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Wesgroup
Suite 910, Four Bentall Centre
1055 Dunsmuir Street
Vancouver, B.C.
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July 13, 2020
File: 15077

Attention: Graham Brewster/ Stefan Hertel

Re: Geotechnical Investigation Report: Proposed Residential Development
1008 West 41st Avenue & 5763 Oak Street, Vancouver, B.C.

1.0 INTRODUCTION

We understand that Wesgroup Properties intends to proceed with the redevelopment of the above referenced site. Preliminary design drawings prepared by IBI Group (Canada) Inc. (dated June 8, 2020), indicate the development will consist of a 16-storey tower and an 8-storey building at the north and south of the site respectively, all over three levels of below grade parking. The deepest portion of the P3 slab elevation is shown to be at an elevation of 82.1 m (269.25 ft) geodetic.

This report presents the results of our geotechnical investigation and makes recommendations for the updated design and construction of the proposed building and related earthworks. This report has been prepared exclusively for Wesgroup, for their use, the use of others on their design team and for the City of Vancouver for use in the development and permitting process.

2.0 SITE DESCRIPTION

The site is rectangular in shape and is located on the southwest corner, at the intersection of West 41st Avenue and Oak Street in Vancouver, BC. The site is bounded by West 41st Avenue to the north, Oak Street to the east, 42nd Avenue to the south and a municipal laneway to the west. The property is currently improved with a community garden in the northern portion of the site and a two-storey commercial building to the south.

According to the site survey issued by Underhill Geomatics Ltd. (dated June 6, 2017), the site gently slopes from the southwest, down towards the northeast with a total elevation change of approximately 0.8 m across the site (91.7 m to 90.9 m geodetic). The total site area is approximately 3,427 m^2.

The approximate locations of test holes across the site are shown on Drawing No. 15077-02, following the text of this report.

3.0 FIELD INVESTIGATIONS

GeoPacific completed three test holes and three Dynamic Cone Penetration Tests (DCPT) soundings at the site on June 16, 2017. The site was investigated using a truck-mounted auger drill rig supplied and operated by Southland Drilling Co. Ltd. of Delta, B.C. The locations of test holes were limited by the location of the existing building, nearby underground utilities and gas tanks. The test holes and DCPT investigations were terminated at depths of up to 7.6 m and 3.4 m below existing grade, respectively. The test holes were

logged by a member of our technical staff from our office and backfilled immediately in accordance with B.C Provincial requirements, following the completion of testing and logging.

A supplementary drill investigation was completed on January 30 and 31, 2020, with a total of three test holes advanced to a maximum depth of 21.3 m below existing grades. TH20-01, TH20-02 and TH20-03 were advanced to depths of 18.3 m, 21.3 m and 18.3 m, respectively using a track mounted sonic drill rig supplied and operated by BlueMax Drilling of Surrey, B.C. Once drilling was completed, groundwater monitoring wells and electronic data-loggers were installed at all three test hole locations. The data-loggers were installed to remotely collect and record water level measurements every hour. The test hole locations were located, supervised, logged and sampled by a member of our technical team.

The soil logs and monitoring well details from both investigations are presented in Appendix A. The approximate test hole, DCPT sounding and monitoring well locations are shown on our Drawing No. 15077-02, following the text of this report.

4.0 SUB-SURFACE CONDITIONS

4.1 Published Geology

According to the Geological Survey of Canada Map 1486A, the general geology of the region under investigation, is described as Capilano Sediments and Vashon Drift, consisting of near surface raised beach deposited, medium to coarse sand 1 to 5 m thick, overlying glacial drift including lodgment and minor flow till, lenses and interbeds of sub-stratified glaciofluvial sand to gravel, and lenses and interbeds of glaciolacustrine laminated stony silt. The Vashon Drift till sediments are underlain by the pre-glacial deposits consisting of Quadra sand to silty sand.

4.2 Onsite Soil Conditions

The subsurface conditions at our test hole locations were observed to consist of ASPHALT underlain by natural deposits of GLACIAL SILTY SAND AND GRAVEL and pre-glacial SAND.

ASPHALT/GRANULAR FILL/SILT

Testholes TH17-01, TH17-02, TH17-03 and TH20-01 were located within asphaltic surfaced driving aisles. The asphalt was noted to be up to 60 mm thick. The 2017 test holes showed a 0.45 m thick layer of fill which consisted of compact sand to sand and gravel road-base over another fill layer consisting of reddish-brown fine sand with trace silt extending to 0.9 m to 1.1 m below grade. The asphalt at TH20-01 was observed to be overlying approximately 1.2 m of brown, compact sand with some gravel and silt. A brown, compact sand and gravel layer with trace amounts of silt was observed at the surface at TH20-02 and TH20-03.

