Preliminary Geotechnical Investigation
Proposed Two Highrise Buildings
1771-1775 Jane Street
North York, Ontario

PREPARED FOR:
Medallion Corporation

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1. INTRODUCTION

DS Consultants Ltd. (DS) was retained by Medallion Corporation (The client) to undertake a preliminary geotechnical investigation for the proposed residential development located at 1771-1775 Jane Street, North York, Ontario.

The Site is currently occupied by a 14-storey apartment building with one level of underground parking. DS understands that two additional residential buildings (12 storey each) are proposed in phases at the north and south ends of the existing building, each with underground parking. The north building A (Phase 1) will include one (1) level of underground parking (P1), whereas the south building B (Phase 2) will include two (2) levels of underground parking (P2). The proposed ground elevation is approximately 127.3 m. The lowest finished floor elevations are 122.8 m for the P1 level For Building A and 120.95 m for the P2 level for Building B.

In 2015, SPL drilled three boreholes (BH15-1 to BH15-3) at the subject site to depths ranging from 9.7 to 41.6 m. The borehole locations are shown on Drawing 1 and the logs are presented in **Appendix A**.

In 2025, DS drilled two additional boreholes at the subject site to depths of 46.3 and 49.4m.

The purpose of this preliminary geotechnical investigations were to determine the subsurface conditions at the borehole locations and from the findings in the boreholes make preliminary engineering recommendations for the following:

1. Foundations
2. Floor slabs and permanent drainage
3. Excavations and Groundwater control
4. Temporary shoring
5. Earth pressures
6. Earthquake considerations

This report is provided on the basis of the terms of reference presented above and, on the assumption, that the design will be in accordance with the applicable codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design.

The format and contents are guided by client specific needs and economics and do not conform to generalized standards for services. Laboratory testing for most part follows ASTM or CSA Standards or modifications of these standards that have become standard practice.

This report has been prepared for Medallion Corporation and its architects and designers. Third party use of this report without DS consent is prohibited.

2. FIELD AND LABORATORY WORK

Two boreholes (BH25-1 and BH25-2) were drilled by DS at the subject site to depths ranging from 46.3 to 49.4 m.

Boreholes were drilled with hollow stem continuous flight auger and mud rotary equipment method by a drilling sub-contractor under the direction and supervision of DS Consultants Limited personnel.

Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer weighing 624 N and dropping 760 mm in accordance with the Standard Penetration Test (SPT) method. The samples were logged in the field and returned to the DS Consultants Ltd. laboratory for detailed examination by the project engineer and for laboratory testing.

As well as visual examination in the laboratory, all soil samples were tested for moisture contents. Grain size analyses were carried out on selected soil samples and gradation curves for grain size analyses are presented on **Drawings 4, and 5**. Atterberg Limits testing was carried on selected samples and results are presented on the respective borehole logs.

Monitoring wells were installed in all the boreholes BH25-1 and BH25-2 for long-term groundwater level measurements.

The elevation surveying of the borehole locations was undertaken by DS personnel, using the differential GPS unit. It should be noted that the elevations at the as-drilled borehole/well locations were not provided by a professional surveyor and should be considered approximate. Contractors performing any work referenced to the borehole elevations should confirm the borehole elevations for their work.

3. SUBSURFACE CONDITIONS

The borehole location plan is shown on **Drawing 1**. General notes on sample description are provided on **Drawing 1A**. The subsurface conditions in the boreholes are presented in the individual borehole logs **Drawings 2 and 3**.

3.1 Soil Conditions of DS boreholes

Topsoil/Organic Material:

A layer of topsoil, ranging from 100 to 180 mm in thickness, was present at the surface at all borehole locations. The SPT 'N' values measured in the granular material ranged from 4 to 9 blows per 300 mm of penetration, indicating firm to stiff state of consistency. The moisture content of the granular material ranged from 18 to 23 %.

Fill Materials:

Below the topsoil layer, cohesive and cohesionless fill material was found in boreholes, extending to depths ranging from 0.1 to 2.8 m below the existing grade. Fill material consisted of clayey silt, with trace to some organics, sand, trace asphalt, rock fragments, and brick piece. The cohesionless fill material was found in one borehole location (BH25-2) at depth of 0.8 m extending to 2.8 m below the existing grade.

The SPT 'N' values measured in cohesive fill materials ranged from 4 to 10 and cohesionless material ranged from 5 to 12 blows per 300 mm spoon penetration. The moisture content of the fill materials were 18 to 20 %.

The type/quantity and extent of the existing fill layers can be explored by further test pit investigation prior to excavations.

Clayey Silt/Silty Clay (Till):

Brown to grey deposit consisting of clayey silt/silty clay (till) extended below the fill layer in borehole BH25-1 and cohesionless material in borehole BH25-2 to depths ranging from 15.2 to 27.4 m below ground surface at both boreholes (BH25-1 and BH25-2). This deposit contained some sand to sandy, and trace gravel. SPT 'N' values measured in the clayey layers ranged from 8 to 24 blows per 300mm of penetration, indicating a stiff to very stiff consistency. The moisture content of the cohesive clayey material varied from 13 to 16%.

Grain size analyses of two (2) soil samples from clayey soils (BH25-1/SS7, and BH25-2/SS15) were conducted, and the results are presented in **Drawings 4 and 5**, with the following fractions:

Clay: 19 to 24%
Silt: 50 to 52%
Sand: 22 to 29%
Gravel: 2%

Atterberg limits tests of above noted two (2) clayey soil (BH25-1/SS7, and BH25-2/SS15) samples were conducted. The results are shown on **Drawing 6** and the borehole logs and are summarized as follows:

Liquid limit (W_L):	22 to 27%
Plastic limit (W_P):	11 to 12%
Plasticity index (PI):	11 to 15

Silty Clay:

Silty clay deposit encountered in borehole (BH25-1 and BH25-2) at varying depths below ground surface. This deposit contained trace sand and trace gravel. The deposit contained wet silty sand layers/interbeds in both boreholes at varying depths. SPT 'N' values measured in the clayey layer ranging 4 to over 50 blows per 300mm of penetration, indicating firm to hard consistency. The moisture content of the cohesive clayey material was 15 to 22%.

Grain size analyses of three (3) soil samples from (BH25-1/SS17, and BH25-2/SS25/29B) were conducted, and the results are presented in **Drawings 4**, with the following fractions:

Clay:	20 to 46%
Silt:	46 to 73%
Sand:	1 to 10%
Gravel:	0 to 2%

Atterberg limits tests of above noted two (2) clayey soil (BH25-1/SS7, and BH25-2/SS15) samples were conducted. The results are shown on **Drawing 6** and the borehole logs and are summarized as follows:

Liquid limit (W_L):	26 to 38%
Plastic limit (W_P):	17 to 18%
Plasticity index (PI):	8 to 21%

Silty Sand/Sand and Gravel/Coarse Sand:

Cohesionless deposits were encountered at upper, and lower layers below fill and cohesive deposits all boreholes extended depth of 42.7 m in borehole (BH25-1) and to maximum depth of 49.4 m in borehole (BH25-2). Gravelly sand layer was encountered at 40.5 m in borehole (BH25-1). The cohesionless material was present in a loose to dense state, with measured SPT 'N' values ranging between 5 to 43 blows per 300 mm of penetration.

Grain size analyses of one (1) soil sample from sandy soil (BH25-1/SS24) was conducted, and the results are presented in **Drawing 4**, with the following fractions:

Clay:	7%
Silt:	22%
Sand:	71%
Gravel:	0%

3.2 Soil Conditions of SPL boreholes

Pavement Structure/Topsoil and Fill Materials:

BH15-1 was drilled on the paved area and a 100mm of asphalt layer was encountered at the surface. A surficial topsoil layer, about 100mm in thickness was encountered at BH15-3. Fill material was encountered in all boreholes for the depths varying from 1.5 to 1.8m below the existing grade. Fill material was heterogeneous and consisted of clayey silt, sandy silt and silty sand. Fill was present in a loose to compact / firm state, with SPT 'N' values ranging from 6 to 21 blows per 300mm of penetration.

Upper Cohesionless Soils (Sandy Silt, Silty Sand, Sand and Gravel):

Below the fill material, upper cohesionless soils consisting of sandy silt, silty sand, sand and gravel were found in all boreholes for the depths varying from 3.1 to 6.1m. Interbedded clayey silt / silty clay layers was found in BH15-2 and BH15-3. These soils were generally wet and present in a loose to compact state, with SPT 'N' values ranging from 5 to 20 blows per 300mm of penetration.

Silty Clay Till:

Below the cohesionless soil deposits, silty clay till deposit was encountered in all boreholes. Interbedded layers of cohesionless soils (sand, sandy silt to silty sand and silt) and layers of cohesive soils (clayey silt / silty clay) at different depths. The cohesive till was present in firm to hard consistency, with SPT 'N' values ranging from 7 to over 50 blows per penetration.

Grain size analyses of two (2) soil samples from silty clay till (BH15-1/SS9 and BH15-1/SS22) was conducted, and the results are presented in **Appendix A**, with the following fractions:

Clay: 29 to 30%
Silt: 49 to 51%
Sand: 16 to 18%
Gravel: 2%

Atterberg limits tests of above noted two (2) soil samples from silty clay till (BH15-1/SS9 and BH15-1/SS22) was conducted. The results are shown on **Appendix A** and the borehole logs and are summarized as follows:

Liquid limit (W_L): 25 to 28%
Plastic limit (W_P): 14 to 15%
Plasticity index (PI): 10 to 14

Middle and Lower Cohesionless Soils:

Layers of saturated cohesionless soils consisting of sandy silt, silty sand, sand and sandy gravel were encountered within or below the silty clay till deposit, at varying depths. Lower water bearing cohesionless were encountered in BH15-2 below a depth of 37.5m to the maximum depth of 41.6m. The middle soil deposits were present in a compact to very dense state, with SPT 'N' values of 15 to over 50 blows per 300mm of penetration. Lower cohesionless soils encountered in BH15-2 were generally dense to very dense, with SPT 'N' values ranging from 35 to over 50 blows per 300mm of penetration.

