1056 & 1060 Brant Street, Burlington, ON

2735842 Ontario Inc., 2735842 Ontario Inc., 2060188 Ontario Inc., and 2059977 Ontario Inc.

Type of Document:
Geotechnical Investigation Report

Project Name:
Proposed Mid-Rise Residential Development
1056 & 1060 Brant Street
Burlington, Ontario

Project Number:
GTR-22029875-A0

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Date Submitted:
March 18, 2025

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1. Introduction and Background

This report presents the findings of the geotechnical investigation carried out for proposed mid-rise residential development at 1056 & 1060 Brant Street in Burlington, Ontario (hereafter referred to as the "Site"). Based on the conceptual site plan, it is understood that the existing low-rise buildings will be demolished to make way for an 11-storey (plus a mechanical floor) residential condominium structure with one (1) level of underground parking. The underground parking garage will essentially occupy the entire site area. The investigation was authorized by Mr. Nolan Moss on behalf of 2735842 Ontario Inc., 2735842 Ontario Inc., 2060188 Ontario Inc., and 2059977 Ontario Inc.

The purpose of this investigation was to determine the subsoil and groundwater conditions at the Site by advancing five (5) boreholes and based on an assessment of the factual subsurface data, provide an engineering report containing general geotechnical recommendations pertinent to the proposed construction. Hydrogeological and environmental investigations were also carried out by EXP at the subject site, with the results presented under separate cover.

The comments and recommendations given in this report assume that the above-described design concept will proceed into construction. If changes are made either in the design phase or during construction, this office must be retained to review these modifications. The result of this review may be a modification of our recommendations or the requirement of additional field or laboratory work to check whether the changes are acceptable from a geotechnical viewpoint.

2. Site Description & Geological Setting

The Site is situated at 1056 & 1060 Brant Street and is currently occupied by two 2-storey residential buildings with associated asphalt parking lots. The Site is bound by Brant Street to the east, and low-rise residential/commercial properties on the remaining sides. The Site is rectangular in shape and the topography is relatively flat lying.

Based on the Ontario Geological Survey (OGS) Map 2509, Quaternary Geology, Hamilton Area, and previous investigations undertaken in the vicinity of the Site, the overburden consists of lacustrine and outwash sand and overlies Halton Till (clay and silt). The underlying bedrock consists of red shale of the Queenston Formation as indicated on the OGS Map 2336, Bedrock Geology, Hamilton Area.

3. Field Investigation

EXP advanced a total of five (5) boreholes at the Site; numbered BH-1 to BH-5, with the approximate locations shown on Drawing No. 1 in Appendix A. The boreholes were advanced in accessible to depths ranging from approximately 3.7 to 10.8 m below existing grade.

The fieldwork for this investigation was carried out on March 2, 3, 6 and 7, 2023. Drilling and sampling operations were completed by a combination of auger, split-spoon, and rock coring techniques using truck mounted drilling equipment owned and operated by a specialist drilling subcontractor. Prior to the commencement of the drilling, the public and private-owned underground services were located to minimize the risk of contacting any such services during the investigation.

Soil samples were obtained using a 51 mm outside diameter split-spoon sampler driven in conjunction with Standard Penetration Test procedure (ASTM D1586) at the depths noted graphically on the borehole logs. The retained soil

and bedrock samples were logged in the field and then carefully packaged and transported to our Hamilton laboratory for detailed visual, textural, and olfactory classification. The Standard Penetration Test (SPT) N values and pocket penetrometer measurements were recorded and used to provide an assessment of the compactness condition or consistency of the in-situ soils.

Groundwater levels within the boreholes were measured prior to backfilling and the boreholes were backfilled upon completion of drilling in accordance with O.Reg. 903. Groundwater monitoring wells were installed in three (3) of the boreholes. The boreholes were located in accessible areas on site by EXP field personnel. The geodetic ground surface elevations at the borehole locations were surveyed by EXP personnel using Trimble GPS survey equipment.

4. Subsurface Conditions

Details of the subsurface conditions encountered during the drilling program are summarized on the borehole logs in Appendix A. The logs include textural descriptions of the subsoil and groundwater conditions and indicate the soil boundaries inferred from non-continuous sampling and observations during drilling. These boundaries reflect approximate transition zones for the purpose of geotechnical design and should not be interpreted as exact planes of geological change. The "Notes on Sample Description" preceding the borehole logs form an integral part of and should be read in conjunction with this report.

4.1 Soil Stratigraphy

Briefly, the stratigraphy at the site generally comprises surficial topsoil and/or pavement structure overlying fill material which extended to depths ranging from 1.5 to 4.6 m below grade. The underlying native soils consisted of silty clay till and sandy silt till overlying shale bedrock at depths of 6.1 to 7.1 m. The stratigraphy is further detailed in the subsections below.

4.1.1 Pavement Structure

A surficial asphaltic concrete or granular pavement structure was encountered at all locations, except Borehole BH-3. The asphalt pavement structure consisted of 15 to 25 mm of asphaltic concrete overlying 125 to 180 mm of granular base. The gravel pavement structure encountered at Borehole BH-2 consisted of 150 mm of granular fill.

4.1.2 Topsoil

Surficial topsoil was encountered in Borehole BH-3 and was noted to have a thickness approximately 125 mm. It should be noted that the topsoil thickness may further vary across the site.

4.1.3 Fill

Fill material was encountered below the pavement structure in all boreholes extending to approximately 1.5 to 4.6 m below the existing grades. The fill generally comprised silty clay with some sand and trace gravel, was brown in colour and in moist to wet condition. Moisture contents in the fill were measured between 11 and 20%. Trace rootlets, dark brown to black organic staining, and/or trace concrete fragments were typically encountered in the fill.

4.1.4 Silty Clay Till

Silty clay till was encountered in all boreholes except Borehole BH-2, below the fill and extended to the termination depth of 3.7 m at Borehole BH-5 or to sandy silt till/shale at depths of 3.8 to 6.9 m. The silty clay till included trace sand, gravel, and shale fragments; was generally brown or reddish brown in colour; and in a moist state with moisture contents ranging from 8 to 16%. SPT N values ranged from 32 to greater than 100 per 305 mm of spoon penetration. Based on the undrained shear strengths greater than 225 kPa as determined by pocket penetrometer measurements, the stratum is classified as hard in consistency. One (1) grain size analysis and Atterberg Limits test was conducted on the stratum, with the results included in Appendix B and summarized in the table below. The silty clay material is classified as a low plasticity clay (CL).

Table 4-1: Summary of Grain Size Analysis (Silty Clay Till)

Borehole and Sample No.	Sample Depth (m)	Soil Fractions (%)				Liquid Limit	Plasticity Index
		Clay	Silt	Sand	Gravel		
BH-5 SS3	1.5-2.3	32	43	18	7	31	17

4.1.5 Sandy Silt Till

A sandy silt till deposit was encountered below the fill in Borehole BH-2 and below the silty clay till in boreholes BH-3 and BH-4. The sandy silt till deposit contained some gravel and trace to some clay or was clayey. The sandy silt till was brown or reddish brown in colour. Moisture contents recorded the deposit ranged from 8 to 18%, indicating moist conditions. Based on SPT N values of 45 to greater than 100 blows per 305 mm of penetration, the stratum is classified as dense to very dense. One (1) grain size analysis was conducted on a selected sample of the stratum, with the results included in Appendix B and summarized in the table below.

Table 4-2: Summary of Grain Size Analysis (Sandy Silt Till)

Borehole and Sample No.	Sample Depth (m)	Soil Fractions (%)			
		Clay	Silt	Sand	Gravel
BH-3 SS6	4.6-5.0	5	55	25	15

4.1.6 Shale

Red shale bedrock of the Queenston Formation was contacted in all boreholes, except BH-5, at depths ranging from 6.1 to 7.1 m below grade. The bedrock was proven by coring at Borehole BH-1 and inferred from drilling observations at the remaining locations. It should be noted that the contact elevations should not be interpreted as exact planes of bedrock since the auger will frequently penetrate some distance into the weathered rock before noticeable resistance is encountered. Further, the distinction between highly weathered shale and the overlying stratum, particularly if the latter contains abundant shale fragments, is not always clear and consequently, some of the soil resting on the surface of the bedrock might be very weak and highly weathered shale.

