Jacan Construction Ltd.
5400 Bimini Court
Mississauga, Ontario
L5M 6G9

Attention: Mr. Liaquat J. Mian

RE: GEOTECHNICAL INVESTIGATION
FOR THE PROPOSED OFFICE BUILDING
AT 1110 LORNE PARK ROAD
CITY OF MISSISSAUGA, ONTARIO

Report No. 2011-22768

February 9, 2011

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SOIL PROBE LTD.

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APPENDIX A

SOIL PROBE LTD.

CONSULTING GEOTECHNICAL, INSPECTION & TESTING ENGINEERS

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DATE: February 9, 2011

REPORT NO.: 2011-22768
FILE NO.: SP-3179

1.0 INTRODUCTION

Mr. Liaquat Mian of Jacan Construction Ltd., authorized Soil Probe Ltd. (SPL) to carry out a geotechnical investigation for the proposed 2 storied Office Building with a basement (for Storage and Mechanical use only) at 1110 Lorne Park Road, City of Mississauga, Ontario.

As per the terms of reference, the purpose of this geotechnical investigation was to collect information on the subsoil and groundwater conditions at the subject site and to make recommendations for the design and construction of the foundations, basement, etc., for the proposed building as well as driveway pavement design and also to check the suitability of the site for the construction of a Permeable Pavement for the parking lot and to review the structural competency of a proposed design submitted to us.

2.0 PROJECT AND SITE DESCRIPTION

The subject site is located at the south-west corner of Lorne Park Road and Albertson Crescent; it is roughly a trapezium-shaped, and bounded by Bramblewood Lane on the south and a residential dwelling on the west. There are some trees within the site, and at the time of our field work for this investigation the site was covered by a layer of snow.

The existing ground surface within the site is more or less level. The maximum difference in existing grade elevations between the borehole locations is about 70 cm, with the highest elevation of 94.78 m being at the location of Borehole No. 3, drilled near the north-east corner of the site and the lowest elevation of 94.07 m at the location of Borehole No. 7, drilled in the south-western part of the site.

3.0 FIELDWORK

3.1 ITEMS OF FIELDWORK

The fieldwork was carried out on January 21, 2011. A total of seven (7) boreholes were drilled at the locations shown on Plot Plan of Enclosure No. 9. Four of these boreholes were drilled around the proposed building locations and 3 in the parking lot area.

The boreholes were drilled to depths of 6.55 m each (Building B.H. Nos. 1 through 4) and to 2.45 m (Parking Lot Boreholes 5, 6 & 7), all below the existing grade.

3.2 METHOD OF FIELDWORK

The boreholes were advanced using a truck mounted, 115 mm diameter, and solid stem auger machine (CME 45), equipped for soil sampling. Standard penetration tests (SPTs) were conducted according to ASTM Method D1586 at a depth interval of 0.76 m in the top 3.5 m and at 1.5 m at lower levels, in each borehole (Building Boreholes) and continuous sampling (Parking Lot Boreholes). Representative soil samples were recovered from the split spoon sampler used in these SPTs. The results of the SPT, in terms of the number of blows per 0.3 m of penetration after 1st 15 cm, designated as "N-value", have been used to estimate the relative density of native cohesionless soils (No cohesive soil was hit within the investigated depths).

A soil technologist from Soil Probe (under the direction of a Senior Engineer) supervised the fieldwork. The locations of the boreholes were decided by us and our field personnel laid out the boreholes and also determined the existing grade elevations at the borehole locations using **"THE TOP OF THE EXISTING SANITARY MANHOLE, LOCATED ON BRAMBLEWOOD LANE, SOUTH OF THE SITE"** as a Temporary Bench Mark (TBM); the Geodetic Elevation of the TBM was obtained as 94.12 m from a Site Plan Drawing received from the client.

4.0 LABORATORY TESTS

The soil samples recovered from the SPT spoon were properly sealed, labelled and brought to our laboratory. They were visually examined to classify each sample. The natural moisture content of each sample was determined by drying in the oven, in the laboratory.

The natural moisture contents, the description and classification of each sample and the N-values (of SPTs) are presented in the borehole logs on Enclosure Nos. 1 through 7, while the terms and symbols used to describe the soils on these logs are summarized on Enclosure No. 8.

A composite soil sample was prepared through mixing of SPT samples from depth 0.76 m to 2.3 m of Parking Lot B.H. Nos. 5, 6 & 7 and subjected to grading test. The results of the grading analysis are presented on Enclosure No. 10.

5.0 SUBSOIL CONDITIONS

The investigations reported herein indicate that the site is underlain by a surficial topsoil/fill cover followed by native soils comprising sand to silty sand.

Detailed soil descriptions at the borehole locations are given in the borehole logs (Enclosure Nos. 1 through 7) while generalized descriptions of the different subsoil units encountered within the investigated depths are given in the following subsections.

5.1 TOPSOIL (SURFICIAL AND BURIED)

A surficial layer of topsoil, about 100 mm to 800 mm thick was found at existing grade at the locations of B.H. Nos. 1, 2, 3, 5, 6 & 7; also a buried topsoil layers, about 300 to 400 mm thick was found between two fill layers (discussed next) at B.H. Nos. 4 & 6.

5.2 FILL

Fill was encountered at existing grade at B.H. No. 4 and below topsoil at B.H. Nos. 1, 2, 3, 5, 6 & 7. The fill layers extend to depths in the range of about 1.8 m (B.H. No. 5) to 2.9 m (B.H. No. 4) below the existing grade.

The fill layers included materials varying from mixed dark brown and grey sand with some gravel, through reddish brown fine sand, occasionally with trace of silt, greyish brown fine to medium sand, fine sand with trace to some organics, dark brown/greyish brown fine sand occasionally with trace to some organics, grey silty sand with trace of organics dark brown medium sand.

The natural moisture contents of the fill layers are in the range of about 4.8% (B.H. No. 6) to 17% (B.H. No 4), with some of the higher values reflecting organic/topsoil inclusions. The N-values (from SPT) of these layers are in the range of 4 (B.H. Nos. 5 & 7) to 19 (B.H. Nos. 2 & 5), the relatively higher N-values, being generally associated with the gravel-rich fill layers.

The grading curve obtained from grain-size analysis of the composite fill sample from parking lot B.H. Nos. 5, 6 & 7 is presented on Enclosure No. 10; it confirms that the fill layer is fine sand with some silt.

5.3 NATIVE GRANULAR SOIL

Granular soils are the only ones encountered within the investigated depths, occurring at all the building boreholes and at B.H. No. 5; these occur below the fill layers at depths varying from about 1.8 m to 2.9 m, and comprise materials varying from fine sand with trace of silt to silty fine sand to medium sand. The N-values of these layers are in the range of 10 (B.H. No. 2) to 50 (B.H. No. 4), suggesting these layers to be in loose to very dense conditions.

The natural moisture content of the granular soils are in the range of about 8% (B.H. No. 5) to 24% (B.H. No. 2), indicating their moist to wet conditions.

