PATERSON GROUP

Geotechnical Investigation

Proposed Development

295 Roger Neilson Way
Ottawa, Ontario

Prepared for 1850591 Ontario Ltd.

Report PG7845-1 dated February 24, 2026

Table of Contents

Appendices

1.0 Introduction

Paterson Group (Paterson) was commissioned by 1850591 Ontario Ltd. to conduct a geotechnical investigation for the proposed development to be located at 295 Roger Neilson Way in the City of Ottawa, Ontario (refer 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 existing subsoil and groundwater information at this site by means of boreholes, and to

❐ Provide geotechnical recommendations for the design of the proposed development including construction considerations which may affect its design.

This 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.

2.0 Proposed Development

Based on the available site plan, it is understood that the proposed development will consist of a single-storey commercial building with an approximate footprint of 3,252 m^2 and slab-on-grade construction.

The proposed development is expected to include associated at-grade parking areas, loading docks, landscaped areas, and sidewalks around the proposed building. It is also expected that the proposed building will be municipally serviced.

3.0 Method of Investigation

3.1 Field Investigation

Field Program

The field program for the geotechnical investigation was conducted on January 22 and 23, 2026. The investigation consisted of a total of 6 boreholes (BH 1-26 to BH 6-26) advanced to a maximum depth of 7.5 m below the existing grade. The boreholes were placed in a manner to provide general coverage of the subject site taking into consideration site features and underground utilities. The borehole locations for the current investigation are presented on Drawing PG7845-1 - Test Hole Location Plan included in Appendix 2.

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

Sampling and In Situ Testing

Soil samples were collected from the boreholes using two different techniques, namely, sampled directly from the auger flights (AU) or collected using a 50 mm diameter split-spoon (SS) sampler. All samples were visually inspected and initially classified on-site, and subsequently placed in sealed plastic bags. All samples were 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.

A 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 carried out at regular depth intervals in cohesive soils.

The overburden thickness was evaluated by completing dynamic cone penetration testing (DCPT) at boreholes BH 2-26 and BH 6-26. The DCPT testing consisted 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 test holes were recorded in detail in the field. The soil profiles are presented on the Soil Profile and Test Data sheets in Appendix 1.

Groundwater

Monitoring wells were installed at boreholes BH 1-26, BH 2-26 and BH 5-26 to permit monitoring of the groundwater levels subsequent to the completion of the sampling program. Typical monitoring well construction details are described below:

- 1.5 m of slotted 51 mm diameter PVC screen at the base of the boreholes.
- 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.
- 300 mm thick bentonite hole plug directly above PVC slotted screen.
- Clean backfill from top of bentonite plug to the ground surface.

Refer to the Soil Profile and Test Data sheets in Appendix 1 for specific well construction details.

The installed monitoring well should be decommissioned in accordance with Ontario Regulations O.Reg 903 by a qualified licensed well technician and prior to construction.

The remaining boreholes were fitted with flexible piezometers to monitor groundwater levels. The groundwater observations are discussed in Section 4.3 and presented in the Soil Profile and Test Data sheets in Appendix 1.

3.2 Field Survey

The borehole locations, and the ground surface elevation at each borehole location, were surveyed by Paterson using a GPS unit with respect to a geodetic datum. The locations of the boreholes, and the ground surface elevation at each borehole location, are presented on Drawing PG7845-1 - Test Hole Location Plan in Appendix 2.

3.3 Laboratory Testing

Soil samples were recovered from the subject site and visually examined in our laboratory to review the results of the field logging. Moisture content analyses were also completed on split spoon samples collected from the boreholes. Further, 2 samples were submitted for Atterberg limits testing, and 1 sample was submitted for grain size distribution testing. The results are discussed in Section 4.2.

All samples 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 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. The sample was submitted to determine the concentration of sulphate and chloride, the resistivity and the pH of the sample. The results are presented in Appendix 1 and are discussed further in Section 6.7.

4.0 Observations

4.1 Surface Conditions

The subject site is currently vacant and generally covered with grass, with scattered trees present across the property. The site is bordered to the north by an existing commercial development, to the east by Roger Neilson Way, to the south by an institutional property, and to the west by a pond.

The ground surface across the site is generally level at approximate geodetic elevations 95 to 96 m.

4.2 Subsurface Profile

Overburden

Generally, the subsurface profile at the borehole locations consists of fill or very stiff, brown silty clay at the ground surface, underlain by a silty sand and a thick deposit of silty clay. Where present, the fill was generally observed to extend to approximate depths of 0.7 to 1.5 m and consist of brown silty clay with trace to some sand, gravel, crushed stone, and topsoil.

Underlying the fill and/or silty clay, a silty sand deposit was encountered in all boreholes at depths ranging from approximately 1.0 to 2.6 m below ground surface. This deposit generally consists of very loose to loose, brown to grey silty sand with trace to some clay.

A firm, grey silty clay deposit was encountered beneath the silty sand layer at depths of about 2.0 to 2.6 m below ground surface, extending to the termination depths of the boreholes.

Practical refusal to the DCPT was encountered at boreholes BH 2-26 and BH 6-26 at depths of 15.2 m and 13.4 m below the existing ground surface, respectively.

Reference should be made to the Soil Profile in Appendix 1 for specific details of the soil profiles encountered at each test hole location.

Bedrock

Based on available geological mapping, the site is located in an area where the bedrock consists of sandstone of the Nepean formation.

Grain Size Distribution and Hydrometer Testing

Grain size distribution (sieve and hydrometer analysis) was completed on 1 selected soil sample. The results of the grain size analysis are summarized in Table 1 below and are presented in Appendix 1.

Table 1 – Summary of Grain Size Distribution Analysis

Borehole	Sample	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH 3-26	SS4	0.0	23.4	47.6	29

Atterberg Limit Tests

A total of 2 silty clay samples were submitted for Atterberg limits testing. The test results indicate that the silty clay is generally classified as an Inorganic Clay of Low Plasticity (CL). The results are summarized in Table 2 below.

Table 2 – Summary of Atterberg Limits Results

Borehole	Sample	Depth (m)	LL (%)	PL (%)	PI (%)	Classification
BH 3-26	SS 4	2.30	29	15	14	CL
BH 6-26	SS 4	2.30	27	15	12	CL

Notes: LL: Liquid Limit; PL: Plastic Limit; PI: Plasticity Index; CL: Clay of Low Plasticity

4.3 Groundwater

The groundwater levels were recorded in the monitoring wells and piezometers on January 28, 2026. The recorded groundwater levels are presented in Table 3, on the next page, and are further noted on the Soil Profile and Test Data sheets in Appendix 1.

Table 3 – Summary of Groundwater Level Readings

Borehole Number	Ground Surface Elevation (m)	Measured Groundwater Level		Date Recorded
		Depth (m)	Elevation (m)	
BH 1-26*	95.80	2.20	93.60	January 28, 2026
BH 2-26*	95.13	1.66	93.47	
BH 3-26	94.83	2.42	92.41	
BH 4-26	95.04	5.73	89.31	
BH 5-26*	95.02	5.45	89.57	
BH 6-26	95.22	3.50	91.72	

Note: The ground surface elevation at each borehole location was surveyed by Paterson and was referenced to a geodetic datum.
*-Monitoring Well

It should be noted that the groundwater levels could be influenced by surface water infiltrating the backfilled boreholes. Long-term groundwater levels can also be estimated based on the observed colour and consistency of the recovered soil samples. Based on these observations, the long-term groundwater table can be expected at an approximate depth of 2 to 3 m below ground surface.

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

5.0 Discussion

5.1 Geotechnical Assessment

From a geotechnical perspective, the subject site is suitable for the proposed development. It is recommended that the proposed building be supported on conventional spread footings bearing on the undisturbed, compact silty sand or stiff to firm silty clay.

However, should the recommended bearing resistance values and/or maximum footings sizes be insufficient based on the building loads, then foundation support for the proposed building would need to consist of end-bearing piles driven to refusal on bedrock.

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

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

5.2 Site Grading and Preparation

Stripping Depth and Subgrade Preparation

Topsoil, asphalt or fill, such as those containing organic materials, should be stripped from under the building footprints and other settlement sensitive structures, prior to placing the fill.

However, it is anticipated that the existing fill can remain in place below the proposed building, outside of the lateral support zones of the footings, provided that the existing fill subgrade is proof rolled several times under dry conditions and above freezing temperatures. The proof rolling should consist of several passes of a vibratory drum roller, which is done under the supervision of Paterson. Any poor performing areas noted during the proof rolling operation should be removed and replaced with an approved fill.

Where silty sand is encountered at the slab-on-grade subgrade and/or underside of the footing (USF) elevation and is observed to be in a loose state of compactness, it should also be proof-rolled with several passes of a vibratory drum roller.

