

re: Geotechnical Review - McKinnon's Creek Alterations
Proposed residential Development
Summerside West - Tenth Line Road - Ottawa

to:David Schaeffer Engineering Limited - **Ms. Jennifer Ailey** - jailey@dsel.ca
to:David Schaeffer Engineering Limited - **Mr. Steve Pichette** - spichette@dsel.ca
to:Mattamy Homes - **Ms. Jillian Normand** - Jillian.Normand@mattamycorp.com
date:November 26, 2018
file:PG4049-MEMO.10 Revision 2

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to detail our geotechnical review of the McKinnon's Creek proposed alterations for the aforementioned site. It is understood that the creek alterations include a lowering of the channel bottom and steepening of the existing side slopes in several sections. Our review included a slope stability analysis of the proposed slope alterations based on the design drawing prepared by David Schaeffer Engineering Limited Drawing No. 1 - McKinnon's Creek, Proposed Alterations, Plan and Cross Sections, Project 15-766 dated October 11, 2018.

Slope Stability Analysis

The slope sections presented in the design drawing were reviewed by Paterson. Based on our review, Section C-C was noted to include a 2H:1V slope profile along the east side of the channel and a 3H:1V slope profile along the west side. The remainder of the proposed slope profiles were observed to be greater than 2H:1V. Therefore, Section C-C was analyzed to determine the global slope stability factor of safety as the worst case scenario for the proposed alterations. **The slope stability analysis also considered a 2 m high preload above original ground surface. It should be noted that the assumed 2 m preload fill height is well above the design roadway and pathway grading adjacent to McKinnon's Creek along the west side and is approximately 0.5 m above anticipated lot grading for the lots adjacent to McKinnon's Creek along the east side of the alignment. It should also be noted that no preloading will be completed beyond the geotechnical limit of hazard lands. Also, it should be noted that a settlement surcharge program is not required for the lots, pathways or roadways adjacent to the subject alignment of McKinnon's Creek.**

The results of our analysis are presented in Figures 1a, 1b, 2a and 2b attached. Figures 1a and 1b present the results of our global slope stability analysis under static conditions for each side slope of the channel and Figures 2a and 2b present the analysis when considering the seismic loading. Based on our analysis results, Section C-C is considered stable with a global slope stability factor of safety of greater than 1.5 under static conditions and greater than 1.1 under seismic loading. Therefore, a slope stability setback is not required for the limit of hazard lands setback.

Limit of Hazard Lands

The subsurface profile along the subject alignment of McKinnon's Creek consists of a brown silty clay crust over a grey silty clay deposit based on the nearby boreholes along the alignment. Relevant borehole logs are attached to the present memorandum report. Based on our observations and soils along the slope profile, a 2 m toe erosion allowance is recommended for the subject alignment. Based on the cross-sections shown on the aforementioned plan prepared by David Schaeffer Engineering Limited, at worst-case, the surcharge pile will be 50 m at minimum from the top of slope of McKinnon's Creek.

The limit of hazard lands designation line for the proposed McKinnon's Creek alterations consists of a 6 m erosion access allowance and a 2 m toe erosion allowance taken from the top of slope. **Therefore, the limit of hazard lands setback consists of a 8 m setback from top of slope along both sides of the subject alignment of McKinnon's Creek.**

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.



David J. Gilbert, P.Eng.