6.0 GROUNDWATER CONDITIONS

The boreholes were advanced using dry augering, and ground seepage water was found at a depth below existing grade of about 4.2 m in Borehole No. 2, 4.0 m in Borehole No. 3, and 3.8 m (B.H. No. 4).

Based on the above information and visual examination of the soil samples obtained, in our opinion, the ground seepage water encountered in the above boreholes represents true water table in the locality.

7.0 DISCUSSIONS & RECOMMENDATIONS

As per the design drawings received from the client, the proposed office building will be a 2-storied structure with a basement (for storage and mechanical use only) and a permeable parking lot on its south and driveway entrance from Albertson Crescent. Based on the above information and the geotechnical data collected through our investigation and presented in the preceding chapters, our comments and recommendations are as follows.

7.1 FOUNDATION DESIGN (REF. B.H. NOS. 1, 2, 3 & 4)

The boring data of the above-noted boreholes have indicated that the undisturbed native ground is suitable for supporting the proposed building through conventional spread, circular and/or strip footing foundations. The footings can be founded at a minimum depth of 2.25 m (B.H. Nos. 1 & 2), 2.75m (B.H. No. 3) and 3.05 m (B.H. No. 4) below the existing grade. Allowable soil bearing pressures of 300 kPa (SLS) and 400 kPa (ULS) are recommended for footing design.

For the above soil bearing pressure, it is assumed that the footings will have a minimum width of 600 mm and a minimum depth/width ratio of 0.5. For footings in the basements, the depth of footing should be considered from the top of finished basement floor. For footings of smaller width or smaller depth/width ratio, the allowable soil bearing pressure should be decreased proportionately. For frost protection, external footings should be covered with at least 1.2 m of soil. Also if the basement is un-heated the interior footings should also be placed at least 1.2 m below finished basement level.

Prior to pouring concrete footings, the subsoil at the footing founding levels should be inspected by a soils engineer from this office.

7.2 BASEMENT CONSTRUCTION (FOR STORAGE & MECHANICAL EQUIPMENTS)

The installation of perimeter weepers enclosed in filter socks around exterior footings would be required as per the Ontario Building Code requirement. The weeping tiles should be connected to a sump, as there is no storm sewer along the streets adjacent to the subject site. Furthermore, in view of permeable parking lot pavement (discussed next) proposed to be constructed adjacent to the building, the exterior faces of the foundation walls should be water proofed.

Basement floor slabs can rest on undisturbed natural ground. For bedding and to serve as a moisture barrier under the basement floor slabs, a minimum of 150 mm thick layer of crushed stone should be placed.

7.3 PARKING LOT PAVEMENT (Ref. B.H. Nos. 5, 6 & 7)

It is proposed to construct the parking lot pavement as a permeable pavement, for which a design has been proposed by the client's consultants, and Soil Probe has been requested to check if the subject site is suitable for this type of pavement and also to assess the structural adequacy of the proposed design. This has been carried out as discussed below.

A) Site Suitability: The suitability of the site depends on the infiltration characteristics of the subgrade fill/native soil and the position of the water table. In this context, reference is made to the grading curve of the composite fill layer, Enclosure No. 10; it shows that the tested composite sample is fine sand with some silt; also the native soil below fill is sandy in texture. The infiltration rate for the tested fill material is estimated to be about 30 mm/hour; however, as infiltration performance is affected by clogging over time (as fine particles invade the permeable pathways), allowance for clogging must be considered. As such a long term infiltration rate of 20 mm/hour is recommended for the pavement subgrade. The minimum depth of water table at this site is 3.8 m below existing grade (Ref. log of BH. No. 4, Enclosure No. 4).

Based on the above data, in our opinion, permeable pavement construction is feasible at this site.

B) Review of Proposed Pavement Structure: We have reviewed the proposed Permeable Pavement Structure Detail (Drawing No. 208147-SK2), dated February, 2011, prepared by EMC Group Limited for this site (Copy attached). As per this drawing, the proposed permeable pavement structure will be as follows:

Pavement Component	Thickness (mm)
Permeable Concrete Pavers	80
5 mm Gravel leveling Course	50
20 mm Clear crushed Granular	100
50 mm Clear Crushed Granular	300
Total Thickness	**530 mm**

The design also includes installation of 100 mm diameter perforated pipe subdrain. Based on our estimate of Granular Base Equivalency of the above design, in our opinion, the above-listed pavement structure would be adequate for a normal parking lot from a structural point of view, provided the subgrade, consisting of a relatively fine-textured fill of marginal compactness condition is proof rolled, and any soft areas removed.

Prior to placing the filter cloth (to separate the pavement granulars from the subgrade soil) all topsoil (surficial/buried) should be removed (or salvaged for landscaping) and the subgrade should be compacted to obtain a minimum of 98% Standard Proctor Maximum Dry Density (SPMDD). The granular materials should then be placed in thin layers and compacted with a heavy smooth drum roller (as per related City/CVC Document) to eliminate any inter-layer voids.

7.4 Driveway Pavement (Ref. B.H. Nos. 4 & 6)

It is understood that the project envisages one driveway entrance from Albertson Crescent. For the construction of this driveway all the topsoil and organic-rich fill, should be completely removed (or saved for landscaping).

Based on the geotechnical data from the above boreholes, the undisturbed native ground as well as relatively clean existing fill soils can support the proposed driveway pavement. Accordingly, in view of the frost susceptibility and drainage characteristics of the on-site soils and the expected volume of traffic for an office development the following pavement design will perform satisfactorily.

Recommended Driveway Pavement Design

PAVEMENT COMPONENTS	HEAVY DUTY DRIVEWAY
Asphalt Wearing Course (OPSS 1150) HL-3	40 mm
Asphalt Base Course (OPSS1150) HL8	60 mm
OPSS Granular 'A' Base (OPSS 1010)	150 mm
OPSS Granular 'B' Sub-base (OPSS 1010)	400 mm
Alternatively	
20 mm Crusher Run Limestone (CRL)	150 mm
50 mm Crusher Run Limestone	300 mm

The 20 mm diameter CRL shall meet the Ontario Provincial Standard Specification (OPSS) Granular "A" gradation specification. The 50 mm diameter CRL shall meet the OPSS Granular B "Type I" gradation specification. The stone bases should be compacted to at least 100% of their SPMDD.

The asphaltic concretes are to be hot-mixed, hot-laid in accordance with current OPSS specifications, Forms 310 and 1150 (Ontario PGAC grades PG 58-28equivalency), and compacted to a minimum of 92.5 – 96% of maximum Relative Density (mRD).

Prior to placing the granular bases, the final subgrade should be proof-rolled to identify soft spots, if any, and rectified as required.

In order to intercept infiltrating water and provide drainage of the subgrade and pavement material, we recommend that subdrains, wrapped in filter cloth, be provided along both sides of the driveways in the proposed subgrade. Also, the subgrade should be crowned to promote flow of water towards the subdrains and catch basins.

7.5 EARTH PRESSURES

The following equation should be used to estimate the intensity of the lateral earth pressure acting against any earth retaining structure, such as the walls of the basement.

