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Geotechnical Engineering
Environmental Engineering
Hydrogeology
Materials Testing
Building Science
Rural Development Design
Retaining Wall Design
Noise and Vibration Studies

patersongroup.ca

December 19, 2024
PG7168-LET.01 Revision 2

**Minto Communities**
200 – 180 Kent Street
Ottawa, Ontario
K1P 0B6

Attention: **Kevin Harper**

Subject: **Geotechnical Investigation**
**Proposed Commercial Building**
**340 Huntmar Drive, Ottawa, Ontario**

Dear Kevin,

Paterson Group (Paterson) was commissioned by Minto Communities to conduct a geotechnical investigation for the proposed two-storey sales centre building to be located at 340 Huntmar Drive within the City of Ottawa, Ontario.

The objectives of the assessment were to:

- Determine the subsoil and groundwater conditions at this site by means of a test hole program.

- Provide geotechnical recommendations pertaining to the design of the proposed development including construction considerations which may affect the design.

The following report presents a summary of our findings and provides geotechnical recommendations pertaining to the proposed development. Investigating the presence or potential presence of contamination on the subject site was not part of the scope of work of the present investigation. Therefore, the present report does not address environmental issues.

# 1.0 Field Observations

## Field Program

The field program for the investigation was conducted on July 26, 2024, and consisted of advancing six test pits to a maximum depth of 4.0 m below the existing ground surface. A previous investigation was undertaken by Paterson in October of 2013. At that time, two (2) boreholes were advanced within the subject site to maximum depth of 10.2 m.

The test holes were reviewed in the field by Paterson personnel under the direction of a senior engineer from the Geotechnical Division. The test pit procedure consisted of excavating to the required depths at the selected locations and sampling the overburden. The depths at which the grab samples were recovered from the test pits are shown as G on the Soil Profile and Test Data sheets attached to the present report.

The test pits were placed in a manner to provide general coverage of the subject site, taking into consideration existing site features and underground services. The approximate locations of the test holes are shown on Drawing PG7168-1 – Test Hole Location Plan attached to the present report.

## Site Conditions

The subject site currently consists of a vacant open field and the ground surface throughout the subject site is relatively flat. Several 3 m high fill piles, consisting of silty sand with clay and gravel, exist in the northeast and southwest corners of the site. The subject site is bordered to the north and west by Campeau Drive, and to the east and south by vacant land.

## Subsurface Conditions

### Overburden

Generally, the soil profile at the test hole locations consists of an 11.4 m thick layer of in-situ, stiff to firm, brown to grey silty clay which was further underlain by glacial till overlying the bedrock surface. The grey silty clay layer was encountered at every test hole at a depth ranging between 2.0 to 2.5 m below ground surface. Practical refusal to DCPT was encountered at a depth of 12.1 m below ground surface at BH 10.

The subsurface conditions observed in the test holes are presented in detail in the Soil Profile and Data Sheets attached to the end of this report.

## Grain Size Distribution and Hydrometer Test

Grain size distribution and hydrometer testing was also completed on one selected soil sample. The results of the grain size analysis are summarized in Table 1 and presented on the Grain-size Distribution and Hydrometer Testing Results sheets attached to the end of this report.

**Table 1 - Grain Size Distribution and Hydrometer Testing**

| Test Hole | Sample | Gravel (%) | Sand (%) | Silt (%) | Clay (%) |
|---|---|---|---|---|---|
| TP 2-24 | G2 | 0.0 | 0.2 | 36.8 | 63.0 |

## Atterberg Limit Tests

Atterberg Limits testing was completed on select samples of silty clay recovered from TP 1-24 and TP 4-24. The result of the Atterberg Limits test is presented on Table 2.

**Table 2 – Atterberg Limits Results**

| Test Hole and Sample | Depth (m) | LL (%) | PL (%) | PI (%) | w (%) | Classification |
|---|---|---|---|---|---|---|
| TP 1-24 – G4 | 1.8 to 1.9 | 56 | 21 | 35 | 59 | CH |
| TP 4-24 – G3 | 1.9 to 2.0 | 59 | 19 | 40 | 60 | CH |

Notes: LL: Liquid Limit; PL: Plastic Limit; PI: Plasticity Index; w: water content;
CH: Lean Clay of High Plasticity.

## Shrinkage Test

The shrinkage limit and shrinkage ratio of the tested silty clay sample (TP 2-24, sample No. G1) were found to be 16.2% and 1.88, respectively.

## Bedrock

Based on available geological mapping, the bedrock in the area consists of interbedded limestone and shale of the Verulam Formation, with a drift thickness of 15 to 25 m.

## Groundwater

The open hole groundwater infiltration levels were observed within the sidewalls of each test pit at the time of excavation. Our observations are presented in the Soil Profile and Test Data sheets attached to the end of this report.

**Table 3 – Summary of Groundwater Levels**

| Test Hole ID | Observation Method | Ground Surface Elevation (m) | Measured Groundwater Level | | Date Recorded |
|---|---|---|---|---|---|
| | | | Depth (m) | Elevation (m) | |
| TP 1-24 | Sidewall Infiltration | 97.41 | 1.0 | 96.41 | July 26, 2024 |
| TP 2-24 | Sidewall Infiltration | 97.33 | 1.5 | 95.83 | |
| TP 3-24 | Sidewall Infiltration | 97.31 | 1.5 | 95.81 | |
| TP 4-24 | Sidewall Infiltration | 97.12 | 2.0 | 95.12 | |
| TP 5-24 | Sidewall Infiltration | 97.62 | 1.3 | 96.32 | |
| TP 6-24 | Sidewall Infiltration | 97.14 | 1.5 | 95.64 | |

**Note:** The ground surface elevation at each borehole location was surveyed using a high precision GPS and referenced to a geodetic datum.

# 2.0 Geotechnical Assessment

From a geotechnical perspective, the subject site is suitable for the proposed development. It is expected that the proposed building will be founded on conventional spread footings placed on an undisturbed, in-situ, stiff brown silty clay bearing surface, or upon a layer of approved engineered fill placed upon an undisturbed, stiff silty clay bearing surface. Due to the presence of a silty clay deposit, permissible grade restrictions are recommended for this site.

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

## 2.1 Site Grading and Preparation

**Stripping Depth**

Topsoil and/or fill, such as those containing organic or deleterious materials, should be stripped from under any buildings, paved areas, pipe bedding, and other settlement sensitive structures. Care should be taken not to disturb adequate bearing soils below the founding level during site preparation activities. Disturbance of the subgrade may result in having to sub-excavate the disturbed material and placement of additional suitable fill material.

**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 the building should be compacted to a minimum of 98% of the standard Proctor maximum dry density (SPMDD).

Non-specified existing fill along with site-excavated soil could be placed as general landscaping fill where settlement of the ground surface is of minor concern. These materials should be spread in lifts with a maximum thickness of 300 mm and compacted by the tracks of the spreading equipment to minimize voids.

Consideration could be given to placing workable, Paterson reviewed and approved, soil fill consisting of workable silty clay free of deleterious materials, cobbles larger than 200 mm in diameter and organic debris. This recommendation is considered preliminary at this time and can be explored further if suitable fill is available at the time of construction. The material would be recommended to be placed in maximum 300 mm thick loose lifts, compacted using a suitably sized vibratory sheepsfoot roller, placed in dry and above-freezing conditions, and under the full-tie supervision of Paterson field personnel.

If approved soil fill would be considered for those purpose, provisions should be carried to provide a minimum 450 mm thick layer of engineered fill of crushed directly below the footings.

Non-specified existing fill and site-excavated soils are not suitable for placement as backfill against foundation walls, unless used in conjunction with a geocomposite drainage membrane, such as CCW MiraDRAIN 2000 or Delta-Teraxx.

## 2.2 Foundation Design

### Bearing Resistance Values

Strip footings, up to 3 m wide, and pad footings, up to 5 m wide, placed on engineered fill on an undisturbed, in-situ, stiff brown silty clay bearing surface can be designed using a bearing resistance value at serviceability limit states (SLS) of **100 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **150 kPa**.

An undisturbed soil bearing surface consists of a surface from which all topsoil and deleterious materials, such as loose, frozen or disturbed soil, whether in-situ or not, have been removed, in the dry, prior to the placement of concrete footings. A geotechnical resistance factor of 0.5 was applied to the above noted bearing resistance values at ULS.

