

Highway 940 – Km 20.2 Cut Slope

This site is located approximately 20 km northbound along Highway 940 from the intersection between Highway 940 and Highway 3, in Coleman, AB. The site location is shown on Figures B1 and B3 in Appendix B. The site coordinates are listed in Table B1 in Appendix B.

The site inspection was performed on September 27, 2008 by Mr. Andrew Bidwell, P.Eng. of AMEC.

Background

AMEC is not aware of any previously reported problems or repair work at this site. The September 2008 site inspection was performed as part of the Highway 940 geohazard corridor review.

A general description of the geological and climatic conditions in this area is presented in Section 5.2 of this report.

Site Observations

- There is a rock cut slope along the west side of the road at this site. The cut slope is in the order of 12 to 15 m maximum height at a 33° crest-to-toe angle. Photos 940-15 and 940-16 show general views of the cut slope.
- The upper portion of the cut slope is near-vertical. There is a talus apron extending downslope below the near-vertical areas. The talus apron is confined to a mid-slope bench in the cut slope.
- The road ditch along the toe of the cut slope is typically 3 to 4 m wide and less than 1 m deep. Photos 940-17 and 940-18 show the road ditch with debris accumulation into the upslope side of the ditch.
- The cut slope exposes shale to sandstone rock. The bedding orientation is near-horizontal and possibly dipping very gently into the cut slope.

Assessment

The cut slope angle of 33° is gentle enough to prevent debris from erosion of the cut slope from falling and bouncing down towards the road. The existing ditch appears to be sufficient to contain eroded material that does roll and slide downslope.

Risk Level

The recommended Risk Level for this site, based on AT's rockfall risk matrix, is as follows:

- Probability Factor of 3 to reflect the negligible amount of rockfall activity on a cut slope of this inclination.
- Consequence Factor of 1 based on the negligible impact of the cut slope erosion on the road surface.

Therefore, the current recommended Risk Level for this site is 3.

Recommendations

No work is recommended for this site. The accumulated debris may need to be cleaned out from the ditch at some point in the future, however the accumulation of debris to date has not significantly reduced the ditch capacity and it is judged that this can be handled during the course of routine road maintenance for this area.

April 2009

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Photo 940-15 (top) – Facing northbound across the Km 20.2 Cut Slope site. The mid-slope bench retains debris from the near-vertical uppermost portion of the rock cut.



Photo 940-16 (bottom) – Facing southbound across the Km 20.2 Cut Slope site.

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Photo 940-17 (top) – Facing southbound along the ditch at the Km 20.2 Cut Slope site. Note the debris accumulation into the upslope side of the ditch.



Photo 940-18 (bottom) – Facing southbound along the ditch at the Km 20.2 Cut Slope site. Note the debris accumulation into the upslope side of the ditch.