Grain size analyses of one (1) soil sample from silty sand (BH15-1/SS21) was conducted, and the results are presented in **Appendix A**, with the following fractions:

Clay: 8%
Silt: 28%
Sand: 64%

Clayey Silt / Silty Clay:

Layers of clayey silt and silty clay were encountered at all borehole locations at varying depths within the silty clay till deposits. The layers were present in a stiff to very stiff, generally stiff in consistency, with SPT 'N' values ranging from 8 to 23 blows per 300mm of penetration.

Grain size analyses of one (1) soil sample from silty clay (BH15-1/SS19) was conducted, and the results are presented in **Appendix A**, with the following fractions:

Clay: 53%
Silt: 46%
Sand: 1%

Atterberg limits tests of above noted soil sample (BH15-1/SS19) was conducted. The results are shown on **Appendix A** and the borehole logs and are summarized as follows:

Liquid limit (W_L): 37%
Plastic limit (W_P): 17%
Plasticity index (PI): 20

3.3 Groundwater Conditions

Groundwater levels measured in the monitoring wells (installed by DS and SPL) are provided below on Table 2.

Table 2: Groundwater Levels Observed in DS and SPL Boreholes

Well ID	Ground Elevation (masl)	June 17th ,2025 (DS) & June 1, 2015 (SPL)	
		Depth to Water (mbgs)	Groundwater Elevation (masl)
BH25-1 (DS)	126.2	5.6	120.6
BH25-2 (DS)	126.9	4.3	122.6
BH15-1 (SPL)	126.6	2.2	124.4
BH15-2 (d) (SPL)	127.0	11.7	115.3
BH25-2 (s) (SPL)	127.0	3.4	123.6
BH15-3 (SPL)	127.3	3.7	123.6

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events. Therefore, further groundwater monitoring process to determine the long-term groundwater levels in the installed monitoring wells will be required.

In addition, reference is made to the hydrogeology study report prepared by DS Consultants for further details on the extent and the conditions of the groundwater, as well as the recommended groundwater control.

4. FOUNDATIONS

Based on the most recent provided drawings, it is understood that two additional residential buildings (12 storey each) are proposed in phases at the north and south ends of the existing building, each with underground parking. The north building A (Phase 1) will include one (1) level of underground parking (P1), whereas the south building B (Phase 2) will include two (2) levels of underground parking (P2). The proposed ground elevation is approximately 127.3 m. The lowest finished floor elevations are 122.8 m for the P1 level For Building A and 120.95 m for the P2 level For Building B.

4.1 Building A

The north building A (Phase 1) will be 12 storey structure with one (1) level of underground parking (P1). The Ground level floor slab will be at 127.3m and P1 floor slab will be at an Elevation of 122.8m.

4.1.1 Raft Foundations and Combined Raft-Pile Foundation System

Based on the boreholes (BH25-1 and BH15-1) and due to the variable soil conditions and the presence of less competent soils below the basement level, shallow foundations such as raft foundation founded on the undisturbed native clayey silt io silty clay below the P1 basement floor can be designed for bearing capacity values of 150 kPa at SLS and 210 kPa at ULS.

A subgrade reaction modulus of kt = 5 MPa/m can be adopted for the design of the raft foundations.

The raft base must be inspected by this office prior to pouring concrete. The inspected and approved footing base should be covered with 50 mm thick mud slab immediately in order to avoid disturbance of the founding soil due to construction activity and weathering /drying.

The available bearing capacity values of 150 kPa at SLS (210 kPa at ULS) for raft will not be sufficient to support the proposed building. Additional deep foundations such as CFA piles can be adopted to provide additional support to the proposed building.

In summary, building loads to be supported by the foundations are as follows:

- **Raft foundation**: to support design loads of 150 kPa SLS (210 kPa ULS).
- **Piles (CFA piles)**: to support design loads exceeding the bearing capacity values of 150 kPa SLS (210 kPa ULS) for the raft foundations, using a **combined raft-pile foundation system**.

Based on boreholes, CFA piles of 610 mm in diameter to be installed to Elev. 94.0 in the hard and/or dense soils can be designed for bearing capacity values of 1500 kN/pile at SLS and 2100 kN/pile at ULS.

4.2 Building B

The south building B (Phase 2) will be 12 storey structure with two (2) levels of underground parking (P1). The Ground level floor slab will be at 127.3m and P2 floor slab will be at an Elevation of 120.95m.

4.2.1 Raft Foundations and Combined Raft-Pile Foundation System

Based on the boreholes (BH25-2, BH15-2 and BH15-3) and due to the variable soil conditions and the presence of less competent soils below the P2 basement level, shallow foundations such as raft foundation founded on the undisturbed native clayey silt io silty clay below the P1 basement floor can be designed for bearing capacity values of 150 kPa at SLS and 210 kPa at ULS.

A subgrade reaction modulus of kt = 5 MPa/m can be adopted for the design of the raft foundations.

More boreholes will be required in the area of BH15-3 to confirm the soil bearing capacity, due to the presence of loose sand at an approximate Elevation of 118.0m.

The raft base must be inspected by this office prior to pouring concrete. The inspected and approved footing base should be covered with 50 mm thick mud slab immediately in order to avoid disturbance of the founding soil due to construction activity and weathering /drying.

The available bearing capacity values of 150 kPa at SLS (210 kPa at ULS) for raft will not be sufficient to support the proposed building. Additional deep foundations such as CFA piles can be adopted to provide additional support to the proposed building.

In summary, building loads to be supported by the foundations are as follows:

- **Raft foundation**: to support design loads of 150 kPa SLS (210 kPa ULS).
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Based on boreholes, CFA piles of 610 mm in diameter to be installed to Elev. 94.0 m in the hard and/or dense soils can be designed for bearing capacity values of 1500 kN/pile at SLS and 2100 kN/pile at ULS.

4.3 General Foundation Notes

Field load testing of the CFA piles is required to confirm the actual design bearing capacity. The test pile must be loaded to at least 1.67 times the design bearing capacity at ULS.

The centre-to-centre distance between adjacent piles should be minimum 3.0 times its diameter/size to avoid group effect on the pile capacity.

The bearing resistances of CFA piles will be highly dependent on the contractor's experience, the quality and procedure of the pile installation, and the skills of the installation operator(s). The CFA contractor must review the borehole information and evaluate bearing capacity of the piles based on their experience. The quality and the design bearing resistance of the piles must be ensured by the CFA contractor. A specialty contractor should be retained to design and install the CFA piles based on the performance specification and design bearing resistances.

Prior to the pile construction, the contractor should submit the details of the installation plan, load test program, installation procedure, automated monitoring system and control parameters, grout/concrete mix design, and reinforcement installation etc. for the review by the structural engineer and the geotechnical engineer. All pile installation must be inspected by this office.

Due to variable soil conditions, settlement analyses will be required based on design loads

Further borehole investigation by will be required at a later stage when the foundation drawings and design grades are available to confirm subsurface soil and groundwater conditions, raft's recommended bearing capacity and recommended pile lengths and capacities.

Prior to placing concrete, all piles/grade beams and foundation bases must be inspected by this office to confirm the founding soil conditions and design bearing capacity.

The excavation base must be covered with 50 mm thick mud slab immediately after inspection and cleaning, in order to avoid disturbance of the founding soil due to weathering and construction activity.

All grade beams/caps exposed to seasonal freezing conditions and in the vicinity of air shafts and exit/entry doors must have at least 1.2 m soil cover for frost protection in the P1 basement.

It should be noted that the recommended bearing capacities have been calculated by DS from the available borehole information for the design stage only. The investigation and comments are necessarily on-going as new information of the underground conditions becomes available. For example, more specific information is available with respect to conditions between boreholes when foundation construction is underway. The interpretation between boreholes and the recommendations of this report must therefore be checked through field inspections provided by DS to validate the information for use during the construction stage.

5. FLOOR SLAB

The floor slab can be supported on grade supported by the recommended raft foundation.

It should be noted that permanent groundwater discharge is not permitted by the City of Toronto. Therefore, tanked basement should be considered.

If raft foundation alternative is adopted, then the substructure should be fully waterproofed withstand hydrostatic pressure.

6. EARTH AND WATER PRESSURES

The lateral earth and water pressure acting at any depth on basement walls can be calculated as follows:

In soils above the groundwater table ($z < d_w$):

$$p = K (\gamma z + q)$$

In soils below the groundwater table ($z \geq d_w$):

$$p = K \{\gamma\, d_w + \gamma_1 (z - d_w) + q\} + p_w$$

In which, $p_w = \gamma_w (z - d_w)$

where p	=	lateral earth and water pressure in kPa acting at a depth of z below ground surface
K	=	earth pressure coefficient K = 0.40 for basement walls
γ	=	unit weight of soil above groundwater table, assuming γ = 21 kN/m^3
γ_1	=	submerged unit weight of soil below groundwater table, assuming γ_1 = 11 kN/m^3
γ_w	=	unit weight of water, assuming γ_w = 9.8 kN/m^3
z	=	depth below ground surface to point of interest, in metres
d_w	=	depth of groundwater table below ground surface, in metres
q	=	value of surcharge in kPa
p_w	=	hydrostatic water pressure in kPa

When the basement wall is poured against the shoring caisson wall, the basement wall as well as the shoring caisson wall should be designed for hydrostatic pressure, even though a drainage board is provided between the basement wall and the caisson wall.