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

Where
- K = Appropriate coefficient of earth pressure;
- γ = Unit weight of compacted backfill, adjacent to the walls;
- h = Depth (below adjacent highest grade) at which P is calculated;
- q = intensity of any surcharge distributed uniformly over the backfill surface.

The coefficient of the earth pressure at rest (K_o) should be used in the calculation of the earth pressure on the basement walls, which are expected to be rather rigid and not to deflect.

For the on-site soils, the following geotechnical parameters may be assumed:

i) Wet unit weight (γ) kN/m^3 = 19.0

ii) Coefficients of Earth Pressure:

at Rest (K_o) = 0.5

Active (K_a) = 0.3

Passive (K_p) = 3.0

7.6 EXCAVATION AND DEWATERING

Excavations for construction of footings, basement, etc. are not anticipated to pose any problem. Any excavation deeper than 1.2 m should be sloped back or shored to conform to the latest version of the Occupational Health and Safety Act (OHSA) and applicable regulations for construction projects.

The existing fill and native granular soils are considered as a Type 3 soils in accordance with the OHSA; according to this Act the sides of open excavations should temporarily be stable with a slope of 1 horizontal to 1 vertical.

No ground water problems are anticipated for excavation above ground water table; any seepage from wet pockets in fill/native soil can be drained out by conventional sump pumping.

7.7 EARTHQUAKE CONSIDERATIONS

In accordance with the Ontario Building Code 2006 (O. Reg. 350/06, as amended) (OBC), the proposed building should be designed to resist earthquake loads.

Based on the OBC, the subject site should be classed as "Site Class D" for designing against earthquake forces.

7.8 SITE PREPARATION

As pointed out earlier in Section 5.0, topsoil and or topsoil-mixed fill have been found at a few borehole locations as also some trees within the site. It is recommended that prior to starting construction the following site preparation should be carried out:

i) all the topsoil and topsoil-mixed fill should be removed (or salvaged for re-use in landscaping),

ii) The trees which interfere with the proposed development should be cut and removed (including their major root systems).

8.0 STATEMENT OF LIMITATIONS

The comments and recommendations presented in this report are based on the geotechnical data gathered from the boreholes at the locations indicated on the plot plan of Enclosure No. 9 and are intended as a guide for the design engineers of the project. Soil and groundwater conditions between and beyond the borehole locations may differ from those encountered at the time of our soil investigation and may become apparent during construction. Our responsibility is limited to an accurate interpretation of the soil and groundwater conditions prevailing at the locations investigated.

9.0 CLOSURE

We feel honoured to be involved in this project. It would be appreciated if we are given the opportunity to ensure that our recommendations are implemented as intended.

Respectfully Submitted
SOIL PROBE LTD.

LICENSED PROFESSIONAL ENGINEER
D. HOSSAIN
PROVINCE OF ONTARIO

Delwar Hossain, Ph.D, P.Eng.
Senior Vice President

for
Anwar Memon, M.Phil, DIC., P.Eng.
President

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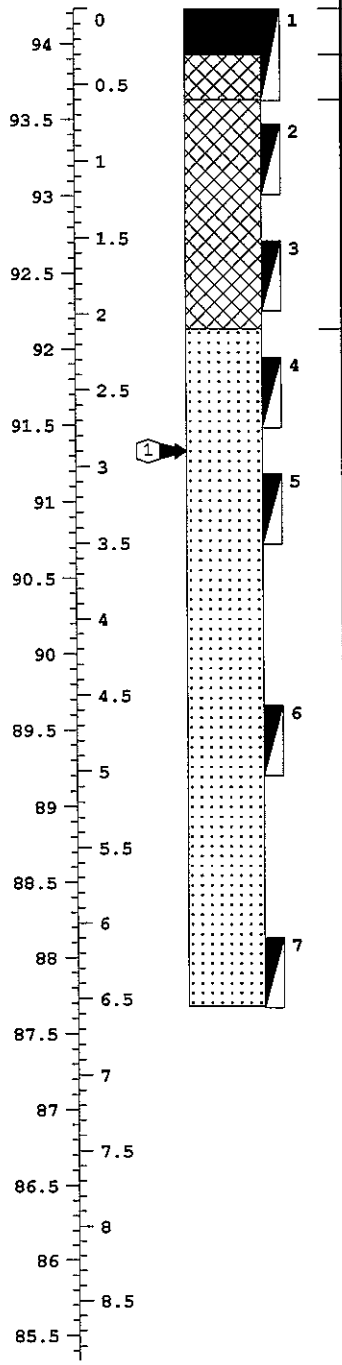
Encls.
Appendix A.

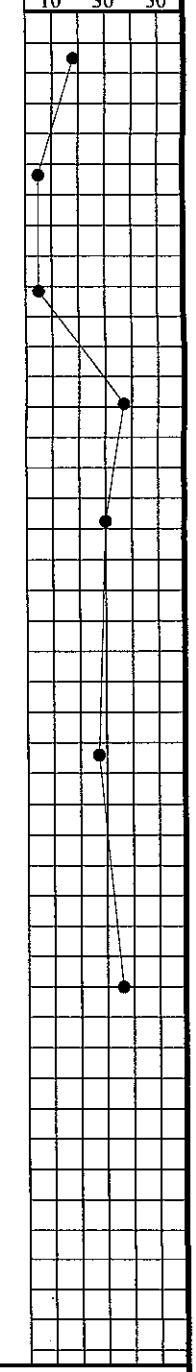
BOREHOLE LOG
BOERHOLE NO.: 1

PROJECT: Proposed Office Building
LOCATION: 1110 Lorne Park Road, City of Mississauga, Ontario
ELEVATION (m) 94.23
CAVED AT DEPTH (m): 2.90
N=Blow Count in Standard Penetration Test (Blows/0.3m)

PROJECT NO.: SP-3179
DATE: January 21, 2011
WATER LEVEL DEPTH (m):
M.C. = Natural Moisture Content



ELEVATION/ DEPTH (m)	DESCRIPTION	M.C. %	STANDARD PENETRATION TEST N	DEPTH/ ELEVATION (m)
	TOPSOIL- mixed with fine sand, about 300 mm thick.			
	FILL - mixed dark brown and grey sand with some gravel, wet (frozen)	11.8	18	
	FILL - reddish brown fine sand, moist	6.2	5	
	- layer of greyish brown, moist, fine to medium sand below about 1.4 m	6.9	5	
	FINE SAND - trace of silt, greyish brown, moist to very moist, dense.	13.2	37	
		18.3	30	
	- becomes wet and compact to dense below about 4.0 m	22.2	27	
	End of Borehole @ 6.55 m Cave in at 2.9 m No water in borehole on completion	21.6	36	



