DAVROC
TESTING LABORATORIES INC.

CONSULTING ENGINEERS
Materials Testing and Inspection

File No. L20-0711MT

December 17, 2020

Geotechnical Investigation
Fausto Cortese Architects (FCA)
Proposed Condominium Development
12148 Albion Vaughan Road,
Bolton, Ontario

Prepared For:

Mr. Fausto Cortese

Prepared By:

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1. INTRODUCTION

This report presents the results of a geotechnical investigation carried out by Davroc Testing Laboratories Inc. (Davroc) for the proposed condominium development to be constructed at 12148 Albion Vaughan Road, Bolton, Ontario (see Figure No.'s 1 and 2 in Appendix A). The investigation was authorized by Mr. Fausto Cortese of Fausto Cortese Architects (FCA) on November 16, 2020.

It is understood that a mixed-use condominium development consisting of two towers and townhouses is proposed to be constructed at the above captioned address. Both of the proposed towers are to be constructed with 6 floors above grade. It is also understood that the southern portion of the development, including the area under one of the towers, will have two underground parking levels and the northern portion of the development, including the northern tower and the townhouses, will be constructed with one level of underground parking.

The purpose of this investigation was to determine the subsurface conditions at six (6) borehole locations and from the findings in these boreholes provide geotechnical recommendations for the design and construction of the proposed buildings and parking areas. The six (6) boreholes that were advanced on this site were designated as Borehole No.'s 1 to 6 (BH 1 to BH 6).

The comments and recommendations given in this report are based on the assumption that the above-described design concept will proceed into construction. If changes are made either in the design phase or during construction, this office must be retained to review these modifications. The result of this review may be a modification of our recommendations or the requirement of additional field or laboratory work to check whether the changes are acceptable from a geotechnical viewpoint.

2. PROCEDURE

The fieldwork was carried on November 24, 25, 27 and December 11, 2020. At that time, six (6) boreholes were advanced to depths ranging from about 9.6m to 15.7m by a drilling subcontractor using hollow and solid stem augers. Borehole No.'s 1, 2, and 3 were located within the general vicinity of the south tower. The remaining boreholes, Borehole No.'s 4, 5, and 6, were located within the general vicinity of the north tower.

Soil samples were retrieved at regular intervals with a split barrel sampler in accordance with the Standard Penetration Test procedures. The samples were logged in the field and then returned to the laboratory for testing and detailed examination. The drilling was undertaken under the full-time supervision of a member of our field staff.

Groundwater observations were made in the open boreholes during and upon completion of the drilling operations. Groundwater observations are noted on the attached borehole logs and below in section 3.6 titled 'Groundwater'.

Davroc was informed that a formal hydrogeological study was undertaken by another firm specialized in hydrogeological work. The results of that study were not available to Davroc at the time of preparing this report.

The locations of the boreholes were laid out in the field by Davroc and ground surface elevations were surveyed using the top nut of fire hydrant located on the west side of Albion Vaughan Road at the approximate southeast corner of the property, as having an assumed local elevation of 100.0m, consequently elevations noted in this report are not geodetic. All depths mentioned in this report are referenced from the existing surface grade at the time of drilling.

As well as visual examination in the laboratory, all samples were tested for moisture content. The samples will be stored for a period of three months and then discarded, unless we are instructed differently.

3. SUBSURFACE CONDITIONS

The borehole locations, identified as Borehole No.'s 1 to 6, are shown on Figure No. 1 in Appendix A of this report and detailed subsurface conditions are presented on the borehole logs in Appendix B. It should be noted that the soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations during drilling. These boundaries are intended to reflect approximate transition zones for the purpose of geotechnical design and should not be interpreted as exact planes of geological change. The "Notes on Sample Description" preceding the borehole logs form an integral part of and should be read in conjunction with this report.

A brief description of the subsurface deposits follows.

3.1 Topsoil

An approximate 100 to 200 mm thick veneer of topsoil was encountered at the surface of all the boreholes.

3.2 Fill

A layer of fill material was encountered under the topsoil layer in all of the Boreholes. The fill extended to a depth of approximately 1.52m to 2.29m (elevations ranging from 97.16m – 98.86m) below existing grade.

The fill was generally brown and/or gray in colour and consisted primarily of disturbed clayey silt and/or silty clay with trace to some gravel. The fill layers extended to the native clayey silt.

3.3 Clayey Silt

Underlying the fill, deposits of clayey silt were encountered in all of the Boreholes and extend to approximately 4.57m to 9.20m (elevations ranging from 89.64m – 95.61m) below existing grade.

The clayey silt layer was brown to gray in colour and had moisture values ranging from 6% to 17%. This layer had very compact to very dense compactness with 'N'-values ranging from 17 blows per 305mm to 50 blows/130mm. The clayey silt contains trace gravel and signs of oxidation.

A second (lower) clayey silt layer was encountered in Borehole No. 2, below a sand layer, at a depth of 12.7m (elevation 86.14m) and extended to the borehole termination depth of approximately 15.7m (elevation 83.14m) below existing grade. This layer contains trace sand and is gray in colour. The clayey silt in this layer had moisture values ranging from 14% to 16% and had a very dense compactness with 'N'-values ranging from 81 to 92 blows per 305mm.

3.4 Silt and Sand

A deposit of native silt was found below the clayey silt in Borehole No. 1 and extend to depths of approximately 12.2m (BH 1) below existing grade. The silt layer contains some clay, layered, is moist, and gray in colour. The silt had moisture values ranging from 11% to 19% and had a dense to very dense compactness with 'N'-values ranging from 45 to 86 blows per 305mm.

Sand was encountered in Borehole No.'s 2, 4, 5 and 6 and extend to depths of approximately 12.7m (BH 2), 9.60m (BH 4), 11.10m (BH 5), and 11.1m (BH 6) below existing grade. The sand layer contains some clay, is moist, and brown and/or gray in colour. The sand had moisture values ranging from 5% to 19% and had a dense to very dense compactness with 'N'-values ranging from 49 blows per 305mm to 50 blows/130mm.

