

re: **Geotechnical Response to City Review Comments**
Wateridge Residential Development
335 St. Laurent Boulevard - Ottawa

to: Mattamy Homes - **Ms. Jillian Normand** - Jillian.Normand@mattamycorp.com

cc: DSEL - **Mr. Steve Merrick** - SMerrick@dsel.ca

date: September 27, 2019

file: PG4064-MEMO.11

Further to your request, Paterson Group (Paterson) prepared a response to the most recent City of Ottawa review comments in a letter dated August 8, 2019, prepared for the aforementioned development. This memo should be read in conjunction with Paterson Group Report PG4064-2 Revision 2 - Blocks 15, 22 and 24 - June 25-2019.

Geotechnical Comment 1

Comment: *Paterson Group is required to submit a letter to the City of Ottawa signing off on the Grading Plan prepared by DSEL to verify that there are no exceedances from the permissible grade raise, the grading is acceptable from a geotechnical perspective and the proposal is in conformance with the recommendations and statements of the latest Geotechnical Investigation.*

Response: Reference should be made to PG4064-MEMO.08R - Grading Plan Review - April 12, 2019 for Paterson's review of the grading plan for Block 24 and reference should be made to PG4064-MEMO.10 - Grading Plan Review - Block 15 - July 29, 2019 for Paterson's review of the grading plan for Block 15. If site grading has changed since our review of the grading plan, a further assessment should be completed by Paterson.

Geotechnical Comment 2

Comment: *The proposed grading exceeds the permissible grade raise of 1.0 m for the subject site. Please conduct a geotechnical review of the grading information prepared by DSEL and provide lightweight fill requirements for the aforementioned development if this is the selected option being considered by Mattamy Homes to accommodate the grade raise. A summary table of relevant grading information for each housing block shall be provided. Lightweight fill placement details and limits are required to be identified on the Grading Plan prepared by DSEL.*

Response: Reference should be made to PG4064-MEMO.10 - Grading Plan Review - Block 15 - July 29, 2019 for Paterson's review of the grading plan for Block 15. As noted in the grading plan review memo, minor exceedances of the 1 m grade raise were noted. However, Paterson completed further review and the 1 m grade raise is considered very conservative for the soils at the subject site. Therefore, lightweight fill is **not** required based on the current grading for the subject site. If site grading has changed since our review of the grading plan, a further assessment should be completed by Paterson.

Geotechnical Comment 3

Comment: *Clay soils are present within the subject development that are highly sensitive to water depletion by trees of high water demand during periods of dry weather that can cause the clay to shrink resulting in settlement of any adjacent structure(s). Trees proposed within 4.5 m of foundations will be subject to the tree planting conditions established in the Tree Planting in Sensitive Marine Clay Soils 2017 Guidelines. Please establish the Plasticity Index of the clay soil and satisfy the procedures and conditions identified in the Tree Planting in Sensitive Marine Clay Soils 2017 Guidelines.*

Response: Reference should be made to PG4064-MEMO.06R - Landscape Plan Review - April 11, 2018 for Paterson's review of the soil plasticity at the subject site. The following is noted in the memo:

"Atterberg testing was completed at seven (7) borehole locations across the overall site, all with plasticity index results of less than 40% (see Atterberg testing results attached). This satisfies the first condition for reducing the tree foundation setback to **4.5 m** in the City of Ottawa guideline "Tree Planting in Sensitive Marine Clay Soils - 2017 Guidelines."

Geotechnical Comment 4

Comment: *It is expected that bedrock removal will be required. Any blasting activities shall conform to City of Ottawa standard S.P. Np. F-1201. A pre-blasting survey is required to be completed prior to any blasting operations and written notification to all owners and tenants of buildings within 150 m shall be given a minimum of 15 days prior to any blasting commencing.*

Response: Reference can be made to Section 5.2 of the above noted geotechnical report for recommendations regarding bedrock removal. If blasting is required, a pre-blasting survey could be completed by Paterson for the relevant neighbouring structures upon request.

