PATERSON GROUP

memorandum

re: **Global Stability Analysis – Proposed Retaining Walls**
Proposed Residential Building
4828 Bank Street – Ottawa, Ontario

to: Zayoun Group – **Raad Akrawri** – raad@zayoungroup.com

to: Maverick Development Corporation – **Paul Paglialunga** – paul@maverickdevelopments.com

date: May 26, 2025

file: PG7262-MEMO.02

Further to your request and authorization, Paterson Group (Paterson) prepared the following memorandum to provide a geotechnical review and complete global stability analysis of the proposed stone strong retaining walls. The current memorandum should be read in conjunction with Paterson Group Report PG7262-1 Revision 2, dated April 11, 2025.

1.0 Background Information

As requested, Paterson Group (Paterson) completed the geotechnical review of the proposed stone strong retaining wall systems to be located at the aforementioned development. The stone strong retaining wall system has been checked for global stability, considering the preliminary site constraints and grading to date. The analysis was completed for the worst-case scenario (with the highest wall section on grading plans) as per the Canadian Highway and Bridge Design Code (CHBDC) 2019.

The following grading plan, prepared by Novatech, was considered as part of our geotechnical review of the proposed retaining wall:

- ❑ Grading and Erosion & Sediment Control Plan – Project No. 124107 – Drawing No. 124107-GR1 – Revision No. 2, dated April 10, 2025.

Based on our review, the exposed portions of the subject stone strong retaining walls vary in height between 0.5 m to 2.3 m, located on the north and east property boundaries of the subject site. The global stability of retaining walls higher than 1.0 m should be assessed by a professional engineer, as per the City of Ottawa retaining wall design standards. Two retaining wall sections (the highest section from each retaining wall), with two different soil conditions across the site, have been used in this preliminary analysis for a conservative, given the significance of the retaining walls in relation to the adjacent property. Reference should be made to the markup plan, attached to the current memorandum, for the location of the cross sections.

Retaining Wall System Stability

The proposed retaining walls have been verified for global stability and have an adequate factor of safety in excess of the required 1.5 for static conditions and 1.1 for seismic loading conditions. The applicable seismic design incorporates a PGA of 0.351, as per NBCC 2020.

Bearing Resistance Value

Geotechnical field review must be completed at the time of excavation, prior to placing the granular bedding layer, to assess the bearing medium under the proposed wall.

The bearing resistances provided in Table 1 are applicable to the proposed retaining wall. The soil parameters presented in Tables 2 and 3 should be used for the design of the retaining wall.

Table 1 - Bearing Resistance Values

Bearing Surface	Bearing Resistance Value at SLS (kPa)	Factored Bearing Resistance Value at ULS (kPa)
Approved Engineered Fill Over an Undisturbed In-Situ Soil Bearing Surface	150	225
Undisturbed, Compact Silty Sand	150	225
Undisturbed, Compact to Very Dense Glacial Till	250	350
Clean, Surface Sounded Sandstone and Dolomite Bedrock	-	3000

The bearing medium at the subgrade level for the retaining wall should consist of a minimum 300 mm granular pad placed over an undisturbed in-situ soil bearing surface, and/or compact silty sand and/or undisturbed, compact to very dense glacial till, and/or clean, surface sounded sandstone and dolomite bedrock.

Any loose sandy material, where free of significant amounts of organic material, should be proof rolled by a vibratory roller making several passes under dry and above-freezing conditions, and reviewed and approved by Paterson Group at the time of construction. Provided that minimal flexing is observed the sand layer can be left in place as subgrade for retaining walls.

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 the granular base.

A clean, surface-sounded bedrock bearing surface should be free of loose materials, and have no near surface seams, voids, fissures, or open joints which can be detected from surface sounding with a rock hammer.

2.0 Global Stability Analysis

The global stability analysis was modeled using SLIDE2, a computer program which permits a two-dimensional slope stability analysis using several limit equilibrium analysis methods, which are widely used and accepted analysis methods. The program calculates a factor of safety, which represents the ratio of the forces resisting failure to those favoring failure. 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 subsoil and groundwater conditions, a factor of safety greater than one is usually required to ascertain the risks of failure are acceptable. A minimum factor of safety of 1.5 is generally recommended for conditions where the failure of the slope would endanger permanent structures.

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 0.176 g (which is taken as 0.5 of the area's peak ground acceleration (PGA)), 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.

The retaining wall section was reviewed using the design loading according to CHBDC 2019.

Two representative sections (one of each retaining wall proposed) were evaluated as worst-case scenarios for each soil and loading possible to be encountered on site.

Section A represents the highest overall section for the proposed retaining wall located on the north and east side of the subject site. The highest section is approximately 2.3 m in height. The soil along that area was found to consist of a layer of topsoil underlain by 0.7 m of loose, brown, silty sand. The silty sand layer is underlain by very dense, glacial till over bedrock. The bedrock is located at an approximate elevation of 93.3 to 94.2 m.

Section B represents the highest overall section for the proposed retaining wall located on the east side of the site. The highest section is approximately 1.7 m in height. The soil along that area was found to consist of a layer of topsoil underlain by 1.4 m of loose, brown, silty sand. The silty sand layer is underlain by dense to very dense, glacial till over bedrock. The bedrock is located at an approximate elevation of 95.2 m.

Reference should be made to above noted geotechnical report (Paterson Group Report PG7262-1 Revision 2, dated April 11, 2025) for the subsurface profile at the location of cross sections A and B.

