



re: Geotechnical Recommendations - Grading Plan Review and Frost Protection
Proposed Warehouse Buildings
Campeau Drive at Huntmar Road
Ottawa, Ontario

to: Rosefellow Holdings Inc – Mr. Julian Nini – juliann@rosefellow.com
NOVATECH - Mr. Adam Thompson – a.thompson@novatech-eng.com

date: May 30, 2023

file: PG6394-MEMO.02

Further to your request and authorization, Paterson Group (Paterson) prepared this memorandum to provide a review from a geotechnical perspective for the grading plan and landscaping plan for the proposed warehouse buildings at the aforementioned site. This memorandum should be read in conjunction with Paterson Group Report PG6394-1 Revision 3 dated May 31, 2023.

1.0 Grading Plans Review

Paterson reviewed the following conceptual grading and landscaping plans prepared by Novatech regarding the aforementioned development:

- Project No. 122151 - Drawing No. 122151-GR1 – REV #2 – Grading Plan – dated March 30, 2023.
- Project No. 122151 - Drawing No. 122151-GR2 – REV #2 – Grading Plan – dated March 30, 2023.
- Project No. 122151 - Drawing No. 122151-L1 – REV #2 - Overall Landscape Plan – dated March 30, 2023.
- Project No. 122151 - Drawing Nos. 122151-L2, 122151-L3, 122151-L4, and 122151-L5 – REV #2 - Landscape Plan – dated March 30, 2023.
- Project No. 122151 - Drawing No. 122151-L6 – REV #2 - Landscape Plan Enlargements – dated March 30, 2023.
- Project No. 122151 - Drawing No. 122151-L7 – REV #2 - Landscape Details – dated March 30, 2023.

Based on our review of the above noted grading plans, the proposed grade raises for the proposed buildings, roads, and parking areas at the aforementioned site are within the recommended permissible grade raise of 2.0 m with no exceedances noted. Therefore, the proposed grade raises are considered acceptable from a geotechnical perspective and will not require the use of lightweight fill at this time. It should be noted that the USF for the proposed warehouse buildings provided on the above noted drawings is 2.03m. However, based on discussions with the Client, it is understood that the proposed depth of footings will be revised to be 1.5m below finish floor elevation. Therefore, our review will be based on the 1.5m depth for all footings.





2.0 Bearing Resistance Values for Foundation Design

Strip footings, up to 2 m wide, and pad footings, up to 5 m wide, founded on an undisturbed, very stiff to stiff brown silty clay or on engineered fill pad over approved fill, engineered pad/concrete in-filled trench placed over a very stiff to stiff brown silty clay bearing surface, can be designed using a bearing resistance value at serviceability limit states (SLS) of **150 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **225 kPa** incorporating a geotechnical factor of 0.5.

Strip footings, up to 2 m wide, and pad footings, up to 5 m wide, placed on an undisturbed, stiff grey silty clay bearing surface, engineered pad/concrete in-filled trench placed over a stiff grey silty clay, can be designed using a bearing resistance value at SLS of **120 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **200 kPa** incorporating a geotechnical factor of 0.5.

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

Footings designed using the above noted bearing resistance value at SLS given above will be subjected to potential post construction total and differential settlements of 25 and 20 mm, respectively.

3.0 Protection of Footings Against Frost Action

Based on our review of the above noted drawings, it is understood that the proposed finish grade elevations will be at geodetic elevation 101.95m and 102.40m for Building A and B, respectively. Furthermore, and based on our discussion with the Client, it is understood that the USF will be located 1.5 m below the proposed finish grade elevations. Therefore, the anticipated USF will be at geodetic elevations 100.45m and 100.90m for Building A and B, respectively.

For heated structures, the above noted footings will be provided with sufficient soil cover (minimum 1.5m required for heated conditions) against frost action. However, it is expected that frost migration may occur during freezing conditions while loading doors are open for loading/unloading purposes. Therefore, it is highly recommended that rigid insulation be used to prevent frost migration at these locations. Where insufficient soil cover is present above the underside of footing, the rigid insulation recommendations provided in Table 1 below should be followed:



Table 1 - Rigid Insulation Recommendations for Buildings with Reduced Soil Cover			
Thermal Condition	Soil Cover Provided (mm)	Insulation Dimensions	
		Thickness (mm)	Extension (mm)
Heated	1200-1400	25	Extend 900 mm horizontally beyond edge of footing face
	900-1200	50	Extend 1200 mm horizontally beyond edge of footing face
	600-900	75	Extend 1200 mm horizontally beyond edge of footing face
Unheated	1200-1700	50	Extend 600 mm horizontally beyond edge of footing face
	900-1200	75	Extend 1200 mm horizontally beyond edge of footing face
	600-900	100	Extend 1800 mm horizontally beyond edge of footing face

Notes:

- 1- The abovementioned recommendations for rigid insulation are only applicable for the subject site, based on the encountered subsurface conditions, and shall not be used elsewhere without our review and confirmation.**
- 2- A perimeter drainage pipe shall be installed as per section 6.1 of the aforementioned geotechnical report.**

For the proposed USF (1.5m below finish grades), the footings located in areas experiencing unheated conditions will require to be protected with a minimum 50mm thick layer of rigid insulation HL-40 or equivalent. Rigid insulation boards should be placed upon a level and flat surface with negligible gaps between abutting boards. Consideration can be given to placing a thin levelling mat consisting of a layer of compacted OPSS Granular A crushed stone, stone dust or sand below the insulation layer, as required. The placement of the insulation layers should be reviewed by Paterson personnel at the time of construction.

Frost Taper

A frost taper is recommended for areas where hard surfaces (concrete/interlock/asphaltic sidewalk) are placed adjacent to the proposed structures. It is recommended that an additional 300mm deep area be subexcavated below the rigid insulation and extended horizontally at least 600mm.



The frost taper should be located at the outside face of the rigid insulation below the adjacent hard surfaces. A minimum 3H:1V slope profile can be used to raise the sub-excavated area back to subgrade level. The frost taper area should be backfilled with a free-draining, non-frost susceptible engineered fill, such as OPSS Granular A or B Type II crushed stone, placed in maximum 300 mm thick loose lifts and compacted to a minimum of 98% of the material's Standard Proctor Maximum Dry Density. Further, it is recommended that Paterson complete compaction testing on the granular material.

