



Soil Engineers Ltd.

CONSULTING ENGINEERS

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March 30, 2026

Reference No. 2507-S174

Page 1 of 4

Halton Hills One Limited Partnership
75 Tiverton Court
Markham, Ontario
L3R 4M8

Attention: Mr. Michael Mendes, Vice President, Development

**Re: Slope Stability Assessment
9094 Regional Road 25
Town of Halton Hills**

Dear Sir:

In accordance with the Purchase Order, P.O. No. 24, issued December 18, 2025, Soil Engineers Ltd. (SEL) has carried out a slope stability study for the valley slope located at the southwest corner of the captioned property. This study focuses on evaluating the stability of the east valley slope nearest to the proposed development and to establish the Long-Term Stable Top of Slope (LTSTOS) in this area in accordance to the Conservation Halton (CH) Guideline for Slope Stability.

Site and Slope Description

The subject site is located within the Sixteen Mile Creek Watershed, in the northwest quadrant of Regional Road 25 and 5 Sideroad. A tributary of the Sixteen Mile Creek meanders from the adjacent property to the west and flows east through an open/unconfined system before turning south, where it continues through a partially confined and confined valley system located at the southwest corner of the site, ultimately crossing beneath 5 Sideroad through a corrugated steel culvert.

A review of the topographic survey plan prepared by C. Wahba Surveying Ltd., dated September 4, 2025, indicates that the east valley slope is approximately 2 to 3 m high, with overall slope gradients ranging from 1.6 to 4.6H:1V. The tributary channel is approximately 1 to 2 m wide, meandering at various distances from the toe of slope.

Visual inspection, conducted on March 25, 2026, revealed that the slope is stable with shrub and tree growth generally in the upright position, along with wetland vegetation on the



floodplain. No deep-seated slope failure or groundwater seepage was observed on the slope face. Surficial sloughing was observed at a localized, oversteepened area in the southern portion of the channel where the tributary abuts the east valley slope. A semi-buried weeping tile and dug drainage trench, likely the result of human activity, were observed on the slope adjacent to the existing residential lot in the southern end of the site. Minor active erosion and occasional leaning trees and undercutting of channel bank were observed in localized areas along the tributary.

Modeling

Four sections, Cross-Section A-A to D-D, inclusive, were selected for the analysis at the steepest and/or tallest portions of the east valley slope; the locations of the cross-sections are shown on Drawing No. 1, enclosed.

The slope profiles at the cross-sections were interpreted from the contours and spot elevations presented on the aforementioned topographic survey plan. The subsurface profile at each cross-section was interpreted based on BH/MW 8 from the geotechnical investigation report prepared by our office, Reference No. 2507-S174, dated October 2025. Borehole data indicated that beneath the surficial topsoil veneer, the slope is underlain by stratum of stiff to hard silty clay till. A high groundwater level (at surface) recorded from the monitoring well, MW8, between September 2025 and March 2026 by our office was incorporated into the analysis as a phreatic surface.

The slope stability was analysed using the limit-equilibrium criteria of the Bishop Method, with the effective soil strength parameters shown in the following table:

Soil Type	Unit Weight γ (kN/m³)	Cohesion c' (kPa)	Internal Friction Angle ϕ' (degrees)
Silty Clay Till	22.0	5	30

Results

The slope stability analysis results indicate that the existing slope at Cross-Sections A-A, B-B, and C-C has a minimum factor of safety (FOS) of 1.67 to 2.64, which satisfies the Ontario Ministry of Natural Resources (OMNR) and CH guideline requirements for active land use (minimum FOS 1.5) as well as the accepted minimum FOS of 1.3 under high groundwater condition. The existing slope at Cross-Section D-D, with a resulting FOS of 1.27, failed to meet the minimum OMNR or CH requirement.



A 5.0 m Toe Erosion Allowance (TEA) was recommended by GEO Morphix Ltd. to be applied from the edge of channel bank. In view that the watercourse is located at the base of slope at Cross-Sections A-A and D-D, the cross-sections were remodelled with the incorporation of the TEA and a stable gradient of 2.2 to 2.3H:1V. The remodelled slopes yield a resulting FOS of greater than 1.5, which satisfies the OMNR and CH requirements. The slope stability results are presented on Drawing Nos. 2A to 5B, and are summarized in the table below.

