Geotechnical Engineering

Environmental Engineering

Hydrogeology

Geological Engineering

Materials Testing

Building Science

Archaeological Services

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Hydrogeological Assessment

Proposed Residential Development
3640 Greenbank Road
Ottawa, Ontario

Prepared For

Tamarack (Nepean) Corporation

April 30, 2018

Report PG3443-2

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APPENDICES

1.0 INTRODUCTION

Paterson Group (Paterson) was commissioned by Tamarack (Nepean) Corporation to prepare a hydrogeological assessment for Phases 3 to 5 of the proposed residential development to be located at 3640 Greenbank Road in Ottawa, Ontario (refer to Figure 1 - Key Plan within Appendix 1).

Subsurface information was obtained from the geotechnical investigation carried out to determine the subsoil and groundwater conditions at the site by means of test holes.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains the investigation findings and includes hydrogeological assessments pertaining to the proposed program as understood at the time of writing this report.

1.1 Proposed Project

It is our understanding that Phases 3 to 5 of the proposed residential development, to be located on the west side of Greenbank Road and east of Borrisokane Road, consists of the municipal address 3640 Greenbank Road.

The subject site consists of an approximate 47 hectare undeveloped property consisting of former agricultural field land, active construction sites and forested areas. The majority of the property is relatively flat, with the exception of part of Phase 5 which rises to a ridge approximately 5 to 7 m above the grade of the surrounding areas. It is bordered to the north by residential buildings, forested areas and Cambrian Road, to the east by residential buildings, to the south by residential buildings, forested areas and a sand pit and to the west by forested areas and Borrisokane Road.

2.0 SITE CONDITIONS

Physical Setting

As previously noted, the subject site is located on the west side of Greenbank Road and the east side of Borrisokane Road and contains a mixture of former agricultural land, active construction sites and densely treed areas. Site topography is generally flat with the exception of Phase 5, with average elevations of 95 m above sea level (asl) along the eastern and western portions of the property and average elevations of 100 m asl along the central portion. The general drainage direction is expected to vary locally but travel regionally in a southwest to northeast direction, following topographic trends. There were no named water bodies known to exist on the subject site.

According to available mapping, the subject site is located in the Ottawa Valley Clay Plains physiographic region, which is characterized by relatively flat clay plains interrupted by rock ridges. While the site is relatively flat, several physiographic landforms are present including an esker, till plains and clay plains, all of which were encountered during the various field programs conducted as part of the geotechnical investigations.

2.1 Geology

Surficial Geology

The field programs for the geotechnical investigations were carried out over an extended period of time for the various phases of the project, with the earliest work being completed in April 2004 and the most recent being completed in February 2018. Over the course of the various field programs, total of 18 boreholes and 34 test pits were advanced to a maximum depth of 11.3 m. The test hole locations were distributed in a manner to provide general coverage of the subject site. The approximate locations of the test holes are shown on Drawings PG4242-1, PG3786-1 and PG0214-4 - Test Hole Location Plans included in Appendix 2.

Overburden soils identified during the geotechnical field investigation were generally consistent with available mapping for the area. Within Phase 3 of the proposed development, the overburden generally consisted of topsoil overlying a overlying a thin layer of brown silty clay, which was underlain by glacial till comprised of a silty sand/silty clay matrix with gravel, cobbles and boulders.

Within Phase 4 of the proposed development, the overburden materials were variable but generally consisted of topsoil overlying a deposit of silty sand, which was underlain

by a layer of brown silty clay becoming grey with depth. This was further underlain by glacial till comprised of a silty sand/silty clay matrix with gravel, cobbles and boulders.

The overburden materials within Phase 5 of the proposed development were variable but generally consisted of topsoil overlying a deposit of silty sand. This was either underlain by a layer of silty clay or a glacial till deposit comprised of a silty sand/silty clay matrix with gravel, cobbles and boulders.

Specific details of the soil profile at each test hole location are presented on the Soil Profile and Test Data sheets included in Appendix 2.

Bedrock

Based on available geological mapping, the subject site is located in an area where the bedrock consists of dolomite of the Oxford formation, with an estimated overburden thickness ranging from 10 to 25 m.

Karst Features

The term “karst” refers to a geologic formation characterized by the dissolution of carbonate bedrock, such as limestone or dolostone. In order for karstification to occur, precipitation must be allowed to infiltrate the top of the bedrock to dissolutionally enlarge previously existing joints and bedding planes. Given the depth of surficial soils overlying the dolomite bedrock that are non-conducive to groundwater infiltration, it is highly unlikely that karstification is occurring.

2.2 Hydrogeology

Existing Aquifer Systems

Aquifer systems may be defined as geological media, either overburden soils or fractured bedrock, which permit the movement of groundwater under hydraulic gradients. Although groundwater has been observed within the overburden soils, the composition of materials throughout the majority of the site does not allow for the development of significant water supply wells, with the only exception to this being wells that are installed within the esker located south of the site. However, despite the presence of the esker, water supply wells in the vicinity of the study area are generally found to be accessing bedrock aquifers.

Bedrock aquifer mapping, provided by Natural Resources Canada Urban Geology of the National Capital Region mapping, was reviewed as part of this assessment. Using

this tool, the Oxford formation aquifer system was identified as the only bedrock water supply aquifer system in the vicinity of the study area.

The Oxford formation aquifer system is present throughout the study area. While there are no wells extending into this aquifer on the subject site, wells completed within this formation located in proximity to the site reported encountering water-bearing fractures at depths typically ranging from 25 to 35 m bgs.

Groundwater Levels

Groundwater was observed in the piezometers/monitoring wells installed in the overburden at the borehole locations and was also observed in the field during the excavation of the test pits. Based on a review of water well records, groundwater is also present in the bedrock at depth.

Groundwater levels in the overburden at the subject site were observed to vary from 0.1 to 3.2 m bgs at the time of the geotechnical field investigations. It should be noted that groundwater levels may have been influenced by surface water infiltrating the backfilled boreholes. Subsequent groundwater level readings within the piezometers can be also influenced by perched water in the backfill material within the borehole. Groundwater levels are also influenced by seasonal variations in temperature and precipitation. As such, long-term groundwater levels are also estimated based on other factors such as colour and consistency of the recovered soil samples. Based on these observations, the long-term groundwater level at the subject site is expected to range from approximately 0.5 to 2.0 m bgs, with water levels expected to be higher within Phase 4 of the proposed development and slightly lower within Phases 3 and 5.

Hydraulic Gradients

Vertical hydraulic gradients were not measured at the subject site as the previous studies completed did not warrant the installation of monitoring well nests.

With respect to horizontal hydraulic gradients, due to the nature of the water levels obtained from field work conducted at the site (piezometers and groundwater monitoring wells), the absolute direction of horizontal hydraulic gradients was not determined. However, using the available data, it was possible to approximate the horizontal hydraulic gradients in the overburden material given that the horizontal hydraulic gradient between any 2 points is the slope of the hydraulic head between those points:

$$i=h2-h1/L$$

Where: i=horizontal hydraulic gradient
h=water level (m bgs)
L=horizontal distance between test hole locations

Using the above noted formula, the horizontal hydraulic gradient was observed to have an approximate north-to-northeast orientation and a magnitude ranging from 0.02 to 0.001. Shallow groundwater flow in the vicinity of the subject site is expected to reflect local topography. Regional groundwater flow is considered to be in a northerly direction, towards the Jock River.

Hydraulic Conductivity

The hydraulic conductivity values were conservatively estimated based upon previous experience at similar sites in the area, information obtained from the results of the geotechnical field program, results of slug testing completed at select locations and typical published values for similar stratigraphy. The values are interpreted to be in the order of 1×10^{-4} to 1×10^{-7} m/sec for silty sand, 1×10^{-6} to 1×10^{-10} m/sec for glacial till with a variable matrix composition and 1×10^{-7} to 1×10^{-10} m/sec for silty clay.

Groundwater Recharge and Discharge

In general, groundwater will follow the path of least resistance from areas of higher hydraulic head to areas of lower hydraulic head. While upward and downward hydraulic gradients may be indicative of discharge and recharge respectively, other factors must be considered.

Based on the hydraulic conductivity estimates obtained from previous studies and published literature, the silty clay overburden is generally considered to act as a confining layer. It is our interpretation that groundwater will generally flow laterally through the upper layer of silty sand/weathered brown silty clay, as opposed to vertically upwards or downwards through overburden soils with lower hydraulic conductivity such as the grey silty clay. As such, the volume of recharge occurring within the majority of the site boundaries is expected to be minimal. The only exception to the above is a small portion along the southern boundary within Phase 5 of the proposed development, where available information indicates esker materials such as silty sand and glacial till dominate the overburden material composition in the area. However, given the limited extent of these materials within the confines of the subject site, the volume of recharge expected to occur remains minimal.

With regards to discharge zones, neither the topographical or geological conditions are suitable for discharge to be occurring at the subject site.

3.0 POTENTIAL IMPACTS

3.1 Adverse Effects on Adjacent Structures

The overburden in the area varies dependant on location but generally consists of topsoil overlying a silty sand layer which is further underlain by either a silty clay deposit or glacial till. The potential dewatering volumes due to groundwater infiltration into potential excavation footprints are anticipated to be low to moderate depending on the majority composition of the materials at a given location, with lower volumes expected within silty clay and higher volumes expected within the silty sand. Given the nature of the development (low lying residential housing and associated servicing), the duration of any excavation on site is expected to be short term in duration. Additionally, the majority of the site is surrounded by undeveloped land, with only the eastern boundary containing existing residential buildings. As such, any effects related to ground surface settlement due to potential groundwater removal as part of construction activities are expected to be negligible.

3.2 Adverse Effects on Neighbouring Water Wells

A search of the Ontario Water Well Records online mapping database and the Groundwater Information Network (GIN) indicates there are 11 wells within 500 m of the site as depicted on Drawing PG3443-3 - MOECC Water Well Location Plan included in Appendix 1. However, upon investigation it was determined that these wells are no longer in use due to both their installation dates and the developed nature of the region. Additionally, the developed area surrounding the eastern portion of the site is serviced by municipal water supplies. Construction activities at the site are therefore not expected to cause any interference to the water supply of surrounding properties or other negative impacts.

A series of calculations were carried out on theoretical radii of influence for a typical servicing trench excavation withdrawing water from the upper 3 to 5 m of the saturated zone. These calculations were completed based on Sichardt (1992) using the equation:

$R = r_e + 3000*\Delta h(k^{0.5})$

- R = radius of influence (m)
- r_e = equivalent radius of excavation (m)
- Δh = thickness of drawdown within the aquifer (m)
- k = hydraulic conductivity (m/sec)

For the purposes of completing the calculations, the following assumptions were made:

- ❑ r_e = 7.96 m
- ❑ k = 1 x 10^{-4} m/sec to 1 x 10^{-10} m/sec, based upon our experience in the area, the results of the slug testing analyses and published values.
- ❑ Δh = 2 to 4 m, to review potential minimum/maximum variable conditions.

Using the above equation and assumptions, a radius of influence of approximately 1 to 120 m will develop as a steady state condition, extending from the edge of the excavation, in the area of the subject site.

Given the hydrogeological characteristics of the subject site, the theoretical radii of influence for the potential excavations related to the development and the lack of water supply wells within 500 m, a long-term groundwater monitoring program is not required to be implemented based on our review.

