Project: 19-174-100 September 4, 2019

Mr. Michael Toccalino
3903 County Rd 13,
Milford, ON K0K 2P0
By email: mtoccalino@sympatico.ca

RE: Slope Stability Assessment
Proposed Addition to Existing Cottage
3903 County Rd 13
Milford, Ontario

Dear Sir:

In conformance with your request, a senior geotechnical engineer from DS Consultants Ltd. (DS) made a site visit on August 30, 2019. The purpose of the site visit was to visually inspect the slope and assess the stability. Selected photographs taken during the site visit are presented in Appendix A.

It is understood that a two-storey addition without basement will be constructed adjacent to the existing cottage structure, as shown in the plan in Appendix B. Quinte Conservation requests that a slope stability assessment be conducted by a geotechnical engineer to provide opinion on the long-term stability of the bedrock slope in the addition area.

Our site observations and comments are as follows:

- As shown in Photos A1, A2 and A3 in Appendix A, the area from the top of slope to the proposed addition is generally flat. The distance between the existing top of slope and the proposed addition is 6.5 m.
- The height of the slope is about 10 m. The upper portion (Photo A4) and the lower portion (Photo A5) of slope consisted of exposed bedrock, which are steeper than the middle portion of the slope. The middle portion of slope was covered with soils (weathered bedrock material etc.), with vegetation and trees.
- As examined at the bottom of the slope (Photo A5), the slope at site consisted of limestone bedrock. As observed at the top of the slope, the bedrock surface was about 0.5 m below the ground surface near the top of slope.
- Measurement of the distance between the toe of the slope and the top of the slope was conducted using a Laser measurement sensor. Using the measurement data, the calculated horizontal distance between the existing toe and the existing top of the slope is 5.5 m. Therefore, the horizonal distance between the existing toe of slope and the northeast corner of the proposed addition adjacent to the existing structure is about 12 m. At the northwest corner of the proposed

addition, the horizonal distance between the existing toe of slope and the addition is more than 12 m.

- Long-term erosion at the toe of the bedrock slope is expected to be 1 to 2 m. Assuming a long-term erosion of 2 m at the toe of the slope, the horizonal distance between the long-term toe of slope and the proposed addition is will be 10 m. As the height of the slope is 10 m, the imaginary line from the long-term toe of slope to the proposed addition will be 1 horizontal to 1 vertical (1H:1V) in inclination, indicating the proposed addition will be on stable ground in terms of long-term slope stability.
- In conclusion, the proposed addition is acceptable in terms of long-term slope stability.
- It is understood that the addition will be founded on sound bedrock.

We trust that the information contained in this letter is satisfactory. Should you have any questions, please do not hesitate to contact this office.

Yours Very Truly,
DS Consultants Ltd.

Alka Sangal, M.Eng., P.Eng.

Fanyu Zhu, Ph.D., P.Eng.

Attachments:
Appendix A - Site Photographs
Appendix B - Site Survey Plan

Appendix A - Site Photographs

Photo A1 to Photo A6, taken on August 30, 2019

Photo A1: Existing structure and proposed addition area at left side

Photo A2: Top of slope area

Photo A3: Existing top of slope

Photo A4: Upper portion of slope

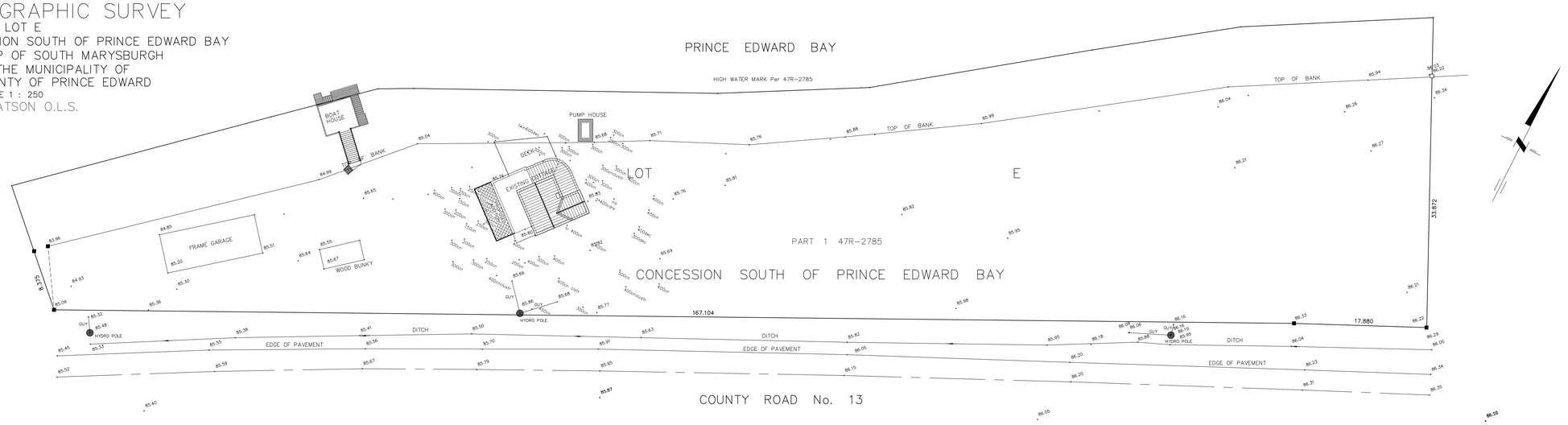
Photo A5: Lower portion of slope near lake water level

Photo A6: Slope conditions (looking from bottom of slope)

Appendix B - Site Survey Plan

TOPOGRAPHIC SURVEY

PART OF LOT E
CONCESSION SOUTH OF PRINCE EDWARD BAY
TOWNSHIP OF SOUTH MARYSBURGH
NOW IN THE MUNICIPALITY OF
THE COUNTY OF PRINCE EDWARD
METRIC SCALE 1 : 250
KEITH WATSON O.L.S.



LEGEND :

■ DENOTES SURVEY MONUMENT FOUND
□ " SURVEY MONUMENT PLANTED

218 CHURCH STREET
BELLEVILLE, ONTARIO

WATSON
LAND SURVEYORS Ltd.

K8N – 3C3
(613) 962 – 9521

DECEMBER 3, 2018

PROJECT № 11012–T–18