## **APPENDIX I**

**Geotechnical Investigations Report** 



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## A REPORT TO BLOCK 27 LANDOWNERS GROUP INC.

### A SOIL INVESTIGATION FOR PROPOSED URBAN DEVELOPMENT

## BLOCK 27 AREA BOUNDED BY KEELE STREET, TESTON ROAD, JANE STREET AND KIRBY ROAD

CITY OF VAUGHAN

Reference No. 1007-S084

**JANUARY 2011** 

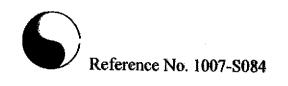
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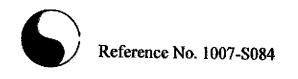


#### 1.0 INTRODUCTION

In accordance with written authorization dated July 27, 2010, from Mr. Tony Miele of Block 27 Landowners Group Inc., a soil investigation was carried out within a parcel of land bounded by Keele Street, Teston Road, Jane Street and Kirby Road, City of Vaughan, for a proposed Urban Development, which has been designated as "Block 27".

The purpose of the investigation was to reveal the subsurface conditions and to determine the engineering properties of the disclosed soils for the design and construction of the proposed project.

The findings and resulting geotechnical recommendations are presented in this Report.



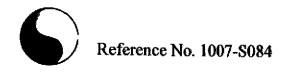
#### 2.0 SITE AND PROJECT DESCRIPTION

The City of Vaughan is located on Markham-Peel till plain where drift dominates the soil stratigraphy. In places, interglacial lacustrine sands, silts, silty clay and reworked till have modified the soil stratigraphy.

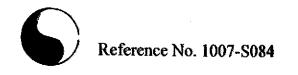
The investigated area consists of various parcels of land belonging to the Block 27 Landowners Group Inc. located within an area bounded by Keele Street to the east, Teston Road to the south, Jane Street to the west, and Kirby Road to the north, in the City of Vaughan. The site consists predominantly of agricultural farm fields with scattered trees and wooded areas. The ground surface of the site is relatively undulated. The overall grading of the site generally slopes towards the south. In places, tributaries of the Don River were encountered within the site, running in an east-west or north-south direction. Drainage ditches were also encountered within the property, and they appeared to be dry at the time of the borehole investigation. An existing Canadian National (CN) railway track also crosses the property in a north-south direction in the eastern portion of the property and the TransCanada Pipeline is located in the northern portion of the property, running in an east-west direction.

Properties to the north and west of the site, across Kirby Road and Jane Street, generally consist of farm fields. To the east and south of the subject site are existing residential developments.

At the time of the report preparation, detailed design of the proposed development was not available; however, it is understood that the property will be subdivided into residential lots and blocks reserved for other land uses. The development will



be provided with municipal services and roadways meeting urban standards. The impact of the tributaries and the bank slope within the development is outside the scope of this report.



#### 3.0 FIELD WORK

The field work, consisting of 75 boreholes to depths ranging from 6.3 to 30.9 m, was performed during the period from August 12 to September 17, 2010. The borehole locations are shown on the Borehole and Monitoring Well Location Plan and Subsurface Profile, Drawing No. 1. For identification purposes, the boreholes carried out in this investigation are labelled with a prefix of 'BH10' and the boreholes with monitoring wells installed are labelled with a prefix of 'MW10' to denote 2010. The borehole locations and depths were specified by Cole Engineering Group Ltd. It should be noted that BH10-28, BH10-45 and BH10-48 were relocated due to access difficulties. As instructed by Cole Engineering Group Ltd., MW10-61, MW10-64, MW10-67, MW10-70 and MW10-73 were extended from a depth of 5.0 m to depths of over 6.0 m in order to determine if wet sand or silt deposits are encountered to this depth.

The holes were advanced at intervals to the sampling depths by a track-mounted, continuous-flight power-auger machine equipped for soil sampling. Standard Penetration tests, using the procedures described on the enclosed "List of Abbreviations and Terms", were performed at the sampling depths. The test results are recorded as the Standard Penetration Resistance (or 'N' values) of the subsoil. The relative density of the granular strata and the consistency of the cohesive strata are inferred from the 'N' values. Split-spoon samples were recovered for soil classification and laboratory testing.

The field work was supervised and the findings recorded by a geotechnical technician.

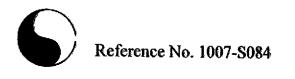


The elevation at each of the borehole locations was surveyed by Schaeffer Dzaldov Bennett Ltd. The elevation of each of the monitoring wells, MW10-61 to MW10-75, inclusive, was determined based on the average of 3 elevation points adjacent to the monitoring well easing.

The borehole and monitoring well coordinates in North American Datun of 1983 (NAD 83), as provided by Schaeffer Dzaldov Bennett Ltd., are presented in the Appendix.

In order to facilitate a Hydrogeological Study to be carried out by Cole Engineering Group Ltd., groundwater monitoring wells, 50 mm in diameter, were installed in MW10-61 to MW10-75, inclusive. The depths and details of the monitoring wells are shown on the borehole logs.

Due to an artesian condition encountered in MW10-64, the monitoring well has been decommissioned under the supervision of Cole Engineering Group Ltd.



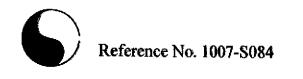
#### 4.0 SUBSURFACE CONDITIONS

Detailed descriptions of the encountered subsurface conditions are presented on the Borehole and Monitoring Well Logs, comprising Figures 1 to 75, inclusive. The revealed stratigraphy is plotted on the subsurface profile on Drawing No. 1, and the engineering properties of the disclosed soils are discussed herein.

This investigation has disclosed that beneath a veneer of topsoil, the site is generally underlain by a deposit of silty clay till to various depths. In places, deposits of silty clay, sandy silt till, silty sand till, silt, sandy silt, silty fine sand, fine sand and fine to medium sand were also encountered. Refusal to augering was encountered in 2 boreholes at depths of 7.0 m and 7.3 m from the prevailing ground surface, inferring the presence of boulders.

#### 4.1 Topsoil (All Boreholes, except BH10-71)

The revealed topsoil veneer ranges in thickness from 13 to 90 cm, with a median of 30 cm. In BH10-10 and BH10-22, the encountered topsoil was mixed with silty clay material. BH10-07, BH10-09, BH10-10, BH10-45, BH10-51 and BH10-52 contain more than 60 cm of topsoil as disclosed by the borehole findings. The topsoil is dark brown to brown in colour, indicating that it contains an appreciable amount of roots and humus. These materials are unstable and compressible under loads; therefore, the topsoil is considered to be void of engineering value, but can be used for general landscaping purposes. A fertility analysis should be carried out to assess the suitability of the topsoil for use as a planting soil or sodding medium. Due to its humus content, the topsoil may produce volatile gases and will generate an offensive odour under anaerobic conditions. Therefore, the topsoil must not be



buried close to any proposed structures deeper than 1.2 m below the exterior finished grade. This is to avoid imposing an adverse impact on the environmental well-being of the developed areas.

As noted, the property is agricultural land; past cultivation will invariably have filled the localized depressions. Therefore, topsoil thicker than that found in the boreholes is expected to occur in places, particularly in localized depressions where thick topsoil deposited by erosion from higher areas will likely occur. This indicates that the thickness of the topsoil varies randomly. Therefore, the topsoil stripping operation should be closely monitored to minimize overstripping.

#### 4.2 Silty Clay Till (All Boreholes)

The clay till was encountered at various depths of the soil stratigraphy. It contains some sand to being sandy. It is heterogeneous in structure, and amorphous in places, indicating that it is a glacial deposit, part of which has been reworked by water action of the glacial lake. Occasionally, it contains sand, silt and sandy silt till layers which are generally wet and, in places, the layers are water-bearing.

The obtained 'N' values range from 4 to 100+, with a median of 39 blows per 30 cm of penetration. This indicates that the consistency of the till is soft to hard, being generally hard. In places, the obtained 'N' values fluctuate from a hard to a very stiff consistency (BH10-13, BH10-28, BH10-55, and BH10-59) either within the brown zone, or in the grey zone at the interface of the brown to grey zone. This indicates that part of the till may have been reworked by water action of the glacial lake.



Sample examinations indicated that the weathered till is fractured and permeated with fissures, and generally extends to depths ranging from  $0.7\pm$  to  $1.8\pm$  m from the prevailing ground surface. In BH10-08 and BH10-09, the weathered till extends to depths of  $1.8\pm$  m and  $1.4\pm$  m from the prevailing ground surface, respectively.

Hard resistance to augering and examination of the auger spoil indicated that occasional cobbles and boulders are embedded in the till. Refusal to augering was encountered in BH10-13 and BH10-15 at depths of 7.0 m and 7.3 m from the prevailing ground surface, inferring the presence of boulders.

The Atterberg Limits of 14 representative samples and the natural water content values of all the samples were determined; the results are plotted on the Borehole Logs and summarized below:

Liquid Limit

22% to 29%

Plastic Limit

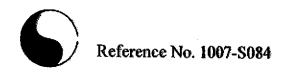
15% to 17%

Natural Water Content

7% to 34% (median 12%)

The above results show that the till is a cohesive material with low plasticity. The natural water content values generally lie below its plastic limit, confirming the consistency of the till as determined by the 'N' values. The low 'N' values and high water content values were generally obtained in the badly weathered till where infiltrating precipitation has wetted the fissures, thus softening its consistency.

Grain size analyses were performed on 14 representative samples, and the results are plotted on Figures 76 to 80, inclusive.



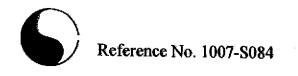
It should be noted that in MW10-64, artesian condition was encountered. This condition is likely caused by the water-bearing sand and silt seams and layers within the silty clay till which are under artesian pressure.

According to the above findings, the soil engineering properties pertaining to the project are given below:

- Moderate frost susceptibility, with low frost-heave potential.
- Low water erodibility.
- Very low in permeability, with an estimated coefficient of permeability of 10<sup>-7</sup> cm/sec, an estimated percolation time of 70 min/cm, and runoff coefficients of:

Stope	
0% - 2%	0.15
2% - 6%	0.20
6% +	0.28

- A cohesive-frictional soil, its shear strength is derived from consistency and
  is augmented by internal friction, thus being inversely moisture dependent
  and, to a lesser extent, dependent on soil density.
- In cuts, the clay will be stable with relatively steep slopes; however,
   prolonged exposure will allow infiltrating precipitation to saturate the
   fissures and sand layers in the till, and this may cause localized sloughing.
- A poor pavement-supportive material, with an estimated California Bearing Ratio (CBR) value of 3%.
- Moderate corrosivity to buried metal, with an estimated electrical resistivity of 4000 ohm cm.



4.3 <u>Silty Clay</u> (BH10-06, BH10-17, BH10-25, BH10-26, BH 10-36, BH 10-44, BH10-45, BH10-48 and BH10-52, and MW10-61, MW10-62, MW10-63, MW10-68, MW10-69, MW10-71 and MW10-73)

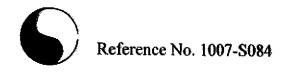
The silty clay was encountered at various depths of the revealed soil stratigraphy in 16 of the 75 boreholes. It contains wet silt and sand layers and has a slightly varved structure, indicating that the clay is a lacustrine deposit. Occasional silty clay till layers are embedded within the silty clay.

The wet silt layers in the silty clay became highly dilatant when shaken. The overall strength of the clay was weakened when kneaded, showing its strength is susceptible to remoulding.

Sample examinations show that, in places, the consistency of the clay becomes softer with depth, either in the brown zone, grey zone or the transition zone between brown and grey. This condition was encountered in BH10-25, BH10-36 and BH10-52 and MW10-61 and MW10-69. The change in consistency in the brown to grey zone indicates that the upper layer of brown clay has stiffened by dessication. The top 1.0± m of the clay below the prevailing ground surface is fissured and is generally soft to firm in consistency. In BH10-71, the weathered clay extends to a depth of 1.5± m from the prevailing ground surface.

The obtained 'N' values range from 4 to 100+, with a median of 24, from which the consistency of the clay is inferred as firm to hard, being generally very stiff.

The Atterberg Limits of 2 representative samples and the natural water content of all the samples were determined. The results are plotted on the Borehole Logs and summarized below:



Liquid Limit

25% and 34%

Plastic Limit

16% and 20%

Natural Water Content

14% to 26% (median 20%)

The values show that the silty clay is low to medium in plasticity. The generally high water content values in the stiff to very stiff clay are due to wetness in the fissures of the weathered soil from infiltrating precipitation and the wetness in the silt and sand layers.

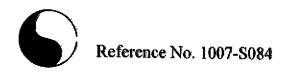
Grain size analyses were performed on 2 representative samples, the results are plotted on Figure 81.

According to the above findings, the following engineering properties are deduced:

- High frost susceptibility and due to the high silt content and the presence of the wet silt layers, high soil-adfreezing potential.
- Low to moderate water erodibility.
- The clay is virtually impervious. However, due to the sand and silt layers, the lateral permeability is higher than the vertical permeability. The estimated coefficient of permeability is 10<sup>-7</sup> cm/sec, an estimated percolation time of 100 min/cm, with runoff coefficients of:

# Slope 0% - 2% 0.15 2% - 6% 0.20 6% + 0.28

 A cohesive soil, its shear strength is derived from consistency and is inversely dependent on soil moisture. It will be susceptible to some

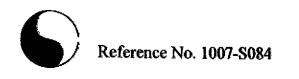


reduction in strength if remoulded; i.e., the silt and sand (layers) are frictional soils. Their strength is soil density dependent. The wet silt, due to its dilatancy, is susceptible to impact disturbance; i.e., the disturbance will induce a pore pressure build-up within the mantle, resulting in soil dilation and a reduction in shear strength.

- In excavation, the stiff to very stiff clay crust will be stable in a relatively
  steep cut for a short duration; however, as water seepage saturates the sand
  layers, the sides will slough, and sheet collapse may occur without warning.
- A very poor flexible pavement-supportive material, with an estimated CBR value of 3% or less.
- Moderately high corrosivity to buried metal, with an estimated electrical resistivity of 3000 to 3500 ohm cm.
- 4.4 <u>Sandy Silt Till</u> (BH10-03, BH10-04, BH10-14, BH10-20, BH10-27, BH10-29, BH10-36, BH10-42 and BH10-50 and MW10-72, MW10-73 and MW10-74)

The sandy silt till deposit was generally encountered beneath or interstratified with the silty clay till deposit. It consists of a random mixture of particle sizes ranging from clay to gravel, with silt being the predominant fraction. The material is heterogeneous in structure, showing that it is a glacial till. Wet sand layers which are water-bearing are embedded, in places, in the till.

Sample examinations disclosed that the till is cemented and displayed slight cohesion when remoulded. The samples slaked readily when placed in water, and when shaken, the wet samples displayed a low dilatancy.



Hard resistance to augering was encountered, showing that occasional cobbles and boulders are embedded in the till mantle.

The obtained 'N' values of the sandy silt till range from 37 to 100+, with a median of 100+, indicating that the relative density of the sandy silt till is dense to very dense, generally being very dense.

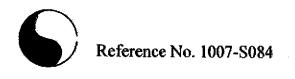
The natural water content values of the sandy silt till samples were determined, and the results are plotted on the Borehole Logs. The values range from 8% to 22%, with a median of 12%, showing that the till is in a moist to wet, generally very moist condition. Wet sandy silt till which appears to be water-bearing was encountered 15.0± m below the prevailing ground surface in MW10-72.

Grain size analyses were performed on 2 representative samples of the sandy silt till, and the results are plotted on Figure 82.

According to the above findings, the engineering properties of the sandy silt till are listed below:

- High frost susceptibility and moderate water erodibility.
- Relatively low permeability, with an estimated coefficient of permeability of  $10^{-5}$  to  $10^{-6}$  cm/sec, an estimated percolation time of 20 to 50 min/cm and runoff coefficients of:

Slope	
0% - 2%	0.11 to 0.15
2% - 6%	0.16 to 0.20
6%+	0.23 to 0.28



- A frictional soil, its shear strength is primarily derived from internal friction and is augmented by cementation. Therefore, its strength is primarily soildensity dependent.
- It will be stable in steep cuts; however, under prolonged exposure, local sheet collapse will likely occur.
- A fair pavement-supportive material, with an estimated CBR value of 8%.
- Moderate corrosivity to buried metal, with an estimated electrical resistivity of 4500 ohm cm.

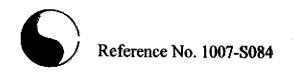
#### 4.5 Silty Sand Till (BH10-08, BH10-13, BH10-40, BH10-41, BH10-43 and BH10-53)

The sand till was encountered in 6 of the 75 boreholes of the site. It was found at various depths of the stratigraphy. It consists of a random mixture of particle sizes ranging from clay to gravel, with sand being the dominant fraction. Its structure is heterogeneous.

A tactile examination of the soil samples indicated that the till is slightly cemented, and it displayed some cohesion when wetted. The till is also laminated with wet sand layers which, in places, are water bearing.

The relative density of the till, as inferred from the 'N' values of 18 to 100+, with a median of 45, is compact to very dense, being generally dense. The compact silty sand till occurred within a shallow depth of 1.0± m from the prevailing ground surface in BH10-40 and BH10-53, where it has been loosened by weathering.

Intermittent hard resistance to augering was encountered, indicating the presence of cobbles and boulders in the stratum, particularly in the lower zone of the stratum.



The natural water content values of the samples range from 5% to 10%, with a median of 8%, showing that the till is damp to moist, being generally in a moist condition.

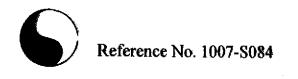
Grain size analyses were performed on 2 representative samples of the silty sand till; the gradations are plotted on Figure 83.

According to the above findings, the engineering properties are listed below:

- High frost susceptibility and moderate water erodibility.
- Low permeability, with an estimated coefficient of permeability of 10<sup>-5</sup> to 10<sup>-6</sup> cm/sec, an estimated percolation time of 25 to 50 min/cm, and runoff coefficients of:

# Slope 0% - 2% 0.11 to 0.15 2% - 6% 0.16 to 0.20 6% + 0.23 to 0.28

- A frictional soil, its shear strength is primarily derived from internal friction and is augmented by cementation. Therefore, its strength is soil densitydependent.
- It will be stable in steep cuts; however, under prolonged exposure, localized sheet collapse will likely occur.
- A poor pavement-supportive material, with an estimated CBR value of 5%.
- Moderately low corrosivity to buried metal, with an estimated electrical resistivity of 5500 ohm cm.



## 4.6 <u>Silt</u> (BH10-15, BH10-53 and BH10-60 and MW10-65, MW10-69, MW10-71 and MW10-75)

The silt was generally encountered in the lower sector of the revealed stratigraphy. It contains some clay and sand, with occasional sandy silt, fine sand and silty clay layers. The laminated structure shows that it is an interglacial lacustrine deposit.

Sample examinations revealed that the silt is generally wet and it displayed appreciable dilatancy when shaken by hand.

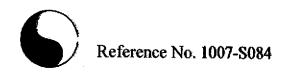
Its natural water content values range from 14% to 23%, with a median of 19%, confirming that the silt is in a very moist to saturated, generally wet condition. The silt appears to be water-bearing at a depth below  $7.4\pm$  to over  $10.4\pm$  m from the prevailing ground surface, or El. 273.6 $\pm$  to below 238.9 $\pm$  m, depending on location.

The obtained 'N' values range from 10 to 100+, with a median of 100+, showing that the relative density of the silt is loose to very dense, being generally very dense. The loose silt was found in MW10-65, at a depth of 15.0± m; the loose condition is likely the result of hydrostatic uplift as well as suction effect during sampling which would have loosened the density of the sand.

A grain size analysis was performed on 1 representative sample of the silt, and the resulting gradation is plotted on Figure 84.

According to the above findings, the following engineering properties are deduced:

- High frost susceptibility, with high soil-adfreezing potential.
- High water erodibility.



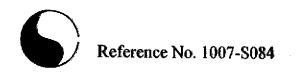
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Low permeability due to the occurrence of silty clay layers, with an
estimated coefficient of permeability of 10<sup>-6</sup> cm/sec, an estimated percolation
time of 50 min/cm, and runoff coefficients of:

prope	
0% - 2%	0.15
2% - 6%	0.20
6% +	0.28

- A frictional-cohesive soil, its shear strength is largely derived from internal
  friction. Due to its dilatancy, the strength of the wet silt is susceptible to
  dynamic disturbance; i.e., the disturbance will induce a build-up of pore
  pressure within the soil mantle, resulting in soil dilation and a reduction in
  shear strength.
- In steep cuts, the wet silt will slowly slump, and this may cause the sides to slough. It will boil under a piezometric head of 0.4 m.
- Will migrate through small openings, particularly under seepage pressure.
- A poor flexible pavement-supportive material, with an estimated CBR value of 5%.
- Moderate corrosivity to buried metal, with an estimated electrical resistivity of 4500 ohm·cm.
- 4.7 <u>Sandy Silt</u> (BH10-11, BH10-19, BH10-29, BH10-30, BH10-33, BH10-39, BH10-40 and BH10-46 and MW10-62, MW10-63, MW10-65, MW10-66, MW10-68, MW10-69, MW10-74 and MW10-75)

The sandy silt was found either in the upper or lower sector of the revealed stratigraphy. Sample examinations showed that the sandy silt is in a moist to saturated condition. It contains a trace to some clay and occasional traces of gravel.



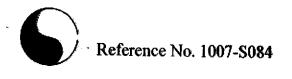
The obtained 'N' values of the sandy silt varied from 5 to 100+, with a median of 88. The relative density of the silt is thus inferred as loose to very dense, being generally very dense. The loose condition is generally restricted to the weathered zone in BH10-11, which extends to a depth of 1.0± m from the prevailing ground surface.

The natural water content of the samples was determined to range from 7% to 21%, with a median of 17%; the values are plotted on the Borehole Logs. These values confirm that the silt is in a damp to saturated, generally wet condition. A review of the water content profile indicates that the sandy silt is saturated and water bearing at depths ranging from  $6.0\pm$  to over  $9.0\pm$  m from the prevailing ground surface, or El. 259.2± to below 235.8± m, depending on location. In places, the water-bearing sandy silt is under subterranean artesian pressure as seen in BH10-19, BH10-29, and BH10-30 and MW10-62, MW10-63, MW10-65 and MW10-66.

Grain size analyses were performed on 3 representative samples and the results are plotted on Figure 85.

According to the above findings, the engineering properties relating to the project are given below:

- Highly frost susceptible, with high soil-adfreezing potential.
- Highly water erodible; susceptible to migration through small openings under seepage pressure.
- Medium permeability, with an estimated coefficient of permeability of 10<sup>-4</sup> to 10<sup>-5</sup> cm/sec, an estimated percolation time of 16 to 24 min/cm, and runoff coefficients of:

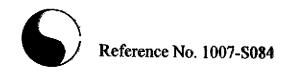


Slope
-------

0% - 2% 0.07 to 0.11 2% - 6% 0.12 to 0.16 6% + 0.18 to 0.23

- A frictional soil, its shear strength is density dependent. Due to its dilatancy, the strength of the wet silt is susceptible to impact disturbance, i.e. the disturbance will induce a build-up of pore pressure within the soil mantle, resulting in soil dilation and a reduction in shear strength.
- In excavation, the moist silt will be stable in relatively steep cuts, while the
  wet silt will slough and run slowly with seepage bleeding from the cut face.
  It will boil with a piezometric head of 0.4 m.
- A fair pavement-supportive material, with an estimated CBR value of 8%.
- Moderately low corrosivity to buried metal, with an estimated electrical resistivity of 5000 ohm·cm.
- 4.8 <u>Silty Fine Sand</u> (BH10-05, BH10-16, BH10-17, BH10-20, BH10-22, BH10-24, BH10-30, BH10-31, BH10-32, BH10-44, BH10-47, BH10-48, BH10-50, BH10-51, BH10-52, BH10-53, BH10-55 and BH10-56 and MW10-61, MW10-65, MW10-66, MW10-69, MW10-70, MW10-71, MW10-72, MW10-73, MW10-74, and MW10-75)

The silty fine sand deposit was generally encountered beneath the silty clay till deposit. It contains occasional sandy silt and fine sand layers. The sorted structure indicates that it is a glaciolacustrine deposit. The wet silty fine sand layers became dilatant when shaken.



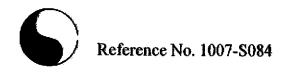
The obtained 'N' values of the silty fine sand range from 14 to 100+, with a median of 57, indicating that the relative density of the deposit is compact to very dense, being generally very dense.

The obtained natural water content values range from 5% to 24%, with a median of 19%, showing that the sand is in a damp to saturated, generally saturated condition. The silty fine sand, as indicated by the water content values, is often water bearing at depths ranging from 4.6± to over 7.6± m from the prevailing ground surface, or El. 263.2± to El. 242.6 m and the water in the sand, in places is under subterranean artesian condition as shown in BH10-20, BH10-24, BH10-31, BH10-50, BH50-51, BH10-52, BH10-55 and BH10-56.

Grain size analyses were performed on 8 representative samples and the results are plotted on Figures 86 to 88.

According to the above findings, the soil engineering properties relating to the project are given below:

- A soil of high capillarity, with high water-retention capability.
- High frost susceptibility, with high soil-adfreezing potential.
- High water erodibility; it will migrate through small openings under low to moderate seepage pressure.
- Relatively pervious, with an estimated coefficient of permeability of  $10^{-3}$  to  $10^{-5}$  cm/sec, an estimated percolation time of 8 to 24 min/cm, and runoff coefficients of:



Slope	
0% - 2%	0.04 to 0.11
2% - 6%	0.09 to 0.16

6% + 0.13 to 0.23

Its shear strength is derived from internal friction, thus being density
dependent. Due to its dilatancy, dynamic loads imposed on the saturated soil
will render a reduction of its shear strength.

- When excavated, the soil will run with seepage and the bottom will boil under a piezometric head of 0.4 m.
- A fair pavement-supportive material, with an estimated CBR value of 8%.
- Moderately low corrosivity to buried metal, with an estimated electrical resistivity of 5000 ohm cm.
- 4.9 Fine Sand (BH10-01, BH10-04, BH10-05, BH10-06, BH10-07, BH10-09, BH10-10, BH10-23, BH10-30, BH10-32, BH10-33, BH10-36, BH10-37, BH10-38, BH10-39, BH10-40, BH10-42, BH10-43, BH10-46, BH10-48, BH10-49, BH10-54, BH10-55 and BH10-56 and MW10-63, MW10-65, MW10-66, MW10-68, MW10-71, MW10-74 and MW10-75)

The sand was encountered generally beneath the silty clay till in 31 of the 75 boreholes. It contains a trace to some silt and traces of gravel, with occasional silt and silty fine sand seams and layers. The layered structure shows that the sand is a lacustrine deposit.

Sample examinations showed that the sand is non-cohesive, and generally in a saturated condition. The wet samples displayed a slight dilatancy when shaken by hand. The saturated condition is confirmed by the determined water content values of



the samples which was found to range from 3% to 22%, with a median of 17%, which indicates that the fine sand is in a damp to saturated, generally wet condition. The fine sand appears to be water bearing at depths ranging from 4.0± to over 7.8 m from the prevailing ground surface, or El. 291.1± to 236.6± m. In places, the groundwater in the sand is under subterranean artesian pressure as shown in BH10-01, BH10-04, BH10-07, BH10-10, BH10-30, BH10-32, BH10-36, BH10-42, BH10-54, BH10-55 and BH10-56.

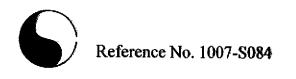
The obtained 'N' values range from 5 to 100+, with a median of 52, indicating that the relative density of the sand is loose to very dense, being generally very dense. The loose condition was encountered in BH10-43 and MW10-66, in the surficial layers that have been loosened by the weathering process and extends to depths of  $1.2\pm m$  and  $1.0\pm m$ , respectively.

Grain size analyses were performed on 6 representative samples. The results are plotted on Figures 89 and 90.

According to the above findings, the following engineering properties of the sand are deduced:

- Moderately low frost susceptibility with high water erodibility.
- Susceptible to migration through small openings under seepage pressure.
- Pervious, with an estimated coefficient of permeability of 10<sup>-2</sup> to 10<sup>-3</sup> cm/sec, an estimated percolation time of 2 to 10 min/cm, and runoff coefficients of:

Stope	
0% - 2%	0.04
2% - 6%	0.09
6% +	0.13



- A frictional soil, its shear strength is dependent on its internal friction angle
  and soil density. Due to its dilatancy, its shear strength is susceptible to impact
  disturbance, i.e. the disturbance will induce a build-up of pore pressure within
  the soil mantle, resulting in soil dilation and reduction of shear strength.
- In steep cuts, the sand will be stable in a damp to moist condition, but will slough if it is in a wet condition, run with seepage and boil with a piezometric head of about 0.4 m.
- A fair pavement-supportive material, with an estimated CBR value of 20%.
- Low corrosivity to buried metal, with an estimated electrical resistivity of 6500 ohm·cm.
- 4.10 Fine to Medium Sand (BH10-16, BH10-23, BH10-37, BH10-38 and BH10-53 and MW10-66, MW10-71, MW10-72 and MW10-75)

The fine to medium sand was encountered beneath the silty clay till deposit, generally in the lower sector of the revealed stratigraphy. It is often encountered within the fine sand deposit, or contains fine sand layers.

It is well graded with variable amounts of silt and gravel. Sample examinations show the particles are subangular in shape, and the deposit is non-cohesive and is generally in a damp to saturated condition.

The obtained 'N' values range from 19 to 100+, with a median of 70, indicating the relative density of the sand is compact to very dense, being generally very dense.

The natural water content values of the samples were found to range from 3% to 23%, with a median of 17%, showing the sand is in a damp to saturated, generally saturated



condition. The fine to medium sand encountered is often water bearing at depths ranging from 4.6 to over 7.4 m from the prevailing ground surface, or El.  $270.2\pm$  to 230.2 m.

Due to the pervious nature, some water drained during sampling; therefore, the determined water content may not represent the true value of the sand.

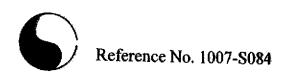
Grain size analyses were performed on 4 representative samples and the results are plotted on Figures 91 and 92.

According to the above findings, the following engineering properties are deduced:

- Low to high frost susceptibility depending on the silt content.
- Pervious, with an estimated coefficient of permeability of 10<sup>-2</sup> cm/sec, an
  estimated percolation time of 2 min/cm, and runoff coefficients of:

# Slope 0% - 2% 0.04 2% - 6% 0.09 6% + 0.13

- A frictional soil, its shear strength is derived from its internal friction angle and is soil density dependent.
- In steep cuts, the dry and wet sand will slough to its angle of repose, run under seepage pressure and boil with a piezometric head of about 0.4 m.
- A good pavement-supportive material, with an estimated CBR value of 21%.
- Low corrosivity to buried metal, with an estimated electrical resistivity of 6500 ohm cm.



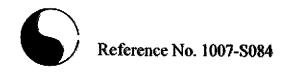
### 4.11 Compaction Characteristics of the Revealed Soils

The obtainable degree of compaction is primarily dependent on the soil moisture and, to a lesser extent, on the type of compactor used and the effort applied.

As a general guide, the typical water content values of the revealed soils for Standard Proctor compaction are presented in Table 1.

Table 1 - Estimated Water Content for Compaction

		Water Content (%) for Standard Proctor Compaction		
Soil Type	Determined Natural Water Content (%)	100% (optimum)	Range for 95% or +	
Silty Clay Till	7 to 34 (median 12)	15, 16 and 17	11 to 22	
Silty Clay	14 to 26 (median 20)	15 and 19	11 to 24	
Sandy Silt Till	8 to 22 (median 12)	11	7 to 16	
Silty Sand Till	5 to 10 (median 8)	10 and 11	6 to 16	
Silt	14 to 23 (median 19)	12 and 13	8 to 17	
Sandy Silt	7 to 21 (median 17)	12	8 to 16	
Silty Fine Sand	5 to 24 (median 19)	11	6 to 16	
Fine Sand	3 to 22 (median 17)	11	5 to 16	
Fine to Medium Sand	3 to 23 (median 17)	11	5 to 16	

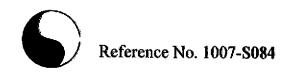


According to the above findings, portions of the in situ soils are generally suitable for a 95% or + Standard Proctor compaction. Portions of the tills are either too dry or on the dry side of the optimum and will require addition of water prior to structural compaction, particularly in dry, warm weather and in areas where compaction is best performed on the wet side of the optimum. The weathered soils and portions of the in situ soils are excessively wet and will require prior aeration. This should be carried out during the dry, warm weather by spreading them thinly on the ground. The soils having a low water content can be mixed with wetter soils, or can be wetted prior to or during structural compaction.

The occurring soils should be compacted using a heavy-weight, kneading-type roller. The silts and sands can be compacted by a smooth roller with or without vibration, depending on the water content of the soils being compacted. The lifts for compaction should be limited to 20 cm, or to a suitable thickness as assessed by test strips performed by the equipment which will be used at the time of construction.

One should be aware that with considerable effort a 90%± Standard Proctor compaction of the wet silts and silty fine sand is achievable. Further densification is prevented by the pore pressure induced by the compactive effort; however, large random voids will have been expelled, and with time the pore pressure will dissipate and the percentage of compaction will increase. There are many cases on record where after a few months of rest, the density of the compacted mantle has increased to over 95% of its maximum Standard Proctor dry density.

When compacting the very stiff to hard silty clay till and cemented dense to very dense silty sand till and sandy silt till on the dry side of the optimum, the



compactive energy will frequently bridge over the chunks in the soil and be transmitted laterally into the soil mantle. Therefore, the lifts of these soils must be limited to 20 cm or less (before compaction). It is difficult to monitor the lifts of backfill placed in deep trenches; therefore, it is preferable that the compaction of backfill at depths over 1.0 m below the road subgrade be carried out on the wet side of the optimum. This would allow a wider latitude of lift thickness. As noted, wetting of some portions of the tills and the sandy silt will be necessary to achieve this requirement.

If the compaction of the soils is carried out with the water content within the range for 95% Standard Proctor dry density, but on the wet side of the optimum, the surface of the compacted soil mantle will roll under the dynamic compactive load. This is unsuitable for road construction since each component of the pavement structure is to be placed under dynamic conditions which will induce the rolling action of the subgrade surface and cause structural failure of the new pavement. On the other hand, the foundations or bedding of the sewer and slab-on-grade will be placed on a subgrade which will not be subjected to impact loads. Therefore, the structurally compacted soil mantle with the water content on the wet side or dry side of the optimum will provide an adequate subgrade for the construction.

The presence of boulders will prevent transmission of the compactive energy into the underlying material to be compacted. If an appreciable amount of boulders over 15 cm in size is mixed with the material, it must either be sorted, or must not be used for construction of engineered fill and/or structural backfill.



#### 5.0 **GROUNDWATER CONDITIONS**

Groundwater seepage encountered during augering was recorded on the field logs. The boreholes were checked for the presence of groundwater and the occurrence of cave-in upon their completion. The levels are plotted on the Borehole Logs and listed in Table 2.

Table 2 - Groundwater Levels

	BH/MW	Soil Colour Changes Brown to Grey	Seepage Encountered During Augering		Measured Groundwater/ Cave-in* Level On Completion	
BH/MW No.	Depth (m)	Depth (m)	Depth (m)	Amount	Depth (m)	El. (m)
BH10-01	7.8	7.4	5.5	Appreciable	5.5	262.4
BH10-02	7.8	4.6	7.3	Slight	7.3	258.1
BH10-03	8.1	7.4	-		Dry	_
BH10-04	8.1	8.1+	5.8	Some	5.8/7.0*	264.9/263.7*
BH10-05	8.1	8.1+	4.6	Appreciable	4.6/6.0*	262.3/260.9*
BH10-06	8.1	8.1+	6.0	Appreciable	6.0/6.2*	264.6/264.4*
BH10-07	8.1	4.6	5.2	Slight	5.2	254.4
BH10-08	7.9	6.0	_	-	Dry	-
BH10-09	8.1	4.9	-	-	Dry	-
BH10-10	8.1	4.6	3.0	Slight	3.7	295.2
BH10-11	8.1	6.0	7.6	Slight	7.9	280.6
BH10-12	8.1	3.0	7.6	Slight	3.0	256.4
BH10-13	7.0	4.6	-	-	Dry	_

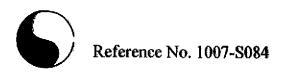


Table 2 - Groundwater Levels (Cont'd 1)

	BH/MW	Soil Colour Changes Brown to Grey	Seepage Encountered During Augering		Measured Groundwater/ Cave-in* Level On Completion		
BH/MW No.	Depth (m)	Depth (m)	Depth (m)	Amount	Depth (m)	El. (m)	
BH10-14	7.9	6.0	-	-	Dry	-	
BH10-15	7.3	6.0	_	-	Dry	-	
BH10-16	8.1	8.1+	4.6	Appreciable	4.8*	263.0*	
BH10-17	8.1	3.0	6.7	Some	6.7	262.1	
BH10-18	8.1	8.1+	7.0	Slight	7.0	257.4	
BH10-19	8.1	4.6	6.7	Slight	6.7	259.9	
BH10-20	8.1	6.0	3.0	Slight	3.0	260.0	
BH10-21	8.1	4.6	6.0	Slight	Dry	-	
BH10-22	8.1	8.1+	6.0	Slight	6.0/7.8*	253.9/252.1*	
BH10-23	7.9	7.9+	•	•	Dry	•	
BH10-24	8.1	6.0	5.8	Slight	5.8	258.4	
BH10-25	8.1	7.1	-	•	Dry	-	
BH10-26	8.1	4.6	1.5	Slight	7.2	249.0	
BH10-27	8.1	2.3	4.6	Slight	5.2	248.6	
BH10-28	7.7	4.6	2.4	Slight	2.4	248.0	
BH10-29	8.1	4.6	3.7	Some	3.7	250.0	
BH10-30	8.1	3.0	1.5	Some	1.8/6.0*	253.8/249.6*	
BH10-31	7.4	4.6	4.3	Slight	4.3	262.1	
BH10-32	8.1	3.0	4.0	Appreciable	4.0/4.3*	251.0/250.7*	
BH10-33	8.1	7.4	5.5	Slight	5.5	259.6	
BH10-34	7.9	7.9+		-	Dry	_	

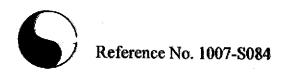


Table 2 - Groundwater Levels (Cont'd 2)

	BH/MW	Soil Colour Changes Brown to Grey	Seepage Encountered During Augering		Measured Groundwater/ Cave-in* Level on Completion		
BH/MW No.	Depth (m)	Depth (m)	Depth (m)	Amount	Depth (m)	El. (m)	
BH10-35	8.1	6.0	4.6	Slight	5.8	254.5	
BH10-36	8.1	7.4	3.7	Slight	3.7/6.2*	263.1/260.6*	
BH10-37	8.1	8.1+	4.0	Appreciable	4.0/4.8*	266.6/265.8*	
BH10-38	7.9	7.4	4.9	Appreciable	4.9/6.0*	269.9/268.8*	
BH10-39	7.9	7.9+	4.6	Appreciable	5.5	270.8	
BH10-40	7.8	7.8+	-	**	Dry	-	
BH10-41	8.1	4.6	6.0	Slight	6.7	279.1	
BH10-42	7.9	7.9+	6.7	Slight	6.7	268.9	
BH10-43	8.1	8.1+	-	*	Dry	-	
BH10-44	8.1	8.1	6.0	Some	6.4	262.2	
BH10-45	7.9	7.9+	-	-	Dry	•	
BH10-46	7.9	7.9+	7.4	Slight	Dry	-	
BH10-47	8.1	4.6	-	•	Dry	-	
BH10-48	8.1	8.1+	7.0	Appreciable	7.0*	266.7	
BH10-49	8.1	8.1+	6.0	Appreciable	6.0*	265.0*	
BH10-50	8.1	7.4	5.2	Some	5.2/6.2*	262.8/261.8*	
BH10-51	8.1	8.1+	4.6	Slight	4.6/6.7*	262.2/260.1*	
BH10-52	8.0	7.4	7.4	Slight	4.9	257.9	
BH10-53	7.9	7.9+	7.8	Appreciable	7.8*	273.2*	
BH10-54	7.9	7.9+	6.0	Appreciable	3.0	264.4	
BH10-55	8.1	7.4	3.0	Slight	2.4/4.6*	261.6/259.4*	

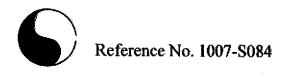


Table 2 - Groundwater Levels (Cont'd 3)

	Borehole	Soil Colour Changes Brown to Grey	t'd 3)  Seepage  Encountered  During Augering		Measured Groundwater/ Cave-in* Level on Completion	
BH/MW No.	Depth (m)	Depth (m)	Depth (m)	Amount	Depth (m)	El. (m)
BH10-56	8.1	8.1+	4.6	Slight	3.7	257.6
BH10-57	8.1	3.0	-	-	Dry	-
BH10-58	8.1	4.6	7.3	Slight	7.3	250.7
BH10-59	8.1	4.6	7.3	Slight	7.3	247.7
BH10-60	8.1	4.6	_	-	Dry	-
MW10-61	6.7	6.7+	5.2	Slight	5.2	260.8
MW10-62	15.0	3.8	7.9	Slight	7.9	255.9
MW10-63	15.4	4.6	9.1	Slight	9.1	254.5
MW10-64	6.6	3.4	-		Dry	-
MW10-65	15.8	2.7	9.1	Appreciable	7.8	245.2
MW10-66	30.9	13.7	2.3	Appreciable	2.4	261.9
MW10-67	6.3	6.3+	5.8	Slight	5.8	277.3
MW10-68	15.7	13.7	4.6	Slight	Dry	_
MW10-69	30.9	19.8	10.8	Appreciable	10.8	273.9
MW10-70	6.5	6.5+	4.6	Slight	4.6	254.4
MW10-71	24.6	9.1	6.0	Appreciable	4.8	246.9
MW10-72	30.9	4.6	6.0	Appreciable	5.8	260.4
MW10-73	6.7	6.7+	4.6	Appreciable	3.7	258.8
MW10-74	15.7	9.1	6.0	Appreciable	6.0	259.5
MW10-75	30.9	6.0	6.0	Slight	6.0	258.8

<sup>\*</sup>Cave in level (In wet sands and silts, the level generally represents the groundwater regime at the borehole location.)

Most of the boreholes and monitoring wells where water-bearing sands and silts were encountered under subterranean artesian condition within the investigated depth of 8.0± m were found in the south central and east sectors of the site.

A check of the groundwater levels in these boreholes and monitoring wells showed that in some it had risen to about 3.0 m above the depth of sands and silts revealed at the time of borehole completion.

A review of the subsurface condition revealed by deep monitoring wells showed that the sands and silts extend to considerable depths to over 30.9 m. The sands and silts, in places, are interstratified with hard silty clay, silty clay till and very dense silt. The groundwater level was monitored on October 22, 2010 which was about 1 to 2 months after installation of the wells. The measured groundwater levels are listed in Table 3.

Table 3 - Groundwater Levels on October 22, 2010

	Measured Groundwater Level on October 22, 2010			
MW No.	Depth from Ground (m)	El. (m)		
MW10-61	3.3	262.7		
MW10-62	3.1	260.7		
MW10-63	4.9	258.7		
MW10-64	Above Ground	252.9		
MW10-65	Above Ground	253.9		
MW10-66	4.6	259.7		
MW10-67	4.3	278.8		
MW10-68	Dry	-		
MW10-69	23.1	261.6		

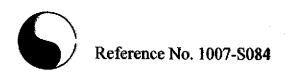


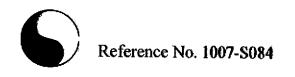
Table 3 - Groundwater Levels on October 22, 2010 (Cont'd)

	Measured Groundwater I	Level on October 22, 2010
MW No.	Depth (m)	El. (m)
MW10-70	2.5	256.5
MW10-71	2.0	249.7
MW10-72	6.9	259.3
MW10-73	2.4	260.1
MW10-74	8.5	257.0
MW10-75	8.3	256.5

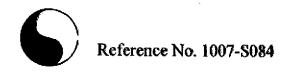
As shown above, groundwater levels were detected in 52 of the 75 boreholes upon completion at depths ranging from  $1.8\pm$  to  $10.8\pm$  m below the prevailing ground surface, or at El. 295.2 $\pm$  to 245.2 $\pm$  m. Cave-in was encountered in 17 of the 75 boreholes, at depths ranging from  $4.3\pm$  to  $7.8\pm$  m, or El. 275.0 $\pm$  to 249.6 $\pm$  m. The groundwater and cave-in encountered at shallow depths are likely caused by infiltrated precipitation trapped in the fissures of the weathered soil and in the wet sand and silt seams and layers.

The strata of sands and silts dominate the lower sectors of the investigated depths and they are generally water bearing. This indicates that the sands and silts are likely part of the regional aquifer which, in places, is under artesian or subterranean artesian condition.

The soil colour changes from brown to grey at depths of  $2.3\pm$  to  $19.8\pm$  m below the ground surface. The brown colour shows that the soils have oxidized. This indicates that the groundwater level will fluctuate seasonally and is affected by the water level of the Don River tributaries.



The groundwater yield from the silty clay till and silty clay, due to their low permeability, is expected to be small and limited. The yield from the sand till and silt till will be some to moderate and the yield from the sands and silts will be appreciable and persistent.



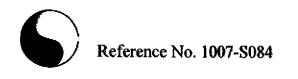
## 6.0 <u>DISCUSSION AND RECOMMENDATIONS</u>

The investigation has disclosed that beneath a veneer of topsoil, the site is underlain by a complex stratigraphy of soft to hard, generally hard silty clay till; firm to hard, generally very stiff silty clay; dense to very dense, generally very dense sandy silt till; compact to very dense, generally dense silty sand till; loose to very dense, generally very dense sandy silt; compact to very dense silt; loose to very dense, generally very dense sandy silt; compact to very dense, generally very dense silty fine sand; loose to very dense, generally very dense fine sand; and compact to very dense, generally very dense fine to medium sand. The loose and firm deposits are generally restricted to the weathered zone extending to a depth of 1.8± m below the prevailing ground surface.

The groundwater regime at the time of the borehole investigation is inferred to lie at depths ranging from 1.8± to 10.8± m, or El. 295.2± to 245.2± m. Perched groundwater derived from infiltrated precipitation will likely occur at a shallower depth during wet seasons. This condition will often dissipate in dry seasons.

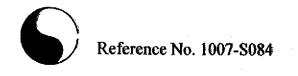
Groundwater detected in water-bearing sands and silts is generally under subterranean artesian condition. The head of groundwater, in places, has risen about 3.0 m above the water-bearing sand and silt revealed on borehole completion. Groundwater was monitored 1 to 2 months after completion of the monitoring well installation.

The groundwater yield from the silty clay till and silty clay, due to their low permeability, is expected to be small and limited. The yield from the sand till and silt till will be some to moderate and the yield from the water-bearing sands and silts will be appreciable and will be persistent, particularly when the groundwater is under subterranean artesian condition.

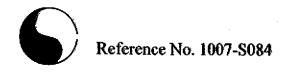


The revealed findings show that the following geotechnical considerations require special attention:

- 1. The revealed topsoil is 13 to 90 cm thick. Thicker topsoil is expected to occur in localized depressions, particularly in the farm fields and low-lying drainage areas. The topsoil is highly compressible and must be stripped as it is unsuitable for engineering applications. Due to its high humus content, it will generate volatile gases under anaerobic conditions and is unsuitable for engineering application. For the environmental as well as the geotechnical well-being of the future development, the topsoil should not be buried within the vicinity of any structures.
- As noted, thicker topsoil may occur, in places, in low-lying areas deposited by erosion from higher areas. Diligent control of the stripping operation will be necessary to prevent overstripping and to ensure satisfactory removal.
- 3. The surficial soils are generally weathered in the zone extending to a depth of 1.8± m from the prevailing ground surface. These soils are weak and will consolidate under heavy surcharge loads.
- 4. Where cut and fill is required for site grading, substantial savings can be realized by placing the fill in an engineered manner suitable for foundation, underground services and road construction. This must, however, be properly planned and implemented during the site grading stage.
- 5. The sound natural soils are suitable for normal spread and strip footing construction. Due to the presence of topsoil and weathered soils, the footing subgrade must be inspected by a geotechnical engineer, or a geotechnical technician under the supervision of a geotechnical engineer, or a building inspector who has geotechnical background, to ensure that the condition of the subgrade is compatible with the design of the foundations. It should be

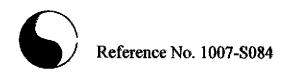


- noted that where deep basements are contemplated, the footing must be placed at a level that has adequate till cover to prevent break-out of subterranean artesian groundwater from the water-bearing sands and silts that will cause settlement of the foundation.
- 6. In order to alleviate the problem of soil adfreezing, special measures should be implemented for the houses constructed in the areas where the silty clay, silts and silty fine sand occur within the founding depths.
- 7. Depending on the design grade of the basement, perimeter and floor subdrains and dampproofing of the foundation walls are required for basement construction. The subdrains should be shielded by a fabric filter to prevent blockage by silting. This can be further assessed at the time of basement excavation.
- 8. A Class 'B' bedding is recommended for the design of the underground services. The bedding material should consist of compacted 20-mm Crusher-Run-Limestone, or equivalent. Where the subgrade needs to be stabilized by well points, a Class 'A' bedding should be considered. In the silty clay and tills plagued with water-bearing sand and silt layers, the bedding material should consist of Crusher-Run Limestone.
- Curb subdrains will be required by the City of Vaughan for road construction.
- 10. The hard and very dense tills contain occasional boulders. Extra effort and a properly equipped backhoe will be required for excavation. Boulders larger than 15 cm in size are not suitable for structural backfill.
- 11. The sides of the excavations in the wet silt and sand will run and the bottom will boil under a piezometric head of about 0.3 m. Excavation below groundwater must be stabilized by vigorous pumping from closely spaced sump-wells or, if necessary, by a well-point dewatering system. Where the



services are to be installed in water-bearing sands and silts which are affected by subterranean artesian conditions, deep dewatering wells should be installed to relieve the condition. The joints of services in water-bearing sands and silts and silty sand and sandy silt tills must be leak-proofed or wrapped with a waterproof membrane. The appropriate method of dewatering should be determined by a test pit programme carried out by the contractor prior to tendering and construction of the project when the intended bottom of excavation is determined.

