REVISED UPDATED REPORT ON
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED DEVELOPMENT
CALEDON STATION
BOLTON, ONTARIO

Draft Plan of Subdivision (21T-22001) and for Amendment for the Zoning By-Law (RZ 2022-0002)

Draft Plan of Subdivision (21T-22002)
Zoning By-Law (RZ 2022-0003)

PRE-2023-0080

PREPARED FOR:
Caledon Community Partners
c/o Glen Schnarr & Associates

Project No: 20-169-105-R3
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APPENDICES

1. INTRODUCTION

DS Consultants Ltd. (DS) was retained by Caledon Community Partners to prepare an updated preliminary geotechnical investigation report for the proposed development, Caledon Station (Argo Macville I, Argo Macville II, Argo Macville III, Argo Macville V, Argo Humber Station, Humberking (I) Developments, Humberking (IV) Developments and Argo Humberking Corporation), in connection with a Preliminary Framework Plan to establish the Caledon Station Secondary Plan area, located at The Gore Road and King Street in Bolton, Ontario.

It is understood that the proposed development will consist of a residential subdivision (single-family dwellings and low to mid-rise residential buildings), mixed-use land uses, stormwater management facilities, and a transit hub.

The proposed site grades and lowest finished floor elevations for the proposed structures were not known to us at the time of writing this report.

The purpose of this geotechnical investigation was to obtain information about the subsurface conditions at boreholes locations (including seven (7) new sampled boreholes within the Spiers Lands - (Block 7) and from the findings in the boreholes to make engineering recommendations pertaining to the geotechnical design of underground utilities, roads and to comment on the foundation conditions for the building construction.

This report deals with geotechnical issues only. Findings in the hydrogeological investigation by DS are documented under separate cover.

This report is provided on the basis of the terms of reference presented above and, on the assumption, that the design will be in accordance with the applicable codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design. It may then be necessary to carry out additional borings and reporting before the recommendations of this office can be relied upon.

The format and contents are guided by client specific needs and economics and do not conform to generalized standards for services. Laboratory testing for most part follows ASTM or CSA Standards or modifications of these standards that have become standard practice.

This report has been prepared for Caledon Community Partners and its architect and designers. Third party use of this report without DS consent is prohibited.

2. BACKGROUND INFORMATION

In 2020, DS was retained by Bolton Option 3 Landowners Group to complete a preliminary geotechnical, environmental, and hydrogeological studies for the proposed development at the Site (Macville Community, in connection with a LOPA application to establish the Macville Community Secondary plan area, located at The Gore Road and King Street in Bolton, Ontario).

DS carried out the geotechnical investigation field work at the subject site during the period of July 27 to 31, 2020, consisting of sixteen (16) boreholes (BH20-1 to BH20-16) which were drilled to depths ranging from 6.7 to 11.3 m below the existing grade at the locations shown on the Borehole Location Plan, **Drawing 1**. The Borehole logs are attached in **Appendix A** of this report.

Monitoring wells were installed in all boreholes, except Boreholes BH20-8, BH20-10, and BH20-13 to monitor long-term stabilized groundwater levels.

In addition, laboratory tests such as moisture content for all soil samples, grain size distribution (sieve and hydrometer analyses) and Atterberg Limit tests were carried out, by DS Consultants on selected samples.

Subsequently, DS advanced fourty-two (42) additional boreholes (BH22-1 to BH22-42) as requested by the consultant team between August and September 2022 to depths ranging from 8.2 to 12.8 m below the existing grade at the locations shown on **Drawing 1.** Additionally, for this investigation, three boreholes, (BH22-36A, BH22-39A and BH22-40A) were augered to depths of 4.0 to 7.6 m without soil sampling beside BH22-36, BH22-39, and BH22-40, respectively, for installation of shallow monitoring wells.

Laboratory testing on recovered samples included moisture content test on all samples and grain size analyses and Atterberg limits tests on selected samples.

Water level observations were made during and upon completion of drilling. Twenty-four (24) monitoring wells of 50 mm diameter were installed in select boreholes for the long-term groundwater levels monitoring and for hydrogeological purposes.

Soil Engineers Ltd. also carried out a hydrogeological assessment at the subject site, which included the advancement of eighteen boreholes (BH1 to BH18) and the findings of their investigation are documented in their report titled ”Hydrogeological Assessment, Proposed Mixed Use Development King Street and Humber Station Road, Town of Caledon” dated December 2022. The borehole logs from Soil Engineers’ (Soil Eng.) report are appended to this report for information purposes for the Humberking Developments.

3. FIELD AND LABORATORY WORK

DS has again been retained by Caledon Community Partners to update the previous preliminary geotechnical investigation for the Caledon Station Community Preliminary Framework Plan to establish the Caledon Station Community Secondary plan area with eight (8) new boreholes (BH23-1 to BH23-8) drilled on the Spiers Lands (Block 7).

A total of seven (7) sampled boreholes (BH23-1, BH23-2 and BH23-4 to BH23-8), see **Drawing 1** for borehole locations) were drilled by DS during the period between June 23 and July 5, 2023, to depths ranging from 8.2 to 21.9 m below the existing grade. **Additionally, one borehole, (BH23-1A) was augered to a depth 9.1 m without soil sampling beside BH23-1, for installation of a shallow monitoring well.**

The boreholes were drilled with solid and hollow stem continuous flight augers equipment by a drilling sub-contractor under the direction and supervision of DS personnel. Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer weighing 624 N and dropping 760 mm in accordance with the Standard Penetration Test (SPT) method. The samples were logged in the field and returned to the DS laboratory for detailed examination by the project engineer and for laboratory testing.

As well as visual examination in the laboratory, all soil samples from geotechnical boreholes were tested for moisture contents. Grain size analyses of eight (8) selected soil samples were conducted and the results are presented on **Drawings 55 to 58**. Atterberg Limits testing was conducted on selected three (3) soil sample and results are presented on the respective borehole logs and on **Drawings 59**.

Water level observations were made during and upon completion of drilling. All boreholes, except BH23-6 were equipped with monitoring wells of 50 mm diameter, for the long-term groundwater levels monitoring. The elevation surveying of the boreholes was undertaken by DS Consultants Ltd. personnel, using the differential GPS unit.

4. SUBSURFACE CONDITIONS

4.1 SOIL CONDITIONS

The borehole location plan is shown on **Drawing 1**. The site location plan is shown on Drawing 1A. General notes on sample description are provided on **Drawing 1B**. The subsurface conditions in the boreholes (BH23-1, BH23-2 and BH23-4 to BH23-8) drilled in 2023 and (BH22-1 to BH22-42) drilled in 2022 by DS were generally consistent with the findings from the 2020 investigation (and the soil conditions described in Soil Eng.'s boreholes) and are presented in the individual borehole logs

presented on **Drawings 2 to 54**. Logs of the previous 2020 boreholes (BH20-1 to BH20-16) are attached in **Appendix A**.

Topsoil and Fill/(Possible Fill) Material and Weathered/Disturbed Native Material:

A surficial layer of topsoil, ranging from 200 to 550 mm in thickness, was observed at the surface of all the boreholes, except BH20-4.

Fill or weathered/disturbed native material (possible fill in BH22-9) consisting of clayey silt to silty clay and sandy silt to silty sand soils were detected in all the boreholes below the topsoil layer and extended to approximate depths ranging from 0.4 to 2.3 m below the existing ground surface. In the area of Borehole BH20-4, the fill layer was overlain by a concrete slab, approximately 300 mm in thickness. In the area of Borehole BH22-9, the weathered/disturbed clayey silt to silty clay with inclusions of gravel, organic staining, and no readily apparent structure. Hence, this layer may be possible fill. The fill and weathered/disturbed native materials were generally brown to dark brown in color and contained trace of organics, gravel, and rootlets.

SPT 'N' values measured in fill and weathered/disturbed native materials ranged from 3 to 15 blows per 300mm penetration, indicating a soft to stiff consistency or loose to compact state. The moisture content of this moist to wet fill and weathered/disturbed native soil layer ranged from 5 to 24%.

The type/quantity and extent of the existing weathered/disturbed soil or fill, and topsoil layers must be explored by further test pit investigation prior to/during excavation.

Clayey Silt/Silty Clay Till:

Clayey silt to silty clay till deposit was encountered below the weathered/disturbed soil layer in Boreholes BH23-1, BH23-2 and BH23-4 to BH23-8, and BH22-1 to BH22-5, BH22-8, BH22-10, BH22-11, BH22-14 to BH22-35, BH22-37 to BH22-40 and BH22-42, below a thin sandy silt to silty sand deposit in BH22-36 and BH22-41, below the fill layer in BH20-1 to BH20-3 and BH20-5 to BH20-16, and extended to approximate depths ranging from 1.5 to 15.3 m below existing ground surface, i.e., the maximum explored depth of Boreholes BH23-4, BH22-14, BH22-16, BH22-17, BH22-19, BH22-20, BH22-21, BH22-24, BH22-34, BH22-36, BH22-37 to BH22-41, BH20-6, BH20-7, BH20-10, BH20-14 and BH20-15. The clayey silt till was interrupted by a cohesionless silt deposit between 4.6 and 6.1 m depth in BH22-24 and by a gravelly sand deposit between 1.8 and 10.7 m depths in BH22-34. This, in general, moist to very moist clayey to silty clay till deposit was brown to grey in color and contained some sand too sandy and trace to some gravel. SPT 'N' values measured in the clayey silt to silty clay till ranged from 5 to more than 50 blows per 300 mm of penetration, indicating a

firm to hard consistency (generally very stiff to hard). The moisture content of this clayey silt to silty clay till deposit ranged from 7 to 26%.

Grain size analyses of ten (10) soil samples (BH23-1/SS8, BH23-4/SS7, BH23-8/SS6, BH22-1/SS3, BH22-14/SS7, BH22-21/SS5, BH22-25/SS3, BH22-36/SS3 and SS8, and BH22-41/SS6) obtained from the 2023 and 2022 drilling programs, were conducted and the results are presented on **Drawings 55 to 58.** Grain size analyses of one (1) silty clay till soil sample (BH20-7/SS4) was conducted during 2020 drilling program and the results are presented on the logs in **Appendix A**. The fractions of soil particles of clayey silt to silty clay tills are presented as follows:

Clay: 20 to 37%
Silt: 38 to 51%
Sand: 11 to 31%
Gravel: 1 to 15%

Atterberg limits tests of above noted ten (10) soil samples (BH23-1/SS8, BH23-4/SS7, BH23-8/SS6, BH22-1/SS3, BH22-14/SS7, BH22-21/SS5, BH22-25/SS3, BH22-36/SS3 and SS8, and BH22-41/SS6) were conducted. The results are shown on the borehole logs and on **Drawings 59 to 61.** The results of BH20-7/SS4) are shown on the log in **Appendix A.** They are summarized as follows:

Liquid limit (W_L): 19 to 33%
Plastic limit (W_P): 12 to 26%
Plasticity index (PI): 6 to 16

Clayey Silt:

A thin layer of clayey silt with trace sand was encountered below the clayey silt/silty clay till deposit in BH22-18 and extended to a depth of 7.6 m below existing ground surface. SPT 'N' value measured in the clayey silty was in the order of 29 blows per 300 mm of penetration, indicating a very stiff consistency. The moisture content of this clayey silt layer was 10 %.

Sandy Silt Till:

A cohesionless sandy silt till deposit was encountered below the clayey silt to silty clay till deposit in Boreholes BH22-1, BH22-3, BH22-10, BH22-11, BH22-15, BH22-22, BH22-23, BH22-28, and BH22-33, below a sand deposit in BH22-2 and 22-42, and below the clayey silt layer in BH22-18. The sandy silt till deposit extended to depths ranging from 3.1 to 12.8 m below existing ground surface, i.e., the maximum depth explored in BH22-2, BH22-15, BH22-18, BH22-23, and BH22-42.

SPT 'N' values measured within this sandy silt till deposit ranged from 21 to more than 50 blows per 300 mm of penetration, indicating compact to very dense relative density. The moisture content of this moist to wet sandy silt till deposit ranged from 8 to 23%.

Grain size analyses of two (2) sandy silt till samples soil samples (BH22-10/SS5 and BH22-18/SS8) obtained from the 2022 drilling program, were conducted and the results are presented on **Drawings 56 and 58,** with the following fractions:

Clay: 11%
Silt: 40 to 64%
Sand: 24 to 38%
Gravel: 1 to 11%

Cohesionless Deposits of Silt, Sandy Silt to Silty Sand, Sand, Sand and Gravel, and Sandy Gravel/Gravelly Sand:

Cohesionless deposits of silt, sandy silt to silty sand, sand, sand and gravel and sandy gravel/gravelly sand soils with inclusions of clay and varying amounts of gravel was encountered underlying or embedded in the clayey silt to silty clay till and/or sandy silt till deposits in Boreholes BH23-1, BH23-2, BH23-4 to BH23-8, BH22-1, BH22-2, BH22-3, BH22-4, BH22-5, BH22-8, BH22-10, BH22-11, BH22-24, BH22-25, BH22-26, BH22-27, BH22-28, BH22-29 to BH22-35, BH22-42, BH20-1 to BH20- 3, BH20-5, BH20-8, BH20-9, BH20-11 to BH20-13 and BH20-16, below the weathered/disturbed soils in BH22-6, BH22-7, BH22-9, BH22-12, BH22-13, BH22-36 and BH22-41, and below the fill in BH20-4. These cohesionless deposits extended to depths ranging from 0.8 to 21.9 m below existing ground surface, i.e., the maximum depths explored in BH23-1, BH23-2, BH23-4 to BH23-8, BH22-1, BH22-3, BH22-4, BH22-5, BH22-6, BH22-7, BH22-8, BH22-9, BH22-10, BH22-11, BH22-12, BH22-13, BH22-25 to BH22-33, BH22-35, BH20-1 to BH20- 3, BH20-5, BH20-8, BH20-9, BH20-11 to BH20-13 and BH20-16.

SPT 'N' values measured within these sandy, silty deposits ranged from 7 to more than 50 blows per 300 mm of penetration, indicating loose to very dense relative density. Disturbance of the split spoon samples noted at depth in BH23-6, BH22-27 and BH22-30 is likely attributable to heaving of the water bearing silty sand/sand. The moisture content of this moist to wet sands and silts ranged from 6 to 27%.

This moist to wet deposit was brown to grey in color and layers of sand and gravel and/or sandy gravel/gravelly sand materials were encountered in the area of Borehole BH23-8 between depths of 6.5 and 7.6 m, BH22-33 between depths of 6.1 and 9.1 m, BH22-34 between depths of 1.8 and 10.7 m, and BH20-16, between depths of 1.5 and 3.3 m and between depths of 4.5 and 6.2 m. SPT

'N' values measured within this sand and gravel and sandy gravel/gravelly sand layers ranged from 24 to 66 blows per 300mm of penetration, indicating compact to very dense relative density.

Grain size analyses of twelve (12) cohesionless, silt, sandy silt to silty sand, sand, and sandy gravel/gravelly sand soil samples (BH23-1/SS15, BH23-2/SS5, BH23-5/SS5, BH23-7/SS7, BH23-8/SS10, BH22-13/SS6 and SS9, BH22-25/SS9, BH22-28/SS7, BH22-32/SS10, BH22-33/SS8 and BH22-34/SS6) obtained from the 2023 and 2022 drilling programs were conducted and the results are presented on **Drawings 55 to 58.** Grain size analyses of eight (8) cohesionless, silt, sandy silt to silty sand, and sand and gravel soil samples sample (BH20-5/SS8, BH20-8/SS4 and SS7, BH20-11/SS8, BH20-12/SS7, BH20-16/SS4, SS6 and SS7) was conducted during 2020 drilling program and the results are presented on the logs in **Appendix A**. The fractions of soil particles of cohesionless sands, silts and gravel are presented as follows:

Clay: 2 to 18%
Silt: 10 to 94%
Sand: 1 to 82%
Gravel: 0 to 52%

4.2 GROUNDWATER CONDITIONS

During drilling and upon completion of drilling, groundwater was observed at variable depths, or the bottom of boreholes was wet in some boreholes while some boreholes remained dry.

Groundwater levels in the monitoring wells installed at thirty-one (31) borehole locations from 2023 and 2022 drilling program (BH23-1, BH23-1A, BH23-2, BH23-4, BH23-5, BH23-7, BH23-8, BH22-1, BH22-3, BH22-5, BH22-10, BH22-11, BH22-13, BH22-14, BH22-15, BH22-17, BH22-20, BH22-22, BH22-25, BH22-27, BH22-28, BH22-29, BH22-32, BH22-33, BH22-35, BH22-36A, BH22-39, BH22-39A, BH22-40, BH22-40A) were measured on September 8 and October 18, 2022, and March 21, 2023, and in thirteen (13) borehole locations from 2020 drilling program (BH1 to BH7, BH9, BH 11, BH 12 and BH14 to BH 16) on August 6, 2020, September 8, 2020, October 22, 2020, March 21, 2023 and July 7, 2023. The groundwater level measurements are provided below on **Table 1**.

Table 1: Summary of Groundwater Level Measurements in Monitoring Wells

BH No.	Ground Surface Elevation (m)	Date of Drilling	Date of Observation	Depth of Groundwater (m)	Elevation of Groundwater (m)
BH23-1	261.5	June 26, 2023	July 7, 2023	*Above ground surface (~-2.9)	*Above ground surface (~264.4)
BH23-1A	261.5	July 4, 2023	July 7, 2023	8.40	253.10
BH23-2	271.7	June 23, 2023	July 7, 2023	3.40	268.30
BH23-4	270.2	June 23, 2023	July 7, 2023	7.10	263.10
BH23-5	265.5	July 4, 2023	July 7, 2023	*Flowing Artesian Conditions (~-2.9)	*Flowing Artesian Conditions (~268.4)
BH23-7	265.3	July 5, 2023	July 7, 2023	-0.30*	265.6*
BH23-8	274.2	July 4, 2023	July 7, 2023	8.20	266.00
BH 22- 1	279.0	Aug 31, 2022	Sept 8, 2022 Mar. 21, 2023	3.40 2.62	275.60 276.40
BH 22-3	274.8	Aug 30, 2022	Sept 8, 2022 Mar. 21, 2023	1.42 0.32	273.40 274.50
BH 22-5	279.7	Aug 31, 2022	Sept 8, 2022 Mar. 21, 2023	6.53 5.82	273.20 273.90
BH 22-10	269.9	Sept 6, 2022	Sept 8, 2022 Mar. 21, 2023	1.27 0.22	268.60 269.70
BH 22-11	272.9	Sept 6, 2022	Sept 8, 2022	2.78	269.30

			Mar. 21, 2023	3.11	269.80
BH 22-13	276.1	Sept 1, 2022	Sept 8, 2022	6.03	270.10
			Mar. 21, 2023	5.43	270.70
BH 22-14	271.4	Sept 1, 2022	Sept 8, 2022	11.9	259.50
			Mar. 21, 2023	0.33	271.10
BH 22-15	270.2	Aug 29, 2022	Sept 8, 2022	1.93	268.30
BH 22-17	269.0	Aug 29, 2022	Sept 8, 2022	2.26	266.70
			Mar. 21, 2023	-0.71	269.70
BH 22-20	269.4	Aug 29, 2022	Sept 8, 2022	2.51	266.90
			Mar. 21, 2023		
BH 22-22	267.8	Aug 26, 2022	Sept 8, 2022	1.43	266.30
			Mar. 21, 2023	0.73	267.00
BH 22-25	270.9	Aug 25, 2022	Sept 8, 2022	3.10	267.80
			Mar. 21, 2023	2.27	268.60
BH 22-27	271.2	Aug 19, 2022	Sept 8, 2022	4.25	266.90
			Mar. 21, 2023	2.96	268.20
BH 22-28	270.9	Aug 19, 2022	Sept 8, 2022	4.81	266.10
			Mar. 21, 2023	3.68	267.20
BH 22-29	268.9	Aug 23, 2022	Sept 8, 2022	3.80	265.10
			Mar. 21, 2023	2.65	266.20
BH 22-32	265.3	Aug 23, 2022	Sept 8, 2022	0.32	265.00
			Mar. 21, 2023	-0.48	265.80
BH 22-33	268.0	Aug 25, 2022	Sept 8, 2022	4.29	263.70
			Mar. 21, 2023	3.17	264.80
BH 22-35	266.1	Aug 24, 2022	Sept 8, 2022	2.23	263.80

			Mar. 21, 2023	1.23	264.80
BH 22-36A	261.8	Sept 7, 2022	Sept 19, 2022	2.70	259.10
			Mar. 21, 2023	0.14	261.70
BH 22-39A	266.6	Sept 7, 2022	Sept 19, 2022	1.92	264.70
			Mar. 21, 2023	-0.02	266.60
BH 22-40	264.0	Sept 7, 2022	Oct 18, 2022	3.03	260.90
BH 22-40A	263.9	Sept 7, 2022	Sept 19, 2022	1.92	262.00
BH22-42	266.7	Sept. 6, 2022	Oct 18, 2022	2.05	264.60
			Mar. 21, 2023	0.51	266.20
BH 20- 1	279.8	July 27, 2020	Aug 6, 2020	4.10	275.70
			Sept 8, 2020	4.24	275.56
			Oct 22, 2020	4.51	275.29
			Mar. 21, 2023	3.96	275.90
BH 20-2	278.8	July 27, 2020	Aug 6, 2020	6.12	272.68
			Sept 8, 2020	6.36	272.44
			Oct 22, 2020	6.48	272.32
			Mar. 21, 2023	6.08	272.70
BH 20-3	278.6	July 27, 2020	Aug 6, 2020	6.0	272.60
			Sept 8, 2020	Dry	Dry
			Oct 22, 2020	Dry	Dry
			Mar. 21, 2023	5.93	272.60
BH 20-4	277.1	July 27, 2020	Aug 6, 2020	3.77	273.33
			Sept 8, 2020	3.90	273.20
			Oct 22, 2020	Not accessible	Not accessible

			Mar. 21, 2023	4.75	272.30
BH 20-5	273.0	July 29, 2020	Aug 6, 2020	2.78	270.22
			Sept 8, 2020	3.09	269.91
			Oct 22, 2020	3.38	269.62
			Mar. 21, 2023	2.68	270.40
BH 20-6	271.0	July 28, 2020	Aug 6, 2020	6.71	264.23
			Sept 8, 2020	1.15	269.85
			Mar. 21, 2023	0.26	270.70
BH 20-7	261.7	July 31, 2020	Aug 6, 2020	Dry	Dry
			Sept 8, 2020	6.52	255.18
			Oct 22, 2020	3.40	258.30
BH 20-9	274.1	July 28, 2020	Aug 6, 2020	4.43	269.67
			Sept 8, 2020	4.72	269.38
			Oct 22, 2020	4.97	269.13
			Mar. 21, 2023	4.50	269.61
BH 20-11	270.1	July 29, 2020	Aug 6, 2020	5.42	264.68
			Sept 8, 2020	5.37	264.73
			Oct 22, 2020	5.33	264.77
			Mar. 21, 2023	1.63	268.50
BH 20-12	264.9	July 31, 2020	Aug 6, 2020	0.20	264.70
			Sept 8, 2020	0.10	264.80
			Oct 22, 2020	0.14	264.76
			Mar. 21, 2023	-0.15	265.10
BH 20-14	267.7	July 30, 2020	Aug 6, 2020	3.32	264.38
			Sept 8, 2020	3.43	264.27

			Oct 22, 2020	3.59	264.11
			Mar. 21, 2023	0.19	267.50
BH 20-15	264.1	July 30, 2020	Aug 6, 2020	2.41	261.69
			Sept 8, 2020	2.33	261.77
			Oct 22, 2020	2.41	261.69
			Mar. 21, 2023	1.65	262.50
BH 20-16	265.5	July 31, 2020	Aug 6, 2020	2.12	263.38
			Sept 8, 2020	2.27	263.23
			Oct 22, 2020	2.49	263.01
			Mar. 21, 2023	1.30	264.20

*Artesian Conditions (above grade water levels)

During drilling, artesian condition was encountered at BH 23-1, BH23-5 and BH23-7 (Spiers Lands – Block 7), with water flowing out.

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events. Further groundwater level readings in the monitoring wells are recommended.

5. DISCUSSION AND RECOMMENDATIONS

It is understood that the proposed development will consist of a residential subdivision (single-family dwellings and low to mid-rise residential buildings), mixed-use land uses, stormwater management facilities, and a transit hub.

5.1 ARTESIAN CONDITIONS & SAFE EXCAVATION DEPTHS (SED)

Groundwater levels in the monitoring well installed at BH23-1, BH23-5 and BH23-7 was measured at about 0.30 m (BH23-7) to 2.9 m (BH23-1 and BH23-5) above the existing grade (artesian conditions). Due to the presence of artesian condition at three (3) borehole locations and higher water table at other boreholes (including water levels extending to or above ground surface during seasonal high groundwater period, i.e., BH22-17, BH22-32, BH22-39A and BH20-12), it is important that the till thickness and the upward groundwater pressures be well understood, in order to determine the safe depths of sub-surface construction.

Table 2 provides the preliminary safe excavation depths at borehole locations, without positive dewatering or de-pressurization of the aquifer. A factor of Safety of 1.43 was used to calculate the safe excavation depths, in accordance with the Canadian Foundation Manual. Improvement of the safe excavation depths across the site can be achieved by drilling additional deep boreholes and monitoring wells.

