



**re: Response to Technical Review Comments**

**Proposed Residential Development**

Hannan Hills Subdivision – Mississippi Mills, Ontario

**to:** Novatech – **Steve Pentz** – [s.pentz@novatech-eng.com](mailto:s.pentz@novatech-eng.com)

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**file:** PG4746-MEMO.02 Revision 1

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Further to your request and authorization, Paterson Group (Paterson) has prepared the following memorandum to provide our response to the geotechnical-related technical review comments prepared by the Municipality of Mississippi Mills (dated September 9, 2024) for the proposed residential development to be located at the aforementioned site. This memorandum should be read in conjunction with letter report PG4746-LET.01 dated January 17, 2019.

## **Review Comments**

**Comment 10:** *Please be advised that, as a standard, tree planting is required at a rate of one tree per lot and for corner lots two trees per lot. Based on the Geotechnical Study, please provide information regarding the planting of trees and if there are any impacts due to the existence of sensitive soils.*

**Response:** Reference should be made to our response to Comment 11 regarding anticipated bearing mediums for structures considering currently proposed preliminary grading. For structures founded upon soils that are not underlain by silty clay/clayey silt, bedrock or indirectly supported by bedrock using engineered fill or lean-concrete extending between USF and the bedrock surface, there are no applicable to tree planting setback or other geotechnical restrictions for landscaping.

For structures that are anticipated to be supported by the soil bearing mediums underlain by silty clay/clayey silt, it is recommended to assume the in-situ soils are of high plasticity (i.e., plasticity index greater than 40%) and that the following recommendations should be considered for planning tree plantings for the subject structures:

Large trees (mature height over 14 m) can be planted provided a tree to foundation setback equal to the full mature height of the tree can be provided. Tree planting setback limits may be considered as 7.5 m for small (mature tree height up to 7.5 m) and medium size trees (mature tree height 7.5 m to 14 m) provided that the following conditions are met:





- ❑ A small tree must be provided with a minimum of 25 m<sup>3</sup> of available soil volume while a medium tree must be provided with a minimum of 30 m<sup>3</sup> of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally uncompacted when backfilling in street tree planting locations.
- ❑ The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.
- ❑ The foundation walls facing the tree are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- ❑ Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree), as noted on the subdivision Grading Plan.

As noted in our response to Comment 11 through Comment 13, structures that would be required to be subject to the above-noted setbacks would be determined as part of the Grading Plan review that would be completed by Paterson. It should be noted where the plasticity index is determined to be less than 40% (i.e., low to medium plasticity), tree planting setback limits may be reduced to 4.5 m for small (mature tree height up to 7.5 m) and medium size trees (mature tree height 7.5 m to 14 m) and meeting the above-noted conditions.

**Comment 11:** *It is noted that the bedrock is shallow and if inferred as main bearing surface for development on land. Please confirm if this is accurate*

**Response:** Based on the results of our most recent field investigation and review of current preliminary grading and servicing drawings prepared by Novatech (Revision 3 dated June 2024), it is anticipated bedrock will be encountered at the design underside of footing (USF) elevation for several structures located throughout the subject site. However, soil bearing mediums are anticipated to be encountered at the design founding elevation and to provide foundation support for the remaining structures throughout the subject site. The preferred bearing medium would be determined during the detailed design stage.

**Comment 12:** *The Geotechnical Study identified areas of the site with 65 kPa bearing capacity. Please clarify what method of foundation is proposed for these areas. Will construction occur on top of the sensitive clay soils or will these sensitive soils be removed to access the bedrock bearing surface.*

**Response:** Based on the current grading and design USF information, it is anticipated several structures would be assigned a design bearing resistance value at serviceability limit states (SLS) of 65 kPa since they would be located upon a suitable, native, undisturbed soil bearing medium. Consideration may be given to extending those footings to the underlying bedrock bearing surface, or, placing the footings upon either lean-concrete or engineered fill extending to the bedrock bearing surface. This would be assessed and determined by Paterson at the detailed design and grading plan review stage.



**Response:** Based on the current grading and design USF information, it is anticipated several structures would be assigned a design bearing resistance value at serviceability limit states (SLS) of 65 kPa since they would be located upon a suitable, native, undisturbed soil bearing medium. Consideration may be given to extending those footings to the underlying bedrock bearing surface, or, placing the footings upon either lean-concrete or engineered fill extending to the bedrock bearing surface. This would be assessed and determined by Paterson at the detailed design and grading plan review stage.

**Comment 13:** *A condition in the draft conditions/subdivision agreement regarding sensitive soils may be required to advise future landowners that the area contains sensitive soils based on the response to #11 and 12 above.*

**Response:** This comment has been acknowledged. Based on our response to Comment 12, if consideration is given to founding structures upon the soil bearing medium based at the detailed design stage, the structures which would be expected to be supported by the soil bearing medium would be identified in the form of a grading plan review memorandum and table prepared by Paterson. The structures Paterson anticipates being supported by soil bearing mediums at that time could be suggested to be provided with the associated draft condition agreement if considered suitable by the Municipality.

**Comment 14:** *Seasonally high ground water table was not identified. Please note that CLI ECA has substantial requirements for the design of sewers and watermains which cannot be shown to be above the seasonally high ground water table.*

**Response:** Based on Paterson review of the preliminary grading and servicing drawings prepared by Novatech (Revision 3 dated June 2024), it is anticipated the proposed site services will be located below long-term and potentially seasonally high groundwater table. Therefore, from a geotechnical perspective it is recommended that site services be designed for submerged conditions with regards to the requirements outlined by the current CLI ECA.

We trust that the current submission meets your immediate requirements.

Best Regards,

**Paterson Group Inc.**

Drew Petahtegoose, P.Eng.

