PENNSYLVANIA • NEW JERSEY • FLORIDA • ONTARIO

McCLYMONT&RAK
ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

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

WWW.MCCRAK.COM

MG4842 **MARCH 2021**

PRELIMINARY GEOTECHNICAL REPORT
PROPOSED
RESIDENTIAL/COMMERCIAL DEVELOPMENT
PIER 27, PHASE 3
BUILDINGS A AND F
25 & 35 QUEENS QUAY EAST
TORONTO, ONTARIO

DISTRIBUTION:

1 COPY (electronic)	PIER 27 TORONTO (NORTHEAST) INC.
1 COPY	McCLYMONT & RAK ENGINEERS, INC.

PREPARED FOR:

PIER 27 TORONTO (NORTHEAST) INC.
56 THE ESPLANADE, SUITE 308
TORONTO, ONTARIO
M5E 1A7

TABLE OF CONTENTS

DRAWINGS

TABLES

APPENDICES

1.0 INTRODUCTION

Pier 27 Toronto (Northeast) Inc. (the Client) retained MCR to prepare a geotechnical report for the proposed residential/commercial development (Pier 27 North) located at Queens Quay East and Yonge 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 CONDITION

The Site is located on the southeast corner of the intersection of Queens Quay East and Yonge Street, in Toronto, Ontario. The rectangular shaped site is currently an asphalt paved parking lot in the western portion, with a sales centre in the northeast and construction storage (for Phase II of the development) in the southeast portion.

Queens Quay East limits the subject site to the north, Yonge Street to the west and residential developments to the east and south. The ground surface is relatively flat with a slight slope towards the west.

2.1 PROPOSED DEVELOPMENT

The proposed redevelopment includes a forty five [45] storey tower with an eleven [11] storey podium (Building F), and an eleven [11] storey building (Building A), over four [4] levels of below grade parking.

The finished floor elevation (FFE) at ground level is expected to be at an elevation of 77.30 m. The lowest P4 FFE will be at an elevation of 63.24 m (Appendix A).

3.0 SITE INVESTIGATION

Twelve [12] boreholes (BH 20-1 to BH 20-8) were drilled, by MCR, at the subject site from September 21 to 25, 2020, at locations shown on Drawing No. 1. The boreholes were advanced to depths ranging from 3.96 to 14.02 m. The borehole records are enclosed in Appendix B.

Monitoring wells were installed in all boreholes, except 20-3, 20-4 and 20-7 for long-term groundwater monitoring and sampling.

The geodetic elevations of the boreholes were surveyed by MCR, and referenced to a temporary bench mark established by Krcmar on September 16, 2020, with a reported elevation of 77.43 masl.

4.0 SOIL AND GROUNDWATER CONDITIONS

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

Pavement: An asphalt layer, 75 mm in thickness, was observed at the surface of boreholes 20-4, 20-5-D and 20-7 and a 75 mm thick concrete layer was present at the surface of borehole 20-8. Granular fill, varying from 425 to 525 mm in thickness, underlies the asphalt/concrete in the boreholes.

Fill: Loose to compact fill consisting of sand, silt, gravel and clay/clayey silt was present at the surface of boreholes 20-1-D, 20-2, 20-3 and 20-6-D and below the pavement at boreholes 20-4, 20-5-D, 20-7 and 20-8. The moist to wet fill contained trace clay, sand, gravel and clinker, trace to some organics, and debris such as decayed wood and brick fragments. The brown to black fill extended to depths ranging from 4.27 to 6.10 m.

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

Sand: A layer of very loose to loose, medium to fine sand was detected below the fill at boreholes 20-1-D and 20-8 and extended to the depths of 6.10 and 5.20 m, respectively. The dark brown to black sand contained some silt and trace travel and was in a wet condition.

Silt/Silty Clay/Sandy Silt: A layer of soft to hard silt/silty clay/sandy silt was encountered below fill/sand at all boreholes except 20-1-S, 20-5-S, 20-8 and 20-6-S. The deposit was in a moist to wet condition and contained trace to some sand, trace gravel, shells, clay and organics. Dark brown to black and black to grey silt/silty clay/sandy silt extended to the depths ranging from 5.18 to 12.50 m.

Although no boulders were encountered during the geotechnical investigation, using 100 to 150 mm diameter boreholes, the substructure is to be constructed in soils that went through historic periods of glaciation. As a result, glacial drop stones, ranging from gravel to boulders can be encountered within the overburden.

Shale: Grey moist shale was found below silty clay at boreholes 20-1-D, 20-5-D and 20-6-D at depths ranging from 11.89 to 13.41 m and extended to the maximum depth of boreholes at depths ranging from 12.65 to 14.02 m, at elevations 63.01 to 65.41 m.

Groundwater: Upon completion of drilling all the boreholes remained dry.

The groundwater level was measured, in the installed wells, on six occasions between September 28 to October 19, 2020 at depths varying from 2.25 to 11.64 m. The results are summarized in Table 1.

Table 1 – Groundwater Level Monitoring Results

Monitoring Well Id	Ground Surface Elevation (masl)	Water Level (mbgs)	Groundwater Elevation (masl)	Date of Measurement (mm/dd/yyyy)	Depth of Well (mbgs)	Depth of Bentonite (mbgs)	Length of Screen (m)	Inside Diameter of Pipe (mm)	Top of Monitoring Well
20-1-S	76.93	2.55	74.38	09/28/2020	3.96	0.30	3.05	50	FLUSH MOUNT
		2.58	74.35	10/01/2020					
		2.61	74.32	10/05/2020					
		2.62	74.31	10/09/2020					
		2.59	74.34	10/14/2020					
		2.64	74.29	10/19/2020					
20-1-D	76.93	11.29	65.64	09/28/2020	12.19	9.75	3.05	50	FLUSH MOUNT
		7.50	69.43	10/01/2020					

		7.54	69.39	10/05/2020					
		7.52	69.41	10/09/2020					
		7.50	69.43	10/14/2020					
		7.50	69.43	10/19/2020					
20-2	76.08	2.71	73.37	09/28/2020	4.57	0.91	3.05	50	FLUSH MOUNT
		2.69	73.39	10/01/2020					
		2.72	73.36	10/05/2020					
		2.72	73.36	10/09/2020					
		2.70	73.38	10/14/2020					
		2.78	73.30	10/19/2020					
20-5-S	77.03	2.55	74.48	09/28/2020	4.27	0.60	3.05	50	FLUSH MOUNT
		2.56	74.47	10/01/2020					
		2.55	74.48	10/05/2020					
		2.57	74.46	10/09/2020					
		2.58	74.45	10/14/2020					
		2.56	74.47	10/19/2020					
20-5-D	77.03	11.29	65.74	09/28/2020	13.41	9.45	3.05	50	FLUSH MOUNT
		11.40	65.63	10/01/2020					
		11.26	65.77	10/05/2020					
		11.55	65.48	10/09/2020					
		11.20	65.83	10/14/2020					
		11.64	65.39	10/19/2020					
20-6-S	77.06	2.66	74.40	09/28/2020	9.14	5.49	3.05	50	FLUSH MOUNT
		2.66	74.40	10/01/2020					
		3.36	73.70	10/05/2020					
		2.73	74.33	10/09/2020					
		2.69	74.37	10/14/2020					
		2.69	74.37	10/19/2020					
20-6-I	77.06	2.84	74.22	09/28/2020	4.57	0.60	3.05	50	FLUSH MOUNT
		2.89	74.17	10/01/2020					
		2.90	74.16	10/05/2020					
		2.90	74.16	10/09/2020					
		2.82	74.24	10/14/2020					
		2.83	74.23	10/19/2020					
20-6-D	77.06	9.80	67.26	09/28/2020	12.19	9.75	3.05	50	FLUSH MOUNT
		9.82	67.24	10/01/2020					
		10.00	67.06	10/05/2020					
		9.83	67.23	10/09/2020					
		9.80	67.26	10/14/2020					
		9.84	67.22	10/19/2020					
20-8	77.05	2.25	74.80	09/28/2020	4.57	0.91	3.05	50	FLUSH MOUNT
		2.28	74.77	10/01/2020					
		2.26	74.79	10/05/2020					
		2.26	74.79	10/09/2020					
		2.25	74.80	10/14/2020					
		2.27	74.78	10/19/2020					
Min	76.08	2.25	65.39	-	3.96	-	-	-	-
Max	77.06	11.64	74.80	-	13.41	-	-	-	-
Average	76.91	5.02	71.89	-	7.65	-	-	-	-

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 study.

In addition, Geohydrology assessment study is currently underway. The results of the assessment will be presented in a separate report.

It is recommended that, as a minimum, prior to the design of the dewatering system, a pumping test be carried out.

5.0 FOUNDATION

The proposed redevelopment includes a forty five [45] storey tower with an eleven [11] storey podium (Building F), and an eleven [11] storey building (Building A), over four [4] levels of below grade parking.

The finished floor elevation (FFE) at ground level is expected to be at an elevation of 77.30 m. The lowest P4 FFE will be at an elevation of 63.24 m (Appendix A).

Based on the encountered soil/rock foundation conditions, the proposed development with four underground parking levels can be supported on conventional spread/strip footings.

The proposed footings could be proportioned using the following bearing resistance:

Factored Bearing Resistance at ULS = 3500 kPa
Bearing Resistance at SLS = 2500 kPa

When established in weathered shale bedrock, at least 300 mm below the surface of shale bedrock, at or below an approximate elevation ranging from 63.30 to 64.75 m, subject to final design grades, the depth of shale bedrock across the site, to be confirmed by further onsite borehole investigation, and field inspection during foundation installations.

Coefficient of Subgrade Reaction k (for sound shale) = 120 MN/m^3 is considered applicable.

5.1 GENERAL FOUNDATION NOTES

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

Adjacent footings, founded at different elevations, preferably are to be stepped at 10 horizontal to 7 vertical, subject to rock condition during excavations.

For frost protection requirements, the exterior footings and footings in unheated areas in unheated P4 areas must have a minimum shale bedrock cover of 0.5 m.

Any water or loose materials must be removed from the footing bases prior to placing the concrete.

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

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

More specific information with respect to rock/foundation conditions will be available when the proposed shoring/foundation construction is underway. Therefore, the encountered rock/foundation conditions must be verified in the field, and all drilled foundations/footings must be inspected and approved by our office prior to placement of concrete.

6.0 EARTHQUAKE CONSIDERATION

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:

$$V = S(T_a)\, M_v I_E W / R_d R_o$$

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

$$S(2.0)\, M_v I_E W / R_d R_o$$

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:

$$2/3\, S(0.2)\, I_E W / R_d R_o$$

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 B (based on the borehole information), the applicable values of F_a and F_v are 0.8 and 0.6 respectively. A structural consultant should review all factors.

