Geotechnical Investigation
Proposed Bus Drop-Off Lane
Vincent Massey Public School
745 Smyth Road
Ottawa, Ontario

Client:
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Type of Document:

Project Number:
OTT-00245378-S0

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December 22, 2020

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1. Introduction

EXP Services Inc. (EXP) is pleased to present the results of the geotechnical investigation recently completed for the proposed bus drop-off lane at Vincent Massey Public School situated at 745 Smyth Road, Ottawa, Ontario (Figure 1). Terms and conditions of this assignment were outlined in EXP Services Inc. (EXP) proposal number: 245378-S0 dated October 26, 2020. This work was authorized by the Ottawa Carleton District School Board via PO 333210019586 and was completed under standing agreement number: 18-007.

It is understood that the proposed bus drop-off lane will be constructed on the maintained green area on the south side of the property between the school building and Smyth Road. Topographic plan of survey of the property by Farley, Smith and Denis Surveying Ltd. Dated September 10, 2020 was provided to EXP. Final grading plans were not available at the time of this report preparation.

This geotechnical investigation was undertaken to:

a) Establish the subsurface soil and groundwater conditions at the four (4) borehole locations on the site;

b) Discuss grade raise restrictions;

c) Discuss excavation conditions and dewatering requirements during construction of the proposed bus drop-off lane;

d) Discuss pipe bedding and cover requirements for underground services;

e) Comment on backfilling requirements and suitability of the on-site soils for backfilling purposes;

f) Recommend pavement structure thickness for the proposed bus drop-off lane; and,

g) Comment on subsurface concrete requirements and the corrosion potential of subsurface soils to buried metal structures/members.

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

2. Site Description

The proposed Bus Drop-off lane will be located on the south side of the property in a maintained green land with grass and few trees and would provide access to busses from Smyth Road. The ground surface is generally flat with geodetic elevations ranging between 75.9 m and 75.5 m at the borehole locations.

The top of catch basins situated along the northern edge of Smyth Road varied from Elevation 75.21 m to 76.2 m.

3. Procedure

The fieldwork for the geotechnical investigation was completed on November 18, 2020 and consists of four (4) boreholes; Borehole Nos. 1 to 4 advanced to depths ranging between 3.7 m and 4.3 m below the existing ground surface (Elevations 72.2 m to 71.2 m). The boreholes were drilled using a truck-mounted drill rig operated by drilling specialists subcontracted to EXP. The borehole fieldwork was supervised on a full-time basis by a representative of EXP.

The locations of the boreholes were established in the field by EXP and cleared of any underground services by USL-1 cable locator. Their elevations were estimated from a topographic survey plan of prepared by Farley, Smith and Denis Surveying Ltd. dated September 10, 2020 and therefore are considered approximate. The locations and estimated geodetic elevations of the boreholes are shown on Figure 2.

Standard penetration tests (SPTs) were performed in the boreholes at 0.75 m depth intervals and soil samples were retrieved by the split-barrel sampler. Penetrometer tests were carried out in the cohesive soil to establish the undrained shear strength.

A 19 mm diameter standpipe was installed in Borehole No. 3 for long-term monitoring of the groundwater level. The standpipe was installed in accordance with EXP standard practice and the installation configuration is documented on the respective borehole log. The boreholes were backfilled upon completion of the drilling and the installation of the standpipe.

All soil samples were visually examined in the field for textural classification, logged, preserved in plastic bags and identified. On completion of the fieldwork, all the soil samples were transported to the EXP laboratory in Ottawa, Ontario, where they were visually examined by a geotechnical engineer and the borehole log was prepared. The engineer also assigned the laboratory testing which consisted of performing the following tests on the soil samples:

Natural Moisture Content.....21 Tests

Natural Unit Weights.....5 Tests

Grain Size Analysis.....3 Tests

Atterberg Limits.....2 Test

Chemical Analysis (pH, sulphate, chloride and resistivity) .....1 Test

4. Subsurface Soil and Groundwater Conditions

A detailed description of the geotechnical conditions encountered in the boreholes is given on the borehole logs, Figure Nos. 3 to 6. The borehole logs and related information depict subsurface conditions only at the specific locations and times indicated. Subsurface conditions and water levels at other locations may differ from conditions at the locations where sampling was conducted. The passage of time may also result in changes in the conditions interpreted to exist at the locations where sampling was conducted.

The boreholes were drilled to provide representation of subsurface conditions as part of a geotechnical exploration program and are not intended to provide evidence of environmental conditions.

It should be noted that the soil boundaries indicated on the borehole logs 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" preceding borehole logs forms an integral part of this report and should be read in conjunction with this report.

A review of the borehole logs indicates the following subsurface soil conditions with depth and groundwater level measurements.

4.1 Topsoil

A 100 to 230 mm thick topsoil layer was contacted at ground surface in all boreholes.

4.2 Fill

The topsoil in all boreholes is underlain by fill. The fill material was heterogeneous in nature and comprised of brown organic silty sand with trace clay to brown silty clay with some sand. The fill extends to depths ranging between 1.2 m and 1.8 m below ground surface (Elevations 74.4 m to 74.1 m). it is loose to compact as indicated by the SPT N-values which range from 5 to 24 and has a natural moisture content ranging from 17 percent to 26 percent.

Grain size analysis was conducted on one (1) sample of the silty sand fill material and the results are presented in Figure 7 and summarized in Table I below.

Table I: Summary of Grain-size Analysis Results – Fill Sample

Borehole No. – Sample No.	Depth (m)	Grain-size Analysis (%)				Soil Classification (USCS)
		Gravel	Sand	Silt	Clay	
BH-4 – SS1	0 – 0.6	0	74	19	7	Silty SAND (SM)

Based on the results of the grain size analysis, the fill may be classified as silty sand (SM) in accordance with the Unified Soil Classification System (USCS).

4.3 Buried Topsoil

A 200 mm thick buried topsoil layer was contacted underlying the fill in Borehole No. 4. This layer is suspected to be the original topsoil and is likely present underlying the fill throughout the site.

4.4 Clay (CL)

The fill in Borehole Nos. 1 to 3 and the buried topsoil in Borehole No. 4 is underlain by grey clay which contains sand seams. The clay extends to depths ranging between 2.7 m and 3.5 m below ground surface (Elevations 72.8 and 72.3 m) in all boreholes and is stiff to very stiff as indicated by the undrained shear strength of 192 kPa and the SPT N-values which range from 8 to 18. The clay has a natural moisture content and unit weight ranging from 20 percent to 46 percent and from 18.4 to 18.9 kN/m^3 respectively.

Grain size analysis and Atterberg Limits were conducted on one (1) sample of the clay and the results are presented in Figure 8 and summarized in Tables II and III below.

Table II: Summary of Grain-size Analysis Results – Clay Sample						
Borehole No. – Sample No.	Depth (m)	Grain-size Analysis (%)				Soil Classification (USCS)
		Gravel	Sand	Silt	Clay	
BH-2 – SS3	1.5 – 2.1	0	7	37	56	CLAY (CL)

Table III: Summary of Atterberg Limits Results – Clay Sample							
Borehole No. – Sample No.	Depth (m)	Atterberg Limits Results					Soil Classification (USCS)
		W_c (%)	LL (%)	PL (%)	PI (%)	LI	
BH-2 – SS3	1.5 – 2.1	36	43	20	23	0.7	Low plasticity clay
w_c: Moisture Content, **LL**: Limit Liquid; **PL:** Plastic Limit; **PI**: Plasticity Index; **LI**: Liquidity Index; (1): Refer to Casagrande Plasticity Chart (1932)							

Based on the results of the grain size analysis and Atterberg Limits, the clay may be classified as clay (CL) of low plasticity in accordance with the Unified Soil Classification System (USCS).

