



**re: Geotechnical Assessment**  
**Proposed Low-Rise Building**  
**180 Main Street – Ottawa**

**to:** Sula Wok - **Mr. Andrew Lay** – [andrew@sulawok.com](mailto:andrew@sulawok.com)

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**file:** PG6472-MEMO.01

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Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide geotechnical recommendations for the proposed development to be located at the subject site. This memorandum should be read in conjunction with Paterson Group report PG6472 dated November 7, 2022.

## 1.0 Background Information

Based on the site plan drawings prepared by Rosaline J. Hill Architect Inc., the proposed mixed-used three-storey building at the subject site will consist of a mixed-use building with a restaurant on the ground floor, residential units in above floors and a one basement level. It is also anticipated that the subject site will be municipally serviced.

### Subsurface Profile

Based on existing test hole coverage from nearby sites and available public well records, the subsurface profile of the site generally consists cultivated topsoil/organic layer followed by a loose to very loose, silty sand with trace to some clay overlying a silty clay deposit, transitioning from brown to grey between 3.6 and 5.9 m. A fill layer is expected to be encountered within the footprint of the existing building and the surrounding backfill. The thickness of the fill layer will vary between 0.3 and 1.5 m depending on the location. Undrained shear strength values obtained from nearby sites range from 55 to >100 kPa.

## 2.0 Geotechnical Assessment

Based on the undrained shear strengths recovered from Paterson's nearby coverage, which is located within 100 m of the subject site, the consistency of the silty clay deposit varies between stiff to very stiff. Based on Paterson's experience with sensitive marine silty clay across the downtown Ottawa area, and the findings of the nearby investigations, the silty clay within the subject site is expected to be low to medium sensitivity clay as per the City of Ottawa's *Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines*.





Therefore, based on the depth of the underside of footing of the proposed building and anticipated depth of the clay transition depth, it is expected the proposed building will be founded on brown, very stiff to stiff, low/medium sensitivity clay.

### **Tree Planting Setback Recommendations**

Although it is anticipated that the proposed footings will be placed over a low to medium sensitivity clay, it is recommended that tree planting be designed to a more conservative nature due to the lack of boreholes within the immediate area below the proposed building.

To adhere to the worst-case scenario of a high sensitivity clay, Paterson recommends the following recommendations are implemented, in accordance with *Guidelines for Tree Planting in Sensitive Marine Clay Soils*.

New trees planted at the proposed site should have a small to medium mature tree height. It is not expected that sufficient room will be available for large trees (greater than 14 m), which require a setback equal to the height of the mature tree.

Tree planting setback limits are 7.5 m for small (mature height up to 7.5 m) and medium size trees (mature tree height 7.5 to 14 m), provided that the following conditions are met:

- The underside of footing (USF) is 2.1 m or greater below the lowest finished grade for footings within 10 m from the tree, as measured from the centre of the tree trunk and verified by means of the Grading Plan.
- A small tree must be provided with a minimum of 25 m<sup>3</sup> of available soils 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 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 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.



An existing tree is located approximately 6.2 m from the proposed foundation. It is anticipated that dewatering of the clay deposit caused by the existing tree has already occurred, therefore further dewatering of the clay will be minimal and have negligible impact on the proposed foundation.

Furthermore, an identical existing tree is located the same setback distance from 178 Main Street with no evidence of detriment to the building. It is understood the proposed building will match the general architecture of 178 Main Street, therefore a similar interaction between tree roots and soils is expected.

### 3.0 Conclusion

Based on the scope of the proposed development, existing test hole coverage within the silty clay deposit, the tree planting recommendations provided herein, as well as the fact that matching building styles have been constructed on both sides of the proposed development, it is Paterson's opinion that the existing subsurface information is sufficient to justify the design and construction recommendations presented in the aforementioned report. Therefore, a borehole located within the subject site is not considered to be required from a geotechnical perspective.

We trust that the current submission meets your requirements.

Best Regards,

**Paterson Group Inc.**

Owen R. Canton, EIT



Faisal I. Abou-Seido, P.Eng.

