City of Richmond

Memorandum

Planning and Development Division
Development Applications

To:	Mayor and Councillors	**Date:**	June 8, 2023
From:	Wayne Craig Director, Development	**File:**	RZ 17-791280
Re:	**Application by 1265028 B.C. Ltd. for Rezoning at 8180 Heather Street from "Single Detached (RS1/E)" Zone to the "Single Detached (RS2/A)" Zone**		

The purpose of this memorandum is to provide an update regarding the above-referenced rezoning application, which was first considered at the Public Hearing held on April 17, 2023, and subsequently deferred at the Public Hearing held on May 15, 2023.

At the initial Public Hearing, comments and concerns were raised by the neighbouring property owner at 9271 Dixon Avenue regarding potential construction-related impacts to the neighbouring property to the east, in particular potential impacts to the existing cast-in-place concrete retaining wall located along the shared property line. At the Public Hearing held on May 15, 2023, City Council provided further direction for the applicant to meet with the neighbour regarding their concerns.

The applicant has engaged the services of a consultant to conduct an assessment of the retaining wall. The assessment, prepared by Summit Geotechnical Services Inc. dated May 16, 2023, (Attachment 1) identifies that the existing cast-in-place concrete retaining wall located along the east property line is abnormal and encroaches into the subject property underground by approximately 2.5 ft. The retaining wall is non-structural, is in poor condition and serves a landscaping purpose (grade separation) only.

The applicant's consultant has identified that the proposed finished grades of the subject property after the development will be close to the existing grade of the east neighbouring property and would therefore no longer require a landscape retaining wall at this location. However, considering the existing concrete retaining wall is also supporting the existing fence, the wall can be left in place.

The applicant's consultant also identified that the existing cast-in-place retaining wall is in poor condition and that partial removal of the visible broken portions of the wall may be considered. However, the applicant has confirmed to staff that no portion of the existing retaining wall will be removed without the consent of the neighbour.

The applicant had previously identified that a new wooden retaining wall would be constructed on the subject property abutting the existing cast in place concrete retaining wall. The applicant's consultant commented on the feasibility of a wood retaining wall in this location, and while possible to construct, is not recommended because it would result in a small gap between the retaining walls allowing water flow and resulting in soil migration and settlement issues.

Richmond

Considering the consultant's recommendation, the applicant is no longer proposing to construct a wooden retaining wall.

In light of the concerns expressed, the applicant's Consultant has also recommended survey monitoring during construction through the use of monitoring hubs installed on the existing retaining wall and on neighbouring buildings. The applicant is committed to providing monitoring as recommended on both the subject site and the neighbouring lot, provided the neighbouring property owner consents to the installation of the monitoring equipment.

Following the direction of City Council, the applicant has advised City Staff that they have met with the neighbouring property owner on May 15, 2023, and May 26, 2023, and provided a copy of the consultant's assessment of the retaining wall; however, no agreement was reached regarding the treatment of the retaining work or the installation of monitoring equipment on the neighbouring property.

The applicant will be present at the Public Hearing on June 19, 2023, to provide a full overview and respond to any further queries from members of the public and City Council.

Wayne Craig
Director, Development
(604-247-4625)

Attachment 1 – Geotechnical Assessment of Existing Neighbouring Retaining Walls

WC:ac

pc: SMT
Josh Reis, Program Manager, Development
Suzanne Smith, Program Manager, Development

SUMMIT

EGBC Permit To Practice No.: 1000284

May 16, 2023,

Reference No. VAN-2339

Owner
8180 Heather Street
Richmond, BC, V6Y 2R1

c/o: CT Studio

email: tcdesign2012@hotmail.com

Re: Assessment of Existing Neighboring Retaining Walls - Revision 1
8180 Heather Street, Richmond, BC

1.0 INTRODUCTION

As requested, **Summit** Geotechnical Services Inc. (**Summit**) completed a geotechnical assessment of the existing retaining walls located adjacent to 8180 Heather Street in Richmond, BC. The purpose of the assessment is to evaluate the potential impact from the proposed subdivision development of the subject property to the adjacent neighboring retaining walls. This report provides a summary of our site observations and our geotechnical opinion.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 Site Description

The subject property is located at 8180 Heather Street in Richmond, BC. The site is bounded to the south by Dixon Avenue, to the west by Heather Street, to the north and the east by private residential properties. Currently, the site is improved by an at-grade supported single-story house (constructed in 1985) located near the center of the property.

