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Geotechnical Investigation Proposed Mixed-Use Development 0 Humber Station Road Caledon, Ontario

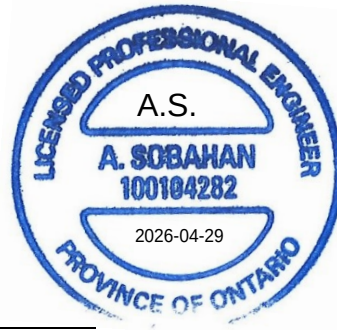
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ENGLOBE

Geotechnical Investigation Report

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1 Introduction

Englobe Corp. (Englobe) was retained by Mr. Satwant Deol to conduct a geotechnical investigation for a proposed mixed-use development consisting of four (4) single-storey slab-on-grade commercial buildings (Building A, Building B, Building C and Building D) and two (2) 14-storey apartment buildings (Building A and Building B) resting on a two-level common underground parking structure, at-grade parking lots and driveways.

The field investigation consisted of advancing a total of fifteen (15) exploratory boreholes (2 boreholes for each apartment building footprint location, 2 boreholes for each commercial building footprint and 3 boreholes for the proposed parking areas). After drilling, the proposed site plan was revised (prepared by the n Architecture Inc., Project No. 24-66, Drawing No. A-1.0, dated January 08, 2025) to include the construction of eight (8) one to two-storey slab-on-grade commercial buildings (Building A, Building B, Building C, Building D, Building E, Building F, Building G and Building H) and two (2) 20-storey apartment building (Building 1 and Building 2) resting on a two-level common underground parking structure, at-grade parking lots and driveways. We understand that the proposed commercial building footprint locations were shifted to the west, apartment buildings were shifted to the east, north and south as well as the apartment buildings were raised to 20 storey and portions of parking area were shifted to the east.

It is noted that a total of fifteen (15) boreholes {8 commercial building Boreholes (BHs 1 to 8), three parking lot Boreholes (BHs 9 to 11) and four apartment building Boreholes (BHs 12 to 15)} were advanced for the entire site. Furthermore, Two (2) of the parking lot boreholes (Boreholes 9 and 10) which were located in the vicinity proposed commercial building footprints (Buildings B and E) did not extend to adequate depths below the foundation level/elevation as these boreholes were drilled for pavement recommendations. Based on review of borehole information in the context of the revised Site Plan/

building locations, the existing boreholes are not adequate to cover each commercial and apartment building location (refer to updated Site Plan, Figure 2A and Appendix D). The client requested Englobe to prepare a report based on the existing borehole information. Therefore, this report is prepared based on the existing borehole information on the assumption that additional boreholes will be advanced later within the commercial and apartment building locations and this report will be updated accordingly.

It must be noted that the report is prepared based on existing borehole information. No new boreholes were advanced for the revised site plan.

The current report encompasses the results of the geotechnical investigation conducted for the proposed redevelopment to determine the prevailing subsurface soil and shallow ground water conditions to provide preliminary geotechnical engineering recommendations for the design of building foundations, slab-on-grade, basement floor slab and drainage, earthquake and earth pressure design parameters, shoring, pipe bedding, and pavement design. In addition, geotechnical comments are included on pertinent construction aspects, excavation, ground water control and backfill.

Englobe has also conducted Hydrogeological Study for this property. The findings of the investigations are reported under separate cover.



2 Site and Project Description

The project site is located on the northeast quadrant of the King Street and Humber Station Road intersection, in the Town of Caledon, Ontario. The municipal address of the site is 0 Humber Station Road, Caledon, Ontario. The legal description of the property is Part of Lot 11, Concession 5 (Albion). The subject site measures about 2.62 hectares (6.47 acres) in size. The project site currently consists of a particle of vacant land. A portion of the subject property is regulated by TRCA as it is within 30 metres of a Provincially Significant Wetland (PSW) associated with the Humber River Watershed.

The design details of the proposed development are not available at the time of preparation of the proposal. However, based on current available information (site plan, refer to Appendix D) provided by the client, it is understood that the proposed development includes construction of eight (8) one to two-storey slab-on-grade commercial buildings (Building A, Building B, Building C, Building D, Building E, Building F, Building G and Building H) and two (2) 20-storey apartment building (Building 1 and Building 2) resting on a two-level common underground parking structure, at-grade parking lots and driveways.



3 Investigation Procedure

The field investigation was conducted on January 27 to 30, 202 and consisted of drilling and sampling a total of fifteen (15) boreholes in the vicinity of the proposed development and extended to depths varying from about 3.5 to 14.2 m below existing grade.

The boreholes were staked in the field by Englobe in consultation with the client. Various utility locates agencies, including a private locator, were contacted to locate the locatable underground public and private utility lines and clear the borehole locations prior to drilling. The approximate borehole locations are shown on enclosed Borehole Location Plan (Figures 2A and 2B).

The borehole ground surface elevations were surveyed by Englobe using a Trimble R10 GNSS System. The Trimble R10 system uses the Global Navigation Satellite System and the Can-Net reference system to determine target location and elevation. The Trimble R10 system is reported to have an accuracy of up to 10 mm horizontally and up to 30 mm vertically.

The borings were advanced by a specialist drilling contractor using a continuous flight power auger machine (truck-mounted) with solid stem augers and were sampled at 0.75 m interval (upper 3.0 m depth) and 1.5 m interval (below 3.0 m depth below grade) with a conventional 50 mm diameter split barrel samplers when the Standard Penetration Test (SPT) was carried out (ASTM D1586). The boreholes were continuously sampled with a conventional 50 mm diameter split barrel sampler when the Standard Penetration Test (SPT) was carried out (ASTM D1586). The results of these Penetration Tests are reported as “N” values on the enclosed Borehole Logs at corresponding depths.

All field work (drilling, sampling, and testing) was observed and recorded by a member of Englobe’s field engineering staff, who logged the borings and examined the samples as they were obtained. All samples obtained during the field investigation were sealed into clean plastic jars and transported to our testing

laboratory for detailed inspection and testing. All borehole samples were examined (visual and tactile) in detail by a geotechnical engineer and classified according to visual and index properties. Laboratory tests consisted of water content determination on all samples, and a Sieve and Hydrometer analysis test on four (4) selected native soil samples (Borehole 8, Sample 3; Borehole 11, Sample 2; Borehole 12, Sample 8 and Borehole 15, Sample 9). The laboratory testing results of individual soil samples are plotted on the enclosed Borehole Logs at respective sampling depths, and the results of the Sieve and Hydrometer analysis are appended and summarized in Section 4.2 of this report.

Groundwater levels were measured in the boreholes upon completion of drilling. Monitoring wells comprising of 50-mm diameter PVC tubing were installed in all boreholes to facilitate ground water monitoring and the purpose of hydrogeological study. The results of groundwater monitoring are presented in Section 4.3 of this report. Water levels in the monitoring wells were measured on January 23, 2024 and is noted on the enclosed Borehole Logs.



4 Subsurface Conditions

The specific soil conditions encountered at each borehole location are described in greater detail on the Borehole Logs, with a summary of the general subsurface soil conditions outlined below. This summary is intended to correlate this data to assist in the interpretation of the subsurface conditions encountered at the site.

It should be noted that the subsurface conditions are confirmed at the borehole locations only and may vary between and beyond the borehole locations. The boundaries between the various strata as shown in the logs are based on non-continuous sampling. These boundaries represent an inferred transition between the various strata, rather than a precise plane of geologic change.

4.1 Stratigraphy

The following stratigraphy is based on the borehole findings, as well as the geotechnical laboratory testing conducted on selected representative soil samples. The summary provided below is for general guidance only. Detailed depths and elevations are given in the following subsections and appended borehole logs.

4.1.1 Topsoil

A surficial topsoil layer (about 300 to 450 mm thick) was encountered in all boreholes. The topsoil was noted to be dark brown to black in colour and predominantly consisted of a silt matrix with organic presence.

The topsoil thicknesses were estimated from the borings and are approximate and may vary between and beyond the boreholes. The topsoil thickness noted on the Borehole Logs refers to the distinct topsoil layer present at the borehole location, however, organic inclusions extended deeper than the topsoil thickness layer noted on the Borehole Logs. The topsoil thickness to be removed/stripped for the site development

may differ from the topsoil thickness noted on the Borehole Logs. Therefore, this information is not sufficient for estimating topsoil quantities and/or associated costs. Consideration should be given to conduct a shallow test pit investigation to obtain a more precise topsoil thickness.

4.1.2 Earth Fill

A zone of earth fill soil was encountered in all boreholes beneath the topsoil layer extending to a depth of about 0.8 m below existing grade. The earth fill materials predominantly consisted of clayey silt with trace amounts of sand and gravel as well as organics.

The Standard Penetration Test results (N Values) obtained from the earth fill materials varied generally from 5 to 12 blows per 300 mm of penetration, indicating a firm to stiff consistency. Measured moisture contents of the earth fill materials generally ranged from 15 to 26 percent by weight, indicating a moist condition.

4.1.3 Glacial Till

Undisturbed native glacial till deposit soil was encountered in all boreholes beneath the zone of earth fill material and extended to the full depth of investigation (up to about 14.2 m depth below existing grade).

The cohesive glacial till deposit predominately consisting of clayey silt to silt and clay with some sand and trace amounts of gravel. The till deposit was encountered in all boreholes beneath the earth fill materials at a depth of about 0.8 m and extended to depths varying from about 3.5 m (Boreholes 9 to 11) to 14.2 m (Boreholes 12 and 14) below existing grade.

The Standard Penetration Test results (N Values) obtained from the cohesive glacial till deposit varied from 10 to 62 blows per 300 mm of penetration, indicating a stiff to hard (typically very stiff) consistency. Measured moisture contents of the cohesive glacial till deposit ranged from 5 to 25 percent by weight, indicating a moist condition.

4.2 Geotechnical Laboratory Test Results

The geotechnical laboratory testing consisted of natural water content determination for all samples, while a Sieve and Hydrometer analysis were conducted on selected native soil samples. The test results are plotted on the enclosed Borehole Logs at respective sampling depths. The results (graphs) of the Sieve and Hydrometer (grain size) analysis are appended, and a summary of these results are presented as follows:

Borehole No.	Sampling Depth below Grade (m)	Percentage (by mass)				Descriptions (MIT)
		Gravel	Sand	Silt	Clay	
Borehole 8, Sample 3	1.8	6	14	42	38	SILT AND CLAY, some sand, trace gravel.

Borehole No.	Sampling Depth below Grade (m)	Percentage (by mass)				Descriptions (MIT)
		Gravel	Sand	Silt	Clay	
Borehole 11, Sample 2	1.0	3	15	45	37	SILT AND CLAY, some sand, trace gravel.
Borehole 12, Sample 8	11.0	8	15	53	24	CLAYEY SILT, some sand, trace gravel
Borehole 15, Sample 9	9.4	5	16	45	34	CLAYEY SILT, some sand, trace gravel

4.3 Groundwater

Observations pertaining to the depth of caving were made in boreholes immediately after completion of drilling and are noted on the enclosed Borehole Logs. Standpipe piezometers were installed in selected four (4) boreholes (Boreholes 2, 4, 6 and 8) to facilitate groundwater level monitoring. Water levels in the piezometers were measured on July 15, 2025 and are noted on the enclosed Borehole Logs. A summary of these observations is provided as follows:

Borehole No.	Depth of Boring Below Grade (m)	Depth to Cave Upon Completion of Drilling (m)	Water Level Depth During Drilling (m)	Water Level Depth /Elevation in the Monitoring Wells on July 15,2025 (m)
1	6.6	open	dry	damaged
2	6.6	open	5.9 BG	NMW
3	6.6	open	dry	NMW
4	6.6	open	6.4	1.0 /264.4
5	6.6	open	dry	1.8/264.3
6	6.6	open	dry	1.6/264.1
7	6.6	open	dry	NMW
8	6.6	open	dry	1.5/265.5
9	3.5	open	dry	NMW
10	3.5	open	dry	NMW
11	3.5	open	dry	NMW
12	14.2	open	dry	1.7/262.7
13	12.6	open	dry	3.0/258.9

Borehole No.	Depth of Boring Below Grade (m)	Depth to Cave Upon Completion of Drilling (m)	Water Level Depth During Drilling (m)	Water Level Depth /Elevation in the Monitoring Wells on July 15,2025 (m)
14	14.2	open	dry	2.8/261.7
15	12.6	open	dry	3.3/259.2

BG = Below Grade

NMW = No Monitoring well Installed



5 Discussions and Recommendations

The following discussion and recommendations are based on the factual data obtained from this investigation and are intended for the use of the owner and the design engineer. Contractors bidding or providing services on this project should review the factual data and determine their own conclusions regarding construction methods and scheduling.

This report is provided on the basis of these terms of reference and on the assumption that the design features relevant to the geotechnical analyses will be in accordance with applicable codes, standards and guidelines of practice. The Ontario Building Code may require additional considerations beyond the recommendations provided in this report, and must be followed. If there are any changes to the site development features or there is any additional information relevant to the interpretations made of the subsurface information with respect to the geotechnical analyses or other recommendations, then Englobe should be retained to review the implications of these changes with respect to the contents of this report.

5.1 Foundations

Fifteen (15) exploratory boreholes were advanced in the vicinity of the original proposed building footprints based on previous site plan. After the boreholes had been drilled, the proposed site plan was revised (prepared by the n Architecture Inc., Project No. 24-66, Drawing No. A-1.0, dated January 8, 2025) that include construction of eight (8) one to two-storey slab-on-grade commercial buildings (Building A, Building B, Building C, Building D, Building E, Building F, Building G and Building H) and two (2) 20-storey apartment building (Building 1 and Building 2) resting on a two-level common underground parking structure, at-grade parking lots and driveways. Based on review of borehole information in the context of the revised building locations and height change for the apartment buildings, the existing boreholes are not adequate to cover each commercial and apartment building locations. Therefore, we recommend advancing additional boreholes within the commercial and apartment building areas to update this geotechnical report accordingly.

The existing ground surface elevations at the borehole location varies from about 261.9 to 267.0 m. The grading plan is not available during the preparation of this report. However, based on available project design information (including Site Plan) provided by n Architecture Inc., it is understood that the proposed finished floor elevation of the proposed Building A would be set at about Elev. 267.05± m; the proposed finished floor elevation of the proposed Building B would be set at about Elev. 267.13 to 267.28± m; the proposed finished floor elevation of the proposed Building C would be set at about Elev. 265.65± m, the proposed finished floor elevation of the proposed Building D would be set at about Elev. 265.7± m; the proposed finished floor elevation of the proposed Building E would be set at about Elev. 267.95± m; the proposed finished floor elevation of the proposed Building F would be set at about Elev. 267.55 to 267.85± m; the proposed finished floor elevation of the proposed Building G would be set at about Elev. 265.98± m; and the proposed finished floor elevation of the proposed Building H would be set at about Elev. 265.75± m. The proposed finished-floor elevation of the Apartment Building 1 and Building 2 would be set at about Elev. 265.65± m and 265.70± m, respectively. The proposed finished floor elevation of the (P1) common underground parking would be set at about Elev. 261.05 m (about 0.85 to 3.25 m below existing grade). The proposed finished floor elevation of the (P2) common underground parking would be set at about Elev. 257.25 ± m (about 4.6 to 7.1 m below existing grade). The underside of footing level would likely be set at about elevation 256.25± m (about from 5.6 to 8.25 ± m) below existing ground surface and 1 m below proposed finished floor elevation of the (P2) underground parking). It is expected that core elevator pits and building sumps will likely be further 2 or 3 metres lower than the lowest floor elevation.

The boreholes encountered earth fill soils beneath the topsoil and extended to a depth of about 0.8 m below existing grade. The earth fill materials were underlain by undisturbed native till soil deposit which extended to the full depth of investigation (up to about 14.2 m depth below grade).

The existing earth fill materials are not suitable to support the proposed buildings' foundations. All foundations must be supported on the underlying undisturbed competent native till soil or engineered fill.

Based on the proposed development and soil conditions, it is anticipated that the proposed commercial buildings may be supported on spread footing foundation. The proposed foundation types are discussed in the following paragraphs.

5.1.1 Commercial Buildings on Native Soils

We note that the development details and building locations have been revised since the completion of the field (borehole drilling) investigation. As noted before, some of the boreholes (Borehole 9 to 11) did not extend to adequate depths for foundation design recommendations. Therefore, we have provided preliminary geotechnical engineering recommendations based on existing boreholes and recommends conducting a supplementary geotechnical investigation (advance additional boreholes to 20 ft) in the vicinity of the commercial building locations.

The boreholes encountered earth fill soils beneath the topsoil and extended to a depth of about 0.8 m below existing grade. The earth fill materials were underlain by undisturbed native till soil deposit which extended to the full depth of investigation (up to about 6.6 m depth below grade).

The undisturbed native till soils of very stiff to hard consistency are considered suitable to support the proposed commercial buildings on conventional spread footing foundations. The following table summarizes the recommended geotechnical reaction/resistance available at each building location.

BH#	Existing Ground Surface Elev. (m)	Minimum Founding Depth Below Existing Grade (m)	Highest (Bottom of) Foundation Elevation (m)	Net Geotechnical Reaction at S.L.S. (kPa)	Factored Geotechnical Resistance at U.L.S. (kPa)	Bearing Stratum
BH1	266.0	1.1	264.9	200	300	Clayey Silt Till
BH2	265.3	1.1	264.2	200	300	Clayey Silt Till
BH3	265.9	1.1	264.8	200	300	Clayey Silt Till
BH4	265.4	1.1	264.3	200	300	Clayey Silt Till
BH5	266.1	1.1	265.0	200	300	Clayey Silt Till
BH6	265.7	1.1	264.6	200	300	Clayey Silt Till
BH7	266.5	1.1	265.4	200	300	Clayey Silt Till
BH8	267.0	1.1	265.9	200	300	Clayey Silt Till
BH9	266.8	1.1	265.7	200	300	Clayey Silt Till
BH10	266.3	1.1	265.2	200	300	Clayey Silt Till

The minimum width of continuous strip footing in this case should be 450 mm, and the minimum size of isolated footings should be 900 mm x 900 mm, in conjunction with the above recommended geotechnical resistance.

The geotechnical resistance(s) as recommended allow for up to 25 mm of total settlement. This settlement will occur as load is applied and is linear elastic and non-recoverable. Differential settlement is a function of spacing, loading and foundation size.

It should be noted that disturbed soils may be encountered within the areas previously occupied by the structures. It is recommended that the excavation for the proposed structure foundations should be advanced deeper through the disturbed soils in order to support them on the underlying undisturbed native soils.

If footings must step from one level to another, the slope between the two adjacent footings must not be steeper than 10 horizontal to 7 vertical. Specific consideration must be given to the excavation procedures during the setting out of footings at different levels, either to stipulated neat cut excavations or to allow for sufficient separation to provide for forming. Regardless, the deepest foundations must be cast first so that there is minimal chance of soil disturbance under footings already cast.

The final grading plan and design drawings should be reviewed by Englobe to better assess the design foundation elevations and to provide updated foundation bearing pressure (geotechnical resistance) recommendations prior to the development.

5.1.2 Foundation on Engineered Fill

The final design grading information was not available at the time of preparation of this report, however, based on the existing site conditions and current available information, it is understood that both cut and fill may be required for the design site grading. It is recommended that any new fill required at the site for grading should be constructed as Engineered Fill which will facilitate new foundations to be supported at normal depths. The Engineered Fill refers to earth fill designed and constructed under full-time inspection and testing supervision of a geotechnical engineer to support foundations without excessive settlement.

Prior to the placement of the Engineered Fill, it is recommended that the existing topsoil and existing earth fill materials be stripped (down to native soil) from beneath and beyond the proposed house/structure footprints (minimum of 2 m beyond footprint), and that the subgrade be proof-rolled. Any soft or wet areas which deflect excessively during proof roll, should be sub-excavated and replaced with suitably compacted clean earth fill placed in lifts of a thickness of 150 mm or less. It should be noted that localized subgrade stabilization measures may be required, based on the proof-roll assessment. The selection and sorting of the existing earth fill soils present on the site should be conducted under the supervision of a geotechnical engineer. These materials may be utilized as Engineered Fill, provided these soils are not too wet to achieve specified compaction, and do not contain excessive organic/topsoil inclusions. The moisture content of the Engineered Fill material must be within 2 percent of its optimum moisture content for SPMDD.

The Engineered Fill should consist of clean earth fill or imported granular materials (OPSS.MUNI 1010) and should be placed in lifts of 150 mm thicknesses or less, and compacted to a minimum of 98 percent Standard Proctor Maximum Dry Density (SPMDD). The Engineered Fill should extend for a distance of at least 2 m beyond the building footprints as measured at the founding level and should extend downwards from this point at a 1 to 1 (horizontal to vertical) slope, to the approved subgrade. In addition, the Engineered Fill should extend at least 0.6 m above the proposed foundation elevation. This is to ensure that the foundations are placed on the Engineered Fill both in plan and elevation.

The placement and inspection of the Engineered Fill must be conducted under the full-time supervision of a qualified geotechnical engineer. Provided the Engineered Fill is placed and compacted as indicated above, a maximum net allowable geotechnical reaction of up to 150 kPa (Serviceability Limit States, S.L.S.) and 225 kPa (factored geotechnical resistance at Ultimate Limit States, U.L.S.) may be utilized for the design of conventional spread footing foundations supported on Engineered Fill. Site grading plans should be reviewed by Englobe to better assess the suitability and requirements for Engineered Fill.