4.0 Design for Earthquakes

A shear wave velocity test was conducted at the subject site on May 26, 2023. Based on the results of the site-specific seismic shear wave velocity test completed at the subject site, a **Site Class C** is applicable for the design of the proposed buildings founded on conventional footings at the subject site, as per Table 4.1.8.4.A of the 2012 Ontario Building Code (OBC 2012).

The soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest revision of the 2012 Ontario Building Code for a full discussion of the earthquake design requirements.

5.0 Landscaping and Tree Planting Restrictions

As noted in the above-mentioned geotechnical report, Atterberg limits testing was completed on selected samples at the subject site. Two tree planting setback areas are present within the proposed development and are outlined in the attached Drawing PG6394-2 - Tree Planting Setback Recommendations. The following general recommendation are required for Area 1 and Area 2:

Area 1- High Sensitivity Clay Soils:

The modified plasticity index results were generally greater than 40%, indicating a high sensitivity clay soil. Based on the test results and the City of Ottawa guideline "Tree Planting in Sensitive Marine Clay Soils - 2017 Guidelines," Large trees (mature height over 14 m) can be planted within this area provided a tree to foundation setback equal to the full mature height of the tree can be provided (e.g. in a park or other green space). The tree planting setback limits in Area 1 can be reduced to 7.5 m for small (mature tree height up to 7.5 m) and medium size trees (mature tree height 7.5 m to 14 m) provided that the following conditions are met:



- ❑ The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied where trees have less than 10 m horizontal separation from the foundation wall. should be made to Table 2 below and following comments regarding the underside of footing elevations.
- ❑ A small tree must be provided with a minimum of 25 m³ of available soil volume while a medium tree must be provided with a minimum of 30 m³ of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally un-compacted when backfilling in street tree planting locations.
- ❑ The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.
- ❑ The foundation walls are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- ❑ Grading surrounds the tree must promote drainage to the tree root zone. This should be confirmed by the landscape architect and civil engineer.

Area 2 - Low/Medium Sensitivity Clay Soils:

The modified plasticity index results for this area were found to be less than 40%. 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.” The following conditions are also required to be met based on the tree planting guidelines:

- ❑ The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree. Reference should be made to Table 2 below and following comments regarding the underside of footing elevations.
- ❑ A small tree must be provided with a minimum of 25 m³ of available soil volume while a medium tree must be provided with a minimum of 30 m³ of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally un-compacted when backfilling in street tree planting locations.
- ❑ The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.
- ❑ The foundation walls are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- ❑ Grading surrounds the tree must promote drainage to the tree root zone. This should be confirmed by the landscape architect and civil engineer.

Table 2 below provides a summary of the landscaping and grading information for the proposed warehouse buildings, assuming a foundation depth of 1.5m below finish floor elevation, as discussed with the Client:



Table 2 - Landscaping Plan and Grading Details

Building No.	Tree Species*	Underside of Footing Elevation (m)	Finished Grade Elevation (m)	Proposed Foundation Depth (m)	Tree to Foundation (m)	Exceedance of Permissible Setback (m)
B4	AXB	102.40	100.37	1.5	16	N/A
B4	AXB	102.40	100.37	1.5	8	N/A
B4	AXB	102.40	100.37	1.5	8	N/A
B4	TO	102.40	100.37	1.5	16.7	N/A
B4	TO	102.40	100.37	1.5	14	N/A
B4	TO	102.40	100.37	1.5	9.5	N/A
B4	LL	102.40	100.37	1.5	20	10
B4	AR	102.40	100.37	1.5	21.2	N/A
B4	AR	102.40	100.37	1.5	20	N/A
B4	AR	102.40	100.37	1.5	19	N/A
B4	LL	102.40	100.37	1.5	21	9
B4	QM	102.40	100.37	1.5	20	2
B4	QM	102.40	100.37	1.5	22	N/A
B4	TO	102.40	100.37	1.5	18.2	N/A
B4	TO	102.40	100.37	1.5	19	N/A
B4	TO	102.40	100.37	1.5	18.6	N/A
B4	BPM	102.40	100.37	1.5	19	N/A
B4	BPM	102.40	100.37	1.5	20.9	N/A
B4	BPM	102.40	100.37	1.5	20.6	N/A
B4	UAP	102.40	100.37	1.5	21	2
B4	LL	102.40	100.37	1.5	18	12
B4	LL	102.40	100.37	1.5	20	10
B3	UAP	102.40	100.37	1.5	20	3
B3	CEL	102.40	100.37	1.5	30	N/A
B3	AR	102.40	100.37	1.5	20.5	N/A
B3	CEL	102.40	100.37	1.5	37	N/A
B3	GYE	102.40	100.37	1.5	16.6	N/A
B2	GYE	102.40	100.37	1.5	16.6	N/A
B2	CEL	102.40	100.37	1.5	36.8	N/A
B2	CEL	102.40	100.37	1.5	37.2	N/A
B2	PBB	102.40	100.37	1.5	14.9	N/A
B2	PBB	102.40	100.37	1.5	15.8	N/A
B2	PBB	102.40	100.37	1.5	14.2	N/A
B2	UAP	102.40	100.37	1.5	37	N/A
B2	UAP	102.40	100.37	1.5	37	N/A
B2	GTS	102.40	100.37	1.5	16.6	N/A



