

Attachment 5: Ryzuk Geotechnical Report, dated July 6, 2016

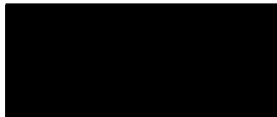
**RYZUK GEOTECHNICAL**

Engineering & Materials Testing

28 Crease Avenue, Victoria, BC, V8Z 1S3 Tel: 250-475-3131 Fax: 250-475-3611 www.ryzuk.com

July 6, 2016

File No: 8-5140-2



Dear 

Re: Supplemental Review of Driveway  
5347 Mt. Matheson Road – East Sooke, BC

As requested, and further to our letters of September 30, 2014 and June 9, 2015, we have attended the referenced site recently to discuss and review measures to further stabilize a portion of the driveway accessing the new residence, which is located atop a bedrock knoll. We understand that the Capital Regional District (CRD) requires this letter prior to issuing a final occupancy permit for the residence. Our related comments and observations are summarized herein. Our services are provided in accordance with the attached Terms of Engagement.

Our 2014 report identified a potential issue with the driveway. Specifically, over a distance of about 60 m, the outer edge of the driveway was underlain by fill that was retained by logs resting against living trees. On the basis of your advice that the outer portion of the driveway is no longer required, and in consideration of the fact that a minor fillslope failure would be of little consequence to areas downslope, we recommended that the outer portion of the driveway simply be barricaded off to keep traffic to the inside area. Our 2015 letter noted that this had been satisfactorily carried out, through the placement of large logs near the edge of the driving area, but that the upper portion of the fill could be removed if desired, to forestall any fillslope failures. Further, it was noted that this solution may not be sufficient in the long term, and we proposed that inspections be carried out by a geotechnical engineer every five years, to determine if any further slope stabilization is required.

On April 27, 2016, we met on site with you and Mr. Neil Smith of HHS Drilling and Blasting to discuss possible upgrades to the section of the driveway of concern, including a switchback a short distance upslope of the log-supported fillslope. One objective of the proposed upgrades would be to eliminate the five-year inspection requirement. The upgrades included removing some rock at the toe of the slope just beyond the switchback to allow the turn to be widened and the ditch to be deepened as well as decrease the grade through this section, improvements to the ditch on the uphill side of the road below the switchback (opposite the fillslope of concern) and installation of a culvert in a stable and non-erodible location, removal of the top row of logs and the fill that it supported, and regrading the road surface.

5347 Mt. Matheson Road – East Sooke, B.C.

July 6, 2016

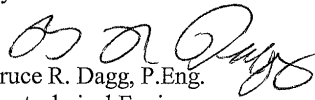
We subsequently attended on June 7 and verified that the above work had been completed, and that the log barricades remained in place well back of the edge of the log-supported fillslope, such that traffic loads will be well away from that slope. We noted, however, that there remained a significant lateral load on the living trees supporting the logs, which could shorten the life of the trees and cause the edge of the fill to fail onto the rocky slope below. As such, we recommended further log removal, and you have subsequently provided photos indicating that some of the logs were cut to relieve pressure on the trees.

We consider that the measures discussed above have made it such that the driveway is safe for the use intended. Any minor fillslope failures would not affect the load-bearing portion of the driveway, and, as noted above, would have little impact on downslope areas, which we understand are entirely within the subject property. Our assessment considers the geotechnical hazard associated with a seismic design event having a 2% probability of exceedence in 50 years. This is pursuant to and in accordance with Section 56 of the Community Charter.

We have also been asked to comment on the suitability of the existing gravel surfacing of the driveway. We did not walk the upper portion of the driveway during our recent site visit, but we understand that it has been graded in a similar fashion to the area described above, and that neither light vehicles, dump trucks, nor the existing East Sooke Fire Department fire truck have had any difficulty ascending the driveway, in various weather conditions. As such, and provided that regular proper maintenance of drainage and road surfacing is carried out, we consider that this surface is adequate for the use intended, from a geotechnical perspective.

We trust that the preceding letter is suitable for your purposes at this time, and that it satisfies the requirements of the Capital Regional District. If we can provide further information or clarification in this regard, please contact us. Thank you for the opportunity to have been of service to you.

Yours very truly,  
Ryzuk Geotechnical

  
Bruce R. Dagg, P.Eng.  
Geotechnical Engineer



Attachment – Terms of Engagement

cc: Capital Regional District, Juan de Fuca Electoral Area Building Inspections  
- Attn.: Michael Matlo, RBO (by e-mail: [bijdf@crd.bc.ca](mailto:bijdf@crd.bc.ca))

## TERMS OF ENGAGEMENT

### GENERAL

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.

Ryzuk Geotechnical is a wholly owned subsidiary of C. N. Ryzuk & Associates Ltd.

### COMPENSATION

All charges will be payable in Canadian Dollars. Invoices will be due and payable by the Client on receipt of the invoice without hold back. Interest on overdue accounts is 24% per annum.

### REPRESENTATIVES

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

### TERMINATION

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.

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.

### ENVIRONMENTAL

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.

### PROFESSIONAL RESPONSIBILITY

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.

### INSURANCE

Ryzuk Geotechnical is covered by Professional Indemnity Insurance as follows:

1. \$ 2,000,000 each and every claim
2. \$ 4,000,000 aggregate
3. \$ 5,000,000 commercial/general liability coverage

### LIMITATION OF LIABILITY

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

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.

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.

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.

#### DOCUMENTS AND REPORTING

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.

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.

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.

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.

#### JOBSITE SAFETY AND CONTROL

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.

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.

#### FIELD SERVICES

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.

#### DISPUTE RESOLUTION

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.