August 22, 2023 Report No.: 230082-G2

Fairpark Homes (1065752 Ontario Inc.)
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Attention: Mr. Daniel Ronco, P. Eng., Vice President

GEOTECHNICAL INVESTIGATION FOR PROPOSED INDUSTRIAL DEVELOPMENT AT 35 GORDON COLLINS DRIVE, GORMLEY, ONTARIO

Prepared for:

Fairpark Homes (1065752 Ontario Inc.)

CANADA ENGINEERING SERVICES INC.
39 Davisbrook Blvd., Scarborough
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EXECUTIVE SUMMARY

Re: Geotechnical Investigation for Proposed Industrial Development at 35 Gordon Collins Drive, Gormley, Ontario

We have completed the geotechnical investigation you requested at the above site and our report is enclosed.

The investigation consisted of putting down eight boreholes at the site-namely, Borehole Number 1 to a depth of 8.1 m, Borehole Number 2 to a depth of 8.1 m, Borehole Number 3 to a depth of 8.1 m, Borehole Number 4 to a depth of 5.0 m, Borehole Number 5 to a depth of 5.0 m, Borehole Number 6 to a depth of 5.0 m, Borehole Number 7 to a depth of 8.1 m and Borehole Number 8 to a depth of 8.1 m. Monitoring wells were installed in Borehole Numbers 1, 2, 3, 7 and 8. The general soil profile at the site consisted of the following materials starting in sequence below existing ground surface:

Topsoil
Sandy Silt (possible fill, loose to compact)
Sandy Silt Till (loose to compact)
Sand Seam (compact)
Sandy Silt Till (wet, dense)
Silty Sand (wet, compact)
Sandy Silt Till (wet, dense)

Water was encountered at a depth of 2.4 m in Borehole Number 1, 5.8 m in Borehole Number 2, 2.1 m in Borehole Number 3 and no water in Borehole Number 4, 4.0 m in Borehole Number 5, 1.5 m in Borehole Number 6, 3.0 m in Borehole Number 7 and 3.6 m in Borehole Number 8.

Water is not expected to pose any difficulties at this site, with the exception of the area around Borehole Number 6. Any water trapped in the fill layers can be pumped from sump pits with conventional pumping equipment.

The Seismic Site Response Classification for this site has been evaluated as Type D.

INTRODUCTION

Canada Engineering Services Inc., was authorized by Mr. Daniel Ronco, P. Eng., Vice President of Fairgate Homes, to carry out a Geotechnical Investigation for the property located at 35 Gordon Collins Drive, Gormley, Ontario. It was understood that the owner is proposing to construct a three-storey industrial building with no basement levels.

The purpose of this investigation was to:

(a) determine the subsoil and water table conditions by placing 8 boreholes at selected locations representing the site.

(b) provide pertinent recommendations for excavation, de-watering and backfilling during the installation of storm sewers, sanitary sewers, watermain, and building foundations.

(c) make recommendations for allowable soil bearing pressures for the proposed industrial development and recommendations for pavement designs, and floor slab.

GEOLOGY

The surficial geology of the site, as published in the Ontario Geological Survey, Surficial Geology of Southern Ontario, consists of: Clay to Silt-Textured Till (derived from glaciolacustrine deposits or shale).

SITE DESCRIPTION

The site is located at 35 Gordon Collins Drive, Gormley, Ontario. It consists of a vacant plot of land recently stripped of topsoil. The site is located in a rural mixed industrial/commercial, residential and agricultural area.

The subject property is generally relatively flat with a general slope towards the southeast. The site comprises an area of 4.49 acres.

The site is bounded by Gordon Collins Drive on the north side, Brillinger Industrial Place on the west side, an industrial building and water tank on the east side and vacant lands on the south side. Further north beyond Gordon Collins Drive is Don Anderson Haulage and further east beyond the industrial buildings is Woodbine Avenue.

GEOTECHNICAL PROCEDURE

The field work for the boreholes was carried out with a track mounted drill rig with continuous flight solid stem auger equipment on August 1 and 2, 2023. The investigation was supervised by staff from Canada Engineering Services Inc. Total of eight boreholes were put down at the site, five to the depth of 8.1 m each and three to the depth of 5.0 m each. Monitoring wells were installed to the bottoms of Borehole Numbers 1, 2, 3, 7 and 8.

From the boreholes, soil samples were taken at 500 mm intervals between ground surface and a depth of 3.0 m and thereafter at 1.5 m intervals to the termination of the borehole. The samples were taken by means of a split-spoon sampler, in accordance with the requirements of the Standard Penetration Test, (CSA test specifications A119.1).

Where practical, field penetrometer readings were taken on the samples from the boreholes to determine the different bearing values of the soils encountered. These are plotted on the borehole logs in a column in kPa.

All the samples taken were brought back to our laboratory where moisture content tests, grain size analyses and further visual observations were carried out. Our field and laboratory findings are plotted on the Borehole Log Numbers 1 to 8 and the grain size analysis results are shown on Figure Number 1.

Drawing Number 1 shows the site and its surrounding, while Drawing Number 2 shows the locations of the boreholes which were established by staff from CESI. The ground surface elevation of each borehole was referenced to the site plan drawing by Joseph N. Campitelli Architect Inc. (Dated May 8, 2023), provided to us by Mr. Ronco.

SOIL DESCRIPTION

Topsoil

A layer of grey silty sand and gravel, some organics was found at the surface of Borehole Number 7. This layer was moist and in a loose state, down to a depth of 0.6 m in Borehole Number 7.

Sandy Silt (Possible Fill)

A layer of brown sandy silt (possible fill), trace gravel, clay and organics was found at the surfaces of Borehole Numbers 3, 4 and 8. This material was moist and in a loose state, down to depths of 1.8 m from the surface.

Sandy Silt Till

A layer of native mottled grey-brown sandy silt till, trace gravel and clay was found at the surfaces of Borehole Numbers 1, 2, 5 and 6 and immediately below the sandy silt and topsoil layers in Borehole Numbers 3, 4, 7 and 8. This till layer was moist to wet and in a loose to dense state down to a depth of 6.1 m, 4.9 m, 4.6 m and 6.1 m in Borehole Numbers 1, 6, 7 and 8 respectively. This layer also extended down to the bottoms of Borehole Numbers 2, 3, 4 and 5.