In general, the Queenston Shale bedrock is highly weathered in the upper portion (becoming more sound with depth), and it exhibits characteristics more commonly encountered with soil than with rock (slake durability index less than 80%, higher moisture content, etc.). Hard limestone interbeds are also possible within the shale.

Table 4-3: Depths and Elevations of Bedrock Surface

Borehole No.	Depth of Bedrock Surface (m)	Elevation of Bedrock Surface (m)	Rock Quality Designation (RQD)	Unconfined Compressive Strength (MPa)
BH-1	6.9	94.9	Poor to Good (28 to 85%)	62.7 to 77.6
BH-2	6.3	95.1	---	---
BH-3	7.1	93.5	---	---
BH-4	6.1	95.7	---	---

4.2 Groundwater Conditions

Groundwater levels were observed in the open boreholes upon completion of drilling and subsequently, in monitoring wells installed in Boreholes BH-1, BH-3, and BH-4. At Borehole BH-4, a set of deep and shallow wells (designated as BH-4-D and BH-4-S) were installed. All boreholes were dry upon completion. Subsequent groundwater levels were recorded as summarized in the table below.

Table 4-4: Groundwater Level Measurements

Borehole No.	Groundwater Depth Below Grade/Elevation (m)			
	Upon Completion	March 13, 2023	March 21, 2023	March 24, 2023
BH-1	dry	2.3 / 99.5	2.3 / 99.5	2.4 / 99.4
BH-3	dry	1.9 / 99.3	2.0 / 99.2	2.0 / 99.2
BH-4 (shallow)	dry	2.3 / 99.5	2.5 / 99.3	2.5 / 99.3
BH-4 (deep)	dry	2.4 / 99.4	2.6 / 99.2	2.5 / 99.3

Seasonal fluctuations in groundwater levels should be anticipated. Reference should be made to the EXP hydrogeological report for the project for additional groundwater information.

5. Discussion and Recommendations

It is understood that an 8-storey (plus a mechanical floor) residential condominium structure with one (1) level of underground parking is planned. The underground parking garage structure will occupy essentially the entire site area. Geotechnical recommendations for the proposed construction are provided in the subsections below.

5.1 Foundation Considerations

One (1) level of underground parking is envisioned which corresponds to an assumed founding level in the order of 4 m below grade. Based on the subsurface conditions encountered, the proposed building may be supported on conventional footings founded on the very dense or hard till.

Conventional strip and spread footing foundations constructed on the very dense or hard till can be designed using a geotechnical resistance of 500 kPa at Serviceability Limit State (SLS) and 750 kPa at Ultimate Limit State (ULS) at or below the depths and geodetic elevations provided in the table below. The geotechnical resistances provided are subject to footing base review by EXP during construction.

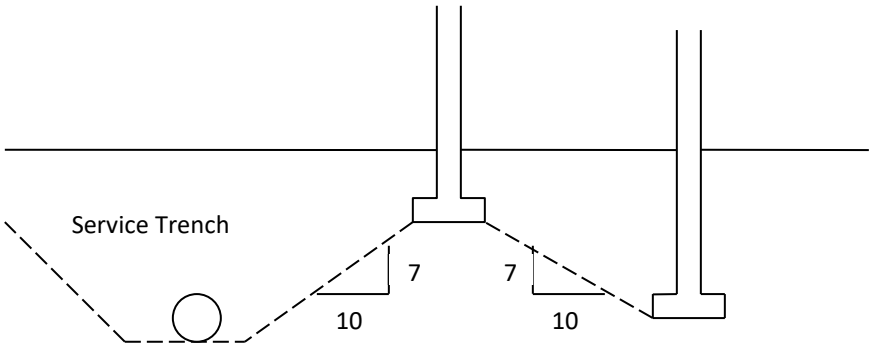
Table 5-1: Available Geotechnical Resistance

Borehole No.	Available Geotechnical Resistance (kPa)	Founding Soils	Recommended Minimum Founding Depth / Elevation (m)
BH-1	500 SLS / 750 ULS	Silty Clay Till	2.5 / 99.3
BH-2	500 SLS / 750 ULS	Sandy Silt Till	5.5 / 95.9
BH-3	500 SLS / 750 ULS	Silty Clay Till, Sandy Silt Till	3.5 / 97.7
BH-4	500 SLS / 750 ULS	Silty Clay Till, Sandy Silt Till	3.5 / 98.3

Prior to placement of foundation concrete, all existing fill, organics, and any deleterious material encountered must be removed down to the competent native soils. The exposed founding surface is to be reviewed by EXP prior to concrete placement.

5.2 General Foundation Recommendations

Conventional foundations in soil at different elevations should be located such that higher footings are set below a line drawn up at 10:7, horizontal to vertical from the near edge of the lower footing. This requirement is not applicable for foundations in sound bedrock. This concept should also be applied to excavations for new foundations in relation to existing foundations or underground services.



FOOTINGS NEAR SERVICE TRENCHES OR AT DIFFERENT ELEVATIONS

All foundations exposed to freezing conditions must be provided with a minimum of 1.2 m of earth cover or equivalent insulation for frost protection, depending on the final grade requirements. Provided that the ground is not disturbed due to groundwater, precipitation, traffic, etc. and the aforementioned geotechnical resistance values are not exceeded, then total and differential settlements should be within the normally tolerated limits of 25 mm and 19 mm, respectively.

The recommended geotechnical resistances have been calculated by EXP from the borehole information for the design stage only. The investigation and comments are necessarily on-going as new information of underground conditions becomes available. For example, it should be appreciated that modifications to bearing levels may be required if unforeseen subsoil conditions are revealed after the excavation is exposed to full view or if final design decisions differ from those assumed in this report. For this reason, this office should be retained to review final foundation drawings and to provide field inspections during the construction stage.

5.3 Excavations

Excavations across the site are expected to extend to depths of about 4 m below existing grade and will encounter the fill and native overburden soils. Excavations of the soil at this site can be carried out with heavy hydraulic excavators.

The silty clay till is a non-sorted sediment and cobbles and boulders may be encountered in the stratum. Consequently, provisions should be made in the contract documents to cover any delays caused by shale inclusions, boulders, obstructions, and the very dense soils, etc.

All excavations must be completed in accordance with the most recent regulations of the Ontario Occupation Health and Safety Act (OHSA). The fill can be generally classified as Type 3 Soil above the groundwater level and the hard silty clay till, dense to very dense sandy silt till as Type 2 Soil. In accordance with the OHSA regulations if the excavation contains more than one type of soil, the soil shall be classified as the type with the highest number. The OHSA requires that excavation slopes be cut at predetermined inclinations, based on the soil types encountered. The need to excavate flatter side slopes if excessively wet or soft/loose materials, or concentrated seepage zones are encountered, should not be overlooked. Water (i.e. surface water runoff) should not be permitted to enter and/or pond within the construction area.

5.4 Temporary Shoring

The shoring method chosen by the structural engineer and/or contractor will depend on the settlement tolerance of the surrounding structures and infrastructure. Where settlement sensitive structures or services are located within a distance from the excavation equal or less than the overburden excavation depth, the use of a rigid retaining structure will be required.

In general, temporary shoring can be laterally restrained with tieback anchors, rakers, struts, or corner braces. The shoring system should be designed in accordance with the guidelines provided in the Canadian Foundation Engineering Manual (CFEM).

Lateral support for the shoring system can be obtained by using rakers with a geotechnical resistance on the very dense till of 500 kPa or by using tiebacks. Tieback anchors should be installed in the soil/rock behind the excavation to a sufficient distance to allow mobilizing the desired lateral load resistance. The recommended configuration of the no-load zone is shown in the latest edition of the Canadian Foundation Engineering Manual (CFEM). The minimum horizontal spacing between anchors should be 1.2 m to ensure that group effects between adjacent ground anchors are minimized and that anchor intersection (due to drilling deviations) is avoided. Group effects will reduce the load-carrying capacity of individual ground anchors. The anchors may be installed in the silty clay till utilizing an equivalent bond stress of 50 kPa, or in the shale bedrock with a bond stress of 150 kPa. Higher bond values may be considered if the soil anchors are constructed using re-groutable techniques. The actual value should be based on the results of pullout tests conducted in the early phases of construction.