The bearing resistance value at SLS, 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. Adequate lateral support is provided to a soil bearing medium when a plane extending down and out from the bottom edges of the footing, at a minimum of 1.5H:1V, passes only through in situ soil or engineered fill of the same or higher capacity as that of the bearing medium.

### Permissible Grade Raise

Based on the undrained shear strength testing carried out within the silty clay layer, a permissible grade raise restriction of **2 m** is recommended for grading within 5 m of the proposed buildings and using soil fill. A permissible grade raise restriction of **3 m** is recommended in the parking areas and access lanes. A post-development groundwater lowering of 0.5 m was considered in our permissible grade raise calculations.

If greater permissible grade raises are required, preloading with or without a surcharge, lightweight fill, and/or other measures could be investigated to reduce the risks of unacceptable long-term post construction total and differential settlements.

## 2.3 Design for Earthquakes

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

## 2.4 Slab-on-Grade Construction

With the removal of all topsoil and deleterious materials within the footprint of the proposed building, a soil subgrade approved by Paterson personnel at the time of construction, is considered to be an acceptable subgrade surface on which to commence backfilling for the floor slab construction.

Any soft areas should be removed and backfilled with appropriate backfill material prior to placing any 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 (outside the zone of influence of the footings).

It is recommended that the upper 200 mm of sub-slab fill consist of OPSS Granular A crushed stone compacted to a minimum of 98% of the materials SPMDD. All backfill material within the footprint of the building footprint should be placed in maximum 300 mm thick loose layers and compacted to a minimum of 98% of the SPMDD. All fill placed to raise the subgrade for the slab-on-grade should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 98% of the materials SPMDD and as verified by Paterson field personnel.

## 2.5 Pavement Design

Car only parking areas, driveways and access lanes are anticipated at this site. The proposed pavement structures are shown in Tables 4 and 5.

**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 and 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 |
| 400 | **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. Weak subgrade conditions may be experienced over service trench fill materials. This may require the use of a geotextile, thicker subbase or other measures that can be recommended at the time of construction as part of the field observation program.

The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 100% of the material's SPMDD using suitable vibratory equipment. All subgrade surfaces should be proof rolled with a suitably sized vibratory sheepsfoot roller prior to the placement of the subbase stone layer. If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be sub-excavated and replaced with OPSS Granular A or Granular B Type II Material.

## 2.6 Foundation Drainage

Since the building will consist of a slab-on-grade, a perimeter foundation drainage system is considered optional throughout the landscaped portions of the proposed building footprint.

In areas where hard-scaping or pavement structures will abut the building footprint, it is recommended to implement a foundation drainage system. The system should consist of a 100 to 150 mm diameter perforated corrugated plastic pipe wrapped in a geosock and surrounded by 150 mm of 10 mm clear crushed stone. The clear stone should be wrapped in a non-woven geotextile. The pipe should have a positive outlet, such as a gravity connection to the storm sewer.

Alternatively, the perimeter drainage pipe may be placed up to 600 mm below proposed finished grade and against the building footprint upon site-generated compacted soil backfill to ensure adequate drainage of the overlying granular fill layer is provided from precipitation events and/or spring meltwater.

In this configuration, provided the backfill overlying the pipe consists of crushed stone fill associated with the pavement structure, a composite foundation drainage board will not be required. The installation of the perimeter drainage system should be reviewed by Paterson personnel at the time of construction.

## 2.7 Foundation Backfill

Backfill against the exterior sides of the foundation walls may consist of free-draining, non-frost susceptible imported crushed stone or clean sand fill. Alternatively, consideration may be given to placing site-generated soil fill as backfill against the foundation walls provided the material is compacted in 300 mm thick loose lifts.

If the building's perimeter drainage pipe is located at footing level and backfill will consist of approved soil fill that does not consist of clean sand or free-draining non-frost susceptible imported crushed stone, a composite foundation drainage board should be placed against the foundation walls to ensure satisfactory drainage of the backfill layer to the perimeter drainage pipe.

If the building's perimeter drainage pipe is raised up to 600 mm below finished grade and the overlying fill will consist of granular stone fill, the composite foundation drainage board may be omitted. All fill placed as foundation backfill should be placed in maximum 300 mm thick loose lifts, compacted using suitable compaction equipment (suitably sized smooth-drum roller for crushed stone fill, sheepsfoot roller for soil fill) and tested for compaction efforts at the time of construction by Paterson personnel.

## 2.8 Protection of Footings Against Frost Action

Perimeter footings of heated structures are required to be insulated against the deleterious effects of frost action. A minimum of 1.5 m of soil cover alone, or a minimum of 0.6 m of soil cover, in conjunction with foundation insulation (and as advised by Paterson), should be provided.

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

## 2.9 Excavation Side Slopes

The side slopes of excavations in the soil and fill 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. It is assumed that sufficient room will be available in selected areas of the excavation to be undertaken by open-cut methods (i.e., unsupported excavations).

The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. The flatter slope is required for excavation below groundwater level. The subsoil at this site is considered to be mainly Type 2 and Type 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. 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.

## 2.10 Pipe Bedding and Backfill

At least 150 mm of OPSS Granular A should be used for pipe bedding for sewer and water pipes. The bedding should extend to the spring line of the pipe. Cover material, from the spring line to at least 300 mm above the obvert of the pipe, should consist of OPSS Granular A. The bedding and cover materials should be placed in maximum 225 mm thick lifts compacted to 99% of the material’s standard Proctor maximum dry density.

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. Any stones greater than 200 mm in their longest dimension should be removed from site-generated materials prior to placement.

The backfill material within the frost zone (about 1.8 m below finished grade) should match the soils exposed at the trench walls to reduce potential differential frost heaving. The backfill should be placed in maximum 225 mm thick loose lifts and compacted to a minimum of 95% of the material’s SPMDD.

To reduce long-term lowering of the groundwater level at this site, clay seals should be provided in the service trenches. The seals should be at least 1.5 m long and should extend from trench wall to trench wall. Generally, the seals should extend from the frost line and fully penetrate the bedding, sub bedding and cover material. The barriers should consist of relatively dry and compatible brown silty clay placed in maximum 225 mm thick loose layers and compacted to a minimum of 95% of the material’s 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.

## 2.11 Groundwater Control

Based on our observations, 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. 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.

## 2.12 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/pile caps/grade beams are protected with sufficient soil cover to prevent freezing at founding level. Trench excavations and pavement construction are difficult activities to complete during freezing conditions without introducing frost in the subgrade or in the excavation walls and bottoms. Precautions should be considered if such activities are to be completed during freezing conditions. Additional information could be provided, if required.

## 2.13 Corrosion Potential and Sulphate

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

## 2.14 Landscaping Considerations

**Tree Planting Restrictions**

Paterson completed a soils review of the site to determine applicable tree planting setbacks, in accordance with the City of Ottawa *Tree Planting in Sensitive Marine Clay Soils* (2017 Guidelines) for trees planted within a public right-of-way (ROW).

Atterberg limits testing was completed for recovered silty clay samples at selected locations during the additional investigation. Grain size distribution and hydrometer testing was also completed on selected soil samples. The above-noted test results were completed on samples taken at depths between the anticipated underside of footing elevation and a 3.5 m depth below finished grade. The results of our testing are presented in Tables 1 and 2 in Subsection 1.0 and attached to the end of this report.

Based on the results of the Atterberg limit testing mentioned above, the plasticity index was found to be less than 40% in all the tested clay samples. Based on this, the in-situ clay soils are considered to have a low to medium potential for soil volume change and as identified in the City of Ottawa's *Tree Planting in Sensitive Marine Clay Soils* (2017 Guidelines) .

Large trees (mature height over 14 m) can be planted within these areas provided a tree to foundation setback equal to the full mature height of the tree can be provided (e.g. in a park or other green space). Tree planting setback limits may be reduced to 4.5 m for small (mature height up to 7.5 m) and medium size trees (mature tree height 7.5 to 14 m), provided that the condition noted below are met:

- ❑ The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree, as measured from the centre of the tree trunk and verified by means of the Grading Plan as indicated procedural changes below.
- ❑ A small tree must be provided with a minimum 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 placed on the sides of the building the trees are located are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- ❑ Grading surround the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree).

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

**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.

## 3.0 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 preliminary and detailed grading, servicing and structural plan(s) from a geotechnical perspective.

