THURBER ENGINEERING LTD.
GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS

December 7, 2006 File: 15-85-32

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

Attention: Mr. Randy Shaul

NORTH CENTRAL REGION LANDSLIDE ASSESSMENT
(STONY PLAIN AREA)
EMBANKMENT DISTRESS ON ACCESS ROAD (A.R. 172) TO NEW SAREPTA
2 KM EAST OF HWY 21 SOUTH EAST OF EDMONTON (NC47)
2006 ANNUAL INSPECTION REPORT

Dear Sir:

This letter documents the 2006 annual site inspection of a site located on the New Sarepta access road approximately 2 Km east of Hwy 21:26, southeast of Edmonton, Alberta. The work was undertaken by Thurber Engineering Ltd. (Thurber) in partial fulfillment of our Geotechnical Services Contract (CE142/2006) for Geohazard Assessment, Instrumentation Monitoring and Related work contract with Alberta Infrastructure and Transportation (AIT).

Dr. Mohammed Sakr, P.Eng. and Mr. Don Proudfoot, P.Eng. of Thurber undertook the inspection on June 7, 2006 in the presence of Mr. Roger Skirrow, P. Eng., Mr. Randy Shaul and Mr. Robert Kreller all of AIT.

1. BACKGROUND

Thurber first visited the site in June 2005 and the site condition at that time is described in our Part E call-out report in the site binder.

2. SITE OBSERVATIONS

The changes in condition since last year are shown on the attached site sketch plan (Figure NC47-1). Selected photographs taken during the visit are also attached.

At the location of distressed embankment, the highway is 9 m wide and paved. Cracks observed during the emergency call-out visit remained the same in size and length. It is understood that asphalt patches have not been applied to this part of the road in the last 10 years.

The bowed section of the guard rail along the south side was realigned last year.

The shallow slide in the embankment side slope above the existing culvert appeared more subdued as a result of growth of a grass cover. Water was ponded in the culvert to depth of about 200 mm above the invert of the culvert.

A marshy flat grassed field was present south of the embankment. Ponded water was also noted along the north side of the embankment slope.

3. ASSESSMENT

As indicated in our call-out report, the highway embankment failure appears to be due to progressive failure of a relatively steep embankment. However, no signs of additional distress in the embankment were observed during the present site visit.

4. RISK LEVEL

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

PF (10) * CF (4) = 40

A risk level of 40 is considered applicable to this site, based on a Probability Factor of 10 (active with moderate steady rate of movement) and a Consequence Factor of 4 (relatively high fill at a culvert crossing). The PF factor was reduced since there were no signs of significant movement since our last visit.

5. RECOMMENDATIONS

5.1 Short Term

It is recommended that annual site visits be carried out as presently programmed.

5.2 Long Term

As indicated in our Call-out report, the possible long-term solutions are as follows:

- Option 1 - construct a toe berm along with slight slope flattening; and
- Option 2 - rebuild the distressed section of the embankment with pit run granular fill.

In both solutions, the oil company should be contacted to realign their line or to confirm that the additional earth loads and associated settlements are within the allowable limits for the pipe line. Moreover during the present site visit, a Telus line was observed along the south side of embankment. Hence, Telus should be also contacted to realign their line prior to construction. .Also, Option 1 will extend into private land and hence right-of-way negotiations will be required before the work can commence.

The ball park cost of the work, excluding land, pipeline relocation and engineering costs is $150,000 to $200,000 for Option 1 and $200,000 to $250,000 for Option 2.

5.3 Investigation

It is understood that the field drilling program that was recommended in the June 2005 site visit, will be carried out by others this year. The field drilling program will consist of installing a slope inclinometer at the crest of the slope, 13 m deep and digging a test pit at the toe of the embankment to identify the soil conditions in the flat lying marshy area.

This will provide information on the primary cause for slope failure and for the preliminary design of remedial work should it be required in the future.

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

Mohammed Sakr, P.Eng.
Project Engineer
/dw
Attachments
cc Mr. Roger Skirrow, P.Eng.
Director of Geotechnical Services, AIT