PATERSON GROUP

memorandum

re: **Slope Stability Analysis**
Proposed Commercial Building
575 Dealership Drive – Ottawa, Ontario

to: RF Ottawa Limited Partnership – Mr. Julian Nini – juliann@rosefellow.com

date: March 10, 2023

file: PG6514-MEMO.01

As requested, Paterson Group (Paterson) prepared the current memorandum to provide geotechnical recommendations for the proposed steep slopes to be located along the western property boundary at the aforementioned site. This memo should be read in conjunction with Paterson's geotechnical Report PG6514-1 Revision 1 dated March 8, 2023.

Background Information

It is our understanding that due to the proposed parking area along the west property line, a steep slope is proposed to be excavated (steeper than the recommended 3H:1V). Therefore, Paterson was approached by Rosefellow to analyze the potential to build slopes with a maximum inclination of 1H:1V or 2H:1V and provide recommendations to ensure that the slope is achieved while maintaining the slope stability in the long term.

As part of our assessment of the subject slope, the following drawing was reviewed to retrieve proposed grading and the existing topography of the area:

- Project No. 119123-00, Drawing No. 119123-CGS - Conceptual Grading and Site Servicing, Revision 7 dated Jan 20, 2023, prepared by Novatech.

The following provides our assessment of the proposed slope and our recommendations during and post construction.

Slope Stability Assessment

Subsurface Conditions

Based on our geotechnical investigation findings, the subsurface profile across the western side of the subject site generally consists of topsoil underlain by a thin layer of silty sand fill. The above noted layers are followed by dense to very dense glacial till or a stiff to very stiff grey silty clay and followed by a layer of glacial till. The glacial till layer consists of brown to grey silty sand with gravel, cobbles and boulders with some clay which are underlain by bedrock.

Generally, based on the measured groundwater levels at each borehole location along with the colouring, consistency and moisture levels of the recovered samples, the groundwater table is expected to range between 2 to 4 m below existing grade. Reference should be made to the latest revision of the geotechnical Report PG6514-1 Revision 1 dated March 8, 2023.

Slope Stability Analysis methodology

The slope stability analysis was modeled in SLIDE, a computer program which permits a two-dimensional slope stability analysis calculating several limit equilibrium analysis methods, including but not limited, the Bishop's and Morgenstern-Price methods, which are widely accepted slope analyses methods. The program calculates a factor of safety, which represents the ratio of the forces resisting failure to forces favoring failure. The factor of safety displayed represents the lowest value calculated from the analysis results. Theoretically, a factor of safety of 1.0 represents a condition where the slope is stable. However, due to intrinsic limitations of the calculation methods and the variability of the subsurface soil and groundwater conditions, a factor of safety greater than 1.0 is generally required for the failure risk to be considered acceptable.

A minimum factor of safety of 1.5 is generally recommended for conditions where the slope failure would comprise permanent structures. An analysis considering seismic loading was also completed. A horizontal acceleration of 0.16 g was considered for the sections for the seismic loading condition. A factor of safety of 1.1 is considered to be satisfactory for stability analyses including seismic loading. It should be noted that only the figures with the lowest factor of safety are presented and considered the governing factors.

Two (2) slope scenarios (Sections A and B) were studied with the potential proposed inclination of 1H:1V or 2H:1V, respectively, for the proposed slopes to be located along the west side of the site. Conservatively, the subsurface layers were assumed to be fully saturated in order to achieve a factor of safety of 1.5 or higher while in the worst case scenario.

The cross-section locations are presented on Drawing PG6514-1 - Test Hole Location Plan attached to the end of this memorandum. It should be noted that details of the slope height and slope angle at the cross-section locations are presented in Figures 1A through 3B attached to the end of this report based on the proposed grading.

The parameters in Table 1 and 2 were used for the slope stability analysis under static and seismic conditions:

Table 1 - Soil Parameters – Static Conditions			
Soil Layer	**Unit Weight (kN/m^3)**	**Friction Angle (degrees)**	**Cohesion (kPa)**
Silty Sand Fill	19	35	
Silty Clay with Sand and Gravel	18	33	10
Glacial Till	20	38	5
Bedrock	24	-	-

Table 2 - Soil Parameters – Seismic Loading			
Soil Layer	**Unit Weight (kN/m^3)**	**Friction Angle (degrees)**	**Cohesion (kPa)**
Silty Sand Fill	19	35	
Silty Clay with Sand and Gravel	18	33	80
Glacial Till	20	38	5
Bedrock	24	-	-

Slope Stability Sections

Section A

Section A was drawn to form a slope with a maximum slope inclination of 1H:1V and an approximate horizontal distance of 6.5 m between the toe of the slope edge of the proposed curb. A 1 m wide swale was assumed to be located along the bottom of the slope at a depth of approximately 1 m below finished grade.

Two separate scenarios were analyzed to determine whether a 1H:1V slope is achievable given the available tight spacing present on site and are summarized as follows:

- The first Scenario (Figures 1A and 1B) assumed that the slope face will be covered by a geosynthetic system that would provide erosion control along the slope face.
- The second Scenario (Figures 2A and 2B) assumed that a 3.8 m deep geogrid wrapped, compacted granular fill layers placed in a tapered fashion along the face of the slope and separated vertically at 750 mm vertical spacing, would be built to support the 1H:1V slope face. The geogrid wrapped granular fill will contain a biaxial geogrid liner such as Terrafix TBX2500 or equivalent, wrapped around a minimum 750 mm thick layers of OPSS Granular B Type II compacted to 98% of the material's SPMDD. Reference should be made to the sketch presented below for this system.

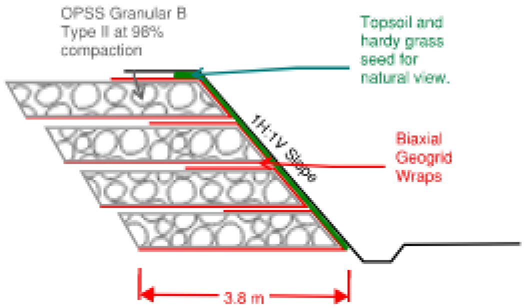

Figure 1- Sketch of the geogrid reinforced slope face

Section B

Section B was drawn with a maximum slope inclination of 2H:1V with an approximate horizontal distance of 3 m between the toe of the slope to the edge of the proposed curb. A 1 m wide swale was assumed to be located along the bottom of the slope at a depth of approximately 1 m below finished grade.

The analysis was completed with the assumption that the slope face will be supported by an erosion control system such as the use of GeoWeb cells penetrated into the slope face by a minimum of 150 mm below the slope face and backfilled with topsoil and hardy grass seed.

The results of the slope stability sections are summarized in the following section.

Slope Stability Analysis Results

The static analysis results for slope sections A and B are presented in Figures 1A, 2A, and 3A and attached to the end of this report. The factor of safety for both slope scenarios of Section A was less than the minimum acceptable factor of safety of 1.5 (Figures 1A and 2A). Whereas the factor of safety for Section B (Figure 3A) was found to be greater than 1.5 without the need to complete excessive work on the slope face beyond providing an erosion control system along the slope face.

Similarly, the slope stability analysis under seismic loading for Section A were less than the desired factor of safety of 1.1 while the analysis results for Section B indicate a safe slope under seismic conditions. Reference should be made to Figures 1B, 2B and 3B showing the results of the slope stability under seismic loading.

Conclusion and Recommendations

Based on the above analysis results, it is recommended that the slope be shaped to a minimum of 2H:1V or shallower. If a shallower slope of 1H:1V is required, the extent of the geogrid will be required to encroach into the City property. Provided that the client receives a written approval from the City to encroach, this option will not be viable.