Slope Stability Analysis Results - East Valley Slope

Cross-Section	Existing Slope Gradient (H:V)	Existing FOS	Stable Slope Gradient	Stable FOS	Available Flood Plain (m)	TEA Applied (m)	LTSTOS Setback from TOS ^a (m)
A-A	4.6:1	2.64	2.2:1	1.70	0.0	5.0	0.0
B-B	3.4:1	2.49	N/A	N/A	16.4	0.0	0.0
C-C	2.1 to 3.1:1	1.67	N/A	N/A	6.4	0.0	0.0
D-D	1.6:1	1.27	2.3:1	1.51	0.0	5.0	8.5

^a TOS - Top of Slope

The LTSTOS, incorporating the stable slope gradient and TEA, where applicable, is established on Drawing No. 1. The application of the TEA may not be apparent where the flood plain is greater than 5 m.

Lastly, a development setback buffer will be required to account for man-made and environmental degradation of the valley land, as well as to provide access allowance during repair and maintenance events. This setback is subject to the discretion of the Conservation Halton (CH).

In order to prevent disturbance of the existing slope, the following geotechnical constraints should be stipulated:

1. The prevailing vegetative cover on the slope must be maintained as its rooting system acts as reinforcement against soil erosion by weathering. If, for any reason, the vegetative cover is stripped, it must be reinstated to its original, or better than its original, protective condition.
2. Any leafy topsoil cover on the slope face should not be disturbed, since this provides insulation and screening against frost wedging and rainwash erosion.
3. Grading of the land adjacent to the slope must be such that concentrated runoff is not allowed to drain onto the slope face. Landscaping features which may cause runoff to



pond at the top of the slope, such as infiltration trenches, as well as saturating the crown of the slope, must not be permitted.

4. Where development is carried out adjacent to the slope, there are other factors to be considered related to possible human environmental degradation. These include, but not limited to, soil saturation from frequent watering to maintain landscaping features, stripping of topsoil or vegetation, dumping of loose fill over the slope, and material storage close to the top of slope. These actions must be prohibited.

The above recommendations are subject to the approval and requirements of the CH.

We trust this letter satisfies your present requirements; however, should any queries arise, please feel free to contact this office.

Yours truly,
SOIL ENGINEERS LTD.

Hui Wing Yang, P.Eng.
HWY/KH



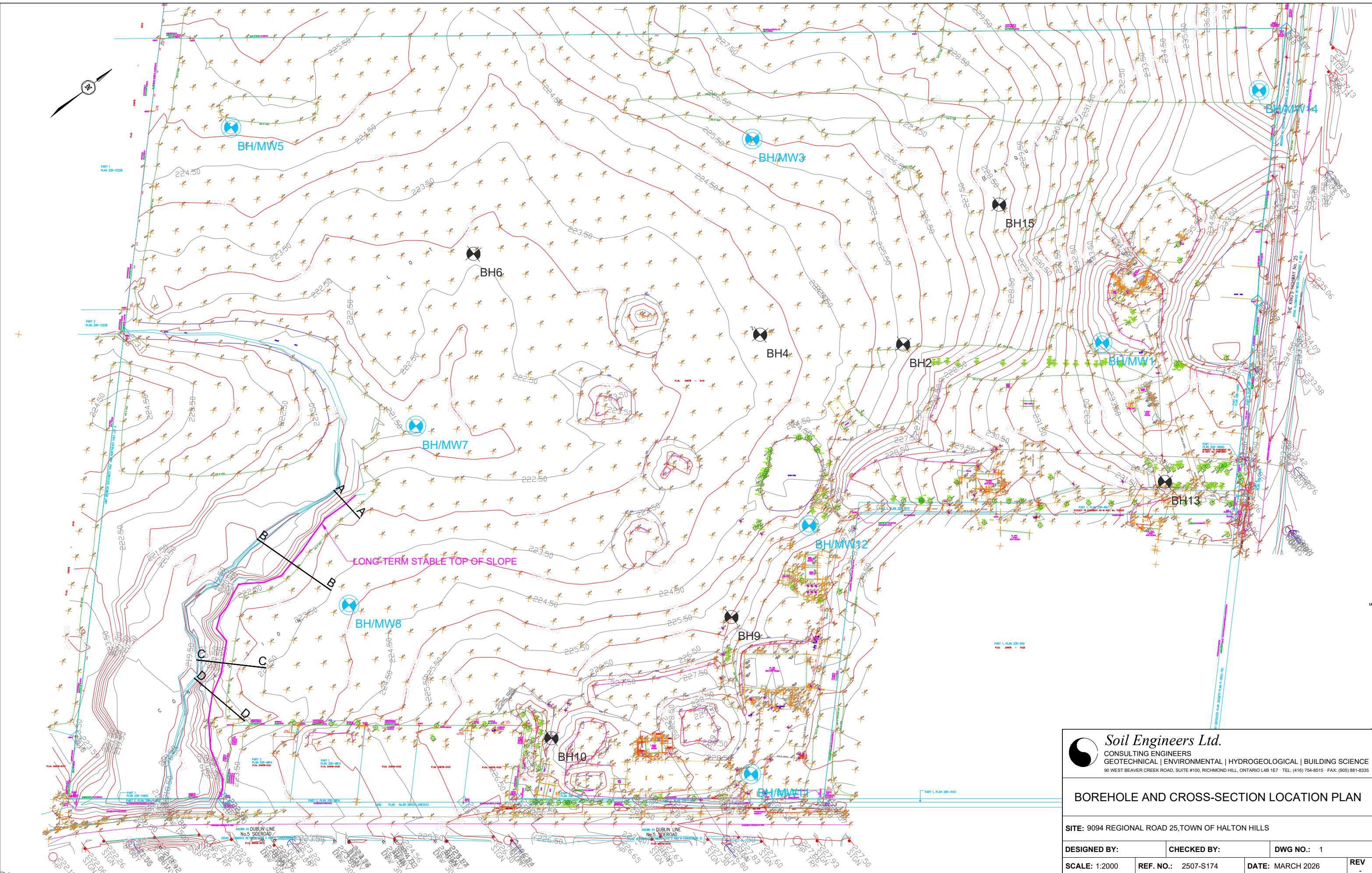
Kelvin Hung, P.Eng.



