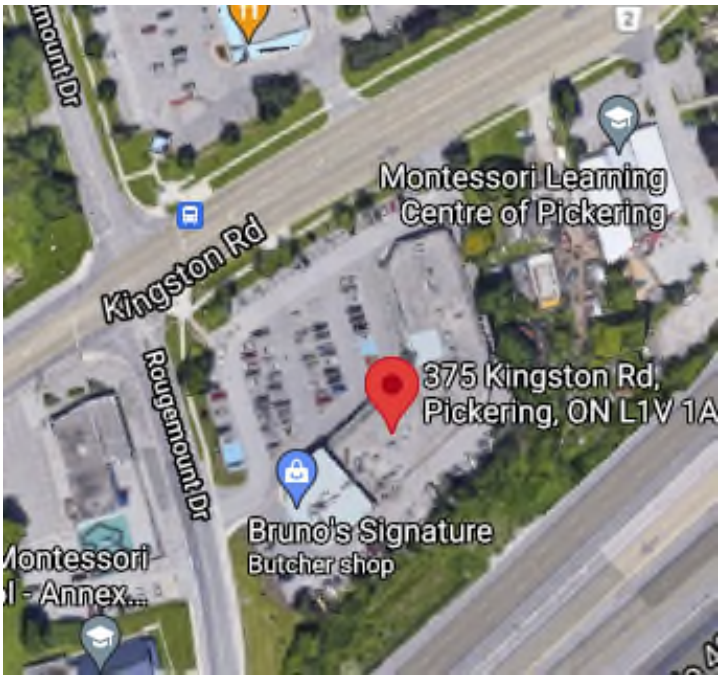
Preliminary Geotechnical Investigation



ENGINEERING

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Prepared for:

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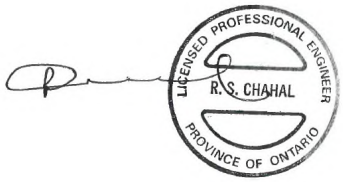
Project No. FE-P 21-11145Geo.

May 13, 2021

Issued to:	Decade Capital
Contact:	Mike Siskind mike@decadegroup.ca
Project Name:	Preliminary Geotechnical Investigation
Project Address:	375 Kingston Road, Pickering, Ontario
Project Number:	FE-P 21-11145Geo
Issued on:	May 13, 2021
Report Prepared by: **(Primary Contact)**	 Rajinder Chahal, P. Eng., Senior Project Engineer 647.227.8473 rajinder@fisherenvironmental.com
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1. INTRODUCTION

Fisher Engineering Limited was commissioned by Decade Capital to carry out a preliminary geotechnical subsurface investigation at 375 Kingston Road, Pickering, Ontario.

The purpose of this geotechnical investigation was to explore the general subsurface conditions across/at the site and to provide general geotechnical comments/recommendations for the design/ construction of the potential new development by means of five (5) boreholes.

This report presents the results of the investigation performed in accordance with the general terms of reference outlined in the scope of work.

The report has been prepared solely for the general geotechnical aspects of design & construction of the future development.

2. SITE AND PROJECT DESCRIPTION

The subject property is located at the south-east corner of Kingston Road & Rougemount Drive in the retail/commercial strip between Highway 401 and Kingston Road in Pickering, Ontario.

An L-shaped 'Rougemount Square' one to two story building exists in the south-east portion of the site. The remainder of the site was generally asphalt paved.

Residential dwellings were observed towards north of the commercial on the north side and on the south side of highway 401.

Design details as new building location/footprint, type of structure, finished floor, grade, underground parking floor elevations or founding levels etc. were not available at the time of this investigation.

3. SCOPE OF GEOTECHNICAL WORK

The geotechnical scope of work included the following:

- Investigation of the subsurface conditions at the site by advancing boreholes, soil sampling and their visual evaluations.

- Prepare a geotechnical report with general comments and recommendations regarding:

    - Appropriate foundation depth, type and bearing pressures (SLS & ULS)

- Seismic site classification.
- Comments regarding underground parking garage/basement construction.
- Recommendations regarding slab-on-grade construction.
- Comments/recommendations regarding pavement construction.
- Excavation recommendations etc.

4. METHOD OF INVESTIGATION

The field work for this investigation was carried out on April 28, 2021, in which a total of five (5) boreholes, were drilled to approximate depths of 3.20m to 9.60m below the prevailing grades. The approximate locations of the boreholes and elevations are shown on the attached Borehole Location Plan in Appendix A.

Elevations at borehole locations were established by 'FISHER' personnel using the temporary benchmark "TOP OF CATCH BASIN IN THE FRONT PARKING AREA" as datum having an assumed elevation of 100.00m.