7. EARTHQUAKE CONSIDERATION

Based on the subsurface information from the drilled boreholes on site and according to Table 4.1.8.4.B of OBC 2024, the subject site for the proposed building with one or two levels of basement could be classified as 'Class D' for seismic site response.

However, field Shear Wave Velocity Test (SWVT) is required to confirm the 'Class D' site classification or explore possible higher site classification as "Class C".

8. EXCAVATIONS AND GROUNDWATER CONTROL

Excavations in overburden can be carried out with heavy hydraulic backhoe. Groundwater was encountered in the monitoring wells at depths varying from 2.2 to 11.7 m below existing ground surface, corresponding Elevations varying from 124.4 to 115.3 m.

Excavation of the overburden will be relatively straightforward; however, obstructions and boulder should be expected.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA).

In accordance with OHSA, the fill materials, stiff clayey soil and cohesionless deposits (sand, silt, sandy silt to silty sand), can be classified as Type 3 Soil above the groundwater table and as Type 4 Soil below the groundwater table. Very stiff to hard clayey deposits can be classified as Type 2 Soil above the groundwater table and as Type 3 Soil below the groundwater table. Soft to firm clayey soil can be classified as Type 4 Soil.

Large obstructions in the fill material and boulders in till are anticipated. Provisions must be made in the excavation contract for the removal of large obstructions in the fill materials and boulders in till.

DS carried out a hydrogeological study at the subject site and more comments regarding the type and extent of groundwater control required will be addressed in the hydrogeology report under separate cover.

Expected groundwater seepage into the excavations above groundwater table can be handled by conventional pumping methods. Dewatering will be required prior to any excavations below groundwater. A contractor specializing in dewatering should be retained to design the dewatering systems.

Select inorganic fill and native soils free from topsoil and organics can be used as general construction backfill. Loose lifts of soil, which are to be compacted, should not exceed 200 mm.

Underfloor fill should be compacted to at least 98 percent of Standard Proctor Maximum Dry Density (SPMDD).

The excavated soils are not considered to be free draining. Where free draining backfill is required, imported granular fill such as OPSS Granular B should be used.

It should be noted that the excavated soils are subject to moisture content increase during wet weather which would make these materials too wet for adequate compaction. Stockpiles should be compacted at the surface or be covered with tarpaulins to minimize moisture uptake.

9. TEMPORARY SHORING

The proposed excavations may be supported by a temporary shoring system consisting of timber lagging and soldier piles.

A tightly braced caisson wall may be required to support adjacent structures. The requirement for caisson walls to support adjacent structures is given on **Drawing 7.**

The shoring system must be designed in accordance with the 4th Edition of the Canadian Foundation Engineering Manual. The soil parameters estimated to be applicable for this design are as follows:

1) Earth Pressure Coefficient for shoring:

(a) where movement must be minimal K=0.45

(b) where minor movement (.002H) can be tolerated K=0.30, where H is the shoring height

(c) passive earth pressure for soldier piles (unfactored) Kp=3 for compact to dense and stiff to very stiff native deposits.

2) For stability check

$\phi = 32°$

C = 0

$\gamma = 21$ kN/m^3

surcharge is to be determined by shoring contractor.

3) For soil anchors

An allowable bond value of 25 kPa is suggested for post-grouted anchors in the firm to very stiff clayey soils.

However, this suggested bond value is preliminary since the contractor's installation methods and grouting procedures will determine the actual soil to concrete bond value.

Hence, the contractor must decide on a capacity and confirm its availability by field load testing. Gravity poured concrete can result in low bond values while pressure grouted anchors will give higher values and produce a more satisfactory anchor. All anchors must be tested as indicated in the Foundation Manual, 4th edition.

Casing will be required during the construction of the tiebacks to prevent caving of soils. The soldier piles should be installed in pre-augered holes taken below the deepest excavation. The holes should be filled with concrete below the excavation level and half bag mix above the base of the excavation. The concrete strength must be specified by the shoring designer. Temporary liners may be required to help prevent the sand from caving during the installation period. Positive measures may be required to prevent the loss of soil through the spaces between the lagging boards. This could probably be achieved by placing well-graded sand and gravel behind the lagging boards or by installing a geotextile filter cloth.

Soil anchors will be required to support the shoring. The anchors must be of a length that meets the Canadian Foundation Manual recommendations.

It is important to note that the minimum length lies beyond the (45 - ϕ/2 + .15H) line drawn from the base of the soldier pile and the overall stability of the system must be checked at each anchor level, where ϕ is the soil friction angle and H is the shoring height.

The top anchor must not be placed lower than 3.0 metres below the top of level ground surface. Anchors will require casing when penetrating through wet sand and silt layers.

The contractor must decide the anchor capacity and confirm its availability. All anchors must be tested as indicated in the Canadian Foundation Engineering Manual, 4th edition.

Adhesion on the buried caisson shaft or behind the shoring system must be neglected when designing this shoring system.

Movement of the shoring system is inevitable. Vertical movements will result from the vertical load on the soldier piles resulting from the inclined tiebacks and inward horizontal movement results from earth and water pressures. The magnitude of this movement can be controlled by sound construction practices, and it is anticipated that the horizontal movement will be in the range of 0.1 to 0.25% of the shoring height (H). Vertical movements increase the horizontal movements because of the reduced stress in the inclined anchors and must be kept well below this value.

To ensure that movements of the shoring are within an acceptable range, monitoring must be carried out. Vertical and horizontal targets on the soldier piles must be located and surveyed before excavation begins. Weekly readings during excavation should show that the movements will be within those predicted; if not, the monitoring results will enable directions to be given to improve the shoring.

10. PAVEMENTS

10.1 Pavement Structure above Garage Slab

In order to provide surface drainage over the garage roof, granular material must be used to obtain slope for drainage.

The following asphalt pavement structures are recommended for light and heavy-duty areas:

Light Duty Areas:

60 mm HL3HS

150 mm Granular A (min. 100 mm variable thickness to provide 2% slope for drainage)

Protection board to prevent piercing of waterproofing membrane

Structural Concrete Slab

Heavy Duty Areas:

40 mm HL3HS

80 mm HDBC

300 mm Crusher Run Limestone

Protection board to prevent piercing of waterproofing membrane

Structural Concrete Slab

Concrete Pavers Pavement Structure:

70 mm Concrete Pavers

25 mm Sand Leveling underlain by filter fabric

200 mm Concrete Slab (Subbase) with 25 mm diameter drain holes @ 3,000 mm spacing.

150 mm Granular A (min. 100 mm variable thickness to provide 2% slope for drainage)

Protection board to prevent piercing of waterproofing membrane

Structural Concrete Slab

If this method is used, a bi-level drainage system is required.

If the underlying concrete slab (parking garage roof) has been sloped to provide adequate surface drainage, the placement of granular drainage layer is not required, and asphalt concrete can be placed directly on top of the protection board.

The critical section of pavement will be at the transition from the infinitely rigid substructure onto soil/backfill subgrade.

As a result, we suggest that an approach type slab be constructed at the entrance/exit points. The approach slab will alleviate detrimental effects of dynamic loading/settlement/pavement depression in the backfill to the rigid substructure.

10.2 At Grade Asphalt Pavement Structure

For the pavement areas, the recommended pavement structures provided in Table 4 are based upon an estimate of the subgrade soil properties determined from visual examination and textural classification of the soil samples.

The values may need to be adjusted based on the city/regional standards. Consequently, the recommended pavement structures should be considered for preliminary design purposes only.

A functional design life of eight to ten years has been used to establish the pavement recommendations. This represents the number of years to the first rehabilitation, assuming regular maintenance is carried out. If required, a more refined pavement structure design can be performed based on specific traffic data and design life requirements and will involve specific laboratory tests to determine frost susceptibility and strength characteristics of the subgrade soils, as well as specific data input from the client. The long-term performance of the pavement structure is highly dependent upon the subgrade support conditions.

Stringent construction control procedures should be maintained to ensure uniform subgrade moisture and density conditions are achieved. In addition, the need for adequate drainage cannot be over-emphasized. The finished pavement surface and underlying subgrade should be free of depressions and should be sloped (preferably at a minimum grade of two percent) to provide effective surface drainage toward catch basins. Surface water should not be allowed to pond adjacent to the outside edges of pavement areas. Subdrains should be installed to intercept excess subsurface moisture and prevent subgrade softening. This is particularly important in heavy-duty pavement areas.

Table 4: Recommended Pavement Structure Thickness for Parking Lots

Pavement Layer	Compaction Requirements	Light Duty Parking (Cars)	Heavy Duty Parking (Delivery Trucks)
Asphaltic Concrete	92.0 to 96.5% Maximum Relative Density (MRD)	40 mm HL 3 or SP 12.5 50 mm HL 8 or SP 19.0	40 mm HL 3 or SP 12.5 80 mm HL 8 or SP 19.0
OPSS Granular A Base (or 20mm Crusher Run Limestone)	100% SPMDD*	150 mm	150 mm
OPSS Granular B (or 50mm Crusher Run Limestone)	100% SPMDD	250 mm	350 mm

* Denotes Standard Proctor Maximum Dry Density, ASTM-D698
The subgrade must be compacted to 98% SPMDD for at least the upper 500 mm unless accepted by DS Consultants Ltd.

Additional comments on the construction of parking areas and access roadways are as follows:

1. As part of the subgrade preparation, proposed parking areas and access roadways should be stripped of topsoil and other obvious objectionable material. Fill required to raise the grades to design elevations should conform to backfill requirements outlined in previous sections of this report.