Geotechnical Comment 5

Comment: *Please provide Squadron Crescent road reinstatement recommendations.*

Response: Reference can be made to Table 4 within Section 5.7 of the above noted geotechnical report. Squadron Crescent would be considered a local roadway within the development and the pavement structure presented in Table 4 would be applicable for this roadway. The following additional recommendations are provided.

The pavement structure, where it abuts the existing pavement not being replaced, should be placed as follows:

- ❑ A 300 mm wide section of the existing asphalt roadway should be sawcut 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, and construct an extension of the subbase and base to the widened section, and then place a new asphalt surface.
- ❑ The proposed pavement structure subbase materials should be tapered no greater than 3H:1V to meet the existing subbase materials.
- ❑ The new pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 98% of the material's SPMDD.
- ❑ If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be excavated and replaced with OPSS Granular B Type II material compacted in maximum 300 mm loose lifts.
- ❑ Clean existing granular road subbase materials can be reused upon assessment by the geotechnical consultant at the time of excavation (construction) as to its suitability.

Geotechnical Comment 6

Comment: *Please document what the elevation of the groundwater table is in relation to the proposed USF elevations and foundation drains.*

Response: Based on the results of the geotechnical investigation and the proposed underside of footing elevations, the long-term groundwater level is anticipated to be a minimum of 1 m below the underside of footing and foundation drains. The long-term groundwater elevation is anticipated to be below the elevation of 87 m with respect to the underside of footing elevations which are proposed at 88 m or higher. It should be further noted that a groundwater lowering of 0.5 m is expected due to the proposed development. Therefore, the proposed underside of footing elevations are acceptable from a geotechnical perspective regarding the long term groundwater level.

Geotechnical Comment 7

Comment: *Please review the proposed LID measures and provide recommendations from a geotechnical perspective.*

Response: Reference should be made to PG4064-MEMO.09 - Infiltration Rates - January 21-2019 for recommendations regarding the infiltration rates of the native soils.

Additional recommendations include the following:

- The fill between the clear stone media and the building footprint should consist of an impermeable silty clay to act as a clay seal. A minimum 3 m offset should be provided between the clear stone trench and the foundation walls of the proposed buildings (where livable space is located on the opposite side).
- A 150 mm thick scarification can be provided at the interface between the clear stone and the native soil.
- A non-woven geotextile liner, such as Terrafix 360R or equivalent, should fully surround the clear stone to prevent migration of fines into the clear stone.

Site Servicing Plan Comment 15

Comment: *The proposed private watermain and sanitary sewer along the north property line with a separation less than a horizontal separation distance of 2.5 m (edge of pipe to edge of pipe) is not supported. The reduced separation distance may be supported by Procedure F-6-1 however there appears to have been no consideration for future maintenance challenges as the sewer and watermain are located below the proposed underside of footings with minimal setback from the foundations. Repairing this private infrastructure without adversely impacting the structures and encroaching into the ROW will be difficult and unavoidable. Any maintenance costs will be significantly increased. Please investigate alternatives as any future repair costs will be the responsibility of the condominium corporation. Consideration shall be given to the future maintenance/repair challenges and associated costs with the servicing strategy and stormwater management solution proposals. Please demonstrate how this infrastructure would be serviced in the future for the City to review and provide recommendations from the geotechnical engineer. If these Blocks are to form part of the future condominium corporation the units shall be serviced internal to the development. Individual service connections under the current scenario to the public infrastructure within Mikinak Road would not be supported.*

Response: Reference should be made to PG4064-MEMO.12 - Lateral Support of Footings - September 26-2019 for information regarding the above noted comment. This memo should be read in conjunction with DSEL's drawings. This memo only addresses geotechnical aspects of footing/service lateral support. Impacts to ROW and additional costs to be addressed by Mattamy/DSEL.

We trust that this information satisfies your requirements.

Paterson Group Inc.



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