Boreholes were advanced using solid stem auguring. The subsurface strata were sampled at regular intervals of depth using a split-spoon sampler following the procedure as detailed in the ASTM Standard specification D1586 for the Standard Penetration Test. Field tests to determine the engineering parameters of the soil were carried out during drilling, which included Standard Penetration Tests (SPT).

Monitoring wells were installed in boreholes 1, 2 & 4 for groundwater observation and/or water sampling.

All soil samples were taken to our accredited laboratory for final visual assessment, classification and selected moisture content testing. The samples were tested and classified in general accordance with the Unified Soil Classification System, ASTM D 2487, and Standard Practice for Classification of Soil for Engineering Purposes.

Soil Description and test results are given in the borehole logs attached to this report.

The soil samples recovered during the investigation will be stored in our laboratory for a period of 30 days after which they will be discarded unless further instructions are received.

5. SUBSURFACE CONDITIONS

The subsurface conditions encountered in the boreholes are shown on the Borehole Log Sheets provided in Appendix B.

The boreholes logs include soil stratification at the borehole locations along with detailed soil descriptions. Variations in the soil stratification may occur and should be expected between borehole locations and elsewhere on the site.

FILL

Asphalt, granular material/fill soils were found at the surface of all the boreholes.

Fill extended to the following approximate depths below the prevailing grades.

BH No.	1	2	3	4	5
Depth of Fill, m	0.46	0.61	0.46	0.30	0.46

The fill generally consisted of dark brown/grey to brown silty sand to sandy silt with trace of roots/topsoil/gravel.

BROWNISH GREY/GREY SILT

Grey to brownish grey silt was encountered below the fill of boreholes 1 to 4. Relative density of this silt varied from compact to very dense and it extended to the approximate depths of 1.68m (nos. 1 & 3) to 2.44m (no. 2).

GREYISH BROWN/GREY SANDY SILT TILL

Grey/brownish grey silt of boreholes 1 to 4 and fill of borehole 5 were underlain by greyish brown to grey sandy silt till. Relative density of this till varied from dense to very dense and it extended to the approximate depths of 3.05m (no. 3) to 4.72m (nos. 1 & 4). Borehole 5 was terminated in the brownish grey sandy silt till at the approximate depth of 3.20m.

GREY SILTY SAND TILL

Greyish brown/brownish grey/grey sandy silt till was followed by very dense grey silty sand till which extended to the termination depths of 8.08m to 9.60m.

6. GROUNDWATER CONDITIONS

Boreholes were put down using dry auguring and they were found to be dry on completion of the respective soil boring operations.

Monitoring wells were installed in boreholes 1, 2 & 4 for ground water sampling for environmental purposes. Seepage/ground water developed to the depths of 5.68m (no. 1), 4.32 (no.2) and 4.70m (no. 4) by May 10.

Based on the above observations and visual evaluation of the soil samples, it appears that water bearing aquifer was not encountered within the depths penetrated by the boreholes. However, we consider that perched ground water exists in the granular material or fill soils and/or wet seams/pockets trapped in the native till soils. We consider the water in boreholes 1, 2 & 4 represents this perched groundwater.

7. GEOTECHNICAL DISCUSSIONS AND RECOMMENDATIONS

7.1 General Discussion

We understand that the site or part of it may be redeveloped in future. However, design details such as type, size, height & location of the new building(s); finished floor/grade elevations etc. were not available at the time of investigation.

The following sections presents general geotechnical recommendations for design and construction.

7.2 Foundation Considerations

Boreholes indicate that undisturbed natural soils can be used for the building support using conventional strip and/or spread footing foundations.

For footings placed over undisturbed dense to very dense natural soils at the approximate depths of 1m below existing grades soil bearing pressures 400kPa (SLS) & 600kPa (ULS). For footings placed over undisturbed natural soils below the approximate depths of 2.4m below existing grades, soil bearing pressures of 600kPa (SLS) & 900kPa (ULS) will likely be available for foundation purposes.
For the above soil bearing pressures, the overall & differential settlements are expected to be 25mm & 19mm (or less) respectively.

For footings founded at different levels in the vicinity of each other or located adjacent to excavated and backfilled areas, such as sewer/utility trenches etc., the slope of the imaginary line joining the bottom of two footings or the bottom of footing and excavation should not be steeper than 10 horizontals to 7 verticals for silt/sandy silt to till soils.

The base conditions at the footing founding levels should be observed by a soil engineer from our office prior to pouring concrete, to ensure that the design bearing pressures are being attained.

For frost protection, a minimum 1.2m earth cover should be provided for wall/column footings subjected/exposed to freezing weather conditions.