3.3 Groundwater

A search of the MOECC Brownfields Environmental Site Registry was conducted as part of the assessment of the site, neighbouring properties and the general area of the site. Using a search radius of 1 km provided no recorded Brownfield sites in that area. No concerns were identified in the review of the MOECC Brownfields database.

It is anticipated that the material on site will be disposed of or re-used as per the MOECC policy, *Management of Excess Soil - A Guide for Best Management Practices* dated January, 2014.

The groundwater that is pumped from site excavations must be managed in an appropriate manner. The contractor will be required to implement a water management program to dispose of the pumped water.

4.0 STATEMENT OF LIMITATIONS

The recommendations provided in this report are in accordance with our present understanding of the project.

A hydrogeological review of this nature is a limited sampling of a site. The recommendations are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around the test locations. Should any conditions at the site be encountered which differ from those at the test locations, we request notification immediately in order to permit reassessment of our 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 Tamarack (Nepean) Corporation or their agent(s) is not authorized without review by Paterson Group for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.

Michael Laflamme, GIT

David J. Gilbert, P.Eng.

APPENDIX 1

Figure 1 - Key Plan

Drawing PG3443-3 - MOECC Water Well Location Plan

FIGURE 1

KEY PLAN

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154 Colonnade Road South
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NO.	REVISIONS	DATE	INITIAL
0			

TAMARACK (NEPEAN) CORPORATION

HYDROGEOLOGICAL ASSESSMENT
PROPOSED RESIDENTIAL DEVELOPMENT - 3640 GREENBANK ROAD
OTTAWA, ONTARIO

Title:
MOECC WATER WELL LOCATION PLAN

Scale: N.T.S.	Date: 04/2018
Drawn by: MPG	Report No.: PG3443-2
Checked by: ML	Dwg. No.: PG3443-3
Approved by: DJG	Revision No.: 0

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APPENDIX 2

Soil Profile and Test Data

Drawing PG4242-1 - Test Hole Location Plan

Drawing PG3786-1 - Test Hole Location Plan

Drawing PG0214-4 - Test Hole Location Plan

PG3786 - Hydraulic Conductivity Testing Results

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Taggart Construction Ltd.

FILE NO. PG3786

REMARKS

HOLE NO. TP 1-18

BORINGS BY Hydraulic Shovel **DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	93.65		
Loose, brown **SILTY SAND** with gravel, cobbles and boulders, trace clay		G	1			1	92.65		
1.60									
Stiff to firm, grey **SILTY CLAY,** trace sand		G	2			2	91.65		
2.65									
End of Test Pit (TP dry upon completion)									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Taggart Construction Ltd.

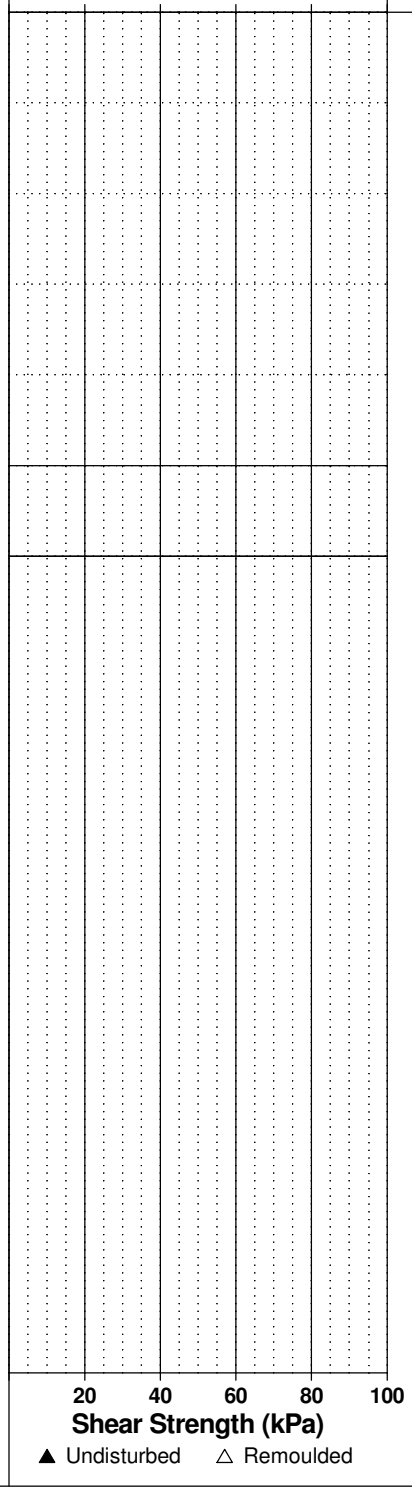
FILE NO. PG3786

REMARKS

HOLE NO. TP 2-18

BORINGS BY Hydraulic Shovel **DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	93.40		
Loose, brown **SILTY SAND,** trace clay		G	1						
0.70									
Stiff, brown **SILTY CLAY,** some sand		G	2			1	92.40		
1.20									
End of Test Pit									
(TP dry upon completion)									



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Taggart Construction Ltd.

FILE NO. PG3786

REMARKS

HOLE NO. TP 3-18

BORINGS BY Hydraulic Shovel **DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	94.05		
Loose, brown **SILTY SAND to SANDY SILT**						1	93.05		
		G	1						
1.75									
End of Test Pit									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %
20 40 60 80

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Taggart Construction Ltd.

FILE NO. PG3786

REMARKS

HOLE NO. TP 4-18

BORINGS BY Hydraulic Shovel **DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	93.96		
Loose, brown **SILTY SAND,** trace clay		G	1			1	92.96		
1.30									
End of Test pit (Groundwater infiltration at 0.7m depth)									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Taggart Construction Ltd.

FILE NO. PG3786

REMARKS

HOLE NO. TP 5-18

BORINGS BY Hydraulic Shovel **DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content % (20 40 60 80)	Piezometer Construction
GROUND SURFACE						0	95.23		
FILL: Brown sand and gravel, some silt, cobbles and boulders, trace clay		G	1			1	94.23		
1.62									
Stiff to very stiff, brown **SILTY CLAY,** trace sand		G	2			2	93.23		
2.30									
End of Test Pit									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

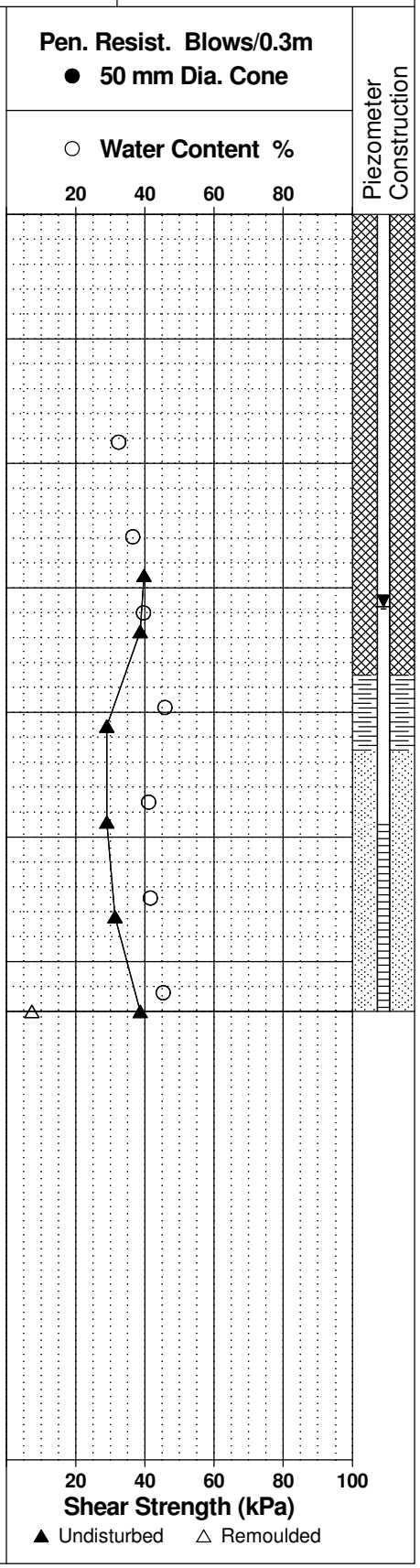
FILE NO. PG4242

REMARKS

HOLE NO. BH 1-18

BORINGS BY CME 55 Power Auger **DATE** January 9, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	93.78
TOPSOIL, some clay		AU	1				
0.40							
		SS	2	33	4	1	92.78
Firm, grey-brown **SILTY CLAY,** trace sand		SS	3	25	2	2	91.78
- grey by 2.3m depth						3	90.78
						4	89.78
						5	88.78
						6	87.78
6.40							
End of Borehole							
(GWL @ 3.15m - Jan. 15, 2018)							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

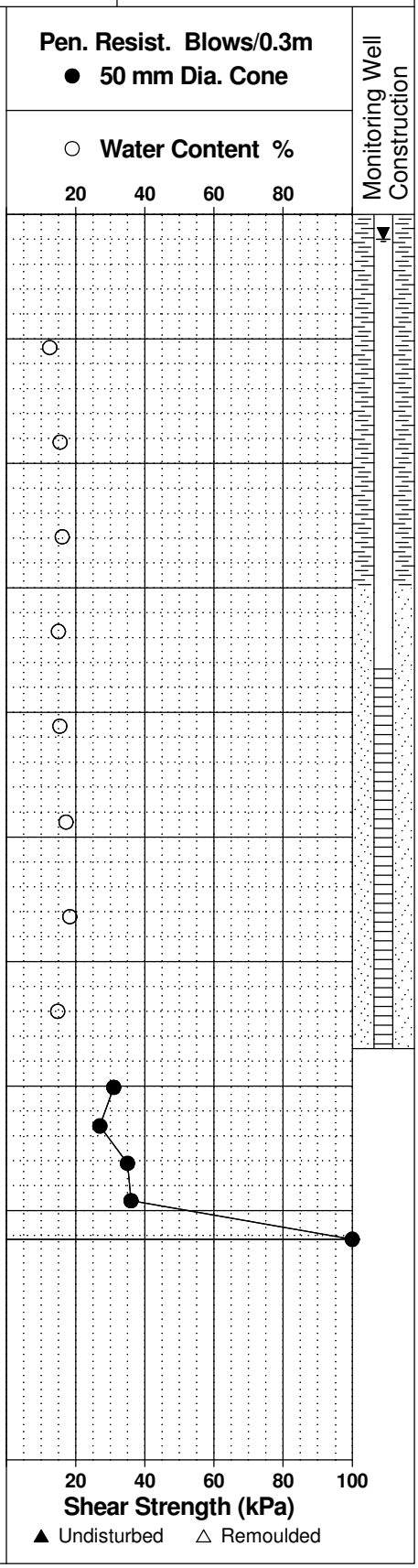
FILE NO. PG4242

REMARKS

HOLE NO. BH 2-18

BORINGS BY CME 55 Power Auger **DATE** January 9, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
TOPSOIL						0	97.02
0.36		AU	1				
		SS	2	33	16	1	96.02
		SS	3	33	21	2	95.02
GLACIAL TILL: Compact to dense, brown silty sand with gravel, cobbles and boulders		SS	4	29	20		
		SS	5	42	38	3	94.02
		SS	6	38	36	4	93.02
- compact by 4.5m depth		SS	7	42	25	5	92.02
		SS	8	46	27	6	91.02
		SS	8	21	28		
6.70							
Dynamic Cone Penetration Test commenced at 6.70m depth.						7	90.02
Inferred **GLACIAL TILL**							
8.23						8	89.02
End of Borehole							
Practical DCPT refusal at 8.23m depth							
(GWL @ 0.20m - Jan. 15, 2018)							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