A deposit of native silt and sand was found below the clayey silt in Borehole No. 3. This layer contains some clay, shale fragments, is moist, and brown to gray in colour. The silt and sand had moisture values ranging from 13% to 17% and had a very dense compactness with 'N'-values ranging from 71 blows per 305mm to 50 blows per 130mm.

3.5 Clay

A deposit of native clay was found in Borehole No.'s 1, 4, 5, and 6 and extend to depths of approximately 15.7m (BH 1), 6.6m (BH 4 & 5), and 8.10m (BH 6) below existing grade.

The clay layer contains trace to some sand, and is grey in colour. The clay had moisture values ranging from 6% to 22% and had a very stiff to hard consistency with 'N'-values ranging from 20 blows per 305mm to 50 blows per 130mm.

3.6 Groundwater

Groundwater levels were monitored in the open boreholes upon completion of the drilling operations. Wet seams and some freestanding water were observed in all of the Boreholes during drilling operations and immediately upon completion of drilling.

Davroc was informed that a formal hydrogeological study was undertaken by another firm specialized in this type of work. The hydrogeological study results were not yet available at the time of preparing this report. The hydrogeological report should be reviewed for recommendations concerning ground water control and/or dewatering during construction and for permanent drainage design purposes.

Depending on the findings of the hydrogeological study, some recommendations given in this report may require updating.

4. ENGINEERING DISCUSSION AND RECOMMENDATIONS

4.1 Foundations

The design, size, and exact location of the proposed foundations was not provided to Davroc at the time of preparing this report however, we understand that the proposed development will consist of two levels of underground parking within the vicinity of Borehole No.'s 1, 2, and 3 with an assumed footing founding level of approximately 5m to 6m below existing grade. We also understand that the proposed development will consist of one level of underground parking within the vicinity of Borehole No.'s 4, 5, and 6 with an assumed footing founding level of approximately 2.5m to 3m below existing grade.

Based on the results of this investigation, the proposed structure can be supported by conventional spread footings, founded on the native undisturbed clayey silt found at the locations and depths (and elevations) listed below utilizing the following geotechnical resistance:

Location	Depth (below existing grade)	Elevation	Bearing Capacity
BH No. 1	2.3m – 6.5m 6.5m – 8.6m 8.6m or deeper	97.15m – 92.95m 92.95m – 90.85m 90.85m or deeper	400 kPa SLS (600 kPa ULS) 200 kPa SLS (300 kPa ULS) 400 kPa SLS (600 kPa ULS)
BH No. 2	1.5m – 3.6m 3.6m – 7.6m 7.6m or deeper	97.34m – 95.24m 95.24m – 91.24m 91.24m or deeper	400 kPa SLS (600 kPa ULS) 200 kPa SLS (300 kPa ULS) 400 kPa SLS (600 kPa ULS)
BH No. 3	1.5m – 3.6m 3.6m – 7.6m 7.6m or deeper	97.78m – 95.68m 95.68m – 91.68m 91.68m or deeper	400 kPa SLS (600 kPa ULS) 200 kPa SLS (300 kPa ULS) 400 kPa SLS (600 kPa ULS)
BH No. 4	1.5m – 3.6m 3.6m or deeper	98.65m – 96.55m 96.55m or deeper	400 kPa SLS (600 kPa ULS) 300 kPa SLS (450 kPa ULS)
BH No. 5	1.5m – 3.6m 3.6m or deeper	98.68m – 96.58m 96.58m or deeper	400 kPa SLS (600 kPa ULS) 300 kPa SLS (450 kPa ULS)
BH No. 6	1.5m – 3.6m 3.6m or deeper	98.88m – 96.78m 96.78m or deeper	400 kPa SLS (600 kPa ULS) 300 kPa SLS (450 kPa ULS)

Footings designed to this bearing resistance are expected to settle less than 25 mm total and 19 mm differential.

The strength of the soils on this site generally initially decrease and then increase with additional depth consequently should designers require higher bearing capacities than stated above, foundations must be extended to greater depths. Davroc should be contacted to evaluate this option.

All footings exposed to seasonal freezing conditions must have at least 1.2m of soil cover or equivalent insulation for protection against frost effects.

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

The site classification for seismic response for this site is Site Class 'D', Stiff soil, according to Table 4.1.8.4.A of the Ontario Building Code.

4.2 Floor Slabs and Permanent Drainage

Normal slab construction can be used on the native silty or sandy materials anticipated at the subgrade level. All underfloor fill should be compacted to at least 98 percent standard Proctor maximum dry density.

A moisture barrier consisting of at least 200 mm of clear crushed stone should be installed under the floor slab. In addition, the underfloor drains shown on Figure 3 in Appendix C are recommended. The recommendations for exterior backfill and perimeter drainage are also shown on this Figure.

4.3 Earth Pressures

The lateral earth pressures acting on basement walls may be calculated from the following expression:

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

where p = lateral earth pressure in kPa acting at depth h

K = earth pressure coefficient, assumed to be 0.45 for vertical walls and horizontal backfill

γ = unit weight of backfill, a value of 20.5 kN/cu.m. may be assumed

h = depth to point of interest in metres

q = equivalent value of surcharge on the ground surface in kPa

The above expression assumes that the perimeter drainage system prevents the buildup of any hydrostatic pressure behind the wall and that granular fill is used.

4.4 Excavations and Backfill

Excavation of the soil at this site can be carried out with heavy hydraulic backhoes. Perched water and water within sand layers was encountered during borehole drilling however, significant water was not encountered during this investigation. It is recommended that the hydrogeological study being prepared for this site be reviewed for recommendations concerning ground water control and/or dewatering during construction and for permanent drainage design purposes.