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

γ = 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 silt/silty clay/sandy silt 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:

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

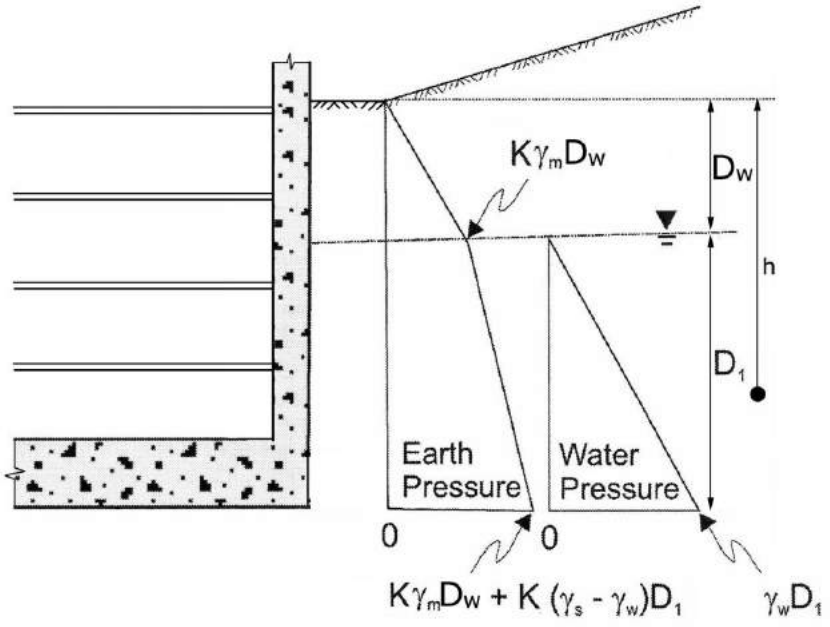
Where: K = 0.50 is the earth pressure coefficient considered applicable

γ_m = 20 kN/m^3 is moist or wet soil unit weight

γ_s = 21.7 kN/m^3 is saturated soil unit weight

γ_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 structure will extend through the wet/saturated clayey silt/silty clay/sandy silt soils into bedrock, to a depth below water table.

In order to protect the excavation from being disturbed by excess groundwater pressure, positive dewatering, such as eductors will be required for the proposed excavation.
To control potential localized groundwater influx, upon completion of general excavation, bedrock should be trenched and temporary sump pumps installed.

The selected dewatering system, which should be designed and installed by a specialty contractor, will be most effective if it is activated at the earliest opportunity during/prior to the general excavation.

In addition, a pre-construction survey of the adjacent structures/roads should 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. The excavation in weathered shale bedrock can be carried out with a heavy-duty backhoe.

However, the shoring/foundation contractor must be aware that the relatively harder limestone slabs or seams are interbedded in the shale bedrock.

A dewatering system such as eductors will be required for excavation below the groundwater level.

The material to be used for backfilling under floor slab should be size 19 mm clear stone. In service trenches, the fill should be suitable for compaction, i.e. free of

limestone fragments of a size greater than 150 mm, 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 percent of the Standard Proctor Maximum Dry Density (SPMDD).

The backfill against 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 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 will 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.

Specifically, the shoring contractor may experience difficulties during the drilling the much harder limestone slabs.

Due to the groundwater and wet silt/silty clay/sandy silt soils or perched water in the fill layer, it might be difficult to prevent groundwater from penetrating into the excavation through gaps in timber lagging.

The geotechnical parameters, considered 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

Passive pressure coefficient in shale bedrock Kp = 5

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 0.45 is used. The expected movements are based on a properly constructed system.

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

Soil and rock anchors should be designed for 20 kPa and 600 kPa, respectively. **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.**

It is imperative that a stability analysis of the entire support system is undertaken prior to commencement of construction. The final shoring design should be reviewed by our office.

Space and groundwater influx permitting, lowest parking level could be excavated "neat" into the rock face. A sufficient rock bench/rock bolts will be required to secure the integrity of the shoring system.

The exposed rock face could be shotcreted (if required), subject to site condition/field inspection during excavation.

Slope indicators must be installed during the shoring work.

Schematic drawing for the proposed permanent drainage system is enclosed (Drawing No. 2).

In addition, a pre-construction survey of the surrounding structures/roads is recommended prior to commencement of shoring construction. The shoring system and surrounding structures must be monitored for horizontal and vertical movements, prior to, during and after the excavation.

11.0 SLAB ON GRADE AND PERMANENT DRAINAGE

The City of Toronto – Toronto Water requires that any private water to be discharged into the City sewer system must have a permit or agreement in place in order to discharge; this applies to all water not purchased from the City water supply. For temporary dewatering during the construction phase, this includes all groundwater and storm water that is collected or encountered during site excavation.

For Private Water Discharge System (PWDS) this includes all groundwater that is constantly pumped as a result of the PWDS elevation located below the groundwater table elevation, or through storm water infiltration.

Toronto Water has indicated that PWDS systems may only be permitted through recirculation via an infiltration gallery and discharge to sewers may be prohibited. Otherwise, a fully waterproofed substructure may be required in the event that infiltration is not feasible. The Client must obtain permission and confirm discharge approval from Toronto Water directly (see Appendix C).

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 silt/silty clay/sandy silt soils and/or engineered fill.

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 Drawings No. 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 pits should be fully waterproofed as shown on Drawing No. 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 constructed at the entrance/exit points, as shown on Drawing No. 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.

Asphaltic concrete layer should be compacted to the range of 92 to 96.5% of maximum relative density.

Typical flexible pavement designs are as follows:

Pavement Layer	Recommended Thickness for Light Duty Parking	Recommended Thickness for Heavy Duty Parking
Asphaltic Concrete	40 mm OPSS HL 3 40 mm OPSS HL 8	50 mm OPSS HL 3 75 mm OPSS HL 8
OPSS Granular A Base (or 20mm Crushed Limestone)	150 mm	150 mm
OPSS Granular B	200 mm	350 mm

Upper 300 mm of the subgrade should be compacted to 98% SPMDD.

Implementation of a rigid pavement structure is suggested for areas with intense truck use, parking and turning vehicles. The minimum recommendation for rigid pavement structure is presented in following table.

Pavement Layer	Compaction Requirements	Heavy Duty Pavement
Portland Cement Concrete (CAN3-CSA A23.1) - Class C-2	CAN3-CSA A23.1	225 mm
Base Course: Granular A (OPSS 1010) or 19 mm Crusher Run Limestone	100% Standard Proctor Maximum Dry Density (ASTM-D698)	150 mm

A typical pavement structure above garage roof slab, please see Drawings No. 6 and 7.

13.0 METHANE GAS

The methane gas concentrations, presented on the attached borehole log sheets, are below the maximum MOE allowable limit of 5.0 % of Lower Explosive Limit (L.E.L.).

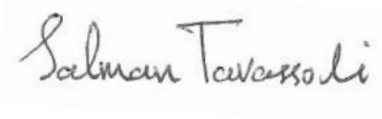
14.0 GENERAL COMMENTS

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.

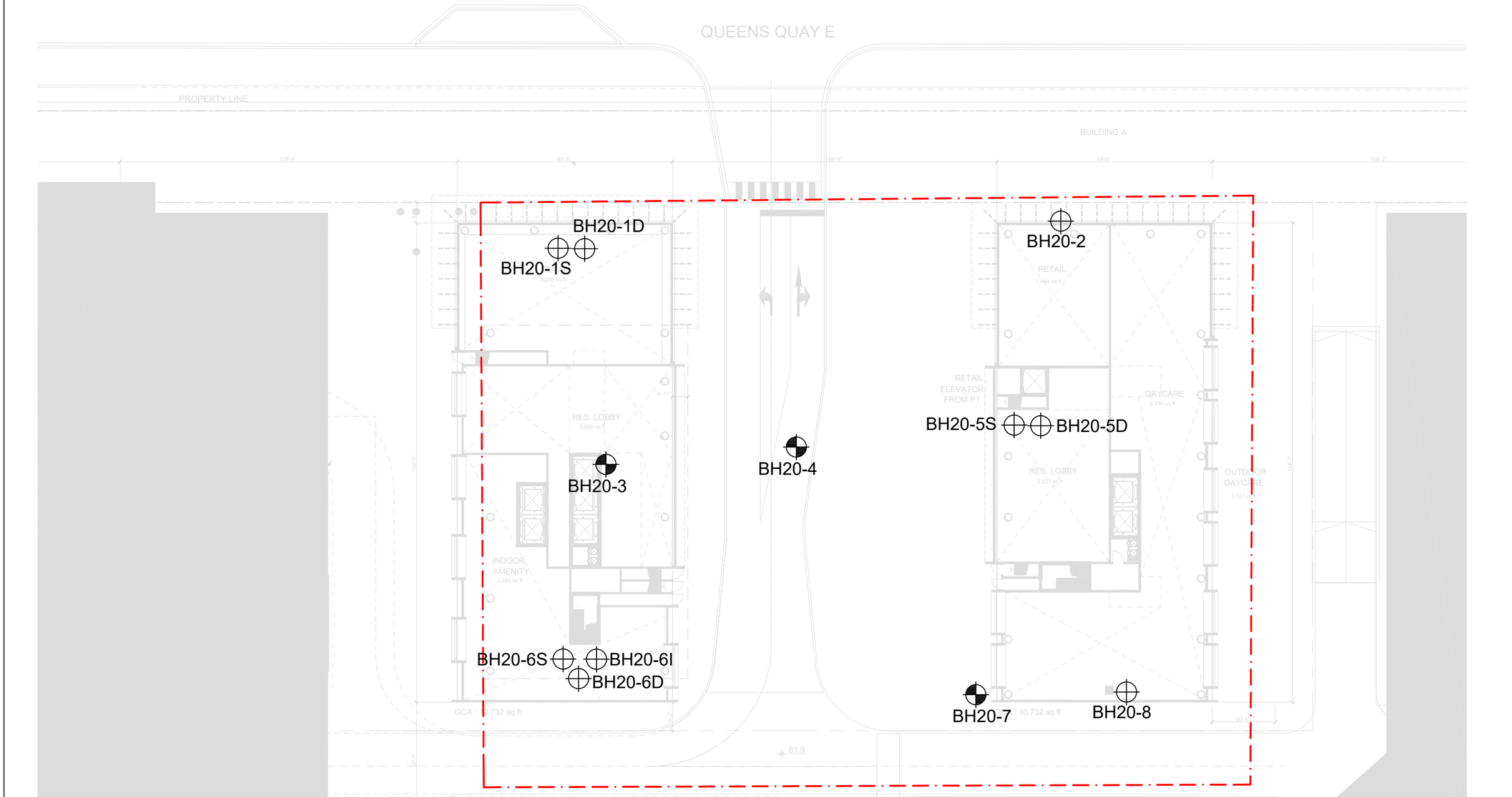
Respectfully,
McCLYMONT & RAK ENGINEERS INC.



S. Tavassoli, E.I.T.

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

DRAWINGS



LEGEND:

PHASE ONE PROPERTY BOUNDARY

BOREHOLE/MONITORING WELL INSTALLED BY MCR, 2020

Drawing Notes: Image drafted from property survey, Toronto Maps, Google Maps, and site inspections. Not for construction purposes.