Fill Placement

Fill placed for grading beneath the building areas 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 prior to delivery. The fill should be placed in maximum 300 mm thick loose lifts and compacted by suitable compaction equipment. Fill placed beneath proposed buildings and paved areas should be compacted to a minimum 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. These materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids. If this material is to be used to build up the subgrade level for areas to be paved, it should be compacted in thin lifts to at least 95% of the material's SPMDD.

Fill used for grading beneath the base and subbase layers of paved areas should consist, unless otherwise specified, of clean imported granular fill, such as OPSS Granular A, Granular B Type II or select subgrade material. This material should be tested and approved prior to delivery to the 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 paved areas should be compacted to at least 95% of its SPMDD.

Protection of Subgrade

Where the footing subgrades consist of silty clay, it is recommended that a minimum 50 mm thick lean concrete mud slab be placed on the undisturbed silty clay subgrade shortly after the completion of the excavation. The main purpose of the concrete mud slab is to reduce the risk of disturbance of the subgrade under the traffic of workers and equipment.

5.3 Foundation Design

Conventional Spread Footings

Strip footings, up to 1.5 m wide, and pad footings, up to 3 m wide, placed on the undisturbed, compact silty sand or stiff to firm silty clay, **at or above geodetic elevation 93.5 m can**, be designed using a bearing resistance value at serviceability limit states (SLS) of **60 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **90 kPa**. A geotechnical resistance factor of 0.5 was applied to the above-noted bearing resistance value at ULS.

An undisturbed soil bearing surface consists of one 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, compact silty sand or stiff to firm silty clay bearing surface, or on engineered fill which is placed and compacted directly over these strata, 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.

The bearing medium under footing-supported structures is required to be provided with adequate lateral support with respect to excavations and different foundation levels. Adequate lateral support is provided to an undisturbed soil bearing surface above the groundwater table when a plane extending horizontally and vertically from the bottom edge of the footing at a minimum of 1.5H:1V, passing through in situ soil of the same or higher capacity as the bearing medium soil.

End Bearing Pile Foundation

As noted above, should the recommended bearing resistance values and/or maximum footings sizes be insufficient based on the building loads, then foundation support for the proposed building would need to consist of end-bearing piles driven to refusal on bedrock.

Typically, driven piles in the Ottawa area consist of concrete-filled steel pipe piles. Applicable pile resistance values at ultimate limit states (ULS) are given in Table 4 below. Note that these are all geotechnical axial resistance values in compression.

Table 4 - Pile Foundation Design Data

Pile Outside Diameter (mm)	Pile Wall Thickness (mm)	Geotechnical Axial Resistance	Final Set (blows/ 12 mm)	Transferred Hammer Energy (kJ)
		Factored at ULS (kN)		
245	9	1,090	10	50
245	11	1,260	11	50
245	13	1,500	12	50

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

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.

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.

If there are proposed grade raises at the site, downdrag loads should be considered on the piles. This can be discussed further if piles are selected as the foundation support option.

Lateral and uplift capacities of the piles can also be provided if piles are selected as the foundation support option for the proposed building.

Permissible Grade Raise Recommendations

Due to the presence of the silty clay deposit, a permissible grade raise restriction of **0.5 m** is recommended in the proposed building footprint and within 3 m of the building perimeter. This accounts for a live load on the slab-on-grade of 12 kPa. If the actual live load on the slab-on-grade differs from this value, then this permissible grade raise value would need to be adjusted.

Beyond the 3 m distance from the proposed building perimeter, a permissible grade raise restriction of **1.2 m** is recommended.

A post-development groundwater lowering of 0.5 m was considered in our permissible grade raise calculations. If higher than permissible grade raises are required, preloading with or without a surcharge, lightweight fill, and/or other measures should be investigated to reduce the risks of unacceptable long-term post construction total and differential settlements.

5.4 Design for Earthquakes

The site class for seismic site response can be taken as **Class X_E**. If a higher seismic site class is required for the proposed development (such as a velocity in the vicinity of Class X_D), then a site-specific shear wave velocity test may be completed to accurately determine the applicable seismic site classification for foundation design of the proposed building, as defined in the Ontario Building Code (OBC) 2024.

Soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest version of the OBC 2024 for a full discussion of the earthquake design requirements.

5.5 Slab-on-Grade Construction

With the removal of all topsoil and fill, containing significant amounts of deleterious or organic materials, the silty clay, silty sand and/or existing fill are considered acceptable subgrades on which to commence backfilling for floor slab construction.

A vibratory drum roller should complete several passes over the subgrade surface as a proof-rolling program. Any poor performing areas should be removed and reinstated with an engineered fill, such as OPSS Granular B Type II.

It is recommended that the upper 200 mm of sub-slab fill consist of OPSS Granular A crushed stone which is compacted to 98% of its SPMDD.

5.6 Pavement Structure

The pavement structures presented in the following tables are recommended for the design of car only parking, heavy truck parking areas and access lanes.

Table 5 – Recommended Asphalt Pavement Structure – Car Only Parking Areas

Thickness (mm)	Material Description
50	**Wear Course** – Superpave 12.5 Asphaltic Concrete
150	**BASE** – OPSS Granular A Crushed Stone
300	**SUBBASE** – OPSS Granular B Type II
SUBGRADE – Either fill, in situ soils or OPSS Granular B Type I or II placed over in situ soil.	

Table 6 – Recommended Asphalt Pavement Structure – Heavy Truck Loading Areas and Access Lanes

Thickness (mm)	Material Description
40	**Wear Course** – Superpave 12.5 Asphaltic Concrete
50	**Binder Course** – Superpave 19.0 Asphaltic Concrete
150	**BASE** – OPSS Granular A Crushed Stone
450	**SUBBASE** – OPSS Granular B Type II
SUBGRADE – Either fill, in situ soils or OPSS Granular B Type I or II placed over in situ soil.	

Minimum Performance Graded (PG) 58-34 asphalt cement should be used for this project.

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.

The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 99% of the material's SPMDD using suitable compaction equipment.

Pavement Structure Drainage

The pavement structure performance is largely dependent on the contact zone between the subgrade material and the base stone in a dry condition. Failure to provide adequate drainage under conditions of heavy wheel loading can result in the fine subgrade soil being pumped into the voids in the stone subbase, thereby reducing load carrying capacity.

Due to the impervious nature of the subgrade and fill materials, consideration should be provided to installing subdrains during the pavement construction. At transition zones between various pavement structures, subdrains should be installed longitudinally to drain any potential water trapped in the granular layers. The subdrains at catch basins should extend in four orthogonal directions and longitudinally when placed along a curb.

6.0 Design and Construction Precautions

6.1 Foundation Drainage and Backfill

A perimeter foundation drainage system is considered optional for the proposed structure at the subject site, as it would help minimize frost heave of paved and landscaped areas in the vicinity of the proposed building. Where utilized, the system should consist of a 150 mm diameter perforated and corrugated plastic pipe which is surrounded on all sides by 150 mm of 19 mm clear crushed stone and placed at the footing level around the exterior perimeter of the structure. The pipe should have a positive outlet, such as a gravity connection to the storm sewer.

Backfill against the exterior sides of the foundation walls should consist of free-draining, non-frost-susceptible granular materials, such as clean sand or OPSS Granular B Type I granular material, should otherwise be used for this purpose.

6.2 Protection of Footings Against Frost Action

Perimeter foundations of heated structures are required to be insulated against the deleterious effects of frost action. A minimum 1.5 m thick soil cover, or an equivalent thickness of soil cover and foundation insulation, should be provided in this regard.

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

If the building is unheated, then rigid insulation would also be required under the slab-on-grade. More details can be provided on this, if applicable.

6.3 Excavation Side Slopes

The side slopes of excavations in the overburden materials should either be cut back at acceptable slopes or should be retained by shoring systems from the start of the excavation until the structure is backfilled. For the proposed development, it is anticipated that sufficient room will be available for the greater pat of the excavation to be undertaken by open-cut methods (i.e. unsupported excavations).

The excavation side slopes in the overburdened soils, above the groundwater level and extending to a maximum depth of 3 m, should be cut back at 1H:1V or flatter. A flatter slope is required for excavation below groundwater level, such as 3H:1V.

The subsurface soil at this site is considered to be mainly 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 be kept away from the excavation sides.

Excavation side slopes carried out for the building footprint are recommended to be provided surface protection from erosion by rain and surface water runoff. This can be accomplished by covering the entire surface of the excavation side slopes with tarps secured between the top and bottom of the excavation, and approved by Paterson personnel at the time of construction.

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.

It is recommended that a trench box is used 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.

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.

