



November 28, 2008

File: 15-16-218

Alberta Transportation  
202, Provincial Building  
111 - 54 Street  
Edson, Alberta  
T7E 1T2

Attention: Mr. Cliff Corner

**NORTH CENTRAL REGION EDSON AREA GEOHAZARD ASSESSMENT  
HWY 22:32 km 32.3 SOUTH OF MAYERTHORPE – NC63  
2008 ANNUAL INSPECTION REPORT**

Dear Sir:

This letter documents the 2008 annual site inspection of an area of slope instability located along Hwy 22:32 approximately 8 km south of the town of Mayerthorpe, Alberta (refer to Figure NC63-1 attached for inclusion in Section F of the binder). Thurber Engineering Ltd. (Thurber) undertook this inspection in partial fulfillment of our Geotechnical Services for Geohazard Assessment, Instrumentation Monitoring and Related Work contract (CE103/2008) with Alberta Transportation (TRANS).

Dr. Renato Clementino, P.Eng of Thurber undertook the inspection on June 10, 2008 in the presence of Messrs. Roger Skirrow, P. Eng., Cliff Corner, Reg Faulkner, and Brian Swan of TRANS.

1. BACKGROUND

Thurber performed a call-out assessment for this site on May 17, 2007. According to information provided by Mr. Daryl Yagos (MCI for the area) at the time of the call-out, the slide occurred after a few days of a substantial rainfall. About half of the northbound lane (east side) slid down leaving a drop of approximately 200 mm. Additional information can be obtained from the call-out report dated May 17, 2007, which is included in Section G of the binder.

Following the call-out, a geotechnical investigation program was carried out on October 31, 2008, and a report dated November 30, 2007, was prepared by Thurber with three remediation options as follows:

- replacement of the slide mass with medium plastic clay;
- slope flattening and a toe berm; and
- construction of a pile wall along the highway.

A copy of the remediation options report is also included in Section G of the binder.

The pile wall was the option of choice and construction started on August 13, 2008 about two months after the geohazard site assessment discussed in this report. The construction of the pile wall was completed on August 28, 2008.

## 2. SITE OBSERVATIONS

The changes in condition since last year's call-out are shown on the attached site sketch plan (Figure NC63 sheet 1 of 2). A cross section through the main portion of the slide is presented in Figure NC63 sheet 2 of 2 and selected photographs taken during the visit are also attached for inclusion in Section F.

According to Mr. Swan the area was patched in the fall of 2007 and pavement cracks were re-appearing about three weeks after the patching.

The slide appeared to be very active. At the time of the site visit there was a well defined arc shaped crack with a differential drop across the crack of approximately 150 mm. No significant change in the toe roll was observed.

## 3. ASSESSMENT

As mentioned in Section 2 this site was repaired in August 2008 with a driven steel pile wall and is performing well. However, it will take about one to two years for the wall to be fully mobilized, and therefore some pavement cracking is expected to occur until then.

## 4. RISK LEVEL

Due to the recent repair the risk level for this site has been reduced to:

$$PF(1) * CF(3) = 3$$

A Probability Factor of 1 is considered appropriate since it is unlikely that the slide will to be re-activated. The Consequence Factor is independent of the repair and it will always exist, therefore a value of 3 is considered appropriate since the embankment is a moderate fill and a partial closure of the road would be a direct result of an unlikely slide occurrence.

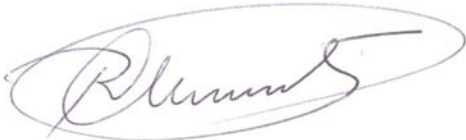
## 5. RECOMMENDATIONS

Until full pile wall mobilization has occurred pavement cracking is expected to appear and the maintenance contractor should fill cracking periodically to reduce water infiltration into the pavement. Depending on the width of the cracking pavement re-patching may be required to keep a smooth road surface.