4.5 Glacial Till

The clay in all boreholes is underlain by dark grey glacial till extending to borehole termination depths ranging between 3.7 m and 4.3 m below ground surface (Elevations 72.4 m to 71.4 m). The glacial till consists of sandy clay with trace to some gravel. The glacial till is firm to stiff as indicated by the SPT N-values which range from 6 to 13. It has a natural moisture content ranging from 14 percent to 36 percent.

Grain size analysis and Atterberg Limits were conducted on one (1) sample of the glacial till and the results are shown in Figure 9 and summarized in Tables IV and V below.

Table IV: Summary of Grain-size Analysis Results – Glacial Till Sample						
Borehole No. – Sample No.	Depth (m)	Grain-size Analysis (%)				Soil Classification (USCS)
		Gravel	Sand	Silt	Clay	
BH-4 – SS5	3.0 – 3.6	7	36	37	20	Sandy CLAY (CL)

Table V: Summary of Atterberg Limits Results – Glacial Till Sample							
Borehole No. – Sample No.	Depth (m)	Atterberg Limits Results					Soil Classification (USCS)
		W_c (%)	LL (%)	PL (%)	PI (%)	LI	
BH-4 – SS5	3.0 – 3.6	15	25	15	10	0	Low plasticity clay
w_c: Moisture Content, **LL**: Limit Liquid; **PL:** Plastic Limit; **PI**: Plasticity Index; **LI**: Liquidity Index; (1): Refer to Casagrande Plasticity Chart (1932)							

Based on the results of the grain size analysis and Atterberg Limits, the glacial till may be classified as sandy silt (ML) of low plasticity in accordance with the Unified Soil Classification System (USCS).

4.6 Groundwater

Upon completion of the drilling, the groundwater was observed in the open boreholes at depths ranging between 2.7 m and 3.0 m (Elevations 73.0 m and 72.8 m).

A groundwater level measurement taken 12 days after drilling in the standpipe installed in Borehole No. 3 indicates the groundwater level to be at 1.3 m depth below the existing ground surface (Elevation 74.3 m).

Groundwater levels were determined in the boreholes at the times and under the conditions stated in the scope of services. Note that fluctuations in the level of groundwater may occur due to a seasonal variation such as precipitation, snowmelt, rainfall activities, and other factors not evident at the time of measurement and therefore may be at a higher level during wet weather periods.

5. Grade Raise Restrictions

Based on the available topographical information, no significant grade raise is anticipated for the construction of the proposed bus drop-off lane. However, for design purposes, a 1.0 m grade raise is considered acceptable at the site from a geotechnical point of view. It is therefore recommended that the final grading plan is reviewed by EXP.

6. Excavation and De-Watering Requirements

6.1 Excess Soil Management

Ontario Regulation 406/19 made under the Environmental Protection Act (November 28, 2019) is scheduled to be implemented on January 1, 2021. The new regulation will dictate the testing protocol that will be required for the management and disposal of excess soils. As set forth in the regulation, specific analytical testing protocols will need to be implemented and followed based on the volume of soil to be managed. The testing protocols are specific as to whether the soils are stockpiled or in situ. In either scenario, the testing protocols are far more onerous than have been historically carried out as part of standard industry practices. These decisions should be factored in and accounted for prior to the initiation of the project-defined scope of work. EXP would be pleased to assist with the implementation of a soil management and testing program that would satisfy the requirements of Ontario Regulation 406/19.

6.2 Excavations

Grading plans as well as proposed service installation information were not available to EXP at the time of preparation of this report.

For preliminary recommendation, the excavations for the new pavement structure and underground services are expected to extend to a maximum depth of 3.0 m to 3.5 m below the existing ground surface. These excavations will extend through the topsoil, fill, the native clay, and into the glacial till. These excavations are anticipated to be up to 2.2 m below the groundwater level.

Excavations in the overburden may be undertaken using large mechanical shovel and should be completed in accordance with the Occupational Health and Safety Act (OHSA), Ontario, Reg. 213/91. Based on the definitions provided in OHSA, the subsurface soils at the site are considered to be Type 3 soil and therefore the excavations may be undertaken as open cut provided the excavation walls are sloped back at 1H:1V from the bottom of the excavation as per OHSA. Excavations below the groundwater level are expected to slough and the side slopes will eventually stabilize at 2H:1V to 3H:1V from the bottom of the excavation.

Base heave type failure is not anticipated in excavations that extend to a 3.5 m depth below existing grade.

The clay stratum at the site is susceptible to disturbance due to the movement of construction equipment, and personnel on its surface. It is therefore recommended that the excavation at the site should be undertaken by equipment that does not travel on the excavated surface, such as a gradually or mechanical shovel.

Extra care should be exercised during excavation close to the existing school building to prevent the undermining of existing foundations and infrastructure.

A pre-construction survey of all adjacent surrounding structures and infrastructure should be conducted prior to start of construction.

Many geologic materials deteriorate rapidly upon exposure to meteorological elements. Unless otherwise specifically indicated in this report, walls and floors of excavations must be protected from moisture, desiccation, and frost action throughout the course of construction.

6.3 De-Watering Requirements

Seepage of the surface and subsurface water into the excavation is anticipated. However, it should be possible to collect water entering the excavations at low points and to remove it by conventional pumping techniques. The clay

stratum at the site is susceptible to softening due to water collecting at the bottom of the excavation. Therefore, it is recommended that the groundwater level is lowered below the bottom of the excavation at the excavation location. However, care should be exercised to protect adjacent structures and underground utilities from drawdown induced settlement. In areas of high infiltration or in areas where more permeable soil layers may exist, a higher seepage rate should be anticipated. Therefore, the need of high capacity pumps and continuous pumping to keep the excavation dry to allow the installation of the services should not be ignored.

It has been assumed that the maximum excavation depth at the site will be approximately 2.0 m and may require groundwater removal from the site. Therefore, it is noteworthy to mention that new legislation came into force in Ontario on March 29, 2016 to regulate groundwater takings for construction dewatering purposes. Prior to March 29, 2016, a Category 2 Permit to Take Water (PTTW) was required from the Ontario Ministry of the Environment and Climate Change (MOECC) for groundwater takings related to construction dewatering, where taking volumes in excess of 50 m3/day, but less than 400 m3/day, and the taking duration was no more than 30 consecutive days. The new legislation replaces the Category 2 PTTW for construction dewatering with a new process under the Environmental Activity and Sector Registry (EASR). The EASR is an on-line registry, which allows persons engaged in prescribed activities, such as water takings, to register with the MOECC instead of applying for a PTTW.