A minimum 150 mm of OPSS Granular A should be placed for bedding for sewer or water pipes when placed on a soil subgrade. The bedding should extend to the spring line of the pipe. Cover material, from the spring line to a minimum of 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 layer should be increased to a minimum thickness of 300 mm where the subgrade consists of grey silty clay. The bedding and cover materials should be placed in maximum 300 mm thick lifts compacted to 95% of the material’s standard Proctor maximum dry density.

It should generally be possible to re-use the site generated fill materials (moist, not wet) above the cover material if excavation and filling operations are carried out in dry and non-freezing weather conditions. The wet silty clay should be given a sufficient drying period to decrease its moisture content to an acceptable level to make compaction possible prior to being reused.

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) and above the cover material 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 at this site, clay seals should be provided within the service trenches excavated through the silty clay deposit. The seals should be at least 1.5 m long (in the trench direction) and should extend from trench wall to trench wall. The seals should extend from the frost line and fully penetrate the bedding, subbedding and cover material. The barriers should consist of relatively dry and compactable brown silty clay placed in maximum 300 mm thick loose layers and compacted to a minimum of 95% of the SPMDD. The clay seals should be placed at the site boundaries and at strategic locations at no more than 60 m intervals in the service trenches excavated through the silty clay deposit.

6.5 Groundwater Control

It is anticipated that groundwater infiltration into the excavations should be moderate and 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.

Under the current regulations enacted by the Ministry of Environment, Conservation and Parks (MECP), any dewatering in excess of 50,000 L/day requires a registration on the Environmental Activity and Sector Registry (EASR), provided that dewatering is related to construction. If the dewatering is not related to construction, a Permit to Take Water obtained from the MECP will be required.

In the event that an EASR is required to facilitate dewatering of the proposed development, a minimum of 3 to 4 weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan, to be prepared by a Qualified Person as stipulated under O.Reg. 63/16. Should a Permit to Take Water be required, a minimum of 5 to 6 months should be allotted for completion of the permit, due to the minimum review period imposed by the MECP.

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. Heaving and settlement upon thawing could occur.

In the event of construction during below zero temperatures, the founding stratum should be protected from freezing temperatures using straw, propane heaters and tarpaulins or other suitable means. In this regard, 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 also difficult activities to complete during freezing conditions without introducing frost into the subgrade or in the excavation walls and bottoms. Precautions should be taken if such activities are to be carried out 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 (GU – General Use cement) would be appropriate for this site. The chloride content and pH of the sample indicate that they are not a significant factor in creating a corrosive environment for exposed ferrous metals at this site, whereas the resistivity is indicative of a non-aggressive to moderately aggressive corrosive environment.

6.8 Landscaping Considerations

Tree Planting Restrictions

In accordance with the City of Ottawa Tree Planting in Sensitive Marine Clay Soils (2017 Guidelines), Paterson completed a soils review of the site to determine applicable tree planting setbacks. Atterberg limits testing was completed for recovered silty clay samples at selected locations throughout the subject site. Grain size distribution and hydrometer testing were also completed on selected soil samples. The above-noted soil samples were recovered from elevations below the anticipated design underside of footing elevation and 3.5 m depth below anticipated finished grade. The results of our testing are presented in Subsection 4.2 and in Appendix 1.

Based on the results of our Atterberg Limits tests, a low to medium plasticity clay soil (plasticity index < 40%) was encountered between the anticipated underside of footing elevation and 3.5 m below the anticipated finished grade at the subject site. The following tree planting setbacks are therefore recommended for these areas.

Large trees (mature height over 14 m) can be planted within this area 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 are **4.5 m** for small (mature tree height up to 7.5m) and medium sized trees (mature tree height 7.5 m to 14 m) provided that the following conditions are met:

- The underside of footing (USF) is 2.1 m or greater below the lowest finished grade, which must be satisfied for footings within 10 m from the tree, as measured from the center of the tree trunk and verified by means of the Grading Plan.

- A small tree must be provided with a minimum of 25 m^3 of available soil volume while a medium tree must be provided with a minimum of 30 m^3 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), as noted on the Grading Plan.

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.

It is recommended that smaller plantings within 4.5 m of the foundation walls have shallow root systems that extend less than 1.2 m below ground surface.

7.0 Recommendations

It is recommended that the following be carried out by Paterson once details of the proposed building have been prepared:

- ❑ Review detailed grading and servicing plans, from a geotechnical perspective.

- ❑ Review of detailed plans pertaining to excavation.

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 Paterson:

- ❐ Observation of all bearing surfaces prior to the placement of concrete.

- ❐ Sampling and testing of the concrete and fill materials used.

- ❐ 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 materials.

- ❐ Field density tests to determine the level of compaction achieved.

- ❐ Sampling and testing of the bituminous concrete including mix design reviews.

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.

All excess soils must be handled as per *Ontario Regulation 406/19: On-Site and Excess Soil Management*.

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 1850591 Ontario Ltd., 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.

Zubaida Al-Moselly, Ph.D., P. Eng.

Scott S. Dennis, P.Eng.

Report Distribution:

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- ❑ Paterson Group (1 copy)

APPENDIX 1

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

ATTERBERG LIMITS TESTING RESULTS

GRAIN SIZE DISTRIBUTION TESTING RESULTS

ANALYTICAL TESTING RESULTS

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 350211.99 **NORTHING:** 5018333.84 **ELEVATION:** 95.80

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

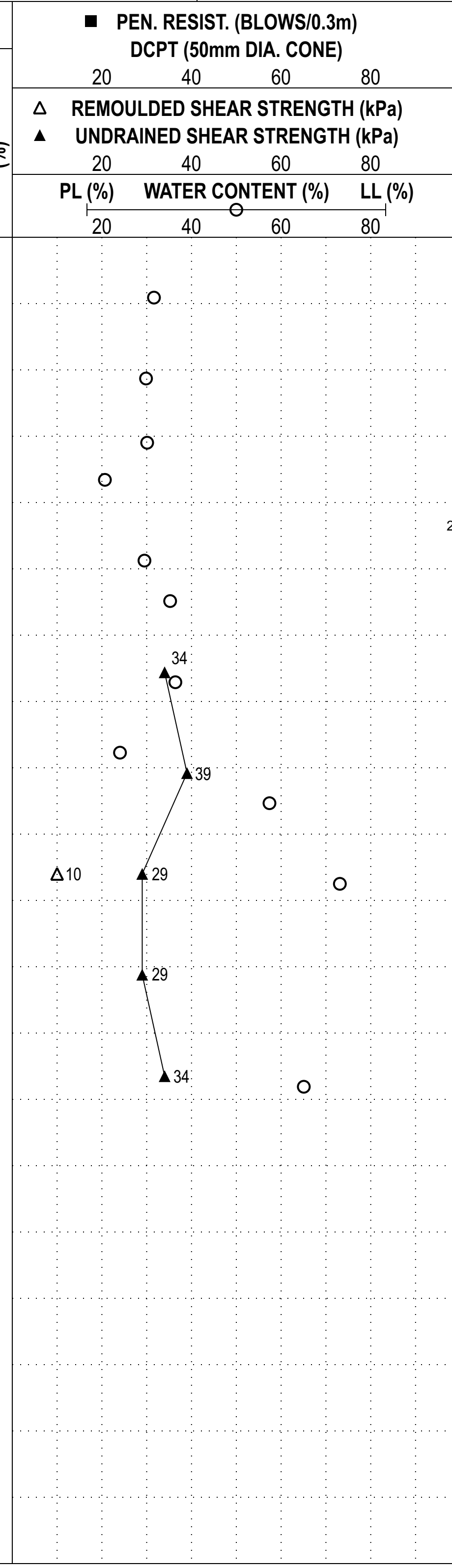
REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** January 22, 2026

FILE NO. : PG7845

HOLE NO. : BH 1-26

SAMPLE DESCRIPTION (GROUND SURFACE)	Bottom depth [elevation]
FILL: Brown silty clay, some gravel, crushed stone and topsoil	0.69m [95.11m]
Hard to very stiff, brown **SILTY CLAY** with thin sand seams	1.57m [94.23m]
Loose, brown **SILTY SAND** - Some clay by 2.3 m depth	2.59m [93.21m]
Firm, grey **SILTY CLAY**, some sand - Trace gravel by 3.8 m depth	4.01m [91.79m]
Firm, grey **SILTY CLAY**	6.71m [89.09m]
End of Borehole (GWL at 2.20 m depth - January 28, 2026)	

TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
AU 1			32
SS 2	75	2-3-4-4 7	30
SS 3	67	P	30, 21
SS 4	42	1-1-1-1 2	30, 35
SS 5	92	P	36
SS 6	67	P	24, 57
SS 7	100	P	73
SS 8	100	P	65