PROJECT NORTH

TRUE NORTH

0 5 10 20

SCALE (m)

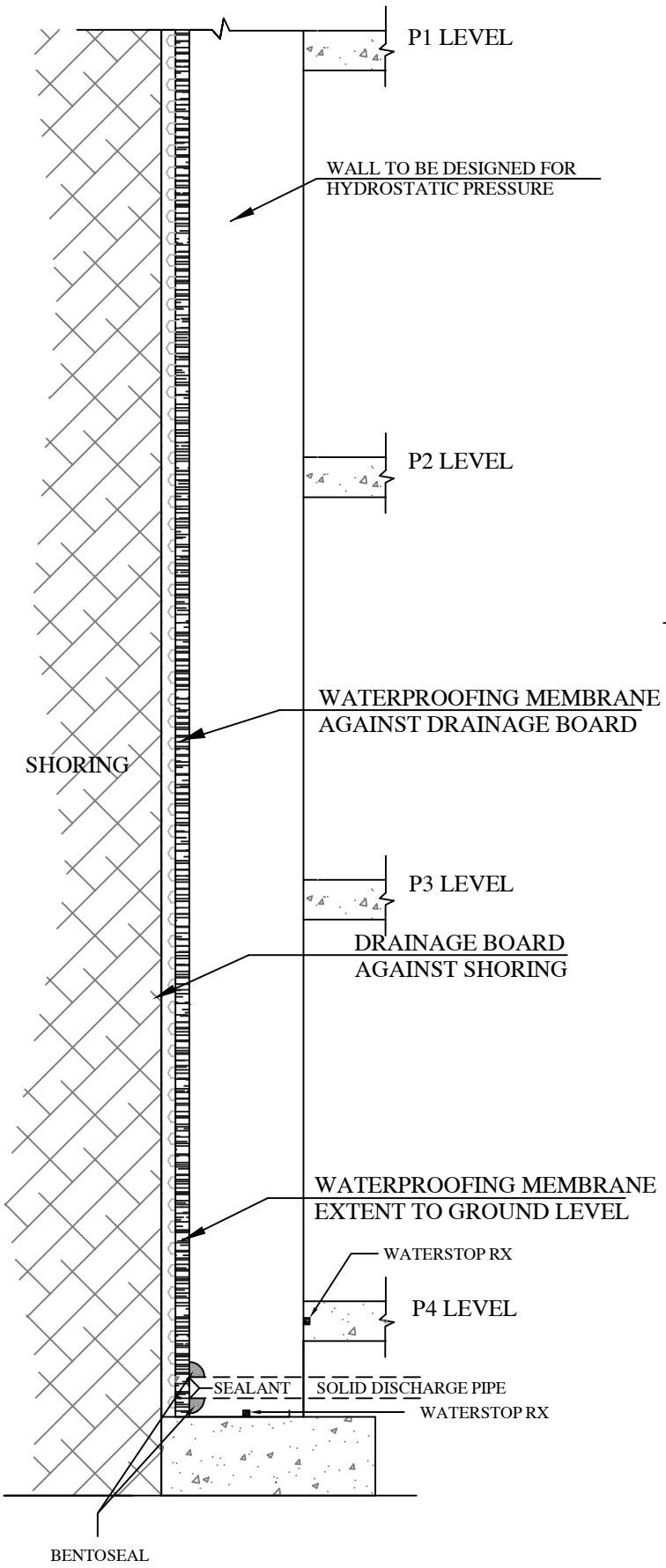
McCLYMONT&RAK ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

PIER 27, YONGE STREET & QUEENS QUAY EAST, TORONTO, ONTARIO

BOREHOLE LOCATION PLAN

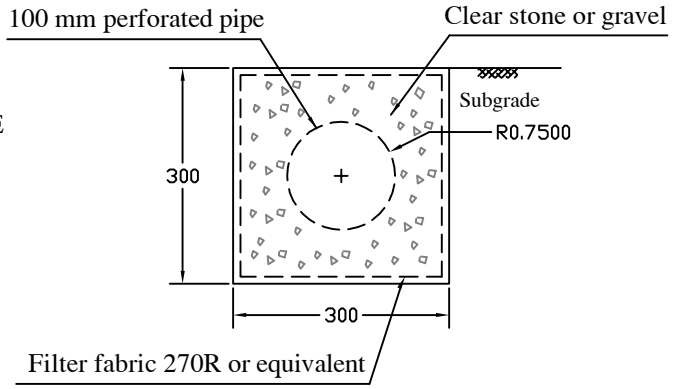
Project No.	Date	Drawing No.
G4842	OCTOBER 2020	1

SUGGESTED EXTERIOR DRAINAGE AGAINST SHORING



NOTE:

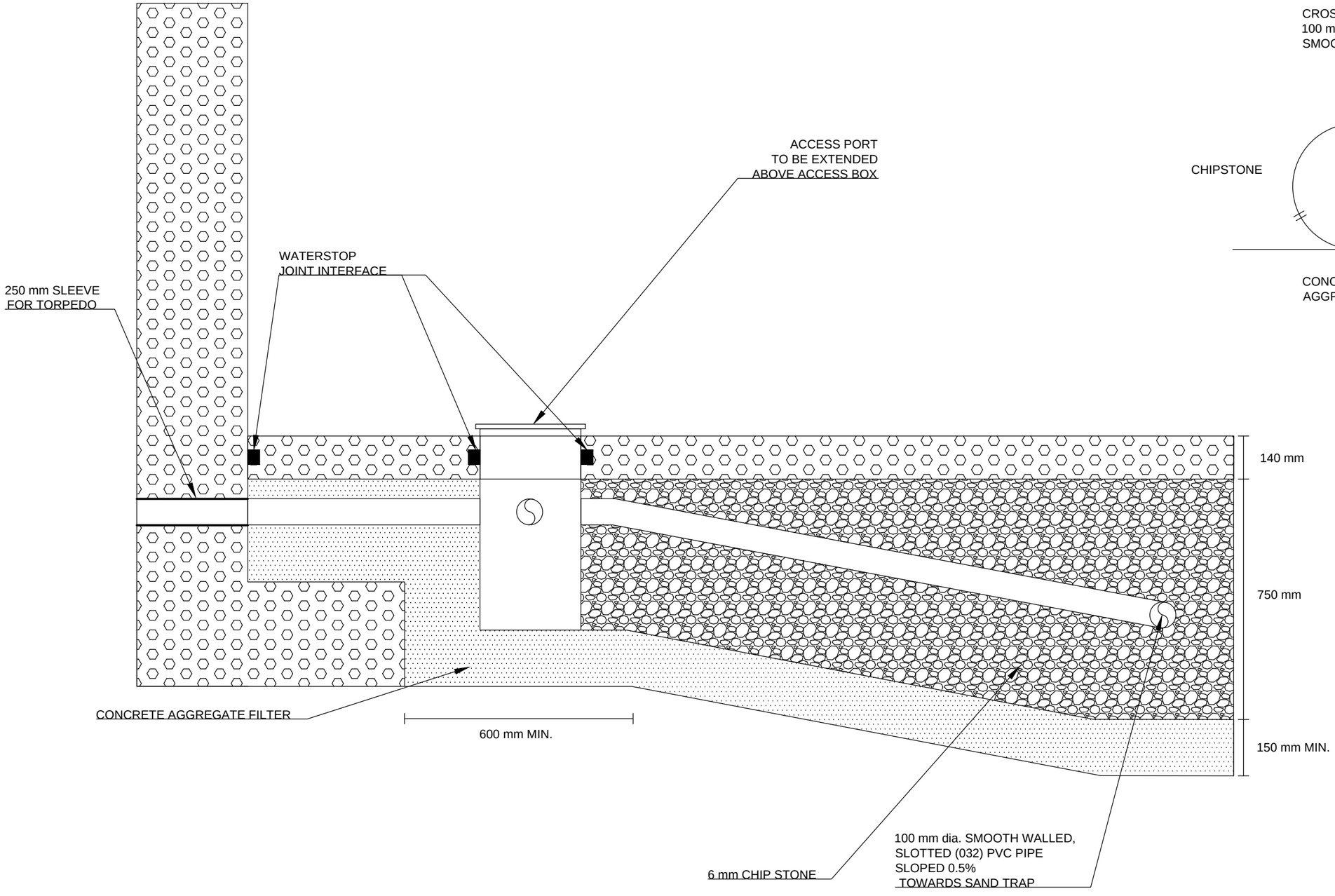
* All permanent drainage pipes must have Geotextile filter sleeve to prevent long term silting. To further minimize siltation of the drainage system, all drainage pipe connections must be solid PVC elbows and Ts, no "butt" end connections should be permitted.
* Perimeter collection pipe to be solid pipe.

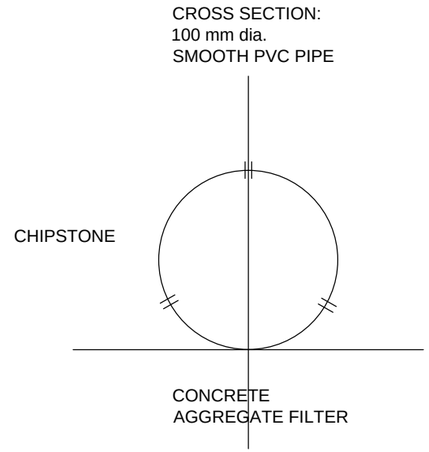


DETAILS OF SUB-FLOOR DRAINS
TO BE PLACED IN PARALLEL ROWS 6- 8M (20'- 25')
CENTERLINE TO CENTERLINE.

McCLYMONT AND RAK ENGINEERS INC.
GEO-ENVIROMENTAL CONSULTANTS
1271 DENISON STREET, UNIT 45, MARKHAM, ON. TEL: 905 470 0160 FAX : 905 475 6371

