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McCLYMONT&RAK
ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

WWW.MCCRAK.COM

111 ZENWAY BLVD., UNIT 4, VAUGHAN, ONTARIO, L4H 3H9
TEL: 416.675.0160 FAX: 905 851.1722
office@mccrak.com

1271 DENISON ST., UNIT 45, MARKHAM, ONTARIO, L3R 4B5
TEL: 905.470.0160 FAX: 905.475.6371
denison@mccrak.com

McMASTER INNOVATION PARK - COLABORATORY No. 110A
175 LONGWOOD RD. S., HAMILTON, ONTARIO, L8P 0A1
office@mccrak.com

G5168 **AUGUST 2017**

GEOTECHNICAL REPORT
PROPOSED
RESIDENTIAL DEVELOPMENT
1637-1645 BATHURST STREET
TORONTO, ONTARIO

DISTRIBUTION:

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PREPARED FOR:

STARLIGHT INVESTMENTS

1400-3280 Bloor Street West, Centre Tower
Toronto, Ontario
M8X 2X3

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1.0 INTRODUCTION

Starlight Investment(the Client) retained McClymont& Rak Engineers Inc. (MCR) to prepare a geotechnical report for the proposed residential development located at 1637-1645 Bathurst Street, Toronto, Ontario (hereafter referred to as ‘the Site’).

The objective of the report was to determine design data required for foundations, dewatering, shoring/excavation, backfill, slab on grade, and pavement. The above design and construction issues are addressed in the following report.

2.0 SITE CONDITIONS

The subject property is located at the municipal address 1637-1645 Bathurst Street, just north of Barton Road, in the City of Toronto, Ontario.

Bathurst Street bounds the Site to the west and existing residential buildings to the north, south and to the east.

The site is occupied by five 3-storey apartment buildings, paved entrance from the Bathurst Street to the east side of the buildings and paved driveway along the east side.

The ground surface on the west side of the buildings is landscaped, covered with grass and some trees and bushes There are board fences on the south and east sides, and wire fence on the north side.

The paved surfaces are even, while landscape parts are made with irregular slopes and flatter areas. Terrain slopes towards the north and the east with the maximum difference in borehole elevations of 2.6 m. There is a retaining wall along Bathurst Street extending from the entrance driveway all the way to the south end of property.

2.1 PROPOSED DEVELOPMENT

The Site is proposed for redevelopment with four [4] storey building and one to two [1-2] level (s) of below grade parking.

Based on the provided architectural drawings, the finished floor elevation (FFE) at ground floor will be 174.00 m.

According to a vertical section through the proposed development, the P1 slab FFE will vary from 169.15 m to 167.09 m.

3.0 SITE INVESTIGATION

Three boreholes were drilled by MCRduring the period of June 17 to August 14/2017at the locations shown on Drawing No. 1.

The boreholes were advanced to depths ranging from 12.45 to 12.65 m.

In addition, wells were installed in Boreholes 1 and 2 for long term groundwater monitoring and sampling.

Elevations referred to in this report are geodetic and metric and are referenced to the site survey plan by KrcmarSurveyors Ltd., dated February 17/2016.

4.0 SOIL AND GROUNDWATER CONDITIONS

Subsurface conditions encountered at borehole locations are shown on Borehole Log Sheets, attached in Appendix A and summarized as follows:

Asphalt: An asphalt layer, about 75 mm in thickness, was present at the ground surface at Borehole 1.

Miscellaneous Fill: Fill, consisting of silty sand and clayey silt with some sand and gravel, was detected below the asphalt layer in Borehole 1 and at the surface at Boreholes 2 and 3 and extended to depths ranging from 0.75 to 1.50 m. The brown, moist, stiff/compact, fill also contained trace of organics, rootlets and construction debris such as brick pieces.

For the purpose of offsite disposal, the type/quantity and extent of the existing fill layer should be explored by further test pit investigation, prior to contract award.

Sandy Silt/Sandy Silt Till: Compact to very dense sandy silt to sandy silt till deposit was encountered below the fill and extended to the maximum depth of investigation at all boreholes. The brown to grey, moistto very moist to wet depositcontained layers of hard, moist to wet clayey silt to clayey silt till, very dense, wet silty sand and some to trace of clay and gravel.

It should be noted that the sand soil is anunsorted sediment; therefore, boulders and cobbles are anticipated.

Groundwater: Upon completion of drilling the groundwater was observed at depths of 11.30 and 11.00 m in Boreholes 2 and 3 while Borehole 1 remained dry. .

However, groundwater level was recorded in the wellat BH1 on July 21/2017 at 15 days after completion of drilling.

In essence, the water table was detected at a depth of 6.23 m. The results are summarized on the Borehole Logs in Appendix A.

It should be noted that groundwater levels are subject to seasonal fluctuations. Consequently, definitive information on the long-term groundwater levels could not be obtained during this investigation.

Subject to the owner’s approval, groundwater monitoring could be carried out, using the installed well, to determine long term groundwater conditions which should be presented in a separate report addressing Geohydrology/Dewatering Induced Settlement issues, if required.

In addition, a Geohydrology assessment is currently underway by MCR.The results will be presented in a separate report upon completion.

5.0 FOUNDATIONS

The Site is proposed for redevelopment with four [4] storey building and one to two [1-2] level (s) of below grade parking.

Based on the provided architectural drawings, the finished floor elevation (FFE) at ground floor will be 174.00 m.

According to a vertical section through the proposed development, the P1 slab FFE will vary from 169.15 to 167.09m.

Due to the variable soil conditions and the presence of less competent soils encountered in Borehole 3, the proposed residential development, with a single level of underground parking, can be supported on conventional spread/strip footings, founded in the competent native undisturbed (by hydrostatic pressure) silt/silt till.

Recommended founding depths/elevations and corresponding bearing resistance/factored bearing resistance for limit states (SLS and ULS) are presented in Table 1.

Table 1 – Founding Depths/Elevations and Bearing Resistance for Conventional Footings

Borehole No.	Borehole Elevation (m)	Depth (at or below) (m)	Elevation (at or below) (m)	Bearing Resistance At SLS (kPa)	Factored Bearing Resistance At ULS (kPa)
1	173.50	3.50	168.50	300	420
2	171.95	2.45	168.50	300	420
3	174.55	4.55	168.50	300	420

5.1 GENERAL FOUNDATION NOTES

The northern portion was not accessible to the drilling machine due to the presence of existing retaining walls and the drop in ground elevations, no boreholes were drilled in the northern portion of the site. Therefore, additional boreholes must be advanced to sufficient depths, after the demolition of existing walls, to explore the subsurface soil and groundwater conditions and to confirm the recommended bearing resistance/founding elevations and site classification.

Our report should then be updated and our recommendations revised accordingly.

It is essential that the groundwater be lowered a minimum of 1.0 m below the underside of the proposed footings/excavation. The wet/saturated silty soil, encountered at the foundation level, will be subject to dilation/quick condition when saturated/subjected to hydrostatic pressure, subject to groundwater monitoring results and depth of excavation.

In the areas of the existing service trenches/old footings (if any), the new footings should be established below the invert of the existing services/underside of old footings, in the original undisturbed soils, or could potentially be bridged over the trench backfill (subject to existing invert elevation and review by a structural engineer).

It should be noted that the as-built vertical/horizontal alignment and conditions of the existing underground services should be established prior to the design/construction stage.

Low strength concrete (to be determined by the structural engineer) could be placed to bring the subgrade up to specified underside of the proposed footings, if required, subject to design grades and field inspection during construction.