Building No.	Tree Specie*	Underside of Footing Elevation (m)	Finished Grade Elevation (m)	Foundation Depth (m)	Tree to Foundation (m)	Exceedance of Permissible Setback (m)
B2	GTS	102.40	100.37	1.5	16.6	N/A
B2	UAB	102.40	100.37	1.5	16.7	N/A
B2	UAB	102.40	100.37	1.5	17	N/A
B1	UAB	102.40	100.37	1.5	16.7	N/A
B1	UAP	102.40	100.37	1.5	37.3	N/A
B1	COU	102.40	100.37	1.5	17	N/A
B1	COU	102.40	100.37	1.5	17	N/A
B1	COU	102.40	100.37	1.5	17	N/A
B1	COU	102.40	100.37	1.5	17	N/A
B1	PBA	102.40	100.37	1.5	36	N/A
B1	PBA	102.40	100.37	1.5	33	N/A
B1	PBA	102.40	100.37	1.5	35	N/A
B1	LL	102.40	100.37	1.5	33.5	N/A
B1	LL	102.40	100.37	1.5	33	N/A
B1	QM	102.40	100.37	1.5	30	N/A
B1	PP	102.40	100.37	1.5	26.6	N/A
B1	LL	102.40	100.37	1.5	16	14
B1	LL	102.40	100.37	1.5	22	8
B1	LL	102.40	100.37	1.5	19	11
B1	UF	102.40	100.37	1.5	15.8	N/A
B1	MPS	102.40	100.37	1.5	12	N/A
B1	MPS	102.40	100.37	1.5	7.3	N/A
B1	UF	102.40	100.37	1.5	4.5	N/A
B1	TO	102.40	100.37	1.5	4.5	N/A
B1	TO	102.40	100.37	1.5	4.5	N/A
B1	TO	102.40	100.37	1.5	4.5	N/A
B1	GTH	102.40	100.37	1.5	4.5	N/A
B1	GTH	102.40	100.37	1.5	4.5	N/A
B1	GTH	102.40	100.37	1.5	4.5	N/A
B1	PBB	102.40	100.37	1.5	4.5	N/A
B1	PBB	102.40	100.37	1.5	4.5	N/A
B1	PBB	102.40	100.37	1.5	4.5	N/A
B1	AFCM	102.40	100.37	1.5	4.5	N/A
B1	AFCM	102.40	100.37	1.5	4.5	N/A
B1	AFCM	102.40	100.37	1.5	4.5	N/A
B1	TO	102.40	100.37	1.5	4.5	N/A
B1	TO	102.40	100.37	1.5	4.5	N/A



Building No.	Tree Specie*	Underside of Footing Elevation (m)	Finished Grade Elevation (m)	Foundation Depth (m)	Tree to Foundation (m)	Exceedance of Permissible Setback (m)
B1	TO	102.40	100.37	1.5	4.5	N/A
A1	AFCM	101.95	99.92	1.5	5.5	N/A
A1	AFCM	101.95	99.92	1.5	11	N/A
A1	AFCM	101.95	99.92	1.5	15.5	N/A
A1	UF	101.95	99.92	1.5	12.5	N/A
A1	UF	101.95	99.92	1.5	16.5	N/A
A1	PP	101.95	99.92	1.5	20	N/A
A1	PP	101.95	99.92	1.5	19.4	N/A
A1	PP	101.95	99.92	1.5	23	N/A
A1	GTI	101.95	99.92	1.5	23.7	N/A
A1	GTI	101.95	99.92	1.5	28.5	N/A
A1	GTI	101.95	99.92	1.5	28.5	N/A
A1	GTI	101.95	99.92	1.5	33	N/A
A1	GYE	101.95	99.92	1.5	16	N/A
A1	GYE	101.95	99.92	1.5	16	N/A
A1	GYE	101.95	99.92	1.5	16	N/A
A1	AXB	101.95	99.92	1.5	35	N/A
A1	AXB	101.95	99.92	1.5	35	N/A
A1	AXB	101.95	99.92	1.5	35	N/A
A1	UAB	101.95	99.92	1.5	16	N/A
A2	UAB	101.95	99.92	1.5	16	N/A
A2	UAB	101.95	99.92	1.5	12.5	N/A
A1	MPS	101.95	99.92	1.5	35	N/A
A1	MPS	101.95	99.92	1.5	35	N/A
A2	MPS	101.95	99.92	1.5	35	N/A
A2	MPS	101.95	99.92	1.5	35	N/A
A2	COU	101.95	99.92	1.5	14.7	N/A
A2	TO	101.95	99.92	1.5	30	N/A
A2	TO	101.95	99.92	1.5	33	N/A
A2	PP	101.95	99.92	1.5	32	N/A
A2	PP	101.95	99.92	1.5	33	N/A
A2	PP	101.95	99.92	1.5	32.2	N/A
A2	COU	101.95	99.92	1.5	17	N/A
A2	COU	101.95	99.92	1.5	17	N/A
A2	MPS	101.95	99.92	1.5	35	N/A
A2	MPS	101.95	99.92	1.5	35	N/A
A2	MPS	101.95	99.92	1.5	35	N/A



Building No.	Tree Specie*	Underside of Footing Elevation (m)	Finished Grade Elevation (m)	Foundation Depth (m)	Tree to Foundation (m)	Exceedance of Permissible Setback (m)
A3	COU	101.95	99.92	1.5	17	N/A
A3	GTS	101.95	99.92	1.5	16	N/A
A3	GTS	101.95	99.92	1.5	16	N/A
A3	GTS	101.95	99.92	1.5	16	N/A
A3	MPS	101.95	99.92	1.5	35	N/A
A3	AXB	101.95	99.92	1.5	35	N/A
A3	AXB	101.95	99.92	1.5	35	N/A
A3	AXB	101.95	99.92	1.5	35	N/A
A3	GTI	101.95	99.92	1.5	12	N/A
A3	PP	101.95	99.92	1.5	30	N/A
A3	PP	101.95	99.92	1.5	33	N/A
A3	PP	101.95	99.92	1.5	31.4	N/A
A3	GTI	101.95	99.92	1.5	12	N/A
A3	TO	101.95	99.92	1.5	28.8	N/A
A3	TO	101.95	99.92	1.5	32	N/A
A3	MPS	101.95	99.92	1.5	34	N/A
A3	MPS	101.95	99.92	1.5	34	N/A
A4	MPS	101.95	99.92	1.5	34	N/A
A4	MPS	101.95	99.92	1.5	34	N/A
A3	UF	101.95	99.92	1.5	16	N/A
A4	UF	101.95	99.92	1.5	16	N/A
A4	UF	101.95	99.92	1.5	16	N/A
A4	UF	101.95	99.92	1.5	16	N/A
A4	UF	101.95	99.92	1.5	16	N/A
A4	GTI	101.95	99.92	1.5	34	N/A
A4	GTI	101.95	99.92	1.5	34	N/A
A4	GTI	101.95	99.92	1.5	34	N/A
A4	PP	101.95	99.92	1.5	32.5	N/A
A4	PP	101.95	99.92	1.5	35	N/A
A4	PP	101.95	99.92	1.5	30.5	N/A

*Tree counting starts from the northeast corner of the building and continues counter-clockwise.

