



October 25, 2017

Reference No.: VAN-00241231-A0

Mr. Chris Osborne  
**City of Campbell River**  
301 St. Ann's Road  
Campbell River, BC  
V9W 4C7

Email: chris.osborne@campbellriver.ca

**RE: Third Party Geotechnical Review  
Proposed 6-level Residential Development  
1430 Island Highway South (Hwy. 19A), Campbell River BC**

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Dear Mr. Osborne,

Further to the Letters dated July 25<sup>th</sup> and October 23<sup>rd</sup>, 2017, both prepared by EXP Services Inc. (EXP) and titled '*Third Party Geotechnical Review*' regarding the above-referenced redevelopment, EXP has prepared this letter. The purposes of this letter is to provide comment with respect to the slope stability analysis results submitted by Terran Geotechnical Consultants Ltd. (Terran Geo) to EXP via email on October 25, 2017.

The previously issued letters by EXP are intended to form part of this letter. Review and use of this letter should be completed in accordance with the attached *Interpretation and Use of Study and Report* document. These documents are included as an integral part of this letter and should be read in conjunction with all parts of this letter.

The results of Terran Geo's slope stability analysis showed that the Factor of Safety against sliding under existing conditions is about 1.1 and less than 1 for the static and seismic cases, respectively. A Factor of Safety against sliding of 2.2 and 1.7 for static and seismic cases, respectively, for the mitigated slope were also shown. These Factors of Safety meet the minimum criteria that was identified and compared to by Terran Geo.

Based on this information, it is EXP's opinion that provided the recommended mitigation measures are properly designed and constructed, that the site can be re-developed as proposed with the previously discussed mitigation measures (surface/groundwater control and slope stabilization with soil anchors/nails and suitable facing).

The details of the proposed mitigation measures should be developed during the detailed design stage and building permit process and be based on detailed testhole information as previously discussed by EXP. The soil anchor/nail system should be designed such that a suitable bond length is achieved beyond the critical slip surface and be capable of providing adequate pull-out resistance. The existing slope stability analysis may need to be updated to represent the detailed testhole information once it is completed.

The comments and recommendations presented in this letter are based on the referenced information and EXP's understanding of the project as described herein. If subsurface conditions or project parameters differ from those described in this report, EXP should be notified promptly in order to review the geotechnical aspects of the project and modify them if necessary.

This letter has been prepared for the exclusive use of *City of Campbell River* and/or their designated consultants or agents. Any use of the materials contained in this letter for other than its intended purpose

exp Services Inc.

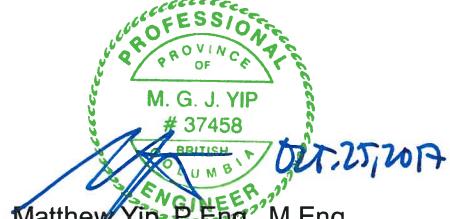
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or by any other party must first be verified in writing by EXP Services Inc. EXP does not accept any responsibility or damages as a result of any other party relying on or using the information and recommendations contained in this letter.

EXP trusts that this meets your current requirements. Should you have any concerns or questions, please do not hesitate to contact the undersigned.

Sincerely,

EXP Services Inc.



Matthew Yip, P.Eng., M.Eng.  
Project Manager | Geotechnical Engineer

Reviewed by:

A handwritten blue signature of "Evan Sykes".

Evan Sykes, P.Eng.  
Senior Geotechnical Engineer

Enclosed: Interpretation and Use of Study and Report



## INTERPRETATION & USE OF STUDY AND REPORT

### 1. STANDARD OF CARE

This study and Report have been prepared in accordance with generally accepted engineering consulting practices in this area. No other warranty, expressed or implied, is made. Engineering studies and reports do not include environmental consulting unless specifically stated in the engineering report.

### 2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report which is of a summary nature and is not intended to stand alone without reference to the instructions given to us by the Client, communications between us and the Client, and to any other reports, writings, proposals or documents prepared by us for the Client relative to the specific site described herein, all of which constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

### 3. BASIS OF THE REPORT

The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose that were described to us by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alteration to or variation from any of the said descriptions provided to us unless we are specifically requested by the Client to review and revise the Report in light of such alteration or variation.

### 4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT OUR WRITTEN CONSENT. WE WILL CONSENT TO ANY REASONABLE REQUEST BY THE CLIENT TO APPROVE THE USE OF THIS REPORT BY OTHER PARTIES AS "APPROVED USERS". The contents of the Report remain our copyright property and we authorise only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of the Report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make the Report, or any portion thereof, available to any party without our written permission. Any use which a third party makes of the Report, or any portion of the Report, are the sole responsibility of such third parties. We accept no responsibility for damages suffered by any third party resulting from unauthorised use of the Report.

### 5. INTERPRETATION OF THE REPORT

- a. Nature and Exactness of Descriptions: Classification and identification of soils, rocks, geological units, contaminant materials, building envelopment assessments, and engineering estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors 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 building envelope descriptions, utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarising 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 change over time and those 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 the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.
- b. Reliance on Provided information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, we 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. To avoid misunderstandings, **exp** Services Inc. (**exp**) should be retained to work with the other design professionals to explain relevant engineering findings and to review their plans, drawings, and specifications relative to engineering issues pertaining to consulting services provided by **exp**. Further, **exp** should be retained to provide field reviews during the construction, consistent with building codes guidelines and generally accepted practices. Where applicable, the field services recommended for the project are the minimum necessary to ascertain that the Contractor's work is being carried out in general conformity with **exp**'s recommendations. Any reduction from the level of services normally recommended will result in **exp** providing qualified opinions regarding adequacy of the work.

### 6.0 ALTERNATE REPORT FORMAT

When **exp** submits both electronic file and hard copies of reports, drawings and other documents and deliverables (**exp**'s instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by **exp** 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 version archived by **exp** shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of **exp**'s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except **exp**. The Client warrants that **exp**'s instruments of professional service will be used only and exactly as submitted by **exp**.

The Client recognizes and agrees that electronic files submitted by **exp** have been prepared and submitted using specific software and hardware systems. **Exp** makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.