It is highly recommended that an erosion control system be installed along the 2H:1V slope face consisting of the following:

- The slope face should be shaped to a minimum 2H:1V with the top of slope at an approximate elevation of 109 m down to an approximate elevation of 102.5 m.
- A swale should be excavated along the slope face with a positive outlet to ensure that the accumulated surface water runoff is drained away from the bottom of the slope.
- The swale should be backfilled with granular material consisting of OPSS Granular B Type II or rip-rap with a maximum particle size of 150 mm to allow for drainage and provide a sufficient toe protection against active erosion.
- The slope face should be covered with GeoWeb system by Presto, or equivalent, with a minimum cell depth of 150 mm penetrated into the slope face.

- ❑ The GeoWeb Cells should be backfilled with a minimum of 300 mm thick layer of topsoil followed by applying hardy grass seed to establish vegetation. Reference should be made to the attached GeoWeb data sheets.
- ❑ It is important to note that the placement of the topsoil layer and the application of the hardy grass seed should be completed during the fall season or after the spring thaw, away from freezing temperatures, to ensure a fast growth of roots into the slope face.
- ❑ Any existing trees located within the proposed slope alignment should remain in place as tree roots reinforce the stability of the slope face.

Field Inspections

All slope related field work should be overseen and approved by Paterson at the time of construction. It is recommended to contact Paterson if different soils than described in this report are encountered along the slope faces to provide additional recommendations, where required.

We trust that this information satisfies your requirements.

Best Regards,

Paterson Group Inc.

Escandar Abdullah B.Eng.

Faisal I. Abou-Seido, P.Eng.

Attachments:

- ❑ Presto Geoweb Data Sheets
- ❑ Slope Stability Analysis Figures 1A through 3B
- ❑ Drawing PG6514-1 – Test Hole Location Plan
- ❑ Conceptual Grading and Site Servicing, Revision 7 dated Jan 20, 2023, prepared by Novatech.

PRESTO GEOSYSTEMS®

Perforated GEOWEB® System
Performance & Material Specification Summary

	Property	Value		Test Method
Base Material	**Material Composition**	Polymer – Polyethylene with density of 58.4 - 60.2 lb/ft^3 (0.935 – 0.965 g/cm^3)		ASTM D 1505
	Color	Black - from Carbon Black	Tan, Green, Other colors with no heavy metal content	N/A
	Stabilizer	Carbon black content 1.5% - 2% by weight	Hindered amine light stabilizer (HALS) 1.0% by weight of carrier	N/A
	Minimum ESCR	5000 hr		ASTM D 1693
Strip Properties	**Sheet Thickness**	50 mil –5% +10%(1.27 mm -5% +10%)		ASTM D 5199
	Surface Treatment	**Performance:** The polyethylene strips shall be textured and perforated such that the peak friction angle between the surface of the textured / perforated plastic and #40 silica sand at 100% relative density shall be no less than 85% of the peak friction angle of the silica sand in isolation when tested by the direct shear method per ASTM D 5321.	**Material:** The polyethylene strips shall be textured with a multitude of rhomboidal (diamond shape) indentations. The rhomboidal indentations shall have a surface density of 140 – 200 per in^2 (22 – 31 per cm^2). In addition, the strips shall be perforated with horizontal rows of 0.4 in (10 mm) diameter holes. Perforations within each row shall be 0.75 in (19 mm) on-center. Horizontal rows shall be staggered and separated 0.50 in (12 mm) relative to the hole centers. The edge of strip to the nearest edge of perforation shall be 0.3 in (8 mm) minimum and the centerline of the weld to the nearest edge of perforation shall be 0.7 in (18 mm) minimum. A slot with a dimension of 3/8 in x 1 3/8 in (10 mm x 35 mm) is standard in the center of the non-perforated areas and at the center of each weld.	

Cell & Seam Properties

Cell Details	Percent Cell Wall Open Area	Nominal Dimensions ±10%		Density per yd^2 (m^2)	Nominal Area ±1%
		Length	Width		
GW20V	21.2% ±1.0%	8.8 in (224 mm)	10.2 in (259 mm)	28.9 yd^2 (34.6 m^2)	44.8 in^2 (289 cm^2)
GW30V	16.8% ±1.0%	11.3 in (287 mm)	12.6 in (320 mm)	18.2 yd^2 (21.7 m^2)	71.3 in^2 (460 cm^2)
GW40V	19.89% ±1.0%	18.7 in (475 mm)	20.0 in (508 mm)	6.9 yd^2 (8.3 m^2)	187.0 in^2 (1,206 cm^2)

Short-term Seam Peel Strength	Cell Depth	Minimum Certified Cell Seam Strength
	3 in (75 mm)	240 lbf (1060 N)
	4 in (100 mm)	320 lbf (1420 N)
	6 in (150 mm)	480 lbf (2130 N)
	8 in (200 mm)	640 lbf (2840 N)

Property	Value
Long-term Seam Peel Strength	Long term seam peel-strength test shall be performed on all resin or pre-manufactured sheet or strips. A 4.0 in (100 mm) wide seam sample shall support a 160 lb (72.5 kg) load for a period of 168 hours (7 days) minimum in a temperature-controlled environment undergoing a temperature change on a 1-hour cycle from ambient room to 130°F (54°C). Ambient room temperature is per ASTM E 41.
10,000 hour Seam Peel Strength Certification	Presto shall provide data showing that the high-density polyethylene resin used to produce the GEOWEB® sections has been tested using an appropriate number of seam samples and varying loads to generate data indicating that the seam peel strength shall survive a loading of at least 209 lbf (95 kg) for a minimum of 10,000 hours.

Section Properties

Section Dimension	Section Width	Section Length Range (Cells Long: 18, 21, 25, 29, 34)	
	Variable	Minimum	Maximum
GW20V	7.7 ft (2.3 m) to 9.2 ft (2.8 m)	12.0 ft (3.7 m)	27.3 ft (8.3 m)
GW30V		15.4 ft (4.7 m)	35.1 ft (10.7 m)
GW40V		25.4 ft (7.7 m)	58.2 ft (17.8 m)

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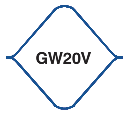
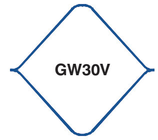
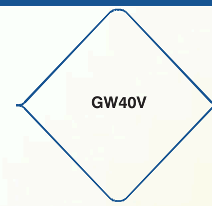
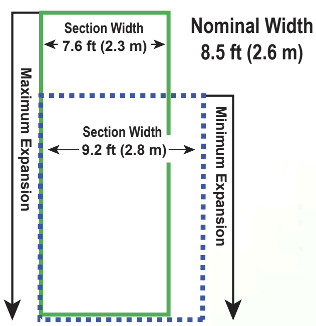
The GEOWEB® Cell Dimensions

Relative Size[1]				
Name	**GW20V (small cell)**	**GW30V (mid cell)** For all other Applications	For Earth Retention[4]	**GW40V (large cell)**
Nominal Length x Width[2]	8.8 x 10.2 in (224 x 259 mm)	11.3 x 12.6 in (287 x 320 mm)	10.5 x 13.0 in (267 x 330 mm)	18.7 x 20.0 in (475 x 508 mm)
Nominal Area[3]	44.8 in^2 (289 cm^2)	71.3 in^2 (460 cm^2)	68.3 in^2 (440 cm^2)	187.0 in^2 (1206 cm^2)
Cells per yd^2 (m^2)	28.9 (34.6)	18.2 (21.7)	NA	6.9 (8.3)
Nominal Depths	3 in (75 mm), 4 in (100 mm), 6 in (150 mm), and 8 in (200 mm) for all cells			

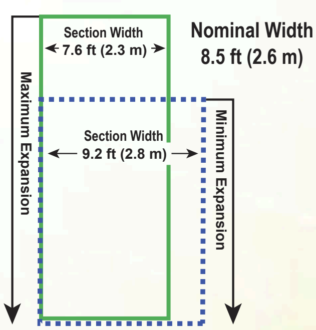
1 All details and dimensions are nominal and subject to manufacturing tolerances.
2 Cell length and width will vary approximately ±10% through the recommended expansion range.
3 Cell area will vary only ±1% through the recommended section expansion range.
4 Cell dimensions for Earth Retention sections are fixed and NOT variable or nominal.