To be eligible for the new EASR process, the construction dewatering taking must be less than 400 m3/day under normal conditions. The water taking can be groundwater, storm water, or a combination of both. It should be noted that the 30-consecutive day limit on the water taking under the old Category 2 PTTW process has been removed in the new EASR process. Also, it should be noted that the EASR process requires two technical studies be prepared by a Qualified Person, prior to any water taking. These studies include a Water Taking Report, which provides assurance that the taking will not cause any unacceptable impacts, and a Discharge Plan, which provides assurance that the discharge will not result in any adverse impacts to the environment. EXP has qualified persons who can prepare these types of reports, if required. A significant advantage of the new EASR process over the former Category 2 PTTW process, is that the groundwater taking may begin immediately after completing the on-line registration of the taking and paying the applicable fee, assuming the accompanying technical studies have been completed. The former PTTW process typically took more than 90 days, which had the potential to impact construction schedules.

Although this investigation has estimated the groundwater levels at the time of the fieldwork, and commented on dewatering and general construction problems, conditions may be present which are difficult to establish from standard boring and excavating techniques and which may affect the type and nature of dewatering procedures used by the contractor in practice. These conditions include local and seasonal fluctuations in the groundwater table, erratic changes in the soil profile, thin layers of soil with large or small permeabilities compared with the soil mass, etc. Only carefully controlled tests using pumped wells and observation wells will yield the quantitative data on groundwater volumes and pressures that are necessary to adequately engineer construction dewatering systems.

7. Pipe Bedding Requirements

New underground services are proposed for the new pavement structure. Elevations, material, and diameter information are not available for these services at the time of this report preparation. Subgrades for these services are anticipated to be within the native undisturbed clay.

It is recommended that the bedding for the underground services including material specification, thickness of cover material and compaction requirements conform to the local requirements of the municipality and/or Ontario provincial Standard Specification and Drawings (OPSS and OPSD).

For guidance, and for excavation that extends below the groundwater table, the pipe bedding may consist of 300 mm of OPSS 1010 Granular A. The bedding material should be also placed along the sides and on top of the pipes to provide a minimum cover of 300 mm. The bedding, spring line and cover should be compacted to at least 98 percent the standard Proctor maximum dry density (SPMDD).

It is imperative that the groundwater be controlled during installation of the services to allow the installation and compaction of the bedding material and to prevent softening of the founding clay. In areas of high infiltration, a granular sub-base should be allowed for in the contract if needed. The sub-base may consist of 300 mm of OPSS 1010 Granular B Type II overlain by 150 mm of OPSS 1010 Granular A both compacted to 98 % of the SPMDD. The use of geotextile may be required and should be allowed for as a provisional item in the contract.

It is recommended that final design drawings for any services to be installation be reviewed by EXP so changes can be made to the report as deemed required/necessary.

8. Backfilling Requirements and Suitability of On-Site Soils for Backfilling Purposes

The material to be excavated from the site will consist of topsoil, organic silty sand with trace clay fill, silty clay with some sand fill, and native clay. These soils are not considered suitable for use under structural elements, as subgrade fill, or for trench backfilling purposes. However, they may be used for general grading purposes in landscaped areas.

It is anticipated that the majority of the material required for the pavement structure and trench backfilling purposes would have to be imported and should preferably conform to the OPSS 1010 standard as noted below.

- Trench Backfill- OPSS 1010 Granular B Type II –below the groundwater table and OPSS 1010 Select Subgrade material (SSM) above the groundwater level, both compacted to 95 % of the SPMDD.

- Subgrade Fill – OPSS 1010 Select Subgrade material (SSM) compacted to 95 % of the SPMDD.

9. Pavement Structure

Pavement structure thicknesses required for the proposed bus drop-off lane were computed and are shown on Table VI. The thicknesses are based upon an estimate of the subgrade soil properties determined from visual examination and textural classification of the soil samples and pavement functional design life of ten to fifteen (10 to 15) years. The proposed functional design life represents the number of years to the first rehabilitation, assuming regular maintenance is carried out. The subgrade is anticipated to consist of the native undisturbed clay or select subgrade material (SSM).

Table VI: Recommended Pavement Structure Thicknesses

Pavement Layer	Compaction Requirements	Heavy Duty Traffic (busses)
Asphaltic Concrete (PG 64-34)	92-97 % MRD*	50 mm HL3 or SP12.5 Cat D 60 mm HL8 or SP 19 Cat D
OPSS 1010 Granular "A" Base	100% SPMDD**	150 mm
OPSS 1010 Granular "B" Sub-Base, Type II	100% SPMDD**	450 mm

**Denotes maximum relative density in accordance with ASTM D2041.*

*** Denotes standard Proctor maximum dry density, ASTM-D698-12e2.*

Construction procedures for the pavement structure are discussed below.

The foregoing design assumes that construction is carried out during dry periods and that the subgrade is undisturbed under the load of construction equipment. If construction is carried out during wet weather, and heaving or rolling of the subgrade is experienced, additional thickness of granular material and/or geotextile may be required.

Additional comments on the construction of the bus drop-off lane are as follows:

- As part of the subgrade preparation for the proposed pavement, the area should be stripped of asphalt, topsoil and other obviously unsuitable material down to subgrade level. The subgrade should be properly shaped, crowned, then proofrolled using a ten (10) non-vibratory roller in the full-time presence of a representative of this office. Any loose, soft, or spongy subgrade areas detected should be sub-excavated and replaced OPSS 1010 Granular B Type II material placed in 300 mm lifts and each lift compacted to 95% of the Standard Proctor Maximum Dry Density (SPMDD) in accordance with ASTM D698-12e2.

- In addition to the proof-roll, test pits must be excavated throughout the alignment of the proposed bus drop-off lane to establish the presence of the buried topsoil and whether the removal of this material is required. This can also be completed by the examination of the excavation sides during the installation of the services. Therefore, for the cost of test pits and removal of the fill and buried topsoil, if deemed required, must be included as a provisional item in the contract.

- It is noted that the long-term performance of the pavement structure is highly dependent upon the subgrade support conditions. Stringent construction control procedures should be maintained to ensure that uniform subgrade moisture and density conditions are achieved. The need for adequate drainage cannot be over-emphasized. Subdrains should be installed on both sides of the pavement and at low points and should be continuous between catchbasins to intercept excess surface and subsurface moisture and to prevent subgrade softening. This will ensure no water collects in the granular course, which could result in pavement failure during the spring thaw. The location and extent of subdrains required within the paved area should be reviewed by this office in conjunction with the proposed site grading.

- To minimize the problems of differential movement between the pavement and catchbasins/manhole due to frost action, the backfill around the structures should consist of free-draining granular preferably conforming to OPSS Granular B Type II material. Care should be taken to ensure that the fill around the services installation (catchbasins and manholes) is properly compacted using smaller compaction equipment's. Weep holes should be provided in the catchbasins/manholes to facilitate drainage of any water that may accumulate in the granular fill.

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

- The finished pavement surface should be free of depressions and should be sloped (preferably at a minimum cross fall of 2 percent) to provide effective surface drainage towards catch basins. Surface water should not be allowed to pond adjacent to the outside edges of paved areas.

- Relatively weaker subgrade may develop over service trenches at subgrade level. Therefore, only compactible and dry soil should be used as backfill in the services trenches. The use of a geotextile may be required at subgrade level and should be allowed for as a provisional item in the contract.

- The granular materials used for pavement construction should conform to Ontario Provincial Standard Specifications (OPSS 1010) for Granular A and Granular B Type II and should be compacted to 100 percent of the SPMDD.

The asphaltic concrete used and its placement should meet OPSS 1150 or 1151 requirements. It should be compacted from 92 percent to 97 percent of the MRD (ASTM D2041). Asphalt placement should be in accordance with OPSS 310 and OPSS 313.

