

# **Geotechnical Investigation**

## **Proposed Sortation Facility**

Project X Development 99 Bill Laethem Drive, 2 & 20 Leikin Drive and 11 Beckstead Road Ottawa, Ontario

Prepared for Broccolini

Report PG5876-2 Revision 1 dated September 11, 2024



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## 1.0 Introduction

Paterson Group (Paterson) was commissioned by Broccolini to conduct a geotechnical investigation for the proposed Project X Development to be located at 99 Bill Leathern Drive, 2 & 20 Leikin Drive & 11 Beckstead Road in the City of Ottawa, Ontario (reference should be made to Figure 1 - Key Plan in Appendix 2 of this report for the general site location).

The objectives of the geotechnical investigation were to:

- Determine the subsoil and groundwater conditions at this site by means of test holes, and to
- Provide geotechnical recommendations pertaining to design of the proposed development including construction considerations which may affect the design.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes geotechnical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

Investigating the presence or potential presence of contamination on the subject property was not part of the scope of work of the present investigation. Therefore, the present report does not address environmental issues.

### 2.0 **Proposed Development**

Based on the available drawings, it is understood that the proposed development will consist of a multi-storey sortation facility building with a slab-on-grade and an approximate footprint of 60,000 m<sup>2</sup>. The proposed building will be immediately surrounded by loading bays, access lanes and parking areas.

The proposed development will also include the construction of a sanitary alignment connected between Leathern Drive and Merivale Road, which is to be located south of the proposed building.



## 3.0 Method of Investigation

#### 3.1 Field Investigation

#### **Field Program**

The field program for the current investigation was conducted between July 25 and August 7, 2024 and consisted of advancing a total of 32 boreholes to a maximum depth of 14.3 m below the existing grade.

These boreholes were advanced using a low clearance, track-mounted drill rig operated by a two-person crew. The drilling procedure consisted of augering to the required depths at the selected locations and sampling the overburden soils. All fieldwork was conducted under the full-time supervision of our personnel under the direction of a senior engineer from our geotechnical department.

Previous geotechnical investigations were completed by others in June to July 2023, and April to May 2021. During those investigations, a total of 18 boreholes, 68 test pits and 28 cone-penetration tests (CPTs) were advanced throughout the subject site to a maximum depth of 28.3 m below the existing ground surface. Additional historical boreholes were completed by others between June 1990 and October 1991, at which time 10 boreholes were drilled to a maximum depth of 22.7 m below the ground surface.

The test hole locations were distributed in a manner to provide general coverage of the subject site and taking into consideration underground utilities and site features. The locations of the test holes are shown on Drawing PG5876-1 - Test Hole Location Plan in Appendix 2.

The subsurface profiles are presented on the Test Hole Logs and Cone Penetration Testing (CPT) Logs by Others in Appendix 1.

#### Sampling and In Situ Testing

Soil samples collected from the boreholes were either recovered directly from the auger flights (AU) or collected using a 50 mm diameter split-spoon (SS) sampler. All samples were initially classified on site and subsequently placed in sealed plastic bags and transported to our laboratory for further examination and classification. The depths at which the auger and split spoon samples were recovered from the boreholes are shown as AU and SS, respectively, on the Soil Profile and Test Data Sheets presented in Appendix 1.



The Standard Penetration Test (SPT) was conducted in conjunction with the recovery of the split spoon samples. The SPT results are recorded as "N" values on the Soil Profile and Test Data sheets. The "N" value is the number of blows required to drive the split spoon sampler 300 mm into the soil after a 150 mm initial penetration using a 63.5 kg hammer falling from a height of 760 mm.

Undrained shear strength testing was conducted at regular intervals in cohesive soils (clay) where encountered, using a field vane apparatus.

The overburden thickness was evaluated by a dynamic cone penetration test (DCPT) completed at boreholes BH 1-24 to BH 17-24, BH 20-24, BH 21-24, and BH 30-24 to BH 32-24. The DCPT consists of driving a steel drill rod, equipped with a 50 mm diameter cone at the tip, using a 63.5 kg hammer falling from a height of 760 mm. The number of blows required to drive the cone into the soil is recorded for each 300 mm increment.

The subsurface conditions observed in the boreholes were recorded in detail in the field. The soil profiles are logged on the Soil Profile and Test Data sheets and Cone Penetration Testing (CPT) Logs, by others, presented in Appendix 1.

#### Groundwater

Boreholes BH 18-24, BH 22-24 to BH 25-24, BH 29-24 and BH 32-24 were fitted with 51 mm diameter PVC groundwater monitoring wells. Boreholes BH 5-24, BH 9-24, BH 11-24, BH 14-24 and BH 15-24 were fitted with flexible polyethylene standpipes to permit monitoring of the groundwater levels subsequent to the completion of the sampling program. The groundwater observations are discussed in Subsection 4.3 and presented in the Soil Profile and Test Data sheets in Appendix 1.

Typical monitoring well construction details are described below:

- > Slotted 51 mm diameter PVC screen at the base of each borehole.
- 51 mm diameter PVC riser pipe from the top of the screen to the ground surface.
- > No.3 silica sand backfill within annular space around screen.
- Bentonite hole plug directly above PVC slotted screen.
- Clean backfill from top of bentonite plug to the ground surface.

Reference should be made to the Soil Profile and Test Data sheets presented in Appendix 1 for specific well construction details.



#### 3.2 Field Survey

The test hole locations and ground surface elevation at each test hole location were surveyed by Paterson using a high precision, handheld GPS and referenced to a geodetic datum. The location of the test holes and ground surface elevation at each the test hole location are presented on Drawing PG5876-1 - Test Hole Location Plan presented in Appendix 2.

#### 3.3 Laboratory Review

Soil samples were recovered from the subject site and visually examined in our laboratory to review the results of the field logging. A total of 2 Atterberg limits tests were completed on selected soil samples obtained from the current investigation. Moisture content was completed on all retrieved soil samples. The results of the testing are discussed in Section 4.2 and are provided in Appendix 1.

#### Sample Storage

All samples from the current investigation will be stored in the laboratory for a period of 1 month after issuance of this report. They will then be discarded unless we are otherwise directed.

#### 3.4 Analytical Testing

One (1) soil sample was submitted for analytical testing to assess the corrosion potential for exposed ferrous metals and the potential of sulphate attacks against subsurface concrete structures by Paterson. The sample was submitted to determine the concentration of sulphate and chloride, the resistivity, and the pH of the sample. The results are discussed further in Section 6.7 and presented in Appendix 1.



## 4.0 Observations

#### 4.1 Surface Conditions

The majority of the subject site currently consists of agricultural fields. The existing ground surface was observed to be relatively flat at approximate geodetic elevation 90.5 m, although it has been noted that an approximately 5 m high stockpile of fill had been placed within the southwest portion of the subject site.

The site is bordered to the west and north by agricultural land, to the south by Bill Leathern Drive and a three-storey manufacturing facility on Paragon Avenue, and to the east by Leikin Drive. The subject site is at grade with the surrounding roadways.

#### 4.2 Subsurface Profile

#### Overburden

Generally, the subsurface profile consists of topsoil underlain by a deep deposit of silty clay, followed by a glacial till deposit.

The silty clay deposit was observed to consist of a layer of hard to very stiff, brown silty clay crust extending to depths ranging between 2.9 and 4.5 m below ground surface. The brown silty clay layer was observed to be underlain by a firm to stiff, grey silty clay deposit extending to depths ranging between 9.0 and 17.0 m below the ground surface.

The silty clay deposit was underlain by a compact to very dense glacial till deposit. The fine matrix of the glacial till was observed to consist of either silty clay or silty sand, along with varying amounts of gravel, cobbles and boulders.

Practical refusal to DCPT was observed at depths ranging between 17.4 and 23.6 m below ground surface.

Reference should be made to the Soil Profile and Test Data sheets presented in Appendix 1 for details of the soil profile encountered at each borehole location.

#### Bedrock

Based on available geological mapping, the bedrock in the subject area consists of interbedded sandstone and dolomite of the March formation, with an overburden drift thickness of 15 to 25 m depth.



The bedrock was cored by others throughout the subject site at depths ranging between 19.3 and 25.4 m below the ground surface, and was observed to consist of a fair to good quality dolomite.

#### Atterberg Limit and Shrinkage Tests

Atterberg limits testing, as well as associated moisture content testing, were completed on the recovered silty clay samples at selected locations throughout the subject site. The results of the Atterberg limits tests are presented in Table 1 and on the Atterberg Limits Results by Others in Appendix 1.

Table 1 - Atterberg Limits Results							
Test Hole and Sample	Depth (m)	LL (%)	PL (%)	РІ (%)	w (%)	Classification	
BH 4-24 SS2	0.7-1.3	61	25	36	38.6	СН	
BH 16-24 SS3	1.5-2.1	40	19	21	34.0	CL	
Notes: LL: Liquid Limit; PL: Plastic Limit; PI: Plasticity Index; w: water content; CH: Inorganic Clay of High Plasticity CL: Lean Clay of Low Plasticity ML: Silt							

Atterberg limits testing were also completed following previous investigations by others. The results of the Atterberg Limits testing completed by others are summarized in Table 2 and on the Laboratory Results by Others included in Appendix 1.

Table 2 - Atterberg Limits Results by Others						
Test Hole and Sample	Depth (m)	LL (%)	PL (%)	РІ (%)	w (%)	Classification
BH-01 ST-5	3.05	52	21	31	45	СН
BH-01 SS-11	9.15	50	24	26	68	СН
BH-02 ST-7	4.57	47	22	25	54	CL
BH-02 SS-3	1.52	38	17	21	27	CL
BH-02 SS-11	9.15	27	22	5	25	CL-ML
BH-02 SS-14	11.43	14	12	2	8	SM
BH-02 SS-19	15.24	13	11	2	8	SM
BH-03 SS-11	8.23	48	23	25	66	CL
BH-03 SS-14	12.19	26	18	8	39	CL
BH-03 SS-18	18.29	15	13	2	9	SM



Table 2 - Atterberg Limits Results by Others [continued]						
Test Hole and Sample	Depth (m)	LL (%)	PL (%)	PI (%)	w (%)	Classification
BH-03 ST-13	10.67	41	22	19	58	CL
BH 101-23 SS-06	3.05-3.66	43	19	24	33	CL
BH 101-23 SS-08	4.57-5.18	46	21	25	50	CL
BH 101-23 SS-10	6.09-6.70	51	25	26	62	СН
BH 101-23 SS-12	7.62-8.23	48	23	25	63	CL
BH 102-23 SS-12	7.62-8.23	39	19	20	33	CL
BH 102-23 SS-14	10.1-10.7	44	20	24	52	CL
BH 102-23 SS-16	13.1-13.7	65	22	43	62	СН
BH 102-23 SS-17	14.6-15.3	43	21	22	51	CL
Notes: LL: Liquid L CH: Inorgar						t; ML: Inorganic Silt

#### Grain Size Distribution and Hydrometer Testing

Grain size distribution was completed by others on 11 soil samples. The grain-size analysis results are summarized in Table 3 below, and also in Appendix 1.

Table 3 - Summary of Grain Size Distribution Analysis By Others							
Test Hole	Sample	Gravel (%)	Sand (%)	Silt (%)	Clay (%)		
BH 01	ST 5	0	7	g	93		
BH 01	SS 11	0	7	ļ g	93		
BH 02	SS 3	0	10	ļ g	90		
BH 02	SS 11	0	2	98			
BH 02	SS 14	22	42	36			
BH 02	SS 19	26	40	34			
BH 03	SS 11	0	4	<u>g</u>	96		
BH 03	SS 14	0	6	67	27		
BH 03	SS 18	25	45	23	7		
BH 101-23	SS 12	0	0.7	99	9.3		
BH 101-23	SS 17	0	0.5	99.5			
BH 101-23	SS 18	0	0.5	99	9.5		
BH 102-23	SS 12	0	3.6	90	6.4		



#### 4.3 Groundwater

Groundwater levels were measured on August 13, 2024 within the installed monitoring wells and piezometers. The measured groundwater levels are presented in Table 4 below and on the Soil Profile and Test Data Sheet in Appendix 1.

Table 4 – Summary of Groundwater Levels (Paterson – 2024 Investigation)							
Borehole Number	Observation Method	Ground Surface Elevation (m)	Measured Groundwater Level Depth Elevation (m) (m)		Date Recorded		
BH 5-24	Piezometer	90.56	1.15	89.41	August 13, 2024		
BH 9-24	Piezometer	90.43	1.02	89.41	August 13, 2024		
BH 11-24	Piezometer	90.52	1.02	89.50	August 13, 2024		
BH 14-24	Piezometer	90.38	0.92	89.46	August 13, 2024		
BH 15-24	Piezometer	90.46	0.63	89.83	August 13, 2024		
BH 18-24	Monitoring Well	90.61	1.26	89.35	August 13, 2024		
BH 22-24	Monitoring Well	90.37	1.08	89.29	August 13, 2024		
BH 23-24	Monitoring Well	90.37	0.88	89.49	August 13, 2024		
BH 24-24	Monitoring Well	90.25	0.45	89.80	August 13, 2024		
BH 25-24	Monitoring Well	90.44	1.26	89.18	August 13, 2024		
BH 29-24	Monitoring Well	90.34	1.33	89.01	August 13, 2024		
BH 32-24	Monitoring Well	90.06	4.97	85.09	August 13, 2024		

Long-term groundwater levels can also be estimated based on the observed colour and consistency of the subsurface profile. Based on these observations, the longterm groundwater table can be expected at a depth ranging between 2.5 to 3.5 m below the existing ground surface.

However, it should be noted that groundwater levels are subject to seasonal fluctuations. Therefore, the groundwater levels could vary at the time of construction.



## 5.0 Discussion

#### 5.1 Geotechnical Assessment

From a geotechnical perspective, the subject site is considered suitable for the proposed development. Based on preliminary foundation loads provided by the structural engineer, it is understood that the foundation loads will vary from approximately 5,000 to 8,000 kN. Accordingly, it is recommended that foundation support for the proposed building consist of one of the following:

- conventional spread footings bearing on the undisturbed, stiff silty clay in conjunction with significant lightweight fill placed under the building floor slab, or
- □ end-bearing piles driven to refusal on the bedrock surface

Due to the presence of a silty clay layer, the site is subjected to a permissible grade raise restriction. The permissible grade raise recommendations are discussed in Section 5.3.

Based on the anticipated excavation depth and the nature of the overburden, a temporary excavation support system is expected to be required for the construction of the proposed sanitary alignment.

The above and other considerations are discussed in the following sections.

#### 5.2 Site Grading and Preparation

#### **Stripping Depth**

Topsoil and deleterious fill, such as those containing significant organic materials, should be stripped from under any buildings, paved areas, pipe bedding and other settlement sensitive structures.

Care should be taken not to disturb adequate bearing soils below the founding level during site preparation activities. Disturbance of the subgrade may result in sub-excavating the disturbed material and the placement of additional suitable fill material.



#### **Fill Placement**

Fill used for grading beneath the building area should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or Granular B Type II. The imported fill material should be tested and approved by Paterson personnel prior to delivery to site. The fill should be placed in lifts no greater than 300 mm thick and compacted using suitable compaction equipment for the lift thickness. Fill placed beneath the building footprint should be compacted to a minimum of 98% of the standard Proctor maximum dry density (SPMDD).

Non-specified existing fill along with site-excavated soil can be used as general landscaping fill where settlement of the ground surface is of minor concern. The material should be spread in thin lifts with a maximum thickness of 300 mm and at least compacted by the tracks of the spreading equipment to minimize voids.

If excavated brown silty clay, free of organics and deleterious materials, is to be used to build up the subgrade level for areas to be paved, it is recommended that the material be placed under dry conditions and above freezing temperatures. The silty clay should be compacted in thin lifts using suitable compaction equipment to a minimum density of 95% of its respective SPMDD.

#### 5.3 Foundation Design

#### **Conventional Spread Footings**

Pad footings, up to 8 m wide, and strip footings up to 2.5 m wide, placed on the undisturbed, stiff silty clay can be designed using a bearing resistance value at serviceability limit states (SLS) of **150 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **225 kPa**. A geotechnical resistance factor of 0.5 was applied to the above-noted bearing resistance value at ULS.

It should be noted that these bearing resistance values and footing sizes can only be used in conjunction with a reduced permissible grade raise restriction within the building footprint. This is discussed further below in the "Permissible Grade Raise Recommendations" subsection.

An undisturbed soil bearing surface consists of a surface from which all topsoil and deleterious materials, such as loose, frozen or disturbed soil, whether in situ or not, have been removed, in the dry, prior to the placement of concrete for footings.



Footings placed on the undisturbed, stiff silty clay and designed using the bearing resistance values at SLS given above will be subjected to potential post construction total and differential settlements of 25 and 20 mm, respectively.

#### **Pile Foundation**

As an alternative to conventional spread footings and a reduced permissible grade raise restriction within the building footprint, a deep foundation consisting of end-bearing steel pipe piles could be employed.

Concrete filled steel pipe piles driven to refusal are a typical deep foundation option in Ottawa. Applicable pile resistance at serviceability limit states (SLS) and ultimate limit states (UL) are provided in Table 5 below. Additional resistance values can be provided if available pile sizes vary from those detailed in Table 5. Note that these are all geotechnical axial resistance values.

The geotechnical pile resistance values were estimated calculating the Hiley dynamic formula. The piles should be confirmed during pile installation with a program of dynamic monitoring. For this project, the dynamic monitoring of four piles is recommended. This is considered to be the minimum monitoring program, as the piles under shear walls may be required to be driven using the maximum recommended driving energy to achieve the greatest factored resistance at ULS values.

Table 5 - Pile Foundation Design Data							
Pile Outside	Pile Wall	Geotechnical Axial Resistance	Final Set	Transferred			
Diameter (mm)	Thickness (mm)	Factored at ULS (kN)	(blows/12 m)	Hammer Energy (kJ)			
245	9	1090	10	28.5			
245	11	1260	10	34.2			
245	13	1500	10	40.7			

The minimum centre-to-centre pile spacing is 2.5 times the pile diameter. The closer the piles are spaced, however, the more potential that the driving of subsequent piles in a group could have influence on piles in the group that have already been driven. These effects, primarily consisting of uplift of previously driven piles, are checked as part of the field review of the pile driving operations.

Accordingly, re-striking of all piles, at least once, will also be required after at least 48 hours have elapsed since initial driving.



A full-time field review program carried out by Paterson personnel should be conducted during the pile driving operations, which is required under the Ontario Building Code (OBC) 2012 to record the pile lengths, and to ensure that the refusal criteria is met, and that piles are driven within the location tolerances (within 75 mm of proper location and within 2% of vertical).

Prior to the commencement of production pile driving, a limited number of indicator piles should be installed across the site. It is recommended that each indicator pile be dynamically load tested to evaluate pile stresses, hammer efficiency, pile load transfer, and end-of-driving criteria for end-bearing in the bedrock.

#### Down Drag Loads

Due to the presence of silty clay below the subject site and proposed grade raises at the site, down drag loads should be considered during the final design of the piles. Based on the available subsurface information, it is expected that the piles will be driven through approximately 21 to 26 m of stiff to soft silty clay. The silty clay generally has a cohesion of 30 to 70 kPa. Assigning an adhesion factor of 1.0 to 0.5 (as per the Canadian Foundation Engineering Manual), the silty clay can be taken to have an ultimate adhesion of 20 kPa against the sides of the piles.

The down drag load is effectively applied to each pile at the location of the "neutral plane," where negative (i.e., down drag) skin friction becomes positive shaft resistance. In the case of the end-bearing piles at this site, the neutral plane will be located near the bedrock surface.

The down drag load is a structural pile capacity criterion and does not affect the geotechnical capacity of the piles. The structural axial capacity of the pile is governed by its structural strength at the neutral plane when subjected to the permanent load plus the down drag load. Transient live load is not to be included. At or below the pile cap, the structural strength of the embedded pile is determined as a short column subjected to the permanent load plus the be permanent load plus the transient live load, but down drag load is to be excluded.

At the depth of the neutral plane where the down drag load is applied, the pile structure is well confined. The 4th edition of the Canadian Foundation Engineering Manual recommends that the allowable structural axial capacity of piles at the neutral plane, for resisting permanent load plus the down drag load, can be determined by applying a factor of safety of 1.5 to the pile material strength (steel yield and concrete 28 day compressive strength).



#### Foundation Lateral Load Resistance

Lateral loads on the foundations can be resisted using passive resistance on the sides of the foundations. For Limit States Design, the resistance factor to be applied to the ultimate lateral resistance, including passive pressure, is 0.50. The total lateral resistance will be comprised of the individual contributions from up to several material layers.

Geotechnical parameters for the native silty clay and glacial till, and for typical backfill materials, compacted to 98% of SPMDD in 300 mm lift thicknesses, are provided in Table 6 below. In addition, earth pressure coefficients are provided in Table 6 for the horizontal resistance calculated for pile caps or grade beams under lateral loads. Friction factors between concrete and the various subgrade materials are also provided in Table 6, where normal loads allow them to be used.

Where granular soils and/or granular backfill materials are present, the passive pressure can be calculated using a triangular distribution equal to  $K_{P}\cdot\gamma\cdot H$  where:

- $K_P$  = factored passive earth pressure coefficient of the applicable retained soil
- $\gamma$  = unit weight of the fill of the applicable retained soil (kN/m<sup>3</sup>)
- H = height of the equivalent wall or footing side (m)

Note that for cases where the depth to the top of the structure pushing against the soil does not exceed 50% of the depth to the base of the structure, the effective value of H in the above noted relationship will be the overall depth to the base of the structure. There will also be "edge effects" where the effective width of soil providing the resistance can be increased by 50% of the effective depth on each side of the pushing structural component.

Note that where the foundation extends below the groundwater level, the effective unit weight should be utilized for the saturated portion of the soil or fill.

Should additional passive resistance be required, the horizontal component of the axial resistance of battered piles (up to 1H:3V inclination), or anchors can be used in the building foundation design. This resistance would be considered in conjunction with additional sources of lateral load resistance considered for the structure.

#### Foundation Uplift Resistance

Uplift forces on the proposed foundations can be resisted using the dead weight of the concrete foundations, the weight of the materials overlying the foundations, and the submerged weight of the piles. Unit weights of materials are provided in Table 6.



For soil above the groundwater level, uplift forces should be calculated using the drained unit weight. For calculations below groundwater level, the effective unit weight should be used. Backfilled excavations in low permeability soils can be expected to fill with water. Then, effective unit weights should be used if drainage of the anchor footings is not allowed.

As noted above, the piles will be mostly located below the groundwater level, so the submerged, or effective, weights of the piles, where used, will be available to contribute to the uplift resistance. Considering that this is a reliable uplift resistance, and is counteracting a dead load, it is our opinion that a resistance factor of 0.9 is applicable for the ULS weight component. Should the pile uplift resistance capacities be insufficient for the foundation uplift loads, rock anchors should be utilized if a deadman anchor is not considered economical (i.e., dead weiaht of buried concrete foundation members). Detailed desian recommendations for rock anchors can be provided upon request, if needed.

A sieve analysis and standard Proctor test should be completed on each of the fill materials proposed to obtain an accurate soil density to be expected, so the applicable unit weights can be estimated.

Table 6 – Geotechnical Parameters for Uplift and Lateral Resistance Design							
Material	Unit Weight (kN/m³)		Internal Friction	Earth Pressure Coefficients			
Description	Drained ¥ <sup>dr</sup>	Effective ¥'	Angle (°) φ'	Factor, tan δ	Active K <sub>A</sub>	At-Rest K₀	Passive $K_p$
OPSS Granular A (Crushed Stone)	22.0	13.7	38	0.60	0.22	0.36	8.80
OPSS Granular B Type II (Well- Graded Sand-Gravel)	21.5	13.4	36	0.55	0.26	0.41	7.50
In-Situ Silty Clay	17.0	10.0	33	0.40	0.30	0.45	3.40
In-Situ Glacial Till	20.0	12.0	33	0.50	0.29	0.46	3.39
<ul> <li>Notes:</li> <li>Properties for fill materials are for condition of 98% of standard Proctor maximum dry density.</li> <li>The earth pressure coefficients provided are for horizontal backfill profile.</li> </ul>							

**D** Passive pressure coefficients incorporate wall friction of  $0.5 \varphi$ '.



#### Permissible Grade Raise Recommendations

If the proposed building is supported on conventional spread footings bearing on the undisturbed stiff silty clay, a reduced permissible grade raise restriction of **0.4 m** is required inside and within 3 m of the building footprint. With this permissible grade raise restriction and the available preliminary grading for the site, it is expected that significant lightweight fill (about 1.0 m thickness or more) would be required below the slab-on-grade.

If the proposed building is supported on end-bearing piles, a permissible grade raise restriction of **1.5 m** is applicable inside and within 3 m of the building footprint.

A permissible grade raise restriction of **2.0 m** may be considered throughout the remainder of the subject site, regardless of the foundation type of the proposed building.

As noted above, if higher than permissible grade raises are required, lightweight fill and/or other measures should be investigated to reduce the risks of unacceptable long-term post construction total and differential settlements.

However, once detailed grading plans have been finalized for the subject development, Paterson should complete a review of the proposed grades for the subject site to ensure they are suitable from a geotechnical perspective, and to specify lightweight fill thicknesses, where required.

#### 5.4 Design for Earthquakes

The site class for seismic site response can be taken as **Class D** for foundations constructed at the subject site. The soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest revision of the 2012 Ontario Building Code for a full discussion of the earthquake design requirements.

#### 5.5 Slab-on-Grade Construction

With the removal of all topsoil and fill within the footprint of the proposed building, the native and undisturbed silty clay deposit will be considered to be an acceptable subgrade upon which to commence backfilling for floor slab construction.

The upper 300 mm of sub-slab fill is recommended to consist of OPSS Granular A crushed stone. All backfill material within the footprint of the proposed building should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 98% of its SPMDD.



If the top of the slab-on-grade extends above the permissible grade raise restriction, then lightweight fill (LWF) would be required under the 300 mm thickness of OPSS Granular A crushed stone. The specific thickness of LWF would depend on the final elevation of the slab-on-grade.

#### 5.6 Pavement Design

Car only parking areas, access lanes, heavy truck parking areas, and concrete aprons are anticipated at this site. The proposed pavement structures are presented in Tables 7 to 9 below.

Table 7 – Recommended Light Duty Pavement Structure for Car Only Parking Areas				
Thickness (mm)	Material Description			
50	Wear Course - HL-3 or Superpave 12.5 Asphaltic Concrete			
150	BASE - OPSS Granular A Crushed Stone			
450	450 SUBBASE - OPSS Granular B Type II			
Separation Layer Woven Geotextile - Terrafix 200W or equivalent				
SUBGRADE – Either approved fill, in-situ soil, or OPSS Granular B Type I or II material placed on				

in-situ soil or fill.

Table 8 - Recommended Flexible Pavement Structure for Access Lanes and Heavy           Truck Parking Areas				
Thickness (mm)	Material Description			
40	Wear Course - HL-3 or Superpave 12.5 Asphaltic Concrete			
50	Upper Binder Course - HL-8 or Superpave 19.0 Asphaltic Concrete			
50	Lower Binder Course - HL-8 or Superpave 19.0 Asphaltic Concrete			
150	BASE - OPSS Granular A Crushed Stone			
550	SUBBASE - OPSS Granular B Type II			
Separation Layer	Woven Geotextile - Terrafix 200W or equivalent			

**SUBGRADE** - Either approved fill, in-situ soil, or OPSS Granular B Type I or II material placed on in-situ soil or fill.



Thickness (mm)	Material Description			
Specified by Others	Reinforced Concrete Slab			
150	BASE - OPSS Granular A Crushed Stone			
600	SUBBASE - OPSS Granular B Type II			
100 HI-40 Rigid Insulation				

The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 100% of the material's SPMDD using suitable compaction equipment. If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be excavated and replaced with OPSS Granular B Type II material.

#### Grade Raise Fill for Paved Areas

It is anticipated the cut and fill operation throughout the subject site will result in portions of the paved areas to be located over grade raise fill. This fill may consist of a workable brown silty clay material generated by site excavations. It should be noted that grey or wet/saturated portions of the silty clay will not be considered suitable for this purpose. If additional material will be imported to accommodate the proposed grades, the geotechnical consultant should review the additional material at the source prior to being delivered to site to assess its suitability for this purpose.

Site-approved grade raise fill should be spread in maximum 300 mm thick loose lifts and compacted using a suitably sized vibratory sheepsfoot roller. It is anticipated the material may be compacted by several passes of the suitably sized equipment (i.e.- 5 to 6 passes and as deemed appropriate by the geotechnical consultant at the time of construction). The material should be placed in **dry and above-freezing conditions**. Frozen material may not be considered for this purpose.

Surfaces should be shaped to minimize ponding of water and promote sheet drainage of rain. Areas exposed to heavy rainfall events should be given a sufficient period to dry to avoid over-wetting of the surface and potential for soft spots to develop throughout the fill. Compaction efforts and placement of sitegenerated fill should be reviewed by the geotechnical consultant at the time of construction to ensure the placement of grade raise fill is carried out satisfactorily.



#### **Paving Timeline**

It is recommended to delay paving over the grade raise fill areas by a minimum of one freeze-thaw seasons (i.e.- raise subgrade with suitable fill prior to winter and freezing temperatures, pave the following summer or fall. It is not recommended to carry out paving within the early-spring in consideration of the thawing of soils affected by frost migration.

#### **Frost Tapers**

For utility trenches and other subgrade structures backfilled with non-frost susceptible granular material or at the interface between the concrete apron and flexible pavement structure, consideration should be given to installing a 1V:5H frost tapers in hard landscaped areas and below pavement structures to lessen the effects of differential frost heaving. Consideration could also be given to installing rigid insulation which requires tapering with various insulation thicknesses.

#### **Rigid Pavement Apron - Frost Protection and Taper Recommendations**

To improve the long-term performance of the concrete apron and lessen the effects of frost penetration and movement, the following insulation detail is suggested:

Insulation type required......HI-40 or equivalent
 HI-40 Insulation thickness (directly under the concrete apron) ......100 mm
 HI-40 Insulation thickness (0 to 1.2 m beyond the edge of the apron).....75 mm
 HI-40 Insulation thickness (1.2 to 2.4 m beyond the edge of the apron)....50 mm
 HI-40 Insulation thickness (2.4 to 3.6 m beyond the edge of the apron)...25 mm

#### **Pavement Structure Drainage**

The pavement structure performance is dependent on the moisture condition at the contact zone between the subgrade material and granular base. Failure to provide adequate drainage under conditions of heavy wheel loading could result in the subgrade fines pumped into the stone subbase voids, thereby reducing the load bearing capacity.

Due to the impervious nature of the subgrade materials and transitions between various pavement structures, consideration should be provided to installing subdrains during the pavement construction. At transition zones between various pavement structures, subdrains will be installed longitudinally to drain any potential water trapped in the granular layers. This recommendation should be considered at the transition between rigid aprons against the building footprints and the flexible pavement structure. The subdrains at catch basins should extend in four orthogonal directions and longitudinally when placed along a curb.



The clear crushed stone surrounding the drainage lines or the pipe, should be wrapped with suitable filter cloth. The subdrain inverts should be approximately 300 mm below subgrade level. The subgrade surface should be shaped to promote water flow to the drainage lines. Discharge of the subdrains should be directed by gravity to storm sewers or deeper drainage ditches.



## 6.0 Design and Construction Precautions

#### 6.1 Foundation Drainage and Backfill

#### **Foundation Drainage**

It is recommended that a perimeter foundation drainage system be provided for the proposed structure. The system should consist of a 150 mm diameter, perforated and corrugated plastic pipe which is wrapped in a geosock and surrounded by 150 mm of 19 mm clear crushed stone, placed at the footing level around the exterior perimeter of the structure. The 19 mm clear crushed stone should be wrapped in a non-woven geotextile. The pipes should have a positive outlet, such as a gravity connection to storm sewer or sump pump.

#### Foundation Backfill

Backfill against the exterior sides of the foundation walls should consist of freedraining, non-frost susceptible granular materials. Foundation backfill located below pavement structures and hard landscaped areas should be spread in 300 mm thick loose lifts and compacted to a minimum of 95% of the materials SPMDD.

#### Sidewalks and Walkways

To avoid differential settlement within proposed sidewalks adjacent to the building, it is recommended that the upper 600 mm of backfill placed below concrete sidewalk and walkways adjacent to the proposed building footprint consist of free draining, non-frost susceptible material, such as OPSS Granular A or Granular B Type II.

The granular material should be shaped to promote positive drainage towards the building perimeter drainage system. The granular material should be placed in maximum 300 mm thick loose lifts and compacted to at least 98% of the materials SPMDD under dry and above-freezing conditions, and using suitable compaction equipment. Consideration could be given to placing a rigid insulation layer below the granular fill layer to prevent frost heave issues at the building entrance.

#### 6.2 **Protection of Footings Against Frost Action**

Perimeter footings and pile caps of heated structures are required to be insulated against the deleterious effects of frost action. A minimum 1.5 m thick soil cover, or a combination of soil cover in conjunction with insulation, should be provided in this regard.



Exterior unheated foundations, such as those for isolated exterior piers, are more prone to deleterious movement associated with frost action than the exterior walls of the heated structure. These structures require additional protection, such as 2.1 m of soil cover or and equivalent combination of soil cover and rigid insulation.

### 6.3 Excavation Side Slopes and Temporary Shoring

The side slopes of excavations at the subject site should be cut back at acceptable slopes from the start of the excavation until structures are backfilled. It is expected that sufficient room will be available for excavations to be undertaken by open-cut methods.

However, if insufficient room is available to permit the proposed sanitary alignment excavation to be constructed by open-cut methods (i.e., unsupported excavations), then a temporary shoring system would be required.

#### Unsupported Excavations

The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. The flatter slope is required for excavation below groundwater level. The subsurface soil is mainly a Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects. Excavated soil should not be stockpiled directly at the top of excavations and heavy equipment should maintain safe working distance from the excavation sides.

Slopes in excess of 3 m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.

Excavated soil and other material should not be stockpiled directly at the top of excavations and heavy equipment should be kept away from the excavation sides.

It is recommended that a trench box be used at all times to protect personnel working in trenches with steep or vertical sides. It is expected that services will be installed by "cut and cover" methods and excavations will not be left open for extended periods of time.

#### **Temporary Shoring**

Temporary shoring may be required for support of the overburden soils to complete the required excavations for the installation of the sanitary alignment, where insufficient room is available for open cut methods.



If a temporary shoring system is required, the design and implementation of these temporary systems will be the responsibility of the excavation contractor and their design team. The shoring requirements, designed by a structural engineer specializing in those works, will depend on the depth of the excavation, the proximity of the adjacent structures, and the elevation of the adjacent building foundations and underground services. The design and implementation of these temporary systems will be the responsibility of the excavation contractor and their design team. Inspections and approval of the temporary system will also be the responsibility of the designer.

Geotechnical information provided below is to assist the designer in completing a suitable and safe shoring system. The designer should take into account the impact of a significant precipitation event and designate design measures to ensure that precipitation will not negatively impact the shoring system or soils supported by the system. Any changes to the approved shoring design system should be reported immediately to the owner's structural design prior to implementation.

The temporary system could consist of soldier pile and lagging system or interlocking steel sheet piling.

Any additional loading due to street traffic, construction equipment, adjacent structures and facilities, etc., should be included to the earth pressures described below. These systems could be cantilevered, anchored or braced. Generally, it is expected that the shoring systems will be provided with tie-back rock anchors to ensure their stability. The shoring system is also recommended to be adequately supported to resist toe failure and inspected to ensure that the sheet piles extend well below the excavation base.

The earth pressures acting on the shoring system may be calculated with the following parameters.

Table 10 – Soil Parameters for Shoring System Design				
Parameters	Values			
Active Earth Pressure Coefficient (K <sub>a</sub> )	0.33			
Passive Earth Pressure Coefficient ( $K_p$ )	3			
At-rest Earth Pressure Coefficient (K₀)	0.5			
Total Unit Weight (γ), kN/m³	20			
Submerged Unit Weight (γ'), kN/m³	13			



The active earth pressure should be calculated where wall movements are permissible while the at-rest pressure should be calculated if no movement is permissible. The dry unit weight should be calculated above the groundwater level while the effective unit weight should be calculated below the groundwater level.

The hydrostatic groundwater pressure should be included to the earth pressure distribution wherever the effective unit weights are calculated for earth pressures. If the groundwater level is lowered, the dry unit weight for the soil/bedrock should be calculated full weight, with no hydrostatic groundwater pressure component.

#### **Excavation Base Stability**

Excavation base stability for the deep sanitary alignment should be reviewed based on the final invert elevations.

The base of supported excavations can fail by 3 general modes:

- Shear failure within the ground caused by inadequate resistance to loads imposed by grade difference inside and outside of the excavation,
- > Piping from water seepage through granular soils, and
- Heave of layered soils due to water pressures confined by intervening low permeability soils.

The factor of safety with respect to base heave, FS<sub>b</sub>, is:

 $FS_b = N_b s_u / \sigma_z$ 

where:

- N<sub>b</sub> stability factor dependent upon the geometry of the excavation and given in the figure on the following page.
- su undrained shear strength of the soil below the base level.
- $\sigma_z$  total overburden and surcharge pressures at the bottom of the excavation.

Shear failure of excavation bases is typically rare in granular soils if adequate lateral support is provided. Inadequate dewatering can cause instability in excavations made through granular or layered soils. The potential for base heave in cohesive soils should be determined for stability of flexible retaining systems.

As a preliminary precaution, service trench excavations exceeding 4 to 5 m in depth should be assessed for excavation base stability during the design phase to verify the suitability of conventional cut-and-cover excavation techniques.



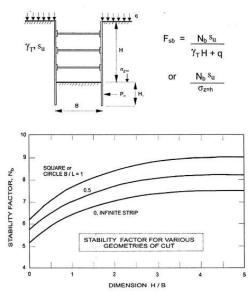


Figure for Stability Factor Nb

#### 6.4 Pipe Bedding and Backfill

Bedding and backfill materials should be in accordance with the most recent Material Specifications and Standard Detail Drawings from the Department of Public Works and Services, Infrastructure Services Branch of the City of Ottawa.

At least 150 mm of OPSS Granular A should be used for pipe bedding for sewer and water pipes when placed on a soil subgrade. If the bedding subgrade consists of grey silty clay, the thickness of the bedding should be increased to 300 mm for sewer pipes. The bedding should also extend to the spring line of the pipe.

Cover material, from the spring line to at least 300 mm above the obvert of the pipe, should consist of OPSS Granular A or Granular B Type II with a maximum size of 25 mm. The bedding and cover materials should be placed in maximum 225 mm thick lifts compacted to 99% of the material's SPMDD.

It should generally be possible to re-use the site materials above the cover material if the operations are carried out in dry weather conditions.

Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.8 m below finished grade) should match the soils exposed at the trench walls to minimize differential frost heaving. The trench backfill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of the material's SPMDD.



To reduce long-term lowering of the groundwater level at this site, clay seals should be provided in the service trenches. The seals should be at least 1.5 m long and should extend from trench wall to trench wall. Generally, the seals should extend from the frost line and fully penetrate the bedding, sub-bedding and cover material. The barriers should consist of relatively dry and compactable brown silty clay placed in maximum 225 mm thick loose lifts and compacted to a minimum of 95% of the material's SPMDD. The clay seals should be placed at the site boundaries and at no more than 60 m intervals in the service trenches.

#### 6.5 Groundwater Control

#### Groundwater Control for Building Construction

It is anticipated that groundwater infiltration into the excavations should be controllable using open sumps. The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium.

#### **Dewatering Permit**

A temporary Ministry of Environment, Conservation and Parks (MECP) permit to take water (PTTW) may be required if more than 400,000 L/day of ground and/or surface water are to be pumped during the construction phase. At least 4 to 5 months should be allowed for completion of the application and issuance of the permit by the MECP.

For typical ground or surface water volumes being pumped during the construction phase, typically between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan to be prepared by a Qualified Persons as stipulated under O.Reg. 63/16.

#### 6.6 Winter Construction

Precautions must be taken if winter construction is considered for this project.

The subsoil conditions at this site consist of frost susceptible materials. In the presence of water and freezing conditions, ice could form within the soil mass with potentially intolerable settlement upon thawing.



In the event of construction during below zero temperatures, the founding stratum should be protected from freezing temperatures by propane heaters and tarpaulins or other suitable means. Additional means may consist of backfilling the foundation with an appropriate thickness of fill extending above and beyond the base of the footing. It would be further recommended to mitigate heavy-truck traffic in proximity to the foundation and across the insulating soil to minimize the effect of compressing frost-affected soils against sufficiently insulated soils.

The base of the excavations should be insulated from sub-zero temperatures immediately upon exposure and until such time as heat is adequately supplied to the building and the footings are protected with sufficient soil cover to prevent freezing at founding level.

Trench excavations and pavement construction are difficult activities to complete during freezing conditions without introducing frost in the subgrade or in the excavation walls and bottoms. Precautions should be considered if such activities are to be completed during freezing conditions. Additional information could be provided, if required.

#### 6.7 Corrosion Potential and Sulphate

The results of analytical testing show that the sulphate content is less than 0.1%. This result is indicative that Type 10 Portland cement (normal cement) would be appropriate for this site. The chloride content and the pH of the sample indicate that they are not significant factors in creating a corrosive environment for exposed ferrous metals at this site, whereas the resistivity is indicative of a non-aggressive to slightly aggressive corrosive environment.

#### 6.8 Tree Planting Restrictions

Paterson completed a soils review of the site to determine the applicable tree planting setbacks, in accordance with the City of Ottawa's "Tree Planting in Sensitive Marine Clay Soils (2017 Guidelines)". Atterberg limits testing was completed for selected silty clay samples. Sieve analysis testing was also completed on selected soil samples. The results of the testing are presented in Tables 1, 2, and 3 in Section 4.2 and included in Appendix 1.

Based on the results of our review, the plasticity index of the silty clay deposit at the subject site does not exceed 40%. Therefore, the following tree planting setbacks are recommended for the silty clay deposit. Large trees (mature height over 14 m) can be planted within the silty clay areas provided a tree to foundation setback equal to the full mature height of the tree can be provided (e.g., in a park or other green space).



Tree planting setback limits may be reduced to **4.5 m** for small (mature height up to 7.5 m) and medium size trees (mature tree height 7.5 to 14 m), provided that the conditions noted below are met.

- □ The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree, as measured from the centre of the tree trunk and verified by means of the Grading Plan as indicated procedural changes below.
- ☐ A small tree must be provided with a minimum 25 m<sup>3</sup> of available soil volume while a medium tree must be provided with a minimum of 30 m<sup>3</sup> of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally un-compacted when backfilling in street tree planting locations.
- □ The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.
- □ The foundation walls are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree).

It is well documented in the literature, and is our experience, that fast-growing trees located near buildings founded on cohesive soils that shrink on drying can result in long-term differential settlements of the structures. Tree varieties that have the most pronounced effect on foundations are seen to consist of poplars, willows, and some maples (i.e., Manitoba Maples) and, as such, they should not be considered in the landscaping design.



## 7.0 Recommendations

It is a requirement for the foundation design data provided herein to be applicable that a material testing and observation program be performed by the geotechnical consultant. The following aspects of the program should be performed by the geotechnical consultant:

- Review detailed grading plan(s) from a geotechnical perspective.
- > Observation of all bearing surfaces prior to the placement of concrete.
- Sampling and testing of the concrete and fill materials.
- Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.
- > Observation of all subgrades prior to backfilling.
- > Field density tests to determine the level of compaction achieved.
- Sampling and testing of the bituminous concrete including mix design reviews.

All excess soils, with the exception of engineered crushed stone fill, generated by construction activities that will be transported on-site or off-site should be handled as per *Ontario Regulation 406/19: On-Site and Excess Soil Management.* 

A report confirming that these works have been conducted in general accordance with our recommendations could be issued upon the completion of a satisfactory inspection program by the geotechnical consultant.



## 8.0 Statement of Limitations

The recommendations provided are in accordance with the present understanding of the project. Paterson requests permission to review the recommendations when the drawings and specifications are completed.

A soils investigation is a limited sampling of a site. Should any conditions at the site be encountered which differ from those at the test locations, Paterson requests immediate notification to permit reassessment of our recommendations.

The recommendations provided herein should only be used by the design professionals associated with this project. They are not intended for contractors bidding on or undertaking the work. The latter should evaluate the factual information provided in this report and determine the suitability and completeness for their intended construction schedule and methods. Additional testing may be required for their purposes.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Broccolini or their agents is not authorized without review by Paterson for the applicability of our recommendations to the alternative use of the report.

#### Paterson Group Inc.

Fernanda Carrozzi, PhD. Geoph.

#### **Report Distribution:**

- Broccolini (digital copy)
- Paterson Group (1 copy)

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Scott S. Dennis, P.Eng.



## **APPENDIX 1**

SOIL PROFILE AND TEST DATA SHEETS SYMBOLS AND TERMS TEST HOLE LOGS BY OTHERS ATTERBERG LIMITS TESTING RESULTS LABORATORY TESTING RESULTS BY OTHERS ANALYTICAL TESTING RESULTS

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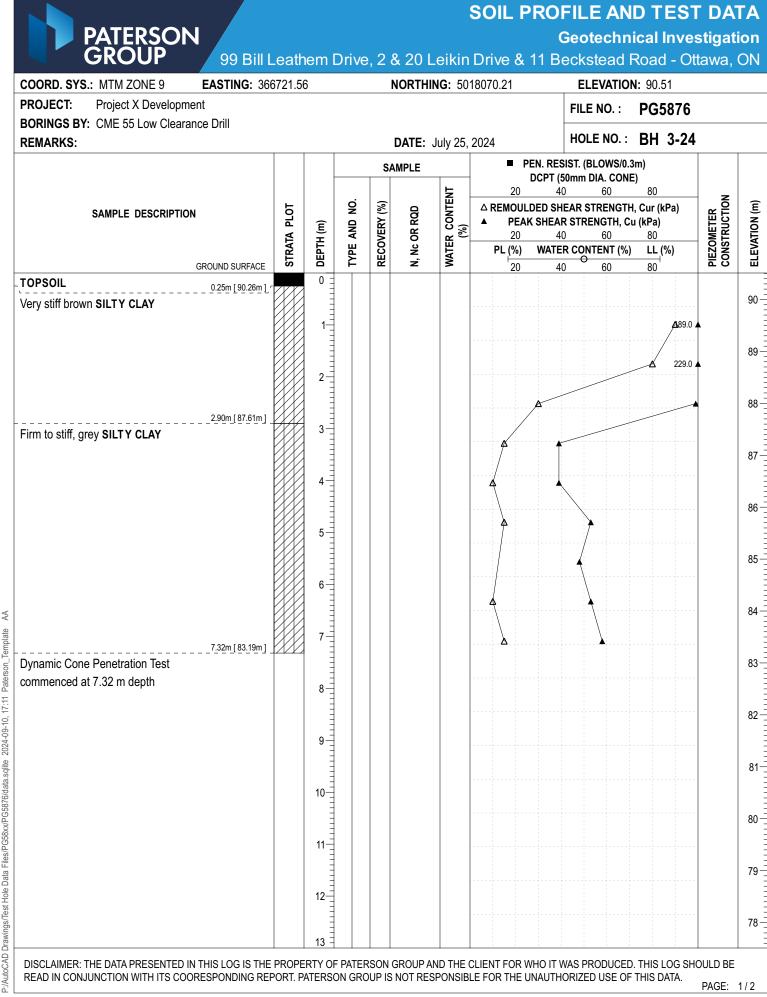
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<b>ROJECT:</b> Project X Development <b>DRINGS BY:</b> CME 55 Low Clearance Drill								FI	LE NO. :	PG5876		
EMARKS:				I	DATE:	July 25,	2024	H	OLE NO. :	BH 2-24		
				SA	MPLE				. (BLOWS/0.3) m DIA. CONE)	)		
SAMPLE DESCRIPTION	ы		No	(%)	Q	WATER CONTENT (%)	20 △ REMOUL	40 DED SHEAF	60 R STRENGTH,	80 Cur (kPa)	NOI	
SAMPLE DESCRIPTION	strata plot	٦ ۳	type and no.	RECOVERY (%)	N, NC OR RQD	R CON (%)	▲ PEAI 20		RENGTH, Cu 60		PIEZOMETER CONSTRUCTION	
GROUND SURFACE	STRAI	DEPTH (m)	ТҮРЕ	RECO	N, Nc (	WATE	PL (%)	WATER C 40	ONTENT (%) 60	LL (%)	PIEZO	
GROUND SURFACE		13 =					20	40	00	00		-
		14										
		15										
		16										
		17-										
		18-										
		19										
20.45m [ 70.13m ]		20										
d of Borehole												
ne pushed up to 18.90 m depth.		21-										
actical refusal to DCPT at 20.45 m depth.		22										
		23					· · · · · · · · · · · · · · · · · · ·					
		24										
		25										



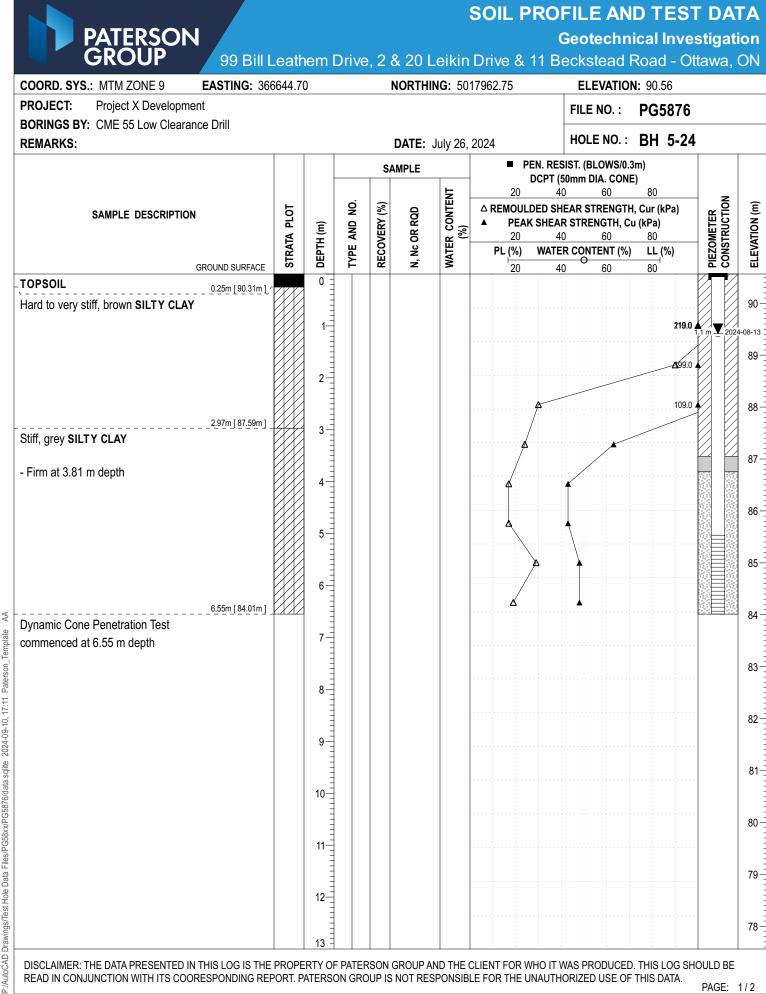
ORD. SYS.: MTM ZONE 9 EASTING: 36	6721.5	6		Ν	IORTHI	<b>NG</b> : 50	18070	.21		EL	EVATIO	<b>1:</b> 90.51			
OJECT: Project X Development										FILE	NO. :	PG58	876		
RINGS BY: CME 55 Low Clearance Drill MARKS:				I	DATE:	July 25.	2024			HOL	.E NO. :	BH 3	3-24		
					MPLE	<b>,</b>		■ P			LOWS/0.3				
						L		20	4	0	DIA. CONE 60	80		z	
SAMPLE DESCRIPTION	PLOT	- -	type and no.	RECOVERY (%)	RQD	WATER CONTENT (%)	∆R ▲				TRENGTH ENGTH, Cu		a)	PIEZOMETER CONSTRUCTION	
	STRATA PLOT	DEPTH (m)	E AN	OVEF	N, Nc OR RQD	(%)		20 PL (%)	4	0	60 TENT (%)	<u>80</u> 80	<u>,                                     </u>	ZOME	
GROUND SURFACE	STF	1 1	Ł	REC	z, z	-MA		20		0	60	80	,	E E	
		13													
		15-													
		16													
		17-													
		18-													
		19													
19.74m [ 70.77m ]															
d of Borehole		20-													
ne pushed up to 17.63 m depth.															
ctical refusal to DCPT at 19.74 m depth.		21-													
		22													
		23													
		24													
		25													

READ IN CONJUNCTION WITH ITS COORESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.