The GW20V Section Dimensions



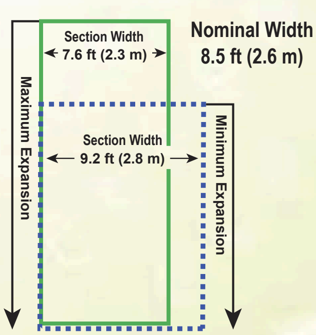
Cells Long	Length Minimum Expansion	Nominal Length	Length Maximum Expansion	Nominal Area
18	12.0 ft (3.7 m)	13 ft (4.0 m)	14.5 ft (4.4 m)	112 ft^2 (10.4 m^2)
21	4.0 ft (4.3 m)	15 ft (4.7 m)	16.9 ft (5.1 m)	131 ft^2 (12.1 m^2)
25	6.7 ft (5.1 m)	18 ft (5.6 m)	20.1 ft (6.1 m)	156 ft^2 (14.5 m^2)
29	9.4 ft (5.9 m)	21ft (6.5 m)	23.3 ft (7.1 m)	181 ft^2 (16.8 m^2)
34	22.7 ft (6.9 m)	25 ft (7.6 m)	27.3 ft (8.3 m)	212 ft^2 (19.7 m^2)

The GW30V Section Dimensions

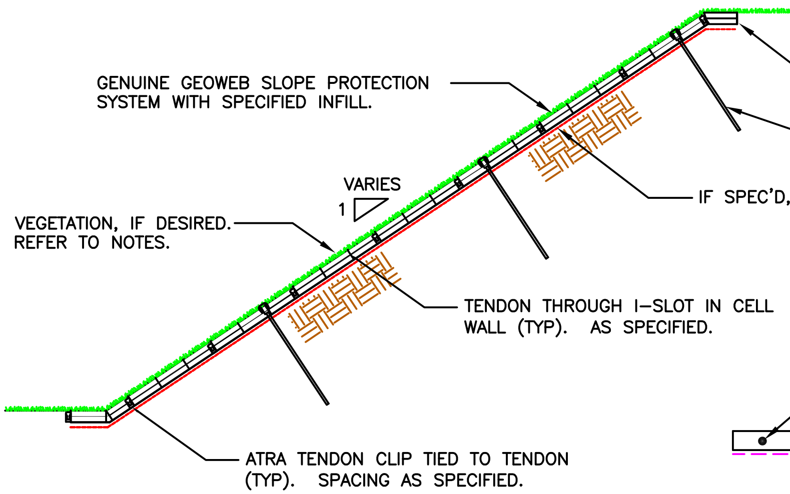


Cells Long	Length Minimum Expansion	Nominal Length	Length Maximum Expansion	Nominal Area
18	15.4 ft (4.7 m)	17 ft (5.1 m)	18.6 ft (5.7 m)	143 ft^2 (13.3 m^2)
21	18.0 ft (5.5 m)	20 ft (6.0 m)	21.7 ft (6.6 m)	167 ft^2 (15.5 m^2)
25	21.4 ft (6.5 m)	23 ft (7.1 m)	25.8 ft (7.9 m)	198 ft^2 (18.4 m^2)
29	24.8 ft (7.6 m)	27 ft (8.2 m)	30.0 ft (9.1 m)	230 ft^2 (21.4 m^2)
34	29.1 ft (8.9 m)	32 ft (9.6 m)	35.1 ft (10.7 m)	270 ft^2 (25.0 m^2)

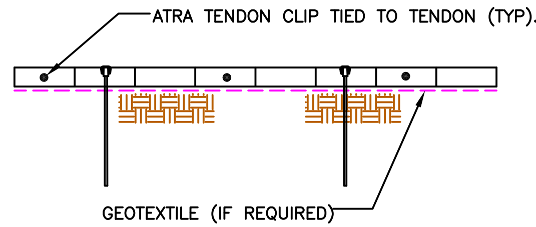
The GW40V Section Dimensions



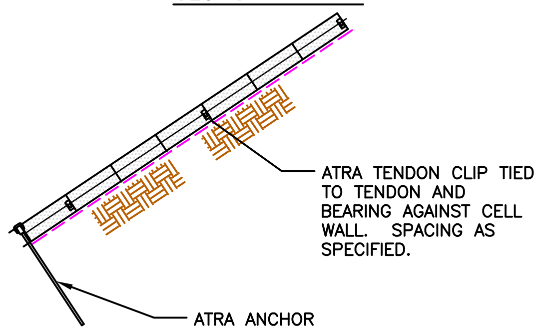
Cells Long	Length Minimum Expansion	Nominal Length	Length Maximum Expansion	Nominal Area
18	25.4 ft (7.7 m)	28 ft (8.3 m)	30.8 ft (9.4 m)	234 ft^2 (21.7 m^2)
21	29.6 ft (9.0 m)	32 ft (9.7 m)	36.0 ft (11.0 m)	273 ft^2 (25.3 m^2)
25	35.2 ft (10.7 m)	38 ft (11.6 m)	42.8 ft (13.1 m)	325 ft^2 (30.2 m^2)
29	40.9 ft (12.5 m)	44 ft (13.5 m)	49.7 ft (15.1 m)	377 ft^2 (35.0 m^2)
34	47.9 ft (14.6 m)	52 ft (15.8 m)	58.2 ft (17.8 m)	441 ft^2 (41.0 m^2)



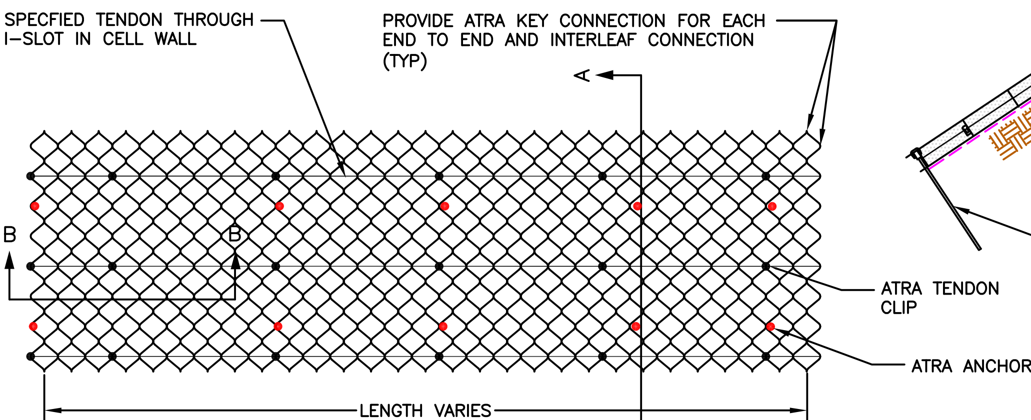
TYPICAL TENDON ANCHOR SYSTEM



SECTION A – A



SECTION B – B



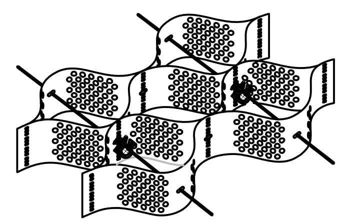
PLAN VIEW

NOTES:

1. THE TYPE AND QUANTITY OF TENDONS AND ATRA ANCHORS SHALL BE AS SPECIFIED.
2. THE GEOWEB SHALL BE FILLED WITH THE SPECIFIED MATERIAL (TOPSOIL, STONE, OR CONCRETE) AND SHALL BE SUITABLE TO WITHSTAND THE APPLICABLE HYDRAULIC CONDITIONS.
3. THE GEOWEB SECTIONS SHALL BE ANCHORED TO RESIST SLIDING DUE TO DRIVING AND HYDRAULIC FORCES.
4. IF VEGETATION IS DESIRED, PROVIDE AN EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT IF THERE IS A POTENTIAL FOR WASH-OUT PRIOR TO ESTABLISHING VEGETATION.
5. THE GEOWEB PANELS SHALL BE CONNECTED WITH ATRA KEYS AT EACH INTERLEAF AND END TO END CONNECTION.
6. REFER TO THE GENERAL DETAIL DRAWINGS FOR ANCHOR DETAILS.