Till and Sandy soils, in southern Ontario are glacial/interglacial in origin and as such contain cobbles, boulders and other erratic rock, the precise placement and location of which cannot be determined without comprehensive excavation. Removal of cobbles, boulders and other erratic rock will usually result in extra excavation and construction cost.

It is recommended that your excavation and construction contract provisions include unit prices for excavation into soils which may contain cobbles, boulders and erratic rock to minimize potential unexpected extra costs during excavation and foundation installations.

Adjacent footings founded at different elevations, should be stepped at 10 horizontal to 7 vertical.

For frost protection requirements, all exterior footings and footings in the unheated parking structure P1 must have a minimum soil cover of 1.20 m and P1 (Lower Level) 0.90 m.

The recommended bearing resistance at SLS allows for up to 25 mm of total settlement. **Potential differential settlements must be evaluated after completion of the foundation drawings.**

Furthermore, the recommended bearing resistances and foundation elevations have been calculated from the limited borehole information, and are intended for design purposes only.

More specific information with respect to soil/foundation conditions will be available when the proposed shoring/foundation construction is underway.

Therefore, the encountered soil/foundation conditions must be verified in the field, and all footings must be inspected and approved by our office prior to placement of concrete.

6.0 EARTHQUAKE CONSIDERATIONS

The building must be designed to resist a minimum earthquake force. The National Building Code specifies that the building be designed to withstand a minimum lateral seismic force, V, which is assumed to act non-currently in any direction on the building as per the following expression:

$$V = S(T_a)M_vI_EW/(R_dR_o)$$

It should be noted that V shall not be less than:

$$S(2.0)M_vI_EW/(R_dR_o)$$

In addition, the SFRS (Seismic Force Resisting System (s)) with R_d equal to or greater than 1.5, V should not be greater than:

$$2/3S(0.2)I_EW/(R_dR_o)$$

Where $S(T_a)$ shall be calculated by $S_a(T_a)F_a$ or $S_a(T_a)F_v$, depending on fundamental lateral period T_a. The terms, which are relevant to the geotechnical conditions at the site, are acceleration-based site coefficient F_a and velocity-based site coefficient F_v.

For the subject site, which is classified as Class C (based on the limited borehole information), the applicable values of F_a and F_v are 1.0 and 1.0 respectively. A structural consultant should review all factors.

However, the site classification must be confirmed by further investigation.

7.0 BASEMENT WALLS

Basement walls should be designed to resist a pressure "p", at any depth, "h" below the surface, as given by the expression:

$$p = 0.40\ [\gamma\ h + q]$$

Where: 0.40 is the earth pressure coefficient considered applicable

$\gamma = 21.7\ kN/m^3$ is the unit weight of backfill

q = an allowance for surcharge.

The above equation assumes that perimeter drains will be provided and that the backfill against subsurface walls, where applicable, would be a free draining granular material.

However, subject to groundwater conditions and the presence of the wet sandy soils, all subject to further groundwater monitoring results, we suggest that perimeter walls below the groundwater level be designed for hydrostatic pressure to resist a pressure "p", at any depth "h" below the surface, as given by the expression:

$$p = \begin{cases} Kq + K\gamma_m h, & h \le D_w \\ Kq + K\gamma_m D_w + K(\gamma_s - \gamma_w)(h - D_w) + \gamma_w(h - D_w), & h > D_w \end{cases}$$

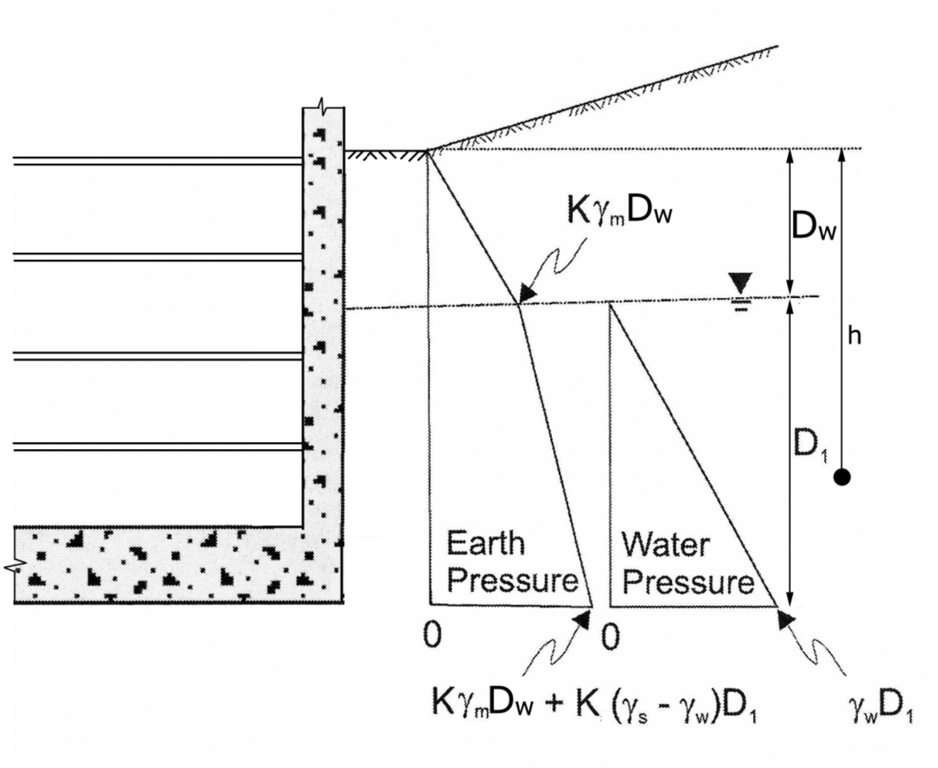
Where: $K = 0.50$ is the earth pressure coefficient considered applicable

$\gamma_m = 20$ kN/m^3 is moist or wet soil unit weight

$\gamma_s = 21.7$ kN/m^3 is saturated soil unit weight

$\gamma_w = 9.80$ kN/m^3 is the unit weight of water

q = an allowance for surcharge.



8.0 DEWATERING

The excavation for the proposed underground parking will extend below the groundwater table to the wet/saturated silty soils, **subject to final design grades**, **further investigation and groundwater monitoring results.**

In order to protect the bottom and sides of the excavation from being disturbed by excess groundwater pressure, i.e. to prevent quick sand/dilating silt conditions, the water table must be lowered to at least 1.0 m below the bottom of the footing excavations.

Positive dewatering, such as well points will be required for the proposed excavation, **subject to long term groundwater monitoring results**.

The selected dewatering system, designed and installed outside of the shoring enclosure by a speciality contractor, will be most effective if it is installed and activated at the earliest opportunity during general excavation.

It is reiterated that on site soils might be subject to localized piping. Creation of piping channels might result in a substantial increase in the volume of both temporary dewatering and permanent drainage. It is critical that upon completion of general excavation **potential formation of localized piping be carefully evaluated and appropriate corrective measures implemented.**

A pre-construction survey of adjacent the structuresshould be carried out prior to the dewatering/shoring construction stage. Potential adverse effects on adjacent structures, due to the dewatering must be assessed/quantified and suitable preventive/remedial measures implemented.

9.0 EXCAVATION AND BACKFILL

No major problems will be encountered for the anticipated depth of general excavations, carried out within a shoring wall enclosure.

For excavation above the water table, the anticipated water seepage into excavations from the more permeable seams/lenses or surface run-off can be handled by conventional pumping methods.

A dewatering system such as well points will be required for excavation below the groundwater level, subject to groundwater monitoring results and the excavation condition during construction.

The material to be used for backfilling in the service trenches (outside the buildings) should be suitable for compaction, i.e. free of organics and with natural moisture content, which is within 2% percent of the optimum moisture content. The backfill material should be compacted to at least 98% of the Standard Proctor Maximum Dry Density (SPMDD).

