

**REPORT ON  
GEOTECHNICAL INVESTIGATION  
PROPOSED DWELL CITY TOWNS  
2 HOLIDAY DRIVE  
TORONTO, ONTARIO**

**Prepared for:**

**MENKES DEVELOPMENTS LTD.**

**By:**

**SPL CONSULTANTS LIMITED**

Project: 1934-110 Rev. 1  
December 10, 2013



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FILE	1120
PROJECT	Dwell
X-REF	

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BOREHOLE LOGS BY JACQUES WHITEFORD LIMITED

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## 1. INTRODUCTION

SPL Consultants Limited (SPL) was retained by Menkes Developments Limited (Menkes) to undertake a geotechnical investigation for the proposed Dwell City Towns development located at 2 Holiday Drive in Toronto, Ontario.

It is understood that the proposed development will consist of blocks of three storey brick town houses with roof terrace and one level of basement (B1) or up to two levels of parking garage (P2). Finished B1 basement level floor will be at about Elev. 141.0 m. Finished P2 parking garage will be at about Elev. 138.1 m.

Previously, a preliminary geotechnical investigation was carried out at the subject site by Jacques Whiteford Limited in November 2006. The geotechnical borehole logs from this report are attached in **Appendix A**.

The purpose of this geotechnical investigation is to determine the subsurface conditions at the borehole locations and from the findings in the boreholes make engineering recommendations for the following:

1. Foundations
2. Floor slabs and permanent drainage
3. Excavations and Dewatering
4. Temporary shoring
5. Earth pressures
6. Earthquake considerations

This report is provided on the basis of the terms of reference presented above and on the assumption that the design will be in accordance with the applicable codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design. It may then be necessary to carry out additional borings and reporting before the recommendations of this office can be relied upon.

The site investigation and recommendations follow generally accepted practice for geotechnical consultants in Ontario. The format and contents are guided by client specific needs and economics and do not conform to generalized standards for services. Laboratory testing for most part follows ASTM or CSA Standards or modifications of these standards that have become standard practice.

This report has been prepared for Menkes and its architect and designers. Third party use of this report without SPL consent is prohibited.

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## 2. FIELD AND LABORATORY WORK

A total of eight (8) boreholes (BH13-1 to BH13-8) were drilled at the subject site between November 14 and November 15, 2013, see **Drawing 1** for location plan. Boreholes were drilled to depths ranging from 8.2 to 18.3 m.

The boreholes were drilled with solid/hollow stem augers by a drilling sub-contractor under the direction and supervision of SPL personnel. Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer weighing 624 N and dropping 760 mm in accordance with the Standard Penetration Test (SPT) method. The samples were logged in the field and returned to the SPL laboratory for detailed examination by the project engineer and for laboratory testing.

As well as visual examination in the laboratory, all soil samples were tested for moisture contents. Grain size analyses of selected three samples were conducted and results are presented in **Drawing 10**. Three samples were subjected to Atterberg limits and results are presented on the respective borehole logs.

Three 50 mm diameter monitoring wells were installed at boreholes BH13-1, BH13-3 and BH13-6 to monitor long-term (stabilized) groundwater levels.

The surface elevations at the borehole locations were referenced to a geodetic datum and were surveyed by SPL.

## 3. SITE AND SUBSURFACE CONDITIONS

The area under assessment is an irregular-shaped parcel of land with an area of approximately 2.2 hectares (5.4 acres) located at 2 Holiday Drive, north of Holiday Drive, immediately west of Highway 427 in Etobicoke, Ontario. The area is covered with demolition debris, construction rubble, some paved and grass and earth covered areas. It is understood that the area was previously occupied by Ramada Hotel Toronto Airport with several one to six storey buildings.

Based on visual observation the site is generally flat and at grade with neighboring properties and roadways. A maximum grade difference of approximately 0.8m was recorded between boreholes during the ground surface elevation survey.

The borehole location plan is shown in **Drawing 1**. The subsurface conditions at the borehole locations are presented in the individual borehole logs presented in **Drawings 2 to 9** and are summarized in the following paragraphs.

### 3.1 Soil Conditions

**Pavement:** The pavement structure consisted of 125 mm of asphalt overlying 300 mm of granular base (sand and gravel, trace clay, trace silt) encountered at the borehole BH13-1.

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**Concrete:** The 125 mm thick concrete slab was encountered at the borehole BH13-4.

**Topsoil and Fill Material:**

Fill material was found in all the boreholes to depths varying from ground level to up to 4.5 m below the existing grades. The fill material was heterogeneous and consisted of very loose to compact sand, sand and gravel, gravelly sand and stiff to firm clayey silt and silty clay. Trace to some gravel, some sand, trace to some organics, trace to some brick, trace construction debris, seams and pockets of silty clay, pockets of sandy silt were observed in fill material.

**Clayey Silt Till to Silty Clay Till:**

Underneath the fill material, upper native soil consisting of clayey silt to silty clay till was found in all the boreholes except BH13-3, extending to depths ranging from 1.8 m to 9.1 m below existing grades. The till was present in very stiff to hard consistency with measured SPT 'N' values ranging from 16 to more than 50 blows per 0.3 m of penetration. Some sand to sandy, sand seams, silt seams, trace gravel, some oxidation, pockets of silty clay and shale fragments were observed in the till deposits.

**Silty Sand Till to Sandy Silt Till:**

Underneath the fill material, upper native soil consisting of silty sand to sandy silt till was found in all the boreholes extending to depths ranging from 3.0 m to 10.2 m below existing grades. The till was present in compact to very dense consistency with measured SPT 'N' values ranging from 23 to more than 50 blows per 0.3 m of penetration. Some clay to clayey, trace to some gravel, some oxidation, sand seams, silt seams, shale fragments, pockets of silty clay were observed in the till deposits.

Grain size analyses of one sample of silty sand till (BH13-2/SS5) was conducted and the results are presented in **Drawing 10**, with the following fractions:

Clay: 6%  
Silt: 44%  
Sand: 37%  
Gravel: 13%

Fractions are also shown on the borehole logs.

Atterberg limits test of one sample (BH13-2/SS5) was conducted. The results are shown on the borehole logs and are summarized as follows:

Liquid limit ( $W_L$ ): 22  
Plastic limit ( $W_P$ ): 17  
Plasticity index (PI): 5.3

The soil is classified as silty sand till.

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### **Sandy Silt to Silty Sand:**

At the lower portion of the boreholes BH13-1, 13-2, 13-3, 13-5 and 13-6 native soil consisting of sandy silt and silty sand was found extending to depths ranging from 5.6 m to 11.1 m below existing grades. The soil was present in very dense consistency with measured SPT 'N' values of more than 50 blows per 0.3 m of penetration. Trace gravel and trace to some clay were observed in the silty sand and sandy silt deposits.

Grain size analyses of one sample of silty sand till (BH13-2/SS7) was conducted and the results are presented in **Drawing 10**, with the following fractions:

Clay: 11%  
Silt: 42%  
Sand: 36%  
Gravel: 11%

Fractions are also shown on the borehole logs.

Atterberg limits test of one sample (BH13-2/SS7) was conducted. The results are shown on the borehole logs and are summarized as follows:

Liquid limit ( $W_L$ ): 16  
Plastic limit ( $W_P$ ): 13  
Plasticity index (PI): 3.3

The soil is classified as silty sand.

