Candec Engineering Consultants Inc.
consulting engineers and environmental scientists

Report
of the
Geotechnical Investigation
Of the Property at
69 Sanders Boulevard & 1630 Main Street West
Hamilton, Ontario

Prepared for

Bloomfield Homes

Our project number: 18-1565
Date: May 14, 2018

Table of Contents

Candec Engineering Consultants Inc.
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May 14, 2018

Bloomfield Homes
9120 Leslie Street, Suite 203
Richmond Hill, Ontario
L4B 3J9

Attention: Mr. Selva Chelliah

Re: 69 Sanders Boulevard & 1630 Main Street West, Hamilton, Ontario
Our Reference Number: 18-1565

Dear Sir;

1.0 INTRODUCTION

Candec Engineering Consultants Inc. (Candec) has carried out a preliminary geotechnical investigation of the above referenced property that is proposed as the site of a new residential/mixed-use development. The property is comprised of two juxtpositioned parcels of land located at 69 Sanders Boulevard & 1630 Main Street West, Hamilton, Ontario.

The property is legally described as

- **69 Sanders Boulevard:** - LOT 20, Registrar's complied Plan 1475; Hamilton
  PIN 17474-0284 (LT)

- **1630 Main Street W:** - LTS 1, 2 & 3, Plan 904; Hamilton
  PIN 17474-0018 (LT)

Authorization to proceed with the assessment was given by Mr. Selva Chelliah, who is the authorized signing officer of the owner of the property, Bloomfield Homes, located at 9120 Leslie Street, Suite 203, Richmond Hill, Ontario L4B 3J9.

The purpose of the investigation was to determine the subsoil conditions and to provide general recommendations pertaining to the geotechnical aspects of constructing a residential subdivision comprised of stacked townhouses and a low-rise multi-unit condominium building; it is expected that these buildings will have one level of basement.

We expect that asphalt concrete pavements will be required to provide access into and out of the property, and light duty pavement to serve as parking facilities for motor vehicles. It is assumed that the design will comply with the applicable codes and standards.

This report presents the results of the investigation performed in accordance with the general terms of reference outlined above.

No portion of this report should be used as a separate entity. It should be clearly understood that the report is written to be read in its entirety.

2.0 LIMITATIONS

The report is limited in scope to those items specifically referenced in the text. No other testing and design calculations have been performed except as specifically reported.

It should be understood that the data we have collated and the opinions we have formed after reviewing this information should not be construed as a guarantee but only a guide to probable expectations. Conditions that exist but are not recorded herein were not apparent given the level of study authorised.

The discussions and recommendations presented in this report are intended for the sole guidance of the client named along with their architectural and structural design consultants. It should not be relied upon for any other purpose. Unauthorised parties who use this report do so totally at their own risk.

The information on which the recommendations stated herein are based is subject to confirmation by engineering personnel from Candec at the time of construction.

The fact that localised variations in the subsurface conditions may be present between and beyond the boreholes and that those conditions may be significantly different from the general description provided for design purposes should be understood. This applies particularly to the thickness and consistency of the soil strata. Contractors should make their own interpretation of the factual borehole and sample test results detailed in this report or contact us for assistance, and should draw their own conclusions as to the effect of subsurface conditions on work below ground level.

It is strongly urged that Candec be contacted to provide assistance in the interpretation of the borehole records by anyone undertaking work on or below the ground surface at this site prior to this work being carried out.

3.0 PROGRAM OF TESTING

3.1 Field work

The field work on which the discussion and recommendation presented in this report are based was comprised seven boreholes/monitoring wells. The locations of the boreholes are detailed in Drawing No. 1.

The boreholes were drilled by a specialist drilling contractor employing a continuous flight auger, under the direction of personnel from Candec, who logged the holes in the field and transported the extracted soil samples to our laboratory for testing.

The sampling was achieved using a split barrel samplers and the standard penetration test percussion technique.

The holes were allowed to remain open for a few hours in order to afford observation of the ground water conditions at each location.

A pocket penetrometer was used on the soil strata that were exposed in each test hole in order to estimate the unconfined compressive strength of the soil.

3.2 Laboratory work

The samples that were extracted were taken to or laboratory where they were sorted and classified based on an initial tactile and visual examination. The tube samples were used in order to determine the in situ unit weight of the soils that were encountered.

Moisture content determinations were performed on representative samples of the soils that were encountered across the site as well as within selected borehole in order to determine the moisture content variation with depth as well as laterally across the site.

Two samples were selected as being representative of the predominant soil strata that were been encountered. Particle size gradation analyses were preformed on these samples. These analyses involved a combination of mechanical sieving and the hydrometer analysis.

Standard proctor tests were performed on two composite samples of soils have the same lithology located at a depth of 1.5m and 4.5m respectively.

Unconfined compression tests (pocket penetrometer) were performed on a sample taken from each of boreholes.

4.0 Areal Setting

4.1 Site Description

The property is in a highly developed are of the City of Hamilton that is not known to be or designated as being environmentally or ecologically sensitive. There are no bodies of water within 300m of the subject property.

No fill materials are evident on the ground surface; the ground surface was generally flat in the eastern two-thirds, dropping off by approximately 1m to the west. The exposed soil appeared to be brown fine sandy silt. No water was accumulated on the ground surface, which appeared to be slightly higher than the elevation of Main Street west.

3.0 SITE GEOLOGY

The geology of the subject property is expected to be characterized by Halton Till (Ontario – Erie Lobe). This deposit is predominantly a silt and silty clay matrix. The soil matrix is underlain by Upper Ordovician shale, limestone, dolostone and siltstone of the Queenston Formation. Bedrock is expected to be located at a depth of approximately 3m to 8m below the ground surface.

4.0 SITE AND SUBSURFACE CONDITIONS

The boreholes revealed that the uppermost stratum of the soil profile below the pavement and topsoil is comprised of dark brown sandy silt and silty sand both with varying proportions of fine gravel. The thickness of the stratum ranges from 500mm to 3500mm at the borehole locations, with average thickness being approximately 1.2m, and the maximum thickness being in northern ‘leg’ of the property. This material appears to have varying proportions of organic matter that may limit its reuse as engineered fill. Possible concrete obstructions were encountered by others in the northern ‘leg’ of the property as well.

No visible or olfactory evidence of the presence of chemical contamination was noted in any of the samples of this surface stratum that were extracted.

The natural soil below the fill dense brown to grey fine to medium sand with some silt, ranging in thickness from 2.5m to 4m. In its lower horizons, it is interbedded with sandy silt to silt seams ranging in thickness to 1.0mfine sand. This soil stratum was moist to very moist. The upper elevations are oxidized to a brown colour. Below a depth of approximately 4m the soil has a brownish grey colour.

This is underlain by grey clay silt to silt clay till that extended to the depths at which the boreholes were terminated.

Groundwater was encountered in all of the boreholes at depths ranging from 5.1m to 5.8m below the ground surface.

The insitu moisture content of the soil generally was between 11% and 19%.

The liquid limit and plastic limit of the brown to brown grey clayey silt were approximately 20% and 16% respectively. This suggests that the clayey soils are in a very plastic insitu state. One sample of the grey silt was tested and found to have a low plasticity based on a liquid limit of 15.8% and a plastic limit of 11.3%.

Given the penetrometer readings that were registered in these soils their insitu consistency is classified as hard for the cohesive strata and very dense for the silt strata.

5.0 GEOTECHNICAL DISCUSSIONS

5.1 Bearing Capacity and Foundations

The undrained shear strength of the soils ranges from 90KPa to 170KPa based on the results of the pocket penetrometer field tests.