7.3 Earthquake Considerations

The 2012 OBC Subsection 4.1.8 stipulates that a building should be designed to meet the requirements of the Earthquake Load and Effects. The Site Classification for Seismic Site Response (Table 4.1.8.4.A) is determined from the average Standard Penetration Resistance (N_{60}) and/or the undrained shear strength (Su) of the soils within upper 30 m.

Based on the results of standard penetration tests i.e., “N” values from the current geotechnical investigation, the site designation for seismic analysis for the proposed building foundations placed over undisturbed native soils is expected to be **"Class C"**.

The seismic parameters and analysis requirements are detailed in Subsection 4.1.8 of the 2012 OBC.

7.4 Underground Parking Garage

The underground structure should be equipped with efficient drainage system, which includes the perimeter weeping tiles around the bottom of the garage wall footings and the interior weeping tiles below the floor slab. The perimeter weepers should be surrounded by clear stone or pea gravel encased in a granular filter or filter cloth. Both weepers should be connected to independently positive frost-free sump pits from where the water is constantly removed.

Where there is insufficient space for the installation of exterior perimeter weeping tiles, the drainage system can be modified by providing vertical drainage between the garage walls and the adjacent shoring. A series of drain holes should be precast through the walls below the garage floor slab level, forming a complete drainage path to the solid interior weeping tiles placed beside the garage wall footings.

Underfloor weeping tile drainage system should be provided under the floor slab to release any potential uplift pressure on the slab-on-grade. The drains should be encased in 150 mm of clear stone/pea gravel wrapped in geotextile filter & placed below the granular bedding and connected positively to sump pit. The geotextile filter should have equipment opening size of less than 60 µm.

The entire drainage system should be designed by competent professionals, to ensure its capacity and effectiveness concerning the efficient transmittal of volume of water generated without any migration of fines from the surrounding soils.

In the event of power or mechanical failure, a backup system should be designed for pumping/dewatering operations. Water relief valves/plates may be installed in the garage floor slab to relieve any excess hydrostatic pressure in the event of malfunction of the drainage system. The floor slab should also be designed to accommodate the maximum allowable pressure for relief valves.

The parking garage/basement floor slab can be constructed as slab-on-grade. After excavating to the desired level, any loose or wet soil should be sub-excavated and replaced with granular material compacted to 98% of the Standard Proctor Maximum Dry Density. A 19 mm clear stone granular bedding of at least 200 mm in thickness should be provided.

The modulus of subgrade reaction for slab-on-grade design of 40MN/m^3 can be used provided the subgrade is undisturbed & granular bedding is well compacted.

The parking garage walls under free drainage conditions, can be designed for a lateral earth pressure P, given by the following expression:

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

where K = Coefficient of earth pressure

γ = Unit weight of soil

q = Surcharge load, if any

Design parameters K, γ are suggested in section 7.5 of this report.

If the perimeter/underfloor drainage systems are not permitted/feasible and water tight structure design is adopted then parking garage walls & floor slabs must be designed to resist hydrostatic/uplift pressures. Highest groundwater level should be used for determining the water pressures. Parking garage walls should be waterproofed to at least 1m above the highest water level.

For a waterproofed basement, the lateral earth pressures acting on basement walls may be calculated from the following expression:

$$p = K (\gamma h_1 + \gamma' h_2 + q) + \gamma_w h_2$$

where p = lateral earth pressure in kPa acting at depth h

K = earth pressure coefficient, assumed to be 0.4 for vertical walls and horizontal backfill

γ' = submerged unit weight of backfill of 12kN/m^3 may be assumed

γ_w = Unit weight of water, a value of 10kN/m^3 can be used

h_1 = depth to the highest groundwater table in metre

h_2 = depth below water table in metres

q = surcharge on the ground surface in kPa

7.5 Slab-on-Grade Construction

The existing fill appears to be free of compressible organic materials. However, we recommend that the existing fill should be further evaluated from footing/service trenches at the time of construction. All the loose fill and any unsuitable fill, if any, should be removed from the areas to be slabbed.

Exposed subgrade should be proof rolled in the presence of our soils personnel to detect any compressible, spongy or unstable areas. If any isolated pockets of such materials are detected, they should be sub-excavated to competent subsoils and backfilled with approved inorganic materials compacted to at least 95% of their Standard Proctor Maximum Dry Density (S.P.M.D.D.) in thin layers.

Any new fill should consist of approved compactable inorganic soils, placed in thin layers (not exceeding 300mm), and each layer should be compacted to at least 98% of its S.P.M.D.D. under dry and frost-free conditions.

For normal light duty slab-on-grade construction, a 200mm thick bedding layer consisting of granular 'A' or 20mm crusher run material should be specified under the slab-on-grade to serve as a moisture barrier. The bedding layer should be compacted to a minimum of 98% of its S.P.M.D.D.