The recommended design parameters should be confirmed by load testing a number of anchors to 200%design load in accordance with the current edition of the CFEM. As a minimum for this site, at least two 200%anchor load tests for each stratum should be carried out to verify the capacity of the anchors. The design for the production anchors should then be modified based on the test results, where necessary. All remaining anchors must be installed using similar procedures and proof tested to 1.5 times the design load.

EXP should be retained to review the shoring design, to monitor installation and testing of the system, and to monitor the shoring movements during all phases of the excavation. Inclinometers should be installed at locations where buildings or services lie close to the excavation. Careful monitoring is needed in any shored excavation, especially when buildings are located in close proximity. This is necessary to anticipate when and if additional support is needed.

5.5 Lateral Earth Pressure

The lateral earth pressure acting on the foundation walls may be calculated using the following equation:

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

where
- p = lateral earth pressure intensity at depth h (kPa)
- K = earth pressure coefficient (assume 0.40)
- γ = unit weight of retained soil (assume 22.0 kN/m^3 for granular backfill)
- h = depth to point of interest (m)
- q = surcharge load acting adjacent to the wall at the ground surface (kPa)

The above expression assumes that the perimeter drainage system prevents the build-up of hydrostatic pressure behind the wall and free-draining granular material will be used for backfilling adjacent to the wall. Otherwise, if the building is constructed as a waterproof tank without drainage, lateral hydrostatic and uplift pressures below the slab will need to be accounted for using the expression below:

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

where
- p = lateral earth pressure and hydrostatic pressure acting at depth h (kPa)
- K = active earth pressure coefficient (assume 0.40)
- γ_w = unit weight of water (9.8 kN/m^3)
- γ = unit weight of soil surrounding the structure (assume 22.0 kN/m^3)
- γ' = effective unit weight of retained soil (assume 11.2 kN/m^3)
- h = depth to point of interest (m)
- q = equivalent value of surcharge on the ground surface (kPa)

5.6 Groundwater Control

The boreholes remained dry upon completion and groundwater levels in the monitoring wells ranged from 2.0 to 2.5 m below grade on March 24, 2023. Given the fine-grained nature of the encountered soils, conventional construction sump pumps and ditching can be used to control groundwater infiltration. Seepage should be anticipated from the coarse layers within the till and from perched water within the fill. Reference should be made to the hydrogeological study for the site for additional groundwater comments and groundwater volumes.

Dewatering requirements will be governed by the time of year the construction is performed. It is the responsibility of the contractor to propose a suitable dewatering system base on the groundwater levels at the time of construction.

5.7 Building Floor Slab-on-Grade and Permanent Drainage

It is understood that the proposed building will include a 1-storey underground parking garage. The basement floor slab-on-grade can be supported on the dense to very dense or hard till. It is recommended that the exposed subgrade be examined by a geotechnical engineer prior to constructing the floor slab-on-grade. Any soft or loose areas encountered during the review should be sub-excavated and backfilled with concrete or replaced with approved fill placed in lifts not exceeding 200 mm and compacted to 100%Standard Proctor Maximum Dry Density (SPMDD) within 2% of the optimum moisture content.

The floor slab should be cast on a moisture barrier consisting of 19 mm clear stone with a thickness of at least 200 mm. The clear stone layer will minimize the capillary rise of moisture from the subsoil to the floor slab (moisture barrier). Adequate saw cuts should be provided in the floor slab as directed by the structural engineer to help control cracking. Unless the building is constructed as a “tank” and waterproofed, the installation of a perimeter drainage is required and a separate underfloor drainage system installed at 3 m intervals one-way is recommended. The exterior grade should be sloped to ensure positive drainage of surface water away from the structure and reduce groundwater infiltration adjacent to the foundations. The building should be waterproofed below the high groundwater level as indicated in the hydrogeological report for the site.

5.8 Backfill

Backfill used to satisfy under slab requirements and service trenches, etc. should be compactible fill, i.e. inorganic soil with its moisture content close to its optimum moisture content as determined in the Standard Proctor Test. Fill placed below concrete slab areas should be compacted to 100% SPMDD in lifts not exceeding 200 mm.

To minimize potential problems, any trench backfilling operations should follow closely after excavation so that only minimal length of trench slope is exposed. This will minimize wetting of the subgrade material. Should construction extend to the winter season, particular attention should be given to ensure that frozen material is not used as backfill.

The majority of excavated material will likely consist of silty clay till or sandy silt till. In general, the excavated material may be re-used for backfilling, subject to the removal of any obviously unsuitable material and moisture content adjustment as required. The shale bedrock should not be reused as backfill. In general, the overburden soils are not free draining and therefore should not be used where this characteristic is required, or in confined areas. Imported granular material conforming to OPSS Granular A or Granular B Type I or II would be suitable for these purposes.

All backfilling and compaction operations must be closely examined by a qualified geotechnical consultant to ensure uniform compaction to specification requirements in all areas that are not readily accessible to compaction equipment.

5.9 Earthquake Considerations

The recommendations for the geotechnical aspects to determine the earthquake loading are presented in the subsections below.

5.9.1 Subsoil Conditions

The subsoil and groundwater information at this site have been examined in relation to Section 4.1.8.4 of the OBC 2024. Foundations are anticipated to be founded either on the hard or very dense till at about 4 m below grade. The reported N values for the soil below the anticipated founding level ranged from 45 to greater than 100 per 305 mm penetration.

There have been no shear wave velocity measurements carried out at this site and therefore, N values and EXP's knowledge of the soil and bedrock conditions in the area have been used to determine the site classification.

5.9.2 Site Classification

Based on the known soil conditions and anticipated founding conditions, the recommended Site Class for this site is "C" as per Table 4.1.8.4.A, Site Classification for Seismic Site Response, OBC 2024. The acceleration and velocity-based site coefficients, F_a and F_v, should be determined from Tables 4.1.8.4.B. and 4.1.8.4.C. respectively of the OBC for the above recommended Site Class.

5.10 Soil Corrosivity

Analyses of pH, and sulphates concentrations were performed on selected soil samples. The complete test results are included in the Certificate of Analysis in Appendix C and summarized in the table below.

Table 5-2: Results of pH, and Sulphate Concentrations

Borehole and Sample No.	pH	Sulphate (µg/g)
BH-2 SS7	7.71	187
BH-3 SS4	6.79	229

According to the Canadian Standards Association (CSA A23.1, Table 3) requirements for concrete subjected to sulphate attack, the use of sulphate resistance concrete is recommended when soluble sulphate concentrations in soils are greater than 1,000 µg/g (0.10%). The highest concentration of soluble sulphate ions in the soil samples tested was 229 µg/g (0.0229%), indicating a low degree of sulphate exposure.

Given the test results, normal General Use (GU) hydraulic cement can be used for the below grade concrete structures. It is noted that the results from different areas may potentially indicate higher values of soluble sulphate concentrations.

5.11 Pavement Considerations

It is understood that new paved areas will be constructed at the site and anticipated to include medium-duty and heavy-duty parking/driveway areas. The recommended pavement structures are provided in the table below and are based on an estimate of the subgrade soil properties determined from visual examination and textural classification of the soil samples and traffic requirements. Consequently, the recommended pavement structures should be considered for preliminary design purposes only.

Table 5-3: Recommended Pavement Structure Thicknesses

Pavement Layer	Compaction Requirements	Medium-Duty Parking	Heavy-Duty Parking	Concrete Pavements/Loading Docks
Asphaltic Concrete (OPSS 1150)	Min 92.0% Maximum Relative Density (MRD)	40 mm HL3 50 mm HL8	40 mm HL3 80 mm HL8	---
Concrete (32 MPa Portland Cement, Exposure Class C-2)	---	---	---	225 mm
Granular A Crusher Run Limestone (OPSS 1010)	100% SPMDD	150 mm	150 mm	300 mm
Granular B Type II (OPSS 1010)	100% SPMDD	250 mm	350 mm	---

The fill materials in pavement areas may remain in place, subject to being proof-rolled and replaced as directed by a geotechnical representative, but pavements constructed over non-engineered fill may require more frequent maintenance and may experience a reduced service life.

