Geotechnical Investigation

Proposed Residential Development

1670 Tenth Line Road
Ottawa, Ontario

Prepared for 1070456 Ontario Inc.

Report PG7562-1 Revision 1 dated November 5, 2025

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1.0 Introduction

Paterson Group (Paterson) was commissioned by 1070456 Ontario Inc. to conduct a geotechnical investigation for the proposed residential building to be located at 1670 Tenth Line Road in the City of Ottawa (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 boreholes.

- 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 for 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 conceptual plan, it is understood that the proposed development will consist of one low-rise residential building with a partial basement level. Walkways and landscaped areas are anticipated surrounding the proposed building. At grade parking will occupy the western half of the site. It is also expected that the subject site will be municipally serviced.

Construction of the proposed development will involve demolition of the existing building presently located at the site.

3.0 Method of Investigation

3.1 Field Investigation

Field Program

The field program for the current geotechnical investigation was carried out on May 27, 2025, and consisted of advancing a total of 4 boreholes to a maximum depth of 6.7 m below the existing ground surface. The borehole locations were distributed in a manner to provide general coverage of the subject site, taking into consideration underground utilities and site features. The approximate borehole locations are shown on Drawing PG7562-1 – Test Hole Location Plan included in Appendix 2.

The boreholes were completed using a low clearance auger 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 testing procedure consisted of augering and excavating to the required depth at the selected location and sampling 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.

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 carried out at regular depth intervals in cohesive soils.

The overburden thickness was evaluated by completing dynamic cone penetration testing (DCPT) at borehole BH 4-25. 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 boreholes were recorded in detail in the field. The soil profiles are logged on the Soil Profile and Test Data Sheets in Appendix 1 of this report.

Groundwater

Flexible standpipe piezometers were installed in all boreholes to permit monitoring of the groundwater levels subsequent to the completion of the sampling program. The groundwater level readings were obtained after a suitable stabilization period subsequent to the completion of the field investigation.

3.2 Field Survey

The borehole locations, and ground surface elevation at each borehole location, were surveyed by Paterson using a handheld GPS unit and referenced to a geodetic datum. The locations of the boreholes, and the ground surface elevations at each borehole location, are presented on Drawing PG7562-1 - 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. Additionally, one (1) shrinkage test, two (2) grain size distribution analysis and two (2) Atterberg Limits tests were completed on selected soil samples. The results are discussed in Section 4.2 and are provided in Appendix 1 of this report. All samples will be stored in the laboratory for a period of one (1) month after issuance of this report. They will then be discarded unless we are directed otherwise.

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. The sample was submitted to determine the concentration of sulphate and chloride, the resistivity, and the pH of the samples. 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 occupied by a residential dwelling and associated shed structure location within the central portion of the subject site. An asphalt paved access lane spans the southern limit of the site. The western half of the property is generally vacant and grass covered. However, a commercial building and in-ground swimming pool were located to the rear of the residential building as recently as 2022.

The site is bordered to the north and south by residential dwellings, to the east by Tenth Line Road, and to the west by Duvernay Drive. The ground surface across the subject site is relatively flat at an approximate geodetic elevation of 88m.

4.2 Subsurface Profile

Generally, the subsoil profile encountered at the borehole locations consists of topsoil or asphaltic concrete underlain by fill and/or a deep deposit of silty clay. An approximate 50 and 80 mm thickness of asphaltic concrete was encountered at the existing ground surface at boreholes BH 2-25 and BH 4-25, respectively.

Fill material was encountered below the topsoil or asphaltic concrete at boreholes BH 2-25 through BH 4-25 and was observed to consist of brown silty sand with crushed stone and gravel and extended maximum depths of 0.3 to 0.5 m below the existing ground surface.

A hard to very stiff, brown silty clay deposit was encountered below the fill material, becoming stiff to firm and grey in colour at approximate depths 2.8 to 3.7 m.

Practical refusal to the DCPT was not encountered by an approximate depth of 30 m at borehole BH 4-25.

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

Bedrock

Based on available geological mapping, the bedrock in the area of the subject site consists of shale of the Rockcliffe Formation, with an overburden drift thickness ranging between 25 and 50 m depth.

Grain Size Distribution and Hydrometer Testing

Two (2) hydrometer tests were completed to further classify selected soil samples. The results are summarized in Table 1 below, and are presented in Appendix 1.

Table 1 – Summary of Grain Size Distribution Analysis

Borehole Number	Sample	Depth (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH 2-25	SS3	1.5 - 2.1	0.0	0.9	26.4	72.7
BH 3-25	SS4	2.3 - 2.9	0.0	0.3	30.2	69.5

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 Clays of High Plasticity (CH). These classifications are in accordance with the Unified Soil Classification System. The results are summarized in Table 2 below.

Table 2 – Summary of Atterberg Limits Results

Borehole Number	Sample	Depth (m)	LL (%)	PL (%)	PI (%)	Classification
BH 1-25	SS3	1.5 – 2.1	59	29	30	CH
BH 4-25	SS4	2.3 - 2.9	56	26	30	CH
Notes: LL: Liquid Limit; PL: Plastic Limit; PI: Plasticity Index; CH: Inorganic Clay of High Plasticity						

Shrinkage Test

Linear shrinkage testing was completed on 1 soil sample recovered from borehole BH 4-25 at an approximate depth of 3.0 m. The shrinkage limit and shrinkage ratio of the tested silty clay sample were found to be 18.35% and 1.81, respectively.

4.3 Groundwater

Groundwater levels were measured within the installed piezometers on June 2, 2025, and are presented in Table 3 on the following page.

Table 3 – Summary of Groundwater Levels				
Borehole Number	**Ground Surface Elevation (m)**	**Measured Groundwater Level**		**Dated Recorded**
		Depth (m)	**Elevation (m)**	
BH 1-25	88.25	1.52	86.73	June 2, 2025
BH 2-25	88.09	1.48	86.61	
BH 3-25	88.08	1.11	86.97	
BH 4-25	88.35	1.40	86.95	
Note: Ground surface elevations at borehole location are referenced to a geodetic datum.				

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 approximately 1.5 to 3.0 below 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. It is recommended that the proposed structures be founded on conventional spread footings placed on an undisturbed, hard to stiff silty clay bearing surface.

Due to the presence of a silty clay deposit at the site, the proposed development will be subjected to grade raise restrictions. Our permissible grade raise recommendations are discussed in Section 5.3.

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

5.2 Site Grading and Preparation

Stripping Depth

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

Existing foundation walls and other construction debris should be entirely removed from within the footprints of the proposed building. Under paved areas, existing construction remnants such as foundation walls should be excavated to a minimum of 1 m below final grade.

Fill Placement

Fill used 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. 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 proposed building areas should be compacted to at least 98% of its standard Proctor maximum dry density (SPMDD).

Non-specified existing fill along with site-excavated soil can be used as general landscaping fill and beneath exterior parking areas where settlement of the ground surface is of minor concern. In landscaped areas, these materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids. If these materials are to be used to build up the subgrade level for areas to be paved, they should be compacted in thin lifts to a minimum density of 95% of their respective SPMDD.

Non-specified existing fill and site-excavated soils are not suitable for use as backfill against foundation walls unless a composite drainage blanket connected to a perimeter drainage system is provided.

5.3 Foundation Design

Bearing Resistance Values

Strip footings, up to 3 m wide, and pad footings, up to 5 m wide, founded on an undisturbed, hard to stiff silty clay bearing surface can be designed can be designed using a bearing resistance value at serviceability limit states (SLS) of **125 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **200 kPa**. A geotechnical resistance factor of 0.5 was applied to the above noted bearing resistance value at ULS.

Strip footings, up to 3 m wide, and pad footings, up to 5 m wide, founded on an undisturbed, stiff to firm grey silty clay bearing surface can be designed can be designed using a bearing resistance value at serviceability limit states (SLS) of **80 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **120 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, have been removed prior to the placement of concrete for footings.

Footings bearing on an undisturbed soil bearing surface and designed using the bearing resistance values provided above will be subjected to potential post-construction total and differential settlements of 25 and 20 mm, respectively.

Lateral Support

The bearing medium under footing-supported structures is required to be provided with adequate lateral support with respect to excavations and different foundation levels. Above the groundwater level, adequate lateral support is provided to the in-situ bearing medium soils when a plane extending down and out from the bottom edge of the footing at a minimum of 1.5H:1V passes only through in situ soil.