In general, the surficial fill material at all six test hole locations is underlain by a layer of brown/grey, stiff silt to sandy silt, extending to a depth of 3.0 m below grade.

SILTY, SAND AND GRAVEL TILL

Dense till was noted beneath the fill and/or silt at depths ranging between 1.8 and 3.0 m below grade at all six test hole locations. Although there were slight variations in silt and gravel content, in general, the predominant grain size of the glacial material was fine to medium sand and gravel with some silt to silty. Our 2020 investigation indicates that the glacial till extends down to depths ranging between 10.7 to 12.2 m at the location of our test holes.

Based on our observations during the investigation of this site, as well as our experience in this area, the glacial till contains sandy lenses, cobbles and boulders locally.

PRE-GLACIAL SAND

A brown to grey, dense to very dense, medium to coarse sand with trace to some silt and gravel was encountered below the till at depths of 10.7 to 12.2 m below existing grades. A decrease in silt and gravel content and an increase in the grain size of the sand was noted with increasing depth. The sand extends to the final depth of exploration of 21.3 m.

For a detailed description of the soil conditions refer to our test hole logs in Appendix A, following the text of this report.

4.2 Groundwater Conditions

During our field investigation in 2020, three groundwater monitoring wells were installed and groundwater levels measured at the site. Monitoring wells MW20-01 and MW20-02 were screened within the medium to coarse sands inferred to be part of the Quadra Sands Formation while MW20-03 was screened within the glacial till material. Based on the preliminary results of our groundwater monitoring, the static groundwater table was encountered at depths ranging between 14 and 15 m below existing grades within the Quadra sands underlying the glacial till deposits. Based on the existing data and current design, the static groundwater table, measured at MW20-01 and MW20-02, is at ~ 77 m geodetic, or at least 5 m below the deepest portion of the P3 slab elevation. MW20-03 was installed within the glacial till deposits and found to be dry during the five-month monitoring period.

In our experience, perched groundwater may be encountered at the contact zone between the surficial sand and gravel fill layer and the underlying, less permeable, silt stratum. Additionally, discrete zones of discontinuous seepage are normally present throughout the glacial till however these zones produce light seepage and are expected to reduce with time. We expect that the temporary influx of water from the glacial till can be controlled with conventional gravity drainage and sump pumps.

5.0 DISCUSSION

5.1 General

We understand that the proposed development will consist of a 16-storey tower and an 8-storey building at the north and south of the site respectively, all over three levels of below grade parking. Design drawings indicate that the proposed building will be constructed near property lines on all sides. Therefore, we expect that shoring will be required on all sides.

The site soils are not considered to be prone to ground liquefaction or other types of ground softening during the 2019 Vancouver Building By-Law design earthquake. Thus, ground improvement to control liquefaction is not required.

Our review of the ground conditions indicates that the proposed structure may be supported on conventional strip and pad foundations bearing on the glacial till.

We confirm, from a geotechnical point of view, that the proposed development is feasible provided the recommendations outlined in Sections 6.0 are incorporated into the overall design.

6.0 RECOMMENDATIONS

6.1 Site Preparation

Prior to construction of new foundations and floor slabs all asphalt, vegetation, topsoil, fill, organic material, debris, refuse, and loose or otherwise disturbed soils must be removed from the construction areas to expose a subgrade of undisturbed very dense glacial till. The subgrade should be immediately protected using a thin layer of lean mix concrete having a compressive strength of at least 20 MPa at 28 days.

The excavation floor should be graded to prevent ponding of water at footing locations. Any water softened soil must be excavated to expose a subgrade of undisturbed very dense glacial till.

Site stripping must be reviewed by the geotechnical engineer prior to the placement of lean mix concrete.

6.2 Spread Foundations

Based on our investigation, we expect the building to be founded on very dense glacial till. Therefore, the proposed building can be founded on normal spread foundations, including pad and strip footings.

For a subgrade of glacial till, foundations may be designed on the basis of a serviceability limit states (SLS) bearing pressure of 400 kPa and an ultimate limit states (ULS) bearing pressure of 600 kPa. For the bearing pressures provided, any grade reinstatement beneath the foundations must be done using lean mix concrete. For foundations designed as recommended we expect that settlements should be limited to less than 25 mm total and 20 mm over 10 m differential.