The granular base and sub-base must be placed in maximum 200 mm lifts and compacted to 100% of the Standard Proctor Maximum Dry Density (SPMDD) at a moisture content within 2% of the optimum moisture content. The subgrade should be compacted to at least 95% SPMDD, or 98% SPMDD for at least the upper 600 mm. The recommended pavement structures outlined assume adequate provision for subgrade drainage, either in the form of ditches or subdrains installed along both sides of the driveways, and around catch basins.

The foregoing design assumes construction is carried out during dry periods and the subgrade is properly shaped, crowned, and then proof-rolled in the full-time presence of a representative of this office. Soft or spongy subgrade areas should be sub-excavated and properly replaced with suitable approved backfill compacted to at least 98% SPMDD. If construction is carried out during wet weather, and heaving or rolling of the subgrade is experienced, additional thickness of sub-base course material may be required.

The long-term performance of the pavement structure is highly dependent upon the subgrade support conditions. Stringent construction control procedures should be maintained to ensure uniform subgrade moisture and density conditions are achieved. In addition, the need for adequate drainage cannot be over emphasized. The finished pavement surface and underlying subgrade should be free of depressions and should be sloped to provide effective surface drainage toward catch basins. Surface water should not be allowed to pond adjacent to the outside edges of pavement areas. Subdrains should be installed to intercept excess subsurface moisture and prevent subgrade softening.

Additional comments on the construction of the paved areas are as follows:

- Assuming that satisfactory crossfalls have been provided for subdrainage, subdrains extending from and between catch basins may be sufficient.
- To minimize problems of differential movement between the pavement and catch basins/manholes due to frost action, the backfill around the structures should consist of free draining granular fill.

- The most severe loading conditions on pavement areas and the subgrade may occur during construction. Consequently, special provisions such as half loads during paving, etc. may be required, especially if construction is carried out during unfavourable weather.

- To minimize settlement and cracking of the pavement structures, it is recommended that paving of the roadways following completion of the underground service installation be delayed as long as is practically possible to allow for the trench backfill to settle over time. Further, placement of the surface course should be delayed for as long as is practically possible.

6. General Comments

The information presented in this report is based on a limited investigation designed to provide information to support an overall assessment of the current geotechnical conditions of the subject property. The conclusions presented in this report reflect site conditions existing at the time of the investigation. *

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

The comments given in this report are intended only for the guidance of design engineers. The number of boreholes required to determine the localized underground conditions between boreholes affecting construction costs, techniques, sequencing, equipment, scheduling, etc., would be much greater than has been carried out for design purposes. Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual borehole results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

More specific information, with respect to the conditions between samples, or the lateral and vertical extent of materials, may become apparent during excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent; should this occur, EXP Services Inc. should be contacted to assess the situation and additional testing and reporting may be required. EXP Services Inc. has qualified personnel to provide assistance in regard to future geotechnical and environmental issues related to this property.

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

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Geotechnical Engineer-in-Training

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Appendix A

Drawings & Borehole Logs



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LEGEND:

- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE BOREHOLE/ MONITORING WELL LOCATION

TITLE AND LOCATION:

BOREHOLE LOCATION PLAN
GEOTECHNICAL INVESTIGATION
PROPOSED MID-RISE RESIDENTIAL DEVELOPMENT
1056 & 1060 BRANT STREET, BURLINGTON, ON

JOB NO.: GTR-22029875-A0	DRAWN BY: CR
SCALE: 1:400	CHECKED BY: JG
DATE: MARCH 2025	DWG NO.: 1

Notes on Sample Descriptions

1. All sample descriptions included in this report follow the International Society for Soil Mechanics and Foundation Engineering (ISSMFE), as outlined in the Canadian Foundation Engineering Manual. Note, however, that behavioral properties (i.e. plasticity, permeability) take precedence over particle gradation when classifying soil. Please note that, with the exception of those samples where a grain size analysis has been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

UNIFIED SOIL CLASSIFICATION

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



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

ISSMFE SOIL CLASSIFICATION

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

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

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (75 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

Notes On Soil Descriptions

4. The following table gives a description of the soil based on particle sizes. With the exception of those samples where grain size analyses have been performed, all samples are classified visually. The accuracy of visual examination is not sufficient to differentiate between this classification system or exact grain size.

Soil Classification		Terminology	Proportion
Clay and Silt	<0.060 mm	"trace" (e.g. Trace sand)	1% to 10%
Sand	0.060 to 2.0 mm	"some" (e.g. Some sand)	10% to 20%
Gravel	2.0 to 75 mm	adjective (e.g. sandy, silty)	20% to 35%
Cobbles	75 to 200 mm	"and" (e.g. and sand)	35% to 50%
Boulders	>200 mm		

The compactness of Cohesionless soils and the consistency of the cohesive soils are defined by the following:

Cohesionless Soil		Cohesive Soil		
Compactness	**Standard Penetration Resistance "N" Blows / 0.3 m**	**Consistency**	**Undrained Shear Strength (kPa)**	**Standard Penetration Resistance "N" Blows / 0.3 m**
Very Loose	0 to 4	Very soft	<12	<2
Loose	4 to 10	Soft	12 to 25	2 to 4
Compact	10 to 30	Firm	25 to 50	4 to 8
Dense	30 to 50	Stiff	50 to 100	8 to 15
Very Dense	Over 50	Very Stiff	100 to 200	15 to 30
		Hard	>200	>30

5. **ROCK CORING**

Where rock drilling was carried out, the term RQD (Rock Quality Designation) is used. The RQD is an indirect measure of the number of fractures and soundless of the rock mass. It is obtained from the rock cores by summing the length of the core covered, counting only those pieces of sound core that are 100 mm or more length. The RQD value is expressed as a percentage and is the ratio of the summed core lengths to the total length of core run. The classification based on the RQD value is given below.

RQD Classification	RQD (%)
Very Poor Quality	<25
Poor Quality	25 to 50
Fair Quality	50 to 75
Good Quality	75 to 90
Excellent Quality	90 to 100

$$\text{Recovery Designation \% Recovery} = \frac{\text{Length of Core Per Run}}{\text{Total Length of Run}} \times 100$$