Permissible Grade Raise Recommendations

Due to the presence of the silty clay deposit at the site, a permissible grade raise restriction of **1.5 m** is recommended for grading at the subject site.

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_D** for the foundations considered at this site. Soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest revision of the Ontario Building Code for a full discussion of the earthquake design requirements.

5.5 Basement Floor Slab

With the removal of all topsoil and deleterious fill from within the footprint of the proposed building, the undisturbed, hard to stiff silty clay will be considered an acceptable subgrade on which to commence backfilling for floor slab construction. It is recommended that the upper 200 mm of sub-slab fill consist of 19 mm clear crushed stone.

Any soft areas in the basement slab subgrade should be removed and backfilled with appropriate backfill material prior to placing fill. OPSS Granular A or Granular B Type II, with a maximum particle size of 50 mm, are recommended for backfilling below the floor slab. All backfill material within the footprint of the proposed building should be placed in maximum 300 mm thick loose layers and compacted to a minimum of 98% of the SPMDD.

5.6 Basement Wall

There are several combinations of backfill materials and retained soils that could be applicable for the basement walls of the proposed building. However, the conditions can be well-represented by assuming the retained soil consists of a material with an angle of internal friction of 30 degrees and a drained unit weight of 20 kN/m^3 (effective unit weight 13 kN/m^3).

Lateral Earth Pressures

The static horizontal earth pressure (p_o) can be calculated using a triangular earth pressure distribution equal to $K_o \cdot \gamma \cdot H$ where:

K_o = at-rest earth pressure coefficient of the applicable retained soil (0.5)
γ = unit weight of fill of the applicable retained soil (kN/m^3)
H = height of the wall (m)

An additional pressure having a magnitude equal to $K_o \cdot q$ and acting on the entire height of the wall should be added to the above diagram for any surcharge loading, q (kPa), that may be placed at ground surface adjacent to the wall. The surcharge pressure will only be applicable for static analyses and should not be used in conjunction with the seismic loading case.

Actual earth pressures could be higher than the “at-rest” case if care is not exercised during the compaction of the backfill materials to maintain a minimum separation of 0.3 m from the walls with the compaction equipment.

Seismic Earth Pressures

The total seismic force (P_{AE}) includes both the earth force component (P_o) and the seismic component (ΔP_{AE}).

The seismic earth force (ΔP_{AE}) can be calculated using $0.375 \cdot a \cdot H^2/g$ where:

$a_c = (1.45 - a_{max}/g)a_{max}$
γ = unit weight of fill of the applicable retained soil (kN/m^3)
H = height of the wall (m)
g = gravity, 9.81 m/s^2

The peak ground acceleration, (a_{max}), for the Ottawa area is 0.32g according to OBC 2024. Note that the vertical seismic coefficient is assumed to be zero.

The earth force component (P_o) under seismic conditions can be calculated using $Po = 0.5\ K_o \cdot \gamma \cdot H^2$, where K = 0.5 for the soil conditions noted above.

The total earth force (P_{AE}) is considered to act at a height, h (m), from the base of the wall, where:

$h = \{P_o \cdot (H/3) + \Delta P_{AE} \cdot (0.6 \cdot H)\}/P_{AE}$

The earth forces calculated are unfactored. For the ULS case, the earth loads should be factored as live loads, as per OBC 2024.

5.7 Pavement Design

For design purposes, the pavement structure presented in the following tables could be used for the design of car only parking areas and access lanes.

Table 4 - Recommended Pavement Structure - 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
300	**SUBBASE** - OPSS Granular B Type II
SUBGRADE - Either fill, in situ soil or OPSS Granular B Type I or II material placed over in situ soil or fill.	

Table 5 - Recommended Pavement Structure - Access Lanes & Heavy Truck Parking Areas

Thickness (mm)	Material Description
40	**Wear Course** - HL-3 or Superpave 12.5 Asphaltic Concrete
50	**Binder Course** - HL-8 or Superpave 19.0 Asphaltic Concrete
150	**BASE** - OPSS Granular A Crushed Stone
450	**SUBBASE** - OPSS Granular B Type II
SUBGRADE - Either fill, in situ soil or OPSS Granular B Type I or II material placed over in situ soil or fill.	

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 vibratory equipment.

6.0 Design and Construction Precautions

6.1 Foundation Drainage and Backfill

Foundation Drainage

A perimeter foundation drainage system is recommended to be provided for the proposed structure. The system should consist of a 150 mm diameter, geotextile-wrapped, perforated and corrugated plastic pipe which is surrounded on all sides by 150 mm of 19 mm clear crushed stone, and which is placed at the footing level around the exterior perimeter of each structure. The pipe should have a positive outlet, such as to the storm sewer or building sump pit.

Foundation Backfill

Backfill against the exterior sides of the foundation walls should consist of free draining non frost susceptible granular materials. The greater part of the site excavated materials will be frost susceptible and, as such, are not recommended for re-use as backfill against the foundation walls, unless used in conjunction with a drainage geocomposite board, such as Delta Drain 6000, connected to the perimeter foundation drainage system. Imported granular materials, such as clean sand or OPSS Granular B Type II granular material, should otherwise be used for this purpose.

6.2 Protection of Footings Against Frost Action

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

Exterior unheated footings, 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.

6.3 Excavation Side Slopes

The temporary excavation side slopes anticipated should either be excavated to acceptable slopes or retained by shoring systems from the beginning of the excavation until the structure is backfilled.

Unsupported Side Slopes

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 considered to be 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.

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

Depending on the depth of excavation of the proposed building, and the proximity of the proposed building to the property boundaries, temporary shoring may be required to support the overburden soils of the adjacent properties. The design and approval of the shoring system will be the responsibility of the shoring contractor and the shoring designer who is a licensed professional engineer and is hired by the shoring contractor. It is the responsibility of the shoring contractor to ensure that the temporary shoring is in compliance with safety requirements, designed to avoid any damage to adjacent structures and include dewatering control measures.

In the event that subsurface conditions differ from the approved design during the actual installation, it is the responsibility of the shoring contractor to commission the required experts to re-assess the design and implement the required changes. The designer should also take into account the impact of a significant precipitation event and designate design measures to ensure that a precipitation event will not negatively impact the temporary shoring system or soils supported by the system. Any changes to the approved temporary shoring system design should be reported immediately to the owner’s structural designer prior to implementation.

The temporary shoring system may consist of a soldier pile and lagging system which could be cantilevered, anchored or braced. The shoring system is recommended to be adequately supported to resist toe failure. Any additional loading due to street traffic, construction equipment, adjacent structures and facilities, etc., should be added to the earth pressures described below.

The earth pressure acting on the shoring system may be calculated using the parameters in Table 6 below:

Table 6 – Soil Parameters

Parameters	Values
Active Earth Pressure Coefficient (K_a)	0.33
Passive Earth Pressure Coefficient (K_p)	3
At-Rest Earth Pressure Coefficient (K_o)	0.5
Unit Weight , kN/m^3	21
Submerged Unit Weight , kN/m^3	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 table.

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

For design purposes, the minimum factor of safety of 1.5 should be calculated.

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 of 150 mm of OPSS Granular A should be placed for bedding for sewer or water pipes when placed on a soil subgrade. Where the bedding is located on the stiff, grey silty clay, the thickness of the bedding material should be increased to 300 mm. 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 (concrete or PSM PVC pipes) or sand (concrete pipe). The bedding and cover materials should be placed in maximum 300 mm thick lifts and compacted to 98% of the SPMDD.

It should generally be possible to re-use the upper portion of the dry to moist (not wet) silty clay above the cover material if the excavation and filling operations are carried out in dry 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 re-used.

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 backfill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of the material's SPMDD.

6.5 Groundwater Control

It is anticipated that groundwater infiltration into the excavations should be low to 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.

Groundwater Control for Building Construction

A temporary Ministry of the Environment, Conservation and Parks (MECP) permit to take water (PTTW) may be required for this project if more than 400,000 L/day of ground and/or surface water is to be pumped during the construction phase. A minimum 4 to 5 months should be allowed for completion of the PTTW application package 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 Person as stipulated under O.Reg. 63/16.

6.6 Groundwater Assessment for Sump Pump Feasibility

Groundwater Assessment

Based on a review of the grading plan, the proposed building will generally be founded over a deep, low permeability silty clay deposit, with an approximate underside of footing (USF) elevation of 86.1 m. The building's mechanical room will have an approximate USF elevation of 84.9 m and founded over the stiff to firm grey silty clay.