### **Clayey Silt:**

At the lower portion of the borehole BH13-3 native soil consisting of clayey silt was found extending to depths ranging from 7.2 m to 9.0 m below existing grades. The soil was present in very stiff consistency with measured SPT 'N' values of 22 blows per 0.3 m of penetration. Trace gravel and trace sand were observed in the clayey silt deposit.

Grain size analyses of one sample of clayey silt (BH13-3/SS8) was conducted and the results are presented in **Drawing 10**, with the following fractions:

Clay: 11%  
Silt: 42%  
Sand: 36%  
Gravel: 11%

Fractions are also shown on the borehole logs.

Atterberg limits test of one sample (BH13-3/SS8) was conducted. The results are shown on the borehole logs and are summarized as follows:

Liquid limit ( $W_L$ ): 25  
Plastic limit ( $W_P$ ): 21  
Plasticity index (PI): 4.4

The soil is classified as clayey silt.

### 3.2 Groundwater Conditions

Short-term (unstabilized) water was found in the boreholes during drilling at depths ranging from 2.7 to 16.2 m. The groundwater table observed in the monitoring wells, screened at lower elevations, was at depths ranging from 12.5 to 13.4 m (Elevations 130.4 to 130.9 m), as listed in Table 1.

**Table 1: Groundwater Levels Observed in Wells**

BH No.	Date of Drilling	Date of Observation	Depth of Groundwater (m)	Elevation of Groundwater (m)	Note
BH13-1	Nov. 15/13	Nov. 21/13	12.5	130.9	well
BH13-3	Nov. 14/13	Nov. 21/13	13.4	130.4	well
BH13-6	Nov. 14/13	Nov. 21/13	dry	dry	well

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events. Also, wet sand seams/layers were perched in the upper glacial till layers between 3.0 and 7.0m. Some water is expected from this strata.

## 4. FOUNDATIONS

It is understood that the proposed development will consist of blocks of three storey brick town houses with roof terrace and one level of basement (B1) or up to two levels of parking garage (P2). Finished B1 basement level floor will be at about Elev. 141.0 m. Finished P2 parking garage will be at about Elev. 138.1 m.

### 4.1 Three Storey Town Houses with Two Levels of Basements

The proposed three storey town houses with two levels of parking garage can be supported by spread and strip footings founded on the undisturbed native soils for bearing capacity values of 250 to 500 kPa at the serviceability limit states (SLS), and for factored geotechnical resistances of 400 to 750 kPa at the ultimate limit states (ULS). The bearing values and the corresponding founding elevations of SPL boreholes at the borehole locations are summarized in Table 2. The bearing values and corresponding founding elevations at the borehole locations drilled by others are summarized in Table 3.

**Table 2: Bearing Values and Founding Levels of Foundations on Native Soils  
 (Boreholes by SPL, 2013)**

SPL BH No.	Soil Type	Bearing Capacity at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	At or Below Depth below Ground (m)	At or Below Highest Founding Elevation (m)
BH13-1 (MW)	Silty Sand Till	250	400	3.2	140.2
	Clayey Silt Till	500	750	5.2	138.2
BH13-2	Clayey Silt Till	300	450	2.5	141.2
	Silty Sand Till	500	750	3.0	140.7
BH13-3 (MW)	Silty Sand Till	250	400	3.1	140.7
		500	750	4.5	139.3
BH13-4	Clayey Silt Till	300	450	2.5	141.3
		500	750	3.0	140.8
BH13-5	Sandy Silt Till	250	400	3.6	140.1
	Clayey Silt Till	500	750	4.5	139.2
BH13-6 (MW)	Clayey Silt Till	300	450	2.2	141.5
	Sandy Silt Till	500	750	6.0	137.7
BH13-7	Clayey Silt Till	500	750	4.6	139.6
BH13-8	Clayey Silt Till	300	450	2.6	141.4
		500	750	4.1	139.9

**Table 3: Bearing Values and Founding Levels of Foundations on Native Soils  
 (Boreholes by others, 2006)**

BH No.	Soil Type	Bearing Capacity at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	At or Below Depth below Ground (m)	At or Below Highest Founding Elevation (m)
BH1	Silty Clay Till / Clayey Silt Till	300	450	1.6	142.1
		500	750	3.5	140.2
BH2	Silty Clay Till / Clayey Silt Till	300	450	1.6	141.9
		500	750	3.0	140.5
BH3	Silty Clay Till / Clayey Silt Till	300	450	2.5	140.6
		500	750	3.0	140.1
BH4	Silty Clay Till / Clayey Silt Till	300	450	2.5	140.8
		500	750	3.5	139.8
BH5	Silty Clay Till / Clayey Silt Till	300	450	1.7	141.8
		500	750	3.2	140.3
BH6	Silty Clay Till / Clayey Silt Till	250	400	1.6	141.6
		500	750	3.0	140.2
BH7	Silty Clay Till / Clayey Silt Till	250	400	2.4	141.3
		500	750	3.9	139.9
BH8	Clayey Silt Till	250	400	2.4	141.1
	Clayey Silt Till	500	750	3.3	140.2

The other option is to excavate all the fill and replace with engineered fill compacted to 100 percent SPMD. The footing founded on engineered fill can be designed for 150 kPa SLS and 225 kPa ULS.

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Where the foundation bases consist of sandy deposits (sand, silt, sandy silt to silty sand, gravelly sand), the footing bases should be covered with 50 mm thick mud slab immediately after inspection and cleaning.

#### **4.2 Townhouses with One Level of Basement**

The proposed town houses with one level of basement can be supported by spread and strip footings founded on the undisturbed native soils for a bearing capacity value of 250 to 300 kPa at the serviceability limit states (SLS), and for factored geotechnical resistances of 400 to 450 kPa at the ultimate limit states (ULS). The bearing values and the corresponding founding elevations of SPL boreholes at the borehole locations are summarized in Table 2. The bearing values and the corresponding founding elevations at the borehole locations drilled by others are summarized in Table 3. The other option is to support the foundations on engineered fill for 150 kPa SLS and 225 kPa ULS. For engineered fill option, all fill must be sub-excavated and replaced with engineered fill compacted to 100% SPMDD.

#### **4.3 General Comments on Foundations**

Foundations designed to the specified bearing capacities at the serviceability limit states (SLS) are expected to settle less than 25 mm total and 19 mm differential.

Where it is necessary to place footings at different levels, the upper footing must be founded below an imaginary 10 horizontal to 7 vertical line drawn up from the base of the lower footing. The lower footing must be installed first to help minimize the risk of undermining the upper footing.

Prior to the placement of concrete, all footing bases must be inspected by this office to confirm the design bearing values.

It should be noted that the recommended bearing capacities have been calculated by SPL from the borehole information for the design stage only. The investigation and comments are necessarily on-going as new information of the underground conditions becomes available. For example, more specific information is available with respect to conditions between boreholes when foundation construction is underway. The interpretation between boreholes and the recommendations of this report must therefore be checked through field inspections provided by SPL to validate the information for use during the construction stage.

### **5. FLOOR SLAB AND PERMANENT DRAINAGE**

A moisture barrier consisting of at least 200 mm of 19 mm clear crushed stone should be installed under the floor slab.

A perimeter drainage system as illustrated on **Drawing 11** will be required around the exterior one level basement walls for the town houses for non-shored excavations system. The need for under floor drainage can be confirmed at near completion of excavation stage.