Project : PROPOSED DEVELOPMENT		
Scale : N.T.S.	Date :	Drawing No. 2

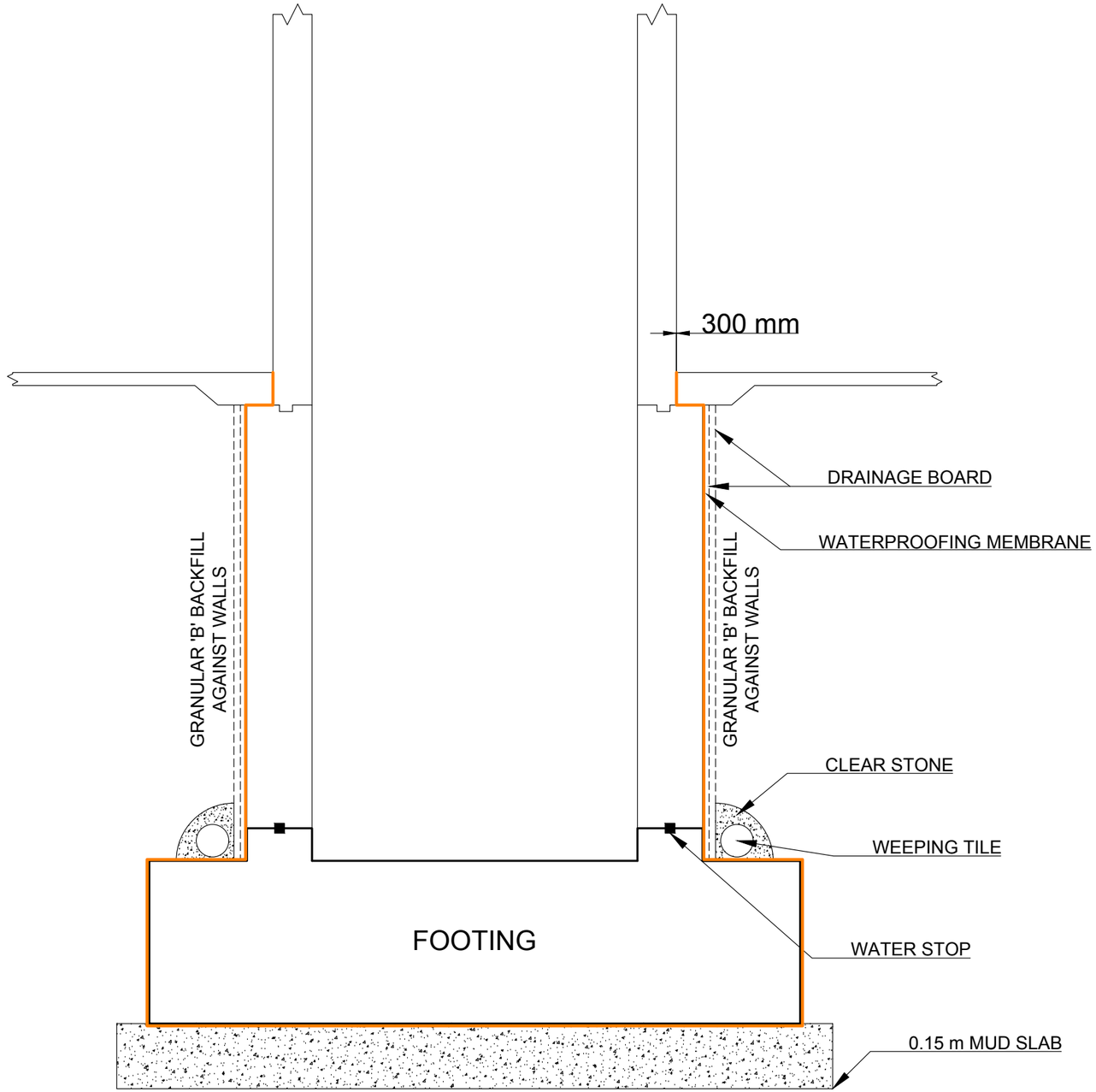




McCLYMONT&RAK
ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

PRIVATE WATER DRAINAGE SYSTEM

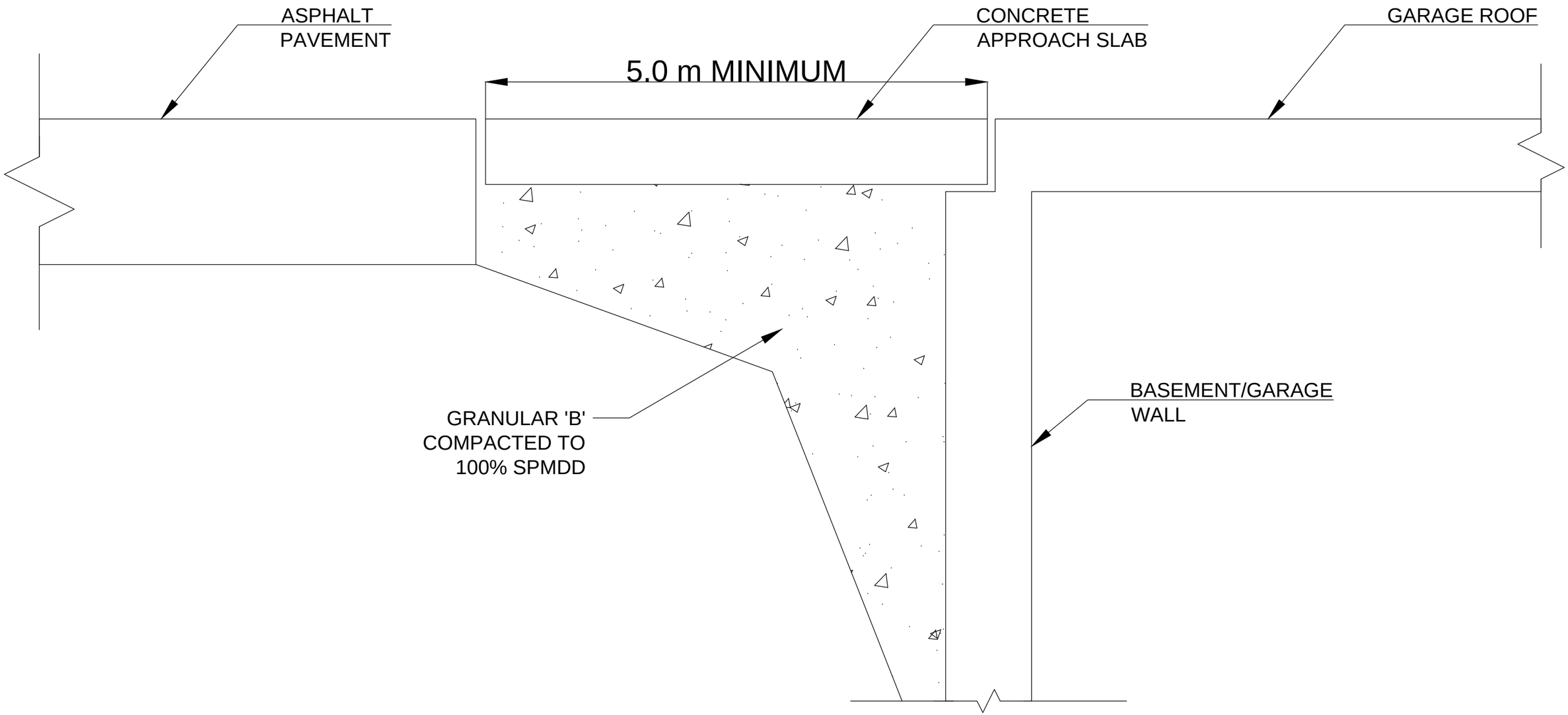
Scale:	Drawing No.
NTS	3



McCLYMONT&RAK ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

TYPICAL ELEVATOR PIT WATERPROOFING

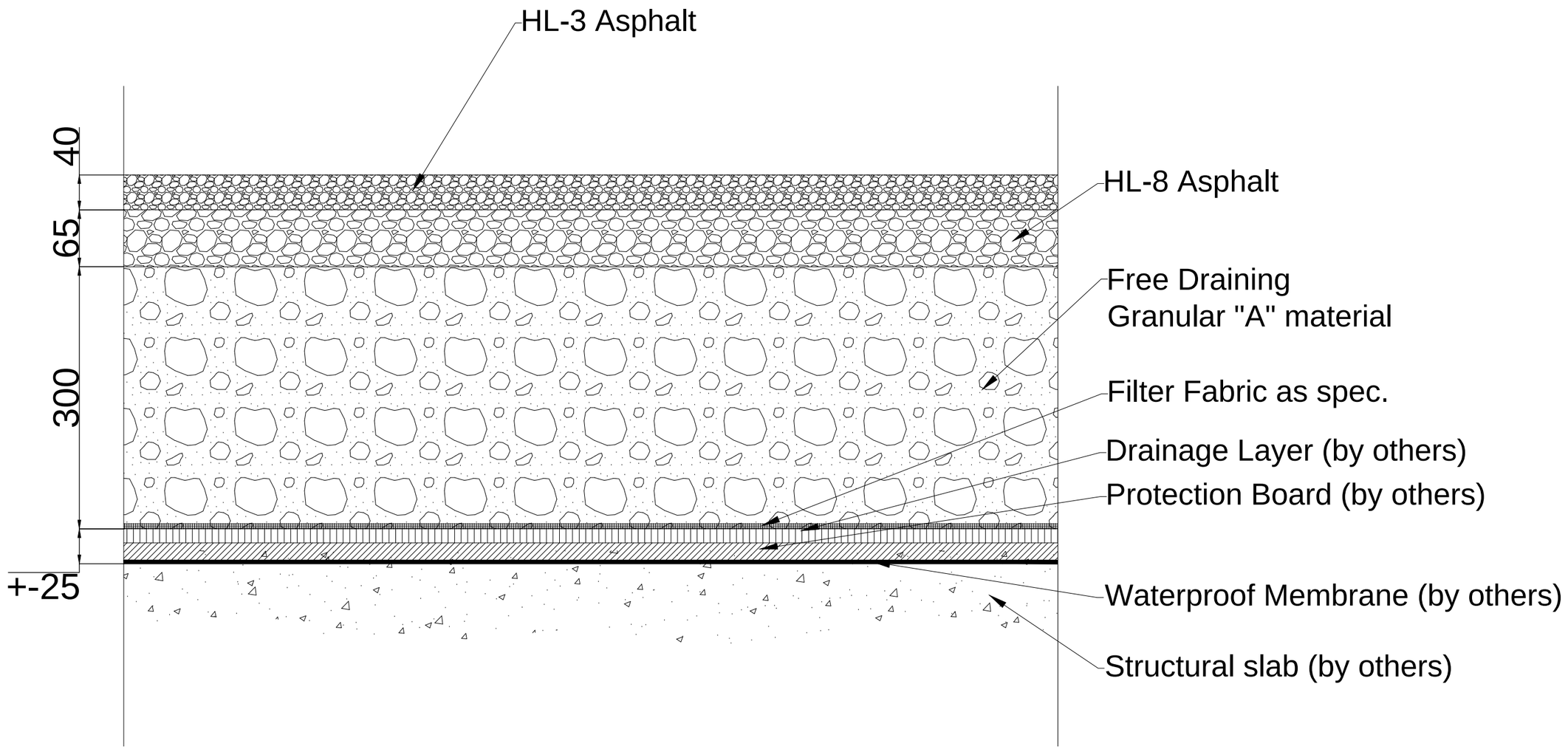
Scale:	Drawing No.
NTS	4



McCLYMONT&RAK
ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

SUGGESTED APPROACH
SLAB DETAIL

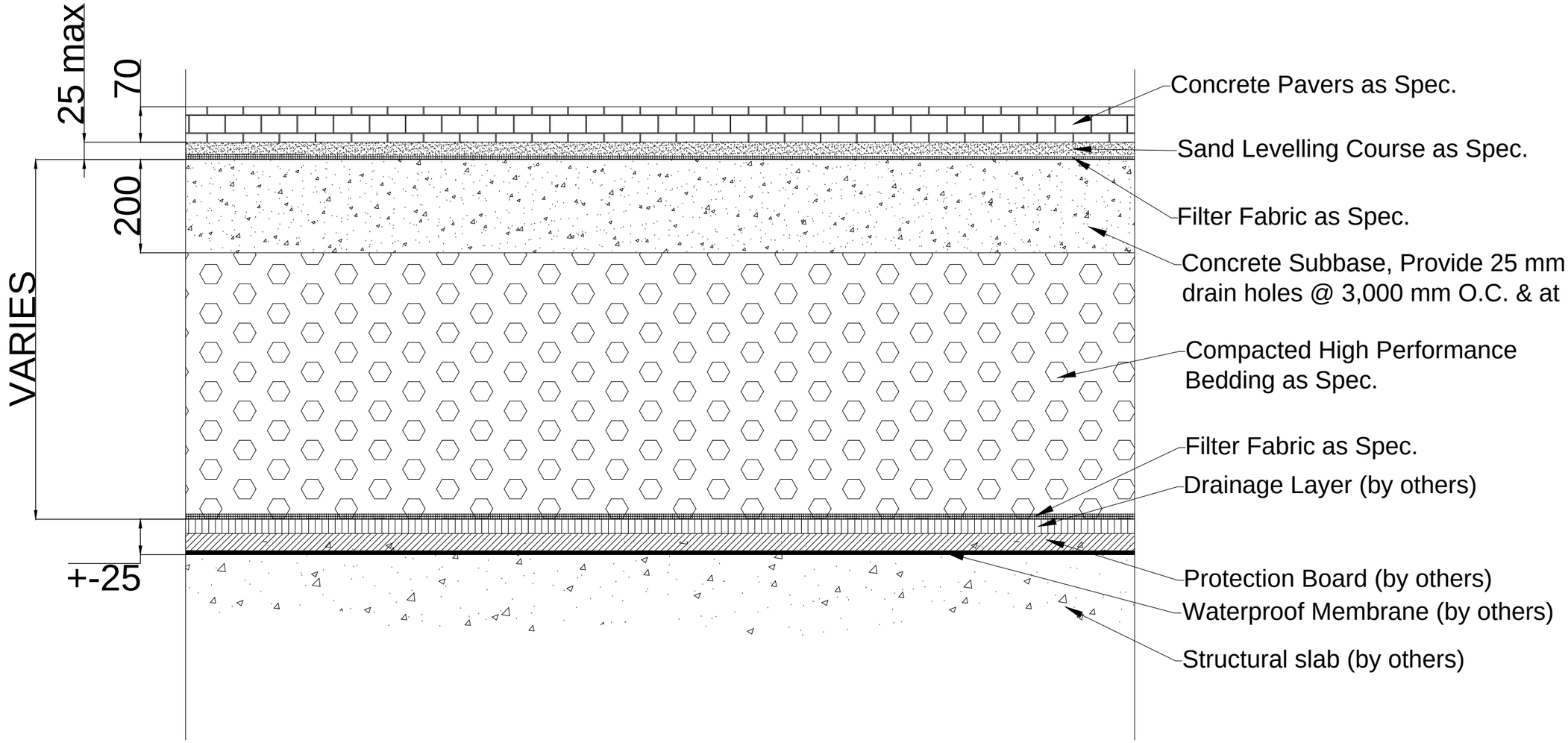
Scale:	Drawing No.
NTS	5



McCLYMONT&RAK
ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

PAVEMENT ABOVE
GARAGE ROOF SLAB

Scale:	Drawing No.
NTS	6



McCLYMONT&RAK
ENGINEERS, INC.
GEO-ENVIRONMENTAL CONSULTANTS

PAVEMENT ABOVE
GARAGE ROOF SLAB

Scale: NTS

Drawing No. 7

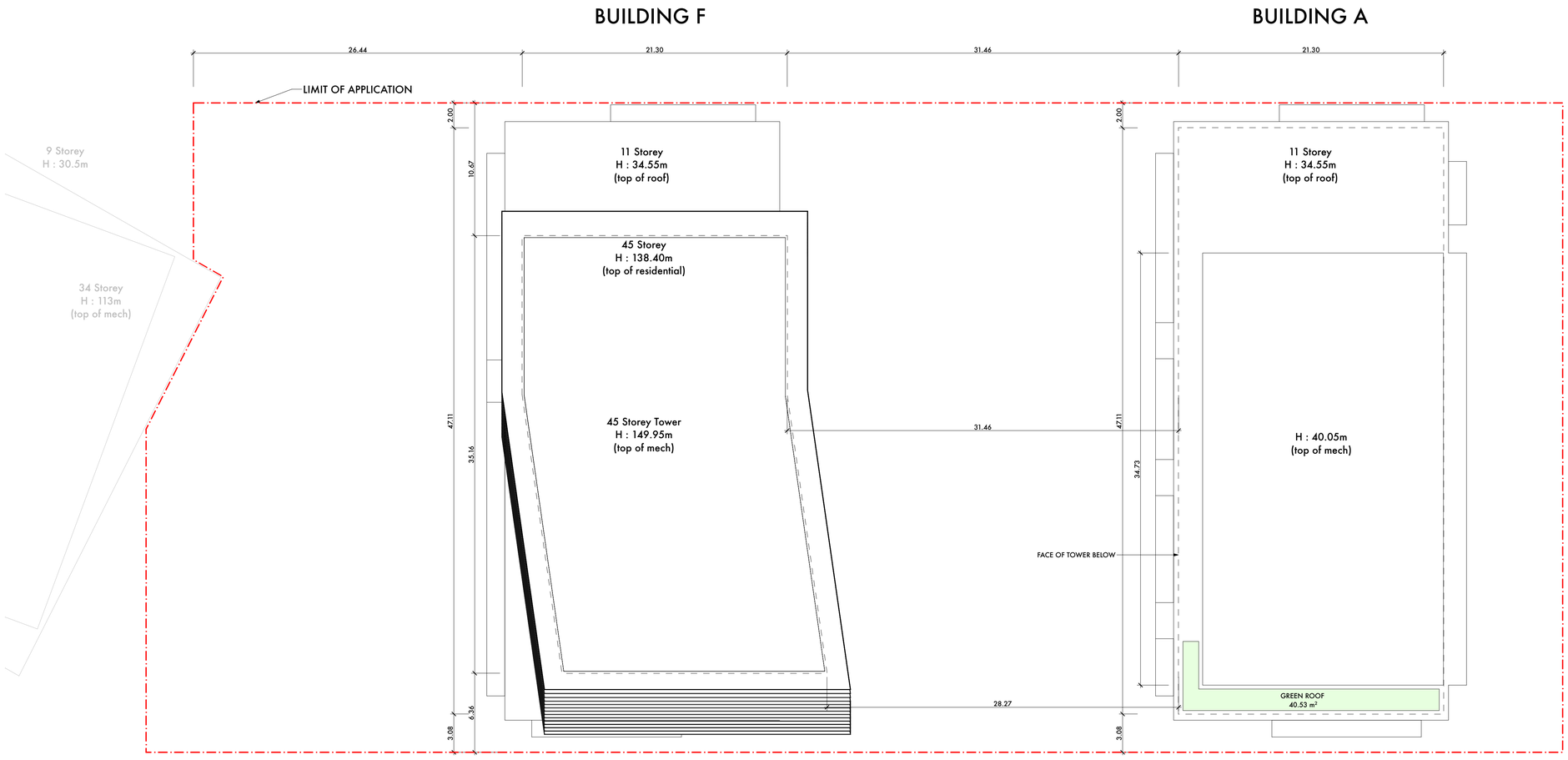
APPENDIX A

Green Roof Statistics

Toronto Green Standard Version 3.0

BUILDING F		Proposed
Gross Floor Area, *as defined in Green Roof Bylaw* (m^2)		34348 m2
Total Roof Area (m^2)		1145 m2
Area of Residential Private Terraces (m^2)		0 m2
Rooftop Outdoor Amenity Space, *if in a Residential Building* (m^2)		395 m2
