

RYZUK GEOTECHNICAL

Engineering & Materials Testing

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November 3, 2020

File No: 6709-12

Amity Construction
102-2250 Oak Bay Avenue
Victoria, BC
V8R 1G5

Attn: Mr. Dusty Delain (By Email: amitybuilt@gmail.com)

Dear Mr. Delain,

Re: Proposed Single Family Residence
457 Sturdee Street – Esquimalt, BC



As requested, we attended the above referenced site on October 6, 2020 to conduct a visual geotechnical assessment in support of the proposed construction of a single family residence. The site is located along the shoreline and includes steep slopes, therefore confirmation that the proposed construction is not subject to geohazard is required, pursuant to Section 56 of the Community Charter. The following letter summarizes the results of our assessments and associated recommendations. The Township of Esquimalt may rely on this information for the purpose of building permit approval. Our work is completed in accordance with, and is subject to, the attached Terms of Engagement.

PROPOSED DEVELOPMENT

The site comprises a vacant lot that was subdivided from a larger residential lot in 2015. The lot is situated adjacent to a common property access right-of-way to the north, a vacant residential lot to the east, a public park to the west, and the Present Natural Boundary (PNB) of Pontoon Cove to the south.

The proposed development will involve the construction of a new single family residence. The proposed residence building will be of wood-framed construction with conventional reinforced concrete foundations, as shown on the attached architectural plan prepared by Victoria Design Group, dated February 7, 2020.

SURFACE CONDITIONS

A previously existing residence partially situated in the northeast area of the lot has been demolished. The remaining portions are landscaped with grass yard areas, shrubs and a few mature fir trees. Bedrock is exposed along the shoreline and we expect that a veneer of topsoil

with possible localized pockets of dense glacial till or very stiff glacio-marine silty clay may overly the shallow bedrock. Some fill soils associated with past site works may also be encountered. The bedrock was noted to be hard metavolcanic gneiss and the surface of the rock is typically erratic, as observed along the shoreline.

The topographic relief within the lot slopes gently downwards to the southwest from the road within the north and east areas of the lot, with the slope inclination steepening to moderately steep with local steep portions adjacent to the rough shoreline in the south and west areas. The elevation change within the slope from the gently sloped portions down to the natural boundary is approximately 6 m.

GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

Based on our site observations, we consider the planned development to be feasible from a geotechnical perspective. We anticipate that bedrock will be present throughout much of the site and controlled blasting techniques will be necessary to achieve design elevation.

Soil and Rock Excavation Considerations

Given the soil conditions encountered, we expect that vertical excavations to a maximum of 1.5 m will be feasible. Where deeper, excavation cutslopes in soil will be stable at the following configurations:

- 1 H to 1 V (Horizontal : Vertical) for fill materials,
- ½ H to 1 V for stiff to very stiff brown silty clay,
- ½ H to 1 V for very dense glacial till, and
- Near vertical for bedrock

Topsoil and fill soils should be pulled back from all excavations so as to eliminate any chance these materials might slough into the opening. Shoring or adjustments to the above may be required upon site inspection during construction if variations of the soil conditions are observed, and due to the possible presence of existing utilities or seepage. According to WorkSafeBC guidelines, excavations deeper than 1.2 m must be inspected and approved by a qualified geotechnical professional prior to worker entry, unless sloped or shored in accordance with the guidelines.

Rock excavations up to approximately 3.5 m depth are anticipated to be required to achieve design grade for the proposed foundation elements throughout a large portion of the site. Blasting will be required in order to remove intact bedrock and such will need to be undertaken using controlled blasting techniques to minimize backbreak along cutslopes and to not impact adjacent properties or infrastructure.

Bedrock slopes will need to be thoroughly mechanically scaled by excavator bucket following each blast and inspected by a geotechnical engineer during or soon after removal of the rock to identify areas of potential instability.