## 6. CLOSURE

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

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



Renato Clementino, Ph.D., P.Eng.  
Project Engineer

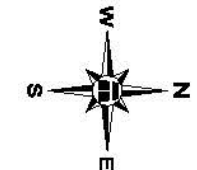
Attachments



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SE 32-56-8-5

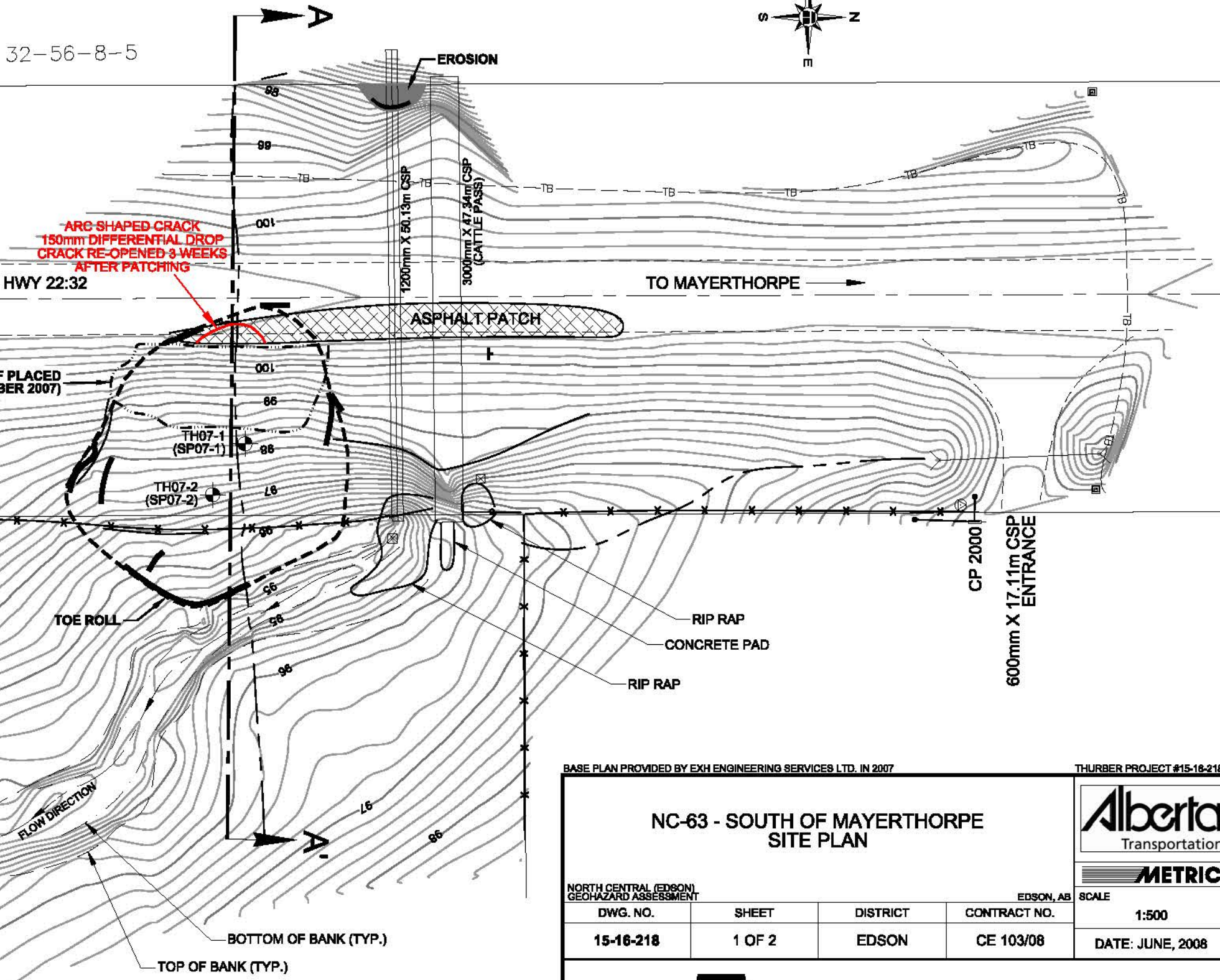
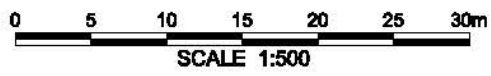


CP 1000

SW 33-56-8-5

- LEGEND**
- ⊥ POWER POLE
  - ⊡ TELEPHONE PEDESTAL
  - ⊕ SIGN
  - TB--- BURIED TELEPHONE CABLE
  - HIGHWAY CENTRELINE
  - SHOULDER
  - X--- BARB WIRE FENCE
  - CRACKS
  - SLIDE OUTLINE
  - ⊙ TEST HOLE LOCATION
  - SP STANDPIPE PIEZOMETER

