1970 & 1980 Fowler Drive, Mississauga, Ontario

Proposed Residential Development

Type of Document:

Geotechnical investigation

Client Name:
IMH 1970 & 1980 Fowler Drive Ltd.

Project Number:

BRM-22022660-B0

Submitted By:

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1. Introduction

This report presents the findings of a geotechnical investigation carried out for the proposed residential development located at 1970 & 1980 Fowler Drive, Mississauga, Ontario.

It is understood that the proposed site will be developed to a high-rise development consisting of a 24-storey building with four (4) levels of underground parking and associated parking area and access road. The detailed design of the proposed development was provided for our review and preparing this report.

Our Terms of Reference also included hydrogeological investigation and Phase One Environmental Site Assessment (ESA) for the Site. The findings of these assessments will be reported under separate covers.

The purpose of this investigation was to obtain information on the subsurface conditions at the site by drilling ten (10) boreholes, located within the footprint of the proposed development and based on an assessment of the factual borehole data, to provide geotechnical engineering guidelines for the design and construction of the proposed residential development.

The comments and recommendations given in this report are based on the assumption 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 and Regional Geology

The Site is located on the east side of Fowler Drive, about 160 m south of the intersection of Fowler Drive and North Sheridan Way, in the City of Mississauga, Ontario. The site is currently a landscaping area east of the existing apartment buildings, 1970 & 1980 Fowler Drive.

The project area is situated in the transition zone of Lake Iroquois, beach or bar deposits: gravel, sand and Young tills: clayey silt till (Halton). as represented in Quaternary Geology: Toronto and Surrounding Area (Ministry of Natural Resources, Ontario Geological Survey, Preliminary Map P.2204).

The overburden soils at the site consist of shallow man-made fill underlain by silty clay till/shale complex. Bedrock at the site consists of grey shale of Georgian Bay Formation. The depth of bedrock in this general area ranges from approximately 3.3 to 4.7 m below the surface.

3. Investigation Procedures

The fieldwork for the geotechnical investigation was carried out in the period of June 20 to 23, 2023 and March 18 to 26, 2025. Prior to drilling, the borehole locations were cleared of underground services by the local utility companies and a private locator. Ten (10) sampled boreholes, designated as Borehole 1 to 6 and Borehole 25-1 to 25-4 were drilled to depths ranging from about 4.0 to 18.5 m below the existing grade. The location and ground surface elevation of the boreholes were obtained via GPS Instrument, SOKKIA GCX3 unit, which uses satellites to establish the UTM coordinates and geodetic elevations. The approximate borehole locations are shown on the attached Borehole Location Plan, Drawing No. 1.

The boreholes were advanced using a continuous flight solid/hollow stem augering drilling equipment owned and operated by a specialist drilling contractor. In each borehole, soil samples were recovered at regular intervals with a split barrel sampler in accordance with the standard penetration test (SPT) procedures. Bedrock was encountered in all boreholes. Boreholes 1, 25-1 to 25-4 were extended into the shale bedrock and rock coring drilling method was carried out using HQ size diamond coring equipment.

All of the boreholes from the investigation were instrumented with monitoring wells for subsequent groundwater level measurements and preliminary hydrogeological investigation.

The fieldwork was supervised by an EXP geotechnical technician who monitored the drilling operations and logged the borings. All split barrel samples were transported to our laboratory for detailed examination by the project engineer and for laboratory testing, which included natural moisture content determination on all recovered samples. Three (3) rock core sample was prepared and subjected to Unconfined Compressive Strength testing (UCS) and four (4) rock core samples were subjected to point load testing. Groundwater levels were observed on site upon completion of drilling operation as well as taken in the installed monitoring wells during the subsequent groundwater level reading. One (1) soil sample was also analyzed for pH & water-soluble sulphate.

4. Subsurface Conditions

The detailed soil profiles encountered in each borehole and the results of geotechnical laboratory testing are indicated on the attached borehole logs (Drawings No. 2 through 11) and in Appendix A. It should be noted that the soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations during drilling. These boundaries are intended to 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 Descriptions" and "Explanatory Sheet to Core Log" (Drawing 1A) preceding the borehole logs form an integral part of and should be read in conjunction with this report.

The following is a brief description of the subsurface conditions encountered during the current investigation.

4.1 Subsoil Conditions

Topsoil

Topsoil was encountered at the ground surface in all boreholes with a thickness ranging from about 150 to 250 mm.

Fill Materials

Fill materials were encountered below the topsoil in all boreholes. The fill typically consisted of brown sand, sand and gravel, and clayey silt with occasional rock fragments. The fill extended to depths ranging from 1.4 to 4.6 m (~Elevation 119.3 to 121.9 m). The moisture contents within the fill samples were found to range from 5 to 19 percent.

Silty Clay Till/Shale Complex

The silty clay till/shale complex was encountered in all boreholes below the fill material, except for Borehole 4 and 25-3. The till/shale complex extended to depths ranging from about 3.1 to 5.2 m (~Elevation 117.1 to 119.9 m). This deposit consists of a rather heterogeneous mixture of hard silty clay till with extensive amount of broken bedrock (shale and limestone/siltstone) slabs and fragments. This stratum was reportedly difficult to penetrate with the augers due to the fragmented shale/limestone content and given its hard condition. Cobbles and boulders are also anticipated in these deposits. The natural water contents measured in the test samples ranged from about 7% to 20%. This deposit gradually blends into the weathered shale and the transition between the two is difficult to estimate and some contractors may term this transition layer as weathered shale.

Shale Bedrock

Bedrock of the Georgian Bay Formation was encountered below the till/shale complex in all boreholes at depths ranging from about 3.3 to 4.7 m (~Elevation 117.1 to 119.9 m).

The shale bedrock was proven by rock core drilling in Boreholes 1 and 25-1 to 25-4. It should be noted that it was often difficult to distinguish where silty clay till/shale complex ends and bedrock begins, particularly where the bedrock surface is weathered. As such, the inferred bedrock surface can vary by approximately ±1.0 m.

Bedrock of the Georgian Bay Formation consists typically of highly weathered to fresh, grey, fine to very fine grained fissile, weak to strong shale, interbedded with siltstone and limestone layers.

Shale bedrock was cored to a depth ranging from 12.4 to 18.5 m below the existing ground surface and detailed coring information is provided on the rock core log. Photographs of rock cores are presented in Appendix B of this report. Total Core Recovery (TCR) achieved with the HQ double tube size core bit ranged from 52 to 100%. The recorded RQD values for shale bedrock were generally ranging from 0 to 100%, indicating very poor to excellent rock quality.

Based on the visual examination of the rock cores, an attempt was made to identify and record the thickness and percentages of the relatively harder siltstone and limestone layers. At Boreholes 1 and 25-1 to 25-4 locations, the bedrock consists of 66% to 87% shale, 6% to 15% limestone, 4% to 15% siltstone and 1% to 3% clay and rubble layers/seams. It should be noted that in Borehole 25-1, there is a significant clay layer of up to 400 mm in thickness approximately 2 m into the bedrock. The total percentage of the “hard layers” is about 10% to 31%. The thickness of these layers varied but was generally less than 50mm. Although not encountered, the Georgian Bay formation is known to contain very strong limestone or siltstone layers of 600 to 900 mm thickness and layers of such thickness should be anticipated during construction. It is also common to encounter closely spaced groupings of thin strong limestone/siltstone layers which individually may only be 25 to 50 mm thick but collectively can be 1 m in thickness.

Four (4) samples of the rock cores were subjected to eight (8) point load index strength testing. The tested samples were generally shale. Unconfined compressive strength values were calculated as:

$$UCS = Is50 \times K$$

where Is50 represents Point Load Index,

K = 12.6 for shale/limy shale

The measured point load index strengths correspond roughly to unconfined compressive strengths ranging from about 10 to 40 MPa in axial; about 1 to 5 MPa in diametral, indicating weak to strong rock strength (Canadian Foundation Engineering Manual, 2023, 5th Edition, Table 4.21). The detailed point load test results on the rock core samples are included in Appendix A.

Test result of the unconfined compressive strength of rock core measured in the laboratory of EXP on three (3) sample is presented in Appendix A. The UCS test result was ranging from 48.9 to 76.2 MPa. Based on this result, the tested sample is classified as a 'Medium Strong to Strong' rock and likely belongs to the limestone/siltstone zones.

Although combustible gas was not measured in the open borings, the Georgian Bay Formation, as well as overburden directly above the shale, is known to contain pockets of methane.

4.2 Groundwater Conditions

Groundwater conditions were assessed by taking readings in monitoring wells installed in selected boreholes. Groundwater level observations in the monitoring wells are recorded on the attached borehole logs and summarized in Table 1.

Table 1: Measured Groundwater Levels

Borehole No.	Ground Elevation (m)	Groundwater Depth/Water Level Elevation (m)			Remark
		July 11,2023	April 11, 2025	April 21, 2025	
1s*	123.30	3.68/119.6	4.45/118.9	4.49/118.8	In overburden
1d*	123.30	8.32/115.0	9.04/114.3	9.20/114.1	In bedrock
2	122.44	Dry (>3.4)	Dry (>3.4)	Dry (>3.4)	In overburden and bedrock
3	123.54	3.80/119.7	4.56/119.0	4.58/119.0	In overburden and bedrock
4	123.40	4.37/119.0	4.24/119.2	4.49/118.9	In overburden and bedrock
5	123.35	5.47/117.9	-	-	In overburden and bedrock
6	123.86	3.99/119.9	-	-	In overburden and bedrock
25-1	121.51	-	6.18/115.3	6.30/115.2	In bedrock
25-2	121.80	-	5.52/116.3	5.65/116.2	In bedrock
25-3	124.04	-	5.24/118.8	5.68/118.4	In bedrock
25-4	123.87	-	7.76/116.1	8.66/115.2	In bedrock

*Monitoring wells installed in different depths to monitoring the groundwater levels in overburden and bedrock.

It should be noted that the groundwater levels can vary seasonally and are subject to fluctuations in response to major weather events. A perched water table condition may occur due to the accumulation of surface water in the fill materials overlying the silty clay till/shale complex.

5. Geotechnical Recommendations

5.1 Foundation Considerations

Based on the limited information with regard to the proposed development, the following recommendations for foundation options are provided.

Spread and Strip Footings / Raft Foundation

For the proposed development, the building structure will consist of four (4) levels of underground parking. The proposed slab of the P4 underground parking of the building is designed to be at ~Elevation 110.15 m. The elevator pit will extend to about 2.6 m below the P4 slab. It is expected that founding level will extend approximately 1 m for spread footings and up to 3 m for raft foundations below the basement floor.

Based on the above summarized assumptions and borehole information, the proposed base floor slab of underground parking will be located in the shale bedrock of the Georgian Bay Formation.

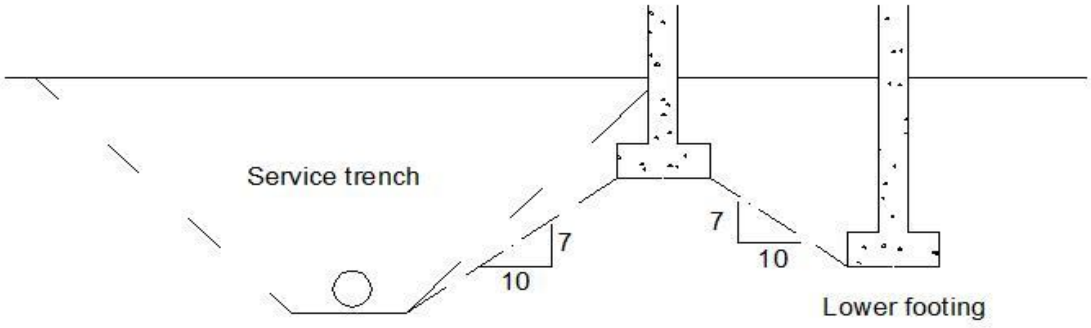
The proposed structures can be supported by spread/strip footings or raft foundations founded in the sound shale bedrock of the Georgian Bay Formation. Spread/strip footings or raft foundations founded on sound shale bedrock below the P4 level can be designed using a factored ultimate bearing resistance of 7.5 MPa at Ultimate Limit States (ULS). The sound shale bedrock is considered to be an unyielding material; as such, SLS condition does not apply for this foundation type. A modulus of subgrade reaction of 600 MPa/m on sound shale with limestone and siltstone interbeds can be used for the raft design.

All footing bases must be reviewed by this office prior to pouring concrete. The shale bedrock weathers rapidly between wetting and drying cycles. In view of this, it is suggested that a lean concrete mat slab be placed immediately after the excavation is complete and approved to keep the shale intact unless the footings are poured immediately after excavating. The bearing shale bedrock and fresh concrete must be protected from freezing during cold weather construction.

5.2 Foundations - General

If footings are to be placed at different levels in the sound shale bedrock, the higher footings should be placed below an imaginary line with slope of one (1) Horizontal to one (1) Vertical (1H:1V) drawn from the bottom of the lower footing. This is assuming that the rock between the footings is not fractured during the excavation.

In case that footings are to be placed at different levels in the overburden, adjacent footings at different elevations should be located such that higher footings are set below a line drawn up at ten (10) Horizontal to seven (7) Vertical (10H:7V) from the near edge of the lower footing. This concept should also be applied to excavations for new foundations in relation to existing footings or underground services. The aforementioned concept is illustrated in the following sketch.



FOOTINGS NEAR SERVICE TRENCHES OR AT DIFFERENT ELEVATIONS

All footing caps 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.

For footings founded on sound bedrock, the settlements are expected to be about 12 mm total and 6 mm differential.

The recommended bearing capacities 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. As stated before, the results of this geotechnical study should therefore be regarded as very preliminary at best due to the limited number of boreholes drilled to the required depth for the proposed development.

5.3 Excavation and Groundwater Control

For the proposed development with four (4) levels of basement, the excavations will be carried out through the overburden followed by weathered and sound rock up to about 16 m below the existing grade. Sumps and elevator pits may require localized excavations to continue even deeper.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, the fill can be classified as Type 3 Soil and the till/shale complex can be classified as Type 1 Soil.

It should be noted that the till/shale complex may contain cobbles, boulders and the shale bedrock may contain limestone/siltstone slabs. Their presence may influence the progress of excavation. Consequently, provisions should be made in the contract documents to cover any delays caused by these obstructions. In addition, perched water may be encountered at the transition zone between overburden and bedrock.