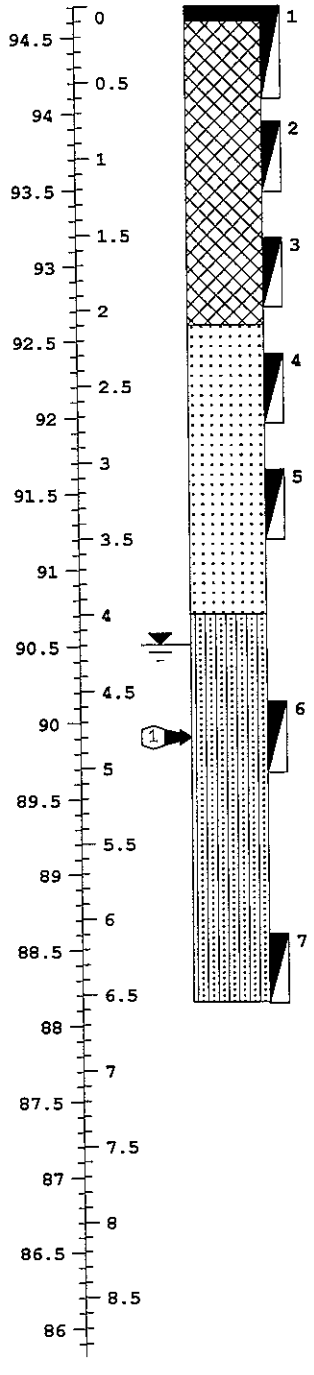
Enclosure No. 1

SOIL PROBE LTD.

BOREHOLE LOG
BOERHOLE NO.: 2

PROJECT: Proposed Office Building
LOCATION: 1110 Lorne Park Road, City of Mississauga, Ontario
ELEVATION (m) 94.71
CAVED AT DEPTH (m): 4.8
N=Blow Count in Standard Penetration Test (Blows/0.3m)

PROJECT NO.: SP-3179
DATE: January 21, 2011
WATER LEVEL DEPTH (m): 4.2
M.C. = Natural Moisture Content



ELEVATION/ DEPTH (m)	SOIL SYMBOLS	DESCRIPTION	M.C. %	STANDARD PENETRATION TEST N	DEPTH/ ELEVATION (m)	CURVE N (Blows/0.3m)
		TOPSOIL - about 100 mm thick				
		FILL - dark brown fine sand with trace to some organics, moist	10.8	17		
		- layer of dark brown fine sand below about 0.6 m	15.7	19		
		- occasional root below about 1.4 m.	12.3	8		
		FINE SAND - trace of silt, greyish brown, moist, dense.	11.1	42		
			16.2	32		
		SILTY FINE SAND - brown, wet, compact to loose.	16.7	12		
		End of borehole at 6.55 m Water level at 4.2 m on completion of borehole Cave in at 4.8 m.	23.5	10		

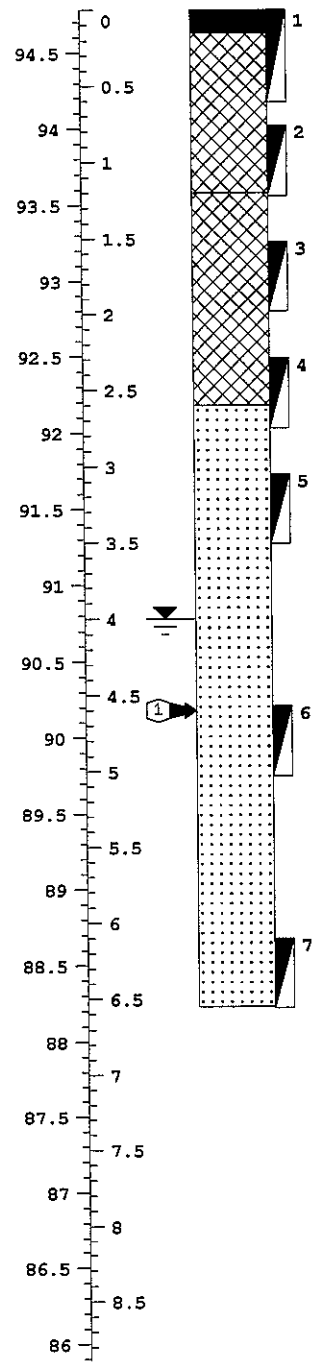
Enclosure No. 2

SOIL PROBE LTD.

BOREHOLE LOG
BOERHOLE NO.: 3

PROJECT: Proposed Office Building
LOCATION: 1110 Lorne Park Road, City of Mississauga, Ontario
ELEVATION (m) 94.78
CAVED AT DEPTH (m): 4.6
N=Blow Count in Standard Penetration Test (Blows/0.3m)

PROJECT NO.: SP-3179
DATE: January 21, 2011
WATER LEVEL DEPTH (m): 4.0
M.C. = Natural Moisture Content



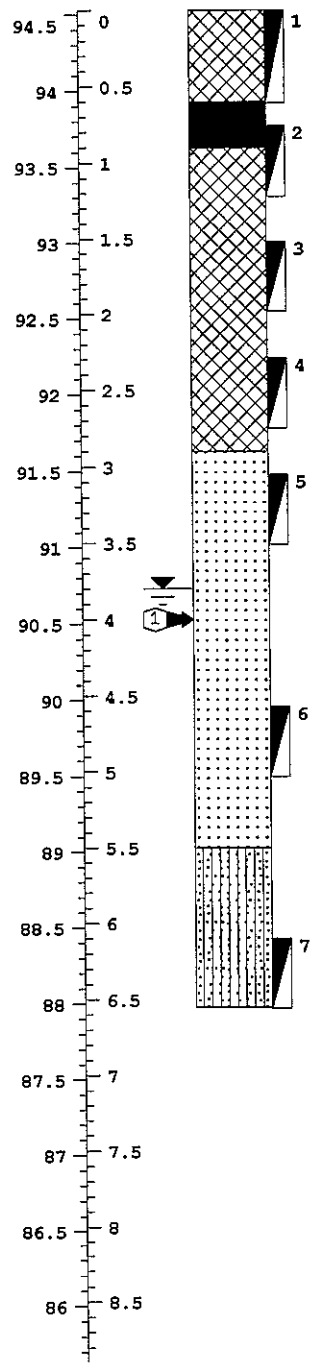
ELEVATION/ DEPTH (m)	DESCRIPTION	M.C. %	STANDARD PENETRATION TEST N	DEPTH/ ELEVATION (m)	CURVE N (Blows/0.3m)
94.5 / 0	TOPSOIL - about 150 mm thick				
94.5 / 0	FILL - dark brown fine sand with trace to some organics, moist	9.9	7		
94 / 0.5					
94 / 1		7.7	13		
93.5 / 1	FILL - dark brown fine sand, moist				
93.5 / 1.5					
93 / 2		7.8	8		
92.5 / 2					
92.5 / 2.5		11.1	30		
92 / 3	FINE SAND - trace of silt greyish brown, moist, compact to dense.				
91.5 / 3		10.5	39		
91.5 / 3.5					
91 / 4	- wet below about 4.0 m				
90.5 / 4					
90.5 / 4.5		19.8	44		
90 / 5					
89.5 / 5	- compact below about 5.5 m.				
89.5 / 5.5					
89 / 6					
88.5 / 6		21.6	15		
88.5 / 6.5	End of borehole at 6.55 m				
88 / 7	Water level at 4.0 m on completion of borehole				
87.5 / 7	Cave in at 4.6 m				
87.5 / 7.5					
87 / 8					
86.5 / 8					
86.5 / 8.5					
86					