If heavily fractured rock or adverse discontinuities are present, it may be necessary to configure the slope back by scaling at between 0.25 H : 1 V to 0.5 H : 1 V, or to stabilize such with shotcrete and/or rock pins/bolts. If it is preferred to blast rock with near vertical cuts, on past projects we have recommended making an additional allowance of 10 to 15% of the overall rock excavation cost to cover works associated with rock stabilization. Direction for such would be provided at the time of excavation. However, based on the rock quality observable within surface exposures we do not anticipate poor rock condition will be encountered, provided that due care is imparted by a qualified blasting contractor.

It may be necessary to monitor vibration of the surrounding areas during the excavation works. Vibration monitoring during rock blasting should also be undertaken to ensure that peak particle velocities (PPV) are kept below threshold values relating to adjacent structures/infrastructure. It is probable that neighboring residents will raise concerns regarding vibrations, even if some are not structurally harmful, and a pre-blast analysis may be important to later verify or alleviate such concerns.

Shoreline Construction Considerations

Construction activities at the site will involve working near the Pontoon Cove foreshore. We recommend that a temporary silt fence be installed along the lower limits of the work area for the duration of the construction period in order to prevent the movement of sediments and construction debris beyond the PNB.

Retaining Walls

We understand that retaining walls are planned to facilitate lot grading in areas adjacent to the proposed residence. All structural concrete wall designs should be provided by a qualified structural engineer and any retaining walls greater than 1.2 m should be designed by a qualified engineer. Retaining wall designs consisting of gravity or MSE type can be provided by Ryzuk Geotechnical upon request.

Settlement Considerations

Provided non-select soils (i.e. topsoils and fill) are removed from all building/embankment areas and areas of expected heavy loading (from construction machinery or otherwise), we expect that settlement at this site will be minor, if any, and of minimal significance to the structural or geotechnical design.

Seismic Considerations

The Capital Regional District is situated in a region of very high seismicity. Considerable earthquake risk exists, stemming from our proximity to the Cascadia subduction zone and numerous more local faults in southwestern BC and northwestern Washington State. Based on soil conditions observed at the site and possible basement grades, building foundations are generally expected to bear on any one of: stiff/dense native soils, engineered fill, or bedrock.

In accordance with the 2018 BC Building Code, we expect the shear wave velocity in the upper 30 m (V_{s30}) of intact or fractured in place bedrock will be greater than 1500 m/s, which corresponds to a Site Classification for Seismic Site Response of 'A'. In areas where there are dense/stiff native soils above bedrock, we expect the V_{s30} will be between 760 m/s and 1500 m/s, which corresponds to a Site Classification for Seismic Site Response of 'B'.

As determined from the 2015 National Building Code Seismic Hazard Calculation, for a design seismic event with a 2% probability of exceedance in 50 years, the adjusted Peak Ground Acceleration (PGA) and Spectral Acceleration Values for Site Classes 'A' and 'B,' respectively, are summarized in Table 1.

Table 1: Summary of PGA and Spectral Acceleration Values (NBC 2015)

Period (sec)	0.2	0.5	1.0	2.0	5.0	10.0	PGA (g)	PGV (m/s)
Response (g) Site Class 'A'	0.91	0.67	0.39	0.24	0.08	0.03	0.53	0.52
Response (g) Site Class 'B'	1.01	0.76	0.43	0.26	0.08	0.03	0.51	0.56

Foundations

We expect typical pad and strip footings to be the preferred foundation choice. We recommend that any foundation elements situated along the crest of the natural rock slope at the site bear directly on intact rock. These foundation elements can be dimensioned using a design bearing resistance of 2 MPa. For footings in other locations that bear directly on undisturbed native mineral soils, or approved engineered fill placed upon undisturbed native mineral soils or bedrock, foundation elements can be dimensioned using a Serviceable Limit State (SLS) bearing resistance of 250 kPa. For an Ultimate Limit State (ULS) bearing resistance, 375 kPa can be used assuming a geotechnical resistance factor of 0.5 as per the current Canadian Foundation Engineering Manual. Actual bearing resistances of the foundation subgrade will need to be confirmed by Ryzuk Geotechnical once footing subgrade is exposed.