It should be noted that the soils on this site are non-sorted sediment and therefore may contain boulders. Provisions must be made in the excavation contract for the removal of possible boulders.

All temporary excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, the fill is classified as Type 3 soil and the compact to very dense silty soil is classified as Type 2 soil if above the water table. Where excessive seepage and sloughing of the excavation occurs in fill areas, it may be necessary to slope the excavations flatter than normal.

The silty and clayey soils are considered to be suitable for use as construction backfill provided all topsoil and any other objectionable materials are selectively removed. Loose lifts of soil, which are to be compacted, should not exceed 200 mm. The fill may require moisture content adjustment (such as drying) before it can adequately be compacted.

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

Imported granular fill, which can be compacted with hand held equipment, should be used in confined areas.

Underfloor fill should be compacted to at least 98 percent standard Proctor maximum dry density.

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

4.5 Pavements

The recommended pavement structures provided in Table 1 are based upon an estimate of the subgrade soil properties determined from visual examination and textural classification of the soil samples. Consequently, the recommended pavement structures should be considered for preliminary design purposes only. A functional design life of eight to ten years has been used to establish the pavement recommendations. This represents the number of years to the first rehabilitation, assuming regular maintenance is carried out. If required, a more refined pavement structure design can be performed based on specific traffic data and design life requirements and will involve specific laboratory tests to determine frost susceptibility and strength characteristics of the subgrade soils, as well as specific data input from the client.

TABLE 1: Recommended Pavement Structure Thickness

Pavement Layer	Compaction Requirements	Light Duty Parking (Cars)	Heavy Duty Parking (Delivery Trucks)
Asphaltic Concrete	92% Minimum* 92% Minimum*	40 mm OPSS HL 3 40 mm OPSS HL 8	40 mm OPSS HL 3 80 mm OPSS HL 8
OPSS Granular A Base (Crushed Limestone)	100% SPMDD**	150 mm	150 mm
OPSS Granular B Sub-base	100% SPMDD**	150 mm	350 mm

*Denotes minimum percentage of Maximum Relative Density of the asphalt mixture.

** Denotes Standard Proctor Maximum Dry Density, ASTM-D698.

The upper 600 mm of any fill subgrade shall be compacted to at least 98 percent standard Proctor maximum dry density. It is also recommended that all topsoil or topsoil stained soil, which may be encountered at the subgrade level, be removed from under the pavement structure. Native subgrade should be proof rolled, as outlined in item 1 below.

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

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

1. As part of the subgrade preparation, proposed parking areas and access roadways should be stripped of topsoil and other obvious objectionable material. Fill required to raise the grades to design elevations should conform to backfill requirements outlined in previous sections of this report. The subgrade should be properly shaped, crowned then proof-rolled in the full-time presence of a representative of this office. Soft or spongy subgrade areas should be sub-excavated and properly replaced with suitable approved backfill compacted to 98% SPMDD.

2. The locations and extent of sub-drainage required within the paved areas should be reviewed by this office in conjunction with the proposed lot grading. Assuming that satisfactory cross falls in the order of two percent have been provided, sub-drains extending from and between catch basins may be satisfactory. In the event that shallower cross falls are considered, a more extensive system of sub-drainage may be necessary and should be reviewed by Davroc Testing Laboratories Inc.

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

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

5. GENERAL COMMENTS

Davroc Testing Laboratories Inc. should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, Davroc Testing Laboratories Inc. will assume no responsibility for interpretation of the recommendations in the report.

This report has been prepared for and is intended for the exclusive use of the client and their architects and engineers. Any use which a third party makes of this report, or any part thereof, of any reliance on or decision to be made based on it, are the responsibility of such third parties. Davroc Testing Laboratories Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decision made or actions based on this report. The contents of this report should not be relied upon by any other party without the express written consent of Davroc Testing Laboratories Inc. The findings are relevant for the dates of our Site visits and should not be relied upon to represent conditions at later dates.

The information in this report in no way reflects on the environmental aspects of the soil and has not been addressed in this report, since this aspect is beyond the scope and terms of reference. Should specific information be required, additional testing may be required.

The comments given in this report are primarily intended only for the guidance of design engineers. The number of boreholes required to determine the localized underground conditions between boreholes affecting construction costs, techniques, sequencing, equipment, scheduling, etc. could be greater than has been carried out for design purposes. Contractors bidding on or undertaking the works should make their own interpretations of the factual borehole results and draw their own conclusions as to how the subsurface conditions may affect them.

More specific information with respect to the conditions between samples, or the lateral and vertical extent of materials may become apparent during excavation operations. The interpretation of the borehole information must, therefore, be validated during excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent; should this occur, Davroc Testing Laboratories Inc. should be contacted to assess the situation and additional testing and reporting may be required. Davroc Testing Laboratories Inc. has qualified personnel to provide assistance in regards to future geotechnical issues related to this property.

We trust that this report is satisfactory for your purposes. Should you have any questions or comments, please do not hesitate to contact this office.

Yours truly,
Davroc Testing Laboratories Inc.

Shubhagata Roy, M. Eng.
Field E.I.T.

