

INVITATION TO TENDER "ITT" NO. PS20190251
KOOTENAY BUILDING SECURED LOT PAVING

QUESTIONS AND ANSWERS NO. 1

ISSUED ON MARCH 28, 2019

Q1	<p>The drawing refers to 300mm pumice or approved light weight material subject to approval by the geotechnical consultant. For this material, is it acceptable to use a white pumice light weight material?</p> <p>Is there a geotechnical report available?</p>
A1	<p>There is no grading specification for the backfill material over the pipe zone; however, the lightweight fill used should not exceed 6.0 kN/m³ as a specific weight when dry/loose. As long as the white pumice meets this specification, it is an acceptable material.</p> <p>Please refer to Appendix 1 for the only geotechnical report available for this site at this time.</p>

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QUESTIONS AND ANSWERS NO. 1
APPENDIX 1

APPENDIX 1 - GEOTECHNICAL REPORT follows:



LEVELTON CONSULTANTS LTD.

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July 25, 2014

Levelton File # R714-1023-00

Citiwest Consulting Ltd.
#101-9030 King George Blvd.
Surrey, BC V3V 7Y3

Attention: Mr. John Sidnell

Project: Preliminary Geotechnical Investigation
Subject: 1570 Kootenay Street, Vancouver, BC

1.0 INTRODUCTION

This letter, with the attached location plan and test hole logs, is our Preliminary Geotechnical Investigation Report and presents the findings and discussions on the general behaviour of the on-site soils.

The purpose of this Preliminary Geotechnical Investigation report is to provide subsurface information to assist CitiWest Consulting Ltd. (CitiWest) in their audit as per outlined in our proposal dated May 30, 2013, which was part of CitiWest's submission to the City of Vancouver (COV) in response to a Request for Quotation-PS20140454.

A meeting was held on site on June 11, 2014 to review the site conditions and to better understand the COV's project concerns. The site is in a generally flat area occupied by an L shaped two storey building surrounded by asphalt parking and driveways. During the meeting, it was brought to our attention that the City of Vancouver has changed the exterior skirting to match the ground settlement which had developed over time around the building. Furthermore, we understand that a sanitary sewer line breakage occurred recently beneath the central area of the existing building

Subsequent to this site meeting, CitiWest conducted a survey and prepared a Site Plan showing elevations of the existing ground surface across the site. Based on the CitiWest Site Plan, it appears that the parking and driveway areas to the north east and west have generally settled between 15 in. (0.38m) to 31.5 in. (0.8 m). Based on this information and discussions with CitiWest, Levelton completed three test holes at select locations as shown on Drawing Number 1.

The test holes involved hydrovacating to a depth of approximately 5 ft. (1.5 m) to clear for buried services and thereafter machine-augering to the depth of hard native soil or to refusal. Grab samples were recovered from shovel samples (during hydrovac work) and from the auger flights. These samples were returned to our laboratory for further analyses and classification.

Upon completing the investigation, the test holes were backfilled and closed in accordance with the BC Ground Water Regulation (Water Act), and the surface was patched with asphalt.

2.0 SOIL CONDITIONS

The soil logs of the three test holes, AH-01, AH-02, and AH-03, are attached. Based on the test hole information, the site generally consists of fill over peat over silty clay, underlain by till-like silty sand, as follows:

- **Fill** - 4 to 5 ft. (1.2 to 1.5 m) in thickness, silty sands and wood waste, with the exception of AH-03 where no wood waste was encountered, over;
- **Peat** - 5.5 to 7 ft. (1.7 to 2.1 m) in thickness, soft, with moisture contents ranging between 336 to 601%, over;
- **Silty clay** - 10 to 11 ft. (3 to 3.4 m) in thickness with the exception of AH-02 where the thickness is 23 ft. (7m), soft, with moisture contents ranging between 32 to 87%, over;
- **Silty sands** - very dense to dense, till-like.

The generalized soil profile is consistent with the soils described in the Vancouver Surficial Geology Map 1486A, which is lowland stream channel fill and overbank sandy loam to clay loam, also organic sediments; up to 8 m thick.

The groundwater table was measured to be about 4.5 ft. (1.4 m) below the existing grade at the time of our field investigation. The ground water level would be expected to fluctuate with the seasons.

