memorandum

consulting engineers

re: Slope Stability Assessment
Proposed Residential Development
122 Old Mill Lane – Appleton, Ontario

to: Southwell Homes Ltd. - Mr. John Southwell - johnsouthwell@rogers.com

date: May 4, 2022

file: PG6241-MEMO.01

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide the slope stability assessment for the proposed residential development to be located at the aforementioned site.

The following sections provide a summary of our analysis of the slope conditions and recommendations to achieve stable slope setbacks for the proposed development.

1.0 Proposed Development

Based on the review of the drawings provided by the client, it is understood that the proposed residential development will consist of single-family residential dwellings with associated driveways, roadways, and access lanes. It is further anticipated that the proposed development will be privately serviced, with a septic system at the rear of each dwelling.

2.0 Field Observations

Paterson conducted subsurface investigations in 2008, 2015, 2016 and 2018 which consisted of advancing a total of 56 test pits and 5 boreholes to a maximum depth of 12.1 m below the existing ground surface. The locations of the test holes are shown on Drawing PG6241-1 – Limit of Hazard Lands Plan attached to this report.

Further, Paterson conducted a site visit on April 20, 2022 to review the site conditions and complete an assessment of the slope located along the northern boundary of the subject site. Two (2) slope cross-sections (Sections A-A and B-B) were studied as the worst-case scenarios. The cross-section locations are presented on Drawing PG6241-1 – Limit of Hazard Lands Plan attached to this report. The following provides a summary of the field observations and assessment.

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Surface Conditions

The subject site is located along the south shore of the Mississippi River and adjacent to the Appleton Swamp. The subject site is currently undeveloped. The existing ground surface across the subject site is generally level at approximate geodetic elevation 126 to 128 m, but slopes moderately downward in the vicinity of the Mississippi River to approximate geodetic elevation 118 m.

Subsurface Profile

Generally, the soil profile at the subject site consists of a thin layer of topsoil or fill underlain by bedrock. A layer of variable thickness of silty sand or silty clay, and a discontinuous glacial till, were also encountered underlying the fill at various test holes. The fill layer extends down to depths ranging between approximately 0.2 to 7.0 m below ground surface, and was observed to consist of brown silty sand and/or sandy silt, some gravel, and variable amounts of crushed stone, concrete, organics, glass, metal, or plastic debris.

Practical refusal to excavation or augering was encountered in several test holes at approximate depths ranging between 0.1 and 3.0 m below ground surface.

Reference should be made to the Soil Profile and Test Data sheets, attached to this report, for the details of the subsurface soil profile encountered at each test hole location.

Bedrock

Based on the available geological mapping, the subject site is underlain by dolostone of the Oxford Formation.

Groundwater

Groundwater levels were measured during the previous subsurface investigations. The measured groundwater level readings are provided on the Soil Profile and Test Data sheets attached to the present report.

However, it should be noted that the groundwater levels can fluctuate periodically throughout the year and higher levels could be encountered at the time of construction.



3.0 Slope Stability Assessment

The slope conditions at the northern boundary of the subject site were reviewed by Paterson field personnel on April 20, 2022. Photographs from our site visit are attached following this memo. Paterson also surveyed the top of slope location on this date using a mobile GPS unit.

The slope at the northern boundary of the subject site is generally well vegetated with no observed signs of active erosion. Two (2) slope cross-sections (Sections A-A and B-B) were studied as the worst-case scenarios. The cross-section locations are presented on Drawing PG6241-1 – Limit of Hazard Lands Plan attached to the current memo report.

A slope stability analysis was carried out to evaluate the stability of the slope under existing and proposed conditions.

Slope Stability Assessment

The analyses of the stability of the slopes were carried out using SLIDE, a computer program which permits a two-dimensional slope stability analysis using several methods, including the Bishop's method, which is a widely used and accepted analysis method. The program calculates a factor of safety, which represents the ratio of the forces resisting failure to those favouring failure. Theoretically, a factor of safety of 1.0 represents a condition where the slope is stable.

However, due to intrinsic limitations of the calculation methods and the variability of the subsoil and groundwater conditions, a factor of safety greater than 1.0 is usually required to ascertain that the risks of failure are acceptable. A minimum factor of safety of 1.5 is generally recommended for conditions where the failure of the slope would endanger permanent structures.

The cross-sections were analyzed based on the existing conditions observed during our site visit, and review of the available topographic mapping. The slope stability analysis was completed at each slope cross-section under worst-case-scenario by assigning cohesive soils under fully saturated conditions. Subsoil conditions at the cross-sections were inferred based on nearby boreholes and general knowledge of the area's geology.

The effective strength soil parameters used for static analysis were chosen based on the subsoil information recovered during the geotechnical investigation. The effective strength soil parameters used for static analysis are presented in Table 1 on the following page.



Table 1 – Effective S	Table 1 – Effective Soil and Material Parameters (Static Analysis)											
Soil Layer	Unit Weight (kN/m³)	Friction Angle (degrees)	Cohesion (kPa)									
Fill	18	33	0									
Brown Silty Clay	17	33	5									
Silty Sand	20	35	0									
Bedrock	22	-	1,000									

The total strength parameters for seismic analysis were chosen based on the subsurface conditions observed in the test holes, and our general knowledge of the geology in the area. The strength parameters used for seismic analysis at the slope cross-sections are presented in Table 2 below.

Table 2 – total Stress	Table 2 – total Stress Soil and Material Parameters (Seismic Analysis)											
Soil Layer	Unit Weight (kN/m³)	Friction Angle (degrees)	Undrained Shear Strength (kPa)									
Fill	18	33	0									
Brown Silty Clay	17	-	100									
Silty Sand	20	35	0									
Bedrock	22	-	1,000 kPa									

Static Loading Analysis

The results for the slope stability analyses under static conditions at Sections A-A and B-B are shown on Figures 2A and 3A, attached to the present memorandum. The factors of safety were found to be 1.2 and 0.9 at Section A-A and B-B under static conditions, respectively. Therefore, stable slope setback allowances from the top of slope have been provided to obtain a factor of safety greater than or equal to 1.5.

Seismic Loading Analysis

An analysis considering seismic loading was also completed. A horizontal acceleration of 0.16 g was considered for all slopes. A factor of safety of 1.1 is considered to be satisfactory for stability analyses including seismic loading. The results of the slope stability analyses under seismic conditions are shown on Figures 2B and 3B attached to the present memorandum.



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The results indicate a factor of safety are greater than 1.1 under seismic conditions at Section A-A. Therefore, the slope is considered stable under seismic conditions at this location.

However, the results indicate a factor of safety less than 1.1 beyond the top of slope for Section B-B. Based on these results, a stable slope setback of 7 m from the top of slope is required to achieve a factor of safety of at least 1.1 in the area of Section B-B. It should be noted that the stable slope setback associated with the seismic loading analysis governs the required stable slope setback over the static analysis for Section B-B.

Geotechnical Setback - Limit of Hazard Lands

Typically, the Limit of Hazard Lands setback is comprised of a stable slope allowance, toe erosion, and 6 m erosion access allowance. The Limit of Hazard Lands designation line for the subject site is indicated on Drawing PG6241-1 – Limit of Hazard Lands Plan, attached to the end of this memorandum.

Based on the analysis results, stable slope setbacks of 3 and 7 m at the locations of Sections A-A and B-B, respectively, are required for the slope to be stable under static and seismic conditions.

The toe erosion allowance is based on the nature of the soils, the observed current erosion activities, and the width and location of the current watercourse. Based on the soil profile encountered at the test hole locations, and our site observations as part of the slope stability assessment, a 1 m toe erosion allowance is considered suitable for the subject site.

Further, based on the generally accepted guidelines, a 6 m erosion access allowance is recommended for the subject site.

The results of the slope stability assessment indicate that Limit of Hazard Lands setbacks of 10 and 14 m, as measured form the top of the slope, should be provided for any proposed structures at the subject site in the areas of Section A-A and B-B, respectively, in order to provide a suitable factor of safety of 1.5 under static conditions and 1.1 under seismic conditions.

It should be noted that other setbacks may be applicable from the top of slope, such as those from the municipality or other regulatory agencies, and which may exceed the above-noted Limit of Hazard Lands setbacks.



4.0 General Recommendations

The existing vegetation on the slope face should not be removed as it contributes to the stability of the slope and reduces erosion. If the existing vegetation needs to be removed, it is recommended that a 100 to 150 mm of topsoil mixed with a hardy seed be placed across the exposed slope face. The use of an erosion control blanket may be necessary to minimize rill-type erosion until the vegetation takes root.