Table 2: Approximate Safe Excavation Depths in Boreholes Without Positive Dewatering/Depressurization

Borehole No.	Ground Surface Elevation (m)	Depth/Elevation of Groundwater Level* (m)	Safe Excavation Depth / Elevation without Positive Dewatering/ Depressurization**
BH23-1	261.5	-2.9/264.4*	2.9/258.6
BH23-5	265.5	-2.9/268.4*	0.0/265.5
BH23-7	265.3	-0.3/265.0*	0.7/264.6
BH22-3	274.8	0.3/274.5	1.2/273.6
BH22-10	269.9	0.2/269.7	2.0/267.9
BH22-14	271.4	0.3/271.1	Below 4.3/267.1
BH22-17	269.0	-0.7/268.3*	Below 2.1/266.9
BH22-22	267.8	0.7/267.1	Below 2.9/264.9
BH22-32	265.3	-0.5/264.8*	0.3/265.0
BH22-35	266.1	1.2/264.9	1.3/264.8
BH22-36A	261.8	0.14/261.7	3.4/258.4
BH23-39A	266.6	-0.02/266.6*	2.4/264.2
BH22-42	266.7	0.5/266.2	2.3/264.4
BH20-11	270.1	1.6/268.5	3.5/266.6
BH20-12	264.9	-0.15/264.8*	0.8/264.1
BH20-14	267.7	0.2/267.5	Below 3.7/264.0
BH20-15	264.1	1.7/262.4	Below 4.2/259.9
BH20-16	265.5	1.3/264.2	1.4/264.1

*above groundwater water table

**Safe Excavation Depths will vary with groundwater table elevations, to be confirmed by further measurements.

Groundwater control will be required for any excavations that extend in sandy soils below the groundwater table. Groundwater control (dewatering/depressurization) will also be required for temporary excavations that exceed the safe excavation depths provided in **Table 2**.

More comments regarding the type and extent of groundwater control required are provided in the Hydrogeological Investigation Report prepared by DS.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, the very stiff to hard clayey silt to silty clay till can be classified as Type 2 Soil above the groundwater table and Type 3 Soil below the groundwater table. The fill and cohesionless soils (silt, sandy silt to silty sand, sand, sand and gravel and sandy gravel/gravelly sand and sandy silt till) are classified as Type 3 soils above the groundwater table and Type 4 soils below the groundwater level.

5.2 SITE GRADING & ENGINEERED FILL

It is understood that the Caledon Station Community Secondary Plan, once approved through a Local Official Plan Amendment (LOPA), will serve as a framework for future development of the Subject Lands for the purposes of accommodating residential and mixed-use development with related complimentary uses, such as open spaces, parks, trails, commercial uses, the Bolton GO Station, the Natural Heritage System (NHS), and stormwater management facilities. This report may require updating when the secondary plan is approved. Recommendations for different components will be provided in the updated geotechnical report, if required.

For the residential subdivision with residential lots/buildings, underground services, roads, and driveways, it is recommended that all fill to be placed for grading purposes be constructed as engineered fill to provide competent subgrade below house foundations, roads, boulevards, etc.

Prior to placement of engineered fill, all existing surficial organic material/topsoil, fill materials, weathered/disturbed native soils and soils containing topsoil/organics should be stripped to expose the undisturbed inorganic native subgrade. The exposed subgrade should then be proof rolled with a heavy sheepsfoot roller to identify weak areas. Any weak or excessively wet zones identified during proof-rolling should be sub-excavated and replaced with compacted competent material to establish stable and uniform conditions. Prior to placement of engineered fill, the subgrade should be inspected and approved by a geotechnical engineer.

General guidelines for the placement and preparation of engineered fill are presented in **Appendix B**. Bearing capacity values of 150 kPa at SLS and 225 kPa at ULS can be used on engineered fill, provided that all requirements in **Appendix B** are adhered to. To reduce the risk of improperly placed engineered compacted fill, full-time supervision of the contractor is essential.

The following is a recommended procedure for an engineered fill:

1. Prior to site work involving engineered fill, a site meeting to discuss all aspects must be convened. The surveyor, contractor, design engineer and geotechnical engineer must attend the meeting. At this meeting, the limits of the engineered fill will be defined. The contractor must

make known where all fill material will be obtained and samples must be provided to the geotechnical engineer for review, and approval before filling begins.

2. Detailed drawings indicating the lower boundaries as well as the upper boundaries of the engineered fill must be available at the site meeting and be approved by the geotechnical engineer.

3. The building footprint and base of the pad, including basements, garages, etc. must be defined by offset stakes that remain in place until the footings and service connections are all constructed. Confirmation that the footings are within the pad, service lines are in place, and that the grade conforms to drawings, must be obtained by the owner in writing from the surveyor and DS. Without this confirmation no responsibility for the performance of the structure can be accepted by DS. Survey drawing of the pre, and post fill location and elevations will also be required.

4. The area must be stripped of all topsoil and fill materials. Subgrade must be proof-rolled. Soft spots must be dug out. The stripped native subgrade must be examined and approved by a DS engineer prior to placement of fill.

5. The approved engineered fill must be compacted to 100% Standard Proctor Maximum Dry Density throughout. Granular Fill preferred. Engineered fill should not be placed (where it will support footings) during the winter months. Engineered fill compacted to 100% SPMDD will settle under its own weight approximately 0.5% of the fill height and the structural engineer must be aware of this settlement. In addition to the settlement of the fill, additional settlement due to consolidation of the underlying soils from the structural and fill loads will occur.

6. Full-time geotechnical inspection by DS during placement of engineered fill is required. Work cannot commence or continue without the presence of the DS representative.

7. The fill must be placed such that the specified geometry is achieved. Refer to sketches for minimum requirements. Take careful note that the projection of the compacted pad beyond the footing at footing level is a minimum of 2 m. The base of the compacted pad extends 2 m plus the depth of excavation beyond the edge of the footing.

8. Bearing capacity values of 150 kPa at SLS and 225 kPa at ULS may be used provided that all conditions outlined above are adhered to. A minimum footing width of 500 mm (20 inches) is suggested, and footings should be provided with nominal steel reinforcement.

9. All excavations must be done in accordance with the Occupational Health and Safety Regulations of Ontario.

10. After completion of the pad a second contractor may be selected to install footings. All excavations must be backfilled under full time supervision by DS to the same degree as the

engineered fill pad. Surface water cannot be allowed to pond in excavations or to be trapped in clear stone backfill. Clear stone backfill can only be used with the approval of DS.

11. After completion of compaction, the surface of the pad must be protected from disturbance from traffic, rain, and frost.

12. If there is a delay in construction, the engineered fill pad must be inspected and accepted by the geotechnical engineer. The location of the structure must be reconfirmed that it remains within the pad.

The native soils and any existing fill materials free from organics/topsoil and organics to be excavated from cut-areas are considered suitable for re-use as engineered fill, provided that their moisture contents at the time of construction are at or near optimum. Clayey tills are likely to be excavated in cohesive chunks or blocks and will be difficult to compact. They should be pulverized and placed in thin layers not exceeding 200 mm and compacted using heavy equipment suitable for these types of soils (e.g., heavy sheepsfoot compactors).

5.3 ROADS/PAVEMENTS

The investigation has shown that the predominant subgrade soil, after stripping the topsoil and any other organic and otherwise unsuitable subsoil, will generally consist of clayey silt/silty clay till and silt to sandy silt soils.

Based on the above and assuming that traffic usage will be residential, the following minimum pavement thickness is recommended for the roads to be constructed within the development.

For Minor Local or Local Roads

40 mm HL3 Asphaltic Concrete
65 mm HL8 Asphaltic Concrete
150 mm Granular ‘A’
300 mm Granular ‘B’

For Collector Roads

40 mm HL3 Asphaltic Concrete
90 mm HL8 Asphaltic Concrete
150 mm Granular ‘A’
450 mm Granular ‘B’

Roads and driveway pavements/aprons should be constructed as per the Town of Caledon standards.

The site subgrade and weather conditions (i.e., if wet) at the time of construction may necessitate the placement of thicker granular sub-base layer and/or geogrid in order to facilitate the construction. Furthermore, heavy construction equipment may have to be kept off the newly constructed roads before the placement of asphalt and/or immediately thereafter, to avoid damaging the weak subgrade by heavy truck traffic.

5.3.1 STRIPPING, SUB-EXCAVATION AND GRADING

The site should be stripped of all organic soil/topsoil, fill materials, weathered/disturbed soils, soils containing topsoil/organics or otherwise unsuitable soils to the full depth of the roads, both in cut and fill areas. Following stripping, the site should be graded to the subgrade level and approved. The subgrade should then be proof rolled, in the presence of the Geotechnical Engineer, by at least several passes of a heavy compactor having a rated capacity of at least 8 tonnes. Any soft spots thus exposed should be removed and replaced by select fill material, similar to the existing subgrade soil and approved by the Geotechnical Engineer. The subgrade should then be re-compacted from the surface to at least 98% of its Standard Proctor Maximum Dry Density (SPMDD). The final subgrade should be cambered or otherwise shaped properly to facilitate rapid drainage and to prevent the formation of local depressions in which water could accumulate.

Owing to the clayey (i.e., impervious) nature of some subsoils at the site, proper cambering and allowing the water to escape towards the sides (where it can be removed by means of subdrains) is considered to be beneficial for this project. Otherwise, any water collected in the granular sub-base materials could be trapped thus causing problems due to softened subgrade, differential frost heave, etc. For the same reason damaging the subgrade during and after placement of the granular materials by heavy construction traffic should be avoided. If the moisture content of the local material cannot be maintained at ±2% of the optimum moisture content, imported granular material may need to be used.

Any fill required for re-grading the site or backfill should be select, clean material, free of topsoil, organic or other foreign and unsuitable matter. The fill should be placed in thin layers and compacted to at least 98% of its SPMDD. The compaction of the new fill should be checked by frequent field density tests.

5.3.2 CONSTRUCTION

Once the subgrade has been inspected and approved, the granular base and sub-base course materials should be placed in layers not exceeding 200 mm (uncompacted thickness) and should

be compacted to at least 100% of their respective SPMDD. The grading of the material should conform to current OPS Specifications.

The placing, spreading, and rolling of the asphalt should be in accordance with OPS Specifications or, as required by the local authorities.

Frequent field density tests should be carried out on both the asphalt and granular base and sub-base materials to ensure that the required degree of compaction is achieved.

5.3.3 DRAINAGE

The installation of full-length subdrains on all roads is recommended. The subdrains should be properly filtered to prevent the loss of (and clogging by) soil fines.

All paved surfaces should be sloped to provide satisfactory drainage towards catch-basins. As discussed in **Section 5.3.1,** by means of good planning any water trapped in the granular sub-base materials should be drained rapidly towards subdrains or other interceptors.

5.4 WATERMAIN/SEWERS

As a part of the site development, a network of new watermains, storm and sanitary sewers will be constructed. It is assumed that the trenches will generally be within 4 to 5 m below the existing grade.

The type of material for the pipes to be used for watermains or sewers will be the choice of civil engineer.

5.4.1 TRENCHING

The boreholes show that below the existing topsoil and fill, the trenches will be predominantly dug through the silty clay till, sand and gravel and sandy silt to silt soils. Groundwater seepage within the clayey silt/silty clay till is expected to be slow to moderate and manageable by gravity drainage and pumping from filtered sumps. Positive dewatering will be required for any excavations in cohesionless soils (sand, gravel, silt, sandy silt to silty sand and sandy silt till) below groundwater table. The groundwater table must be lowered to at least 1.0 m below the excavation base.

Excavations in fill and native soils can be carried out with heavy hydraulic backhoe.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, fill material and weathered/disturbed native soils can be classified as Type 3 Soil above groundwater and Type 4 Soil below groundwater table or in perched water condition. The very stiff to hard clayey silt/silty clay (till) can be classified as Type 2

Soil above groundwater and Type 3 Soil below groundwater. Cohesionless soils (sand, gravel, silt, sandy silt to silty sand, sandy silt till) can be classified as Type 3 soil above groundwater and as Type 4 below groundwater.

The sides of excavations in the natural strata can be expected to be temporarily stable at relatively steep side slopes above the groundwater table for short periods of time but they should be cut back at slopes no steeper than 1V:1.5H in fill material and 1V:1H in clayey silt/silty clay till in order to comply with the safety regulations. The OHSA stipulates that any excavation deeper than 1.2m must be shored or cut back at a slope of 1V:1H or flatter, depending on the soil type.

It should be noted that the till is a non-sorted sediment and therefore contain cobble and boulders. Possible large obstructions such as buried concrete pieces are also anticipated in the fill material. Provisions must be made in the excavation contract for the removal of possible boulders in the till and obstructions in the fill material.

5.4.2 BEDDING

Subject to design grades, the sewer pipes will predominantly be laid within the native soils and/or engineered fill which will provide adequate support for the sewer pipes and allow the use of normal Class B type bedding. The bedding should conform to the current Ontario Provincial Standard specifications (OPSS 401/OPSD 802) and/or standards set by the local municipality.

The recommended minimum thickness of granular bedding below the invert of the pipes is 150 mm. The thickness of the bedding may, however, have to be increased depending on the pipe diameter or in accordance with local standards or if wet or weak subgrade conditions or fill materials are encountered at the trench base level. The bedding material should consist of well graded granular material such as Granular ‘A’ or equivalent.

After installing the pipe on the bedding, a granular surround of approved bedding material, which extends at least 300 mm above the obvert of the pipe, or as set out by the local Authority, should be placed.

To avoid the loss of soil fines from the subgrade, uniformly graded clear stone should not be used unless, below the granular bedding material, a suitable, approved filter fabric (geotextile) is placed. The geotextile should extend along the sides of the trench and should be wrapped all around the poorly graded bedding material.

5.4.3 BACKFILLING OF TRENCHES

Based on visual and tactile examination, the on-site excavated inorganic native soils are considered to be suitable for re-use as backfill in the service trenches provided their moisture contents at the time of construction are within 2 percent of their optimum moisture content. Significant aeration of the wet excavated soils will be required prior to their use as backfill material.

The clayey deposits especially when its consistency is hard is likely to be excavated in cohesive chunks or blocks and will be difficult to compact in confined areas. For use as backfill, the clayey material will have to pulverized and placed in thin layers. The clayey soils will have to be compacted using heavy equipment suitable for these soils which may be difficult to operate in the narrow confines of the trenches. Unless the clayey materials are properly pulverized and compacted in sufficiently thin lifts post-construction settlements could occur. Their use in narrow trenches such as laterals (where heavy compaction equipment cannot be operated) may not be feasible.

Selected inorganic fill and the native soils free from topsoil and organics can be used as general construction backfill where it can be compacted with sheep's foot type compactors. Loose lifts of soil, which are to be compacted, should not exceed 200 mm. Depending on the time of construction and weather, some excavated material may be too wet to compact and will require aeration prior to its use.

Imported granular fill, which can be compacted with handheld equipment, should be used in confined areas.

The excavated soils are not considered to be free draining. Where free draining backfill is required, imported granular fill such as OPSS Granular B should be used.

The backfill should be placed in maximum 200 mm thick layers at or near (±2%) their optimum moisture content and each layer should be compacted to at least 95% SPMDD. In the upper 1.5 m of the subgrade, underneath the road base, the compaction should be increased to 98% SPMDD.

Unsuitable materials such as organic soils, boulders, cobbles, frozen soils, etc. should not be used for backfilling.

The on-site excavated soils and especially the clayey soils should not be used in confined areas (e.g., around catch-basins and laterals under roadways) where heavy compaction equipment cannot be operated. The use of imported granular fill together with an appropriate frost taper would be preferable in confined areas and around structures, such as catch-basins.

It should be noted that the excavated soils are subject to moisture content increase during wet weather which would make these materials too wet for adequate compaction. Stockpiles should be compacted at the surface or be covered with tarpaulins to minimize moisture uptake.

The topsoil encountered at the site can be used for landscaping fill area to raise the grades. Topsoil cannot be reused as foundation or trench backfill material.

5.4.4 ANTI SEEPAGE COLLARS/TRENCH PLUGS

For pipes installed under the groundwater table, seepage between the trench backfill material and the trench wall may cause erosion of the backfill materials. it is recommended that nominal anti-seepage collars (maximum spacing 50 m) be provided to prevent erosion of the backfill materials. Anti seepage collar should not be located at pipe joint.

The anti-seepage collar may consist of a clay plug surrounding the sewer pipe. A typical clay plug will be about 1 m thick and extends laterally to a minimum distance of 0.5 m from the pipe circumference with a minimum of 0.3 m embedment into the shale or native sub-grade. Typical (not to scale) anti-seepage collar conceptual detail is provided on **Drawing 62.**

The on-site native clayey soils may be suitable for such purpose subject to additional sampling and testing.

5.4.5 THRUST BLOCKS AND JOINT RESTRAINTS

An allowable (or SLS) bearing resistance of 150 kPa and factored ULS bearing resistance of 225 kPa can be used in the design of thrust blocks constructed on undisturbed native soils or engineered fill.

5.5 FOUNDATION CONDITIONS

It is understood that the Macville Community Secondary Plan, once approved through a Local Official Plan Amendment (LOPA), will serve as a framework for future development of the Subject Lands for the purposes of accommodating residential and mixed-use development with related complimentary uses, such as open spaces, parks, trails, commercial uses, the Bolton GO Station, the Natural Heritage System (NHS), and stormwater management facilities. This report may require updating when the secondary plan is approved. Recommendations for different components will be provided in the updated geotechnical report, if required.

5.5.1 Proposed Houses

It is understood that the proposed subdivision will consist of single detached homes, townhomes, back-to-backs, and stacked townhomes with one level of basement.

The footings must be founded as high as possible, in order to avoid any permanent depressurization of the underlying aquifer. Depressurization / dewatering of the water bearing sandy soils will be required for installation of footings below the safe excavation depths given in **Table 2** to prevent the heave / uplift of the excavation base and loss of bearing capacity due to hydrostatic pressure in underlying sandy soils interbedded in and below the clayey till deposits.

The native soils encountered in the boreholes are competent to support the proposed houses on conventional footings.

The spread and strip footings founded on the undisturbed native soils (below any fill or weathered/disturbed native soils) can be designed for a bearing capacity of 150 kPa at SLS (Serviceability Limit State), and for a factored geotechnical resistance of 225 kPa at ULS (Ultimate Limit State).

Subject to design grades, footing founding elevations, in the area of Borehole BH20-12 (2020 investigation), must be confirmed on site due to variable soil conditions. The footings might be lowered, or less bearing capacity be used.

In addition, the locally encountered silt, sandy silt to silty sand at the base of footings can be easily disturbed by construction activities. A concrete skim coat, about 50 mm in thickness, on the founding subgrade immediately after its approval might be required, on a case by case basis, to prevent its disturbance by construction activities.

Due to the difference in ground elevations and subject to design grades, should the proposed footings be founded above the competent native soils, then the proposed houses can also be supported by spread and strip footings founded on engineered fill for a bearing capacity of 150 kPa at the serviceability limit states (SLS) and for a factored geotechnical resistance of 225 kPa at the ultimate limit states (ULS), provided all requirements in Section 5.1 and in **Appendix B** are adhered to.

5.5.2 PROPOSED LOW TO MID-RISE RESIDENTIAL BUILDINGS

It is understood that low to mid-rise residential buildings (varying from 4 to 6 storey and up to probably 15 storey) are proposed to be erected in the vicinity of the GO station, the areas of DS boreholes BH22-36 to BH22-42 and BH20-10, BH20-11, BH20-14, and BH20-15 (2020 investigation),

and BH1 to BH10 from Soil-Eng.'s investigation. The proposed buildings may also include underground parking.

The design grades and number of floors/underground parking levels are not known at this stage. Therefore, our recommendations should be considered preliminary and will be revised when the proposed Site/Foundation plan becomes available.

Based on the provided recent information, it is understood that the number of floors could range as high as 15 storey structures in some locations, however, due to the variable soil conditions and the presence of less competent soils, the available soil bearing capacity information is not yet available to define the necessary geotechnical recommendations for such structures. Therefore, further location specific deep borehole investigation is required to investigate the subsurface soil conditions at greater depths and the need to utilize deep foundation alternative (if required) and or raft foundation and confirm the soil bearing capacities, subject to design loads.

In addition, settlement analyses will be required when the foundation plan/design loads areas available to evaluate/quantify the total and differential settlements.

Subject to design grades/loads, number of floors/levels of underground parking and based on the information from the above-mentioned boreholes, the following soil bearing capacities, as presented in Table 2, are available (which must be confirmed by further borehole investigation).

Table 2: Bearing Values and Founding Levels of conventional Footings in Native Soils

BH No.	Surface Elevation At Borehole (m)	Bearing Capacity at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	Minimum Depth below Existing Ground (m)	Founding Level At or Below Elevation (m)
*BH22-36 (DS)	261.7	150 200	225 300	1.0 2.3	260.7 259.4
BH22-37 (DS)	265.1	200	300	1.2	263.9
BH22-38 (DS)	262.7	150 250	225 375	1.1 1.8	261.6 260.9
*BH22-39 (DS)	266.5	250	375	1.7	264.8
BH22-40 (DS)	265.1	200	300	1.1	264.0
BH22-41 (DS)	264.0	150 200	225 300	1.1 2.5	262.9 261.5
*BH22-42 (DS)	266.7	200	300	1.1	265.6

BH20-10 (DS)	268.3	200	300	2.0	266.3
*BH20-11 (DS)	270.1	250	375	1.2	268.9
*BH20-14 (DS)	267.7	150 250	225 375	1.2 2.5	266.5 265.2
*BH20-15 (DS)	264.1	200 150	300 225	2.0 5.0	262.1 259.1
BH1 (Soil Eng.)	263.9	300	450	1.2	262.7
BH2 (Soil Eng.)	264.1	300 250	450 375	1.2 4.0	262.9 260.1
BH3 (Soil Eng.)	266.3	300 250	450 375	1.2 4.0	265.1 262.3
BH4 (Soil Eng.)	266.6	300 200	450 300	1.2 4.0	265.4 262.6
BH5 (Soil Eng.)	267.9	200 150	300 225	1.2 3.0	266.7 264.9
BH6 (Soil Eng.)	268.1	200 150	300 225	1.2 3.0	266.9 265.1
BH7 (Soil Eng.)	266.6	200 300	300 450	1.2 1.5	265.4 265.1
BH8 (Soil Eng.)	265.6	200 150	300 225	1.2 5.0	264.4 260.6
BH9 (Soil Eng.)	267.7	300 200	450 300	1.2 5.0	266.5 262.7
BH10 (Soil Eng.)	267.6	150 200	225 300	1.2 1.5	266.4 266.1

* Depressurization / dewatering of the water bearing sandy soils will be required for installation of footings below the safe excavation depths given in **Table 2** to prevent the heave / uplift of the excavation base and loss of bearing capacity due to hydrostatic pressure in underlying sandy soils interbedded in and below the clayey till deposits.

5.5.3 GENERAL FOUNDATION NOTES

Foundations designed to the specified bearing capacities at the serviceability limit states (SLS) are expected to settle less than 25 mm total and 19 mm differential.

All footings exposed to seasonal freezing conditions must have at least 1.4 metres of soil cover for frost protection.

Where it is necessary to place footings at different levels, the upper footing must be founded below an imaginary 10 horizontal to 7 vertical line drawn up from the base of the lower footing. The lower footing must be installed first to help minimize the risk of undermining the upper footing.

It should be noted that the recommended bearing capacities have been calculated by DS from the borehole information for the design stage only. The investigation and comments are necessarily on-going as new information of the underground conditions becomes available. For example, more specific information is available with respect to conditions between boreholes when foundation construction is underway. The interpretation between boreholes and the recommendations of this report must therefore be checked through field inspections provided by DS to validate the information for use during the construction stage.

5.6 FLOOR SLAB

The floor slab can be supported on grade provided all organic materials/topsoil, fill, and surficial softened/disturbed native soils are removed and the base thoroughly proof rolled. The fill required to raise the grade can consist of inorganic soil, approved by this office, placed in shallow lifts, and compacted to 98 percent of Standard Proctor Maximum Dry Density (SPMDD). Where engineered fill is used to support the foundations, the floor slab can also be supported by engineered fill.

A moisture barrier consisting of at least 200 mm of 19 mm clear crushed stone should be installed under the floor slab.

A perimeter and underfloor drainage system will be required around the exterior basement walls, as shown on **Drawing 63**.

5.7 EARTH PRESSURES

The lateral earth pressures acting on retaining walls or underground structures may be calculated from the following expression:

$$p = k(\gamma h + q)$$

where, p = Lateral earth pressure in kPa acting at depth h

K = Earth pressure coefficient, assumed to be 0.40 for vertical walls and horizontal backfill for permanent construction

γ = Unit weight of backfill, a value of 21 kN/m^3 may be assumed

h = Depth to point of interest in metres

q = Equivalent value of surcharge on the ground surface in kPa

The above expression assumes that the perimeter drainage system prevents the build up of any hydrostatic pressure behind the wall.

5.8 STORMWATER MANAGEMENT PONDS

It is understood that two stormwater management ponds are proposed in the following areas closest to boreholes advanced on the site by DS: **Pond 1** will be located in the area of BHH13 to BH16 (drilled by Soil Engineers Ltd.) and BH22-33 (drilled by DS); **Pond 2A** (will be located in closest proximity to BH20-7, BH23-1 and BH23-4, however these boreholes are a significant distance away from the Pond 2A).

Five boreholes (BH13 to BH16 by Soil Engineers Ltd. (Soil-Eng.) and BH22-33 by DS) were carried out in the area of **Pond 1**. Borehole BH14 by Soil-Eng. was terminated at Elev. 261.2 m, i.e., 0.2 m above the base of the proposed pond and all Soil-Eng.'s boreholes indicated the presence of a surficial topsoil and weathered zone, followed by silty clay till for the extent of the boreholes, i.e., to Elev. 259.2 to 261.2 m. The water levels in the open boreholes and/or monitoring wells were noted as dry.

For **Pond 1,** BH22-33 by DS indicated that below a surficial topsoil and weathered disturbed layer, silty clay till was encountered and extended to Elev. 265.7 m and followed by sandy silt till which extended to Elev. 261.9 m. The sandy silt till was followed by a wet sandy gravel deposit to Elev. 258.9 and then wet silty sand to sandy silt which extended to the depth investigated, i.e., depth of 11.3 m below ground surface (Elev. 256.7 m). The groundwater level measured on March 21, 2023, in the monitoring well in BH22-33 was at Elev. 264.8 m. The measured groundwater in BH22-33 was **3.8 m** above the base of the pond.