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:

- Review and inspection of the installation of the foundation drainage systems.
- Observation of all bearing surfaces prior to the placement of concrete.
- Sampling and testing of the concrete and fill materials.
- Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.
- Observation of all subgrades prior to backfilling and follow-up field density tests to determine the level of compaction achieved. 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 Paterson field personnel.

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

## 4.0 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 hole 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 the purposes other than those described herein or by person(s) other than Minto Communities, or their agents, is not authorized without review by Paterson for the applicability of our recommendations to the alternative use of the report.

We trust that the current submission meets your immediate requirements.

Best Regards,

**Paterson Group Inc.**

LICENSED PROFESSIONAL ENGINEER
December 19, 2024
D. J. PETAHTEGOOSE
100568013
PROVINCE OF ONTARIO

Killian Bell, B.Eng.

Drew Petahtegoose, P.Eng.

**Attachments**

- ❑ Soil Profile and Test Data Sheets
- ❑ Symbols and Terms
- ❑ Analytical Testing Results
- ❑ Figure 1 - Key Plan
- ❑ Drawing PG7198-1 - Test Hole Location Plan

**Report Distribution**

- ❑ Minto Communities (e-mail copy)
- ❑ Paterson Group (1 copy)

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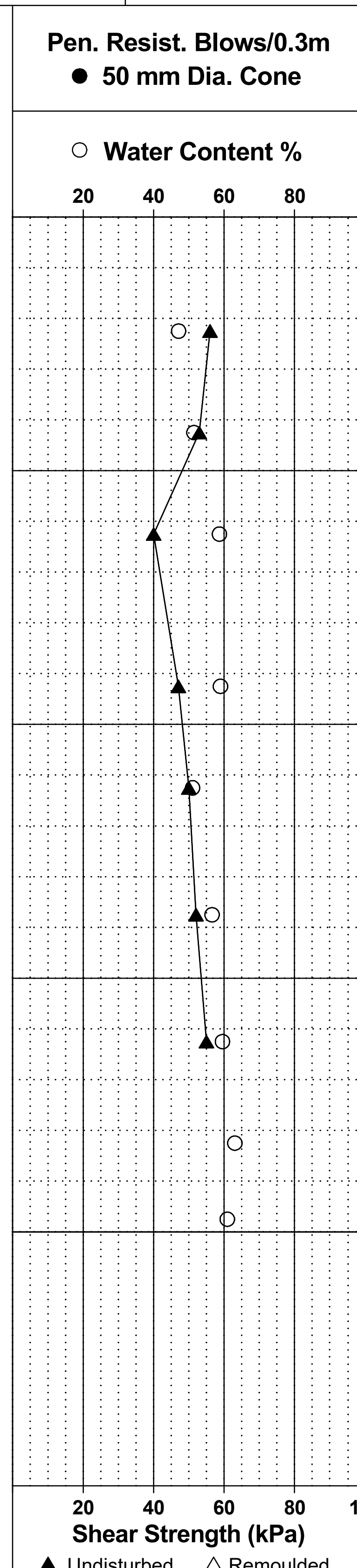
# SOIL PROFILE AND TEST DATA

**Geotechnical Investigation**
**Proposed Commercial Building - 340 Huntmar Drive, Ottawa, Ontario**

**EASTING:** 349122.847 **NORTHING:** 5018079.949 **ELEVATION:** 97.406
**DATUM:** Geodetic
**REMARKS:**
**BORINGS BY:** Excavator **DATE:** 2024 July 26

**FILE NO.** PG7168
**HOLE NO.** TP 1-24

| SAMPLE DESCRIPTION | STRATA PLOT | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | 0 | 97.41 |
| **TOPSOIL** and organics, trace clay — 0.10 | | | | | | | |
| Stiff, brown **SILTY CLAY** | | G | 1 | | | | |
| | | G | 2 | | | | |
| | | | | | | 1 | 96.41 |
| | | G | 3 | | | | |
| | | G | 4 | | | | |
| | | | | | | 2 | 95.41 |
| 2.20 — Firm, grey **SILTY CLAY** | | G | 5 | | | | |
| | | G | 6 | | | | |
| | | | | | | 3 | 94.41 |
| | | G | 7 | | | | |
| | | G | 8 | | | | |
| 4.00 | | G | 9 | | | 4 | 93.41 |
| End of Test Pit | | | | | | | |




PIEZOMETER CONSTRUCTION

PATERSON GROUP

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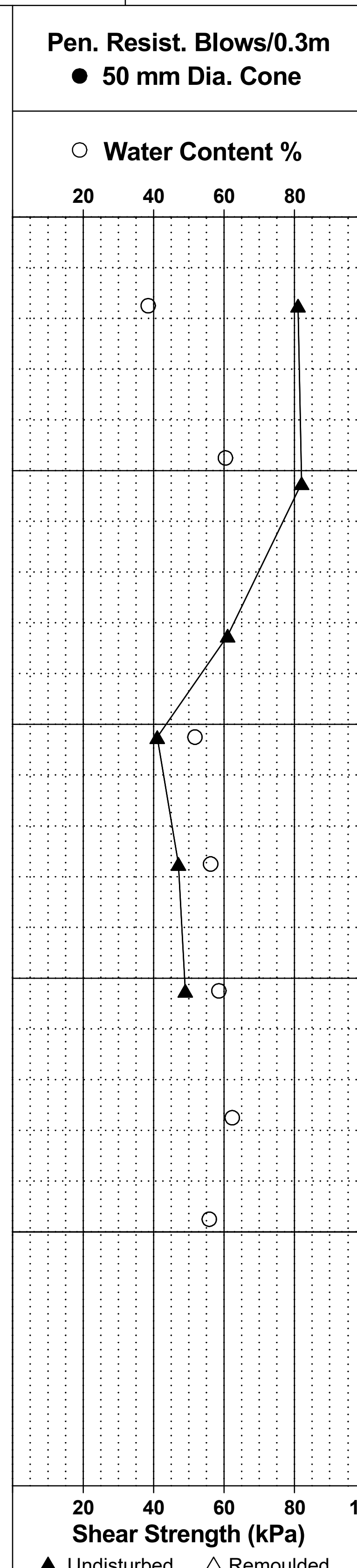
# SOIL PROFILE AND TEST DATA

**Geotechnical Investigation**
**Proposed Commercial Building - 340 Huntmar Drive, Ottawa, Ontario**

**EASTING:** 349147.466 **NORTHING:** 5018101.702 **ELEVATION:** 97.329
**DATUM:** Geodetic
**REMARKS:**
**BORINGS BY:** Excavator **DATE:** 2024 July 26

**FILE NO.** PG7168
**HOLE NO.** TP 2-24

| SAMPLE DESCRIPTION | Depth to base (m) | STRATA PLOT | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | 0 | 97.33 |
| **TOPSOIL** and organics, trace clay | 0.08 | | | | | | | |
| Stiff, brown **SILTY CLAY** | | | G | 1 | | | | |
| | | | G | 2 | | | 1 | 96.33 |
| | 2.00 | | | | | | | |
| Firm, grey **SILTY CLAY** | | | G | 3 | | | 2 | 95.33 |
| | | | G | 4 | | | | |
| | | | G | 5 | | | 3 | 94.33 |
| | | | G | 6 | | | | |
| | 4.00 | | G | 7 | | | 4 | 93.33 |
| End of Test Pit | | | | | | | | |

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# SOIL PROFILE AND TEST DATA

**Geotechnical Investigation**
**Proposed Commercial Building - 340 Huntmar Drive, Ottawa, Ontario**

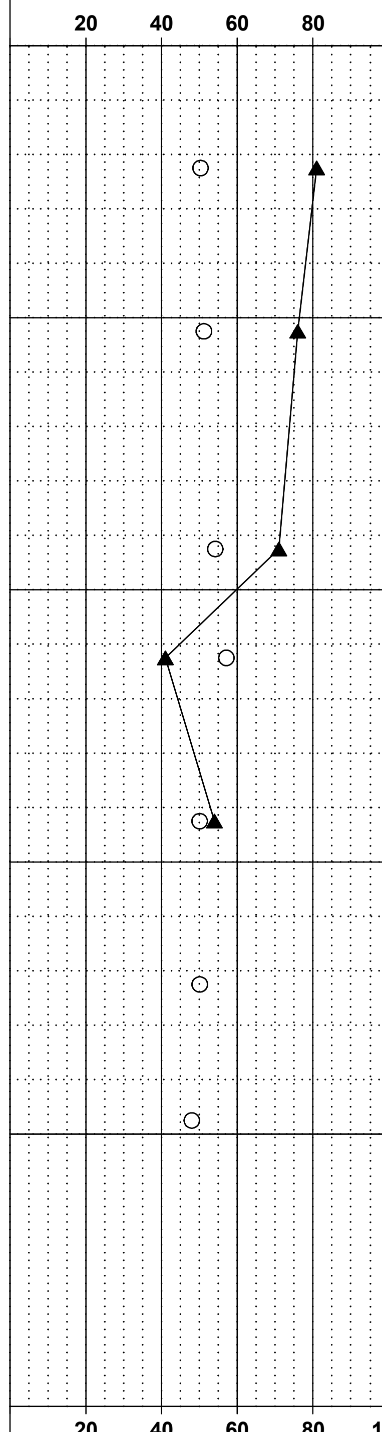
**EASTING:** 349149.602 **NORTHING:** 5018084.034 **ELEVATION:** 97.307
**DATUM:** Geodetic
**REMARKS:**
**BORINGS BY:** Excavator **DATE:** 2024 July 26

