PATERSON GROUP

memorandum

re: **Geotechnical Design Summary Details**
Proposed Residential Building
2458 Cleroux Crescent – Ottawa, Ontario

to: Melmar Group – **Mr. Marc Nakhle** – info@melmargroup.ca

date: July 20, 2023

file: PG5973-MEMO.02

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide geotechnical design summary details for the aforementioned project. The following memorandum should be read in conjunction with the current Geotechnical Investigation Report (Paterson Group Report PG5973-1 Revision 1 dated April 1, 2022).

Grading Plan Review

Paterson reviewed the following grading plan prepared by ARCH-NOVA Design Inc. for the aforementioned development:

- ❒ Services & Grading Plan – 2458 Cleroux Cres. – Project No. CW-01-21 – Drawing No. W-01 – Revision 1, dated February 2023.

Generally, the subsurface profile consists of topsoil underlain by a layer of silty sand followed by silty clay deposit. It is anticipated that the proposed building addition will be founded on conventional spread footings placed on an undisturbed, hard to very stiff silty clay bearing medium. Due to the presence of the silty clay deposit below the proposed building, a permissible grade raise restriction of 2.0 m was provided in our geotechnical report based on the shear strength and consistency of the underlying silty clay.

Based on our review of the aforementioned grading plan, the proposed grades around the proposed buildings 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 at this time in those areas.

Further to our review, the proposed finished grade along the rear side and throughout the parking area of the proposed building would result in an exceedance in the recommended permissible grade raise restriction provided in the aforementioned Geotechnical Report. Lightweight fill (LWF) has therefore been recommended to accommodate the proposed grading throughout and along the rear portion of the building.

The LWF should consist of EPS (expanded polystyrene) geofoam blocks consisting of a minimum EPS type 19 block for these purposes. The LWF should be placed throughout the indicated area of the building footprint a minimum of 500 mm below the subslab fill layer. The entire LWF layer footprint is recommended to be covered with a layer polyethylene which should further extend a minimum of 300 mm below the LWF layer surface. Placement of LWF should be upon a leveled surface and reviewed at the tie of construction by Paterson personnel.

Reference should be made to Figure 1 – Lightweight Fill Recommendations attached to the end of this memorandum for a summary of the proposed installation methodology information.

Bearing Resistance Values for Foundation Design

Strip footings up to 3 m wide, and pad footings, up to 5 m wide, founded on an undisturbed very stiff brown silty clay bearing surface can be designed using a bearing resistance value at serviceability limit states (SLS) of **200 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **350 kPa**.

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

A geotechnical resistance factor of 0.5 was applied to the reported bearing resistance value at ULS. The bearing resistance values provided herein will be subjected to potential post-construction total and differential settlements of 25 and 20 mm, respectively.

Site Servicing Plan Review

Paterson reviewed the following site servicing plan prepared by ARCH-NOVA Design Inc.:

- ❒ Services & Grading Plan – 2458 Cleroux Cres. – Project No. CW-01-21 – Drawing No. W-01 – Revision 1, dated February 2023.

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

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

Best Regards,

Paterson Group Inc.

Drew Petahtegoose, B.Eng.

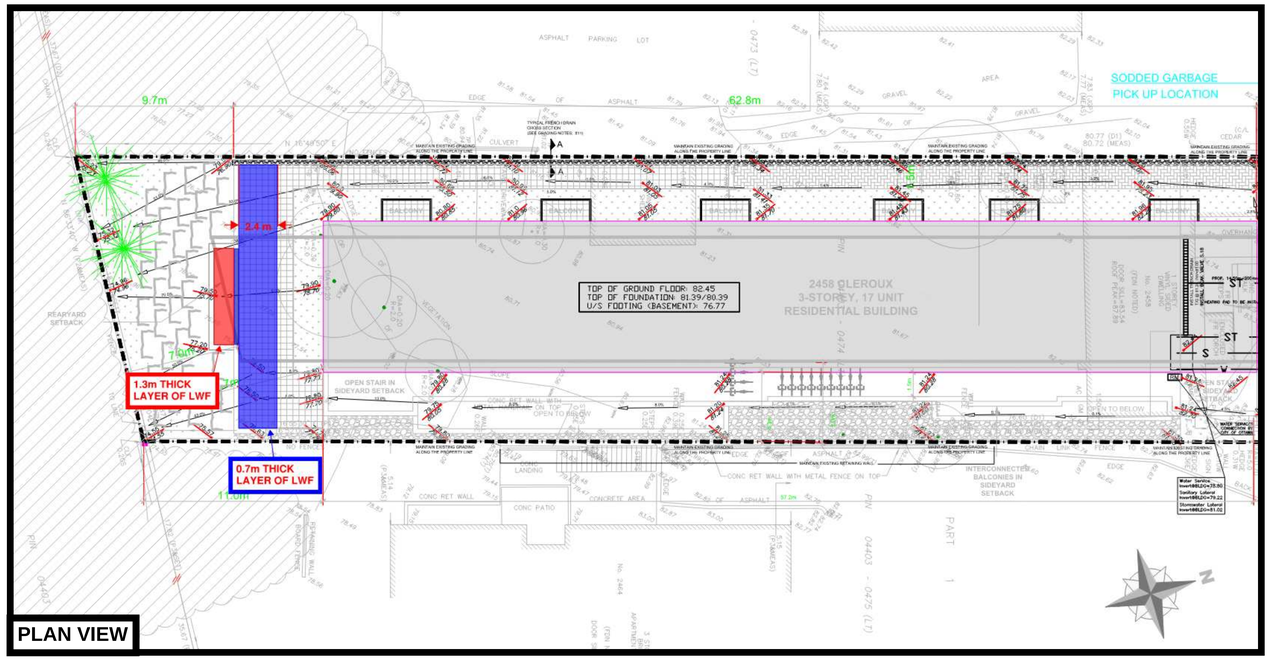
July 20, 2023
LICENSED PROFESSIONAL ENGINEER
D. J. GILBERT
100116130
PROVINCE OF ONTARIO

David J. Gilbert, P.Eng.

Attachments:

- ❒ PG5973-Figure 1 – Lightweight Fill Recommendations

PG5973-MEMO.02 - FIGURE 1
LIGHTWEIGHT FILL RECOMMENDATIONS



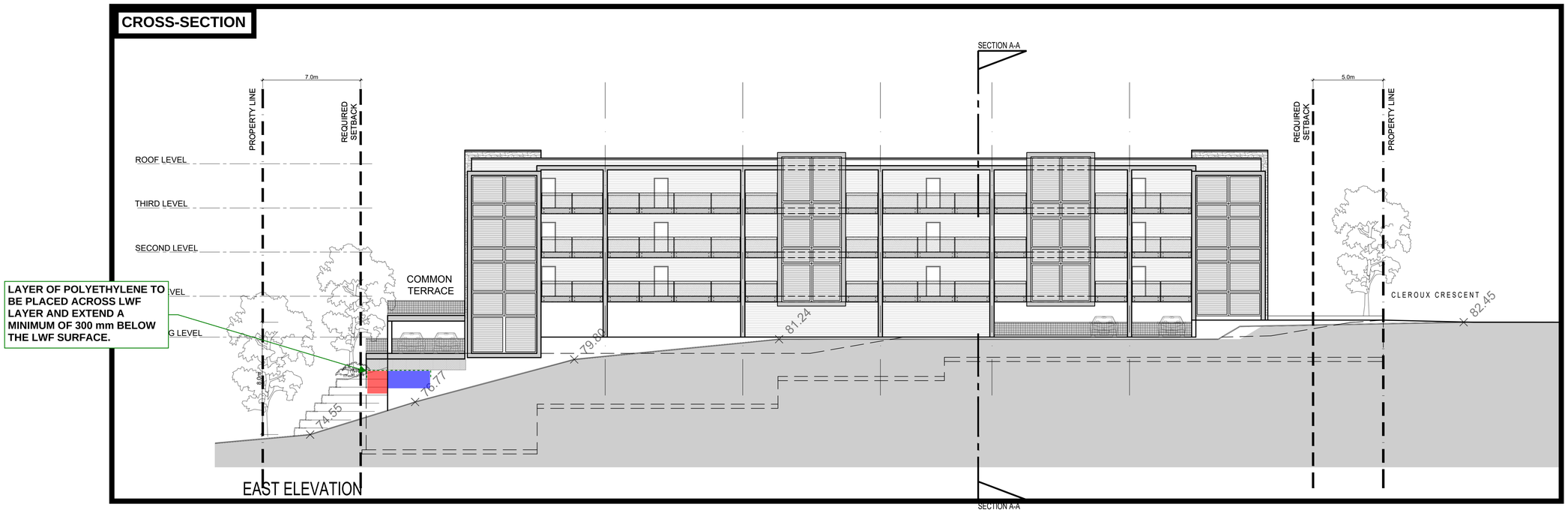
LEGEND

- MINIMUM 0.7 m THICK LAYER OF EPS19 LWF
- MINIMUM 1.3 m THICK LAYER OF EPS19 LWF
- POLYETHYLENE LAYER

NOTES

IT IS RECOMMENDED THAT LIGHTWEIGHT FILL (LWF) BE PLACED THROUGHOT THE GRADE RAISE FILL WITHIN THE PARKING LEVEL AS DEPICTED HEREIN. THE LWF IS RECOMMENDED TO CONSIST OF EPS GEOFOAM BLOCKS CONSISTING OF A MINIMUM EPS TYPE 19. THE LWF BLOCKS SHOULD BE COVERED WITH A LAYER OF POLYEHTYLENE AND A MINIMUM THICKNESS OF 500mm OF CRUSHED STONE. PLACEMENT OF THE BLOCKS IS RECOMMENDED TO BE REVIEWED AT THE TIME OF CONSTRUCTION BY PATERSON PERSONNEL.

CROSS-SECTION



No.	REVISIONS	BY	DATE
13			
12			
11			
10			
09			
08			
07			
06			
05			
04			
03	FOR REVIEW	PE	JUNE 16 2021
02	FOR REVIEW	PE	JAN. 26 2021
01	FOR REVIEW	PE	DEC. 21 2020

NOT AUTHENTIC UNLESS SIGNED AND DATED

CONSULTING ENGINEERS

STRUCTURAL

MECHANICAL

ELECTRICAL

DESIGNED BY:	DRAWN BY:	APPROVED BY:
P.E.	P.E.	P.E.

PROJECT

2458
CLEROUX CRESCENT
OTTAWA

DRAWING TITLE

FLOOR PLANS

PROJECT NO.
0410

DATE
JAN, 08, 2021

A100