Based on the survey plan, the site is relatively flat with existing ground elevations ranging between +0.83m to +1.41m. The existing ground at the north neighboring property is about 0.3 to 0.4m higher than the ground near the common property line of the subject property. The grade separation is supported by a wood landscaping retaining wall (located on the north neighboring property) as shown in Photo 1 below. The existing ground at the east neighboring property is about 0.15 to 0.2m higher than the ground near the common property line of the subject property. The grade separation is supported by a cast-in-place concrete retaining wall as shown in Photo 2 below.

The existing building on the north neighboring property setback about 1.15m (3'-9") from the common property line, while the east neighboring building setback about 1.37m (4.5') from the common property line. Both neighboring buildings are typical at-grade supported wood frame structures supported on concrete foundation.

Based on the updated survey plan, it is confirmed that the existing wood retaining wall along the north property line is located on north neighboring property. The existing cast-in-place concrete retaining wall along the east property line is a shared wall with the top of the wall at the south side located on the east neighboring property and the north side on the subject property.

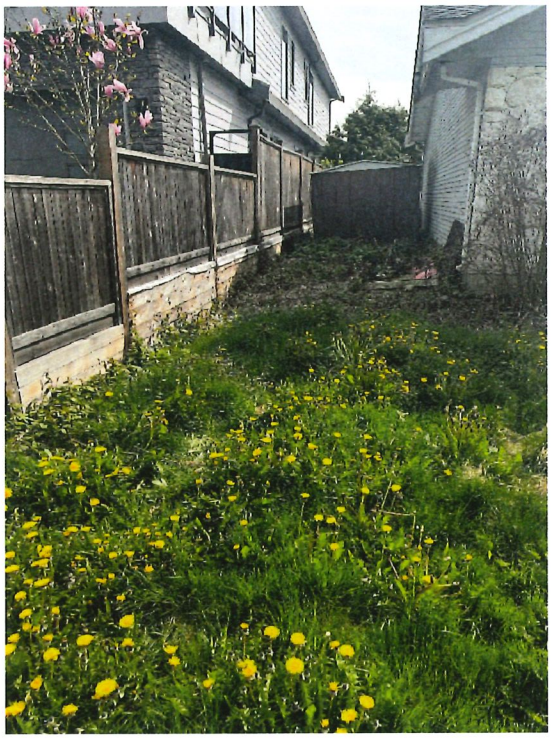


Photo 1 Existing wood retaining wall along north property line

Photo 2 Existing CIP retaining wall along east property line

2.2 Proposed Development

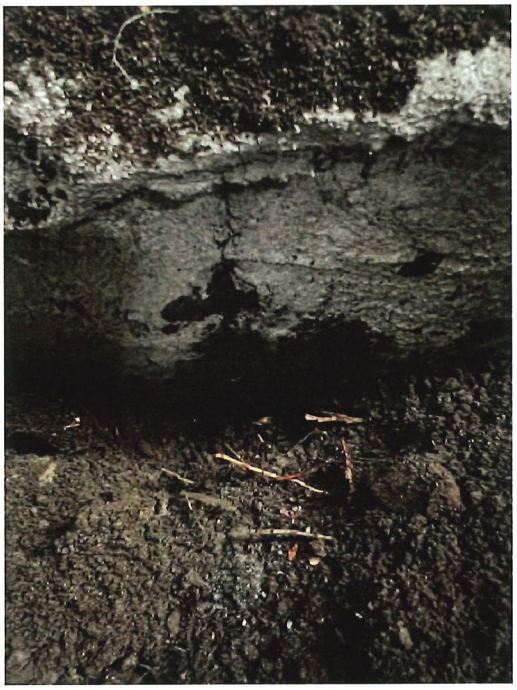
Based on the conceptual subdivision plan prepared by CT Studio, it is understood that the intention is to subdivide the property into two separate single-family dwelling residential lots and construct a new house with attached garage on each lot. The new buildings will setback about 6.42m (21') from the north property lines and setback about 1.22m (4 ft.) from the east property line. The proposed finished grade near the east and the west property lines will match the neighboring ground surface and used as either backyard (north side) or concrete sidewalk (east side).