Based on the properties of the recovered soil samples taken during the geotechnical investigation, the groundwater table is anticipated at an approximate depth of 1.5 to 3.0 m below the existing ground surface, corresponding to an approximate depth of 85 to 86.5 m.

The low permeability native silty clay soils surrounding the proposed building are laterally continuous and as such, groundwater ingress into the building's foundation drainage system and associated sump pump system are considered to be minimal. Based on the properties of clay soil, and the footprint of the proposed building, groundwater ingress into the foundation drainage system is expected to be less than 30,000 L/day (0.35 L/s), which is considered to be very low when compared to the standard minimum pump capacity of 0.9 L/s outlined in the City of Ottawa technical bulletin.

It is recommended that the proposed building be backfilled with a clay cap to minimize groundwater infiltration into the building's foundation drainage system. The backfill material should consist of the native reworked clay soils generated on site. Due to the low permeability of the native clay soils and clay backfill, groundwater ingress into the foundation drainage system will be minimal. As such, the sump pump will not be overloaded, nor will it run continuously.

It should be noted that, based on a cursory review, the surrounding buildings appear to have basement levels. Due to the developed nature of the area, groundwater lowering attributed to development would have already occurred. Groundwater lowering resultant from the proposed basement level and associated sump pump system will be negligible and without impact to surrounding infrastructure.

It is recommended that Paterson complete a review of the backfill efforts at the time of construction as well as a review of the sump pump installation to ensure conformance with the City of Ottawa technical bulletin.

6.7 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 by the use of 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 in 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.

6.8 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 moderate to aggressive corrosive environment.

6.9 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 Section 4.2 and in Appendix 1.

Based on the Atterberg Limits test results, the plasticity index limit does not exceed 40% across the subject site. In addition, based on the moisture levels and consistency, the silty clay encountered at the subject site is considered low to medium sensitive clay. Therefore, the following tree planting setbacks are recommended for the low to medium sensitivity areas.

Large trees (mature height over 14 m) can be planted within the site 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). A tree planting setback limit of **4.5 m** is applicable for small (mature tree height up to 7.5m) and medium size trees (mature tree height 7.5 m to 14 m) provided that the following conditions presented on the following page 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 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), be noted in a drawing as part of the Grading Plan.

The recommended tree planting setbacks should be reviewed by Paterson, once the proposed Grading Plan and Landscape Plan have been prepared.

Aboveground Swimming Pools, Hot Tubs, Decks and Additions

The in-situ soils are considered to be acceptable for in-ground swimming pools. Above ground swimming pools must be placed at least 5 m away from the residence foundation and neighboring foundations. Otherwise, pool construction is considered routine, and can be constructed in accordance with the manufacturer`s requirements.

Additional grading around the hot tub should not exceed permissible grade raises. Otherwise, hot tub construction is considered routine, and can be constructed in accordance with the manufacturer’s specifications.

Additional grading around proposed deck or addition should not exceed permissible grade raises. Otherwise, standard construction practices are considered acceptable.

7.0 Recommendations

It is recommended that the following be carried out by Paterson once preliminary and future details of the proposed development have been prepared:

- ❑ Review of updates to the grading, servicing and landscaping plans from a geotechnical perspective.

- ❑ Review of the geotechnical aspects of the excavation and shoring design, if not by Paterson, prior to construction (if applicable).

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.

- ❑ 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.

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 soil 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 1070456 Ontario Inc., 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.

LICENSED PROFESSIONAL ENGINEER
November 5, 2025
K. A. PICKARD
100531344
PROVINCE OF ONTARIO

Owen R. Canton, B.Eng.

Kevin Pickad, P.Eng.

Report Distribution:

- ❏ 1070456 Ontario Inc. (Email Copy)
- ❏ Paterson Group (1 Copy)

APPENDIX 1

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

ATTERBERG LIMIT TESTING RESULTS

GRAIN SIZE DISTURBUTION AND HYDROMETER TESTING RESULTS

ANALYTICAL TESTING RESULTS

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

1670 Tenth Line Road, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 383572.10 **NORTHING:** 5036998.50 **ELEVATION:** 88.25

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

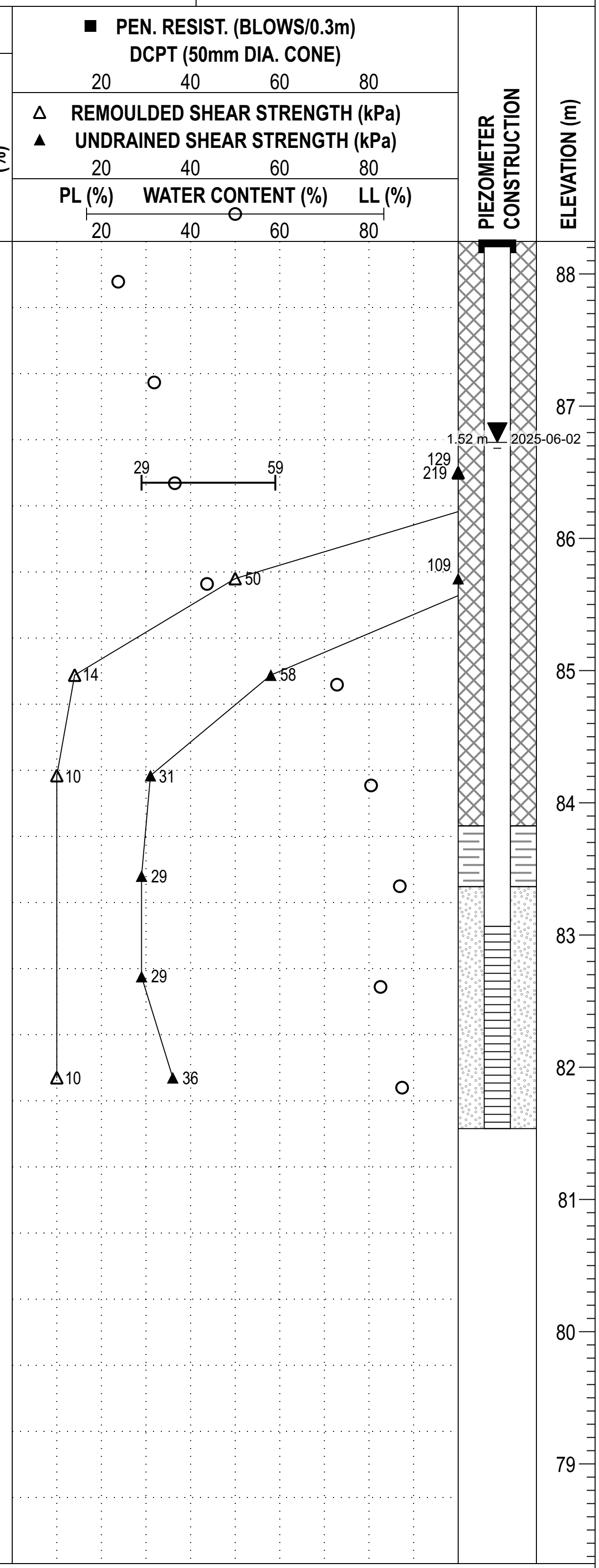
REMARKS:

DATE: May 27, 2025

FILE NO. : PG7562

HOLE NO. : BH 1-25

SAMPLE DESCRIPTION	DEPTH (m)	TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
GROUND SURFACE					
TOPSOIL and organics — 0.15m [88.10m]		AU 1			24
Hard to very stiff, brown **SILTY CLAY** - Trace organics to 0.3 m depth	1	SS 2	25	2-4-5-7 9	32
	2	SS 3	67	P	36
2.82m [85.43m]		SS 4	71	P	44
Stiff, grey **SILTY CLAY**	3	SS 5	100	P	73
- Firm by 3.8 m depth	4	SS 6	100	P	80
	5	SS 7	100	P	87
	6	SS 8	100	P	83
6.71m [81.54m]		SS 9	100	P	87
End of Borehole (GWL at 1.52 m depth - June 2, 2025)	7				
	8				
	9				
	10				



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.