Irrespective of specified bearing pressures, footings should not be less than 450 mm in width for strip footings and not less than 600 mm in width for square or rectangular footings. Footings should also be buried a minimum of 450 mm below the surface for frost protection.

Foundation subgrades of all buildings must be reviewed by the geotechnical engineer prior to lean mix concrete blinding and footing construction.

6.3 Slab-On-Grade Floors

In order to provide suitable support for slab-on-grade floors we recommend that any fill placed under the slab should be granular and essentially "clean" with not more than 5% passing the #200 sieve. In addition, this granular fill must be compacted to a minimum of 98% Standard Proctor (ASTM D698) maximum dry density with water content within 2% of optimum for compaction.

Floor slabs should be directly underlain by a minimum of 150 mm of a free draining granular material. We recommend that this free draining material consist of 19 mm clear crush gravel. The material beneath the slab should be hydraulically connected to the perimeter drainage system to facilitate the removal of any water which may accumulate below the floor slab. A moisture barrier should underlie the slab directly above the free draining granular material.

Slab-on-grade fill compaction must be reviewed by the geotechnical engineer.

6.4 Seismic Design of Foundations

The site is considered to be generally underlain by glacial till which can be considered as Site Class C, in accordance with Table 4.1.8.4.A. of the 2019 Vancouver Building By-Law (VBBL) provided that footings

are supported directly on the glacial till. Peak ground accelerations on firm ground for the approximate site location is 0.47 g (National Resource Canada, Site Coordinates: 49.264 degrees North, 123.185 degrees West).

The soils beneath the proposed building are not prone to liquefaction or other forms of ground softening under the 2019 VBBL design earthquake.

6.5 Foundation Drainage

A perimeter and under slab drainage system will be required for the below grade structure to prevent the development of water pressure on the foundation walls and the basement floor slabs. Groundwater flows are expected to be light, likely in the range of 10 to 20 L/min for the entire excavation. These flow rates should be confirmed by the mechanical designer once the excavation has achieved target grades.

6.6 Temporary Excavations and Shoring

We expect that excavations would be sloped where possible. Excavations cut into very dense till-like deposits may be constructed at 3 Horizontal to 4 Vertical (3H:4V). Excavations within topsoil/fills should be benched back at a distance equal to the thickness of the topsoil/fill (1H:1V). Where sloped excavations are not feasible due to the building proximity to property lines, neighbouring structures, or utilities, we expect that a vertical shored excavation would be required to facilitate excavation depths.

It is our opinion that the soils onsite have sufficient stiffness to allow for an anchored shotcrete shoring system, which is the most economical method for the expected excavation depth and soil conditions. We expect that conventional anchors will be appropriate for the site. The extent of the shored and underpinning sections of the excavation will depend on the final design layout and elevations for the proposed structure and existing adjacent structures.

GeoPacific will prepare an excavation/shoring design upon request.

Some excavation induced ground movements are unavoidable and should be expected. Excavation movements are typically and primarily caused by elastic relaxation of the ground as the excavation proceeds and weight is removed from the site. Movements can also be dictated by the type of shoring equipment employed and quality of work undertaken by the shoring contractor. For an excavation of approximately 10 metres in depth, our past experience indicates total accumulated horizontal and vertical ground movements may be on the order of 10 mm to 20 mm at the excavation face, decreasing to half that within 3 metres away from the excavation face. This magnitude of movement is not expected to significantly impact adjacent structures such as roads and services on municipal property or adjacent buildings or other structures surrounding the subject site.

Our experience in this area indicates that cobbles and boulders may be encountered during excavations. Cobbles and small boulders can typically be removed with conventional excavation equipment. However, large boulders may require splitting/blasting to facilitate their removal from the site.

Light to moderate seepage during the wetter months should be expected due to the formation of perched groundwater. We expect that inflows may be handled with sumps and sump pumps.

Shoring installation requires review at the time of tie back anchor installations and trimming of panels, prior to shotcrete applications and during tensioning of the tie back anchors.

The geotechnical engineer shall be contacted for the review of shoring installation and temporary excavations.

6.7 Lateral Pressure on Foundation Walls

Earth pressures against the foundation walls are dependent on factors such as lateral restraint along the wall, surcharge loads, backfill materials, compaction of the backfill and drainage conditions.