7.6 Pavement Construction

The functional life of a pavement depends directly on the subgrade conditions and the load carrying capacity of the pavement structure. The following minimum flexible pavement structure thicknesses are recommended.

Minimum Flexible Pavement Structure Thicknesses

PAVEMENT LAYER	COMPACTED THICKNESSES	
	LIGHT DUTY PARKING	DRIVEWAYS
Asphalt top course, HL-3	40mm	40mm
Asphalt base course, HL-8	40mm	60mm
Granular 'A' or 20mm crusher run limestone base	150mm	150mm
50mm crusher run limestone sub-base	200mm	300mm

The pavement structure should also meet the minimum local municipal/regional design requirements, if any, for the proposed development.

The above thicknesses are applicable for dry and stable subgrade conditions during summer season construction only. If the construction is carried out during winter and for unstable subgrade conditions, the thicknesses of granular materials may have to be increased.

The granular base materials should conform to O.P.S.S. Form 1010 specifications and be compacted to at least 98% of their SPMDD's. Similarly, asphaltic concretes should meet the O.P.S.S. Form 1150 requirements for specified grades and be compacted to at least 97% of their Marshall Densities.

All the topsoil and unsuitable/compressible/organic fill soils, if any, must be removed from the areas to be paved. In addition, any fill/backfill soils within 1m below the proposed subgrade levels should be compacted to 98% SPMDD. Exposed subgrade must be proof rolled to ensure its stability and compactness.

Prior to placement of granular bases, the finished sub-grade should be contoured to eliminate depressions and sloped at a minimum of 2% towards the catch basins to facilitate drainage of subgrade and base materials.

Water should not be allowed to accumulate at/near the pavement edges. The importance of sub-grade drainage and regular maintenance and repairs cannot be over-emphasized.

7.7 Excavation

It is understood that the excavation for the proposed structures/services may extend to the depth of 1.5m or more. According to the Ontario Occupational Health and Safety Act, all excavations deeper than 1.2m should be adequately supported against ground collapse. Caving of any loose fill or wet pockets/layers should be kept in awareness during excavation.

Moist fill and weathered native silt/sandy silt till soils to depth of 1.2m can be considered as Type 3 Soils and the cut slopes should not be steeper than 1H:1V from the bottom of trench/excavation. Presence of wet seams/pockets/layers may require flattening of the side slopes. Dense to very dense silt/sandy silt till can be considered as Type 2 Soils.

Field review should be carried out at the time of construction to evaluate the impact of site/perched groundwater conditions.

The following soil parameters can be used in the evaluation of lateral earth pressures and design of the shoring system.

	FILL	Silt/Sandy Silt Till
Unit weight, γ, kN/m^3	18	21.0
Coefficient of earth pressure at rest (K_0)	0.50	0.38
Coefficient of active earth pressure (Ka)	0.40	0.30
Coefficient of passive earth pressure (Kp)	2.50	3.33

The excavation sides should be protected to prevent erosion from surface water flow.

8. GENERAL CONSIDERATIONS

This report is limited in scope to those items spec This report is limited in scope to those items specifically referenced in the text. No other testing and design calculations have been performed except as specifically reported.

The discussions and recommendations presented in this report are intended for the sole guidance of the client named and the design consultants. It should not be relied upon for any other purpose.

The information on which these recommendations are based is subject to confirmation by engineering personnel at the time of construction.

The fact that localised variations in the subsurface conditions may be present between and beyond the boreholes and that those conditions may be significantly different from the general description provided for design purposes should be understood.

Contractors bidding on or undertaking the work should decide on their own investigations, as well as their own interpretations of the factual borehole results. This concern specifically applies to the

classification of the subsurface soils and the potential reuse of these soils on/off Site. Contractors must draw their own conclusions as to how the near surface and subsurface conditions may affect them.

It is strongly urged that Fisher be contacted to provide assistance in the interpretation of the borehole records by anyone undertaking work on/or below the ground surface at this site prior to this work being carried out.