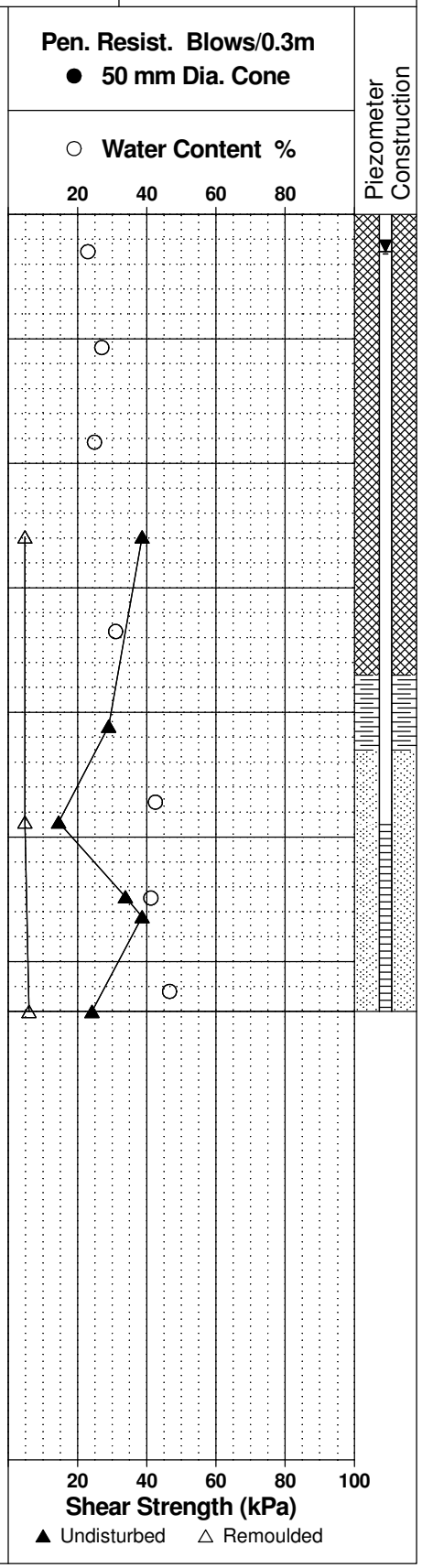
FILE NO. PG4242

REMARKS

HOLE NO. BH 3-18

BORINGS BY CME 55 Power Auger **DATE** January 10, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	95.74
Loose to compact, brown **SILTY SAND**		AU	1				
		SS	2	38	9	1	94.74
1.98		SS	3	75	11	2	93.74
Firm to soft, grey **SILTY CLAY,** trace sand		SS	4	100	2	3	92.74
						4	91.74
						5	90.74
6.40						6	89.74
End of Borehole							
(GWL @ 0.3m - Jan. 15, 2018)							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

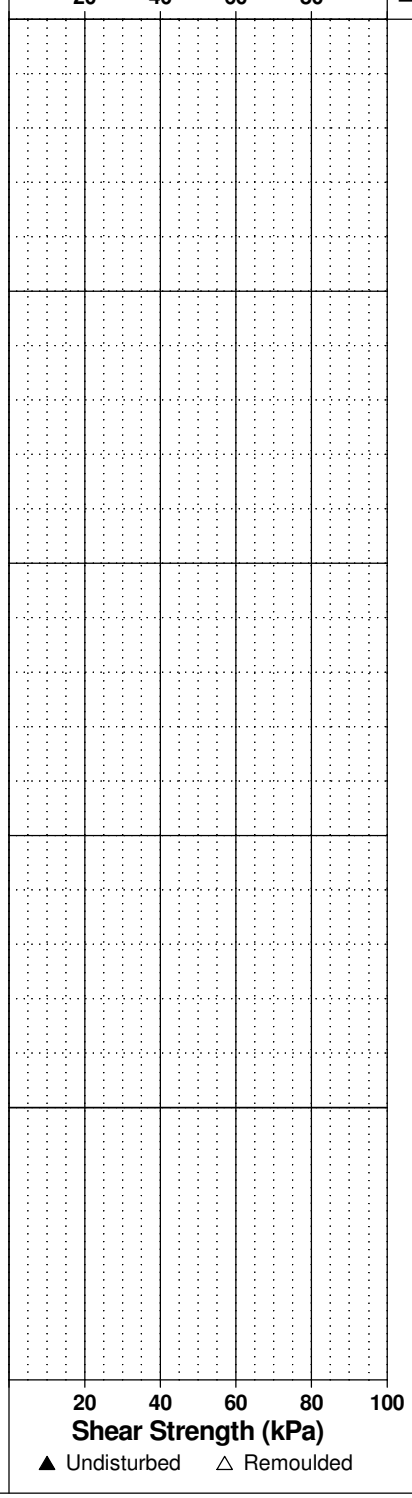
FILE NO. PG4242

REMARKS

HOLE NO. TP 1-18

BORINGS BY Backhoe **DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	93.42		
TOPSOIL 0.30		G	1						
Brown **SILTY SAND** 0.60		G	2						
		G	3			1	92.42		
Brown **CLAYEY SAND** with silt		G	4						
- grey by 2.1m depth		G	5			2	91.42		▽
		G	6			3	90.42		
4.00						4	89.42		
End of Test Pit									
(GWL @ 2.1m depth based on field observations)									



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. PG4242

REMARKS

HOLE NO. TP 2-18

BORINGS BY Backhoe **DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	93.78	20 40 60 80	
TOPSOIL with clay		G	1						
0.38									
Brown **FINE SAND,** trace clay		G	2			1	92.78		▽
1.32									
Grey **CLAYEY SAND**		G	3			2	91.78		
2.13									
Grey **SILTY CLAY** with sand		G	4			3	90.78		
		G	5						
4.00						4	89.78		
End of Test Pit									
(GWL @ 1.3m depth based on field observations)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. PG4242

REMARKS

HOLE NO. TP 3-18

BORINGS BY Backhoe **DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	96.11		
TOPSOIL 0.30		G	1						
		G	2			1	95.11		
Brown **SILTY SAND**		G	3			2	94.11		
		G	4						
3.05						3	93.11		▽
Brown **CLAYEY SAND**		G	5						
4.00						4	92.11		
End of Test Pit									
(GWL @ 3.0m depth based on field observations)									

Pen. Resist. Blows/0.3m: 20, 40, 60, 80

Water Content %: 20, 40, 60, 80

Shear Strength (kPa): 20, 40, 60, 80, 100

▲ Undisturbed △ Remoulded

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. PG4242

REMARKS

HOLE NO. TP 4-18

BORINGS BY Backhoe **DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.18		G	1			0	97.13		▽
GLACIAL TILL: Brown silty sand with gravel, cobbles and boulders		G	2						
		G	3			1	96.13		
1.52 End of Test Pit									
(GWL @ 0.3m depth based on field observations)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. PG4242

REMARKS

HOLE NO. TP 5-18

BORINGS BY Backhoe **DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	96.86		
TOPSOIL 0.15									
GLACIAL TILL: Brown silty sand with gravel, cobbles and boulders		G	1			1	95.86		
		G	2			2	94.86		
		G	3			3	93.86		
3.35 End of Test Pit									
(GWL @ 0.6m depth based on field observations)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. PG4242

REMARKS

HOLE NO. TP 6-18

BORINGS BY Backhoe **DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.10		G	1			0	97.26		
		G	2			1	96.26		▽
GLACIAL TILL: Brown silty sand with gravel, cobbles and boulders		G	3			2	95.26		
		G	4			3	94.26		
4.00						4	93.26		
End of Test Pit									
(GWL @ 1.2m depth based on field observations)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - Borrisokane Road
Ottawa, Ontario

DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. PG4242

REMARKS

HOLE NO. TP 7-18

BORINGS BY Backhoe **DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	97.89		
		G	1						
						1	96.89		
		G	2						
Brown **SILTY SAND**						2	95.89		
		G	3						
						3	94.89		
		G	4						
3.66									
Grey **SANDY CLAY** with silt		G	5						
4.00						4	93.89		
End of Test Pit									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Stantec Geomatics Limited.

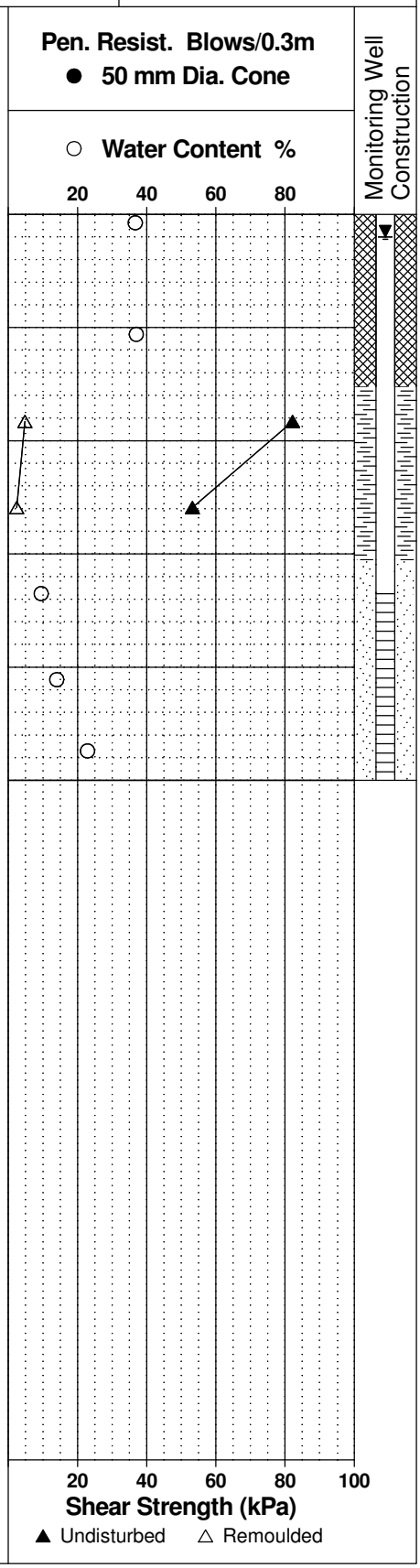
FILE NO. PG3786

REMARKS

HOLE NO. BH 1-16

BORINGS BY CME 55 Power Auger **DATE** March 11, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	94.86
FILL: Brown silty sand with clay and topsoil (0.30)		AU	1				
Stiff, brown **SILTY CLAY**		SS	2	100	3	1	93.86
- grey by 2.1m depth						2	92.86
(2.74)							
GLACIAL TILL: Grey silty sand with clay, gravel, cobbles, trace boulders		SS	3	33	9	3	91.86
(3.81)							
Grey **SILTY FINE SAND,** trace gravel		SS	4	33	8	4	90.86
- running sand encountered between 3.8 and 5.0m depth		SS	5	62	50+		
(5.00)						5	89.86
End of Borehole							
Practical refusal to augering at 5.00m depth							
(GWL @ 0.20m-April 4, 2016)							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Stantec Geomatics Limited.

