

Geotechnical Investigation East Urban Community

Mer Bleue Road Ottawa, Ontario

Prepared for Richcraft Group of Companies

Report PG3130-3 Revision 2 dated April 24, 2025



Table of Contents

	PAGE
1.0	Introduction1
2.0	Proposed Development1
3.0	Method of Investigation2
3.1	Field Investigation2
3.2	Field Survey
3.3	Laboratory Review
3.4	Analytical Testing4
4.0	Observations5
4.1	Surface Conditions5
4.2	Subsurface Profile5
4.3	Groundwater6
5.0	Discussion7
5.1	Geotechnical Assessment7
5.2	Site Grading and Preparation7
5.3	Foundation Design9
5.4	Design for Earthquakes14
5.5	Basement Floor Slab/Slab on Grade Construction14
5.6	Pavement Structure
6.0	Design and Construction Precautions17
6.1	Foundation Drainage and Backfill 17
6.2	Protection of Footings Against Frost Action17
6.3	Excavation Side Slopes17
6.4	Pipe Bedding and Backfill19
6.5	Groundwater Control20
6.6	Stormwater Management Pond Removal21
6.7	Cut-Off Swale Design22
6.8	Winter Construction22
6.9	Corrosion Potential and Sulphate23
6.1	23 Landscaping Consideration
7.0	Recommendations25
8.0	Statement of Limitations26



Appendices

- Appendix 1Soil Profile and Test Data Sheets
Boreholes by Others
Symbols and Terms
Consolidation Testing Results
Atterberg Limits Testing Results
- Appendix 2Figure 1 Key PlanDrawing PG3130-6 Test Hole Location PlanDrawing PG3130-7 Permissible Grade Raise PlanDrawing PG3130-8 Bedrock Contour Plan
- Appendix 3 PG3130-MEMO.10 Geotechnical Recommendations Phase 5



1.0 Introduction

Paterson Group (Paterson) was commissioned by Richcraft Group of Companies (Richcraft) to complete a geotechnical investigation for the proposed East Urban Community (EUC) development to be located along Mer Bleue Road, in the City of Ottawa (refer to Figure 1 – Key Plan presented in Appendix 2).

The objective of the study is:

- Determine the subsurface soil and groundwater conditions based on available subsoil information and supplemental borehole investigation.
- Provide geotechnical recommendations for the design of the proposed development including construction considerations which may affect the design.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes geotechnical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

Investigating the presence or potential presence of contamination on the subject property was not part of the scope of work of the present investigation. Therefore, the present report does not address environmental issues.

2.0 **Proposed Development**

Based on current plans, it is understood that the proposed development will consist of a series of residential and commercial buildings with associated driveways, access roads, landscaped areas and parking areas. The proposed development is also understood to be municipally serviced.

The subject site is located to the north of Renaud Road and to the south of Innes Road. Mer Bleue Road runs in a north-south direction through the east portion of the site and the existing Hydro corridor runs in roughly an east-west direction through the south portion of the site.



3.0 Method of Investigation

3.1 Field Investigation

Field Program

The field program for the current investigation was conducted between June 11 and June 26, 2018. At that time, a total of 45 boreholes were advanced to a maximum depth of 9.75 m or auger refusal. The historical geotechnical field investigations were completed by Paterson between March 2002 and September 2014. During that time, a total of 64 test holes, consisting of boreholes, test pits and hand auger holes, were extended to a maximum depth of 22 m. Previous geotechnical investigations were also completed by others within the area of the subject site. The results of the previous investigations by others are discussed in the present report. The locations of the test holes are shown on Drawing PG3130-6 – Test Hole Location Plan included in Appendix 2.

The boreholes were completed using a track-mounted auger drill rig operated by a two-person crew. The test pits were completed using a rubber tire backhoe. All fieldwork was conducted under the full-time supervision of personnel from our geotechnical division under the direction of a senior engineer. The testing procedure consisted of augering to the required depths and at the selected locations sampling the overburden.

Sampling and In Situ Testing

Soil samples were collected from the boreholes using a 50 mm diameter splitspoon (SS) sampler, using 73 mm diameter thin walled (TW) Shelby tubes in conjunction with a piston sampler, or from the auger flights. Soil samples were also recovered along the sidewalls of the test pits by hand during excavation.

All soil samples were visually inspected and initially classified on site. The splitspoon samples were placed in sealed plastic bags and the Shelby tubes were sealed at both ends on site. All samples were transported to our laboratory for examination and classification. The depths at which the split-spoon, Shelby tube, auger and grab samples were recovered from the test holes are shown as SS, TW, AU and G, respectively, on the Soil Profile and Test Data sheets presented in Appendix 1.

The Standard Penetration Test (SPT) was conducted in conjunction with the recovery of the split-spoon samples. The SPT results are recorded as "N" values on the Soil Profile and Test Data sheets. The "N" value is the number of blows required to drive the split-spoon sampler 300 mm into the soil after a 150 mm initial penetration using a 63.5 kg hammer falling from a height of 760 mm.



Undrained shear strength testing was carried out at regular depth intervals in cohesive soils. Undrained shear strength testing in test pits was completed using a handheld, portable vane apparatus (field inspection vane tester Roctest Model H-60).

All soil samples were classified on site, placed in sealed plastic bags and were transported to our laboratory for visual inspection.

Overburden thickness was evaluated during the course of the site investigations by dynamic cone penetration testing (DCPT) at several of the borehole locations. The DCPT consists of driving a steel drill rod, equipped with a 50 mm diameter cone at the tip, using a 63.5 kg hammer falling from a height of 760 mm. The number of blows required to drive the cone into the soil is recorded for each 300 mm increment.

The subsurface conditions observed at the borehole and test pits were recorded in detail in the field. The soil profiles are presented on the Soil Profile and Test Data sheets and Borehole Logs by Others in Appendix 1.

Groundwater

Flexible standpipes were installed in all boreholes to monitor the groundwater levels subsequent to the completion of the sampling program. Groundwater infiltration levels were noted at the time of excavation at the test pit locations.

The groundwater observations are discussed in Subsection 4.3 and presented in the Soil Profile and Test Data sheets in Appendix 1.

3.2 Field Survey

The borehole locations were determined by Paterson personnel taking into consideration the presence of underground and aboveground services. The location and ground surface elevation at each borehole location were provided by Stantec Geomatics. It is understood that the elevations were referenced to a geodetic datum. The test hole locations and ground surface elevations at the test hole locations are presented on Drawing PG3130-6 – Test Hole Location Plan in Appendix 2.

3.3 Laboratory Review

The soil samples recovered from the subject site were visually examined in our laboratory to review the results of the field logging.



A total of 19 Shelby tube samples were submitted for unidimensional consolidation during the current and the previous geotechnical investigations. The results of the consolidation and Atterberg testing are presented on the Consolidation Test sheets presented in Appendix 1 and are further discussed in Sections 4.

A total of 36 Atterberg limit tests were completed on selected soil samples. The results are presented under Subsection 4.2. In addition, 12 soil samples were submitted for grain size distribution and hydrometer analysis. The results of our testing are presented in Subsection 4.2 and on Grain Size Distribution sheets in Appendix 1.

3.4 Analytical Testing

Three (3) soil samples were submitted for analytical testing (2 from current investigation) to assess the corrosion potential for exposed ferrous metals and the potential of sulphate attacks against subsurface concrete structures. The samples were submitted to determine the concentration of sulphate and chloride, the resistivity and the pH of the samples. The results are presented in Appendix 1 and are discussed further in Subsection 6.9.



4.0 **Observations**

4.1 Surface Conditions

Currently, the subject site consists of agricultural lands and lands formerly used for agricultural purposes. A portion of the east side is occupied by an existing snow disposal facility. The site and regional topography are relatively flat with a slight downslope towards the west and south. The site is approximately at grade with neighboring properties and adjacent roadways. It should be noted that an existing Hydro corridor runs roughly in an east-west direction through the south portion of the site.

4.2 Subsurface Profile

Overburden

Generally, the subsurface profile encountered at the test hole locations varies between shallow bedrock and a deep silty clay deposit across the subject site. Shallow bedrock was encountered below a cultivated organic zone/topsoil followed by a silty sand, stiff silty clay and/or clayey silt layer within the north portion of the site. The remainder of the subject site was underlain by a sensitive silty clay deposit. Reference should be made to the Soil Profile and Test Data sheets in Appendix 1 for specific details of the soil profiles encountered at each test hole location.

Bedrock

Based on available geological mapping, the bedrock in this area mostly consists of interbedded limestone and dolomite of the Gull River formation with an overburden drift thickness of 0 to 30 m depth.

Atterberg Limit Tests

Atterberg limit testing of 36 samples was completed. The Plasticity Index of the underlying silty clay was measured to range from 24 to 51. The results of the Atterberg limit testing on select silty clay samples are presented in Appendix 1.

Grain Size Distribution Tests

Twelve (12) sieve analyses were completed to classify selected soil samples according to the Unified Soil Classification System (USCS). The results are presented in Appendix 1.



4.3 Groundwater

Generally, the groundwater levels recovered from the piezometers installed at the borehole locations varied between 0.2 and 7.3 m below existing ground surface. It is important to note that groundwater readings at piezometers can be influenced by surface water perched within the borehole backfill material. Long-term groundwater conditions can also be estimated based on the observed colour and consistency of the recovered soil samples.

Based on these observations, it is estimated that long-term groundwater level can be expected between **2.5 to 3.5 m** depth. Groundwater levels are subject to seasonal fluctuations and therefore could vary during time of construction. The groundwater conditions observed at the borehole and test pits were recorded in detail in the field. Our groundwater observations are presented in the Soil Profile and Test Data sheets in Appendix 1.



5.0 Discussion

5.1 Geotechnical Assessment

From a geotechnical perspective, the subject site is adequate for the proposed development. Bedrock removal may require line drilling and blasting or hoe ramming depending on the depth of bedrock removal required. Due to the presence of the sensitive silty clay layer, residential buildings should be designed in accordance with Part 4 of the current Ontario Building Code (OBC). Also, due to the sensitive silty clay deposit, the proposed development will be subjected to grade raise restrictions.

Permissible grade raise recommendations have been designed for the subject site. The recommended permissible grade raise areas are presented in Drawing PG3130-7 – Permissible Grade Raise Plan in Appendix 2. If higher than permissible grade raises are required, preloading with or without a surcharge, lightweight fill and/or other measures should be investigated to reduce the risks of unacceptable long-term post construction total and differential settlements.

Municipal services are anticipated within the subject site and will generally be completed through OHSA Type 2 and 3 soils.

The above and other considerations are further discussed in the following sections.

5.2 Site Grading and Preparation

Stripping Depth

Topsoil and deleterious fill, such as those containing organic materials, should be stripped from under any buildings, paved areas, pipe bedding, and other settlement sensitive structures.

Due to the relatively shallow depth of the bedrock surface within the north portion of the site and the anticipated founding level for the proposed buildings, bedrock removal may be required.

Bedrock Removal

Bedrock removal can be accomplished by hoe ramming where only a small quantity of the bedrock needs to be removed. Sound bedrock may be removed by line drilling and controlled blasting and/or hoe ramming.



Prior to considering blasting operations, the blasting effects on the existing services, buildings and other structures should be addressed. A pre-blast or preconstruction survey of the existing structures located in proximity of the blasting operations should be completed prior to commencing site activities. The extent of the survey should be determined by the blasting consultant and should be sufficient to respond to any inquiries/claims related to the blasting operations.

As a general guideline, peak particle velocities (measured at the structures) should not exceed 25 mm/s during the blasting program to reduce the risks of damage to the existing structures.

The blasting operations should be planned and conducted under the supervision of a licensed professional engineer who is also an experienced blasting consultant.

Excavation side slopes in sound bedrock can be excavated almost vertical side walls. A minimum 1 m horizontal ledge should remain between the overburden excavation and the bedrock surface. The ledge will provide an area to allow for potential sloughing or a stable base for the overburden shoring system.

Vibration Considerations

Construction operations are the cause of vibrations, and possibly, sources of nuisance to the community. Therefore, means to reduce the vibration levels as much as possible should be incorporated in the construction operations to maintain, as much as possible, a cooperative environment with the residents.

The following construction equipment could be the source of vibrations: hoe ram, compactor, dozer, crane, truck traffic, etc. Vibrations, whether caused by blasting operations or by construction operations, could be the source of detrimental vibrations on the nearby buildings and structures. Therefore, all vibrations are recommended to be limited.

Two parameters are used to determine the permissible vibrations, namely, the maximum peak particle velocity and the frequency. For low frequency vibrations, the maximum allowable peak particle velocity is less than that for high frequency vibrations. As a guideline, the peak particle velocity should be less than 15 mm/s between frequencies of 4 to 12 Hz, and 50 mm/s above a frequency of 40 Hz (interpolate between 12 and 40 Hz). The guidelines are for current construction standards. Considering that these guidelines are above perceptible human level and, in some cases, could be very disturbing to some people, a pre-construction survey is recommended be completed to minimize the risks of claims during or following the construction of the proposed building.



Fill Placement

Fill used for grading beneath the building areas should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or Granular B Type II material. This material should be tested and approved prior to delivery to the site. The fill should be placed in lifts no greater than 300 mm thick and compacted using suitable compaction equipment for the lift thickness. Fill placed beneath the buildings should be compacted to at least 98% of its standard Proctor maximum dry density (SPMDD).

Non-specified existing fill along with site-excavated soil can be used as general landscaping fill where settlement of the ground surface is of minor concern. These materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids. If excavated stiff brown silty clay, free of organics and deleterious materials, is to be used to build up the subgrade level for areas to be paved, the silty clay, under dry conditions, should be compacted in thin lifts to a minimum density of 95% of their respective SPMDD. Non-specified existing fill and site-excavated soils are not suitable for use as backfill against foundation walls unless a composite drainage blanket connected to a perimeter drainage system is provided.

5.3 Foundation Design

Bearing Resistance Values

Conventional style shallow footings for buildings can be designed using the bearing resistance values presented in Table 1. A geotechnical resistance factor of 0.5 was applied to the bearing resistance values at ULS.

Table 1 – Bearing Resistance Values											
Bearing Surface	Bearing Resistance Values at SLS (kPa)	Factored Bearing Resistance Value at ULS (kPa)									
Undisturbed, Compact Sandy Silt	60	150									
Undisturbed, Firm Clayey Silt/Silty Clay	60	150									
Undisturbed, Stiff Silty Clay/Clayey Silt	100	180									
Undisturbed, Compact Glacial Till	150	250									
Clean, Surface Sounded Bedrock	-	500									
Note: Pad footings, up to 3 m wide, and designed using the above noted bearing silty clay bearing surface.											



The bearing resistance values are provided on the assumption that the footings will be placed on undisturbed soil bearing surfaces. An undisturbed soil bearing surface consists of one from which all topsoil and deleterious materials, such as loose, frozen or disturbed soil, whether in situ or not, have been removed, in the dry, prior to the placement of concrete for footings.

The bearing resistance values at SLS for shallow footing bearing on the above noted soils will be subjected to potential post-construction total and differential settlements of 25 and 15 mm, respectively.

A clean, surface-sounded bedrock bearing surface should be free of loose materials, and have no near surface seams, voids, fissures or open joints which can be detected from surface sounding with a rock hammer. Footings bearing on an acceptable bedrock bearing surface and designed using the bearing resistance values provided herein will be subjected to negligible potential post-construction total and differential settlements.

Where a building is founded partly on bedrock and partly on soil, it is recommended to decrease the soil bearing resistance value by 25% for the footings placed on soil bearing media to reduce the potential long term total and differential settlements. Also, at the soil/bedrock and bedrock/soil transitions, it is recommended that the upper 0.5 m of the bedrock be removed for a minimum length of 2 m (on the bedrock side) and replaced with nominally compacted OPSS Granular A or Granular B Type II material. The width of the subexcavation should be at least the proposed footing width plus 0.5 m. Steel reinforcement, extending at least 3 m on both sides of the 2 m long transition, should be placed in the top part of the footings and foundation walls.

Settlement/Grade Raise

During the current investigation, a total of 9 consolidation tests were completed within the subject site. Also, 10 consolidation tests were conducted as part of the previous investigations within the immediate area of the subject site. The results of the consolidation tests from the previous investigations are presented in Tables 2, 3, 4 and 5 and in Appendix 1.

The value for p'_c is the preconsolidation pressure and p'_o is the effective overburden pressure of the test sample. The difference between these values is the available preconsolidation. The increase in stress on the soil due to the cumulative effects of the fill surcharge, the footing pressures, the slab loadings and the lowering of the groundwater should not exceed the available preconsolidation if unacceptable settlements are to be avoided.



The values for C_{cr} and C_c are the recompression and compression indices, respectively. These soil parameters are a measure of the compressibility due to stress increases below and above the preconsolidation pressures. The higher values for the C_c , as compared to the C_{cr} , illustrate the increased settlement potential above, as compared to below, the preconsolidation pressure.

Table 2 – Summary of Consolidation Test Results (Current Investigation)												
Borehole	Sample	Depth (m)	p' _c (kPa)	p' _o (kPa)	C _{cr}	Cc	Q*					
BH 1-18	TW 3	3.53	98.5	41.2	0.039	1.868	G					
BH 3-18	TW 4	4.27	92.9	45.8	0.018	0.961	А					
BH 6-18	TW 4	4.22	100	48.4	0.031	2.756	А					
BH 27-18	TW 4	5.05	145.9	66.9	0.023	3.182	G					
BH 28-18	TW 5	4.98	121.7	66.43	0.028	4.375	А					
BH 35-18	TW 4	4.29	94	54.1	0.026	1.989	А					
BH 36-18	TW 4	4.98	104.7	60.1	0.035	3.182	Α					
BH 42-18	TW 4	5.05	132.2	66.9	0.022	3.777	А					
BH 44-18	TW 4	5.03	85.8	66.8	0.027	1.823	Ρ					
* - Q – Quality	assessment of sa	mple – G: Goo	d A: Accep	otable P: Lik	ely disturbed	b						

Table 3 – Summary of Consolidation Test Results (Paterson Investigation PG2392)

Borehole	Sample	Depth (m)	p'c (kPa)	p'o (kPa)	Ccr	Сс	Q*						
BH 7	TW 2	4.36	90	53	0.016	1.643	Α						
BH 9	TW 3	4.33	106	53	0.021	4.008	А						
BH 11	TW 4	4.32	85	53	0.027	2.735	Р						
* - Q – Quality	* - Q – Quality assessment of sample – G: Good A: Acceptable P: Likely disturbed												

Table 4 – Summary of Consolidation Test Results (Paterson Investigation PG0861)												
Borehole	Sample	Depth (m)	p' _C (kPa)	p' _O (kPa)	C _{cr}	Cc	Q*					
BH 9-08	TW 2	4.8	126	55	0.026	3.260	Α					
BH 12-08	TW 4	9.4	109	68	0.031	3.080	Α					
BH 13-08	TW 2	3.42	142	43	0.025	1.334	Α					
BH 15-08	TW 2	4.91	87	50	0.029	1.890	Α					
BH 19-08	TW 3	4.9	99	43	0.025	3.100	А					
* - Q – Quality a	assessment of sa	mple – G: Goo	d A: Accep	otable P: L	ikely disturbe	d						



Table 5 – Summary of Consolidation Test Results (Paterson Investigation G8533)											
Borehole	Sample	Depth (m)	p' _C (kPa)	p' _O (kPa)	C _{cr}	Cc	Q*				
BH 3	TW 5	6.53	103	64	0.043	2.967	Α				
BH 3	13 TW 7 9.6 175 82 0.028 3.046										
* - Q – Quality a	assessment of sa	mple – G: Goo	d A: Accep	table P: L	ikely disturbed	ł					

The values of p'_c, p'_o, C_{cr} and C_c are determined using standard engineering testing procedures and are estimates only. Natural variations within the soil deposit will affect the results. The p'_o parameter is directly influenced by the groundwater level. Groundwater levels were measured during the site investigation. Groundwater levels vary seasonally which has an impact on the available preconsolidation. Lowering the groundwater level increases the p'_o and therefore reduces the available preconsolidation. Unacceptable settlements could be induced by a significant lowering of the groundwater level.

The p' $_{0}$ values for the consolidation tests during the investigation are based on the long-term groundwater level being at 0.5 m below the existing groundwater table. The groundwater level is based on the colour and undrained shear strength profile of the silty clay.

The total and differential settlements will be dependent on characteristics of the proposed buildings. For design purposes, the total and differential settlements are estimated to be 25 and 20 mm, respectively. A post-development groundwater lowering of 0.5 m was assumed.

The potential post construction total and differential settlements are dependent on the position of the long-term groundwater level when building are situated over deposits of compressible silty clay. Efforts can be made to reduce the impacts of the proposed development on the long-term groundwater level by placing clay dykes in the service trenches, reducing the sizes of paved areas, leaving green spaces to allow for groundwater recharge or limiting planting of trees to areas away from the buildings. However, it is not economically possible to control the groundwater level.

To reduce potential long-term liabilities, consideration should be given to accounting for a larger groundwater lowering and to provide means to reduce long term groundwater lowering (e.g. clay dykes, restriction on planting around the dwellings, etc). Buildings on silty clay deposits increases the likelihood of movements and therefore of cracking. The use of steel reinforcement in foundations placed at key structural locations will tend to reduce foundation cracking compared to unreinforced foundations.



Based on the undrained shear strength testing results, consolidation testing and experience with the local silty clay deposit. The recommended permissible grade raise areas for buildings are defined in Drawing PG3130-7 – Permissible Grade Raise Plan in Appendix 2.

Where proposed grade raises exceed our permissible grade raise recommendations, several options could be considered for the foundation support of the proposed buildings:

Scenario A

Where the grade raise is close to, but below, the maximum permissible grade raise, consideration should be given to using more reinforcement in the design of the foundation (footings and walls) to reduce the risks of cracking in the concrete foundation. The use of control joints within the brick work between the garage and basement area should also be considered.

Scenario B

Where the grade raise cannot be accommodated with soil fill, the following options could be used alone or in combination.

Option 1 – Use of Lightweight Fill

Lightweight fill (LWF) can be used, consisting of EPS (expanded polystyrene) Type 19 or 22 blocks or other light weight materials which allow for raising the grade without adding a significant load to the underlying soils. However, these materials are expensive and, in the case of the EPS, are more difficult to use under the groundwater level, as they are buoyant, and must be protected against potential hydrocarbon spills. Use lightweight fill within the interior of the garage and porch areas to reduce the fill- related loads. LWF shall not be used within the rights-ofway (ROWs) or servicing alignments.

Option 2 – Preloading or Surcharging

It is possible to preload or surcharge the proposed site in localized areas provided sufficient time is available to achieve the desired settlements based on theoretical values from the settlement analysis. If this option is considered, a monitoring program using settlement plates will have to be implemented. This program will determine the amount of settlement in the preloaded or surcharged areas. Preloading to proposed finished grades will allow for consolidation of the underlying clays over a longer time period.



Surcharging the site with additional fill above the proposed finished grade will add additional load to the underlying clays accelerating the consolidation process and allowing for accelerated settlements. Once the desired settlements are achieved, the site can be unloaded and the f ill can be used elsewhere on site.

Once the required grade raises are established, the above options could be further discussed along with further recommendations on specific requirements.

5.4 Design for Earthquakes

The site class for seismic site response can be taken as **Class C** for the foundations bearing on a compact to dense glacial till and/or bedrock within the north portion of the subject site. A higher site class, such as Class A or B, is applicable for footings bearing on the bedrock surface. However, a site specific seismic shear wave test will be required to confirm the Class A or B seismic site classification. A seismic site response **Class D** is applicable for design of the proposed buildings bearing over a stiff to firm silty clay deposit throughout the remainder of the site.

Soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest revision of the 2012 Ontario Building Code for a full discussion of the earthquake design requirements.

5.5 Basement Floor Slab/Slab on Grade Construction

With the removal of all topsoil and fill, containing deleterious or organic materials, the native soil or existing granular fill approved by the geotechnical consultant at the time of excavation will be considered to be an acceptable subgrade surface on which to commence backfilling for basement floor slab or slab on grade construction. Any soft areas should be removed and backfilled with appropriate backfill material. OPSS Granular A or Granular B Type II, with a maximum particle size of 50 mm, are recommended for backfilling below the floor slab.

It is recommended that the upper 200 mm of sub-floor fill for basement slab construction consist of 19 mm clear crushed stone. It is also recommended that the upper 300 mm sub-floor fill below slab on grade construction consist of OPSS Granular A crushed stone. All backfill materials within the footprint of the proposed buildings should be placed in maximum 300 mm thick loose layers and compacted to at least 98% of its SPMDD.



5.6 Pavement Structure

For design purposes, the pavement structure presented in the following tables could be used for the design of car only parking areas and local roadways.

Table 6 – Recommended Pavement Structure – Car Only Parking Areas/Driveways									
Thickness (mm)	Material Description								
50	Wear Course – HL-3 or Superpave 12.5 Asphaltic Concrete								
150	BASE – OPSS Granular A Crushed Stone								
300	SUBBASE – OPSS Granular B Type II								
SUBGRADE – Either in situ soil or OPSS Granular B Type I or II material placed over in situ soil.									

Table 7 – Recommended Pavement Structure – Local Roadways									
Thickness (mm)	Material Description								
40 Wear Course – HL-3 or Superpave 12.5 Asphaltic Concrete									
50	Binder Course – HL-8 or Superpave 19.0 Asphaltic Concrete								
150	BASE – OPSS Granular A Crushed Stone								
450	SUBBASE – OPSS Granular B Type II								
SUBGRADE – Either in situ soil or OPSS Granular B Type I or II material placed over in situ soil.									

 Table 8 – Recommended Pavement Structure – Arterial Roadways with Bus

 Traffic

Thickness (mm)	Material Description									
40	Wear Course – HL-3 or Superpave 12.5 Asphaltic Concrete									
50	Upper Binder Course – HL-8 or Superpave 19.0 Asphaltic Concrete									
50	Lower Binder Course – HL-8 or Superpave 19.0 Asphaltic Concrete									
150	BASE – OPSS Granular A Crushed Stone									
450	SUBBASE – OPSS Granular B Type II									
SUBGRADE – Eithe	SUBGRADE – Either in situ soil or OPSS Granular B Type I or II material placed over in situ soil.									

Minimum Performance Graded (PG) 58-34 asphalt cement should be used for this project.



If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be excavated and replaced with OPSS Granular B Type I or II material.

The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 100% of the material's SPMDD using suitable vibratory equipment.

Pavement Structure Drainage

Satisfactory performance of the pavement structure is largely dependent on keeping the contact zone between the subgrade material and the base stone in a dry condition. Failure to provide adequate drainage under conditions of heavy wheel loading can result in the fine subgrade soil being pumped into the voids in the stone subbase, thereby reducing its load carrying capacity.

Due to the low permeability of the subgrade materials consideration should be given to installing subdrains during the pavement construction as per City of Ottawa standards. The subdrain inverts should be approximately 300 mm below subgrade level. The subgrade surface should be crowned to promote water flow to the drainage lines.



6.0 Design and Construction Precautions

6.1 Foundation Drainage and Backfill

It is recommended that a perimeter foundation drainage system be provided for the proposed structures. The system should consist of a 150 mm diameter perforated corrugated plastic pipe, surrounded on all sides by 150 mm of 10 mm clear crushed stone, placed at the footing level around the exterior perimeter of the structure. The pipe should have a positive outlet, such as a gravity connection to the storm sewer.

Backfill against the exterior sides of the foundation walls should consist of freedraining non frost susceptible granular materials. The greater part of the site excavated materials will be frost susceptible and, as such, are not recommended for re-use as backfill against the foundation walls, unless used in conjunction with a composite drainage system, such as Delta Drain 6000 or an approved equivalent. Imported granular materials, such as clean sand or OPSS Granular B Type I granular material, should otherwise be used for this purpose.

6.2 Protection of Footings Against Frost Action

Perimeter footings of heated structures are required to be insulated against the deleterious effect of frost action. A minimum of 1.5 m thick soil cover (or equivalent) should be provided in this regard.

Exterior unheated footings, such as those for isolated exterior piers, are more prone to deleterious movement associated with frost action than the exterior walls of the structure proper and require additional protection, such as soil cover of 2.1 m or a combination of soil cover and foundation insulation.

6.3 Excavation Side Slopes

The side slopes of excavations in the overburden materials should either be cut back at acceptable slopes or should be retained by shoring systems from the start of the excavation until the structure is backfilled. It is assumed that sufficient room will be available for the greater part of the excavations to be undertaken by opencut methods (i.e. unsupported excavations).

The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. The flatter slope is required for excavation below groundwater level. The subsoil at this site is considered to be mainly a Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects.



Excavated soil should not be stockpiled directly at the top of excavations and heavy equipment should be kept away from the excavation sides.

Slopes in excess of 3 m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.

It is recommended that a trench box be used at all times to protect personnel working in trenches with steep or vertical sides. It is expected that services will be installed by "cut and cover" methods and excavations will not be left open for extended periods of time.

Excavation Base Stability

The base of supported excavations can fail by three (3) general modes:

- □ Shear failure within the ground caused by inadequate resistance to loads imposed by grade difference inside and outside of the excavation,
- □ Piping from water seepage through granular soils, and
- □ Heave of layered soils due to water pressures confined by intervening low permeability soils.

Shear failure of excavation bases is typically rare in granular soils if adequate lateral support is provided. Inadequate dewatering can cause instability in excavations made through granular or layered soils. The potential for base heave in cohesive soils should be determined for stability of flexible retaining systems.

The factor of safety with respect to base heave, FS_b, is:

$$FS_b = N_b s_u / \sigma_z$$

where:

 $N_{\rm b}$ – stability factor dependent upon the geometry of the excavation and given in Figure 1 on the following page.

 s_u – undrained shear strength of the soil below the base level.

 σ_z – total overburden and surcharge pressures at the bottom of the excavation.



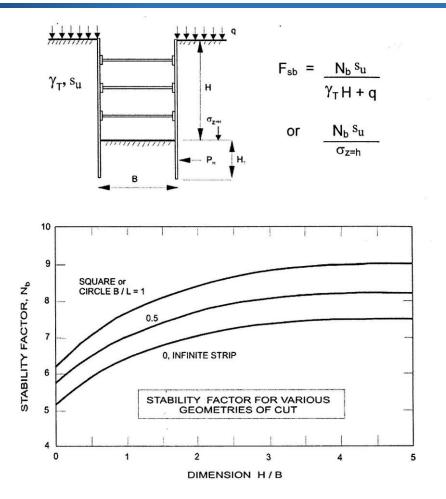


Figure 1 – Stability Factor for Various Geometries of Cut

In the case of soft to firm clays, a factor of safety of 2 is recommended for base stability.

6.4 Pipe Bedding and Backfill

Bedding and backfill materials should be in accordance with the most recent Material Specifications & Standard Detail Drawings from the Department of Public Works and Services, Infrastructure Services Branch of the City of Ottawa.

At least 150 mm of OPSS Granular A should be used for bedding for sewer and water pipes when placed on soil subgrade. The bedding should extend to the spring line of the pipe. Cover material, from the spring line to at least 300 mm above the obvert of the pipe should consist of OPSS Granular A (concrete or PSM PVC pipes) or sand (concrete pipe). The bedding and cover materials should be placed in maximum 225 mm thick lifts compacted to a minimum of 95% of the material's SPMDD.



Generally, it should be possible to re-use the moist, not wet, silty clay above the cover material if the excavation and filling operations are carried out in dry weather conditions. The wet silty clay should be given a sufficient drying period to decrease its moisture content to an acceptable level to make compaction possible prior to being re-used.

Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.8 m below finished grade) should match the soils exposed at the trench walls to minimize differential frost heaving. The trench backfill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of the material's SPMDD.

To reduce long-term lowering of the groundwater level at this site, clay seals should be provided in the service trenches. The seals should be at least 1.5 m long and should extend from trench wall to trench wall. Generally, the seals should extend from the frost line and fully penetrate the bedding, subbedding and cover material. The barriers should consist of relatively dry and compactable brown silty clay placed in maximum 225 mm thick loose layers and compacted to a minimum of 95% of the material's SPMDD. The clay seals should be placed at the site boundaries and at strategic locations at no more than 60 m intervals in the service trenches.

6.5 Groundwater Control

Groundwater Control for Building Construction

Due to the relatively impervious nature of the silty clay/clayey silt materials, it is anticipated that groundwater infiltration into the excavations should be low and controllable using open sumps. Pumping from open sumps should be sufficient to control the groundwater influx through the sides of shallow excavations. The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium.

Permit to Take Water

A temporary Ministry of the Environment, Conservation and Parks (MECP) permit to take water (PTTW) may be required for this project if more than 400,000 L/day of ground and/or surface water is to be pumped during the construction phase. A minimum of 4 to 5 months should be allowed for completion of the PTTW application package and issuance of the permit by the MECP.



For typical ground or surface water volumes being pumped during the construction phase, typically between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16. If a project qualifies for a PTTW based upon anticipated conditions, an EASR will not be allowed as a temporary dewatering measure while awaiting the MECP review of the PTTW application.

6.6 Stormwater Management Pond Removal

Prior to backfilling of the temporary stormwater pond, all vegetation, topsoil, loose sediment and other deleterious materials should be removed.

Fill used for grading beneath building areas should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or Granular B Type II or approved alternative. The fill should be placed in loose lifts and compacted using suitable compaction equipment for the lift thickness. Fill placed beneath building areas should be compacted to a minimum 98% of the Standard Proctor Maximum Dry Density (SPMDD).

Non-specified existing fill along with site-excavated soil can be used as general landscaping fill and beneath parking areas where settlement of the ground surface is of minor concern. In landscaped areas, these materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids. If these materials are to be used to build up the subgrade level for areas to be paved, they should be compacted in thin lifts to a minimum density of 95% of the SPMDD. Non-specified existing fill and site-excavated soils are not suitable for use as backfill against foundation walls unless a composite drainage blanket connected to a perimeter drainage system is provided.

Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.5 m below finished grade) and above the cover material should match the soils exposed at the trench walls to minimize differential frost heaving. The trench backfill should be placed in maximum 225 mm thick loose lifts and compacted to a minimum of 95% of the material standard Proctor maximum dry density.

It should generally be possible to re-use the site materials for backfill beneath landscaped areas if the operations are carried out in dry weather conditions. If the site-excavated material consists of moist to wet silty clay, the material should be spread in thin lifts and allowed adequate time to dry before being placed.



If buildings are proposed in the area of the temporary stormwater pond, Paterson should review the proposed grades to determine the LWF requirements.

6.7 Cut-Off Swale Design

The excavation for the cut-off swale will be through either sand or stiff silty clay. It is anticipated that bedrock will be located 0 to 1.5 m below the bottom of the cut-off swale.

The cut-off swale should consist of 3H:1V side slopes, or shallower. Where sand is encountered within the excavation for the swale, flatter slopes could be required to prevent raveling and maintain a stable slope. The side slopes should be vegetated immediately upon excavation to promote side slope stability. The side slope excavation should be reviewed by Paterson at the time of excavation.

Rock dams can be considered to reduce the water flow velocity within the swale. If required, Paterson can provide detailed recommendations for rock dams.

Excavated material should not be stockpiled directly at the top of the side slopes and heavy equipment should be kept away from the excavation sides when not in use.

Paterson should conduct geotechnical assessments on proposed side slope designs with slopes steeper than 3H:1V, if applicable.

6.8 Winter Construction

Precautions must be taken if winter construction is considered for this project. The subsoil conditions at this site consist of frost susceptible materials. In the presence of water and freezing conditions, ice could form within the soil mass. Heaving and settlement upon thawing could occur.

In the event of construction during below zero temperatures, the founding stratum should be protected from freezing temperatures by the use of straw, propane heaters and tarpaulins or other suitable means. In this regard, the base of the excavations should be insulated from sub-zero temperatures immediately upon exposure and until such time as heat is adequately supplied to the building and the footings are protected with sufficient soil cover to prevent freezing at founding level.

Trench excavations and pavement construction are also difficult activities to complete during freezing conditions without introducing frost in the subgrade or in the excavation walls and bottoms. Precautions should be taken if such activities are to be carried out during freezing conditions.



6.9 Corrosion Potential and Sulphate

The results of analytical testing show that the sulphate content is less than 0.1%. These results are indicative that Type 10 Portland cement (normal cement) would be appropriate for this site. The results of the chloride content, pH and resistivity indicate the presence of a non-aggressive to slightly aggressive environment for exposed ferrous metals at this site.

6.10 Landscaping Consideration

Tree Planting Restrictions

In accordance with the City of Ottawa Tree Planting in Sensitive Marine Clay Soils (2017 Guidelines), Paterson completed the required soil testing to aid in determining the applicable tree planting setbacks. However, it should be noted that Paterson is also relying on our engineering expertise to determine the applicable tree planting setback for the subject site.

Atterberg limits testing was completed for recovered silty clay samples at selected locations throughout the subject site. Sieve analysis testing was also completed on selected soil samples. The above noted soil samples were recovered from elevations below the anticipated design underside of footing elevation and 3.5 m depth below anticipated finished grade. The results of our testing are presented in Appendix 1.

Based on the colouring and moisture levels of the recovered soil samples and the undrained shear strength values in close proximity to design underside of footing elevation, Paterson has determined that the following tree planting setbacks are recommended. Large trees (mature height over 14 m) can be planted within these areas provided a tree to foundation setback equal to the full mature height of the tree can be provided (e.g. in a park or other green space). Tree planting setback is 4.5 m for small (mature tree height up to 7.5m) and medium size trees (mature tree height 7.5 m to 14 m) provided that the conditions noted below are met.

- □ The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree, as measured from the centre of the tree trunk and verified by means of the Grading Plan as indicated procedural changes below.
- □ A small tree must be provided with a minimum of 25 m3 of available soil volume while a medium tree must be provided with a minimum of 30 m3 of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally un-compacted when backfilling in street tree planting locations.



- □ The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.
- □ The foundation walls are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree), as noted on the subdivision Grading Plan.

Swimming Pools

The in-situ soils are considered to be acceptable for in-ground swimming pools. Above ground swimming pools must be placed at least 5 m away from the residence foundation and neighbouring foundations. Otherwise, pool construction is considered routine, and can be constructed in accordance with the manufacturer`s requirements.

Aboveground Hot Tubs

Additional grading around the hot tub should not exceed permissible grade raises. Otherwise, hot tub construction is considered routine, and can be constructed in accordance with the manufacturer's specifications.

Installation of Decks and Additions

Additional grading around proposed deck or addition should not exceed permissible grade raises. Otherwise, standard construction practices are considered acceptable.



7.0 Recommendations

It is recommended that the following be carried out by Paterson once preliminary and future details of the proposed development have been prepared:

- Review preliminary and detailed grading, servicing and landscaping plans from a geotechnical perspective.
- □ Review of the geotechnical aspects of the foundation drainage systems prior to construction, if applicable.

It is a requirement for the foundation design data provided herein to be applicable that a material testing and observation program be performed by the geotechnical consultant. The following aspects of the program should be performed by Paterson:

- □ Review and inspection of the installation of the foundation drainage systems.
- □ Observation of all bearing surfaces prior to the placement of concrete.
- □ Sampling and testing of the concrete and fill materials used.
- Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.
- □ Observation of all subgrades prior to backfilling and field density tests to determine the level of compaction achieved.
- □ Sampling and testing of the bituminous concrete including mix design reviews.

A report confirming that these works have been conducted in general accordance with our recommendations could be issued, upon request, following the completion of a satisfactory materials testing and observation program by the geotechnical consultant.

All excess soil must be handled as per *Ontario Regulation 406/19: On-Site and Excess Soil Management*.



8.0 Statement of Limitations

The recommendations made in this report are in accordance with Paterson's present understanding of the project. Paterson requests permission to review the grading plan once available. Paterson's recommendations should be reviewed when the drawings and specifications are complete.

The client should be aware that any information pertaining to soils and all test hole logs are furnished as a matter of general information only. Test hole descriptions or logs are not to be interpreted as descriptive of conditions at locations other than those of the test holes.

A soils investigation is a limited sampling of a site. Should any conditions at the site be encountered which differ from those at the test locations, Paterson requests to be notified immediately in order to permit reassessment of the recommendations.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Richcraft Group of Companies or their agent(s) is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.

Owen R. Canton, B.Eng.

Report Distribution:

Distribution:



Scott S. Dennis, P.Eng.