Excavation of the shale can be carried out using large backhoes equipped with single tooth ripper equipment. It should be noted that the limestone/siltstone (hard layers) are frequent and may overlie the shale bedrock surface at some locations. It may be necessary at some locations to utilize ripper and/or hoe ram to break up the limestone/siltstone layers. Contractor should be prepared to deal with the excavation difficulties caused by the anticipated hard layers.

Excavations cut into the bedrock can be on a near-vertical face. The face of the excavation, however, must be scaled off any loose rock to protect the workers working in the excavation. Rock cuts deeper than approximately 1.5 m, should also be covered with welded wire mesh rock fall protection or approved equivalent and anchored using rockbolts at strategic locations as per the supplier's recommendations.

No major problems with groundwater are anticipated for the excavations in the shallow overburden or into the shale bedrock. Perched water should be expected at the interface between the overburden and bedrock and also the fill. It should be possible to control and remove this perched water by pumping from temporary sumps. It should be noted that significant water loss was noted during the rock coring. Frequent fractures and/or bedding joints are inferred to be presented in the bedrock. The fractured bedrock may need to be grouted to stop groundwater seepage in the worst case. Regular cleaning of the sumps will be needed given the potential of accumulation of rock fines. It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to weather events. The groundwater levels measured on July 11, 2023 , April 11 and 21, 2025 show that the groundwater levels ranged from 9.2 to 5.2 m in deep wells installed in bedrock and from 3.7 m to 5.5 m depth in shallow wells installed in overburden and bedrock.

5.4 Temporary Shoring

Excavations in overburden and upper highly weathered shale may be supported by a temporary shoring system consisting of soldier piles and lagging. A caisson wall may be required to support adjacent structures or settlement sensitive utilities. The temporary shoring system for this project should be designed on the basis of the state-of-the-art information given in the fifth edition of the Canadian Foundation Engineering Manual (CFEM). The parameters that are considered to be applicable for this project and have been used successfully on many other deep excavations in the downtown area, are as follows:

The shoring should be designed for lateral earth pressure using the following parameters:

Earth pressure coefficient:

= 0.25 where small movements permissible

= 0.35 where utilities, roads, sidewalks must be protected from significant movement, or where vibration from traffic is a factor

= 0.45 where the movements are to be limited

Unit weight of retained soil and rock (γ) = 22 and 24.5 kN/m^3 respectively

The soldier piles should be installed in pre-augered holes and temporary liners may be required to help prevent the fills from caving during the installation period. Safe net bearing value for soldier pile holes in the sound shale bedrock can be taken as q = 7500 kPa, provided the embedment is at least 1 diameter into the sound rock and the holes are cleaned and dry prior to pouring concrete.

Should the caisson wall be selected, the caisson wall 'filler piles' must be drilled through the weathered zone and taken at least 0.5m into sound shale to provide lateral support. The depth of sound bedrock should be field-verified in selected piles using down-hole video inspection equipment or through field observation of the drilling and the rock cuttings.

Tieback anchors should be installed in the soil 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 Figure 26.16 of the Canadian Foundation Engineering Manual, 4th Edition. 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 designed for the bond stresses shown in Table 2 following.

Table 2: Bond Stress for Tieback Anchors

Soil Type	Allowable Bond Stress (kPa)
Hard silty clay till/shale complex	100*
Shale bedrock	700

* higher bond will be available if re-groutable anchors are used.

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 supporting soil or rock type 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 1.33 times the design load.

During winter months, the shoring should be covered with thermal blankets to prevent frost penetration behind the shoring system which may result in unacceptable movements.

EXP should be retained to review the shoring design, to monitor installation and testing of the system, and to monitor the shoring during all phases of the excavation. Inclinometers should be installed at locations where sensitive 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 not only to anticipate when and if additional support is needed, but also to provide data to meet claims from adjacent property owners. In this regard, it is essential that detailed precondition surveys be made on adjacent buildings.

5.5 Basement Wall

In situations where the basements are drained, the lateral earth pressure acting on the basement walls may be calculated from the following expression:

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

where p = the pressure in kPa acting against any subsurface wall at depth, h, below the ground surface;

k = the earth pressure coefficient considered to be 0.4;

γ = the bulk unit weight of the retained overburden soil, use 22.0 kN/m^3;

h = the depth in m below the ground surface at which the pressure, p, is to be computed; and

q = the value of any adjacent surcharge in kPa which may be acting close to the wall.

The above expression assumes that the perimeter drainage system prevents the buildup of any hydrostatic pressure behind the wall and granular backfill will be used behind the wall.

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

$$p = k (\gamma h1 + \gamma' h2 + q) + \gamma w h2$$

where p	=	lateral earth pressure in kPa acting at depth h
k	=	earth pressure coefficient, assumed to be 0.4 for vertical walls and horizontal backfill
γ & γ'	=	unit weight and submerged unit weight of overburden soil, a value of 22 and 12 kN/m^3 may be assumed
γw		Unit weight of water, a value of 10 kN/m^3 can be used
h1	=	depth to the groundwater table in metres

h2		Depth below water table in metres
q	=	equivalent value of surcharge on the ground surface in kPa

5.6 Floor Slab Construction and Permanent Drainage

The subgrade on which the underground parking floor slabs will rest will be shale bedrock of Georgian Bay Formation. Any softened/disturbed wet rock pieces must be removed and replaced with fill concrete.

For the raft foundation scenario, a secondary slab may be constructed with a clear stone layer separating the raft and the slab-on-grade. Underfloor drainage should be installed in the clear stone just above the raft foundation to collect any leakage from the slab on grade. Alternatively, the top of the raft itself can be used as the floor slab.

If footings are selected for support of the building structure, normal slab-on-grade type construction may be used on shale bedrock. 200 mm of 19 mm clear crushed stone should be installed under the floor slab. A perimeter drainage system will be required around the exterior basement walls. Underfloor drains, placed within the utility trenches should be installed. The recommendations for a perimeter and underfloor drainage system, where open cut procedures are used, are shown on Drawing No. 12. The perimeter drainage for shoring system is shown on Drawing No.13.

If the basement is to be constructed as a water-tight structure, waterproofing will be required below the raft foundation and around the perimeter walls. The basement walls and the raft in this case, would have to be designed for hydrostatic pressure. Perimeter and underfloor drains will not be required in this case.

5.7 Earthquake Considerations

The recommendations for the geotechnical aspects to determine the earthquake loading for design in accordance with Section 4.1.8 in the Ontario Building Code (OBC) 2024, are presented below..

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). The subsoils at this subject site generally consist of fill, till/shale complex and bedrock. It is anticipated that the proposed structures will be founded on footings or raft foundations on bedrock.

Depth of Boreholes

Table 4.1.8.4.-A Exceptions for Site Designation Using Vs30 Calculated from In Situ Measurements and Table 4.1.8.4.-B Site Classes, S, for Site Designation Xs in OBC (2024) indicated that to determine the site classification, the average properties in the top 30 m (below the lowest basement level) are to be used. Site Classification can be determined using the average shear wave velocity (Vs30) as per the classifications stated in Table 4.1.8.4.-A and Table 4.1.8.4.-B. If in-situ shear wave velocity measurements are not available, the site designation Xs shall be determined based on the energy-corrected average standard penetration resistance (SPT) $\bar{N}60$ or the average undrained shear strength Su in accordance with Table 4.1.8.4.-B.

There are no shear wave measurements carried out at this site and therefore, the Site Class will be determined based on the energy-corrected average SPT. The boreholes advanced at this site terminated at depths of about 4.0 to 18.5 m below existing grade. Therefore, the site classification recommendation would be based on the available information as well as our interpretation of conditions below the boreholes based on our knowledge of the soil conditions in the area

Site Classification

Based on the above assumptions and currently available information, the Site Class for the proposed development is “B” as per Table 4.1.8.4.B, Site Classification for Seismic Site Response, OBC 2024. According to Section A-4.1.8.4 of OBC 2024, the in-situ measurements of shear wave velocity can be utilized to lower the demand in the seismic design. Therefore, field shear wave velocity measurements are recommended to be performed through non-intrusive (e.g. multichannel analysis of surface waves) and / or intrusive (e.g. downhole / cross hole techniques, or SCPT) geophysical tests.

5.8 Potential for Sulphate Attack

One (1) sample from BH1 was analyzed for pH and water-soluble sulphate. The pH of the soil sample is 7.71. The soluble sulphate content in the sample analyzed was reported <20 µg/g (<0.002%). Table 3 of the Canadian Standards Association (CSA) A.23.1-09 lists 0.1 % sulphate as the minimum concentration of sulphate in soil that warrants additional requirements for concrete. At the measured concentration, the degree of exposure to sulphate attack is considered to be “negligible” and therefore normal Portland cement (Type 10) can be used in subsurface concrete.

6. General Comments

EXP should be retained for a general review of the final design and specifications to verify this report has been properly interpreted and implemented. If not accorded the privilege of making this review, EXP 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. could be 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. The interpretation of the borehole information must, therefore, be validated during excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent; should this occur, EXP should be contacted to assess the situation and additional testing and reporting may be required. EXP has qualified personnel to provide assistance in regard to future geotechnical issues related to this property.

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

EXP Services Inc.

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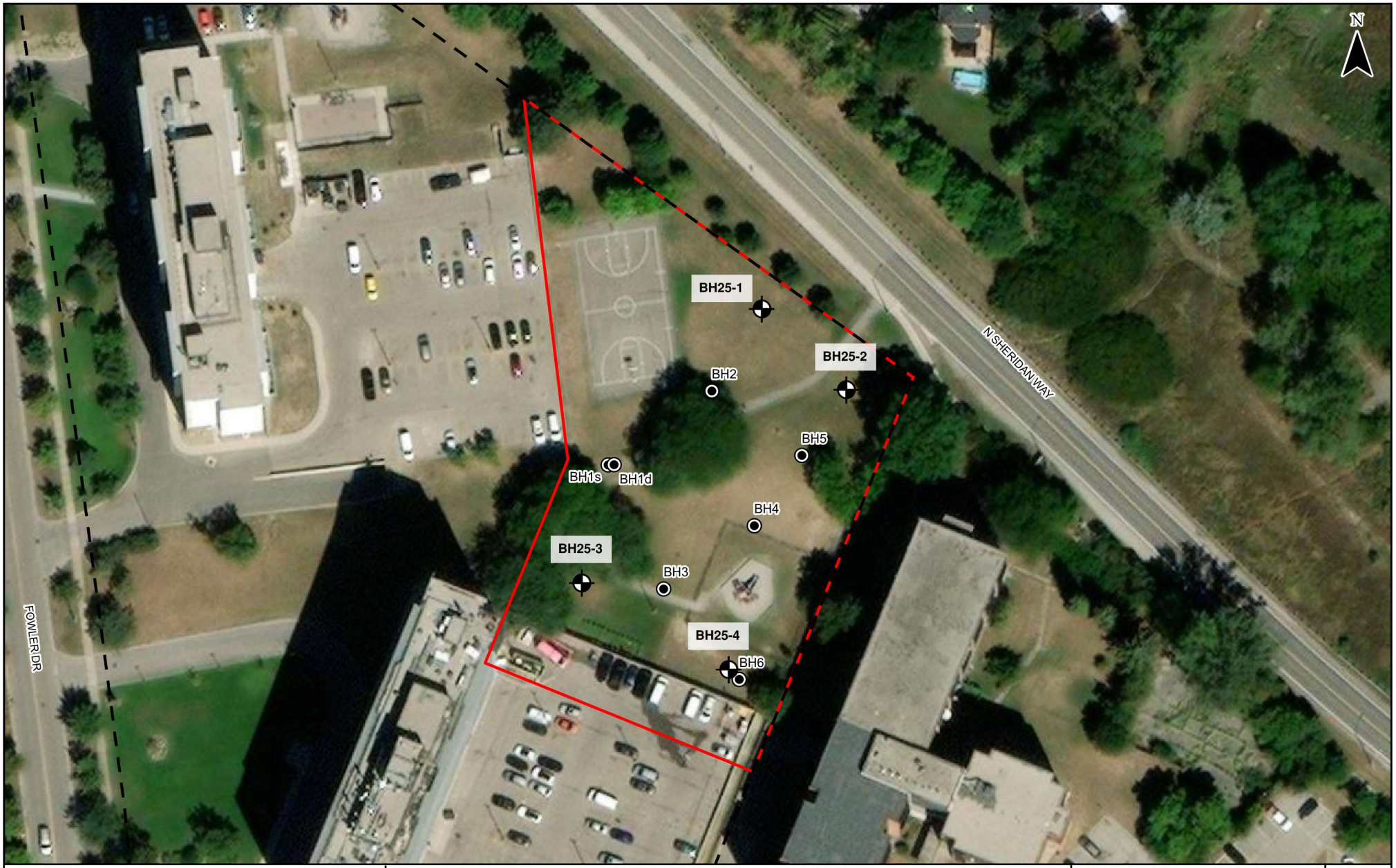
DRAWINGS



SCALE:

0 10 20 30 40 50 m

LEGEND:

- BOREHOLE / MONITORING WELL (EXP, 2023)
- APPROXIMATE SITE BOUNDARY
- PROPERTY BOUNDARY
- BOREHOLE LOCATION (EXP, 2025)

exp.

DRAWN BY:	CHECKED BY:
JW	FM

BOREHOLE / MONITORING WELL LOCATION PLAN

FIGURE: 1

GEOTECHNICAL INVESTIGATION
1970 AND 1980 FOWLER DRIVE
MISSISSAUGA, ONTARIO

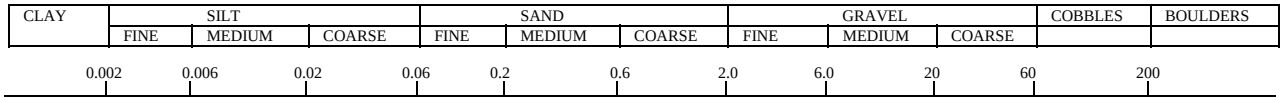
PROJECT NUMBER: BRM-22022660-B0

DATE: APRIL 2025

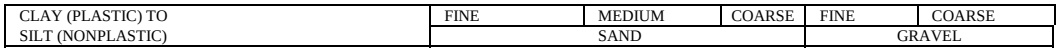
Notes on Sample Descriptions and Soil Types — Drawing 1A

1. All sample descriptions included in this report follow the Canadian Foundations Engineering Manual soil classification system. This system follows the standard proposed by the International Society for Soil Mechanics and Foundation Engineering. Laboratory grain size analyses provided by **exp** also follow the same system. Others may use different classification systems; one such system is the Unified Soil Classification. 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.