- 12. For excavation below the groundwater level, pumping from sumps or, if necessary, a well-point dewatering system will be required. This should be assessed by test pits and test pumping prior to the project construction.
- 13. In areas not impacted by subterranean artesian groundwater conditions, a general lowering of the groundwater is expected once the underground services of the development have been constructed and the site has been properly graded.
- 14. A review of the encountered stratigraphy indicates that the sands and silts beneath the tills and silty clay at depths ranging from 2.3± to over 8.1 m from the prevailing ground surface, or El. 273.6± to El. 249.0± m, generally are under subterranean artesian pressure. Accordingly, it is recommended that the proposed grading of the site must be maintained and caution must be exercised if excavation is to be carried out beyond the till and silty clay mantle. Generally a fill cover of 1.0 m will prevent a breakout of sands and silts under 2.0 m of artesian groundwater. This must be confirmed by a qualified hydrogeologist in order to determine the safe excavation depth within the development.



The recommendations appropriate for the project described in Section 2.0 are presented herein. One must be aware that the subsurface conditions may vary between boreholes and monitoring wells, and the assessment given herein is general in nature based on the borehole and monitoring well findings. Should this become apparent during construction, a geotechnical engineer must be consulted to determine whether the following recommendations require revision.

#### 6.1 Foundations

At the time of the report preparation, detailed site plan for the proposed development was not available. Where the proposed development consists of blocks reserved for other uses such as school, park and/or commercial purposes, additional boreholes must be carried out to confirm and/or elaborate on these recommendations when the layout and plans of the blocks are determined.

As a general guide, Maximum Allowable Soil Pressure (SLS) and Factored Ultimate Soil Bearing Pressure (ULS) based on 'N' values on native soil below the weathered frost zone are presented for the design of spread and strip foundations in Table 4.

Table 4 - 'N' Value and Soil Pressure

		llowable Soil Pressure (SLS)/ Bearing Pressure (ULS)
'N' Values	kPa (SLS)	kPa (ULS)
10	100	160
15	150	225
20	200	325

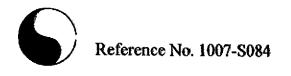


Table 4 - 'N' Value and Soil Pressure (Cont'd)

	Recommended Maximum Allowable Soil Pressure (SLS Factored Ultimate Soil Bearing Pressure (ULS)											
'N' Values	kPa (SLS)	kPa (ULS)										
25	250	375										
30	300	475										

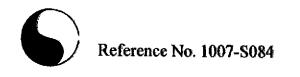
One should be aware that the subsurface conditions often vary between boreholes. Groundwater condition profiles of 'N' values with depth and soil type will impact on soil bearing. Therefore, further investigations need to be carried out when detailed site plans of the building areas are finalized to confirm the above given bearing values.

The recommended soil pressures incorporate a safety factor of 3 against shear failure of the underlying soils. The total and differential settlements of the footings are estimated to be 25 mm and 15 mm, respectively.

Where the footing subgrade consists of wet sands or silts, it must be protected by a concrete mud-slab immediately after exposure and inspection. This will prevent construction disturbance and costly rectification.

Perimeter subdrains and dampproofing of the perimeter basement walls are required in order to provide a dry basement. The subdrains should be encased in fabric filter to protect them against blockage by silting.

The foundations exposed to weathering and in unheated areas should have at least 1.2 m of earth cover for protection against frost action, or must be properly insulated.

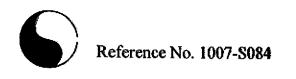


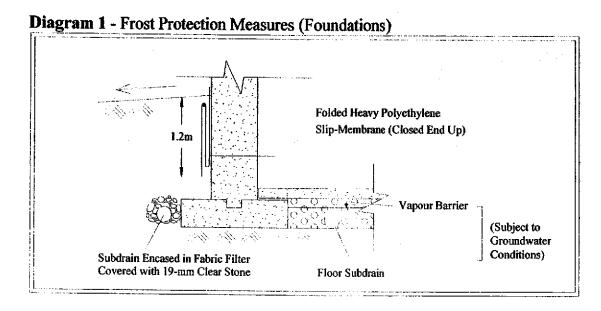
The foundations of buildings to be built in the area close to the CN railroad should be designed to tolerate the vibration emanating from the train traffic.

The footings should meet the requirements specified in the Ontario Building Code 2006, and the structure should be designed to resist an earthquake force using Site Classification 'D' (stiff soil).

Due to the presence of topsoil, weathered soils and wet sands and silts, the footing subgrade must be inspected by a geotechnical engineer, or a geotechnical technician under the supervision of a geotechnical engineer, or a building inspector who has geotechnical background, to assess its suitability for bearing the designed foundations.

As previously discussed, the in situ silty clay, silts and silty fine sand are high in frost heave and soil-adfreezing potential. In order to alleviate the risk of frost damage where these soils are encountered, the basement and foundation walls must be constructed of concrete and either backfilled with non-frost-susceptible pit-run granular, or shielded with a polyethylene slip-membrane. Where groundwater seepage is detected, floor subdrains must be installed and must be connected to sump-wells or to foundation drains which have a positive outlet. A vapour barrier should also be placed above the obvert of the subdrain to prevent upfiltrating moisture from dampening the floor surface. The recommended scheme is schematically illustrated in Diagram 1.

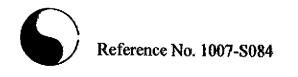




The membrane will allow vertical movement of the heaving soil (due to frost) without imposing structural distress on the foundations. The external grading should be such that runoff is directed away from the foundation.

The necessity to implement this scheme should be further assessed by a geotechnical consultant at the time of construction.

The weathered soils can be upgraded to engineered status suitable for normal footing construction. Where earth fill is required to raise the site or where cut and fill maybe required for lot grading, it is generally more practical and economical to place engineered fill suitable for a Maximum Allowable Soil Pressure (SLS) of 150 kPa for normal footing construction. The requirements and procedures for engineered fill construction are discussed in Section 6.2.



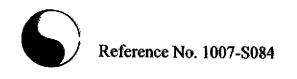
#### 6.2 Engineered Fill

Where earth fill is required to raise the site, it is generally economical to place engineered fill for normal footings, sewer and road construction. The engineering requirements for a certifiable fill for road construction, municipal services, and footings designed with a Maximum Allowable Soil Pressure (SLS) of 150 kPa and a Factored Ultimate Soil Bearing Pressure (ULS) of 250 kPa are presented below:

- All of the topsoil and organics must be removed, and the subgrade must be inspected and proof-rolled prior to any fill placement. Badly weathered soils must be subexcavated, aerated and property compacted.
- 2. Inorganic soils must be used, and they must be uniformly compacted in lifts 20 cm thick to 98% or + of their maximum Standard Proctor dry density up to the proposed finished lot grade and/or road subgrade. The soil moisture must be properly controlled on the wet side of the optimum.
  If the house foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% of the maximum Standard Proctor compaction.
- If imported fill is to be used, the hauler is responsible for its environmental
  quality and must provide a document to certify that the material is free of
  hazardous contaminants.
- 4. If the engineered fill is to be left over the winter months, adequate earth cover, or equivalent, must be provided for protection against frost action.
- 5. The engineered fill must extend over the entire graded area, and the fill envelope must be clearly and accurately defined in the field and precisely documented by qualified surveyors. Foundations partially on engineered fill must be reinforced by two 15-mm steel reinforcing bars in the footings and



- upper section of the foundation walls, or be designed by a structural engineer to properly distribute the stress induced by the differential settlement (about 15 mm) between the natural soil and engineered fill.
- 6. The engineered fill must not be placed during the period from late November to early April, when freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow.
- 7. Where the ground is wet due to subsurface water seepage, an appropriate subdrain scheme must be implemented prior to the fill placement, particularly if it is to be carried out on sloping ground.
- 8. Where the fill is to be placed on a bank steeper than 1 vertical:3 horizontal, the face of the bank must be flattened to 3 + so that it is suitable for safe operation of the compactor and the required compaction can be obtained.
- 9. The fill operation must be inspected on a full-time basis by a technician under the direction of a geotechnical engineer.
- 10. The footing and underground services subgrade must be inspected by the geotechnical consulting firm that inspected the engineered fill placement. This is to ensure that the foundations are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by the footing excavation.
- 11. Any excavation carried out in certified engineered fill must be reported to the geotechnical consultant who inspected the fill placement, in order to document the locations of excavation and/or to inspect reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the status must be assessed for re-certification.

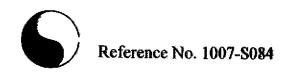


12. Despite stringent control in the placement of engineered fill, variations in soil type and density may occur in the engineered fill. Therefore, the strip footings and the upper section of the foundation walls constructed on the engineered fill may require continuous reinforcement with steel bars, depending on the uniformity of the soils in the engineered fill and the thickness of the engineered fill underlying the foundations. Should the footings and/or walls require reinforcement, the required number and size of reinforcing bars must be assessed by considering the uniformity as well as the thickness of the engineered fill beneath the foundations. In sewer construction, the engineered fill is considered to have the same structural proficiency as a natural inorganic soil.

### 6.3 <u>Underground Services</u>

The subgrade for the underground services should consist of properly compacted inorganic earth fill or sound natural soils. In areas where the subgrade consists of topsoil, weathered soils and, soft to loose soils, they should be subexcavated and replaced with properly compacted bedding material compacted to at least 95% or + of its Standard Proctor compaction.

A Class 'B' bedding is generally recommended for construction of the underground services. The bedding material should consist of compacted 20-mm Crusher-Run Limestone, or equivalent, as approved by a geotechnical engineer. In water-bearing sands and silts, the bedding material for the underground services may need to be changed from 20-mm Crusher-Run Limestone to Class 'A' bedding. The joints of services must be leak-proof or wrapped with a waterproof membrane to prevent the sands and silts under hydrostatic pressure from seeping into the joints thus collapsing the services due to loss of ground.



In order to prevent pipe floatation when the sewer trench is deluged with water from infiltrated precipitation, a soil cover with a thickness equal to the diameter of the pipe should be in place at all times after completion of the pipe installation.

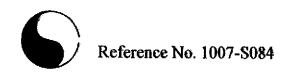
Where wet sand and silt seams, layers or deposits are encountered, the sewer joints should be leak-proof or wrapped with a waterproof membrane. This is to prevent the infiltration of fines. The necessity to implement these measures can best be determined during sewer construction.

Openings to subdrains and catch basins should be shielded with a fabric filter to prevent silting.

The excavation for open cut must be sloped at 1 vertical:1 or + horizontal for stability and the spoil should be placed at a distance away from the trench sides equal to 2 times the depth of excavation. These measures are to prevent sloughing of the sides due to surcharge of the excavated spoil. Alternatively, a trench box can also be used for the construction of the underground services. Deep relief wells and well points need to be installed to stabilize the water-bearing sands and silts under artesian conditions.

## 6.4 Backfilling in Trenches and Excavated Areas

The on-site inorganic soils are generally suitable for trench backfill. The backfill in the trenches and excavated areas should be compacted to at least 95% of its maximum Standard Proctor dry density. In the zone within 1.0 m below the road subgrade, the material should be compacted with the water content 2% to 3% drier than the optimum, and the compaction should be increased to at least 98% of the



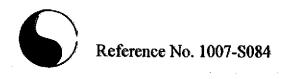
respective maximum Standard Proctor dry density. This is to provide the required stiffness for pavement construction. In the lower zone, the compaction should be carried out on the wet side of the optimum; this allows a wider latitude of lift thickness. Wetting of the sound tills will be necessary to achieve this requirement.

In normal sewer construction practice, the problem areas of road settlement largely occur adjacent to manholes, catch basins, services crossings, foundation walls and columns. In areas which are inaccessible to a heavy compactor, sand backfill should be used. Unless compaction of the backfill is carefully performed, the interface of the native soils and the sand backfill will have to be flooded for a period of at least 1 day.

The narrow trenches should be cut at 1 vertical:2 or + horizontal so that the backfill can be effectively compacted. Otherwise, soil arching will prevent the achievement of proper compaction. The lift of each backfill layer should either be limited to a thickness of 20 cm, or the thickness should be determined by test strips.

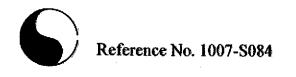
One must be aware of the possible consequences during trench backfilling and exercise caution as described below:

• When construction is carried out in freezing winter weather, allowance should be made for these following conditions. Despite stringent backfill monitoring, frozen soil layers may inadvertently be mixed with the structural trench backfill. Should the in situ soil have a water content on the dry side of the optimum, it would be impossible to wet the soil due to the freezing condition, rendering difficulties in obtaining uniform and proper compaction. Furthermore, the freezing condition will prevent flooding of the backfill



when it is required, such as when the trench box is removed. The above will invariably cause backfill settlement that may become evident within 1 to several years, depending on the depth of the trench which has been backfilled.

- In areas where the underground services construction is carried out during
  winter months, prolonged exposure of the trench walls will result in frost
  heave within the soil mantle of the walls. This may result in some settlement
  as the frost recedes, and repair costs will be incurred prior to final surfacing
  of the new pavement.
- To backfill a deep trench, one must be aware that future settlement is to be expected, unless the side of the cut is flattened to at least 1 vertical: 1.5 + horizontal, and the lifts of the fill and its moisture content are stringently controlled; i.e., lifts should be no more than 20 cm (or less if the backfilling conditions dictate) and uniformly compacted to achieve at least 95% of the maximum Standard Proctor dry density, with the moisture content on the wet side of the optimum.
- It is often difficult to achieve uniform compaction of the backfill in the lower vertical section of a trench which is an open cut or is stabilized by a trench box, particularly in the sector close to the trench walls or the sides of the box. These sectors must be backfilled with sand. In a trench stabilized by a trench box, the void left after the removal of the box will be filled by the backfill. It is necessary to backfill this sector with sand, and the compacted backfill must be flooded for 1 day, prior to the placement of the backfill above this sector, i.e., in the upper sloped trench section. This measure is necessary in order to prevent consolidation of inadvertent voids and loose backfill which will compromise the compaction of the backfill in the upper section. In area where groundwater movement is expected in the sand fill mantle, seepage collars should be provided.



### 6.5 Slab-On-Grade, Garages, Driveways and Landscaping

As noted, the occurring silty clay, silts and silty fine sand are high in frost heave and soil-adfreezing potential; therefore, the ground can be expected to heave during cold weather.

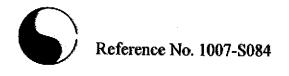
The driveways at the entrances to the garages must be backfilled with non-frost-susceptible granular material, with a frost taper at a slope of 1 vertical:1 horizontal. In area where the silty fine sand and silts occurs beneath the garage floor slab and interior garage foundation walls, they must be insulated with 50-mm Styrofoam, or its thermal equivalent.

The slab-on-grade in open areas should be designed to tolerate frost heave. The grading around the slab-on-grade and house structures must be such that it directs runoff away from the structures.

The slab should be constructed on a granular base, 20 cm thick, consisting of 10-mm Crusher-Run Limestone, or equivalent, compacted to its maximum Standard Proctor dry density.

A Modulus of Subgrade Reaction of 25 to 35 MPa/m is recommended for the design of the floor slab, depending on the subgrade conditions.

In areas where ground movement due to frost heave cannot be tolerated, the slabon-grade, sidewalks and interlocking stone pavement must be constructed on a freedraining granular base, 0.3 to 1.2 m thick, depending on the degree of tolerance for settlement. These measures, with proper drainage, will prevent water from



accumulating in the granular base. Alternatively, the slab-on-grade, sidewalks and interlocking stone pavement should be insulated with 50-mm Styrofoam, or its thermal equivalent.

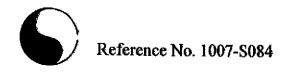
## 6.6 Pavement Design

Based on the borehole findings, the recommended pavement design for local and collector roads is presented in Table 5.

Table 5 - Pavement Design

Course	Thickness (mm)	OPS Specifications
Asphalt Surface		HL-3
Local	40	
Collector	50	
Asphalt Binder		HL-8
Local	50	
Collector	75	
Granular Base		20-mm Crusher-Run Limestone
Local	150	
Collector	125	
Granular Sub-base		50-mm Crusher-Run Limestone
Local	200	
Collector	350	

The pavement structure provided in Table 3 can be used for the design of the roadway for construction under ideal and non-ideal conditions:



#### **Ideal Condition**

Under ideal conditions, the zone of the subgrade within 1.0 m below the underside of the granular sub-base must be compacted to at least 95% of its maximum Standard Proctor dry density, with the water content 2% to 3% drier than its optimum; in the upper 60 cm of the subgrade, the compaction should be increased to 98% of its maximum Standard Proctor dry density.

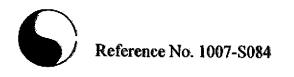
#### Non-ideal Condition

If the roads are to be constructed during the wet seasons and if the subgrade is unstable, either the top 1.0 m of the subgrade should be replaced with drier, compacted, selected subgrade material or the top 0.8 m of the subgrade should be replaced with granular material. This can be determined at the time of road construction.

In preparation of the subgrade prior to the placement of the granular sub-base and base materials, the subgrade must be proof-rolled to determine its stability and suitability for road construction.

The road subgrade will suffer a strength regression if water is allowed to saturate the mantle. The following measures should, therefore, be incorporated in the construction procedures and road design:

 If the road construction does not immediately follow the trench backfilling, the subgrade should be properly crowned and smooth-rolled to allow interim precipitation to be properly drained.



- Lot areas adjacent to the roads should be properly graded to prevent ponding
  of large amounts of water. Otherwise, the water will seep into the subgrade
  mantle and induce a regression of the subgrade strength, with costly
  consequences for the pavement construction.
- Fabric filter-encased curb subdrains may be required to meet City of Vaughan requirements.

#### 6.7 Soil Corrosivity

For estimation purposes for the anode weight requirements, the electrical resistivity which has been determined for the disclosed soils can be used. This, however, should be confirmed by testing the soil along the water main alignment at the time of the sewer construction.

## 6.8 Stormwater Management Facilities

At the time of the report preparation, detail designs and the exact locations of the proposed stormwater management ponds were not determined; however, it is understood that stormwater retention and infiltration facilities will be provided at suitable areas for the proposed development.

#### **Stormwater Retention Facilities**

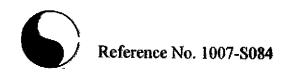
A review of the borehole findings indicates that the revealed stratigraphy within the property generally consists of a stratum of silty clay till overlying sands and silts to various depths. Based on the groundwater condition encountered at the time of the borehole investigation and the revealed soil stratigraphy, the recommended areas where stormwater retention facilities can be considered are presented in Table 6.



	Surface Elevation	ſ.	ealed Fill Deposit	Encountered Groundwater Level
BH No.	El. (m)	Thickness (m)	Bottom El. (m)	El. (m)
BH10-01	267.9	4.1	263.3	262.4
BH10-02	265.4	6.7	258.4	258.1
BH10-03	266.1	6.9	258.7	Dry
BH10-08	275.6	7.2	268.2	Dry
BH10-09	272.6	6.5	265.2	Dry
BH10-11	288.5	6.6	280.4*	280.6
BH10-13	262.2	4.2	257.6	Dry
BH10-14	265.6	5.8	259.6	Dry
BH10-18	264.4	7.6	256.3*	257.4
BH10-19	266.6	7.0	259.2	259.9
BH10-21	262.7	7.8	254.6*	Dry
BH10-22	259.9	7.1	252.5	253.9
BH10-23	280.7	4.3	276.1	Dry
BH10-24	264.2	7.2	256.8	258.4
BH10-25	264.2	6.8	257.2	Dry
BH10-26	256.2	7.9	248.1*	249.0
BH10-41	285.8	4.3	281.2	279.1
BH10-44	268.6	5.8	262.6	262.2
BH10-45	273.6	7.1	265.7*	Dry
BH10-49	271.0	5.8	265.0	265.0
BH10-51	266.8	5.4	260.8	262.2
BH10-59	255.0	7.8	246.9*	247.7
BH10-60	291.5	7.1	284.1	Dry

Thickness is based on revealed depth less encountered topsoil thickness.

\*Deeper boreholes maybe required if invert of facility is below the maximum depth of borehole.



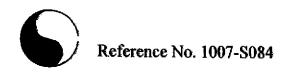
It should be noted, depending on the proposed normal water level of the stormwater retention facilities and the surrounding groundwater levels, the available capacity of the facilities may differ, due to the impact of the possible subterranean artesian condition on the underlying water-bearing sands and silts.

The silty clay till and silty clay are materials of low permeability and are suitable for construction of the stormwater management pond; the seepage of groundwater into the pond will likely be equal to or less than the amount of water lost through evaporation, and the impact on the storage volume of the pond will be minimal.

The estimated coefficient of permeability for use in the design of the pond is  $10^{-7}$  cm/sec and the estimated percolation time ranges from 70 to 100 min/cm for the silty clay till and silty clay. It is generally recommended that the bottom of the pond should be at least 1.0 m above the interface of the sand deposit, due to the presence of sand and silt deposits which may have an impact on the subterranean artesian pressure.

The in situ silty clay and silty clay till are suitable for the construction of the pond berms. They must be compacted to 95% or + of their maximum Standard Proctor dry density. The pond cut into the ground should be sloped at least 1 vertical: 3 or + and 4 or + horizontal above and below the wet perimeter of the pond, respectively.

Where a berm is to be constructed for the stormwater management pond, the topsoil must be removed and the subgrade must be proof-rolled. Inorganic soil material consisting of silty clay or silty clay till must be used and compacted to at least 95% of its maximum Standard Proctor dry density. The fill berm must be designed to have a minimum gradient of 1 vertical:3 or + horizontal.



In case where the proposed stormwater retention facility is to be constructed in an area where soils with higher permeability soils are encountered (i.e., sands and silts), it is recommended that a clay liner, at least 1.0 m thick, should also be provided to prevent groundwater flow which will affect the designed capacity of the ponds. The on-site silty clay and silty clay till are suitable materials for use as a clay liner.

All the exposed side slopes must be vegetated and/or sodded to prevent erosion. A layer of rip-rap can be placed along the wet perimeter to protect against wave erosion.

#### **Stormwater Infiltration Facilities**

The revealed soil stratigraphy indicates that the upper stratum in most boreholes generally consists of either silty clay or silty clay till material, which is low in permeability and is unsuitable for infiltration purposes; however, a review of the borehole findings indicates that, in places, the sand and silt deposits either interstratified with or beneath the impermeable clay material may have some stormwater infiltration potentials. The potential infiltration zone is summarized in Table 7.

Table 7 - Summary of Recommended Area for Water Infiltration Facilities

	Surface Elevation	Potenti	ial Infiltrat	ion Stratum	Encountered Groundwater Level
BH No.	El. (m)	Upper El. (m)	Bottom El. (m)	Soil Type	El. (m)
BH10-09	272.6	265.2	264.5	Fine Sand	Dry
BH10-11	288.5	288.3	287.0	Sandy Silt	280.6

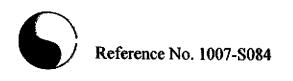
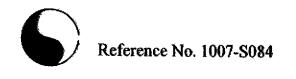


Table 7 - Summary of Recommended Area for Water Infiltration Facilities (Cont'd)

	Surface Elevation	Potenti	al Infiltra	tion Stratum	Encountered Groundwater Level
BH No.	El. (m)	Upper El. (m)	Bottom El. (m)	Soil Type	El. (m)
BH10-38	274.8	272.5	270.2	Fine Sand	269.9
BH10-40	279.6	276.6	273.6	Fine Sand	Dry
BH10-46	280.2	275.6	274.2	Fine Sand	Dry
BH10-47	291.7	290.2	289.4	Silty Fine Sand	Dry
BH10-53	281.0	278.7	275.0	Silty Fine Sand and Fine to Medium Sand	273.2

It must be emphasized that the above potential locations for water retention and infiltration are based on the revealed borehole findings, and the extent of the permeable/practically impermeable deposits will vary from borehole to borehole. Accordingly, detailed investigation will be required to confirm the suitability of the area for retention or infiltration. The revealed soils must be further assessed by a qualified hydrogeologist and hydraulic conductivity tests must be carried out for areas where infiltration is being considered.

The footings for all control structures for the stormwater management facilities must be placed onto the natural sound soil. The suitable Maximum Allowable Soil Pressure (SLS) of 150 kPa and the Factored Ultimate Soil Bearing Pressure (ULS) of 225 kPa can be used for the design of the proposed structures.



# 6.9 Berm Construction and Geotechnically Stable Top of Slope

Where a berm is to be constructed within the development, the topsoil must be removed and the subgrade must be proof-rolled. Inorganic soil material must be used and compacted to at least 95% of its maximum Standard Proctor dry density if loads are to be applied on the top of berm; otherwise, where no loading is to be applied, a berm consisting of topsoil material can also be considered acceptable. In order to maintain stability of the fill berm, the sides of the berm must be designed to have a minimum slope of 1 vertical:3 or + horizontal. The sides of the berm must be vegetated and/or sodded to prevent erosion.

As a general guide, in establishing the long-term stable top of slope, depending on soil type, a 1 vertical:2.5 to 3.0 horizontal stable slope allowance from the bottom of slope to the top of slope must be applied. If a steeper slope is considered, a detailed slope stability analysis must be carried out along the top of slope.

Depending on the location and surrounding features of the slope, additional setbacks will be required in accordance to the guidelines set up out by the Toronto and Region Conservation Authority (TRCA).

## 6.10 Soil Parameters

The recommended soil parameters for the project design are given in Table 8.



Table 8 - Soil Parameters

Unit Weight and Bulk Factor				W. 3.2000 111
		it Weight kN/m³)		timated <u>lk Factor</u>
	Bulk	Submerged	Loose	Compacted
Sandy Silt and Silty Sand Tills	22.5	12.5	1.33	1.05
Silty Clay Till	22.0	12.5	1.33	1.05
Weathered Tills	21.0	11.5	1.20	1.00
Silts	21.0	10.5	1.20	1.00
Silty Clay	20.5	11.5	1.30	1.00
Sands	20.0	10.8	1.20	1.00
Lateral Earth Pressure Coefficients				
	Acti K,			Passive K <sub>p</sub>
Silty Clay and Silty Clay Till	0.4	0.5	0	2.86
Silts and Sandy Silt Till	0.3	3 0.4	3	3.00
Sands and Silty Sand Till	0.30	0.4	0	3.33
Maximum Allowable Soil Pressure (S For Thrust Block Design	LS)			
Engineered Fill and Sound Natural Soil		75 k	Pa	

## 6.11 Excavation

Excavation should be carried out in accordance with Ontario Regulation 213/91.

For excavation purposes, the types of soils are classified in Table 9.

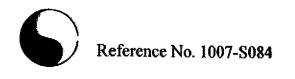


Table 9 - Classification of Soils for Excavation

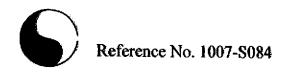
Material	Туре
Sound Tills	2
Weathered Soils, Silty Clay, Sands and Silts above groundwater	3
Sands and Silts below groundwater	4

In the tills and clay which are plagued with fissures and saturated sand and silt seams and layers, the sides of excavations above groundwater may suffer localized sloughing or side collapse. Therefore, the sides must be sloped at 1 vertical: at least 1 horizontal for stability.

At depths below the groundwater level, seepage in the clay and till mantles during excavation is expected to be slow and controllable by normal pumping from sumps.

Excavation into the hard and very dense tills containing boulders will require extra effort and the use of a heavy, properly equipped backhoe.

In places, where excavations are to be carried out in the water-bearing sands and silts, the possibility of flowing sides and bottom boiling dictates that the ground be predrained, either by pumping from closely spaced sump-wells (excavations shallower than 0.5 m below the groundwater) or, if necessary, by the use of a well-point dewatering system (excavations deeper than 0.5 m into the groundwater table). In order to provide a stable subgrade for the services or foundation construction, the groundwater should be depressed to at least 0.5 m below the subgrade.



It must be further emphasised that subterranean artesian condition may occur for excavation beyond the silty clay till mantle into the sand deposit; therefore, caution should be exercised for any excavation into the sand deposit. Where the sands and silts are under strong artesian pressure, the excavation must be stabilized by well points and may need to be controlled by deep relief wells.

As previously discussed, the groundwater yield from the sands and silts will be appreciable and persistent; however, this should be confirmed by test pumping at the time of construction.

#### Caution

Where excavations are to be carried out in water-bearing sands and silts, particularly if they are under artesian condition, a suitable groundwater control scheme must be carried out to lower the groundwater to at least 0.5 m below the depth of trench. If the groundwater is not sufficiently lowered, subgrade heaving and loosening will occur. In this case, the excavation must be immediately backfilled to a level higher than the original ground level and relief-well pumping must be carried out until the heaved subgrade has settled. This should be determined at the time of the construction.

Prospective contractors must be asked to assess the in situ subsurface conditions for soil cuts by digging test pits to at least 0.5 m below the sewer subgrade. These test pits should be allowed to remain open for a period of at least 4 hours to assess the trenching conditions.



# 7.0 LIMITATIONS OF REPORT

It should be noted that no tests have been carried out to determine whether environmental contaminants are present in the soils. Therefore, this report deals only with a study of the geotechnical aspects of the proposed project.

This report was prepared by Soil Engineers Ltd. for the account of Block 27 Landowners Group Inc., and for review by its designated consultants and government agencies. The material in it reflects the judgement of 0Kelvin Hung, B.A.Sc., and Victor S. Chan, P.Eng., in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

PROFESSIONAL GAO

## SOIL ENGINEERS LTD.

Kelvin Hung, B.A.Sc.

Victor S. Chan, P.Eng.

KH/VSC:jp

## LIST OF ABBREVIATIONS AND DESCRIPTION OF TERMS

The abbreviations and terms commonly employed on the borehole logs and figures, and in the text of the report are as follows:

1.	SAMPLE TYPES	3.	SOIL DESCRIP	<u> FION</u>	
AS	Auger sample	a)	Cohesionless Soils	s:	
CS	Chunk sample				•.
DO	Drive open		'N' (Blows/ft)	Relative De	<u>nsity</u>
DS	Denison type sample	•			
FS	Foil sample		0 to 4	very loose	
RC	Rock core with size and		4 to 10	loose	
675	percentage of recovery		10 to 30	compact	
ST	Slotted tube		30 to 50	dense	
TO	Thin-walled, open		over 50	very dense	;
TP	Thin-walled, piston				
WS	Wash Sample	b)	Cohesive Soils:		,
2.	PENETRATION RESISTANCE/'N'		Undrained Shear		
			Strength (ksf)	'N' (Blows/ft)	Consistency
Dyna	mic Cone Penetration Resistance:				
	A continuous profile showing the		Less than 0.25	0 to 2	very soft
	number of blows for each foot of		0.25 to 0.50	2 to 4	soft
	penetration of a 2-inch diameter 90° point		0.50 to 1.0	4 to 8	firm
	cone driven by a 140-pound hammer		1.0 to 2.0	8 to 16	stiff
	falling 30 inches.		2.0 to 4.0	16 to 32	very stiff
	Plotted as		over 4.0	over 32	hard
			0101 4.0	0101 32	11024
Stand	ard Penetration Resistance or 'N' value:	c) ·	Method of Determ Shear Strength of		ined
	The number of blows of a 140-pound				
	hammer falling 30 inches required to		x 0.0 - Field van	e test in borehole	•
	advance a 2-inch O.D. drive open		The numb	er denotes the	
	sampler one foot into undisturbed soil.		sensitivity	to remoulding.	
	Plotted as 'O'		A		
			△ - Laborator	ry vane test	
			☐ - Compress	sion test in labora	atory
WH	Sampler advanced by static weight		For a satura	ated cohesive so	il, the
PH	Sampler advanced by hydraulic pressure			shear strength is	•
PM	Sampler advanced by manual pressure			of the undrained	
NP	No penetration		compressiv		
	-		<b></b>		

#### **METRIC CONVERSION FACTORS**

1 ft. = 0.3048 metres 1 inch = 25.4 mm1 lb. = 0.453 kg $1 \text{ ksf} = 47.88 \text{ kN/m}^2$ 



Soil Engineers Ltd.

CONSULTING SOIL FOUNDATION & ENVIRONMENTAL ENGINEERS
100 NUGGET AVENUE, SCARBOROUGH, ONTARIO MIS 3A7

TEL: (C

# LOG OF BOREHOLE NO: 10-01 FIGURE NO: 1

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: September 3, 2010

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# LOG OF BOREHOLE NO: 10-02 FIGURE NO: 2

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: August 27, 2010

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sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  7 DO 100+  7 DO 100+  8 DO 100+  8 PR 257.6 END OF BOREHOLE				1		1	$\blacksquare$	$\Box$			$\Box$	$\supset$	$\bot$	ļ.,		$\dashv$	4	Ŧ	1	ļ			l
sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  7 DO 100+  7 DO 100+  8 DO 100+  8 PR 257.6 END OF BOREHOLE							1-	-	+		-	$\dashv$	╌	┿	Н	╅	+	+	+	╁	H	+	İ
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# LOG OF BOREHOLE NO: 10-03 FIGURE NO: 3

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

**METHOD OF BORING: Flight-Auger** 

**DATE:** August 30, 2010

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	sandy, a trace of gravel		ļ		4 -			口		1	士					1	士	1		士	上	ş
	occ. wet sand and slit seams and layers, cobbles and boulders				:	1-1	+	$\vdash$	-	+	╀	-		$\vdash$	+	+	+	╀		-	+	Dry on completion
	and injury and boulders	6	DO	58				目		4		上			10			上		士		8
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# LOG OF BOREHOLE NO: 10-04 FIGURE NO: 4

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 30, 2010

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Elev.	DESCRIPTION	ě		N-Value	Α S	H	P	ene	trat	ion	Res	ista	···	~	†			oiat		<u></u>	ntení			1	<u> </u>
(m)		Number	T <sub>P</sub>	\ \ \ \ \ \	호	l٠	္ပင	3	(bla o	WS/	0.3	M) 70	,	90			10 10		ine Šū			•			WAT
0.0	Ground Surface	*		_	0.	1	<u>.                                    </u>							**	╁		ř		<u>ئ</u>	-	<u> </u>	40		╂	
270.7	41 cm TOPSOIL				٠.								1	T	İ	Γ	12	L			П	1	I	1	
	Brown, stiff to hard	1	DO	14		1	0	$\dashv$	_	$\dashv$	-{	+	+	+	╀	╁	•	$\vdash$	$\vdash$	Н	$\vdash$	+	+-	-	
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	sandy, a trace of gravel occ. wet sand and silt seams	4	DO	35					o	$\exists$		1	#	丰	1		*					1	1	1	
	and layers, cobbles and boulders				3.	<del> </del> -	Н		-	-		+	+		╁	╀	╁-	╁	<u> </u>	H	H	+		-	
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4.6 266.1	Grey, dense					1-	Н	_	$\dashv$	$\dashv$	$\dashv$	+	+	+	╀	╀╌	╀	16	├		$\vdash \downarrow$	+	┿	1	KW.L. @ El. 264.9 m on completion Cave-in @ El. 263.7 m on completion
	-	6	DO	40	5.	丰			⊐	コ			#	1	1	上	上					1	士	1	
	SANDY SILT, Till some clay, a trace of gravel					-	$\vdash$	-	-	$\dashv$	-	+	+	+	╀	┿	╀	┝	$\vdash$	├	Н	$\dashv$	+-	-	<b>Ө</b> У.Е
	some clay, a trace of gravel occ. wet sand and clay seams and layers, cobbles and boulders					⇇					耳	$\Box$	#	士	1	丰	上					#	士	1	و بر
6.0					6.	+	-			$\dashv$	-	$\dashv$	+	+	╀	╀	╀	$\vdash$	╀┈	-		+	╁	-	Δo
264.7	Brown, dense	7	DO	32	٠.				$\Box$			$\Box$	$\Box$	#	1				22			#		1	
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	a trace to some silt a trace of gravel												1	1	1	#	T		L			1	1	1	
	occ. silt seams and layers				7.	1	Н		Н	$\dashv$	1	$\dashv$	┪	╁	╁	╁	+	╁	┝	H	Н	$\dashv$	+	1	▼
7.4 263.3	Drawn days					1			$\Box$					1		1					П	1	1	1	
200.0	Brown, dense SANDY SILT, TIII		$\vdash$			╊	H		$\dashv$	$\dashv$		+	┪	+	╁	+	13	1	╁╴	$\vdash$	H	+	+	1	
8.1	some clay, a trace of gravel  occ. wet sand and clay seams	8	DO	42	8.	厂				2		$\Box$	1	1	Ţ	I	•		ļ	_	П	1	T	1	
262.6	and layers, cobbles and boulders					1	H		Н	1		┪	+	+	+	+	+	╁	<del> </del>	$\vdash$	H	+	╁	1	
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# LOG OF BOREHOLE NO: 10-05 FIGURE NO: 5

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 30, 2010

		SA	MPI	ES	Œ			× SI	near	Str	engl	th -				A	tteri	berg	Lin	nits	_		
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (n	11	(kN/m2)  50 100 150 200 Pt L1  Penetration Resistance O (blows/0.3m)  10 30 50 70 90 10 20 30 40								(%)		WATER LEVEL						
0.0	Ground Surface				0																		
266.9	30 cm TOPSOIL  Brown, firm to hard	1	DO	8		9		+					1	-	-		18		-	-	-		
	SILTY CLAY, TIII sandy, a trace of gravel weathered occ. wet sand and silt seams	2	DO	39	1.							1				13		#	1				
1,5	occ. wet sand and silt seams and layers, cobbles and boulders							+				1	_	+	+			1	1	#	+		
265.4	Brown, dense SILTY FINE SAND a trace of clay	3	DO	44	2				0							•			1				262.3 m on completion
2.3 264.6	occ. silt seams and layers Brown, hard							$\pm$	$\perp$				1	1	╁		6		1	╁	_		eldmo
		4	DO	72	3.			‡	+		Ħ	7	+	‡	+			-	+	-			o uo t
	SILTY CLAY, TIII	5	ВО	64	3.						0			1	Ş				1	_			262.3 1
	sandy, a trace of gravel occ. wet sand and silt seams						$\exists$						_	1	$oldsymbol{\perp}$			1	_	1			W.L. @ El. ;
	and layers, cobbles and boulders				4.	<u> </u> _		$\ddagger$	-			4	+	‡	ļ			1	#	<u>.</u>	#		W.L.
4.6 62.3	Brown, loose to compact	_	_	-				+	1					+				22	+		E		立
	•	6	DO	10	5.															$\pm$	$oxed{\top}$		
	FINE SAND							‡	_					1	+				+	+	1		
	a trace to some silt	<u> </u>	_		6.			+	-			7	7	7	+		2	0	+	+	+		•
	a trace of gravel occ. silt seams and layers	7	DO	22	-			I						$\pm$					1		$\pm$		
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7.4		]				上		1	士	<u></u>				1	士	Ĺ		1	1	土	土		
259.5	Brown, hard SILTY CLAY, THI	<u> </u>		ļ		<u> </u>	$\square$	+		├	Н	$\dashv$	$\rightarrow$	+	╀	5	$\square$	$\rightarrow$	4	-	4-	$\vdash$	
	sandy, a trace of grave!	8	DO	43	8	╁	H	+	þ	$\vdash$				+	┿	┢	Н	$\dashv$	╅	+	十	Н	
8.1 258.8	occ. wet sand and silt seams and layers, cobbles and boulders	├	╁	+	┤	L	П	1	T												$\perp$		
	END OF BOREHOLE	1				<del>]</del>	┝╌┼	╌	┽	╀	Н	$\dashv$	-	╬	+	<del> </del>	-		-		+	Н	
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# LOG OF BOREHOLE NO: 10-06 FIGURE NO: 6

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 31, 2010

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		SA	MPL	ES	Ê			×	She	ar:	Stre	ngti	ł				P	Atte	ber	g L	mits	ì			
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Vatue	Depth Scale (m)	-	5 P(	ene	10 trat	e ion	150 Res 0.31	ista	200 nce				PL Mo	oistu 2			-	i (%)			WATER LEVEL
0.0	Ground Surface	-		-		ł	•	—i	<u> </u>		<u>-</u>	<u>i</u> -		<u> </u>	╅		ï.	7	<u>-</u>		<u> </u>	<u> </u>		╁	
270.6	15 cm TOPSOIL		<b></b>	<u> </u>	0.	1	П			$\neg$	1	T	Т	T	┪	Τ	12					T	Т	1	
	Brown, stiff to hard	1	DO	14		E	0			$\exists$							12					$\frac{1}{1}$	$\pm$	1	
	weathered	2	00	29	1.	1	$\parallel$	4			1	#	#	‡	t	-	H					+	‡	1	
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	SILTY CLAY, Till	3	DO	18	2.	-								$\frac{1}{1}$			12					$\pm$	$\frac{1}{1}$		
		4	00	33		F	$\Box$		0	4	4	#	#	+	1	F	12				_	#	+	1	
						F			$\Box$	$\neg$	_	$\dashv$	$\blacksquare$	Ŧ	$\bot$		F					$\dashv$	Ŧ	7	Ę
	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders	5	DO	73	3.	‡				7	7	+	<del>,</del>	‡	‡	1	D		_			丰	+	7	W.L. @ El. 264.6 m on completion Cave-in @ El. 264.4 m on completion
	and layers, accords and boulders		<del>                                     </del>			Į	$\Box$				1	7	1	1							$\Box$	7	1	7	<u> </u>
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	occ. wet sand and sitt seams					╊	+			$\dashv$	$\dashv$	$\dashv$	+	+	╁	╫	╁╌	╁	-			_	+	-	≱ંઇ
6.0	and layers				_	F					_	4	7	Ŧ	1	F	L					$\Box$	1	4.	_
264.6	Brown, dense to very dense	7	00	35	6.	ł						1	士	$\perp$	士			18		_		士	士	1	<u>⊽</u>
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	a trace to some silt a trace of gravel				7.	1	+			$\dashv$	$\dashv$	$\dashv$	+	┿	╄	+	$\vdash$	┢		-		$\dashv$	+	-	
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## LOG OF BOREHOLE NO: 10-07 FIGURE NO: 7

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

DATE: August 12, 2010

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	sandy, a trace of gravel occ. wet sand and silt seams	5	Ю	100+	1	E				$\downarrow$			1	1	1	1							土	_ [ _ [	4
	and layers, cobbles and boulders					╀	H	$\dashv$	$\dashv$	$\dashv$	$\dashv$	-	┥	$\dashv$	+	╁	╀	╁	┞		${\mathbb H}$	+	+	-  }	52 
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## LOG OF BOREHOLE NO: 10-08 FIGURE NO: 8

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 12, 2010

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	sandy, a trace of gravel occ. wet sand and sitt seams				4_	t		コ	$\dashv$														す	1	-   5
	and layers, cobbles and boulders					Ł		コ											_				士	$\pm$	
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7.4 268.2	Brown, very dense					F	$\Box$	_	$\dashv$	$\dashv$										_		-	4	+	-
7.9	! SILTY SAND. TIII	8	DO	100+		1									4		7						1	#	1
267.7	some clay, a trace of gravel occ. wet sand and clay seams and layers, cobbles and boulders				8.	t																	1		1
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## LOG OF BOREHOLE NO: 10-09 FIGURE NO: 9

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 12, 2010

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	Firm to hard	2	DO	5	1.	Ю	$\square$	$\Box$	7		1	T				П		5		耳	1			1
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	sandy, a trace of gravel occ. wet sand and silt seams					╀		+	+	+	╁	╀	╁	$\vdash$		-				$\dashv$	+	+		
	occ. wet sand and silt seams and layers, cobbles and boulders				4.				1	1	Ţ	I						$\dashv$		$\exists$	4	1		5
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7.4 265.2						╀	H	+	+	+	+	╁	╁╴			Н		┪	┥	┥	+	┿		
265.2	Brown, very dense FINE SAND						Н	4	7	-	Ŧ	F	F			П	$\exists$		7	$\dashv$	_	1		
8.1	a trace to some silt a trace of gravel	8	DO	72	8.	t		士	士	1	#	Þ			3			$\exists$			1			
264.5	occ. silt seams and layers					╀	H	$\dashv$	+	+	+	╁		$\vdash$	-	$\vdash$	$\dashv$	$\dashv$	┥	$\dashv$	+	╁	┼╌┤	
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## LOG OF BOREHOLE NO: 10-10 FIGURE NO: 10

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 12, 2010

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		SA	MP	LES	Ê		;	× SI	1001	Stre	ngth				A	tterbe	erg Lin	nits		
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(m)		Number	g	N-Value	듩		Pei O	netra /h.	ition Lowe	Resi 10.3n	istan ^\	ce		•	Mo	isture	Conte	ent (9	6)	
		Z	Type	Ź	8		10	30		0.011	70	9	0		10	20	30	4	įo.	§
0.0	Ground Surface				0.															
298.9	60 cm TOPSOIL (mixed with silty clay material)	1	В			L		$\bot$				$\Box$	$\Box$	I	$\square$	<b>2</b> n				1
	(mixed with sitty day material)	'	שו	11		╁	9	╄	╂╌┨	-	+	Н	-	+	$\blacksquare$	1	╁╁	+	$\vdash$	-
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## LOG OF BOREHOLE NO: 10-11 FIGURE NO: 11

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 12, 2010

Depth   SOIL   DESCRIPTION   Solution   So										_	_	_		~			ru/	Jusi	14,	اک ا	110					
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#### LOG OF BOREHOLE NO: 10-12 FIGURE NO: 12

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge #

**DATE:** August 26, 2010

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# LOG OF BOREHOLE NO: 10-13 FIGURE NO: 13

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 26, 2010

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7.0	and layers, cobbles and boulders				7.	Ⅱ						士		土	士								
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## LOG OF BOREHOLE NO: 10-14 FIGURE NO: 14

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 26, 2010

Depth   SOIL   DESCRIPTION						_							UΑ	TE:	Au	gus	St 20	<b>5</b> , ∠	2010	U .				
SOIL   DESCRIPTION   Set   S			SA	MP	LES	E	T		×s	hear	Stre	engt	ħ		Τ		,	ltte	rber	g L	imits	,		
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O		DESCRIPTION	Vumbe	8	4-Value	Septh &		О	(b	iows	<b>/</b> 0.3	(mi												VATER
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## LOG OF BOREHOLE NO: 10-15 FIGURE NO: 15

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 26, 2010

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	occ. wet sand and sitt seams grey and layers, cobbies and boulders	7	ш	100+					1	1	1	$\pm$	E	ď		1	_	╁	_			士		
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260.1	END OF BOREHOLE Refusal to augering, inferred boulder					H		_	$\pm$	$\pm$			L			1		$\pm$	$\pm$	L		$\pm$	_	
	<u>.</u>				8.			1	1	1		$oldsymbol{\perp}$	L			$\pm$	_		上			$\pm$	1	
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## LOG OF BOREHOLE NO: 10-16 FIGURE NO: 16

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 31, 2010

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267.8	33 cm TOPSOIL			4.0	•	П	$\Box$	$\bot$			Ţ	1				1	1	1	I	П	$\blacksquare$	口	
	Brown, stiff to hard	1	DO	12	:	H	╫	╫	$\vdash$	$\dashv$	╁	+	Н	Н	$\neg$	+	+	╁	╬	╂┥	-	-	
	us allowed	-				$\Box$				_	1					13	1	1	1	П	$\Box$	$\exists$	
	w <u>eathered</u> SILTY CLAY, THI	2	DO	11	1.			1			1	上				•	$\pm$	$\pm$		廿		$\exists$	
	·					-	1	$\vdash$		-	+	-	Н	$\square$		4	$\bot$	-	$\bot$	$\Box$	$\blacksquare$	7	
	sandy, a trace of gravel occ. wet sand and silt seams	3	ро	22		廿	Ь				士	$^{\dagger}$	П			4	士		土			]	
	and layers, cobbles and boulders	<del> </del>		_	2	╀	+	-	Н	$\dashv$	+	╀	$\vdash$		-	4	+	-	╀	$\square$	+	-	
	:	<b> </b>	-	<del>                                     </del>		$\Box$				$\Box$	#					1	丰		#	口	#	コ	5
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3.0 264.8	Brown, very dense	<u> </u>		ļ	3 .			-			T	F	Н		4	1	-	T	Ŧ	耳	二		Cafve-in @ El. 263.0 m on completion
	Diomi, very delac	5	DO	86		$\coprod$					士	O	口			士	$\perp$		$\pm$	廿			no c
						1-	+-	$\vdash$	Н	$\dashv$	+	+		$\dashv$	$\dashv$	$\dashv$	+	_	Ŧ	$\square$	$\dashv$	7	7.0 m
	:	[			4	苴	士				士	上							土	且			263
	SILTY FINE SAND	}				┨-┼		-	H	+	+	╀	H	$\dashv$	$\dashv$	+	+	+	+	╀┤	$\dashv$	-	ii M
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	a trace of clay	6	DO	53	5	1 +	+	-	$\vdash$	어	+	+	Н	$\vdash$		+	18	+	+	++		$\dashv$	***
	occ. sift seams and layers			<u> </u>		$\square$	1			4	7	T	П				1		1	П	1	1	U
			ŀ							$\exists$	T	$\pm$	Н	Н		+	+	+	+	Н	$\vdash$	$\dashv$	
6.0					]	1	+	-		-	4	+			g	7	Ŧ	1	Ŧ	$\square$	$\dashv$	7	
261.8	Brown, hard	7	DO	100+	6.						1	上			ð		士	土	土		士		
	SILTY CLAY, TIG					1+	+	╀	$\vdash$	┪	+	+	Н	$\dashv$	-	+	╁	╁	+	╢	$\dashv$	-	
	sandy, a trace of gravel occ. wet sand and silt seams					$\Box$				4	1	1				#	1		1	口	4	1	
	and layers, cobbles and boulders				7.	1				$\dashv$	$\pm$	+	+	Н	-	+	+	+	$\pm$	H	<u></u>	-	
7.4 260.4	Brown, very dense					$\square$	+	F		$\dashv$	$\bot$	-	Н	П	$\dashv$			Ŧ	Ŧ	$\square$	$\dashv$	7	
	FINE TO MEDIUM SAND			-		荁				丁						14	士	土	士	廿		_	
8.1 259.7	traces of silt and gravel occ. silt seams and layers	8	DO	59	8 -	╂╂	-	╁╌		9		+	H		-	7	+	╁	+	$\dashv$	+	$\dashv$	
2.09.7	END OF BOREHOLE					$\Box$				_	1		П			1	1	#	丰	口	二	コ	
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## LOG OF BOREHOLE NO: 10-17 FIGURE NO: 17