The following parameters were used for the slope stability analysis under static and seismic conditions:

Table 2 - Effective Soil Parameters for Stability Analysis

Soil Layer	Unit Weight (kN/m^3)	Friction Angle (degrees)	Cohesion (kPa)
Engineered Fill	19	30	1
OPSS Granular B Type II	22	38	0
Silty Sand	18	33	2
Glacial Till	21.5	36	2

The total strength parameters for seismic analysis were chosen based on the in situ, undrained shear strengths recovered within the open boreholes completed at the time of our geotechnical investigation and based on our general knowledge of the geology in the area. The following parameters presented in Table 3 below were used for the slope stability analysis under seismic conditions.

Table 3 - Total Strength Soil Parameters for Seismic Analysis

Soil Layer	Unit Weight (kN/m^3)	Friction Angle (degrees)	Cohesion (kPa)
Engineered Fill	19	30	1
OPSS Granular B Type II	22	38	0
Silty Sand	18	33	2
Glacial Till	21.5	36	2

Analysis Results

The factor of safety for the retaining wall sections was found to be greater than 1.5 for static conditions. Similarly, the results under seismic loading yielded a factor of safety for this section greater than 1.1. Based on these results, the retaining wall design is considered suitable from a geotechnical perspective. Reference should be made to Figures 1A to 2B for the results of the global slope stability analysis, attached to the current memorandum.

3.0 Geotechnical Recommendations

Backfill Material

The retaining wall should be backfilled with free-draining granular backfill materials and incorporate longitudinal drains and weep holes to provide positive drainage for the accumulated surface water within the backfill material of the retaining wall. For the purpose of this report, it is recommended that the wall be backfilled with either OPSS Granular B Type II or Granular A materials.

The backfill should be placed within a wedge-shaped zone defined by a line drawn up and back from the back edge of the base block of the wall at an inclination of 1H:1V or a minimum of 1 m behind the back of the blocks, unless otherwise noted in the design drawing. All material should be compacted to a minimum of 95% of the material's SPMDD.

A non-woven geotextile liner such as Terrafix 270R or equivalent should be placed between the backfill material and the retained soil to ensure that the backfill material can retain its free draining characteristics.

The wall should be design with a minimum toe embedement of 200 mm.

Drainage

A 100 mm diameter perforated drainage pipe wrapped in geotextile such as Terrafix 270R or equivalent approved other, surrounded on all sides by 150 mm of clear crushed stone, should be installed at the heel of the bottom block. The drainage system should have outlets through the wall to drain at a nearby catch basin, drainage ditch or ground surface. Drainage outlets should be spaced at minimum intervals of 10 m.

Lateral Earth Pressures

It is recommended that a minimum of 1 m of the backfill material consist of clean imported engineered crushed stone such as OPSS Granular A or Granular B Type II. The soil parameters presented in Table 2 should be used for the design of the retaining wall.

Table 4 - Geotechnical Parameters for backfill material

Material Description	Unit Weight (kN/m³)		Friction Angle () φ'	Friction Factor, tan δ	Earth Pressure Coefficients		
	Drained γ_{dr}	Effective γ'			Active K_a	At-Rest K_o	Passive K_P
OPSS Granular A (Crushed Stone)	22	13.5	36	0.6	0.26	0.41	3.85
OPSS Granular B Type II (Crushed Stone)	22	13.5	38	0.6	0.24	0.38	4.20

Notes:
- Properties for fill materials are for a condition of 98% of the standard Proctor maximum dry density.
- The earth pressure coefficients provided are for a horizontal backfill profile.
- For soil above the groundwater level, the “drained” unit weight should be used, and below the groundwater level, the “effective” unit weight should be used.

4.0 Construction Recommendations

It is recommended that the following be completed once the retaining wall design and course of action are determined:

- ❑ Observation of all bearing surfaces prior to backfill placement.
- ❑ Observation of all subgrades prior to placing backfilling materials.
- ❑ Observation of the drainage system prior to backfilling.
- ❑ Field density tests to ensure the specified level of compaction was achieved.
- ❑ Periodic observation of the retaining wall installation, especially at the first course.

It is further recommended that all bedding and backfill materials be placed under dry conditions and above freezing temperatures and approved by the geotechnical consultant at the time of construction. Precautions should be taken to ensure that the bedding material does not freeze before placement of the retaining wall blocks, which could lead to detrimental movement within the retaining wall once the frost leaves the bedding material.

A report confirming that these works have been conducted in general accordance with Paterson’s recommendations could be issued upon request, following the completion of a satisfactory material testing and observation program by the geotechnical consultant.

We trust the current memorandum satisfies your immediate requirements.