The backfill under floor slab and against the subsurface walls, where applicable, should be free draining granular fill, preferably conforming to the Ontario Provincial Standard Specification for granular base course, Granular B.

10.0 SHORING

A shoring system should be designed to protect adjacent structures, roads and services. The fourth edition of the Foundation Manual should be referred to for the design of the shoring system.

It should be noted that groundwater and boulders may be encountered during soldier pile/caisson construction, and the contractor must be prepared to deal with boulders and water seepage into the caisson shafts without undue delays.

Due to the groundwater and wet silty/sandy soil conditions, it will be difficult to prevent groundwater from penetrating into the excavation through gaps in timber lagging. Therefore, the contractor shall include for un-shrinkable fill or equivalent to help mitigate the flow of water through the shoring system and into the excavation.

The geotechnical parameters, which are considered to be applicable for the design, are as follows:

Active earth pressure coefficient Ka = 0.45 for walls in areas where structures or sensitive services are being supported.

Active earth pressure coefficient Ka = 0.28 for remaining areas.

Natural unit weight of soil = 21.7 kN/m^3

Any surcharge loads must be included in the lateral pressure calculations.

Lateral movements of the shoring wall, designed using Ka = 0.28, are expected to be in order of 15 mm. They are expected to be less if Ka value of 0.4 is used. The expected movements are based on a properly constructed system.

The horizontal and vertical movements should be monitored during construction to ensure a satisfactory performance of the shoring system.

The soil anchors should be designed for 30 kPa (subject to confirmation by at least two load tests).It is re-iterated that subsurface conditions **may vary beyond the site's confines**. As a result, the design values must be confirmed by at least two load tests, carried out to twice the design load.

Alternatively, raker footings, established in the competent native silt till soils could be designed and proportioned for a bearing resistance of 150 kPa(at SLS), i. e. factored bearing resistance of 210 kPa (at ULS), as per recommendations in the Section 5.0.

It is imperative that a stability analysis of the entire support system is undertaken prior to commencement of the shoring construction. Our office should review the final shoring design.

Schematic drawing for the proposed permanent drainage system is enclosed as Figure 2.

The shoring system and surrounding structures must be monitored for horizontal and vertical movements, prior to, during and after the excavation.

In addition, a pre-construction survey of adjacent structures/roads/CN Railways should be carried out prior to the shoring/design/construction stage. Any potential adverse effect on adjacent structures should be assessed and suitable preventive/remedial measures implemented.

11.0 SLAB ON GRADE AND PERMANENT DRAINAGE

The City of Toronto – Toronto Water requires that any private water to bedischarged into the City sewer system must have a permit or agreement in placein order to discharge; this applies to all water not purchased from the City watersupply. For temporary dewatering during the construction phase, this includesall groundwater and storm water that is collected or encountered during siteexcavation.

For Private Water Discharge System this includes all groundwater that is constantlypumped as a result of the PWDS elevation located below the groundwater tableelevation or through storm water infiltration.

Recently, Toronto Water has indicated that PWDS systems may only bepermitted through recirculation via an infiltration gallery and discharge to sewersmay be prohibited. Otherwise, a fully waterproofed substructure may be requiredin the event that infiltration is not feasible. The Client must obtain permissionand confirm discharge approval from Toronto Water directly (see Appendix B).

Should the PWDS/infiltration gallery alternative be adopted and approved by the City, the lowest garage/basement floor slab can be constructed as slab on grade (SOG), supported by competent native undisturbed silty sand/sandy/clayey silt soils.

Any soft spots revealed during proof-rolling should be sub-excavated and backfilled with suitable granular material, compacted to 98% SPMDD.

Upon completion of foundation work, the SOG should rest on a well compacted bed of size 19 mm clear stone at least 200 mm thick. The stone bed would act as a barrier and prevent capillary rise of moisture from the subgrade to the floor slab.

A permanent Private Water Drainage System (PWDS), as shown on Figures 2 and 3, where shoring is constructed, should be considered.

To minimize siltation, all drainage pipe connections must be solid slotted PVC, with elbows and Ts, no “butt” end connections should be permitted. The pipes should slope to a sump at a minimum 1% slope.

Perimeter drainage pipes, with a positive gravity outlet, should be solid and slotted PVC with a minimum of 0.5% slope. In addition, silt traps must be provided at convenient/accessible locations.

We request that PWDS drawings indicate design elevations for both perimeter and underfloor installation. MCR will provide calculations for sizing of permanent pumps, when required.

Upon completion of general excavation, scope and adequacy of the PWDS is to be re-evaluated. The installation of PWDS must be inspected by our office, prior to placement of filter stone.

Any design changes must be approved by the architect and reflected on mandatory as built drawings.*

* A copy of this page “Slab on grade and Permanent Water Drainage System” page should be posted at a site office as a permanent display.

In addition, the elevator pit should be fully waterproofed as shown on Figure 4.

12.0 PAVEMENT

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 considered to protect underground utilities (on the City’s property) at the entrance/exit points, as shown on Figure 5.

The approach slab will alleviate detrimental effects of dynamic loading/settlement/pavement depression in the backfill to the rigid substructure.

All granular materials used in the pavement construction should be compacted to 100% of the Standard Proctor Maximum Dry Density.

A typical composite pavement structure would comprise the following:

50 mm of HL1	Asphaltic Concrete Wearing Course
150 to 200 mm	25 MPa high early strength concrete with 5% to 7% entrained air
150 to 200 mm	Granular A base

All constructed to the City of Toronto standards.

In areas where flexible pavement is used, typical designs are as follows:

	Heavy Duty	**Medium Duty**	**Light Duty**
Asphaltic Concrete	40 mm HL3 65 mm HL8	40 mm HL3 50 mm HL8	50 mm HL3
19 mm Crushed Limestone	150 mm	150 mm	200 mm
Granular B Sub-base or 50 mm Crushed Limestone	300 mm	200 mm	-

A typical pavement structure above garage roof slab, please see Drawings 6 and 7.

13.0 METHANE GAS

The combustible vapour readings, presented on the attached MCR's borehole log sheets in Appendix A, are below the maximum MOE allowable limit of 5.0 % of Lower Explosive Limit (L.E.L.).

14.0 GENERAL COMMENTS

The comments given in this report are intended only as guidance for design engineers and are subject to field verification during construction. As more specific subsurface information, with respect to conditions between boreholes becomes available during excavations on the subject site, this report should be updated.

Contractors bidding on or undertaking the work should decide on their own investigations, as well as their own interpretations of the factual borehole results. This concern specifically applies to the classification of the subsurface soil and the potential reuse of these soils on/off site.

The contractors must draw their own conclusions as to how the near surface and subsurface conditions may affect them.

We trust this report contains information requested at this time. However, if any clarification is required or if we can be of further assistance, please call us.

Respectfully,
McClymont& Rak Engineers Inc.