It should be possible to employ conventional spread and strip footings, founded in the native soil. The estimated bearing capacity of native brown silt/clayey silt is presented in the following table:

Bearing pressure for settlement (SLS)/Factored Ultimate Soil Bearing Pressure (ULS) and Corresponding Founding Level		
Depth (m)	SLS (KPa)	ULS (KPa)
2 – 4	400	600

Both the total and differential settlement resulting from loads not exceeding the allowable loads recommended herein are expected to be 24mm and 16mm respectively.

The buildings should be designed to resist an earthquake force, using site Classification c (stiff soil).

The clean on-site soil, whose moisture content is at the optimum value, can be used as engineering fill. The bearing capacity that will be attained is estimated to be 150Kpa.

The bases of the foundation excavations must be inspected by a geotechnical engineer in accordance with the stipulations in the Ontario Building Code to confirm the bearing capacity of the subsoil.

The sulphate ion content of the soil and ground water do not suggest that cement other than type 10 needs to be used for the foundations.

5.2 Slab-On-Grade

Slab-on-grade construction may be employed at this site. The subgrade should be proof compacted to identify any zones of soft or unsuitable subsurface conditions. If necessary, these conditions should be corrected prior to proceeding with the construction of the slab.

It is recommended that the slab-on-grade should be constructed on a layer of 19mm clean crushed stone. Granular "A", compacted to 100% of its standard Proctor density, may also be used. The layer should not be less than 150mm thick.

5.3 Excavation and Backfill

Excavation at this site will be achieved easily using a backhoe. In the event the excavations will be made to a depth greater 2.5m, it may be necessary to provide temporary shoring or to slope the sides of the excavations back at an angle of 70° to the horizontal. In relation to the installation of sewers or water services, such temporary supports are typically provided by trench boxes. Further commentary in this regard will be provided at such time as the required configurations of the excavations are known.

The existing topsoil is not suitable for use as structural fill. However, it may be stripped and stockpiled with a view to reusing it as surface cover in landscaped areas designated as part of the development plan.

The on-site natural soil can be used as fill. It should be noted that it is fine grained, and it will be difficult to achieve satisfactory levels of compaction in the event its moisture content exceeds its optimum value by more than 3 percentage points. A sheepsfoot roller, operated in the **non-vibratory** mode, can be used to compact the soil in order for best results to be achieved.

Standard Proctor tests that have been carried out reveal that the soil within the depth interval 0.6m to 2.0m and which is a brown sandy silt with varying proportions of clay has a maximum dry density of 1853 Kg/m^3 at an optimum moisture content of 13.3%. As for the soil that is within a depth interval of 3.0m to 5.0m and which is a grey sandy silt with a little clay has a maximum dry density of 1900 kg/m^3 at an optimum moisture content of 11.6%.

5.4 Engineered fill procedures

The on-site fill material can be used as fill provided its moisture content remains within 3 percentage points of the optimum value. The fill should be placed in loose lifts that do not exceed 400mm. The fill must be compacted to 100% of the standard Proctor density.

Compaction tests must be carried out on each lift to confirm the adequacy of the compaction prior to proceeding with the next lift. This will probably require full time inspection by our personnel depending on the speed with which the engineered filling operation is to be executed to completion.

A non-vibratory roller would be best in this situation especially if the moisture content of the fill is found to be wetter of optimum. In the event the conditions at the time of compaction are revealed to be favourable, a field directive may be given to apply vibratory agitation if this is preferred by the contractor.

In the event housing units are to be constructed on engineered fill, it is imperative that the depth of fill should uniform across the entire footprint of the building. The footings should then be reinforced with four 15M reinforcing steel bars, with two being placed in the bottom and two in the top. Similar reinforcement should also be placed in the foundation walls that are to be support on these footings

The zone of engineered fill placement should extend 1000mm beyond the exterior edges of the proposed exterior footings and should extend outward at a 45° angle to eliminate any edge effects on the bearing capacity that will be realized.

It is expected that both the total and differential settlements resulting from loads that do not exceed the allowable bearing capacity recommended here will be less than 30mm and

20mm respectively provided the fill is engineered as described here.

5.5 Sewer and Watermain Construction

Regarding the bedding for the sewer and water service pipes, standard granular materials may be used, such as MTO designated HL6 gravel. Some consideration could be given to placing a geotextile separation sheet between the bedding and the subsoil in order to prevent migration of ‘fines’ into the granular material over time and thereby diminishing its effectiveness. However, this is not essential.

Groundwater was encountered at a depth of approximately 5.0m, with a vadose zone extending to approximately 1m above it. In the event the sewers are to be placed above this depth, there are no precautions that need to be taken to address the possibility of buoyancy.

5.6 Frost and Erosion Potential

The most of the near surface onsite material is fine grained and moderately cohesive and is not considered particularly susceptible to erosion by wind or surface runoff. Nevertheless, precautions should be taken to prevent such erosion and soil particle transportation from the site. This can be achieved by using standard silt fencing and geotextiles.

The soils at this site are not considered highly frost susceptible especially given that the ground water table is not close to the ground surface or the probable location of the foundation and foundation walls. Therefore, there is a low possibility of adfreezing or frost heaving occurring.

Therefore, no special measures need to be taken in this regard. However, footings must be placed no higher than 1.5m below the ground surface so as to provide the requisite frost protection. Given that there will be one level of basement, there appears to be no basis for concern in this regard.

In the event it is necessary to place the foundation at a shallower depth than is needed for adequate soil cover, Styrofoam insulation can be placed and extended outward at least 1.0m from the edges of the footings. The recommended equivalence is 25mm of insulation for each 300mm of soil cover.

In the event there will be a slab on grade in an area that will be unheated and the water table will be within 1.0m of the underside of the slab, styrofoam insulation should also be provided, using the same equivalency stated in the previous paragraph.

5.7 Drainage Considerations

Ground water was not encountered above a depth of 5.1 in any of the boreholes. Therefore, dewater facilities will not be needed for any excavation that will be no deeper than this depth.

The exterior ground surface should be graded to channel surface run off water away from the buildings and away from locations in which this water could drain under the asphalt concrete pavements. Exterior perimeter weeping drains should be placed around all buildings.

Based on the particle size gradations, the permeability of the on-site soils is estimated to be 3×10^{-5} cm/sec using Hazen's formulation and the particle size distribution graphs.

The soil at this site is not considered suitable for on-site infiltration or percolation as a means of storm water disposal.

5.8 Earth Pressure Considerations

It has been estimated that the soil has an angle of internal friction of 30° and cohesion of 10Kpa.

The retaining walls and the subsurface walls of the structures should be designed to resist an earth pressure, 'p', at any depth, 'h', evaluated using the expression:

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

where $K_A = 0.33$, is the estimated applicable earth pressure coefficient;

$\gamma = 18.4$ kN/m^3, the average unit weight of the soil behind the wall;

q = is an allowance for surface surcharge, if any.

It is assumed that the backfill adjacent to the walls will be freely draining material so as to prevent the build up of pore pressure behind the wall. This is an OBC requirement.

In the event a retaining wall that is to be built will be embedded to an extent that passive earth pressures will be exerted, a passive earth pressure coefficient of K_p equal to 3.0 should be used.

The ‘at rest’ condition would be represented by the coefficient K_o which has been estimated to have a value of 1.0.

5.9 Asphalt Concrete Pavements

The existing natural undisturbed soil profile will be capable of supporting flexible pavement structures. A non-repetitive plate load test that was carried out on the soil stratum revealed the following modulii of subgrade reaction;

Depth (mm)	**K (Mpa/m)**
450	32.0

In order to achieve these values, all deleterious materials (topsoil) that are encountered must be stripped from the areas in which a pavement is to be constructed.

The exposed subgrade should be subjected to proof rolling (4 to 6 passes by a large non-vibratory roller) in the presence of a geotechnical engineer.