Enclosure No. 3

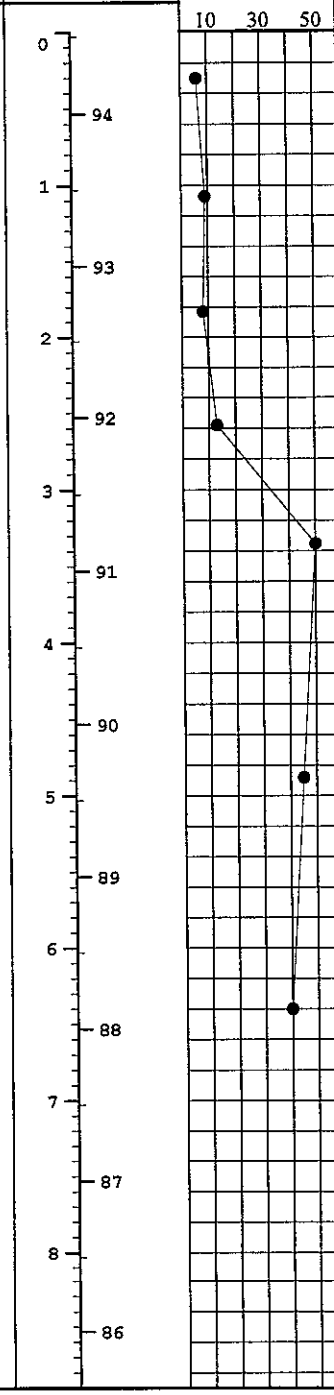
BOREHOLE LOG
BOERHOLE NO.: 4

PROJECT: Proposed Office Building
LOCATION: 1110 Lorne Park Road, City of Mississauga, Ontario
ELEVATION (m) 94.53
CAVED AT DEPTH (m): 4.0
N=Blow Count in Standard Penetration Test (Blows/0.3m)

PROJECT NO.: SP-3179
DATE: January 21, 2011
WATER LEVEL DEPTH (m): 3.8
M.C. = Natural Moisture Content



ELEVATION/ DEPTH (m)	SOIL SYMBOLS	DESCRIPTION	M.C. %	STANDARD PENETRATION TEST N	DEPTH/ ELEVATION (m)	CURVE N (Blows/0.3m)
		FILL - greyish brown fine sand mixed with some topsoil/organics, moist	17.0	6		
		TOPSOIL - mixed with some fine sand, about 300 mm thick				
		FILL - reddish brown fine sand, moist	9.2	9		
		- layer of dark brown medium sand at about 1.4 m	6.9	8		
			10.4	13		
		MEDIUM SAND - brownish grey, moist, dense to very dense.	12.6	50		
		- becomes wet & texture changes to fine to medium below about 3. 8 m	18.0	45		
		SANDY SILT - brownish grey, very moist to wet, dense.	18.5	40		
		End of borehole at 6.55 m Water level at 3.8 m Cave in at 4.0 m				



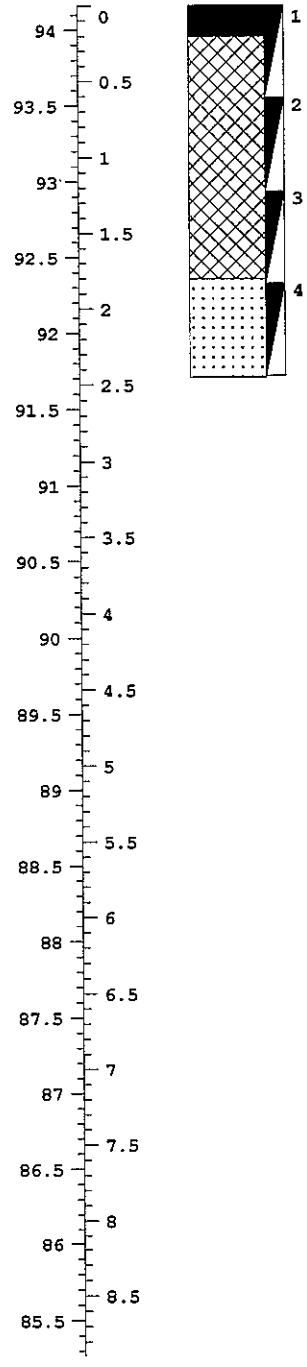
Enclosure No. 4

SOIL PROBE LTD.

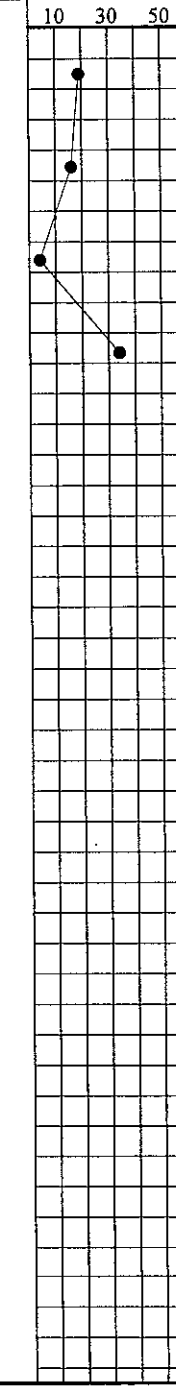
BOREHOLE LOG
BOERHOLE NO.: 5

PROJECT: Proposed Office Building
LOCATION: 1110 Lorne Park Road, City of Mississauga, Ontario
ELEVATION (m) 94.16
CAVED AT DEPTH (m):
N=Blow Count in Standard Penetration Test (Blows/0.3m)

PROJECT NO.: SP-3179
DATE: January 21, 2011
WATER LEVEL DEPTH (m):
M.C. = Natural Moisture Content



DESCRIPTION	M.C. %	STANDARD PENETRATION TEST N	DEPTH/ ELEVATION (m)
TOPSOIL - about 200 mm thick			
FILL - grey silty sand with trace of organics, moist.	8.6	19	
- layer of moist greyish brown fine sand below about 0.4 m			
- layer of reddish brown fine sand with trace of silt below about 0.6 m, moist.	6.6	16	
	11.1	4	
FINE SAND - trace of silt, brown to greyish brown, moist.	7.9	34	
End of borehole at 2.45 m Borehole dry on completion.			