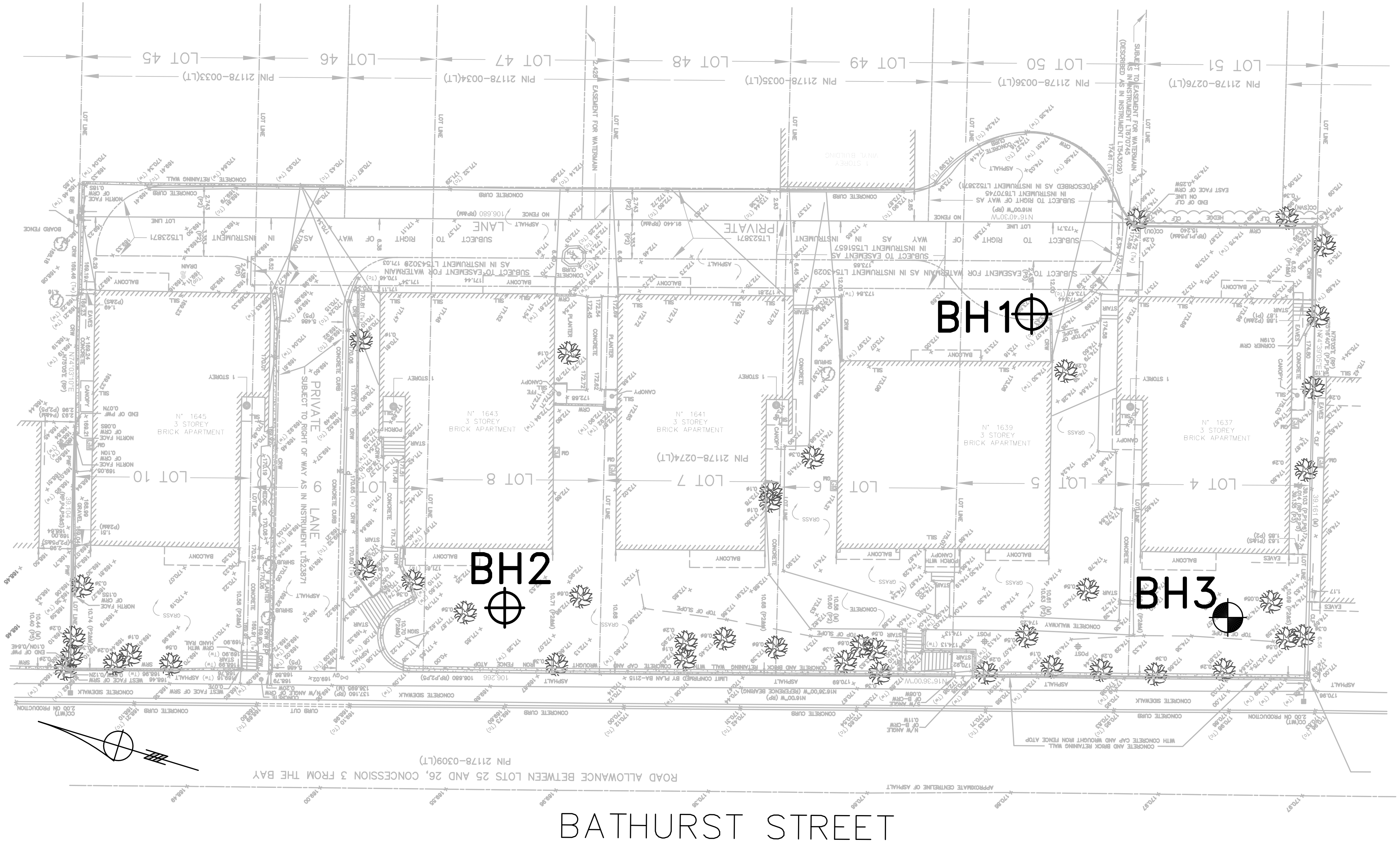
LICENSED PROFESSIONAL ENGINEER
L. S. L. MOUSA
PROVINCE OF ONTARIO

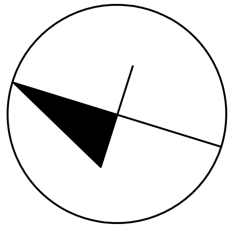
L.S. Mousa, P.Eng.

L.J. Rak, M.Eng., P.Eng.

FIGURES

1637 BATHURST STREET
TORONTO, ONTARIO





Legend

◐ BOREHOLE BY McCLYMONT & RAK ENGINEERS INC., JULY/AUGUST 2017

⊕ GROUNDWATER MONITORING WELL BY McCLYMONT & RAK ENGINEERS INC., JULY/AUGUST 2017

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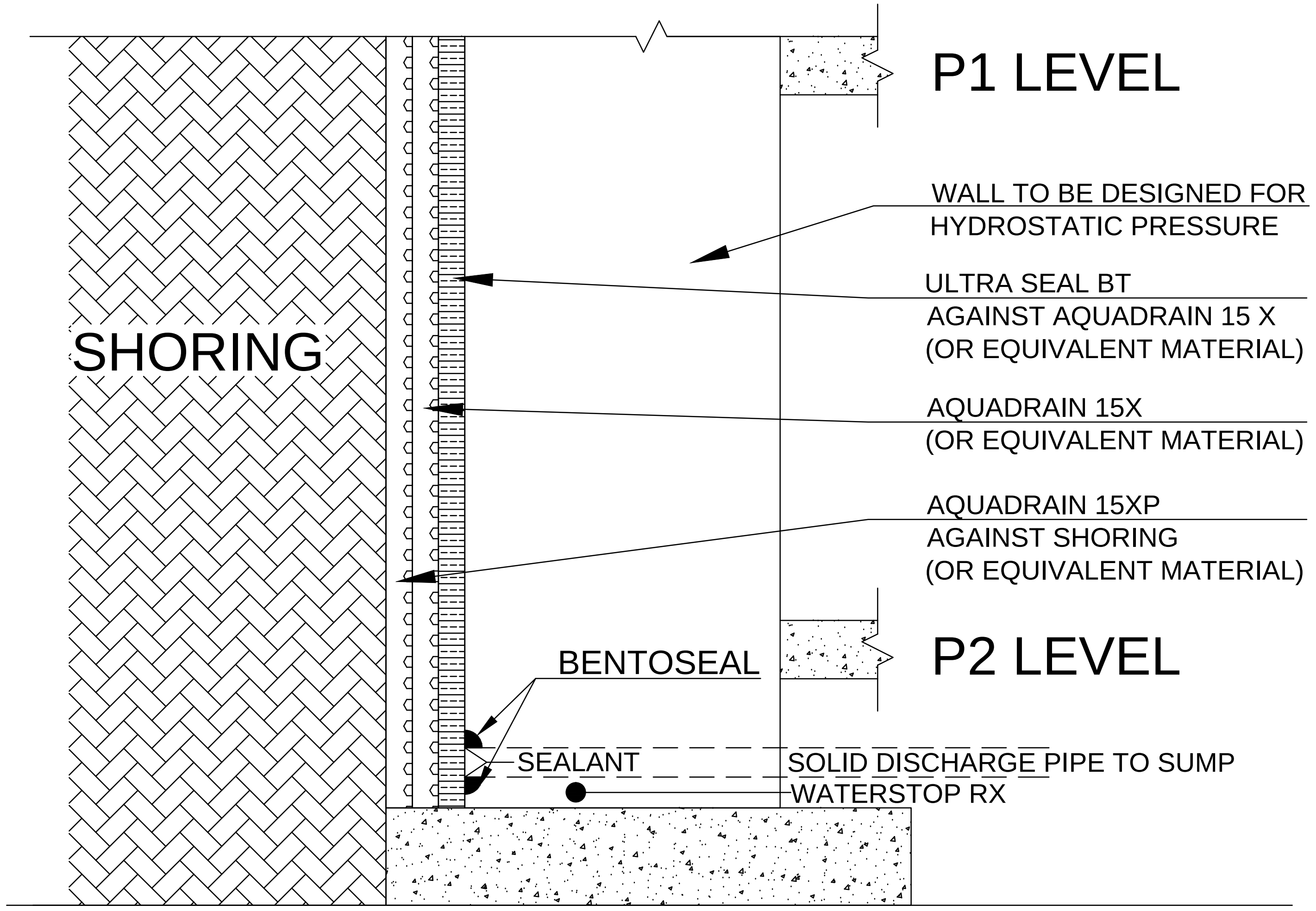
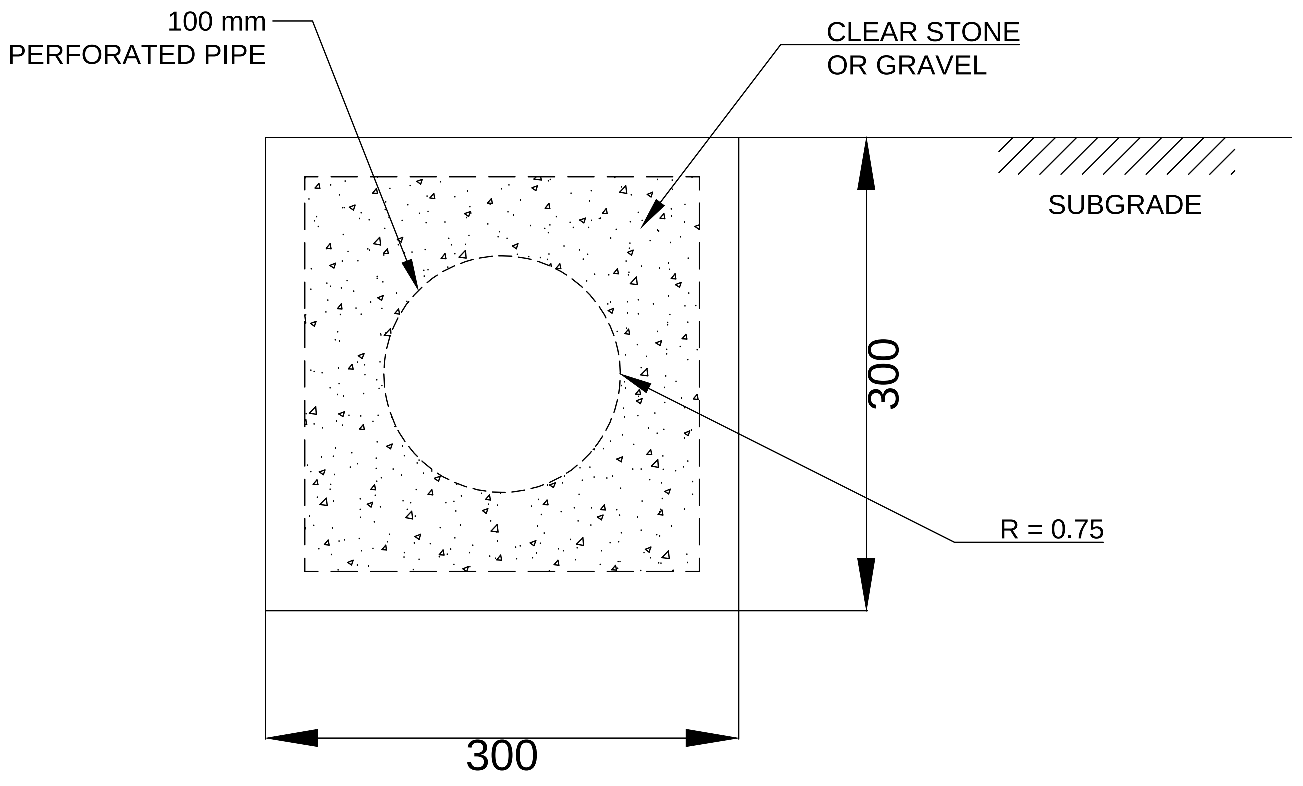
BOREHOLE LOCATION PLAN