The paved roadways should be shaped and crowned to provide drainage. Provided this will be done, and all excavations for the sewer and buried utilities are backfilled and compacted to a dense state, the pavement thicknesses detailed in the table below should perform satisfactorily**. However, it should be noted that the municipal standards take precedence; therefore, in the event any or all of the pavements will be public roads, the municipal standard must be used.**

The asphalt concrete cover may be made up of a base coat comprised of HL-8 asphalt concrete covered with a 50mm thick surface course of HL-3 asphalt concrete where the total thickness is to be greater than 50mm.

The materials comprising the base and sub-base courses should be compacted to a minimum 100% of their standard Proctor density. The materials comprising the asphalt concrete courses should be compacted to a minimum 96% of their Marshall density.

Minimum Pavement Thickness
10 –year useful life

Description	Car Parking Areas (Standard Duty)	Driveways (Heavy Duty)	Materials
Asphalt Cover	50mm	100mm	Hot mix asphalt
Base Course	100mm	200mm	19mm crushed limestone or Granular “A”
Sub-base Course	200mm	300mm	50mm crushed limestone or Granular “B”

Minimum Pavement Thickness
15 –year useful life

Description	Car Parking Areas (Standard Duty)	Driveways (Heavy Duty)	Materials
Asphalt Cover	75mm	100mm	Hot mix asphalt
Base Course	200mm	250mm	19mm crushed limestone or Granular “A”
Sub-base Course	200mm	450mm	50mm crushed limestone or Granular “B”

6.0 CLOSURE

The report that has been prepared is predicated on a presumed plan of development. In the event the plan is changed, it may be necessary to review and revise some of the recommendations we have set out herein. In addition, it is essential that you communicate any alternative design schemes that you are contemplating so that we can give our opinion on the geotechnical implications.

We trust that this report satisfies your requirements at this time. Please do not hesitate to call us in the event we can be of further service.

Yours truly,
CANDEC ENGINEERING CONSULTANTS INC.

Bernard Moore, P. Eng., M. Eng.
Principal

LICENSED PROFESSIONAL ENGINEER
BERNARD MOORE
PROVINCE OF ONTARIO

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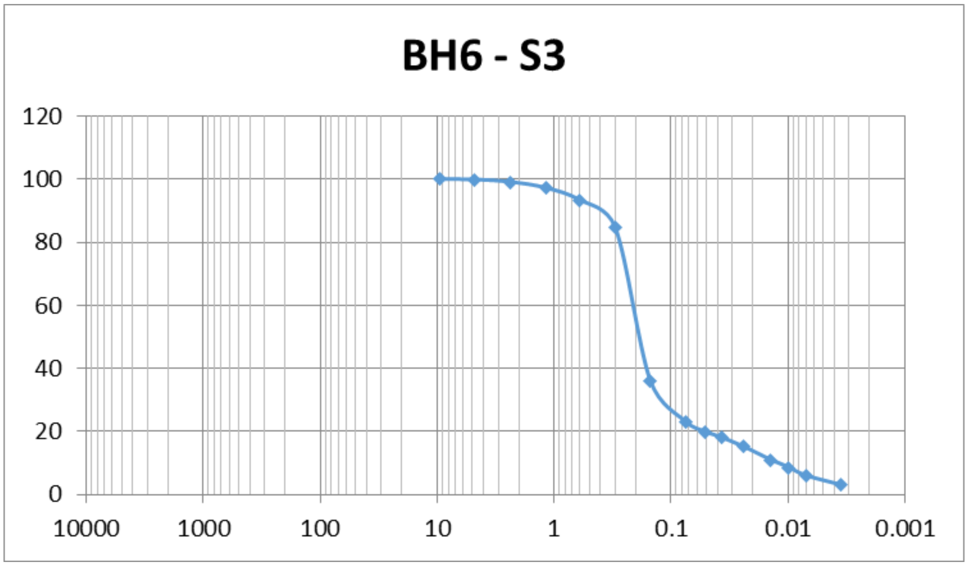
Particle Size Distribution Test Results


BH6 - S3
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80
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20
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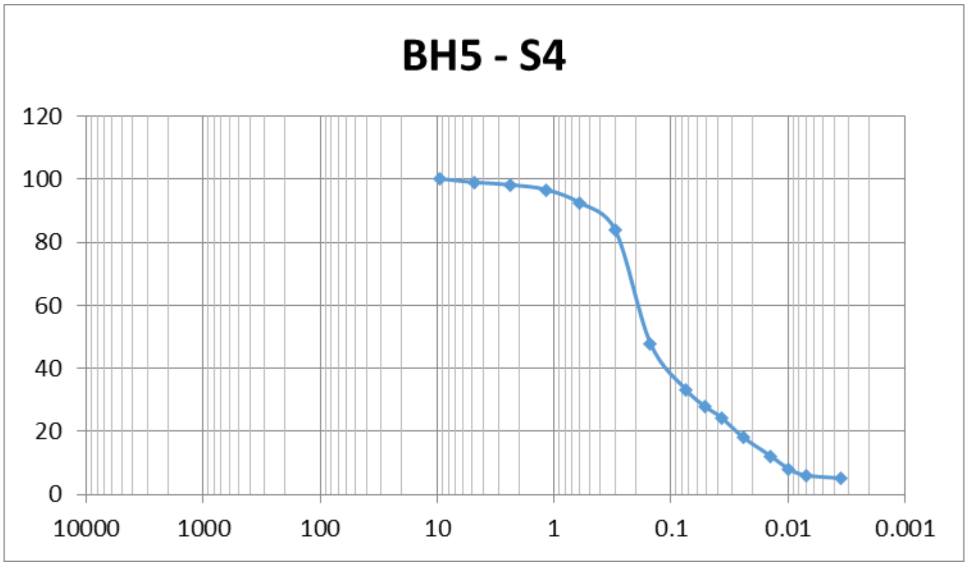
0.01
0.001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10
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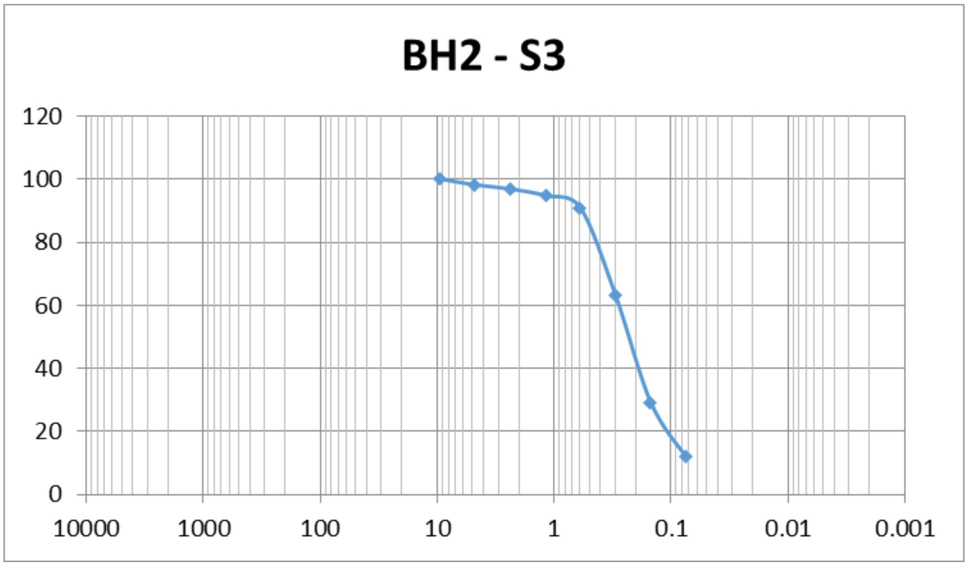
0.01
0.001