The subgrade should be properly shaped, crowned then proof-rolled in the full-time presence of a representative of this office. Soft or spongy subgrade areas should be sub-excavated and properly replaced with suitable approved backfill compacted to 98% SPMDD.

2. The locations and extent of sub-drainage required within the paved areas should be reviewed by this office in conjunction with the proposed lot grading.

Assuming that satisfactory crossfalls in the order of two percent have been provided, subdrains extending from and between catch basins may be satisfactory.

In the event that shallower crossfalls are considered, a more extensive system of sub-drainage may be necessary and should be reviewed by DS Consultants Ltd.

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

4. It is recommended that DS Consultants Ltd. be retained to review the final pavement structure designs and drainage plans prior to construction to ensure that they are consistent with the recommendations of this report.

10.3 Concrete Sidewalk

It is understood that the sidewalks may be constructed in the area. Recommendations for the pavement structure of the sidewalk are as follows:

150 mm Concrete, over 150 mm Granular 'A' Base

The Granular 'A' base must be compacted to at least 100 percent of Standard Proctor Maximum Dry Density (SPMDD). The subgrade must be stripped of topsoil or other unsuitable material. The top 300 mm of the subgrade must be compacted to at least 98 percent of SPMDD. Prior to placing the Granular 'A' base material, the subgrade must be inspected by the geotechnical engineer.

11. GENERAL COMMENTS AND LIMITATIONS OF REPORT

DS Consultants Ltd. (DS) should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, DS will assume no responsibility for interpretation of the recommendations in the report. This report is intended solely for the Client named.

The material in it reflects our best judgment in light of the information available to DS at the time of preparation.

The comments given in this report are intended only for the guidance of designer. The number of boreholes required to determine the localized underground conditions between test holes (i.e. boreholes and/or test pits) affecting construction costs, techniques, sequencing, equipment, scheduling, etc., would be much greater than has been carried out for design purposes. The number of test holes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual borehole and test pit results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

Unless otherwise agreed in writing by DS, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

The conclusions and recommendations given in this report are based on information determined at the borehole locations.

The design recommendations given in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report. The comments made in this report on potential construction problems and possible methods are intended only for the guidance of the designer.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. DS accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

We trust that the information contained in this report is satisfactory. Should you have any questions, please do not hesitate to contact this office.

Labib Mousa, P. Eng.

Alka Sangar, M.Eng., P.Eng.

Fanyu Zhu, Ph.D., P.Eng.

Drawings

Y:\2025 Projects\25-163-100 - Geo - Hydro - Env - 1771-1775 Jane Street, North York\Geotechnical\QGIS\1-QGIS\Drawing 1 Borehole Location Plan.qgs Jan-13 13:46

Legend

- Borehole With Monitoring Well - DS 2025
- Borehole With Monitoring Well - SPL 2015

DS CONSULTANTS LTD.
6221 Highway 7, UNIT 16
Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Client: MEDALLION CORPORATION

Project: GEOTECHNICAL INVESTIGATION
1771-1775 Jane Street, North York, ON

Title: **BOREHOLE LOCATION PLAN**

N

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	L.M	K.T	January 2026
Rev: 0	Scale: As Shown	Project No.: 25-163-100	Drawing No.: 1

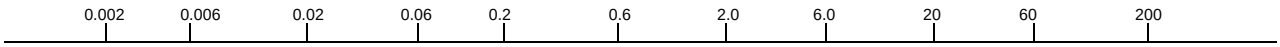
Image/Map Source: *Google Satellite Image*

Drawing 1A: Notes On Sample Descriptions

1. All sample descriptions included in this report generally follow the Unified Soil Classification. Laboratory grain size analyses provided by DSCL also follow the same system. Different classification systems may be used by others, such as the system by the International Society for Soil Mechanics and Foundation Engineering (ISSMFE). Please note that, with the exception of those samples where a grain size analysis and/or Atterberg Limits testing have been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

ISSMFE SOIL CLASSIFICATION

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



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

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

UNIFIED SOIL CLASSIFICATION

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

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH25-1

PROJECT: Geotechnical Investigation
CLIENT: Medallion Corporation
PROJECT LOCATION: 1771-1775 Jane Street, North York, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4840285.7 E 620541.5

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Jun-02-2025 to Jun-03-2025

REF. NO.: 25-163-100
ENCL NO.: 2

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
126.2					
126.0 / 0.1	**TOPSOIL/ORGANIC MATERIAL:** 100mm	1	SS	9	126
125.1 / 1.1	**FILL:** clayey silt, some sand, trace asphalt piece & brick piece, dark brown, very moist, stiff	2	SS	10	
		3	SS	24	
	CLAYEY SILT TO SILTY CLAY TILL: some sand to sandy, trace gravel, occasional cobble/boulder, brown, moist, stiff to very stiff	4	SS	21	124
		5	SS	21	
	grey, stiff below 4.6m	6	SS	12	122
		7	SS	12	
		8	SS	12	118
		9	SS	9	
		10	SS	12	116
		11	SS	14	114
		12	SS	8	112
111.0 / 15.2	**SILTY CLAY:** trace sand, trace gravel, grey, moist to very moist, firm to stiff	13	SS	9	
		14	SS	11	110
		15	SS	11	108
	firm at 19.8m	16	SS	4	106
		17	SS	10	
	frequent wet sand seams at 22.9m	18	SS	12	104
101.8 / 24.4	**SILTY SAND:** trace clay, trace gravel, grey, wet, dense silty clay to clayey silt layer at 24.9m	19	SS	38	102
		20	SS	43	100
98.8 / 27.4	**SILTY CLAY:** wet silty sand layers/interbedded, trace gravel, grey, moist, hard	21	SS	54	98

W. L. 120.6 m
Jun 17, 2025

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
200		
200		
175		Switched to mud rotary
8		
		2 22 52 24
		0 1 53 46
150		

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH25-1

PROJECT: Geotechnical Investigation
CLIENT: Medallion Corporation
PROJECT LOCATION: 1771-1775 Jane Street, North York, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4840285.7 E 620541.5

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Jun-02-2025 to Jun-03-2025

REF. NO.: 25-163-100
ENCL NO.: 2

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SILTY CLAY: wet silty sand layers/interbedded, trace gravel, grey, moist, hard(Continued)		22	SS	36		96	○	○	175	
32							94				
34			23	SS	49		92	○	○	150	
36							90				
89.6											
36.6	**SILTY SAND:** trace clay, grey, wet, compact to dense		24	SS	42			○	○		0 71 22 7
38							88				
40			25	SS	28		86	○	○		
	gravelly sand layer at 40.5m										
42							84				
83.5											
42.7	**SILTY CLAY:** trace sand, trace gravel, grey, moist, hard		26	SS	54			○	○	150	
44							82				
80.5											
46 45.7 79.9	**SILTY CLAY:** interbedded wet silty sand, grey, moist, hard		27	SS	43		80	○	○		
46.3	**END OF BOREHOLE**										

Notes:
1) 50mm dia. monitoring well (MW) was installed upon completion.
2) Water Level Readings:

Date:	W.L.(mbgs):
June 17, 2025	5.6

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH25-2

PROJECT: Geotechnical Investigation
CLIENT: Medallion Corporation
PROJECT LOCATION: 1771-1775 Jane Street, North York, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4840165.4 E 620568

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: May-29-2025 to May-30-2025

REF. NO.: 25-163-100
ENCL NO.: 3

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION	POCKET PEN. (Cu) (kPa)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
126.9							
126.7	**TOPSOIL/ORGANIC MATERIAL:** 180mm	1	SS	4			
126.1 / 0.8	**FILL:** clayey silt with organics, trace rock fragments, dark brown to black, moist, firm	2	SS	5	126		
2		3	SS	9			
124.1 / 2.8	**FILL:** silty sand, trace clay, brown, wet, loose to compact	4	SS	12	124		
123.8 / 3.3	**SILTY SAND:** trace clay, brown, wet, loose to compact	5	SS	5			
4							
122.3	**SILTY CLAY:** trace sand, grey, moist, firm				W. L. 122.6 m Jun 17, 2025		
122.0 / 4.9	**SAND AND GRAVEL:** trace clay, trace silt, brown, wet, compact	6	SS	14			Switched to mud rotary
6	**CLAYEY SILT TO SILTY CLAY TILL:** some sand to sandy, trace gravel, occasional cobble/boulder, grey, moist, stiff to very stiff	7	SS	20	120	175	
8		8	SS	11			
		9	SS	10	118		
10		10	SS	10	116		
12		11	SS	9	114		
14		12	SS	11			
		13	SS	10	112		
16		14	SS	9	110		
18		15	SS	8			2 29 50 19
20		16	SS	8	108		
105.6					106		
21.3	**SILTY CLAY:** trace sand, grey, moist, firm	17	SS	5			
22							
		18	SS	disturbed	104		
24							
102.5							
24.4	**CLAYEY SILT TILL:** trace to some sand, trace gravel, grey, moist, stiff to hard	19	SS	14	102		
26		20	SS	45		200	
99.5					100		
27.4 / 99.0	**SILTY CLAY:** trace sand, grey, moist, hard	21	SS	38			
27.9	**SILTY SAND:** trace clay, grey, wet, dense				98		
30							

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

NATURAL UNIT WT (kN/m³)

GROUND WATER CONDITIONS

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 25-163-100 GEO.GPJ DS.GDT 26-1-15

LOG OF BOREHOLE BH25-2

PROJECT: Geotechnical Investigation
CLIENT: Medallion Corporation
PROJECT LOCATION: 1771-1775 Jane Street, North York, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4840165.4 E 620568

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: May-29-2025 to May-30-2025