Sand Seam

A thin layer of brown to grey sand was found within the sandy silt till layer in Borehole Number 1at a depth of 2.4 m and at the bottom of Borehole Number 6 at a depth of 4.9 m. This soil material was wet and in a compact to dense state.

Silty Sand

A layer of grey non-cohesive silty sand was found below the sandy silt till material in Borehole Numbers 1, 7 and 8 at a depth of 6.1 m, 4.6 m and 6.1 m respectively. This layer was wet and in a compact to dense state, down to a depth of 7.8 m, 7.3 m in Borehole Numbers 1 and 7 and extended down to the bottom of Borehole Number 8.

Sandy Silt Till

A layer of grey sandy silt till, some clay, trace gravel was encountered below the silty sand layer in Borehole Numbers 1 and 7. This layer was wet and in a compact state down to the bottoms of Borehole Numbers 1 and 7 at a depth of 8.1 m.

The location of the site and its surrounding are shown on Drawing Number 1, while the locations of the boreholes are shown on Drawing Number 2. The ground surface elevation of each borehole was referenced to the site plan drawing by Joseph N. Campitelli Architect Inc. (Dated May 8, 2023), provided to us by Mr. Ronco. Drawing Numbers 1 and 2, detailed borehole logs, grain size graphs and our terms and symbols used in this report are shown in Appendix "A".

GROUNDWATER

Water was encountered at a depth of 2.4 m in Borehole Number 1, 5.8 m in Borehole Number 2, 2.1 m in Borehole Number 3 and no water in Borehole Number 4, 4.0 m in Borehole Number 5, 1.5 m in Borehole Number 6, 3.0 m in Borehole Number 7 and 3.6 m in Borehole Number 8.

Water is not expected to pose any difficulties at this site, with the exception of the area around Borehole Number 6. Any water trapped in the fill layers can be pumped from sump pits with conventional pumping equipment.

PERCOLATION TESTING AND T-TIME DETERMINATION

Percolation tests were conducted in two boreholes (P1 and P2) drilled down to a depth of 1.5 m. Percolation rate or T- Time is defined as the rate at which treated wastewater will be absorbed into the soil or as the number of minutes it takes for the water level to fall one centimeter in a hole drilled into a soil and filled with water.

The boreholes were put down with a track-mounted drill rig down to a depth of 1.5 m in both percolation holes P1 and P2 respectively. The soils found consisted of a mottled grey-brown sandy silt till, trace gravel and clay and extended down to the bottoms of the percolation holes.

A few inches of gravel was placed at the base of each of these holes. The holes were then filled with water and the drops in water levels monitored and recorded. In each case, the test was terminated when three consecutive drops in water levels monitored over consecutive 30 minute periods were within 10% of each other or where the water level virtually ceased to drop over an extended period of time. Using the rates of drops of the water levels, the rates of percolation or T-Time were calculated. From the percolation rates, the hydraulic conductivity of the soils were extrapolated and the results are as follows:

Percolation Hole No.	Hydraulic Conductivity (cm/sec)	Percolation "T" Time (min/cm)
P1	1.0×10^{-7}	over 50
P2	1.0×10^{-7}	over 50

The locations of the percolation test holes are shown on Drawing Number 2 attached.

EXCAVATION FOR SEWERS AND FOOTINGS

Sewers are expected to be installed between 1.6 m to 2.0 m below the final ground surface level, while footings are expected to be about 1.5 m to 2.1 m within the native till layer. It is expected that all the excavations for the sewers will be within the native sandy silt material. We do not anticipate any problems with the excavations.

For the excavations for sewers and watermains, the walls of the excavations should be sloped at 45 degrees to the horizontal with the lower 1.2 m, vertical. All temporary slopes of the excavations should conform to the Occupational Health and Safety Act (OHSA) and all local regulations.

BACKFILLING

The existing fill and native soils can be used to backfill the footings, watermains and sewers, but some of the soil materials may have to be dried out where it is too wet to compact. A sand backfill should be used at the bottom and around all pipes to avoid puncturing. For backfilling around manholes, catch basins and confined spaces, a granular material should be used.

If additional fill is required, then it is recommended that an imported fill such as granular "B" be used for backfilling.

The fill should be compacted in maximum lift thicknesses of 200 mm, with a heavy sheep's foot vibratory compactor, or a jumping jack to 98% of the standard proctor maximum dry density. The fill operations should be monitored by a geotechnical engineer/technician to ensure that all areas are adequately compacted.

BUILDING FOUNDATIONS

Conventional strip and spread footings for the proposed three-storey industrial building at this site may be placed on the compact to dense sandy silt till capable of supporting a serviceability limit state (SLS) and a factored ultimate limit state (ULS) bearing pressure of 100 kPa (2000 psf) and of 150 kPa (3000 psf) respectively. This native soil is generally expected to be found at the surface to 1.5 m below ground surface.

Excavations for foundation walls, the excavations should be sloped at 45 degrees to the horizontal with the lower 1.2 m, vertical. Where fill is encountered this slope may have to be reduced 1V:to 2H. All temporary slopes of the excavations should conform to the Occupational Health and Safety Act (OHSA) and all local regulations.

The Seismic Site Response Classification for strip and pad foundations at this site has been evaluated as Type D.

Footings which are to be constructed next to each other at different elevations should be located far enough away, such that the slope from the bases of the adjacent sides of the footings is at least 10 horizontal to 7 vertical.

All footings exposed to frost action should be covered with at least 1200 mm of earth cover or an equivalent value of insulation.

The total and differential settlements from footings designed as per our recommendations above are expected to be less than 25 mm and 19 mm respectively.

All footings must be inspected by Canada Engineering Services Inc., staff to verify the recommended bearing pressures provided in this report.

FLOOR SLAB CONSTRUCTION AND DRAINAGE

The floor slabs may be constructed as slab on grade providing all deleterious material such as topsoil and organics are removed and any soft areas replaced with an approved fill, compacted to 98% of the standard proctor maximum dry density (SPMDD). The subgrade should be proof rolled to determine if there are any weak areas that would need to be sub-excavated and replaced with an approved fill material.

PAVEMENT DESIGN

The subgrade for pavement construction in this site is expected to be primarily the compact sandy silt till now in place and new fill from backfilling of service trenches with compacted reworked silt and sand soils.