The foundation wall is expected to be partially yielding and fully restrained between floors and backfilled with a free draining granular soil. During the installation of the shoring wall, the wall is expected to partially yield, thereby mobilizing the full shear strength of the retained soil. The partial yielding of the wall causes a dilation of the retained soil, which in turn decreases the lateral stress against the foundation wall. The full development of the active condition is expected within the retained soil and can be assumed under these conditions.

We recommend that the foundation walls be designed to resist the following lateral earth pressures:

Static: Triangular soil distribution of 5.0H kPa, where H is equal to the total wall height in metres.

Seismic: Inverted triangular soil pressure distribution of 3.0H kPa, where H is equal to the total wall height in metres.

The preceding loading recommendations assume that the parkade walls would be constructed against the shotcrete shoring wall, separated by a synthetic drainage material or 600 mm working space (backfilled with gravel), providing a drained cavity around the perimeter of the parkade. We expect that the perimeter drainage system will be connected to the synthetic drainage material and sufficiently lower the groundwater level such that hydrostatic pressure against the foundation walls are eliminated.

The geotechnical engineer should be contacted to review foundation wall backfill materials and placement.

7.0 DESIGN AND CONSTRUCTION REVIEWS

The preceding sections make preliminary recommendations for the design and construction of the proposed residential building at 1008 West 41st Avenue & 5763 Oak Street in Vancouver, B.C. We have recommended the review of certain aspects of the design and construction. It is important that these reviews are carried out to ensure that our intentions have been adequately communicated. It is also important that any contractor(s) working on the site review this document prior to commencing their work.

It is the responsibility of the contractor to contact GeoPacific a minimum of 48 hours in advance to notify us that a field review is required. In summary, field reviews are required for the following aspects of the work:

1. Stripping	Review of site stripping.
2. Excavation	Review of temporary cut slopes.
3. Shoring and Underpinning	Review of shoring and underpinning installation and anchor testing.
4. Foundation	Review of foundation subgrade.
5. Slab on-grade	Review of subgrade and underslab fill materials and compaction.
6. Backfill	Review of backfill materials and placement against foundation walls.

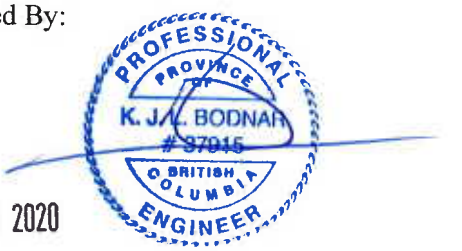
8.0 CLOSURE

This report has been prepared exclusively for Wesgroup and the City of Vancouver for the purpose of providing preliminary geotechnical recommendations for the design and construction of the proposed development described herein and related earthworks. The report remains the property of GeoPacific Consultants Ltd. and unauthorized use of, or duplication of, this report is prohibited.

We are pleased to be of assistance to you on this project and we trust that our comments and recommendations are both helpful and sufficient for your current purposes. If you would like further details or would like clarification of any of the above, please do not hesitate to call.

For:
GeoPacific Consultants Ltd.

