

re: **Grading and Site Servicing Plans Review**
Proposed Warehouse Building
6165 Thunder Road, Ottawa, Ontario

to: Brofort Investments Inc. – **Phil Klugman** – pklugman@brofort.com

to: HP Urban Inc. – **Peter Hume** – peter.hume@hpurban.ca

date: September 15, 2025

file: PG6430-MEMO.01

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide a grading and site servicing plans review for the proposed church at the aforementioned site. The following memorandum should be read in conjunction with Paterson Report PG6430-1 Revision 1 dated April 29, 2024.

1.0 Grading Plan Review

Paterson reviewed the following grading plan prepared by egis for the aforementioned development:

- ❑ Drawing C101 - Lot Grading, Drainage, Erosion & Sediment Control Plan - Project No. CCO-23-1882 – Revision 5 dated September 11, 2025.

Based on the above noted geotechnical report, **a permissible grade raise of 0.7 m** is recommended for finished grading within 6 m of the proposed building footprint. **A permissible grade raise of 1.2 m** can be used only for the grading of parking areas, access roads, and landscaping areas beyond the 6 m mark from the edge of the proposed structures.

Based on our review of the above-noted drawing, the proposed building grading was found to be exceeding the permissible grade restriction assigned for the subject site within the footprint of the proposed building. The exceedances were found to range from 0.35 to 0.65 m above the permissible grade raise restriction. Therefore, LWF recommendations have been assigned to reduce the impacts of the load exerted from the additional soil needed to raise the grade to the proposed grades. It is important to note that the LWF will be recommended to be placed below the slab on grade as well as the perimeter of the proposed building extending horizontally a minimum 6 m beyond the foundation walls. Reference should be made to the attached Figure 1 – EPS Block Installation and Figure 2 - Lightweight fill Recommendations, attached to the end of this report.



Loading Dock – Frost Protection

Based on our review of the above noted grading plan, it is expected that the depressed ramp along the loading dock may have insufficient soil cover above the adjacent footings. The grading plan does not provide the underside of footing elevation of the footing directly adjacent to the depressed ramp. Therefore, one of the following options is recommended:

- ☐ Rigid insulation may be placed below the footings extending a minimum of 2.4 m horizontally beyond the footing face on the exterior side and 1.2 m horizontally on the interior side. The thickness and type of rigid insulation can be provided upon providing additional information regarding the soil cover and proposed underside of footing.
- ☐ Lowering the proposed footings to a minimum 1.5 m below the depressed slab to an elevation of 75.83 m to avoid the use of insulation below the proposed footing.

Additional details can be provided once the missing information is provided.

2.0 Site Servicing Plan Review

Paterson reviewed the following site servicing prepared by egis for the aforementioned development:

- ☐ Drawing C102 – Site Servicing Plan - Project No. CCO-23-1882 – Revision 5 dated September 11, 2025.

Based on our review of the above-noted site service plans, it is noted that all services will be constructed outside the lateral zones of the proposed footings of the building and are considered to be acceptable from a geotechnical perspective.

Further, it should be noted that all watermain pipes have been provided with sufficient soil cover at the subject site for the frost protection. However, insufficient frost protection has been provided for the majority of the proposed storm pipes throughout the subject site. The proposed storm pipes are located within the frost zone, which is the zone located within the upper 2.1 m below the finished grade. It is understood that the proposed storm pipes will be insulated. It is recommended that Paterson review the insulation detail to provide an input from a geotechnical perspective.

Any portion of the services installed at a depth of 2.1 m below finished grade or deeper is considered to have sufficient soil cover for frost protection. Where insufficient soil cover is present above the invert of storm and sanitary sewer pipes, the following frost protection criteria should be followed:



Table 1 - Rigid Insulation Recommendations for Storm Pipes 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
Notes: 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. Reference should be made to Figure 3 - Typical Frost Insulation Detail below:

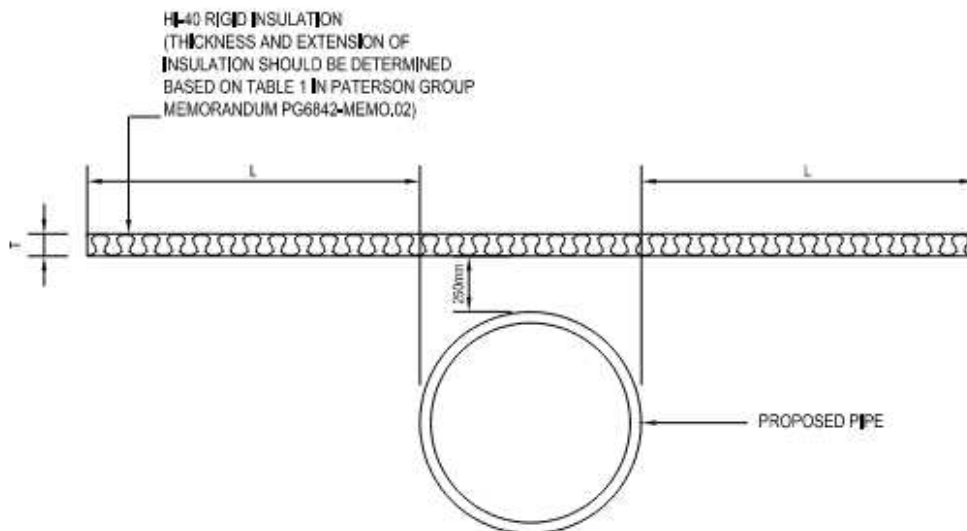


Figure 3 - Typical Frost Insulation Detail

The above detail can be used if the storm pipe is confirmed to be within the frost zone. Insulating the pipe alone without the soil may cause differential settlement in the future, therefore, the above detail provides a sufficient insulation to the pipe and the subgrade below the pipe.