It is recommended that EXP be retained to review the final pavement structure design and drainage plans prior to construction to ensure they are consistent with the recommendations of this report.

10. Subsurface Concrete and Steel Requirements

Chemical tests limited to pH, chloride, sulphate and resistivity were performed on one (1) selected soil sample. The certificate of the laboratory analysis is attached in Appendix A and the results are summarized in Table IV below.

Table VII: Chemical Test Results on Soil Sample

Borehole No. (Sample No.)	Soil Type	Depth (m)	pH	Sulphate (%)	Chloride (%)	Resistivity (ohm-cm)
BH-1 (SS2)	Fill	0.8 – 1.4	7.62	0.0026	0.004	6330

The test results indicate the sulphate and chloride contents in the silty clay fill is 0.0026 percent and 0.004 percent respectively.

The sulphate content is less than 0.1 percent. This concentration in the silty clay fill would have a negligible potential of sulphate attack on subsurface concrete. The concrete should be designed in accordance with Table Nos. 3 and 6 of CSA A.23.1-14. However, the concrete should be dense, well compacted and cured.

Based on a review of the resistivity test results, the clay sample is considered mildly corrosive to bare steel as per the National Association of Corrosion Engineers (NACE). Appropriate measures should be undertaken to protect buried steel elements from corrosion.

11. General Comments

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

The information contained in this report is not intended to reflect on environmental aspects of the soils and groundwater. Should specific information be required, including for example the presence of pollutants, contaminants or other hazards in the soil, additional testing may be required.

We trust that the information contained in this report is satisfactory for your purposes. Should you have any questions, please contact this office.

Sincerely.

DRAFT

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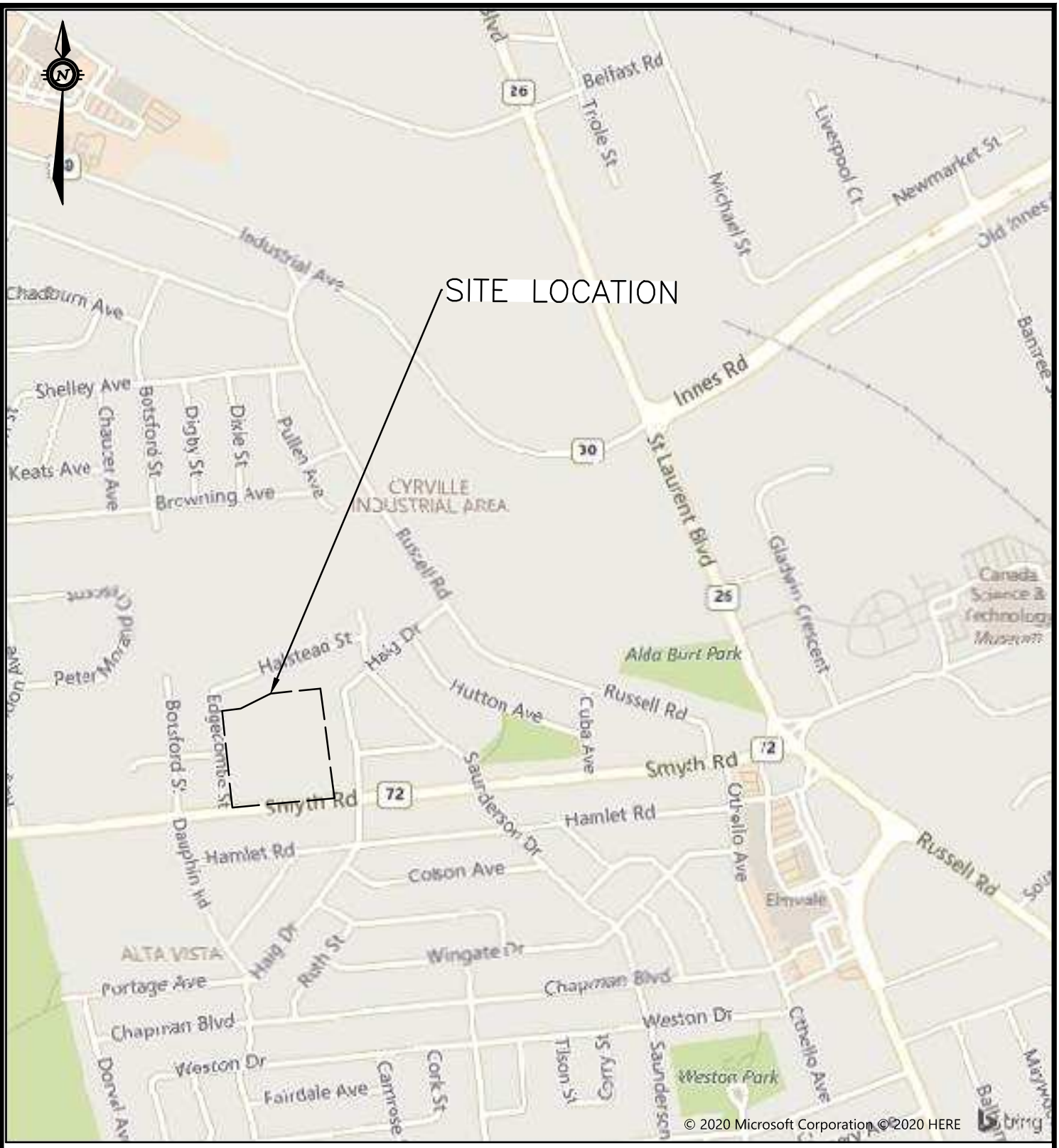
Figures



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DESIGN	A.N
DRAWN	A.J
DATE	NOV. 2020
FILE NO	OTT-00245378-S0