Best Regards,

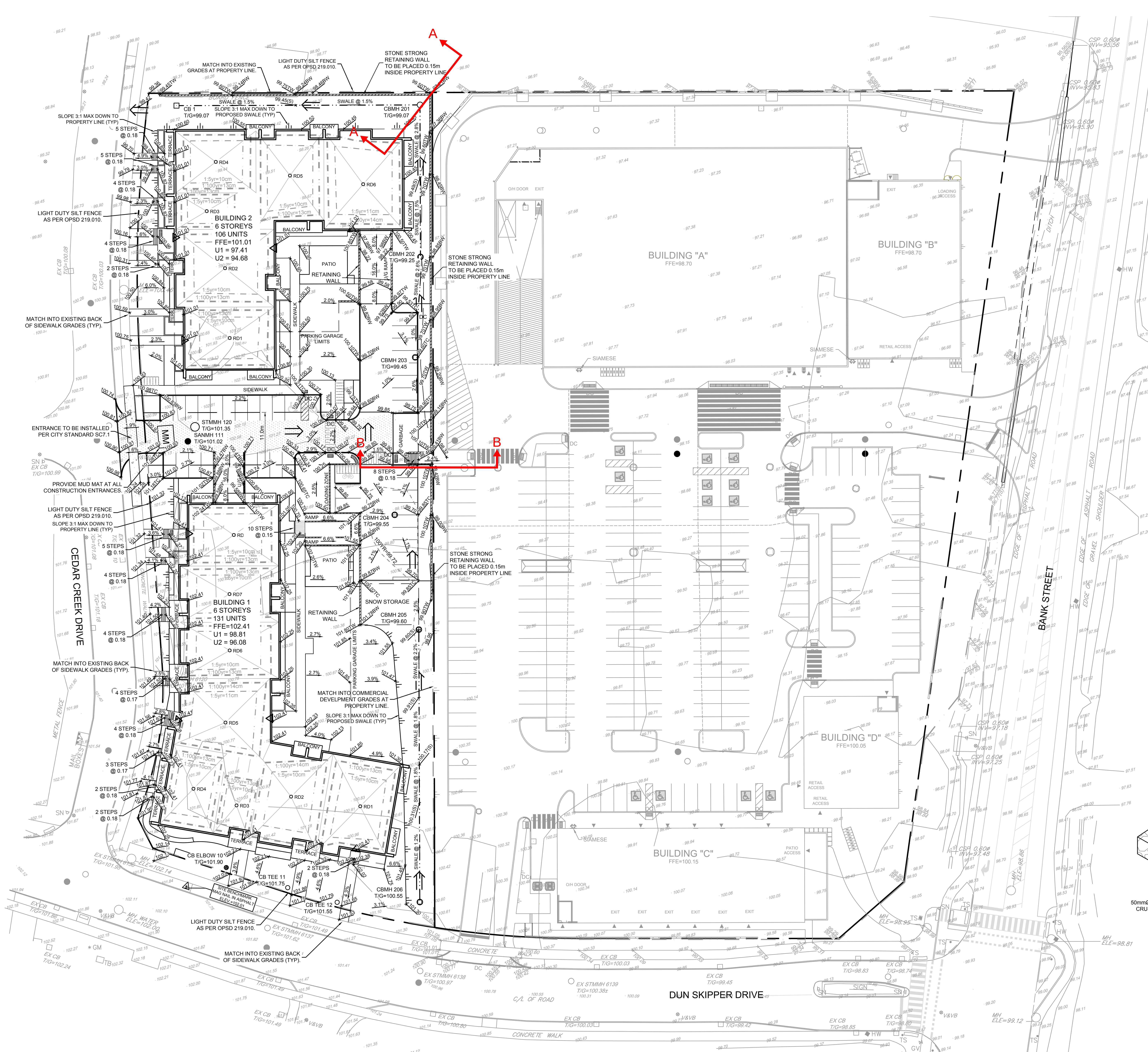
Paterson Group Inc

Yashar Ziaeimehr, M.Sc., EIT

Joey R. Villeneuve, M.A.Sc., P.Eng., ing.

Attachments:

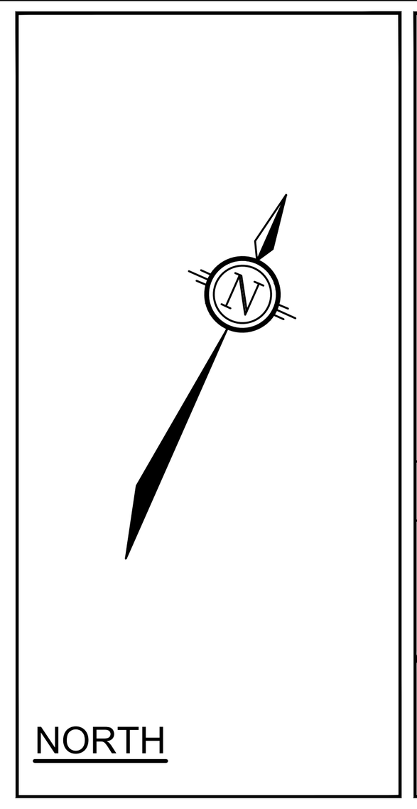
- ❑ Markup Plan – Location of Cross Sections A and B.
- ❑ Figures 1A and 1B – Global Slope Stability Analysis Sections.