	9 Bill Lea ING: 36665	7.86			NORTHIN	<b>IG:</b> 50 <sup>-</sup>	18035.99	ELEVATION	<b>1:</b> 90.54		
PROJECT: Project X Development								FILE NO. :	PG5876		
BORINGS BY: CME 55 Low Clearance Drill REMARKS:					DATE: J	uly 26	2024	HOLE NO. :	BH 4-24		
					AMPLE	uiy 20,		SIST. (BLOWS/0.3			
						Ę	<b>DCPT (</b> 20 4	50mm DIA. CONE 0 60	<b>:)</b> 80		
SAMPLE DESCRIPTION	to z	DEPTH (m)	TYPE AND NO.	RECOVERY (%)	N, Nc OR RQD	R CONTENT (%)	△ REMOULDED SH ▲ PEAK SHEA	iEAR STRENGTH .R STRENGTH, Cເ		PIEZOMETER CONSTRUCTION	EI EVATION (m)
	, I I I I I I I I I I I I I I I I I I I	DEPTH (m)	Ъ.	COVE	Vc OR	WATER (%		0 60 ER CONTENT (%)	80 LL (%)	ZOME	
	SURFACE		E	盟	ź		20 4	0 60	80	₩ S	ū
	1 [ 90.36m ] /		Ss 1	70	2-2-4-5 6	23.66 27.53	0 0				90
Yery stiff brown SILTY CLAY		1-	SS 2	100	3-4-5-4	39.95	(	S			
			ss 3	100	9 2-1-2-2	29.8	0				8
ynamic Cone Penetration Test	1[88.41m]	2-	N N		3	20.0					
ommenced at 7.32 m depth		3-									88
											87
		4-									
		5-									86
											85
		6-									
		7-									84
											83
		8-									
		9-									82
											8
		10-									
		11-									80
											79
		12-									
											78

PATERSON GROUP 99 Bill L OORD. SYS.: MTM ZONE 9 EASTING: 360						NG: 50						Road - Ot : 90.54		
ROJECT: Project X Development	0007.0	0				<b>NG.</b> 50	10055.3	55		FILE N		PG5876		
ORINGS BY: CME 55 Low Clearance Drill									-					
EMARKS:				- 1	DATE:	July 26,	2024					BH 4-24		
				SA	MPLE		-			ST. (BLO 0mm DIA.				
	L .		Ġ			ENT		20	40	6	60	80	N	
SAMPLE DESCRIPTION	STRATA PLOT	Ê	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)		PEA	<b>K SHEAR</b>	STRENG	GTH, Cu	Cur (kPa) (kPa)	PIEZOMETER CONSTRUCTION	
	RATA	DEPTH (m)	E AN	OVE	lc OR	TER C(%)		20 - (%)	40 WATEE		30 NT (%)	80 LL (%)	ZOME	
GROUND SURFACE	STF		ž	REC	ž	.WA		20	40		50	80	E E	
		13												
								· · · · ·						'
		15												
								-						
		16					-							
		17-												
								•						
		18						•						
		19-												
19.61m [ 70.93m ] nd of Borehole	-											I		
		20												
one pushed up to 13.87 m depth.														
actical refusal to DCPT at 19.61 m depth.		21												
		22												
		23												
		24												
		25												

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PATERSON GROUP	99 <u>Bill L</u>	eat	nem [	Drive	, 28	20 L	eikin	Dri∖	/e &			<b>ical Inve</b> Road - Ot		
	EASTING: 36						<b>NG:</b> 50 <sup>-</sup>				ELEVATIO			
OJECT: Project X Development											FILE NO. :	PG5876		
ORINGS BY: CME 55 Low Clearance	e Drill							0004				BH 5-24		
MARKS:							July 26,	2024	■ D		IST. (BLOWS/0.			Τ
					SA	MPLE	1.			DCPT (5	0mm DIA. CON	E)		
SAMPLE DESCRIPTION		5		ò	(%)	0	ITEN	∆R	20 EMOUL	40 DED SHI	60 EAR STRENGT	80 H, Cur (kPa)	NO	
SAMPLE DESCRIPTION		STRATA PLOT	E)	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	<b></b>			R STRENGTH, C		PIEZOMETER CONSTRUCTION	
		TRAT	DEPTH (m)	YPE /	ECO	, Nc C	ATER	P	L (%)	WATER	R CONTENT (%	) LL (%)	IEZON	
GR	OUND SURFACE	ο Ο	<b>0</b> 13 =	<u>н</u>	~	z	5		20	40	) 60	80	_ ∩ O	+
														.
			14											
			15											
								•						
			16											
			17-											
			18-						•					
			19-						_					
									-					
									•					
			20											
	20.00													
d of Borehole	20.96m [ 69.60m ]	-	21-											
ne pushed up to 15.19 m depth. actical refusal to DCPT at 20.96 m de	oth		22											
	pui.													
WL at 1.15 m depth - August 13, 2024	4)		23											
			24											
			25											

COORD. SYS.: MTM ZONE 9	EASTING: 366							17929.77		eckstead I ELEVATIO			
PROJECT: Project X Developm			•							FILE NO. :	PG5876		
BORINGS BY: CME 55 Low Cleara	ance Drill					D.475		0004		HOLE NO. :			
REMARKS:						DATE:	July 26,		PEN RES	SIST. (BLOWS/0.3		•	
					3	AWPLE	⊢	20	DCPT (	<b>50mm DIA. CONE</b> 0 60			
SAMPLE DESCRIPTIO	N	STRATA PLOT	(m	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	△ REMOUL ▲ PEA	.DED SH K SHEA	IEAR STRENGTH R STRENGTH, C	l, Cur (kPa) u (kPa)	PIEZOMETER CONSTRUCTION	EI EVATION (m)
		RATA	DEPTH (m)	PE A	COVE	Nc OI	ATER (°	20 PL (%)		0 60 R CONTENT (%)	80 LL (%)	EZOM	
	GROUND SURFACE	SI			22	ź	-	20		0 60	80	≣ 8	<u> </u>
	0.25m [90.21m]/		0 =	Ss 1	60	2-3-4-6 7	29.87 29.63		0 0				90
/ery stiff brown SILTY CLAY			1-	ss 2	100	2-4-5-6	29.44		0			-	
			-			9							89
	2.13m [ 88.33m ]		2	SS 3	100	1-2-2-2 4	32.89		0				
Oynamic Cone Penetration Test ommenced at 2.13 m depth			-										88
			3-										
			-										87
			4-										
			-										86
			5-										
			-										85
			6-										
			-									-	84
			7-									-	
													83
			8										82
			9										
													8
			10-										
			-										80
			11-										
			-										79
			12-										
			-										78

PATERSON GROUP 99 Bill L	.eath	nem [	Drive	e, 2 8	& 20 L	eikin	Drive &		<b>Geotechn</b> eckstead F			
COORD. SYS.: MTM ZONE 9 EASTING: 366							17929.77		ELEVATION			
PROJECT: Project X Development									FILE NO. :	PG5876		
SORINGS BY: CME 55 Low Clearance Drill							0004		HOLE NO. :			
REMARKS:					DATE:	July 26,		EN RES	SIST. (BLOWS/0.3			
		-		SA	MPLE		-	DCPT (	50mm DIA. CONE	E)		
SAMPLE DESCRIPTION	5		Ö.	(%)	Q	ITEN	20 △ REMOUL	4 DED SH.	0 60 IEAR STRENGTH	80 , Cur (kPa)	R IION	<u>و</u>
SAMPLE DESCRIPTION	strata plot	Ē	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	▲ <b>PEA</b> 20	K SHEAI 4	<b>R STRENGTH, Cι</b> 0 60	<b>i (kPa)</b> 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
	TRAT	DEPTH (m)	YPE /	ECO	, Nc C	ATER	PL (%)	WATE	R CONTENT (%)	LL (%)	IEZON	LEVA:
GROUND SURFACE	Ś	<b>ם</b> 13 =	<u>н</u>	~	z	5	20	4	0 60	80	<b>₽</b> 0	
		-										77
		14										
		-										76
		15										
												75
												75
		16-										
												74
		17-										
												74 · 73 ·
		18-										
		-										72
		19										
												71
		20										
		20 -										70-
												10
		21-										
												69 <sup>.</sup>
		22							•			
		-										68
		23										
23.62m [ 66.84m ]											•	67
nd of Borehole		24										
cone pushed up to 18.90 m depth.												66
Practical refusal to DCPT at 23.63 m depth.		25										
												65
		26										00

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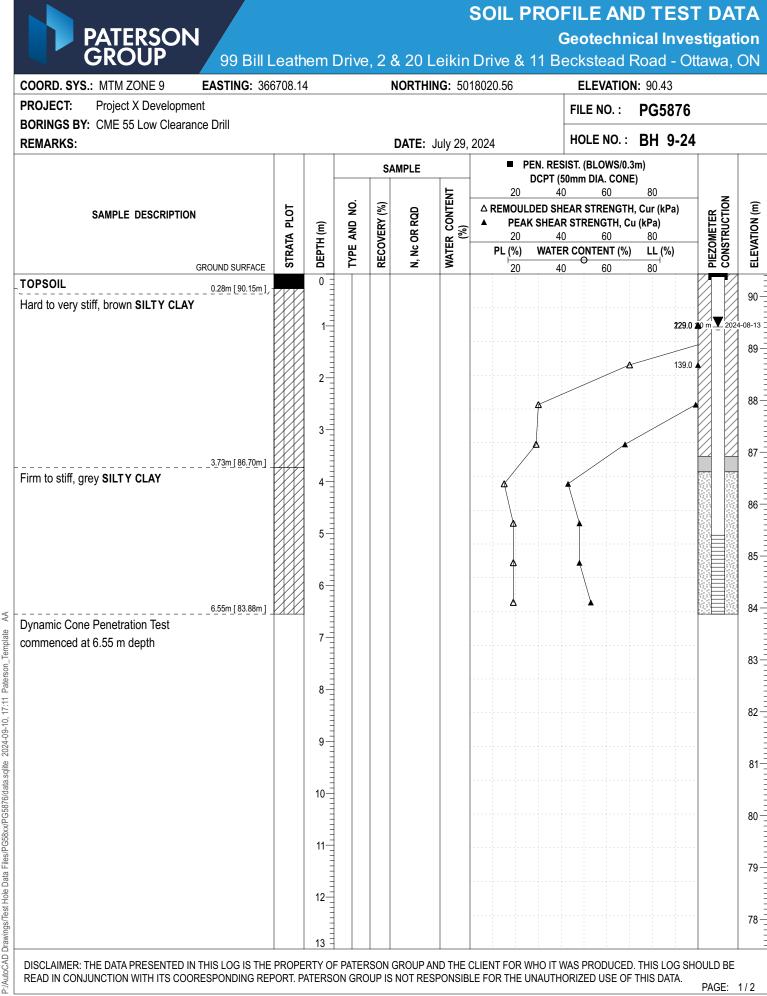
PATERSON								SOIL	. PF		FILE A Geotech			Γ DA stigat	
PATERSON GROUP	99 Bill I	Leath	nem	Drive	e, 2	& 20 L	eikin	Drive	& 1						
COORD. SYS.: MTM ZONE 9	EASTING: 36	6749.00	6			NORTHI	<b>NG:</b> 50	17944.5	5		ELEVAT	<b>ION:</b> 90	0.45		
PROJECT: Project X Developm BORINGS BY: CME 55 Low Cleara											FILE NO.	: PC	G5876		
REMARKS:						DATE:	Julv 26.	2024			HOLE NO	.: Bł	1 7-24		
					S	AMPLE	, <u>-</u> ,				IST. (BLOWS				
							ħ		20 20	CPT (50 40	0mm DIA. CO 60	<b>DNE)</b> 8	0		
SAMPLE DESCRIPTIO	N	LOT	_	type and no.	Y (%)	gg	CONTENT %)				EAR STRENG			PIEZOMETER CONSTRUCTION	(m) N
		strata plot	DEPTH (m)	AN	RECOVERY (%)	N, Nc OR RQD	ER C(%)		20	40	60	8	0	OME	ELEVATION (m)
	GROUND SURFACE	STR	DEP.	TYPE	REC	й х	WATER (%	PL (	(%) \ 20	<b>WATEF</b> 40	CONTENT 60	(%) L 80	<b>L (%)</b> ∩	PIEZ	
TOPSOIL	0.28m [ 90.17m ] ,		0	Ss-	50	1-2-4-5	23.2		0						
Very stiff brown SILTY CLAY			-	β		6	30.11		¢	)					90
			1-	SS 2	100		33.87			0					
			-	H m		9									89
	2.13m [ 88.32m ]		2-	SS3	100	1-1-2-2 3	30.88			c					
Dynamic Cone Penetration Test															88
commenced at 2.13 m depth			3-												
			=					· · · · · · · · · · · · · · · · · · ·							87
			4												
			-												86
			5-												
			-												85
			6												
			-												84
			7-												
			-												83
			8-												
			-												82
			9-												
															81
			-												
			10-												
			-						· · · · · · · · · · · · · · · · · · ·						80
			11-												
			-												79
			12-												
															78
			13 -												

OORD. SYS.: MTM ZONE 9 EASTING: 366	6749.0	6		Ν	IORTHI	NG: 50	17944.55		ELEVATION	: 90.45		
<b>ROJECT:</b> Project X Development <b>DRINGS BY:</b> CME 55 Low Clearance Drill									FILE NO. :	PG5876		
EMARKS:				I	DATE:	July 26,	2024		HOLE NO. :	BH 7-24		
				SA	MPLE				ST. (BLOWS/0.3r 0mm DIA. CONE)			
			Ċ			ENT	20	40	60	80	N	
SAMPLE DESCRIPTION	strata plot	Ê	type and no.	RECOVERY (%)	N, NC OR RQD	WATER CONTENT (%)	A REMOUL ▲ PEAł	<b>SHEAR</b>	AR STRENGTH, STRENGTH, Cu	(kPa)	PIEZOMETER CONSTRUCTION	
	RATA	DEPTH (m)	'PE AI	COVE	Nc OF	ATER (%	20 PL (%)	40 WATER	60 CONTENT (%)	80 LL (%)	EZOMI	
GROUND SURFACE	ST	<b>범</b> 13 :		쀭	ź	3	20	40	-O 60	80	12 S	-
		14										
		15										
		16					-					
		17-										
		18-										
		19							•			
20.19m [ 70.26m ]		20									-	
d of Borehole												
ne pushed up to 15.34 m depth.		21-										
actical refusal to DCPT at 20.19 m depth.												
		22										
		23										
		24										
		25										
		26										

PATERSON GROUP	99 Bill L EASTING: 366			BINE		& 20 L Northin				ГГΒ		LEVATION			va, v	
COORD. SYS.: MTM ZONE 9 ROJECT: Project X Development		5/12.80	)			NORTHI	NG: 50	1/9/3.11						70		
CORINGS BY: CME 55 Low Clearan												E NO. :	PG58			
EMARKS:						DATE: J	luly 29,	2024			HO	LE NO. :	BH 8	-24		
					S	AMPLE		I				BLOWS/0.3 DIA. CONE				
							IN		20	4	0	60	80		z	
SAMPLE DESCRIPTION		PLOT	Ē	TYPE AND NO.	RECOVERY (%)	RQD	CONTENT 6)					STRENGTH ENGTH, Cu			CONSTRUCTION	
		strata plot	DEPTH (m)	EAN	OVEF	N, Nc OR RQD	WATER C(%)		20	4	0	60 NTENT (%)	<u>80</u> 80		ISTRI	
(	GROUND SURFACE	STR	DEP	μ	REC	N N	MAI	I 4	20	4	<u> </u>	60	80			i
OPSOIL	0.20m[90.33m]/	XX	0	ss 1	50	2-2-3-3	23.74 32.22		0	0						
ard to very stiff, brown SILTY CLAY						5	32.22			U						ę
			1— 	SS 2	50	3-5-4-4 9	45.79				0					
			-	۳	60	3-2-3-3	26.74		0							
mania Cana Danatatian Taat	2.13m [ 88.40m ]		2-	X S		5	20.74		Ŭ							
mamic Cone Penetration Test mmenced at 2.13 m depth			=													
			3-													
			=													
			4													
			-													
			5_													
			-													
			6-													
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			7-													
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			11-													
			 12—													
			-													
			=				1									

ORD. SYS.: MTM ZONE 9 EASTING: 366	6712.8	0		Ν	IORTHI	NG: 50	)17973.11		ELE	VATION	: 90.53		
OJECT: Project X Development PRINGS BY: CME 55 Low Clearance Drill									FILE	NO. :	PG5876	<b>j</b>	
MARKS:				I	DATE:	July 29,	, 2024		HOLE	NO. :	BH 8-2	4	
				SA	MPLE					.OWS/0.3 A. CONE			
			Ġ			ENT	20	4(	)	60	80	Z	
SAMPLE DESCRIPTION	strata plot	Ê	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	A REMOUL	<b>K SHEAF</b>	R STREM	IGTH, Cu	(kPa)	PIEZOMETER CONSTRUCTION	
	RATA	DEPTH (m)	ЧЕ AN	COVE	Vc OR	TER (%	20 PL (%)	40 WATE		60 ENT (%)	80 LL (%)	ZOME	
GROUND SURFACE	STI		Σ	Ш.	ź	M	20	4(	<u> </u>	60	80	8	_
		13											
		14											
		15											
		16											
							-						
		17-											
		18-											
		19-											
19.89m [ 70.64m ]	-											-	
d of Borehole		20-											
ne pushed up to 14.17 m depth.													
actical refusal to DCPT at 19.89 m depth.		21											
		22											
		23											
		24											
		2											
		25-											

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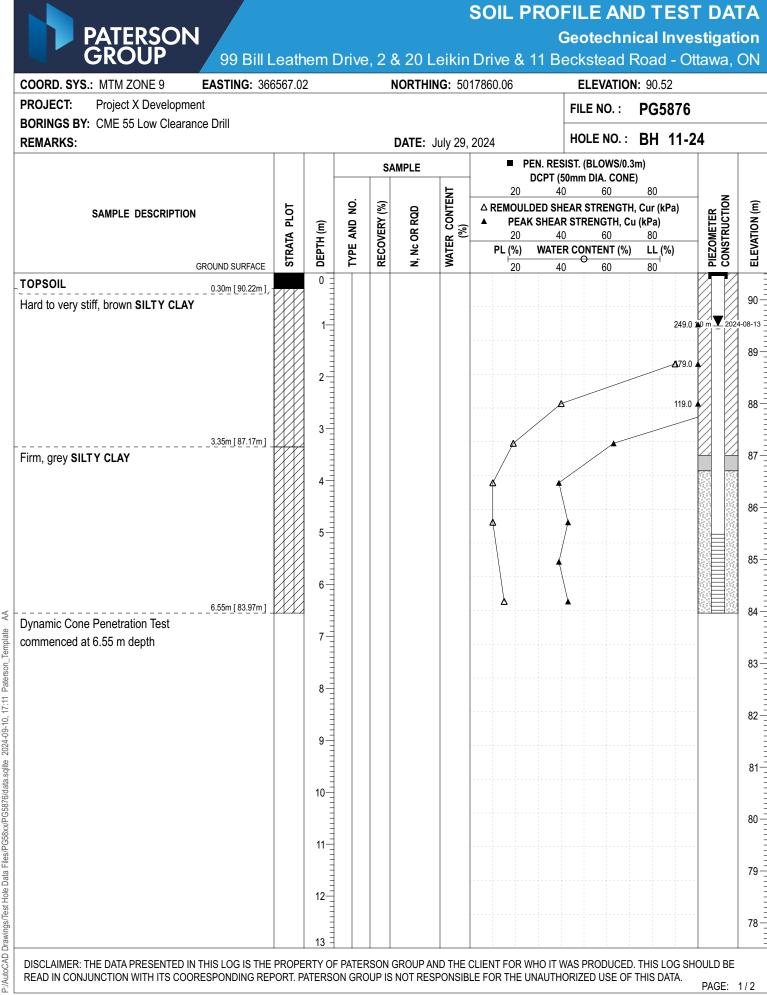


DORD. SYS.: MTM ZONE 9 EASTING: 366	6708.1	4		N	IORTHI	NG: 50	18020.56		ELEVATION	l: 90.43	
<b>ROJECT:</b> Project X Development <b>DRINGS BY:</b> CME 55 Low Clearance Drill									FILE NO. :	PG5876	
EMARKS:				I	DATE:	July 29,	2024		HOLE NO. :	BH 9-24	
				SA	MPLE		<b>■</b> F		SIST. (BLOWS/0.3) 50mm DIA. CONE		
			ġ			ENT	20	4	0 60	80	z
SAMPLE DESCRIPTION	strata plot	Ê	lype and no.	RECOVERY (%)	RQD	WATER CONTENT (%)	▲ PEA		IEAR STRENGTH, R STRENGTH, Cu		PIEZOMETER CONSTRUCTION
	RATA	DEPTH (m)	PE AN	COVE	N, NC OR RQD	TER C(%)	20 PL (%)	4 WATE	0 60 R CONTENT (%)	80 LL (%)	ZOME
GROUND SURFACE	STI		Σ	쀭	ž	M.	20	4	<u>O</u>	80	₩8
		13									
		14									
		15									
		16									
		17-						•			
		18-									
							•				
		19-									
		20									
21.01m [ 69.42m ]	-	21									T
d of Borehole											
ne pushed up to 14.05 m depth.		22									
actical refusal to DCPT at 21.01 m depth.											
WL at 1.02 m depth - August 13, 2024)		23									
,											
		24									
		25									

COORD. SYS.: MTM ZONE 9 EASTING: 3 ROJECT: Project X Development	66626.0	6			NORTHI	<b>IG:</b> 50 <sup>-</sup>	1787	5.49							_
ORINGS BY: CME 55 Low Clearance Drill											NO. :	PG58			
EMARKS:					DATE: 、	luly 29,	2024	1		HOL	E NO. :	BH	10-24	ļ	_
				S	AMPLE	_		■ F			LOWS/0.3 DIA. CONE				
	<sub>F</sub>		ō	(9	-	WATER CONTENT (%)	^ E	20	2	10	60 TRENGTH	80	20)	No	
SAMPLE DESCRIPTION	STRATA PLOT	Ê.	TYPE AND NO.	RECOVERY (%)	N, Nc OR RQD	con	∆r ▲	PEA	K SHEA	R STRE	NGTH, Cu	ı (kPa)	a)	PIEZOMETER CONSTRUCTION	
	RATA	DEPTH (m)	PE A	COVE	Nc OF	ATER (°		20 PL (%)		10 Er con	60 TENT (%)	80 (%	o)	EZOM	
GROUND SURFAC	s ST		L L	R	ź	<b>≯</b> 8.57	0	20	4	40 •	60	80	;	≣ 8	+
L: Brown silty sand, with crushed stone and avel 0.08m [ 90.44m		0	X Is		3-6-4-3 10	31.55 22.85	Ŭ	o	0						
VEI 0.08m [ 90.44m PSOIL 0.30m [ 90.22m		1-	22	70	2-5-7-7	34.35			o						
rd to very stiff, brown SILTY CLAY		-	X S	10	12	34.30			0						
2.13m [ 88.39m	,	2-	ss 3	100	2-3-3-3	29.1			0						
namic Cone Penetration Test		-			6										
mmenced at 2.13 m depth															
		3-									· · · · · · · · · · · · · · · · · · ·				
		=													
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		=													
		11-													
		12-													

							SOIL F	RO	FILE ANI	DTES	T DA	ΤА
PATERSON GROUP 99 Bill L								(	Geotechni	cal Inve	stigati	ion
GROUP 99 Bill L	.eatł	nem l	Drive	, 28	& 20 L	eikin	Drive &	11 B	eckstead F	load - Ot	tawa, (	ON
COORD. SYS.: MTM ZONE 9 EASTING: 366	626.0	6		١	NORTHI	<b>NG:</b> 50	17875.49		ELEVATION	: 90.52		
PROJECT: Project X Development									FILE NO. :	PG5876		
BORINGS BY: CME 55 Low Clearance Drill REMARKS:					DATE:	Julv 29.	2024		HOLE NO. :	BH 10-2	24	
					MPLE	,	■ P		SIST. (BLOWS/0.3)			
						t	20	DCPT (	50mm DIA. CONE) 0 60	) 80		
SAMPLE DESCRIPTION	LOT	_	type and no.	Y (%)	QD	WATER CONTENT (%)			IEAR STRENGTH, R STRENGTH, Cu		PIEZOMETER CONSTRUCTION	(m) N
	strata plot	DEPTH (m)		RECOVERY (%)	N, Nc OR RQD	ER C (%)	20	4	0 60	80	OME	ELEVATION (m)
GROUND SURFACE	STR	DEP	TΥΡΙ	REC	ž Ž	WAT	PL (%)	4	R CONTENT (%)	LL (%)	PIEZ	ELE
		13 =										
		14										77 76 75 74 73 72
												76
		15										
												75
		16										
												74-
		17										
											_	73-
		18-										
												72
		10										
		19										
												71
		20										
												70-
		21-										
												69-
		22										
22.68m [ 67.84m ]												68-
End of Borehole		23										
Cone pushed up to 19.91 m depth.												67
Practical refusal to DCPT at 22.68 m depth.		24										
												66
		25										
												65
		26										65

DISCLAIMER: THE DATA PRESENTED IN THIS LOG IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHO IT WAS PRODUCED. THIS LOG SHOULD BE READ IN CONJUNCTION WITH ITS COORESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.



PATERSON GROUP 99 Bill L COORD. SYS.: MTM ZONE 9 EASTING: 366					IORTHI						EVATION	Road - Ot I: 90.52		
PROJECT: Project X Development										FILE	NO. :	PG5876		
BORINGS BY: CME 55 Low Clearance Drill REMARKS:				I	DATE:	July 29,	2024			HOL	.E NO. :	BH 11-2	4	
					MPLE						BLOWS/0.3			
			÷			ENT		20	4	0	DIA. CONE 60	80	z	
SAMPLE DESCRIPTION	strata plot	Ê	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	∆ RE ▲	PEA	( SHEAI	R STRE	ENGTH, Cu		PIEZOMETER CONSTRUCTION	EL EVATION (m)
	RATA	DEPTH (m)	PE AI	COVE	Nc OF	TER (%	PI	20 L (%)	40 WATE		60 TENT (%)	80 LL (%)	ZOME	FVATI
GROUND SURFACE	ST	<b>円</b> 13 Ξ		8	ź	×		20	4	0	60	80	≣ S	Ξ
														77
		14												
														7
		15												
														7
		16												
														7
		17-												
														7:
		18												
														7:
		19												
														7
		20												
									_					7
		21-												
														69
21.84m [ 68.68m ]		22												
End of Borehole		22-												
Cone pushed up to 19.18 m depth.														6
Practical refusal to DCPT at 21.84 m depth.		23-												
GWL at 1.02 m depth - August 13, 2024)														6
		24												-
														6
		25												
		26												6

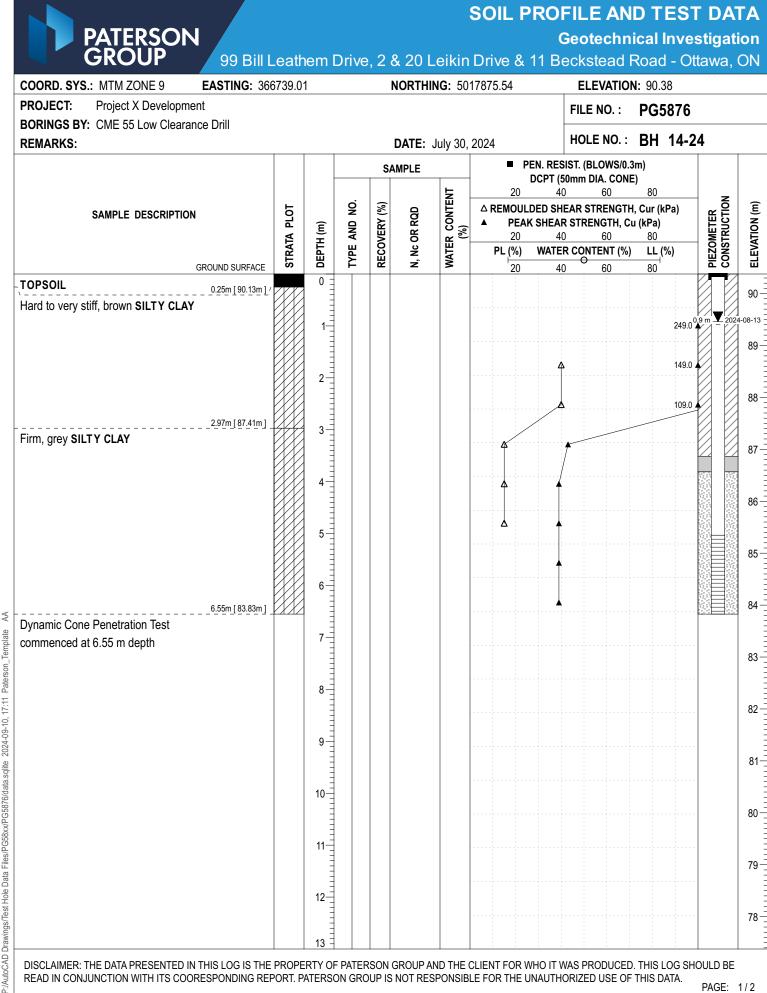
DISCLAIMER: THE DATA PRESENTED IN THIS LOG IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHO IT WAS PRODUCED. THIS LOG SHOULD BE READ IN CONJUNCTION WITH ITS COORESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA. PAGE: 2 / 2

COORD. SYS.: MTM ZONE 9	EASTING: 366	6521.69	)			NORTHIN	<b>NG:</b> 50 <sup>°</sup>	17840.31		ELE	VATION	l: 90.53		
PROJECT: Project X Developme										FILE N	NO. :	PG5876		
BORINGS BY: CME 55 Low Clearar REMARKS:	nce Drill					DATE: 、	luly 20	2024		HOLE	NO. :	BH 12-	24	
LIMARRO.					5	AMPLE	July 29,		PEN. RES	SIST. (BL				
							F	20		50mm Dl				
SAMPLE DESCRIPTION	I	Ъ		Ň	(%)	QD	WATER CONTENT (%)		DED SH	EAR STR	RENGTH,	Cur (kPa)	PIEZOMETER CONSTRUCTION	(m) [
		strata plot	DEPTH (m)	TYPE AND NO.	RECOVERY (%)	N, Nc OR RQD	(%) (%)	20	4		60	80		
	GROUND SURFACE	STRA	DEPT	ТУРЕ	RECO	N, Nc	WATE	PL (%)	WATE 4		ENT (%) 60	LL (%)	PIEZO	
OPSOIL	0.25m [ 90.28m ] /		0 =	Ss 1	60	2-5-6-7	19.96	0	4		00			-
lard to very stiff, brown SILTY CLAY			-	A w		11	33.56		0					90
			1-	SS 2	100	3-5-5-6	38.05		0					
			-	$\square$ $m$		10								8
	2.13m [ 88.40m ]		2-	ss 3	100	1-2-2-3 4	36.41		0					
Dynamic Cone Penetration Test ommenced at 2.13 m depth			-											8
			3-											
			-											8
			4											
			-											8
			4											
				1										8
			6-											
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			10											
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			11-											
			-											7
			12-											
			-											_
			13 -											7

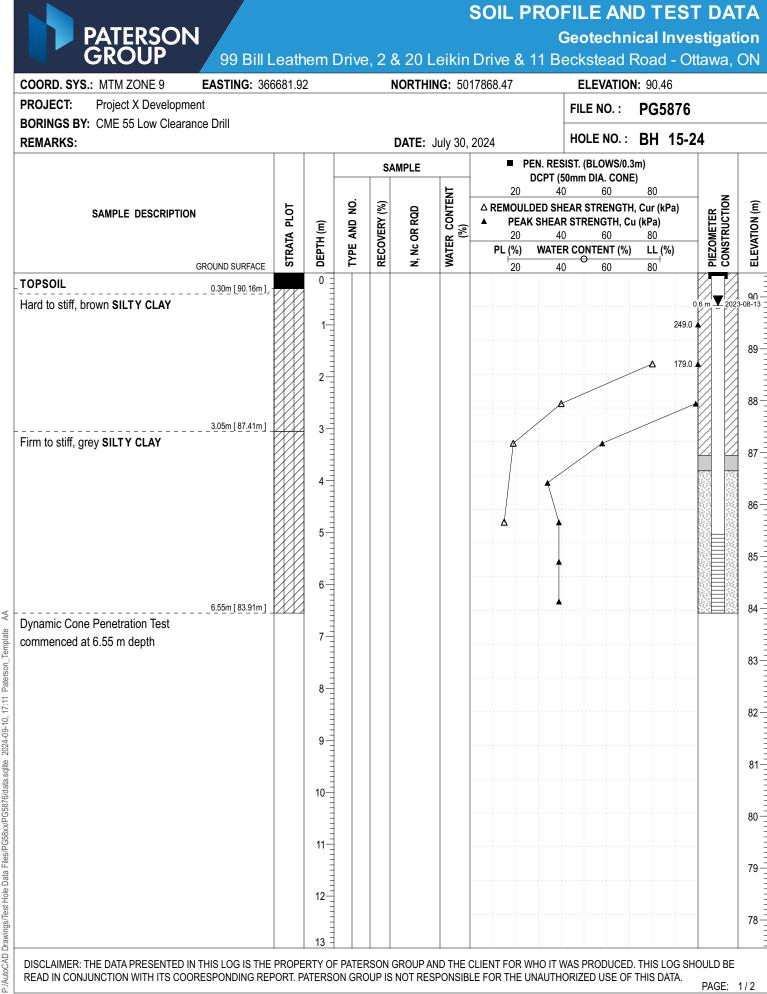
OORD. SYS.: MTM ZONE 9 EASTING: 366 ROJECT: Project X Development	521.6	9		Ν	IORTHI	NG: 50	17840.31		ELEVATION FILE NO. :			
ORINGS BY: CME 55 Low Clearance Drill								F	HOLE NO. :	PG5876	A	
EMARKS:					DATE:	July 29,			ST. (BLOWS/0.3)			
						T	20	<b>DCPT (50</b> 40	mm DIA. CONE 60	) 80	z	
SAMPLE DESCRIPTION	PLOT	Ê	type and no.	RECOVERY (%)	R RQD	WATER CONTENT (%)	△ REMOUL ▲ PEA	<b>K SHEAR</b>	AR STRENGTH, STRENGTH, Cu	ı (kPa)	PIEZOMETER CONSTRUCTION	
	strata plot	DEPTH (m)	ype ai	ECOVE	N, NC OR RQD	ATER (%	20 PL (%)		60 CONTENT (%)	80 LL (%)	EZOMI	
GROUND SURFACE	ω'	<b></b> 13 =	<u>۲</u>		ź	3	20	40	60	80	ΞÖ	ļ_i
		14										
		15										
		16-										
		17-										
								•••••••••••••••••••••••••••••••••••••••				
		18-						•				
		19										
19.96m [ 70.57m ]									-		•	
d of Borehole		20										
ne pushed up to 17.45 m depth.		21-										
actical refusal to DCPT at 19.96 m depth.												
		22										
		23										
		24										
		25-										

	<b>FING</b> : 366							17939.97		eckstead ELEVATIO			
<b>ROJECT:</b> Project X Development										FILE NO. :	PG587	6	
SORINGS BY: CME 55 Low Clearance Dril REMARKS:	I					DATE: J	Luk <i>i</i> 20	2024		HOLE NO. :	BH 13	-24	
						MPLE	iuly 30,		N. RES	SIST. (BLOWS/0			Τ
							F			50mm DIA. CON			
SAMPLE DESCRIPTION		Ŀ,		ġ	(%)	B	CONTENT 6)		ED SH	EAR STRENGT	H, Cur (kPa)	ER CTION	
		strata plot	DEPTH (m)	TYPE AND NO.	RECOVERY (%)	N, Nc OR RQD	R CC (%)	20	4		80	PIEZOMETER CONSTRUCTION	
GROUNC	) SURFACE	STRA	DEPT	ТҮРЕ	RECC	N, Nc	WATER (%	PL (%)	WATE 4	R CONTENT (%	) LL (%) 80	PIEZO	
	m [ 90.29m ] ,~		0	Ss 1	60	1-2-3-5	24.24	0		0 00	00		+
lard to very stiff, brown SILTY CLAY			-	A v		5	33.07		0				9
			1-	SS 2	60	3-5-8-8 13	34.29		0				
			-	ss 3	100		00.00		•				8
	m[88.44m]	XX	2-	$\square$ $\mathbb{S}$	100	2-2-3-2 5	32.03		0				
ynamic Cone Penetration Test ommenced at 2.13 m depth			-										6
			3 4 5										
			-										8
			4										
			-										8
			5-										
			_	1									8
			6-										
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			7-										
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			11-										
			-										
			12-										
			13 -										.

PATERSON GROUP 99 Bill L	.eath	nem E	Drive	, 2 8	k 20 L	eikin	Drive &	11 Be	eckstead F	Road - Ot	tawa,	٥N
COORD. SYS.: MTM ZONE 9 EASTING: 366	6818.3	5		N	ORTHI	<b>NG</b> : 50	17939.97		ELEVATION	: 90.57		
PROJECT: Project X Development									FILE NO. :	PG5876		
SORINGS BY: CME 55 Low Clearance Drill					NATE.	1.1	2024		HOLE NO. :	BH 13-2	4	
REMARKS:					DATE:	July 30,			IST. (BLOWS/0.3)			
				SA	MPLE		-	DCPT (5	0mm DIA. CONE	)		
	-		ö	(9	-	IENT		40 DED SHI	60 EAR STRENGTH,	80 Cur (kBa)	NO	5
SAMPLE DESCRIPTION	strata plot	Ê	type and no.	RECOVERY (%)	N, Nc OR RQD	CONTENT 6)			STRENGTH, Cu		PIEZOMETER CONSTRUCTION	
	ATA	DEPTH (m)	EAN	OVE	c OR	WATER C	20 PL (%)	40	60 R CONTENT (%)	80 LL (%)	SOME	
GROUND SURFACE	STR	B	ΤΥP	REO	N, N	MAI	20	40		80	CON E	
		13 =										
												77
		14										
												7
		15										
												7
		16										
												7
		17					<b></b>					
							-					
												7
		18-										
												7
		19-										
19.61m [ 70.96m ]												
End of Borehole												7
		20										
Cone pushed up to 14.33 m depth.												7
Practical refusal to DCPT at 19.61 m depth.		21										
												6
		22										
												6
		23										
												6
		24										
												6
		25										
												6
		26										



PATERSON GROUP 99 Bill L OORD. SYS.: MTM ZONE 9 EASTING: 366							17875.54		EVATION	Road - Ot	lawa,	
ROJECT: Project X Development	0739.0	1		N		NG: 50	17675.54			PG5876		
ORINGS BY: CME 55 Low Clearance Drill												
EMARKS:						July 30,				BH 14-2	4	
				SAI	MPLE			EN. RESIST. (E DCPT (50mm	DIA. CONE	)		
SAMPLE DESCRIPTION	5		Ö.	(%)	e	ITEN	20 △ REMOUL	40 DED SHEAR S	60 TRENGTH,	80 Cur (kPa)	NOI	1
SAMIFLE DESCRIPTION	strata plot	(E) ۳	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	▲ PEAI 20	K SHEAR STRE 40	ENGTH, Cu 60	<b>(kPa)</b> 80	PIEZOMETER CONSTRUCTION	
	STRAT	DEPTH (m)	ΥPE	RECO	I, Nc (	VATE	PL (%)	WATER CON	TENT (%)	LL (%)	SONS'	
GROUND SURFACE	0)	13 =	-		2	-	20	40	60	80	шо	
												7
		14										
												7
		15										
							_					
		16					-					
		17-					•					
												.
		18-										
												.
19.02m [ 71.36m ]		19-									8	
nd of Borehole												
one pushed up to 19.02 m depth.		20										
actical refusal to DCPT at 14.63 m depth.												.
WL at 0.92 m depth - August 13, 2024)		21										
		22										
		23										
		24										
		25										
												'



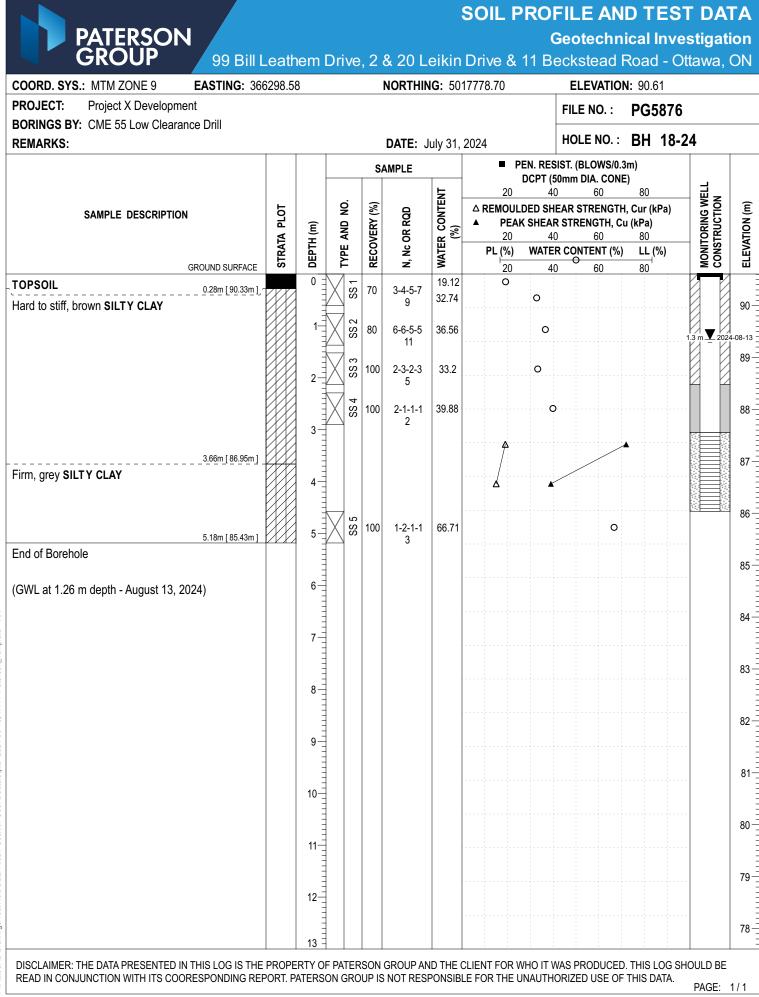
OORD. SYS.: MTM ZONE 9 EASTING: 36					IORTHI						VATION	Road - Ot : 90.46	
ROJECT: Project X Development										FILE N	NO. :	PG5876	
DRINGS BY: CME 55 Low Clearance Drill EMARKS:				г	DATE: 、	July 30	2024			HOLE	NO. :	BH 15-2	24
					MPLE	uly oo,				SIST. (BLO	OWS/0.3r	m)	
						ħ		20	DCPT (5 40		A. CONE) 60	80	
SAMPLE DESCRIPTION	LOT	-	type and no.	KY (%)	RQD	WATER CONTENT (%)					RENGTH, IGTH, Cu	Cur (kPa) (kPa)	PIEZOMETER CONSTRUCTION
	STRATA PLOT	DEPTH (m)	e an	RECOVERY (%)	N, Nc OR RQD	TER C		20 PL (%)	40	)	60	80 LL (%)	ZOME
GROUND SURFACE	STR		ΤY	REC	z, z	MA		20	4(	R CONTE	60	80	SOE
		13											
		14											
		45											
		15-											
		16											
		17-					-						
		18-											
		19-					•						
		20											
		21											
									· · · · · · · · · · · · · · · · · · ·				
22.00m [ 68.46m ]	-	22											-
one pushed up to 15.24 m depth.		23											
actical refusal to DCPT at 22.00 m depth.													
WL at 0.63 m depth - August 13, 2024)		24											
		25											

	<b>ING:</b> 3666					NORTHIN				eckstead F		llava,	
PROJECT: Project X Development	1119. 3000	10.00					<b>IG</b> . 50	1/02/.10		FILE NO. :	PG5876		
BORINGS BY: CME 55 Low Clearance Dril	I												
REMARKS:						DATE: J	uly 30,			HOLE NO. :		24	
					S	AMPLE		■ F		IST. (BLOWS/0.3 0mm DIA. CONE			
		_		ö		_	ENT	20	40	60	80	- N	-
SAMPLE DESCRIPTION		strata plot	Ê	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	▲ PEA	K SHEAF	EAR STRENGTH, R STRENGTH, Cu	(kPa)	PIEZOMETER CONSTRUCTION	EI EVATION (m)
		RATA	DEPTH (m)	PE AI	COVE	Nc OF	VTER (%	20 PL (%)	40 WATE	) 60 R CONTENT (%)	80 LL (%)		EVATI
	SURFACE	ST			R	ź		20	40	60	80	8	ū
	n [90.13m]/	XX	0 =	S S	60	1-3-3-6 6	29.64 33.03		0 0				90
/ery stiff, brown SILTY CLAY				$\neg$		-							
				SS 2	100	2-4-5-5 9	38.36		0				8
				ss 3	100	1-2-2-2	34.04		0				
2_13 المعندي ا المعندي المعندي	n[88.25m]	1/1/	2-			4							
ommenced at 2.13 m depth													8
			3										
													8
			4										
			-										86
			5										
			-										85
			6										
													84
			7-										
													8
			8-										
													82
			9-										
													8
			10-										
			-										8
			11										79
			12										
			13										78

				Juve					11 Be	ckstead F		tawa,	U
	TING: 366	608.6	7		N	IORTHI	<b>IG:</b> 50 <sup>2</sup>	17827.16		ELEVATION			
<b>ROJECT:</b> Project X Development <b>ORINGS BY:</b> CME 55 Low Clearance Dri	II									FILE NO. :	PG5876		
EMARKS:					[	DATE: 、	July 30,	2024		HOLE NO. :	BH 16-2	4	
					SA	MPLE				ST. (BLOWS/0.3			
				_			T I	20	40	mm DIA. CONE	80	z	
SAMPLE DESCRIPTION		гот		lype and no.	(%) <u>/</u> ;	RQD	WATER CONTENT (%)			AR STRENGTH, STRENGTH, Cu		PIEZOMETER CONSTRUCTION	
		strata plot	DEPTH (m)	ANI	RECOVERY (%)	N, Nc OR RQD	ER C (%)	20	40	60	80	OME	
GROUN	) SURFACE	STR	DEP.	ТҮР	REC	Ň, N	WAT	PL (%)	40	60	LL (%)	PIEZ	
			13 =										
			14										
			15										
								=					
			16										
								-					
			17-										
								-					
			10										
			18-										
			19-										
									•				
			20-										
21.18	m [ 69.20m ]		21-										
d of Borehole													
one pushed up to 15.24 m depth.			22										
actical refusal to DCPT at 21.18 m depth.													
			23										
			24										
			24										
			25										

OORD. SYS.: MTM ZONE 9 ROJECT: Project X Developmen	EASTING: 366	6552.75	5		I	NORTHIN	<b>IG</b> : 50	17783.74	ELEVATION FILE NO. :			
ORINGS BY: CME 55 Low Clearan										PG5876		
EMARKS:						DATE: J	uly 30,		HOLE NO. : RESIST. (BLOWS/0.3		4	$\square$
					54	MPLE	F		PT (50mm DIA. CONE 40 60			
SAMPLE DESCRIPTION		strata plot	(m	type and no.	RECOVERY (%)	R RQD	CONTENT (%)	🔺 PEAK SH	) SHEAR STRENGTH IEAR STRENGTH, CI	u (kPa)	PIEZOMETER CONSTRUCTION	
		IRATA	DEPTH (m)	rpe ai	ECOVE	N, Nc OR RQD	WATER (%	20	40 60 ATER CONTENT (%)	80 LL (%)	EZOMI	;
OPSOIL	GROUND SURFACE	ν.					3	20	40 60	80	Ξŏ	-
ery stiff, brown SILTY CLAY	0.20m[90.09m]/			Ss-1	70	1-2-3-3 5	33.35	c	>			9
			1-	ss 2	100	3-4-5-5	37.61		0			8
				 	100	9	25.42		~			
ynamic Cone Penetration Test	2.13m [ 88.16m ]		2	X	100	2-2-3-3 5	35.13		0			
mmenced at 2.13 m depth												
			3-						· · · · · · · · · · · · · · · · · · ·			
			4									;
			5									
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			6									
			7_									
			8-									
			9-									
			10-									
			11-									
			12									

RD. SYS.: MTM ZONE 9 EASTING: 366552.75 NORTHING: 50177									ELEVATION				
ROJECT:         Project X Development           ORINGS BY:         CME 55 Low Clearance Drill								-	FILE NO. :	PG5876			
EMARKS:				[	DATE:	July 30,	2024		HOLE NO. :	BH 17-2	4		
				SA	MPLE				IST. (BLOWS/0.3 0mm DIA. CONE				
			Ġ	o' G		IENT	20	40	60	80	z		
SAMPLE DESCRIPTION	STRATA PLOT	Ê	lype and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	▲ PEA	<b>K</b> SHEAR	EAR STRENGTH, STRENGTH, Cu		PIEZOMETER CONSTRUCTION		
	RATA	DEPTH (m)	E AN	COVE	lc OR	(%)	20 PL (%)	40 WATEF	60 R CONTENT (%)	ZOME			
GROUND SURFACE	STI		ž	Ä	ź	M	20	40	0 60	<b>LL (%)</b>	불양		
		13											
		14											
		15-											
								•					
		17					-						
		18-											
		19-						•					
40.00													
19.86m [ 70.43m ] Id of Borehole		20-								I			
ne pushed up to 15.24 m depth. actical refusal to DCPT at 19.86 m depth.		21-											
		22											
		23											
		24											
		24											
		25-											
		26											



PATERSON GROUP	EASTING: 366							Drive & 11 B	ELEVATION			
<b>ROJECT:</b> Project X Developme		50 12.1					10.00	11002.02		PG5876		
ORINGS BY: CME 55 Low Clearan	ce Drill											
REMARKS:						DATE: J	luly 31,		HOLE NO. :		4	—
					SA	AMPLE			SIST. (BLOWS/0.3) 50mm DIA. CONE)			
				ä			ENT	20 4	0 60	80	N	
SAMPLE DESCRIPTION		PLOT	ē	type and no.	RECOVERY (%)	RQD	WATER CONTENT (%)	△ REMOULDED SH ▲ PEAK SHEA	IEAR STRENGTH, R STRENGTH, Cu		PIEZOMETER CONSTRUCTION	
		strata plot	DEPTH (m)	EAN	OVE	N, Nc OR RQD	ER C(%)	20 4		80 <sup>́</sup> LL (%)	ZOME	
	GROUND SURFACE	STR	DEP	ТҮР	REC	z z	WAT	20 4		80	PIEZ	
OPSOIL	0.25m [90.35m ] /		0	Ss 1	30	2-3-5-6	23.24	0				
ery stiff brown SILTY CLAY			-	$\square$		8	27.82	0				
			1-	SS 2	100	3-3-4-5 7	40.33	0	D			
			-	<b>—</b> ~								
			2-	X s	100	2-1-2-2 3	33.4	0				
			-					Δ		101.0		
			3-									
	3.51m [ 87.09m ]		-					<u>م</u>	$\checkmark$			
irm, grey SILTY CLAY			1									
nd of Borehole	4.27m [ 86.33m ]		4 -						<b>A</b>			
nd of Borenole			-									
			5-									
			-									
			6							· · · · · · · · · · · · · · · · · · ·		
			-									
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			10									
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			11-									
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			12-									
			-									
			13 -									

PATERSON GROUP				Drive					11 Be	eckstead F		ttawa,	ŌN
COORD. SYS.: MTM ZONE 9	EASTING: 36	6496.9 <i>′</i>	1		1	IORTHI	<b>NG</b> : 50'	17771.92		ELEVATION			
PROJECT: Project X Developme BORINGS BY: CME 55 Low Clearar										FILE NO. :	PG5876		
REMARKS:						DATE: 、	July 31,	2024		HOLE NO. :	BH 20-2	24	
					SA	MPLE				IST. (BLOWS/0.3			
SAMPLE DESCRIPTION			Γ				Ł	20	DCPT (5 40	0mm DIA. CONE 60	) 80		
		LOT		NO.	Y (%)	go	ONTE			EAR STRENGTH		CTIO	(m) N
		strata plot	DEPTH (m)	lype and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	20 10 00 00				PIEZOMETER CONSTRUCTION	ELEVATION (m)
	GROUND SURFACE	STR	DEP	ТҮРІ	REC	ž Ž	WAT	PL (%)	40	60	LL (%)	PIEZ	
TOPSOIL	0.25m [ 90.19m ] /		0										90
Very stiff, brown SILTY CLAY													90
			1										
													89
			2-										
													88
	3.35m [ 87.09m ]		3										
Firm to stiff grey SILTY CLAY	<u></u>												87
			4										
													86
			5										
			-										85
			6										
									+				84
			_										
												-	02
								Δ	<u>.</u>	<b>X</b>			83
			8					Ī		$\mathbf{n}$			
								4		À			82
			9										
													81
			10							Į			
													80
	11.13m [ 79.31m ]		11-							λ			
Dynamic Cone Penetration Test													79
commenced at 11.13 m depth			12										
												-	78
			13										

OORD. SYS.: MTM ZONE 9 EASTING: 366	6496.9	1		Ν	IORTHI	<b>NG</b> : 50	17771.92		ELEVATION	<b>:</b> 90.44		
ROJECT:         Project X Development           ORINGS BY:         CME 55 Low Clearance Drill									FILE NO. :	PG5876		
EMARKS:					DATE:	July 31,		HOLE NO.: BH 20-24				
				SA	MPLE				IST. (BLOWS/0.3 0mm DIA. CONE			
			Ċ			ENT	20	40	60	80	- z	
SAMPLE DESCRIPTION	strata plot	Ê	TYPE AND NO.	RECOVERY (%)	N, NC OR RQD	WATER CONTENT (%)	A REMOUL ▲ PEAI	<b>K SHEAR</b>	EAR STRENGTH, STRENGTH, Cu		PIEZOMETER CONSTRUCTION	
	RATA	DEPTH (m)	'PE AI	COVE	Nc OF	TER (%	20 PL (%)	40 WATEF	R CONTENT (%)	EZOMI		
GROUND SURFACE	ST	<b>В</b> 13 =		R	ź	3	20	40	60	80	≣ 8	╞
												.
		14										
		15										
		16										
		17-										
								•				
		18-										
		19										
20.35m [ 70.09m ]		20										
d of Borehole											T	
ne pushed up to 17.37 m depth.		21										
actical refusal to DCPT at 20.35 m depth.												
		22										
		23										
		24										
		25										

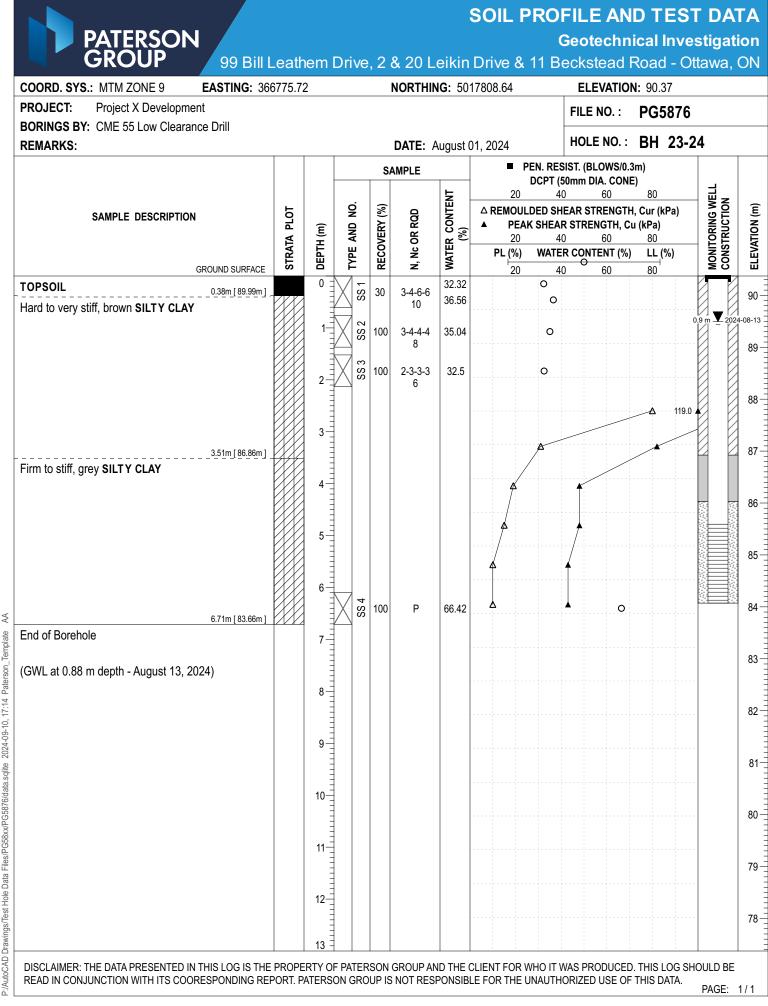
COORD. SYS.: MTM ZONE 9 EASTING: 34 ROJECT: Project X Development	NG: 50	5017774.89 ELEVATION: 90.06 FILE NO. : PG5876									
ORINGS BY: CME 55 Low Clearance Drill						August	01, 2024	HOLE NO. :		4	
REMARKS:					MPLE	August	■ PEN.	RESIST. (BLOWS/0.3)	n)		
SAMPLE DESCRIPTION	L		ö	()	_	IENT	20	T (50mm DIA. CONE) 40 60	80	NO	1
	STRATA PLOT	(m)	type and no.	RECOVERY (%)	N, N¢ OR RQD	WATER CONTENT (%)		SHEAR STRENGTH, EAR STRENGTH, Cu 40 60		METER RUCTI	
GROUND SURFACE	STRAT	DEPTH (m)	TYPE /	RECOV	N, Nc C	WATER		ATER CONTENT (%) 40 60	LL (%)	PIEZOMETER CONSTRUCTION	
DPSOIL and organics		0					20	40 00			90
ry stiff, brown SILTY CLAY											
											8
		2									8
		3									8
3.66m [ 86.40m ] n to stiff, grey <b>SILTY CLAY</b>											
		4-									8
		5									
											8
		6									84
							<b>A</b>	••••			
		7-									8
		8									8
								1			
								<b>↓</b>			8
		10									8
11.13m [78.93m]		11-									79
namic Cone Penetration Test mmenced at 11.13 m depth											
		12									7
		13 -									

			Jive				Drive &	тгре			lawa,	U
OORD. SYS.: MTM ZONE 9 EASTING: 36	6644.0	1		N	IORTHI	NG: 50	17774.89		ELEVATION			
ROJECT:         Project X Development           ORINGS BY:         CME 55 Low Clearance Drill									FILE NO. :	PG5876		
EMARKS:				1	DATE:	Auaust	01, 2024		HOLE NO. :	BH 21-2	4	
					MPLE	0		EN. RESI	ST. (BLOWS/0.3	m)		
						⊢	20	DCPT (50 40	Omm DIA. CONE	) 80		
SAMPLE DESCRIPTION	Б		NO.	(%)	e	NTEN		DED SHE	AR STRENGTH,	, Cur (kPa)	R TION	
	STRATA PLOT	<u>(</u>	type and no.	RECOVERY (%)	N, NC OR RQD	R CONTENT (%)	▲ PEAI 20	<b>K SHEAR</b> 40	STRENGTH, Cu 60	( <b>kPa)</b> 80	<b>PIEZOMETER</b> CONSTRUCTION	
	<b>IRAT</b>	DEPTH (m)	PE /	No No	Nc C	WATER (%	PL (%)		CONTENT (%)	LL (%)	EZON	
GROUND SURFACE	S	8 13 =		뀞	ź	Š	20	40	60	80	₹ŭ	
		15					•					
		16										
		17-										
		18-										
		19-										
20.45m [ 69.61m ]		20-										
d of Borehole	1											
		21-										
ne pushed up to 14.17 m depth. actical refusal to DCPT at 20.45 m depth.												
actical ferusal to DCP1 at 20.45 fit depth.		22										
		23-										
		24										
		25										
		1 7										1