**FILE NO.** PG7168
**HOLE NO.** TP 3-24

| SAMPLE DESCRIPTION | STRATA PLOT | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|
| **GROUND SURFACE** | | | | | | 0 | 97.31 |
| **TOPSOIL** and organics, trace clay (0.10) | | | | | | | |
| Stiff, brown **SILTY CLAY** | | G | 1 | | | | |
| | | G | 2 | | | 1 | 96.31 |
| | | G | 3 | | | | |
| (2.20) | | | | | | 2 | 95.31 |
| Firm, grey **SILTY CLAY** | | G | 4 | | | | |
| | | G | 5 | | | 3 | 94.31 |
| | | G | 6 | | | | |
| (4.00) | | G | 7 | | | 4 | 93.31 |
| End of Test Pit | | | | | | | |

**Pen. Resist. Blows/0.3m**
● 50 mm Dia. Cone

○ Water Content %




**Shear Strength (kPa)**
▲ Undisturbed △ Remoulded

**PIEZOMETER CONSTRUCTION**

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

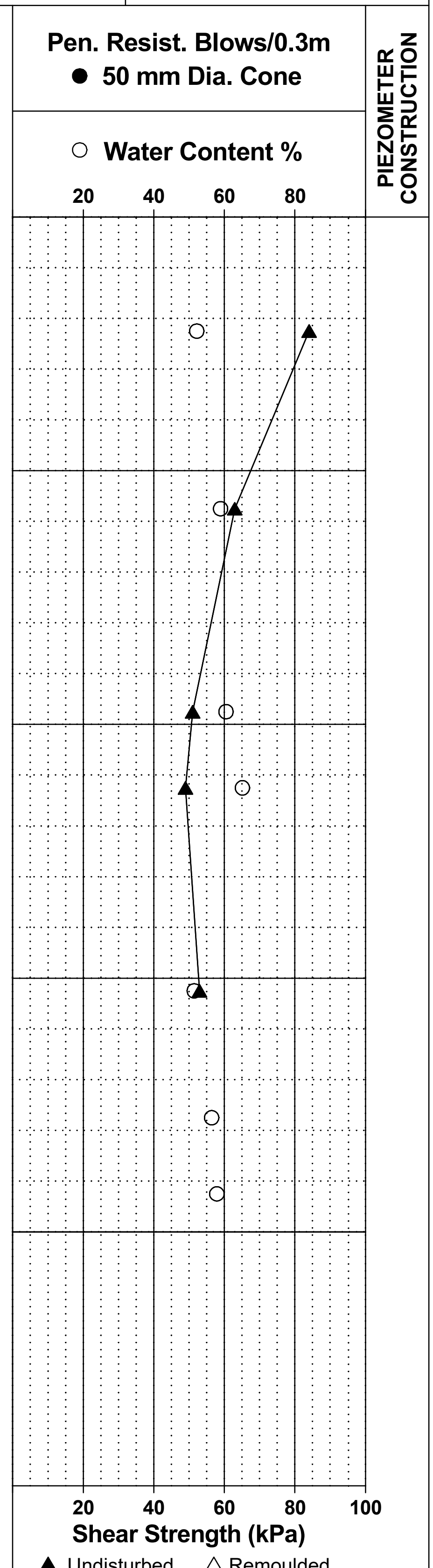
# SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Commercial Building - 340 Huntmar Drive,
Ottawa, Ontario

**EASTING:** 349153.789 **NORTHING:** 5018067.774 **ELEVATION:** 97.139
**DATUM:** Geodetic
**REMARKS:**
**BORINGS BY:** Excavator **DATE:** 2024 July 26

**FILE NO.** PG7168
**HOLE NO.** TP 4-24

| SAMPLE DESCRIPTION | STRATA PLOT | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | 0 | 97.14 |
| **TOPSOIL** and organics, trace clay 0.10 | | | | | | | |
| Stiff, brown **SILTY CLAY** | | G | 1 | | | | |
| | | | | | | 1 | 96.14 |
| | | G | 2 | | | | |
| 2.10 | | G | 3 | | | 2 | 95.14 |
| Firm, grey **SILTY CLAY** | | G | 4 | | | | |
| | | | | | | 3 | 94.14 |
| | | G | 5 | | | | |
| | | G | 6 | | | | |
| 3.90 | | G | 7 | | | | |
| End of Test Pit | | | | | | 4 | 93.14 |



PATERSON GROUP

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

# SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Commercial Building - 340 Huntmar Drive,
Ottawa, Ontario

**EASTING:** 349146.006 **NORTHING:** 5018048.448 **ELEVATION:** 97.617

**DATUM:** Geodetic

**REMARKS:**

**BORINGS BY:** Excavator **DATE:** 2024 July 26

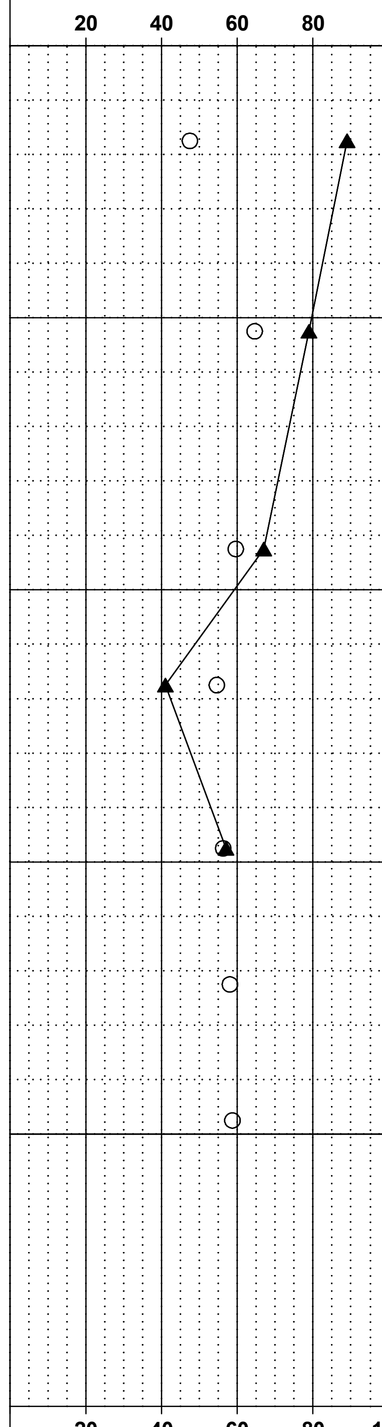
**FILE NO.** PG7168

**HOLE NO.** TP 5-24

| SAMPLE DESCRIPTION | Strata depth (m) | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | 0 | 97.62 |
| **TOPSOIL** and organics, trace clay | 0.10 | | | | | | |
| Stiff, brown **SILTY CLAY** | | G | 1 | | | | |
| | | G | 2 | | | 1 | 96.62 |
| | | G | 3 | | | 2 | 95.62 |
| | 2.30 | | | | | | |
| Firm, grey **SILTY CLAY** | | G | 4 | | | | |
| | | G | 5 | | | 3 | 94.62 |
| | | G | 6 | | | | |
| | 4.00 | G | 7 | | | 4 | 93.62 |
| End of Test Pit | | | | | | | |

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Water Content %




Shear Strength (kPa)