MONITORING WELL CONSTRUCTION: 2.20 m 2026-01-28; 4.68m; 6.20m

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

ELEVATION (m): 95 94 93 92 91 90 89 88 87 86

PATERSON GROUP

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 350156.75 **NORTHING:** 5018284.41 **ELEVATION:** 95.13

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010

DATE: January 22, 2026

FILE NO. : PG7845

HOLE NO. : BH 2-26

SAMPLE DESCRIPTION (GROUND SURFACE)	SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)	REMOULDED SHEAR STRENGTH (kPa)	UNDRAINED SHEAR STRENGTH (kPa)
FILL: Brown silty clay, trace sand, gravel and topsoil	AU 1			21		
	SS 2	33	3-5-6-5 11	17		
1.45m [93.68m]						
Loose, brown **SILTY SAND**, trace clay	SS 3	75	1-2-2-2 4	27		
2.21m [92.92m]						
Firm, grey **SILTY CLAY**, some trace to sand	SS 4	67	1-1-0-1 1	33		
- Trace gravel by 3.3 m depth	SS 5	100	P	35	14	39
3.73m [91.40m]						
Firm to soft, grey **SILTY CLAY**	SS 6	100	P	64	10	39
	SS 7	100	P	69		29
						29
						24
	SS 8		P	71	10	34
7.47m [87.66m]						
Dynamic Cone Penetration Test commenced at 7.47 m depth						

DEPTH (m): 0–10. ELEVATION (m): 95–86.

■ PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80

△ REMOULDED SHEAR STRENGTH (kPa) ▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80

PL (%) WATER CONTENT (%) LL (%) 20 40 60 80

MONITORING WELL CONSTRUCTION: 1.66 m 2026-01-28; 4.77m; 6.29m

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 350156.75 **NORTHING:** 5018284.41 **ELEVATION:** 95.13

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** January 22, 2026

FILE NO. : PG7845

HOLE NO. : BH 2-26

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE: TYPE AND NO.	SAMPLE: RECOVERY (%)	SAMPLE: N OR RQD	SAMPLE: WATER CONTENT (%)	■ PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80; △ REMOULDED SHEAR STRENGTH (kPa) ▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80; PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
		10							85
		11							84
		12							83
		13							82
		14							81
15.21m [79.92m]		15					100		80
End of Borehole Practical refusal to DCPT at 15.21 m depth DCPT pushed from 7.47 m to 15.21 m depth (GWL at 1.66 m depth - January 28, 2026)		16							79
		17							78
		18							77
		19							76
		20							

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 350136.97 **NORTHING:** 5018308.52 **ELEVATION:** 94.83

PROJECT: Proposed Development

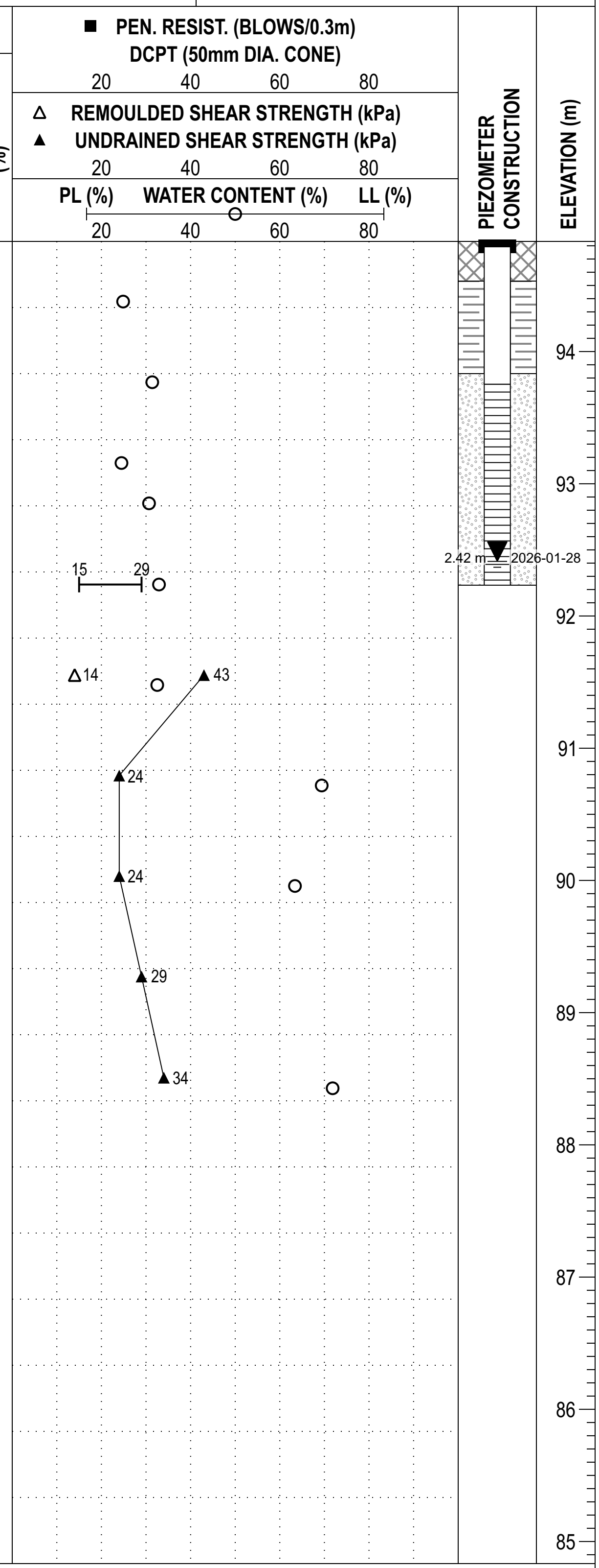
ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** January 22, 2026

FILE NO. : PG7845

HOLE NO. : BH 3-26

SAMPLE DESCRIPTION	Depth (m)	Sample Type and No.	Recovery (%)	N or RQD	Water Content (%)
GROUND SURFACE					
Very stiff, brown **SILTY CLAY**, trace to some sand		AU 1			25
		SS 2	67	1-2-4-4 6	31
		SS 3	33	1-1-2-1 3	25 / 31
1.83m [93.00m]					
Very loose, grey **SILTY SAND**, trace to some clay					
2.64m [92.19m]					
Firm to soft, grey **SILTY CLAY**		SS 4	58	1-1-1-1 2	33
		SS 5	75	P	33
- Trace sand by 3.6 m depth		SS 6	100	P	69
		SS 7	100	P	63
		SS 8		P	72
6.71m [88.12m]					
End of Borehole					
(GWL at 2.42 m depth - January 28, 2026)					



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

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 350173.65 **NORTHING:** 5018320.81 **ELEVATION:** 95.04

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** January 22, 2026

FILE NO. : PG7845

HOLE NO. : BH 4-26

SAMPLE DESCRIPTION	
GROUND SURFACE	
Very stiff, brown **SILTY CLAY**, trace sand	1.22m [93.82m]
Very loose, brown **SILTY SAND**, trace clay	2.21m [92.83m]
Firm, grey **SILTY CLAY**, some trace to sand	3.73m [91.31m]
Firm, grey **SILTY CLAY**	6.71m [88.33m]
End of Borehole	
(GWL at 5.73 m depth - January 28, 2026)	

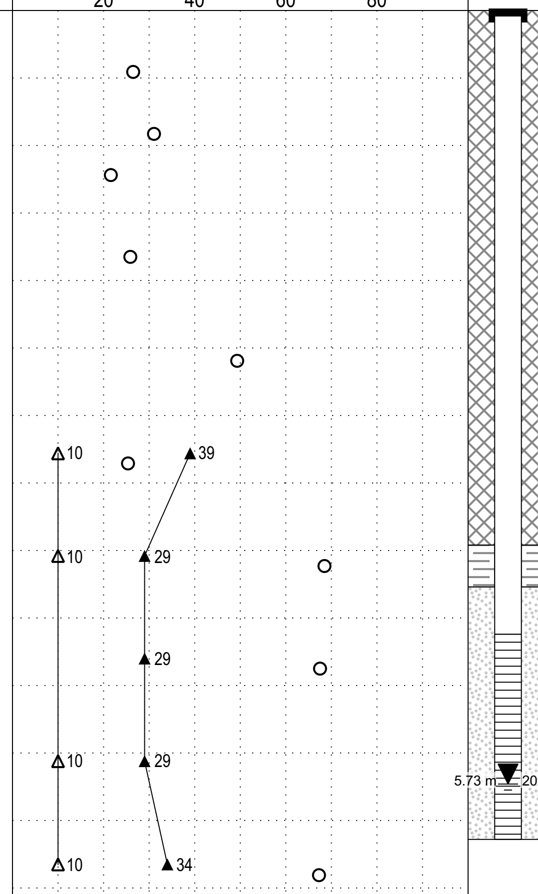
SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
AU 1			26
SS 2	50	2-2-6-3 8	31 22
SS 3	8	1-1-1-1 2	26
SS 4	83	P	49
SS 5	100	P	25
SS 6	100	P	68
SS 7	100	P	68
SS 8	100	P	67