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A perimeter and underfloor drainage system will be required around the exterior walls for buildings with two levels of parking garage. Typical drainage and backfill recommendations are illustrated on **Drawing 12** for shored excavation system.

## **6. FROST PROTECTION**

All footings exposed to seasonal freezing conditions must have at least 1.2 metres of soil cover for frost protection.

There is no official rule governing the required founding depth for footings below unheated basement / parking garage floors. Certainly, it will not be greater than the 1.2 m required in Southern Ontario for exterior footings. Un-monitored experience indicates that a shallower depth ranging from 0.82 to 0.9 m for interior column footings and 0.4 m for wall footings has been successful where 2 or more basement levels apply. The 0.82 m depth is believed to be close to the minimum structural requirement for interior column footings. Adjacent to air shafts and entrance and exit doors, a footing depth of 1.2 m below floor level is required or, alternatively, insulation protection must be provided.

It is also emphasized that underfloor drainage and/or an adequate free draining gravel base is required to minimize the risk of floor dampness. Floor dampness could lead to temporary icing and the risk of accidents.

## **7. EXCAVATIONS AND GROUNDWATER CONTROL**

SPL have been advised that the proposed buildings will include two levels of parking garage below ground with P2 level at about Elev. 138.1 m. It is expected that the general excavation will extend to about 0.5 to 1 m below the P2 garage floor, and local excavations to the underside of footings will be about 1 to 2.5 m below the P2 garage floor.

Excavations can be carried out with heavy hydraulic backhoe. No major problems with groundwater are anticipated for excavation to about Elev. 138 m±. Occasional layers / interbeds of water bearing silt / sand are present fill and in cohesive till deposits. Seepage from wet sandy layers/interbeds should be expected but in all likelihood water seepage should be controllable by the use of conventional pumping from collection sumps and ditches.

It should be noted that the till is a non-sorted sediment and therefore may contain boulders. Possible large obstructions such as buried concrete pieces are also anticipated in the fill material. Provisions must be made in the excavation contract for the removal of possible boulders in the till or obstructions in the fill material.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, the fill can be classified as Type 3 soil above the groundwater table. The very stiff to hard clayey silt to silty clay till and clayey silt can be classified as Type 1 to 2 Soil. The compact to very dense silty sand and sandy silt till and sandy silt to silty sand can be classified as Type 1 to 3 Soil.

The existing fill in the boreholes is generally not suitable for re-use as backfill. The native soils free from topsoil and organics can be used as general construction backfill. Loose lifts of soil, which are to be compacted, should not exceed 200 mm. Depending on the time of construction and weather, some excavated material may be too wet to compact and will require aeration prior to its use.

Imported granular fill, which can be compacted with hand held equipment, should be used in confined areas.

Underfloor fill should be compacted to at least 98 percent of Standard Proctor Maximum Dry Density (SPMDD).

The excavated soils are not considered to be free draining. Where free draining backfill is required, imported granular fill such as OPSS Granular B should be used.

It should be noted that the excavated soils are subject to moisture content increase during wet weather which would make these materials too wet for adequate compaction. Stockpiles should be compacted at the surface or be covered with tarpaulins to minimize moisture uptake.

## 8. EARTH PRESSURES

The lateral earth pressures acting on basement walls may be calculated from the following expression:

$$p = K(\gamma h + q)$$

where, p = Lateral earth pressure in kPa acting at depth h

K = Earth pressure coefficient equal to 0.4 for vertical walls and horizontal backfill.

$\gamma$  = Unit weight of backfill, a value of 21.5 kN/m<sup>3</sup> may be assumed

h = Depth to point of interest in metres

q = Equivalent value of surcharge on the ground surface in kPa

The above expression assumes that the perimeter drainage system prevents the build up of any hydrostatic pressure behind the wall.

## 9. EARTHQUAKE CONSIDERATIONS

Based on the borehole information and according to Table 4.1.8.4.A of OBC 2006, the subject site for the proposed buildings with levels of basement can be classified as Class 'C' for seismic site response.

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## 10. GENERAL COMMENTS AND LIMITATIONS OF REPORT

This geotechnical investigation is preliminary, based on limited number of boreholes only. Additional boreholes must be carried out when final design details of the proposed buildings are available.

SPL should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, SPL will assume no responsibility for interpretation of the recommendations in the report.

This report is intended solely for the Client named. The material in it reflects our best judgment in light of the information available to SPL at the time of preparation. Unless otherwise agreed in writing by SPL, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

The conclusions and recommendations given in this report are based on information determined at the test hole locations. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the test holes may differ from those encountered at the test hole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

The design recommendations given in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report.

The comments made in this report on potential construction problems and possible methods are intended only for the guidance of the designer. The number of test holes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. This work has been undertaken in accordance with normally accepted geotechnical engineering practices.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. SPL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

We trust that the information contained in this report is satisfactory. Should you have any questions, please do not hesitate to contact this office.

**SPL CONSULTANTS LIMITED**



Max Prokudin, M.Sc., E.I.T.



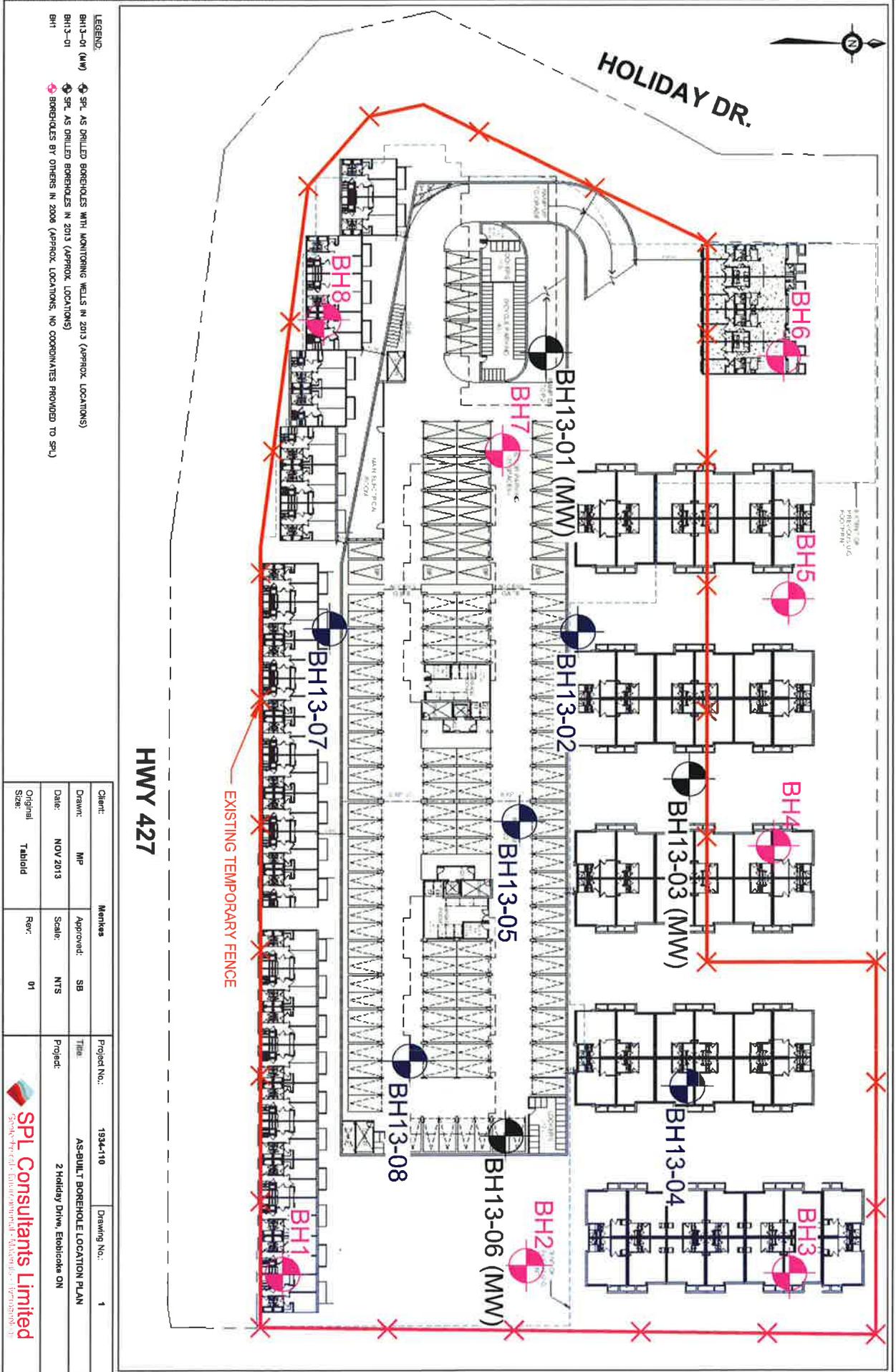
Fanyu Zhu, Ph.D., P.Eng.