▲ Undisturbed △ Remoulded

PIEZOMETER CONSTRUCTION

PATERSON GROUP

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

# SOIL PROFILE AND TEST DATA

**Geotechnical Investigation**
**Proposed Commercial Building - 340 Huntmar Drive, Ottawa, Ontario**

| | |
|---|---|
| **EASTING:** 349178.583 | **NORTHING:** 5018065.187 |
| **ELEVATION:** 97.143 | **DATUM:** Geodetic |
| **REMARKS:** | |
| **BORINGS BY:** Excavator | **DATE:** 2024 July 26 |
| **FILE NO.** PG7168 | **HOLE NO.** TP 6-24 |

**GROUND SURFACE**

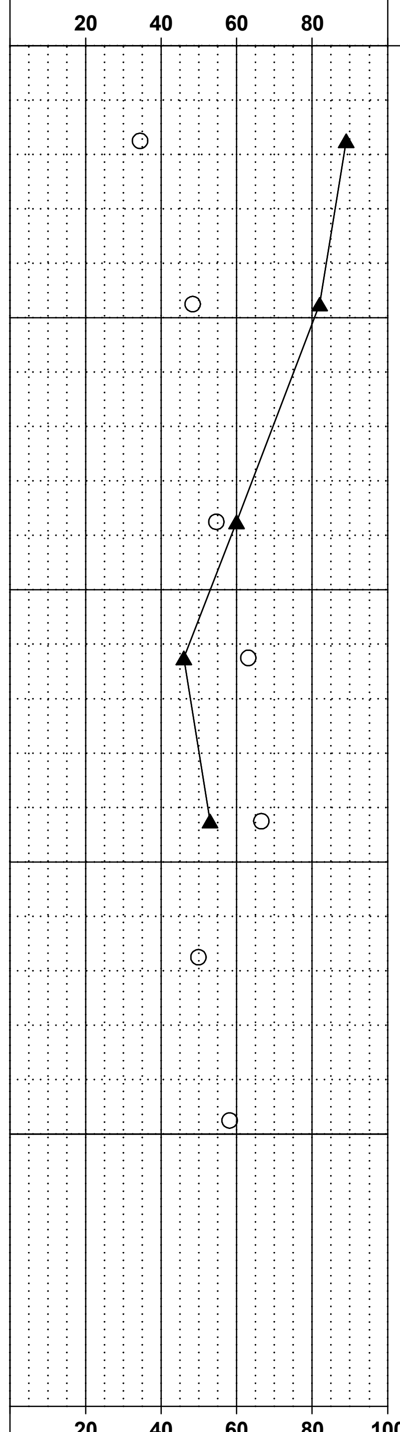
| SAMPLE DESCRIPTION | Depth to base (m) | STRATA PLOT |
|---|---|---|
| **TOPSOIL** and organics, trace clay | 0.10 | |
| Stiff, brown **SILTY CLAY** | 2.20 | |
| Firm, grey **SILTY CLAY** | 4.00 | |
| End of Test Pit | | |

| SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD |
|---|---|---|---|
| G | 1 | | |
| G | 2 | | |
| G | 3 | | |
| G | 4 | | |
| G | 5 | | |
| G | 6 | | |
| G | 7 | | |

| DEPTH (m) | ELEV. (m) |
|---|---|
| 0 | 97.14 |
| 1 | 96.14 |
| 2 | 95.14 |
| 3 | 94.14 |
| 4 | 93.14 |

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Water Content %




Shear Strength (kPa)
▲ Undisturbed △ Remoulded

PIEZOMETER CONSTRUCTION

**patersongroup** Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

**Geotechnical Investigation**
**Prop. Commercial Development - 370 Huntmar Drive**
**Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Stantec Geomatic Ltd.

**REMARKS**

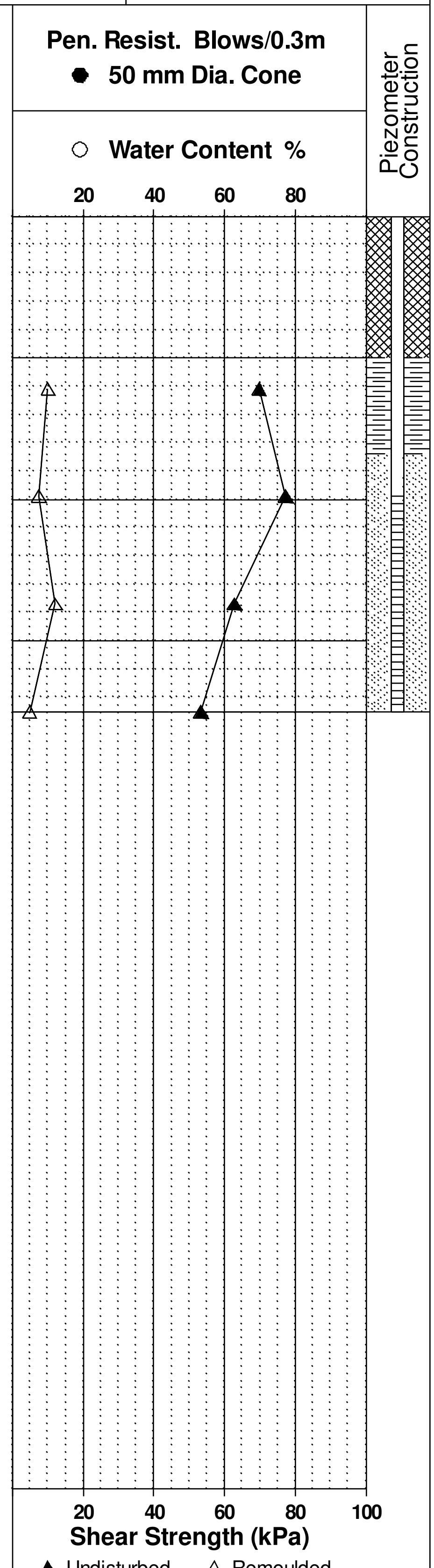
**BORINGS BY** CME 55 Power Auger

**DATE** October 15, 2013

**FILE NO.** PG3045

**HOLE NO.** BH 9

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | 0 | 97.56 |
| Stiff, brown **SILTY CLAY** | | | | | | 1 | 96.56 |
| | | | | | | 2 | 95.56 |
| - grey by 2.4m depth | | | | | | 3 | 94.56 |
| 3.50 | | | | | | | |
| End of Borehole<br>(Piezometer damaged - Oct. 21, 2013) | | | | | | | |



**patersongroup** Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

# SOIL PROFILE AND TEST DATA

**Geotechnical Investigation**
**Prop. Commercial Development - 370 Huntmar Drive**
**Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Stantec Geomatic Ltd.

**REMARKS**

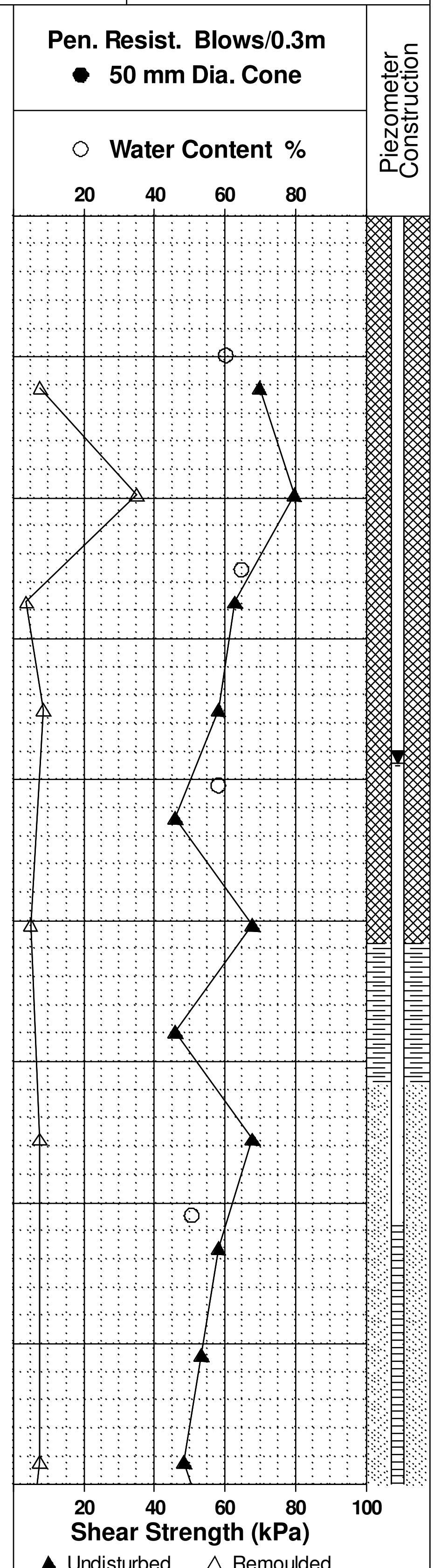
**BORINGS BY** CME 55 Power Auger

**DATE** October 11, 2013

**FILE NO.** PG3045

**HOLE NO.** BH10

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | 0 | 97.57 |
| | | AU | 1 | | | | |
| | | | | | | 1 | 96.57 |
| Stiff to firm, brown **SILTY CLAY** | | | | | | | |
| | | | | | | 2 | 95.57 |
| - grey by 2.5m depth | | | | | | | |
| | | | | | | 3 | 94.57 |
| | | | | | | 4 | 93.57 |
| | | | | | | 5 | 92.57 |
| | | | | | | 6 | 91.57 |
| | | | | | | 7 | 90.57 |
| | | | | | | 8 | 89.57 |
| | | | | | | 9 | 88.57 |