■ PEN. RESIST. (BLOWS/0.3m)
DCPT (50mm DIA. CONE)
20 40 60 80

△ REMOULDED SHEAR STRENGTH (kPa)
▲ UNDRAINED SHEAR STRENGTH (kPa)
20 40 60 80

PL (%) WATER CONTENT (%) LL (%)
20 40 60 80

STRATA PLOT | DEPTH (m) | PIEZOMETER CONSTRUCTION | ELEVATION (m)



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

ELEVATION (m): 95 94 93 92 91 90 89 88 87 86

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 350142.67 **NORTHING:** 5018353.61 **ELEVATION:** 95.02

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010

DATE: January 23, 2026

FILE NO. : PG7845

HOLE NO. : BH 5-26

SAMPLE DESCRIPTION	Depth / Elevation
GROUND SURFACE	
Very stiff, brown **SILTY CLAY**, trace sand	1.07m [93.95m]
Very loose, brown **SILTY SAND** - Trace clay by 1.8 m depth	1.98m [93.04m]
Firm, grey **SILTY CLAY**, some trace to sand	3.73m [91.29m]
Firm, grey **SILTY CLAY**	6.71m [88.31m]
End of Borehole (GWL at 5.45 m depth - January 28, 2026)	

TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
AU 1			22
SS 2	50	2-3-5-5 8	22 10
SS 3	58	3-3-2-1 5	21 23
SS 4	83	P	32
SS 5	100	P	38
SS 6	100	P	66
SS 7	100	P	69
SS 8	100	P	62

■ PEN. RESIST. (BLOWS/0.3m)
DCPT (50mm DIA. CONE)
20 40 60 80

△ REMOULDED SHEAR STRENGTH (kPa)
▲ UNDRAINED SHEAR STRENGTH (kPa)
20 40 60 80

PL (%) WATER CONTENT (%) LL (%)
20 40 60 80

Approx. Depth (m)	Remoulded Shear Strength (kPa)	Undrained Shear Strength (kPa)
3.3	10	29
4.1	10	34
4.8		29
5.5		29
6.3		34

MONITORING WELL CONSTRUCTION: 4.82m; 5.45 m 2026-01-28; 6.34m

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

ELEVATION (m): 95 94 93 92 91 90 89 88 87 86

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 350193.39 **NORTHING:** 5018359.67 **ELEVATION:** 95.22

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010

DATE: January 23, 2026

FILE NO. : PG7845

HOLE NO. : BH 6-26

SAMPLE DESCRIPTION

GROUND SURFACE

Very stiff, brown **SILTY CLAY**, trace sand

0.69m [94.53m]

Loose, brown **SILTY SAND**, trace to some clay

2.21m [93.01m]

Firm, grey **SILTY CLAY**

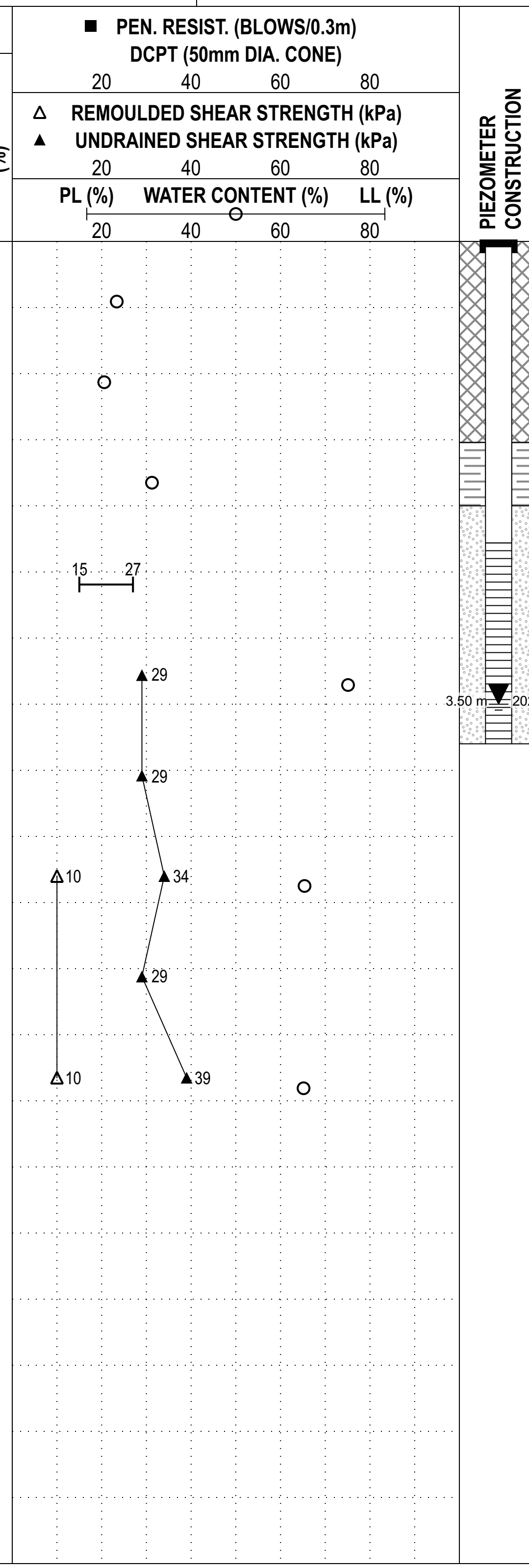
- Trace sand by 3.0 m depth

6.71m [88.51m]

Dynamic Cone Penetration Test commenced at 6.71 m depth

SAMPLE

TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
AU 1			23
SS 2	67	3-3-4-3 7	21
SS 3	100	1-2-2-2 4	31
SS 4	100	P	
SS 5	100	P	75
SS 6	100	P	65
SS 7	100	P	65



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

ELEVATION (m): 95 94 93 92 91 90 89 88 87 86

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

295 Roger Neilson Way, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 350193.39 **NORTHING:** 5018359.67 **ELEVATION:** 95.22

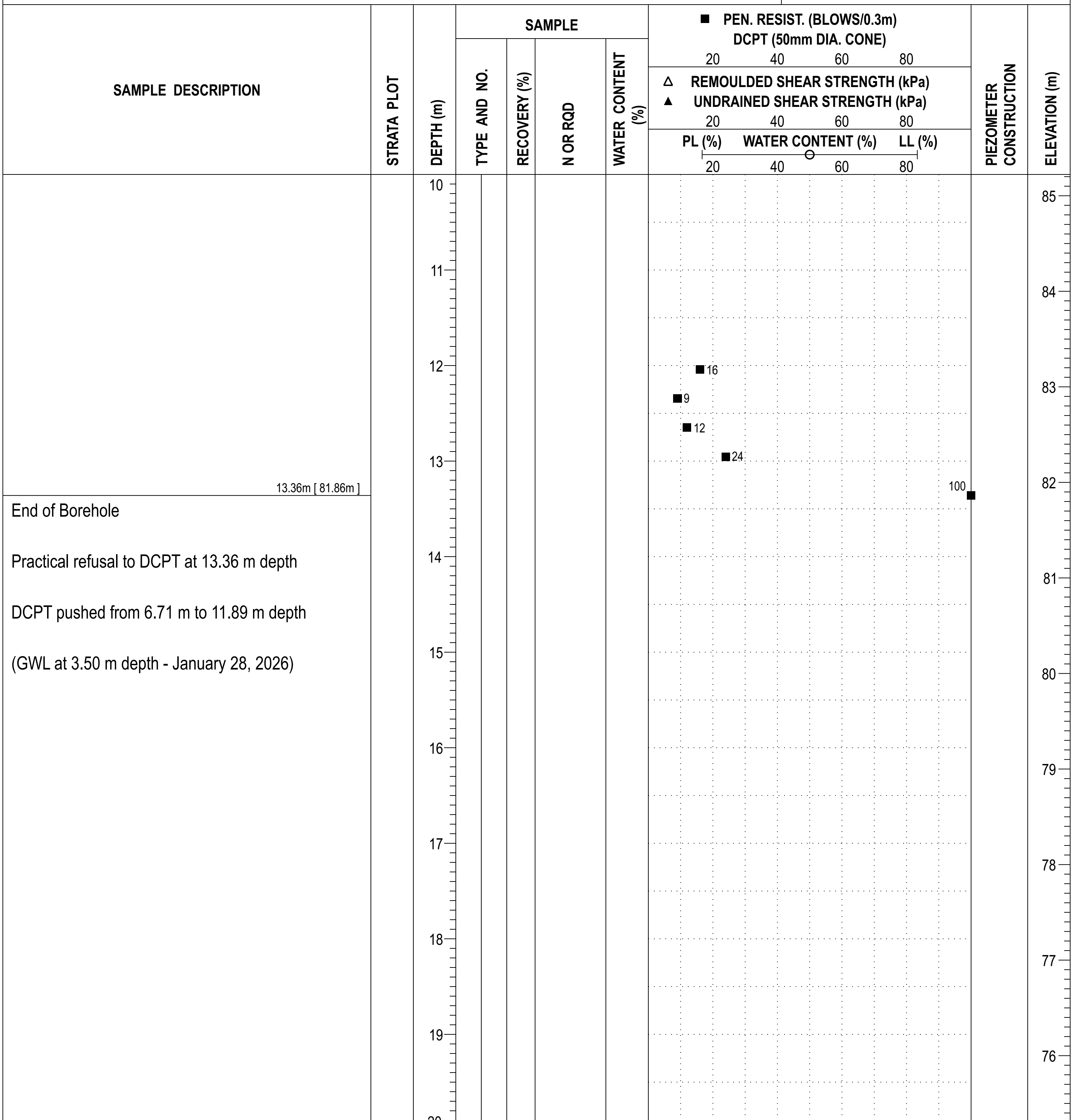
PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** January 23, 2026