Two boreholes BH20-7 and BH23-1 (equipped with monitoring wells) were carried out by DS in closest proximity to **Pond 2A**. At BH20-7, surficial topsoil and shallow fill layers were underlain by clayey silt to silty clay till deposits which extended to the depth of investigation, i.e., a depth of 11.3 m below ground surface (Elev. 250.4 m). The measured groundwater level in the monitoring well installed in BH20-7 was at Elev. 255.2 m. At BH23-1, surficial topsoil and weathered/disturbed native soils were underlain by silty clay to clayey silt till deposits which extended to depths of 15.3 m (Elev. 246.2 m) below ground surface. At BH23-1, the silty clay to clayey silt till was underlain by a cohesionless deposit of water bearing sandy silt to silty sand which extended to the depth investigated, i.e., a depth of 21.9 m (Elev. 239.6 m) below ground surface. As noted before, artesian conditions were encountered at and in the vicinity of BH23-1. Safe excavation depths (SED) were assessed to explore the feasibility of locating the pond in the selected area. Based on the prevailing subsurface conditions at the foregoing mentioned boreholes, the following Safe Excavation Depths (SED) are provided:

BH20-7:	Ground Elev.: 261.7 m	SED: 6.0 m bgs / Elev. 255.7 m or below
BH23-1:	Ground elev.: 261.5 m	SED: 3.0 m bgs / Elev. 258.5 m

It should be noted that all of the boreholes were outside of the footprint of proposed Pond 2A, therefore, additional boreholes equipped with monitoring wells must be carried out within the footprint of proposed Pond 2A to obtain more specific subsurface information and Safe Excavation Depths (SED) for excavations within the footprint of Pond 2A.

Where the pond bottom and sides consist of cohesionless (sandy) soils, a clay liner will be required to retain water in the pond. The required thickness and uplift stability of the liner must be estimated and analyzed when more specific subsurface information within the footprint of the pond is obtained.

Dewatering system will be required for excavations below groundwater levels, subject to depth of excavations and type of soils encountered, to be confirmed during design stage.

Anti-seepage collars should be considered for outlet works that direct flow out of the SWM pond as these outlet works are subject to hydraulic heads directly from the pond. The provision of anti-seepage collars would increase the seepage path along the outlet works and therefore reduce the quantity of potential seepage.

Further preliminary detailed geotechnical discussion based on provided design details/elevations for the ponds are issued under separate cover.

6. GENERAL COMMENTS AND LIMITATIONS OF REPORT

DS Consultants Ltd. (DS) should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, DS will assume no responsibility for interpretation of the recommendations in the report.

This report is intended solely for the Client named. The material in it reflects our best judgment in light of the information available to DS at the time of preparation. Unless otherwise agreed in writing by DS, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

The conclusions and recommendations given in this report are based on information determined at the test hole locations. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between

and beyond the test holes may differ from those encountered at the test hole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

The design recommendations given in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report.

The comments made in this report on potential construction problems and possible methods are intended only for the guidance of the designer. The number of test holes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial organic soil/topsoil or fill layers may vary markedly and unpredictably.

The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. This work has been undertaken in accordance with normally accepted geotechnical engineering practices.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. DS accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

We trust that the information contained in this report is satisfactory. Should you have any questions, please do not hesitate to contact this office.

DS CONSULTANTS LTD

Osbert (Ozzie) Benjamin, P.Eng.
Senior Geotechnical Engineer

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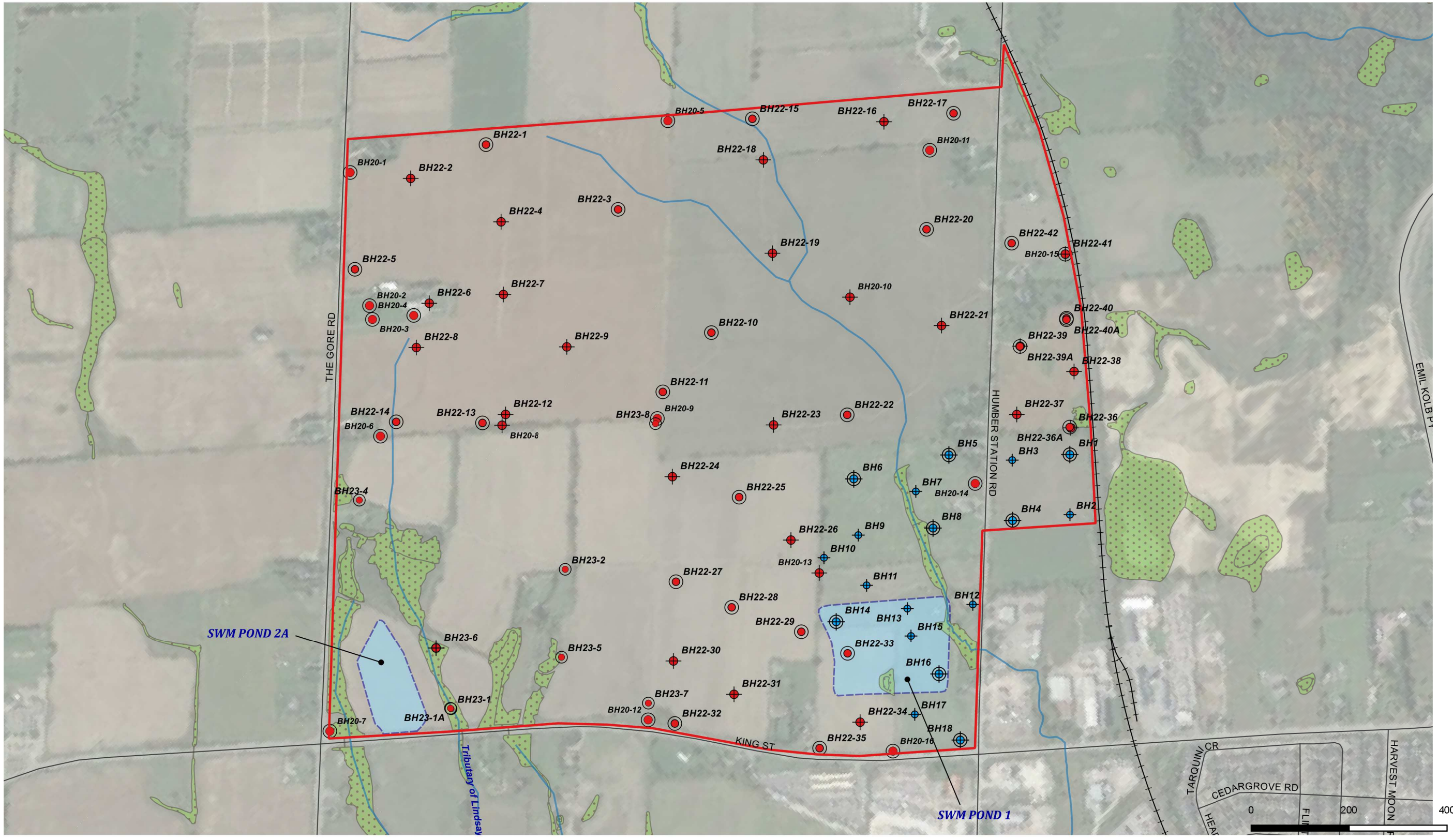
Principal Engineer

Shabbir Bandukwala, M.Eng., P.Eng.
Principal Engineer

Drawings

J:\GIS\2020 PROJECTS\20-169-100 Bolton Option 3 Lands\1-QGIS\GEO\Drawing 1 – Borehole and Monitoring Well Locations-105.qgs May-29 08:43



Legend

- Caledon Station Property Boundary
- Borehole
- Monitoring Well
- Borehole (Soil Eng)
- Monitoring Well (Soil Eng)
- Wetland
- SWM Pond

DS CONSULTANTS LTD.
6221 Highway 7, UNIT 16
Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Project: GEOTECHNICAL INVESTIGATION
Caledon Station , Caledon (Bolton), ON

Title: **BOREHOLE AND MONITORING WELL LOCATIONS**

Client: CALEDON COMMUNITY PARTNERS
c/o GLEN SCHNARR & ASSOCIATES

Size:	Approved By:	Drawn By:	Date:
11x17	O.B	S.Y	May 2024
Rev. 0	Scale: As Shown	Project No.: 20-169-105	Drawing No.: 1

Image/Map Source: *Google Satellite Image*

Legend

- Caledon Station Property Boundary
- Parcels
- Wetland

DS CONSULTANTS LTD.
6221 Highway 7, UNIT 16
Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Project: GEOTECHNICAL INVESTIGATION
Caledon Station and Argo King I & Argo King II, Caledon (Bolton), ON

Title: **SITE LOCATION PLAN**

N

Client: CALEDON COMMUNITY PARTNERS
c/o GLEN SCHNARR & ASSOCIATES

Size:	Approved By:	Drawn By:	Date:
11x17	D.S	S.Y	June 2024
Rev. 0	Scale: As Shown	Project No.: 20-169-105	Drawing No.: **1A**

Image/Map Source: *Google Satellite Image*

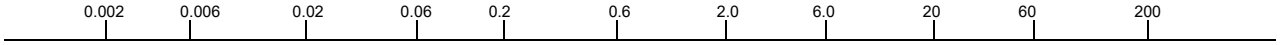
J:\-GIS\2020 PROJECTS\20-169-100 Bolton Option 3 Lands\1-QGIS\GEO\Drawing 1A –Site Plan - 104.qgs Jun-12 15:18

Drawing 1B: Notes On Sample Descriptions

1. All sample descriptions included in this report generally follow the Unified Soil Classification. Laboratory grain size analyses provided by DSCL also follow the same system. Different classification systems may be used by others, such as the system by the International Society for Soil Mechanics and Foundation Engineering (ISSMFE). Please note that, with the exception of those samples where a grain size analysis and/or Atterberg Limits testing have been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

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LOG OF BOREHOLE BH23-1

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857235.34 E 598035.14

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Jun-26-2023

REF. NO.: 20-169-105
ENCL NO.: 2

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
261.5 / 0.0	**TOPSOIL:** 250mm	1	SS	5	260
260.7 / 0.8	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace gravel, brown, moist, firm	2	SS	5	
	SILTY CLAY TO CLAYEY SILT TILL: trace sand, trace gravel, brown, moist, firm to very stiff hard below 2.3m	3	SS	16	
	some sand to sandy, grey below 3.1m	4	SS	50	258
		5	SS	51	
	wet sand seams below 4.5m	6	SS	40	
		7	SS	40	256
		8	SS	27	254
		9	SS	42	
		10	SS	44	252
		11	SS	44	
		12	SS	50/ 130mm	250
246.2 / 15.3	**SANDY SILT TO SILTY SAND:** trace clay, grey, wet, very dense	13	SS	50/ 130mm	248
		14	SS	77	246
		15	SS	72	
		16	SS	84	244
239.6 / 21.9	**END OF BOREHOLE:**	17	SS	75	242
	Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings:				240
	Date: Water Level(mbgl): July 7, 2023 -(above ground surface)				

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
6	25	45	24
0	22	74	4

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-105.GPJ DS.GDT 23-9-22

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH23-1A

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857235.11 E 598033.65

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Jul-04-2023

REF. NO.: 20-169-105
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
261.5												
0.0	Straight drilled to install well						261					
							260					
							259					
							258					
							257					
							256					
							255					
							254					
						W. L. 253.1 m Jul 07, 2023						
252.4												
9.1	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): July 7, 2023 8.4											

DS SOIL LOG-2021-FINAL 20-169-105.GPJ DS.GDT 23-9-22

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH23-2

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857600.68 E 597979.52

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Jun-23-2023

REF. NO.: 20-169-105
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"
271.7				
271.5 0.2	**TOPSOIL:** 200mm	1	SS	9
270.9 0.8	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace gravel, brown, moist, stiff	2	SS	17
269.4 2.3	**CLAYEY SILT TO SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, very stiff	3	SS	28
	SILT: trace clay, brown, moist to very moist, dense	4	SS	31
		5	SS	45
	grey below 4.6m	6	SS	38
264.1 7.6	**SANDY SILT TO SILTY SAND:** trace clay, brown to grey, wet, compact to dense	7	SS	35
		8	SS	41
		9	SS	37
	grey below 10.7m	10	SS	33
258.9 12.8	**END OF BOREHOLE:**	11	SS	21

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
July 7, 2023	3.4

W. L. 268.3 m
Jul 07, 2023

DYNAMIC CONE PENETRATION RESISTANCE PLOT
SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)

POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
		0	0	94	6

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH23-4

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857381.92 E 597592.36

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Jun-23-2023

REF. NO.: 20-169-105
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
270.2					
269.9 0.0	**TOPSOIL:** 250mm				
0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace gravel, brown, moist, stiff	1	SS	12	270
269.4 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** some sand to sandy, trace gravel, brown, moist, very stiff to hard	2	SS	24	269
		3	SS	23	
		4	SS	37	268
		5	SS	35	267
	grey below 4.6m	6	SS	17	266
		7	SS	15	265
		8	SS	16	264
		9	SS	16	263
					262
					261
260.5 9.7	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): July 7, 2023 7.1				

W. L. 263.1 m
Jul 07, 2023

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
GR	SA	SI	CL	
5	28	47	20	

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH23-5

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857474.3 E 598108.68

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Jul-04-2023

REF. NO.: 20-169-105
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
265.5					
0.0 / 265.5	**TOPSOIL:** 250mm				
0.3 / 264.9	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace gravel, brown, moist, firm	1	SS	7	265
0.6	**CLAYEY SILT TO SILTY CLAY TILL:** trace sand, trace gravel, brown to grey, moist, stiff to very stiff	2	SS	14	264
		3	SS	18	263
	grey below 2.3m	4	SS	11	
262.6					262
2.9 / 260.9	**SANDY SILT TO SILT:** trace clay, grey, wet, compact	5	SS	18	
4.6	**SANDY SILT TO SILTY SAND:** with clayey silt pockets, trace gravel, grey, wet, dense	6	SS	40	261
		7	SS	38	260
		8	SS	38	259
257.3					258
8.2	**END OF BOREHOLE:**				

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
July 7, 2023	flowing artesian conditions

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
0	48	49	3

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ● ε=3% Strain at Failure

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LOG OF BOREHOLE BH23-6

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857295.68 E 597922.46

DRILLING DATA
Method: Solid Stem Auger/Hollow Stem Auger
Diameter: 150mm/200mm
Date: Jun-23-2023

REF. NO.: 20-169-105
ENCL NO.: 7

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
263.3							
263.0 / 0.0	**TOPSOIL:** 200mm		1	SS	5		
262.8 / 0.2	**WEATHERED/DISTURBED**						
262.5 / 0.8	**NATIVE:** clayey silt to silty clay, trace rootlets, trace gravel, brown, moist, firm		2	SS	20		262
2	**CLAYEY SILT TO SILTY CLAY TILL:** trace sand, trace gravel, brown to grey, moist, stiff to hard		3	SS	26		
			4	SS	41		
	sandy, grey below 3.1m		5	SS	28		260
4							
			6	SS	26		258
6	sandy silt pockets at 6.0m		7	SS	13		
							256
8			8	SS	50/75 mm		
254.2							
9.1	**SANDY SILT TO SILTY SAND:** trace clay, grey, wet, loose(disturbed) to very dense		9	SS	disturbed		254
10			10	SS	47		
							252
12			11	SS	39		
							250
14			12	SS	24		
	silt pockets at 15.2m		13	SS	26		248
16			14	SS	27		
							246
18							
244.4			15	SS	53		
18.9	**END OF BOREHOLE:** Notes: 1) Water at the depth of 9.1m during drilling.						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Borehole drilled 1m beside original position/switched to Hollow Stem

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH23-7

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857543.28 E 598296.92

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Jul-05-2023

REF. NO.: 20-169-105
ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"
265.3 / 0.0	**TOPSOIL:** 250mm			
0.3 / 264.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace rootlets, brown, moist, firm	1	SS	5
1.0	**CLAYEY SILT TO SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, firm	2	SS	7
2 / 263.0	grey below 1.5m	3	SS	6
2.3	**SANDY SILT TO SILTY SAND:** trace clay, grey, wet, compact to dense	4	SS	23
3		5	SS	15
4				
5		6	SS	30
6 / 259.2				
6.1	**SILT:** trace clay, trace sand, grey, wet, compact	7	SS	21
7 / 257.7				
7.6	**SANDY SILT TO SILTY SAND:** trace clay, grey, wet, compact to dense	8	SS	13
8				
9		9	SS	37
10				
11		10	SS	20
12 / 253.1				
12.2 / 252.5	**SAND:** some silt, trace gravel, grey, wet, compact	11	SS	16
12.8	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitorng well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): July 7, 2023 -0.3			

GROUND WATER CONDITIONS: W. L. 265.6 m Jul 07, 2023

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	0	3	93	4

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH23-8

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: Macville Secondary Plan and Argo King, Caledon, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857936.73 E 597881.64

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Jul-04-2023

REF. NO.: 20-169-105
ENCL NO.: 9

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
274.2					
274.0 0.2	**TOPSOIL:** 230mm				
	WEATHERED/DISTURBED NATIVE: sandy silt, trace clay, trace rootlets, trace organics, brown, moist, compact	1	SS	12	274
273.2 1.0	**CLAYEY SILT TO SILTY CLAY TILL:** some sand to sandy, trace gravel, brown, moist, stiff to hard trace cobble fragments at 1.5m	2	SS	14	273
		3	SS	19	
		4	SS	32	272
		5	SS	50/ 130mm	271
	grey below 4.6m	6	SS	30	270
267.7		7	SS	33	269
6.5	**GRAVELLY SAND:** trace cobble, grey, wet, dense				268
266.6 7.6	**SANDY SILT TO SILTY SAND:** trace clay, grey, wet, dense	8	SS	37	267
		9	SS	35	265
263.5 10.7	**SAND:** some silt, trace clay, grey, wet, dense	10	SS	33	264
		11	SS	40	263
261.4 12.8	**END OF BOREHOLE:**				262

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date: Water Level(mbgl):
July 7, 2023 8.2

W. L. 266.0 m
Jul 07, 2023

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
1	5	23	48	24
11	0	80	17	3

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-105.GPJ DS.GDT 23-9-22

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LOG OF BOREHOLE BH22-1

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858060.2 E 597225.82

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-31-2022

REF. NO.: 20-169-104
ENCL NO.: 10

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
279.0 / 0.0	**TOPSOIL:** 300mm				
278.7 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace rootlets, brown, moist, stiff	1	SS	9	
278.2 / 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** trace to some sand, trace gravel, brown, moist, very stiff to hard	2	SS	24	278
	sandy silt till layer @2.3m	3	SS	28	277
		4	SS	32	
	W. L. 276.4 m Mar 21, 2023				
		5	SS	31	
	W. L. 275.6 m Sep 08, 2022				
	grey below 4.6m	6	SS	34	275 / 274
272.7 / 6.3	**SANDY SILT TILL:** trace clay, trace gravel, grey, very moist, very dense	7	SS	65	273 / 272
271.4 / 7.6	**SANDY SILT TO SILTY SAND:** trace clay, trace gravel, grey, wet, very dense	8	SS	78	271
270.8 / 8.2	**END OF BOREHOLE:**				

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 8, 2022	3.4
Mar. 21, 2023	2.62

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
2	18	47	33

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-2

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857899.68 E 597174.15

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-31-2022

REF. NO.: 20-169-104
ENCL NO.: 11

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
280.2							
279.9 0.0	**TOPSOIL:** 300mm		1	SS	8		280
0.3	**WEATHERED/DISTURBED**						
279.4	**NATIVE:** sandy silt, clayey, trace						
1 0.8	rootlets, trace gravel, brown, moist, loose		2	SS	13		279
278.7	**SILTY CLAY TO CLAYEY SILT**						
1.5	**TILL:** some sand to sandy, trace		3	SS	15		
2	rootlets, trace gravel, brown, moist, stiff						278
	SILTY SAND TO SANDY SILT:		4	SS	36		
3	trace clay, brown, moist, compact to dense						
			5	SS	34		277
4							
							276
	wet, trace gravel below 4.6m		6	SS	45		
5							275
6			7	SS	44		274
7							273
	grey below 7.8m		8	SS	35		
8							272
9	compact below 9.1m		9	SS	19		271
10							270
269.5							
11 10.7	**SAND:** some silt to silty, trace clay, grey, wet, compact		10	SS	16		269
12							
268.0							268
12.2	**SANDY SILT TILL:** some clay,		11	SS	53		
267.4	trace gravel, grey, wet, very dense						
12.8	**END OF BOREHOLE:**						
	Notes:						
	1) Water at depth of 4.5m during drilling.						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH22-3

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858172.91 E 597505.29

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-30-2022

REF. NO.: 20-169-104
ENCL NO.: 12

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"
274.8 / 0.0	**TOPSOIL:** 250mm	1	SS	9
274.5 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace rootlets, brown, moist, stiff			
274.2 / 0.6	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, very stiff	2	SS	20
		3	SS	23
		4	SS	28
271.6 / 3.2	**SANDY SILT TILL:** some clay to clayey, trace gravel, grey, moist, compact to dense	5	SS	30
		6	SS	21
		7	SS	28
267.2 / 7.6	**SANDY SILT:** trace clay, trace gravel, grey, wet, dense to very dense	8	SS	42
		9	SS	59
265.1 / 9.7	**END OF BOREHOLE:**			

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	1.42
Mar. 21, 2023	0.32

W. L. 274.5 m Mar 21, 2023
W. L. 273.4 m Sep 08, 2022

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-4

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857977.59 E 597363.66

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-30-2022

REF. NO.: 20-169-104
ENCL NO.: 13

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
279.8												
279.6 0.2	**TOPSOIL:** 200mm		1	SS	9		279					
278.8 1.0	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace rootlets, brown, moist, stiff		2	SS	26							
2	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, very stiff to hard sand pocket@1.5m		3	SS	50/ 130mm		278					
277.5 2.3	**SAND:** trace to some silt, trace gravel, brown, moist, dense		4	SS	36		277					
3			5	SS	41							
4							276					
275.2 4.6	**SANDY SILT TO SILT:** trace clay, brown, wet, compact to dense		6	SS	25		275					
5												
6			7	SS	39		274					
7							273					
8			8	SS	19		272					
9							271					
10			9	SS	41		270					
11							269					
268.5	grey below 10.7m		10	SS	45							
11.3	**END OF BOREHOLE:** Notes: 1) Water at depth of 4.6m during drilling.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-5

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857690.79 E 597235.89

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-31-2022

REF. NO.: 20-169-104
ENCL NO.: 14

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
279.7 / 0.0	**TOPSOIL:** 320mm				
279.4 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt, some sand to sandy, trace rootlets, trace gravel, brown, moist, stiff	1	SS	10	279
278.9 / 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, hard	2	SS	45	
		3	SS	30	278
		4	SS	37	277
276.6 / 3.1	**SANDY SILT:** trace clay, brown, moist, dense to very dense	5	SS	82	276
	wet below 4.6m	6	SS	46	275
273.6 / 6.1	**SILT:** some clay, trace sand, silty clay pockets, trace gravel, brown, wet, dense	7	SS	40	274
	some sand to sandy@7.6m	8	SS	48	272
271.5 / 8.2	**END OF BOREHOLE:**				

W. L. 273.9 m Mar 21, 2023
W. L. 273.2 m Sep 08, 2022

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	6.53
Mar. 21, 2023	5.82

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-6

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857757.24 E 597389.06

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-31-2022

REF. NO.: 20-169-104
ENCL NO.: 15

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
278.0												
0.0 / 277.6	**TOPSOIL:** 380mm		1	SS	9							
0.4 / 277.2	**WEATHERED/DISTURBED NATIVE:** sandy silt, trace clay, trace gravel, trace rootlets, brown, moist, loose											
1 0.8	**SILTY SAND TO SANDY SILT:** trace clay, brown, moist, compact to dense		2	SS	10		277					
			3	SS	25							
2							276					
			4	SS	38							
3							275					
			5	SS	45							
4							274					
	wet below 4.6m		6	SS	33							
5							273					
6			7	SS	23		272					
7							271					
			8	SS	19							0 51 46 3
8							270					
9			9	SS	18		269					
10							268					
			10	SS	26							
11							267					
12	greyish brown below 12.2m						266					
265.2			11	SS	31							
12.8	**END OF BOREHOLE:** Notes: 1) Water at depth of 4.6m during drilling.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-7

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857881.68 E 597477

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-30-2022

REF. NO.: 20-169-104
ENCL NO.: 16

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
279.8												
279.6	**TOPSOIL:** 300mm											
0.3	**WEATHERED/DISTURBED**		1	SS	7							
279.0	**NATIVE:** silty clay, trace sand,						279					
1 0.8	trace rootlets, trace gravel, brown, moist, firm		2	SS	10							
278.3	**SANDY SILT:** some clay, brown,						278					
1.5	moist, compact		3	SS	24							
2	**SILT:** some sand to sandy, trace clay, trace gravel, brown, very moist, compact to dense occasional silty clay pockets, wet below 2.3m		4	SS	31		277					
3	silty clay layer@3.1m		5	SS	31							0 0 75 25
4							276					
	grey below 4.6m		6	SS	39		275					
5												
6			7	SS	26		274					
7							273					
8			8	SS	43		272					
9							271					
			9	SS	31							
10							270					
11			10	SS	32		269					
12							268					
267.0			11	SS	30							
12.8	**END OF BOREHOLE:**											

Notes:
1) Water at depth of 2.3m during drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-8

