PATERSON GROUP

memorandum

re: **Grading, Site Servicing and Landscaping Review**
Proposed Residential Development
1670 Tenth Line Road – Ottawa, Ontario

to: Tripine – **Connor Gallagher** – connor@tripine.ca

date: October 20, 2026

file: PG7562-MEMO.01 Revision 1

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide a review from a geotechnical perspective for the grading, site servicing and landscaping for the proposed residential building located at the aforementioned site. This memorandum should be read in conjunction with Paterson Geotechnical Report PG7562-1 Revision 1 dated November 5, 2025.

Paterson reviewed the following grading, servicing and landscape plans for the aforementioned residential building:

- ❑ Proposed Site Grading and Servicing Plan – Project No. 825-8 – Drawing No. G-1 – Revision 2 dated October 22, 2025, prepared by T.L. Mak Engineering Ltd.
- ❑ TCR Maps – 1670 Tenth Line Road – Project No. 24.17 – Drawing No. L1.1 – Revision 3 dated October 14, 2026, prepared by Urbantypology.

1.0 Grading Review

1.1 Proposed Grading

Based on our review of the above noted grading plan, the proposed grade raises within the aforementioned site are acceptable from a geotechnical perspective. The proposed development is not subject to a permissible grade raise restriction. Therefore, lightweight fill is not required for building construction.

1.2 Bearing Medium

Based on our review of the grading plan, it is expected that the proposed underside of footing (USF) elevation will primarily be 86.105 m. Upon reviewing the subsurface profile according to the completed boreholes, the majority of footings will be founded within hard to stiff, brown silty clay. If the USF is kept as per the grading plans, a bearing resistance value of **125 kPa (SLS)** and **200 kPa (ULS)** should be utilized for the proposed footing design.

However, it is understood that a sunken mechanical room is proposed within the southern corner of the proposed building, with a USF of 84.90 m, placing the footings for the mechanical room within stiff to firm, grey silty clay.

Therefore, the footings for the mechanical room should be designed using a bearing resistance value of **80 kPa (SLS) and 120 kPa (ULS).** The bearing resistance values are required to be verified in the field.

If organic matter is found within the clay, or if soft spots develop, these areas will be required to be removed and replaced with OPSS Granular A or B Type II engineered fill. If required, the engineered fill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 98% of the material's standard Proctor maximum dry density (SPMDD).

1.3 Protection of Footings Against Frost Action

Perimeter footings of heated structures are required to be insulated against the deleterious effects of frost action. A minimum 1.5 m thick soil cover (or insulation equivalent) should be provided in this regard.

Other exterior unheated footings, such as those for isolated exterior piers, are more prone to deleterious movement associated with frost action than the exterior walls of the proper structure. These footings should be provided with a minimum 2.1 m thick soil cover (or insulation equivalent).

Based on our review of above noted grading plan, the perimeter footings for the proposed development are provided with sufficient soil cover for frost protection. Therefore, rigid insulation will not be required.

2.0 Site Servicing Review

2.1 Lateral Support Zones of Footings

Based on our review of the aforementioned site service plan, all services will be constructed outside the lateral zones of the proposed footings of the building and are acceptable from a geotechnical perspective.

2.2 Protection of Pipes Against Frost Action

Based on our review of the aforementioned service plan, all storm and sanitary services for the proposed development have been provided sufficient soil cover for frost protection. Therefore, rigid insulation will not be required.

It should be noted that the invert elevation of the watermain pipe has not been presented in the aforementioned site servicing drawing. Given the depth of the mechanical room, it is anticipated that sufficient soil cover for frost protection will be provided. However, if insufficient soil cover is provided for the watermain pipe, rigid insulation should be installed as recommended in Table 1 on the following page.

Table 1 – Frost Protection Recommendations for Services with Reduced Soil Cover			
Thermal Condition	**Soil Cover Provided (mm)**	**Insulation Dimensions**	
		Thickness (mm)	**Extension (mm)**
Unheated	600 to 900	125	Extend 1200 mm horizontally beyond edge face of the pipe
	900 to 1200	100	Extend 1200 mm horizontally beyond edge face of the pipe
	1200 to 1500	75	Extend 900 mm horizontally beyond edge face of the pipe
	1500 to 1800	50	Extend 600 mm horizontally beyond edge face of the pipe
	1800 to <2100	25	Extend 300 mm horizontally beyond edge face of the pipe

All rigid insulation should consist of either Dow Chemical High-Load 40 (HL-40), Styro Rail SR.P400, or equivalent approved by Paterson. The placement of all insulation within the service trenches must be reviewed and approved by Paterson personnel at the time of construction.

3.0 Landscaping Review

3.1 Tree Planting Setbacks from Foundation

Based recommended in Paterson's review of the landscaping and grading plan, tree planting setbacks of 6.9 to 7.2 m are provided for the front of the proposed building, and tree planting setbacks of 33.0 to 34.5 m are provided for the rear of the proposed buildings. Furthermore, greater than 2.1 m separation is provided between the proposed ground surface and the underside of footing. The landscaping design and tree planting setbacks are considered acceptable from a geotechnical perspective and are in conformance with the recommendations provided in the aforementioned geotechnical investigation report, with respect to the proposed building foundation.

3.2 Tree Planting Setbacks from Private Services

All private services proposed as part of the current development are located at a minimum depth of 2.3 m below the proposed ground surface, which is greater than the tree roots' depth of influence. Therefore, the landscaping design is considered acceptable from a geotechnical perspective and is in conformance with the recommendations provided in the aforementioned geotechnical investigation report, with respect to the proposed building foundation.

3.3 Tree Planting Setbacks from Tenth Line Road ROW

It should be noted that the depth of the watermain within the Tenth Line Road right-of-way (ROW) is unknown. However, given Paterson's experience with public watermains and known inverts of nearby watermains, it is assumed that the public watermain within the Tenth Line Road ROW is a minimum of 2.1 m below existing grade. Provided that a minimum separation of 2.1 m between the invert of the watermain and the proposed ground surface is provided, the landscape design is considered acceptable from a geotechnical perspective and is in conformance with the recommendations provided in the aforementioned geotechnical investigation report, with respect to the proposed building foundation. The depth of the watermain invert should be confirmed prior to construction.

3.3 Retained Tree Setbacks from Proposed Foundation

Based on our review of the aforementioned landscape plan, it is understood that 3 existing trees located in proximity to the subject site are proposed to be retained. Specifically, a large tree (mature heigh > 14 m) was identified to the northeast of the property.

To mitigate risk of damage to the proposed building resulting from the roots of the retained tree dewatering the clay soils underlying the building foundation, it is recommended that vertical root barrier panels be installed to a minimum depth of 2 m below the proposed finished grade. The panels should be installed with a minimum 150 mm overlap, running parallel to the foundation walls. The root barriers should be installed a minimum 1.5 m away from the foundation wall.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.



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Kevin A. Pickard, P.Eng.