Log of Borehole BH-1

Project No. GTR-22029875-A0 Drawing No. 3

Project: Proposed Mid-Rise Residential Development Sheet No. 1 of 1

Location: 1056 & 1060 Brant Street, Burlington, Ontario

Date Drilled: March 7, 2023

Drill Type: D-120 Truck Mount. Hollow Stem

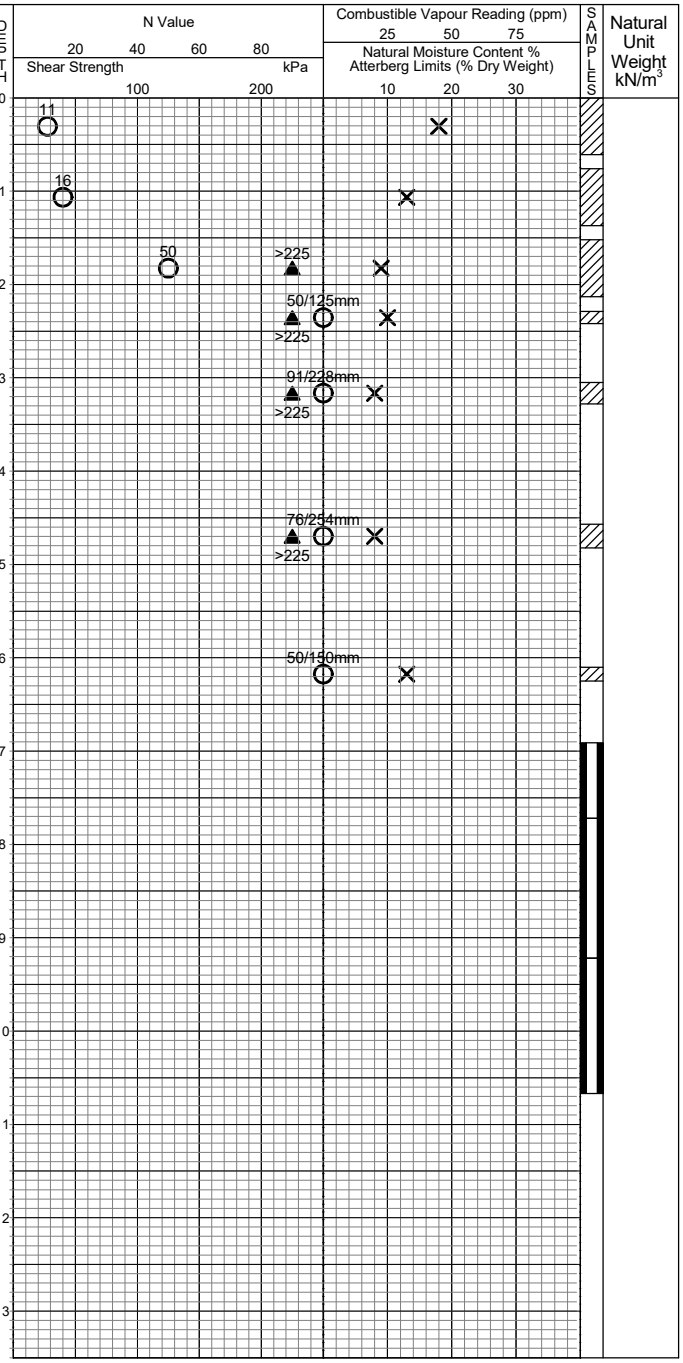
Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
			101.81
		ASPHALT: (~15 mm thick)	~101.8
		GRANULAR: (~125 mm thick)	~101.7
		FILL: silty clay, some sand, trace gravel, brown, moist, dark brown organic staining in upper 600 mm	
			~100.2
		SILTY CLAY TILL: trace sand and gravel, brown, moist, hard, trace shale inclusions	~99.4
		some gravel below 3.1 m	
		50 mm thick sandy silt layer at 4.6 m	
		100 mm thick wet gravel layer at 6.1 m	
			~94.9
		SHALE BEDROCK: highly weathered to slightly weathered, red, damp RUN 1 (6.90 - 7.72 m): Recovery 86%, RQD 28% (Poor) RUN 2 (7.72 - 9.22 m): Recovery 96%, RQD 72% (Fair) RUN 3 (9.22 - 10.67 m): Recovery 100%, RQD 85% (Good)	
			~91.1
		Borehole terminated at 10.7 m depth below existing grade in shale bedrock.	

NOTES:
1. This drawing is to be read with the subject report and project number as presented above.
2. Interpretation assistance by EXP is required before use by others.



LAGWGLJFHAM-EXP BH LOGS-22029875.GPJ NEW.GDT 5/5/23

EXP Services Inc.
Hamilton, Ontario
Telephone: 905.573.4000
Facsimile: 905.573.9693

Time	Water Level (m)	Depth to Cave (m)
on completion	dry	open
March 24, 2023	2.4	--

Log of Borehole BH-2

Project No. GTR-22029875-A0 | Drawing No. 4

Project: Proposed Mid-Rise Residential Development | Sheet No. 1 of 1

Location: 1056 & 1060 Brant Street, Burlington, Ontario

Date Drilled: March 6, 2023

Drill Type: D-120 Truck Mount. Hollow Stem

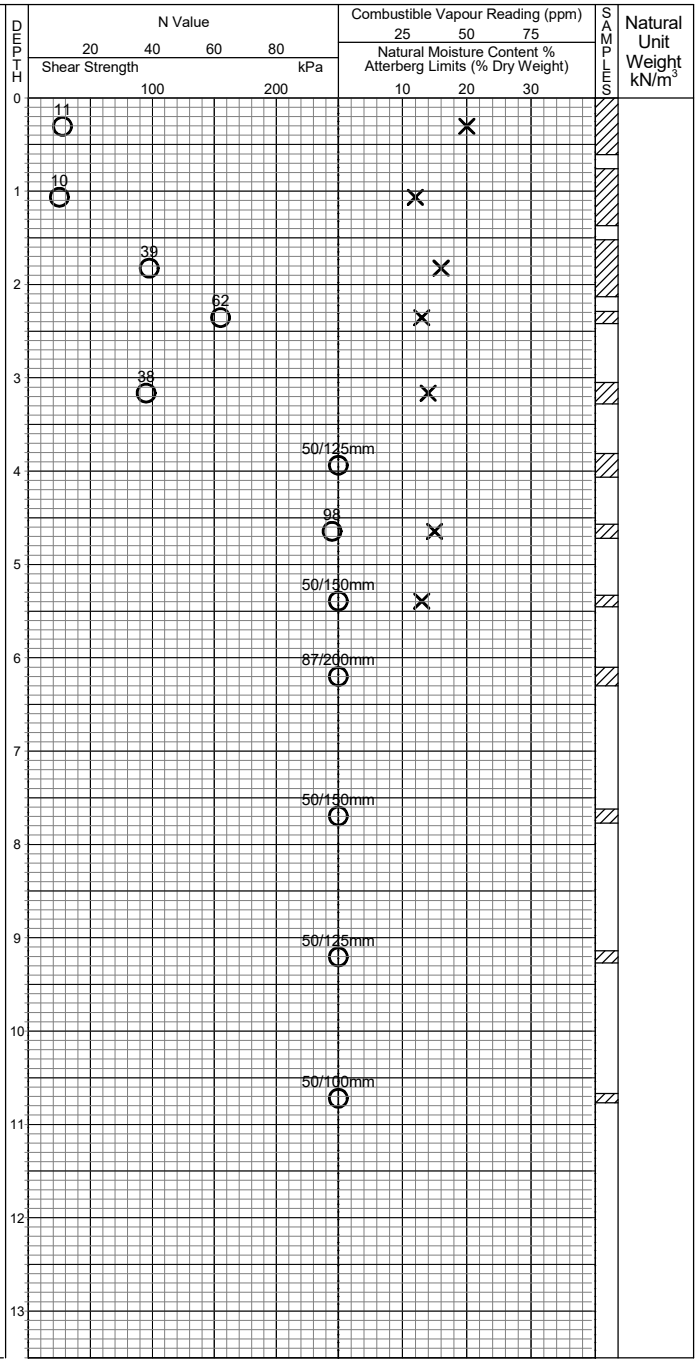
Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
			101.37
		GRANULAR: (~150 mm thick)	~101.2
		FILL: silty clay, some sand, trace gravel, brown, moist, trace organics, trace concrete	
		wet below 4.6 m	
			~96.8
		SANDY SILT TILL: some gravel, trace to some clay, some gravel, brown, moist, very dense	
		clayey below 5.3 m	
			~95.1
		SHALE BEDROCK: highly to slightly weathered, some silty clay till layers, reddish brown	
			~90.6
		Borehole terminated at 10.8 m depth below existing grade due to spoon refusal in shale bedrock.	

NOTES:
1. This drawing is to be read with the subject report and project number as presented above.
2. Interpretation assistance by EXP is required before use by others.



