

Site 46 – Eden Valley Rock Cut

This site consists of a rock cut slope along the northwest side of the highway and approximately 9 km east of the Highwood River Recreation Area.

The lower portion of the cut slope at this site exposes beds of sandstone and coal with a strike approximately perpendicular to the highway and bedding dip down to the west. The maximum height of the near-vertical rock cut is approximately 9 m. The upper portion of the cut slope above the rock cut consists of a grass-covered soil slope with no obvious hazards to the highway.

The ditch contained many boulder-sized pieces of weathered sandstone that had fallen from the rock cut. There were no rocks on the paved surface of the road at the time of the inspection and no damage to the pavement from previous rockfalls was noted. There was an apron of rockfall debris along the base of the rock cut at the east end of the site at the time of the inspection in September 2005. The debris generally consisted of gravel sized coal particles that had fallen from the cut slope and accumulated in the ditch with a slope angle of approximately 34°. The accumulation of debris had reduced the effective ditch width and some boulder-sized pieces of sandstone that had fallen out from the top of the rock cut had rolled down the colluvium apron and landed closer to the paved surface than they would otherwise.

The width and depth of the ditch along the toe of the cut slope were approximately 9.75 and 0.9 m, respectively. For the maximum rock cut height of 9 m, the existing ditch has roughly double the minimum width specified under the ditch sizing criteria shown on Figure B1 in Appendix B however it does not meet the minimum depth criteria. Based on the lack of rockfall debris reaching the road, the existing ditch is judged to be sufficiently sized due to the extra width.

AMEC recommends the following Risk Level factors for this site using the rock fall frequency-severity matrix:

- Probability Factor of 13 based on observations of debris from several rockfalls judged to have occurred in the past year.
- Consequence Factor of 1 based on no visual evidence of past rockfalls reaching the paved surface of the road.

Therefore, the recommended Risk Level for this site is 13.

It is recommended that the accumulated rockfall debris be cleaned from the ditch in order to keep the Consequence Factor from rising due to further debris accumulation. In the future, cleaning rockfall debris from the ditch should be treated as an ongoing maintenance issue.

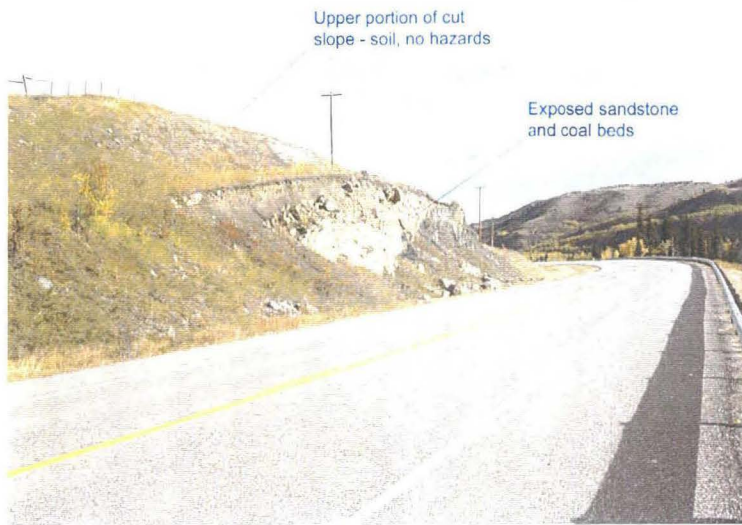


Photo 1 (top) – Facing northeast along Highway 541 at the Eden Valley Rock Cut site. The lower portion of the cut slope is near-vertical and exposes bedded sandstone and coal with active rock falls. The upper portion of the cut slope is laid back at a gentler angle with no hazards.



Photo 2 (middle) – Closer view of the rock cut slope with the accumulation of rockfall debris in the ditch. There were no rocks on the road at the time of the inspection and no visible damage to the pavement from past rockfall.

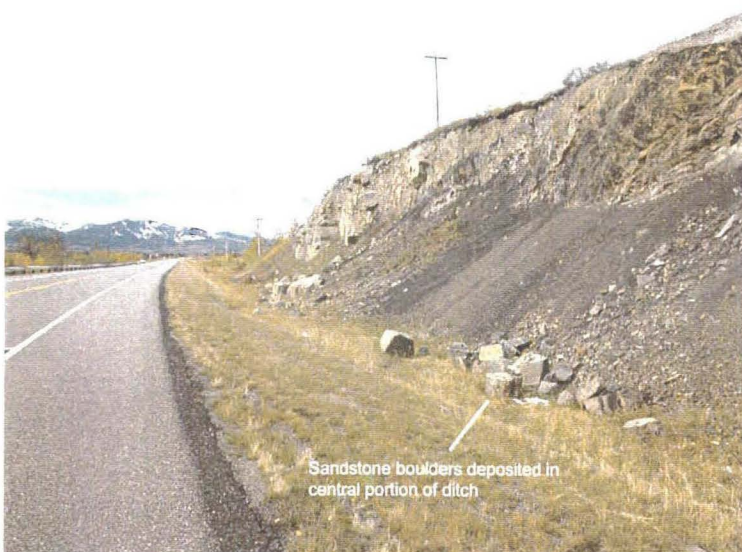


Photo 3 (bottom) – Facing southwest across the rock cut slope. The sandstone boulders in the central portion of the ditch have fallen from the upper portion of the cut and onto the apron of accumulated debris, then rolled down to be deposited in the central portion of the ditch. The hazard of such rocks landing on the paved surface is still low, however the accumulated rockfall debris should be cleaned out to restore the full capacity of the ditch.