

**BRIEF FILE REVIEW
(LANDSLIDE RISK ASSESSMENT)**

- 1) **Site (GP14)** SH 733:04 at Bad Heart River Crossing (bridge size double culvert)
Two slides are located at this crossing one on each side of the valley wall:
Location a) north approach slide
Location b) south approach slide
- 2) **Reference Location along Highway:** SH 733:04 at Bad Heart River Crossing (bridge size: double culvert)
- 3) **Legal Description:** NE Section 28, Twp 75, Rge 3, W6M
- 4) **UTM Coordinate:** Location a) Northing ~~6156694.618~~ Easting ~~214586.744~~
Location b) Northing ~~6156893.151~~ Easting ~~214540.334~~
- 5) **AI File:** None
 - Past records of this slide possibly reside with MD/ID or County Office (1996-2000 SH 733 under responsibility of MD or County);
 - or under other file names in AI archives
- 6) **Alberta Infrastructure Plan and Profile**
 - None
- 7) **General Description of Instability**
 Cracking and settlement of pavement at both distress areas indicated that sliding occurred at both sides (north and south) of the valley wall where fill heights of 8 to 10 m were constructed on the sidehill of this Bad Heart River Valley slope. The length of affected roadway was estimated at 300 to 350 m on either side of the valley wall close to ¼ height of the river valley. It was observed that this highway was upgraded from a winding local roadway to achieved higher geometric standards with sidehill cut/fill. From observations on site, it appeared that local soil strength cannot support fill slope of heights of 8 to 10 m along sidehills of this valley wall. Toe berming was constructed at a distress area of the north approach of this valley crossing alignment. From site observation, it was apparent that slope indicators and piezometers were installed by others within the past 2 to 4 years.
- Records of past instrumentation (slope indicator and piezometer) installations and past information monitored on slide movement information could not be located in AI archives. The soil information, groundwater and movement regime as investigated and monitored by previous instrumentation might possibly be obtained from the previous owner (MD/ID/County) of this secondary highway.
- 8) **Date of Initial Observation**
 - June 2000 (Slide Tour 2000)
- 9) **Date of Last Inspection**
 - June 2000 (Slide Tour 2000)
- 10) **Instrument Installed (site observations, detail of SI remains to be procured)**
 - 3 slope indicators
 - 1 piezometer
 - A. North approach slide
 - SI # 98-5
 - SI # 98-2
 - Piezo # 98-1

6156694.02

*411.980.50
Zone 11*

B. South approach slide

- SI # 98-7

- Possibly other slope indicators and piezometers are present but were not identified (June 2000) on site. The information should be available from County or MD/ID office as they were responsible for the secondary highway for the 1996-2000 period. (when AI decentralized the secondary highway responsibilities).

11) **Instrument Operational (site observations, details of SI remains to be procured)**

- Uncertain. Conditions of the instruments can be verified if requested by AI in the oncoming instrumentation monitoring cycles.

12) **Risk Assessment**

$$PF (7) * CF (5) = 35$$

$$PF = 7$$

- Active with perceptible movement as cracking and settlement of pavement evident.
- Past information on soil conditions and movement data need to be reviewed to determine movement and lithology.

$$CF = 5$$

- Slide will force closure of highway
- Roadway users are mostly local farm traffic

Note:

This Risk Assessment rating is based on the Scheme proposed by AI in the Request for Proposal (2000).

Probability Factor (PF) : 1 to 20 scale

Consequence Factor (CF) : 1 to 10 scale

13) **Geotechnical Conditions**

- This site is located within the general Peace River area and the Bad Heart River is a tributary to the Smoky River which flows to the Peace River. The upland topography above the Bad Heart River Valley is gentle rolling terrain. Surficial deposits are generally glacial till and lacustrine clay deposits from past glaciation erosions and deposition as well as glacial lake deposition environments. The thickness of surficial deposits can vary from a few meters to the 100 metre range, generally increasing thickness at river valley areas.
- Bedrock comprised Cretaceous sandstone and shale. Sequences of bedrock formation (top down) can generally be: 1) Wapiti Formation, 2) Smoky River Formation, 3) Bad Heart Formation, 4) Dunvegan Formation, 5) St. Johns Formation, and 6) Peace River Formations.

14) **Chronology**

- It is not certain whether movement was experienced at the time of gradeline construction (upgrade from local road) which required berm construction for stabilization of the slope at the north approach. (need to check with Mike Rose: previous AI project manager).
- It is apparent that slope indicators, piezometers and a slope profile survey were carried out in the past few years (1996 to 1999).

Past investigations

- Refer to the county who might have retained another consultant to investigate this slide. A copy of the past investigation report is required for information.

Mitigative measures recommended or implemented

- Unknown.
- A copy of the past investigation report is required for information.

15) **Action**

- Further review of file information for this slide as a history of past investigation should exist. The past records might be residing in MD/ID office, AI District Office and AI archives.
- Obtain investigation report from existing instrumentation was apparently installed by another consultant.
- Verify functionality of existing instrumentation of this site in the upcoming instrumentation cycle of Spring 2001 and assess the site conditions for future investigation requirements.
- Planning of future investigation and additional instrumentation will be based on a review of the above-suggested file information, including instrumentation data.

END