We recommend minimum footing widths of 400 and 600 mm for strip and pad footings, respectively. For frost protection, the base of all footings should extend to a depth of at least 450 mm below adjacent finished grades.

Engineered Fill

Approved engineered fill will be required to build up to design grade after removal of rock cut material. Select granular fill material is to be well graded, at or near optimum water content, and should be placed in maximum 300 mm lifts and compacted with adequately-sized vibratory equipment.

All fill materials are to be compacted to a minimum of 95% of Standard Proctor Maximum Dry Density (SPMDD), with in-situ density testing conducted to ensure compaction in the engineered fill. The laterally confined engineered fill must have a footprint that extends horizontally beyond the footings a distance equal to the thickness of the engineered fill, to provide adequate splay for foundation loads. In perimeter areas, it is inadvisable to have the fill splay extend beyond property lines.

Foundation Wall Backfill

Any foundation walls should be backfilled per the Engineered Fill section. Where the grade elevation differs significantly between the two sides of a perimeter wall, and the wall is free to rotate in order to develop the active earth pressure state (rotation of 0.1% of the wall height, non rigid wall), the wall should be designed to resist a lateral earth pressure (due to granular backfill) similar in magnitude and distribution to that of a fluid having a unit weight of 6.3 kN/m^3 . Lateral earth pressures due to floor loadings and/or foundation loads from adjacent portions of the building can be calculated assuming a lateral coefficient of 0.35. Where the wall cannot rotate (rigid wall), it should be designed to resist an at rest lateral earth pressure loading, similar in magnitude and distribution to that of a fluid having a unit weight of 8.6 kN/m^3 . In this case, lateral earth pressure due to floor loadings and/or foundation loads from adjacent buildings can be calculated assuming a lateral coefficient of 0.45. Equipment larger than a bobcat should not be allowed within 1.5 m of the foundation walls during backfilling.

Lateral earth pressures resulting from seismic activity can be calculated according to the following equations:

$$\text{Non Rigid Wall : } PE = 0.375 k_h \gamma H^2$$

$$\text{Rigid Wall : } PE = 0.5 k_h \gamma H^2$$

where:

- PE is the resultant force per unit length of wall;
- the coefficients of 0.375 and 0.5 are dimensionless;
- k_h is the design peak horizontal ground acceleration coefficient;
- γ is the moist unit weight of the backfill material, which is approximately 20.4 kN/m^3 for most granular backfill;
- H is the height of the wall

In the case of the non rigid wall, the backfill pressure distribution resulting from the earthquake loading can be assumed to be triangular, increasing from zero at the base of the wall to a maximum of $0.75 k_h \gamma H$ at the top of the wall, with the resultant force acting at $0.67H$ above the base of the wall.

In the case of the rigid wall, the backfill pressure distribution resulting from the earthquake loading can be assumed to be parabolic, with the resultant force acting at $0.5H$ above the base of the wall.

For design purposes, the pressure distribution resulting from earthquake loading on the backfill should be added to either the active or at rest pressure distribution depending on whether the noted wall rotation can occur.

Foundation Drainage

Conventional perimeter foundation drainage consisting of perforated drain pipe surrounded by free draining granular material containing low fines, tied into the recommended free draining backfill material is recommended. To prevent the migration of fine-grained soil particles into the drainage system, a layer of medium weight, non-woven geotextile should be placed between the clean drain rock around the perforated pipe and the granular backfill material. The geotextile should encompass the entire drain rock/drain pipe system.

From a geotechnical perspective, collected hard surface drainage may be safely disposed of directly atop the bedrock downslope of the building.

GEOHAZARD ASSESSMENT

The potential geohazards assessed at the site include the stability of the natural rock slopes and a flood construction level (FCL) that includes the potential for tsunami inundation.