If the upper layers of the subgrade are backfilled with these materials, then the following designs should be used for the asphaltic parking lots and driveways.

Please note that if for any reason these are less than specified by the Town of Gormley, then their minimum standards should be used.

Minimum Pavement Design Thickness		
Pavement Layer	**Light Parking**	**Driveways**
Asphaltic Concrete	40 mm HL 3 50 mm HL 8 (OPSS Form 310)	40 mm HL3 65 mm HL8 (OPSS Form 310)
Granular “A” Base	150 mm	150 mm
Granular “B”Subbase	200 mm	300 mm

The above pavement thickness assumes adequate positive drainage of the subbase, that dry condition prevails during the construction phase. The granular subbase thickness may require adjustment depending upon the subgrade soil condition, weather conditions during construction and the use by heavy construction traffic. If wet weather conditions and heaving and rolling of the subgrade occur, the subbase thicknesses may have to be increased substantially to obtain a stable pavement.

The upper 600 mm of the subgrade should be compacted to at least 98% SPMDD and below this, the compaction should be to 95% of the SPMDD. The granular subbase and base materials should be compacted to at least 100% SPMDD.

HDBC, Superpave 19, mm, 25mm and 37.5 mm mixes should be compacted to not less than 91% and not more than 97.5% of their Maximum Relative Densities. DFC and Superpave 12.5 mm FC mixes should be compacted to not less than 92% and not more than 98.5% of their Maximum Relative Densities. All other asphaltic concrete mixes should be compacted to not less than 92.5% and not more than 97.5% of their Maximum Relative Densities.

It is essential that the subgrade be properly crowned and graded to avoid ponding of water along its lengths and sides so as to drain towards catch basins. In preparing the final subgrade lbbevels, it should be fine graded free from depressions, with the final compaction carried out by a smooth drum roller. All runoff water from the asphalt surface should also be channelled away from the edges of the pavements to catch basins or natural road side drains.

GENERAL COMMENTS

It is possible that the soil and water conditions between boreholes are quite different from those found at the borehole locations. Any interpretation of data for areas between boreholes should be viewed with this in mind. The accuracy of our report is limited to the findings at specific borehole locations.

The inspections and review of data described above were carried out based on the terms of reference as outlined earlier in this report. It was prepared specifically for the use of Fairpark Homes (1065752 Ontario Inc.).

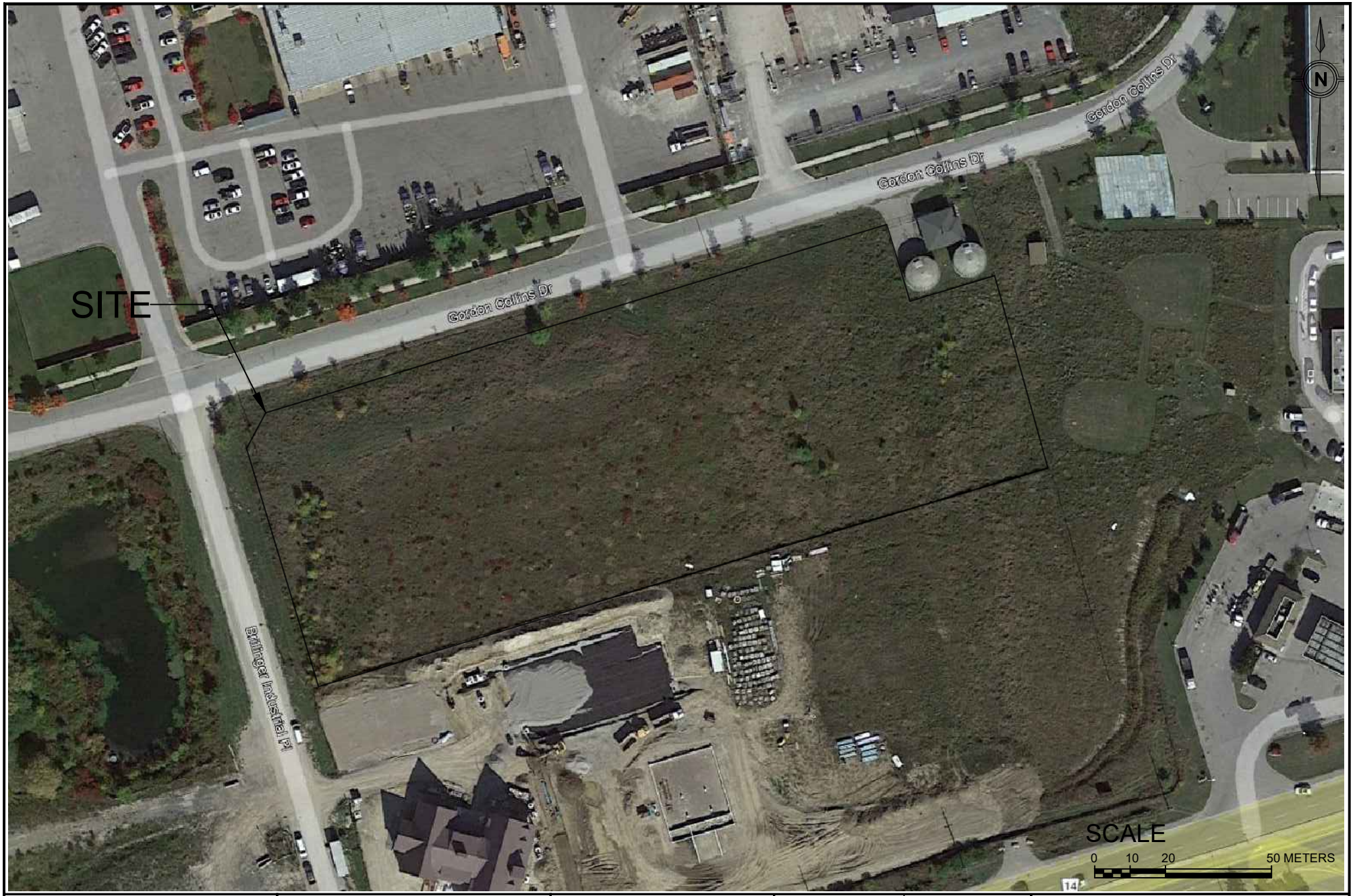
Contractors bidding on the site services should carry out their own investigations to determine how the soil conditions at this site will affect their performance. B

This report was prepared from limited data. Should there be any design or construction changes that would require a review of the geotechnical analyses or any questions regarding the geotechnical aspects of any codes or standards, then this office should be consulted. This may necessitate a supplementary investigation and report for our recommendations to be reliable.