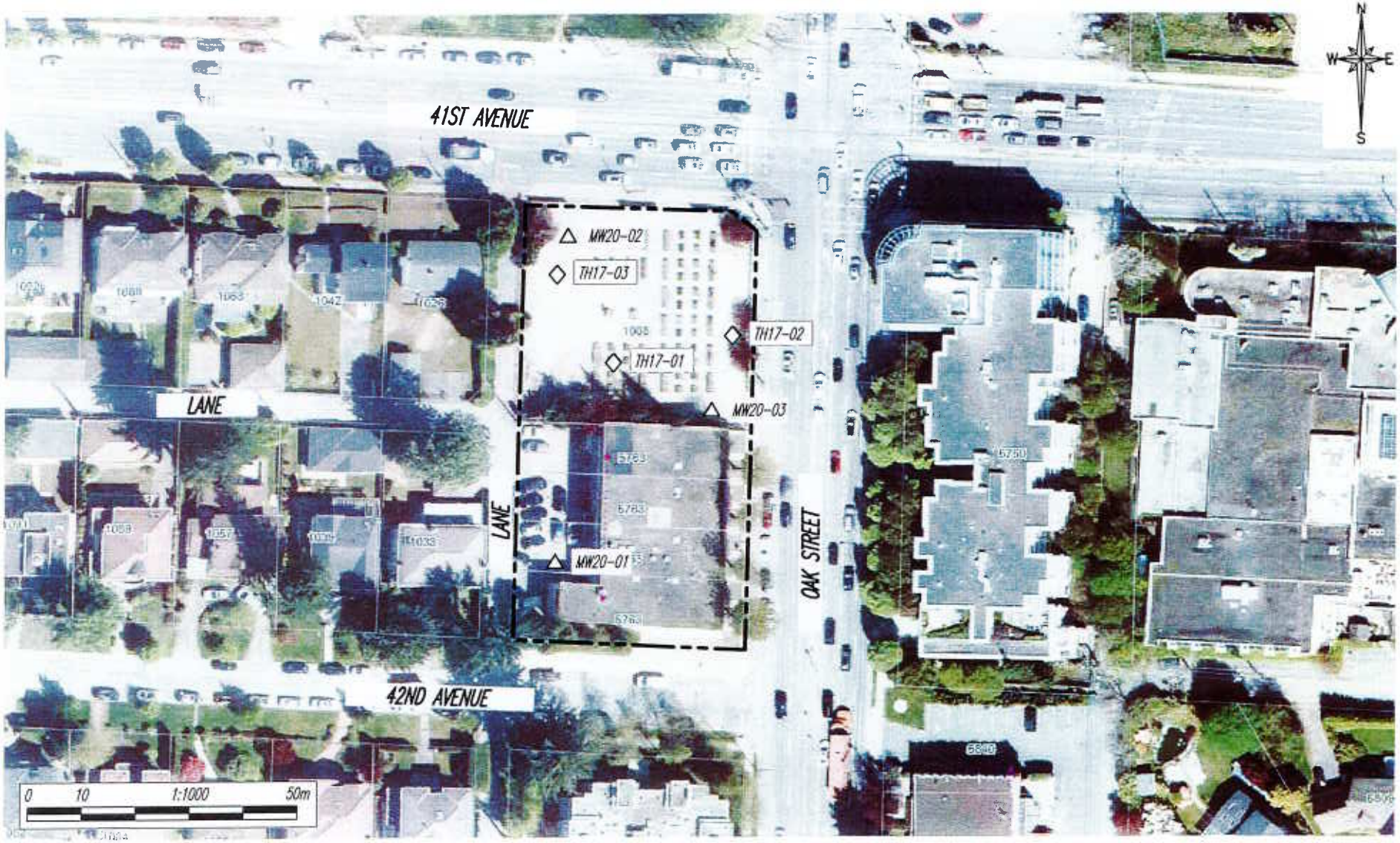
Reviewed By:



JUL 1 3 2020

Nathalie Sahakyan, B.Sc.,
Geoscientist-In-Training

Kevin Bodnar, M.Eng., P.Eng.
Principal



LEGEND:

△ MW20-# – MONITORING WELL (MW) LOCATION (2020)

◇ TH17-# – TEST HOLE (TH) LOCATION (2017)

SITE PLAN

SCALE = 1:1000

*TEST LOCATIONS ARE APPROXIMATE

REFERENCE:

– VANMAP

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DATE:	JUNE 20, 2017	
DRAWN BY: N.K.	APPROVED BY: M.J.K.	REVIEWED BY: N.S.
SCALE:	AS SHOWN	

GEOTECHNICAL INVESTIGATION

1008 W. 41ST AVE. & 5763 OAK ST., VANCOUVER, BC

TEST HOLE LOCATION PLAN

FILE NO.: 15077

DWG. NO.: 15077-02

REVISIONS:

A. JULY 10, 2020

B.

C.

APPENDIX A

Test Hole Log: TH17-01

File: 15077
Project: 1008 W 41st Ave and 5763 Oak St. Proposed Residential Development
Client: Wesgroup
Site Location: 1008 W 41st and 5763 Oak St., Vancouver

GEOPACIFIC CONSULTANTS
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INFERRED PROFILE

Depth (ft)	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
0		Ground Surface	0.0				
		Asphalt (2 inches)	0.0				
		Sand and Gravel (Fill) Light brown sand with crushed gravel and concrete. Road base	-0.5 0.5				
1		***Sand (Fill)*** Reddish brown fine sand, moist	-1.1 1.1	14.4%			
2		***Silt*** Grey silt, layered, moist	-1.8 1.8	26.3%	13 23 26 32 >50		FC = 56.4%
		Silty Sand Reddish brown silty sand and some trace gravel		15.4%			
3		***Sand and Gravel (Till)*** Brown coarse sand mixed with rounded gravel, very dense, slightly moist	-2.7 2.7	11.5%			
4				8.6%			FC = 16.9%
5				17.3%			Gravel content increases after 20 ft
6							
7				10.4%			
8		End of Borehole	-7.6 7.6				
9							

Logged: MK
Method: Truck Mounted Auger
Date: 6/16/2017

Datum: Ground Level
Figure Number: 1
Page: 1 of 1

Test Hole Log: TH17-02

File: 15077
Project: 1008 W 41st Ave and 5763 Oak St. Proposed Residential Development
Client: Wesgroup
Site Location: 1008 W 41st and 5763 Oak St.