3.0 DISCUSSIONS

- The fill is consistent in thickness which means that the applied surcharge load onto the underlying soils is relatively uniform. Noting that there is a slightly higher loading in the area of AH-03 where no wood waste was encountered.
- Peat is highly compressible, and would undergo significant settlement when subjected to a surcharge load, such as the fill above the peat shown in the test holes. It is not uncommon for sites underlain by peat to settle 1 ft. (0.3 m) or greater.
- The peat is relatively uniform in thickness as indicated in the test holes, ranging from 5.5 to 7 ft. (1.7 to 2.1 m).
- Silty clay is also a compressible material but not as nearly as compressible as the peat.
- The peat and, to some degree, the silty clay layer are expected to continue to compress in the future, and as such, further ground settlement should be expected at this site.

- On the basis that the thickness of the fill layer is relatively uniform (i.e. relatively uniform loading) and that the thickness of peat layer is also relatively uniform, the ground settlement would be expected to be relatively uniform across the site. This appear to be the case in the areas of AH-03 and AH-02, where the settlements are 15 in. to 18 in. (0.38m and 0.46 m), respectively. It is not known why the apparent settlement in the area of AH-01 is 31.5 in. (0.8m), which is about twice as much as that at AH-02 and AH-03. Perhaps the site services and grades may not have been constructed to the exact elevations as noted in the original design drawings. The actual settlement in this area may be less than 31.5 in.

4.0 CLOSURE

This geotechnical report has been prepared by Levelton Consultants Ltd. exclusively for CitiWest Consulting Ltd./City of Vancouver and their appointed agents. The report reflects our judgement in light of the information provided to us at the time it was prepared. Any use of the report by third parties, or any reliance on or decisions made based on it, are the responsibility of such third parties. Levelton Consultants Ltd. does not accept responsibility for damages suffered, if any, by a third party as a result of their use of this report. The attached Terms of Reference are an integral part of this geotechnical report.

As confirmation of your authorization to proceed with this work, please complete and sign a copy of this letter and return it to Levelton Consultants Ltd.

Yours truly,

Levelton Consultants Ltd.

[Original signed by: P.K. Linda Fong, P.Eng.] [Original signed by: Kenny K. C. Ko, P.Eng.]

Per: P.K. Linda Fong, P.Eng.

Reviewed by: Kenny K. C. Ko, P.Eng.

LPF/mg

Attachment(s): Terms of Reference
 Test Hole Location Plan
 Soil Logs AH-01, AH-02 & AH-03

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5. INTERPRETATION OF THE REPORT