In case of footings supported on Engineered Fill, the minimum width for the conventional spread strip footing must be 600 mm, and the minimum size of the individual column footing must be 1000 mm x 1000 mm, regardless of loading considerations.

It should be noted that for structures placed on Engineered Fill, nominal (non-structural) reinforcing steel is recommended in the foundation walls. The reinforcing steel should consist of two (2) continuous 15 M bars at the top of the foundation wall and two (2) continuous 15 M bars at the bottom (refer to Figure 3, "Typical Foundation Wall Details for Houses on Engineered Fill"). A copy of the "Draft Engineered Fill Earthworks Specifications" is enclosed in the appendix (refer to Appendix C) section of this report for reference.

5.1.3 Apartment Buildings on Spread Footing Foundations

We note that the development details and building locations have been revised since the completion of the field (borehole drilling) investigation. Therefore, we provided preliminary geotechnical recommendations based on existing four (4) boreholes (Boreholes 12 to 15) and recommend conducting a supplementary geotechnical investigation including additional deeper boreholes within each tower footprint to update this report.

Only (2) boreholes (Borehole 13 and 15) are situated in the vicinity of the proposed apartment building footprints while other two (2) boreholes (Boreholes 12 and 14) are situated about 13 to 20 m away from both tower footprints. The boreholes encountered earth fill soils beneath the topsoil and extended to a depth of about 0.8 m below existing grade. The earth fill materials were underlain by undisturbed native till soil deposit which extended to the full depth of investigation (up to about 14.6 m depth below grade).

The proposed apartment buildings would be 20-storey structures resting on two-level underground parking structure. The proposed finished-floor elevation of the proposed Apartment Building 1 and Building 2 would be set at about Elev. 265.65± m and 265.70± m, respectively. The proposed finished floor elevation of the (P1) common underground parking would be set at about Elev. 261.05 m (about 0.85 to 3.25 m below existing grade). The proposed finished floor elevation of the (P2) common underground parking would be set at about Elev. 257.25 ± m (about 4.65 to 7.25 m below existing grade). The underside of footing level would likely be set at about elevation 256.25± m (about from 5.6 to 8.25 ± m) below existing ground surface and 1 m below proposed finished floor elevation of the (P2) underground parking. It is expected that core elevator pits and building sumps will likely be further 2 or 3 meters lower than the lowest floor elevation.

The foundation subgrade at this elevation is expected to consist of stiff to hard clayey silt till deposit (typically very stiff consistency). The relatively heavy building loads and presence of relatively 'weak' (typically very stiff consistency) clayey silt till bearing stratum extending to the full depth of current investigation renders the conventional spread footing foundation option less feasible at this site. However, the following table summarizes the recommended geotechnical reaction/resistance available at borehole location.

BH#	Existing Ground Surface Elev. (m)	Approximate Founding Depth Below Existing Grade (m)	Approximate (Bottom of) Foundation Elevation (m)	Net Geotechnical Reaction at S.L.S. (kPa)	Factored Geotechnical Resistance at U.L.S. (kPa)	BearingStratum
BH12	264.3	8.05	256.25	265	400	Clayey Silt Till
BH13	261.9	5.65	256.25	265	400	Clayey Silt Till
BH14	264.5	8.25	256.25	265	400	Clayey Silt Till
BH15	262.5	6.25	256.25	265	400	Clayey Silt Till

The minimum width of continuous strip footing in this case should be 450 mm, and the minimum size of isolated footings should be 900 mm x 900 mm, in conjunction with the above recommended geotechnical resistance.

The geotechnical resistance(s) as recommended allow for up to 25 mm of total settlement. This settlement will occur as load is applied and is linear elastic and non-recoverable. Differential settlement is a function

of spacing, loading and foundation size.

5.1.4 Raft/Mat Foundation

As noted above due to relatively heavy building loads (under twenty storey towers) conventional spread footing foundation option does not appear to be feasible at this site. A raft/mat foundation option may be explored for supporting the proposed towers. Deeper boreholes with pressure meter testing to optimize geotechnical parameters for raft design will be required.

5.1.5 Deep Foundation

Alternatively, the proposed towers (Building 1 and Building 2) with two levels of common underground parking (P2) may be supported on caissons/Continuous Flight Auger (CFA) piles and grade beam foundation system. Deeper boreholes will also be required for this option.

5.1.6 Placement of Footings

All exterior foundations and foundations in unheated areas should be provided with a minimum soil cover of 1.2 m or equivalent insulation for frost protection.

It is recommended that all excavated footing bases must be evaluated by a qualified geotechnical engineer before pouring concrete to ensure that the founding soils exposed at the excavation base are consistent with the design bearing pressure intended by the geotechnical engineer.

Prior to pouring concrete for the footings, the footing subgrade should be cleaned of all deleterious materials such as topsoil, fill, softened, disturbed or caved materials, as well as any standing water. If construction proceeds during freezing weather conditions, adequate temporary frost protection for the footing bases and concrete must be provided.

For foundation excavations extending below the prevailing ground water level, it will be necessary to provide positive ground water control (dewatering) and maintain ground water level below the excavation base (a minimum of 1.0 m) prior to, and during the excavation and subsurface construction. Without prior positive dewatering, the foundation subgrade will lose its integrity to support foundations. The excavation subgrade should be evaluated by a geotechnical engineer and depending upon the site conditions, installation of a skim coat of lean concrete (mud slab) may be required to preserve the subgrade integrity, and to provide a working platform. It is recommended that dewatering activities should be carried out prior to any excavation activities. Further comments and recommendations on the ground water control are presented in Section 5.8 of this report.

If footings must step from one level to another, the slope between the two adjacent footings must not be steeper than 10 horizontal to 7 vertical. Specific consideration must be given to the excavation procedures during the setting out of footings at different levels, either to stipulate neat cut excavations or to allow for sufficient separation to provide for forming. Regardless, the deepest foundations must be cast first so that there is minimal chance of soil disturbance under footings already cast.

Native soils and engineered fill tend to weather rapidly and deteriorate on exposure to the atmosphere and surface water. Hence, foundation bases which remain open for an extended period of time should be protected by a skim coat of lean concrete. Provisions should be made to minimize disturbance to the exposed foundation subgrade.

5.2 Lateral Earth Pressure Design Parameters

Walls or bracings subject to unbalanced lateral earth pressures must be designed to resist a pressure that can be calculated based on the following equation:

$$P = K [\gamma (h - h_w) + \gamma' h_w + q] + \gamma_w h_w$$

Where:

- P** = the horizontal pressure (kPa)
- K** = the earth pressure coefficient
- h** = the depth below the ground surface (m)
- h_w** = the depth below the groundwater level (m)
- γ** = the bulk unit weight of soil (kN/m³)
- γ_w** = the bulk unit weight of water (9.8 kN/m³)
- γ'** = the submerged unit weight of the exterior soil, (γ_{sat} - γ_w)
- q** = the complete surcharge loading (kPa)

Where the wall backfill can be drained effectively to eliminate hydrostatic pressures on the wall, this equation can be simplified to:

$$P = K[\gamma h + q]$$

This equation assumes that free-draining granular backfill is used and positive drainage is provided to ensure that there is no hydrostatic pressure acting in conjunction with the earth pressure.

Resistance to sliding of retaining structures is developed by friction between the base of the footing and the soil. This friction (R) depends on the normal load on the soil contact (N) and the frictional resistance of the soil (tan φ) expressed as R = N tan φ. The factored geotechnical resistance at ULS is 0.8 R.

Passive earth pressure resistance is generally not considered as a resisting force against sliding for conventional retaining structure design because a structure must deflect significantly to develop the full passive resistance.

The average values for use in the design of walls subjected to unbalanced earth pressures at this site are tabulated as follow:

<u>Parameter</u>	<u>Definition</u>	<u>Units</u>
φ	angle of internal friction	degrees
γ	bulk unit weight of soil	kN/ m ³
K _a	active earth pressure coefficient (Rankine)	dimensionless
K _o	at-rest earth pressure coefficient (Rankine)	dimensionless
K _p	passive earth pressure coefficient (Rankine)	dimensionless

Stratum/Parameter	γ	Φ	K_a	K_o	K_p
Earth Fill	19.0	28	0.36	0.53	2.77
Clayey Silt Till	21.0	32	0.31	0.47	3.25

The above values of the earth pressure coefficients are for the horizontal backfill grade behind the wall. The earth pressure coefficients for inclined grade will vary based on the inclination of the retained ground surface.

5.3 Site Classification for Seismic Site Response

The Ministry of Municipal Affairs and Housing (MMAH) announced 2024 Ontario Building Code (OBC) that came into effect on February 26, 2025. The 2024 OBC is further harmonized with 2020 National Building Code (NBC) of Canada for the earthquake design analysis. The determination of the type of analysis is predicated on Earthquake Importance Factor (I_E), the Peak Ground Acceleration (PGA(X)), Peak Ground Velocity (PGV(X)), Design Spectral Acceleration (S(T)) and Site Designation (X_v or V_s).

Seismic hazard is defined by 5%-damped spectral acceleration ($S_a(T,X)$) at periods T of 0.2 s, 0.5 s, 1.0 s, 2.0 s, 5.0 s and 10.0 s corresponding to a 2% probability of exceedance in 50 years.

Site Designation (X) shall be X_v , where V is the value of average in situ shear wave velocity in top 30 m soil or rock ($\bar{V}_{s30}$) measured by a Multi-Channel Analysis of Shear Wave (MASW) test. Four (4) ground profiles as set out in the Table 4.1.8.4-A of 2024 OBC are except for determining Site Designation using ($\bar{V}_{s30}$) calculated from the in-suite measurements. The Site Designation shall be determined in accordance with the above table instead.

The 2024 OBC also provided alternative methods to determine the Site Designation (X_s), if V_{s30} calculated from in situ measurements is not available. The Site Designation shall be X_s , where S is the original Site Class determined using energy-corrected average standard penetration resistance ($\bar{N}_{60}$) or average undrained shear strength ($\bar{S}_u$) in the top 30 m of the site stratigraphy below the foundation level. There are 6 site classes from A to F, decreasing in ground stiffness from A, hard rock, to E, soft soil; with site class F used to denote problematic soils (e.g., sites underlain by thick peat deposits and/or liquefiable soils).

Note that it is preferable to determine the Site Designation as X_v on the basis of the average shear wave velocity (V_{s30}). This Site Designation will typically result in a lower seismic demand than a Site Designation X_s determined using the energy-corrected average standard penetration resistance ($\bar{N}_{60}$) or average undrained shear strength ($\bar{S}_u$).

The Site Designation is then used to obtain Peak Ground Acceleration (PGA), Peak Ground Velocity (PGV), and site coefficients (F_a and F_v), and Seismic Category (SC), respectively, used to modify the Uniform Hazard Spectra (UHS) to account for the effects of site-specific soil conditions.

Based on the above noted information, it is recommended that the Site Designation for seismic analysis be X_c , as per the Ontario Building Code.

Note that it is preferable to determine the Site Designation as X_V on the basis of the average shear wave velocity (V_{S30}). This Site Designation will typically result in a lower seismic demand than a Site Designation X_S determined using the energy-corrected average standard penetration resistance ($\bar{N}_{60}$) or average undrained shear strength ($\bar{S}_u$). Therefore, consideration may be given to conducting a site-specific Multichannel Analysis of Surface Waves (MASW) at this site to confirm the average shear wave velocity in the top 30 metres of the site stratigraphy.

5.4 Slab-on-Grade

Conventional lightly loaded concrete floor slab should be placed on at least 150 mm of granular base (OPSS.MUNI 1010 Granular “A” or 19 mm clear crushed stone, OPSS.MUNI 1004) compacted to a minimum of 98 percent SPMDD, or vibrated to a dense state in case of a clear stone type material. The existing weathered/disturbed soil may remain to support the slab-on-grade provided they are assessed and approved by a geotechnical engineer at the time of construction. Any subgrade area containing excessive amount of deleterious/organic materials must be subexcavated. The subgrade must be assessed by a geotechnical engineer prior to the placement of granular base. Any soft or wet subgrade areas identified, should be locally subexcavated and backfilled with clean earth fill compacted to a minimum of 98 percent SPMDD. Based on the borehole information, selection and sorting of the fill will be required. Above granular base thickness is considered adequate for a slab loading up to 12 kPa (about 250 psf). Recommendations for heavier slab loads can be provided, if required.

The following subgrade parameters are recommended for the design of basement slab supported on the undisturbed native soil subgrade:

$K_s = 30,000$ kPa/m (Vertical Modulus of Subgrade Reaction)

$\phi = 32$ degrees (Angle of Internal Friction).

If the slab is supported on fill subgrade, constructed by approved earth fill material placed in maximum 150mm thick lifts and compacted to a minimum of 98 percent SPMDD, the modulus of subgrade reaction may be assumed as 12,000 kPa/m with $\phi = 28$ degrees

Provided the finish floor level of the slab-on-grade buildings is at least 200 mm above the outside design grade, and the site is graded to promote drainage away from the building; subfloor drainage provisions are not required, other than the nominal drain for the granular base.

Regardless of the approach to slab construction, the floor slabs that are to have bonded floor finishes (such as tiles with adhesives) should be provided with a capillary moisture and vapour barrier. The floor manufacturers have specific requirements for moisture and vapour barrier, therefore, the floor designer /architect must ensure that a provision of appropriate moisture and vapour barrier conforming to specific floor finish product requirements is incorporated in the project specifications. Adequate testing must be carried out to ensure acceptable levels of moisture and relative humidity in the concrete slab prior to the installation of floor finish(es). Studies indicate that a provision of 200 mm thick 19 mm clearstone base (OPSS.MUNI 1004) under the slab helps provide a good capillary moisture break provided the granular base

is positively drained. However, this provision does not replace the floor manufacturers' specific requirement(s) for moisture and vapour barrier.

The under slab vapour retarder specifications, selection and installation shall conform to ASTM E1745 and ASTM E1643. The moisture vapour measurement tests shall conform to RH: ASTM F2170, RH: ASTM F2420 and Calcium Chloride: ASTM F1869. The Surface Applied Moisture Vapour Barrier system shall meet the guidelines established in ASTM F3010 13.

5.5 Basement Floor Slab

The current boreholes data indicated that the basement slab subgrade is expected to consist of native till soil deposit of stiff to hard stiff consistency. The excavated subgrade surface should be assessed by a qualified geotechnical engineer. The modulus of subgrade reaction appropriate for the slab design constructed on native soils is 30,000 kPa/m. The excavated surface should be assessed by a qualified geotechnical engineer.

The basement floor slab should be provided with a capillary moisture barrier and drainage layer. This can be made by placing the slab on a minimum 200 mm thick 19 mm clear stone layer (OPSS.MUNI 1004) compacted by vibration to a dense state. This material also serves as the drainage media for the subfloor drainage system. Provision of nominal subfloor drainage (refer to enclosed- Basement Subdrain Detail and Subfloor Drainage Detail, Figures 4 and 5) is required in conjunction with the perimeter drainage to collect and remove the water that infiltrates at the building perimeter and under the floor.

Regardless of the approach to slab construction, the floor slabs that are to have bonded floor finishes (such as tiles with adhesives) should be provided with a capillary moisture and vapour barrier. The floor manufacturers have specific requirements for moisture and vapour barrier, therefore, the floor designer/ architect must ensure that a provision of appropriate moisture and vapour barrier conforming to specific floor finish product requirements is incorporated in the project specifications. Adequate testing must be carried out to ensure acceptable levels of moisture and relative humidity in the concrete slab prior to the installation of floor finish(es). Studies indicate that a provision of 200 mm thick 19 mm clear stone base (OPSS MUNI 1004) under the slab helps provide a good capillary moisture break provided the granular base is positively drained. However, this provision does not replace the floor manufacturers' specific requirement(s) for moisture and vapour barrier.

The under-slab vapour retarder specifications, selection and installation shall conform to ASTM E1745 and ASTM E1643. The moisture vapour measurement tests shall conform to RH: ASTM F2170, RH: ASTM F2420 and Calcium Chloride: ASTM F1869. The Surface Applied Moisture Vapour Barrier system shall meet the guidelines established in ASTM F3010-13.

The subfloor drainage system is an important building element, as such the storm sumps which ensure the performance of this system must have a duplexed pump arrangement for 100 percent pumping redundancy provided with emergency power. Basement and subfloor drainage provisions are further discussed in Section 5.6.

5.6 Basement Drainage

Boreholes 12 to 15 were situated in the vicinity of the proposed apartment buildings and the boreholes remained open and dry upon completion of drilling. The ground water level measurements were taken in the monitoring wells on July 15, 2025 and varied from 1.7 to 3.3 m (Elev. 258.9 to 262.7 m) below existing grade.

To assist in maintaining a dry basement from seepage, it is recommended that exterior grades around the building be sloped away at a 2 percent gradient or more, for a distance of at least 1.2 m, where possible. Perimeter drainage system at the excavation shoring should be provided by forming a drained cavity with prefabricated drain core material, such as CCW MiraDRAIN 6000 series (or Terrafix Terradrain 200 or approved equivalent) which can be incorporated between the shoring and the cast-in-place concrete foundation wall. The composite drainage board then discharges to a non-perforated drainage collector pipe installed along the inside of the perimeter foundation and connected to a sump with positive outlet (refer to enclosed Schematic Drainage Detail- Caisson Wall and Lagging Shoring System, Figures 6 and 7).

The sub-floor drainage system should consist of perforated pipes (minimum 100 mm diameter) located at a spacing of about 5.0 m centre to centre (refer to enclosed- Typical Basement Subdrain Detail, Figure 5). The perimeter and subdrain system should outlet to a suitable discharge point under gravity flow, or connected to a sump located in the lowest level of the basement. The water from the sump must be pumped out to a suitable discharge point/positive outlet. The size of the sump should be adequate to accommodate anticipated water seepage. A duplex pumping arrangement (main pump with a provision of a backup pump) on emergency backup power is recommended. The pumps should have sufficient capacity to accommodate the anticipated maximum peak water flow. The installation of sub-drains as well as the outlet must conform to the applicable plumbing code requirements.

The subfloor drainage system is a critical structural element at this site, since it keeps water pressure from acting on the basement floor slab. As such the storm sump that ensures the performance of this system must have a duplexed pump arrangement on emergency power, as noted above, for 100 percent pumping redundancy. It is common to provide a storm sump with a nominal 200 litre per minute pumping capacity using an industrial pump to remove water from the system as and when required.

Special consideration has to be given to depressed areas below the lowest basement floor slab. At structures like elevator pits which can be about 2 to 3 m below this drained level, a separate pumped sump must be provided if the depressed structure is drained, or alternatively the depressed structure must be waterproofed and designed against uplift, recognizing that the ground water is controlled only to the underside of floor level.

A rigid shoring system (interlocking caissons) adequately designed and installed along the excavation perimeter will help cutoff the water seepage into the excavation from the upper wet soil deposits and can significantly lower the amount of ground water seepage and pumping for both during and post-construction conditions, as well as will effectively help reduce any potential impact of dewatering on adjacent structures.

A Permit To Take Water and Discharge Agreement is generally required during construction and long term depending upon the project design if any water is to be discharged to the storm or sanitary sewers. Refer to the Englobe Hydrogeological report prepared for the site for further basement drainage and ground water discharge volumes and recommendations.

5.7 Pavement

Design recommendations for the entrance driveway and commercial plaza pavement structure are provided in this section. For pavement structure supported on concrete deck, recommendations will be provided during the detailed design stage in consultation with the design team.

5.7.1 Pavement Design

The asphalt pavement design for the entrance driveways and commercial plaza supported on soil subgrade is provided in the following table.

Pavement Structural Layers	Heavy Duty (Driveway/ Access Road)	Light Duty (Car Parking Areas)
Hot Mix Asphalt Surface Course, OPSS 1150 HL 3	50 mm	40 mm
Hot Mix Asphalt Binder Course, OPSS 1150 HL 8	80 mm	50 mm
Base Course, 20 mm Crusher Run Limestone	150 mm	150 mm
Subbase Course, 50 mm Crusher Run Limestone	350 mm	300 mm
Total Pavement Thickness	630 mm	540 mm

Consideration may also be given to the use of rigid Portland Cement concrete pavement where there is intense vehicular use and turning of transport vehicles in conjunction with the waste handling, loading docks or delivery facilities. The following table provides the minimum recommended rigid pavement structure:

Minimum Rigid Concrete Pavement Structure

Pavement Layer	Compaction Requirements	Heavy Duty Pavement
Portland Cement Concrete (CAN3-CSA A23.1) - Class C-2	CAN3-CSA A23.1	200 mm
Base Course: Granular 'A' or 19 mm Crusher Run Limestone (OPSS.MUNI 1010)	100% Standard Proctor Maximum Dry Density (ASTM-D698)	200 mm

5.7.2 General Pavement Recommendations

HL 3 and HL 8 hot mix asphalt mixes should be designed, produced and placed in conformance with OPSS.MUNI 1150 and OPSS.MUNI 310 requirements and relevant City's requirements.

Granular materials should be compacted to 100 percent of Standard Proctor Maximum Dry Density (SPMDD) at ± 2 percent of the Optimum Moisture Content (OMC).