LICENSED PROFESSIONAL ENGINEER
Dec. 21, 2020
G. W. WUISMAN
PROVINCE OF ONTARIO

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Executive Vice President

Distribution

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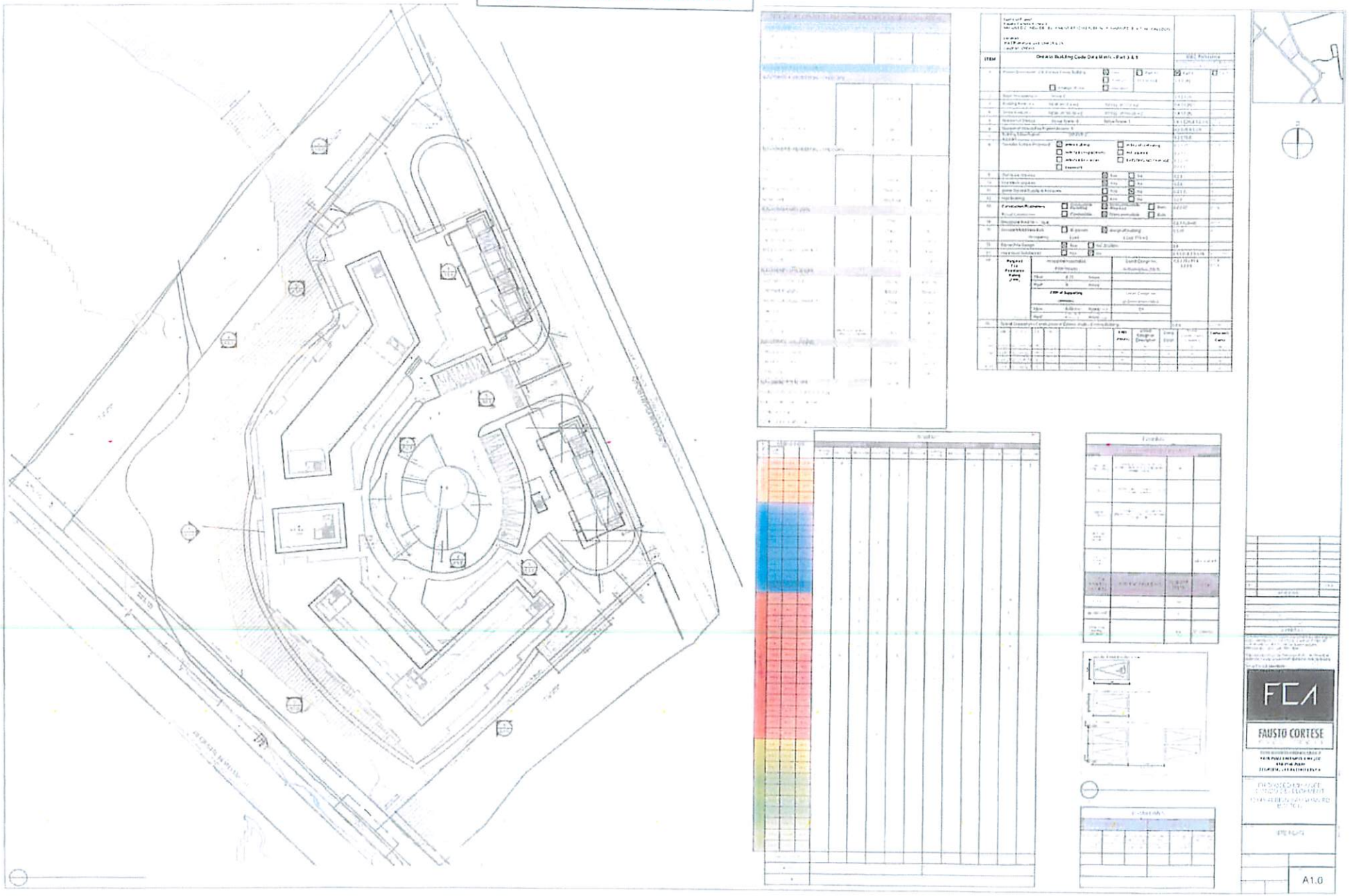
20-0711-1-R Geo-Report

APPENDIX A
BOREHOLE LAYOUT: FIGURE NO. 1

ARCHITECTURAL DRAWING: FIGURE NO. 2


Figure No. 1
Borehole Locations
L20-0711 MT
BH-6
BH-5
BH-4
BH-3
BH-2
BH-1
BM
12148 Albion Vaughan Road
Albion Vaughan Rd
Albion Vaughan Rd
Hwy 50
N

Figure No. 2
Architectural Drawing
By Fausto Cortese Architects



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APPENDIX B

NOTES ON SAMPLE DESCRIPTIONS

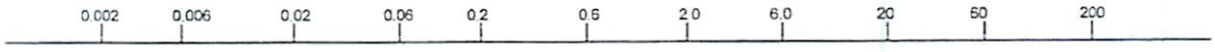
LOGS OF BOREHOLES
(B.H. NO.'S 1 TO 6)

Notes On Sample Descriptions

1. All sample descriptions included in this report follow the Canadian Foundations Engineering Manual soil classification system. This system follows the standard proposed by the International Society for Soil Mechanics and Foundation Engineering. Laboratory grain size analyses provided by Davroc Testing Laboratories Inc. also follow the same system. Different classification systems may be used by others; one such system is the Unified Soil Classification. Please note that, with the exception of those samples where a grain size analysis has been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

ISSMFE SOIL CLASSIFICATION

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



EQUIVALENT GRAIN DIAMETER IN MILLIMETERS

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

UNIFIED SOIL CLASSIFICATION

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

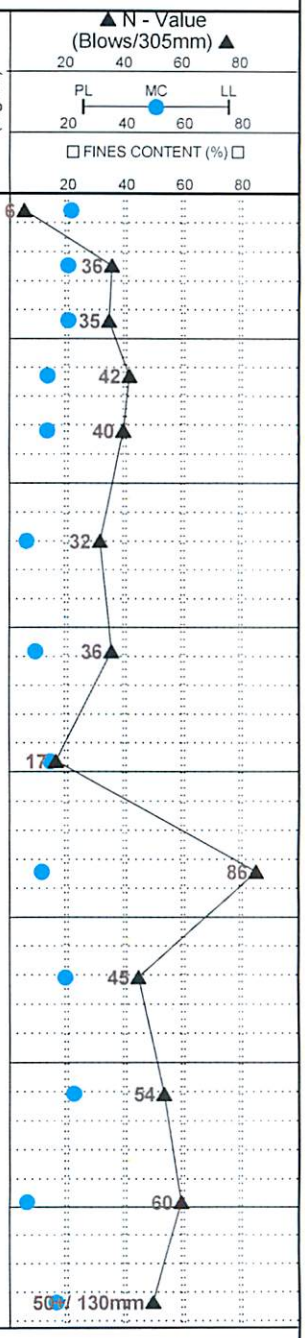
3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel,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