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 31, 2010

Depth   SOIL   DESCRIPTION   So   Solid   DESCRIPTION   Solid   DESCRIPTION   Solid   DESCRIPTION   Solid   DESCRIPTION   Solid   Solid   DESCRIPTION   Solid   Solid   DESCRIPTION   Solid														, E.	Aug	just	J1,	ZU	ייי				
SOIL   DESCRIPTION   So   So   P   So			SA	MP	LES	Ê			×s	hea	r Str	engt	h ·		Π		Att	erbe	erg t	imit	3		
20.0   Ground Surface   3   0   0   0   0   0   0   0   0   0	Elev.		, 0		en	Scale (		50	)	100	15	50	200								<del>-</del>		IR LEVE
20.0   Ground Surface   3   0   0   0   0   0   0   0   0   0	(m)		E N	5	N-V	Pep P	1	0	- (1	blow	s/0.3	im)											WATE
Silty CLAY		Ground Surface				0	Г	٠							t								<del></del>
SILTY CLAY weathered 2 0 0 7 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	268.8	_						П		I		П	I	I	П		I			$\square$	工		1
a trace to some sand occ. wel sand and silt seams and layers  2.3  288.5 Hard  4 0 85  SILTY CLAY, TIN  SILTY CLAY, TIN  Sandy, a trace of gravel occ. wet sand and silt seams and layers, colibles and boulders  6 D0 48  6 D0 48  5 Crey, hard  SILTY CLAY a trace to some sand occ. wet sand and silt seams and layers  Crey, dense sand and silt seams and layers  END OF BOREHOLE  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31  8 D0 31		Brown, firm to stiff		DO	L		E		$\pm$	$\pm$			1				1	ľ	+		$\pm$		
a trace to some sand occ. wet sand and sit seams and layers		SILTY CLAY weathered	7	DO	7	1_			$\pm$	$\pm$			$\pm$	-	Н		+	4		H	_	+	
2.3 289.5 Hard  A DO 85  SILTY CLAY, Till  sandy, a trace of gravel occ. wet sand and sift seams and layers, cobbles and boulders  6 DO 48  5.0 282.8 Grey, hard  SILTY CLAY  a trace to some sand occ. wet sand and sift seams and layers and layers  7.4 281.4 Grey, dense  SILTY FINE SAND  a trace of clay  END OF BOREHOLE  3 DO 31  8 DO 31  8 DO 31  8 DO 31  8 DO 31		a trace to some sand		-	<u> </u>		F		-	+		$\dashv$	+	+	Н	7		I	F	$\Box$	Ŧ		
2.3 286.5 Hard    A   DO   85     SILTY CLAY, Till     sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders     6   DO   48     SILTY CLAY     a trace of some sand occ. wet sand and silt seams and layers     C   DO   S3     A   SILTY CLAY     a trace to some sand occ. wet sand and silt seams and layers     C   DO   S3     A   SILTY CLAY     a trace of come sand occ. wet sand and silt seams and layers     A   SILTY CLAY     C   SILT		occ. wet sand and silt seams and layers	3	DO	14							$\Box$	+	1	П	4		21	F	П	7	$\vdash$	
## Page   Page	2.2					2			1	+	Н	4	7	Ŧ		7	1	F	L	П	丰		
Silty Clay, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders   Silty Clay a trace to some sand occ. wet sand and silt seams and layers   Silty Clay a trace to some sand occ. wet sand and silt seams and layers   Silty Clay a trace to some sand occ. wet sand and silt seams and layers   Silty Clay a trace to some sand occ. wet sand and silt seams and layers   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt seams   Silty Fine Sand a trace of clay occ. silt sea	266.5	Hard	_	-	-					工			士				6	上		廿	士		<b>[</b>
SILTY CLAY, Till  sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  6 DO 48  5.0  C 112  177  7.4  281.4  SILTY CLAY  a trace to some sand occ. wet sand and silt seams and layers  T.4.  Crey, hard  SILTY CLAY  a trace to some sand occ. wet sand and silt seams and layers  FILTY CLAY  a trace of Gravel  C 177  T.4.  SILTY FINE SAND  a trace of day occ. silt seams and layers  END OF BOREHOLE  5 DO 31  8 DO 31  8 DO 31  9 9 10 10 10 10 10 10 10 10 10 10 10 10 10			4	100	85		E	oxdot	$\pm$	$\pm$			4	)			•	+	$\perp$	Н	$oldsymbol{\perp}$		
SILTY CLAY, Till  sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  6 DO 48  6 DO 48  5 Grey, hard  SILTY CLAY a trace to some sand occ. wet sand and slit seams and layers  7 DO 53  7 THIS SILTY FINE SAND a trace of clay occ. slit seams and layers  END OF BOREHOLE  SILTY FINE SAND a trace of clay occ. slit seams and layers  9 10			_	-		3 -	-	$\vdash$	+	+	$\vdash$	$\dashv$	$\pm$	-	Н	1	13	Ŧ	F	Н	+	$\boxminus$	
Sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  6 DO 48  5 SILTY CLAY a trace to some sand occ. wet sand and silt seams and layers  7 DO 53  7.4  261.4  Grey, dense SILTY FINE SAND a trace of clay occ. silt seams and layers  END OF BOREHOLE  4 12 12 12 12 12 12 12 12 12 12 12 13 12 12 12 12 12 12 12 12 12 12 12 12 12	1	SHTY CLAY THE	5	ВО	81					丰		$\Box$	P	1			•	$\perp$	L	П	工	$\Box$	
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10							$\vdash$	$\vdash$	╌┼╴	╁	$\vdash$	$\dashv$	╅	╁╴		+	+	╁	╁	$\vdash$	┿	╂╌┤	န
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10						4			1			1	丰		$\Box$	1	I		丰		士	口	Set E
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10		sandy, a trace of gravel					Н	$\vdash$	$\dashv$	+		$\dashv$	+	╁	Н	+	┿	+	╀		+	$\dashv$	e o
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10		and layers, cobbles and boulders							丰	上		コ					1				士	口	ē
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10			6	ю	48	5		$\vdash$	+	╁	H	$\dashv$	+	╀	Н	-1	2	+	+	$\vdash$	+	$\dashv$	E .
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10					_	-			#				1				1	1	1		丰	口	262
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10							$\vdash$		+	┿		+	+	╁┈	H		+-	╀	╀	Н	+	┼┤	ល់
SILTY CLAY a trace to some sand occ. wet sand and sift seams and layers  7  281.4  Grey, dense SILTY FINE SAND a trace of clay occ. sift seams and layers  END OF BOREHOLE  7  DO 53  7  7  DO 53  7  18  18  9  10																丁	工				土	口	(8)
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a trace to some sand occ. wet sand and sitt seams and layers  7.4  281.4 Grey, dense SILTY FINE SAND a trace of clay occ. sitt seams and layers  END OF BOREHOLE  7.4  8 DO 31  9  10			7	DO	53	:			土	上	9	士	士								士	団	
7.4 281.4 Grey, dense SILTY FINE SAND a trace of clay occ. silt seams and layers  END OF BOREHOLE  7.4  8 DO 31 9 10		a trace to some sand		Ĭ		] :	Н	$\dashv$	╁	╫	$\vdash$	+	+	╁		+	+	╀	╀	Н	+	┼┤	⊽
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261.4 Grey, dense SILTY FINE SAND a trace of clay Occ. silt seams and layers END OF BOREHOLE  8 DO 31 9 10	7.4	,					Н	$\dashv$	4	╀	Н	-	+	╀	$\vdash \vdash$	4	_	$\perp$	$\vdash$	$\sqcup$	+	$\vdash$	
8.1 a trace of clay occ. sift seams and layers END OF BOREHOLE  8 DO 31 8 9 10 10 10 10 10 10 10 10 10 10 10 10 10	261.4	Grey, dense				:				上		士	土					士			士		
8.1 OCC. silt seams and layers END OF BOREHOLE  9 10		a trace of clay	8	DO	31		Н		-	╀	-		+	╂		+			1		_	$\sqcup$	
9	8.1 260.7	occ. silt seams and layers				0				士		士	士			$\pm$		$^{\dagger}$	T		$\pm$	$\vdash$	
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## LOG OF BOREHOLE NO: 10-18 FIGURE NO: 18

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge #

DATE: August 30, 2010

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	sandy, a trace of gravel occ. wet sand and sitt seams	Ť	-	100.	5						1	1	L,			$\exists$	$\exists$	#	#	1		コ	ē
	and layers, cobbles and boulders	·					$\pm$	$\perp$		$\pm$		t			1		+	士	$\pm$	$\pm$			7.4
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## LOG OF BOREHOLE NO: 10-19 FIGURE NO: 19

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 17, 2010

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		SA	MP	LES	Ē	T		×s	hear (kN	Stre	engti	1				At	tert	erg	Lim	iits		
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)		50	netr	100 ation	Re	o sista	200 nce	90		1	PL F		re C		u. —L • Ine		WATER LEVEL
0.0	Ground Surface				0	1		L		<b></b>				1	1							
266.6	36 cm TOPSOIL Stiff to hard	1	DO	15		1	0									- 1	7		-			
-	w <u>eathered</u>	2	DO	18	1.	1	-6				+					14						
		3	ĐO	21	2.	1	<b>6</b>									13						
	SILTY CLAY, THI	4	DO	45	3.	1			a		+					13			+			
		5	DO	52		-				5						12	-	T				u u
	horsen				4.	<u> </u>																n completi
	sandy, a trace of gravel grey occ. wet sand and silt seams and layers, cobbles and boulders	6	DO	48	5 _	1			e													W.L. @ El. 259.9 m on completion
				_	6 _	-																V.L. @ EI.
		7	00	48		<del> </del>		-	c		<del> </del> -					2		#	ŧ	<u> </u>		∑
7.4 259.2	Grey, compact				7_	  -																
8.1 258.5	sandy silt a trace to some clay a trace of gravel occ. silty fine sand layers	8	DO	22	8 _	  -  -	)										20	+				
	END OF BOREHOLE				9_	<u> </u>																
			:			1																
					10_	-		+		1	+	+					+	+			$\exists$	
						F				1		$\perp$			+	+	+	‡				
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## LOG OF BOREHOLE NO: 10-20 FIGURE NO: 20

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: September 1, 2010

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		SA	MP	LES	Ê	Γ		Χŧ	Shea	ır St	ieuč	yth					Atte	rbei	rg L	imits	>		
Depth Elev. (m)	SOIL DESCRIPTION	Number	40	N-Value	Depth Scale (m)			net	100 ratio	n Re	iso esisi	tano	90 >e		<u>.</u>	P?					u. <del>1</del> 1(%)	<del></del>	WATER LEVEL
		Ž	<u>\$</u>	Ž	8	1	٥	30 30	DIOW	/s/0. 50		70	9	o		10		20		10 30	40 40		WAA
0.0 263.0	Ground Surface 20 cm TOPSOIL		<u> </u>		0.					<u>.                                    </u>		,				<u> </u>			_			二	1
205.0	Brown, very stiff to hard	1	DO	18		E	С								+	+	15		_		+	+	
	weathered	2	DO	25	1.			) Э							+	Ŧ	17			П	7	F	]
	SILTY CLAY, TIII	Ī					ľ		$\pm$							1					$\pm$	E	]
		3	DO	50				‡	1	<b>\$</b>		_			$\downarrow$	#	-		•		士	$\pm$	1
	sandy, a trace of gravel occ. wet sand and silt seams				2.			‡	‡					#	+	-					#	丰	1
	and layers, cobbles and boulders	4	DO	80				1				3		1		1			E		#	丰	1
	•	5	DO	76	3.			1	1			0				10					$\pm$		₹
							1	#	+	1				#	$\pm$	1	L				$\pm$	$\perp$	•
					4.			#	-	F				1		‡					#	十	
4.6							+	‡	‡	+			$\dashv$		+	+	+			H	#	‡	
258.4	Brown, very dense	6	DO	100+	5 -		1	#	+	1	-			4	#	12	1				#	‡	•
	SANDY SILT, TIII some clay, a trace of gravel occ. wet sand and clay seams				,			1							$\pm$						$\pm$	E	
6.0	and layers, cobbles and boulders							1	‡	上					‡	1					#	$\pm$	
257.0	Grey, hard	7	DO	77	6		1	‡	+	F		þ			#	10	ļ				#	1	
	SILTY CLAY, Till sandy, a trace of gravel						1	+	+				$\dashv$	#	‡	丰	İ	H	_		#		letion.
	occ. wet sand and silt seams and layers, cobbles and boulders				7									7	1	Ŧ	-	H			丰	丰	on completion
7.4 255.6	Grey, compact							$\pm$													$\pm$		
8.1	SILTY FINE SAND a trace of clay occ. silt seams and layers	8	DO	17	8 _		d	1	_					1	$\pm$	╁	18				$\pm$	<del> -</del>	W.L. @ El. 260.0 m
254.9	END OF BOREHOLE							#	1						$\downarrow$	‡					$\pm$		( <b>9</b>
							+	+	+					#	+	‡	-				$\pm$	<u> </u>	W.L.
					9		+	#	+	F			4	1	†	1	-				$\pm$		
						H	+	#	+		П		1	+	+	‡	F				#	$\Box$	
					10_	П		$\pm$	-		H		7	7	+	-	F	H		1	丰	$\blacksquare$	
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## LOG OF BOREHOLE NO: 10-21 FIGURE NO: 21

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: September 1, 2010

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		SA	MP	LES	£			×s	hear	Stre m2)	ngth		T		,	\tte	rbei	rg Li	mits			
Depth Elev. (m)	SOIL DESCRIPTION	Number	9	N-Value	Depth Scale (m)		50	netra	iço etion	150 Res	istan	200	_		PL I~		ure	Cor	L ntent	<u>:</u> 1 (%)		WATER LEVEL
		Ž	\$	Ž	ă	1	3	(10 _30	IUWS 5	/0.3r o	70 70	5	ø		10		0		0	40		W.A.
0.0 262.7	Ground Surface				0.																	
202.7	30 cm TOPSOIL	1	DO	11		H	5	+	${\mathbb H}$		╀	-		+	-	17 •	_	Ц	-	$\bot$		
	Stiff to hard				-				口				⇉							士		
	weathered_	2	-	9	1 1	H		+	+		+	╀┤	-	+	+-	$\vdash$	χŻ			+	_	
	-		DO	<del>'</del>	╽ ' -					1	#	$\Box$		丰			•			$\perp$		
			_	ļ		1	+	+	H	$\dashv$	╁	+		-	-		Н	$\vdash$	+	+		
		3	DO	18		$\blacksquare$	q				T								1	丰		
			Г		2.		士	1			$\pm$		1			Н	$\vdash$		-	+	$\vdash$	
		4	00	22		1-1	_	-	$\square$	+	-		4	Ŧ	14	ш				$\blacksquare$		
	SILTY CLAY, TIN	•	100	22		目	ľ			1			士						士	士		
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		5	DO	38		口	丰	7	口	丰	1	П		土		•						
						╂┤	+	+	-1	+	╫	H	+	+	┿	$\dashv$	$\dashv$	$\dashv$		+		
					4 -			T		4	T		7	1						П		8
							+	+	$\Box$	$\pm$	十		+	+	H		-	$\dashv$	+	+-		pleti
	brownbrownbrown		ļ					T	$\square$	_	lacksquare			Ι.	10		耳	$\Box$	$\perp$	$\Box$		Dry on completion
:	sandy, a trace of gravel occ. wet sand and sitt seams and layers, cobbles and boulders	6	DO	61	5				団	P				$\pm$	1							6
	and layers, copples and boulders				]	1-1		+	╀┤	+	╀	H	-	+-	$\left\{ \cdot \right\}$		$\dashv$	$\dashv$	$\perp$	+		ြင်
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					7 2					$\perp$	上						$\exists$	1		士		
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8.1 254.6	FND OF BORELOVE	0	טט	66	8 _	┥	+	+-	$\vdash$	+	7	$\vdash$	+	+-'	1	-	-	-	+	+		
204.0	END OF BOREHOLE							1		上	#						$\rightrightarrows$		土	廿		
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	·				9_		1				1		1		П	1		コ		目		,
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## LOG OF BOREHOLE NO: 10-22 FIGURE NO: 22

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: September 1, 2010

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De-#		34	VIF	<u>0</u>	Ê		>	(Sh	ear : kN/i	Stre m2)	ngth	)				Atte	erbei	rg L	.imits	į		拉
Depth Elev. (m)	SOIL DESCRIPTION	Number		N-Value	Depth Scale (m)	F	50 Pen	etrad	ion	150 Res	ista	200 NCE				ł ł doisi	hure	Col		ц -{ (%)		WATER LEVEL
		Ž	<u>\$</u>	₹	8	1	, 0	30 30	DWS/	V.3r	n) 70		90		10		20		10 10	40		× ×
0.0 259.9	Ground Surface	<u> </u>			0.																	
200.0	30 cm TOPSOIL  mixed with silty clay material  Brown, stiff to hard	1	DO	11			)				‡	+	-		+	14				‡	$\vdash$	
	weathered	2	DO	23	1.		0				-	Ŧ			1.	2						
					1					丰	1	上				1				$\pm$		
		3	DO	24	2		0				+	-				1				+		
	SILTY CLAY, Till											lacksquare			1:	2				$\pm$		
	— ·· <b>, ····</b>	4	DO	37	3.	H	_			+	+	+								+	+	ء
		5	DO	54	] "				-	9	1	1			1	6				丰		253.9 m on completion El. 252.1 m on completion
					4				#	‡	+	+			‡	‡	H			‡		di co
	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders				-															$\pm$		9 m on 52.1 m
		6	DO	63	5_					-	,	+		$\dashv$	10	+			$\dashv$	+	$\vdash$	253. (9 El. 29
												E			1					$\pm$		W.L. @ El. 3 Cave-in @ E
										#	士	上								$\pm$		·
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ا ہے ا					7 -				$\pm$	士	土	上		$\pm$	1					$\pm$		
7.4 252.5	Brown/grey, very dense SILTY FINE SAND					H	-	╂╼┨	+	+	+	╁	$\vdash$		+	+	H	$\vdash$	$\vdash$	+	H	
	a trace of clay	8	DO	53		П	1	П	$ \downarrow $	5	1	Ŧ	口	$\dashv$	1	1			$\Box$	丰	$\Box$	
8,1 251.8	occ. silt seams and layers			<u> </u>	8 _	H	$\pm$	目	重		土			士	士					士		Ť
	END OF BOREHOLE					H	+	$\vdash \vdash$	-	+	+	+	$\vdash$		+	+	H		$\prod$	+	+	
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]							$\pm$	П	1		1				上	${f t}$	目			1		
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# LOG OF BOREHOLE NO: 10-23 FIGURE NO: 23

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

DATE: September 10, 2010

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	··	SA	MP	LES	2	-		×	(Sh	ear	St	rene	gth			Γ		A	teri	berg	نا و	mits			T .
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)		F	io en	1 etra	(kN ço	/m2 1 Re	2) 50 25 is	2 tand	00 De				PL  -					<u> </u>		WATER LEVEL
<b>—</b>		Ž	F	Ż	ă	1	10		30		50		70		10	_	10	)	20	<u> </u>	3(		40		≷
0.0 280.7	Ground Surface 23 cm TOPSOIL	<u> </u>	<del>                                     </del>		0	4		r—	1-			,			$\perp$	Ĺ.,		_	_						1
	Brown, stiff to hard	1	DO	14		1	0												7	+		+	+		1
	w <u>eathere</u> d_	2	DO	9	1	1	-	-				-						13	-				1	-	]
	SILTY CLAY, THE			07		I													2	,			#	E	
	sandy, a trace of gravel	3	DO	27	2	1		9											1			+	+	-	1
	occ. wet sand and silt seams and layers, cobbles and boulders	4	DO	27	]	1		0				-							+	-		$\frac{1}{1}$	+		
		5	DO	50	3.	1				F							1	14		1		1	-		
						Ŧ													1		1	1			
4.6					4.	1						_					+	#							Dry on completion
276.1	Brown, very dense	6	Ю	100+		ł					-	_			┪	+	╁	13	╅	+	+	+	╁	╀	8
	FINE SAND a trace to some sitt				5.	1														1	1		Ŧ		Dry or
6.0	a trace of gravel occ. silt seams and layers					‡										1		1	1	#	#	1			
274.7	Brown, hard SILTY CLAY, TIII	7	DO	33	6.	1			0								-	13	+	+			$\pm$		
	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders				7.	1		_			_	-		$\dashv$	1	+	+	+	+	1	+	+	+	-	
7.4	·					ł	+		$\dashv$	$\dashv$	_	$\Box$	-	_	-	$\perp$	-	Ŧ	Ŧ	1	7	-	1		l
273.3 7.9	Brown, very dense FINE TO MEDIUM SAND	8	DO	100+		1								$\dashv$	1	4	+	#	‡	+	1	‡	‡		
272.8	traces of silt and gravel occ. silt seams and layers	<u> </u>	-		8 .	F			$\neg$		$\dashv$		$\exists$	耳	7	1		1	1	#	7	1	丰		
	END OF BOREHOLE					t							╛			1	$\perp$		士	士	+	+	+		
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# LOG OF BOREHOLE NO: 10-24 FIGURE NO: 24

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 26, 2010

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Depth	SOIL				Depth Scale (m)			50		ōo Tkian	MZ) 15		200	,			PL					Ų.		WATER LEVEL
Elev. (m)	DESCRIPTION	Number		N-Value	Į Š	r		Pen	etra	tion	Res	sista			✝	_	M	nieti		Cor	ntent	1961	<del></del>	
		Ž	Ty B	Ž	8	ı	10	0	30 30	OWS 5	/U.3 0	M) 70	)	90			10		, (0		0	40		<b>\$</b>
0.0 264.2	Ground Surface				0	1	<del>-</del>				_								<u> </u>		=			<b></b>
204.2	20 cm TOPSOIL Firm to hard	1	DO	6		1		+	├	$\vdash$	$\dashv$	$\dashv$	+	╁	╀	╀	-	2	<u>h</u>	$\vdash$	$oldsymbol{ec{ec{ec{ec{ec{ec{ec{ec{ec{ec$	╀	+	1
·		<u> </u>	<del> </del>	<u> </u>	-	F	Ŧ					1	1		1						口	1	丰	1
	w <u>eathered</u>	2	DO	7	1,	Ł	<del>-</del>					_	$\pm$	+	t	t		-	22	Н	$oldsymbol{+}$	+	+	1
			-	Ė	-	1	7	ļ				+	+	+		$\vdash$					$\dashv$	7	F	1
		<u> </u>		╂	-	t	土					1	1				4	5			士	土	上	1
		3	DO	23	2	1	╁	О			+	+	+	+	╂		H		H	H	$\dashv$	+	+	-
İ	SILTY CLAY, TIII	<u> </u>			] -	1	$\mp$	F			7	7	1	I							_	#		1
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	sandy, a trace of gravel					F	-				$\dashv$	$\dashv$	Ŧ	Ŧ		F	П				7	7	$\Box$	8
	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders				4.	t	士					1	$\pm$	上								土	世	8
	and tajara, soodies and bounding					╊	┿		$\dashv$	$\dashv$	$\dashv$	-	╫	╁	╀	_		-	$\dashv$	$\dashv$	+	+	╁┵	58.4
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	grey <u>brown</u>	7	DO	100+	6.	Ł	士			$\dashv$	$\dashv$	╁	+	+,	╁	8	-	$\dashv$	┥	-	+	┿	H	
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<u>7.4</u> 256.8	Grey, very dense					F	F		$\neg$	7	7	7	Ŧ	F	<u> </u>	П		_	$\exists$	$\dashv$	丰	丰	$\Box$	
	SILTY FINE SAND a trace of clay	8	00	53	:	ŧ	丰	Ц		#	$^{\pm}$	#	1	丰				1	1		士	士		
8.1 256.1	occ. silt seams and layers	0	ш	23	8 _	╀	+	Н	$\dashv$		7	+	╁	╁╌		Н	-	-	╸┤	$\dashv$	+	+	H	
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## LOG OF BOREHOLE NO: 10-25 FIGURE NO: 25

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 26, 2010

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Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)	$\vdash$	0	enet	(ki 100 ratio blow	n R	150 esis	tano	00 >e		-	PI F		ure (	— Con	l			WATER LEVEL
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0.0 264.2	Ground Surface 15 cm TOPSOIL	├	┼	<u> </u>	0.	╀	т т	т	_	_		_		_	_		T-	,	r <del></del> -	_	_	_	İ
	Brown, stiff to hard	1	Ю	10		E	<b>\$</b>	1	#	+							6			1			
	weathered_	2	DO	17	1 _	1	9		+	+	+			1	+	#				+			Ē
		3	DO	40						-					1					+			
	SILTY CLAY, TIII	-		40	2 _	E			1						1					#			
	out out, in	4	DO	33		E		k	)					+		12				$\pm$		_	
		5	DO	34	3 _	ŧ			+	+	+			1	‡	1:			$\exists$	+	$\parallel$		
	sandy, a trace of gravel							1		-					#				$\exists$	$\mp$			_
	occ. wet sand and silt seams and layers, cobbles and boulders				4 _	E									+					$\pm$			npletion
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6.0						拝		4	1	#	1			_	1	1		П	コ	丰	$\Box$		
258.2	Very stiff	7	ю	17	6.	E	9			+					1		18			$\pm$			
	SILTY CLAY					Ł			$\pm$	$\pm$	$\pm$				$\pm$	$\pm$			士	$\pm$			I
	a trace to some sand <u>brown</u> occ. wet sand and silt seams grey and layers				7 _	‡			-	+	+				+	-			$\exists$	7			!
	sand layers	8	DO	26				0			T			1	1			1		$\frac{1}{4}$			
8.1 256.1	END OF BOREHOLE				8 _	E				ŧ					1				$\exists$	$\pm$			
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										-	-			$\bot$	+	-			$\exists$	1			
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# LOG OF BOREHOLE NO: 10-26 FIGURE NO: 26

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 16, 2010

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		SA	MP	LES	ê	Γ	>	(Sh	ear	Stre	ngth					Att	lerbe	erg t	imit	§	<u> </u>	
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)	10	О	etra	(kN/i 00 tion ows/	150 Res 10.3n	istan		90						nten	LL 1 t (%)		WATER LEVEL
0.0	Ground Surface	<u> </u>	H	1	<del>                                     </del>	Н	<del>,</del>				<u> </u>		7	-	ï		20		30	40		
256.2	13 cm TOPSOIL  Brown, firm to very stiff	1	DO	6	0.	0		E			I	L	Е			$\pm$		<b>*</b>				
	SILTY CLAY weathered	2	DO	23	1		0	-			+	-					2	3		+	+	•
	a trace to some sand occ. wet sand and silt seams and layers	É	50	23											1		<b> </b>					
	and layers	3	DO	24	2 _		0			1							20	L			上	
2,3 253.9			<u> </u>			╂┤	_	$\vdash$	$\vdash$	+	+	╀	Н		+	+	+	╁	$\vdash$	+	┿	<b>!</b>
203.9	Hard	4	DO	76						ŀ	C				-	1						
		5	DO	100+	3 _					+			-	<b>—</b>	-		-				+	
	SILTY CLAY, TIII				4						-				+	+		-				_
	<b></b>				•						Ŧ						‡					npletion
	some sand to sandy, grey a trace of gravel	6	DO	100+	5								4		10	-						n on cor
	occ. wet sand and silt seams and layers, cobbles and boulders														+	+	$\pm$					249.0 r
		7	DO	000	6 -	H				+	+	L		$\dashv$	9	$\frac{1}{1}$	-	-				W.L. @ Ei. 249.0 m on completion
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					7													Ė				⊽
			3												9							
8.1 248.1	END OF BOREHOLE	8	DO	40	8_	H	_				$\pm$				1	$\pm$	$\pm$			$\pm$		
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## LOG OF BOREHOLE NO: 10-27 FIGURE NO: 27

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

DATE: August 16, 2010

		SA	MPI	ES	Ê	Ī		×	She	ear :	Stre	eng	ŧh					A	tte	be	ng L	imit	9			m!
Depth	SOIL				Depth Scale (m)			50	() 10	kN/i o	M2) 15		20	Ю				PL					ų			WATER LEVEL
Elev. (m)	DESCRIPTION	<u>ā</u>	_	alue	S E	t	F	 Pend	etrat	ion	Res	sist	anc		1		_	M	iet	wa.	Co.	- for	⊐ # (%			۳ ۳
		Number	Ę Š	N-Value	O O		10		(bko 30	XVS/	10.3 D		0	9				0		0		100 10	~ \ ^ 	-		WA
0.0 253.8	Ground Surface 25 cm TOPSOIL				0.	I						· · ·														`••
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						ŀ	$\pm$	上			-	_			1	$\exists$	$\exists$							1		
	SILTY CLAY, Till	2	DO	29	1.	1	+	╁		$\dashv$	+	$\dashv$	$\dashv$	$\dashv$	+	$\dashv$		12	_		-	-	-	+	$\dashv$	
						F	$\top$	$\vdash$		7	$\dashv$				1	4	$\exists$							7		
	sandy, a trace of gravel occ. wet sand and silt seams	3	DO	32		‡	#	1	Б							1	4	2						1	$\Box$	
	and layers, cobbles and boulders brown				2.	1																		1		
	<u>brown</u> grey	4	DO	43		1	#			٥	_				1			1-		_				#		ion
3.0					3.	1	$\pm$	$\perp$	Ы	_	1	$\exists$	$\exists$	$\exists$	1	$\exists$				Н		Н	Н	$\pm$		J W.L. @ El. 248.6 m on completion
250.8	Grey, very dense	5	DO	54		1	-	+-	$\vdash$	-	0	-	$\dashv$	$\dashv$	4	+	1	70			L	H		+	-	ם כסו
	SANDY SILT, Till some clay, a trace of gravel occ. wet sand and clay seams					F			П	$\dashv$	4	$\dashv$	$\dashv$		4	4	$\dashv$							7	$\exists$	E
	occ. wet sand and clay seams and layers, cobbles and boulders				4.	‡	$\downarrow$	F	П	7	_	7	$\dashv$	$\dashv$	4	7	4	_						丰	目	248.6
4.6						‡	1	1		寸						$\exists$								1	╡	E)
249.2	Grey, very stiff to hard	6	DO	31		t	1	L		$\exists$							9			Ш				$\perp$	1	/.L. @
				J.	5.	ł	$\pm$	Ė	Н	$\exists$		$\exists$	_	_		$\dashv$	1			Ш		-	$\exists$	$\pm$	$\exists$	<b>≶</b> ∇
						1	+	+	Н	-			-		$\dashv$	$\dashv$	-	_							$\dashv$	-
	SILTY CLAY, THI				6.	F		-		$\dashv$		$\exists$	$\exists$	$\exists$	4	$\exists$	$\dashv$			Н		П	$\Box$	7	4	
		7	DO	39		1	1	F	4	$\overline{}$							9							7	4	
	sandy, a trace of grave! occ. wet sand and silt seams		ļ	-		1	‡	L	Ħ							_								#	4	
	and layers, cobbles and boulders				7.	1	1				$\exists$			$\exists$										$\downarrow$	╛	
						1	$\pm$	上		士					1		Ⅎ							$\pm$		
	sand					1	$\pm$	$\pm$		$\exists$	$\exists$		$\exists$			$\exists$		13						$\dashv$	$\exists$	
8.1 245.7	layer_ END OF BOREHOLE	8	DO	46	8.	f	F	F	$\square$	의	$\dashv$	$\dashv$	$\dashv$	7	$\exists$	$\dashv$	$\dashv$	•		_	F	F	$\dashv$	$\dashv$	4	
240.1	END OF BOKEHOLE					F	Ŧ	-		4	4	$\dashv$		$\exists$	7	7	7	$\exists$		F	F	Г	$\dashv$	1	4	
					_	#	+	1		$\dashv$	1				1									1	4	
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					10.	1	_			$\exists$		$\exists$		_		$\exists$	_			E						
		<u>.</u>				F	F	F		$\dashv$	1	$\dashv$	$\dashv$	$\dashv$	$\dashv$	7	$\dashv$	$\exists$		H		H	$\dashv$	7	4	
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# LOG OF BOREHOLE NO: 10-28 FIGURE NO: 28

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

DATE: September 10, 2010

Depth   SOIL   DESCRIPTION   Set						T.			_							50	-pre	ATTIE.	70 F	<u>''',</u>	2.0	<u> </u>	_		
DESCRIPTION   See   Se			SA	MPI	LES	Ê			×	She	ear S	Stre	ngti	h				,	Atte	rber	rg Li	lmits	}		ير
Q0   Ground Surface   2   D0   19   1   Q   Q   Q   Q   Q   Q   Q   Q   Q	1	SOIL				cale		5										PL					<u>ц</u>		LEW
Q0   Ground Surface   2   D0   19   1   Q   Q   Q   Q   Q   Q   Q   Q   Q	Elev. (m)	DESCRIPTION	Nember	P P P	N-Value	Depth S	,	0	ene	trati	ion	Res	ista	nçe	)	T								<u> </u>	WATER
Very stiff to hard		Ground Surface			L	<del> </del>										†		<u>.                                    </u>				<u> </u>	<u> F</u>		<del>                                     </del>
SILTY CLAY, THI  3 DO 13 2 DO 19 3 DO 13 2 DO 13 3 DO 13 5 DO 37 4 DO 100+ 6 DO 28 7 DO 100+ 7 DO 100+ 8 D	250.4	23 cm TOPSOIL  Very stiff to hard	1	DO	23				0					1									1		
SILTY CLAY, THI  3 DO 13 2 DO 19 3 DO 13 2 DO 13 3 DO 13 5 DO 37 4 DO 100+ 6 DO 28 7 DO 100+ 7 DO 100+ 8 D		weatherw								1	1	1	1	1	+	t	+		_2	0		$\exists$	‡	+	1
SILTY CLAY, THI  4 DO 40  5 DO 37  5 DO 37  4 DO 100+  7 DO 100+  7 DO 100+  8 DO 100+  8 DO 100+  8 DO 100+  8 DO 100+  8 DO 100+  9 9 DO 100+  10 DO			2	DO	19	'		1		1	7	+	1	+	+	Ļ	ļ	F					+	+	1
SILTY CLAY, THI  4 DO 40 5 DO 37 5 DO 37 4 Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders 6 DO 28 7 DO 100+ 6 TO 100+ 8 DO 100+ 8 DO 100+ 8 DO 100+ 8 DO 100+ 9 DO 100+ 8 DO 100+ 9 DO 100+			3	DO	13			0							-				6						1
SILTY CLAY, TIII  5 DO 37  5 DO 37  6 DO 28  7 DO 100+  7 DO 100+  8 DO 300+						2.	-				1	#	‡	+	+	l	-						+	-	1 _
sandy, a trace of gravel bound occ. well sand all seams gray occ. well sand and all seams and layers, cobbles and boulders  7 DO 100+  7 DO 100+  8 DO 37  4 13  7 DO 100+  8 DO 100+  8 DO 100+  9 DO 100+  9 DO 100+  10 DO		SILTY CLAY, THI	4	DQ	40					ф.								11					+	-	1 ¥
Sandy, a trace of gravel gray occ. wet sand and slit seams and layers, cobbles and boulders  7 DO 100+  7 TO 100+  8 DO 100+  8 DO 100+  8 DO 100+  9 1			5	DO	37	3 _			$\dashv$	d	#			1		$\vdash$		1					1	E	
sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbies and boulders  7 DO 100+  7 DO 100+  7 DO 100+  8 DO 100+  8 DO 100+  9 DO 100+  9 DO 100+  10 DO 100									1	1	+	+	+	$\dagger$	+	‡	F					#	1	ŧ	
Occ. wet sand and silt seams and layers, cobbles and boulders  7 DO 100+  7 DO 100+  7 PO 100+  8 DO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  9 PO 100+  10 PO 10						4																			
Occ. wet sand and silt seams and layers, cobbles and boulders  7 DO 100+  7 DO 100+  7 PO 100+  8 DO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  8 PO 100+  9 PO 100+  10 PO 10		brown					Н	$\Box$	$\exists$	-	+	-	+	+	╁	╁	┝	_		Н	$\dashv$	+	+	╀	
7 DO 100+ 7		OCC. Wet sand and silt seams	6	DO	28	5			d	1				$\pm$		E		13					-		
8 (DO 100+ 242.7 END OF BOREHOLE 8 9										+	$\frac{1}{1}$	+	+	‡	_	t						1	+	上	letion
8 (DO 100+ 242.7 END OF BOREHOLE 8 9									4	_	丰	1	1									1			<b>1</b> 🕏
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8 (DO 100+ 242.7 END OF BOREHOLE 8 9						7		$\Box$	4	$\perp$	4	7	Ŧ	T	F	F	П		П		$\Box$	1	Ŧ	Ţ.	竝
8 (DO 100+ 242.7 END OF BOREHOLE 8 9									$\exists$	$\Rightarrow$	1	1	1	土	1	上						1	$\perp$	$oldsymbol{\perp}$	
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		END OF BUKEHOLE							$\dashv$	#	1	#	#	丰	士							土	土	士	i
						:	H	$\dashv$	+	+	+	+	+	+	+	╀	$\vdash$	Н	$\vdash \vdash$	$\dashv$	$\dashv$	+	+	$\vdash$	ł
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## LOG OF BOREHOLE NO: 10-29 FIGURE NO: 29

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 16, 2010

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	and layers, cobbles and boulders				"			丰			#						$\exists$		#			〓	
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249.1	Grey, hard	6	ро	82	] :			#			1	-			7	7	二	$\dashv$	1	丰		$\Box$	
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1 _ [	and layers, cobbles and boulders					上					$\pm$	1				+	-	+	+	+	-	ᅱ	8
6.0 247.7	Grey, compact to dense		<u> </u>		6 -	_	-	+-			-	1		$\Box$	$\blacksquare$	4	18	4	7	$\mp$		$\Box$	El. 250.0 m on completion
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## LOG OF BOREHOLE NO: 10-30 FIGURE NO: 30

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 16, 2010

Depth SOIL DESCRIPTION DESCRIP							Т		-						==	T			, =	บาบ	_		=		1
Description   Description			SA	MPI	ES	Ē			×	She	ar S	itre	ngth					A	tter	berg	) Li	mits			
25.0 Grown soft to very stiff SILTY CLAY, Till SILTY CLAY, Till SILTY CLAY, Till Sandy, a trace of gravel core. wet sand and six seems and layers, cobbles and boulders  2 DO 24  1 DO 4 D D D D D D D D D D D D D D D D D	ĺ		_							10	D	150						PL 				<u> </u>			Y LEVE
25.0 Grown soft to very stiff SILTY CLAY, Till SILTY CLAY, Till SILTY CLAY, Till Sandy, a trace of gravel core. wet sand and six seems and layers, cobbles and boulders  2 DO 24  1 DO 4 D D D D D D D D D D D D D D D D D		DECORAL FION	NCH	Type	N-Valu	Depth	1	С	,	(blo	ws/l	<b>).3</b> n	n)	168	90								%) *0		WATEF
Brown, soft to very self   Silt'y Clay, mile		Ground Surface				├─~	L								_								Ϊ		
sandy, a trace of gravel  2 DO 24  1.5  Brown, dense SILTY FINE SAND 3 DO 49 2.2  2.3  Hard  —trown GRY SILTY CLAY, TIII  Sandy, a trace of gravel cocc. wet sand and sit seams and layers, cobbles and boulders  6 DO 1004  5 DO 60  249.5  Grey, compact  SANDY SILT a trace of spread occ. wet sand and sit seams and layers, cobbles and boulders  8 DO 1004  5 DO 60  7 DO 16  8 DO 1004  5 DO 60  249.5  Grey, compact SANDY SILT a trace of spread occ. sity sine sand layers  END OF BOREHOLE  8 DO 42  8 DO 43  8 DO 44  8	255.6		1	00	4		0			1	+	$\pm$									1				
1.5 Brown, dance Sitty Fines SAND a trace of day occ. self seams and layers  4 DO 100+ SILTY CLAY, THI  Sandy, a frace of gravel occ. vert sand and self seams and layers, cobbles and boulders  6 DO 100+ 5 Grey, compact SANDY SILT A free busine sand layers  7 DO 16 Grey, compact SANDY SILT A free busine sand layers  8 DO 42 8.1 Grey, dense Fines SAND a trace of gravel occ. self years occ. years occ.		sandy, a trace of grave!  OCC. Wet sand and sitt seams	2	00	24	1.			0		1	+	-	_					17						
SILTY FINE SAND a froce of day occ. sill seams and layers  4 DO 100+ gray 5 DO 60  SILTY CLAY, Till  SILTY CLAY, Till  Sandy, a trace of gravel occ. wet sand and sill seams and layers, cobbles and boulders  6 DO 100+ 5  SANDY SLT a trace of gravel occ. sill graves occ. sill gra	1.5	and layers, cobbles and boulders	<del> </del>				$oxed{oxed}$				士	士		士						士					
23	254.1	SILTY FINE SAND	3	DO	49	,	-			1	9	+	+	+						22	+	+			Ā
SILTY CLAY, TIII  Sandy, a trace of gravel occ. wet sand and sitt seams and layers, cobbles and boulders  6 DO 1004  5 SANDY SILT a trace to some day a trace of gravel occ. sitty fine sand layers  Coc. sitty fine sand layers  END OF BOREHOLE  9 10 10 10 10 10 10 10 10 10 10 10 10 10		occ. sitt seams and layers									1	1	上	Ţ.					ゴ		I	1			
SILTY CLAY, Till  sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  6 DO 1004  5 SANDY SILT a trace to some clay a trace of gravel occ. sity fine sand layers  Crey, compact  7 DO 16  7.4  248.2  Grey, dense FINE SAND at trace to some silt a trace of gravel occ. sity sine sand layers  END OF BOREHOLE  9	253.3	Hard	4	DO	100+		Н			1		士	士	$\pm$	1	2		_	-	24	+	$\pm$	$\perp$		
SILTY CLAY, Till  sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  6 DO 1004  5 SANDY SILT a trace to some clay a trace of gravel occ. sity fine sand layers  Crey, compact  7 DO 16  7.4  248.2  Grey, dense FINE SAND at trace to some silt a trace of gravel occ. sity sine sand layers  END OF BOREHOLE  9		brown				2	$oldsymbol{\square}$	$\vdash \overline{1}$	$\dashv$	$\dashv$	$\bot$	$\mp$	+	F			H	7	$\dashv$	1	7	Ŧ	-		
SilLTY CLAY, Till  sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  6 DO 1004  5 SANDY SILT a trace to some clay a trace of gravel occ. slity fine sand layers  7 DO 16  248.2  Grey, dense FINE SAND a trace to some silt a trace to some silt a trace of gravel occ. slit seams and layers  END OF BOREHOLE  8 DO 42  8 DO 42  8 DO 42  8 DO 42  8 DO 42  8 DO 42  8 DO 42  8 DO 42		grey	5	БО	60	3.	Ħ		$\exists$	寸	1	1	1	ļ				$\exists$	#	22	#	丰	丰		
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Grey, compact SANDY SILT a trace to some clay a trace of gravel occ. sity fine sand layers  7 DO 16  7  7.4  248.2  Grey, dense FINE SAND FINE SAND a trace to some sit a trace of gravel occ. sit seams and layers  END OF BOREHOLE		occ. wet sand and silt seams and layers, cobbles and boulders							$\dashv$	1	$\pm$	+	+	+	┢			$\dashv$	$\dashv$	$\pm$	+	╁	+-		86
Grey, compact SANDY SILT a trace to some clay a trace of gravel occ. sity fine sand layers  7 DO 16  7  7.4  248.2  Grey, dense FINE SAND FINE SAND a trace to some sit a trace of gravel occ. sit seams and layers  END OF BOREHOLE		• ,	6	DO	100+	_ :	П			$\overline{\mathbf{I}}$	$\perp$	1		F	[				$\neg$	$\blacksquare$	7	Ŧ	F		Б.б.
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SANDY SILT a trace to some clay a trace of gravel occ. sity fine sand layers  7  248.2  Grey, dense Fine SAND a trace to some sit a trace of gravel occ. sit seams and layers  END OF BOREHOLE  Fine SAND  19  19  10  10  10  10  10  10  10  10						:	H		$\dashv$	+	+	+	╁	╁	<del> </del>	Н	$\dashv$	-	+	+	+	+	╁	H	⊞ 15 69 in
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SANDY SILT a trace to some clay a trace of gravel occ. sity fine sand layers  7  248.2  Grey, dense Fine SAND a trace to some sit a trace of gravel occ. sit seams and layers  END OF BOREHOLE  Fine SAND  19  19  10  10  10  10  10  10  10  10		Grey, compact	7	100	16	6_					1	1	1	L				1	6	1	1	土	L		<u>₹</u>
a trace of gravel occ. sitty fine sand layers  7.4  248.2 Grey, dense FiNE SAND a trace to some sit a trace of gravel occ. sit seams and layers  END OF BOREHOLE  9  10			<u>.</u>		-		H	4	+	+	+	╁	+	-		Н	$\dashv$	_[	4	+	+	+	┼		
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FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  END OF BOREHOLE  8 DO 42	7.4 248.2	Grey, dense							$\dashv$	7	+	+	-		-		$\dashv$		$\dashv$	-	4		$\vdash$		
a trace of gravel occ. silt seams and layers  END OF BOREHOLE  9  10		FINE SAND	Ω.	DΩ	42	:			1	1	#	1	1	上			口		19	1	#	#			ŀ
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## LOG OF BOREHOLE NO: 10-31 FIGURE NO: 31

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan-

METHOD OF BORING: Flight-Auge r

**DATE:** August 16, 2010

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	sandy, a trace of gravel grey occ. wet sand and silt seams	6	DO	40	i							士				2		士	廿	士	士	
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8.1	a trace of clay	8	DO	70	8.						ф					1	1	土		土		` ≥
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# LOG OF BOREHOLE NO: 10-32 FIGURE NO: 32

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: August 16, 2010

		SA	MP	LES	Ê	Ī		×	Shea	ar Si N/m	ren	gth					At	tert	berg	Lim	its			
Depth Elev. (m)	SOIL DESCRIPTION	Number		N-Value	Depth Scale (m)	F	P(	o enet	100 ratio	on R	150 esis	2 tand	00 De				PL 	istu	re C	onte			_	WATER LEVEL
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0.0 255.0	Ground Surface 25 cm TOPSOIL	-			0.			I	T	1						_	$\exists$	18	T	1				-
•	Brown, very stiff to hard	1	DO	30				1	1		_	L			$\exists$	$\perp$	1	1	_	$\pm$	$\bot$	H		
	SILTY CLAY, TIII	2	DO	32	1.			-	+	+	$\dotplus$			$\exists$	$\dashv$		-	+	1	#	+	H	$\exists$	
	sandy, a trace of gravet							1								1	2	1	1		E			
	sandy, a trace of gravet occ. wet sand and silt seams and layers, cobbles and boulders	3	DO	41	2			$\downarrow$	1	1					$\downarrow$	-		1		$\pm$				
		4	DO	64					1		0					- 1	,							
3.0 252.0	Grey, very dense				3			1	1	1				╛	1	1		1	1	1	$\perp$	H	$\exists$	
	orey, very deline	5	DO	87				#	1	+	+		0		$\downarrow$	‡	•	+	+	‡			$\exists$	
					4	П		7	+	+	-			1	1	#	1	7	+	-		H	$\overline{}$	Ā
	SILTY FINE SAND							1		E								$\frac{1}{1}$		I		$\exists$		₹
	a trace of clay	6	DO	92	5_		4	#	+	+	-			5	#	‡	1	#	+	+		H	$\exists$	
	occ. silt seams and layers				ľ										_			1				$oxed{oxed}$	$\exists$	
	·							1	#	‡					$\pm$	‡	$\pm$		1	1			1	io
6.4		7	DO	64	6	H		+	+	#	0				$\downarrow$	‡		13	+	+	Ħ	H	_	oletion omplet
248.6	Grey, hard SILTY CLAY, THE							-	1						$\frac{1}{1}$	$\ddagger$		•	+	F		H		2 00 mg
7.4	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders				7 :			+	1						1			1						251.0 m on completion El. 250.7 m on completion
247.6	Grey, dense FINE SAND						_	#	‡	‡	-			7	1	+	+	18	‡	‡			$\exists$	El. 251. Ø El. 2
8.1 246.9	a trace to some silt a trace of gravel occ. silt seams and layers	8	DO	50	8 -				1	Φ				_			Ţ		+	+			7	W.L. @ E
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## LOG OF BOREHOLE NO: 10-33 FIGURE NO: 33

