

May 17, 2024
Our File: 224002-1

Via Email: abner@maplelane.ag

Durham Heights Bible Retreat Inc.
9553 Wellington Road 6
Mount Forest, ON N0G 2L0

Re: Slope Review
Durham Heights Bible Retreat
423018 Rocky Saugeen Road
Municipality of West Grey

Dear Mr. Wideman,

GEI Consultants Canada Limited/GM BluePlan Engineering has been retained by Durham Height Bible Retreat to complete engineering services relating to a proposed Bible Retreat & Spiritual Center located at 423018 the Rocky Saugeen Road within in the Municipality of West Grey.

As part of the draft plan submission for the proposed development, Saugeen Valley Conservation Authority (SVCA) identified potential slope hazards on the site that require the review of a geotechnical engineer to comment on the condition of the slope.

This letter report provides a review of the current slope conditions and comments on the proposed development.

Site Setting

The site currently is accessed from the Rocky Saugeen Road, by an existing ± 6.0 m wide gravel driveway installed approximately 260 m East of Provincial Highway No. 6. For the purposes of this letter report, Rocky Saugeen Road is considered to run east-west in front of the subject property.

The "Physiography of Southern Ontario.", Chapman and Putnam, 1985, identifies the subject area as part of the Horseshoe Moraines physiographic region. The region is characterized by the irregular stony knobs and ridges that features mostly till and some sand and gravel deposits. The area of Durham is known for a great number of gravel pits. The till in the area is known to contain numerous stones and boulders.

The Quaternary Geology of Ontario (Map 2556) classifies the native soils in the area as glaciofluvial outwash deposits of gravel and sand. The Soils of Grey County (Soil Survey Report No. 17) details the surficial soils in the area as part of the Donnybrook sandy loam series, a poorly sorted outwash.

Slope Review

The undersigned visited the site to review the slope conditions on April 12, 2024. A previous topographical survey had been completed, with the focus on the subject area to the south of Rocky Saugeen Road. For the purposes of this review, these are considered two general areas of the slope being reviewed and the areas are represented by Section A-A and Section B-B.

Section A-A cuts through the slope to the on the north and south side of Rocky Saugeen Road. The top of the slope along this section is near elevation 365m and the bottom of the slope is near elevation 325m, with the overall height of approximately 40m. The upper portion of the slope is at an inclination of 9° to 18°. The slope then has an over-steepened section on the south side of Rocky Saugeen Road, transitioning to an inclination of 35°. On the north side of Rocky Saugeen Road, the slope is at an inclination of 25°, down towards a vertical rock face that is approximately 8 to 10m in height. Below the rock face is relatively flat, with low lying marshy land and the Rock Saugeen River approximately 30m from the base of the slope.

Section B-B is through the slope on the north and south side of the access laneway to the proposed site. This slope is at an inclination of 7° at the top, and transitions to 16° on the south side of the access laneway and 17° on the north side.

On April 12th, during the site visit to review the current condition of the slope, general measurements of the slope inclinations were recorded and found to be generally consistent with the desktop study of the slope. The slopes are well treed, with mainly mature trees and both deciduous and coniferous tree growth. The over-steepened section along the south side of Rocky Saugeen Road and the access laneway features no tree growth and minimal vegetative cover, with the sand and gravel subsurface exposed along the section. As such, there was some evidence of localized erosion of the sand and gravel along Rocky Saugeen Road. No seepage of groundwater was evident along the sections of the slope observed.

The background subsurface information gathered in combination with the topographical survey information, base map contouring and on-site observations was used to conduct preliminary slope condition review. The cross-section locations are identified on Figure No. 1 and the cross-sections are shown on Figure No. 2.

Slope Stability Rating

Based on the above noted observations and slope measurements, the Slope Stability Rating Chart (Table 8.1) from the Ministry of Natural Resources (MNR) Geotechnical Principles for Stable Slopes Guidelines was used to evaluate the slope and determine the potential investigation requirements. The scoring of slope based on the parameters of the Chart is attached to this letter report. The total rating value was determined to be 22, which corresponds to a Low Potential for Slope Instability based on the existing conditions of the slope.

Therefore, the proposed development and alterations to the entrance of the site from Rocky Saugeen Road are not believed to impact the long-term stability of the slope.

Proposed Development

The proposed development includes the re-alignment of the entrance so the sightlines for vehicles exiting are improved. The laneway is to be 9m width and remain a granular surface. A retaining wall is proposed on the south side of the entrance. The construction for the laneway will cut into the existing slope by 2m to 4m and will tie into existing grades at a 3 to 1 slope on the south side, as shown on the attached cross sections. Construction of the new laneway should minimize the removal of trees and vegetation along the slopes. A swale is proposed on the south side of the lane to capture runoff and direct it towards the ditch on Rocky Saugeen Road.