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

1670 Tenth Line Road, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 383577.62 **NORTHING:** 5036981.33 **ELEVATION:** 88.09

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

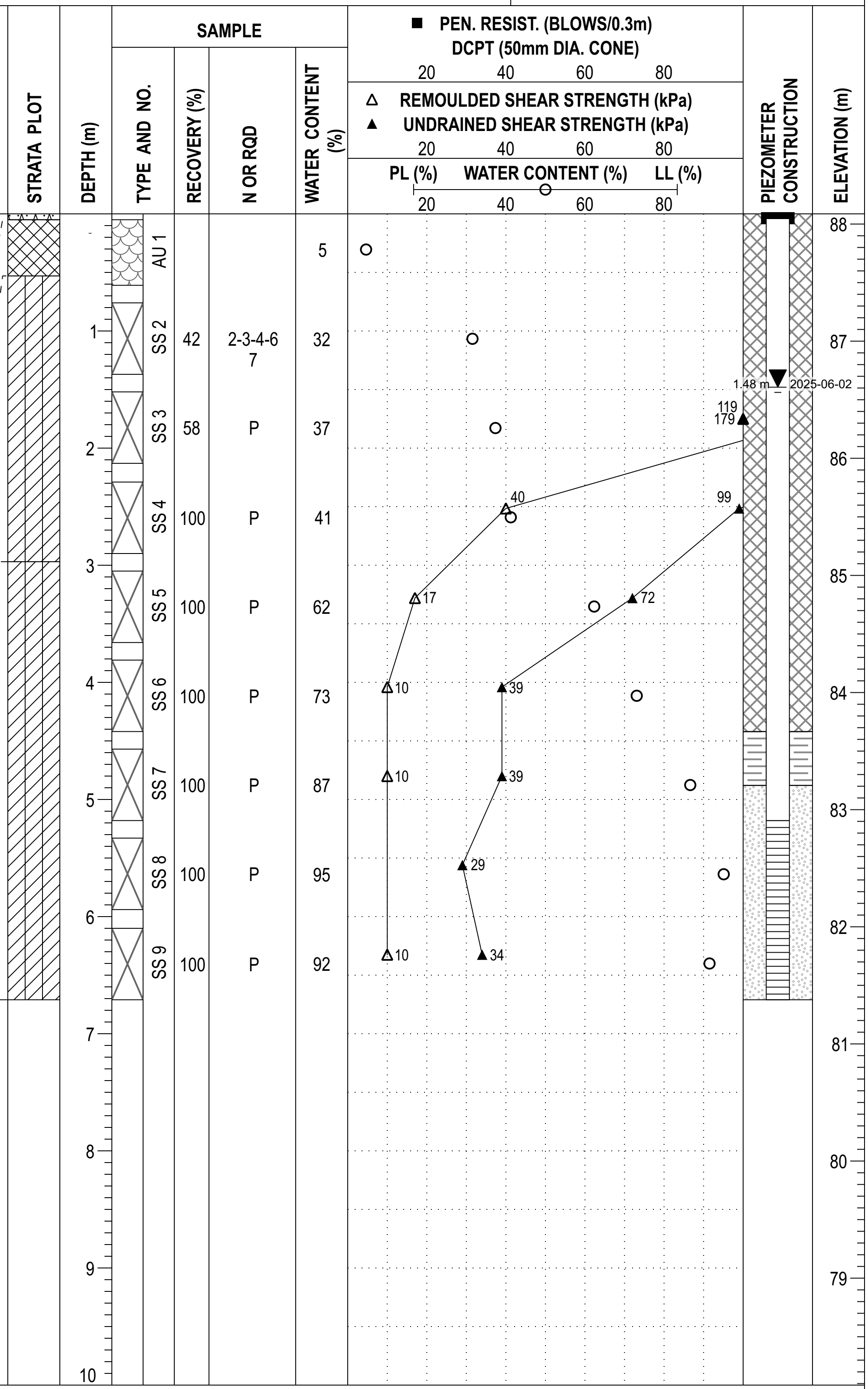
REMARKS:

DATE: May 27, 2025

FILE NO. : PG7562

HOLE NO. : BH 2-25

SAMPLE DESCRIPTION	TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
GROUND SURFACE				
ASPHALT 0.05m [88.04m]				
FILL: Brown silty sand, with crushed stone and gravel 0.53m [87.56m]	AU 1			5
Very stiff to stiff, brown **SILTY CLAY**	SS 2	42	2-3-4-6 7	32
	SS 3	58	P	37
2.97m [85.12m]	SS 4	100	P	41
Stiff, grey **SILTY CLAY**	SS 5	100	P	62
- Firm by 3.8 m depth	SS 6	100	P	73
	SS 7	100	P	87
	SS 8	100	P	95
6.71m [81.38m]	SS 9	100	P	92
End of Borehole				
(GWL at 1.48 m depth - June 2, 2025)				



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

1670 Tenth Line Road, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 383539.15 **NORTHING:** 5036971.80 **ELEVATION:** 88.08

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

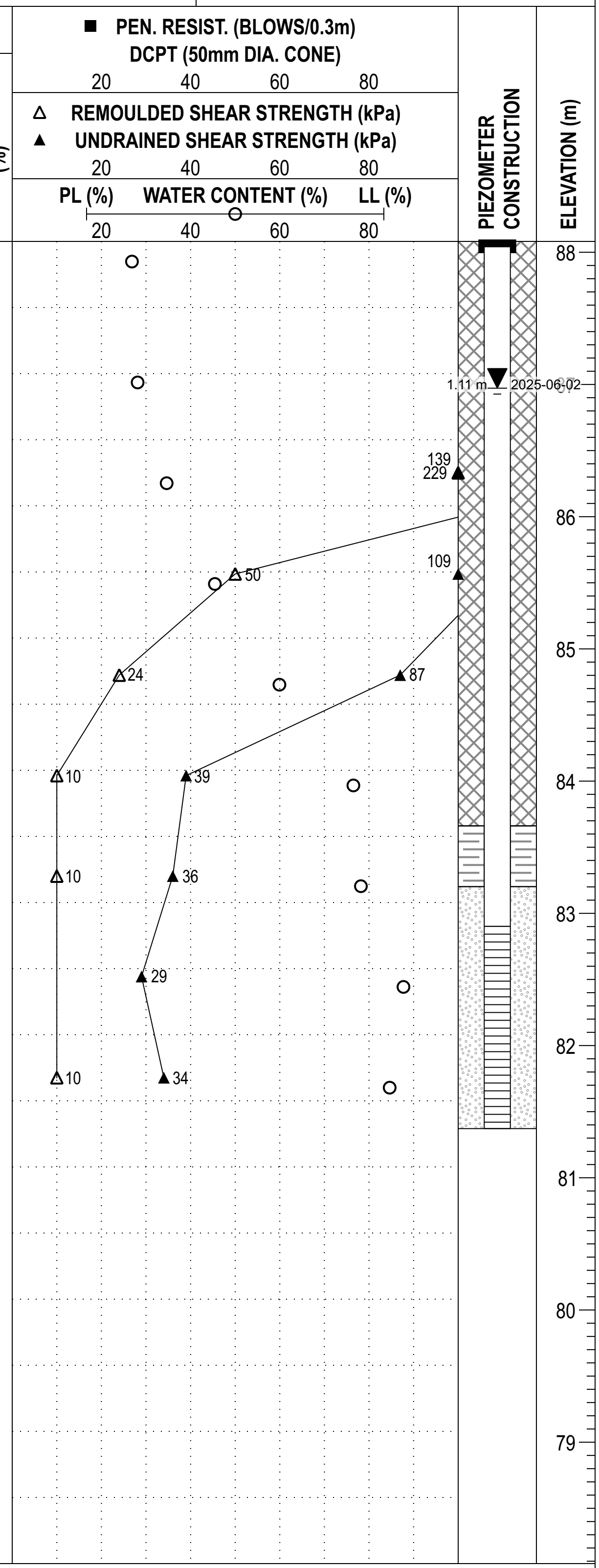
REMARKS:

DATE: May 27, 2025

FILE NO. : PG7562

HOLE NO. : BH 3-25

SAMPLE DESCRIPTION	DEPTH (m)	TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
GROUND SURFACE					
TOPSOIL 0.08m [88.00m]		AU 1			27
FILL: Brown silty sand 0.28m [87.80m]					
Hard to very stiff, brown **SILTY CLAY** - Greyish from 0.3 m to 0.7 mdepth	1	SS 2	71	2-3-4-6 7	28
	2	SS 3	67	P	35
2.97m [85.11m]		SS 4	83	P	45
Stiff, grey **SILTY CLAY**	3	SS 5	100	P	60
- Firm by 3.8 m depth	4	SS 6	100	P	77
	5	SS 7	100	P	78
		SS 8	100	P	88
6.71m [81.37m]	6	SS 9	100	P	85
End of Borehole (GWL at 1.11 m depth - June 2, 2025)	7–10				



