Site 12 – Rock Cut North of Fortress Junction

This site consist of a rock cut slope along the east side of Highway 40, approximately 1 km north of the Fortress Junction service station. The cut slope is near-vertical and approximately 8 m high. The cut slope exposes bedded rock that is steeply dipping down towards the southwest and towards the road. Photo 1 shows a typical view of the cut slope.

The ditch between the cut slope and the east edge of the pavement is approximately 6 m wide and 1.25 m deep. Therefore, the existing ditch meets the sizing criteria shown on Figure B1 in Appendix B.

There were minor volumes of rockfall debris in the ditch at the time of the inspection during October 2005. The rockfall debris was deposited along the toe of the cut slope. There were no rocks in the central portion of the ditch or on the pavement. There were no signs of damage to the pavement from past rockfalls.

The rockfalls from the cut slope appeared to mostly originate along bedding plane contacts exposed in the cut slope. As shown in Photos 2 and 3, some of the bedding plane contacts have separated and gravel to cobble sized rocks are raveling out. Photo 3 also shows a toppling failure developing in the cut slope. These rockfalls are judged to be a minor hazard to the highway because the debris will be contained within the ditch.

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

- Probability Factor of 12 based on the appearance of the cut slope and debris that suggests that several rock falls occur every year at this site.

- 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 12.

It is recommended that the rockfall debris along the toe of the cut slope be removed annually as a proactive measure to maintain the maximum ditch capacity.

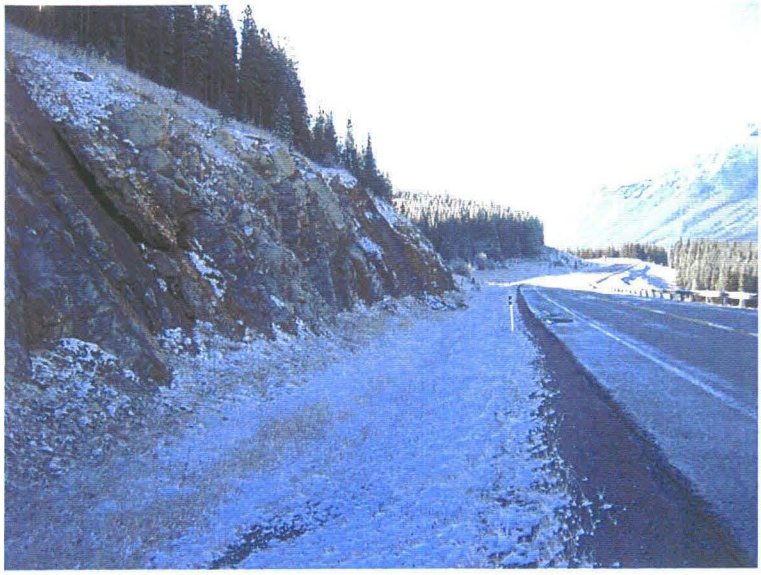

Photo 1 (top) – Facing south along the rock cut north of Fortress Junction. The cut slope is near-vertical and approximately 8 m high. There were minor volumes of rockfall debris along the toe of the cut slope, but no rocks on the road or signs of damage to the pavement from past rockfall.

Photo 2 (middle) – Closer view of a segment of the rock cut slope showing separation along the exposed bedding planes. Water will flow into these gaps and freeze/thaw effects will cause the openings to grow larger during future years and also cause rockfalls due to weathering and breakup of the outer face of the cut slope. It is judged that the debris from such rockfalls will be contained within the ditch. It is possible that boulder-sized rocks will break off and slide down along the bedding planes, but they would be contained within the ditch.

Photo 3 (bottom) – A developing toppling failure caused by cracking and weathering of the outer face of the cut slope. This, and other similar locations along the cut slope, are judged to be a minor hazard to the highway because the debris will be contained within the ditch.