PROPOSED BUS DROP-OFF LANE
VINCENT MASSEY PUBLIC SCHOOL
745 SMYTH ROAD, OTTAWA, ON

SCALE 1:10,000

SKETCH NO FIG 1

SITE LOCATION PLAN

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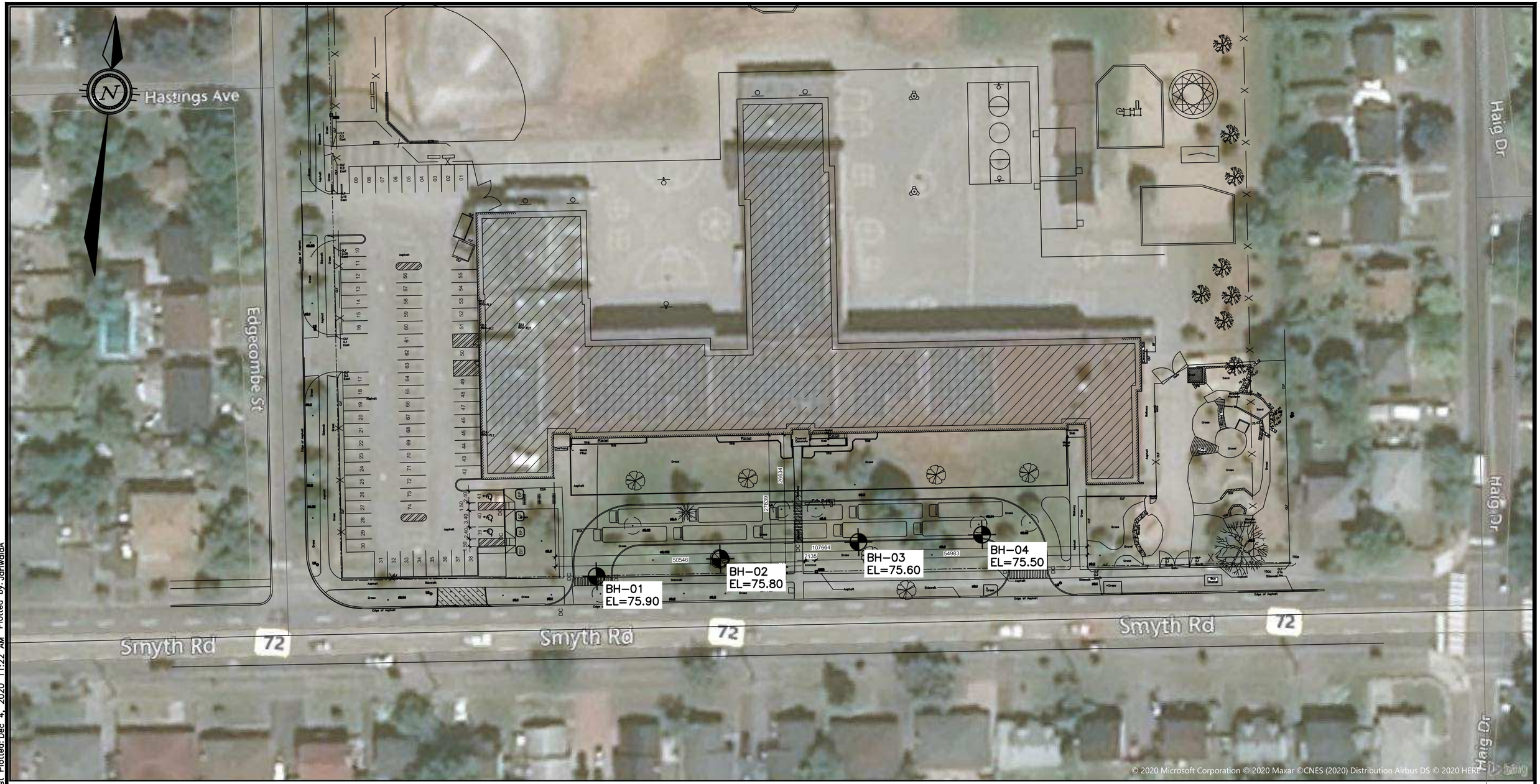

LEGEND

BH-01 EL=76.10 — BOREHOLE NO. GROUND ELEVATION

NOTES

1. THE BOUNDARIES AND SOIL TYPES HAVE BEEN ESTABLISHED ONLY AT BOREHOLE LOCATIONS. BETWEEN BOREHOLES THEY ARE ASSUMED AND MAY BE SUBJECT TO CONSIDERABLE ERROR.
2. TOPSOIL QUANTITIES SHOULD NOT BE ESTABLISHED FROM THE INFORMATION PROVIDED AT THE BOREHOLE LOCATIONS.
3. SOIL SAMPLES WILL BE RETAINED IN STORAGE FOR THREE MONTHS AND THEN DESTROYED UNLESS THE CLIENT ADVISES THAT AN EXTENDED TIME PERIOD IS REQUIRED.
4. BOREHOLE ELEVATIONS SHOULD NOT BE USED TO DESIGN BUILDING(S) OR FLOOR SLABS OR PARKING LOT(S) GRADES.
5. THIS DRAWING FORMS PART OF THE REPORT PROJECT NUMBER AS REFERENCED AND SHOULD BE USED ONLY IN CONJUNCTION WITH THIS REPORT.

0 5m 10m 30m

HORIZONTAL 1:750

exp Services Inc.
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DESIGN	A.N
DRAWN	A.J
DATE	NOV. 2020
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PROPOSED BUS DROP-OFF LANE
VINCENT MASSEY PUBLIC SCHOOL
745 SMYTH ROAD, OTTAWA, ON

BOREHOLE LOCATION PLAN

SCALE 1:750

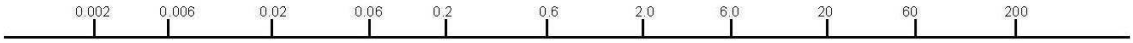
SKETCH NO FIG 2

Notes On Sample Descriptions

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 Societv for Soil Mechanics and Foundation Engineering. Laboratory grain size analyses provided by **exp** Services Inc. also follow the same system. Different classification systems may be used by others; 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

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



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

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

UNIFIED SOIL CLASSIFICATION

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

Log of Borehole BH-1

Project No: OTT-00245378-S0

Project: Proposed Bus Drop-off Lane, Vincent Massey Public School

Location: 745 Smyth Road, Ottawa, Ontario

Figure No. 3

Page. 1 of 1

Date Drilled: November 18, 2020

Drill Type:

Datum: Geodetic Elevation

Logged by: A.Neguss Checked by: A.Nader

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		TOPSOIL ~180 mm thick	75.9	0				
		FILL Silty sand (SM), trace clay, organic, brown, moist (compact)	75.7		11		SS1	
		FILL Silty clay, some sand, brown (compact) Possible reworked material	75.0	1	17		SS2	
		CLAY (CL) Sand seams, grey, (stiff to very stiff)	74.4		17		SS3	18.9
				2				
					15		SS4	
				3				
		GLACIAL TILL Sandy clay (CL), trace to some gravel, dark grey, wet, (stiff)	72.6		10		SS5	18.1
			72.2					
		Borehole Terminated at 3.7 m Depth						

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Borehole backfilled upon completion of the drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00245378-S0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
On Completion	3.0	3.0

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE BH LOGS - 245378-S0.GPJ TROW OTTAWA.GDT 12/18/20

Log of Borehole BH-2

Project No: OTT-00245378-S0

Project: Proposed Bus Drop-off Lane, Vincent Massey Public School

Location: 745 Smyth Road, Ottawa, Ontario

Figure No. 4

Page. 1 of 1

Date Drilled: 'November 18, 2020

Drill Type:

Datum: Geodetic Elevation

Logged by: A.Neguss Checked by: A.Nader

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth
		TOPSOIL ~180 mm thick	75.8	0
		FILL Silty sand (SM), trace clay, organic, brown, moist (loose to compact)	75.6	
		FILL Silty clay, some sand, brown (compact) Possible reworked material	74.7	1
		CLAY (CL) Sand seams, grey, (very stiff)	74.3	2
		GLACIAL TILL Sandy clay (CL), trace to some gravel, dark grey, wet	72.3	3
		Borehole Terminated at 3.7 m Depth	72.1	

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES	Natural Unit Wt. kN/m³
SS1	
SS2	
SS3	
SS4	18.5
SS5	

NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Borehole backfilled upon completion of the drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00245378-S0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
On Completion	3.0	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE BH LOGS - 245378-S0.GPJ TROW OTTAWA.GDT 12/18/20

Log of Borehole BH-3

Project No: OTT-00245378-S0

Project: Proposed Bus Drop-off Lane, Vincent Massey Public School

Location: 745 Smyth Road, Ottawa, Ontario

Figure No. 5

Page. 1 of 1

Date Drilled: 'November 18, 2020

Drill Type:

Datum: Geodetic Elevation

Logged by: A.Neguss Checked by: A.Nader

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		TOPSOIL ~230 mm thick	75.6	0				
		FILL Silty sand (SM), trace clay, organic, brown, moist (loose to compact)	75.4		8		SS1	
		FILL Silty clay, some sand, brown (compact) Possible reworked material	74.6	1	7		SS2	
			74.3					
		CLAY (CL) Sand seams, grey, (stiff)	74.1	2	10 / 192		SS3	18.4
					8		SS4	
		GLACIAL TILL Sandy clay (CL), trace to some gravel, dark grey, wet, (firm)	72.3	3	6		SS5	
			71.9					
		Borehole Terminated at 3.7 m Depth						

LOG OF BOREHOLE BH LOGS - 245378-S0.GPJ TROW OTTAWA.GDT 12/18/20

NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. 19 mm standpipe installed upon completion of the drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00245378-S0

WATER LEVEL RECORDS		
Elapsed Time	Water Level (m)	Hole Open To (m)
On Completion	2.6	3.0
12 Days	1.3	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH-4

Project No: OTT-00245378-S0

Project: Proposed Bus Drop-off Lane, Vincent Massey Public School

Location: 745 Smyth Road, Ottawa, Ontario

Figure No. 6

Page. 1 of 1

Date Drilled: 'November 18, 2020

Drill Type:

Datum: Geodetic Elevation

Logged by: A.Neguss Checked by: A.Nader

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		TOPSOIL ~100 mm thick	75.5	0				
		FILL Silty sand (SM), trace clay, organic, brown, moist (loose to compact)	75.4		8		SS1	
				1	10		SS2	
		BURIED TOPSOIL ~200 mm thick	74.3					
		CLAY (CL) Sand seams, grey, (stiff)	74.1		13 / 192		SS3	18.4
				2	12		SS4	
		GLACIAL TILL Sandy clay (CL), trace to some gravel, dark grey, wet, (firm)	72.8	3	13		SS5	
				4	12		SS6	
		Borehole Terminated at 4.3 m Depth	71.2					

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 20 40 60

NOTES:
1. Borehole/Test Pit data requires Interpretation by exp. before use by others
2. Borehole backfilled upon completion of the drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. This Figure is to read with exp. Services Inc. report OTT-00245378-S0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
On Completion	2.7	

CORE DRILLING RECORD

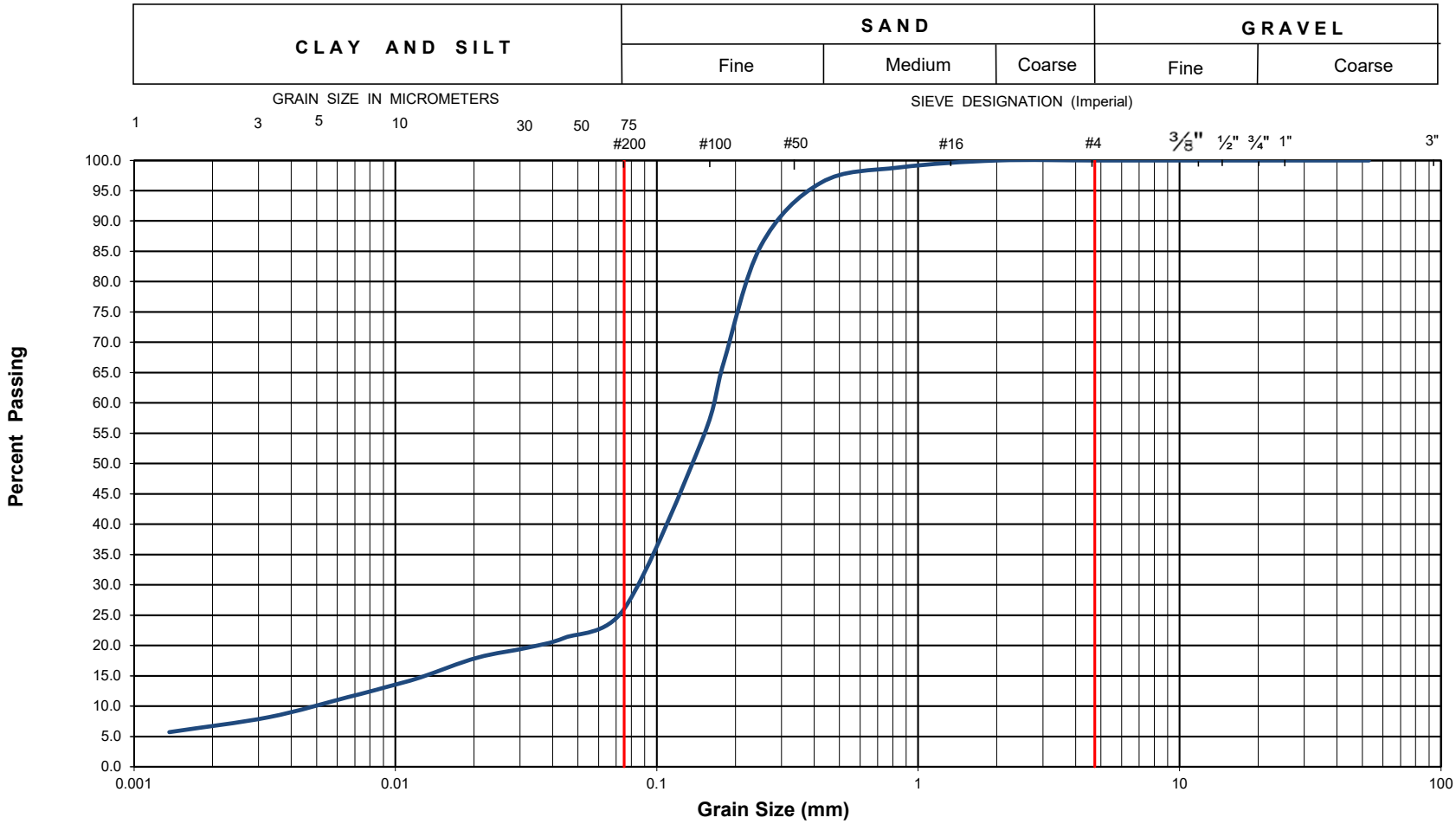
Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE BH LOGS - 245378-S0.GPJ TROW OTTAWA.GDT 12/18/20

EXP Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 8H6

Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422

Unified Soil Classification System



EXP Project No.:	**OTT-00245378-S0**	**Project Name :**	**Proposed Bus Drop-Off Lane, Vincent Massey Public School**						
Client :	**Ottawa Carleton District School Board**	**Project Location :**	**745 Smyth Road, Ottawa, Ontario**						
Date Sampled :	**November 18, 2020**	**Borehole No:**	**BH-4**		**Sample No.:**	**SS1**		**Depth (m) :**	**0-0.6**
Sample Description :		**% Silt and Clay**	**26**	**% Sand**	**74**	**% Gravel**	**0**	**Figure :**	**7**
Sample Description :		**Silty SAND (SM)**							