It is also recommended that the future roof drains which may be intended to discharge onto the slope be directed elsewhere, such as into 19 mm crushed stone drainage pits located on the property, and away from the top of slope.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Fernanda Carozzi, PhD. Geoph.

S. S. DENNIS 100519516

Scott S. Dennis, P.Eng.

Attachments

- Photographs from Site Visit on April 20, 2022
- ☐ Figure 1 Key Plan
- ☐ Drawing PG6241-1 Limit of Hazard Lands Plan
- Soil Profile and Test Data sheets
- ☐ Figures 2 and 3 Slope Stability Sections

Report Distribution

- Southwell Homes Ltd. (e-mail Copy)
- ☐ Paterson Group Inc. (1 copy)

Photo 1: Photograph of area taken from top of slope looking to the east. Slope observed to be heavily covered with vegetation.



Photo 2: Photograph taken from top of slope looking to the north. Area of slope observed to be generally covered with mature vegetation such as bush, trees and grass. No signs of active erosion observed.



Photo 3: Photo of face of slope taken from top of slope. Face of slope observed to be generally covered with vegetation and no signs of active erosion.



Photo 4: Photo of face of slope taken from toe of slope. Vegetation observed to be established throughout the surface. Subject site throughout left portion of photograph.



Photo 5: Photo of slope taken from top of slope. Slope observed to be covered with mature vegetation. No signs of active erosion observed



Photo 6: Photo of general area of slope taken from top of slope, looking north. No signs of erosion observed through the area.



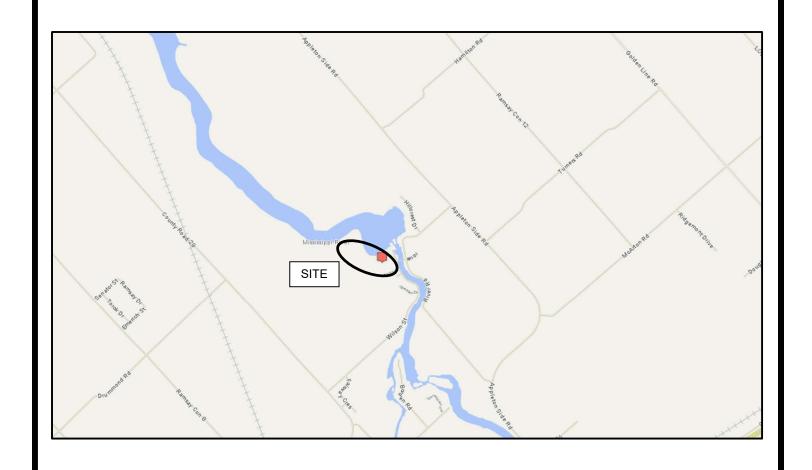
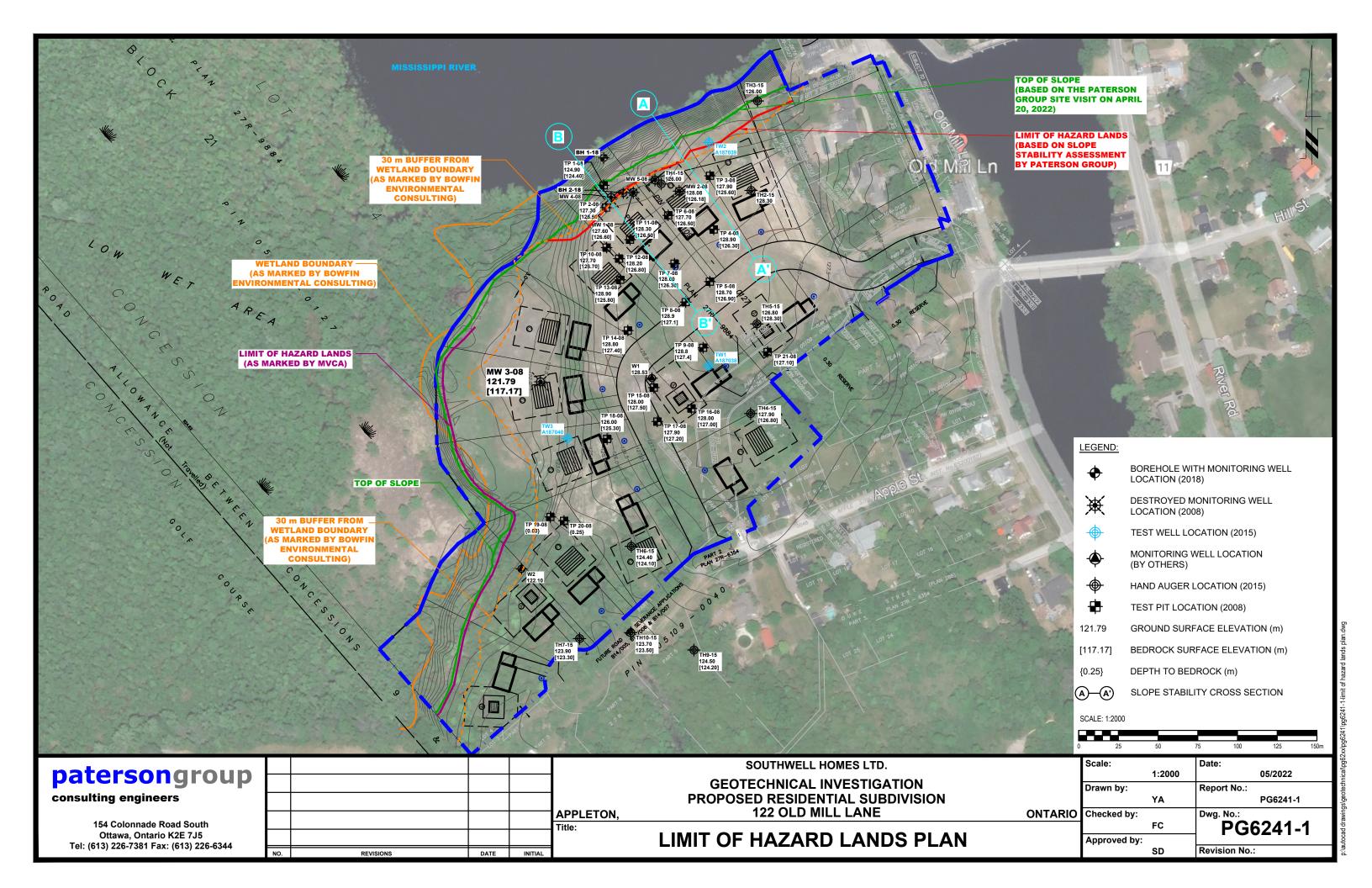


FIGURE 1

KEY PLAN



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. **DATUM** FILE NO. PE1114 **REMARKS** HOLE NO. TP 1 **BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 **GROUND SURFACE** 0+124.9025mm Topsoil over brown SILTY **SAND** with some clay and gravel 0.48 G 1 End of Test Pit TP terminated on bedrock surface @ 0.48m depth 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. FILE NO. DATUM PE1114 **REMARKS** HOLE NO.

BORINGS BY Backhoe					DATE .	August 26	, 2008		HOLE NO.	TP 2				
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.		onization tile Organic F		Monitoring Well			
	STRATA 1							O Lowe	ower Explosive Limit %					
GROUND SURFACE	W		Z	E.S.	z °		-127.28	20	40 60	80	Σ			
TOPSOIL 0.10		× × ×					0							
FILL: Brown silty sand with cinder blocks	3	G	1					Δ						
Brown SILTY SAND	1	_ G	2											
End of Test Pit	<u> </u>		-											
End of Test Pit TP terminated on bedrock surface @ 0.81m depth														
									200 300 Eagle Rdg as Resp. △	0 400 5 . (ppm) Methane Elim.	00			

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment **Former Appletex Mill** Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. DATUM FILE NO. PE1114 **REMARKS** HOLE NO.

BORINGS BY Backhoe				D	ATE .	August 26	, 2008		HOLE NO.	TP3	
SOIL DESCRIPTION	PLOT			IPLE ×		DEPTH (m)	ELEV. (m)		onization De		Well
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD		` ,	O Lowe	r Explosive	Limit %	Monitorina Well
GROUND SURFACE				2	z °	0-	127.94	20	40 60	80	
FILL: Dark brown silty clay with ravel and brick pieces											
						1-	-126.94				
		_ G _	1					Δ			
<u>1</u> . <u>62</u>		-									
rey-brown SILTY CLAY with sand						2-	-125.94				
2.34		- G	2					Δ			
nd of Test Pit											
P terminated on bedrock surface @ .34m depth											
GWL @ 1.6m depth)											
									200 300 Eagle Rdg. (as Resp. △ Me	ppm)	00

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. **DATUM**

FILE NO.