TENDON DATA

TENDON TYPE	WIDTH, IN(MM)	BREAK STRENGTH, LBF (KN)
POLYESTER		
TP-31	0.50 (13)	700 (3.11)
TP-67	0.75 (19)	1506 (6.70)
TP-93	0.75 (19)	2090 (9.30)
KEVLAR		
TK-89	0.375 (10)	2000 (8.90)
TK-133	0.625 (16)	3000 (13.34)
TK-189	0.75 (19)	4000 (17.8)



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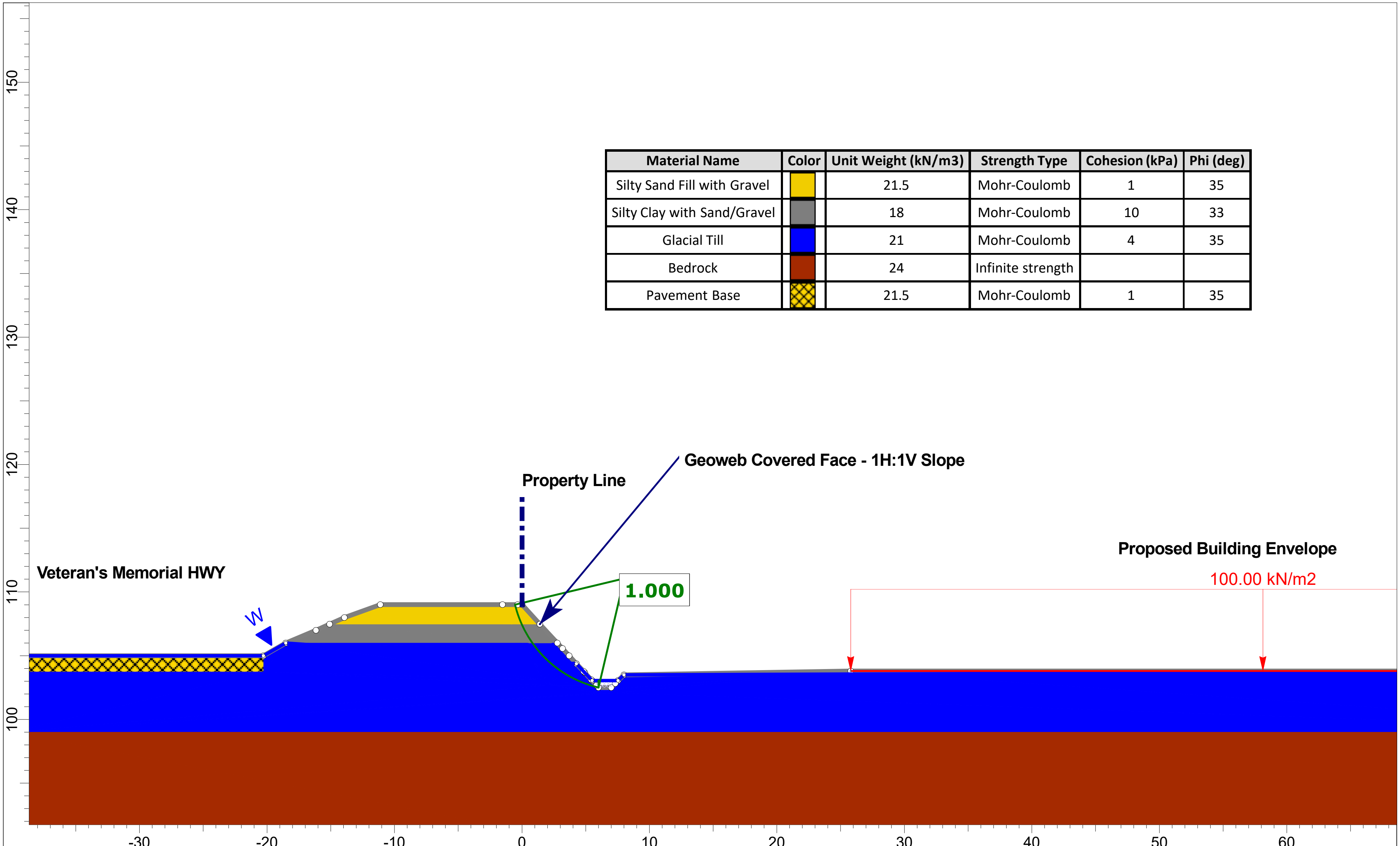
GENUINE GEOWEB®
SLOPE – TENDON/ATRA ANCHORAGE