REF. NO.: 25-163-100
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
96.4												
30.5	**SILTY CLAY TILL:** trace to some sand, trace gravel, seams of sand and gravel, grey, moist, very stiff		22	SS	25		96					
32 94.9												
32.0	**SILTY CLAY:** trace to some sand, trace gravel, frequent wet silty sand layers below, very stiff to hard											
34			23	SS	35		94					
36							92					
			24	SS	22		90					
38												
40			25	SS	18		88			125		2 10 46 42
42							86					
84.2												
42.7	**SILTY SAND:** some clay, trace gravel, grey, wet, dense		26	SS	28		84					
44 82.8												
44.1	**COARSE SAND:** trace silt, trace clay, grey, wet, compact		27	SS	33		82					
81.2												
46 45.7	**SILTY CLAY:** trace sand, frequent wet silty sand layers, grey, moist, very stiff		28	SS	18							
	150mm wet silty sand layer at 47.2m		29	SS	23		80					0 7 73 20
48												
78.1												
48.8 77.5	**SILTY SAND:** trace clay, grey, wet, dense		30	SS	40		78					
49.4	**END OF BOREHOLE**											

Notes:
1) 50mm dia. monitoring well (MW) was installed upon completion.
2) Water Level Readings:

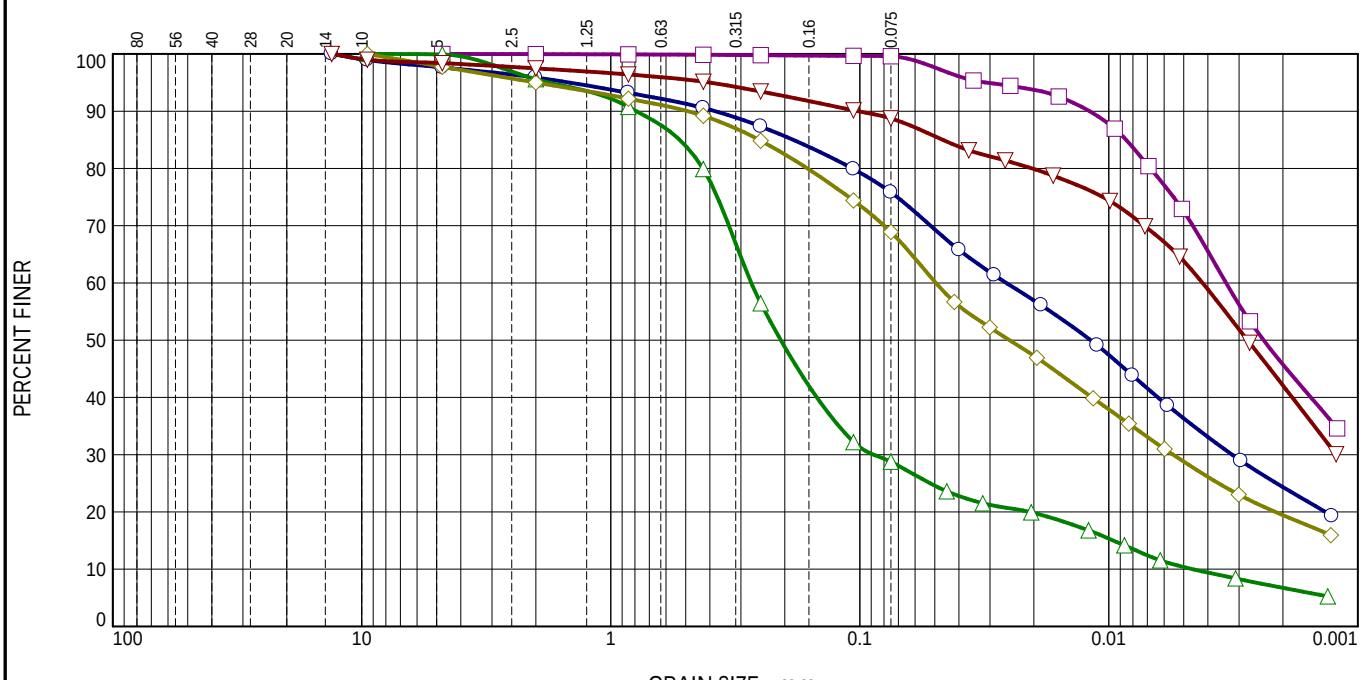
Date:	W.L.(mbgs):
June 17, 2025	4.3

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ε=3% Strain at Failure

Particle Size Distribution Report

ASTM D422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	2.4	1.7	5.3	14.8	51.5	24.3
□	0.0	0.0	0.0	0.0	0.1	0.3	53.8	45.8
△	0.0	0.0	0.1	4.3	15.7	51.1	22.1	6.7
◇	0.0	0.0	2.3	2.7	5.8	20.3	49.5	19.4
▽	0.0	0.0	1.6	0.9	2.3	6.4	46.7	42.1

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	27	12	0.1852	0.0258	0.0118	0.0032				
□	38	17	0.0085	0.0034	0.0024					
△			0.5287	0.2729	0.2076	0.0880	0.0096	0.0046	6.15	59.11
◇	22	11	0.2539	0.0495	0.0250	0.0055				
▽	36	18	0.0464	0.0042	0.0028					

Material Description	USCS	AASHTO
○ Silty clay till, sandy, trace gravel	CL	A-6(9)
□ Silty clay, trace sand	CL	A-6(22)
△ Silty sand, trace clay, occasional gravel		
◇ Silty clay till, sandy, trace gravel	CL	A-6(4)
▽ Silty clay, trace sand, trace gravel	CL	A-6(16)

Project No. 25-163-100 Client: Medallion Corporation

Project: Geotechnical Investigation - 1771-1775 Jane Street, North York, ON

○Location: BH25-1 SS7 Sample Number: VM-6690

□Location: BH25-1 SS17 Sample Number: VM-6690

△Location: BH25-1 SS24 Sample Number: VM-6690

◇Location: BH25-2 SS15 Sample Number: VM-6690

▽Location: BH25-2 SS25 Sample Number: VM-6690

Remarks:

○F.M.=0.49

□F.M.=0.01

△F.M.=1.19

◇F.M.=0.57

▽F.M.=0.27

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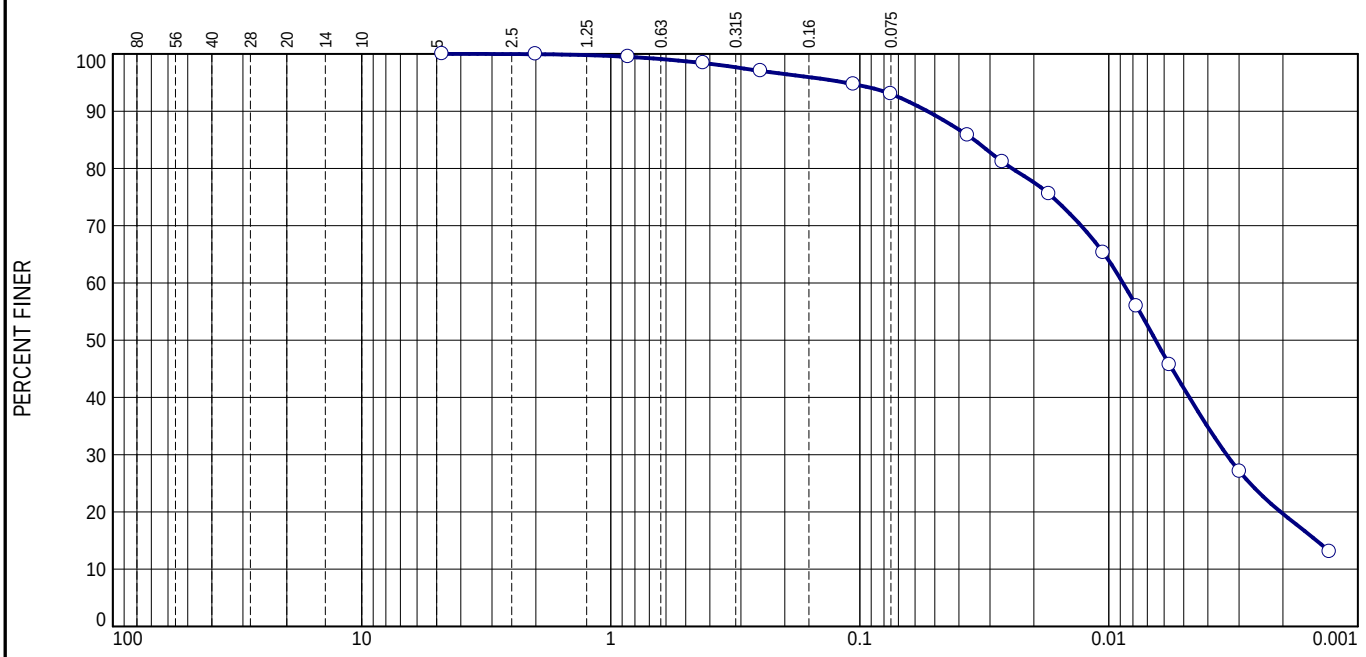
CCIL

Figure 4

Tested By: Helen/Disha Checked By: Kirupa

Particle Size Distribution Report

ASTM D422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	1.6	5.4	73.3	19.7

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	26	18	0.0347	0.0088	0.0065	0.0034	0.0015			

Material Description	USCS	AASHTO
○ Silty clay, trace sand	CL	A-4(6)

Project No. 25-163-100 Client: Medallion Corporation

Project: Geotechnical Investigation - 1771-1775 Jane Street, North York, ON

○Location: BH25-2 SS29B Sample Number: VM-6690

Remarks:

○F.M.=0.08

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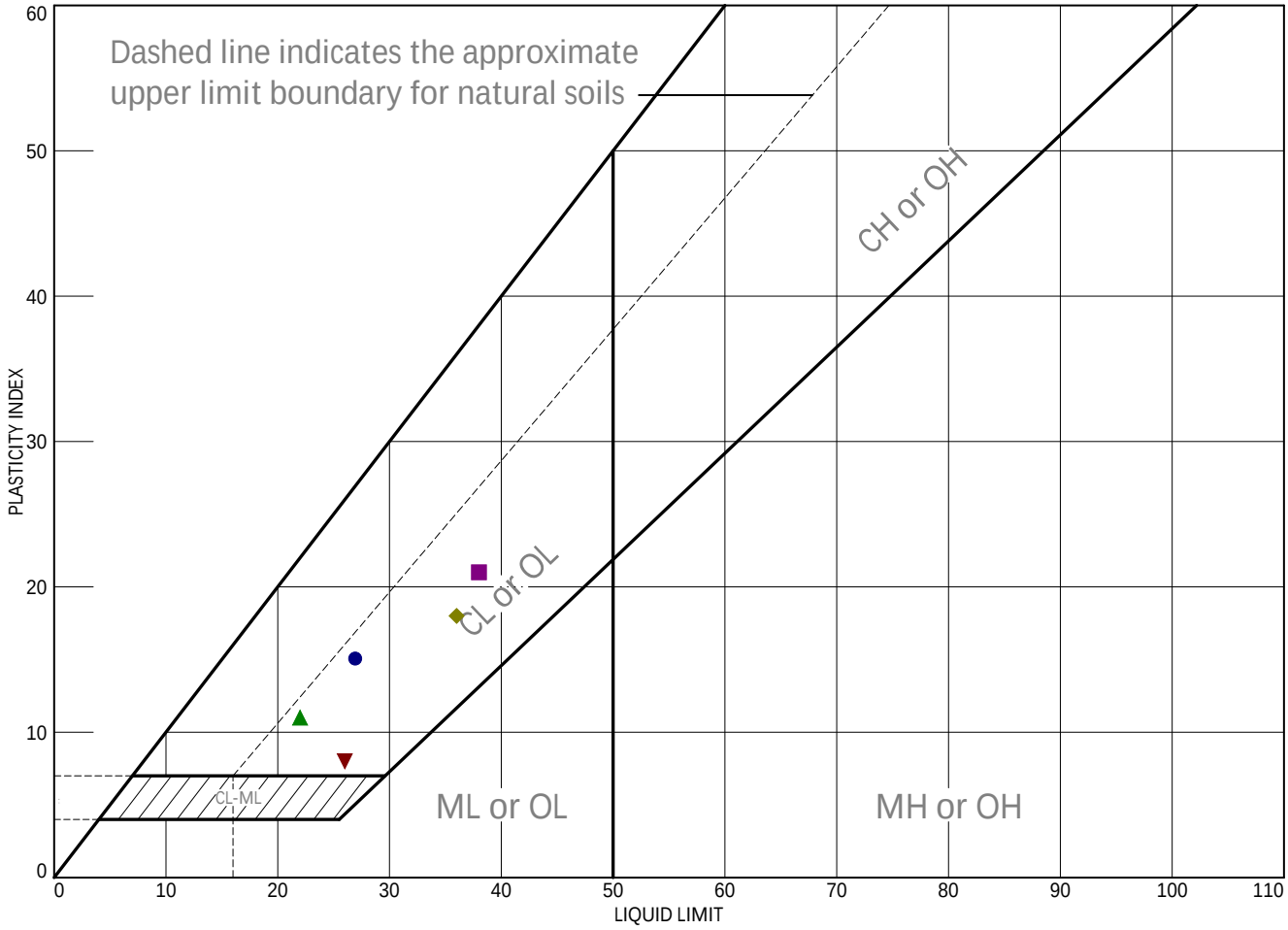
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

CCIL

Figure 5

Tested By: Helen/Disha Checked By: Kirupa

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty clay till, sandy, trace gravel	27	12	15	90.6	75.8	CL
■	Silty clay, trace sand	38	17	21	99.9	99.6	CL
▲	Silty clay till, sandy, trace gravel	22	11	11	89.2	68.9	CL
◆	Silty clay, trace sand, trace gravel	36	18	18	95.2	88.8	CL
▼	Silty clay, trace sand	26	18	8	98.4	93.0	CL

Project No. 25-163-100 Client: Medallion Corporation

Project: Geotechnical Investigation - 1771-1775 Jane Street, North York, ON

● Location: BH25-1 SS7 Sample Number: VM-6690

■ Location: BH25-1 SS17 Sample Number: VM-6690

▲ Location: BH25-2 SS15 Sample Number: VM-6690

◆ Location: BH25-2 SS25 Sample Number: VM-6690

▼ Location: BH25-2 SS29B Sample Number: VM-6690

Remarks:

● Sampled on June 02, 2025

■ Sampled on June 02, 2025

▲ Sampled on May 29, 2025

◆ Sampled on May 29, 2025

▼ Sampled on May 29, 2025

DS CONSULTANTS LTD.

Geotechnical ❖ Environmental ❖ Materials ❖ Hydrogeology

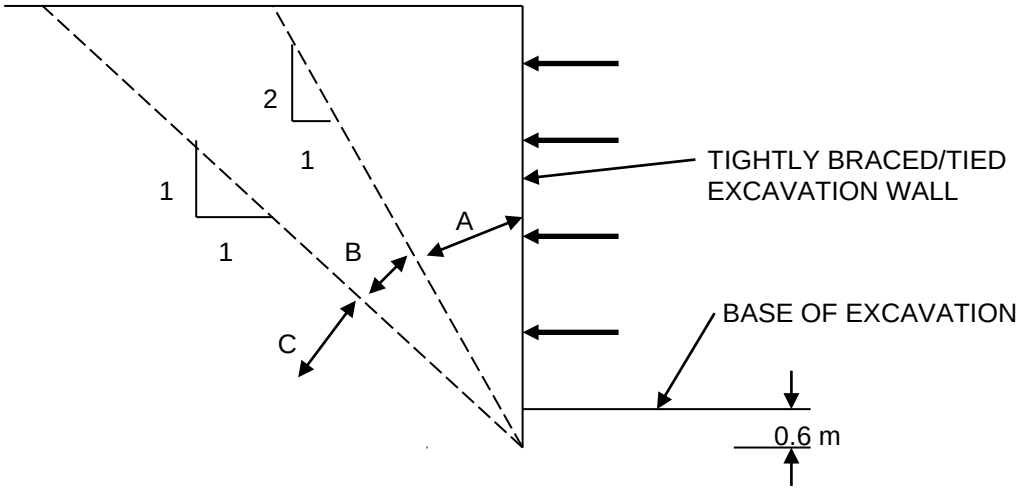
Figure 6

Tested By: Nisha Checked By: Kirupa

Project: 25-163-100 **Drawing 7**

Guidelines for Underpinning in Soil and Excavation Support

Existing foundations located within Zone A normally require underpinning, especially for heavy structures. For some foundations in Zone A, it may be possible to eliminate underpinning and control foundation movement by tightly braced excavation walls, such as caisson walls.



Zone A Foundations located within this zone normally require underpinning. Horizontal and vertical pressures on the excavation wall of non underpinned foundations must be considered

Zone B Foundations located within this zone normally do not require underpinning. Horizontal and vertical pressures on the excavation wall of non underpinned foundations must be considered

Zone C Underpinning to structures is normally founded in this zone. Lateral pressure from underpinning is not normally considered

(Reference: Figure 26.27 from Canadian Foundation Engineering Manual, 4th Edition)

Appendix A

SPL

LOG OF BOREHOLE BH15-1

PROJECT: Geotechnical Investigation - Proposed Buildings
CLIENT: Medallion Realty Holdings Ltd.
PROJECT LOCATION: 1775 Jane Street, Toronto, ON
DATUM: Geodetic
BH LOCATION: Refer to Drawing 1

DRILLING DATA
Method: Hollow stem auger/Tricone
Diameter: 203 mm
Date: May/14/2015

REF. NO.: 10001779
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER LEVEL	ELEVATION	GROUND WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100	SHEAR STRENGTH (kPa) ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
126.6														
126.5 0.1	**ASPHALT:** 100mm													
	FILL: sandy silt, mixed with topsoil, trace asphalt fragments, dark brown, moist, loose		1	SS	7		126							
1 125.1			2	SS	7									
1.5	**SANDY SILT:** trace clay, brown, very moist, loose		3	SS	5		125							
2 124.3						▽								
2.3	**SAND AND GRAVEL:** trace silt, trace clay, brown, saturated, compact		4	SS	20			W. L. 124.4 m: Jun 01, 2015 Holeplug						
3 123.5							124							
3.1	**SILTY CLAY TILL:** trace to some sand, trace gravel, grey, moist, stiff to hard		5	SS	21									
4							123							
5			6	SS	26		122							
6							121	Sand						
			7	SS	13									
7							120							
8			8	SS	12			Screen						
9							118							
			9	SS	7		117							2 18 51 29
10			10	SS	9									Tricone below 9.8m
11							116							
12	embedded silt layers, wet sand seams below 11.6m		11	SS	15		115							
13							114							
			12	SS	30									
14 112.0							113							
14.6 111.6	**SAND:** some gravel, grey, wet, compact		13	SS	15		112							
15 15.0	**SILT:** some clay, grey, very moist, compact													
16 110.1							111							
16.5			14	SS	23		110							

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ 1st ▼ 2nd Deep/Dual Installation ▽ 1st ▼ 2nd

GRAPH NOTES: + 3, × 3, Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

SPL SOIL LOG-2014-2 SEPARATE WELLS 10001779 GINT FILE - FOR GEO.GPJ SPL.GDT 6/29/15

PROJECT: Geotechnical Investigation - Proposed Buildings

CLIENT: Medallion Realty Holdings Ltd.