Scale N/A	Project No. G5168
Date AUGUST 2017	Drawing No. 1

NOTE:
* TO MINIMIZE SILTATION OF THE DRAINAGE SYSTEM, ALL DRAINAGE PIPE CONNECTIONS MUST BE SOLID PVC ELBOWS AND Ts, NO "BUTT" END CONNECTIONS SHOULD BE PERMITTED.
* PERIMETER COLLECTION PIPE TO BE SOLID SLOTTED PIPE.





DETAILS OF SUB-FLOOR DRAINS
TO BE PLACED IN PARALLEL ROWS
6-8 m CENTERLINE TO CENTERLINE

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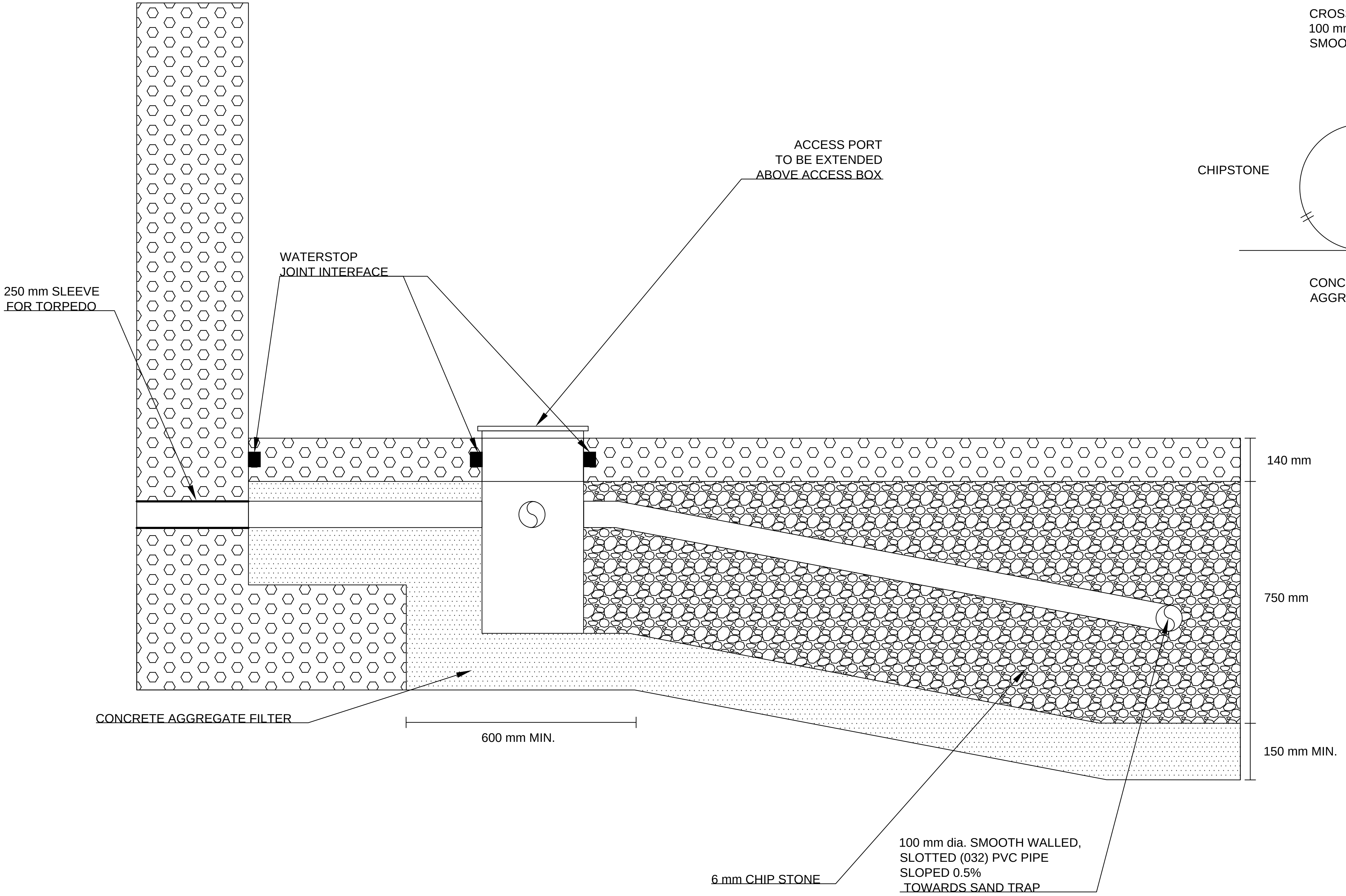
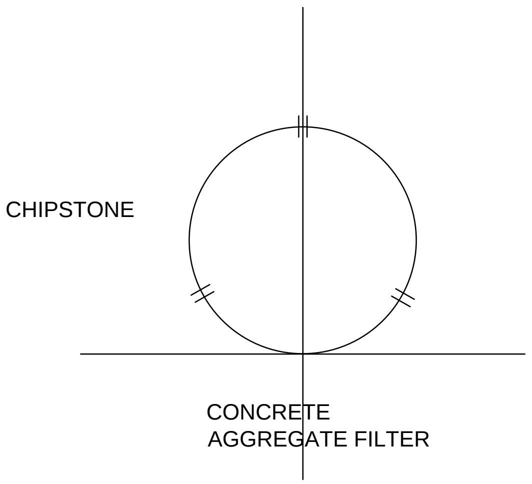
SUGGESTED EXTERIOR
DRAINAGE AGAINST SHORING