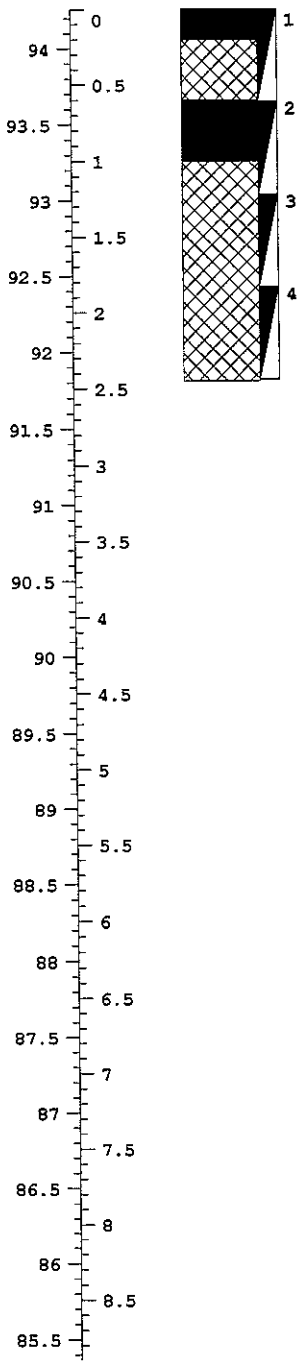
Enclosure No. 5

SOIL PROBE LTD.

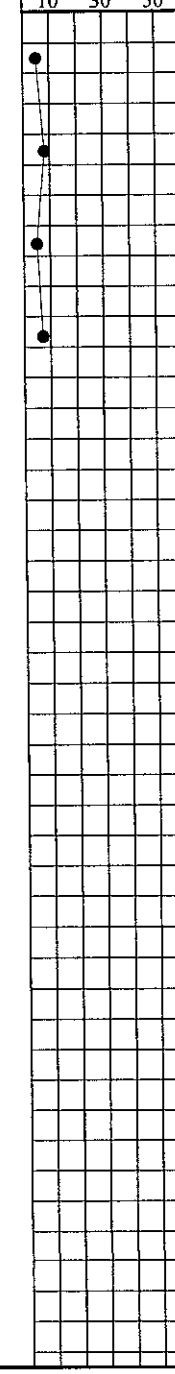
BOREHOLE LOG
BOERHOLE NO.: 6

PROJECT: Proposed Office Building
LOCATION: 1110 Lorne Park Road, City of Mississauga, Ontario
ELEVATION (m) 94.26
CAVED AT DEPTH (m):
N=Blow Count in Standard Penetration Test (Blows/0.3m)

PROJECT NO.: SP-3179
DATE: January 21, 2011
WATER LEVEL DEPTH (m):
M.C. = Natural Moisture Content



DESCRIPTION	M.C. %	STANDARD PENETRATION TEST N	DEPTH/ ELEVATION (m)
TOPSOIL - about 200 mm thick			
FILL - brown fine sand, trace of gravel, moist.	7.5	5	
TOPSOIL - about 400 mm thick			
FILL - reddish brown fine sand, moist	8.9	8	
	4.8	5	
- occasional root below about 1.8 m			
	5.8	7	
End of borehole at 2.45 m Borehole dry on completion.			



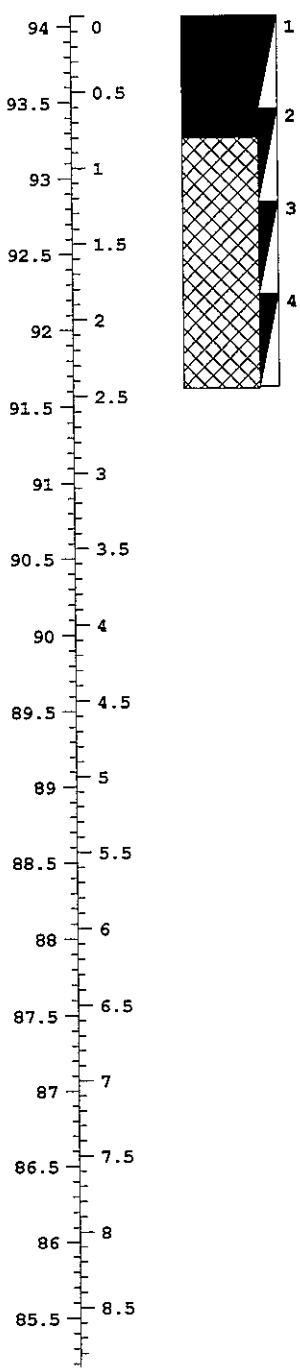
Enclosure No. 6

SOIL PROBE LTD.

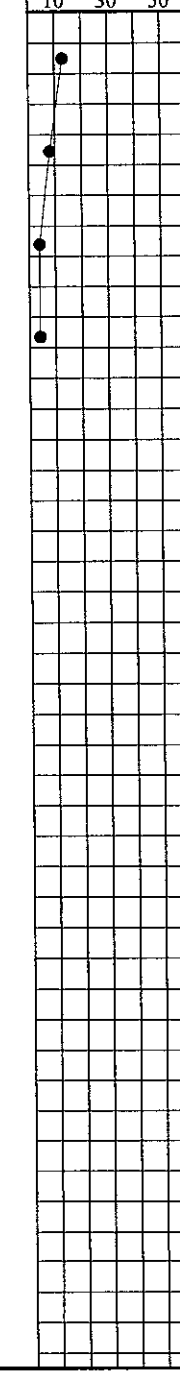
BOREHOLE LOG
BOERHOLE NO.: 7

PROJECT: Proposed Office Building
LOCATION: 1110 Lorne Park Road, City of Mississauga, Ontario
ELEVATION (m) 94.07
CAVED AT DEPTH (m):
N=Blow Count in Standard Penetration Test (Blows/0.3m)

PROJECT NO.: SP-3179
DATE: January 21, 2011
WATER LEVEL DEPTH (m):
M.C. = Natural Moisture Content



DESCRIPTION	M.C. %	STANDARD PENETRATION TEST N	DEPTH/ ELEVATION (m)
TOPSOIL - mixed with some sand and trace of gravel size stones, moist (frozen) about 800 mm thick.	9.2	13	0 94
FILL - reddish brown fine sand, moist.	7.1	8	1 93
- includes occasional roots, below about 1.2 m	6.1	4	2 92
	6.8	4	3 91
End of borehole at 2.45 m Borehole dry on completion.			4 90 5 89 6 88 7 87 8 86



Enclosure No. 7

SOIL PROBE LTD.