PE1114 **REMARKS** HOLE NO.

BORINGS BY Backhoe				D	ATE .	August 26	, 2008		HOLE	: NO.	TP 4		
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)	Photo le			etector g. (ppm)	Monitorina Well	
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(,	\···/	O Lowe	Lower Explosive Limit %				
GROUND SURFACE	XXX			щ		0-	128.92	20	40	60	80		
FILL: Brown sand and gravel with													
iodie		_											
0.97		G -	1			1 -	127.92	Δ					
ACIAL TILL, Drown silty cond		– G –	2					Δ					
iLACIAL TILL: Brown silty sand rith clay, gravel and cobbles													
						2-	126.92						
	\^^^^	_											
P terminated on bedrock surface @ .67m depth													
								100	200	300	400	500	
								RKI E	agle	Rdg. (ppm) ethane Elim		

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

DATUM Ground surface elevations p	rovide	ed by	G. A. S	Smith	Survey	ing Ltd.			FILE NO.	PE1114	ļ
BORINGS BY Backhoe					ATE	August 26	2005		HOLE NO.	TP 5	
DACNINGS BY DACNING	F.		SAN	ے IPLE	AIL	August 20	, 2005	Photo I	onization De		
SOIL DESCRIPTION	A PLOT				E C	DEPTH (m)	ELEV. (m)		tile Organic Rdg.		Monitoring Well Construction
GROUND SURFACE	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD			C Lowe	r Explosive I	Limit % 80	Monito
FILL: Brown silty sand with gravel and clay		_ G _	1				-128.72 -127.72				
GLACIAL TILL: Brown silty clay with sand and gravel		- G -	2					Δ			
End of Test Pit		-									
TP terminated on bedrock surface @ 1.83m depth								100 RKI E	200 300 Eagle Rdg. (p	400 50	00

Ground surface elevations provided by G. A. Smith Surveying Ltd.

SOIL PROFILE AND TEST DATA

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Appleton, Ontario

REMARKS

DATUM

FILE NO. PE1114

BORINGS BY Backhoe				D	ATE /	August 26	5. 2008		HOLE NO. T	P 6
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	1	onization Detectile Organic Rdg. (p	ctor (ppm)
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	○ Lowe	r Explosive Lir	mit %
GROUND SURFACE	Ø		z	RE	z °	0-	127.70	20	40 60 8	80 ≥
FILL: Dark brown silty sand with topsoil		– G	1			O O	127.70	Δ		
Brown SILTY SAND , some clay		_ _ _ G	2					Δ.		
GLACIAL TILL: Grey-brown silty clay with sand, gravel and cobbles 1.20		– G	3			1-	126.70	Δ		
End of Test Pit TP terminated on bedrock surface @ 1.20m depth										
									200 300 4 Eagle Rdg. (ppr is Resp. △ Methal	

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Appleton, Ontario

REMARKS

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FILE NO.

PE1114

HOLE NO.

Ground surface elevations provided by G. A. Smith Surveying Ltd.

TP 7 **BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE**Lower Explosive Limit %** 80 60 **GROUND SURFACE** 128.63 FILL: Brown silty sand with gravel G 1 FILL: Dark brown silty sand with clay and concrete pieces G 2 FILL: Brown silty sand with gravel 1 + 127.63G 3 À 1.22 G 4 GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles 2+126.63 2.34 End of Test Pit TP terminated on bedrock surface @ 2.34m depth 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

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Former Appletex Mill	
Appleton, Ontario	

SOIL PROFILE AND TEST DATA

200

RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

300

500

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ground surface elevations provided by G. A. Smith Surveying Ltd. **DATUM** FILE NO. PE1114 **REMARKS** HOLE NO. TP8 **BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT DEPTH ELEV. Volatile Organic Rdg. (ppm) **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 **GROUND SURFACE** 60 +128.92 FILL: Brown silty sand with clay, cobbles, steel and topsoil G 1 1 + 127.922 :∇; End of Test Pit TP terminated on bedrock surface @ 1.78m depth

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

DATUM Ground surface elevations	provide	ed by	G. A.	Smith	Survey	ing Ltd.			FILE NO.	PE1114	1
REMARKS BORINGS BY Backhoe				F	ATE /	August 26	2008		HOLE NO.	TP 9	
DOTHINGS BT DACKNOC			SAN	MPLE	AIL /	rugust 20	, 2000	Photo le	onization De		— —
SOIL DESCRIPTION	A PLOT			1	본스	DEPTH (m)	ELEV. (m)		tile Organic Rd		ing We
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD				r Explosive		Monitoring Well Construction
GROUND SURFACE				Α.		0-	128.84	20	40 60	80	 -
FILL: Sand and gravel with concrete and steel pieces		_ G _	1			1-	-127.84	Δ			described to the second
1.4 End of Test Pit	7	-									
TP terminated on bedrock surface @ 1.47m depth								100	200 300 agle Rdg. (000

TOPSOIL

End of Test Pit

0.99m depth

Brown SILTY SAND, trace clay

GLACIAL TILL: Grey-brown silty clay with sand, gravel and cobbles

TP terminated on bedrock surface @

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1

2

3

G

G

<u>0.48</u>

0.99

SOIL PROFILE AND TEST DATA

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario Ground surface elevations provided by G. A. Smith Surveying Ltd. DATUM FILE NO. PE1114 **REMARKS** HOLE NO. **TP10 BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPELower Explosive Limit % 80 60 **GROUND SURFACE** 0 + 127.73

Monitoring Well Construction Δ Δ

200

RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

300

500

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. DATUM FILE NO. PE1114 **REMARKS** HOLE NO. **TP11 BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. Volatile Organic Rdg. (ppm) **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 60 **GROUND SURFACE** 0 + 128.34FILL: Silty sand with gravel, concrete, metal and slag pieces G 1 0.60 G 2 1 + 127.34Brown SILTY CLAY with sand End of Test Pit 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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Appleton, Ontario Ground surface elevations provided by G. A. Smith Surveying Ltd. DATUM FILE NO. PE1114 **REMARKS** HOLE NO. **TP12 BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER **Lower Explosive Limit %** 80 60 **GROUND SURFACE** 128.16 FILL: Brown sand with gravel <u>0.15</u> TOPSOIL 2 À Brown SILTY CLAY with sand 1 3 GLACIAL TILL: Light brown silty G 4 sand with clay, gravel and cobbles 1 + 127.161.37 End of Test Pit TP terminated on bedrock surface @ 1.37m depth

200 300 500 RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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Ground surface elevations provided by G. A. Smith Surveying Ltd.

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HOLE NO.

FILE NO.

REMARKS

DATUM

TP13 BORINGS BY Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPELower Explosive Limit % 80 60 **GROUND SURFACE** +128.85 G 1 FILL: Sand and gravel with topsoil 1 + 127.85<u>1</u>.<u>1</u>2|\$ 2 G Brown SILTY SAND, some clay 1.73 2+126.85 GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles G 3 3 + 125.85 End of Test Pit TP terminated on bedrock surface @ 3.05m depth 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

Ground surface elevations provided by G. A. Smith Surveying Ltd.

SOIL PROFILE AND TEST DATA

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REMARKS

DATUM

FILE NO. PE1114

HOLE NO.

TP14 BORINGS BY Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 60 **GROUND SURFACE** +128.82 G 1 FILL: Brown silty sand with clay, Δ concrete and stéel 1 + 127.82GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles 2 End of Test Pit TP terminated on bedrock surface @ 1.42m depth 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. **DATUM** FILE NO. PE1114 **REMARKS** HOLE NO. **TP15 BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 60 **GROUND SURFACE** 0 + 128.04FILL: Mixture of topsoil, sand, silty clay, gravel and wood G 1 End of Test Pit TP terminated on bedrock surface @ 0.51m depth 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

DATUM Ground surface elevations p	provide	ea by	G. A. :	Smith	Survey	/ing Lta.			FIL	E NO.	Pl	E1114	ļ
BORINGS BY Backhoe				П	ΔTF	August 26	2008		НО	LE NO	. TI	P16	
Domina Di Daomio	H		SAN	IPLE	AIL /			Photo	loniz	ation			■ _
SOIL DESCRIPTION	A PLOT		«	34	田〇	DEPTH (m)	ELEV. (m)	● Vo	latile O	rganic	Rdg. (p	om)	Monitoring Well Construction
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD			O Low	er Ex	plosi	ve Lin	nit %	onitor Sonsti
GROUND SURFACE	Ø		z	RE	z °	0-	-127.95	20	40	6	3 0	30	Š
FILL: Sand and gravel with clay, wood and slag		_ _ G _ G	1 2			, and the second		Δ					
0.91 End of Test Pit		=											
TP terminated on bedrock surface @ 0.91m depth								100 RKI		e Rdg	g. (ppn	n)	00

SOIL PROFILE AND TEST DATA

▲ Full Gas Resp. △ Methane Elim.