PG 58-28, conforming to OPSS MUNI 1101 is recommended in the HMA surface and binder courses. Consideration should be given to use higher grade of asphalt cement (PGAC 64-28) for asphaltic concrete where applicable, particularly in the areas of intense truck turning and loading docks.

Tack coat SS-1 should be applied between hot mix asphalt binder course and surface course.

5.7.1 Drainage

Control of water is an important factor in achieving a good pavement life. Full-length subdrains should be installed beneath the curb in accordance with the Town of Caledon Standards and the subdrain pipe should be connected to a positive outlet.

Subdrains should consist of 100 mm diameter perforated plastic pipe wrapped with a knitted geotextile sock and placed in a trench excavated 300 mm wide and 300 mm deep in the subgrade. The backfill around the subdrain should consist of 20 mm crusher run limestone material.

5.7.2 Subgrade Preparation

All topsoil, organics and soft/loose soil should be stripped from the subgrade areas. The subgrade soil is expected to consist of engineered fill, native soils and these fine-grained soils will be weakened by construction traffic when wet; especially if site work is carried out during the periods of wet weather. An adequate granular working surface would be likely required in order to minimize subgrade disturbance and protect its integrity in wet periods.

Immediately prior to placing the granular subbase, the exposed subgrade should be compacted and then proof rolled with a heavy rubber-tired vehicle (such as a loaded gravel truck). The subgrade should be inspected for signs of rutting or displacement. Areas displaying signs of rutting or displacement should be recompacted and retested or, the material should be excavated and replaced with well-compacted clean fill. The fill material may consist of either granular material or local inorganic soils provided that its moisture content is within ± 2 percent of optimum moisture content. Fill should be placed and compacted in accordance with OPSS.MUNI 501 and the subgrade should be compacted to 98 percent of SPMDD. The final subgrade surface should be sloped at least 3 percent to provide positive drainage.

5.8 Excavations and Ground Water Control

The boreholes data indicate that the earth fill materials and undisturbed native soils would be encountered in the excavations. Excavations must be carried out in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects. These regulations designate four (4) broad classifications of soils to stipulate appropriate measures for excavation safety.

TYPE 1 SOIL

- a. is hard, very dense and only able to be penetrated with difficulty by a small sharp object;
- b. has a low natural moisture content and a high degree of internal strength;
- c. has no signs of water seepage; and
- d. can be excavated only by mechanical equipment.

TYPE 2 SOIL

- a. is very stiff, dense and can be penetrated with moderate difficulty by a small sharp object;
- b. has a low to medium natural moisture content and a medium degree of internal strength; and
- c. has a damp appearance after it is excavated.

TYPE 3 SOIL

- a. is stiff to firm and compact to loose in consistency or is previously-excavated soil;
- b. exhibits signs of surface cracking;
- c. exhibits signs of water seepage;
- d. if it is dry, may run easily into a well-defined conical pile; and
- e. has a low degree of internal strength

TYPE 4 SOIL

- a. is soft to very soft and very loose in consistency, very sensitive and upon disturbance is significantly reduced in natural strength;
- b. runs easily or flows, unless it is completely supported before excavating procedures;
- c. has almost no internal strength;
- d. is wet or muddy; and
- e. exerts substantial fluid pressure on its supporting system.

The earth fill/weathered/disturbed materials encountered in the boreholes are classified as Type 3 Soil, while the undisturbed native till soil deposit would be classified as Type 2 Soil above and Type 3 Soil below prevailing groundwater level under these regulations.

Where workmen must enter excavations advanced deeper than 1.2 m, the trench walls should be suitably sloped and/or braced in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects. The regulation stipulates the steepest slopes of excavation by soil type as follows:

Soil Type	Base of Slope	Steepest Slope Inclination
1	within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
2	within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
3	from bottom of trench	1 horizontal to 1 vertical
4	from bottom of trench	3 horizontal to 1 vertical

Minimum support system requirements for steeper excavations are stipulated in the Occupational Health and Safety Act and Regulations for Construction Projects, and include provisions for timbering, shoring and moveable trench boxes.

As noted before, the earth fill and native till soils may contain larger particles that are not specifically identified in the boreholes. The size and distribution of such obstructions cannot be predicted with borings, because the borehole sampler size is insufficient to secure representative samples for particles of this size. Provision should be made in excavation contract to allocate risks associated with the time spent and equipment utilized to remove or penetrate such obstructions when encountered.

All boreholes remained open and dry (except Boreholes 2 and 4 where a depth to cave was to be about 5.9 and 6.4 m below grade, respectively) upon completion of drilling. The ground water level measurements were taken in the monitoring wells on July 15, 2025 and varied from about 1.0 to 3.3 m (Elev. 258.9 to 265.5 m) below existing grade. The proposed commercial buildings will be slab-on-grade structures and will be constructed at the west portion of the site. The proposed apartment buildings (Building 1 and Building 2)

consisted of two level of underground parking and lowest finished basement floor elevation (P2 FFE) will be set at about elev. 257.25 ± m and underside of footing will be at about elev. 256.25 ± which is about 2.65 to 6.45 m below measured ground water level. Therefore, positive dewatering will likely be required. It must be noted that the groundwater levels may fluctuate seasonally depending upon the amount of precipitation and surface runoff.

As per subsurface investigation, the earth fill is underlain by clayey silt till. The glacial till deposit typically has a relatively low permeability which precludes significant amounts of free-flowing water seepage into the excavation during the short-term. Refer to Hydrogeological study for the amount of seepage into the basement excavation. However, perched ground water seepage will likely be encountered during the excavations primarily emanating from silt/sand lenses typically found in the glacial till deposit due to its mode of deposition and the earth fill zone. This seepage may be allowed to drain into the excavation and then pumped out. Issues of delay in excavation due to localized seepage control must be addressed in the excavation contract.

For excavations extending below the prevailing groundwater level and wet cohesionless zone/lenses, it will be necessary to lower the groundwater level and maintain it below the excavation base (at least 1.0 m) prior to and during the subsurface construction. A professional dewatering expert should review the subsurface information to assess the potential requirement of dewatering and establish appropriate dewatering methodology which will be responsibility of the dewatering contractor.

A rigid shoring system (interlocking caissons) adequately designed and installed along the excavation perimeter will help preclude some of the groundwater seepage into the excavation from wet silt/sand lenses and can significantly reduce the amount of groundwater seepage and pumping for both during and post-construction conditions.

Ministry of the Environment, Conservation and Parks (MECP) has made changes to the requirement for Permit to Take Water approvals for construction related activities. Under the revised requirements, specific construction-related water-taking activities are eligible for Environmental Activity and Sector Registry (EASR). The trigger volume for EASR registration is water taking of more than 50,000 L/day. This includes the ground water that is collected in the open excavation as well as any precipitation or surface run off that enters the excavation.

Englobe will provide Hydrogeological Report (File No. 02311642.001) for this site to provide ground water control measures and estimate ground water discharge volume (Refer to this report for detailed information about ground water volumes, quality and control provisions).

5.9 Bedding

All the soils encountered at the site compacted to a minimum of 98% SPMDD will provide adequate support for buried services on a conventional well graded granular base material. Where disturbance of the trench base has occurred, such as due to groundwater seepage or construction traffic, the disturbed soils should be sub-excavated and replaced with suitably compacted granular fill.

Granular bedding material should consist of a conventional Class 'B' bedding such as Granular 'A' conforming to OPSS 1010 specification. The bedding material should be compacted to a minimum of 95% SPMDD. The use of clear stone bedding such as HL8 coarse aggregate (sewer stone) or 19 mm clear stone (OPSS 1004) is also acceptable, however only in conjunction with suitable geotextile filter (Terrafix 360R or equivalent); otherwise without proper filtering, there may be entry of fines from the surrounding soils into the bedding. This loss of ground could result in a loss of support to the pipes and possible future settlements. Clear stone bedding material should be vibrated to a dense state. The bedding material should conform to the pertinent Town Specifications.

5.10 Backfill

The earth fill materials containing excessive amounts of organic inclusion should not be reused as backfill in settlement sensitive areas, such as beneath the floor slabs, trench backfill and pavement areas. However, these materials may be stockpiled and reused for landscaping purposes.

The existing earth fill materials are considered suitable (with selection and sorting as required) for backfill provided the moisture content of these soils is within ± 2 percent of the OMC. Any soil material with ± 2 percent or higher in-situ moisture content than its OMC, could be put aside to dry or be tilled to reduce the moisture content so that it can be effectively compacted. Alternatively, materials of higher moisture content could be wasted and be replaced with imported material which can be readily compacted.

The existing earth fill soil will likely require selection and sorting to be reused as backfill. The selection and sorting must be conducted under the supervision of a geotechnical engineer. The site soils will be best compacted with a heavy sheep foot type roller.

The backfill should consist of clean earth and be placed in lifts of 150 mm thickness or less, and heavily compacted to a minimum of 95 percent SPMDD at a water content close to optimum (within 2 percent). The upper 600 mm of the pavement subgrade (at driveways and parking lots outside of the basement roof deck) must be compacted to a minimum of 98 percent SPMDD.

It should be noted that the soils encountered on the site are generally not free draining, and will be difficult to handle and compact should they become wetter as a result of inclement weather or seepage.

5.11 Earth-Retention Shoring Systems

The proposed finished floor elevation of the (P2) common underground parking would be set at about Elev. $257.25 \pm m$ (about 4.6 to 7.1 m below existing grade). The underside of footing level would likely be set at about elevation $256.25 \pm m$ (about from 5.65 to $8.25 \pm m$) below existing ground surface and 1 m below proposed finished floor elevation of the (P2) underground parking. It is expected that core elevator pits and building sumps will likely be further 2 or 3 meters lower than the lowest floor elevation. Shoring system likely be required only for the apartment building areas.

Decisions regarding shoring methods and sequencing are the responsibility of the Contractor. Temporary shoring system design should be carried out by a licensed Professional Engineer experienced in shoring design.

A special attention should be made along the proposed excavation shoring sections adjacent to the limits of the existing buildings. No excavation shall extend below a line cast as one vertical to one horizontal from foundations of the existing structure without adequate alternate support being provided. Underpinning guidelines are provided in Figure 8.

The shoring requirements for the site will have to be examined in detail with respect to the proximity of existing structures and buried utilities, and site boundary constraints. Depending upon the site conditions, the shoring system may need to consist of a rigid (interlocking drilled caissons) or a steel soldier piles and timber lagging shoring system, or a combination of both. The site conditions must be carefully assessed by the shoring designer to select appropriate type of shoring system in light of the close proximity of the existing roads and buildings. It is imperative that the shoring system provides adequate support to the existing building foundations.

As noted before, a rigid shoring system (interlocking caissons) adequately designed and installed along the excavation perimeter will help preclude some of the groundwater seepage into the excavation from wet sand/silt lenses within the glacial till and can significantly reduce the amount of groundwater seepage and pumping for both during and post-construction conditions, otherwise wet soils have a potential to yield significant amounts of groundwater seepage.

5.11.1 Lateral Earth Pressure Distribution

Applicable soil parameters are included in the Earth Pressure Design Parameters Section (Section 5.2).

If the shoring is supported with a single level of earth anchor or bracing, a triangular earth pressure distribution similar to that used for the basement wall design is appropriate.

Where multiple rows of lateral supports are used to support the shoring walls, research has shown that a distributed pressure diagram more realistically approximates the earth pressure on a shoring system of this type, when restrained by pre-tensioned anchors. A multi-level supported shoring system can be designed based on an earth pressure distribution with a maximum pressure defined by:

$$P = 0.8 K[\gamma H + q] \text{ ... cohesive soils (e.g. clayey silt till)}$$

where, P =	the maximum horizontal pressure (kPa)
K =	the earth pressure coefficient (see Section 3.3)
H =	the total depth of the excavation (m)
γ =	the bulk unit weight of soil, (kN/m ³)
q =	the complete surcharge loading (kPa)

In cohesive soils, the trapezoidal pressure distribution uniformly increases from zero to the maximum pressure defined above, over the top and bottom quarter ($H/4$) of the shoring. In cohesionless soils, the pressure distribution is rectangular.

5.11.2 Lateral Earth Pressure Distribution

Soldier pile toes and fillers will be made in the clayey silt to silt and clay till unit. The horizontal resistance of the soldier pile toes will be developed by embedment below the base of excavation, where resistance is developed from passive earth pressure. It is noted that the resistance will be different depending on whether the soils are dewatered, or remain below the nominal groundwater level. Where soils exist beneath the groundwater level, the unit weight of the soil is diminished by buoyancy. The design of the shoring will therefore have to consider the construction plan and sequence with respect to depth of groundwater control.

The clayey silt till soil has a relatively low permeability however, any sand/silt lenses/layers within the till at this site would be cohesionless, permeable and sufficiently moist to wet such that augered holes made into these soils will likely be unstable. It is necessary to advance temporarily cased holes to prevent excess caving during all augered hole installations. Drill holes for piles, caissons, and/or fillers, utilizing temporary liners, polymer mud/slurry drilling techniques, and/or other methods as deemed necessary by the contractor may be required to prevent issues such as: groundwater inflow or loss of soil into the drill holes, and disturbance to placed concrete. It will also be necessary to control the bases of any augered holes below Elev. 257.25± m, to protect them against basal disturbance caused by the ingress of groundwater and to prevent loss of ground. This may include dewatering to below the shoring toe depths prior to installation, or the use of drilling muds, pre-advancing casing, or other techniques as deemed necessary by the shoring contractor.

5.11.3 Lateral Bracing Elements

If anchor support is necessary and determined to be feasible, the shoring system should be supported by pre-stressed soil anchors extending beneath the adjacent lands. Pre-stressed anchors are installed and stressed in advance of excavation and this limits movement of the shoring system as much as is practically possible. The use of anchors on adjacent properties requires the consent of the adjacent land owners, expressed in encroachment agreements.

Conventional earth anchors could be made with continuous hollow stem augers or alternatively post-grouted anchors can be made. The design adhesion for earth anchors is controlled as much by the installation technique as the soil and therefore a proto-type anchor must be made in each anchor level executed to demonstrate the anchor capacity and validate the design assumptions. A proto-type anchor must be made to demonstrate the anchor capacity (performance tested to 200% of the design load). All production anchors must be proof-tested to 133% of the design load, to validate the design assumptions.

As per subsurface investigation, the earth fill is underlain by clayey silt to silt and clay till soils with some sand and trace gravel.

Conventional earth anchors made in the very stiff clayey silt till soils can be designed using a working adhesion of 50 kPa to 60 kPa. It is expected that post-grouted anchors can be made such that an anchor

will safely carry about 70 kN/m of adhered anchor length (at a nominal diameter of 150 mm) in the typically very stiff clayey silt till soils and must be confirmed by a performance/load test.

The above values are provided as preliminary guidance only and the bond strength values to be used for design and the actual anchor performance must be verified by a performance/load test.

If adjacent landowners are not agreeable to anchored support, then internal bracing or rakers would be necessary. The very stiff clayey silt till soils at the proposed P2 lowest FFE (varied from Elev. 257.25 ±m) is suitable for the placement of raker foundations. Raker footings established on the native till soils at an inclination of 45 degrees can be designed for a maximum factored geotechnical resistance of 150 kPa.

5.12 Quality Control

Excavations on this site must be shored to preserve the integrity of the surrounding properties and structures. The Ontario Building Code 2024 stipulates that engineering review of the subsurface conditions is required on a continuous basis during the installation of earth retaining structures. Englobe should be retained to provide this review, which is an integral part of the geotechnical design function as it relates to the shoring design considerations.

All foundations must be monitored by the geotechnical engineer on a continuous basis as they are constructed. The on-site review of the condition of the foundation soil as the foundations are constructed is an integral part of the geotechnical design function and is required by Section 4.2.2.2 of the Ontario Building Code. If Englobe is not retained to carry out foundation evaluations during construction, then Englobe accepts no responsibility for the performance or non-performance of the foundations, even if they are ostensibly constructed in accordance with the conceptual design advice provided in this report.

Concrete for this structure will be specified in accordance with the requirements of CAN3 - CSA A23.1. Englobe maintains a CSA certified concrete laboratory and can provide concrete sampling and testing services for the project as necessary.

The requirements for fill placement on this project should be stipulated relative to SPMDD, as determined by ASTM D698. In-situ determinations of density during fill placement by Procedure Method B of ASTM D2922 are recommended to demonstrate that the contractor is achieving the specified soil density. Englobe is a CNSC licensed operator of appropriate nuclear density gauges for this work and can provide sampling and testing services for the project as necessary.

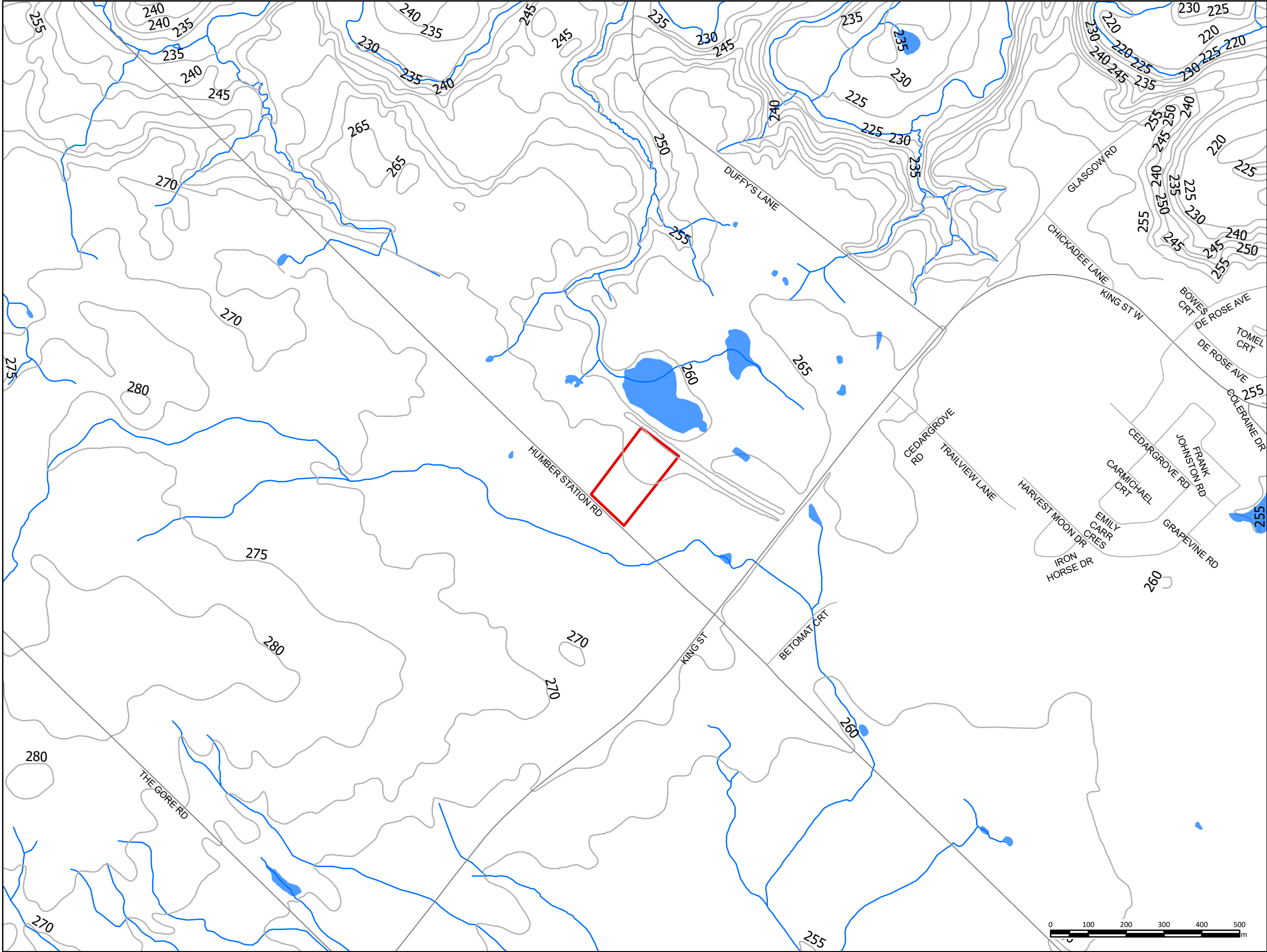
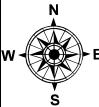
Englobe can provide thorough in house resources, quality control services for Building Envelope, Roofing, as well as Structural Steel in accordance with CSA W178, as necessary, for the Structural and Architectural quality control requirements of the project. Englobe is certified by the Canadian Welding Bureau under W178.1-1996.

Figures

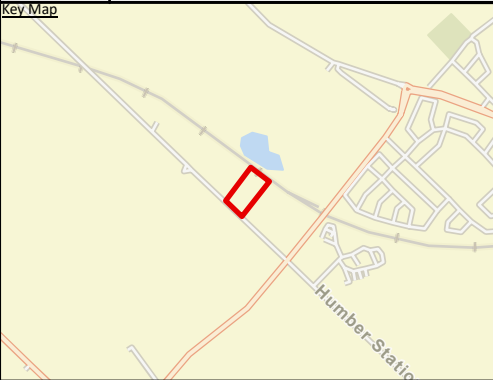


eNGLOBE

Y:\Shared\CA\Terraprobe\Brampton\1-Project Files\2024\02405205.000 - HYD, 0 Humber Station Road, Caledon\0100 - HYD Assessment\A. Dwgs, Logs\PDF



References:
Service Layer Credits: © Topography, Water Body and Watercourse Map was Produced by Englobe Corp. under license from the Ministry of Natural Resources and Forestry (MNRF). Copyright (c) is held by the King's Printer for Ontario 2023.