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: August 12, 2010

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		Ž	Type	Ž	å	10	, 0	30	low	50 50	ЭП1) 7	o	91	,		10		20		0	40			≸
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	w <u>eathered</u>	2	DO	36	1.			士	土					$\pm$	1	-	_				_	1		
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	SILTY CLAY, THI				] * -	1	1	1						#	1	10			F		1		1	_
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						$\square$	$\mp$	Ŧ	-	F	H		$\dashv$	7	Ŧ	F	$\vdash$	F	F	H	7	$\top$	-	£9,6 ⊞
	sandy, a trace of gravel occ. wet sand and silt seams				4.	$\Box$	1	1	Ŧ		П		$\dashv$	#	1	1	1	1	-		1	-	] ;	
	and layers, cobbles and boulders					Ħ	#	#	#				#	#	1	‡	1					_	1 ;	<u>®</u> Ш
	<u>brown</u> grey	6	00	100+					$\pm$				1	4		+	<b>15</b>				$\perp$		1	¥. Ŀ
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6.0					6 -	$\prod$	7	+	Ŧ		H		-	4	1	Ŧ	F		F		1	-	1	
259.1	Brown, compact	7	00	30	6.		1	1	1		H		丰	1	1	丰		21	匚		#	#	1	
	FINE SAND a trace to some silt		H					$\perp$	士				1	士	$\dagger$	ҍ	1					士	1	
i	a trace of gravel occ. slit seams and layers				7.	H	$\pm$	╁	$\pm$		$\Box$		$\pm$	士	$\pm$	士	士			oxed	+	+		
7.4	ood, one south and layors					H		+	+	H	Н	$\dashv$	$\dashv$	+	+	╁	+	ļ	_		+	-	1	
257.7	Grey, very dense SANDY SILT					$\Box$	1				П	$\dashv$	7	1	1	Ŧ	1	-	-		1	+	-	
8.1	a trace to some clay a trace of gravel	8	DO	88	8 _		#	1	‡	L			9	#	1	1	1	丰	<b>_</b>	Ħ			1	
257.0	Occ. silty fine sand layers  END OF BOREHOLE						士		土				士	#	#	士	1				1	‡	1	
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## LOG OF BOREHOLE NO: 10-34 FIGURE NO: 34

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 13, 2010

Depth   SOIL   DESCRIPTION	/10	August 15, 2010	DATE: August 13, 201		
Depth   DESCRIPTION   Fig.   Solid   DESCRIPTION   Fig.   Solid   So	perg Limits	Atterberg Limits	X Shear Strength Atterbe	SAMPLES =	
90. Ground Surface 1 to m To PSOIL 1 to m To PSOIL 2 to 0 40 1 to 0 100  SILTY CLAY, Till 5 DO 1000  Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders	<u>u</u>	PL Li	(kN/m2) 50 100 150 200 PL	Soale (7	
Doc   Ground Surface	E .		O (blows/0.3m)	Numit Type N-Val	
Firm to hard		<u> </u>			Ground Surface
SILTY CLAY, Till   Sandy, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Coc. wet sand and silt seams and tayers, cobbles and boulders   Silty Clay, a frace of gravel   Coc. wet sand and silt seams and tayers, cobbles and boulders   Coc. wet sand and silt seams and tayers, cobbles and boulders   Coc. wet sand and silt seams and tayers, cobbles and boulders   Coc. wet sand and silt seams and tayers, cobbles and boulders   Coc. wet sand and silt seams and tayers, cobbles and boulders   Coc. wet sand and silt seams and tayers, cobbles and boulders   Coc. wet sand and tayers, cobbles and boulders   Coc. wet sand and tayers, cobbles and boulders   Coc. wet sand and tayers, cobbles and boulders   Coc. wet sand and tayers, cobbles and boulders   Coc. wet sand and tayers, cobbles and boulders   Coc. wet sand and tayers, cobbles and tay			3	1 00 17	
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SILTY CLAY, Till  5 DO 100+  5 DO 100+  4 Sandy, a trace of gravel occ. wet sand and sit seams and tayers, cobbles and boulders				2 00 40 1	wearing -
SILTY CLAY, Till  5 DO 100+  5 DO 100+  4 DO 100+  5 DO 100+  5 DO 100+  6 DO 100+  5 DO 100+  5 DO 100+  6 DO 100+  5 DO 100+  5 DO 100+  6 DO 100+  7 DO 88  7 DO 88  7 DO 88  7 DO 88  9 DO 100+  8 DO 100+  8 DO 100+  8 DO 100+  9 DO 100+  9 DO 100+  1				-	
SILTY CLAY, TIII  5 DO 100+  5 DO 100+  4 DO 100+  5 DO 100+  6 DO 100+  5 DO 100+  5 DO 100+  7 DO 88  7 DO 88  7 DO 88  7 DO 88  7 DO 88  7 DO 88  9 DO 100+  8 DO 100+  8 DO 100+  9 DO		12	0 12	3 DO 45	
SILTY CLAY, Till  5 DO 100+  5 DO 100+  Coc. wet sand and sit seams and layers, cobbles and boulders				<del>       </del> 2 <del> </del>	<u> </u>
SILTY CLAY, Till  5 DO 100+  5 DO 100+  5 DO 100+  5 DO 100+  5 DO 100+  5 DO 100+  6 DO 100+  5 DO 100+  7 DO 88  7 DO 88  7 DO 88  7 DO 88  7 DO 88  9 DO 100+  8 DO 100+  9 D		1		4 100 1001	<u> -</u>
sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders	<del>                                     </del>		<del>├                                    </del>	1 100 1007	
sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders					
sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders	<del>- - - - </del>	<del>╒┋┋┋</del>	<del>╒</del> <del>╒</del> <del>╒</del> <del>╒</del> <del>╒</del> <del>╒</del> <del>╒</del> <del>╒</del> <del>╒</del> <del>╒</del>	5 DO 100+	<u> </u>
sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders					
sandy, a trace of gravel occ. wet sand and sitt seams and layers, cobbles and boulders	╼┼┼┼┼╂╂	<del>╒╃╃╃┩┩</del>	<del>╒╃╗╏╏╏╏╏</del>		
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7.9 DO 88 7 DO 88 7 DO 88 7 DO 88 7 DO 88 7 DO 99 DO 9				6 DO 100+	sandy, a trace of gravel occ. wet sand and silt seams
7 DO 88  7 9  7.9  END OF BOREHOLE  7 9  9 9	<del></del>			5 1-	and layers, cobbles and boulders
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7 DO 88  7 9  7.9  END OF BOREHOLE  7 9  9 9					brown arev
7.9 END OF BOREHOLE  8  9  9  9  9				7 DO 88	
7.9 END OF BOREHOLE  8 9 9 9				1	
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## LOG OF BOREHOLE NO: 10-35 FIGURE NO: 35

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 13, 2010

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	sandy, a trace of gravel	6	DO	36					土						止	廿		士	$\top$		Y. M.L
	occ. wet sand and silt seams and layers, cobbles and boulders		20	30	5 _	$\vdash$	$\perp$	9			_		Ш				$\Box$	4			
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## LOG OF BOREHOLE NO: 10-36 FIGURE NO: 36

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge #

**DATE:** August 13, 2010

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Depth Elev.	SOIL DESCRIPTION	<u>.</u>			Depth Scale (m)		50		10		150		200				PL  -			•••	ŧ	ŧ		LEVE
(m)	DEGORM FIGH	Number	47.	N-Value	Depth		Pt O 10	۱ ۱	trati (blo 0	on F ws/( 50	D.3n	star n) 70	ice	90			Mo o		ure (	Con	itent	(%) 40		WATER LEVEL
0.0	Ground Surface				0	T	<del></del>								Н							<u> </u>		<del>                                     </del>
266.8	20 cm TOPSOIL  Brown, stiff to hard	1	00	12		Ī	þ			1			Ŧ				12 •					$\mp$		]
	w <u>eathered</u>	2	DO	14	1						+	+		_			-	5			#	‡	+	1 .
						}	$\coprod$					1	-									$\pm$		tion
	SILTY CLAY, TIII	3	DO	27	2	1		O				$\pm$		E			12							comple
		4	DO	100+		}	+	1	1	+	‡	+	_		,			18	4	1	+	‡		T m on
	sandy, a trace of gravel occ. wet sand and silt seams	5	23	100+	3.			1								9					1	1	<u> </u>	ML. @ El. 263.1 m on completion Cave-in @ El 260.6 m on completion
	and layers, cobbles and boulders	5	00	100+		L						Ŧ	E							1		<u> </u>		0 T-
					4.	1	+	+	+	‡	+	+				4	1	$\dashv$		+		$\downarrow$		<b>₹</b> 0
4.5						I	$\Box$	#	#	1		1	L			コ	⇉	$\exists$	二	士		士		
262.2	Brown, very dense	6	DO	60		t	廿	1	$\pm$	+	$\downarrow$	上	t				12		$\pm$	1	$\pm$	土		
	SANDY SILT, Till some clay, a trace of gravel occ. wet sand and clay seams	0	50		5.	-	+	1	1	+	#	+	$\vdash$	F		$\dashv$	-	4	1			$\pm$		
6.0	occ. wet sand and clay seams and layers, cobbles and boulders						$\blacksquare$	1		+												Ŧ		
260.8	Brown, dense	7	DO	50	6.	1	#	#	+	+	+	1	-			1	_	17	1	1	- -	‡		~
	FINE SAND a trace to some silt a trace of gravel							1					E						1	#				
7.4	occ. silt seams and layers				7.		+	+	+	+	+	+	-			+	+	$\dashv$		+	+	$\downarrow$	F	
259.4	Grey, very stiff SILTY CLAY a trace to some sand	8	DO	25	•			5			-	Ė			$\exists$					6		$oxed{\pm}$		
8.1 258.7	occ. wet sand and silt seams and layers  END OF BOREHOLE				8.				+	+	+		Ė									$\pm$		
	END OF BUREFULE				9 _	L	#	+	+	+	+	-				$\frac{1}{1}$	$\dashv$	+	+	1	+	-		
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## LOG OF BOREHOLE NO: 10-37 FIGURE NO: 37

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 13, 2010

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0.0 270.6	Ground Surface 20 cm TOPSOIL	<del> </del>	-	-	0	╀	т-									_	_		<del></del>	_	_			_	l
	Brown, stiff to hard	1	DO	11		L	b									$\exists$			$\dagger$	+	$\Box$	Н	+		l
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	SILTY CLAY, Till weathered	2	DO	38	1	T	T	٠.			-	Н	_			$\dashv$	1	2	十	╁	+	H	$\dashv$	⊣	} _
			-	50	-	1	1									$\neg$	$\top$	7	$\perp$	F		Ц	1	$\Box$	ation
	sandy, a trace of gravet		<del> </del>	<u> </u>	-	+	+			Н	Н	Н	-	-	$\dashv$	-	10	+	+	╁	H	Н	+	-	etio 4
	occ. wet sand and sift seams	3	DO	84		L								0		4	•		1	I	$\Box$		$\Box$		E 8
2.3	and layers, cobbles and boulders				2.	╊	┢		-	Н			$\vdash$			-	+	+	+	╁╌	╂┦	Н	+	┨	80
268.3	Brown, very dense	-	-	<del> </del>	1	F	F								耳	コ	-4	1	1		$\Box$		1	コ	W.L. @ El. 266.6 m on completion Cave-in @ El. 265.8 m on completion
		4	DO	76		╊	+						0		-	+	-	+	╁	╀	╢	Н	$\dashv$	$\dashv$	. 26.6 26.6
1 1	CINE GAME		<u> </u>		3	Ī										$\exists$	1		T	L	$\Box$				### #################################
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	a trace to some sitt		<del>                                     </del>	I-	1	I													上	L	$\Box$				
	a trace of gravel				4	╊	╀	-	긕	$\dashv$	$\dashv$		_	$\dashv$	$\dashv$	+	+	+	╀	╄-	╄╌┦	Н	$\dashv$	_	
	occ. silt seams and layers				*	L									╛	_				L	世	$\exists$	$\exists$		五
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266.0	Brown, dense to very dense	6	DO	56	1	L							$\dashv$		_	1		+	2	╡	H	┪	十	$\dashv$	
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	traces of silt and gravel occ. silt seams and layers				]	╀	Н	$\dashv$	┪	┪	-	$\dashv$	┥	-1	-	╅	+	+	┢	╁	Н	$\dashv$	+	4	
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8.1		8	DO	32	8.	I			2]				コ				ľ			上			士	1	
262.5	END OF BOREHOLE					Ͱ	H	-{		$\dashv$	$\dashv$	-	$\dashv$	$\dashv$	+	+			╀	╀	$\vdash$	$\dashv$	+	4	
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## LOG OF BOREHOLE NO: 10-38 FIGURE NO: 38

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 13, 2010

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Depth Elev.	SOIL DESCRIPTION	ڀ			Depth Scale (m)			0	11	(kN/ 00	/m2	50 50	2	00				PŁ ├-					4		WATER LEVEL
(m)	DEGOIL! HOW	Number	Type	N-Value	Depth		P. C	)	etrai (Ibk 30	tion ows	Re:/0.3	3m)	tane 70		ю.			<b>M</b> c	istı 2			ntent o	(% 40		WATER
0,0	Ground Surface				0	T			<u> </u>		<u> </u>		_		-									····	<del>                                     </del>
274.8	30 cm TOPSOIL			1	<b>1</b> ~	L													6				T	T	
	Brown, stiff to hard	1	DO	14			O												•						]
	SILTY CLAY, Till weathered	2	DO	23	1.	ļ		θ-										13					+	-	-
	sandy, a trace of gravet occ. wet sand and silt seams					匚																	1		_
	and layers, cobbies and boulders	3	DO	33					0									13 •		1			$\perp$		-
2.3					2				Н	Н	Н	H		H	Н	$\dashv$	$\dashv$		ᅱ		$\dashv$	-	+	╁	┨ _┋
272.5	Brown, very dense	_		<del> </del>	1	$\vdash$		口							$\Box$		7		耳	_		$\rightrightarrows$	1	$\perp$	
		4	DO	52	3									_			•		$\dashv$	$\downarrow$		#	+	+	269.9 m on completion El 268.8 m on completion
	FINE SAND	5	DO	100+											_					1		_	+	-	ี รัย
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	a trace to some silt		Ī			$\vdash$	H	┪		Н			$\dashv$		-	$\dashv$	┪	$\dashv$	-	-+	$\dashv$	$\dashv$	+	╁	- 85.
	a trace of grave! occ. silt seams and layers				4.										コ	╛							1		- 1 - 5 m
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4.6 270.2								Ė	╛			$\neg$	_	$\dashv$	1	1	1		.	$\dashv$	┪	╅	+	+	W.L. @ El.
2/0.2	Brown/grey, very dense	6	DO	100+				_		$\Box$					q		$\exists$			$\Box$	$\Box$	$\dashv$	1		Ţ Ş
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	traces of silt and grave!				6_				1			$\dashv$	-	-	┪	┪	┪		+	$\dashv$	┪	$\dashv$	+	┿	-
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	Grey, hard SILTY CLAY, TIN							コ	耳	コ	$\Box$			$\Box$	丁	1	コ	7	$\Box$	ユ	丁	$\sqsupset$	1		1
7.9 266.9	sandy, a trace of gravel	8	DO	100+	8 -	H	-	+	$\dashv$	-		$\dashv$	$\dashv$	$\dashv$	-\$	4	4	4	$\dashv$	+	-	+	+	+	-
200.0	occ. wet sand and sitt seams and layers, cobbles and boulders				"												1	$\dashv$	1	$\neg$	寸		十	╁	1
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# LOG OF BOREHOLE NO: 10-39 FIGURE NO: 39

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Augest

**DATE:** August 30, 2010

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		SA	MP	LES	) <u>E</u>			×	Sh	ear (LA)	Str /m2	eng	th		T		,	Atter	berg	Lir	nits			
Depth	SOIL				Depth Scale (m)		•	50		00 (m.w	15 15	•	20	n			PL.				LĮ.	_		WATER LEVEL
Elev. (m)	DESCRIPTION	Number	_	N-Value	၂ မွ			en.	etra	tion	Re	sist	anc		╁		<u>_</u>	- 2- 4.					-	8
(,		Ę	F Se	Ž			10	)	(b) 30	ows 5	/0.3		0	90	١		7 AVA 10				tent (			¥
0,0	Ground Surface			<del>                                     </del>	<u> </u>	t	<del></del>	_	4		<u>.                                    </u>		<u> </u>		╁	_	<u></u>	2		30		40	$\dashv$	<u> </u>
276.3	30 cm TOPSOIL	1	DO	18	7	Ţ	T-				Ц	Ц	$\Box$	$\Box$		L	12			I				
	Brown, stiff to very stiff			16		t	+			Н	Н		+	+	╁	╁	•	Н	+	+	+	╢		Ė
·	SILTY CLAY, Till weathered_	-	<del>                                     </del>		1.	F	F				П	$\Box$	$\Box$	_	1	T	13			1	1	П		İ
		2	DO	13	1	1	0								1		•			_		Ш		
	sandy, a trace of gravel occ. wet sand and silt seams			<del> </del> _		1	+		-	H	$\blacksquare$		$\dashv$	+	╀	+	-		+	+	+			
	and layers, cobbles and boulders	3	DO	30		Į	ļ.,	4	Σ.					1	1	8			1	1		廿		
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274.0	Brown, very dense SANDY SILT	4	DO	76	1	1	F			П		7	0	7	T	8	<u> </u>	П	_	1	T	$\square$	口	io L
2.8 273.5	Brown, hard	7		1,0	-								7		t				1				$\exists$	plet
3.3	SILTY CLAY, TH		-	-	3.	1	+	H	Н	$\vdash \vdash$	-	-	+	+	╀	+	12	$\dashv$	$\perp$	+	+	$\square$	$\dashv$	W.L. @ El. 270.8 m on completion
273.0	Brown, dense	5	DO	60		I	-				•		1	#	二		Ĭ		1	1	土	口		6
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	a trace of gravel occ. slit seams and layers	6	DO	44	5.	I				의				#	L			ě	1	#		廿	ゴ	5
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	SILTY CLAY, TIII				1	厂	П			7	1	4	1	1	Į				1	丰		口		]
	sandy, a trace of gravel	- {	:		7	1			士			$\pm$	$\pm$	士	╁			$\dashv$	+	╁	+	H	-1	
	occ. wet sand and silt seams and layers, cobbles and boulders					╀	$\vdash$	_		-	4	$\dashv$	4	Ŧ	1			_	$\mp$	1	1		$\exists$	
	orey brown		·						$\rightrightarrows$	寸	$\exists$	#		$\perp$	L	9		士	士				$\exists$	J
. 7.9 268.4	END OF BOREHOLE	8	DO	100+	8_	╂	$oxed{H}$	_	$\dashv$	+	+	+	+	╀	φ_		$\vdash$	-	+	+	+	$\vdash \vdash$	4	
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								7	4	7	7	1	_ _	1			4	1	1	1	1		$\exists$	
			ļ	İ				1	1	1	士	$\pm$	土				士		+	$\pm$		$\perp$	$\exists$	
					11_	L			_	$\bot$	$\perp$	$\perp \Gamma$	$\mathcal{I}$		Ē		I	[	1	L			7	



# LOG OF BOREHOLE NO: 10-40 FIGURE NO: 40

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge #

**DATE:** August 30, 2010

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		SA	MP	LES	F	Ţ		×	Sh	ear	Str	eng	th					Atte	erbe	rg l	imits	<u></u>		T	
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)			).	1 etra	oo tion ows	/m2 Re //0.3	io sisti					P N	lois			nten	•			WATER LEVEL
0.0	Ground Surface	┝╤	+-	1	<del>                                     </del>				_		<u> </u>		_		1		·ř		20		30	40	<u>'</u> —		<u> </u>
279.6	25 cm TOPSOIL			┢	0.	†	<u> </u>		Γ	П			П	7	+	Т	8	Ţ	<del>-</del>	Т	П	Т		1.	
	Brown, compact to dense	1	DO	24		Ī		0												E		$\exists$	1	1	
	SILTY SAND, TIII weathered	2	DO	46	1.	1				0							8					$\frac{1}{1}$	$\pm$	<u>-</u>	
	some clay, a trace of gravel occ. wet sand and clay seams and layers, cobbles and boulders	3	DO	44	2	1				0							10					<u> </u>			
		4	DO	30				(	<u>Σ</u>							+	10	-				+	+	-	
3.0 276.6	Brown, dense				3.	‡							$\exists$	_	#	+,	+	‡	+	<del> </del>		$\downarrow$	丰	1	
	, 	5	DO	48		#				9		$\exists$	7	7	7	Ť	1	+	+	-	H	$\dashv$	+	1	
	FINE SAND				4.	Ī		_							4		$\pm$			E		7	土	-	Ę
	a trace to some silt					1									1	1				E		1	_		pletic
	a trace of gravel occ. silt seams and layers	6	DO	44	5.	‡				0					1	4	+	+		$\perp$		#	#	1	Dry on completion
					9.	‡						7	_		1	+	‡	+	-	F		7	‡	1	Q.
	·					I											1	$\perp$		E	$\exists$	$\exists$	$\pm$	1	
6.0 273.6	Brown, hard	7	DO	68	6.	1								_	1	#	$\pm$	16	t	t	H	1	$\pm$	1	
	SILTY CLAY, TIII sandy, a trace of gravel		-			1	$\pm$	_						1	1	1	1	£	$\pm$	上		士	士	1	
	occ. wet sand and silt seams and layers, cobbles and boulders				7.	‡									#	1	‡	+	#	上		$\pm$	1		
7.4 272.2	Brown, very dense					1									#	#	#	1	1	上		$\downarrow$	1	1	
7.8 271.8	SANDY SILT  a trace to some clay	8	DO	100+		‡	$\pm$	_							•	1		1	士	上		$\Rightarrow$	士	1	
	a trace of gravet occ. silty fine sand layers				8.	1		_						1	1	#	1		1	上		#	$\pm$	1	
	END OF BOREHOLE					1	土							1	$\pm$	+	$\pm$	$\pm$		$\vdash$		$\pm$	$\pm$	1	
	·				9.	ł							-	-	+		+	+	1	$\vdash$		+	+	1	
						1							$\exists$	_	$oldsymbol{f}$	+	$\int$	$\overline{\Gamma}$	$\perp$	$\vdash$		$\dashv$	$\top$	-	
,						I	$\pm$					$\exists$	$\exists$		$oldsymbol{+}$	$\pm$		F	F	E		7	十	1	
					10.	Ŧ	$\mathbf{F}$			H			$\exists$		+	+		Ŧ	F	F	Н	7	+	-	
						Ŧ		_				-	1	$\dashv$	7	7	T	Ŧ	F	F		7	+	1	
					11.	Ŧ		_		H		4	7	7	7	+	Ŧ	Ŧ	-	F	П	7	丰	-	
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## LOG OF BOREHOLE NO: 10-41 FIGURE NO: 41

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 30, 2010

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		SA	MP	LES	Ê			×	Sh	ear (kN/	Stre	eng	th		İ			A	tterl	ber	g Li	mits			ی ا	
Depth	SOIL				) 9 9 9			50		,KNV 20	MZ, 15		20	10				PŁ					1		WATER LEVEL	
Elev. (m)	DESCRIPTION	ğ		N-Value	Depth Scale	F		•	etra	lion	Re	sist	anc			_		<u> </u>	: - A				<u>                                     </u>		4 🖁	
		Number	₹.	Ž	8	ŀ	10	0	(bk 30	DWS 5	/0.3 o	m) 7	0	9	0		10		istu 20		.011 30		(%) 40		\ ¥	
0.0	Ground Surface				0				•								_	-					T		╁╌	
285.8	30 cm TOPSOIL	1	DO	10		╀	6	╄-											17 •	$\dashv$	$\neg$	4	Ŧ	F	1	
	Brown, stiff to hard weathered					1	ľ	‡														Ī	士			
	sand-layer	2	DO	22	1	╀	╁	╁		H	$\dashv$	┥		$\dashv$			1	;	+	-	$\dashv$	+	+	┢	-	
		<u> </u>	-			1	-	1									•		_	$\dashv$	$\neg$		Ŧ		1	
}						t	丰							$\exists$				1		$\exists$		1	士		1	
	OIL TV Of AV TIM	3	DO	36	2.	╁	╁	╁	0	H	-	$\dashv$	$\dashv$	-	$\dashv$		$\dashv$			-	+	+	+	┞	-	
	SILTY CLAY, THE				-	1	1			$\Box$	$\neg$	$\exists$	$\exists$				4	1	1	_	7	7	#		1	
		4	DO	28		ŧ	1	<u> </u>										13		$\exists$	士	士	士		1	
<b>i</b>				_	3.	╁	+	$\vdash$	Н	-		$\dashv$	$\dashv$	-	$\dashv$	$\dashv$	$\dashv$	-	$\dashv$	+	$\dashv$	+	+	╀	1	
	sandy, a trace of gravel occ. wet sand and silt seams	5	DO	34	•	I	T		0		4					$\Box$	#	13	_		1	#	#	匚	រ្គំ	
	and layers, cobbles and boulders					Ł	士	上			士					╛	士		1	$\exists$	$\exists$	$\pm$	士	$\perp$	튵	
					4.	╄	╁	╀	Н	$\dashv$	$\dashv$	$\dashv$	-	-	$\dashv$			+	4	$\dashv$	$\dashv$	-	$\mp$	-	8	
					<b>-</b>	1	T	L		二							#	$\exists$	1	1	二	#	丰		E	
4.6 281.2						Ł	$\pm$						-	$\dashv$		$\exists$	3	$\dashv$	+	$\dashv$	$\dashv$	+	+	-	79.1	
201.2	Grey, very dense	6	DO	100+	5	╀	╀		$\sqcup$		$\dashv$	4	_	4	9	4		$\exists$	4	$\neg$	-		Ŧ		W.L. @ El. 279.1 m on completion	
<u> </u>	SILTY SAND, Till some clay, a trace of gravel				J.	Į	1	L			_		$\Box$	コ					#	1			土	口	(3)	
	some clay, a trace of gravel occ. wet sand and clay seams and layers, cobbles and boulders					Ł	+		Н	$\dashv$	1	$\dashv$	$\dashv$	$\dashv$	$\dashv$	-	$\dashv$	$\dashv$	+	$\dashv$	$\dashv$	+	┿	$\vdash$	₹	
6.0					6.	1	F			$\dashv$	$\dashv$	$\dashv$	$\neg$	$\neg$		$\dashv$	4	$\dashv$	4	4	$\dashv$	$\bot$	Ŧ	F		
279.8	Grey, hard	7	ро	54	0.	L	‡			二	0		1	$\exists$	⇉	$\exists$	9	$\exists$	#	#	1	$\pm$	士			
	SH TV OLAV TH			•		Ł	$\pm$		Н	-	$\dashv$	+	1	$\dashv$	$\dashv$	-	7	$\dashv$	+	$\dashv$	+	+	-	Н	_	
	SILTY CLAY, THI				7	F	T			$\dashv$	1	$\dashv$	$\dashv$		$\exists$	7	4	1	7	1	4	4	#	П	立	
	sandy, a trace of gravel occ. wet sand and silt seams				7.	ŧ	1			$\exists$	1			$\exists$				1	#	士	$\perp$	#	土			
	and layers, cobbles and boulders					╀	╁	┢	Н	$\dashv$	$\dashv$	-	$\dashv$	$\dashv$	-	$\dashv$	+	$\dashv$	+	+	+	+	+	Н	1	
		8	DO	40		-	F		Ę	$\Box$		4	4	$\dashv$	4		10		1	7	7	1	1	П	1	
8.1 277.7	END OF BOREHOLE			-	8 _	t	1				$\exists$	╛	1				1	#	1	士	$\exists$	$\pm$	士	$\Box$		
						1	+	$\vdash$	┝┥	-	$\dashv$	-	+	-	┪	$\dashv$	$\dashv$	$\dashv$	+		$\dashv$	+	+	$\vdash$	1	
	•			:	_	F					1	1	$\dashv$		4	7	1	1	#	$\downarrow$	7	#	#	Ħ	1	
			:	:	9 .		t						$\exists$	$\exists$			$\exists$	1	1	$\pm$	1	$\pm$	士	$\Box$		
		<u> </u>				1	+	-	$\vdash$			$\dashv$	$\dashv$	$\dashv$	$\dashv$	4	-	+	+	$\dashv$	$\perp$		+	$\square$		
						I	1			$\exists$	寸		#	_	1	$\exists$	$\exists$	#	#	$\downarrow$	1	#	士	Ħ	1	
					10_	$\vdash$	$\pm$			_	$\dashv$	+	_	+	$\dashv$	_	_	+	+	+	-	+	+	<del>                                     </del>		
						F	F			$\dashv$	$\dashv$	1		1	7	7	7	4	7	7	7	7	Ŧ	$\Box$		
							1			1	$\downarrow$		$\downarrow$	$\dashv$			士	$\pm$	$\pm$	$\pm$	#	1	士	目		
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# LOG OF BOREHOLE NO: 10-42 FIGURE NO: 42

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 30, 2010

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		SA	MP	LES	ε			× s	hear	Str	eng	th				A	tteri	berg	Limi	its	<u> </u>	T	
Depth Elev.	SOIL DESCRIPTION	Ţ		•	Scale (	L	50		(KN 100	/m2) 15		200				PL		<del></del>		Щ.		1	LEVE
(m)	DECORATION	Number	Type	N-Value	Depth Scale (m)	1	Pe O	netra (b 30	lows	Re: \$/0.3	sista lm)	ance				Mo				ent (9	•		WATER LEVEL
0.0	Ground Surface	-	├	-	+		<u> </u>	Ĭ.		1			90	╄			20	,	30		10		<u> </u>
275.6	20 cm TOPSOIL		<del>                                     </del>		0	+		$\overline{}$	Т				_	┢		13		1	<b>T</b>	_		-	
	Brown, stiff to very stiff	1	DO	16			0	╄	F	П		1	1	F		•	7	7	1	$\Box$		7	
	SILTY CLAY, Till weathered	2	DO	14	1	$\blacksquare$	$\perp$	Ŧ		H		1	+	F			6	+	+			7	
	sandy, a trace of gravel occ. wet sand and silt seams	<u> </u>		14		$\Box$	0	Ŧ	-	Н	-	+			H			7	‡	$\Box$	#	7	
	and layers, cobbles and boulders	3	DO	22			Ь	F	-	Н	$\exists$	+	-	F	П	12	-		+	$\boxminus$	H	4	
2.3					2			F	F	П	4				П		7	+	丰	Ħ		_	
273.3	Brown, dense SANDY SILT, Till	4	DO	42				E	b		$\exists$	$\pm$	$oxed{\mathbb{F}}$		Н	1	7	-	F	$\square$	$\top$	7	
3.0	some clay, a trace of gravel occ. wet sand and clay seams	┝	_			1	-	1	$\square$			4	_			$\dashv$	$\bot$		T	$\Box$	1	7	
272.6	and layers, cobbles and boulders	5	DO	44	3.		1	1	0				上		9			$\pm$	上	目		-	Ē
	Hard						$\perp$	$\pm$	Ŭ		1	$\pm$	╁╴		$\exists$	+	+	+	+-	$\vdash \vdash$	_	-   ·	E C
					4	H	$\perp$	+		$\Box$		Ŧ	F		$\Box$	4	7	1	<b>—</b>	$\square$	1	]	<u> </u>
					<b>"</b> .			#		$\dashv$	#	#			$\exists$	士	#	#	士		士	ן ו	> ≣
	SILTY CLAY, TIII							上			1		$\pm$		$\dashv$	+	$\pm$	+	+	Н	+	W	9.00 9.00
ı	DIMOTO	6	DO	80	   5	H	+	+	$\square$	-	-	-	$\vdash$		9	$\dashv$	-	-	lacksquare	$\Box$	#	] ;	ij
	sandy, a trace of gravel occ. wet sand and silt seams				"		1	F	П	_	1	#	F			1	1	#	二		#	@	§) i
	and layers, cobbles and boulders							L		$\exists$	#		上			1	#	土	上		士	3	•
					6 .			L		$\pm$			_			$\pm$	+	╫	╁	╁	+	-	
ļ		7	DO	84	:	$\vdash$		╁	Н	$\dashv$	+	-	-			2	+	-		H	$\mp$	7	
							#	F		_	1	1				1		#	$\Box$	Ħ	丰	-	7
					7	Ц					$\pm$	1			_	$\pm$	$\pm$	$\pm$	╁┤	╁┼	+	┨╶	÷
7.4			ĺ			╂┽	+	┿	Н	+	+	╀	$\vdash$	-	4	+	╁	Ŧ	$\blacksquare$	$\Box$	-	-	
268.2	Brown, very dense FINE SAND	_						L			#				コ	4	7	1	口	口		1	
7.9 267.7	a trace to some silt a trace of gravel	8	DO	100+	8_	H	$\dashv$	$\vdash$	Н	$\dashv$	+	+	1	Н	┪	┦	+	╁	+	$\vdash$	+	-	
	occ. silt seams and layers					$\square$	-	F	П	$\exists$	4	-		$\square$		1		#	$\Box$	$\Box$		1	
- 1	END OF BOREHOLE	.		ĺ	:		士			$\pm$	1	$\pm$			$\exists$	$\pm$		+	+		+	┨	
		:			9	${\mathbb H}$	+	┼	Н	+	+	-	H	$\Box$		7		$\bot$	$\square$	$\Box$		]	
				ļ	<b>.</b> .	口	1			$\downarrow$	1	1			$\exists$	士					$\pm$	1	
ļ							-	┢	H	+	+	+		H	+	+	+	+	$\dashv$	H	+	4	
Ī	Line	1	ļ					-		1	#	1			#	#	1	1	Ħ	口	丰	1	
İ		ļ	İ		10_				$\vdash$	_	_	+	H	╌┤	+	+	+	+	╁┤	├┼	+	-	
ľ				ļ		$\square$	$\top$		$\Box$	4	1	_			4	1	1	1	口	口	1	1	
					1	廿	士			$\pm$	$\pm$		$oxed{H}$		_	$\perp$	+	+-	H	$\dashv$	+	1	
					11.					$oxed{\Box}$	$\perp$	Ι	Ц		Ţ					二	工	1	
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#### LOG OF BOREHOLE NO: 10-43 FIGURE NO: 43

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

DATE: September 10, 2010

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		SA	MP	LES	Ê	T		×	She	ar S	tren	gth					A	ttert	berg	Lin	nits	-		ᆏ
Depth	SOIL				Depth Scale (m)				-	(N/m							PL				ш	_	ļ	WATER LEVEL
Elev.	DESCRIPTION	ĕ		e e	S	$\vdash$	50 Da		100 irati	on F	150 Posi		.00 ~~				-				_			8
(m)		Number	Type	N-Value	E E	L.	0	(	(blo	ws/0	).3m	)								ont	ent (	%)		ATE
0.0	Ground Surface	Z	F	Z	<del>                                     </del>	-	0	30		50		70		90			0	20		30		40		- 3
290.9	23 cm TOPSOIL		$\vdash$		0.	╁		Т	Т	T	Т	T	Т	Н	Н		4 [	7	_	<b>T</b>		Т		
	Brown, loose to compact	1	DO	5		0		7	1	7	1	1							1	1	1	口		Ė
						╊		$\dashv$	+	+	+	╁	╁	Н	$\Box$		+	$\dashv$	+	+	+	H	H	İ
	FINE SAND weathered	2	DO	6	1.	0	П	$\dashv$	1	1	$\bot$	ļ	-					$\dashv$	4	$\bot$	$\bot$	П		İ
	a trace to some silt a trace of gravel		<del>                                     </del>		1	L	Ш	1	1	1								+	+	+	+	H		ł
	occ. silt seams and layers	3	DO	25	1		Н	0	4	+	Ŧ	F			П	-1	9	4	1	1		$\square$		ĺ
		Ľ		25	2			7	士	$\pm$		t							1	1	t	旦		
2.3						▙	$\vdash$	4	4	+	+	╀		-	$\square$		4	-	+	+		$\square$	$\vdash$	İ
288.6	Brown, stiff to hard	4	ро	13		$oxed{t}$	0	1	$\pm$		1						#	士	士	士	1	廿		
j	boukter				,	╀	$\vdash$	$\dashv$	+	+	+	┼-	┝	Ш	$\square$	$\dashv$	$\dashv$	-	+	4	-	$\square$		
	SILTY CLAY, TIR	5	DO	76	3.			1	1	1		上						士	1	1		目		
				10		-	H	+	+	-	-	P	<b> </b>	Н	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	╂╌┨		
	sandy, a trace of gravel occ. wet sand and silt seams								1	士	1							1	$\perp$	士		廿		Í
	and layers, cobbles and boulders				4_		$\vdash$	-	+	+	+	╀	╀	Н	$\dashv$	-		-	+	+	+	₩	$\dashv$	fion
							コ	1	$\perp$	$\perp$		上	Ė		╛			1	1	1		廿		<u>5</u>
4.6 286.3	Brown, very dense	6	DO	100+		$\mathbb{H}$	┝╼┼	+	+	+	+	╀	┞	Н	$\dashv$	-	+	4	+	+	+	$\vdash \vdash$	$\blacksquare$	Dry on completion
		-	100	100+	5.			1	1									1	#	1	1	口		6
				,		$\vdash$	H		+	+	╁	+	┝	Н		-	+	+	+	+	╁	╁┤	Н	٥
	SILTY SAND, TIII							1	1	1	1	L		П	$\Box$	コ	ユ	#	1	#	I	耳		
	some clay a trace of gravel				6	$\mathbf{H}$	H	+	╁	+	╁	╁	├	Н	$\dashv$	$\dashv$	+	+	╁	╁	+	╁┼┤	-	
	some clay, a trace of gravel occ. wet sand and clay seams	7	DO	64	"			1	1	1	6					1		1		1		П		
	and layers, cobbles and boulders		-	-		Н	╌┼	╅	+	+	ť	╀	┢	Н		$\dashv$	+	+	+	┿	╁	╁┤	$\dashv$	
								_	1	#	1			П			#	#	7	1	1	口		
	•				7 -		$\dashv$	$\dashv$	+	+	╁	╁╴	┝	Н	$\dashv$	$\dashv$	$\dashv$	+	+	+	╫	H	$\vdash$	
7.4 283.5	Brown hard		ŀ				$\Box$	7	Ţ	7	Ţ	L		П	$\Box$	4	$\Box$	1		1	T	口		
1	Brown, hard SILTY CLAY, TIII		<b>-</b>				$\dashv$	╅	+	+	╁	╁	$\vdash$	Н	$\dashv$	-	12	+	+	╁	+	H		
8.1	sandy, a trace of gravel — occ. wet sand and silt seams	8	DO	85	8 .	П	$\Box$	_	1	1	Ţ		0				•	7	7	Ţ	Ŧ	$\Box$	$\Box$	
282.8	and layers, cobbles and boulders								1	$\pm$	十	╁				-	+	1	+	+	+	+	_	{
	END OF BOREHOLE	-	}				$\Box$	$\perp$	$\bot$	Ţ	Ŧ	1	F		$\Box$	$\Box$	$\blacksquare$		1	1	$\perp$	$\blacksquare$		ł
	•				9_			1	+	$\pm$	1							+	$\dagger$	+	+	H	$\dashv$	ļ
	:						$\Box$	4	$\bot$		1	-	_	П	$\dashv$	$\Box$				1		$\square$		}
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						H	$\Box$	4	Ţ	Ţ	Ŧ	F	F		$\Box$	7	7	Ŧ	$\bot$	T	F	$\Box$	$\exists$	ĺ
	,	,			10_	H			士	1	1		L		_	_	$\perp$	$\perp$	_	士	$\pm$	<del>                                      </del>	_	
			]			$\square$	H	Ţ	Ŧ	T	$\bot$	F	F	П	$\Box$	1	7	T	T	Ŧ	T	$\square$	$\exists$	
								$\pm$		$\perp$							$\exists$	$\pm$	$\pm$	$\pm$			$\exists$	
					11.		Ш	Д.									I				1		$\exists$	_



#### LOG OF BOREHOLE NO: 10-44 FIGURE NO: 44

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge #

**DATE:** August 31, 2010

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	44	SA	MPI	LES I	E		:	× Sł	ear (kN/	Stre m2)	ength	•				Att	erbe	erg L	_imit	8			
Depth	SOIL				Depth Scale (m)	l	50		 00	15		200				PŁ 			<del></del>	LL -		WATER LEVEL	Ì
Elev. (m)	DESCRIPTION	Number		N-Value	Š	Г	Per	netra	tion	Res	ista			┢	•	Mais	ture	· Co	nten	i (%)		<b>F</b>	
<b></b>		复	Type Sec	Ž	8	10	,0	(b)	lows.	/0.30 0	m) 70		90		10		<b>2</b> 0		30	40 40		¥ ×	
0,0	Ground Surface				0.	匚			<u></u>													<b></b>	1
268.6	15 cm TOPSOIL Brown, firm to hard	1	DO	5		0	+	╀	$\blacksquare$		+	╀	-	Н	$\dashv$			+-	H	+	-	1	
		<u> </u>	Ļ	L				1				1			$\exists$		1	丰				1	Ì
	weathered_	2	DO	20	1	1-	士	+	H	$\dashv$	+	╁	+	H	$\dashv$	14	+	╁╌	H	╬	╁╌	-	ŀ
		<u> </u>	100	20			T	T	П		-	$\bot$					Ţ					1	
	SILTY CLAY, TH	<u> </u>		-				1							$\exists$	15						<u></u> ].	ľ
		3	DO	20	2	1-1	φ	╁	H	$\dashv$	+	+	╀	-	$\dashv$	•	+	+	H	+	+-	1	
	sandy, a trace of gravel occ. wet sand and sitt seams				ן ב		1	丰	П		1				_	#	#	1		士	士	1	ł
	and layers, cobbles and boulders	4	DO	50	]		$\pm$	$\pm$	1		$\pm$		$\vdash$	$oxed{oxed}$	$\dashv$	1	+	+	H	+	+	1	
					3_	$\prod$	$\mp$	Į.	$\square$	$\dashv$	1	Ŧ		$\Box$	7	7	Ŧ	-		1		1	
		5	DO	76	3 -			上			士	,		廿	9		土	$\perp$				j _	ı
		<u> </u>	-	<u></u>		┨┤	+	╂-	╂┪	$\dashv$	+	1	Н	$\vdash$	7	+	+	╁	$\left  \cdot \right $	+	+-	. iĝ	ı
							#			$\dashv$		1			7			丰		1	丰		I
	boulder				4 -		$\dashv$	+			+	+	Н	$\exists$	$\dashv$	+	╁	╁	H	+	╁	5	ł
4.6	<u> </u>							$\bot$	П	4	-	-	$\Box$	$\dashv$	_		-	F	П			, E	ı
264.0	Brown, hard	6	DO	49	:						#	土				14	#	上		$\pm$	士	W.L. @ El. 262.2 m on completion	ı
	SILTY CLAY		-		5	H		┿	Н	+	+	╁	+	H	+	7	╀	╫	H	+	╁	- <u>ai</u>	ı
l i	a trace to some sand occ. wet sand and silt seams								П	_		1	П	$\Box$			1	L	П	_	1	9	I
l i	and layers						$\exists$					士				$\pm$	$\pm$			1	1	`	ı
6.0 262.6	Brown, compact		_	-	6_		+	+	H	$\dashv$	+	1	$\vdash$	$\dashv$	4	4	19	╄	$\blacksquare$		-	ł	I
	SILTY FINE SAND	7	DO	28	:		1	9	П	#	#	1			1	1	1	L		1		¥	ı
	a trace of clay occ. silt seams and layers				:	1	$\dashv$	十	H	$\dashv$	+	╁	Н	$\vdash$	+	+	╁	╫	Н	+	+-	ł	ı
	occ. siit seams and layers				7			1				F		$\Box$	7	1	-	1	П	1	$\perp$	ļ	ı
7,4 261.2								上	Ш		士	上					上			$\pm$		]	
201.2	Brown, hard SILTY CLAY		ļ		] :	H	+	+	$\left  \cdot \right $		+	╀	$oldsymbol{+}$	ert	$\dashv$	$\perp$	21	+	$\square$	+	+	ł	Ī
8,1	a trace to some sand occ. wet sand and silt seams	8	DO	32	8		丰	þ			#	丰			#	1	Ť	T	口	丰	#	1	
260.5	and layers				[ :		_	$\pm$	oxdot	1	$\perp$	$\pm$	$\vdash$	$\exists$	$\exists$	+	Ť	+		+	+		
	END OF BOREHOLE						_	F	П	1	1	F	$\Box$	$\Box$	$\dashv$		-		П	1	_		
					9			士				$^{\dagger}$	Н			$\pm$	$\pm$			$\perp$	十		I
								+	H	+	+	+	$\mathbb{H}$	H	+	-	+	+		- -	+		ı
				ļ	] :		1	1	П		#	1	П	$\Box$	1	丰	1	丰		#			l
				<u> </u>	10		_	$\pm$		_+	_	+	H	$\vdash \vdash$	+	+	+	+	H	+	-		
					•		1	F	П		1	T	П	4	1	1	$\mp$	1		#			
							$\pm$	1.	口	$\pm$	士	$^{\perp}$	Н	廿	士	士	$\pm$	上				1	
					41	H	+	+	H	-	+	+	$\vdash$	$\dashv$	+	+	$\perp$	F	$ar{\Box}$	$\bot$	+	1	
			L	<u> </u>	11_	ᆣ			<u> </u>				4					1.	Ш		<u> </u>	<u> </u>	



#### LOG OF BOREHOLE NO: 10-45 FIGURE NO: 45

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge in

DATE: September 7, 2010

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		SA	MPI	<u>LES</u>	Ê		. ;	< SI	iear Ku	Stre (m2)	engti	h		-		A	lert.	erg	Lim	its		
Depth	SOIL				Depth Scale (m)		50		100 (81%	1112) 15		200				PŁ				Ų		WATER LEVEL
Elev. (m)	DESCRIPTION	ğ		a e	Š	-	Per	etra	tion	Re	sista			t		Ma	oteu	~ ^·			<u></u>	- <u>-</u>
,,		Number	Type	N-Value	8	10	, 0	(b) 30	lows !	/0.3 50	<b>m)</b> 70		90			0			30 30	-	0 <i>7</i>  0	\ ¥
0.0	Ground Surface				0.														T.			
273.6		1	DO	5		0	-	╀	$\vdash$	Н			+			-	20	+	-	$\perp$	$oldsymbol{+}$	7
	76 cm TOPSOIL	<u> </u>		Ľ		Ĭ	$\perp$	1	厂		1	1	1			寸	1	士	土	L		
	Brown, stiff to very stiff weathered	2	DO	11	1 1 -	H	+	+		Н	+	+	+	┞		$\dashv$	18	╅	╁	$\vdash$	+	-
	SILTY CLAY, TH	<u> </u>	$\sim$				7	F	_	П		_					1	-	$\bot$	F		
	sandy, a trace of gravel occ. wet sand and silt seams	<del> </del>	$\vdash$				$\perp$					1				4	士		1	${f  o}$		
ŀ	and layers, cobbles and boulders	3	DO	22	2_	$\vdash$	<del>- P</del>	╁	H	H	+	╁	+-		-		+	+	╀	$\vdash$	+	-
2.3					-	П	1	1		П	#	1	#				1	1	1		丰	]
271.3	Brown, very stiff SILTY CLAY	4	DO	21			古	$\bot$			士	士	$\pm$			$\pm$		26	$\pm$		$\pm$	-
3.0	a trace to some sand occ. wet sand and silt seams		<b></b>	<u> </u>	3.	H	+	+-	$\vdash$	H	+	-	+	$oldsymbol{\square}$		+		+	╀	H	-	-[
270.6	\ and layers /	5	DO	37			1	1				1	1			12	#	#	T		1	_
	Brown, hard		-	-				Ľ			$\pm$	$\pm$	$\pm$				$\pm$	士	+		+	-
					4	H	+	+		H	+	-	-	$\square$		4	+	-	1	Н	-	] _
					7		丰	1		⇉	#	#						1	#		士	Dry on completion
							_	-	Н	${\mathbb H}$	$\dashv$	+	+	Н	$\dashv$	$\dashv$	+	+	+	Н	┽	- Ē
	011 774 04 434 7711	6	DO	59		$\Box$		F	_	4	1	1	$\bot$		$\exists$	7	7	1	T		#	1 8 - 8
	SILTY CLAY, THI				5		1				$\downarrow$	1			$\exists$	士	1	土	士		$\pm$	Š
						$\vdash$		╁	Н	H	+	┿	╁	Н	$\dashv$	+	+	+	╀	$\vdash$	-	-
									$\square$	$\Box$	1	1						1	1	П	#	1
	sandy, a trace of gravel occ. wet sand and silt seams	7	D0	100+	6 .							1		Н	9	$\perp$	_	$\pm$	上	$\vdash$	士	1
	and layers, cobbles and boulders		100	100-			+	╀	Н	$\vdash$	-	+	+	Н	7	+	+	+	╀	$\vdash$	+	-]
					_ :			1			1	1	1		コ	#	1	1	丰			]
					7 _		╁			$\exists$	$\pm$	+	$\perp$	Н	-	$\dashv$	+	-	╁			-
i.	·						4	-		П	+	$\mp$	F	П	$\blacksquare$	15		T	1		$\top$	]
7.9		8	DO	100+				L				1	口			1	#	#	‡		士	_
265.7	END OF BOREHOLE				8 _		$\pm$	$oldsymbol{\perp}$	$oxed{\Box}$	$oxed{oxed}$	+	+	$\pm$	H	-	_	+	+	+	H	+	┨ ┃
	İ					П	$\bot$	-		H	7	Ŧ	1		7	1	1	1	1	П	#	]
							上	上			$\perp$	1	上	H	#	$\perp$	$\perp$	$\pm$	士			<u>†</u> 1
					9 -		+	+	$\vdash$	$\vdash \vdash$	+	+	+	Н	$\dashv$	+	+	+	+	$oldsymbol{oldsymbol{arphi}}$	+	
					:		1			$\Box$	1	1	$\bot$		コ	丰	$\downarrow$	$\top$	T		#	]
								士			1	士	$\perp$		_	$\pm$	1	$\pm$				1
					10_	$\prod$		+		$\dashv$	$\mp$	Ŧ	-		$\dashv$		_	Ŧ	1	П	$\bot$	-] <b>i</b>
<u> </u>							$\perp$				#	#	1				1	丰	1	$\Box$	士	<u> </u>
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### LOG OF BOREHOLE NO: 10-46 FIGURE NO: 46