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

1670 Tenth Line Road, Ottawa, Ontario

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 383561.37 **NORTHING:** 5036977.59 **ELEVATION:** 88.35

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

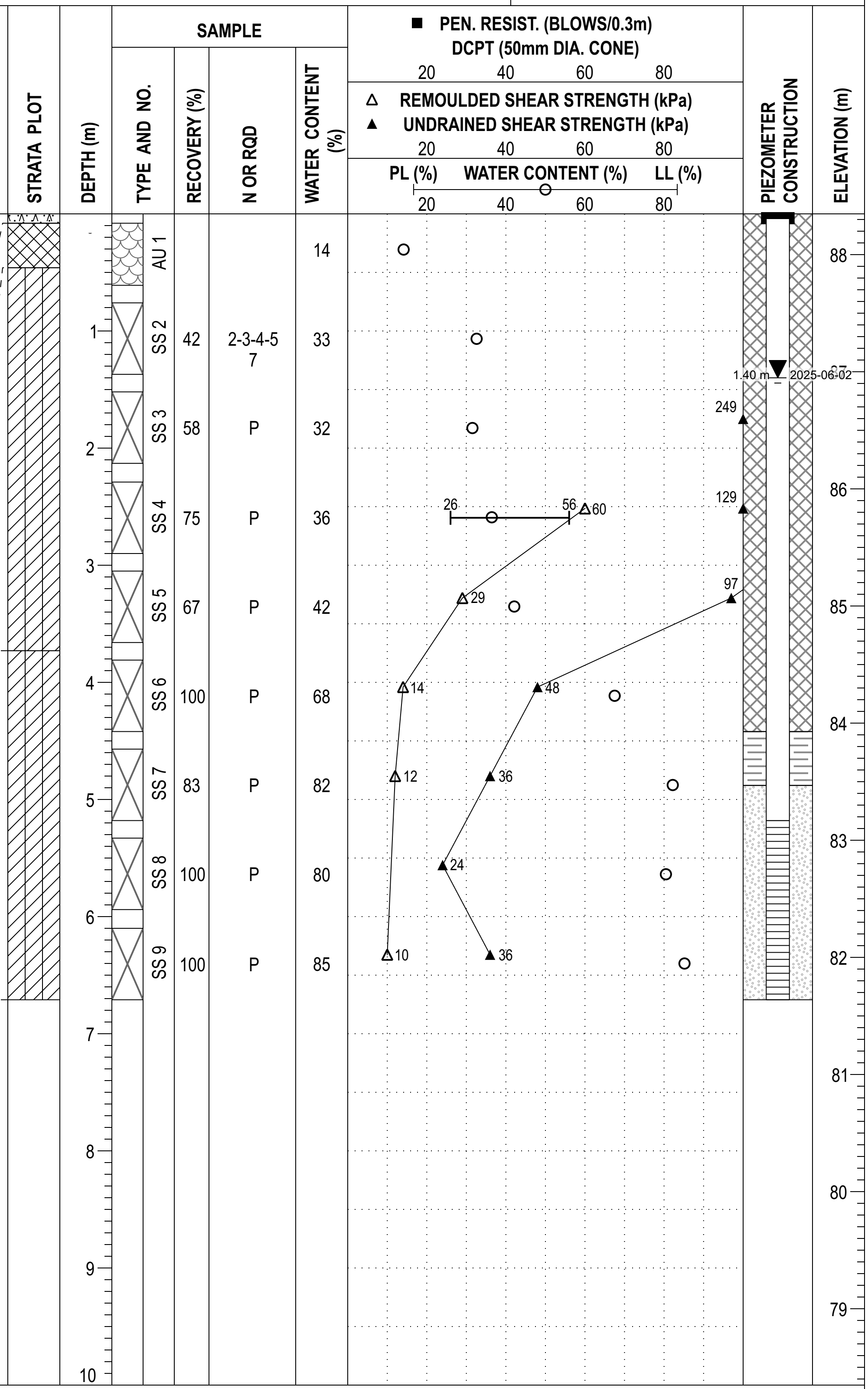
DATE: May 27, 2025

FILE NO. : PG7562

HOLE NO. : BH 4-25

SAMPLE DESCRIPTION	Depth / Elevation
GROUND SURFACE	
ASPHALT	0.08m [88.27m]
FILL: Brown silty sand, with crushed stone and gravel, some clay	0.46m [87.89m]
Hard to stiff, brown **SILTY CLAY**	3.73m [84.62m]
Firm to soft, grey **SILTY CLAY**	6.71m [81.64m]
Dynamic cone penetration test commenced at 6.71 m depth	

TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)
AU 1			14
SS 2	42	2-3-4-5 7	33
SS 3	58	P	32
SS 4	75	P	36
SS 5	67	P	42
SS 6	100	P	68
SS 7	83	P	82
SS 8	100	P	80
SS 9	100	P	85



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COORD. SYS.: MTM ZONE 9 **EASTING:** 383561.37 **NORTHING:** 5036977.59 **ELEVATION:** 88.35

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: May 27, 2025

FILE NO. : PG7562

HOLE NO. : BH 4-25

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	PIEZOMETER CONSTRUCTION	ELEVATION (m)
Dynamic cone penetration test		10							78
		11							77
		12							76
		13							75
		14							74
		15							73
		16							72
		17							71
		18							70
		19							69
		20							

COORD. SYS.: MTM ZONE 9 **EASTING:** 383561.37 **NORTHING:** 5036977.59 **ELEVATION:** 88.35

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: May 27, 2025

FILE NO. : PG7562

HOLE NO. : BH 4-25

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	PIEZOMETER CONSTRUCTION	ELEVATION (m)
Dynamic cone penetration test		20							68
		21							67
		22							66
		23							65
		24							64
		25							63
		26							62
		27							61
		28							60
		29							59
		30							

COORD. SYS.: MTM ZONE 9 **EASTING:** 383561.37 **NORTHING:** 5036977.59 **ELEVATION:** 88.35

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: May 27, 2025

FILE NO. : PG7562

HOLE NO. : BH 4-25

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	PIEZOMETER CONSTRUCTION	ELEVATION (m)
30.48m [57.87m]		30							58
End of Borehole		31							57
DCPT pushed from 6.71 m to 30.48 m		32							56
(GWL at 1.40 m depth - June 2, 2025)		33							55
		34							54
		35							53
		36							52
		37							51
		38							50
		39							49
		40							

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 = $(D30)^2 / (D10 \times D60)$
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 $Cu > 4$
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

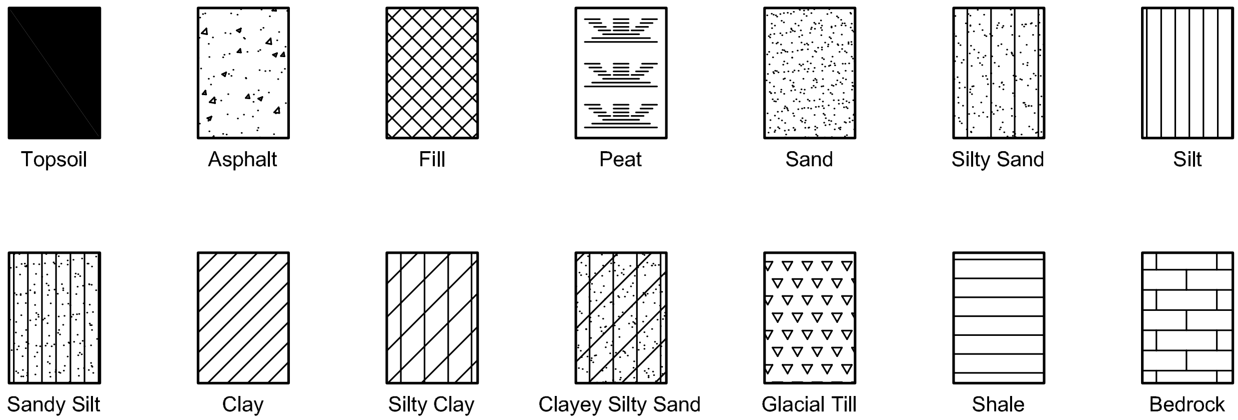
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void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