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INFERRED PROFILE

Depth (ft / m)	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
0 / 0		Ground Surface	0.0				
		Asphalt (2.5 inches)	0.0				
		Sand and Gravel (Fill) Road base of sand mixed with crushed gravel and concrete	-1.1 / 1.1				
		Sandy Silt Grey fine silt mixed with some sand, moist	-1.8 / 1.8	22.3%			FC = 81.8%
		Silty Sand Brown fine-medium sand with some silt, medium dense, slightly moist		11.9%	26, 16, 20, 25, >50		FC = 41.6%
		Sand and Gravel (Till) Greyish brown coarse sand and gravel, very dense, slightly moist	-3.0 / 3.0	7.4%			
				7.2%			FC = 13.8%
		End of Borehole	-6.1 / 6.1				

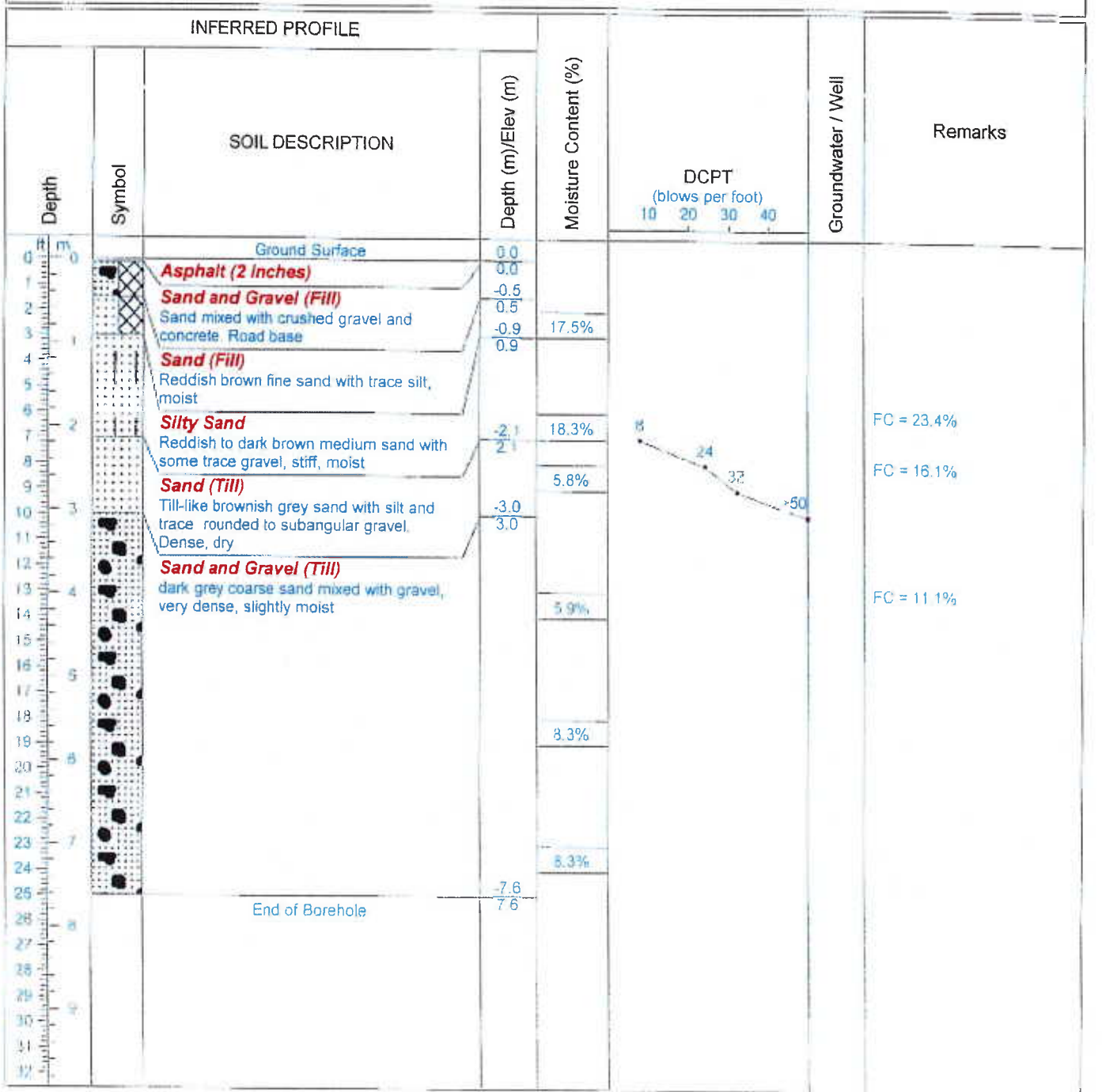
Logged: MK
Method: Truck Mounted Auger
Date: 6/16/2017