FILE NO. : PG7845

HOLE NO. : BH 6-26



End of Borehole

Practical refusal to DCPT at 13.36 m depth

DCPT pushed from 6.71 m to 11.89 m depth

(GWL at 3.50 m depth - January 28, 2026)

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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

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%	-	Natural moisture content or water content of sample, %
LL	-	Liquid Limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic limit, % (water content above which soil behaves plastically)
PI	-	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 x 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 > 4
Well-graded sands have: 1 < Cc < 3 and Cu > 6
Sands 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

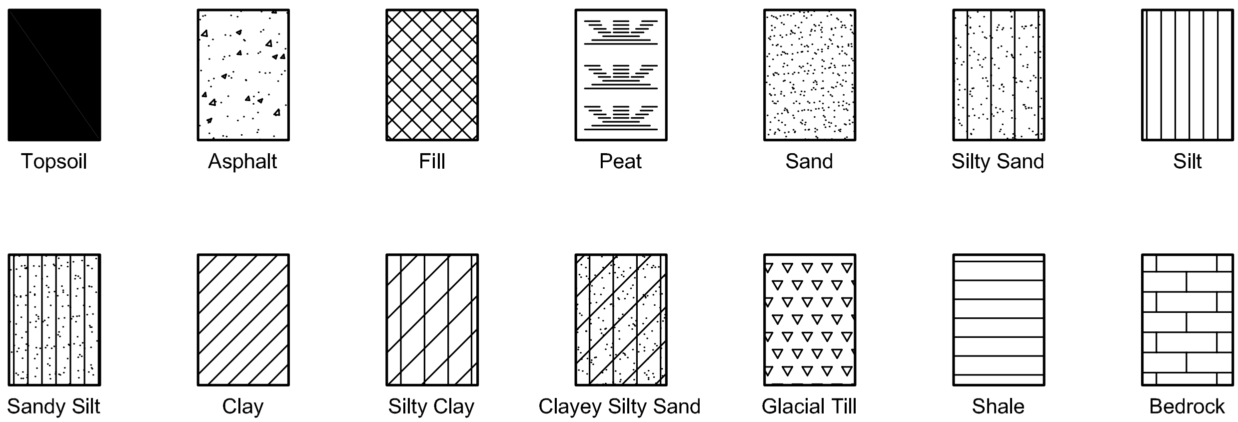
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		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.

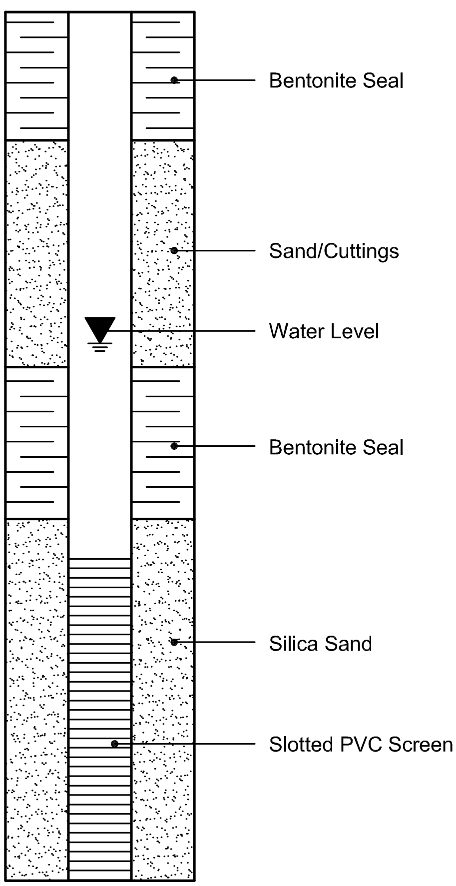
SYMBOLS AND TERMS (continued)

STRATA PLOT

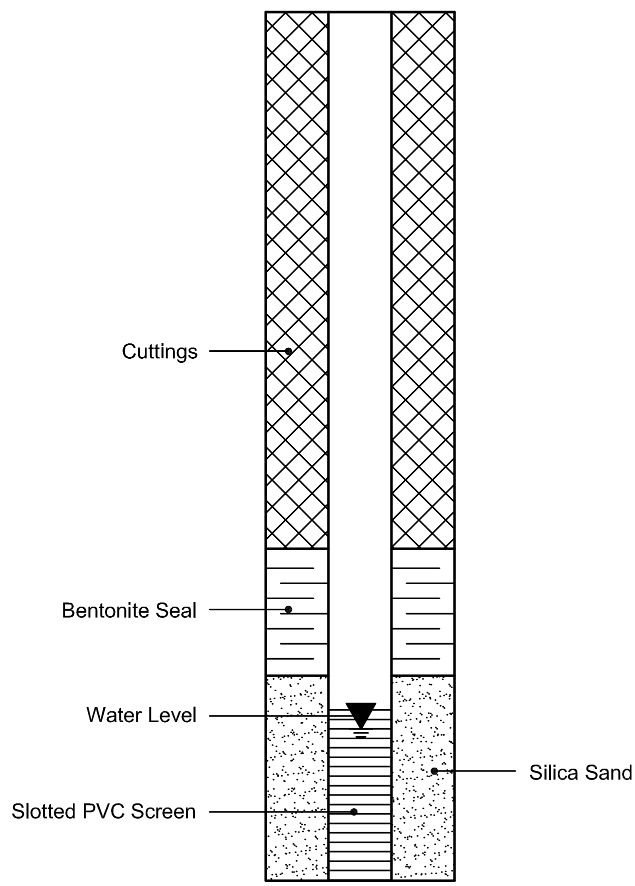


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



PATERSON GROUP

ATTERBERG LIMITS
LS-703/704

CLIENT:	1850591 Ontario Ltd	FILE NO.:	PG7845
PROJECT:	295 Roger Neilson Way	DATE SAMPLED:	22-Jan
LOCATION:	BH3-26 SS4, 7'6" - 9'6"	DATE REPORTED:	06-Feb
LAB NUMBER:	65092		

LIQUID LIMIT DETERMINATION

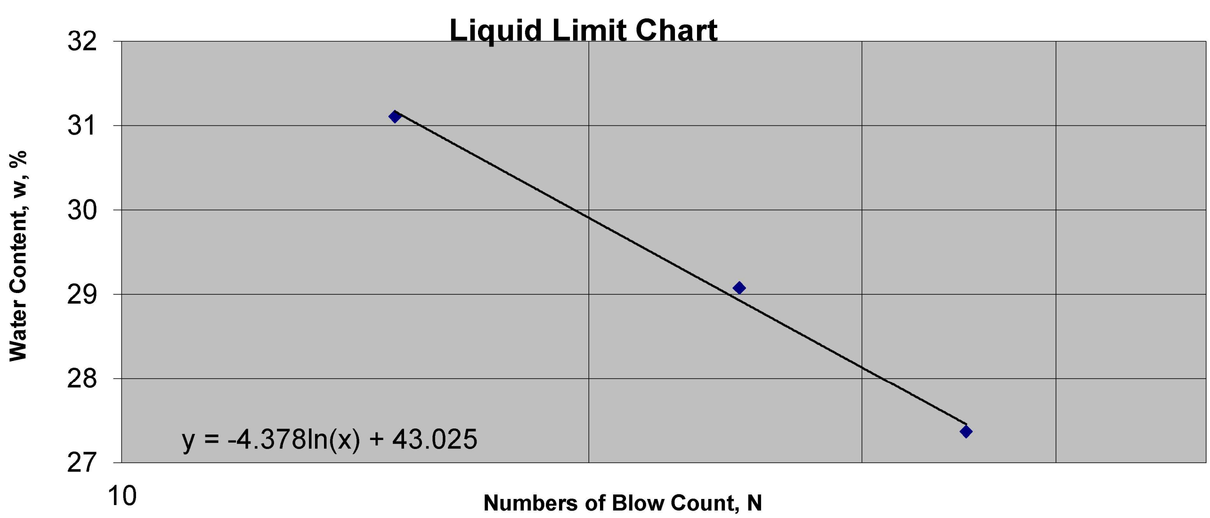
CAN NO.	**2**	**3**	**4**				
WT. OF CAN	8.61	8.63	8.63				
WT. OF SOIL & CAN	18.81	18.84	19.24				
WT. OF DRY SOIL & CAN	16.39	16.54	16.96				
WT. OF MOISTURE	2.42	2.3	2.28				
WT. OF DRY SOIL & CAN	7.78	7.91	8.33				
WATER CONTENT, w, %	**31.11**	**29.08**	**27.37**				
NO. OF BLOWS, N	15	25	35				

