



January 18, 2008

File: 15-85-72

Alberta Infrastructure and Transportation
Room 301, Provincial Building
9621 – 96 Avenue
Peace River, Alberta
T8S 1T4

Attention: Mr. Ed Szmata

**PEACE REGION (PEACE – HIGH LEVEL AREA) GEOHAZARD ASSESSMENT
HWY 744:04 JUDAH HILL (PH 12) HEART RIVER SLIDES
2007 ANNUAL INSPECTION REPORT**

Dear Sir:

This letter documents the 2007 annual site inspection of an area of slope stability located along Hwy 744:04 about 2.5 km south of Peace River, Alberta. Thurber Engineering Ltd. (Thurber) undertook this inspection in partial fulfillment of our Geotechnical Services for Geohazard Assessment, Instrumentation Monitoring and Related Work contract (CE049/2004) with Alberta Infrastructure and Transportation (INFTRA).

Mr. Simon Cullum-Kenyon, P.Eng. of Thurber undertook the inspection on May 30, 2007 in the presence of Mr. Roger Skirrow, P. Eng. and Mr. Ed Szmata of INFTRA.

1. BACKGROUND

Thurber last visited the site in June 2006 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 File Review in Section A of the binder.

2. SITE OBSERVATIONS

The changes in condition since last year are shown on the attached site sketch plan and cross-section. Selected photographs taken during the visit are also attached.

No significant changes were noted at slide 1, the northern most slide that had been repaired some years ago (Photo 1). There was some seepage noted at the north end of the backscarp.

Additional cracking and vertical offset has occurred north of slide 2, and between slideS 2 and 3 back from the crest of the slope, suggesting imminent expansion of these slides (Photo 2). Though the distance between the backscarp and guardrail remains 3 m (Photos 2 and 3), there has been movement and failure within the slide bowl (Photo 4).

At slide 3, the distance between the backscarp and guardrail remains 6.5 m, and although the upper part of the slide bowl appears stable, there has been fresh movement lower down within the failed mass (Photos 5 and 6). Photo 6 also shows water in the sag pond at the base of this slope segment.

Slide 4 does not appear to have changed significantly, though there is some cracking on either side of the slide area (Photos 7 and 8).

No maintenance or repair work has been carried out since the last visit.

3. ASSESSMENT

Surface water drainage appears to be the primary factor driving development of these slides. Slides 2 and 3 are expected to enlarge, with further movement of the unstable blocks on either side of these slides. Enlargement of the slides so far has been primarily through lateral expansion rather than retrogression towards the guardrail. Repair work at slide 1 continues to perform well.

4. RISK LEVEL

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

$$PF(9) * CF(2) = 18$$

The risk level has decreased slightly from last year (22) due to no apparent increase in the rate of movement. The slides are sufficiently far away from the active road lanes that there are no immediate concerns.

5. RECOMMENDATIONS

5.1 Short Term

In the short term the site should be regularly inspected by the MCI, particularly after heavy and/or prolonged rain or snowmelt to ensure that the slides haven't encroached on the road.

5.2 Long Term

Consideration should be given to repair work at Slide No.2 similar to that for Slide No.1. The work could be deferred and the slide observed, but the extent of future repair work will be greater. The repair could be combined with more general improvements to drainage alongside the layby, such as installation of a French drain, in order to decrease or arrest slide development in this area. With no work, the slides will develop and expand to affect the layby, and ultimately the active lanes, though this may take a number of years, depending on spring runoff and rainfall. Slide No. 2 may start impacting the layby within 12 to 24 months.

The approximate cost for repairing Slide No. 2 is \$100,000, with installation of a French drain along the ditch estimated to cost another \$40,000.

5.3 Investigation

No investigation is required at present.

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



Simon Cullum-Kenyon, P.Eng.
Project Engineer
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Attachments