ISSMFE SOIL CLASSIFICATION



EQUIVALENT GRAIN DIAMETER IN MILLIMETERS



UNIFIED SOIL CLASSIFICATION

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

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

till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

4. Excerpt from “OHSA Regulations for Construction Projects,” Part III, Section 226:

- **Soil Types**

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. O. Reg. 213/91, s. 226.

EXPLANATORY SHEET TO CORE LOG

Column No.	Description
1	Elevation of Geotechnical Boundary
2	Depth of Geotechnical Boundary in Borehole
3	Geological Symbol for Rock or Soil Material
4	General Description of Geotechnical Unit : Quantitative description including rock type (s), percentage of rock types, frequency and sizes of interbeds, colour, texture, weathering, strength and general joint spacing
5 - 11	Joint (Discontinuity) Characteristics
5	Number of Joints in Set: A rock mass can be intersected by a number of joint sets of varying orientations.
6	Joint Type : B = Bedding Joint; F = Fault; C = Cross Joint; S = Shear Plane
7	Orientation : Only variations in dip can be identified in core; dip direction is obtained from field mapping or orientated core.

F = Flat = 0 - 20°
D = Dipping = 20 - 50°
V = Vertical = 50 - 90°

8 Joint Spacing : This is an approximate measure of spacing between joints in specific joint sets.

VW	= Very Wide	≥ 3 m
W	= Wide	= 1 to 3 m
M	= Moderate	= 30 cm to 1 m
C	= Close	= 5 to 30 cm
VC	= Very Close	≤ 5 cm

9 Roughness :

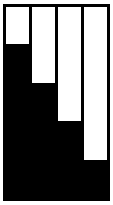
RU = Rough Undulating
RP = Rough Planar
SU = Smooth Undulating
SP = Smooth Planar
LU = Slickensided Undulating
LP = Slickensided Planar

10 Filling :

	Approximate ϕ_r
T = Tight, hard, non softening	25 - 35°
O = Oxidation, surface staining only	25 - 30°
SA = Slightly altered; clay free	25 - 30°
S = Sandy particles; clay free	25 - 35°
Si = Sandy and silty; minor clay	20 - 25°
NC = Non softening clays (< 5 mm)	16 - 24°
SO = Softening clays (< 5 mm)	12 - 16°
SC = Swelling clay fillings (< 5 mm)	6 - 12°

11 Aperture : Estimated size of joint opening

12 Degree of Weathering of Rock Material :

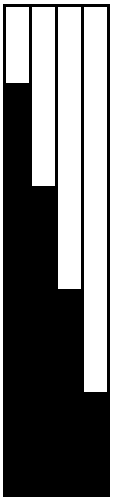


Unweathered	= no signs of discolouration or oxidation
Slightly weathered	= partial discolouration; fractures (joints) typically oxidized
Moderately weathered	= total discolouration
Highly weathered	= total discolouration; typically friable & pitted
Completely weathered	= resembles soil; rock structure usually preserved

EXPLANATORY SHEET TO CORE LOG

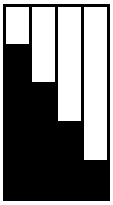
Column No. **Description**

13 Strength of Rock Material :



		Uniaxial Compressive Strength
Very high strength	= specimen can only be chipped by geological hammer	> 200 MPa
High strength	= specimen requires a number of blows to fracture it; cannot be scrapped with a pocket knife	50 - 200 MPa
Medium strength	= specimen can be fractured by a single blow of geological hammer; can be scrapped with pocket knife, not peeled	15 - 50 MPa
Low strength	= shallow indentations made with a firm blow of geological hammer; can be peeled by pocket knife with difficulty	4 - 15 MPa
Very low strength	= crumbles under firm blow with point of geological hammer; can be peeled by pocket knife	1 - 4 MPa

14 Fracture Frequency : Number of natural joints occurring over a metre length of core. All natural joints are counted irrespective of the number of joint sets.



Fracture Frequency		Joint Spacing	
< 0.3 /m	=	Very wide	= 3 m
0.3 – 1 /m	=	Wide	= 1 - 3 m
1 – 3 /m	=	Moderate	= 30 cm - 1 m
3 - 20 /m	=	Close	= 5 - 30 cm
> 20 /m	=	Very close	≤ 5 cm

15 Run Number : Drill run number

16 Core Recovery : Core recovery is the total length of core pieces, irrespective of their individual lengths, obtained in a core run and expressed as a percentage of the length of that core run.

17 Rock Quality Designation (RQD) : The total length of those pieces of sound core which are 10 cm or greater in length in a core run expressed as a percentage of the total length of that core run. Sound pieces of rack are those pieces separated by natural breaks and not machine breaks or subsequent artificial breaks.

RQD	Rock Mass Classification (After Deere)
0 - 25%	very poor
25 - 50%	poor
50 - 75%	fair
75 - 90%	good
90 - 100%	excellent

18 Water Recovery : The estimated water returning out of the casing

19 Water Colour : The colour of the water returning out of the casing

Log of Borehole 1d

Project No. GTR-22022660-A0 | Drawing No. 2

Project: Geotechnical Investigation | Sheet No. 1 of 2

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: Jue 23, 2023

Drill Type: Hollow Stem Auger / Rock Coring

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 ▲

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
			123.30	0
		TOPSOIL: ~200 mm	~123.1	
		FILL: sand and gravel to sand, trace silt, trace clay, brown, moist.		1
			~121.9	
		SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist, very stiff to hard		2
				3
			~119.5	4
		SHALE BEDROCK: Georgian Bay Formation, grey. **Refer to Rock Core Logs**		5
				6
				7
			~115.0	8
				9
				10

SPT (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

Sample | Natural Unit Weight kN/m³

10 12 23 44 46 50/25mm

Continued Next Page

Date	Water Level (m)	Hole Open to (m)
July 11, 2023	8.32	
April 11, 2025	9.04	
April 21, 2025	9.20	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 1d

Project No. GTR-22022660-A0 Drawing No. 2

Project: Geotechnical Investigation Sheet No. 2 of 2

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
			113.30	10
				11
				12
			~110.9	
		END OF BOREHOLE		

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.

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

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

Sample

Natural Unit Weight kN/m^3

Date	Water Level (m)	Hole Open to (m)
July 11, 2023	8.32	
April 11, 2025	9.04	
April 21, 2025	9.20	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

ROCK CORE LOG

BH 1

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Geotechnical Investigation	Vertical	123.3	GTR-22022660-A0	Geodetic
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970&1980 Fowler Drive, Mississauga, Ontario	06/23/23	06/23/23	Jack Li	2
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Developments	DBW	Track Mount CME 55	HQ	1 of 1

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
120.3	3		**See Borehole Log for Details**															
119.5																		
119.5	4		**GEORGIAN BAY FORMATION**															
119.2			Shale with interbedded siltstone, and clay layers.											1	68	48	80	Grey
118.9																		
118.8			Shale (87%) thinly bedded or laminated, grey, low strength, alternating between heavily and moderately weathered to 9.4 m and between slightly weathered and fresh below.															
118.5																		
118.4	5								SO	250 mm								
118.3			Limestone (6%) fine grained, grey, medium strength, unweathered.		C	V	VC	RU	Si	40 mm								
118.1							VC	RU						2	85	31	85	Grey
			Siltstone (4%) fine grained, grey, medium strength, unweathered.															
	6		Discontinuities: bedding joints are rough planar to smooth undulating and at very close intervals.															
			Vertical fractures were noted at 5.26 m and 7.04 m.															
116.5																		
116.4	7		A clay (3%) layer, heavily weathered, very low strength were noted at ~4.98 m.		F	V	VC	SU	T	100 mm								
116.3							VC	RU						3	85	14	85	Grey
116.2			Rubble layers were noted at ~3.84 m (305 mm) and 6.53 m (80 mm).															
115.8																		
115.8	8													4	97	31	85	Grey
	9																	
113.4														5	100	100	100	Grey
113.3	10																	
	11													6	100	100	100	Grey
112.0																		
112.0																		
111.8																		
111.7	12																	
110.9			**END OF BOREHOLE**															
			End of Borehole at 12.4 m															

EXP_ROCKCORE_ROCK_LOG.GPJ CORE_LOG.GDT 7/12/23

exp.

Log of Borehole 1s

Project No. GTR-22022660-A0 | Drawing No. 2

Project: Geotechnical Investigation | Sheet No. 1 of 1

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: Jue 21, 2023

Drill Type: Hollow Stem Auger / Rock Coring

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 ▲

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
			123.30	0	20 40 60 80 / 100 200	25 50 75 / 10 20 30		
		TOPSOIL: ~200 mm	~123.1					
		FILL: sand and gravel to sand, trace silt, trace clay, brown, moist.		1				
			~121.9					
		SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist.		2				
			~119.6	3				
			~119.4					
		SHALE BEDROCK: Georgian Bay Formation, grey.	~119.3	4				
		END OF BOREHOLE						

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.

Date	Water Level (m)	Hole Open to (m)
July 11, 2023	3.68	
April 11, 2025	4.45	
April 21, 2025	4.49	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 2

Project No. GTR-22022660-A0

Drawing No. 3

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: Jun 21, 2023

Drill Type: Soild Stem Auger

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 ▲

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
			122.44	0
		TOPSOIL: ~250 mm	~122.2	
		FILL: sand to clayey silt, trace gravel, brown, moist.		1
				2
			~119.8	
		SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist, hard		3
			~119.1	
		POSSIBLE SHALE BEDROCK: grey shale and limestone pieces		4
			~118.3	
		END OF BOREHOLE DUE TO AUGER REFUSAL		
		Note: 1. A 50 mm dia. monitoring well was installed in the borehole.		

SPT (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

Sample

Natural Unit Weight kN/m³

10
15
12
40
62
50/250mm

Date	Water Level (m)	Hole Open to (m)

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 3

Project No. GTR-22022660-A0

Drawing No. 4

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: Jue 20, 2023

Drill Type: Soild Stem Auger

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 ▲

Soil Description	ELEV. m	Depth (m)
	123.54	0
TOPSOIL: ~250 mm	~123.3	
FILL: sand to clayey silt, trace gravel, brown, moist.		1
	~121.4	2
SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist, hard		3
	~119.9	
POSSIBLE SHALE BEDROCK: grey shale and limestone pieces	~119.7	4
	~118.9	
END OF BOREHOLE DUE TO AUGER REFUSAL		

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.

SPT (N Value): 24, 15, 10, 50/250mm, 45, spoon bouncing

Shear Strength: 20 40 60 80 kPa; 100 200

Combustible Vapour Reading (ppm): 25 50 75

Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Sample

Natural Unit Weight kN/m³

Date	Water Level (m)	Hole Open to (m)
July 11, 2023	3.8	
April 11, 2025	4.56	
April 21, 2025	4.58	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 4

Project No. BRM-22022660-A0

Drawing No. 5

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: Jun 21, 2023

Drill Type: Soild Stem Auger

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

Soil Description	ELEV. m	Depth (m)
	123.40	0
TOPSOIL: ~250 mm	~123.2	
FILL: sand to clayey silt, trace gravel, brown, moist.		1
cobbles and large pieces of gravel		2
	~119.8	3
POSSIBLE SHALE BEDROCK: grey shale and limestone pieces	~119.0	4
	~118.7	
END OF BOREHOLE DUE TO AUGER REFUSAL		

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.

SPT (N Value): 14, 14, 18, 6, 49, 50/25mm, 50/25mm

Shear Strength kPa: 20 40 60 80 / 100 200

Combustible Vapour Reading (ppm): 25 50 75

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Sample

Natural Unit Weight kN/m³

Date	Water Level (m)	Hole Open to (m)
July 11, 2023	4.37	
April 11, 2025	4.24	
April 21, 2025	4.49	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 5

Project No. GTR-22022660-A0

Drawing No. 6

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: Jun 21, 2023

Drill Type: Soild Stem Auger

Datum: Geodetic

Auger Sample

SPT (N) Value

Dynamic Cone Test

Shelby Tube

Field Vane Test

Combustible Vapour Reading

Natural Moisture

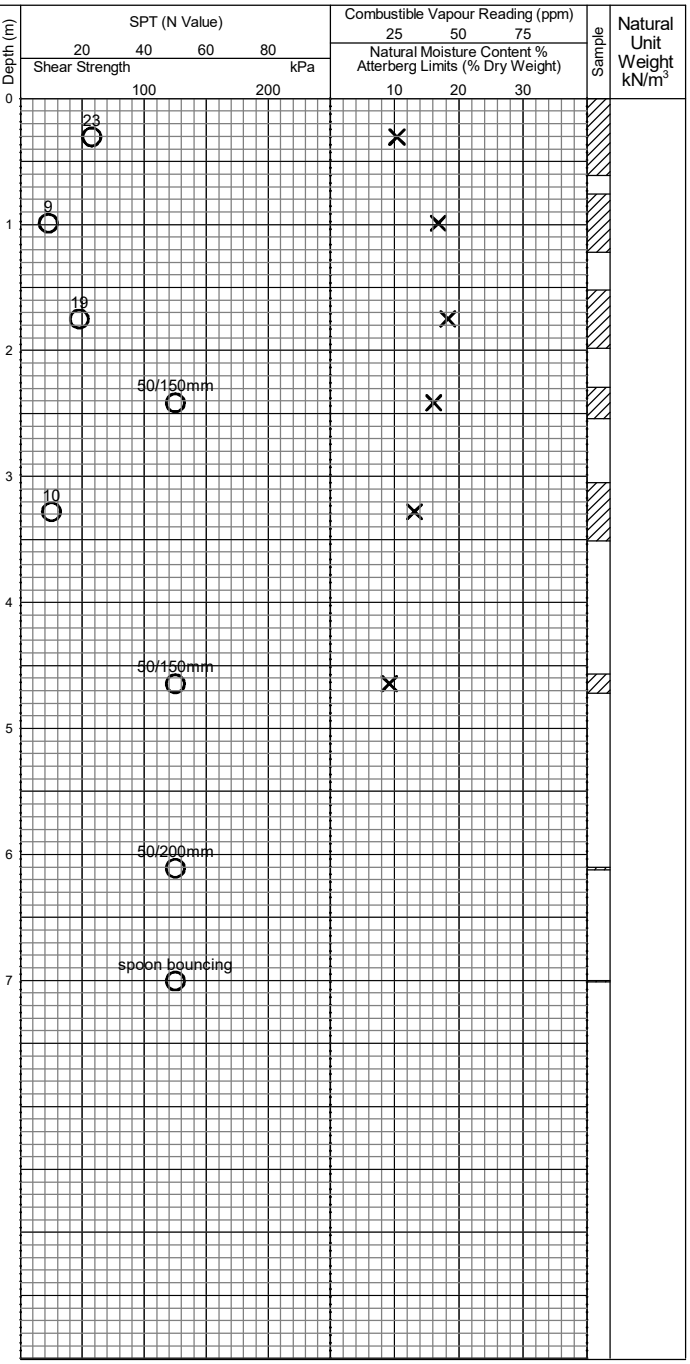
Plastic and Liquid Limit

Undrained Triaxial at % Strain at Failure

Penetrometer

Soil Description	ELEV. m
	123.35
TOPSOIL: ~250 mm	~123.1
FILL: sand, trace gravel, contain clayey silt fill pockets and rock pieces, brown, moist.	
---------- rock pieces	
	~118.8
POSSIBLE SHALE BEDROCK: grey shale and limestone pieces	
	~117.9
	~116.4
END OF BOREHOLE DUE TO AUGER REFUSAL	

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.