Notes:

- Legend:**
- Watercourse
 - City of Caledon, Topographic Contours
 - Roads Type**
 - Collector
 - Local / Street
 - Approximate Site Location
 - Water Body

Project Title:
Geotechnical Investigation
Hydrogeological Assessment

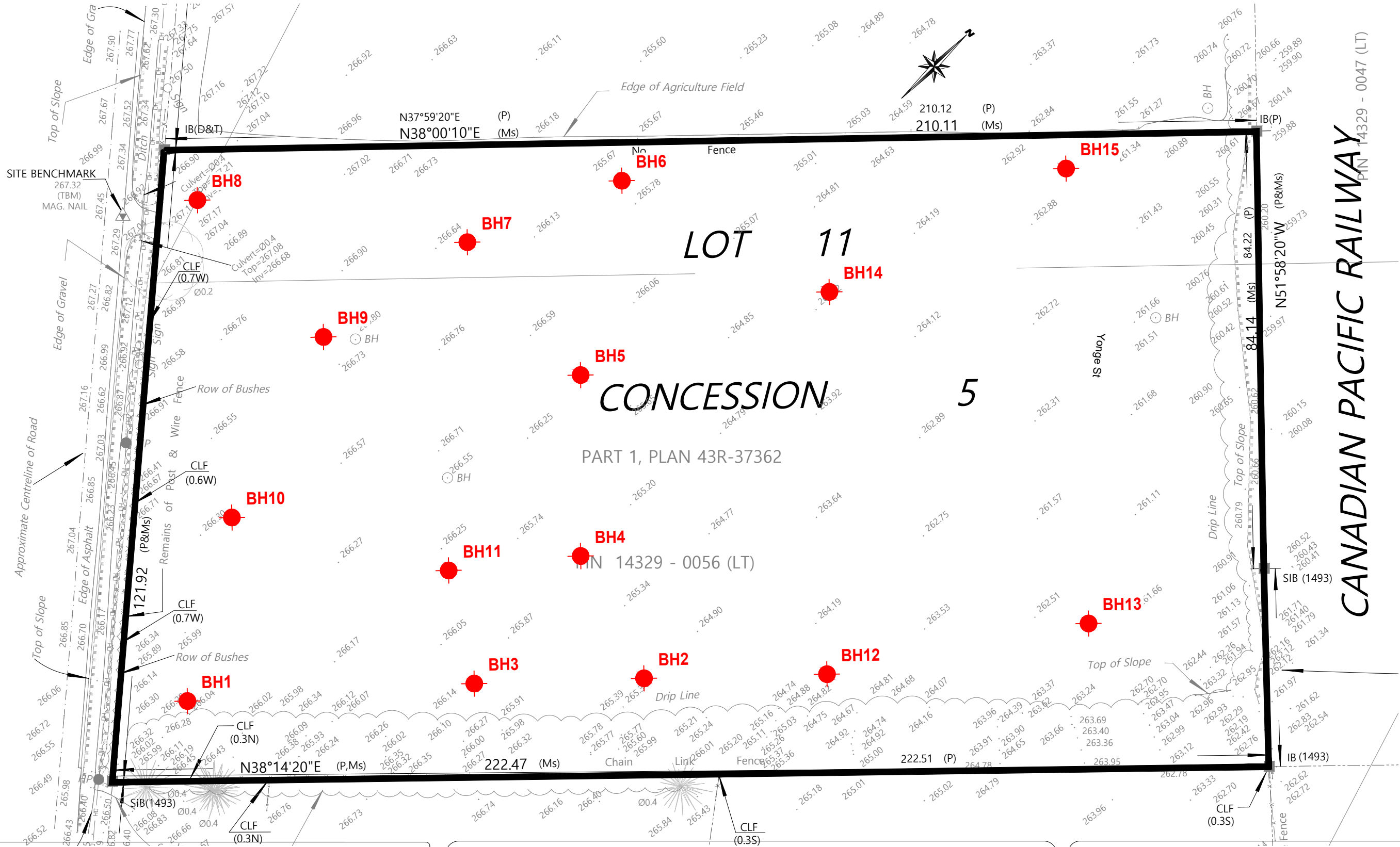
Site Location:
0 Humber Station Road
Caledon, Ontario

Figure Title: Site Location Plan
Topography Map

Designed By: AQ	File No.: 02405205.000
Drawn By: HK	Scale: As Shown
Reviewed By: MS	Figure No.: 1
Date: July 2025	

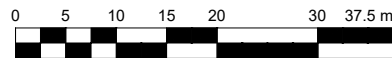
Y:\SHARED\CATERAPROBE\BRAMPTON\1-PROJECT FILES\2024\02405205.001 - GEO, 0 HUMBER STATION ROAD, CALEDON\FIGURES\AUTOCAD\02405205.000 BLP B8294.POS_I_V3 2025-07-31.DWG

known as **HUMBER STATION ROAD**
ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 4 AND 5
PIN 14329 - 0105 (LT)



LEGEND

● Approximate Prop. Borehole Location



1:750

REFERENCE

Part of Lot 11, Concession 5

Town of Caledon, Project No.: 24-B8294

Survey Date: July 3, 2024, By: Mauro Group Inc.

Project

Geotechnical investigation
0 Humber Station Road
Caledon, Ontario

Title

Borehole Location Plan
Existing Condition



Prepared **K. Chawla**
Drawn **K. Chawla**
Checked **S. Abdus**

Discipline **GEOTECHNICAL**
Scale **N.T.S**
Date **Jan. 2025**

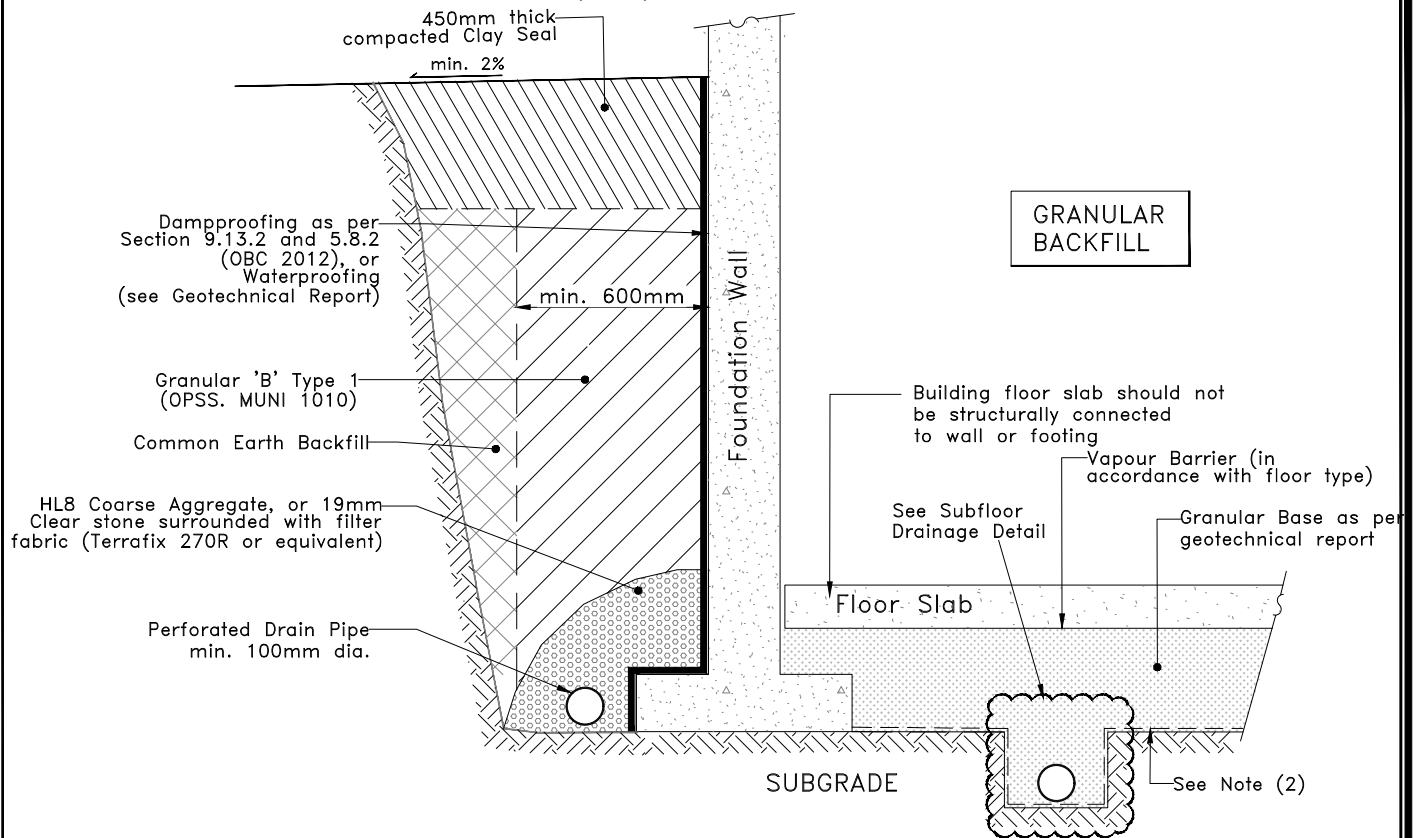
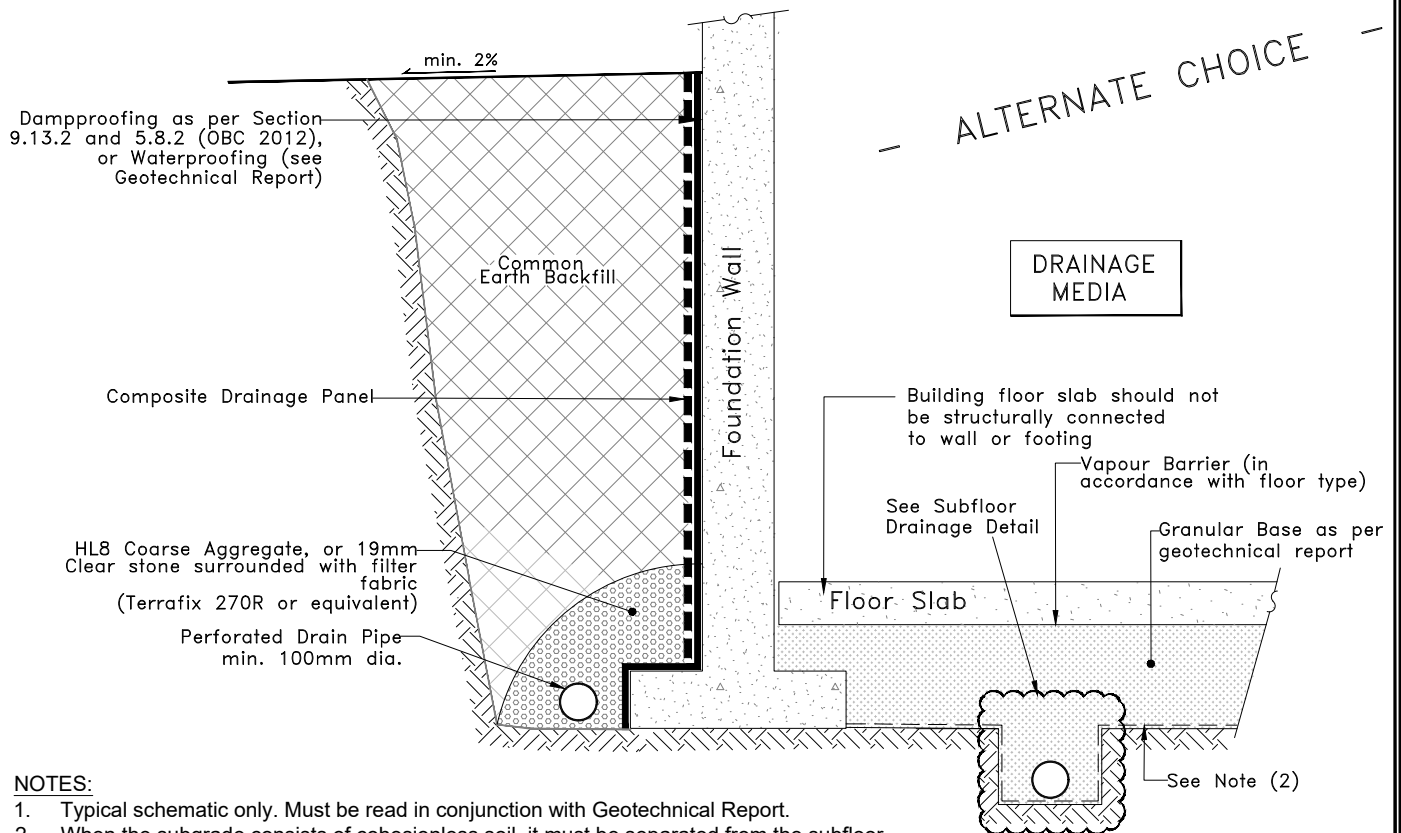
Project manager
S. Abdus
Sequence no.

Resp.	Project	Phase	Disc.	Type	Drawing no.	Rev.
01	02405205.000	0100	GS	D	2	00

Resp.	Project	Phase	Disc.	Type	Drawing no.	Rev.
01	02405205.000	0100	GS	D	2A	00

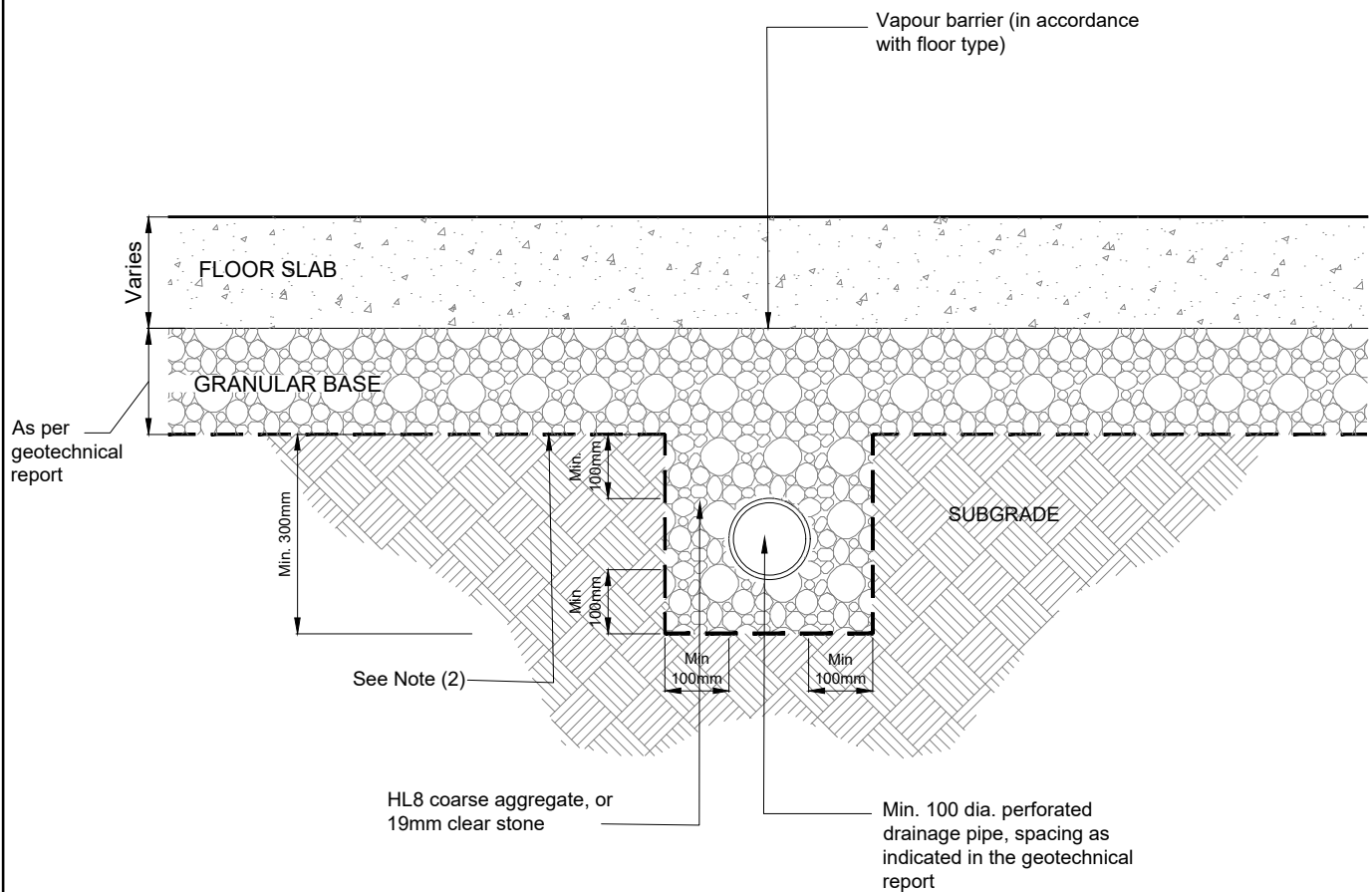


1. Reinforcing steel C.S.A. G30.18-09 Grade 400
2. Concrete min. 28 day strength 20MPa (3000psi)
3. Base of all footing excavations to be inspected and approved prior to placing formwork.
4. All dimensions are in mm.



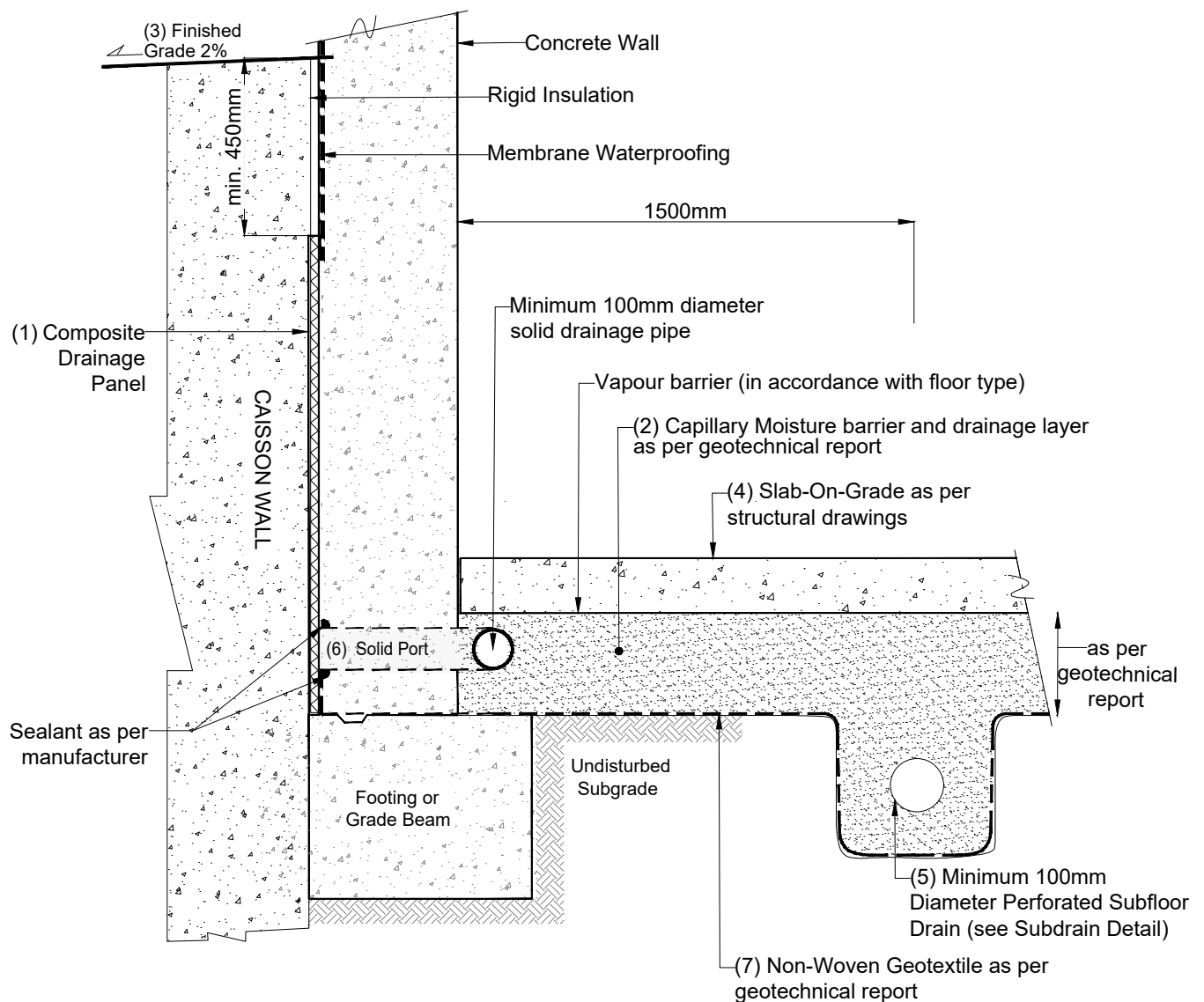
NOTES:

1. Typical schematic only. Must be read in conjunction with Geotechnical Report.
2. When the subgrade consists of cohesionless soil, it must be separated from the subfloor drainage layer using a non-woven geotextile (Terrafix 360R or approved equivalent).
3. Not to Scale