Scale: NTS	Drawing No. 2



CROSS SECTION:
100 mm dia.
SMOOTH PVC PIPE



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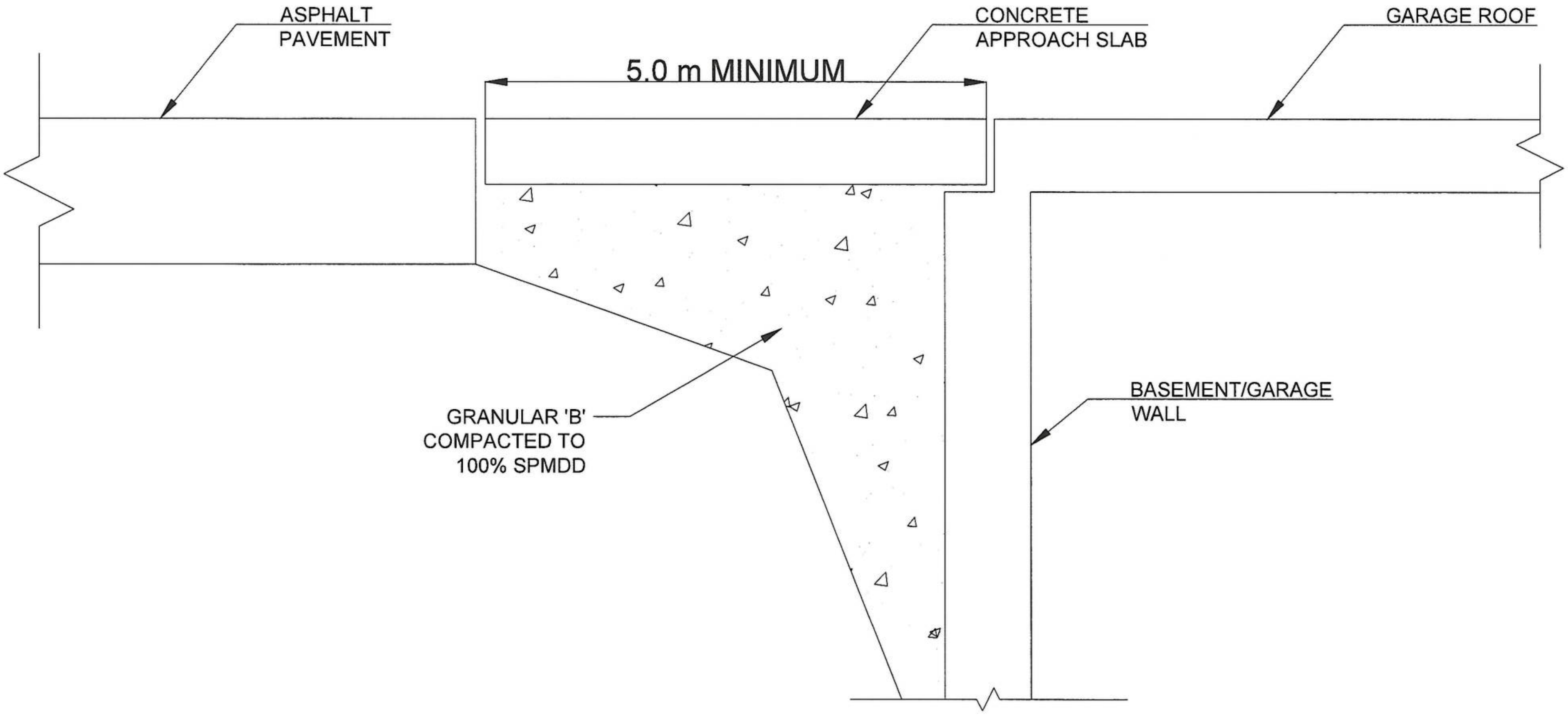
PRIVATE WATER
DRAINAGE SYSTEM

Scale: NTS

Drawing No. 3



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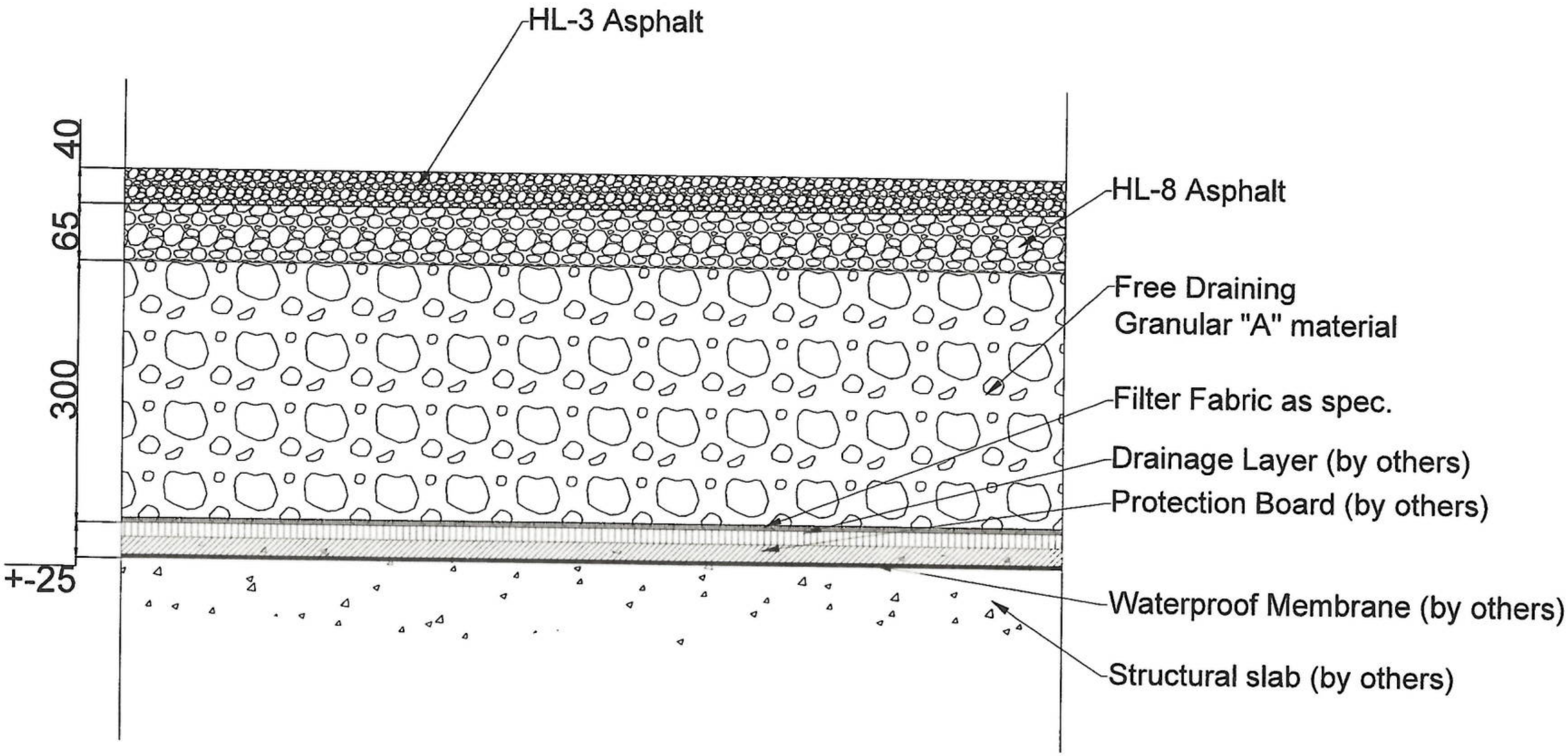
SUGGESTED APPROACH
SLAB DETAIL