LAGWGLJFHAM-EXP BH LOGS-22029875.GPJ NEW.GDT 5/12/23

EXP Services Inc.
Hamilton, Ontario
Telephone: 905.573.4000
Facsimile: 905.573.9693

Time	Water Level (m)	Depth to Cave (m)
on completion	dry	open

Log of Borehole BH-3

Project No. GTR-22029875-A0 Drawing No. 5

Project: Proposed Mid-Rise Residential Development Sheet No. 1 of 1

Location: 1056 & 1060 Brant Street, Burlington, Ontario

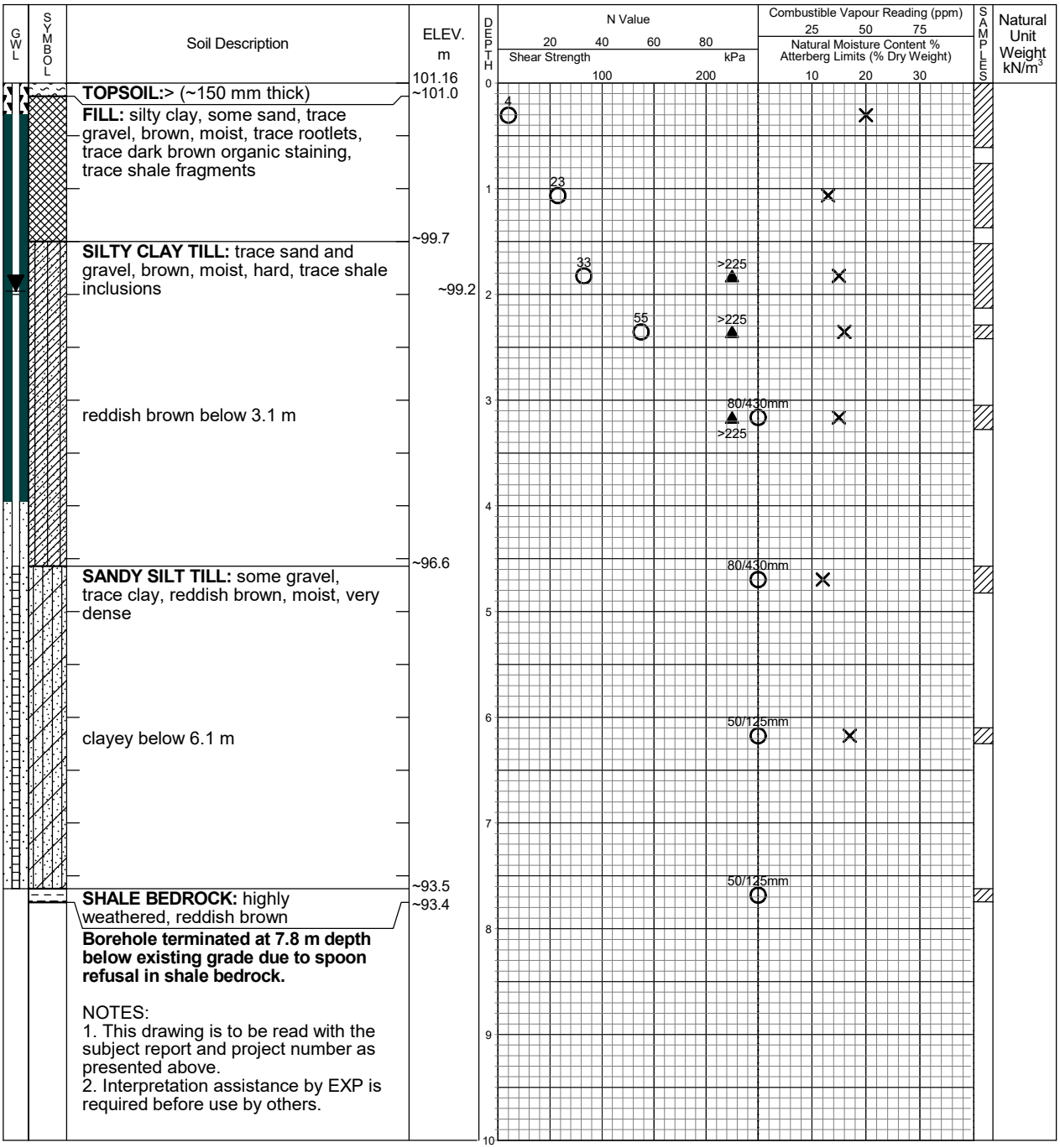
Date Drilled: March 2, 2023

Drill Type: D-120 Truck Mount. Hollow Stem

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



NOTES:
1. This drawing is to be read with the subject report and project number as presented above.
2. Interpretation assistance by EXP is required before use by others.

LAGWGLJFHAM-EXP BH LOGS-22029875.GPJ NEW.GDT 5/5/23

EXP Services Inc.
Hamilton, Ontario
Telephone: 905.573.4000
Facsimile: 905.573.9693

Time	Water Level (m)	Depth to Cave (m)
on completion	dry	open
March 24, 2023	2.0	--

Log of Borehole BH-4

Project No. GTR-22029875-A0 Drawing No. 6

Project: Proposed Mid-Rise Residential Development Sheet No. 1 of 1

Location: 1056 & 1060 Brant Street, Burlington, Ontario

Date Drilled: March 3, 2023

Drill Type: D-120 Truck Mount. Hollow Stem

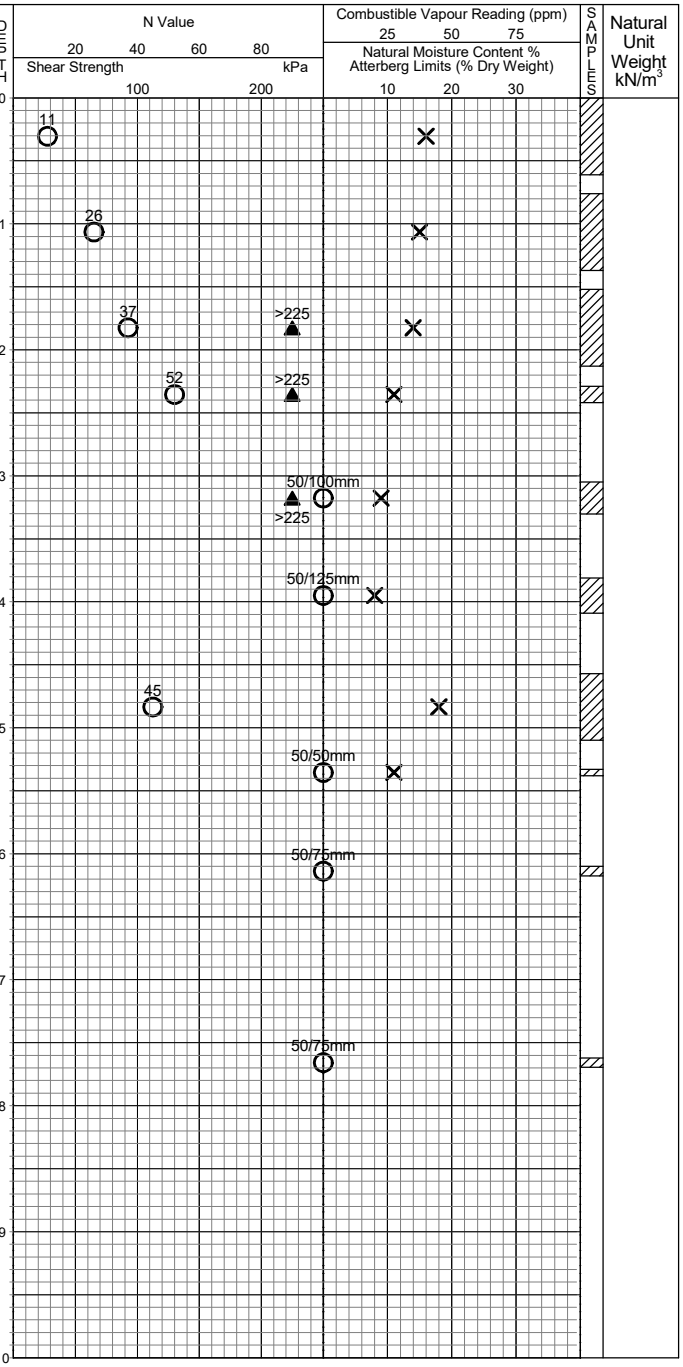
Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
			101.80
		ASPHALT: (~20 mm thick)	~101.8
		GRANULAR: (~180 mm thick)	~101.6
		FILL: silty clay, trace to some sand, trace gravel, brown, moist, trace black organic staining	
			~100.3
		SILTY CLAY TILL: trace sand and gravel, brown, moist, hard, trace shale inclusions	
▽			~99.3
		SANDY SILT TILL: some gravel, trace clay, reddish brown, moist, very dense	~98.0
		clayey below 4.6 m	
		trace shale fragments below 5.3	
			~95.7
		SHALE BEDROCK: highly weathered, reddish brown	
			~94.1
		Borehole terminated at 7.7 m depth below existing grade due to spoon refusal in shale bedrock.	