Based on our review of the above noted drawings, all footings were observed to have sufficient horizontal setback from proposed trees with the exception of some LL, UAP, and QM trees within buildings B1, B3, and B4, noted in the above table. These trees should either be sufficiently spaced from the building footprint at a minimum distance equal to the mature tree heights (20 to 30m) or should be replaced with small to medium trees with a maximum mature height of 14m.



Based on our review, it was further noted that the footings along the southern foundation wall of building B1 and the footings at the southeast corner of Building A1 will be located within 10m from the proposed trees, and therefore, will require to have a minimum embedment depth of 2.1m below finish floor elevation as per City guidelines for planting in sensitive marine clays. To compensate for the reduced foundation depth for the impacted footings, an engineered fill pad can be placed below the underside of footing to an elevation matching a depth of 2.1 m below proposed finished grade surrounding the buildings. The engineered fill pad will effectively increase the depth between the finished grade and the underlying silty clay deposit to the required 2.1 m which achieves the same goal as lowering the footing from a tree planting perspective. The granular pad should consist of OPSS Granular A or Granular B Type II placed in 300 mm loose lifts and compacted to 98% of the material's SPMDD. The granular pad should be extended horizontally a minimum of 150 mm beyond the footing edges in all directions and a minimum 1.5H:1V down and out from the footing face. Reference can be made to Figure 1 - Engineered Pad Below USF For Tree Planting Purposes attached for additional information.

Reference should be made to the attached markup drawing for the location of the effected footings.

In addition, as required by the guidelines, the foundation walls should be provided with a minimum of two 15-M bars in the upper and lower sections of the foundation walls. This should be indicated on the relevant drawings and reviewed by Paterson at the time of construction.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Zubaida Al-Moselly, P.Eng.

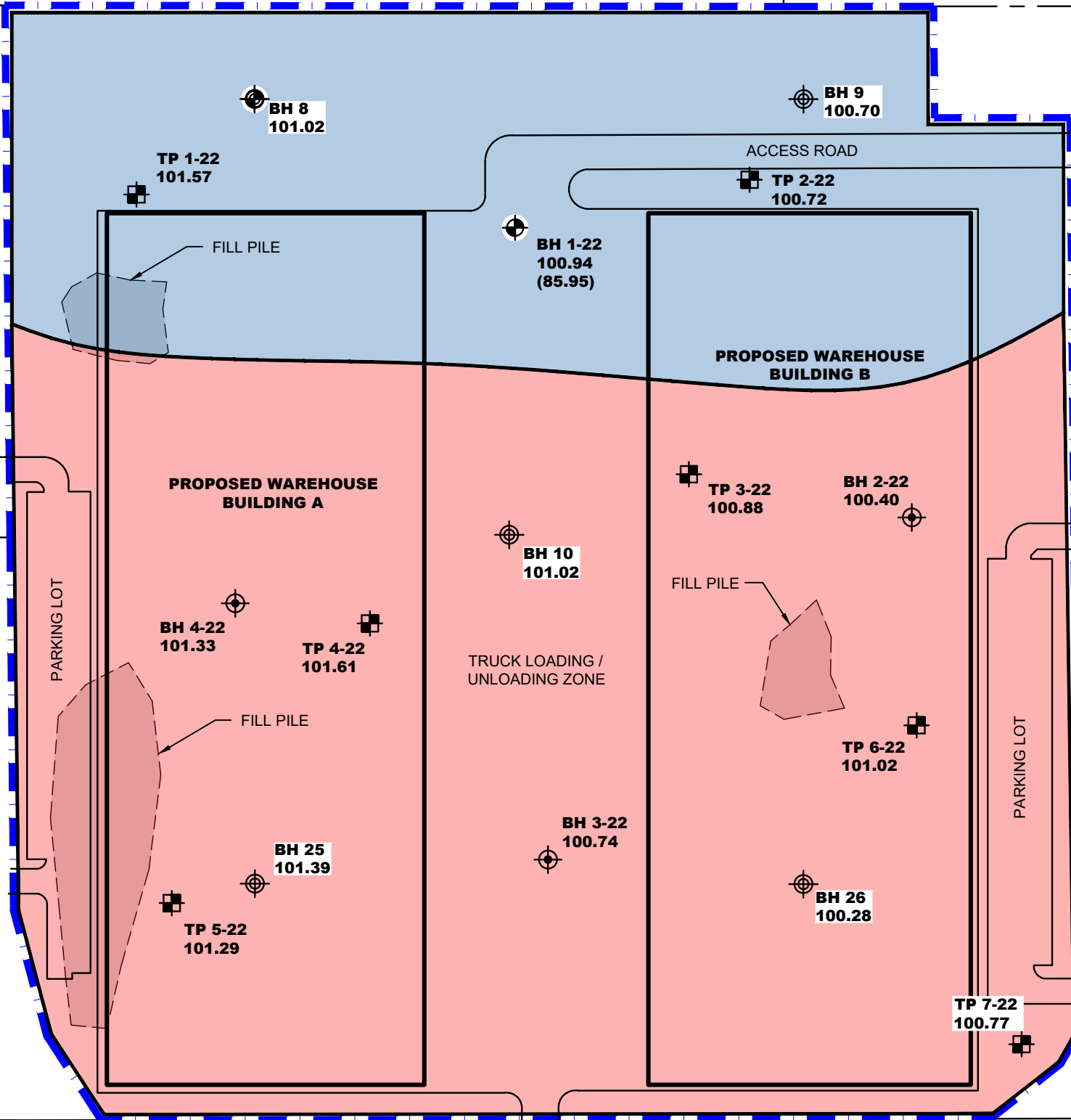


Maha K. Saleh, P.Eng.

Attachments:

- PG6394-2 - Tree Planting Setback Recommendations
- Overall Landscape Plan Markup
- Figure 1 - Engineered Pad Below USF For Tree Planting Purposes
- Figure 2 – Rigid Insulation Detail for Unheated Footings with Reduced Soil Cover





TREE PLANTING SETBACK:

- AREA 1 - 7.5m TREE PLANTING SETBACKS
- AREA 2 - 4.5m TREE PLANTING SETBACKS

LEGEND:

- BOREHOLE LOCATION (CURRENT INVESTIGATION)
- BOREHOLE WITH MONITORING WELL INSTALLED LOCATION (CURRENT INVESTIGATION)
- TEST PIT LOCATION (CURRENT INVESTIGATION)
- BOREHOLE LOCATION, PREVIOUS PATERSON GROUP REPORT PG3115-1
- 101.74 GROUND SURFACE ELEVATION (m)
- (90.49) PRACTICAL REFUSAL TO DCPT/AUGERING ELEVATION (m)

CONCEPTUAL PLAN PROVIDED BY ROSEFELLOW DEVELOPMENTS

GROUND SURFACE ELEVATIONS AT TEST HOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM

SCALE: 1:1500



PATERSON GROUP
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NO.	REVISIONS	DATE	INITIAL

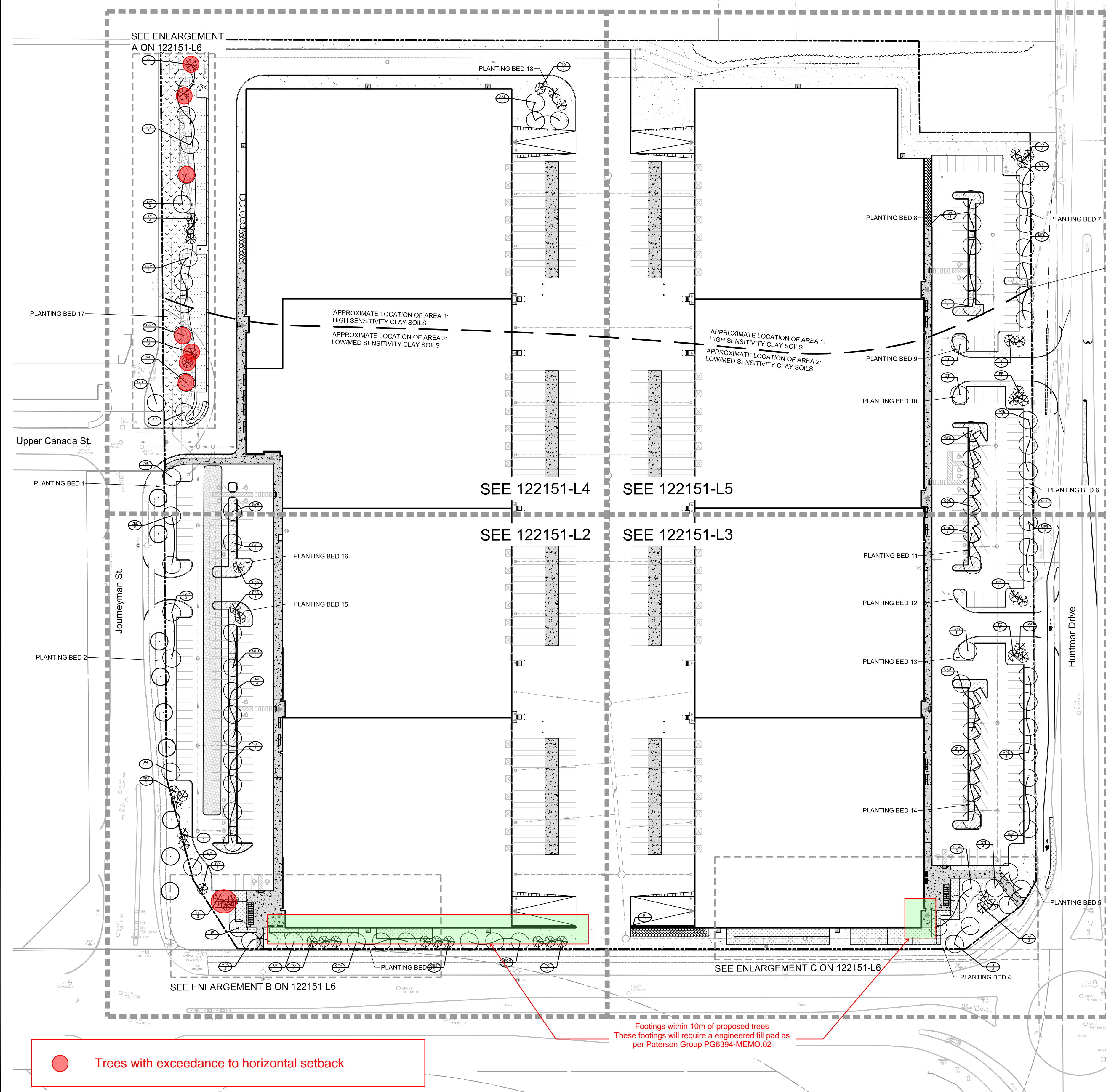
ROSEFELLOW DEVELOPMENTS
GEOTECHNICAL INVESTIGATION
PROPOSED WAREHOUSE BUILDINGS
CAMPEAU DRIVE AT HUNTMAR ROAD

OTTAWA, ONTARIO

TREE PLANTING SETBACK RECOMMENDATIONS

Scale:	1:1500	Date:	09/2022
Drawn by:	YA	Report No.:	PG6394-1
Checked by:	ZA	Dwg. No.:	PG6394-2
Approved by:	MS	Revision No.:	

PG6394-MEMO.02 - Grading Plan and Landscaping Plan



LOCATIONS ARE APPROXIMATE. REFER TO GEOTECHNICAL REPORT (Geotechnical Investigation Proposed Warehouse Buildings Campeau Drive at Huntmar Drive Ottawa, Ontario, Maha K. Saleh, March 21, 2023) AND MAP (Tree Planting Setback Recommendations, March 21, 2023)

TREES VS PARKING SPACES

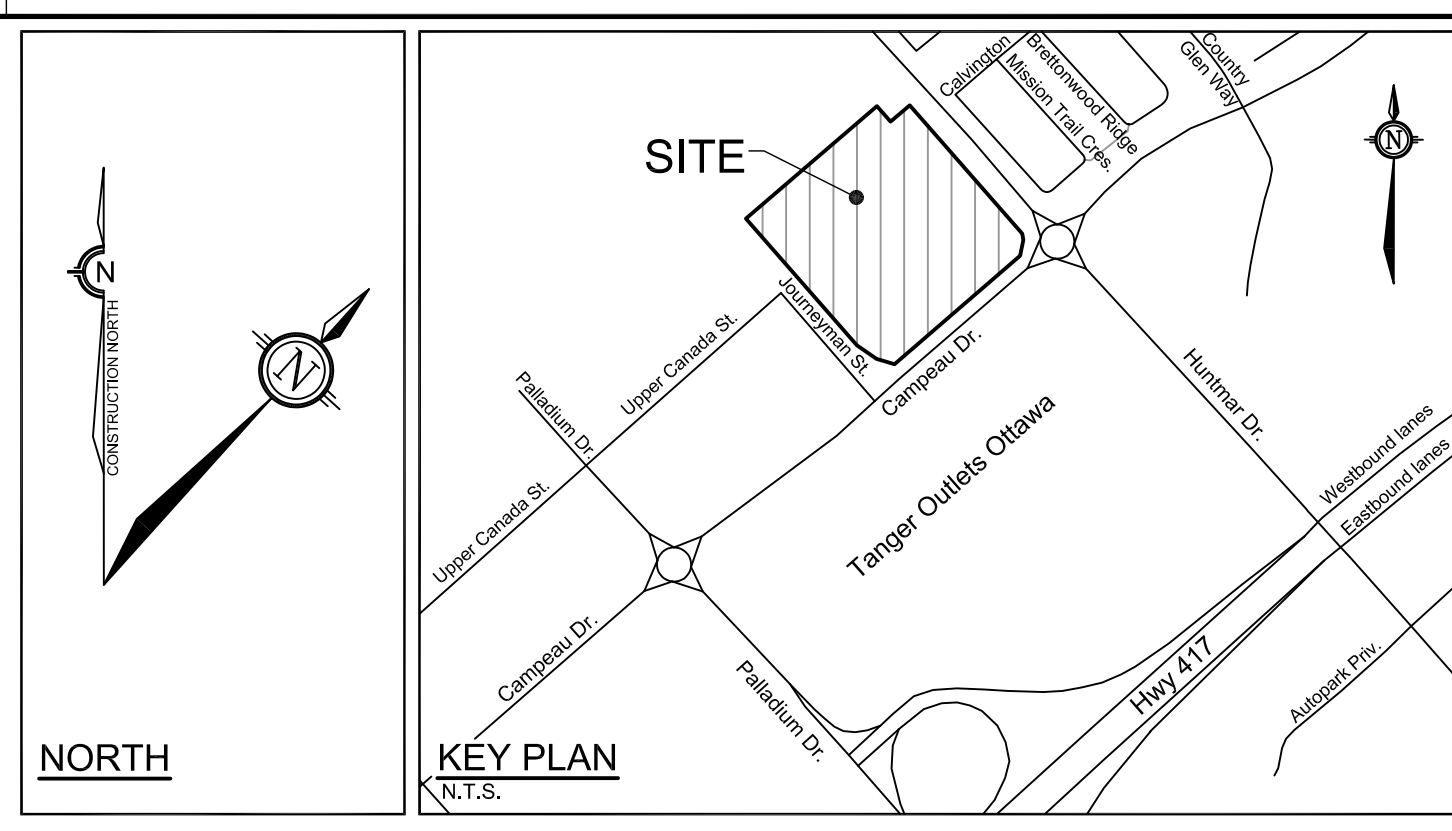
Building A	Building B
Parking Provided	168
Trees in Parking Lot Area	55
Number of Parking Spaces per Tree	3
Parking Provided	114
Trees in Parking Lot Area	30
Number of Parking Spaces per Tree	4

SOIL VOLUMES

Planting bed no.	Available Soil Area (sq m)	Available Soil Volume (cu m)	No. of trees proposed				Existing trees	Total No. of trees	Min. required Soil volume: total (cu m)
			Small	Medium	Large	Evergreen			
Planting bed 1	299.20	448.80	0	0	3	0	2	5	175.00
Planting bed 2	1368.58	1,962.36	1	1	4	9	7	22	730.00
Planting bed 3	895.92	1,343.88	1	7	0	9	0	17	526.00
Planting bed 4	459.41	743.12	0	9	0	3	0	12	360.00
Planting bed 5	606.13	909.20	7	0	0	3	0	10	265.00
Planting bed 6	921.06	1,381.59	7	0	0	5	0	12	325.00
Planting bed 7	1390.11	2,085.17	4	3	0	5	0	12	340.00
Planting bed 8	140.59	210.88	0	5	0	0	0	5	150.00
Planting bed 9	25.44	38.16	0	1	0	0	0	1	30.00
Planting bed 10	75.37	113.05	0	1	0	0	0	1	30.00
Planting bed 11	157.07	235.61	0	0	6	0	0	6	210.00
Planting bed 12	18.50	27.75	0	0	0	0	0	0	0.00
Planting bed 13	36.40	54.60	0	0	1	0	0	1	35.00
Planting bed 14	178.22	267.33	0	3	0	0	0	3	105.00
Planting bed 15	301.96	452.94	0	3	6	2	0	11	360.00
Planting bed 16	114.60	171.90	0	0	2	1	0	3	100.00
Planting bed 17	212.06	318.08	0	0	12	7	0	19	630.00
Planting bed 18	376.69	565.04	3	0	0	3	0	6	165.00

Footings within 10m of proposed trees. These footings will require an engineered fill pad as per Paterson Group PG6394-MEMO.02

Trees with exceedance to horizontal setback



- ### LEGEND
- 3-D1 DETAIL SHEET #
 - PROPERTY LIMIT
 - PROPOSED CONCRETE
 - PROPOSED PLANTING BED
 - SOD
 - SEED MIX A - SEE NOTE
 - SEED MIX B - SEE NOTE
 - SEED MIX C - SEE NOTE
 - PROPOSED DECIDUOUS TREE
 - PROPOSED CONIFEROUS TREE
 - EXISTING TREE TO REMAIN
 - EXISTING HEDGEROW TO REMAIN
- ### GENERAL
- Read and interpret this drawing/drawing set in conjunction with all the contract details and specifications, including related civil, utility, structural, architectural, mechanical, electrical, environmental, geotechnical, and survey information.
 - The Contractor is to determine the exact location, size, material, and elevation of all existing utilities prior to commencing construction. Protect and assume responsibility for all existing utilities regardless of being shown on the drawings.
 - It is essential to use the plans and details in conjunction with the specifications and notes.
 - Do not scale drawings. Work to dimensions only.
 - Protect all existing and retained vegetation for the duration of construction according to the contract details and specifications.
 - Reinstate all areas and items damaged or disturbed, beyond the Limit of Work, because of construction activities, including but not limited to construction staging areas, haul roads, stockpile areas, etc. to the satisfaction of the Consultant. Unless otherwise noted, Contractor is to reinstate all areas to pre-construction condition or better to the satisfaction of the Contract Administrator.
- ### CITY DETAILS
- Related details from City of Ottawa Standard Tender Documents Volume No. 2 Standard Detail Drawings.
- SC4. Typical Concrete Sidewalk in Boulevard
 - SC5. Sidewalk Construction Joints
- ### NOVATECH DETAILS
- Found on Sheet L7.
- D1. Standard Deciduous Tree Planting
 - D2. Standard Coniferous Tree Planting
 - D3. Shrub and Perennial Planting
 - D4. Tree Protection Fence
 - D5. Bike Layout
 - D6. Site furniture Installation
 - D7. Reforestation
 - D8. Riverstone
- ### PRODUCT INFORMATION
- Install products as per manufacturer specifications. Shop drawings required.
- ### SITE FURNITURE
- Fasten all site furnishing to surface with stainless steel anti-vandal anchors.
- Accessible 400 Bench by Maglin
Product Number: MMP-0400-00034
Size: 72.75" Length
Frame colour: Gunmetal
Slats: Ipe
Options: Steel ends, end arms and centre arm 9" ht.
 - Mug Bike Rack by Maglin
Product Number: MBR-0500-00001
Fixture: Direct Burial
Colour: Gunmetal Gloss Post
- ### EXISTING VEGETATION
- No clearing of vegetation should occur between April 15th and August 15. Should clearing be necessary during this time, a survey is to be conducted by a biologist (approved by the Landscape Architect) to determine that no nesting is occurring within 5 days prior to clearing.
 - Should any clearing be required before April 15th, a pre-clearing survey for active stick nests and cavity nests must also occur between April 1 and April 15, to identify and protect early-nesting owls and raptors.

- ### TREE PLANTING IN SENSITIVE CLAY
- The landscape plans have been developed in accordance with the Geotechnical Report (Geotechnical Investigation Proposed Warehouse Buildings Campeau Drive at Huntmar Drive Ottawa, Ontario, Maha K. Saleh, March 21, 2023), which includes the letter/memo (Maha K. Saleh, March 21, 2023), and map (Tree Planting Setback Recommendations, March 21, 2023) that confirms the categories and locations of clay soils.
 - The following City of Ottawa clay soils guideline applies: Guidelines for Tree Planting in Sensitive Marine Clay Soils (2017).
 - The soil volumes provided are sufficient for a reasonable chance of tree survival. Unless otherwise noted, all new trees on City property meet the minimum soil volume requirements of the following, based on a depth of 1.5m below finished grade, and subtracting the volume of utility trenches.
 - Small tree (mature height up to 7.5m) - 25m³ minimum soil volume provided.
 - Medium tree (mature height 7.5-14m) - 30m³ minimum soil volume provided.
 - Two (2) small trees - 15m³ minimum soil volume provided per tree.
 - Two (2) medium trees - 18m³ minimum soil volume provided per tree.

CALIPER TREES PLANT LIST

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COND	SPACING
Deciduous Trees						
AR	4	<i>Acer rubrum</i>	Red Maple	50mm Cal	WB	As Shown
AFCM	6	<i>Acer fraxinifolium 'Celtam'</i>	Celebration Maple	50mm Cal	WB	As Shown
AXB	9	<i>Amelanchier x grandiflora 'Ballarina'</i>	Ballarina Serviceberry	50mm Cal	WB	As Shown
BPM	3	<i>Betula papyrifera (multistem)</i>	Multistem Paper Birch	50mm Cal	WB	As Shown
CEL	4	<i>Celtis occidentalis</i>	Hackberry	50mm Cal	WB	As Shown
COU	8	<i>Celtis occidentalis 'Ultra'</i>	Ultra Hackberry	50mm Cal	WB	As Shown
GTH	9	<i>Gleditsia triacanthos var. inermis 'Impicola'</i>	Imperial Honeylocust	50mm Cal	WB	As Shown
GTH	3	<i>Gleditsia triacanthos var. inermis 'Haka'</i>	Haka Honeylocust	50mm Cal	WB	As Shown
GTS	5	<i>Gleditsia triacanthos var. inermis 'Shademaster'</i>	Shademaster Honeylocust	50mm Cal	WB	As Shown
GVE	5	<i>Gymnocladus dioica 'Espresso-JFS'</i>	Espresso Kentucky Coffee Tree	50mm Cal	WB	As Shown
MPS	14	<i>Malus 'Pink Spire'</i>	Pink Spire Crabapple	50mm Cal	WB	As Shown
QM	3	<i>Quercus macrocarpa</i>	Burr Oak	50mm Cal	WB	As Shown
UAB	6	<i>Ulmus americana 'Brandon'</i>	Brandon Elm	50mm Cal	WB	As Shown
UF	9	<i>Ulmus americana 'Frontier'</i>	Frontier Elm	50mm Cal	WB	As Shown
UAP	4	<i>Ulmus americana 'Princeton'</i>	Princeton Elm	50mm Cal	WB	As Shown
Coniferous Trees						
LL	9	<i>Larix laricina</i>	Tamarack	200cm Ht	WB	As Shown
PP	13	<i>Picea pungens</i>	Colorado Spruce	200cm Ht	WB	As Shown
PGB	6	<i>Picea pungens 'Baby Blue'</i>	Baby Blue Colorado Spruce	175cm Ht	WB	As Shown
PBA	3	<i>Pinus banksiana</i>	Jack Pine	200cm Ht	WB	As Shown
TO	16	<i>Thuja occidentalis</i>	Eastern White Cedar	200cm Ht	WB	As Shown

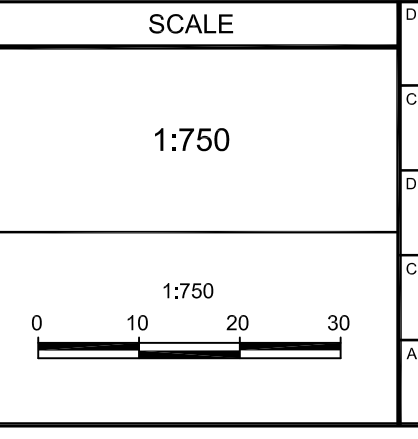
Total Number of Deciduous Trees: 92
Total Number of Coniferous Trees: 47
Total Number of Trees: 139

NOTE: THE POSITION OF ALL POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Owner:
Rosefellow
c/o Julian Niemi
750 Marconi/Laurier, Suite 210
Saint-Laurent, QC H4M 2M4
Phone: (514) 532-1080

NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY
3.	XXX	MAY XX/23	RGJ
2.	REVISED PER CITY COMMENTS	MAR 30/23	RGJ
1.	ISSUED FOR CITY OF OTTAWA REVIEW	DEC 16/22	RGJ



DESIGN	FOR REVIEW ONLY
KW	
CHECKED RGJ	
DRAWN TB	
CHECKED KW	
APPROVED RGJ	

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
405 HUNTMAR DRIVE - WAREHOUSE DEVELOPMENT

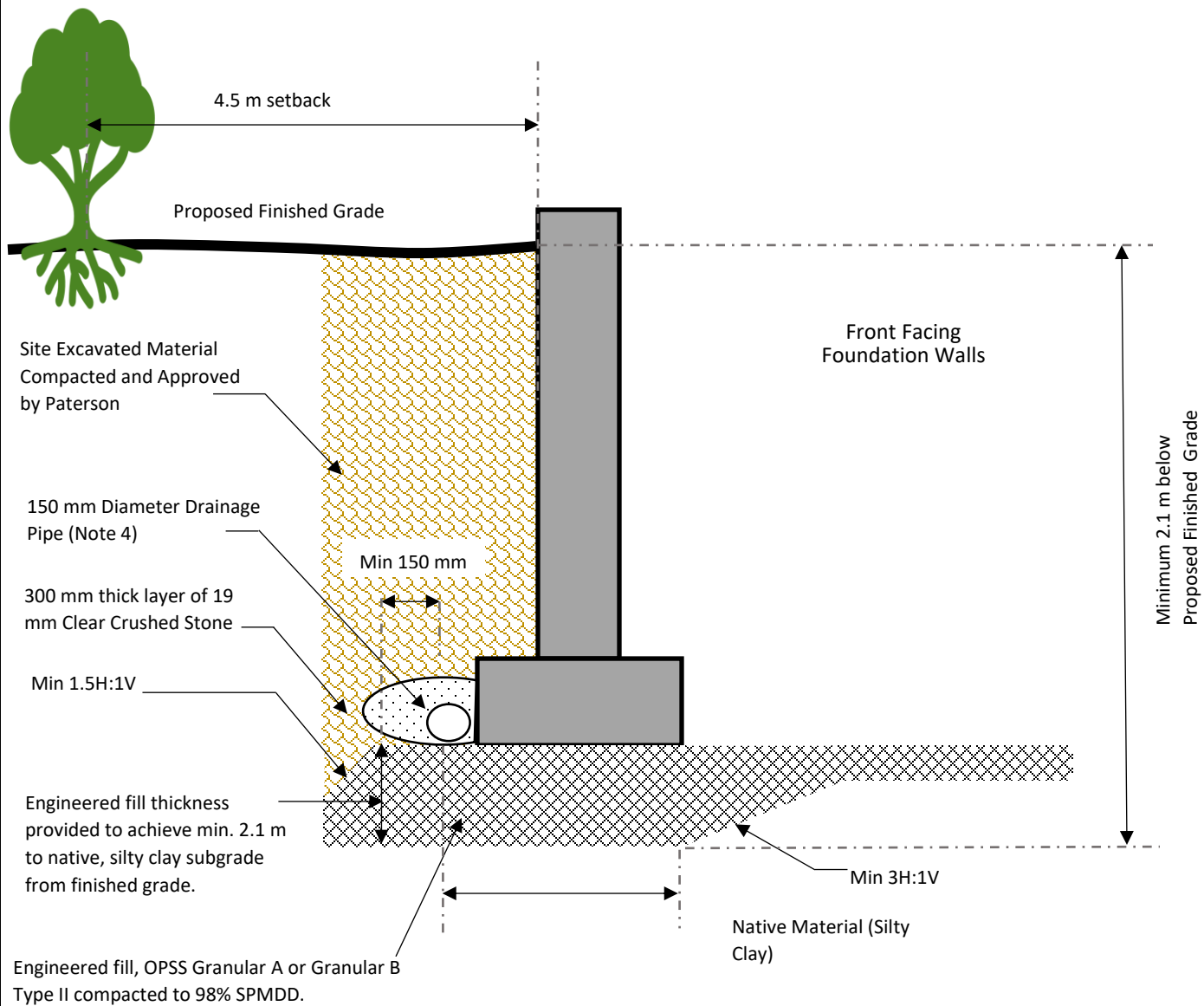
DRAWING NAME
OVERALL LANDSCAPE PLAN

PROJECT No. 122151

REV #2

DRAWING No. 122151-L1

Figure 1 – Engineered Pad Below USF For Tree Planting Purposes



Notes:

- Note 1: Where footings have a minimum depth less than 2.1 m below finished grade, a granular pad below the footings will be required.
- Note 2: The thickness of the engineered pad is dependent of the depth of footings below proposed grade. The thickness of the engineered pad can be calculated by subtracting the depth of footing from 2.1 m.
- Note 3: The placement of the engineered fill should be reviewed and approved in the field by Paterson
- Note 4: The 150 mm diameter perforated, corrugated drainage pipe should be geotextile wrapped, placed at the founding level and connected to a positive outlet with a gravity connection.

RIGID INSULATION DETAIL FOR FOOTINGS WITH REDUCED SOIL COVER