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857677.07 E 597438.67

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep-01-2022

REF. NO.: 20-169-104
ENCL NO.: 17

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
277.0							
277.0 / 0.0	**TOPSOIL:** 200mm						
0.2 / 276.2	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace rootlets, brown, moist, stiff		1	SS	11		
0.8	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, very stiff		2	SS	17		276
2 / 274.7			3	SS	26		275
2.3	**SILT:** some sand to sandy, trace clay, trace gravel, brown, moist, dense to very dense		4	SS	65		274
			5	SS	60		273
	grey, wet below 4.6m		6	SS	51		272
			7	SS	38		271
			8	SS	34		270
9 / 267.9							269
9.1	**SILTY SAND TO SANDY SILT:** trace clay, grey to brown, wet, compact to dense		9	SS	24		268
	brown, clayey silt pocket@10.7m		10	SS	48		267
12 / 264.2			11	SS	44		266
12.8	**END OF BOREHOLE:** Notes: 1) Water at depth of 4.6m during drilling.						265

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-9

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857907.13 E 597643.95

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep-02-2022

REF. NO.: 20-169-104
ENCL NO.: 18

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
278.2												
278.0 0.0	**TOPSOIL:** 250mm											
0.3	**FILL:** clayey silt to silty clay, some sand to sandy, trace gravel, trace rootlets, organic staining, dark brown to brown, moist, firm to stiff (possible weathered/disturbed native)		1	SS	7		278					
1			2	SS	11		277					
2			3	SS	9							
275.9							276					
2.3	**SILT:** some sand to sandy, trace clay, brown, moist, dense to very dense		4	SS	31							
3			5	SS	53		275					
4							274					
	wet below 4.6m		6	SS	53							
5							273					
272.1												
6.1	**SANDY SILT TO SILTY SAND:** trace clay, brown, wet, dense		7	SS	42		272					
7							271					
8			8	SS	38							
							270					
9			9	SS	38		269					
268.1			10	SS	43							
10.1	**END OF BOREHOLE:** Notes: 1) Water at depth of 4.6m during drilling.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-10

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858145.98 E 597819.82

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep-06-2022

REF. NO.: 20-169-104
ENCL NO.: 19

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
269.9							
269.6 0.0	**TOPSOIL:** 280mm	1	SS	8	W. L. 269.7 m Mar 21, 2023	269	
0.3 269.1	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace to some sand, trace gravel, trace rootlets, brown, moist, stiff	2	SS	15			
1 0.8 268.4	**SILTY CLAY TILL:** trace to some sand, trace gravel, brown, moist, very stiff	3	SS	29	W. L. 268.6 m Sep 08, 2022	268	
1.5 2	**SANDY SILT TILL:** trace to some clay, trace gravel, brown, moist, compact to very dense	4	SS	71		267	
3		5	SS	61			1 24 64 11
4						266	
	grey, wet below 4.6m	6	SS	56		265	
5 263.8						264	
6.1 7	**SANDY SILT TO SILTY SAND:** trace clay, trace gravel, grey, wet, compact to dense	7	SS	38		263	
8		8	SS	37		262	
9		9	SS	23		261	
10 259.6		10	SS	31		260	
10.3	**END OF BOREHOLE:**						

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	1.27
Mar.21, 2023	0.22

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-104 GEO COPY.GPJ DS.GDT 23-9-22

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LOG OF BOREHOLE BH22-11

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857991.3 E 597843.47

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep-06-2022

REF. NO.: 20-169-104
ENCL NO.: 20

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
272.9					
272.8 / 0.0	**TOPSOIL:** 250mm	1	SS	8	
0.3	**WEATHERED/DISTURBED NATIVE:** silty clay, trace sand, trace gravel, trace rootlets, brown, moist, stiff				
272.1 / 0.8		2	SS	21	272
	SILTY CLAY TILL: trace sand, trace gravel, brown, moist, very stiff to hard	3	SS	32	271
270.2		4	SS	40	270
2.7	**SANDY SILT TILL:** clayey, trace gravel, brown, moist, dense to very dense	5	SS	50/50mm	
268.3					
4.6	**SANDY SILT TO SILTY SAND:** trace clay, trace gravel, brown, wet, compact to very dense	6	SS	54	268
		7	SS	44	267
		8	SS	14	266
		9	SS	37	265
262.6		10	SS	53	264
10.3	**END OF BOREHOLE:**				263

Notes:
1) Monitoring well installed 1 m away from borehole.
2) 50mm dia. monitoring well installed upon completion.
3) Water Level Readings:

Date: Water Level(mbgl):
Sept. 08, 2022 3.6
Mar. 21, 2023 3.11

W. L. 269.8 m Mar 21, 2023
W. L. 269.3 m Sep 08, 2022

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-12

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857721.12 E 597662.19

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep-02-2022

REF. NO.: 20-169-104
ENCL NO.: 21

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
277.7							
277.4 0.0	**TOPSOIL:** 300mm		1	SS	10		277
0.3	**WEATHERED/DISTURBED NATIVE:** sandy silt to silt, trace clay, trace gravel, trace rootlets, dark brown to brown, moist, compact						
276.7 1.0	**SILT:** some sand to sandy, trace clay, trace gravel, brown, moist, compact to very dense clayey@2.3m		2	SS	18		276
			3	SS	33		
			4	SS	59		275
	wet below 3.1m		5	SS	75		274
			6	SS	66		273
			7	SS	40		272
270.1							271
7.6	**SANDY SILT TO SILTY SAND:** trace clay, brown, wet, compact to dense		8	SS	38		270
			9	SS	33		269
	grey below 10.7m		10	SS	45		268
			11	SS	14		267
264.9							266
12.8	**END OF BOREHOLE:**						265

Notes:
1) Water at depth of 3.1m during drilling.

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-13

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857674.46 E 597643.49

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep-01-2022

REF. NO.: 20-169-104
ENCL NO.: 22

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
276.1							
276.0	**TOPSOIL:** 250mm						
0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace sand, trace gravel, brown, moist, stiff	1	SS	9		276	
275.2							
0.9	**SILT:** trace sand, trace clay, trace gravel, brown, moist, compact to very dense	2	SS	15		275	
		3	SS	19		274	
		4	SS	70		273	
		5	SS	72		272	
	wet below 4.6m	6	SS	52		271	0 3 93 4
		7	SS	34	W. L. 270.7 m Mar 21, 2023 W. L. 270.1 m Sep 08, 2022	269	
268.5							
7.6	**SANDY SILT:** trace clay, brown, wet, compact to dense	8	SS	35		268	
	grey below 9.1m	9	SS	21		267	0 31 64 5
		10	SS	46		266	
		11	SS	37		265	
263.3						264	
12.8	**END OF BOREHOLE:**						

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	6.03
Mar. 21, 2023	5.43

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%): 10 20 30
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-14

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857544.96 E 597523.95

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep-01-2022

REF. NO.: 20-169-104
ENCL NO.: 23

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
271.4 / 0.0	**TOPSOIL:** 300mm					
271.1 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt, trace rootlets, trace sand, trace gravel, brown, moist, firm	1	SS	7		
270.4 / 1.0	**SILTY CLAY TO CLAYEY SILT TILL:** some sand to sandy, trace gravel, brown, moist, stiff to hard	2	SS	9		
		3	SS	34		
	sandy below 2.3m	4	SS	42		
	grey below 3.4m	5	SS	48		
		6	SS	22		
		7	SS	26		
		8	SS	28		
		9	SS	19		
		10	SS	16		
	moist to very moist @12.2m	11	SS	12		
258.6 / 12.8	**END OF BOREHOLE:**					

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	11.9
Mar 21, 2023	0.33

W. L. 271.1 m
Mar 21, 2023

W. L. 259.5 m
Sep 08, 2022

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	4	31	45	20

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-15

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858500.39 E 597551.22

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-29-2022

REF. NO.: 20-169-104
ENCL NO.: 24

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
270.2 / 0.0	**TOPSOIL:** 300mm				
0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace gravel, trace sand, brown, moist, stiff to firm	1	SS	10	270
268.7		2	SS	6	269
1.5	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, very stiff to hard	3	SS	25	
		4	SS	38	267
		5	SS	24	
	grey below 4.6m	6	SS	22	266
		7	SS	21	265
262.6					264
7.6 / 262.0	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist, very dense	8	SS	57	263
8.2	**END OF BOREHOLE:**				

Notes:
1) 50mm dia. monitoring well upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	1.93

W. L. 268.3 m
Sep 08, 2022

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-16

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858695.96 E 597735.36

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-29-2022

REF. NO.: 20-169-104
ENCL NO.: 25

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
268.8 / 0.0	**TOPSOIL:** 250mm	1	SS	9	268
268.5 / 0.3	**WEATHERD/DISTURBED NATIVE:** clayey silt, some sand, trace gravel, brown, moist, stiff				
268.0 / 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, very stiff to hard	2	SS	17	
		3	SS	20	267
		4	SS	36	266
	grey below 3.5m	5	SS	27	
					265
		6	SS	27	264
					263
		7	SS	21	
					262
	silty sand pockets @ 7.6m	8	SS	25	261
260.6 / 8.2	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.				

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)
PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) — GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-17

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858813.11 E 597817.61

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-29-2022

REF. NO.: 20-169-104
ENCL NO.: 26

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS
269.0 / 0.0	**TOPSOIL:** 300mm					
268.7 / 0.3	**WEATHERED/DISTURBED NATIVE:** sandy silt, trace to some clay, trace rootlets, trace gravel, brown, moist, loose		1	SS	8	
268.2 / 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, very stiff to hard		2	SS	23	
			3	SS	27	
			4	SS	33	
			5	SS	31	
	grey below 4.9m		6	SS	26	
	possible boulder@6.1m		7	SS	50/75mm	
260.8			8	SS	24	
8.2	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Sept. 08, 2022 2.26 Mar. 21, 2023 -0.71					

W. L. 269.7 m
Mar 21, 2023
W. L. 266.7 m
Sep 08, 2022

ELEVATION: 268, 267, 266, 265, 264, 263, 262, 261

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100
SHEAR STRENGTH (kPa)
UNCONFINED + FIELD VANE & Sensitivity
QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-104 GEO COPY.GPJ DS.GDT 23-9-22

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LOG OF BOREHOLE BH22-18

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858460.95 E 597628.58

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-29-2022

REF. NO.: 20-169-104
ENCL NO.: 27

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
270.0								20 40 60 80 100	10 20 30			
269.7 0.0	**TOPSOIL:** 250mm											
0.3	**WEATHERED/DISTURBED**		1	SS	3							
269.2	**NATIVE:** clayey silt, some sand,											
1 0.8	trace rootlets, trace gravel, brown, moist, soft		2	SS	21		269					
	SILTY CLAY TO CLAYEY SILT TILL: trace sand, trace gravel, brown, moist, very stiff to hard		3	SS	21		268					
2			4	SS	34		267					
3			5	SS	31		266					
4												
	grey below 4.6m		6	SS	18		265					
5 263.9							264					
6.1	**CLAYEY SILT:** trace sand, grey, moist, very stiff		7	SS	29		263					
7 262.4												
7.6	**SAND AND SILT TILL:** some clay, some gravel, grey, moist, dense		8	SS	31		262					11 38 40 11
8 261.8												
8.2	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-19

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858347.09 E 597782.77

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-30-2022

REF. NO.: 20-169-104
ENCL NO.: 28

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
269.0 / 0.0	**TOPSOIL:** 280mm				
268.7 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt, trace sand, trace rootlets, trace gravel, brown, moist, firm	1	SS	6	
268.2 / 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, stiff to hard trace fine rootlets above 0.9m	2	SS	9	268
		3	SS	23	267
		4	SS	31	266
		5	SS	32	265
	sandy, grey below 4.6m	6	SS	24	264
		7	SS	24	263
		8	SS	20	262
260.8 / 8.2	**END OF BOREHOLE:** Notes: 1) Water at depth of 7.3 during drilling.				261

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-20

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858613.57 E 597956.89

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Aug-29-2022

REF. NO.: 20-169-104
ENCL NO.: 29

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
269.4 / 0.0	**TOPSOIL:** 250mm				
269.2 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt, some sand to sandy, trace rootlets, trace gravel, brown, moist, firm	1	SS	7	269
268.6 / 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, gravelly sand pocket@1.0m, brown, moist, very stiff to hard	2	SS	24	
		3	SS	30	268
		4	SS	45	267
	W. L. 266.9 m Sep 08, 2022				
		5	SS	39	266
	grey below 4.6m	6	SS	19	265
		7	SS	21	264
		8	SS	18	263
261.2 / 8.2	**END OF BOREHOLE:**				262

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	2.51

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) — GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-21

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858504.78 E 598123.48

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-26-2022

REF. NO.: 20-169-104
ENCL NO.: 30

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
267.4						
267.1 0.0	**TOPSOIL:** 250mm	1	SS	6	267	
0.3	**WEATHERED/DISTURBED NATIVE:** sandy silt, trace rootlets, trace clay, trace gravel, brown, moist, loose					
266.6 1 0.8	**SILTY CLAY TILL:** some sand, trace gravel, brown, moist, very stiff to hard	2	SS	20	266	
2		3	SS	18		
265		4	SS	30	265	
3		5	SS	33	264	4 17 47 32
4					263	
5	grey below 4.6m	6	SS	16		
6					262	
		7	SS	16	261	
7					260	
8 259.2		8	SS	19		
8.2	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.					

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-22

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858239.64 E 598130.15

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-26-2022

REF. NO.: 20-169-104
ENCL NO.: 31

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"
267.8				
267.0 / 0.0	**TOPSOIL:** 250mm	1	SS	7
0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, some sand, trace gravel, dark brown, moist, firm			
267.0 / 0.8	**CLAYEY SILT TO SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, very stiff to hard	2	SS	16
		3	SS	26
		4	SS	33
		5	SS	39
	grey below 4.6m	6	SS	15
		7	SS	22
260.2 / 7.6	**SANDY SILT TILL:** some clay to clayey, trace gravel, silty sand pockets, grey, moist, very dense	8	SS	68
259.6 / 8.2	**END OF BOREHOLE:**			

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	1.43
Mar. 21, 2023	0.73

GROUND WATER CONDITIONS: W. L. 267.0 m Mar 21, 2023; W. L. 266.3 m Sep 08, 2022

ELEVATION: 265, 264, 263, 262, 261, 260

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-23

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858114.18 E 598044.93

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-26-2022

REF. NO.: 20-169-104
ENCL NO.: 32

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
270.6												
270.0 / 0.0	**TOPSOIL:** 250mm											
269.8 / 0.3	**WEATHERED/DISTURBED NATIVE:** silty clay, trace rootlets, trace sand, trace gravel, brown, moist, firm		1	SS	5		270					
0.8	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, very stiff to hard		2	SS	23							
			3	SS	24		269					
			4	SS	29		268					
			5	SS	30		267					
	grey below 4.6m		6	SS	21		266					
264.5 / 6.1	**SANDY SILT TILL:** clayey, trace gravel, grey, moist, compact to very dense		7	SS	27		265					
							264					
262.5 / 8.1	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.		8	SS	50/ 100mm		263					

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-24

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857889.88 E 597985.22

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-25-2022

REF. NO.: 20-169-104
ENCL NO.: 33

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
273.1												
273.0	**TOPSOIL:** 200mm											
272.8												
272.7	**WEATHERED/DISTURBED NATIVE:** silty clay, trace sand, trace rootlets, brown, moist, stiff		1	SS	12		273					
0.4												
1	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, stiff to hard		2	SS	32		272					
2			3	SS	36		271					
3			4	SS	35		270					
4			5	SS	38		269					
268.5												
4.6	**SILT:** some clay, some sand, trace gravel, grey, moist, dense		6	SS	30		268					
5												
267.0												
6.1	**CLAYEY SILT TO SILTY CLAY TILL:** trace sand, trace gravel, grey, moist, very stiff		7	SS	20		267					
7												
8			8	SS	17		266					
9	sandy @9.1m		9	SS	17		265					
10							264					
262.7			10	SS	16		263					
10.4	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-25

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857963.09 E 598107.54

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-25-2022

REF. NO.: 20-169-104
ENCL NO.: 34

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
270.9 / 0.0	**TOPSOIL:** 300mm	1	SS	10	270
270.6 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace sand, trace gravel, brown, moist, stiff	2	SS	28	
270.1 / 0.8	**SILTY CLAY TILL:** some sand, trace gravel, brown, moist, very stiff to hard	3	SS	29	269
		4	SS	31	
		5	SS	30	268
	grey below 4.6m	6	SS	18	267
		7	SS	34	266
263.3 / 7.6	**SILTY SAND:** trace clay, silt seams, grey, wet, compact to very dense	8	SS	57	265
		9	SS	22	264
		10	SS	37	263
259.6 / 11.3	**END OF BOREHOLE:**				262

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date: Water Level(mbgl):
Sept. 08, 2022 3.1
Mar. 21, 2023 2.27

GROUND WATER CONDITIONS:
W. L. 268.6 m Mar 21, 2023
W. L. 267.8 m Sep 08, 2022

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
3	1	14	49	36
9	0	70	27	3

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-26

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857983.06 E 598243.39

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-24-2022

REF. NO.: 20-169-104
ENCL NO.: 35

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
269.0					
268.8 / 0.0	**TOPSOIL:** 200mm	1	SS	9	
268.6 / 0.2	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace sand, brown, moist, stiff				
268.2 / 0.8	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, stiff to hard	2	SS	28	268
		3	SS	22	267
		4	SS	39	266
		5	SS	34	265
	grey below 4.6m	6	SS	14	264
	silty sand pockets below 6.1m	7	SS	31	263
					262
		8	SS	53	261
259.9 / 9.1					260
259.6 / 9.4	**SILT:** trace to some sand, trace clay, grey, moist to wet, very dense	9	SS	50/ 30mm	
	END OF BOREHOLE: Notes: 1) Borehole wet at the bottom upon completion.				

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%): 10 20 30
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) — GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-27

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857751.7 E 598149.64

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-19-2022

REF. NO.: 20-169-104
ENCL NO.: 36

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
271.2 / 0.0	**TOPSOIL:** 230mm	1	SS	12		271
270.4 / 0.8	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, some sand to sandy, trace rootlets, trace gravel, brown, moist, stiff	2	SS	23		270
269.5 / 1.7	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, very stiff	3	SS	35		269
	SANDY SILT: trace clay, trace gravel, brown, moist, dense	4	SS	46		
	clayey seams @3.1m	5	SS	44	W. L. 268.2 m Mar 21, 2023	268
266.6 / 4.6	grey @4.5m **SILT:** some clay to clayey, some sand, grey, very moist, compact	6	SS	29	W. L. 266.9 m Sep 08, 2022	267
	wet below 6.1m	7	SS	26		266
263.6 / 7.6	**SANDY SILT:** trace clay, grey, wet, compact	8	SS	20		265
		9	SS	19		264
		10	SS	17		263
259.0 / 12.2	**SILTY SAND:** trace clay, grey, wet, (disturbed)	11	SS	disturbed		262
258.4 / 12.8	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Sept. 08, 2022 4.25 Mar. 21, 2023 2.96					261
						260
						259

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%): 10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

disturbed sample

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-28

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857801.25 E 598264.59

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-19-2022

REF. NO.: 20-169-104
ENCL NO.: 37

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
270.9							
270.7 0.2	**TOPSOIL:** 200mm		1	SS	13		
270.1 0.8	**WEATHERED/ DISTURBED NATIVE:** clayey silt, some sand to sandy, trace gravel, trace rootlets, brown, moist, stiff		2	SS	30		270
268.6 2.3	**SILTY CLAY TO CLAYEY SILT TILL:** trace sand, trace gravel, brown, moist, hard sandy@1.5m		3	SS	55		269
267.8 3.1	**SANDY SILT TILL:** trace clay, trace to some gravel, brown, moist, dense		4	SS	44		268
	SANDY SILT: trace clay, brown, very moist to wet, very dense		5	SS	72	W. L. 267.2 m Mar 21, 2023	
265.9 5.0	**SILT:** some clay to clayey, trace sand, trace to some gravel, grey, very moist to wet, dense to very dense		6	SS	56	W. L. 266.1 m Sep 08, 2022	265
			7	SS	32		264
263.3 7.6	**SANDY SILT:** trace clay, grey, wet, compact to dense		8	SS	37		263
			9	SS	29		262
			10	SS	14		261
259.6 11.3	**END OF BOREHOLE:**						260

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	4.81
Mar. 21, 2023	3.68

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
GR	SA	SI	CL	
1	10	71	18	

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-29

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857873.47 E 598396.84

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-23-2022

REF. NO.: 20-169-104
ENCL NO.: 38

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
268.9								
268.6	**TOPSOIL:** 250mm							
0.3	**WEATHERED/DISRURBED**		1	SS	10			
268.1	**NATIVE:** silty clay, trace sand,							
1 0.8	trace gravel, trace rootlets, brown, moist, stiff		2	SS	26		268	
	SILTY CLAY TO CLAYEY SILT							
	TILL: trace sand, trace gravel,		3	SS	26		267	
2	brown, moist, very stiff to hard							
	sandy silt till lenses below 2.3m		4	SS	34	▼		
3 265.7							W. L. 266.2 m Mar 21, 2023	
3.2	**SAND:** trace silt, trace gravel, orange brown, moist to wet, compact to dense		5	SS	36	▽		
4							W. L. 265.1 m Sep 08, 2022	
	clayey silt pockets, grey, wet@4.6m		6	SS	39		264	
5								
6							263	
			7	SS	29			
7							262	
			8	SS	32		261	
8								
9 259.8							260	
9.1	**SILTY SAND:** silt pockets, trace clay, grey, wet, dense		9	SS	43			
259.2								
9.7	**END OF BOREHOLE:**							

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	3.8
Mar. 21, 2023	2.65

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-30

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857638.89 E 598267.27

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-23-2022

REF. NO.: 20-169-104
ENCL NO.: 39

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
268.3												
268.0	**TOPSOIL:** 250mm											
0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace rootlets, brown, moist, stiff		1	SS	10		268					
267.5												
1 0.8			2	SS	35		267					
	SILTY CLAY TILL: trace sand, trace gravel, occasional cobble, brown, moist, very stiff to hard		3	SS	28							
2 266.0												
2.3	**SANDY SILT:** trace clay, brown to grey, wet, dense grey below 2.6m		4	SS	35		266					
3			5	SS	32		265					
4 263.7												
4.6	**SILT TO SANDY SILT:** some sand, trace to some clay, grey, wet, compact		6	SS	23		264					
5							263					
6			7	SS	25		262					
7							261					
8			8	SS	21		260					
9 259.2												
9.1	**SAND:** some silt to silty, grey, wet, compact		9	SS	11		259					
10							258					
11			10	SS	29		257					
12												
255.5			11	SS disturbed			256					(disturbed sample)
12.8	**END OF BOREHOLE:** Notes: 1) Water at depth of 2.3m during drilling.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-31

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857685.22 E 598400.58

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-23-2022

REF. NO.: 20-169-104
ENCL NO.: 40

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
268.8												
268.6	**TOPSOIL:** 200mm											
0.2	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace organics/rootlets, brown, moist, stiff		1	SS	9		268		○			
268.0												
1 0.8			2	SS	24				○			
	SILTY CLAY TILL: trace sand, trace gravel, brown, moist, very stiff		3	SS	24		267		○			
2 266.5												
2.3	**SILT:** some sand to sandy, trace to some clay, brown, wet, compact to dense		4	SS	37		266		○			
3			5	SS	38				○			
4							265					
	grey below 4.6m		6	SS	28		264		○			
5												
6			7	SS	33		263		○			
7							262					
8			8	SS	37		261		○			
9							260					
			9	SS	35				○			
10							259					
258.1												
10.7	**SAND:** some silt to silty, trace clay, brown to greyish brown, wet, dense		10	SS	30		258		○			
11 257.5												
11.3	**END OF BOREHOLE:**											

Notes:
1) Water at depth of 2.3m during drilling.