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 12, 2010

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		SA	MPI	LES	Ê			×sı	ear (kN	Str	eng \	th				1	Atte	rber	g Li	imits	<b>.</b>		급
Depth Elev.	SOIL DESCRIPTION	<u>_</u>		9	Depth Scale (m)		50		ioc	15	50 -	20	L			PL F					u <del>1</del>		3 LEVI
(m)		Number	F 88	N-Value	Depth Th	10	Q	netra (b 30	lows	Re 5/0.3 50	lm)	anc o	же 91		•	<b>D M</b>		ure ( go		ntent jo	t (%) 40	!	WATER LEVEL
0.0	Ground Surface		<b>—</b>		0	1 '								1				<u>;                                    </u>					
280.2	30 cm TOPSOIL				1 * :						П				I		18				$\perp$		]
	Brown, loose to compact SANDY SILT	1	DO	8		19		$\pm$						1	+	L	•				$\pm$	$\pm$	
	a trace to some clay a trace of gravel weathered occ. silty fine sand layers	2	00	13	1.			#						1	+	<b> </b>				Ħ	$\pm$	+	1
1.5	occ. sitty fine sand layers.		-	-	1	1		+	╁	Н	Н	$\exists$	$\forall$	+	╁	╫	$\vdash$	H		┢═╋	+	十	-
278.7	Brown, stiff to hard		_		1			1							1	L	6			$\Box$	工	1	]
		3	DO	9	2	19	1	+	╁	Н	Н	Н	$\vdash \vdash$	╅	╁	╂	₽_	H	Н	$\vdash \vdash$	+	+	1
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		4	DO	30	1	1-1	$\dashv$	<u></u>	╀	H	$\vdash$	$\vdash$		+	+	12	Ͱ	Н		$\vdash$	+	+	<b>!</b>
	SILTY CLAY, TIN			30				Υ						1	上	ľ				口	土	土	1
		<del>  _</del>	-	100+	3 -	1	+	+	$\vdash$	Н	Н		-	1	+	ф-	╀	$\sqcup$	$\vdash$	<del>     </del>	+	+	
	sandy, a trace of gravel	5	DO	100+			$\exists$	+	上					1	+	•					+	十	
	OCC, wet sand and silt seams					П	4	$\bot$	$\vdash$	П			$\Box$	_	Ŧ	F		П		$\Box$	$\mp$	$\bot$	]
	and layers, cobbles and boulders				4	H	┪		╁╌	Н		$\dashv$	$\dashv$	┰	+	+-	-	$\vdash$			十	+	_
					'		耳		_						1			П		口	丰	丰	etio
4.6						H	+	+	$\vdash$	Н	$\vdash$	$\dashv$	+	╁	╁	┼	-	Н	-	$\vdash$	+	╫	Ē
275.6	Brown, very dense	6	DO	59	1										士	L				口	士		Dry on completion
	FINE SAND	Ľ.		J5	5	┨┤			├-	H	Н	$\dashv$	$\dashv$	+	╀	╀	╀	╂┷┥		<del>                                     </del>	+	+	°
	a trace to some sitt a trace of gravel							1	上					士		士					士	<del>     </del>	
	occ. silt seams and layers	ŀ			1		$\perp$		-	Н	Н	-		_	+	$\perp$	-			$\sqcup$	4	-	
6.0					6						Н		$\dashv$	_	$\dagger$	╁	<del> </del>	H	Н		+	╁╌	
274.2	Brown, hard	7	00	72		1-4	4	$\bot$	ļ			5		_	$\perp$	ľ	F	$\Box$		$\Box$	4	$\perp$	
	SILTY CLAY, TIM	-	-		1	11	$\dashv$	╅	╁	H	Н	$\dashv$	$\vdash$	+	╁	╁	H	$\vdash$	-	$\vdash \uparrow$	十	╁	
	sandy, a trace of gravel occ. wet sand and silt seams							$\perp$	L			$\Box$			T	1				$\Box$	工		
	and layers, cobbies and boulders				7.	┨┤	+	+	╁	Н	Н	$\dashv$	-	+	╀	╁	├	H		H	十	+-	
7.4 272.8									厂						1					口	丰	二	•
	Brown, very dense FINE SAND	8	-	400.	} :	H	+	+	╀	Н	Н	$\dashv$	$\vdash$	+	╀	+	<del> </del>	H		┝╌┼	+	+	ŧ ,
7.9 272.3	a trace to some silt	0	ш	100+	8 .		士	士	上						土	ľ		口		口	土	士	
	a trace of gravel occ. silt seams and layers						+	+	╀	Н	$\sqcup$	$\Box$		4	╀	╀	╀	$\square$		$oldsymbol{arphi}$	+	+	<b>!</b>
	END OF BOREHOLE							+	T		Н			1	$\dagger$	╁	+	Н	Н	$\vdash \uparrow$	十	十	i l
							4	$\perp$							$\bot$	L	$\sqsubseteq$			口	$\bot$	$\top$	
					9.	╂┤		+	┼-	-	H	$\vdash$	$\dashv$	+	╁	+-	+			$\vdash$	+	+	
					:	$\square$									T	1				$\Box$	1	1	
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					10.	Ħ								二	1					口	士	士	
						1-1	-	- -	╀	Н	$\vdash \mid$		$\dashv$	+	+	+	╄	Н	Н	$\vdash \vdash$	+	+	
								土		Ħ	$\Box$			ᆂ	1		L			<del> </del>		1	
						П	$\dashv$	$\perp$	ļ	П			$\Box$		Ŧ	F	<u> </u>			H	$\bot$	$\Box$	
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#### LOG OF BOREHOLE NO: 10-47 FIGURE NO: 47

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 12, 2010

		SA	MPI	ES		T			/ OL		Ot-				T						mits			
Depth	SOIL				Depth Scale (m)			_	<b>.</b> Of	ear (kN/	m2	) Otily	UFF	-					IUCI	yы				WATER LEVEL
Elev.	DESCRIPTION	<u> </u>		<b>Q</b>	Scal			50		00	15	<u> </u>	20		┸		PL F							3 LE
(m)		Number	Type	N-Value	鬟		(	)	(bl	tion ows	<b>70.3</b>	sist (m)	anç	9		(	• M	oist	ure	Con	tent	(%)		ATE
		ž	15	Ż		-	10		3Ò	5	iO		0	80	╀		10		20	3	<u> </u>	40		<u> </u>
0.0 291.7	Ground Surface  13 cm TOPSOIL				0.	╁	Т	Т	1				1	_	╀	T	.T-	Т		П	Т	7		
	Brown, firm to stiff	1	DO	7		1	<u>d</u>	L	L					1	1	T				Ц	1	丰		
	SILTY CLAY, TIII				:	1	╁	╀	╁		H	H	$\dashv$	$\dashv$	-	╁	╁	╁	-	Н	+	╁	┢┈┤	
	sandy, a trace of gravel weathered occ. wet sand and silt seams	2	DO	10	1.	‡	4				П		$\exists$	_	1	1	1	6			1	1		
1.5	and layers, cobbles and boulders	_			:	1	$\pm$				$\vdash$	Н			+	+	+	$\vdash$			+	+	╁╌┤	
290.2	Brown, compact	3	DO	26		F	+-			$\Box$			$\dashv$	$\dashv$	+	4	F		_		T	1		
	SILTY FINE SAND a trace of clay	<u> </u>	ВО	20	2	1		上							1	Ī	士	$oldsymbol{\perp}$			$\perp$			
2.3 289.4	occ. silt seams and layers					1	+	╀	╀	Н		Н	$\dashv$	+	+	+	+	L			+	+		
208.4	Very stiff to hard	4	ю	17		1							1	1	1	1	#	1				士	口	
				<b>-</b>	3	1	╁	╁╴	╀	$\vdash$	$\dashv$		-	+	╀	+	+	╫			+	╫		
		5	DO	33		Ŧ	1	L	6	П			#	1	1	1	12				丰	丰		
						ł	$\pm$						_	$\pm$	$\pm$	$\pm$	Ė	$\vdash$	Н	$\dashv$	+	+	Н	
		,				Ŧ	Ŧ						4	$\blacksquare$	Ŧ	F	F			$\Box$	1	1		_
	SILTY CLAY, TIII				4.	1	土								t	L	┢				$\pm$	土		etion
	brown					1	-	╀	╀	Н	_	$\dashv$		+	+	╀		L	Н	$\dashv$	+	Ŧ		
	grey	6	DO	22		1	丰	6						士	1	1	10				士	土		8
	sandy, a trace of gravel occ. wet sand and silt seams		-		5.	╁	╁	۲	$\vdash$				+	+	╀	╀	╀	╁	Н	$\dashv$	+	╁		Dry on completion
	occ. wet sand and silt seams and layers, cobbles and boulders					Ī	1			П		$\Box$	$\dashv$	$\downarrow$		L			П			丰		لسا
	and tayons, obblide and coulders					1	+	-	$\vdash$	Н	$\dashv$	$\dashv$	┪	+	╅	╁	╁	╫	-	$\dashv$	+	+	╌┫	
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## LOG OF BOREHOLE NO: 10-48 FIGURE NO: 48

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auges

DATE: September 7, 2010

Depth   SOIL   DESCRIPTION   Soil   DESCRIPTION   DESCRIPTION   Soil   DESCRIPTION   DESCRI													ATE	. 3	ahre	JIE	91 1	, ZU	10			
Document   Document			SA	MP	LES	2		>	(Sh	ear	Stren	gth				,	tter	berg	Lim	its		
Document   Document	Elev.		reder reder		/aiue	pth Scale (n	L	50 Pen	1 etra	(kN/i oo tion	m2) 150 Resis	2 stand				PŁ  -	~	-		<u> </u>	6)	WATER LEVEL
Brown, stiff to hard  1 DO 13  Brown, stiff to hard  2 DO 13  1 DO 13  1 DO 13  Brown, stiff to hard  2 DO 13  1 DO 14  2 DO 13  1 DO 13  1 DO 14  2 DO 13  1 DO 13  1 DO 14  2 DO 13  1 DO 14  2 DO 13			Ž	F	ż	å	10		30	50	)		9(									≸
Brown, stiff SILTY CLAY a trace to some sand weightened occ. well sand and sit seams and layers.  SILTY CLAY, Till  SILTY CLAY, Till  SILTY CLAY, Till  SILTY CLAY, Till  SILTY CLAY, Till  SILTY CLAY, Till  Sometime and layers, cobbles and boulders  SILTY FINE SAND a trace of clay occ. well seams and layers occ. well seams.						0.																1
SILTY CLAY a trace to some sand occ. wet sand and sit seams and layers.  SILTY CLAY, TIII  4 DO 27  SILTY CLAY, TIII  4 DO 27  Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders  SILTY FINE SAND a trace of clay occ. sit seams and layers  Brown, hard SILTY CLAY, TIII  7 DO 74  Brown, hard SILTY CLAY, TIII  7 DO 74  Brown, wey dense FINE SAND a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders  SILTY SILTY CLAY, TIII Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders  SILTY CLAY, TIII Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders  SILTY CLAY, TIII Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders SILTY CLAY, TIII Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders SILTY CLAY, TIII Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders SILTY CLAY, TIII Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders SILTY CLAY, TIII Sandy, a trace to some sit a trace to some sit a trace to some sit a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders SILTY CLAY, TIII Sandy, a trace to some sit a trace to some sit a trace to some sit a trace of gravel occ. wet sand and sit seams and layers, cobbies and boulders SILTY CLAY, TIII SILTY C	2/3,/		1	DO	13				-			F		1			190		$\frac{1}{1}$			
3 DO 14  272.2 Brown, stiff to hard 3 DO 14  SILTY CLAY, Till 4 DO 27  sandy, a trace of gravel occ wet sand and sit seams and layers, cobbles and boulders  4.6 Brown, very dense 5 DO 36  SILTY FINE SAND a trace of clay occ. sit seams and layers  5 DO 74  Brown, hard SILTY CLAY, Till sandy a trace of gravel occ. wet sand and sit seams and layers  7.0 Brown, very dense 6 DO 74  Brown, very dense 7  Brown of very dense 7  Brow		SILTY CLAY a trace to some sand weathered	2	DO	13	1.		+				L					19					]
SILTY CLAY, TIII  SILTY CLAY, TIII  4 DO 27  sandy, a trace of gravel occ. wet sand and sitt seams and layers, cobbles and boulders  Frown, very dense SILTY FINE SAND a trace of clay occ. sit seams and layers  SILTY CLAY, TIII  4 DO 27  3 DO 36  5 DO 36  4 DO 57  5 DO 38  SILTY FINE SAND a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  7.0  Brown, hard SILTY CLAY, TIII sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  FINE SAND a trace to some sit a trace of gravel occ. sit seams and layers  8 DO 78  8 DO 78  8 DO 78  8 DO 78  8 DO 78  8 DO 78  8 DO 78	15	and layers					H	+	Ͱ	╁	+	+-	$\vdash$		╀	Н	7	+	+	+	+	4
SILTY CLAY, TIII  4 DO 27  Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  5 DO 36  8 DO 57  SILTY FINE SAND a trace of clay occ. sit seams and layers  6 DO 57  5 DO 74  8 Frown, hard sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  7 DO 74  8 Brown, hard sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  8 Brown, trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  8 Brown, trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  8 DO 78  8 DO 78  8 DO 78  8 DO 78	272.2	Brown, stiff to hard	3	DO	14											1 <u>2</u>		1				
sandy, a trace of gravel occ. wet sand and sitt seams and layers, cobbles and boulders  4.6  209.1 Brown, very dense SILTY FINE SAND a trace of clay occ. sit seams and layers  6.0  287.7 Brown, hard sandy, a trace of gravel occ. wet sand and sitt seams and layers occ. wet sand and sitt seams and layers occ. sit seams and layers  7.0 Brown, very dense FINE SAND a trace of gravel occ. wet sand and sitt seams and layers occ. sit seams and layers  8.1 Brown, very dense FINE SAND a trace of gravel occ. sit seams and layers  8 DO 78  8 DO 78  9 SON THE SAND SAND A TRACE SAND SAND SAND SAND SAND SAND SAND SAND						2		丰						#			1	1	-		1	1
sandy, a trace of gravel occ. wet sand and slit seams and layers  8.0 Brown, very dense		SILTY CLAY, TIII	4	DO	27			C						1				1				1
Brown, hard SILTY CLAY, Till sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  7.0 Brown, very dense Fine SAND a trace to some slit a trace of gravel occ. slit seams and layers  8.1 END OF BOREHOLE  7 DO 74  7 DO 74  7 DO 74  8 DO 78  9 9		sandy, a trace of gravel	5	DO	36	3 _		+	0		+		$\dashv$	+	<u>                                     </u>	1	$\dashv$	+				-
Brown, hard SiLTY CLAY, Till sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  7.0 Brown, very dense Fine SAND a trace to some slit a trace of gravel occ. slit seams and layers  8.1 END OF BOREHOLE  7 DO 74  7 DO 74  7 DO 74  8 DO 78  9 9		and layers, cobbles and boulders						I						$\pm$				+	1		+	npletic
Brown, hard SiLTY CLAY, Till sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  7.0 Brown, very dense Fine SAND a trace to some slit a trace of gravel occ. slit seams and layers  8.1 END OF BOREHOLE  7 DO 74  7 DO 74  7 DO 74  8 DO 78  9 9		,				4 _		+		1							$\pm$					] 8
Brown, hard SiLTY CLAY, Till sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  7.0 Brown, very dense Fine SAND a trace to some slit a trace of gravel occ. slit seams and layers  8.1 END OF BOREHOLE  7 DO 74  7 DO 74  7 DO 74  8 DO 78  9 9						-	H	┰	Н	+	┿		$\dashv$	╁			$\dashv$	十	╁	╅┤	+	-
Brown, hard SiLTY CLAY, Till sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  7.0 Brown, very dense FiNE SAND a trace to some silt a trace to some silt a trace of gravel occ. silt seams and layers 8 DO 78 END OF BOREHOLE	209.1		6	DO	57	5 .					9							-				7 586
Brown, hard SiLTY CLAY, Till sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  7.0 Brown, very dense Fine SAND a trace to some slit a trace of gravel occ. slit seams and layers  8.1 END OF BOREHOLE  7 DO 74  7 DO 74  7 DO 74  8 DO 78  9 9		a trace of clay			j		H	+	H	_	+			‡	F		#	+	+		+	- 8 -
Brown, hard SiLTY CLAY, Till sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  7.0 Brown, very dense Fine SAND a trace to some slit a trace of gravel occ. slit seams and layers  8.1 END OF BOREHOLE  7 DO 74  7 DO 74  7 DO 74  8 DO 78  9 9	6.0						П	1					1				7	丰	T		#	
7.0 Solution and salt seams and layers, cobbles and boulders  Brown, very dense Fine SAND a trace to some silt a trace of gravel occ. silt seams and layers  8.1 Solution Solu		SILTY CLAY, THI	7	DO	74	6						0			8		+	+	l		+	1 "
Brown, very dense FiNE SAND a trace to some silt a trace of gravel occ. silt seams and layers  8 DO 78  END OF BOREHOLE  9	7.0	occ. wet sand and silt seams				7		+					_	╁				+				]
8 DO 78 8.1  295.6  END OF BOREHOLE  8 DO 78 9 9	266.7	FINE SAND												‡			+	+	+	$\exists$	+	▼
285.6 END OF BOREHOLE  9		a trace of grave)	8	DO	78			+							9							]
	8.1 265.6	END OF BOREHOLE				8 -		1		1		Ĭ						1				1
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#### LOG OF BOREHOLE NO: 10-49 FIGURE NO: 49

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: September 3, 2010

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Depth Elev.	SOIL DESCRIPTION	5		en Pi	Depth Scale (m)	L		io		20	15	0	20				P	<u> </u>				<u>"</u>			WATER LEVEL
(m)		Number	Type Ppe	N-Value	Depth	l	10	)	(b) 30	DWS.	10.3 D	51314 M) 70		9(	,		● N 10	fois	ture 20		enter 30	nt (%) 40		l	WATE
0.0	Ground Surface				0.	t									7									1	
271.0	20 cm TOPSOIL				٠.	Ţ					$\Box$		$\Box$	$\Box$	1	$\top$	$\Box$	Ţį		工	匚	$\Box$	工	]	
	Brown, firm to hard	1	DO	8		1	1						1	1		1	_	1	1	$\pm$	$\vdash$	H	$\pm$	1	
	weathered	2	DO	11	1.	1	•							$\dashv$	1	1	‡	‡	rd •	丰	F		#	1	
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	sandy, a trace of gravel occ. wet sand and sit seams	5	DO	48	3 .	1	1							$\dashv$	1	1	1	3	t	$\pm$	F	H	$\frac{1}{2}$	1	Cave-in @ El. 265.0 m on completion
	and layers, cobbles and boulders	<u> </u>				1				$\exists$	1	1	1	1	1	‡	<u> </u>	1	-	$\pm$	上	咠	+	1	E E
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		6	DO	78	5 .	‡	+				4	_	4	1	_	‡	+	1	8	‡	F	H	#	1	æ-in (
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6.0 265.0	Brown, very dense	7	DO	54	6 -	1	$\pm$				0					1		17		+	L	H	$\pm$	1.	•
	FINE SAND	<u> </u>	-	- 5		1		_		$\dashv$	~	$\dashv$	$\dashv$	$\dashv$	╂	+	+	╀	╁	╀	╀	╁	+	1	
	a trace to some silt a trace of gravel occ. silt seams and layers				7 -	-					-				-	$\pm$		F		$\pm$	$\vdash$	$oxed{H}$	$\pm$	]	
7.4	ood. Six seams and layers				-	1	╬	_	-		$\dashv$	-	$\dashv$	-	4	+	+	+	-	+	$\vdash$	$\vdash \vdash$		-	
263.6	Brown, hard SILTY CLAY, THI					t	1						#	$\dashv$	1	#	1	1	#	丰	Ħ	口	丰	1	
8.1	sandy, a trace of gravel	8	DO	78	8.	t	-				-	$\dashv$	┪	_		$\pm$	10 10	+	+	+	$\vdash$	oxdot	-	-	
262.9	occ. wet sand and silt seams and layers, cobbles and boulders	<u> </u>				Ŧ	$\bot$				$\dashv$	$\exists$	$\Box$	4	7	Ŧ	Ŧ	Ŧ	F	Ŧ	F	$\Box$	干	4	
* -	END OF BOREHOLE					t	土						$\exists$		1	士	士	士		士		廿		_	
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# LOG OF BOREHOLE NO: 10-50 FIGURE NO: 50

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

DATE: August 31, 2010

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		SA	MP	LES	£		>	(Sh	ear	Stre	ength	)				At	tert	erg	Lim	its		
Depth Elev. (m)	SOIL DESCRIPTION	ğ.		alue	Depth Scale (m)		50 Pen	etra	(kN/ oo tion	150 Res	o sistar	200 10e				Pi 				<u>"</u>		WATER LEVEL
\ <i>,</i>		Number	5	N-Value		10	0	30 30	OWS.	/0.3i	<b>m)</b> 70		90		10		SIUF 20		30 Oute	ent (9 4	6) (0	WAT
0.0	Ground Surface				0.						E											1
266.0	46 cm TOPSOIL	1	DO	9		4						$\perp$				•	$\pm$	$\pm$	$oldsymbol{\mathbb{E}}$		$oxed{oxed}$	-
	Brown, stiff to very stiff	<u> </u>	<del></del>	-	-	┨┤	-	H	H	$\dashv$	_	_			$\dashv$	$\bot$	$\mp$	1	$\bot$	$\Box$		7
	weathered	2	DO	10	1.	Ħ	#				#	1			1	Į.		‡	#			1
	SILTY CLAY, THE						1	F			+					1	‡	‡	丰			_
	sandy, a trace of gravel occ. wet sand and sitt seams	3	DO	26	2	Ħ	C			4	+	+			1	2	‡	‡	丰	Ħ	十	<del>-</del>
	and layers, cobbles and boulders				•	H	+			1		F			+	_	‡	‡	‡	$\Box$		etio
		4	DO	16		H	0			+	+	+	Н	H	-	+	丰	丰	丰	$\Box$	+	W.L. @ El. 262.8 m on completion
3.0 265.0	Brown, very dense		-	100	3.		1	П	$\dashv$	7		1			8	#	#	丰	丰	口		
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	SANDY SILT, Till					廿	1	H		$\pm$		+	$\vdash$	H	+	┿	┿	╅	┿	H	+	- 80
	onibi dici, in				4 -	Н		Н	$\dashv$	$\Box$	ļ	_		$\Box$	$\blacksquare$	1	I	T	$\perp$	$\Box$	工	
	some clay, a trace of gravel							Н	$\dashv$	$\pm$	$\pm$	╁╌		H	╅	╁	+	+	+	H	╅	<b>┧</b> ╡
ł	some clay, a trace of gravel occ. wet sand and clay seams and layers, cobbles and boulders	6	50	70		1	-		$\Box$	4	T	$\perp$			9	Ţ	Ŧ	$oldsymbol{\perp}$	T	$\Box$	$\mp$	] ~
	with myers, commes and bounders		DO	70	5					$\pm$		_			1	$\pm$	土	士	上	H	+	
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										1		上			$\pm$	士	土	上	士	$\Box$	士	1
6.0					6 _	₽	╁┈	H	+	+	+	-		Н	+	-	+	4	+	$\square$	丰	7
262.0	Brown, very dense	7	DO	55	0 -						_	上			1	土	21	土	土	廿		_
	SILTY FINE SAND				]	╀	╁	Н	$\dashv$	9	-	╀	$\square$	-	+	┿	╀	+-	╀	╀┤	+	<b>→</b>
	a trace of clay occ. silt seams and layers				]	耳									士	#	土	土	士		土	
					7 -	$\vdash$	╂		+	+	+	╀╌	$\vdash$		+	+	+	╀	+	$\vdash$	+	-
7.4 260.6	Grey, hard				]				#	#					1	1	1	土	上	廿		1
	SILTY CLAY, TILL					H	╀	Н	┥	+	+-	╁	Н	$\dashv$	4	╁	╀	+	╀	ightarrow	+	
8.1	sandy, a trace of grave! — occ. wet sand and silt seams	8	DO	45	8 -		上		이	丰	1			$\Box$	Ť		1	土	上	$\Box$		_
259.9	and layers, cobbles and boulders					${\mathbb H}$	╁	Н	$\dashv$	+	+	╀		-	+	+	+	+	+	╢	+-	4
ĺ	END OF BOREHOLE						丰		$\dashv$						1	丰	1	土	土			
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### LOG OF BOREHOLE NO: 10-51 FIGURE NO: 51

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: Aurust 27 2010

	Salle Street, and Kilby Ro				agi iça							_	DI	172	: /	\uç	ust	27	20	10					
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(m)		Number	8	N-Value	je Sept		, c	)	(bk 30	)WS	/0.3	m)	a110									ent (9			M∓E
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266.8	60 cm TOPSOIL	1	00	T,	<b>  °</b>	Ļ								$\Box$	1	1			8	T		I			i
		<u> </u>	۳	6	]	E						1			1	+	$\dashv$	+	-	┿	╁	+	H		İ
	Brown, stiff to hard weathered		-	-	1	₽	_		Н			$\Box$		4	-	$\exists$	7		8	1	1	F	$\Box$		
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	SILTY CLAY, Titl	4	DO	35	1	$\perp$			0		$\dashv$	$\dashv$	-	+	+	+	+	14	+	+	+	+	dash	$\vdash$	W.L. @ Ei. 262.2 m on completion Cave-in @ Ei. 260.1 m on completion
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		5	DO	57	3 .	t					d	$\exists$	$\exists$	$\perp$	士	1	10	$\pm$	士			上			. 26. El.
	sandy, a trace of gravel occ. wet sand and silt seams			ļ <u>.</u>		╀	$\vdash$	Н	Н	ᅱ	Ä	┥	$\dashv$	$\dashv$	╬	+	╀	╁	╁	╁	╀	╀	H	-	<b>69</b> <del>-</del> ⊞ <b>9</b>
	and layers, cobbles and boulders					1						$\dashv$	4	7	1	1	1	_	1	1	1	$\perp$	П		Y.F.
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260.8	Brown, very dense	7	00	75	6 -		Н			士		1	1	$\pm$		$\pm$	-	$\pm$	$\pm$	$\pm$	+		$\vdash$		
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	SILTY FINE SAND									〓	1	#	#	1	#	1	#	1	丰	1	丰		口		▼
	a trace of clay occ. silt seams and layers				7 .					$\exists$		$\dashv$	$\exists$	-	+	+	╫	╁	+	+	╁	╂╌┤	Н	$\dashv$	
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	or wellmixelec							4	7	4	7	$\bot$	$\dashv$	$\mp$	Ŧ	Ŧ	$\mp$	Ŧ	F	F	F	$\Box$	П		
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# LOG OF BOREHOLE NO: 10-52 FIGURE NO: 52

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 30, 2010

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		SA	MP	LES	£			×	She	ar	Stre	engi	th		T			Att	erb	erg	Limi	its		٦	
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)	•	50	ene	trati (blo	kN/ o iori	m2) 156 Res (0.3)	o sista	20 anc					<u>\</u>		e Co		<u></u> nt (9	-		WATER LEVEL
0.0	Ground Surface		Ť	_	0	-		_						_~~	$\dagger$		_i_		<u></u>		<u> </u>		0	$\dashv$	<u> </u>
262.8	75 cm TOPSOIL	1	DO	5	ľ	1	0									T				1					!
	Brown, hard weathered boulder	2	DO	59	1			_			0						10	+	+	-					
	SILTY CLAY, TIII	3	DO	69	2	-						0					1;	2							
	sandy, a trace of gravel occ. wet sand and silt seams	4	DO	34		1			0								•	2					+		
	and layers, cobbles and boulders	5	DO	58	3	1				1	9		+		+		12	2	+	<del> </del>			+		
					4.	 										-									
4.6 258.2	Brown, dense					1		1		1		士	士			1	$\pm$		$\pm$	1			_	1	
	SILTY FINE SAND	6	DO	47	5.	1	+	-	1	9	+	1	‡	1		+	+		9	1			1		立
6.0	a trace of clay occ. silt seams and layers									1				1			Ī								
256.6	Brown, very stiff SILTY CLAY	7	DO	24	6.	1		,		+	1					+	+	11	8	F			1		etion
7.4	a trace to some sand occ. wet sand and silt seams and layers				7.	1				-															9 m on completion
255.4 8.0	Grey, hard SILTY CLAY, Till sandy, a trace of gravel	8	DO	76	8.	‡				1		1	  -				9								
254.8	occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE							-	#		1	-		+	+	-							1		W.L. @ El. 257
					9.							I													
					10_	1		+	+		+	+		+	‡										
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### LOG OF BOREHOLE NO: 10-53 FIGURE NO: 53

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auges

**DATE:** August 30, 2010

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		SA	MP	LES	٤			X	She	ar Si	tren	gth					Atte	erbe	erg L	imit	\$		
Depth Elev. (m)	SOIL DESCRIPTION	Number	8	N-Value	Depth Scale (m)	$\vdash$	50 P€	enet	190 tratic	N/m on R	150 (esis	tan	çe Ce	-			L Hois	ture	Co	nter	LL 	)	WATER LEVEL
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201.0	36 cm TOPSOIL	4	DO	5	l	lo		4	+		+	╀-	L		_	4	1	•	╀				1
0.8	Brown, firm SILTY CLAY, Till			Ŀ		Ĕ	H	+	+		‡	F				+	+		ŧ		$\exists$		_
280.2	Brown, compact to dense weathered	2	DO	18	1.		d				1_	L				10					$\Box$		_
	SILTY SAND, TIH	<u> </u>	_	-	┨	₽	Н	+	+	╬	┿	╀	Н		+	+	+	╀	╀	┢	-	-	4
	some clay, a trace of gravet occ. wet sand and clay seams	_		-	-	Լ						t			1			T				+	1
	and layers, cobbles and boulders	3	DO	36		╄	$\vdash$	+	이	4	╄	<u> </u>	L	_	4	ĕ	$\bot$	$\perp$				$\bot$	]
2.3					2.	╁╴		$\dashv$	+	╫	t	┝	Н	+	$\dashv$	+		╀	╁	-	+	+-	-{
278.7	Brown, compact to dense		<del>                                     </del>	<u> </u>	1			$\dashv$	#	1	Ţ			二	コ	10	1	T		口	士	丄	
	,	4	DO	38		1	$\vdash \vdash$	+	9	-	+-	╀	Н	$\dashv$	4	-	$\perp$	+	-	H	$\bot$	$\perp$	4
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1	SILTY FINE SAND	5	DO	22	1		Ц	$\overline{\mathbf{I}}$	$\bot$	I	I				コ	8							1
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	a trace of clay occ. silt seams and layers							1							士					Н	$\top$		-
	occ. sin seams and layers				4 .	1	Н	4	4	$\perp$	ļ	$oxed{oxed}$		$\Box$	1	$\top$	Ţ.				$\Box$	I	1
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4,6 278.4				1										1	1	士	上	上					1 €
276.4	Brown, very dense	6	Ю	58	_ :	1	-	4	+	4		-	-	-	3	$\bot$		$\vdash$	L		4		] 🖺
	FINE TO MEDIUM SAND			-	5 _	1	┝╌┼	$\dagger$	+	+	╁	╁╌	Н	+	╅	+	+	+	╁	Н	╅	╁	- 8
	traces of silt and gravel occ. silt seams and layers						П	$\exists$		1_					1	1						工	Î
	•					╌	$\vdash$	+	╁	+	+	$\vdash$	┝┤	+	+	+	+	╁	┢	Н	+	┿	32
6,0 275.0					6				士	土	上					7	1	t			士	$\perp$	Cave-in @ El. 273.2 m on completion
275.0	Brown, hard	7	<u>DO</u>	100+	1	1	Н	4	+	╀	4	_		-4	-		$\perp$	ļ.,	L		_	$\bot$	Ü
	SILTY CLAY, TH						$\vdash$	+	╅	╁╴	╁	╁╌	H	$\dashv$	+	╁	╅	十	╁	Н	+	╁	- S
:	sandy, a trace of gravel occ. wet sand and sit seams							1		工				]	1	1	1.				丰	工	ģ
	and layers, cobbles and boulders				7 -	H	$\dashv$	+	+	+	+	$\vdash$	$\vdash$		+	-	+	+	╀	╢	+	+-	ပိ
7.4								1		士		-			+	+	+	+	╁	Н	╅	+	-
273.6	Brown, very dense					1	$\sqcup$	$\perp$	4	$\bot$	<u> </u>			_	4	$\bot$	11					1_	1
7.9 273.1	traces to some sand and clay	8	50	100+	8	H	-	+	╅	+	╁	-	┞┤	┩	╅	┿	•	4	╁	Н	+	+	₩
	a trace of gravel occ. sand seams and layers						$\Box$	1			匚				1	工							1
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## LOG OF BOREHOLE NO: 10-54 FIGURE NO: 54

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

**METHOD OF BORING: Flight-Auger** 

**DATE:** August 13, 2010

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267.4	30 cm TOPSOIL	1	DO	16		Ţ	0	Ţ	I			1	T	I	П	13		I	$oldsymbol{ op}$		I	1
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	weathered			├	┨.	1		1	T-			1	F	_		12	1	1	T		1	<u>-</u>
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	occ, wet sand and silt seams and layers, cobbles and boulders	J	100	1001	}	凵	$\downarrow$	士			士	士	<u> </u>		<b>_</b>	_		1	Н	$\pm$	士	•
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	<u>brown</u> grey						_	1	П	7	$\exists$		丰				1	上			口	j
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261.4	Brown, very dense	7	DO	100+				Þ		$\exists$		1	L		寸		8	L	Ц	土		22
	FINE SAND						+	╀	┨	$\dashv$		+	╁	Н	$\dashv$	+	+	╀	Н	$\dashv$	+	iii
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	a trace to some silt a trace of gravel				7			$\perp$		$\exists$		$\pm$		H	+	+	╁	╁	Н	$\dashv$	+	W.L.
	occ. silt seams and layers silty					H	$\mp$	F	$\Box$	$\dashv$		$\mp$	П	H	1	1	$\perp$		П	#	口	
7.9	clay tillknyer	8	ОО	100+			1	上	$\Box$	$\exists$	$\perp$	士			1D	1	8		╛	士	士	
259.5	END OF BOREHOLE				8 _	┥	+	+	$\dashv$	+	+	+	H		$\bot$		1	F	П	$\top$	$\Box$	
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## LOG OF BOREHOLE NO: 10-55 FIGURE NO: 55

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 12, 2010

Depth SOIL DESCRIPTION S SOIL DE	
DO   Ground Surface   DO   18   DO   18   DO   18   DO   18   DO   19   DO   18   DO   19   DO   18   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   19   DO   DO   DO   DO   DO   DO   DO   D	
254.0 Grown, very stiff to hard    Siltry CLAY, Till   3 DO 32   2   3   3   3   3   3   3   3   3	WATER LEVEL
264.0     39 cm TOPSOIL   1   DO   18	≸
Brown, very siff to hard	1
SILTY CLAY, Tall   3 DO 32   2   DO 30   1   3   3   3   3   3   3   3   3   3	1
SILTY CLAY, Till  3 DO 32  4 DO 50  sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  5 DO 32  4 DO 50  4 DO 50  3 DO 32  4 DO 50  5 DO 32  4 DO 50  5 DO 32  6 DO 56  FINE SAND a trace of gravel occ. silt seams and layers  6 DO 56  6 DO 56  6 DO 56  6 DO 56  7 DO 32  8 DOWN, dense  SILTY FINE SAND a trace of clay occ. silt seams and layers  7 DO 32  7 DO 32  7 DO 32  8 DOWN, dense  SILTY FINE SAND a trace of clay occ. silt seams and layers  7 DO 32  8 DO 50  8 DO 50  8 DO 50  8 DO 50  8 DO 50  8 DO 50  9 DO 50  8 DO 50  8 DO 50  9 DO 50  8 DO 50  8 DO 50  8 DO 50  8 DO 50  9 DO 50  8 DO 50  8 DO 50  9 DO 50  8 DO 5	1
SILTY CLAY, Titl  3 DO 32  4 DO 50  sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  5 DO 32  4 DO 50  4 DO 50  3 DO 32  4 DO 50  5 DO 32  A4  4 DO 50  5 DO 32  FINE SAND a trace of gravel occ. silt seams and layers  6 DO 56  6 DO 56  6 DO 56  6 DO 56  7 DO 32  7 DO 32  7 DO 32  7 DO 32  7 DO 32  8 DO 50	]
SILTY CLAY, Till  Sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  4 DO 50  Sandy, a trace of gravel occ. wet sand and silt seams and layers  FINE SAND a trace of sanel occ. with seams and layers  8 DO 32  FINE SAND a trace of gravel occ. with seams and layers  7 DO 32  Frown, dense  SILTY FINE SAND a trace of day occ. silt seams and layers  Results of the control of the control occ. with seams and layers occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE	-
SILTY CLAY, Till  Sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  4 DO 50  Sandy, a trace of gravel occ. wet sand and silt seams and layers  FINE SAND a trace of sanel occ. with seams and layers  8 DO 32  FINE SAND a trace of gravel occ. with seams and layers  7 DO 32  Frown, dense  SILTY FINE SAND a trace of day occ. silt seams and layers  Results of the control of the control occ. with seams and layers occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE	1
sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  4 DO 50  sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  5 DO 32  4 4  4 DO 50  4 DO 50  3 DO 32  4 DO 50  4 DO 50  4 DO 50  5 DO 32  4 DO 50  5 DO 32  6 DO 56  6 DO 56  6 DO 56  7 DO 32  8 DO 50  8	
sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  5 DO 32  4.8  259.4 Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6 DO 56  8 Brown, dense SILTY FINE SAND a trace of day occ. silt seams and layers  7 DO 32  7.4  256.6 Grey, hard SILTY CLAY, Till sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders END OF BOREHOLE  9 9	]
sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  5 DO 32  4.8  259.4 Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6 DO 56  8 Brown, dense SILTY FINE SAND a trace of day occ. silt seams and layers  7 DO 32  7.4  256.6 Grey, hard SILTY CLAY, Till sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders END OF BOREHOLE  9 9	⊽
sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  4.8  259.4  Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6.0  258.0  Brown, dense SILTY FINE SAND a trace of clay occ. silt seams and layers  7 DO 32  7.4  256.6  Grey, hard SILTY CLAY, TNI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE	] -
sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  4.8  259.4  Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6.0  258.0  Brown, dense SILTY FINE SAND a trace of clay occ. silt seams and layers  7 DO 32  7.4  256.6  Grey, hard SILTY CLAY, TNI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE	1
and layers, cobbles and boulders  4.8 259.4 Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6.0 258.0 Brown, dense SiLTY FINE SAND a trace of clay occ. silt seams and layers  7.4 258.6 Grey, hard SILTY CLAY, Till sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders END OF BOREHOLE  9	]
4.6 259.4 Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6.0 258.0 Brown, dense SILTY FINE SAND a trace of clay occ. silt seams and layers  7.4 256.6 Grey, hard SILTY CLAY, THI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders END OF BOREHOLE	1
4.6 259.4 Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6 DO 56  FINE SAND a trace of gravel occ. silt seams and layers  7 DO 32  7.4 256.6 Grey, hard SILTY CLAY, TNI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE	
259.4 Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6.0  258.0 Brown, dense SILTY FINE SAND a trace of clay occ. silt seams and layers  7 DO 32  7.4  256.8 Grey, hard SILTY CLAY, TNI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders END OF BOREHOLE	•
259.4 Brown, very dense FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6.0  258.0 Brown, dense SILTY FINE SAND a trace of clay occ. silt seams and layers  7 DO 32  7.4  256.8 Grey, hard SILTY CLAY, Till sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders END OF BOREHOLE	
FINE SAND a trace to some silt a trace of gravel occ. silt seams and layers  6.0  258.0  Brown, dense  SILTY FINE SAND a trace of clay occ. silt seams and layers  7  7.4  256.6  Grey, hard SILTY CLAY, TNI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE	▼
a trace to some silt a trace of gravel occ. silt seams and layers  6.0  258.0 Brown, dense  SILTY FINE SAND a trace of clay occ. silt seams and layers  7 DO 32  7.4  256.6 Grey, hard SILTY CLAY, TNI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE	
6.0 258.0 Brown, dense SILTY FINE SAND a trace of clay occ. sit seams and layers  7 DO 32  7.4 256.6 Grey, hard SILTY CLAY, Tall sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders END OF BOREHOLE  8 DO 50 8 DO 5	
SiLTY FINE SAND a trace of clay occ. sift seams and layers  7  7  7  7  7  7  7  7  7  8.1  255.9  Brown, dense  SiLTY FINE SAND a trace of clay occ. sift seams and layers  7  7  8  DO 32  7  7  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  8  DO 50  BROWN, dense  Table T	_
Siltry Fine SAND a trace of clay occ. sift seams and layers  7 DO 32  7 A 256.6 Grey, hard Siltry CLAY, Till sandy, a trace of gravel occ. wet sand and sift seams and layers, cobbles and boulders END OF BOREHOLE  7 DO 32  7 DO 32  7 DO 32  9 DO 32  9 DO 32  9 DO 32  9 DO 32  9 DO 32  9 DO 32	ا في
SILTY FINE SAND a trace of clay occ. sift seams and layers  7.4  256.6  Grey, hard SILTY CLAY, Till sandy, a trace of gravel occ. wet sand and sift seams and layers, cobbles and boulders  END OF BOREHOLE  SILTY CLAY, Till sandy, a trace of gravel occ. wet sand and sift seams and layers, cobbles and boulders  9	a te Perio
7.4 258.6 Grey, hard SILTY CLAY, TMI sandy, a trace of gravel occ. wet sand and slit seams and layers, cobbles and boulders  END OF BOREHOLE  7  8 DO 50 8  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	E 8
7.4 258.6 Grey, hard SILTY CLAY, TMI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE  8 DO 50 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	50
258.6 Grey, hard SILTY CLAY, THI sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE  8 DO 50 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	E 6
SILTY CLAY, THE sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE  8 DO 50 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	261.6 m on completion El. 259.4 m on completion
8.1 255.9 occ. wet sand and silt seams and layers, cobbles and boulders  END OF BOREHOLE  8 DO 50 8 0000000000000000000000000000000000	i⊕9
END OF BOREHOLE  9	W.L. @ I Cave-in
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## LOG OF BOREHOLE NO: 10-56 FIGURE NO: 56

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auges

DATE: August 16, 2010

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	sandy, a trace of gravel	<u> </u>		<u> </u>	3.		$\Box$	1	T	L			П	耳	$\Box$	8	#	#	1	I	$\Box$	口	コ	
	sandy, a trace of gravel occ. wet sand and silt seams	5	DO	100+	1	1-	-+	+	+	╁	$\vdash$	-	$\vdash \vdash$	-4	4	4	+	+	┿	╁	╂╌┦	$\vdash \vdash$		ĺ
	and layers, cobbles and boulders				ĺ				上						1	$\exists$	土	$\perp$		土			•	_
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255.3	Brown, compact				6		-	4	╀	-	Н		4	_	4	4	4	4	24	Į.	$\Box$	$\Box$	$\exists$	El. 257.6 m on completion
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7.4 263.9	Brown, very dense						工	Ţ	F		Д	$\Box$	$\Box$	1	$\Box$	1	Ţ	1	1	$\bot$	口	口	コ	₩.L.
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8.1	a trace to some silt a trace of gravel	8	DO	72	8		二	I				2			士			*	土		廿	士		
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### LOG OF BOREHOLE NO: 10-57 FIGURE NO: 57

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auge r

**DATE:** August 16, 2010

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		SA	MPI	LES	€	T		× Sł	ear	Stre m2)	ngti	1				Atte	erbe	rg L	imits			
Depth Elev. (m)	SOIL DESCRIPTION	Number	Туре	N-Value	Depth Scale (m)	-	50	netra	oo ition	m2) Res /0.3r	ista	200 nce	90		₽ N	lois	ture 20			(%)		WATER LEVEL
0.0	Ground Surface				0.	T					•								<b>L</b>			
257.4	36 cm TOPSOIL Firm to hard	1	DO	8		1_	3									17	'   _					
	w <u>eathered</u>	2	DO	17	1.	F	0					+			12	2				-		
		3	DO	37	2_			C							9					1		
		4	DO	86				+			1	0			0							
	SILTY CLAY, TIII <u>brown</u> grey	5	DO	62	3_	1		L							8							
						-																
					4_							+										mpletion
	sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders	6	DO	40	5_			F			+				9							Dry on completion
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		7	DO	36	6_			0		_		+			10							
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8.1 249.3	END OF BOREHOLE	8	DO	30	8_	F		þ		#	+	#	H	$\dashv$	1	+		Ħ		#	$\square$	
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#### LOG OF BOREHOLE NO: 10-58 FIGURE NO: 58

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 16, 2010

SAMPLES   SAMP	
SOIL     a   so an   PL LL	
I -min	WATER LEVEL
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0.0 Ground Surface 0 25 cm TOPSOIL	
258.0 25 cm TOPSOIL 15 DO 6	
weathered 2 DO 12 1	
3 DO 27 13 13 13 13 13 13 13 13 13 13 13 13 13	
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4 DO 30 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 -
5 DO 62 3	
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sandy, a trace of gravel 6 DO 41 5 000 000 000 000 000 000 000 000 000	W.L. @ El. 250.7 m on completion
and layers, cobbles and boulders	(3) El. 2!
7 DO 44 6	W.L.
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8 00 48 8 0	
249.9 END OF BOREHOLE	-
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#### LOG OF BOREHOLE NO: 10-59 FIGURE NO: 59

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 16, 2010

SOIL   DESCRIPTION   So   SAMPLES					_		T	_		_				_,				ust				_			=	·
SOIL   DESCRIPTION   Set   So   100   100   200   10			SA	MP	LES	E			×	Sh	ear	Stre	eng	th					ΑI	tert	berg	y Lir	nits			ییا
9.0   Cround Surface   2   DO   9   1   O   0   O   O   O   O   O   O   O   O	Depth					ale (									<b>10</b>			F	PL.				ų	L		
9.0   Cround Surface   2   DO   9   1   O   0   O   O   O   O   O   O   O   O	Elev.	DESCRIPTION	8		3	S	H				L			_		$\dashv$			-	,_,				<b>'</b>		E E
9.0   Cround Surface   2   DO   9   1   O   0   O   O   O   O   O   O   O   O	(m)		È	8	> -		ı	(	0	(bid	)WS	10.3	m)			٠,										§ ₹
Firm to hard	0.0	Ground Surface	┢		-		╂			Ī	<u></u>	_						<u>i</u> -						<u> T'</u>		
SILTY CLAY, TIM  4 DO 64 5 DO 1004 5 DO 1004 7 DO 24 7 DO 34 8	255.0	23 cm TOPSOIL				•	1	Ι	1								$\Box$	$\blacksquare$	15	$\Box$	$\Box$	$\Box$	$\top$	T		1
SILTY CLAY, TIII  4 DO 64  5 DO 1000  4 DO 64  5 DO 1000  4 DO 64  5 DO 1000  4 DO 64  7 DO 24  7 DO 24  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34		Firm to hard	1	IDO	Б		15	4	t	Н	H	$\exists$	$\dashv$		Н	$\dashv$	┥	+	7	+	$\dashv$	$\dashv$	+	╀		
SILTY CLAY, TIII  4 DO 64  5 DO 1000  4 DO 64  5 DO 1000  4 DO 64  5 DO 1000  4 DO 64  7 DO 24  7 DO 24  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34  8 DO 34		.veather-d				_	F			П			口				$\exists$	1	1	18		$\Box$	7	T		1
SILTY CLAY, TIR  4 DO 64 5 DO 100+ 5 DO 100+ 4 Sandy, a trace of gravel brown occ. wet sand and sit seams and layers, cobbles and boulders  7 DO 24 7 DO 24 8 DO 34 8		weganister_	2	DO	9	1.	t	9-	士	H		╛						1		•						İ
SILTY CLAY, TIR  4 DO 64 5 DO 100+ 5 DO 100+ 4 Sandy, a trace of gravel brown occ. wet sand and sit seams and layers, cobbles and boulders  7 DO 24 7 DO 24 8 DO 34 8							╀	╀	+	Н		4	_		Н		-	+	-	+	-	$\dashv$	-	╀	-	
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Sandy, a trace of gravel occ. wet sand and sit seams and layers, cobbles and boulders  7 DO 24  8 DO 34  8 DO 34  8 DO 34  9 9 10			_		64		F	F		П			$\overline{\Box}$				$\blacksquare$	-	1	7				F		
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sandy, a trace of gravel gray occ. wet sand and sit seams and layers, cobbles and boulders  7 DO 24  7 DO 34  8 DO 34  8 DO 34  8 DO 34  9  10			_	<del>  _</del>	100		F	1	1				$\dashv$			$\Box$	7	1	7	7	1	7	1	$\perp$		
sandy, a trace of gravel gray occ. wet sand and sit seams and layers, cobbles and boulders  7 DO 24  7 DO 34  8 DO 34  8 DO 34  8 DO 34  9  10							E		<u> </u>				廿					$\perp$	_		$\exists$		1	$\perp$		
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### LOG OF BOREHOLE NO: 10-60 FIGURE NO: 60