2.3 Site Observations

Based on our site observations, the existing wood retaining wall along the north property line appeared to be in good condition. No significant ground movements (particular settlement) observed.

The existing cast-in-place (CIP) concrete retaining wall located along the east property line is in very poor condition. Numbers of cracks (spaced at 2 to 2.5m) were observed at the top and exposed front face of the wall and extended below ground (shown in in Photo 3-6). The observed cracks indicated that the concrete wall has no or inadequate reinforcement. In addition, a section of this wall (about 3m long) close to the southwest corner of the east neighboring building has tilted outward towards the subject property indicated significant ground movements had occurred and the wall could fail in the future.

Phot 3 Cracks on CIP Concrete Retaining Wall



Phot 4 Cracks on CIP Concrete Retaining Wall

Photo 5 Cracks on CIP Concrete Retaining Wall

Photo 6 Cracks on CIP Concrete Retaining Wall

As access was not granted by the owner of the east neighboring property, the condition of the east neighboring property (building foundation and sidewalks) near the CIP concrete retaining wall was not inspected.

3.0 SUBSOIL AND GROUNDWATER CONDITION

Based on the published Surficial Geological Survey of Canada Map 1486A and **Summit**'s experience within the project vicinity, soil conditions in the project area (center Richmond) typically consist of a thin layer of topsoil or fill overlying natural firm to soft silt, and in turn underlain by loose to medium dense sand to a depth about 20 to 25m where deep interbedded sand and silt starts. The groundwater table is generally near ground surface in winter months.

A senior geotechnical engineer from **Summit** attended the site on April 25, 2023. During our site reconnaissance, four (4) hand dug test holes were attempted at locations shown on the attached Figure 1 Site Plan. Hand dug test holes were advanced to up to 1.22m below the existing ground surface to assess near surface subsoil condition. The encountered subsoil are generally complied with that described in the geological map. Detail description of subsoil encountered in hand dug test holes are presented I Table 1 below

Table 1 Hand Dug Test Hole Log

Test Hole No.	Depth (m)	Soil Descriptions
HA23-01	0 – 0.3	Loose, moist, dark brown, silty SAND, trace rootlet (FILL)
	0.3 – 0.76	Loose to compact, moist, brown, SAND (FILL)
	>0.76	Firm to soft, moist, grey clayey SILT
HA23-02	0 – 0.76	Loose, moist, dark brown, silty SAND, trace rootlet (FILL)
	0.76 – 0.91	Loose to compact, moist, brown, SAND (FILL)
	>0.91	Firm to soft, moist, grey clayey SILT
HA23-03	0 – 0.76	Loose, moist, dark brown, silty SAND, trace rootlet (FILL)
	0.76 – 0.9	Loose to compact, moist, brown, SAND (FILL)
	>0.9	Firm to soft, moist, grey clayey SILT
HA23-04	0 – 0.3	Loose, moist, dark brown, silty SAND, trace rootlet (FILL)
	0.3 – 1.22	Loose to compact, moist, brown, SAND (FILL)
	>1.22	Firm to soft, moist, grey clayey SILT

Hand dug test hole 2 and 3 are excavated adjacent to the existing CIP concrete retaining wall to the bottom of the wall. It was noted that the existing CIP concrete retaining wall has an enlarged footing that likely extended about 0.76m (2.5') into the subject property as shown in the attached Figure 2 Cross Sections. The top of the retaining wall footing is likely located at about 0.5m to 0.76m below the existing ground surface.

No free groundwater was encountered during our site reconnaissance. Considering the site location and elevations, the static groundwater table is expected to be well below the proposed foundation level.