**patersongroup** Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

**Geotechnical Investigation**
**Prop. Commercial Development - 370 Huntmar Drive**
**Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Stantec Geomatic Ltd.

**REMARKS**

**BORINGS BY** CME 55 Power Auger

**DATE** October 11, 2013

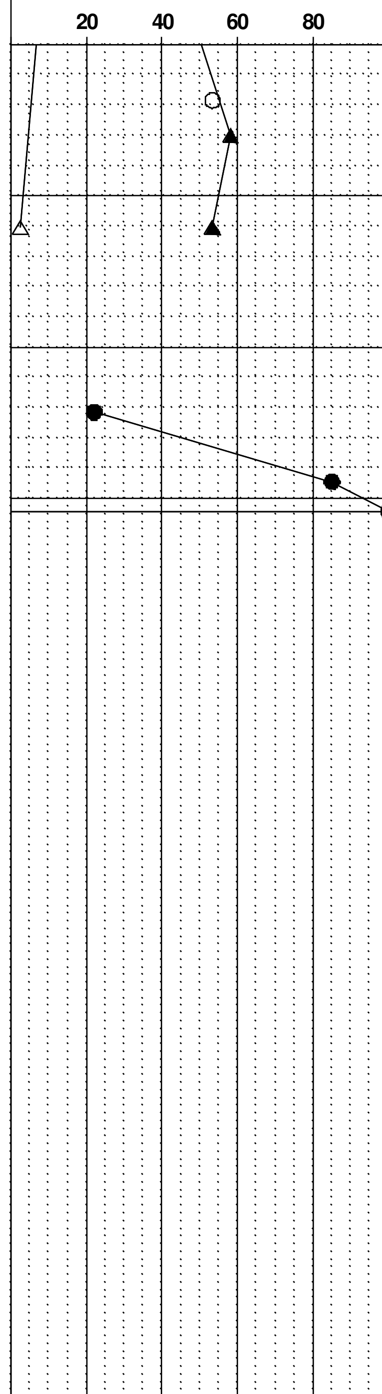
**FILE NO.** PG3045

**HOLE NO.** BH10

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE TYPE | SAMPLE NUMBER | % RECOVERY | N VALUE or RQD | DEPTH (m) | ELEV. (m) |
|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | |
| | | | | | | 9 | 88.57 |
| Stiff, brown **SILTY CLAY** | | | | | | | |
| | | | | | | 10 | 87.57 |
| 10.21 | | | | | | | |
| Dynamic Cone Penetration Test commenced at 10.21m depth. Cone pushed to 11.4m depth. | | | | | | | |
| | | | | | | 11 | 86.57 |
| 12.09 | | | | | | 12 | 85.57 |
| End of Borehole<br>Practical DCPT refusal at 12.09m depth<br>(GWL @ 3.88m-Oct. 21, 2013) | | | | | | | |

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Water Content %




Piezometer Construction

20 40 60 80 100
**Shear Strength (kPa)**
▲ Undisturbed △ Remoulded

# 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 relative strength of cohesionless soils is the compactness condition, 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. An SPT N value of "P" denotes that the split-spoon sampler was pushed 300 mm into the soil without the use of a falling hammer.

| Compactness Condition | '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 shear vane tests, unconfined compression tests, or occasionally by the Standard Penetration Test (SPT). Note that the typical correlations of undrained shear strength to SPT N value (tabulated below) tend to underestimate the consistency for sensitive silty clays, so Paterson reviews the applicable split spoon samples in the laboratory to provide a more representative consistency value based on tactile examination.

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

## SYMBOLS AND TERMS (continued)

## SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their “sensitivity”. The sensitivity, $S_t$, is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil. The classes of sensitivity may be defined as follows:

| | |
|---|---|
| Low Sensitivity: | $S_t < 2$ |
| Medium Sensitivity: | $2 < S_t < 4$ |
| Sensitive: | $4 < S_t < 8$ |
| Extra Sensitive: | $8 < S_t < 16$ |
| Quick Clay: | $S_t > 16$ |

## 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 NQ or larger size core. However, it can be used on smaller core sizes, such as BQ, 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, generally recovered using a piston sampler |
| G | - | "Grab" sample from test pit or surface materials |
| AU | - | Auger sample or bulk sample |
| WS | - | Wash sample |
| RC | - | Rock core sample (Core bit size BQ, NQ, HQ, etc.). Rock core samples are obtained with the use of standard diamond drilling bits. |

## SYMBOLS AND TERMS (continued)

## PLASTICITY LIMITS AND GRAIN SIZE DISTRIBUTION

| | | |
|---|---|---|
| WC% | - | Natural water 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 at which xx% of the soil, by weight, is of finer grain sizes<br>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

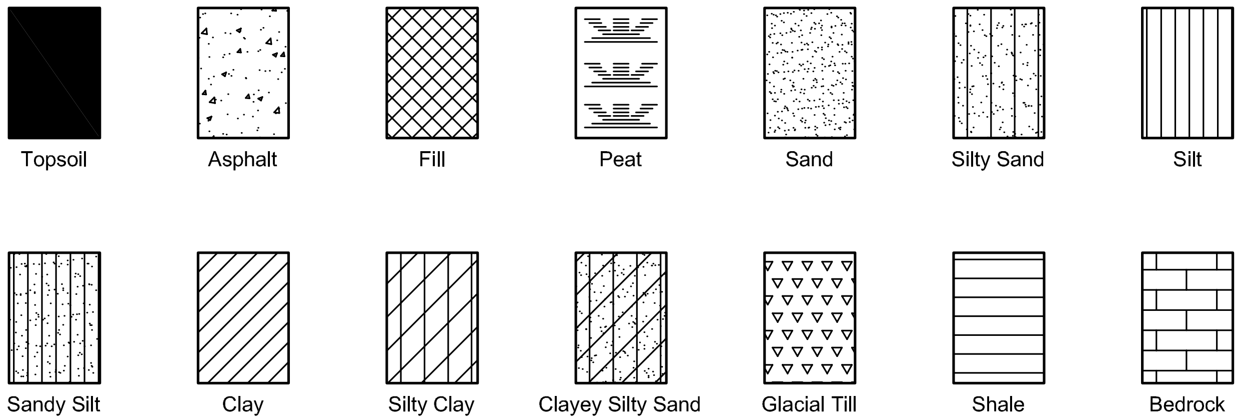
| | | |
|---|---|---|
| $p'_o$ | - | Present effective overburden pressure at sample depth |
| $p'_c$ | - | Preconsolidation pressure of (maximum past pressure on) sample |
| Ccr | - | Recompression index (in effect at pressures below $p'_c$) |
| Cc | - | Compression index (in effect at pressures above $p'_c$) |
| 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. |