Shabbir Bandukwala, P.Eng.



# Drawings



PROJECT: Geotechnical Investigation  
 CLIENT: Menkes Developments Limited  
 PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario  
 DATUM: Geodetic  
 BH LOCATION: See Borehole Location Plan

**DRILLING DATA**  
 Method: Hollow Stem Auger  
 Diameter: 203mm  
 Date: Nov/15/2013  
 REF. NO.: 1934-110  
 ENCL NO.: 2

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100						
143.4															
143.0	ASPHALT: 125 mm														
143.0	FILL: sand and gravel, grey, wet, compact		1	SS	25										
143.0	FILL: clayey silt, trace gravel, some sand, trace organics, contains pockets of silty clay, greyish brown, most, stiff														
143.0			2	SS	10										
143.0	firm at 1.5 m														
143.0			3	SS	6										
143.0	soft at 2.3 m														
143.0			4	SS	2										
140.4	50 mm layer of grey sand and gravel at 2.9 m														
140.4	SILTY SAND TILL: some clay to clayey, some gravel, oxidized, brown, wet, compact		5	SS	25										
140.4															
140.4	grey below 4.5 m														
138.5															
138.5	CLAYEY SILT TILL: some sand to sandy, trace gravel, oxidized, occasional brown sand seams, grey, moist, hard		6	SS	69										
138.5															
137.4															
137.4	SANDY SILT TILL: trace gravel, some clay, grey, moist, very dense		7	SS	50/ 75mm										auger grinding
137.4															
137.4															
137.4	dense, wet at 7.6 m		8	SS	44										
137.4															
137.4															
134.4															
134.4	SANDY SILT: occasional gravel, trace to some clay, grey, moist, very dense		9	SS	76										

SPL SOIL LOG 1834-110 - SEP24.GPJ SPL.GDT 6/12/13

Continued Next Page

GROUNDWATER ELEVATIONS

GRAPH NOTES

+<sup>3</sup>, ×<sup>3</sup>: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

Shallow/Single Installation ▽ ▽ Deep/Dual Installation ▽ ▽

PROJECT: Geotechnical Investigation  
 CLIENT: Menkes Developments Limited  
 PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario  
 DATUM: Geodetic  
 BH LOCATION: See Borehole Location Plan

**DRILLING DATA**  
 Method: Hollow Stem Auger  
 Diameter: 203mm  
 Date: Nov/15/2013  
 REF. NO.: 1934-110  
 ENCL NO.: 2

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH (kPa) ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE	PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>	POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m									
132.4	SANDY SILT: occasional gravel, trace to some clay, grey, moist, very dense(Continued)		10	SS	50/150mm		133							
11.0	AUGERED TO INSTALL MONITORING WELL;						132							
				AS			131							
							130							
							129							
							128							
							127							
							126							
125.1														
18.3	END OF BOREHOLE: Notes: 1) Ground water was at 16.2 m depth after completion 2) 50 mm monitoring well was installed at 18.3 m after completion													

W. L. 130.9 m  
Nov 21, 2013

SPL SOIL LOG 1834-110 - SEP24.GPJ SPL.GDT 6/12/13

**GROUNDWATER ELEVATIONS**

Shallow/ Single Installation ▽ ▽ Deep/Dual Installation ▽ ▽

**GRAPH NOTES**

+ 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

PROJECT: Geotechnical Investigation  
 CLIENT: Menkes Developments Limited  
 PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario  
 DATUM: Geodetic  
 BH LOCATION: See Borehole Location Plan

**DRILLING DATA**  
 Method: Hollow Stem Auger  
 Diameter: 203mm  
 Date: Nov/14/2013  
 REF. NO.: 1934-110  
 ENCL NO.: 3

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>	POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%)			
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m		20	40	60	80	100							SHEAR STRENGTH (kPa)		
											○ UNCONFINED	+	×				GR	SA	SI	CL
143.7 0.0	FILL: sand, some gravel, trace brick pieces, contains pockets of sandy silt, brown, wet		1	AS																
142.9 0.8	FILL: silty clay to clayey silt, sandy, greyish brown, moist, stiff  trace to some organics at 1.5 m		2	SS	13															
			3	SS	11															
141.4 2.3	CLAYEY SILT TILL: some sand to sandy, trace gravel, contains grey sand/silt seams, brown, moist, very stiff		4	SS	28															
140.7 3.0	SILTY SAND TILL: some clay, trace gravel, contains grey sand/silt seams, brown, moist, very dense, oxidized		5	SS	51															6 44 37 13
139.6 4.1	CLAYEY SILT TILL: some sand to sandy, trace gravel, contains grey sand/silt seams, brown, moist, hard greyish brown below 4.5 m		6	SS	50/ 25mm															
138.1 5.6	SILTY SAND: trace to some clay, occasional gravel, grey, moist, very dense		7	SS	50/ 25mm															11 42 36 11
136.1 7.6	SILTY SAND TILL: some clay, trace gravel, contains grey sand/silt seams, brown, moist, dense		8	SS	43															
135.5 8.2	END OF BOREHOLE: Notes: 1) Borehole was open and dry after completion																			

SPL SOIL LOG 1834-110 - SEP24.GPJ SPL\_GDT 6/12/13

GROUNDWATER ELEVATIONS

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

Shallow/ Single Installation ▽ ▽ Deep/Dual Installation ▽ ▽

PROJECT: Geotechnical Investigation  
 CLIENT: Menkes Developments Limited  
 PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario  
 DATUM: Geodetic  
 BH LOCATION: See Borehole Location Plan

**DRILLING DATA**  
 Method: Hollow Stem Auger  
 Diameter: 203mm  
 Date: Nov/14/2013  
 REF. NO.: 1934-110  
 ENCL NO.: 4