Date	Water Level (m)	Hole Open to (m)
July 11, 2023	5.47	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 6

Project No. GTR-22022660-A0 | Drawing No. 7

Project: Geotechnical Investigation | Sheet No. 1 of 1

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: Jue 20, 2023

Drill Type: Soild Stem Auger

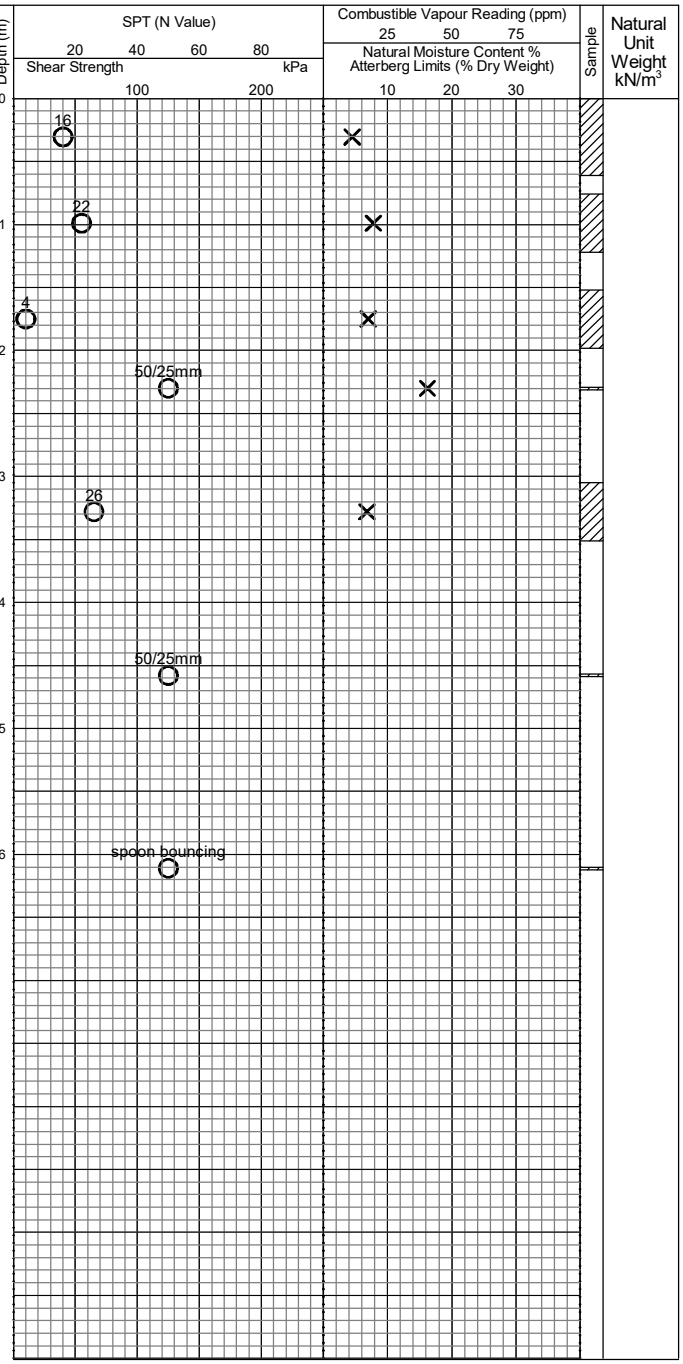
Datum: Geodetic

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 ▲

Soil Description	ELEV. m
	123.86
TOPSOIL: ~200 mm	~123.7
FILL: sand and gravel, trace silt, brown, moist.	
auger grinding	
	~121.0
SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist, hard	
	~119.9
POSSIBLE SHALE BEDROCK: grey shale and limestone pieces	
	~117.8
END OF BOREHOLE DUE TO AUGER REFUSAL	

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.



Date	Water Level (m)	Hole Open to (m)
July 11, 2023	3.99	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 25-1

Project No. BRM-22022660-B0 | Drawing No. 8

Project: Geotechnical Investigation | Sheet No. 1 of 2

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: March 19, 2025

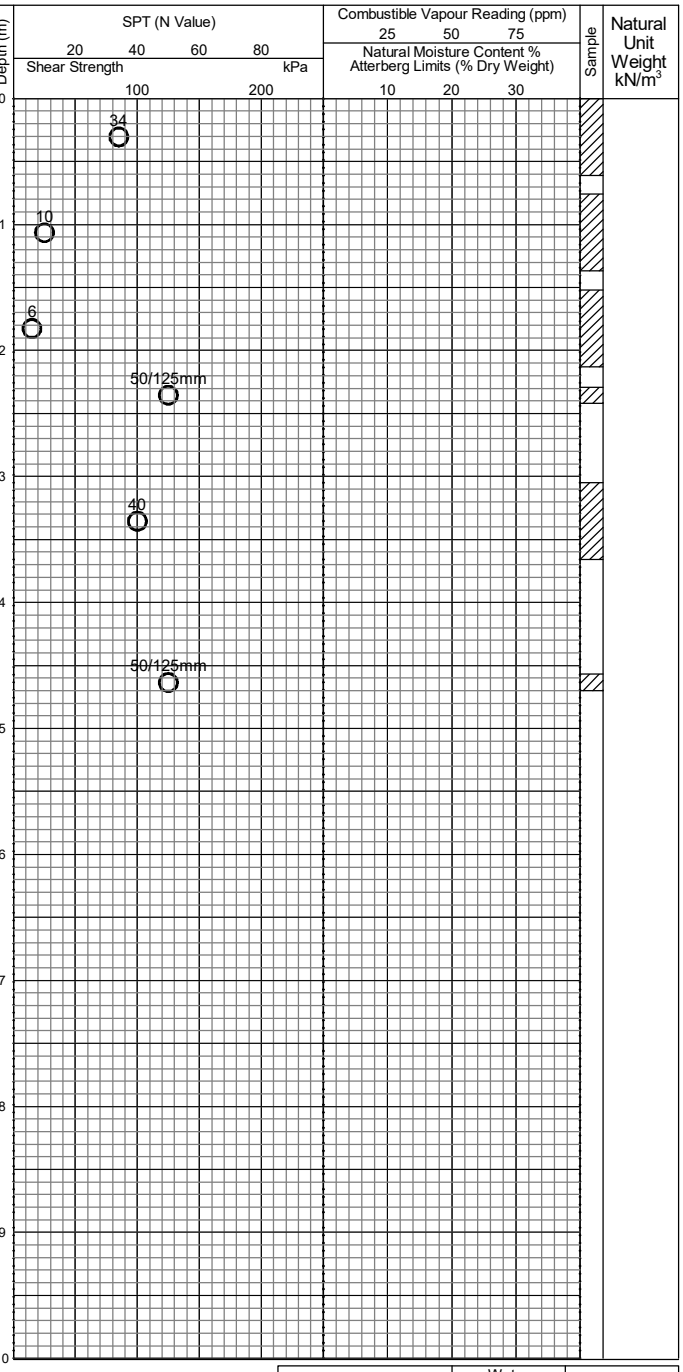
Drill Type: Hollow Stem Auger / Rock Coring

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

Soil Description	ELEV. m
	121.51
TOPSOIL: ~175 mm	~121.3
FILL: sand to clayey silt, trace gravel, some sand, brown to dark brown, moist.	
	~119.3
SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist, hard	
---------- auger grinding	
	~117.7
SHALE BEDROCK: Georgian Bay Formation, grey. **Refer to Rock Core Logs**	



Sample | Natural Unit Weight kN/m³

Continued Next Page

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	6.18	
April 21, 2025	6.30	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 25-1

Project No. BRM-22022660-B0 Drawing No. 8

Project: Geotechnical Investigation Sheet No. 2 of 2

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
			111.51	10	20 40 60 80 / 100 200	25 50 75 / 10 20 30		
				11				
				12				
				13				
				14				
				15				
				16				
				17				
				18				
			~103.0					
		END OF BOREHOLE						

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	6.18	
April 21, 2025	6.30	

exp.

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

ROCK CORE LOG

BH 25-1

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	121.5	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/19/25	03/20/25	D. Panchal	8
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	1 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
116.8																		
	5		See Borehole Log for Details															
116.4			**GEORGIAN BAY FORMATION**		F	V												
116.4																		
116.3			**Shale with interbedded siltstone, and clay layers.**						NC	30 mm								
116.3					F	V												
116.3									NC	30 mm								
116.2			**Shale (71%) thinly bedded or laminated, grey, low strength, alternating between heavily and slightly weathered to 8.0 m and between moderately weathered and unweathered below.**															
116.2																		
116.2																		
116.1			**Limestone (7%) fine grained, grey, medium strength, unweathered**															
116.0																		
115.8																		
115.7			**Siltstone (21%) fine grained, grey, medium strength, unweathered.**	1	B	F	C	RU	NC	40 mm				1	93	38	80	Grey
115.7							C	RU										
115.6																		
115.6	6		**Discontinuities: bedding joints are rough planar to smooth undulating and at wide to very close intervals.**															
115.4																		
115.4																		
115.3			**Vertical fractures were noted at ~5.1 m, 5.3 m, 6.7 m, 7.0 m, 8.0 m, 10.0 m, 10.7 m, 11.4 m and 13.0 m.**															
115.2																		
115.2																		
115.1			**A clay till (1%) layer, heavily weathered, very low strength were noted at ~5.2 m, 5.4 m, 5.8 m and 7.8 m.**															
115.1																		
115.0																		
114.9			**Probably a lost clay or rubble layer were noted at ~7.1 m (420 mm)**		F	V												
114.8																		
			Rubble layers was noted at ~5.2 m (50 mm), 5.3 m (30 mm), 6.5 m (40 mm), 6.8 m (200 mm), 7.6 m (160 mm), 13.1 m (50 mm) and 13.3 m.															
114.6	7				F	V												
114.4			Core Lost Possible Shale Rubble Layer low recovery possibly due to clay being washed out	1	B	F	C	RU						2	52	0	70	Grey
							C	RU										
114.0																		
113.9																		
113.8																		
113.8									NC	50 mm								
113.7																		
113.7																		
113.6	8																	
113.5																		
113.5																		
113.4																		
113.4																		
113.2																		
113.2																		
113.1																		
112.8																		

ROCK CORE LOG

BH 25-1

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	121.5	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/19/25	03/20/25	D. Panchal	8
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	2 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
112.7				1	B	F	C C	RU RP						3	100	72	90	Grey
112.6	9																	
112.3																		
112.2																		
112.1																		
111.6	10				F	V												
111.4																		
111.3																		
111.3				1	B	F	M M	RP SU						4	100	88	100	Grey
110.9																		
110.9					F	V												
110.8																		
110.5	11																	
110.4																		
110.2					F	V												
110.1																		
110.1				1	B	F	M W	SU SP						5	100	87	100	Grey
109.6	12																	
109.4																		
109.3																		

exp.

ROCK CORE LOG

BH 25-1

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	121.5	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/19/25	03/20/25	D. Panchal	8
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	3 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
108.6																		
108.5	13				F	V												
108.5																		
108.4																		
108.3																		
108.2				1	B	F	M	SP						6	100	88	100	Grey
108.1							M	SP										
108.1																		
107.9																		
107.9																		
107.8																		
107.6																		
107.5	14																	
107.4																		
107.0																		
106.8																		
106.6				1	B	F	W	SP						7	100	100	100	Grey
106.6							W	SP										
	15																	
106.4																		
106.3																		
	16																	
				1	B	F	W	SP						8	100	100	100	Grey
							W	SP										

EXP_ROCKCORE_ROCK_LOG_22022660_B.GPJ_CORE_LOG.GDT 4/16/25

exp.