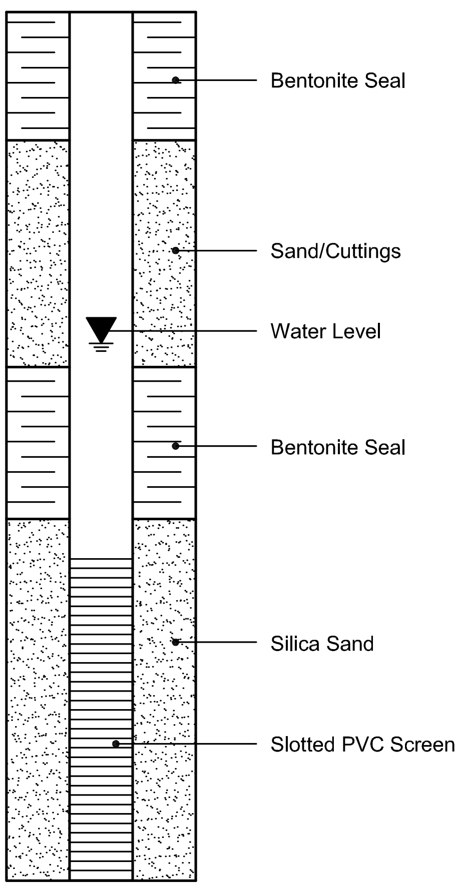
SYMBOLS AND TERMS (continued)

STRATA PLOT

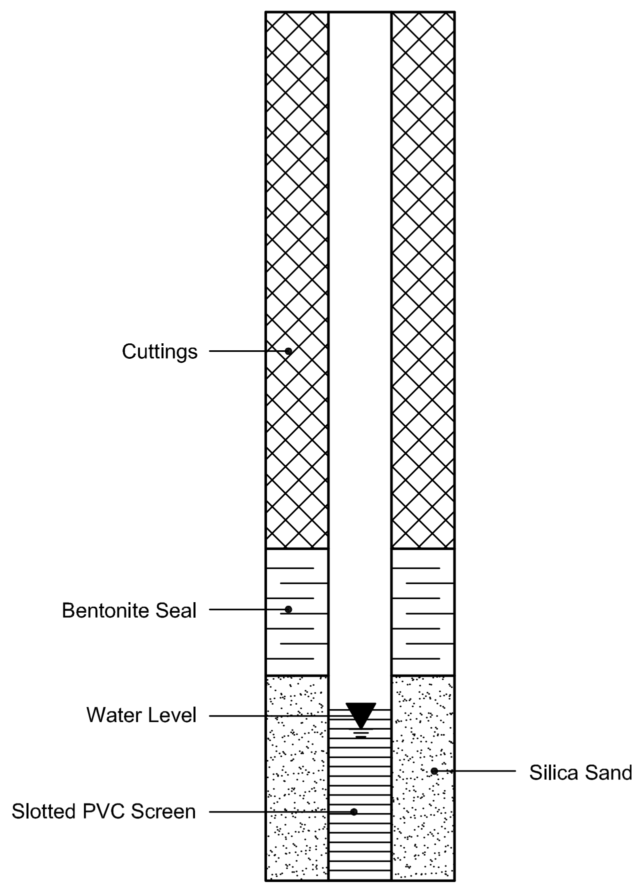


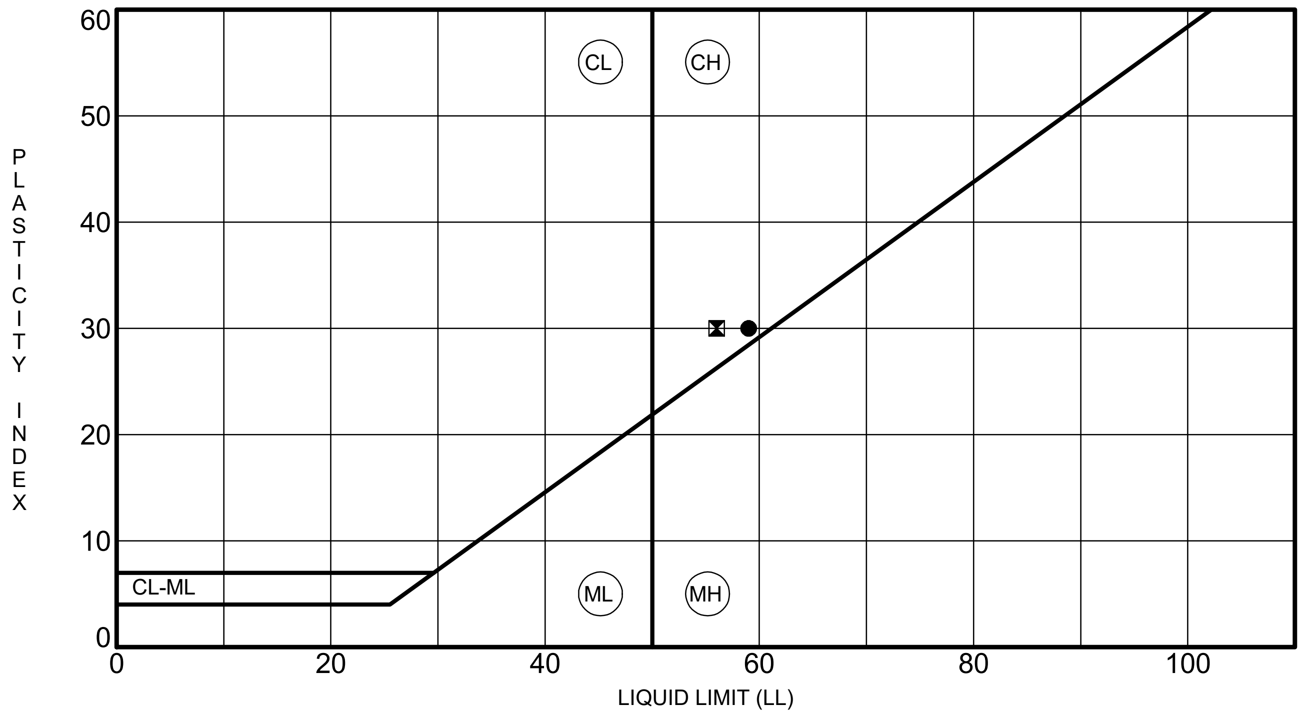
MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION





	Specimen Identification		LL	PL	PI	Fines	Classification
●	**BH 1-25**	**SS3**	**59**	**29**	**30**		**CH - Inorganic clays of high plasticity**
⧗	**BH 4-25**	**SS4**	**56**	**26**	**30**		**CH - Inorganic clays of high plasticity**