Slope Stability Review

The natural rock slopes at the site are considered to be globally stable, however surface instability may be experienced in the long term. We recommend that that all conventional footings for the proposed residence be situated so that any line extending from the base of a footing to the base of the natural rock slope will be no steeper than 1H:1V. Any footings beyond this zone will need to be reviewed on a case by case basis to verify local stability conditions.

Flood Construction Level (FCL)

The technical documents reviewed and referenced for the determination of the FCL consist of the following:

- AECOM – Capital Regional District; Coastal Sea Level Rise Risk Assessment, January 2015
- Ausenco Sandwell – Climate Change Adaption Guidelines for Sea Dikes and Coastal Flood Hazard Land Use; Draft Policy Discussion Paper, 27 January 2011 “AS(2011a)”
- Ausenco Sandwell – Climate Change Adaption Guidelines for Sea Dikes and Coastal Flood Hazard Lane Use; Guidelines for Management of Coastal Flood Hazard Land Use, 27 January 2011 “AS (2011b)”
- Engineers and Geoscientists BC - Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC, v2.1 August 28, 2018
- Kerr Wood Leidal - Provincial Guidelines for Coastal Floodplain Mapping, June 2011
- Province of British Columbia – Flood Hazard Area Land Use Management (FHALUM) Guidelines, May 2004, Amended January 2018 (Sections 3.5 & 3.6)

The FCL for coastal areas was determined following the “Combined Method” provided in the FHALUM Guidelines. Additional information required to establish the FCL was obtained from the Canadian Hydrographic Service (CHS) as well as “Relative and absolute sea level rise in western Canada and northwestern United States from a combined tide gauge-GPS analysis” by Mazzotti et al. (2008).

In order to determine the FCL at the referenced site, the steps and recommendations outlined in the Provincial guidelines were modified slightly based on site specific features. We utilized the highest predicted tide (HHWLT) which was provided by the CHS as a base, upon which the predicted Sea Level Rise (SLR), storm surge, wave effect, local uplift, as well as an additional free board factor including tsunami impact were considered. The following table summarizes how the FCL was determined from our analysis.

The Provincial Guidelines outline a 1.0 m sea level rise, and accordingly, a factor of 1.0 m was applied to account for the predicted sea level rise from the reference year 2000 to the year 2100. In addition, a correction factor has been added to account for regional uplift and isostatic rebound. A regional uplift rate of -0.79 mm/year for the Esquimalt area was assumed, based on published uplift rates from “Relative Sea-level Projections in Canada and the Adjacent Mainland United States” by James et al. (2014). Therefore, the FCL has been elevated by 0.79 mm per year to 2100. An estimated wave effect of 0.65 m, and a nominal freeboard amount of 0.3 m have also been included in the analysis. Table 2 summarizes how the FCL was determined.

Item:	(m)	Notes:
Highest predicted tide (HHWLT)	1.31	As per CHS, based on Oak Bay tidal gauges
Total Storm Surge during "designated storm"	1.30	As per 2011 guidelines for 1/500 AEP storm event
Estimated wave effect	0.65	As per reference/Provincial Guidelines
Uplift (-) / Subsidence (+)	0.06	0.79 mm/year subsidence for 80 years
Sea Level Rise (SLR)	1.00	As per Provincial Guidelines
Free Board Factor	0.30	As per Provincial Guidelines
FLOOD CONSTRUCTION LEVEL (geodetic)	+4.62	

Table 2. Summary of FCL calculations (geodetic)

Based on the above, and in accordance with Provincial Guidelines, an FCL, or minimum habitable floor elevation of **+4.62 m (geodetic)** has been calculated.

Tsunami Inundation Review

We have not undertaken detailed wave run-up analyses or associated magnitude return period frequency analyses of tsunami events to quantify the risk at the referenced site, however, we believe there is potential for tsunami inundation given that the subject site is located on the shores of the Juan de Fuca Strait. It should be noted that a joint probability analysis of a tsunami occurring at the same time as a high tide, storm surge, and wave run up has also not been undertaken but is considered remote. We recommend that residents review and understand the Provincial Tsunami Advanced Warning System.