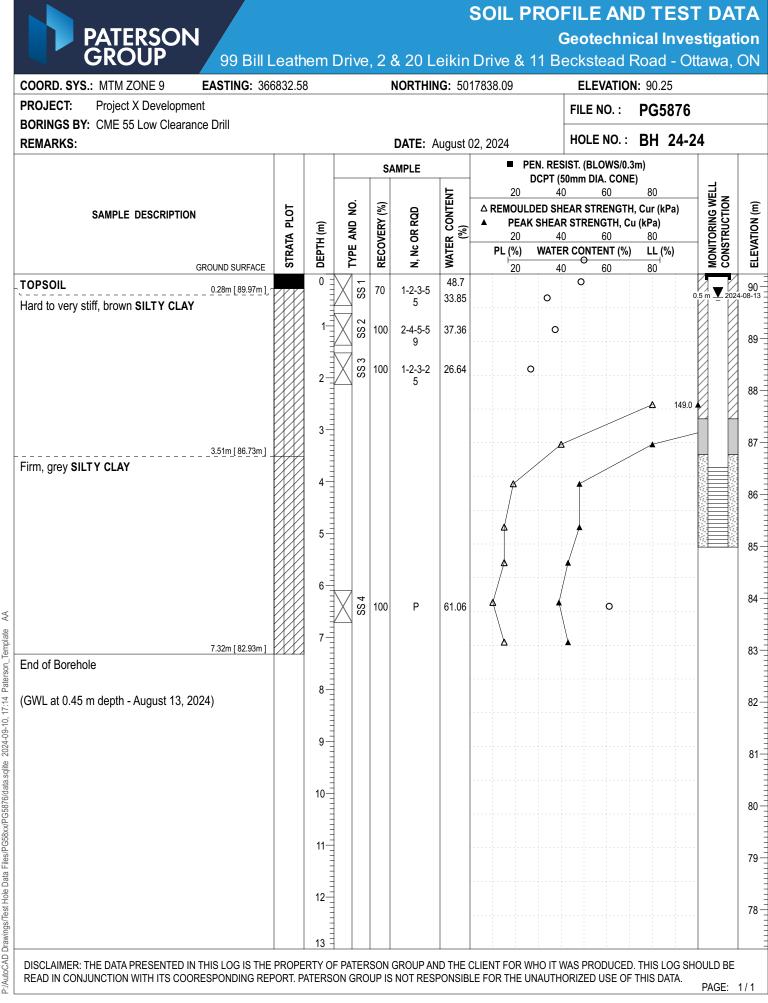
PAGE: 2 / 2

OORD. SYS.: MTM ZONE 9 EASTING: 36 ROJECT: Project X Development	00090.72	۷			NUKIHI	<b>NG:</b> 50'	17655.28	ELEVATION FILE NO. :	PG5876		
ORINGS BY: CME 55 Low Clearance Drill											
EMARKS:				6	DATE: /	August (	01, 2024 PEN. RES	BH 22-2	4	Τ	
						ħ		50mm DIA. CONE			
SAMPLE DESCRIPTION	PLOT	(E	type and no.	RECOVERY (%)	R RQD	R CONTENT (%)		R STRENGTH, Cu	(kPa)	MONITORING WELL CONSTRUCTION	
	STRATA PLOT	DEPTH (m)	YPE A	RECOVE	N, Nc OR RQD	WATER (%	PL (%) WATE	R CONTENT (%)	80 LL (%)	AONITO CONSTE	
GROUND SURFACE <b>DPSOIL</b> 0.28m [90.09m]		0	ss 1		2-4-5-4	22.87	20 4	0 60	80 '		
ard to firm, brown SILTY CLAY			$\exists$		9	35.85	0			.1 m ▼ 202	
		-	X S	100	2-3-5-5 8	30.43	O		1	.1 m <u>▼</u> 202	24-0
		2-	SS3	100	1-2-2-2 4	31.12	o				
		-					<b>A</b>		119.0	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
		3-					<b>A</b>	*			
		1									aa a'aa a'aa a
4.57m [ 85.80m ]		4					Δ	<b>A</b>			
d of Borehole		5									
WL at 1.08 m depth - August 13, 2024)		-									
		6-									
		7-									
		8-									
		-									
		9-									
		10-									
		-									
		11-									
		-									
		12-									

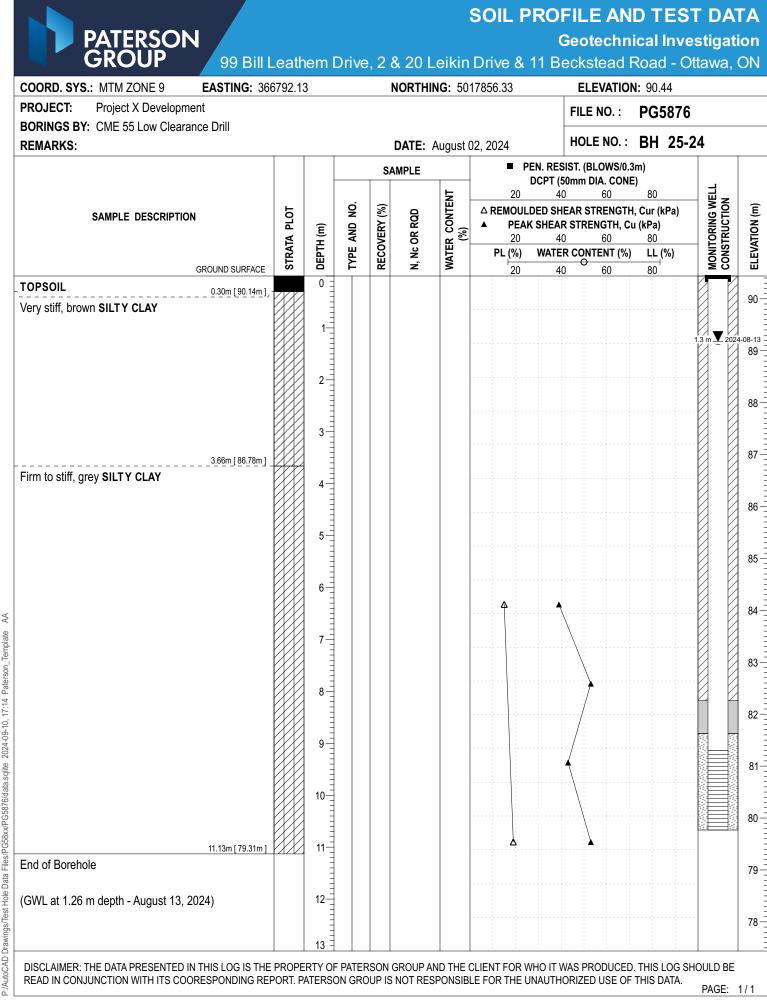
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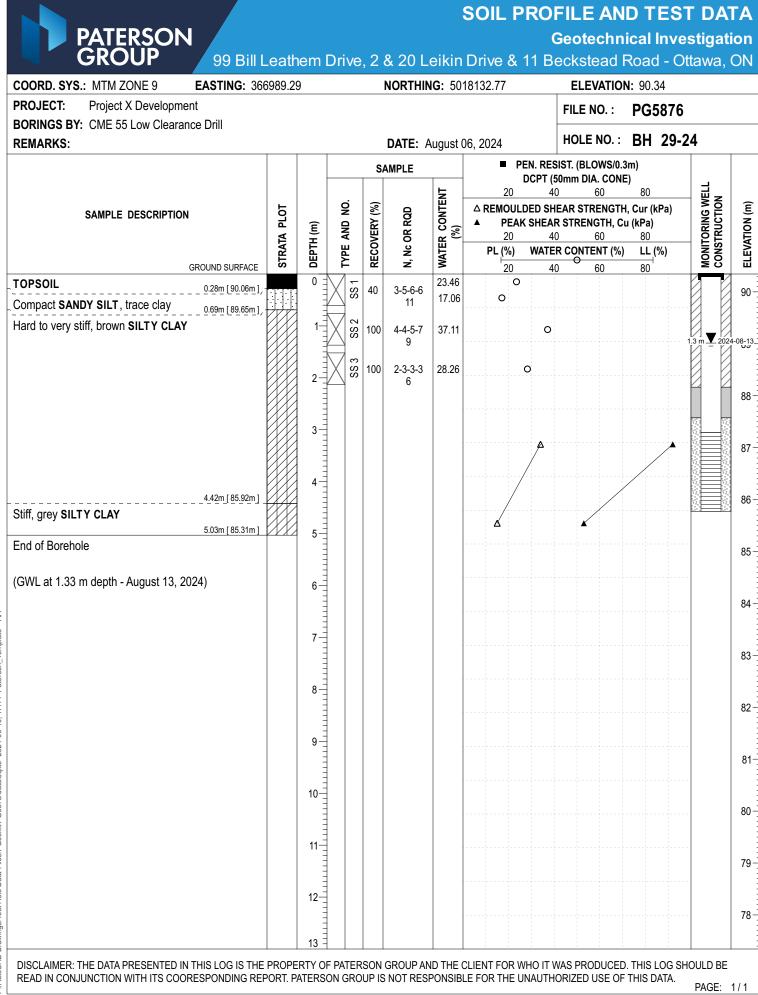
COORD. SYS.: MTM ZONE 9 PROJECT: Project X Developmer	EASTING: 366	921.89	)		N	IORTHI	NG: 50	17932.86		ELEVATION FILE NO. :	: 90.32 PG5876		
SORINGS BY: CME 55 Low Clearand									-	HOLE NO. :		) <b>/</b>	
REMARKS:						MPLE	August	02, 2024 <b>—</b> Р		IST. (BLOWS/0.3	m)	.4	
SAMPLE DESCRIPTION		STRATA PLOT	( <b>m</b> )	TYPE AND NO.	RECOVERY (%)		WATER CONTENT (%)		40 DED SHE K SHEAR	EAR STRENGTH, STRENGTH, Cu	80 Cur (kPa)	PIEZOMETER CONSTRUCTION	
		STRAT#	DEPTH (m)	гүре ⊿	RECOV	N, NC OR RQD	NATER )	PL (%)	40 WATEF	R CONTENT (%)	LL (%)		
OPSOIL	0.25m [ 90.07m ] _		0			-	-	20	40	60	80	20	9
ard to very stiff, brown SILTY CLAY													
			1										8
			2										
													8
			3										8
m to stiff, grey SILTY CLAY	3.66m [ 86.66m ]		-										
			4										8
			5										
													8
			6										
			-										8
			7-					•		<b>\</b>			8
			8					\					
								\					8
			9-										
			-										8
			10										8
			11										
													7
nd of Borehole	11.89m [ 78.43m ]		12					Δ					
													7

DORD. SYS.: MTM ZONE 9	EASTING: 36	6935.39	9			NORTHIN	<b>NG:</b> 50 <sup>-</sup>	17999.30		ELEVATIO	N: 90.28	
ROJECT: Project X Developme										FILE NO. :	PG5876	
ORINGS BY: CME 55 Low Clearan	ce Drill										BH 27-2	A
EMARKS:						DATE: A	August (					4
					S	AMPLE				SIST. (BLOWS/0.3 50mm DIA. CONI	E)	
		F		<u>o</u>	(%	0	TENT	20		10 60 HEAR STRENGTH	80 Cur (kPa)	NO
SAMPLE DESCRIPTION		strata plot	<u>ا</u>	TYPE AND NO.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	▲ PE	AK SHEA	R STRENGTH, C	u (kPa)	PIEZOMETER CONSTRUCTION
		RATA	DEPTH (m)	PE A	COVI	Nc OI	VTER ()	20 PL (%)		10 60 ER CONTENT (%)	80 LL (%)	EZOM
	GROUND SURFACE	ST			盟	ŕ	-	20		0 60	80	8
DPSOIL	0.30m [89.98m],		0	Ss 1	70	1-1-3-4 4	29.76 34.01		0			
ard to very stiff, brown SILTY CLAY			-	$\exists \sim$								
			1-	$\mathbb{N}^{\mathbb{N}}$	90	2-3-5-5 8	33.52		0			
				ss 3	90	1-3-3-4	28.94		0			
			2-	Цú		6	20.04		,			
	2 00~ [ 07 00~ ]		-							۵	119.0	
rm, grey SILT Y CLAY	2.90m [ 87.38m ]		3-									
			-					Â				
			4									
			-									
	5.03m [ 85.25m ]		_					▲				
nd of Borehole			5-									
			-									
			6-									
			-									
			7-									
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			12-									
				1								

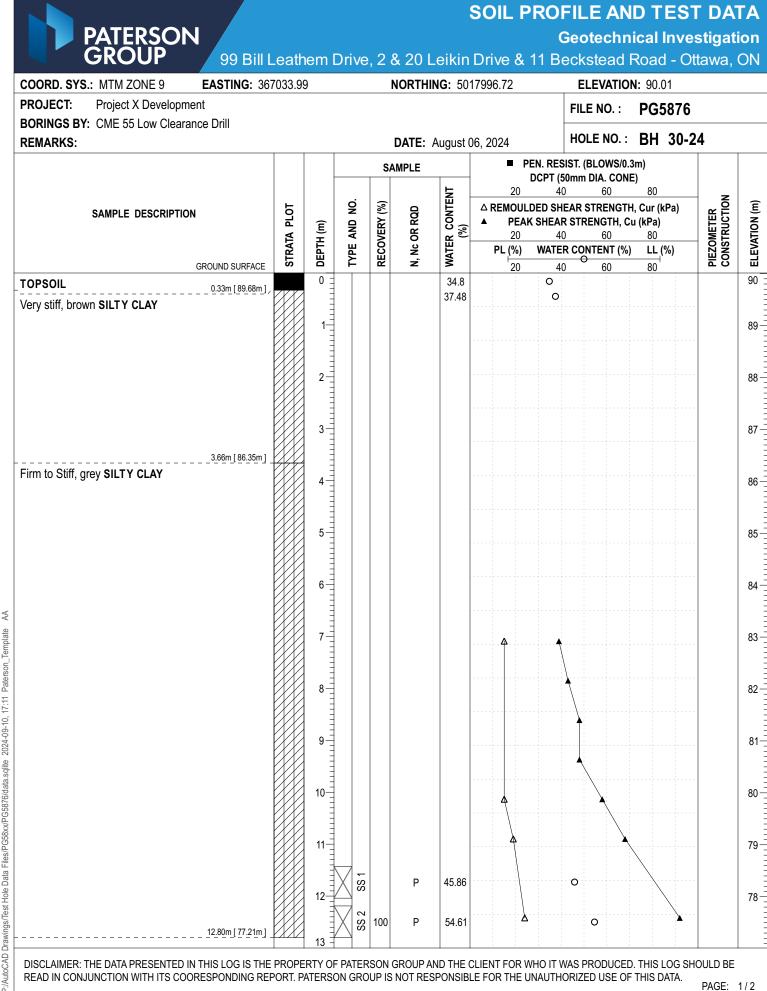
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PATERSON GROUP	EASTING: 36							18108.15				Road - Ot I: 90.59		
ROJECT: Project X Developmen		0033.00	, 				<b>10</b> . 00	10100.15		FILE N				
ORINGS BY: CME 55 Low Clearand											0.1	PG5876		
EMARKS:						DATE: A	August	06, 2024		HOLE	NO. :	BH 28-2	4	
					S	AMPLE		■ F		SIST. (BLC				
							E	20	DCPT (	50mm DIA	<b> CONE</b> ) 60	) 80		
SAMPLE DESCRIPTION		5		Ň	(%)	e	NTEN			-			TION	1
		strata plot	Ē	type and no.	RECOVERY (%)	N, NC OR RQD	WATER CONTENT (%)	▲ PEA 20	K SHEA	R STRENG	<b>GTH, Cu</b> 60	(kPa) 80	PIEZOMETER CONSTRUCTION	
		RAT	DEPTH (m)	μĘ /	S S	N° C	ATER	PL (%)		R CONTE		LL (%)		í
	ROUND SURFACE	ST				ź	-		4	0 0	60	80	≣ ö	Ē
OPSOIL	0.25m [_90.34m ]_		0	X Is	50	3-6-7-8	25.63 27.78		о О					
ard to very stiff, brown SILTY CLAY						13	21.10		Ŭ.					9
			1-	SS 2	100	2-3-4-4 7	39.72		c	)				
				<u> </u>		1								8
			2	ss 3	100	1-1-1-2 2	36.02		0					
			-			-								
	2 05 [ 07 54 ]		-											8
rm, grey SILT Y CLAY	3.05m [ 87.54m ]		3-					Δ						
								/		/				8
			4											
			-											
	5.03m [ 85.56m ]		_					4						8
nd of Borehole	0.0011[00.0011]		5-											
			-											8
			6											
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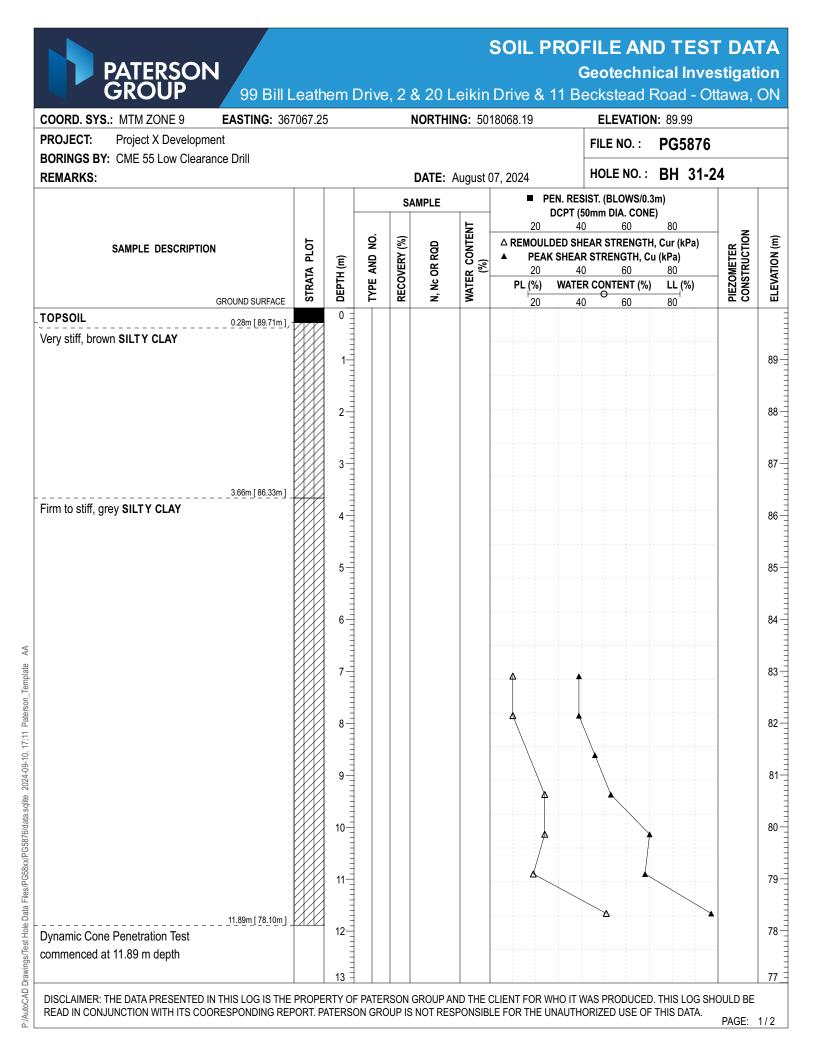
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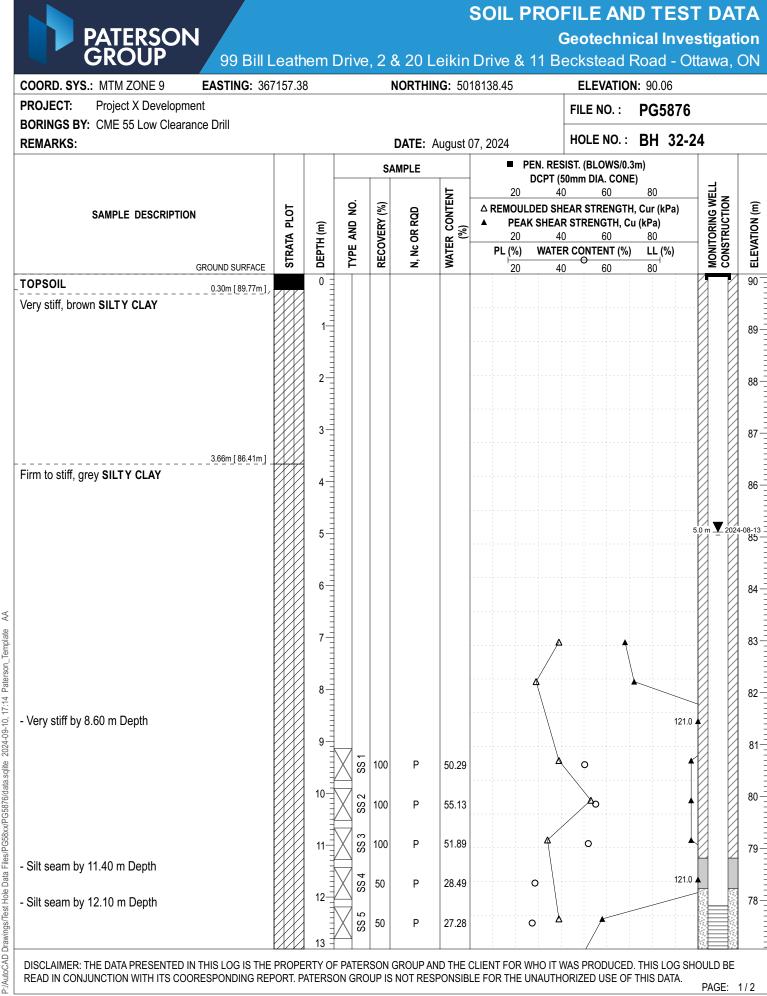
PATERSON GROUP 99 Bill L			JIVE					ΠB				Jilawa,	
OORD. SYS.: MTM ZONE 9 EASTING: 367	033.9	9		N	IORTHI	NG: 50	17996.72				<b>:</b> 90.01		
ROJECT:         Project X Development           ORINGS BY:         CME 55 Low Clearance Drill									FILE N	0. :	PG587	6	
EMARKS:				I	DATE:	August (	06, 2024		HOLE	NO. :	BH 30	-24	
				SA	MPLE				SIST. (BLC 50mm DIA				
SAMPLE DESCRIPTION	STRATA PLOT	(m	type and no.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)		<b>K SHEAI</b>	EAR STR R STREN	GTH, Cu	ı (kPa)	PIEZOMETER CONSTRUCTION	
	RATA	DEPTH (m)	PE AI	COVE	Nc OF	TER (%	20 PL (%)	40 WATE	0 R CONTE	60 NT (%)	80 LL (%)		
GROUND SURFACE	STI		Σ	盟	ź	W	20	4	<u> </u>	60	80	8	_
ynamic Cone Penetration Test ommenced at 12.8 m depth		13											7
		14											7
		15-											7
		16											74
		17-											7
		18-											7
		19											7
		20						•		•			70
									•				
04.44-100.77-1		21											6
21.44m [68.57m] nd of Borehole													
one pushed up to 19.91 m depth.		22											6
actical refusal to DCPT at 21.44 m depth.													
		23											6
		24											6
		25											6
		26											

PAGE: 2 / 2



DATEDGON							SOIL F					
PATERSON GROUP 99 Bill L	oot		) rive	2.2	2 201	منادنه	Drive 8		Geotechni			
COORD. SYS.: MTM ZONE 9 EASTING: 367			Shve				18068.19	TTB	eckstead F		mawa,	
PROJECT: Project X Development	007.2	.0		r		NG. 50	10000.19		FILE NO. :	PG5876		
BORINGS BY: CME 55 Low Clearance Drill												
REMARKS:						August	07, 2024		HOLE NO. :		24	
		-		SA	MPLE	_	-	DCPT (5	iIST. (BLOWS/0.3	)		
SAMPLE DESCRIPTION	oT		NO.	(%)	R	CONTENT 6)			EAR STRENGTH		R NOIT	Ű.
	strata plot	DEPTH (m)	type and no.	RECOVERY (%)	N, Nc OR RQD	R CO (%)	▲ PEA 20	4(		( <b>kPa)</b> 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE	STRA.	DEPT	TYPE	RECO	N, Nc	WATER (%	PL (%)	WATE 40	R CONTENT (%)	LL (%)	PIEZC	ELEV
		13 =					20	40	0 00	00		
		14										76
		15										75
		16-										74
		17-										73
		18-										72
18.90m [ 71.09m ]												
End of Borehole		19-										71
Cone pushed up to 18.85 m depth.												
Practical refusal to DCPT at 18.90 m depth.		20-										70
		21-										69
		22-										68
		23										67
		24										66
		25-										65
		26										64
DISCLAIMER: THE DATA PRESENTED IN THIS LOG IS THE	PROP									THIS LOG S		

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			Drive					eckstead Road -	Ottawa, O
OORD. SYS.: MTM ZONE 9 EASTING: 3	67157.3	8			NORTH	ING: 50	18138.45	<b>ELEVATION:</b> 90.06	
<b>ROJECT:</b> Project X Development <b>ORINGS BY:</b> CME 55 Low Clearance Drill								FILE NO. : PG587	'6
EMARKS:					DATE:	August	07, 2024	HOLE NO. : BH 32	2-24
				S	SAMPLE			SIST. (BLOWS/0.3m) 50mm DIA. CONE)	
			ō			ENT	20 4	60 80 HEAR STRENGTH, Cur (kPa)	MONITORING WELL CONSTRUCTION
SAMPLE DESCRIPTION	STRATA PLOT	Ē	TYPE AND NO.	RECOVERY (%)	N, Nc OR RQD	WATER CONTENT (%)	A PEAK SHEA	MONITORING V CONSTRUCTIO	
	IRATA	DEPTH (m)	PE A	COVE	Nc OI	ATER (°	20	10 60 80 ER CONTENT (%) LL (%)	
GROUND SURFACE	<u>.</u> 5	<b>ä</b> 13 :		8	ź	Š	20 4	10 60 80	ž č
		-						/	
		14	SS 6	30	Р	27.74	o 4	(	
/namic Cone Penetration Test		-							
ommenced at 14.33 m depth		15					· · · · · · · · · · · · · · · · · · ·		
		-							
		16							
		-							
		17-							
		-							
		18-					-		
		19-							
19.76m [ 70.30m	1	-							
nd of Borehole		20-							
one pushed up to 15.77 m depth.		-							
ractical refusal to DCPT at 19.76 m depth.		21-							
NAU at 4.07 as double . August 40, 2024)		-							
WL at 4.97 m depth - August 13, 2024)		22							
		-							
		23							
		-							
		24							
		25							
		26							

# SYMBOLS AND TERMS

#### SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

Consistency	Undrained Shear Strength (kPa)	'N' Value		
Very Soft	<12	<2		
Soft	12-25	2-4		
Firm	25-50	4-8		
Stiff	50-100	8-15		
Very Stiff	100-200	15-30		
Hard	>200	>30		

# SYMBOLS AND TERMS (continued)

### **SOIL DESCRIPTION (continued)**

Cohesive soils can also be classified according to their "sensitivity". The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

#### **ROCK DESCRIPTION**

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NXL size core. However, it can be used on smaller core sizes, such as BX, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in situ fractures.

#### RQD % ROCK QUALITY

90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

#### SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard
		Penetration Test (SPT))

- TW Thin wall tube or Shelby tube
- PS Piston sample
- AU Auger sample or bulk sample
- WS Wash sample
- RC Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

# SYMBOLS AND TERMS (continued)

### **GRAIN SIZE DISTRIBUTION**

MC% LL PL PI	- - -	Natural moisture content or water content of sample, % Liquid Limit, % (water content above which soil behaves as a liquid) Plastic limit, % (water content above which soil behaves plastically) Plasticity index, % (difference between LL and PL)
Dxx	-	Grain size which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2 / (D10 \times D60)$
Cu	-	Uniformity coefficient = D60 / D10
Cc and	Cu are	used to assess the grading of sands and gravels:

Well-graded gravels have: 1 < Cc < 3 and Cu > 4Well-graded sands have: 1 < Cc < 3 and Cu > 4Well-graded sands have: 1 < Cc < 3 and Cu > 6Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded. Cc and Cu are not applicable for the description of soils with more than 10% silt and clay (more than 10% finer than 0.075 mm or the #200 sieve)

# **CONSOLIDATION TEST**

p'o	-	Present effective overburden pressure at sample depth
p'c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'c)
Cc	-	Compression index (in effect at pressures above p'c)
OC Ratio	)	Overconsolidaton ratio = $p'_c / p'_o$
Void Rat	io	Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

### PERMEABILITY TEST

k - Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

# SYMBOLS AND TERMS (continued) STRATA PLOT Topsoil Asphalt Peat Sand Silty Sand Fill $\nabla$ Sandy Silt Clay Silty Clay Clayey Silty Sand Glacial Till Shale Bedrock

# MONITORING WELL AND PIEZOMETER CONSTRUCTION



PIEZOMETER CONSTRUCTION



Client : Project : Location : Drilling Contractor : Borehole Type : Borehole Diameter : Described by : SAMPLE TYPE SAMPLE TYPE SAMPLE TYPE SAMPLE : Split Spoon (En RC : Rock diamond ( GS(E): Grab sample (Eb SAMPLE STATE SAMPLE STATE Remoulded Intact Lost Diamond dr	David Vincent, Tech. vironment) core nvironment) wironment vironment N: Standarr R: Refusal R.Q.D.: Refu	ership ation - Propo va, Ontario Drilling Limited Core Verifit RMINOLOGY 1- 10- e" (y) 35- SYMBOLS d penetration ind	sed Dis Bit Size : ed by : 10% 20% 35% 50% ex ation 0.cm)	NQ Kesh 9 CLA: Silt San Gra Cco	Refe tion ( ini Ra EDROC 6 RQD 0-25 25-50 50-75 75-90 850175 75-90 90-1000 900-1000 90-1000 90-1000 900-100 900 900-1000 90000000000	Center Prel ngasaa CK QUA QUJ Ver Poo Fair Goo Exc No.002 - 0.0075 4.7 755	No. r my, LLITY ALLITY ALLITY ALLITY ALLITY a 0.00 000 - 4.1 5 - 30	Y INDEX FYING por I nt D SYSTEM) 02 mm	COMPA Very loc Loose Compac Dense Very de	ct	tic Coc (NAD Start) : inish) ble Dep n Plar inication 0-4 -4-1 10-3 -30-4 -55 FENCY	ordina -1983 -1983 -1983 - 1983 - 1984 - 1985 - 1984 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 198	): Date: Dept	2023 h: EAR RE	X: Y: Z: WATER	BH-10' 366 5017 202 202 FIGI LEVEL Date: 202 Depth: E (Su)	5614.6 7753.8 90.67 3-07-03 3-07-06 28.30 URE 1
DEPTH - m DEPTH - ft ELEVATION / DEPTH - m	STRATIGRAP DESCRIPTION SOIL AND BEDROC	BOL	SAMPLE TYPE AND NUMBER	SUB - SAMPLE		COVE	N, NC OT KUU	BLOW CO	UNT/18 RATION	5cm ♥: N +:	SRAF N (standa Nc (dynai Su (labor Sur (labo Sur (field) Sur (field) PL M PL M	ard pen. mic pen atory) ratory) / LL	) ı.)		CA : c GSA : p H : h PL : p W : w Su : u Sur : ra UCS : c k : p	ST SYN hemical analy article size ar ydrometer tes quid limit lastic limit rater content ndrained shee ompression t ermeability	ysis nalysis sting ar ar sar est
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Ground surface Topsoil: Brown silt, some clay, trac sand, moist. Presence of organic matter (rootlets). Native Soil: Stiff, brown-grey-orange s some clay, moist. Firm to stiff, grey-orange t clayey silt to silt and clay, of sand, moist. Firm to stiff, grey clayey si slity clay, moist.	ilt, o grey traces	SS-01 B SS-02 B SS-03 B SS-04 B SS-05 B ST-06 SS-07 B ST-08 SS-09 B ST-10			100 1 100 5 100 7 100 7 100 0	6 5 9 7 1 1	1-2- 4-7-8 4-4- 0-1- 0-0-	5-5 3-4 0-1						Dup : s Dup : s Su = OCT GSA, LL = PL = Su = Su = LL = PL = Su = LL = PL = LL = PL =	75 kPa ,H 43% 19% 33.0% 78 kPa 46% 21% 50.0% 46 kPa 46 kPa 42 kPa 51%	collected

Production Date: 2023-08-30

			5		ВС	DREI	ю	LE	RI	EP	ORT							Page 2 of 3
								Re	feren	ce No	o.: 12615684-A1	в	orehol	e No				BH-101-23
				STRATIGRAPH	ΗY		SAI	MPLE	•				GR	APH	IIC		ATER	TEST SYMBOL
DEPTH - M	DEDTH - #	л-п-п-	ELEVATION / DEPTH - m	DESCRIPTION SOIL AND BEDROCK	symbol	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	RECOVERY %	N, Nc or	BLOW COUNT/1	5cm N	▲ : Nc (d ▼ : Su (la ∨ : Sur ( × : Su (fi + : Sur ( PL	andard dynamic aborato laborato ield) field) - W  40 60 * +	c pen.) ory) ory) LL		F	CA : chemical analysis GSA : particle size analysis H : hydrometer testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear Sur : remoulded shear UCS : compression test k : permeability Dup : spec. duplicate collected Su = 41 kPa
	25					SS-11 B		X	100	0	0-0-0-0	4						Su = 41 kPa
	в	_				ST-12			100				$\vdash \!$					OCT GSA
-	9	_				SS-13 B			100	0	0-0-0-0	4						LL = 48% PL = 23% W = 63.0% Su = 37 kPa
-	30	0— — —				SS-14 B			100	0	0-0-0-0	4				M		Su = 42 kPa
1 - -	D	_												*				Su = 44 kPa ─
- - 1	3: 1	5				SS-15 B		$\mid$	100	0	0-0-0-0			×				Su = 43 kPa -
- - - 1:	2	_												×				Su = 42 kPa -
-	40	0— 				SS-16 B		X	100	0	0-0-0-0	4						
-1:	3	_	77.72 12.95	Firm to stiff, grey clayey sill traces of sand, moist.	t, .									*				Su = 47 kPa -
- - 1	4	5—				SS-17 B		X	74	1	0-1-0-1							GSA Su = 59 kPa -
-		_			•													
-1	5	0- _				SS-18 B		$\square$	82	2	1-1-1-0			*				– GSA Su = 58 kPa
- 1 -	6	_	74.52 16.15	Loose to compact, grey silt	y	+												-
- - - -1	5	5-		sand, some gravel, some to traces of clay, moist.					40	0	45.24							
-		_				SS-19 B		$\square$	49	8	4-5-3-4							GSA
d.sty	B 60	 0				SS-20			25	16	6-8-8-7							_
Borehole - standard.sty	9	_	71.62 19.05	becoming with presence of														-
Borehol		_	. 5.00	cobbles and/or boulders				$\times$										

	Ĥ			вс	DRE	10	LE	RI	EΡ	ORT							Page 3 of 3
							Re	feren	ce No	o.: 12615684-A1	В	orel	nole	• No			BH-101-23
			STRATIGRAPHY			SAI	MPLE					(	GR	API	HIC		
DEPTH - m	DEPTH - ft	ELEVATION / DEPTH - m	DESCRIPTION SOIL AND BEDROCK	SYMBOL	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	RECOVERY %	N, Nc or	BLOW COUNT/15 PENETRATIO	5cm N	▲ ▼ × +	Nc (dy Su (la Sur (la Su (fie Sur (fie PL PL 0 4	ndard ynami borate aborate ald) ield) W 	c pen ory) tory) LL	) .)	CA : chemical analysis GSA : particle size analysis H : hydrometer testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear Sur : remoulded shear UCS : compression test k : permeability Dup : spec. duplicate collected
-20	-	-			B B		X	57	26	23-12-14-19			<u> </u>				
- 21 - - - 22	70-	-			RC-22			100	0								
-	-	-			NQ			100	U								-
23 - -	75-	-			RC-23 NQ			42	0								
<b>24</b> - - -	-   -   80-   -	-			RC-24 NQ			22	0								
-25	-	65.24 25.43	Bedrock:			A											
- 26 -	85-	-	Grey dolomite, excellent quali		RC-25 NQ	в		91	91								
- <b>27</b> -	90-	-			RC-26			95	95								-
-28	-	<u>62.37</u> 28.30	End of borehole		NQ												-
- - 29	95-	-															-
- - - -30	-	-														_	
- - - - 	- 100- -	-															
Borehole - standard.sty	-	-															
Borehol	105-	-															

ſ							<u></u>			<b>-</b>		007								Page 1 of 3
	5					BC	JKE	10				<b>ORT</b>	84-41	Bore	hole	No			BH	I-102-23
5	Clie	ent :		Medusa Lim	ited Partnership				Re	leren		120150				oordir	nates		X:	366511.8
I.	٦ro	ject		Castashniss	l Investigation 5					C	4.0.4			MTM-	·9 (N/	AD-198	83)		Y:	5017682.3
ľ	10	jeor		Geotecnnica	I Investigation - F	ropo	osea Dis	strid	ution			inary							Z:	95.18
1	_002	ation :	:	Bill Leathem [	Drive, Ottawa, Ontar	io				Pr	elin	ninary		Date	•	<i>,</i>				2023-07-10
		0	ontractor Type :	: George Down Auger and Ca	ing Estate Drilling L sing	imited	t							Date ( Boreh	•	h) : Iepth (	m):			2023-07-11 22.90
			Diameter by :	200 mm David Vincent	U		Bit Size : ed by :		hini R							an No				FIGURE 1
г		SA			TERMINOLC		eu by .		BEDRO	DCK Q	UALI	Y INDEX	COMPAC				·	v	VATER LEV	EL
F	C SS(E	: Roo ): Gra	k diamon b sample	d core (Environment)	"traces"		-10% -20%		% RQI 0-25 25-50	Ň	QUALI /ery p Poor	FYING oor	Very loos Loose Compact			0-4 4-10 0-30			_	
1	ΈÈ	í: San	ger (Enviro nple tube o elby tube	onment) environment	"some" "adjective" (y) "and"	20-	-35% -50%		50-75 75-90	F	⁼air Good		Dense Very dens		3	0-50 >50	Dat Dep	e: pth:	Dat Dej	te: pth:
	<u> </u>		PLE STAT	E	SYMBOL						•	D SYSTEM)		ONSIS		Y	S		ISTANCE (S	su)
		77777	Remoulde Intact	d	N: Standard penetrat R: Refusal (N > 100) R.Q.D.: Rock Quality			Si	lay ilt and		)2 - 0.(	002 mm 075 mm .75 mm		Very s Soft Firm	oft			12	<12 kPa 2-25 kPa 5-50 kPa	
			Lost Diamond	drilling	% R.Q.D. <del>-Σ</del> Core > .	-	0 cm)	Co	ravel obbles oulders		75 - 3	75 mm 300 mm 300 mm	5	Stiff Very s Hard	tiff			-50 -100	100 kPa 200 kPa 200 kPa	
F									MPLE				•		GR	APHI	C	WATER	-	SYMBOL
	-		Że					ш		<b>`</b> 0		-		<b>A</b>	N (sta	ndard pe mamic p	en.) Den.)	LEVEL		ical analysis le size analysis meter testing
	ш- Н.	¥-н	ELEVATION / DEPTH - m	DESC		Ъ	SAMPLE TYPE AND NUMBER	- SAMPLE	ш	:RY %	Nc or RQD	BLOW CO		cm x	Su (la Sur (la	ooratory	r)		LL : liquid PL : plastic	limit c limit
	DEPTH	DEPTH	DEPI	SOIL AN	D BEDROCK	SYMBOL		3 - SA	STATE	RECOVERY	Nc or	PENET	RATION		Su (fie Sur (fi PL	eld) W L	L		Su : undrai Sur : remou	ulded shear
	_	_	<b>ш</b> 95.18	Ground surfac	e	0,	SAN	SUB		REC	ź			:	•	-O D 60	80		UCS : compo k : perme	
-		_	0.00	Topsoil:	ne clay, traces of		SS-01		$\square$	61	10	3./	1-6-7							
Ē			94.57	sand, moist. P	resence of		B			01	10		+-0-7	Ī						-
F	1	_	0.61	Fill:	·		SS-02		$\mathbb{N}$	74	11	4-5	5-6-6							-
-	1	_	-	sand, moist. P			В		$\left \right\rangle$											-
ŀ		5—		organic matter	r (rootlets).		SS-03 B		X	66	9	2-4	1-5-6							-
E	2	_	93.35 1.83	-	grey clayey silt,				$\left \right\rangle$									-		-
ŀ		_		traces of sand of organic mat	, moist. Presence ter (rootlets).		SS-04 B			66	13	5-6	6-7-7	1	<b>`</b>					
ŀ							SS-05		$\square$	66	7	1_3	3-4-5							-
Ē	3	10-	-				В			00	'		J- <del>-</del> -J	Ĥ				-		-
È		_					SS-06		$\mathbb{N}$	66	7	2-3	3-4-6							-
ŀ		_	-				В		$\langle \rangle$											-
ŀ	4	_	-				SS-07 B			0	10	2-4	1-6-7					-		_
Ē		_	-				_		$\backslash$											-
Ē		15—					SS-08 B			66	12	3-4	1-8-7							-
F	5						SS-09			66	19	7-8-	11-13					-		-
-		_	89.69	0	1		В			00	10	1-0-	11-10		Ī					-
Ē		_	5.49	Grey-orange d	layey silt, moist.		SS-10		$\mathbb{N}$	100	13	2-6	-7-10							-
F	6	20-					В		$\left \right\rangle$					Ħ				-		
╞		_					SS-11 B		X	100	8	2-3	3-5-5			X			Su = 70	kPa -
F		-							$\vdash$											-
	Ren	nark(	(s): O	CT: Oedometer	Consolidation Tes	st											11			

Borehole - standard.sty

~		5		R	)RFI	IUI	F	SE	PORT			Page 2 of
		2							Jo.: 12615684-A1	Borehole No.		BH-102-2
_			STRATIGRAPI			SAM		encei	12013004-A1	GRAPHIC	WATER	TEST SYMBO
DEPTH - m	DEPTH - ft	ELEVATION / DEPTH - m	DESCRIPTION SOIL AND BEDROCK	30L	SAMPLE TYPE AND NUMBER	LE		N. NC OF ROD	PENETRATION	<ul> <li>▲ : N (standard pen.)</li> <li>△ : Nc (dynamic pen.)</li> <li>▼ : Su (laboratory)</li> <li>▼ : Sur (laboratory)</li> </ul>	LEVEL	CA : chemical analysis GSA : particle size analysis H : hydrometre testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear Sur : remoulded shear UCS : compression test UCS : compression test k : permeability Du ; spec. duplicate cole
8	 	88.01 7.17 86.76	Native Soil: Firm to stiff, grey clayey sill traces of sand, moist.		ST-12		1	00				Su = 80 kPa OCT GSA LL = 39%
9	 30	8.42	Firm to stiff, grey clayey sil silty clay, moist.	t to	SS-13 B		1	00 0	0-0-0-0			PL = 19% W = 33.0% Su = 58 kPa Su = 42 kPa
10	 35				ST-14		٤ ا	32				LL = 44% PL = 20% W = 52.0% Su = 46 kPa
12	 40—				SS-15 B		1	00 0	0-0-0-0			Su = 42 kPa Su = 43 kPa
13	_  45				ST-16		1	00				OCT GSA, H LL = 65% PL = 22%
15	  50				ST-17		1	00		× + 10 - *		W = 62.0% Su = 49 kPa Su = 44 kPa LL = 43% PL = 21% W = 51.0% Su = 48 kPa
16 17	 55—	77.90			SS-18 B		1	00 0	0-0-0-0			Su = 50 kPa
18	 60	17.28	Firm to stiff, grey clayey silt traces of sand, moist.	t,	SS-19 B			0 2	0-1-1-1			
19	_				SS-20			00 8	2-3-5-3			

Π														Page 3 of 3
	G				BC	DRE	10				ORT			BH-102-23
H				STRATIGRAPH	IY		SAI	Re MPLE		ce No	b.: 12615684-A1	Bo	Borehole No.	WATER TEST SYMBOL
	DEPTH - M	DEPTH - ft	ELEVATION / DEPTH - m	DESCRIPTION SOIL AND BEDROCK	30L	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	RECOVERY %	N, Nc or RQD	BLOW COUNT/1 PENETRATIO	5cm N	▲ : N (standard pen.) ↓ : Nc (dynamic pen.) ♥ : Su (laboratory) ♥ : Sur (laboratory) ★ : Su (field) + : Sur (field) PL W LL PL W LL 20 40 60 80	LEVEL CA : chemical analysis GSA : particle size analysis H : hydrometer testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear UCS : compression test k : permeability Dup : spec. duplicate collected
e - standard.sty	31		72.28 22.90	End of borehole		<b>S</b> S-21 B SS-22 B			90	<b>Ž</b> 9 3	4-3-6-6 1-2-1-2			k : permeability
Boret		105—												-

		ソ			RC	JKE	ΗÜ				<b>ORT</b>	201 14	Bore	nole No.			F	3H-103-23
Clie	ent :		Medusa Lim	ited Partnership				Re	leren		120150	004-A I		tic Coordina	ates		X:	366472.6
_													MTM-9	) (NAD-1983	3)		Y:	5017591.4
Pro	ject	:	Geotechnica	I Investigation - I	Propo	sed Dis	strib	ution									<b>Z</b> :	90.66
									Pr	elin	ninary		Date (	Start) ·				2023-07-06
	ntion : ng Co	ontractor :		Drive, Ottawa, Ontar ing Estate Drilling L		1								Finish) :				2023-07-10
		Type : Diameter :	Auger and Ca 200 mm & 76	sing		Bit Size :	NO						Boreho	ole Depth (n	n):			25.25
	cribed	l by :	David Vincent	, Tech.	Verifi	ed by :	Kes				, CEP			on Plan No.:				FIGURE 1
S(E	): Spli	MPLE TYPE t Spoon (Ei k diamond	nvironment)	TERMINOLO		400/		% RQI	) (	QUALI	TY INDEX	Very lo		INDEX "N" 0-4		v	VATER L	EVEL
S(E	): Gra ): Aug	b sample (E jer (Enviror	Environment) nment)	"traces" "some"	10-	-10% -20% -35%		0-25 25-50 50-75	F	/ery p Poor ⁼air	oor	Loose Compa Dense	ct	4-10 10-30 30-50	Date	: 2023-	08-22	Date: 2023-07-20
EÈ	: San	nple tube er Iby tube	nvironment	"adjective" (y) "and"		-50%		75-90 90-100	(	Sood	ent	Very de	nse	>50	Dept	h:	I	Depth:
	_	PLE STATE Remoulded		SYMBOL N: Standard penetrat		ex	CI	ay		< 0.0	ED SYSTEM) 002 mm		CONSIST Very so		SHI	EAR RES	ISTANC <12 kPa	E (Su)
	77777	Intact		R: Refusal (N > 100) R.Q.D.: Rock Quality	Desigr	nation		nd		75 - 4	075 mm .75 mm		Soft Firm			2	2-25 kPa 5-50 kPa	
		Lost Diamond di	rillina	% R.Q.D. <del>-Σ Core &gt;</del> drill	4 in. (1 ed leng	<u>0 cm)</u> 1th	Co	avel obbles oulders	;	75 - 3	· 75 mm 300 mm 300 mm		Stiff Very sti Hard	ff		100-	100 kPa 200 kPa 200 kPa	
			<u> </u>	ATIGRAPHY			SA	MPLE						GRAPHIC	-	WATER	-	ST SYMBOL
_		3.					ш			_	-			N (standard pen Nc (dynamic pe	ı.)		GSA : pa	emical analysis article size analysis
E - T	н-д	ELEVATION DEPTH - m	DESC		Ъ	ABEF	SAMPLE	щ	RY %	or RQD	BLOW C	OUNT/1	5cm <sup>▼</sup> .:	Su (laboratory) Sur (laboratory)		nlla	LL : liq	rdrometer testing juid limit astic limit
DEPTH	DEPTH	EVA EPT		D BEDROCK	SYMBOL	PLE		STATE	RECOVERY	Nc or	PENE	TRATIO	NI	Su (field) Sur (field) PL W LL			Su :ur	ater content Idrained shear moulded shear
		_			Ś	SAMPLE TYPE AND NUMBER	SUB		REC	z z				⊢⊖—  0 40 60 8	20		UCS:co k :pe	moulded snear ompression test ermeability
		90.66 0.00	Ground surfact Topsoil:		2000			k 7								m -1.99 m 2 - 1.89 m	Dup : sp	ec. duplicate collected
	_	00.05	Brown silt, sor sand, moist. P	ne clay, traces of resence of		SS-01 B		X	41	12	2-	5-7-9	•					
	_	90.05 0.61	organic matter		ĨĨ			$\left\{ \right\}$									×	
1	_		Stiff, brown sil	t, some clay,		SS-02 B		X	100	13	4-	6-7-9	<b>†</b>			т 1.99-	×	-
	_	89.29 1.37	moist. Presend	•				$\vdash$								2.32   8-22 - 08-22	×	
	5	1.07	Firm to stiff, gr silt, traces of s	rey-orange clayey				$\bigtriangledown$		_						3-08-22 - 2.32 m 2023-08-22 - 1 √ 2023-08-22 -		
2	_		Presence of o	,		SS-03 B		$ \wedge$	100	5	2-	3-2-4	<b>_</b>			023	Š.	-
			(rootlets).					=									×	
	_					SS-04 B		IX.	100	3	1-	2-1-1	H				×	
3	10-					В		$\square$									× × 911 – 1	50 kPa <sup>-</sup>
						SS-05		$\mathbb{N}$	100	2	0-	1-1-1		$ \uparrow $			x 3u - : X	υ ΝΙ α
	_					B		$\square$					Γ				X	
4	_	0 <i>G</i> = 4																
-	_	86.54 4.12		ey clayey silt to													su = 6	61 kPa <sup>-</sup>
	15—		silty clay, mois	ST.													× ·	
_	_					ST-06			100					μp			LL = 4	
5	_																PL = 2 W = 5	
	_																	
~	_																	
6	20—							7									Su = 4	48 kPa -
						SS-07 B		X.	100	0	0-	0-0-0						
								$\vdash$										
er	nark(	s).				I	I	1	I	I	1				L Ŕ	<u>н К///</u>	X	
		-).																

							Re	ferend	ce No	o.: 12615684-A1	Во	rehol	e No.			BH-103-2
			STRATIGRAP	НҮ		SAN	IPLE					GR	APHIC		NATER	
DEPTH - m	DEPTH - ft	ELEVATION / DEPTH - m	DESCRIPTION SOIL AND BEDROCI	K SYMBOL	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	RECOVERY %	N, Nc or RQD	BLOW COUNT/15 PENETRATION	5cm	▲ : Nc (c ▼ : Su (l ∨ : Sur ( × : Su (f + : Sur ( PL	andard pen. lynamic pen aboratory) laboratory) ield) field) . W LL . W LL . H LL . H LL	, )		CA : chemical analysis GSA : particle size analysis H : hydrometer testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear Sur : remoulded shear Sur : remoulded shear UCS : compression test k : permeability Dup : spec. duplicate collee
	25-				ST-08			100				L	þ			LL = 54%
8	_							100								PL = 23% W = 58.0% Su = 52 kPa
9	 30				SS-09 B		X	100	0	0-0-0-0						
10											-		×			Su = 48 kPa
11	35— 	79.36			ST-10			100								LL = 52% PL = 21% W = 58.0%
12		11.30	Firm to stiff, grey clayey sil traces of sand, moist.	lt,	ST-11			0								Su = 52 kPa
	40— 															
13				•	SS-12 B		$\times$	100	2	2-1-1-0						
14	_	76.32 14.34	Very loose to loose, grey s silt, some clay, traces of gr	andy			<u> </u>									Su = 58 kPa
15			moist.		SS-13 B		$\square$	100	3	1-1-2-2		<u> </u>				
16											-					
17	55— 				SS-14 B			0	8	8-4-4-3						
18	  60—	73.28 17.38	Compact to dense, grey si sand, some gravel and cla moist.		SS-15 B			0	17	10-6-11-19	-					
19	_										-					

				ВС	DRE	10	LE	RI	ΞP	ORT					Page 3 of 3
										o.: 12615684-A1	В	orehole I	lo.		BH-103-23
F			STRATIGRAPI	НҮ		SAI	MPLE					GRA		WATER	
DEPTH - m	DEPTH - ft	ELEVATION / DEPTH - m	DESCRIPTION SOIL AND BEDROCH	X SYMBOL	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	RECOVERY %	N, Nc or RQD	BLOW COUNT/18 PENETRATION	5cm N	Su (labo)	imic pen.) ratory) oratory) ) I) W LL ) —––––––––––––––––––––––––––––––––––		CA : chemical analysis GSA : particle size analysis H : hydrometer testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear Sur : remoulded shear UCS : compression test k : permeability Dup : spec. duplicate collected
2 - - - - - - 2	-	-			SS-16 B			90	47	11-20-27-34					
- 2: - - - - - - 2:	75-	<u>68.03</u> 22.63	Bedrock: Brown-grey dolomite, poor quality.												
- - - 24 - -		66.91 23.75	becoming grey, excellent q	uality 7	RC-17 NQ RC-18 NQ			100 95	44 95						
- -2: - - - - -2:	85-	<u>65.41</u> 25.25	End of borehole												
	-	-												_	
- 2; - - - -	3 _	-												_	
2! - - - - - 3(	-	-													
Borehole - standard.sty	-	-												_	
Boreho	2 105														

lier					Reference No.: 12615684-A1									Borehole No.					BH-104-23			
	nt :		Medusa Limi	ited Partnership	rship										oordina			X:		6549.1		
roje	ect :	:	Geotechnica	I Investigation - I	ation - Proposed Distribution Center													Y: Z:	501	7733.7 91.01		
					Preliminary								Date	(Start	<u>۱</u> .				20 <sup>.</sup>	23-06-29		
rillin		ntractor :	George Downi	Drive, Ottawa, Ontar Ing Estate Drilling L	wa, Ontario								(Finisl	,					23-06-29			
oreh	iole D		Auger and Cas 200 mm	sing		Bit Size :									epth (n an No.:				FIG	22.33 3URE 1		
Described by : David Vincent, Tech. SAMPLE TYPE TE				, Tech. TERMINOLC		ed by :	1				Y INDEX	СОМРА	CTNES	S IND	EX "N"		w	ATER L				
SS(E) : Split Spoon (Environment) RC : Rock diamond core SS(E): Grab sample (Environment) AU(E): Auger (Environment) TEE : Sample tube environment TE : Sample tube environment adjectiv "adjectiv "and"			"some" "adjective" (y)	10- 20-	-10% -20% -35% -50%		% RQD QUALIFYING 0-25 Very poor 25-50 Poor 50-75 Fair 75-90 Good			oor	Very loo Loose Compao Dense Very de	4-10 ict 10-30 30-50			Date: 2023-08-22 Date: 2023 Depth: 1.19 Depth: 1.8							
				SYMBOL N: Standard penetrat		ex			ATION	< 0.0	ED SYSTEM) 002 mm		CONSI Verv s		Y	SI	HEAR RESI	STANC	• •			
	<b>1</b>	ntact		R: Refusal (N > 100) R.Q.D.: Rock Quality	Desigr	ation	Sil Sa	ť nd	0.0	2 - 0.0 75 - 4	)75 mm .75 mm		Very soft Soft Firm Stiff				<ul> <li>&lt;12 kPa</li> <li>12-25 kPa</li> <li>25-50 kPa</li> <li>50-100 kPa</li> </ul>					
ļ	_	₋ost Diamond di	illing	% R.Q.D. <del>-Σ Core &gt;</del> drill	4 in. (1 ed lenç	0 cm) jth	Gravel 4.75 - 75 mm Cobbles 75 - 300 mm Boulders > 300 mm						Very s Hard				100-200 kPa >200 kPa					
			STR	ATIGRAPHY			SAI	MPLE							APHIC		WATER LEVEL	CA :ch	ST SY	lysis		
	DEPTH - ft	ELEVATION / DEPTH - m		RIPTION D BEDROCK	SYMBOL	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	RECOVERY %	N, Nc or RQD	BLOW CO PENE	OUNT/1	. I Ĉ	: Nc (dy : Su (lal : Sur (la : Su (fie : Su (fie PL		en.) )		H : hy LL : liq PL : pla W : wa Su : ur Sur : re UCS : co	article size a adrometer to juid limit astic limit ater conten adrained sh moulded sh pompression	esting t lear hear		
		91.01	Ground surface	e	Received and the second	S A	<b>S</b>			_				20 4	0 60 8	B0		k :pe Dup :sp	ermeability ec. duplica	te collecte		
	-	90.91 0.10 90.40	sand, moist. P	1		SS-01 B	В	Х	77	8	2-3	3-5-7	<b> </b> ↑									
		0.61	organic matter	, , , , , , , , , , , , , , , , , , , ,		SS-02		$\square$	74	9	4-3	3-6-6										
1	_	89.79	Brown clayey s sand, moist. P	resence of	B			$\left( \right)$					Π				1.19 m					
	5		becoming brov	vn-grey	''	SS-03 B		X	100	7	3-:	3-4-6	4				-08-22					
2			becoming grey	-orange		SS-04		$\square$	100	8	5-1	5-3-4	4	3			<b>1</b> 2023-					
	_	88.57 2.44	Native Soil:			В		$\square$	100	Ũ			k									
	_			ey-orange clayey and. moist.		SS-05 B		X	100	3	2-2	2-1-1	6									
3	10—		Presence of or (rootlets).			SS-06		[	100	2	1	1-1-1	Å	10								
			·			B		$\square$	100	2	-		Į4	3								
4	_					SS-07		$\square$	100	2	1-1	1-1-1		3								
		86.51				B		$\square$		2	'-			3								
	15—	4.50	Firm to stiff, gr silty clay, mois	ey clayey silt to t.		SS-08		$\square$	100	0	0-0	0-0-0										
5						B		$\square$		-			Į.	3		$\square$						
	-					SS-09		$\square$	100	0	0-0	0-0-0	ā									
6						В		$\square$														
	20— 					SS-10		$\square$	100	0	0-0	0-0-0										
	_					В		$\square$					Б									
em	ark(s	s) :			ИN			$\bowtie$										1				