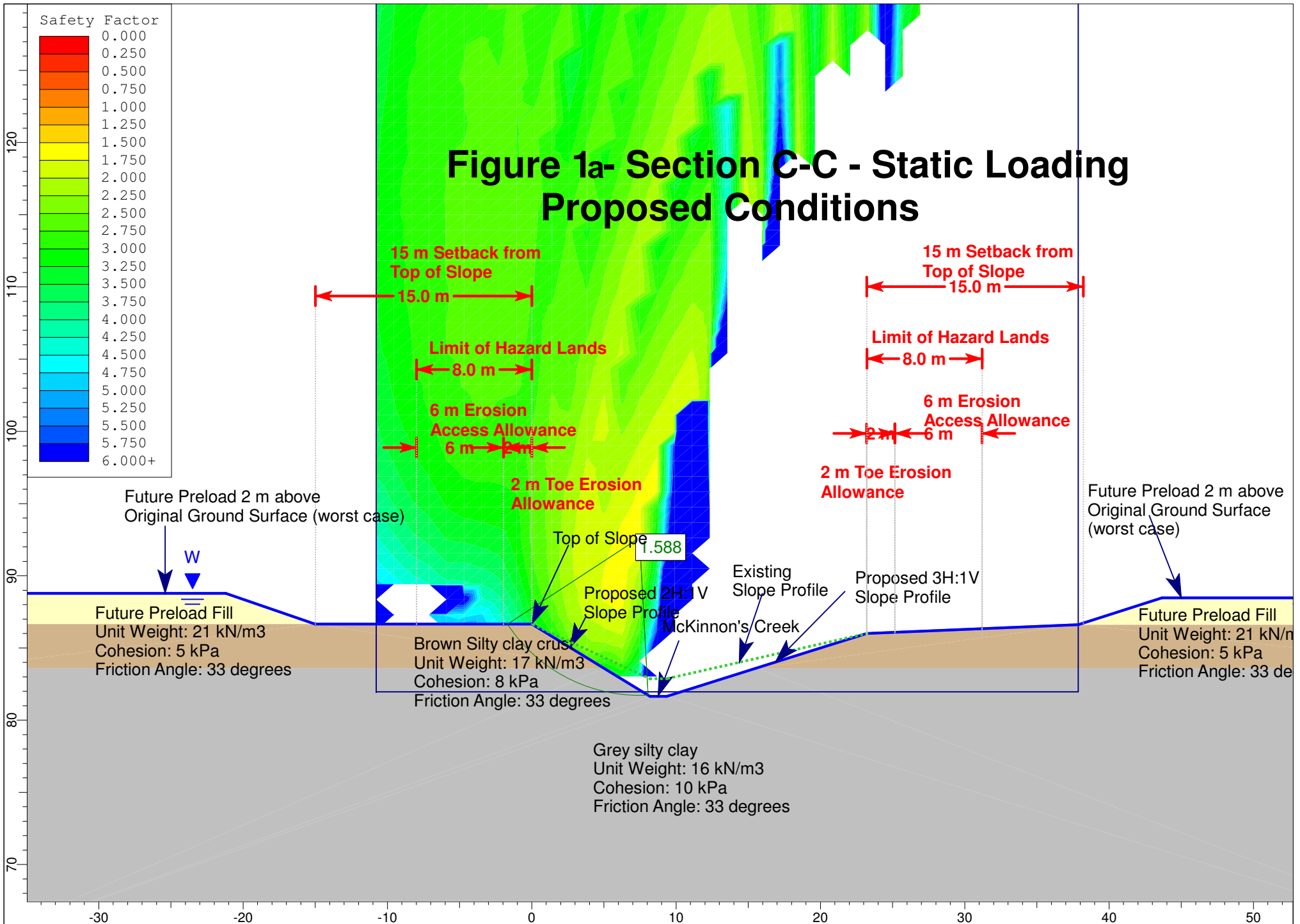


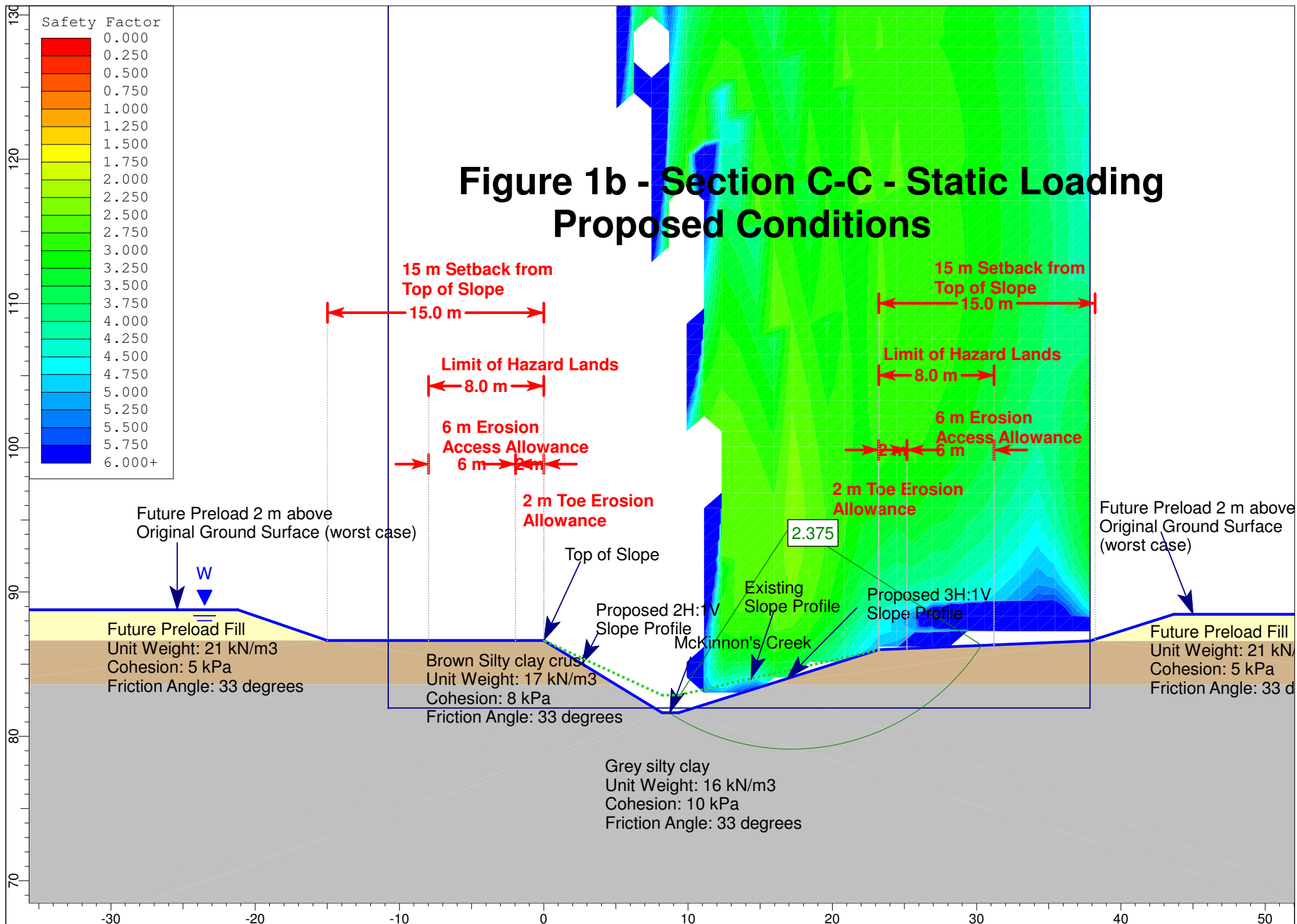
Paterson Group Inc.

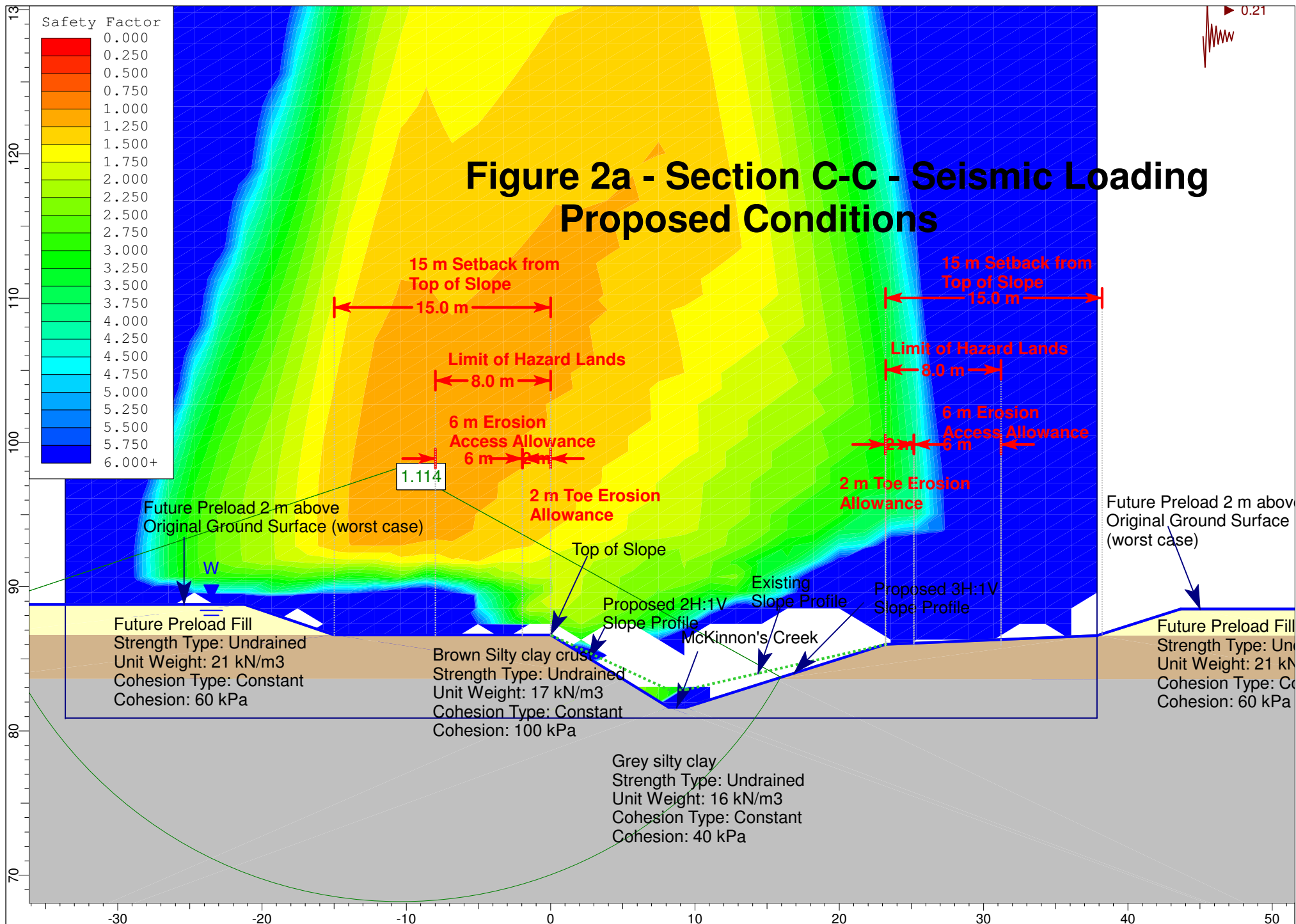
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154 Colonnade Road South
Ottawa - Ontario - K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