The proposed construction of the driveway to the specified design is not expected to impact the long-term stability of the slope. If the proposed access laneway is changed significantly, we request reviewing the modifications to confirm suitability.

Considerations

It must be noted that ground movement along the edge of the slope due to surficial erosion, long term soil creep or shallow surficial slippage is likely to occur over the long-term as part of the naturally evolving slope and periodic maintenance of the access laneway may be required.

Yours truly,

GEI CONSULTANTS CANADA LIMITED

Per:



Ethan C.J. Webb, P.Eng.
EW/clw

Encl.

cc: GEI: Bill Dubeau – wdubeau@geiconsultants.com
GEI: Darren Hewgill – dhewgill@geiconsultants.com
File No. 224002-1

224002
DURHAM HEIGHTS BIBLE
RETREAT INC.

Scale = N.T.S.
MAY 2024

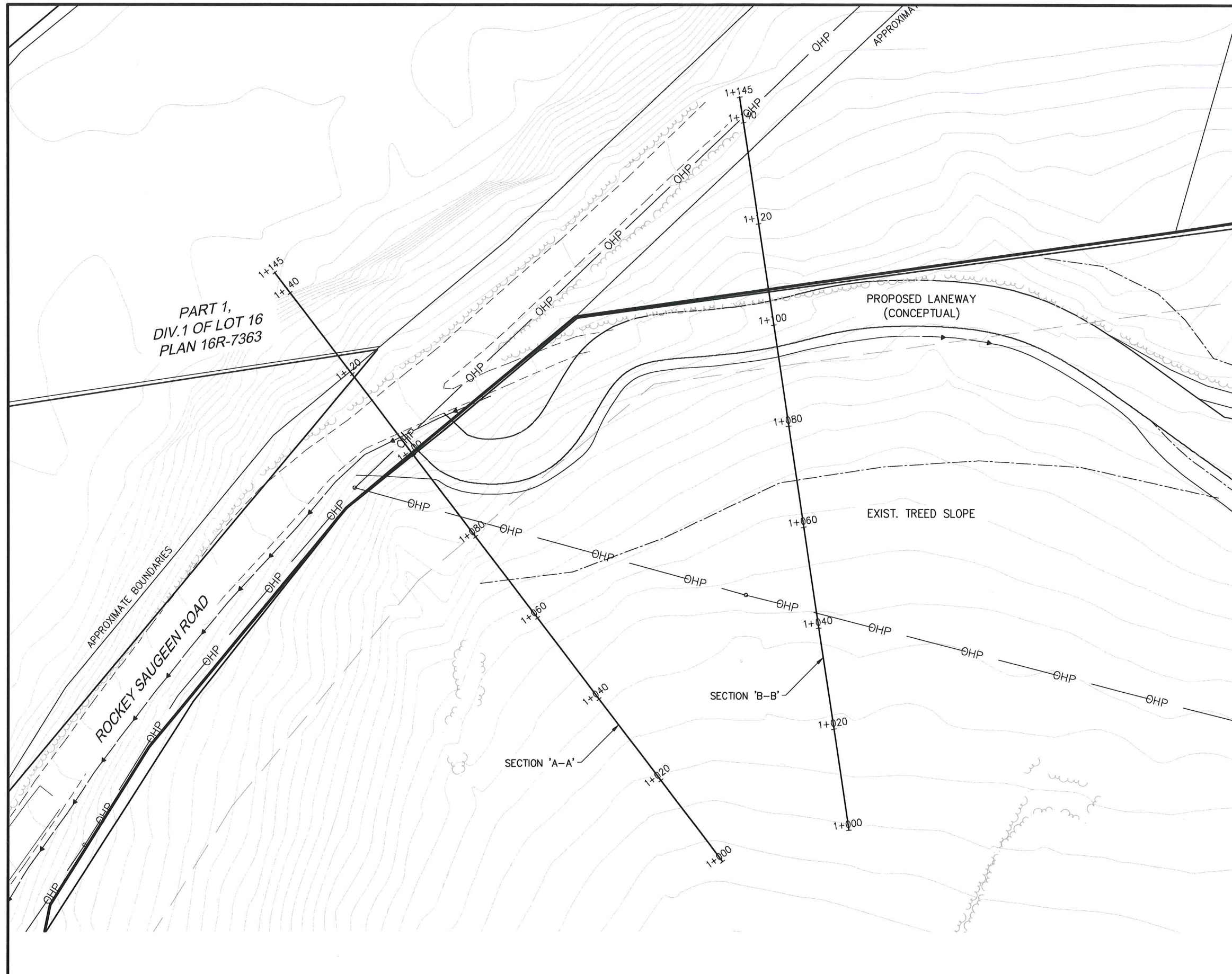
AREA OF SLOPE REVIEW

PLAN VIEW

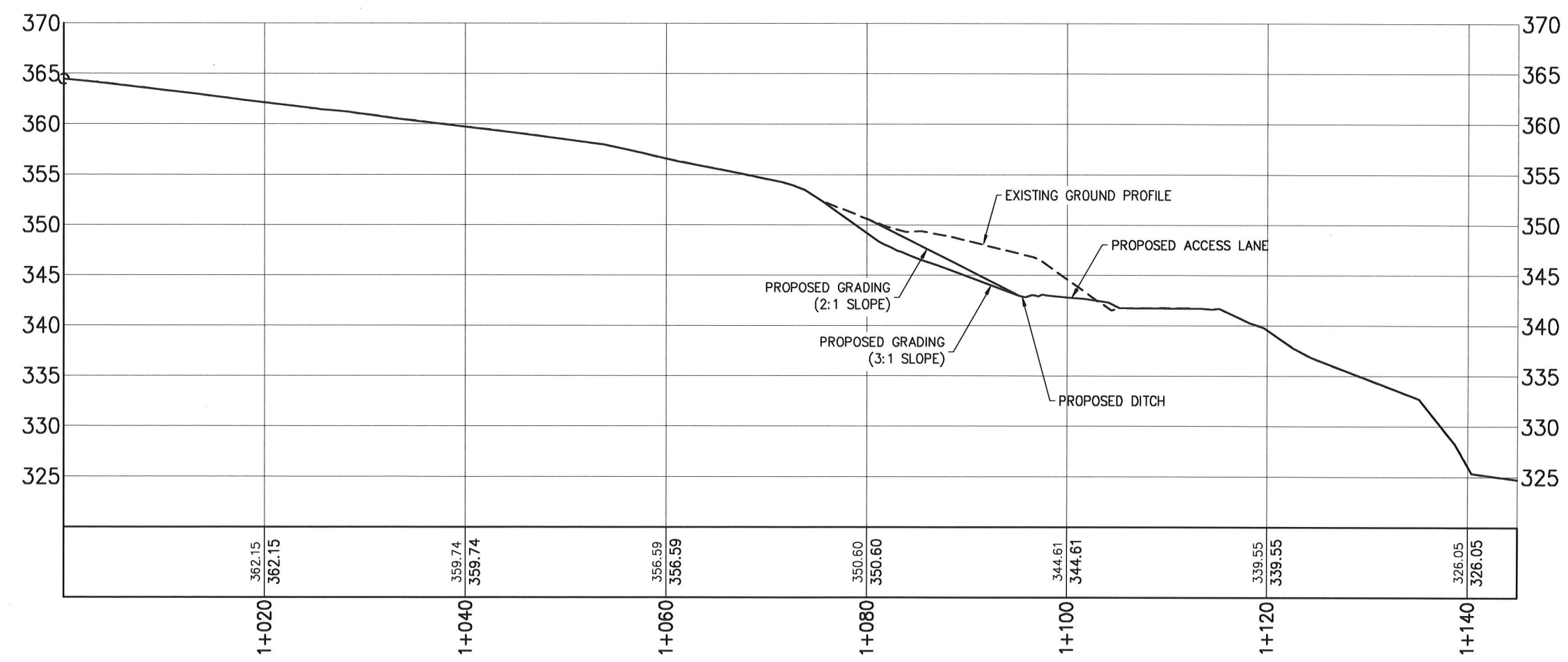
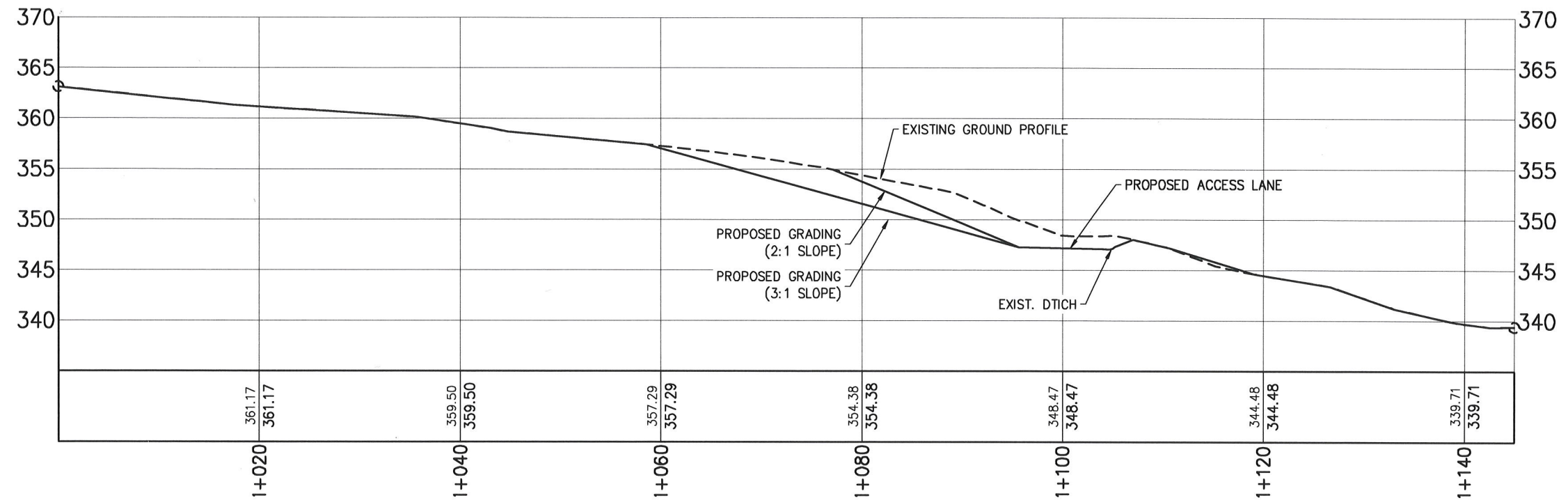
423018 ROCKY
SAUGEEN ROAD