ROCK CORE LOG

BH 25-1

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	121.5	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/19/25	03/20/25	D. Panchal	8
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	4 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	17																	
104.3																		
104.2																		
				1	B	F	W W	SP SP						9	100	100	100	Grey
103.5	18																	
103.4																		
103.0			End of Borehole at 18.5 m															
	19																	
	20																	

Log of Borehole 25-2

Project No. BRM-22022660-B0 | Drawing No. 9

Project: Geotechnical Investigation | Sheet No. 1 of 2

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: March 18, 2025

Drill Type: Hollow Stem Auger / Rock Coring

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

Soil Description	ELEV. m
	121.80
TOPSOIL: ~175 mm	~121.6
FILL: sand to clayey silt, trace gravel, some sand, brown to dark brown, moist.	
	~119.4
SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist, firm to stiff.	
	~117.1
SHALE BEDROCK: Georgian Bay Formation, grey. **Refer to Rock Core Logs**	

SPT (N Value): 10, 13, 11, 8, 12, 50/100mm

Shear Strength (kPa): 100, 200

Combustible Vapour Reading (ppm): 25, 50, 75

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10, 20, 30

Depth (m): 0 1 2 3 4 5 6 7 8 9 10

Sample

Natural Unit Weight kN/m³

Continued Next Page

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	5.52	
April 21, 2025	5.65	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 25-2

Project No. BRM-22022660-B0 Drawing No. 9

Project: Geotechnical Investigation Sheet No. 2 of 2

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) 20 40 60 80 / Shear Strength kPa 100 200	Combustible Vapour Reading (ppm) 25 50 75 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 10 20 30	Sample	Natural Unit Weight kN/m³
			111.80	10				
				11				
				12				
				13				
				14				
				15				
			~106.4					
		END OF BOREHOLE						

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	5.52	
April 21, 2025	5.65	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

ROCK CORE LOG

BH 25-2

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	121.8	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/18/25	03/18/25	D. Panchal	9
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	1 of 3

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
117.3			See Borehole Log for Details															
116.8	5		**GEORGIAN BAY FORMATION**															
116.7					F	V												
116.6			**Shale with interbedded siltstone, and clay layers.**		F	V												
116.6									NC	70 mm								
116.5			**Shale (66%) thinly bedded or laminated, grey, low strength, alternating between heavily and slightly weathered to 7.2 m and between moderately weathered and unweathered below.**		F	V												
116.4									NC	70 mm								
116.3																		
116.3																		
116.2			**Limestone (15%) fine grained, grey, medium strength, unweathered**															
116.2									NC	60 mm								
116.1																		
116.0			**Siltstone (16%) fine grained, grey, medium strength, unweathered.**	1	B	F	C	RU						1	92	45	80	Grey
115.9							C	RU										
			Discontinuities: bedding joints are rough planar to smooth undulating and at wide to very close intervals.															
115.8	6								NC	50 mm								
115.7			**Vertical fractures were noted at ~5.1 m, 5.2 m, 5.4 m, 6.7 m, 7.5 m, 8.2 m, 9.1 m, 9.5 m, 9.8 m and 13.6 m.**															
115.6																		
115.5																		
115.5			**A clay till (3%) layer, heavily weathered, very low strength were noted at ~5.3 m, 5.4 m, 5.7 m, 6.1 m and 7.0 m.**															
115.4																		
115.3			**Probably a lost clay or rubble layer were noted at ~8.5 m (530 mm)**															
115.3																		
115.2																		
115.1			Rubble layers was noted at ~5.6 m (60 mm), 6.6 m (100 mm), 6.9 m (110 mm), 8.5 m (60 mm) and 9.3 m (100 mm).		F	V												
115.1																		
115.0																		
115.0	7								NC	90 mm								
114.9																		
114.8																		
114.7																		
114.6				1	B	F	VC	RU						2	90	44	80	Grey
							C	RP										
114.4					F	V												
114.2																		
114.0																		
113.9																		
113.8	8																	
					F	V												

EXP_ROCKCORE_ROCK_LOG_22022660_B.GPJ_CORE_LOG.GDT 4/16/25

exp.

ROCK CORE LOG

BH 25-2

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	121.8	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/18/25	03/18/25	D. Panchal	9
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	2 of 3

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
113.3																		
113.3			Core Lost Possible Shale Rubble Layer low recovery possibly due to clay being washed out	1	B	F	C C	RP RP						3	62	17	60	Grey
	9																	
112.7					F	V												
112.6																		
112.5																		
112.4																		
112.4																		
112.3					F	V												
112.3																		
112.1					F	V												
112.0																		
111.9																		
	10																	
111.4				1	B	F	C M	RP SP						4	100	90	100	Grey
111.4																		
	11																	
110.6																		
110.5																		
				1	B	F	C C	SP SP						5	100	88	100	Grey
109.8	12																	
109.7																		
109.5																		
109.4																		

exp.

ROCK CORE LOG

BH 25-2

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	121.8	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/18/25	03/18/25	D. Panchal	9
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	3 of 3

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
109.2																		
	13			1	B	F	M	SP						6	100	95	100	Grey
108.3							M	SP										
108.2					F	V												
108.0																		
107.9																		
107.8	14																	
107.6																		
107.5																		
107.4																		
107.3																		
107.1																		
107.0				1	B	F	W	SP						7	100	100	100	Grey
106.9							W	SP										
	15																	
106.7																		
106.5																		
106.5																		
106.4			End of Borehole at 15.4 m															
	16																	

EXP_ROCKCORE_ROCK_LOG_22022660_B.GPJ CORE_LOG.GDT 4/16/25

exp.

Log of Borehole 25-3

Project No. BRM-22022660-B0 | Drawing No. 10

Project: Geotechnical Investigation | Sheet No. 1 of 2

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: March 25, 2025

Drill Type: Hollow Stem Auger / Rock Coring

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

Soil Description	ELEV. m
	124.04
TOPSOIL: ~150 mm	~123.9
FILL: sand to clayey silt, trace gravel, some sand, brown to dark brown, moist.	
auger grinding	
	~119.8
SHALE BEDROCK: Georgian Bay Formation, grey. **Refer to Rock Core Logs**	

SPT (N Value): 11, 12, 28, 9, 6, 50/50mm

Shear Strength (kPa)

Combustible Vapour Reading (ppm)

Natural Moisture Content % / Atterberg Limits (% Dry Weight)

Continued Next Page

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	5.24	
April 21, 2025	5.68	

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Log of Borehole 25-3

Project No. BRM-22022660-B0 Drawing No. 10

Project: Geotechnical Investigation Sheet No. 2 of 2

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) 20 40 60 80 / Shear Strength kPa 100 200	Combustible Vapour Reading (ppm) 25 50 75 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 10 20 30	Sample	Natural Unit Weight kN/m³
			114.04	10				
				11				
				12				
				13				
				14				
				15				
				16				
				17				
				18				
			~105.6					
		END OF BOREHOLE Note: 1. A 50 mm dia. monitoring well was installed in the borehole.						

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	5.24	
April 21, 2025	5.68	

exp.

ROCK CORE LOG

BH 25-3

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	124.0	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/25/25	03/26/25	D. Panchal	10
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	1 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
119.5			See Borehole Log for Details															
119.2			**GEORGIAN BAY FORMATION**															
119.1	5			1	B	F	C C	RU RU						1	88	50	85	Grey
119.0			**Shale with interbedded siltstone, and clay layers.**															
118.8			**Shale (71%) thinly bedded or laminated, grey, low strength, alternating between heavily and slightly weathered to 6.5 m and between moderately weathered and unweathered below.**															
118.8																		
118.7									T	20 mm								
118.7			**Limestone (13%) fine grained, grey, medium strength, unweathered**															
118.4			**Siltstone (15%) fine grained, grey, medium strength, unweathered.**															
118.1			**Discontinuities: bedding joints are rough planar to smooth undulating and at wide to very close intervals.**	1	B	F	C M	RU RP						2	100	77	100	Grey
118.0	6		**Vertical fractures were noted at ~6.8 m, 7.2 m, 8.2 m, 14.6 m.**															
117.9									NC	50 mm								
117.8			**A clay till (1%) layer, heavily weathered, very low strength were noted at ~5.4 m and 6.1 m.**															
117.7			**Rubble layers was noted at ~5.1 m (130 mm).**															
117.6																		
117.5																		
117.3					F	V												
117.2																		
116.8	7				F	V												
116.7				1	B	F	C M	RP SU						3	100	90	100	Grey
116.5																		
116.5																		
116.4																		
116.2																		
115.9	8				F	V												
115.9																		
115.7																		

exp.

ROCK CORE LOG

BH 25-3

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	124.0	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/25/25	03/26/25	D. Panchal	10
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	2 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
115.5																		
115.3																		
115.1				1	B	F	C M	SU SU						4	97	91	100	Grey
115.0	9																	
114.5																		
114.4																		
114.1																		
114.0	10																	
113.8																		
113.6				1	B	F	W	SP						5	100	100	100	Grey
113.6							W	SP										
113.5																		
112.9	11																	
112.9																		
112.8																		
112.7																		
112.6																		
112.5																		
112.0	12													6	100	100	100	Grey
111.9																		

ROCK CORE LOG

BH 25-3

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	124.0	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/25/25	03/26/25	D. Panchal	10
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	3 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
111.4																		
111.3																		
111.1																		
111.0	13																	
				1	B	F	W W	SP SP						7	100	100	100	Grey
110.3																		
110.2																		
	14																	
109.4																		
109.3																		
109.2					F	V												
109.2																		
	15			1	B	F	M M	SU SP						8	98	98	100	Grey
108.1																		
108.1	16																	
107.9																		
107.7																		

EXP_ROCKCORE_ROCK_LOG_22022660_B.GPJ CORE_LOG.GDT 4/16/25

exp.

ROCK CORE LOG

BH 25-3

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	124.0	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/25/25	03/26/25	D. Panchal	10
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	4 of 4

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
107.5				1	B	F	W W	SP SP						9	100	100	100	Grey
107.1																		
107.1	17																	
106.8																		
106.7																		
106.6																		
106.5																		
106.2				1	B	F	W W	SP SP						10	100	100	100	Grey
106.2	18																	
105.6			End of Borehole at 18.5 m															
	19																	
	20																	

exp.

Log of Borehole 25-4

Project No. BRM-22022660-B0 | Drawing No. 11

Project: Geotechnical Investigation | Sheet No. 1 of 2

Location: 1970&1980 Fowler Drive, Mississauga, Ontario

See Borehole Location Plan

Date Drilled: March 21, 2025

Drill Type: Hollow Stem Auger / Rock Coring

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 ▲

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
		TOPSOIL: ~150 mm	123.87 ~123.7	0	14			
		FILL: sand and gravel to silty sand, trace silt, brown, moist.		1	6			
				2	4			
				2	50/50mm			
		---------- auger grinding		3				
			~120.2	4	50/125mm			
		SILTY CLAY TILL/SHALE COMPLEX: trace sand, trace gravel, containing shale fragments, grey moist, hard		4	50/40mm			
			~119.3	5				
		SHALE BEDROCK: Georgian Bay Formation, grey. **Refer to Rock Core Logs**		6				
				7				
				8				
				9				
				10				

SPT (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

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Continued Next Page

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	7.76	
April 21, 2025	8.66	

Log of Borehole 25-4

Project No. BRM-22022660-B0 Drawing No. 11

Project: Geotechnical Investigation Sheet No. 2 of 2

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) 20 40 60 80 / Shear Strength kPa 100 200	Combustible Vapour Reading (ppm) 25 50 75 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 10 20 30	Sample	Natural Unit Weight kN/m³
			113.87	10				
				11				
				12				
				13				
				14				
				15				
			~108.1					
		END OF BOREHOLE						

Note:
1. A 50 mm dia. monitoring well was installed in the borehole.

EXPLOGBRAMPTON FOWLER DRIVE-BHLOGS_JW.GPJ NEW.GDT 4/22/25

Date	Water Level (m)	Hole Open to (m)
April 11, 2025	7.76	
April 21, 2025	8.66	

ROCK CORE LOG

BH 25-4

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	123.9	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/24/25	03/25/25	D. Panchal	11
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	1 of 3

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
119.1																		
	5		See Borehole Log for Details															
118.5																		
			Core Lost Possible Shale Rubble Layer low recovery possibly due to clay being washed out															
118.3			**GEORGIAN BAY FORMATION**															
118.2			**Shale with interbedded siltstone, and clay layers.**															
117.9	6		**Shale (71%) thinly bedded or laminated, grey, low strength, alternating between heavily and slightly weathered to 6.5 m and between moderately weathered and unweathered below.**	1	B	F	C C	RU RU						1	82	60	80	Grey
117.7					F	V												
117.7			**Limestone (13%) fine grained, grey, medium strength, unweathered**						NC	30 mm								
117.7																		
117.6			**Siltstone (15%) fine grained, grey, medium strength, unweathered.**															
117.3			**Discontinuities: bedding joints are rough planar to smooth undulating and at wide to very close intervals.**		F	V												
117.3																		
117.2			**Vertical fractures were noted at ~6.8 m, 7.2 m, 8.2 m, 14.6 m.**															
117.1																		
116.9			**A clay till (1%) layer, heavily weathered, very low strength were noted at ~5.4 m and 6.1 m.**		F	V												
116.9	7																	
116.8			**Rubble layers was noted at ~5.1 m (130 mm).**		F	V												
116.7																		
116.6									NC	50 mm								
116.6																		
116.6				1	B	F	C M	RU RP						2	100	55	90	Grey
116.5																		
116.4																		
116.4																		
116.0																		
116.0																		
115.9	8																	
115.8																		
115.7																		
115.6																		
115.5					F	V												
115.4																		
115.3																		
115.2																		

EXP_ROCKCORE_ROCK_LOG_22022660_B.GPJ CORE_LOG.GDT 4/16/25

exp.

ROCK CORE LOG

BH 25-4

PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	123.9	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/24/25	03/25/25	D. Panchal	11
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	2 of 3

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
114.9				1	B	F	C	RP						3	100	87	100	Grey
114.9	9						M	RP										
114.7					F	V												
114.7																		
114.5																		
114.5																		
114.1																		
114.0																		
	10																	
113.7																		
113.6																		
				1	B	F	M	RP						4	100	98	100	Grey
							M	SP										
113.2																		
113.2																		
113.1																		
113.0																		
	11																	
112.7					F	V												
112.4																		
112.2																		
112.1																		
	12			1	B	F	C	RP						5	96	89	100	Grey
111.8							W	SP										
111.8																		
111.3																		
111.2																		

EXP_ROCKCORE_ROCK_LOG_22022660_B.GPJ CORE_LOG.GDT 4/16/25

exp.