NOTES:

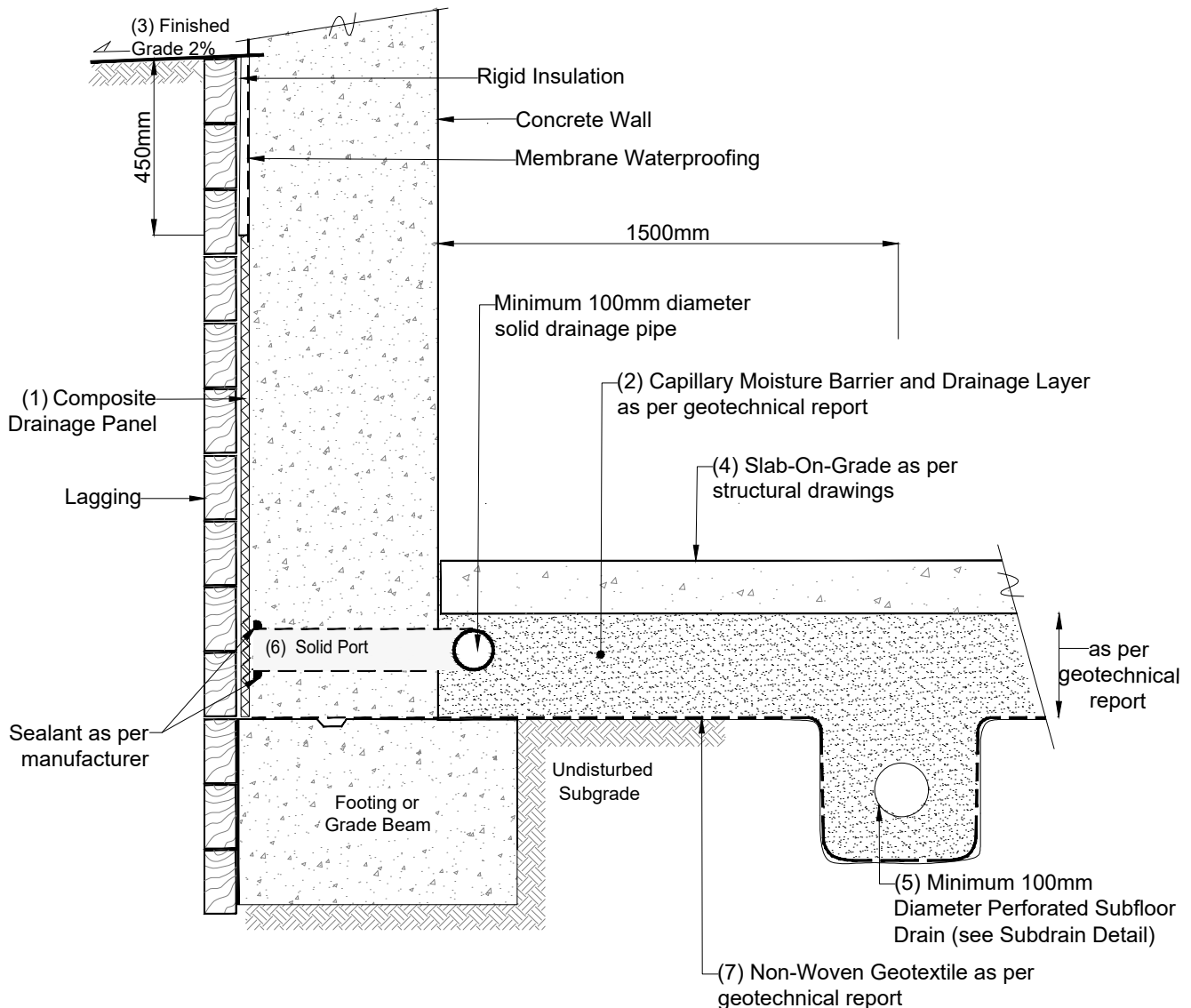
1. Typical schematic only. Must be read in conjunction with Geotechnical Report.
2. When the subgrade consists of cohesionless soil, it must be separated from the subfloor drainage layer using a non-woven geotextile (Terrafix 360R or approved equivalent).
3. Not to Scale



NOTES

- 1) Prefabricated composite drainage panels to consist of Miradrain 6000, or approved equivalent. Panels should provide continuous cover as per manufacturer's requirements.
- 2) Capillary moisture barrier/drainage layer to consist of a minimum 200mm layer of 19mm clear stone (OPSS. MUNI 1004), or as indicated in geotechnical report, compacted to a dense state. Upper 50mm can be replaced with Granular "A" (OPSS. MUNI 1010) compacted to 98% SPMDD where vehicular traffic is required. A vapour barrier may be required depending on floor type.
- 3) Exterior finished grade away from wall at a minimum grade of 2% for min. 1.2m.
- 4) Building floor slab-on-grade shall not be structurally connected to foundation wall or footing.
- 5) Subfloor drain invert to be a minimum of 300mm below underside of floor slab, to be set in parallel rows, one way, and at the spacing specified in the geotechnical report. Don't connect subfloor drains to perimeter drains.
- 6) Embedded ports to be set a distance of maximum 3m on-centre. Each port to have a minimum cross-sectional area of 1500mm². Perimeter drainage must be collected and conveyed directly to the building sumps in solid pipe.
- 7) When the subgrade consists of a cohesionless soil, the subgrade must be separated from the subfloor drainage layer using a non-woven geotextile (Terrafix 360R or approved equivalent).
- 8) Geotechnical report contains specific details. Final detail must be reviewed before system is considered acceptable to use.

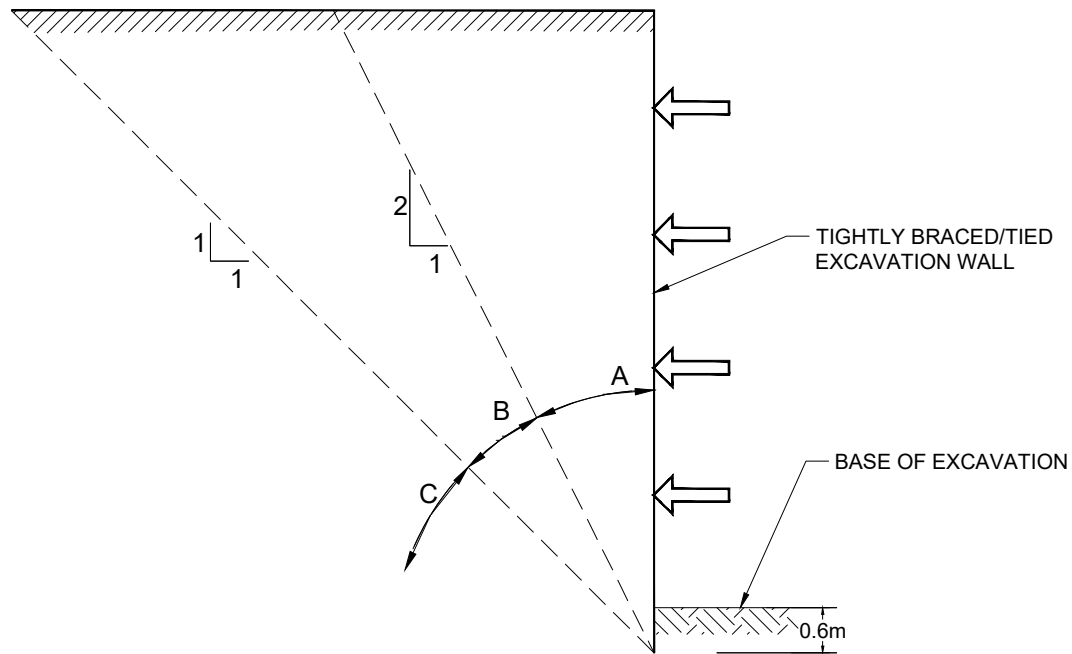
N.T.S



NOTES

- 1) Prefabricated composite drainage panels to consist of Miradrain 6000, or approved equivalent. Panels should provide continuous cover as per manufacturer's requirements.
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- 7) When the subgrade consists of a cohesionless soil, the subgrade must be separated from the subfloor drainage layer using a non-woven geotextile (Terrafix 360R or approved equivalent).
- 8) Geotechnical report contains specific details. Final detail must be reviewed before system is considered acceptable to use.

N.T.S.



Zone A: Foundations within this zone often require underpinning. Horizontal and vertical pressures on excavation wall of non-underpinned foundations must be considered.

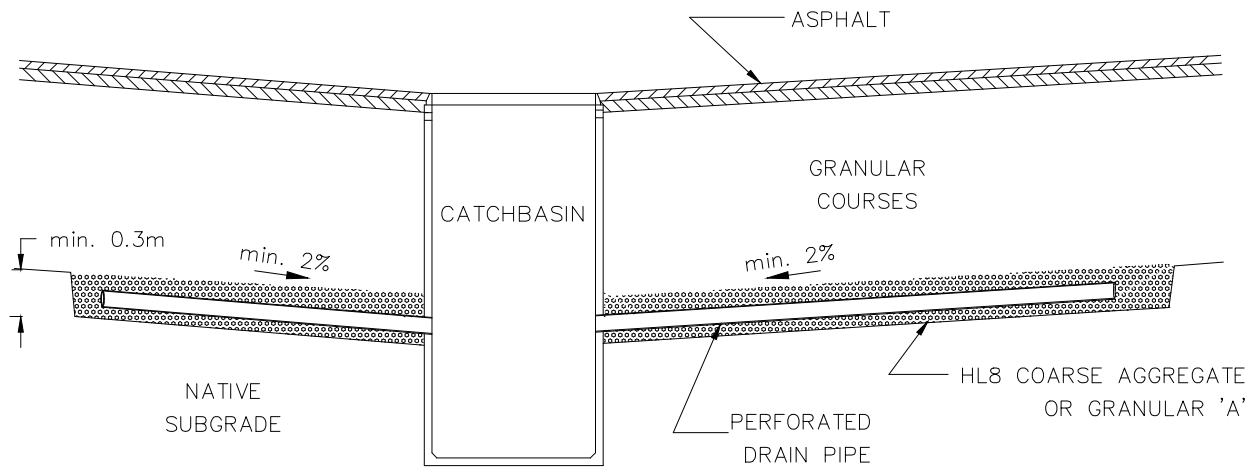
Zone B: Foundation within this zone often do not require underpinning. Horizontal and vertical pressures on excavation wall of non-underpinned foundations must be considered.

Zone C: Foundations within this zone usually do not require underpinning.

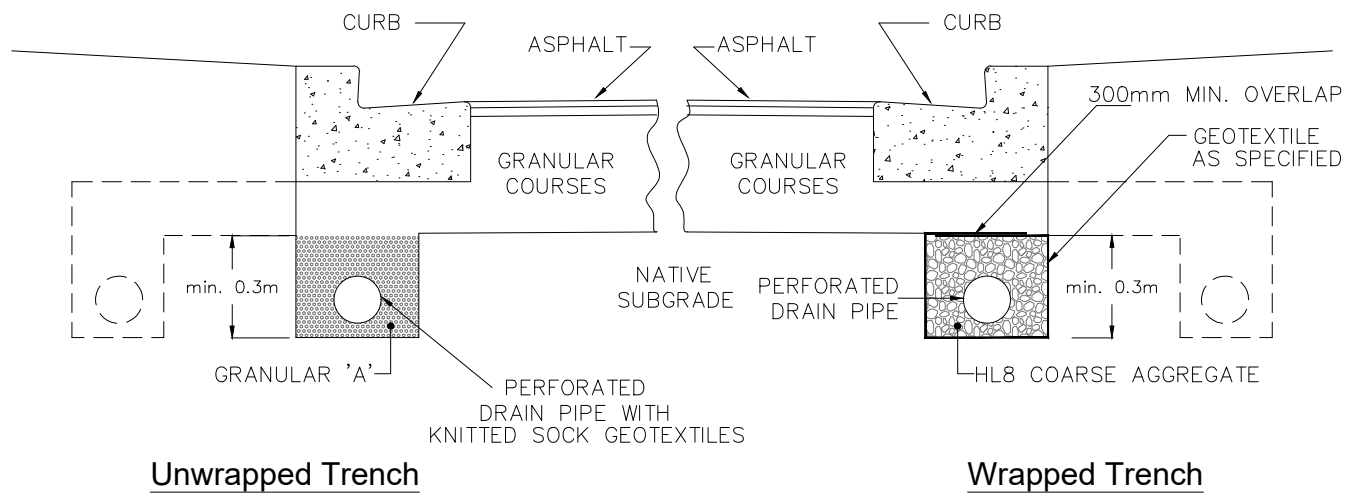
REFERENCE

User's Guide - NBC 2005 Structural Commentaries
(Part 4 of Division B) - Commentary K

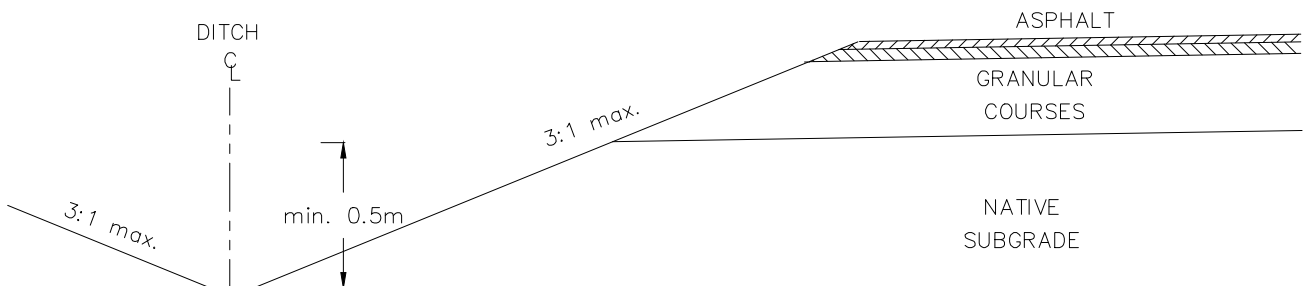
Longitudinal Subdrain Connection to Catchbasin



Urban Cross Sections



Rural Cross Section



Appendix A

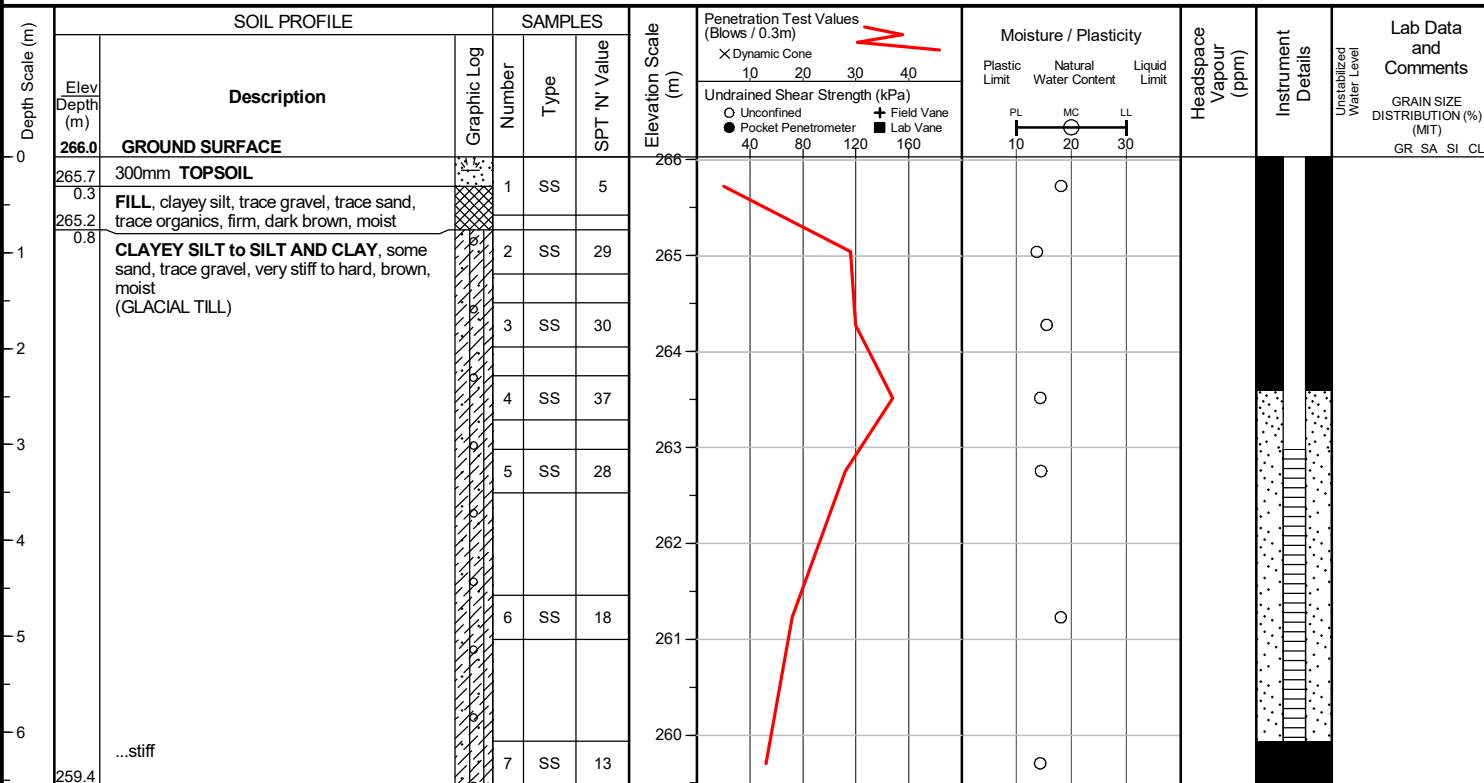
Borehole Logs



eNGLOBE

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 30, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598590, N: 4858230 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 30, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598642, N: 4858301 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone Undrained Shear Strength (kPa) ○ Unconfined ● Pocket Penetrometer	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments Unstabilized Water Level GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value						
0	265.3	GROUND SURFACE										
0.3	265.0	325mm TOPSOIL		1	SS	7	265					
0.8	264.5	FILL, clayey silt, trace gravel, trace sand, trace organics, firm, dark brown, moist		2	SS	20	264					
		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		3	SS	30	263					
				4	SS	38	262					
		...brownish grey below		5	SS	31	261					
				6	SS	19	260					
				7	SS	16	259					
6.6	258.7	END OF BOREHOLE										

END OF BOREHOLE

Unstabilized water level measured at 5.9 m below ground surface; borehole was open upon completion of drilling.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 30, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598622, N: 4858275 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

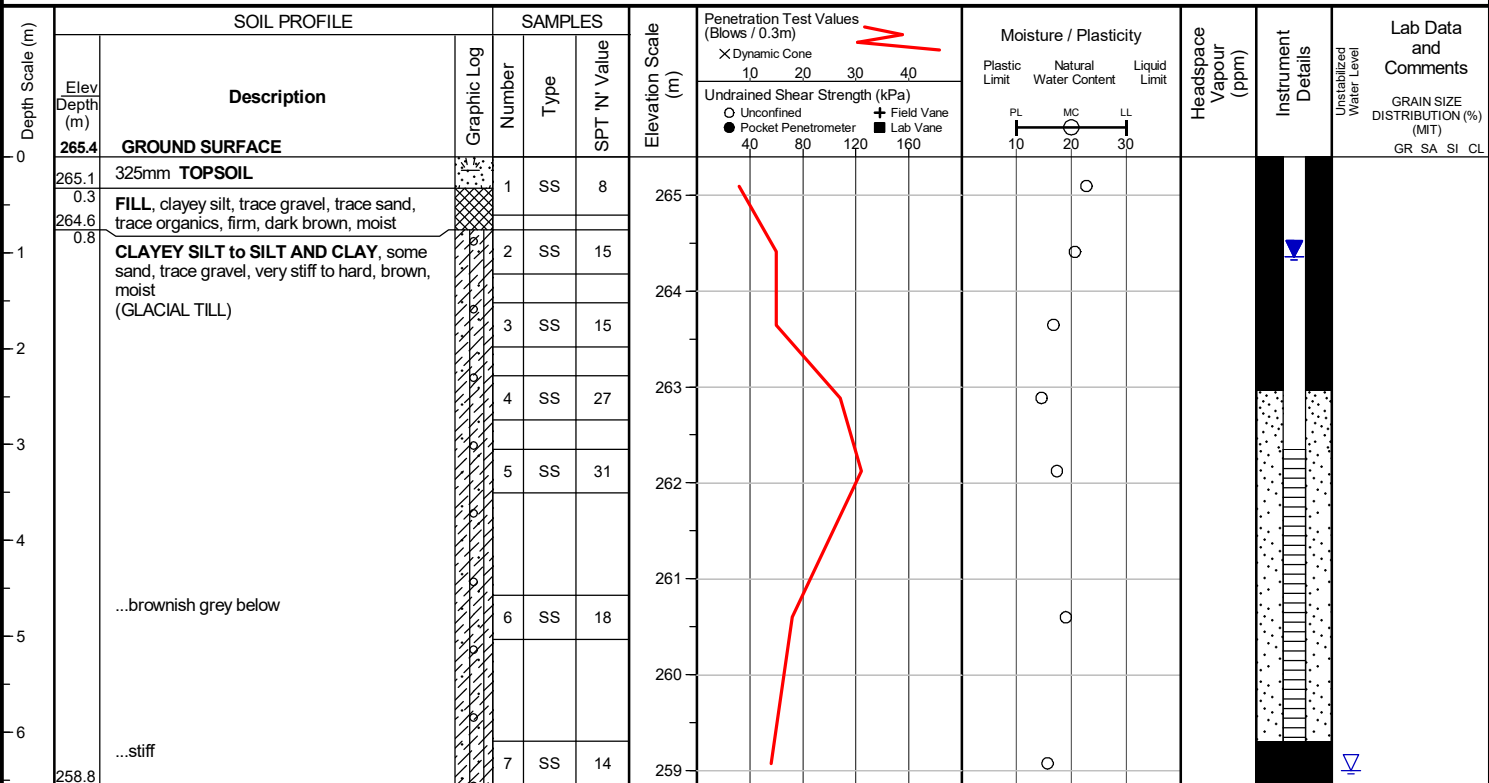
Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	265.9	GROUND SURFACE													
0.4	265.5	350mm TOPSOIL		1	SS	7									
0.8	265.1	FILL, clayey silt, trace gravel, trace sand, trace organics, firm, dark brown, moist													
1		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		2	SS	38									
2				3	SS	31									
3				4	SS	44									
4				5	SS	34									
5		...brownish grey below		6	SS	19									
6				7	SS	17									
6.6	259.3														

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 30, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598616, N: 4858307 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers



END OF BOREHOLE

Unstabilized water level measured at 6.4 m below ground surface; borehole was open upon completion of drilling.