BH2 - S3
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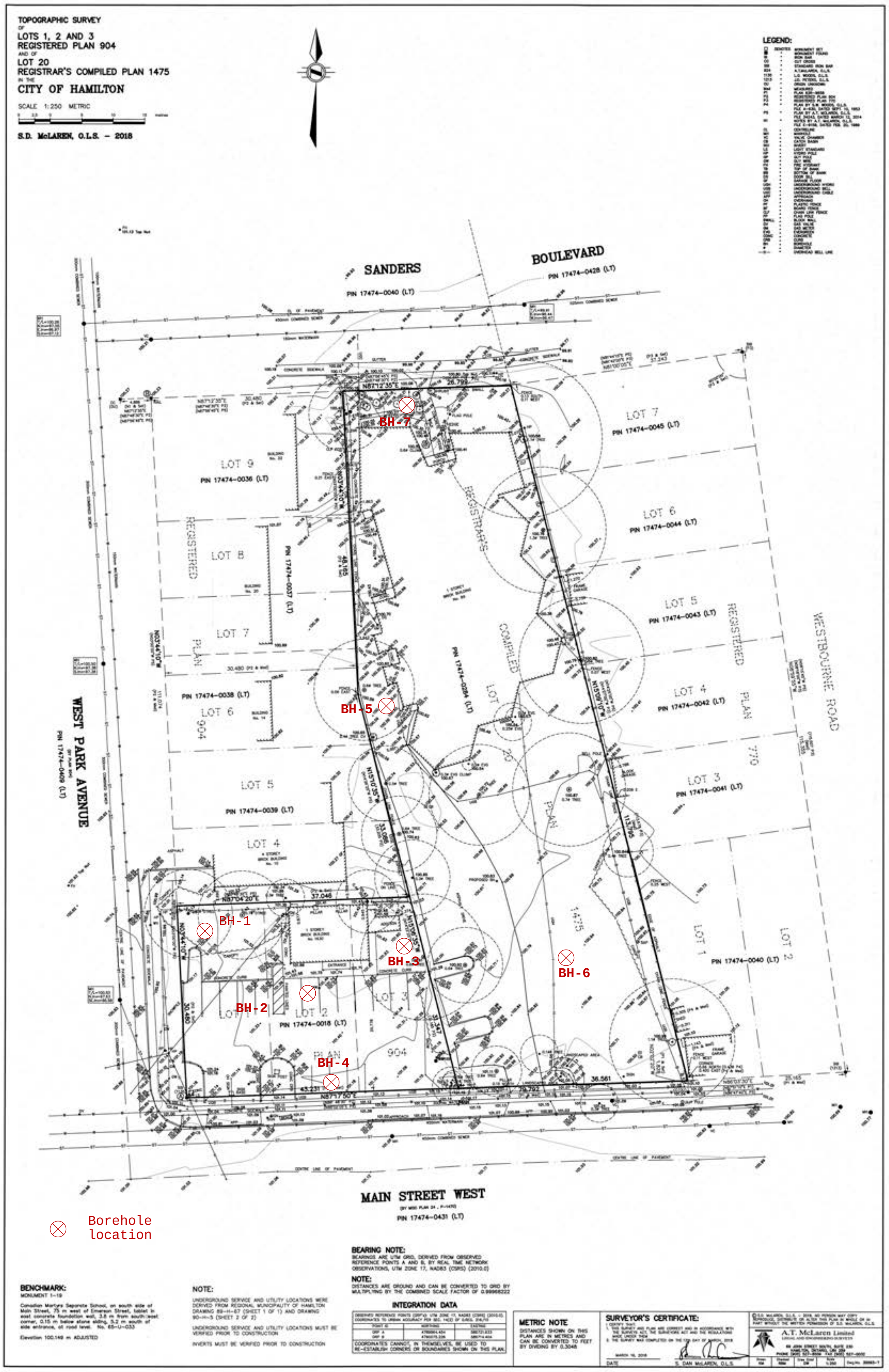
10
1
0.1
0.01
0.001

Appendix B

Borehole Location Plan & Borehole Logs



Borehole Location Plan

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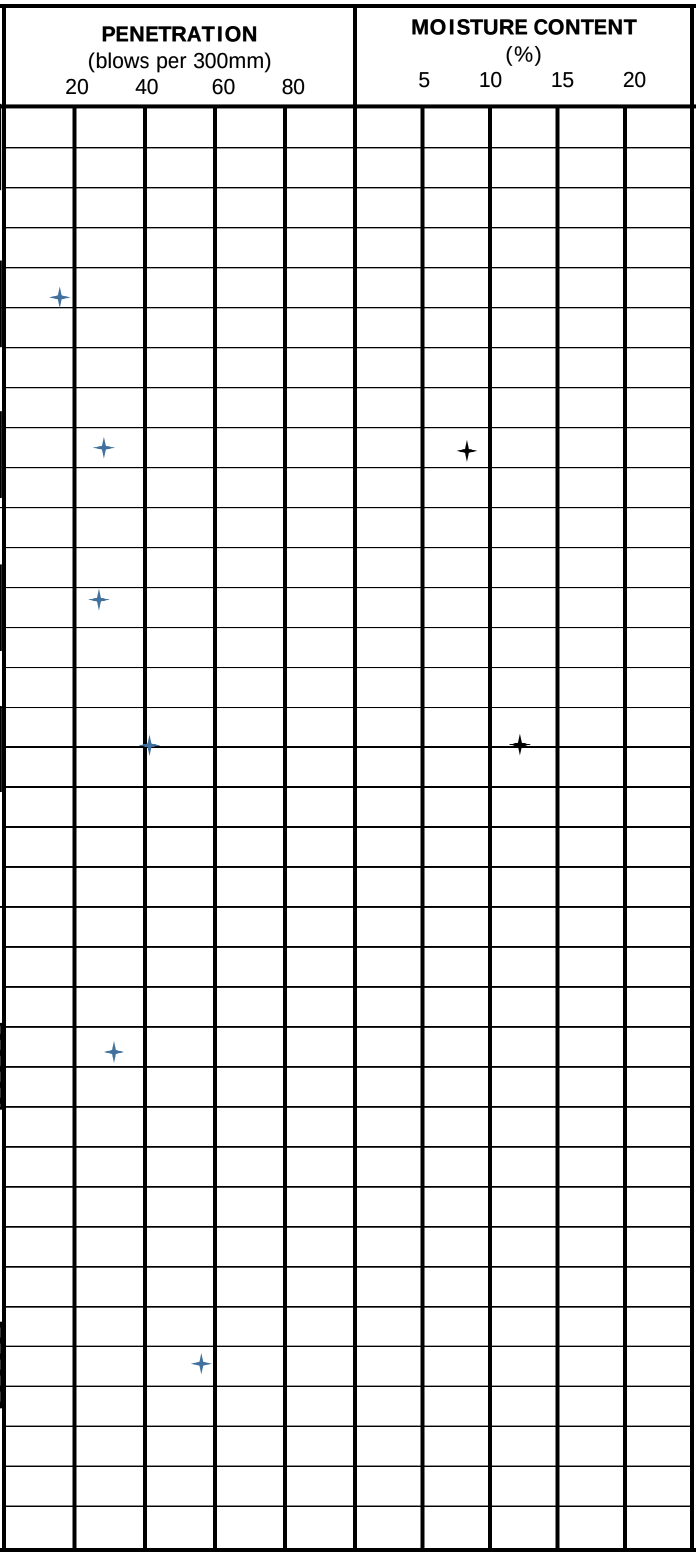
Client: Bloomfield Homes	AUGER SAMPLE	▤	LL & PL	o——o	**PROJECT NO:** 18-1565
	SPLIT SPOON SAMPLE	▨	LAB VANE	v	**DATE:** APRIL 30, 2018
Project: Sanders Boul. & Main St. W	SHELBY TUBE	■	POCKET PEN	ⱪ	**BOREHOLE NO:** 1
Location: Hamilton, Ontario	DUTCH CONE	↘	VANE & SENSITIVITY	+ (S)	**PREPARED BY:** SF