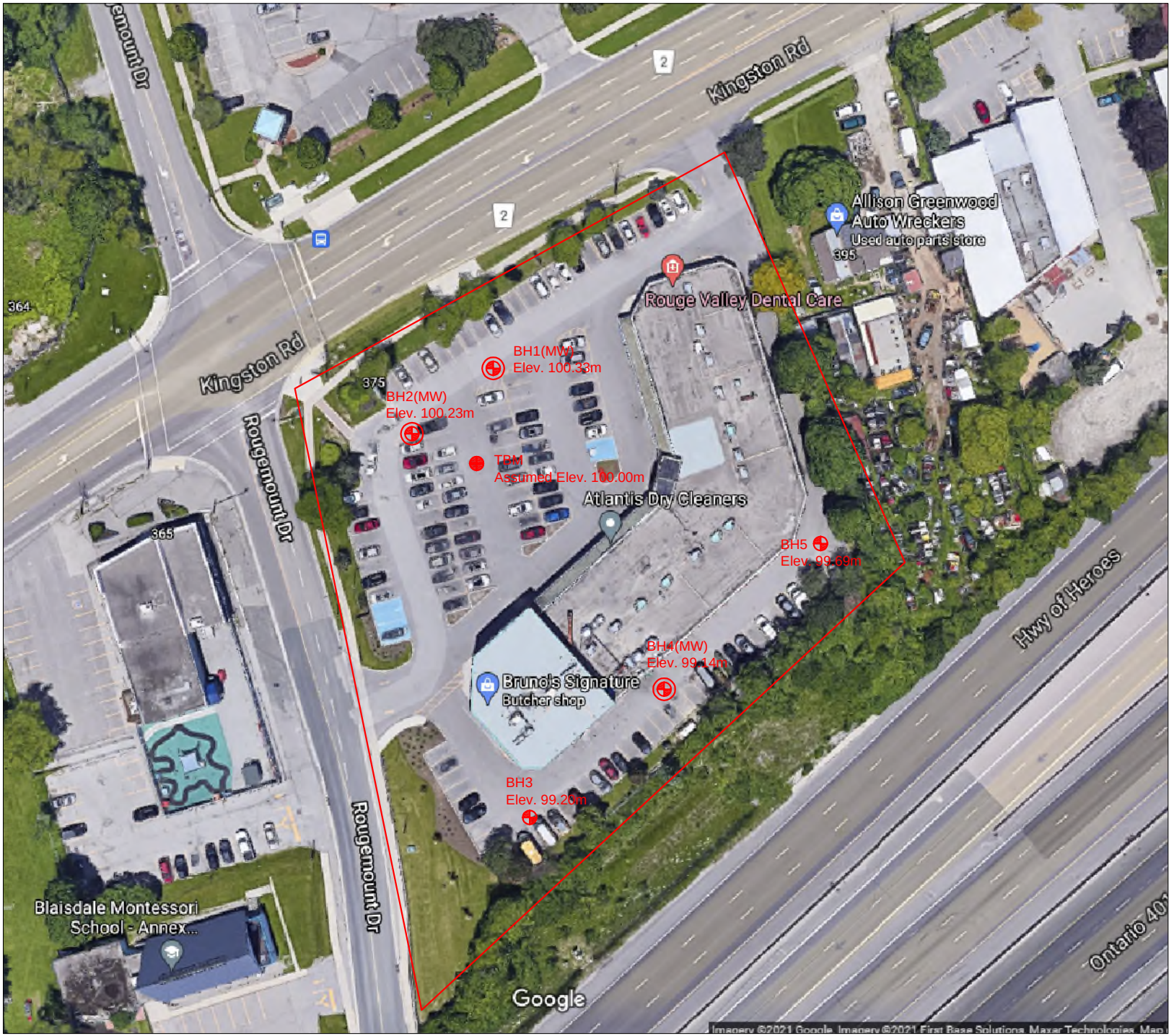
The client expressly agrees that it has entered into this agreement with Fisher, both on its own behalf and as agent on behalf of its employees and principals.

The client expressly agrees that Fisher's employees and principals shall have no personal liability to the client in respect of a claim, whether in contract, tort and/or any other cause of action in law. Accordingly, the client expressly agrees that it will bring no proceedings and take no action in any court of law against any of Fisher's employees or principals in their personal capacity.

9. CLOSING

We trust that the foregoing information is sufficient for your present needs and will be pleased to review the contents of this report in greater detail if required. Should you require any additional services or clarifications, please do not hesitate to contact our office.

APPENDIX A – SITE PLAN



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Markham, Ontario
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Fax: 905 475-7718

NORTH

LEGEND

Monitoring Well/ Borehole

Benchmark

PROJECT NAME AND ADDRESS

PHASE TWO ESA & GEOTECHNICAL INVESTIGATION

375 KINGSTON ROAD, PICKERING, ONTARIO

FIGURE 1:

SITE PLAN WITH BOREHOLE LOCATIONS

PROJECT NO.	SHEET NO.
FE-P 21-11144/45	1
DATE: MAY 2021	
SCALE: AS SHOWN	

APPENDIX B – LOGS OF BOREHOLES

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LOG OF BOREHOLE NO. BH1(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 21-11144 & 21-11145