PROJECT LOCATION: 1775 Jane Street, Toronto, ON

DATUM: Geodetic

BH LOCATION: Refer to Drawing 1

DRILLING DATA

Method: Hollow stem auger/Tricone

Diameter: 203 mm

Date: May/14/2015

REF. NO.: 10001779

ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER LEVEL	ELEVATION	GROUND WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	CLAYEY SILT: some sand, occasional gravel, grey, moist, stiff to very stiff(Continued)						109						
18			15	SS	12								
19 107.4							108						
19.2	**SILTY CLAY:** trace sand, contains sand seams, grey, moist, stiff		16	SS	8		107			○			
20													
21			17	SS	10		106			○			
22							105						
23			18	SS	8		104			○			
24							103						
25 101.3			19	SS	8					⊢○⊣			0 1 46 53
25.3	**SILTY CLAY TILL:** some sand, contains sand seams, trace gravel, grey, moist, hard		20	SS	83/ 275mm		102			○			
26 99.8							101						
27 26.8	**SILTY SAND:** trace clay, grey, wet, very dense		21	SS	59		100			○			0 64 28 8
28 98.3							99						
28.3	**SILTY CLAY TILL:** some sand, contains silt seams, trace gravel, grey, moist, hard		22	SS	41		98			⊢○⊣			2 16 49 33
29 96.7							97						
30 29.9	**SILTY SAND:** trace clay, grey, wet to saturated, very dense		23	SS	50					○			
31 95.2							96						
31.4	**CLAYEY SILT TILL:** sandy, trace gravel, occasional wet sand layers, ~~grey, moist, hard~~		24	SS	35		95			○			
32 94.6													
32.0	**END OF BOREHOLE** Notes: 1) 50mm diameter monitoring well installed to a depth of 9.m on completion of drilling. 2) Water level in well on June 1, 2015 recorded at 5.81 mbgs.												

SPL SOIL LOG-2014-2 SEPARATE WELLS 10001779 GINT FILE - FOR GEO.GPJ SPL.GDT 6/29/15

GROUNDWATER ELEVATIONS

Shallow/ Single Installation 1st ▽ 2nd ▼ Deep/Dual Installation 1st ▽ 2nd ▼

GRAPH NOTES $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

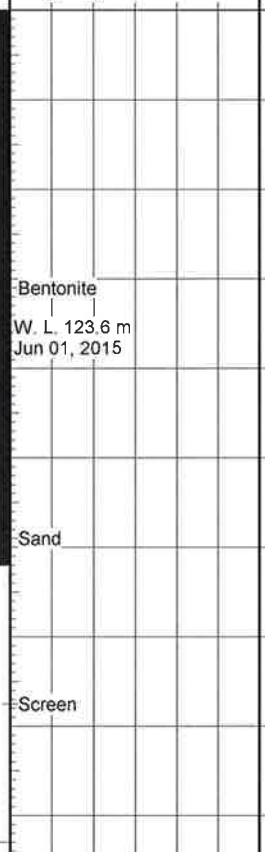
LOG OF BOREHOLE BH15-2

PROJECT: Geotechnical Investigation - Proposed Buildings
CLIENT: Medallion Realty Holdings Ltd.
PROJECT LOCATION: 1775 Jane Street, Toronto, ON
DATUM: Geodetic
BH LOCATION: Refer to Drawing 1

DRILLING DATA
Method: Hollow stem auger/Tricone
Diameter: 203 mm
Date: May/19/2015

REF. NO.: 10001779
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
127.0					
0.0 / 126.2	**FILL:** silty sand, trace clay, trace to some asphalt, trace gravel, dark brown, moist, compact	1	SS	21	
0.8 / 125.2	**FILL:** sandy silt, some clay, trace rootlets, brown, moist, loose to compact	2	SS	9	126
		3	SS	11	
1.8 / 123.9	**SANDY SILT:** trace clay, brown, wet, compact to loose	4	SS	7	125
3.1 / 122.4	**CLAYEY SILT:** trace sand, trace gravel, brown to grey, moist, stiff	5	SS	9	124
4.6 / 122.0	**SAND AND GRAVEL:** trace clay, grey, saturated, loose	6	SS	9	123
5.0	**SILTY CLAY TILL:** some sand, trace gravel, grey, moist, stiff to very stiff	7	SS	18	122
		8	SS	14	121
	embedded silt layer at 10m	9	SS	9	120
		10	SS	9	119
		11	SS	8	118
	occasional sand layers below 12.9m	12	SS	8	117
		13	SS	8	116
		14	SS	9	115
					114
					113
					112
					111



DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100
SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Tricone/Mud rotary below 9.8m

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ 1st ▼ 2nd
Deep/Dual Installation ▽ 1st ▼ 2nd

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG-2014-2 SEPARATE WELLS 10001779 GINT FILE - FOR GEO.GPJ SPL.GDT 6/29/15

PROJECT: Geotechnical Investigation - Proposed Buildings

CLIENT: Medallion Realty Holdings Ltd.

PROJECT LOCATION: 1775 Jane Street, Toronto, ON

DATUM: Geodetic

BH LOCATION: Refer to Drawing 1

DRILLING DATA

Method: Hollow stem auger/Tricone

Diameter: 203 mm

Date: May/19/2015

REF. NO.: 10001779

ENCL NO.: 3

SOIL PROFILE			SAMPLES			GROUND WATER LEVEL	ELEVATION	GROUND WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m				20 40 60 80 100	10 20 30			GR SA SI CL
107.8	**SILTY CLAY TILL:** some sand, trace gravel, grey, moist, stiff to very stiff(Continued)		15	SS	9		109						
19.2	**SILTY CLAY:** trace sand, occasional gravel, grey, moist, stiff		16	SS	12		107						
			17	SS	9		106						
			18	SS	9		105						
103.5							104						
23.5	**SILTY CLAY TILL:** some sand, trace gravel, occasional cobble/boulder, grey, moist, very stiff layer of gravelly sand at 24.2m		19	SS	21		103						
101.5							102						
25.5	**SAND:** some silt, grey, wet, compact		20	SS	28		101						
100.2													
26.8	**SILTY CLAY TILL:** some sand, trace gravel, contains wet sand seams, occasional silt seams, grey, moist, very stiff		21	SS	19		100						
98.7							99						
28.3	**SILTY SAND TO SANDY SILT:** trace clay, grey, wet to saturated, compact		22	SS	24		98						
			23	SS	31		97						
95.6							96						
31.4	**CLAYEY SILT:** trace sand, occasional gravel, contains wet sand seams, grey, moist, very stiff		24	SS	16		95						
94.1													
32.9	**SANDY SILT:** trace clay, grey, saturated, dense		25	SS	40		94						

Bentonite Grout

SHEAR STRENGTH (kPa): ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

SPL SOIL LOG-2014-2 SEPARATE WELLS 10001779 GINT FILE - FOR GEO.GPJ SPL.GDT 6/29/15

Continued Next Page

GROUNDWATER ELEVATIONS

Shallow/ Single Installation 1st ▽ 2nd ▼ Deep/Dual Installation 1st ▼ 2nd ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH15-2

PROJECT: Geotechnical Investigation - Proposed Buildings
CLIENT: Medallion Realty Holdings Ltd.
PROJECT LOCATION: 1775 Jane Street, Toronto, ON
DATUM: Geodetic
BH LOCATION: Refer to Drawing 1

DRILLING DATA
Method: Hollow stem auger/Tricone
Diameter: 203 mm
Date: May/19/2015

REF. NO.: 10001779
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER LEVEL	ELEVATION	GROUND WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (CU) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
92.6													
34.4	**SILTY CLAY TILL:** some sand, contains wet sand seams, trace gravel, grey, moist, stiff		26	SS	10		92			○			
35													
36			27	SS	12		91			○			
37							90						
89.5													
37.5	**SILTY SAND:** trace clay, embedded clayey silt layers, grey, saturated, dense		28	SS	35		89 Sand			○			
38													
39			29	SS	40		88			○			
40							Screen						
86.8													
40.2	**SAND:** some silt, trace clay, grey, saturated, dense		30	SS	41		86			○			
41													
85.8													
41.2	**SANDY GRAVEL:** trace silt, trace clay, occasional cobble/boulder,												
85.4													
41.6	grey, saturated, very dense		31	SS	50/ 125mm								
	END OF BOREHOLE												

Notes:
1) Tricone refusal at 41.6m on possible boulder or bedrock.
2) 19 mm dia. peizometer (deep well) installed to a depth of 41.6m in borehole upon completion.
3) Water level in 19mm piezometer on June 1, 2015 recorded at 11.7 mbgs.
4) 50mm dia. monitoring well (shallow well) installed in an adjacent separate borehole at 9.3m.
5) Water level in 50mm well on June 1, 2015 recorded at 3.4 mbgs.