NOTES:
1. This drawing is to be read with the subject report and project number as presented above.
2. Interpretation assistance by EXP is required before use by others.



LAGWGLJFHAM-EXP BH LOGS-22029875.GPJ NEW.GDT 5/5/23

EXP Services Inc.
Hamilton, Ontario
Telephone: 905.573.4000
Facsimile: 905.573.9693

Time	Water Level (m)	Depth to Cave (m)
on completion	dry	open
March 24, 2023	2.5	--

Log of Borehole BH-5

Project No. GTR-22029875-A0 Drawing No. 7

Project: Proposed Mid-Rise Residential Development Sheet No. 1 of 1

Location: 1056 & 1060 Brant Street, Burlington, Ontario

Date Drilled: March 7, 2023

Drill Type: D-120 Truck Mount. Hollow Stem

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
			101.88	0
		ASPHALT: (~25 mm thick)	~101.9	
		GRANULAR: (~125 mm thick)	~101.7	
		FILL: silty clay, some sand, trace gravel, brown, moist, trace black organic stainings		1
			~100.4	
		SILTY CLAY TILL: trace sand, trace gravel, brown, moist, hard		2
			~98.2	3
		Borehole terminated at 3.7 m depth below existing grade.		4
		NOTES: 1. This drawing is to be read with the subject report and project number as presented above. 2. Interpretation assistance by EXP is required before use by others.		5
				6

N Value (20 40 60 80) — Shear Strength (100 200 kPa)

Combustible Vapour Reading (ppm) (25 50 75) — Natural Moisture Content % Atterberg Limits (% Dry Weight) (10 20 30)

SAMPLES

Natural Unit Weight kN/m³

14 11 32 >225 72 >225 48 >225

LAGWGLJFHAM-EXP BH LOGS-22029875.GPJ NEW.GDT 5/5/23

EXP Services Inc.
Hamilton, Ontario
Telephone: 905.573.4000
Facsimile: 905.573.9693

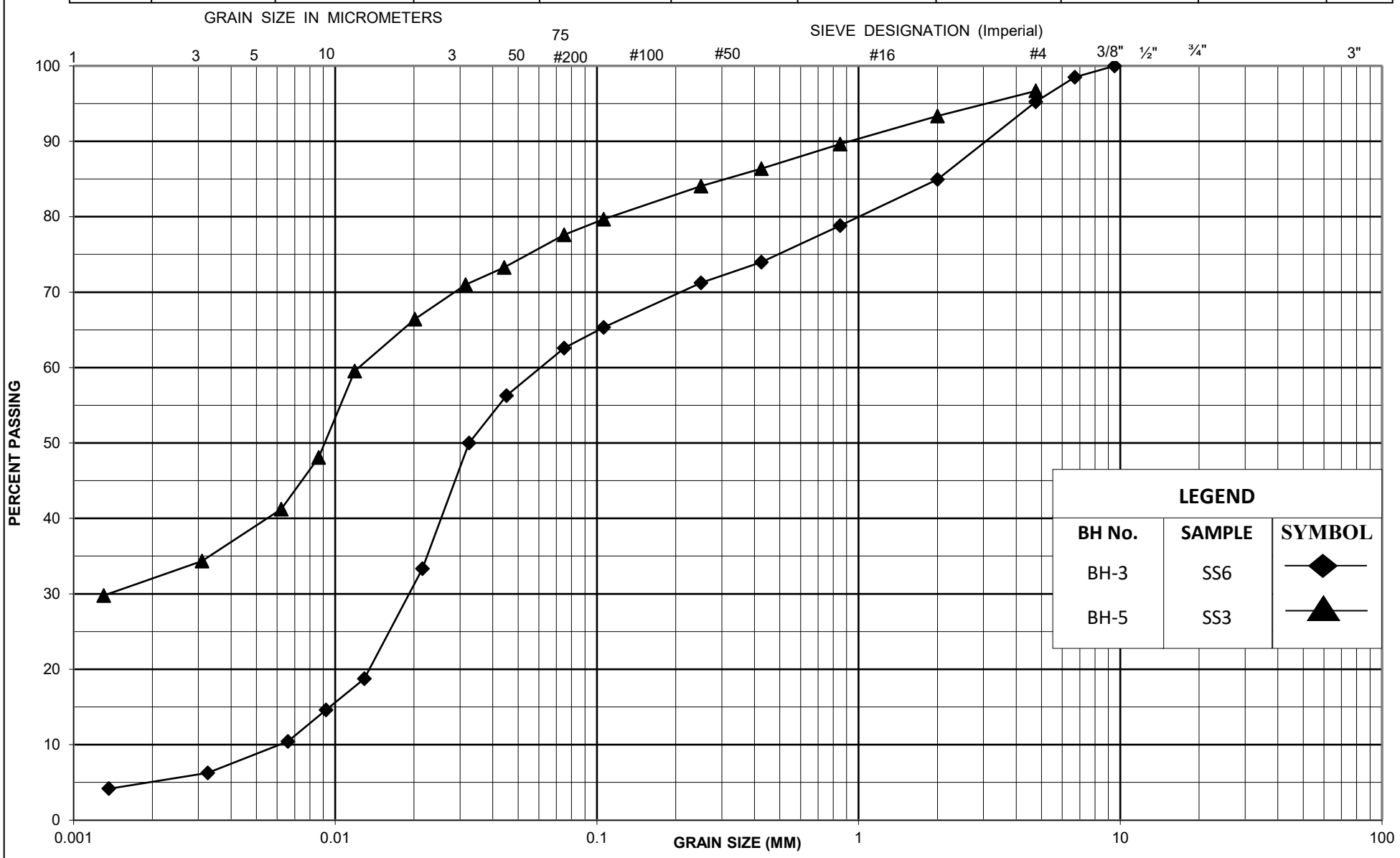
Time	Water Level (m)	Depth to Cave (m)
on completion	dry	open

Appendix B

Laboratory Test Results

ISSMFE SOIL CLASSIFICATION SYSTEM

CLAY	SILT			SAND			GRAVEL			Cobbles
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	