PLASTIC LIMIT DETERMINATION

CAN NO.	**4**	**11**
WT. OF CAN	19.96	19.92
WT. OF SOIL & CAN	28.70	28.57
WT. OF DRY SOIL & CAN	27.55	27.43
WT. OF MOISTURE	1.15	1.14
WT. OF DRY SOIL & CAN	7.59	7.51
WATER CONTENT, w, %	**15.15**	**15.18**

RESULTS

LIQUID LIMIT	**29**
PLASTIC LIMIT	**15**
PLASTICITY INDEX	**14**



TECHNICIAN: CP	**REVIEWED BY:**	**C. Beadow**	**J. Forsyth, P. Eng.**

Paterson Group Inc., 28 Concourse Gate, Unit 6, Ottawa, Ontario, K2E 7T7

PATERSON GROUP		**ATTERBERG LIMITS LS-703/704**

CLIENT:	1850591 Ontario Ltd	FILE NO.:	PG7845
PROJECT:	295 Roger Neilson Way	DATE SAMPLED:	22-Jan
LOCATION:	BH6-26 SS4, 7'6" - 9'6"	DATE REPORTED:	06-Feb
LAB NUMBER:	65093		

LIQUID LIMIT DETERMINATION

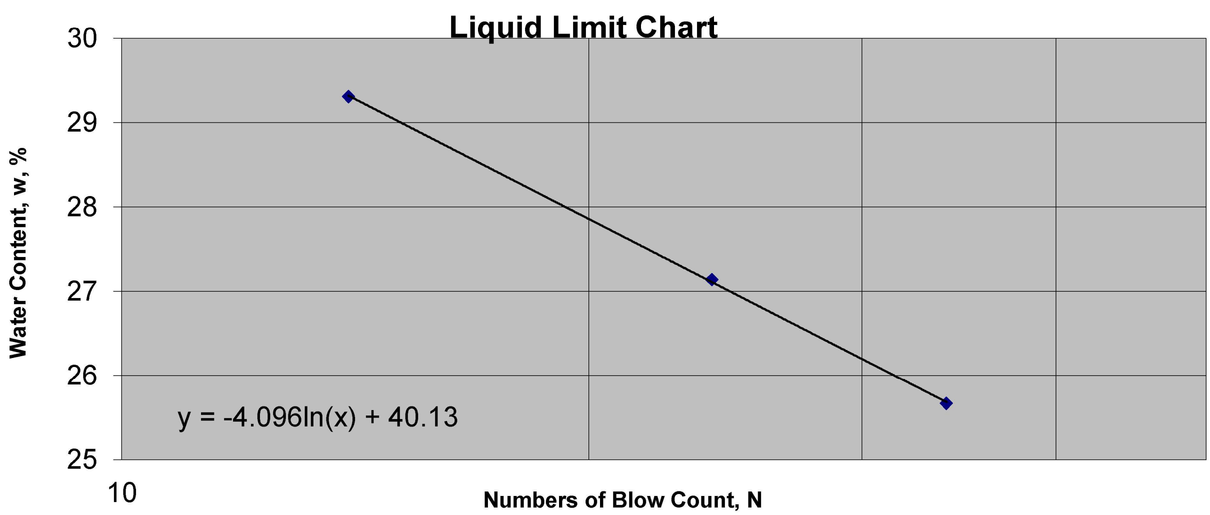
CAN NO.	**0**	**14**	**16**				
WT. OF CAN	8.64	8.61	8.66				
WT. OF SOIL & CAN	23.55	19.90	19.04				
WT. OF DRY SOIL & CAN	20.17	17.49	16.92				
WT. OF MOISTURE	3.38	2.41	2.12				
WT. OF DRY SOIL & CAN	11.53	8.88	8.26				
WATER CONTENT, w, %	**29.31**	**27.14**	**25.67**				
NO. OF BLOWS, N	14	24	34				

PLASTIC LIMIT DETERMINATION

CAN NO.	**10**	**18**
WT. OF CAN	19.78	20.00
WT. OF SOIL & CAN	28.34	28.46
WT. OF DRY SOIL & CAN	27.23	27.38
WT. OF MOISTURE	1.11	1.08
WT. OF DRY SOIL & CAN	7.45	7.38
WATER CONTENT, w, %	**14.9**	**14.63**

RESULTS

LIQUID LIMIT	**27**
PLASTIC LIMIT	**15**
PLASTICITY INDEX	**12**



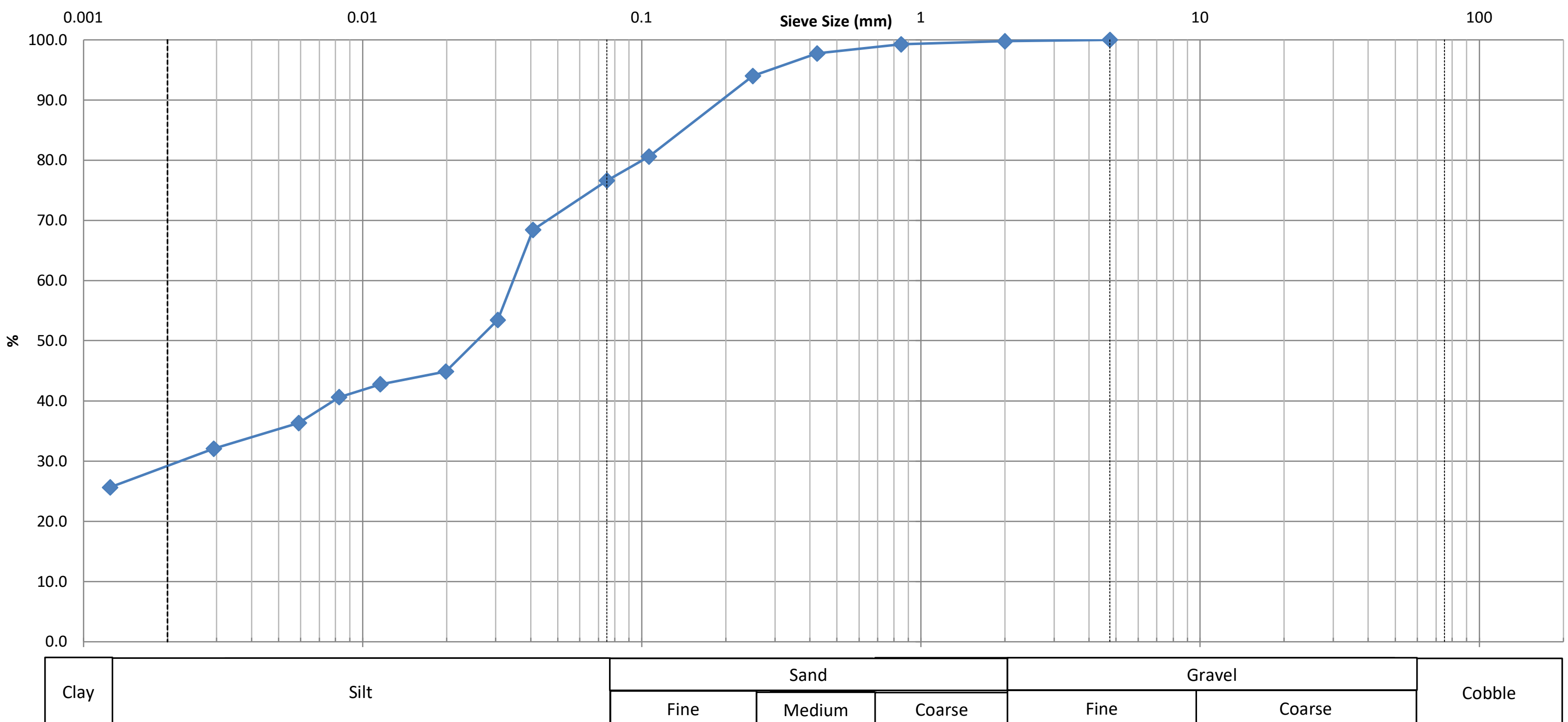
TECHNICIAN: CP	**REVIEWED BY:**	**C. Beadow**	**J. Forsyth, P. Eng.**

Paterson Group Inc., 28 Concourse Gate, Unit 6, Ottawa, Ontario, K2E 7T7

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	1850591 Ontario Ltd	DEPTH:	7'6" - 9'6"	FILE NO:	PG7845
CONTRACT NO.:		BH OR TP No.:	BH3-26 SS4	LAB NO:	65092
PROJECT:	295 Roger Neilson Way			DATE RECEIVED:	23-Jan-26
				DATE TESTED:	26-Jan-26
DATE SAMPLED:	22-Jan-26			DATE REPORTED:	6-Feb-26
SAMPLED BY:	Jacob P.			TESTED BY:	C.M.