GROUNDWATER ELEVATIONS
Shallow/ Single Installation 1st ▽ 2nd ▼ Deep/Dual Installation 1st ▼ 2nd ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

SPL SOIL LOG-2014-2 SEPARATE WELLS 10001779 GINT FILE - FOR GEO.GPJ SPL.GDT 6/29/15

LOG OF BOREHOLE BH15-3

PROJECT: Geotechnical Investigation - Proposed Buildings
CLIENT: Medallion Realty Holdings Ltd.
PROJECT LOCATION: 1775 Jane Street, Toronto, ON
DATUM: Geodetic
BH LOCATION: Refer to Drawing 1

DRILLING DATA
Method: Hollow stem auger
Diameter: 203 mm
Date: May/26/2015

REF. NO.: 10001779
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER LEVEL	ELEVATION	GROUND WATER LEVEL
127.3								
127.0 0.4	**TOPSOIL:** 100mm							
126.5	**FILL:** sandy silt, some clay, trace rootlets, trace gravel, brown, moist, compact		1	SS	16		127	
1 0.8	**FILL:** clayey silt, some organics, dark brown to brown, moist, firm		2	SS	6		126	
125.6								
2 1.7	**SILTY SAND TO SANDY SILT:** trace clay, brown, moist, loose to compact		3	SS	6		125	
			4	SS	13		Holeplug	
3 124.0							124	
3.3	**SILTY CLAY:** trace sand, trace gravel, grey, moist, stiff		5	SS	8	▽	W. L. 123.6 m Jun 01, 2015	
4 122.7							123	
4.6	**SAND:** some gravel, trace silt, grey, saturated, compact		6	SS	21		122	
5 6 121.2							Sand	
6.1	**SILTY CLAY TILL:** some sand, contains wet sand seams, trace gravel, grey, moist, very stiff		7	SS	21		121	
7							120	
			8	SS	17		Screen	
8							119	
9 118.0	interbed of silty clay at 9.1 m							
9.3 117.6	**SAND:** trace silt, grey, wet, very loose		9	SS	3		118	
9.7	**END OF BOREHOLE**							

Notes:
1) 50mm diameter monitoring well installed to a depth of 9.1m on completion of drilling.
2) Water level in well on June 1, 2015 recorded at 3.67 mbgs.

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN (Cu) (kPa)

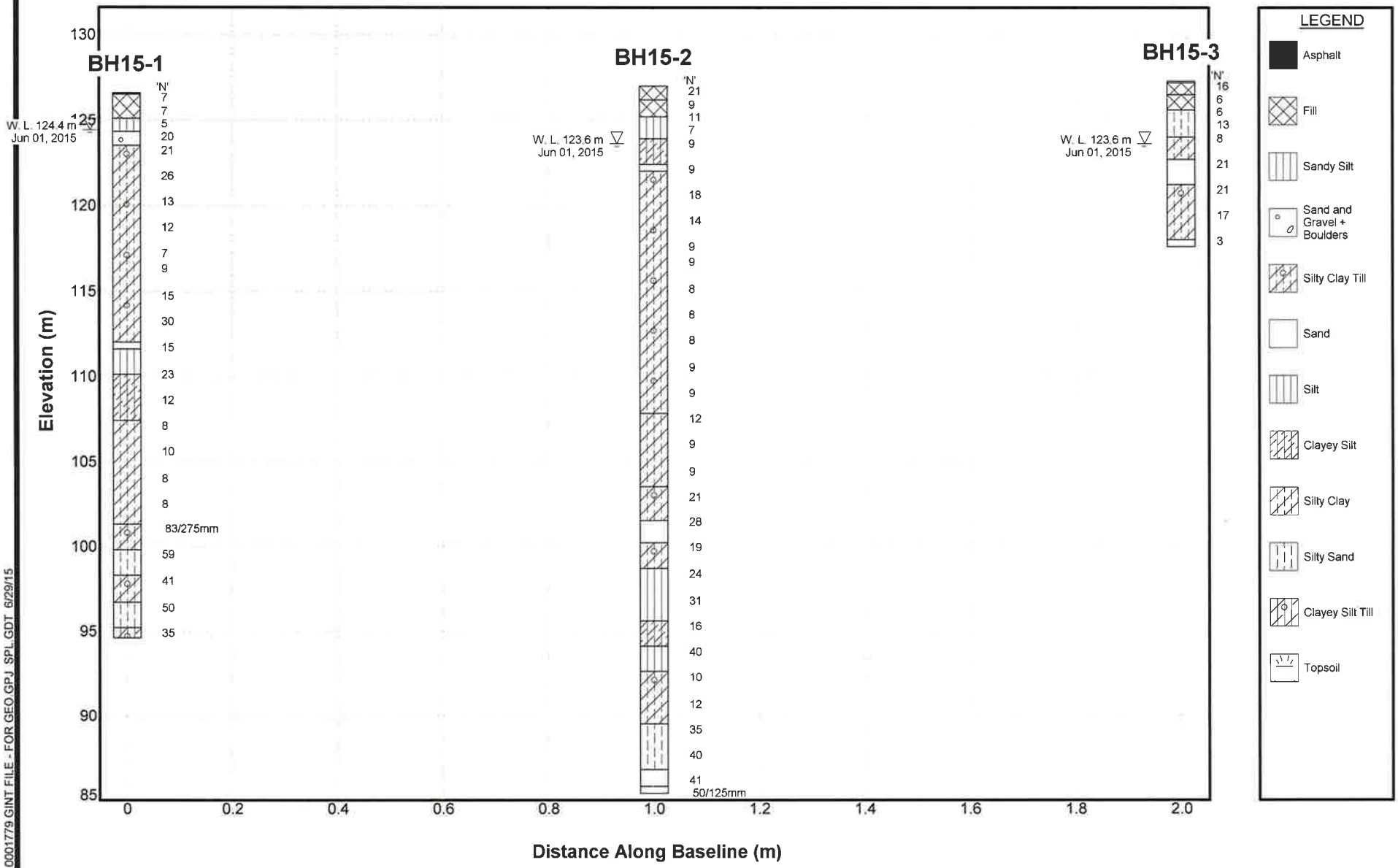
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ 1st ▼ 2nd
Deep/Dual Installation ▽ 1st ▼ 2nd

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG-2014-2 SEPARATE WELLS 10001779 GINT FILE - FOR GEO GPJ SPL.GDT 6/29/15

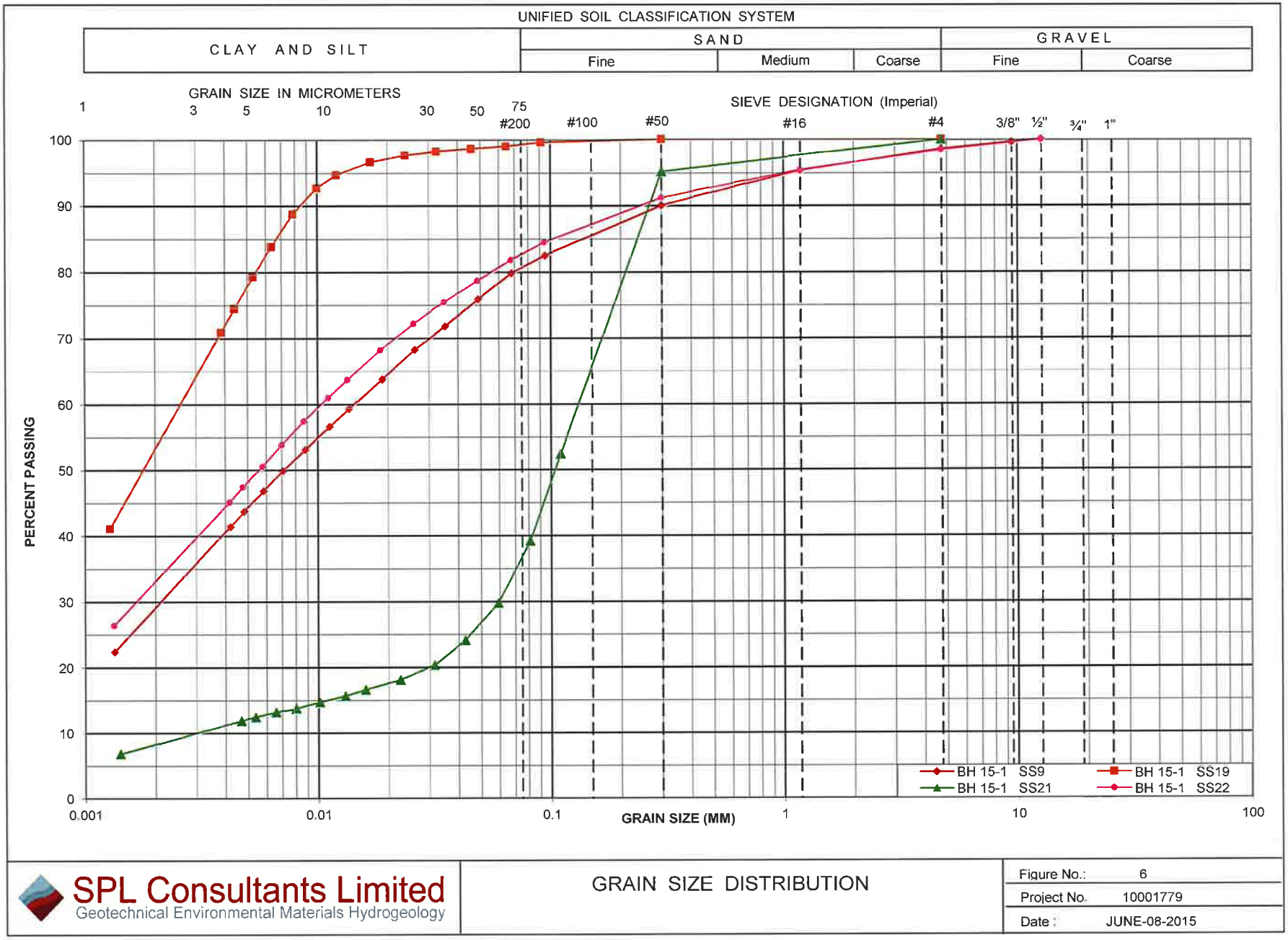


SPL FENCE (M) 10001779 GINT FILE - FOR GEO.GPJ SPL.GDT 6/29/15

SPL

Generalized Sub-surface Profile

DRAWING NO.	5
JOB NO.	10001779
DATE	June, 2015



SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

GRAIN SIZE DISTRIBUTION

Figure No.:	6
Project No.	10001779
Date :	JUNE-08-2015