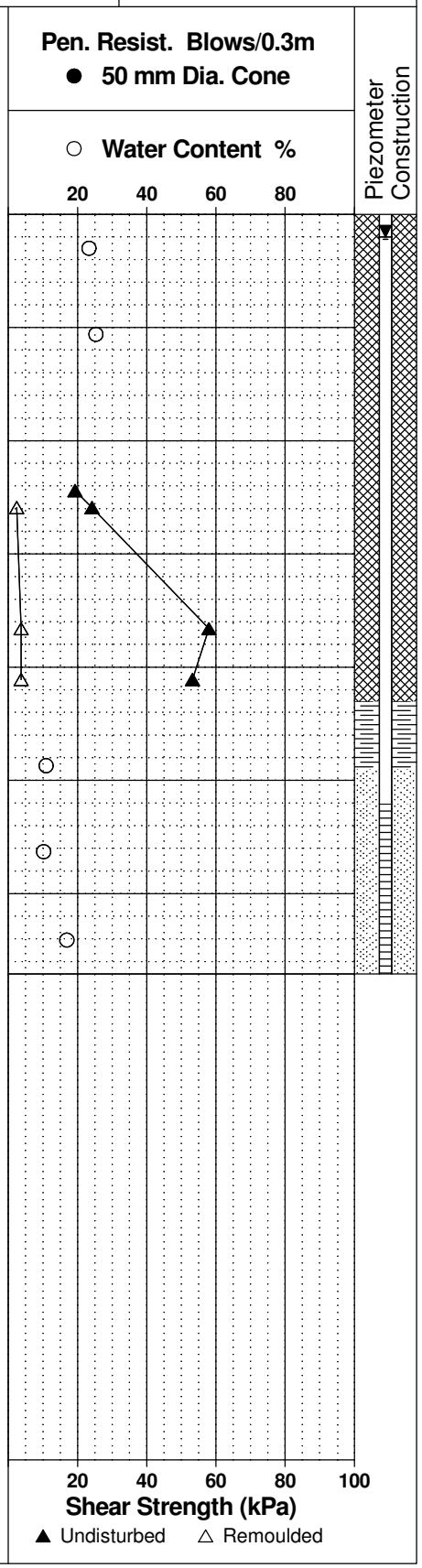
FILE NO. PG3786

REMARKS

HOLE NO. BH 2-16

BORINGS BY CME 55 Power Auger **DATE** March 11, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	94.10
Loose, light brown to brown **SILTY FINE SAND**		AU	1				
		SS	2	92	4	1	93.10
1.45							
		TW	3	100		2	92.10
Soft, grey **SILTY CLAY**							
		TW	4	92		3	91.10
- firm and grey by 3.35m depth						4	90.10
4.62							
		SS	5	88	21	5	89.10
GLACIAL TILL: Grey silty sand with clay, gravel, cobbles, trace boulders		SS	6	71	47	6	88.10
		SS	7	83	35		
6.71							
End of Borehole							
(GWL @ 0.20m-April 4, 2016)							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Stantec Geomatics Limited.

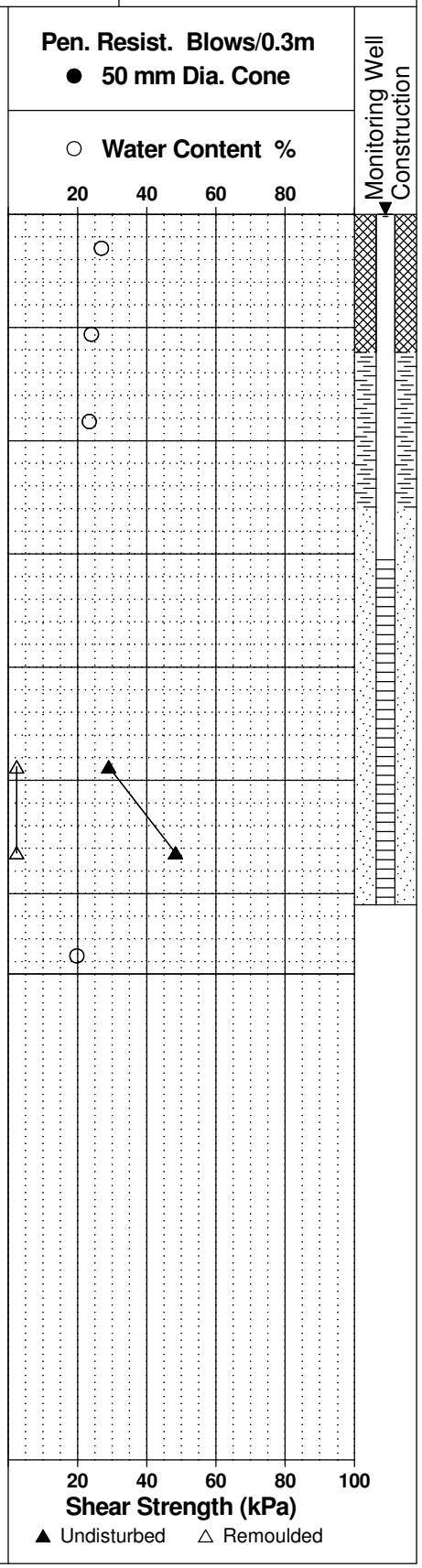
FILE NO. PG3786

REMARKS

HOLE NO. BH 3-16

BORINGS BY CME 55 Power Auger **DATE** March 11, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	93.93
FILL: Topsoil with brown silty sand, trace gravel (0.30)		AU	1				
Very loose, brown **SILTY FINE SAND,** trace clay (1.47)		SS	2	96	2	1	92.93
		SS	3	71	2	2	91.93
Grey **SILTY FINE SAND to SANDY SILT,** trace clay (3.96)		TW	4	96		3	90.93
		TW	5	100		4	89.93
Soft to firm, grey **SILTY CLAY** (6.38)		TW	6	100		5	88.93
		TW	7	100		6	87.93
GLACIAL TILL: Grey silty sand with clay, gravel, cobbles, trace boulders (6.71)		SS	8	100	4		
End of Borehole							
(GWL @ 0.1m above existing ground surface - April 4, 2016)							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Stantec Geomatics Limited.

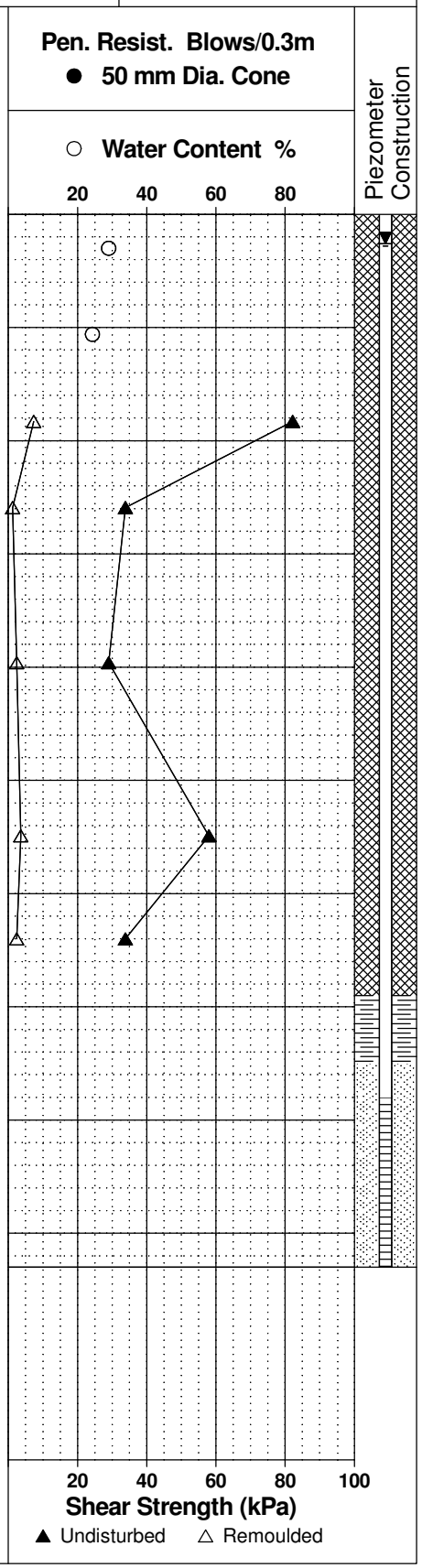
FILE NO. PG3786

REMARKS

HOLE NO. BH 4-16

BORINGS BY CME 55 Power Auger **DATE** March 14, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	94.10
TOPSOIL with silty sand 0.20		AU	1				
Brown **SILTY FINE SAND to CLAYEY SILT**		SS	2	83	3	1	93.10
- clay content increasing with depth 1.52						2	92.10
Stiff to firm, grey **SILTY CLAY**, some sand seams		TW	3	100		3	91.10
		TW	4	77		4	90.10
						5	89.10
6.40						6	88.10
Dynamic Cone Penetration Test commenced at 6.40m depth. Cone pushed to 9.30m depth.						7	87.10
Inferred **SILTY CLAY**						8	86.10
9.30						9	85.10
End of Borehole							
Borehole terminated on inferred glacial till at 9.30m depth							
(GWL @ 0.26m-April 4, 2016)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Stantec Geomatics Limited.

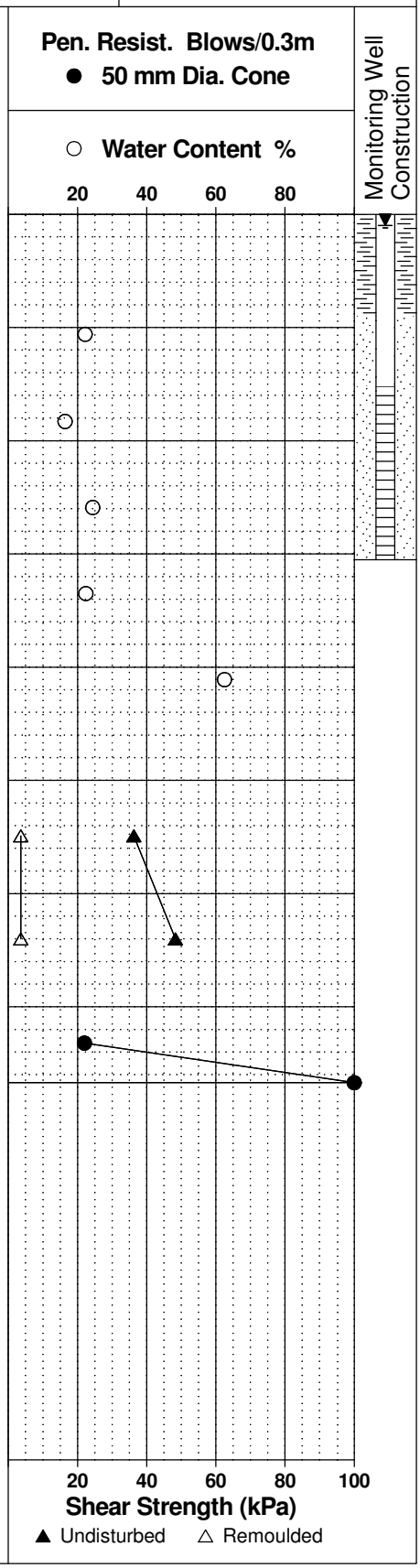
FILE NO. PG3786

REMARKS

HOLE NO. BH 5-16

BORINGS BY CME 55 Power Auger **DATE** March 14, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	94.92
PEAT with organics 0.25		AU	1				
Loose, brown **SILTY SAND**		SS	2	54	6	1	93.92
1.22		SS	3	50	2	2	92.92
Loose to very loose, grey **SILTY FINE SAND**		SS	4	42	3		
- running sand encountered between 1.5 and 3.0m depth		SS	5	50	5	3	91.92
3.96		SS	6	100	1	4	90.92
Firm, grey **SILTY CLAY**		TW	7	92		5	89.92
6.40						6	88.92
Dynamic Cone Penetration Test commenced at 6.40m depth. Cone pushed to 7.3m depth.						7	87.92
7.67							
End of Borehole							
Practical DCPT refusal at 7.67m depth							
(GWL @ 0.1m-April 4, 2016)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Residential Development - The Meadows Phase 4
Greenbank Road, Ottawa, Ontario

DATUM Ground surface elevations were provided by Stantec Geomatics Limited.