ROCK CORE LOG

BH 25-4

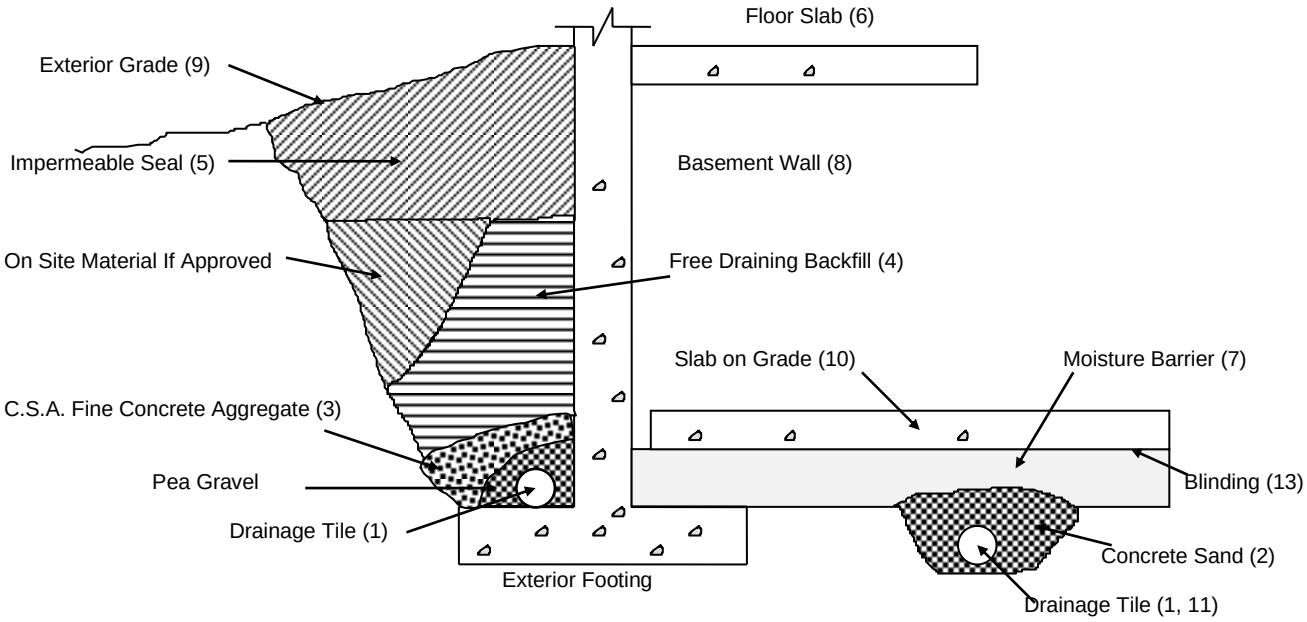
PROJECT	ORIENTATION	ELEVATION (m)	DATUM	PROJECT NUMBER
Supplementary Geotechnical Investigation	Vertical	123.9	Geodetic	BRM-22022660-B0
LOCATION	**DATE STARTED**	**COMPLETED**	**LOGGED BY**	**DRAWING NUMBER**
1970 & 1980 Fowler Drive, Mississauga	03/24/25	03/25/25	D. Panchal	11
CLIENT	**DRILLER**	**DRILL TYPE**	**CORE BARREL**	**SHEET**
Starlight Development	DBW	CME Track Mount	HQ	3 of 3

ELEVATION (m)	DEPTH (m)	SYMBOL	GENERAL DESCRIPTION	JOINT CHARACTERISTICS: NO. OF SETS	JOINT TYPE	ORIENTATION	SPACING	ROUGHNESS	FILLING	APERTURE (mm)	WEATHERING	STRENGTH	FRACTURE FREQUENCY	RUN NUMBER	RECOVERY (%)	RQD	WATER RECOVERY (%)	WATER COLOUR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
110.4	13																	
110.4				1	B	F	W W	SP SP						6	100	100	100	Grey
109.7	14																	
109.7																		
109.5																		
109.4																		
109.3																		
109.1																		
109.1																		
108.8	15																	
108.8				1	B	F	M M	SP SP						7	100	97	100	Grey
108.1			End of Borehole at 15.8 m															
	16																	

EXP_ROCKCORE_ROCK_LOG_22022660_B.GPJ CORE_LOG.GDT 4/16/25

exp.

Project: BRM-22022660-B0 **Drawing No. 12**



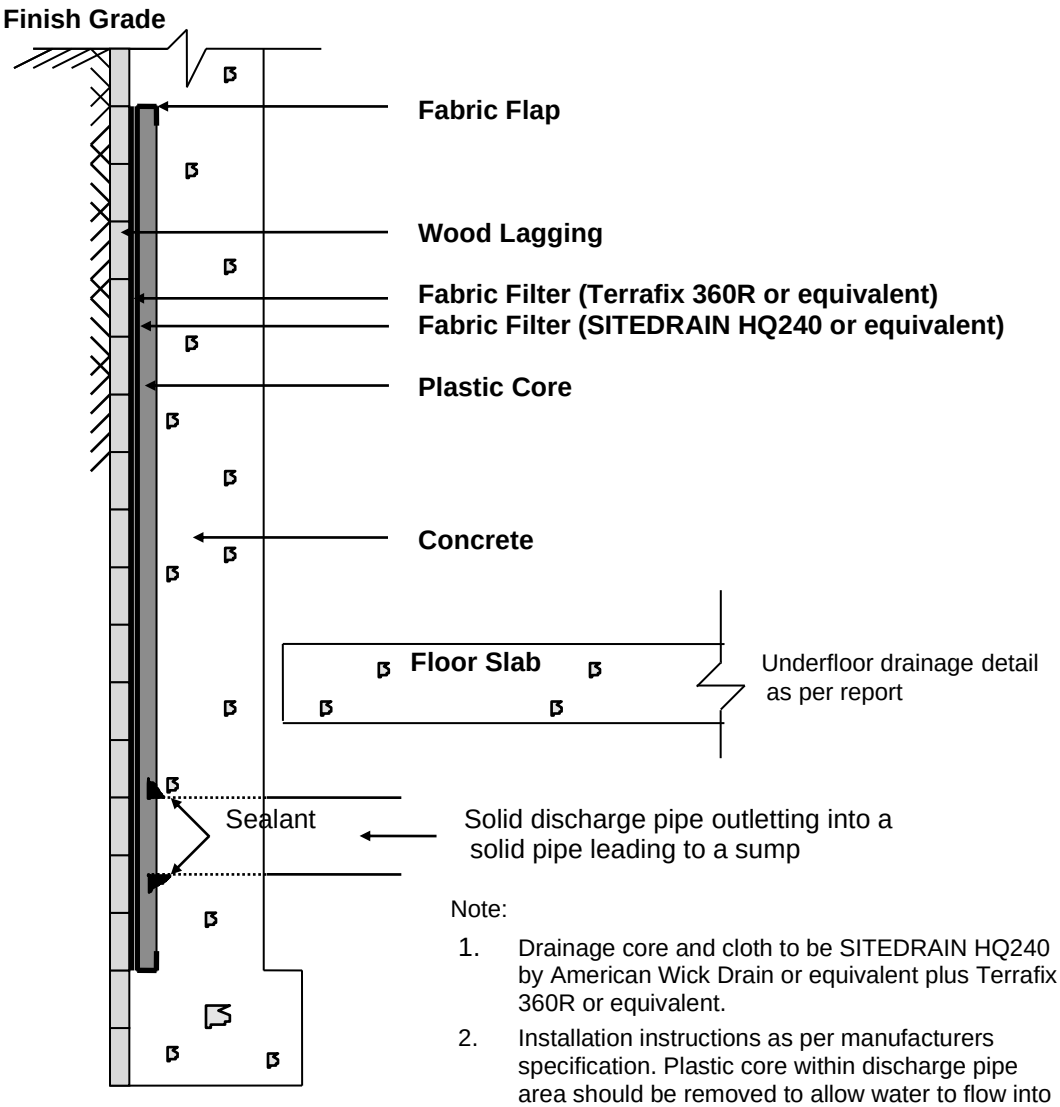
Notes:

1. Drainage tile to consist of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet.
2. Concrete sand - 150 mm (6") top and side of drain. If drain is not on footing, place 100 mm (4 inches) of pea gravel below drain. 20 mm (3/4") clear stone is an alternative provided it is surrounded by an approved filter fabric (Terrafix 600R or equivalent).
3. C.S.A. fine concrete aggregate to act as filter material. Minimum 300 mm (12") top and side of tile drain. This may be replaced by an approved filter fabric as indicated in (2).
4. Free Draining backfill - OPSS Granular B or equivalent compacted to the specified density. Do not use heavy compaction equipment within 450 mm (18") of the wall. Use hand controlled light compaction equipment within 1.8 m (6') of wall.
5. Impermeable backfill seal - compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted.
6. Do not backfill until wall is supported by basement and floor slabs or adequate bracing.
7. Moisture barrier to be at least 200 mm (8") of compacted clear 20 mm (3/4") stone.
8. Basement wall to be damp-proofed or waterproofed as per report.
9. Exterior grade to slope away from building.
10. Slab on grade should not be structurally connected to the wall or footing.
11. Underfloor drain invert to be at least 300 mm (12") below underside of floor slab. Drainage tile placed in parallel rows 6 to 8 m (20 to 25') centres one way. Place drain below subgrade with 150 mm (6") of concrete sand on top and sides.
12. Do not connect the underfloor drains to perimeter drains.
13. If the 20 mm (3/4") stone requires surface blinding, use 6 mm (1/4") clear stone chips.

DRAINAGE AND BACKFILL RECOMMENDATIONS
BASEMENT WITH UNDERFLOOR DRAINAGE

(not to scale)

Project: BRM-22022660-B0 **Drawing No. 13**



Note:

1. Drainage core and cloth to be SITEDRAIN HQ240 by American Wick Drain or equivalent plus Terrafix 360R or equivalent.
2. Installation instructions as per manufacturers specification. Plastic core within discharge pipe area should be removed to allow water to flow into discharge pipe.
3. To be full width unless otherwise recommended by the engineer.
4. Final detail must be approved before system is considered acceptable.
5. SITEDRAIN HQ240 should be kept a minimum of 1.2 m below exterior finished grade.
6. The solid discharge pipes should be located in the middle of each solider pile bay.

SUGGESTED EXTERIOR DRAINAGE AGAINST SOLDIER PILE AND LAGGING SHORING SYSTEM

APPENDICES

APPENDIX A

Rock Lab Testing Results

Table - Results of Point Load Index Strength Tests (Georgian Bay Formation)

BH No.	Run No.	Loading	Oil Pressure (kPa)	Force P (kN)	Distance D (mm)	De (mm)	Rock Type	Is (kPa)	F	Point Load Index $I_{S(50)}$ (MPa)	Approximate Uniaxial Compressive Strength (MPa)*
BH1	Run5	Diametral	300	0.3	62.00	62	Shale	78	1.11	0.1	1
		Axial	3980	3.8	41.00	57		1170	1.07	1.2	16
BH1	Run6	Diametral	1340	1.3	62.00	62	Shale	338	1.11	0.4	5
		Axial	2860	2.8	50.00	63		705	1.12	0.8	10

*UCS ≈ 12.6 $Is_{(50)}$ [MPa] for Shale/Limy Shale;

UCS ≈ 24 Is(50) [MPa] for Limestone/Siltstone

Force P = Pressure (kPa) X Ram Area (0.000967 m^2)

Is (kPa) = P/(De/1000)^2

Is(50) = F X Is

where F = sqrt (De/50)

Table - Results of Point Load Index Strength Tests (Georgian Bay Formation)

BH No.	Depth	Loading	Oil Pressure (kPa)	Force P (kN)	Distance D (mm)	De (mm)	Rock Type	Is (kPa)	F	Point Load Index $I_{S(50)}$ (MPa)	Approximate Uniaxial Compressive Strength (MPa)*
BH25-2	13.72	Diametral	400	0.4	63.00	63.0	Limy Shale	97	1.12	0.1	1.4
		Axial	9490	9.2	38.00	55.2		3011	1.05	3.2	39.9
BH25-4	13.41	Diametral	210	0.2	63.00	63.0	Shale	51	1.12	0.1	0.7
		Axial	3670	3.5	32.00	50.7		1383	1.01	1.4	17.5

*UCS ≈ 12.6 $Is_{(50)}$ [MPa] for Shale/Limy Shale;

UCS ≈ 24 Is(50) [MPa] for Limestone/Siltstone

Force P = Pressure (kPa) x Ram Area (0.000967 m^2)

Is (kPa) = P/(De/1000)^2

Is(50) = F x Is

where F = sqrt (De/50)

exp Services Inc.
1595 Clark Boulevard
Brampton, Ontario, L6T 4V1
Tel: (905) 793-9800
Fax: (905) 793-0641
www.exp.com

Rock Core Test
UCS

Project No.: GTR-22022660-A0 **Project Name:** 1970 & 1980 Fowler Dr.

Uniaxial Compressive Strength of Intact Rock Core Specimens

Core No.	BH1 R5				
Depth (m)	10.59				
Date Sampled	N/A				
Date Received	June 26th, 2023				
Date Tested	June 27th, 2023				
Lithology	N/A				
Length - (mm)	128.0				
Average Diameter - (mm)	63.0				
L/D Ratio	2.03				
Rate of Loading (MPa/Sec)	0.30				
Uniaxial Compressive Strength - (MPa)	**76.2**				
Moisture Condition at Time Of Test	Dry				
Remarks	Tested by E.Jageshur				

Tested in accordance with ASTM D3967, unless otherwise indicated.

E Jageshur

Testing Laboratory Representative Signature
Eric Jageshur - Concrete Supervisor

June 28th, 2023

Date

Exp Services Inc.
Brampton Laboratory
1595 Clark Boulevard, Brampton ON L6T4V1
Tel: (905) 793 - 9800
Fax: (905)793-0641
www.exp.com

Standard Test Method for Compressive Strength & Elastic Moduli of Intact Rock Core Specimens Under Varying States of Stress & Temperature
ASTM D7012 "Method C"

Project No.: BRM-22022660-B0 **Project Name:** 1980 Fowler Dr.

Test Results

Uniaxial Compressive Strength of Intact Rock Core Specimens

Core No.	BH25 - 1 R8	BH25 - 1 R10				
Depth (m)	16.46 - 16.57	17.34 - 17.50				
Date Sampled	N/A					
Date Received	April 2, 2025					
Date Tested	April 4, 2025					
Lithology	N/A					
Length (mm)	121.0	122.0				
Average Diameter - (mm)	60.0					
L/D Ratio	2.02	2.03				
Rate of Loading (MPa/Sec)	0.30					
Uniaxial Compressive Strength - (MPa)	**48.9**	**65.1**				
Moisture Condition at Time of Test	Dry					

*Tests in accordance with D7012 "Method C", unless otherwise indicated.