The Emergency Management BC - Recommended Tsunami Planning Levels (Appendix B of the MOFLNR Coastal Floodplain Mapping – Guidelines and Specifications) indicate a combined wave height and run-up height of 4 m above the normal high water level for Zone D (Juan de Fuca Strait). The high water mean tide level (HHWMT) at the location of the project is approximately 0.732 m geodetic. Therefore, terrain below 4.73 m geodetic should be considered potentially at risk of impact by aggressive flood water and wave energy for a short duration during tsunami run-up.

SUMMARY

The above proposed single family residence development is considered feasible from a geotechnical perspective. It is expected that rock blasting, retaining wall construction, and fill placement will be performed to achieve required grades.

Construction and use of non-inhabitable spaces below the flood construction level (FCL) of 4.62 m (geodetic) would be geotechnically feasible, however, flooding below the design level

November 3, 2020

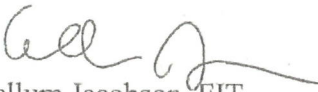
should be anticipated and planned for accordingly. No water sensitive equipment or structures should be below the designated FCL. The proposed lower floor of the residence is to be situated at an elevation well above the flood risk zone (6.17 m geodetic).

Tsunami risk has not been quantified, however terrain below 4.73 m (geodetic) should be considered potentially at risk of tsunami wave impact.

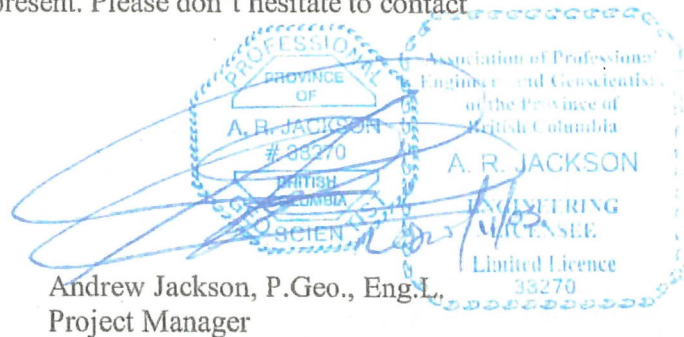
Considering the above and in fulfillment of the requirements of Section 56 of the Community Charter, we confirm that with the implementation of the recommendations contained in this report the land can be used safely for the use intended, from a geotechnical engineering perspective considering a design seismic event with a probability of exceedance of 2% in 50 years.

We hope the preceding is suitable for your purposes at present. Please don't hesitate to contact our office if we can be of further assistance.

Yours truly,
Ryzuk Geotechnical


Callum Jacobson, EIT
Junior Engineer

Attachment: Terms of Engagement
Architectural Plan (February 7, 2020)


Andrew Jackson, P. Geo., Eng. L.
Project Manager

TERMS OF ENGAGEMENT

1 GENERAL

- 1.1 Ryzuk Geotechnical (the Consultant) shall render the Services, as specified in the agreed Scope of Services, to the Client for this Project in accordance with the following terms of engagement. The Services, and any other associated documents, records or data, shall be carried out and/or prepared in accordance with generally accepted engineering practices in the location where the Services were performed. No other warranty, expressed or implied, is made. The Consultant may, at its discretion and at any stage, engage sub-consultants to perform all or any part of the Services.
- 1.2 Ryzuk Geotechnical is a wholly owned subsidiary of C. N. Ryzuk & Associates Ltd.

2 COMPENSATION

- 2.1 All charges will be payable in Canadian Dollars. Invoices are issued on a monthly basis. Payment is due within 30 days of invoice without hold back. Interest on overdue accounts is 24% per annum. Collection action will commence if invoices are not settled within 90 days.
- 2.2 Our Services may be engaged on a Fixed Fee basis or hourly rate as per our Fee Schedule. When Services are provided in accordance with our Fee Schedule, the rates for our Services will be marginally adjusted annually in January and the Client agrees to the adjusted rate.