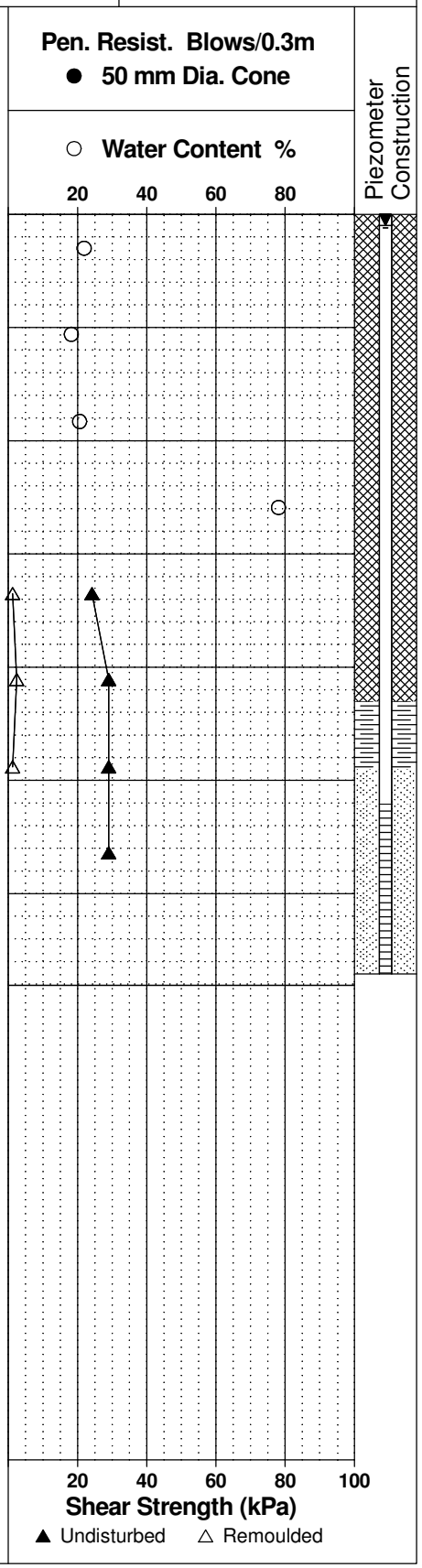
FILE NO. PG3786

REMARKS

HOLE NO. BH 6-16

BORINGS BY CME 55 Power Auger **DATE** March 14, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	94.78
TOPSOIL with organics and silty sand 0.25		AU	1				
Loose, brown **SILTY SAND**		SS	2	71	4	1	93.78
- grey by 0.6m depth							
- running sand encountered between 1.4 and 2.5m depth		SS	3	67	5	2	92.78
2.54		SS	4	67	2		
		TW	5	100		3	91.78
Soft to firm, grey **SILTY CLAY**						4	90.78
						5	89.78
						6	88.78
6.70		TW	6	100			
Dynamic Cone Penetration Test commenced at 6.70m depth 6.81							
End of Borehole							
Borehole terminated on inferred glacial till at 6.81m depth							
(GWL @ 0.10m-April 4, 2016)							



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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. TP 6-09

BORINGS BY Hydraulic Shovel **DATE** December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0			
TOPSOIL 0.20									
Brown **SILTY CLAY** with sand 0.40									
GLACIAL TILL: Very dense, brown silty sand with clay, gravel, cobbles, trace boulders 2.10						1			
GLACIAL TILL: Very dense, grey sandy silt with gravel, cobbles, boulders, trace clay 3.20						2			
End of Test Pit						3			
(TP dry upon completion)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. TP 7-09

BORINGS BY Hydraulic Shovel **DATE** December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0			
TOPSOIL 0.30									
Brown **SILTY CLAY,** trace sand and gravel 0.50									
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles, trace clay and boulders						1			
2.70						2			
GLACIAL TILL: Grey sandy silt with gravel, cobbles and boulders 3.00						3			
End of Test Pit									
(TP dry upon completion)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. TP 8-09

BORINGS BY Hydraulic Shovel **DATE** December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0		20 40 60 80	
TOPSOIL 0.40									
GLACIAL TILL: Brown silty clay with sand, gravel, cobbles and boulders 0.60						1			
GLACIAL TILL: Brown sandy silt/silty sand						2			▽
3.20						3			
End of Test Pit (GWL @ 2.7m depth based on field observations)								20 40 60 80 100 **Shear Strength (kPa)** ▲ Undisturbed △ Remoulded	

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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

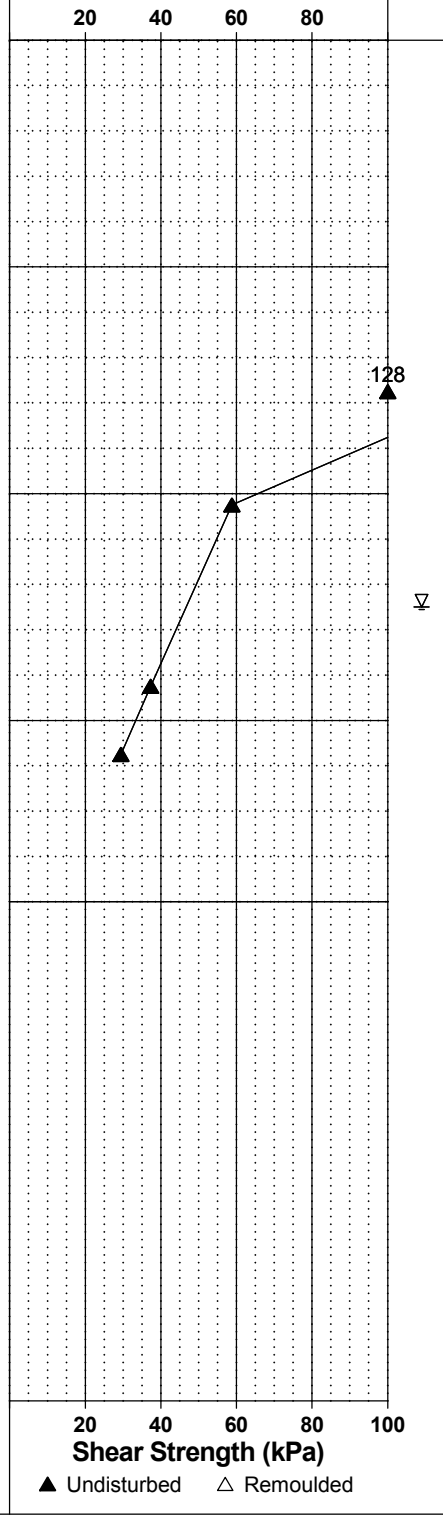
HOLE NO. TP 9-09

BORINGS BY Hydraulic Shovel **DATE** December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	
TOPSOIL 0.35							
Brown fine to coarse **SAND** 0.90						1	
Very stiff to stiff, brown **SILTY CLAY**						2	
- firm and grey by 2.4m depth							
3.30						3	
GLACIAL TILL: Grey silty clay with sand, gravel, cobbles and boulders 3.60							
GLACIAL TILL: Very dense, grey sandy silt to silty sand with gravel, cobbles, boulders, trace clay 3.80							
End of Test Pit							
(GWL @ 2.5m depth based on field observations)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

Piezometer Construction



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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. TP10-09

BORINGS BY Hydraulic Shovel **DATE** December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0		20 40 60 80	
TOPSOIL 0.50									
Red-brown **SILTY CLAY** with sand 0.85						1			
Brown **SILTY SAND** 1.30									
Soft to firm, grey-brown **SILTY CLAY** with sand - grey by 1.9m depth						2			▽
						3			
						4			
4.80									
End of Test Pit (GWL @ 1.8m depth based on field observations)								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded	

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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. TP11-09

BORINGS BY Hydraulic Shovel **DATE** December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0		20 40 60 80	
TOPSOIL 0.30									
Brown **SILTY CLAY** with sand 0.70						1			▽
Brown **SILTY SAND** with clay and clay seams 1.50									
Soft to firm, grey **SILTY CLAY** with sand seams						2			
4.30						3			
End of Test Pit (GWL @ 1.5m depth based on field observations)						4			

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. TP13-09

BORINGS BY Hydraulic Shovel **DATE** December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.25						0			
Red-brown **SILTY SAND** with gravel 0.50									
GLACIAL TILL: Brown silty clay with sand, gravel, cobbles and boulders 1.00						1			
GLACIAL TILL: Brown silty sand with gravel, cobbles, boulders, trace clay - grey by 2.1m depth 2.50						2			
End of Test Pit (GWL @ 1.3m depth based on field observations)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. BH 2-09

BORINGS BY CME 55 Power Auger **DATE** 2 Mar 09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	93.76
TOPSOIL 0.08		AU	1				
Brown organic **SILT** 0.60							
Stiff, brown **SILTY CLAY**, trace sand		SS	2	58	6	1	92.76
1.52		SS	3	67	50+	2	91.76
		SS	4	4	22		
GLACIAL TILL: Grey silty clay with sand, gravel, cobbles and boulders		SS	5		15	3	90.76
		SS	6	0	37	4	89.76
		SS	7	52	81	5	88.76
		SS	8	42	73		
6.04						6	87.76
End of Borehole							
Practical refusal to augering @ 6.04m depth							
(GWL @ 1.79m-Mar. 11/09)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. BH 3-09

BORINGS BY CME 55 Power Auger **DATE** 2 Mar 09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	93.33
TOPSOIL 0.08		AU	1				
CLAYEY SILT, some sand. High organic content in upper 600mm.		SS	2	58	2	1	92.33
2.13		SS	3	83	2	2	91.33
		SS	4	100	1	3	90.33
Firm to stiff, grey **SILTY CLAY**		TW	5	88		4	89.33
		SS	6	100	2	5	88.33
5.72						6	87.33
		SS	7	42	7		
GLACIAL TILL: Grey silty clay with sand, gravel, cobbles and boulders		SS	8	25	11	7	86.33
		SS	9	0	50+	8	85.33
		SS	10	4	52		
8.99							
End of Borehole							
(GWL @ 0.50m-Mar. 11/09)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

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FILE NO. PG0214

REMARKS

HOLE NO. BH 3B-09

BORINGS BY CME 55 Power Auger **DATE** 3 Mar 09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	93.33		
OVERBURDEN						1	92.33		
						2	91.33		
2.44									
SILTY CLAY		TW	1			3	90.33		
3.05									
End of Borehole									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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Ottawa, Ontario

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FILE NO. PG0214

REMARKS

HOLE NO. BH 4-09

BORINGS BY CME 55 Power Auger **DATE** 3 Mar 09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	93.44
TOPSOIL 0.05		AU	1				
Organic **SILT**, some sand 0.61							
Loose, brown **SANDY SILT**, some clay		SS	2	25	5	1	92.44
		SS	3	100	2	2	91.44
2.13							
		SS	4	0	1	3	90.44
Soft, grey **SILTY CLAY**		SS	5	100	1		
4.27						4	89.44
End of Borehole							
BH terminated due to clay entering augers @ 4m depth.							
(Open hole GWL @ 1.5m depth)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation
Prop. Residential Development-Greenbank Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. BH 5-09