KEY TO SYMBOLS

Enclosure No. 8
Report No.: 2011 – 22768

Symbol Description

Strata symbols


Fill


Sand


Silty sand


Sandy silt


Topsoil

Notes:

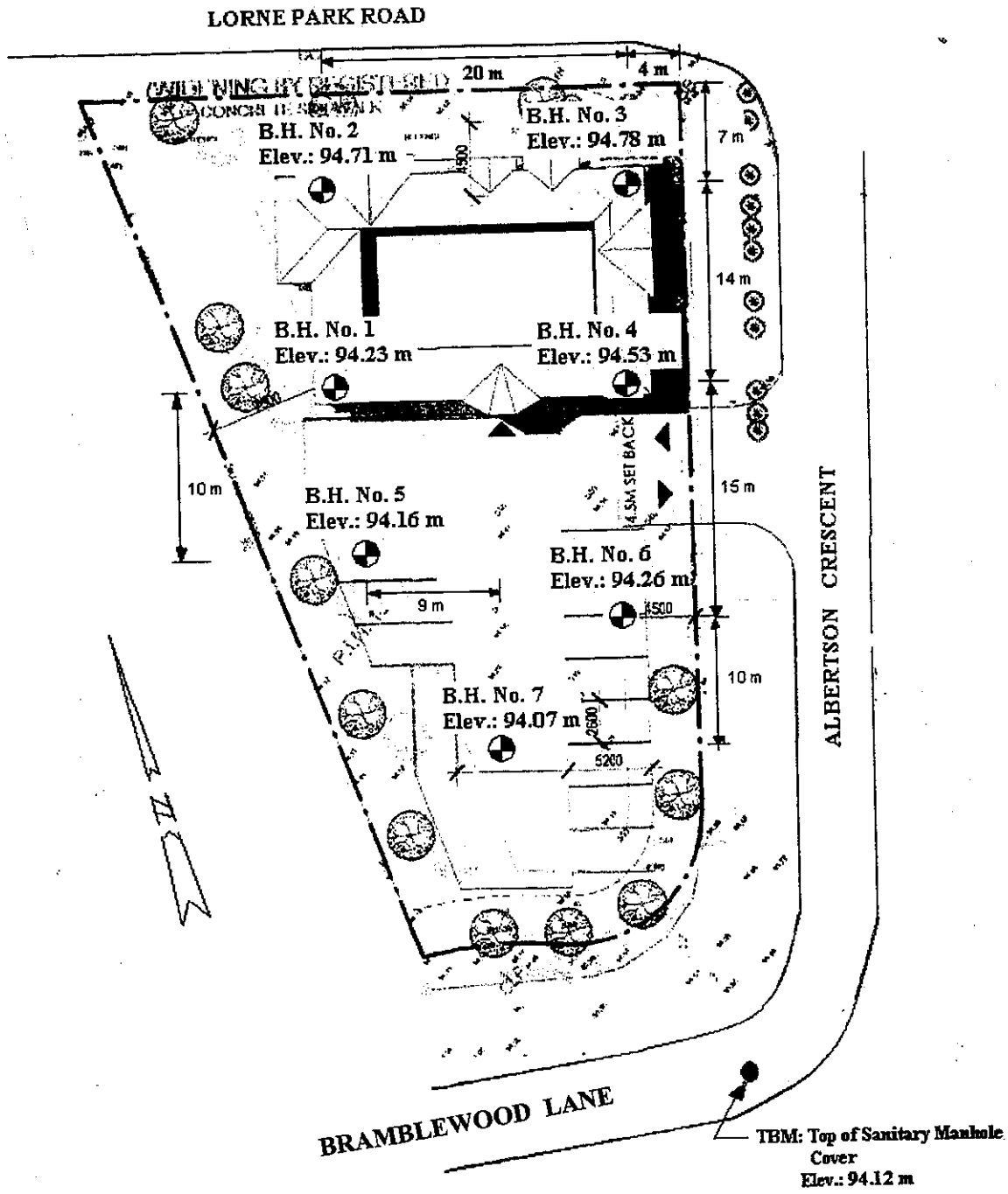
TERMS DESCRIBING RELATIVE DENSITY, BASED ON STANDARD PENETRATION TEST N-VALUE FOR COARSE GRAINED SOILS (major portion retained on No.200 sieve).

DESCRIPTIVE TERM	"N"-VALUE (blows/0.3m)	RELATIVE DENSITY (%)
Very Loose	< 4	< 15
Loose	4 to 10	15 to 35
Compact or Medium	10 to 30	35 to 65
Dense	30 to 50	65 to 85
Very Dense	> 50	> 85

TERMS DESCRIBING CONSISTENCY, BASED ON STANDARD PENETRATION TEST N-VALUE, FOR FINE GRAINED SOILS (major portion passing No. 200 sieve)

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH (kPa)	"N"-VALUE (blows/0.3m)
Very Soft	< 25	< 2
Soft	25 to 50	2 to 4
Firm	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very Stiff	200 to 400	15 to 30
Hard	> 400	> 30