Datum: local



ELEV. DEPTH	SOIL DESCRIPTION	SAMPLE	% RET'D	SOIL GAS (%)	WELL
0.0m	Dark Brown Silty Loam **TOPSOIL** - wet	▨	**65**	0	
	Brown to dark br. **Sandy Silt Fill**	▨	**94**	0	
1.0m	Brown to br. **Sandy Silt** w/ a trace of gravel • Compact to dense • Moist to very moist	▨	**98**	0	
2.0m		▨	**84**	0	
3.0m	Brown to grey **Silty Sand**; with some Gravel & a trace of Clay	▨	**89**	0	
4.0m		▨	**89**	0	
5.0m					
6.0m		▨	**89**	0	
	End of Borehole **Gwl @5.2m**				

Note:

This borehole log should only be read and interpreted in conjunction with the report of which it forms a part. It is otherwise invalid
Candec Engineering Consultants Inc. must be contacted to provide assistance in the interpretation of the information in this borehole record

Client: Bloomfield Homes

Project: Sanders Boul. & Main St. W

Location: Hamilton, Ontario

AUGER SAMPLE	▤	LL & PL	o——o
SPLIT SPOON SAMPLE	▨	LAB VANE	v
SHELBY TUBE	■	POCKET PEN	ⱪ
DUTCH CONE	↘	VANE & SENSITIVITY	+ (S)

PROJECT NO: 18-1565

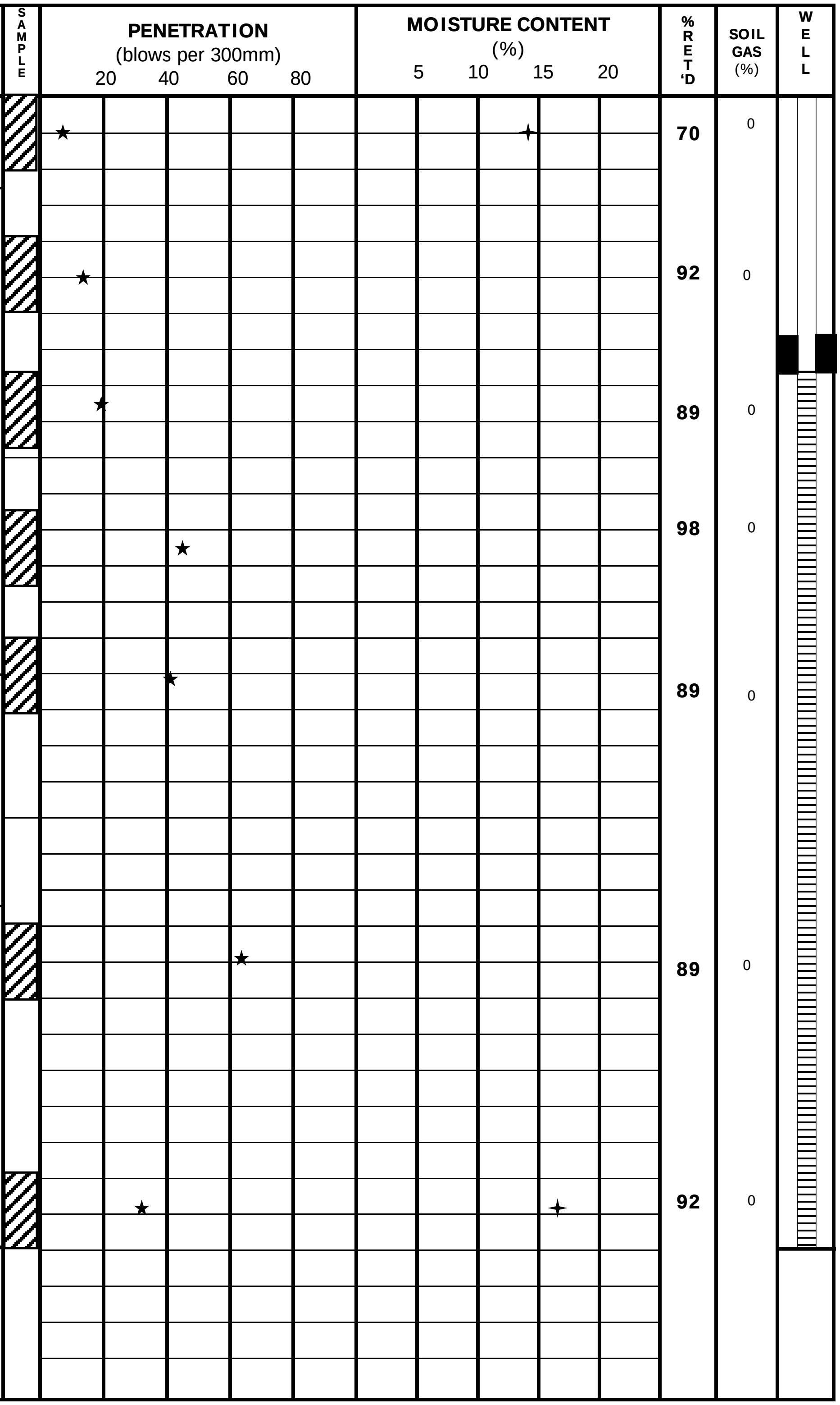
DATE: APRIL 30, 2018

BOREHOLE NO: 2

PREPARED BY: SF

Datum: local

ELEV. DEPTH	SOIL DESCRIPTION	% RET'D	SOIL GAS (%)
0.0m	Asphalt concrete pavement – 350m Loamy Silt Topsoil - 100mm Moist	70	0
1.0m	Brown **Silt Fine Sand** with a trace of gravel • *Compact to dense* • *Moist to very moist*	92	0
		89	0
2.0m		98	0
3.0m	Grey **silty SAND**, trace of clay & gravel • *Compact to dense* • *Moist to very moist*	89	0
4.0m			
		89	0
5.0m	Grey **fine SAND**, some silt • *Compact to dense* • *Moist to wet*		
6.0m		92	0
6.5m	**End of Borehole** **GWL @ 5.2mbeg**		



Note:

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Client: Bloomfield Homes

Project: Sanders Boul. & Main St. W

Location: Hamilton, Ontario

AUGER SAMPLE	▤	LL & PL	o——o
SPLIT SPOON SAMPLE	▨	LAB VANE	v
SHELBY TUBE	■	POCKET PEN	ⱪ
DUTCH CONE	↘	VANE & SENSITIVITY	+ (S)

