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# SOIL-MAT ENGINEERS & CONSULTANTS LTD.

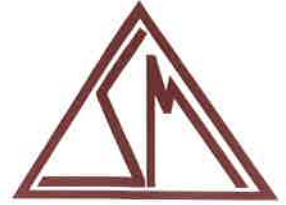
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**PROJECT NO.: SM 188161-G**

November 12, 2018

BRANTHAVEN DEVELOPMENT CORP.  
720 Oval Court  
Burlington, Ontario  
L7L 6A9

Attention: Anthony Girolami  
Project Manager

**SLOPE STABILITY CONSIDERATIONS  
PROPOSED RESIDENTIAL DEVELOPMENT  
308 & 314 MAIN STREET EAST  
GRIMSBY, ONTARIO**

Dear Mr. Girolami,

Further to your request and comments from the Niagara Peninsula Conservation Authority [NPCA], SOIL-MAT ENGINEERS has prepared this slope stability considerations report in connection with the above noted project. This report should be read in conjunction with our initial geotechnical report dated April 12, 2018.

It is understood that the proposed residential development will involve the construction of single family dwellings on lots located below the toe of the slope of the Niagara Escarpment. A representative of SOIL-MAT ENGINEERS visited the site on November 8, 2018, and visual evaluation of the toe of the escarpment did not indicate any significant signs of movements or instability. The toe of the escarpment slope was noted to be heavily vegetated with young to mature trees and scrub vegetation, with average inclinations ranging from approximately 2.5 to 4 horizontal to 1 vertical, or flatter. A ditch was noted along the toe of the slope, which was approximately 0.5 to 0.8 metres wide and 0.4 to 0.6 metres deep, presumably constructed to direct surface water from the escarpment away from the agricultural field at the toe. The subsurface soil conditions described in our geotechnical report consist of silty clay till to weathered Queenston shale bedrock at near surface elevations.

As with all slopes, there is a reduction in surficial shearing resistance attributed to the effects of freezing and thawing, wetting and drying, burrowing animals, etc. With time, the surface of the slope will degenerate and tend to reach equilibrium within its stress and ambient environment, including vegetative cover. It should be noted that this type of degeneration is a very slow process, as is evident by the observed relatively stable condition of the existing slopes.



Based on our observations and experience in the area, as well as the subsurface soils present over the site, the slope is considered to be sufficiently stable in the short and long term. Rear lot lines and structure extending to the within perhaps 1 to 2 metre of northern [downhill] top edge of the existing ditch would not be considered to negatively impact the stability of the slope or function of the ditch. A greater setback from the ditch line may be required to accommodate other constraints, such as ecology or biology. In this regard it is understood that the development is proposed to incorporate a 7.5 metre setback from the top of the ditch. This setback would be considered more than sufficient to ensure the long-term stability of the slope, and as mentioned above a lesser setback would be considered adequate, from a geotechnical point of view. The existing ditch should be maintained or improved upon, however, to ensure drainage from the slope remains controlled around the proposed development.

We trust that this letter report is sufficient for your present requirements. Should you have any questions regarding the content or comments within the report, please do not hesitate to contact our office.

Yours very truly,  
SOIL-MAT ENGINEERS & CONSULTANTS LTD.

A handwritten signature in blue ink, appearing to be 'K. Richardson'.

Kyle Richardson, P.Eng.  
Project Engineer



A handwritten signature in blue ink, appearing to be 'I. Shaw'.

Ian Shaw, P.Eng.  
Senior Engineer

Distribution: Branthaven Development Corp. [1, plus pdf]