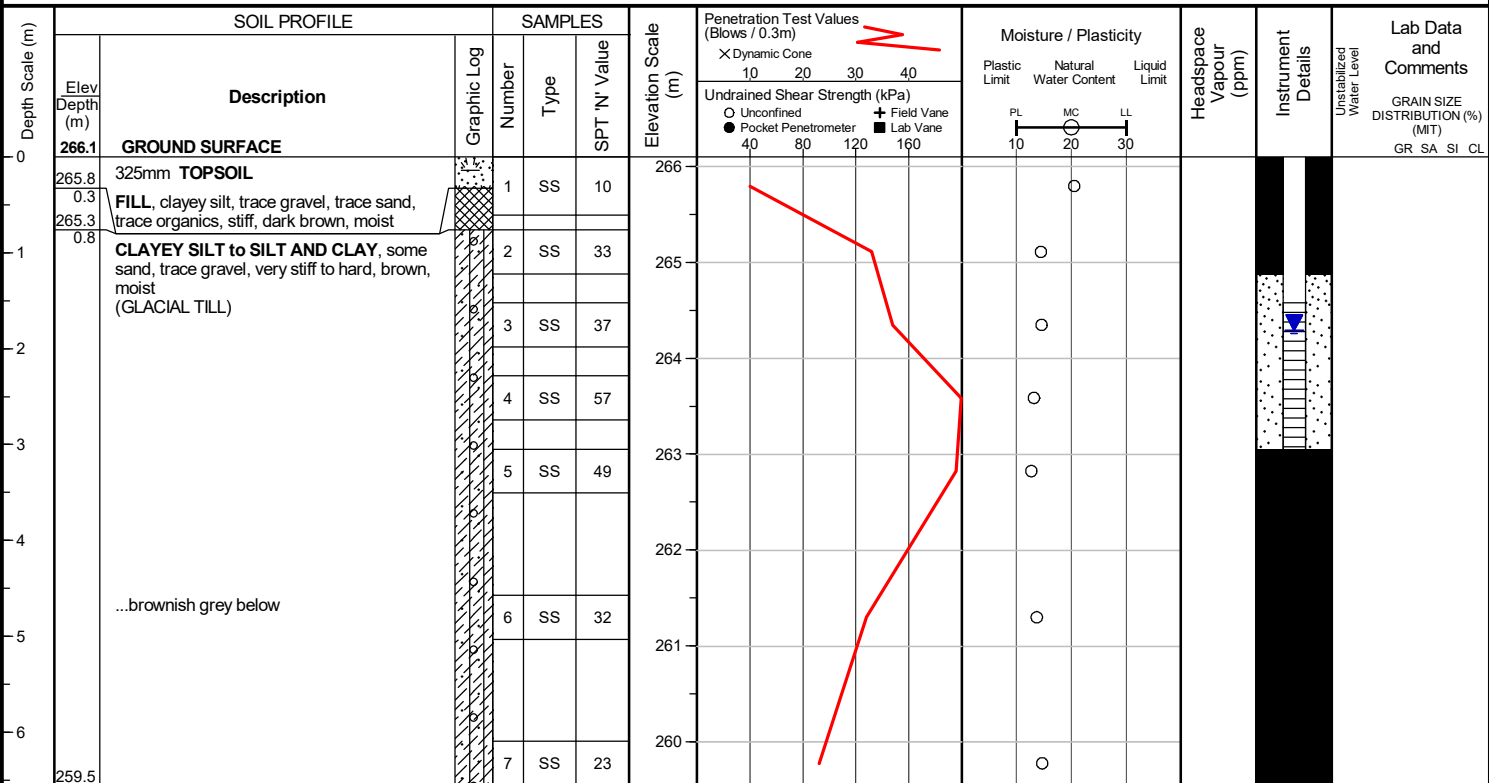
50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date Jul 15, 2025 Water Depth (m) 1.0 Elevation (m) 264.4

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 29, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598589, N: 4858329 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

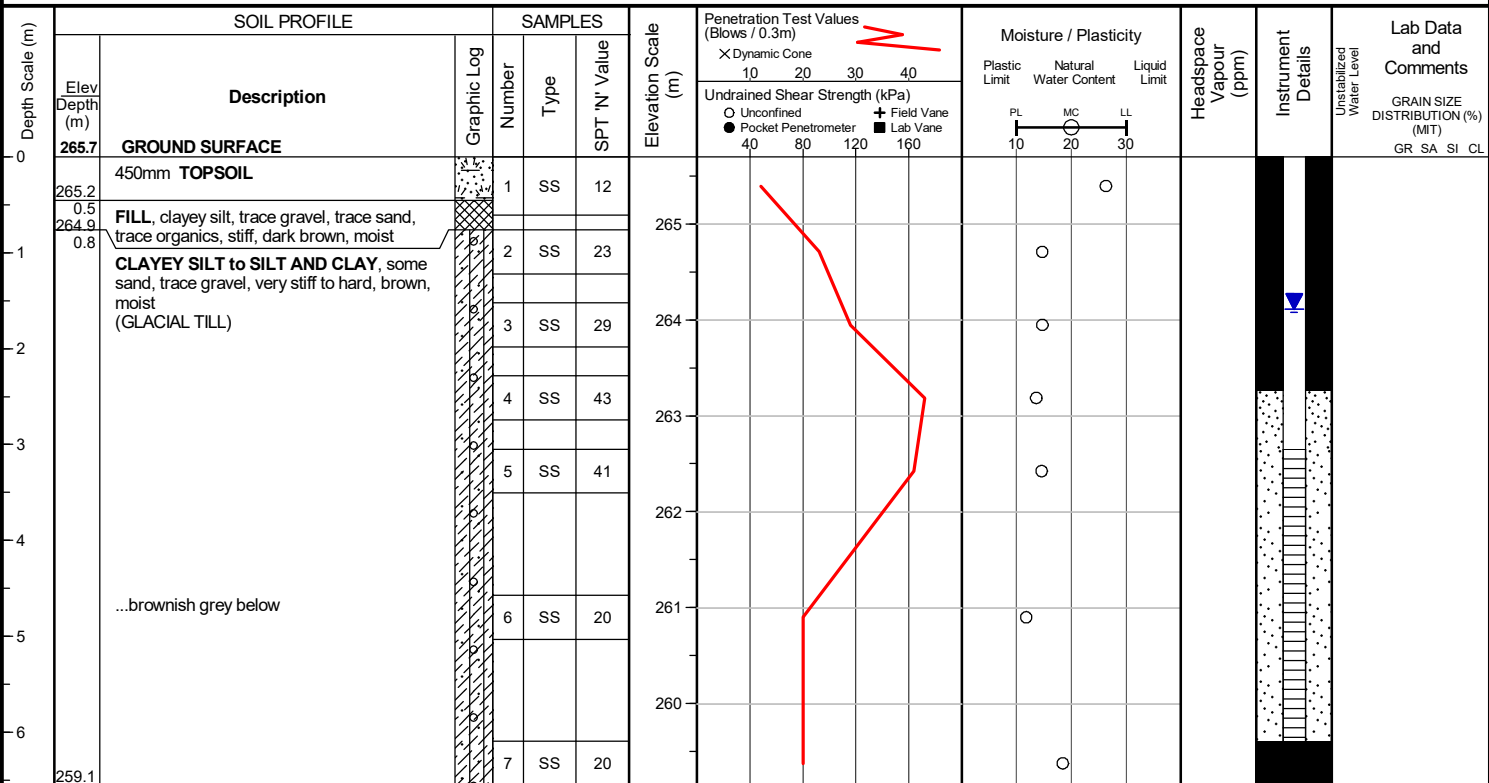
50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date Jul 15, 2025 Water Depth (m) 1.8 Elevation (m) 264.3

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 29, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598564, N: 4858358 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date Jul 15, 2025 Water Depth (m) 1.6 Elevation (m) 264.1

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 29, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598555, N: 4858328 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

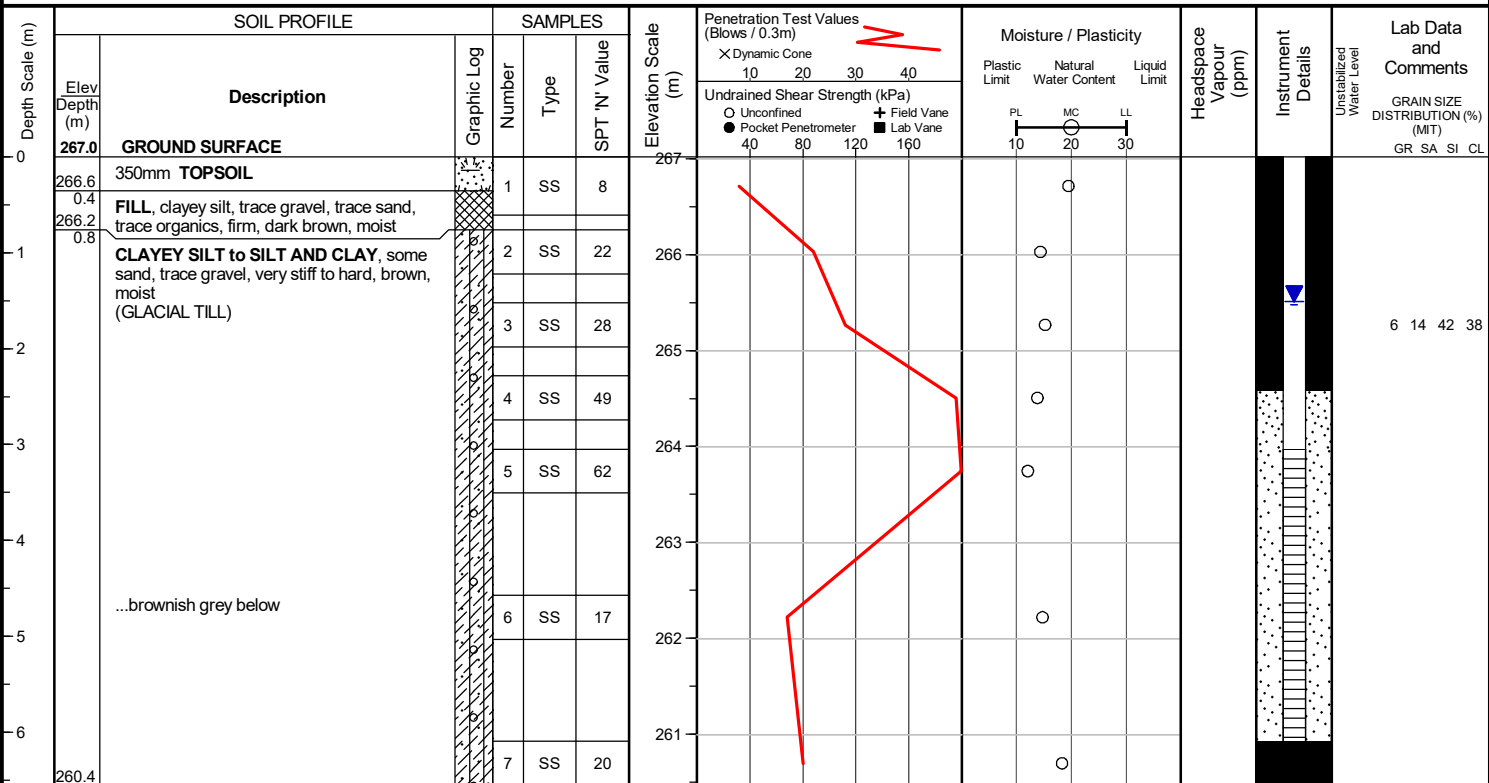
Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	266.5	GROUND SURFACE													
0.3	266.2	300mm TOPSOIL		1	SS	12	266								
0.8	265.7	FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist													
1		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		2	SS	34									
2				3	SS	34									
3				4	SS	35									
4				5	SS	48									
5		...brownish grey below		6	SS	20									
6				7	SS	20									
6.6	259.9						260								

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 29, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598516, N: 4858293 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date Jul 15, 2025 Water Depth (m) 1.5 Elevation (m) 265.5

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 29, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598552, N: 4858295 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone Undrained Shear Strength (kPa) ○ Unconfined ● Pocket Penetrometer	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value								
0	266.8	GROUND SURFACE												
0.4	266.4	350mm TOPSOIL		1	SS	9								
0.8	266.0	FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist		2	SS	19								
		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		3	SS	36								
				4	SS	41								
				5	SS	37								
3.5	263.3													

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 29, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598568, N: 4858259 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined ● Pocket Penetrometer + Field Vane ■ Lab Vane 40 80 120 160	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL 10 20 30			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value								
0	266.3	GROUND SURFACE												
0.3	266.0	300mm TOPSOIL		1	SS	12	266							
0.8	265.5	FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist												
1		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		2	SS	28	265							
2				3	SS	36	264							
3				4	SS	36	263							
3.5	262.8			5	SS	36								

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 30, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598602, N: 4858285 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone Undrained Shear Strength (kPa) ○ Unconfined ● Pocket Penetrometer	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments Unstabilized Water Level GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value								
0	266.1	GROUND SURFACE					266							
0.4	265.7	350mm TOPSOIL		1	SS	7	265							
0.8	265.3	FILL, clayey silt, trace gravel, trace sand, trace organics, firm, dark brown, moist		2	SS	26	264							
		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		3	SS	32	263							
				4	SS	31								
				5	SS	40								
3.5	262.6													

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Project No. : 02405205.000

Client : Mr. Satwant Deol

Originated by : SM

Date started : January 27, 2025

Project : 0 Humber Station Road

Compiled by : AS

Sheet No. : 1 of 1

Location : Caledon, ON.

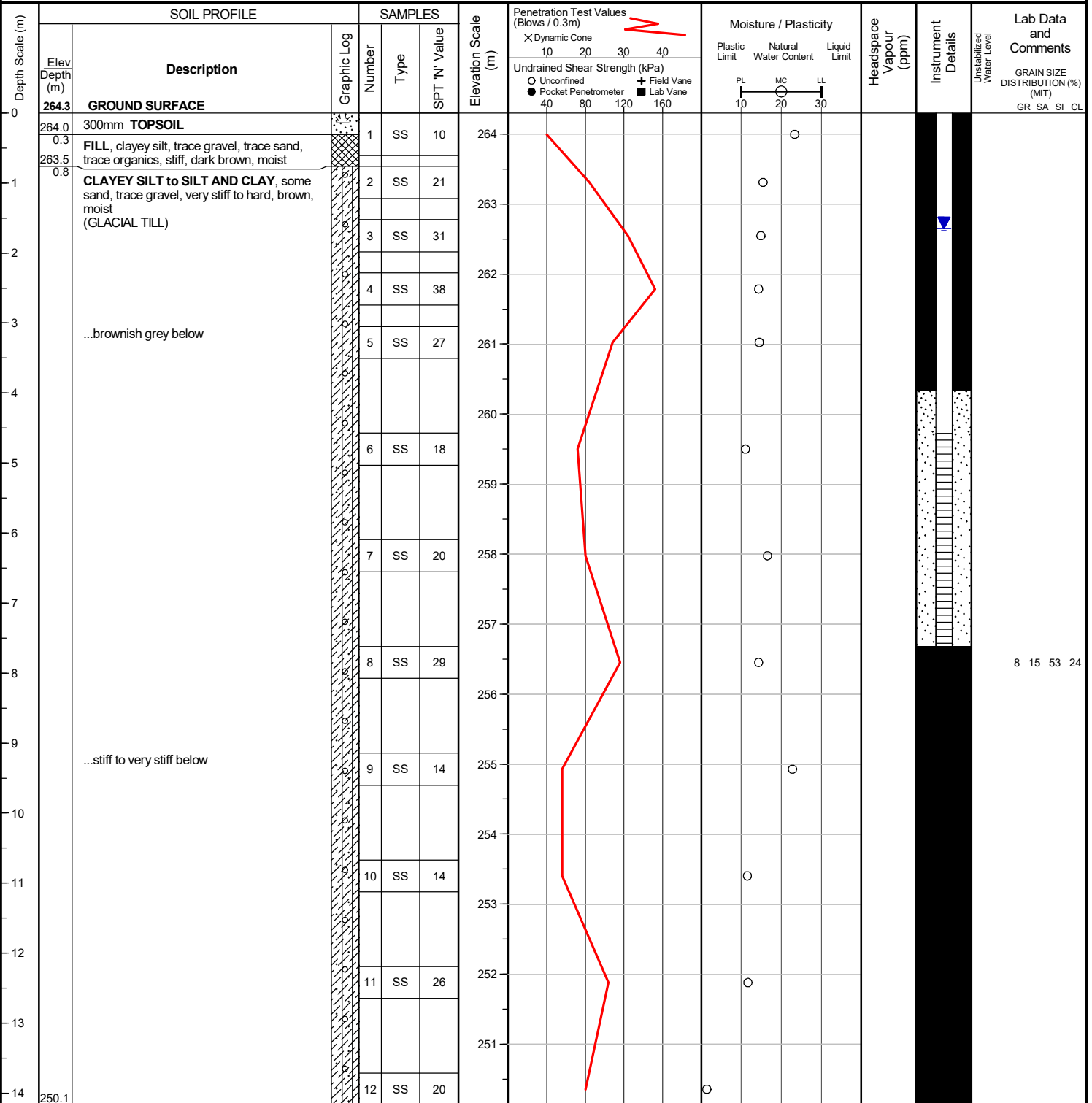
Checked by : AS

Position : E: 598663, N: 4858329 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date Jul 15, 2025 Water Depth (m) 1.7 Elevation (m) 262.7

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 27, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598687, N: 4858375 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone Undrained Shear Strength (kPa) ○ Unconfined ● Pocket Penetrometer	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value						
0	261.9	GROUND SURFACE										
0.3	261.6	300mm TOPSOIL		1	SS	8						
0.8	261.1	FILL, clayey silt, trace gravel, trace sand, trace organics, firm, dark brown, moist										
1		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		2	SS	16						
2				3	SS	33						
3		...brownish grey below		4	SS	30						
4				5	SS	27						
5				6	SS	26						
6				7	SS	27						
7				8	SS	33						
8				9	SS	36						
9				10	SS	33						
10				11	SS	20						
12	249.3	END OF BOREHOLE										
	12.6											

WATER LEVEL READINGS
 Date Jul 15, 2025 Water Depth (m) 3.0 Elevation (m) 258.9

Borehole was dry and open upon completion of drilling.
 50 mm dia. monitoring well installed.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 27, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598606, N: 4858376 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone Undrained Shear Strength (kPa) ○ Unconfined ● Pocket Penetrometer + Field Vane ■ Lab Vane	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value								
0	264.5	GROUND SURFACE												
0.4	264.1	350mm TOPSOIL		1	SS	11	264							
0.8	263.7	FILL, clayey silt, trace gravel, trace sand, trace organics, firm, dark brown, moist		2	SS	26	263							
		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		3	SS	26	262							
				4	SS	35	261							
				5	SS	25	260							
		...brownish grey below		6	SS	21	259							
				7	SS	18	258							
				8	SS	22	257							
				9	SS	18	256							
				10	SS	14	255							
		...stiff, brown		11	SS	10	254							
				12	SS	27	253							
		...very stiff					252							
14	250.3	END OF BOREHOLE					251							

WATER LEVEL READINGS
 Date Jul 15, 2025 Water Depth (m) 2.8 Elevation (m) 261.7

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

Project No. : 02405205.000 Client : Mr. Satwant Deol Originated by : SM
 Date started : January 28, 2025 Project : 0 Humber Station Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Caledon, ON. Checked by : AS

Position : E: 598616, N: 4858425 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	262.5	GROUND SURFACE													
0.3	262.2	300mm TOPSOIL		1	SS	12	262								
0.8	261.7	FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist													
1		CLAYEY SILT to SILT AND CLAY, some sand, trace gravel, very stiff to hard, brown, moist (GLACIAL TILL)		2	SS	33	261								
2				3	SS	24	260								
3				4	SS	36	259								
4				5	SS	20	258								
5		...brownish grey below		6	SS	16	257								
6				7	SS	20	256								
7				8	SS	19	255								
8				9	SS	31	254								
9				10	SS	33	253								
10				11	SS	34	252								
12	249.9						251								
12.6							250								