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-32

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857555.59 E 598363.99

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-23-2022

REF. NO.: 20-169-104
ENCL NO.: 41

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"
265.3 / 0.0	**TOPSOIL:** 200mm	1	SS	9
265.1 / 0.2	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace rootlets, brown mottled, moist, stiff	2	SS	19
264.5 / 0.8	**SILTY CLAY TILL:** trace sand, trace gravel, brown mottled, moist, stiff to very stiff	3	SS	14
263.3 / 2.0	**SANDY SILT:** trace clay, trace to some gravel, grey, very moist, compact to dense wet below 2.3m	4	SS	21
		5	SS	27
		6	SS	38
		7	SS	27
	with silty sand lenses below 7.6m	8	SS	33
		9	SS	23
254.6 / 10.7	**SAND:** some silt, trace clay, grey, wet, compact	10	SS	24
253.1 / 12.2	**SANDY SILT:** with clayey silt pockets, grey, wet, compact	11	SS	15
252.5 / 12.8	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Sept. 08, 2022 0.32 Mar. 21, 2023 -0.48			

GROUND WATER CONDITIONS: W. L. 265.8 m Mar 21, 2023; W. L. 265.0 m Sep 08, 2022

ELEVATION: 265, 264, 263, 262, 261, 260, 259, 258, 257, 256, 255, 254, 253

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
0	82	15	3

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-33

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857913.51 E 598493.46

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-25-2022

REF. NO.: 20-169-104
ENCL NO.: 42

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
268.0 / 0.0	**TOPSOIL:** 250mm	1	SS	10	
267.7 / 0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace sand, trace gravel, brown, moist, stiff	2	SS	12	267
267.2 / 0.8	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, stiff to very stiff	3	SS	29	266
265.7 / 2.3	**SANDY SILT TILL:** trace clay, trace gravel, occasional cobble, brown, moist, compact to very dense occasional wet sand seams@3.1m	4	SS	41	265
		5	SS	25	264
		6	SS	50/100mm	263
261.9 / 6.1	**SANDY GRAVEL:** some silt, brown, wet, compact to dense	7	SS	25	262
		8	SS	43	261
258.9 / 9.1	**SILTY SAND TO SANDY SILT:** trace clay, grey, wet, compact to dense	9	SS	27	260
		10	SS	35	259
256.7 / 11.3	**END OF BOREHOLE:**				258
					257

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date: Water Level(mbgl):
Sept. 08, 2022 4.29
Mar. 21, 2023 3.17

GROUND WATER CONDITIONS: W. L. 264.8 m Mar 21, 2023; W. L. 263.7 m Sep 08, 2022

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
52	34	11	3

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-34

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857838.45 E 598615.09

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-24-2022

REF. NO.: 20-169-104
ENCL NO.: 43

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
267.0							
266.8 0.0	**TOPSOIL:** 250mm		1	SS	8		
0.3	**WEATHERED/DISTURBED**						
266.2	**NATIVE:** silty clay to clayey silt,						
1 0.8	trace sand, trace gravel, trace rootlets, brown, moist, stiff		2	SS	13		266
	CLAYEY SILT TO SILTY CLAY						
265.2	**TILL:** trace to some sand, trace		3	SS	28		
2 1.8	gravel, brown, moist, stiff to very stiff						265
	GRAVELLY SAND: some silt,		4	SS	44		
3	trace clay, brown, wet, compact to very dense						264
	moist, some cobbles at 3.1m		5	SS	51		
4							263
5			6	SS	25		262
6							261
			7	SS	24		
7							260
8			8	SS	56		259
9							258
			9	SS	43		
10							257
256.3							
11 10.7	**CLAYEY SILT TILL:** sandy, trace gravel, sand pockets, grey, moist,		10	SS	49		256
255.7	hard						
11.3	**END OF BOREHOLE:**						
	Notes:						
	1) Water at depth of 1.8m during drilling.						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
GR	SA	SI	CL	
32	54	11	3	

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-35

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857741.56 E 598599.11

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Aug-24-2022

REF. NO.: 20-169-104
ENCL NO.: 44

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
266.1 / 0.0	**TOPSOIL:** 250mm	1	SS	5	
0.3	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace rootlets, brown, moist, firm	2	SS	21	265
265.3 / 0.8	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, very stiff	3	SS	18	
264.6 / 1.5	**SANDY SILT TO SILTY SAND:** trace clay, brown, wet, compact to dense	4	SS	30	264
		5	SS	32	263
		6	SS	23	262
260.0 / 6.1	**SAND:** some silt, trace silt seams, brown, wet, compact	7	SS	17	261
258.5 / 7.6	**SANDY SILT TO SILTY SAND:** trace clay, grey, wet, compact to very dense	8	SS	37	260
		9	SS	52	259
		10	SS	37	258
		11	SS	47	257
252.5 / 13.6	**END OF BOREHOLE:**	12	SS	23	256
					255
					254
					253

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Sept. 08, 2022	2.23
Mar. 21, 2023	1.23

W. L. 264.8 m Mar 21, 2023
W. L. 263.8 m Sep 08, 2022

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-36

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858560.88 E 598455.25

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 45

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
261.7												
260.9 0.0	**TOPSOIL:** 250mm											
0.3	**WEATHERED/DISTURBED NATIVE:** silty sand, trace rootlets, trace gravel, brown, moist, loose		1	SS	7		W. L. 261.6 m Mar 21, 2023					
260.9 1 0.8	**SANDY SILT:** some clay, trace gravel, brown, very moist, compact		2	SS	12							
260.2 1.5	**SILTY CLAY TILL:** some sand to sandy, trace gravel, brown, moist, stiff to very stiff grey below 2.3m		3	SS	10		260					4 25 48 23
2			4	SS	16		259					
3			5	SS	16		258					
4												
5			6	SS	18		257					
6							256					
7			7	SS	19		255					
8			8	SS	19		254					6 19 45 30
9			9	SS	27		253					
10							252					
251.2 10.5	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.		10	SS	26							

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-36A

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858560.27 E 598452.63

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 46

SOIL PROFILE			SAMPLES										
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
261.8												
0.0	Straight drilled to 4m to installed well											
							W. L. 261.7 m Mar 21, 2023					
1							261					
2							260					
3							W. L. 259.1 m Sep 19, 2022					
257.8							258					
4.0	**END OF BOREHOLE:** Notes: 1) Straight drilled to 4m to install 50mm dia. monitoring well. 2) Water Level Readings: Date: Water Level(mbgl): Sept. 19, 2022 2.7 Mar. 21, 2023 0.14											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-37

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858497.3 E 598361.23

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 47

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
265.1 / 0.0	**TOPSOIL:** 230mm		1	SS	5		
264.9 / 0.2	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace rootlets, trace sand, trace gravel, brown, moist, firm		2	SS	22		264
264.3 / 0.8	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, stiff to very stiff		3	SS	27		263
			4	SS	29		
	grey below 3.1m		5	SS	22		262
			6	SS	14		261
			7	SS	14		260
			8	SS	16		259
256.9 / 8.2	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.						258 257

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-38

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858642.88 E 598374.23

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 48

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
262.7												
262.6	**TOPSOIL:** 250mm											
0.3	**WEATHERED/DISTURBED**		1	SS	6		262					
261.9	**NATIVE:** clayey silt to silty clay, trace rootlets, trace sand, trace gravel, brown to reddish brown, moist, firm		2	SS	13							
1 0.8	**SILTY CLAY TILL:** trace sand, trace gravel, brown, moist, stiff to very stiff		3	SS	22		261					
2			4	SS	42		260					
3	grey below 3.1m		5	SS	24		259					
4												
5			6	SS	21		258					
6							257					
7			7	SS	25		256					
8 254.5			8	SS	23		255					
8.2	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.											

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GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-39

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858595.53 E 598262.19

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 49

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
266.5							
266.3 0.0	**TOPSOIL:** 200mm						
0.2	**WEATHERED/DISTURBED**		1	SS	5		266
265.7	**NATIVE:** clayey silt to silty clay, trace rootlets, brown, moist, firm silty sand lens below 0.5m		2	SS	9		
1 0.8							
265.0	**SILTY CLAY TILL:** trace sand, trace gravel, trace rootlets, brown, moist, stiff (disturbed)		3	SS	23		265
1.5							
2	**SILTY CLAY TILL:** trace sand, trace gravel, trace rootlets, brown, moist, very stiff to hard		4	SS	35		264
3							
			5	SS	41		263
4							
	grey below 4.6m						262
5			6	SS	34		
							261
6							
			7	SS	19		260
7							
							259
8 258.3			8	SS	26		
8.2	**END OF BOREHOLE:**						

Notes:
1) Borehole wet at the bottom upon completion.

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-39A

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858595.12 E 598262.27

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 50

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa): ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE & Sensitivity, × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
266.6											
0.0	Straight drilled to 7.6m to install well.						W. L. 266.6 m Mar 21, 2023				
							266				
							265				
							W. L. 264.7 m Sep 19, 2022				
							264				
							263				
							262				
							261				
							260				
259.0							259				
7.6	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Sept. 19, 2022 1.92 Mar. 21, 2023 -0.02										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-40

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858703.05 E 598283.24

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 51

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
264.0												
263.8 0.2	**TOPSOIL:** 230mm **WEATHERED/DISTURBED**		1	SS	8							
263.2 0.8	**NATIVE:** silty clay, trace sand, trace rootlets, trace gravel, brown, moist, stiff		2	SS	27		263					
	SILTY CLAY TILL: trace sand, trace gravel, brown, moist, very stiff to hard trace rootlets above 1.0m		3	SS	27		262					
			4	SS	37		261					
	grey below 3.1m		5	SS	29	▽ W. L. 260.9 m Oct 18, 2022						
							260					
			6	SS	15		259					
							258					
			7	SS	20		257					
255.8 8.2			8	SS	17		256					
	END OF BOREHOLE: Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Oct 18, 2022 3.03											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-40A

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858702.2 E 598285.12

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-07-2022

REF. NO.: 20-169-104
ENCL NO.: 52

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
263.9												
0.0	Straight drilled to 4.0m to install well.						263					
1												
2						W. L. 262.0 m Sep 19, 2022	262					
3							261					
259.9							260					
4.0	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Sept. 19, 2022 1.92											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-41

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858790.18 E 598184.07

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-06-2022

REF. NO.: 20-169-104
ENCL NO.: 53

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
264.0												
0.0 / 263.7	**TOPSOIL:** 350mm											
0.4 / 263.2	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace gravel, trace sand, organic staining, trace rootlets, brown, moist, stiff		1	SS	9		263					
1 0.8			2	SS	12							
	SANDY SILT TO SILTY SAND: trace to some clay, trace gravel, brown, very moist, compact		3	SS	12		262					
2 261.7 / 2.3	**SILTY CLAY TILL:** trace to some sand, trace gravel, brown, moist, stiff to very stiff grey below 3.1m		4	SS	24							
3			5	SS	21		261					
4							260					
5			6	SS	16		259					1 11 51 37
6							258					
			7	SS	13							
7							257					
8 255.8			8	SS	20		256					
8.2	**END OF BOREHOLE:** Notes: 1) Borehole wet at the bottom upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-42

PROJECT: Geotechnical Investigation
CLIENT: Caledon Community Partners
PROJECT LOCATION: The Gore Rd. & King St., Bolton, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858723.71 E 598094.14

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Sep-06-2022

REF. NO.: 20-169-104
ENCL NO.: 54

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
266.7								20 40 60 80 100	10 20 30			
266.4 0.3	**TOPSOIL:** 250mm		1	SS	13							
265.9 0.8	**WEATHERED/DISTURBED NATIVE:** clayey silt to silty clay, trace sand, trace gravel, trace rootlets, brown, moist, stiff		2	SS	21		W. L. 266.2 m Mar 21, 2023					
	SILTY CLAY TILL: trace sand, trace gravel, brown, moist, very stiff		3	SS	21		265					
			4	SS	26		W. L. 264.6 m Oct 18, 2022 264					
			5	SS	27		263					
	grey below 4.6m		6	SS	17		262					
260.6 6.1	**SAND:** silt pockets, grey, wet, compact		7	SS	18		261					
259.1 7.6	**SANDY SILT TILL:** trace clay, trace gravel, grey, very moist, dense		8	SS	32		260					
258.5 8.2	**END OF BOREHOLE:**						259					

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water level Readings:

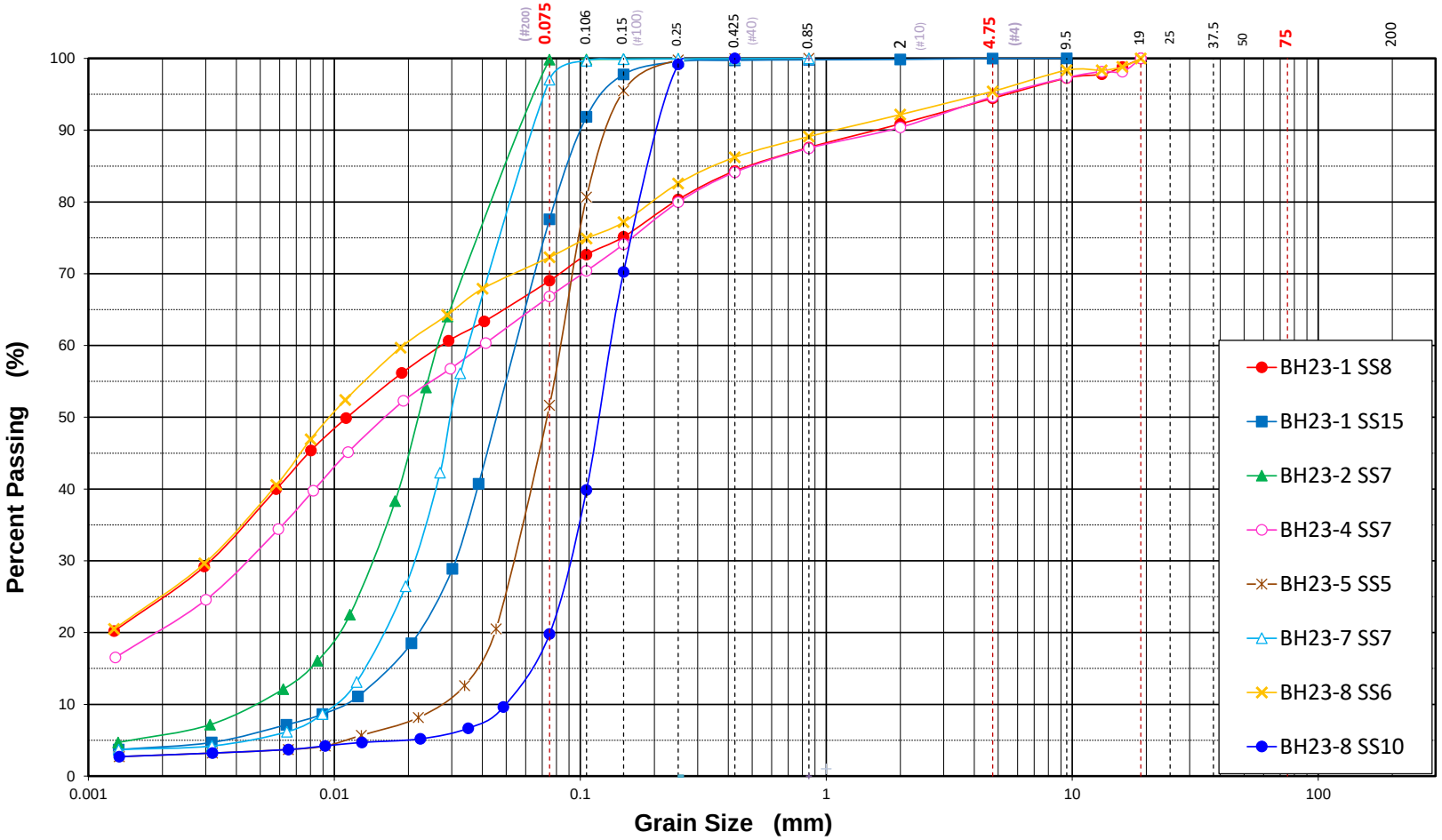
Date:	Water Level(mbgl):
Oct. 18, 2022	2.05
Mar. 21, 2023	0.51

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-104 GEO COPY.GPJ DS.GDT 23-9-22

Particle Size Distribution (ASTM-D421/D422)



Silt and Clay		Sand			Gravel		Cobble +
Clay	Silt	Fine	Medium	Coarse	Fine	Coarse	

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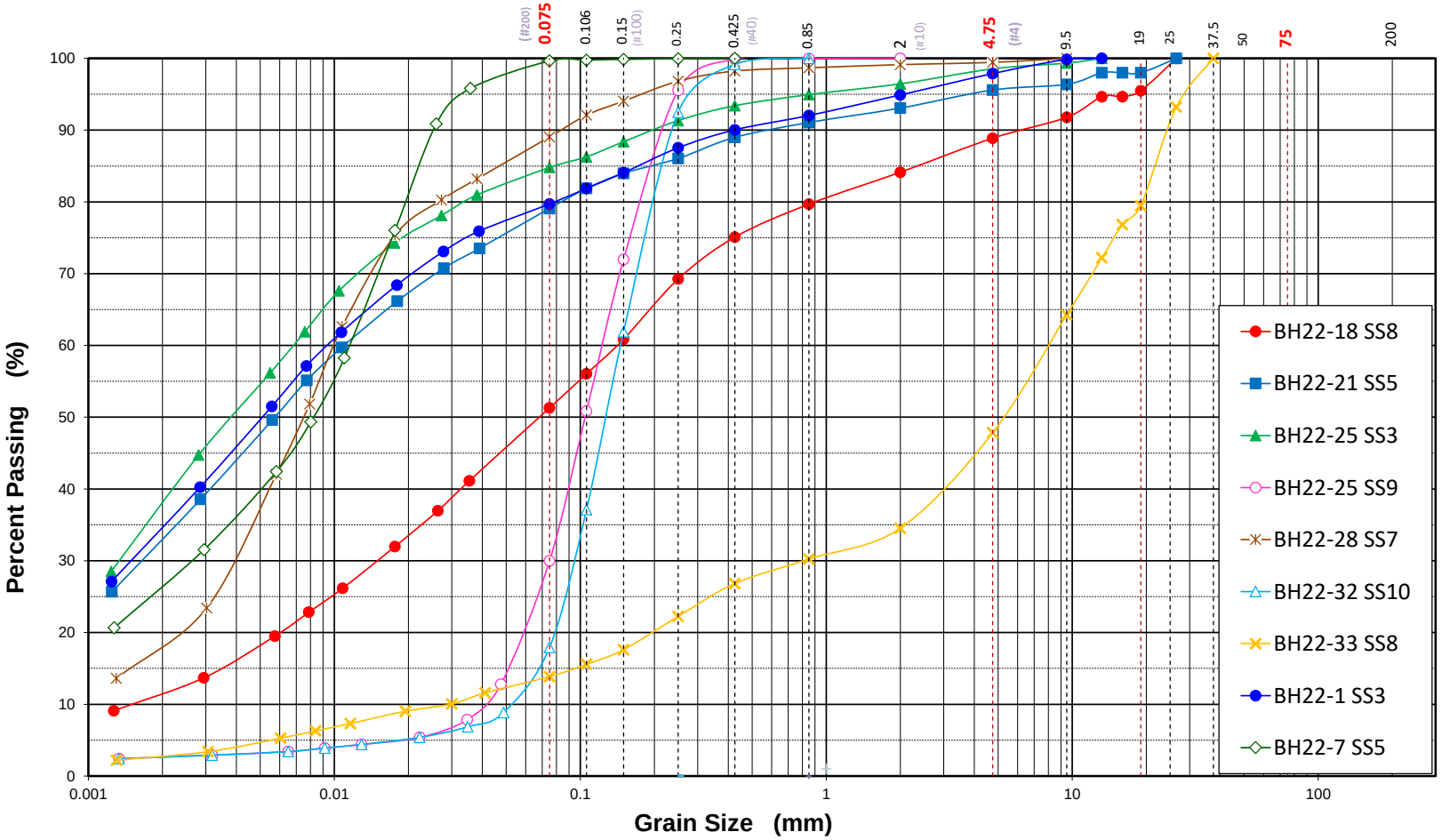
Project	**Geotechnical Investigation**	Project No	**20-169-105**
Location	**Macville Secondary Plan and Argo King, Caledon, ON**	Date	**Jul-07-2023**
Client	**Caledon Community Partners**	Figure No	55

Particle Size Distribution (ASTM-D421/D422)



Silt and Clay		Sand			Gravel		Cobble +
Clay	Silt	Fine	Medium	Coarse	Fine	Coarse	

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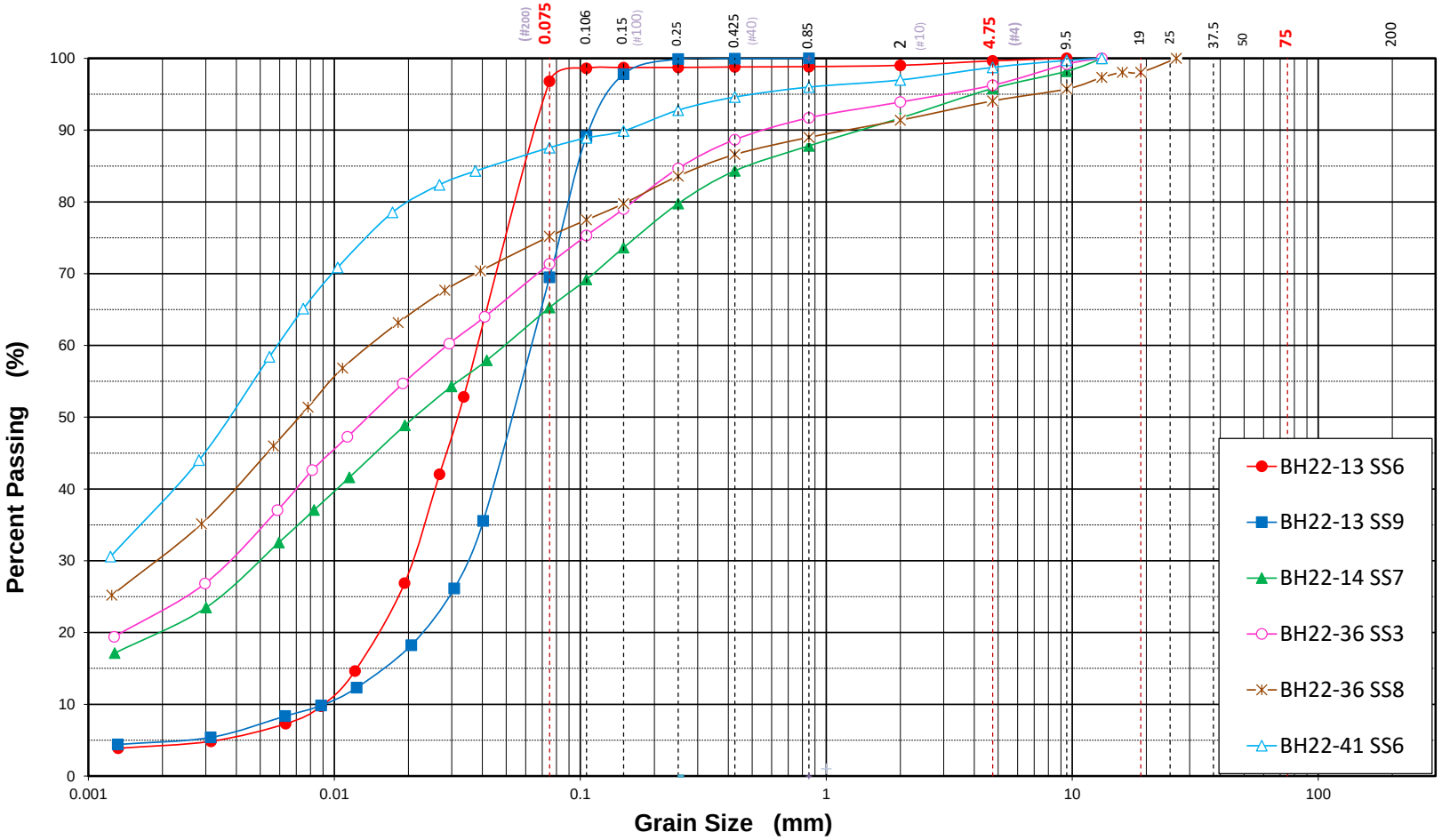
Project	**Geotechnical Investigation**	Project No	**20-169-104**
Location	**Macville Secondary Plan, Caledon, ON**	Date	**Aug-31-2022**
Client	**Caledon Community Partners**	Figure No	56

Particle Size Distribution (ASTM-D421/D422)



Silt and Clay		Sand			Gravel		Cobble +
Clay	Silt	Fine	Medium	Coarse	Fine	Coarse	

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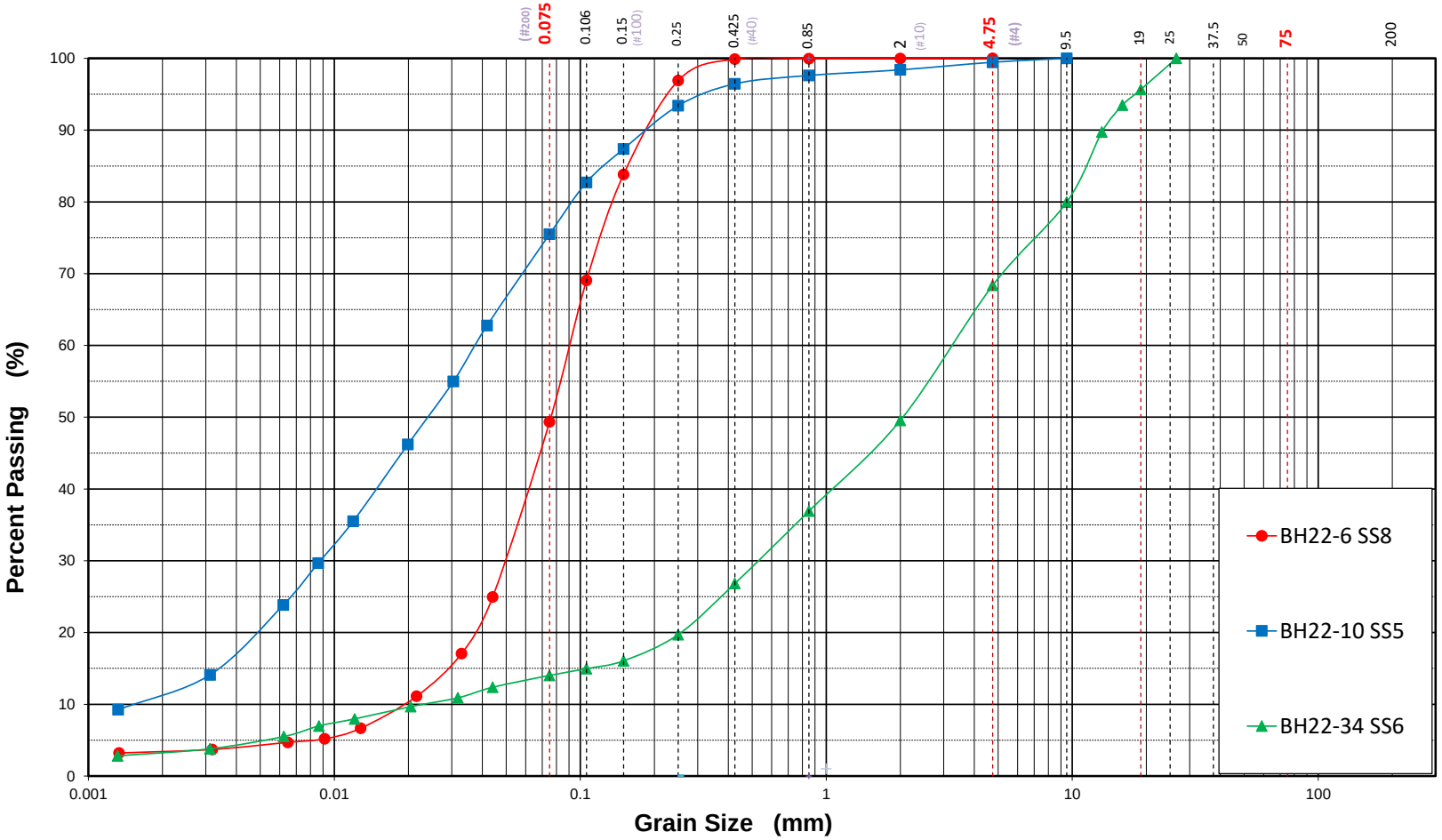
Project	**Geotechnical Investigation**	Project No	**20-169-104**
Location	**Macville Secondary Plan, Caledon, ON**	Date	**Sep-09-2022**
Client	**Caledon Community Partners**	Figure No	57