ENCLOSURE

- Cross-Section Location Plan Drawing No. 1
- Slop Stability Analysis Results Drawing Nos. 2A to 5B

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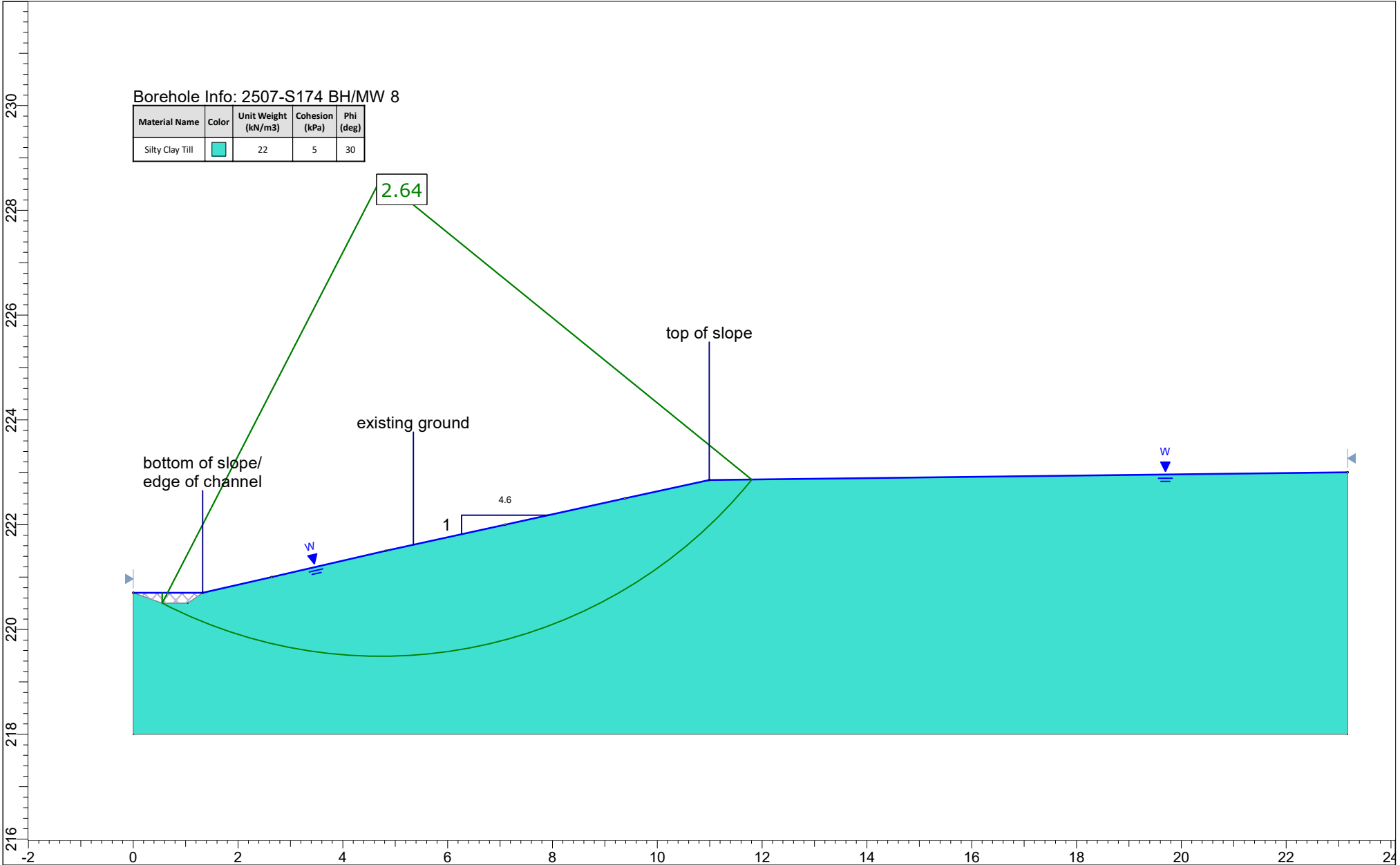
BOREHOLE AND CROSS-SECTION LOCATION PLAN