Sincerely,
CANADA ENGINEERING SERVICES INC.

Lawrence Yu. P. Eng.
Geotechnical Project Manager

Ram Jagdat. P. Eng.
Consulting Engineer
Principal



CLIENT:
1065752 ONTARIO INC.

8 PASILEY LANE
STOUFFVILLE, ONTARIO
L4A 7X4

PROJECT:
GEOTECHNICAL INVESTIGATION

35 GORDON COLLINS DRIVE,
STOUFVILLE, ONTARIO
L0H 1G0

TITLE:
KEYPLAN

SCALE:	DATE:
AS SHOWN	AUG / 2023
DRAWING NO:	PROJECT NO
1	230082

CANADA ENGINEERING SERVICES INC.
39 DAVISBROOK BOULEVARD
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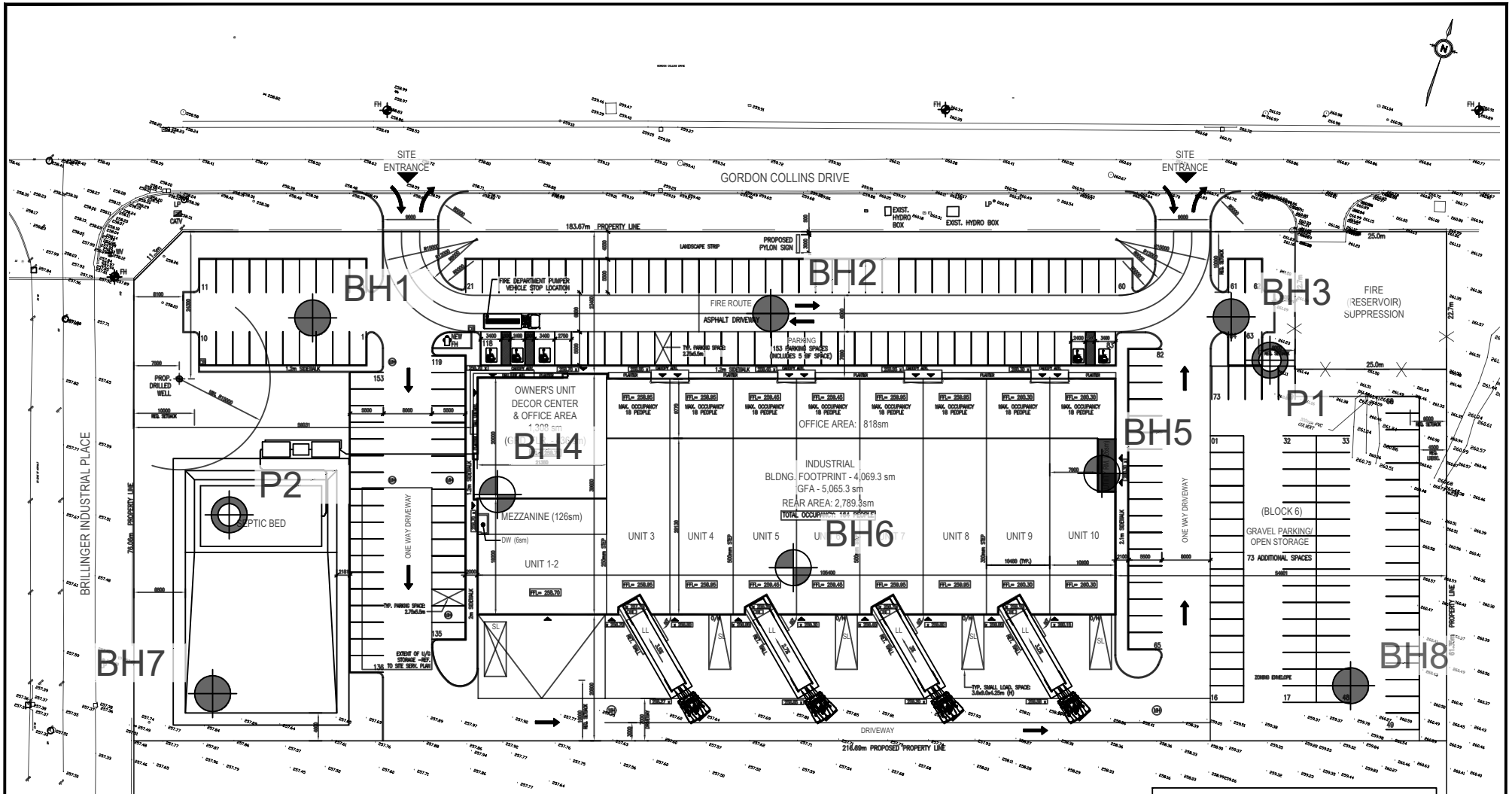


LEGEND

- BOREHOLE
- MONITORING WELLS
- PERCOLATION TESTS

THIS DRAWING IS PREPARED FROM THE SITE PLAN DRAWING BY JOSEPH N CAMPITELLI ARCHITECT INC. DATED MAY 08, 2023

SCALE

0 5 10 25 METERS

CLIENT: 1065752 ONTARIO INC. 8 PASILEY LANE STOUFFVILLE, ONTARIO L4A 7X4	PROJECT: GEOTECHNICAL INVESTIGATION 35 GORDON COLLINS DRIVE, STOUFVILLE, ONTARIO L0H 1G0	TITLE: BOREHOLE/MONITORING WELLS AND PERCOLATION TEST LOCATIONS	SCALE: AS SHOWN DATE: AUG / 2023 DRAWING NO: 2 PROJECT NO 230082

CANADA ENGINEERING SERVICES INC.
39 DAVISBROOK BOULEVARD
SCARBOROUGH, ONTARIO M1T 2H6
Ph: 416 492 4000 Fax: 416 492 4001
E-mail address: cesi@cesi.ca

Project No: 230082

Log of Borehole No. 1

Project: Proposed Industrial Building

Client: Fairgate Homes (1065752 Ontario Inc.)