Scale:	Drawing No.
NTS	4



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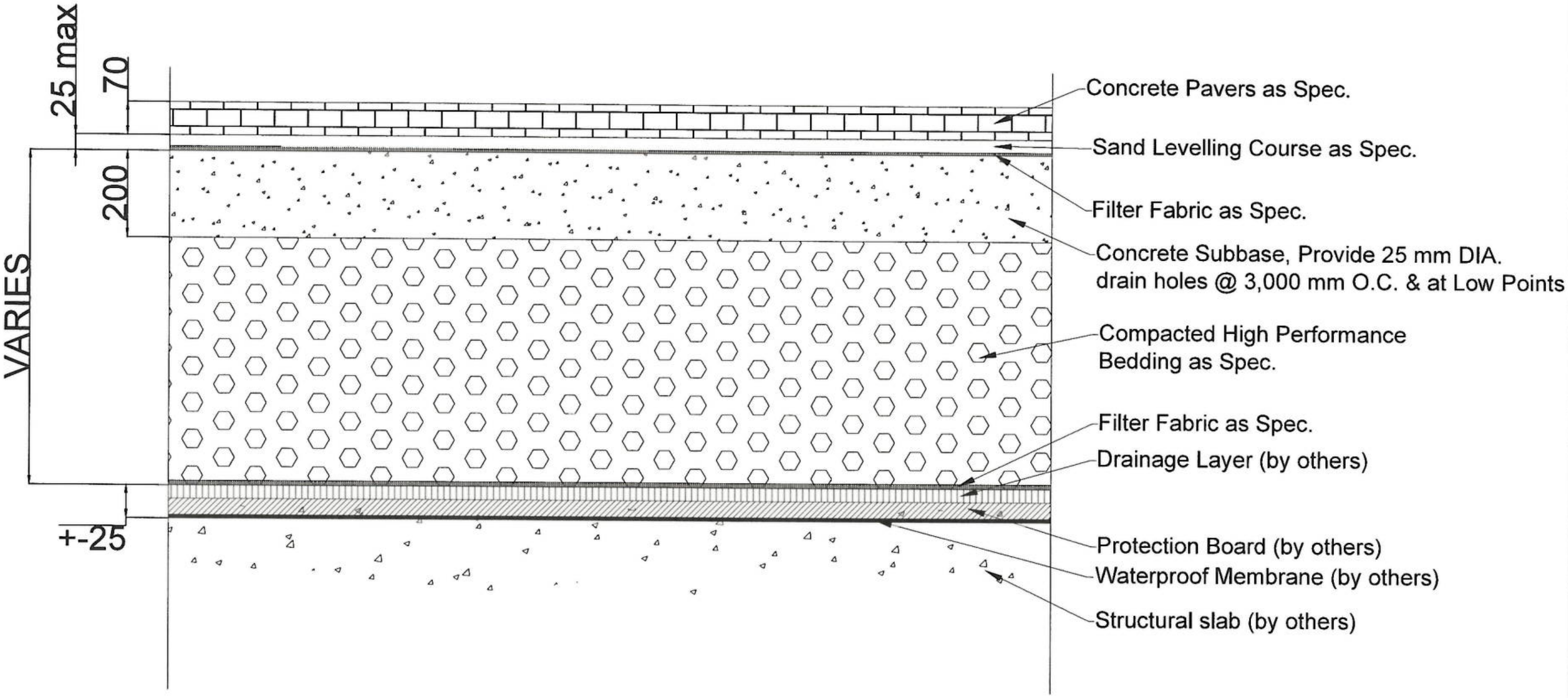
PAVEMENT ABOVE
GARAGE ROOF SLAB

Scale: NTS	Drawing No. 5



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PAVEMENT ABOVE
GARAGE ROOF SLAB

Scale: NTS	Drawing No. 6

APPENDIX A

RECORD OF BOREHOLE 1

MC CLYMONT & RAK ENGINEERS, INC.

PROJECT : G5168
LOCATION : 1637 Bathurst Street, Toronto, Ontario
STARTED : July 6, 2017
COMPLETED : July 6, 2017

SHEET 1 OF 1
DATUM Geodetic

BORING METHOD: POWER BORING, HOLLOW STEM AUGER

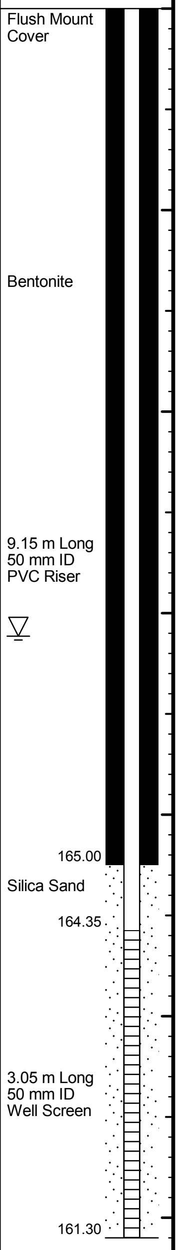
ORGANIC VAPOUR READINGS (ppm) ⊗: 100, 200, 300, 400
% LEL (hexane) ☐: 20, 40, 60, 80
SHEAR STRENGTH: Cu, KPa — nat V - ✚ Q - ✖ rem V - ● U - ▲: 20, 40, 60, 80
WATER CONTENT, PERCENT — wp, w, wl: 10, 20, 30, 40
ADDITIONAL LAB. TESTING

DESCRIPTION	ELEV. / DEPTH (m)
GROUND SURFACE	173.50
75 mm ASPHALT	173.42 / 0.08
FILL: clayey silt, some sand and gravel, trace of brick pieces, brown, moist, stiff.	172.74 / 0.76
SANDY SILT TILL: some clay, trace of gravel, brown, moist, dense.	171.98 / 1.52
SANDY SILT: brown, moist, very dense.	171.21 / 2.29
CLAYEY SILT TILL: some sand, trace of gravel, brown, moist, hard. -grey below 4.9 m depth.	167.10 / 6.40
SANDY SILT TILL: some clay, trace of gravel, grey, moist, very dense.	165.88 / 7.62
CLAYEY SILT: grey, moist to wet, hard.	164.05 / 9.45
SILTY CLAY: grey, moist, hard.	162.83 / 10.67
SANDY SILT: grey, wet, very dense.	162.53 / 10.97
CLAYEY SILT TILL: some sand, trace of gravel, grey, moist, hard.	161.06 / 12.44
End of Borehole	

NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm)
1	SS	36	0
2	SS	31	0
3	SS	55	0
4	SS	66	5
5	SS	>100	5
6	SS	54	5
7	SS	90	0
8	SS	>100	40
9	SS	80	5
10	SS	50	0
11	SS	>100	0

Note:
1) Borehole remained dry on completion of drilling.
2) Soil samples were screened using a RKI Eagle gas meter with methane response mode off.
3) Water level was measured at 6.23 m bgs on July 21, 2017.