Perched water (run-off) from precipitation should be expected during "wet" season at the ground surface and at the top of the lower permeable till-like soils. It should be noted that fluctuations in the level of the groundwater may occur depending on season, precipitation and local land use

4.0 DISCUSSION AND RECOMMENDATION

It is **Summit**'s opinion that both the existing wood retaining wall located along the north property line and the existing CIP concrete retaining wall located along the east property line are non-structural retaining wall servicing landscaping purpose (grade separation) only. The proposed finished grades at the subject property after the development will be close to the existing ground surface at the existing ground surface at both north and east neighboring properties; therefore, those landscaping retaining wall will not be required.

Considering the wood retaining wall located along the north property line is in good condition and the wood wall is supporting the existing wood fences, removing this wall is not recommended. It is recommended to raise the ground near the north property line to match the north neighboring property using free draining materials such as river sand or clear crushed gravel.

The existing CIP concrete retaining wall is in very poor condition. Considering the existing wall is a shared wall (the exposed portion of the wall crosses properties and the footing of the wall extends into the subject property by about 2.5') and the condition of the wall is very poor, it is recommended that the ground at the west side of the existing CIP concrete retaining wall should be raised to match the east neighboring ground to ensure no lateral soil pressure apply to the wall from the east neighboring property as illustrated in Figure 2 Cross Section. The fill is expected to be up to 0.3m and extended to maximum 1.22m (4 ft.) to the edge of the proposed new building.

It is understood that a timber retaining wall was proposed abutting the existing retaining wall. It is **Summit**'s opinion that placing a timber wall in front of the existing CIP concrete wall is not necessary from geotechnical point of view. In addition, leaving a gap between timber wall and the existing CIP concrete wall will cause water flow and result soil migration and additional settlement. If a timber retaining wall is preferred to abut the existing CIP concrete retaining wall, it should be installed against the concrete wall.

Considering the existing building and future buildings are at-grade supported structures, demolition of the existing building, filling of the site (no grade raise in general, except near the north and the east property lines will be filled by up to 0.3m) and construction of the future home will have negligible impact to the neighboring properties.

However, survey monitoring during construction is highly recommended. Monitoring hubs should be installed on the existing CIP concrete retaining wall and on neighboring buildings and surveyed weekly from the start of demolition and completion of building foundations. Survey frequency can be reduced to monthly during the construction of upper structures. A detailed pre-construction survey at the east and the north neighboring property should be carried out and any existing cracks, damage should be documented. The contractor/owner of the subject property should be fully responsible for any construction caused damage and repair the damage on their expenses.

Totally removing the existing CIP concrete retaining wall is not recommended. However, considering the poor condition of the existing CIP concrete wall and the location of the wall (crosses properties), partially remove the visible broken CIP concrete wall may be considered. The existing CIP concrete retaining wall may be sawcut to 0.3m below the finished grade and backfilled using topsoil. Please note that should any portion of the retaining wall be removed, written approval from the owner of the east neighbor shall be obtained. Reinstallation of the fence and that all work would be done at the cost of the developer of 8180 Heather Street, Richmond. If no agreement can be reached the retaining wall should be left in place.

We trust that this letter will meet your present requirements. Please contact the undersigned if you have any questions or require further assistance.

Sincerely,

Summit Geotechnical Services Inc.