MUNICIPALITY OF
WEST GREY

Figure No. 1



224002
 DURHAM HEIGHTS BIBLE
 RETREAT INC.



Scale = N.T.S.
 MAY 2024

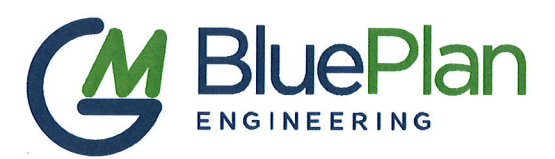
AREA OF SLOPE REVIEW

SECTION VIEWS

423018 ROCKY
 SAUGEEN ROAD

MUNICIPALITY OF
 WEST GREY

Figure No. 2



Site Location: 423018 Rocky Sauguen Rd. File No: 224002-1
 Property Owner: Durham Heights Bible Retreat Inc. Inspection Date: April 12, 24
 Inspected By: E. Webb Weather: Rain / Overcast

1. SLOPE INSPECTION			Rating Value
	Degrees	Horiz. : Vert.	
a)	18 or less	3 : 1 or flatter	0
b)	18 to 26	2 : 1 to 3 : 1	6
c)	more than 26	steeper than 2 : 1	16
2. SOIL STRATIGRAPHY			
a)	Shale, Limestone, Granite (Bedrock)		0
b)	Sand, Gravel		6
c)	Glacial Till		9
d)	Clay, Silt		12
e)	Fill		16
f)	Leda Clay		24
3. SEEPAGE FROM SLOPE FACE			
a)	None or Near bottom only		0
b)	Near mid-slope only		6
c)	Near crest only or from several levels		12
4. SLOPE HEIGHT			
a)	2 metres or less		0
b)	2.1 to 5 metres		2
c)	5.1 to 10 metres		4
d)	Greater than 10 metres		8
5. VEGETATION COVER ON SLOPE FACE			
a)	Well vegetated; heavy shrubs or forested with mature trees		0
b)	Light vegetation; Mostly grass, weeds, occasional trees, shrubs		4
c)	No vegetation; bare		8
6. TABLELAND DRAINAGE			
a)	Tableland flat, no apparent drainage over slope		0
b)	Minor drainage over slope, no active erosion		2
c)	Drainage over slope, active erosion, gullies		4
7. PROXIMITY OF WATERCOURSE TO SLOPE TOE			
a)	15 metres or more from slope toe		0
b)	Less than 15 metres from slope toe		6
8. PREVIOUS LANDSLIDE ACTIVITY			
a)	No		0
b)	Yes		6
			TOTAL
			22
SLOPE INSTABILITY RATING	RATING VALUE	INVESTIGATION REQUIREMENTS	

1.	Low potential	<24	Site inspection only, confirmation, report letter.
2.	Slight potential	25-35	Site inspection and surveying, preliminary study, detailed report.
3.	Moderate potential	>35	Boreholes, piezometers, lab tests, surveying, detailed report.

NOTES:

- Choose only one from each category; compare total rating value with above requirements.
- If there is a water body (stream, creek, river, pond, bay, lake) at the slope toe; the potential for toe erosion and undercutting should be evaluated in detail and, protection provided if required.