DATE	JUNE 2013	FILE NAME	GWSL6F.DWG
SCALE	NTS	SHEET 1	

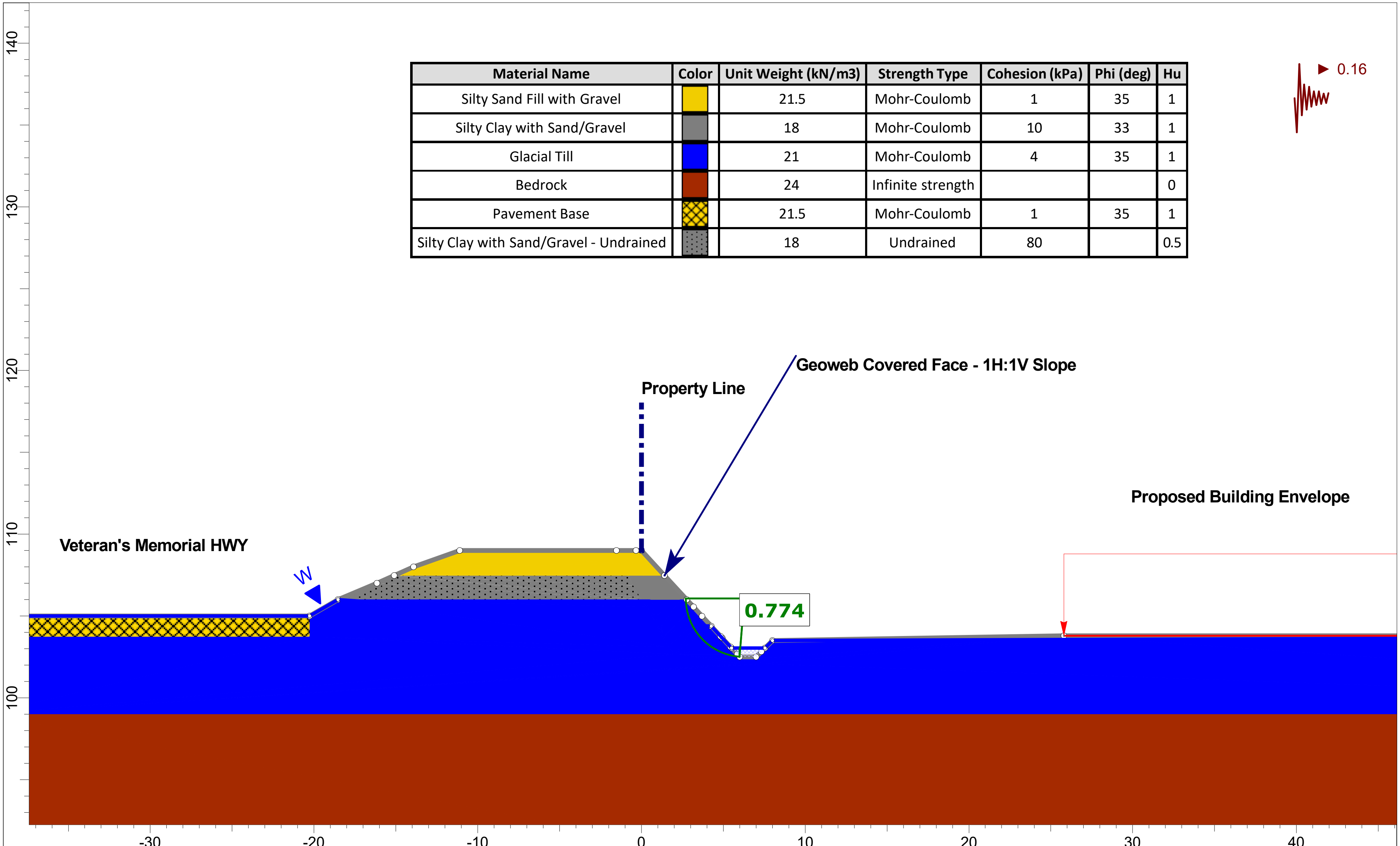


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)
Silty Sand Fill with Gravel		21.5	Mohr-Coulomb	1	35
Silty Clay with Sand/Gravel		18	Mohr-Coulomb	10	33
Glacial Till		21	Mohr-Coulomb	4	35
Bedrock		24	Infinite strength		
Pavement Base		21.5	Mohr-Coulomb	1	35

PATERSON GROUP

SLIDEINTERPRET 9.025

Project	**Proposed Commercial Development**
Figure No.	**Figure 1A - Section A - No Support - Static Conditions**
Drawn By	Faisal I. Abou-Seido, P.Eng.
Company	Paterson Group
Date	Thu, 2023-03-09, 12:34:08 PM
File Name	Section A - 1H to 1V Slopes.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Hu
Silty Sand Fill with Gravel		21.5	Mohr-Coulomb	1	35	1
Silty Clay with Sand/Gravel		18	Mohr-Coulomb	10	33	1
Glacial Till		21	Mohr-Coulomb	4	35	1
Bedrock		24	Infinite strength			0
Pavement Base		21.5	Mohr-Coulomb	1	35	1
Silty Clay with Sand/Gravel - Undrained		18	Undrained	80		0.5

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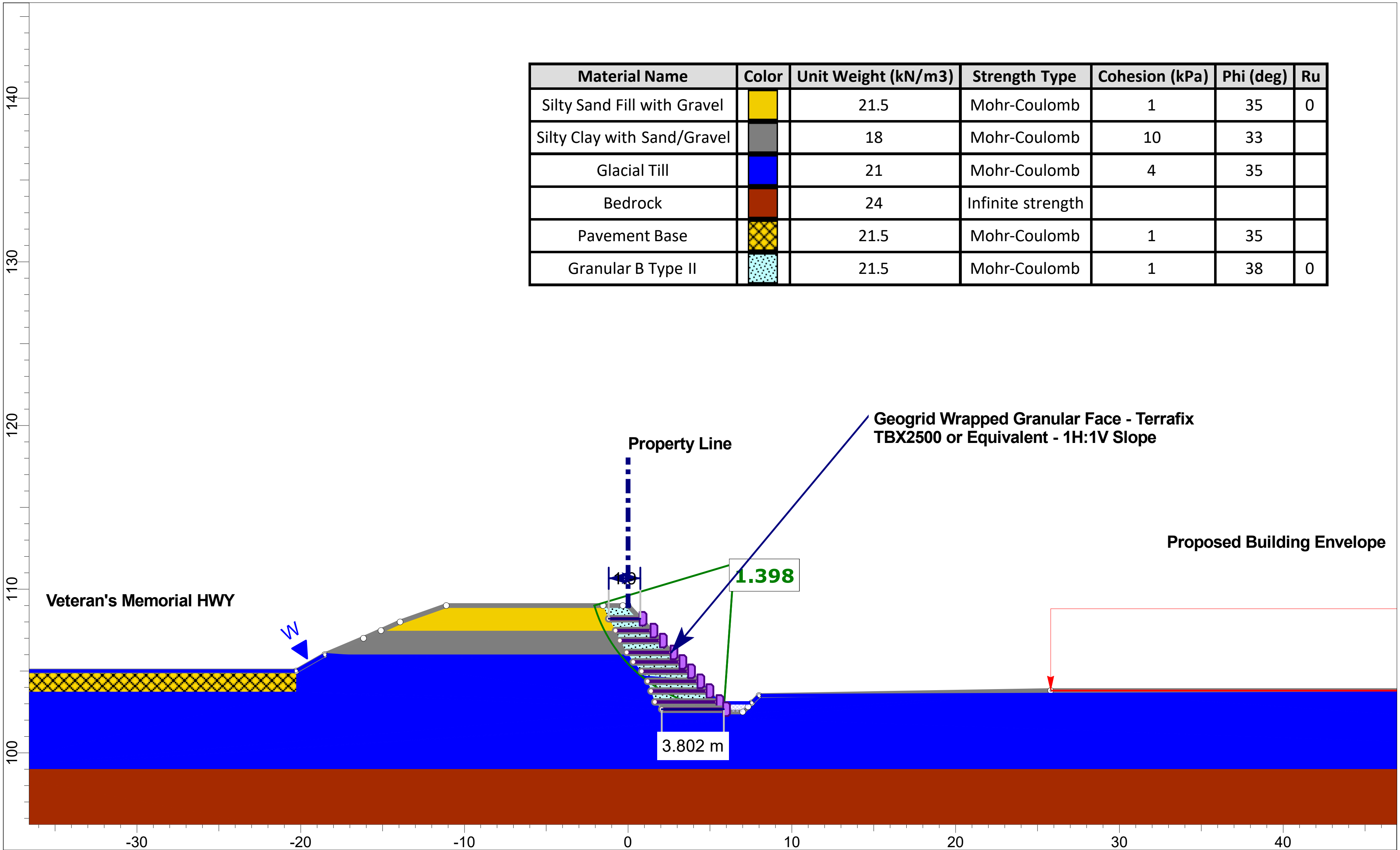
SLIDEINTERPRET 9.025

Project	**Proposed Commercial Development**		
Figure No.	**Figure 1B - Section A - No Support - Seismic Loading**		
Drawn By	Faisal I. Abou-Seido, P.Eng.	*Company*	Paterson Group
Date	Thu, 2023-03-09, 12:34:08 PM	*File Name*	Section A - 1H to 1V Slopes.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Ru
Silty Sand Fill with Gravel		21.5	Mohr-Coulomb	1	35	0
Silty Clay with Sand/Gravel		18	Mohr-Coulomb	10	33	
Glacial Till		21	Mohr-Coulomb	4	35	
Bedrock		24	Infinite strength			
Pavement Base		21.5	Mohr-Coulomb	1	35	
Granular B Type II		21.5	Mohr-Coulomb	1	38	0