Particle Size Distribution (ASTM-D421/D422)



Silt and Clay		Sand			Gravel		Cobble +
Clay	Silt	Fine	Medium	Coarse	Fine	Coarse	

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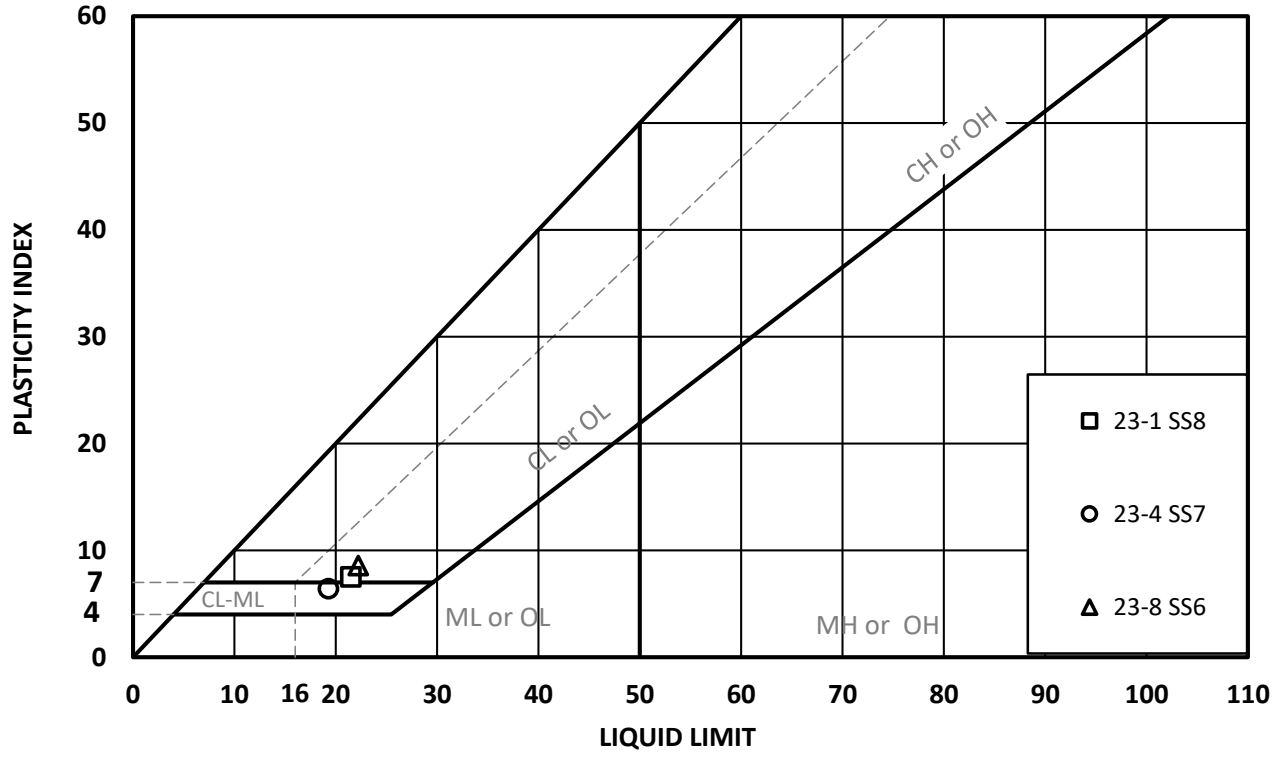
Project	**Geotechnical Investigation**	Project No	**20-169-104**
Location	**Macville Secondary Plan, Caledon, ON**	Date	**Sep-20-2022**
Client	**Caledon Community Partners**	Figure No	58

Atterberg Test (ASTM D-4318)



Code	Sample ID	Sample No.		Moisture Contant (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	USCS Symbol
1	□	23-1	SS8	11	21.5	14	7.5	CL
2	○	23-4	SS7	11	19.3	12.9	6.4	CL-ML
3	△	23-8	SS6	13	22.2	13.6	8.6	CL

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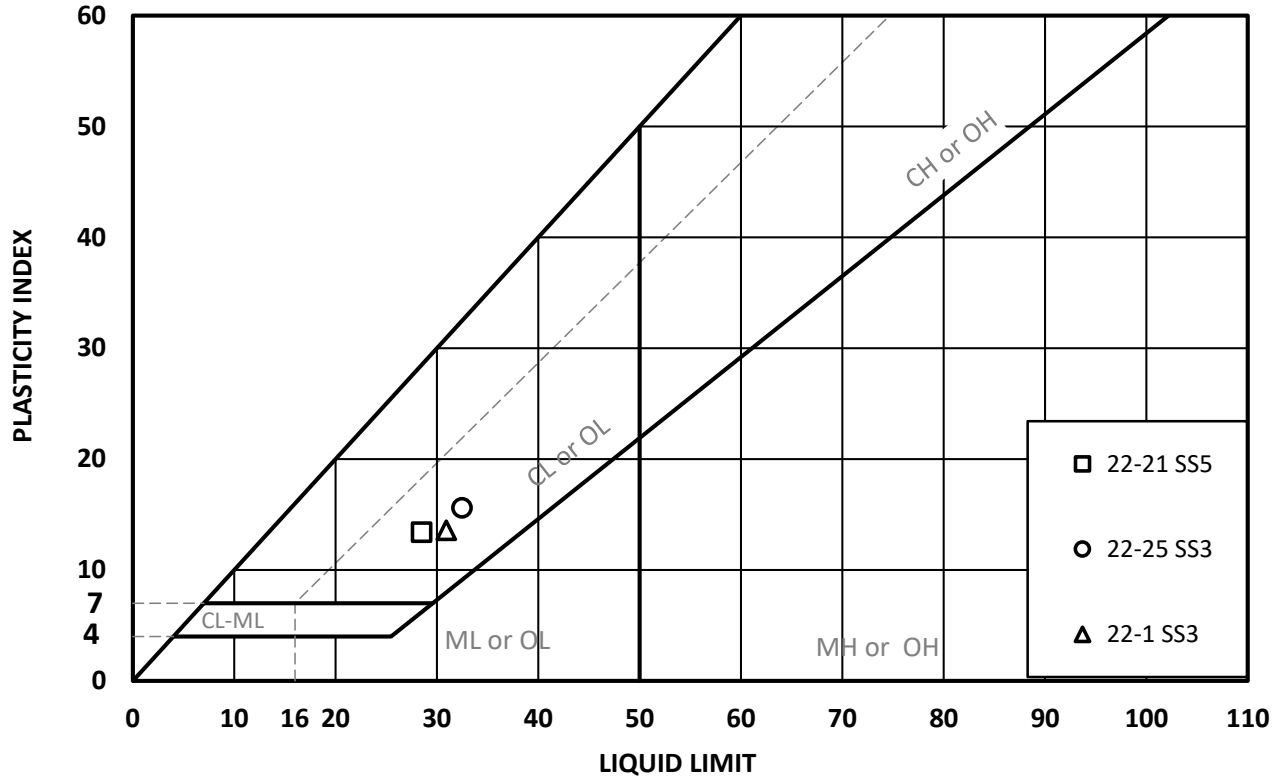
Project	**Geotechnical Investigation**	Project No	**20-169-105**
Location	**Macville Secondary Plan & Argo King, Caledon, ON**	Date	**Jul-07-2023**
Client	**Caledon Community Partners**	Figure No	59

Atterberg Test (ASTM D-4318)



Code	Sample ID	Sample No.		Moisture Contant (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	USCS Symbol
1	□	22-21	SS5	13	28.5	15.1	13.4	CL
2	○	22-25	SS3	15	32.5	16.9	15.6	CL
3	△	22-1	SS3	14	30.9	17.3	13.6	CL

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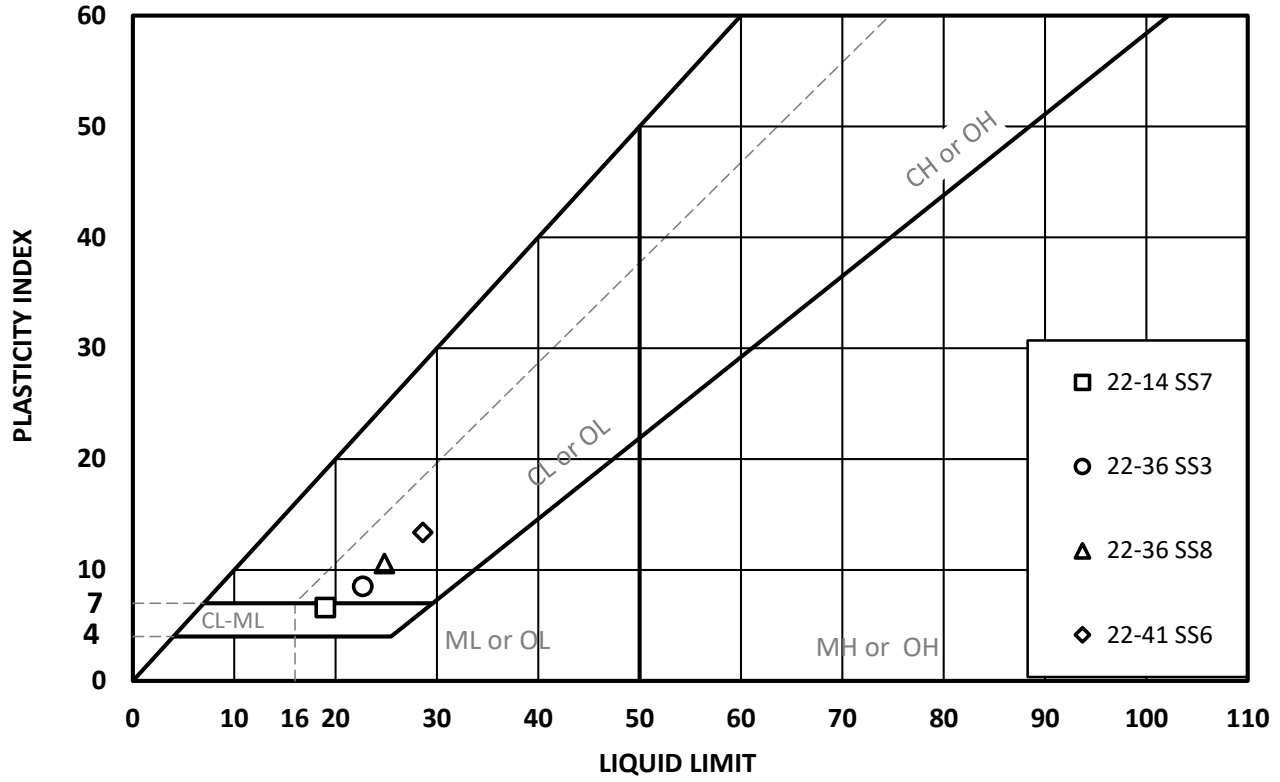
Project	**Geotechnical Investigation**	Project No	**20-169-104**
Location	**Macville Secondary Plan, Caledon, ON**	Date	**Aug-31-2022**
Client	**Caledon Community Partners**	Figure No	60

Atterberg Test (ASTM D-4318)



Code	Sample ID	Sample No.		Moisture Contant (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	**USCS Symbol**
1	□	22-14	SS7	9	19	12.4	6.6	CL-ML
2	○	22-36	SS3	17	22.7	14.2	8.5	CL
3	△	22-36	SS8	13	24.8	14.2	10.6	CL
4	◇	22-41	SS6	15	28.6	15.2	13.4	CL

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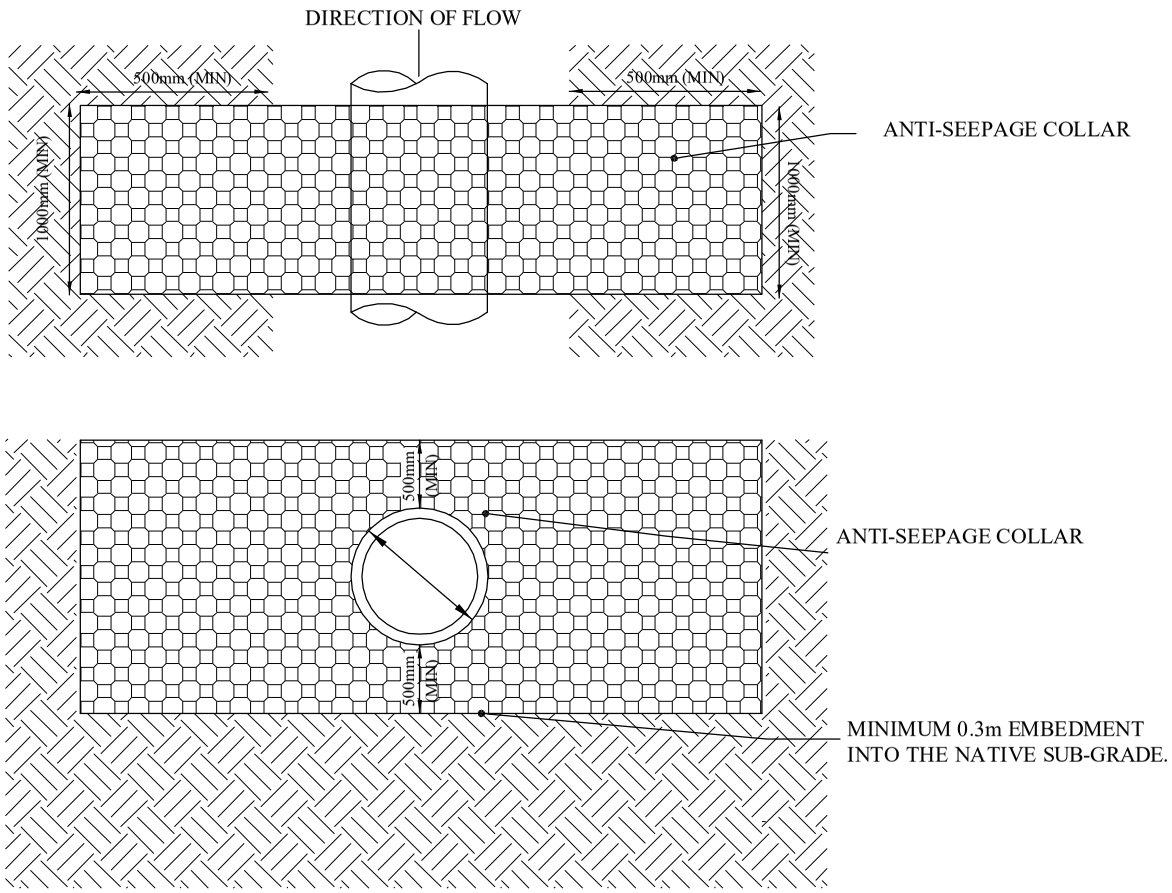
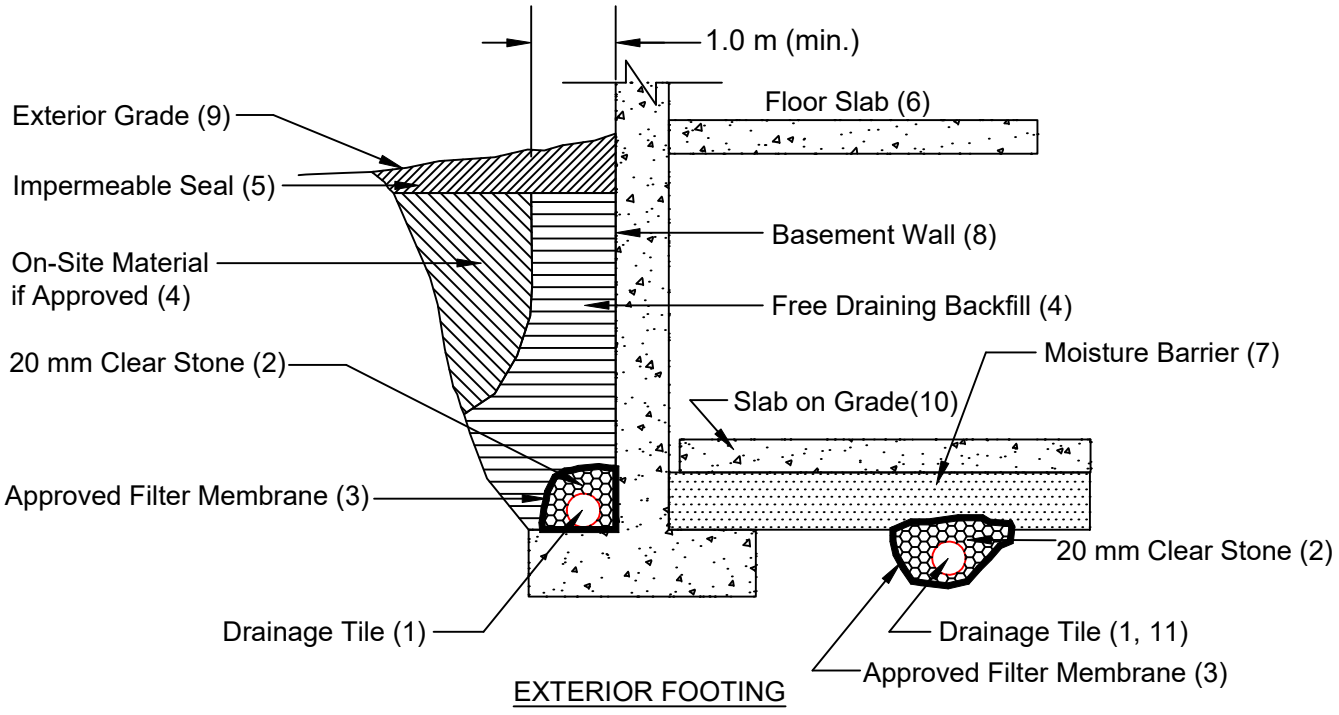
Project	**Geotechnical Investigation**	Project No	**20-169-104**
Location	**Macville Secondary Plan, Caledon, ON**	Date	**Sep-09-2022**
Client	**Caledon Community Partners**	Figure No	61

Drawing No. 62: TYPICAL TRENCH PLUG INSTALLATION



ANTI-SEEPAGE COLLAR DETAIL

SCALE: N.T.S.



EXTERIOR FOOTING

Notes

1. Drainage tile to consist of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet.
2. 20 mm (3/4") clear stone - 150 mm (6") top and side of drain. If drain is not on footing, place100 mm (4 inches) of stone below drain .
3. Wrap the clear stone with an approved filter membrane (Terrafix 270R or equivalent).
4. Free Draining backfill - OPSS Granular B or equivalent compacted to the specified density. Do not use heavy compaction equipment within 450 mm (18") of the wall. Use hand controlled light compaction equipment within 1.8 m (6') of wall. The minimum width of the Granular 'B' backfill must be 1.0 m.
5. Impermeable backfill seal - compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted. Maximum thickness of seal to be 0.5 m.
6. Do not backfill until wall is supported by basement and floor slabs or adequate bracing.
7. Moisture barrier to be at least 200 mm (8") of compacted clear 20 mm (3/4") stone or equivalent free draining material. A vapour barrier may be required for specialty floors.
8. Basement wall to be damp proofed /water proofed.
9. Exterior grade to slope away from building.
10. Slab on grade should not be structurally connected to the wall or footing.
11. Underfloor drain invert to be at least 300 mm (12") below underside of floor slab.
12. Drainage tile placed in parallel rows 6 to 8 m (20 to 25') centers one way. Place drain on 100 mm (4") clear stone with 150 mm (6") of clear stone on top and sides. Enclose stone with filter fabric as noted in (3).
13. The entire subgrade to be sealed with approved filter fabric (Terrafix 270R or equivalent) if non-cohesive (sandy) soils below ground water table encountered.
14. Do not connect the underfloor drains to perimeter drains.
15. Review the geotechnical report for specific details.

DRAINAGE AND BACKFILL RECOMMENDATIONS
Basement with Underfloor Drainage

(not to scale)

Appendix A

Borehole Logs from DS 2020 Investigation

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LOG OF BOREHOLE BH20-1

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857815.92 E 597082.44

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-27-2020

REF. NO.: 20-169-100
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
279.8							
0.0 / 279.8	**TOPSOIL:** 300mm		1	SS	6		
0.3 / 279.0	**FILL:** sandy silt, trace gravel, dark brown, moist, loose						
0.8	**CLAYEY SILT TILL:** sandy, trace gravel, sand seams, brown, moist, very stiff to hard		2	SS	19		279
			3	SS	36		278
	trace cobble below 2.3m		4	SS	55		Bentonite
			5	SS	32		276
275.3						W. L. 275.9 m Aug 06, 2020[1] W. L. 275.7 m Aug 06, 2020[1] W. L. 275.3 m Oct 22, 2020	
4.5 / 273.8	**SILTY CLAY:** trace sand, grey, very moist, very stiff		6	SS	17		274
6.0	**SILT:** trace clay, grey, wet, compact		7	SS	12		Filter Pack / Slotted Pipe
271.6			8	SS	20		272
8.2	**END OF BOREHOLE:**						

Notes:
1) Water level at 4.5m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	4.11
Sept 8, 2020	4.24
Oct 22, 2020	4.51
Mar 21, 2023	3.96

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH20-2

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857663.29 E 597311.06

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-27-2020

REF. NO.: 20-169-100
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
278.8								20 40 60 80 100	10 20 30			
278.6	**TOPSOIL:** 200mm											
0.2 / 278.0	**FILL:** sandy silt, trace gravel, brown, moist, loose		1	SS	8							
1 0.8	**CLAYEY SILT TILL:** sandy, trace gravel, sand seams, brown, moist, very stiff		2	SS	16		278					
			3	SS	19		277					
2 / 276.5						Bentonite						
2.3	**SANDY SILT:** trace clay, brown, moist to very moist, very dense		4	SS	58		276					
3			5	SS	58							
4							275					
5			6	SS	66		274					
6	wet below 6m					Filter Pack Slotted Pipe						
			7	SS	51	W. L. 272.7 m Aug 06, 2020 W. L. 272.3 m Oct 22, 2020						
7												
8 / 270.6			8	SS	52		271					
8.2	**END OF BOREHOLE:**											

Notes:
1) Water level at 6.1m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	6.12
Sept 8, 2020	6.36
Oct 22, 2020	6.48
Mar21, 2023	6.08

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-3

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857648.82 E 597335.94

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-27-2020

REF. NO.: 20-169-100
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
278.6												
0.0 / 278.3	**TOPSOIL:** 300mm											
0.3 / 277.8	**FILL:** sandy silt, trace gravel, brown, moist, compact		1	SS	10		278					
1 0.8	**SILTY CLAY TILL:** sandy, trace gravel, sand seams, brown, moist, stiff		2	SS	13							
			3	SS	10		277	Bentonite				
2 / 276.3												
2.3	**SILTY SAND:** trace clay, grey, moist, compact to very dense		4	SS	15		276					
3			5	SS	35		275					
4								Filter Pack / Slotted Pipe				
	wet below 4.5m		6	SS	65							
5							273					
6								W. L. 272.6 m Aug 06, 2020				
271.9			7	SS	49		272					
6.7	**END OF BOREHOLE:**											

Notes:
1) Water level at 4.5m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	6.0
Sept 8, 2020	dry
Oct 22, 2020	dry
Mar 21, 2023	5.93

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-4

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857717.02 E 597386.34

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-27-2020

REF. NO.: 20-169-100
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
277.1												
0.0 / 276.8	**CONCRETE:** 300mm											
0.3 / 276.3	**FILL:** clayey silt, trace gravel, grey to brown, moist, stiff		1	SS	8							
1 0.8	**SANDY SILT:** trace clay, brown, moist, compact to very dense		2	SS	21		276					
			3	SS	42		Bentonite					
2							275					
			4	SS	62							
3							274					
			5	SS	56							
4							W. L. 273.3 m Aug 06, 2020 Sep 08, 2020					
	wet below 4.5m						Slotted Pipe					
5			6	SS	46		W. L. 272.3 m Mar 21, 2023					
6 271.1												
6.0 / 270.4	**SANDY SILT:** trace silt, brown, wet, compact		7	SS	28		271					
6.7	**END OF BOREHOLE:**											

Notes:
1) Water level at 4.5m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	3.77
Sept 8, 2020	3.90
Oct 22, 2020	inaccessible
Mar 23, 2023	4.75

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ε=3% Strain at Failure

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LOG OF BOREHOLE BH20-5

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858369.55 E 597438.77

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-29-2020

REF. NO.: 20-169-100
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
273.0												
272.7 0.0	**TOPSOIL:** 250mm											
0.3	**FILL:** sandy silt, trace topsoil/ organics, trace gravel, trace rootlets, brown, moist, compact		1	SS	15							
272.2 0.8	**SILTY CLAY TILL:** sandy, trace gravel, frequent sand seams, brown, moist, hard		2	SS	35		272					
			3	SS	31		271					
			4	SS	39	▼						
270.0 3.0	**CLAYEY SILT TILL:** sandy, trace gravel, interbed of sandy silt layers, greyish brown, moist to very moist, hard		5	SS	35	▼ ▼	W. L. 270.2 m Aug 06, 2020 W. L. 269.6 m Oct 22, 2020					
	grey below 4.5m		6	SS	37		269 268					
	sand seams below 6m		7	SS	46		267					
265.5 7.5	**SILTY SAND:** trace clay, grey, moist, very dense		8	SS	74/ 280mm		266 Filter Pack Slotted Pipe					0 51 47 2
	very moist at 9m		9	SS	59		264					
263.3 9.7	**END OF BOREHOLE:**											

Notes:
1) Water level at 9.1m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	2.78
Sept 8, 2020	3.09
Oct 22, 2020	3.38
Mar 21, 2023	2.68

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-6

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857501.44 E 597524.2

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-28-2020

REF. NO.: 20-169-100
ENCL NO.: 7

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
271.0 / 0.0	**TOPSOIL:** 250mm				
270.7 / 0.3	**FILL:** sandy silt, trace topsoil/ organics, trace gravel, trace rootlets, dark brown, moist, loose	1	SS	8	
270.2 / 0.8	**CLAYEY SILT TILL:** sandy, trace gravel, sand seams, brown, moist, stiff to hard	2	SS	12	270
		3	SS	21	269
	hard below 2.3m	4	SS	59	
					268
		5	SS	58	
					267
	grey below 4.5m	6	SS	31	266
					265
		7	SS	39	
262.8 / 8.2	**END OF BOREHOLE:**	8	SS	25	263

Notes:
1) Borehole dry during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	6.77
Sept 8, 2020	1.15
Mar 21, 2023	0.26

GROUND WATER CONDITIONS: W. L. 269.8 m Mar 21, 2023; Bentonite; Filter Pack; W. L. 264.2 m Aug 06, 2020

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)
PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) — GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-7

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857020.81 E 597903.58

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-31-2020

REF. NO.: 20-169-100
ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
261.7												
0.0 / 261.2	**TOPSOIL:** 500mm		1	SS	8							
0.5 / 260.9	**FILL:** clayey silt, trace topsoil/ organics, trace gravel, trace rootlets, dark brown, moist, stiff						261					
0.8	**CLAYEY SILT TILL:** some sand, trace gravel, brownish grey, very moist, stiff with silt and sand seams at 1.5m		2	SS	10							
1			3	SS	13		260					
2 / 259.4												
2.3	**SILTY CLAY TILL:** some sand, some gravel, greyish brown, moist, very stiff to hard		4	SS	39							15 18 38 29
3	grey, very moist to wet below 3m						Bentonite					
			5	SS	28	▼	W. L. 258.3 m Oct 22, 2020					
4												
			6	SS	21		257					
5												
6							256					
			7	SS	19	▼	Filter Pack W. L. 255.2 m Sep 08, 2020					
7												
			8	SS	25		254					
8												
							253					
9			9	SS	16		Bentonite: Bottom of hole					
							252					
10												
			10	SS	24		251					
11 / 250.4												
11.3	**END OF BOREHOLE:**											

Notes:
1) Borehole dry during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	dry
Sept 8, 2020	6.52
Oct 22, 2020	3.40

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-8

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857701.02 E 597673.81

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-28-2020

REF. NO.: 20-169-100
ENCL NO.: 9

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
277.2												
0.0 / 276.8	**TOPSOIL:** 340mm		1	SS	8		277					
0.4 / 276.4	**FILL:** sandy silt, trace topsoil/ organics, trace gravel, brown, moist, loose											
1 0.8 / 275.7	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, compact		2	SS	10		276					
1.5	**SILT:** some clay, trace sand, trace gravel, brown, very moist, compact to very dense		3	SS	19							
2			4	SS	58		275					2 2 85 11
3			5	SS	92/ 255mm		274					
4							273					
5			6	SS	74		272					
271.2												
6.0	**SANDY SILT:** trace clay, brown, wet, very dense		7	SS	62		271					0 27 67 6
7							270					
8 / 269.0			8	SS	54		269					
8.2	**END OF BOREHOLE:** Notes: 1) Water at depth of 6.1m during drilling.											