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40	60	80						
143.8 0.0	FILL: sandy gravel, trace brick pieces, wet, brown, loose		1	SS	8												GR SA SI CL
143.2 0.6	FILL: clayey silt, trace gravel, some sand, trace organics, contains wet sand seams, contains silty clay seams, brownish grey, moist, firm		2	SS	5												wet sampler
	grey at 1.5 m		3	SS	5												
			4	SS	7												
140.8 3.0	SILTY SAND TILL: some clay, trace gravel, brown, moist, compact		5	SS	26												
	very dense		6	SS	72												
	contains brown wet sand seams, grey, compact at 6.0 m		7	SS	25											spoon bouncing	
	contains shale fragments at 6.6 m																
136.6 7.2	CLAYEY SILT: trace sand, grey, moist, very stiff		8	SS	22											0 0 85 15	
134.8 9.0	SANDY SILT: trace gravel, trace to some clay, grey, moist, very dense		9	SS	50/ 100mm												
134.3 9.5	AUGERED TO INSTALL MONITORING WELL;																

SPL SOIL LOG 1834-110 - SEP24-GPJ SPL.GDT 6/12/13

Continued Next Page

GROUNDWATER ELEVATIONS

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

Shallow/Single Installation ▽ ▽ Deep/Dual Installation ▽ ▽



PROJECT: Geotechnical Investigation  
 CLIENT: Menkes Developments Limited  
 PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario  
 DATUM: Geodetic  
 BH LOCATION: See Borehole Location Plan

**DRILLING DATA**  
 Method: Hollow Stem Auger  
 Diameter: 203mm  
 Date: Nov/14/2013  
 REF. NO.: 1934-110  
 ENCL NO.: 5

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT					POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%)										
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40	60	80	100				PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	50	100	150	200	250	10	20
143.8	<b>CONCRETE: 125 mm</b>		1	AS																					
143.0	<b>FILL: sand, trace gravel, trace brick pieces, brown, moist</b>		2	SS	4																				
141.5	<b>FILL: sand, some silt to silt, trace gravel, contains pockets of silty clay, greyish brown, wet, loose</b>		3	SS	6																				
141.5	<b>CLAYEY SILT TILL: some sand to sandy, trace gravel, oxidized, contains grey wet sand and silt seams, brown, moist, hard</b>		4	SS	31																				
137.8	<b>SANDY SILT TILL: some clay to clayey, trace gravel, grey, moist, very dense</b>		7	SS	53/ 50mm																				
135.8	<b>CLAYEY SILT TILL: some sand, trace gravel, contains pockets of silty clay, grey, moist, hard</b>		8	SS	37																				
133.8	<b>END OF BOREHOLE:</b> Notes: 1) Borehole was open and dry after completion																								

SPL SOIL LOG 1834-110 - SEP24.GPJ SPL.GDT 6/12/13

GROUNDWATER ELEVATIONS

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity      ○ ε=3% Strain at Failure

Shallow/Single Installation ▽ ▽      Deep/Dual Installation ▽ ▽



PROJECT: Geotechnical Investigation

**DRILLING DATA**

CLIENT: Menkes Developments Limited

Method: Hollow Stem Auger

PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario

Diameter: 203mm

REF. NO.: 1934-110

DATUM: Geodetic

Date: Nov/14/2013

ENCL NO.: 6

BH LOCATION: See Borehole Location Plan

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>	POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE			"N" BLOWS 0.3 m	20	40	60	80						
133.5	<b>SANDY SILT:</b> trace gravel, trace to some clay, grey, moist, very dense  contains wet sand seams at 10.7		10	SS	90/ 275mm	133	SHEAR STRENGTH (kPa) ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE					WATER CONTENT (%) ○ ε=3% Strain at Failure					
132.6																	
11.1	<b>END OF BOREHOLE:</b> Notes: 1) Borehole caved in at 9.1 m and ground water was at 2.7 m after completion																

SPL SOIL LOG 1834-110 - SEP24-GPJ SPL\_GDT 6/12/13

GROUNDWATER ELEVATIONS

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

Shallow/Single Installation ▽ ▽ Deep/Dual Installation ▽ ▽

PROJECT: Geotechnical Investigation  
 CLIENT: Menkes Developments Limited  
 PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario  
 DATUM: Geodetic  
 BH LOCATION: See Borehole Location Plan

**DRILLING DATA**  
 Method: Hollow Stem Auger  
 Diameter: 203mm  
 Date: Nov/14/2013  
 REF. NO.: 1934-110  
 ENCL NO.: 7

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>	POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (kg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%)								
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE			"N" BLOWS 0.3 m	20	40	60							80	100	50	100	150	200	250	10
143.7	0.0 FILL: sand, some gravel, brown, wet  trace gravel, loose to compact below 0.8 m		1	AS																				
			2	SS	9																			
141.9	1.8 CLAYEY SILT TILL: some sand to sandy, trace gravel, brown, moist, very stiff		3	SS	11																			
			4	SS	27																			
140.8	3.0 SANDY SILT TILL: some clay to clayey, grey, moist, oxidized, greyish brown, dense		5	SS	34																			
			6	SS	16																			
139.6	4.1 CLAYEY SILT TILL: some sand to sandy, trace gravel, brown, moist, very stiff contains wet sand seams, sandy at 4.5 m		7	SS	48																			
			8	SS	46																			
138.1	5.7 SANDY SILT TILL: some clay to clayey, grey, moist, compact oxidized, greyish brown, dense grey below 6.0 m		9	SS	62																			
			9	SS	62																			
136.6	7.2 CLAYEY SILT TILL: some sand to sandy, trace gravel, brown, moist, hard		9	SS	62																			
			9	SS	62																			
134.7	9.0 SILTY SAND TILL: some clay to clayey, grey, moist, very dense		9	SS	62																			
			9	SS	62																			

SPL SOIL LOG 1834-110 - SEP24-GPJ - SPL-GDT 6/12/13

Continued Next Page

GROUNDWATER ELEVATIONS

GRAPH NOTES

+ 3, X 3: Numbers refer to Sensitivity  
 ○ ε=3% Strain at Failure

Shallow/Single Installation ▽ ▽ Deep/Dual Installation ▽ ▽

**LOG OF BOREHOLE BH13-6**

PROJECT: Geotechnical Investigation CLIENT: Menkes Developments Limited PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario DATUM: Geodetic BH LOCATION: See Borehole Location Plan	<b>DRILLING DATA</b> Method: Hollow Stem Auger Diameter: 203mm Date: Nov/14/2013 REF. NO.: 1934-110 ENCL NO.: 7
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SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>	POCKET PEN (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%)							
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS 0.3 m	ELEVATION	20	40	60							80	100	SHEAR STRENGTH (kPa)			WATER CONTENT (%)	
133.5	<b>SANDY SILT:</b> trace gravel, trace to some clay, grey, moist, very dense		10	SS	84	133							○										
132.7						132																	
11.0	<b>AUGERED TO INSTALL MONITORING WELL:</b>			AS		131																	
130						130																	
129						129																	
128.5	<b>END OF BOREHOLE:</b> Notes: 1) Well dry measured on Nov. 21, 2013					15.2																	

SPL SOIL LOG 1834-110 - SEP24.GPJ SPL\_GDT 6/12/13

**GROUNDWATER ELEVATIONS**      **GRAPH NOTES**      + 3, × 3: Numbers refer to Sensitivity      ○ ε=3% Strain at Failure  
 Shallow/ Single Installation ▽ ▽      Deep/Dual Installation ▽ ▽