Technologist: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY	WELL
0 / 0	Ground Surface	257.82					
0–8 / 0–2.4	**SANDY SILT TILL** Brown, mottled, sandy silt till, trace gravel, trace clay, moist, loose to compact PPR at 0.4 m = 200 kPa PPR at 1.0 m = 450 kPa PPR at 1.5 m = 350 kPa PPR at 2.3 m > 45 0kPa		1 2 3	SS SS SS	6 21 28	100 100 100	SEAL
8–9 / 2.4–2.7	**SAND SEAM** Brown to grey sand, wet, compact	255.38 254.92	4	SS	27	100	
9–20 / 2.7–6.0	**SANDY SILT TILL** Brown to grey sandy silt till, trace gravel, trace clay, moist to wet, dense PPR at 3.2 m > 450 kPa Turned grey at 4.6 m depth PPR at 4.7 m = 350 kPa		5 6	SS SS	50 31	100 100	SAND FILLING
20–25 / 6.0–7.6	**SILTY SAND** Grey silty sand, non-cohesive, wet, compact	251.72 250.05	7	SS	15	100	
25–26 / 7.6–7.9	**SANDY SILT TILL** Grey sandy silt till, some clay, trace gravel, wet, dense PPR at 7.9 m > 450 kPa	249.74	8	SS	46	100	
26–32 / 7.9–9.8	**END OF BOREHOLE** Borehole open up to 4.9 m depth. Water level upon completion = 3.10 m Water level on August 15, 2023 = 2.58 mbgl PPR = Pocket Penetrometer Reading						

Standard Penetration Test (10 20 30 40 50)

Moisture Content (% — 10 20 30 40 50)

Sample	Moisture Content (%)
1	16.07
2	8.89
3	9.63
4	11.81
5	9.21
6	11
7	17.56
8	12.09

Drill Method: Track mounted drill rig

Drill Date: August 02, 2023

Hole Size: 150 mm diameter

Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Project No: 230082

Log of Borehole No. 2

Project: Proposed Industrial Building

Client: Fairgate Homes (1065752 Ontario Inc.)

Technologist: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY	WELL	Standard Penetration Test (10 20 30 40 50)	Moisture Content % (10 20 30 40 50)
	Ground Surface	259.27							
0 – 1 m	**SANDY SILT TILL** Brown to grey mottled, sandy silt till, trace gravel, trace clay, moist to wet, compact PPR at 0.4 m = 200 kPa PPR at 1.0 m = 200 kPa		1	SS	10	100			23.84
1 – 2 m	PPR at 1.5 m = 250 kPa		2	SS	10	100			13.14
2 – 3 m	PPR at 2.3 m = 45 0kPa		3	SS	21	100	SEAL		12.41
3 – 4 m	PPR at 3.0 m > 450 kPa Turned grey at 3.4 m		4	SS	24	100			10.41
4 – 5 m	Becoming more clayey at 4.5 m PPR at 4.6 m = 350 kPa		5	SS	25	100			8.67
5 – 6 m	Became wet at 5.8 m PPR at 6.0 m = 150 kPa		6	SS	15	100	SAND FILLING		8.41
6 – 7 m			7	SS	16	100			7.02
7 – 8 m	PPR at 7.6 m = 350 kPa		8	SS	23	100			9.57
		251.19							
8 – 9 m	**END OF BOREHOLE** Borehole completely open upon completion Water level upon completion = 5.6 m Water level on August 15, 2023 = 1.84 mbgl PPR = Pocket Penetrometer Reading								

Drill Method: Track mounted drill rig

Drill Date: August 02, 2023

Hole Size: 150 mm diameter

Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Project No: 230082

Log of Borehole No. 3

Project: Proposed Industrial Building

Client: Fairgate Homes (1065752 Ontario Inc.)

Technologist: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY	WELL	Standard Penetration Test (10 20 30 40 50)	Moisture Content % (10 20 30 40 50)
0 / 0	Ground Surface	260.51							
0–2 / 0	**POSSIBLE FILL** Brown sandy silt (possible) fill, trace gravel, trace clay, moist, loose	259.90	1	SS	8	100			7.25
2–26 / 0–8	**SANDY SILT TILL** Brown to grey, mottled, sandy silt till, trace gravel, trace clay, moist to wet, compact to very dense PPR at 0.8 m = 300 kPa PPR at 1.5 m = 300 kPa		2	SS	12	100			14.38
			3	SS	25	100	SEAL		15.14
	Became wet at 2.1 m PPR at 2.3 m = 450kPa		4	SS	36	100			13.64
	Became more sandy at 3.0 m		5	SS	44	100			14.96
	Turned grey at 4.6 m PPR at 4.7 m = 450 kPa		6	SS	54	100	SAND FILLING		3.11
	PPR at 6.0 m > 450 kPa		7	SS	38	100			8.14
	PPR at 7.6 m > 450 kPa		8	SS	39	100			8.15
26 / 8	**END OF BOREHOLE** Borehole open up to 7.3 m upon completion Water level upon completion = 6.4 m Water level on August 15, 2023 = 2.88 mbgl PPR = Pocket Penetrometer Reading	252.43							

Drill Method: Track mounted drill rig

Drill Date: August 01, 2023

Hole Size: 150 mm diameter

Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Project No: 230082

Log of Borehole No. 4

Project: Proposed Industrial Building

Client: Fairgate Homes (1065752 Ontario Inc.)

Engineer: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY
0 / 0	Ground Surface	258.71				
0–6 / 0–2	**POSSIBLE FILL** Brown silty sand (possible) fill, trace gravel, trace clay, moist, loose		1	SS	4	100
			2	SS	6	100
	PPR at 1.5 m= 100 kPa					
6 / 2		256.88	3	SS	11	100
6–16 / 2–5	**SANDY SILT TILL** Brown to grey, mottled, sandy silt till, trace gravel, trace clay, moist, compact to dense PPR at 2.3 m = 450 kPa		4	SS	38	100
	PPR at 3.0 m = 400 kPa		5	SS	37	100
	PPR at 4.6 m = 400 kPa		6	SS	47	100
16 / 5		253.68				
17 / 5	**END OF BOREHOLE** Borehole completely open and dry upon completion PPR = Pocket Penetrometer Reading					

SPT (10 20 30 40 50 60 70)

Moisture Content (% — 10 20 30 40)

