April 03, 2024

Our File Ref.: 220536

Unpoised Architecture Inc.
5-16 Sweetland Ave.
Ottawa, ON
K1N 7T6

Attention: Sam Cox

Subject: **Addendum to Slope Stability (GLOBAL) Analysis – Proposed Automotive Dealership and Body Shop**
5254 Bank Street
Ottawa, Ontario

Pursuant to your request, LRL Associates Ltd. (LRL) completed a Global Stability analysis at the above referenced location. The purpose of this analysis was to determine the Global Stability of the proposed retaining wall to be constructed onsite.

This addendum should be read in conjunction with the original Slope Stability Report generated for this site by LRL, dated: October 20, 2023.

The slope modelling program, Slide 5.0 (Rocscience), was used to implement the Bishop simplified method of slices. The retaining wall cross section chosen to be ran in the modelling was obtained from the information provided to LRL, generated by the project's structural consultant; Design and Systems Inc. The cross section (Section 3-RTW1) was considered to be the worst-case scenario (tallest section of the retaining wall).

The wall was analyzed under the undrained (short-term), drained (long-term), and seismic condition. However, it shall be noted that the drained and undrained parameters for the soil encountered on this site are the same. Therefore, the drained and undrained conditions are considered to be equivalent.

The seismic analysis was performed by incorporating the seismic coefficient (k_h) into the modelling. The peak ground acceleration (PGA) for this area is equal to 0.32 for the 2% in 50 year probability of exceedance as per the NBC 2015. The value for k_h was taken as 50% of the PGA, which equates to 0.16.

The Factor of Safety (FoS) against global failure for the proposed retaining wall was determined to be 2.35. A FoS of 1.50 or greater is considered to be safe with regards to stability.

The FoS in the seismic condition was determined to be 1.64. The minimum FoS with regards to seismic condition is 1.10.

These results indicate that the proposed construction of the retaining wall will remain stable in the long and short term, and in the event of any seismic activity.

The model results are attached for your reference.

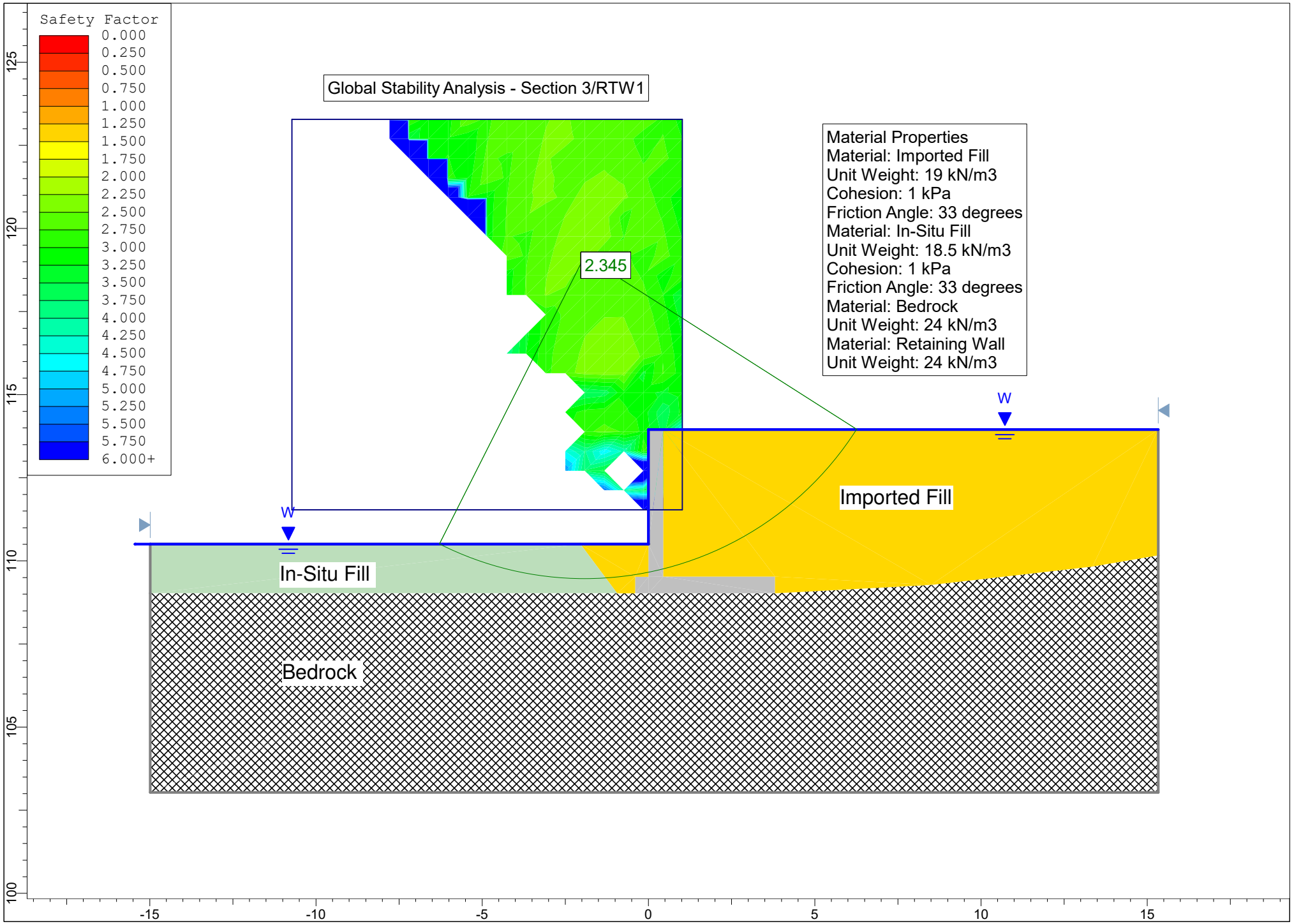
We trust this addendum provides sufficient information for your present purposes. If you have any questions concerning this memo or if we may be of further services to you, please do not hesitate to contact our office.