PROJECT NAME: Phase II ESA & Geotechnical Investigation

LOCATION: 375 Kingston Road, Pickering, Ontario

DRILLING METHOD: D-50, Solid Stem

DRILLING DATE: April 28, 2021

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID:	TYPE NUMBER	P.I.D. Reading	"N" VALUE
		GROUND SURFACE (m asl)		100.33				
0	0	60mm Asphalt FILL: grey silty sand, slightly moist. Petrol odour.		0.46/ 99.87	21-6436-1	SS-1		12
4	1	GREY SILT: slightly moist, very dense. Petrol odour.		1.68/ 98.65	21-6436-2	SS-2		50
6	2					SS-3		100+
8		GREY SANDY SILT TILL: trace of gravel, dry, very dense.				SS-4		100+
10	3					SS-5		100+
12	4							
14				4.72/ 95.61				
16	5					SS-6		65
18		GREY SILTY SAND TILL: trace of gravel, moist, very dense.						
20	6					SS-7		81
22								
24	7							
26	8			8.08/ 92.25		SS-8		100+
28		End of Borehole						
30	9							
32	10							

PENETRATION TESTING (SPT) ▲ 20 40 60 80

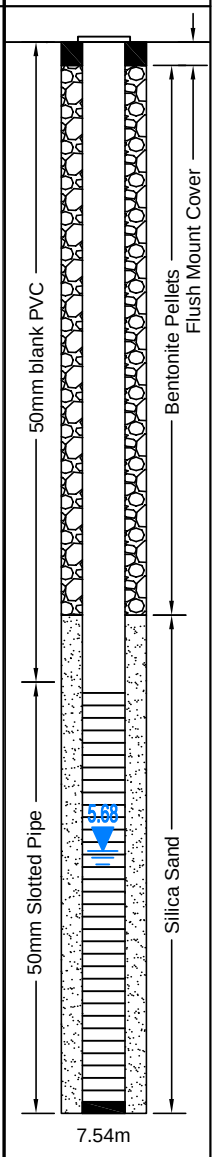
SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

13%

12%



Groundwater Depth: on completion: Dry; on May 10, 2021: 5.68

DRAWN: BL LOGGED: CW CHECKED: RC

FISHER ENVIRONMENTAL LTD.

LOG OF BOREHOLE NO. BH2(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 21-11144 & 21-11145

PROJECT NAME: Phase II ESA & Geotechnical Investigation

LOCATION: 375 Kingston Road, Pickering, Ontario

DRILLING METHOD: D-50, Solid Stem

DRILLING DATE: April 28, 2021

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID:	TYPE NUMBER	P.I.D. Reading	"N" VALUE
		GROUND SURFACE (m asl)		100.23				
0	0	80mm Asphalt						
		FILL: grey with black spots silty sand/silt.		0.61/ 99.62		SS-1		12
2						SS-2		31
4	1	GREY SILT: slightly moist, dense to very dense.						
6	2					SS-3		100+
8				2.44/ 97.79	21-6436-3	SS-4		100+
10	3	GREY SANDY SILT TILL: trace of gravel, dry to moist, very dense.		3.20/ 97.03		SS-5		58
12								
14	4	GREY SILTY SAND TILL: trace of gravel, moist, very dense.						
16	5					SS-6		64
18								
20	6					SS-7		82
22	7			8.08/ 92.15				
24		End of Borehole						
26	8							
28								
30	9							
32	10							

PENETRATION TESTING (SPT) ▲ 20 40 60 80

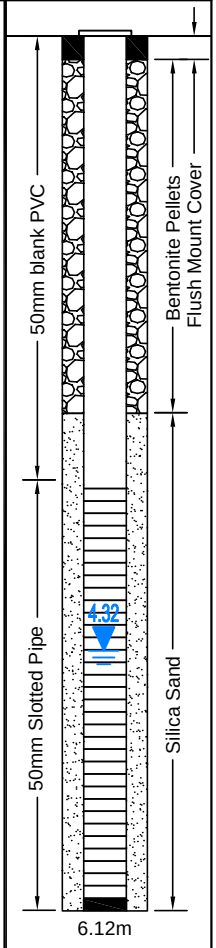
SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

5.9%

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth: on completion: Dry; on May 10, 2021: 4.32m

DRAWN: BL LOGGED: CW CHECKED: RC

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LOG OF BOREHOLE NO. BH3 SHEET. 1 of 1