2023-05-16

Jian Zhong Jin, M.Eng., P.Eng.
Principal, Geotechnical Engineer

Enclosures: Figure 1 Site Plan
Figure 2 Cross Section

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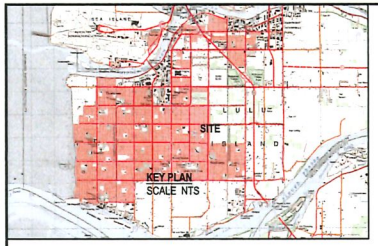
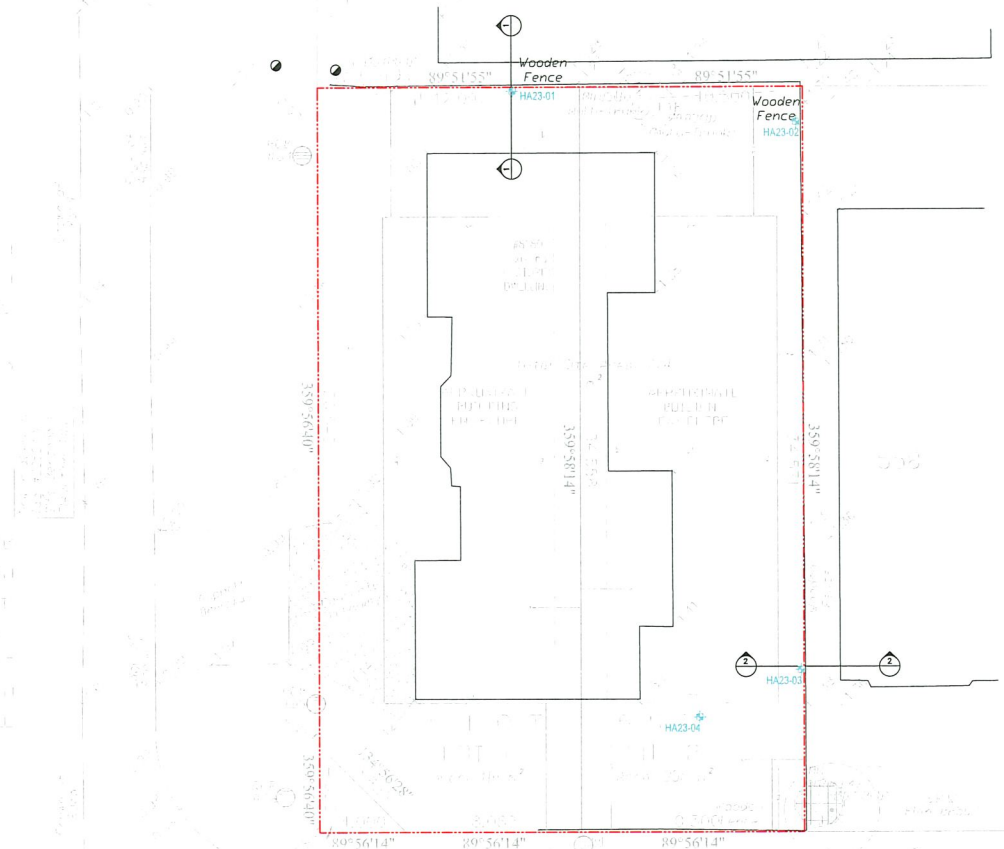
PH – 15





LEGEND

- PROPERTY LINE
- PROPOSED SUBDIVISION LINE
- HA23-01 2023 HAND DUG TEST HOLE

REFERENCE

- SURVEY PLAN BY J.C. TAM AND ASSOCIATES CANADA AND LAND SURVEYOR, DATED FEB.6, 2023

Scale – 1:500

0m 10 20 30m

SUMMIT **Summit** Geotechnical Services Inc.
EGBC Permit To Practice No.: 1000284
59 Fernway Drive, Port Moody
British Columbia V3H 5K5
Telephone: 604–362–7021

DFTR.	REVISIONS			CLIENT	TITLE:
SZH	No.	DESCRIPTION	DATE	OWNER, c/o: CT STUDIO	SITE PLAN
DSGN. JJ	3			PROJECT PROPOSED RESIDENTIAL SUBDIVISION 8180 HEATHER STREET, RICHMOND, BC	
CHK. JJ	2			PROJECT NO. VAN-2339	DATE 2023-04-26 / SCALE: 1:500 / DWG NO. FIGURE 1
	1				
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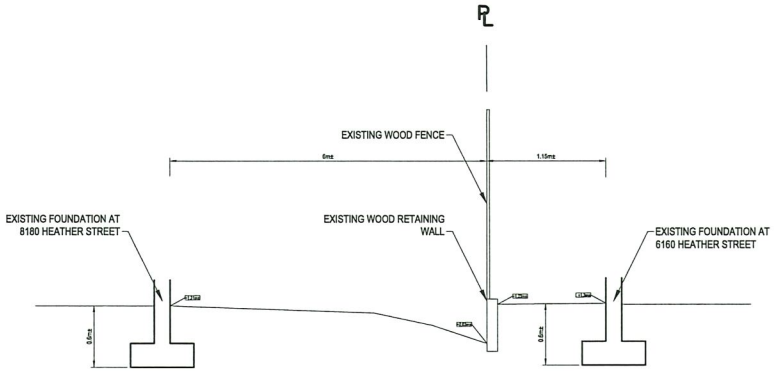
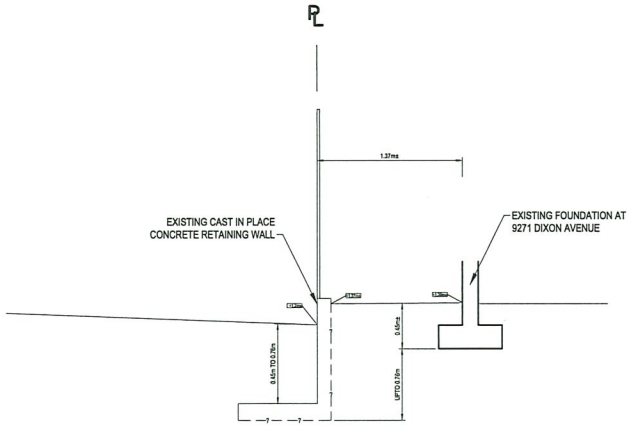