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ground surface elevations provided by G. A. Smith Surveying Ltd. **DATUM** FILE NO. **PE1114 REMARKS** HOLE NO. **TP17 BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT DEPTH ELEV. Volatile Organic Rdg. (ppm) **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 60 **GROUND SURFACE** 0 + 127.85FILL: Sand, gravel, wood and slag G 1 Ά 0.66 End of Test Pit TP terminated on bedrock surface @ 0.66m depth 200 300 500 RKI Eagle Rdg. (ppm)

SOIL PROFILE AND TEST DATA

▲ Full Gas Resp. △ Methane Elim.

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ground surface elevations provided by G. A. Smith Surveying Ltd. **DATUM** FILE NO. PE1114 **REMARKS** HOLE NO. **TP18 BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 60 **GROUND SURFACE** 0 + 125.97FILL: Silty sand with clay, topsoil, wood and slag G 1 À End of Test Pit TP terminated on bedrock surface @ 0.63m depth 200 300 500 RKI Eagle Rdg. (ppm)

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill

Appleton, Ontario Ground surface elevations provided by G. A. Smith Surveying Ltd. DATUM FILE NO. **PE1114 REMARKS** HOLE NO. **TP19 BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 20 60 **GROUND SURFACE** 0 TOPSOIL 0.03 End of Test Pit TP terminated on bedrock surface @ 0.03m depth 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. **DATUM** FILE NO. **PE1114 REMARKS** HOLE NO. TP20 **BORINGS BY** Backhoe **DATE** August 26, 2008 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER TYPE **Lower Explosive Limit %** 80 60 **GROUND SURFACE** 0 FILL: Brown silty sand with clay, rubber, steel, plastic and fabric G 1 À End of Test Pit TP terminated on bedrock surface @ 0.25m depth 200 300 500

DATUM

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Former Appletex Mill Appleton, Ontario

Ground surface elevations provided by G. A. Smith Surveying Ltd. REMARKS

FILE NO. PE1114

BORINGS BY Backhoe				D	ATE /	August 26	5, 2008		HOLE NO. TP21	
SOIL DESCRIPTION			SAN	IPLE		DEPTH	ELEV.		onization Detector title Organic Rdg. (ppm)	Well
	STRATA PLOT	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		er Explosive Limit %	Monitoring Well
GROUND SURFACE	ß		z	E. E.	z °		100.10	20	40 60 80	Σ
FILL: Brown silty sand with clay and gravel 0.20		_ _ G	1			0-	128.19	Δ		
TOPSOIL 		_ _ G	2					Δ		
GLACIAL TILL: Brown silty clay with sand, gravel and cobbles		_ _ G	3				107.10	۵		
1.12	^^^^	_				-	127.19			
End of Test Pit TP terminated on bedrock surface @ 1.12m depth										
									200 300 400 500 Eagle Rdg. (ppm) as Resp. △ Methane Elim.	0

Consulting Engineers

Ground surface elevations provided by G. A. Smith Surveying Ltd.

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill

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

Appleton, Ontario

REMARKS

DATUM

PE1114 HOLE NO.

FILE NO.

BORINGS BY CME 55 Power Auger				D	ATE 2	26 Aug 08		MW 1-08
SOIL DESCRIPTION			SAN	IPLE	ı	Pen. Resist. Blows/0.3m ■ 50 mm Dia. Cone		
GROUND SURFACE	STRATA PLOT	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone Cone
FILL: Silty sand with gravel		₩ AU	1			0-	-127.46	
	0.86	RC	1	91	0	1-	126.46	
		RC	2	90	60	2-	125.46	
		- RC	3	88	82	3-	-124.46	
		-	4	100	44		123.46	
		RC -	4	100	44		-122.46 -121.46	
BEDROCK: Limestone		RC -	5	90	73		-120.46	
		RC	6	95	92	8-	-119.46	
		- RC	7	100	78	9-	-118.46	
		-	6	67	00		-117.46 -116.46	
4	2 10	RC - RC	8 9	97	100		-115.46	
ind of Monitoring Well GWL @ 9.86m-Sept. 2/08)	2.19		Ĭ					
								100 200 300 400 500 Gastech 1314 Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

Consulting Engineers

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

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

Ground surface elevations provided by G. A. Smith Surveying Ltd. DATUM FILE NO. **PE1114 REMARKS**

HOLE NO.

BORINGS BY CME 55 Power Auge	er			D	ATE 2	26 Aug 08			MW 2-	80
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH	ELEV.		sist. Blows/0.3m mm Dia. Cone	Monitoring Well Construction
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	O Lower	er Explosive Limit %	
GROUND SURFACE						0-	-128.08			
FILL: Silty sand with gravel and concrete pieces						1-	-127.08			
	1.90	- RC -	1	85	73		-126.08			
		RC	2	93	60	3-	-125.08			
		_					-124.08			
BEDROCK: LImestone		RC -	3	100	100		-123.08			
		RC -	4	97	87		-122.08 -121.08			
		RC -	5	92	82		-120.08			
		RC	6	100	93		-119.08 -118.08			
		- RC	7	93	88	11-	-117.08			
End of Monitoring Well	12.19	_ _ RC	8	100	100	12-	-116.08			
(GWL @ 7.30m-Sept. 2/08)								Gastech	200 300 400 50 n 1314 Rdg. (ppm) Resp. △ Methane Elim.	00

Consulting Engineers

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment Former Appletex Mill Appleton, Ontario

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

Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. **PE1114**

REMARKS

DATUM

HOLE NO.

BORINGS BY CME 55 Power Auger					ATE 2	26 Aug 08		MW 3-	80
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone	Well
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	O Lower Explosive Limit %	Monitoring Well
GROUND SURFACE TOPSOIL	0.05	V 22		-		0-	-121.79	20 40 60 60	
FILL: Brown silty sand with		SS 77	1	33	2				
lay and gravel		ss	2	17	12	1-	-120.79		
	2.21	SS AU	3 5	4	4	2-	-119.79	4 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :	
ILL: Grey to black silty clay		∬ ss	4	17	2	2	-118.79	· · · · · · · · · · · · · · · · · · ·	
rith gravel	3.73	ss	6	17	3	3-	-110.79	<u>A</u>	
LACIAL TILL	4.62	ss	7	29	74	4-	-117.79		
:	4.02 \^^^	ss	8	55	33	5-	-116.79		
EDROCK: Limestone	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	RC	1	96	83		115 70		
EDROCK, LIMESTONE		RC	2	95	90	6-	-115.79		
						7-	-114.79		
nd of Monitoring Well	7.62	RC	3	90	70				<u>::</u>
GWL @ 2.70m-Sept. 2/08)									
								100 200 300 400 50 Gastech 1314 Rdg. (ppm)	00
								▲ Full Gas Resp. △ Methane Elim.	

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM

Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

FILE NO. PH2723

REMARKS

HOLF NO

SOIL DESCRIPTION THE STAMPLE THE STAMPLE	BORINGS BY Hand Auger					ATE .	August 28	, 2015		HOLE	NO. TH 1	
GROUND SURFACE FILL: Dark brown silty sand with gravel G 1 1-125.0	SOIL DESCRIPTION	PLOT	SAMPLE DEPTI									
FILL: Dark brown silty sand with ravel G 1 1-125.0			TYPE	NUMBER	COVERY VALUE		()	(111)	O Water Content %			
FILL: Dark brown silty sand with gravel G 1 1-125.0	ROUND SURFACE	•			2	Z	0-	126.0	20	40	60 80	\perp
20 40 60 80 100	FILL: Dark brown silty sand with gravel	1.55	G	1								100

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Consulting Engineers

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ground surface elevations interpolated from topo plan prepared by G.A. Smith **DATUM** FILE NO. Surveying Limited and, as such, are approximate only. PH2723 **REMARKS** HOLE NO. TH 2 **BORINGS BY** Hand Auger **DATE** August 28, 2015 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER TYPEWater Content % 80 **GROUND SURFACE** 20 0 + 128.3FILL: Dark brown silty sand with gravel G 1

<u>1</u>.55

1 + 127.3

60

△ Remoulded

Shear Strength (kPa)

▲ Undisturbed

100

End of Test Hole

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Ground surface elevations interpolated from topo plan prepared by G.A. Smith

FILE NO.