Production Date: 2023-08-30

											ODT			Page 2 of 3						
		2			BC	JREI	10				<b>ORT</b> D.: 12615684-A1	B	orehole No.	BH-104-23						
-				STRATIGRAPH	IY	1	SA	MPLE			D.: 12015004-A1		GRAPHIC	WATER TEST SYMBOL						
DEPTH - m	DEPTH - ft			DESCRIPTION SOIL AND BEDROCK	SYMBOL	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	RECOVERY %	N, Nc or RQD	BLOW COUNT/1: PENETRATIO	5cm N	A : N (standard pen.)     ∴ Nc (dynamic pen.)     ∵ Su (laboratory)     ∵ Su (laboratory)     × : Su (field)     * : Sur (field)     PL W LL     LL     Q     40     60     80	LEVEL CA : chemical analysis GSA : particle size analysis H : hydrometer testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear UCS : compression test k : permeability Du; spec: duplicate collected						
-	25-					SS-11 B			100	0	0-0-0-0		<b>4</b> 4 <i>X</i>	-						
- - 8 -						SS-12 B		$\mid$	100	0	0-0-0-0	4	8 ∡							
- - - 9	_					SS-13 B			100	0	0-0-0-0		X X							
-	30— — —					SS-14 B			100	0	0-0-0-0	4								
10 - -	_					SS-15 B		$\square$	100	0	0-0-0-0		4							
- 11 -	35— —					SS-16 B			100	0	0-0-0-0	4								
- - - -12	_												<b>∡</b> 8							
- - - - -13	<b>40</b> — —					SS-17 B			90	0	0-0-0-0	4								
-	 45	77 <u>7</u> 13.2	7_ 4	becoming with traces of sar	nd	SS-18			100	0	0-0-0-0									
14 - - -	_					В			100	0	0-0-0-0	-								
	50— 	75.1	9			SS-19 B			100	0	0-0-0-0									
16 - -	-	15.8	2	End of sampling									₽ 21 15							
- 17 -	55— 												21 20 20							
- - - 18													20 47							
tandard.sty	60— 												15 20 21							
Borehole - s	-												29 24							

	G				B	DRE	10	LE	R	EΡ	ORT	Page 3					
								Re	feren	ce No	o.: 12615684-A1	в	orehole No.		BH-104-23		
Γ				STRATIGRAP	HY		SAI	MPLE					GRAPHIC		CHART SYMBOL		
	DEPTH - m	DEPTH - ft	ELEVATION / DEPTH - m	DESCRIPTION SOIL AND BEDROCI	K	SAMPLE TYPE AND NUMBER	SUB - SAMPLE	STATE	<b>RECOVERY %</b>	N, Nc or RQD	BLOW COUNT/1: PENETRATIO	5cm N	20 40 60 80	GS. H LL PL W Su Su UC: UC: k	Commical analysis A particle size analysis hydrometer testing liquid limit yalastic limit undrained shear r remoulded shear S compression test permeability s spec. duplicate collected		
-	20	_											41		-		
-	21	 70											25 58 91 66		- - - - - - - - 		
-	22	_	68.68										23		-		
-	23	_ 75_	22.33	End of dynamic penetration End of borehole	n test	-									- - -		
-		_													-		
-	24	 80—															
-	25	_													-		
-			-												- -		
-	26														 - -		
-	27	_													-		
-	28	90—													-		
-		_													-		
-	29	95— 															
-	30	_													-		
		100													-		
tandard.sty	31	_															
Borehole - standard.sty	32														-		

Client : Project : Location : Drilling Contractor : Borehole Type : Borehole Diameter : Described by : SAMPLE TYPE SAMPLE TYPE SAMPLE TYPE SAMPLE STATE C : Reck diamond (GS(E): Grab sample (tube en ST : Shelby tube SAMPLE STATE Remoulded Intact Lost	Auger 200 mm David Vincent, Tech. vironment) core nvironment wironment vironment vironment nx Standard R: Refusal ( R.Q.D.: Roc	ership ation - Proposed I a, Ontario Drilling Limited Core Bit Siz Verified by : RMINOLOGY " (y) 20-35% 35-50% SYMBOLS I penetration index N > 100) k Quality Designation	e : Keshini F BEDR % RQ 0-25 25-5( 50-7; 75-9( 90-10) CLASSIFIC Clay Silt Sand Gravel	An Center Prelim Rangasamy OCK QUALI D QUALI Very p D Poor 5 Fair 0 Good 0 Excellu CATION (UNIFIE CATION (UNIFIE) CATION (UNIFIE)	2.: 12615684-A ninary y, CEP ry INDEX IFYING IFYING Very Loss Com Dens Very Eo system 02 mm 075 mm 75 mm 75 mm	Geodetic Coordin MTM-9 (NAD-198 Date (Start) : Date (Finish) : Borehole Depth (r Location Plan No. PACTNESS INDEX "N" loose 0-4 a 4-10 bact 10-30 a 30-50 dense >50 CONSISTENCY Very soft Soft Firm Stiff	<ul> <li>Y: 5017688.8</li> <li>Y: 5017688.8</li> <li>Z: 93.05</li> <li>2023-07-11</li> <li>2023-07-11</li> <li>2023-07-11</li> <li>2023-07-11</li> <li>x: FIGURE 1</li> <li>WATER LEVEL</li> <li>Date: 2023-08-22 Date: 2023-07-20</li> <li>Depth: 1.25 Depth: 1.77</li> <li>SHEAR RESISTANCE (Su)         <ul> <li>&lt;12 kPa</li> <li>25-50 kPa</li> <li>50-100 kPa</li> </ul> </li> </ul>		
Lost Diamond dr	illing % R.Q.D. ₽ STRATIGRAP	Core > 4 in. (10 cm) drilled length	Cobbles Boulder	's > ;	300 mm 300 mm	Very stiff Hard GRAPHI	100-200 kPa >200 kPa		
#       #       WOLEVAIL         93.05       93.05         93.05       0.00         92.44       0.61         91.83       1.22         91.22       1.83         91.22       1.93         91.22       1.93         91.23       1.93         91.24       1.93         91.25	DESCRIPTION SOIL AND BEDROCE Topsoil: Brown silt, some clay, trac sand, moist. Presence of organic matter (rootlets). Fill: Brown silt, some clay, trac sand. Presence of organic matter (rootlets). Native Soil: Firm to stiff, grey-orange c silt, traces of sand, moist. Presence of organic matte (rootlets). End of sampling (Destructive drilling) End of borehole	K TOBWAS BALL BALL BALL BALL BALL BALL BALL BA	2 STATE	so D	BLOW COUNT PENETRAT	A : N (standard pe △ : Nc (dynamic py ♥ : Su (laboratory) ♥ : Su (laboratory) ♥ : Su (field) + : Sur (field) PL W L 20 40 60	LEVEL CA : chemical analysis GSA : particle size analysis H : hydrometer testing LL : liquid limit PL : plastic limit W : water content Su : undrained shear UCS : compression test		

GHD		I	tion - Proposed Distribution Center Bill Leathem Drive, Ottawa, Ontario
			phic Report of Rock Samples Project : 12615684-A1
Client :	Medusa Limited Partnership	Borehole Date :	July 3-6, 2023
Site :	Ottawa, Ontario	Depth :	25.43 to 28.30 m
Borehole :	BH-101-23	Elevation :	65.24 to 62.37 m
	Photogr	aph of Dry Rock	
	21,93	22.H.	23.72
		251.Br	
	26.82		
		2832	2
	Photogr	aph of Wet Rock	
	2193	22.P. 25.R.	23,72
	268	28,322	
Done by :	Keshini Rangasamy, CEP		Page: <u>1</u> de <u>2</u>

		Bill	n - Proposed Distribution Center I Leathem Drive, Ottawa, Ontario
			ic Report of Rock Samples
		Pr	oject : 12615684-A1
Client :	Medusa Limited Partnership	Borehole Date :	July 6-10, 2023
Site :	Ottawa, Ontario	Depth :	22.63 to 25.25 m
Borehole :	BH-103-23	Elevation :	68.03 to 65.41 m
	Photo	graph of Dry Rock	
		252	
1	Photog	raph of Wet Rock	
	22.33 22.33 23.8 23.8		
		2525.	
Done by :	Keshini Rangasamy, CEP	Pa	nge: _2_de _2_

#### Reference No. 11227097-A1

	GHD						ORE	EHOLE	REI	PORT			Boreh	ole No	).	BH-01				
PRO	ENT: DJECT: CATION:	PF		D SORTATIC		ACILITY ALE ROAD INTERSECTIO	1.501/942.8							<ul> <li>▼ - WATER LEVEL</li> <li>Date : 2021-05-19</li> <li>Depth (m) : 0.83</li> </ul>						
DES	SCRIBED	BY: F.		N	VE	RIFIED BY: MA. RICHA	ARD / A. FIORILL						Location plan : 11220797-A1-1							
Core Ham Ener Date	ehole type e bit size : mer type : rgy ratio : e (start) : e (finish) :	B Au 20: 20:	ger tomatic 21-04-19 21-04-19		SAMPLE TYPE	SS(E) - Split Spoon (Environment) RC(E)- Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample			Remoulded EXAMPLES HATCH HATCH Diamond drilling Lost			GSA: grain size analysis CA: chemical analysis W <sub>2</sub> : liquid limit W <sub>5</sub> : plastic limit w : water content C <sub>1</sub> : undrained shear strength S <sub>7</sub> : sensitivity Dup: duplicate sample								
			STRATIG	RAPHY					s T	AMPLE			0	O Wa	TEST ater conte	S RESUL		Field, kPa)		
	epth m)	Elevation (m)	Symbol		Description		State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	$N_{\rm c}$ or RQD	H Atte	erberg lim 'Standa	its (%) rd penetr		Lab, kPa) alue alue		
0	.00	90.59			Grou	und surface	Sta		Rec	Of	E	6 ir Blo (sa	ź	10 20	30 40 5	50 60 7	0 80 90	Water level		
_	- 0.14 	90.45		Topsoil: Clayey silt, Native soil Stiff to very moist	I:	es of sand /		SS-1A SS-1B	72			1-2-4-4	6	•				()))))))))))))))))))))))))))))))))))))		
1.0 —	0.90	89.69		becoming g	grey			SS-2	100			4-5-7-8	12	→   						
- 2.0 -	  	89.07		becoming v beddings	with	presence of silt		SS-3	100			2-2-3-3	5	•						
3.0 -	2.28	88.31		becoming s	stiff,	very moist		SS-4	100			1-2-1-2	3	• •						
								ST-5	100	GSA A w						-9				
4.0 -	- <u>3.81</u> - - - -	86.78		becoming f	firm,	saturated		SS-6	100			1-0-0-1	0 •	•						
5.0 —								SS-7	100			1-0-0-1	0 •							
6.0 -								SS-8	100			1-0-0-1	0 •	•						
- 7.0 -	- 6.10 	84.49		becoming v beddings	with	presence of silt		SS-9	100			1-0-0-1	0.							
-	- - - 7.62	82.97		becoming g	grey	 to dark grey		SS-10	100			1-0-0-0	0 •							

See the attached explicative note for the complete list of symbols and abbreviations

#### Reference No. 11227097-A1

G	HD				В	OREHOLE REPORT							Borehole No.					BH-01		
CLIENT:	ME	EDUSA I	LP						ETIC COO		ATES	👳 - WATER LEVEL								
PROJECT:	PR	ROPOSE	ED SORTAT	ION F	ACILITY				, NAD-83) (	(m)		1	Date :		-05-19	9				
LOCATION:		IKIN DR		ERIV	ALE ROAD INTERSECTIO	1.301/942.0						Depth (m) : 0.83								
DESCRIBED				VE	RIFIED BY: MA. RICHA	7 . 90 59						Location plan : 11220797-A1-1 GSA: grain size analysis								
Borehole type : Core bit size :	Au B	ger		ų	SS(E) - Split Spoon (Enviro RC(E) - Rock diamond core			TE	Remoulded			Ъ		CA: ch	emical	analysi				
Hammer type :		tomatic		SAMPLE TYPE	AU(E) - Auger TEE - Sampling Tube							Image: Crassing and the state of the sta								
Energy ratio : Date (start) :		21-04-19		MPL	Environment ST - Shelby tube									C <sub>u</sub> : une	drained	d shear	strenç	gth		
Date (finish) :	202	21-04-19		7S	GS(E) - Grab sample			/S	Lost			TEST :		S <sub>⊤</sub> : sen Dup: dı		e sampl	ie			
		STRATIGRAPHY					1		SAMPLE		_		1			TS RES				
	ion								(0		ts ize)	B	Р	Attor		ent (%) nits (%)		$\triangle C_u$		
Depth (m)	Elevation (m)	Symbol		De	escription		and er	ery %	test	(mq	15 cr coun	or RQD	W <sub>P</sub> W <sub>I</sub>	"N"	-			on test v		κi α <i>)</i>
. ,		<i>w</i>				State	Type and Number	Recovery	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	ž	► "N <sub>c</sub> " Dynamic penetration test value					Motor		
8.00	82.59	770		Gro	und surface	ŭ	Ļ₽ź	- La	ō	đ	i Bi Si	ź	10	20 3	0 40	50 60	70	80 90		
-						X									$\vdash$	++	_	++	_ [:	
-															$\vdash$	++	_	++	-	
-														_		+++			-  :	
-																+	_			I∃:
9.0 —																			-1	
-						$\mathbb{N}/$														
-						IX	SS-11	100	GSA A		1-0-0-0	0		⊢		-	0			
- 9.76	80.83		End of sa	molir	na	( )			w				0		<u> </u>					
10.0					ynamic penetration test								0				_		_	
-																+	_		_	
													0			++	_		_	
-													0					+		
													o							
11.0																				
-													0							
+													o		<u> </u>		_			
-													0	_		++	_	+	_	
12.0													F	_		++	+	++	_	
-													0			++	-		_	
													1				-			
-													o							
13.0-																				
-													1		<u> </u>		_		_	
-													1		-		_		_	
													\ \\5	_		++	+	+	_	
-													<b>}</b> 5			+-+	-	+	-	
14.0													<b>†</b> 4		$\square$	++	-	++		
													15			$\uparrow \uparrow$		+		
													<b>†</b> 4		$\vdash$	$\downarrow \downarrow$		$\square$		
15.0-													<b>↓</b> 5		$\vdash$	++	_	++		
													46	+	$\vdash$	++	+	++	_	
														+		++	+	++	-	
													45	+	$\square$	++	+	++		
													<b>†</b> 6			+	+	+		

G	HD				B	ORE	EHOLE	ERE	PORT				Boreh	nole N	No.		BH-0	01
CLIENT:	ME	DUSA	LP						DETIC COO		ATES		<b>y</b> - W	ATER		EL		
PROJECT:	PR	ROPOSE	ED SORTATIO	N F	ACILITY			(MTN	/I, NAD-83) (	m)			<b>-</b> Date : 20					
					LE ROAD INTERSECTIO	N. NE	PEAN.		: 366477.6				Depth (m					
LOCATION: DESCRIBED	ON	ITARIO			RIFIED BY: MA. RICHAI			7	: 5017942.8 : 90.59	3		L	ocation p	olan :	11	122079	7-A1-1	
Borehole type :	Au	aer			SS(E) - Split Spoon (Enviror	nment)			Rem	oulded				. grain s				
Core bit size :	B	gei		۳.	RC(E) - Rock diamond core			SAMPLE STATE				õL		chemica liquid lim		SIS		
Hammer type : Energy ratio :	Au	tomatic		SAMPLE TYPE	AU(E) - Auger TEE - Sampling Tube			E S1	Intac			SYMBOL	w <sub>P</sub> : p	olastic lin vater cor	nit			
Date (start) :	202	21-04-19		MP	Environment ST - Shelby tube			MPL	drillin	ng		TEST S	C <sub>u</sub> :	undraine	ed shea	r streng	th	
Date (finish) :	202	21-04-19		SA SA	GS(E) - Grab sample			SA	Lost			щщ		ensitivity duplica		ole		
	5	TRATIG	RAPHY						SAMPLE					•	STS RE			
											ê	Δ	o w	ater con				eld, kPa)
Denth	ation (I	lod		_				%	ts	-	nts size	or RQD		terberg l			C <sub>u</sub> (La	
Depth (m)	Elevation (m)	Symbol		De	escription		and	ery	tes	L mdo	15 cou cou	o					n test val	
. ,		- 07				State	Type and Number	Recovery	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	z		-			n test valu	ue Water
16.00	74.59			Grou	und surface	ŝ	r∠z	Re	đ	4	i Bi Si Si Si	ź		30 40	50 6	0708	0 90	level
-													4					
-													li 🗆					
+													<b>∱</b> <sup>5</sup>					
													4					
17.0-																		
													<b>4</b> 3					
-													5					
-																		
-													<b>4</b> <sup>3</sup>					
40.0													3					
18.0													Ţ					
-													2					
-													15					
-													15					
-													4					
19.0													13					
-																		
													8					
-														30				
-														10				
20.0															45			
-																<u> </u>		
																	89	
-																	88	
																	$\square$	
21.0																		100
_ 21.16	69.43				penetration test													-
			End of bore	enole	8													
22.0-																		
23.0																		
														++				

	G	HD				В	ORE	HOLE	RE	PORT				Borehole No. BH-02	
	ENT: DJECT: CATION:	PF	IKIN DF	ED SORTAT RIVE AND M	ERIV	FACILITY ALE ROAD INTERSECTIO RIFIED BY: MA. RICHA	,	,	(MTM X Y 7	ETIC COO , NAD-83) ( : 366599.6 : 5018011.4 : 90.61	m)	ATES	0	<ul> <li>✓ - WATER LEVEL</li> <li>Date : 2021-05-19</li> <li>Depth (m) : 1.1 0.93 ; 1.35</li> <li>Location plan : 11220797-A1-1</li> </ul>	
Bore Core Ham Ener Date	e bit size : amer type : rgy ratio : e (start) : e (finish) :	: Au B+ Au 20: 20:	ger + Cas NQ tomatic 21-04-21 21-04-22	sing	SAMPLE TYPE	SS(E) - Split Spoon (Enviro RC(E) - Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample	nment)		SAMPLE STATE	Rem	nond		TEST SYMBOL	GSA: grain size analysis CA: chemical analysis w <sub>i</sub> : liquid limit w <sub>p</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear strength S <sub>7</sub> : sensitivity Dup: duplicate sample TESTS RESULTS	
(	epth m) .00	(m) (m)	Symbol			escription	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	N, N <sub>c</sub> or RQD	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
	0.10	90.51		Native s	lt, tra <b>oil:</b> ery sti	ces of sand/	0	SS-1A SS-1B	54	0	<u>ц</u>	<u>оп</u> 1-2-4-4	6	• • • • • • • • • • • • • • • • • • •	
1.0 -	 1.00 	89.61		becomin				SS-2	100			3-4-6-6	10		
2.0 —	- 1.52	89.09		beddings		presence of sand		SS-3	82	GSA A w		2-3-3-3	6		
- 3.0 -	2.28	88.33		becomin	g stiff			SS-4	100			1-1-1-1	2		
_	- - - - - - -	87.21		becomine	 g firm	, saturated		SS-5	100			1-0-0-1	0 •		
4.0 -								SS-6	100			1-0-0-1	0 •		
5.0 —								ST-7	100	A w					
6.0 —	- - - - - - - - - - - - - - - - - - -	84.51		becomin		presence of silt		SS-8	100			1-0-0-1	0 •		
_	-			beddings			X	SS-9	100			1-0-0-1	0 •		
7.0 -															
	F							SS-10	100			1-0-0-1	0		

See the attached explicative note for the complete list of symbols and abbreviations

FO-030.82/IA/12-14

G	HD	В	OREHOL	E RE	PORT			Borehole No.	BH-02
CLIENT: PROJECT: LOCATION: DESCRIBED		DSED SORTATION FACILITY DRIVE AND MERIVALE ROAD INTERSECTIC IO		(MTM	ETIC COO , NAD-83) ( : 366599.6 : 5018011.4 : 90.61			<ul> <li>✓ - WATER LEVEL</li> <li>Date : 2021-05-19</li> <li>Depth (m) : 1.1 0.93 ; 1.3</li> <li>Location plan : 112207</li> </ul>	
Borehole type : Core bit size : Hammer type : Energy ratio : Date (start) : Date (finish) :	B+NQ Automat 2021-04 2021-04	c AU(E) - Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample	,	SAMPLE STATE	Intac Diam drillir Lost	nond 1g	TEST SYMBOL	GSA: grain size analysis CA: chemical analysis w <sub>L</sub> : liquid limit w <sub>F</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear streng S <sub>T</sub> : sensitivity Dup: dupicate sample	
Depth (m)	Elevation (m) Svmbol		State Type and Number	,0	Other tests	PID (ppm) 6 in / 15 cm Blow counts (sampler size)	N <sub>c</sub> or RQD		$\Delta C_{u} (Field, kPa)$ $\Box C_{u} (Lab, kPa)$ on test value on test value Weter
8.00 9.0 9.15 10.0 11.0 12.0	82.61 81.46 79.94 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	saturated	00         F-2           SS-11           SS-12           SS-13           SS-14	2 51 3 100	GSA A W GSA A W	<u>ц</u> (с ш с 1-0-0-0 4-3-2-2 1-2-2-2 1-1-4-1	2 <u>2</u> 0 5 4 5	10 20 30 40 50 60 70	Bot Store         level           Image: Store         Imag
13.0			SS-16			2-1-0-3 3-1-1-2	1		
14.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		SS-17			1-1-1-3			
			SS-18		GSA A W	1-1-0-1	6		

GHD		В	BOREH	IOLE	RE	PORT				Borehole No.	BH-02
PROJECT: PF	NTARIO	TION FACILITY IERIVALE ROAD INTERSECTION VERIFIED BY: MA. RICH/		EAN,	(MTM X Y	ETIC COORD , NAD-83) (m) : 366599.6 : 5018011.4 : 90.61		TES	0	<ul> <li>✓ - WATER LEVEL</li> <li>Date : 2021-05-19</li> <li>Depth (m) : 1.1</li> <li>0.93 ; 1.35</li> <li>ocation plan :</li> <li>1122079</li> </ul>	
Borehole type : Au Core bit size : B+ Hammer type : Au Energy ratio : Date (start) : 20 Date (finish) : 20	ger + Casing NQ tomatic 21-04-21 21-04-22 STRATIGRAPHY	SS(E) - Split Spoon (Enviro RC(E) - Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample	onment)	TORILLI	SAMPLE STATE	Remoul			TEST SYMBOL	GSA: grain size analysis CA: chemical analysis w <sub>L</sub> : liquid limit w <sub>5</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear strengt S <sub>T</sub> : sensitivity Dup: duplicate sample TESTS RESULTS	h
Depth (m) (m) (m)		Description	State	Type and Number	Recovery %		PID (ppm)	6 in / 15 cm Blow counts (sampler size)	N, N <sub>c</sub> or RQD	O Water content (%) ↓ Atterberg limits (%) ↓ N" Standard penetration ↓ "N <sub>c</sub> " Dynamic penetration	test value
16.00 74.61 17.0 18.0 18.0 18.29 72.32 19.0 19.10 71.51 20.0		g compact		<u>F'Z</u> SS-20 SS-21 SS-22 SS-22	28 28			<u>co m %</u> 2-1-2-9 4-1-1-1 4-5-5-6 15-7-13-8	2 3 10 20		
21.0 21.0 21.21 69.40 22.0 22.13 68.48 23.0 22.78 67.83 23.0 - 23.62 66.99	+ + + + - + + + - + + + - + + + + + +	c: omite, fair rock quality g good rock quality		SS-24 RC-25 RC-26	62 74 95			17-21 29-28	50 61 86		

See the attached explicative note for the complete list of symbols and abbreviations

Page: 3 of 3



Photo 1 : BH-02 Core box – Dry rock



Photo 2 : BH-02 Core box – Wet rock



Proposed Sortation Facility Leikin Drive and Merivale Road Intersection, Nepean, Ontario

GHD | Geotechnical Investigation | 11227097-A1(1)

**Borehole No. BH-02** 

	G	HD			В	ORI	EHOLE	REI	PORT				Borehole	No.	BH-	03
PRO	ENT: DJECT: CATION:	PR	IKIN DR ITARIO	ED SORTATION	FACILITY /ALE ROAD INTERSECTIC ERIFIED BY: MA. RICHA			(MTM) X : Y : 7	ETIC COO NAD-83) ( 366427.8 5017867.9 90.52	(m)	ATES			1 0.86 ; 1	.31 0797-A1-1	
Core Ham Ener Date	hole type : bit size : mer type : gy ratio : (start) : (finish) :	B+I Aut 202 202	ger + Cas NQ tomatic 21-04-19 21-04-20	SAMPLE TYPE	SS(E) - Split Spoon (Enviro RC(E)- Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample			SAMPLE STATE	Intac Dian drillin	nond ng		TEST SYMBOL	CA: chem $w_L$ : liquid $w_P$ : plastic w : water of $C_u$ : undra $S_T$ : sensiti Dup: dupli	limit content ined shear stro vity cate sample	ength	
			TRATIG	RAPHY		-		s	AMPLE	1				ESTS RESUL		
(1	epth n)	Elevation (m)	Symbol		Description	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	, N <sub>c</sub> or RQD	H Atterber W <sub>P</sub> W <sub>L</sub> N" St ▲ "N <sub>C</sub> " Dy	ontent (%) g limits (%) andard penetr namic penetra	$\Box$ C <sub>u</sub> (L ation test va	
0.	00	90.52		Gro _ Topsoil:	ound surface	5	FŹ SS-1A	ž	Ó	₫	6 (s	ź	10 20 30	40 50 60 7	0 80 90	
_	- 0.13 - - -	90.39		Clayey silt, tra Native soil:	iff, brown silt and clay,		SS-1B	48			2-3-4-5	7	•			
1.0 —	 	89.42		becoming bre	y-brown		SS-2	100			4-8-7-7	15	• •			
- 2.0 -	 _ 1.52 _ _ _ _ _	89.00		becoming stiff sand bedding	f, grey with presence of s		SS-3	100			2-2-3-4	5	•			
							SS-4	100			1-2-2-2	4	•			
_	 	87.02		becoming firm	n, saturated		SS-5	100			1-1-1-1	2	•			
4.0 —	-						SS-6	100			1-0-0-1	0				
5.0 —	4.57	85.95		becoming with	n presence of cobbles		SS-7	69			6-5-4-4	9		/ / / / / /		
6.0 —	-						SS-8	100			2-1-0-0	1				
	-						SS-9	100			1-0-0-1	0	•			
7.0 —							ST-10	0								

G			OREHOL	E RE	PORT				Borehole No.	BH-03
CLIENT: PROJECT: LOCATION: DESCRIBED		LP ED SORTATION FACILITY RIVE AND MERIVALE ROAD INTERSECTIO	DN, NEPEAN,	GEOD (MTN X Y 7	DETIC COOI I, NAD-83) ( : 366427.8 : 5017867.9 : 90.52	m)	TES		<ul> <li>✓ - WATER LEVEL</li> <li>Date : 2021-05-19</li> <li>Depth (m) : 1.1 0.86 ; 1.3</li> <li>.ocation plan : 112207</li> </ul>	97-A1-1
Borehole type : Core bit size : Hammer type : Energy ratio : Date (start) : Date (finish) :	Auger + Ca B+NQ Automatic 2021-04-19 2021-04-20	SS(E) - Split Spoon (Enviro) RC(E)- Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample	nment)	SAMPLE STATE	Intac Diam drillir Lost	nond 1g		TEST SYMBOL	GSA: grain size analysis CA: chemical analysis $w_L$ : liquid limit $w_F$ : plastic limit w : water content $C_u$ : undrained shear streng $S_T$ : sensitivity Dup: duplicate sample	-
Depth (m)	Elevation (m) Symbol	Description	State Type and Number		Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	$N_{\rm c}$ or RQD	O       Water content (%)         Image: Wp_WL       Atterberg limits (%)         N"       Standard penetration         Image: Nc_"       Dynamic penetration	$\triangle$ C <sub>u</sub> (Field, kPa) $\square$ C <sub>u</sub> (Lab, kPa) on test value
8.00	82.52	Ground surface	State Type Numb			DID	ui of B 0 B 2-1-1-1	z z 2		80 90 Water level
9.0			ST-12		A w		2			
10.0										
11.0			ST-13	5 100	A w					
12.0	78.33	Firm to stiff, grey clayey silt, traces of sand, saturated	SS-14	100	GSA - H A W		1-0-0-0	0 •		
13.0			ST-15	5 0						
-		y the complete list of symbols and abbreviations	SS-16	5 100			1-1-1-1	2		FO-030.82/IA

G	HD			E	BORI	EHOLE	E RE	PORT				Borehole No.	BH-	03
CLIENT: PROJECT: LOCATION: DESCRIBEI	PR LE ON	IKIN DR ITARIO	ED SORTATION F	ACILITY ALE ROAD INTERSECTI RIFIED BY: MA. RICH/			(MTM X Y 7	DETIC COO I, NAD-83) ( : 366427.8 : 5017867.9 : 90.52	(m)	ATES	[ [	▼ - WATER LEVEL Date : 2021-05-19 Depth (m) : 1.1 0.86 ; Location plan : 112		
Borehole type Core bit size : Hammer type Energy ratio : Date (start) : Date (finish) :	B+1 : Aut 202 202	ger + Cas NQ omatic 21-04-19 21-04-20	SAMPLE TYPE	SS(E) - Split Spoon (Enviro RC(E) - Rock diamond cor AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample	,		SAMPLE STATE	Rem Intac Dian drillir Lost	nond ng		TEST SYMBOL	GSA: grain size analy: CA: chemical analysis w <sub>L</sub> : liquid limit w <sub>P</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear s S <sub>T</sub> : sensitivity Dup: duplicate sample <b>TESTS RESL</b>	strength	
Depth (m)	Elevation (m)	Symbol	De	escription	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	N, N <sub>c</sub> or RQD	O     Water content (%)       →     Atterberg limits (%)       ●     "N" Standard pene       ■     "N <sub>c</sub> " Dynamic pene	△ C <sub>u</sub> (F □ C <sub>u</sub> (L etration test va	lue ue
			Compact to loo silty sand, trac Bedrock: Grey dolomite, - joint from 20.	n 21.26 to 21.36m		F2         SS-17         SS-18         SS-19         RC-20         RC-21	#       #         59       59         64       43         97       92	GSA-H A W		2-6-6-7 3-3-6-7 27 50/8cm	2 12 9 R 79 76			Atter 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,



Photo 3 : BH-03 Core box – Dry rock



Photo 4 : BH-03 Core box – Wet rock



Proposed Sortation Facility Leikin Drive and Merivale Road Intersection, Nepean, Ontario

GHD | Geotechnical Investigation | 11227097-A1(1)

**Borehole No. BH-03** 

G	HD				В	ORI	EHOLE	E REI	PORT				Borehole No. BH-04
CLIENT:	ME	EDUSA I	LP						ETIC COO		TES		• WATER LEVEL
PROJECT:	PF	ROPOSE	ED SORTAT	ION F	ACILITY			(MTM,	NAD-83) (	m)			Date : 2021-05-19
LOCATION:	ON	ITARIO			ALE ROAD INTERSECTIO			Y:	366567.3 5017946.1 90.50				Depth (m) : 0.81
DESCRIBED	) BY: F.	ARGUIN	N	VE	RIFIED BY: MA. RICHA	RD / A	A. FIORILL					L	
Borehole type : Core bit size : Hammer type : Energy ratio : Date (start) : Date (finish) :	B Au 202	ger tomatic 21-04-19 21-04-19		SAMPLE TYPE	SS(E) - Split Spoon (Enviro RC(E)- Rock diamond core AU(E)- Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E)- Grab sample			SAMPLE STATE	Rem	nond		TEST SYMBOL	GSA: grain size analysis CA: chemical analysis wt: liquid limit ws: plastic limit w : water content Cu <sup>2</sup> : undrained shear strength S <sub>T</sub> : sensitivity Dup: duplicate sample
	5	STRATIG	RAPHY	I				s	AMPLE				TESTS RESULTS
Depth (m)	Elevation (m)	Symbol		De	escription	State	Type and Number	Recovery %	Other tests	(mqq) C	6 in / 15 cm Blow counts (sampler size)	$N_{\mathrm{c}}$ or RQD	$ \begin{array}{c c} & & \text{Water content (\%)} & \bigtriangleup & C_{u} (Field, kPa) \\ \hline & & \text{Herberg limits (\%)} & \Box & C_{u} (Lab, kPa) \\ \hline & & & \text{N"} & \text{Standard penetration test value} \\ \hline & & & \text{N}_{c}^{*} & \text{Dynamic penetration test value} \end{array} $
0.00	90.50	4 1 4 1 4 1		Gro	und surface	ŝ		Re	ot	PID	6 i Bla (s:	ź	10 20 30 40 50 60 70 80 90 Water level
- 0.13	90.37		Native so Stiff to ve	oil:	$\int \frac{1}{1+\frac{1}{2}} \int \frac{1}{1+\frac$		SS-1A SS-1B	64			2-3-4-5	7	• • 081 m
1.0	89.89		becoming	g grey	/ -brown		SS-2	100			5-5-5-5	10	
2.0	88.98		sand bed	ldings			SS-3	100			2-2-3-2	5	
3.0	88.22		becomino	g stiff,	very moist		SS-4	100			1-1-1-1	2	
	87.25		becoming	g firm,	saturated		SS-5	100			1-0-1-1	1	
4.0							SS-6	100			1-0-0-1	0 •	
5.0	85.17		bocoming				ST-7	100					
6.0			beddings				SS-8	100			1-0-0-1	0 •	
- 6.71	83.79		End of sa	amplir	ng		SS-9	100			1-0-0-0	0	+ 0
7.0					ynamic penetration test								
													0
												'	
⊢						1						.	0

G	HD				B	ORE	EHOLE	ERE	PORT				Bor	reho	le No	).	ľ	BH-(	04
CLIENT:	ME	DUSA I	LP						DETIC COO		ATES		¥	- WA	TER L	EVEL			
PROJECT:	PR	OPOSE	ED SORTAT	ION F	ACILITY				1, NAD-83) (i	m)			-		-05-19				
LOCATION:				ERIVA	ALE ROAD INTERSECTIO	N, NE	PEAN,		: 366567.3 : 5017946.1			1	Depth	(m) :	0.81				
DESCRIBED		ITARIO ARGUII		VE	RIFIED BY: MA. RICHA	RD / A	. FIORILL	7	: 90.50			l	_ocatio	on pla	n :	112	20797	-A1-1	
Borehole type :		ger			SS(E) - Split Spoon (Enviror			ш	Rem	oulded		Ι.			rain size emical a		is		
Core bit size : Hammer type :	B Aut	omatic		SAMPLE TYPE	RC(E) - Rock diamond core AU(E) - Auger			SAMPLE STATE	Intac	t		SYMBOL	v	v <sub>L</sub> : liqu	iid limit stic limit				
Energy ratio :				БГЕ БГ	TEE - Sampling Tube Environment			PLE	Diam drillin			ΓSYN	v	v : wate	er conte drained :		trongth		
Date (start) : Date (finish) :		21-04-19 21-04-19		SAM	ST - Shelby tube GS(E) - Grab sample			SAM	Lost	9		TEST	5	S <sub>T</sub> : sen	sitivity				
	s	TRATIG	RAPHY						SAMPLE				L	Jup: au	uplicate	sample S RESU			
											ê	Q	0	Wate	r conter			. C <sub>u</sub> (F	ield, kPa)
Depth	/atio	Symbol		De	escription		σ	%	sts	Ē	unts r siz	RQD	H W <sub>P</sub> W <sub>L</sub>		berg lim				ab, kPa)
(m)	Elevation (m)	Syr		DC	John Maria	υ	e an ber	very	Other tests	(mqq)	/ 15 v col	N <sub>c</sub> or			Standa Dynami				
8.00	82.50			Gro	und surface	State	Type and Number	Recovery	Othe	PID	6 in / 15 cm Blow counts (sampler size)	z z			0 40 5				Water level
-																			
-													0						
												.	0						
													0					_	
9.0 —																	++	_	-
-													0				++	_	-
													0						-
													1				++		-
-													Ţ.				+++		
10.0													1						
E													1						
													L1				$\parallel$		
-													T				++	_	-
11.0													1				++	_	
-													13		_		++		
													2						
-													Ţ						
12.0													<mark>↑</mark> 2						
-													<b>2</b>						
-													2				++	_	
													<u> </u>		_		++	—	-
-													<mark>†</mark> 2		_		++		
13.0													2				++		
													13						
													Ţ						
-													<b>4</b> 3				$\parallel$		
14.0													4				++	_	-
													15		_		++	+	
													45				+		
													†7				++	+	1
15.0													8						
														16			$\square$		
																	$\square$	_	
													<b>≁</b> 7				++	_	-
													46				++		

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GHD	B	OREHOLE	EREPORT	Borehole No. BH-04
CLIENT: MEDUSA LP	þ		GEODETIC COORDINAT	TES 🕎 - WATER LEVEL
PROJECT: PROPOSED	SORTATION FACILITY		(MTM, NAD-83) (m)	Date : 2021-05-19
LOCATION: LEIKIN DRIV	VE AND MERIVALE ROAD INTERSECTIO	N, NEPEAN,	X : 366567.3 Y : 5017946.1	Depth (m) : 0.81
DESCRIBED BY: F. ARGUIN	VERIFIED BY: MA. RICHA	RD / A. FIORILL	7 . 90 50	Location plan : 11220797-A1-1
Borehole type :       Auger         Core bit size :       B         Hammer type :       Automatic         Energy ratio :       Date (start) :       2021-04-19         Date (finish) :       2021-04-19	SS(E) - Split Spoon (Enviror RC(E)- Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample		HELLS BIANS	GSA: grain size analysis CA: chemical analysis CA: chemical analysis w <sub>i</sub> : liquid limit w <sub>F</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear strength S <sub>T</sub> : sensitivity Dup: duplicate sample
STRATIGRA	APHY		SAMPLE	TESTS RESULTS
Symbol Symbol	Description	State Type and Number	Recovery % Other tests PID (ppm)	Image: strain of the strai
16.00 74.50	Ground surface	rz _ r	P O R	
	End of dynamic penetration test End of borehole			$ \begin{array}{c}                                     $

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	G	HD				E	BORI	EHOLE	RE	PORT				Borehole No. BH-05	
CLIENT:		ME	DUSA	LP						ETIC COO		TES		▼ - WATER LEVEL	
PROJEC	T:	PR	OPOSE	ED SORTAT	'ION F	FACILITY			(MTM	, NAD-83) (	m)			Date : 2021-05-19	
LOCATIO		ON	ITARIO			ALE ROAD INTERSECTION	,	,	Y Z	: 366518.8 : 5017869.4 : 90.47	Ļ			Depth (m) : 0.92	
DESCRI	BED	BY: F.	ARGUI	N	VE	ERIFIED BY: MA. RICHA	ARD / A	A. FIORILL		. 30.47				Location plan : 11220797-A1-1	
Borehole Core bit si Hammer t Energy ra Date (star Date (finis	ze : ype : tio : t) :	202	ger tomatic 21-04-28 21-04-28		SAMPLE TYPE	SS(E) - Split Spoon (Enviro RC(E) - Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube			SAMPLE STATE	Intac	nond		TEST SYMBOL	GSA: grain size analysis CA: chemical analysis wt: liquid limit wf: plastic limit w : water content Cu: undrained shear strength ST: sensitivity	
Date (IIIIIs		202	21-04-20		00	GS(E) - Grab sample			0	Lost			-	Dup: duplicate sample	
			TRATIG	RAPHY			_	1		SAMPLE				TESTS RESULTS	
Depth (m)		Elevation (m)	Symbol		D	Description	fe	Type and Number	Recovery %	Other tests	(mqq)	6 in / 15 cm Blow counts (sampler size)	$N_{\rm c}$ or RQD	$\label{eq:constraint} \begin{array}{ c c c } O & Water content (\%) & \bigtriangleup \ C_u \ (Field, kP kP k)_{W_p} \ W_L \\ Atterberg \ limits \ (\%) & \square \ \ C_u \ (Lab, kPa kPa k)_{W_p} \ W_L \\ \blacksquare \ \ "N" \ \ Standard \ penetration test value \\ \blacksquare \ \ "N_c" \ \ Dynamic \ penetration test value \end{array}$	
0.00		90.47			Gro	ound surface	State	Nur	Rec	Oth	PID	6 in Blov (sat	ź	10 20 30 40 50 60 70 80 90 Wa	
Ŀ			T MM	Topsoil:				SS-1A			_				
- 0. 	15	90.32		Native se	oil:	iff, brown silt and clay,		SS-1B	92			1-3-5-5	8		
1.0	81	89.66		becomino	g grey			SS-2	82			2-5-6-5	11		
2.0	52	88.95		becoming sand bed		y with presence of s		SS-3	100			2-2-3-3	5		
- - - - - - - - -	28	88.19		becoming	g stiff	f, very moist		SS-4	100			1-2-1-2	3		
3.0	27	87.20		becomino	 g firm	n, saturated		SS-5	100			1-0-1-0	1		
4.0								SS-6	100			1-0-0-1	0 •		
5.0								ST-7	100						
6.0 - 5.	94	84.53 84.37		End of sa		ng dynamic penetration		SS-8	100			1-0-0-0	0		
		2		test	9 01 0	iynanno peneuduon								1	
7.0													.		
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G	HD				B	ORE	EHOLE	ERE	PORT				Во	reho	ole N	10.		BH-	05
CLIENT:	ME	DUSA	LP					GEOD	DETIC COO	RDINA	ATES		¥	_ \// ^					
PROJECT:			ED SORTAT	ION F	ACILITY			(MTN	I, NAD-83) (	m)				: 2021			-		
LOCATION:	LE	IKIN DF	RIVE AND M	ERIVA	ALE ROAD INTERSECTIO	DN, NE	PEAN,		: 366518.8					י בסב י י (m) :					
DESCRIBED	ON	ITARIO			RIFIED BY: MA. RICHA			7	: 5017869.4 : 90.47	ŧ		L	_ocat	ion pla	in :	112	220797	'-A1-1	
Borehole type	: Aug	ger			SS(E) - Split Spoon (Enviror				Rem	oulded						size analy al analysis			
Core bit size :	В	-		SAMPLE TYPE	RC(E) - Rock diamond core AU(E) - Auger			SAMPLE STATE	Intac	rt		SYMBOL		w <sub>L</sub> : liqu	uid lim	nit	,		
Hammer type : Energy ratio :	Aut	omatic		Ē	TEE - Sampling Tube Environment			LES	Diam			SYM		w <sub>P</sub> : pla w : wat	ter con	ntent			
Date (start) : Date (finish) :		21-04-28 21-04-28		AMF	ST - Shelby tube			SAMF	LU drillir	-		TEST		C <sub>u</sub> : un S <sub>T</sub> : ser		ed shear v	strength	1	
					GS(E) - Grab sample										uplicat	ite sample			
		TRATIG	RAPHY				<del></del>	;	SAMPLE		_		1			STS RES			
	ion								(0		ts tize)	B	$  \overset{\circ}{\mathbf{H}}  $			itent (%) limits (%)			ield, kPa) ab, kPa)
Depth	Elevation (m)	Symbol		De	escription		er d	۳y %	test	(mqq)	5 cr oun er s	or RQD	w <sub>P</sub> w	1	-	dard pen			
(m)	Ĕ	Ś				fe	Type and Number	Recovery	Other tests	ld)	1 / C	z		"N <sub>c</sub> "	Dyna	amic pene	etration	test va	
8.00	82.47			Grou	und surface	State	N L	Rec	Oth	PID	6 in / 15 cm Blow counts (sampler size)	ź	10	203	0 40	50 60	70 80	) 90	Water level
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G	HD				В	ORE	EHOLE	RE	PORT				Borehole No. BH-05
CLIENT:	ME	DUSA	LP						DETIC COOI		ATES		▼ - WATER LEVEL
PROJECT:	PR	OPOSE	ED SORTATION	F/	ACILITY				/I, NAD-83) (I	m)		1	- Date : 2021-05-19
LOCATION:	LE		RIVE AND MERIN	VA	ALE ROAD INTERSECTIO	N, NE	PEAN,		: : 366518.8 : : 5017869.4	Ļ		[[	Depth (m) : 0.92
DESCRIBED		ITARIO ARGUII		EF	RIFIED BY: MA. RICHA	RD/A	. FIORILL	7	: 90.47			L	Location plan : 11220797-A1-1
Borehole type : Core bit size : Hammer type : Energy ratio : Date (start) : Date (finish) :	B Aut 202	ger tomatic 21-04-28 21-04-28			SS(E) - Split Spoon (Environ RC(E)- Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E)- Grab sample			SAMPLE STATE	Rem	nond 1g		TEST SYMBOL	GSA: grain size analysis CA: chemical analysis w <sub>L</sub> : liquid limit w <sub>p</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear strength S <sub>T</sub> : sensitivity Dup: duplicate sample
	s	TRATIG	RAPHY						SAMPLE				TESTS RESULTS
Depth (m)	Elevation (m)	Symbol	C	De	escription	te	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	$N_{\rm c}$ or RQD	$ \begin{array}{ c c c c c } & & & & & \\ & & & \\ \hline & & & \\ & & & $
16.00	74.47		Gr	ou	und surface	State		Rec	Oth	PIC	6 ir Blo (sa	N, N <sub>c</sub>	10 20 30 40 50 60 70 80 90 Water level
	68.42			nic	c penetration test								$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

G	HD				В	ORE	EHOLE	ERE	PORT				Borehole	No.	BH	-06
CLIENT:	ME	DUSA	LP						ETIC COO		ATES		🗶 - WATE	R LEVEL		
PROJECT:	PF	ROPOSE	ED SORTATI	ION F	FACILITY				, NAD-83) (	m)			- Date : 2021-0	5-19		
LOCATION:				ERIV	ALE ROAD INTERSECTION	ON, NE	PEAN,	1	: 366640.1 : 5017937.4	1			Depth (m) : 1.	1		
DESCRIBED	Ur	NTARIO ARGUII		VE	ERIFIED BY: MA. RICHA	RD / A	. FIORILL	7	90.53			L	ocation plan :	112	20797-A1-	1
Borehole type	: Au	ger			SS(E) - Split Spoon (Enviro				Rem	oulded				n size analy ical analysis		
Core bit size :	В	tomatic		SAMPLE TYPE	RC(E) - Rock diamond core AU(E) - Auger	•		SAMPLE STATE	Intac	rt		BOL	w <sub>L</sub> : liquid	limit		
Hammer type Energy ratio :	. Au	tomatic		LE 1	TEE - Sampling Tube Environment			LE S	Dian	nond		SYMBOL	w <sub>P</sub> : plastic w : water o	content		
Date (start) : Date (finish) :		21-04-28 21-04-28		SAME	ST - Shelby tube			SAMF	Lost	•		TEST	C <sub>u</sub> : undra S <sub>⊤</sub> : sensiti	ined shear s vity	strength	
					GS(E) - Grab sample							· ·		cate sample		
		STRATIG							SAMPLE		â	0		ontent (%)		(Field, kPa)
Depth	atior (ر	Symbol		_			_	%	ts	Ê	nts size	RQD		g limits (%)		(Lab, kPa)
(m)	Elevation (m)	Syn		De	escription		anc	very	r tes	(mqq)	15 ( cou	or	"N" St		etration test	
0.00	ш 90.53			Gro	ound surface	State	Type and Number	Recovery	Other tests	DID (	6 in / 15 cm Blow counts (sampler size)	N, N <sub>c</sub>	▲ "N <sub>c</sub> " Dy 10 20 30		tration test v	Water
0.00	30.33	5 15 15 15 15 15 15 15 15 15 15 15 15 15	Topsoil:	010		\/		<u> </u>	0	ш.	СШС	~	10 20 30 4			
0.16	90.37		\Clayey sil		ices of sand	1	SS-1	44			2-3-5-5	8	•			
+		111	Native so Stiff to ve		iff, brown silt and clay,	$ \rangle$										
_ 0.61	89.92				/	$\overline{1}$										
			becoming	g com	npact, grey-brown	X	SS-2	100			3-4-6-6	10	•			
1.0 —						$ \rangle \rangle$										
		H														
- 1.52	89.01	HH	becoming	verv			1									
-				, ,	,		SS-3	46			2-3-3-4	6				
2.0 —											2001	Ŭ				
E																
2.28	88.25		becoming	g stiff,	, saturated	$\mathbb{N}$	1									
			1			X	SS-4	89			2-1-2-1	3	•			- ::=::
-			1			$\square$										
3.0	87.48	HH -			presence of silt		1									
_			beddings			$\mathbb{N}$	SS-5	100			1-1-1-1	2				
							00-0	100			1-1-1-1	2	T I I			
-		111				$\vdash$										
4.0 - 3.81	86.72		becoming	g firm	n, saturated	$\mathbf{N}$	1									
4.0			1			X	SS-6	100			1-0-0-1	0				
-		111				$\langle \rangle$										
+		111														
-						$\mathbb{N}$	SS-7	100			1-0-0-0	0				
5.0 -						$  \wedge$	33-1	100			1-0-0-0					
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6.0 - 5.94	84.59 84.43	-	End of sa			-							1			
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See the attached explicative note for the complete list of symbols and abbreviations

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G	HD				B	ORE	EHOLE	ERE	PORT				Во	oreho	le N	0.	B	H-0	16
CLIENT:	ME	EDUSA I	LP					GEOD	DETIC COO	RDINA	ATES		¥	- W/A	TFR	LEVEL			
PROJECT:			ED SORTAT	ION F	ACILITY			(MTN	I, NAD-83) (	m)				: 2021					
	LE	IKIN DF	RIVE AND M	ERIVA	ALE ROAD INTERSECTIO	DN, NE	PEAN,		: 366640.1					n (m) :					
LOCATION: DESCRIBED	ON	ITARIO			RIFIED BY: MA. RICHAI			7	: 5017937.4 : 90.53	ł		L	_ocat	ion pla	n :	1122	20797-A	1-1	
Borehole type :	Aug	aer			SS(E) - Split Spoon (Enviror	nment)			Rem	oulded						e analysi analysis	s		
Core bit size :	В			SAMPLE TYPE	RC(E) - Rock diamond core AU(E) - Auger			SAMPLE STATE	Intac	t		SYMBOL		w <sub>L</sub> : liqu	id limit				
Hammer type : Energy ratio :	Aut	tomatic		ц Ц	TEE - Sampling Tube Environment			LES	Diam	nond		sγM		w <sub>P</sub> : plas w : wate					
Date (start) : Date (finish) :		21-04-28 21-04-28		AMP	ST - Shelby tube			AMP		-		TEST		C <sub>u</sub> : uno S <sub>T</sub> : sen		l shear st	rength		
Date (Infish).	202	1-04-20		00	GS(E) - Grab sample			0	Lost			-				e sample			
		TRATIG	RAPHY			<u> </u>	<del></del>		SAMPLE							IS RESU			
	ion	ō									ts ize)	B				ent (%) nits (%)			eld, kPa) ab, kPa)
Depth	Elevation (m)	Symbol		De	escription		r d	ry %	ests	(mqq)	5 cn ount	or RQD	w <sub>P</sub> w	1, 7, 11, 10, 11	-	nits (%) ard penet			
(m)	Ele	Ś				fe	be a nbe	Recovery	Other tests	dd) (	mplo	N <sub>C</sub>				, nic penetr			
8.00	82.53			Grou	und surface	State	Type and Number	Rec	Oth	ЫD	6 in / 15 cm Blow counts (sampler size)	ź	10	20 3	0 40	50 60 7	70 80 9	0	Water level
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15.0													44			+	$\left  - \right  $	$\mid$	
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See the attached explicative note for the complete list of symbols and abbreviations

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G	HD				B	ORE	EHOLE	ERE	PORT				Borehole No.	BH-06
CLIENT:	ME	DUSA	LP						DETIC COO		ATES		▼ - WATER LEVEL	
PROJECT:	PR	ROPOSE	ED SORTATIO	ON F	ACILITY			(MTN	/I, NAD-83) (	m)			Date : 2021-05-19	
LOCATION:				RIVA	ALE ROAD INTERSECTIO	N, NE	PEAN,		: 366640.1 : 5017937.4	ı		[	Depth (m) : 1.1	
DESCRIBED		ITARIO ARGUII		VE	RIFIED BY: MA. RICHAI	RD / A	. FIORILL	7	: 90.53	r		L	Location plan : 11220	797-A1-1
Borehole type :	Au	ger			SS(E) - Split Spoon (Enviror				Rem	oulded			GSA: grain size analysis CA: chemical analysis	
Core bit size : Hammer type :	B	tomatic		SAMPLE TYPE	RC(E) - Rock diamond core AU(E) - Auger			SAMPLE STATE	Intac	:t		TEST SYMBOL	w <sub>L</sub> : liquid limit w <sub>P</sub> : plastic limit	
Energy ratio :				F	TEE - Sampling Tube Environment			LE 0	Diam Diam			NAS.	w : water content	
Date (start) : Date (finish) :		21-04-28 21-04-28		SAM	ST - Shelby tube			SAMF	Lost	-		TEST	$C_u$ : undrained shear stree $S_T$ : sensitivity	ngth
					GS(E) - Grab sample								Dup: duplicate sample	
		STRATIG							SAMPLE		â	0	O Water content (%)	∠ C <sub>u</sub> (Field, kPa)
Donth	atior	lod		_				%	ts	(	nts size	or RQD	Atterberg limits (%)	$\Box$ C <sub>u</sub> (Lab, kPa)
Depth (m)	Elevation (m)	Symbol		De	escription		and	ery	tes	(mdd)	15 cou cou oler	or	w <sub>P</sub> w <sub>L</sub> "N" Standard penetra	
40.00				0		State	Type and Number	Recovery	Other tests	PID (I	6 in / 15 cm Blow counts (sampler size)	s ,	▲ "N <sub>c</sub> " Dynamic penetra	Motor
16.00	74.53			Grou	und surface	S	⊢Z	2	0	4	ତ ଅ ଙ୍	ź	10 20 30 40 50 60 70	level
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22.0 21.97	68.56		End of dyr End of bor		c penetration test e									
23.0														
														+++

G	HD			E	BOR	EHOLE	ERE	PORT				Borehole No. BH-11
CLIENT: PROJECT: LOCATION: DESCRIBED	PR LE ON	IKIN DR ITARIO	D SORTATION F	FACILITY ALE ROAD INTERSECTI RIFIED BY: MA. RICH/		-	(MTM	ETIC COO , NAD-83) ( : 366474.0 : 5017740.7 : 95.01	m)	ATES	0	▼ - WATER LEVEL Date : 2021-05-19 Depth (m) : 5.4 Location plan : 11220797-A1-1
Borehole type : Core bit size : Hammer type : Energy ratio : Date (start) : Date (finish) :	B Aut 202 202	ger tomatic 21-04-29 21-04-29	SAMPLE TYPE	SS(E) - Split Spoon (Envirr RC(E) - Rock diamond con AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample		)	SAMPLE STATE	Rem	nond ng		TEST SYMBOL	GSA: grain size analysis CA: chemical analysis w <sub>L</sub> : liquid limit w <sub>5</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear strength S <sub>7</sub> : sensitivity Dup: duplicate sample TESTS RESULTS
Depth (m)	Elevation (m)	Symbol		escription	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	ž	$ \begin{array}{ c c c c } & & & & & & & & \\ & & & & & \\ & & & & $
0.00	95.01	515151	-	ound surface	Ste	_ <u>⊢</u> z	Re	ð	ШЦ	6 i Blc (sa	ź	10 20 30 40 50 60 70 80 90 Water level
0.30	94.71		Topsoil: Clayey silt, trac Fill: Stiff to very sti moist.	ces of sand ff, brown clayey silt,		SS-1 SSE-1	48			2-2-4-7	6	
1.0			Presence of to	ppsoil		SS-2 SSE-2	66			4-5-7-7	12	
<u>1.42</u>	93.59		becoming grey and gravel	with traces of sand		SS-3A SSE-3A SS-3B SSE-3B	01			4-7-9-9	16	
2.0 - 1.83	93.18		becoming with inclusion	presence of topsoil		SS-4 SSE-4	82			3-5-9-8	14	
3.0						SS-5 SSE-5	48			3-4-8-8	12	
						SS-6 SSE-6	89			3-4-6-6	10	
4.0						SS-7 SSE-7	54			2-4-5-5	9	
						SS-8 SSE-8	64			2-4-5-6	9	
5.0						SS-9 SSE-9	70			5-8-10-10	18	
6.0	89.37		Native soil: Stiff to very sti moist. Presence of to	ff, brown silt and clay,		SS-10A SSE-10A SS-10B SSE-10E	82			2-3-5-5	8	
				, your		SS-11 SSE-11	100			2-2-2-2	4	
7.0						SS-12	100			2-2-2-1	4	
				of symbols and abbreviation		SS-13	100			1-1-2-2	3	

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G	HD				В	ORE	EHOLE	ERE	PORT				Bor	ehole	No.		BH	I-11	
CLIENT: PROJECT: LOCATION:	PR		D SORTAT		ACILITY ALE ROAD INTERSECTIO	DN, NE	PEAN,	(MTN X Y	DETIC COOI I, NAD-83) (I : 366474.0 : 5017740.7 : 95.01	m)	ATES		Date : 2 Depth (	2021-0 (m) : 5.	4				
DESCRIBED Borehole type : Core bit size : Hammer type : Energy ratio : Date (start) : Date (finish) :	Au B Au		<u>.</u>	SAMPLE TYPE	RIFIED BY: MA. RICHA SS(E) - Split Spoon (Enviro RC(E) - Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample	nment)		SAMPLE STATE		ond			G C W W W	A: chem L: liquid P: plastic Water of L: undra T: sensiti	n size ar ical anal limit limit content ined she	nalysis lysis ear stre			
	s	TRATIG	RAPHY						SAMPLE					1	ESTS R	ESULT	rs		-
Depth (m)	Elevation (m)	Symbol		De	escription	ate	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	$N_{\mathrm{c}}$ or RQD		Atterbe "N" St		(%) penetra		value	_
8.00	87.01			Gro	und surface	ů,	μŢ	Re	đ	Ē	6 i Blo (\$\$	ź	10 2	20 30	40 50	60 70	0 80 90	level	ī
8.00 9.0 10.0 11.0 12.0 12.0 12.0 12.0 10.0 10.51 11.0 12.0 10.0 10.0 10.51 11.0 10.51 10.				g stiff, of be	very moist with ddings of sand	State	SS-14 ST-15 SS-16	100 100	Oth	DIA	. <u>⊆ o us</u> <u>w m s</u> ) 1-1-2-1 1-0-0-1	3						Water	
13.0																			