CLIENT **1070456 Ontario Inc.**

FILE NO. **PG7562**

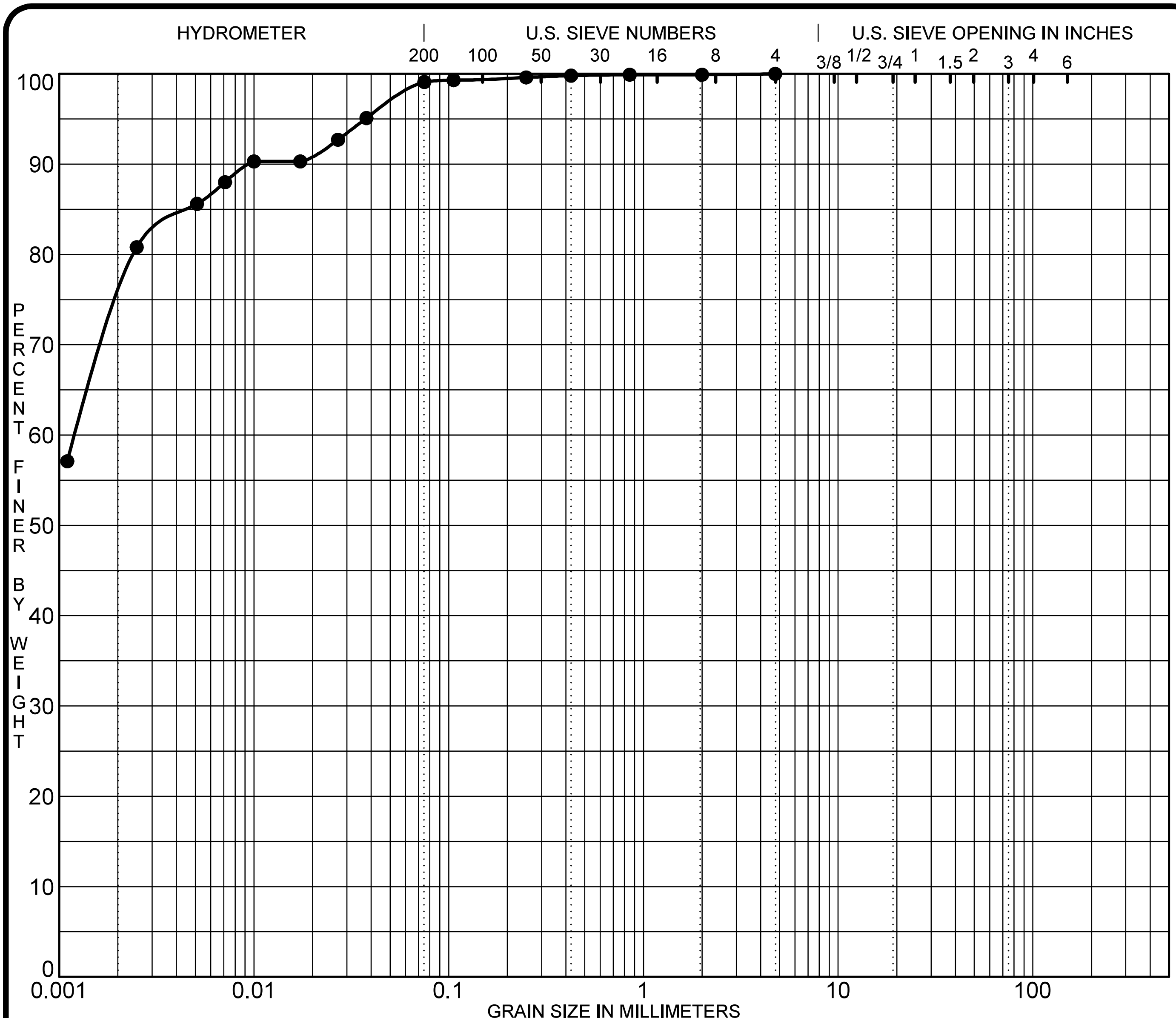
PROJECT **Geotechnical Investigation - Proposed Residential Development 1670 Tenth Line Road, Ottawa, ON**

DATE **25 May 25**

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario
K2E 7T9
TEL: (613) 226-7381

ATTERBERG LIMITS' RESULTS



CLAY	SILT	SAND			GRAVEL		COBBLES
		fine	medium	coarse	fine	coarse	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	**BH 2-25**	**SS3**		**35.1**					
⊠									
▲									
★									

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH 2-25**	**SS3**	**4.75**	**0.00**			**0.0**	**0.9**	**26.4**	**72.7**
⊠										
▲										
★										

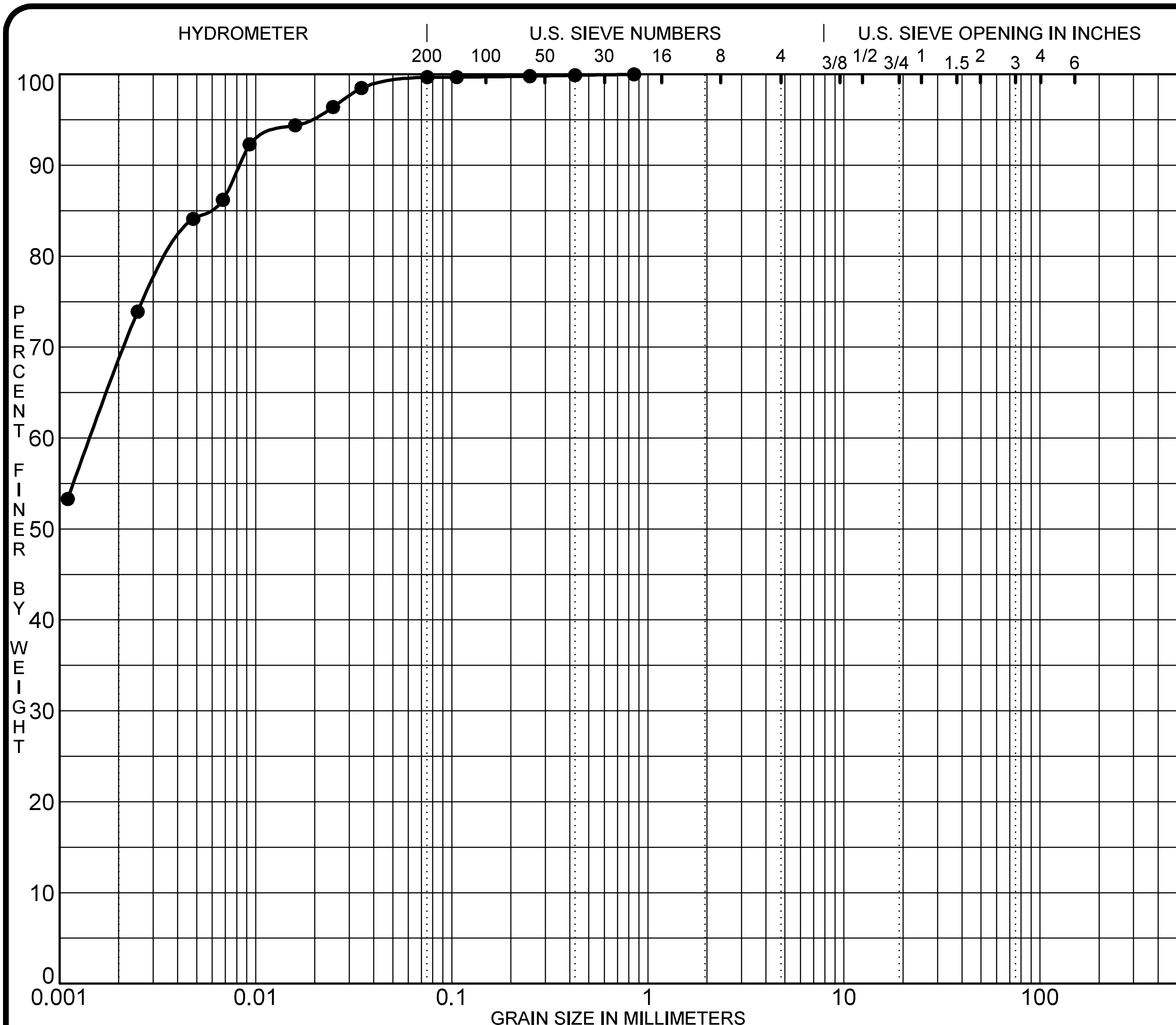
CLIENT **1070456 Ontario Inc.** FILE NO. **PG7562**

PROJECT **Geotechnical Investigation - Proposed Residential Development 1670 Tenth Line Road, Ottawa, ON** DATE **30 May 25**

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario
K2E 7T9
TEL: (613) 226-7381

GRAIN SIZE DISTRIBUTION



CLAY	SILT	SAND			GRAVEL		COBBLES
		fine	medium	coarse	fine	coarse	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● BH 3-25	SS4		42.3					
⊠								
▲								
★								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BH 3-25	SS4	0.85	0.00			0.0	0.3	30.2	69.5
⊠									
▲									
★									

CLIENT **1070456 Ontario Inc.** FILE NO. **PG7562**

PROJECT **Geotechnical Investigation - Proposed Residential Development 1670 Tenth Line Road, Ottawa, ON** DATE **30 May 25**

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario
K2E 7T9
TEL: (613) 226-7381

GRAIN SIZE DISTRIBUTION

Certificate of Analysis

Report Date: 03-Jun-2025

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 28-May-2025

Client PO: 63210

Project Description: PG7562

Client ID:		BH4-25-SS3	-	-	-		
Sample Date:		27-May-25 09:00	-	-	-	-	-
Sample ID:		2522400-01	-	-	-		
Matrix:		Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	76.1	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.53	-	-	-	-	-
Resistivity	0.1 Ohm.m	29.7	-	-	-	-	-
Anions							
Chloride	10 ug/g	36	-	-	-	-	-
Sulphate	10 ug/g	42	-	-	-	-	-