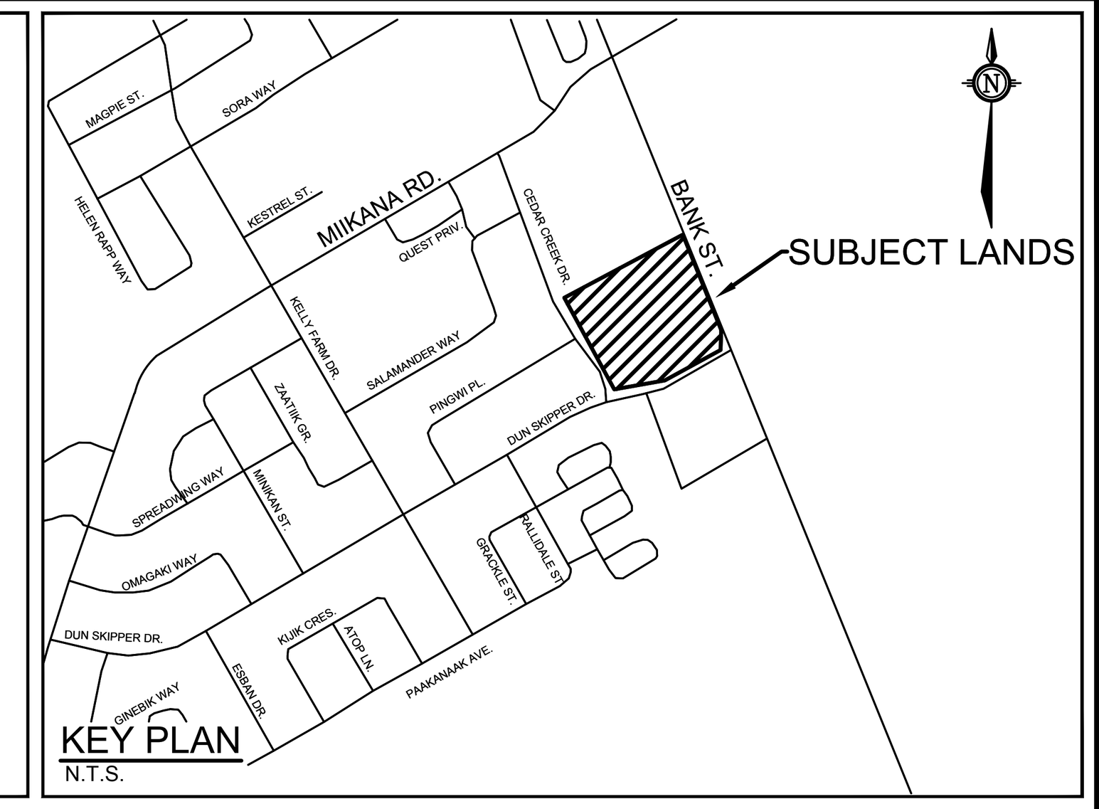


Markup Plan - Location of Cross Sections A and B - PG7262-MEMO.02

LEGEND

- PROPERTY LINE
- 90.00 — PROPOSED ELEVATION
- 76.45 — EXISTING ELEVATION
- 90.00 (S) — PROPOSED SWALE ELEVATION
- PROPOSED BUILDING ENTRANCE
- DIRECTION OF MAJOR OVERLAND FLOW
- PROPOSED SAN MANHOLE
- PROPOSED RETAINING WALL
- PROPOSED STORM MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED FIRE HYDRANT
- V&VB — PROPOSED VALVE AND VALVE BOX
- H.P. — PROPOSED HIGH POINT
- PROPOSED CURB
- 1:5 YR — APPROXIMATE PONDING LIMITS
- PROPOSED DEPRESSED CURB
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- SWALE AND DIRECTION OF FLOW
- TERRACING 3:1 SLOPE MAX (UNLESS OTHERWISE INDICATED)
- 2.0% — SLOPE AND DIRECTION
- V&VC — *EXISTING VALVE & VALVE CHAMBER*
- V&VB — *EXISTING VALVE & VALVE BOX*
- FH — *EXISTING HYDRANT*
- *EXISTING SANITARY MANHOLE*
- *EXISTING STORM MANHOLE*
- *EXISTING CATCHBASIN*
- LS — *EXISTING LIGHT STANDARD*
- HW — *EXISTING HANDWELL*
- HP — *EXISTING HYDRO POLE*
- SN — *EXISTING SIGN*
- TS — *EXISTING TRAFFIC SIGNAL*
- ANC — *EXISTING HYDRO ANCHOR*
- GV — *EXISTING GAS VALVE*





GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT PG7262-1, DATED NOVEMBER 14, 2024, PREPARED BY PATERSON GROUP, FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO SERVICING AND STORMWATER MANAGEMENT REPORT (R-2024-129) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

GRADING NOTES:

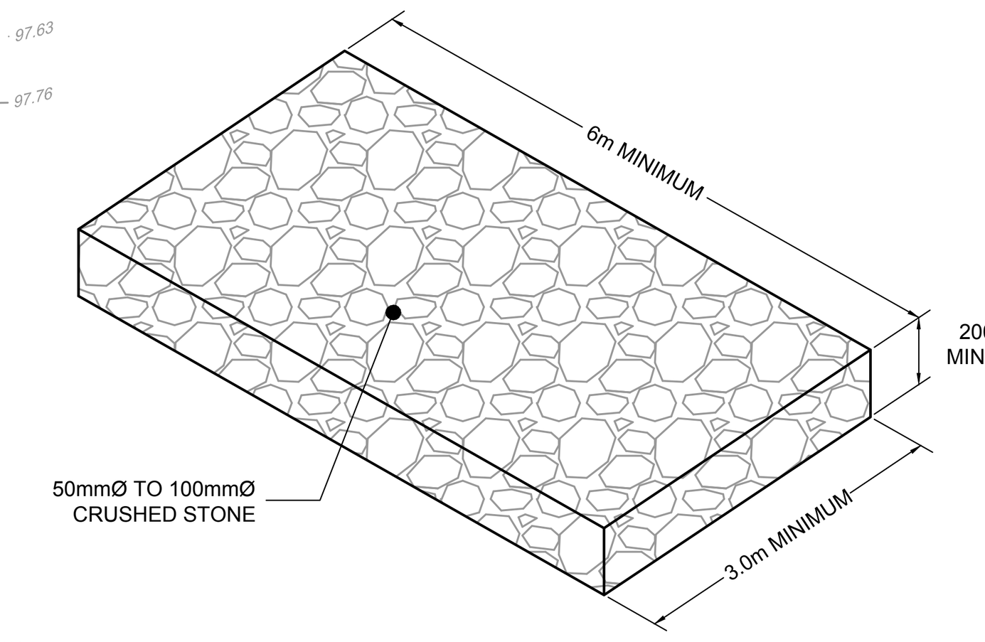
1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
3. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
4. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
5. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
6. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
7. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
8. ALL CURBS SHALL BE BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1)
9. CONCRETE CURB AND SIDEWALK SHALL BE AS PER CITY OF OTTAWA STANDARD SC1.4
10. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
11. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.

BENCHMARK NOTES:

1. ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO CITY OF OTTAWA 2016-0350, HAVING A PUBLISHED ELEVATION OF 64.947 METRES (CGVD28:78).
2. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE JOB BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT IT'S RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN ON THIS DRAWING.
3. BENCHMARK WAS PROVIDED ON PLAN OF SURVEY BLOCK 241, REGISTERED PLAN 4M-1617, CITY OF OTTAWA, SURVEYED BY J.D. BARNES LIMITED.