	G	HD			В	ORI	EHOLE	ERE	PORT				Borehole No.	BH-12
CLIEN PROJI LOCA <sup>-</sup> DESC	ECT: TION:	PF	IKIN DR	ED SORTATION F	ACILITY ALE ROAD INTERSECTIC RIFIED BY: MA. RICHA			(MTN X Y	DETIC COO 1, NAD-83) ( : 366605.0 : 5017606.5 : 90.31	m)	ATES	[ [		)797-A1-1
Borehol Core bit Hamme Energy Date (si Date (fi	t size : er type : ratio : tart) :	B Au 20 20	ger tomatic 21-04-28 21-04-28	SAI	SS(E) - Split Spoon (Enviro RC(E)- Rock diamond core AU(E)- Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E)- Grab sample			SAMPLE STATE	Rem	nond ng		TEST SYMBOL	GSA: grain size analysis CA: chemical analysis w <sub>1</sub> : liquid limit w <sub>p</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear strn S <sub>T</sub> : sensitivity Dup: duplicate sample TESTS RESUL	ength
Dept (m)	)	Elevation (m)	Symbol	De	escription	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	N, $N_c$ or RQD	O Water content (%) H Atterberg limits (%) ● "N" Standard penetr ■ "N <sub>c</sub> " Dynamic penetr	<ul> <li>△ C<sub>u</sub> (Field, kPa)</li> <li>□ C<sub>u</sub> (Lab, kPa)</li> <li>ation test value</li> <li>water</li> </ul>
0.00	) 0.05	90.31		Gro Topsoil: Loose, dark br Fill: Stiff, brown silt		<u>v</u>	SS-1A SS-1A	57	0		<u>ග ක                                   </u>	2 6	10 20 30 40 50 60 7	
1.0	0.61	89.70		Native soil:	f, brown silt and clay,		SS-2	100			4-5-6-8	11		
							SS-3	100			4-4-5-5	9		
	2.28	88.03		becoming stiff,	grey-brown		SS-4	100			2-1-2-1	3	•	
3.0	3.05	87.26		becoming grey			ST-5	100						
4.0	3.81	86.50		becoming firm	very moist		SS-6	100			1-0-0-1	0 •	•	
5.0 -	4.57	85.74		becoming satu			SS-7	100			1-0-0-0	0 •		
6.0	5.94	84.37		End of samplir	n		SS-8	100			1-0-0-0	0 •		
	6.10	84.21			ynamic penetration	-							1	
7.0														
					of symbols and abbreviations								<b>4</b> 3 <b>4</b> 3	

G	HD				B	ORE	EHOLE	RE	PORT				Borehole No.	BH-12
CLIENT:	ME	EDUSA I	LP						DETIC COOI 1, NAD-83) (1		ATES		- WATER LEVEL	
PROJECT:	PR	OPOSE	ED SORTAT	ION F	ACILITY				: 366605.0	m)			Date : 2021-05-19	
LOCATION:	LE ON	IKIN DR	RIVE AND M	ERIVA	ALE ROAD INTERSECTIO	N, NE	PEAN,	Y	: 5017606.5	5			Depth (m) : 1.12	
DESCRIBED				VE	RIFIED BY: MA. RICHAI	RD / A	. FIORILL	Z	: 90.31			L	Location plan : 1122079	}7-A1-1
Borehole type : Core bit size :	Aug B	ger		u.	SS(E) - Split Spoon (Enviror RC(E)- Rock diamond core			μ	Rem	oulded		2	GSA: grain size analysis CA: chemical analysis	
Hammer type :		tomatic		SAMPLE TYPE	AU(E) - Auger			SAMPLE STATE	Intac			TEST SYMBOL	w <sub>L</sub> : liquid limit w <sub>P</sub> : plastic limit	
Energy ratio : Date (start) :	202	21-04-28		MPLI	TEE - Sampling Tube Environment ST - Shelby tube			WPLE	Diam drillin	nond Ig		STS	w : water content C <sub>u</sub> : undrained shear streng	jth
Date (finish) :	202	21-04-28		S	GS(E) - Grab sample			SA	Lost			۳ ا	S <sub>⊤</sub> : sensitivity Dup: duplicate sample	
		TRATIG	RAPHY						SAMPLE				TESTS RESULTS	
	ion	ō							(0		ts ize)	B	Atterberg limits (%)	<ul> <li>△ C<sub>u</sub> (Field, kPa)</li> <li>□ C<sub>u</sub> (Lab, kPa)</li> </ul>
Depth (m)	Elevation (m)	Symbol		De	escription		and er	ery %	tests	(mq	15 cr coun	or RQD	W <sub>P</sub> W <sub>L</sub> W <sub>P</sub> W <sub>L</sub> ■ "N" Standard penetration	
		0				State	Type and Number	Recovery	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	ž	▲ "N <sub>c</sub> " Dynamic penetratio	Motor
8.00	82.31			Grou	und surface	t.	Γź	<u> </u>	Õ	<u>a</u>	© BI	ź	10 20 30 40 50 60 70	80 90 level
Ē													<b>↓</b> 3	
													2	
-														
													<b>}</b> 3	
9.0 —													▲3	
-													<b>↓</b> 4	
-													5	
10.0													4	
Ē													5	
-													<b>↑</b> 6	
11.0													<b>↓</b> 5	
-													<b>↓</b> 6	
<b>–</b>													46	
12.0-													10	
-													12	
													47	
-													19	
13.0														
-													47	
-													8	
													12	
-														
14.0													<b>†</b> 9	
Ē													8	
													16	
													34	
15.0														
													<b>44</b>	
													51	
							Í						54	

G	HD			В	ORI	EHOLE	ERE	PORT				Bore	ehole	No.		Bł	I-12	
CLIENT: PROJECT: LOCATION: DESCRIBED	PF LE ON	IKIN DF ITARIO	ED SORTATION	FACILITY ALE ROAD INTERSECTIC RIFIED BY: MA. RICHA			(MTN X Y	DETIC COO I, NAD-83) ( : 366605.0 : 5017606.5 : 90.31	m)	ATES	[	Date : 2 Depth (	WATER 2021-05 m) : 1.1 n plan :	-19 2	EL 12207	97-A1	-1	
Borehole type Core bit size : Hammer type Energy ratio : Date (start) : Date (finish) :	B Au 20: 20:	tomatic 21-04-28 21-04-28	SA	SS(E) - Split Spoon (Enviro RC(E) - Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample			SAMPLE STATE	Intac Diam drillir Lost	nond 1g		TEST SYMBOL	C/ W <sub>L</sub> W <sub>F</sub> W C <sub>u</sub> S <sub>T</sub>	SA: grain A: chemic : liquid lir : plastic li : water cc : undrair : sensitivi up: duplic	al analy mit mit ontent ied shea ity ate sam	sis ar stren ple	-		
Depth (m)	(m) (m) 74.31	loquux	D	escription	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	N, N <sub>c</sub> or RQD		Water co Atterberg "N" Star "N <sub>c</sub> " Dyn 20 30 4	limits ( ndard p amic pe	o) %) enetrati enetratio	△ C <sub>t</sub> □ C <sub>t</sub> on test	value	)
	72.78			ic penetration test												77	93 100 100	

G	HD				B	ORI	EHOLE	ERE	PORT				Boreho	le No		BH-	13
CLIENT: PROJECT: LOCATION:	PF		ED SORTATI		ACILITY	ON, NE	EPEAN,	(MTM)	ETIC COO , NAD-83) ( : 366809.6 : 5017824.8	(m)	ATES	[			EVEL		
DESCRIBED			N	VE	RIFIED BY: MA. RICHA	ARD / A	A. FIORILL	Z	90.38			L	ocation pla	n :	11220	797-A1-1	
Borehole type Core bit size : Hammer type : Energy ratio : Date (start) : Date (finish) :	B Au 202 202	ger tomatic 21-04-29 21-04-29		SAMPLE TYPE	SS(E) - Split Spoon (Enviro RC(E)- Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample			SAMPLE STATE	Intac Dian drillir Lost	nond ng		TEST SYMBOL	CA: che w <sub>L</sub> : liqu w <sub>P</sub> : plas w : wate C <sub>u</sub> : une S <sub>T</sub> : sen	stic limit er conten drained s sitivity uplicate s	nalysis It hear strei ample	-	
		STRATIG	RAPHY					5	SAMPLE			_			RESULT		
Depth (m)	Elevation (m)	Symbol		D	escription	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	$N_{\rm c}$ or RQD	Meric Werker Werker ● "N"		s (%) d penetra	C <sub>u</sub> (⊢ □ C <sub>u</sub> (L tion test va	lue
0.00	90.38	413131		Gro	und surface	St		Re	õ	Ē	6 i Blc (\$\$	ź	10 20 3	0 40 50	0 60 70	80 90	Water level
0.09	90.29		Native so	oil:	rown silt, moist /		SS-1A SS-1B	84			2-3-4-4	7	•				<b>1</b> 0.8 m
	88.86		hooming		presence of beddings		SS-2	100			6-5-7-8	12					
2.0	88.10		of sand				S-S3	100			2-3-3-3	6					
3.0 - 3.05							SS-4	100			1-1-1-1	2	•				
	87.33		becoming				SS-5	100			1-0-1-0	1					
	60.57		presence		, saturated with nells		SS-6	100			1-0-0-1	0 •					
5.0							SS-7	100			1-0-0-1	0 •					
6.0							SS-8	100			1-0-0-0	0.					
I F						<i>\///</i>	ST-9	100									11:目:1

See the attached explicative note for the complete list of symbols and abbreviations

FO-030.82/IA/12-14

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G	HD				E	BORI	eholi	ER	EPORT	-			Boreho	ole No.		BH-1	13
CLIENT:	ME	EDUSA I	LP						DETIC CO		ATES		▼ - WA	ATER LE\	/EL		
PROJECT:	PR	OPOSE	ED SORTAT	ION F	FACILITY			(MT	m, NAD-83	3) (m)			<b>-</b> Date : 202 <sup>-</sup>				
LOCATION:			RIVE AND M	ERIV	ALE ROAD INTERSECTI	on, ne	EPEAN,		X : 366809 Y : 501782				Depth (m)				
DESCRIBED		ITARIO ARGUIN	N	VE	RIFIED BY: MA. RICH	ARD / A	A. FIORILI	1 :	Z : 90.38	4.0		I	Location pla	an :	1122079	97-A1-1	
Borehole type :	Au	ger			SS(E) - Split Spoon (Enviro			ш	R	emoulded	t			grain size ai nemical ana			
Core bit size : Hammer type :	B	tomatic		SAMPLE TYPE	RC(E) - Rock diamond core AU(E) - Auger	e		SAMPLE STATE	Ir	itact		TEST SYMBOL	w <sub>L</sub> : liq	juid limit astic limit	. <b>,</b>		
Energy ratio :				БГЕ	TEE - Sampling Tube Environment			PLE		iamond rilling		NVS-	w:wa	ter content			
Date (start) : Date (finish) :		21-04-29 21-04-29		SAM	ST - Shelby tube GS(E)- Grab sample			SAM	_	ost		TESI	S <sub>T</sub> : se	ndrained she nsitivity	-	,tn	
· · ·		TRATIG			GG(L)- Grab sample				SAMPLE				Dup: c	duplicate sar	-		
						-			JAMPLE		(e		O Wat	ter content (			ield, kPa)
Depth	Elevation (m)	Symbol		-			-	%	sts	e la construction de la construc	cm ints size	or RQD		rberg limits	(%)	🗆 C <sub>u</sub> (La	ab, kPa)
(m)	, C	Syn		D	escription		ber	Verv	r tes	(mqq)	15 cot	o.	• "N"	Standard   Dynamic			
8.00	82.38			Gro	ound surface	State	Type and Number	Recoverv	Other tests	DID	6 in / 15 cm Blow counts (sampler size)	N, Nc		30 40 50			Water
-	02.00			0.0								~					
-							2										
-																	
Ē																	
9.0 —																	
-																	
-						V	SS-10	10	0		1-0-0-0	0					
-											1000						
Ē							N I									+	
10.0																	
-																	
10.67	79.71	HH	becomina	 g with	presence of beddings												
11.0-			of silt	5	1 3		SS-11	10	0		1-0-0-0	0					
-													.1				
_ 11.28	79.10		End of bo			1							<b>↑</b> -				
			Beginning	g of d	lynamic penetration test								2				
-													3			+	
12.0																	
-													<b>3</b>				
													<b>↓</b> 2				
-													3				
13.0													<b>3</b>				
-													<b>)</b> 9				
-													8				
-													8				
-													<b>A</b> <sup>0</sup>			+	
14.0													11				
-														27			
												1					
												1	/20				
15.0												1	<mark>∢</mark> 13				
												1	17				
												1				+	
												1	<b>4</b> 14			+	
													\ <b>1</b> 7				

G	HD			В	ORE	EHOLE	RE	PORT				Borehole No.	BH	-13
CLIENT: PROJECT: LOCATION: DESCRIBEI	PF LE ON	IKIN DF ITARIO	ED SORTATION	FACILITY ALE ROAD INTERSECTIO RIFIED BY: MA. RICHA			(MTN X Y 7	DETIC COO 1, NAD-83) ( : 366809.6 : 5017824.8 : 90.38	m)	ATES			- 220797-A1-	.1
Borehole type Core bit size : Hammer type Energy ratio : Date (start) : Date (finish) :	B Au 20: 20:	tomatic 21-04-29 21-04-29	SA	SS(E) - Split Spoon (Enviro RC(E) - Rock diamond core AU(E) - Auger TEE - Sampling Tube Environment ST - Shelby tube GS(E) - Grab sample			SAMPLE STATE	Intac Dian drillir Lost	nond ng	I	TEST SYMBOL	GSA: grain size analy CA: chemical analysi w <sub>i</sub> : liquid limit w <sub>p</sub> : plastic limit w : water content C <sub>u</sub> : undrained shear S <sub>1</sub> : sensitivity Dup: duplicate sampl	strength e	
Depth (m)	Elevation (m)	Ioquia		escription	State	Type and Number	Recovery %	Other tests	PID (ppm)	6 in / 15 cm Blow counts (sampler size)	N, N <sub>c</sub> or RQD	O       Water content (%)         H       Atterberg limits (%)         ●       "N" Standard per         ▲       "Nc" Dynamic pen	$\triangle C_u$ $\Box C_u$ etration test	/alue
	74.38			ic penetration test le		ΓZ	<u>x</u>	0						100 93

		Page 1 of 2
O-A756 -A	Fondex	BOREHOLE BH-91-3
	Highway 16 Names Out	REPORT DATE Nov/91
GEOLOGIC PROFILE	SAMPLES DYNAMIC PENETRATION	CONSISTENCY :
Elev. Depth DESCRIPTION (m)	X     X     X     RESISTANCE BLOWS       0     20     40     60     80       0     20     40     60     80       0     SHEAR STRENGTH     kPa       FIELD VANE SHEAR     •       0     50     50     100       15     20     50     100     150	NATURAL MOISTURE CONTENT (W) LIQUID LIMIT (W )
89.42 0.00 <u>Silty Clay</u>		0 20 40 60 80
-very stiff, brown, occasional oxidation 1.00 stains and silty seams trace white shells, moist.		
2.00	1 SS 2	
3.00	2 SS 4	
-becoming, grey, stiff. 4.00		
5.00 -becoming, layered, with silty seams.	3 SS WH	
6.00 82.42	4 SS WH	
7.00 (continued on next page)	remolded	

								Page 2 of 2	F
0-,	A756-A				Fo	NI	DEX	BOREHOLE BH-91-3	{ 
LOC		Hig	<u>ihw</u>	ay_	16,	N	epean, Ont	DRILLING DATE Oct REPORT DATE NOV. DRAWN BY M.K.	/91
	GEOLOGIC PROFILE	T		MPL				CONSISTENCY :	
		È			Ê	Hγ	RESISTANCE BLOWS	NATURAL MOISTURE	
Elev. Depth	DESCRIPTION	STRATIGRAPHY	NUMBER	TYPE	BLOWS	RECOV	LAB VANE SHEAR 🖤 [	CONTENT (W) LIQUID LIMIT (W) PLASTIC LIMIT (Wp)	
2.42	Clause Cilt	ST ST	ž	1	Б	%	0 50 100 150 200 250	<u> </u>	60
.00	Clayey Silt								
	-Loose to compact,	N	<b>}</b>						
	grey interbeded clay seams, wet.	Ņ	5	ss	wн				
8.00		N	]						
		N					ΦΙ Ι Ι ΦΙ Ι Ι Ι		
		N							
9.00		N	\	i	1			5	
		K							
			6	ss	2				
10.00		IN		1					
		N	J			:			
		N	7	ss	6	-			
10 10		N							
8.19 1.23	<ul> <li>End of Borehole</li> </ul>			1					
	Notec			and a state					
	<u>Notes</u>				-				
	-piezometer installed and destroyed		-						
	,								
			-	!	1	1		1 3 5	1

0	-A756 -A	Fondex	BOREHOLE NUMBER BH-91-4
LOC	UM <u>Ass. Geodetic</u> boreh	Business Park Highway 16, Nepean, Ont.	DRILLING DATE Oct 21/91
	GEOLOGIC PROFILE	SAMPLES DYNAMIC PENETRATION	CONSISTENCY :
Elev. Deptn (m) 89.70		HAVE HAVE SHEAR O 20 40 60 80 SMEAR STRENGTH KPC SMOOT FIELD VANE SHEAR LAB VANE SHEAR	NATURAL MOISTURE           CONTENT (W)
0.00	-very stiff, brown occasional oxidation		
2.00	-becoming grey with occasional white shells	1 SS 5	
4.00	-becoming stiff, wet with interbeded layered silty seams.	2 SS 2	G.W.L. (elev. 85.3)
5.00			
82.70 7.00	(continued on next page)	4 SS WH	

			1			Page 2 of 2
	O-A756 -A		ľ	ŌN	DEX	BOREHOLE NUMBER BH-91-4
LOC	JECT <u>South Meriva</u> ATION <u>Merivale Rd.</u> M <u>Ass. Geodetic</u> волен	<u>8 Hi</u>	ghway	/ 16	, Nepean, Ont.	DRILLING DATE Oct 21/91 REPORT DATE NOV/91 DRAWN BY M.K.
	GEOLOGIC PROFILE	1	AMPLES		DYNAMIC PENETRATION	CONSISTENCY :
<u>Eiev.</u> Depth (m) 82,70	DESCRIPTION	STRATIGRAPHY NUMBER		% RECOVERY	LAB VANE SHEAR 🛛 🐨	NATURAL MOISTURE CONTENT (W) LIQUID LIMIT (W ) PLASTIC LIMIT (Wp)
7.00	Clayey Silt loose to compact, grey interbeded clay seams, wet.				0     50     100     150     200     250       0     1     1     1     1     1     1       0     1     1     1     1     1     1       0     1     1     1     1     1     1       0     1     1     1     1     1     1       1     1     1     1     1     1     1	
8.00		5	SS WI		φ	
9.00		6	ss wi			
78.47	End of Borehole		SS 4	_ P		
1.23	<u>Notes</u>					
	installed 2. Water Level					
N	<u>date depth</u> lov 1 4.4 m					

					ľ			Page 1 of 2
		O-A756-A					DEX	BOREHOLE BH-91-5
	LOCA	JECT South Meriva ATION Merivale Rd. M Ass. Geodetic вояен	8 H	lighw	ay_	16,	Nepean, Ont.	
	6	GEOLOGIC PROFILE		SAMP	LES		DYNAMIC PENETRATION	CONSISTENCY :
	Elev. Depth (m) 89.76	DESCRIPTION	STRATIGRAPHY	NUMBER	BLOWS (N)	% RECOVERY	LAB VANE SHEAR 🛛 🚭	NATURAL MOISTURE           CONTENT (W)
	0.00	Silty Clay Hard to stiff, brown, ccasional oxidation tains, and silty seams noist						
	2.00			1 SS	5			
	3.00	becoming grey, occasional white shells, wet		2 55				G.W.L. (elev. 86.8)
	4.00							
	5.00	becoming layered with silt seams		3 SS	WH			
	2.76			ss	WH		undisturbed	
7		continued on next page)					O     remoided       I     I       <	

LOC	DJECT <u>South Meriva</u> ATION <u>Merivale Rd.</u> JM <u>Ass. Geodetic</u> BORE	3	Hig	hwa	∍y ′	16,	Nepean, Ont.		
	GEOLOGIC PROFILE							DRAWN BY M.K.	
		+		MPL	ES 2		DYNAMIC PENETRATION RESISTANCE BLOWS	CONSISTENCY : NATURAL MOISTURE	
		HOV			-	VER	0 20 40 60 80	CONTENT (W)	
Elev. Depth	DESCRIPTION	101	i E		S	RECOVERY	SHEAR STRENGTH KPa FIELD VANE SHEAR	LIQUID LIMIT (W )	<u></u>
(m) 82.76		STRATIGRAPHV	NUMBER	TYPE	BLOWS	¥ %	LAB VANE SHEAR 🛛 🗶	-	<del></del>
	Clayey Silt					<u>^`</u>	0 <u>50 100 150 200 250</u> ΨΨ		60
		N	N						
	-loose to compact, grey interbeded with	N	N	 					
	clay seams, wet.	M	N						
8.00		$\mathbb{N}$	N 5	ss	WH				<u> </u>
						Į			<b>#</b>
		N		-					
		N							
9.00		N		<u> </u>					1
		M			ĺ				
		ΝN	6	ss	٨н				
		IN		5	1				
10.00		N			:	Ľ			
		N			,	-			
		K.		 i		-			
			7	ssv	۷н				
78.53	_ End of Borehole _	R							
11.23						F			
<u> </u>	<u>Notes</u>								
1	· Piezometer installed								
	. water level								
	Date Level								
<b>  </b>	Nov 1 3.0 m								
						Η			
			1						
<b>  </b>						H			
		1				Π			

0	)-A756-A				FC	)N	DEX	BOREHOLE BH-91-	-6
	DJECT South Merival							DRILLING DATE OC	t 21/9
LOC	CATION Merivale Rd.	8 1	lig	hwa	<u>y</u>	16,	Nepean, Ont.		/91
DATI		OLE				<u></u> 5	5, Hollow Stem	DRAWN BY M.K.	
····	GEOLOGIC PROFILE	<u> </u>	SA	MPL				CONSISTENCY : NATURAL MOISTURE	
		APH			Z			CONTENT (W)	
Elev. Depth	DESCRIPTION	TIGR.	EA		Ś	CO ECO		LIQUID LIMIT (W)	
(m)		STRATIGRAPHY	NUMBER	ТүрЕ	BLOWS	œ	LAB VANE SHEAR 🛛 🐨 🏌	PLASTIC LIMIT (Wp)	<u>†</u>
89.36 0.00		S	ž	4	ā	%		0 20 40	60
0.00	Sitty Clay	N							
		h N							
	-very stiff, brown,								
	occaisional oxidation	IN							
1.00	stains and silty seams moist	$\mathbb{N}$							
		N							
		NI		.					
<u> </u>		$\mathbb{N}$	1	ss	5				
2.00									
		ĽΝ							
				,		ļ			
	_ becoming stiff, grey,	N	11111		1				
3.00	presence of white		<u> </u>			Ī			
	shells, wet	$\mathbb{N}$	2	ss	2 ·				
		VI.							
		KN.				ļ			
+.00		$\mathbf{N}$							
		$\mathbf{N}$				ŀ			
		$\mathbf{Y}$							
		$\mathbb{N}$			Ī	ŀ			
5.00		N	3 5	ss  ۱	٨H				
		N	Ì	1		ŀ			
	-becoming layered	Ν				Į (			
5	with silty seams.	V				-			
5.00		VI.				ŀ			
		N							Ì
		$\sum_{i=1}^{n}$	4 5	sw	/H	Ľ			
		$\langle \rangle$							
2,36		4				-			
.00	(continued on next					$\vdash$	• undisturbed		
ļ	page)					-	Oremolded		

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0	-A756-A				FC	) N	DEX	Page 2 of 2 BOREHOLE BH-91-6	<u>.</u>
LOC	DJECT South Merival ATION Merivale Rd. JM Ass. Geodetic BORE	<u>в н</u>	igh	way	/ 11	5,	Nepean, Ont. 5, Hollow Stem	DRILLING DATE Oct 21/9	<u>91</u>
	GEOLOGIC PROFILE			MPL			DYNAMIC PENETRATION	CONSISTENCY :	
Elev. Depth (m) 82.36	DESCRIPTION	STRATIGRAPHY	NUMBER	түрЕ	BLOWS (N)	RECOV	RESISTANCE BLOWS 0 20 40 60 80 <u>SHEAR STRENGTH</u> kPg FIELD VANE SHEAR LAB VANE SHEAR	NATURAL MOISTURE CONTENT (W) LIQUID LIMIT (W ) PLASTIC LIMIT (Wp)	
7.00	<u>Clayey Silt</u> loose to compact, grey interbeded clay seams, wet.			SS N			0 50 100 150 200 250 H		
9.00			6	SS	NH				
10.00 78.13 11.23	_ End of Borehole _		78	is M	/H				·····
	<u>Notes</u> - Piezometer installed and destroyed		7444 - <b></b>		· • • • • • • • • • • • • • • • • • • •				
				<b>1</b> . <b> </b>					

	O-A756-A				Fc	Ni	DEX	BOREH	ÖLE	2 	91-7	
LOC	DJECT South Merivale CATION Merivale Rd. & UM Ass. Geodetic BOREH	Hiç	ghy	vay	16	N	epean, Ont. 5, Hollow Stem	DRILLIN REPOR DRAWN	T DATE	Nov	/91	/91
	GEOLOGIC PROFILE		SA	MPL			DYNAMIC PENETRATION	CONSI				
		AHA			2	ЕяУ	RESISTANCE BLOWS 0 20 40 60 80	NATURA CONTEN				
Elev. Depth (M)	DESCRIPTION	STRATIGRAPHY	NUMBER	TYPE	BLOWS	RECOVERY	LAB VANE SHEAR 🛛 🐨 :	LIQUID PLASTIC	LIMIT	(W)	 	
38.97	Silty Clay	-S	ž	1	<b>B</b>	%	<u>) 50 100 150 200 250</u>	0	20	40	<u>    60</u> ,	% 80
	-very stiff, borwn, occasional silty seams and oxidation stains, presence of white fossils, moist.	<u> </u>					Number         Number<					<u> </u>
2.00			1	SS	3					<b></b>	-	
3.00			2	SS	3						<b>1</b>	
4.00	- becoming grey, stiff, wet				۰	F				.W.L.	85-0)	<b>.</b>
5.00			3 \$	<u>ss</u> li	₩Н						•	
	-becoming layered with silty seams											<b>.</b>
5.00 31.97			4 9	s	WH						<b>, , , , , , , , , , , , , , , , , , , </b>	
7.00	(continued on next page)						undisturbed     remolded     iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii					

	-A756-A	Fondex	BOREHOLE NUMBER <u>BH-91-</u>
LOC		Highway 16 Nemon Out	
	GEOLOGIC PROFILE	SAMPLES DYNAMIC PENETRATION	CONSISTENCY :
Elev. Depth (m) 81,97		TY WIN A OF LAB VANE SHEAR	NATURAL MOISTURE CONTENT (W) LIQUID LIMIT (W ) PLASTIC LIMIT (Wp)
7.00	Clayey Silt -loose to compact, grey, interbeded with clay seams, wet.	b     z     z     m     %     0     50     100     150     200     250       P     P     P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P       P     P     P     P     P     P     P     P	
9.00		6 SS 1	
77.74	End of Borehole <u>Notes</u> -piezometer installed	7     SS     1 </td <td></td>	
	- Water Level <u>Date Depth</u> Nov 1 4.0 m		

LOCA	VECT <u>Ceotechnical Inv</u> ATION South Merivale B M <u>Geodetic</u> BOREHO	estigation Business Par	·k			REPORT D/	ATELUIY.	22/9
	GEOLOGIC PROFILE	SAMPLES			TRATION	CONSI	M.T. <u>STENCY:</u> L MOISTURE T (W)	.W
Elev Depih 89.53	DESCRIPTION	STRATIGRAPHY NUMBER TYPE BLOWS (N)	% RECOVERY	SHEAR STRE FIELD VANE SHE LAR VANE SHE 50 TRO	EAR v	PLASHG	MIT (W ) LIMIT (Wp)	
0.0	Corn and 330 mm clayey topsoil over							
1.0	Silty Clay: occasional thin beds of silt and fine sand, trace shells; hard to stiff, olive-brown,	1 SS 9					<b>▶4</b>	
2.0	moist	3 SS 2					ł	v.∟ ⊊ iy 12, tip '
3.0 85.72 3.81	_ becoming firm to soft, grey, and wet		-				► ►	
4.0		5 SS -	· · · · · · · · · · · · · · · · · · ·	<ul> <li>**</li> <li>**</li> <li>**</li> <li>**</li> </ul>				•
5.0								
5.0 82.82 6.71	-Trace charcoal-grey organic spots becoming stiff	7 SS -						
7.0		+ 8 SS 1						
8.0								
9.0		9 55 1			in-situ	(p	G. Ju Ju	"≢ ₩.L. Iy 12/
	Continued on next sheet			re-m	oulded			

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c	-A756	FONDEX								BOREHOLE BH-1 (2 of 3)				(2	of 3)	
PRO.	JECTGeotechnical In	ves	stig	atio	n											22/90
	ATION <u>South Merivale</u> M Geodetic BOREHO											REPOR	IT DATE	14	uly/9 1.T.Y	
	GEOLOGIC PROFILE	T		AMPL			DYN		ENETRA					ENCY:		······
		γH4			ŝ	VERY	RESI	STANC	E BLOW	60 60	80	4	URAL N TENT (V	IOISTUI VI	۹ε.	_ <del></del>
Elev. Depth	DESCRIPTION	STRATIGRAPHY	NUMBEA		ş	RECOVERY	SHE	ARS	RENG	ITH.	kPa		IIO LIMI STIC LIN	T (W ) Aft (Wp)	-	
79.53	· · · · · · · · · · · · · · · · · · ·	STR	NUM	ГУРЕ	BLOWS	<u>×</u>		VANE S	SHEAR HEAR	1	* ×			40 6		80 *
10.0	<u>Silty Clay:</u> Stiff, Grey, wet	Ľ	•		•	ľ										
		H	٢									-				ł
78.53		μ	-	:		}						ļ		_		
11.0			••													
12.0			-									-	ļ	<u> </u>	ļ	ļ
12.0	Clayey Silt:		, 10	SS	4											
	stratified, thin clay layers, loose, grey,	T		; ; 												
	wet							· ,				-		<u> </u>	 	
13.0				•												
				:												
14.0					1		+ . ; .	• 1						<u> </u>		<u> </u>
_75.20 14.33	······································	IT L	÷	· :												
				i	[			. I . I I . I .								
15.0		r	-	:	ļ	l	- 1 ' : : , : :	<u>.                                     </u>	. i <u>:</u> i :			<u> </u>				
	Silt/Clay Till: some sand and gravel.	H	11	SŞ	4				• • •							
	loose to compact, grey, wet	H			 ;		1 	•				-	<b>P4</b>			
16.0			•	-					· · · ·				<u> </u>			
		4	• . - :													
		4														
17.0		T	ĺ			ſ										
		1														
		H				ļ										
18.0		.  -														
			12	ss	1											
0.33	Auger Refusal	- L				┝										
19.20	Sandstone Bedrock horizontal bedding,		Ì	;	 											
	sound, light grey							1 1 1 1 1								
20.0	Continued next sheet	i														
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	O-A756	المعمد				(DE)	-			BOREHO				
LOCA	JECT <u>Ceotechnical Inv</u> ATION <u>South Merivale</u> M <u>Geodetic</u> BOREHO	.Busi	ine	ss. Pa	erk.					ORILLIN REPORT	0A7E		uly/s	0
	GEOLOGIC PROFILE	1		MPLES		······			 	- <u>y</u>				· · · ·
	999 1999 1999 1999 1999 1999 1999 1999	АРНУ		Z	12		STANCE		80	CON: NATUR CONTR	BAL M	OISTUI 1		
Elev. Depin		STRATIGRAPHY	UMBER	TYPE BLOWS	RECC	FIELD	AR ST	SHEAR	kPa * X				- + (	
	CONTINUED	on Mar	Z	<u> </u>	1 2	111		1.111	thin			<u> </u>	<u> </u>	
20.0	Sandstone Bedrock horizontal bedding, sound, light grey. Becoming less sandy and more dolimitic with depth		13	RC55	89									
21.0			4 1	RC 64	100									
22.0			15	RC 6	4100									
5.82				:										l
۲./۱	End of Borehole			:	Ì									
	Notes: 1. Two piezometer standpipes installed: A) Piezometer tip 'A' , installed at 18.3m;													
	B) Plezometer tip 'B' . at 6.1 m;					1:, ;;,.								
	C) 500 mm thick Bentonite Seals at 18.0 m, 6.7m,.								+					
	and 5.5 m. 2. Water Level Record		•	-										
	<u>Time</u> <u>Water Level (m)</u> June 25/90 2.0 ( in	aug	ers	;)										
	A B June 26/90 13.3 4. July 6/90 7.9 2.1 July 12/90 9.0 2.4	5 4							178 arranda da antida agrae antidade 278 arranda da antida agrae de la consta 278 arranda da antida da antida de la consta 278 arranda da antida da antida da antida da antida da antida de la consta 278 arranda da antida da ant			-		
	<ul> <li>3. Pocket Penetrometer</li> <li>4. The low blow counts in the till may be a to saturated and dist conditions due to drill</li> </ul>	s in ttrib urbe	va	lues										
		7												
	annan 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													

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	0-A756				L	ŌN	DE)	(					BOREH NUMBE	OLE R	BF	1-7	
	ECT Geotechnical Inv												DRILLIN				
	TION South Merivale B Geodetic BOREHO												REPOR				l
	· ·· · · · · · · · · · · · · · · · · ·					33	·····						ORAWN			α <u>.</u>	
	GEOLOGIC PROFILE		SA T	MPL T	ES Ē	TF	1	NMIC P STANC			-		3	ISISTE	<u>NCY:</u> DISTURI	=	
		STRATIGRAPHY			2	RECOVERY	0	20	40	6	10	80	CONT	ENT (W	3		-+-
Elev. Depth	DESCRIPTION	TIGR	SEA		Ś	1ECC	SHE	AR S	TREN	<b>VG</b> T	<u>н</u>	kPa		D UMIT TIC UM	' (W ) IT (Wo)		
90.07		TAA	NUMBER	JYPE	BLOWS		FIELI	ONE 9	SHE/	48 8 1 5	n	* 200×			0 60	, 80	
0.0	Corn and 250 mm	555			<u>.</u>	1.2	111	<b>İ</b> iii	Ťīī	ŢŢ				<u> </u>	ŤŤŤ		
	clayey topsoil over	ľ"	•					i!!									
		11															
		Ĥ	1	SS	7	1											
1.0	Silty Clay	ŀ			•	ĺ	111			i.i	<u></u>		$\square$				
	occasional silt and		:	i .								N III					
	fine sand lenses, trace shells, very stiff to			SS		İ											
	stiff, olive-brown,	L		33						11	; [ ]	++++			_G.W	, ,	, <u>,</u>
2.0	moist	h		1		-				₩  :			┼──				
				• SS	2	1							Į		Juiy	6/9	0
											!!!!						
		H						*									
3.0				· i	; 2	-		1.	+	-	<u></u> 	1.11		<u> </u>			
			4	. 55 	, 2		1	1									
							.1				.   <u>. i</u>   ] ] ]			++-		ł	
6.26 3.81	_becoming firm to soft, grey, wet			SS		-	11-1				+						
4.0	3.011		j	و د ا		-	$\frac{1}{1}$			1.			+				
		U				-	**										
		1.				1							•				
		ŀ	6	SS	-	ļ					┊╀╞┡						
5.0						Ì		::!	† !		111						*****
		H				!	1.1.1										
	<b>-</b>																
6.0	Trace charcoal-grey organic spots	$\mathbb{H}$	7	ss			: <u> </u> } *	1.			. [ ] ]	114					
		ľ	.														
83.37		Ш	•				e ×-									-	
6.7	End of Borehole			1	İ		1:1		ľ,		'III				l		
							ιλ, '		in∽s								
	Notes:							_ re	-mo	uld	ed			·			
	1. Pocket Penetro-											111			ļ		
	meter values	:					1111		11								
	2. Standpipe piezo-																
	meter installed to													- [			
	6.1 m																
	3. Chemical Analysis							- 111									
1	performed on water sample obtained			and a								╞┊┼╇┋					
	from 5 m depth			3											ĺ		
	4. Water Level Record														ļ		
	Time Water Level (m) on compl. 5.0 (in a			1				· []		Щ							
1	on compr. 0.0 (ID a	ug	er S	1													
	June 25/90 1.8	-		1			1111	1111	1111	111			1	,		- 1	
		-															

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PROJI	-A756 ECT <u>Geotechnical Inve</u> TION South Merivale Bi Geodetic source	usi	nes	ion s Pa	ırk	_	IDEX		BOREHOLE BH-8 NUMBER June 22/90 REPORT DATE JULY/90
	Geodetic BOREHOL	[	S.A	MPLE	\$		DYNAMIC PENETRATION RESISTANCE BLOWS		DRAWN BY
Elev. Depth	DESCRIPTION	STRATIGRAPHY	NUMBER		ģ]	RELOVERT	LABWANE SHEAR	r	CONTENT (W)
0.0	Corn and 275 mm clayey topsoil over					2			
1.0	Silty Clay: Trace fine sand, trace shells, very stiff to stiff, olive-brown, moist			SS SS					
2.0			3	SS :	2			······································	.G.₩.L. ₹
3.0			•	\$5 S5 S5					
4.0 85.52 4.27	becoming soft to firm, grey, wet			SS					
5.0	Average of a second second		. :					· · · · · · · · · · · · · · · · · · ·	
6.0 <u>3.19</u> 5.7	trace charcoal, grey organic spots		7	5S -					
2.1	End of Borehole <u>Note:</u> I.A Pocket Penetro- meter Values 2. Standpipe Piezo	ļ					in situ re-moulded		
	meter installed to 6.1 m. 3. Water Level Recor <u>Time Water Level (m</u> on comp. dry (in ad June 25/90 2.3	ds	rs)						
	June 26/90 2.3 July 6/90 2.3				T PARLOWNER & PREVALENCE THE ADDRESS				

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0	-A756	Fo	NDEX	BOREHOLE BH-9 (1 of 3				
	ECT Geotechnical Inv							
				=				
DATUM	Geodetic 8086HO	E TYPE CME	-55	DRAWN BY M.T.W.				
	GEOLOGIC PROFILE	SAMPLES	DYNAMIC PENETRATION RESISTANCE BLOWS	CONSISTENCY: NATURAL MOISTURE				
		STRATIGRAPHY NUMBER TYPE SLOWS IN	C 20 40 60 80 C 20 40 60 80 C SHEAR STRENGTH kPa	CONTENT (W)				
Elev. Depth	DESCRIPTION	S ER	SHEAR STRENGTH KPa	LIQUID LIMIT (W)				
90.65		STRATIGR NUMBER TYPE BLOWS	HELD VANE SHEAR 🖌	· · · · ·				
0.0	Grass and 200 mm	);; · · · · · ·	* LAR VANE SHEAR 50 100 150 300	20 40 60 80				
0.0	clayey topsoil over							
1.0	Silty Clay:	1 SS 8						
1.0	Trace fine sand and silt lenses							
	occasional shells,	2:55 3		G.W.L. 5				
	very stiff to stiff, olive-brown, moist	H 2 55 3		July 12/90				
z.0				Piezo 'B'				
=		3 SS -						
87.65	becoming firm,							
3.0	grey and wet	4 SS -		G.W.L.				
36.84 3.81	_ Trace charcoal- grey organic spots	5 SS ~ 1	***	Piezo 'A'				
1.0	to bottom of clay							
		6 SS -						
5.0			* *					
		H						
		H						
6.0								
		7 SS -						
7.0								
		8 ST -						
8.0								
0.0								
9.0		9 55 -						
			<b>H</b>					
10.0	Continued							
	on next sheet							
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	O-A756									ВН-	9 [2	of 3
	ROJECT <u>Ceotechnical Investigation</u> OCATION <u>South Merivale Business Park</u>								DRILLING D	ATE	une_2	6/90
DATUN	Geodetic BOREHO	Busines	is_ <u>Park</u> CMF-	55	······				REPORT DA			L
	GEOLOGIC PROFILE	· · · · · · · · · · · · · · · · · · ·	APLES			NETRA	TION				·	
Ī					ISTANCE		5	80	CONSISTENCY: NATURAL MOISTURE			
Elev. Depth	DESCRIPTION	STRATIGRAPHY NUMBER			1		<u>,                                     </u>	1	CONTENT	MIT (W)	-	<del></del>
	• • • •	STRATEGR NUMBER	TYPE BLOWS	FIEL	EAR ST	SHEAR		kPa	PLASTIC I	IMIT (Wp	¥ +	
80.65 10.0	Continued	IS Z	<u>, E 3</u>		YANE S		150	200 <sup>X</sup>	20	<u>40</u>	60 8	<u>o *</u>
	<u>Silty Clay</u> : firm, grey, wet	+										
11.0									-			
									-	-		
12.0		10 S	55									
13.0												
1/1 0										<u> </u>		
14.0												
75.41 15.24	<ul> <li>Transition to very loose <u>clavey silt</u> with occasional silty clay layers, grey, wet</li> </ul>		<b>is</b>									
6.0		1	· · · · · · · · · · · · · · · · · · ·									
73.43												
7.22	Day/Silt/Sand/Gravel <u>Till</u> : occasional boulders, compact to dense,		12 1993 ANILAN ANIL									
8.0	grey, wet	12,55	S 22						<b>**</b> -			
19.0												
0.0	Continued on next page											

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	O-A756				F	ŌN	IDEX					Boreh Numbe	ole R	BH	-9 (:	l of 3
PRO.	JECT <u>Geotechnical Inve</u>	stj	gat	lon												
	ATION <u>South Merivale</u> Bi M <u>Geodetic</u> воявної											AEPOR: DRAWA				
	GEOLOGIC PROFILE	T		MPL				IC PE	NETRA	NON			ISISTE			
		APHY			ŝ	RECOVERY	AESIST		8LOWS	50 50	80		IRAL M	OISTUR A	e 	
Elev. Depith	DESCRIPTION	STRATIGRAPHY	NUMBER	YPE	BLOWS	RECO	SHEA FIELD V	ANE		<u>гн</u> _	kPa ★ X	PLAS		ll'î (Wp)		. %
20.0	Continued Clay/Silt/Sand/Gravel <u>Till</u> : dense, grey,		12		ē	×							20 4	0 60	30	
21.0	wet, occasional boulders (auger refusal at 20.7 m)	+	. 13	RC												
68.91	Split spoon refusal	P	14	\$S.	40											
21.74	End of Borehole		1									<b></b>	ļ			
	Notes:															
	<ol> <li>Pocket Penetrometer values</li> <li>Two Piezometer standpipe insta- lied</li> </ol>															
	<ul> <li>A) Plezometer tip 'A' installed at 21.3 m</li> <li>B) piezometer tip 'B'</li> </ul>															
	installed at 6.1 m C) 500 mm thick									1						
	Bentonite seals at 20.7 m, 6.4 m, and 5.5 m.															
	3. Water Level Record Time <u>Water Level (m)</u>															
	<u>'A'</u> <u>'B'</u> July 6/90 3.0 1.5 July 12/90 3.1 1.7															
	<ol> <li>300 m of rock coring at a depth of 20.7 m (sample RC-13) confirmed the existence of a boulder</li> </ol>															

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G	HD		TEST PIT REF	PORT				Page 1 of 1				
			Referer	nce No.: 1261568	34-A1	Test Pit	No.:	TP-101-23				
Clien	nt :	Medusa Limited Partners	hip			Geodetic C MTM-9 (NA		Y : 5017776				
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Cent					Z : 90.51				
	on : ited by : ibed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Ra	Preliminar <sup>n</sup> ngasamy, CEI	P	Location P Date (Start Date (Finis Test Pit De	t) : h) :	FIGURE 1 2023-07-07 2023-07-07 3.00				
ε	Żε	:	STRATIGRAPHY			<b>IPLE</b>	7	TEST SYMBOL				
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content				
	90.51 0.00	Ground Surface Topsoil:		<u> </u>								
- - - 0.5	89.91	Brown silt, some clay, tra organic matter (rootlets) (	ces of sand, moist. Presence of 1-5%).		GS-01							
-	0.60	Native Soil:		- WW		$\left( \right)$						
- - - <b>1.0</b> -		Firm to stiff, grey clay and Presence of organic matt	l silt, traces of sand, moist. er (rootlets) (1%).		GS-02			GSA, H LL = 70% PL = 31%				
	89.11 1.40	Firm to stiff grey-orange	clayey silt, traces of sand, moist.			$\longmapsto$		W = 33.0%				
- 1.5 - - - - - 2.0	88.41	r inn to sun, grey-orange	Clayey Sin, traces of Sand, moist.		GS-03							
- - - 2.5	2.10	Firm to stiff, grey clayey s	ilt to silty clay, moist.		GS-04							
- - 3.0 - -	87.51 3.00	End of test pit (voluntary t	termination)									
- 3.5 -												
- <b>4.0</b> - -												
- <b>4.5</b> - -												
- <b>5.0</b> - -												
- <b>5.5</b> - - -												
Rema	Remark(s) : Easy to excavate No water infiltration Stables walls The compactness / consistency is estimated											

G	HD		TEST PIT REPO	ORT				Page 1 of 1
			Reference	No.: 126156	84-A1	Test Pit	No.:	TP-102-23
Clier	nt :	Medusa Limited Partners	hip			Geodetic C MTM-9 (N/		Y: <b>5017774</b>
Proje	ect :	Geotechnical Investigation	on - Proposed Distribution Center					Z: 90.77
	on : ited by : ibed by :	Bill Leathem Drive, Ottawa, 6 Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Rang	reliminar asamy, CE	P	Location P Date (Start Date (Finis Test Pit De	:) : :h) :	FIGURE 1 2023-07-07 2023-07-07 3.00
ε	ŽΕ		STRATIGRAPHY			MPLE	z	TEST SYMBOL
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis         H : Hydrometer Testing         CA : Chemical Analysis         LL : Liquid Limit         PL : Plastic Limit         W : Water Content         Dup : Duplicate Sample Taken         OM : Organic Matter Content
-	90.77 0.00	Ground Surface Topsoil:			GS-01			
	90.46 0.30	organic matter (rootlets) ( Native Soil:			63-01			
- - - 1.0		Pirm to stiff, brown slit, so Presence of organic matte	me clay, traces of sand, moist. er (rootlets) (1%).		GS-02			
-						$ / \rangle$		
_ 1.5 _	89.36 1.41	Firm to stiff, grey-orange sand, moist.	silt, some clay to clayey, traces of					
- <b>2.0</b> 					GS-03			
- 2.5 - -					GS-04			
- 3.0	87.77 3.00	End of test pit (voluntary t	termination)					
- 3.5 -								
- 4.0 -								
- 4.5 -								
- 5.0 -								
- - - 5.5 - -								
Rema		Easy to excavate No water infiltration						
	9	No water inflitration Stables walls The compactness / consister	ncy is estimated					

G	Ð		TEST PIT REP	ORT				Page 1 of 1				
			Referen	ce No.: 1261568	34-A1	Test Pit	No.:	TP-103-23				
Clien	ıt :	Medusa Limited Partners	ship			Geodetic ( MTM-9 (N/		Y : 5017740				
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Cente					Z: 93.33				
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Rar	Preliminar ngasamy, CEI	P	Location P Date (Star Date (Finis Test Pit De	:) : h) :	FIGURE 1 2023-07-07 2023-07-07 4.80				
ε	ν N E		STRATIGRAPHY			<b>IPLE</b>	z	<b>TEST SYMBOL</b> GSA : Particle Size Analysis				
DEPTH - m	ELEVATION /		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content				
-	93.33 0.00	Ground Surface Fill:				$\land$						
		Brown clayey silt, traces of matter (rootlets) (1-5%).	of sand, moist. Presence of organic		GS-01	$ \times $						
- 0.5	92.83 0.50		silt, some sand, traces of clay and		GS-02	$\bowtie$						
-	92.53 0.80	-	ces of sand, moist. Presence of			$\left\langle \right\rangle$						
		organic matter (rootlets) (	1%).		GS-03			GSA				
-1.5						$ / \rangle$		LL = 47% PL = 27%				
-	91.53 1.80	Brown-grey clayey silt, tra	aces of sand, moist. Presence of			$\left( \longrightarrow \right)$		W = 22.0%				
- 2.0 - -		organic matter (rootletss)	(1%).		GS-04							
- 2.5	<u>90.73</u> 2.60	Grey-brown silt, some cla Presence of organic matt	y to clayey, traces of sand, moist. er (rootlets) (1%).									
					GS-05							
- 3.5	89.93 3.40	Native Soil:				$\left( \longrightarrow \right)$						
-		Firm to stiff, grey-orange	clayey silt, traces of sand, moist.			$\left \right\rangle$						
<b>4.0</b>					GS-06							
- 4.5												
	88.53 4.80	End of test pit (voluntary	termination)	rихи		()						
-												
- 5.5 - - -												
Rema	emark(s) : Easy to excavate No water infiltration Stables walls The compactness / consistency is estimated											

G	Ð		TEST PIT REP	ORT				Page 1 of 1
			Reference	ce No.: 1261568	34-A1	Test Pit	No.:	TP-104-23
Clien	it :	Medusa Limited Partners	ship			Geodetic ( MTM-9 (N/		Y: 5017713
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Cente					Z: 90.41
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Ran	preliminar gasamy, CEI	P	Location P Date (Start Date (Finis Test Pit De	t) : sh) :	FIGURE 1 2023-07-07 2023-07-07 3.00
ε	Ž E	:	STRATIGRAPHY			MPLE	7	TEST SYMBOL
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content
	90.41 0.00	Ground Surface Topsoil:		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
- - - 0.5			ces of sand, moist. Presence of 1-5%).		GS-01			
-	<u>89.71</u> 0.70	Native Soil: Firm to stiff, grey-brown-c	prange silt, some clay, traces of		GS-02	$\left \right\rangle$		
	89.31 1.10	sand, moist. Firm to stiff, grey-orange	clayey silt, traces of sand, moist.			$\left \right\rangle$		
- 1.5 - -					GS-03			SA
- <b>2.0</b> - - -								
2.5 - - -	07.44				GS-04			
3.0  	87.41 3.00	End of test pit (voluntary	termination)					
- 3.5 -								
- <b>4.0</b> -								
- 4.5 -								
- 5.0 -								
- 5.5 - - -								
Rema		Easy to excavate No water infiltration Stables walls The compactness / consister SA: Soil Aggressiveness	ncy is estimated					

								Page 1 of 1		
G	Ð		TEST PIT REF	PORT						
			Refere	nce No.: 1261568	34-A1	Test Pit	No.:	TP-105-23		
Clien	t :	Medusa Limited Partners	hip			Geodetic CoordinatesX :30MTM-9 (NAD-1983)Y :50				
Proje	ect :	Geotechnical Investigati	ion - Proposed Distribution Center					Z: 94.88		
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.				Location P Date (Start Date (Finis Test Pit De	t) : sh) :	FIGURE 1 2023-07-07 2023-07-07 5.50		
ε	ŻΕ		STRATIGRAPHY			MPLE	7	TEST SYMBOL GSA : Particle Size Analysis		
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content		
	94.88 0.00	Ground Surface Fill:			GS-01	$\sim$				
- - 0.5 -		Brown silt, some clay, tra organic matter (rootlets) (	ces of sand, moist. Presence of 1-5%).		GS-02					
- 1.0										
	93.58									
- 	1.30	Grey silt, some clay to cla Presence of organic matt	ayey, traces of sand, moist. er (rootlets) (1%).		GS-03					
- 2.5 - - 3.0					GS-04					
- 3.5 										
- <b>4.0</b> - -					GS-05			GSA LL = 56% PL = 27%		
- <b>4.5</b> - -	90.38 4.50	Native Soil: Firm to stiff, grey-orange	clayey silt, traces of sand, moist.					W = 28.0%		
- 5.0 - -					GS-06					
- - <b>5.5</b> - - -	89.38 5.50	End of test pit (voluntary	termination)							
Rema		L Easy to excavate No water infiltration Stables walls The compactness / consister	ncy is estimated							

								Page 1 of 1		
G	Ð		TEST PIT REPO	DRT						
			Reference	No.: 126156	84-A1	Test Pit	No.:	TP-106-23		
Clien	it :	Medusa Limited Partners	hip			Geodetic ( MTM-9 (N/		Y: 5017706		
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Center	. or	N			Z: 91.11		
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, ( Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Rangasamy, CEP			Location Plan No.: Date (Start) : Date (Finish) : Test Pit Depth (m):		FIGURE 1 2023-07-07 2023-07-07		
	-		STRATIGRAPHY	<b>,</b> ,	I	MPLE	spur (m).	3.00 TEST SYMBOL		
DEPTH - m	ELEVATION / DEPTH - m	SOIL	DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken		
	91.11 0.00	Ground Surface Topsoil:		2222				OM : Organic Matter Content		
- - - - 0.5	90.80 0.30	Brown silt, some clay, tra organic matter (rootlets) ( Native Soil: Firm to stiff, brown silt, so	me clay, traces of sand and gravel,		GS-01					
- - 1.0	89.91		ic matter (rootlets) (1-5%).		GS-02					
- - 1.5 -	1.20	Firm to stiff, grey silt, som moist.	e clay, traces of gravel and sand,		GS-03					
- <b>2.0</b> - - -	<u>89.11</u> 2.00	Firm to stiff, grey-orange	clayey silt, traces of sand, moist.							
2.5 - - -	88.11				GS-04			LL = 45% PL = 18% W = 31.0%		
3.0   	3.00	End of test pit (voluntary	termination)			<u>,                                     </u>				
3.5 - - -										
<b>4.0</b>  -										
- 4.5 - -										
- 5.0 - -										
- <b>5.5</b> - - -										
Rema	Remark(s) : Easy to excavate No water infiltration Stables walls The compactness / consistency is estimated									

G			TEST PIT REP	ORT				Page 1 of 1
			Referen	ce No.: 1261568	34-A1	Test Pit	No.:	TP-107-23
Clier	nt :	Medusa Limited Partners				Geodetic C MTM-9 (N/		x X : 366586 Y : 5017673
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Cente					Z : 90.65
	on : ited by : ibed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario			Location Plan No.: Date (Start) : Date (Finish) : Test Pit Depth (m):		FIGURE 1 2023-07-07 2023-07-07 3.00
ε	ŽΕ	:	STRATIGRAPHY			MPLE	z	TEST SYMBOL GSA : Particle Size Analysis
DEPTH - m	BLEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content
-	90.65 0.00	Ground Surface Topsoil:				$\wedge$		
		Brown silt, some clay, tra organic matter (rootlets) (	ces of sand, moist. Presence of 1-5%).		GS-01			
F	89.95 0.70	Native Soil:				$\left( \rightarrow \right)$		
- 1.0 -	<u>89.55</u> 1.10	Compact, brown-grey silt, Presence of organic matt Stiff, grey silt, some clay,		· · · ·	GS-02	$\left \right\rangle$		
- - - 1.5 - -					GS-03			
- <b>2.0</b> - -	88.65 2.00	Firm to stiff, grey-orange	clayey silt, traces of sand, moist.					
- 2.5 - -					GS-04			
- 3.0 - -	87.65 3.00	End of test pit (voluntary	ermination)					
- 3.5 - -								
- - 4.0 -								
- 4.5 - -								
- <b>5.0</b> -								
- <b>5.5</b> - - -								
Rema		Easy to excavate No water infiltration Stables walls The compactness / consister	ncy is estimated					

G			TEST PIT REP	ORT				Page 1 of 1
			Referen	ce No.: 1261568	34-A1	Test Pit	No.:	TP-108-23
Clier	it :	Medusa Limited Partners	hip			Geodetic C MTM-9 (N/		Y: 5017672
Proje	ect :	Geotechnical Investigation	on - Proposed Distribution Cente					Z: 91.00
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, o Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Rangasamy, CEP			Location Plan No.: Date (Start) : Date (Finish) : Test Pit Depth (m):		FIGURE 1 2023-07-07 2023-07-07 3.00
E	/ N 1		STRATIGRAPHY			MPLE	-	TEST SYMBOL
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content
-	91.00 0.00	Ground Surface Topsoil:		22222				
-	90.60	Brown silt, some clay, trac organic matter (rootlets) (	ces of sand, moist. Presence of 1-5%).		GS-01			
- 0.5 - - -	0.40	Native Soil: Firm to stiff, grey-brown s Presence of cobbles (1-5)	ilt, some clay and sand, moist. %).		GS-02			
- 1.0	89.90 1.10		a alaysia alaysiy inaaaa afaanad	• • •		$ \longrightarrow $		
-	1.10	moist.	e clay to clayey, traces of sand,					
	89.00				GS-03			
- - - - 2.5	2.00	Firm to stiff, grey-orange	clayey silt, traces of sand, moist.		GS-04			
-								
3.0 - -	88.00 3.00	End of test pit (voluntary t	ermination)	<u> </u>				
- 3.5 -								
- <b>4.0</b> -								
- <b>4.5</b> - -								
- <b>5.0</b> - -								
- <b>5.5</b> - - -								
Rema		Easy to excavate No water infiltration Stables walls The compactness / consister	ncy is estimated					