We trust that this information satisfies your requirements.

Best Regards,

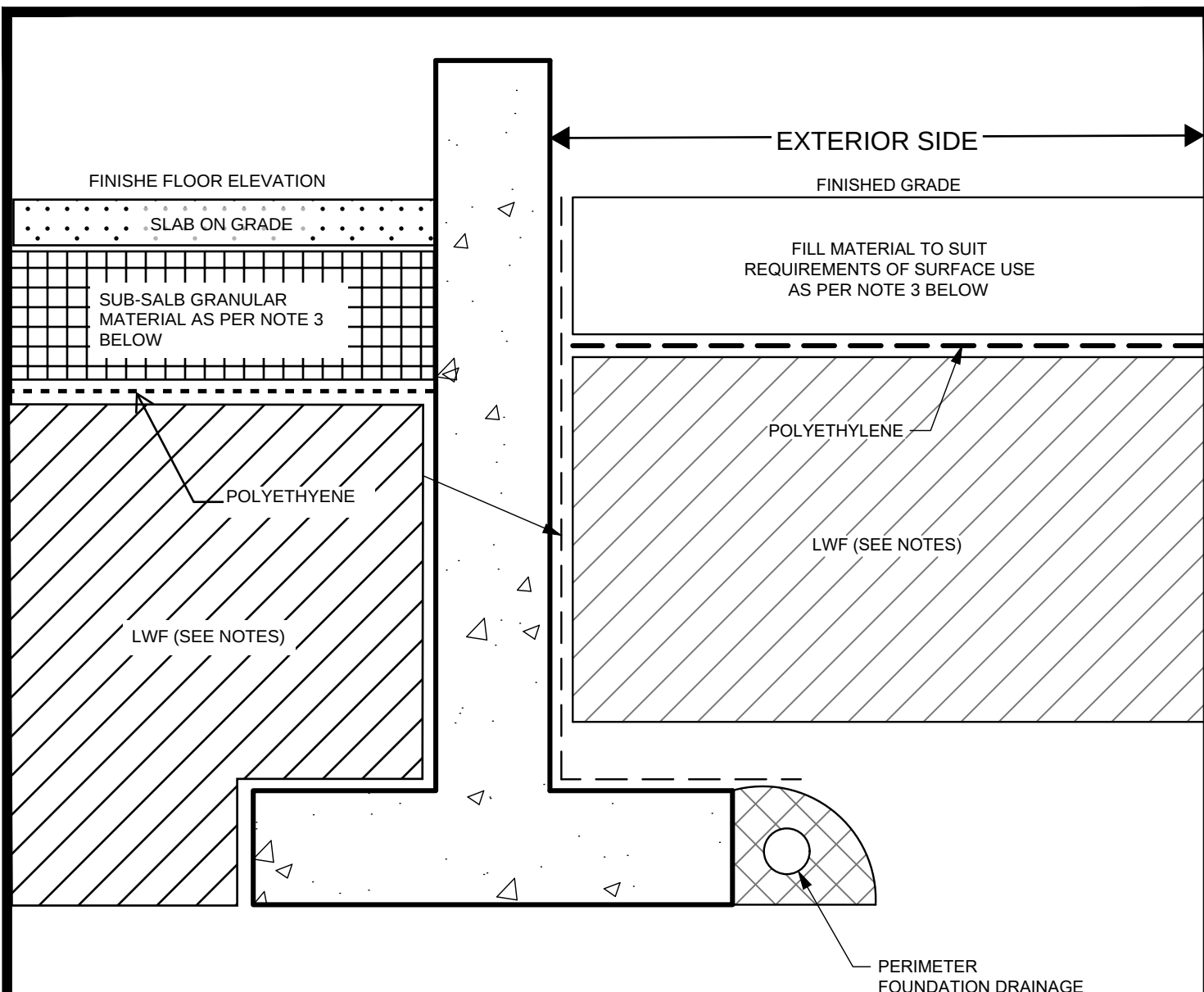
Paterson Group Inc.

Faisal I. Abou-Seido, P.Eng



September 13, 2025





NOTES:

1. USE EPS12 BELOW LANDSCAPED AREAS
2. USE EPS15 BELOW GARAGE DRIVEWAY AND INTERIOR AREA
3. MINIMUM GRANULAR THICKNESS OVER LWF SHOULD BE AS FOLLOWS:

FRONT PORCH	150mm OF OPSS GRANULAR A
GARAGE	300mm OF OPSS GRANULAR A
DRIVEWAY	450mm OF OPSS GRANULAR A
LANDSCAPED	500mm OF APPROVED BACKFILL SOIL
INTERIOR AREA	300mm OF OPSS GRANULAR A
4. PLACEMENT OF LWF SHOULD BE ON A LEVELED SURFACE (SAND CAN BE USED TO PROVIDE AN ADEQUATE LEVELLING SURFACE).



Title:

**EPS BLOCK INSTALLATION
FOR SLAB ON GRADE BUILDINGS**

Scale:

N.T.S.

Date:

07/2022

Drawn by:

NFRV

Checked by:

FA

Drawing No.:

FIGURE 1

Figure 2 - Lightweight Fill Recommendations