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 12, 2010

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284.1	Grey, compact SILT					П			П			1		4	$\exists$	1	$\bot$	二	$\square$			
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i I	END OF BOREHOLE						+	$\vdash$	H	+	+	╁	$\vdash$	$\dashv$	$\dashv$	$\dashv$	╫	╄╌	╀╌┨	-	+	
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### LOG OF MON. WELL NO: 10-61 FIGURE NO: 61

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

DATE: September 3, 2010

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Depth Elev. (m)	SOIL DESCRIPTION	Number	Туре	N-Value	Depth Scale (m)	$\mid$	0	enei	10 rati (blo	ion F	150 Resi 0.3n	istar n)	200 200			•!			Cor		<u>↓</u> -(%)	7		WATER LEVEL
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	Stiff to hard	1	DO	15		L	0	1				1					3				+		1	
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	SILTY CLAY, TIII				1					1	1						2							
	sandy, a trace of gravel	3	DO	32	2.				+	1	1													Ę
	occ. wet sand and silt seams and layers, cobbles and boulders	4	DO	1004	-				1	1	1	1				10					+			mpletic
	<u>brown</u> grey	5	DO	44	3.	<del> </del>		$\frac{1}{1}$		5	$\mp$					1	2				-			El. 260.8 m on completion
3.8 262.2	Grey, stiff to hard								1	-			H								1			1. 260.8
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	SILTY CLAY	7	DO	15	5 _		0	#	1		#	+					1	9		T				
	traces of sand and gravel occ. wet sand and silt seams and layers	8	DO	72				+		+	+	b			$\dashv$	+	+	21			+			⊻
6.0			<del> </del>	-			H	$\dashv$	7	7	Ţ	Ŧ		П		1	I		П			口		
260.0	Brown, very dense SILTY FINE SAND a trace of clay	9	DO	54	6.			#	+	<u> </u>	)	+				+	15							
6.7 259.3	occ. silt seams and layers END OF BOREHOLE				7_																+			
	Installed 50 mm Ø monitoring well to 6.0 m 1.5 m screen covered with geomembrane Sand backfill from 4.0 to 6.0 m					1		+	‡	+	+	-	-				+				-			
:	Bentonite seal from 0.3 to 4.0 m Provided with a steel protective casing				8_				-	1						1					+			
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	~ <del>*</del>				9_			1		1	‡					1	L			$\exists$				
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## LOG OF MON. WELL NO: 10-62 FIGURE NO: 62A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Sterm

DATE: September 2, 2010

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Depth Elev.	SOIL DESCRIPTION	Į.		e e	Depth Scale (m)		50	)	(k) 100	Vm2	2) 50	200				PL  -				u T			WATER I EVE
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263,8	36 cm TOPSOIL		T		1 "	†	П	Т	T	T			_	✝	Г	4	1	1	Т	T	_	- П	7
	Brown, stiff to hard	1	DO	14	]	E	0	+	-	Ŧ				F		4		+	-	1	1		E
	w <u>eathered</u> SILTY CLAY, Till	2	ро	34	1.	-		C	7							1							
	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders	3	DO	21	2.		•									14							
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260.8	Brown, very dense			-	3.	1	⊢┼	- -	+	$\vdash$	$oxed{\sqcup}$	+	+	$\vdash$	$\sqcup$	$\perp$	-	$\perp$	П	丁	$\perp$		
3.8 260.0	SANDY SILT a trace to some clay a trace of gravel occ. sifty fine sand layers	5	DO	78								4				14		-					
	Grey, hard	6	DO	76	4.		$\Box$		1			0									工		
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	SILTY CLAY, TIII	8	DO	80								•			9								255.9 m on completion
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	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders				7			-							$\exists$	1							W.i.
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9.1					9	$\vdash$	+	+		H	$\dashv$	+	1	$\vdash$	$\dashv$	_[_	+	-	П	Ŧ	П		
54.7	Grey, very dense	11	DO	70		H	1	-	+		7	#			+	+	19	L		#			
	SANDY SILT a trace to some clay				-	H	+		H		Ĭ	1			7	+	1	H	耳	+			
10.4	a trace of gravel occ. silty fine sand layers				10_						1												
53.4	Grey, hard SILTY CLAY, Till						$\downarrow$	-			1	+			$\dashv$	+					$\Box$		
11.0	Cont'd on Fig. 62B	12		54	11	┝╼┼	-	╅━	+	d	+	-	<b>↓</b>	-	10	-		┡	1		$oldsymbol{\sqcup}$		



### LOG OF MON. WELL NO: 10-62 FIGURE NO: 62B

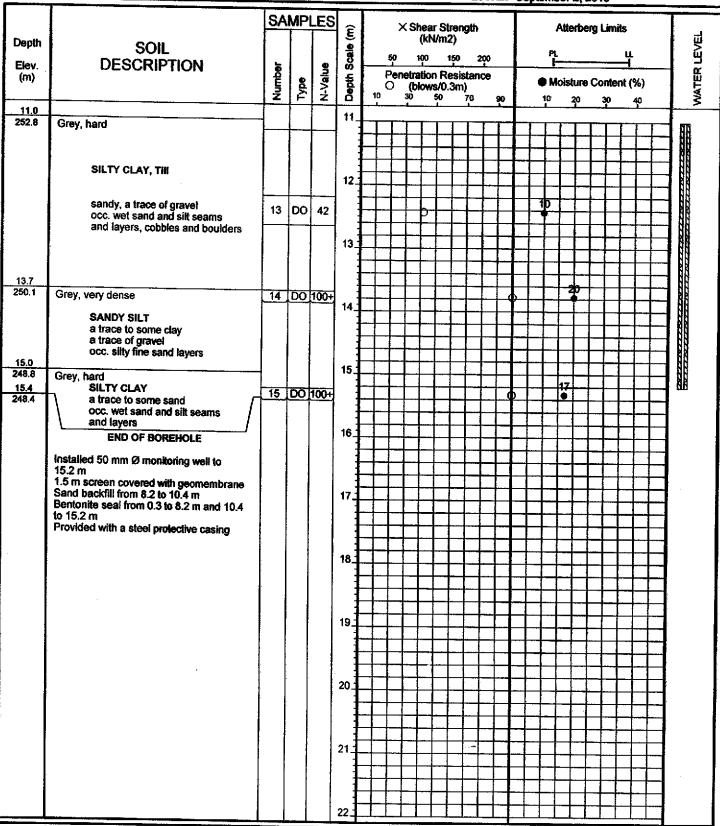
JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

**METHOD OF BORING: Hollow-Stern** 

DATE: September 2, 2010





## LOG OF MON. WELL NO: 10-63 FIGURE NO: 63A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

DATE: September 17, 2010

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\""		Number	ğ	>	흥		10 C	) ;	(bk	) 50	10.34 0	m) 70		90			P IMIC IO				tent	(%)			T &
0.0	Ground Surface		<del>                                     </del>	┢▔	0	†	-	_	·			<u></u> `		30	┢		<u>.                                    </u>	20		30		Ţ,		-	<u> </u>
263.6	20 cm TOPSOIL Brown, stiff to hard				1 .	L	I				1	I	I						1	I	I	Τ	T	ſ	7
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	sandy, a trace of gravel occ. wet sand and sit seams	3	DO	55		₽					d	+	╁	+	┢	$\vdash$	-1	5	$\dashv$	+	+	╀	$\vdash$		
	and layers, cobbles and boulders			-	2.	L						1	1	1					1	#	1	I			i i
2.3 261.3	Brown, stiff					╊	╁┤	Н	$\dashv$	$\dashv$	+	╁	+	┿	╂	$\vdash$	$\dashv$	$\dashv$	+	+	╁	╀	╁┈┤	ğ	j
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	<b>a trace t</b>					上			$\exists$	+	$\pm$	$\dagger$	十	┿	<del> </del>	Н	$\vdash$	$\dashv$	+	╁	+	┿	$\vdash$		
	a trace to some sand occ. wet sand and silt seams					lacksquare		$\Box$	$\neg$	4		1	1	T					7	#	ļ				•
	and layers				4.				1	$\pm$	+	╁	╁	╁			$\dashv$	$\dashv$	+	╅	+	╁	$\vdash$		3
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259.0	Grey, hard	6	DO	53							$\pm$		+	士			12	+	+	+	+	+	Н		
				55	5 _	1_	Н	_		_[	7	L	$\bot$				•		1	1	Ţ	F	П		
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						┢	$\vdash$		-	+	+	1	+	+	<u> </u>	Н	-	_	$\perp$	Ŧ	4	$\bot$	П		Ş Ş
1					6					士	1	1							$\pm$	士					Ē
:	SILTY CLAY, TIII	7	00	72		1	H		$\dashv$	+	+	Ь	╀	-	┞		}	4	-	+	+	-	Н		ğ
						L			$\exists$	$\perp$	1	#	士						1	1	土				E
					7	┢	Н		$\dashv$	+	+	╀	+	-	L	H	-+	+	+	+	+	╂	$\square$		2.5
					1				#		#	1	1				$\exists$	士	士	1				░	El. 254.5 m on completion
	sandy, a trace of gravel occ. wet sand and silt seams					┡	H	-	┥	$\dashv$	+	+	╀	╀	┝┈		$\dashv$	+	+	+	+	╀	┦╌┨	88	(8)
	and layers, cobbles and boulders	8	DO	100+	:		П		1	1	1	1	1			8			1	#	土				N.L
					8 -	┨	H	$\dashv$	+	+	+	╁	+	╁		$\vdash$	$\dashv$	+	+	+	+	╁	$oldsymbol{H}$		
<b>[</b>							П	$\Box$	4	#	1	1	1	<u> </u>			耳	#	#	1			口	10	
			ŀ			1	H	$\dashv$	+	+	+	╁	╁	┼-		$\dashv$		+	╀	╁	+	╁	$oldsymbol{ec{ec{ec{ec{ec{ec{ec{ec{ec{ec$		
					9 _				1	1	#	1	1					_	1	丰	1		口		V
ĺ		9	DO	91		L	H	_	$\dashv$	+	+	+	+	6		9	+	+	+	+	+	+	H		*
į	}							_	1	7	1	1.	Į	Ľ		耳	耳	1		1	丰		口		
		ŀ			10_			_	_		_	+	+	-	$\vdash$		$\dashv$	+	+	+	+	╁	Н		
10.4								$\blacksquare$	4	7	Ţ	Ţ	F			$\Box$	1	1	1	1	T	T	口		. !
	Grey, dense	ļ						_	$\pm$	_	+	+	+	-	$\vdash$	-	$\dashv$	+	+	+	+	+	H		
11.0	FINE SAND Cont'd on Fig. 63B	10	DO	32	: قىيى		$\Box$	$\dashv$	$\exists$	1	1	Ŧ	F	F		_		20	#	1	T	1			J
		ΙV	<u>.</u>	32	11_		ᆜ					느	<u></u>	Ш	닏			_	<u> </u>				니	UU	



# LOG OF MON. WELL NO: 10-63 FIGURE N O: 63B

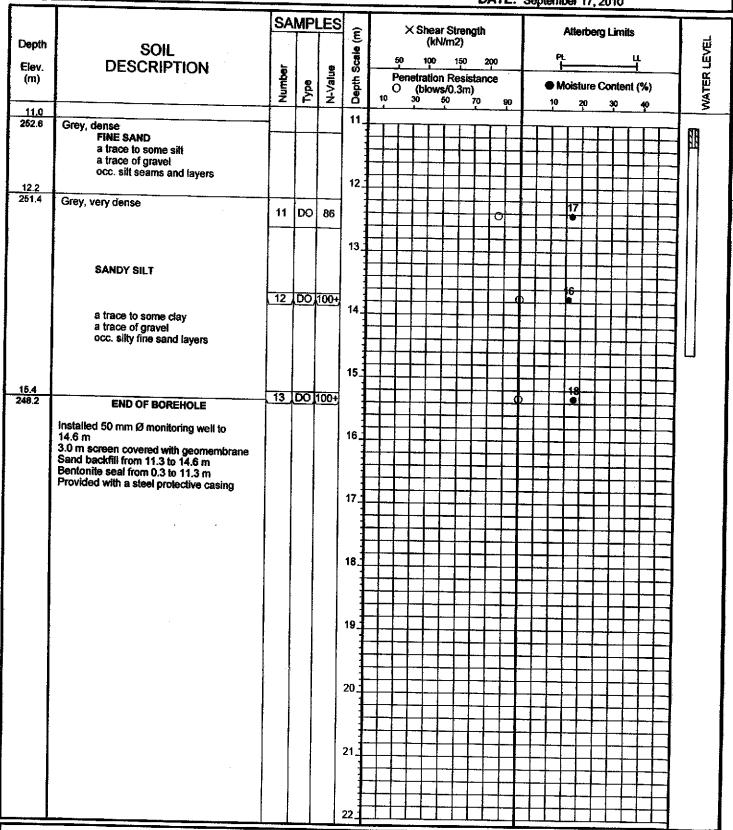
JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Ste m

DATE: September 17, 2010





## LOG OF MON. WELL NO: 10-64 FIGURE NO: 64

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Sterm

**DATE:** August 16, 2010

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Depth	SOIL	1	ŀ		Depth Scale (m)		50	1	(ki	Wm:	2) 150	,	•••	İ		e	L			i.	Ţ			WATER LEVEL
Elev. (m)	DESCRIPTION	Number		N-Value	မ္	$\vdash$	Pe	enei	ratio	ın R	esis	tand	00 00	1					^	itent	<u> </u>			F
		Ž	1,70 80,71	Ž			. O	30	blov	vs/0. 50		70	\$			10		20 20	JOI1		(76) 40			WAT
0.0 252.0	Ground Surface 30 cm TOPSOIL				0	I						<u>.                                    </u>						·					<u> </u>	
	Stiff to hard	1	DO	16		╊	0	-	+	╁╌	╀	Ͱ	Н		+	+	4-	┦┤		+	+			]
			_	<u> </u>	-	F		1	1	Ŧ					1	#				丰	丰			
ć	weathered	2	DO	16	1.		0		$\pm$	$\pm$					1	1	3			+	+	$\vdash$		}
		<u> </u>			+	╀	H	$\dashv$	╁	╁	-			$\dashv$	+	+	-	H		+	-			
		3	DO	44	1	F		1						1	#	1	ļ			#				
		Ľ	100	44	2				<u> </u> c	1				1	士	ľ	-			+	╁			
	SILTY CLAY, TIII		<u> </u>	ļ	]	₽	┞┼	╁	+	╀	$\vdash$	-	$\vdash \dashv$	-	+	-	$\vdash$	H	-	$\perp$	F			
		4	DO	53		F	П	7	1	0.				1	1	<b>!</b>	F		1	#	‡	口		
					3.	上			土	上					$\pm$	$\pm$			_	+	+	$\vdash$		
	_ brown	5	DO	56		╄	H	+	+	╆	$\vdash$		$\dashv$		+	T	-	Н	4	_	$\top$	П	ı	
	grey			<del>                                     </del>				1	1	1			$\exists$	#	#	1			ightharpoons	1				
	sandy, a trace of gravel				4.				土					+	+	+			╅	╫	+			<u></u>
	occ. wet sand and sift seams and layers, cobbles and boulders						H	+	+	$\vdash$			$\dashv$	4	-	Ŧ		$\Box$	$\dashv$					) etto
	and bounders		ļ					1	#	上				1	#								П	E O
		6	Ю	35	5 _			+	十	上		$\dashv$	$\dashv$	$\pm$	╁	TU T	-	H	$\dashv$	+	+			Dry on completion
						$\square$		+	$\bot$	╀	$\square$	$\dashv$	4	4	Ŧ	F		$\dashv$		1	1			Š .
					:		4	1	ļ	上			コ	1	丰			〓	#	1				
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		7	DO	66		Н	$\dashv$	7	+	-	H		-	-	Ŧ	10		$\Box$	1	#	H			
6.6 245.4	END OF BOREHOLE		ω	00				丰	丰	L	9	コ	1	#				$\exists$	$\pm$	$\pm$	Ħ			
					7		$\perp$	$\pm$	$\pm$				_	+	╁	╁╌	Н	+	+	+	+	_		
	installed 50 mm Ø monitoring well to 6.0 m 1.5 m screen covered with geomembrane				:	Н	_	+	+	-		$\neg$	$\dashv$		Ŧ	F			7	-	П			
	Bentonite seal from 0.3 to 4.3 m				:		1	#	丰				#	#	#	上			#	#		ゴ		
	Provided with a steel protective casing				8 -		+		+	$\vdash$		$\dashv$	$\dashv$	+	┿	╀	Н	+	+	+	+	$\dashv$		
						H	$\overline{+}$	+	+	П		$\neg$	-	1		F		7	1	1				
							$\downarrow$	丰	$\perp$				$\pm$	1	土			1	$\pm$		$\Box$	$\exists$		
					9 _		+	+	+	$\vdash$	$\vdash$	$\dashv$	$\dashv$	╁	╁	$\vdash$	H	+	+	+	H	-		ł
					-			1	1.			1	$\dashv$	1	1			1	1	1	П			
	·						$\downarrow$	1	士			1	$\pm$	1	士	L		$\pm$	$\pm$	上	$\Box$	$\exists$		
					10_	H	+	+	+	Н	$\dashv$	$\dashv$	+	+	+		ert		+	-	$\vdash$	$\exists$		
		ļ			.,,	П	#	#	F		1	_	丰	1	1		口		1	1	Ħ	$\exists$		
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					''-					_				土	٠	_			<u> </u>		<u>l</u>	ᆂ		



### LOG OF MON. WELL NO: 10-65 FIGURE NO: 65A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Sterm

**DATE:** August 17, 2010

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ŀ		SA	MP	LES	Ê		:	X SI	hear (kN	Str	engi	ih.				A	\tte	ben	نا و	mits				
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)	14	0	netra	150	Re	o sista	200 ance				PL F- Mc		ire (	Con 30	tent	<u> </u>			WATER LEVEL
0.0	Ground Surface	▎▔	⇈		0.	+-				ł				┢	-	<u> </u>		<u>-</u>	_~~		<u>. T.</u>		┢	
253.0	18 cm TOPSOIL	1	DO	8		q							-	-	1	0					-			
	weathered_	2	DO	31	1.			0								1								
:		3	DO	31	2.			•								13								
	<u>brown</u> grey	4	DO	33	3_			6						E		<u> </u>								El. 245.2 m on completion
	SILTY CLAY, TIII	5	DO	46	J _				0			 			8		F						2007	Z 24 C. Z 25
		6	ВО	34	4			0								12 ●							*********	
	sandy, a trace of gravel	7	DO	34	5_			0				+				12							-	pletion
	occ. wet sand and silt seams and layers, cobbles and boulders	8	ю	32	6			b					+			12							2000	m on com
		9	DO	24			0									12 •								El. 245.2
					7																			W.L. @ 1
		10	DO	32	8 _			D D									17 •		-				ı nı	n i
9.1				,	9																			
243.9	Grey, compact SANDY SILT a trace to some clay a trace of gravel	11	DO	25			- c					+					2	7					7	
	occ. silty fine sand layers				10				F		1	7	$\pm$			1		7	7	#	1			
10.4 242.8	Grey, compact							1			4	1	$\bot$	$\Box$		_]	$\exists$		1		1			
11.0	SiLTY FINE SAND Cont'd on Fig. 65B	i			11_		+		H	1	+	+	‡					22	+	+				
		<u></u>				<u> </u>	<del>)</del>				_							•				ᅼ	, L	



### LOG OF MON. WELL NO: 10-65 FIGURE NO: 65B

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

DATE: August 17, 2010

		SA	MPI	ES	_	T	-	<u> </u>	e.		C	-		IE.	Ī	<i>a</i>		_	ber		in 2			Ţ	<del></del>
Depth	SOIL				Depth Scale (m)			^	) (	kN/	m2)							we	ne!	y L					WATER LEVEL
Elev.	DESCRIPTION	<b>_</b>		9	SS	-		0		DO Linna	15 Doz	o sista	200		-		PL.					<u>ц</u>		-	兴 ()
(m)		Number	Type	N-Value	g g	1	, C	) -	(bk	DWS/ 5	10.3	81548 m) 70										ŧ (%)	)		/ATE
11.0		["			11.	+	<u> </u>		ĩ	<u>~</u>	_			90	┢		10		22	3		- 10		1	5
242.0	Grey, compact	12	DO	14		Ŧ	P		_	П	$\dashv$	1	4	$\bot$	F			_			П	7	Ŧ		
	SILTY FINE SAND a trace of clay					1			Ħ		#	1	#	1								#	1		
	occ. silt seams and layers				12_	1					$\exists$	1	1	$\pm$	L							$\perp$	土	叫上	
12.2 240.8	Grey, compact					1					$\dashv$	+	+	+	┞			19		Н	Н	$\dashv$	╁	-	
	FINE SAND	13	DO	11		F	0				$\dashv$		+	$\perp$				•				1		]   [	
	a trace to some silt a trace of gravel				13_	‡					1	1	1	1								1	1		
	occ. sitt seams and layers					ŧ					$\Rightarrow$	#	#	#	L							1	1	111	
13.7 239.3	Grey, compact	<u> </u>				1					$\pm$	士	$\pm$	$\pm$								$\pm$	土	<u> </u>	
	· · · · · · · · · · · · · · · · · · ·	14	ю	29	14.	╁	+	H			$\dashv$	+	+	+	╀						$\dashv$	$\dashv$	+	]	
	SILT					F	1				7	7	7	#	F			$\equiv$			4	$\dashv$	-	111	
	traces to some sand and clay a trace of gravel					‡					1	#	#	#							1	#		1	
	occ. sand seams and layers	L.	<u></u>		15_	t					$\exists$	1	1	$\pm$								士	土	<b>.</b>	ł
		15	00	10		Ł	6				$\dashv$	+	+	+	-		Н	-19	Н		-	┽	╀	-	
15.8 237.2	END OF BOREHOLE				16_	F					4	$\mp$	$\dashv$	-	F		Н				$\dashv$	7	Ŧ	-	
	Installed 50 mm Ø monitoring well to					1					1	7	7	1	F			$\exists$			$\dashv$	1		1	
	15.2 m 3.0 m screen covered with geomembrane Sand backfill from 11.9 to 15.2 m				:	‡					#	#	#	1	Ш							#	1	1	
	Bentonite seal from 0.3 to 11.9 m				17	ł								$\pm$								$\pm$	$\pm$	}	
	Provided with a steel protective casing				:	1		-			$\dashv$	+	+	╫	╂╌	$\vdash$	Н		╢		-	+	╁	-	
						F					1	7	7	7	F		П		$\Box$		$\dashv$	1		7	
					18	1					1	1	#	#								#	1	1	
	•					t					1	#	1	1				_			$\exists$	1	土		
						1					$\dashv$	+	+	+	┢	H	Н	_			$\dashv$	+	+	┨	
					19	1	-	T			$\dashv$	7	+	7	F	$\Box$						$\mp$	Ŧ	-	
						F	$\blacksquare$	$\equiv$			7	#	1	1							$\exists$	1	#	1	
						<u></u>					1	$\perp$	$\downarrow$									1		1	
					20.	1				$\Box$	$\exists$	$\pm$	$\pm$	+			Ы						$\pm$	1	
			[			F			$\Box$	$\dashv$	$\dashv$	Ŧ	Ŧ		F		П		П	$\Box$	$\Box$	$\dashv$	-	1	
						1					1	1	#	#			H		口	口		#	1	1	
					21 <u>.</u>	1					_	士	1	$\pm$	L							1	土	1	- }
						1		Н		$\exists$	_	$\pm$	$\pm$	$\pm$	H						_	_	+	}	
					22	F	+		$\dashv$	$\dashv$	$\dashv$	-	Ŧ		F						7	7	-	1	j
		•	L		22.	1								L	-		<u> </u>				1			1	



## LOG OF MON. WELL NO: 10-66 FIGURE NO: 66A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stem

DATE: September 14, 2010

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		SA	MP	LES	Ê			×ε	Shea	er St	reng	th				٨	llerb	xerg	Lim	its		T	
Depth Elev. (m)	SOIL DESCRIPTION	Number		N-Value	Depth Scale (			enete	100 ratio	n Re	50 eaist			-	_	PL 	into o		· ·	- <u>L</u>	<u> </u>		WATER LEVEL
()		N S	Š	Ž	8	1	,0	(I 30		/S/0.2 50		O	90	ŀ		0	154UI 20		30 -		•) (0		WAT
0.0 264.3	Ground Surface				0	L				<del></del>												士.	
207.0	20 cm TOPSOIL Brown, loose to dense	1	00	9												#		$\pm$		+		-	3
	FINE SAND weathered	2	DO	30	1.			•		-							5	+	-	_			
	a trace to some silt a trace of gravel	3	DO	38					d				1	-			7	-	-				
	occ. silt seams and layers.				2.											1			1				
3.0		4	DO	32	3.			þ					#	F									고
261.3	Brown, very stiff SILTY CLAY, Till	5	DO	30	<b>3</b> ,			•				#	#	ŧ			8		‡				
	sandy, a trace of gravel occ. wet sand and sift seams and layers, cobbles and boulders				4.											1	+	+	‡			- - -	oletion
4.6 259.7						H	7	+	+	-	$\Box$	+	Ŧ	F		7	+	7	Ŧ			7	om Som
204./	Brown, very dense  SANDY SILT a trace to some clay a trace of gravel	6	DO	100+	5.									0									El. 261.9 m on completion ∤⊲
6.0	occ. silty fine sand layers				6		+	+	+				<u></u>	F		+	‡	+	‡		#		Ne)
258.3	Brown, very dense	7	00	67				1	1		9		+	E		1	7	-					и <
	FINE TO MEDIUM SAND traces of sit and gravet occ. sit seams and layers				7.		#		1				+					+	Ė				
7.6 256.7								1									<b>+</b>					18	
254,,	Brown, very dense SILTY FINE SAND a trace of clay	8	DO	100+	8		$\frac{1}{1}$	$\frac{1}{2}$				<u> </u>		_		+	Ť		-				
	occ. sift seams and layers							-								1		F					7
9.1 255.2	Brown, very dense			_	9		-	$oldsymbol{\Gamma}$	F						-	-	18	Ŧ	-	H	+		
	SANDY SILT a trace to some clay a trace of gravel	9	DO	54						0		-		F			•	+	F		+		
10.4	occ. silty fine sand layers				10_		1	1								1	1						
253.9 11.0	Brown, very dense FINE TO MEDIUM SAND Cont'd on Fig. 66B	10	DO	63			#		L		0	1	+			+	21				‡		
		וטו	טט	03	11.				<u>_</u>		<u> </u>			<u> </u>	<u> </u>							1 8	1



### LOG OF MON. WELL NO: 10-66 FIGURE NO: 66B

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

DATE: September 14, 2010

		7			<del></del>						~	op IO	mber	17, 4	2010			
		SA	MP	LES	E		X Sh	ear St	rengti	)			Atte	erber	g Lim	iits		
Depth	SOIL				Depth Scale (m)	50		(kNVm2 po 1	•	200			PL			ų.		ĒVĒ
Elev. (m)	DESCRIPTION	8		3	8	Pe	enetra	tion Re	esista		+		مندارا	le see 4	٠			FR
L''''		Number	<u>₹</u>	N-Value	o o	10 0	30 30	0 <b>ws/0</b> . 50	3m) 70	9				ture ( 20	SONTE 30	ent (%) 40	-	WATER LEVEL
11.0 253.3	Dense				11.					i	1			1		<u></u>		
200.0	Dense		T	<del> </del>	1		+		╁┼	+	+	+		+ 1		╂╂	-	1 111
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					12_		1				1							
		11	DO	49									11		士			
		H	-					+	++	+	+		-	+		+	+	
	FINE TO MEDIUM SAND				13_													
									H	$\Box$	#				#			
		-	<u> </u>	-							士		17		$\pm$	<del>     </del>		
		12	DO	31	14_		P		H	+	+	+1	-   -	H		H	+	
<b>i</b> .				ł			+			+	-	$\blacksquare$	-	П	-	$\prod$		
	traces of silt and grave! occ. silt seams and layers									$\Box$	1	11		Ħ	1			
		<u> </u>			15_								١.,					
		13	DO	37			-0					╂╢		0	+	++	+	
					16		$\blacksquare$					$\square$			-			
											1		1		$\bot$			
16.8																		
247.5	Grey, dense to very dense	14	DO	36	17		$\pm$	+		H	+	+	18	H	+	╁┼	+	
			100	30	] :	$\vdash$	10	+	H	+			-	П	-	H	$\perp$	
	FINE SAND							1			1	Ħ						
					18_						1						口	
	a trace to some silt a trace of gravel	15	DC	100+	:				士	╁╅	$\pm$		18		╁			
	occ. silt seams and layers	<del>  "</del>		100+	] :		+	-		$\prod$	7	$\prod$	T	H	$\mp$	H	$\square$	
19.2					19_		$\Box$			$\Box$	1	H	17	H	1			
245.1	Grey, very dense	16	DO	100+			$\pm 1$		口		•		17		$\pm$		丗	
	•							+	oxdot		$\pm$				<u> </u>		┪	8 8
	FINE TO MEDIUM SAND				20_		+		$oxed{F}$	H	-	H	$-\Gamma$	H			$\square$	
	traces of sill and success							$\bot$	H	-	1				‡-		11	
}	traces of silt and gravel occ. silt seams and layers							1	上		$\pm$			廿	$\pm$	11	廿	
21.3					21_						_			$\vdash \vdash$	_		+	
243.0	Grey, compact SILTY FINE SAND	17	DO	19			$\prod$			П	F		17		1	H	$\prod$	
22.0	Cont'd on Fig. 66C	<u> </u>	-	-	. :				1						1		#1	
				<u> </u>	22_					<u>i l</u>	_	<u> </u>					1	



# LOG OF MON. WELL NO: 10-66 FIGURE NO: 660

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

DATE: September 14, 2010

														96	Plot	nbe	1 1-	, 4	710				
		SA	MP	LES	Ê		>	× SI	near	Stre	ength	1				At	terb	erg	Lim	its			<u>4</u>
Depth	SOIL				] ē											DI DI				,,			Š
Elev.	DESCRIPTION	5		9	Depth Scale (m)	<u> </u>	50 Do-		100	15		200		<u> </u>		PL  -				-		_	WATER LEVEL
(m)		Number	- Ap	N-Value	Į ģ		0	ietra (b)	ition lows	Kes (0.3)	istar m)	108			•	Moi	stur	e C	onte	ent (9	6)	Į	Ě
<u> </u>		<del>Ž</del>	15	Ż	8	10	•	30	5	0	70		90	L	10	0	20		30	4	0		_ ≸
22.0 242.3	Grey, compact to very dense	-			22	┨.,	- <del>,</del>	1	Т-	-			, -	Ĺ,									
	or of the section of the section					$\mathbf{H}$	+	╂	╀┤		+	╁	╁	┞╌		+	+	╀	╁	+			
]						口		T		耳	丰	I			$\Box$	丰	1	士				J	
		<u> </u>	_	<u> </u>	23	1	+	╀	$\vdash$	+	+	╀	$\vdash$		$\dashv$	+	+	+	╆	+		_	
		18	DO	28	23	$\Box$	1	丰				丰		口			1	士	士			_	
; ;	·		┼		1	1		╂-			+	╀	-		$\dashv$	_	$\bot$	$\bot$	Ļ			7	
<b>]</b>								上		士	土	$\perp$			$\exists$	$\pm$	士	+	+	H	+	-	
					24.	1	$\perp$	1	H	$\bot$	$\bot$	F	$\Box$	П	$\dashv$	7	T	T	I	П		]	
					]	廿	土	上		十	+	$\perp$	$\vdash$	H	_	+	+	+	+-	╁┤	+	-	
		19	DO	33	-	<b>1</b>	$\bot$	6	П	7	Ţ	L	Щ	П	1	1	21	1	L	П	丰	]	terri
	SILTY FINE SAND	-			25	$\coprod$	+	1	╢	$\dashv$	+	+		Н	$\dashv$		f	+	╁	╀┦	+	-	
			-			口	1			1	Ŧ	L			1	#	1	I	工			1	
						1+	╁	╁	H	$\dashv$	- -	╀╴	Н	$\dashv$	+	٠	╀	╀	╀	$\mathbb{H}$	+		
									$\Box$						ユ		1				土		
		20	DO	26	26.	1		+-	H		+	╁	Н	$\vdash \downarrow$	4	4	21	+	$\vdash$	┨┩	$\bot$	-	
		<u> </u>	<u> </u>		-	廿	工			1	士		Н	Ħ	士	士		$\pm$	$\pm$	士		1	
						┨╌┤	+	-	$\prod$	$\perp$	+-	$\vdash$	П	$\Box$	7	Ţ	-	T	F		$\perp$	7	
	a trace of clay occ. silt seams and layers				27.					士	_	$\perp$		$\exists$	$\dashv$	$\dashv$	+	+	╁	H	+	$\exists$	
ļ <b>i</b>	occ. silt seams and layers					$oldsymbol{\Pi}$	$\perp$		П	Ţ	$\bot$			$\Box$	4	1	Ţ	T	ļ	口		7	
		21	DO	100+			+-	╁	$\vdash \vdash$	$\dashv$	+	+	⊣	H	+	+	<del>2</del> 0	+	+	╂╌╉	+	-	
							T	П	П		1			耳	コ		1	1		口	丰	1	
					28.	$\Box$	_	$\vdash$	H	-	+	╁	Н	$\dashv$	+	+	+	╁	-	$\vdash$	+	-	ĺ
									П	1	1				1	1	上	1			士		
	•					₩	+	Н	${oldsymbol{dash}}$	+	+	╄	dash	+	+	+	+	+	-	<del> </del>	+	-	
		<u> </u>			29		丰	口	口						士	$\pm$			上	廿	士	1	
		22	DO	91		╀	+	$\vdash$	$\dashv$	+	+	Н	,	1	4	$\perp$	<b>2</b> 0	F	lacksquare	$\Box$	Ţ	1	
				_			上	H	╛	士	1			$\exists$	_	+	+	+	+-	H	+	1	
30.0					-	$\prod$	1	П	1	$\bot$	1			1	$\dashv$	Ŧ	I	T	L	П			į
234.3	Grey, very dense FINE TO MEDIUM SAND				30_		1	$\vdash$	$oxed{oxed}$	+	+	H	$\dashv$	$\dashv$	+	+	+	╁	$\vdash$	$\vdash +$	+	1	
	traces of silt and gravel					П	T	П	П	1	$\bot$			$\dashv$	1	1	I	上				1	
30.9	occ. silt seams and layers	23	DO	92		╟┼	+	Н	$\dashv$	-	╫	Н	5	$\dashv$	+	+1	9	╀	H	H	+	-	
233.4	END OF BOREHOLE		-	-	31_	口				1		Ħ		$\bot$	士			t			士	1	
1	Installed 50 mm Ø monitoring well to						+-	$\vdash \vdash$	$\dashv$	+	+	$\vdash$	$\sqcup$	+	+	- -	$\perp$	1	H	H	- -	4	l
. ]	24.4 m					廿			$\exists$		上	Ħ		士	士	士	1	$\perp$		H	_	1	
ł	3.0 m screen covered with geomembrane Sand backfill from 21.0 to 24.4 m				22	$\vdash$	+	$\prod$	1	1	$\perp$		4	7	T	T	F	L			1	1	
	Bentonite seal from 0.3 to 21.0 m				32_		$\pm$	H	-	+	+	Н	寸	+	+	+	H	╁	H	-	+	1	
ŀ	Provided with a steel protective casing				1		T	П		1	1	П	1		$\downarrow$	ļ	ፗ	上			丰	1	i
Į						╟┼	+	H	+	+	+-	$\vdash$	-	+	+	+	┼	+		$\vdash$	- -	1	
			Ī		33_		1		丄	上				土	1	土	上		Ш		士	1	l
										_	=			=	_		=					<u> </u>	



## LOG OF MON. WELL NO: 10-67 FIGURE NO: 67

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 26, 2010

		SA	MP	LES		T			· C·		· ^·		-		Ť									T	
Depth	604			T	Depth Scale (m)			X	. Sh	ear (kN	Sti /m2	reng !)	ŗth					Atte	enbei	rg L	imits	•			ᆏ
Elev.	SOIL DESCRIPTION	_			👸			50	1	00	1	50	20	90			P	<u> </u>				<u> </u>			ğ
(m)	DEGOKII HON	Number	-dy	N-Value	氰			'eni	etra (hi	tion	Re	sisi 3m)	anc	æ	T		• 1	lois	lure	Co	nteni	i (%)			WATER LEVEL
		Ž	E	Ź	<del> </del>	┸	10		30		50		o	9	,		10		20·	3	0	40	·	L	<b>≸</b>
<u>0.0</u> 283.1	Ground Surface 30 cm TOPSOIL		-	-	0	╀	Т	Γ-	Г	Ţ	Γ	1			$\dashv$	_	14.	, T	1	1	П	-r	Т	┨,	_
	Brown, very stiff to hard	1	DO	19	Ì	F	3		F				П		1	1	1		上			1	丰	1	112
	• 		ļ		1	t									1	1	$\pm$	1				_	上	1	
l	weathered	2	DO	18	1.	╀	+	┝	-	-			Н	$\vdash$	+	+	+	11	<b>}</b>	$\vdash$	${\mathbb H}$	+		1	
					]	F				_						7	1	$\bot$	F			1		1	
		3	DO	13		Į	þ.								#	$\pm$	12	<u> </u>							
					2.	L								_	1	+	╀	+				╅	╀		77
	SILTY CLAY, TIII	4	00	25	1	╀	╀	0				Н		$\dashv$	4	+	1	3			$\Box$				
		-	ļ_	<u> </u>		F	1	Ĭ				Ц			#	#	<b> </b>	1	П			#			W.L. @ El. 277.3 m on completion
		5	00	43	3	Ł				_					士	1	10	1				t	$\pm$	1	dion
	i	_	-	_	1	╀			_	9		H	$\dashv$	$\dashv$	╁	+	╀		Н		$\dashv$	+	+		a de
					4	$\vdash$	$\vdash$			Ш			$\dashv$	_	1	1		-			4	1	1		8
	sandy, a trace of gravel occ. wet sand and silt seams				4 -	t							ゴ	_	1	1	1							1	Ē
	and layers, cobbies and boulders					L	<del> </del>						_	_	+	+	╁	-	Н		$\dashv$	╬	+	H	27.
		6	DO	100+	5_	F	$\perp$								φ	7	<b>—</b>	F	П			1			iii
					3								口	1	#	丰	1					$^{\dagger}$			(B)
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i					6 .	╄				_		-	$\dashv$	+	+	+		-			-	-	$\Box$	L	ĪΔ
6.3 276.8		7	DO	100+	٠		П					$\dashv$	$\exists$	7	φ	1	12	1				1	1		
2/0.5	END OF BOREHOLE												1	$\pm$		士	上					士	土		
	Installed 50 mm Ø monitoring well to 5.8 m 1.5 m screen covered with geomembrane Sand backfill from 4.0 to 5.8 m				7	1	H	-				-	$\dashv$	+	╁	╁	╀	╀╌	H	-	+	+	┿		
	Demonre seal from 0.3 to 4.0 m					$\vdash$						_	7	7	1	1	1	F				7	$\bot$		
ŀ	Provided with a steel protective casing										_		$\exists$		1	#	丰				#	#			
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] ]	:					╀			$\dashv$		$\dashv$	$\dashv$	$\dashv$	7	-	-	+	<del> -</del> -	Н	-	$\perp$	Ŧ	$\Box$		
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	ĺ				10					$\exists$		$\exists$		$\pm$	1	1	$^{\dagger}$	$\vdash$	$\exists$	_	$\pm$	$\pm$			
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				j	11							士	1	1	1	$\pm$					土	上	$\perp$		l



# LOG OF MON. WELL NO: 10-68 FIGURE NO: 68A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

**DATE:** August 18, 2010

		SA	MP	LES	3 _	T		\.	, Cr		Ch.				T			A 24.			las*s			Т	
Depth	SOIL		T	T	Depth Scale (m)			×	. on	ear (kN	out m2)	engt	n				•	<b>Atte</b>	rbei	g L	imits	<b>;</b>			Ą
Elev.	DESCRIPTION	Ļ			Į			50		00	15		200				PL  -					4			WATER LEVEL
(m)	Jacob Million	Number	9	N-Value	\ <del>\f</del>		F	en O	etrai	tion	Re	sista	nce		Τ		D M	oist	ure	Cor	ntent	(%)		1	띮
		Ž	Ę Š	Įź	්		10		30	OW8.	0	70		90			10		<b>2</b> 0		Q.	40			≸
0.0 283.0	Ground Surface 20 cm TOPSOIL	_		-	_ 0	1	_	_	,						L		_							T.	
	Brown, firm to hard	1	DO	14		1	0	$\vdash$	Н	Н	$\dashv$	+	+	+	╀	╀	1	-	Н	Н	$\dashv$	+	╁	1	
	: :	<u> </u>	┞		4	I		L				1	1		T	1						土	上		Dry on completion
	w <u>eathere</u> d				1	1	+	┢	Н	Н	$\dashv$	╁	+	+	╀	╀	╁	6	Н		+	+	-	18	
		2	DO	14		Ŧ	О		П		7	7	1	1	T						二	1	上		
				-	1				Н		$\dashv$	+	+	╁	╁	╁	-	<b>-</b>	H	-	+	+	+		
		3	DO	8		F	<b>a</b> —				1	1		T	1			17				1			
				-	2	t			Н		_	╅	+	t	╀	-	+	H	Н	-	╁	+	+		
				T	1	1	-		Н		4	1	$\bot$		F	L,				$\Box$	1	1			
		4	DO	12	1	t	Þ					1		1	1	H			Н	┪	$\dashv$	+			Ř.
	SILTY CLAY, THI			-	3	1		-		-	4	+	-	igaplus	L	Ι,	D		$\Box$			1			
	, , , , , , , , , , , , , , , , , , ,	5	DO	84		I					1	士	10								1	$\pm$		N	
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					4	丰				1	士	1	1			9					士	1			=
	i	6	DO	78		╊	Н	-	$\dashv$	+	+	+	9	╀	┡			$\dashv$	$\dashv$	$\neg$	4	Ŧ			層
					1		Ц	$\Box$		1		土						士	士	_		土			į
		7	DO	48	5	1	$\vdash$	$\dashv$	-	귱	╀	+	╀	╀	-	_	Н	6	$\dashv$	-	- "	-			8
	sandy, a trace of gravel occ. wet sand and silt seams			_	ັ	T			コ	Ĭ		丰	1							$\exists$	士	土		H	È
	and layers, cobbles and boulders	8	DO	80	1	1		-	$\dashv$	+	+	╁	+	╀	-	Н	b-	$\dashv$	+	+	+	+	-	N	
		_ 。	ы	00		F			7	$\Box$		1	Ψ.							コ	土	土			
		9	8	100+	6.	╁		┪	$\dashv$	┽	+	+	┿	╁	-	Н	12 •	┥	+	+	+	╀	H		H
						F	$\square$		$\neg$	7	1	1							1	1		I			
						L			1	+	$\dagger$	+	╫		Н	Н		+	+	+	╁	╀	┼┤	A	
		- 1			7.	1	Н	$\dashv$	[	$\blacksquare$		F	L	$oxed{\Box}$			1	$\exists$	7	7		I	口	H	
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İ		1			8.	上			1	士	$\pm$		上					+	$\dagger$	$\dagger$	╅	╁			
						╀	H	+	+	+	+	+	╀	Н			4	4	-	Ŧ	4				1
						丰	口	寸	士	1	丰	1					寸	╛	$\pm$	1	1		H		
9,1		ļ			9_	1	$\vdash \vdash$	+	+	+	+	-	$\vdash$	$\vdash$	$\vdash \vdash$	$\Box$	$\dashv$	$\dashv$	4	Ţ	$\bot$	$\vdash$			]
273.9	Brown, very dense	11	חמ	100+				1	士	#	1					7	$\downarrow$	1	士	1					
				,,,,,,		$\vdash$		+	+	+	╁	+	╀	Н		•	+	-	+	4	Ŧ	-	$oldsymbol{H}$		
	FINE SAND		ŀ				口	コ	#	1	1	I		口		$\exists$			$\perp$	1			口		
	a trace to some silt				10_	╂╌	$\dashv$	+	+	+	+	╁	-	Н	$\dashv$		+	+	+	+	-	-	$\square$		
Ì	a trace of gravel occ. silt seams and layers							1	1	1	1					$\exists$	$\downarrow$	$\perp$	1	1			口		
	O-wild - El AA-	-	_			$\vdash$	$\dashv$	+	+	+	+	-	+	H	4	7	-+	+	+	+	+	1			
11.0		12	וסט	100+	11				1	$\top$	1	T	T	4		•	$\dashv$	$\top$	+	十	+	1		M	



## LOG OF MON. WELL NO: 10-68 FIGURE N O: 68B

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Sterm

**DATE:** August 18, 2010

													JA	TE:	AL	<i>i</i> gu	St 1	<b>σ</b> , 2	201	U					
		SA	MP	LES	Ê			х	She	ear :	Stre	ngtl	1		T		-	Atte	rbe	rg L	.imit	5		T	
Depth	SOIL				Depth Scale (m)		5	o	10	kN/i	n2) 150		200				PL L					щ			WATER LEVEL
Elev. (m)	DESCRIPTION	Number	Type	N-Value	at S	r		ene	irat (blo	ion ws/	Res 0.3r	ista m)			1	•	) M	oist	ure	Cor	nten	<u> </u>	)	1	TER
11.0		Ź	<u>P</u>	Ż	<del>!</del>	1	0	3	Ò	50		70		90	L		10	2	20	3	ķ0	40			\$
272.0	Brown, very dense	-			11.	╁		П	7	F	-г		_	-	╀┈	Т	Τ-	ŧ	T	1			_	-	1
	FINE SAND					口			$\exists$		1	#	1		1	L		L				1	土		l
	a trace to some silt a trace of gravel				1	$\blacksquare$			╛	$\pm$	1	$\pm$	+	-	╁	$\vdash$	-	-	├	┝		+	+-	1   11	ł
12.2	occ. silt seams and layers				12.	H			4	-1	-	+	+	F	L	$\vdash$					П	_	Ŧ	]	
270.8	Brown, very dense	13	DO	88	1							1	#	_	上	t		6					士	<b>1</b>	
	SANDY SILT a trace to some clay		-		-					$\dashv$		+	╁	╁	╂	┝	├	F	-	$\vdash$	Н	+	+	┨┃┢	ľ
	a trace of gravel				13.					$\dashv$	1	$\bot$	T		F								丰		ŀ
	occ. silly fine sand layers					甘	$\rightrightarrows$		⇉	士	#	#	1		t							$\pm$	土	11	
13.7 269.3	Grey, hard	<del> </del>		<u> </u>	-	╢		$\dashv$	┥	+	+	╁	+	╁	╀	-	$\vdash$		2	$\vdash$	$\dashv$	+	+	┨╽╏	ĺ
		14	DO	82	14.	П			7	1	-	1	þ	7								1	丰	11	
	SILTY CLAY				1			1	$\exists$	士	1	士	#	1		E				Н		$\pm$	土	<b>1</b>	
	a trace to some sand					1 +	-	+	╫	$\dashv$	+	+	╀	╁	├-	-	_		Н		$\vdash$	+	+	]	
	occ. wet sand and silt seams and layers				15.	$\Box$		4	$\dashv$	1		1	1	ļ							耳	#	丰		
	•	-							$\exists$	$\pm$		$\pm$	$\pm$	1		<u> </u>		2	Ы	$\vdash$		+	+	┨╙	
15.7 267.3	END OF DODELLOL	15	DO	62		H			$\dashv$	+	7	+	Ŧ	+	-							7	T	1	
	END OF BOREHOLE				16.				#		#	#	#	1									士	1	
	Installed 50 mm Ø monitoring well to 15,2 m						-	+	+	+	+	╁	╁	╁	┞	Н	-	Н	-		$\dashv$	+	十	1	
	3.0 m screen covered with geomembrane Sand backfill from 11.6 to 15.2 m					$\Box$	$\dashv$	$\dashv$	7	4	7	-	T	$\perp$							_	#	丰		
	Bentonite seal from 0.3 to 11.6 m Provided with a steel protective casing				17		$\exists$	$\Rightarrow$	士	$\downarrow$	1	上	土										土		
	trained trained discontinuously casing					H	$\dashv$	$\dashv$	+	+	+	+-	╁	╀	╂┈		$\vdash$	Н	-			+	╀┈		
							1	1	7	1	1	1	1	1	L				日		$\exists$	1	丰		
İ					18				1	士				士	Ė						$\dashv$	$\pm$	士		
						H	+	+	$\dashv$	+	+	+	+	-	-	Н						Ŧ	F		
ļ							_	7		1	1	1	#	丰								$\downarrow$	1		
ł					19_	Ш	1	$\pm$	士	$\pm$	$\pm$	士	1	$\vdash$			Н		$\dashv$	$\dashv$	-	╁	+-		
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					20_		_	$\pm$	+	+	+	+-	+	╁		H	$\vdash$	$\dashv$			+	+	+	ŀ	
				ŀ		П	7	1	1	1	1		T	1							1	1	$\Box$		
							$\downarrow$	1	$\downarrow$	1	1	1	上								士	$\pm$			
					21_	$\vdash \vdash$	+	+	+	+	+	+	+			$\square$			$\dashv$	$\dashv$	$\overline{+}$	$\bot$	$\square$	ŀ	
j					:		#	#	#	_	丰		L	上						$\rightrightarrows$		#	口		
							士	$\pm$	$\pm$	士	$\pm$	$\pm$	$\pm$	1	_				1	+	$\dashv$	+	+-		
Ì					22	П	7	7	7	7	Ŧ	Ŧ	L	$\vdash$			4		$\dashv$	4	1	1	$\Box$		
		L			22	브			ᆣ					1					1	L		<u> </u>			



## LOG OF MON. WELL NO: 10-69 FIGURE N O: 69A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Steam

DATE: September 13, 2010.