EROSION AND SEDIMENT CONTROL NOTES :

1. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
2. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF OTTAWA. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED DURING CONSTRUCTION IN ACCORDANCE WITH THE "GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES" (GOVERNMENT OF ONTARIO, MAY 1987). THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEETING ALL REGULATORY AGENCY REQUIREMENTS.
4. TO PREVENT SURFACE EROSION FROM ENTERING ANY STORM SEWER SYSTEM DURING CONSTRUCTION, FILTER BAGS WILL BE PLACED UNDER GRATES OF NEARBY CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED AROUND THE CONSTRUCTION AREA (WHERE APPLICABLE).
5. TO LIMIT EROSION: MINIMIZE THE AMOUNT OF EXPOSED SOILS AT ANY GIVEN TIME, RE-VEGETATE EXPOSED AREAS AND SLOPES AS SOON AS POSSIBLE AND PROTECT EXPOSED SLOPES WITH NATURAL OR SYNTHETIC MULCHES.
6. FOR MATERIAL STOCKPILING: MINIMIZE THE AMOUNT OF EXPOSED MATERIALS AT ANY GIVEN TIME; APPLY TEMPORARY SEEDING, TARPS, COMPACTION AND/OR SURFACE ROUGHENING AS REQUIRED TO STABILIZE STOCKPILED MATERIALS THAT WILL NOT BE USED WITHIN 14 DAYS.
7. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
8. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
9. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
10. ROADWAYS ARE TO BE SWEPT AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR THE MUNICIPALITY.
11. THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS. MONITOR DUST LEVELS DURING SITE PREPARATION/EXCAVATION, AND CONSTRUCTION ACTIVITIES, AND WHEN DUST LEVELS BECOME VISUALLY APPARENT SPRAY WATER TO MINIMIZE THE RELEASE OF DUST FROM GRAVEL, PAVED AREAS AND EXPOSED SOILS. USE CHEMICAL DUST SUPPRESSANTS ONLY WHERE NECESSARY ON PROBLEM AREAS.



MUD MAT DETAIL
NOT TO SCALE

PAVEMENT STRUCTURES:

LIGHT DUTY
50mm HL3/SP12.5mm CAT. B
150mm GRANULAR "A"
300mm GRANULAR "B" TYPE II

HEAVY DUTY
40mm HL3/SP12.5mm CAT. B
50mm HL8/SP19.0mm CAT. B
150mm GRANULAR "A"
450mm GRANULAR "B" TYPE II

Erosion and Sediment Control Responsibilities:

				During Construction			After Construction Prior to Final Acceptance		After Final Acceptance
	ESC Measure	Symbol	Specification	Installation Responsibility	Inspection/Maintenance Responsibility	Inspection Frequency	Approval to Remove	Removal Responsibility	Inspection/Maintenance Responsibility
Temporary Measures	Silt Fence		OPSD 219.110	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
	Filter Bag	Location as Indicated in ESC Note #4	Erosion and Sediment Control Notes	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
	Mud Mat		Drawing Details	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Developer's Contractor	Developer's Contractor	N/A
	Dust Control	Location as Required Around Site	Erosion and Sediment Control Notes	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
	Stabilized Material Stockpiling	Location as Required by Contractor	Erosion and Sediment Control Notes	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Developer's Contractor	Developer's Contractor	N/A
	Sediment Basin (for flows being pumped out of excavations)	Location as Required by Contractor	- - -	Developer's Contractor	Developer's Contractor	After Every Rainstorm	Developer's Contractor	Developer's Contractor	N/A

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
2	REVISED PER CITY COMMENTS	APR 10/25	MS
1	ISSUED FOR SPC APPLICATION	JAN 17/25	MS

SCALE 1:400

DESIGN MS / LSC
CHECKED MS
DRAWN LSC
CHECKED MS
APPROVED MS

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
M. SAVIC
100102651
4/10/2025
PROVINCE OF ONTARIO

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
150 DUN SKIPPER DRIVE

DRAWING NAME
GRADING AND EROSION & SEDIMENT CONTROL PLAN

PROJECT No. 124107
REV REV # 2
DRAWING No. 124107-GR1

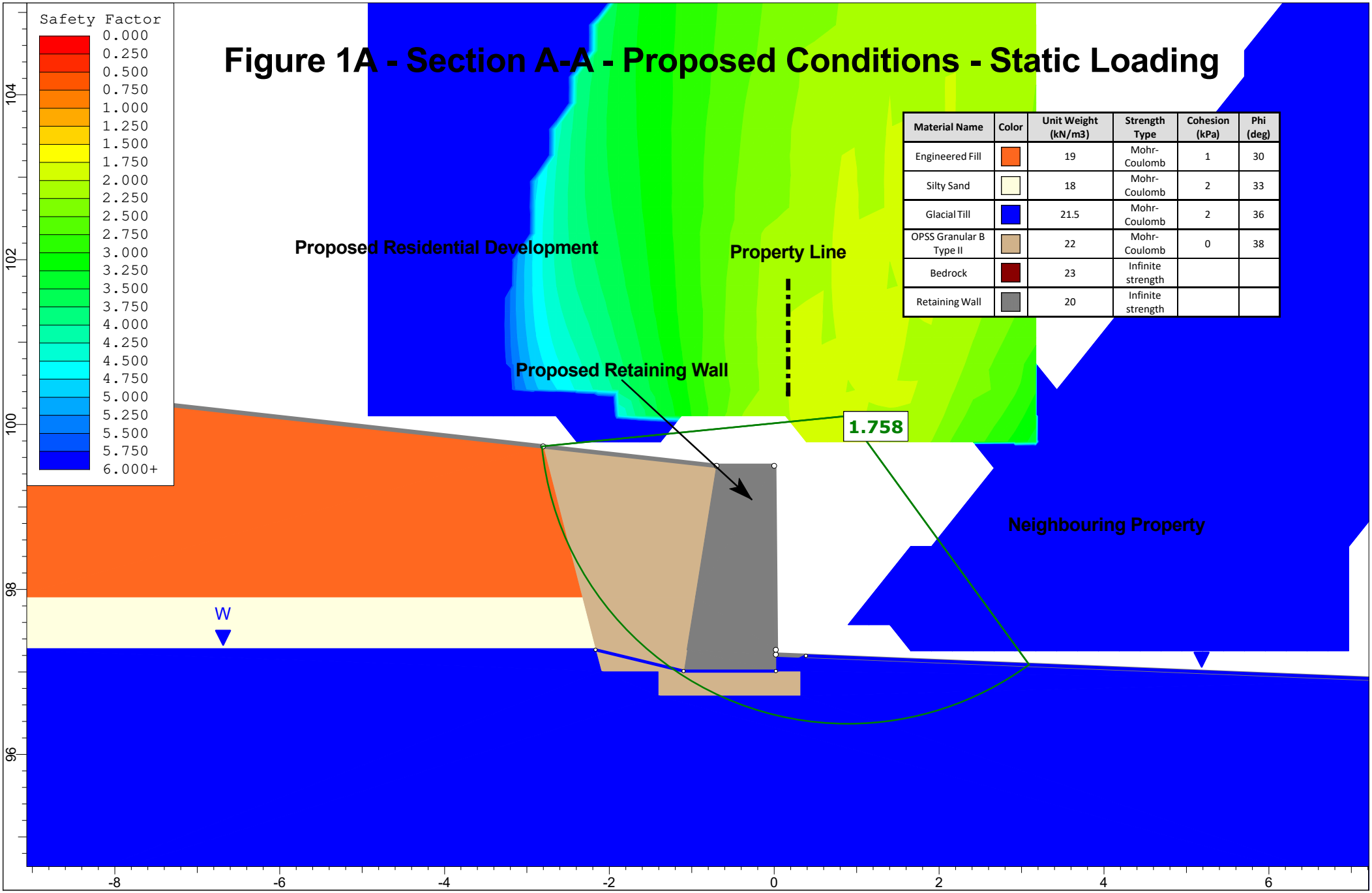


Figure 1A - Section A-A - Proposed Conditions - Static Loading
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Material Name | Color | Unit Weight (kN/m3) | Strength Type | Cohesion (kPa) | Phi (deg)
Engineered Fill | 19 | Mohr-Coulomb | 1 | 30
Silty Sand | 18 | Mohr-Coulomb | 2 | 33
Glacial Till | 21.5 | Mohr-Coulomb | 2 | 36
OPSS Granular B Type II | 22 | Mohr-Coulomb | 0 | 38
Bedrock | 23 | Infinite strength
Retaining Wall | 20 | Infinite strength
Proposed Residential Development
Property Line
Proposed Retaining Wall
1.758
Neighbouring Property
W
104
102
100
98
96
-8
-6
-4
-2
0
2
4
6

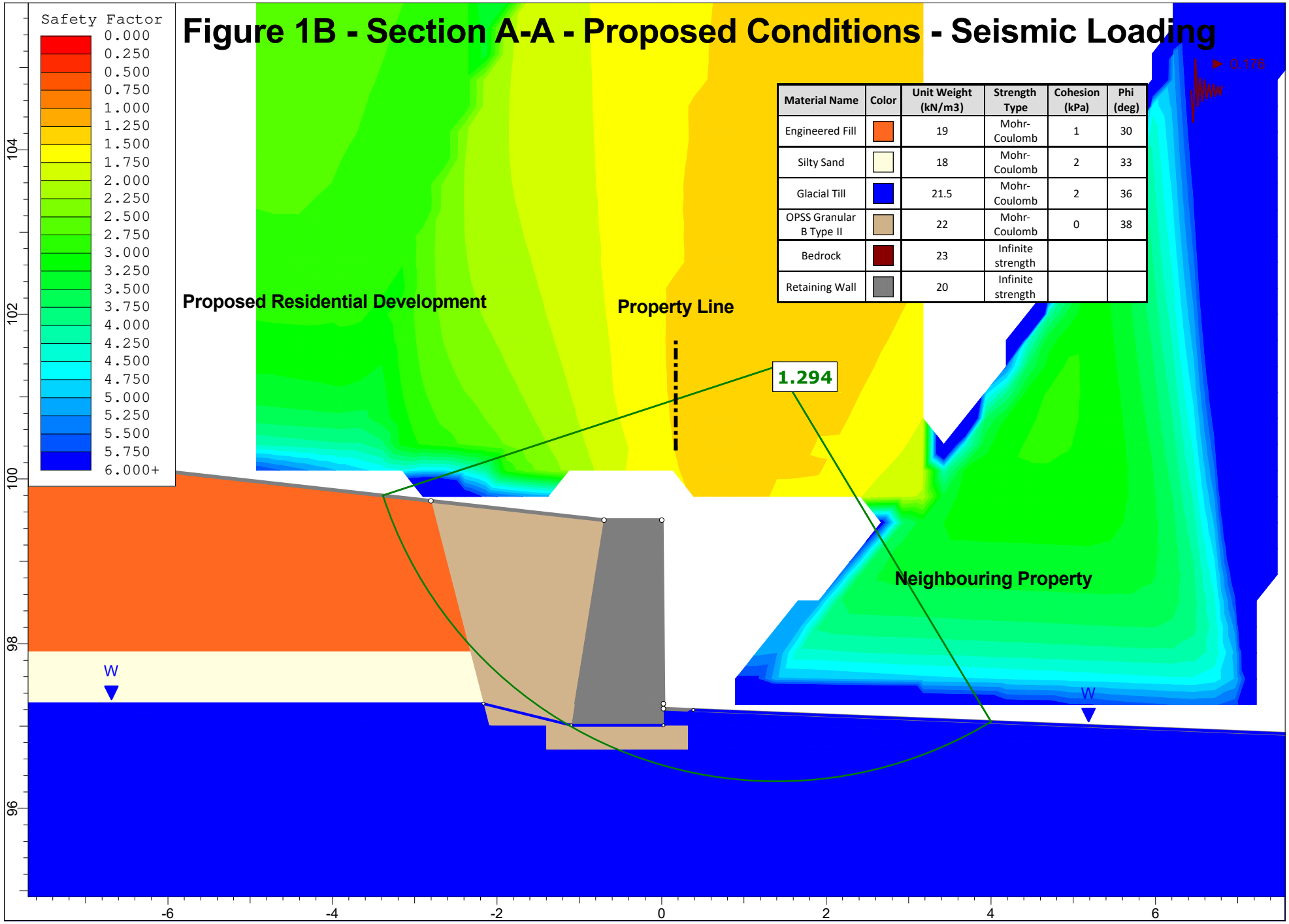


Figure 1B - Section A-A - Proposed Conditions - Seismic Loading
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Material Name | Color | Unit Weight (kN/m3) | Strength Type | Cohesion (kPa) | Phi (deg)
Engineered Fill | 19 | Mohr-Coulomb | 1 | 30
Silty Sand | 18 | Mohr-Coulomb | 2 | 33
Glacial Till | 21.5 | Mohr-Coulomb | 2 | 36
OPSS Granular B Type II | 22 | Mohr-Coulomb | 0 | 38
Bedrock | 23 | Infinite strength
Retaining Wall | 20 | Infinite strength
0.176
Proposed Residential Development
Property Line
1.294
Neighbouring Property
W
W
104
102
100
98
96
-6
-4
-2
0
2
4
6