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

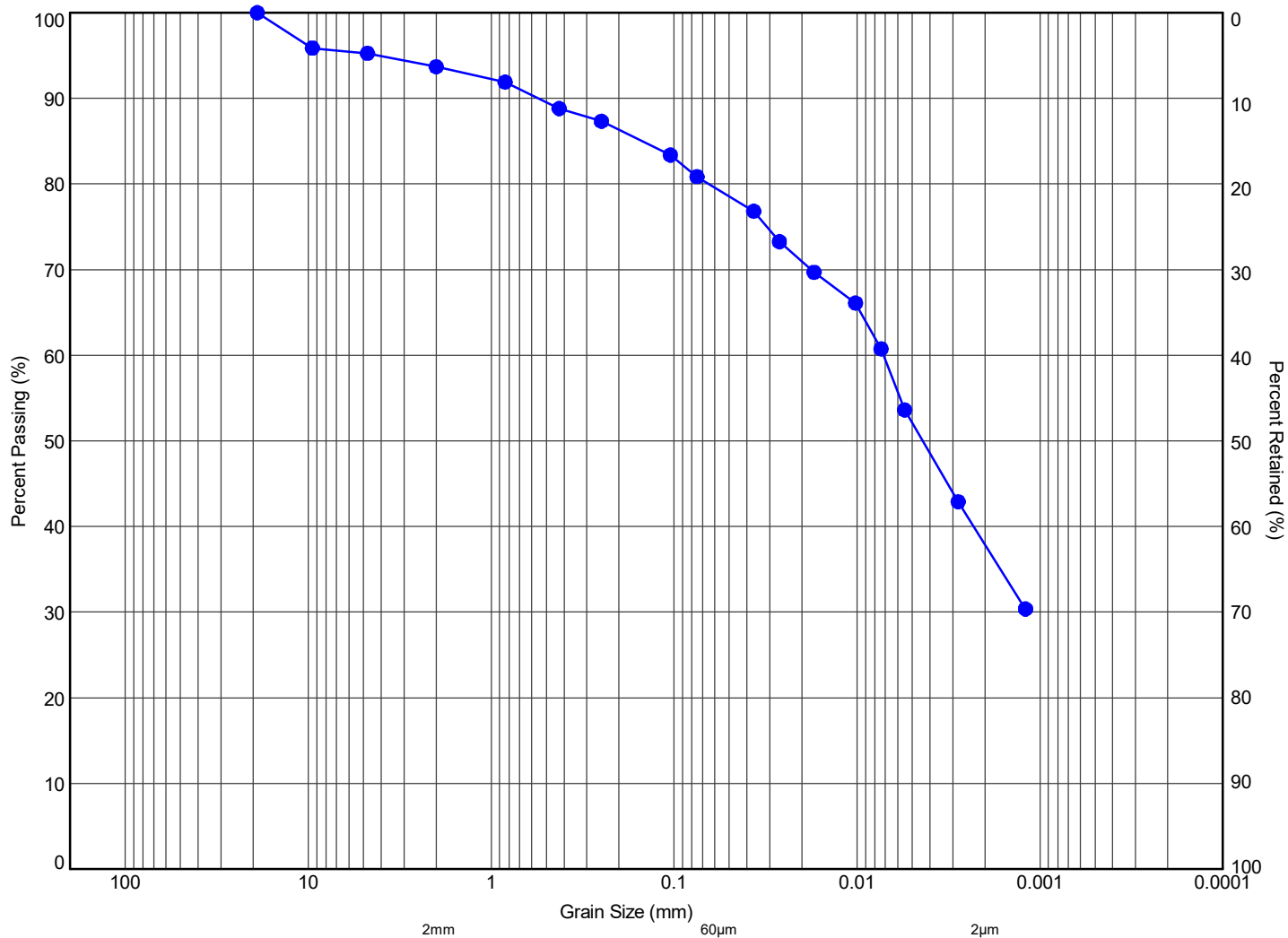
WATER LEVEL READINGS
 Date Jul 15, 2025 Water Depth (m) 3.3 Elevation (m) 259.2

Appendix B

Geotechnical Laboratory Test Results



ENGLOBE



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)
● 8	SS3	1.8	265.3	6	14	42	38	

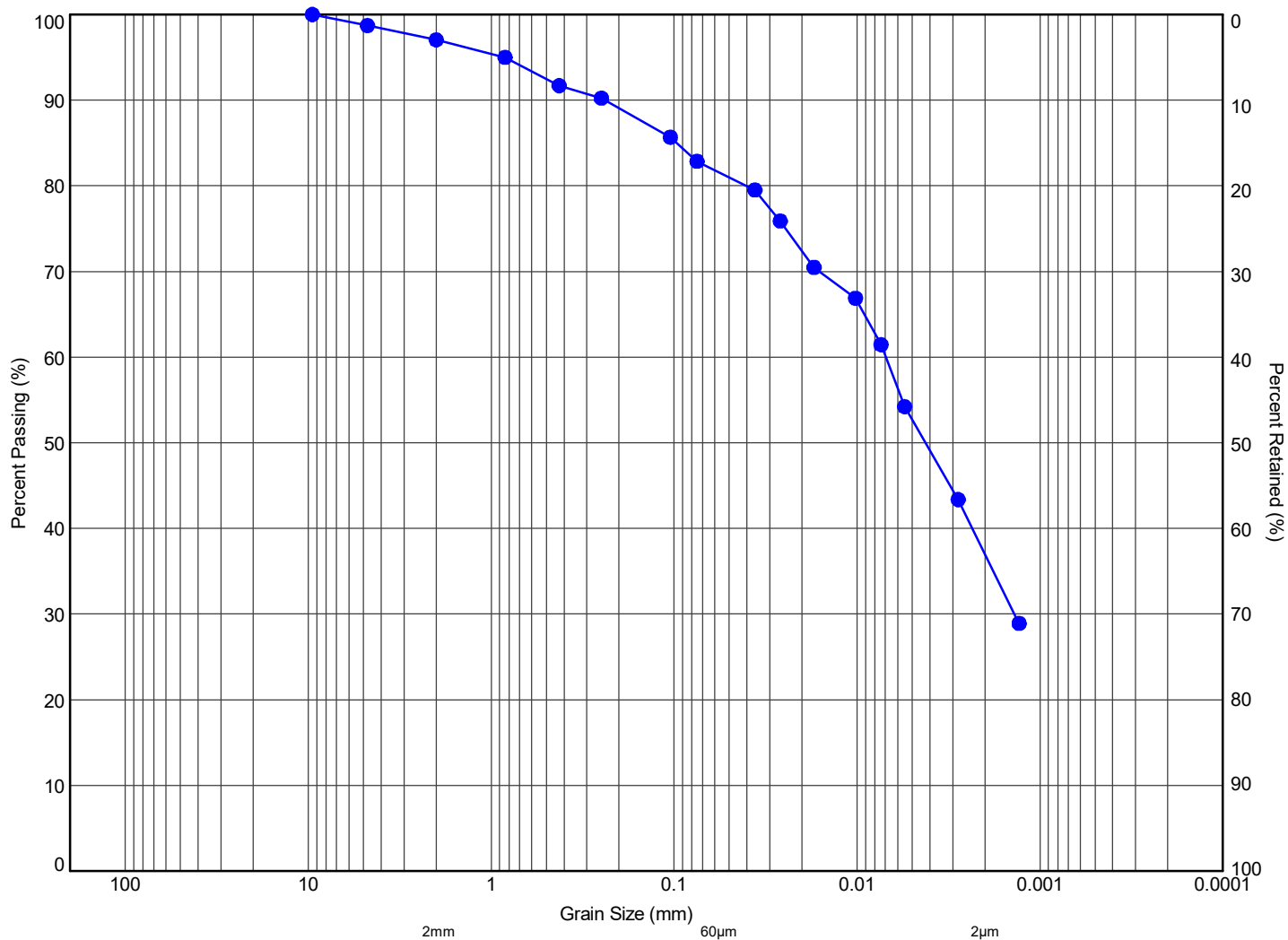


Title:

**GRAIN SIZE DISTRIBUTION
SILT AND CLAY, SOME SAND, TRACE GRAVEL**

File No.:

02405205.000



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)
11	SS2	1.0	265.1	3	15	45	37	

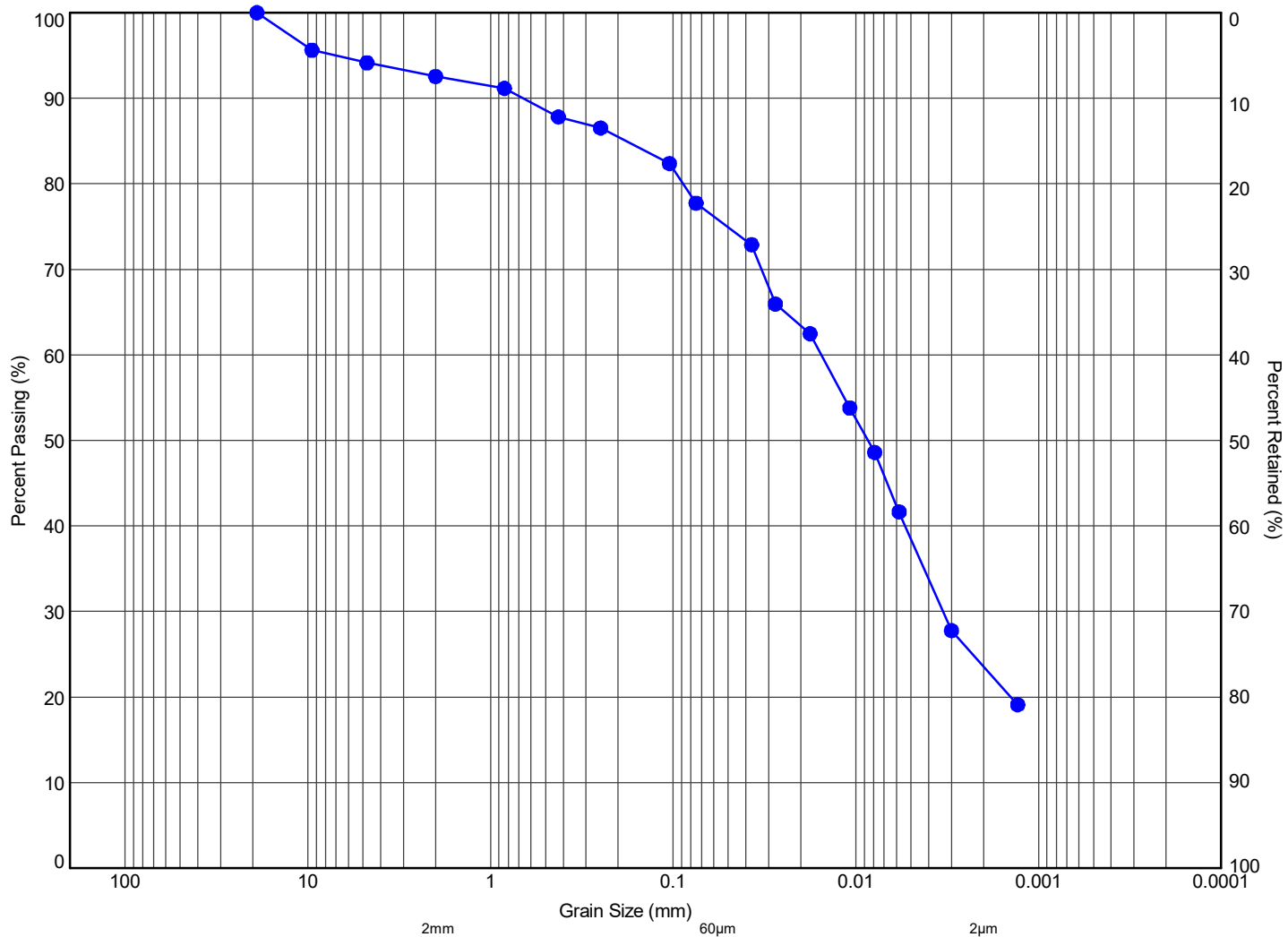


Title:

**GRAIN SIZE DISTRIBUTION
SILT AND CLAY, SOME SAND, TRACE GRAVEL**

File No.:

02405205.000



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM									
Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)	
12	SS8	7.8	256.5	8	15	53	24		

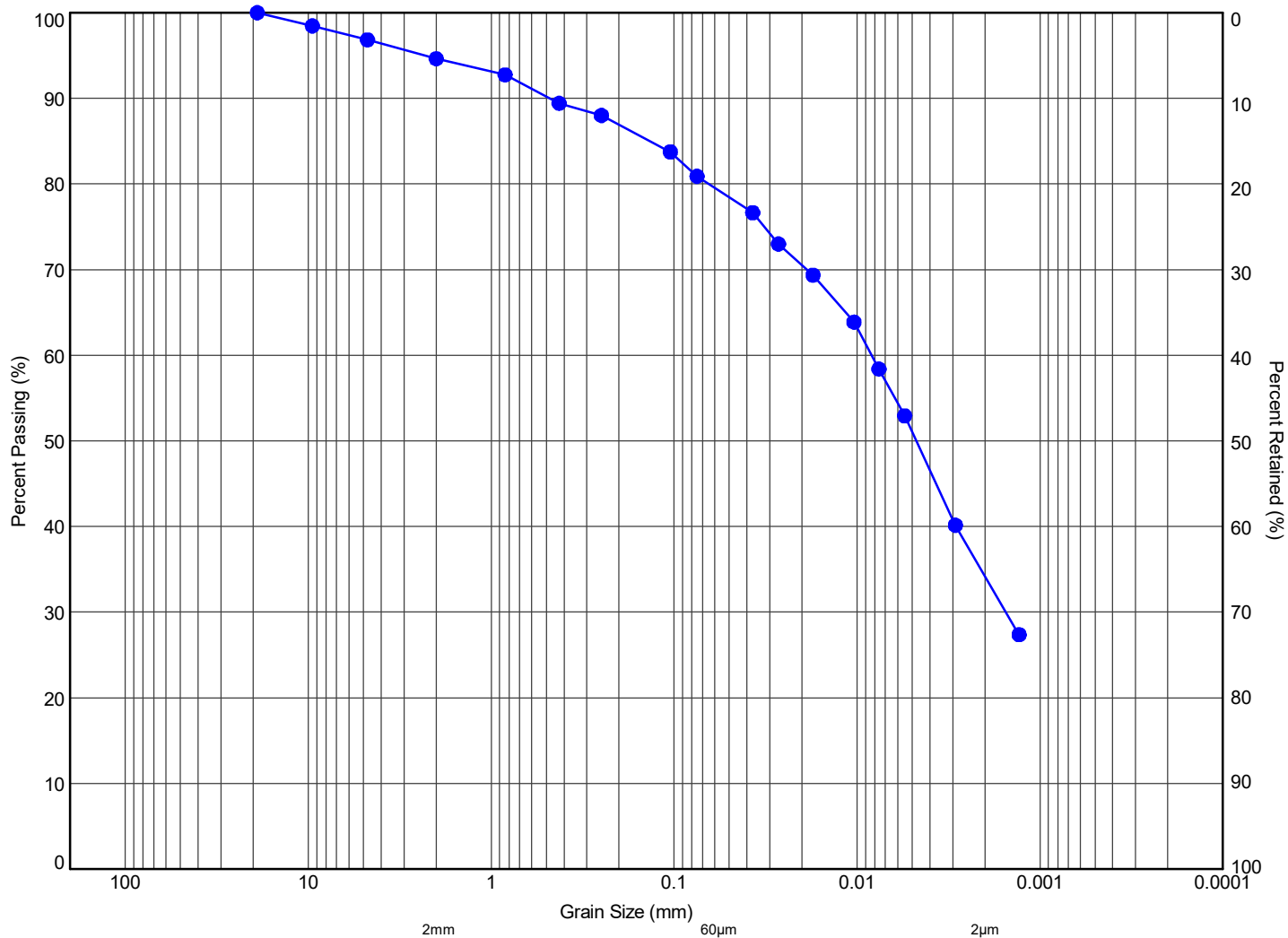


Title:

**GRAIN SIZE DISTRIBUTION
CLAYEY SILT, SOME SAND, TRACE GRAVEL**

File No.:

02405205.000



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)
● 15	SS9	9.4	253.1	5	16	45	34	



Title:

**GRAIN SIZE DISTRIBUTION
SILT AND CLAY, SOME SAND, TRACE GRAVEL**

File No.:

02405205.000

Appendix C

Engineered Fill Earthwork Specifications



eNGLOBE

PART 1 GENERAL

1.01 Description

Engineered Fill refers to earth fill (earthworks) designed and constructed with engineering inspection and testing, so as to be capable of supporting structure foundations and slabs without excessive settlement. Poured concrete foundation walls must be provided with nominal reinforcing steel to provide stiffening of the foundation walls and to protect against excessive crack formation within the foundation walls.

Preparation for Engineered Fill and Engineered Fill operations must only be conducted under full time inspection and testing by the Geotechnical Engineer, in order to ensure adequate compaction and fill quality.

The work for the construction of Engineered Fill, is shown on the Design Drawings prepared by the Design Civil Engineer and as described by these specifications. The work included in this section includes the following:

- a) Stripping of the existing topsoil, fill layer, and weathered/disturbed soil as needed from the ground surface below all areas to be covered with Engineered Fill,
- b) Excavation of Test Holes into the subgrade to investigate the suitability of subsurface conditions for support of the Engineered Fill and determine if any prior existing fill materials are present,
- c) Proof-rolling or visual inspection (as directed by the geotechnical engineer) of the subgrade below areas to be covered with Engineered Fill, to detect the presence and extent of unstable ground conditions,
- d) Excavation and removal of unstable subgrade materials or other approved stabilization measures, if required prior to the placement of Engineered Fill,
- e) Surveying of ground elevations prior to placing Engineered Fill,
- f) Supply, placement, and compaction of approved clean earth as specified herein, with full time inspection and testing,
- g) Surveying of ground elevations on completion of Engineered Fill placement,
- h) Providing and maintaining survey layout of areas to receive Engineered Fill, and monitoring of ground elevations throughout the construction of Engineered Fill.

1.02 The Project Parties

- A) The term Contractor shall refer to the individual or firm who will be carrying out the earthworks related to preparation and construction of Engineered Fill.
- B) The term Geotechnical Engineer shall refer to the individual or firm who will be carrying out the full time inspection and testing of the earthworks related to preparation and construction of Engineered Fill.
- C) The term Design Civil Engineer shall refer to the individual or firm who will be carrying out the Site Grading Design (pre-grading), the determination of Design Foundation Grades for the structures on the site, and the choice of lots and site areas to receive Engineered Fill.

PART 2 MATERIALS

2.01 Definitions

- A) Topsoil Layer is the surface layer of naturally organic soil typically found at the ground surface and with thickness on the order of 25 to 250 mm thick.
- B) Earth fill is soil material which has been placed by man-made effort and has not been deposited by nature over a long period of time.
- C) Weathered/disturbed soil is natural or native soil that has been disrupted by weathering processes such as frost damage.
- D) Subgrade soil is the “in situ” (in place) natural or native soil beneath any earth fill and/or weathered/disturbed soil and/or topsoil layer(s).
- E) Engineered Fill soils must consist of clean earth materials (not excessively wet), free of organics and topsoil, free of deleterious materials such as building rubble, wood, plant materials, placed in thin lifts not exceeding 150 mm in thickness. Cohesionless soils such as sand or gravel, are the easiest to handle and compact.
- F) All values stated in metric units shall be considered as accurate.

PART 3 ENGINEERED FILL DESIGN

3.01 Design Foundation Pressure

- A) Engineered Fill can be expected to experience post-construction settlement on the order of 1 percent of the depth of the Engineered Fill. The time period over which most of this settlement typically occurs, depends on the composition of the Engineered Fill as follows (after initial placement);
- a) Sand or gravel soil; several days,
 - b) Silt soil; several weeks,
 - c) Clay or clayey soil; several months.
- The placement of Engineered Fill might also result in post-construction settlement of the underlying natural soil.
- The timing of foundation construction must take into account the post-construction settlement of the Engineered Fill and the foundation soil.
- B) Unless otherwise stated, the Engineered Fill is to be placed over the entire lot or site area.
- C) The Engineered Fill is to extend up to 1 m above the highest level of required foundation support. Typically this can be within 1 m of the design final grades. Additional common fill can be placed over the Engineered Fill to provide protection against environmental factors such as wind, frost, precipitation, and the like.
- E) A geotechnical reaction at SLS of 150 kPa for 25 mm of settlement is typically recommended for the Engineered Fill, unless it consists of glaciolacustrine silt and clay in which case a lower design foundation pressure will need to be determined on a site specific basis. Foundations shall have minimum widths of 0.6 m for continuous strip footings, and minimum dimensions of 1 m for column footings.
- F) At the foundation level, sufficient Engineered Fill shall be constructed to ensure that it extends at least 1.0 m laterally beyond the edge of any foundations, and that it extends outward within an area defined by a 1 to 1 line downward from the edge of any Engineered Fill.
- G) Foundations placed on the Engineered Fill must be provided with nominal reinforcing steel for protection against excessive minor cracking. The reinforcing steel must consist of 2-15M bars continuous at the top of the foundation wall, and 2-15M bars continuous at the bottom of the foundation walls.
- H) At the time of foundation construction, foundation excavations must be reviewed by the Geotechnical Engineer to confirm suitable bearing capacity of the Engineered Fill. The Geotechnical Engineer must inspect the foundation subgrade immediately after excavation, and must inspect the foundation subgrade immediately prior to placement of concrete for footings. The Geotechnical Engineer must also inspect the placement of reinforcing steel in the foundation walls. Written approval must be obtained from the Geotechnical Engineer prior to,
- a) placement of footing concrete, and
 - b) placement of foundation wall concrete.

