REVIEWED
By Doug at 2:58 pm, Nov 16, 2022

Adverse Soils Conditions

Address(&lot): 1500 Thomas Argue
Subdivision, Phase, Builder: Carp Rd Phase 2A Phoenix Homes
Geotechnical Memo (s) & Report (s): PG2450-MEMO.12
Notes:

Date:

		Permit Approvals - requirements at permit application
Site Class A,B,C,D,E or F		A, B, C, D - Standard Procedure unless dictated by other factors
Bearing Capacity Kpa		75 kPa or greater, part 9 fdtn - Standard Procedure unless dictated by other factors
Maximum Permissable Grade Raise Identified	**Part 4/9**	Part 9 & 4 Foundation Requirements Geotechnical Engineer • Confirmation of part 9/4 foundation • Part 9 only - Lot specific bearing capacity values at the USF as a function of founding elevation, including footing restrictions • Part 4 only - Soil design bearing capacity, SLS and ULS at USF as a function of founding elevation, including footing restrictions • Footing sizes and the effects of long term groundwater lowering accounted for • Existing grade elevation, proposed finished grade elevation, maximum allowable grade raise, actual grade raise, proposed USF elevation • Calculated post construction settlements (include special requirements for foundation construction where calculated settlements are more than 25mm total and 20mm differential)
	Additional for part 4	Part 4 Foundation Additional Requirements Note: Requirements are in addition to geotechnical engineer where part 4 foundation design required. Structural Engineer • Lot specific foundation design in accordance with current OBC, part 4 • Confirm foundation design is in accordance with recommendations provided by geotechnical engineer (indentify report and date) to limit the post construction settlements to within acceptable limits • Footing, foundation wall details including reinforcing requirements • Foundation design to include concrete compressive strength, footing, including reinforcing requirements.
Light Weight Fill Required		Part 9&4 Foundation Requirements Geotechnical Engineer • Confirmation of part 9 Foundation (site conditions may dictate part 4 design as determined by geotechnical engineer) • Lot Specific, backfill, engineered fill details • Calculated post construction settlements, (include special requirements for footing and foundation wall construction where calculated settlements are more than 25mm total and 20mm differential).

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		Building Inspection - requirements at key inspection stages
Site Class A,B,C,D,E or F		A, B, C, D - Standard Procedure unless dictated by other factors
Bearing Capacity Kpa		75 kPa or greater, part 9 fdtn - Standard Procedure unless dictated by other factors
Maximum Permissable Grade Raise Identified	**Part 4/9**	Part 9 or 4 fdtn Excavation Inspection - Geotechnical Engineer Confirm bearing capacity at USF meets/exceeds minimum design requirements. Final Inspection - Geotechnical Engineer • Lot specific letter signed under professional seal confirming that the grade raise, is as recommended (reference all geotechnical reports) • Expected post construction settlement limits of 25 mm total and 20 mm differential will not be exceeded.
	Additional for part 4	Part 4 foundation additional requirements Framing Inspection - Structural Engineer/designate Lot specific site review memo confirming foundation materials, reinforcing and construction is in accordance with the permit drawings and current OBC part 4. Final Inspection - Structural Engineer • Lot specific letter signed under professional seal confirming foundation materials, reinforcing and construction is in accordance with permit drawings and current OBC part 4, • Constructed to accommodate post construction settlement limits of 25 mm total and 20 mm differential to minimize foundation cracking, • Constructed in accordance with the geotechnical recommendations (reference all reports). • Confirm that the design SLS and ULS bearing pressure at USF does not exceed those specified by Geotechnical Engineer.
Light Weight Fill Required		Part 9 or 4 foundation design Excavation Inspection - Geotechnical Engineer Confirm bearing capacity at USF meets/exceeds minimum design requirements. Framing Inspection - Geotechnical Engineer/Designate Lot specific site review memo confirming light weight fill has been placed in accordance with geotechnical engineers recommendations. Final Inspection - Geotechnical Engineer • Lot specific letter signed under professional seal confirming that the installed backfill, lightweight fill, granular fill are installed as recommended (reference all geotechnical reports) • Expected post construction settlement limits of 25 mm total and 20 mm differential will not be exceeded.

PATERSON GROUP

memorandum

re: **Geotechnical Design Summary Details**
Carp Airport Residential Development – Phase 1B
Diamondview Road – Ottawa

to: West Capital Developments – **Mr. Sandy Pollock** – spollock@phoenixhomes.ca

date: November 9, 2022

file: PG2450-MEMO.12

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide the geotechnical design summary details for the proposed residential development at the aforementioned site. Reference should be made to Paterson Group report PG2450-2 dated July 22, 2013.

Relevant design information is presented in Table 1 – Summary Design Details for the subject blocks and lots. The relevant design and inspection information includes the following:

- ❒ Legal lot/block number and Civic Address
- ❒ Original ground surface elevation
- ❒ Proposed finished grade elevations
- ❒ Maximum allowable grade raise
- ❒ Proposed USF elevation
- ❒ Bearing resistance values at SLS
- ❒ Seismic Site Class
- ❒ Estimated engineered fill thickness beneath footings.
- ❒ Lightweight Fill (LWF) recommendations

Grading Plan Review

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

- ❑ Project No. 102085-01 – Grading Plan – Drawing No. 102085-GR2, Revision 15, dated December 1, 2021.

Based on the grading plan provided, the proposed grades are generally in compliance with our permissible grade raise recommendations for the current development phase. Where significant grade raise exceedances have occurred, lightweight fill, such as expanded polystyrene (EPS) geofoam blocks, is recommended for specific areas adjacent to the subject buildings.

Table 1 attached provides a grading summary and lightweight fill (LWF) requirements for the subject buildings based on our grading plan review. LWF material specifications and cover recommendations are provided in Table 1 and Figure 1 attached.

Protection of Footings Against Frost Action

Perimeter footings of heated structures are required to be insulated against the deleterious effect of frost action. A minimum of 1.5 m thick soil cover (or equivalent) should be provided in this regard.

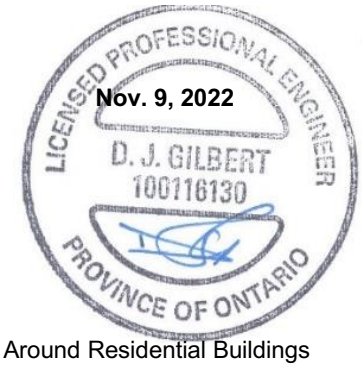
Based on our review of the grading plan, sufficient soil cover was provided to all units. The estimated frost cover for each unit is shown on Table 1 - Summary of Design Details, attached to this memorandum.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Kevin A. Pickard, EIT

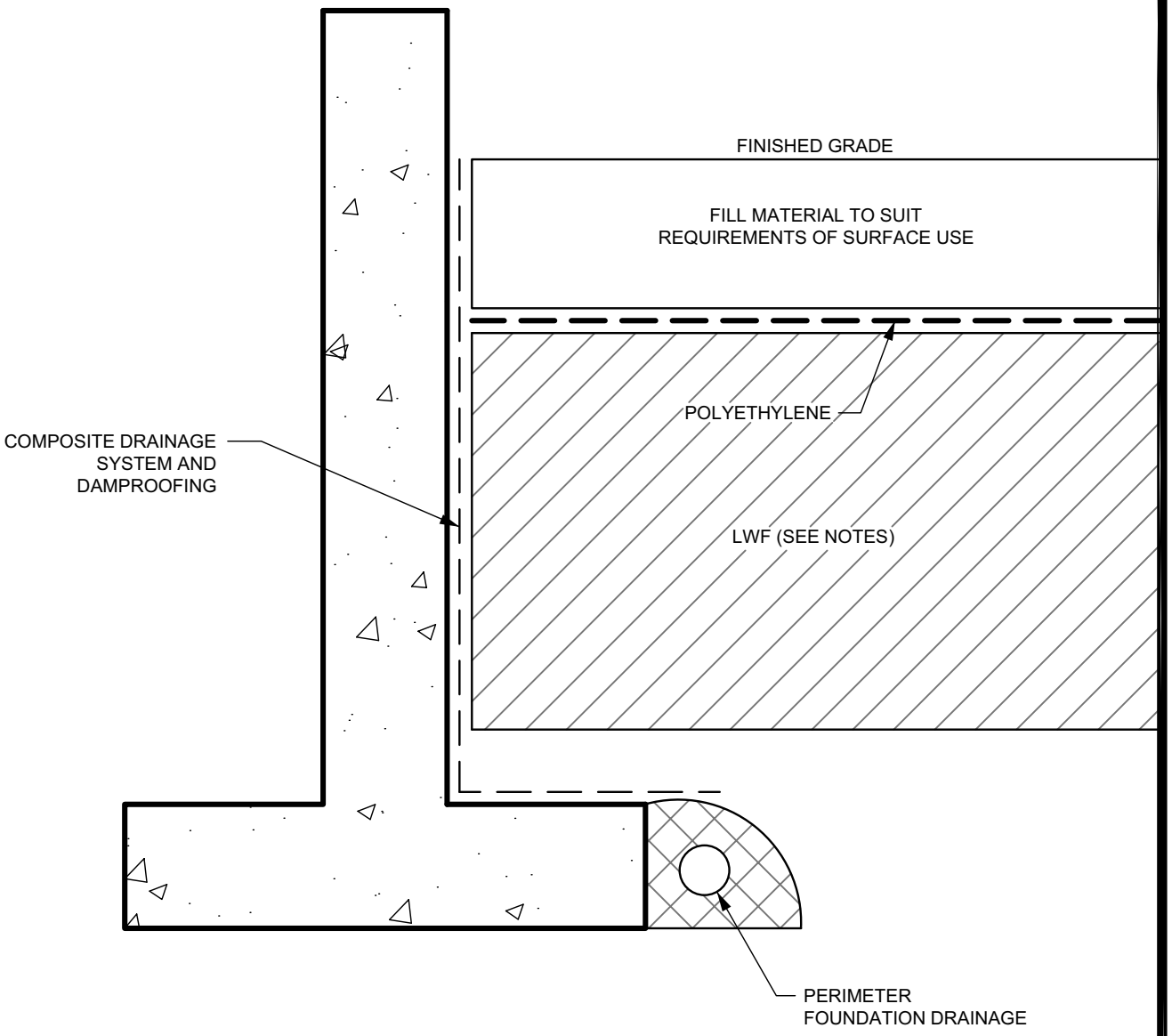


Nov. 9, 2022

David J. Gilbert, P.Eng.

Attachments

- ❒ Figure 1 – EPS Block Installation Around Residential Buildings
- ❒ Table 1 – Summary of Design Details



NOTES:

1. USE EPS12 BELOW FRONT PORCH AND LANDSCAPED AREAS

2. USE EPS15 BELOW GARAGE AND DRIVEWAY

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

4. PLACEMENT OF LWF SHOULD BE ON A LEVELED SURFACE (SAND CAN BE USED TO PROVIDE AN ADEQUATE LEVELLING SURFACE).

PATERSON GROUP

Title: **EPS BLOCK INSTALLATION AROUND RESIDENTIAL BUILDINGS**

Scale:	Date:
N.T.S.	07/2022

Drawn by:	Checked by:	Drawing No.:
NFRV	FA	FIGURE 1

p:\autocad drawings\geotechnical\eps lwf figure.dwg

Block Number	Lot Number	Civic Address	Dwelling Type	Original GS Front	Proposed GS Front	Original GS Rear	Proposed GS Rear	Underside of Footing Elevation	Minimum Underside of Footing Elevation	*Bearing Resistance Value at SLS	Seismic Site Class	Frost Protection Front	Frost Protection rear	Permissible Grade Raise	Above Permissible Grade Raise Front	Above Permissible Grade Raise Rear	Engineered Fill Thickness	Minimum Thickness LWF in Garage and Front Porch	Minimum Thickness LWF and Extents
				(m)	(m)	(m)	(m)	(m)		(kPa)		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
n/a	Lot 77	108 Chandelle Private	Single	115.86	116.94	115.32	116.05	114.55	114.25	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 78	106 Chandelle Private	Single	115.92	116.97	115.25	116.08	114.58	114.28	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 79	104 Chandelle Private	Single	116.00	117.15	115.25	116.26	114.76	114.46	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 80	102 Chandelle Private	Single	116.08	117.19	115.20	116.30	114.82	114.50	60	D	2.37	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 81	100 Chandelle Private	Single	116.23	117.33	116.00	116.44	114.94	114.64	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 82	98 Chandelle Private	Single	116.37	117.40	116.00	116.51	115.01	114.71	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 83	96 Chandelle Private	Single	116.50	117.56	115.70	116.67	115.17	114.87	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 84	94 Chandelle Private	Single	116.50	117.59	115.99	116.70	115.20	114.90	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 85	92 Chandelle Private	Single	116.50	117.76	116.17	116.87	115.37	115.07	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 86	90 Chandelle Private	Single	116.58	117.77	116.17	116.88	115.38	115.08	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 87	88 Chandelle Private	Single	116.58	117.96	116.38	117.07	115.57	115.27	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 88	86 Chandelle Private	Single	116.81	117.99	116.38	117.10	115.60	115.30	60	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 89	212 Silver Dart Private	Single	117.00	118.19	116.50	117.30	115.80	115.50	100	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 90	210 Silver Dart Private	Single	116.86	118.41	116.63	117.52	116.02	115.72	100	D	2.39	1.80	1.50	0.05	0.00	0.00	0.0	n/a
n/a	Lot 91	208 Silver Dart Private	Single	116.86	118.41	117.00	117.52	116.02	115.72	100	D	2.39	1.80	1.50	0.05	0.00	0.00	0.0	n/a
n/a	Lot 92	206 Silver Dart Private	Single	117.02	118.40	117.02	117.51	116.01	115.71	100	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 93	204 Silver Dart Private	Single	117.12	118.53	117.05	117.64	116.14	115.84	100	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 94	202 Silver Dart Private	Single	117.50	118.54	117.50	117.99	116.15	115.85	100	D	2.39	2.14	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 95	200 Silver Dart Private	Single	117.53	118.47	117.64	118.47	116.08	115.78	100	D	2.39	2.69	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 111	114 Chandelle Private	Single	115.59	116.73	115.03	115.84	114.34	114.04	100	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 112	116 Chandelle Private	Single	115.51	116.64	115.13	115.75	114.25	113.95	100	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 113	118 Chandelle Private	Single	115.51	116.50	114.87	115.61	114.11	113.81	100	D	2.39	1.80	1.50	0.00	0.00	0.00	0.0	n/a
n/a	Lot 114	120 Chandelle Private	Single	115.37	116.40	114.87	115.51	114.01	113.71	100	D	2.39	1.80	1.20	0.00	0.00	0.00	0.0	n/a
n/a	Lot 115	122 Chandelle Private	Single	115.34	116.26	114.51	115.37	113.87	113.64	100	D	2.39	1.73	1.20	0.00	0.00	0.00	0.0	n/a
n/a	Lot 116	124 Chandelle Private	Single	115.18	116.19	114.51	115.30	113.80	113.55	100	D	2.39	1.75	1.20	0.00	0.00	0.00	0.0	n/a
n/a	Lot 117	126 Chandelle Private	Single	114.83	115.99	114.83	115.29	113.60	113.50	100	D	2.39	1.79	1.20	0.00	0.00	0.00	0.0	n/a
n/a	Lot 118	128 Chandelle Private	Single	114.00	115.89	114.83	115.10	113.50	113.34	100	D	2.39	1.76	1.20	0.69	0.00	0.00	1.5	0.7m thick LWF along front extending 2.4 m beyond building face, 0.7m thick LWF along sides extending to a max. of 1.2 m or property line
n/a	Lot 119	130 Chandelle Private	Single	113.33	115.78	112.89	114.88	113.38	113.22	100	D	2.40	1.66	1.20	1.25	0.79	0.35	1.5	1.3m thick LWF along front extending 2.4 m beyond building face, 1.3m thick LWF along sides extending to a max. of 1.2 m or property line, 0.8m thick LWF along rear extending 2.4 m beyond building rear face

Notes:
- Proposed grade raise information was based on the following grading plan prepared by Novatech: Project No. 102085-01 - Grading Plan - Drawing No. 102085-GR2, Revision 15, dated December 1, 2021
- Current Block and Lot numbers assigned based on above noted grading plans.