Datum: Ground Level
Figure Number:
Page: 1 of 1

Test Hole Log: TH17-03

File: 15077
Project: 1008 W 41st Ave and 5763 Oak St. Proposed Residential Development
Client: Wesgroup
Site Location: 1008 W 41st and 5763 Oak St.

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Logged: MK
Method: Truck Mounted Auger
Date: 6/16/2017

Datum: Ground Level
Figure Number: 3
Page: 1 of 1

Test Hole Log: MW20-01

File: 15077-GW
Project: GROUNDWATER INVESTIGATION
Client: WESGROUP CONTRACTING LTD.
Site Location: 1008 W. 41ST AVENUE & 5763 OAK STREET, VANCOUVER, BC

GEOPACIFIC CONSULTANTS
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INFERRED PROFILE

Depth (ft / m)	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Groundwater / Well	Remarks
0 / 0		Ground Surface			
0		***Asphalt (150 mm)***	0.0		
1		***Sand*** Sand, some gravel, trace to some silt with depth, brown, compact, moist, fine-grained sand	1.2		
2		***Silt*** Silt, some sand, mottled brown-grey, stiff, moist	1.8		
3		***Sand and Gravel [TILL]*** Sand and Gravel, some silt, grey-brown, dense, moist, fine to coarse subrounded gravel, fine-grained sand			
4					
5		***Sand and Gravel [TILL]*** Sand and Gravel, trace to some silt, light brown-grey, dense, moist, fine to coarse subrounded to rounded gravel, medium-grained sand, coarsening with depth 6.1 m to 6. 4 m - Sand lense, medium to coarse-grained sand	4.9		
6					
7					
8					
9					
10					
11					
12			12.2		

Logged: NP
Method: SONIC DRILING
Date: JANUARY 30, 2020

Datum: EXISTING GROUND
Figure Number: A.01

Test Hole Log: MW20-01

File: 15077-GW
Project: GROUNDWATER INVESTIGATION
Client: WESGROUP CONTRACTING LTD.
Site Location: 1008 W. 41ST AVENUE & 5763 OAK STREET, VANCOUVER, BC

GEOPACIFIC CONSULTANTS
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INFERRED PROFILE

Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Groundwater / Well	Remarks
41–80 (13–24)		***Sand*** Sand, trace fine gravel, trace silt, light brown-grey, dense, moist			
		Sand Sand, trace to some silt with depth, light brown-grey, dense, moist, medium-grained sand	13.7		
		Sand Sand, some gravel, light brown-grey, dense, moist, fine to coarse subrounded gravel, medium-grained sand, coarsening with depth	15.2		The screen was installed between 49 ft (14.9 m) and 59 ft (18.0 m)
		End of Borehole	18.3		

Logged: NP
Method: SONIC DRILING
Date: JANUARY 30, 2020

Datum: EXISTING GROUND
Figure Number: A.01

Test Hole Log: MW20-02

File: 15077-GW
Project: GROUNDWATER INVESTIGATION
Client: WESGROUP CONTRACTING LTD.
Site Location: 1008 W. 41ST AVENUE & 5763 OAK STREET, VANCOUVER, BC

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Tel: 604-439-0922 Fax:604-439-9189