3 REPRESENTATIVES

- 3.1 Each party shall designate a representative who is authorized to act on behalf of that party and receive notices under this Agreement.

4 TERMINATION

- 4.1 Either party may terminate this engagement without cause upon thirty (30) days' notice in writing. On termination by either party under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed, including all expenses and other charges incurred by the Consultant for this Project.
- 4.2 If either party breaches this engagement, the non-defaulting party may terminate this engagement after giving seven (7) days' notice to remedy the breach. On termination by the Consultant under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed to the date of termination, including all fees and charges for this Project.

5 ENVIRONMENTAL

- 5.1 The Consultant's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. The Consultant will cooperate with the Client's environmental consultant during the field work phase of the investigation.

6 PROFESSIONAL RESPONSIBILITY

- 6.1 In performing the Services, the Consultant will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the Services contemplated in this engagement at the time when and the location in which the Services were performed.



7 INSURANCE

7.1 Ryzuk Geotechnical is covered by Professional Indemnity Insurance as follows:

1. \$ 3,000,000 each and every claim
2. \$ 5,000,000 aggregate
3. \$ 5,000,000 commercial/general liability coverage

7.2 Notwithstanding the provision of insurance coverage by the Client, the Engineer hereby agrees to indemnify and save harmless the Client, its successor(s), assign(s) and authorizes representative(s) and each of them from and against losses, claims, damages, actions, and causes of action, (collectively referred to as "Claims") that the Client may sustain, incur, suffer or be put to at any time either before or after the expiration or termination of this Agreement, that arise out of errors, omissions or negligent acts of the Engineer or their Subconsultant(s), servant(s), agent(s) or employee(s) under this Agreement, excepting always that this indemnity does not apply to the extent, if any, to which the Claims are caused by errors, omissions or the negligent acts of the Client, its other consultant(s), assign(s) and authorized representative(s) or any other persons.

8 LIMITATION OF LIABILITY

8.1 The Consultant shall not be responsible for:

1. the failure of a contractor, retained by the Client, to perform the work required for the Project in accordance with the applicable contract documents;
2. the design of or defects in equipment supplied or provided by the Client for incorporation into the Project;
3. any cross-contamination resulting from subsurface investigations;
4. any Project decisions made by the Client if the decisions were made without the advice of the Consultant or contrary to or inconsistent with the Consultant's advice;
5. any consequential loss, injury or damages suffered by the Client, including but not limited to loss of use, earnings and business interruption;
6. the unauthorized distribution of any confidential document or report prepared by or on behalf of the consultant for the exclusive use of the Client
7. Subsurface structures and utilities

8.2 The Consultant will make all reasonable efforts prior to and during subsurface site investigations to minimize the risk of damaging any subsurface utilities/mains. If, in the unlikely event that damage is incurred where utilities were unmarked and/or undetected, the Consultant will not be held responsible for damages to the site or surrounding areas, utilities/mains or drilling equipment or the cost of any repairs.

8.3 The total amount of all claims the Client may have against the Consultant or any present or former partner, executive officer, director, stockholder or employee thereof under this engagement, including but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall be strictly limited to the amount of any professional liability insurance the Consultant may have available for such claims. Where the Engineer is a corporation or partnership, the Client and Consultants of the Client will limit any claim they may have to the corporation or partnership, without liability on the part of any officer, director, member, employee, or agent of such corporation or partnership.

8.4 No claim may be brought against the Consultant in contract or tort more than two (2) years after the date of discovery of such defect.

9 INDEMNIFICATION FOR KNOWN RISKS

9.1 In the course of our work, we will advise Client of Project risks including vibration, settlement, dewatering, damages associated with construction activity involving earthworks, heavy equipment, excavation, drilling, blasting, trucking and those actions associated with construction of the Project.