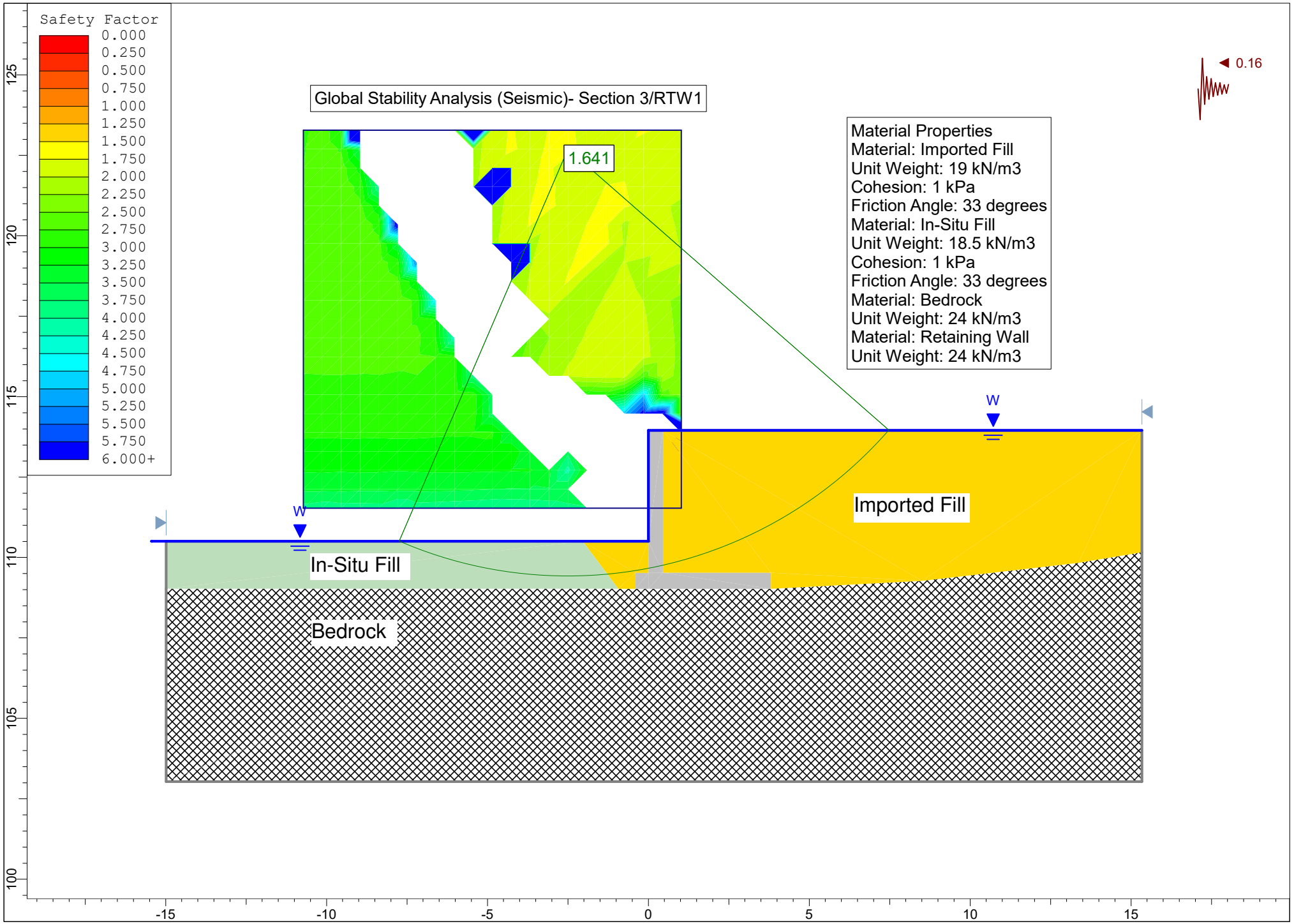
Yours truly,

LRL Associates Ltd.

Brad Johnson, P. Eng.
Geotechnical Engineer

Encl. Slope Stability Analysis Results


Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Global Stability Analysis - Section 3/RTW1
2.345
Material Properties
Material: Imported Fill
Unit Weight: 19 kN/m3
Cohesion: 1 kPa
Friction Angle: 33 degrees
Material: In-Situ Fill
Unit Weight: 18.5 kN/m3
Cohesion: 1 kPa
Friction Angle: 33 degrees
Material: Bedrock
Unit Weight: 24 kN/m3
Material: Retaining Wall
Unit Weight: 24 kN/m3
W
W
Imported Fill
In-Situ Fill
Bedrock
125
120
115
110
105
100
-15
-10
-5
0
5
10
15


Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Global Stability Analysis (Seismic)- Section 3/RTW1
1.641
0.16
Material Properties
Material: Imported Fill
Unit Weight: 19 kN/m3
Cohesion: 1 kPa
Friction Angle: 33 degrees
Material: In-Situ Fill
Unit Weight: 18.5 kN/m3
Cohesion: 1 kPa
Friction Angle: 33 degrees
Material: Bedrock
Unit Weight: 24 kN/m3
Material: Retaining Wall
Unit Weight: 24 kN/m3
W
W
Imported Fill
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Bedrock
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-15
-10
-5
0
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15