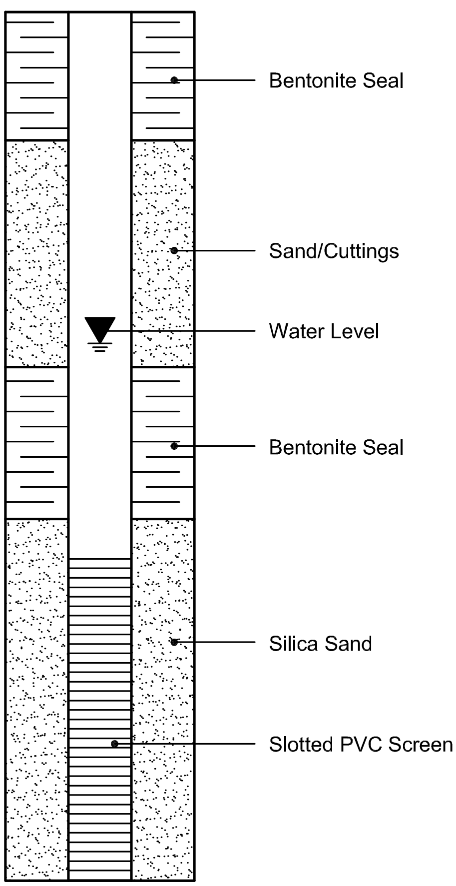
## SYMBOLS AND TERMS (continued)

### STRATA PLOT

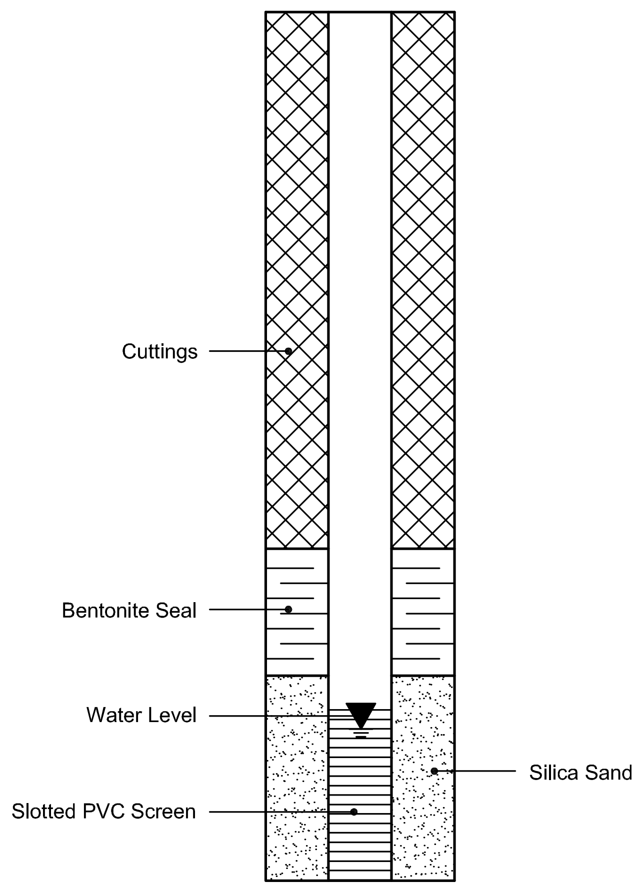


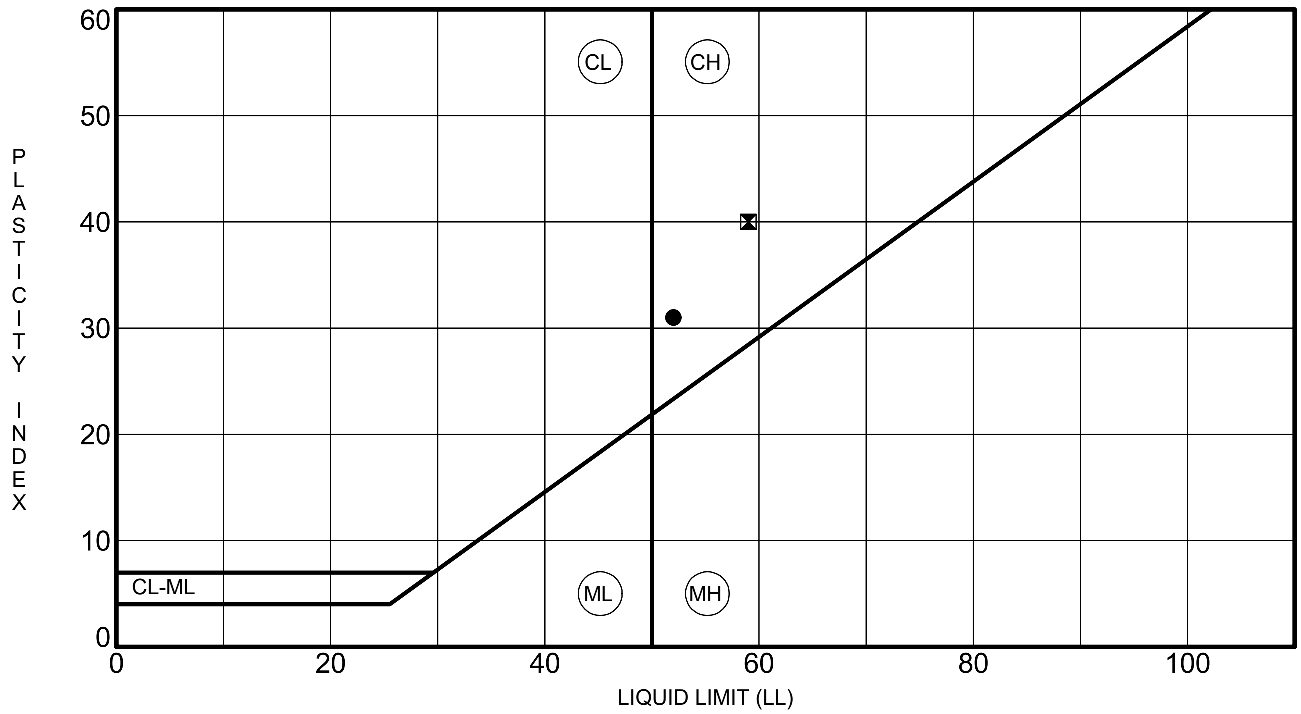

### MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION




PIEZOMETER CONSTRUCTION






| | Specimen Identification | LL | PL | PI | Fines | Classification |
|---|---|---|---|---|---|---|
| ● | **TP 1-24** | **52** | **21** | **31** | | **Inorganic clays of high plasticity** |
| ⧗ | **TP 4-24** | **59** | **19** | **40** | | **Inorganic clays of high plasticity** |
| | | | | | | |
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CLIENT **Minto Communities Inc.**

PROJECT **Geotechnical Investigation - Proposed Commercial Building - 340 Huntmar Drive,**

