



March 29, 2011

Our File: 107-1964

MINA TARAVOSH and CYRUS GHOTBI
2663 Delaphaye Drive
Coquitlam, BC

Attention: Ms Taravosh and Mr Ghotbi

Re: Slope Stabilization
2049 Westview Drive, North, BC
Final Assessed Partial Risk - Geotechnical

INTRODUCTION

This document provides a summary of the Final Assessed Partial Risk to the above-noted subject property subsequent to carrying out slope stabilization works.

BACKGROUND

Horizon Engineering has provided a geotechnical report dated October 12, 2007 regarding slope stabilization works at the above-noted site. British Columbia Building Code Letters of Assurance Schedules A, B1, and B2 dated October 24, 2007 have been issued for this project. On October 18; November 4, 5, and 9; and December 21, 2010 Horizon Engineering personnel carried out field reviews at the subject property. On February 2, 2011; a final field review was carried out for the purpose of preparing this document and the associated Letters of Assurance Schedule C-A and C-B.

Field reviews were carried out during earthworks in which fill materials and a portion of the existing retaining walls were removed. Field reviews were also carried out during installation of helical piles used to support the existing deck and underpin the west side of the existing house. A summary field review record regarding the pile installations is attached following the text of this document. It should be noted that at the time of our site visit on February 2, 2011, the proposed deck had not been constructed as originally discussed in the October 12, 2007 geotechnical report. Furthermore, where the fill has been removed the terrain has been sloped to approximately 35 degrees.

The existing outlet for the storm water disposal been exposed, re-constructed, and extended to a suitable location at the toe of the slope to prevent water from discharging onto the slope.

Prior to issuing this document, our client (Mr. Ghotbi) declared that a deck with a width of approximately 6.0 feet has been constructed along the back of the house. Based on the information provided by Mr. Ghotbi, it appears that the new deck is supported on pad footings

placed on the slope with "structural connection to the previous deck structure". We have not been provided with an opportunity to review the construction of this deck. Furthermore, the new deck is supported on conventional pad footings and NOT on deep foundations, as specified in our report.

RESIDUAL RISK ANALYSIS

Based on the Mosquito Creek East Ravine Landslide Risk Analysis Phase II - Detailed Study prepared by Westrek Geotechnical Services Ltd and dated May 8, 2007; the existing retaining walls and fill located west of the house had a high probability of a landslide event and it was concluded that there would be a very high to extreme risk to the house.

The City of North Vancouver determined that an acceptable level of risk per the Westrek risk assessment methodology would be moderate or better (Letter from The Corporation of the City of North Vancouver dated August 31, 2007; File No.: 4037-03-M1-03).

Subsequent to completion of the slope stabilization works, a residual risk analysis based on the aforementioned Landslide Risk Analysis Phase II document has been carried out for the current site conditions. The results of this residual risk analysis are presented in the following tables.

Table 1: Landslide Hazard and Risks

Site Condition	Probability of a Landslide	Partial Risk to House	Vulnerability of House	Specific Risk to House
Pre-Remediation	High	Very High	High	Extreme
Post-Remediation	Low	Low	Low	Very Low

Table 2: Seismic Slope Hazard

Site Condition	Probability of a Landslide	Partial Risk to House	Vulnerability of House	Specific Risk to House
Pre-Remediation	High	High	High	Very High
Post-Remediation	Low to Moderate	Low to Moderate	Low	Low to Very Low

CONCLUSIONS

It is concluded that as much of the existing fill and retaining walls as practicable has been removed. Moreover, this fill and retaining wall removal and the helical pile installations have been carried out in general accordance with the geotechnical recommendations.

It is also concluded that the Final Assessed Partial Risk to the house is considered to be "Low to Very Low" and satisfies the City of North Vancouver acceptable level of risk as previously discussed.

The above conclusion does not include the new deck and any other structure that may be installed subsequent to our site visit on February 2, 2011 unless it has been reviewed and approved by Horizon Engineering Inc.

CLOSURE

This document has been prepared for the sole use of our client, **Mina Taravosh and Cyrus Ghotbi**, and other consultants for this project, as described. Permission has been granted to the City of North Vancouver to publish this document for public information. Any use or reproduction of this report or the information provided in this document for other than the stated intended purpose is prohibited without the written permission of Horizon Engineering Inc. The information provided in this document is only valid under the site and surrounding conditions as described and present at the time of publishing this report.

We are pleased to be of assistance to you on this project and we trust that our comments are sufficient for your current purposes. If you have any questions or if we can provide additional service, please do not hesitate to contact us.

For
HORIZON ENGINEERING INC



K. KARIMZADEGAN
#27156
BRITISH COLUMBIA
PROFESSIONAL ENGINEER
March 28, 2011

Karim Karimzadegan, M.A.Sc., P.Eng.
Principal

Attachments: Field Review - Helical Pile Installation (dated November 10, 2010)
BC Building Code Letters of Assurance Schedules C-A and C-B

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