Area of Renewable Energy Devices (m^2)		0 m2
Tower (s)Roof Area with floor plate less than 750 m^2		750 m2
Total Available Roof Space (m^2)		0 m2
Green Roof Coverage	Required	Proposed
Coverage of Available Roof Space (m^2)	0	0
Coverage of Available Roof Space (%)		

BUILDING A		Proposed
Gross Floor Area, *as defined in Green Roof Bylaw* (m^2)		10397 m2
Total Roof Area (m^2)		1002 m2
Area of Residential Private Terraces (m^2)		0 m2
Rooftop Outdoor Amenity Space, *if in a Residential Building* (m^2)		260 m2
Area of Renewable Energy Devices (m^2)		0 m2
Tower (s)Roof Area with floor plate less than 750 m^2		674 m2
Total Available Roof Space (m^2)		67.55 m2
Green Roof Coverage	Required	Proposed
Coverage of Available Roof Space (m^2)	40.53 m2	40.53 m2
Coverage of Available Roof Space (%)	60%	60%



NO	ISSUANCE	DATE
1	SPA/OPA/ZBA	-
2	-	-
3	-	-
4	-	-
5	-	-

aA

architectsAlliance

205 - 317 Adelaide Street West
Toronto, ON M5V 1P9 Canada
t 416 593 6500
f 416 593 4911
info@architectsalliance.com
www.architectsalliance.com

Pier 27 Phase 3

(buildings F and A)

25&35 Queens Quay East

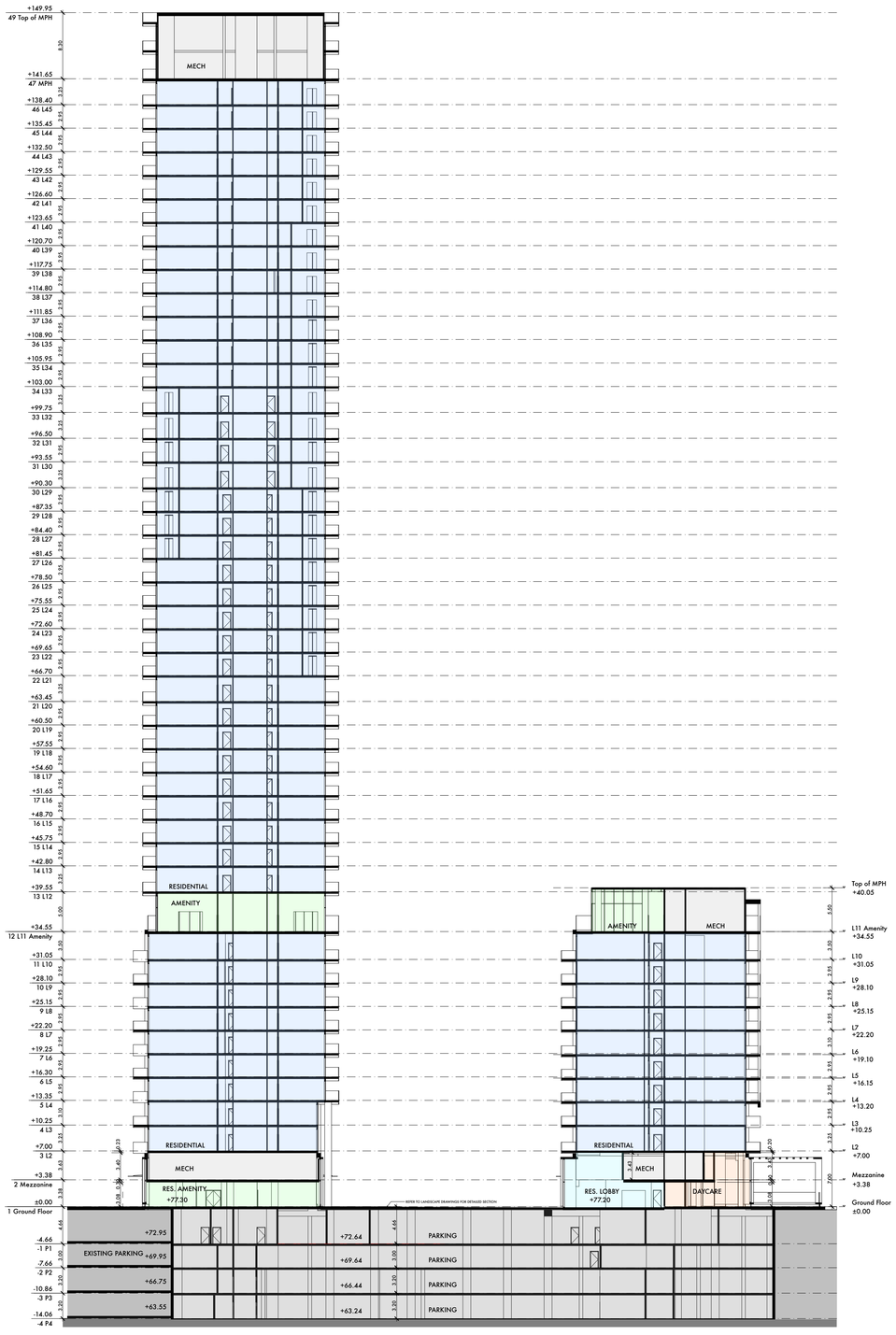
Pier 27 Toronto (Northeast) Inc.
56 The Esplanade, suite 308
Toronto M5E 1A7