SITE: 9094 REGIONAL ROAD 25, TOWN OF HALTON HILLS

DESIGNED BY:	CHECKED BY:	DWG NO.: 1
SCALE: 1:2000	REF. NO.: 2507-S174	DATE: MARCH 2026
		REV

Borehole Info: 2507-S174 BH/MW 8

Material Name	Color	Unit Weight (kN/m ³)	Cohesion (kPa)	Phi (deg)
Silty Clay Till	■	22	5	30



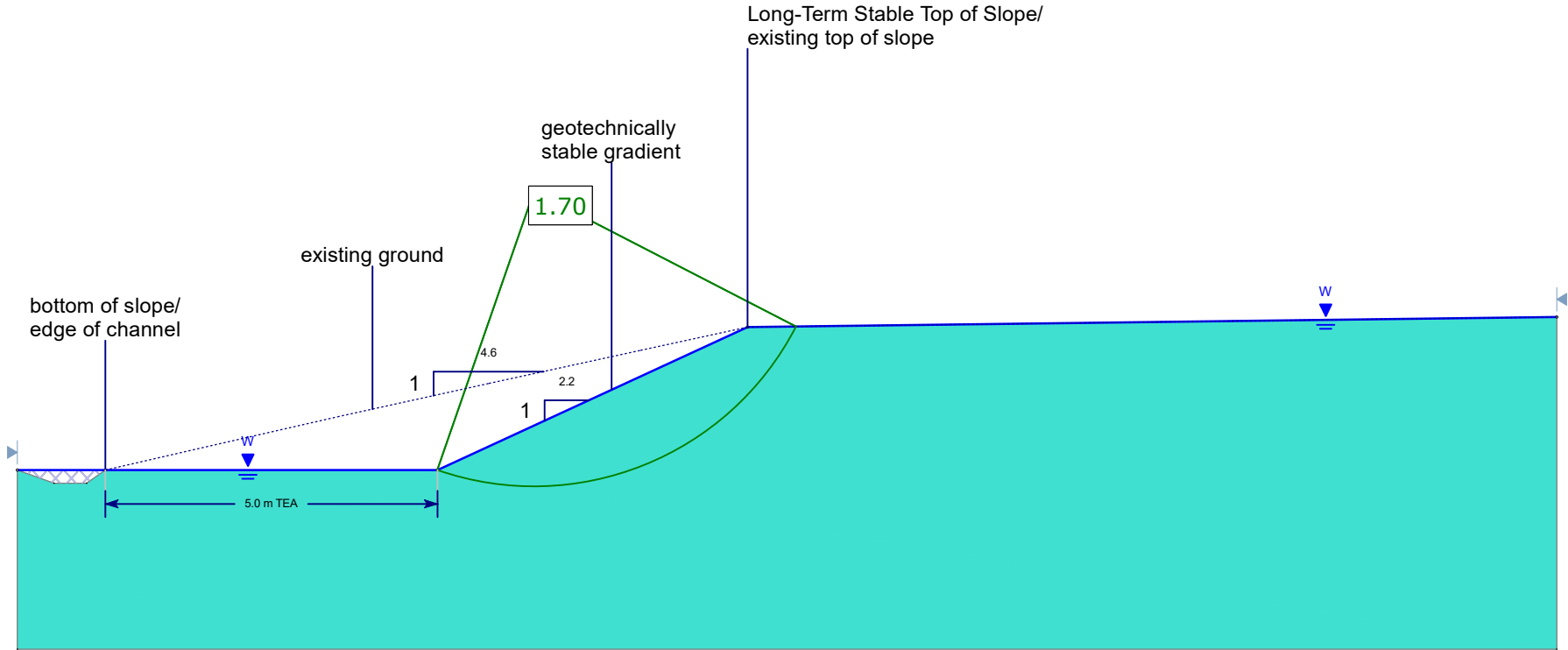
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Project Title		Cross-Section A-A		Load Case		Existing Condition	
Location		9094 Regional Road 25, Town of Halton Hills					
Drawn By	HWY	Checked By	KH	Scale	1:100	Revision	-
Date	March 2026			Reference No.	2507-S174	Drawing No.	2A