PART 4 CONSTRUCTION

4.01 Survey Layout

- A) The survey layout shall be carried out and maintained throughout the construction of Engineered Fill activities. A suitable layout stake shall be placed at the corners of the start and finish of every block or work area to receive Engineered Fill.
- B) At least two temporary survey elevation benchmarks shall be provided for every work area to receive Engineered Fill, to assist in monitoring the level of the Engineered Fill as it is constructed.
- C) The ground elevations of the subgrade approved for receiving Engineered Fill shall be surveyed and recorded on a regular grid pattern. Engineered Fill shall not be placed on any work area without the written approval of the Geotechnical Engineer.
- D) The ground elevations of the Engineered Fill on each work area shall be surveyed and recorded on a regular grid pattern at the end of each day during the placement of Engineered Fill.
- E) On completion of Engineered Fill construction, the final ground elevations shall be surveyed and recorded on a regular grid pattern.

4.02 Topsoil Stripping

- A) The Geotechnical Engineer must observe the stripping of topsoil from the areas proposed for Engineered Fill, from start to finish.
- B) Topsoil must be stripped from the entire building site area. The Geotechnical Engineer must photograph the work areas which have had the earth fill suitably stripped.

4.03 Test Holes Into Subgrade

- A) After the topsoil has been stripped, the exposed subgrade must be investigated for the presence of weak zones or deleterious material, which may be unsuitable for the support of Engineered Fill.
- B) Exploratory test holes must be dug using a small backhoe, on a suitable pattern to obtain a representative indication of the entire site area.
- C) The Geotechnical Engineer must observe the digging and backfilling of the test holes; must log the test hole stratigraphy; must obtain soil samples at maximum depth intervals of 0.3m; and must photograph each dug test hole.
- D) If the test holes discover any old buried fill or deleterious materials, it must be excavated and removed from the lot area down to undisturbed, stable native soil.
- E) All test holes must be properly backfilled and compacted in loose lifts of maximum 150 mm thickness to at least 98 percent Standard Proctor Maximum Dry Density (SPMDD), at the optimum water content plus or minus 2 percent. The Geotechnical Engineer must observe the backfilling and compaction of the test holes.

4.04 Subgrade Proof-rolling

- A) Prior to placing any Engineered Fill, the exposed subgrade must be proof-rolled with a static smooth-drum roller and the Geotechnical Engineer must observe the proof-rolling.
- B) Cohesive soil will be disrupted by proof-rolling. Competency must be determined by a geotechnical engineer by cutting and inspecting the soil.

- C) If unstable subgrade conditions are encountered, the unstable subgrade must be sub-excavated. If wet site conditions exist during filling, stabilization with granular materials may be required.

4.05 Engineered Fill Placement

- A) Engineered fill must not be placed without the approval of the Geotechnical Engineer. Prior to placing any Engineered Fill, the existing fill must be removed down to native soil subgrade, the subgrade must be investigated for old buried fill or deleterious material, the subgrade must be proof-rolled, and the subgrade elevations must be surveyed.
- B) Prior to the placement of Engineered Fill, the source or borrow area for the Engineered Fill must be evaluated for its suitability. Some of the existing site fill that is removed prior to placement of Engineered Fill may be sorted and reused as Engineered Fill, but must first be approved by the Geotechnical Engineer. Samples of the proposed fill material must be obtained by the Geotechnical Engineer and tested in the geotechnical laboratory for Standard Proctor Maximum Dry Density, prior to approval of the material for use as Engineered Fill. The Engineered Fill must be free of organics and other deleterious material (wood, building debris, rubble, cobbles, boulders, and the like).
- C) The Engineered Fill must be placed in maximum loose lift thicknesses of 150 mm. Each lift of Engineered Fill must be compacted with a heavy roller, to at least 98 percent Standard Proctor Maximum Dry Density (SPMDD), at the optimum water content plus or minus 2 percent.
- D) Field density tests must be taken by the Geotechnical Engineer, on each lift of Engineered Fill, on each lot area. Any Engineered Fill which is tested and found to not meet the specifications, shall be either removed or, reworked and retested.
- E) Engineered fill must not be placed during the period of the year when cold weather occurs, i.e., when there are freezing ambient temperatures during the daytime and overnight.

Appendix D

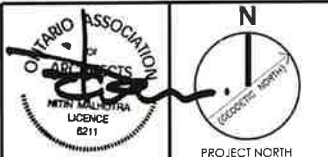
Project Design Drawings



eNGLOBE



n Architecture Inc
PRINCIPAL: NITIN MALHOTRA, ARCHITECT
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11 DEC. 2025

11th DECEMBER 2025
ISSUED FOR OPA APPLICATION #1
NOT FOR CONSTRUCTION

No.	Date	Version	Dwn.
1.	11 DEC. 2025	ISSUED FOR OPA APPLICATION #1	MG.

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PROJECT:

**"0" HUMBER
STATION RD
CALEDON, ON.**

DRAWING TITLE:

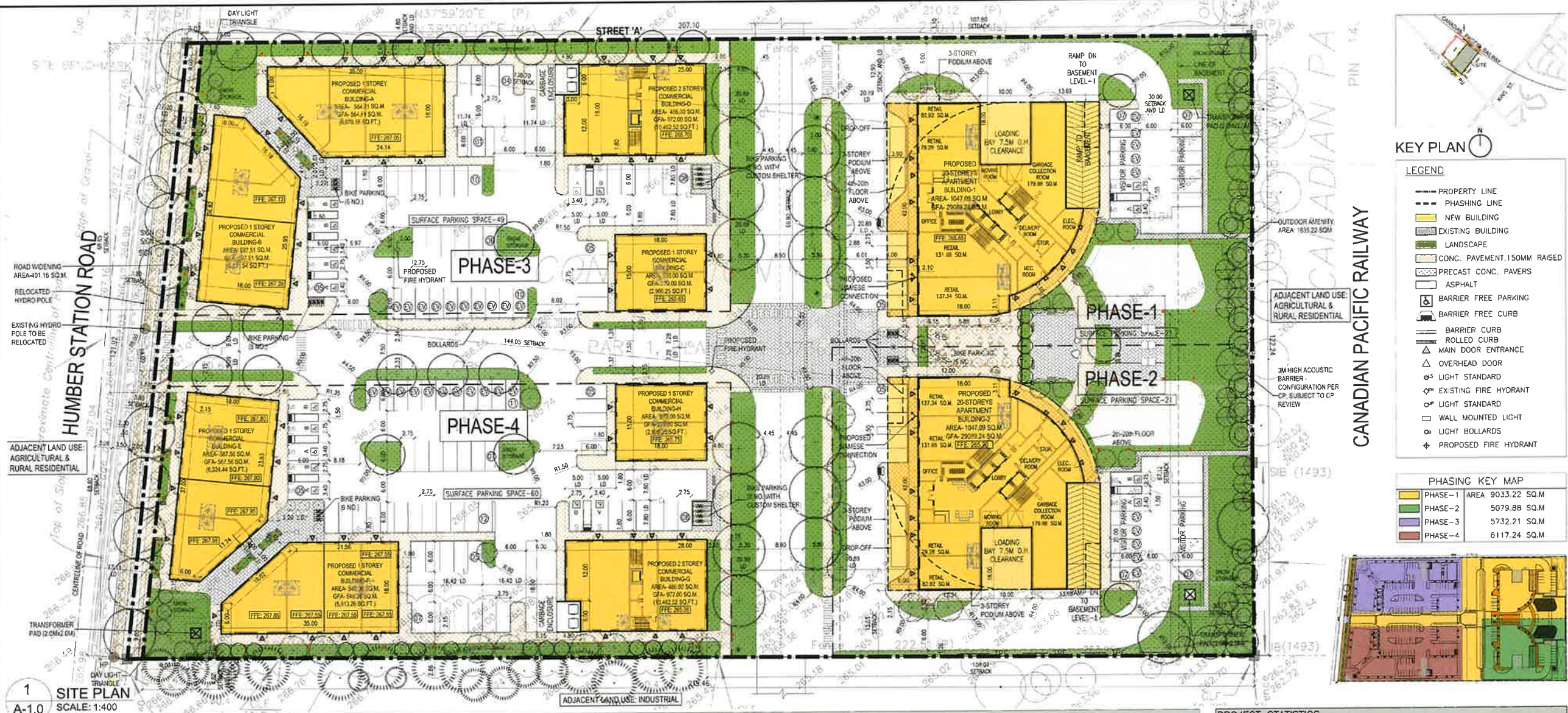
**SITE PLAN:
GROUND LEVEL**

DRAWN BY: MB DATE: 08 JAN. 2025

CHECKED BY: NM SCALE: AS NOTED

PROJECT NO.: DRAWING NO.:

24-66 A-1.0



1
A-1.0
SITE PLAN
SCALE: 1:400

PHASE-1 (APARTMENT BUILDING-1)					
PARKING CALCULATION		PROPOSED	SETBACKS		
APARTMENT - RETAIL(431.52 SQM)	231(0.7 SPACES PER UNIT)	220 (INC. B.F+EV PARKING)	NORTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	12.90 M.
ACCESSIBLE PARKING		10	SOUTH SIDE (INTERIOR SIDE LOT LINE)	3 M.	67.12 M.
RETAIL(431.52 SQM)	22 (1 PER 20 SQ.M. OF GFA)	05	EAST SIDE (REAR LOT LINE)	3 M.	30.00 M.
VISITOR PARKING (0.10 SPACES PER UNIT)	33	14(INC. B.F + EV PARKING)	WEST SIDE (FRONT LOT LINE)	NIL	138.70 M.
TOTAL PARKING	264	239			
BIKE PARKING		78			
PHASE-2 (APARTMENT BUILDING-2)					
PARKING CALCULATION		PROPOSED	SETBACKS		
APARTMENT - RETAIL(431.52 SQM)	231(0.7 SPACES PER UNIT)	220(INC. B.F PARKING)	NORTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	66.90 M.
ACCESSIBLE PARKING		10	SOUTH SIDE (INTERIOR SIDE LOT LINE)	3 M.	13.03 M.
RETAIL(431.52 SQM)	22(1 PER 20 SQ.M. OF GFA)	05	EAST SIDE (REAR LOT LINE)	3 M.	30.17 M.
VISITOR PARKING (0.10 SPACES PER UNIT)	33	14(INC. B.F PARKING)	WEST SIDE (FRONT LOT LINE)	NIL	144.05 M.
TOTAL PARKING	264	239			
BIKE PARKING		78			
PHASE-3 (COMMERCIAL BUILDINGS-A,B,C,D)					
PARKING CALCULATION		PROPOSED	SETBACKS		
COMMERCIAL-2404.32 SQM.	120 (1 PER 20 SQ.M. OF GFA)	49 (INC. B.F + EV PARKING)	NORTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	4.80 M.
ACCESSIBLE PARKING		07	SOUTH SIDE (INTERIOR SIDE LOT LINE)	3 M.	68.39 M.
TOTAL PARKING	120	49	EAST SIDE (REAR LOT LINE)	3 M.	107.80 M.
BIKE PARKING		22	WEST SIDE (FRONT LOT LINE)	NIL	3.80 M.
PHASE-4 (COMMERCIAL BUILDINGS-E,F,G,H)					
PARKING CALCULATION		PROPOSED	SETBACKS		
COMMERCIAL- 2378.92 SQM.	119 (1 PER 20 SQ.M. OF GFA)	60 (INC. B.F + EV PARKING)	NORTH SIDE (SIDE LOT LINE)	3 M.	67.96 M.
ACCESSIBLE PARKING		07	SOUTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	4.82 M.
TOTAL PARKING	119	60	EAST SIDE (INTERIOR REAR LOT LINE)	3 M.	108.87 M.
BIKE PARKING		14	WEST SIDE (FRONT LOT LINE)	NIL	3.80 M.
BUILDING AREA			PROPOSED		
PHASE 1 LOT AREA			9033.42 SQ.M.		
RETAIL BUILDING AREA			431.24 SQ.M.		
APARTMENT BUILDING #1 AREA			N/A		
PHASE 1 TOTAL COVERAGE			1047.09 SQ.M.(4.03%)		
PHASE 1 TOTAL GFA			29089.24 SQ.M.		
BUILDING AREA			PROPOSED		
PHASE 2 LOT AREA			5079.88 SQ.M.		
RETAIL BUILDING AREA			431.24 SQ.M.		
APARTMENT BUILDING #2 AREA			N/A		
PHASE 2 TOTAL COVERAGE			1047.09 SQ.M.(4.03%)		
PHASE 2 TOTAL GFA			29089.24 SQ.M.		
BUILDING AREA			PROPOSED		
PHASE 3 LOT AREA			5714.38 SQ.M.		
COMMERCIAL BUILDING -A			564.81 SQ.M.		
COMMERCIAL BUILDING -B			597.51 SQ.M.		
COMMERCIAL BUILDING -C			270.00 SQ.M.		
COMMERCIAL BUILDING -D			466.00 SQ.M.		
PHASE 3 TOTAL COVERAGE			1918.32 SQ.M.(7.39%)		
PHASE 3 TOTAL GFA			2404.32 SQ.M.		
BUILDING AREA			PROPOSED		
PHASE 4 LOT AREA			6099.70 SQ.M.		
COMMERCIAL BUILDING -E			587.56 SQ.M.		
COMMERCIAL BUILDING -F			549.36 SQ.M.		
COMMERCIAL BUILDING -G			486.00 SQ.M.		
COMMERCIAL BUILDING -H			270.00 SQ.M.		
PHASE 4 TOTAL COVERAGE			1892.92 SQ.M.(7.29%)		
PHASE 4 TOTAL GFA			2378.92 SQ.M.		

PROJECT STATISTICS		
ADDRESS: "0" HUMBER STATION RD CALEDON		
PROPOSED ZONING: RMD		
	REQUIRED	PROPOSED
TOTAL LOT AREA	NIL	26328.55 SQ.M.(6.50Acre)
ROAD WIDENING AREA (DEDUCTION)		365.79 SQ.M.
PROPOSED LOT AREA		25962.76 SQ.M.(6.41Acre)
LOT FRONTAGE	NIL	121.92 M.
TOTAL PAVED AREA		15435.9 SQ.M.(59.46%)
TOTAL LANDSCAPED AREA	15% OF LOT	4621.44 SQ.M.(17.80%)
BUILDING HEIGHT (MAX.)	20 STOREYS	20 STOREYS
TOTAL NO. OF RESIDENTIAL UNITS		660
BASEMENT LEVELS		2
TOTAL PARKING SPACES		587
EV READY PARKING SPACES (RESIDENTIAL PHASE 1 & 2)		94
EV READY PARKING SPACES (COMMERCIAL PHASE 3 & 4)		21
TOTAL LOADING AREAS		4
PLANTING STRIP	3M ALONG A STREET	
AMENITY AREA (BUILDING 1 & 2) (GYM+PARTY HALL+CO-SHARING OFFICE)	1320 SQ.M. (2M ² PER UNIT)	1243.14 SQ.M.
OUTDOOR AMENITY AREA	2592.74 SQ.M. (10% OF SITE AREA)	1835.22 SQ.M. (6.97%)
NUMBER OF UNITS FOR EACH APARTMENT BUILDING IN PHASE 1 AND 2: 330 UNITS (145 (1BR UNIT), 179 (2BR UNITS), 6 (3BR UNITS))		
PARKING SIZES: SURFACE PARKING SIZE (2.6M X 5.8M) UNDERGROUND PARKING SIZE (2.75M X 6.0M) ACCESSIBLE PARKING SIZE (TYPE-A-3.4M X 6.0M) (TYPE-B-2.75M X 6.0M)		
MUNICIPAL ADDRESS & LEGAL DESCRIPTION		
PART OF LOT 11 CONCESSION 5 (FORMERLY TOWNSHIP OF ALBION, COUNTY OF PEE) TOWN OF CALEDON REGIONAL MUNICIPALITY OF PEE		
SURVEY INFORMATION TAKEN FROM: 2 HOLLAND DRIVE, UNIT 5, BOLTON, ONTARIO L7E 1E1 PHONE 905.951.6000/ FAX 905.857.4811 /EMAIL-info@mouragroup.co		
OWNER: SATWANT DEOL, 188 La Rocca Avenue, Woodbridge, Ontario, L4H 2M3		



PRINCIPAL: NITIN MALHOTRA, ARCHITECT
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www.narchitecture.com



11 DEC. 202

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PROJECT:

**"0" HUMBER
STATION RD
CALEDON, ON.**

DRAWING TITLE:

**BASEMENT
LEVEL(-1)**

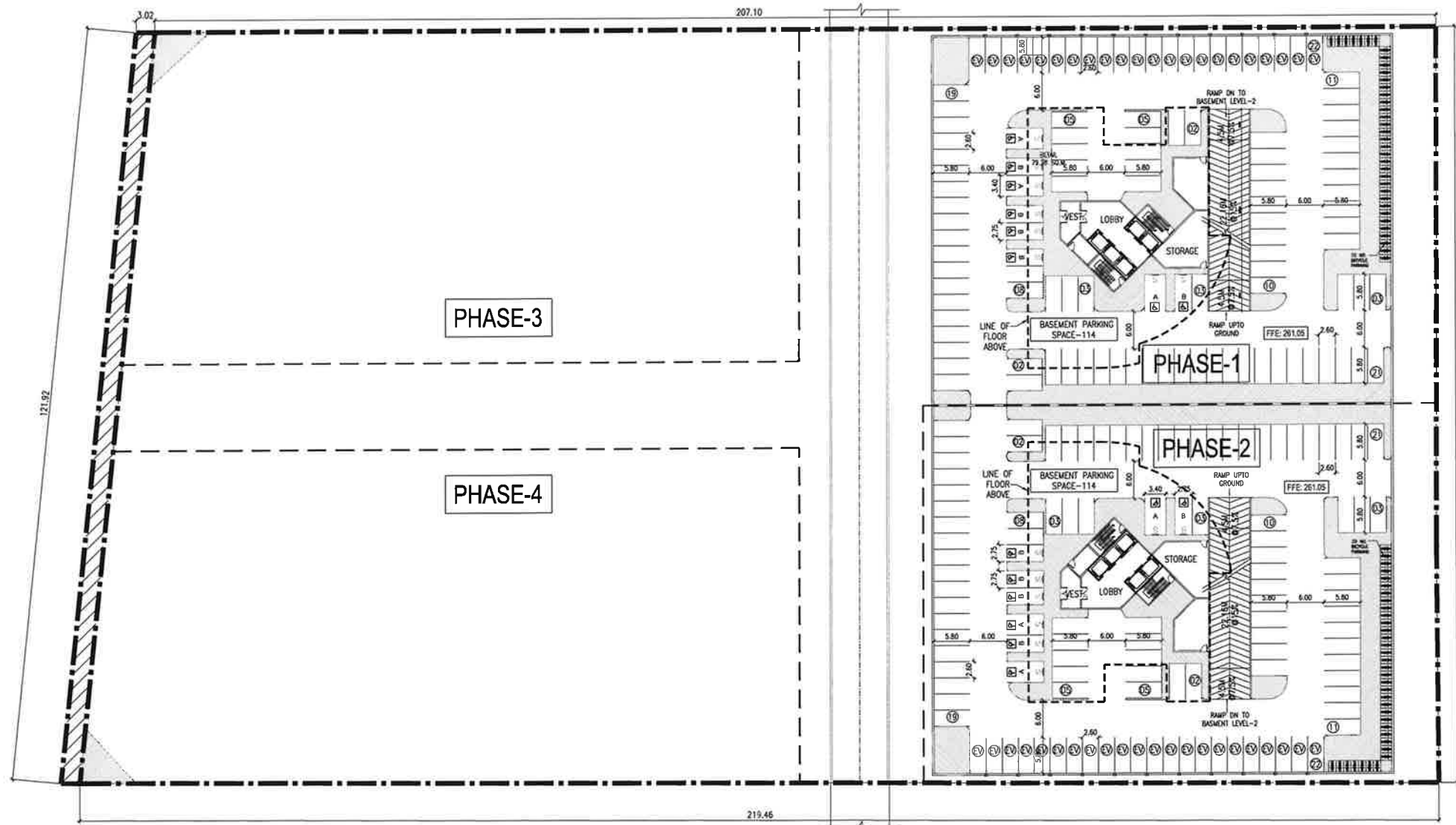
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CHECKED BY: NM SCALE: AS NOTED

PROJECT NO.:	DRAWING NO.:
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24-66

A-1.5



1 BASEMENT PLAN LEVEL (-1)
A-1.5 SCALE: 1:400



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PROJECT:
**"0" HUMBER
STATION RD
CALEDON, ON.**

DRAWING TITLE:
**BASEMENT
LEVEL(-2)**

DRAWN BY: MB	DATE: 08 JAN, 2025
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO: 24-66	DRAWING NO: A-1.6