BOREHOLE NUMBER BH 1

DAVROC
Unit 21, 2051 Williams Parkway
Brampton, Ontario, L6Y-3R9
Telephone:(905)792-7792

CLIENT Fausto Cortese Architects (FCA)
PROJECT NAME Condominium
PROJECT NUMBER L20-0711MT
PROJECT LOCATION 12148 Albion Vaughan Rd
DATE STARTED (dd/mm/yy) 27-11-20 **COMPLETED**
GROUND ELEVATION 99.45 m **HOLE SIZE** 0.15
DRILLING CONTRACTOR Tri-Phase Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow stem auger
AT TIME OF DRILLING --- Dry, Nov 27, 2020
LOGGED BY SR **CHECKED BY** GW
AT END OF DRILLING --- Wet, Nov 27, 2020
NOTES CME 75 Track
AFTER DRILLING ---

DEPTH (m)	ELEV DEPTH	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	N VALUE	POCKET PEN. (kPa)
0.4	99.45	TOPSOIL	SS SS1	54	6	
0.8	0.20	-Blackish Brown				
1.2		-Organics	SS SS2	93	36	
1.6		-Grass				
2.0		-Rootlets	SS SS3	100	35	
2.4	97.16	-Seams -Trace Sand				
2.8	2.29	FILL	SS SS4	100	42	300
3.2		-Clayey Silt				
3.6		-Brown to Gray	SS SS5	100	40	
4.0		-Rootlets				
4.4		-Seams				
4.8		-Oxidation	SS SS6	100	32	450
5.2		-Trace Gravel				
5.6		-Layered at Depth				
6.0		CLAYEY SILT				
6.4		-Brown to Gray	SS SS7	100	36	
6.8		-Oxidation				
7.2		-Some Gravel				
7.6		-Trace Sand				
8.0		-High Clay Content at Depth	SS SS8	100	17	200
8.4		-Dense to Compact				
8.8						
9.2	90.30					
9.6	9.15	SILT	SS SS9	100	86	
10.0		-Gray				
10.4		-Layered				
10.8		-Some Clay at Depth	SS SS10	100	45	
11.2		-Wet at Depth				
11.6		-Very Dense to Dense				
12.0	87.25					
12.4	12.20	CLAY	SS SS11	100	54	
12.8		-Gray				
13.2		-Some Silt				
13.6		-Sand and Gravel layer at depth 13.7 to 14. 2m				
14.0		-Spoon Refusal at depth 15.5m	SS SS12	78	60	
14.4		-Hard				
14.8						
15.2						
15.6	83.75		SS SS13	100	50+	
	15.70	Bottom of hole at 15.70 m.				



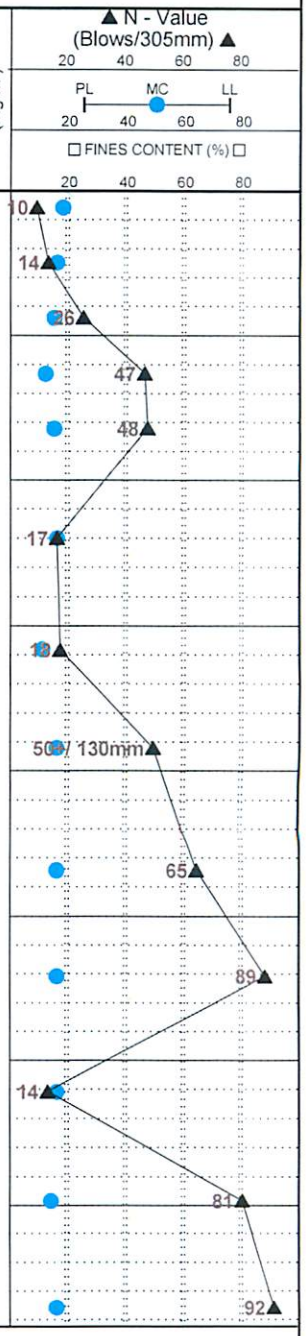
GEOTECH BH PLOTS L20-0711-12148 ALBION VAUGHAN RD.GPJ GINT STD CANADA.GDT 2-12-20

BOREHOLE NUMBER BH 2

DAVROC
Unit 21, 2051 Williams Parkway
Brampton, Ontario, L6Y-3R9
Telephone:(905)792-7792

CLIENT Fausto Cortese Architects (FCA)
PROJECT NAME Condominium
PROJECT NUMBER L20-0711MT
PROJECT LOCATION 12148 Albion Vaughan Rd
DATE STARTED (dd/mm/yy) 24-11-20 **COMPLETED**
GROUND ELEVATION 98.84 m **HOLE SIZE** 0.15
DRILLING CONTRACTOR Tri-Phase Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow stem auger
AT TIME OF DRILLING --- Snow & Dry, Nov 24, 2020
LOGGED BY SR **CHECKED BY** GW
AT END OF DRILLING --- Wet, Nov 24, 2020
NOTES CME 55TT Truck
AFTER DRILLING ---