BORINGS BY CME 55 Power Auger **DATE** 3 Mar 09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.08		AU	1			0	93.35		▽
Brown **SILTY SAND**, some gravel 0.60		SS	2	25	9	1	92.35		
		SS	3	33	9	2	91.35		
Loose to compact, grey **SAND**, some gravel		SS	4	42	10	3	90.35		
3.66		SS	5	83	12				
End of Borehole									
(Open hole GWL @ 0.6m depth)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

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Ottawa, Ontario

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REMARKS

HOLE NO. BH 6-09

BORINGS BY CME 55 Power Auger **DATE** 3 Mar 09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	94.00
25mm Topsoil		AU	1				
Compact, brown **SILTY SAND** with clay and gravel		SS	2	33	13	1	93.00
		SS	3	42	4	2	92.00
		SS	4	50	3		
3.00						3	91.00
Soft, grey **SILTY CLAY**, some fossiliferous shells		SS	5	100	2		
		SS	6	100	2	4	90.00
4.57							
Loose to compact, brown **SILTY SAND**		SS	7	83	6	5	89.00
		SS	8	100	4		
		SS	9	83	4	6	88.00
		SS	10	100	6	7	87.00
		SS	11	83	10	8	86.00
		SS	12	67	13		
						9	85.00
9.75							
End of Borehole							
(GWL @ 0.70m-Mar. 11/09)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ **Water Content %**

20 40 60 80

Piezometer Construction

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation
Part 1, Lot 10 and Part 1, Lot 9, Concession 3
Ottawa (Nepean), Ontario

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FILE NO. PG0214

REMARKS

HOLE NO. TP 1

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	95.00
TOPSOIL		G	1				
0.40							
		G	2			1	94.00
Firm, grey-brown **SILTY CLAY**, trace sand and shells						2	93.00
- grey by 2.7m depth						3	92.00
3.50							
End of Test Pit							
(Water infiltration @ 1.5m depth)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

▽

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

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Ottawa (Nepean), Ontario

DATUM Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

FILE NO. PG0214

REMARKS

HOLE NO. TP 2

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	97.95		
TOPSOIL									
0.40									
Red-brown **SAND** with gravel, cobbles and boulders									
0.80									
Firm, grey-brown **SILTY CLAY**, some boulders, trace sand seams and shells						1	96.95		
						2	95.95		▽
3.10									
GLACIAL TILL: Grey silty clay with gravel, cobbles and boulders		G	1			3	94.95		
4.00						4	93.95		
End of Test Pit									
(Water infiltration @ 2.0m depth)									

Water Content % scale: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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FILE NO. PG0214

REMARKS

HOLE NO. TP 3

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.20						0	103.11		
GLACIAL TILL: Brown sand with gravel, cobbles and boulders		G	1			1	102.11		
						2	101.11		
		G	2			3	100.11		
4.50						4	99.11		
End of Test Pit (TP dry upon completion)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation
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Ottawa (Nepean), Ontario

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FILE NO. PG0214

REMARKS

HOLE NO. TP 4

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	97.88		
TOPSOIL 0.20									
Red-brown **SAND** with gravel 0.50									▽
GLACIAL TILL: Brown sand with gravel, cobbles and boulders		G	1			1	96.88		
						2	95.88		
						3	94.88		
						4	93.88		
4.50 End of Test Pit (Water infiltration @ 0.5m depth)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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FILE NO. PG0214

REMARKS

HOLE NO. TP 5

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	94.22		
TOPSOIL									
1.00						1	93.22		
Firm, grey-brown **SILTY CLAY**, trace sand seams						2	92.22		
3.00						3	91.22		
Very loose, grey **SANDY SILT**									
4.50						4	90.22		
End of Test Pit (Water infiltration @ 1.0m depth)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %; 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100; ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation
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FILE NO. PG0214

REMARKS

HOLE NO. TP 6

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	99.11
TOPSOIL 0.10							
Brown medium to coarse **SAND**		G	1				
0.50						1	98.11
		G	2				
Firm, grey-brown **SILTY CLAY**, some sand, trace shells						2	97.11
						3	96.11
						4	95.11
4.50							
End of Test Pit							
(Water infiltration @ 3.0m depth)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation
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Ottawa (Nepean), Ontario

DATUM Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

FILE NO. PG0214

REMARKS

HOLE NO. TP 7

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	97.75		
TOPSOIL 0.30									
Brown medium to coarse **SAND**, trace gravel		G	1			1	96.75		▽
						2	95.75		
3.00 End of Test Pit						3	94.75		
(Water infiltration @ 1.0m depth)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %; 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100; ▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

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Ottawa (Nepean), Ontario

DATUM Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

FILE NO. PG0214

REMARKS

HOLE NO. TP 8

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.50		
TOPSOIL									
0.40									
Red-brown **SAND** with gravel									
0.80						1	98.50		
GLACIAL TILL: Brown sand with gravel, cobbles and boulders		G	1			2	97.50		▽
						3	96.50		
4.00						4	95.50		
End of Test Pit (Water infiltration @ 2.5m depth)									

Water Content % scale: 20 40 60 80

Shear Strength (kPa) scale: 20 40 60 80 100

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation
Part 1, Lot 10 and Part 1, Lot 9, Concession 3
Ottawa (Nepean), Ontario

DATUM Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

FILE NO. PG0214

REMARKS

HOLE NO. TP 9

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	98.73		
TOPSOIL 0.14									
Brown medium to coarse **SAND**, trace gravel		G	1			1	97.73		
						2	96.73		▽
3.00						3	95.73		
End of Test Pit (Water infiltration @ 2.1m depth)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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Ottawa (Nepean), Ontario

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FILE NO. PG0214

REMARKS

HOLE NO. TP10

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	99.00		
TOPSOIL 0.30									
Brown fine to medium **SAND**, trace gravel		G	1						
		G	2			1	98.00		▽
1.10									
		G	3						
Firm, grey **SILTY CLAY**, trace shells						2	97.00		
						3	96.00		
3.50									
End of Test Pit (Water infiltration @ 1.1m depth)									

Pen. Resist. Blows/0.3m — ● 50 mm Dia. Cone; ○ Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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FILE NO. PG0214

REMARKS

HOLE NO. TP11

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	98.98		
TOPSOIL 0.20									
Red-brown **SAND**, some gravel 0.50									
Brown **SAND** with gravel, cobbles and boulders 1.50						1	97.98		
Brown **SAND**, some gravel		G	1			2	96.98		▽
3.50						3	95.98		
End of Test Pit (Water infiltration @ 2.5m depth)									

Pen. Resist. Blows/0.3m — ● 50 mm Dia. Cone / ○ Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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FILE NO. PG0214

REMARKS

HOLE NO. TP12

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	96.33		
TOPSOIL									
						1	95.33		
1.30									
Firm, grey-brown **SILTY CLAY**, some sand seams									
- grey by 2.5m depth						2	94.33		
3.00									
End of Test Pit						3	93.33		
(Water infiltration @ 1.3m depth)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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

SOIL PROFILE AND TEST DATA

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Ottawa (Nepean), Ontario

DATUM Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

FILE NO. PG0214

REMARKS

HOLE NO. TP13

BORINGS BY Backhoe **DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	95.48		
TOPSOIL									
0.40									
Firm, grey-brown **SILTY CLAY**						1	94.48		▽
- grey by 1.7m depth						2	93.48		
3.00						3	92.48		
End of Test Pit									
(Water infiltration @ 1.7m depth)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %; 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100; ▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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Ottawa (Nepean), Ontario

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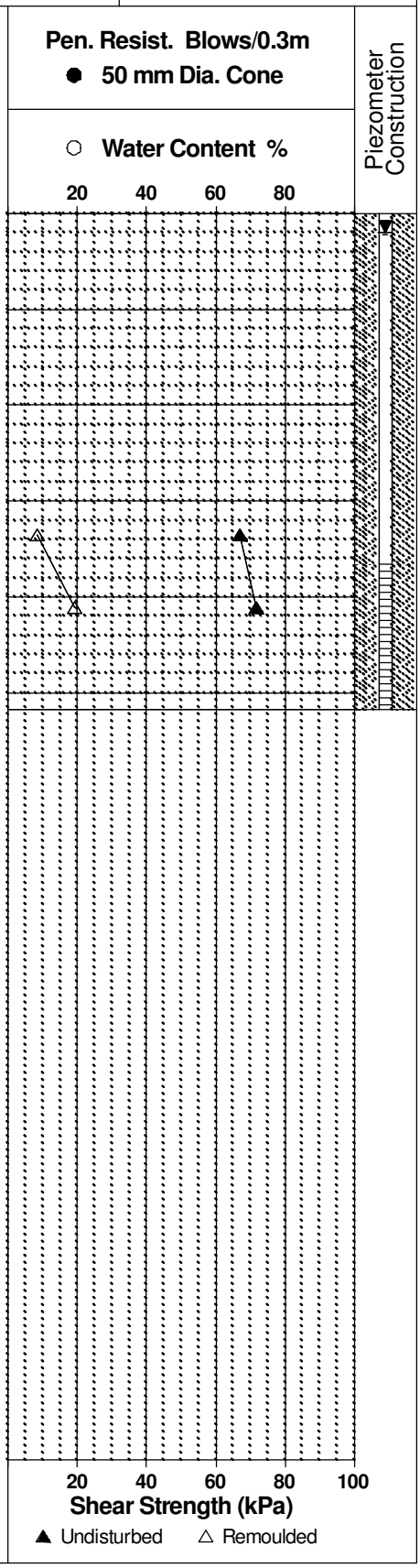
FILE NO. PG0214

REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** 22 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	93.32
TOPSOIL 0.30							
Brown **CLAYEY SILT**, some sand seams		SS	1	100	3	1	92.32
1.37		SS	2	100	2	2	91.32
Stiff, grey-brown **CLAYEY SILT** to **SILTY CLAY**, some sand seams		SS	3	100	1	3	90.32
4.57						4	89.32
GLACIAL TILL: Stiff, grey clayey silt with sand, gravel, cobbles and boulders 5.18		SS	4	100	5	5	88.32
End of Borehole							
(GWL @ 0.20m-May 1/04)							



patersongroup

Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation
Part 1, Lot 10 and Part 1, Lot 9, Concession 3
Ottawa (Nepean), Ontario

DATUM Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

FILE NO. PG0214

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** 22 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	94.97
TOPSOIL 0.36							
Stiff, brown **CLAYEY SAND**		SS	1	75	4	1	93.97
- grey by 1.5m depth		SS	2	100	W	2	92.97
		SS	3	71	W		
		SS	4	100	W	3	91.97
3.80							
Stiff, grey **CLAYEY SAND** to **SANDY SILT**		SS	5	100	1	4	90.97
4.57							
Very loose, grey fine to medium **SAND**		SS	6	100	W	5	89.97
5.60						6	88.97
		SS	7	100	W		
Stiff, grey **SILTY CLAY**						7	87.97
		SS	8	100	W	8	86.97
						9	85.97
		SS	9	100	1		
9.75						10	84.97
GLACIAL TILL: Loose, grey silty sand with gravel, cobbles and boulders		SS	10	50	7	11	83.97
11.28							
End of Borehole							
(GWL @ 1.20m-May 1/04)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Francis Lands-Cambrian Road @ Greenbank Road
Ottawa (Nepean), Ontario