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER ELEVATIONS

SHALLOW/SINGLE INSTALLATION — WATER LEVEL (date)

DEEP/DUAL INSTALLATION — WATER LEVEL (date)

LOGGED : NS
CHECKED : LM

RAK6 5168.GPJ 8/18/17

RECORD OF BOREHOLE 2

PROJECT : G5168
LOCATION : 1637 Bathurst Street, Toronto, Ontario
STARTED : August 14, 2017
COMPLETED : August 14, 2017

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

BORING METHOD: POWER BORING, SOLID STEM AUGER

ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400; % LEL (hexane) □ 20 40 60 80

SHEAR STRENGTH: Cu, KPa nat V - ✚ Q - ✖ rem V - ● U - ▲ 20 40 60 80

WATER CONTENT, PERCENT wp ⊢—○w—⊣ wl 10 20 30 40

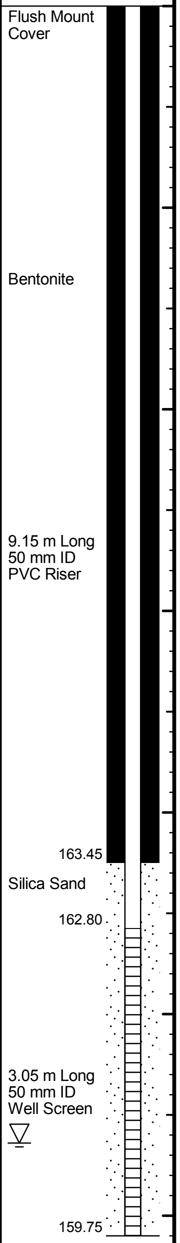
ADDITIONAL LAB. TESTING

SOIL PROFILE DESCRIPTION	ELEV. DEPTH (m)
GROUND SURFACE	171.95
FILL: silty sand, brown, moist, compact. -trace of organics and rootlets in the upper 350 mm.	
SANDY SILT: brown, moist, compact.	170.43 1.52
SANDY SILT TILL: trace of clay and gravel, brown, moist, very dense to dense. -some clay below 4.55 m depth.	169.66 2.29
CLAYEY SILT TILL: trace of sand and gravel, grey, moist, hard. -moist to wet below 6.1 m depth.	167.10 4.85
SANDY SILT TILL: trace of clay and gravel, grey, moist, very dense.	164.33 7.62
End of Borehole	159.48 12.47

SAMPLES NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm)
1	SS	16	0
2	SS	18	0
3	SS	17	0
4	SS	70	0
5	SS	77	0
6	SS	33	0
7	SS	30	0
8	SS	75	0
9	SS	53	0
10	SS	>100	5
11	SS	>100	

Note:
1) Water level was measured at 11.28 m bgs on completion of drilling.
2) Soil samples were screened using a RKI Eagle gas meter with methane response mode off.

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date)

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : NB
CHECKED : LM

RECORD OF BOREHOLE 3

MC CLYMONT & RAK ENGINEERS, INC.

PROJECT : G5168
LOCATION : 1637 Bathurst Street, Toronto, Ontario
STARTED : June 17, 2017
COMPLETED : August 14, 2017

SHEET 1 OF 1
DATUM Geodetic

BORING METHOD: POWER BORING, SOLID STEM AUGER

DESCRIPTION	ELEV. DEPTH (m)
GROUND SURFACE	174.55
FILL: silty sand, to sandy silt, brown, moist, loose. -trace of organics and rootlets in the upper 350 mm.	
SANDY SILT TILL: trace of clay and gravel, brown, moist, compact to very dense. -oxidized fissures below 3.05 m depth. -grey below 4.55 m depth.	173.79 0.76
SILTY SAND: grey, wet, very dense.	162.26 12.29
SANDY SILT TILL: trace of clay and gravel, grey, moist, very dense.	162.05 12.50
End of Borehole	161.90 12.65

SAMPLES NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗
1	SS	7	0
2	SS	29	0
3	SS	60	0
4	SS	35	0
5	SS	36	0
6	SS	30	0
7	SS	24	0
8	SS	47	25
9	SS	38	35
10	SS	73	15
11	SS	56	10

ORGANIC VAPOUR READINGS (ppm) ⊗: 100 200 300 400
% LEL (hexane) □: 20 40 60 80

SHEAR STRENGTH: Cu, KPa: nat V - ✚ Q - ✖ rem V - ● U - ▲: 20 40 60 80

WATER CONTENT, PERCENT: wp ⊢—○w—⊣ wl: 10 20 30 40

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION: ∇

DEPTH SCALE (metres): 2, 4, 6, 8, 10, 12, 14

Note:
1) Water level was measured at 10.97 m bgs on completion of drilling.
2) Soil samples were screened using a RKI Eagle gas meter with methane response mode off.

GROUNDWATER ELEVATIONS

∇ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date)

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : AR/OM/NB
CHECKED : LM

APPENDIX B

[Company Letterhead]

[Company Name]

[Property Owner Name and Contact Information]

[Date DD/MMM/YYYY]

Attention: Executive Director, Engineering and Construction Services
c/o Manager, Development Engineering
[ADDRESS]

cc: General Manager, Toronto Water
c/o Manager, Environmental Monitoring and Protection Unit
30 Dee Ave, Toronto ON M9N 1S9

Dear Sir or Madam,

I ____________, confirm and undertake that I will maintain all building(s) on the subject lands (MUNICIPAL ADDRESS) in a manner which will not discharge, directly or indirectly, any private water collected from subsurface drainage system consisting of but not limited to weeping tile(s), foundation drain(s), private water collection sump(s), private water pump or any combination thereof for the disposal of private water to a private sewer connection directly or indirectly or drainage system for disposal directly or indirectly in a municipal sewer. All the water collected in the subdrainage collection system will be managed onsite all time via infiltration gallery/dry well. There will be no direct or indirect discharge of private water to City's sewer.

I am aware of MOECC and OBC requirements regarding infiltration gallery/dry well.

____

Name (printed) and Title

____

Email

____

Signature

I, [PRINT NAME], have the authority to bind the corporation.

[Company Letterhead]

[Company Name]

[Property Owner Name and Contact Information]

[Date DD/MMM/YYYY]

Attention: Executive Director, Engineering and Construction Services
c/o Manager, Development Engineering
[ADDRESS]

cc: General Manager, Toronto Water
c/o Manager, Environmental Monitoring and Protection Unit
30 Dee Ave, Toronto ON M9N 1S9

Dear Sir or Madam,

I ____________, confirm and undertake that I will construct and maintain all building(s) on the subject lands (MUNICIPAL ADDRESS) in a manner which shall be completely water-tight below grade and resistant to hydrostatic pressure without any necessity for Private Water Drainage System (subsurface drainage system) consisting of but not limited to weeping tile(s), foundation drain(s), private water collection sump(s), private water pump or any combination thereof for the disposal of private water on the surface of the ground or to a private sewer connection directly or indirectly or drainage system for disposal directly or indirectly in a municipal sewer.

____

Name (printed) and Title

____

Email

____

Signature

I, [PRINT NAME], have the authority to bind the corporation.