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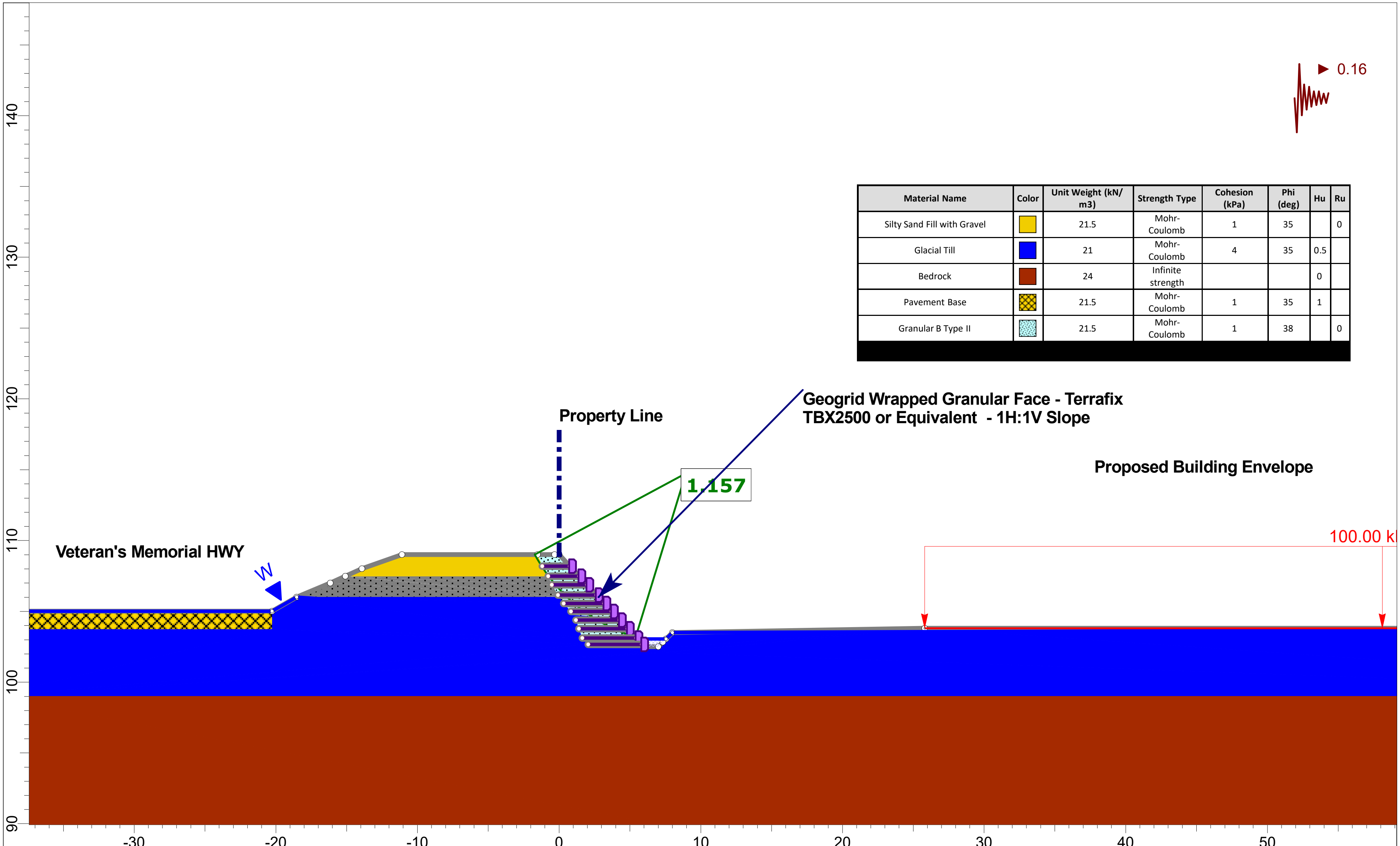
Project	**Proposed Commercial Development**		
Figure No.	**Figure 2A - Section A -Geogrid Raps Along Slope Face - Static Conditions**		
Drawn By	Faisal I. Abou-Seido, P.Eng.	*Company*	Paterson Group
Date	Thu, 2023-03-09, 12:34:08 PM	*File Name*	Section A - 1H to 1V Slopes.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Hu	Ru
Silty Sand Fill with Gravel		21.5	Mohr-Coulomb	1	35		0
Glacial Till		21	Mohr-Coulomb	4	35	0.5	
Bedrock		24	Infinite strength			0	
Pavement Base		21.5	Mohr-Coulomb	1	35	1	
Granular B Type II		21.5	Mohr-Coulomb	1	38		0

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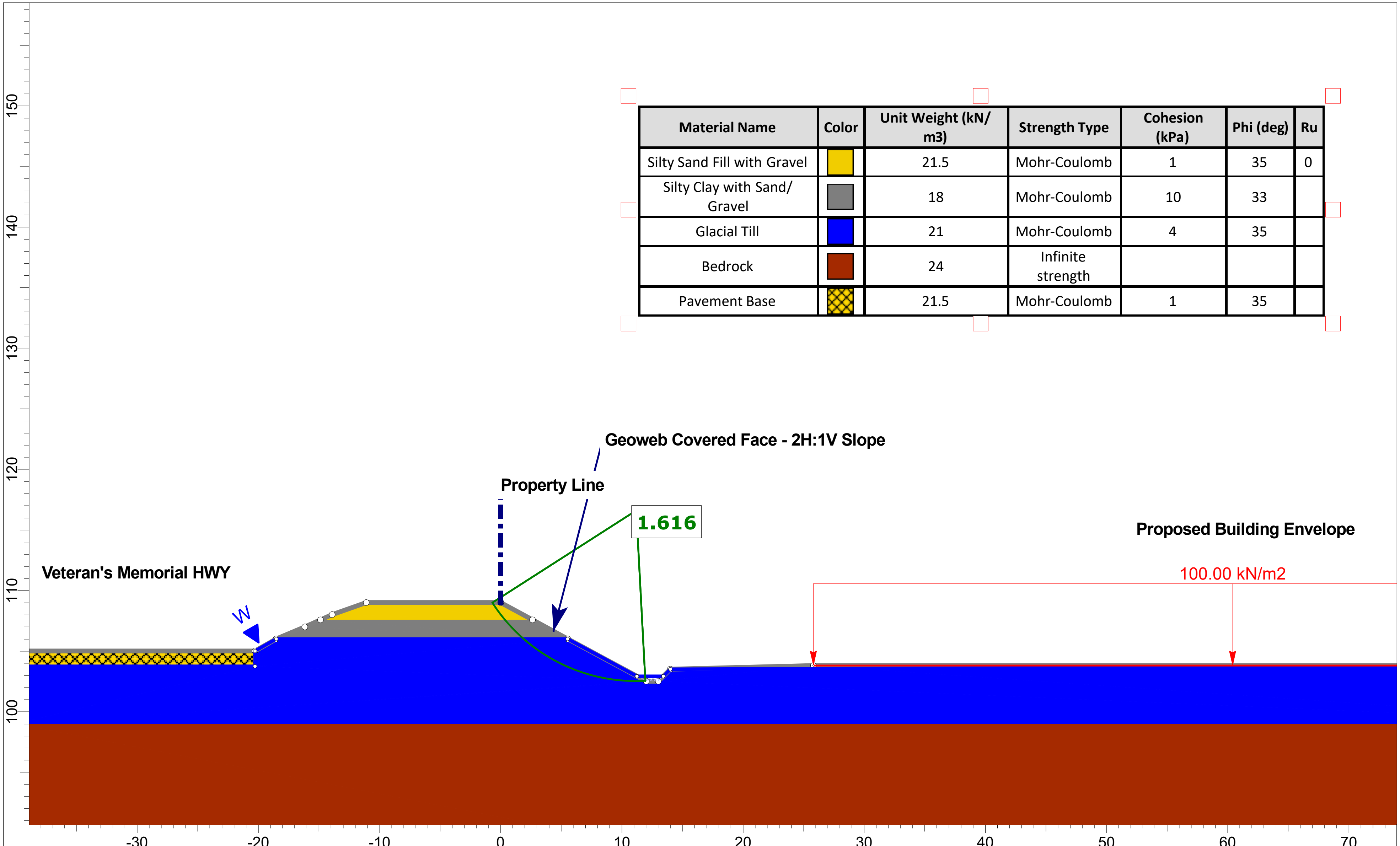
SLIDEINTERPRET 9.025

Project	**Proposed Commercial Development**
Figure No.	**Figure 2B - Section A - Geogrid Raps Along Slope Face - Seismic Loading**
Drawn By	Faisal I. Abou-Seido, P.Eng.
Company	Paterson Group
Date	Thu, 2023-03-09, 12:34:08 PM
File Name	Section A - 1H to 1V Slopes.slmd