Roof Plan

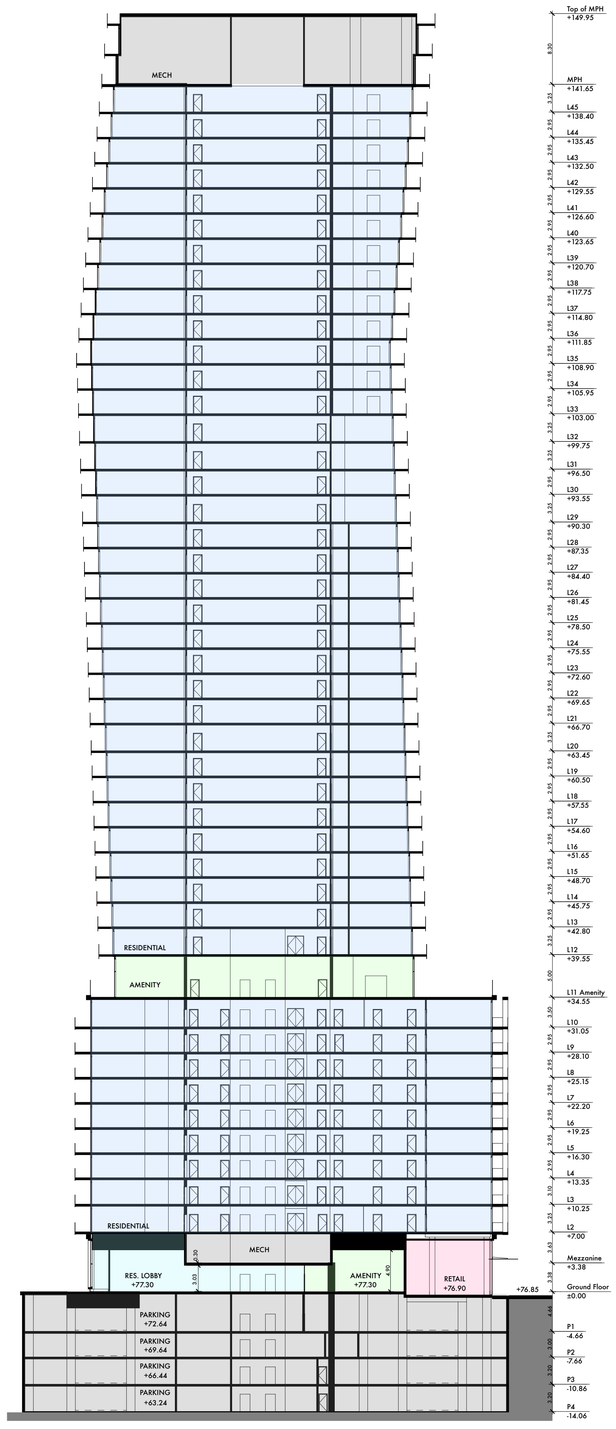
Project No.

1:200

A.1.21



BUILDING F BUILDING A



BUILDING F

NO	ISSUANCE	DATE
1	SPA/OPA/ZBA	-
2	-	-
3	-	-
4	-	-
5	-	-

aA

architectsAlliance

205 - 317 Adelaide Street West
Toronto, ON M5V 1P9 Canada
t 416 593 6500
f 416 593 4911
info@architectsalliance.com
www.architectsalliance.com

Pier 27 Phase 3
(buildings F and A)
25&35 Queens Quay East

Pier 27 Toronto (Northeast) Inc.
56 The Esplanade, suite 308
Toronto M5E 1A7

Section

Project No.

1:350

A.3.1

APPENDIX B

RECORD OF BOREHOLE 20-1-S

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 21, 2020
COMPLETED : September 21, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.93							
	POWER BORING / HOLLOW STEM AUGER	STRAIGHT DRILLING TO 3.96 m DEPTH									Flush Mount Cover; 76.63; Bentonite; 1.52 m Long 50 mm ID PVC Riser; 76.02; Silica Sand; 3.05 m Long 50 mm ID Well Screen; ▽; 72.97
2											
4		End of Borehole.		72.97 3.96							

Note:
1) Borehole remained dry on completion of drilling.
2) Water level was measured at 2.55 m depth on September 28, 2020

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: 2.55 m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-1-D

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 21, 2020
COMPLETED : September 21, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.93							
	POWER BORING / HOLLOW STEM AUGER	FILL: sand and silt, trace clay and organics, brown, moist, loose to compact			1	SS	15	0			Flush Mount Cover; Bentonite; 1.52 m Long 50 mm ID PVC Riser
					2	SS	10	40			
2					3	SS	3	50			
		- decayed wood at 2.44 m depth			4	SS	25	30			
					5	SS	7	40			
4											
		SAND: medium to fine, dark brown to black, wet, loose		72.66 4.27	6	SS	9	75			
6											
		SILT: some fine sand, dark brown to black, wet, soft		70.83 6.10	7	SS	4	35			▽
				69.31 7.62							
8		SILTY CLAY: trace sand, gravel and shells, black to grey, moist, soft to hard			8	SS	3	130			
					9	SS	3	140			67.18
10											Silica Sand; 66.26
					10	SS	4	60			
12		WEATHERED SHALE: grey, moist		65.04 11.89							3.05 m Long 50 mm ID Well Screen; 64.74; 64.13
					11	SS	>100	0			
				64.05 12.88							
		End of Borehole.									
14		Note: 1) Borehole remained dry on completion of drilling. 2) Water level was measured at 11.29 m depth on September 28, 2020									

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION — WATER LEVEL: 7.46 m bgs

▼ DEEP/DUAL INSTALLATION — WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-2

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 25, 2020
COMPLETED : September 25, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.08							
	POWER BORING / HOLLOW STEM AUGER	FILL: sand and gravel, trace organics, brown, moist, loose			1	SS	16	0			Flush Mount Cover; Bentonite; 1.52 m Long 50 mm ID PVC Riser; 75.97
					2	SS	9	20			74.56 Silica Sand
					3	SS	4	15			3.05 m Long 50 mm ID Well Screen
2		- wet and brick fragments at 2.59 m depth			4	SS	6	20			▽
					5	SS	5	30			
4		SANDY SILT: dark brown to grey, moist to wet, stiff		71.51 4.57	6	SS	17	30			71.51
		End of Borehole.		70.90 5.18							
		Note: 1) Borehole remained dry on completion of drilling. 2) Water level was measured at 2.71 m depth on September 28, 2020									
6											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: 2.71 m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-3

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 22, 2020
COMPLETED : September 22, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.88							
	POWER BORING / HOLLOW STEM AUGER	FILL: sand and gravel, brown, moist, compact to loose			1	SS	26	⊗ 5			
					2	SS	6	⊗ 10			
					3	SS	4	⊗ 75			
2		FILL: clay and silt, some organics, trace of sand and gravel, dark brown to black, moist, loose			4	SS	9	⊗ 55			
					5	SS	12	⊗ 10			
4				72.61 4.27							
		SILTY CLAY: trace sand and gravel, black to grey, moist, stiff			6	SS	5	⊗ 5			
6					7	SS	13	⊗ 5			
		End of Borehole.		70.17 6.71							

Note:
1) Borehole remained dry on completion of drilling.

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-4

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 24, 2020
COMPLETED : September 24, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		75.84							
	POWER BORING / HOLLOW STEM AUGER	75 mm ASPHALT		75.76							
		425 mm GRANULAR FILL: sand and gravel, trace of organics, brown, moist, compact.		0.08	1	SS	27	⊗ 0			
		FILL: sandy and silt, trace organics and gravel, black, moist, compact		75.34 0.50	2	SS	11	⊗ 10			
2		FILL: silt and clay, trace organics and sand, black, moist, loose		74.01 1.83	3	SS	6	⊗ 20			
					4	SS	4	⊗ 0			
		SILTY CLAY: trace sand and gravel, black to grey, moist to wet, soft		72.49 3.35	5	SS	2	⊗ 20			
4		End of Borehole. Note: 1) Borehole remained dry on completion of drilling.		71.27 4.57	6	SS	3	⊗ 10			

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-5-S

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 23, 2020
COMPLETED : September 23, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.03							
	POWER BORING / HOLLOW STEM AUGER	STRAIGHT DRILLING TO 4.27 m DEPTH									Flush Mount Cover
											Bentonite 76.43
											1.52 m Long 50 mm ID PVC Riser
											75.81
											Silica Sand
2											
											3.05 m Long 50 mm ID Well Screen
											▽
4											
				72.76							72.76
		End of Borehole.		4.27							

Note:
1) Borehole remained dry on completion of drilling.
2) Water level was measured at 2.55 m depth on September 28, 2020

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: 2.55 m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-5-D

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 23, 2020
COMPLETED : September 23, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.03							
	POWER BORING / HOLLOW STEM AUGER	75 mm ASPHALT		76.96 0.08	1	SS	14	⊗ 0			Flush Mount Cover
		425 mm GRANULAR FILL: sand and gravel, trace of organics, brown, moist, compact.		76.53 0.50							Bentonite
		FILL: sandy and silt, trace organics and gravel, black, moist, loose			2	SS	6	⊗ 10			1.52 m Long 50 mm ID PVC Riser
2		FILL: silt and clay, trace organics and sand, black, moist, loose		75.20 1.83	3	SS	3	⊗ 10			
					4	SS	3	⊗ 5			
		- brick fragments at 3.35 m depth			5	SS	2	⊗ 10			
4		SANDY SILT: trace organics and gravel, dark brown to black, wet, stiff		72.68 4.35	6	SS	3	⊗ 130			
6					7	SS	12	⊗ 70			
		SILTY CLAY: trace of sand and gravel, grey, moist to wet, soft		69.41 7.62	8	SS	3	⊗ 20			
					9	SS	2	⊗ 10			67.58
10					10	SS	4	⊗ 5			Silica Sand ▽
12					11	SS	4	⊗ 0			65.14
		WEATHERED SHALE: grey, moist		63.62 13.41							3.05 m Long 50 mm ID Well Screen 63.62
14		End of Borehole.		63.01 14.02	12	SS	>100	⊗ 0			

Note:
1) Borehole remained dry on completion of drilling.
2) Water level was measured at 11.29 m depth on September 28, 2020

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION — WATER LEVEL: 11.29 m bgs

▼ DEEP/DUAL INSTALLATION — WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-6-S

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 22, 2020
COMPLETED : September 22, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.06							
	POWER BORING / HOLLOW STEM AUGER	STRAIGHT DRILLING TO 9.14 m DEPTH									
2											▽
4											
6											71.57 / 70.96
8											67.92
		End of Borehole.		67.92 / 9.14							
10		Note: 1) Borehole remained dry on completion of drilling. 2) Water level was measured at 2.66 m depth on September 28, 2020									