G	D		TEST PIT REP	PORT				Page 1 of 1		
			Referen	nce No.: 1261568	34-A1	Test Pit	No.:	TP-109-23		
Clien	it :	Medusa Limited Partners	hip			Geodetic C MTM-9 (NA		Y: <b>5017642</b>		
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Center					Z : 90.81		
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Rangasamy, CEP			Location Plan No.: Date (Start) : Date (Finish) : Test Pit Depth (m):		FIGURE 1 2023-07-07 2023-07-07 3.00		
ε	Σ Z E		STRATIGRAPHY			MPLE	z	TEST SYMBOL GSA : Particle Size Analysis		
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content		
-	90.81 0.00	Ground Surface Topsoil:				$\land$				
-	90.51 0.30	Brown silt, some clay, tra \ organic matter (rootlets) (	ces of sand, moist. Presence of 1-5%)		GS-01					
- 0.5 - -	89.91	Native Soil: Firm to stiff, brown silt, so	me clay, traces of sand, moist. %) and organic matter (rootlets)		GS-02					
- 1.0 -	0.90	(1-5%). Firm to stiff, brown silt, sc Presence of organic matt	me clay, traces of sand, moist. er (rootlets) (1%).							
- 1.5 					GS-03			LL = 69% PL = 26% W = 26.0%		
- 	<u>89.01</u> 1.80	Firm to stiff, grey-orange moist.	silt, some clay, traces of sand,		GS-04					
- 3.0 -	87.81 3.00	End of test pit (voluntary t	rermination)							
- 3.5 - -										
- <b>4.0</b> - -										
- 4.5 - -										
- <b>5.0</b> - -										
- 5.5 - - -										
Rema	Remark(s) : Easy to excavate No water infiltration Stables walls The compactness / consistency is estimated									

G	Ð		TEST PIT REPO	ORT				Page 1 of 1		
			Reference	No.: 126156	84-A1	Test Pit	No.:	TP-110-23		
Clien	it :	Medusa Limited Partners	hip			Geodetic ( MTM-9 (N/		Y: 5017640		
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Center					Z : 90.51		
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario			Location Plan No.: Date (Start) : Date (Finish) : Test Pit Depth (m):		FIGURE 1 2023-07-07 2023-07-07 3.00		
ε	Ž E		STRATIGRAPHY			MPLE	7	TEST SYMBOL		
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content		
-	90.51 0.00	Ground Surface Topsoil:								
- - - - - -	90.20 0.30	organic matter (rootlets) ( <b>Native Soil</b> :	ilt, some clay, traces of sand, moist.		GS-01 GS-02					
-1.0										
	89.31 1.20	Firm to stiff, grey silt, som	e clay, traces of sand, moist.			$\left( \right)$				
- <b>1.5</b> - - -	88.51				GS-03					
- 2.0	2.00	becoming grey-orange			GS-04			GSA, H LL = 45% PL = 18%		
- 3.0	87.51 3.00	End of test pit (voluntary	remination)					W = 36.0%		
- - - - 3.5	3.00									
-										
- <b>4.0</b>										
- <b>4.5</b> - -										
- 5.0 - -										
- <b>5.5</b> - - -										
Rema	Remark(s) : Easy to excavate No water infiltration Stables walls The compactness / consistency is estimated									

G			TEST PIT REP	ORT				Page 1 of 1
			Reference	e No.: 126156	84-A1	Test Pit	No.:	TP-111-23
Clien	it :	Medusa Limited Partners				Geodetic C MTM-9 (N/		xs X : 366513 Y : 5017631
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Center					Z : 90.52
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by: Keshini Rangasamy, CEP			Location Plan No.: Date (Start) : Date (Finish) : Test Pit Depth (m):		FIGURE 1 2023-07-07 2023-07-07 3.00
ε	Żε		STRATIGRAPHY			MPLE	7	TEST SYMBOL
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content
_	90.52 0.00	Ground Surface Topsoil:			ŝ			
-	90.17 0.35	organic matter (rootlets) (	ces of sand, moist. Presence of 1-5%).		GS-01	$\left \right\rangle$		
- 0.5		Firm to stiff, brown-grey s	Native Soil: Firm to stiff, brown-grey silt, some clay, traces of sand, moist. Presence of organic matter (rootlets) (1%). Firm to stiff, grey silt, some clay, traces of sand, moist.					
- 1.0 -	89.62 0.90	-	e clay, traces of sand, moist.			$\left \right\rangle$		
- - 1.5					GS-03	X		
-	88.72 1.80	Firm to stiff, grey-orange	silt, some clay to clayey, traces of			$\left( \longrightarrow \right)$		
- 2.0		sand, moist.						
- 2.5 -					GS-04			
- - 3.0 -	87.52 3.00	End of test pit (voluntary	ermination)					
- - 3.5 -								
- - - <b>4.0</b> -								
- - 4.5 -								
- 								
-								
Rema		I Easy to excavate No water infiltration Stables walls The compactness / consister	ncy is estimated		<u>.</u>	I		1

G	Ĥ		TEST PIT REP	ORT				Page 1 of 1
			Reference	e No.: 126156	84-A1	Test Pit	No.:	TP-112-23
Clier	nt :	Medusa Limited Partners	hip			Geodetic C MTM-9 (N/		Y : 5017624
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Center				Z : 90.71	
	on : ited by : ibed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.	Ontario Verified by : Keshini Rangasamy, CEP			Location Plan No.: Date (Start) : Date (Finish) : Test Pit Depth (m):		FIGURE 1 2023-07-07 2023-07-07 3.00
ε	ŽE		STRATIGRAPHY			MPLE	z	TEST SYMBOL GSA : Particle Size Analysis
DEPTH - m	ELEVATION / DEPTH - m	SOIL Ground Surface	DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	H       : Hydrometer Testing         CA       : Chemical Analysis         LL       : Liquid Limit         PL       : Plastic Limit         W       : Water Content         Dup       : Duplicate Sample Taken         OM       : Organic Matter Content
-	90.71 0.00	Topsoil:			GS-01	$\searrow$		
	90.41 0.30	Brown silt, some clay and \ matter (rootlets) (1-5%).	sand, moist. Presence of organic		03-01	$\left \right\rangle$		
0.5 - -	89.81	Native Soil: Firm to stiff, brown silt, so of organic matter (rootlets	me clay and sand, moist. Presence a) (1%).		GS-02			
- 1.0	0.90	Firm to stiff, grey-orange	clayey silt, traces of sand, moist.					
- 1.5 - -					GS-03			
-2.0 	88.71 2.00	Firm to stiff, grey clayey s	ilt to silt and clay, moist.					
2.5 - - -	87.71				GS-04			
	3.00	End of test pit (voluntary t	ermination)					
3.5 - -								
- - 4.0 -								
- 4.5 								
- 5.0 -								
- <b>5.5</b> - - -								
Rema		Easy to excavate No water infiltration Stables walls The compactness / consister	ncy is estimated					

G	Ð		TEST PIT REPO	ORT				Page 1 of 1		
				No.: 1261568	34-A1	Test Pit	No.:	TP-113-23		
Clien		Medusa Limited Partners				Geodetic ( MTM-9 (N/		× X : 366436 Y : 5017625 Z : 90.56		
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Center		.,			2. 90.90		
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.				Location P Date (Star Date (Finis Test Pit De	:) : :h) :	FIGURE 1 2023-07-07 2023-07-07 <b>2.90</b>		
ε	Żε		STRATIGRAPHY			MPLE	7	TEST SYMBOL		
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size Analysis H : Hydrometer Testing CA : Chemical Analysis LL : Liquid Limit PL : Plastic Limit W : Water Content Dup : Duplicate Sample Taken OM : Organic Matter Content		
	90.56 0.00	Ground Surface Topsoil:				$\land$				
	90.21 0.35	Brown silt, some clay, tra organic matter (rootlets) ( Native Soil:	ces of sand, moist. Presence of 1-5%).		GS-01	$\left \right\rangle$				
- 0.5	89.81	Firm to stiff, brown silt, so	me clay, traces of sand, moist.		GS-02					
- - - 1.0	0.75	Presence of organic matt Firm to stiff, grey silt, som								
- - - 1.5					GS-03			SA		
-	88.76		<u> </u>							
- <b>2.0</b> 	1.80	Firm to stiff, grey-orange	clayey silt, traces of sand, moist.		GS-04					
2.5 - -	87.66									
- 3.0 -	2.90	End of test pit (voluntary	ermination)							
- 3.5										
- - - <b>4.0</b> -										
- <b>4.5</b> - -										
- <b>5.5</b> - - - -										
Rema	Remark(s) : Easy to excavate No water infiltration Stables walls The compactness / consistency is estimated SA: Soil Aggressiveness									

G	Ð		TEST PIT REPO	ORT					Page 1 of 1
				No.: 1261568	34-A1	Test Pit			P-114-23
Clien		Medusa Limited Partners				Geodetic ( MTM-9 (N			366577 5017568 90.27
Proje	ect :	Geotechnical Investigati	on - Proposed Distribution Center					£.	50.27
	on : ted by : bed by :	Bill Leathem Drive, Ottawa, Demolition Plus Mathieu Chénier, Tech.				Location P Date (Star Date (Finis Test Pit De	t) : sh) :		FIGURE 1 2023-07-07 2023-07-07 3.00
ε	Ž E	:	STRATIGRAPHY			<b>MPLE</b>	7	TEST S	
DEPTH - m	ELEVATION / DEPTH - m		DESCRIPTION	SYMBOL	SAMPLE TYPE AND NUMBER	STATE	WATER INFILTRATION	GSA : Particle Size H : Hydrometer' CA : Chemical An LL : Liquid Limit PL : Plastic Limit W : Water Conte Dup : Duplicate Sa OM : Organic Matt	Testing alysis nt mple Taken
	90.27 0.00	Ground Surface Topsoil:				$\wedge$		_	
- - 0.5	89.96 0.30	organic matter (rootlets) ( Native Soil:			GS-01	$\left \right\rangle$			
-		Firm to stiff, brown silt, so Presence of organic matt	me clay, traces of sand, moist. er (rootlets) (1%).		GS-02				
- 1.0 -	<u>89.37</u> 0.90	-	silt, some clay to clayey, traces of			$\left \right\rangle$			
- 1.5					GS-03				
- - 2.0				•					
- - <b>2.5</b> -					GS-04			SA	
	87.27								
-	3.00	End of test pit (voluntary	termination)						
3.5  -									
- 4.5 -									
- 5.0 -									
- - 5.5									
-									
Rema		Easy to excavate No water infiltration Stables walls The compactness / consister SA: Soil Aggressiveness	ncy is estimated						

Reference No.	11227097-A1					Page:	1 of 1		
G	HD		TEST PIT REP	ORT	TEST PIT No	o. TP-	01		
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTA <sup>*</sup> LEIKIN DRIVE AND M ONTARIO		DINTERSECTION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366239.2 Y : 5017861.2 Z : 90.67					
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>M. CHÉNIER</li> <li>2021-05-03</li> <li>MA. RICHARD / A. F</li> <li>2021-05-03</li> </ul>	IORILLI	Sample type       CA : Chemical analysis     PS : Proctor Sample       MSS: Manual split spoon     AU: Auger       RC : Rock core     GS(E) : Grab sample (environment)			Manual tests         PA : Panda (q_d)         PP : Portable penetrometer ( $C_u$ )         DP: Dynamic penetrometer ( $E_{25}$ )         GVT: Geonor Vane tester ( $C_u$ )			
Depth (m) 0,0	Elevation (m) El		STRATIGR	APHY	Sample type & Number	Tests Type	¥ <		
-		Clayey silt, t	native soil / topsoil: races of sand. ots and organics		GS-1 GSE-1		2		
0.30	90.37		stiff, brown-grey silt and clay, very i	noist	GS-2				
	89.87	becoming g			GS-3	w = 33.0% WI = 63.0% Wp = 26.0 %			
	89.17	becoming st	iff, saturated		GS-4				
3.0	87.87	End of test p	pit				<		
		Note: Slight water	infiltration at 2.80m						
3.5 — — —									
4.0									
4.5									



Photo 1 : TP-01 excavation.



Photo 2 : TP-01 materials.



## Test Pit No. TP-01 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD			TEST PIT RE	PORT	. т	EST PIT No	. TP	P-02	
PROJECT:		SORTATIO	ON FACILITY RIVALE ROAD	INTERSECTION, NEPEAN,	GEODETIC           COORDINATES (m)           (MTM, NAD-83)           X : 366350.8           Y : 5017942.4           Z : 90.59			<ul><li>INFILTRATION</li><li>WATER LEVEL</li></ul>		
DESCRIBED BY:	M. CHÉNIEF	२		Sa	ample typ	be	N			
DATE:	2021-05-03			CA : Chemical analysis	PS : F	Proctor Sample	PA : Panda (q <sub>d</sub> )			
	MA. RICHA	ARD / A. FIO	RILLI	MSS: Manual split spoon	AU: A	-	PP : Portable penetrometer ( DP: Dynamic penetrometer (			
DATE:	2021-05-03			RC : Rock core GS(E) : Grab sample (environment)			GVT: Geo	nor Vane teste		
Depth (m)	Elevation (m)	Symbol		STRATIG	RAPHY		Sample type &	Tests	<b>_</b>	
0,0	90.59	S	Domouldad	native soil / topsoil:			Number	Туре	<	
-			Clayey silt, tr	native soil / topsoil: aces of sand. ts and organics			GS-1			
0.30	90.29		Native soil: Stiff to very s	tiff, brown silt and clay, moist			GS-2			
			becoming gre				GS-3			
	89.09		becoming sti	ff, saturated			GS-4			
3.0 - 3.00 - 3.00 	87.59		End of test pi Note: No water infil							

Reference No. 11227097-A1



Photo 1 : TP-02 excavation.



Photo 2 : TP-02 materials.



## Test Pit No. TP-02 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD	TEST PIT REPORT	- те	EST PIT No	o. TP-	03
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATION FACILI LEIKIN DRIVE AND MERIVALE R ONTARIO		GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366431.0 Y : 5017938.4 Z : 90.52		- INFILTRATION	
DESCRIBED BY	: M. CHÉNIER	Sample ty	De	N	Manual tests	
DATE: VERIFIED BY: DATE:	2021-05-03 MA. RICHARD / A. FIORILLI 2021-05-03	MSS: Manual split spoon AU: A	Proctor Sample uger ) : Grab sample (environment)	PP : Porta DP: Dyna	PA : Panda $(q_d)$ PP : Portable penetrometer $(C_u)$ DP: Dynamic penetrometer (E $_{25})$ GVT: Geonor Vane tester $(C_u)$	
Depth (m) 0,0	Elevation G (m) E 90.52	STRATIGRAPHY	,	Sample type & Number	Tests Type	<b>▼</b> <
-	Clayey s	<b>ded native soil / topsoil:</b> ilt, traces of sand. f roots and organics		GS-1		
0.5 - 0.30		ery stiff, brown silt and clay, moist		GS-2		
		g grey, very moist		GS-3		
	88.72 becomin	g stiff with traces of sand, saturated		GS-4		
	87.62 End of t Note: No wate	est pit				

See the attached explicative note for the complete list of symbols and abbreviations

Reference No. 11227097-A1



Photo 1 : TP-03 excavation.



Photo 2 : TP-03 materials.



#### Test Pit No. TP-04 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD		TEST PIT REPORT	r ·	TEST PIT No	o. TP-	04
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SOR <sup>-</sup> LEIKIN DRIVE ANI ONTARIO		D INTERSECTION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366476.0 Y : 5018013.0 Z : 90.46		- INFILTRATION	
DESCRIBED BY	: M. CHÉNIER		Sample ty	pe	I	Vanual tests	
DATE:	2021-05-03		CA : Chemical analysis PS : I	Proctor Sample	PA : Pan		(= )
VERIFIED BY:	MA. RICHARD / A	A. FIORILLI	MSS: Manual split spoon AU: A	-		able penetromete amic penetromete	
DATE:	2021-05-03	i	RC : Rock core GS(E	:) : Grab sample (environment	) GVT: Ge	onor Vane tester	(C <sub>u</sub> )
Depth (m) 0,0	Elevation (m)		STRATIGRAPH	Y	Sample type &	Tests Type	Ĭ ↓ く
0,0	90.46		I native soil / topsoil:		Number	Турс	<b>``</b>
-		Clayey silt,	traces of sand. bots and organics		GS-1 GSE-1		
0.30	90.16	Native soil: Stiff to very	stiff, brown silt and clay, moist		GS-2		
		becoming v			GS-3		
	66.60	becoming s	tiff with traces of sand, grey, saturated		GS-4		
3.0					GS-5		
	87.36	End of test Note: Slight water	pit infiltration at 3.10m				<

Reference No. 11227097-A1



Photo 1 : TP-04 excavation.



Photo 2 : TP-04 materials.



#### Test Pit No. TP-04 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD			TEST PIT RE	PORT	. т	EST PIT No.	. TF	P-05	
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATION FACILITY LEIKIN DRIVE AND MERIVALE ROAD ONTARIO			INTERSECTION, NEPEAN,		GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366565.4 Y : 5018013.4 Z : 90.60				
DESCRIBED BY	: M. CHÉNIEF	र		Sa	ample typ	be	N	anual tests		
DATE:	2021-05-03			CA : Chemical analysis	PS : F	Proctor Sample	PA : Pand	a (q <sub>d</sub> )		
VERIFIED BY:	MA. RICHA	RD / A. FIC	ORILLI	MSS: Manual split spoon	AU: A		PP : Portable penetrometer ( $C_u$ ) DP: Dynamic penetrometer ( $E_z$			
DATE:	2021-05-03			RC : Rock core	GS(E)	: Grab sample (environment)		nic penetrome nor Vane teste		
Depth (m)	Elevation (m)	Symbol		STRATIG	RAPHY	,	Sample type &	Tests	<u> </u>	
0,0	90.60	Syı					م Number	Туре	<	
-			Clayey silt, tr	<b>native soil / topsoil:</b> aces of sand. ots and organics			GS-1			
0.30	90.30		Native soil: Stiff to very s	tiff, brown silt and clay, moist			GS-2			
1.0	<u>89.90</u> -		becoming gre	ey, very moist			GS-3			
2.0							GS-4			
2.5			becoming sti	ff, saturated			GS-5			
3.0 - 3.00	87.60		End of test p Note: No water infil							
4.0										
4.5 —										

See the attached explicative note for the complete list of symbols and abbreviations

Reference No. 11227097-A1



Photo 1 : TP-05 excavation.



Photo 2 : TP-05 materials.



# Test Pit No. TP-05 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No. 11227097-A1		Page: 1 of 1
GHD	TEST PIT REPORT	TEST PIT No. TP-06
CLIENT: MEDUSA LP PROJECT: PROPOSED SORTAT LOCATION: LEIKIN DRIVE AND M	ETIC DINATES (m) NAD-83) C - INFILTRATION 6603.7 18084.5 F - WATER LEVEL	
DESCRIBED BY: M. CHÉNIER DATE: 2021-05-04 VERIFIED BY: MA. RICHARD / A. F DATE: 2021-05-04		Manual tests
Depth (m)Elevation (m)R C C C0,090.61	STRATIGRAPHY	Sample     Tests       type     Type       &     Type
0.30 90.31	Remoulded native soil / topsoil:         Clayey silt, traces of sand.         Traces of roots and organics         Native soil:         Officient soil:	GS-1 GSE-1
0.5	Stiff to very stiff, brown silt and clay, moist	GS-2
	becoming grey, very moist	GS-3
	becoing stiff, saturated	
2.5		GS-4
3.0 3.00 87.61	End of test pit Note: No water infiltration	
4.5		



Photo 1 : TP-06 excavation.



Photo 2 : TP-06 materials.



## Test Pit No. TP-06 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No.	11227097-	A1						Page:	1 of 1	
G	HD			TEST PIT RE	PORT	г т	EST PIT No	o. TP-	-15	
CLIENT: PROJECT: LOCATION:	PROJECT: PROPOSED SORTATION FACILITY (MTM, NAD-83) LEIKIN DRIVE AND MERIVALE ROAD INTERSECTION NEDEAN X: 366292.5 X: 366292.5									
DESCRIBED BY: M. CHÉNIER DATE: 2021-05-03 VERIFIED BY: MA. RICHARD / A. FIORILLI DATE: 2021-05-03			CA : Chemical analysis MSS: Manual split spoon RC : Rock core	AU: Au	roctor Sample	$\begin{tabular}{ c c c c c } \hline Manual tests \\ \hline PA : Panda (q_d) \\ PP : Portable penetrometer (C_u) \\ DP: Dynamic penetrometer (E_{25}) \\ GVT: Geonor Vane tester (C_u) \\ \hline \end{tabular}$				
Depth (m) 0,0	Elevation (m) 90.65	Symbol		STRATIO	RAPHY		Sample type & Number	Tests Type	Ĭ. ▼ <	
-			Clayey silt, tr Traces of roo	native soil / topsoil: races of sand. ots and organics			GS-1			
0.30	90.35		Native soil: Stiff to very s	stiff, brown silt and clay, moist			GS-2			
				ey, very moist			GS-3			
2.0	<u>89.05</u> -		becoming sti	iff, saturated			GS-4			
3.0	87.85		End of test p	it					<	
3.5			Note: Slight water i	infiltration at 2.80m						
4.0										
4.5 — - - - -										



Photo 1 : TP-15 excavation.



Photo 1 : TP-15 materials.



#### Test Pit No. TP-15 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No.	. 11227097-A1						Page:	1 of 1
в	HD		TEST PIT RE	PORT	т	EST PIT No	. TP-	16
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTAT LEIKIN DRIVE AND M ONTARIO		DINTERSECTION, NEPEAN,		GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366351.7 Y : 5017860.4 Z : 90.62		· INFILTRATION	
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>M. CHÉNIER</li> <li>2021-05-03</li> <li>MA. RICHARD / A. F</li> <li>2021-05-03</li> </ul>	IORILLI	CA : Chemical analysis MSS: Manual split spoon RC : Rock core	AU: Au	e roctor Sample	PA : Pand PP : Porta DP: Dynar	lanual tests a (q₀) ble penetromete nic penetromete nor Vane tester	er (E <sub>25</sub> )
Depth (m) 0,0	Elevation (m) ک 90.62 ס		STRATIG	RAPHY		Sample type & Number	Tests Type	¥ <
		Clayey silt, t Traces of ro	native soil / topsoil: races of sand. ots and organics			GS-1 GSE-1		
0.30	90.32	Native soil: Stiff to very s	stiff, brown silt and clay, moist			GS-2		
1.0		becoming gr	rey, very moist			GS-3		
	89.12	becoming st	iff, saturated			GS-4		
2.5						GS-5		
3.0 <u>3.00</u> - 3.00 	87.62	End of test p Note: No water infi						

See the attached explicative note for the complete list of symbols and abbreviations



Photo 1 : TP-16 excavation.



Photo 2 : TP-16 materials.



### Test Pit No. TP-16 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

CLENT:     MEDUSA LP     CEODETIC     COORDNATES (m) (MTM, NAD-83)     - NFILTRATION       PROJECT:     PROPOSED SORTATION FACILITY     COORDNATES (m) (MTM, NAD-83)     - NFILTRATION       LOCATION:     LEKKIN DRIVE AND MERIVALE ROAD INTERSECTION, NEPEAN, ONTARCO     - Sinther Sinther Sinther Sinther PS: Protor Simple     - Manual tests       DATE:     2021-05-03     CA: Chemical analysis (C: Chemical analysis 2021-05-03     PS: Protor Simple     - Manual tests       DATE:     2021-05-03     RC: Roak core     GS(E): Grab sample (environment)     PP: Optimic penetrometer CDP, Optimic penetrometer CDP, Optimic penetrometer CDP, Optimic penetrometer CDP, Optimic penetrometer CDP, Simple     - Manual tests       0.0     90,59     STRATIGRAPHY     Simple Water Simple     - Tests Water Simple       0.0     90,29     Matrix soil: Sett to very sett, brown silt and day, meist     GS-2       0.5     90,29     Becoming grey, very moist     - GS-2       1.0     -     -     -       1.45     88.14     End of test pit Note: No water infiltration     -       3.0     -     -     -       3.0     -     -     -	G	HD		TEST PIT REF	PORT	· ·	EST PIT No	). TF	P-17
DATE:     2021-05-03     PS: Prodor Sample     PA: Panda (a)       VERIFIED BY:     MA. RICHARD / A. FIORILLI     CA: Chemical analysis     PS: Frodor Sample     AU: Auger       DATE:     2021-05-03     CA: Chemical analysis     SC: Rock core     GS(E): Grab sample (environment)     PP: Portable penetrometer       Depth (m)     Elevation     Tests     Tests     Type       0.0     90,59     Remoulded native soil / topsoli:     Clavey slift, traces of sand.     GS-1       0.5     0.30     90,29     Native soil:     GS-2       0.6     0.80     89.79     Native soil:     GS-3       1.5     1.45     89.14     End of test pit     Note:       No water infitration     Soil:     GS-3     GS-3	PROJECT:	PROPOSED SORTATIO		) INTERSECTION, NEPEAN,		COORDINATES (m) (MTM, NAD-83) X : 366450.1 Y : 5017904.3	_		
VERIFIED BY:     M.A. RICHARD / A. FIORILLI DATE:     2021-05-03     MSS: Manual split spoon RC: Rock core     AU: Auger RC: Rock core     PP: Portable penetrometer DP: Dynamic penetro	DESCRIBED BY:	: M. CHÉNIER		Sa	mple typ	De	1	Manual tests	
VERIFIED BY:     M.A. RICHARD / A. FIORILLI DATE:     MSS: Manual spill spoon     AU: Auger RC: Rock core     PP: Portable penetrometer GSE(): Grab sample (environment)       Depth (m)     Elevation (m)     3     3     Tests     Depth (m)     Sample becoming grey, very moist     Tests       0.0     90.59     6     Remoulded native soil / topsoli: Clayey silt, traces of sand. Traces of roots and organics     GS-1     GS-1       0.5     0.30     90.29     Native soil: Stiff to very stiff, brown silt and clay, moist     GS-2       1.0     0.80     89.79     becoming grey, very moist     GS-3       1.5     1.45     89.14     End of test pit Note: No water infitration     GS-3       2.0     0.30     0.21     Note: No water infitration     Infitration	DATE:	2021-05-03		CA : Chemical analysis	PS : P	Proctor Sample	PA : Pane	da (q <sub>d</sub> )	
DATE:         2021-09-03         RC: Rock core         CS(E): Grab sample (environment)         GVT: Genore Varie tester (C           Depth (m)         Elevation         0	VERIFIED BY:	MA. RICHARD / A. FIC	ORILLI						
Depth (m)         Elevation (m)         0.0         90.59         STRATIGRAPHY         Sample by per- mathematical (Number         Tests Type           0.0         90.59         0.5         -         <	DATE:	2021-05-03			GS(E)	: Grab sample (environment			
Depth (m)         Level of model         Line         STRATIGRAPHY         Uppe Number         Type           0.0         90.59         G         Remoulded native soil / topsoil: Clayey silt, traces of sand. Traces of roots and organics         GS-1         GS-1           0.5         0.30         90.29         Matrice soil         Stiff to very stiff, brown silt and clay, moist         GS-2           0.5         0.80         89.79         becoming grey, very molet         GS-3           1.0         1.45         89.14         End of test pit Note: No water infiltration         GS-3           2.0         1.45         89.14         End of test pit Note:         Image: Note:         Image: Note:           3.0         1.5         1.45         89.14         End of test pit         Image: Note:         Image: Note:           3.0         1.5         1.45         89.14         Image: Note:         Image: Note:         Image: Note:           3.0         1.5         1.45         1.45         1.45         1.45         1.45         1.45         1.45         1.45			1						
30.39         Remoulded native soil / topsoil: Clays sit, traces of sand. Traces of rosand organics         GS-1           0.5         0.30         90.29         Native soil: Stiff to very stiff, brown sit and clay, moist         GS-2           0.5         0.80         89.79         becoming grey, very moist         GS-3           1.0         0.80         89.79         becoming grey, very moist         GS-3           1.5         1.45         89.14         End of test pit Note: No water infiltration         GS-3           2.0         1.45         89.14         End of test pit         Note: No water infiltration         GS-3				STRATIG	RAPHY		type	Tests	-
Clappe silt, races of sand. Traces of roots and organics         GS-1           0.5         0.30         90.29         Native soil: Stiff to very stiff, brown silt and clay, moist         GS-2           0.5         0.80         89.79         becoming grey, very moist         GS-3           1.0         1.45         89.14         End of test pit Note: No water infiltration         GS-3           2.0         1.45         89.14         End of test pit Note: No water infiltration         Image: State of the state of t	0,0	90.59 õ					Number	Туре	<
0.30         90.29         Native soll: Stiff to very stiff, brown silt and clay, moist         GS-2           0.80         89.79         becoming grey, very moist         GS-3           1.0         -         -         -         -           1.0         -         -         -         -           1.0         -         -         -         -           1.0         -         -         -         -           1.5         -         1.45         89.14         End of test pit Note: No water infiltration         -           2.0         -         -         -         -         -           2.5         -         -         -         -         -           3.0         -         -         -         -         -	_		Clayey silt, tr	races of sand.			GS-1		
1.0     GS-3       1.5     1.45       89.14     End of test pit       Note:       No water infiltration       2.0       3.0			Native soil:				GS-2		
2.0     -       2.5     -       3.0     -	-	89.79	becoming gre	ey, very moist			- GS-3		
		89.14	Note:						

Reference No. 11227097-A1



Photo 1 : TP-17 excavation.



Photo 10 : TP-17 materials.



# Test Pit No. TP-17 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No.	11227097-	A1						Page:	1 of 1
G	HD			TEST PIT RE	PORT	т	EST PIT No	o. TP-	-18
CLIENT: PROJECT: LOCATION:		PROPOSED SORTATION FACILITY (MTM, NAD-83) EIKIN DRIVE AND MERIVALE ROAD INTERSECTION, NEPEAN, Y : 5017946.2						- INFILTRATION - WATER LEVE	
DESCRIBED BY DATE: VERIFIED BY: DATE:	: M. CHÉNIEF 2021-05-03 MA. RICHA 2021-05-03		DRILLI	CA : Chemical analysis MSS: Manual split spoon RC : Rock core	AU: Au	roctor Sample	PA : Pan PP : Port DP: Dyna	Manual tests da (q <sub>d</sub> ) able penetromete imic penetromete onor Vane tester	er (E <sub>25</sub> )
Depth (m) 0,0	Elevation (m) 90.55	Symbol		STRATIO	BRAPHY		Sample type & Number	Tests Type	¥ <
-			Clayey silt, tr Traces of roo	<b>native soil / topsoil:</b> aces of sand. ots and organics			GS-1		
0.30	90.25		Native soil: Stiff to very s	stiff, brown silt and clay, moist			GS-2		
1.0	89.65		becoming gro	ey, very moist			 GS-3		
1.5 <u>1.50</u> - - 2.0 <u>-</u>	89.05		End of test p Note: No water infil						
  2.5 									
3.0									
4.0									
4.5 — — — — —									



Photo 1 : TP-18 excavation.



Photo 2 : TP-18 materials.



# Test Pit No. TP-18 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD		TEST PIT REP	ORT	TEST PIT NO	o. TP	-19
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATI LEIKIN DRIVE AND ME ONTARIO		DINTERSECTION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366584.3 Y : 5017980.1 Z : 90.68	< ¥	- INFILTRATIO	
DESCRIBED BY	: M. CHÉNIER		San	iple type		Manual tests	
DATE:	2021-05-04		CA : Chemical analysis	PS : Proctor Sample	PA : Pan	da (q <sub>d</sub> )	
VERIFIED BY:	MA. RICHARD / A. FI	ORILLI		AU: Auger		able penetromet	
DATE:	2021-05-04		RC : Rock core	GS(E) : Grab sample (environme		amic penetromet onor Vane teste	
Depth (m)	Elevation (m) El		STRATIGR	Δρηγ	Sample type &	Tests	<u> </u>
0,0	90.68		UNANOR		& Number	Туре	<
-		Clayey silt, tr Traces of roo	<b>native soil / topsoil:</b> aces of sand. ots and organics		GS-1 GSE-1	_	
0.30	90.38	Native soil: Stiff to very s	stiff, brown silt and clay, moist		GS-2		
	89.18	becoming gr becoming gr End of test p Note: No water infi			GS-3		
3.0							
3.5 —							
4.0							
4.5							

Reference No. 11227097-A1



Photo 1 : TP-19 excavation.



Photo 1 : TP-19 materials.



## Test Pit No. TP-19 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No.	11227097-A1					Page: 1 of 1
G	HD		TEST PIT RE	PORT	TEST PIT No	o. TP-20
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTA LEIKIN DRIVE AND M ONTARIO		) INTERSECTION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366653.2 Y : 5017996.1 Z : 90.52		- INFILTRATION - WATER LEVEL
DESCRIBED BY DATE: VERIFIED BY: DATE:	<sup>:</sup> M. CHÉNIER 2021-05-04 MA. RICHARD / A. F 2021-05-04	FIORILLI	CA : Chemical analysis MSS: Manual split spoon RC : Rock core	ample type PS : Proctor Sample AU: Auger GS(E) : Grab sample (environme	PA : Pano PP : Porta DP: Dyna	Manual tests da $(q_d)$ able penetrometer $(C_u)$ mic penetrometer $(E_{25})$ ponor Vane tester $(C_u)$
Depth (m) 0,0	Elevation (m) (m) (m) (m) (m) (m) (m) (m) (m) (m)		STRATIG	RAPHY	Sample type & Number	Tests 里 Type ✔
0.30	90.22	Clayey silt, tr Traces of roo Native soil:	native soil / topsoil: races of sand. ots and organics stiff, brown silt and clay, moist		GS-1 GSE-1	
0.5			ey, very moist		GS-2	
					GS-3	
	89.12	becoming sti	iff with traces of sand, saturated		GS-4	
2.5					GS-5	
3.0 - 3.00 - 3.00 	87.52	End of test p Note: Slight water	it			<



Photo 1 : TP-20 excavation.



Photo 2 : TP-20 materials.



### Test Pit No. TP-20 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No.	11227097-A1					Page: 1 of 1
6	HD	ТІ	EST PIT REPORT	- TE	ST PIT No.	TP-24
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATI LEIKIN DRIVE AND ME ONTARIO	ON FACILITY RIVALE ROAD INTERSECT	TION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366263.6 Y : 5017757.8 Z : 90.68		NFILTRATION WATER LEVEL
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>M. CHÉNIER</li> <li>2021-05-03</li> <li>MA. RICHARD / A. FIG</li> <li>2021-05-03</li> </ul>		anual split spoon AU: A	Proctor Sample	PA : Panda PP : Portab DP: Dynam	inual tests $(q_d)$ le penetrometer $(C_u)$ ic penetrometer $(E_{25})$ or Vane tester $(C_u)$
Depth (m) 0,0	Elevation (m)		STRATIGRAPHY	,	Sample type & Number	Tests ⊻ Type ✓
0.5	30.06	Remoulded native soil / t Clayey silt, traces of sand. Traces of roots and organi			GS-1	
0.50 	90.18	Native soil: Stiff to very stiff, brown silt			GS-2	
- 1.00 	89.68	becoming grey, very moist	t 		GS-3	
2.00	88.68	becoming stiff, saturated			GS-4	
3.0 - 3.00 	87.68	End of test pit Note: No water infiltration				
4.5						



Photo 1 : TP-24 excavation.



Photo 2 : TP-24 materials.



## Test Pit No. TP-24 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

GHD		TEST PIT REPOR	r ı	EST PIT No	o. TP-:	25
	SED SORTATION FACILITY DRIVE AND MERIVALE ROAD	) INTERSECTION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366327.0 Y : 5017764.9 Z : 90.71	_	- INFILTRATION	
DESCRIBED BY: M. CHÉI	NIER	Sample ty	pe	_	Manual tests	
DATE: 2021-05	-03	CA : Chemical analysis PS :	Proctor Sample	PA : Pan	( lu)	
VERIFIED BY: MA. RI	CHARD / A. FIORILLI	MSS: Manual split spoon AU: A	Auger		able penetromete amic penetromete	
DATE: 2021-05	-03	RC : Rock core GS(E	i) : Grab sample (environment)		onor Vane tester	
Depth (m) Eleva		STRATIGRAPH	Y	Sample type &	Tests	¥ <
0,0 90.7		native soil / topsoil:		Number	Туре	
	Clayey silt, t Traces of ro	races of sand. ots and organics		GS-1 GSE-1	-	
0.30 90.4		stiff, brown silt and clay, moist		GS-2		
		ey, very moist to saturated		GS-3	w = 37.0% WI = 53.0% Wp = 24.0 %	
2.5				GS-4		
3.0 2.90 87.8	Stiff, grey cla	ayey silt, saturated		GS-5		
3.30 87.4	End of test p	bit			-	
3.5 —	Note: No water inf	iltration				
4.0						
4.5						

See the attached explicative note for the complete list of symbols and abbreviations

Reference No. 11227097-A1



Photo 1 : TP-25 excavation.



Photo 2 : TP-25 materials.



## Test Pit No. TP-25 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No. 1	1227097-A1				Page: 1 of 1
GH	D	TEST PIT REPORT	TE	st Pit No.	TP-26
PROJECT: P	IEDUSA LP PROPOSED SORTATION EIKIN DRIVE AND MERIN DNTARIO	_	NFILTRATION WATER LEVEL		
VERIFIED BY: M	Л. CHÉNIER 2021-05-03 ЛА. RICHARD / А. FIORII 2021-05-03	LLI MSS: Manual split spoon AU: Aug	octor Sample	PA : Panda PP : Portab DP: Dynam	inual tests $(q_d)$ le penetrometer $(C_u)$ ic penetrometer $(E_{25})$ or Vane tester $(C_u)$
Depth (m) 0,0	Elevation 0 (m) E 90.68	STRATIGRAPHY		Sample type & Number	Tests Ţype
-	F F F	Remoulded native soil / topsoil: Clayey silt, traces of sand. Traces of roots and organics		GS-1	
0.30		Native soil: Stiff to very stiff, brown silt and clay, moist		GS-2	
		pecoming grey, very moist		GS-3	
	88.88	becoming stiff, saturated		GS-4	
	1	End of test pit Note: No water infiltration			

See the attached explicative note for the complete list of symbols and abbreviations



Photo 1 : TP-26 excavation.



Photo 2 : TP-26 materials.



### Test Pit No. TP-26 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD		TEST PIT REPO	RT	TEST PIT No	o. TP	-27
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTAT LEIKIN DRIVE AND M ONTARIO		DINTERSECTION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366471.1 Y : 5017866.9 Z : 90.58	< ¥	- INFILTRATION	
DESCRIBED BY	: M. CHÉNIER		Sample	e type		Manual tests	
DATE: VERIFIED BY:	2021-05-03 MA. RICHARD / A. F	IORILLI		S : Proctor Sample J: Auger	PA : Pan PP : Port	da (q <sub>d</sub> ) able penetromet	er (C <sub>u</sub> )
DATE:	2021-05-03			S(E) : Grab sample (environmen		amic penetromet	
Depth (m)	Elevation (m) Elevation (m) (m) (m) (m) (m) (m) (m) (m) (m) (m)		STRATIGRAF	РНҮ	Sample type	onor Vane tester Tests	Ţ Ţ
0,0	90.58				& Number	Туре	<
		Clayey silt, t	I <b>native soil / topsoil:</b> races of sand. ots and organics		GS-1 GSE-1		
0.5 - 0.30	90.28	Native soil: Stiff to very	stiff, brown silt and clay, moist		GS-2	-	
	89.08	becoming g			GS-3		
4.5 — — — — —							

Reference No. 11227097-A1



Photo 1 : TP-27 excavation.



Photo 2 : TP-27 materials.



#### Test Pit No. TP-27 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD		TEST PIT REI	PORT		TEST PIT No	o. TP	-28
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATI LEIKIN DRIVE AND ME ONTARIO		INTERSECTION, NEPEAN,		GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366545.7 Y : 5017908.9 Z : 90.71	<	- INFILTRATIO	
DESCRIBED BY	: M. CHÉNIER		Sa	mple typ	e		Manual tests	
DATE:	2021-05-03		CA : Chemical analysis	PS : P	roctor Sample	PA : Pan		
VERIFIED BY:	MA. RICHARD / A. FI	ORILLI	MSS: Manual split spoon	AU: A	uger		able penetromet	
DATE:	2021-05-03		RC : Rock core	GS(E)	: Grab sample (environmen		amic penetromet onor Vane tester	
Depth (m)	Elevation (m) Elevation (m)		STRATIG	RAPHY		Sample type &	Tests	¥ <
0,0	90.71 O	Remoulded	native soil / topsoil:			Number	Туре	
-		Clayey silt, tr Traces of roc	aces of sand. ots and organics			GS-1 GSE-1		
0.30	90.41	Native soil: Stiff to very s	tiff, brown silt and clay, moist			GS-2		
	89.21	becoming gro	ey, very moist			GS-3		
	00.21	Note: No water infi						
2.5 —								
3.0								
3.5 —								
4.0								
- - 4.5								

Reference No. 11227097-A1



Photo 1 : TP-28 excavation.



Photo 2 : TP-28 materials.



#### Test Pit No. TP-28 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD		TEST PIT REF	PORT		TEST PIT No	o. TP	-29
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTAT LEIKIN DRIVE AND MI ONTARIO		DINTERSECTION, NEPEAN,	C (1	EODETIC COORDINATES (m) MTM, NAD-83) X : 366605.4 Y : 5017942.6 Z : 90.72		- INFILTRATIO - WATER LEVI	
DESCRIBED BY			Sa	mple type	2.30.72	r	Vanual tests	
DATE: VERIFIED BY: DATE:	2021-05-04 MA. Richard / A. Fi 2021-05-04	ORILLI	CA : Chemical analysis MSS: Manual split spoon RC : Rock core	PS : Procto AU: Auger	r Sample ab sample (environmen	PA : Pano PP : Porta		ter (E <sub>25</sub> )
Depth (m) 0,0	Elevation (m) Elevation (m)		STRATIG	RAPHY		Sample type & Number	Tests Type	¥ (
	90.72	Clayey silt, t	native soil / topsoil: races of sand. ots and organics			GS-1		
0.30	90.42	Native soil: Stiff to very	stiff, brown silt and clay, moist			GS-2		
1.0	90.02	becoming gr	rey, very moist			GS-3		
1.5 <u>1.45</u> - - - -	89.27	End of test p Note: No water inf						
2.0								
2.5 —								
3.0								
3.5 — — —								
4.0								
4.5 —								

Reference No. 11227097-A1



Photo 1 : TP-29 excavation.



Photo 2 : TP-29 materials.



# Test Pit No. TP-29 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No. 1122	27097-A1				Page: 7	1 of 1
GHD		TEST PIT REPORT	TE	ST PIT No.	TP-	30
PROJECT: PROF	USA LP POSED SORTATION FACILITY IN DRIVE AND MERIVALE ROAD ARIO	_	INFILTRATION			
VERIFIED BY: MA.	HÉNIER -05-03 . RICHARD / A. FIORILLI -05-03	MSS: Manual split spoon AU: Au	roctor Sample	PA : Panda PP : Portal DP: Dynan	anual tests a (q <sub>d</sub> ) ble penetromete nic penetromete nor Vane tester	r (E <sub>25</sub> )
0.0	wation 0.56	STRATIGRAPHY		Sample type & Number	Tests Type	¥ <
-	Remoulded Clayey silt, tr Traces of roc	native soil / topsoil: aces of sand. ts and organics		GS-1 GSE-1		/
0.30 9	00.26 Native soil: Stiff to very s	tiff, brown silt and clay, moist		GS-2		
1.0 — — — — — — — — — — — — — — — — — — —		ey, very moist		GS-3		
	38.86 becoming still	ff with traces of sand		GS-4		
	37.96 Stiff, grey sar	ndy and clayey silt, saturated		GS-5		
3.0 <u>3.00</u> 8 - 3.00 8 - 4.0 <u>- 4.0</u> - 4.5 <u></u>	37.56 End of test pi Note: No water infil					

See the attached explicative note for the complete list of symbols and abbreviations



Photo 1 : TP-30 excavation.



Photo 2 : TP-30 materials.



# Test Pit No. TP-30 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No	. 11227097-	A1						Page:	1 of 1	
G	HD			TEST PIT RE	PORT		TEST PIT No	o. TP	-31	
CLIENT: PROJECT: LOCATION:	PROJECT: PROPOSED SORTATION FACILITY (MTM, NAD-83) X : 366627.4 X : 5672702 C							- INFILTRATION		
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>Y: M. CHÉNIEF</li> <li>2021-05-04</li> <li>MA. RICHA</li> <li>2021-05-04</li> </ul>		ORILLI	CA : Chemical analysis MSS: Manual split spoon RC : Rock core	MSS: Manual split spoon AU: Auger			Manual tests         PA : Panda (q <sub>d</sub> )         PP : Portable penetrometer (C <sub>u</sub> )         DP: Dynamic penetrometer (E $_{25}$ )         GVT: Geonor Vane tester (C <sub>u</sub> )		
Depth (m) 0,0	Elevation (m) 90.41	Symbol		STRATIC	RAPHY		Sample type & Number	Tests Type	¥ <	
0.30			Clayey silt, tr	native soil / topsoil: races of sand. ots and organics			GS-1 GSE-1			
0.5				stiff, brown silt and clay, moist			GS-2			
				ey, very moist			GS-3			
	88.71		becoming sti	iff with traces of sand, saturated	i		GS-4			
	87.41		End of test p Note: No water infi							

See the attached explicative note for the complete list of symbols and abbreviations



Photo 1: TP-31 excavation.



Photo 2 : TP-31 materials.



## Test Pit No. TP-31 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No	. 11227097-A1				Page: 1 of 1		
9	HD	TESTI	PIT REPORT	TEST PIT No	o. TP-35		
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATI LEIKIN DRIVE AND ME ONTARIO	ON FACILITY RIVALE ROAD INTERSECTION, N	EPEAN, GEODETIC COORDINATES ( (MTM, NAD-83) X : 366558.2 Y : 5017809.8 Z : 90.46	<			
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>M. CHÉNIER</li> <li>2021-05-05</li> <li>MA. RICHARD / A. FIG</li> <li>2021-05-05</li> </ul>	CA : Chemical a DRILLI MSS: Manual sp RC : Rock core	Sample type nalysis PS : Proctor Sample	PA : Pano PP : Porta DP: Dyna	Manual testsPA : Panda $(q_d)$ PP : Portable penetrometer $(C_u)$ DP: Dynamic penetrometer (E 25)GVT: Geonor Vane tester $(C_u)$		
Depth (m) 0,0	Elevation 0 (m) 5 90.46	S	STRATIGRAPHY	Sample type & Number	Tests ▼ Type		
-		<b>Topsoil:</b> Brown clayey silt, moist. Traces of roots and organics		GS-1			
0.30	90.16	Native soil: Stiff to very stiff, brown silt and cla	ay, moist	GS-2			
		becoming grey, very moist		GS-3	w = 30.0% WI = 59.0% Wp = 25.0 %		
		becoming stiff, very moist to satur	rated	GS-4			
3.0 - 3.00 	87.46	End of test pit Note: No water infiltration					

See the attached explicative note for the complete list of symbols and abbreviations



Photo 1 : TP-35 excavation.



Photo 2 : TP-35 materials.



## Test Pit No. TP-35 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No.	11227097-A	41						Page:	1 of 1	
G	HD			TEST PIT REI	PORT		EST PIT No	. ТР	-36	
CLIENT: PROJECT: LOCATION:	DJECT: PROPOSED SORTATION FACILITY (MTM, NAD-83) X : 366701.1							<ul><li>INFILTRATION</li><li>WATER LEVEL</li></ul>		
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>M. CHÉNIER</li> <li>2021-05-05</li> <li>MA. RICHAI</li> <li>2021-05-05</li> </ul>		ORILLI	Sample type         CA : Chemical analysis       PS : Proctor Sample         MSS: Manual split spoon       AU: Auger         RC : Rock core       GS(E) : Grab sample (environment)			PA : Pand PP : Porta DP: Dynai	$\begin{tabular}{ c c c c } \hline Manual tests \\ \hline PA : Panda (q_d) \\ PP : Portable penetrometer (C_u) \\ DP: Dynamic penetrometer (E_{25}) \\ GVT: Geonor Vane tester (C_u) \\ \hline \end{tabular}$		
Depth (m) 0,0	Elevation (m) 90.34	Symbol		STRATIG	RAPHY		Sample type & Number	Tests Type	¥ <	
-				/ silt, moist. ots and organics			GS-1			
0.30	90.04		Native soil: Stiff to very s	tiff, brown silt and clay, moist			GS-2			
			becoming sti	ff, grey, very moist to saturated			GS-3			
							GS-4			
3.0 <u>3.00</u> - 3.00 	87.34		End of test p Note: No water infi							



Photo 1 : TP-36 excavation.



Photo 2 : TP-36 materials.



## Test Pit No. TP-36 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No.	. 11227097-A1					Page: 1 of 1
G	HD		TEST PIT REP	ORT	TEST PIT No	o. TP-40
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SOR LEIKIN DRIVE AN ONTARIO					
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>M. CHÉNIER</li> <li>2021-05-06</li> <li>MA. RICHARD /</li> <li>2021-05-06</li> </ul>	' A. FIORILLI	CA : Chemical analysis	MSS: Manual split spoon AU: Auger		
Depth (m) 0,0	Elevation (m) 90.51	symbol	STRATIGR	APHY	Sample type & Number	onor Vane tester (C <sub>u</sub> ) Tests Type
		Topsoil: Brown clayey Traces of roo	r silt, moist. ts and organics		GS-1 GSE-1	
0.5 —					GS-2	
	89.91		and clay, very moist		GS-3	
2.0	88.91	becoming stif	ff with traces of sand, very moist f	to saturated	GS-4	
					GS-5	
	87.51	End of test pi Note: Slight water in	t nfiltration at 3.0m			



Photo 7 : TP-40 excavation.



Photo 8 : TP-40 materials.



### Test Pit No. TP-40 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No	. 11227097-/	41					Page:	1 of 1
G	HD			TEST PIT REPOR	т т	EST PIT No	o. TP-	43
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED LEIKIN DRIV ONTARIO	SORTATIO		- INFILTRATION - WATER LEVEL				
DESCRIBED BY DATE: VERIFIED BY: DATE:				CA : Chemical analysis PS : MSS: Manual split spoon AU:	MSS: Manual split spoon AU: Auger			er (C <sub>u</sub> ) er (E <sub>25</sub> ) (C <sub>u</sub> )
Depth (m) 0,0	Elevation (m) 93.75	Symbol		STRATIGRAPH	IY	Sample type & Number	Tests Type	Ĭ
			Fill: Stiff, brown c	ayey silt mixed with roots and organic	s, moist	GS-1		
0.5 - 0.50	93.25		Grey to brow	n clayey silt, moist		GS-2		
1.0 — - - - 1.5 —						GS-3		
2.0						GS-4		
2.5						GS-5		
3.0						 GS-6		
- 3.35 3.5 — - - -	90.40		End of test p Note: No water infil					
4.0								
4.5 — - - - - -								



Photo 1 : TP-43 excavation.



Photo 2 : TP-43 materials.



## Test Pit No. TP-43 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

GH	D		TEST PIT REF	PORT		TEST PIT No	o. TP-	-44	
PROJECT: F	MEDUSA LP PROPOSED SORTATI LEIKIN DRIVE AND ME DNTARIO	< ¥	- INFILTRATION - WATER LEVEL						
DESCRIBED BY: N	M. CHÉNIER		Sa	mple typ	e		Manual tests		
DATE: 2	2021-05-05		CA : Chemical analysis	PS : P	roctor Sample		PA : Panda (q <sub>d</sub> )		
VERIFIED BY: N	MA. RICHARD / A. FIC	ORILLI	MSS: Manual split spoon	AU: Au	Jger		PP : Portable penetrometer ( $C_u$ ) DP: Dynamic penetrometer ( $E_{25}$ )		
DATE: 2	2021-05-05		RC : Rock core	GS(E)	: Grab sample (environment	· · · · ·	onor Vane tester		
Depth (m) 0,0	Elevation (m) (m) (m) (m) (m) (m) (m) (m) (m) (m)		STRATIGE	RAPHY		Sample type & Number	Tests Type	¥ <	
0.5 0.50		Topsoil: Brown clayey Traces of roc	y silt, moist. ots and organics			GS-1			
0.50.50	90.05	Native soil: Stiff to very s	stiff, brown silt and clay, moist			GS-2			
	89.80		ey, very moist			GS-3	w = 39.0% WI = 74.0% Wp = 34.0 %		
	88.75		iff with traces of sand			GS-4			
	87.55	End of test p Note: No water infil							

See the attached explicative note for the complete list of symbols and abbreviations

Reference No. 11227097-A1



Photo 1 : TP-44 excavation.



Photo 2 : TP-44 materials.



## Test Pit No. TP-44 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD	TEST PIT REPOR	RT те	EST PIT No.	TP-45	
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATI LEIKIN DRIVE AND ME ONTARIO	ON FACILITY RIVALE ROAD INTERSECTION, NEPEAN,	GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366763.1 Y : 5017843.2 Z : 90.52		INFILTRATION WATER LEVEL	
DESCRIBED BY	1: M. CHÉNIER	Sample	type	M	anual tests	
DATE: VERIFIED BY: DATE:	2021-05-06 MA. RICHARD / A. FIG 2021-05-06	ORILLI MSS: Manual split spoon AU:	: Proctor Sample Auger (E) : Grab sample (environment)	DP: Dynar	a (q <sub>d</sub> ) ble penetrometer (C nic penetrometer (E nor Vane tester (C <sub>u</sub> )	<sub>25</sub> )
Depth (m) 0,0	Elevation 0 (m) E 90.52	STRATIGRAPH	łY	Sample type & Number	Tests Type	L
	90.22	Topsoil: Brown clayey silt, moist. Traces of roots and organics Native soil:		GS-1 GSE-1		
0.5 -		Stiff to very stiff, brown silt and clay, moist		GS-2		
		becoming grey, very moist	turotod	GS-3		
2.0	66.92	becoming stiff with traces of sand, very moist to sa	turated	GS-4		
2.5				GS-5		
	87.52	End of test pit Note: No water infiltration				

See the attached explicative note for the complete list of symbols and abbreviations

Reference No. 11227097-A1



Photo 1 : TP-45 excavation.



Photo 2 : TP-45 materials.



# Test Pit No. TP-45 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD			TEST PIT REF	PORT	r	EST PIT No	o. TP	-46	
CLIENT: PROJECT: LOCATION:	MEDUSA LPGEODETIC COORDINATES (m) (MTM, NAD-83)PROPOSED SORTATION FACILITYX : 366877.5LEIKIN DRIVE AND MERIVALE ROAD INTERSECTION, NEPEAN, ONTARIOY : 5017907.6Z : 90.36Z : 90.36									
DESCRIBED BY	Y: M. CHÉNIER			Sa	nple typ	e	1	Manual tests		
DATE:	2021-05-06			CA : Chemical analysis	PS : Pi	roctor Sample	PA : Pano			
VERIFIED BY:	MA. RICHARD /	A. FIORILLI		MSS: Manual split spoon	AU: Au			able penetromet		
DATE:	2021-05-06			RC : Rock core	GS(E)	: Grab sample (environment		onor Vane tester		
Depth (m)	Elevation (m)	Symbol		STRATIGF	RAPHY		Sample type &	Tests	¥ /	
0,0	90.36	の メンジン Tops	soil				Number	Туре	<	
-		Brow	vn clayey	silt, moist. ts and organics			GS-1 GSE-1			
0.5	90.06		<b>ve soil:</b> to very st	iff, brown silt and clay, moist			GS-2			
				ry with traces of sand, very mois			GS-3			
	87.36	End	of toot ni				GS-4			
	87.36	Note	of test pil							

Reference No. 11227097-A1

Page: 1 of 1



Photo 1 : TP-46 excavation.



Photo 2 : TP-46 materials.



