



**re: Grading and Servicing Plan Review**  
**Proposed Warehouse Development**  
**1540 Star Top Road, Ottawa, Ontario**  
**to: BBS Construction (Ontario) Ltd. – Mr. Pete Van Grootheest –**  
[pete@bbsconstruction.ca](mailto:pete@bbsconstruction.ca)  
**date: October 11, 2023**  
**file: PG6674-MEMO.01**

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Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide a grading and servicing plan review for the proposed development to be located at the aforementioned site. The following memorandum should be read in conjunction with the current Geotechnical Report (Paterson Group Report PG6674-1, Revision 1 dated July 21, 2023).

### **Grading Plan Review**

Paterson reviewed the following grading plan prepared by McIntosh Perry for the subject site:

- Grading Plan – 1560 Star Top Road, Boone Plumbing Warehouse – Project No. CCO-23-3725 – Drawing No. GP, Revision 2 dated October 6, 2023.

Based on our review of the aforementioned grading plan, the proposed grades around the proposed building and throughout the subject site are within the permissible grade raise restriction provided. Therefore, the proposed grading is considered acceptable from a geotechnical perspective and no lightweight fill or other considerations to accommodate the proposed exterior grades are required for the subject site.

### **Site Servicing Plan Review**

Paterson reviewed the following site servicing plan prepared by McIntosh Perry for the subject site:

- Site Servicing Plan – 1560 Star Top Road, Boone Plumbing Warehouse – Project No. CCO-23-3725 – Drawing No. SS, Revision 2 dated October 6, 2023.

From a geotechnical perspective, the relevant recommendations including adequate frost protection of services, pipe bedding, and backfill provided by Paterson in the aforementioned geotechnical investigation report have been incorporated satisfactorily into the above-noted plan.





### Frost Protection of Service Pipes

Based on our review, the majority of the invert elevations for service pipes entering the stormwater and sanitary manhole structures throughout the subject site were observed to be found in the frost zone (i.e., approximately 1.8 m below the finished ground surface). Soil cover over the landscape storm sewer and some segments of the storm service pipe within the parking areas and access lanes have insufficient frost protection. However, it is expected that significant frost heave issues will not occur for the storm service alignments within the landscaping area. Please see the service pipe alignments where insufficient frost protection has been provided and rigid insulation is recommended:

- CB 1 South-running storm pipe; approximately 1.1 m of soil cover to invert.
- CB 2 North-running storm pipe; approximately 1.1 m of soil cover to invert.
- CB 4 North-running storm pipe; approximately 0.8 m of soil cover to invert.
- STMH 3 & OGS1 East-running storm pipe; approximately 1.22 m of soil cover to invert.

From a geotechnical perspective, those catch basins and the associated leads do require additional insulation within the boundaries of the subject site. the following frost protection criteria should be followed:

<b>Table 1 - Rigid Insulation Recommendations for Storm Sewer Pipes with Reduced Soil Cover</b>			
<b>Thermal Condition</b>	<b>Soil Cover Provided (mm)</b>	<b>Insulation Dimensions</b>	
		<b>Thickness (mm)</b>	<b>Extension (mm)</b>
Unheated	600 to 900	125	Extend 1200 mm horizontally beyond edge face of the sewer
	900 to 1200	100	Extend 1200 mm horizontally beyond edge face of the sewer
	1200 to 1500	75	Extend 900 mm horizontally beyond edge face of the sewer
	1500 to 1800	50	Extend 600 mm horizontally beyond edge face of the sewer
	1800 to <2100	25	Extend 300 mm horizontally beyond edge face of the sewer
<b>Notes:</b> All designs are based on a freezing index of 1000°C-days			

All rigid insulation should consist of either Dow Chemical High-Load 40 (HI-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.



## Bedrock/Soil Transitions

In areas where the service subgrade transitions from soil to bedrock, it is recommended that the founding medium be inspected in the field to determine how steeply the bedrock surface, where encountered, drops off.

A transition treatment is generally recommended to be provided where the bedrock slopes steeper than 3H:1V. At these locations, the bedrock should be excavated, and a minimum 500 mm thick layer of bedding, such as OPSS Granular A crushed stone, be placed to provide a 3H:1V transition from the bedrock subgrade toward the soil subgrade. This treatment will reduce the propensity for bending stresses to occur in the service pipe alignments.

It is recommended that this condition be reviewed in the field by Paterson personnel at the time of excavation and construction of site services. Paterson field personnel may advise on appropriate treatments where pipe subgrade transition between soil and bedrock surfaces.

We trust that this information is satisfactory for your immediate requirements.

Best Regards,

**Paterson Group Inc.**

Escandar Abdullah, B. Eng.



David J. Gilbert, P.Eng.