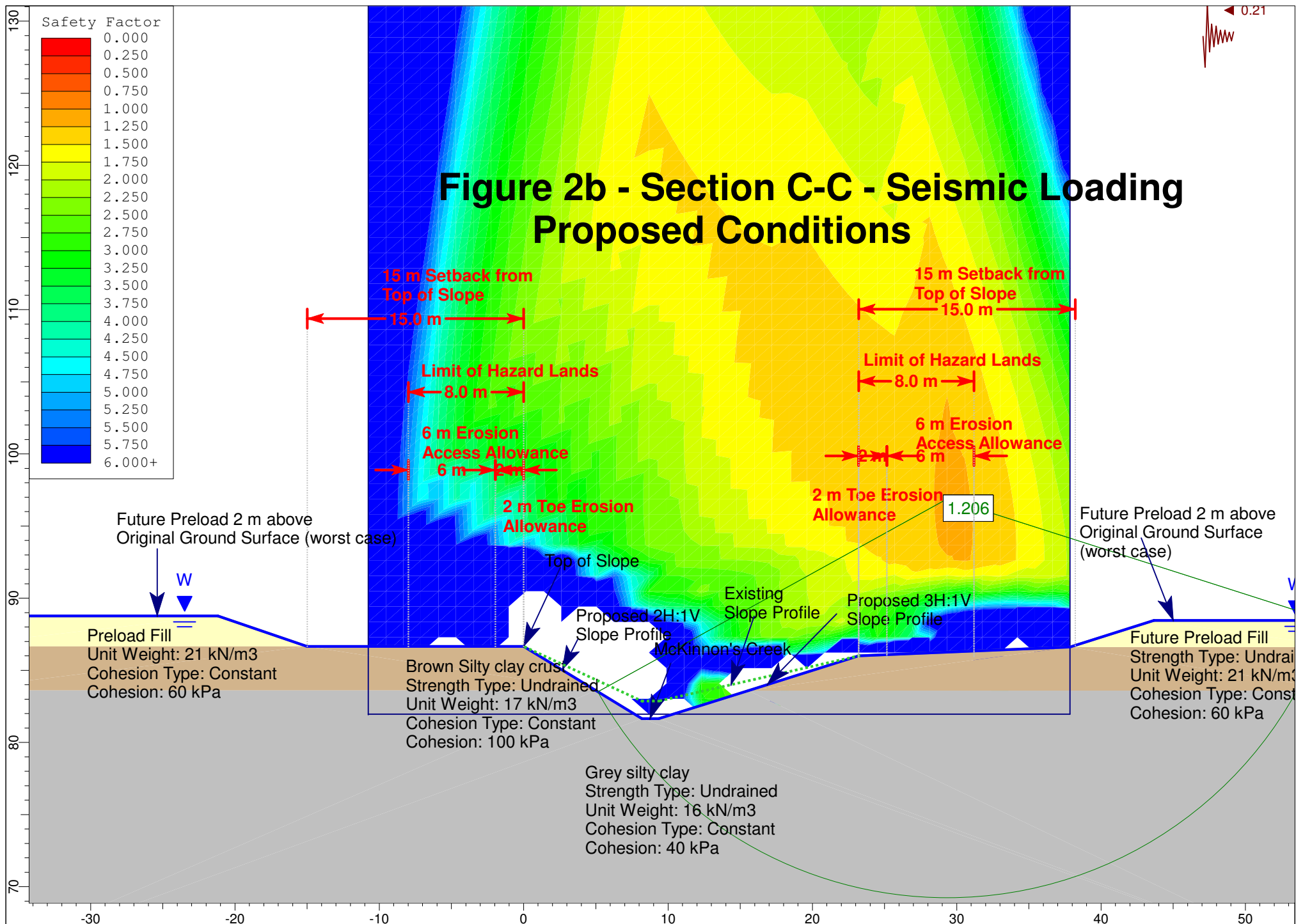
Northern Office and Laboratory
63 Gibson Street
North Bay - Ontario - P1B 8Z4
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St. Lawrence Office
993 Princess Street - Suite 100
Kingston - Ontario - K7L 1H3
Tel: (613) 542-7381









DATUM Ground surface elevations provided by J.D. Barnes Limited.

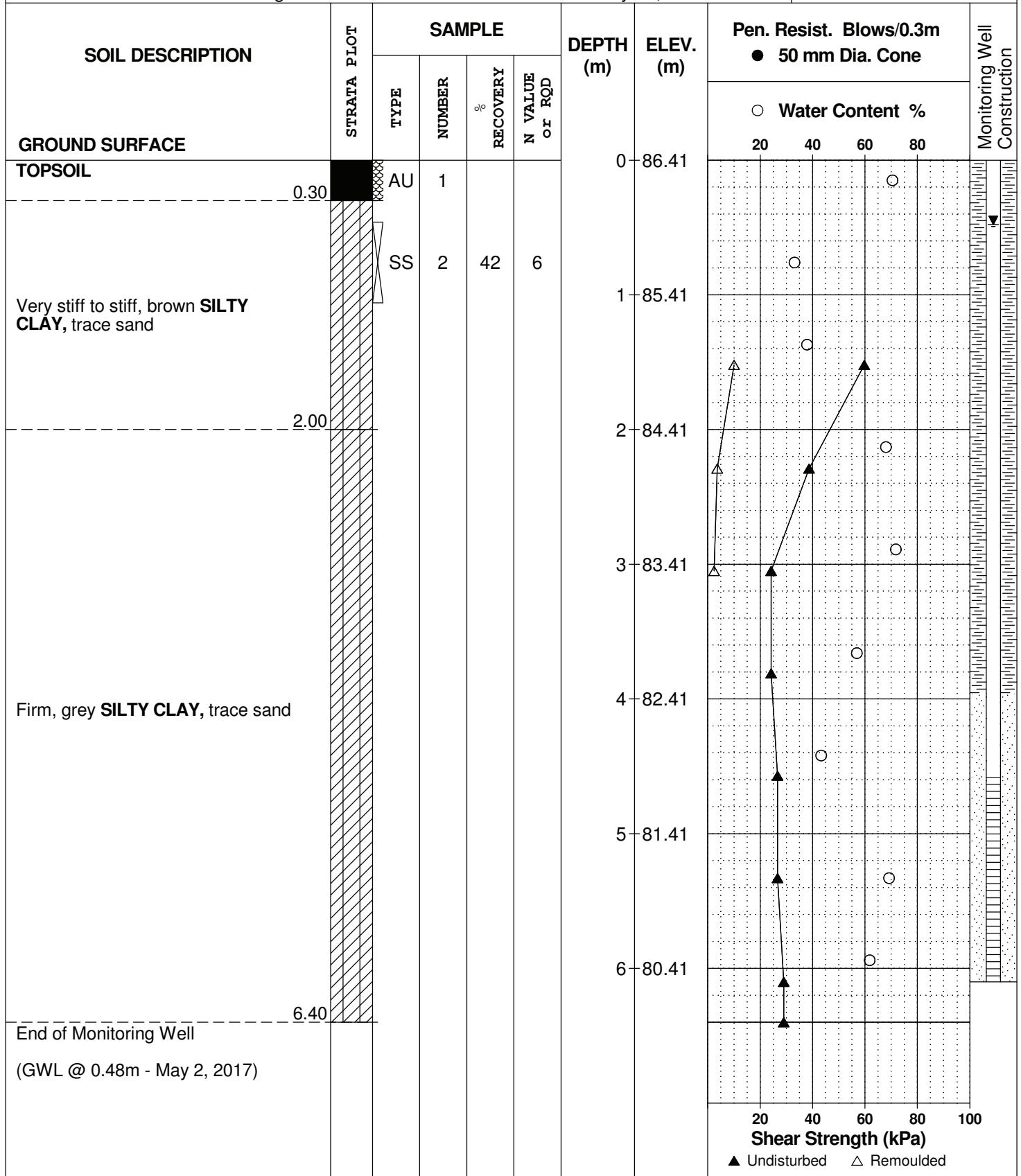
FILE NO.
PG4049

REMARKS

HOLE NO.
MW 4A

BORINGS BY CME 55 Power Auger

DATE February 28, 2017



SOIL PROFILE AND TEST DATA

Geotechnical Residential
Residential Development - Summerside West Phase 4 & 5
Tenth Line Road, Ottawa, Ontario

DATUM Ground surface elevations provided by J.D. Barnes Limited.

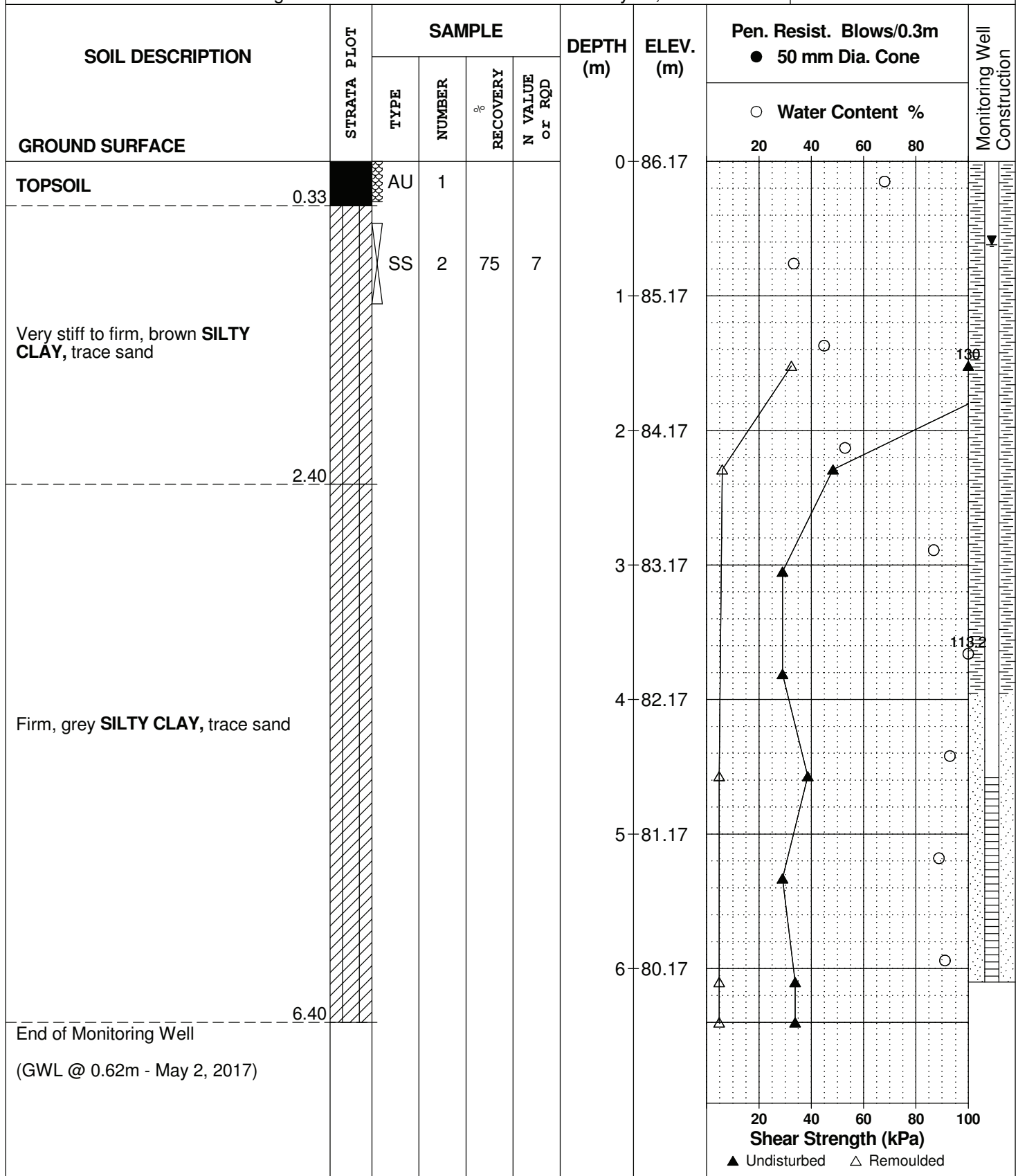
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PG4049

REMARKS

HOLE NO.
MW 6A

BORINGS BY CME 55 Power Auger

DATE February 28, 2017



SOIL PROFILE AND TEST DATA

Geotechnical Residential
Residential Development - Summerside West Ph. 4 & 5
Tenth Line Road, Ottawa, Ontario

DATUM Ground surface elevations provided by J.D. Barnes Limited.

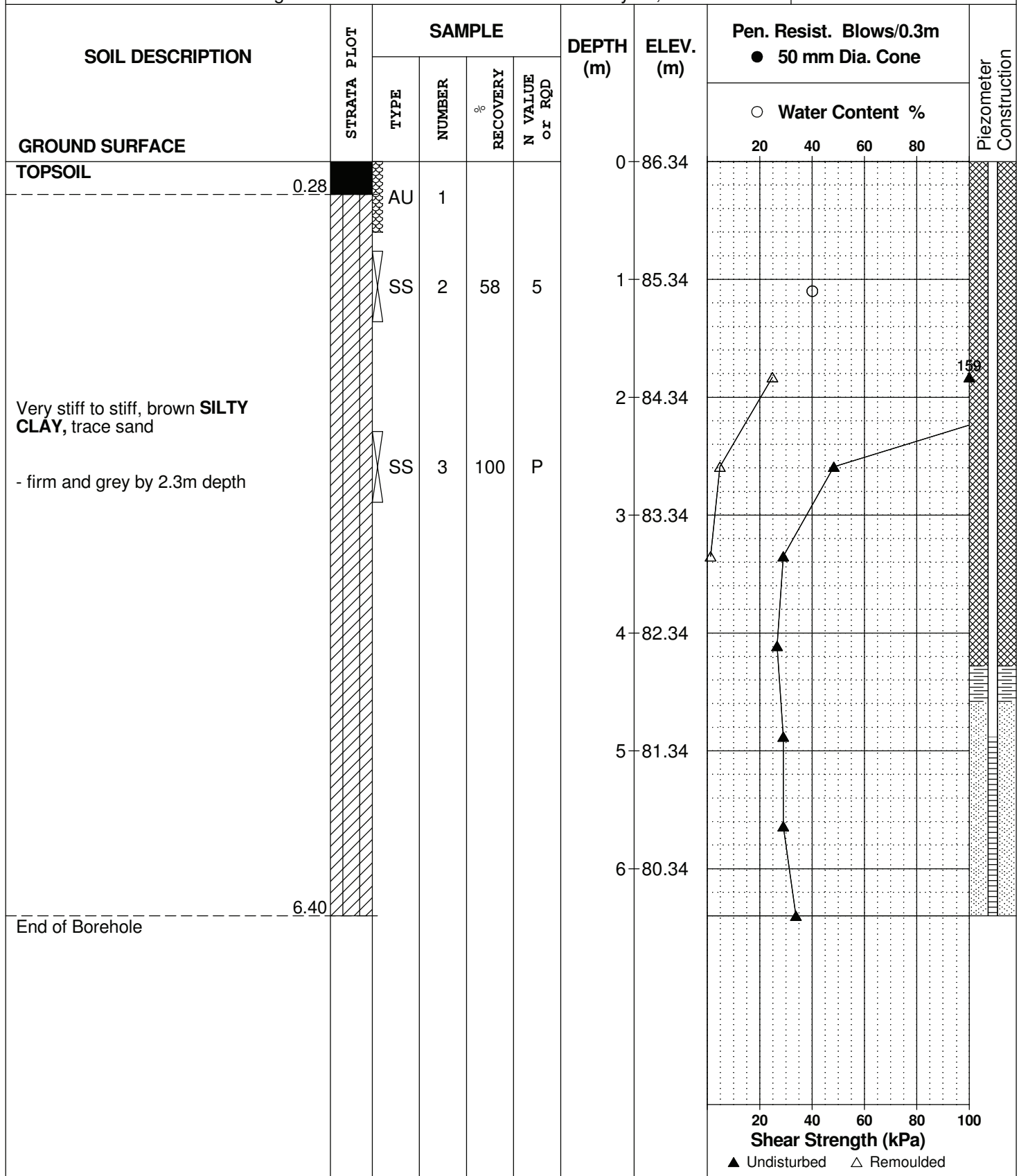
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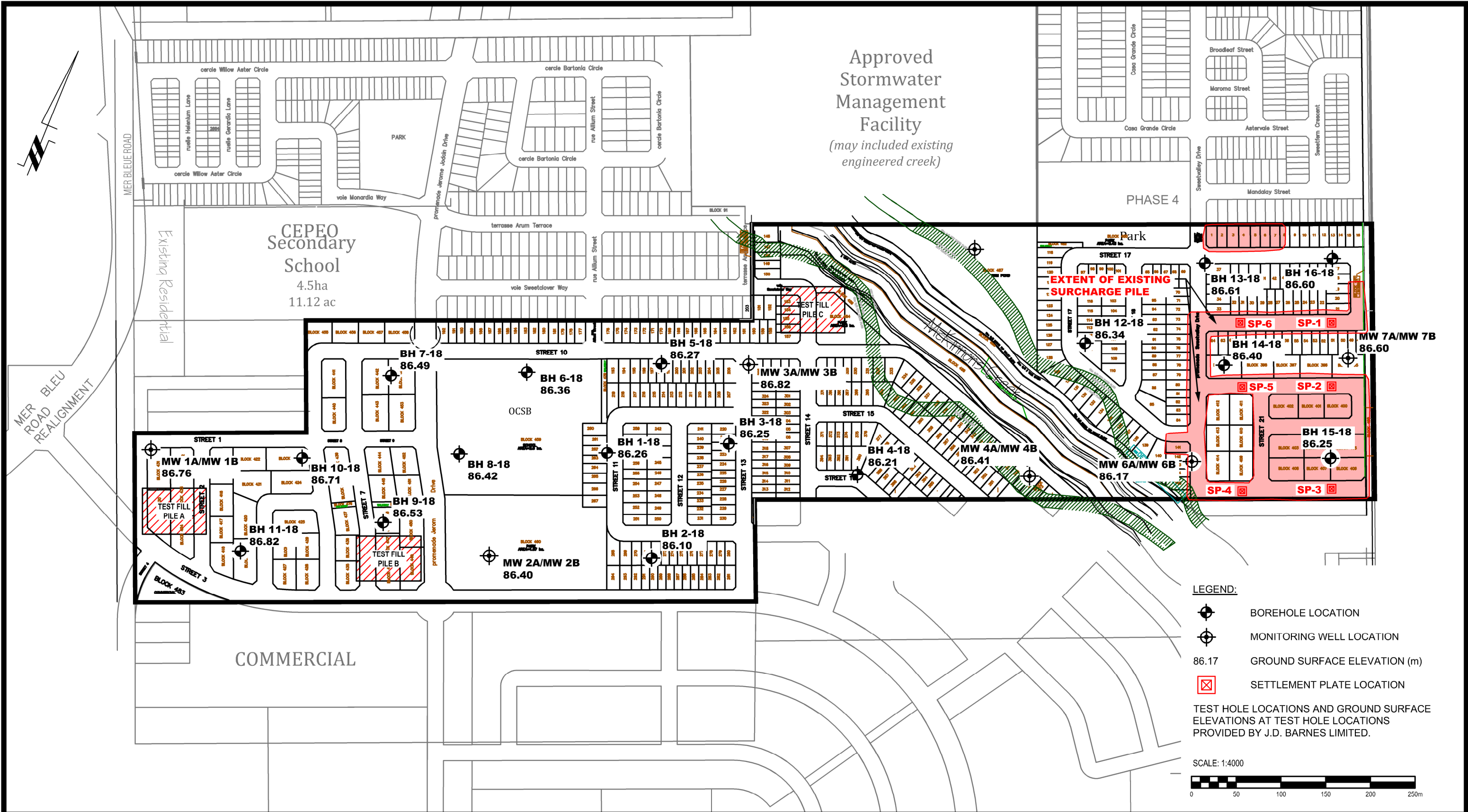
REMARKS

HOLE NO.
BH12-18

BORINGS BY CME 55 Power Auger

DATE February 22, 2018





patersongroup
consulting engineers

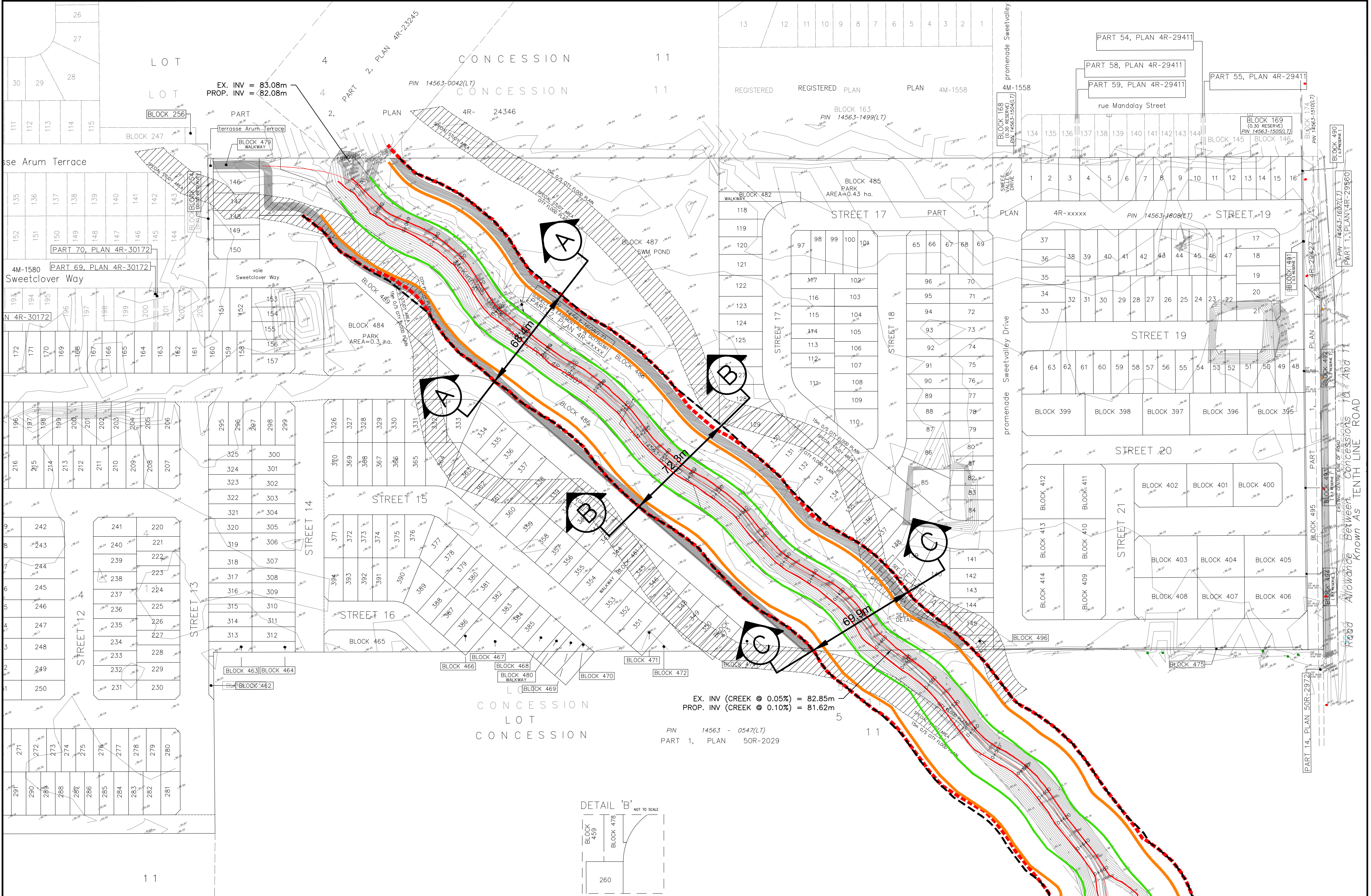
154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

2	EXTENT OF SURCHARGE PILE UPDATED	23/10/2018	NC
1	NEW SURCHARGE PILE AND SETTLEMENT PLATES ADDED	08/08/2018	DJG
NO.	REVISIONS	DATE	INITIAL

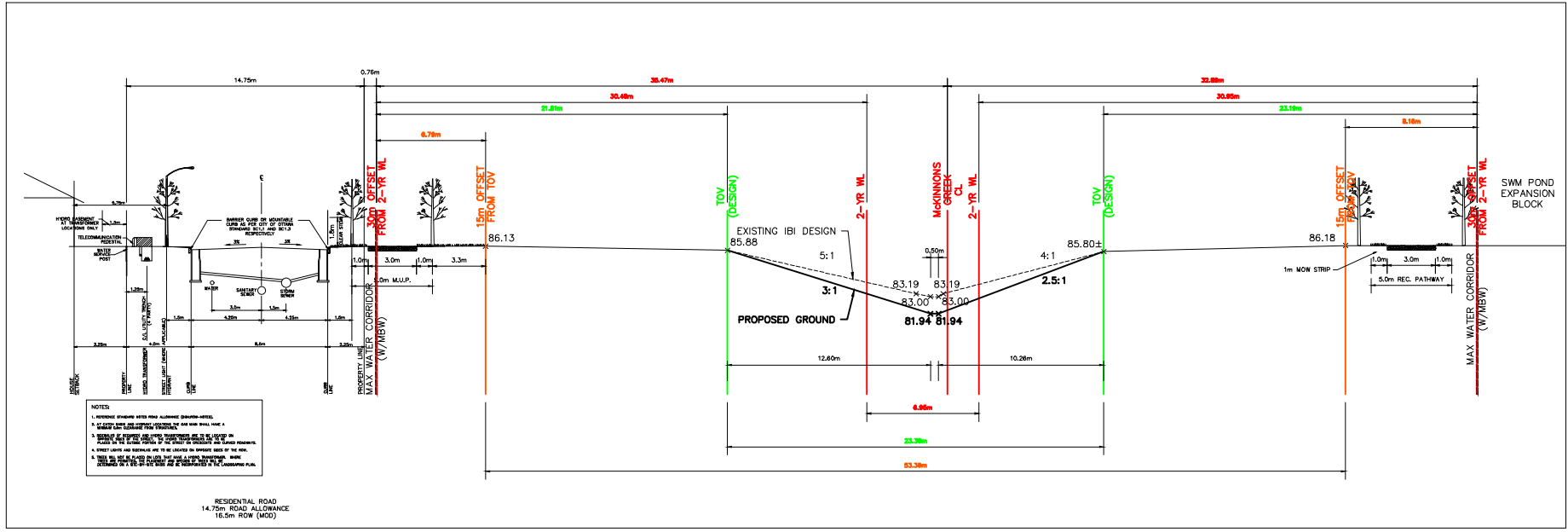
2447591 ONTARIO INC.	
GEOTECHNICAL INVESTIGATION	
RESIDENTIAL DEVELOPMENT - SUMMERSIDE WEST PHASES 4 & 5	
OTTAWA,	ONTARIO
Title: TEST HOLE LOCATION PLAN	

Scale:	1:4000	Date:	03/2018
Drawn by:	MPG	Report No.:	PG4049
Checked by:	SB	Dwg. No.:	PG4049-1
Approved by:	DJG	Revision No.:	2

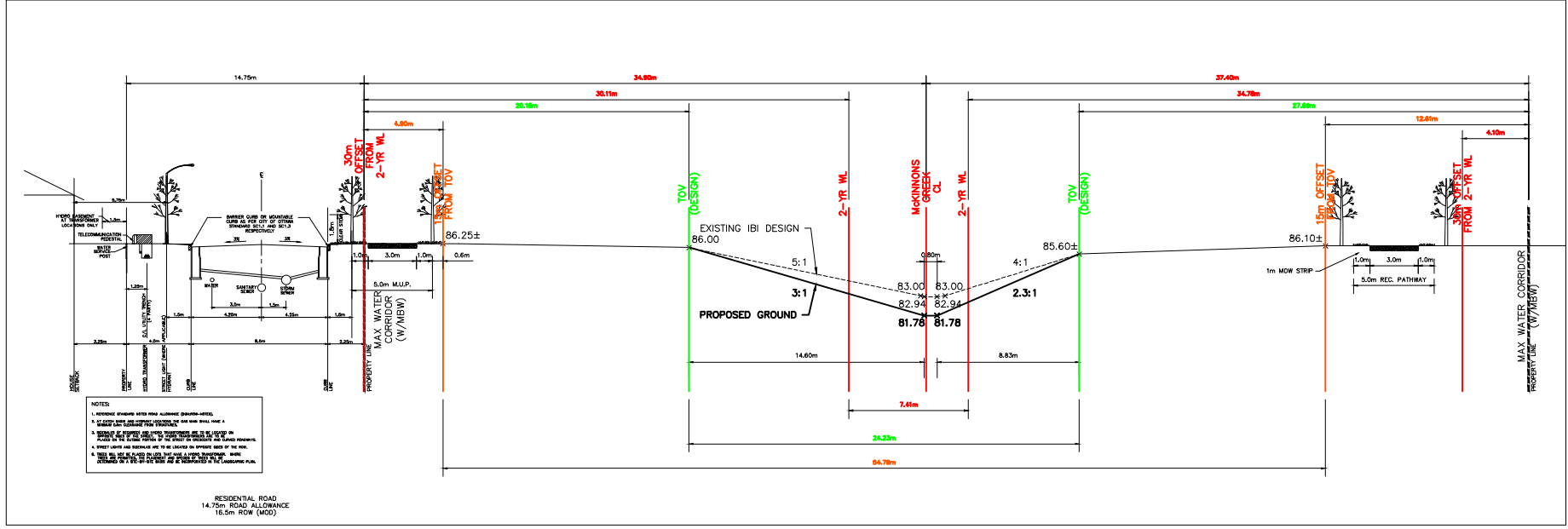
p:\aioacad drawings\geotechnical\pg4049\pg4049-1 rev2 with surcharge pile.dwg



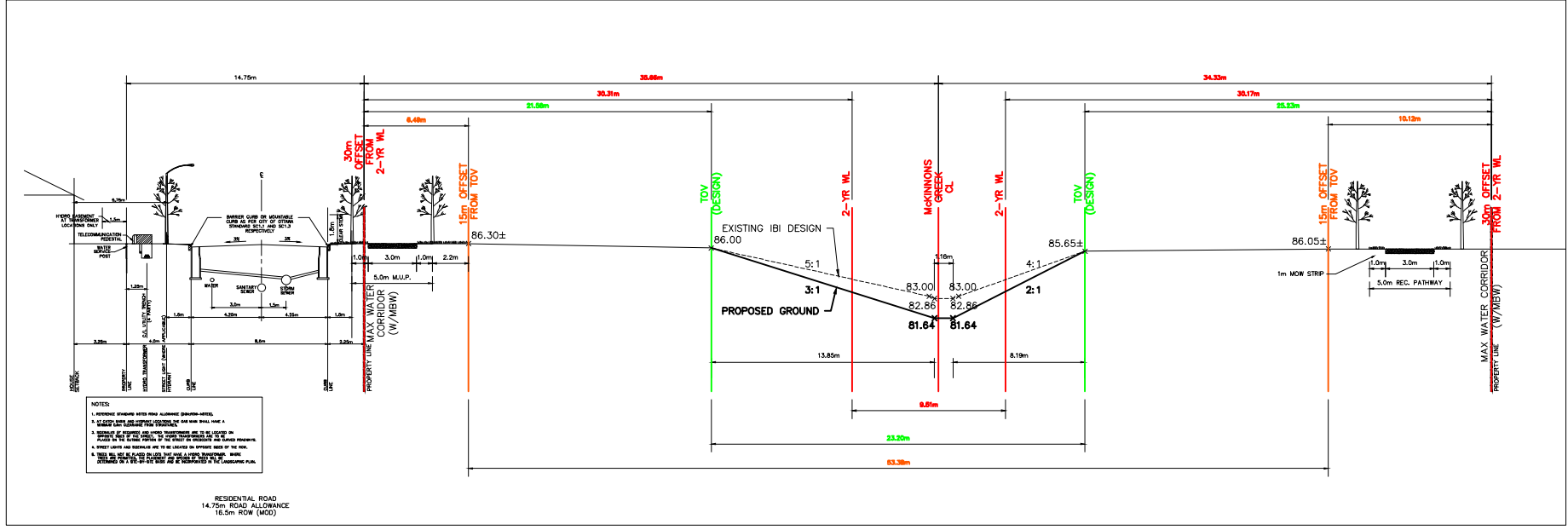
SECTION A-A



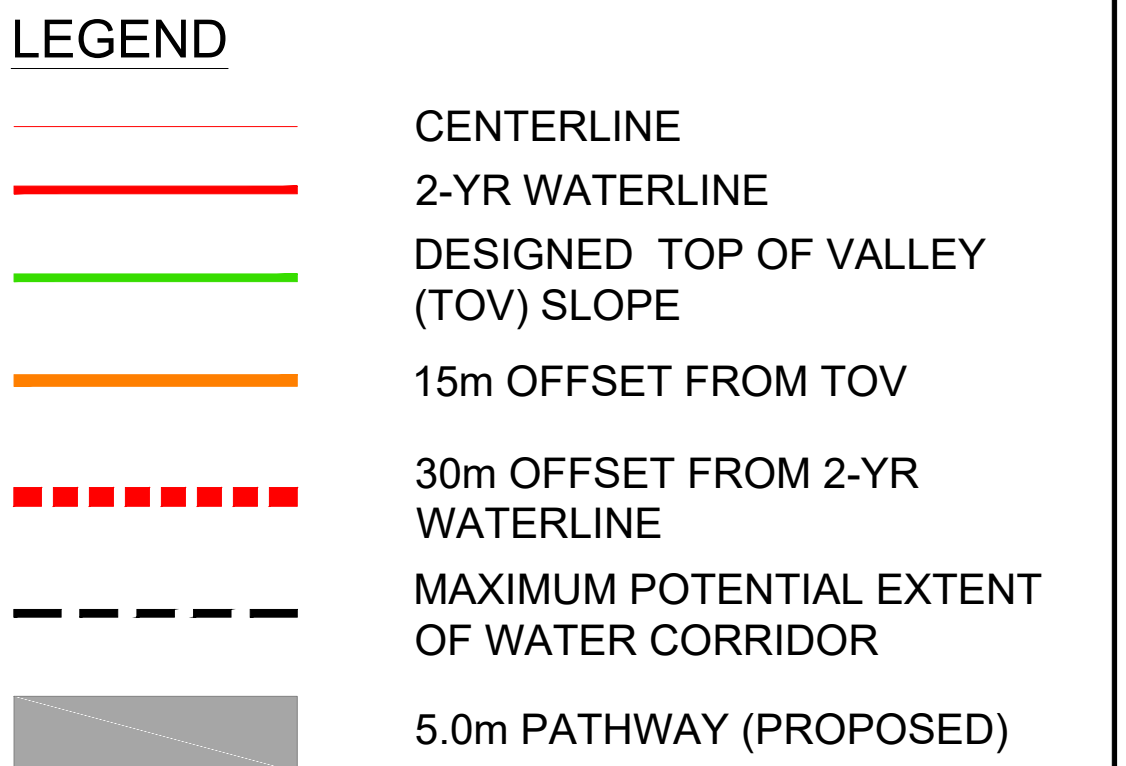
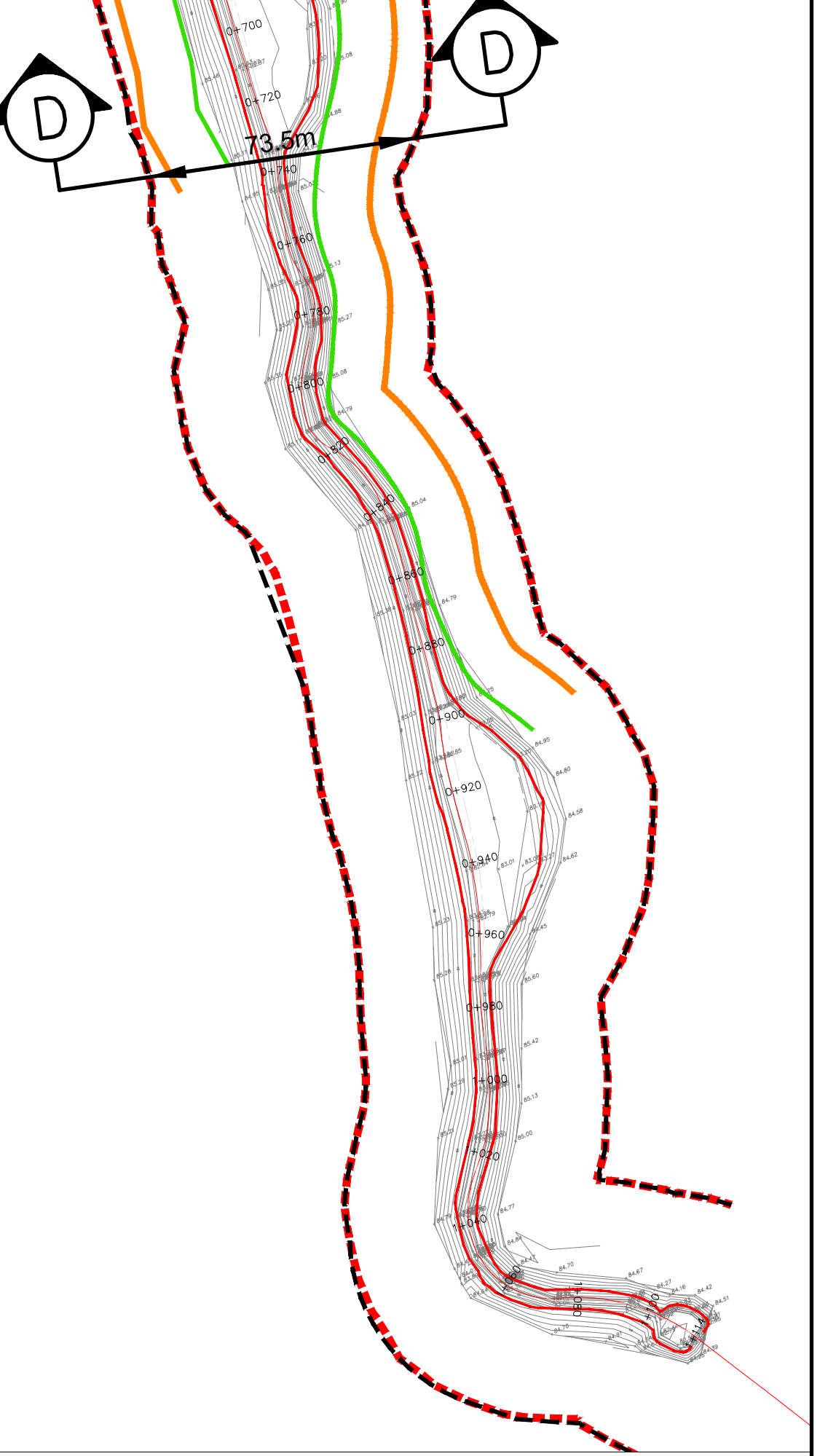
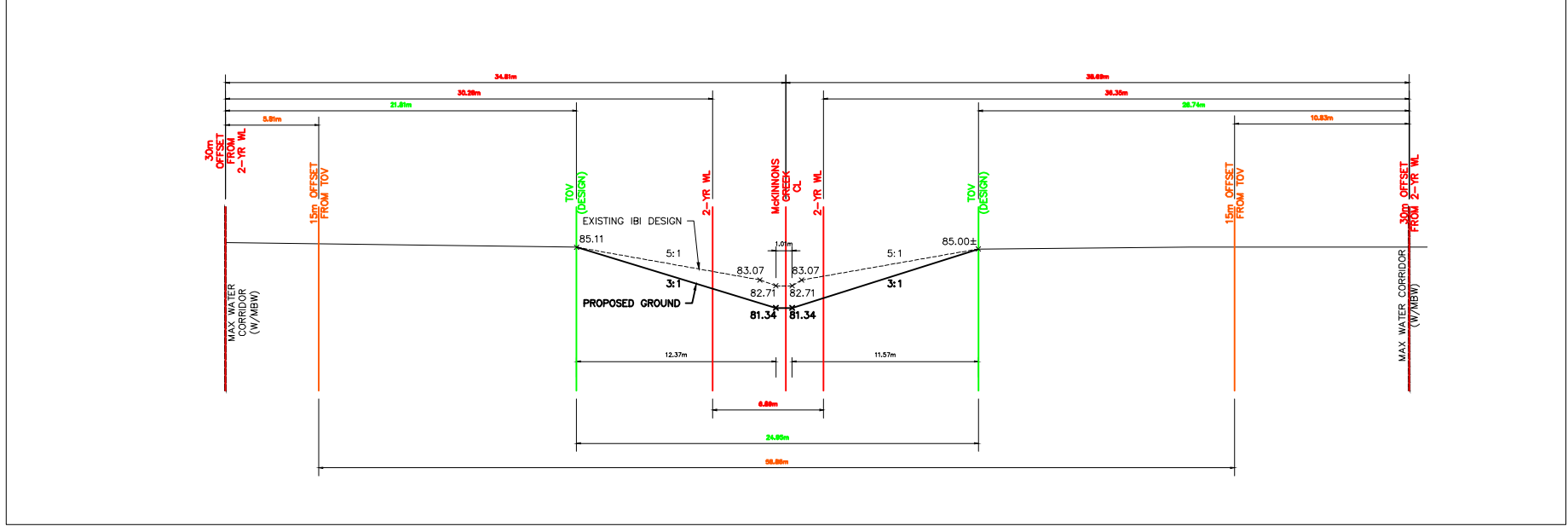
SECTION B-B



SECTION C-C



SECTION D-D

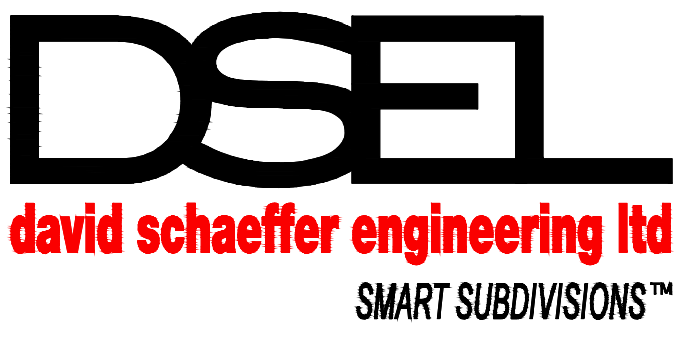


BACKGROUND TOPOGRAPHY FROM SURVEY
PREPARED BY J.D. BARNES (SEPT. 12, 2018)

LEGAL INFORMATION FROM DRAFT PLAN
PREPARED BY J.D. BARNES (SEPT. 25, 2018)

SCALE 1:400

SCALE 1:1500



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McKINNON'S CREEK PROPOSED ALTERATIONS PLAN AND CROSS-SECTIONS

PROJECT No. :	15-766
SCALE:	SEE DRAWING
DATE:	OCTOBER 11, 2018
DRAWING No.	1