Borehole Info: 2507-S174 BH/MW 8

Material Name	Color	Unit Weight (kN/m ³)	Cohesion (kPa)	Phi (deg)
Silty Clay Till	■	22	5	30



Soil Engineers Ltd.

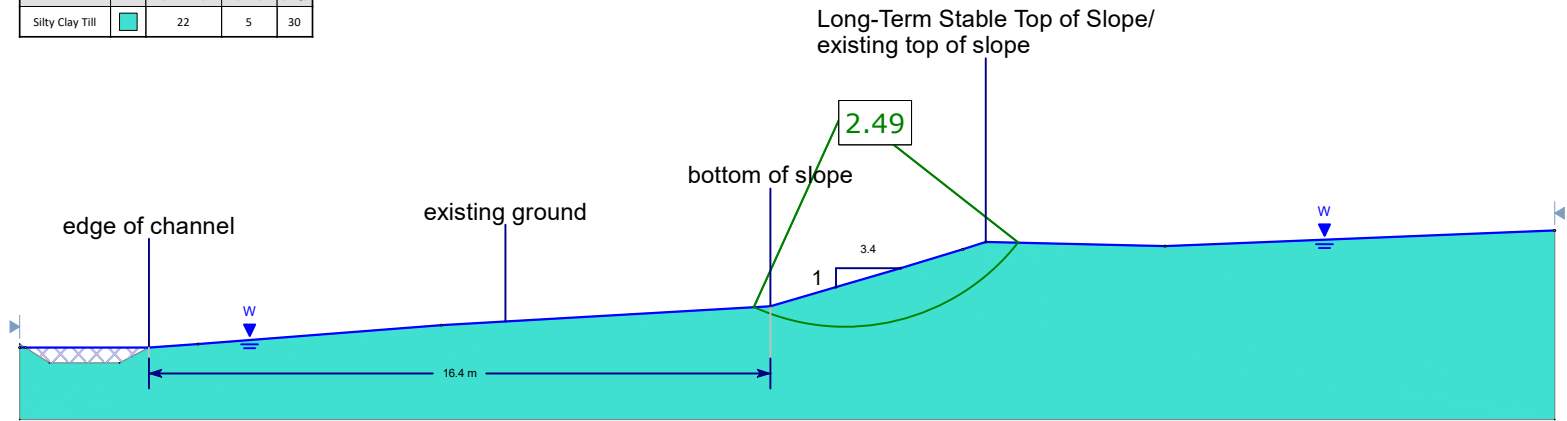
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Project Title		Cross-Section A-A		Load Case		Geotechnically Stable Condition	
Location		9094 Regional Road 25, Town of Halton Hills					
Drawn By	HWY	Checked By	KH	Scale	1:100	Revision	-
Date	March 2026			Reference No.	2507-S174	Drawing No.	2B

212 214 216 218 220 222 224 226 228 230 232 234 236 238 240 242 244

Borehole Info: 2507-S174 BH/MW 8

Material Name	Color	Unit Weight (kN/m ³)	Cohesion (kPa)	Phi (deg)
Silty Clay Till		22	5	30



-6 -4 -2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46



Soil Engineers Ltd.