Depth (m)	Moisture Content (%)
0	15.83
1	12.05
2	14.77
3	9.44
4	8.86
5	15.85

Drill Method: Track mounted drill rig

Drill Date: August 02, 2023

Hole Size: 150 mm diameter

Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Project No: 230082

Log of Borehole No. 5

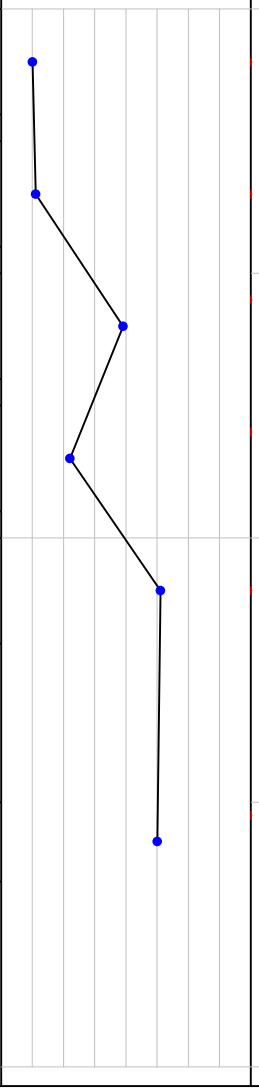
Project: Proposed Industrial Building

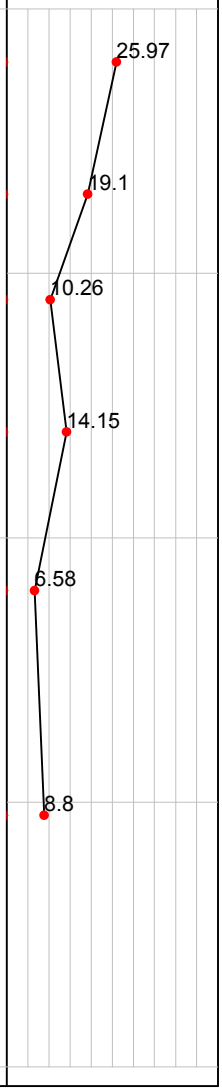
Client: Fairgate Homes (1065752 Ontario Inc.)

Engineer: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY
0 / 0	Ground Surface	259.49				
0–5 / 0–1.5	**SANDY SILT TILL** Brown to grey, mottled, sandy silt till, trace gravel, trace clay, moist to wet, compact to very dense PPR at 0.6 m = 400 kPa		1	SS	10	100
5–10 / 1.5–3	PPR at 1.0 m = 200 kPa PPR at 1.5 m= 450 kPa		2	SS	11	100
10–15 / 3–4.5	PPR at 2.3 m = 450 kPa PPR at 3.0 m > 450 kPa		3	SS	39	100
15–20 / 4.5–6	Turned grey and wet at 4.0 m PPR at 4.6 m > 450 kPa		4	SS	22	100
			5	SS	51	100
			6	SS	50	100
16 / 5		254.46				
17–20 / 5–6	**END OF BOREHOLE** Borehole completely open upon completion Water level upon completion = 3.96 m PPR = Pocket Penetrometer Reading					





Drill Method: Track mounted drill rig

Drill Date: August 01, 2023

Hole Size: 150 mm diameter

Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Project No: 230082

Log of Borehole No. 6

Project: Proposed Industrial Building

Client: Fairgate Homes (1065752 Ontario Inc.)

Engineer: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY
0 / 0	Ground Surface	257.90				
0–3 / 0–1	**SANDY SILT TILL** Brown to grey, mottled, sandy silt till, trace gravel, trace clay, moist to wet, loose to very dense		1	SS	5	100
3 / 1	PPR at 1.0 m = 100 kPa		2	SS	27	100
4	Became wet at 1.5 m depth					
6 / 2	PPR at 2.0 m= 450 kPa		3	SS	66	100
7–8	PPR at 2.3 m = 300 kPa		4	SS	59	100
10 / 3	PPR at 3.0 m > 450 kPa		5	SS	68	100
13 / 4	Turned grey at 4.5 m					
16 / 5		253.02	6	SS	46	100
16–17 / 5	**SAND SEAM** Brown to grey sand seam, wet, dense	252.72				
17	**END OF BOREHOLE** Borehole open up to 4.3 m depth. Water level upon completion = 3.70 m PPR = Pocket Penetrometer Reading					

SPT: 10 20 30 40 50 60 70

Moisture Content (%): 10 20 30 40

Moisture Content values: 23.35, 8.95, 9.08, 11.43, 9.19, 20.96

Drill Method: Track mounted drill rig

Drill Date: August 01, 2023

Hole Size: 150 mm diameter

Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Project No: 230082

Log of Borehole No. 7

Project: Proposed Industrial Building

Client: Fairgate Homes (1065752 Ontario Inc.)

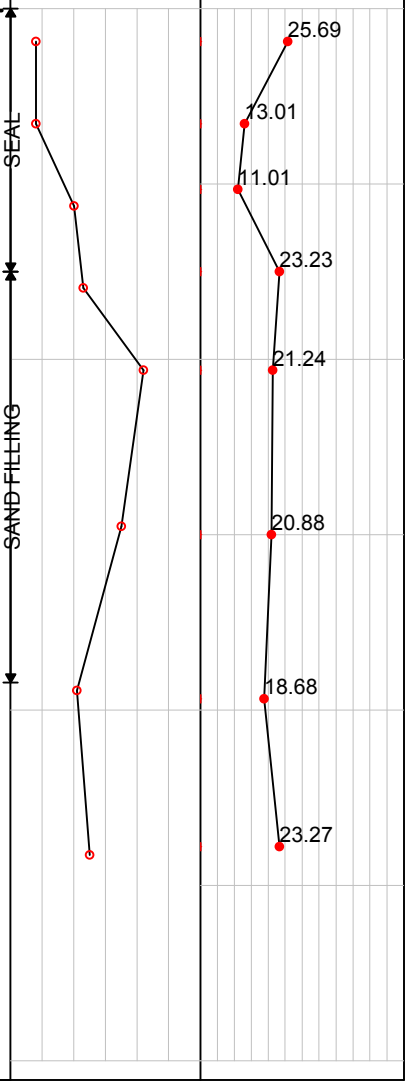
Technologist: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY	WELL
0 / 0	Ground Surface	257.40					
0–2 / 0	**TOPSOIL** Grey silty sand and gravel, organics, moist, loose	256.79	1	SS	8	100	SEAL
2–15 / 0–4	**SANDY SILT TILL** Brown to grey, mottled, sandy silt till, trace gravel, trace clay, moist to wet, loose to dense PPR at 0.8 m = 100 kPa PPR at 1.5 m > 450 kPa PPR at 2.3 m = 40 0kPa Became wet and more sandy below 3.0 m	252.83	2 3 4 5	SS SS SS SS	8 20 23 42	100 100 100 100	SAND FILLING
15–24 / 4–7	**SILTY SAND** Grey silty sand, non-cohesive, wet, dense to compact	250.08	6 7	SS SS	35 21	100 100	
24–26 / 7–8	**SANDY SILT TILL** Grey sandy silt till, some clay, trace gravel, wet, compact	249.32	8	SS	25	100	
26–32 / 8–9	**END OF BOREHOLE** Borehole open up to 4.6 m depth. Water level upon completion = 3.0 m Water level on August 15, 2023 = 2.67 mbgl PPR = Pocket Penetrometer Reading						

