



Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

September 4, 2019

File No. 7-15-5064

Stoney Creek Office

Bloomfield Developments Inc.

9120 Leslie Street, Suite 203
Richmond Hill, ON, L4B 3J9

Attention: Mr. Selva Chelliah

**RE: CITY OF BURLINGTON REVIEW COMMENTS - RESPONSE
105 AVONDALE COURT & 143 BLUE WATER PLACE, BURLINGTON**

Dear Mr. Chelliah;

This letter addresses Item 1.7 in the City of Burlington interoffice memorandum dated July 18, 2019, which pertains to the review of Terraprobe's geotechnical report prepared for the property. We offer clarification for the following comments:

Stable Top of Slope between 143 and 4342 Blue Water Place

1. The pre-consultation notes from October 3, 2018 indicated that information regarding the stable top of slope between 143 Blue Water Place and 4342 Blue Water Place was to be included in the Geotechnical Report. Section 2.1.3 does not provide sufficient information regarding stable top of slope. Through the review of the original Rezoning/Official Plan Amendment application in 2015 a slope analysis between 143 Blue Water Place and 4342 Blue Water Place was provided, a stable top of slope was determined to ensure an appropriate setback for development. Odan Detech Consulting Engineering provided a Section (A-2) that indicated 3.38m westerly from the property line at the approximate center of 4342 Blue Water as the stable top of slope. We would ask that the Geotechnical investigation be updated to include that information and that the stable top of slope & development setback line be shown and identified on all drawings.

Response: We have updated our figures to include the stable top of slope line between 143 and 4342 Blue Water Place. The stable top of slope was defined based on the 'Agreed Statement of Facts: Meeting of Engineering Experts' for the property as discussed on February 26, 2018. It was agreed that 2.5H:1V stable slope inclination be applied within this area of the site. It was further agreed that no additional setback would be required from the stable top of slope.

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Erosion Control Measures for Unregulated Drainage Feature

2. The pre-consultation notes from October 3, 2018 indicated that details of any proposed/required erosion control measures for the unregulated drainage feature/water course needed to be included in the report. Section 2.1.2 discusses active erosion and deformation of the gabion wall, but no discussion on remedial works, please provide, and consult with the Civil Engineer so that the works can be shown on the engineering drawings.

Response: The long term stable top of bank for river and stream systems is determined based on the potential for bank erosion to impact on the stability of the slope (toe erosion allowance) and the stability of the slopes (stable slope allowance). For the purposes of evaluating appropriate setbacks from the unregulated drainage feature, Terraprobe has already applied an erosion allowance of 5 metres. No additional erosion control measures are considered warranted as all proposed buildings have been setback a minimum distance of 7.5 metres beyond the long term stable top of bank.

As noted in Section 2.1.2 of the Terraprobe's geotechnical investigation report, there is an existing gabion wall along the west bank of the unregulated drainage feature which has experienced some deformation. Consideration should be given to removing the gabion wall in its entirety as it has the potential to obstruct the natural flow of water through the drainage feature. It is expected that any embankments disturbed by the proposed works would be flattened to an overall inclination of about 3 horizontal to 1 vertical or flatter.

If erosion protection is to be considered, suitable rip-rap protection can be placed along the west bank of the unregulated drainage feature. The size and thickness of the rip-rap should be determined by a qualified specialist on the basis of the stream velocity and other factors. The reuse of existing gabion stone for this purpose could be considered but must be similarly evaluated by a qualified specialist. The rip-rap should be separated from the native soils or embankment material with a suitable geotextile filter fabric or a filter zone of granular material.

Pre-Construction (Pre-condition) Surveys

3. The Geotechnical Study Checklist provided at the pre-consultation indicated that the geotechnical report should contain confirmation regarding the need for pre-construction (pre-condition) surveys for surrounding buildings/structures, i.e. what radius is recommended for the surrounding homes/retaining walls, etc.

Response: Pre-construction condition surveys are recommended where existing utilities, homes or retaining walls are located within the zone of influence of an excavation. The zone of influence of the excavation may be taken as a line drawn upwards from the base of an excavation at an inclination of 1 horizontal to a vertical. The locations and depths of utilities which would potentially be affected by the proposed work should be identified prior to commencing the excavation and addressed with the respective agencies.

Ground Water Conditions

4. Provide information regarding groundwater elevations, it has been brought to the City's attention from area residents that there may be high groundwater levels in the area. We ask that the Geotechnical Engineer assess groundwater conditions and make recommendations regarding sump pump/waterproofing/etc. requirements, i.e. is a dual sump pump system (with water powered back up pump) recommended, is a warning clause on title warranted that continual sump pump cycling may be experienced?

Response: Boreholes drilled at the site encountered ground water at depths of about 3.0 and 6.1 metres below existing grade, or at elevations in the range of about 77.9 to 80.6 m. This is a perched ground water condition in the silty sand stratum, above low permeability deposits of clayey silt till. At this site, the ground water levels will likely coincide with the present level of Lake Ontario (Elevation 75.8 metres).

To assist in maintaining dry basements and preventing seepage, it is recommended that exterior grades around the building be sloped away at a 2 percent gradient or more, for a distance of at least 1.2 m. Provision of nominal subfloor drainage is required in conjunction with the perimeter drainage of the structure, to collect and remove the water that infiltrates at the building perimeter and under the floor. Subfloor drainage is recommended for basements deeper than elevation 81 m.

The drainage system is a critical structural element, since it keeps water pressure from acting on the basement floor slab or on the foundation walls. As such, the sump that ensures the performance of this system must have a duplexed pump arrangement for 100% pumping redundancy and these pumps must be on emergency power. The size of the pump should be adequate to accommodate the anticipated ground water and storm event flows. It is expected that the seepage can be controlled with typical widely available, commercial sump pumps.

We trust that this letter is sufficient for your present requirements. If there is any point requiring further clarification, please contact the undersigned.

Yours truly,

Terraprobe Inc.



Patrick Cannon, P.Eng
Principal