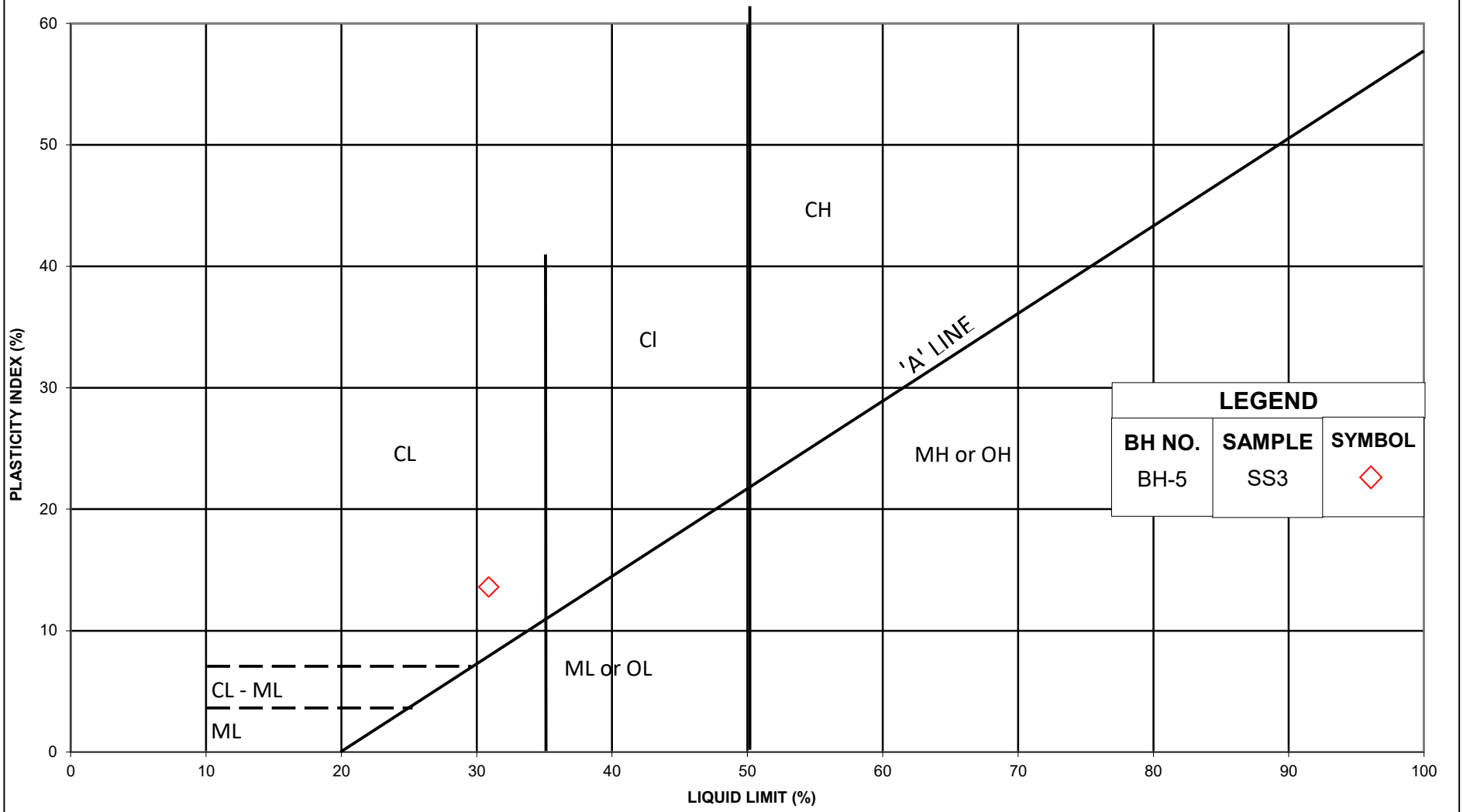
GRAIN SIZE DISTRIBUTION

DRAWING NO.: B1

PROJECT NO.: GTR-22029875-A0

DATE: APRIL 2023

PROPOSED MID-RISE RESIDENTIAL DEVELOPMENT
1056 & 1060 Brant Street, Burlington, ON



exp.	PLASTICITY CHART ***SILTY CLAY (CI)***	DRAWING NO.: B2 PROJECT NO.: GTR-22029875-A0 DATE: APRIL 2023

Unconfined Compressive Strength Results

Sample No.	Sample Depth Below Grade (meters)	Diameter, D (mm)	Length of Core (mm)	Area (mm^2)	Mass of Core (g)	Unit Weight kg/m^3	Correction Factor	Break Load (kN)	Compressive Strength (MPa)
UCS #1	BH 1 Run 2 at 26'3"– 26'6"	60	69	2826	475.8	1440	0.91	194.60	62.7
UCS #2	BH 1 Run 3 at 30'10" – 31'3"	60	112	2826	833.2	2632	0.99	221.43	77.6
UCS #3	BH 1 Run 3 at 34'5" – 34'9"	60	90	2826	692.2	2722	0.96	223.93	76.1

*Test procedure in general accordance with A23.2-14C: Method for Compressive Strength Testing of Drilled Cores

Appendix C

Rock Core Photographs



Borehole BH-1: Run 1 (6.90 to 7.72 m) and Run 2 (7.72 to 9.22 m)



Borehole BH-1: Run 3 (9.22 to 10.67 m)

Appendix D

Certificate of Analysis

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: EXP SERVICES INC
1266 SOUTH SERVICE ROAD, SUITE C1-1
STONEY CREEK , ON L8E 5R9
(905) 573-4000
ATTENTION TO: Jeffrey Golder
PROJECT: Geo Investigation- Brant Street
AGAT WORK ORDER: 23T012542
SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer
DATE REPORTED: Apr 13, 2023
PAGES (INCLUDING COVER): 6
VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.
- For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 23T012542

PROJECT: Geo Investigation- Brant Street

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Jeffrey Golder

SAMPLING SITE:1056-1060 Brant Street, Burlington, ON

SAMPLED BY:KP

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2023-04-06 **DATE REPORTED: 2023-04-13**

		SAMPLE DESCRIPTION:		BH2 SS7	BH-3 SS4
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2023-03-06	2023-03-02
Parameter	Unit	G / S	RDL	4903407	4903408
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.71	6.79

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4903407-4903408 pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Results relate only to the items tested. Results apply to samples as received.

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 23T012542

PROJECT: Geo Investigation- Brant Street

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Jeffrey Golder

SAMPLING SITE:1056-1060 Brant Street, Burlington, ON

SAMPLED BY:KP

Sulphate (Soil)

DATE RECEIVED: 2023-04-06 **DATE REPORTED: 2023-04-13**

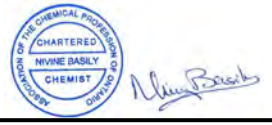
		SAMPLE DESCRIPTION:		BH2 SS7	BH-3 SS4
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2023-03-06	2023-03-02
Parameter	Unit	G / S	RDL	4903407	4903408
Sulphate (2:1)	µg/g		2	187	229

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4903407-4903408 Sulphate was determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Results relate only to the items tested. Results apply to samples as received.

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 23T012542

PROJECT: Geo Investigation- Brant Street

ATTENTION TO: Jeffrey Golder

SAMPLING SITE:1056-1060 Brant Street, Burlington, ON

SAMPLED BY:KP

Soil Analysis

RPT Date: Apr 13, 2023			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - ORPs (Soil)															
pH, 2:1 CaCl2 Extraction	4903884		6.84	7.01	2.5%	NA	100%	80%	120%						
Comments: NA signifies Not Applicable. pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.															
O. Reg. 153(511) - ORPs (Soil)															
pH, 2:1 CaCl2 Extraction	4903408	4903408	6.79	7.06	3.9%	NA	100%	80%	120%						
Comments: NA signifies Not Applicable. pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.															
Sulphate (Soil)															
Sulphate (2:1)	4903903		44	44	0.0%	< 2	101%	70%	130%	99%	80%	120%	97%	70%	130%

Certified By:

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Results relate only to the items tested. Results apply to samples as received.

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 23T012542

PROJECT: Geo Investigation- Brant Street

ATTENTION TO: Jeffrey Golder

SAMPLING SITE:1056-1060 Brant Street, Burlington, ON

SAMPLED BY:KP

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
pH, 2:1 CaCl2 Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE
Sulphate (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH

Results relate only to the items tested. Results apply to samples as received.

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: EXP Services Inc.
Contact:
Address: 1266 South Service Road, Unit C1-1
Stoney Creek, ON L8E 5R9
Phone: 905.525.6069 Fax:
Reports to be sent to:
1. Email: jeffrey.golder@exp.com
2. Email: shailesh.bhattarai@exp.com

Project Information:

Project: Geo Investigation- Brant Street
Site Location: 1056-1060 Brant Street, Burlington, ON
Sampled By: KP
AGAT Quote #: 279948EB PO: GTR-22029875-A0
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

(Please check all applicable boxes)

☑ Regulation 153/04
Table _____ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Excess Soils R406
Table _____ *Indicate One*
☐ Regulation 558
☐ CCME

☐ Sewer Use
☐ Sanitary ☐ Storm
_____ *Region*
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ *Indicate One*

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on *Certificate of Analysis* ☑ Yes ☐ No

Laboratory Use Only

Work Order #: 23T012542
Cooler Quantity: 1 med
Arrival Temperatures: 3.4 3.7 3.2
Custody Seal Intact: ☐ Yes ☐ No ☑ N/A
Notes: loose ice

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC Y/N	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs Analyze F4G if required ☐ Yes ☐ No	O. Reg 153: PAHs	O. Reg 153: PCBs	O. Reg 153: VOC	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach SPLP: ☐ Metals ☐ VOCs ☐ SVOCs	O. Reg 406: Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	pH, Sulphates	Potentially Hazardous or High Concentration (Y/N)
BH 2 SS7	Mar 6, 2023	AM PM	1	S													☑	
BH-3 SS4	Mar 2, 2023	AM PM	1	S													☑	
		AM PM																
		AM PM																
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Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Shailesh Bhattarai	Apr 6, 2023		Rhiana C	Apr 6	4:28
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

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No: