



December 5, 2005

File: 15-85-11

Alberta Infrastructure and Transportation  
Room 223, Provincial Building  
4709-44 Avenue  
Stony Plain, Alberta  
T7Z 1N4

Attention: Mr. Michael Baik

**NORTH CENTRAL REGION GEOHAZARD ASSESSMENT  
HWY 39:06 SAUNDERS LAKE (MODEST CREEK) – NC5  
2005 ANNUAL INSPECTION REPORT**

Dear Sir;

This letter documents the 2005 annual site inspection of an area of slope instability located along Hwy 39:06 approximately 9.5 km west of the junction of Hwy 20, Alberta (refer to Figure NC5-1, Section F). Thurber Engineering Ltd. (Thurber) undertook this inspection in partial fulfillment of our Geotechnical Services for Geohazard Assessment, Instrumentation Monitoring and Related Work contract (CE046/2004) with Alberta Infrastructure and Transportation (AIT).

Mr. Renato Clementino, P.Eng of Thurber undertook the inspection on May 19, 2005 in the presence of Mr. Roger Skirrow, P. Eng. and Mr. Wilfred Cousineau of AIT.

**1. BACKGROUND**

Thurber last visited the site on May 31, 2004 and the site condition at that time is described in our Part B assessment letter in the site binder. Additional information of the site is provided in the Geotechnical in Section G of the binder and in the report prepared by Thurber (2002) to AIT entitled "Saunders Lake Toe Berm and Other Work – Contract 6505/02 – Project Summary Report", dated December 20, 2002

## 2. SITE OBSERVATIONS

The changes in condition since last year are shown on the attached site sketch plan Figure NC5-1 in Section F of the binder. A cross section through the toe berm is also provided in Figure NC5-2. Selected photographs taken during the visit are also attached at the end of this letter.

In general the site is performing well. The maintenance crew has repaired the main erosion along the culvert outlet swale and has also realigned the swale which is now performing much better. However, a minor scour is still occurring at the culvert outlet immediately after the riprap end treatment.

A small pond of water about 1 m diameter was observed accumulating at the north toe of the berm.

The pavement crack pattern was the same as observed last year, with the exception of two faint cracks at the east side of the west bound lane as shown in the drawing.

The vegetation has filled in very well through the soil covering along the swales especially on the west swale.

The south side slope is performing well with no signs of erosion or instability.

The stick up section of Slope Inclinator SI01-2A was broken by a lawnmower or quad and is bent approximately 0.75 cm below ground surface.

## 3. ASSESSMENT

The existing berm appears to be performing very well and no slide activity was observed in this site. The SI reading has also confirmed that no movement is occurring on this site.

## 4. RISK LEVEL

The risk level for this site has been assessed as follows:

$$PF(3) * CF(2) = 6$$

A Probability Factor of 3 is considered appropriate since the slide is inactive with low probability of remobilization. A Consequence Factor of 2 is considered appropriate since the embankment fill is moderate high and a slide will affect the use of the roadway and safety of motorist, but not requiring closure of the highway.

## 5. RECOMMENDATIONS

### 5.1 General

Based on the above observation no action is required at site with the exception of minor maintenance items, which are described in Section 5.2.

Consideration should be give to removing this site from the monitoring program if no further slide activity is observed in the next year (2006) geohazard assessment.

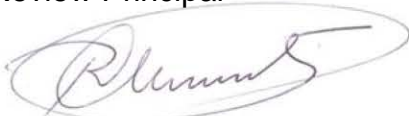
### 5.2 Maintenance

- The existing scour (Photo 1) at the culvert outlet location should be repaired as soon as possible to avoid becoming bigger and more expensive to repair. It is our understanding the Mr. Wilf Cousineau is planning to extend the existing riprap apron (riprap over non-woven geotextile) until it covers the affected area. In addition, the soil covering should be extended to cover the entire new re-aligned swale, after it is topsoiled and seeded. These measures should provide the necessary protection against future erosion at the outlet location.
- The existing silt fence at the toe of the berm should be removed (Photo 4).
- Slope Inclinometer SI01-2A (Photo 5) is located in a strategic position which would allow the early detection of future slope movement. Therefore, it is recommended that the stick up of this SI be repaired. Due to the shallow depth of the damaged section it is expected that the repair of this SI should be relatively inexpensive.

## 6. CLOSURE

We trust this assessment and recommendations meet with your needs at this time. Please contact the undersigned should questions arise or if the slide condition worsens.