Standard Penetration Test (10 20 30 40 50)

Moisture Content (% — 10 20 30 40 50)



Drill Method: Track mounted drill rig

Drill Date: August 02, 2023

Hole Size: 150 mm diameter

Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Project No: 230082

Log of Borehole No. 8

Project: Proposed Industrial Building

Client: Fairgate Homes (1065752 Ontario Inc.)

Technologist: MK

Location: 35 Gordon Collins Drive, Stouffville, Ontario

Depth (ft / m)	Description	Depth/Elev.	NUMBER	Sample Type (SS)	Blows/ft	RECOVERY	WELL	Standard Penetration Test (10 20 30 40 50)	Moisture Content % (10 20 30 40 50)
0 / 0	Ground Surface	260.03							
0–5 / 0–1	**POSSIBE FILL** Grey to brown silty sand (Possible) fill, trace gravel, trace clay, organics, moist, loose		1	SS	9	100	SEAL		14.2
			2	SS	8	100			11.58
5 / 1		258.51							
5–20 / 1–6	**SANDY SILT TILL** Brown to grey, mottled, sandy silt till, trace gravel, trace clay, moist to wet, loose to very dense PPR at 1.5 m > 200 kPa PPR at 2.3 m = 15 0kPa PPR at 3.0 m = 150 kPa Became wet at 3.6 m PPR at 4.6 m > 450 kPa		3	SS	12	100			12.73
			4	SS	8	100			21.97
			5	SS	5	100			25.72
			6	SS	53	100	SAND FILLING		10.92
20 / 6		253.93							
20–26 / 6–8	**SILTY SAND** Grey silty sand, non-cohesive, wet, dense to compact		7	SS	56	100			19.49
			8	SS	30	100			18.06
26 / 8		251.95							
26–32 / 8–9	**END OF BOREHOLE** Borehole open up to 5.2 m depth. Water level upon completion = 3.80 m Water level on August 15, 2023 = 3.78 mbgl PPR = Pocket Penetrometer Reading								

Drill Method: Track mounted drill rig

Drill Date: August 01, 2023

Hole Size: 150 mm diameter

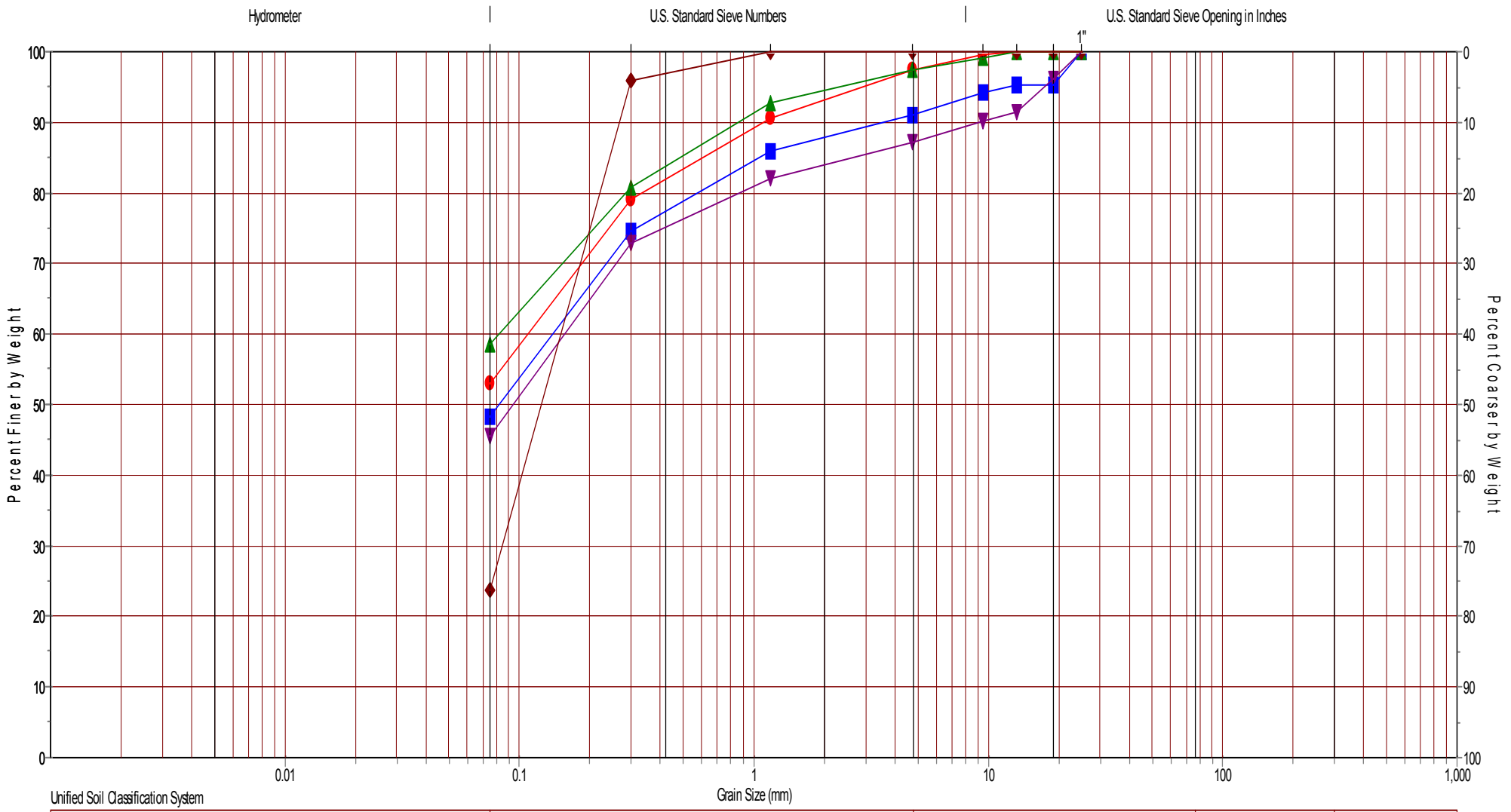
Canada Engineering Services Inc.
39 Davisbrook Blvd.
Scarborough, Ontario
M1T 2H6