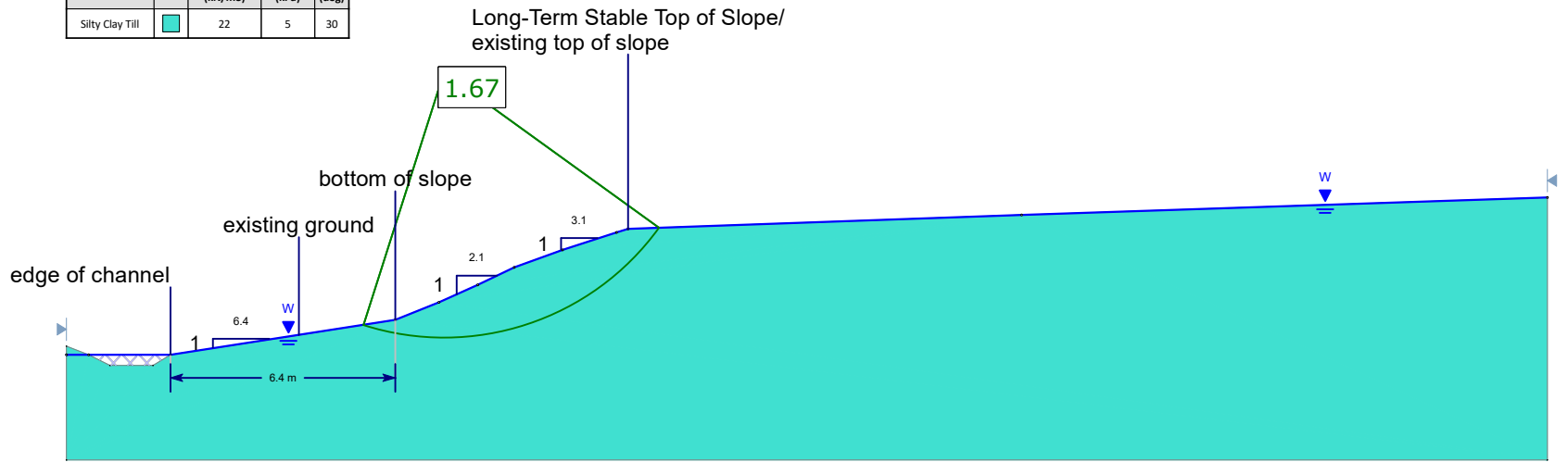
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Project Title		Cross-Section B-B		Load Case	Existing Condition	
Location		9094 Regional Road 25, Town of Halton Hills				
Drawn By	HWY	Checked By	KH	Scale	1:200	
Date	March 2026		Reference No.	2507-S174	Revision	-
				Drawing No.	3	

212 214 216 218 220 222 224 226 228 230 232 234 236 238 240 242 244

Borehole Info: 2507-S174 BH/MW 8

Material Name	Color	Unit Weight (kN/m ³)	Cohesion (kPa)	Phi (deg)
Silty Clay Till	■	22	5	30



-6 -4 -2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46




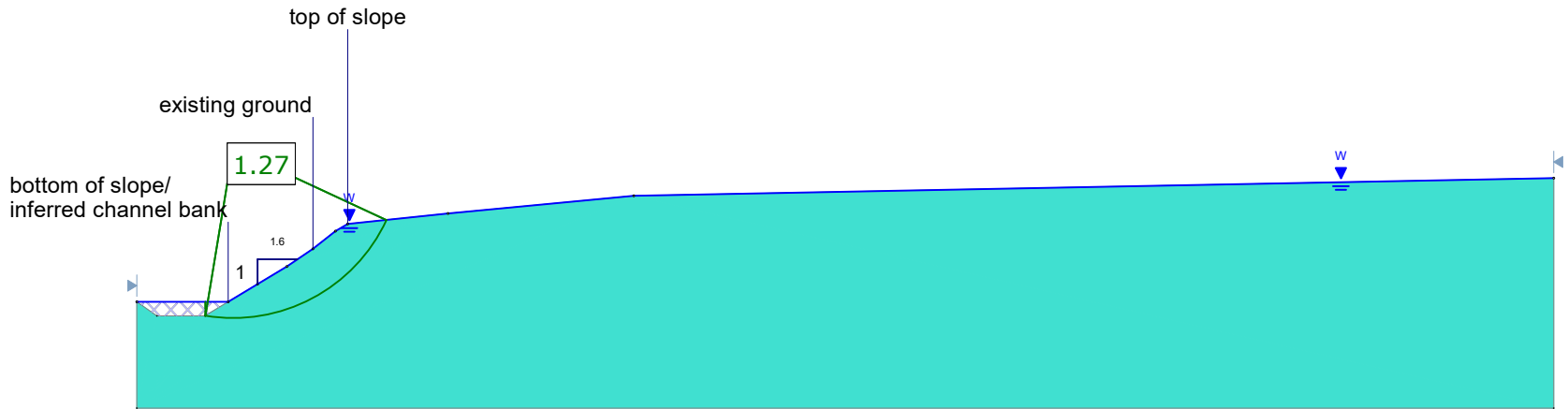
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Project Title		Cross-Section C-C		Load Case		Existing Condition	
Location		9094 Regional Road 25, Town of Halton Hills					
Drawn By	HWY	Checked By	KH	Scale	1:200	Revision	-
Date	March 2026			Reference No.	2507-S174	Drawing No.	4