Yours very truly,  
Thurber Engineering Ltd.  
Don Proudfoot, P.Eng.  
Review Principal



Renato Clementino, P.Eng.  
Project Engineer

### Attachments



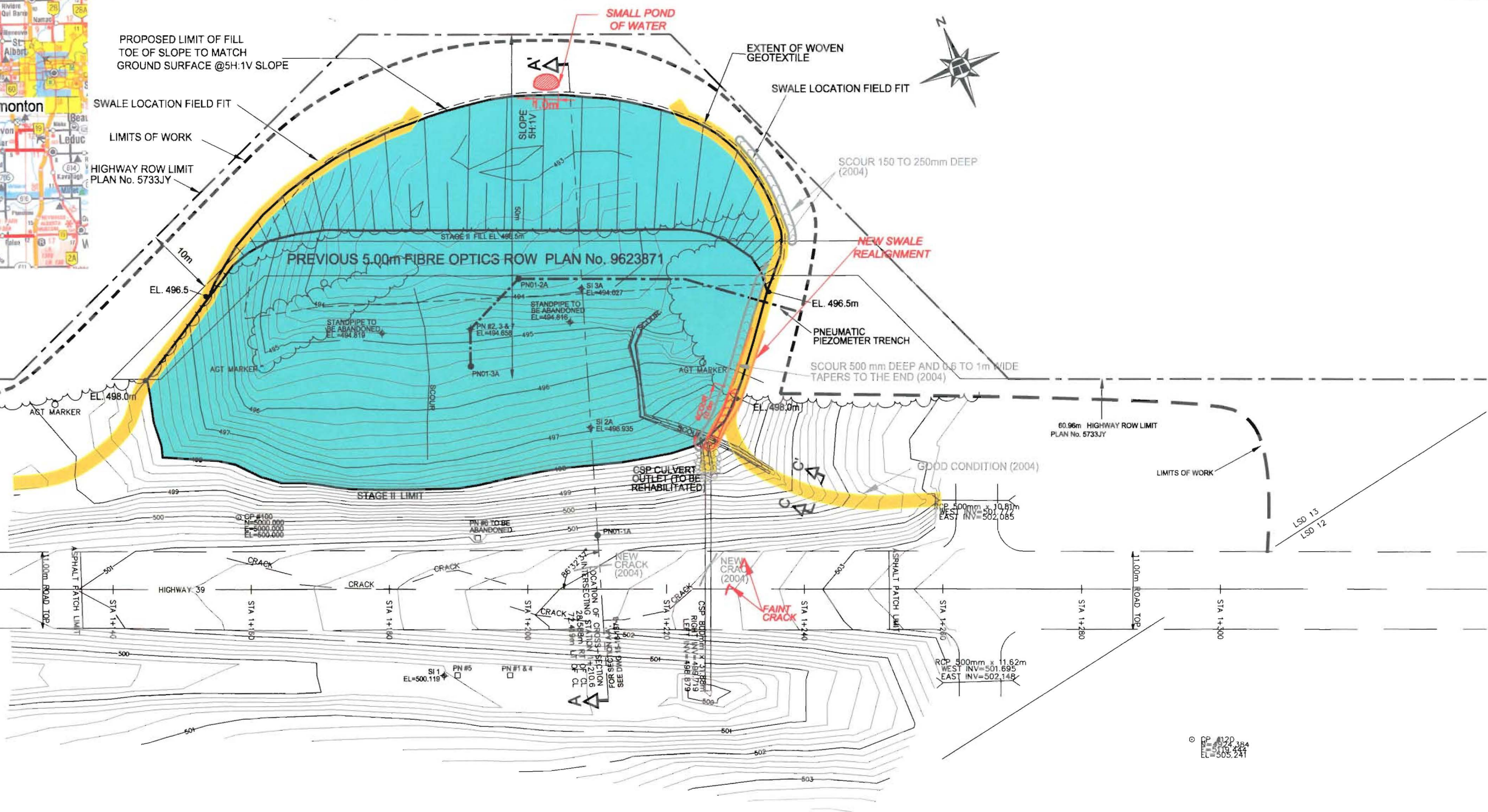


PROPOSED LIMIT OF FILL TOE OF SLOPE TO MATCH GROUND SURFACE @5H:1V SLOPE

SWALE LOCATION FIELD FIT

LIMITS OF WORK

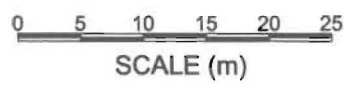
HIGHWAY ROW LIMIT PLAN No. 5733JY



N.W. Sec.36-48-05 W.5M.  
LSD 13

60.96m HIGHWAY ROW LIMIT  
PLAN No. 5733JY

- NOTES :**
1. FEATURE LOCATIONS ARE APPROXIMATE.
  2. PREVIOUS OBSERVATIONS SHOWN IN BLACK
  3. MAY 2005 OBSERVATIONS SHOWN IN RED