9.2 To the fullest extent permitted by law, and notwithstanding any other provision in the Agreement, the Consultant and Consultant's officers, directors, partners, employees, agents, or any of them, shall not be liable to the Client or

anyone claiming by, through, or under the Client for any special, incidental, indirect, or consequential damages whatsoever arising out of, resulting from, or in any way related to the Project or the Agreement from any cause or causes, including but not limited to any such damages caused by the negligence, professional errors or omissions, strict liability, breach of contract, or warranties, express or implied, of the Consultant or Consultant's officers, directors, partners, employees, agents, or any of them, provided that such described risks are within the tolerances that we advise.

10 DOCUMENTS AND REPORTING

- 10.1 All of the documents prepared by the Consultant or on behalf of the Consultant in connection with the Project are instruments of service for the execution of the Project. The Consultant retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used on any other project without the prior written agreement of the Consultant.
- 10.2 The documents have been prepared specifically for the Project, and are applicable only in the case where there has been no physical alteration to, or deviation from any of the information provided to the Consultant by the Client or agents of the Client. The Client may, in light of such alterations or deviations, request that the Consultant review and revise these documents.
- 10.3 The identification and classification as to the extent, properties or type of soils or other materials at the Project site has been based upon investigation and interpretation consistent with the accepted standard of care in the engineering consulting practice in the location where the Services were performed. Due to the nature of geotechnical engineering, there is an inherent risk that some conditions will not be detected at the Project site, and that actual subsurface conditions may vary considerably from investigation points. The Client must be aware of, and accept this risk, as must any other party making use of any documents prepared by the Consultant regarding the Project.
- 10.4 Any conclusions and recommendations provided within any document prepared by the Consultant for the Client has been based on the investigative information undertaken by the Consultant, and any additional information provided to the Consultant by the Client or agents of the Client. The Consultant accepts no responsibility for any associated deficiency or inaccuracy as the result of a miss-statement or receipt of fraudulent information.

11 JOBSITE SAFETY AND CONTROL

- 11.1 The Client acknowledges that control of the jobsite lies solely with the Client, his agents or contractors. The presence of the Consultant's personnel on the site does not relieve the Client, his agents or contractors from their responsibilities for site safety. Accordingly, the Client must endeavor to inform the Consultant of all hazardous or otherwise dangerous conditions at the Project site of which the Client is aware.
- 11.2 The client must acknowledge that during the course of a geotechnical investigation, it is possible that a previously unknown hazard may be discovered. In this event, the Client recognizes that such a hazard may result in the necessity to undertake procedures which ensure the safety and protection of personnel and/or the environment. The Client shall be responsible for payment of any additional expenses incurred as a result of such discoveries, and recognizes that under certain circumstances, discovery of hazardous conditions or elements requires that regulatory agencies must be informed. The Client shall not bring about any action or dispute against the Consultant as a result of such notification.

12 FIELD SERVICES

- 12.1 Where applicable, field services recommended for the Project are the minimum necessary, in the sole discretion of the Consultant, to observe whether the work or a contractor retained by the Client is being carried out in general conformity with the intent of the Services. Any reduction from the level of services recommended will result in the Consultant providing qualified certifications for the work.



13 DISPUTE RESOLUTION

- 13.1 If requested in writing by either the Client or the Consultant, the Client and the Consultant shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with the mediator, the dispute shall be referred to and finally resolved by arbitration under the rules of the arbitrator appointed by agreement of the parties or by reference to a Judge of the British Columbia Court.

14 CONFIDENTIALITY

- 14.1 During the period of this Agreement, the Consultant shall not use or disclose any Confidential Information to any third parties. The Consultant will only use Confidential Information for the sole purpose of carrying out the service(s) agreed upon unless withholding such information would present a risk to the safety, health and welfare of the public, the protection of the environment, or health and safety within the workplace. Access to the Client's Confidential Information will be restricted to employees who need the information to perform work duties. The Consultant may share photos of the project without disclosing any information not already made public unless the Client refuses consent of photos shared on social media. Unless already made public, the Consultant will not share owner or site address information on social media or with outside parties.