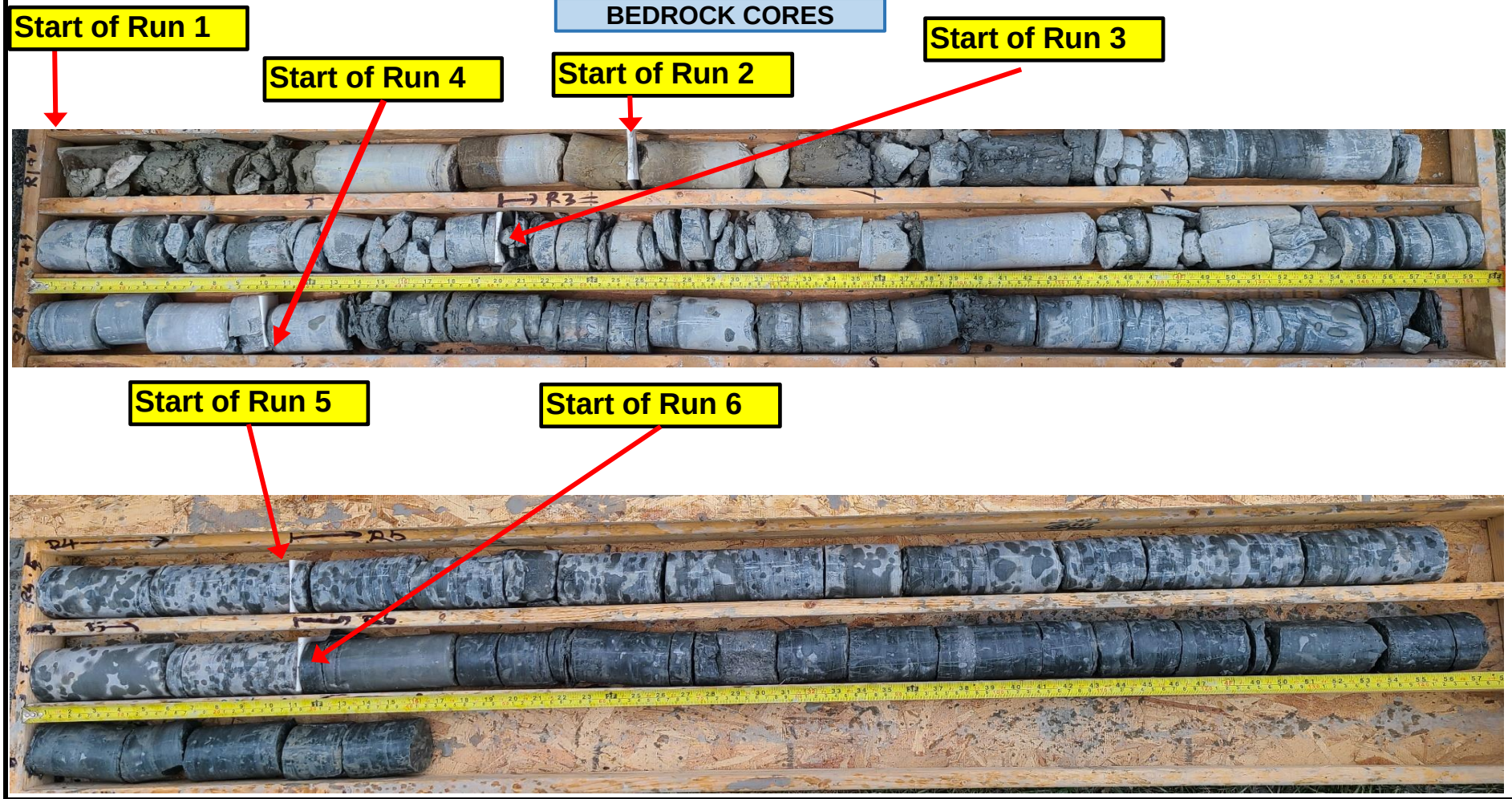
E Jageshur
Testing Laboratory Approving Supervisor
Eric Jageshur - Concrete Supervisor

April 4, 2025
Date

APPENDIX B

Rock Core Photographic

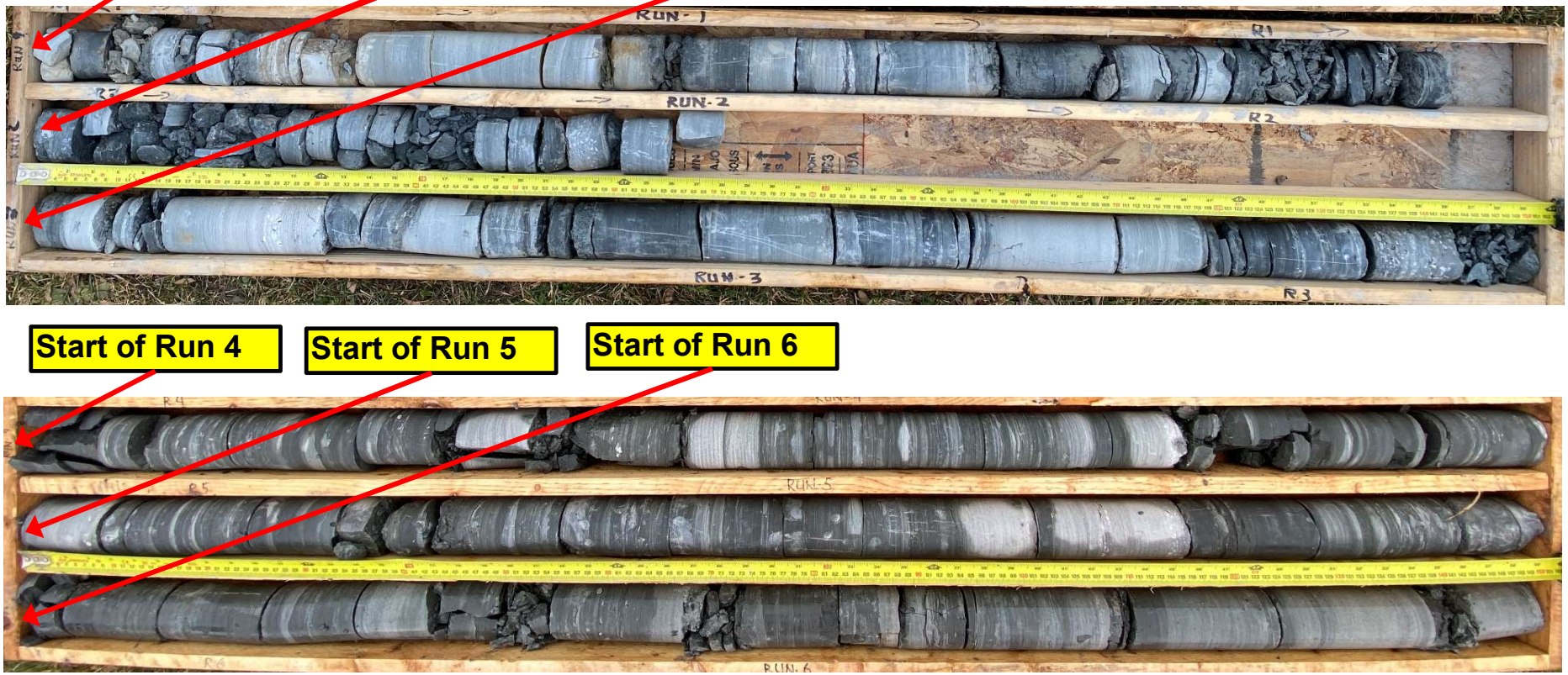
BEDROCK CORES



EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
Borehole 1	Run 1 to 6: 3.84 - 12.4 m	Location: 1970 & 1980 Fowler Drive, Mississauga	GTR-22022660-A0
date cored		Rock Core Photographs	FIG 1
Jun 23, 2023			

BEDROCK CORES



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2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-1	Run 1 to 3: 5.08 - 9.50 m Run 4 to 6: 9.50 - 14.07 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 2
Mar 19, 2025			

BEDROCK CORES

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2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-1	Run 7 to 9: 14.07 - 18.54 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 3
Mar 19, 2025			

BEDROCK CORES

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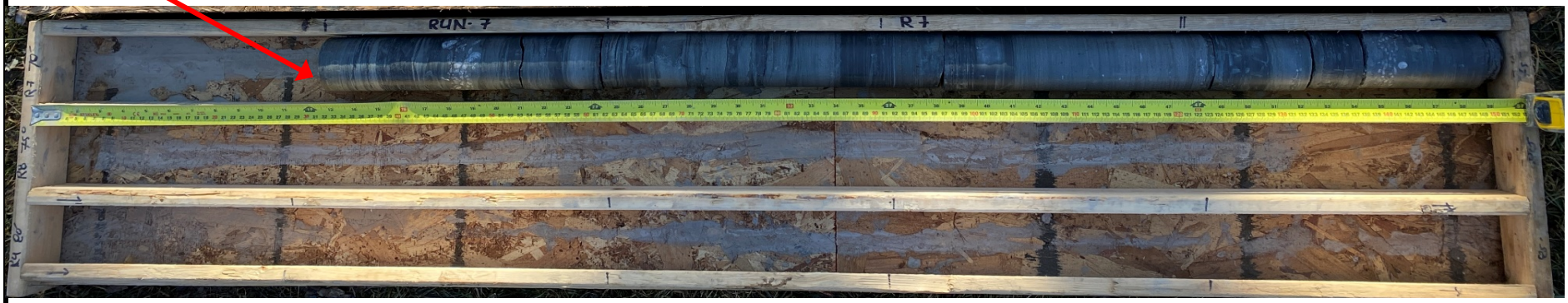
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-2	Run 1 to 3: 5.00 - 9.60 m Run 4 to 6: 9.60 - 14.20 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 4
Mar 18, 2025			

BEDROCK CORES



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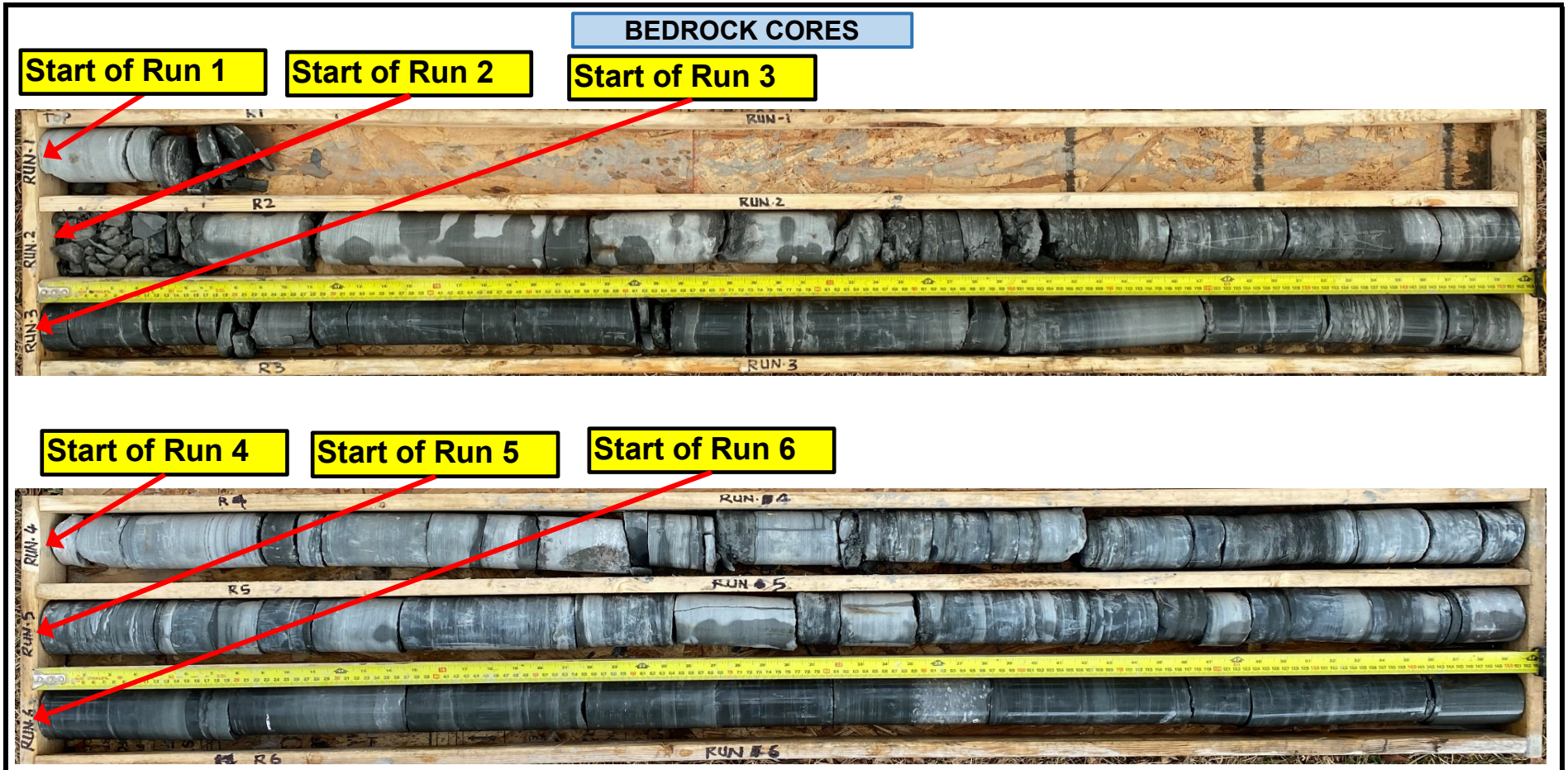
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-2	Run 7: 14.20 - 15.42 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 5
Mar 18, 2025			

BEDROCK CORES



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2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-3	Run 1 to 3: 4.88 - 8.13 m Run 4 to 6: 8.13 - 12.70 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 6
Mar 26, 2025			