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: 2.66 m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-6-I

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 24, 2020
COMPLETED : September 24, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.06							
	POWER BORING / HOLLOW STEM AUGER	STRAIGHT DRILLING TO 4.57 m DEPTH									76.46
2											75.84
4											
		End of Borehole. Note: 1) Borehole remained dry on completion of drilling. 2) Water level was measured at 2.84 m depth on September 28, 2020		72.49 4.57							72.49

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: 2.84 m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-6-D

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 22, 2020
COMPLETED : September 22, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.06							
	POWER BORING / HOLLOW STEM AUGER	FILL: sandy and silt, trace organics and gravel, black, moist, dense to loose			1	SS	55	⊗ 0			Flush Mount Cover; Bentonite; 1.52 m Long 50 mm ID PVC Riser
					2	SS	11	⊗ 20			
2				75.23	3	SS	5	⊗ 10			
		FILL: silt and clay, trace organics and sand, black, moist, loose		1.83	4	SS	3	⊗ 45			
		- wood fragments at 4.57 m depth			5	SS	3	⊗ 50			
4											
					6	SS	4	⊗ 30			
6				70.96							
		SILTY CLAY: trace of sand and gravel, grey, moist to wet, soft		6.10	7	SS	5	⊗ 30			
				69.44							
		SANDY SILT: trace organics and clay, dark brown to black, wet, soft		7.62	8	SS	4	⊗ 30			
8				67.92							
		SILTY CLAY: trace of sand and gravel, grey, moist, soft		9.14	9	SS	4	⊗ 5			▽ 67.31; Silica Sand; 66.39
10					10	SS	2	⊗ 5			
12											64.87
		WEATHERED SHALE: grey, moist		64.56	11	SS	>100	⊗ 0			
		End of Borehole.		12.65							3.05 m Long 50 mm ID Well Screen
14											

Note:
1) Borehole remained dry on completion of drilling.
2) Water level was measured at 9.80 m depth on September 28, 2020

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: 9.80 m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-7

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 23, 2020
COMPLETED : September 23, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.11							
	POWER BORING / HOLLOW STEM AUGER	75 mm ASPHALT		77.03 0.08							
		425 mm GRANULAR FILL: sand and gravel, trace of organics, brown, moist, compact.			1	SS	29	0 ⊗			
		FILL: sandy and silt, trace organics and gravel, black, moist, loose		76.61 0.50							
					2	SS	8	5 ⊗			
					3	SS	12	5 ⊗			
2		FILL: silt and clay, trace organics and sand, black, moist, loose		75.28 1.83							
					4	SS	4	20 ⊗			
					5	SS	4	20 ⊗			
4											
					6	SS	4	10 ⊗			
6		SANDY SILT: grey to black, wet, stiff		71.32 5.79							
					7	SS	14	10 ⊗			
		End of Borehole. Note: 1) Borehole remained dry on completion of drilling.		70.40 6.71							

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL: m bgs

▼ DEEP/DUAL INSTALLATION
WATER LEVEL:

LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

RECORD OF BOREHOLE 20-8

PROJECT : MG4842
LOCATION : Pier 27, Yonge Street & Queens Quay East, Toronto, Ontario
STARTED : September 24, 2020
COMPLETED : September 24, 2020

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	ORGANIC VAPOUR READINGS (ppm) ⊗ 100 200 300 400 / % LEL - (hexane) □ 20 40 60 80	SHEAR STRENGTH: Cu, KPa nat V - ✚ rem V - ● Q - ✖ U - ▲ 20 40 60 80 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.05							
		75 mm CONCRETE		76.97							Flush Mount Cover
		525 mm GRANULAR FILL: sand and gravel, trace of organics, brown, moist, compact.		0.08	1	SS	23	0			
				76.44							Bentonite
		FILL: clayey silt with organics, trace of sand and gravel, trace of clinkers and brick pieces, black, moist, compact.		0.61	2	SS	13	0			1.52 m Long 50 mm ID PVC Riser 76.94
					3	SS	7	0			75.53 Silica Sand
2					4	SS	5	0			3.05 m Long 50 mm ID Well Screen
					5	SS	3	0			
4											72.48
		SAND: fine, some silt, trace gravel, grey, wet, very loose		72.48 4.57	6	SS	3	0			
		End of Borehole.		71.87 5.18							
6		Note: 1) Borehole remained dry on completion of drilling. 2) Water level was measured at 2.25 m depth on September 28, 2020									

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION — WATER LEVEL: 2.25 m bgs

▼ DEEP/DUAL INSTALLATION — WATER LEVEL:

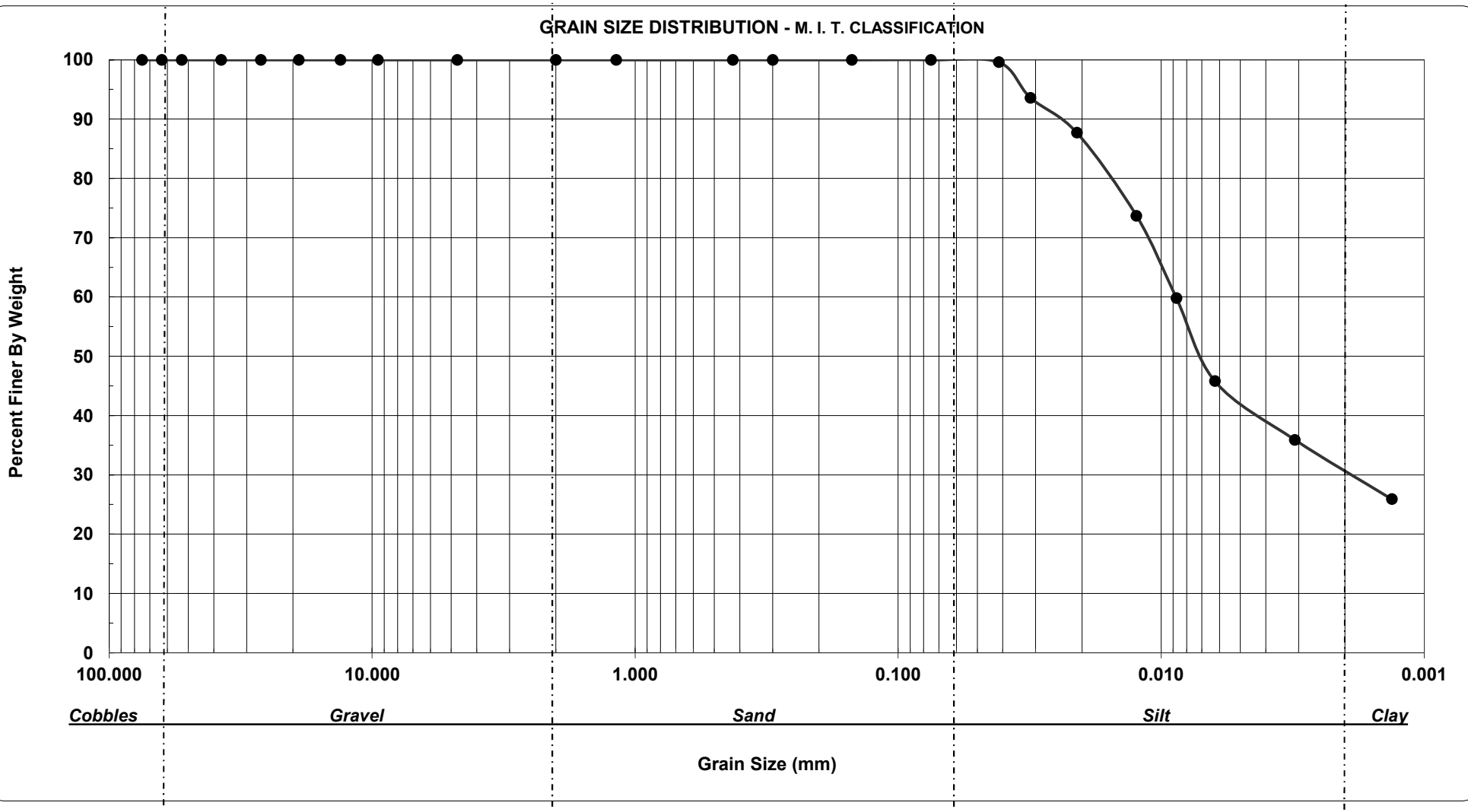
LOGGED : PL
CHECKED : NS

MCR LOG ENVIRONMENTAL 4842.GPJ 10/14/20

McCLYMONT AND RAK ENGINEERS INC.
GEO-ENVIRONMENTAL CONSULTANTS
111 Zenway Blvd., Unit 4, Vaughan, Ontario L4H 3H9
TEL: 416-675-0160 FAX: 905-851-1722

GRAIN SIZE ANALYSIS (Gradation Curve)

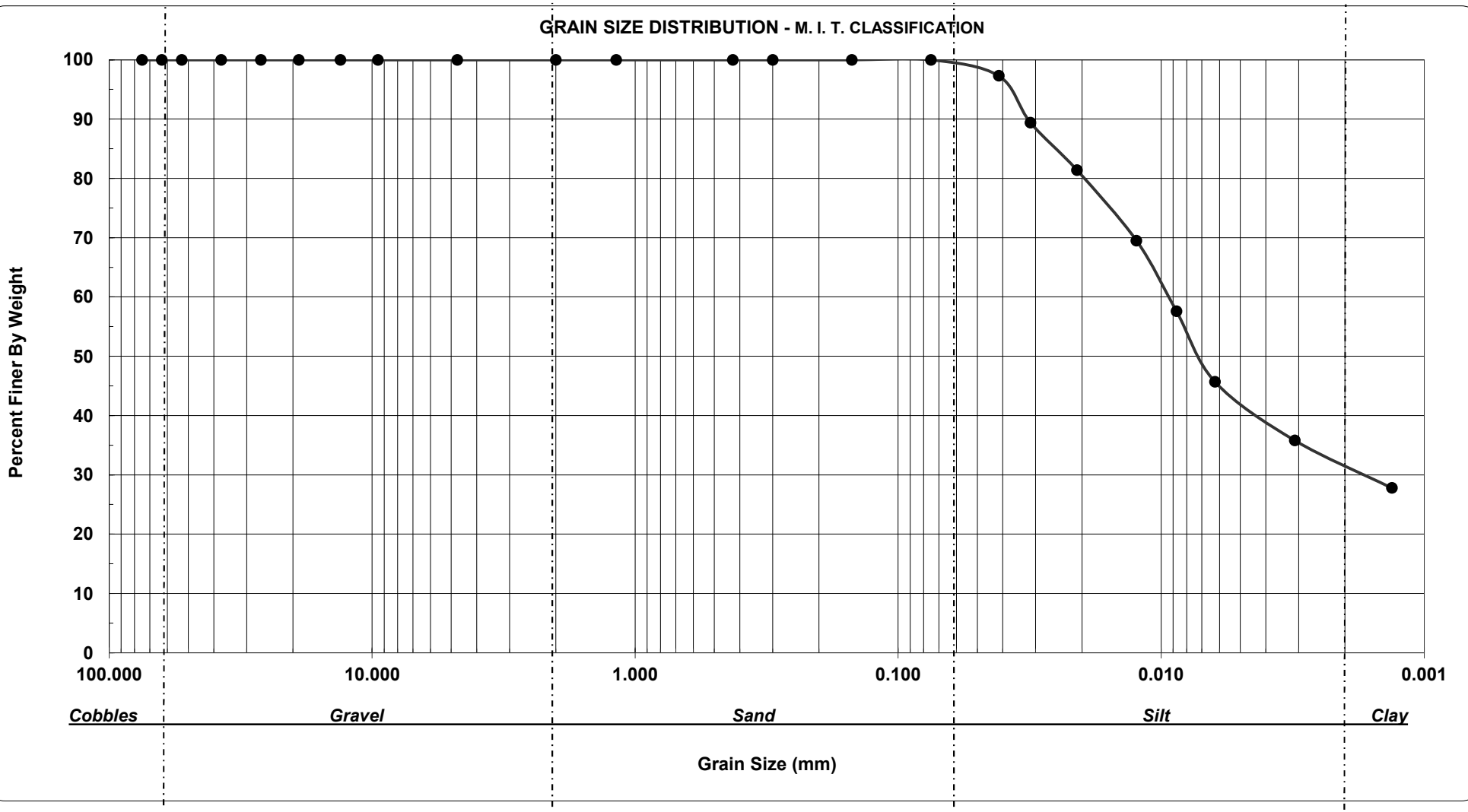
Job No.:	**G 4842**	Report No.:	**1**
Sample Location:	**BH 20-5D**	Sample No.:	**SS 8**
Sampled by:		Date Sampled:	
Tested by:	**M.M.**	Date Tested:	**September, 2020**