212 214 216 218 220 222 224 226 228 230 232 234 236 238 240 242 244

Borehole Info: 2507-S174 BH/MW 8

Material Name	Color	Unit Weight (kN/m ³)	Cohesion (kPa)	Phi (deg)
Silty Clay Till		22	5	30



-8 -6 -4 -2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44



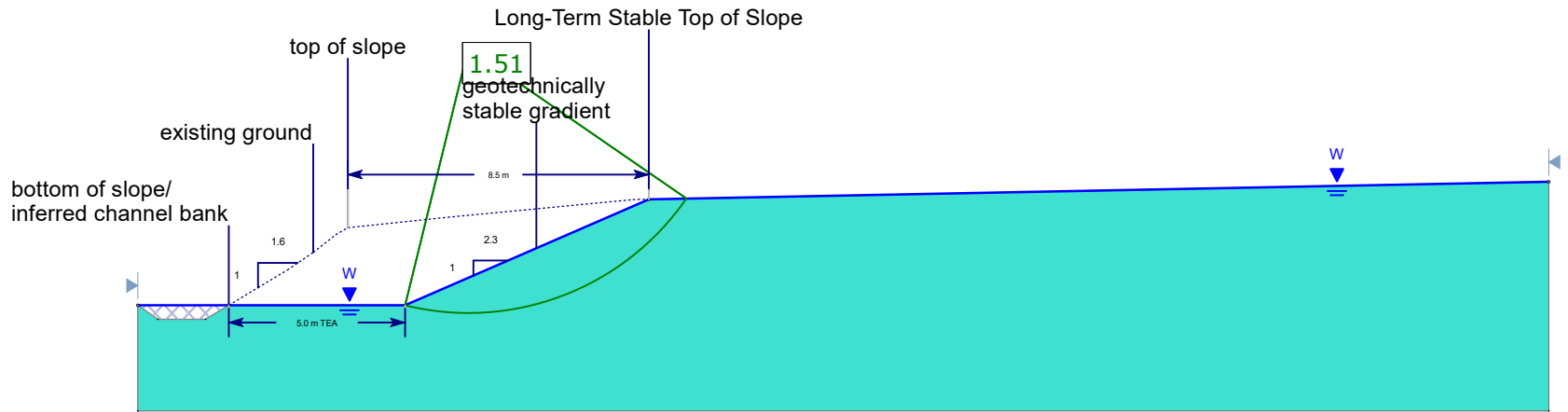
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Project Title		Cross-Section D-D		Load Case		Existing Condition	
Location		9094 Regional Road 25, Town of Halton Hills					
Drawn By	HWY	Checked By	KH	Scale	1:200	Revision	-
Date	March 2026			Reference No.	2507-S174	Drawing No.	5A

Borehole Info: 2507-S174 BH/MW 8

Material Name	Color	Unit Weight (kN/m ³)	Cohesion (kPa)	Phi (deg)
Silty Clay Till	■	22	5	30



24
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-8 -6 -4 -2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44



Project Title		Cross-Section D-D		Load Case		Geotechnically Stable Condition	
Location		9094 Regional Road 25, Town of Halton Hills					
Drawn By	HWY	Checked By	KH	Scale	1:200	Revision	-
Date	March 2026			Reference No.	2507-S174	Drawing No.	5B