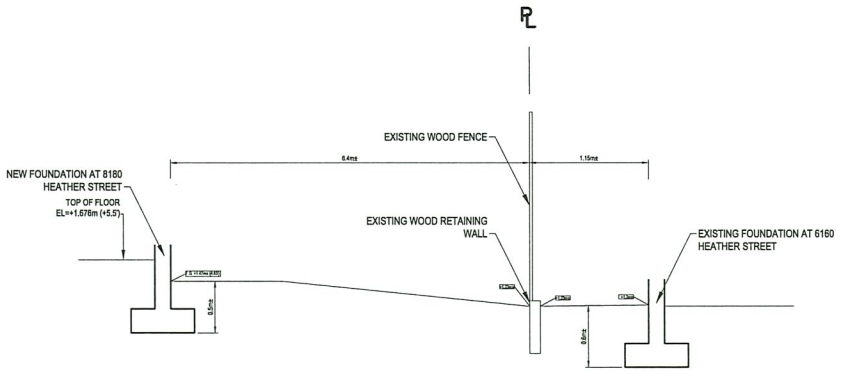
SECTION 1 - EXISITNG CONDITION

SCALE: AS SHOWN



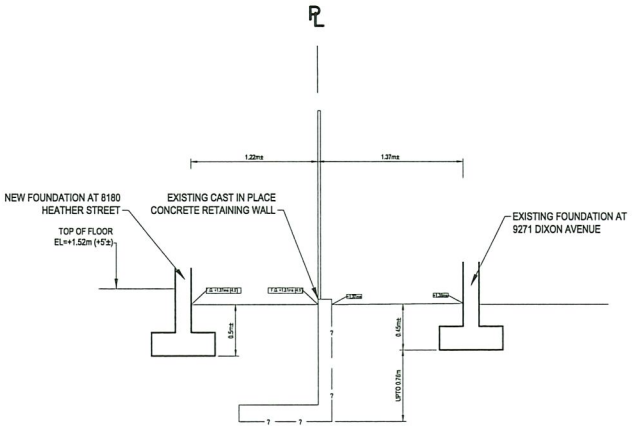
SECTION 2 - EXISITNG CONDITION

SCALE: AS SHOWN



SECTION 1 - POST-DEVELOPMENT CONDITION

SCALE: AS SHOWN



SECTION 2 - POST-DEVELOPMENT CONDITION

SCALE: AS SHOWN

SUMMIT	**Summit** Geotechnical Services Inc. EGBC Permit To Practice No.: 1000284 59 Fernway Drive, Port Moody British Columbia V3H 5K5 Telephone: 604–362–7021	DFTR. SZH DSGN. JJ CHK. JJ	REVISIONS No. / DESCRIPTION / DATE 3 2 1 0	CLIENT: OWNER, c/o: CT STUDIO PROJECT: PROPOSED RESIDENTIAL SUBDIVISION 8180 HEATHER STREET, RICHMOND, BC PROJECT NO.: VAN-2339	TITLE: CROSS SECTIONS DATE: 2023-04-26	SCALE: AS SHOWN	DWG NO. FIGURE 2