PROJECT NO.: FE-P 21-11144 & 21-11145

PROJECT NAME: Phase II ESA & Geotechnical Investigation

LOCATION: 375 Kingston Road, Pickering, Ontario

DRILLING METHOD: D-50, Solid Stem

DRILLING DATE: April 28, 2021

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID:	TYPE NUMBER	P.I.D. Reading	"N" VALUE
		GROUND SURFACE (m asl)		99.20				
0	0	60mm Asphalt FILL: grey silty sand, some gravel, dry.		0.46/ 98.74		SS-1		26
2								
4	1	BROWNISH GREY SILT: slightly moist, dense to very dense.				SS-2		49
				1.68/ 97.52				
6	2	BROWNISH GREY SANDY SILT TILL: trace of gravel, dry, very dense.			21-6436-4	SS-3		100+
8						SS-4		100+
10	3			3.05/ 96.15		SS-5		100+
12	4	GREY SILTY SAND TILL: trace of gravel, slightly moist to dry, very dense.						
14								
16	5					SS-6		100+
18								
20	6					SS-7		100+
22	7							
24								
26	8			8.08/ 91.12		SS-8		100+
28		End of Borehole						
30	9							
32	10							

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✚ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

5.7%

PIEZOMETER OR WELL CONSTRUCTION

Groundwater Depth: on completion: Dry

DRAWN: BL LOGGED: CW CHECKED: RC

FISHER ENVIRONMENTAL LTD.

LOG OF BOREHOLE NO. BH4(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 21-11144 & 21-11145

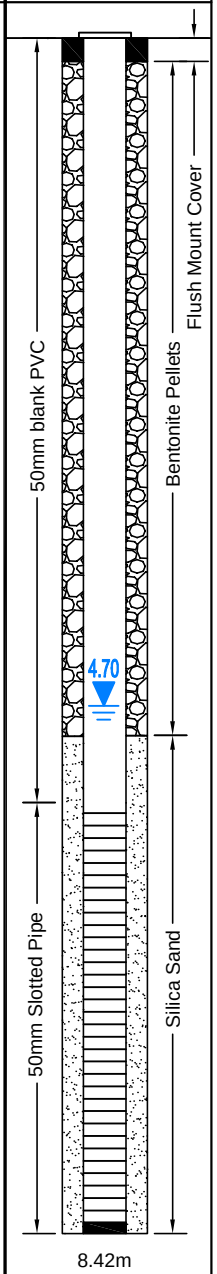
PROJECT NAME: Phase II ESA & Geotechnical Investigation	LOCATION: 375 Kingston Road, Pickering, Ontario
DRILLING METHOD: D-50, Solid Stem	DRILLING DATE: April 28, 2021

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID:	TYPE NUMBER	P.I.D. Reading	"N" VALUE
		GROUND SURFACE (m asl)		99.14				
0	0	60mm Asphalt FILL: sandy silt, trace of gravel.		0.30/ 98.84		SS-1		20
2								
4	1	BROWNISH GREY SILT: moist to dry, compact to very dense.				SS-2		46
6					21-6436-5	SS-3		100+
	2			1.98/ 97.16				
8		BROWNISH GREY SANDY SILT TILL: trace of gravel, moist to dry, very dense.				SS-4		59
10	3					SS-5		67
12								
14	4			4.72/ 94.42				
16	5	GREY SILTY SAND TILL: trace of gravel, dry, very dense.				SS-6		100+
18								
20	6					SS-7		100+
22	7							
24								
26	8					SS-8		100+
28								
30	9							
32	10	End of Borehole		9.60/ 89.54				

PENETRATION TESTING (SPT) ▲ 20 40 60 80
SHEAR STRENGTH (Kpa) ✚ 40 80 120 160
VAPOUR READING (ppm) □ 20 40 60 80
MOISTURE CONTENT (%) ● 10 20 30 40

● 6.5%

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth: on completion: Dry; on May 10, 2021: 4.70m

DRAWN: BL LOGGED: CW CHECKED: RC

FISHER ENVIRONMENTAL LTD.