**LOG OF BOREHOLE BH13-7**

<b>PROJECT:</b> Geotechnical Investigation <b>CLIENT:</b> Menkes Developments Limited <b>PROJECT LOCATION:</b> 2 Holiday Drive, Toronto, Ontario <b>DATUM:</b> Geodetic <b>BH LOCATION:</b> See Borehole Location Plan	<b>DRILLING DATA</b> Method: Hollow Stem Auger Diameter: 203mm Date: Nov/14/2013 REF. NO.: 1934-110 ENCL NO.: 8
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SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>	POCKET PEN (Cu) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT NUMBER	TYPE	"N" BLOWS 0.3 m			20	40	60	80	100						
	1) Borehole was moved by 1.0 m due to spoon bouncing/refusal at 2.7 m 2) Borehole was open and ground water was at 8.8 m depth after completion																

SPL SOIL LOG 1834-110 - SEP24.GPJ SPL\_GDT 6/12/13

**GROUNDWATER ELEVATIONS**      **GRAPH NOTES**      + 3, × 3: Numbers refer to Sensitivity      ○ ε=3% Strain at Failure  
 Shallow/ Single Installation ▽ ▽      Deep/Dual Installation ▽ ▽

PROJECT: Geotechnical Investigation  
 CLIENT: Menkes Developments Limited  
 PROJECT LOCATION: 2 Holiday Drive, Toronto, Ontario  
 DATUM: Geodetic  
 BH LOCATION: See Borehole Location Plan

**DRILLING DATA**  
 Method: Hollow Stem Auger  
 Diameter: 203mm  
 Date: Nov/14/2013  
 REF. NO.: 1934-110  
 ENCL NO.: 9

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT					POCKET PEN (Cu) (kPa)	NATURAL UNIT WT (Mg/m <sup>3</sup> )	REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m		ELEVATION	20	40	60	80				100	PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>
144.0	FILL: clayey silt, sandy, trace gravel, trace brick pieces, trace organics, brown, moist, stiff  firm below 0.8 m		1	SS	12													
			2	SS	6													
			3	SS	4													
141.7	2.3		4	SS	28													
141.0	3.0		5	SS	23													
139.9	4.1		6	SS	35													
138.3	5.7		7	SS	56													
136.4	7.6		8	SS	57													
135.8	8.2		END OF BOREHOLE: Notes: 1) Borehole was open and dry after completion															

SPL SOIL LOG 1834-110 - SEP24.GPJ SPL\_GDT 6/12/13

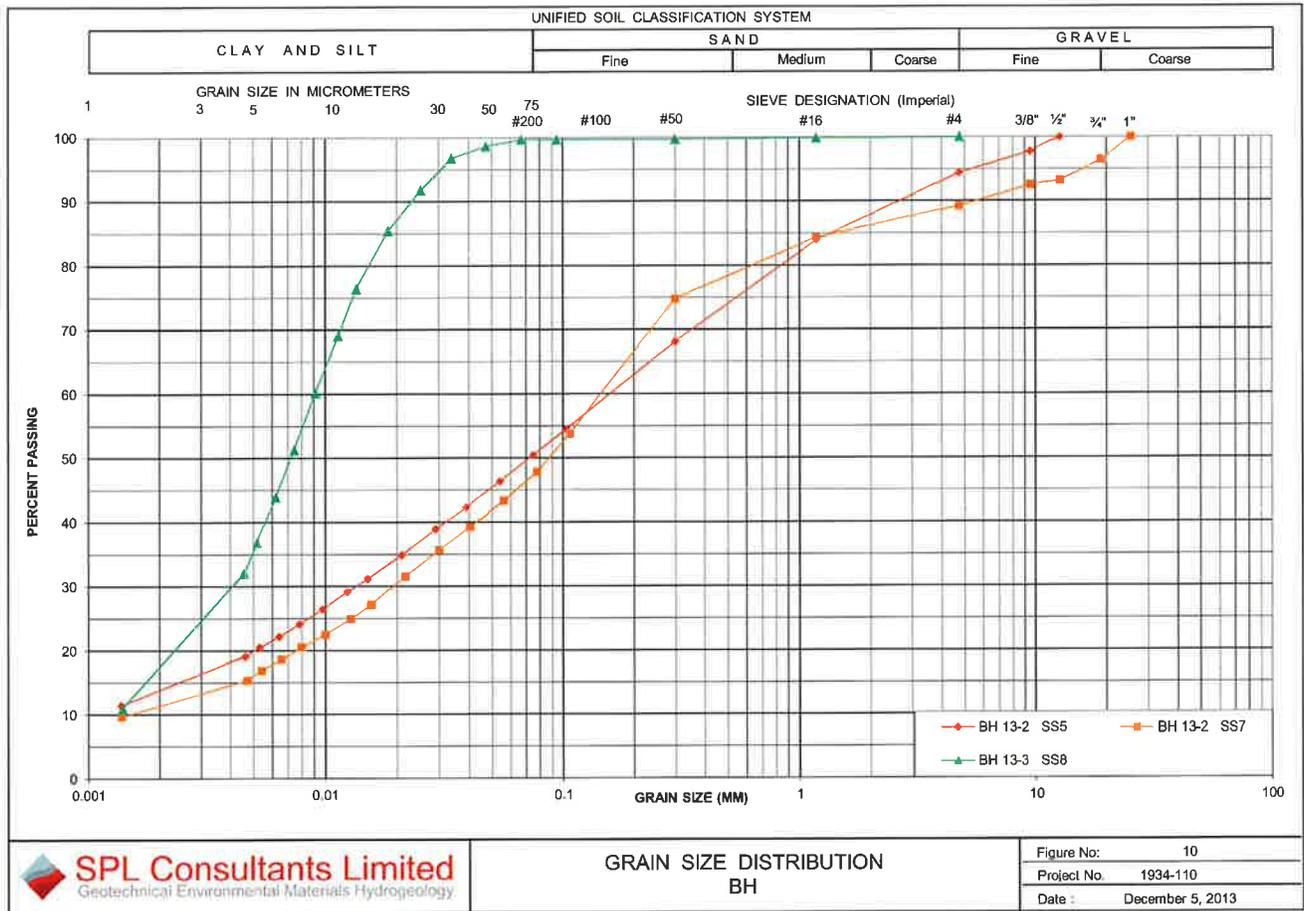
GROUNDWATER ELEVATIONS

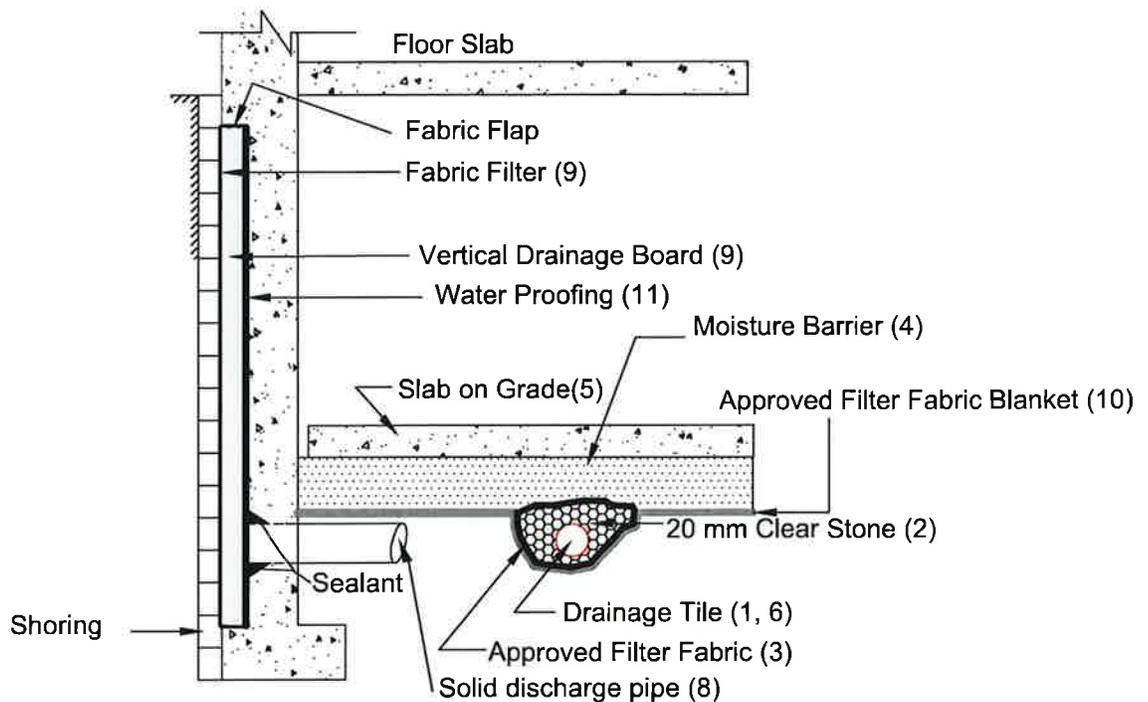
Shallow/Single Installation ▽ ▽ Deep/Dual Installation ▽ ▽

GRAPH NOTES

+<sup>3</sup>, ×<sup>3</sup>: Numbers refer to Sensitivity

○ ε=3% Strain at Failure





### EXTERIOR FOOTING

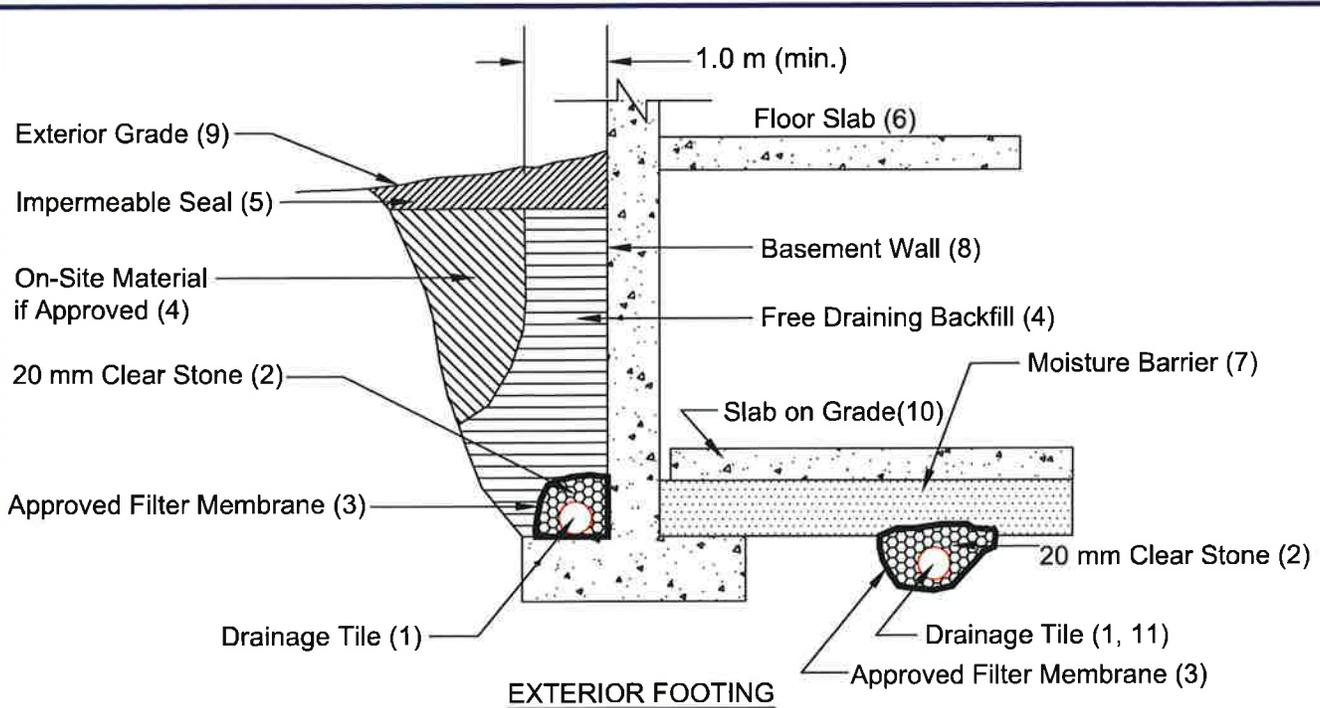
#### **Notes**

1. Drainage tile to consist of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet, spaced between columns.
2. 20 mm (3/4") clear stone - 150 mm (6") top and side of drain. If drain is not on footing, place 100 mm (4 inches) of stone below drain.
3. Wrap the clear stone with an approved filter membrane (Terrafix 270R or equivalent).
4. Moisture barrier to be at least 200 mm (8") of compacted clear 20 mm (3/4") stone or equivalent free draining material. A vapour barrier may be required for specialty floors.
5. Slab on grade should not be structurally connected to the wall or footing.
6. Underfloor drain invert to be at least 300 mm (12") below underside of floor slab.  
Drainage tile placed in parallel rows 6 to 8 m (20 to 25') centers one way. Place drain on 100 mm (4") clear stone with 150 mm (6") of clear stone on top and sides. Enclose stone with filter fabric as noted in (3).
7. Do not connect the underfloor drains to perimeter drains.
8. Solid discharge pipe located at the middle of each bay between the soldier piles, approximate spacing 2.5 m, outletting into a solid pipe leading to a sump.
9. Vertical drainage board with filter cloth should be kept a minimum of 1.2 m below exterior finished grade.
10. The entire subgrade to be sealed with approved filter fabric (Terrafix 270R or equivalent) if non-cohesive (sandy) soils below ground water table encountered.
11. The basement walls should be water proofed using bentonite or equivalent water-proofing system.
12. Review the geotechnical report for specific details. Final detail must be approved before system is considered acceptable.

### **DRAINAGE RECOMMENDATIONS**

#### **Shored Basement wall with Underfloor Drainage System**

(not to scale)



### Notes

1. Drainage tile to consist of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet.
2. 20 mm (3/4") clear stone - 150 mm (6") top and side of drain. If drain is not on footing, place 100 mm (4 inches) of stone below drain .
3. Wrap the clear stone with an approved filter membrane (Terrafix 270R or equivalent).
4. Free Draining backfill - OPSS Granular B or equivalent compacted to the specified density. Do not use heavy compaction equipment within 450 mm (18") of the wall. Use hand controlled light compaction equipment within 1.8 m (6') of wall. The minimum width of the Granular 'B' backfill must be 1.0 m.
5. Impermeable backfill seal - compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted. Maximum thickness of seal to be 0.5 m.
6. Do not backfill until wall is supported by basement and floor slabs or adequate bracing.
7. Moisture barrier to be at least 200 mm (8") of compacted clear 20 mm (3/4") stone or equivalent free draining material. A vapour barrier may be required for specialty floors.
8. Basement wall to be damp proofed /water proofed.
9. Exterior grade to slope away from building.
10. Slab on grade should not be structurally connected to the wall or footing.
11. Underfloor drain invert to be at least 300 mm (12") below underside of floor slab.
12. Drainage tile placed in parallel rows 6 to 8 m (20 to 25') centers one way. Place drain on 100 mm (4") clear stone with 150 mm (6") of clear stone on top and sides. Enclose stone with filter fabric as noted in (3).
13. The entire subgrade to be sealed with approved filter fabric (Terrafix 270R or equivalent) if non-cohesive (sandy) soils below ground water table encountered.
14. Do not connect the underfloor drains to perimeter drains.
15. Review the geotechnical report for specific details.

**DRAINAGE AND BACKFILL RECOMMENDATIONS**  
**Basement with Underfloor Drainage**  
(not to scale)

# Appendix A

















CLIENT Bydixer Holdings Inc. c/o Ramada Hotel Toronto Airport

PROJECT No. 1018795

LOCATION 2 Holiday Drive, Etobicoke, Ontario

DATUM Geodetic

DATES: BORING November 14, 2006

WATER LEVEL --

TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	SAMPLES				UNDRAINED SHEAR STRENGTH (kPa)										REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
						TYPE	NUMBER	RECOVERY (mm) / TCR(%) / SCR(%)	N-VALUE OR ROD(%)	WATER CONTENT & ATTERBERG LIMITS DYNAMIC CONE PENETRATION TEST, BLOW/0.3m STANDARD PENETRATION TEST, BLOW/0.3m										
0	143.5				0					50 100 150 200 Wp W W <sub>L</sub>										
	143.4	150 mm of ASPHALTIC			1	SS	1	380 / 460	21											
	143.2	CONCRETE			2															
		Brown, compact, SAND and GRAVEL (FILL), trace silt, damp			3	SS	2	76 / 610	11											
1		Brown, mottled grey, stiff, Silty CLAY (FILL), with sand, trace gravel, trace to some organic matter, moist			4															
	141.9				5															
2		Brown, very stiff to hard, Silty CLAY / Clayey SILT (TILL), with sand, trace gravel, moist			6	SS	3	560 / 610	25											
					7															
					8	SS	4	610 / 610	22											7 28 46 19
					9															
3					10															
					11	SS	5	610 / 610	41											
					12															
					13	SS	6	610 / 610	40											
					14															
	138.9	- grey, very stiff to hard			15															
5					16	SS	7	560 / 610	22											
					17															
					18															
					19															
					20															
					21	SS	8	510 / 610	37											
					22															
					23															
					24															
					25															
8	135.6	- brown			26	SS	9	300 / 300	50 / 150 mm											
					27															
					28															
					29															
					30															
	134.1				31	SS	10	300 / 300	50 / 150 mm											
					32															
10		Grey, very dense, Sandy SILT / Silty SAND, trace gravel, moist to wet																		

- Field Vane Test (kPa)
- Remoulded Vane Test (kPa)
- △ Pocket Penetrometer Test (kPa)







CLIENT Bydixer Holdings Inc. c/o Ramada Hotel Toronto Airport

PROJECT No. 1018795

LOCATION 2 Holiday Drive, Etobicoke, Ontario

DATUM Geodetic

DATES: BORING November 15, 2006

WATER LEVEL --

TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES				UNDRAINED SHEAR STRENGTH (kPa)										REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL								
					DEPTH (m)	TYPE	NUMBER	RECOVERY (mm) / TCR(%) / SCR(%)	N-VALUE OR RQD(%)	WATER CONTENT & ATTERBERG LIMITS DYNAMIC CONE PENETRATION TEST, BLOWS/0.3m STANDARD PENETRATION TEST, BLOWS/0.3m																	
										50	100	150	200	10	20	30	40	50	60	70	80	90	100				
10	133.2	Grey, very dense, Sandy SILT / Silty SAND, trace gravel, damp to moist  - auger grinding on inferred boulder or cobble  - auger grinding on inferred boulder or cobble			33																						
11					34																						
					35																						
					36	SS	11	460 / 480	92																		
					37																						
					38																						
					39																						
					40	SS	12	100 / 100	50 / 100 mm																		
					41																						
					42																						
		43																									
		44																									
		45	SS	13	250 / 250	50 / 100 mm																					
		46																									
		47																									
		48																									
		49																									
	127.8	50																									
	127.4	51	SS	14	560 / 560	61																		1 82 14 3			
16		52																									
		53																									
		54																									
		55																									
17		56																									
		57																									
		58																									
		59																									
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		61																									
		62																									
		63																									
		64																									
		65																									





CLIENT Bydixer Holdings Inc. c/o Ramada Hotel Toronto Airport

PROJECT No. 1018795

LOCATION 2 Holiday Drive, Etobicoke, Ontario

DATUM Geodetic

DATES: BORING November 16, 2006

WATER LEVEL --

TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	SAMPLES				UNDRAINED SHEAR STRENGTH (kPa)										REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SL CL
						TYPE	NUMBER	RECOVERY (mm) / TOR (%) / SCR (%)	N-VALUE OR RQD (%)	WATER CONTENT & ATTERBERG LIMITS										
										DYNAMIC CONE PENETRATION TEST, BLOWS/0.3m $\nabla$ STANDARD PENETRATION TEST, BLOWS/0.3m $\bullet$										
										10	20	30	40	50	60	70	80	90	100	
0	143.5				0															
	143.2	100 mm of ASPHALTIC CONCRETE	F		1	SS	1	360 / 610	14											
		Brown, compact, SAND and GRAVEL (FILL), trace silt, moist	F		2															
1		Brown, firm, Silty CLAY (FILL), some sand, trace gravel, trace to some organic matter, moist	F		3	SS	2	410 / 610	8											
			F		4															
			F		5															
2			F		6	SS	3	410 / 610	8											
	141.2		F		7															
		Brown, very stiff to hard, Silty CLAY / Clayey SILT (TILL), with sand, trace gravel, moist	F		8	SS	4	510 / 610	20											
3			F		9															
			F		10															
			F		11	SS	5	460 / 610	44											
			F		12															
4			F		13															
	138.9	- grey, trace cobble	F		14	SS	6	610 / 610	64											
5			F		15															
		- auger grinding on inferred boulder or cobble	F		16	SS	7	510 / 610	57											
		- auger grinding on inferred boulder or cobble	F		17															
		- auger grinding on inferred boulder or cobble	F		18															
		- auger grinding on inferred boulder or cobble	F		19															
6			F		20															
		- auger grinding on inferred boulder or cobble	F		21	SS	8	280 / 280	50 / 130 mm											
			F		22															
			F		23															
			F		24															
8	135.5	- very stiff, wet	F		26	SS	9	560 / 610	28											
	135.0	Grey, compact, SILT, trace sand, moist	F		27															
		Grey, very dense, Sandy SILT / Silty SAND, moist to wet	F		28															
9			F		29															
			F		30															
			F		31	SS	10	410 / 560	54											
10			F		32															

- Field Vane Test (kPa)
- Remoulded Vane Test (kPa)
- Pocket Penetrometer Test (kPa)