# Test Pit No. TP-46 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD			TEST PIT REP	PORT	· -	EST PIT No	). TP	9-47
CLIENT: PROJECT: LOCATION:		) SORTATIO	ON FACILITY RIVALE ROAD	) INTERSECTION, NEPEAN,		GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366973.4 Y : 5017961.2 Z : 90.31	<u>`</u>	- INFILTRATIO	
DESCRIBED BY:	M. CHÉNIEF	२		Sa	mple typ	be	N	Manual tests	
DATE:	2021-05-06			CA : Chemical analysis	PS : P	roctor Sample	PA : Pano		
VERIFIED BY:	MA. RICHA	ARD / A. FIC	RILLI	MSS: Manual split spoon	AU: A			able penetromet	
DATE:	2021-05-06			RC : Rock core	GS(E)	: Grab sample (environment	<b>1</b>	mic penetromet onor Vane tester	
Depth (m)	Elevation (m)	Symbol		STRATIG	RAPHY		Sample type &	Tests	Ţ
0,0	90.31	60 878787878	<u> </u>				Number	Туре	<
			<b>Topsoil:</b> Brown clayey Traces of roo	y silt, moist. ots and organics			GS-1		
0.5	00.74						GS-2		
0.60 	89.71		Native soil: Stiff to very s	stiff, brown silt and clay, moist			GS-3		
	88.61			ff with traces of sand, vert moist	to satur	ated	GS-4		
	87.31		End of test pi Note: No water infil						

Reference No. 11227097-A1

Page: 1 of 1



Photo 1 : TP-47 excavation.



Photo 2 : TP-47 materials.



# Test Pit No. TP-47 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD			TEST PIT RE	PORT		TEST PIT No	o. TP	9-49
CLIENT: PROJECT: LOCATION:		SORTATI	ON FACILITY RIVALE ROAD	) INTERSECTION, NEPEAN,		GEODETIC COORDINATES (m) (MTM, NAD-83) X : 366510.8 Y : 5017662.8 Z : 90.87		- INFILTRATIO	
DESCRIBED B	Y: M. CHÉNIEF	र		Sa	ample typ	be		Manual tests	
DATE:	2021-05-05			CA : Chemical analysis	PS : F	Proctor Sample	PA : Pan		
VERIFIED BY:	MA. RICHA	ARD / A. FIC	ORILLI	MSS: Manual split spoon	AU: A			able penetrome amic penetrome	
DATE:	2021-05-05			RC : Rock core	GS(E)	) : Grab sample (environmer		onor Vane teste	
Depth (m)	Elevation (m)	Symbol		STRATIG	RAPHY	,	Sample type &	Tests	<b>⊻</b> <
0,0	90.87	o v	Fill:				Number	Туре	×
0.5 —			Brown clayey	y silt, moist. roots and organics			GS-1		
				stiff, brown silt and clay, moist			GS-2		
	89.57		becoming sti	ff, grey, very moist to saturated			GS-3		
							GS-4		
	87.87	<u> </u>	End of test p Note: No water infi						

See the attached explicative note for the complete list of symbols and abbreviations

Reference No. 11227097-A1

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Photo 1 : TP-49 excavation.



Photo 2 : TP-49 materials.



# Test Pit No. TP-49 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD			TEST PIT REF	PORT	1	EST PIT No.	TP-4	9PILE
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED LEIKIN DRIVI ONTARIO	SORTATIC		) INTERSECTION, NEPEAN,		GEODETIC COORDINATES (m) (MTM, NAD-83) X : Y : Z : 02.00		INFILTRATIO WATER LEVI	
				S	mplo tur	Z : 92.90		anual tests	
DATE: VERIFIED BY: DATE:	<ul> <li>f: M. CHÉNIER</li> <li>2021-05-05</li> <li>MA. RICHARD / A. FIORILLI</li> <li>2021-05-05</li> </ul>		CA : Chemical analysis MSS: Manual split spoon RC : Rock core	MSS: Manual split spoon AU: Auger			a (q <sub>d</sub> ) ble penetrome nic penetrome nor Vane teste	ter (E 25)	
Depth (m) 0,0	Elevation (m) 92.90	Symbol		STRATIG	RAPHY		Sample type & Number	Tests Type	¥
			Fill: Brown clayey	y silt, moist			GS-1 GSE-1		
- - - 1.0							GS-2 GSE-2		
1.5							GS-3 GSE-3		
							GS-4 GSE-4		
2.0 2.00	90.90		End of test p Note: No water infi						
3.0									
- - 3.5 - -									
- - 4.0 - -									
4.5									

L

Reference No. 11227097-A1

Page: 1 of 1



Photo 1 : TP-49-PILE excavation.



# Test Pit No. TP-49-PILE Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No	o. 11227097-A1	Page: 1 of 1		
G	TEST PIT REPORT TE	EST PIT No. TP-50		
CLIENT: PROJECT: LOCATION:	MEDUSA LPGEODETIC COORDINATES (m) (MTM, NAD-83)PROPOSED SORTATION FACILITYX: 366472.0LEIKIN DRIVE AND MERIVALE ROAD INTERSECTION, NEPEAN, ONTARIOY: 5017605.6Z: 90.55Z: 90.55	<ul> <li>- INFILTRATION</li> <li>- WATER LEVEL</li> </ul>		
DESCRIBED BY DATE: VERIFIED BY: DATE:	2.00.00	$\begin{tabular}{ c c c c } \hline Manual tests \\ \hline PA : Panda (q_d) \\ PP : Portable penetrometer (C_u) \\ DP: Dynamic penetrometer (E_{25}) \\ GVT: Geonor Vane tester (C_u) \\ \hline \end{tabular}$		
Depth (m) 0,0	Elevation (m) 90.55	Sample type & Number Type <		
_	Topsoil: Description: Descri	GS-1		
0.20		GS-2		
		GS-3		
2.0	89.05 becoming stiff, saturated	GS-4		
		GS-5		
	87.55 End of test pit Note: Slight water infiltration at 3.0m			



Photo 1 : TP-50 excavation.



Photo 1 : TP-50 materials.



# Test Pit No. TP-50 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

Reference No	. 11227097-A1			Page: 1	1 of 1	
9	HD	TEST PIT REI	PORT TE	ST PIT No. TP-	51	
CLIENT: PROJECT: LOCATION:	MEDUSA LP PROPOSED SORTATI LEIKIN DRIVE AND ME ONTARIO	<ul> <li>- INFILTRATION</li> <li>- WATER LEVEL</li> </ul>				
DESCRIBED BY DATE: VERIFIED BY: DATE:	<ul> <li>Y: M. CHÉNIER</li> <li>2021-05-05</li> <li>MA. RICHARD / A. FIG</li> <li>2021-05-05</li> </ul>	CA : Chemical analysis	Z : 90.42 ample type PS : Proctor Sample AU: Auger GS(E) : Grab sample (environment)	$\begin{tabular}{ c c c c c } \hline Manual tests \\ \hline PA : Panda (q_d) \\ PP : Portable penetrometer (C_u) \\ DP: Dynamic penetrometer (E_{25}) \\ GVT: Geonor Vane tester (C_u) \\ \hline \end{tabular}$		
Depth (m) 0,0	Elevation 0 (m) E	STRATIG	RAPHY	Sample type & Number Type	¥ <	
-		<b>Topsoil:</b> Brown clayey silt, moist. Traces of roots and organics		GS-1		
0.5		Native soil: Stiff to very stiff, brown silt and clay, moist		GS-2		
		becoming grey		GS-3		
		becoming stiff with traces of sand, moist to v	rery moist	GS-4		
	87.42	End of test pit Note: No water infiltration				



Photo 1 : TP-51 excavation.



# Test Pit No. TP-51 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario

G	HD		TEST PIT RE	PORT	-	EST PIT No	o. TP	-52	
CLIENT: PROJECT: LOCATION:	MEDUSA LP GEODETI PROPOSED SORTATION FACILITY LEIKIN DRIVE AND MERIVALE ROAD INTERSECTION, NEPEAN, Y : 50176 ONTARIO Z : 92.69					<ul> <li>- INFILTRATION</li> <li>- WATER LEVEL</li> </ul>			
DESCRIBED BY	: M. CHÉNIER		Sa	ample typ	e	I	Manual tests		
DATE:	2021-05-05		CA : Chemical analysis	PS : P	roctor Sample	PA : Pan			
VERIFIED BY:	MA. RICHARD / A.	FIORILLI	MSS: Manual split spoon	AU: Au	-		able penetrome amic penetrome		
DATE:	2021-05-05		RC : Rock core	GS(E)	: Grab sample (environment		onor Vane teste		
Depth (m) 0,0	Elevation (m) (m)		STRATIG	RAPHY		Sample type &	Tests Type	¥ <	
0,0	92.69 0	Fill:				Number	Туре		
0.5		Brown claye	ey silt, moist			GS-1			
						GS-2			
						GS-3			
						GS-4			
2.0						GS-5			
3.0			ayey silt, very moist			GS-6			
3.5	89.37	End of test Note: No water inf							
4.0									
4.5 —									

Reference No. 11227097-A1

Page: 1 of 1



Photo 1 : TP-52 excavation.



Photo 2 : TP-52 materials.



# Test Pit No. TP-52 Proposed Sortation Facility

Leikin Drive and Merivale Road Intersection, Nepean, Ontario



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario

#### Lateral friction Tip resistance Pore pressure Shear strength Stratigraphic Interpretation Sand & silty sand Very dense/stiff soil 1 . 1 -Clay & silty clay 2 -2 · Clay & silty clay 3 -3 -3 -Clay 4 -4 -5 -5 -5 · 5 -6 -7 -7. 7 -7 -8 -Clay & silty clay 9 -9. 9. 10-11-Depth (m) 13 13 14 15 12-Clay 13. Clay & silty clay Clay & silty clay Clay & silty clay Silty sand & sandy silt Clay & silty clay Clay & silty clay Silty sand & sandy silt 16. Clay & silty clay Silty sand & sandy silt Clay Clay & silty clay Silty sand & sandy silt Refusal Refusal Refusa Refusa 21-22. 27. ..... 2 4 6 8 10 12 14 1,000 0 2 4 6 8 10 12 14 16 18 1,500 200 250 qt (MPa) Fs (kPa) SBTn (Robertson, 1990) u2 (kPa) Su (kPa)

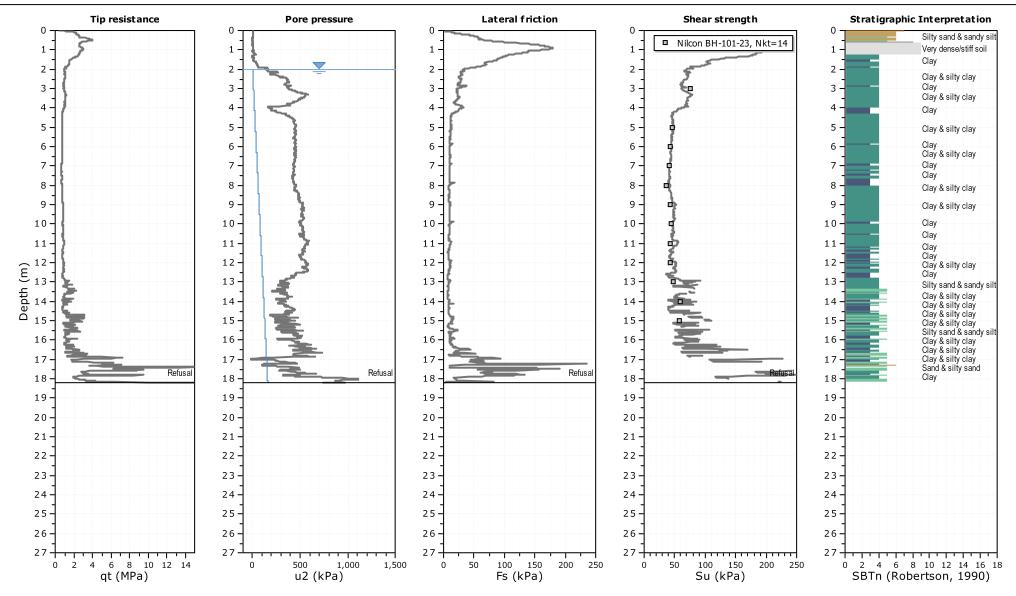
### Sounding No: CPT-101-23

Total depth: 18.77 m, Date: 7/10/2023 Surface Elevation: 90.80 m Cone Type: 100 Mpa, ID #60257 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario



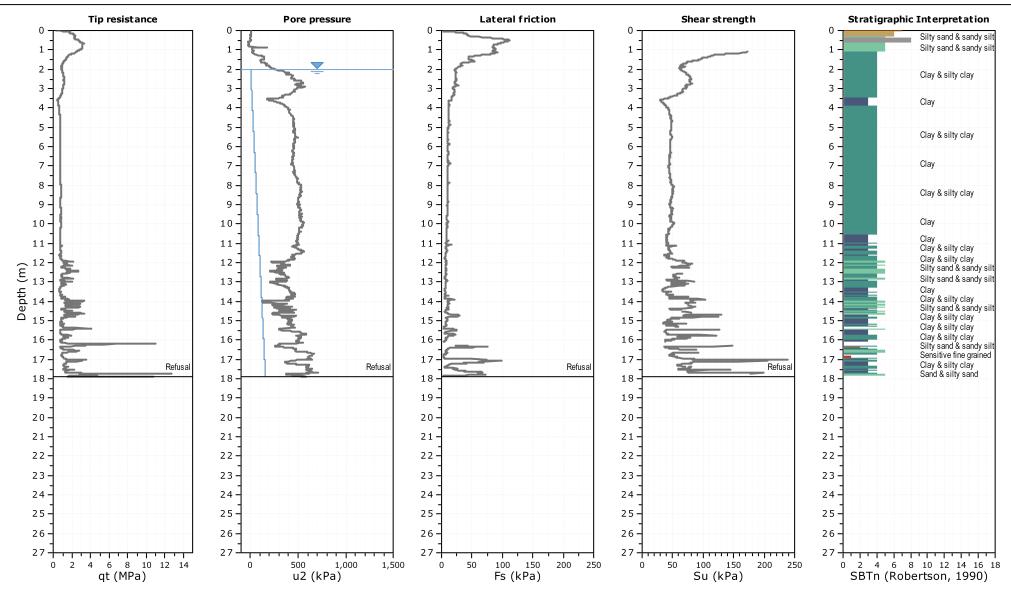
#### Sounding No: CPT-102-23

Total depth: 18.21 m, Date: 7/10/2023 Surface Elevation: 90.66 m Cone Type: 100 Mpa, ID #60298 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario



### Sounding No: CPT-103-23

Total depth: 17.89 m, Date: 7/10/2023 Surface Elevation: 90.48 m Cone Type: 100 Mpa, ID #60298 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario

#### Lateral friction Tip resistance Pore pressure Shear strength Stratigraphic Interpretation Silty sand & sandy silt Sand & silty sand Clay Clay 2 • Clay Clay 3 -Clay Clay 4 . 4 -Clay & silty clay Clay & silty clay 5 -5 · Clay Clay & silty clay 7 -7. 7 -Clay 8 -8 -9. 9. 9 -10-11-Clay Depth (m) 13 13 14 15 12. 12-13-14-15. 15-Clay & silty clay Silty sand & sandy silt 16. Clay & silty clay 17. Clay & silty clay Clay & silty clay Clay & silty clay Silty sand & sandy silt 18. Silty sand & sandy silt Clay Clay & silty clay Clay Clay & silty clay 21. Clay & silty clay Silty sand & sandy silt Clay & silty clay Clay Silty sand & sandy silt Silty sand & sandy silt Refusal Refusal Refusa Silty sand & sandy silt 27-. . . . . . . . 2 4 6 8 10 12 14 1,000 2 4 6 8 10 12 14 16 18 1,500 200 250 qt (MPa) Fs (kPa) SBTn (Robertson, 1990) u2 (kPa) Su (kPa)

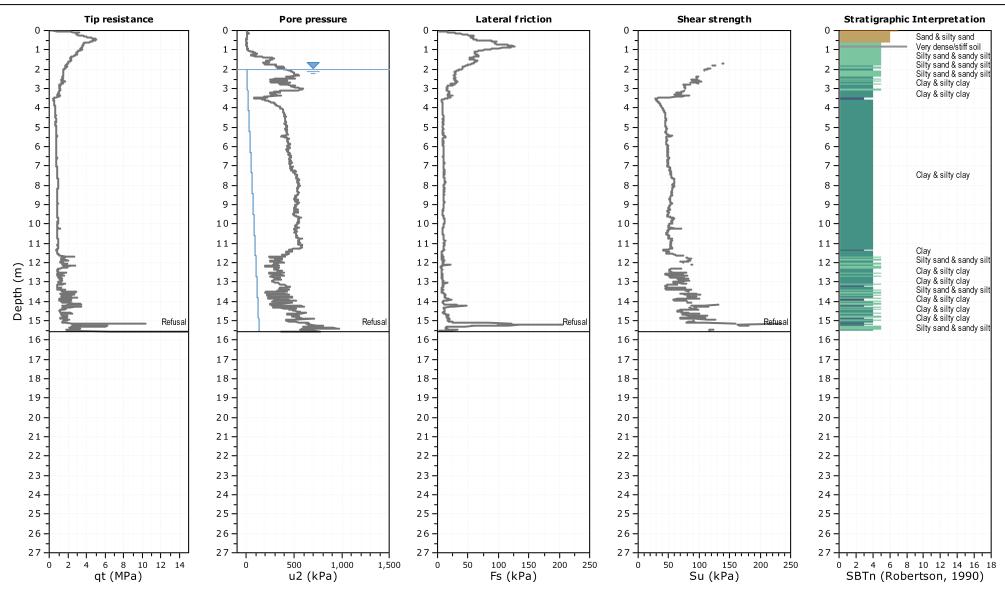
#### Sounding No: CPT-104-23

Total depth: 24.84 m, Date: 7/11/2023 Surface Elevation: 93.96 m Cone Type: 100 Mpa, ID #60298 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario

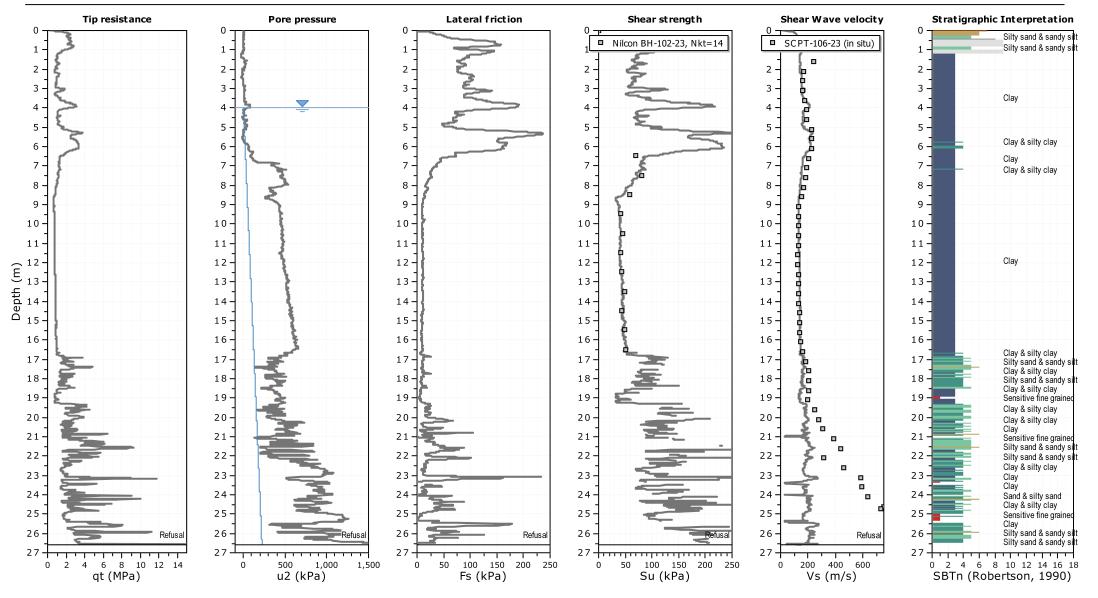


Total depth: 15.56 m, Date: 7/10/2023 Surface Elevation: 90.60 m Cone Type: 100 Mpa, ID #60257 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario



### Sounding No: CPT-106-23

Total depth: 26.57 m, Date: 7/10/2023 Surface Elevation: 95.20 m Cone Type: 100 Mpa, ID #60257 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario

#### Tip resistance Pore pressure Lateral friction Shear strength Stratigraphic Interpretation 0 0 0 0 0 Sand & silty sand 1 -1 1 . 1 -1 Very dense/stiff soil 2 -2 -2 2 • 2 -Clay & silty clay 3 -3 -3 . 3 3 -Clay 4 . 4 -4 4 -Clay Clay & silty clay 4 5 -5 -5 · 5 -5 Clay & silty clay Clay 6 • 6 6 6 6 Clay & silty clay Clay 7 -7 • 7 · 7. 7 -8 8 -8 8 8 -Clay & silty clay 9 9 9 9. 9 -Clay Clay Clay & silty clay 10 10 10 10 10-11 1111 11-11 Clay & silty clay Depth (m) 13 13 14 15 12 12-12 12 Silty sand & sandy silt Clay & silty clay Clay & silty clay 13 13 13 13 Silty sand & sandy silt Clay & silty clay 14 14 14 14 Clay & silty clay Silty sand & sandy silt 15 15 15 15. 15 Refusal Refusal Refus Clay & silty clay 16 16 16 16 16 17 17 17 17 17 18 18 18 18 18 19 19 19 19 19 20 20 20 20 20 21 21 21 21. 21 22 22 22 22 22. 23 23 23 23 23 24 24 24 24 24 25 25 25 25 25 26 26 26 26 26 27 27 27 27-27 2 4 6 8 10 12 14 1,000 50 150 200 50 0 2 4 6 8 10 12 14 16 18 500 1,500 100 250 100 150 200 250 0 0 0 0 qt (MPa) Fs (kPa) SBTn (Robertson, 1990) u2 (kPa) Su (kPa)

Total depth: 15.69 m, Date: 7/11/2023 Surface Elevation: 90.55 m Cone Type: 100 Mpa, ID #60298 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario

#### Tip resistance Pore pressure Lateral friction Shear strength Stratigraphic Interpretation 0 0 0 0 0 Silty sand & sandy silt 1 1 1 . 1 -1 Silty sand & sandy silt 2 -2 -2 2 · 2 -Clay & silty clay 3 -3 -3 . 3 3 -Clay 4 4 -4 4 -4 -5 -5 -5 -5 -5 -6 • 6 6 · 6 6 -7 -7 – 7 -7 -7 -Clay & silty clay 8 8 -8 8 8 -9. 9 9 9. 9 -10 10 Clay 10 10 10-Clay & silty clay 11 1111 11. 11-Silty sand & sandy silt Silty sand & sandy silt Clay Depth (m) 13 13 14 15 12 12 12-12 Clay & silty clay Sand & silty sand 13 13 13 13 Clay & silty clay 14 14 14 14 Silty sand & sandy silt Clay & silty clay Refusal Refusal Refusal Refusal 15 15 15 15 15 Silty sand & sandy silt 16 16 16 16 16. 17 17 17 17 17 18 18 18 18 18 19 19 19 19 19 20 20 20 20 20 21 21 21 21 21. 22 22 22 22 22. 23 23 23 23 23 24 24 24 24 24 25 25 25 25 25 26 26 26 26 26 27 27 27 27-27 .... 2 4 6 8 10 12 14 1,000 50 150 200 50 0 2 4 6 8 10 12 14 16 18 500 1,500 100 250 100 150 200 250 0 0 0 0 qt (MPa) Fs (kPa) SBTn (Robertson, 1990) u2 (kPa) Su (kPa)

### Sounding No: CPT-108-23

Total depth: 15.42 m, Date: 7/11/2023 Surface Elevation: 90.57 m Cone Type: 100 Mpa, ID #60257 Cone Operator: Stratum



#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario

#### Tip resistance Pore pressure Lateral friction Shear strength Stratigraphic Interpretation Silty sand & sandy silt Nilcon BH-103-23, Nkt=14 1 -1 . Silty sand & sandy silt Silty sand & sandy silt Clay & silty clay Silty sand & sandy silt 2 -2 -3 -3 -3 . ζ Clay & silty clay 4 • 5 -5 -5 -5 -6 -7 -7 – 7 -7 -7. Clay & silty clay 8 -8 -9 -9. 10-Silty sand & sandy silt Sand & silty sand Silty sand & sandy silt Depth (m) 13 13 14 15 12. Silty sand & sandy silt Silty sand & sandy silt Silty sand & sandy silt Clay & silty clay Clay & silty clay Refusal Refusal Refusal Refusal Sand & silty sand 16-21. 22. 27. ..... 2 4 6 8 10 12 14 1,000 0 2 4 6 8 10 12 14 16 18 1,500 200 250 Fs (kPa) SBTn (Robertson, 1990) qt (MPa) Su (kPa) u2 (kPa)

## Sounding No: CPT-109-23

Total depth: 15.02 m, Date: 7/11/2023 Surface Elevation: 90.59 m Cone Type: 100 Mpa, ID #60298 Cone Operator: Stratum

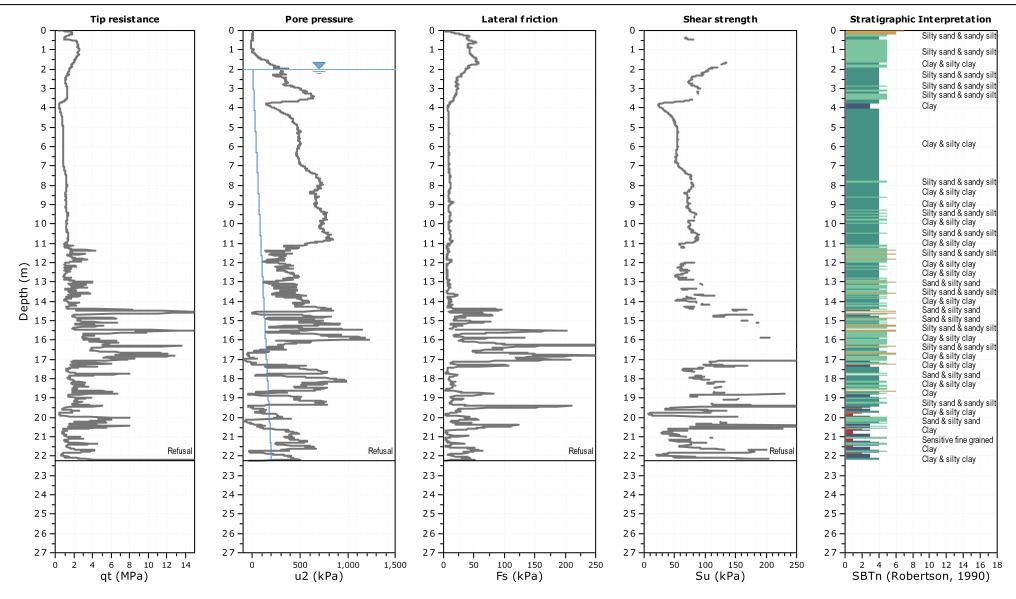


#### Project: Proposed Distribution Center

Location: Bill Leathem Drive, Ottawa, Ontario

#### Sounding No: CPT-110-23

Total depth: 22.26 m, Date: 7/11/2023 Surface Elevation: 90.24 m Cone Type: 100 Mpa, ID #60257 Cone Operator: Stratum



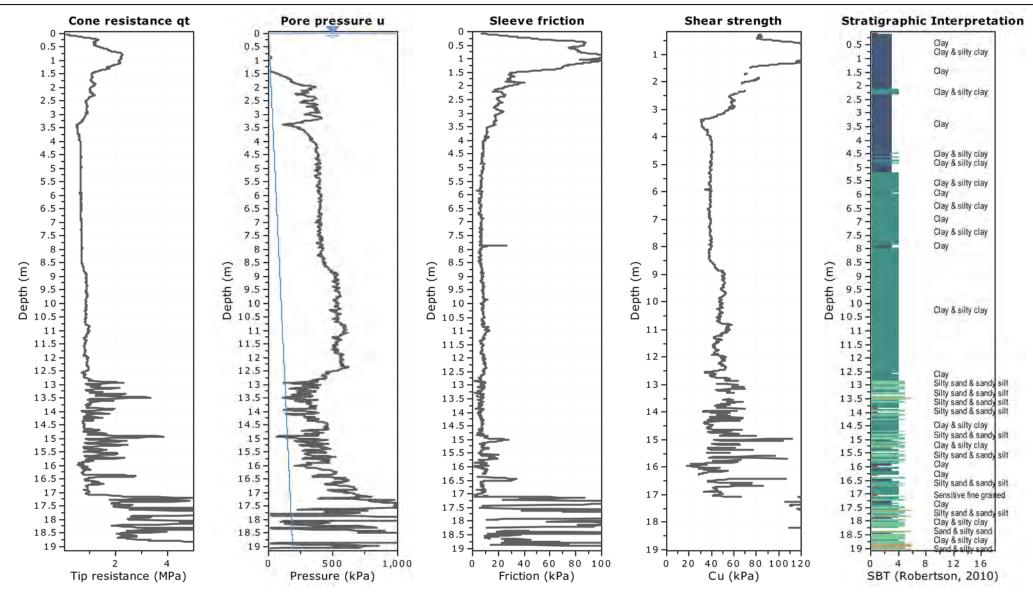


11227097-A1

Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

## Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario



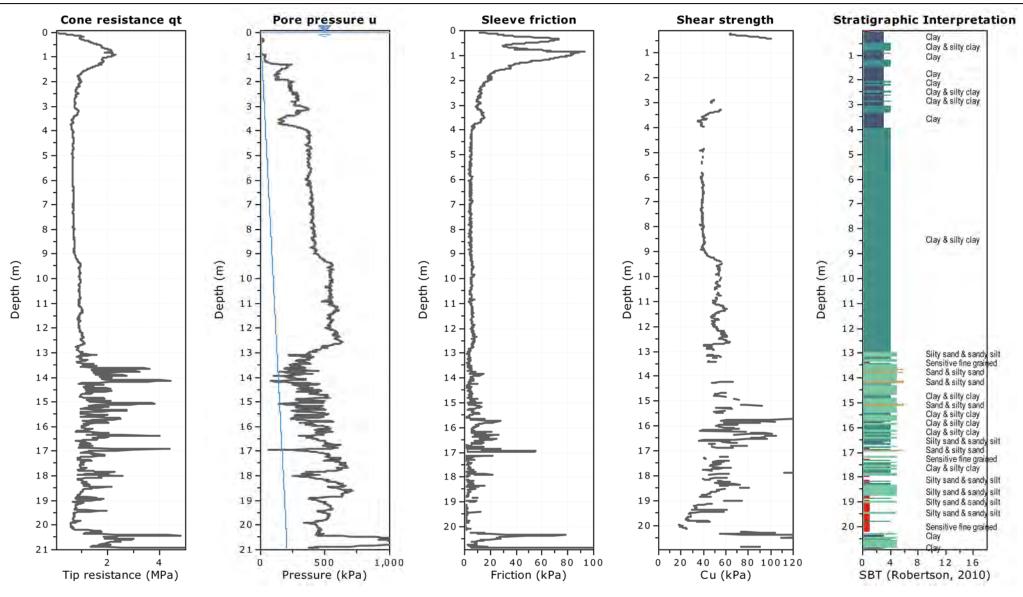




**11227097-A1** Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

# Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario

## CPT-02 Total depth: 20.92 m

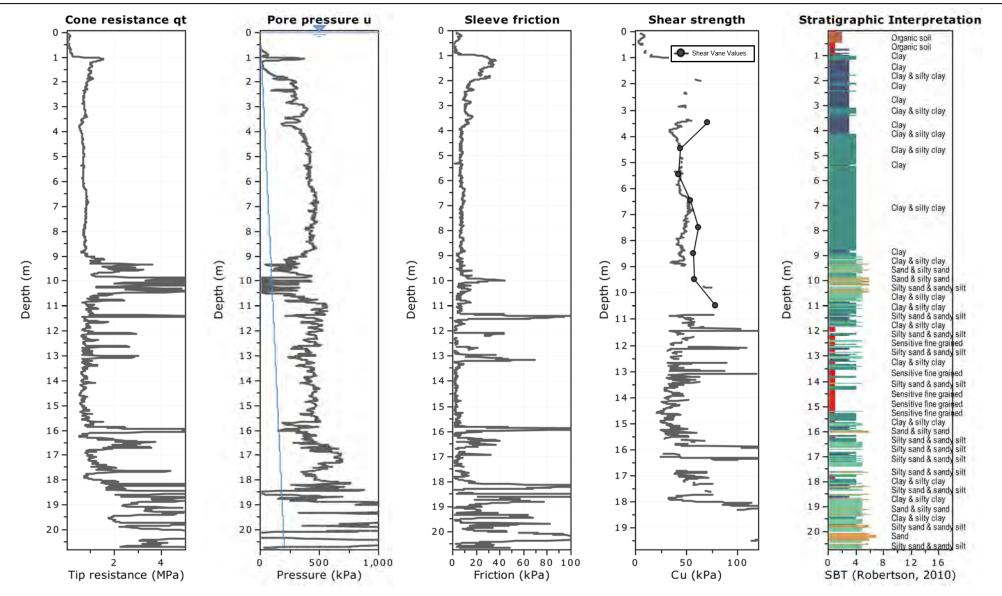




**11227097-A1** Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

#### Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario





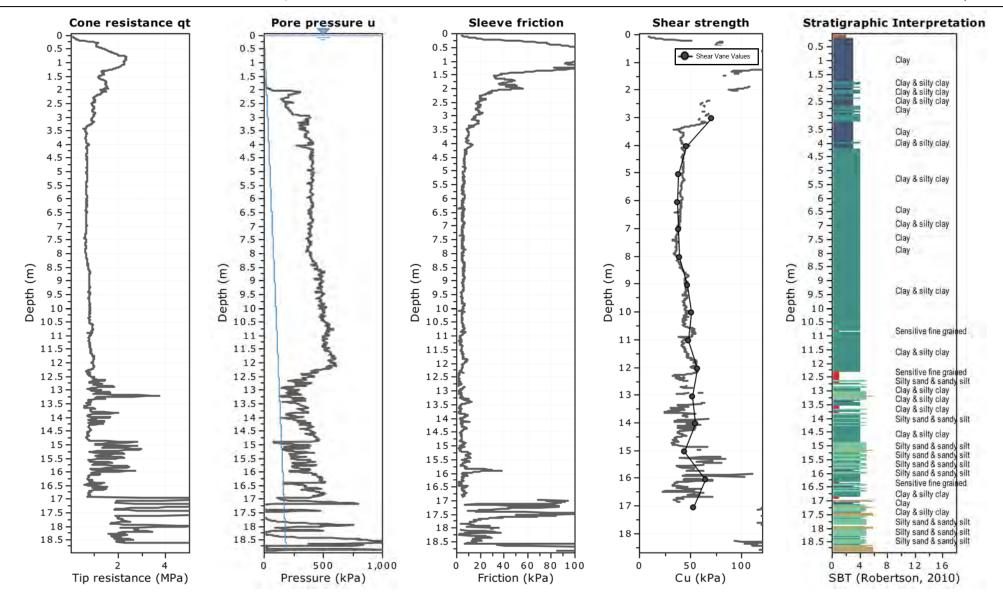


11227097-A1

Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

#### Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario

## CPT-04 Total depth: 18.89 m

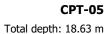


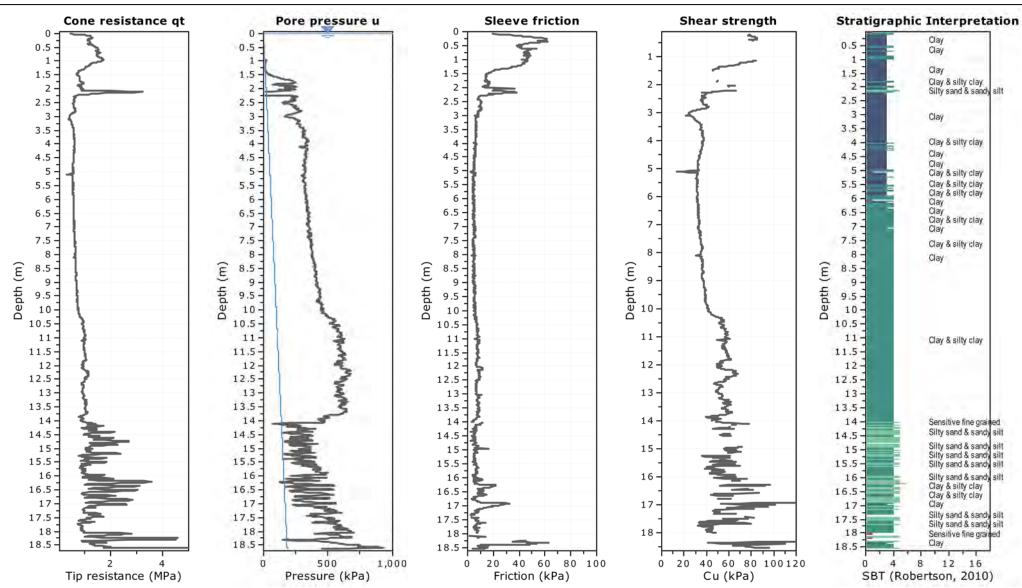


11227097-A1

Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

## Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario





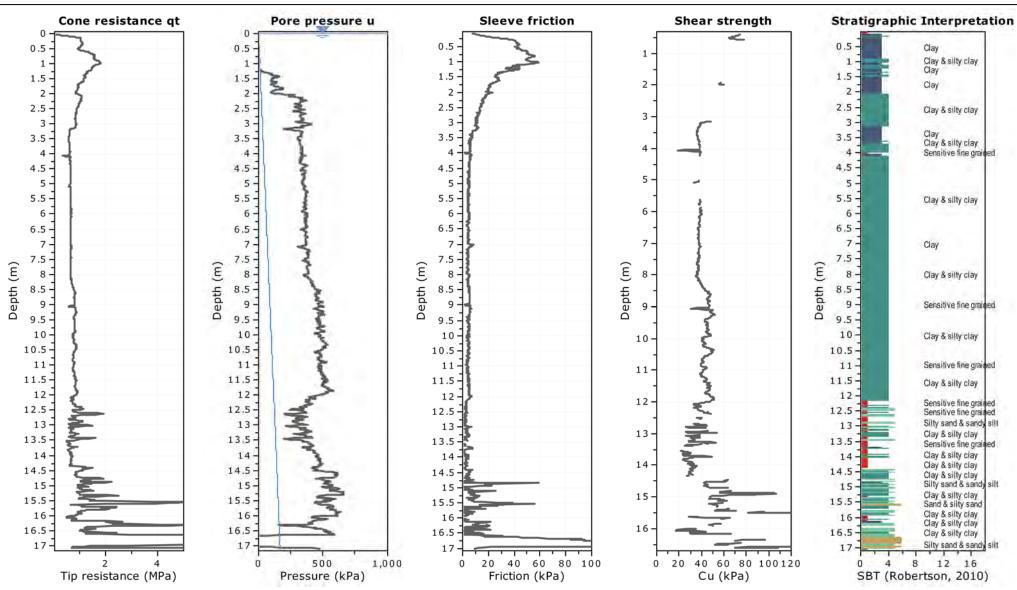


**11227097-A1** Performed by Stratum CPT

Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

## Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario

## CPT-06 Total depth: 17.10 m



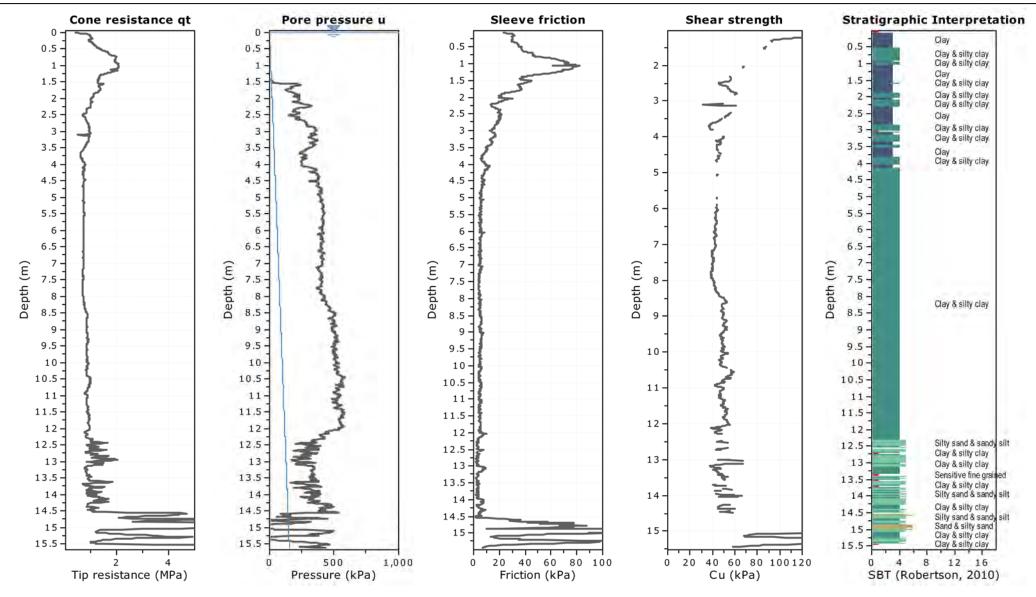


**11227097-A1** Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr

Verified by Kamel Hamouche, ing. Ph. D.

# Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario

# CPT-07 Total depth: 15.62 m

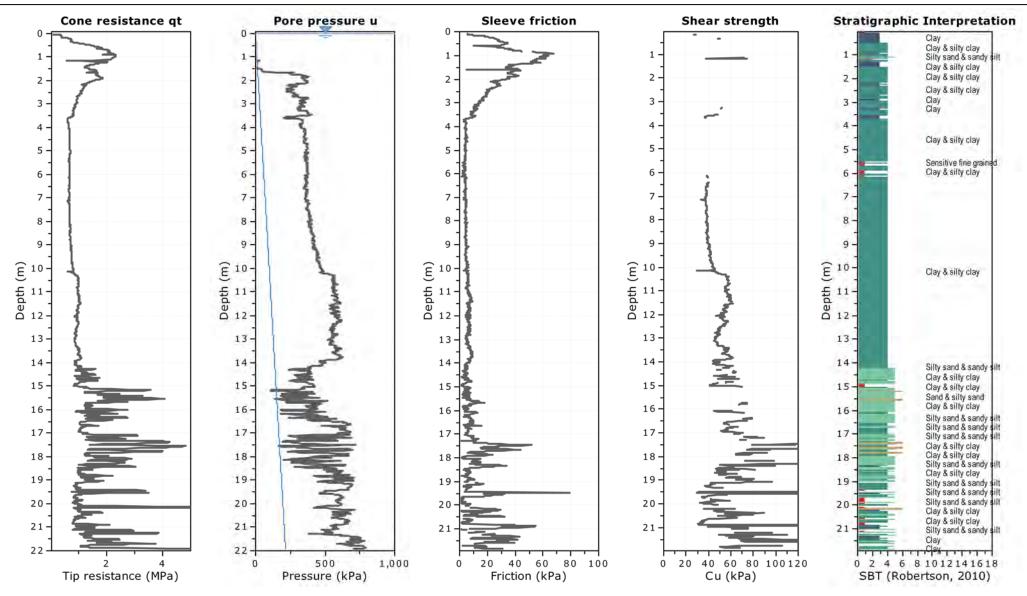




**11227097-A1** Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

## Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario

## CPT-08 Total depth: 21.93 m



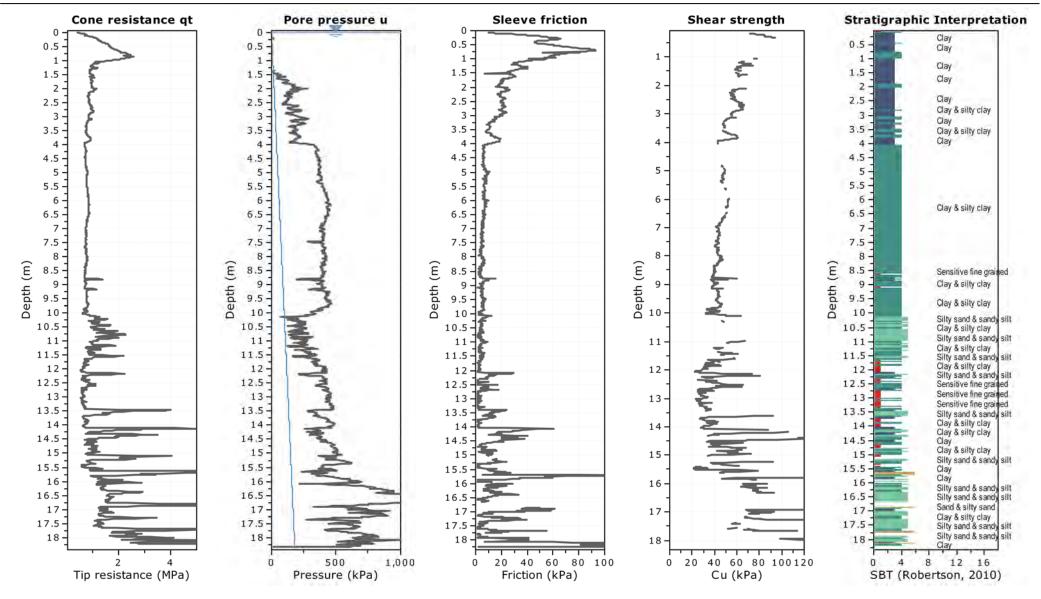


**11227097-A1** Performed by Stratum CPT

Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

## Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario



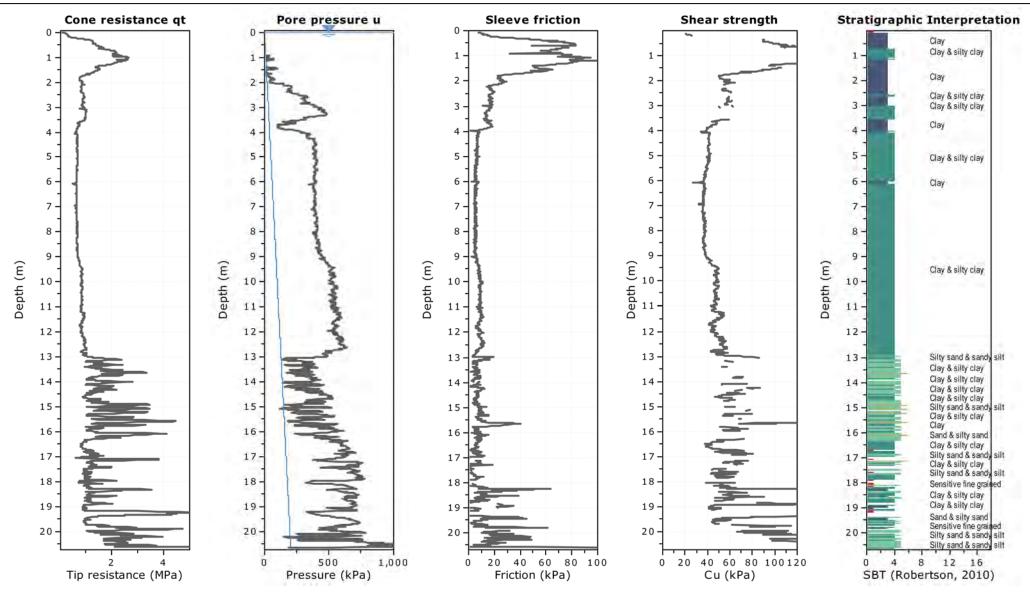




**11227097-A1** Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

# Project: Geotechnical Investigation - Proposed Sortation Facility Location: Leikin Drive and Merival Road Intersection, Nepean, Ontario

# CPT-16 Total depth: 20.66 m



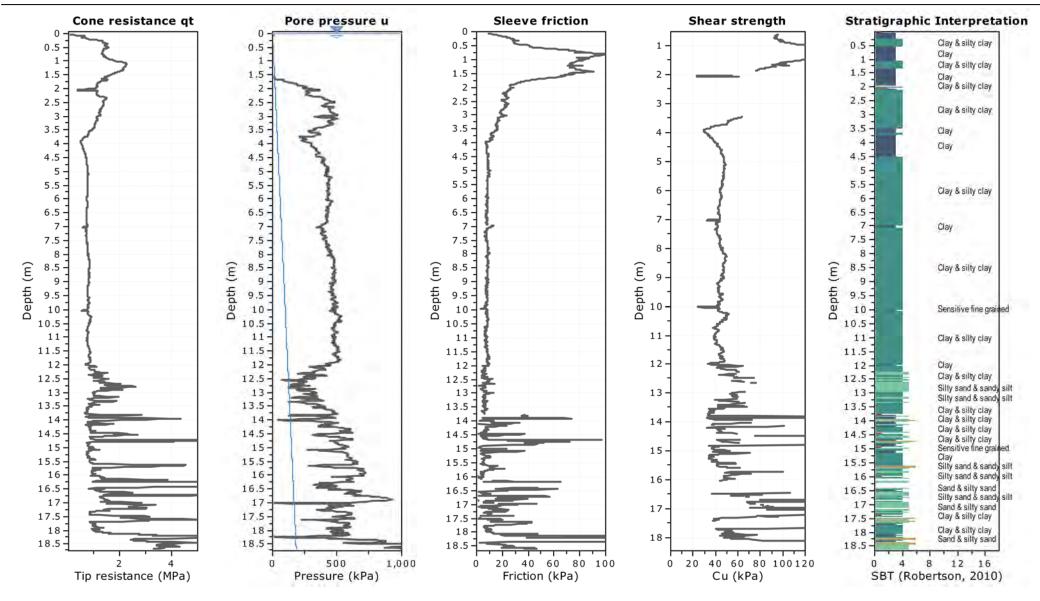


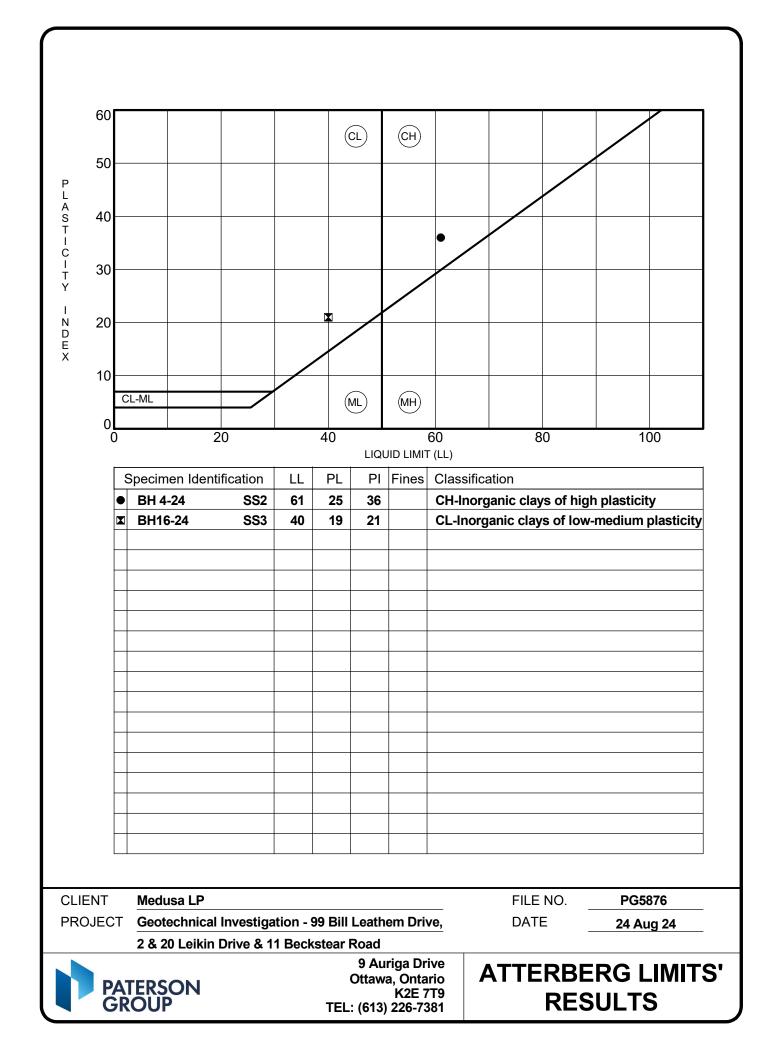
11227097-A1

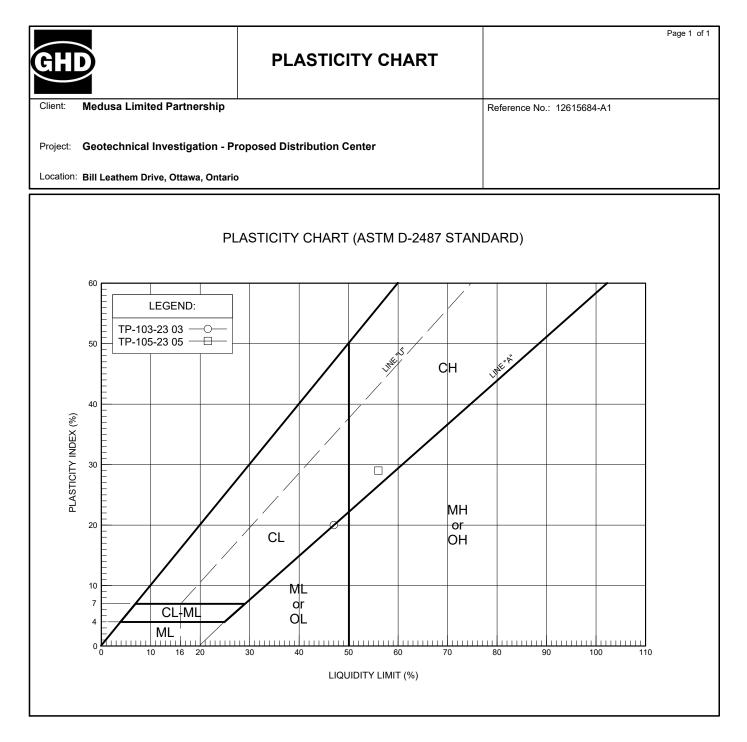
Performed by Stratum CPT Interpreted by Marc-Andre Richard, ing. jr Verified by Kamel Hamouche, ing. Ph. D.