DEPTH (m)	ELEV / DEPTH	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	N VALUE	POCKET PEN. (kPa)	DRY UNIT WT. (Mg/m^3)
0.0	98.84								
0.4	98.74 / 0.10		TOPSOIL -Brown -Organics -Seams -Sand and Gravel		SS SS1	78	10		
0.8									
1.2					SS SS2	100	14		
1.6	97.32								
2.0	1.52		FILL -Silty Clay -Brown -Trace Gravel -Oxidation		SS SS3	100	26	400	
2.4									
2.8					SS SS4	100	47	450	
3.2									
3.6					SS SS5	100	48	450	
4.0			CLAYEY SILT -Brown to Gray -Oxidation -Trace Gravel -Spoon refusal at 7.8m -Dense to Compact to Very Dense						
4.4									
4.8					SS SS6	0	17		
5.2									
5.6									
6.0									
6.4					SS SS7	65	18	300	
6.8									
7.2									
7.6									
8.0					SS SS8	0	50+		
8.4									
8.8									
9.2	89.64								
9.6	9.20		SAND -Gray -Some Clay -Sand at depth 9.2 to 9.6m and 12.2 to 12.7m -Fine Sand at depth 10.7 to 11.1m -Wet at Depth -Very Dense to Compact		SS SS9	100	65		
10.0									
10.4									
10.8					SS SS10	93	89		
11.2									
11.6									
12.0									
12.4									
12.8	86.14				SS SS11	89	14		
13.2	12.70		CLAYEY SILT -Gray -Trace Sand -Very Dense						
13.6									
14.0					SS SS12	100	81	400	
14.4									
14.8									
15.2									
15.6	83.14				SS SS13	100	92	400	
	15.70		Bottom of hole at 15.70 m.						



BOREHOLE NUMBER BH 3

DAVROC
Unit 21, 2051 Williams Parkway
Brampton, Ontario, L6Y-3R9
Telephone:(905)792-7792

CLIENT Fausto Cortese Architects (FCA)
PROJECT NAME Condominium
PROJECT NUMBER L20-0711MT
PROJECT LOCATION 12148 Albion Vaughan Rd
DATE STARTED (dd/mm/yy) 25-11-20 **COMPLETED**
GROUND ELEVATION 99.28 m **HOLE SIZE** 0.15
DRILLING CONTRACTOR Tri-Phase Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow stem auger
AT TIME OF DRILLING --- Snow & Dry, Nov 25, 2020
LOGGED BY SR **CHECKED BY** GW
AT END OF DRILLING --- Wet, Nov 25, 2020
NOTES CME 55TT Truck
AFTER DRILLING ---

DEPTH (m)	ELEV / DEPTH	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	N VALUE	POCKET PEN. (kPa)	DRY UNIT WT. (Mg/m³)
	99.28								
0.4	99.08		TOPSOIL		SS SS1	78	13		
0.8	0.20		-Brown						
1.2			-Organics		SS SS2	65	20		
1.6	97.76		-Sand and Gravel						
2.0	1.52		FILL		SS SS3	100	27		
2.4			-Clayey Silt						
2.8			-Brown		SS SS4	100	30		
3.2			-Some Gravel						
3.6			-Oxidation		SS SS5	100	38	400	
4.0			CLAYEY SILT						
4.4			-Brown to Gray						
4.8			-Oxidation		SS SS6	83	25	450	
5.2			-Seams						
5.6			-Trace Gravel						
6.0			-High Clay Content at Depth						
6.4			-Compact		SS SS7	100	20	300	
6.8	92.68								
7.2	6.60		SILT & SAND						
7.6			-Brown to Gray						
8.0			-Silt at depth 7.6 to 8.1m and 12.2 to 12.7m		SS SS8	93	71		
8.4			-Sand at depth 9.2 to 11.1m						
8.8			-Shale Fragments						
9.2			-Some Clay at Depth						
9.6			-Wet at Depth		SS SS9	100	84		
10.0			-Auger refusal at depth 12.8m						
10.4			-Very Dense						
10.8					SS SS10	89	85		
11.2									
11.6									
12.0									
12.4					SS SS11	100	50+		
12.8	86.48								
	12.80		Bottom of hole at 12.80 m.						

N - Value (Blows/305mm)
20 40 60 80
PL MC LL
20 40 60 80
FINES CONTENT (%)
20 40 60 80

13 20 27 30 38 25 20 71 84 85 50+/ 130mm

GEOTECH BH PLOTS L20-0711-12148 ALBION VAUGHAN RD.GPJ GINT STD CANADA.GDT 2-12-20

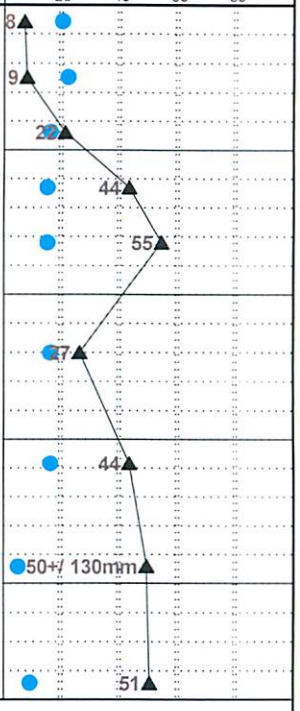
BOREHOLE NUMBER BH 4

DAVROC
Unit 21, 2051 Williams Parkway
Brampton, Ontario, L6Y-3R9
Telephone:(905)792-7792

CLIENT Fausto Cortese Architects (FCA)
PROJECT NAME Condominium
PROJECT NUMBER L20-0711MT
PROJECT LOCATION 12148 Albion Vaughan Rd
DATE STARTED (dd/mm/yy) 11-12-20 **COMPLETED**
GROUND ELEVATION 100.15 m **HOLE SIZE** 0.10
DRILLING CONTRACTOR Tri-Phase Group
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
AT TIME OF DRILLING --- Dry, Dec 11, 2020
LOGGED BY SR **CHECKED BY** GW
AT END OF DRILLING --- Wet, Dec 11, 2020
NOTES CME 55 Truck
AFTER DRILLING ---

DEPTH (m)	ELEV / DEPTH	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	N VALUE	POCKET PEN. (kPa)	DRY UNIT WT. (Mg/m³)
0.4	~~99.90~~ 0.20		TOPSOIL -Blackish Brown -Organics -Grass		SS SS1	61	8		
0.8									
1.2					SS SS2	89	9		
1.6	98.63		FILL						
2.0	1.52		-Silty Clay -Brown -Some Gravel -Some Sand		SS SS3	100	22	450	
2.4									
2.8					SS SS4	100	44	450	
3.2			CLAYEY SILT -Brown -Oxidation -Seams -Trace Gravel -Compact to Dense to Very Dense						
3.6					SS SS5	100	55	450	
4.0									
4.4	95.58								
4.8	4.57		CLAY -Gray -Seams -Trace Gravel -Very Stiff to Hard		SS SS6	100	27	400	
5.2									
5.6									
6.0									
6.4									
6.8	93.55				SS SS7	100	44		
7.2	6.60		SAND -Brown -Some Silt -Wet -Very Dense						
7.6									
8.0					SS SS8	100	50+		
8.4									
8.8									
9.2									
9.6	90.55				SS SS9	100	51		
	9.60		Bottom of hole at 9.60 m.						