EXP Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 8H6

Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422

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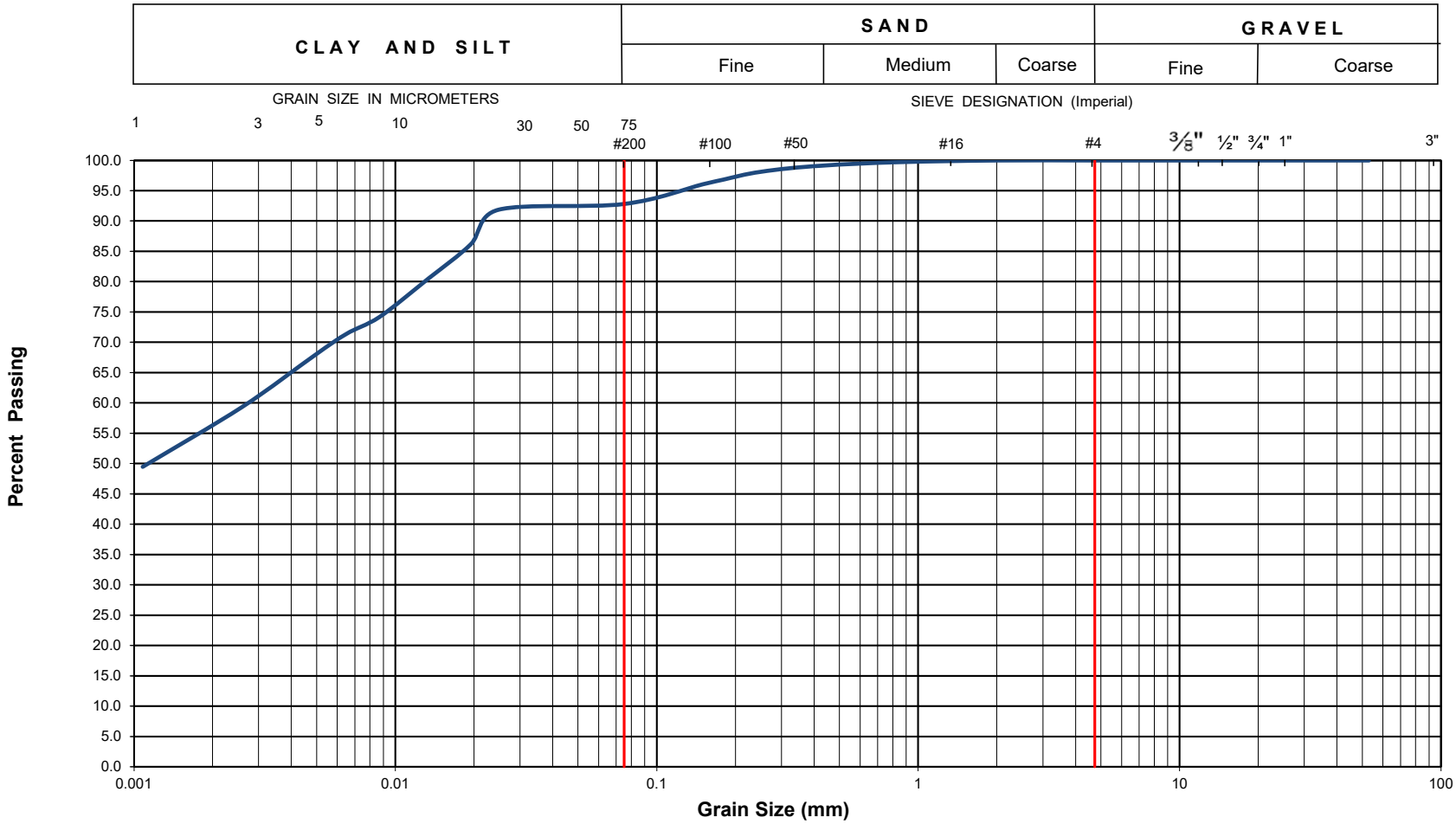
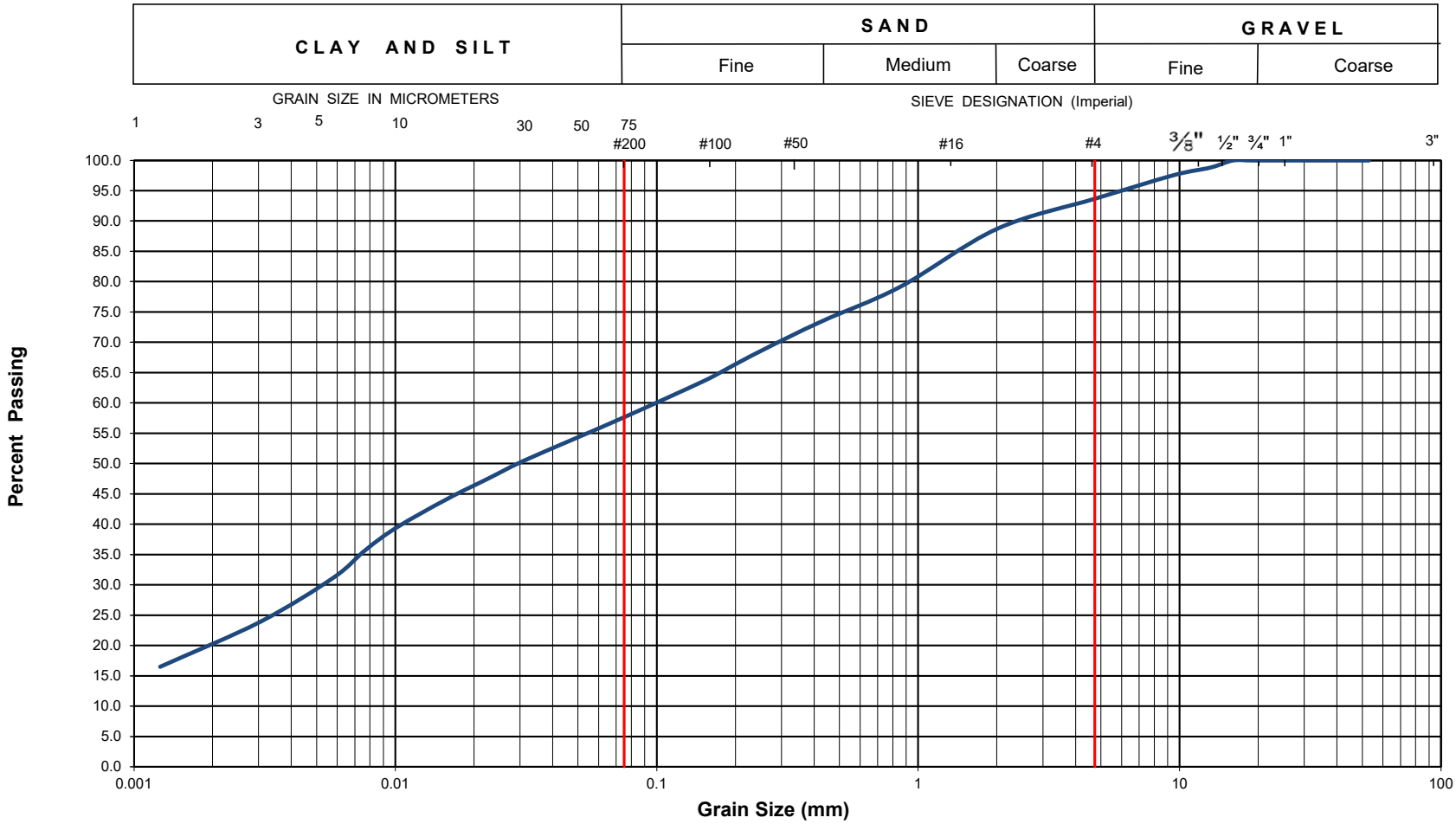