DATUM Surveying Limited and, as such, are approximate only. PH2723 **REMARKS** HOLE NO. **TH 3** POPINGS BY Hand Auger

BORINGS BY Hand Auger	DATE August 28, 2015 TH 3																	
SOIL DESCRIPTION	PLOT		SAM	IPLE	Г	DEPTH	ELEV.					st. nm						ter
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)					er C						Piezometer
GROUND SURFACE	ST	H	DN DN	REC	N O O C		100.0		2	20	4		60		80			Δ(
FILL: Dark brown silty sand with gravel End of Test Hole		.i∎ G	ION 1	REC	N N OZ		-126.0											
									S	20 Sheandist	4 ar S	Stre	60 ngt	h (k Rem	80 Pa	1)	10	0

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Consulting Engineers

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM Ground surface elevations interpo

Ground surface elevations interpolated from topo plan prepared by G.A. Smith

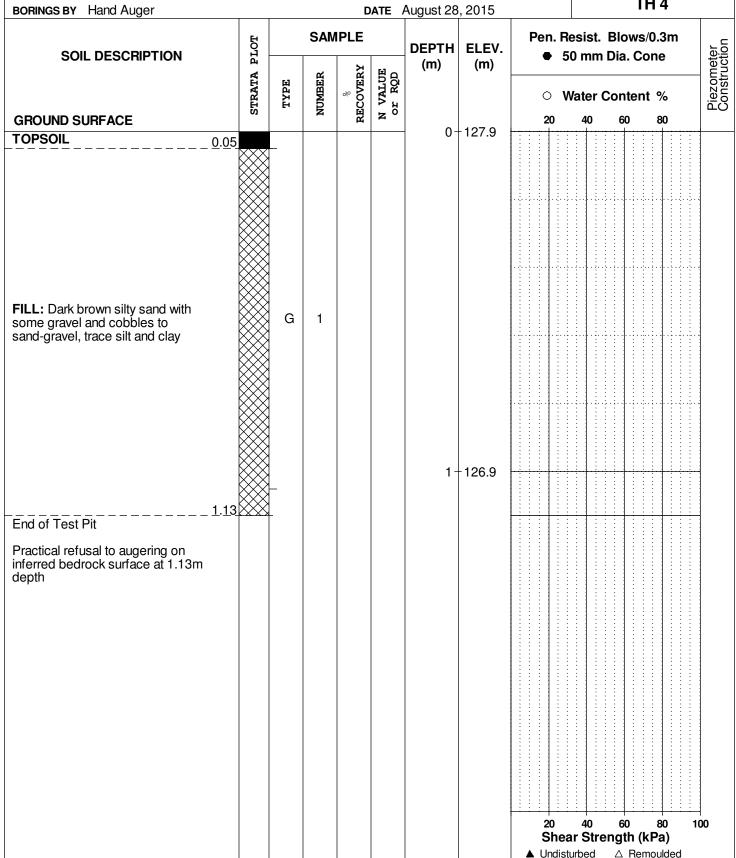
FILE NO.

PH2723

REMARKS

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RINGS BY Hand Auger DATE August 28, 2015



154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM

Ground surface elevations interpolated from topo plan prepared by G.A. Smith

FILE NO. PH2723

REMARKS

Surveying Limited and, as such, are approximate only.

HOLE NO.

ORINGS BY Hand Auger				D	ATE .	August 28	3, 2015	HOLE NO. TH 5	
SOIL DESCRIPTION	PLOT		SAN	IPLE	1	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ◆ 50 mm Dia. Cone	eter
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(111)	(111)	O Water Content %	Piezometer
GROUND SURFACE				24	z °	0-	127.9	20 40 60 80	
ILL: Light brown silty sand		G	1						
/ery stiff, brown SILTY CLAY, trace ravel	9	G	2						
ind of Test Hole	5					1-	126.9		
Practical refusal to augering on inferred bedrock surface at 1.05m epth									

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM

Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

FILE NO.

PH2723

Surveying Limited and, EMARKS	as such, a	re app	oroxim	ate on	ly.			PH2723	
ORINGS BY Hand Auger					ATE .	August 28	, 2015	HOLE NO. TH 6	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.	Pen. Resist. Blows/0.3m • 50 mm Dia. Cone	ā
OOIL BEOOM! HOW	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	Water Content %	Piezometer
ROUND SURFACE	ST	H) N	REC	N			20 40 60 80	Δ
OPSOIL	<u>0</u> . <u>0</u> 6					0-	128.6		
LL: Brown silty sand with clay	0.35								
d of Test Hole		Ī							
ractical refusal to augering on ferred bedrock surface at 0.35m epth									
								20 40 60 80 10 Shear Strength (kPa)	JÜ
								▲ Undisturbed △ Remoulded	

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM

Ground surface elevations interpolated from topo plan prepared by G.A. Smith

FILE NO.

Surveying Limited and, as such, are approximate only.

PH2723 **REMARKS** HOLE NO.

BORINGS BY Hand Auger				D	ATE /	August 28	, 2015		HOLEIN	^C TH 7	
SOIL DESCRIPTION	PLOT		SAN	IPLE	Γ	DEPTH	ELEV.			lows/0.3m ia. Cone	ŗ
	STRATA I	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0 V	Vater Co	entent %	Diozomotor
GROUND SURFACE	0.04			K	-	0-	123.9	20	40	60 80	_
FILL: Brown silty sand with clay	0.04	-									
End of Test Hole	0.65	=									
Practical refusal to augering on nferred bedrock surface at 0.65m depth											
								20 Shea	40 ar Stren	60 80 1 gth (kPa)	00

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Consulting Engineers

SOIL PROFILE AND TEST DATA

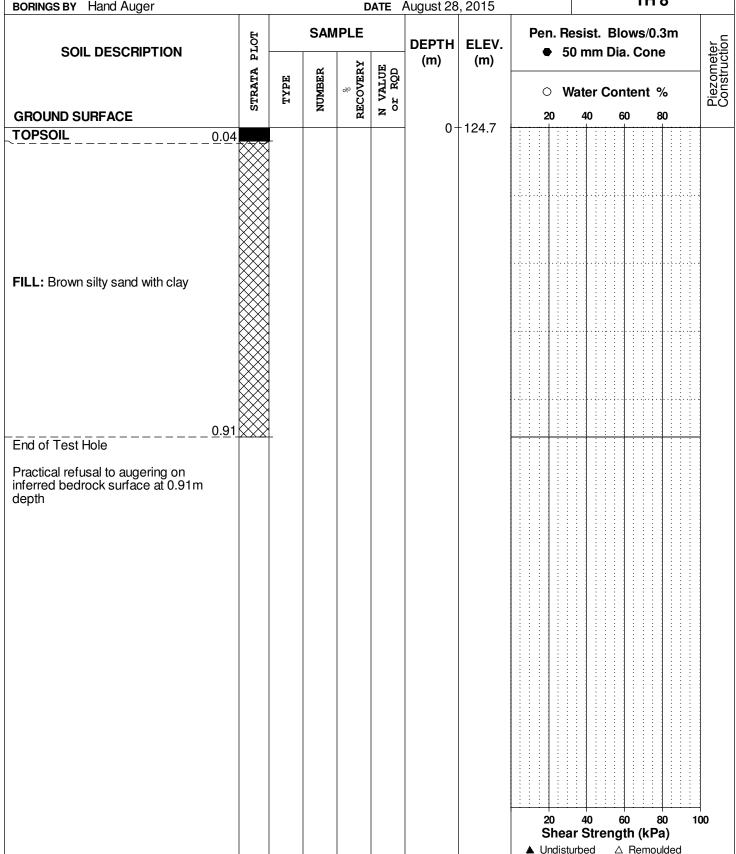
Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM

Ground surface elevations interpolated from topo plan prepared by G.A. Smith

FILE NO.