DATUM

REMARKS

BORINGS BY Backhoe **DATE** 1 Apr 04

FILE NO. PG0177

HOLE NO. TP11

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0		20 40 60 80	
TOPSOIL									
0.40									
Very stiff, grey-brown **SILTY CLAY**, trace roots						1			▽
1.80									
GLACIAL TILL: Grey sandy silt with gravel, cobbles and boulders						2			
2.50									
End of Test Pit									
(Open hole GWL @ 1.6m depth)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

patersongroup

Consulting Engineers

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

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Francis Lands-Cambrian Road @ Greenbank Road
Ottawa (Nepean), Ontario

DATUM

REMARKS

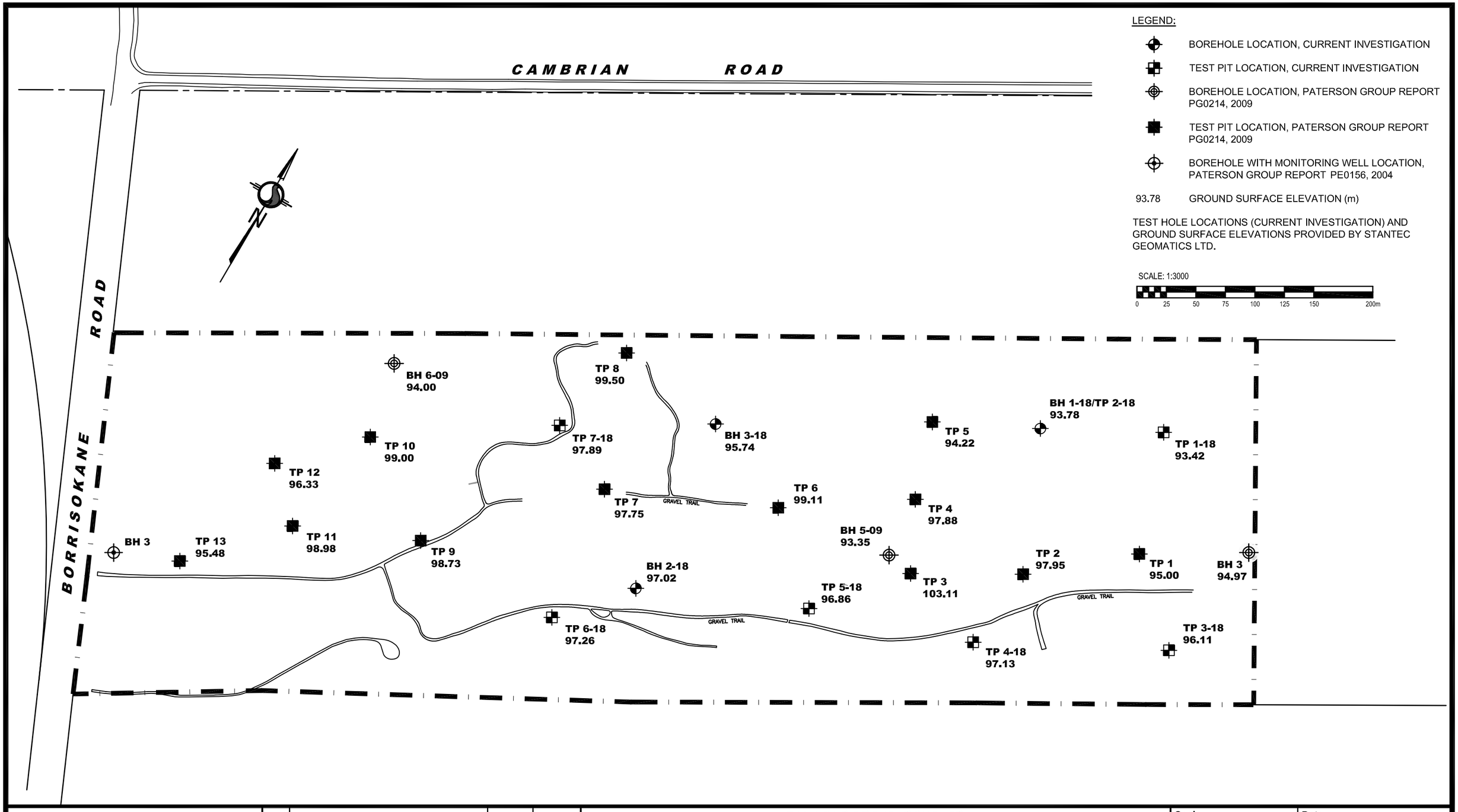
BORINGS BY Backhoe **DATE** 1 Apr 04

FILE NO. PG0177

HOLE NO. TP12

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0		20 40 60 80	
TOPSOIL									
0.40									
Reddish brown fine to medium **SAND**		G	1			1			▽
- coarse sand with some gravel and shells by 1.0m depth		G	2			2			
3.00						3			
End of Test Pit									
(Open hole GWL @ 1.0m depth)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded



LEGEND:

- BOREHOLE LOCATION, CURRENT INVESTIGATION
- TEST PIT LOCATION, CURRENT INVESTIGATION
- BOREHOLE LOCATION, PATERSON GROUP REPORT PG0214, 2009
- TEST PIT LOCATION, PATERSON GROUP REPORT PG0214, 2009
- BOREHOLE WITH MONITORING WELL LOCATION, PATERSON GROUP REPORT PE0156, 2004
- 93.78 GROUND SURFACE ELEVATION (m)

TEST HOLE LOCATIONS (CURRENT INVESTIGATION) AND GROUND SURFACE ELEVATIONS PROVIDED BY STANTEC GEOMATICS LTD.

SCALE: 1:3000

0 25 50 75 100 125 150 200m

patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL
0			

TAMARACK DEVELOPMENTS

GEOTECHNICAL INVESTIGATION
PROP. RESIDENTIAL DEVELOPMENT - THE MEADOWS - BORRISOKANE RD.
OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:3000	Date: 01/2018
Drawn by: MPG	Report No.: PG4242-1
Checked by: CB	Dwg. No.: PG4242-1
Approved by: DJG	Revision No.: 0

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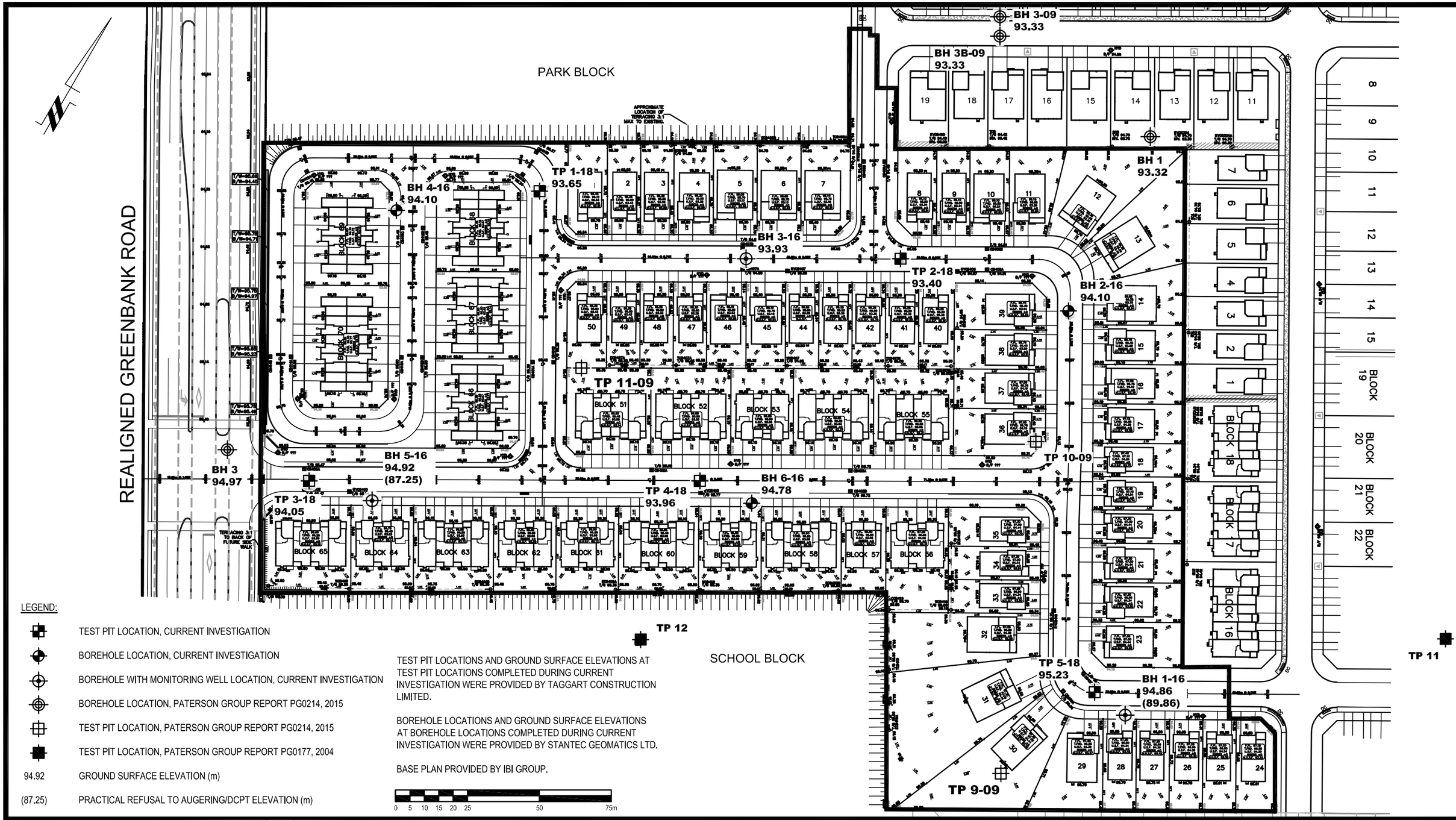

LEGEND:

- TEST PIT LOCATION, CURRENT INVESTIGATION
- BOREHOLE LOCATION, CURRENT INVESTIGATION
- BOREHOLE WITH MONITORING WELL LOCATION, CURRENT INVESTIGATION
- BOREHOLE LOCATION, PATERSON GROUP REPORT PG0214, 2015
- TEST PIT LOCATION, PATERSON GROUP REPORT PG0214, 2015
- TEST PIT LOCATION, PATERSON GROUP REPORT PG0177, 2004
- 94.92 GROUND SURFACE ELEVATION (m)
- (87.25) PRACTICAL REFUSAL TO AUGERING/DCPT ELEVATION (m)

TEST PIT LOCATIONS AND GROUND SURFACE ELEVATIONS AT TEST PIT LOCATIONS COMPLETED DURING CURRENT INVESTIGATION WERE PROVIDED BY TAGGART CONSTRUCTION LIMITED.

BOREHOLE LOCATIONS AND GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS COMPLETED DURING CURRENT INVESTIGATION WERE PROVIDED BY STANTEC GEOMATICS LTD.

BASE PLAN PROVIDED BY IBI GROUP.