INFERRED PROFILE

Depth (ft / m)	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Groundwater / Well	Remarks
0 / 0		Ground Surface			
		Sand and Gravel Sand and Gravel, trace silt, brown, compact, moist	0.0		
3 / 1		***Silt*** Silt, trace fine gravel, trace fine-grained sand, light brown-grey, stiff, moist	1.8		
10 / 3		***Sand [TILL]*** Sand, some fine gravel, some to trace silt with depth, grey-brown, dense, moist, medium-grained sand 2.4 m to 3.0 m - Sand and Gravel, fine to coarse gravel	4.0		
20 / 6		***Sand and Gravel [TILL]*** Sand and Gravel, trace to some silt with depth, light brown-grey, dense, moist, fine to coarse rounded gravel, medium-grained sand, coarsening with depth 6.0 m to 7. 3 m - cobbles 9.1 m to 10.6 m - trace to some silt			
35 / 11			10.7		
40 / 12					

Logged: NP
Method: SONIC DRILING
Date: JANUARY 30, 2020

Datum: EXISTING GROUND
Figure Number: A.02

Test Hole Log: MW20-02

File: 15077-GW
Project: GROUNDWATER INVESTIGATION
Client: WESGROUP CONTRACTING LTD.
Site Location: 1008 W. 41ST AVENUE & 5763 OAK STREET, VANCOUVER, BC

GEOPACIFIC CONSULTANTS
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Tel: 604-439-0922 Fax:604-439-9189

Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Groundwater / Well	Remarks
41 42 43 13 44 45 46 14 47 48 49 15 50 51 52 16 53 54 55 17 56 57 58 18 59 60 61 62 19 63 64 65 20 66 67 68 69 21 70 71 72 22 73 74 75 23 76 77 78 79 24 80		***Sand*** Sand, some to trace fine gravel with depth, light brown-grey, dense, moist, medium to coarse-grained sand, rounded gravel 12.8 m to 15.2 m - medium-grained sand 16.7 m to 18.3 m - coarse-grained sand			The screen was installed between 48 ft (14.6 m) and 53 ft (16.1 m)
		End of Borehole	21.3		

Logged: NP
Method: SONIC DRILING
Date: JANUARY 30, 2020

Datum: EXISTING GROUND
Figure Number: A.02

Test Hole Log: MW20-03

File: 15077-GW
Project: GROUNDWATER INVESTIGATION
Client: WESGROUP CONTRACTING LTD.
Site Location: 1008 W. 41ST AVENUE & 5763 OAK STREET, VANCOUVER, BC

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Tel: 604-439-0922 Fax:604-439-9189

INFERRED PROFILE

Depth (ft / m)	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Groundwater / Well	Remarks
0 / 0		Ground Surface			
		Sand Sand, trace silt, reddish brown, compact, moist fine-grained sand, some organics	0.0		
3 / 1			0.6		
		Silt Silt, trace fine gravel, trace fine sand, mottled brown-grey, stiff, moist			
10 / 3			3.0		
		Sand and Gravel [TILL] Sand and Gravel, some silt, grey, dense, moist, fine to coarse rounded gravel, medium-grained sand			
13 / 4					
		4.0 m to 6.0 m - silty Sand and Gravel			
16 / 5					
		6.0 m to 6.7 m - medium-grained sand seam			
20 / 6					
		8.2 m to 9.1 m - medium to coarse-grained sand			
26 / 8					
29 / 9					
33 / 10					
36 / 11			11.0		
		Sand Sand, trace to some silt, light brown-grey, dense, moist, medium-grained sand coarsening with depth			
40 / 12					

The screen was installed between 23 ft (7.0 m) and 33 ft (10.0 m)

Logged: NP
Method: SONIC DRILING
Date: JANUARY 31, 2020

Datum: EXISTING GROUND
Figure Number: A.03

Test Hole Log: MW20-03

File: 15077-GW
Project: GROUNDWATER INVESTIGATION
Client: WESGROUP CONTRACTING LTD.
Site Location: 1008 W. 41ST AVENUE & 5763 OAK STREET, VANCOUVER, BC

GEOPACIFIC CONSULTANTS
1779 West 75th Avenue, Vancouver, BC, V6P 6P2
Tel: 604-439-0922 Fax:604-439-9189

Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)	Groundwater / Well	Remarks
41 42 43 13 44 45					
46 14 47 48 49 15 50 51 52 16 53 54 55 56 17 57 58 59 18 60		***Sand*** Sand, trace to some fine gravel with depth, light brown-grey, very dense, medium to coarse-grained sand with depth	13.7		
61 62 19 63 64 65 66 20 67 68 69 21 70 71 72 22 73 74 75 23 76 77 78 79 24 80		End of Borehole	18.3		

Logged: NP
Method: SONIC DRILING
Date: JANUARY 31, 2020

Datum: EXISTING GROUND
Figure Number: A.03