PATERSON GROUP

memorandum

re: **Geotechnical Review of Grading and Servicing Plans**
Proposed Residential Development
1066 Silver Street – Ottawa, Ontario
to: **Concorde Properties** – Jordan Tannis – jt@concorde-properties.ca
date: July 8, 2025
file: PG5573-MEMO.03

Further to your request and authorization, Paterson Group (Paterson) prepared the following memorandum to provide geotechnical design summary details regarding the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson Geotechnical Report PG5573-LET.03 dated January 17, 2024.

Grading Plan Review

Paterson reviewed the following grading plan prepared by D.B. Gray Engineering Inc. for the aforementioned residential development:

- Grading Plan – 1066 Silver Street, Ottawa, Ontario, Job. No. 23056, Drawing No. C-2, Revision 10 dated July 4, 2024

Generally, the subsurface profile consists of fill underlain by a deposit of silty clay layer, followed by a deposit of clayey glacial till. It is anticipated that the proposed development will be founded on conventional spread footings placed on an undisturbed very stiff silty clay bearing medium and foundation designed using the bearing resistance values provided within the aforementioned Geotechnical Report.

Based on our review of the above-noted drawing, the proposed grades throughout the subject site are generally within the permissible grade raise restriction of 3 m provided in the aforementioned Geotechnical Report. Therefore, the proposed grading is considered acceptable from a geotechnical perspective such that lightweight fill (LWF) or any further measures will not be required to be taken for the proposed development. Further, sufficient soil cover has been provided to perimeter and exterior pad footings such that the use of insulation to mitigate the migration of frost will not be required for the subject footings.

Bearing Resistance Values for Foundation Design

Based on Paterson's review, conventional strip footings will be placed on an undisturbed, very stiff brown silty clay bearing surface and can be designed using a bearing resistance value at serviceability limit states (SLS) of **150 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **225 kPa** and as indicated in the current Geotechnical Report. A geotechnical resistance factor of 0.5 was applied to the bearing resistance value at ULS.

An undisturbed soil bearing surface consists of one from which all topsoil and deleterious material, such as loose, frozen, or disturbed soil, whether in situ or not, have been removed in dry conditions, prior to the placement of concrete for footings.

Settlement

Footings placed on a soil bearing surface and designed using the bearing resistance values at SLS given for the soil bearing surface will be subjected to potential post construction total and differential settlements of 25 and 20 mm, respectively. Reference should be made to the above noted geotechnical report for additional design information.

Tree Planting Restrictions

In accordance with the City of Ottawa Tree Planting in Sensitive Marine Clay Soils (2017 Guidelines), Paterson completed a soils review of the site to determine applicable tree planting setbacks. Atterberg limits testing was completed for recovered silty clay samples at selected locations throughout the subject site. Sieve analysis testing was also completed on selected samples. The results of our testing are presented in the aforementioned current Geotechnical Report.

Based on the results of our testing, the plasticity index of the silty clay deposit at the subject site does not exceed 40%. Therefore, the following tree planting setbacks are recommended for the subject site. Large trees (mature height over 14 m) can be planted within the silty clay areas provided a tree to foundation setback equal to the full mature height of the tree can be provided (e.g., in a park or other green space). Tree planting setback limits may be reduced to **4.5 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 conditions noted below are met.

- ❑ The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree, as measured from the center of the tree trunk and verified by means of the Grading Plan. Based on Paterson's review, this condition is generally met from a geotechnical perspective.
- ❑ A small tree must be provided with a minimum of 25 m^3 of available soil volume while a medium tree must be provided with a minimum of 30 m^3 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 trees are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall). Based on Paterson's review, it is expected this condition will be met.
- ❑ 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.

High-water demanding tree-species such as poplars, willows, and some maples (i.e., Manitoba Maples) should not be considered in the landscaping design from a geotechnical perspective.

Servicing Plan Review

Paterson reviewed the following site servicing plan prepared by D.B. Gray Engineering Inc. for the aforementioned residential development:

- ❒ Site Servicing – 1066 Silver Street, Ottawa, Ontario, Job. No. 23056, Drawing No. C-1, Revision 8 dated July 4, 2024

Based on our review of the above-noted drawing, the majority of the design details (i.e., lateral support of footings, adequate frost protection of services, pipe bedding and backfill), provided by Paterson in the aforementioned Geotechnical Report have been satisfactorily incorporated into the above-noted drawing.

Pavement Joint Tie-in

Where pavement cuts are required to tie into existing paving, such as for service trenches or existing asphalt abutting the proposed works, the following recommendations should be followed:

- ❑ A 300 mm wide section of the existing asphalt should be saw cut from the existing pavement edge to provide a sound surface to abut the proposed pavement structure.
- ❑ It is recommended to mill a 300 mm wide and 40 mm deep section of the existing asphalt at the saw cut edge.
- ❑ The proposed pavement structure subbase materials should be tapered no greater than 3H:1V to meet the existing subbase materials.
- ❑ Clean existing granular subbase materials can be reused upon assessment by Paterson at the time of excavation (construction) as to its suitability.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Drew Petahtegoose, P.Eng.