▲ N - Value (Blows/305mm) ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

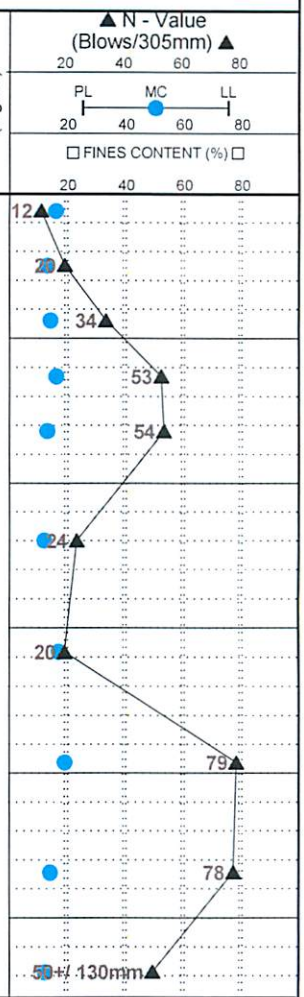


BOREHOLE NUMBER BH 5

DAVROC
Unit 21, 2051 Williams Parkway
Brampton, Ontario, L6Y-3R9
Telephone:(905)792-7792

CLIENT Fausto Cortese Architects (FCA)
PROJECT NAME Condominium
PROJECT NUMBER L20-0711MT
PROJECT LOCATION 12148 Albion Vaughan Rd
DATE STARTED (dd/mm/yy) 11-12-20 **COMPLETED**
GROUND ELEVATION 100.18 m **HOLE SIZE** 0.10
DRILLING CONTRACTOR Tri-Phase Group
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
AT TIME OF DRILLING --- Dry, Dec 11, 2020
LOGGED BY SR **CHECKED BY** GW
AT END OF DRILLING --- Wet, Dec 11, 2020
NOTES CME 55 Truck
AFTER DRILLING ---

DEPTH (m)	ELEV / DEPTH	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	N VALUE	POCKET PEN. (kPa)	DRY UNIT WT. (Mg/m^3)
	100.18								
0.4	~~99.98~~ 0.20		TOPSOIL -Blackish Brown -Organics -Grass -Rootlets		SS SS1	54	12		
0.8									
1.2					SS SS2	93	20		
1.6	98.66								
2.0	1.52		FILL -Silty Clay -Brown -High Sand Content at depth -Seams		SS SS3	100	34	400	
2.4									
2.8					SS SS4	100	53	450	
3.2									
3.6			CLAYEY SILT -Brown -Oxidation -Seams		SS SS5	100	54	450	
4.0									
4.4	95.61								
4.8	4.57		-Trace Gravel -Dense to Very Dense		SS SS6	100	24	400	
5.2			CLAY -Gray -Seams						
5.6									
6.0									
6.4	93.58		-Trace Gravel -Very Stiff		SS SS7	100	20	200	
6.8	6.60		SAND -Brown -Some Silt						
7.2									
7.6									
8.0			-Some Clay at Depth -Wet -Very Dense		SS SS8	100	79		
8.4									
8.8									
9.2									
9.6					SS SS9	100	78		
10.0									
10.4									
10.8	89.08				SS SS10	100	50+		
	11.10		Bottom of hole at 11.10 m.						



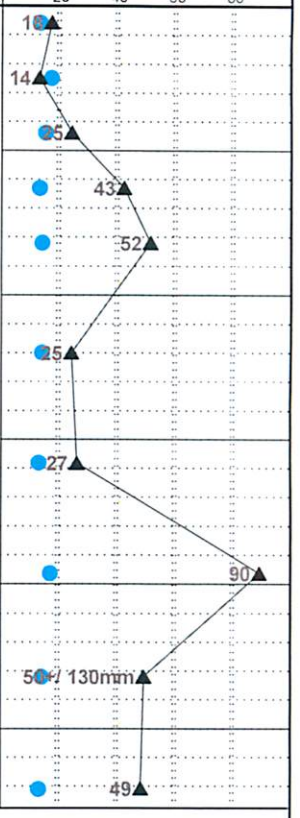
BOREHOLE NUMBER BH 6

DAVROC
Unit 21, 2051 Williams Parkway
Brampton, Ontario, L6Y-3R9
Telephone:(905)792-7792

CLIENT Fausto Cortese Architects (FCA)
PROJECT NAME Condominium
PROJECT NUMBER L20-0711MT
PROJECT LOCATION 12148 Albion Vaughan Rd
DATE STARTED (dd/mm/yy) 27-11-20 **COMPLETED**
GROUND ELEVATION 100.38 m **HOLE SIZE** 0.10
DRILLING CONTRACTOR Tri-Phase Group
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
AT TIME OF DRILLING --- Dry, Nov 27, 2020
LOGGED BY SR **CHECKED BY** GW
AT END OF DRILLING --- Wet, Nov 27, 2020
NOTES CME 75 Track
AFTER DRILLING ---