PROJECT NO: 18-1565

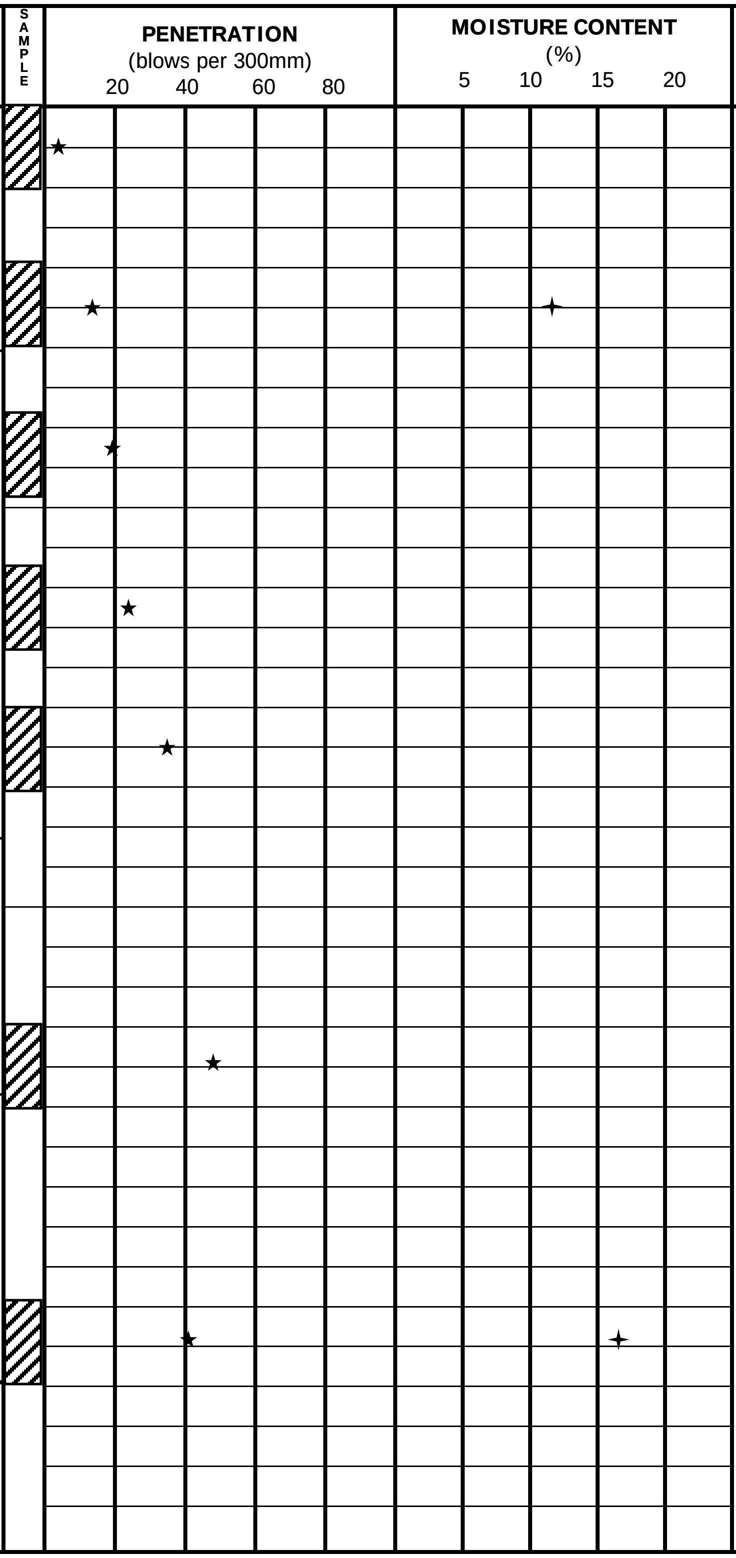
DATE: APRIL 30, 2018

BOREHOLE NO: 3

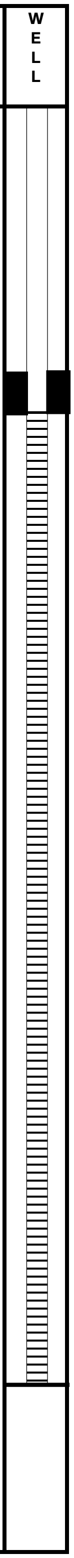
PREPARED BY: SF

Datum: local

ELEV. / DEPTH	SOIL DESCRIPTION
0.0m	Dark Brown Silty Loam **TOPSOIL** Silty Sand Fill Moist
1.0m	Brown **Silt Fine Sand** with a trace of gravel • *Compact to dense* • *Moist to very moist*
2.0m	
3.0m	
	Grey **silty SAND**, trace of clay & gravel • *Compact to dense* • *Moist to very moist*
4.0m	
5.0m	Grey **fine SAND**, some silt • *Compact to dense* • *Moist to wet*
6.0m	
6.5m	**End of Borehole** **GWL @ 5.3mbeg**



% RET'D	SOIL GAS (%)
74	0
65	0
89	0
89	0
74	0
89	0
89	0



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Client: Bloomfield Homes

Project: Sanders Boul. & Main St. W

Location: Hamilton, Ontario

PROJECT NO: 18-1565

DATE: APRIL 30, 2018

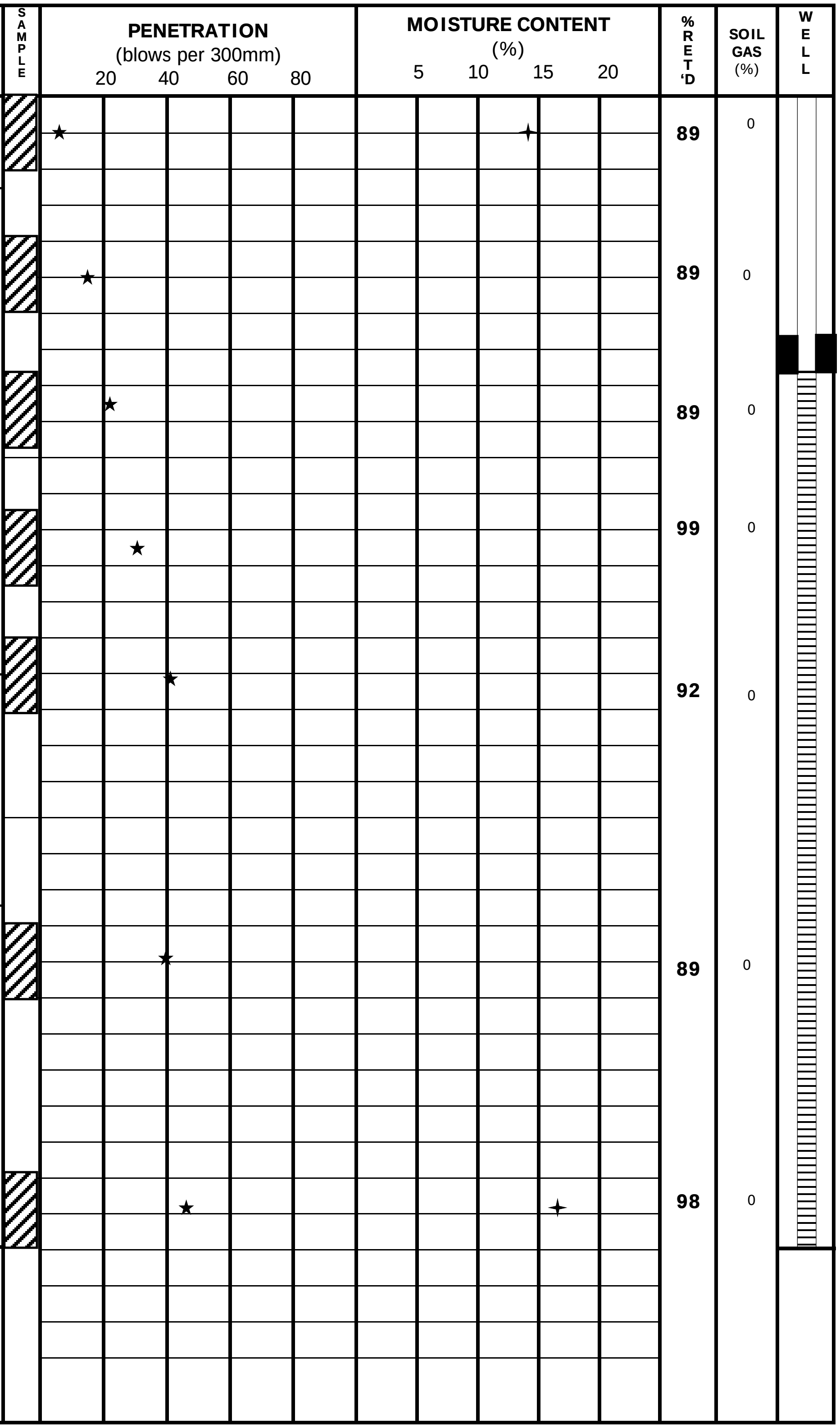
BOREHOLE NO: 4

PREPARED BY: SF

AUGER SAMPLE	▤	LL & PL	o——o
SPLIT SPOON SAMPLE	▨	LAB VANE	v
SHELBY TUBE	■	POCKET PEN	ⱪ
DUTCH CONE	↘	VANE & SENSITIVITY	+ (S)