0 5 10 15 20 25 50 75m

patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL
1	GRADING PLAN UPDATED AND 2018 TEST PITS ADDED	05/03/2018	RG

TAMARACK (NEPEAN) CORPORATION

GEOTECHNICAL INVESTIGATION
PROP. RESIDENTIAL DEVELOPMENT - THE MEADOWS PHASE 4
OTTAWA, ONTARIO

Title:
TEST HOLE LOCATION PLAN

Scale: :1250	Date: 04/2016
Drawn by: MPG	Report No.: PG3786-1
Checked by: RG	Dwg. No.: PG3786-1
Approved by: DJG	Revision No.: 1

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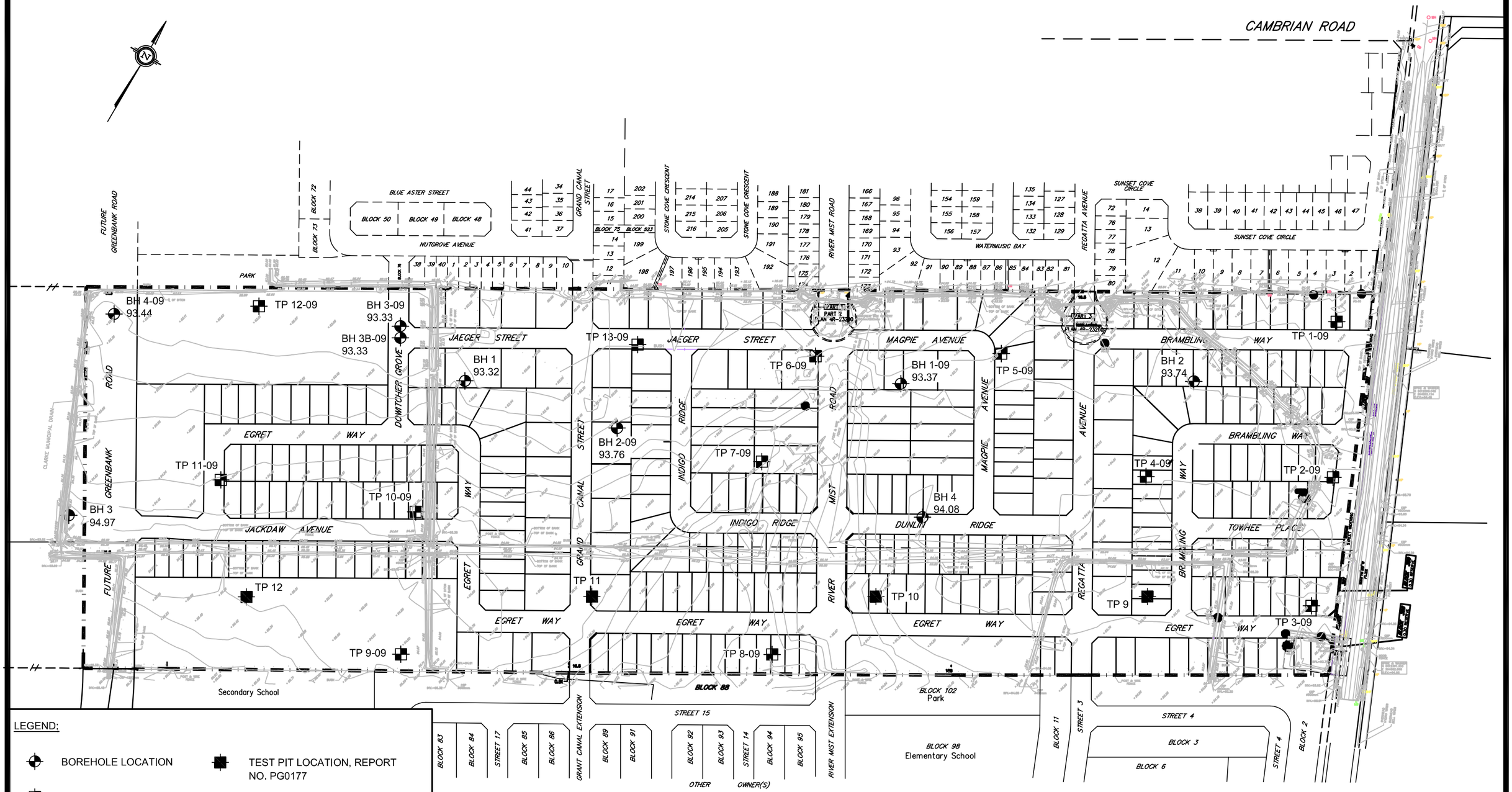


LEGEND:

- BOREHOLE LOCATION
- TEST PIT LOCATION
- TEST PIT LOCATION, REPORT NO. PG0177
- 93.32 GROUND SURFACE ELEVATION (m)

BASE PLAN PROVIDED BY STANTEC CONSULTING.

patersongroup
consulting engineers
28 Concourse Gate, Unit 1, Ottawa, Ontario K2E 7T7

Scale:	1:3000
Des.:	DG
Dwn:	MPG
Chkd:	CDS

TAGGART GROUP OF COMPANIES

GEOTECHNICAL INVESTIGATION

PROP. RESIDENTIAL DEVELOPMENT–THE MEADOWS, PHASE I

OTTAWA, ONTARIO

TEST HOLE LOCATION PLAN

Dwg. No. PG0214–4

Report No. PG0214–2

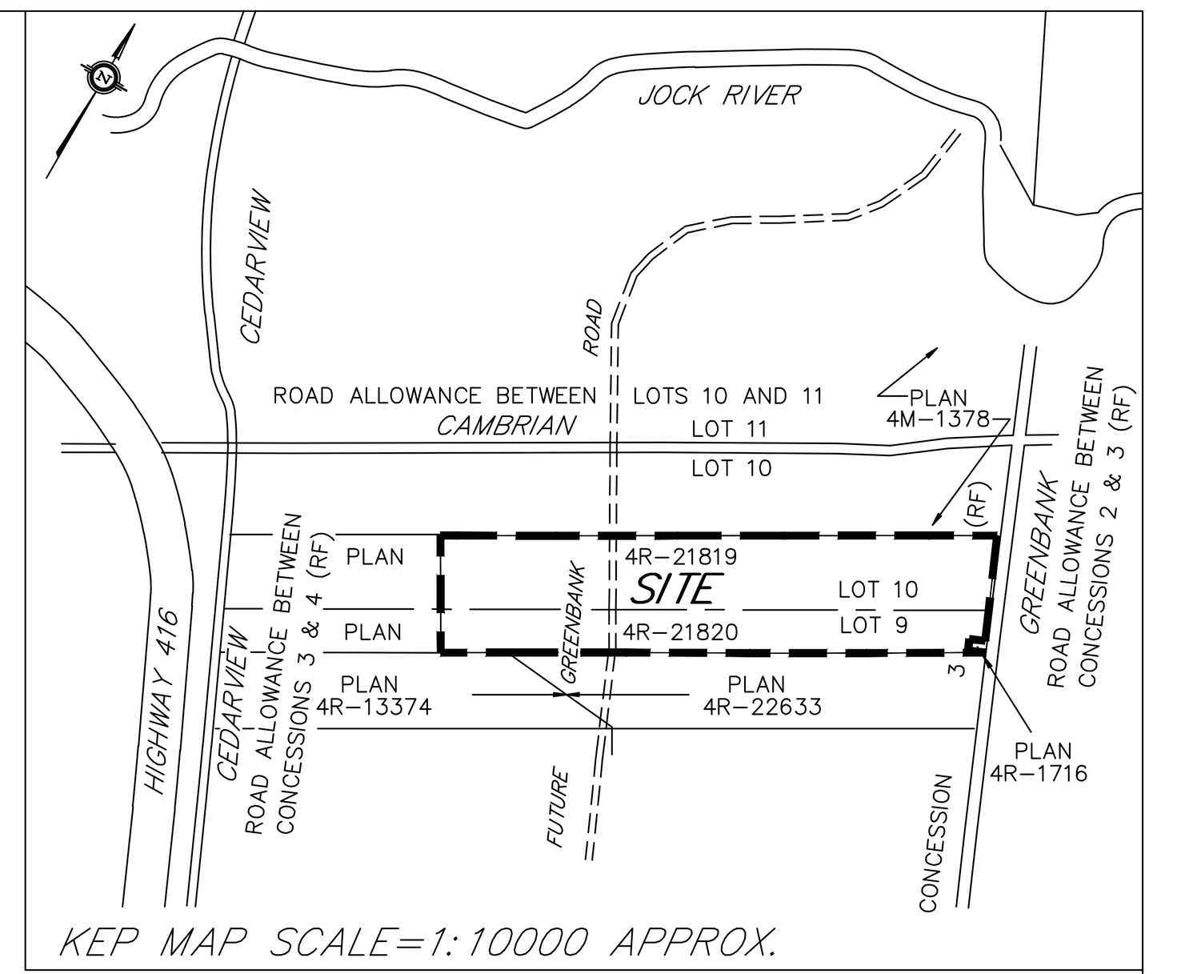
Date: 12/2009

11x17

Table 9: Hydraulic Conductivity Test Results				
Well ID	**Depth of Well (mbgs)**	**Depth to Water Level (mbgs)**	**Test Type**	**Hydraulic Conductivity (m/sec)**
BH1-16	3.1	0.4	Falling Head	4.02E-07
BH3-16	6.1	0.1	Falling Head	5.59E-06
			Rising Head	2.52E-06
BH5-16	4.5	0.6	Falling Head	9.90E-05
			Rising Head	6.20E-05
			Falling Head	8.48E-05
			Rising Head	5.94E-05
Maximum				**9.90E-05**
Minimum				**4.02E-07**
Geometric Mean				**1.51E-05**

APPENDIX 3

Stantec Geomatics Limited - Draft Plan of Subdivision With Contours



SITE AREA = 45.0 Ha± (111.2 Acres±)

DRAFT PLAN OF SUBDIVISION OF PART OF LOTS 9 AND 10 CONCESSION 3 (RIDEAU FRONT) GEOGRAPHIC TOWNSHIP OF NEPEAN CITY OF OTTAWA FORMERLY IN THE CITY OF NEPEAN

STANTEC GEOMATICS LTD.

2009

SCALE 1:2000 METRIC

0 50 100 150 200 250 METRES

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

SURVEYOR'S CERTIFICATE :

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND THEIR RELATIONSHIP TO ADJOINING LANDS HAVE BEEN ACCURATELY AND CORRECTLY SHOWN.

DATE : __________

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

ADDITIONAL INFORMATION :

d) RESIDENTIAL
h) CITY WATER AVAILABLE
i) SEE SOIL REPORT
j) SEE TOPOGRAPHICAL INFORMATION
k) ALL CITY SERVICES AVAILABLE
l) NONE KNOWN

NOTE:
THE PLAN DATA IS COMPILED FROM OFFICE RECORDS OF STANTEC GEOMATICS LTD. AND HAS NOT BEEN VERIFIED BY FIELD MEASUREMENTS. ALL DISTANCES ARE APPROXIMATE, TO BE VERIFIED BY FINAL REGISTERED PLAN(S).

DATE	REVISIONS		BY
Sept 18/09	add topo info from office maps, dwg & pdf to FP for review		CS
Sept 8–09	Prep Draft Plan per FP/GS, print for review	rev1.dwg	CS

FROM THE OFFICE OF
STANTEC GEOMATICS LTD.
Ontario Land Surveyors
OTTAWA – ONTARIO
(613)722–4420 FAX (613)722–0769
"E"–Mail: brian.webster@stantec.com
Website: www.stantec.com
161610681v–131–Curkovic–Lands–Greenbank_rev1.dwg

P.M.: FP	DRAWN: CS	FIELD:	CHECKED: FP	JOB No. : 161610681–131	Sept 18–09