BASE PLAN WAS TAKEN FROM THURBER REPORT #15-16-167

THURBER PROJECT #15-85-11

ALBERTA INFRASTRUCTURE & TRANSPORTATION

SITE PLAN SHOWING TOE BERM

NORTH CENTRAL 2005  
GEOHAZARD ASSESSMENTS

NW-36-48-05-W5M  
HWY 39:06 km 1+200  
SAUNDERS LAKE, AB

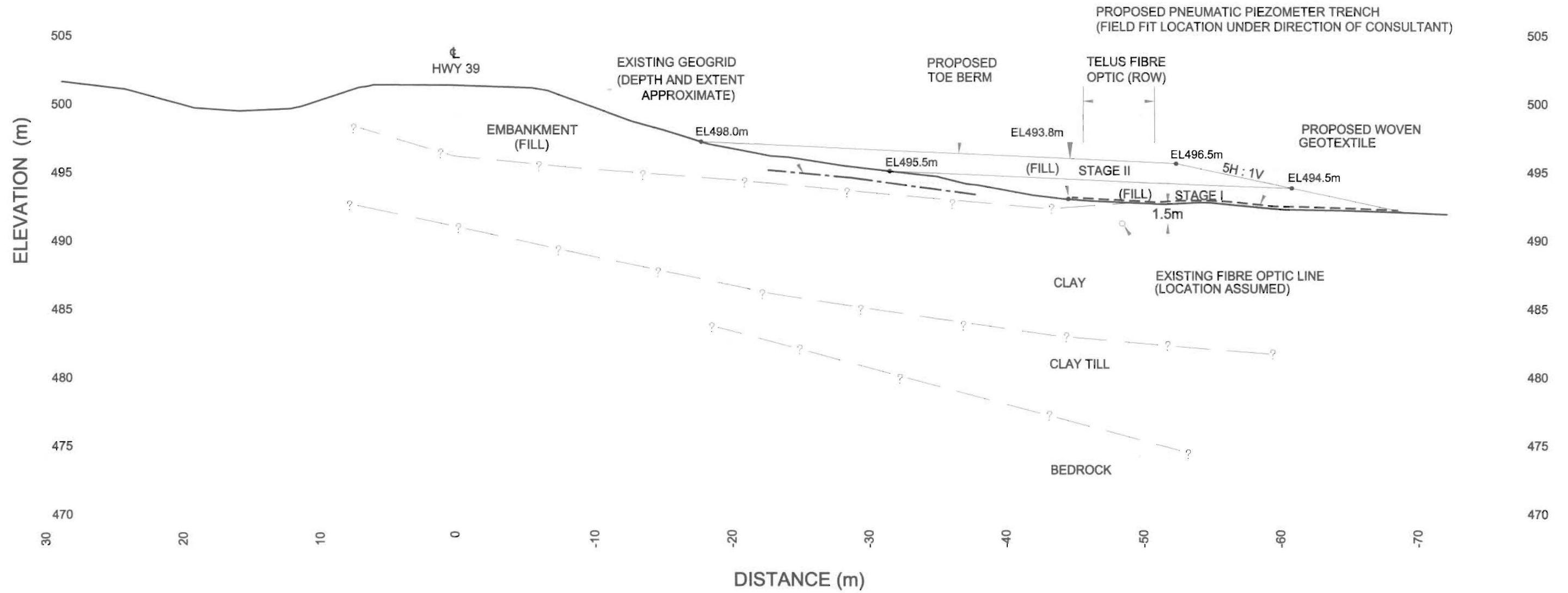
**THURBER ENGINEERING LTD.**  
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

ENGINEER:	RVC	DRAWN:	GV	APPROVED:
DATE:	MAY, 2005	SCALE:	1:600	DRAWING No.
				FIGURE NC5-1

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BASE PLAN WAS TAKEN FROM THURBER REPORT #15-16-192

THURBER PROJECT #15-85-11

ALBERTA INFRASTRUCTURE & TRANSPORTATION

**CROSS-SECTION A-A'  
AT STATION 1+210**

NORTH CENTRAL 2005  
GEOHAZARDS ASSESSMENT

NW-36-48-05-W5M  
HWY 39:06 km 1+200  
SAUNDERS LAKE, AB



**THURBER ENGINEERING LTD.**  
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

ENGINEER:	RVC	DRAWN:	ZD	APPROVED:
DATE:	MAY 2005	SCALE:	1:600	DRAWING NO.:
				FIGURE NC5-2



Photo 1. Culvert outlet scour



Photo 2. New swale realignment





Photo 3 – Berm and west swale looking east.



Photo 4 – View of the berm's toe area





Photo 4 – SI01-2A – Stick up broken and pipe is bent at 0.75m depth.