Datum: local

ELEV. DEPTH	SOIL DESCRIPTION
0.0m	Asphalt concrete pavement – 300m Loamy Silt Topsoil - 200mm Moist
1.0m	Brown **Silt Fine Sand** with a trace of gravel • *Compact to dense* • *Moist to very moist*
2.0m	
3.0m	Grey **silty SAND**, trace of clay & gravel • *Compact to dense* • *Moist to very moist*
4.0m	
5.0m	Grey **fine SAND**, some silt • *Compact to dense* • *Moist to wet*
6.0m	
6.4m	**End of Borehole** **GWL @ 5.1mbeg**



% RET'D	SOIL GAS (%)
89	0
89	0
89	0
99	0
92	0
89	0
98	0

Note:

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Candec Engineering Consultants Inc.
consulting engineers and environmental scientists

Client: Bloomfield Homes

Project: Sanders Boul. & Main St. W

Location: Hamilton, Ontario

AUGER SAMPLE	▤	LL & PL	o——o
SPLIT SPOON SAMPLE	▨	LAB VANE	v
SHELBY TUBE	■	POCKET PEN	ⱪ
DUTCH CONE	↘	VANE & SENSITIVITY	+ (S)

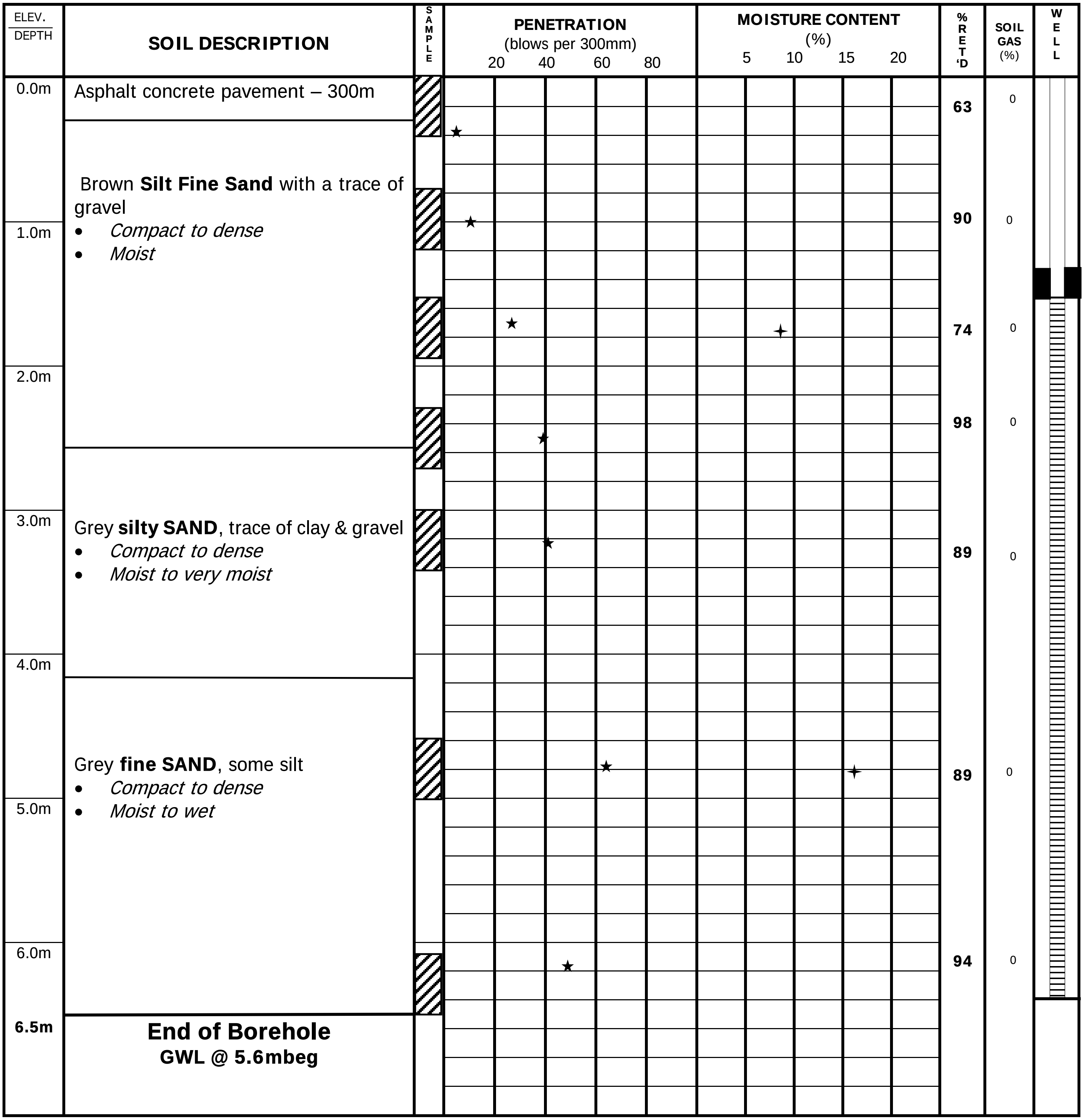
PROJECT NO: 18-1565

DATE: APRIL 30, 2018

BOREHOLE NO: 5

PREPARED BY: SF

Datum: local



Asphalt concrete pavement – 300m

Brown **Silt Fine Sand** with a trace of gravel
- *Compact to dense*
- *Moist*

Grey **silty SAND**, trace of clay & gravel
- *Compact to dense*
- *Moist to very moist*

Grey **fine SAND**, some silt
- *Compact to dense*
- *Moist to wet*

End of Borehole
GWL @ 5.6mbeg

Note:

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Candec Engineering Consultants Inc. must be contacted to provide assistance in the interpretation of the information in this borehole record

Candec Engineering Consultants Inc.
consulting engineers and environmental scientists

Client: Bloomfield Homes

Project: Sanders Boul. & Main St. W

Location: Hamilton, Ontario

AUGER SAMPLE ▤
SPLIT SPOON SAMPLE ▨
SHELBY TUBE ■
DUTCH CONE ↘
LL & PL o——o
LAB VANE v
POCKET PEN ⱶ
VANE & SENSITIVITY + (S)