PH2723 Surveying Limited and, as such, are approximate only. **REMARKS** HOLE NO. **TH 8 BORINGS BY** Hand Auger **DATE** August 28, 2015



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Appleton, Ontario

REMARKS

DATUM

Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

FILE NO. PH2723

HOLE NO.

TH 9 **BORINGS BY** Hand Auger DATE September 9, 2015 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER TYPEWater Content % **GROUND SURFACE** 60 80 20 0 + 124.5TOPSOIL 0.03 SILTY SAND with clay G 1 0.34 End of Test Hole Practical refusal to augering on inferred bedrock surface at 0.34m depth 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM

Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

REMARKS

FILE NO.

PH2723

HOLE NO. TH10

BORINGS BY Hand Auger	DATE September 9, 2015 TH10							1				
SOIL DESCRIPTION	PLOT		SAN	IPLE	ı	DEPTH	ELEV.	Pen. R		Blow Dia. C		ter
	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)			Conte		Piezometer Construction
GROUND SURFACE	1111			2	Z	0-	123.7	20	40	60	80	
SILTY SAND		G	1									
End of Test Hole Practical refusal to augering on inferred bedrock surface at 0.22m depth								20 Shea ▲ Undist		60 ength	80 1 (kPa)	1000

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Ground surface elevations interpolated from topo plan prepared by G.A. Smith

FILE NO.

PH2723

Surveying Limited and, as such, are approximate only.

HOLF NO

REMARKS

DATUM

BORINGS BY Hand Auger				D	ATE S	Septembe	er 9, 2015			E NO.	ГН11	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)		Pen. R		Blow Dia. C		eter
GROUND SURFACE	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	, ,	, ,	○ V	/ater	Conte	nt %	Piezometer
	2 111	.				0-	124.6	20	+0	:: : :	:: ::	:
SILTY SAND, some clay							124.0	20 Shea ▲ Undist		60 ength △ Re	80 (kPa)	100

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM Geodetic									FILE NO.	PH2723	
REMARKS				_		A	2 2212		HOLE NO	^{).} TP1	
BORINGS BY Backhoe					ATE	August 18	3, 2016				
SOIL DESCRIPTION	PLOT			/IPLE		DEPTH (m)	ELEV. (m)		esist. Bi 0 mm Dia	ows/0.3m a. Cone	er
	STRATA	TYPE	NUMBER	RECOVERY	N VALUE or RQD			0 W	/ater Cor	ntent %	Piezometer Construction
GROUND SURFACE	ST	Ħ	N D	REC	N O N		100.05	20		60 80	Piez
FILL: Brown sand, silt, clay, rock and burnt wood debris. Slightly moist.		G	1			0-	-126.25				
FILL: Brown sand, silt and broken stone. Dry.		G	2								
FILL: Gravel, old wires, black plastic pieces. Drainage tile (pea stone) at 1.30 1.3m depth. FILL: Brown sand, silt and fabric debris 1.60 End of Test Pit Refusal on bedrock at 1.60 m depth		- G	3			1-	-125.25				
								20 Shea ▲ Undist	r Streng		000

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM Geodetic									FILE	NO.	PH2723	
REMARKS									HOLI	E NO. T	P2	
BORINGS BY Backhoe				D	ATE /	August 18	3, 2016 		<u> </u>	•	· <u>~</u>	
SOIL DESCRIPTION	A PLOT			MPLE 젊	Ħ O	DEPTH (m)	ELEV. (m)	Pen. Re		Blows Dia. Co		eter ction
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD			o w	/ater (Conten	t %	Piezometer Construction
GROUND SURFACE			-	2	Z	0-	128.17	20	40	60	80	E O
FILL: Brown silt, sand and clay with gravel. Slightly moist. 0.20		– G	4				120.17					
FILL: Light brown silt, sand, some gravel. Slightly moist. 0.40		G	5									
FILL: Black sand and silt, trace clay and charcoal. Slightly moist. 0.70		G	6									
<u>0.10</u>		_										
FILL: Light brown coarse sand, silt, gravel. Moist.		G	8			1-	127.17					
graver. Moist.		G	7									
1.70]
End of Test Pit		<u> </u>										
Refusal on bedrock at 1.70 m depth												
								20 Shea ▲ Undist		60 ength (k △ Ren	80 1 (Pa) noulded	00

Old Mill Lane

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. TP3 **BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+128.60FILL: Dark brown sand, silt, clay topsoil. Moist **FILL:** Light brown sand, silt, clay and gravel. Slightly moist. G 8 1 + 127.60End of Test Pit Refusal on bedrock at 1.83 m depth 40 60 80 100 Shear Strength (kPa)

Proposed Residential Subdivision

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Old Mill Lane

SOIL PROFILE AND TEST DATA

,					Ap	opleton, (Ontario									
DATUM Geodetic										FIL	E N	10.	Р	Ή2	723	3
REMARKS										НС	LE	NO.				
BORINGS BY Backhoe				D	ATE	August 18	3, 2016							P4		
SOIL DESCRIPTION	PLOT		SAN	//PLE		DEPTH (m)	ELEV. (m)	Pen					ws/ . Co		m	<u>~</u>
	STRATA	TYPE	NUMBER	% OVERY	ALUE ROD	(,	(,									
GROUND SURFACE	STR	TY	NOM	% RECOVERY	N VALUE or RQD		107.05	20		ατ e 40		on 60	tent	80 80		Piezometer
FILL: Brown sandy silt, trace clay 0.09 topsoil. Slightly moist.		_				- 0-	-127.95									
FILL: Light brown sand, silt, clay, gravel with debris (wood and plastic). Slightly moist.		G	9			1 -	-126.95									
End of Test Pit	XXXX	_														
Refusal on bedrock at 1.92 m depth								20	D	40		600	D	80		100
								S	hea hdistu	r S	trei	ngt	h (k Rem	Pa)		100

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

										FILE	NO.	PI	H2723	
				ATE	Λιιαιιο ι 10	2016			ı	HOL	E NO). TP	5	
LOT		SAN		AIL	DEPTH	ELEV.						ows/0).3m	
	五台	3ER	VERY	LUE	(m)	(m)		_						meter
STR	IXI	NOM	RECO	N VA or 1									% 80	Piezometer Construction
					0-	128.78				1				
	G	10			1-	-127 78								
7	_					.270								
								200	hear	40 Str	ena	50 th (ki	80 1 Pa)	000
	STRATA PLOT	STRATA	D TYPE OITH PLO OITH THE PLO OI	STRATA PLOT TYPE O NUMBER STRATA PLOT RECOVERY	D TYPE NUMBER RECOVERY N VALUE OF ROD OF ROD	STRATA PLOT STRATA PLOT STRATA PLOT NUMBER STRATA PLOT OF ROD OF	G 10 G 10 DEPTH (m) C 128.78 1 - 127.78	G 10 SAMPLE BALL G 10 G 10 1-127.78	SAMPLE SAMPLE BELEV. (m) O 128.78 G 10 1-127.78	SAMPLE SAMPLE SAMPLE BEAL August 18, 2016 DEPTH (m) O Wa 20 1-127.78 G 10 1-127.78	SAMPLE DEPTH (m) G 10 G 10 DEPTH (m) DEPTH (m) Fig. 12.778	G 10 DATE August 18, 2016 DEPTH (m) DEPTH (m) Pen. Resist. Bit of Somm Dia Water Cor 20 40 6 Shear Streng	TO SAMPLE SAMPLE DEPTH ELEV. (m) Pen. Resist. Blows/f 50 mm Dia. Col Water Content 20 40 60 Shear Strength (kf	DATE August 18, 2016 HOLE NO. TP5

Old Mill Lane

Proposed Residential Subdivision Appleton, Ontario

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. TP6 **BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+127.88FILL: Brown sandy silt topsoil. Slightly moist. FILL: Light brown sandy silt, some G 11 1 + 126.88clay and gravel. Moist. 1.51 End of Test Pit Refusal on bedrock at 1.51 m depth 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. TP7 **BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+128.42FILL: Brown sandy silt topsoil. Dry. 0.38 FILL: Light brown sandy silt, trace clay, debris. Dry. G 12 1 + 127.42End of Test Pit Refusal on bedrock at 1.17 m depth 40 60 80 100 Shear Strength (kPa)