DEPTH (m)	ELEV / DEPTH	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	N VALUE	POCKET PEN. (kPa)	DRY UNIT WT. (Mg/m³)
	100.38								
0.4	100.00 / 0.20		TOPSOIL -Blackish Brown -Organics -Grass -Rootlets		SS SS1	100	18		
0.8									
1.2					SS SS2	100	14		
1.6	98.86 / 1.52		FILL -Clayey Silt -Brown -Trace Gravel -Seams -Oxidation		SS SS3	100	25	400	
2.0									
2.4					SS SS4	100	43	450	
2.8									
3.2					SS SS5	100	52	450	
3.6									
4.0			CLAYEY SILT -Brown to Gray -Oxidation -Trace Gravel -Seams -High Clay Content at Depth -Compact to Dense to Compact						
4.4									
4.8	95.35 / 5.03				SS SS6	100	25	300	
5.2									
5.6									
6.0			CLAY -Gray -Trace Sand -Shale Fragments at Depth 8m -Very Stiff to Hard						
6.4					SS SS7	100	27		
6.8									
7.2									
7.6									
8.0	92.28				SS SS8	89	90	100	
8.4	8.10		SAND -Brown -Trace Gravel -Some Clay -Wet -Very Dense to Dense						
8.8									
9.2									
9.6					SS SS9	100	50+		
10.0									
10.4									
10.8	89.28				SS SS10	100	49		
	11.10		Bottom of hole at 11.10 m.						

▲ N - Value (Blows/305mm) ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

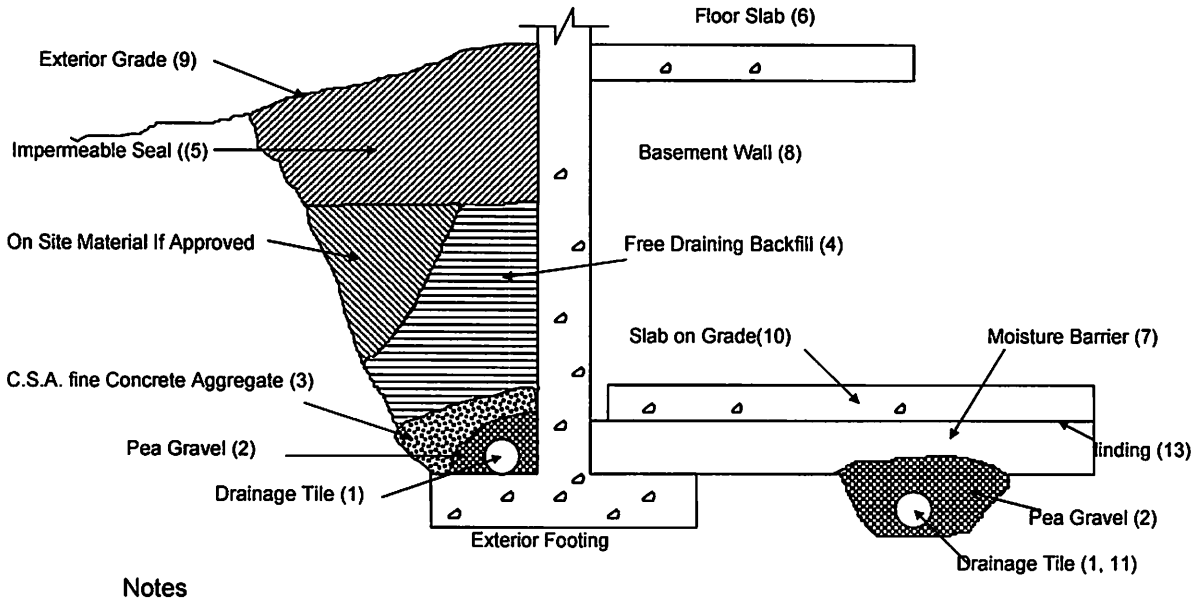


GEOTECH BH PLOTS L20-0711-12148 ALBION VAUGHAN RD.GPJ GINT STD CANADA.GDT 2-12-20

APPENDIX C
DRAINAGE AND BACKFILL RECOMMENDATIONS DRAWING

Project: L20-0711 MT

Figure No. 3



Notes

1. Drainage tile to consist of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet. Invert to be a minimum of 150 mm (6") below underside of floor slab.
2. Pea gravel - 150 mm (6") top and side of drain. If drain is not on footing, place 100 mm (4 inches) of pea gravel below drain . 20 mm (3/4") clear stone is an alternative provided it is surrounded by an approved porous plastic membrane (Terrafix 360R or equivalent).
3. C.S.A. fine concrete aggregate to act as filter material. Minimum 300 mm (12") top and side of tile drain. This may be replaced by an approved porous plastic membrane as indicated in (2).
4. Free Draining backfill - OPSS Granular B or equivalent compacted to the specified density. Do not use heavy compaction equipment within 450 mm (18") of the wall. Use hand controlled light compaction equipment within 1.8 m (6') of wall.
5. Impermeable backfill seal - compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted.
6. Do not backfill until wall is supported by basement and floor slabs or adequate bracing.
7. Moisture barrier to be at least 200 mm (8") of compacted clear 20 mm (3/4") stone or equivalent free draining material.
8. Basement wall to be damp-proofed.
9. Exterior grade to slope away from building.
10. Slab on grade should not be structurally connected to the wall or footing.
11. Underfloor drain invert to be at least 300 mm(12") below underside of floor slab. Drainage tile placed in parallel rows 6 to 8 m (20 to 25') centres one way. Place drain on 100 m (4") pea gravel with 150 mm(6") of pea gravel on top and sides. Provide filter material as noted in (3) if moisture barrier is not clear crushed stone.
12. Do not connect the underfloor drains to perimeter drains.
13. If the 20 mm (3/4") stone requires surface blinding, use 6 mm (1/4") clear stone chips.

DRAINAGE AND BACKFILL RECOMMENDATIONS

(not to scale)