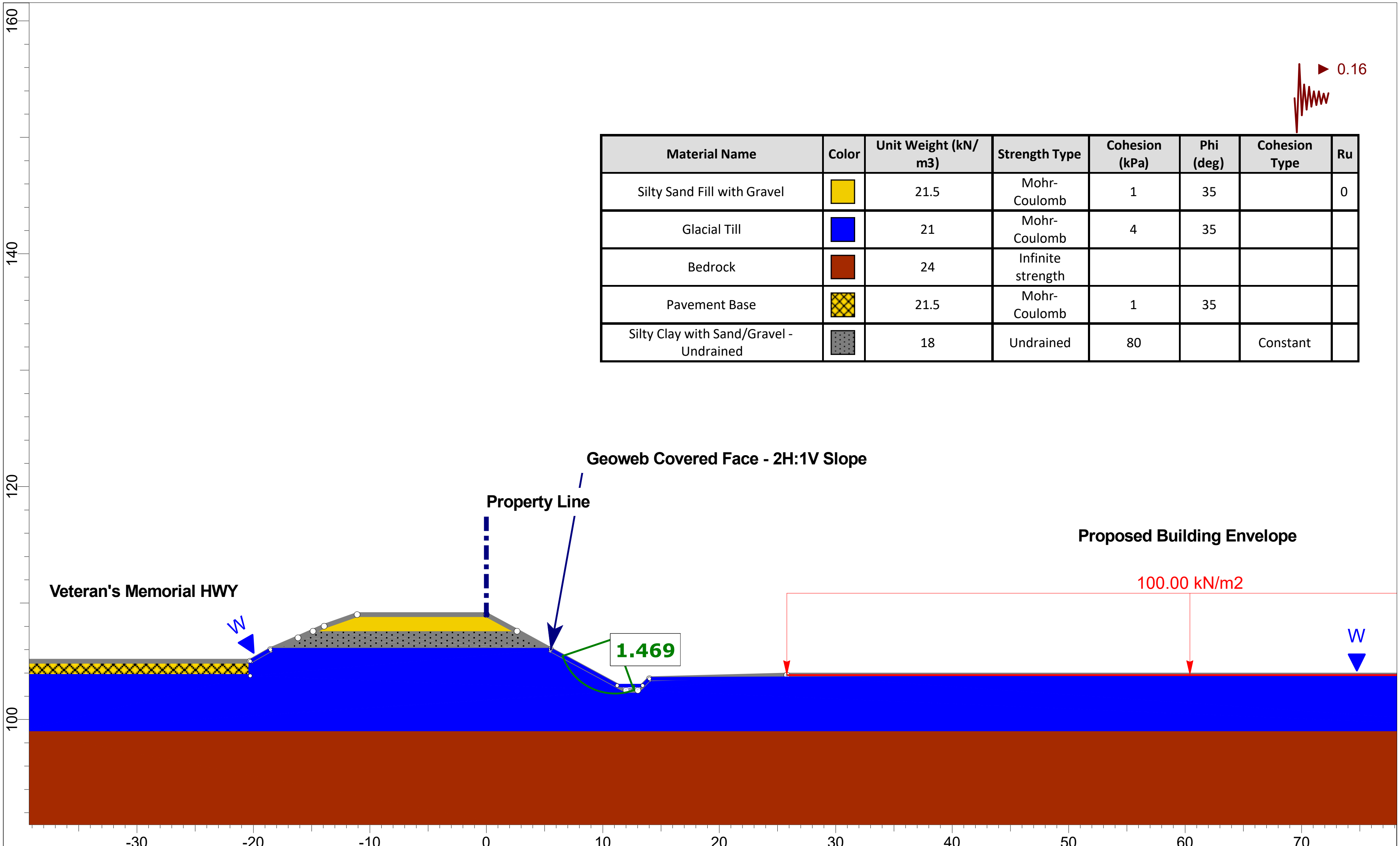


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Ru
Silty Sand Fill with Gravel		21.5	Mohr-Coulomb	1	35	0
Silty Clay with Sand/Gravel		18	Mohr-Coulomb	10	33	
Glacial Till		21	Mohr-Coulomb	4	35	
Bedrock		24	Infinite strength			
Pavement Base		21.5	Mohr-Coulomb	1	35	

PATERSON GROUP

SLIDEINTERPRET 9.025

Project	**Proposed Commercial Development**		
Figure No.	**Figure 3A - Section B - GeoWeb on Slope Face - Static Conditions**		
Drawn By	Faisal I. Abou-Seido, P.Eng.	*Company*	Paterson Group
Date	Thu, 2023-03-09, 12:34:08 PM	*File Name*	Section A - 1H to 1V Slopes.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Cohesion Type	Ru
Silty Sand Fill with Gravel		21.5	Mohr-Coulomb	1	35		0
Glacial Till		21	Mohr-Coulomb	4	35		
Bedrock		24	Infinite strength				
Pavement Base		21.5	Mohr-Coulomb	1	35		
Silty Clay with Sand/Gravel - Undrained		18	Undrained	80		Constant	