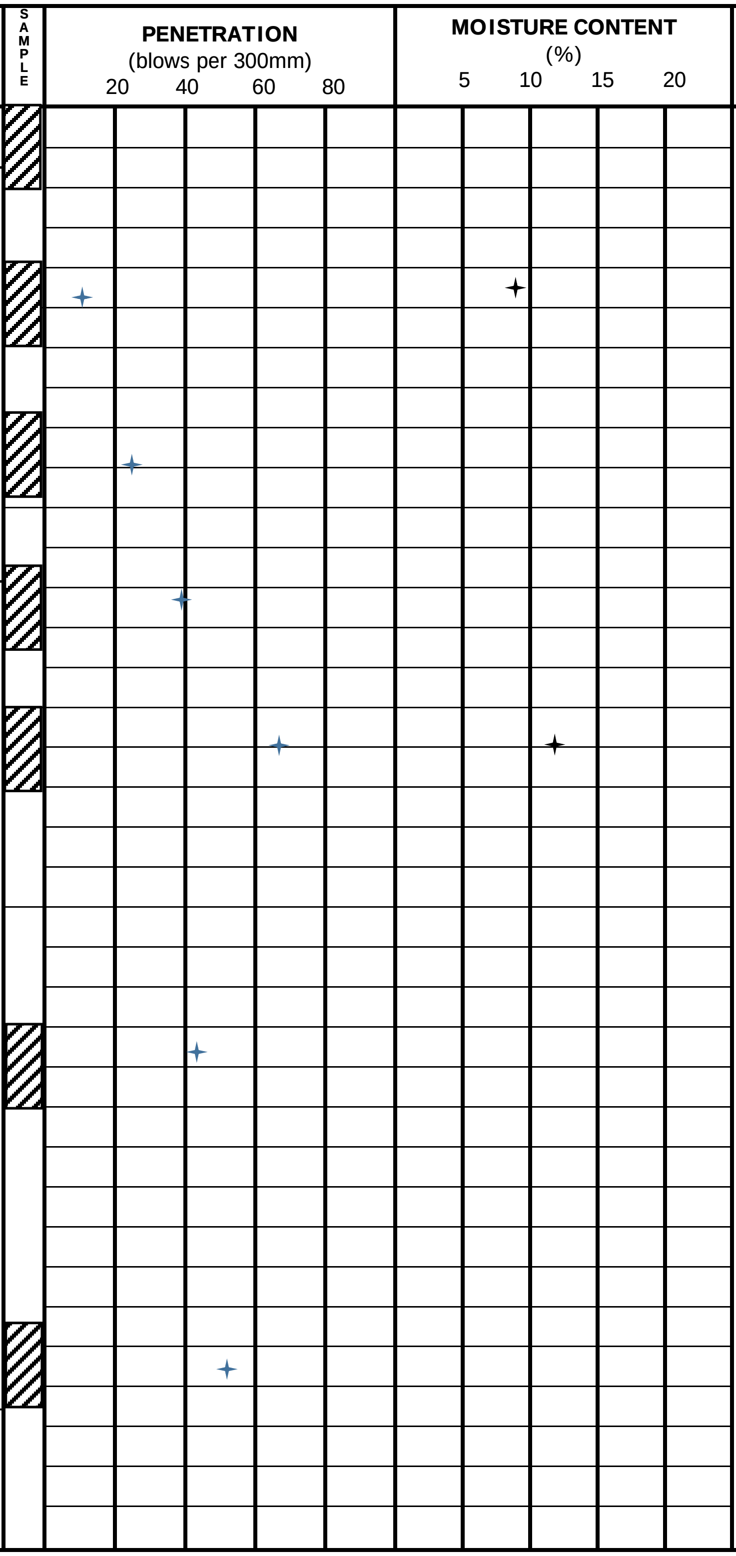
PROJECT NO: 18-1565

DATE: APRIL 30, 2018

BOREHOLE NO: 6

PREPARED BY: SF

Datum: local



ELEV. DEPTH	SOIL DESCRIPTION	% RET'D	SOIL GAS (%)	WELL
0.0m	Dark brown Loamy **Silt Topsoil**	72	0	
	Brown to dark br. **Sandy Silt** w/ a trace of gravel • Compact to dense • Moist to very moist	89	0	
1.0m				
		89	0	
2.0m				
	Brown to grey **Silty Sand**; with some Gravel & a trace of Clay	95	0	
3.0m		90	0	
4.0m				
		98	0	
5.0m				
6.0m		94	0	
	End of Borehole **Gwl @5.3m**			

Note:

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AUGER SAMPLE	☰	LL & PL	o——o
SPLIT SPOON SAMPLE	▨	LAB VANE	v
SHELBY TUBE	■	POCKET PEN	ꓘ
DUTCH CONE	↘	VANE & SENSITIVITY	+ (S)

PROJECT NO: 18-1565

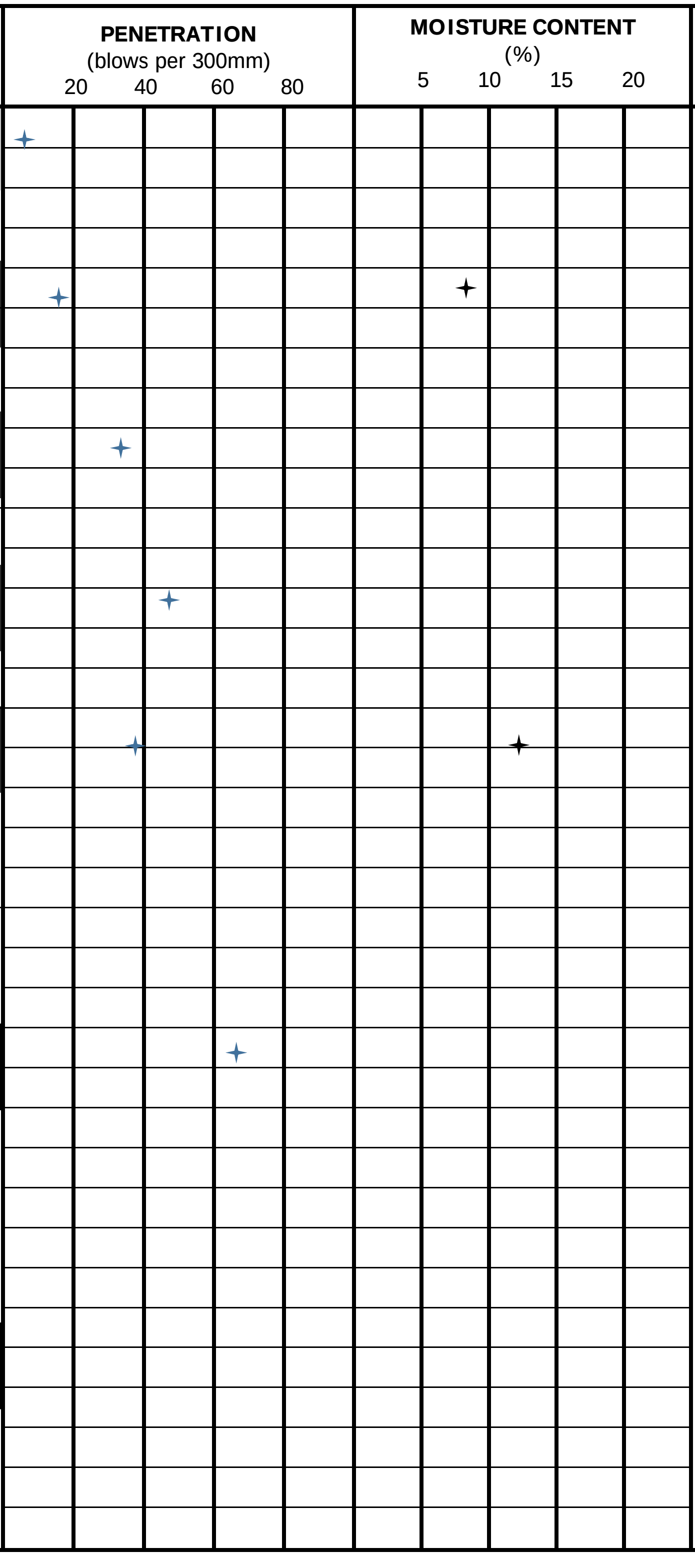
DATE: APRIL 30, 2018

BOREHOLE NO: 7

PREPARED BY: SF

Datum: local

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLE	% RET'D	SOIL GAS (%)	WELL
0.0m	Dark Brown Silty Loam **TOPSOIL** - moist	▨	72	0	
	Brown to dark br. **Sandy Silt** w/ a trace of gravel • Compact to dense • Moist to very moist	▨	89	0	
1.0m		▨	89	0	
2.0m	Brown to grey **Silty Sand**; with some Gravel & a trace of Clay	▨	95	0	
3.0m		▨	90	0	
4.0m		▨	98	0	
5.0m					
6.0m		▨			
	End of Borehole **Gwl @5.8m**				



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