Proposed Residential Subdivision Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

					pietori, t	Jinano				
								FILE NO.	PH2723	
			п	ΔTF	August 19	2016		HOLE NO.	TP8	
LOT		SAN		/AIL /	DEPTH	ELEV.				
	田	3ER	VERY	LUE	(m)	(m)				meter
STR	IX.	NOM	RECO	N VA						Piezometer
					0-	-				
	G	12								
	G	13			1-	-				-
6										
							20	40 60		7 00
	STRATA PLOT	STRATA	C TYPE INUMBER	C TYPE TYPE NUMBER & STRATA PLOT RECOVERY H	STRATA PLOT TYPE NUMBER RECOVERY N VALUE OF ROD	SAMPLE SUBSTITUTE OF RECOVERY OF ROD	G 13 RECOVERY NUMBER OF RQD O	G 13 DATE August 18, 2016 SAMPLE DEPTH (m) Pen. Re COALERA O VA 20 1	DATE August 18, 2016 SAMPLE DEPTH (m) G 13 G 13 FILE NO. HOLE NO. HOLE NO. HOLE NO. Pen. Resist. Blo 50 mm Dia. Water Con 20 40 66	BATE August 18, 2016 SAMPLE SAMPLE BALL BAL

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane Appleton, Ontario

DATUM Geodetic						. ,			FILE NO. PH2723	
REMARKS BORINGS BY Backhoe				-	NATE	August 18	2016		HOLE NO. TP9	
SOIL DESCRIPTION	PLOT		SAN	/IPLE	/AIL	DEPTH	ELEV.		esist. Blows/0.3m 0 mm Dia. Cone	
	STRATA 1	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)		Vater Content %	Piezometer Construction
GROUND SURFACE	Ø		Z	푒	z °	0-	128.31	20	40 60 80	i _m S
FILL: Brown sandy silt topsoil. Slightly moist. 0.56		_				o di	120.01			
FILL: Light brown to grey sandy silt, gravel and wood debris. Slightly moist.		G	14			1-	-127.31			
1.18						'	127.01			
End of Test Pit		-								
Refusal on bedrock at 1.18 m depth										
								20	40 60 80 1	↓ 00
								Shea ▲ Undist	ar Strength (kPa)	

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision Old Mill Lane

Appleton, Ontario

Ontario

Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. **TP10 BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+127.85FILL: Brown topsoil. Slightly moist. FILL: Brown sandy silt, some clay. G 15 Slightly moist. End of Test Pit Refusal on bedrock at 0.55 m depth 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

DATUM Geodetic									FILE NO	o. PH272	23
REMARKS BORINGS BY Backhoe				D	ATE /	August 18	3, 2016		HOLE N	10. TP11	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH	ELEV.			Blows/0.3m ia. Cone	ır On
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)	0 W	/ater Co	ontent %	Piezometer Construction
GROUND SURFACE	S	-	M	REC	N	0	127.55	20	40	60 80	Pie Co
FILL: Dark brown sandy topsoil. Dry.						0	127.55				
FILL: Brown sandy silt, clay and gravel. Dry. 0.49 End of Test Pit	$\otimes \otimes$	– G –	16								
Refusal on bedrock at 0.49 m depth											

Proposed Residential Subdivision Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Appleton, Ontario

SOIL PROFILE AND TEST DATA

DATUM Geodetic					·					FILE	NO.	Pł	12723	
REMARKS BORINGS BY Backhoe				_	ATE	August 18	3 2016			HOLI	NO.	TP	12	
BOTHNOODT BACKHOC	H		SAN	IPLE	AIL			Pen	. Res	sist.	Blo	ows/0		
SOIL DESCRIPTION	PLOT				₩ -	DEPTH (m)	ELEV. (m)	•				. Cor		ter
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD			0	Wa	ter (Con	tent	%	Piezometer Construction
GROUND SURFACE	ស		Ä	REC	Z O	0-	127.85	 20)	40	6	0	80	So Pie
FILL: Dark brown sandy silt topsoil. Slightly moist.		_				o o	127.00							
FILL: Light brown fine sand, silt, trace clay. Dry.		G	17											
End of Test Pit	XXX.	_												
Refusal on bedrock at 0.88 m depth								20 S) h ear	40 Stree	6engi	0 :h (kF	Pa)	000

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

40

▲ Undisturbed

Shear Strength (kPa)

60

80

△ Remoulded

100

Old Mill Lane 154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. **TP13 BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+128.03FILL: Brown mixture of sand, silt, clay and gravel. Dry. G 18 1 + 127.03End of Test Pit Refusal on bedrock at 1.27 m depth

Old Mill Lane

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario DATUM Geodetic FILE NO. PH2723 **REMARKS** HOLE NO.

ORINGS BY Backhoe				D	ATE /	August 18	3, 2016		HOLE	TP14	
SOIL DESCRIPTION	PLOT		SAN	IPLE		DEPTH (m)	ELEV. (m)			Blows/0.3m Dia. Cone	¥.
	STRATA	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(111)	(111)			Content %	Piezometer
GROUND SURFACE				ĬZ.		0-	-126.89	20	40	60 80	Д (
TLL: Brown sandy silt, gravel. Slightly moist. 0.28	8	G	19				120.00				
End of Test Pit		Ť									
Refusal on bedrock at 0.28 m depth								20	40	60 80 ngth (kPa)	100

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

Shear Strength (kPa)

△ Remoulded

▲ Undisturbed

Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. **TP15 BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % **GROUND SURFACE** 80 20 0+121.62FILL: Brown sandy silt, clay, boulders, concrete, asphalt, plastic and stell debris. Slightly moist. G 20 1 + 120.621.98 G 21 2+119.62 FILL: Grey/black clay, sand, gravel and organics. Very moist. 3.00 3 + 118.62End of Test Pit Test pit terminated due to maximum reach of backhoe. 40 60 80 100

SOIL PROFILE AND TEST DATA
Proposed Residential Subdivision

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Old Mill Lane
Appleton, Ontario

DATUM Geodetic										FILE	NO.	Ρ	H27	23	
REMARKS				_		A	2 0040			HOL	E NO	. TE	216		
BORINGS BY Backhoe			041		DATE	August 18	3, 2016	D							
SOIL DESCRIPTION	A PLOT			MPLE 굺	と	DEPTH (m)	ELEV. (m)	Pen.				. Co			eter ction
	STRATA	TYPE	NUMBER	RECOVERY	N VALUE or RQD			0			Con	tent			Piezometer Construction
GROUND SURFACE	XXX			2	4	0-	121.06	20)	40	6	0	80		<u> </u>
FILL: Brown sandy silt, clay and cobbles/boulders. Moist.															
cobbles/boulders. Moist.		G	24												
						1-	120.06								
						·	120.00								
1.4															
1.4		_													
FILL: Grey clay, sand		G	22			2-	119.06								
0.5															
<u>2.5</u>	8 💢	_													
Black organics, cat tails. Very wet.	7.1.5	G	23												
3.0	0 ===					2	118.06								
End of Test Pit						3-	110.00								
Test pit terminated due to maximum reach of backhoe.															
(GWL @ 1.57 m depth)															
								20		40	6		80	10	00
												h (k l Rem	Pa) oulded	d	

Old Mill Lane

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

40

▲ Undisturbed

Shear Strength (kPa)

60

80

△ Remoulded

100

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. **TP17 BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+120.63FILL: Brown sandy silt topsoil. 0.13 Slightly moist. FILL: Brown to dark brown sandy silt, clay, gravel, brick, plastic and concrete debris. Moist. 1 + 119.63G 27 2+118.63 FILL: Grey clay, sand. Very wet. G 26 2.34 End of Test Pit Test pit terminated due to inflow of groundwater. (GWL @ 1.78 m depth)

Proposed Residential Subdivision

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Old Mill Lane Appleton, Ontario

SOIL PROFILE AND TEST DATA

DATUM Geodetic					•				FILE NO.	PH2723	
REMARKS BORINGS BY Backhoe				_	A-T-F	August 10	2 2016		HOLE NO.	Γ P 18	
SOIL DESCRIPTION	PLOT		SAN	/IPLE	AIE	August 18 DEPTH	ELEV.		esist. Blow	s/0.3m	. =
30.2 2 2 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	STRATA F	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)				Piezometer Construction
GROUND SURFACE	STR	TY	NOM	RECO	N VZ			O V	/ater Conter	nt % 80	Piezo
FILL: Brown silty sand, some clay, gravel. Dry		G	29				-121.74				
FILL: Black to grey clay, sand, fabric, garbage bag. Slightly wet. 3.00 End of Test Pit Test pit terminated due to maximum reach of backhoe.		G	28				-119.74				
									40 60 or Strength ((kPa)	00

Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Proposed Residential Subdivision Appleton, Ontario