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH20-9

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857946.64 E 597876.44

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-28-2020

REF. NO.: 20-169-100
ENCL NO.: 10

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
274.1							
0.0	**TOPSOIL:** 550mm		1	SS	5		274
273.6							
0.6	**FILL:** sandy silt, trace topsoil/						
273.3							
0.8	organics, trace clay, trace gravel, trace organics, trace rootlets, dark brown, moist, loose		2	SS	16		273
	SILTY CLAY TILL: some sand, trace gravel, brown, moist, very stiff to hard		3	SS	25		
							272
	sand seams below 2.3m		4	SS	38		
						Bentonite	
							271
			5	SS	72		
							270
	grey below 4.5m					W. L. 269.7 m Aug 06, 2020	
			6	SS	45	W. L. 269.1 m Oct 22, 2020	
						W. L. 268.7 m Mar 21, 2023	
	trace cobble, very moist below 6m		7	SS	24		268
						Filter Pack	
						Slotted Pipe	267
266.6							
7.5	**SANDY SILT:** trace clay, grey, wet, compact		8	SS	29		
265.9							266
8.2	**END OF BOREHOLE:**						

Notes:
1) Water level at 7.6m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	4.43
Sept 8, 2020	4.72
Oct 22, 2020	4.97
Mar 21, 2023	4.5

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-10

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858404.6 E 597955.26

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-29-2020

REF. NO.: 20-169-100
ENCL NO.: 11

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
268.3												
0.0 / 268.0	**TOPSOIL:** 300mm											
0.3 / 267.5	**FILL:** sandy silt, trace topsoil/ organics, trace gravel, trace rootlets, brown, moist, compact		1	SS	15		268					
0.8	**SILTY CLAY TILL:** some sand, trace gravel, sand seams, brown, moist to very moist, very stiff		2	SS	21							
			3	SS	25		267					
			4	SS	25		266					
	grey below 3m		5	SS	16		265					
			6	SS	20		264					
			7	SS	17		263					
			8	SS	15		262					
260.1							261					
8.2	**END OF BOREHOLE:** Notes: 1) Borehole dry and open upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-11

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858726.5 E 597841.19

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-29-2020

REF. NO.: 20-169-100
ENCL NO.: 12

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
270.1												
0.0 / 269.8	**TOPSOIL:** 300mm											
0.3 / 269.3	**FILL:** sandy silt, trace topsoil/ organics, trace gravel, trace rootlets, brown, moist, compact		1	SS	12		270					
0.8	**SILTY CLAY TILL:** sandy, trace gravel, sand seams, brown, moist, very stiff to hard		2	SS	19		269					
			3	SS	22	▽		W. L. 268.5 m Mar 21, 2023				
			4	SS	28		268					
			5	SS	44		267	Bentonite				
	grey below 4.5m		6	SS	24		266					
						▽	265	W. L. 264.7 m Aug 06, 2020				
			7	SS	21		264					
262.4							263					
7.7	**SILT:** some sand, trace clay, trace gravel, grey, wet, compact		8	SS	28			Filter Pack / Slotted Pipe				1 11 80 8
			9	SS	27		261					
260.4												
9.7	**END OF BOREHOLE:**											

Notes:
1) Water level at 9.1m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	5.42
Sept 8, 2020	5.37
Oct 22, 2020	5.33
March 21, 2023	1.63

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-12

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857520.15 E 598321.99

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-31-2020

REF. NO.: 20-169-100
ENCL NO.: 13

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
264.9							
0.0 / 264.5	**TOPSOIL:** 400mm		1	SS	8		
0.4 / 264.1	**FILL:** clayey silt, trace topsoil/ organics, trace gravel, sand seams, trace rootlets, dark brown, moist, stiff					W. L. 264.7 m Aug 06, 2020	
0.8	**SILTY CLAY TILL:** some sand, trace gravel, sand seams, brown, moist to very moist, stiff		2	SS	8		264
			3	SS	9		263
	grey below 2.3m		4	SS	10	Bentonite	
261.9							262
3.0	**SANDY SILT TO SILT:** trace clay, grey, very moist, dense		5	SS	32		
	wet below 4.5m		6	SS	36		261
258.9							260
6.0	**SILT:** trace clay, trace sand, grey, very moist, compact to loose		7	SS	25	Filter Pack Slotted Pipe	259
							258
256.7			8	SS	7		257
8.2	**END OF BOREHOLE:**						

Notes:
1) Water level at 3.1m below grade during drilling
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	0.2
Sept 8, 2020	0.1
Oct 22, 2020	0.14
Mar 21, 2023	-0.15

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
0	1	94	5

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-13

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857981.07 E 598332.09

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-30-2020

REF. NO.: 20-169-100
ENCL NO.: 14

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
268.1					268
268.0 0.0	**TOPSOIL:** 200mm				
0.2	**FILL:** clayey silt, trace topsoil/ organics, trace gravel, trace rootlets, dark brown, moist, stiff	1	SS	12	
267.3 0.8	**SILTY CLAY TILL:** some sand, trace gravel, sand seams, brownish grey, moist, stiff to very stiff	2	SS	19	267
		3	SS	20	
		4	SS	26	266
		5	SS	14	265
	grey below 4.5m	6	SS	9	264
		7	SS	19	263
260.6					262
7.5	**SANDY SILT TO SILT:** trace clay, trace gravel, grey, wet, very dense	8	SS	94/ 255mm	261
259.9					260
8.2	**END OF BOREHOLE:** Notes: 1) Water at 7.6m below grade during drilling				

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

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LOG OF BOREHOLE BH20-14

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858339.89 E 598409.18

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-30-2020

REF. NO.: 20-169-100
ENCL NO.: 15

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
267.7					
0.0 / 267.3	**TOPSOIL:** 400mm	1	SS	7	
0.4 / 266.9	**FILL:** clayey silt, trace topsoil/ organics, trace gravel, trace sand, trace rootlets, brown, moist, firm				
0.8	**SILTY CLAY TILL:** some sand, trace gravel, frequent sand seams, brown, moist, stiff to hard	2	SS	14	
		3	SS	13	
		4	SS	27	
		5	SS	28	
		6	SS	24	
	grey below 6m	7	SS	18	
		8	SS	29	
		9	SS	22	
	interbed of clayey silt and sany silt layers, wet below 10.5m	10	SS	35	
256.4					
11.3	**END OF BOREHOLE:**				

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	3.32
Sept 8, 2020	3.43
Oct 22, 2020	3.59
Mar 21, 2023	0.19

GROUND WATER CONDITIONS: W. L. 267.5 m Mar 21, 2023; W. L. 264.3 m Aug 06, 2020; Oct 22, 2020; Bentonite; Filter Pack; Slotted Pipe

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH20-15

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4858789.95 E 598183.97

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-30-2020

REF. NO.: 20-169-100
ENCL NO.: 16

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
264.1							
0.0 / 263.8	**TOPSOIL:** 350mm		1	SS	12		264
0.4 / 263.3	**FILL:** clayey silt, trace topsoil/ organics, trace gravel, trace sand, trace rootlets, brown, moist, stiff						
0.8	**CLAYEY SILT TILL:** some sand, trace gravel, sand seams, brown, moist, stiff to very stiff		2	SS	18		263
			3	SS	22	W. L. 262.5 m Mar 21, 2023	262
			4	SS	27	W. L. 261.7 m Aug 06, 2020	
			5	SS	27	Bentonite	261
	grey below 4.5m		6	SS	17		260
			7	SS	14		259
			8	SS	16	Filter Pack	258
	wet below 9m		9	SS	12	Slotted Pipe	257
254.4							255
9.7	**END OF BOREHOLE:**						

Notes:
1) Water level at 9.1m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	2.41
Sept 8, 2020	2.33
Oct 22, 2020	2.41
Mar 21, 2023	1.65

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH20-16

PROJECT: Geotechnical Investigation
CLIENT: Bolton Option 3 Landowners Group
PROJECT LOCATION: Bolton Option 3 Lands, Caledon, Ontario
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4857848.7 E 598703.75

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-31-2020

REF. NO.: 20-169-100
ENCL NO.: 17

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
265.5							
0.0 / 265.1	**TOPSOIL:** 400mm	1	SS	9		265	
0.4 / 264.7	**FILL:** clayey silt, trace topsoil/ organics, trace gravel, trace rootlets, brown, moist, stiff						
0.8 / 264.0	**SILTY CLAY TILL:** some sand, trace gravel, sand seams, brown, moist, stiff to hard	2	SS	33			
1.5	**GRAVELLY SAND:** some silt, trace clay, brown, very moist to wet, compact to dense	3	SS	30		W. L. 264.2 m Mar 21, 2023	
262.2		4	SS	24		W. L. 263.4 m Aug 06, 2020[1] W. L. 263.1 m Oct 22, 2020	22 64 10 4
3.3 / 261.0	**SANDY SILT:** trace clay, brown, wet, compact	5	SS	20		262	
4.5	**SAND AND GRAVEI:** some silt, trace clay, brownish grey, wet, very dense	6	SS	66		261	42 37 15 6
259.3						260	
6.2 / 258.0	**SILTY SAND:** some clay, trace gravel, greyish brown, wet, dense	7	SS	38		Filter Pack Slotted Pipe	3 61 26 10
7.5 / 257.3	**SANDY SILT:** trace clay, grey, wet, dense	8	SS	41		258	
8.2	**END OF BOREHOLE:**						

Notes:
1) Water level at 2.3m below grade during drilling.
2) 50mm dia. monitoring well installed upon completion.
3) Water level Reading:

Date:	Water Level (mbgl):
Aug 6, 2020	2.12
Sept 8, 2020	2.27
Oct 22, 2020	2.49
Mar 21, 2023	1.30

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%): 10 20 30
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 20-169-100 BOLTON OPTION 3 LANDS.GPJ DS.GDT 23-9-25

Appendix B
Engineered Fill Guidelines

GENERAL REQUIREMENTS FOR ENGINEERED FILL

Compacted imported soil that meets specific engineering requirements and is free of organics and debris and that has been continually monitored on a full-time basis by a qualified geotechnical representative is classified as engineered fill. Engineered fill that meets these requirements and is bearing on suitable native subsoil can be used for the support of foundations.

Imported soil used as engineered fill can be removed from other portions of a site or can be brought in from other sites. In general, most of Ontario soils are too wet to achieve the 100% Standard Proctor Maximum Dry Density (SPMDD) and will require drying and careful site management if they are to be considered for engineered fill. Imported non-cohesive granular soil is preferred for all engineered fill. For engineered fill, we recommend use of OPSS Granular 'B' sand and gravel fill material.

Adverse weather conditions such as rain make the placement of engineered fill to the required degree of density difficult or impossible; engineered fill cannot be placed during freezing conditions, i.e. normally not between December 15 and April 1 of each year.

The location of the foundations on the engineered fill pad is critical and certification by a qualified surveyor that the foundations are within the stipulated boundaries is mandatory. Since layout stakes are often damaged or removed during fill placement, offset stakes must be installed and maintained by the surveyors during the course of fill placement so that the contractor and engineering staff are continually aware of where the engineered fill limits lie. Excavations within the engineered fill pad must be backfilled with the same conditions and quality control as the original pad.

To perform satisfactorily, engineered fill requires the cooperation of the designers, engineers, contractors and all parties must be aware of the requirements. The minimum requirements are as follows; however, the geotechnical report must be reviewed for specific information and requirements.

1. Prior to site work involving engineered fill, a site meeting to discuss all aspects must be convened. The surveyor, contractor, design engineer and geotechnical engineer must attend the meeting. At this meeting, the limits of the engineered fill will be defined. The contractor must make known where all fill material will be obtained from and samples must be provided to the geotechnical engineer for review, and approval before filling begins.

2. Detailed drawings indicating the lower boundaries as well as the upper boundaries of the engineered fill must be available at the site meeting and be approved by the geotechnical engineer.

3. The building footprint and base of the pad, including basements, garages, etc. must be defined by offset stakes that remain in place until the footings and service connections are all constructed. Confirmation that the footings are within the pad, service lines are in place, and that the grade conforms to drawings, must be obtained by the owner in writing from the surveyor and DS Consultants Ltd (DSCL). Without this confirmation no responsibility for the performance of the structure can be accepted by DSCL. Survey drawing of the pre and post fill location and elevations will also be required.

4. The area must be stripped of all topsoil and fill materials. Subgrade must be proof-rolled. Soft spots must be dug out. The stripped native subgrade must be examined and approved by a DSCL engineer prior to placement of fill.

5. The approved engineered fill material must be compacted to 100% Standard Proctor Maximum Dry Density throughout. Engineered fill should not be placed during the winter months. Engineered fill compacted to 100% SPMDD will settle under its own weight approximately 0.5% of the fill height and the structural engineer must be aware of this settlement. In addition to the settlement of the fill, additional settlement due to consolidation of the underlying soils from the structural and fill loads will occur and should be evaluated prior to placing the fill.

6. Full-time geotechnical inspection by DSCL during placement of engineered fill is required. Work cannot commence or continue without the presence of the DSCL representative.

7. The fill must be placed such that the specified geometry is achieved. Refer to the attached sketches for minimum requirements. Take careful note that the projection of the compacted pad beyond the footing at footing level is a minimum of 2 m. The base of the compacted pad extends 2 m plus the depth of excavation beyond the edge of the footing.

8. A bearing capacity of 150 kPa at SLS (225 kPa at ULS) can be used provided that all conditions outlined above are adhered to. A minimum footing width of 500 mm (20 inches) is suggested and footings must be provided with nominal steel reinforcement.

9. All excavations must be done in accordance with the Occupational Health and Safety Regulations of Ontario.

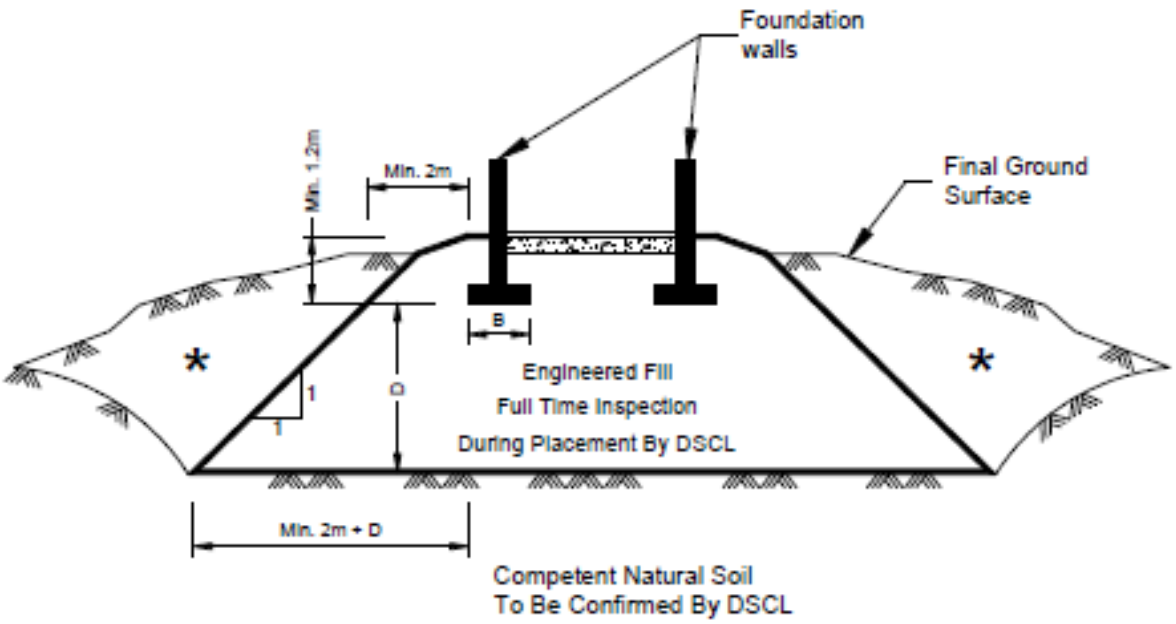
10. After completion of the engineered fill pad a second contractor may be selected to install footings. The prepared footing bases must be evaluated by engineering staff from DSCL prior to footing concrete placements. All excavations must be backfilled under full time supervision by DSCL to the same degree as the engineered fill pad. Surface water cannot be allowed to pond in excavations or to be trapped in clear stone backfill. Clear stone backfill can only be used with the approval of DSCL.

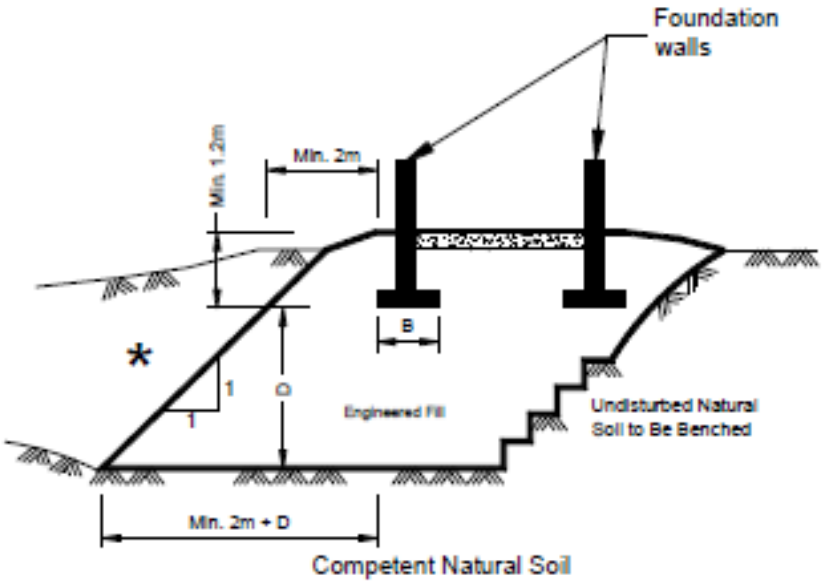
11. After completion of compaction, the surface of the engineered fill pad must be protected from disturbance from traffic, rain and frost. During the course of fill placement, the engineered fill must be smooth-graded, proof-rolled and sloped/crowned at the end of each day, prior to weekends and any stoppage in work in order to promote rapid runoff of rainwater and to avoid any ponding surface water. Any stockpiles of fill intended for use as engineered fill must also be smooth-bladed to promote runoff and/or protected from excessive moisture take up.

12. If there is a delay in construction, the engineered fill pad must be inspected and accepted by the geotechnical engineer. The location of the structure must be reconfirmed that it remains within the pad.

13. The geometry of the engineered fill as illustrated in these General Requirements is general in nature. Each project will have its own unique requirements. For example, if perimeter sidewalks are to be constructed around the building, then the projection of the engineered fill beyond the foundation wall may need to be greater.

14. These guidelines are to be read in conjunction with DS Consultants Ltd report attached.





* Backfill in this area to be as per the DSCL report.

Appendix C

Borehole Logs from Soil Engineers Ltd. 2021 Hydrogeological Assessment

LIST OF ABBREVIATIONS AND DESCRIPTION OF TERMS

The abbreviations and terms commonly employed on the borehole logs and figures, and in the text of the report, are as follows:

SAMPLE TYPES

AS Auger sample
CS Chunk sample
DO Drive open (split spoon)
DS Denison type sample
FS Foil sample
RC Rock core (with size and percentage recovery)
ST Slotted tube
TO Thin-walled, open
TP Thin-walled, piston
WS Wash sample

PENETRATION RESISTANCE

Dynamic Cone Penetration Resistance:

A continuous profile showing the number of blows for each foot of penetration of a 2-inch diameter, 90° point cone driven by a 140-pound hammer falling 30 inches.

Plotted as '—●—'

Standard Penetration Resistance or 'N' Value:

The number of blows of a 140-pound hammer falling 30 inches required to advance a 2-inch O.D. drive open sampler one foot into undisturbed soil.