EXP Project No.:	**OTT-00245378-S0**	**Project Name :**	**Proposed Bus Drop-Off Lane, Vincent Massey Public School**						
Client :	**Ottawa Carleton District School Board**	**Project Location :**	**745 Smyth Road, Ottawa, Ontario**						
Date Sampled :	**November 18, 2020**	**Borehole No:**	**BH-2**		**Sample No.:**	**SS3**		**Depth (m) :**	**1.5-2.1**
Sample Description :		**% Silt and Clay**	**93**	**% Sand**	**7**	**% Gravel**	**0**	**Figure :**	**8**
Sample Description :		**CLAY (CL)**							

EXP Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 8H6

Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422

Unified Soil Classification System



EXP Project No.:	**OTT-00245378-S0**	**Project Name :**	**Proposed Bus Drop-Off Lane, Vincent Massey Public School**						
Client :	**Ottawa Carleton District School Board**	**Project Location :**	**745 Smyth Road, Ottawa, Ontario**						
Date Sampled :	**November 18, 2020**	**Borehole No:**	**BH-4**		**Sample No.:**	**SS5**		**Depth (m) :**	**3.0-3.6**
Sample Description :		**% Silt and Clay**	**57**	**% Sand**	**36**	**% Gravel**	**7**	**Figure :**	**9**
Sample Description :		**Sandy CLAY (CL)**							

Appendix A:
Laboratory Certificate of Analysis

AGAT Laboratories

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

CLIENT NAME: **EXP SERVICES INC**
2650 QUEENSVIEW DRIVE, UNIT 100
OTTAWA, ON K2B8H6
(613) 688-1899
ATTENTION TO: **Athir Nader**
PROJECT: **OTT-00245378-SO**
AGAT WORK ORDER: **20Z682962**
SOIL ANALYSIS REVIEWED BY: **Nivine Basily, Inorganics Report Writer**
DATE REPORTED: **Dec 03, 2020**
PAGES (INCLUDING COVER): **6**
VERSION*: **1**

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

*Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 20Z682962

PROJECT: OTT-00245378-SO

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Athir Nader

SAMPLING SITE:745 Snyth Rd, Ottawa

SAMPLED BY:EXP

Inorganic Chemistry (Soil)

DATE RECEIVED: 2020-11-25 **DATE REPORTED: 2020-12-03**

			SAMPLE DESCRIPTION:	BH#1 SS2 2. 5'-4.5'
			SAMPLE TYPE:	Soil
			DATE SAMPLED:	2020-11-18
Parameter	Unit	G / S	RDL	1744880
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.62
Chloride (2:1)	µg/g		2	40
Sulphate (2:1)	µg/g		2	26
Resistivity (2:1) (Calculated)	ohm.cm		1	6330

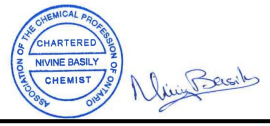
Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1744880 pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Chloride and Sulphate were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 20Z682962

PROJECT: OTT-00245378-SO

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Athir Nader

SAMPLING SITE:745 Snyth Rd, Ottawa

SAMPLED BY:EXP

Inorganic Chemistry (Soil) %

DATE RECEIVED: 2020-11-25 **DATE REPORTED: 2020-12-03**

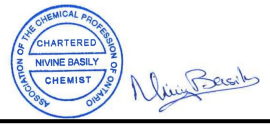
		SAMPLE DESCRIPTION:		BH#1 SS2 2. 5'-4.5'
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2020-11-18
Parameter	Unit	G / S	RDL	1744880
Chloride (2:1)	µg/g		0.0002	0.004
Sulphate (2:1)	µg/g		0.0002	0.0026

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

1744880 Chloride and Sulphate were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

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TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 20Z682962

PROJECT: OTT-00245378-SO

ATTENTION TO: Athir Nader

SAMPLING SITE:745 Snyth Rd, Ottawa

SAMPLED BY:EXP

Soil Analysis

RPT Date: Dec 03, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Inorganic Chemistry (Soil)															
pH, 2:1 CaCl2 Extraction	1741040		7.50	7.60	1.3%	NA	100%	80%	120%						
Chloride (2:1)	1742166		96	96	0.4%	< 2	98%	70%	130%	108%	80%	120%	105%	70%	130%
Sulphate (2:1)	1742166		1410	1410	0.1%	< 2	102%	70%	130%	103%	80%	120%	NA	70%	130%
Inorganic Chemistry (Soil) %															
Chloride (2:1)	1742166		0.0096	0.0096	0.0%	< 0.0002	98%	70%	130%	108%	80%	120%	105%	70%	130%
Sulphate (2:1)	1742166		0.141	0.141	0.0%	< 0.0002	102%	70%	130%	103%	80%	120%	NA	70%	130%

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By:

AGAT Laboratories

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

Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 20Z682962

PROJECT: OTT-00245378-SO

ATTENTION TO: Athir Nader

SAMPLING SITE:745 Snyth Rd, Ottawa

SAMPLED BY:EXP

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
pH, 2:1 CaCl2 Extraction	INOR-93-6031	modified from EPA 9045D and MCKEAGUE 3.11	PH METER
Chloride (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Resistivity (2:1) (Calculated)	INOR-93-6036	McKeague 4.12, SM 2510 B,SSA #5 Part 3	EC METER

(Ice-packs) - 4.8 Iced Blue

AGAT Laboratories

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

Chain of Custody Record

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

Report Information:

Company: EXP Services Inc. Ottawa
Contact: Athir Nader
Address: 2650 Queensview dr. Unit 100
Ottawa, ON, K2B 8H6
Phone: 613-688-1899 Fax:
Reports to be sent to:
1. Email: athir.nader@exp.com
2. Email:

Project Information:

Project: OTT-00245378-S0
Site Location: 745 Smyth rd., Ottawa
Sampled By: Exp
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

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

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

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

☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ *Indicate One*
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ *Indicate One*

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

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

Sample Matrix Legend

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

Laboratory Use Only

Work Order #: 20682962
Cooler Quantity: 1
Arrival Temperatures: 20.0 | 20.0 | 20.1
Custody Seal Intact: ☐ Yes ☐ No ☑ N/A
Notes: No Coolant

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

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

OR Date Required (Rush Surcharges May Apply):

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

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI Y/N	O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (incl. Hydrides))	O. Reg 153: ORPs: ☐ B-HWS ☐ CN ☐ Cr6+ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	PHCs F1 - F4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	pH	Sulphate	Chlorides	Resistivity	Potentially Hazardous or High Concentration (Y/N)
BH#1 SS2 2.5'-4.5'	Nov.18		1	S																	✓	✓	✓	✓	

Samples Relinquished By (Print Name and Sign): Jeff MacMillan — Date: Nov.25/20 — Time: 4:45
Samples Received By (Print Name and Sign): Jeff Innis — Date: 25/Nov/20 — Time: 16:50
Samples Relinquished By (Print Name and Sign): DHL to fedex — Date: 2020/11/26 — Time: 10h00
Samples Received By (Print Name and Sign): SIMRAN — Date: NOV 27/20 — Time: 11:12
Samples Relinquished By (Print Name and Sign): — Date: — Time:
Samples Received By (Print Name and Sign): — Date: — Time:

Document ID: DM-76-1511_010

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Appendix B:
Legal Notification

Legal Notification

This report was prepared by EXP Services Inc. (EXP) for the account of The Ottawa Carleton District School Board.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Report Distribution

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