McCLYMONT AND RAK ENGINEERS INC.
GEO-ENVIRONMENTAL CONSULTANTS
111 Zenway Blvd., Unit 4, Vaughan, Ontario L4H 3H9
TEL: 416-675-0160 FAX: 905-851-1722

GRAIN SIZE ANALYSIS (Gradation Curve)

Job No.:	**G 4842**	Report No.:	**2**
Sample Location:	**BH 20-6D**	Sample No.:	**SS 10**
Sampled by:		Date Sampled:	
Tested by:	**M.M.**	Date Tested:	**September, 2020**



APPENDIX C

[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.

APPENDIX D

Your Project #: 4842
Your C.O.C. #: 152751

Attention: Salman Tavassoli

McClymont & Rak Engineers Inc
111 Zenway Blvd
Unit 4
Vaughan, ON
CANADA L4H 3H9

Report Date: 2020/10/07
Report #: R6361523
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0P3558
Received: 2020/09/28, 16:30

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride (20:1 extract)	1	2020/09/30	2020/10/01	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	1	2020/10/01	2020/10/02	CAM SOP-00414	OMOE E3530 v1 m
Moisture (Subcontracted) (1, 3)	1	N/A	2020/10/06	AB SOP-00002	CCME PHC-CWS m
Sulphide in Soil (1)	1	N/A	2020/10/06	AB SOP-00080	EPA9030B/SM4500S2-DF
pH CaCl2 EXTRACT	1	2020/10/01	2020/10/01	CAM SOP-00413	EPA 9045 D m
Resistivity of Soil	1	2020/09/29	2020/10/02	CAM SOP-00414	SM 23 2510 m
Sulphate (20:1 Extract)	1	2020/09/30	2020/10/01	CAM SOP-00464	EPA 375.4 m
Redox Potential (2, 4)	1	N/A	N/A		

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by BVLabs Calgary via Mississauga
(2) This test was performed by Sub from Campo to Env. Testing Canada (Eurofins)
(3) Offsite analysis requires that subcontracted moisture be reported.

Your Project #: 4842
Your C.O.C. #: 152751

Attention: Salman Tavassoli

McClymont & Rak Engineers Inc
111 Zenway Blvd
Unit 4
Vaughan, ON
CANADA L4H 3H9

Report Date: 2020/10/07
Report #: R6361523
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0P3558
Received: 2020/09/28, 16:30

(4) Oxidation-Reduction Potential (ORP) values are determined using a Ag/AgCl reference electrode.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bvlabs.com
Phone# (905)817-5817

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C0P3558
Report Date: 2020/10/07

McClymont & Rak Engineers Inc
Client Project #: 4842

RESULTS OF ANALYSES OF SOIL

BV Labs ID		NTH506			NTH506	NTH506	NTH506		
Sampling Date		2020/09/23			2020/09/23	2020/09/23	2020/09/23		
COC Number		152751			152751	152751	152751		
	UNITS	BH20-5D SS10	RDL	QC Batch	BH20-5D SS10 Lab-Dup	BH20-5D SS10 Lab-Dup 2	BH20-5D SS10 Lab-Dup 3	RDL	QC Batch
Calculated Parameters									
Resistivity	ohm-cm	1700		6971545					
Inorganics									
Soluble (20:1) Chloride (Cl-)	ug/g	83	20	6974855					
Conductivity	umho/cm	580	2	6976739					
Available (CaCl2) pH	pH	7.20		6976515					
Soluble (20:1) Sulphate (SO4)	ug/g	<20	20	6974862					
Sulphide	mg/kg	2.4 (1)	0.5	6986221	13.5 (2)	1.0 (2)	7.9 (2)	0.5	6986221
Physical Testing									
Moisture-Subcontracted	%	30	0.30	6986220					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.
Sample extracted past method-specified hold time.
Sample contained greater than 10% headspace at time of extraction.
(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

TEST SUMMARY

BV Labs ID: NTH506
Sample ID: BH20-5D SS10
Matrix: Soil

Collected: 2020/09/23
Shipped:
Received: 2020/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride (20:1 extract)	KONE/EC	6974855	2020/09/30	2020/10/01	Deonarine Ramnarine
Conductivity	AT	6976739	2020/10/01	2020/10/02	Yogesh Patel
Moisture (Subcontracted)	BAL	6986220	N/A	2020/10/06	Margarita Aguilera
Sulphide in Soil	SPEC	6986221	N/A	2020/10/06	Sonya Radvan
pH CaCl2 EXTRACT	AT	6976515	2020/10/01	2020/10/01	Surinder Rai
Resistivity of Soil		6971545	2020/10/02	2020/10/02	Automated Statchk
Sulphate (20:1 Extract)	KONE/EC	6974862	2020/09/30	2020/10/01	Deonarine Ramnarine
Redox Potential	COND	6988807	2020/10/07		Antonella Brasil

BV Labs ID: NTH506 Dup
Sample ID: BH20-5D SS10
Matrix: Soil

Collected: 2020/09/23
Shipped:
Received: 2020/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphide in Soil	SPEC	6986221	N/A	2020/10/06	Sonya Radvan

BV Labs ID: NTH506 Dup2
Sample ID: BH20-5D SS10
Matrix: Soil

Collected: 2020/09/23
Shipped:
Received: 2020/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphide in Soil	SPEC	6986221	N/A	2020/10/06	Sonya Radvan

BV Labs ID: NTH506 Dup3
Sample ID: BH20-5D SS10
Matrix: Soil

Collected: 2020/09/23
Shipped:
Received: 2020/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphide in Soil	SPEC	6986221	N/A	2020/10/06	Sonya Radvan

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C

Sample NTH506 [BH20-5D SS10] : Sample was analyzed past method specified hold time for Sulphide.

Results relate only to the items tested.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**% Recovery**	**QC Limits**	**Value**	**UNITS**
6974855	Soluble (20:1) Chloride (Cl-)	2020/10/01	NC	70 - 130	103	70 - 130	<20	ug/g
6974862	Soluble (20:1) Sulphate (SO4)	2020/10/01	NC	70 - 130	104	70 - 130	<20	ug/g
6976515	Available (CaCl2) pH	2020/10/01			100	97 - 103		
6976739	Conductivity	2020/10/02			102	90 - 110	<2	umho/cm
6986220	Moisture-Subcontracted	2020/10/06					<0.30	%
6986221	Sulphide	2020/10/06	79 (1)	75 - 125	87	75 - 125	<0.5	mg/kg

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

(1) Matrix Spike Parent ID [NTH506-01]

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Antonella Brasil, Senior Project Manager

Anastassia Hamanov, Scientific Specialist

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Certificate of Analysis

Client: Bureau Veritas Canada (2019) Inc.
6740 Campobello Road
Mississauga, ON
L5N 2L8
Attention: Antonella Brasil
PO#:
Invoice to: Bureau Veritas Canada (2019) Inc.

Report Number: 1939814
Date Submitted: 2020-10-01
Date Reported: 2020-10-07
Project: C0P3558
COC #: 863691

Dear Antonella Brasil:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: Bureau Veritas Canada (2019) Inc.
6740 Campobello Road
Mississauga, ON
L5N 2L8
Attention: Antonella Brasil
PO#:
Invoice to: Bureau Veritas Canada (2019) Inc.

Report Number: 1939814
Date Submitted: 2020-10-01
Date Reported: 2020-10-07
Project: C0P3558
COC #: 863691

Group	Analyte	MRL	Units	Guideline	Lab I.D. 1519615 Sample Matrix Soil Sample Type Sampling Date 2020-09-23 Sample I.D. NTH506-BH20-5D SS10
Redox Potential	REDOX Potential		mV		181.6

Guideline = *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Bureau Veritas Canada (2019) Inc.
6740 Campobello Road
Mississauga, ON
L5N 2L8
Attention: Antonella Brasil
PO#:
Invoice to: Bureau Veritas Canada (2019) Inc.

Report Number: 1939814
Date Submitted: 2020-10-01
Date Reported: 2020-10-07
Project: C0P3558
COC #: 863691

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 390500 **Analysis/Extraction Date** 2020-10-07 **Analyst** R R **Method** C SM2580B			
REDOX Potential	191 mV	101	

Guideline = *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 152751

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: McCLYMONT & RAK	Company Name:	Quotation #:	☒ Regular TAT (5-7 days) Most analyses
Contact Name: SALMAN	Contact Name:	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: ZENWAY VAUGHAN	Address:	Project #: 4842	Rush TAT (Surcharges will be applied)
Phone: 675-0160 Fax:	Phone: Fax:	Site Location:	☐ 1 Day ☐ 2 Days ☐ 3-4 Days
Email: starassoli@mccrak.com	Email:	Site #:	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Site Location Province: Sampled By: PL	Rush Confirmation #:

Regulation 153	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/ Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ MISA ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/ Other	☐ PWQO Region
☐ Table ____	☐ Other (Specify)
FOR RSC (PLEASE CIRCLE)	☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
Include Criteria on Certificate of Analysis: Y / N	☐ REG 406 Table

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals: HWS - B)		CORROSIVITY							HOLD- DO NOT ANALYZE
1	BH20-5D SS10	SEP. 23		SOIL										X							
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

28-Sep-20 16:30
Antonella Brasil
C0P3558
GK1 ENV-902

LABORATORY USE ONLY

CUSTODY SEAL (Y / N)		COOLER TEMPERATURES
Present	Intact	
		2.0 | 3

COOLING MEDIA PRESENT: (Y) / N

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
MCR	SEP. 28/20	12p	BV	2020/09/29	16:30	

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas Laboratories' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms available at http://www.bvlabs.com/terms-and-conditions

COC-1004 (06/19) White: BV Labs Yellow: Client