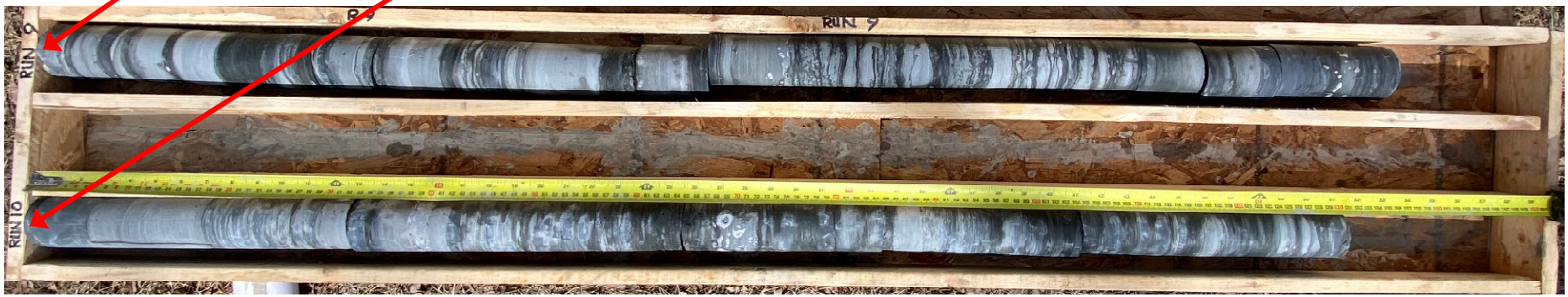
BEDROCK CORES

Start of Run 7

Start of Run 8

Start of Run 9

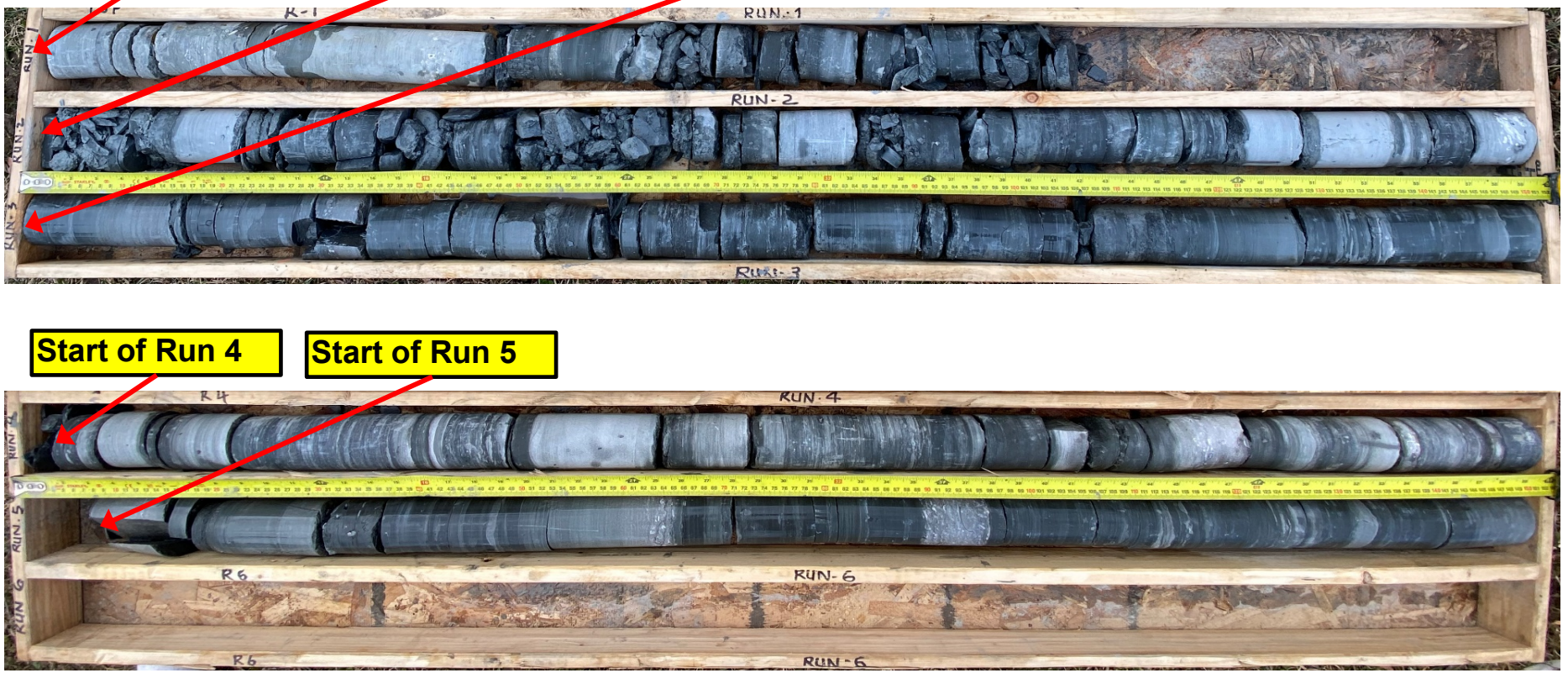
Start of Run 10



EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-3	Run 7 to 8: 12.70 - 15.80 m Run 4 to 6: 15.80 - 18.49 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 7
Mar 26, 2025			

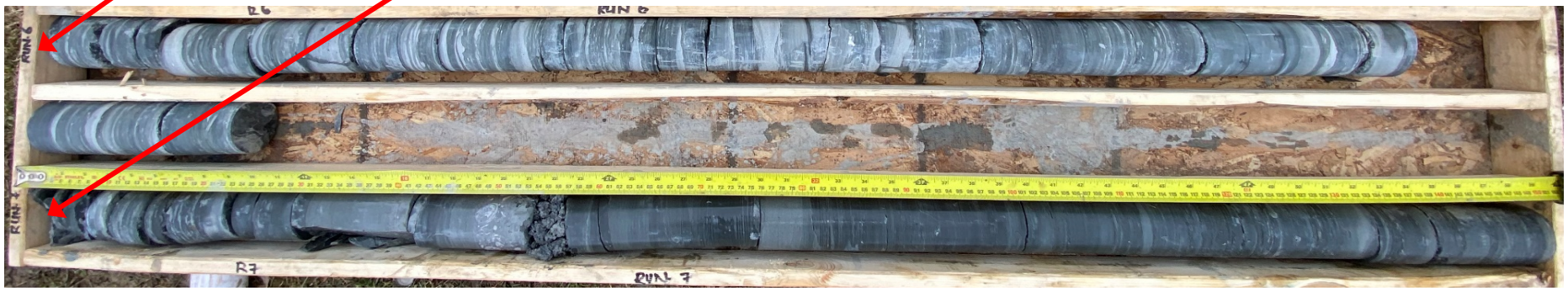
BEDROCK CORES



EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-4	Run 1 to 3: 5.33 - 9.65 m Run 4 to 5: 9.65 - 12.70 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 8
Mar 24, 2025			

BEDROCK CORES



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t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

borehole no.	core runs	project	project no.
BH 25-4	Run 6 to 7: 12.70 - 15.82 m	Location: 1970 & 1980 Fowler Drive, Mississauga	BRM-22022660-B0
date cored		Rock Core Photographs	FIG 9
Mar 24, 2025			

APPENDIX C

Certificates of Analyses

Your Project #: GTR-22022660-A0
Site Location: 1970 & 1980 FOWLER DRIVE, MISSISSAUGA, ON
Your C.O.C. #: N/A

Attention: Jack Li

exp Services Inc
Brampton Branch
1595 Clark Blvd
Brampton, ON
CANADA L6T 4V1

Report Date: 2023/07/06
Report #: R7703364
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3J1752
Received: 2023/06/29, 12:00

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
pH CaCl2 EXTRACT	1	2023/07/05	2023/07/05	CAM SOP-00413	EPA 9045 D m
Sulphate (20:1 Extract)	1	2023/07/06	2023/07/06	CAM SOP-00464	MOE E3013 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: GTR-22022660-A0
Site Location: 1970 & 1980 FOWLER DRIVE, MISSISSAUGA, ON
Your C.O.C. #: N/A

Attention: Jack Li

exp Services Inc
Brampton Branch
1595 Clark Blvd
Brampton, ON
CANADA L6T 4V1

Report Date: 2023/07/06
Report #: R7703364
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3J1752
Received: 2023/06/29, 12:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Patricia Legette, Project Manager
Email: Patricia.Legette@bureauveritas.com
Phone# (905)817-5799

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3J1752
Report Date: 2023/07/06

exp Services Inc
Client Project #: GTR-22022660-A0
Site Location: 1970 & 1980 FOWLER DRIVE, MISSISSAUGA, ON
Sampler Initials: JL

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		WGF372		
Sampling Date		2023/06/27 15:00		
COC Number		N/A		
	UNITS	**BH1 SS4**	**RDL**	**QC Batch**
Inorganics				
Available (CaCl2) pH	pH	7.71		8768951
Soluble (20:1) Sulphate (SO4)	ug/g	<20	20	8771696

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3J1752
Report Date: 2023/07/06

exp Services Inc
Client Project #: GTR-22022660-A0
Site Location: 1970 & 1980 FOWLER DRIVE, MISSISSAUGA, ON
Sampler Initials: JL

TEST SUMMARY

Bureau Veritas ID: WGF372
Sample ID: BH1 SS4
Matrix: Soil

Collected: 2023/06/27
Shipped:
Received: 2023/06/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	8768951	2023/07/05	2023/07/05	Surinder Rai
Sulphate (20:1 Extract)	KONE/EC	8771696	2023/07/06	2023/07/06	Massarat Jan

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.0°C

Results relate only to the items tested.

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Bureau Veritas Job #: C3J1752
Report Date: 2023/07/06

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: GTR-22022660-A0
Site Location: 1970 & 1980 FOWLER DRIVE, MISSISSAUGA, ON
Sampler Initials: JL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8768951	Available (CaCl2) pH	2023/07/05			100	97 - 103			0.56	N/A
8771696	Soluble (20:1) Sulphate (SO4)	2023/07/06	94	70 - 130	92	70 - 130	<20	ug/g	2.8	35

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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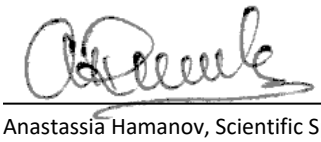
Bureau Veritas Job #: C3J1752
Report Date: 2023/07/06

exp Services Inc
Client Project #: GTR-22022660-A0
Site Location: 1970 & 1980 FOWLER DRIVE, MISSISSAUGA, ON
Sampler Initials: JL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

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6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD

ENV COC - 00014v3

Invoice Information		Report Information (if differs from invoice)		Project Information	
Invoice to (requires report) ☐					
Company:	EXP Services Inc.	Company:		Quotation #:	Stream 3
Contact Name:	Jack Li	Contact Name:		P.O. #/ AFE#:	
Street Address:	1595 Clark Boulevard	Street Address:		Project #:	GTR-22022660-A0
City:	Brampton Prov: ON Postal Code: L6T 4V1	City: Prov: Postal Code:		Site #:	
Phone:	416-319-5773	Phone:		Site Location:	1970&1980 Fowler Drive, Mississauga
Email:	jack.li@exp.com	Email:		Site Location Province:	ON
Copies:		Copies:		Sampled By:	Jack Li

IOVA-06-442

Regulatory Criteria

REG 153: ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table ____ ☐ Res/Park ☐ Ind/Comm ☐ Agri/other ☐ Med/Fine ☐ Course ☐ For RSC

OTHER: ☐ CME ☐ Reg 406, Table: ____ ☐ SUB* ☐ Sanitary Sewer Bylaw ☐ *min 3 day TAT ☐ Storm Sewer Bylaw ☐ MISA ☐ Municipality ____ ☐ WQO ☐ Other: ____

Include Criteria on Certificate of Analysis (check if yes): ☐

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 BTEX/ F1	5 F2 - F4	6 VOCs	7 Reg 153 metals and inorganics	8 Reg 153 ICPMS metals	9 Reg 153 metals (Hg, Cr VI, ICPMS metals, HWS - B)	10 pH & Sulphate	11	12	13	14	15	16	17	18	19	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE
1	BH1 SS4	23	06	27	15	00	Soil										V											1
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Regular Turnaround Time (TAT)

☑ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply

☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

Comments

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present		✓	4	3	7	
Seal intact		✓				
Cooling media present	✓					

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

Temperature reading by:

Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special Instructions
1 Jack Li	23	06	28	15	00	1 Mrad NIRAL PATEL	2023	06	29	12	00	
2						2						

www.BVNA.com

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD

ENV COC - 00014v3

Invoice Information		Report Information (if differs from invoice)		Project Information	
Invoice to (requires report) ☐					
Company:	EXP Services Inc.	Company:		Quotation #:	Stream 3
Contact Name:	Jack Li	Contact Name:		P.O. #/ AFE#:	
Street Address:	1595 Clark Boulevard	Street Address:		Project #:	GTR-22022660-A0
City: Brampton Prov: ON Postal Code:	L6T 4V1	City: Prov: Postal Code:		Site #:	IIOVA-06-442
Phone:	416-319-5773	Phone:		Site Location:	1970&1980 Fowler Drive, Mississauga
Email:	jack.li@exp.com	Email:		Site Location Province:	ON
Copies:		Copies:		Sampled By:	Jack Li

C3J1752

Regulatory Criteria

REG 153: ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table _____ ☐ Res/Park ☐ Ind/Comm ☐ Agri/other ☐ Med/Fine ☐ Course ☐ For RSC

OTHER: ☐ CCME ☐ Reg 558* ☐ *min 3 day TAT ☐ MISA ☐ PWQO ☐ Reg 406, Table: _____ ☐ Sanitary Sewer Bylaw ☐ Storm Sewer Bylaw Municipality _____ ☐ Other: _____

Include Criteria on Certificate of Analysis (check if yes): ☐

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 BTEX/ F1	5 F2 - F4	6 VOCs	7 Reg 153 metals and inorganics	8 Reg 153 ICPMS metals	9 Reg 153 metals (Hg, Cr VI, ICPMS metals, HWS - B)	10 pH & Sulphate	11	12	13	14	15	16	17	18	19	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Comments
1	BH1 SS4	23	06	27	15	00	Soil										v											1		
2																														
3																														
4																														
5																														
6																														
7																														
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Regular Turnaround Time (TAT)

☑ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply

☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

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LAB USE ONLY	Yes	No	°C	1	2	3
Seal present		✓				
Seal intact		✓				
Cooling media present	✓			7	3	7

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

Temperature reading by:

	Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM
1	Jack Li	23	06	28	15	00	NIRAL PATEL	2023	06	29	12	00
2												

Special instructions