- □ Richcraft Group of Companies (Email Copy)
- Paterson Group (1 Copy)



APPENDIX 1

SOIL PROFILE AND TEST DATA SHEETS BOREHOLES BY OTHERS SYMBOLS AND TERMS CONSOLIDATION TESTING RESULTS ATTERBERG LIMITS TESTING RESULTS

SOIL PROFILE AND TEST DATA

Geotechnical Investigation East Urban Community (EUC) Mixed-Use CDP Mer Bleue Road, Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 East Orban Community (EOC) Mixed-Ose CDP Mer Bleue Road, Ottawa, Ontario													
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	àeoma	atics Limi	ted.		FI	LE NO.	PG	i3130	
REMARKS									н	OLE NO			
BORINGS BY CME 55 Power Auger				D	ATE 、	June 11,	2018	1			BH	1-18	
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH	ELEV.	Pen.		st. Blo nm Dia			- 5
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	VALUE r rod	(m)	(m)	0	Wate	er Con	tent 9	%	Piezometer Construction
GROUND SURFACE	ŝ	•	Ĩ	REC	N O N		07.07	20	4	0 6	s 0	30	e S
Topsoil & organics0.10		S AU	1			0-	-87.67						88
Brown SILTY CLAY with sand 0.69		ss	2	71	5	1-	86.67				······································		
		\mathbb{V}	-		Ũ			0					
Very stiff to stiff, brown SILTY CLAY						2-	-85.67				.		¥
- firm and grey by 2.5m depth		тw	3	92		3-	-84.67				O		
						4-	-83.67						
						5-	-82.67						
		∦ss	4	92	W	6-	-81.67				· · · · · · · · · · · · · · · · · · ·		
						7-	-80.67						
						8-	-79.67				· · · · · · · · · · · · · · · · · · ·		
8.99		∛ss	5	96	w					•••••••••••			
End of Borehole													
(GWL @ 1.93m - July 20, 2018)													
										strengt			00

SOIL PROFILE AND TEST DATA

Geotechnical Investigation East Urban Community (EUC) Mixed-Use CDP Mer Bleue Road, Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario											
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	àeoma	atics Limi	ted.		FILE NO.	PG3130	
REMARKS									HOLE NO	^{).} BH 2-18	
BORINGS BY CME 55 Power Auger				D	ATE .	June 11,	2018			БП 2-10	
SOIL DESCRIPTION			SAN	IPLE		DEPTH	ELEV.		esist. Blo 0 mm Dia	ows/0.3m 1. Cone	- 5
	TA PLOT	E	BER	ÆRY	SOD LUE	(m)	(m)				mete ructio
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			0 V 20	Vater Cor 40 6	itent %	Piezometer Construction
Brown SILTY CLAY with organics, 0.15 trace topsoil 0.69	XX	§ AU	1			0-	-87.64				
Brown SILTY CLAY with sand		ss	2	79	7	1-	-86.64				
		ss	3	88	2		-85.64				
Very stiff to stiff, brown SILTY CLAY						2	-03.04				
- firm and grey by 2.2m depth		тw	4	100		3-	-84.64	A			
						4-	-83.64				
						_			/		
						5-	-82.64		4		
		∛ss	5	00		6-	-81.64				
		<u> </u>	5	92	W	7-	-80.64				
		7	_			8-	-79.64				
8.99 End of Borehole	XX	ss	6	96	W						
(GWL @ 2.64m - July 20, 2018)											
								20	40 6	0 80 10	0
									ar Streng		

SOIL PROFILE AND TEST DATA

Geotechnical Investigation East Urban Community (EUC) Mixed-Use CDP

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario												
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	àeoma	atics Limi	ted.		FILE NO	PG3130		
REMARKS									HOLE N			
BORINGS BY CME 55 Power Auger				D	ATE 、	June 11,	2018		DI13-10			
SOIL DESCRIPTION			SAN	IPLE		DEPTH	ELEV.		esist. Bl 0 mm Dia	ows/0.3m a. Cone	- 5	
	TA PLOT	띮	BER	ÆRY	SD LUE	(m)	(m)				mete ructic	
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or ROD					ntent %	Piezometer Construction	
GROUND SURFACE FILL: Brown silty sand, some 0.18	XXX	Ž AU	1	щ.		0-	87.47	20	40 0	60 80		
crushed stone, organics							00.47					
		ss	2	71	8	1-	-86.47					
Very stiff to stiff, brown SILTY CLAY						2-	85.47		· · · · · · · · · · · · · · · · · · ·			
- firm and grey by 2.2m depth		тw	3	0		3-	-84.47		1			
		тw	4	100		4-	-83.47					
									0			
						5-	-82.47					
						6-	-81.47					
						7-	-80.47					
		∛ss	5	96	w	8-	-79.47					
End of Borehole 8.99	EXAZ	-										
(GWL @ 6.22m - July 20, 2018)												
								20 Choo			DO	
								Shea		ith (kPa) ⊾ Remoulded		

SOIL PROFILE AND TEST DATA

Geotechnical Investigation East Urban Community (EUC) Mixed-Use CDP Mer Bleue Road, Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario											
DATUM Ground surface elevations provided by Stantec Geor						atics Limi	ted.		FILE NO. PG3130		
REMARKS											
BORINGS BY CME 55 Power Auger				D	ATE .		BH 4-18				
SOIL DESCRIPTION	PLOT	SAMPLE				DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone			
	STRATA	ТҮРЕ	NUMBER	°% ©™ECOVERY	VALUE r rod	(m)	(m)		Vater Content %	Piezometer Construction	
GROUND SURFACE	ST	NUN T'		N 0 H			20	Piez Con			
Brown SILTY CLAY with organics, 0.15		aUA 🖉	1			0-	-87.36				
		ss	2	92	7	1-	-86.36				
Very stiff to stiff, brown SILTY CLAY		ss	3		3	2-	-85.36				
						3-	-84.36		1		
- Firm and grey by 2.7m depth								4	*	-	
		тw	4	92		4-	-83.36				
						5-	-82.36				
		7				6-	-81.36			- +	
		ss	5	96	W	7-	-80.36				
		∛ss	6	96	w						
		A 22	0	90	vv	8-	-79.36				
8.99 End of Borehole	XX	-									
(GWL @ 5.64m - July 20, 2018)											
								20 Shea ▲ Undist	ar Strength (kPa)	00	

SOIL PROFILE AND TEST DATA

Geotechnical Investigation East Urban Community (EUC) Mixed-Use CDP

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 East Orban Community (EOC) Mixed-Ose CDP Mer Bleue Road, Ottawa, Ontario												
DATUM Ground surface elevations provided by Stantec Geoma							ted.	FILE NO. PG3130				
REMARKS HOLE NO. BLI 5 10												
BORINGS BY CME 55 Power Auger DATE June 12, 2018 BH 5-18												
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				
	STRATA	ЪЕ	BER	% RECOVERY	N VALUE or RQD	(m)		○ Water Content %			mete	
GROUND SURFACE	STR	TYPE NUMBER % RECOVER						0 V 20		10 80	Piezometer Construction	
Brown SILTY CLAY with organics &0.18	3	au 🕈	1			0-	-87.34					
		ss	2	75	10	1-	-86.34		······			
		ss	3	88	4	2-	-85.34					
Very stiff to stiff, brown SILTY CLAY							00.04					
- firm and grey by 2.7m depth						3-	-84.34		······			
		тw	4	92		4-	-83.34		1			
			-			_						
		∛ss	5		W	5-	-82.34	Å				
			0			6-	-81.34					
						7-	-80.34					
											× III	
						8-	-79.34					
8.99		-				9-	-78.34					
commenced at 8.99m depth. cone pushed to 13.7m depth.						10-	-77.34				•	
							11.54					
						11-	-76.34					
						12-	-75.34					
						10	74.04					
						13-	-74.34					
<u>14.0</u> 2	2	-				14-	73.34				-	
End of Borehole												
Practical DCPT refusal at 14.02m depth												
(GWL @ 7.25m - July 20, 2018)								20	40			
		20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded									UU	

SOIL PROFILE AND TEST DATA

Geotechnical Investigation East Urban Community (EUC) Mixed-Use CDP Mer Bleue Road, Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 East Orban Community (EOC) Mixed-Ose CDP Mer Bleue Road, Ottawa, Ontario											
DATUM Ground surface elevations provided by Stantec Geon						atics Limi	ted.	FILE NO. PG3130			
REMARKS											
BORINGS BY CME 55 Power Auger				D	ATE 、	BH 6-18					
SOIL DESCRIPTION	PLOT	SAMPLE				DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone			
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD	(m)	(m)		Vater Content % 40 60 80	Piezometer Construction	
FILL: Brown silty clay with sand, 0.28 crushed stone and organics	XX	au	1	-		0-	-87.79	20	40 60 80		
		ss	2	21	8	1-	-86.79				
		ss	3	38	8	2-	-85.79				
Very stiff to stiff, brown SILTY CLAY											
- firm and grey by 2.2m depth						3-	-84.79				
		тw	4	88		4-	-83.79		0		
						5-	-82.79				
						6-	-81.79			¥	
		ss	5	96	W				\mathbb{N}		
		_				7-	-80.79				
		ss	6	92	W	8-	-79.79				
8.99 End of Borehole		_									
(GWL @ 5.64m - July 20, 2018)											
								20 Shea ▲ Undist	40 60 80 100 ar Strength (kPa) arbed △ Remoulded	0	

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario														
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	àeoma	atics Limi	ited.		FILE NO.	PG3130				
REMARKS									HOLE NO	`				
BORINGS BY CME 55 Power Auger		1		D	ATE 、	June 13,	2018	1	BH 7-18					
SOIL DESCRIPTION	PLOT		SAN	IPLE	DEPTH		ELEV.		esist. Blo 0 mm Dia	ows/0.3m a. Cone	r no			
	STRATA	ТҮРЕ	NUMBER	°∞ RECOVERY	N VALUE of ROD	(m)	(m)	• N	/ater Cor	ntent %	Piezometer Construction			
GROUND SURFACE	Ω.	- .	IN	REG	z ö			20	40 6	60 80	C Pie			
Brown SILTY CLAY with organics, 0.13		AU	1				-88.68							
Very stiff, brown SILTY CLAY		∦ss ∝ss	2 3	75	14 50+	1-	-87.68							
End of Borehole		× 33	3		50+						<u>1901–1907</u>			
Practical refusal to augering at 1.75m depth														
(GWL @ 1.35m - July 20, 2018)														
								20 Shea ▲ Undistr	r Streng	50 80 10 th (kPa) ⊾ Remoulded	00			

SOIL	. PROFIL	E AND	TEST	DATA
------	----------	-------	------	------

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario													
DATUM Ground surface elevations	prov	ided b	y Sta	ntec C	Geoma	atics Limi	ted.		FILE NO.	PG3130			
REMARKS									HOLE NO)			
BORINGS BY CME 55 Power Auger				D	DATE June 13, 2018 BH 8-								
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH	ELEV.		esist. Bl 0 mm Dia	ows/0.3m	۲		
		ы	ER	ERY	Ba	(m)	(m)	• 3			Piezometer Construction		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• V	Vater Cor	ntent %	ezon onstr		
		~	4	RE	z	0-	-88.80	20	40 6	60 80	ŭ ji www.ww		
Topsoil and organics with brown silto 10		aU 🕅	1										
		ss	2	88	9	1-	87.80						
Very stiff to stiff, brown SILTY CLAY		ss	3	79	6						¥ IIIIII		
- firm by 2.2m depth						2-	-86.80						
<u>3.12</u>		∦ SS ≖ SS	4 5	17 0	1 50+	3-	-85.80						
End of Borehole		- 33	5	0	50+								
Practical refusal to augering at 3.12m depth													
(GWL @ 1.46m - July 20, 2018)													
								20		60 80 10	00		
								Shea ▲ Undist	ar Streng	th (kPa) Remoulded			

SOIL PROFILE AND TEST DATA

DATUM Ground surface elevations provided by Stantec Geomatics Limited. FILE NO. REMARKS BORINGS BY CME 55 Power Auger DATE June 13, 2018 HOLE NO. BH 9-18 SOIL DESCRIPTION SAMPLE DEPTH ELEV. Pen. Resist. Blows/0.3m 50 mm Dia. Cone 0 9000000000000000000000000000000000000	154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario														
REMARKS BORINGS BY CME 55 Power Auger DATE June 13, 2018 HOLE NO. BH 9-18 SOIL DESCRIPTION Yes Yes Yes SOIL DESCRIPTION Yes Yes Yes Percent of Barehole Topsoil & organics with brown silty 0.15 Yes AU 1 Brown SILTY CLAY O 89.56 Practical refusal to augering at 0.51m AU 1	DATUM Ground surface elevations p								ec Geomatics Limited.						
SOIL DESCRIPTION Image: Same and the state state is the state state is the state state is the state is th	REMARKS									н	OLE NO.				
SOIL DESCRIPTION OT A VERT ACE DEPTH AVER ACE DEPTH (m) ELEV. (m) • 50 mm Dia. Cone DEPTH (m) • 50 mm Dia. Cone GROUND SURFACE Image: Average	BORINGS BY CME 55 Power Auger				D	ATE 、		BH 9-18							
GROUND SURFACE H	SOIL DESCRIPTION	РГОТ	SAMPLE											er on	
Topsoil & organics with brown silty 0.15 Clay0.51 Brown SILTY CLAY End of Borehole Practical refusal to augering at 0.51m depth	GROUND SUBFACE		ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)						iezomete onstructio	
Aclay 0.51		VX	AU	1			0-	89.56					,		
20 40 60 80 100 Shear Strength (kPa)	End of Borehole Practical refusal to augering at 0.51m depth		AU							4) 60	80		00	

154 Colonnade Road South, Ottawa, Ont	ario K	(2E 7J	5					tawa, Ont	ario	CDP				
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	àeoma	atics Limi	ted.		FILE NO.	PG3130				
REMARKS									HOLE NO.	DU10 10				
BORINGS BY CME 55 Power Auger				D	ATE	June 13, :	2018	BH10-18						
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH	ELEV.		esist. Blov 0 mm Dia.		- r			
	STRATA I	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Conte		Piezometer Construction			
GROUND SURFACE	STF	Т	NUM	RECO	N OF		99 CE	20	40 60	80	Piez(Cons			
Brown SILTY CLAY wiht sand, 0.18		AU	1				-88.65							
Brown SILTY CLAY		∦ss ∦ss	2 3	79 88	8 5		-87.65							
End of Borehole 2.13	ΔΖΧΖ	Δ				2-	-86.65				<u>38.839</u>			
Practical refusal to augering at 2.13m depth														
(GWL @ 1.45m - July 20, 2018)														
								20 Shea ▲ Undist	40 60 ar Strength	80 10 (kPa) Remoulded	00			

SOIL	PROFIL	E AND	TEST	DATA
------	--------	-------	------	------

154 Colonnade Road South, Ottawa, Ont	ario K	(2E 7J	5			er Bleue I				leu-Use C	DF	
DATUM Ground surface elevations	provi	ded b	y Sta	ntec C	ieoma	atics Limi	ted.	FIL	FILE NO. PG3130			
REMARKS									нс			
BORINGS BY CME 55 Power Auger				D	ATE 、	1		BI	111-18			
SOIL DESCRIPTION	ргот	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone				er on
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of ROD			0 20	Wate 40	r Content	% 80	Piezometer Construction
Topsoil & organics with brown silty 0.10	XX	🕈 AU	1			0-	-89.38					
Clay <u>0.51</u> Brown SILTY CLAY End of Borehole Practical refusal to augering at 0.51m depth (BH dry upon completion)								20	40	60	80 11	00
								Sh	40 Iear Si disturbe	rength (k	Pa)	00

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, On											CDP			
DATUM Ground surface elevations	provi	ided b	y Sta	ntec G	ieoma	atics Limi	ted.	FIL	FILE NO. PG3130					
REMARKS					HOLE NO. PHI 1 19									
BORINGS BY CME 55 Power Auger					ATE 、	June 13, :	2018			BH12-18				
SOIL DESCRIPTION	РГОТ	SAMPLE			(i	DEPTH (m)	ELEV. (m)	Pen.		t. Blows m Dia. C		er		
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD		-90.29	0 20	Wate 40	r Conter	nt % 80	Piezometer Construction		
Brown SILTY SAND , some gravel, occ. cobbles End of Borehole Practical refusal to augering at 0.46m depth (BH dry upon completion)														
								20 Sh ▲ Und		trength (00		

154 Colonnade Road South, Ottawa, Onta	Road, Ottawa, Ontario													
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	ieom	atics Limi	ted.	FILE NO.	PG3130					
REMARKS									HOLE NO					
BORINGS BY CME 55 Power Auger				D	ATE	June 13,	2018							
SOIL DESCRIPTION	PLOT		SAN	IPLE	DEPTH	ELEV.		ows/0.3m I. Cone						
		FI	I.R.	ERY	Ba	(m)	(m)				Piezometer Construction			
	STRATA	ТҮРЕ	NUMBER	* RECOVERY	N VALUE of RQD			• V	Vater Con	itent %	ezon			
GROUND SURFACE		<i></i>	z	RE	z ^o	0-	-90.12	20	40 6	0 80	ыщо С			
Brown SILTY CLAY with organics, 0.08 some topsoil Very stiff, brown SILTY CLAY		§ AU ∛ SS	1 2	83	13		-89.12							
1.37 End of Borehole	224	<u> </u>	۷	00	13		00.12							
Practical refusal to augering at 1.37m depth														
(BH dry upon completion)														
								20	40 6	0 80 10	00			
									ar Strengt	t h (kPa) Remoulded				

154 Colonnade Road South, Ottawa, Ont	Road, Ottawa, Ontario															
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	Geomatics Limited. FILE NO. PG3130											
REMARKS						June 13,	HOLE NO. PH14 19									
BORINGS BY CME 55 Power Auger																
SOIL DESCRIPTION	PLOT	SAMPLE				DEPTH (m)	ELEV. (m)				ows/0.3 a. Cone		er			
GROUND SURFACE	STRATA	ЛҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD			0 20	Wate		ntent %		Piezometer Construction			
Brown SILTY CLAY with organics, 0.18 some topsoil		au 🕈	1			0-	-89.27									
Very stiff, brown SILTY CLAY		∑ss ∑ss	2 3	75 88	13 5		-88.27 -87.27									
End of Borehole																
Practical refusal to augering at 2.16m depth																
(GWL @ 1.53m - July 20, 2018)								20 Sh ▲ Unc		Streng	0 8 th (kPa Remou	I)	00			

154 Colonnade Road South, Ottawa, Onta	Road, Ottawa, Ontario																				
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	Geomatics Limited. FILE NO. PG3130																
REMARKS									HOLE NO. DU15 10												
BORINGS BY CME 55 Power Auger				D	ATE	June 13,	2018		BH15-18												
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV.		ows/0.3m . Cone	r n											
	STRATA											ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0 V	Vater Con	itent %	Piezometer Construction
GROUND SURFACE	S	н	NN	REC	N O			20	40 6	0 80	Pie: Cor										
Brown SILTY CLAY with organics, 0.13 Some topsoil Very stiff, brown SILTY CLAY		AU	1				-89.44														
End of Borehole	Ħ	ss	2	90	11	1-	-88.44														
Practical refusal to augering at 1.30m depth																					
(BH dry upon completion)																					
								20 Shea ▲ Undis	40 6 ar Strengt		00										

154 Colonnade Road South, Ottawa, Ont	Road, Ottawa, Ontario													
DATUM Ground surface elevations	prov	ided b	y Sta	ntec C	c Geomatics Limited. FILE NO. PG3130									
REMARKS									HOLE NO	BU16 10				
BORINGS BY CME 55 Power Auger				D	ATE .	June 14,	2018		BH16-18					
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		ows/0.3m . Cone	n r				
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD	(m)	(m)	0 V 20	Vater Con 40 6		Piezometer Construction			
Brown SILTY CLAY, some organics0.10		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1			0-	-89.49							
Very stiff, brown SILTY CLAY		∬ss ∝ss	2 3		11 50+	1-	-88.49							
End of Borehole		≏ 33	3		50+									
Practical refusal to augering at 1.65m depth														
(BH dry upon completion)														
								20 Shea ▲ Undist	40 6 ar Strengt urbed △		00			

154 Colonnade Road South, Ottawa, Ont		ue Road, Ottawa, Ontario												
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	C Geomatics Limited. FILE NO. PG3130									
REMARKS						June 14,			нс		H17-18			
BORINGS BY CME 55 Power Auger		D117-10												
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH		Pen.	;/0.3m one	- 5				
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0	Wate	r Conten	t %	Piezometer Construction		
GROUND SURFACE	ŝ		N	REC	z ⁶			20	40	60	80	O E		
Brown SILTY CLAY, some organics0.10		AU	1			- 0-	-88.88							
Very stiff, brown SILTY CLAY		ss	2	75	9	1-	87.88							
- trace sand by 1.7m depth1.93	X	⊥ IX ss	3	88	7									
End of Borehole														
Practical refusal to augering at 1.93m depth														
(GWL @ 1.66m - July 20, 2018)														
								20				00		
									hear St disturbe	t rength (l d _∆ Rei	k Pa) moulded			

154 Colonnade Road South, Ottawa, Ont		eue Road, Ottawa, Ontario													
DATUM Ground surface elevations	provi	ided b	y Sta	ntec G	Geomatics Limited. FILE NO. PG3130										
REMARKS									HOLE NO	<u>ר</u>					
BORINGS BY CME 55 Power Auger				D	ATE	June 14,	2018	1		^[^] BH18-18					
SOIL DESCRIPTION	РГОТ		SAMPLE			DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone							
	STRATA I	ΡE	BER	VERY	LUE ROD	(m)	(m)			mete					
GROUND SURFACE	STR	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			0 W 20	Ater Coi	ntent % 50 80	Piezometer Construction				
Topsoil & organics, some silty clay 0.18	/XXI	au 8	1			- 0-	-88.82								
		≊ ∏ss	2	71	10	1-	-87.82								
Very stiff, brown SILTY CLAY		∑ ss	3	83	9										
		∆ SS X SS	4	100	50+	2-	-86.82								
End of Borehole 2.74	ΔΖΧΖ	-													
Practical refusal to augering at 2.74m depth															
(GWL @ 1.57m - July 20, 2018)															
								20 Shor		50 80 1(th (kPa)	00				
								Snea ▲ Undist	urbed △	Remoulded					

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	Road, Ottawa, Ontario														
DATUM Ground surface elevations	prov	ded b	y Sta	ntec G	Geomatics Limited. FILE NO. PG3130										
REMARKS									н	DLE NO.	BH19-18	,			
BORINGS BY CME 55 Power Auger				D	ATE 、	June 14,	2018								
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH	ELEV.	Pen.		st. Blov m Dia.	ws/0.3m Cone	- 5			
		E	ßER	ТЕКУ	EUE QD	(m)	(m)					mete			
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			0		er Cont		Piezometer Construction			
GROUND SURFACE Brown SILTY CLAY, some organics0.10	XX	Ž AU	1	щ		0-	88.22	20	40) 60	80				
trace topsoil	X		I												
		ss	2	88	9	1-	-87.22								
	X	ss	3	38	10	2-	-86.22								
Very stiff to stiff, brown SILTY CLAY	X	ss	4	46	4	_	00.22								
	XX	Δσσ	•		·	3-	85.22								
	X							A							
- stiff to firm and grey by 3.8m depth	X					4-	-84.22								
End of Borehole		-							<u></u>						
Practical refusal to augering at 4.67m depth															
(GWL @ 1.52m - July 20, 2018)															
								20	40) 60	80 -	100			
								Sł		trength					

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont												
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	Geoma	atics Limi	ted.		FILE NO. PG3130			
REMARKS									HOLE NO. BHOD 10	,		
BORINGS BY CME 55 Power Auger				D	$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
SOIL DESCRIPTION	ргот		SAN	IPLE		-				- 5		
		ы	ER	ERY	SD C	(m)	(m)			Piezometer Construction		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	VAJ K R			0 V	Vater Content %	ezor		
GROUND SURFACE		~	4	R	zv	0-	-88.30	20	40 60 80	ŭ <u>ה</u>		
Brown SILTY CLAY with organics, 0.18		S AU	1									
		ss	2	83	7	1-	-87.30					
		ss	3	92	q					∶₩₩		
Very stiff to stiff, brown SILTY CLAY						2-	-86.30					
		ss	4	96	4	3-	-85 30					
							00.00					
- stiff to firm and grey by 3.8m depth						4-	-84.30					
			-	00	\A/				K			
		ss	5	96	vv	5-	-83.30					
6.10		ss	6	96	1	6-	-83 30					
	· · · · · · · · · · · · · · · · · · ·	ss	7		6		02.50					
GLACIAL TILL: Grey silty clay,						7-	-81.30					
some sand, trace gravel, cobbles, boulders												
8.38						8-	-80.30					
End of Borehole												
Practical refusal to augering at 8.38m depth												
(GWL @ 1.81m - July 20, 2018)												
									ar Strength (kPa)	100		
								▲ Undist				

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	ario k	(2E 7J	5					tawa, Ont	ario	JF	
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	àeoma	atics Limi	ted.		FILE NO.	G3130	
REMARKS										121-18	-
BORINGS BY CME 55 Power Auger				D	ATE 、	June 14,	2018		Br	121-18	_
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Blows/(0 mm Dia. Cor		on
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD			0 V 20	Vater Content	08 % en	Construct
Brown SILTY CLAY, some organics0.10		aU a	1			0-	-87.50				8
(ss	2	83	10	1-	-86.50		······································		*
Very stiff to stiff, brown SILTY CLAY		ss	3	88	7	2-	-85.50				
		∦ss	4		2	3-	-84.50				\approx
- firm and grey by 3.7m depth						4-	-83.50	A			
		тw	5	83		5-	-82.50				
						6-	-81.50				
		ss	6	96	W	7-	-80.50				
7.92 End of Borehole	XX.	∑ss	7		50+						<u> </u>
Practical refusal to augering at 7.92m depth											
(GWL @ 1.54m - July 20, 2018)											
								20 Shea ▲ Undist	40 60 ar Strength (kF urbed △ Remo		

SOIL PROFILE AND TEST DATA

4 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario											
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	àeoma	atics Limi	ted.		FILE NO.	G3130	
REMARKS									HOLE NO.	122-18	
BORINGS BY CME 55 Power Auger				D	ATE .	June 15,	2018		DL	122-10	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blows/0 0 mm Dia. Cor		
		ы	ER	ТЕКУ	SO E	(m)	(m)			meter	
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	° © © © © © © ©	N VALUE or RQD			0 W	Vater Content 40 60	8 % au Piezometer Construction	
Brown SILTY CLAY with organics, 0.08	N X	S AU	1			0-	87.72	20	40 80		
trace topsoil			I								
		ss	2	79	5	1-	-86.72				
Very stiff to stiff, brown SILTY CLAY		ss	3	88	6	2-	-85.72				
		ss	4	46	3	_					
- firm and grey by 3.0m depth		<u>//</u>			_	3-	84.72				
								A	.		
		тw	5	100		4-	-83.72				
						5-	82.72				
GLACIAL TILL: Stiff, grov silty clay		∛ ss	6		11	6-	-81.72				
GLACIAL TILL: Stiff, grey silty clay, trace sand and gravel	<u>^^^^</u>	<u> </u>	0								
End of Borehole											
Practical refusal to augering at 6.71m depth											
(GWL @ 1.49m - July 20, 2018)											
								20	40 60	80 100	
									ar Strength (kF	Pa)	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	ario K	2E 7J	5					tawa, Ont		-USE CDF	
									FILE N	IO. PG3	3130
REMARKS									HOLE	NO. BH2	2 10
BORINGS BY CME 55 Power Auger				D	ATE 、	June 15, I	2018			DHZ	5-10
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV.			Blows/0.3 Dia. Cone	
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)			ontent %	o lei
GROUND SURFACE Brown SILTY CLAY with organics 0.18	XXX	ž AU	1	щ		0-	-87.27	20	40	60 80	
and topsoil		SS SS	3 2	58 83	7 6	1-	-86.27				
		<u>_</u>	_			2-	-85.27				
		ss	4	96	3		-84.27				
Very stiff to stiff, brown SILTY CLAY								A			
- firm and grey by 3.7m depth			F	00		4-	-83.27	4	1		
		тw	5	98		5-	-82.27				
						6-	-81.27				
						7-	-80.27				
		ss	6	100	W	8-	-79.27				
End of Borehole8.99		-									
(GWL @ 1.66m - July 20, 2018)											
								20 Shea ▲ Undist		60 80 ngth (kPa) △ Remoule	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	ario k	(2E 7J	5					tawa, Ont		JSE CDP	
									FILE NO	PG3130)
REMARKS									HOLE N	^{0.} BU04.40	•
BORINGS BY CME 55 Power Auger				D	ATE .	June 15, :	2018			⁶ BH24-18	>
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.			lows/0.3m a. Cone	r n
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)			ntent %	Piezometer Construction
GROUND SURFACE Brown SILTY CLAY with organics, 0.10	1 Hi	X AU	1	н		0-	-87.12	20	40	60 80	
trace topsoil		≊ ∏ss	2	88	6	1-	-86.12				
		ss	3	96	7		05 40				
Very stiff to stiff, brown SILTY CLAY						2-	-85.12				
- firm and grey by 3.0m depth						3-	-84.12				
		тw	4	100		4-	-83.12				
						5-	-82.12				
							04.40				
		ss	5	96	w	6-	-81.12				
						7-	-80.12				
		тw	6	96		8-	-79.12				
8.99											
End of Borehole											
(GWL @ 1.49m - July 20, 2018)											
								20 Shea ▲ Undist	ar Streng	60 80 · · 3th (kPa) ∆ Remoulded	100

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont				tawa, Ont	ario	JUP					
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	àeoma	atics Limi	ted.		FILE NO.	PG3130	
REMARKS									HOLE NO.	H25-18	
BORINGS BY CME 55 Power Auger				D	ATE 、	June 18,	2018		D		
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV.		esist. Blows 0 mm Dia. Co		ر ب
		ы	ER	ERY	E G	(m)	(m)				netel uctic
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	Vater Content	t %	Piezometer Construction
	358	X.	-	R	Z °	0-	-87.05	20	40 60	80	⊡ິ ‱∭∞
Brown SILTY CLAY with organics, 0.10		S AU	1							**************************************	
		ss	2	79	8	1-	-86.05			X	
		ss	3	92	10	2-	-85.05			×	፼፞፞፟፞፼
		ss	4	92	3					······································	8
Very stiff to stiff, brown SILTY CLAY						3-	-84.05				88
						4-	-83.05	4			
- firm and grey by 3.7m depth							00.00		*	······	88
		ΤW	5	0		5-	-82.05				
		ΤW	6	98		6	-81.05				
						0	01.05				
						7-	-80.05			· · · · · · · · · · · · · · · · · · ·	
		∛ss	7	92	w		70.05				
		Δ 33	,	52	~~	8-	-79.05				
8.99 End of Borehole	XX	-								·····	
(GWL @ 1.61m - July 20, 2018)											
								20 Shee	40 60 ar Strength (k	80 10 (Pa)	0
								Snea ▲ Undist	ar Strength (k urbed △ Ren	noulded	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	tario ł	(2E 7J	Mer Bleue Road, Ottawa, Ontario					
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	ieoma	atics Limi	ted.	FILE NO. PG3130
REMARKS								HOLE NO. BH26-18
BORINGS BY CME 55 Power Auger				D	ATE .	June 19, I	2018	DN20-10
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)	50 mm Dia. Cone Joint State Content % 20 40 60 80
GROUND SURFACE		-	IJ.	RE	zö	0	00 70	
Brown SILTY CLAY with organics, 0.10		AU	1				-86.73	
		ss	2	83	6	1-	-85.73	
		ss	3	96	6	2-	-84.73	
Very stiff to stiff, brown SILTY CLAY						3-	-83.73	
- firm and grey by 3.7m depth						4-	-82.73	
		TW	4	92		5-	-81.73	
						6-	-80.73	
						7-	-79.73	
							-78.73	
9.75		ss	5	29	W	9-	-77.73	
End of Borehole								
(GWL @ 1.14m - July 20, 2018)								20 40 60 80 100
								Shear Strength (kPa) ▲ Undisturbed △ Remoulded

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	ario K	2E 7J	5					tawa, Onta	nixed-OSE CDP	
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	Geoma	atics Limi	ted.		FILE NO. PG3130	
REMARKS								-	HOLE NO. BH27-18	
BORINGS BY CME 55 Power Auger				D	ATE 、	June 19, :	2018		ВП27-10	
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH	ELEV.		esist. Blows/0.3m) mm Dia. Cone	r ou
GROUND SURFACE	STRATA	ЭДХТ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	○ W 20	ater Content % 40 60 80	Piezometer Construction
Brown SILTY CLAY with organics, 0.43		au 🕈	1			0-	-86.69			
		ss	2	92	7	1-	-85.69			
		ss	3	83	7	2-	-84.69			¥.
Very stiff to stiff, brown SILTY CLAY						3-	-83.69			
- firm and grey by 3.7m depth						4-	-82.69			
		тw	4	92		5-	-81.69		Т	
						6-	-80.69			
						7-	-79.69		A A A A A A A A A A A A A A A A A A A	
		ss	5	0	W	8-	-78.69			
8.99 End of Borehole		-								28H23
(GWL @ 2.34m - July 20, 2018)								20	40 60 80 10	00
									r Strength (kPa)	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 East Orban Community (EOC) Mixed-Ose CDP Mer Bleue Road, Ottawa, Ontario												
DATUM Ground surface elevations									FILE NO.	PG3130		
REMARKS										H28-18		
BORINGS BY CME 55 Power Auger				D	ATE .	June 19, :	2018		B	NZO-10		
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Blows 0 mm Dia. Co		on	
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD		()	0 W 20	Vater Conten	t % 80	Piezometer Construction	
Brown SILTY CLAY with organics, 0.18		au 🕈	1			- 0-	-86.80					
		ss	2	92	6	1-	-85.80			·····		
		ss	3	83	8	2-	-84.80					
		ss	4	75	2	3-	-83.80					
Very stiff to stiff, brown SILTY CLAY								A				
- firm and grey by 3.7m depth			_			4-	-82.80	4	f			
		TW	5	100		5-	-81.80			0		
						6-	-80.80			· · · · · · · · · · · · · · · · · · ·		
						7-	-79.80	· A				
						8-	-78.80					
Dynamic Cone Penetration Test		ss	6	92	W	9-	-77.80					
commenced at 8.99m depth. Cone pushed to 21.6m depth.						10-	-76.80					
						11-	-75.80					
							-74.80					
						13-	-73.80					
						14-	-72.80					
						15-	-71.80					
						16-	-70.80	20	40 60	80 10	00	
									ar Strength (F			

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	Me	er Bleue l	Road, Ot	ttawa, Onta	ario	se CDP					
									FILE NO.	PG3130	Piezometer Construction
REMARKS									HOLE NO	BH28-18	
BORINGS BY CME 55 Power Auger				D	ATE .	June 19,	2018			DH20-10	
	РГОТ		SAN	IPLE		DEPTH	ELEV.			ows/0.3m	_
SOIL DESCRIPTION			æ	RY	Що	(m)	(m)	• 5	0 mm Dia	. Cone	eter ctior
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• •	/ater Con	tent %	zome
GROUND SURFACE	LS.	H	NN	REC	N O D			20	40 6	0 80	Piez Cor
						16-	-70.80				
						17-	-69.80				
							03.00				
						18-	68.80		· · · · · · · · · · · · · · · · · · ·		
									• • • • • • • • • • • • •		
						19-	-67.80				
						20-	-66.80				
						21-	-65.80				
										· · · · · · · · · · · · · · · · · · ·	
						22-	-64.80				
									≯		
23.47						23-	-63.80				
End of Borehole		-									
Practical DCPT refusal at 23.47m											
depth.											
(GWL @ 3.05m - July 20, 2018)											
								20 Shea	40 6 Ir Strengt	0 80 10 h(kPa)	00
								▲ Undist		Remoulded	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	ario K	(2E 7J	5			er Bleue I						se CD	Ρ	
DATUM Ground surface elevations	provi	ded b	y Sta	ntec C	Geoma	atics Limi	ted.			FIL	E NO.	PG	3130	
REMARKS										но	LE NO			
BORINGS BY CME 55 Power Auger				D	ATE 、	June 20, 1	2018					BH	29-18	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.					ows/0.: . Cone		۲
SOIL DESCRIPTION			R	:RY	ËQ	(m)	(m)		• 50	J IIII		. Cone	;	Piezometer Construction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD				0 W	late	r Con	tent %	6	szom
GROUND SURFACE		~	Z	RE	z ⁰	0-	-87.90		20	40	6	8 0	0	S B B B B B B B B B B B B B B B B B B B
Brown SILTY CLAY with organics, 0.15		S AU	1				07.00			· · · · · · ·				
		ss	2	83	14	1-	-86.90							
		ss	3	96	7					· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	∰₹₩
Very stiff to stiff, brown SILTY CLAY						2-	-85.90							
		∦ss	4	92	3	3-	-84.90			· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
- firm and grey by 3.7m depth								A	· · · · · · · · · · · · · · · · · · ·			-		
						4-	-83.90							
5.00		тw	5	29		5.	-82.90							
End of Borehole						5-	-02.90							
Practical refusal to augering at 5.00m depth														
(GWL @ 1.49m - July 20, 2018)														
									²⁰ Shea	40 Ir St		o 8 h(kPa	0 10 a)	00
									Indist			Remou		

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont				e CDP								
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	Geoma	atics Limi	ted.		FILE NO.	PG3130		
REMARKS									HOLE NO.	DU20 10		
BORINGS BY CME 55 Power Auger				D	DATE June 20, 2018 Pen. Resist. Blows/0.3m							
SOIL DESCRIPTION	РГОТ		SAN	IPLE		-					<u>ب 2</u>	
	STRATA	ТҮРЕ	NUMBER	°% RECOVERY	ALUE ROD	(m)	(m)		latar Cant	ant 9/	Piezometer Construction	
GROUND SURFACE	STR	Т	NUM	RECO	N OF						Piezo Cons	
Topsoil & organics, trace silty clay 0.18	[¥ X]	S AU	1			0-	-88.40				88	
Very stiff to stiff, brown SILTY CLAY		∛ ss	2	83	7	1-	-87.40					
Very still to still, brown Sill'I' CLAT		ss	3	88							T	
- stiff and grey by 3.0m depth		Δ				2-	-86.40					
		∛ss	4	96	3	3-	-85.40					
3.86 End of Borehole	XX.	⊐ ≍ SS	5	0	50+				· · · · · · · · · · · · · · · · · · ·			
Practical refusal to augering at 3.86m												
depth												
(GWL @ 1.51m - July 20, 2018)												
									40 60 ar Strength		0	
								▲ Undist	urbed 🛛 🛆 F	Remoulded		

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Onta	itawa, On		JSE CDP								
DATUM Ground surface elevations p	provid	ded b	y Sta	ntec C	Geoma	atics Limi	ted.		FILE NC	PG3130	
REMARKS									HOLE N	^{o.} BH31-18	
BORINGS BY CME 55 Power Auger				D	ATE .	June 20,	2018		БПЗІ-10		
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		Resist. B 50 mm Di	lows/0.3m a. Cone	- 5
		ы	ER	ERY	ËQ	(m)	(m)				Piezometer Construction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			0	Water Co	ntent %	ezon onstr
GROUND SURFACE		,	А	RE	zo	0-	-88.12	20	40	60 80	ĒŎ
Brown SILTY CLAY with organics &0.13		§ AU	1				00.12				
		ss	2	83	10	1-	-87.12			······································	
		ss	3	96	9						፼₹
		33	3	90	9	2-	-86.12				
Very stiff to stiff, brown SILTY CLAY							05 10				
- firm and grey by 3.7m depth						3-	-85.12				
- Inn and grey by 5.7m depth		ss	4	0	w	4-	-84.12			1	
		۱ ۲	4		vv					· · · · · · · · · · · · · · · · · · ·	
		ss	5	96	1	5-	-83.12				
6.02		ss	6	100	w					· · · · · · · · · · · · · · · · · · ·	
GLACIAL TILL: Stiff, grey silty clay,		2				6-	-82.12				
trace sand and gravel						7-	-81.12				
End of Borehole	<u>^^^^</u>						01.12				08888
Practical refusal to augering at 7.21m depth											
(GWL @ 1.50m - July 20, 2018)											
									ear Streng	gth (kPa)	00
								▲ Undis		∆ Remoulded	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont		r Bleue Road, Ottawa, Ontario										
DATUM Ground surface elevations	provi	ded b	y Sta	ntec C	ec Geomatics Limited. FILE NO. PG3130							
REMARKS										32-18		
BORINGS BY CME 55 Power Auger				D	ATE .	June 20,	2018		БП	32-10		
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Re 5				
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	○ V 20	/ater Content 6	00 % 00 % 00 % 00 % 00 % 00 % 00 % 00		
Topsoil with organics, some silty clay.20		au 8	1			0-	87.85	20	40 00 0			
			I									
		ss	2	54	8	1-	86.85					
		ss	3	92	9	2-	-85.85			¥		
Very stiff to stiff, brown SILTY CLAY						3-	-84.85					
- firm and grey by 3.7m depth						4-	-83.85	A				
		тw	4	100		5-	-82.85					
6.70						6-	-81.85					
GLACIAL TILL: Grey silty clay, some gravel, cobbles and boulders 7.92		SS ≤ SS	5 6	83 100	W 50+	7-	-80.85					
End of Borehole		-										
Practical refusal to augering at 7.92m depth												
(GWL @ 1.56m - July 20, 2018)												
								20 Shea ▲ Undist	ar Strength (kPa			

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont		tawa, Ont	ario	CDP							
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	deoma	atics Limi	ited.		FILE NO.	PG3130	
REMARKS									HOLE NO.	BH33-18	
BORINGS BY CME 55 Power Auger				D	ATE .	June 20,	2018			опоо-то	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blow 0 mm Dia. (
		ы	ER	ERY	E G	(m)	(m)				netei 'uctic
	STRATA	ТҮРЕ	NUMBER	∾ RECOVERY	N VALUE or RQD				Vater Conte		Piezometer Construction
GROUND SURFACE		<u>x</u>	-	8	Z *	0-	-88.41	20	40 60	80	ດ⊡ັ ‱
Topsoil & organics 0.30		S AU	1					· · · · · · · · · · · · · · · · ·			
		ss	2	79	10	1.	-87.41				
Very stiff, brown SILTY CLAY		ss	3	96	8	_					
2.39		⊠ SS	4	36	50+	2-	-86.41				
End of Borehole											
Practical refusal to augering at 2.39m depth											
(GWL @ 1.90m - July 20, 2018)											
								20 Shea	40 60 ar Strength	80 10 (kPa)	0
								▲ Undist		emoulded	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario													
DATUM Ground surface elevations	provi	ded b	y Sta	ntec C	Geoma	atics Limi	ted.	FILE NO. PG3130					
REMARKS									HOLE NO	HOLE NO.			
BORINGS BY CME 55 Power Auger				D	ATE .	June 21, :	2018			² BH34-18			
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV.		Resist. Bl 50 mm Dia				
		덦	ER	ERY	БО	(m)	(m)				Piezometer Construction		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			0	Water Cor	ntent %	ezon onstr		
GROUND SURFACE Brown SILTY CLAY with organics &0.23		8		R	zv	0-	-88.08	20	40 6	60 80	ΞŎ		
		§ AU	1										
		ss	2	83	12	1-	-87.08						
		ss	3	79	7	2-	-86.08				Ţ		
Very stiff to stiff, brown SILTY CLAY		ss	4	92	3	_	00.00						
		7				3-	-85.08						
- firm and grey by 3.7m depth							-84.08	4					
4.57		-				4-	-04.00						
End of Borehole													
Practical refusal to augering at 4.57m depth													
(GWL @ 1.52m - July 20, 2018)													
								20 She	40 6 ear Streng	60 80 10 th (kPa)	00		
								▲ Undis		Remoulded			

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario	Mer Bleue Road, Ottawa, Ontario								
DATUM Ground surface elevations provided by Stantec Geomatics Limited. FILE NO. PG3	FILE NO. PG3130								
REMARKS									
BORINGS BY CME 55 Power Auger DATE June 22, 2018 BH35	5-18								
SOIL DESCRIPTION BOIL									
	meter uctic								
GROUND SUBFACE	Piezometer Construction								
Brown SILTY CLAY with organics, 0.30 AU 1									
SS 2 71 10 1-86.81									
Very stiff to stiff, brown SILTY CLAY									
- firm and grey by 3 0m depth									
- firm and grey by 3.0m depth									
TW 4 100 4-83.81									
5-82.81									
6-81.81									
SS 5 96 W									
7-80.81									
8-79.81									
SS 6 96 W 9+78.81									
9.75									
End of Borehole									
(Piezometer dry - July 20, 2018)									
(GWL @ 2.5m depth based on field									
observations)									
	100								
Shear Strength (kPa) ▲ Undisturbed △ Remould									

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario											
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	ieoma	atics Limi	ted.		FILE NO.	G3130	
REMARKS									HOLE NO.	36-18	
BORINGS BY CME 55 Power Auger				D	ATE .	June 22, :	2018	1	БП	30-10	
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV.		esist. Blows/0 0 mm Dia. Con		ž
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0 W 20	Vater Content	% 80	Piezometer Construction
Brown SILTY CLAY with organics, 0.23 some topsoil		§ AU	1			0-	-87.44				
` <u>`</u>		ss	2	75	9	1-	-86.44				
		ss	3	96	7	2-	-85.44				
Very stiff to stiff, brown SILTY CLAY						3-	-84.44				¥.
- firm and grey by 3.7m depth						4-	-83.44	*			
		тw	4	100		5-	-82.44			0	
		ss	5	92	W	6-	-81.44				
						7-	-80.44				
		ss	c	96	W	8-	-79.44				
9.75		<u> </u>	6	90	vv	9-	-78.44				
Dynamic Cone Penetration Test commenced at 9.75m depth. Cone pushed to 12.6m depth.		-				10-	-77.44			· · · · · · · · · · · · · · · · · · ·	
						11-	-76.44				
						12-	-75.44				
12.67 End of Borehole		-									
Practical DCPT refusal at 12.67m depth											
(GWL @ 2.83m - July 20, 2018)											
								20 Shea ▲ Undist	ar Strength (kP	-	00

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont			tawa, Or			; CDP						
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	ieoma	atics Limi	ted.	FIL	FILE NO. PG3130			
REMARKS									нс	DLE NO.		
BORINGS BY CME 55 Power Auger				D	ATE 、	June 22, 1	2018	1			BH37-1	8
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH	ELEV.			t. Blov m Dia.	vs/0.3m Cone	<u>+ 5</u>
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	VALUE r rod	(m)	(m)	0	Wate	r Conte	ent %	Piezometer Construction
GROUND SURFACE	ST	Ë	IUN	RECO	N V OF			20	40		80 80	Piez
Brown SILTY CLAY with organics, 0.43 some topsoil		AU	1			0-	-87.83					
		ss	2	83	7	1-	-86.83					
Very stiff to stiff, brown SILTY CLAY		ss	3	96	2	2-	-85.83		······		· · · · · · · · · · · · · · · · · · ·	
						3-	-84.83	A				
- firm and grey by 2.7m depth												
		τw	4	100		4-	-83.83					
		∛ss	5	96	W	5-	-82.83	Å				
		<u> </u>	5	90	vv	6-	-81.83					
						7-	-80.83					
		ss	6	96	W	8-	-79.83					
						9-	-78.83					
9.75		_					10.00					
End of Borehole												
(Piezometer blocked at 2.78m depth - July 20, 2018)												
(GWL @ 2.5m depth based on field observations)												
								20	40	60	80	100
									ear St	trength		

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont		Road, Ottawa, Ontario												
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	ieoma	atics Limi	ted.	FILE NO. PG3130						
REMARKS							HOLE NO. BUIGO 10							
BORINGS BY CME 55 Power Auger				D	ATE 、	June 22,	BH38-18							
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blows/0.3m 0 mm Dia. Cone					
	STRATA 1	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• V	Vater Content %					
GROUND SURFACE		~	-	<u></u>	ų	0-	87.50	20						
Topsoil & organics, some silty clay 0.30	NX.	S AU	1											
		ss	2	96	7	1-	-86.50							
Very stiff to stiff, brown SILTY CLAY		ss	3	96	5	2-	-85.50							
- firm and grey by 3.0m depth		ss	4		W	3-	-84.50							
		тw	F	100			-83.50							
			5	100			-82.50							
							-81.50 -80.50	4						
		∦ss	6		W		-79.50							
		ss	7	96	W		-78.50							
9.75 End of Borehole		-												
(GWL @ 2.79m - July 20, 2018)														
								20 Shea ▲ Undist	40 60 80 100 ar Strength (kPa) urbed △ Remoulded					

154 Colonnade Road South, Ottawa, Onta	er Bleue					ISE CD	F						
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	c Geomatics Limited. FILE NO. PG3130								
REMARKS									H		`		
BORINGS BY CME 55 Power Auger	I			D	ATE 、	June 22,	2018	1			BH	39-18	
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV.	Per			ows/0. a. Cone		25
	STRATA I	ТҮРЕ	NUMBER	°% ©™ERY	N VALUE of RQD	(m)	(m)	C	Wa	ter Co	Piezometer Construction		
GROUND SURFACE		8	-	Ř	4	0-	88.36	2	0 / 	40 (60 8 	30 : : : :	с О
Topsoil & organics, some silty clay 0.30	XX	§ AU	1										
		ss	2	71	9	1-	-87.36						
Very stiff to stiff, brown SILTY CLAY		ss	3	88	9	2-	-86.36						
						3-	-85.36	A				1	
- grey by 3.7m depth						4-	-84.36						
GLACIAL TILL: Stiff, grey silty clay, trace sand, gravel, occ. cobbles & 5.03 boulders		SS SS	4	78	50+	5-	-83.36						
End of Borehole													
Practical refusal to augering at 5.03m depth													
(GWL @ 1.39m - July 20, 2018)													
								S		Streng	50 8 1 th (kPa 3 Remou	a)	00

SOIL	. PROFIL	.E AND	TEST	DATA
------	----------	--------	------	------

154 Colonnade Road South, Ottawa, Ont			tawa, Ont		Secor							
DATUM Ground surface elevations	prov	ided b	y Sta	ntec G	Geoma	atics Limi	ted.		FILE NO. PG3130			
REMARKS									HOLE NO)		
BORINGS BY CME 55 Power Auger				D	ATE .	June 22,	2018			[″] BH40-18	1	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Blo 0 mm Dia	ows/0.3m a. Cone	on	
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	° © © © © © © ©	N VALUE or RQD			0 V 20	/ater Cor 40 6	ntent %	Piezometer Construction	
Brown SILTY CLAY with organics, 0.28		× AU	1			0-	-88.59					
		≊ ∑ss	2	88	8	1-	-87.59					
Very stiff to stiff, brown SILTY CLAY		∆ ss	3	92	7							
							-86.59					
3.73						3-	-85.59					
GLACIAL TILL: Grey silty clay, 4.19 some gravel, occ. cobbles, boulders End of Borehole	<u>`^^^^^</u>	∑ss	4	53	50+	4-	-84.59					
Practical refusal to augering at 4.19m depth												
(GWL @ 1.57m - July 20, 2018)												
								20 Shea ▲ Undist	ar Streng		00	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Mer Bleue Road, Ottawa, Ontario													
DATUM Ground surface elevations provided by Stantec Geo						natics Limited.			FILE NO. PG3130				
REMARKS													
BORINGS BY CME 55 Power Auger	DATE June 22, 2018						Ľ	3H41-18					
SOIL DESCRIPTION	PLOT	SAN				DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone					
		5	R	ERY	Ba	(m)	(m)	 50 mm Dia. Cone Water Content % 20 40 60 80 					
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• Water Content %			ezom		
GROUND SURFACE		~	Z	RE	z ^o	0-	-88.62	20	40 60	80	ŭ Ē		
Brown SILTY CLAY with organics, 0.33 some topsoil		S AU	1				00.02						
Very stiff to stiff, brown SILTY CLAY		ss	2	58	12	1-	87.62						
		ss	3	88	5	2-	-86.62						
- stiff and grey by 2.2m depth		ss	4	33	2	_	00.02						
2.97		ss				3-	85.62						
GLACIAL TILL: Grey silty clay, some gravel, cobbles, boulders			5	29	6		04.00						
4.57		ss	6	54	13	4-	-84.62						
End of Borehole													
Practical refusal to augering at 4.57m depth													
(GWL @ 1.52m - July 20, 2018)													
								20 Shea	20 40 60 80 100 Shear Strength (kPa)				
								▲ Undisturbed △ Remoulded					

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, On	tario ł	<2E 7J	5					tawa, Oni		eu-us	Se CDP		
DATUM Ground surface elevations	prov	ided b	y Sta	ntec C	Geoma	atics Limi	ted.		FIL	e no.	PG3 ⁻	130	
REMARKS									но	LE NO.			
BORINGS BY CME 55 Power Auger		1		D	ATE	June 22,	2018				BH42	-18	
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH	ELEV.				ws/0.3n . Cone		- 5
	STRATA 1	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)				tent %		Piezometer Construction
GROUND SURFACE Topsoil & organics, some silty clay 0.30		×		Щ.		0-	87.96	20	40	60) 80		
		S AU	1									XXXX	
		ss	2	54	10	1-	86.96				·····		
		ss	3	92	6	2-	-85.96					······································	Y
Very stiff to stiff, brown SILTY CLAY						3-	-84.96					······································	
- firm and grey by 3.7m depth						4-	-83.96		1				
		TW	4	100			-82.96					0	
							-81.96						
		ss	5	96	w		-79.96						
GLACIAL TILL: Grey silty clay, 8.79 some sand, gravel, cobbles, boulders End of Borehole		ss	6	50	50+								
Practical refusal to augering at 8.79m depth													
(GWL @ 1.57m - July 20, 2018)													
										-) 80 h (kPa) Bemoulde	10	0

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	ario K	2E 7J	5					tawa, Ont	ario	
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	ieoma	atics Limi	ted.		FILE NO. PG3130	
REMARKS									HOLE NO. BH43-18	
BORINGS BY CME 55 Power Auger				D	ATE 、	June 26, I	2018		БП45-10	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Blows/0.3m 0 mm Dia. Cone	on
GROUND SURFACE	STRATA	ЭДХТ	NUMBER	% RECOVERY	N VALUE of RQD			0 V 20	Vater Content %	Construction
Brown SILTY CLAY with organics, 0.30 some topsoil		au 🕈	1			0-	-87.92			
		ss	2	67	12	1-	-86.92			
		ss	3	17	10	2-	-85.92			¥
Very stiff to stiff, brown SILTY CLAY						3-	-84.92			
- firm and grey by 3.7m depth							-83.92	A	f i i i i i i i i i i i i i i i i i i i	
		тw	4	100			-82.92 -81.92			
						7-	-80.92	Å		
		ss	5	96	W	8-	-79.92			
9.14 GLACIAL TILL: Stiff, grey silty clay,9.60 htrace gravel, occ. cobbles, boulders End of Borehole	<u>, , , , , , , , , , , , , , , , , , , </u>	ss	6	51	5	9-	-78.92			
Practical refusal to augering at 9.60m depth										
(GWL @ 1.63m - July 20, 2018)								20	40 60 80 100	
									ar Strength (kPa)	

SOIL PROFILE AND TEST DATA

Ground surface elevations provided by Stantec Geomatics Limited. FILE NO. PG313 REMARKS BORINGS BY CME 55 Power Auger DATE June 26, 2018 FILE NO. PG313 SOIL DESCRIPTION Image: Sample state st	
BORINGS BY CME 55 Power Auger DATE June 26, 2018 HOLE NO. BH44-16 SOIL DESCRIPTION Image: Constraint of the second secon	
SOIL DESCRIPTION Image: Bit of the state s	
SOIL DESCRIPTION OI dia water Content % Image: Solid DESCRIPTION Image: Solid DESCRIPTION Image: Solid DESCRIPTION Image	Piezometer
VEL VEL <th>Piezometer</th>	Piezometer
	Č Ji
Brown SILTY CLAY, some topsoil, 0.13 AU 1	
SS 2 79 6 1-87.02	
Very stiff to stiff, brown SILTY CLAY	·18881 1882
3-85.02	
- firm and grey by 3.7m depth 4-84.02	
TW 4 100 5-83.02	
<u>6.02</u> 6-82.02	
GLACIAL TILL: Hard, grey silty clay,	
some sand, gravel, occasional cobbles, boulders $3.98 \times 10^{-1} \times$	
End of Borehole	
Practical refusal to augering at 7.98m depth	
(GWL @ 1.47m - July 20, 2018)	
20 40 60 80 Shear Strength (kPa) ▲ Undisturbed △ Remoulded	⊣ 100

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ont	ario K	(2E 7J	5					tawa, Ont		JSE CDP		
DATUM Ground surface elevations	provi	ded b	y Sta	ntec G	Geoma	atics Limi	ted.		FILE NO	PG3	8130	
REMARKS									HOLE N	^{o.} BH4	5_18	
BORINGS BY CME 55 Power Auger				D	ATE .	June 26, 2	2018			DII4	5-10	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Bl 0 mm Di		m	er on
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD	(11)	(11)	0 W 20	/ater Co	ntent %		Piezometer Construction
	XX	Š AU	1			0-	-87.95					₩ ₩
Brown SILTY CLAY with organics, 0.33		[⊗] ss	2	71	10	1-	-86.95					
												▓₹
		x ss	3	58	10	2-	-85.95					
Very stiff to stiff, brown SILTY CLAY						3-	-84.95					
- firm and grey by 3.7m depth						4-	-83.95		*			
		тw	4	100		5-	-82.95					
						6-	-81.95					
						7-	-80.95	4				
						8-	-79.95					
9.75		ss	5	96	w	9-	-78.95					
Dynamic Cone Penetration Test commenced at 9.75m depth. Cone pushed to 11.0m depth.						10-	-77.95					
11.43						11-	-76.95	•				
End of Borehole		-										
Practical DCPT refusal at 11.43m depth.												
(GWL @ 1.47m - July 20, 2018)												
								20 Shea ▲ Undist	r Streng	60 80 th (kPa) △ Remoule)	00

patersongro		In	Con	sulting		SOI	L PRO		ID TES	T DATA	
154 Colonnade Road South, Ottawa, O		-		ineers	E	Geotechnic East Urban Ottawa, Or	Commu	tigation nity - Nava	an Road		
DATUM Ground surface elevations	provide	ed by <i>i</i>	Annis,	O'Sulliv					FILE NO.	PG3130	
REMARKS									HOLE NO		
BORINGS BY CME 55 Power Auger				DA	TE	Septembe	er 12, 201	4		BH 1-14	1
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blo 0 mm Dia		ster Stion
	STRATA I	ТҮРЕ	NUMBER	% RECOVERY	VALUE F ROD	(m)	(m)	0 W	later Con	tant 9/	Piezometer Construction
GROUND SURFACE	STR	Ъ	NUM	RECO	N VI			20	40 6		ЧĞ
	8	S AU	1			- 0-	-87.68				₩ ₩
		ss	2	83	9	1-	-86.68		· · · · · · · · · · · · · · · · · · ·		
		Д			Ū						
Very stiff to stiff, brown SILTY CLAY						2-	-85.68				
- firm and grey by 2.9m depth						3-	-84.68				श्रीतिति श्रीतिति
						4-	-83.68				
									· · · · · · · · · · · · · · · · · · ·		
						5-	-82.68				
6.55	5					6-	-81.68				
Dynamic Cone Penetration Test commenced at 6.55m depth. Cone		-				7-	-80.68				
pushed to 14.0m depth.							70.69				
						8-	-79.68		· · · · · · · · · · · · · · · · · · ·		
						9-	-78.68			· · · · · · · · · · · · · · · · · · ·	
						10-	-77.68		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
						11-	-76.68				
							10100				
						12-	-75.68		· · · · · · · · · · · · · · · · · · ·		
						13-	-74.68		· · · · · · · · · · · · · · · · · · ·		
14.02	2	_				14-	-73.68				
End of Borehole Practical DCPT refusal at 14.02m											
depth.											
(GWL @ 3.60m-Sept. 24, 2014)								20	40 6	D 80 1	00
									r Strengt		

patersongro		In	Con	sulting		SOI	l pro	FILE AI	ND TES	ST DATA	
154 Colonnade Road South, Ottawa, On		-		ineers	E	ieotechnic ast Urban ottawa, Or	Commu	tigation Inity - Nav	an Road		
DATUM Ground surface elevations p	rovide	ed by <i>i</i>	Annis,	O'Sulliv					FILE NO	D00100	
REMARKS									HOLE N	PG3130	
BORINGS BY CME 55 Power Auger		1		DA	TE	Septembe	er 12, 201	14		[°] BH 2-14	
	PLOT		SAN	IPLE		DEPTH	ELEV.			ows/0.3m	r L
SOIL DESCRIPTION	1		æ	RY	년 o	(m)	(m)	• 5	50 mm Di	a. Cone	Piezometer Construction
	STRATA	TYPE	NUMBER	∾ RECOVERY	VALUE Dr ROD			• •	Vater Co	ntent %	iezo
GROUND SURFACE	IS I		NN	REC	N N N			20	40	60 80	щО
TOPSOIL0.33		ള AU	1			- 0-	-88.13				
		ss	2	83	12	1-	-87.13				
Hard to very stiff, brown SILTY		Δ									
CLAY						2-	86.13			21 4	
						2	-85.13			1	
- stiff to firm and grey by 2.9m depth						3-	-05.15	4			
4.40						4-	-84.13				
GLACIAL TILL: Grey-brown silty		x ss	3		50+				•		
clay with sand, gravel, cobbles, 5.05		A 22				5-	-83.13				
End of Borehole											
Practical refusal to augering at 5.05m depth											
(GWL @ 3.91m-Sept. 24, 2014)											
								20 She	40 ar Streng	60 80 1 10 (kPa)	1 00
								Undis		A Remoulded	

patersongro		In	Con	sulting	3	SOI	L PRO	FILE	AN	ID	TES	ST D	ΑΤΑ	
154 Colonnade Road South, Ottawa, On		-		ineers	E	Geotechnic East Urban	Commu			ın R	oad			
DATUM Ground surface elevations p				O'Sulli		Ottawa, Or Vollebekk				FIL	e no.			
REMARKS		-								10			G313()
BORINGS BY CME 55 Power Auger				DA	ATE	Septembe	er 12, 201	4		но	LENC	" B⊦	I 3-1 4	
	PLOT		SAN	IPLE		DEPTH	ELEV.	Pe				ows/0		r n
SOIL DESCRIPTION			Я	RY	Щс	(m)	(m)		5	0 m	m Dia	a. Cor	ne	mete
	STRATA	ТҮРЕ	NUMBER	* RECOVERY	N VALUE	22 4			> W	ate	r Cor	ntent	%	Piezometer Construction
GROUND SURFACE		簽 AU	1	RE	z		-88.74	2	20	40	6	60	80	-
_ TOPSOIL 0.28			1								· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· · · · ·
Very stiff, brown SILTY CLAY		ss	2		11	1-	-87.74				· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	
2.13		_					86.74			· · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			121 •
GLACIAL TILL: Brown silty clay with 31 sand, gravel, cobbles and boulders		- SS	3	0	50+	+								
End of Borehole											· · · · · · · · · · · · · · · · · · ·			
Practical refusal to augering at 2.31m depth														
(BH dry upon completion)														
											· · · ·			
											· · · ·			
											· · · · · · · · · · · · · · · · · · ·			
											· · · · · · · · · · · · · · · · · · ·			
											· · · ·			
											· · · · · · · · · · · · · · · · · · ·			
											· · · · · · · · · · · · · · · · · · ·			
									20 Shea	40 r St	e reng	® th (kF	80 Pa)	100

▲ Undisturbed

 $\bigtriangleup \text{ Remoulded}$

patersongr		In	Con	sulting ineers	J	SOI	L PRO	FILE AN	ND TES	ST DATA	
154 Colonnade Road South, Ottawa, C		-		ineers	E	Geotechnic East Urban Ottawa, Or	Commu		an Road		
DATUM Ground surface elevations	provide	ed by <i>i</i>	Annis,	O'Sulliv	_				FILE NO		
REMARKS									HOLE N	PG3130	
BORINGS BY CME 55 Power Auger				DA	TE	Septembe	er 12, 201	4		^{BH} 4-14	-1
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	-	esist. Bl 0 mm Di	ows/0.3m	er on
SOIL DESCRIPTION			ιR	IRY	Be	(m)	(m)	• 5		a. Cone	omet
	STRATA	ТҮРЕ	NUMBER	» RECOVERY	N VALUE	н 		• v	Vater Co	ntent %	Piezometer Construction
GROUND SURFACE			N	RE	z	,	-88.15	20	40	60 80	
TOPSOIL 0.2	8	_					00.15				
		ss	1	83	6	1-	-87.15		······································		
Very stiff to stiff, brown SILTY CLAY						2-	-86.15		· · · · · · · · · · · · · · · · · · ·		
						3	-85.15				
- firm and grey by 2.9m depth							05.15				
						4-	-84.15		······································		
									•••••••••••••••••••••••••••••••••••••••		
						5-	-83.15		<u></u>		
							00.45				
6.5	5					6-	-82.15				
Dynamic Cone Penetration Test commenced at 6.55m depth. Cone						7-	-81.15		.	· · · · · · · · · · · · · · · · · · ·	
pushed to 10.7m depth.											· •
						8-	-80.15				
											· • · •
						9-	-79.15				
						10-	-78.15				· · ·
							70.10				
						11-	77.15				
11.7	3	-							······································	······································	
End of Borehole											I
Practical DCPT refusal at 11.73m depth											
(GWL @ 4.00m-Sept. 24, 2014)											
								20 Shor			⊣ 100
								Snea ▲ Undist		jth (kPa) ∆ Remoulded	
		I						1			

natersonard	TOUP Consulting Engineers					SOI	L PRO		ND TE	ST DATA	
154 Colonnade Road South, Ottawa, On		-		ineers	Ea		Commu	tigation Inity - Nav	an Road		
DATUM Ground surface elevations p				O'Sulliv		tawa, Or /ollebekk			FILE NC).	
REMARKS									HOLE N	PG3130	
BORINGS BY CME 55 Power Auger				DA	TE	Septembe	er 15, 201	14		BH 5-14	
SOIL DESCRIPTION	PLOT		SAN	IPLE अ		DEPTH (m)	ELEV. (m)			lows/0.3m ia. Cone	neter uction
	STRATA	ТҮРЕ	NUMBER	°	N VALUE or ROD			0 1	Vater Co	ontent %	Piezometer Construction
GROUND SURFACE		-	N	RE	zö	0-	-90.54	20	40	60 80	
TOPSOIL 0.13 GLACIAL TILL: Brown silty clay witb.46 sand, gravel and cobbles End of Borehole Practical refusal to augering at 0.46m depth (BH dry upon completion)											

20 40 60 80 Shear Strength (kPa)

△ Remoulded

▲ Undisturbed

100

patersongro							l pro	FILE AN	ID TES	T DATA						
154 Colonnade Road South, Ottawa, On		-		ineers	Ea		Commu	tigation nity - Nava	an Road							
DATUM Ground surface elevations p				O'Sulliv	-	tawa, On			FILE NO.							
REMARKS	10100		-11113,	O Suiiv	/an, v	UIEDERK	Linited.			PG3130						
BORINGS BY CME 55 Power Auger				ПА	те (Septembe	or 15 201	1	HOLE NO	BH 6-14						
	F .		SVW	IPLE			, 10, 201		esist. Blo	we/0.3m						
SOIL DESCRIPTION	A PLOT				ЩО	DEPTH (m)	ELEV. (m)		0 mm Dia		Piezometer Construction					
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	later Con	tent %	Piezo Consti					
				8	z	0-	-89.34	20	40 6	0 80						
TOPSOIL 0.20 Brown SILTY CLAY, trace sand 0.38 End of Borehole Practical refusal to augering at 0.38m depth (BH dry upon completion)		∞ AU	1				-09.34									
								20 20 Shea ▲ Undist	_: : : : 40 60 ar Strengt urbed △	0 80 10 h (kPa) Remoulded	00					

patersongro	nsulting	3	SOI	l pro	FILE AN	ND TE	ST DA	TA			
154 Colonnade Road South, Ottawa, On		-		jineers		Geotechnic East Urban Ottawa, Or	Commu		an Roac	I	
DATUM Ground surface elevations p	rovide	ed by <i>i</i>	Annis,	, O'Sulli					FILE NO). PC(3130
REMARKS									HOLEN	10	
BORINGS BY CME 55 Power Auger				DA	ATE	Septembe	er 15, 201	4		BH	/-14
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.			lows/0.3 ia. Cone	m Log
	1	ы	ĸ	ΞRΥ	Be	ୁ (m) କୁ	(m)	• 5			omet
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE	R R		• v	Vater Co	ontent %	Piezometer Construction
				RE	Z		-87.99	20	40	60 80	
TOPSOIL0.23	X	ጅ AU	1							· · · · · · · · · · · · · · · · · · ·	
		ss	2	100		1-	-86.99		· · · · · · · · · · · · · · · · · · ·		
		ss	3	100	5	2-	-85.99		· · · · · · · · · · · · · · · · · · ·		
Very stiff to stiff, brown SILTY CLAY											
- firm and grey by 2.9m depth						3-	-84.99		· · · · · · · · · · ·		
						4-	-83.99				
5.40						_					
5.18 GLACIAL TILL: Grey-brown silty	[^ <u>^</u> ^^^/	l X ss	4	100	12		-82.99	Δ		· · · · · · · · · · · · · · · · · · ·	
clay with sand, gravel, cobbles 5.82 and boulders 5.82 End of Borehole		1									
Practical refusal to augering at 5.82m											
depth											
(GWL @ 3.5m depth based on field observations)											
								20 Shea	40 ar Stren	60 80 61 gth (kPa	
								▲ Undist			

patersongro	וור	in	3	SOI	l pro	FILE AND TEST DATA			
154 Colonnade Road South, Ottawa, Or		-		jineers	E	ieotechnic ast Urban ttawa, Or	Commu	tigation ınity - Navan Road	
DATUM Ground surface elevations p	provide	ed by <i>i</i>	Annis,	O'Sulli	-			FILE NO. PG3130	
REMARKS									
BORINGS BY CME 55 Power Auger				DA	TE	Septembe	er 15, 201		
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone	tion
		ы	R	ΞRΥ	Be	(m)	(m)		struc
	STRATA	ТҮРЕ	NUMBER	* RECOVERY	N VALUE or ROD			• Water Content %	Construction
GROUND SURFACE				RE	zÓ		-87.46	20 40 60 80	-
0.25	FFF	⊠ AU	1				07.40		
		ss	2	100	3	1-	-86.46		
Very stiff to stiff, brown SILTY CLAY						2-	-85.46		
- firm and grey by 2.9m depth						3-	-84.46		₽
						4-	-83.46		
						5-	-82.46		
6. <u>5</u> 5						6-	-81.46		
Dynamic Cone Penetration Test commenced at 6.55m depth. Cone pushed to 13.1m depth.						7-	-80.46		
						8-	-79.46		
						9-	-78.46		
						10-	-77.46		
						11-	-76.46		
						12-	-75.46		
13.16	;	+				13-	-74.46		
Practical DCPT refusal at 13.16m depth									
(GWL @ 3.0m depth based on field observations)									
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded	

patersongro		Consulting			ing SOIL PROFILE AND TEST DATA							
154 Colonnade Road South, Ottawa, Ontar	_	-		ineers	E	eotechnic ast Urban	Commu		an Roa	ad		
DATUM Ground surface elevations prov				O'Sulliv)ttawa, On Vollebekk			FILE	NO.		
REMARKS									HOLE		PG3130	
BORINGS BY CME 55 Power Auger				DA	TE	Septembe	er 15, 201	4		E NO.	3H 9-14	
			SAN	IPLE		DEPTH	ELEV.	Pen. R				on
			R	IRY	Ba	(m)	(m)	• 5	U mm	Dia. C	one	omet
		TYPE	NUMBER	% RECOVERY	N VALUE or ROD			• v	Vater (Conter	nt %	Piezometer Construction
GROUND SURFACE		AU	-1	RE	z		-89.97	20	40	60	80	
TOPSOIL 0.20 Very stiff, brown SILTY CLAY											· · · · · · · · · · · · · · · · · · ·	
1.32		SS	2		14	1-	-88.97				· · · · · · · · · · · · · · · · · · ·	
End of Borehole												
Practical refusal to augering at 1.32m depth												
(BH dry upon completion)												
								20 Shea	40 ar Stre	60 ength (80 10 87 80	00

▲ Undisturbed

patersongro		In	Con	sulting		SOI	l pro	FILE AN	ND TES	T DATA	
154 Colonnade Road South, Ottawa, Or				ineers	Ea		Commu	tigation inity - Nava	an Road		
DATUM Ground surface elevations p				O'Sulliv		t tawa, Or Vollebekk			FILE NO.		
REMARKS		-								PG3130	
BORINGS BY CME 55 Power Auger				DA	TE	Septembe	er 15, 201	4	HOLE NO	BH10-14	
	E.		SAN	IPLE		DEPTH		Pen. R	esist. Blo	ows/0.3m	<u>ر</u> د
SOIL DESCRIPTION	LOI V		~	7	ы о	(m)	ELEV. (m)	• 5	0 mm Dia	. Cone	nete uctio
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	later Con	tent %	Piezometer Construction
GROUND SURFACE	ST	H	ŊŊ	REC	N O		00.44	20	40 6	0 80	шO
0.28	- - - -	⊠ AU	1			0-	-88.44		· · · · · · · · · · · · · · · · · · ·		
		ss	2	83	9	1-	-87.44				
		ss	3	83	5						
			0		Ŭ	2-	-86.44		· · · · · · · · · · · · · · · · · · ·		
Very stiff to stiff, brown SILTY CLAY						3-	-85.44	<u> </u>			
- firm and grey by 3.7m depth								4	· · · · · · · · · · · · · · · · · · ·		
- Initiatio grey by 5.711 deptit						4-	-84.44				₽
						5-	-83.44				
						6-	-82.44		· · · · · · · · · · · · · · · · · · ·		
7.14						7-	-81.44		· · · · · · · · · · · · · · · · · · ·		
End of Borehole							•••••				
Practical refusal to augering at 7.14m depth											
(GWL @ 4.0m depth based on field observations)											
ODServalions)											
								20	40 6	D 80 10	
									ar Strengt		00

Undisturbed

 \triangle Remoulded

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Prop. Residential Development-Trails Edge Phase 2 Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

DATUM Ground surface provided by Annis, O'Sullivan, Vollebekk Limited.										PG2392	
REMARKS									HOLE NO.		
BORINGS BY CME 55 Power Auger				D	ATE	17 August	2011			BH 7	
SOIL DESCRIPTION	PLOT	SAMPLE				DEPTH (m)	ELEV. (m)		esist. Blow 0 mm Dia. C		neter uction
	STRATA	ЭДҮТ	NUMBER	% RECOVERY	N VALUE or RQD			• v	later Contei	nt %	Piezometer Construction
GROUND SURFACE	01		N	RE	z o	0	-87.15	20	40 60	80	
TOPSOIL 0.20 Loose, brown SILTY SAND 0.30							07.15				
Very stiff to stiff, brown SILTY CLAY		∦ ss	1	67	7		-86.15 -85.15				
<u>3.30</u>						3-	-84.15				
		τw	2	100		4-	-83.15				
		TW	3	100			-82.15		⁴ • • • • • • • • • • • • • • • • • • •		
Firm, grey SILTY CLAY							-81.15				
							-80.15		· · · · · · · · · · · · · · · · · · ·		
		тw	4	100			-79.15				
9.60 Dynamic Cone Penetration Test							-78.15				
commenced @ 9.60m depth. Cone pushed to 23.5m depth.							-77.15	· · · · · · · · · · · · · · · · · · ·			
							-76.15		· · · · · · · · · · · · · · · · · · ·		
						12-	-75.15		· · · · · · · · · · · · · · · · · · ·		
							-74.15				
						14-	-73.15			· · · · · · · · · · · · · · · · · · ·	
						15-	-72.15	20 Shea ▲ Undisti	40 60 ar Strength	80 10 (kPa) emoulded	00

patersongroup Consulting Engineers SOIL PROFILE Geotechnical Investigation Prop. Residential Developm

SOIL	PROFIL	E AND	TEST	DATA

Undisturbed

△ Remoulded

Prop. Residential Development-Trails Edge Phase 2 Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

DATUM Ground surface provided	by Anni	s, O'Sı	ullivan,	Volle	bekk L	imited.			FILE NO.	PG2392	
				_		4 7 4	0011		HOLE NO.	BH 7	
BORINGS BY CME 55 Power Auger SOIL DESCRIPTION	ТОЛЧ		SAN	/IPLE	DATE	17 August	ELEV.		esist. Blow 0 mm Dia. C	/s/0.3m	eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• v	ater Conte	nt %	Piezometer Construction
GROUND SURFACE				8	ZŬ	15-	-72.15	20	40 60	80	
							-71.15				
						17-	-70.15				
						18-	-69.15	·····		· · · · · · · · · · · · · · · · · · ·	
						19-	-68.15				
							-67.15				
							-66.15				
							-65.15				
							-64.15				
24.	84					24-	-63.15		· · · · · · · · · · · · · · · · · · ·		
End of Borehole											
Practical cone refusal @ 24.84m depth											
(GWL @ 2.3m depth based on field observations)								20	40 60	80 10	00
								Shea	ar Strength	(kPa)	-

paterson

DATUM

natoreonau		n	Con	sulting		SOIL	. PRO	FILE AN	ND TEST DATA	
patersongr 154 Colonnade Road South, Ottawa	sulting ineers	Pr	eotechnica op. Reside tawa, Oni	-Trails Edge Phase 2						
DATUM Ground surface provided	d by Annis	s, O'Si	ullivan,	, Vollebe					FILE NO. PG2392	
REMARKS										
BORINGS BY CME 55 Power Auger		1		DA	TE	9 February	/ 2012	1	BH 8	
SOIL DESCRIPTION	PLOT		SAN			DEPTH (m)	ELEV. (m)		esist. Blows/0.3m 0 mm Dia. Cone	neter uction
	STRATA	ТҮРЕ	NUMBER	~ RECOVERY	N VALUE or RQD		()	• v	/ater Content %	Piezometer Construction
GROUND SURFACE			4	R	z ⁰	0-	-86.93	20	40 60 80	~~~~~
TOPSOIL (<u>).25</u>	X AU	1				-85.93		· * · · · · * · * · * · * · * · * · * ·	
Very stiff to stiff, brown SILTY CLAY		∦ ss	2		8		-00.93	······································		
						2-	-84.93			E
	<u>2.90</u>	TW	3	83		3-	-83.93			
						4-	-82.93			
		тw	4	100		5-	-81.93	· · · · · · · · · · · · · · · · · · ·	· • • • • • • • • • • • • • • • • • • •	
Firm, grey SILTY CLAY						6-	-80.93			
						7-	-79.93			
						8-	-78.93			
	<u>).60</u>					9-	-77.93	4		
Dynamic Cone Penetration Test commenced @ 9.60m depth. Cone pushed to 19.8m depth.						10-	-76.93			
						11-	-75.93			
						12-	-74.93		· · · · · · · · · · · · · · · · · · ·	
								· · · · · · · · · · · · · · · · · · ·		
						13-	-73.93		· • • • • • • • • • • • • • • • • • • •	
						14-	-72.93			

.

20

▲ Undisturbed

15+71.93

· • • • • • ÷.,

Shear Strength (kPa)

60

80

 \triangle Remoulded

100

40

SOIL PROFILE AND TEST DATA patersongroup Consulting Engineers **Geotechnical Investigation** Prop. Residential Development-Trails Edge Phase 2 154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ottawa, Ontario Ground surface provided by Annis, O'Sullivan, Vollebekk Limited. FILE NO. DATUM REMARKS

PG2392

newanky									HOLE NO. BH 8	
BORINGS BY CME 55 Power Auger		1		D	ATE S	9 February	y 2012		БПО	
SOIL DESCRIPTION	PLOT		SAN			DEPTH (m)	ELEV. (m)		esist. Blows/0.3m 0 mm Dia. Cone	neter uction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD	()	()	• v	Vater Content %	Piezometer Construction
GROUND SURFACE			4	R	z	15	-71.93	20	40 60 80	
							-70.93			
							-69.93			***
							-68.93			***
						19-	-67.93			
						20-	-66.93			
						21-	-65.93			***
						22-	-64.93			***
						23-	-63.93			
24.0	0	-				24-	-62.93	• • • • • •		
End of Borehole							02.00			T
Practical DCPT refusal @ 24.00m depth.										
(GWL @ 2.2m depth based on field observations)										
								20 Shea ▲ Undistu	ar Strength (kPa)	00

paterso NAROUN

Consulting

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa	a, Ontario	- 6 K2E		Pr	Prop. Residential Development-Trails Edge Phase 2 Ottawa, Ontario					
DATUM Ground surface provided	by Annis	s, O'Sı	ullivan,	, Vollet	oekk L	FILE NO. PG2392				
REMARKS								HOLE NO. DU O		
BORINGS BY CME 55 Power Auger		1		D	ATE	10 Februa	ry 2012	BH 9		
SOIL DESCRIPTION	ТОЛЧ		SAN	IPLE		DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD		(11)	Pen. Resist. Blows/0.3m □ ● 50 mm Dia. Cone □ □ Output □ ○ Water Content % □		
GROUND SURFACE	N N		Z	RE	z ^o			20 40 60 80		
).23		4			1 0-	-86.96			
Very stiff to stiff, brown SILTY CLAY		8 AU SS SS	1 2	100	8	1-	-85.96			
						2-	-84.96			
2	<u>2.90</u>					3-	-83.96			
		тw	3	100		4-	-82.96			
						5-	-81.96			
Firm, grey SILTY CLAY		ТW	4	100		6-	-80.96			
						7-	-79.96			
						8-	-78.96			
с	9.60					9-	-77.96			
Dynamic Cone Penetration Test commenced at 9.60m depth. Cone pushed to 19.8m depth.						10-	-76.96			
						11-	-75.96			
						12-	-74.96			
						13-	-73.96			
						14-	-72.96			
						45	71.00			

15+71.96

40

Shear Strength (kPa)

20

▲ Undisturbed

60

80

 \triangle Remoulded

100

patersongroup Consulting Engineers SOIL PROFILE AND TEST DATA **Geotechnical Investigation** Prop. Residential Development-Trails Edge Phase 2 154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ottawa, Ontario vided by Appie O'Sullivan Vellebekk Limited DATUM Gr dourfo

DATUM Ground surface prov	ided by	Annis	s, O'Si	illivan,	Vollet	Dekk L	imited.			FILE NO	⁾ PG2392	2
REMARKS										HOLE N	0.	
BORINGS BY CME 55 Power Aug	ger		DATE 10 February 2012								BH 9	
SOIL DESCRIPTION		PLOT		SAN			DEPTH (m)	ELEV. (m)		esist. Bl 0 mm Dia	lows/0.3m a. Cone	neter uction
		STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD				/ater Coi		Piezometer Construction
GROUND SURFACE							15-	-71.96	20	40	60 80	
							16-	-70.96				
							17-	-69.96				
								-68.96				
								-67.96				
							20-	-66.96				
							21-	-65.96				
							22-	-64.96		· · · · · · · · · · · · · · · · · · ·		
							23-	-63.96				·····
							24-	-62.96				· • •
							25-	-61.96				
	<u>26.16</u>						26-	60.96		······································		
End of Borehole												
Practical DCPT refusal @ 26.16m depth.												
(GWL @ 2.2m depth based on field observations)												

40

Shear Strength (kPa)

20

Undisturbed

60

80

△ Remoulded

100

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Prop. Residential Development-Trails Edge Phase 2

154

154 Colonnade Road South, Ottawa, C	Ontario	o K2E	7J5			tawa, On		velopment		r nase z	
DATUM Ground surface provided by	y Annis	s, O'Si	Illivan,	, Volleb	ekk L	imited.			FILE NO.	PG2392	
REMARKS									HOLE NO.	BH10	
BORINGS BY CME 55 Power Auger				D	ATE	17 August	2011			БПІО	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blows 0 mm Dia. Co		eter tion
	STRATA I	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Conten		Piezometer Construction
GROUND SURFACE	0		Z	RE	zÓ	0	96.07	20	40 60	80	
TOPSOIL 0.20 Brown SILTY CLAY with 0.69		AU	1			- 0-	-86.97	·····			
sand, trace gravel		ss	2	92	7	1-	-85.97	·····	······································		
Very stiff to stiff, brown SILTY CLAY						2-	-84.97			1 	
<u>3.3</u> (-83.97				
		TW	2			4-	-82.97				
		Т	3			5-	-81.97				
Firm, grey SILTY CLAY						6-	-80.97				
						7-	-79.97				
						8-	-78.97	4		· · · · · · · · · · · · · · · · · · ·	
9.60							-77.97				
commenced @ 25.27m depth. Cone pushed to 22.7m depth.						10-	-76.97				
						11-	-75.97				
						12-	-74.97				
						13-	-73.97	· · · · · · · · · · · · · · · · · · ·			
						14-	-72.97				
						15-	-71.97		40 60 ar Strength ()0
								🔺 Undist	urbed $ riangle$ Re	moulded	

SOIL PROFILE AND TEST DATA patersongroup Consulting Engineers 154 Colonnade Road South, Ottaw DATUM Ground surface provide

				อนแบบงู							
154 Colonnade Road South, Ottawa, O	ineers	Pr	Geotechnical Investigation Prop. Residential Development-Trails Edge Phase 2 Ottawa, Ontario								
DATUM Ground surface provided by	Annis	s, O'Sı	ullivan,	Vollet		,			FILE NO.	PG2392	
REMARKS BORINGS BY CME 55 Power Auger				D	ATE	17 August	2011		HOLE NO.	BH10	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blov 0 mm Dia.		ter ion
	STRATA P	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		/ater Conte	ent %	Piezometer Construction
GROUND SURFACE						15-	-71.97				
						16-	-70.97		· · · · · · · · · · · · · · · · · · ·		4-14-14-14
						17-	-69.97		· · · · · · · · · · · · · · · · · · ·		

	16+70.97	
	17-69.97	
	18-68.97	
	19-67.97	
	20-66.97	
	21-65.97	
	22-64.97	
	23-63.97	
	24-62.97	
End of Borehole25.27	25-61.97	
Practical cone refusal @ 25.27m depth		
(GWL @ 2.3m depth based on field observations)		
		20 40 60 80 100 Shear Strength (kPa)
		▲ Undisturbed △ Remoulded

patersongroup Consultin Engineer

001 - -

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

BORINGS BY CME 55 Power Auger

DATUM REMARKS

ersongro		n	Con	sulting		SOIL	- PRO	FILE AND TEST DATA
ade Road South, Ottawa, (-	Eng	ineers	Ge Pr	eotechnic op. Resid tawa, On	ential De	tigation evelopment-Trails Edge Phase 2
Ground surface provided b	y Annis	s, O'Su	ullivan	, Volleb	ekk L	imited.		FILE NO. PG2392
CME 55 Power Auger				D	ATE S	9 February	y 2012	HOLE NO. BH11
L DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone
L DESCRIPTION	STRATA P.	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ■ ● 50 mm Dia. Cone □atapation ○ Water Content % □atapation
RFACE 0.2		⊧ ⊗ AU	1 1	REC	N N OL	0-	-87.17	20 40 60 80
stiff, brown SILTY		S AU SS SS	2 3	83	12	1-	-86.17	
						2-	-85.17	
2.9						3-	-84.17	
		тw	4	100		4-	-83.17	
						5-	-82.17	
TY CLAY		тw	5	100		6-	-81.17	
						7-	-80.17	
						8-	-79.17	
9.6	0					9-	-78.17	
e Penetration Test @ 9.60m depth. to 20.4m depth.						10-	-77.17	
						11-	-76.17	

SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone	ion Ion
SOIL DESCRIPTION	STRATA P	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• Water Content %	Plezometer Construction
	STF	ЛТ	MUN	SECO SEC	N VI				īβ
GROUND SURFACE TOPSOIL 0.25	-	X AU	1			0-	-87.17	20 40 60 80	<u>a ex</u>
TOPSOIL0.25		AU AU	2						
Very stiff to stiff, brown SILTY CLAY		ss	3	83	12	1-	-86.17		
						2-	-85.17		¥₩
2.90						3-	-84.17		
		тw	4	100		4-	-83.17		
						5-	-82.17		
Firm, grey SILTY CLAY		тw	5	100		6-	-81.17		
						7-	-80.17		
						8-	-79.17		
9.60						9-	-78.17		
Dynamic Cone Penetration Test commenced @ 9.60m depth. Cone pushed to 20.4m depth.						10-	-77.17		
						11-	-76.17		
						12-	-75.17		
						13-	-74.17		
						14-	-73.17		
						15-	-72.17	20 40 60 80 100	
								Shear Strength (kPa)	
								▲ Undisturbed △ Remoulded	

SOIL PROFILE AND TEST DATA patersongroup Consulting Engineers **Geotechnical Investigation** Prop. Residential Development-Trails Edge Phase 2 154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ottawa, Ontario DATUM Ground surface provided by Annis, O'Sullivan, Vollebekk Limited. FILE NO. REMARKS

PG2392

BORINGS BY CME 55 Power Aug	er				D	ATE S	9 Februar	y 2012		BH11	
SOIL DESCRIPTION		РГОТ		SAN	IPLE		DEPTH	ELEV.		esist. Blows/0.3m 0 mm Dia. Cone	eter tion
		STRATA F	ТУРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Content %	Piezometer Construction
GROUND SURFACE					RI	ZŸ	15-	-72.17	20	40 60 80	
								-72.17			
							10	/ 1.17	· · · · · · · · · · · · · · · · · · ·		
							17-	-70.17	······································		
							18-	-69.17			•
							19-	-68.17			·• ·• ·•
							20-	-67.17	······································		· · · · · · · · · · · · · · · · · · ·
							21_	-66.17			
End of Borehole	<u>21.28</u>						21	00.17		······································	÷
Practical DCPT refusal @ 21.28m depth.											
(GWL @ 2.3m depth based on field observations)											
									20 Shea ▲ Undistu	ar Strength (kPa)	⊣ 100

patersongroup Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Residential Development - Eden Park East Portion

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	7T7				tawa, On			
DATUM Ground surface elevations p	rovide	ed by S	Stante	c Geo	matics	s Ltd.		FILE NO. PG0861	
REMARKS								HOLE NO. PH 0.00	
BORINGS BY CME 55 Power Auger				D	ATE	7 August 2	2008	BH 9-08	
SOIL DESCRIPTION	РГОТ		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone	ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Construc
GROUND SURFACE	ũ		N	REC	z Ö			20 40 60 80	5
TOPSOIL 0.40						-0	-86.92		\boxtimes
Loose, light brown SILTY 0.75		∦ ss	1	67	7	1-	-85.92		
Very stiff to stiff, brown SILTY						2-	-84.92		
- firm and grey by 2.7m depth						3-	-83.92		
- nim and grey by 2.7m depth						4-	-82.92		
		τw	2	100		5-	-81.92		
						6-	-80.92		
						7-	-79.92		
						8-	-78.92		
9. <u>60</u>						9-	-77.92		
End of Borehole									
(GWL @ 5.17m-Aug. 28/08)								20 40 60 80 100	
								Shear Strength (kPa)	
								▲ Undisturbed △ Remoulded	

patersongroup Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Hion

DATUM Ground surface elevations provided by Startec Geomatics Ltd. FILE NO. PG0861 REMARKS BORINGS BY CME 55 Power Auger DATE 7 August 2008 PDETH ELEW. Pon. Resist. Blows0.3m BH11-08 SOIL DESCRIPTION Image: Starter Star	28 Concourse Gate, Unit 1, Ottawa, ON	K2E	7T7				tawa, On		ment - Ede	en Park East Portion	
BORINGS BY CME 55 Power Auger DATE 7 August 2008 Pen: Resist. Blows 0.3m 9 SOIL DESCRIPTION Image: Sample in the same same same same same same same sam		rovide	ed by S	Stante	c Geo	matics	s Ltd.			FILE NO. PG086	1
SOIL DESCRIPTION SAMPLE DEPTH I ELEV (m) Pen. Resist. Blows0.3m 6 50 m Dia. Cone Pen. Resist. Blows0.3m 6 50 m Dia. Cone GROUND SURFACE TOPSOL 0.20 I I 9 1-86.14 I I 9 1-86.14 I I I 9 1-86.14 I										HOLE NO. PLI1	00
SOIL DESCRIPTION organization organizat	BORINGS BY CME 55 Power Auger				D	ATE	7 August 2	2008	1	БПП	-00
GROUND SURFACE I		Б		SAN	IPLE		DEPTH	FI FV			٦e
GROUND SURFACE I	SOIL DESCRIPTION				ĸ	ы	-		• 5	0 mm Dia. Cone	nete
GROUND SURFACE I		TRATA	ГYРЕ	UMBER	°∾ COVER	VALUI c RQD			• v	Vater Content %	Piezol
TOPSOL 0.20 Very stiff to stiff, brown SILTY - firm and grey by 2.9m depth TW 2 TW 2 88 4 -85.14 4 -86.14 4 -86.14 5 -82.14 6 -81.14 5 -82.14 6 -81.14 5 -82.14 6 -81.14 9 -78.14 9 -78.14 9 -77.14 9 -77.14 9 -75.14 10 -77.14 11 -76.14 12 -75.14 13 -74.14	GROUND SURFACE	ß	-	۶.	REC	z ö			20	40 60 80	
Very stiff to stiff, brown SiLTY - firm and grey by 2.9m depth TW 2 88 TW 2 88 TW 3 100 TW 3 100 Commerced @ 9.60m depth Dynamic Cone Penetration Test commerced @ 9.60m depth Inferred SiLTY CLAY Dynamic Cone Penetration Test Commerced @ 9.60m depth Inferred SiLTY CLAY 11 - 76.14 20 - 40 - 60 - 80 - 100 Shear Strength (UP) 100 100 100 100 100 100 100 10							0-	-87.14			··· 😹 🕅
Very stiff to stiff, brown SiLTY - firm and grey by 2.9m depth TW 2 88 TW 2 88 TW 3 100 TW 3 100 Commerced @ 9.60m depth Dynamic Cone Penetration Test commerced @ 9.60m depth Inferred SiLTY CLAY Dynamic Cone Penetration Test Commerced @ 9.60m depth Inferred SiLTY CLAY 11 - 76.14 20 - 40 - 60 - 80 - 100 Shear Strength (UP) 100 100 100 100 100 100 100 10											
Very stiff to stiff, brown SiLTY - firm and grey by 2.9m depth TW 2 88 TW 2 88 TW 3 100 Dynamic Cone Penetration Test commenced @ 9.60m depth Inferred SILTY CLAY Dynamic Cone Penetration Test commenced @ 9.60m depth Inferred SILTY CLAY 11 - 76.14 2 - 85.14 4 - 83.14 4 - 83.14 5 - 82.14 6 - 81.14 9 - 78.14 10 - 77.14 11 - 76.14 12 - 75.14 13 - 74.14 20 - 40 - 60 - 80 - 100 Shear Strength (00 - 80 - 100) 100 - 70 - 100 - 70 - 100 - 100 - 70 - 70 - 100 - 70 - 70 - 100 - 70 - 70 - 70 - 70 - 70 - 70 - 70 - 70			7 99	1		٩	1-	-86.14	· · · · · · · · · · · · · · · · · · ·	····	:88
- firm and grey by 2.9m depth TW 2 88 3-84.14 - firm and grey by 2.9m depth TW 2 88 TW 3 100 -82.14 82.14 -9.60 -9.60 TW 3 100 TW 3 100 TW 3 100			A 33	1		9					÷8 8
- firm and grey by 2.9m depth TW 2 88 3-84.14 4-83.14 4-83.14 4-83.14 5-82.14 6-81.14 4-83.14 5-82.14 6-81.14 4-83.14 9-78.14 9-78.14 4-83.14 10-77.14 10-77.14 11-76.14 11-76.14 12-75.14 10-77.14 13-74.14 20-80-60-80-100 560-100											
CLAY - firm and grey by 2.9m depth TW 2 88 3-84.14 4-83.14 4-83.14 4-83.14 4-83.14 4-83.14 4-83.14 4-83.14 5-82.14 6-81.14 6-81.14 4-83.14 4-83.14 4-83.14 0-7-80.14 6-81.14 6-81.14 6-81.14 6-81.14 6-81.14 0-7-80.14 10-77.14 10-77.14 6-81.14 6-81.14 6-81.14 10-77.14 10-77.14 10-77.14 6-81.14 6-81.14 6-81.14 6-81.14 10-77.14 10-77.14 10-77.14 10-77.14 6-81.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 7-80.14 <td< td=""><th>Very stiff to stiff, brown SILTY</th><td></td><td></td><td></td><td></td><td></td><td>2-</td><td>-85.14</td><td></td><td></td><td></td></td<>	Very stiff to stiff, brown SILTY						2-	-85.14			
- Tirm and grey by 2.9m depth TW 2 88 4-83.14 5-82.14 6-81.14 7-80.14 8-79.14 9-78.14 9-78.14 10-77.14 11-76.14 12-75.14 12-75.14 13-74.14 20.40.60.80.100	CLÁY										
- Tirm and grey by 2.9m depth TW 2 88 4-83.14 5-82.14 6-81.14 7-80.14 8-79.14 9-78.14 9-78.14 10-77.14 11-76.14 12-75.14 13-74.14 20.40 60 80 100 Shear Strength (KPa)							3-	8/ 1/			
9.60 Dynamic Cone Penetration Test commenced @ 9.60m depth Inferred SILTY CLAY	- firm and grey by 2.9m depth		тw	2	88			04.14		····/······	
TW 3 100 5-82.14 6-81.14 6-81.14 7-80.14 7-80.14 8-79.14 7-80.14 9-78.14 7-7.14 10-77.14 10-77.14 10-77.14 11-76.14 11-76.14 12-75.14 13-74.14 20 40 60 80 100				-							
TW 3 100 6-81.14 7+80.14 7+80.14 8-79.14 9-78.14 9-60 9-78.14 9-78.14 10-77.14 10-77.14 11-76.14 11-76.14 12-75.14 13-74.14 20-40-60-80-100 Shear Strength (kPa) 100							4-	-83.14	- <u> /</u>		
TW 3 100 6-81.14 7+80.14 7+80.14 8-79.14 9-78.14 9-60 9-78.14 9-78.14 10-77.14 10-77.14 11-76.14 11-76.14 12-75.14 13-74.14 20-40-60-80-100 Shear Strength (kPa) 100									.4		
TW 3 100 6-81.14 7+80.14 7+80.14 8-79.14 9-78.14 9-60 9-78.14 9-78.14 10-77.14 10-77.14 11-76.14 11-76.14 12-75.14 13-74.14 20-40-60-80-100 Shear Strength (kPa) 100							_				
9.60 9.60 9.60 9.78.14 9-78.14 9-78.14 9-78.14 9-78.14 10-77.14 11-76.14 11-76.14 12-75.14 12-75.14 13-74.14							5-	-82.14			
TW 3 100 7-80.14 9-60 8-79.14 9-78.14 Dynamic Cone Penetration Test commenced @ 9.60m depth 10-77.14 Inferred SILTY CLAY 11-76.14 12-75.14 12-75.14 13-74.14 20 40 60 80 100											
9.60 9.60 9.60 9.78.14 9-78.14 9-78.14 9-78.14 9-78.14 10-77.14 11-76.14 11-76.14 12-75.14 12-75.14 13-74.14							6-	-81 14		······································	::***
9.60 9.60 9.7 - 80.14 9 - 78.14 9 - 78.14 9 - 78.14 10 - 77.14 10 - 77.14 Inferred SILTY CLAY 11 - 76.14 12 - 75.14 20 40 60 80 100 Shear Strength (kPa) 100			тω	З	100			01.14			:: ::
9.60 Dynamic Cone Penetration Test commenced @ 9.60m depth 10-77.14 10-77.14 11-76.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)				0							::::::::::::::::::::::::::::::::::::::
9.60 Dynamic Cone Penetration Test commenced @ 9.60m depth 10-77.14 10-77.14 11-76.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)							7-	-80.14			
9.60 Dynamic Cone Penetration Test commenced @ 9.60m depth 10-77.14 10-77.14 11-76.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)										••••	
9-78.14 0-77.14 10-77.14 11-76.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)								70.14			
9.60 Dynamic Cone Penetration Test commenced @ 9.60m depth Inferred SILTY CLAY 11 - 76.14 12 - 75.14 13 - 74.14 20 40 60 80 100 Shear Strength (kPa)							8-	- 79.14			
9.60 10-77.14 Inferred SILTY CLAY 11-76.14 12-75.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa) 100											
Dynamic Cone Penetration Test commenced @ 9.60m depth 10-77.14 Inferred SILTY CLAY 11-76.14 12-75.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)							9-	78.14			- Re
Dynamic Cone Penetration Test commenced @ 9.60m depth 10-77.14 Inferred SILTY CLAY 11-76.14 12-75.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)	9.60										
Inferred SILTY CLAY 11-76.14 12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)	Dynamic Cone Penetration Test										····
11-76.14 $12-75.14$ $13-74.14$ $20 40 60 80 100$ Shear Strength (kPa)	commenced @ 9.60m depth						10-	-77.14			
12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)	Inferred SILTY CLAY									······································	
12-75.14 13-74.14 20 40 60 80 100 Shear Strength (kPa)							11-	-76 14			
13-74.14 20 40 60 80 100 Shear Strength (kPa)								/ 0.11			
13-74.14 20 40 60 80 100 Shear Strength (kPa)											
20 40 60 80 100 Shear Strength (kPa)		171					12-	-75.14			
20 40 60 80 100 Shear Strength (kPa)		III									
20 40 60 80 100 Shear Strength (kPa)							10	7/ 1/	.		
							13-	/ 7.14		40 60 80	100

Consulting Engineers Ge

SOIL PROFILE AND TEST DATA

▲ Undisturbed

 \triangle Remoulded

Geotechnical Investigation Residential Development - Eden Park East Portion Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

						iawa, Onia					
DATUM Ground surface elevations	provide	ed by S	Stante	ec Geo	matics	s Ltd.			FILE NO.	PG0861	
REMARKS									HOLE NO.		0
BORINGS BY CME 55 Power Auger				D	ATE 7	7 August 20	800			BH11-0	8
SOIL DESCRIPTION	PLOT		SAN	IPLE			ELEV.		esist. Blows 0 mm Dia. Co		eter Xion
	STRATA I	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		/ater Conten		Piezometer Construction
GROUND SURFACE	SI	H	N	REC	N N			20	40 60	80	чо
GROUND SURFACE						13-7	74.14	•			
						14-7	73.14		••••••	· · · · · · · · · · · · · · · · · · ·	
						15+7				······································	
										· · · · · · · · · · · · · · · · · · ·	
Inferred SILTY CLAY						16-7	71.14		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
						17-7	70.14				
						18-6	69.14			· · · · · · · · · · · · · · · · · · ·	
						19-6	68.14			· · · · · · · · · · · · · · · · · · ·	
						20-6	67.14				
						21-6	66.14		•••••••••••••••••••••••••••••••••••••••	· · · · · · · · · · · · · · · · · · ·	
						22-6	65.14			· · · · · · · · · · · · · · · · · · ·	
Inferred SILTY CLAY						00	64.14			· · · · · · · · · · · · · · · · · · ·	
						23-6	04.14	•••••••••••••••••••••••••••••••••••••••		· · · · · · · · · · · · · · · · · · ·	
Inferred GLACIAL TILL						24-6	63.14				
						25-6	62.14				
25.9	6 <u>[^^^^^^^</u>										
								20 Shea	40 60 ar Strength (80 10 kPa)	0

patersongroup Consulting Engineers SOIL PROFILE Geotechnical Investigation

SOIL PROFILE AND TEST DATA

20

Undisturbed

40

Shear Strength (kPa)

60

80

 \triangle Remoulded

100

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	- 7T7				esidential Itawa, On		ment - Ede	n Park Eas	st Portion	
DATUM Ground surface elevations p	orovide	ed by S	Stante	c Geor	natic	s Ltd.			FILE NO.	PG0861	
REMARKS									HOLE NO.		0
BORINGS BY CME 55 Power Auger		1		D	ATE	7 August 2	2008			BH11-0	Ø
SOIL DESCRIPTION	PLOT		SAN			DEPTH (m)	ELEV. (m)		esist. Blov 0 mm Dia.		neter uction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	later Conte	ent %	Piezometer Construction
GROUND SURFACE				R	z	_		20	40 60	80	
End of Borehole Practical DCPT refusal @ 25.96m depth (GWL @ 0.61m-Aug. 28/08)											

SOIL PROFILE AND TEST DATA

Piezometer Construction

100

20 40 60 80 Shear Strength (kPa)

▲ Undisturbed

natersonard		n	Con	sulting	J	SOIL			VD IES	IDAIA	1
28 Concourse Gate, Unit 1, Ottawa, O		-	Eng	ineers	Re	eotechnic esidential tawa, On	Develop		n Park Eas	t Portion	
DATUM Ground surface elevations	provide	ed by S	Stante	ec Geoi	matics	s Ltd.			FILE NO.	PG0861	
REMARKS									HOLE NO.		
BORINGS BY CME 75 Power Auger				D	ATE	16 Octobe	er 2008	1		BH12-0)8
	Ę		SAN	IPLE		DEDTU		Pen. R	esist. Blov	vs/0.3m	
SOIL DESCRIPTION	PLOT			к		DEPTH (m)	ELEV. (m)	• 5	0 mm Dia. (Cone	1040
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	Vater Conte	ent %	01010
GROUND SURFACE	01		z	RE	z ^o	0	-87.62	20	40 60	80	
TOPSOIL0.2	0	1				- 0-	-07.02				
Stiff to firm, brown SILTY CLAY		SS	1 2	58	5	1-	-86.62				
- grey by 1.3m depth						2-	-85.62				
						3-	-84.62				
						4-	-83.62				
		TW	3	100		5-	-82.62				the the second
						6-	-81.62				
						7-	-80.62				
						8-	-79.62			·	aninin a
		тw	4			9-	-78.62			Q	
Dynamic Cone Penetration Test commenced @ 10.06m depth	06					10-	-77.62				
Inferred SILTY CLAY						11-	-76.62				نىلىشىغىيات
						12-	-75.62				فطيفيقيهم
	PXX	1				13-	-74.62	T			-

ST DATA

PG0861

80

:

100

20 40 60 80 Shear Strength (kPa)

riangle Remoulded

▲ Undisturbed

.....

BH12-08

Piezometer Construction

patersongro		n	Con	sulting		SOIL	- PRO	FILE AN	ND T	EST	DA1
28 Concourse Gate, Unit 1, Ottawa, O		-	Eng	ineers	Ge Re	eotechnic esidential tawa, On	Develop	igation ment - Ede	n Park	East	Portio
DATUM Ground surface elevations	provide	ed by	Stante	ec Geor	natics	s Ltd.			FILE	NO.	PG08
REMARKS BORINGS BY CME 75 Power Auger				D		16 Octobe	or 2009		HOLE	NO.	BH1
			241	/IPLE			2000	Pen. R	ociet	Blow	~/0 3m
SOIL DESCRIPTION	PLOT		JAN			DEPTH	ELEV.		esisi. 0 mm l		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• v	Vater C	onten	nt %
GROUND SURFACE	N N		z	RE	z ⁰	13-	-74.62	20	40	60	80
						14-	-73.62		· · · · · · · · · · · · · · · · · · ·		······································
Inferred SILTY CLAY		- - - -				15-	-72.62		•••••••		······································
						16-	-71.62				······································
						17-	-70.62		••••••		······································
Inferred GLACIAL TILL						18-	-69.62				······································
18.9 End of Borehole	<u>)2 ^^^^/</u>										++++++++++++++++++++++++++++++++++++++
Practical DCPT refusal @ 18.92m depth											
, GWL @ 5.60m-Oct. 23/08)											

notorconar

Consulting

SOIL PROFILE AND TEST DATA

Piezometer Construction

riangle Remoulded

Undisturbed

28 Concourse Gate, Unit 1, Ottawa, O		-	Eng	jineers	Re	eotechnica esidential tawa, Oni	Develop		n Park Eas	t Portion
DATUM Ground surface elevations	provid	ed by S	Stante	ec Geor	natic	s Ltd.			FILE NO.	PG0861
REMARKS									HOLE NO.	
BORINGS BY CME 75 Power Auger				DA	ATE	16 Octobe	er 2008			BH13-08
SOIL DESCRIPTION	PLOT		SAN	MPLE		DEPTH (m)	ELEV. (m)		esist. Blow 0 mm Dia. (
	STRATA	ЭДХТ	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)	• v	Vater Conte	nt %
GROUND SURFACE	S S		Z	RE	z		-87.38	20	40 60	80
TOPSOIL0.2	20						-07.30		• • • • • • • • • • • • •	
		ss	1			1-	-86.38			
Stiff to firm, brown SILTY CLAY						2-	-85.38			
- grey by 2.5m depth		тw	2	88		3-	-84.38			0
						4-	-83.38		/	
						5-	-82.38			
		ss	3	100		6-	-81.38			
						7-	-80.38			
		TW	4	100		8-	-79.38		· · · · · · · · · · · · · · · · · · ·	
9.9		ss	5	100		9-	-78.38			
End of Borehole		1							<u> </u>	
(GWL @ 6.30m-Oct. 23/08)										
								20 She	40 60 ar Strength	80 100 (kPa)
		1		1				JIE	a Suenym	(κΓα)

SOIL PROFILE AND TEST DATA

▲ Undisturbed

 \triangle Remoulded

Piezometer Construction

patersongr	OU		Con	suiting				/			
28 Concourse Gate, Unit 1, Ottawa,		-	Eng	ineers	Re	eotechnica esidential tawa, Oni	Develop		en Park Eas	t Portion	
DATUM Ground surface elevation	ns provide	ed by S	Stante	ec Geo	matics	s Ltd.			FILE NO.	PG0861	
REMARKS									HOLE NO.		
BORINGS BY CME 75 Power Auger		1		D	ATE	15 Octobe	er 2008	1		BH14-0	8
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blov 0 mm Dia. (1010
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• V	Vater Conte	ent %	
GROUND SURFACE	ß	_	ä	RE	zö	0	07.00	20	40 60	80	
	.20	S AU	1			0-	-87.03		• • • • • • • • • • • • •		▓
Very stiff to stiff brown SII TY		ss	2	75	9	1-	-86.03				
Very stiff to stiff, brown SILTY CLAY						2-	-85.03		······		
- firm and grey by 2.0m depth						3-	-84.03	4			
		тw	3	100		4-	-83.03			• • • • • • • • • • • • • • • • • • •	
		Т	4	100		5-	-82.03			· · · · · · · · · · · · · · · · · · ·	
						6-	-81.03			· · · · · · · · · · · · · · · · · · ·	
						7-	-80.03			· · · · · · · · · · · · · · · · · · ·	
						8-	-79.03			· · · · · · · · · · · · · · · · · · ·	
0	.91					9-	-78.03				
End of Borehole	.914///								À		
(GWL @ 1.45m-Oct. 23/08)											
								20 She	40 60 ar Strength	80 10 (kPa)	00

Ά

patersong	irou	n	Con	sulting		SOIL	- PRO	FILE AND TEST DATA	
28 Concourse Gate, Unit 1, Otta		-	Eng	ineers	Re	eotechnic esidential tawa, On	Develop	tigation ment - Eden Park East Portion	
Ground surface eleva	ations provide	ed by S	Stante	ec Geor				FILE NO. PG0861	
REMARKS									
CME 75 Power Aug	ger	1		D	ATE	16 Octobe	er 2008	BH15-08	
SOIL DESCRIPTION	PLOT		SAN	APLE		DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone	
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD		(,	• Water Content %	Construction
ROUND SURFACE			ч	RE	zÓ	0-	-87.24	20 40 60 80	
DPSOIL	0.20						07.21		
		ss	1	67	11	1-	-86.24		
ery stiff to stiff, brown SILTY LAY						2-	-85.24		in in the second se
stiff to firm and grey by 2.5m						3-	-84.24		1. And the second
epth						4-	-83.24		714471 augustus
		ТW	2	100					171471471
			-			5-	-82.24		
						6-	-81.24		
						7-	-80.24		7.1.4.7.1.4.7.1.4
		ss	3	100		8-	-79.24		
		蓉 AU TW	5 4	100			70.04		
	0.01					9-	-78.24	288 	<u>ال</u>
nd of Borehole	_ 9.91								
GWL @ 6.10m-Oct. 23/08)									
								20 40 60 80 100 Shear Strength (kPa)	
								Snear Strengtn (KPa) ▲ Undisturbed △ Remoulded	

-

TEST DATA

PG0811

Piezometer Construction

BH 3

..........

............

20

▲ Undisturbed

......... ****************

80

 \triangle Remoulded

;

100

40

60

Shear Strength (kPa)

patersongroup			Con	sulting	1	SOIL PROFILE AND TEST DA						
28 Concourse Gate, Unit 1, Ottawa, Of	Engineers		Pł	Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Roa Ottawa, Ontario								
DATUM Geodetic, as provided by S	Stanteo	c Cons	ulting	Ltd.					FILE	NO.	PG0	
REMARKS									HOL	e no.		
BORINGS BY CME 75 Power Auger	BORINGS BY CME 75 Power Auger				ATE	5 Apr 06			BH :			
SOIL DESCRIPTION	PLOT	SAMPLE			DEPTH	ELEV.		Resist. Blows/0.3 50 mm Dia. Cone				
			8	RY	Що	or Rod	(m)	• 3				
	STRATA	ЭДҮТ	NUMBER	% RECOVERY	N VALUE or RQD				Vater (
GROUND SURFACE	0			щ	-	- 0-	-89.00	20	40	60	80	
Very stiff, brown SILTY CLAY 0.76	6	X SS	1	67	50+	1-	-88.00					

Consulting Engineers

SOIL PROFILE AND TEST DATA

Shear Strength (kPa)

 \triangle Remoulded

▲ Undisturbed

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

DATUM Geodetic, as provided by Stantec Consulting Ltd.							FILE NO. PG0811						
REMARKS									HOLE NO).			
BORINGS BY CME 75 Power Auger				D	ATE {			BH 4	Π4				
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Blo) mm Dia	ows/0.3m . Cone	leter ction		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	()	()	• v	/ater Con	tent %	Piezom Constru		
GROUND SURFACE	ß		5	RE	zö	0	-88.38	20	40 6	0 80	Piezometer		
TOPSOIL0.2;	3	j				0-	-00.30				▓⋥▓		
Very stiff to stiff, brown SILTY CLAY		ss	1	62	12	1-	-87.38						
CLAT		ss	2	100	8	2-	-86.38						
- stiff to firm and grey by 2.6m depth		x ss	3	100	1	3-	-85.38						
		x ss	4	100	1	4-	-84.38						
End of Borehole													
(GWL @ 0.40m-Apr. 12/06)													
				1				20	40 6	0 80 10	0		

Consulting Engineers

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

	unng	Liu.					FILE NO.	PG0811	
		_	ATE /				HOLE NO.		
н	SAN					Pen. R			
DIG V			Шо	DEPTH (m)	ELEV. (m)	• 50 mm Dia. Cone			Piezometer Construction
TYPE	UMBER	°	VALU r RQD			• v	later Conte	Piezo	
	Z	RE	z ⁰	0-	-88.46	20	40 60	80	
	1	75	12			· · · · · · · · · · · · · · · · · · ·			
X ss	2	83	7			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
ss	3	100	4						
	4	100	1	4-	-04.40			•••••••••••••••••	
						20 Shea ▲ Undistu	$\begin{array}{ccc} 40 & 60 \\ ar Strength \\ urbed \triangle R \end{array}$	80 10 (kPa) emoulded	00
	STRATA PLOT SS SS TYPE	SALV STRATA PLOT STRATA PLOT STRATA PLOT STRATA PLOT	LIOTA VIEWINA SAMPLE ALL NUMBER SSS 1 75 SS 2 83 SS 3 100	DATE SAMPLE LIONA LIONA SSS 11 75 12 SSS 2 83 7 SSS 3 100 4	DATE 5 Apr 06 SAMPLE BETH SAMPLE BETH BETH BETH BETH DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) DEPTH (m) (m) DEPTH (m) (m) DEPTH (m) (m) (m) (m) (m) (m) (m) (m)	DATE 5 Apr 06 DEPTH (m) ELEV. (m) ELEV. OP TA 1 O	DATE 5 Apr 06 SAMPLE DEPTH (m) ELEV. (m) Pen. Fu Image: state in the state	DATE 5 Apr 06 Per Resist. Blow SAMPLE DEPTH ELEV. Pen. Resist. Blow 1 1 75 12 1 87.46 3 5 2 83 7 2 86.46	PG0811 DATE 5 Apr 06 BH 5 DATE 5 Apr 06 DEPTH (m) at at< at at<

patersongroup Consulting Engineers SOIL PROFILE AND TES Preliminary Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	7T7				arand La tawa, On		es Road a	t Mer	Bleeu	Road	
DATUM Geodetic, as provided by St.	antec	Cons	ulting l	_td.		-			FILE	E NO.	PG0811	
REMARKS									HOL	E NO.		
BORINGS BY CME 75 Power Auger		1		DA	TE !	5 Apr 06		1			BH 6	
SOIL DESCRIPTION	SAMPLE DEPTH		ELEV.		Pen. Resist. Blows/0.3m • 50 mm Dia. Cone			eter ction				
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• V	Vater	Conte	nt %	Piezometer Construction
GROUND SURFACE		H	ŊŊ	REC	N OL N	0-	-89.47	20	40	60	80	шО
TOPSOIL0.25Brown SILTY CLAY, trace0.76	X	容 AU	1									
sand		1										
Practical refusal to augering @ 0.76m depth								20 She ▲ Undist		60 rength	80 10 (kPa) emoulded	0

patersongroup

Consulting Engineers

SOIL PROFILE AND TEST DATA

Undisturbed

△ Remoulded

Piezometer Construction

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road 28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7 Ottawa, Ontario DATUM Geodetic, as provided by Stantec Consulting Ltd. FILE NO. PG0811 REMARKS HOLE NO. **BH 7** BORINGS BY CME 75 Power Auger DATE 5 Apr 06 SAMPLE Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. SOIL DESCRIPTION 50 mm Dia. Cone • (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE 0\0 Water Content % Ο 40 60 80 20 **GROUND SURFACE** 0 + 88.20.... TOPSOIL 0.23 Very stiff to stiff, red-brown 1+87.20 SILTY CLAY, trace sand 9 SS 1 75 SS 2 100 4 2+86.20 - firm and brown by 2.1m depth SS 3 100 3 - grey by 2.7m depth 3+85.20 4+84.20 SS 4 100 1 4.72 End of Borehole (GWL @ ground surface - April 12/06) 40 60 80 100 20 Shear Strength (kPa)

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation .

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7						Pharand Lands - Innes Road at Mer Bleeu Road Ottawa, Ontario							
DATUM Geodetic, as provided by	Stantec	Cons	ulting	Ltd.					FILE NO.	PG0811			
REMARKS									HOLE NO.				
BORINGS BY CME 75 Power Auger				D	ATE	5 Apr 06				BH 8			
SOIL DESCRIPTION	ТОЛЧ		SAN	IPLE		DEPTH	ELEV.		esist. Blov 0 mm Dia.		eter Stion		
	STRATA I	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• V	Vater Conte	ent %	Piezometer Construction		
GROUND SURFACE	0		Z	RE	z ^o		00.00	20	40 60	80	v		
	19					- 0-	-88.28				\otimes		
Very stiff to stiff, brown to red-brown SILTY CLAY		ss	1	50	11	1-	-87.28						
		ss	2	75	7	2-	-86.28						
- firm to soft and grey by 2.6m depth						3-	-85.28						
oopin		x ss	3	100	1		-84.28						
							04.20						
End of Borehole 4.	. <u>88</u>							<u>.</u>					
(GWL @ ground surface - April 12/06)								20	40 60	80 10	00		
								She Lundist	ar Strength	a (kPa) Remoulded			

patersongroup	Consulting Engineers	Ge
		l n.

SOIL PROFILE AND TEST DATA

Undisturbed

 \triangle Remoulded

Geotechnical Investigation Proposed Residential Subdivision, 4th Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Approximate geodetic, based on base plan provided by Webster and Simmonds DATUM FILE NO. Surveying Ltd. G8533 REMARKS HOLE NO. BH 3 BORINGS BY CME 55 Power Auger DATE 12 Mar 02 SAMPLE Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. SOIL DESCRIPTION 50 mm Dia. Cone • (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE 0/0 Water Content % Ο 40 60 80 20 **GROUND SURFACE** 0 + 87.50TOPSOIL 0.15 المجارف المحافية الم Stiff to very stiff, grey-brown SILTY CLAY 1 + 86.50SS 1 62 5 SS 2 58 3 2 + 85.50- firm by 2.4m depth 3+84.50 - grey by 3.0m depth ΓW 3 4+83.50 SS 4 100 1 5 + 82.506+81.50 τw 5 7+80.50 SS 6 100 1 8+79.50 9+78.50 τw 7 10 + 77.50SS 8 100 1 11 + 76.5012+75.50 SS 9 100 1 13+74.50 14.00 14+73.50 40 60 80 100 20 Shear Strength (kPa)

patersongro	יור	n	Con	sulting		SOII	_ PRO	FILE AI	ND TEST			
28 Concourse Gate, Unit 1, Ottawa, O		-	Eng	ineers	G P	Geotechnical Investigation Proposed Residential Subdivision, 4th Line Road Ottawa, Ontario						
DATUM Approximate geodetic, bas Surveying Ltd. REMARKS	ed on l	base p	olan pr	ovided	by V	Vebster ar	nd Simmo	nds	FILE NO.	G8533		
BORINGS BY CME 55 Power Auger				DA	ATE	12 Mar 02	2		HOLE NO.	BH 3		
	ц		SAN	IPLE		DEPTH	ELEV.	Pen. R	esist. Blow	/s/0.3m	ir Dn	
SOIL DESCRIPTION	A PLOT		ĸ	RY	E۵	(m)	(m)	• 5	0 mm Dia. C	Cone	omete	
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• V	Vater Conte	nt %	Piezometer Construction	
		x ss	10	100	z °	- 14-	-73.50	20	40 60	80		
						15-	-72.50					
Stiff, grey SILTY CLAY		TW	11			16-	-71.50		······································	· · · · · · · · · · · · · · · · · · ·		
						17-	-70.50					
						18-	-69.50	······································				
						19-	-68.50			•••••••••••••••••		
						20-	-67.50					
GLACIAL TILL: Dense, grey	· · ^ ^ ^ /					21-	-66.50					
silty sand and gravel	6	x ss	12		50+					· · · · · · · · · · · · · · · · · · ·		
(Standpipe damaged - March 26/02)												
								20 She ▲ Undist	40 60 ar Strength urbed △ Re		00	

patersongroup	Consulting Engineers	SOIL PROFILE AND TEST DATA Geotechnical Investigation Proposed Residential Subdivision, 4th Line Road				
28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7	Engineers					
20 Concourse Gale, Onit 1, Ollawa, ON K2E / 17		Ottawa, Ontario				
DATUM Approximate geodetic, based on base p Surveying Ltd.	lan provided b	y Webster and Simmonds	FILE NO. G8533			

j Llu.			
5 Power Auger	DATE	12 Mar 02	2

HOLE NO.

BORINGS BY CME 55 Power Auger	-			D	ATE	12 Mar 02		BH 4
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content % 20 40 60 80
GROUND SURFACE	-					0-	87.40	
		∦ ss	1	50	9	1-	86.40	
Very stiff to stiff, brown-grey SILTY CLAY		ss	2	67	6	2-	85.40	
- firm and grey by 3.0m depth						3-	84.40	
		∦ ss	3	100	1	4-	83.40	
		ss	4	100	1	5-	82.40	
		ss	5	100	1	6-	81.40	
		Vee	0	100			80.40	
		∦ ss	6	100	1		79.40	
		ss	7	100	1		77.40	
		ss	8	100	1	11-	76.40	
		Vec	0	100	4	12-	75.40	
		X ss	9	100	1	13-	74.40	
14.00) XX	X				14-	73.40	<u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u><u>+</u></u>
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

patersongro		n	Con	sulting		SOIL	_ PRO	FILE AI	ND TEST DATA	
28 Concourse Gate, Unit 1, Ottawa, O			Consulting Engineers Geotechnical Investigation Proposed Residential Subdivision, 4th Line Roa Ottawa, Ontario							
DATUM Approximate geodetic, bas Surveying Ltd. REMARKS	sed on	base p	olan pr	ovided I	by W	lebster ar	ld Simmo	onds	FILE NO. G8533	
BORINGS BY CME 55 Power Auger				БА	тс	12 Mar 02)		HOLE NO. BH 4	
			CAN	IPLE			-	Don D	esist. Blows/0.3m	
SOIL DESCRIPTION	A PLOT				ы	DEPTH (m)	ELEV. (m)		0 mm Dia. Cone	Piezometer Construction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• V	Vater Content %	Piezo Const
		v ss	10	i≊ 100	≍ - 1	14-	-73.40	20	40 60 80	. <u> </u>
Firm to stiff, grey SILTY CLAY					1		-72.40			
		ss	11	100	1					
Dynamic Cone Penetration test	16						-71.40			
commenced @ 16.46m depth						17-	-70.40			
						18-	-69.40			· · · · · · · · · · · · · · · · · · ·
						19-	-68.40			
						20-	-67.40			
20.9	96							•••••••••••••••••••••••••••••••••••••••		
End of Borehole										Ţ
Cone refusal @ 20.96m depth										
(Standpipe damaged - March 26/02)										
								20 She ▲ Undist	ar Strength (kPa)	100

	patersongrou	sonaroun	Consulting	SOIL PROFILE AND TEST DATA				
	28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7		Engineers	Geotechnical Investigation				
				Proposed Residential Subdivision, 4th Line Road Ottawa, Ontario				
	DATUM Approximate geodetic, based of Surveying Ltd.	n base p	blan provided b	y Webster and Simmonds	FILE NO.	G8533		

REMARKS

Г

REMARKS BORINGS BY CME 55 Power Auger				F		13 Mar 02)	HOLE NO. BH 5
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	
	STRATA P	ТҮРЕ	NUMBER	∾ RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m □ ● 50 mm Dia. Cone □ ○ Water Content % □
GROUND SURFACE	01		Z	RE	z ^o	0-	-87.70	20 40 60 80
TOPSOIL0.1	8	1] 0-	-07.70	·····································
Stiff to very stiff, brown-grey SILTY CLAY		ss	1	75	7	1-	-86.70	
- firm to stiff by 1.5m depth		ss	2	79	2	2-	-85.70	
- firm and grey by 3.0m depth		x ss	3	100	1	3-	-84.70	
		<u>N</u> 33	5	100	1	4-	-83.70	
		ss	4	100	1	5-	-82.70	
		тw	5			6-	-81.70	
		V					-80.70	
		x ss	6	100	1	8-	-79.70	
		ss	7	100	1	9-	-78.70	
						10-	-77.70	
		ss	8	100	1	11-	-76.70	
12.0	4/1//					12-	-75.70	
Practical refusal to augering @ 12.04m depth								
(GWL @ 0.27m-March 26/02)								
								20 40 60 80 100 Shear Strength (kPa)
								▲ Undisturbed △ Remoulded

patersongrou	JD
--------------	----

Consulting Engineers

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Residential Subdivision, 4th Line Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

Approximate geodetic, based on base plan provided by Webster and Simmonds DATUM Surveying Ltd.

FILE NO.

G8533 REMARKS HOLE NO. BH₆ BORINGS BY CME 55 Power Auger DATE 13 Mar 02 SAMPLE Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. SOIL DESCRIPTION 50 mm Dia. Cone • (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE 0/0 Water Content % Ο 40 60 80 20 **GROUND SURFACE** 0 + 87.30TOPSOIL ÷ 0.15 . . ÷ . : .: Stiff to very stiff, brown-grey SILTY CLAY 1+86.30 SS 1 67 11 - firm by 1.5m depth SS 2 79 2 2+85.30 3+84.30 - grey by 3.0m depth SS 3 29 1 4+83.30 τw 4 5 + 82.306+81.30 SS 5 100 1 7+80.30 SS 6 100 1 8+79.30 9+78.30 SS 7 100 1 10+77.30 SS 8 100 1 11+76.30 12+75.30 SS 9 100 1 13+74.30 14.00 14+73.30 40 60 80 100 20 Shear Strength (kPa) Undisturbed △ Remoulded

patersongro		n	Con	sulting		SOIL	- PRO	FILE AI		ST DATA	
28 Concourse Gate, Unit 1, Ottawa, ON		-	Engi	ineers	P	eotechnic roposed R ttawa, On	lesidenti	igation al Subdivis	ion, 4th	Line Road	
DATUM Approximate geodetic, base Surveying Ltd. REMARKS	d on l	base p	lan pr	ovided	by V	Vebster an	d Simmo	nds	FILE NO	G8533	
BORINGS BY CME 55 Power Auger				DA	TE	13 Mar 02	2		HOLE N	o. BH 6	
	ц		SAMPLE					Pen. R	esist. Bl	ows/0.3m	<u> </u>
SOIL DESCRIPTION	A PLOT		~	х	ы о	DEPTH (m)	ELEV. (m)	• 5	0 mm Dia	a. Cone	mete
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	later Cor	ntent %	Piezometer Construction
		v ss	2 10	뛽 100	z °		-73.30	20	40 (60 80	
Firm, grey SILTY CLAY					I					· · · · · · · · · · · · · · · · · · ·	*
		x ss	11	100	1	15-	-72.30			·····	-
10.40					I	16-	-71.30				
Dynamic Cone Penetration test commenced @ 16.46m depth						17-	-70.30				****
							10100				
						18-	-69.30	·····		·····	
<u>18.80</u> End of Borehole		-									
Cone refusal @ 18.80m depth											
(GWL @ 1.42m-March 26/02)											
								20 Shea ▲ Undist	ar Streng	60 80 10 10 kPa) ⊾ Remoulded	00

|--|

SOIL PROFILE AND TEST DATA

Piezometer Construction

2.

100

Proposed Residential Subdivision, 4th Line Road

Geotechnical Investigation 28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7 Ottawa, Ontario Approximate geodetic, based on base plan provided by Webster and Simmonds DATUM FILE NO. Surveying Ltd. G8533 REMARKS HOLE NO. BH 7 BORINGS BY CME 55 Power Auger DATE 14 Mar 02 SAMPLE Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. SOIL DESCRIPTION 50 mm Dia. Cone • (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE 0/0 Water Content % Ο 40 60 80 20 **GROUND SURFACE** 0 + 86.80TOPSOIL ÷.;.;. 0.18; Very stiff to stiff, brown-grey 1+85.80 SS 1 58 10 SILTY CLAY SS 2 67 7 2 + 84.803+83.80 - firm and grey by 3.0m depth SS 3 71 2 4+82.80 SS 4 100 1 5 + 81.806+80.80 SS 5 100 1 7+79.80 SS 6 100 1 8+78.80 9+77.80 SS 7 100 1 10+76.80 - stiff to firm by 10.0m depth SS 8 100 1 11 + 75.8012+74.80 SS 9 100 1 13+73.80 14.00 14+72.80 40 60 80 20 Shear Strength (kPa) Undisturbed △ Remoulded

patersongro		n	Consulting								
28 Concourse Gate, Unit 1, Ottawa, ON		-	Engi	ineers	Geotechnical Investigation Proposed Residential Subdivision, 4th Line Road Ottawa, Ontario						
DATUM Approximate geodetic, base Surveying Ltd. REMARKS	ed on l	base p	lan pr	ovided							
BORINGS BY CME 55 Power Auger				DA	TE	14 Mar 02	2		HOLE NO.	BH 7	
	Б		SAN	IPLE		DEPTH	ELEV.	Pen. R	esist. Blov	ws/0.3m	ir Dn
SOIL DESCRIPTION	A PLOT		ĸ	RY	Що	(m)	(m)	• 5	0 mm Dia.	Cone	omete
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	Vater Conte	ent %	Piezometer Construction
		χ ss	10	i≊ 100	2 1	14-	-72.80	20	40 60	80	
Stiff, grey SILTY CLAY						15-	-71.80			· · · · · · · · · · · · · · · · · · ·	
		ss	11	100	1	16-	-70.80		······································	· · · · · · · · · · · · · · · · · · ·	
Dynamic Cone Penetration test commenced @ 16.46m depth	3///										
							-69.80			· · · · · · · · · · · · · · · · · · ·	
						18-	-68.80		······	·····	
<u>19.3</u> 0)					19-	-67.80		······································	· · · · · · · · · · · · · · · · · · ·	
End of Borehole Cone refusal @ 19.30m depth (GWL @ 4.23m-March											
26/02)											
								20 Shea ▲ Undist	40 $60ar Strengthurbed \triangle F$	80 10 I (kPa) Remoulded	00

patersongroup	Consulting	SOIL PROFILE AND TEST DAT					
28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7	Engineers	Geotechnical Investigation Residential Development - Eden Park East Portion Ottawa, Ontario					
DATUM Ground surface elevations provided by S	Stantec Geoma	atics Ltd.	FILE NO.				

Γ

	•		,								PG0	861			
REMARKS										HOLE	^{NO.} тр	0.00			
BORINGS BY Hydraulic Shovel					D	ATE 2	28 August 2008			TP 9-08					
SOIL DESCRIPTION		гол		SAN			DEPTH	ELEV.			Blows/0.3ı Dia. Cone	n	eter ction		
			STRATA		ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• V	Vater C	ontent %		Piezometer Construction
		5 L	H	Б N	REC	N V			20	40	60 80		ιö		
GROUND SURFACE TOPSOIL	0.15						0-	-86.92							
Loose, light brown SILTY SAND															
	_ <u>0.75</u>	<u> </u>					1-	-85.92		······		·····			
Very stiff to stiff, brown SILTY CLAY							2-	-84.92				128	; ⊻		
- firm and grey by 2.7m depth															
	_ 3.70						3-	-83.92				······································			
End of Test Pit	_ <u></u>														
(GWL @ 1.6m-Aug. 28/08)									20 She ▲ Undist		60 80 19th (kPa) △ Remould		J		

Undisturbed

Patersongroup 28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7				onsulting	SOIL PROFILE AND TEST DATA														
				ineers	Geotechnical Investigation Residential Development - Eden Park East Portion Ottawa, Ontario														
DATUM Ground surface elevations p	orovide	ed by	Stante	ec Geor	matics	s Ltd.			FILE NO. PG0861										
REMARKS BORINGS BY Hydraulic Shovel				D	ATE 2	28 August	2008		HOLE NO. TP11-0	8									
SOIL DESCRIPTION		SAN	SAMPLE		SAMPLE		SAMPLE		SAMPLE		SAMPLE		SAMPLE		DEPTH	ELEV.		en. Resist. Blows/0.3m • 50 mm Dia. Cone	
SOIL DESCRIPTION	LOI FIO	ы	R	ΞRΥ	ВQ	(m)	(m)	• J		struct									
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			0 V 20	Vater Content %	Piezometer Construction									

BURINGS BY Hyuraulic Shovel				U		20 Augusi	2000	· · · · · · · · · · · · · · · · · · ·
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH ELEV. (m) (m)		Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content % 20 40 60 80
GROUND SURFACE TOPSOIL						0-	-87.14	
0.2	0							
Very stiff to stiff, brown SILTY						1-	-86.14	
CLAY						2-	-85.14	128 128
- stiff to firm and grey by 2.9m depth						3-	-84.14	
3.7 End of Test Pit (GWL @ 1.0m-Aug. 28/08)	0							
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

nat	ersongroup	Consulting Engineers	SOIL PROFILE AN	AND TEST DATA				
-	28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7		Geotechnical Investigation Residential Development - Eden Park East Portio Ottawa, Ontario					
DATUM	Ground surface elevations provided by	Stantec Geom	atics Ltd.	FILE NO.	PG0861			
REMARKS BORINGS B	Y Hydraulic Shovel	DA	re 28 August 2008	HOLE NO.	TP16-08			

SOIL DESCRIPTION	SOIL DESCRIPTION 법					DEPTH	ELEV.	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone
SUL DESCRIPTION	STRATA P	ЭДХТ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m □ ● 50 mm Dia. Cone □ □ Water Content %
GROUND SURFACE	0		z	RE	z ^o	0	-86.81	20 40 60 80
TOPSOIL 0.20						0-	-80.81	
Very stiff to stiff, brown SILTY CLAY						1-	-85.81	
CLÁY						2-	-84.81	
						3-	-83.81	
3.85 End of Test Pit	ΝΧ							
(GWL @ 1.1m-Aug. 28/08)								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

patersongroup	Consulting Engineers
---------------	-------------------------

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Residential Development - Eden Park East Portion Ottawa, Ontario

▲ Undisturbed

 \triangle Remoulded

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	7T7				tawa, On		ment - Ede	II Faik Ea		
DATUM Ground surface elevations p	Stante	matics	s Ltd.		FILE NO. PG0861						
REMARKS											
BORINGS BY Backhoe				D	1		[^] TP17-	80			
SOIL DESCRIPTION	PLOT		SAN	IPLE		-	ELEV.	esist. Blo 0 mm Dia	ows/0.3m . Cone	ater	
	STRATA I	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Con		Piezometer Construction
GROUND SURFACE	N.	51	N N	REC	z ⁰			20	40 6	0 80	
TOPSOIL0.15						0-	-87.62				
Stiff to firm, brown SILTY CLAY - firm and grey by 1.3m depth							-86.62				
3.20						3-	-84.62				
(TP dry upon completion)								20 She	40 e ar Streng	0 80 th (kPa)	100

patersongro	nin	Consulting	SOIL PROFILE AND TEST DATA								
28 Concourse Gate, Unit 1, Ottawa, ON	Engineers	Geotechnical Investigation Residential Development - Eden Park East Portion Ottawa, Ontario									
DATUM Ground surface elevations pr	rovided by	Stantec Geom	atics Ltd.			FILE NO.	PG0861				
BORINGS BY Backhoe		DAT	E 24 Octobe	er 2008		HOLE NO.	TP18-08				
						•					

	Ę	SAMPLE			DEDTU		Pen. Resist. Blows/0.3m	r L	
SOIL DESCRIPTION	A PLOT		~	ĸ	ы .	DEPTH (m)	ELEV. (m)	• 50 mm Dia. Cone	nctio
GROUND SURFACE	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD	0	07 20	 Water Content % 20 40 60 80 	Piezometer Construction
TOPSOIL 0.15						0-	-87.38		
						1-	-86.38		
Stiff, brown SILTY CLAY						2-	-85.38		Ţ
- firm and grey by 2.5m depth									
3.10						3-	-84.38		
5.10									
(Groundwater infiltration @ 1.5m depth)								20 40 60 80 100	n
								Shear Strength (kPa)	
								▲ Undisturbed △ Remoulded	

Patersongroup 28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7		Consulting	SOIL PROFILE AND TEST DATA					
		Engineers	Geotechnical Investigation Residential Development - Ede Ottawa, Ontario	n Park Eas	t Portion			
	DATUM Ground surface elevations provided by S	Stantec Geoma	atics Ltd.	FILE NO.	PG0861			

REMARKS

BORINGS BY Backhoe

			Residential Development - Eden Park East Portion Ottawa, Ontario												
tante	c Geo	matics	s Ltd.			FILE NO.	PG0861								
	D	ATE 2	24 Octobe		HOLE NO.	TP19-08	3								
SAM	IPLE		DEPTH	ELEV.	-	esist. Blov 0 mm Dia.	ter tion								
NUMBER	% RECOVERY	N VALUE or RQD	(m)		(m) -87.03		/ater Conte 40 60	ent %	Piezometer Construction						
			0-	-87.03											

	РІОТ	SAMPLE		DEPTH ELEV		Pen. Resist. Blows/0.3m 50 mm Dia Cone				
SOIL DESCRIPTION	STRATA PI	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	 50 mm Dia. Cone Water Content % 	Piezometer Construction	
	S.H.	Ĥ	IDN I	SEC	N V OF				۵Ğ	
GROUND SURFACE TOPSOIL 0.15						0-	-87.03	20 40 60 80	<u> </u>	
10PSOIL0.15										
						1-	-86.03			
Stiff, brown SILTY CLAY						2-	-85.03		Ā	
- stiff to firm and grey by 2.3m depth										
<u>3.35</u>						3-	-84.03			
End of Test Pit (Groundwater infiltration @ 1.6m depth)										
								20 40 60 80 10 Shear Strength (kPa)	10	
								▲ Undisturbed △ Remoulded		

paleisungiuup	patersongrou	p
---------------	--------------	----------

Consulting Engineers

SOIL PROFILE AND TEST DATA

Undisturbed

 \triangle Remoulded

Geotechnical Investigation Residential Development - Eden Park East Portion

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	7T7			Ot	tawa, On	tario				
DATUM Ground surface elevations p	rovide	ed by	Stante	ec Geo	matics	s Ltd.			FILE NO.	PG0861	
REMARKS									HOLE NO.		.
BORINGS BY Backhoe	DATE 24 October 2008									TP20-08	D
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH (m)	ELEV. (m)		esist. Blo 0 mm Dia.		eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)	• V	Vater Cont	ent %	Piezometer Construction
GROUND SURFACE	LS.	H	DN I	REC	N N			20	40 60		шО
						0-	-87.24				
TOPSOIL											
						1-	-86.24				
									• • • • • • • • • • • • • • •		
Stiff, brown SILTY CLAY											
		•								/	
						2-	-85.24				
						2	00.24				
		-							7		
- firm and grey by 2.5m depth											
									· · · · · · · · · · · · · · · · · · ·		
						3-	-84.24			·····	Ţ
<u>3.2</u> 0	X										
End of Test Pit									T		
(Groundwater infiltration @ 3.0m depth)											
S.om depth)											
								20) 80 10	
								She	40 60 ar Strengt	h (kPa)	50

-

natersonaro		n	Con	sulting									
28 Concourse Gate, Unit 1, Ottawa, ON		-	Eng	sulting ineers	Pł	reliminary narand La ttawa, On	nds - Inn	nical Inves les Road a	stigation t Mer Bleeu	Road			
DATUM Geodetic, as provided by Sta	antec	Cons	ulting	Ltd.	•				FILE NO.	PG0811			
REMARKS									HOLE NO.				
BORINGS BY Backhoe			DATE			12 Apr 06		1		TP14	1		
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone			eter ction		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	VALUE Dr RQD	(m)	(m)	• V	later Conte	ent %	Piezometer Construction		
GROUND SURFACE	ŗ.		NC	REC	N V OF	0	-89.06	20	40 60	80	0		
TOPSOIL 0.30 Stiff, brown SILTY CLAY 1.00 End of Test Pit 1.00 TP terminated on bedrock surface @ 1.00m depth (TP dry upon completion) (TP dry upon completion) 1.00						1-	-88.06						
								20 She ▲ Undist	40 60 ar Strength urbed △ F	80 1((kPa) Remoulded	DO		

patersongroup Consulting Engineers SOIL PROFILE AND TES Preliminary Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7						tawa, On		es nuau ai	Mer Bleeu	nuau	
DATUM Geodetic, as provided by	/ Stantec	Cons	ulting I	Ltd.					FILE NO.	PG0811	
REMARKS									HOLE NO.		
BORINGS BY Backhoe				DA	TE	12 Apr 06				TP15	
SOIL DESCRIPTION	ТОТ		SAN			DEPTH (m)	ELEV. (m)		esist. Blow 0 mm Dia. C		eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)	• v	/ater Contei	nt %	Piezometer Construction
GROUND SURFACE	ß	•	E	REC	zö	0	00.00	20 40 60 80			
TOPSOIL	.15					- 0-	-88.63				
Very stiff, grey-brown SILTY CLAY	.10	G 	1			1-	-87.63				¥
End of Test Pit	.10/2//										
TP terminated on bedrock surface @ 1.10m depth											
(Open hole GWL @ 1.0m depth)								20 Shea	40 60 ar Strength	80 10 (kPa)	00

patersongroup

SOIL PROFILE AND TEST DATA

PG0811

TP16

80

Piezometer Construction

⊻

80

△ Remoulded

Shear Strength (kPa)

Undisturbed

100

Pharand Lands - Innes Road at Mer Bleeu Road Ottawa, Ontario

Consulting Engineers **Preliminary Geotechnical Investigation** 28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7 DATUM Geodetic, as provided by Stantec Consulting Ltd. FILE NO. REMARKS HOLE NO. BORINGS BY Backhoe DATE 12 Apr 06 SAMPLE Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. SOIL DESCRIPTION • 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE 0/0 Water Content % Ο 40 60 20 **GROUND SURFACE** 0 + 88.48TOPSOIL 0.15 -87.48 1-..... Very stiff to stiff, grey-brown **SILTY CLAY** 2+86.48 ÷ ٠į ÷ ÷ ÷ ÷ ÷ 3+85.48 3.10 End of Test Pit (Open hole GWL @ 1.8m depth) 40 60 20

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road

28 Concourse Gate, Unit 1, Ottawa, ON		tawa, On		es Road a	t Mer Bieeu	Road						
DATUM Geodetic, as provided by S	antec	Cons	ulting	Ltd.					FILE NO.	PG0811		
REMARKS									HOLE NO. TP17			
BORINGS BY Backhoe	1			D	ATE	12 Apr 06		1				
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)		vs/0.3m Cone	eter ction		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(,	()	• v	Vater Conte	ent %	Piezometer Construction	
GROUND SURFACE	••		4	R	z	- 0-	-88.47	20	40 60	80		
TOPSOIL 0.30							00117					
Stiff, grey-brown SILTY CLAY End of Test Pit (Open hole GWL @ 1.0m depth)						2-	-87.47				∇	
								20 Shea ▲ Undist	40 60 ar Strength urbed △ F	80 10 (kPa) Remoulded	00	

T DATA

PG0811

TP18

....

• i

.....

******

riangle Remoulded

▲ Undisturbed

.....

100

.....

.....

Piezometer Construction

patersongroup		Con	sulting			IL PROFILE AND TEST DAT							
28 Concourse Gate, Unit 1, Ottawa, C		-	Eng	ineers	Ph	eliminary harand La tawa, On	nds - Inn					Road	Ł
DATUM Geodetic, as provided by	Stantec	: Cons	ulting	Ltd.		,				FILE	NO.	PG	108
REMARKS				_						HOL	e no.	ТР	212
BORINGS BY Backhoe			DATE 12 Apr 06				D		. Resist. Blow				
SOIL DESCRIPTION	A PLOT				Ë٥.	DEPTH (m)	ELEV. (m)	Per •			Dia. C		m
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			0	W	ater (Conter	nt %	
GROUND SURFACE			4	R	z	0-	-89.14	20))	40	60	80)
TOPSOIL 0.5 Stiff, brown to grey-brown SILTY CLAY SILTY CLAY 1.7 End of Test Pit 1 TP terminated on bedrock surface @ 1.10m depth (Open hole GWL @ 1.1m depth)						1-	-88.14						
								20 S) Shea	40 ar Stre	60 ength	8 ⁽ (kPa)	D)

patersondroup Consulting

28 Concourse Gate, Unit 1, Ottawa, ON	IK2E	777	Eng	ineers	Pł	eliminary narand La tawa, On	nds - Inn	nica es l	al Ir Roa	nve ad a	stig t M	jatic er B	on Slee	u R	oad	I	
DATUM Geodetic, as provided by Si	tantec	Cons	ulting	Ltd.							F	ILE I	NO .	I	PG	081	1
REMARKS				_		10 4 00					H	OLE	NO		TP	19	
BORINGS BY Backhoe					TE	12 Apr 06											
SOIL DESCRIPTION	А РІОТ			/IPLE	Ĕ٥.	DEPTH (m)	ELEV. (m)		Pe (ist. nm l				n	Piezometer Construction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD				(er C					Piezo
GROUND SURFACE				Щ.		- 0-	-89.26		2	20	4	0	60	J :::	80		
TOPSOIL 0.30																·····	
Brown SILTY CLAY																	
0.60 End of Test Pit																 	
TP terminated on bedrock surface @ 0.60m depth																	
									2 2 1	20 She	4 ar sturb	0 Stre	_: 60 ngt	<u>:</u>) h (k Rem	80 80 Pa)	i i i i i i i i i i i i i i i i i i i	100

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road

28 Concourse Gate, Unit 1, Ottawa, ON		tawa, On		es Road at	ivier Bieeu	Road					
DATUM Geodetic, as provided by St.	ulting I	Ltd.					FILE NO.	PG0811			
REMARKS									HOLE NO.		
BORINGS BY Backhoe				D	ATE	12 Apr 06				TP20	
SOIL DESCRIPTION	РІОТ		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Blow 0 mm Dia. C		eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(,	()	• v	later Conte	nt %	Piezometer Construction
GROUND SURFACE	ß	•	ų	REC	z ö	0	-88.94	20	40 60	80	-0
TOPSOIL 0.30						0-	-00.94		•		
Stiff, brown SILTY CLAY											
1.00 End of Test Pit	XX					1-	-87.94				
TP terminated on bedrock surface @ 1.00m depth											
(TP dry upon completion)								20 Shea ▲ Undistu	40 60 ar Strength urbed △ R	80 10 (kPa) emoulded	0

patersongroup Consulting Engineers SOIL PROFILE AND TE

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	∎ 7T7	9		P		nds - Inn	inical inves les Road at	Mer Bleeu	Road	
DATUM Geodetic, as provided by St	antec	Cons	ulting	Ltd.		,			FILE NO.	PG0811	
REMARKS									HOLE NO.		
BORINGS BY Backhoe	1			DA	TE	12 Apr 06				TP21	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blow 0 mm Dia. (eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	• v	/ater Conte	ent %	Piezometer Construction
GROUND SURFACE	Ω.		N	REC	zö	0	-88.53	20	40 60	80	
TOPSOIL						0	00.00				
<u>0.30</u>	XX										
Stiff, grey-brown SILTY CLAY											
						1-	-87.53				
<u>1.70</u> End of Test Pit											
TP terminated on bedrock											
surface @ 1.70m depth (TP dry upon completion)											
(TF dry upon completion)											
								20 20	+ + + + + + + + + + + + + + + + + + +	80 10	1 00
								Shea Undist	ar Strength urbed $\triangle R$	(KPa) Remoulded	

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road

28 Concourse Gate, Unit 1, Ottawa, Ol	etic, as provided by Stantec Consulting Ltd.						Ottawa, Ontario						
	ulting	Ltd.	·				FILE NO.	PG0811					
REMARKS									HOLE NO.	TP22			
BORINGS BY Backhoe					ATE	12 Apr 06							
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH (m)	ELEV. (m)		esist. Blow 0 mm Dia. 0		Piezometer Construction		
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD		(11)		latar Canta		ezom nstru		
GROUND SURFACE	STF	Υ.Τ.	MUN	RECO	N VI OF			0 W 20	Vater Conte 40 60	80	Ъ. СЪ		
						0-	-88.78						
TOPSOIL 0.30	C												
Stiff, grey-brown SILTY CLAY													
							07 70						
						1-	-87.78						
End of Test Pit													
TP terminated on bedrock surface @ 1.40m depth													
(TP dry upon completion)													
								20 Shea	40 60 ar Strength	80 10 81 (kPa)	00		
								▲ Undist	urbed $\triangle R$	Remoulded			

patersongroup Consulting Engineers SOIL PROFILE AND TE

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	∎ 7T7	9		Pł	arand La	nds - Inn	es Road at	t Mer Bleeu F	Road	
DATUM Geodetic, as provided by St	antec	Cons	ulting I	_td.		,			FILE NO.	PG0811	
REMARKS									HOLE NO.		
BORINGS BY Backhoe	I			DA	TE	12 Apr 06		1		TP23	1
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)		esist. Blows 0 mm Dia. C		eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(11)	(11)	• v	later Conten	it %	Piezometer Construction
GROUND SURFACE	0		Z	RE	z °	0-	-88.49	20	40 60	80	
TOPSOIL							00.40		· · · · · · · · · · · · · · · · · · ·		
Stiff, brown to grey-brown SILTY CLAY End of Test Pit (Open hole GWL @ 2.0m depth)						2-	-87.49				¥
								20 20 Shea ▲ Undist	40 60 ar Strength (⊔urbed △ Re	80 10 80 10 80 80 80 80	00

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, Ol	NK2E	7T7				tawa, On		es Road at	t Mer Bleeu	Road	
DATUM Geodetic, as provided by S	tantec	Cons	ulting	Ltd.					FILE NO.	PG0811	
REMARKS									HOLE NO.		
BORINGS BY Backhoe				D	ATE	12 Apr 06				TP24	
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH (m)	ELEV. (m)		lesist. Blow 0 mm Dia. C		eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD		(III)	• v	Vater Conte	nt %	Piezometer Construction
GROUND SURFACE	L.S.	н		REC	N O L		00 74	20	40 60	80	щО
TOPSOIL 0.31 Stiff, grey-brown SILTY CLAY End of Test Pit (Open hole GWL @ 1.4m depth)						1-	-87.71				Ā
								20 Shea ▲ Undist	40 60 ar Strength urbed △ R	80 10 (kPa) emoulded	0

ATA

Piezometer Construction

⊻

100

patersongr		n	Con	sulting		SOIL	. PRO	FILE AN	ID TES	T DATA
28 Concourse Gate, Unit 1, Ottawa, 0		-	Eng	sulting ineers	Ph	eliminary harand La tawa, On	nds - Inn	inical Inves les Road at	tigation Mer Bleeu	I Road
DATUM Geodetic, as provided by	Stanted	Cons	ulting	Ltd.		<u> </u>			FILE NO.	PG0811
REMARKS									HOLE NO.	
BORINGS BY Backhoe				DA	TE	12 Apr 06				TP25
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH	ELEV.		esist. Blov 0 mm Dia. (
	STRATA I	ТҮРЕ	NUMBER	* RECOVERY	N VALUE or RQD	(m)	(m)	- N	/ater Conte	
GROUND SURFACE	STI	L.	Î	RECO	N OL (00.00	20	40 60	80 80
TOPSOIL	40					- 0-	-88.82	···········		
						1_	-87.82			
Stiff, grey-brown SILTY CLAY							07.02		······	
						2-	-86.82			
End of Test Pit	40									
TP terminated on bedrock surface @ 2.40m depth										
surface @ 2.40m depth (Open hole GWL @ 1.6m depth)										
								20 Shea ▲ Undistu	40 60 ar Strength urbed △ F	80 100 I (kPa) Remoulded

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	717			Ot	tawa, On	tario				
DATUM Geodetic, as provided by St	antec	Cons	ulting	Ltd.					FILE NO.	PG0811	
REMARKS									HOLE NO.		
BORINGS BY Backhoe				D	ATE	12 Apr 06		1		TP26	
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH (m)	ELEV. (m)		esist. Blov 0 mm Dia.		eter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD		(11)	• v	/ater Conte	ent %	Piezometer Construction
GROUND SURFACE	S	-	ŭ	REC	zö	0	-89.48	20	40 60	80	
TOPSOIL							09.40		••••••		
Stiff, brown SILTY CLAY								· · · · · · · · · · · · · · · · · · ·			
End of Test Pit		-									
TP terminated on bedrock surface @ 0.70m depth											
(TP dry upon completion)								20 Shei	40 60 ar Strength	80 1(I (KPa)	00
								Shea Undist	ar Strength urbed \triangle F	i (kPa) Remoulded	

patersongroup Consulting Engineers SOIL PROFILE AND TES Preliminary Geotechnical Investigation

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	7T7				harand La		es Road at	t Mer Bleeu F	load	
DATUM Geodetic, as provided by St	antec	Cons	ulting	Ltd.	I				FILE NO.	PG0811	
REMARKS									HOLE NO.	TP27	
BORINGS BY Backhoe					ATE	12 Apr 06					
SOIL DESCRIPTION	PLOT			APLE א	61	DEPTH (m)	ELEV. (m)		esist. Blows 0 mm Dia. Co		Piezometer Construction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	later Conten	it %	iezoi onstr
GROUND SURFACE	-S	н	DNI I	REC	N OL	0	-88.54	20	40 60	80	щΟ
TOPSOIL 0.30						1-	-87.54				¥
2.30 End of Test Pit TP terminated on bedrock surface @ 2.30m depth (Open hole GWL @ 1.2m depth)								20 Shea ▲ Undist	40 60 ar Strength (l urbed △ Re	80 10 kPa) moulded	00

natoreonaroun

Consulting

28 Concourse Gate, Unit 1, Ottawa, C	ON K2E	- 7T7		ineers	Ph	eliminary harand La tawa, On	nds - Inn	inical Inves les Road at	stigation t Mer Bleeu	Road	
DATUM Geodetic, as provided by	Stanted	: Cons	sulting	Ltd.					FILE NO.	PG0811	
REMARKS						10 4			HOLE NO.	TP28	
BORINGS BY Backhoe			0.41		IE.	12 Apr 06		Dam D	La ciat Diam		
SOIL DESCRIPTION	PLOT			/IPLE		DEPTH (m)	ELEV. (m)		esist. Blow 0 mm Dia. C		meter uction
	STRATA	ТҮРЕ	NUMBER	~ RECOVERY	N VALUE or RQD				Vater Conte		Piezometer Construction
GROUND SURFACE				<u>к</u>	4	0-	-88.15	20	40 60	80	
TOPSOIL	30	1									
										· · · · · · · · · · · · · · · · · · ·	
Stiff, grey-brown SILTY CLAY						1-	-87.15				
								· · · · · · · · · · · · · · · · · · ·			
						2-	-86.15				
2. End of Test Pit	40										
TP terminated on bedrock surface @ 2.40m depth											
(Open hole GWL @ 1.3m depth)								20	40 60	80 10	00
									ar Strength	(kPa) emoulded	

patersongroup

Consulting Engineers

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road Ottawa, Ontario

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7 Geodetic, as provided by Stantec Consulting Ltd. FILE NO. DATUM PG0811 REMARKS HOLE NO. **TP29** BORINGS BY Backhoe DATE 12 Apr 06 SAMPLE Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. • 50 mm Dia. Cone SOIL DESCRIPTION (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE Water Content % 0 40 60 80 20 **GROUND SURFACE** 0+88.12TOPSOIL 0.30 1+87.12 G 1 Stiff, grey-brown SILTY CLAY - grey by 1.8m depth 2+86.12 ÷ ÷ 3+85.12 3.20 End of Test Pit (TP dry upon completion) 40 60 80 100 20 Shear Strength (kPa) Undisturbed △ Remoulded

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road

28 Concourse Gate, Unit 1, Ottawa, ON		tawa, On		es nuau ai		nuau					
DATUM Geodetic, as provided by Sta	_td.					FILE NO.	PG0811				
REMARKS									HOLE NO.		
BORINGS BY Backhoe				D	ATE	12 Apr 06				TP30	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		esist. Blow 0 mm Dia. C		ion
		51	R	IRY	ВQ	(m)	(m)				ome
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE of RQD			• v	later Conte	nt %	Piezometer Construction
GROUND SURFACE	01		4	RE	z	0-	-89.09	20	40 60	80	
TOPSOIL 0.20											
Stiff, brown SILTY CLAY						1-	-88.09				
1.10 End of Test Pit	<u> </u>										
TP terminated on bedrock surface @ 1.10m depth											
(TP dry upon completion)								20 Shea ▲ Undistu	40 60 ar Strength urbed △ Fi	80 10 (kPa) emoulded	00

patersongroup Consulting SOIL PROFILE AND TE Preliminary Geotechnical Investigation Preliminary Geotechnical Investigation

SOIL PROFILE AND TEST DATA

28 Concourse Gate, Unit 1, Ottawa, O	N K2E	■ 7T7				harand La Itawa, On		es Road at	t Mer Bleeu	Road	
DATUM Geodetic, as provided by S	Stantec	Cons	ulting	Ltd.					FILE NO.	PG0811	
REMARKS									HOLE NO.		
BORINGS BY Backhoe				D	ATE	12 Apr 06		1		TP31	
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH	ELEV.		esist. Blow 0 mm Dia. C		eter stion
	STRATA I	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Conte	nt %	Piezometer Construction
GROUND SURFACE	ST	Ľ	NU	REC	N OF	0-	-88.63	20	40 60	80	ЧÖ
TOPSOIL	0						-00.03				
Stiff, grey-brown SILTY CLAY							-87.63				
2.5 End of Test Pit	<u>ofx</u> z										
TP terminated on bedrock surface @ 2.50m depth (TP dry upon completion)											
									40 60 ar Strength		00

patersongroup Consulting Engineers SOIL PROFILE AND TES Preliminary Geotechnical Investigation

SOIL PROFILE AND TEST DATA

28 Concourse Gate, Unit 1, Ottawa, ON	K2E	7T7				arand La tawa, On		es Road a	t Mer Bleeu	I Road	
DATUM Geodetic, as provided by St	antec	Cons	ulting I	Ltd.					FILE NO.	PG0811	
REMARKS									HOLE NO.		
BORINGS BY Backhoe				DA	TE	12 Apr 06				TP32	
SOIL DESCRIPTION	PLOT		SAN			DEPTH (m)	ELEV. (m)		esist. Blov 0 mm Dia.		leter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	()	(,	• V	later Conte	ent %	Piezometer Construction
GROUND SURFACE	ũ		IN	RE(z ^ö	0-	-89.18	20	40 60	80	10
TOPSOIL						- 0-	-09.10				
Stiff, brown SILTY CLAY									······································	· · · · · · · · · · · · · · · · · · ·	
0.80 End of Test Pit											
TP terminated on bedrock surface @ 0.80m depth											
(TP dry upon completion)								20	40 60	80 10	00
								Sheat Sheat	ar Strength	r (kPa) Remoulded	

patersongroup Consulting Engineers

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation Pharand Lands - Innes Road at Mer Bleeu Road

28 Concourse Gate, Unit 1, Ottawa, O	N K2E	7T7			0	tawa, On	tario			liouu	
DATUM Geodetic, as provided by S	Stantec	Cons	ulting	Ltd.					FILE NO.	PG0811	
REMARKS									HOLE NO.	TP33	
BORINGS BY Backhoe				D	ATE	12 Apr 06					
SOIL DESCRIPTION	PLOT		SAN			DEPTH (m)	ELEV. (m)		esist. Blow 0 mm Dia. (neter uction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD			• v	/ater Conte	nt %	Piezometer Construction
GROUND SURFACE	ß	-	ž	RE	zö	0-	-88.99	20	40 60	80	
TOPSOIL	80						00.00		••••••••••		
Stiff, grey-brown SILTY CLAY						1-	-87.99				
- some boulders by 1.2m depth	40										
End of Test Pit											
TP terminated on bedrock surface @ 1.40m depth											
(TP dry upon completion)								20	40 60	80 10	00
								Shea Undistr	40 60 ar Strength urbed △ R	(kPa) emoulded	

natoreonaroun

Consulting

SOIL PROFILE AND TEST DATA

28 Concourse Gate, Unit 1, Ottawa, O		-	Eng	ineers	Ph	eliminary arand La tawa, On	nds - Inn	nical Inves es Road at	tigation Mer Bleeu F	Road	
DATUM Geodetic, as provided by S	Stanted	Cons	ulting	Ltd.					FILE NO.	PG0811	
REMARKS									HOLE NO.	TP34	
BORINGS BY Backhoe					TE	12 Apr 06					
SOIL DESCRIPTION	A PLOT			/PLE ଅ	ш.	DEPTH (m)	ELEV. (m)	-	esist. Blows) mm Dia. Co		Piezometer Construction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD				ater Conten		Piezo Const
GROUND SURFACE				Щ.		0-	-88.49	20	40 60	80	
TOPSOIL	80										
								• • • • • • • • • • • •	······································		
						-	-87.49				
Stiff, grey-brown SILTY CLAY							-07.49				
									•••••••••••••••••••••••••••••••••••••••		
						2-	-86.49				
2.3 End of Test Pit	30										
TP terminated on bedrock surface @ 2.30m depth											
(TP dry upon completion)											
								20	40 60	80 10	00
								Shea	r Strength (I	(Pa) moulded	

patersongroup

SOIL PROFILE AND TEST DATA

FILE NO.

PG1605

Geotechnical Investigation Proposed Residential Development-Renaud Road Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

DATUM

REMARKS

BORINGS BY Hand Auger				D	ATE	11 May 2(009				ŀ	IOL	E NC	א ו	H/	43	-09	•
SOIL DESCRIPTION	PLOT			IPLE		DEPTH (m)	ELEV. (m)							ows 1. Co				neter uction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(tent				Piezometer Construction
GROUND SURFACE				<u></u> м	4	0-	-		: ::	20		10	6	50 · · · ·	8	30 		
TOPSOIL									•••••••••••••••••••••••••••••••••••••••		· · · · · · · · · · · · · · · · · · ·	•	· · · · · · · · · · · · · · · · · · ·					
<u>0.2</u>								· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			•••••••••••••••••••••••••••••••••••••••	· · · · · · · · · · · · · · · · · · ·					
Very stiff, brown SILTY CLAY									•••••••••••••••••••••••••••••••••••••••	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	•••••••••••••••••••••••••••••••••••••••	•••••••••••••••••••••••••••••••••••••••					8
						1-	-			· · · · · · · · · · · · · · · · · · ·								
1.60									•••••				· · · · · · · · · · · · · · · · · · ·					28
End of Hand Auger Hole										20		40	6	i0		30	10	00
										She Indis				t h (k . Ren				

Consulting Engineers

patersongroup Consulting Engineers

SOIL PROFILE AND TEST DATA

FILE NO.

Geotechnical Investigation Proposed Residential Development-Renaud Road Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

DATUM

														PG	i160)5	
REMARKS											НО	LEN					
BORINGS BY Hand Auger	1			D	ATE	11 May 20	009	1						Η/	A 4	-0	9
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		Per •				low ia. C				Piezometer Construction
		ы	JER	TERY	ÖD FUE	(m)	(m)										zome
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD				0				nter				Pie
GROUND SURFACE				<u></u>	-	0-	-		20	0	40		60	} 	80		
TOPSOIL																	
0.25 Brown SILTY fine SAND 0.35																	
Very stiff, brown SILTY CLAY								······································			•••••••••••••••••••••••••••••••••••••••			· · · · · · · · · · · · · · · · · · ·			
						1-	-			······································	······································			······································		:1; ;	
End of Hand Auger Hole									20) She	40 ar Si	ren	60 gth (80 a)		28
											urbec				ulded		

patersongroup

SOIL PROFILE AND TEST DATA

FILE NO.

PG1605

Geotechnical Investigation Proposed Residential Development-Renaud Road Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

DATUM

REMARKS

BOBINGS BY Hand Augor						11 May 20	סחר			H	OLE	NO	ŀ	łΑ	5-0	09	
BORINGS BY Hand Auger			644	/IPLE	AIE	11 May 20		De	n. R			Dia					
SOIL DESCRIPTION	PLOT				M	DEPTH (m)	ELEV. (m)	Pe					Co		m		Piezometer Construction
	STRATA	ЭЛХРЕ	NUMBER	* RECOVERY	N VALUE or RQD			C	V	Vate	er C	ont	ent	%			Piezor Constr
GROUND SURFACE	01		Z	RE	zo	0-	_	 2	20	4	0	6)	80)	•••	
TOPSOIL								 · · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·	•••••	· · · · · · · · · · · · · · · · · · ·		
0.3	<u>30</u>																
								 · · · · · · · · · · · · · · · · · · ·									
Very stiff, brown SILTY CLAY								 · · · · · · · · · · · · · · · · · · ·						****		.12	8
						1-	-							***	· · · · · · · · · · · · · · · · · · ·		
																12	8
End of Hand Auger Hole	50							 									
								2 (20 Sheandist	4 ar S	o Stre	−−− 60 ngt △) h (k Rem	• + 80 Pa) ioulc)) ded	10)

Consulting Engineers

patersongroup

SOIL PROFILE AND TEST DATA

FILE NO.

PG1605

Geotechnical Investigation Proposed Residential Development-Renaud Road Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

DATUM

REMARKS

BORINGS BY Hand Auger				D	ATE	11 May 20	009			H	OLE	NO.	Н	A	6-0	9
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)	Pei			st. I m D				ı	leter ction
	STRATA	ТҮРЕ	NUMBER	% RECOVERY	N VALUE or RQD	(,	()	C 2		/ate 40	er Co	onte 60	ent	% 80		Piezometer Construction
GROUND SURFACE						0-	_	 			, 			00		-
TOPSOIL								······		·····						
0.3																
sand0.5																
Very stiff, brown SILTY CLAY								······		·····						28
						1-	-									
								·····								
<u>1.6</u>											· · · · · · · · · · · · · · · · · · ·					28
End of Hand Auger Hole																
									0 Shea ndistu		trer		(kF Remo			00

Consulting Engineers

PROJECT: 05-1120-163

RECORD OF BOREHOLE: 05-1

SHEET 1 OF 1

DATUM:

LOCATION: Se	e Site Plan
--------------	-------------

BORING DATE: Oct. 26, 2005

	COH L	SOIL PROFILE	16	r	SAI	VPLE T		DYNAMIC PENETF RESISTANCE, BLC	ATION WS/0.3n	1	1	cm/s	UCTI	VITY,	T	NG L	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH	NUMBER	TVPE	BLOWS/0.3m	20 40 SHEAR STRENGT Cu, kPa	60 H nat V rem \	50 + Q- (+ U- (10* WATE	10 ³ ER CONT		PERCE		ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
	BOR		STRA	(m)	Z	-	ы ВГО	20 40	60	80	Wp I- 20	40	<u>977</u> 977		VM 80	X3	
		GROUND SURFACE	1			-t			Ť				Ĩ	<u> </u>	Ĩ		
0	Т	TOPSOIL		6.02	ГŤ		_						†		1	t=t	
ή	Power Augor 200mm Diam (Hollow Slam)	Stiff grey brown SILTY CLAY, slight black organic mottling (Weathered Crust)		6.28	1	\$00	12									e verde en	
z	201			2.29		50 DO	8										
		Loose brown SiLTY SAND, some gravel, trace clay, occasional boulder (GLACIAL TILL)			3	50 00	>100										
		End of Borehole	-HH	2.72		_											
з		Sampler Refusal															
										-		Ì					
										L					1		
									-						ļ		
4																	
				ļ													
															-		
									[
5																	
ĩ				ļ													
5									~~~~								
			E														
7																	
										-							

\$							}										
										****		Landard					
ę																	
							and the second se										
										1							
10																	
t				· •	- 1	6			l		i			L	-J		*****
DEI	PTH	SCALE					1	G AGOI								LO	GGED: R.I.

.00	ATIO	r: 05-1120-163 N: See Sile Plan R HAMMER, 64kg: DROP. 760mm		RE	C	DR	D	OF B BORI			DLE: ct. 26, 2		5-2	PEN	ETRAT	ION TE	ST HAM	DAT	ET 1 OF 1 UM: Ikg; DROP, 760mr	Tì
		SOL PROFILE				APLE		DYNAMIC RESISTAN	PENET	IRATIO	v ,3m	\sum	HYDRAU				1		PIEZOMETER	
REARS	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	20 SHEAR S Cu, kPa 20	40 1. TRENG 40	TH na re	it V, ∔ ni V. ⊕	0-0 0-0		rer CC	NTENT	PERCE	13 -L NT WI 0	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION	
0	7	GROUND SURFACE TOPSOIL		60.0			_													
	Starn}	Stiff grey brown and rad brown SILTY CLAY, slight black organic mottling (Weathered Crust)		0.20																-
1	Power Auget 200mm Diam. (Hollow Stam)				+	66 00	10													
2	200	Compact brown SILTY SAND, some		2.13		50 DD	7				regelje mike verbuit wie A be et title VAB V ottere A to									
	l	gravel, trace clay (SLACIAL TILL) End of Borehole Sampler Refusal		2.35		50 50	<u>≥ 100</u>													
3																				-
4																				-
5																				-
6																Anno 1999 - Anno 1999 - Anno 1999				-
·																				
7																				
8																				-
9																				-
10																				-

LOCATI	XT: 05-1120-163 DN: See Site Plan ER HAMMER, 64kg; DROP, 760mm		RE	C	OF	۶D				0 CLE 0ct. 21,)5-3	PEN	VETRAT	TION TES		ĎA	EET 1 OF 1 .TUM: 54kg; DROP, 760mm
a Hob	SOIL PROFILE	1		SA	MPL			NC PEN			2		k, cm/s			Is	g	PIEZOMETER
METRES BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ЭчХ	BLOWS/0.3m	2 SHEAF Cu, kP 2	L STREN	GTH	50 8 natV.+ nemV.⊕ 60 8		1		ONTENT	0 ⁴ 10 ³ PERCENT 	ADDITIC	LAB. TEST	OR STANDPIPE INSTALLATION
°	GROUND SURFACE TOPSOIL		0.00														_	 XXX
Dowel Auget TSom (Acknow Creat)			0.22		50 50 50 50 50 50									°				\ Vative Backfil
Power Power	Firm grey SILTY CLAY		3.20	*		ž.	⊕ ⊕	+					J	0	0			Bentonite Seal Silica Sand
s s . p	Probably Glacial Till End of Borehole Augor Refusal		5.3															Slandpipe

		F: 05-1120-163 N: See Site Plan		RE	C	OF	۶D	OF BC	DATE: O			5-4					DAT	ET 1 OF 1 UM:
SAM	PLEI	R HAMMER, 64kg; DROP, 760mm					r	00000000				NORMAN				ST HAM	IMER. 6	4kg; DROP, 760mm
,	1HOD	SOIL PROFILE	TE		SA	MPLI		DYNAMIC PE RESISTANCI		3m 0	5	HYDRAU k	, cm/s			, I	NAL TING	PIEZOMETER
	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	Түре	BLOWS/0,3m	20 SHEAR STRI Cu, kPa 20	40 60 ENGTH nat ren 40 60	V. + C NV.⊕ U	- 0		ER CON	ITENT F	ERCEN	T VI	ADDITIONAL LAB. TESTING	STANDPIPE
0	1.	GROUND SURFACE TOPSOIL	annun annun annun	0.00														
1 2 3 4 5	Power Auger 200mm Danu (Hosew Stern)	Stiff grey brown and red brown SILTY CLAY, slight organic mottling (Weathered Crust)		0.30	3	800 920 920 920 920		8 8 +	+ +	+			ρ.	0				
£ 9		End of Borehole		7.3		38	The second se	⊕ + ⊕ ⊕	- + +						{	0		

PROJECT: 05-1120-163	RI	CORE	D OF BOREHOLE: 0	5-5 si	HEET 1 OF 1
LOCATION: See Site Plan SAMPLER HAMMER, 64kg; DROP, 760mr	ĩ		BORING DATE: Oct. 27, 2005	D. PENETRATION TEST HAMMER,	ATUM: , 64kg; DROP, 760mm
SOIL PROFI		SAMPLES	B DYNAMIC PENETRATION	HYDRAULIC CONDUCTIVITY,	PIEZOMETER
SOIL PROFI	TOTA PLOT	NUMBER TYFE BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q. • • • Cu, kPa rem V. ⊕ U - Q • 20 40 60 60	k, cm/s 10 ⁴ 10 ⁴ 10 ⁴ 10 ⁵ WATER CONTENT PERCENT Wp	OR STANDPIPE INSTALLATION
GROUND SURFACE					না নাম
Firm grey SiLTY CLAY	LAY 6.3	1 50 4 2 50 2 3 50 2 50 2 50 2 50 2 50 2 50 2 50 2 50 2	10 4 A A A A A A A A A A A A A A A A A A		Silica Send
5019721 LIGS WOY 2019 8 5019721 LIGS WOY 2019 9 9 10 DEPTH SCALE 1: 50		71	B + B		Bentonite Seal
DEPTH SCALE	1_1		Golder		LOGGED: H.E.C. CHECKED: M.J.C.

~	LIENT	McNeely Engineering Consu	Itants 1	Ltd.					BOREHOLE No. 95-1
	OCATION	Orleans South Feedermain,				0			BOREHOLE No PROJECT No10629
	ATES: BOI	AING 95-05-15			_ WA	TER	LEVEL	95-0	
	Ê		F	_			1PLES		UNDRAINED SHEAR STRENGTH - KPa
(m)	1 1		PLOT	EVEL				111	50 100 150 200
Ħ	THC	SOIL DESCRIPTION	T P		ТҮРЕ	Ш Ш Ш	UER	n n n n n n n n n n n n n n n n n n n	WATER CONTENT & ATTERBERG LIMITS
DEPTH	ELEVATION		STRATA	WATER	4	NUMBER	RECOVERY	N-VALUE	DYNAMIC PENETRATION TEST, BLOWS/0.3m *
	1		<u>ں</u>	3					STANDARD PENETRATION TEST, BLOWS/0.3m
0	98.37	Compact, brown and grey,			1		mm 		
		SANDY SILT, trace clay							
		-					ļ		
1	97.3	www.withcommon.com.com.com.com.com.com.com.com.com.com			SS	1	560	13	
		Very stiff to stiff,			SS	2	610	7	e.
-2.		greyish-brown, SILTY			.		 		
		CLAY			SS	3	610	4	
2	95.3								Ψ
- 3 -			#		SS	4	610	4	
	-				22	4	010	4	Ď
- d -									
Ŧ									
- 5	-	Firm to stiff, grey, SILTY CLAY							O
	TTTT								
	-								
- 6	1			Į₽		<u> </u>	<u> </u>	ļ	
-	1				SS	5	610	2	•
-					B				
- 7	1								
_	-		H.						
	1 1 1 1								
- 8									
-									
٢٧							<u> </u>		
-	88.6				SS	6	610	2	•
-10	\$	End of Borehole	(XZ)	1	綴				
- 10	++++	Conduine installed				-	1		
-		Standpipe installed							
-11	1	<u> </u>							
		Σ. Σ							Field Vane Test, kPa
		- Proposed Pipe Invert							□ Remoulded Vane Test, kPa △ Pocket Penetrometer Test, kPa

Ċ

													····. ;																	
J I	AC(JMI	QUES W	/HITFORD	B	OF	EH	OL	ER	ECO	RJ)																			
		ENT	McNeely Engineering Consult Orleans South Feedermain, O	ants	Ltd.																IOL CT			•		<u>9</u> :				
		TES: BO						LEVEL	95-0	5-19)										ví			1	<u>[_0</u>]	ca				
-	T	Ê	<u></u>	E			SAN	1PLES					U	ND	RAI	NE	D S	HE	AR	ST	RE	IGT	H	- k	Pa					
	Ê			PLOT	EVEL			X	lii a				5(}			!	100 				15	0				200)		
	DEPTH	ELEVATION	SOIL DESCRIPTION	STRATA	WATER L	түре	NUMBER	RECOVERY	N-VALUE				CON C P											Wp 1- 0.3		W -0-	*	₩լ เ		
L				<u></u> ()	3					s			RD														ø			
-	0 +	99.60	Stiff to very stiff,	- 22	革	1		mm		11)ן) []]	2() TT	3	0 T		40 :	11	50 T		60) []	7	0 []]]		80		90 	_
	***		greyish-brown, SILTY CLAY		4									*****************	******				*****									******		
┝	1-					SS	1	560	9		20																			
	بعداعيف					×													*****	*****										
1	2					ss	2	610	2	•						-														
	2	96.6			2																									
	Juni			-						D		d		0									******							-
	4					SS	3	610	1				50	****							*******************									
	5		Firm to stiff, grey, SILTY CLAY									1															***			
										0							****************		*****			*****************								1 1 2 4 1 1
	6-					SS	4	610	2														**********	***						
	-	92.9	End of Borehole	- 18/	q					+		1		+				+					#		+	+-				
	7-		Standpipe installed							*********						1		**************				**************								
	- 8 -											***																		
a a a a a a a a a a a a a a a a a a a	- 9 -																													الم الم الم الم
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		V. 1619 - 19 - 10 - 10 - 10 - 10 - 10 - 10 - 10					والمحافظ																******			***************		يد برا بخت
	-10-	1 1 1 3 1 1 1 4 3		والمحاوية والمحاولة	a se		-																							
	-11		Proposed Pipe Invert			11			1		D	Re	eld mo cke	ulde	ed 1	Var	ie 7	`est			Pa					ſ	N V	Å		

J L	ACQ	UES W	HITFORD	B	OF	EH	OL	ER	ECO	RD		ł									<u></u>		
	CLI	ent	McNeely Engineering Consulta											E	ORI	EHO	LE	No.	•)5-3		~
		ATION	Orleans South Feedermain, Or	lean	s, (95-05	10			~		ROJ				r		06	29	-
-	DAT	ES: BOI	UNG95-05-15	T	1	WA		LEVEL	95-0.	-12		IDRAI			AD	*****				<u>.0C</u>	41		
	ê) a		PLOT	EUEL		1AC	1PLES			50		NEU	ən: 100		518		50	• K.I	'a	20	0	
E .	DEPTH (ELEVATION	SOIL DESCRIPTION	STRATA P	WATER LE	түре	NUMBER	RECOVERY	N-VALUE	WATER									₩p 	€ R	{ ! }	₩L 1	
		1			-			mm		STANI 10	ard 1 20			10N 40		т, I 50	3LOV 6().3c 70		ه 80		90
1	0 🕂	99.54	Firm to very stiff,	-la	¥																		Ē
-	-		greyish-brown, SILTY CLAY													442444101999411994		**********					
-	*		a.			SS 		610	12			*****											
1	2	97.2		-																			
1	ىلىنىد بلىنىد					SS	2	610	2	•				****)				
F	سيشقلين										0 14 C								****				
~	4					SS	3	610	2	•												0	1 1 1 1 1
	5		Firm, grey, SILTY CLAY					1															1111

	6-	92.8				ss	4	610	1													Ŷ	
	- - - - - - -		End of Borehole		****				1														Ē
			Standpipe installed											******								*********	
	- 8 - 1													****									
	- 9 -			ومرويه والمحالي والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والم																			
	- 10-															*****							
													************************		*****						*******		
	-11-		Proposed Pipe Invert							0	Field N Remou Pocket	lded 3	lane	Tes							V	A	

IC(MI	QUES W	HITFORD	B	OF	EH	OL	ER	ECO	RI)											ulidad (final de la co			
CLI	ENT	McNeely Engineering Consul	tants]	Ltd.											BC	। स	HOI	F	No.		9	5-4		
	CATION	Orleans South Feedermain, (Orlean	s, C	Intari	0										ОЛ						062		
DA'	TES: BO	RING <u>95-05-15</u>			WA	TER	LEVEL	95-0	5-19							เาบ				L	oca	I		
Τ	Ĵ		5	L.		SAI	1PLES		Γ		U	NORA	INE			RS	TRE	NGT	н -	kP	a		********	
	z		PLOT	LEVEL			۲	111 -	1		50) 		10	00 †			15	0			200		
	I Le	SOIL DESCRIPTION	TA	l ci	ТҮРЕ	NUMBER	CEF	ALU RQC	u	TER	CON	TENT	e	A T T F	- DRI	FRG	10	1 1111		Wp	ų	1	WL	
	ELEVATION		STRATA	WATER	Ϋ́	NDZ	RECOVERY	N-UALUE	1	(NAM)										.3m	Q-	*	1	
			0	3				~	1	AND/												ø		
+	99.69	Stiff to very stiff,		V		ļ	mm			10	20	1:1	30	4	0	50)	60		70		80	9	0
111		grey-brown, SILTY CLAY				-																		
																								 -
		`			SS	1	610	17			0				1									Ē
111					¶	<u></u>																		1
		·																						E
171																								-
T I					SS	2	610	3																Ē
	96.6				33 	4	010																	
																								F
																								Ē
1111							<u> </u>				$\boldsymbol{\nu}$													
					SS	3	610	2	0															Ē
يلغ		Firm, grey, SILTY CLAY																						-
T.L.									þ	<u> </u>														Ē
											a													
																								-
								<u> </u>																Ļ
1					SS	4	610	1									******							
+++++++++++++++++++++++++++++++++++++++	93.0	End of Borehole		4.				<u> </u>															<u>IÍ</u>	Ę
																				+		╫		F
		Standpipe installed						****																E
111																								Ē
3-	•					-								111										F
																								Ę
																								Ē
, 11																								E
- - -																								E
1 0-1																								E
у т																						T		F
								}																H
1				-																				E

LIENT		101	OF	EH	[OI	ER	ECO	RD)														
VC 4 777/1355	McNeely Engineering Consul	tants	Ltd.											BO	REF	IOI.	Ē	No		9	5-5	Š	
CATON		Örlean	<u>s, C</u>)ntari	0											CT					062		
TES: BO	RING95-05-16			_ WA	TER	LEVEL	95-0	5-19						DA	TU	м.			L	<u>, oc</u> z	1		
je j		PLOT	ШЦ		SAI	1PLES					RAI	NÉC		HEAR	2 51				kF	'a			
NU	007: DE005757701:		LEVEL		α	¥	Що			50 -				00 		*	15	0 			20({)	
UAT	SOIF DESCRIPTION	RATE	щ	Чре	MBE	E C C	UAL(NA.	TER CO	NTE	NT	& A	ATTE	ERBE	RG	LIM	11:	5	Wp I	W 0		₩L 1	
		57F	ЧA	P	ž		1 de	1													*		
99.91	Loose, gravel fill at surface					mm		1													• 80		90
			퉆		<u> </u>										T		Π		Τ		Π		Ē
													*****										Ē
				22	1	500	10																
					1	500	10							0									÷
																							1.1
																							-
				00	5	520	A																Ē
96.9				33 	2	530	4	e															
	1999 999 999 999 900 900 900 900 900 900	· - 10																	Ť				F
					-				1 1 1 1 1														F
				00	2	610																	Ē
				33		010																	
	Firm, grey, SILI Y CLAY													******									
					-					H÷									+				
																							Ē
																			*****				Ē
				22	4	610	1																F
93.2	End of Parabola		4		ļ.	0.0		ſ.														0	F
							man dopp washood										1					+	t.
	Standpipe installed																						
					-																		F
																			+-				
																							ŀ
																							F
																							r.
																							1111
	96.9 93.2	99.91 Loose, gravel fill at surface Stiff to very stiff, grey-brown, SILTY CLAY 96.9 96.9 97.1 Firm, grey, SILTY CLAY 93.2 End of Borehole Standpipe installed	99.91 LOOSE, gravel fill at surface 99.91 LOOSE, gravel fill at surface 96.9 Stiff to very stiff, grey-brown, SILTY CLAY 96.9 Firm, grey, SILTY CLAY 93.2 End of Borehole Standpipe installed Image: Standpipe installed	Market Soll Description et bit a 99.91 Loose, gravel fill at surface a Stiff to very stiff, grey-brown, SILTY CLAY a b 96.9	SOIL DESCRIPTION understand underst	SOIL DESCRIPTION tr I	SOIL DESCRIPTION R H H R H <thr h<="" th=""></thr>	SOIL DESCRIPTION E I E	SOIL DESCRIPTION generation generat	SOIL DESCRIPTION E	SOIL DESCRIPTION g g g g g g g g g g g g g g g g g g g	SOIL DESCRIPTION diamonski bit diamonski b	SOIL DESCRIPTION E D E	SOIL DESCRIPTION End of Borehole End of Borehole <th< td=""><td>SOIL DESCRIPTION g</td><td>SOIL DESCRIPTION E</td><td>SOIL DESCRIPTION g</td><td>SOIL DESCRIPTION E</td><td>SOIL DESCRIPTION E</td><td>SOIL DESCRIPTION diamondary and a strategy and a s</td><td>SOIL DESCRIPTION E</td><td>SOIL DESCRIPTION <thdescription< <="" td=""><td>SOIL DESCRIPTION E B</td></thdescription<></td></th<>	SOIL DESCRIPTION g	SOIL DESCRIPTION E	SOIL DESCRIPTION g	SOIL DESCRIPTION E	SOIL DESCRIPTION E	SOIL DESCRIPTION diamondary and a strategy and a s	SOIL DESCRIPTION E	SOIL DESCRIPTION description <thdescription< <="" td=""><td>SOIL DESCRIPTION E B</td></thdescription<>	SOIL DESCRIPTION E B

SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their "sensitivity". The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NXL size core. However, it can be used on smaller core sizes, such as BX, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in situ fractures.

RQD % ROCK QUALITY

90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard
		Penetration Test (SPT))

- TW Thin wall tube or Shelby tube
- PS Piston sample
- AU Auger sample or bulk sample
- WS Wash sample
- RC Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC% LL PL PI	- - -	Natural moisture content or water content of sample, % Liquid Limit, % (water content above which soil behaves as a liquid) Plastic limit, % (water content above which soil behaves plastically) Plasticity index, % (difference between LL and PL)		
Dxx	-	Grain size which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size		
D10	-	Grain size at which 10% of the soil is finer (effective grain size)		
D60	-	Grain size at which 60% of the soil is finer		
Сс	-	Concavity coefficient = $(D30)^2 / (D10 \times D60)$		
Cu	-	Uniformity coefficient = D60 / D10		
Cc and Cu are used to assess the grading of sands and gravels:				

Well-graded gravels have: 1 < Cc < 3 and Cu > 4Well-graded sands have: 1 < Cc < 3 and Cu > 4Well-graded sands have: 1 < Cc < 3 and Cu > 6Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded. Cc and Cu are not applicable for the description of soils with more than 10% silt and clay (more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

p'o	-	Present effective overburden pressure at sample depth
p'c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

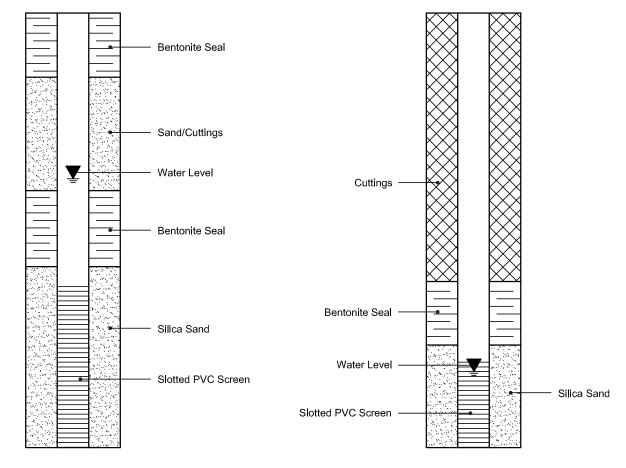
k - Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

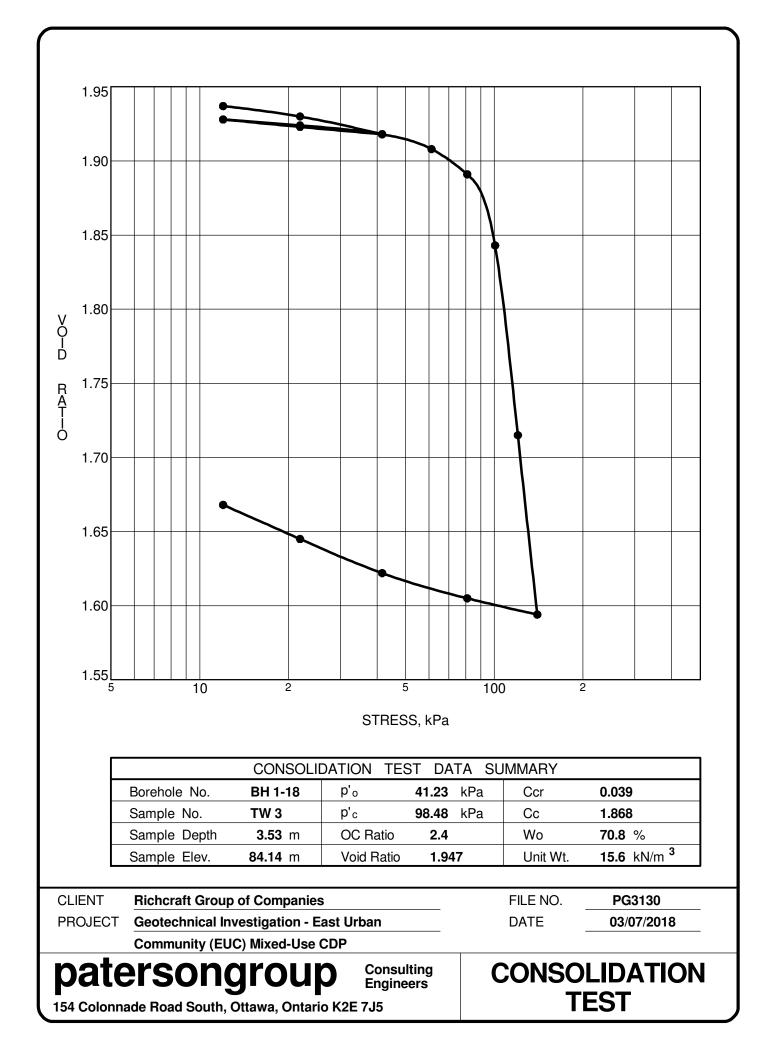
SYMBOLS AND TERMS (continued) STRATA PLOT Topsoil Asphalt Peat Sand Silty Sand Fill ∇ Sandy Silt Clay Silty Clay Clayey Silty Sand Glacial Till Shale Bedrock

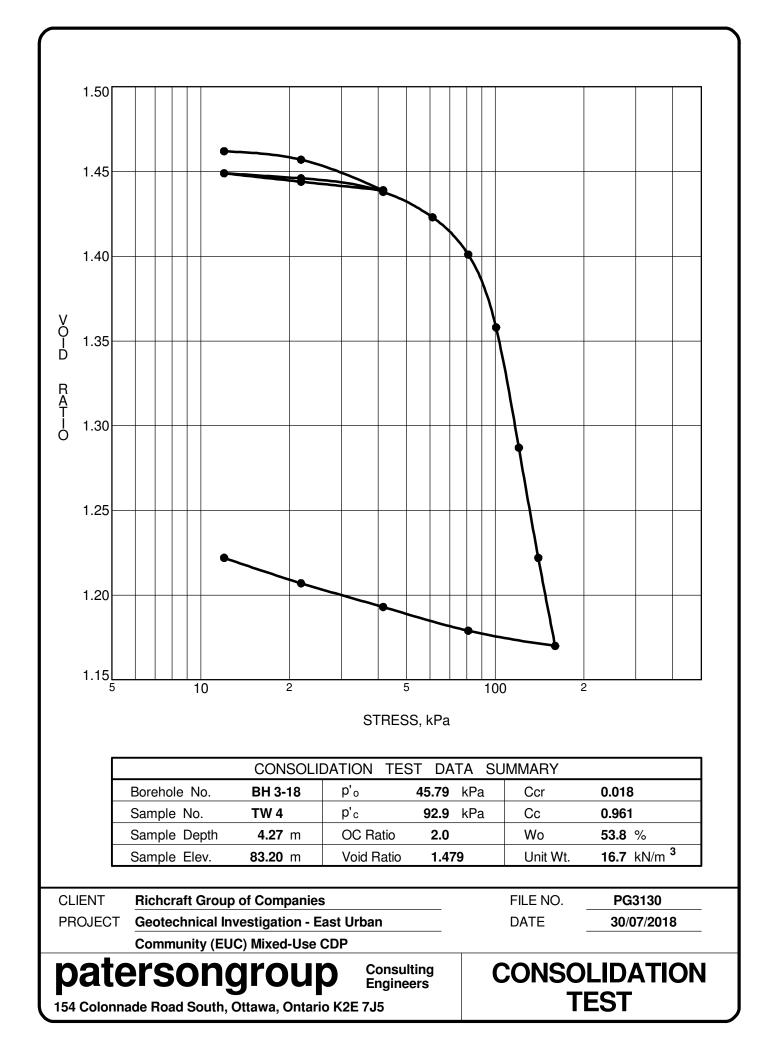
MONITORING WELL AND PIEZOMETER CONSTRUCTION

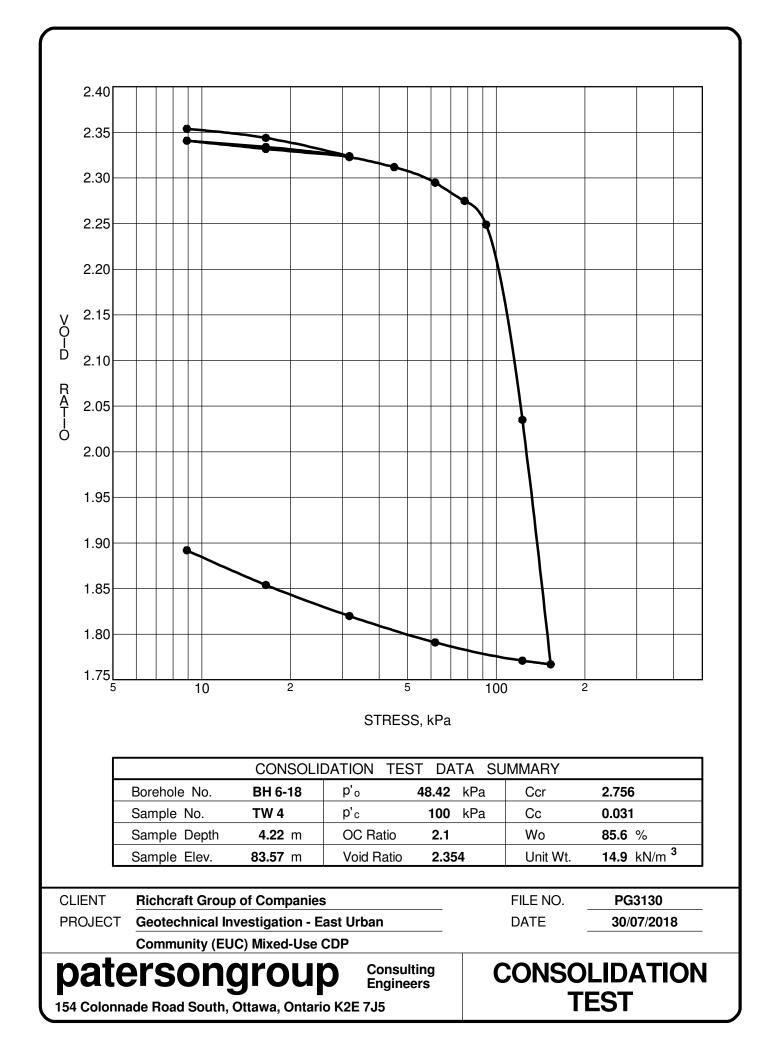


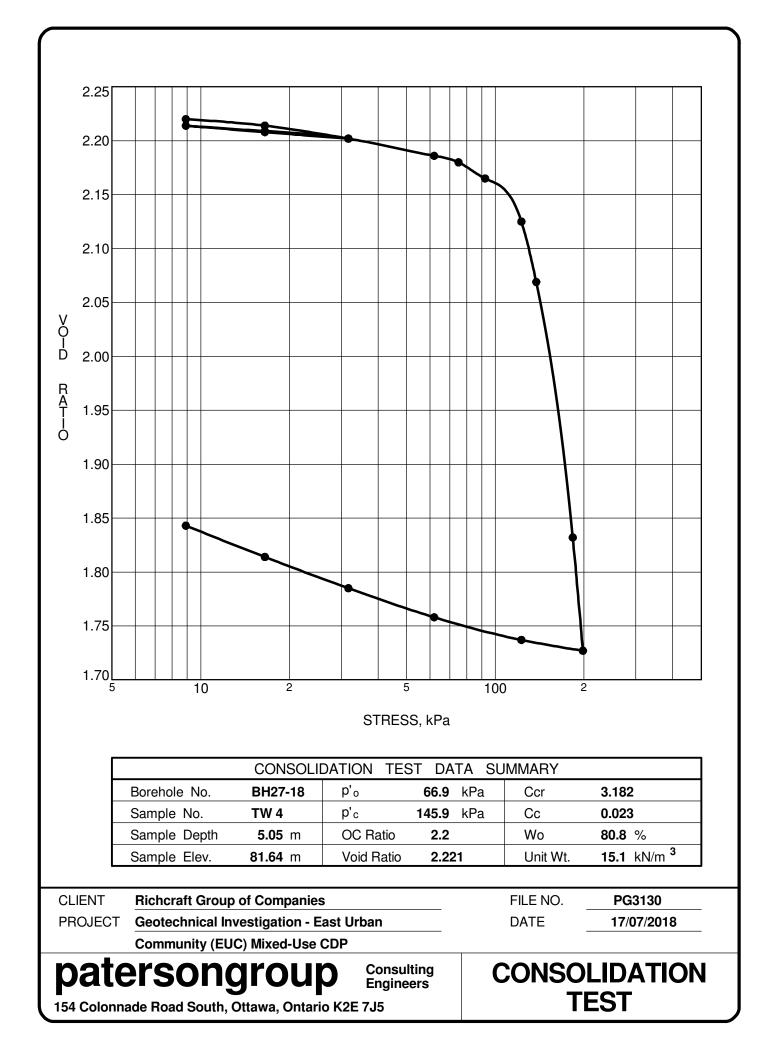
PIEZOMETER CONSTRUCTION

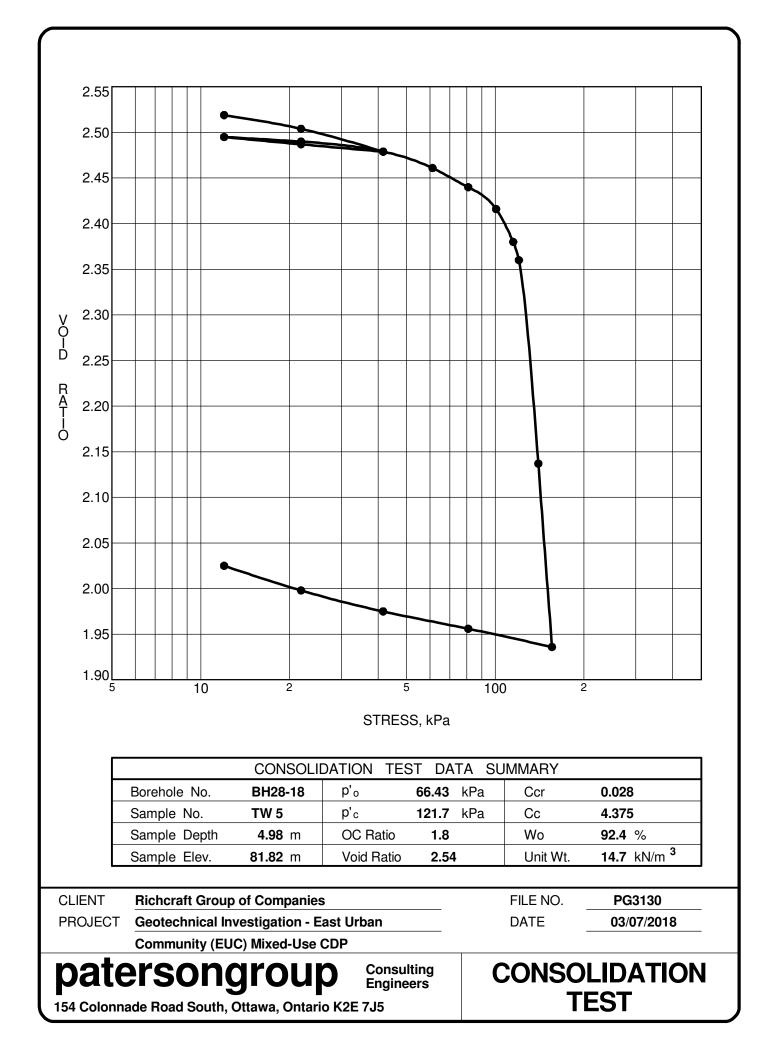


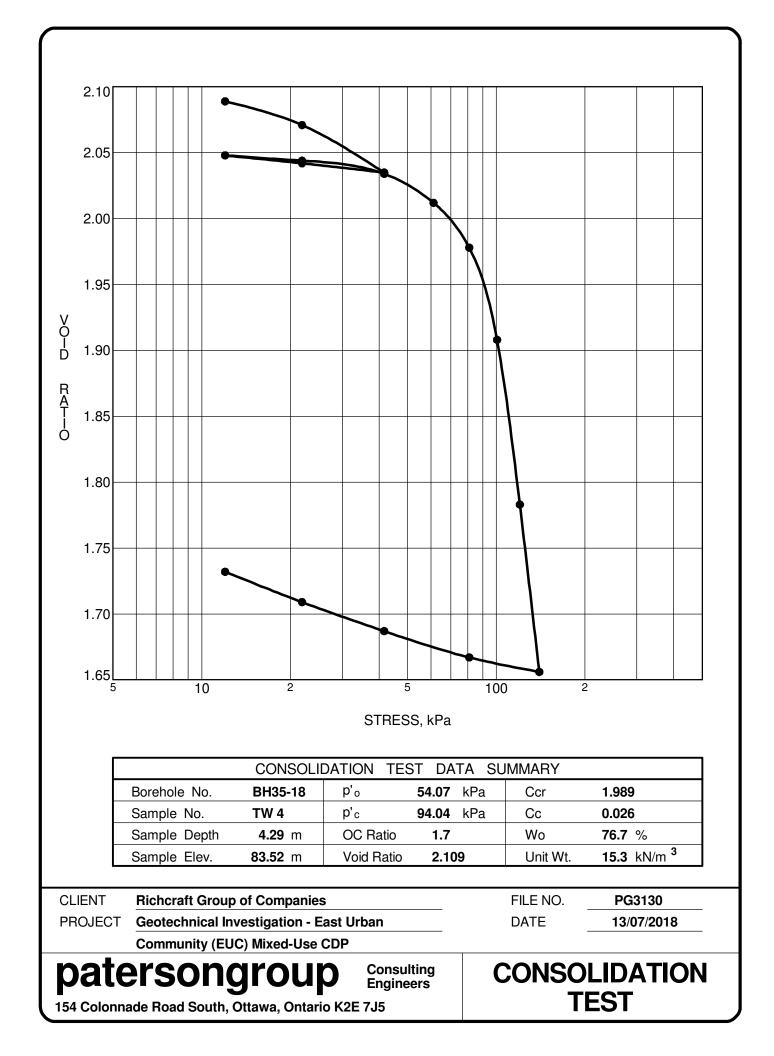


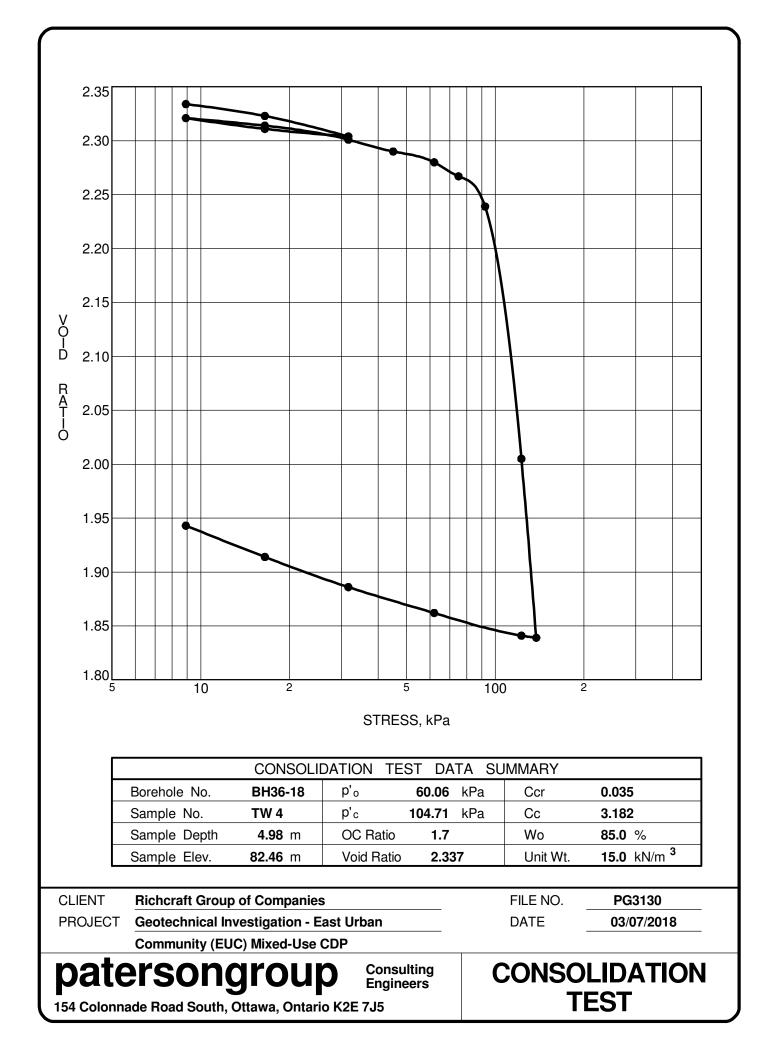


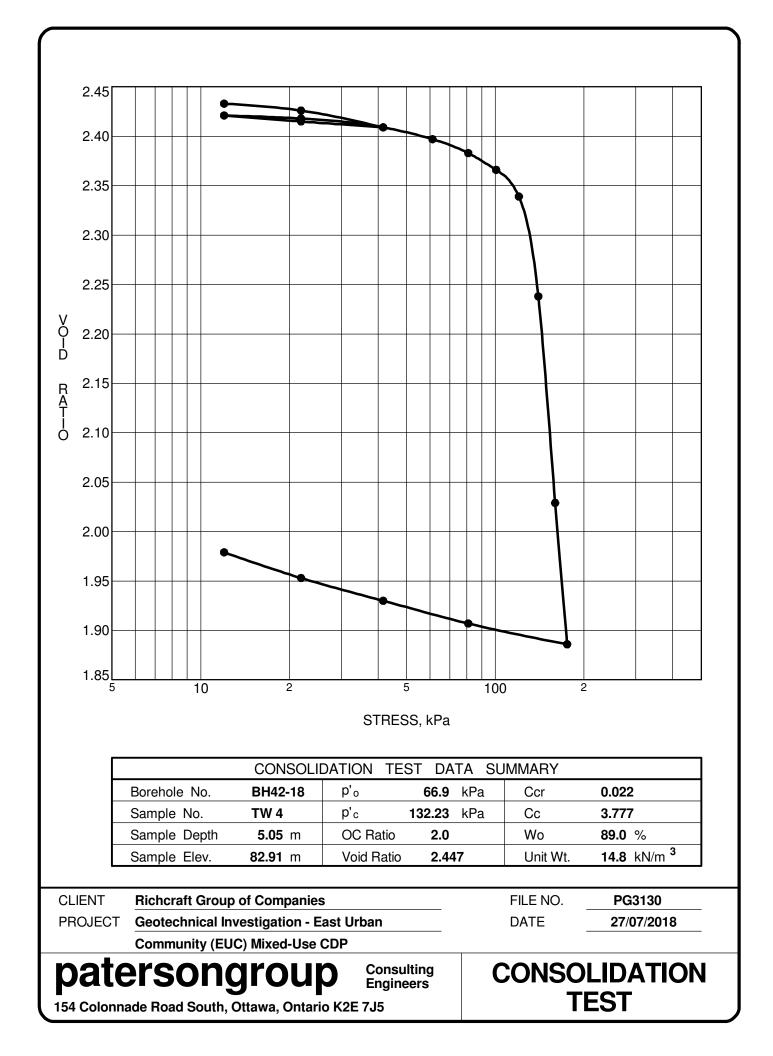


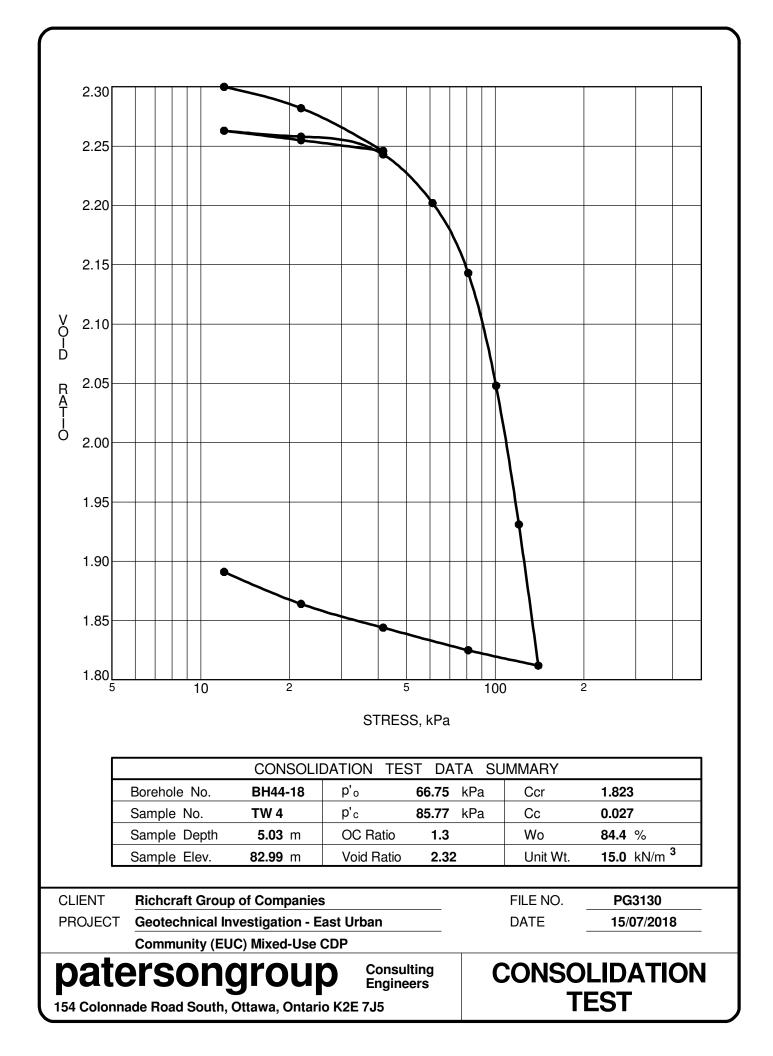


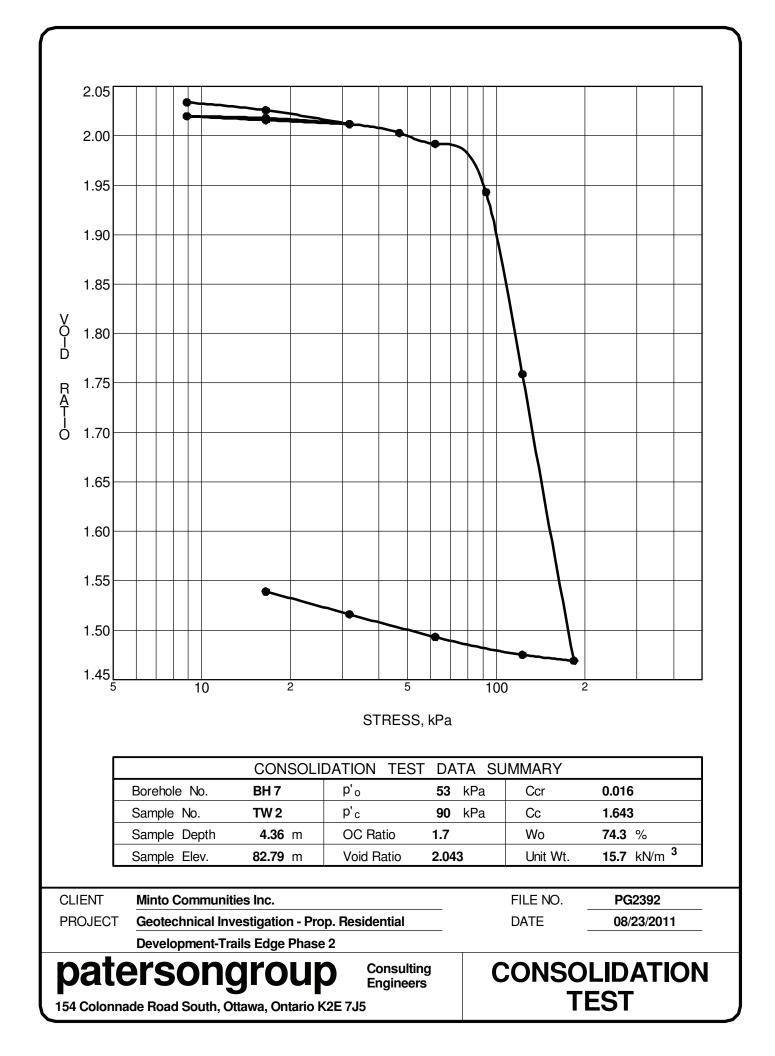


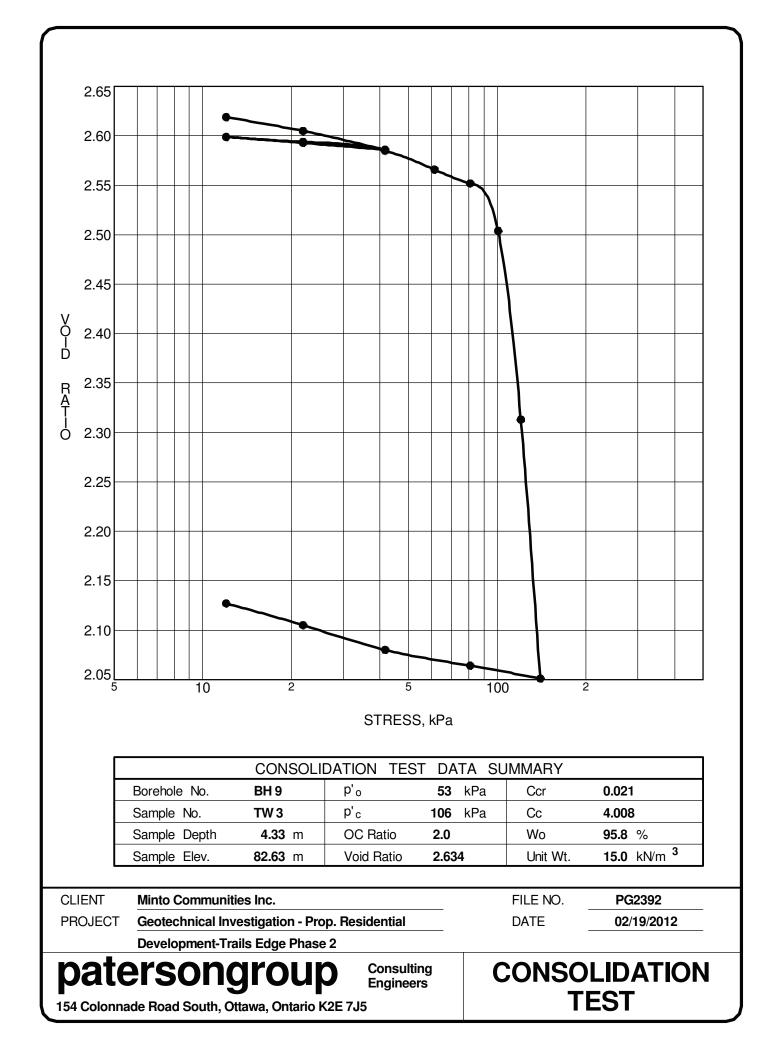


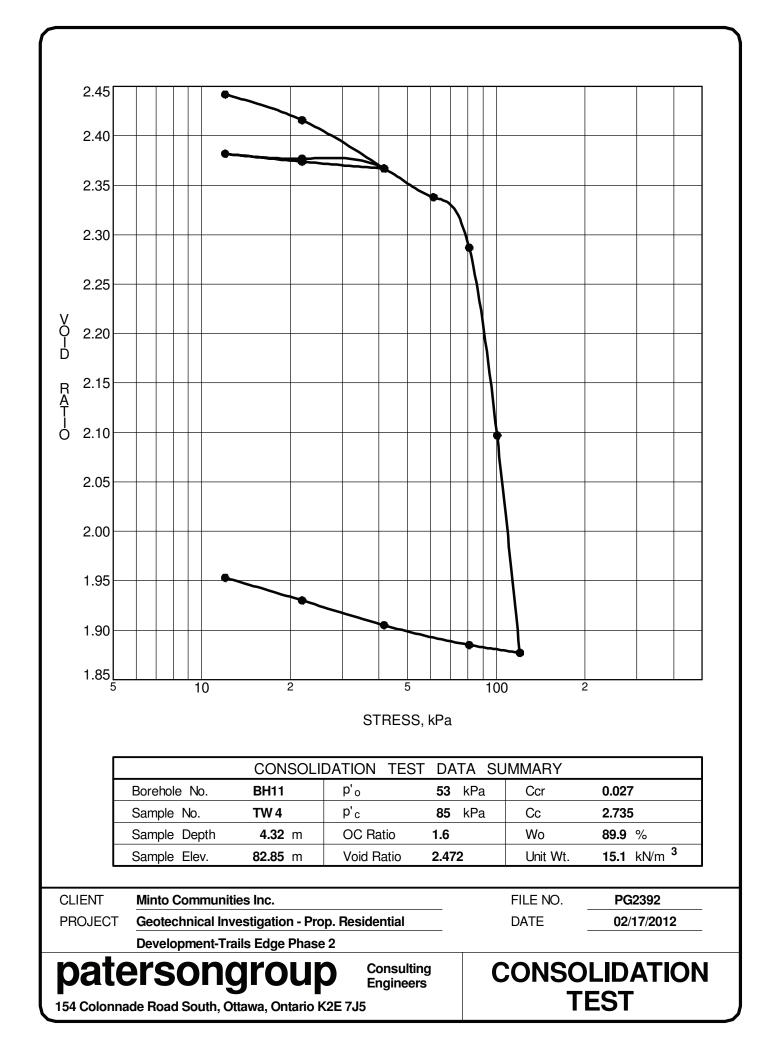


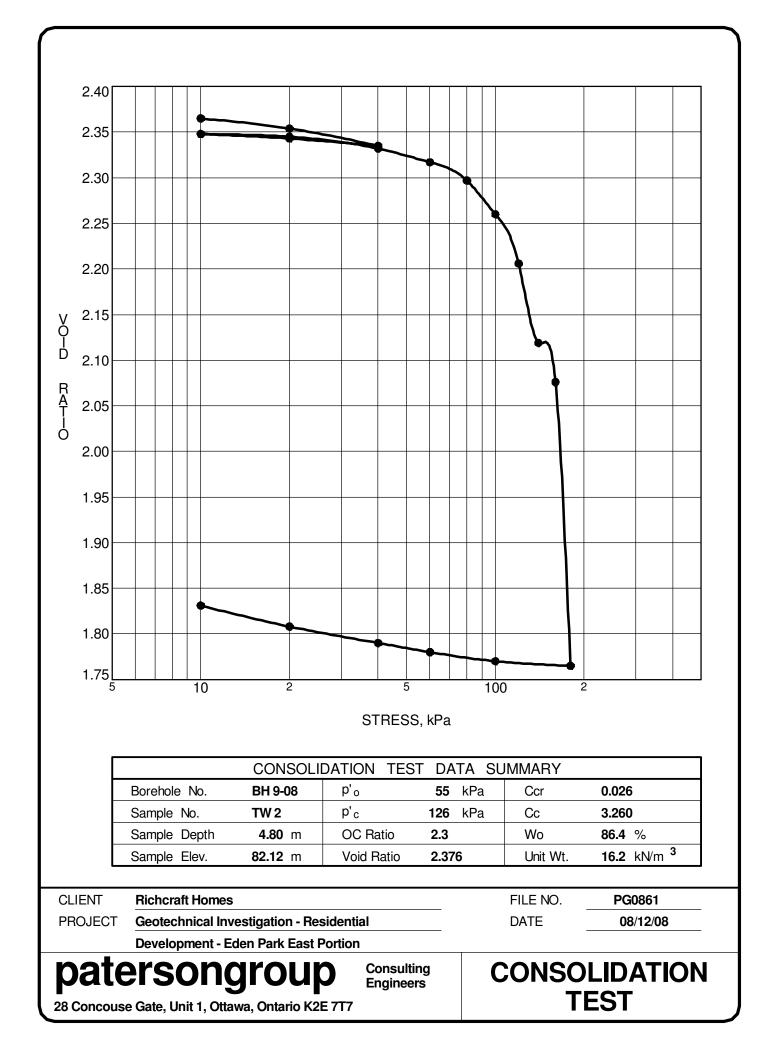


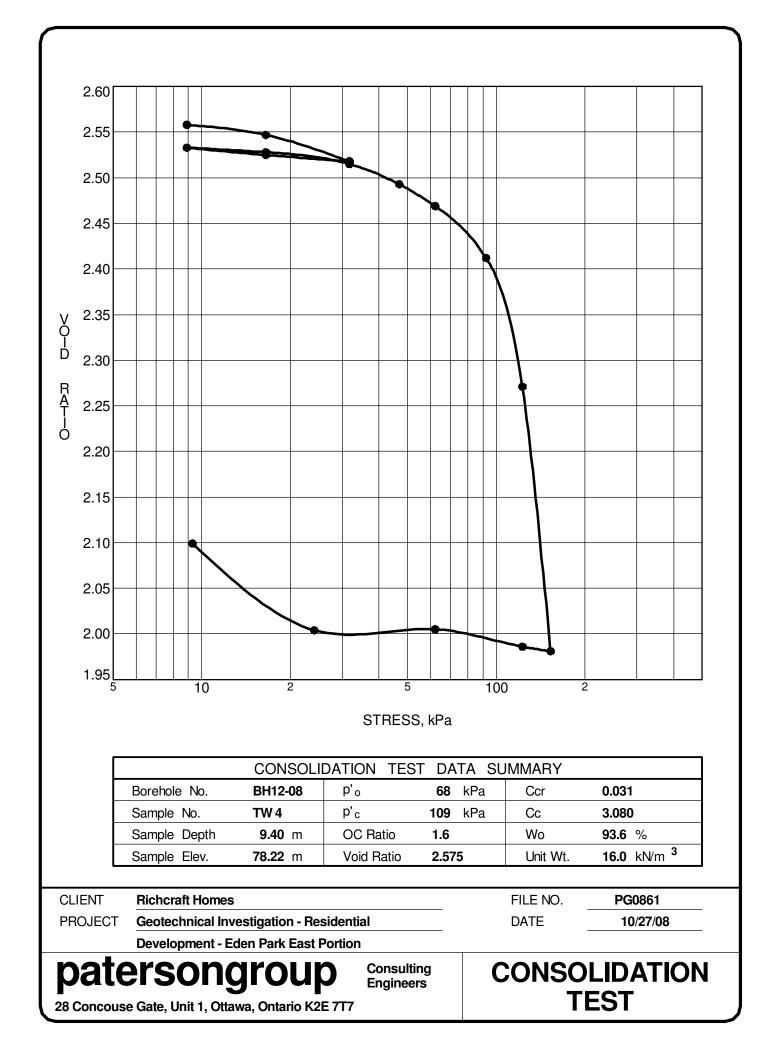


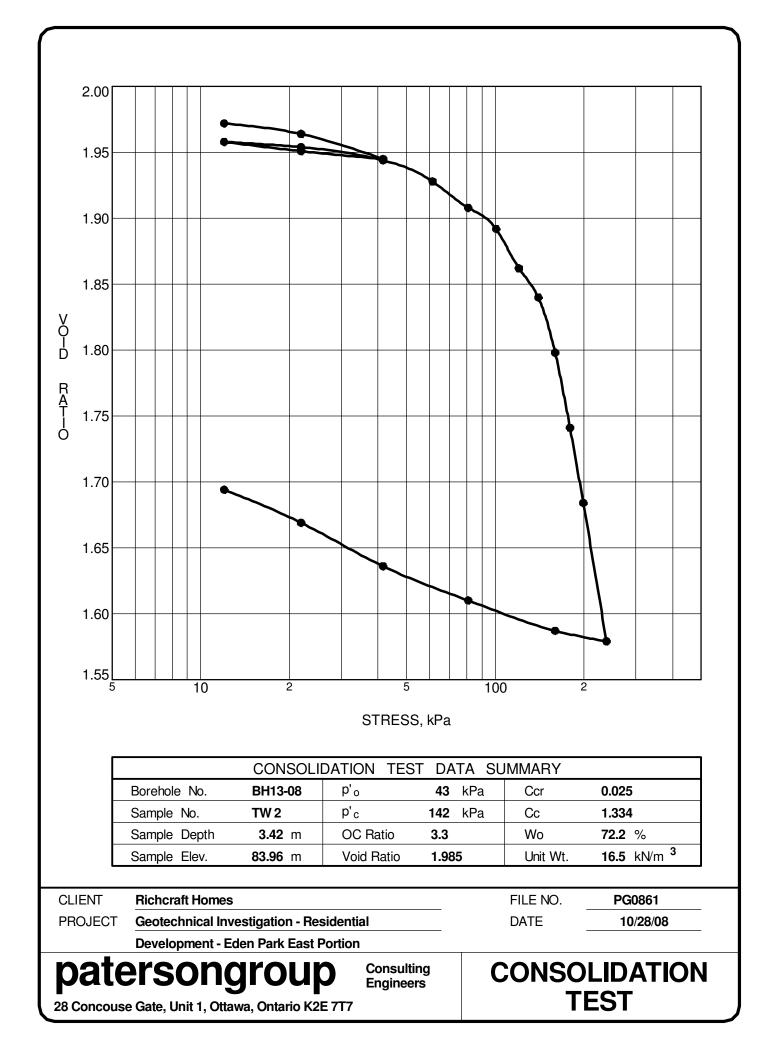


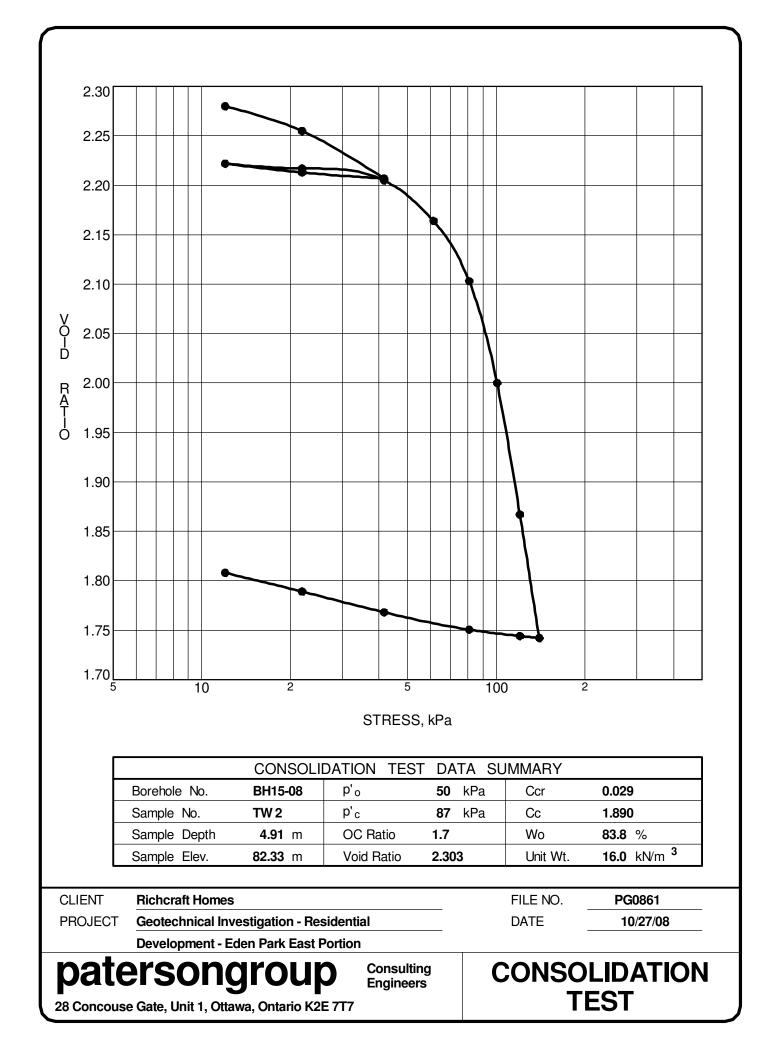


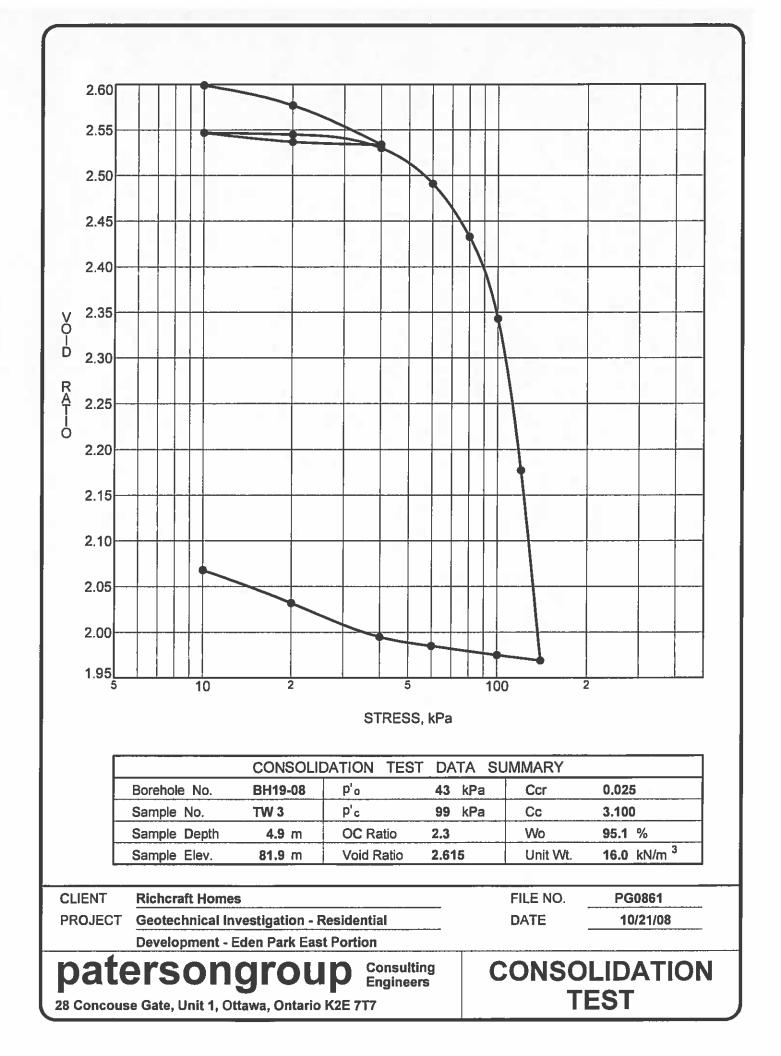


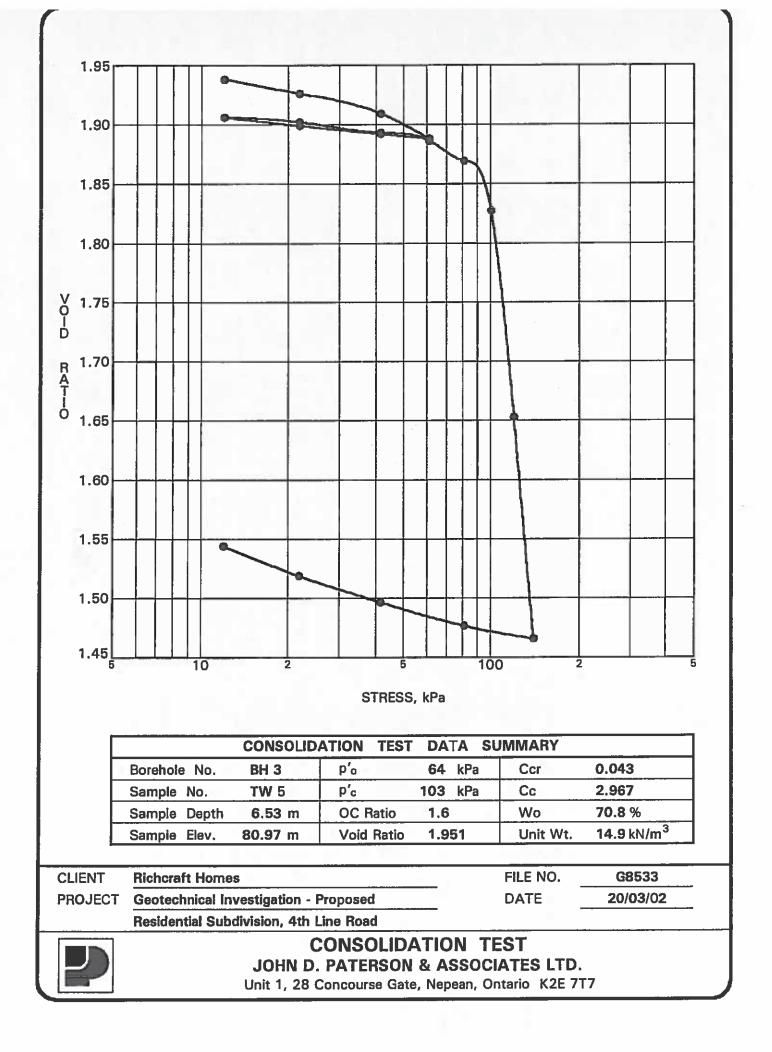


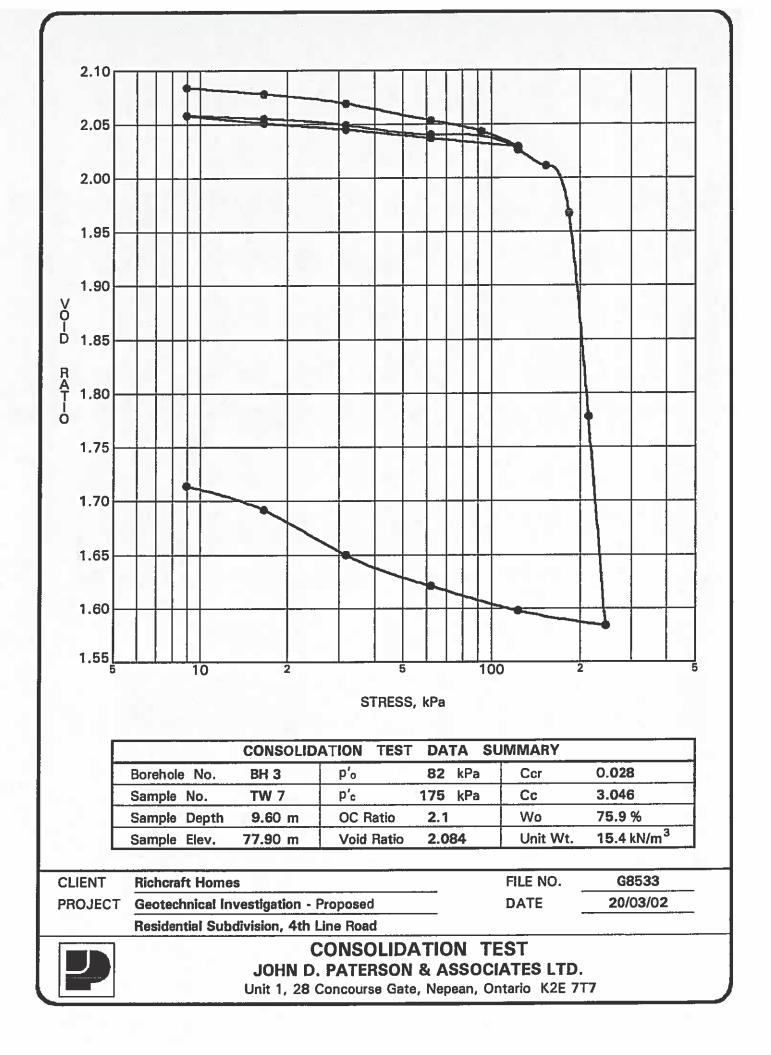


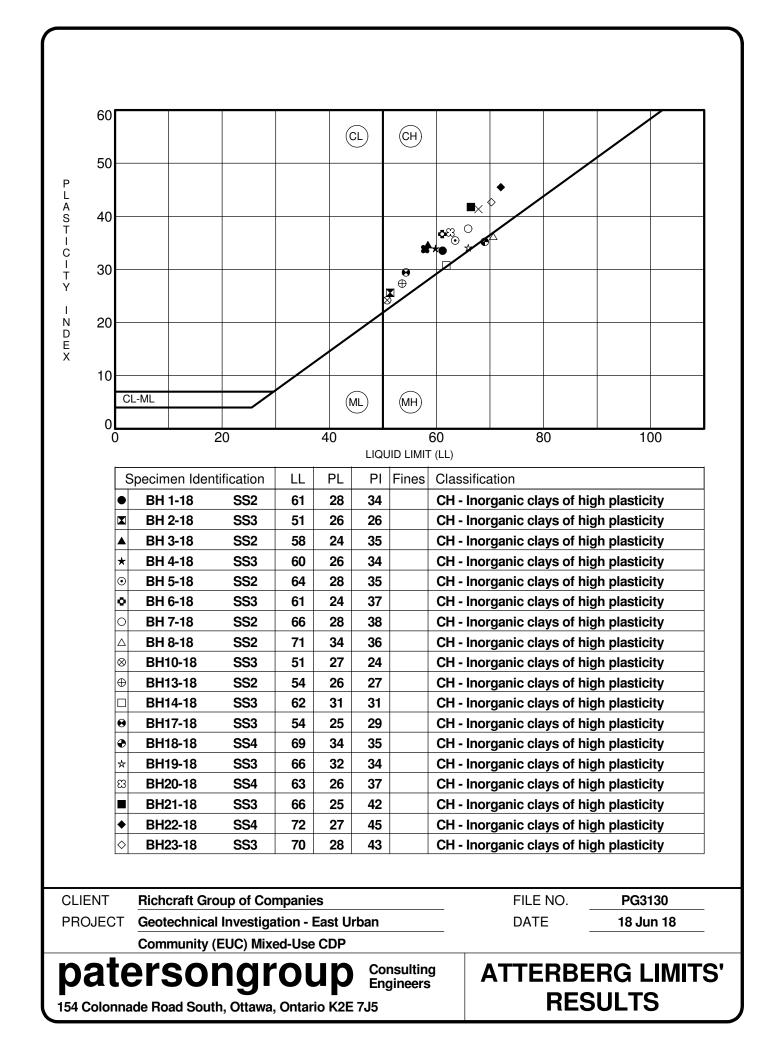


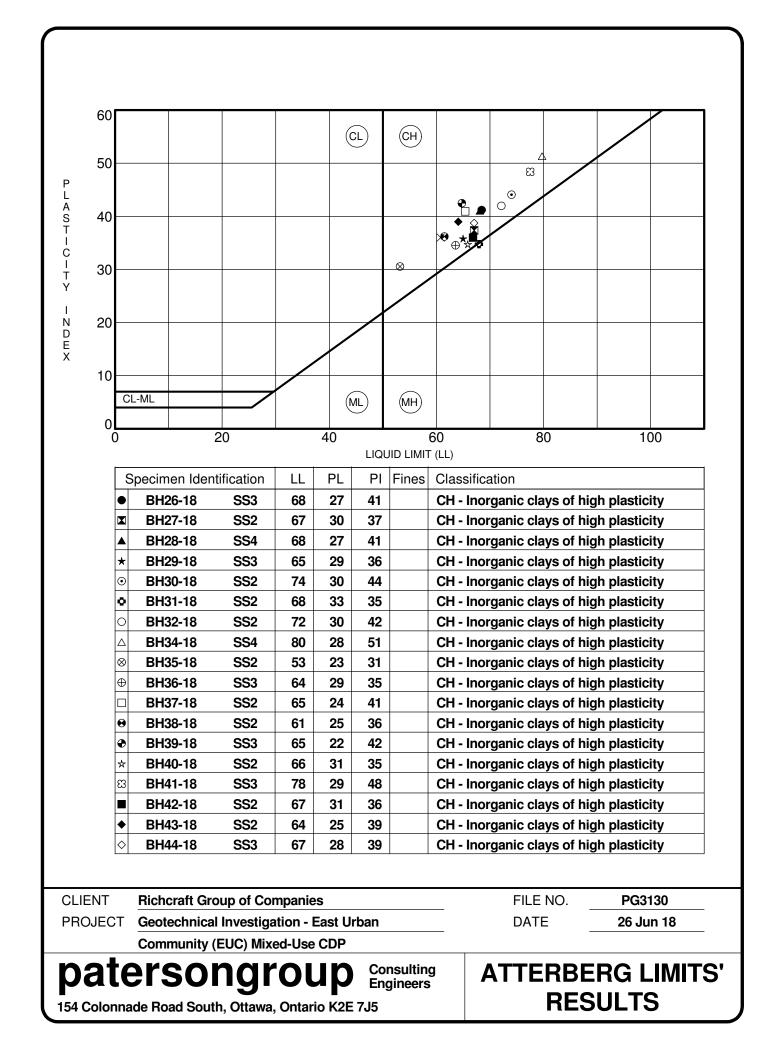




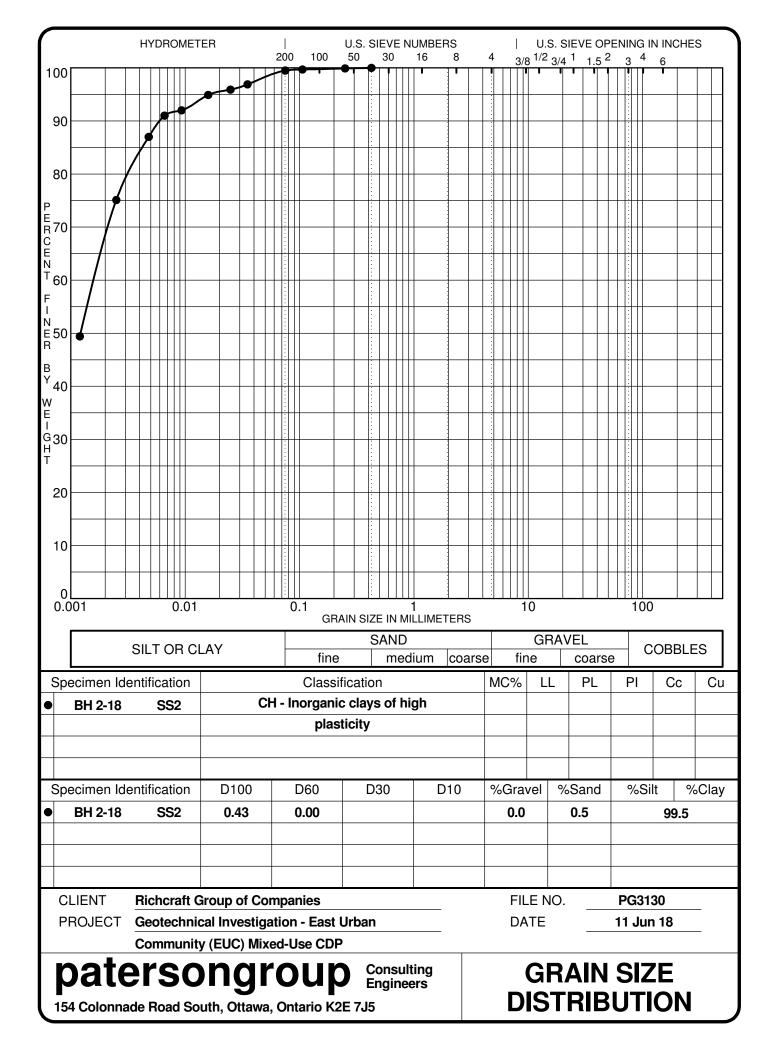


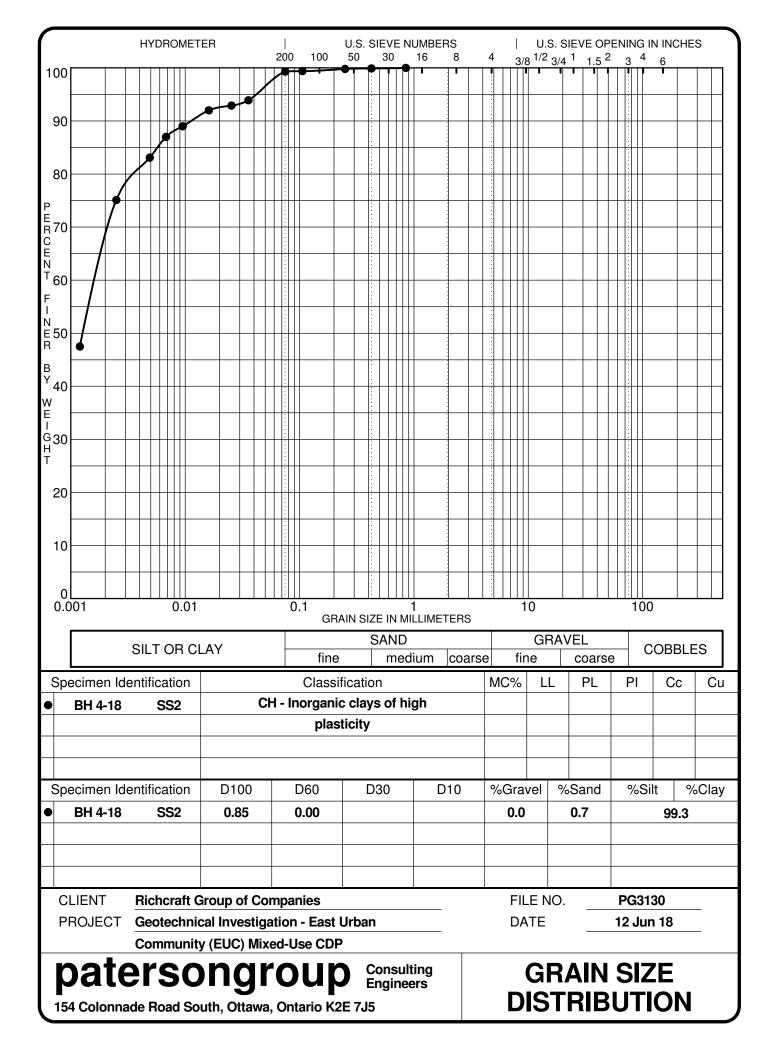


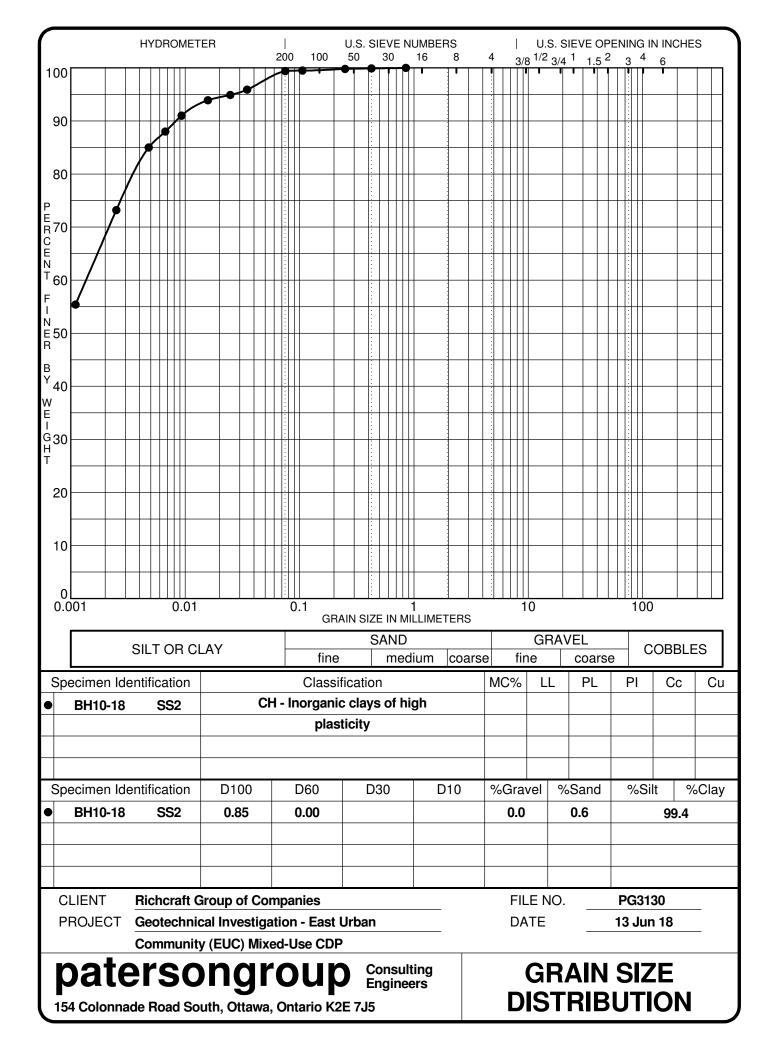


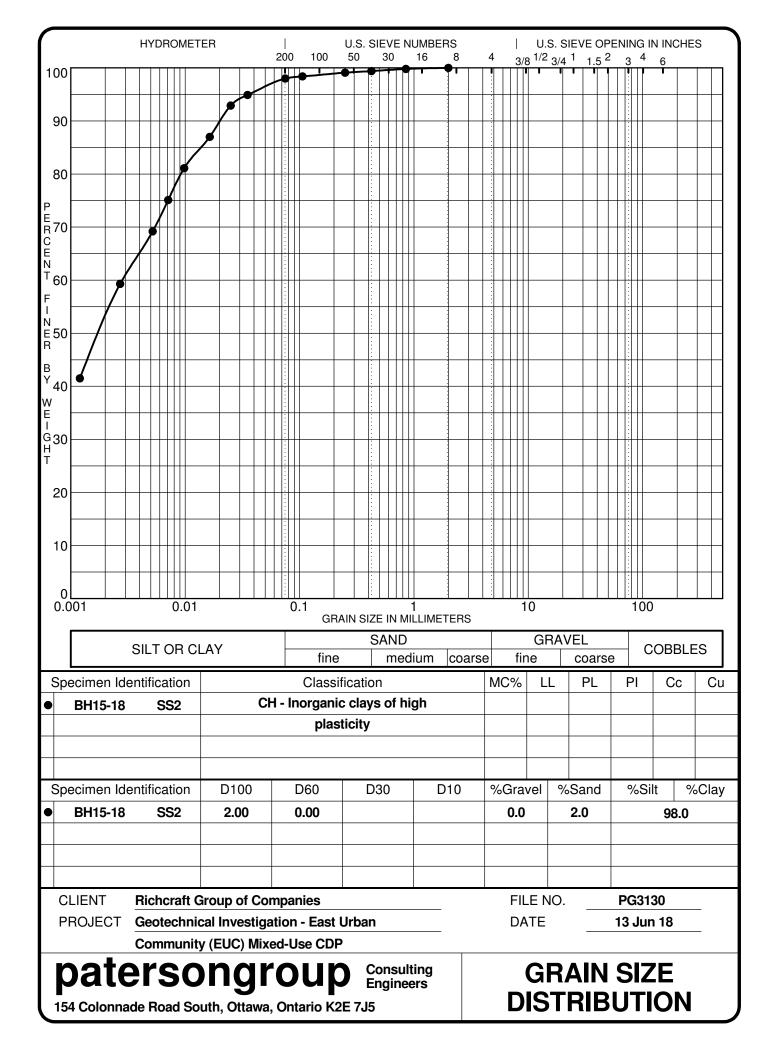


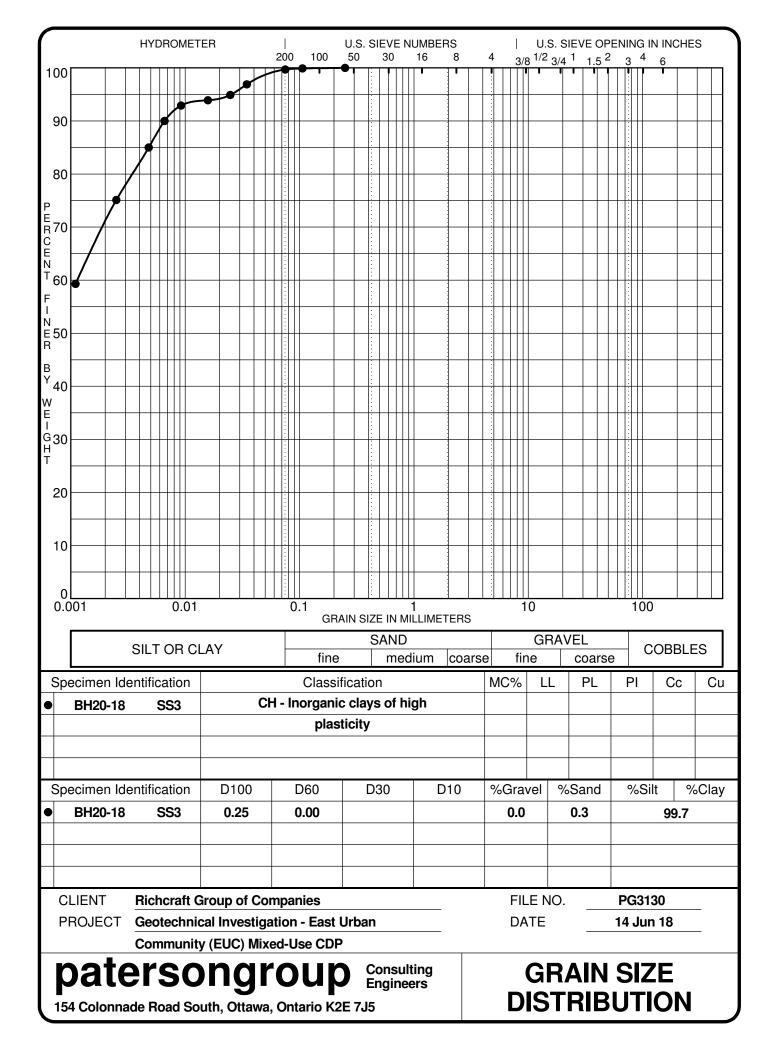
	60										
						CL	CH				
	50										
P											
P L A S T I C I T	40										
T	-10										
ċ											
Τ Υ	30						/				
I N	20					$ \land$					
N D E X											
~	10										
	10		L-ML								
	0				(ML)	(MH)				
	0	0	20	1	40	I	(50	80	100	
						LIQ		(LL)			
			Specimen Identification	LL	PL	PI	Fines	Classi	fication		
			BH 1-08	70	26	44		CH - Clay with high plasticity (TW 5)			
			BH 3-08	69	26	44		CH - Clay with high plasticity (TW 3)			
			BH 5-08	69	28	41		CH - Clay with high plasticity (TW 5)			
		* ⊙	BH 6-08 BH 9-08	72 70	27 30	44 41			Clay with high plastici		
			BH10-08	70	30 29	41			Clay with high plastici Clay with high plastici		
			BH15-08	66	28	38			organic Clays of High		
			BH17-08	77	29	48			organic Clays of High		
		$\left \right $									
		\parallel									
		$ \uparrow $									
		·									
0			Disk seaft 11 see							DOGGA	
		Ŧ	Richcraft Homes	tion T)oold	atic			FILE NO.	PG0861	
r K(OJEC.	1	Geotechnical Investigat						DATE _	15 Oct 08	
	_ 1										
P	al	E	ersongro	JU	p		nsulting gineers		ATTERBE	RG LIMITS	
							-			ULTS	

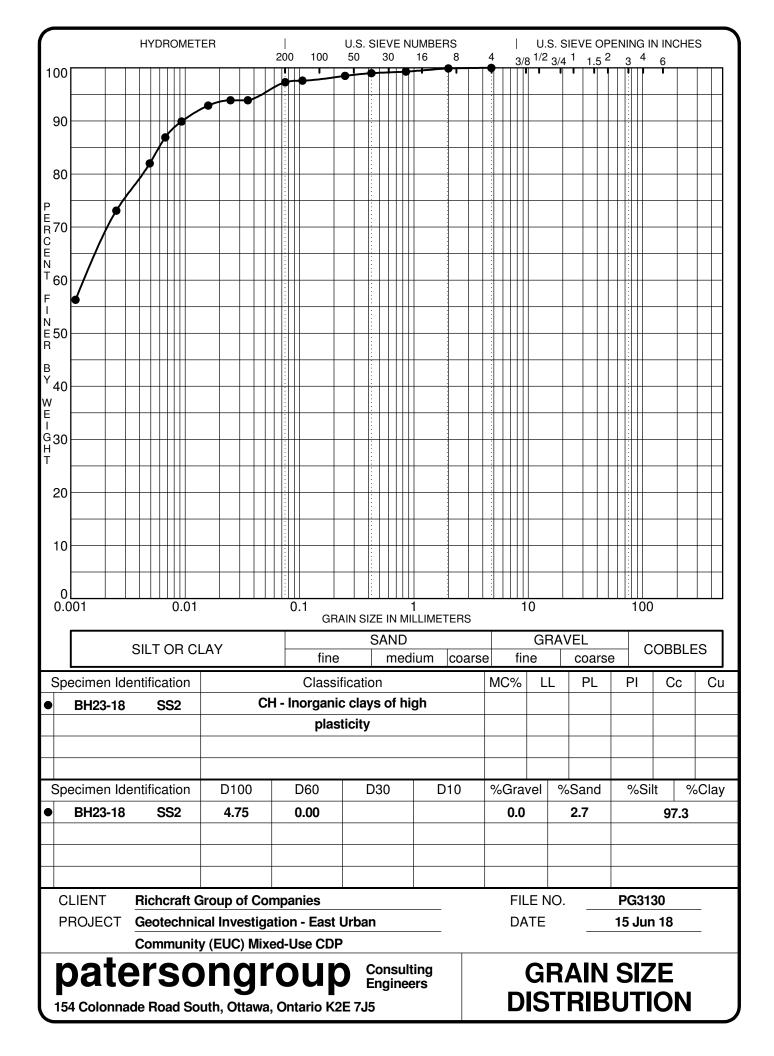


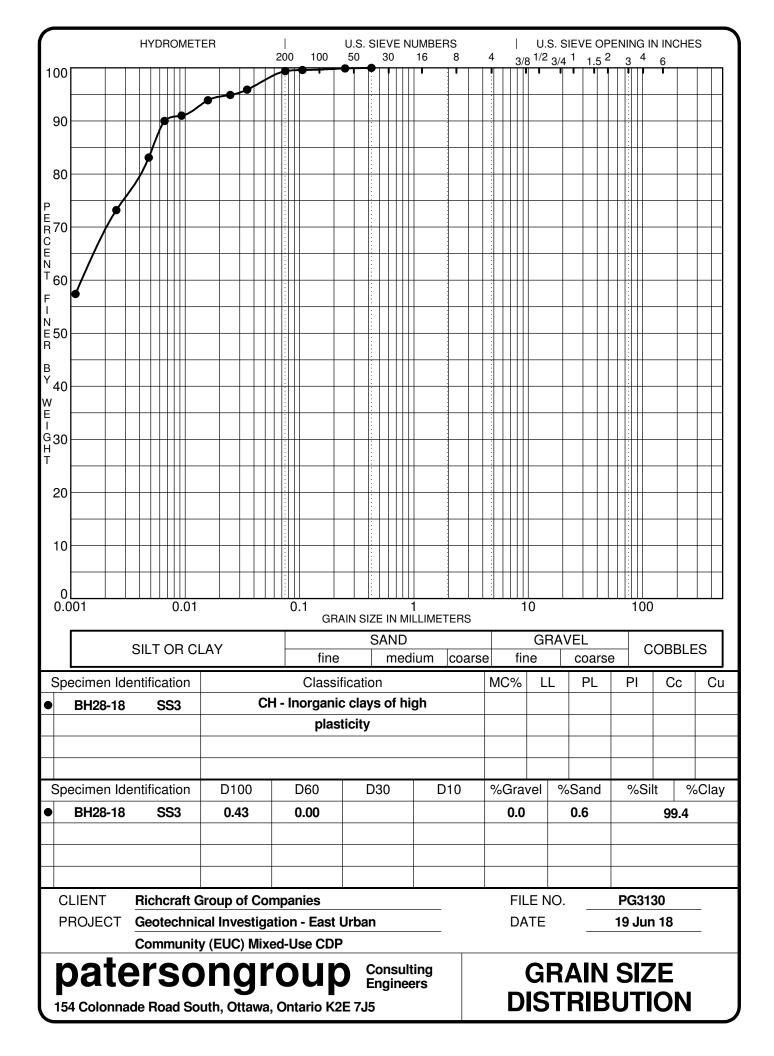


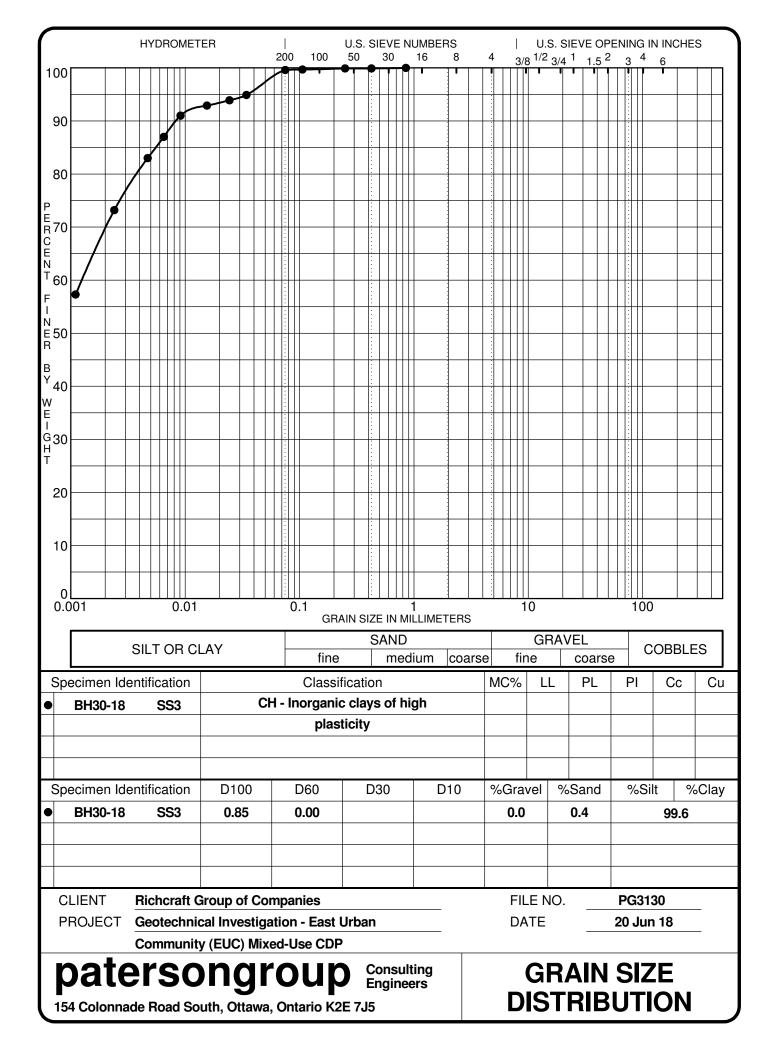


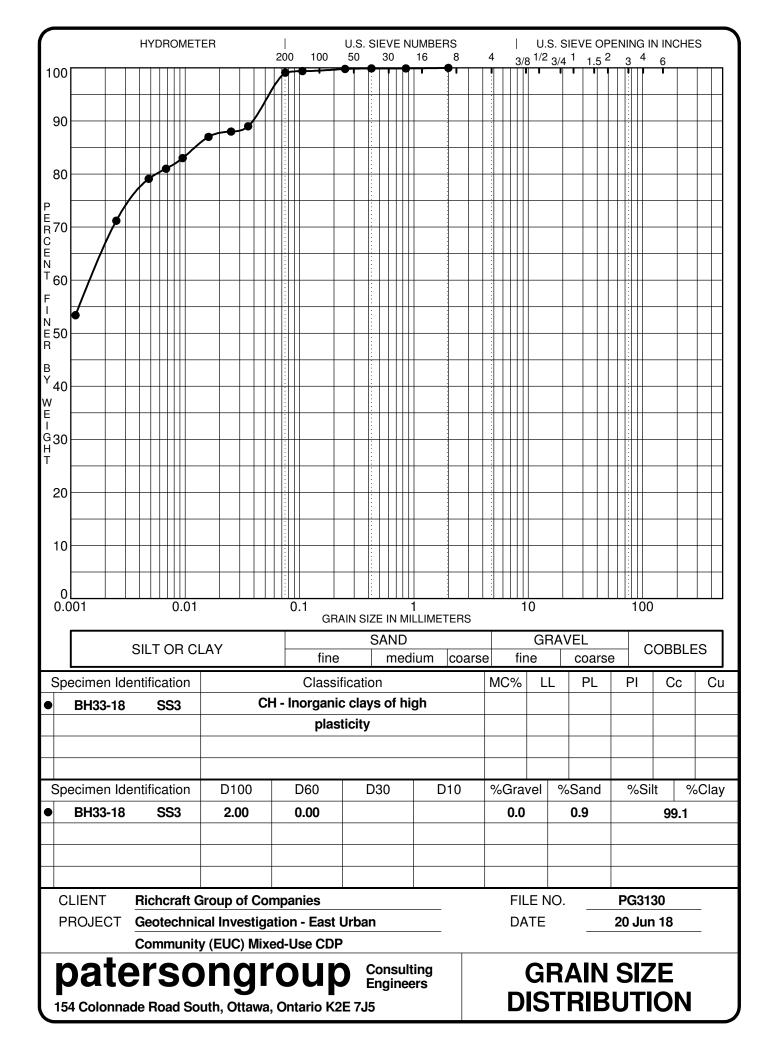


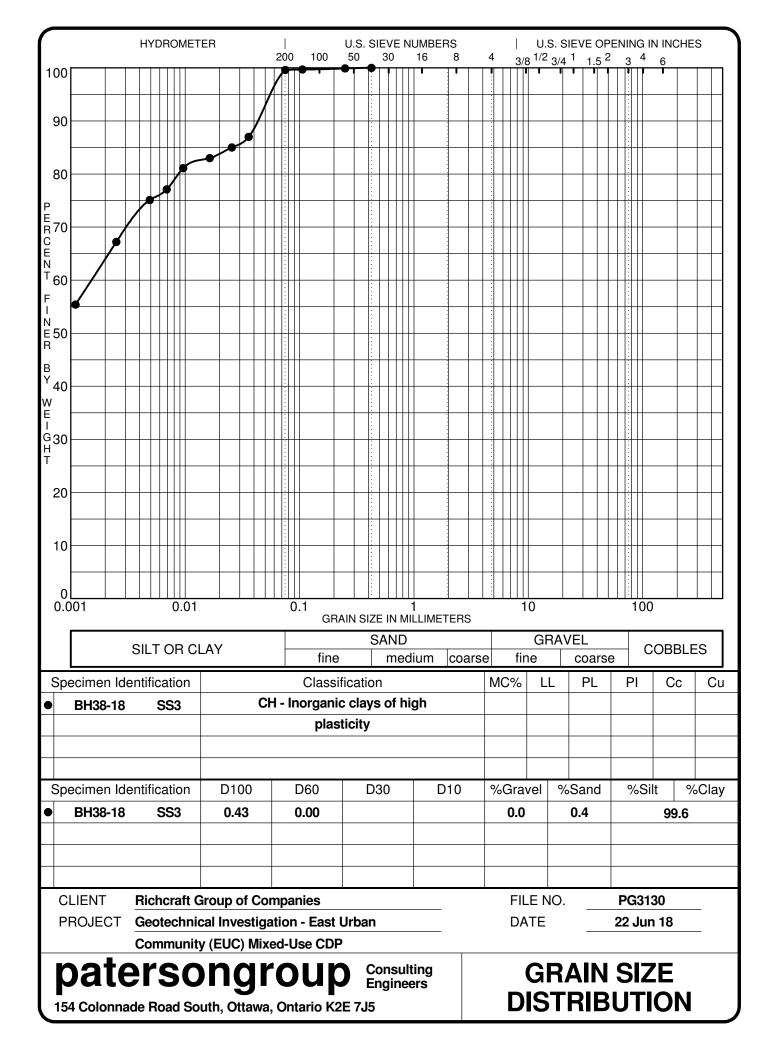


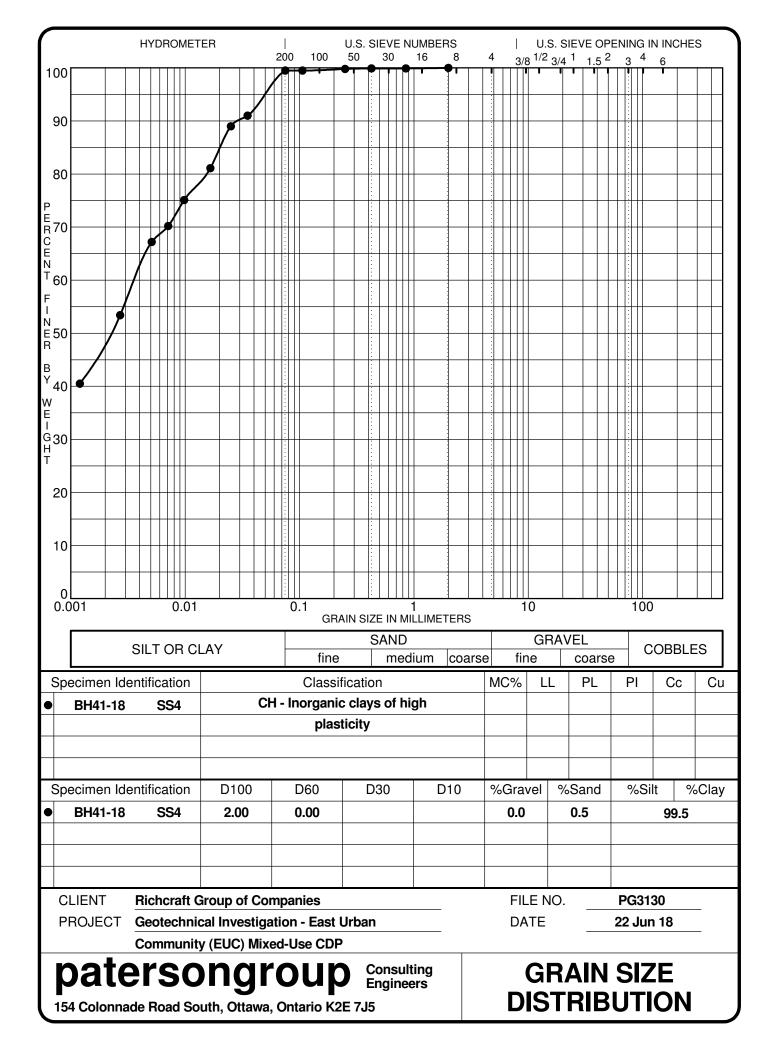


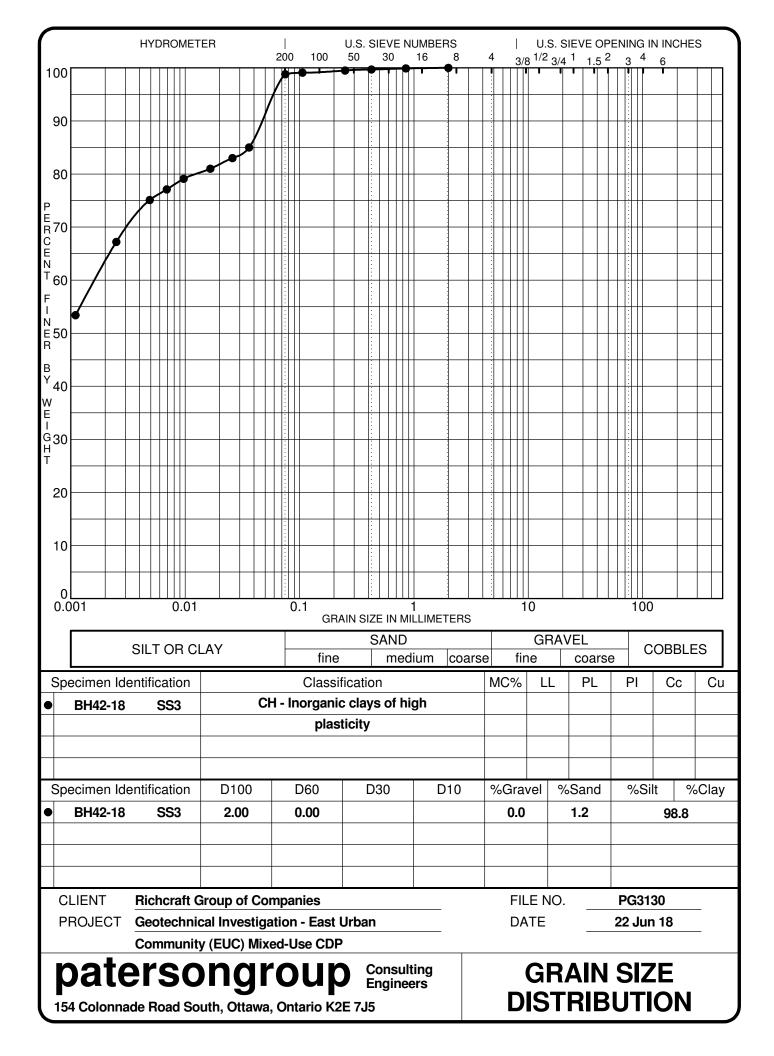














Certificate of Analysis

Report Date: 22-Sep-2014 Order Date:16-Sep-2014

Client: Paterson Group Consulting Engineers Client PO: 16408

Client PO: 16408	3 3	Project Descripti	on: PG3130		
	Client ID:	BH7-SS3	-	-	-
	Sample Date:	15-Sep-14	-	-	-
	Sample ID:	1438144-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	64.4	-	-	-
General Inorganics					
рН	0.05 pH Units	7.29	-	-	-
Resistivity	0.10 Ohm.m	52.2	-	-	-
Anions					
Chloride	5 ug/g dry	<5	-	-	-
Sulphate	5 ug/g dry	14	-	-	-

P: 1-800-749-1947 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

OTTAWA-EAST 300-2319 St. Laurent Blvd. Ottawa, ON K1G 4J8

OTTAWA-WEST

104-195 Stafford Rd. W. Nepean, ON K2H 9C1

MISSISSAUGA 6645 Kitimat Rd. Unit #27 Mississauga, ON L5N 6J3

SARNIA 218-704 Mara St. Point Edward, ON N7V 1X4 NIAGARA 360 York Rd. Unit 16B Niagara-on-the-Lake, ON LOS 1J0

KINGSTON 1058 Gardiners Rd. Kingston, ON K7P 1R7

Page 3 of 7



Certificate of Analysis **Client: Paterson Group Consulting Engineers** Client PO: 24172

Order #: 1825617

Report Date: 26-Jun-2018

Order Date: 21-Jun-2018

Project Description: PG3130

				_		
	Client ID:		-	-	-	
	Sample Date:	06/20/2018 00:00	-	-	-	
	Sample ID:	1825617-01	-	-	-	
	MDL/Units	Soil	-	-	-	
Physical Characteristics						
% Solids	0.1 % by Wt.	75.0	-	-	-	
General Inorganics	-					
рН	0.05 pH Units	7.20	-	-	-	
Resistivity	0.10 Ohm.m	80.1	-	-	-	
Anions						
Chloride	5 ug/g dry	42	-	-	-	
Sulphate	5 ug/g dry	34	-	-	-	



Certificate of Analysis **Client: Paterson Group Consulting Engineers** Client PO: 24178

Order #: 1826207

Report Date: 29-Jun-2018

Order Date: 26-Jun-2018

Project Description: PG3130

	Client ID:		-	-	-	
	Sample Date:	06/22/2018 09:00	-	-	-	
	Sample ID:	1826207-01	-	-	-	
	MDL/Units	Soil	-	-	-	
Physical Characteristics						
% Solids	0.1 % by Wt.	68.3	-	-	-	
General Inorganics						
pН	0.05 pH Units	7.86	-	-	-	
Resistivity	0.10 Ohm.m	62.6	-	-	-	
Anions						
Chloride	5 ug/g dry	8	-	-	-	
Sulphate	5 ug/g dry	19	-	-	-	



APPENDIX 2

FIGURE 1 – KEY PLAN DRAWING PG3130-6 – TEST HOLE LOCATION PLAN DRAWING PG3130-7 – PERMISSIBLE GRADE RAISE PLAN DRAWING PG3130-8 – BEDROCK CONTOUR PLAN

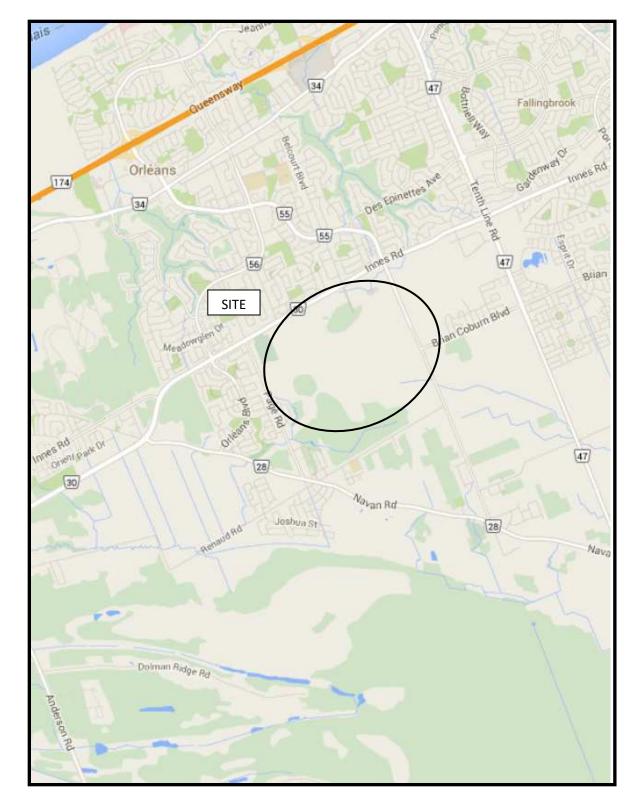
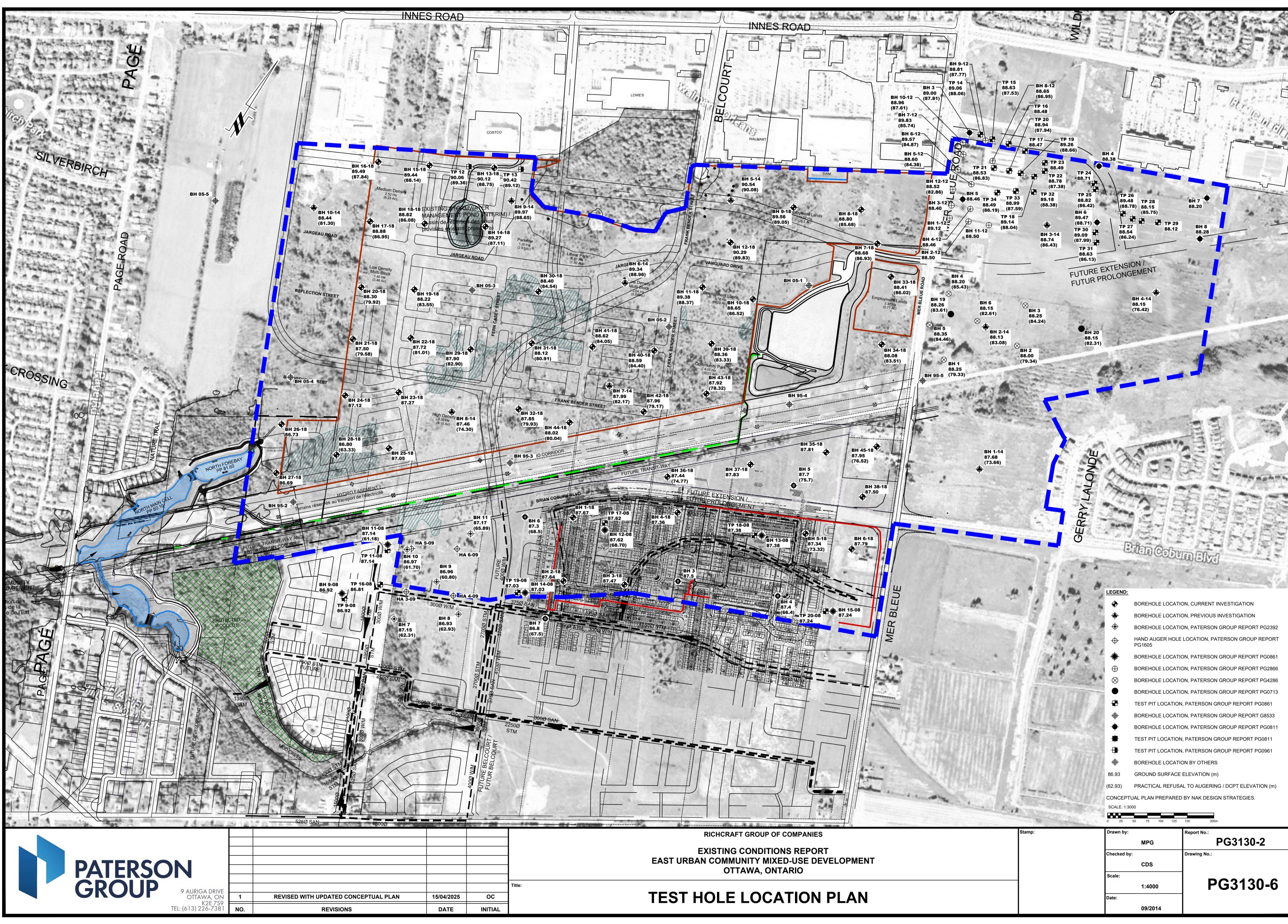


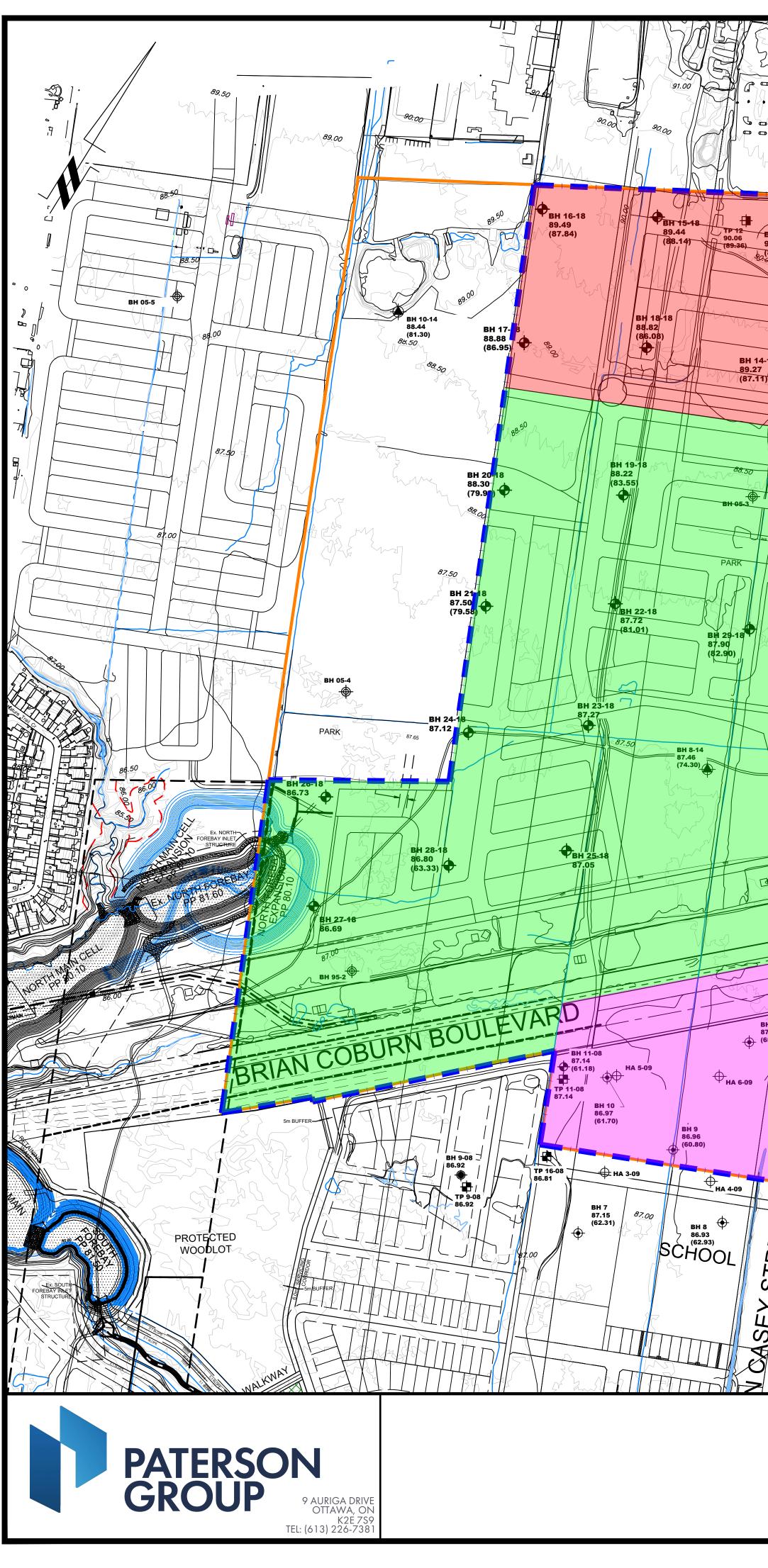
FIGURE 1





18		SCALE: 1:3000					
	and the second s	0 25 50	75	100	125	150	200m
	Stamp:	Drawn by:				Report N	
			MPG				PG3130-2
		Checked by:				Drawing	No.:
			CDS				
		Scale:				1	
			1:400	00			PG3130-6
		Date:					
			09/20)14			

200	MERCENNA"
*	LEGEN
r. Ra	\bullet
-	-
1	¢
	Φ
1	۲
	\oplus
*	\otimes
-	lacksquare
	₽
	\oplus
	•
	÷
	\oplus
	86.93

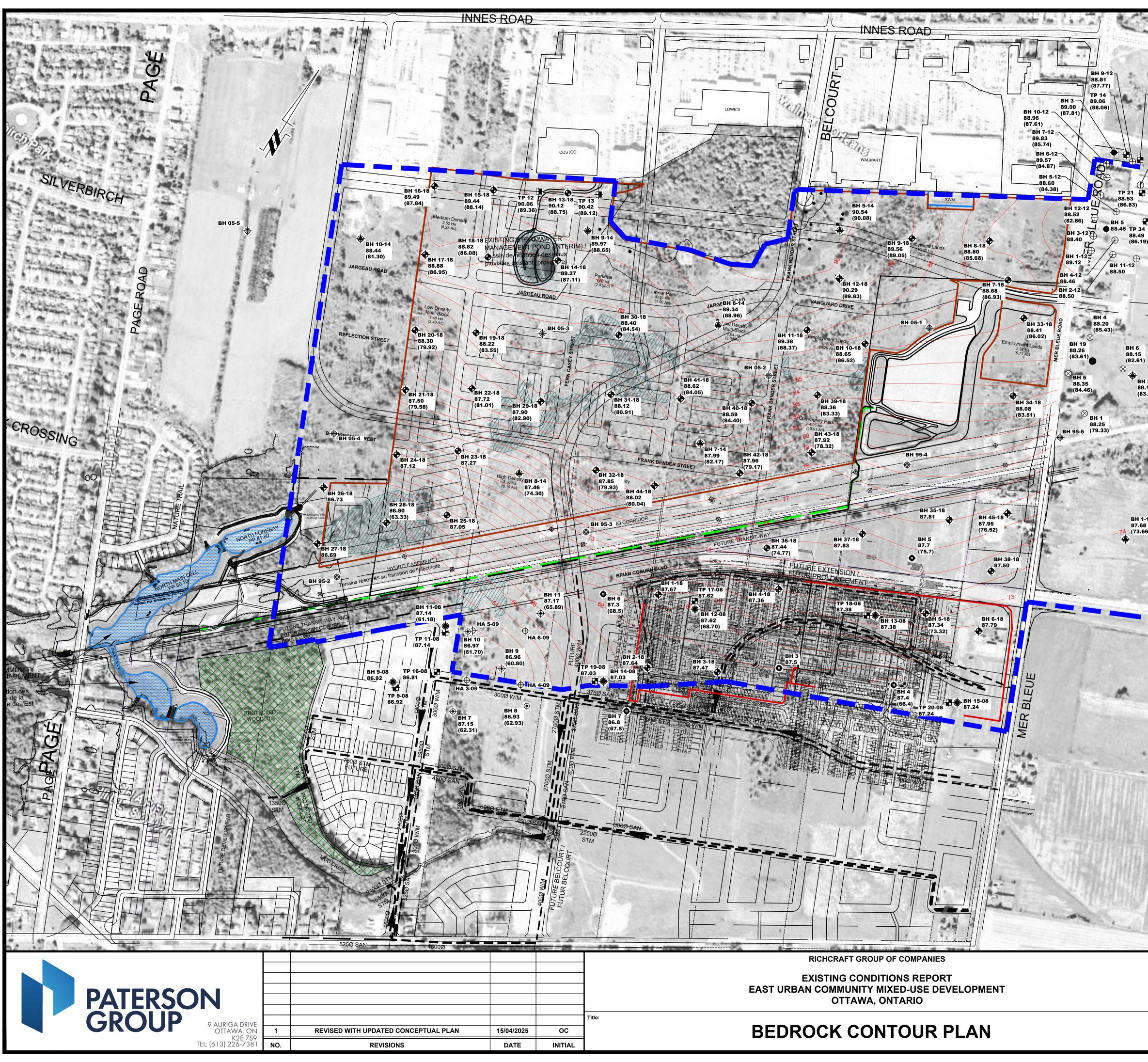


BH 13 90.12 (88.75)	92.00 92.00 92.00 92.00	30 30 30 30 30 30 30 30 30 30 30 30 30 3	94.00		VALMAR WALMAR	BH 88.4 (85.
	BH 30-18 BH 30-18 68-40 (84-54)	CUT-OFF SWALE BH 6-14 89.34 (88.96) OP			BH 3-10 89.56 (89.05) BH 10-18 88.65 (86.52) E	EH 05-1
	BH 31-18 88.12 (80.91) 88.00 88.00 88.00 88.00 88.00 BH 32-18 87.85 (79.93) BH 44-18 88.02 (80.04) BH 95-3	BH 41-18 88.62 (84.05) BH 7-14 87.99 (82.17) (82.17)		ITÉ DOR CO	BH 37-18	SPOSAL ACILITY BH 35-18 87.81
H 11 7.17 55.89)	ССС ВН 6 87.3 (68.5) ТР 19-08 87.03 ВН 2-18 87.64 ВН 2-18 87.64	TP 17-08 87.62 BH 12-08 87.62 (68.70) 000 x 100	BH 4-18 87.36	H 36-18 7.44 (4.77)	87.83 BLOCK 151 BLOCK 151 BLOC	BH 5 87.7 (75.7) BH 5-18 87.34 (73.32) Solution
						TP 20-08 BH 15-08 TP 20
				Title: OC ITIAL	PE	GEOTEC EAST URBAN COM O RMISSIBLE

BH 10-12 BB-50 BH 10-12 BB-50 BB-50 BB-50 BB-50 BH 10-12 BB-50 B			
8-18 80 8-18 80 8-18 80 8-18 80 8-18 80 8-18 80 80 80 80 80 80 80 80 80 8	TP 24 88.71 TP 25 88.82 (86.42) BH 6 89.47 (88.71) TP 26 89.48 (88.78) BH 6 (88.78) TP 30 (87.99) TP 31 88.63 (86.13) TP 31	TP 28 88.15 (85.75) TP 29 88.12 BH 8 88.28	BH 7 88.20
BH 19 88.26 (83.61) BH 5 88.35 BH 34-18 BH 34-18 88.08 88.00 BH 34-18 88.00 (84.46) BH 5 88.50 BH 2-14 88.13 (83.08) BH 2-14 88.13 (83.08)	BH 20 88.15 (82.31) WDRO EASEMEN	BH 4-14 88.15 (76.42)	
		PERMISSIBLE GRADE RAISE: UP TO 1.7 UP TO 2.0 UP TO 2.5 LEGEND: BOREHOLE LOCATION, CL BOREHOLE LOCATION, PF)m 5m JRRENT INVESTIGATION
BH 6-18 BTIAN COBURN BOULEVARD		 HAND AUGER HOLE LOCATOR BOREHOLE LOCATION, PA 	ATERSON GROUP REPORT PG2 ATERSON GROUP REPORT PG0 ATERSON GROUP REPORT PG0 ATERSON GROUP REPORT PG2 ATERSON GROUP REPORT PG4 ATERSON GROUP REPORT PG0 ERSON GROUP REPORT PG086 ATERSON GROUP REPORT PG081 ERSON GROUP REPORT PG086 OTHERS
			ING / DCPT ELEVATION (m) DESIGN STRATEGIES.
RAFT GROUP OF COMPANIES CHNICAL INVESTIGATION MUNITY MIXED-USE DEVELOPMENT OTTAWA, ONTARIO	Stamp:	RCG	Report No.: PG31 Drawing No.: PG3'
GRADE RAISE PLAN		Date: 07/2018	



utbcad drawings/geotechnical/pg31xx/pg3130 - richcraft homes - euc/pg3130 july 2018/pg3130-7 permissible grade plan (rev.01).dwg



· · · · · · · · · · · · · · · · · · ·	Contract of the second	1 h . 2 k . 7 2			20 . C. A.
AN ANTING AND		and have a set of	ALT A	A Series	Sanda .
man marked and a second and		38 200 3	Sec. 1	CALLY RAN	and the second
	Contractor product	and a second	S. Bring .	2.20	a
		1 Cardeman	and the	144-5-5	1.80
	por the second		And Anna and		11
9	8.65	17 -	Summer and commercial states	and the second	
TP 15 88.63 / BH 8-12	ST LANGE	11 5		gammen synth	the second se
(87.53) 88.65 (86.95)	N 16523	LIF	2.20	G.	E
TP 16		1 · · ·	} }	- lit?	11 25 K. 27
88.48	2 8 1 5 1 5	1 33 45 - 1	-max		Part and
TP 20 88.94	1. 1	6431874		1. 16391	11 pm
(87.94) TP 17 TP	19		1.5 . 11 1		14 - 10
88.47 89.	26		Marine I	have	
	BH 4 88.38	A State			and Alberton
TP 23 88.49					
Paw TP 22 88.78	TP 24 •88.71				
(87.38)		2 Jac as		A ROUGH	A MA CHILL
TP 33 / 89.18	TP 25 88.82	TP 26 89.48 TP 28	вн 7 🔶	h last	Mig. Latin
) (87.59)/	(86.42)	(88 78) 00 45	88.20	-	1
TP 18 -/ 89.14	89.47 (88.71) •	Γ 🖶 🛖	P 29	- Tr	and a second second
(88.04) BH 3-14	TP 30 89.09	TP 27 88.54	BH 8 8.12 88.28		
88.74 (86.43)	(87.99)	(86.24)	- +		
	TP 31 88.63	1		-, ·	Constraining of the
	(86.13)	NSION /	- Int	Mar Carlo	
	FUTURE EXTE	ONGEMENT	Stown R. A.		No.
	FUTURE EXTE		and the state	23	and the second
		BH 4-14	15/25	1 4 A A A	
⊗ вн з	Comment of the second	88.15 (76.42)	Mart Char	Star Jacob	a state of
88.25	and the second s	and the second			and the second
(84.24)			the second second	and the second s	Conception of the
2-14 .13	BH 20 88.15		Service Companying		14. 24
3.08) BH 2	(82.31)	A DECEMBER OF THE PARTY OF	The second second	6 min	-
88.00 (79.34)	Contraction of the		ALL ALL	and the second	1
And the second second	And the second		1		Part and
And and and	and the second	and the second se	and the second		1 42
and the second second				Standy .	
the second second			and the second	the shirts	- in the
and the second s	and the second			- sure a	Show 1
a superior and the second	and the second second	Same and	Ser C		Carland ?
L TOP LAND	and a start in	· DESTROY	and and a	5	walky
	Star Star			The second	and a
-14	Ш.	3.4	1. m	29	
6)	Y LALONDE	148 0	S. Sum Equal)	El genter	and the second
-	-00	A CIC	18253	W Manag	
	1	C. Marine .) contract in	State Cal	and the second
	1	- AMA	· portent for	the second	in street. The
and a state of the	~	and a start	Frank Parts Street	Same and the second	1 States
	GERRY		Strange Star	Course and	1000
the state of the second se		and the second	hain in the		1-1-1
	Ō	and the second	Contract Contract	3 Contral	Summer and
	and a support of some second	Olima:	form and	and Constants	and the
The second se	and the second se				

and the second se	and the second	LEGEND:
	lf A	\blacklozenge
and the first for the second	-	+
AR " Egilla		♦
	**	Φ
F. A.		۲
AN		\oplus
344-18 Bar	* ;	
		lacksquare
311. 112 . A C.	50.1	÷
and the second second	Ser.	\oplus
TO DEPAIRS	and a state of the second	+
	16 <i>J</i> .	
	1.62	Ð
1 The second		\oplus
AL THE REPORTS	2252	
	-	86.93
CHEIRISH	HH	(62.93)
14 88 33 30 11	招拍	CONCEP
		IT SHOUL AVAILABL VARY.
18	Contra la	SCALE: 1:3
March	1000	

BOREHOLE I	OCATION, CURRENT INVESTIGATION
BOREHOLE I	OCATION, PREVIOUS INVESTIGATION
BOREHOLE I	OCATION, PATERSON GROUP REPORT PG2392
HAND AUGE PG1605	R HOLE LOCATION, PATERSON GROUP REPORT

BOREHOLE LOCATION, PATERSON GROUP REPORT PG0861 BOREHOLE LOCATION, PATERSON GROUP REPORT PG2866 BOREHOLE LOCATION, PATERSON GROUP REPORT PG4286 BOREHOLE LOCATION, PATERSON GROUP REPORT PG0713 TEST PIT LOCATION, PATERSON GROUP REPORT PG0861 BOREHOLE LOCATION, PATERSON GROUP REPORT G8533 BOREHOLE LOCATION, PATERSON GROUP REPORT PG0811 TEST PIT LOCATION, PATERSON GROUP REPORT PG0811 TEST PIT LOCATION, PATERSON GROUP REPORT PG0961

BOREHOLE LOCATION BY OTHERS BEDROCK CONTOUR

GROUND SURFACE ELEVATION (m)

PRACTICAL REFUSAL TO AUGERING / DCPT ELEVATION (m) .93) NCEPTUAL PLAN PREPARED BY NAK DESIGN STRATEGIES.

SHOULD BE NOTED THAT BEDROCK DEPTHS ARE BASED ON THE /AILABLE TEST HOLE INFORMATION. ACTUAL BEDROCK DEPTH MAY RY.

CALE: 1:3000

and and a second second	and the second s	0 25 50	75 100 125	150 200m
	Stamp:	Drawn by:	MPG	Report No.: PG3130-2
		Checked by:		Drawing No.:
			CDS	
		Scale:		
			1:4000	PG3130-8
		Date:		
			09/2014	



APPENDIX 3

PG3130-MEMO.10 – Geotechnical Recommendations – Phase 5





rth Bay

re: Geotechnical Recommendations – Phase 5 Trailsedge Phase 5 Subdivision Mer Bleue Road – Ottawa

to: Richcraft Group of Companies - Ms. May Pham - mpham@richcraft.com

date: April 24, 2025

file: PG3130-MEMO.10

Further to your request, Paterson Group (Paterson) prepared the current memorandum to provide geotechnical recommendations for Phase 5 of the subject development. The following memorandum should be read in conjunction with Paterson Group Report PG3130-3 Revision 2, dated April 24, 2025 and Memorandum PG3130-MEMO.09 dated April 24, 2025.

1.0 Proposed Development

Based on current plans, it is understood that the proposed development will consist of low, medium and high-density residential buildings with associated driveways, rights-of-way (ROWs), landscaped areas and parks, as well as industrial and logistics developments. The proposed development is anticipated to be municipally serviced.

2.0 Method of Investigation

2.1 Field Investigations

Field Program

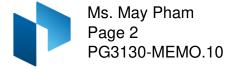
The field investigations for the area currently identified as Phase 5 were conducted between March 2002 and June 2018, and consisted of boreholes, test pits, and hand auger holes. Previous investigations were also completed by others within Phase 5 of the subject site. The Soil Profile and Test Data Sheets are presented in Appendix 1 of the above-noted report. The locations and ground surface elevations of the test holes are presented on Drawing PG3130-6 – Test Hole Location Plan, presented in Appendix 2 of the above-noted report.

Sampling and In-Situ Testing

Soil samples were collected from the boreholes using a 50 mm diameter split-spoon (SS) sampler, using 73 mm diameter thin walled (TW) Shelby tubes in conjunction with a piston sampler, or from the auger flights. Soil samples were also recovered along the sidewalls of the test pits by hand during excavation.

All soil samples were visually inspected and initially classified on site.

	A 11	
oronto	Ottawa	Nor



The split-spoon samples were placed in sealed plastic bags and the Shelby tubes were sealed at both ends on site. All samples were transported to our laboratory for examination and classification. The depths at which the split-spoon, Shelby tube, auger and grab samples were recovered from the test holes are shown as SS, TW, AU and G, respectively, on the Soil Profile and Test Data sheets presented in Appendix 1 of the above-noted report.

The Standard Penetration Test (SPT) was conducted in conjunction with the recovery of the split-spoon samples. The SPT results are recorded as "N" values on the Soil Profile and Test Data sheets. The "N" value is the number of blows required to drive the split-spoon sampler 300 mm into the soil after a 150 mm initial penetration using a 63.5 kg hammer falling from a height of 760 mm.

Undrained shear strength testing was carried out at regular depth intervals in cohesive soils. Undrained shear strength testing in test pits was completed using a handheld, portable vane apparatus (field inspection vane tester Roctest Model H-60).

All soil samples were classified on site, placed in sealed plastic bags and were transported to our laboratory for visual inspection.

Overburden thickness was evaluated during the course of the site investigations by dynamic cone penetration testing (DCPT) at several of the borehole locations. The DCPT consists of driving a steel drill rod, equipped with a 50 mm diameter cone at the tip, using a 63.5 kg hammer falling from a height of 760 mm. The number of blows required to drive the cone into the soil is recorded for each 300 mm increment.

The subsurface conditions observed at the borehole and test pits were recorded in detail in the field. The soil profiles are presented on the Soil Profile and Test Data sheets and Borehole Logs by Others in Appendix 1.

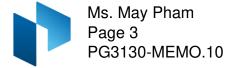
Groundwater

Flexible standpipes were installed in all boreholes to monitor the groundwater levels subsequent to the completion of the sampling program. Groundwater infiltration levels were noted at the time of excavation at the test pit locations.

The groundwater observations are discussed in Section 4.3 and presented in the Soil Profile and Test Data sheets in Appendix 1.

2.2 Field Survey

The borehole locations were determined by Paterson personnel taking into consideration the presence of underground and above-ground services.



The location and ground surface elevation at each borehole location were provided by Stantec Geomatics, Webster and Simmonds Surveying Limited, or Annis, O'Sullivan, Vollebekk Limited. It is understood that the elevations were referenced to a geodetic datum. The test hole locations and ground surface elevations at the test hole locations are presented on Drawing PG3130-6 – Test Hole Location Plan in Appendix 2.

2.3 Laboratory Review & Testing

The soil samples recovered from the subject site were visually examined in our laboratory to review the results of the field logging.

Shelby tube samples were submitted for unidimensional consolidation during the current and the previous geotechnical investigations. The results of the consolidation and Atterberg testing are presented on the Consolidation Test sheets presented in Appendix 1 of the above-noted report, and are further discussed in Section 3.2 below.

Atterberg limit tests and grain size distribution and hydrometer analyses were completed on selected soil samples. The results of our testing are presented in Appendix 1 of the above-noted report and are further discussed in Section 4.2.

3.0 Observations

3.1 Surface Conditions

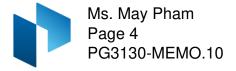
The subject site consists of agricultural lands, and lands formerly used for agricultural purposes. The site and regional topography are relatively flat with a slight downslope towards the west and south. The site is approximately at-grade with neighboring properties and adjacent roadways.

3.2 Subsurface Profile

Overburden

Generally, the subsurface profile encountered at the test hole locations varies between shallow bedrock and a deep silty clay deposit within the subject site site.

Shallow bedrock was encountered below a thin cultivated organic zone/topsoil followed by a very stiff to stiff, brown silty clay or glacial till within the north portion of the site, transitioning to a thin organic/topsoil layer underlain by very stiff to stiff, brown silty clay layer to the south. As the silty clay deposit deepens to the south, the very stiff to stiff, brown silty clay is underlain by firm, grey silty clay and further by glacial till, with occurrences of the glacial till directly underlying the very stiff to stiff, brown silty clay.



Reference should be made to the Soil Profile and Test Data sheets in Appendix 1 of the above-noted report for specific details of the soil profiles encountered at each test hole location.

Bedrock

Based on available geological mapping, the bedrock in this area mostly consists of interbedded limestone and dolomite of the Gull River formation with an overburden drift thickness of 0 to 30 m depth.

Atterberg Limit Tests

Atterberg limit testing of 26 samples was completed. The Plasticity Index of the underlying silty clay was measured to range from 24 to 51. The results of the Atterberg limit testing on select silty clay samples are presented in Appendix 1 of the above-noted report.

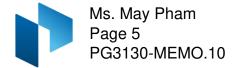
Grain Size Distribution Tests

Nine (9) sieve analyses were completed to classify selected soil samples according to the Unified Soil Classification System (USCS). The results are presented in Appendix 1 of the above-noted report.

3.3 Groundwater

Generally, the groundwater levels recovered from the piezometers installed at the borehole locations varied between 1.5 and 2.5 m below existing ground surface, with the exception of boreholes along the northern border of the site which were observed to be dry. It is important to note that groundwater readings at piezometers can be influenced by surface water perched within the borehole backfill material. Long-term groundwater conditions can also be estimated based on the observed colour and consistency of the recovered soil samples.

Based on these observations, it is estimated that the long-term groundwater level can be expected between **1.5 to 2.5 m** depth, corresponding to an approximate geodetic elevation of **85.5 to 87.5 m**. Within the northern portion of the site, the long-term groundwater level can be expected below the bedrock surface. Groundwater levels are subject to seasonal fluctuations and may vary during the time of construction. The groundwater conditions observed at the borehole and test pits were recorded in detail in the field. Our groundwater observations are presented in the Soil Profile and Test Data sheets in Appendix 1 of the above-noted report.



4.0 Discussion

4.1 Geotechnical Assessment

From a geotechnical perspective, the subject site is adequate for the proposed development. Bedrock removal may require line drilling and blasting or hoe ramming depending on the depth of bedrock removal required. Due to the presence of the sensitive silty clay layer, residential buildings should be designed in accordance with Part 4 of the current Ontario Building Code (OBC).

Due to the sensitive silty clay deposit, the proposed development will be subjected to grade raise restrictions. The recommended permissible grade raise areas are presented in Drawing PG3130-7 – Permissible Grade Raise Plan in Appendix 2 of the above-noted report. If higher than permissible grade raises are required, preloading with or without a surcharge, lightweight fill and/or other measures should be investigated to reduce the risks of unacceptable long-term, post-construction total and differential settlements.

Municipal services are anticipated within the subject site and will generally be completed through OHSA Type 2 and 3 soils.

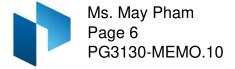
4.2 Foundation Design

Bearing Resistance Values

Conventional style shallow footings for buildings can be designed using the bearing resistance values presented in Table 1. A geotechnical resistance factor of 0.5 was applied to the bearing resistance values at ULS.

Table 1 – Bearing Resistance Values Bearing Surface	Bearing Resistance Values at SLS (kPa)	Factored Bearing Resistance Value at ULS (kPa)	
Undisturbed, Firm Silty Clay	60	150	
Undisturbed, Stiff to Very Stiff Silty Clay	100	180	
Undisturbed, Compact Glacial Till	150	250	
Clean, Surface Sounded Bedrock	-	500	

Note: Pad footings, up to 3 m wide, and strip footings, up to 2 m wide, can be designed using the above noted bearing resistance values placed over an undisturbed, silty clay bearing surface.



An undisturbed soil bearing surface consists of one from which all topsoil and deleterious materials, such as loose, frozen or disturbed soil, whether in situ or not, have been removed, in the dry, prior to the placement of concrete for footings.

The bearing resistance values at SLS for shallow footing bearing on the above noted soils will be subjected to potential post-construction total and differential settlements of 25 and 15 mm, respectively.

A clean, surface-sounded bedrock bearing surface should be free of loose materials, and have no near surface seams, voids, fissures or open joints which can be detected from surface sounding with a rock hammer. Footings bearing on an acceptable bedrock bearing surface and designed using the bearing resistance values provided herein will be subjected to negligible potential post-construction total and differential settlements.

Bedrock to Soil Transition

Where a building is founded partly on bedrock and partly on soil, it is recommended to decrease the soil bearing resistance value by 25% for the footings placed on soil bearing media to reduce the potential long-term total and differential settlements. Also, at the soil/bedrock and bedrock/soil transitions, it is recommended that the upper 0.5 m of the bedrock be removed for a minimum length of 2 m (on the bedrock side) and replaced with nominally compacted OPSS Granular A or Granular B Type II material. The width of the subexcavation should be at least the proposed footing width plus 0.5 m. Steel reinforcement, extending at least 3 m on both sides of the 2 m long transition, should be placed in the top part of the footings and foundation walls.

Settlement/Grade Raise

A total of 4 consolidation tests were completed within the subject site. The results of the consolidation tests are presented in Table 2 and in Appendix 1 in the above-noted report.

The value for p'_c is the preconsolidation pressure and p'_o is the effective overburden pressure of the test sample. The difference between these values is the available preconsolidation. The increase in stress on the soil due to the cumulative effects of the fill surcharge, the footing pressures, the slab loadings and the lowering of the groundwater should not exceed the available preconsolidation if unacceptable settlements are to be avoided.

The values for C_{cr} and C_c are the recompression and compression indices, respectively. These soil parameters are a measure of the compressibility due to stress increases below and above the preconsolidation pressures. The higher values for the C_c , as compared to the C_{cr} , illustrate the increased settlement potential above, as compared to below, the preconsolidation pressure.

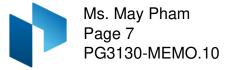


Table 2 – Summary of Consolidation Test Results (Current Investigation)									
Borehole	Sample	Depth (m)	p' _c (kPa)	p'₀ (kPa)	C _{cr}	Cc	Q*		
BH 27-18	TW 4	5.05	145.9	66.9	0.023	3.182	G		
BH 28-18	TW 5	4.98	121.7	66.43	0.028	4.375	А		
BH 42-18	TW 4	5.05	132.2	66.9	0.022	3.777	А		
BH 44-18	TW 4	5.03	85.8	66.8	0.027	1.823	Р		
* - Q – Quality assessment of sample – G: Good A: Acceptable P: Likely disturbed									

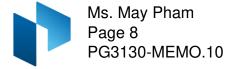
The values of p'c, p'o, C_{cr} and C_c are determined using standard engineering testing procedures and are estimates only. Natural variations within the soil deposit will affect the results. The p'o parameter is directly influenced by the groundwater level. Groundwater levels were measured during the site investigation. Groundwater levels vary seasonally which has an impact on the available preconsolidation. Lowering the groundwater level increases the p'o and therefore reduces the available preconsolidation. Unacceptable settlements could be induced by a significant lowering of the groundwater level.

The p'_o values for the consolidation tests during the investigation are based on the long-term groundwater level being at 0.5 m below the existing groundwater table. The groundwater level is based on the colour and undrained shear strength profile of the silty clay.

The total and differential settlements will be dependent on characteristics of the proposed buildings. For design purposes, the total and differential settlements are estimated to be 25 and 20 mm, respectively. A post-development groundwater lowering of 0.5 m was assumed.

The potential post construction total and differential settlements are dependent on the position of the long-term groundwater level when building are situated over deposits of compressible silty clay. Efforts can be made to reduce the impacts of the proposed development on the long-term groundwater level by placing clay dykes in the service trenches, reducing the sizes of paved areas, leaving green spaces to allow for groundwater recharge or limiting planting of trees to areas away from the buildings. However, it is not economically possible to control the groundwater level.

To reduce potential long-term liabilities, consideration should be given to accounting for a larger groundwater lowering and to provide means to reduce long term groundwater lowering (e.g. clay dykes, restriction on planting around the dwellings, etc). Buildings on silty clay deposits increases the likelihood of movements and therefore of cracking. The use of steel reinforcement in foundations placed at key structural locations will tend to reduce foundation cracking compared to unreinforced foundations.



Based on the undrained shear strength testing results, consolidation testing and experience with the local silty clay deposit. The recommended permissible grade raise areas for buildings are defined in Drawing PG3130-7 – Permissible Grade Raise Plan in Appendix 2 of the above-noted report.

Where proposed grade raises exceed our permissible grade raise recommendations, several options could be considered for the foundation support of the proposed buildings. Reference should be made to Subsection 5.3 of the above-noted report for options concerning proposed grades that exceed the permissible grade raise restrictions.

4.3 Design for Earthquakes

The site class for seismic site response can be taken as **Class X**c for the foundations bearing on a compact to dense glacial till and/or bedrock within the north portion of the subject site. A higher site class, such as Class X_A or X_B, is applicable for footings bearing on the bedrock surface. However, a site specific seismic shear wave test will be required to confirm the Class X_A or X_B for seismic site classification. A seismic site response **Class** X_D is applicable for design of the proposed buildings bearing over a stiff to firm silty clay deposit throughout the remainder of the site.

Soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest revision of the 2024 Ontario Building Code for a full discussion of the earthquake design requirements.

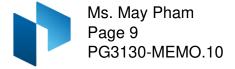
5.0 Additional Considerations

5.1 Stormwater Management Pond Removal

Prior to backfilling of the temporary stormwater pond, all vegetation, topsoil, loose sediment and other deleterious materials should be removed.

Fill used for grading beneath building areas should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or Granular B Type II or approved alternative. The fill should be placed in loose lifts and compacted using suitable compaction equipment for the lift thickness. Fill placed beneath building areas should be compacted to a minimum 98% of the Standard Proctor Maximum Dry Density (SPMDD).

Non-specified existing fill along with site-excavated soil can be used as general landscaping fill and beneath parking areas where settlement of the ground surface is of minor concern. In landscaped areas, these materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids.



If these materials are to be used to build up the subgrade level for areas to be paved, they should be compacted in thin lifts to a minimum density of 95% of the SPMDD. Non-specified existing fill and site-excavated soils are not suitable for use as backfill against foundation walls unless a composite drainage blanket connected to a perimeter drainage system is provided.

Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.5 m below finished grade) and above the cover material should match the soils exposed at the trench walls to minimize differential frost heaving. The trench backfill should be placed in maximum 225 mm thick loose lifts and compacted to a minimum of 95% of the material standard Proctor maximum dry density.

It should generally be possible to re-use the site materials for backfill beneath landscaped areas if the operations are carried out in dry weather conditions. If the site-excavated material consists of moist to wet silty clay, the material should be spread in thin lifts and allowed adequate time to dry before being placed.

5.2 Cut-Off Swale Design

The excavation for the cut-off swale will be through either sand or stiff silty clay. It is anticipated that bedrock will be located 0 to 1.5 m below the bottom of the cut-off swale.

The cut-off swale should consist of 3H:1V side slopes, or shallower. Where sand is encountered within the excavation for the swale, flatter slopes could be required to prevent raveling and maintain a stable slope. The side slopes should be vegetated immediately upon excavation to promote side slope stability. The side slope excavation should be reviewed by Paterson at the time of excavation.

Rock dams can be considered to reduce the water flow velocity within the swale. If required, Paterson can provide detailed recommendations for rock dams.

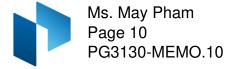
Excavated material should not be stockpiled directly at the top of the side slopes and heavy equipment should be kept away from the excavation sides when not in use.

Paterson should conduct geotechnical assessments on proposed side slope designs with slopes steeper than 3H:1V, if applicable.

5.3 Landscaping Consideration

Tree Planting Restrictions

In accordance with the City of Ottawa Tree Planting in Sensitive Marine Clay Soils (2017 Guidelines), Paterson completed the required soil testing to aid in determining the applicable tree planting setbacks.



However, it should be noted that Paterson is also relying on our engineering expertise to determine the applicable tree planting setback for the subject site.

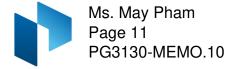
Atterberg limits testing was completed for recovered silty clay samples at selected locations throughout the subject site. Sieve analysis testing was also completed on selected soil samples. The above noted soil samples were recovered from elevations below the anticipated design underside of footing elevation and 3.5 m depth below anticipated finished grade. The results of our testing are presented in Appendix 1.

Based on the colouring and moisture levels of the recovered soil samples and the undrained shear strength values in close proximity to design underside of footing elevation, Paterson has determined that the following tree planting setbacks are recommended. Large trees (mature height over 14 m) can be planted within these areas provided a tree to foundation setback equal to the full mature height of the tree can be provided (e.g. in a park or other green space). Tree planting setback is 4.5 m for small (mature tree height up to 7.5m) and medium size trees (mature tree height 7.5 m to 14 m) provided that the conditions noted below are met.

- □ The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree, as measured from the centre of the tree trunk and verified by means of the Grading Plan as indicated procedural changes below.
- □ A small tree must be provided with a minimum of 25 m3 of available soil volume while a medium tree must be provided with a minimum of 30 m3 of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally un-compacted when backfilling in street tree planting locations.
- □ The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.
- □ The foundation walls are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree), as noted on the subdivision Grading Plan.

Swimming Pools

The in-situ soils are considered to be acceptable for in-ground swimming pools. Above ground swimming pools must be placed at least 5 m away from the residence foundation and neighbouring foundations. Otherwise, pool construction is considered routine, and can be constructed in accordance with the manufacturer's requirements.



Aboveground Hot Tubs

Additional grading around the hot tub should not exceed permissible grade raises. Otherwise, hot tub construction is considered routine, and can be constructed in accordance with the manufacturer's specifications.

Installation of Decks and Additions

Additional grading around proposed deck or addition should not exceed permissible grade raises. Otherwise, standard construction practices are considered acceptable.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Mata

Owen R. Canton, B.Eng.



Scott S. Dennis, P.Eng.

Ottawa Head Office 9 Auriga Drive Ottawa – Ontario – K2E 7T9 Tel: (613) 226-7381 Ottawa Laboratory 28 Concourse Gate Ottawa – Ontario – K2E 7T7 Tel: (613) 226-7381

List of Services

Geotechnical Engineering ♦ Environmental Engineering ♦ Hydrogeology Materials Testing ♦ Retaining Wall Design ♦ Rural Development Design Temporary Shoring Design ♦ Building Science ♦ Noise and Vibration Studies