SOIL PROFILE AND TEST DATA

▲ Undisturbed △ Remoulded

DATUM Geodetic					, <u>-</u>				FILE NO	PH27	23
REMARKS				_		۸ d	0.010		HOLE N	o. TP19	
BORINGS BY Backhoe SOIL DESCRIPTION	PLOT		SAN	IPLE	AIE /	August 18 DEPTH	ELEV.			lows/0.3m a. Cone	
SOIL DESCRIPTION	STRATA P	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)			ntent %	Piezometer Construction
GROUND SURFACE	ST	H	N DN	REC	NO		100.00	20	40	60 80	Piez Con
FILL: Brown sandy silt topsoil. Slightly moist. 0.13		_				0-	-120.63				
FILL: Brown to dark brown sandy silt, clay, gravel, brick, plastic and concrete debris. Moist.						1-	-119.63				
FILL: Grey clay, sand. Very wet.						2-	-118.63				
End of Test Pit		-									
Test pit terminated due to inflow of groundwater.											
(GWL @ 1.78 m depth)								20		60 80 th (kPa)	100

SOIL PROFILE AND TEST DATA

Shear Strength (kPa)

△ Remoulded

▲ Undisturbed

Proposed Residential Subdivision
Old Mill Lane
Appleton Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. **TP20 BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0 ± 127.07 FILL: Dark brown sandy silt. Slightly moist. FILL: Light brown sand, silt, clay, gravel, wood debris. Slightly moist. G 30 0.68 End of Test Pit Refusal on bedrock at 0.68 m depth 40 60 80 100

Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Proposed Residential Subdivision Appleton, Ontario

SOIL PROFILE AND TEST DATA

BORINGS BY Backhoe DATE August 18, 2016 SAMPLE SOIL DESCRIPTION BY AUGUST 18, 2016 Pen. Resist. Blows/0.3m 50 mm Dia. Cone Water Content % 20 40 60 80 FILL: Brown sand, silt, clay, stone, wood and fabric debris G 31	3
SOIL DESCRIPTION SAMPLE SAMPLE DEPTH (m) Pen. Resist. Blows/0.3m 50 mm Dia. Cone Water Content % 20 40 60 80 FILL: Brown sand, silt, clay, stone, wood and fabric debris G 31	
GROUND SURFACE FILL: Brown sand, silt, clay, stone, wood and fabric debris GROUND SURFACE GROUND SURFACE Water Content % 20 40 60 80	:
FILL: Brown sand, silt, clay, stone, wood and fabric debris	Piezometer
FILL: Brown sand, silt, clay, stone, wood and fabric debris	Piez
End of Test Pit 20 40 60 80 1 Shear Strength (kPa)	100

Proposed Residential Subdivision Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Appleton, Ontario

SOIL PROFILE AND TEST DATA

DATUM Geodetic										FI	LE NO	РН	2723	
REMARKS BORINGS BY Backhoe					ATE	August 18	8 2016			Н	OLE N	o. TP 2	22	
BOTHINGS BT BACKINGS	E		SAN	IPLE	AIL /			F	Pen. F	 Resi	st. B	lows/0.	3m	
SOIL DESCRIPTION	A PLOT				ш .	DEPTH (m)	ELEV. (m)		•	50 m	ım Di	a. Con	е	ter
	STRATA	TYPE	NUMBER	% RECOVERY	VALUE r RQD				0 '	Wate	er Co	ntent ^c	%	Piezometer Construction
GROUND SURFACE	ะง		M	REC	N Or Or	0-	123.68		20	4	0	60 8	30	So Pie
FILL: Dark brown sand, silt, gravel, wood, fabrick, concrete, glass, metal and plastic debris. Dry.		G	33				-122.68							
1.48 FILL: Brown sand, silt, metal, glass, wood and plastic debris. gravel. Dry.		_ G	34			'	122.00							
		_									<u>- </u>			
Refusal on bedrock at 1.82 m depth									20 She	44	o ditreno	60 8 th (kP)	30 11 a)	000
									She Undis	ear S sturbe	itrenged /	jth (kPa \ Remou	a) ulded	

Old Mill Lane

Proposed Residential Subdivision

SOIL PROFILE AND TEST DATA

Shear Strength (kPa)

△ Remoulded

▲ Undisturbed

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Appleton, Ontario **DATUM** Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. **TP23 BORINGS BY** Backhoe **DATE** August 18, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+123.42FILL: Dark brown sandy silt. Dry. 0.53 1 + 122.42FILL: Light brown sandy silt, some clay, gravel. Dry. G 35 FILL: Brown clay, some sand, silt G 36 and gravel 2+121.42 End of Test Pit Refusal on bedrock at 2.17 m depth 40 60 80 100

Old Mill Lane

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Proposed Residential Subdivision Appleton, Ontario

SOIL PROFILE AND TEST DATA

DATUM Geodetic FILE NO. PH2723 **REMARKS** HOLE NO. TP24

orings by Backhoe				D	ATE .	August 18	8, 2016			TP24	
SOIL DESCRIPTION	PLOT		SAN	/IPLE		DEPTH	ELEV.			lows/0.3m ia. Cone	
	STRATA E	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)			ontent %	Piezometer
GROUND SURFACE	ω		Z	Æ	z °		100.10	20	40	60 80	ļ iš
TLL: Dark brown sandy silt, some lay. Slightly moist.		G	39			0-	123.16				-
ILL: Light brown sandy silt, some lay and gravel. Dry.		G	38			1-	-122.16				
1.67		_									
ILL: Dark grey clay with sand and oulders. Wet.		G	37			2-	-121.16				
2.23											
ind of Test Pit Refusal on large boulders at 2.23 m epth.											
								20 Shea ▲ Undisi		60 80 1 gth (kPa) △ Remoulded	00

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Groundwater Sampling Program Former Appletex Mill Appleton, Ontario

DATUM FILE NO. PE1114 **REMARKS** HOLE NO. **BH 1-18** BORINGS BY CME 55 Power Auger **DATE** March 16, 2018 **SAMPLE Photo Ionization Detector** Monitoring Well Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY VALUE r RQD NUMBER Lower Explosive Limit % N VZ **GROUND SURFACE** 80 0 TOPSOIL 0.10 SS 1 42 15 SS 2 50 13 1 RC 1 86 2 RC 2 10 3 FILL: Brown silty sand, some gravel, cobbles and boulders, trace concrete RC 3 10 5 6 7.01 RC 4 100 48 8 ¥ 5 RC 100 52 **BEDROCK:** Grey limestone 9 RC 6 72 100 10 End of Borehole (GWL @ 8.46m - June 7, 2018) 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Groundwater Sampling Program Former Appletex Mill Appleton, Ontario

DATUM FILE NO. PE1114 **REMARKS** HOLE NO. **BH 2-18** BORINGS BY CME 55 Power Auger **DATE** March 16, 2018 Monitoring Well Construction **SAMPLE Photo Ionization Detector** STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** Volatile Organic Rdg. (ppm) (m) (m) RECOVERY N VALUE or RQD NUMBER Lower Explosive Limit % **GROUND SURFACE** 80 0 FILL: Topsoil with organics, trace RC 1 100 52 gravel, cobbles and boulders 1 1.83 RC 2 100 94 2 3 RC 3 100 68 **BEDROCK:** Grey limestone RC 4 100 93 5 6 RC 5 100 92 End of Borehole (GWL @ 3.35m - June 7, 2018) 200 300 500 RKI Eagle Rdg. (ppm) ▲ Full Gas Resp. △ Methane Elim.

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% - Natural moisture content or water content of sample, %

Liquid Limit, % (water content above which soil behaves as a liquid)
 PL - Plastic limit, % (water content above which soil behaves plastically)

PI - 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

Cc - 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 > 4 Well-graded sands have: 1 < Cc < 3 and Cu > 6

Sands 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'₀ - 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

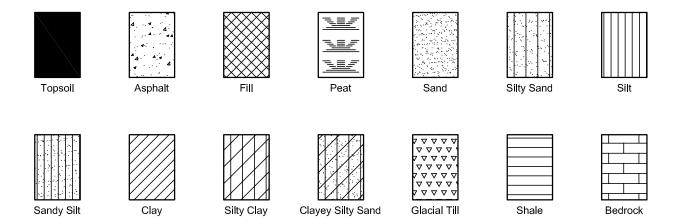
Wo - Initial water content (at start of consolidation test)

PERMEABILITY TEST

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



MONITORING WELL AND PIEZOMETER CONSTRUCTION