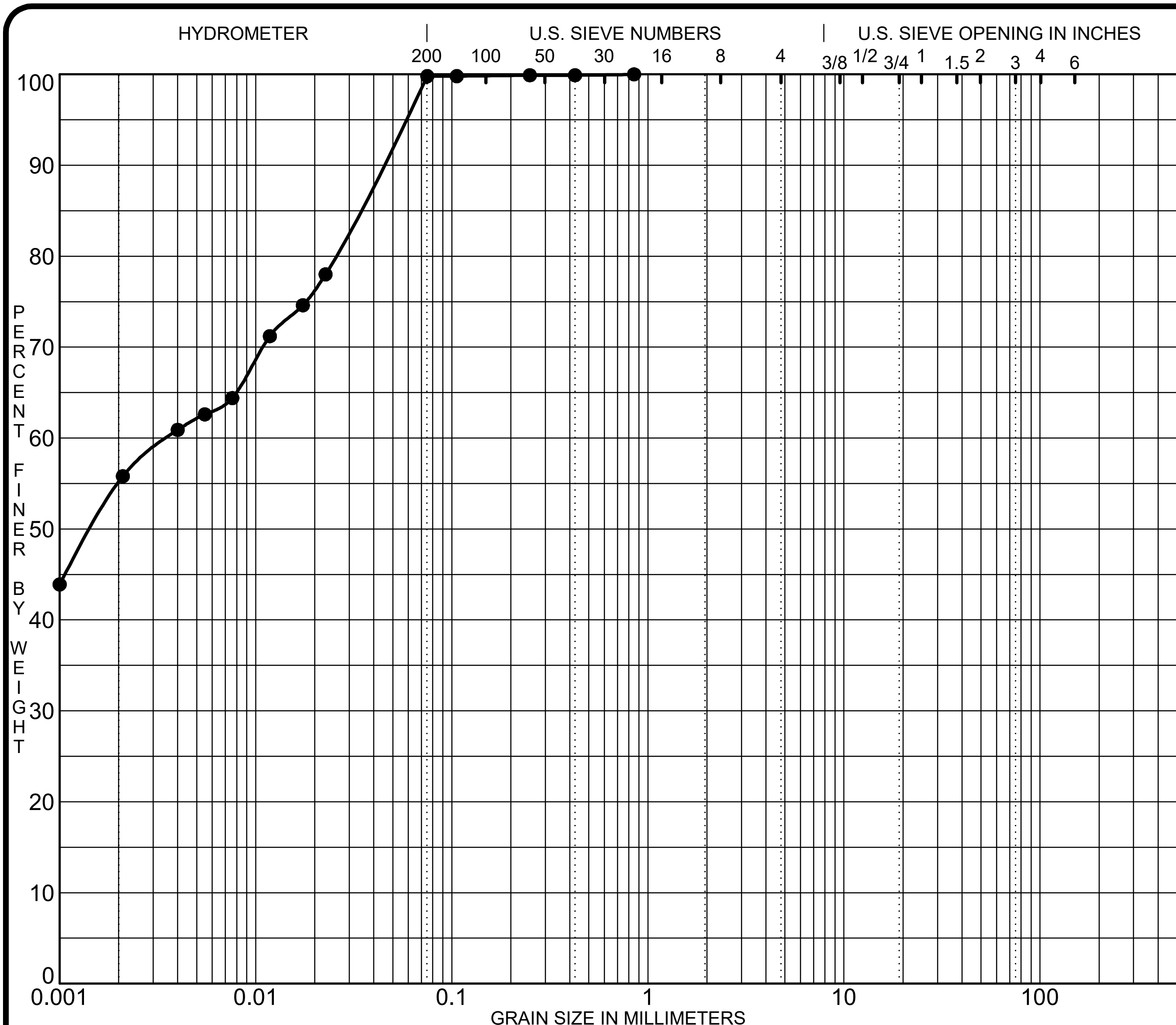
FILE NO. **PG7168**

DATE **26 Jul 24**

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 |
|---|---|---|---|---|---|---|---|---|
| ● | **TP 2-24** | | | | | | | |
| ⊠ | | | | | | | | |
| ▲ | | | | | | | | |
| ★ | | | | | | | | |

| | Specimen Identification | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● | **TP 2-24** | **0.85** | **0.00** | | | **0.0** | **0.2** | | |
| ⊠ | | | | | | | | | |
| ▲ | | | | | | | | | |
| ★ | | | | | | | | | |

CLIENT **Minto Communities Inc.**

FILE NO. **PG7168**

PROJECT **Geotechnical Investigation - Proposed Commercial Building - 340 Huntmar Drive,**

DATE **26 Jul 24**


PATERSON GROUP

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


# GRAIN SIZE DISTRIBUTION

Certificate of Analysis

Report Date: 02-Aug-2024

**Client: Paterson Group Consulting Engineers (Ottawa)**

Order Date: 29-Jul-2024

**Client PO: 60824**

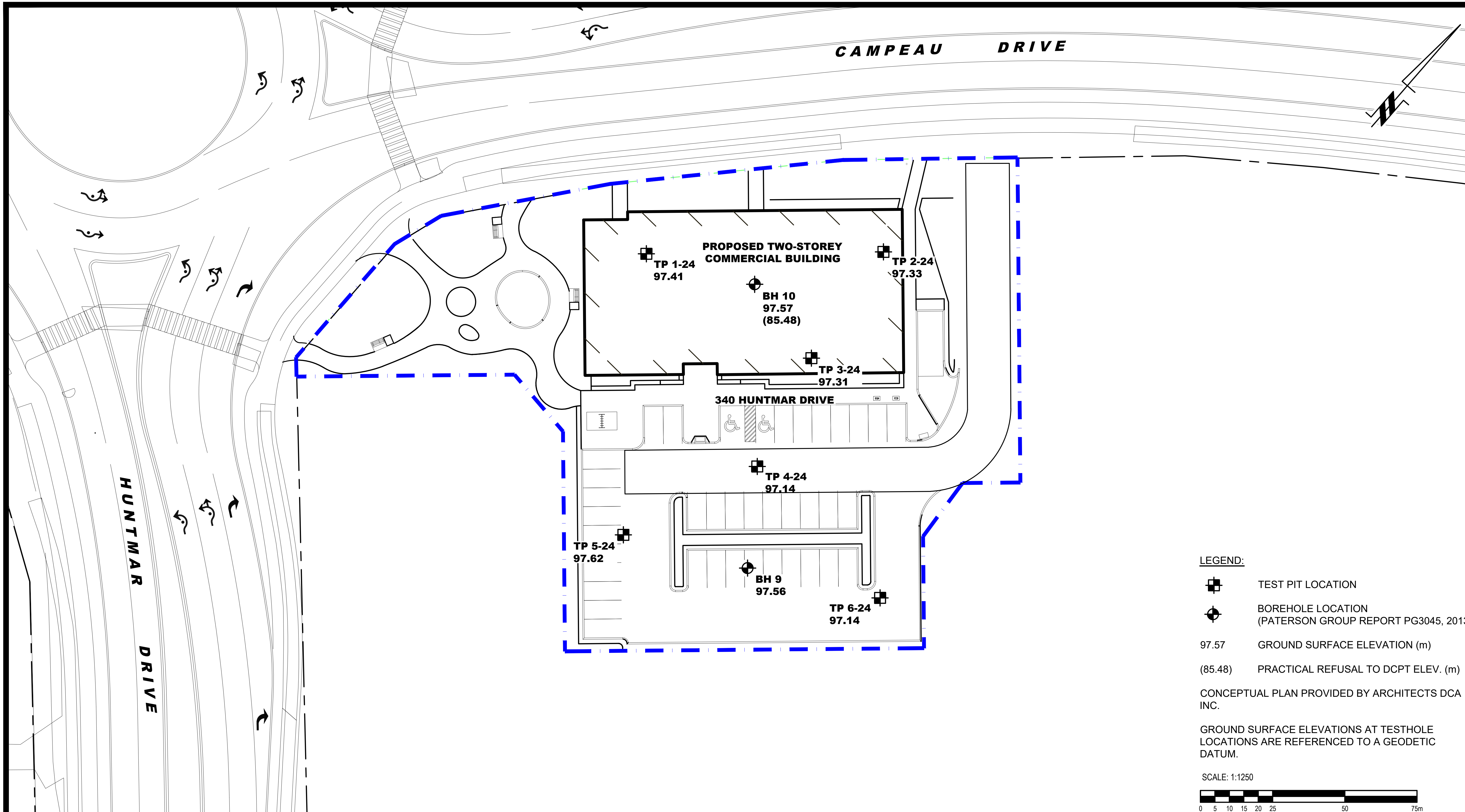
**Project Description: PG7168**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Client ID:** | | TP3-24 G3 | - | - | - | - | - |
| **Sample Date:** | | 26-Jul-24 09:00 | - | - | - | | |
| **Sample ID:** | | 2431125-01 | - | - | - | | |
| **Matrix:** | | Soil | - | - | - | | |
| | **MDL/Units** | | | | | | |
| **Physical Characteristics** | | | | | | | |
| % Solids | 0.1 % by Wt. | 63.7 | - | - | - | - | - |
| **General Inorganics** | | | | | | | |
| pH | 0.05 pH Units | 7.25 | - | - | - | - | - |
| Resistivity | 0.1 Ohm.m | 36.0 | - | - | - | - | - |
| **Anions** | | | | | | | |
| Chloride | 10 ug/g | 53 | - | - | - | - | - |
| Sulphate | 10 ug/g | 48 | - | - | - | - | - |


# FIGURE 1

## KEY PLAN

PATERSON GROUP




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

| NO. | REVISIONS | DATE | INITIAL |
|---|---|---|---|
| 1 | UPDATED CONCEPTUAL PLAN | 08/10/2024 | DP |

MINTO COMMUNITIES
GEOTECHNICAL INVESTIGATION
PROPOSED COMMERCIAL BUILDING
340 HUNTMAR DRIVE

OTTAWA, ONTARIO

Title:

# TEST HOLE LOCATION PLAN

| | |
|---|---|
| Scale: 1:1250 | Date: 07/2024 |
| Drawn by: GK | Report No.: PG7168-1 |
| Checked by: KB | Dwg. No.: PG7168-1 |
| Approved by: DP | Revision No.: 1 |

11x17

p:\autocad drawings\geotechnical\pg71xx\pg7168\pg7168- 1 test hole location plan (rev.01).dwg