Checked By: RJ

Datum: Top of manhole cover close to NE corner of the site, Geodetic Elevation: 260.67 masl

Figure 1	Project No.: 230082`	GRAINSIZE DISTRIBUTION GRAPH
	Location: 35 Gordon Collins Drive, Stouffville	Tested By: MK
	Client: Fairgate Homes	Test Date: 11-Aug-2023

Symbol	Sample No.	% Clay	% Silt	% Fine Sand	% Medium Sand	% Coarse Sand	% Fine Gravel	% Coarse Gravel	% Cobbles
■	BH4 SA3 - 5ft	<48.2	<48.2	26.4	11.2	5.3	4.3	4.7	0.0
●	BH4 SA5 - 10ft	<53.0	<53.0	26.1	11.7	6.9	2.6	0.0	0.0
▲	BH5 SA3 - 5ft	<58.5	<58.5	22.3	12.1	4.8	2.5	0.0	0.0
▼	BH5 SA5 -10 ft	<45.4	<45.4	27.4	9.3	5.1	9.0	3.8	0.0
◆	BH7 SA6 - 15ft	<23.8	<23.8	72.2	4.0	0.0	0.0	0.0	0.0



Unified Soil Classification System

SILT or CLAY		SAND			GRAVEL		COBBLES	BOULDERS
Clay	Silt	fine	medium	coarse	fine	coarse		

APPENDIX “A”

GEOTECHNICAL SYMBOLS AND TERMS USED IN BOREHOLE/TEST PIT LOGS

Soil Description

Terminology describing soil types:

Topsoil	-	Mixture of soil and humus capable of supporting good vegetative growth
Peat	-	Fibrous fragments of visible and invisible decayed organic matter
Till	-	Unstratified and unsorted glacial deposit which may include any particle sizes Such as clay, silt, sand, stone, cobbles and boulders
Fill	-	Materials not identified as deposited by natural geological processes

Terminology describing soil structure:

Desiccated	-	Having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
Fissured	-	Material breaks along plane of fracture
Varved	-	Composed of regular alternating layers of silt and clay
Laminated	-	Alternating layers of beds less than 6 mm thick
Stratified	-	Alternating layers of beds greater than 6 mm thick
Blocky	-	Material can be broken into small and hard angular lumps
Lensed	-	Irregular shaped pockets of soil having different particle size, texture, or colour from materials above and below
Well Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes
Uniformly Graded		Predominantly one grain size

Soil descriptions and classification are based on the Unified Soil Classification System (USCS) (ASTM D-2488), which classifies soils on the basis of engineering properties. The system divides soils into three major categories: (1) coarse grained, (2) fine-grained, and (3) highly organic. The soil is then subdivided based on either gradation or plasticity characteristics. This system provides a group symbol (eg. SM) and group name (eg. silty sand) for identification. The classification excludes particles larger than 76 mm.

Terminology describing materials outside the USCS, (eg. particles larger than 76 mm, visible organic matter, construction debris) is based upon the proportion of these materials present:

Trace	- Trace sand, trace silt, etc.	Less than 10%
Some	- Some sand, some silt, etc.	10 - 20%
Adjective	- Gravelly, sandy, silty, clayey, etc.	20 - 30%
“And”	- and gravel, and silt, etc.	> 35%
Noun	- Gravel, Sand, Silt, Clay	> 35% and main fraction

The standard terminology to describe cohesionless soils includes the compactness as determined by the Standard Penetration Test “N” -value.

Compactness	“N” Value
Very Loose	< 4
Loose	4 - 10
Compact	10 - 30
Dense	30 - 50
Very Dense	> 50

GEOTECHNICAL SYMBOLS AND TERMS USED IN BOREHOLE/TEST PIT LOGS

The standard terminology to describe cohesive soils includes consistency, which is based on undrained shear strength as measured by in-situ vane tests, penetrometer tests, unconfined compression tests or similar field and laboratory analysis. Standard Penetration Test "N" values can also be used to provide an approximate indication of the consistency and shear strength of fine grained, cohesive soils.

Consistency	Undrained Shear Strength (kPa)	"N" Value	Field Identification
Very Soft	< 12.5	< 2	Easily penetrated several cm by the fist
Soft	12.5 - 25	2 - 4	Easily penetrated several cm by the thumb
Firm	25 - 50	4 - 8	Can be penetrated several cm by the thumb with moderate effort
Stiff	50 - 100	8 - 15	Readily indented by the thumb but penetrated only with great effort
Very Stiff	100 - 200	15 - 30	Readily indented by the thumb nail
Hard	> 200	> 30	Indented with difficulty by the thumbnail

Note: "N" Value - The Standard Penetration Test records the number of blows of a 140 lb (64 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler 1 foot (305 mm). For split spoon samples where full penetration is not achieved, the number of blows is reported over the sampler penetration in millimeters (eg. 50/75).

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols:

Asphalt Concrete Topsoil Fill Peat Clay Silt Sand Gravel

WATER LEVEL MEASUREMENTS

Open Borehole or Test Pit

Monitoring Well, Piezometer or Standpipe

SAMPLE TYPE

SS	Split spoon sample (obtained from the Standard Penetration Test)	WS	Wash sample
TW	Thin Wall Sample or Shelby Tube	HQ (65.5 mm)	Rock core samples
PS	Piston sample	NQ (47.6 mm)	(With diameter in mm)
GS	Grab sample	BQ (36.5 mm)	obtained with the use of
AS	Auger sample	Etc.	standard size diamond
BS	Bulk sample		drilling bits