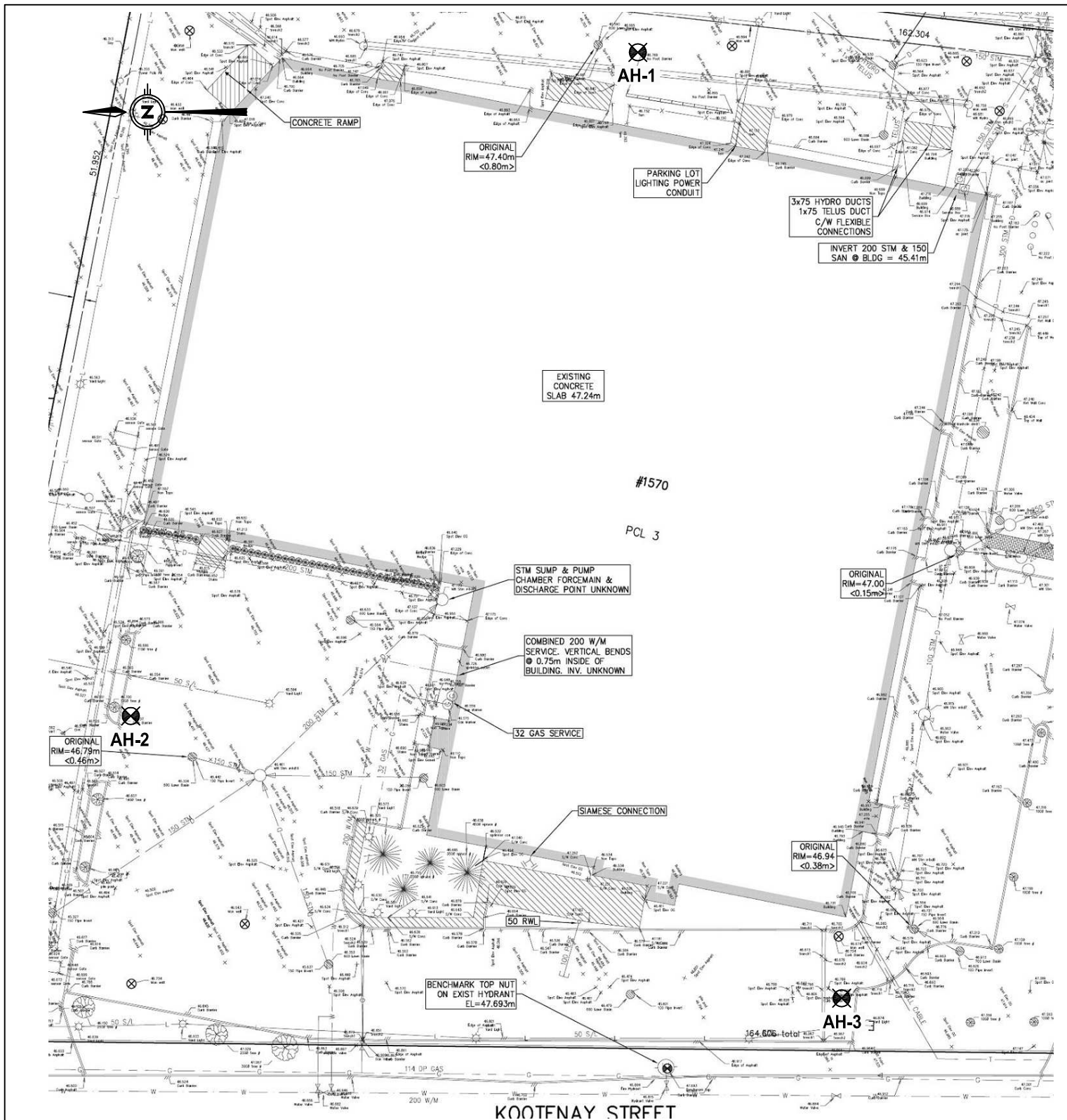
- a. **Nature and Exactness of Descriptions:** The classification and identification of soils, rocks and geological units, as well as engineering assessments and estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1 above. The classification and identification of these items are judgmental in nature and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations or assessments utilizing the standards of Paragraph 1 involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to changes over time and the parties making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or when the Client has special considerations or requirements, the Client must disclose them to Levelton so that additional or special investigations may be undertaken, which would not otherwise be within the scope of investigations made by Levelton or the purposes of the Report.
- b. **Reliance on information:** The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site investigation and field review and on the basis of information provided to Levelton. Levelton has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Levelton cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.
- c. **Additional Involvement by Levelton:** To avoid misunderstandings, Levelton should be retained to assist other professionals to explain relevant engineering findings and to review the geotechnical aspects of the plans, drawings and specifications of other professionals relative to the engineering issues pertaining to the geotechnical consulting services provided by Levelton. To ensure compliance and consistency with the applicable building codes, legislation, regulations, guidelines and generally-accepted practices, Levelton should also be retained to provide field review services during the performance of any related work. Where applicable, it is understood that such field review services must meet or exceed the minimum necessary requirements to ascertain that the work being carried out is in general conformity with the recommendations made by Levelton. Any reduction from the level of services recommended by Levelton will result in Levelton providing qualified opinions regarding adequacy of the work.

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When Levelton submits both electronic and hard copy versions of the Instruments of Professional Services, the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding upon Levelton. The hard copy versions submitted by Levelton shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions; furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed and sealed versions of the Instruments of Professional Services maintained or retained, or both, by Levelton shall be deemed to be the overall originals for the Project.

The Client agrees that the electronic file and hard copy versions of Instruments of Professional Services shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Levelton. The Client warrants that the Instruments of Professional Services will be used only and exactly as submitted by Levelton.