# Project:Geotechnical Investigation - Proposed Sortation FacilityLocation:Leikin Drive and Merival Road Intersection, Nepean, Ontario



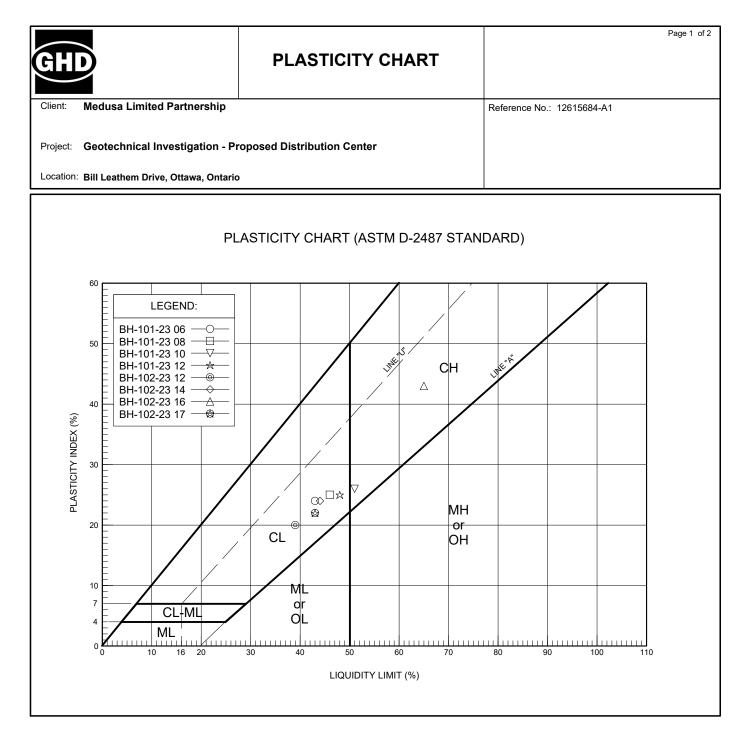






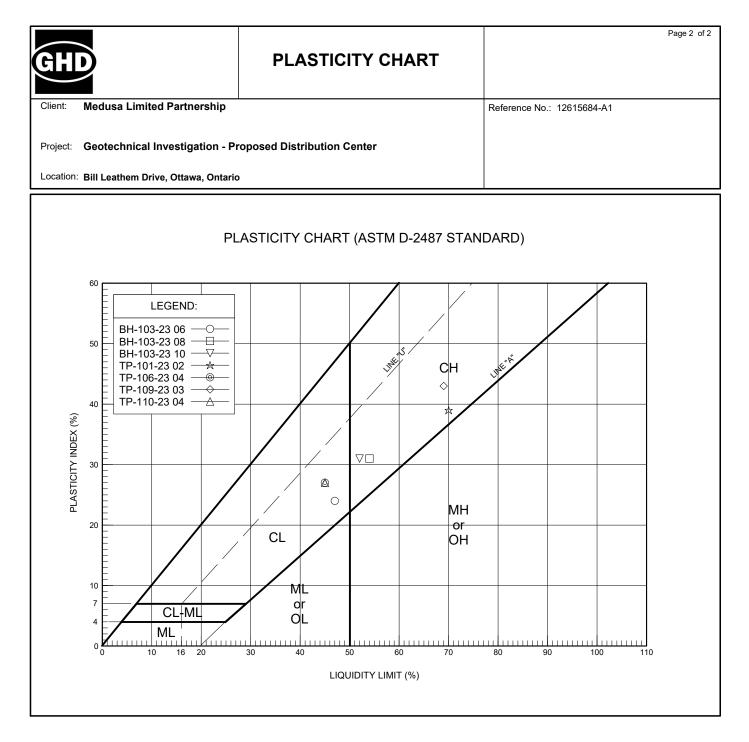
LEGEND	SOUNDING	SPL.	DEPTH (m)	DESCRIPTION	W	LL	PL	PI	LI	USCS
O	TP-103-23	03	0.80 - 1.80	Fill	22.0	47.0	27.0	20.0	-0.3	CL
	TP-105-23	05	3.40 - 4.50	Fill	28.0	56.0	27.0	29.0	0.0	СН

Prepared by: Aman Azizi	Date :	2023-08-01	Verified by: Mark Gamboz	Date : 2023-08-01
Plasticity - standard.sty				



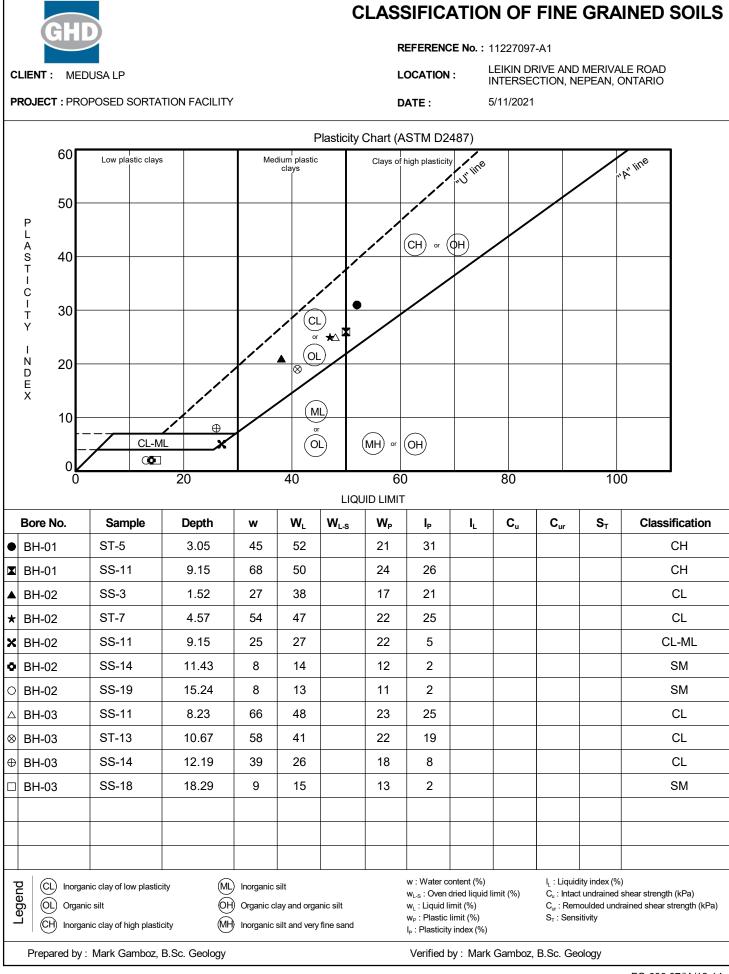
LEGEND	SOUNDING	SPL.	DEPTH (m)	DESCRIPTION	W	LL	PL	PI	LI	USCS
O	BH-101-23	06	3.05 - 3.66	Clayey Silt to Silty Clay Deposit	33.0	43.0	19.0	24.0	0.6	CL
— <del>—</del> —	BH-101-23	08	4.57 - 5.18	Clayey Silt to Silty Clay Deposit	50.0	46.0	21.0	25.0	1.2	CL
——————	BH-101-23	10	6.09 - 6.70	Clayey Silt to Silty Clay Deposit	62.0	51.0	25.0	26.0	1.4	СН
☆	BH-101-23	12	7.61 - 8.22	Clayey Silt to Silty Clay Deposit	63.0	48.0	23.0	25.0	1.6	CL
— <u>©</u> —	BH-102-23	12	7.62 - 8.23	Clayey Silt to Silty Clay Deposit	33.0	39.0	19.0	20.0	0.7	CL
$\rightarrow$	BH-102-23	14	10.13 - 10.74	Clayey Silt to Silty Clay Deposit	52.0	44.0	20.0	24.0	1.3	CL
<u> </u>	BH-102-23	16	13.17 - 13.78	Clayey Silt to Silty Clay Deposit	62.0	65.0	22.0	43.0	0.9	СН
<u> </u>	BH-102-23	17	14.69 - 15.30	Clayey Silt to Silty Clay Deposit	51.0	43.0	21.0	22.0	1.4	CL

Prepared by: Aman Azizi	Date :	2023-08-01	Verified by: Mark Gamboz	Date :	2023-08-01



LEGEND	SOUNDING	SPL.	DEPTH (m)	DESCRIPTION	W	LL	PL	PI	LI	USCS
O	BH-103-23	06	4.56 - 5.17	Clayey Silt to Silty Clay Deposit	51.0	47.0	23.0	24.0	1.2	CL
	BH-103-23	08	7.60 - 8.21	Clayey Silt to Silty Clay Deposit	58.0	54.0	23.0	31.0	1.1	СН
——————	BH-103-23	10	10.23 - 10.84	Clayey Silt to Silty Clay Deposit	58.0	52.0	21.0	31.0	1.2	СН
_☆	TP-101-23	02	0.60 - 1.40	Clayey Silt to Silty Clay Deposit	33.0	70.0	31.0	39.0	0.1	СН
— <u>©</u> —	TP-106-23	04	2.00 - 3.00	Clayey Silt to Silty Clay Deposit	31.0	45.0	18.0	27.0	0.5	CL
$\rightarrow$	TP-109-23	03	0.90 - 1.80	Clayey Silt to Silty Clay Deposit	26.0	69.0	26.0	43.0	0.0	СН
<u> </u>	TP-110-23	04	2.00 - 3.00	Clayey Silt to Silty Clay Deposit	36.0	45.0	18.0	27.0	0.7	CL

Prepared by: Aman Azizi	Date :	2023-08-01	Verified by: Mark Gamboz	Date :	2023-08-01



	(	GH	D					C						GRA	INED S	SOILS
												11227097			LE ROAD	
	LIENT		DUSA LP						L	OCATION	N :	INTERSE	CTION, N			
P	ROJEC	<b>T</b> : PR	OPOSED S	SORTAT	ION FACILITY				0	DATE :		5/31/2021				
							F	Plasticity	Chart (A	ASTM D2	2487)					
		60	Low pla	stic clays		Me	dium plastic clays	:	Clays of	high plastici	ty nu line				A" line	
		50								, _ / <sup>/</sup>	Un				. ( .	
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		-	$\square$	CL-ML		1			MH or	OH						
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		Ū						LIQ							•	
	Bore	No.	Sam	ple	Depth	w	WL	W <sub>L-S</sub>	W <sub>P</sub>	I <sub>P</sub>	I.	Cu	C <sub>ur</sub>	ST	Classif	ication
•	TP-0	1	GS-3		0.80	33	63		26	37					c	Н
	TP-2	5	GS-3		0.70	37	53		24	29					C	Н
	TP-3	5	GS-3		0.70	30	59		25	34						Н
*	TP-4	4	GS-3		0.75	39	74		34	40					C	Н
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$\vdash$			-													
	2   @	L) Inorga	anic clay of lo	w plasticity	y (ML)	Inorganic	silt	1		w : Water o				lity index (%		
	ede	L) Orgai	nic silt		Ŭ	) Organic o	clay and orga	anic silt		w <sub>L-S</sub> : Oven w <sub>L</sub> : Liquid	limit (%)	ı ıımıt (%)	C <sub>ur</sub> : Rem	noulded und	shear strength ( rained shear stre	
	<u>)</u> ا د	H) Inorga	anic clay of hi	igh plastici	ty MH	) Inorganic	silt and very	/ fine sand		w <sub>P</sub> : Plastic I <sub>P</sub> : Plasticit		)	S <sub>T</sub> : Sens	suvity		
	Prep	ared by	: Mark Ga	amboz, B	S.Sc. Geology					Verified	by : Mar	k Gamboz	, B.Sc. Ge	ology		

Γ

GHD		GI ANAL	RAIN S YSIS R		T					Page 1 of 1
	lusa Limited Partnership technical Investigation - Pr	roposed Distributi	on Center			Referen	ce No.: 12	615684-A1		
Location: Bill L	eathem Drive, Ottawa, Ontario	)								
		UNIFIED	SOIL CL	ASSIFI	CATION					
	SILT & CLAY			SAND			GR.	AVEL		
			SIEVE US	ED						
<sup>100</sup> [		0,08	0,160 0,31	5 0,630	125 2,5	5 5	10 14	20 31,540	56 80	
	LEGEND:	₽ 	ΥΥ							
90 -	TP-103-23 03 —O— TP-105-23 05 ——									
80										
70 -									+ + +	
<sub>60</sub>										
% PASSING										
% 40 ·	_									
30 -									+	
20 -									+	
10										
Ø.0	01 0.01	0.1	GRAIN SIZ	  .E (mm)	1		10		100	)

LEGEND	0.001 mm	0.01 mm	0.023 mm	0.051 mm	0,08 mm	0.16 mm	0,315 mm	0,630 mm	1,25 mm	2,5 mm	5 mm	10 mm	14 mm	20 mm	28 mm	31,5 mm
—O—	-	-	-	-	93.40	97.00	97.00	99.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	-	-	-	-	96.60	98.00	99.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

LEGEND	SOUNDING	SPL.	DEPTH (m)	DESCR	RIPTION	GRAVEL	SAND	SILT & CLAY	W	USCS
—o—	TP-103-23	03	0.80 - 1.80	Fill		0.0 %	6.6 %	93.4 %	22.0 %	CL
	TP-105-23	05	3.40 - 4.50	Fill		0.0 %	3.4 %	96.6 %	28.0 %	СН
Prepared by: A	man Azizi			Date : 2023-08-01	Verified by: Mark Gambo	Σ		[	Date : 20	23-08-01

GHD		G ANAL	RAII YSI			RT							Page 1 of 1
Client: Medusa	Limited Partnership							Referenc	e No.:	12615	684-A1		
	nnical Investigation - Pro nem Drive, Ottawa, Ontario	oposed Distribu	tion Ce	nter									
		UNIFIEI	) SOII	_ CLA	SSIFI	CATIC	DN						
	SILT & CLAY				SAND				G	irave	EL		
			SIE	E USE	D								
100			0,450	0,315	0,630	1,25	2,5	5	10 14	20	31,540	56 80	
	LEGEND:	*											
90 - E	BH-101-23 12 —◯— BH-101-23 17 —⊟—												
80 - E	8H-101-23 17 □ 8H-101-23 18 ──▽──  - 8H-102-23 12 ──☆──						-		++	_		+	
70			ĺ							Ì		İİ	
70													
60													
50 July Solution													
% PA:													
40													
30													
20							+					+	
10													
0.001	0.01	<u> </u>	1 GRA	IN SIZE	(mm)	1	<u>     </u>		10			100	)

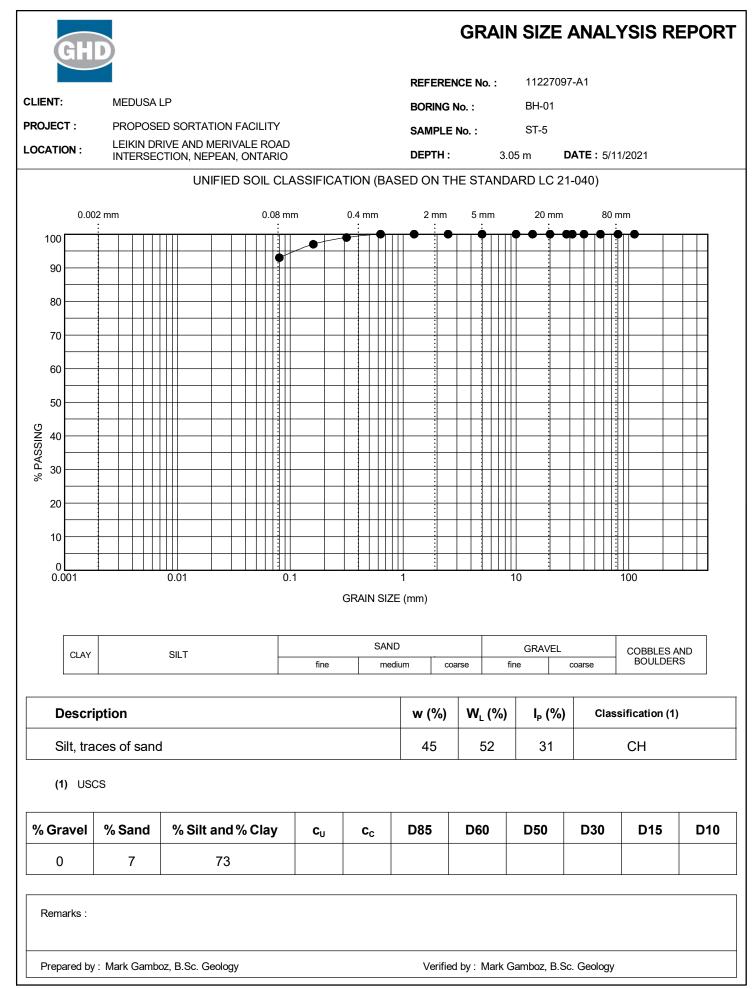
LEGEND	0.001 mm	0.01 mm	0.023 mm	0.051 mm	0,08 mm	0.16 mm	0,315 mm	0,630 mm	1,25 mm	2,5 mm	5 mm	10 mm	14 mm	20 mm	28 mm	31,5 mm
O	-	-	-	-	99.30	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	-	-	-	-	99.50	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
——————	-	-	-	-	99.50	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
☆	-	-	-	-	96.40	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

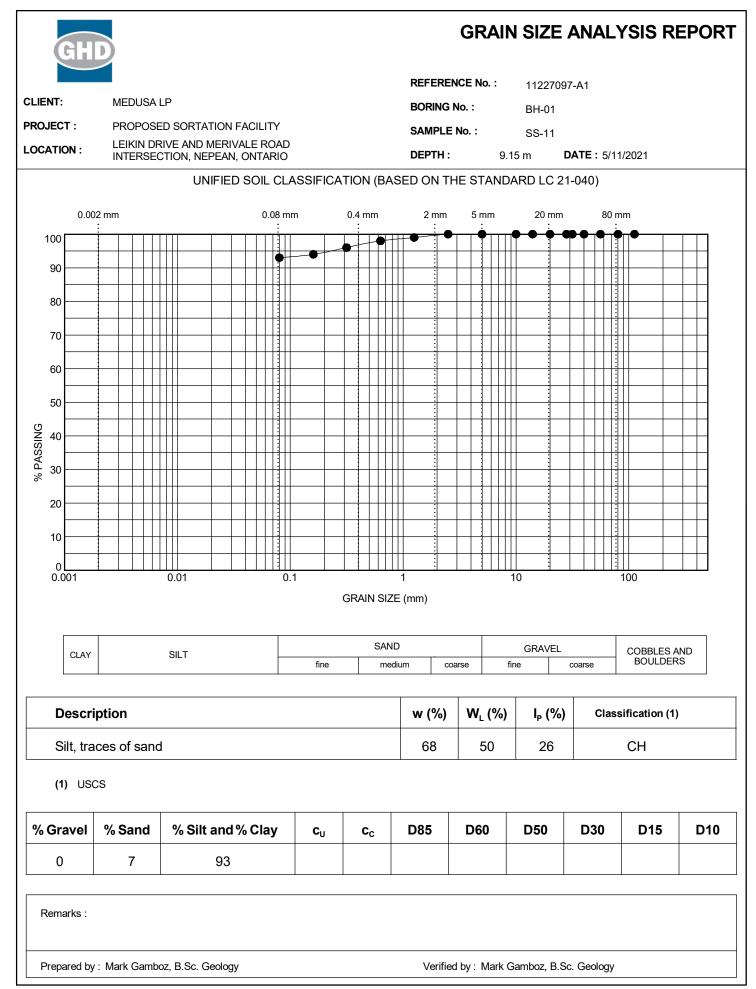
LEGEND	SOUNDING	SPL.	DEPTH (m)	DESCRIPTION	GRAVEL	SAND	SILT & CLAY	W	USCS
—O—	BH-101-23	12	7.61 - 8.22	Clayey Silt to Silty Clay Deposit	0.0 %	0.7 %	99.3 %	63.0 %	CL
	BH-101-23	17	13.40 - 14.01	Clayey Silt to Silty Clay Deposit	0.0 %	0.5 %	99.5 %	-	-
	BH-101-23	18	14.92 - 15.53	Clayey Silt to Silty Clay Deposit	0.0 %	0.5 %	99.5 %	-	-
_☆	BH-102-23	12	7.62 - 8.23	Clayey Silt to Silty Clay Deposit	0.0 %	3.6 %	96.4 %	33.0 %	CL
Prepared by: A	man Azizi			Date : 2023-08-01 Verified by: Mark Gamb	DZ		[	Date : 20	23-08-01

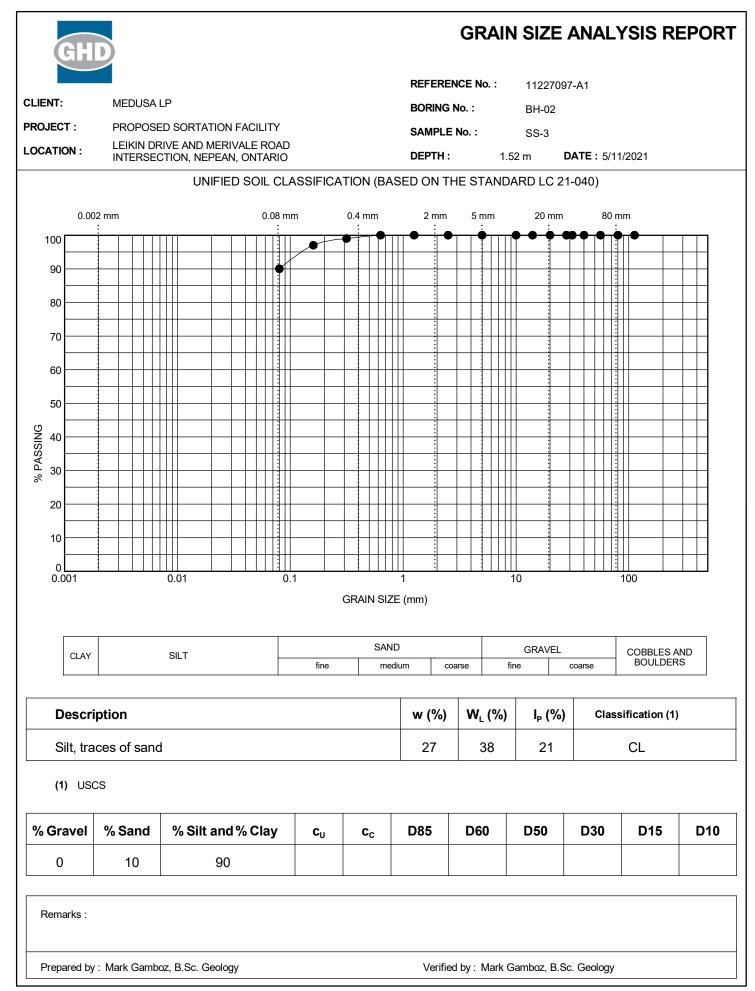
D	HYDR( ANALYSI	OMETER S REPOR	T					
Medusa Limited Partnership		enter		Refere	nce No.:	12615	5684-A1	
n : Bill Leathem Drive, Ottawa, Ontario	• UNIFIED SO	IL CLASSIFI						
CLAY SILT		SAND			G	irave	EL	
	SIE	VES USED						
100	0,08 0,160	0,315 0,630	1,25 2,5	5 5	10 14	20	31,540	56 80
90 80 70 60 50 50 50 70 70 70 70 70 70 70 70 70 70 70 70 70								
a % 40 30) 20 10					BH-101 BH-102 TP-101·	-23 1	6 —C	<u> </u>
0.001 0.01	0.1	AIN SIZE (mm)	1		TP-110- 10		4 —☆	

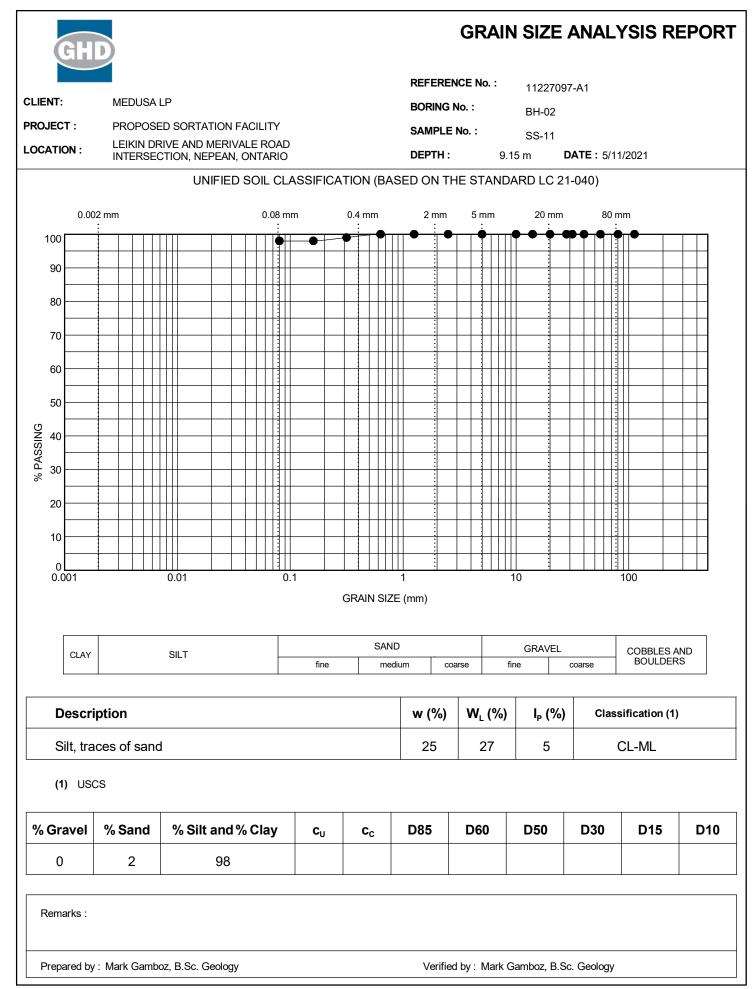
LEGEND	0.001 mm	0.01 mm	0.023 mm	0.051 mm	0,08 mm	0.16 mm	0,315 mm	0,630 mm	1,25 mm	2,5 mm	5 mm	10 mm	14 mm	20 mm	28 mm	31,5 mm
—O—	32.80	57.26	68.43	84.07	97.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	46.70	83.35	94.50	99.31	99.50	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	47.50	77.86	85.81	92.43	98.59	99.00	99.01	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
☆	30.20	47.09	57.18	72.30	95.80	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

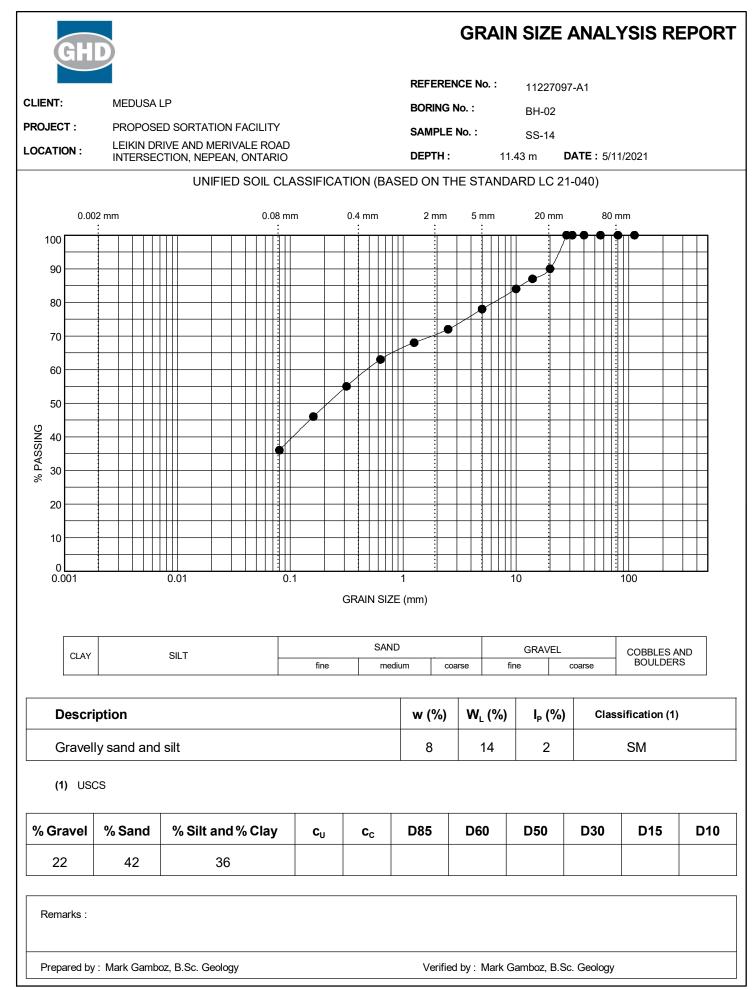
LEGEND	SOUNDING	SPL.	DEPTH (m)	DESCRIPTION	GI	RAVEL	SAND	SILT	CLAY	W	USCS
—O—	BH-101-23	06	3.05 - 3.66	Clayey Silt to Silty Clay Deposit	(	0.0 %	3.0 %	59.5 %	37.5 %	33.0 %	CL
	BH-102-23	16	13.17 - 13.78	Clayey Silt to Silty Clay Deposit	(	0.0 %	0.5 %	43.0 %	56.5 %	62.0 %	СН
——————	TP-101-23	02	0.60 - 1.40	Clayey Silt to Silty Clay Deposit	(	0.0 %	1.4 %	43.6 %	55.0 %	33.0 %	СН
_☆	TP-110-23	04	2.00 - 3.00	Clayey Silt to Silty Clay Deposit	(	0.0 %	4.2 %	60.8 %	35.0 %	36.0 %	CL
Prepared by: A	man Azizi			Date : 2023-08-01 Verified by:	Mark Gan	mboz			Da	ite : 202	3-08-01

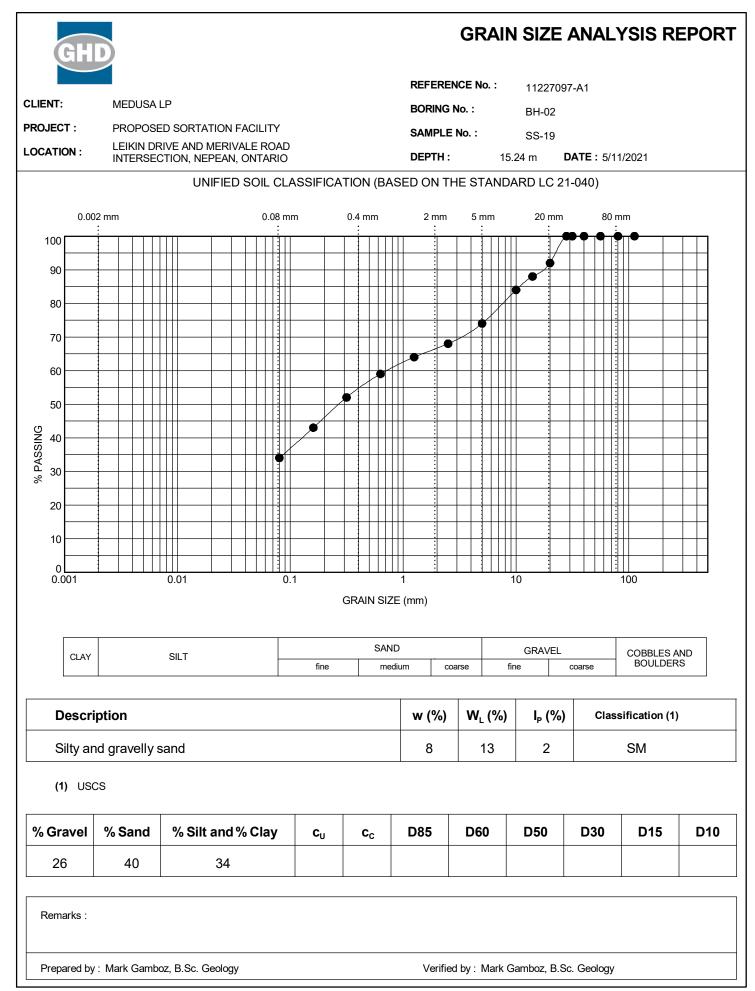


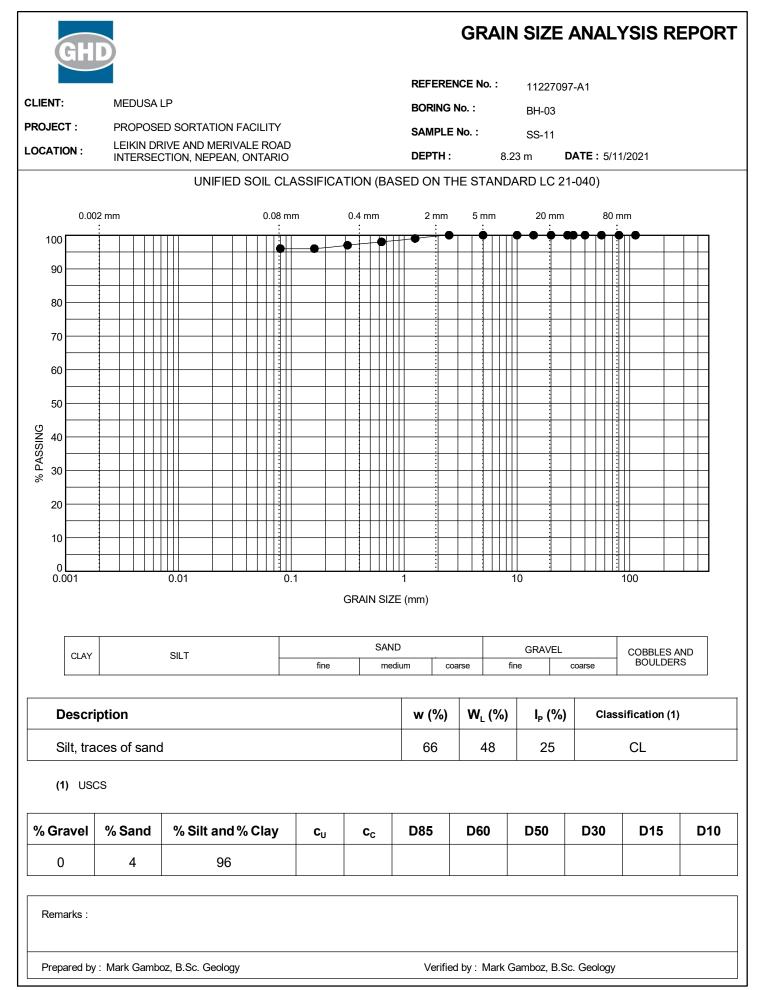


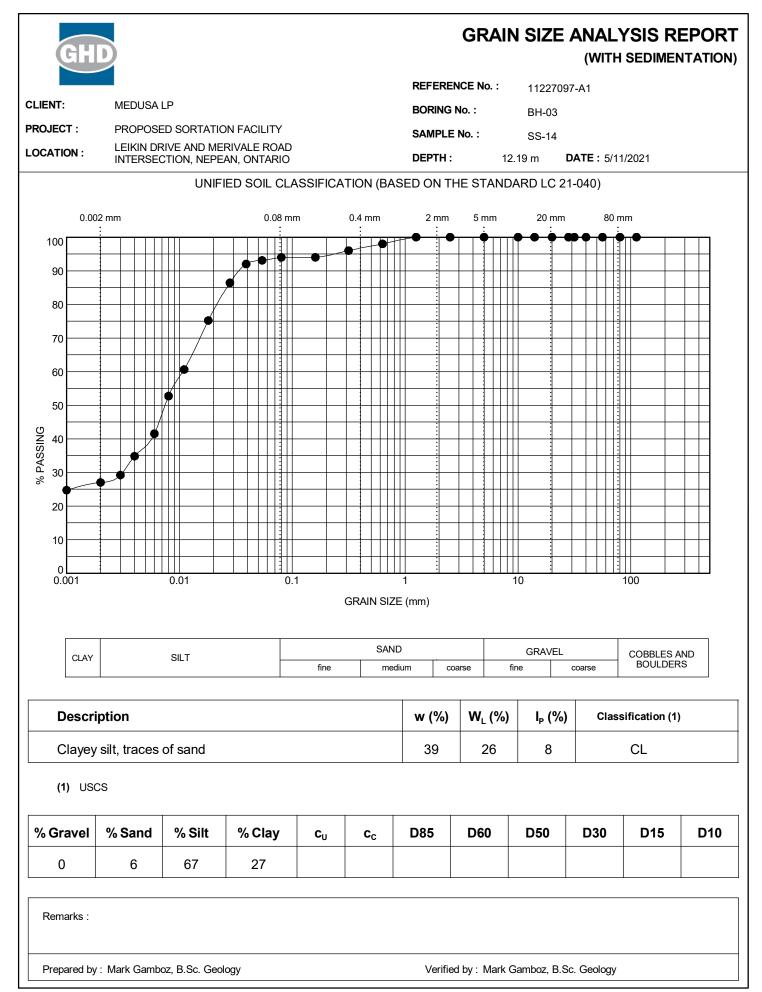


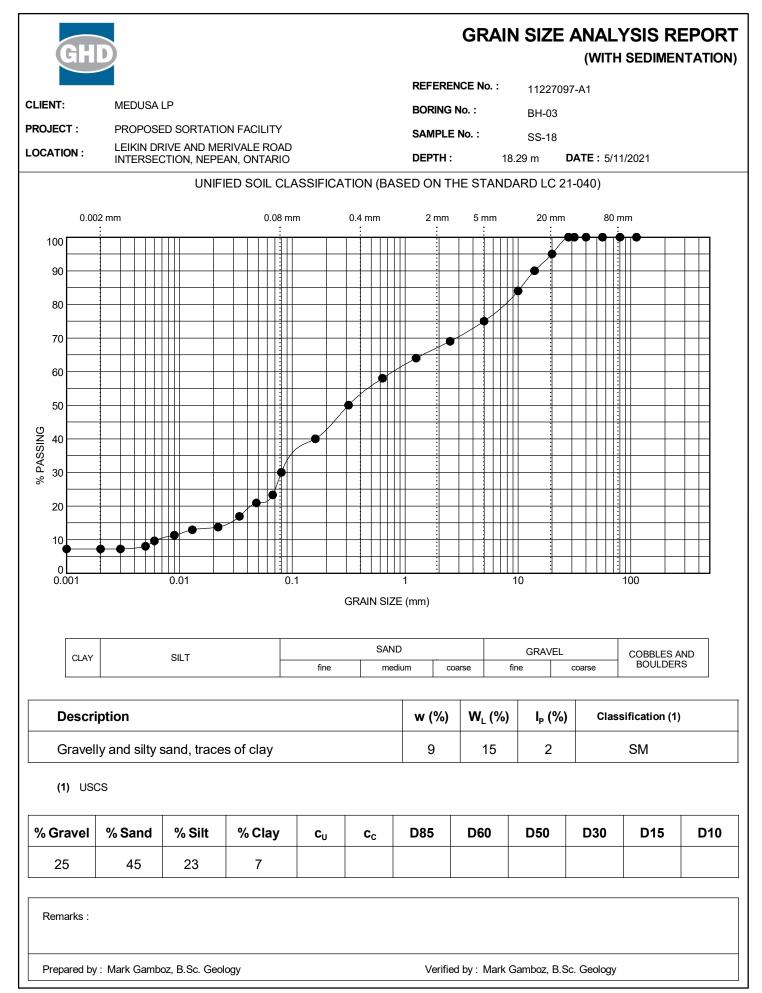


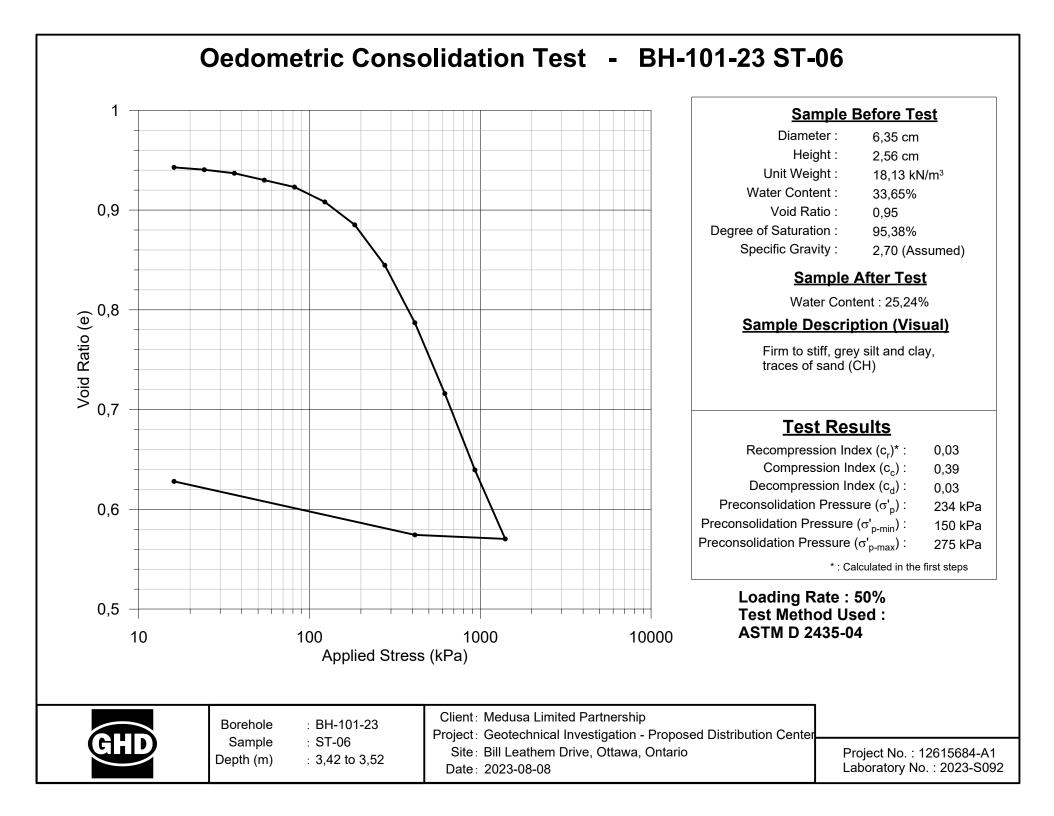




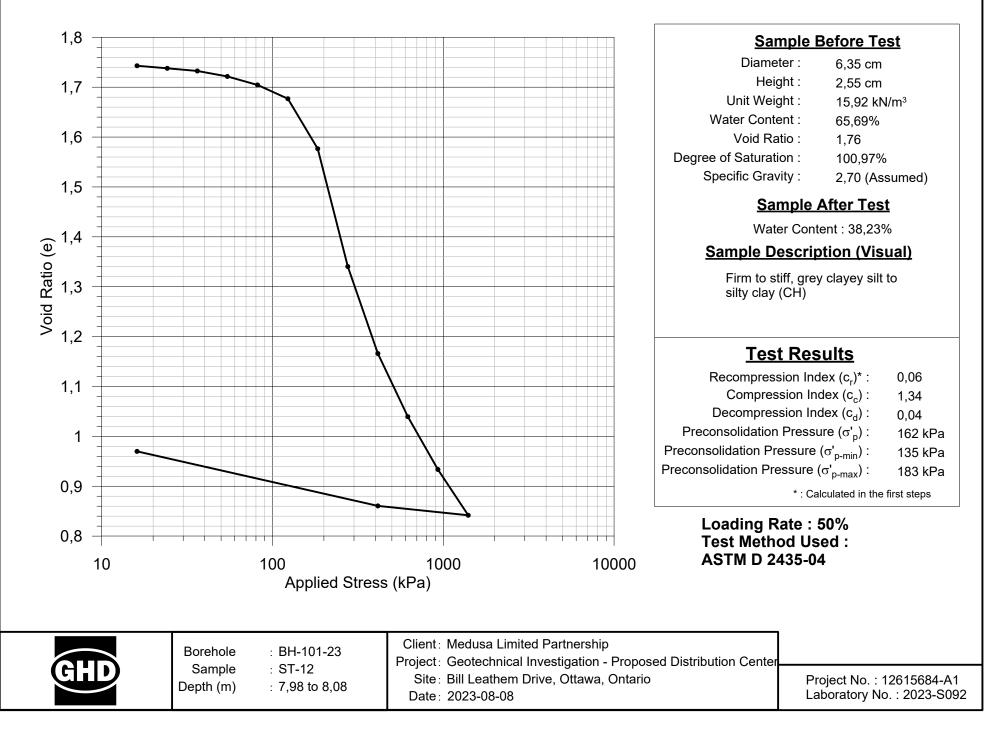


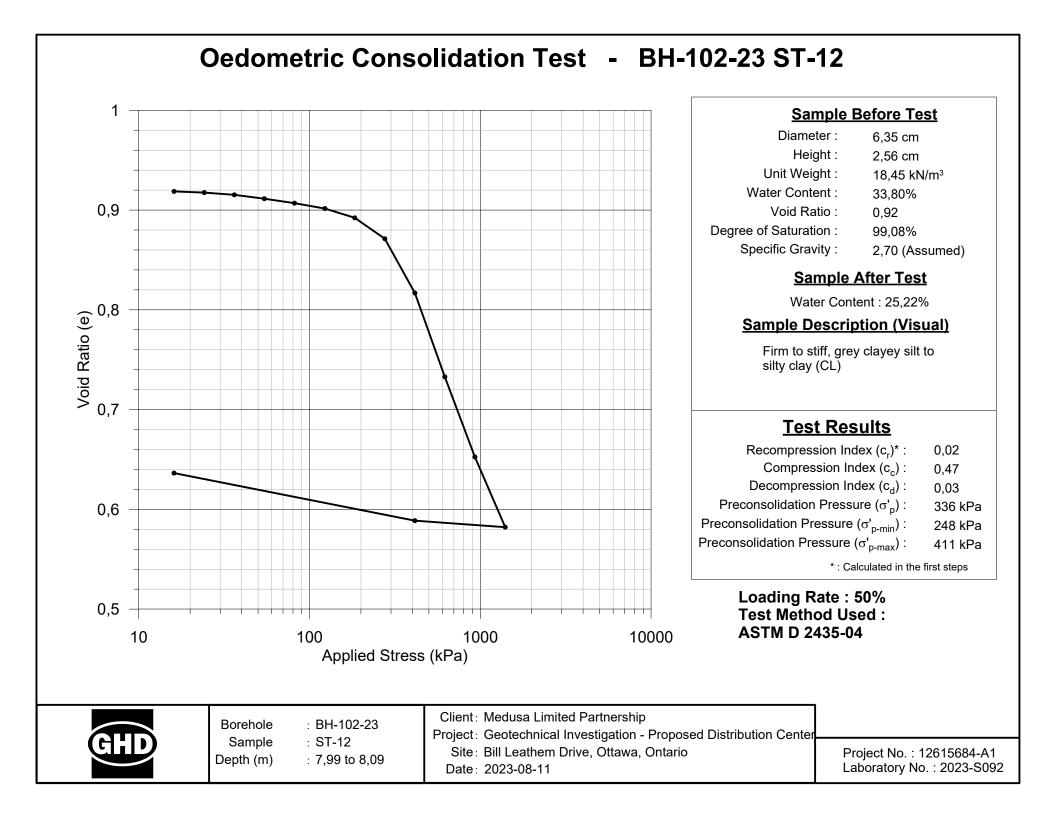




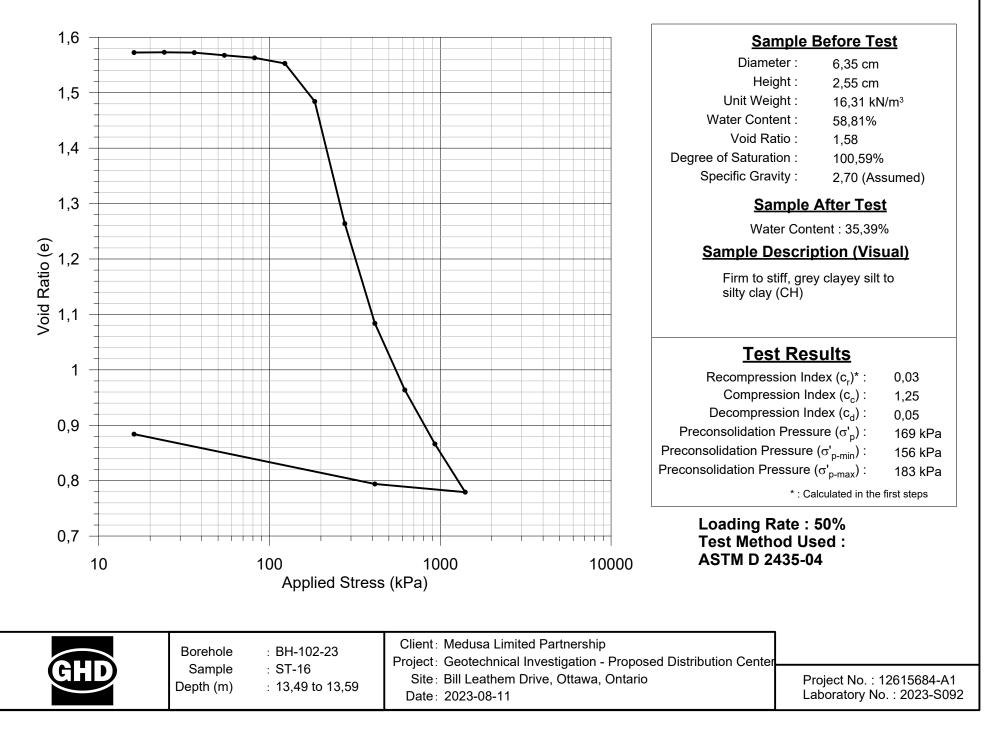


## Oedometric Consolidation Test - BH-101-23 ST-12





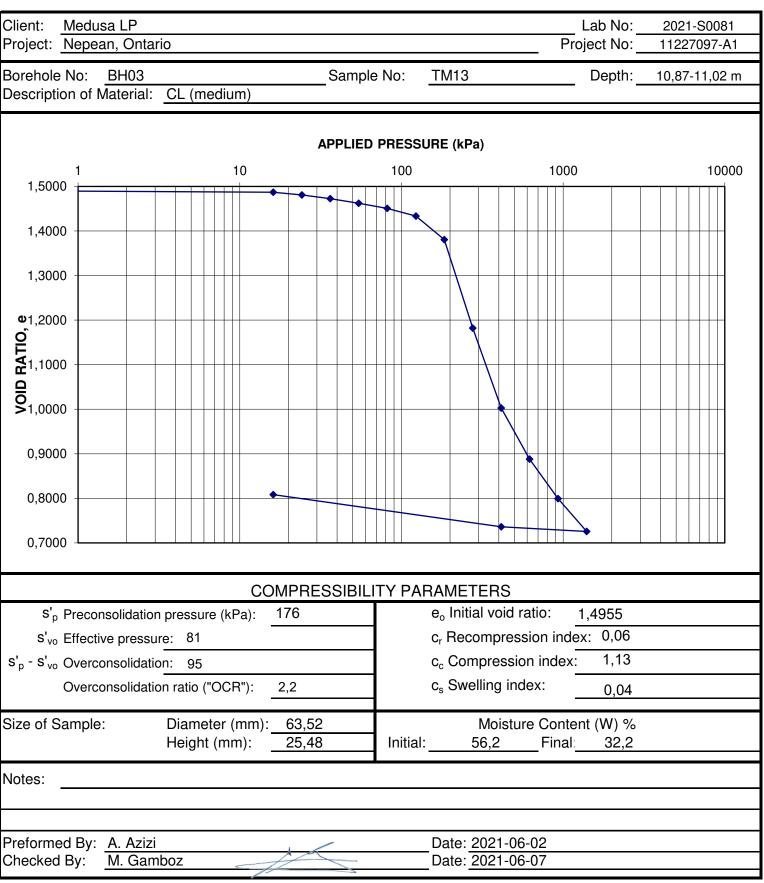
## Oedometric Consolidation Test - BH-102-23 ST-16





Client: <u>Medus</u> Project: <u>Nepea</u>		rio								Lab No Project No		2021-S008 1227097-A	
Borehole No: Description of N	BH02		um)	Sa	Imple N	lo:	TM7			-		1,81-4,98 n	
				APP	LIED PF	RESS	URE (kPa	a)					
1			10			100	·		1	000		100	00
1,6000													•••
1,5000													
1,4000							<u> </u>						
•1,3000 OILV21,2000 OIDO 1,1000													
<b>Å</b> 1,2000								$\left \right\rangle$					
QIO													
≥1,1000 <b>−</b>													
1,0000									X				
									N				
0,9000					++++								
0.0000									+++-				
0,8000													
			COME				RAMET	EDO					
S' Dracan	aalidatior	n pressure (k			DILII	ΓPA	$e_0$ Initia		ratio:	1,5606			
			Fa). 101				$c_{\rm r}$ Reco				7		
s' <sub>vo</sub> Effectiv								-					
s' <sub>p</sub> - s' <sub>vo</sub> Overco										lex: 0,87			
Overco	onsolidatio	on ratio ("OC	R"): 4,0				$c_s$ Swe	lling ind	dex:	0,04			
Size of Sample:		Diameter	(mm): 6	3,52				Moistu	ire Co	ontent (W) %	/ 0		
		Height (m	m): 2	5,48		nitial	. 5	58,0	Fi	nal <u>35,7</u>	7		
Notes:													
Preformed By:							Date: 2						
Checked By:	M. Gam	IDUZ	A		>		Date: 2	.uz i-Ut	0-04				







#### Certificate of Analysis

Client: Paterson Group Consulting Engineers (Ottawa)

#### Client PO: 61024

Report Date: 22-Aug-2024

Order Date: 16-Aug-2024

Project Description: PG5876

	г			1			
	Client ID:	BH6-24 SS3	-	-	-		
	Sample Date:	16-Aug-24 09:00	-	-	-	-	-
	Sample ID:	2433647-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics	•		•	•			
% Solids	0.1 % by Wt.	75.7	-	-	-	-	-
General Inorganics							
рН	0.05 pH Units	7.68	-	-	-	-	-
Resistivity	0.1 Ohm.m	69.5	-	-	-	-	-
Anions	•						
Chloride	10 ug/g	<10	-	-	-	-	-
Sulphate	10 ug/g	<10	-	-	-	-	-



GHD Consultants Ltée Votre # du projet: 12615684-A1 Adresse du site: BROCCOLINI, NEPEAN Votre # de commande: 762-003432 Initiales du préleveur: DV

### PARAMÈTRES CONVENTIONNELS (SOL)

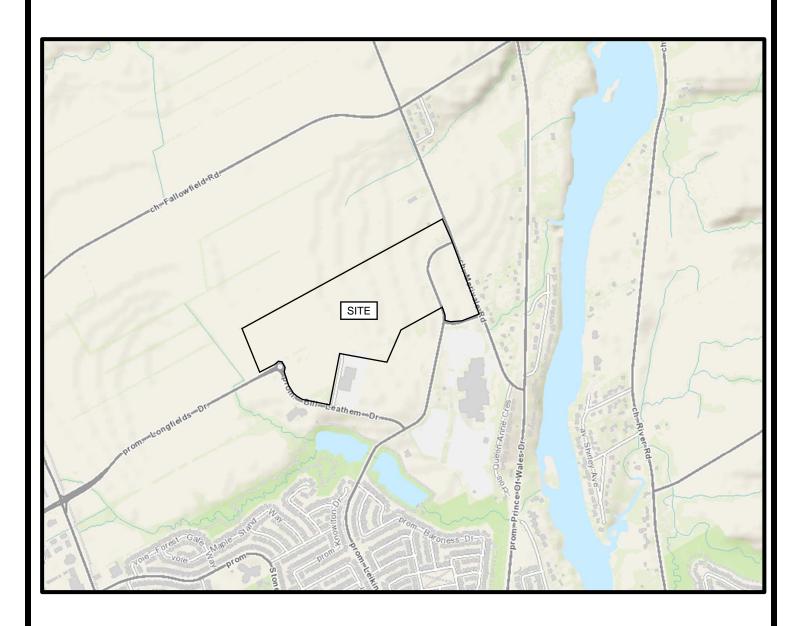
ID Bureau Veritas		MA7807	MA7808	MA7809		
Date d'échantillonnage		2023/07/07	2023/07/07	2023/07/07		
# Bordereau		N-A	N-A	N-A		
	Unités	TP-104-23 VR-03 1,10-2,00	TP-113-23 VR-03 0,75-1,80	TP-114-23 VR-04 1,90 À 3,00	LDR	Lot CQ
% HUMIDITÉ	%	23	26	26	N/A	N/A
CONVENTIONNELS				·		
Chlorures (Cl) +	mg/kg	1.2	3.1	2.3	1.0	2431102
Sulfates (SO4) +	mg/kg	8.4	15	9.2	5.0	2431102
LDR = Limite de détection rapp	ortée			·		
Lot CQ = Lot contrôle qualité						
N/A = Non Applicable						
+ Accréditation non existante p	our ce param	nètre				



# **APPENDIX 2**

## FIGURE 1 - KEY PLAN

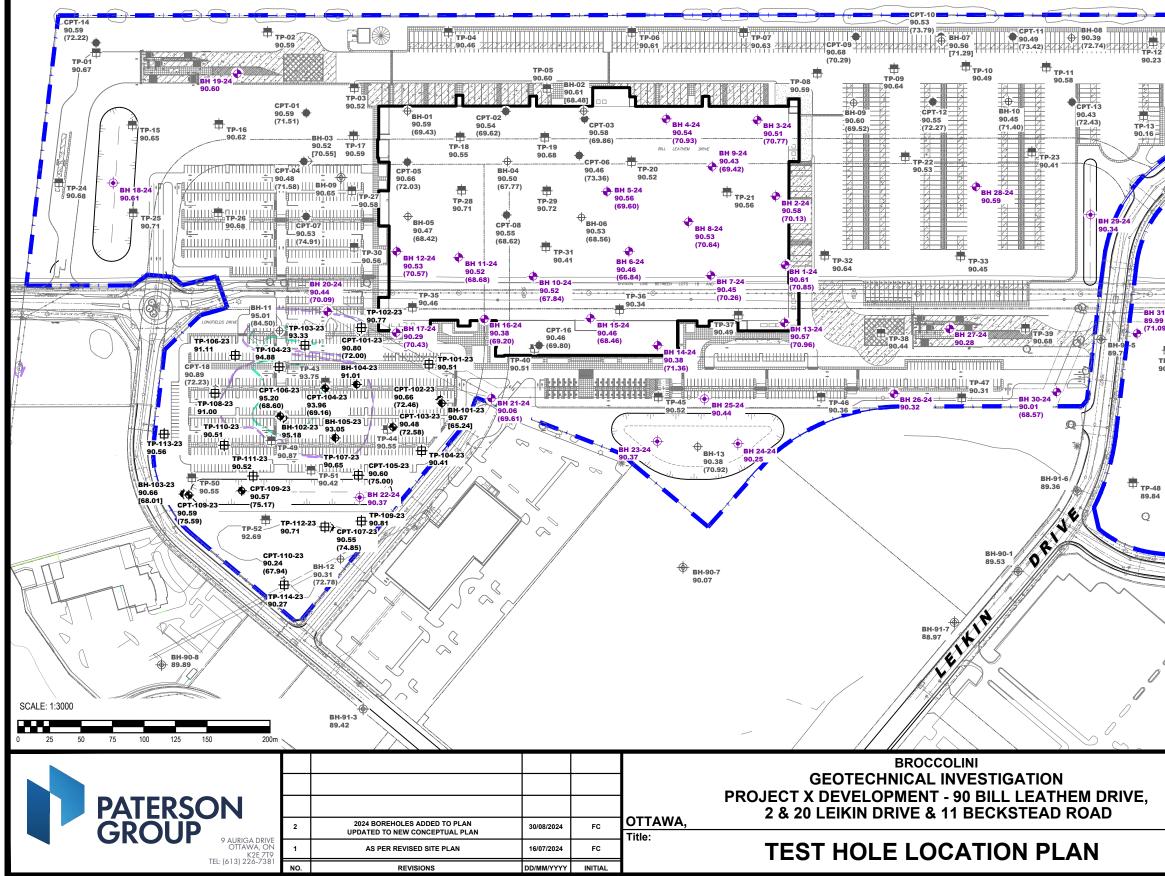
### DRAWING PG5876-1 - TEST HOLE LOCATION PLAN



# FIGURE 1

**KEY PLAN** 





	Approved by	DP	Revision No.:	: 2
ONTARIO	Checked by: Approved by	FC	Dwg. No.: PG	5876-1
	Drawn by:	NFRV	Report No.:	PG5876-1
	Scale:	1:3000	Date:	05/2021
			CE ELEVATION AT 202 REFERENCED TO A G	
S[	1  fm			
<b>)</b>   <i> </i>		(72.58)	PRACTICAL DCPT RE	FUSAL ELEVATION (m)
>/A		[65.24]	BEDROCK SURFACE	
		93.75	OTHERS (FONDEX, 1 GROUND SURFACE E	
		•	(GHD, 04/2021) BOREHOLE LOCATIO	N BY
	<b>*</b> /#=`_		PIEZOCONE SOUNDI	NG
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		<b>•</b>	BOREHOLE BY OTHE LOCATION (GHD, 06/2	2023)
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