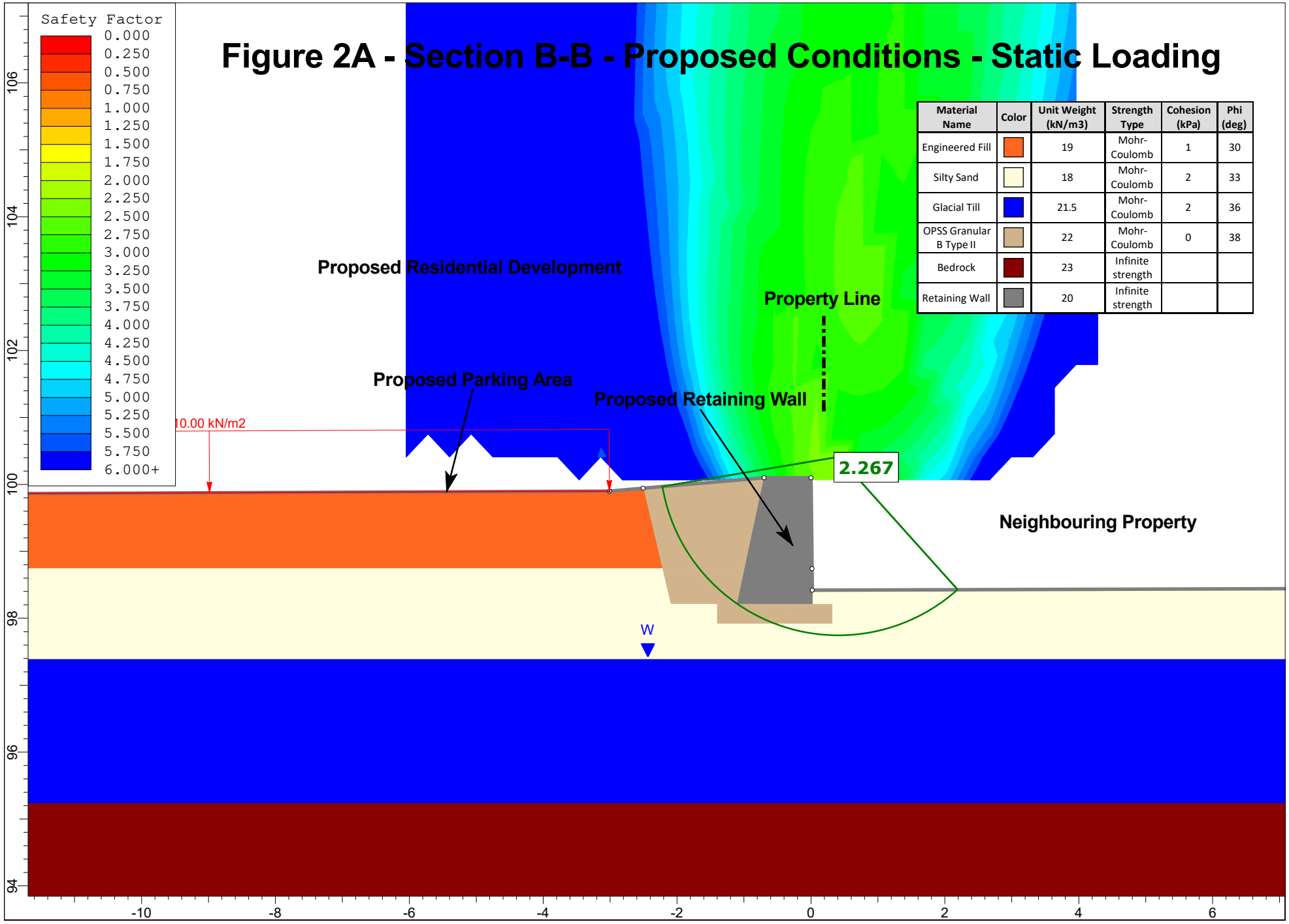


Figure 2A - Section B-B - Proposed Conditions - Static Loading
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Material Name | Color | Unit Weight (kN/m3) | Strength Type | Cohesion (kPa) | Phi (deg)
Engineered Fill | 19 | Mohr-Coulomb | 1 | 30
Silty Sand | 18 | Mohr-Coulomb | 2 | 33
Glacial Till | 21.5 | Mohr-Coulomb | 2 | 36
OPSS Granular B Type II | 22 | Mohr-Coulomb | 0 | 38
Bedrock | 23 | Infinite strength
Retaining Wall | 20 | Infinite strength
Proposed Residential Development
Property Line
Proposed Parking Area
Proposed Retaining Wall
10.00 kN/m2
2.267
Neighbouring Property
W
106
104
102
100
98
96
94
-10
-8
-6
-4
-2
0
2
4
6

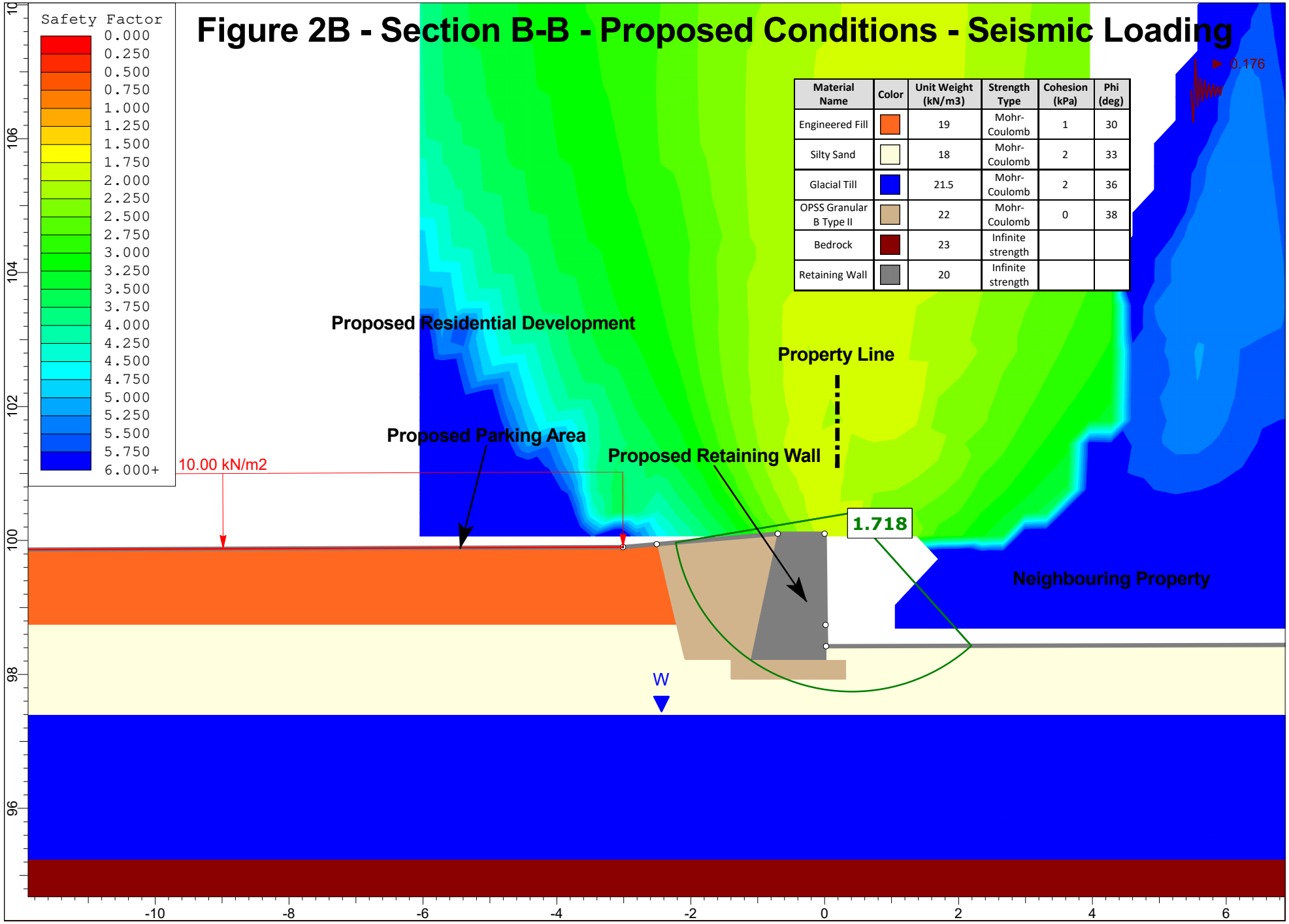


Figure 2B - Section B-B - Proposed Conditions - Seismic Loading
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
0.176
Material Name | Color | Unit Weight (kN/m3) | Strength Type | Cohesion (kPa) | Phi (deg)
Engineered Fill | 19 | Mohr-Coulomb | 1 | 30
Silty Sand | 18 | Mohr-Coulomb | 2 | 33
Glacial Till | 21.5 | Mohr-Coulomb | 2 | 36
OPSS Granular B Type II | 22 | Mohr-Coulomb | 0 | 38
Bedrock | 23 | Infinite strength
Retaining Wall | 20 | Infinite strength
Proposed Residential Development
Property Line
Proposed Parking Area
Proposed Retaining Wall
10.00 kN/m2
1.718
Neighbouring Property
W
10
106
104
102
100
98
96
-10
-8
-6
-4
-2
0
2
4
6