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LEGEND

 APPROXIMATE LOCATION OF TEST HOLE

REFERENCE

CITIWEST CONSULTING'S SITE PLAN 3141Base
F1to250.pdf PROVIDED BY EMAIL ON JUNE 30, 2014.

SCALE

0 10 20m

No.	DRAWN	DATE	REVISIONS/ISSUE

TEST HOLE LOCATION PLAN

PROJECT: 1570 Kootenay Street
Vancouver, B.C.

CLIENT: CitiWest Consulting



Levelton Consultants Ltd.

150-12791 Clarke Place Tel: 604 278-1411
Richmond, B.C. Fax: 604 278-1042

DRAWN	SCALE
LF	AS SHOWN
REVIEWED	DATE
—	July 25, 2014
FILE NUMBER	
R714-1023	
DRAWING NUMBER	REV
1	



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
AH-01

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Project No: R714-1023-00

Depth (m) (ft)	Description	C	N	Type	Water Level	10	20	30	40	50	60	70	80	90
5	FILL - 3 in. of asphalt over 4 in. of road base, over 1.7 ft. of grey gravelly sand			G										
	FILL- brown woodwaste.			G										
2	grey to dark brown clayey SILT to organic SILT, some peat, soft			G	Jul 10 2015		XX							
	dark brown PEAT, soft			G										
10				G										
	grey silty CLAY, soft			G										
4				G			XX							
15				G			XX							
				G										
6				G			XX							
20				G										
	grey silty SAND, trace gravel, dense to very dense (till-like)			G										
25	- auger refusal at 29 ft.			G										
8														
30	Bottom of hole at 29.0 feet.													
10														
35														
12														
40														
14														
45														
50														
16														
55														
18														
60														
65														
20														

C: Condition of Sample

Good 
Disturbed 
No Recovery 

Type: Type of Sampler

SPT : 2 in. standard
ST : Shelby
FP : Fixed Piston
G : Grab
CORE

N: Number of Blows

WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type:

- Moisture Content %
- ▲ Plastic Limit %
- ▲ Liquid Limit %
- ▼ Ground Water Level
- ∞ Shear strength in kPa (Torvane or Penetrometer)
- ✕ Shear strength in kPa (Unconfined)
- ⊗ Shear strength in kPa (field vane)
- Remolded strength in kPa
- Percent Passing # 200 sieve

Drill Method:

Solid Stem Auger

Date Drilled: 10/07/2015

By: LF

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[illegible]

C: Condition of Sample

Good ☐

Disturbed

--	--	--	--	--	--

No Recovery ☐

Type: Type of Sampler

SPT : 2 in. standard

ST : Shelby

FP : Fixed Piston

G : Grab

CORE

N: Number of Blows

WH : Weight of Hammer

WR : Weight of Rod

Standard Penetration Test : ASTM D1586

Hammer Type:

- Moisture Content %
- ▶ Plastic Limit %
- ▶ Liquid Limit %
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1570 Kootenay Street
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AH-03

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Project No: R714-1023-00

Depth (m) (ft)	Description	C	N	Type	Water Level	10	20	30	40	50	60	70	80	90
5	FILL - 3 in. of asphalt over 10 in. of road base, over silty sand, some gravel			G										
	FILL - grey silty sand			G										
2	brown PEAT, soft			G	Jul 10 2015									
				G										
10				G										
				G										
4	grey silty CLAY, soft			G										
	- 2 in. layer of fine sand at 20.5 ft.			G										
15				G										
6				G										
20				G										
	grey silty SAND, dense. (till-like)			G										
	- refusal at 27.5 ft.			G										
25				G										
8				G										
30	Bottom of hole at 27.5 feet.													
10														
35														
12														
40														
45														
14														
50														
16														
55														
18														
60														
65														
20														

C: Condition of Sample

Good

Disturbed

No Recovery

Type: Type of Sampler

SPT : 2 in. standard

ST : Shelby

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● Moisture Content %

▲ Plastic Limit %

▲ Liquid Limit %

▼ Ground Water Level

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✕ Shear strength in kPa (Unconfined)

⊗ Shear strength in kPa (field vane)

■ Remolded strength in kPa

■ Percent Passing # 200 sieve

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