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		SA	MPI	LES	Ê		>	(Sh	ear	Strei	ngth					A	ttert	berg	Lin	nils			
Depth Elev.	SOIL DESCRIPTION	,		9	Depth Scale (m)		50 Pen	10	(kN/)	150		200				PŁ 				<u>_</u>			WATER LEVEL
(m)	:	Number	Type	N-Value	Pept	10	0	eua (bk 30	UCIT DWS/ 50	0.3n	51811 1) 70		90		10		istu 20		ont 30	ent (	%) 40		VATE
0.0	Ground Surface	<del>                                     </del>	Ť	╁╼	0.	<del>                                     </del>		.1					<u>.                                    </u>		ï	-	<u></u>		<u> </u>		<u> </u>	$\dashv$	
284.7	23 cm TOPSOIL				1 °		Ι			T	T	Т	П	$\Box$	4	П	Ŧ	Т	T	T			П
	Brown, stiff to hard	1_	DO	12											•								
	weathered	2	DO	15	1.	$\parallel$	э –	F		+	+	上			$\dashv$	12	1	+	1				ompletion
							+	F		1	1					1	1	1	1	1	$\Box$		
	<b>,</b>	3	DO	14	2.		2			+	ŧ	-				14	+	1	+		H		
			<u> </u>				╀			+	$\mp$	F			4	1	1	7	7	+	H		
		4	DO	61					$\frac{1}{2}$	þ	$oxed{\mathbb{F}}$	Ē				•		1	1				
	SILTY CLAY, THE	5	DO	89	3		-			$\blacksquare$	E			$\exists$	9	$\exists$	$\exists$		$\pm$				
	, ,			-			$\pm$			$\pm$	上	Ė			1		$\downarrow$	$\pm$	$\pm$				
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							士		$\exists$		$\bot$			$\dashv$	1	$\pm$	$\pm$	#	1				
		6	DO	100+	_		丰			+	#			口	9		1	1	#	+			
	sandy, a trace of gravel occ. wet sand and silt seams				5.		#		#	1	‡				1		#	#	‡	#		$\exists$	
	and layers, cobbles and boulders						Ŧ		+	1	1				1	#	#	#	‡	#		7	
	:	_			6	H	-			1	1			1	7	_	7	1	1	1	$\Box$		
	·	7	DO	85		H	-		+	7	1-	0	H		•	7	1	+	1			_	
					7 -				4	7	Ŧ		П	7	1	1	-	7	7	Ŧ		$\exists$	į
					'	H	+	H	$\dashv$	-	-		$\Box$	7	7	7	7	+	7	Ŧ	$\Box$	$\exists$	ompletion
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					8		$\pm$	$oxed{H}$	$\exists$		E				$\frac{1}{2}$	$oldsymbol{\perp}$	$\pm$	$\frac{1}{2}$	$oldsymbol{\perp}$				3.9 m
								oxed	-	1				$\exists$	-	$\frac{1}{2}$		$\pm$	$oldsymbol{\Gamma}$	$\perp$		]	W.L. @ El. 273.9 m on o
					9_	H	$\pm$		$\dashv$	+	$\pm$			$\dashv$	1	$\downarrow$		$\pm$	$\pm$	$\pm$		1	(0)
	`; <del>***</del> **	9	00	100+			+	H	+	$\pm$	$\bot$		4	1	-	2	+	$\pm$	$\pm$	$\pm$			3
							+		1	+	1	H		1	1	1	+	+	+			1	
10,4					10_		+		+	+	-			1	1	+	<u> </u>	$\pm$	+	+		1	
74.3	Brown, very dense SANDY SILT						+		+	+				#	#	$\downarrow$	20	+	+	+		1	// W.L. @ El. 273.9m on c
11.0	Cont'd on Fig. 69B	10	00	100+	11.	┡╌┼╴	+-	$\vdash$	+		╄	₩	<b>⊢</b> Ф	4	_		Ť	+	1	+	$\vdash$		対数



#### LOG OF MON. WELL NO: 10-69 FIGURE NO: 69B

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

DATE: September 13, 2010

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Depth	SOIL				욡	1	•	i0		00		50	20	00				PL.					ų.			WATER LEVEL	-
Elev. (m)	DESCRIPTION	Number	_	N-Value	Š	<b> </b>		ene	etra	tion	Re	sist	land	<u>.                                    </u>		-	_						1		$\dashv$	<u> </u>	,
(11)		E	7ype	3	5	ı	, C	)	(bl	ows	i/0.3	3m)										tent			ı	₽	,
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273.7	Brown, very dense	1			11.	╁╴	Т				Г	Т	Г	ГΊ	-			1	_	-1	_	1	1		╣	00	
		ŀ				L																士			]		
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<b>!</b>					12.										_		$\neg$	1	+	┪	$\dashv$	+	$\dashv$	十	1		
	SANDY SILT	<u> </u>	<u> </u>			1	<del> </del>										$\dashv$	$\dashv$	19	$\Box$	$\Box$	$\Box$	1		]		
		11	DO	97		╊	╁╌		┡	H	$\vdash$			H	-	$\dashv$	$\dashv$	$\dashv$	4	-	+	-	+	+	┨	NX	
	o denote to the state of					₺												1			$\exists$	1	1		1		
	a trace to some clay a trace of gravel				13.	1	$\vdash$	H	-	H		H	<u> </u>	$\vdash \vdash$		$\dashv$	_	4	-[	-	4	+	+		-	M	
	occ. sitty fine sand layers					I								ᆸ			$\exists$	$\exists$	士	士	$\exists$	士	十	_	1		1
						1	┼-	Ц		Ц	Ĺ			П	7	7	7	Ţ	19	$\supset$	1	7	7	$\top$	]		
		12	DO	100+	14.	1	╁	Н	-	H		Н	H	H	┪	,	$\dashv$	ᆉ	4	+	1	+	+	+	┪╽		
]					آ	F								П	耳	$\Box$	$\Box$	$\exists$	$\dashv$	$\Box$	1	1	1		]		
						₽	+			H		$\vdash$	_	$\vdash$	┪	$\dashv$	$\dashv$	+	+	+	┪	+	+	+	-		
				1		Ξ												寸			士	士	士	土			
15,2					15.	1-	╄	Н		-		Н		$\dashv$	4		4	4	4	4	4	-		+	]		
269.5	Brown, very dense	13	DO	100+		扛			_			Н		$\vdash$	┪	,	$\dashv$	$\dashv$	Ť	22 •	+	+	+	+	1		
	SILT					L									$\Box$	$\Box$	_		1	$\Box$	$\Box$	1	1		1		
	traces to some sand and clay			'	16	╊				H		Н	$\vdash$	$\dashv$	┪	+	$\dashv$	+	+	-	-	+	+	+	1		- 1
	a trace of gravel occ. sand seams and layers				.0		П													1		士			18		
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16.8 267.9						上											7	٦,	7	+	1	+	+	$\top$	1		ŀ
257.9	Brown, very dense	14	DO	100+	17	<b>ļ</b>	Н		-		_				4	4	_	4	7	4	$\exists$	4	4				
	SILTY FINE SAND					╀	H		H	$\dashv$	Н	Н		$\dashv$	┪	+	┪	十	+	$\dashv$	+	╅	╅	┿	1		ı
	a trace of clay occ. silt seams and layers			1		I								$\Box$	コ			$\Box$	1			1	1		1		
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18.3						I	Ħ								1	士		士	士	لو	1	士	士	士	1		
268.4	Very dense	15	DO	100+		1-	╀┥		Н	Н		Н	Щ	$\dashv$	-\$	4	$\dashv$	4	₩	2	4	4	_	-			
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		16	DO,	100+	:	1	Н	$\dashv$	$\vdash$	$\dashv$	$\dashv$	Н		$\dashv$	┪	-	$\dashv$	+	+	+	十	╅	+	+	┨		
	SILT				:		П							$\Box$	1	コ	1	$\bot$	$\bot$	I		1	$\perp$		1		]
]	<u>brown</u> grey	<u> </u>			20	1-	${\mathbb H}$	-			Н	Н	Н	$\dashv$	-	-		+	+	+	+	+	+	+	┨╢	IA .	ŀ
	traces to some sand and clay				20.		П								1	寸					1	1	1	士	1		f
]	a trace of gravel					1	H			$\dashv$		$\Box$		$\dashv$	1	$\dashv$	Ţ	Ţ	$\perp$	$\bot$	4	Ţ	Ŧ	T			
	occ. sand seams and layers					<del> </del>	H	-	$\vdash$	Н	$\dashv$	H	$\vdash$	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	+	+	+	+-	ı		
					21		П			$\Box$						ightharpoonup	#	$\downarrow$	1	1	#	$\downarrow$	1	1	18		
21.3 263.4	Control					1	Н			H	$\dashv$	$\vdash$	$\dashv$	-	4	-	+	+	+	+	+	+	+	-	1	Ê	
200.4	Grey, hard SILTY CLAY	17	Ю	45						0				寸	_		士		†	J	<u> </u>	士	_†	╅╴	1 1		
22.0	Cont'd on Fig. 69C	$\vdash \vdash$		_		_	$\sqcup$	_	4	$\dashv$	$\Box$		$\dashv$	_	$\dashv$	4	Ţ	$\bot$	Ţ	$\bot$	$\blacksquare$	$\bot$	Ţ		1 8		I
					22_					<b>=</b>					_	ᆜ	_		L			<u></u>		<u>_</u>	, N	N	_]
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# LOG OF MON. WELL NO: 10-69 FIGURE NO: 690

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Ste m

DATE: September 13, 2010

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Depth	SOIL		Ι.		98			50		DO Firesan		.) 50	20	20				ᆫ					ų.		ĺ	
Eiev. (m)	DESCRIPTION	Number		N-Value	Depth Scale (m)		F	ene	etra	<u>tion</u>	Re	sist	anc				•	Moi	sh	re f			1 (%)	 i	1	WATER LEVEL
		Ž	F P P P	<u>₹</u>	8		10	)	(D)( 30	OW\$	/D.3	3m) 7		9	0		10		20		3		40			WAT
22.0 282.7	Grey, hard	-			22	$\bot$	<del></del>									· · ·	_				· ·				1	NR
						E										$\exists$			1	1		1	1		-	
	SILTY CLAY				ŀ	1	$\vdash$		Н	-					-		+	+	-	4	-	$\dashv$	+	+	71	
:	SICT, SEA,	18	DO	100	23	F			Н	П					4	-	7	_	7	1	4	#	1		11	
	a trace to some sand					$ \downarrow $											1	1	1	1	_	_			1	
	occ. wet sand and silt seams and layers					1						$\exists$				-	$\dashv$	+	+	+	$\dashv$	-	+	╁	-	
					24	╀					-		$\dashv$			4	$\dashv$	7	1	7		7	1	1		
24.4 260.3	Grey, very dense	19	DO	1004		F					$\exists$				4	,	#	1		1	#	#	丰	#	1	
			1	1	]	$\downarrow$									1	$\exists$		₫`	1	1	1	$\pm$	$\pm$	1	1	
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	SANDY SILT					F		$\Box$			4	7	7	7	1	7	7	1	7	7	1	1	#	F	1	
	ordini biri					1				4	$\rightrightarrows$	#	$\exists$		1	#	#	٦,	+	†	#	$\pm$	$\pm$			H
	n trace to come alone	20	DO	100+	26.				╛		Ⅎ		$\exists$		╬	-	$\pm$	1	$\pm$	$\pm$	╁	$\pm$	$\pm$	$\perp$	1	<b>P</b>
	a trace to some clay a trace of grave!					╀	Н	$\dashv$	$\dashv$	$\dashv$	$\dashv$	$\dashv$	$\dashv$	$\dashv$	$\dashv$	7	4	-	Ŧ	7	$\exists$	1	Ŧ		] [	]
	occ. silty fine sand layers					F		$\neg$	4	$\neg$	7	丁	コ	_	7		#	#	‡	#	7	1	丰	上	11	
27.4					27.	上		コ				寸	#	$\exists$	1	#	$\pm$	$\pm$	$\pm$	#	1	1	士	上	11	
257.3	Grey, very dense	21	DO	100+	1	Ł			$\exists$	$\exists$	$\dashv$	_	$\dashv$	_	┪	+	+	+	ł	+	+	+	+	+		
	SILT				28	1	$\square$	$\dashv$	7	$\dashv$		1	_	-	4	7	7	1	1	1	1	#	+	1		
	traces to some sand and clay a trace of gravel		1		20.			$\dashv$	4	7		1	#		1	1	1	1	1	‡	1	#	1		1	
	occ. sand seams and layers								$\exists$	1		1	1	1	1		1	1	$\pm$	$\pm$	1		$\perp$	+	11	
29.0					29.	1	┟┤	$\dashv$	-	$\dashv$	+	+	+	$\dashv$	-	+	+	+	$\mp$	Ŧ	4	+	Ŧ	F	$\  \ $	
255.7	Grey, hard	22	DO	100+	-~		П	1	4	7	7	7	1	4	φ	#	#	#	F	4	#	#	#	#	1	
	SILTY CLAY a trace to some sand							$\exists$	$\downarrow$	#	$\exists$	寸	$\downarrow$	1	1	士	†	1	$\pm$	‡	$\pm$	士	士		<b>!</b>	]
	occ. wet sand and silt seams and layers				30		日	_	_	1	$\pm$	$\pm$	+	_	+	+	+	╁	+	+	+	+	+	+	•	
30.3 254.4	Grey, very dense					1-	$oxed{\Box}$	$\dashv$	$\dashv$	$\dashv$	$\dashv$	-	7	1	7	-	7	Ŧ	1	+	7	1	Ŧ	$\top$	1	
1	SILTY FINE SAND	23	DO	87	:			4	7	#	#	#	1	<b>ユ</b>	#	#	‡	6	‡	#	1	士	#	1		İ
30.9 253.8	a trace of clay occ. silt seams and layers	<del>-</del>	<u> </u>	<u> </u>	31_	L		$\exists$	_	士	1	$\pm$	$\pm$	9	士	+	$\pm$		$\pm$	$\pm$	$\pm$	士	$\pm$		1	
	END OF BOREHOLE				:	-	$\mid \rightarrow \mid$		-	+	+	+	+	$-\!$	+	+	+	+	F	Ŧ	7	T	F			
l	Installed 50 mm Ø monitoring well to 29.6 m							7	1	7	1	7	1	1	1	$\bot$	#	#	1	#	#	#	+			
Ì	3.0 m screen covered with geomembrane Sand backfill from 26.2 to 29.6 m				32_			$\perp$	$\downarrow$	_	1	1	1	$\perp$	$\pm$	$\pm$	1	$\pm$	$\pm$	士	$\pm$	$\pm$	$\perp$			
	Bentonite seal from 0.3 to 26.2 m				:		$\dashv$	$\dashv$	+	+	+	+	-	+	+	-	+		$\perp$	F	Ŧ	Ŧ	-	F		
	Provided with a steel protective casing							4	7	4	7	#	7	7	1	#	‡	1	1	‡	1	#	#	1	ĺ	
					33_			土	1	1	$\pm$		1	土	‡		$\pm$	土	1	$\pm$	$\pm$	上	$\pm$			ļ
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# LOG OF MON. WELL NO: 10-70 FIGURE NO: 70

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Auger

**DATE:** August 17, 2010

	The state of the s	,			-5.10							D.	AT	E: .	Aug	just	17	20	10					
		SA	MP	LES	<u>}</u>			X	She	ar S	tren	gth					At	erb	erg	Limit	s		T	
Depth Elev.	SOIL DESCRIPTION		المعاقبات المعاملات		Depth Scale (m)		5		100		150		200			ı	PL 				<u>"</u>			WATER LEVEL
(m)		Number	8	N-Value	Dept.		P( 10	ene (	iratio (blov	on F ws/0 50	).3m	stan ) 70		90		● I		sture 20		onten 30	nt (%) 40	•		VATEF
0.0	Ground Surface		1	1	0	1		_		<u> </u>		1						- <u>7</u> -		<u> </u>			╀	
259.0	20 cm TOPSOIL				1	1	Ш	$\Box$			I				T	Т	1	Z]	Т	П			16	7
	Very stiff to hard		DO	18		Ł	q	$\dashv$	+	+	+	+	-	H	$\dashv$	-	-	Ŧ	Ŧ	$\blacksquare$	$\dashv$	Ŧ	1	
	w <u>eathered</u>	<u> </u>	-	<del> </del>	1	F	Н	-		Ŧ	Ŧ	F		$\square$	$\dashv$	1	2	-	+		7	丰	1	Ä
		2	DO	48	] `	F	$\Box$	7	7	9	+	F			1	1		1	1		#	#		
			_		1	F				1	1	1			1	٦,	1	#	1		1	#		etion
	SILTY CLAY, THE	3	DO	45	2.	1		7	1	#	1				1	1	#	‡	‡		1	#		dwo
		<u> </u>	<del> -</del> -		-	F		1	1	‡	†	F		#	1	1	+	‡	+		$\ddagger$	#		ĕ
	sandy, a trace of gravel	4	DO	68	3.	F		+	1	1	Ľ	1				-	+	‡	#		丰	#		El. 254.4 m on completion
	OCC, wat sand and silt seams	5	00	100-	•	L		1	#	#	1	上		•	1	3		士	$^{\perp}$		士	+-		11 12
	and layers, cobbles and boulders					╀		+	+	+	╁	╁		$\dashv$	+	+	╫	┼	╀	╀╌┦	+			W.L. @ E
			<del>  -</del> -	<del> </del> -	4	F	$\square$	$\mp$	Ŧ	Ŧ	I		П		7	В	Ŧ	F	1		1	$\perp$		×
		6	DO	84	* -			#	1	1	L		0		$\perp$	•					士	士		
	brown_				]				$\pm$	$\pm$			Н	$\dashv$	+	╁	╁	╁	╁	╂┼	十	-	["	¥
	grey	7	DO	100+	5_	┡	$\vdash$	+	+	+	$\vdash$	$\vdash$		4	7	8	-				7	$\Box$		*
5,3								1	$\bot$	T				寸		土			L		士		11	ļ
253.7	Dense to very dense	8	DO	48				$\pm$	土	$\pm$				+	+	+	+	22	╀╴	H	+	+		
	SILTY FINE SAND a trace of claygrey_				6 <u>:</u>	┞	H	-	+	1	-			4	+	1	F		F		7			
	a trace of clay <u>grey</u> occ. silt seams and layers brown	7	00	82	"			1		1	L			1	#	#	1	9			土	力		J
6.5 252.5	END OF BOREHOLE	•	-					土	t	士				1	$\pm$	+	+	}	-	$\vdash$	+	+		
					7	-	H	+	╀	╀	-	Н	_	4	+	Ŧ	F	$\vdash$	F		丰	$\Box$		
	Installed 50 mm Ø monitoring well to 6.0 m 1.5 m screen covered with geomembrane Sand backfill from 4.3 to 6.0 m				•			1	1	1				#	‡	#	丰	二			土	廿		
	Bentonite seal from 0.3 to 4.3 m Provided with a steel protective casing							1	土	$\perp$				t	$\pm$	-		+	$\vdash$	$\vdash$	+	╂┨		
	Torned with a steel protective casing				8	$\vdash$	$\vdash$	+	-	╀	┡	$\square$	$\dashv$	4	$\bot$	$\perp$	-	-			$\bot$	$\Box$		
								1	1	L				1	1	土	t	上			士	$\pm$		
								+	+	$\pm$	╁╴	Н	-	+	+	┯	+	-			╬	+		
					9			$\bot$	$\top$	F			4	1	1						1=	$\Box$		
					. <del>.</del> .			1.	#	1				1	#	1					土	$\Box$		
						Н	_	$\pm$	$\pm$	_	-	$\vdash \vdash$		╂	+	+-	+	-	$\vdash$	$\vdash$	<del> </del>	igoplus		
ľ					40			Ŧ	I	F				1	#	1					丰	口		
	ŀ				10_			上	士					$\pm$	1	上	士		Н		_			
					1	$\vdash$	$\dashv$	+	+	╀	$\vdash$	[	$\dashv$	+	F	#	1				$\mp$	口		
	·							#	1	‡		$\exists$	#	#	1	士	_				士	目		
					11_		Щ.,		Щ.					4		Щ.		L		<u> </u>	丄	┷┩		



## LOG OF MON. WELL NO: 10-71 FIGURE NO: 71A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Steam/ DATE: August 18, 2010 Wash-bore

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		SA	MP	LES	Ê			×	She	ar S	Stre	ngti	Þ				4	Atte	rber	g Li	mits			ĺ	_
Depth	SOIL				Depth Scale (m)		5		(F 101		150 150		200				ΡŁ				L	Ļ			WATER LEVEL
Elev.	DESCRIPTION			9	S	-		<u> </u>				ista			╀		Ŀ					·		ł	Ġ,
(m)		Number	Type	N-Value	g	1.	0	,	(blo	ws/	0.3n	n)	IVG					oist	ure (	Соп	tent	(%)			A∓E
0.0	Ground Surface	Z	-	Z	+	╂	10		<u> </u>	50		70		90	1		10	2	D	30	<u> </u>	40		_	_₹
251.7	Brown, soft to firm	+-	-	┝	0	1-		7	Т	1	1	T	7	Т	╀	F	1	6		_	-	1	7	٦ ا	7
	SILTY CLAY	1	DO	8		I		$\Box$	寸	丰	1	1	1					9							m
	a trace to some sand	-			-	₽	$\vdash$	$\dashv$	+	+	+	+	╀	-	╄	-	┡		Н	$\dashv$	+	- -	$\vdash$		
	occ. wet sand and sitt seams and layers	2	50		1.			<b>寸</b>	1			上	1		T			2	0	士		+	1		B
1.5	·	_	DO	4		0		4	+	+	4	+	1	_	-	-	L					T			
250.2	Brown, very stiff to hard				1	土		1	1	╅	$\dagger$	╅	†	╁	╁	-	-			+	+	╫	╀┤		ì
	, , , , , , , , , , , , , , , , , , , ,	3	DO	24	١.	▙		0	4	Ţ	_	$\bot$	Ţ	F	L		$\Box$	D.		1	1			Ň	Ř
					2.			+	+	+	+	╁	十	+-	╀	-		Н	-	$\dashv$	+	╁	$\vdash$	S	
		4	DO	82					1	1	Ţ	Ţ	I				1		$\Box$	7			$\Box$		
	SIŁTY CLAY, TIII		00	62		1-		$\dashv$	+	+	╬	╁	P	+	┢	Н	•	$\vdash$	+	-	-	╫		k	
		<u> </u>	<u> </u>		3	$\prod$	$\Box$	7	1	#	1	1	T	F					7	1	1	丰			npletion
	sandy, a trace of gravel	5	DO	81		H	$\dashv$	+	╁	+	+	+	┢	╁	╂─	9		Н	$\dashv$	+	+	+-	-	B	N
	OCC. wet sand and silt seams					П	$\Box$	7	1	1		1	I						ゴ	コ					
	and layers, cobbles and boulders				4	H		╅	+	╁	╀	╀	╀	+	┞		0	Н	+	+	+	+			
ı		6	DO	60	-			1	土		φ	İ							士			$\perp$			
4.6				_			-	+	╬	+	╀	+	╀	╀	-	Н			$\dashv$	+		$\bot$			
247.1	Very dense	7	DO	88				士	士	土			L					2	1	$\perp$	+	T	╁╌╏		l v
				00	5 .	1-1	$\dashv$	4	4	+	+	-	Ľ	1						Ŧ	4				1
								1	士	1		t	T	$\perp$				7	$\overline{}$	十	+	+	H		
ĺ		8	00	75		H	$\dashv$	+	+	+	╀	-6	╀	╀		$\Box$			4	4	1	T		H	Á
ı					6				士	$\pm$	$\pm$	1		+					╅	╁	╅	+-	$\vdash$	M	
		9	DO	96			1	4	Ŧ	$\mp$	Ŧ	$\bot$	F	10	Н	$\dashv$		-3		1	$\perp$	$\bot$			
	OH TV FINE OAMO						$\pm$		1	+	+	+	$\vdash$	+	H	$\dashv$	-		+	+	╁	十	$\vdash$		}
	SILTY FINE SAND						$\perp$	4		1	$\bot$		$\Box$	L		$\Box$			耳	7	1	1			1_
					7 -		+	+	+	+	+	╁	╁	-	Н	$\dashv$	$\dashv$	+	-	╁		╁			ğ
								1	1	I	T	I				$\Box$	$\Box$	$\Box$	丁	1					Ě
		10	DO	91		H	+	$\dagger$	╁	十	十	+	╁╌	╁	Н	-	-	19	+	+	+	╁╴	┦		8
İ		- 10	ы	91	8 _	$\Box$	$\Box$	1		1	1		L	۲-				7	$\downarrow$	1					Ē
	a trace of clay occ. slit seams and layers					H	+	+	╫	┿	╁	╁	┞	+	Н	$\dashv$		$\dashv$	+	+	+				6.9
	occ. slit seams and layers			ļ			1	1		丰	1	1								1	上				2
ľ				İ	9	H	+	+	╁	+	╁	+	$\vdash$	-	${\mathbb H}$	$\dashv$			+	+	+	+	$\square$		(A)
I	<u>btown</u> grey				7 -	$\square$	1	1	#	1	1	F				$\dashv$			土	土	上				W.L. @ El. 246.9 m on col
İ		11	DO	58		${\color{blue}H}$	+	+	+	╁	<b>d</b>	+	╀	-	${oxed}$	$\dashv$	-	- 4	4	+	+	$oldsymbol{\perp}$			₹
I			+		1		丰	#	1	1	丰	T				士	士		士	$\pm$	土				f
					10	$\dashv$	+	+	+	+	+	╀	├-	-	$\vdash \vdash$	F	- [	$\dashv$	$\bot$	$\bot$	<u> </u>		$\Box$		l
10.4 241.3	Comment	ļ		ŀ	•		$\pm$	1	$\pm$	上					$\Box$	_	╛	_	+	+	+	+	$\dashv$		
-41,3	Grey, very dense SILT				]	$\dashv$	$\top$	$\bot$	$\bot$	F	1	$oxed{\Box}$	Γ	П	$\square$		_	18	1	T	T	Н			
	Cont'd on Fig. 71B	- T			-		- 1	- 1	1		E	1			ı I		F	. ~	- 1	- 1		1		NN	



## LOG OF MON. WELL NO: 10-71 FIGURE NO: 71B

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern/ DATE: August 18, 2010 Wash-bore

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		SA	MPI	LES	Ê		)	(Sh	near Mar	Stre	ength	1				Atter	berg	Limi	ts			ᆏ
Depth	SOIL		1		및 및		50		óο fεna	15) 15)		200			P	t.			ų			WATER LEVEL
Elev.	DESCRIPTION	ě		N-Value	Depth Scale	H		etra	tion	Res	sista	_		┝	!				<u> </u>		-	8
(m)		Number	Type	F.V.a	ğ	10	0	(bl	lows 5	/0.3i	m) 70					Aoistu						Ę.
11.0		-	-	-	<del></del>	<del></del> -		<del>"</del>					90	H	10	- 2		30	4	D	-	
240.7	Grey, very dense sand SILT layer	12	DO	51	11.		Ŧ	Т		7	Т	Т			$\Box$	18			П	$\Box$	1 11	1
	SILTlayer_ traces to some sand and clay						-	_			$\perp$	1		$\Box$			П	1	П	二	1 1	}
	a trace of gravel					$\vdash$	+	╁	H		┰	╁	$\vdash$	Н	+	+	+	+	╁		4 86	}
12.2	occ. sand seams and layers				12.	П										$\Box$		I	口	二		
239.5	Grey, compact to dense					11	+	╁	Н		+	╁		Н	-	17	-	┰	H			
	•	13	DO	41					Φ		工	上				•			П	士		
		<del></del>			13.	╂┼	+	╄	$\vdash$	_	-	+		Н	+	+	$\perp$	+	╀╌┨		1 #	
					15.					II		$\pm$								士		
	SILTY FINE SAND					1	- -	+	H	$\dashv$	+	-	$\dashv$			$\Box$	+	+	$\dashv$	$\dashv$		
							士	$\perp$	$\Box$			$\pm$			_		$\pm$	士~	╁┤	一		
	a trace of clay	14	DO	25	14_			-	$\Box$		Ŧ	$\bot$	$\Box$	$\dashv$	$\bot$	$\Box$	23	$\bot$	П	$\perp$		
	a trace of clay occ. silt seams and layers	<u> </u>				╂┼	+	╁	Н	$\dashv$		+	Н	$\dashv$	十	+	-	+	$\vdash$	+		
]						$\Box$		T		$\Box$									П	工		
					15_	╂╌┼	-	╀	Н	$\dashv$	+	+	Н	$\dashv$	+	╂╢	+	+	$\vdash$	+-		
15.2 236.5			<u> </u>		10									$\exists$	土		士		口	二		
230.0	Grey, compact to very dense	15	DO	26		<b>!</b> →	+	+	Н	$\dashv$	╢	+-	$\vdash$	$\dashv$	+		22	-	H	+		
1 1				ì			Ì							$\exists$						土	1 88	
					16.	1		+	Н	$\dashv$	+	-			+	+	$\perp$	-				
							+	+	Н	十	╅	+	H		+	+		╅╴	H			
								L				L					$\Box$	I	П	工		
			<del>                                     </del>	_	17.	▋┤	-	-	╂┤	$\dashv$	╁	╫	Н	$\dashv$	十	10	+	十	╁┤	+-		
	FINE SAND	16	DO	30		П		Φ_	П		1	I			丰	•						
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																			口	土	ı	
	m Amana An anns and				18.	╂╌┼	+	╀	H	$\dashv$	- -	+	$\vdash$	dash	-	+-	-	+-	╁┤	-		
	a trace to some silt a trace of gravel			<u> </u>							$\perp$	1				12	n		T		I	
ì	occ. silt seams and layers	17	DO	86			$\perp$	$\bot$	$\Box$	$\dashv$	$\Box$	IC	$\Box$	$\Box$	$\bot$	耳		$\bot$	П			
					19.		$\pm$	$\pm$	Н		$\pm$	士		┟┪	十	$\blacksquare$	$\Box$	士				
							1	$\bot$	П	$\Box$	$\perp$	Ţ		П	1	$\Box$	$\Box$	T	П			
		ŀ				$\vdash$	+	+	╂┤	-+	+	╁		H	+	+	+	+	╁┤	-	1 111	
	silty-clay layer							1			1	T			1	$\blacksquare$				二		
	layer_	18	DO	100+	20.	1	+	╀	H		+	+	1	Н	+	1.7	76	+	$\vdash$			
							上					1		╚	士	17 •	士	士				
							-	┼-	$\vdash$		+	+	H	$\sqcup$	$\bot$	$\Box$	H	- -	$\Box$	$-\Box$		
					21_		$\pm$	士			_	$\pm$		$\exists$				1	╁┪	_		
<u> </u>					- '-		$\perp$	F		$\Box$	1	T		П	T	$\Box$			П			
21.6		40		1.		1+	十	+	H	$\dashv$	+	+	+-	$\vdash \vdash$	+	18	$\vdash +$	+	H	+	$\  \ $	
230.1	Grey, compact FINE TO MEDIUM SAND	19	DO	19		口	7	1	П	$\Box$		L			丰	Ť			П	二		
22.0	Cont'd on Fig. 71C				22_		_L		Ш							<u> </u>	Щ				Ш	
														_								



## LOG OF MON. WELL NO: 10-71 FIGURE NO: 710

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Sterm/ DATE: August 18, 2010 Wash-bore

		SA	MP	LES	<u> </u>			×	She	ar S	tren	ath					Aft	erb	erg	Lim	ts.			
Depth Elev.	SOIL DESCRIPTION				Depth Scale (m)		5(	•	(k 100	Wm	150 150	2	00	_			P <u>L</u>		ery	Lair	ш —			WATER LEVE
(m)	DEGOTAL TION	Number	Type	N-Value	Depth	1	O	enet (30	ratio (blov	on R ws/0 50	lesia 1.3m	stan ) 70		90		10	Moi:	sture 20		onte 30	•	6) jo		WATER
22.0 229.7	6	1			22.																	<u>.                                    </u>		
22.9	Grey, compact FINE TO MEDIUM SAND traces of silt and gravel occ. silt seams and layers								+								#							
22.9 228.8	Grey, very dense	20	DO	100+	23_	F		1	+	+	-		F	٦	,	1	+	19	‡	t	-	H		
	SILTY FINE SAND							-										1						
	a trace of clay occ. silf seams and layers			i.	24			+	+	Ļ	+						+	1	1	+	E			
4.6		21	DO	100+			1	1	+	‡	‡	+				1	+	40	‡	+	Ė			
27.1	END OF BOREHOLE Refusal to augering due to wet sand condition	] <u> </u>		.55,	25_			1		1						$\exists$	$\perp$	1						
	Installed 50 mm Ø monitoring well to						$\exists$	+	+						$\exists$	$\exists$	$\blacksquare$	$oxed{\mathbb{F}}$						!
	24.1 m 3.0 m screen covered with geomembrane Sand backfill from 20.7 to 24.1 m				26_			1	+	+	‡				_	+		+	‡	+		$\dashv$	1	
	Bentonite seal from 0.3 to 20.7 m Provided with a steel protective casing				26.		7	+	‡	+	+	-			7	+	+	+	‡				$\exists$	
	•																							
					27_			+	1	+					$\frac{1}{2}$	1	1		┢				1	
İ							#	#	‡	‡	+				1	1		+	‡	上			4	
	•				28_		+	+	#	+	+				7	+	#	+	+	-				
-								$\blacksquare$		E														
					29_		1	‡	‡	_	+				1	‡	+	‡	+	L			ᆿ	
					,		$\downarrow$	+	‡	+	F			$\dashv$	#	‡	‡	‡	‡	L			7	
					30_			$\frac{1}{1}$											Ė				$\exists$	
							1	$\pm$	+	_	t				$\frac{1}{1}$	$\frac{1}{1}$		$\perp$				_		
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					32_		+		+	+						$\perp$		$oxed{\Box}$				1		
					1		+	‡	+	+	-	H		1	$\downarrow$	+	+	+	+			+		
1					33	$\dashv$	+	+	╅	+	+	$\vdash$	<del>                                     </del>	$\dashv$	+	+	+	+	+	┼	$\vdash$	+		



## LOG OF MON. WELL NO: 10-72 FIGURE NO: 72A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

DATE: September 15, 2010

					T	T						:: 8 T							 <del>_</del>	
		SA	MPI	LES	두		×	She	ar S	Stren	gth			1	<b>Atte</b>	rberg	j Lin	nits	1	إببر
Depth Elev. (m)	SOIL DESCRIPTION	Number	Type	N-Value	Depth Scale (m)	10	50 Pend O	10 etrat	ion l	150 Resi: 0.3m	stan	0		PL F <b>M</b>	oist	ure C	Cont	u. Hent (	_	WATER LEVEL
0.0	Ground Surface				0.															
266,2	18 cm TOPSOIL  Brown, very stiff to hard	1	DO	17			O								5					
	weathered	2	DO	40	1.			4	-	#					•					
	SILTY CLAY, TIII	3	DO	25	2.		0							1			-			22.22
	,	4	DO	47					a	+			1	1						<b>A</b>
	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders	5	DO	50	3 _				•		+			12			<b>-</b>			
					4.															
												1	1	10						
	a.v.y	6	DO	36	5 _			0				1	+							
6,0					6 .															¥
260.2	Brown, compact to dense	7	DO	26			0									23				
	SILTY FINE SAND				7.															
	a trace of clay	8	DO	32	8 .		1	<b>b</b>	+	+	+		+		2	0	+	+		ND C
	a trace of clay occ. siit seams and layers				"							+	+	_	-			+		m on completion
9.1 257.1	Grey, hard	9	DO	1004	9.						F			11						:60.4 m q
	SILTY CLAY, TIII		50	1.001						1	#	1					1			@ El 2
	sandy, a trace of gravel occ. wet sand and silt seams and layers, cobbles and boulders				10.					+	+			+						W.L. @ El. 260.4 m on completion
11.0	Cont'd on Fig. 72B	10	DO	100+	11.							4		15						



## LOG OF MON. WELL NO: 10-72 FIGURE NO: 72B

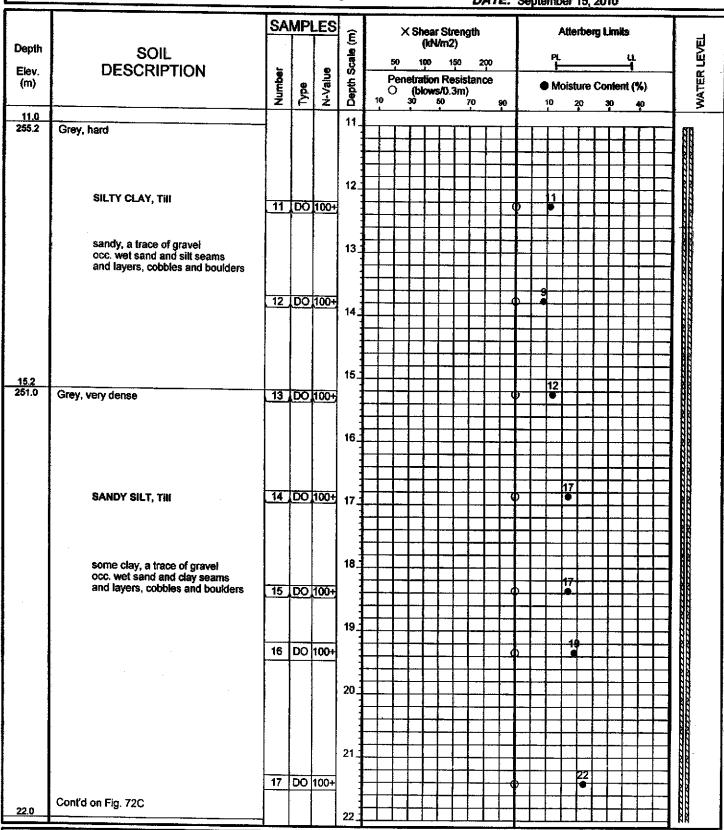
JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

DATE: September 15, 2010





## LOG OF MON. WELL NO: 10-72 FIGURE NO: 720

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Sterm

DATE: September 15, 2010

													ט	Al	£.	Se	pte	mbe	er t	5, 2	:016	)				
		SA	MP	LES	É			>	(SI	hea	r Si	ren	gth			Τ		Α	tter	berg	) Lin	nite	_			
Depth	SOIL				9			50		(k/\ 100		2) 150		200				ΡĻ				Ų	L			WATER LEVEL
Elev. (m)	DESCRIPTION	Number	_	N-Value	Depth Scale	1		Pen	etra	atio	n R	esis	tan			┢	_	<u> </u>							1	기
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22.0 244.2	Brown, very dense				22	1		_	-									·			. T		<u> </u>		┢	
	Brown, tely delise					1	$\pm$	╁	H	+	+	$\vdash$	╀╌	-	╀	┞	H	Н	-	+	+	+	F			
						F	Ŧ	F	L	F	F		L	-	1	F			7	1	#	#	1			
		18	DO	100-	23	1	Ţ	L	Ĺ				上	ᆂ					6		1	$\pm$	上			
	SILTY FINE SAND				1	1	+	╁	┝		┞	╁	╀	╀		H	Н	-	+	+	+	+	$\blacksquare$	$\Box$		1
	].					1	Ŧ	-		-	$\vdash$	F		F	$\vdash$				1	7	1	1	1			
	a trace of clay occ. silt seams and layers				24	1	1	L			Ĺ			L	上				士	1	1	士	上			
						1							H	-	+-	$\vdash$	-		╁	+	+	+	╀			
	·	19	DO	100+		+	+-	$\vdash$	F		F	F	F	F	-	P		$\dashv$	18	1	#	+				
					25	1	I			F	I			L				$\perp$	#	#	$\pm$	1	上			
						1	1											$\pm$	士	$\pm$	士	+	╁╴	╢		
25.9						+	╁			$\vdash$	_	L	-				_	$\dashv$	7	Ŧ	1	Ŧ	F			
240.3	Grey, very dense	20	DO	100+	26	1										口		j	7	1	#	ᆂ				
						t													$\pm$		$\pm$	1				 
						1	╁			┝╌	┝	<b> </b>	-		Н	Н	+	-	+	+	+	1				; 
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						L	1		_								士	1	1			土		_	Н	
	FINE TO MEDIUM SAND	21	00	80		L	$\pm$				_		-	<b>-</b>	-	$\dashv$	-	4	+	+	╀	╀	$\vdash$	Н		
					28.	╀	+	Н								$\square$	$\neg$		T	7	Ţ	T		コ		
						ŧ											#	1	#	1	上				Ц	
	traces of silt and gravel occ. silt seams and layers					Ł	上	Н	_							$\dashv$	$\exists$	+	+	+	╁	╁	Н			
	over seams and tayers	22	DŌ	100+	29.	╀	+	$\vdash \vdash$		Н					7	$\overline{\mathbf{J}}$	7	6	1	1	Ŧ		П	耳		
						F	1	$\square$						_		#	士	#	#	1	士		口			
						t										1	$\pm$	$\pm$	$\pm$	1	l	$\pm$	Н	$\exists$		
					30_	1	╁		$\dashv$	$\vdash$	-				-	$\dashv$	T	7	F	F	F	F	П			
						F			4				1			1	#	#	#	#	丰	1				i
30.9		23	DO	67		t			Ⅎ			0				$\exists$	士	$\pm$	<u>20</u>	$\pm$						ļ
235.3	END OF BOREHOLE			$\neg$	31	╀	-		_				-		$\dashv$	+	+		+	+	+	$\vdash$		$\exists$		
	Installed 50 mm Ø monitoring well to 28.3 m	İ				F		1	4	-	7		7		4	$\dashv$	#	1	1	1			H	1		
	3.0 m screen covered with geomembrane Sand backfill from 25.0 to 28.3 m		ļ	ŀ					$\exists$	╛	$\exists$		1			$\pm$	$\pm$	士	$\pm$	$\pm$			$\vdash \vdash$			
	Bentonite seal from 0.3 to 25 0 m				32_	$\vdash$	$\vdash$	$\dashv$	$\dashv$	$\dashv$	-		{		+		+	+	F	+	$\vdash$	$\vdash$				
	Provided with a steel protective casing				:	F	П	1	7	7		$\dashv$	4	4	1	1	1	‡	1	1	1					
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## LOG OF MON. WELL NO: 10-73 FIGURE NO: 73

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Flight-Augest

DATE: August 17, 2010

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		SA	MP	LES	<u> </u>	T		×	She	ar S	tren	gth		T		_	\tter	berg	, Lim	its		T
Depth	SOIL	ŀ			Depth Scale (m)		5	n	(k 100	N∕m		_		ŀ		만		•		u.		
Elev.	DESCRIPTION	Þ		9	\ \sigma	$\vdash$		ــــــــــــــــــــــــــــــــــــــ			150	tano	90	+						ᅼ.		-[
(m)	ļ	Number	8	N-Value			C	• (	(blo	<i>w</i> s/0	.3m	)	æ		•	M	oistu	re C	onte	ent (9	•)	
0.0	Ground Surface	Ground Surface 25 cm TOPSOIL 1 DO 11	<u> </u>																			
262.5	25 cm TOPSOIL		┢╌		10	╁		Т	<b>-</b> T	$\overline{}$	Т	1		╬	$\overline{}$	17		_	_	1-7		┨╓
	Brown, stiff to hard	1	DO	11	ŀ	1	₽.	$\exists$		土				1	上			$\exists$	$\pm$		$\dashv$	┨╟
		weathered 2 DO 27 1 1 12 12 SILTY CLAY, Till 3 DO 46 2 9 9 13 13 13 14 15 15 DO 54 15 DO 54 15 DO 54 15 DO 54 15 DO 54 15 DO 54 15 DO 54 15 DO 5	棚上																			
	weathered				1	土		$\exists$	_	╁	+	$\vdash$	$\dashv$	+	+	12	┝╌╢	+	+	H	+	- 18
		2	IDO	27		1		O	$\perp$		1				L			1				
	SILTY CLAY, THE					1	-	$\dashv$	+	+	┿	$\vdash$	+	╬	╂	╀		-	┿	+		1 111
		3	DO	46						╬	I			1	╁╴	13	H	+	╁	H	+	1 111
	sandy, a trace of gravet				2.			$\dashv$	+	1	╀	Н	_		$oxed{\Box}$		П	工	$\perp$	П		18
	OCC. Wet sand and silt seams	<u> </u>	ļ		-	+		十	+	╅	╫	╂╌┨	+	╅	╁╌	$\vdash$	-		+	╂┼	-∤	
	and layers, cobbles and boulders	4	DO	48		$\mathbf{L}$		$\Box$	1	4		口	$\Box$	1		13		士		廿	士	
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		_		_	]	L	$\Box$	士	$\perp$	上			$\pm$	1	<u> </u>	1		_	士		+	
		5	DO	54		}-	╀	+	+	0	-		$\dashv$	Ţ	$\vdash$		$\Box$	$\bot$	T	П		
3.8 258.7	D					Ħ		士	_	<del> </del>	+	╁┼	+	+	+-	$\vdash$	$\dashv$	┽	+	╁┼	+-	
200.1	Brown, very dense SANDY SILT, THI	6	DO	100+	4.			]	工	丰			$\Box$	•	9					П	上	M
	some clay, a trace of grayet					$\mathbf{H}$	$\vdash$	+	+	+	-	┝┥	-		-	$\vdash \dashv$	4	_	-	Н		
4.6 257.9	occ. wet sand and clay seams and layers, cobbles and boulders				ĺ	上		士	土	士					$\vdash$		+	+	+	$\vdash$	+	
	Brown, dense to very dense	7	DO	70	_	<u> </u>	$\vdash$	-	+	_			$\perp$	$\perp$			20		L			
	SILTY FINE SAND			, 0	5.	1-	H	+	╁	╫	╁	2	╁	╫	+	-1	7	+	╁	$\vdash$		
	a trace of clay							1	工	丰			ユ	1				土				
	occ. silt seams and layers	8	DO	42		1	$\vdash \vdash$		╼	╁	-	$\vdash$		╂	Н	$\dashv$	- 4	2	╀-	$\sqcup$	$-\Box$	
6.0 256.5	Brown, hard				6			1	土				$\perp$			$\vdash$	$\dashv$	+	╁	H	+	
	SILTY CLAY					1—	-	4	+	╂-			_		Ц	$\Box$	20	1	L			
6.7	some sand to sandy occ. wet sand and sitt seams	9	DO	38				+	4	+	$\vdash$	$\dashv$	╁	╆	$\vdash$	$\vdash$		+	╫	$\vdash$	+-	1
255.8	and layers						$\Box$	1	$\perp$				1					士	上			
	END OF BOREHOLE				7	H	$\vdash$	+	╅╌	╀	H	$\dashv$		╂	$\square$		-	+	<del> </del>	$\sqcup$	+	ī
	Installed 50 mm Ø monitoring well to 6.0 m							士		上			$\pm$					+	十	$\vdash$	$\dashv$	(
	1.5 m screen covered with geomembrane Sand backfill from 4.3 to 6.0 m					<b>!</b>	-	+	+	╂	Н	$\dashv$	4	_		$\neg$		1		П		3
	Bentonite seal from 0.3 to 4.3 m.				8		$\dashv$	╅	+	╁	Н		╁	╁╌	H	$\dashv$	+	╁	╂╌	$\vdash$	+	} >
	Provided with a steel protective casing						1	1				二					士		士			
I		Ī				$\vdash$	$\dashv$	+	+	╆		-	+	╀	$\vdash$		-	+	-	╟╬	+	
Ī		ļ			:					上				士		_	+	+	+	-	+	
ļ				ŀ	9 -	$\Box$	$\dashv$	$\bot$	$\bot$	_		1	$\bot$	L	П	$\dashv$	$\bot$	1				
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## LOG OF MON. WELL NO: 10-74 FIGURE N O: 74A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Steam