APPENDIX 2

FIGURE 1 – KEY PLAN

DRAWING PG7562-1 – TEST HOLE LOCATION PLAN

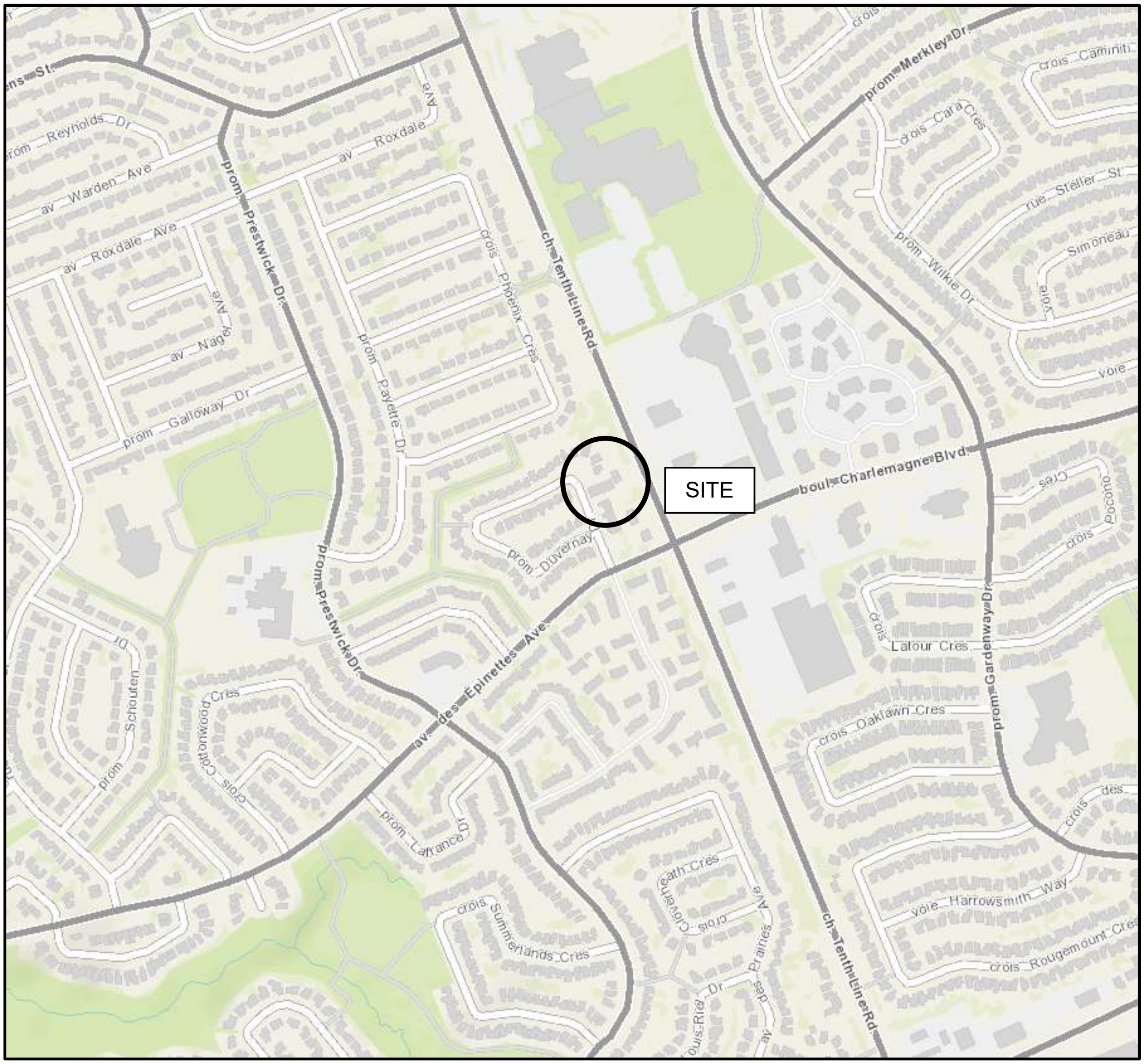
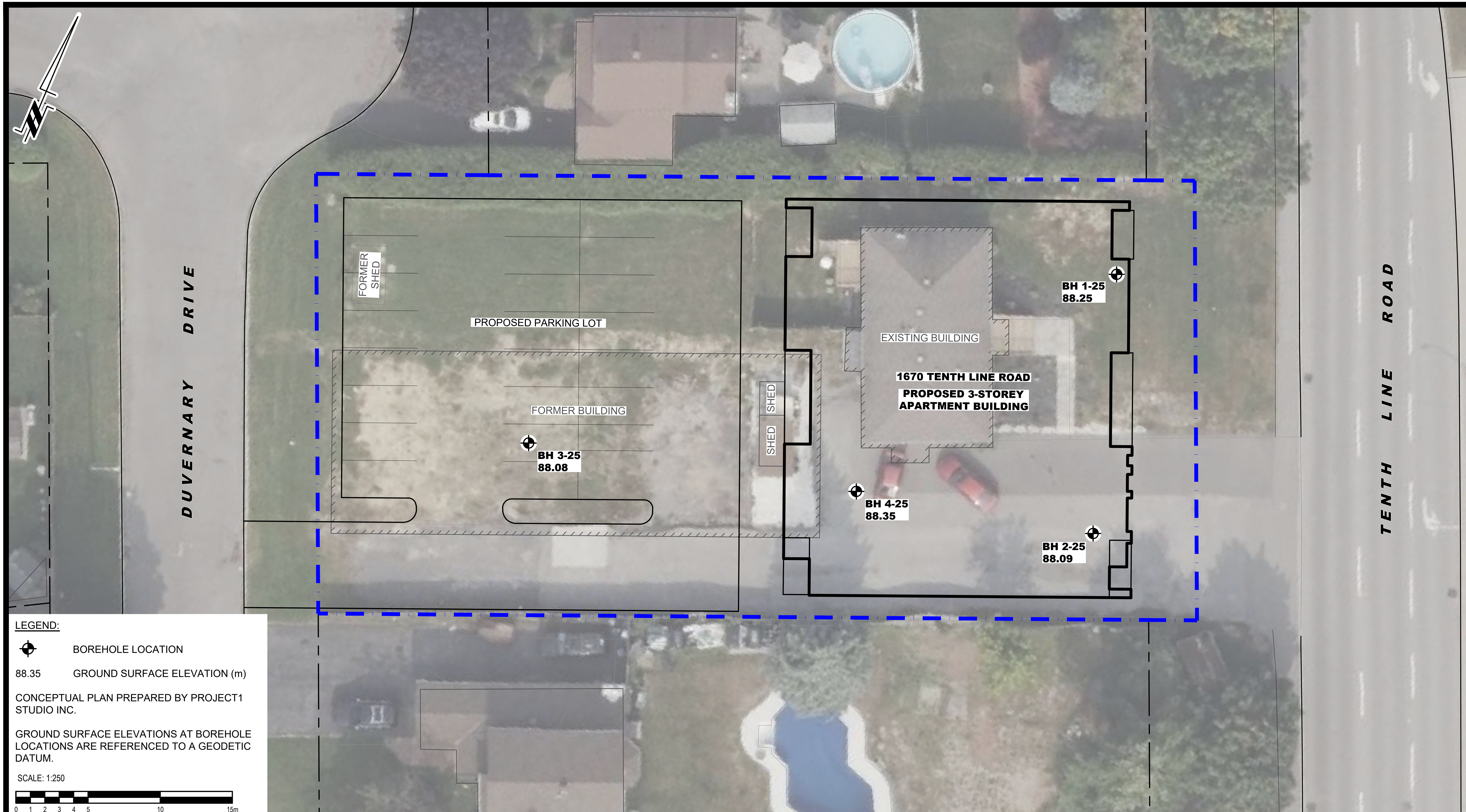


FIGURE 1

KEY PLAN



LEGEND:

⊕ BOREHOLE LOCATION

88.35 GROUND SURFACE ELEVATION (m)

CONCEPTUAL PLAN PREPARED BY PROJECT1 STUDIO INC.

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

SCALE: 1:250

0 1 2 3 4 5 10 15m

PATERSON GROUP

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

NO.	REVISIONS	DATE	INITIAL

1070456 ONTARIO INC.
GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
1670 TENTH LINE ROAD

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:250	Date: 06/2025
Drawn by: ZS	Report No.: PG7562-1
Checked by: MA	Dwg. No.: PG7562-1
Approved by: KP	Revision No.:

11x17

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