Enclosure No. 9
Report No.: 2011 - 22768

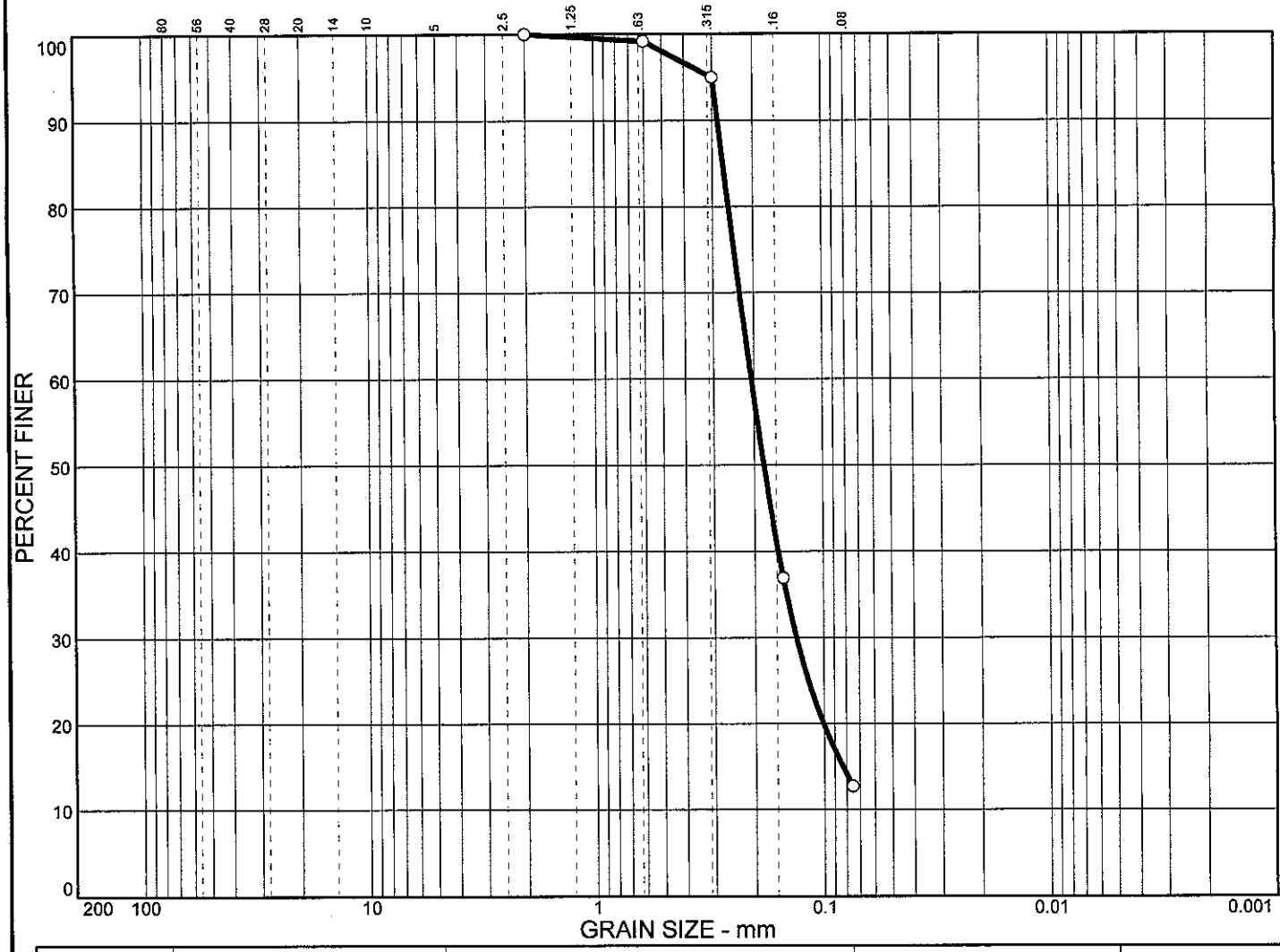


LEGEND

BOREHOLE

PLOT PLAN SHOWING THE BOREHOLE LOCATIONS FOR THE PROPOSED OFFICE BUILDING AT 1110 LORNE PARK ROAD, CITY OF MISSISSAUGA, ONTARIO. (NOT TO SCALE)

GRAIN SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	87.3	12.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.270	0.205	0.182	0.132	0.0829			

MATERIAL DESCRIPTION	USCS	AASHTO
○ On-site material		

Project No. SP-3179 **Client:** Jacan Construction Ltd.

Project: Proposed Office Building at 1110 Lorne Park Road, City of Mississauga, Ontario

○ **Location:** B.H. No. 5 (Depth:0.6 m - 1.8 m), B.H. Nos. 6 & 7: from below topsoil

Remarks:

○ Sampled by: Ehtesham
On January 21, 2011

Report No.: 2011-22768

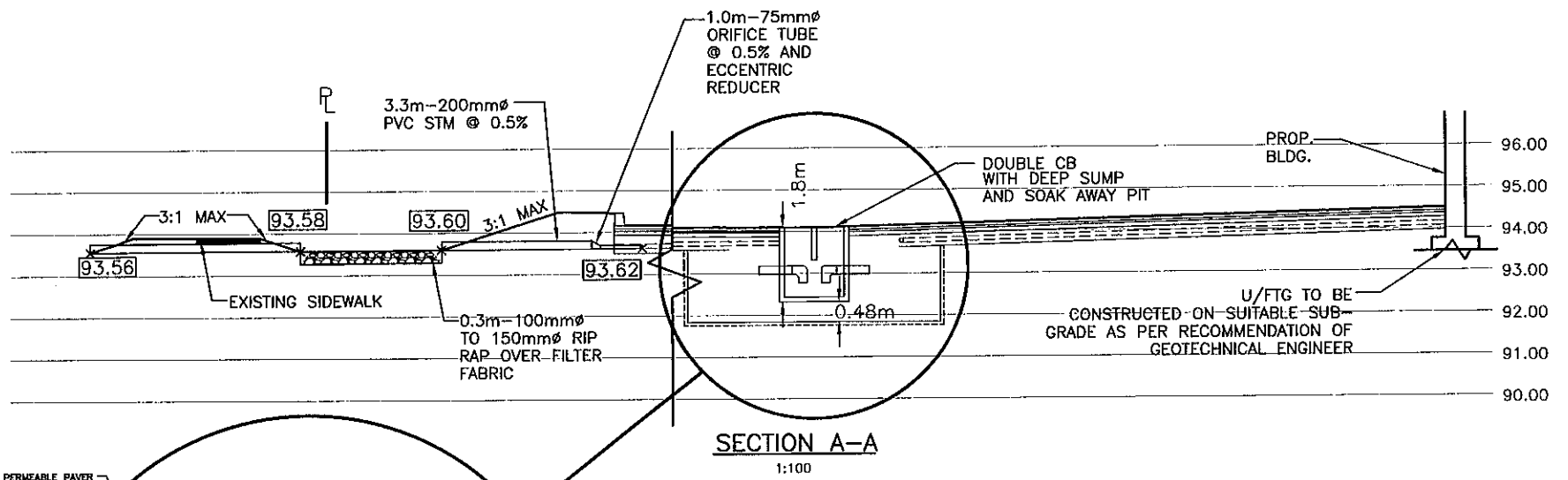
GRAIN SIZE DISTRIBUTION TEST REPORT

SOIL PROBE LTD.

Enclosure No. 10

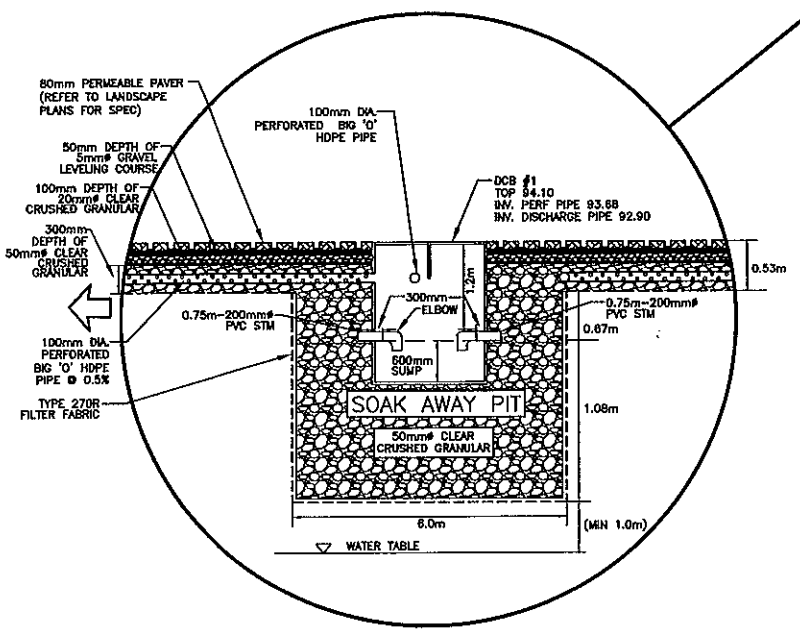
APPENDIX A

PROPOSED PERMEABLE PAVEMENT DESIGN
(PREPARED BY EMC GROUP LIMITED)



SECTION A–A

1:100



PERMEABLE PAVEMENT AND SOAK AWAY PIT DETAIL

N.T.S.

EMC GROUP LIMITED
Engineers Planners Project Managers
Vaughan Ontario (905) 738-3939

TITLE:
PROPOSED 2–STOREY OFFICE BLDG.
1110 LORNE PARK ROAD
PERMEABLE PAVEMENT DETAIL

DESIGN: S.P.	CHECK: M.A.Z.	DATE: FEB. 2011
SCALE: 1 : 100 METRIC	DWG. No. 208147–SK2	