JUNE, 2008 OBSERVATIONS SHOWN IN RED



BASE PLAN PROVIDED BY EXH ENGINEERING SERVICES LTD. IN 2007

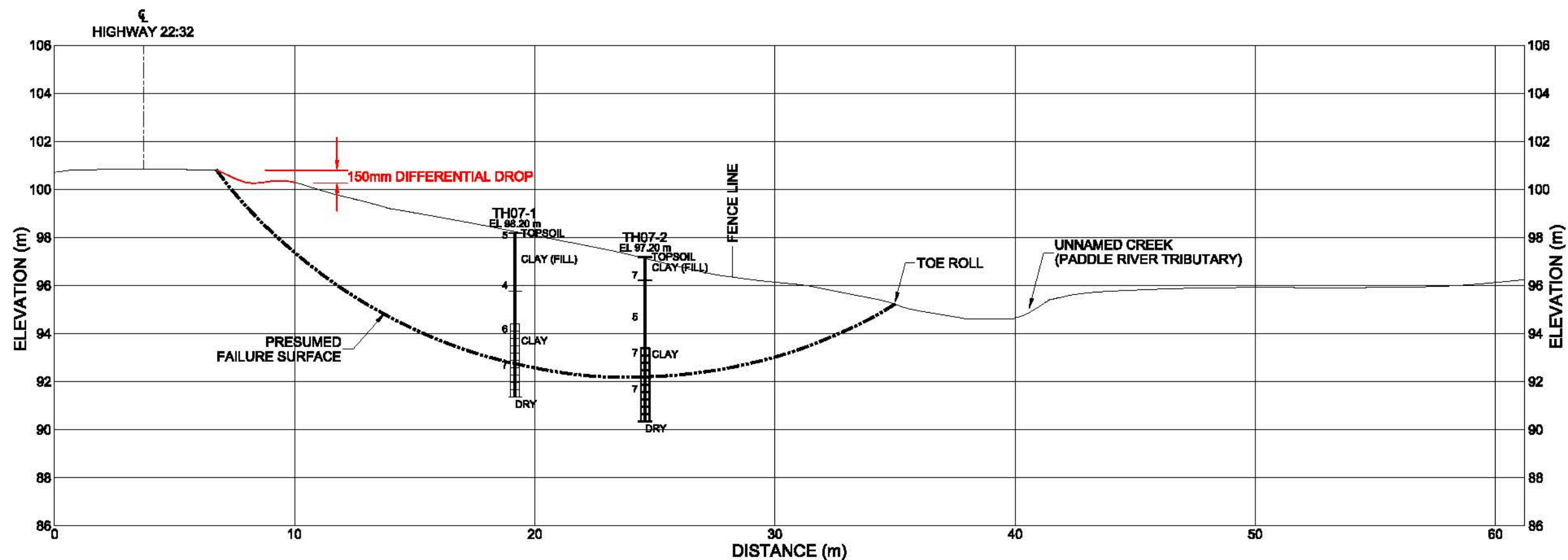
THURBER PROJECT #15-16-218

<b>NC-63 - SOUTH OF MAYERTHORPE SITE PLAN</b>				 <b>METRIC</b>
NORTH CENTRAL (EDSON) GEOHAZARD ASSESSMENT				
DWG. NO.	SHEET	DISTRICT	CONTRACT NO.	SCALE
15-16-218	1 OF 2	EDSON	CE 103/08	1:500
				DATE: JUNE, 2008



FIGURE NC63





**LEGEND**

- 15 | SPT N VALUE
- □ □ □ □ STANDPIPE PIEZOMETER SCREENED INTERVAL

**NOTES**

1. DATA CONCERNING THE VARIOUS STRATA HAVE BEEN OBTAINED AT THE TEST HOLE LOCATIONS ONLY. THE SOIL STRATIGRAPHY BETWEEN TEST HOLES MAY VARY FROM THAT SHOWN.
2. SLIDE CROSS-SECTION SURVEYED BY EXH ENGINEERING SERVICES LTD. IN 2007.
3. FAILURE SURFACE WAS ESTIMATED BASED ON SLOPE GEOMETRY AND SUBSURFACE CONDITIONS FROM DRILLED TEST HOLES.
4. GROUND WATER LEVEL WAS ASSUMED TO BE AT THE TOP OF CREEK BANKS. FOR STABILITY ANALYSES STANDPIPE PIEZOMETER READINGS SHOWED DRY CONDITIONS ONE WEEK AFTER DRILLING COMPLETION.

**STRATIGRAPHIC CROSS-SECTION A-A'**

NORTH CENTRAL (EDSON) GEOHAZARD ASSESSMENT

EDSON, AB

DWG. NO.	SHEET	DISTRICT	CONTRACT NO.
15-16-218	2 OF 2	EDSON	CE 103/08

THURBER PROJECT #15-95-97



SCALE	1:200
DATE:	JUNE, 2008



**THURBER ENGINEERING LTD.**  
GEO TECHNICAL ■ ENVIRONMENTAL ■ MATERIALS



Photo 1 - View of the distressed area.



Photo 2 – View of the side slope below the slide area.



Photo 3 – View of the slide toe roll.