Identification	Soil Classification				MC(%)	LL	PL	PI	Cc	Cu
					37.7%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)	Clay (%)	
					0.0	23.4		47.6	29.0	

Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	1850591 Ontario Ltd	DEPTH:	7'6" - 9'6"	FILE NO.:	PG7845
PROJECT:	295 Roger Neilson Way	BH OR TP No.:	BH3-26 SS4	DATE SAMPLED:	22-Jan-26
LAB No. :	65092	TESTED BY:	C.M.	DATE RECEIVED:	23-Jan-26
SAMPLED BY:	Jacob P.	DATE REPT'D:	06-Feb-26	DATE TESTED:	26-Jan-26

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
108.9	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	46.14	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	12.29	AIR DRY	118.00	118.00
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	108.90	108.90
		CORRECTED	0.923	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.00**	0.0	**100.0**
2.0	**0.27**	0.2	**99.8**
Pan	**108.63**		
0.850	**0.25**	0.7	**99.3**
0.425	**1.02**	2.3	**97.7**
0.250	**2.89**	6.0	**94.0**
0.106	**9.59**	19.4	**80.6**
0.075	**11.60**	23.4	**76.6**
Pan	**12.29**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	7:38	38.0	6.0	23.0	0.0408	68.6	**68.4**
2	7:39	31.0	6.0	23.0	0.0305	53.6	**53.4**
5	7:42	27.0	6.0	23.0	0.0199	45.0	**44.9**
15	7:52	26.0	6.0	23.0	0.0116	42.9	**42.8**
30	8:07	25.0	6.0	23.0	0.0082	40.7	**40.6**
60	8:37	23.0	6.0	23.0	0.0059	36.4	**36.3**
250	11:47	21.0	6.0	23.0	0.0029	32.1	**32.1**
1440	7:37	18.0	6.0	23.0	0.0012	25.7	**25.7**

COMMENTS:

Moisture Content = 37.7%

REVIEWED BY:	**C. Beadow**	**Joe Forsyth, P. Eng.**

PARACEL
LABORATORIES LTD.

Order #: 2604469

Certificate of Analysis

Report Date: 28-Jan-2026

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 23-Jan-2026

Client PO: 64961

Project Description: PG7845

	Client ID:	BH4-26-SS4	-	-	-	-	-
	Sample Date:	22-Jan-26 09:00	-	-	-	-	-
	Sample ID:	2604469-01	-	-	-	-	-
	Matrix:	Soil	-	-	-	-	-
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	74.6	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.88	-	-	-	-	-
Resistivity	0.1 Ohm.m	46.2	-	-	-	-	-
Anions							
Chloride	10 ug/g	<10	-	-	-	-	-
Sulphate	10 ug/g	44	-	-	-	-	-

APPENDIX 2

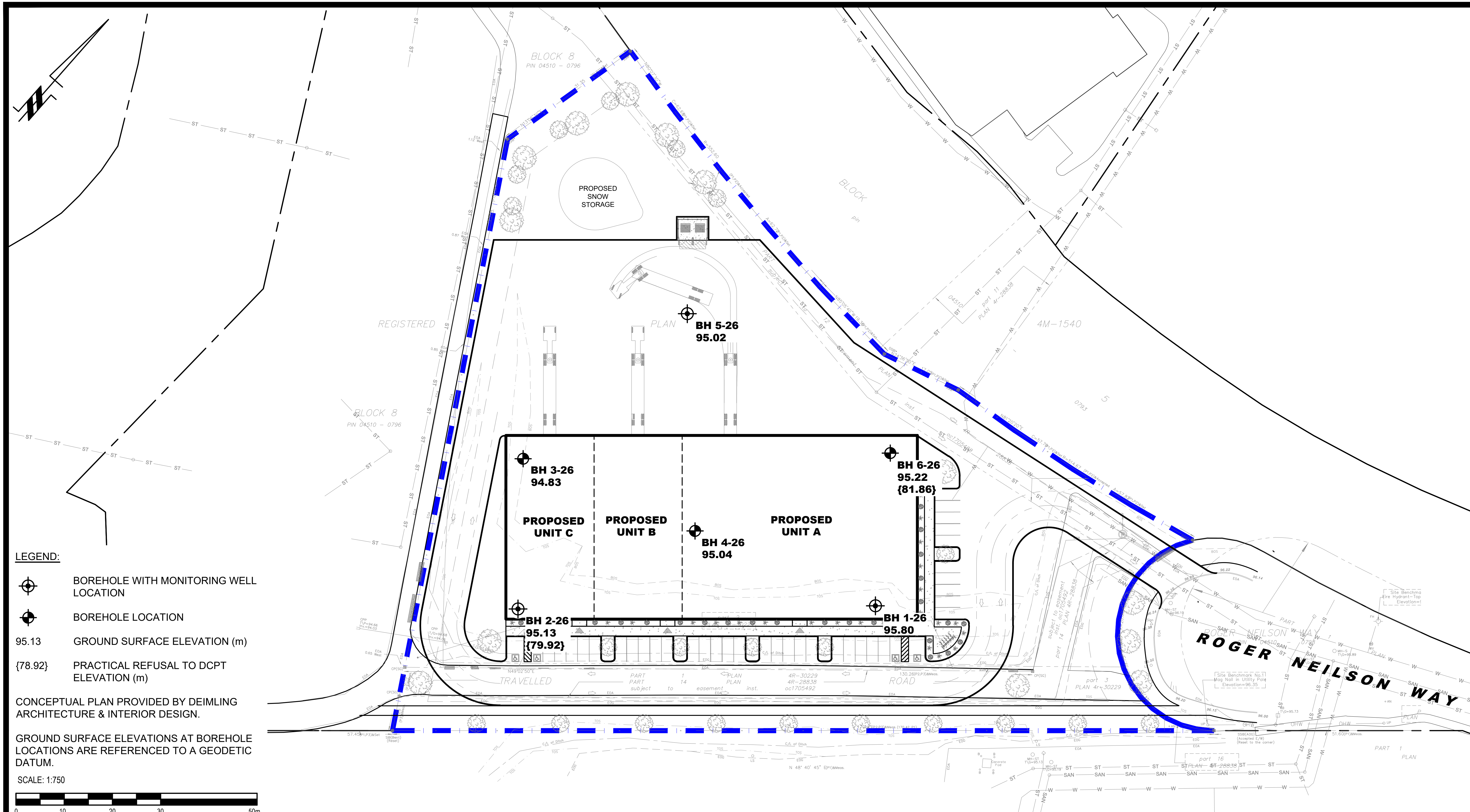
FIGURE 1 - KEY PLAN

DRAWING PG7845-1 - TEST HOLE LOCATION PLAN

FIGURE 1

KEY PLAN

PATERSON GROUP



LEGEND:

⊕	BOREHOLE WITH MONITORING WELL LOCATION
●	BOREHOLE LOCATION
95.13	GROUND SURFACE ELEVATION (m)
{78.92}	PRACTICAL REFUSAL TO DCPT ELEVATION (m)

CONCEPTUAL PLAN PROVIDED BY DEIMLING ARCHITECTURE & INTERIOR DESIGN.

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:750

0 10 20 30 50m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

1850591 ONTARIO LTD.
GEOTECHNICAL INVESTIGATION
PROPOSED DEVELOPMENT
295 ROGER NEILSON WAY

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:750	Date: 02/2026
Drawn by: GK	Report No.: PG7845-1
Checked by: ZA	Dwg. No.: PG7845-1
Approved by: SD	Revision No.:

p:\autocad drawings\geotechnical\pg78xx\pg7845\pg7845-1 test hole location plan.dwg

11x17