Plotted as '○'

WH Sampler advanced by static weight
PH Sampler advanced by hydraulic pressure
PM Sampler advanced by manual pressure
NP No penetration

SOIL DESCRIPTION

Cohesionless Soils:

'N' (blows/ft)	Relative Density
0 to 4	very loose
4 to 10	loose
10 to 30	compact
30 to 50	dense
over 50	very dense

Cohesive Soils:

Undrained Shear Strength (ksf)	'N' (blows/ft)	Consistency
less than 0.25	0 to 2	very soft
0.25 to 0.50	2 to 4	soft
0.50 to 1.0	4 to 8	firm
1.0 to 2.0	8 to 16	stiff
2.0 to 4.0	16 to 32	very stiff
over 4.0	over 32	hard

Method of Determination of Undrained Shear Strength of Cohesive Soils:

x 0.0 Field vane test in borehole; the number denotes the sensitivity to remoulding

△ Laboratory vane test

□ Compression test in laboratory

For a saturated cohesive soil, the undrained shear strength is taken as one half of the undrained compressive strength

METRIC CONVERSION FACTORS

1 ft = 0.3048 metres
1lb = 0.454 kg
1 inch = 25.4 mm
1ksf = 47.88 kPa

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 1

FIGURE NO.: 1

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 29, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
263.9	Ground Surface							
0.0	40 cm TOPSOIL	1	DO	8	0		15	
	Stiff to hard weathered							
		2	DO	54	1		11	
		3	DO	40	2		14	
		4	DO	41			15	
	SILTY CLAY TILL							
		5	DO	30	3		17	
	some sand, a trace of gravel occasional cobbles and boulders — brown grey	6	DO	33	4 5		15	
257.3		7	DO	24	6		15	
6.6	END OF BOREHOLE				7 8 9 10			

Installed 50 mm Ø monitoring well to 6.1 m
completed with 3.1 m screen
Sand backfill from 2.4 to 6.1 m
Bentonite seal from 0.0 m to 2.4 m
Provided with a monument steel casing

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 2

FIGURE NO.: 2

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 28, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
264.1	Ground Surface							
0.0	30 cm TOPSOIL				0			
	Stiff to hard weathered	1	DO	9			19	
		2	DO	36	1		12	
		3	DO	45			14	
		4	DO	26	2		14	
	SILTY CLAY TILL	5	DO	44	3		16	
	some sand, a trace of gravel occasional cobbles and boulders brown grey	6	DO	25	4 5		12	
257.5		7	DO	26	6		16	
6.6	END OF BOREHOLE				7 8 9 10			Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 3

FIGURE NO.: 3

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 28, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
266.3	Ground Surface							
0.0	30 cm TOPSOIL				0			
	Firm to hard weathered	1	DO	6			14	
		2	DO	46	1		12	
		3	DO	51			14	
		4	DO	44	2		12	
	SILTY CLAY TILL	5	DO	56	3		14	
	some sand, a trace of gravel occasional cobbles and boulders brown grey	6	DO	28	4		12	
		7	DO	28	5		15	
259.7					6			
6.6	END OF BOREHOLE				7			
					8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 4

FIGURE NO.: 4

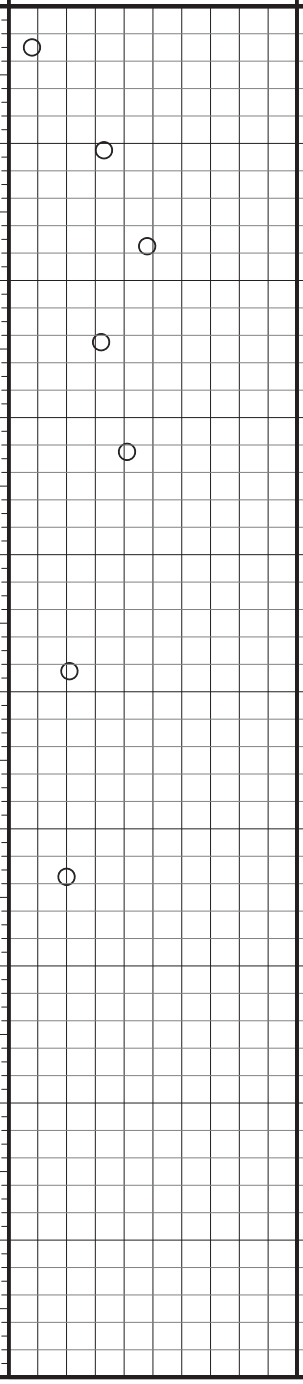
PROJECT DESCRIPTION: Proposed Mixed-Use Development

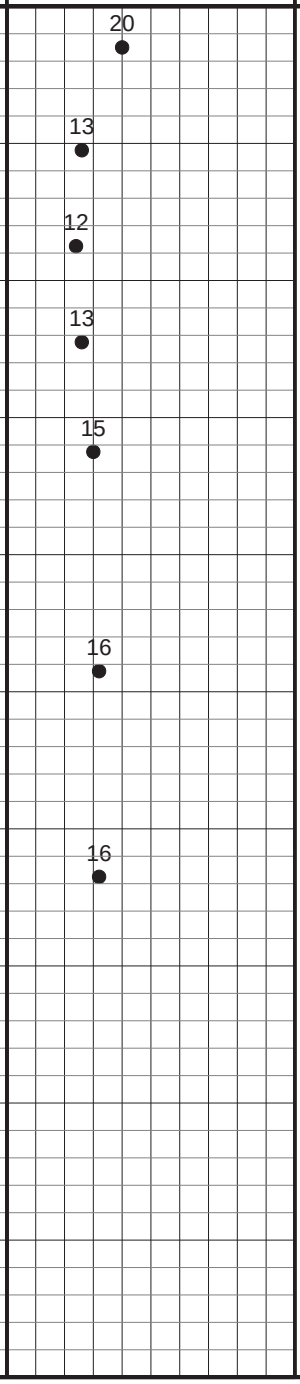
METHOD OF BORING: Flight-Auger

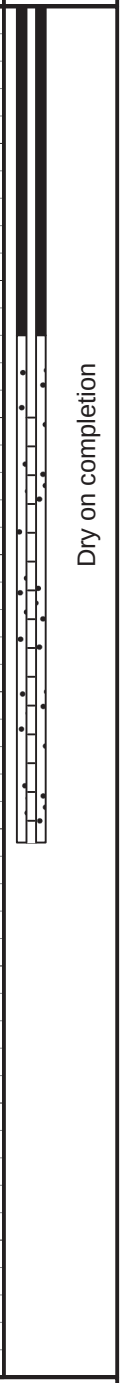
PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 29, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
266.6 / 0.0	Ground Surface				
	60 cm TOPSOIL	1	DO	8	0
	Very stiff to hard — weathered				
		2	DO	33	1
		3	DO	48	2
		4	DO	32	
	SILTY CLAY TILL				
		5	DO	41	3
	— brown grey				4
	some sand, a trace of gravel occasional cobbles and boulders	6	DO	21	5
					6
260.0 / 6.6		7	DO	20	
	END OF BOREHOLE				7
	Installed 50 mm Ø monitoring well to 6.1 m completed with 3.1 m screen Sand backfill from 2.4 to 6.1 m Bentonite seal from 0.0 m to 2.4 m Provided with a monument steel casing				8
					9
					10







Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 5

FIGURE NO.: 5

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 4, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
267.9	Ground Surface							
0.0	20 cm TOPSOIL				0			
	Stiff to hard	1	DO	8			20	
	weathered							
		2	DO	35	1		14	
		3	DO	27			16	
					2			
	SILTY CLAY TILL	4	DO	38			16	
		5	DO	38	3		16	
	some sand, a trace of gravel occasional cobbles and boulders — brown grey				4			
		6	DO	16			12	
					5			
					6			
261.3		7	DO	17			15	
6.6	END OF BOREHOLE				7			
	Installed 50 mm Ø monitoring well to 6.1 m completed with 3.1 m screen Sand backfill from 2.4 to 6.1 m Bentonite seal from 0.0 m to 2.4 m Provided with a monument steel casing				8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 6

FIGURE NO.: 6

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 29, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
268.1	Ground Surface							
0.0	30 cm TOPSOIL				0			
	Firm to hard weathered	1	DO	7			24	
		2	DO	33	1		15	
		3	DO	26			16	
					2			
		4	DO	29			16	
	SILTY CLAY TILL							
		5	DO	34	3		14	
	some sand, a trace of gravel occasional cobbles and boulders brown grey				4			
		6	DO	14			17	
					5			
					6			
261.5		7	DO	15			11	
6.6	END OF BOREHOLE				7			
	Installed 50 mm Ø monitoring well to 6.1 m completed with 3.1 m screen Sand backfill from 2.4 to 6.1 m Bentonite seal from 0.0 m to 2.4 m Provided with a monument steel casing				8			Dry on completion
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 7

FIGURE NO.: 7

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 29, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
266.6	Ground Surface							
0.0	20 cm TOPSOIL				0			
	Stiff to hard	1	DO	8			21	
	weathered							
		2	DO	21	1		17	
		3	DO	31	2		14	
	SILTY CLAY TILL	4	DO	46			13	
		5	DO	40	3		14	
	some sand, a trace of gravel occasional cobbles and boulders — brown / grey				4			
		6	DO	27	5		16	
		7	DO	26	6		12	
260.0								
6.6	END OF BOREHOLE				7			
					8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 8

FIGURE NO.: 8

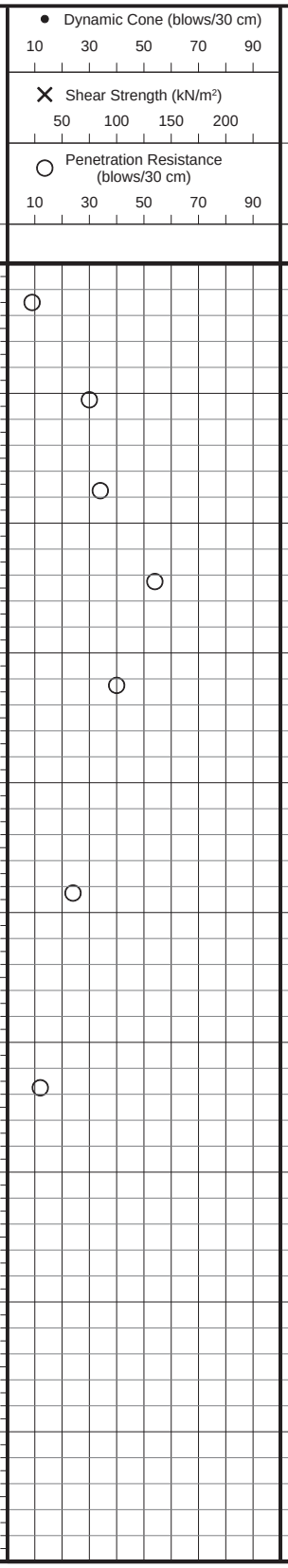
PROJECT DESCRIPTION: Proposed Mixed-Use Development

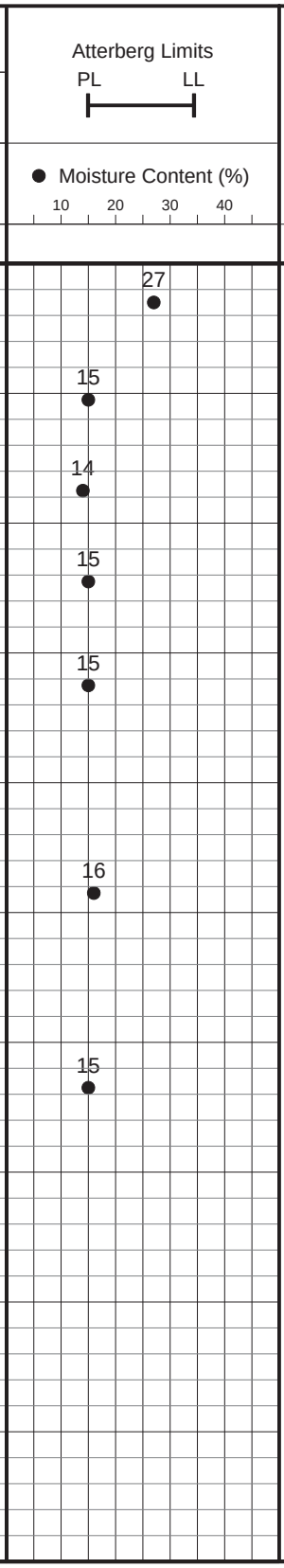
METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 29, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
265.6 / 0.0	Ground Surface				
	25 cm TOPSOIL				0
	Stiff to hard — weathered	1	DO	9	
		2	DO	30	1
		3	DO	34	2
	SILTY CLAY TILL	4	DO	54	
		5	DO	40	3
	some sand, a trace of gravel occasional cobbles and boulders — brown grey				4
		6	DO	24	5
					6
259.0 / 6.6		7	DO	12	
	END OF BOREHOLE				7
	Installed 50 mm Ø monitoring well to 6.1 m completed with 3.1 m screen Sand backfill from 2.4 to 6.1 m Bentonite seal from 0.0 m to 2.4 m Provided with a monument steel casing				8
					9
					10





WATER LEVEL: Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 9

FIGURE NO.: 9

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: September 29, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
267.7	Ground Surface							
0.0	50 cm TOPSOIL	1	DO	8	0		24	
	Stiff to hard weathered							
		2	DO	29	1		17	
		3	DO	36	2		16	
		4	DO	63			12	
	SILTY CLAY TILL				3			
		5	DO	44			15	
	brown grey some sand, a trace of gravel occasional cobbles and boulders				4			
		6	DO	23	5		17	
					6			
261.1		7	DO	18			12	
6.6	END OF BOREHOLE				7			
					8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 10

FIGURE NO.: 10

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 5, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
267.6	Ground Surface							
0.0	20 cm TOPSOIL				0			
	Stiff to hard	1	DO	12			21	
	weathered							
		2	DO	15	1		16	
		3	DO	46			14	
					2			
	SILTY CLAY TILL	4	DO	42			14	
		5	DO	34	3		18	
	some sand, a trace of gravel occasional cobbles and boulders — brown grey				4			
		6	DO	19			13	
					5			
					6			
261.0		7	DO	26			14	
6.6	END OF BOREHOLE				7			
					8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 11

FIGURE NO.: 11

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 5, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
267.2	Ground Surface							
0.0	20 cm TOPSOIL				0			
	Stiff to hard	1	DO	10			24	
	weathered							
		2	DO	27	1		17	
		3	DO	50/15	2		13	
	SILTY CLAY TILL	4	DO	33			15	
		5	DO	35	3		16	
	some sand, a trace of gravel occasional cobbles and boulders — brown / grey				4			
		6	DO	16	5		18	
		7	DO	22	6		13	
260.6								
6.6	END OF BOREHOLE				7			
					8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 12

FIGURE NO.: 12

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 4, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
266.4	Ground Surface							
0.0	100 mm ASPHALTIC CONCRETE 200 mm GRANULAR FILL	1	DO	7	0		22	
	Firm to hard weathered							
		2	DO	22	1		15	
		3	DO	43	2		15	
		4	DO	36			15	
	SILTY CLAY TILL				3			
		5	DO	69			16	
	brown / grey some sand, a trace of gravel occasional cobbles and boulders				4			
		6	DO	25	5		17	
					6			
259.8		7	DO	16			21	
6.6	END OF BOREHOLE				7			
					8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 13

FIGURE NO.: 13

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 1, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
265.8	Ground Surface							
0.0	60 cm TOPSOIL	1	DO	13	0		32	
	Very stiff to hard weathered	2	DO	18	1		14	
		3	DO	35	2		15	
		4	DO	38			15	
	SILTY CLAY TILL	5	DO	40	3		15	
	brown grey some sand, a trace of gravel occasional cobbles and boulders	6	DO	16	4 5		18	
259.2		7	DO	18	6		13	
6.6	END OF BOREHOLE				7 8 9 10			Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 14

FIGURE NO.: 14

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 4, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
267.8	Ground Surface							
0.0	60 cm TOPSOIL	1	DO	8	0		23	
	Very stiff to hard weathered	2	DO	26	1		15	
		3	DO	29	2		15	
		4	DO	38	3		18	
	SILTY CLAY TILL	5	DO	34	4		11	
	brown grey some sand, a trace of gravel occasional cobbles and boulders	6	DO	36	5		10	
261.2		7	DO	87/23	6		18	
6.6	END OF BOREHOLE				7			
	Installed 50 mm Ø monitoring well to 6.1 m completed with 3.1 m screen Sand backfill from 2.4 to 6.1 m Bentonite seal from 0.0 m to 2.4 m Provided with a monument steel casing				8			
					9			
					10			

Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 15

FIGURE NO.: 15

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 1, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
266.2	Ground Surface							
0.0	60 cm TOPSOIL	1	DO	7	0		23	
	Very stiff to hard weathered	2	DO	17	1		19	
		3	DO	41	2		14	
		4	DO	45			13	
	SILTY CLAY TILL	5	DO	42	3		14	
	brown grey some sand, a trace of gravel occasional cobbles and boulders	6	DO	24	4 5		14	
259.6		7	DO	30	6		13	
6.6	END OF BOREHOLE				7 8 9 10			Dry on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 16

FIGURE NO.: 16

PROJECT DESCRIPTION: Proposed Mixed-Use Development

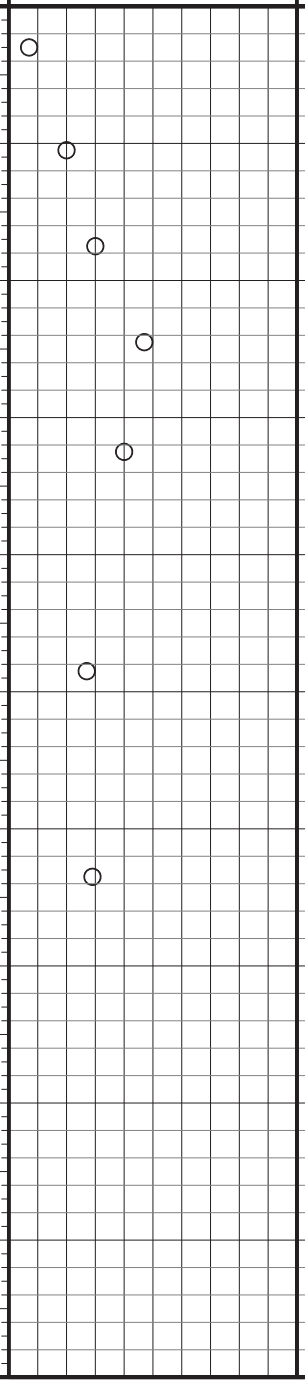
METHOD OF BORING: Flight-Auger

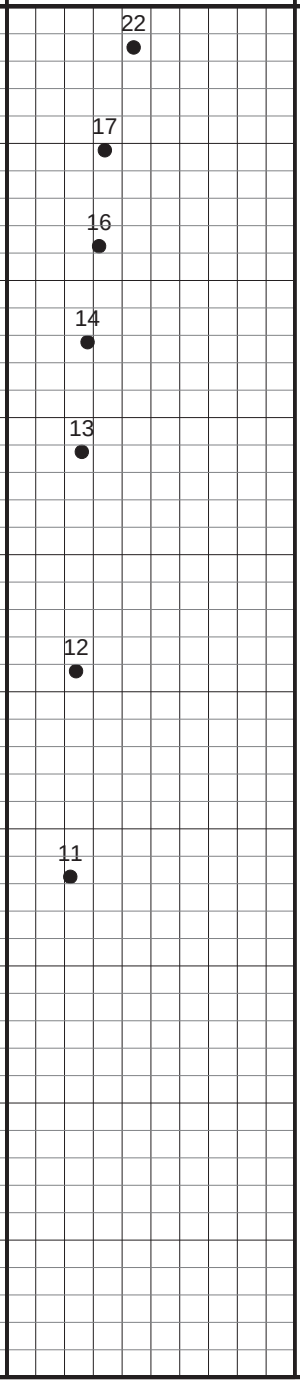
PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

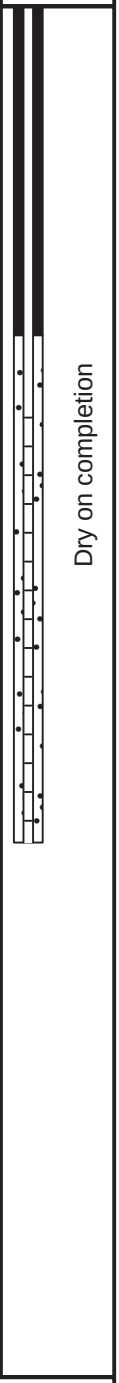
DRILLING DATE: October 1, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value
266.0	Ground Surface			
0.0	60 cm TOPSOIL	1	DO	7
	Very stiff to hard weathered	2	DO	20
		3	DO	30
		4	DO	47
	SILTY CLAY TILL brown grey	5	DO	40
	some sand, a trace of gravel occasional cobbles and boulders	6	DO	27
259.4		7	DO	29
6.6	END OF BOREHOLE			

Installed 50 mm Ø monitoring well to 6.1 m
completed with 3.1 m screen
Sand backfill from 2.4 to 6.1 m
Bentonite seal from 0.0 m to 2.4 m
Provided with a monument steel casing







Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 17

FIGURE NO.: 17

PROJECT DESCRIPTION: Proposed Mixed-Use Development

METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 1, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
266.2	Ground Surface				
0.0	60 cm TOPSOIL	1	DO	9	0
	Brown, stiff to hard weathered	2	DO	22	1
	SILTY CLAY TILL	3	DO	40	2
	some sand, a trace of gravel occasional cobbles and boulders	4	DO	36	
263.3					
2.9	Dense to very dense	5	DO	50/13	3
	brown grey SANDY SILT TILL				4
		6	DO	93/28	5
	traces of clay and gravel occasional cobbles and boulders				6
259.6		7	DO	37	
6.6	END OF BOREHOLE				7 8 9 10

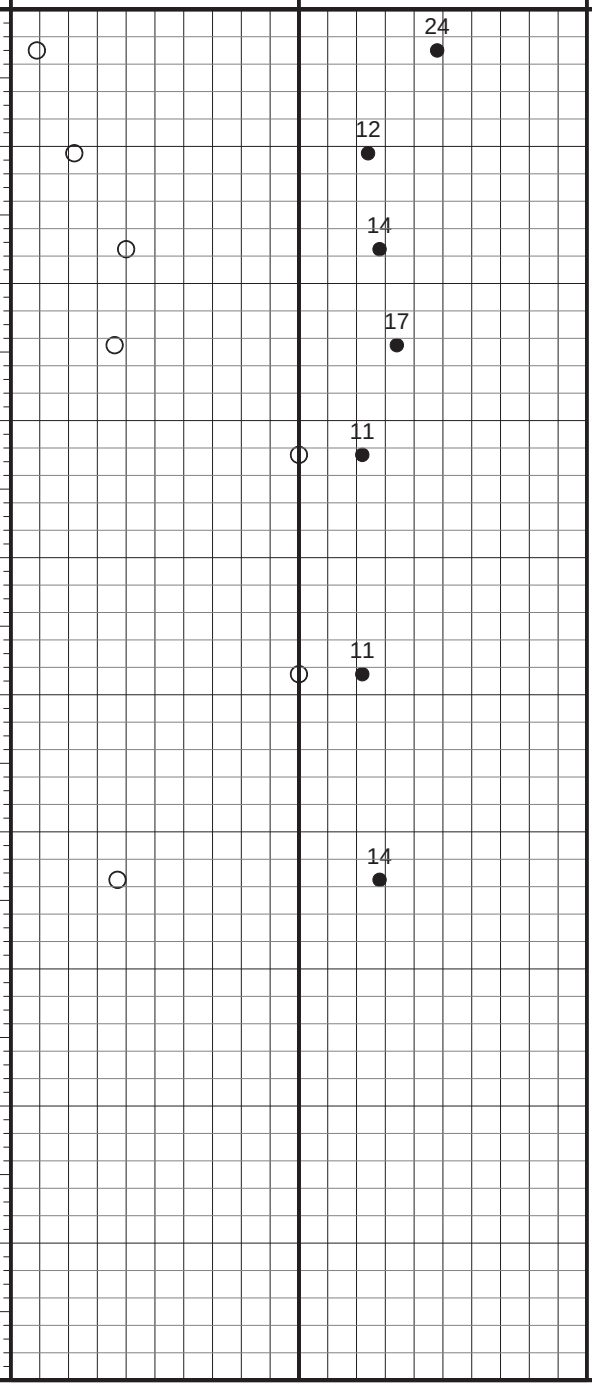
Dynamic Cone (blows/30 cm) 10 30 50 70 90

Shear Strength (kN/m²) 50 100 150 200

Penetration Resistance (blows/30 cm) 10 30 50 70 90

Atterberg Limits PL LL

Moisture Content (%) 10 20 30 40



WATER LEVEL

W.L. @ El. 260.1 m on completion

Soil Engineers Ltd.

JOB NO.: 2108-S069

LOG OF BOREHOLE NO.: 18

FIGURE NO.: 18

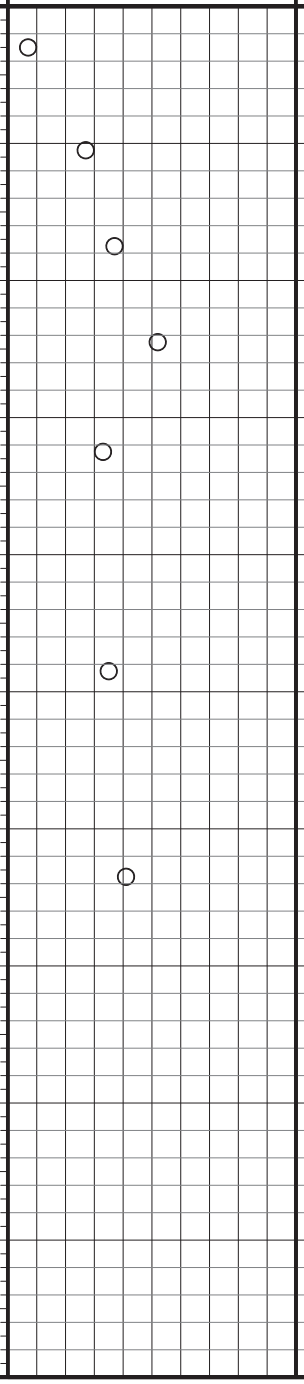
PROJECT DESCRIPTION: Proposed Mixed-Use Development

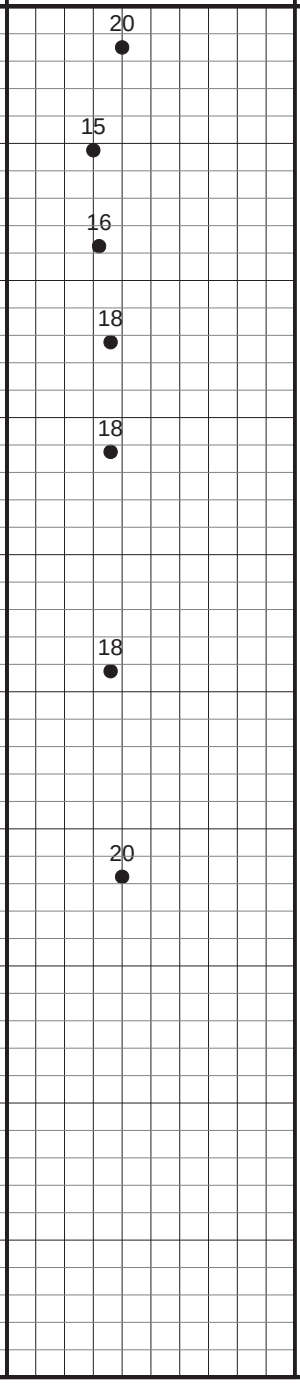
METHOD OF BORING: Flight-Auger

PROJECT LOCATION: King Street and Humber Station Road, Town of Caledon

DRILLING DATE: October 1, 2021

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
265.8	Ground Surface				
0.0	20 cm TOPSOIL				0
	Firm to hard	1	DO	7	
	weathered				
		2	DO	27	1
	SILTY CLAY TILL				
		3	DO	37	
	some sand, a trace of gravel occasional cobbles and boulders				2
		4	DO	52	
262.9					
2.9	Dense				3
		5	DO	33	
	SANDY SILT — brown / grey				4
	a trace of clay wet	6	DO	35	5
260.2					
5.6	Grey, dense				6
	SAND fine-grained, silty wet	7	DO	41	
259.2					
6.6	END OF BOREHOLE				7
	Installed 50 mm Ø monitoring well to 6.1 m completed with 3.1 m screen Sand backfill from 2.4 to 6.1 m Bentonite seal from 0.0 m to 2.4 m Provided with a monument steel casing				8
					9
					10





WATER LEVEL

Cave-in @ El. 262.5 m on completion

Soil Engineers Ltd.