LOG OF BOREHOLE NO. BH5 SHEET. 1 of 1

PROJECT NO.: FE-P 21-11144 & 21-11145

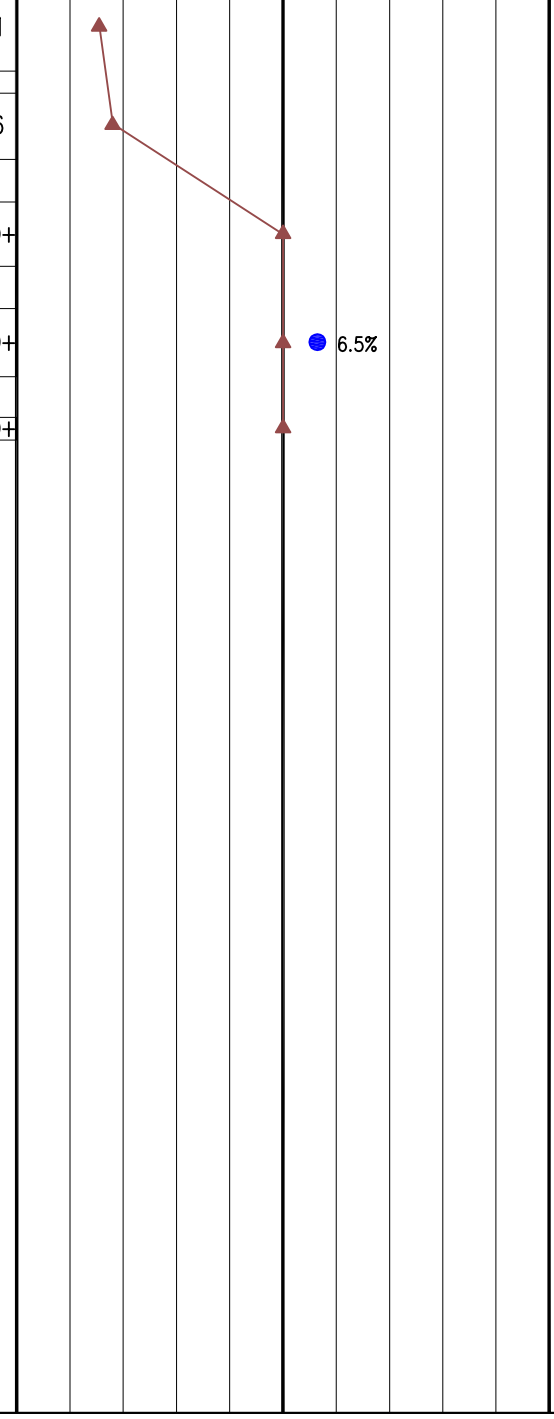
PROJECT NAME: Phase II ESA & Geotechnical Investigation

LOCATION: 375 Kingston Road, Pickering, Ontario

DRILLING METHOD: D-50, Solid Stem

DRILLING DATE: April 28, 2021

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID:	TYPE NUMBER	P.I.D. Reading	"N" VALUE
		GROUND SURFACE (m asl)		99.69				
0	0	80mm Asphalt FILL: brown silty sand, trace of gravel, dry.		0.46/ 99.23		SS-1		31
4	1					SS-2		36
6	2	GREYISH BROWN SANDY SILT TILL: trace of gravel, slightly moist to dry, dense to very dense.				SS-3		100+
8	2				21-6436-6	SS-4		100+
10	3			3.20/ 96.49		SS-5		100+
12	4	End of Borehole						
14	4							
16	5							
18	5							
20	6							
22	7							
24	7							
26	8							
28	9							
30	9							
32	10							



PIEZOMETER OR WELL CONSTRUCTION

Groundwater Depth: on completion: Dry

DRAWN: BL | LOGGED: CW | CHECKED: RC

APPENDIX C – MOISTURE CONTENT AND GRAIN SIZE ANALYSES RESULTS

Certificate of Analysis

Analysis Requested:	Metals, PHCs, VOCs, PAHs, pH, Grain Size
Sample Description:	6 Soil and 4 Water Sample(s)

Parameter	***21-6436-2*** BH1 0.75-1.20m	***21-6436-4*** BH3 1.50-1.95m	***21-6436-6*** BH5 2.25-2.70m			
Grain Size in Soil						
Total Sample, g	44.2	47.2	46.8			
Coarse Fraction >75µm, g	2.5	15.5	18.7			
Fine Fraction <75µm, g	41.7	31.6	28.0			
Coarse Fraction >75µm, %	5.6	32.9	40.0			
Fine Fraction <75µm, %	94.4	67.1	60.0			
Comments	Medium to fine textured	Medium to fine textured	Medium to fine textured			

Certificate of Analysis

Analysis Requested:	Metals, PHCs, VOCs, PAHs, pH, Grain Size
Sample Description:	6 Soil and 4 Water Sample(s)

Parameter	***21-6436-1*** BH1 0.15-0.75m	***21-6436-2*** BH1 0.75-1.20m	***21-6436-3*** BH2 2.25-2.70m	***21-6436-4*** BH3 1.50-1.95m	***21-6436-5*** BH4 1.50-1.95m	***21-6436-6*** BH5 2.25-2.70m
Moisture Content (%)	13	12	5.9	5.7	6.5	6.5

QA/QC Report

Parameter	**Blank**	**RL**	**LCS**	**AR**	**Duplicate**	**AR**
			Recovery (%)		**RPD (%)**	
Moisture Content (%)	<0.1	0.1	100	70-130	2.8	0-20

LEGEND:

RL - Reporting Limit
LCS - Laboratory Control Sample
AR - Acceptable Range
RPD - Relative Percent Difference