DATE: September 8, 2010

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Depth	SOIL				Depth Scale (m)	1	50		100 (12174)	/1412) 15		200				PL					ų.			WATER LEVEL
Elev.	DESCRIPTION	ğ		9	8	-				Res	<del>'</del>			十		<u> -</u>			_		<u> </u>	<del></del> .	$\dashv$	쯦
(m)		Number	Type	N-Value	g	1	0	(b)	lows	/0.3 50	m)										l (%)	)	Į	¥
0.0	Ground Surface	-	╀	2	0	F		1			70		90	╀	_	0	2	20		0	40	·		
265,5	25 cm TOPSOIL				"			I						t			17				I	$\Box$	┨╻	П
	Brown, stiff	1	DO	9		19	-	╀	╀		$\dashv$	$\dashv$	+	╀	-		•		$\dashv$	4	$\dashv$	1	]	ALC.
	SILTY CLAY, TIB		-		1						士	士		İ							士	土	1	
	sandy, a trace of gravel weathered occ. wet sand and silt seams	2	DO	10	1.	1-₫	-	╀	╀		+	+	+-	╀	├-	-	6		$\dashv$	$\dashv$	+	+-	-	44
1.5	and layers, cobbles and boulders				1			1			$\exists$	1		上							士		1	48
264.0	Brown, dense SANDY SILT, Till	3	DO	37		H	-	+		H	$\dashv$	+	╁	╀		12		$\vdash$		$\perp$	+	+	-	
	some clay a trace of gravel	-	-	-	2							1									#	士	1	il l
2.3 263.2	occ. wet sand and clay seams and layers, cobbles and boulders	<del> </del>			-			+	$\vdash$	H	$\dashv$	+	+	┢	_		┝	Н	-	$\dashv$	+	十	-	18
	Brown, hard	4	DO	90		<del>                                     </del>	$\perp$	$\bot$	П	П	7	1	φ.	L	ě				$\exists$	7	#	工		Υ
					3.									L						$\pm$	士	士		10
		5	DO	70		┨┤	+	╀	-	$\dashv$	-∳	+	$\perp$	ļ		12			_	$\dashv$	7	$\mp$	] [	
	SILTY CLAY, THI			-	1	Ħ	土	上				1								$\pm$	$\pm$	上		
					4	┨┤	-	╀	Н		+	+	+	╀	-	_	$\vdash$	-	-	$\dashv$	+	+		
					"			L		#	$\Box$			匚						1	士		<b>j</b> ∦	
ļ	sandy, a trace of gravel occ. wet sand and silt seams					╂┤		╁	H	$\dashv$	+	+	+	╂	H			$\dashv$		+	+	+		
	and layers, cobbles and boulders	6	DO	99	1 _			T		$\Box$	1		1.			12			$\rightrightarrows$	1	#	士	1	
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							-				1	7	T							7	#	丰		
6.0								上			士	士							_	$\pm$	土	土		H
259.5	Brown, very dense				6.	╂┤		$\vdash$	Н	$\dashv$	+	┿	+-	H			18	$\dashv$	4	$\dashv$	Ŧ	-		₽
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l						H	-	╁	$\vdash$		+	+	+	┞		$\dashv$				+	+	┿		
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	SILTY FINE SAND						-	╁╌			+	十	+	┢	$\vdash$	$\dashv$		$\dashv$	$\dashv$	$\dashv$	+	╁┈	B	
		-	_				_	lacksquare		$\Box$	1	4	T				719	H		7	7	1		
	a trace of clay	8	DO	94	8						1	<u> </u>	0							$\pm$	士	+-		e të
	occ. silt seams and layers					╀		╀	H		+	+	+	$\vdash$		-		-	$\dashv$	4	4	$\Box$		d E
							上	上	Ħ		士	$\pm$	1							士	士			2
9.1	·				9	╀	+	+		$\dashv$	+	+	+	$\vdash$	$\vdash$		$\vdash \vdash$	$\dashv$	-	+	+	+		Ē
256.4	Grey, hard			-		H		1			1	1				1 <u>2</u>		#	1	#	丰	口		W.L. @ El. 259.5 m on completion
		9	DO	63			+	$\vdash$	H	<b>-</b> F	╫	+	+	-		•	$\dashv$	$\dashv$	-	+	+	+		EI.
	SILTY CLAY, THE						Ļ			1	1	1	T					$\Box$		1	#	口		0
	sandy, a trace of gravel				10_		$\pm$			$\pm$	$\pm$	$\pm$	+		$\vdash$	-	$\dashv$	$\dashv$	+	+	+	+		ĭ. K.
İ	occ. wet sand and silt seams and layers, cobbles and boulders								П	4		1	-					_	$\dashv$	1	#	$\Box$		
]	Cont'd on Fig. 74B		_								$\pm$	士	$\pm$		8	_	_	$\exists$	+	_	+	+		
11.0		10	DO	92	11.		1						_	_	•	_	$\neg$		-	_	$\overline{}$	_	n Mili	Al-



## LOG OF MON. WELL NO: 10-74 FIGURE NO: 74B

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

	Jane Guest, and Kirby Re	vau, t	July 1	or va	uyria	11							Di	4 TI	-:	Sep	ten	nbe	f 8,	20	10				
		SA	MP	LES	E			×	S	near (kN	St	reni	gth					At	terb	erg	Lim	iits			
Depth Elev.	SOIL DESCRIPTION				<b>\$</b>		,	50		(K)		50	20	00			I	PL				<u> </u>			le K
(m)	DESCRIPTION	Number	y De	N-Value	Depth Scale			)	<b>(b</b> l	lows	s/0.		tand	æ			•	Moi	stur	e C	onte	ent (	%)		WATER LEVEL
11.0		Z	F	Ż	11	┪	10		30		50		70	8	0		10	ŀ	20		30		46	_	_ ≷
254.5	Grey, hard SILTY CLAY, Till	<del> </del>	+		┨"	1				F	Γ	F	П	П		1	1	Ţ	7	Ŧ	1	T	П		m
	sandy, a trace of gravel occ. wet sand and silt seams					1		<u> </u>							1	+	1	+	1	‡	+	‡	H		
12.2	and layers, cobbles and boulders				12	F	F			-	F	-			1	7	+		‡	+	1	丰	H		
253.3	Grey, very dense	11	DO	100-	+	F	-	F			F		П		ф	7	7	13	1	1	‡	丰	H		
	FINE SAND a trace to some silt				13.	F					F		П		1	1	+	1	‡	‡	‡	1			
	a trace of gravel occ. silt seams and layers					F	F								1	+	+	7	1	+	1	F	H		
13.7 251.8	Grey, very dense	10	-		-	F					F		H		7	+	+	17	7	1	F	<del> </del>	H		
	SANDY SILT	12	DO	100+	14.	F	П				F		$\sqcap$	7	7	+	7			+	1	#	Ħ	$\exists$	
į	a trace to some clay a trace of gravel									E				$\exists$	4	+	7	+	+	Ŧ	+	H		4	
15.0 250.5	occ. silty fine sand layers				15.								$\exists$		7	+	7	+	Ŧ	Ŧ	F	$\square$	H		
250.5	Grey, very dense FINE SAND a trace to some silt			_										+	-	-	+	17	,	Ŧ	F	H	$\dashv$		L
15,7 249.8	a trace to some sin a trace of gravel occ. sift seams and layers	13	DO	70								9	2		+		-	•			F	$\square$	$\dashv$	$\exists$	
	END OF BOREHOLE				16.	Ŀ									1	$\frac{1}{2}$		-	-		F	$\square$	$\dashv$	$\exists$	
	Installed 50 mm Ø monitoring well to 15.2 m														_		$\pm$	+				$\Box$			
	3.0 m screen covered with geomembrane Sand backfill from 11.9 to 15.2 m				17								$\exists$	1	1	$\pm$		1	$\perp$		L	Ы	$\exists$	$\exists$	
	Bentonite seal from 0.3 to 11.9 m Provided with a steel protective casing										_			+	$\pm$	$\pm$	$\pm$	$\pm$	L	$\perp$	L	Н	$\exists$		
								$\exists$						$\pm$	1	+	+	t	L	$\pm$	E		1		
					18_					$\exists$	$\exists$		$\dashv$	$\pm$	1	$\pm$	$\pm$	$\pm$				Ы	$\pm$	1	
	•							$\exists$					1	+	‡	$^{\dagger}$	1	1					$\pm$	1	
					19_			7				$\exists$	井	#	‡	‡		1		L	E		_	╡	
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					20_			1		_	1		+	#	#	+	1	1					$\pm$	1	
								+		$\dashv$		$\exists$	#	$\downarrow$	1			+		F	Н	H	$\pm$	1	
					21_		_	#	1	$\dashv$	_	$\dashv$	1	1	‡	1	+	+			Н		$\pm$	$\exists$	
								$\downarrow$	1	1	#	_	1	+	1	1	‡	+	$\vdash$				$\pm$	1	
1							#	#	#	$\dashv$	+		1	+	#	+	#	+				_	士	$\exists$	
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## LOG OF MON. WELL NO: 10-75 FIGURE NO: 75A

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Sterm

DATE: September 9, 2010

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:	sandy, a trace of gravel occ. wet sand and silt seams	3	DO	34	1	₽	╀-		0	-	Н				1	$\perp$	- 1	3			$\Box$			
i	and layers, cobbles and boulders	<u> </u>	100	-	2	Ī									1	+	<del> </del>	╫	Н	Н	+	+	+	
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	SILTY FINE SAND					t			コ				士	<del> </del>	1	士	$\pm$		Н	$\exists$	_	+	+	
	a trace of clay occ. silt seams and layers				4.	1	+	-	-			$\dashv$	-	$\dashv$	4	+	F	_	$\vdash$	$\exists$	4	$\bot$		
4.6	occ. sik seams and layers					t	口					士	$\exists$	1	$\pm$	$\pm$	土				+	+	+	
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	occ. wet sand and silt seams and tayers, cobbles and boulders				-		$\square$	1	ユ	コ	コ	1	1	#	1	丰				#	#	丰	口	8
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## LOG OF MON. WELL NO: 10-75 FIGURE NO: 75B

JOB DESCRIPTION: Proposed Urban Development

JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road,

Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stem

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	and layers, cobbles and boulders						F			4		1	#	‡	1					1	1	十			
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	and layers, cobbles and boulders				2	٥‡	+	+-	$\vdash$				7	7	1	1	1	1	丰		$\exists$	$\downarrow$	1_		
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	Grey, very dense	17	-	100+	-	1	<del> </del>	+	Н	-	-	+	-	-	+	$\Gamma$	$iggl\{$	17			7	1	П		
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## LOG OF MON. WELL NO: 10-75 FIGURE NO: 750

JOB DESCRIPTION: Proposed Urban Development

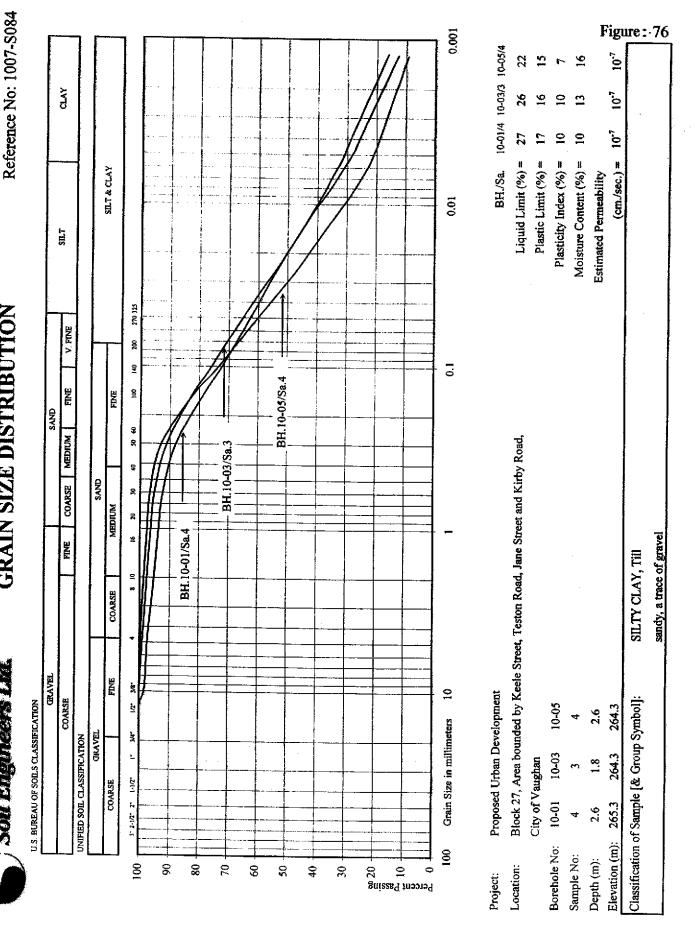
JOB LOCATION: Block 27, Area bounded by Keele Street, Teston Road, Jane Street, and Kirby Road, City of Vaughan

METHOD OF BORING: Hollow-Stern

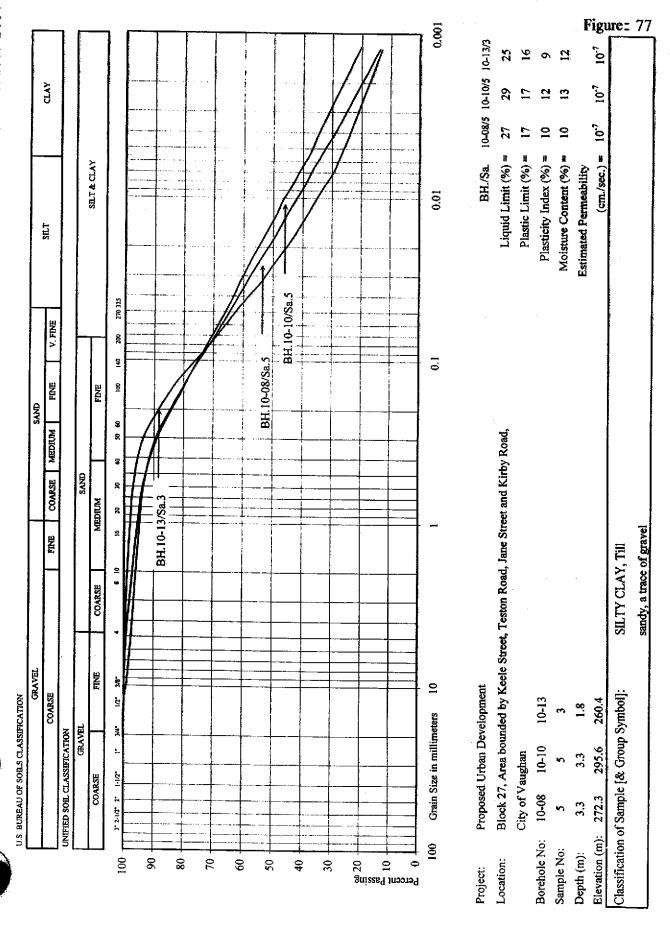
DATE: Sentember 9 2010

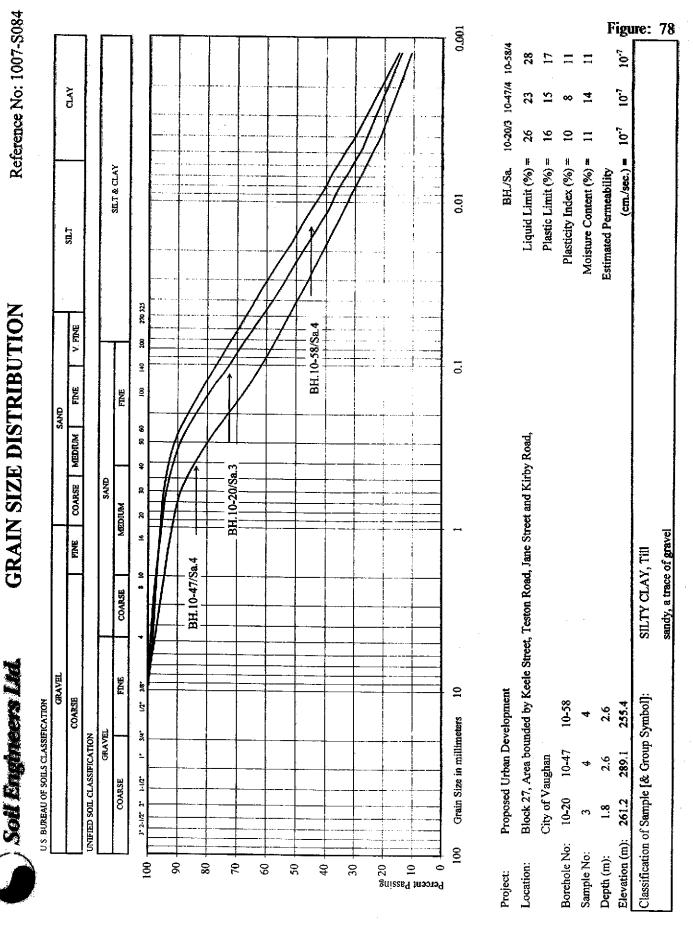
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29.0 235.8	Grey, very dense	22	DΟ	100+	29		4	Ŧ	Ŧ	Ŧ	Ţ	$\perp$	L	Ę	Ļ			-	1	7		1		
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	a trace to some clay a trace of gravel					H		_	+	+	+	-	-	$\vdash$		$\dashv$	$\dashv$	4	$\dashv$	4	$\mp$	$\perp$		
30.0	occ. silty fine sand layers				30_				土	士	上	上					$\exists$			1				1]
234.8	Grey, very stiff SILTY CLAY, THI					H	$\dashv$	╁	+	+	+	╀		H	Н		$\dashv$	-	4	+	+	1		Ц
	sandy, a trace of gravel occ. wet sand and silt seams	~	22	_					士		t	1					14			$\bot$	土	土		
30.9 233.9	and layers, cobbles and boulders	23	Ю	21	31_	$\vdash$	- 0	+	+	+	+	╁		$\vdash$		_	-		-	+	+	╄	H	
200.8	END OF BOREHOLE				31.			1	1		1	1						1	_	1		$\bot$		
	Installed 50 mm Ø monitoring well to					H	+	+	+	+	+	╀	-	Н	Н	-{	-	$\dashv$	4	+	+	+	$\dashv$	
	30.2 m 3.0 m screen covered with geomembrane				:		$\Box$	1	#	1	1	1				コ		1	$\exists$	1	丰		 	
	Sand backfill from 26.8 to 30.2 m Bentonite seal from 0.3 to 26.8 m				32_	H	+	+	+	+	╂-	-	╀	$\vdash$			-	$\dashv$	4	+	+	+	$oxed{H}$	
	Provided with a steel protective casing							丰	#				匚			〓	_	$\downarrow$	$\downarrow$	1	1		口	
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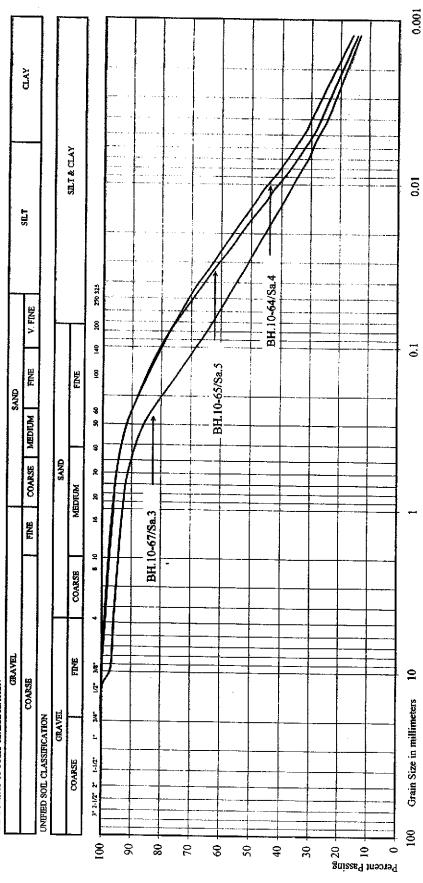
Soft Engineers Let.





Reference No: 1007-S084

U.S. BUREAU OF SOILS CLASSIFICATION



Block 27, Area bounded by Keele Street, Teston Road, Jane Street and Kirby Road, Proposed Urban Development City of Vaughan Location: Project:

10-64/4 10-65/5 10-67/3

BH./Sa.

Liquid Limit (%) =

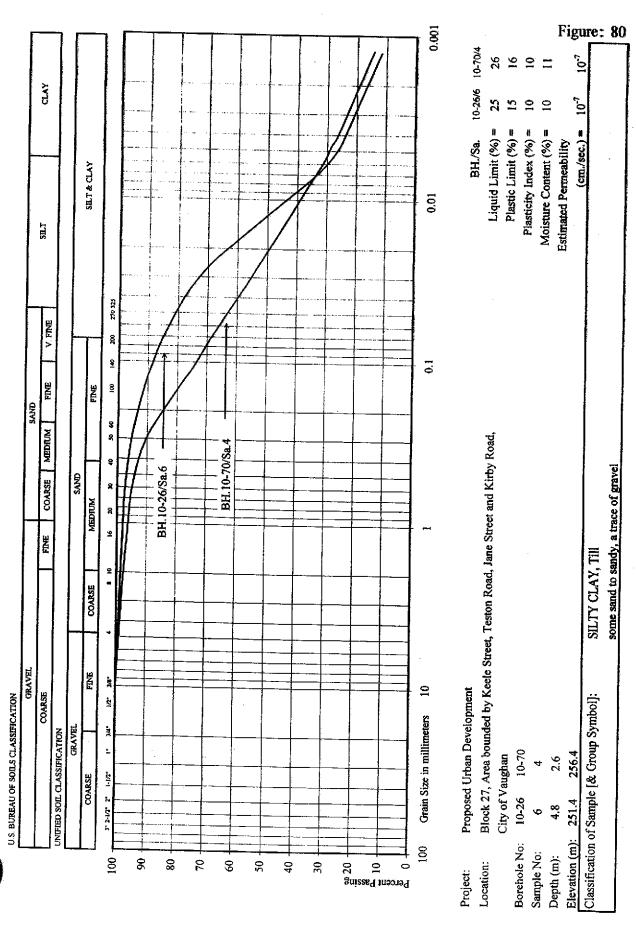
10. 9 10-7 16 10. (cm./sec.) = Moisture Content (%) = Plastic Limit (%) = Plasticity Index (%) = **Estimated Permeability** Classification of Sample [& Group Symbol]: 10-67 281.3 1.8 10-65 249.7 3.3 10-64 4 Elevation (m): 249.4 5.6 Borehole No: Sample No: Depth (m):

sandy, a trace of gravel

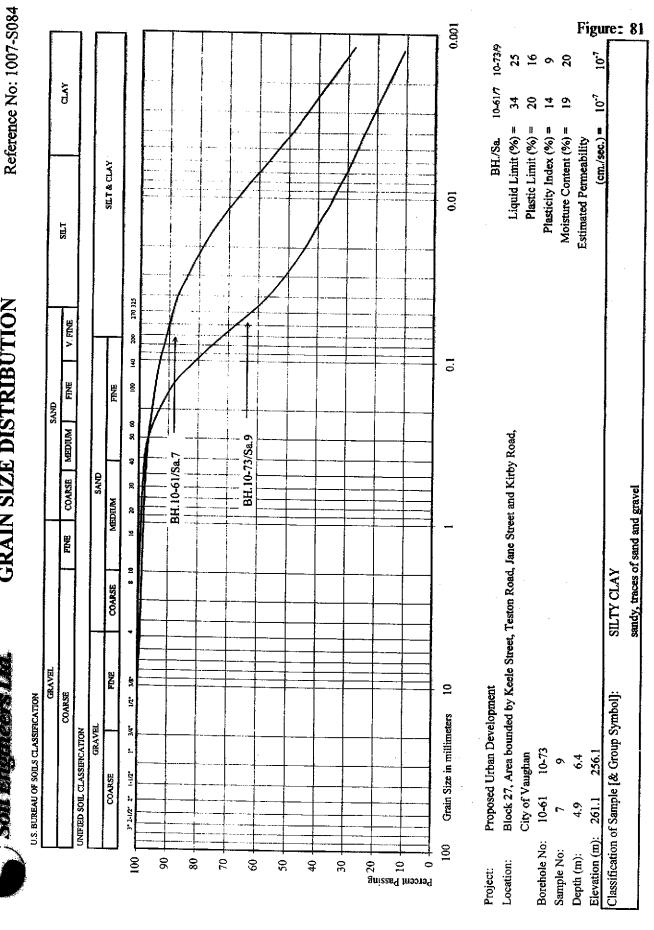
SILTY CLAY, Till

Figure: 79

# Soul Engineers Lat. GRA

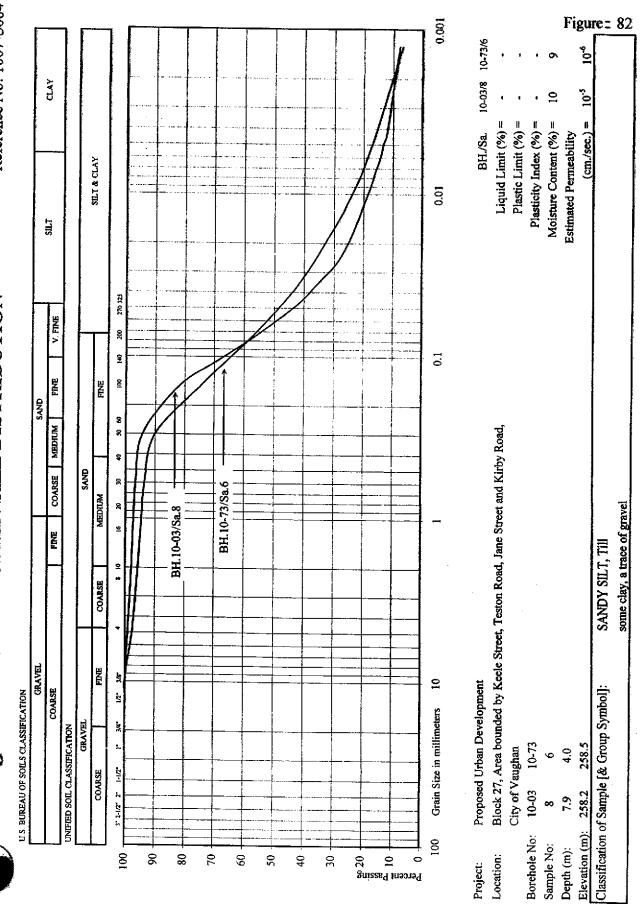








Reference No: 1007-S084





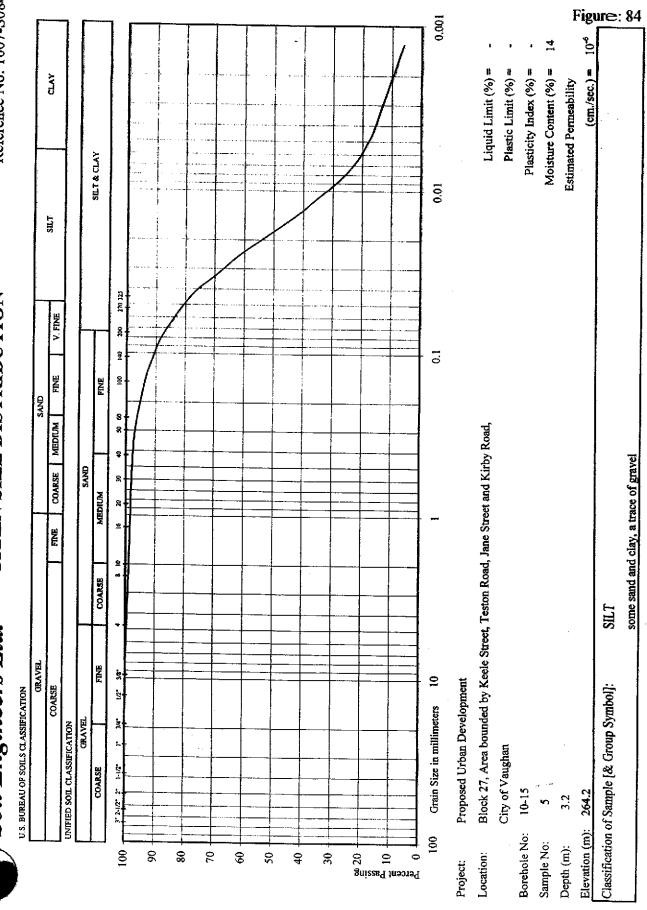
Reference No: 1007-S084

Figure: 83 0.001 10-40/4 10-53/2 90 2 CLAY .0<u>.</u> Moisture Content (%) = (cm./sec.) = Liquid Limit (%) = Plastic Limit (%) = Plasticity Index (%) = Estimated Permeability SILT & CLAY 0.01 SILT 270 335 V. FINE 5 FINE 3 FINE SAND MEDICIM Block 27, Area bounded by Keele Street, Teston Road, Jane Street and Kirby Road, 8 SAND COARSE MEDIUM some clay, a trace of gravel FINE BH.10-53/Sa.2 SILTY SAND, TIII BH.10-40/Sa.4 COARSE GRAVEL FIME 9 Proposed Urban Development Classification of Sample [& Group Symbol]: COARSE U.S. BUREAU OF SOILS CLASSIFICATION Grain Size in millimeters GRAVEL UNIFIED SOIL CLASSIFICATION 10-53 1.0 City of Vaughan COARSE 3-2-1/7 7 1-1/2 10-40 277.0 Elevation (m): Borehole No: 001 Sample No: Depth (m): 8 8 50 Percent Passing 9 0 Location: 80 5 40 30 8 Project:

Soil Engineers Ltd.

# GRAIN SIZE DISTRIBUTION

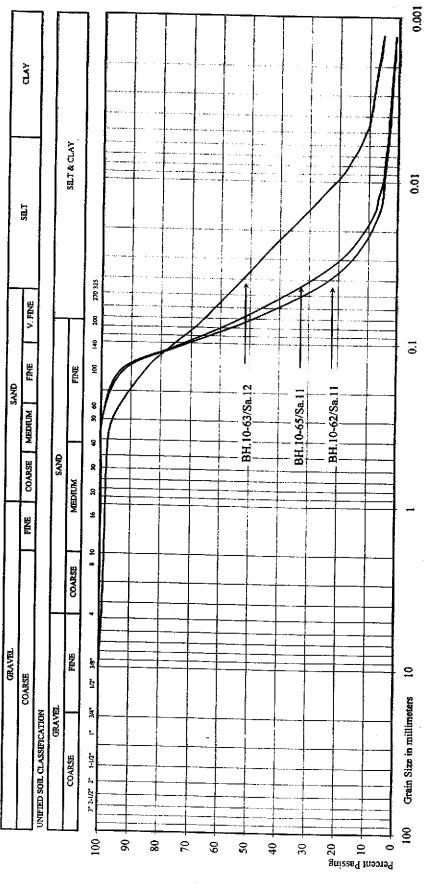
Reference No: 1007-S084





Reference No: 1007-S084

U.S. BUREAU OF SOILS CLASSIFICATION



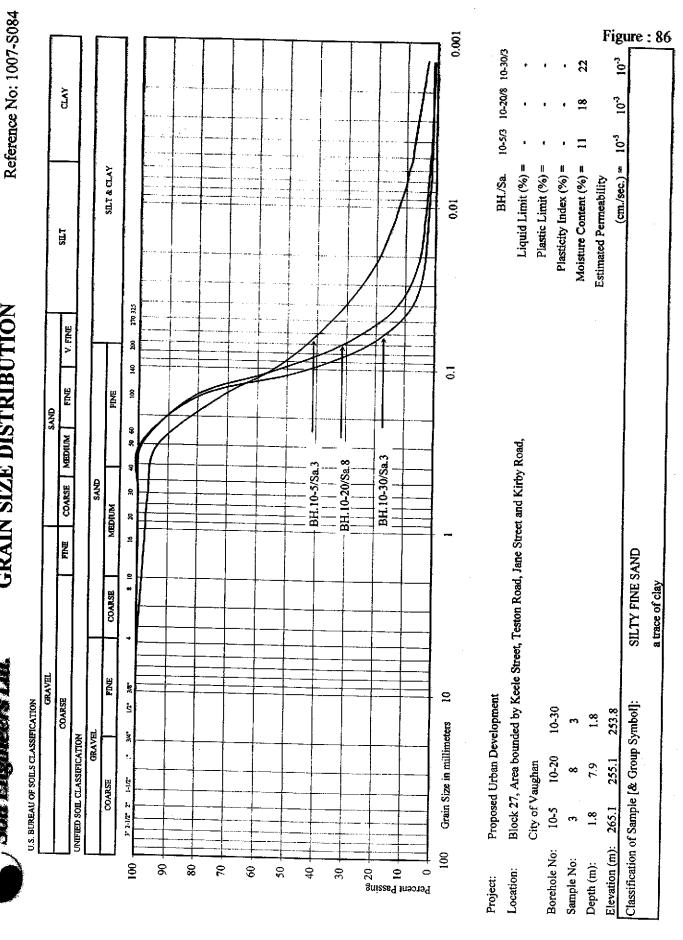
Proposed Urban Development Project:

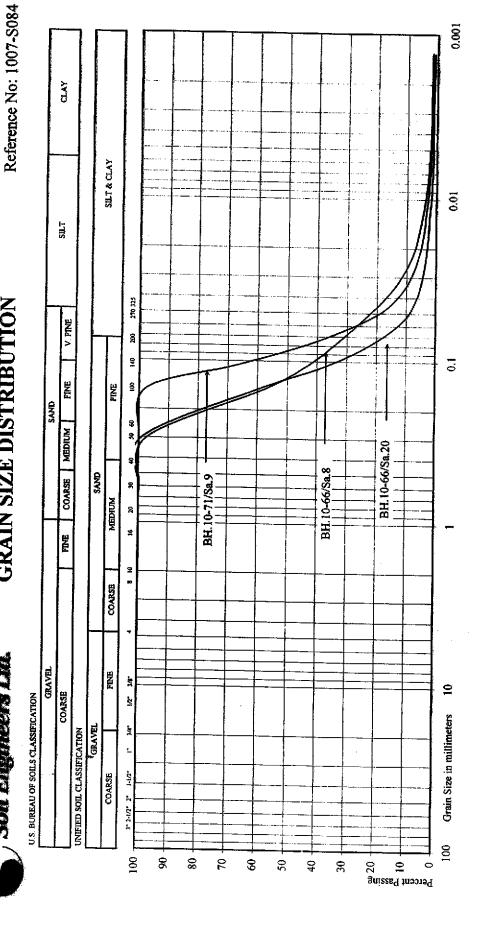
	•		4		BH./5a. 10-62/1110-63/1210.	10-62/11	10-63/121	ģ
Location:	Block 27,	, Area bou	nded by Keele;	Block 27, Area bounded by Keele Street, Teston Road, Jane Street and Kirby Road,	Liquid Limit (%) =	•		
	City of Vaughan	aughan			Dlastic Limit (%)	1	,	
Borehole No:	10-62 10-63	10-63	10-65		- (%) talent vices :	•	•	
Sample No:	11	12	11		Moieting Contant (02) = 10	. 9	. ½	-
Depth (m):	9.4	9.4 13.8 9.4	9.4		Fetimeted Dermeshility	ř.	3	7
Elevation (m): 254.4 249.8 243.6	254.4	249.8	243.6		(100 ) I (100)	4	\$-01	_
Classification of Sample [& Group Symbol]:	of Sample	[& Group	Symbol]:	SANDY SILT	(Altri Ser.)	2	2	7

a trace to some clay and gravel

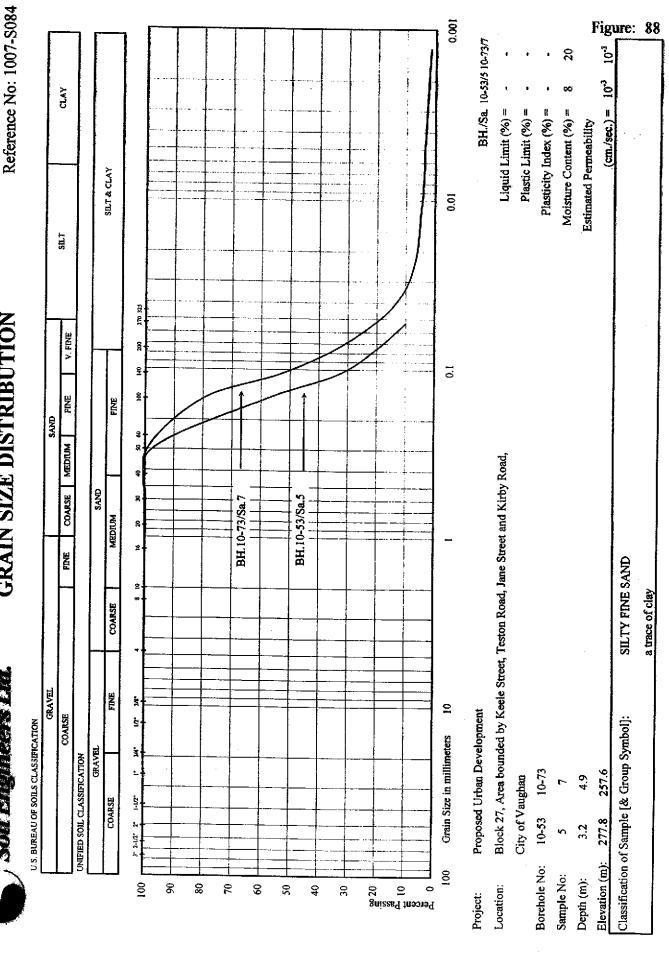
Figure: 85

23

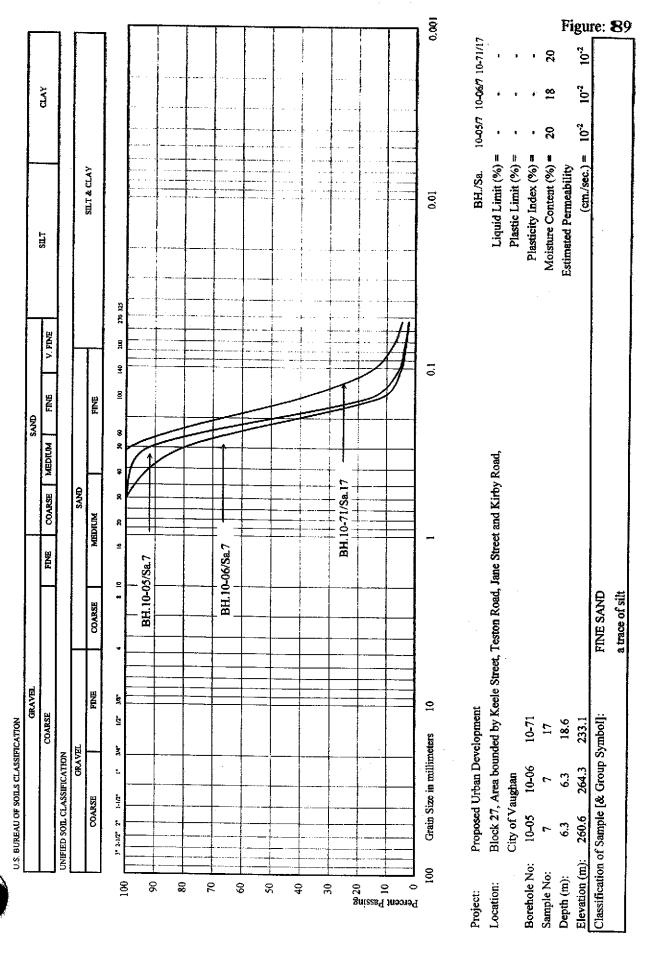


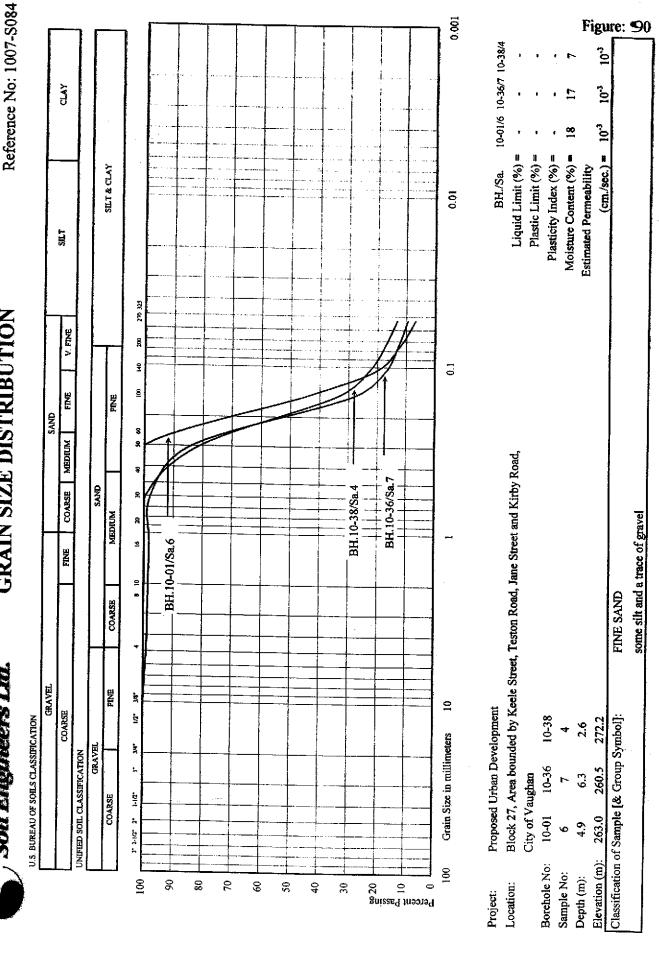


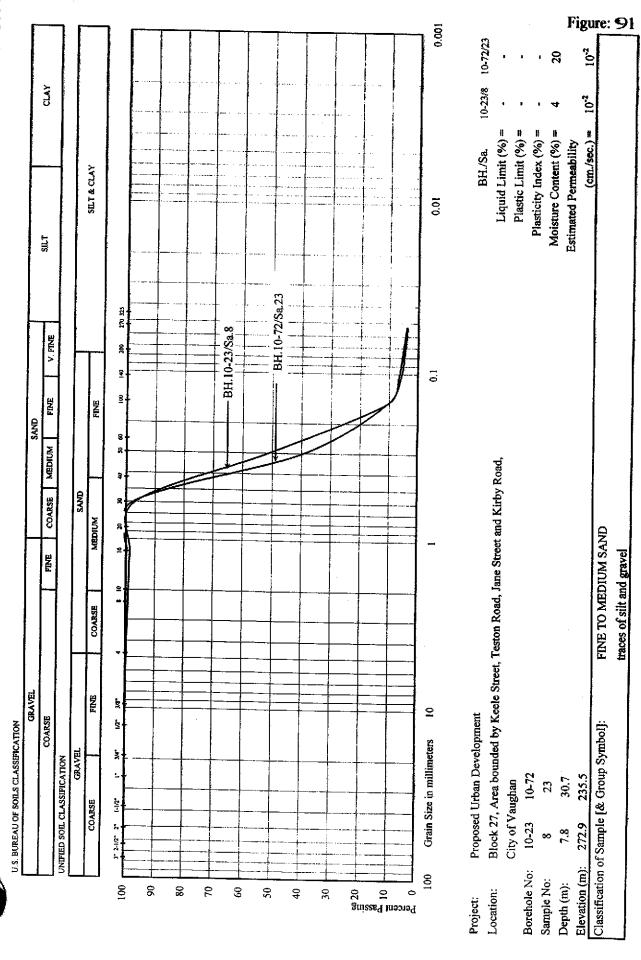
_						Fig	ure :	87
10-71/9	ı	•	ı		17	10.5		
10-66/20	•			, 5	4	10.3		
10-66/8	,		,	, ,	4	10.3		
BHJ/Sa. 10-66/8 10-66/20 10-71/9	Liquid Limit (%) =	Plastic Limit (%)	Plasticity Index (%) =	Moieting Content (%)	Estimated Permeahility	(cm/sec.) = 10° 10° 10°3		
	Block 27, Area bounded by Keele Street, Teston Road, Jane Street and Kirby Road,						SILTY FINE SAND	a trace of clay
Proposed Urban Development	nded by Keele		10-71	σ,	6.2	245.5	Symbol]:	
Urban De	Area bou	ughan	10-66	20	26.2	238.1	& Group	
pesodo	3lock 27, .	City of Vaughan	10-66	<b>∞</b>	7.8	256.5	Sample [	
	Location: E	0	Borehole No: 10-66 10-66	Sample No:	Depth (m):	Elevation (m): 256.5 238.1 245.5	Classification of Sample [& Group Symbol]:	



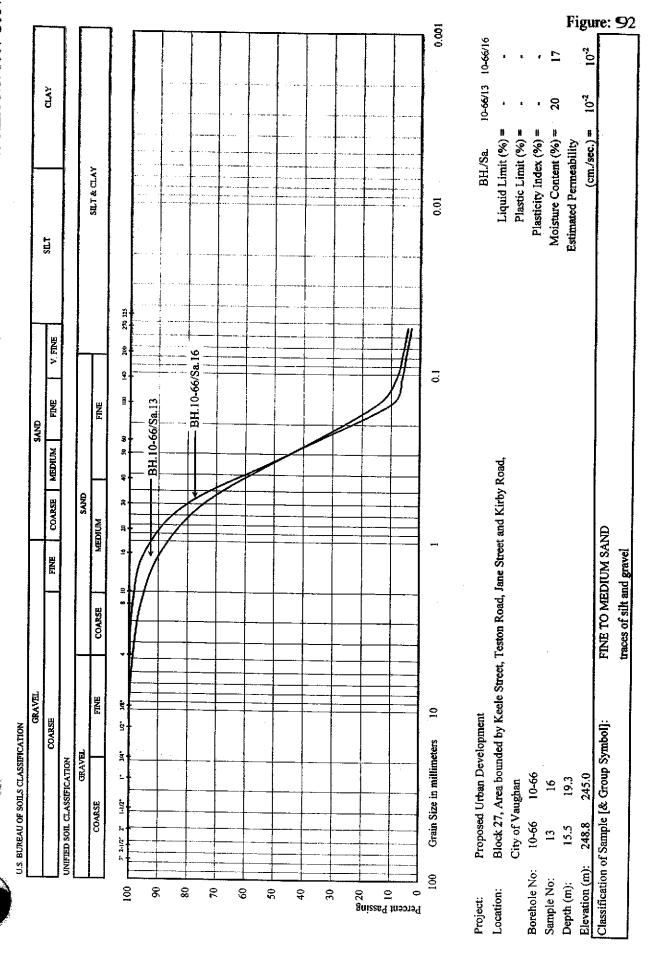
Reference No: 1007-S084







Soff Engineers Las.





LEGEND

EARTH FILL
SILTY CLAY TILL
SANDY SILT TILL

SILTY SAND TILL
SILTY CLAY
SILT

SANDY SILT SILTY FINE SAND

FINE TO MEDIUM SAND

FINE SAND

WATER LEVEL

**▼** CAVE-IN

TOPSOIL/TOPSOIL FILL

# WELL LOCATION PLAN AND SUBSURFACE PROFILE

Reference No.:

e No.: 1007-S084

Date:

January 2011

Drawing No.:

Scale: Vert.: 1:200 Horiz.:1:10000

SOIL ENGINEERS LTD.



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## **APPENDIX**

BOREHOLE AND MONITORING WELL COORDINATES (NAD 83)

REFERENCE NO. 1007-S084



## Borehole and Monitoring Well Coordinates (NAD 83) Reference No. 1007-5084

Borehole	LITM (Eastine)	
10-01	UTM (Easting) 17T 617187,940	UTM (Northing)
10-02	177 617425.257	4859925.544
10-03	17T 617427.743	4859653.571 4859550.252
10-04	17T 618394,508	4859733.273
10-05	17T 618351.615	4859617,321
10-06	17T 618450.308	4859620.992
10-07	17T 618799.000	4858798.996
10-08	17T 617903.003	4860526.001
10-09 10-10	17T 617941.994	4860295.001
10-10	17T 618769.006	4860641.995
10-12	17T 618587,993	4860468,000
10-13	17T 617158.003 17T 617169.665	4858955.999
10-14	177 617194.523	4859158.591
10-15	177 617136.992	4859386.911
10-16	17T 617840.859	4859537.418 4859603.887
10-17	17T 617874.987	4860075.119
10-18	17T 617948.980	4859660.004
10-19	17T 617001.021	4859750.988
10-20	17T 617832.995	4859279.008
10-21 10-22	17T 617501.288	4859228.909
10-23	17T 617454.999	4859020.003
10-24	17T 618520.005 17T 617066,360	4860048.008
10-25	17T 617812.747	4859440.562
10-26	17T 617641.003	4859515.434
10-27	17T 617834.995	4858632.993 4858697.988
10-28	17T 618117.274	4858571.952
10-29	17T 618071.576	4858739.024
10-30	17T 618056.995	4858953.006
10-31 10-32	17T 618255.989	4859427.991
10-32	17T 618270.010	4858631.000
10-34	177 618968.998	4858852.000
10-35	17T 618984.007 17T 618655.979	4859130.995
10-36	17T 61633.979	4859004.977
10-37	17T 618522.001	4859214.995 4859502.005
10-38	17T 618764,009	4859589.010
10-39	17T 619029.994	4859481.009
10-40	17T 618903.235	4859699.538
10-41	17T 618934.238	4859955.034
10-42 10-43	17T 618638.637	4859815.102
10-43	17T 618901.003	4860221.003
10-45	17T 617507.942 17T 618103.772	4859952.117
10-46	177 618306.001	4860138.139
10-47	177 618542.991	4860394.992
10-48	17T 618026.194	4860775.004 4860239.134
10-49	17T 617703,508	4860104.909
10-50	17T 617580.607	4859868.620
10-51	17T 617607.317	4859643.428
10-52	17T 617574.070	4859461.886
10-53 10-54	177 618814.193	4859688.883
10-55	17T 618565,990	4859341.001
10-56	17T 618875.993 17T 618021.990	4859019.989
10-57	17T 618021.990 17T 617995.992	4859346.004
10-58	17T 617995.992	4859117.007
10-59	17T 617505.997	4858873.002 485873.002
10-60	17T 618842.001	4858761.993
	010012.001	4860537,996

## Monitoring Well

10-61	177_616988.159	4859857.974
10-62	171 617133.088	4859284.032
10-63	17T 617639.943	4859161.946
10-64	17T 617949.856	4858637.526
10-65	17T 617972.411	4858646.313
10-66	17T 617936.883	4859760.703
10-67	177 618231 240	4860599.829
10-68	17T 618233.671	4860600.005
10-69	17T 618713.569	4860115.905
10-70	17T 618226,971	4858882.906
10-71	17T 617372.677	4858423.170
10-72	17T 617017.826	4859871.527
10-73	17T 618228.344	
10-74	17T 618979.742	4859136.742
10-75	17T 619008.536	4858989.765 4858991.119