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SLIDEINTERPRET 9.025

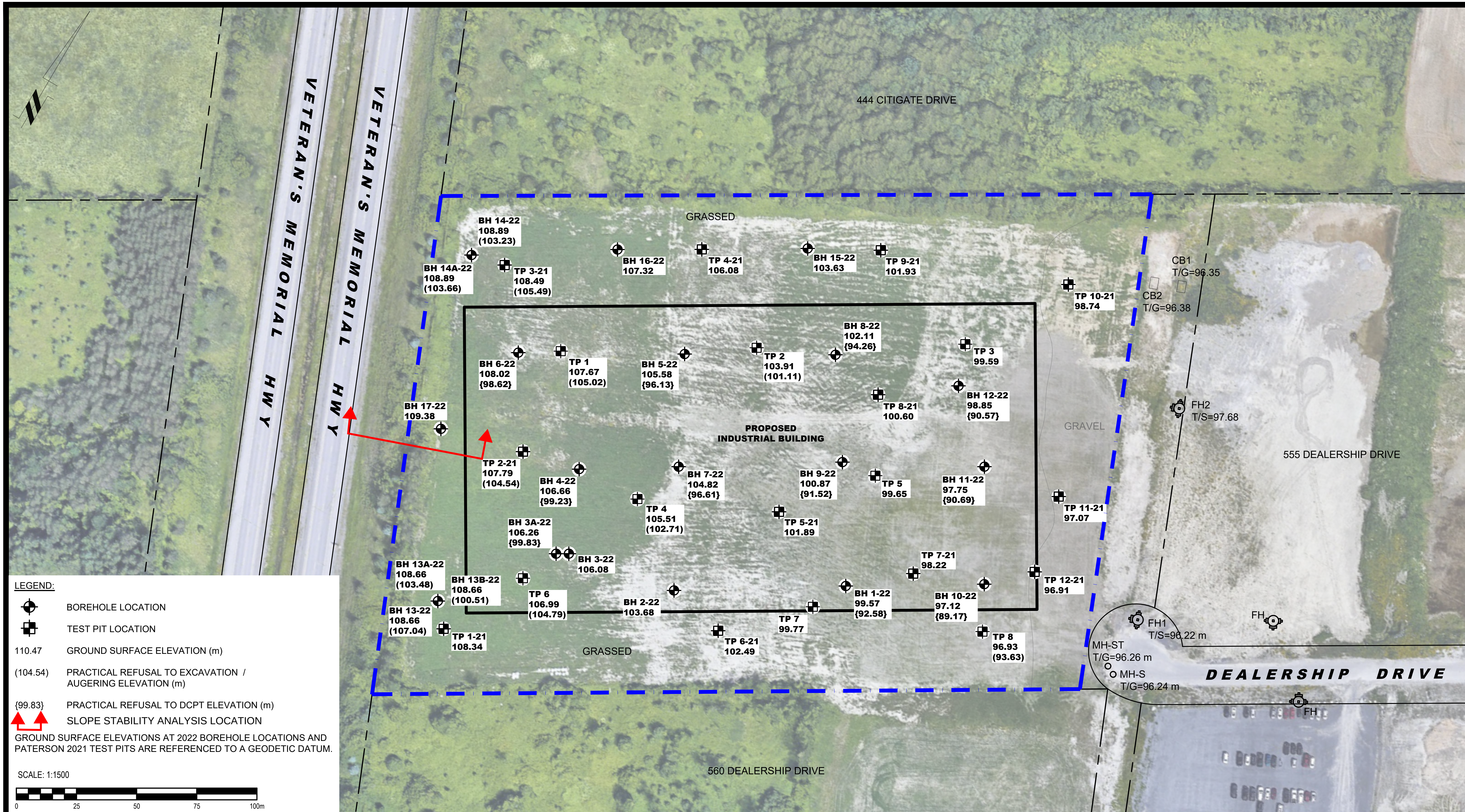
Project

Proposed Commercial Development

Figure No.

Figure 3B - Section B - GeoWeb on Slope Face - Seismic Loading

Drawn By	Faisal I. Abou-Seido, P.Eng.	*Company*	Paterson Group
Date	Thu, 2023-03-09, 12:34:08 PM	*File Name*	Section A - 1H to 1V Slopes.slmd



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	BH 13-22 - BH 17-22 ADDED TO PLAN	05/01/2023	MS

RF OTTAWA LIMITED PARTNERSHIP C/O ROSEFELLOW DEVELOPMENTS

GEOTECHNICAL INVESTIGATION
PROPOSED COMMERCIAL DEVELOPMENT
575 DEALERSHIP DRIVE

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

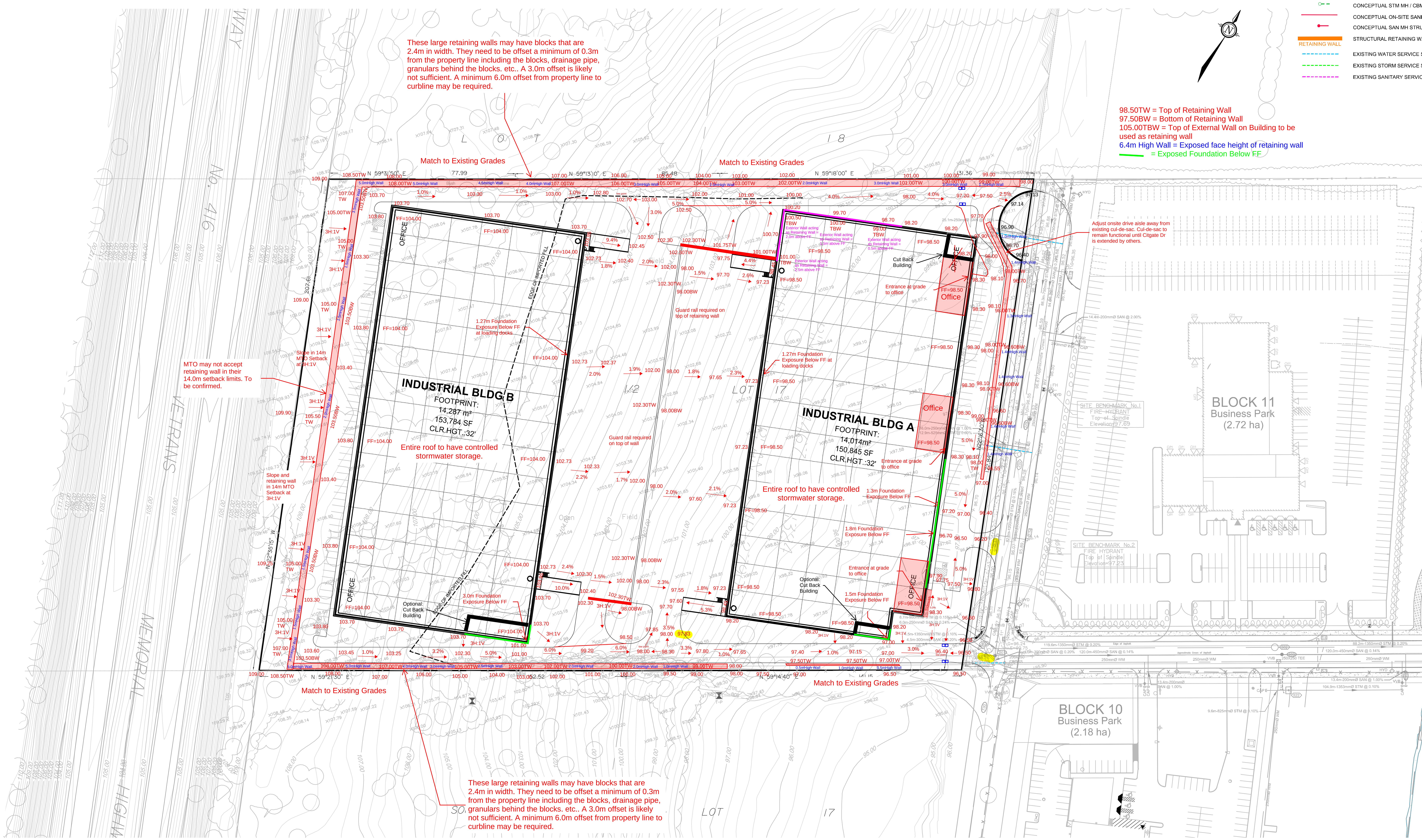
Scale: 1:1500	Date: 12/2022
Drawn by: YA	Report No.: PG6514-1
Checked by: MS	Dwg. No.: PG6514-1
Approved by: DJG	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg65xx\pg6514\pg6514-1 test hole location plan rev 1.dwg

LEGEND

	CONCEPTUAL ON-SITE WATERMAIN
HYD	CONCEPTUAL FIRE HYDRANT AND VALVE BOX
	CONCEPTUAL ON-SITE STORM SEWER
	CONCEPTUAL STM MH / CBMH STRUCTURE
	CONCEPTUAL ON-SITE SANITARY SEWER
	CONCEPTUAL SAN MH STRUCTURE
RETAINING WALL	STRUCTURAL RETAINING WALL
	EXISTING WATER SERVICE STUB
	EXISTING STORM SERVICE STUB
	EXISTING SANITARY SERVICE STUB



NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, 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.

No.	REVISION	DATE	BY
9.	REVISE GRADING	JAN 25/23	DDB
8	PRELIMINARY GRADING COORDINATION SS07B	JAN 20/23	_
7	PRELIMINARY GRADING COORDINATION SS03A	JAN 17/23	_
6	PRELIMINARY GRADING COORDINATION SS03	JAN 10/23	_
5	PRELIMINARY GRADING COORDINATION SS02	DEC 21/22	_
4	PRELIMINARY GRADING OPT 2 COORDINATION	DEC 05/22	_
3	PRELIMINARY GRADING & SERVICING COORDINATION	NOV 30/22	_
2	PRELIMINARY GRADING & SERVICING COORDINATION	NOV 15/22	_
1	PRELIMINARY DUE DILIGENCE INFORMATION	JUL 21/22	DDB

SCALE 1:750

1:750
0 10 20 30

DESIGN DDB / SM
CHECKED DDB
DRAWN SM
CHECKED DDB / SM
APPROVED DDB

FOR REVIEW ONLY

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Website www.novatech-eng.com

LOCATION
CITY of OTTAWA
575 DEALERSHIP DRIVE

DRAWING NAME
CONCEPTUAL GRADING AND SITE SERVICING

PROJECT No. 119123-00
REV REV # 7
DRAWING No. 119123-CGS

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