Site 14 – Fortress Junction – Road Cracking

This site is located approximately 1 km south of the Fortress Junction service station. There is a series of cracks forming a circular pattern that suggests slumping of an approximately 16 m long segment of the southbound lane down towards the west (Photos 1 and 2). The vertical downdrop of the potentially slumped area varied up to a maximum of 25 mm at the time of the site inspection in September 2005. The cracks have been sealed by the maintenance contractor. It is not known when the cracks first appeared, when they were sealed or how they may have developed over time.

The apparent slumping area extends into the northbound lane (Photo 1) and is roughly centered around a culvert installed at the base of the highway fill embankment. The culvert below the embankment did not appear to have been deformed by movement of the overlying fill. The west sideslope of the highway embankment is approximately 10 m high at an angle of about 20°. There were no visible signs of slumping in the west sideslope that would be consistent with the apparent slumping defined by the cracks in the road surface.

AMEC recommends the following Risk Level factors for this site using the AIT's general geohazard frequency-severity matrix:

- Probability Factor of 5 based on the moderate level of uncertainty about whether or not the apparent slumping is active.

- Consequence Factor of 4 based on the possibility that significant slumping of the area delineated by the cracks could required temporary closure and repair of the southbound lane of the highway.

Therefore, the recommended Risk Level for this site is 20.

It is recommended that the potential slumping of the southbound lane be visually inspected in the spring and fall of 2006 in order to determine if the apparent slumping is active. These inspections should be coordinated with other recommended work along the highway corridor in order to economize on field time. If the observations indicate that ongoing cracking and settlement of the road surface is not occurring, then the Probability Factor could be likely be reduced.

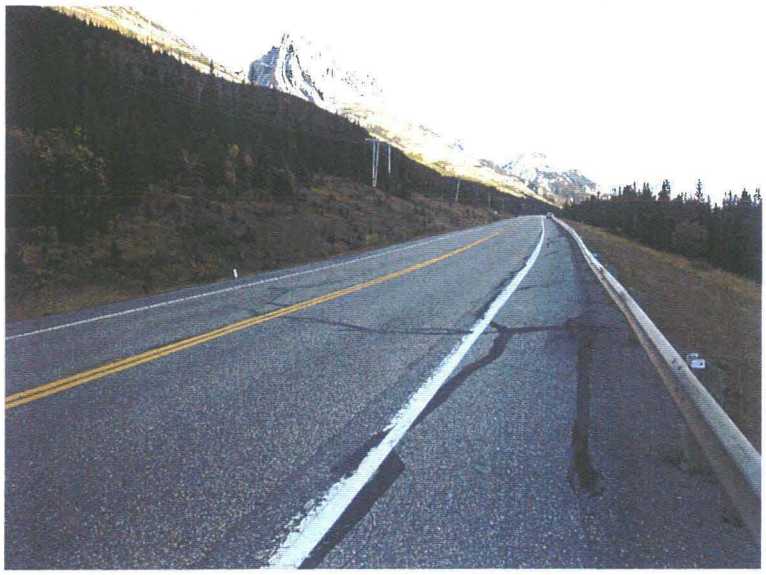

Photo 1 (top) – Facing south along the settlement and cracking area in the southbound lane of Highway 40, approximately 1 km south of the Fortress Junction service station. The cracks are in a circular pattern suggesting slumping of the southbound lane to the west (i.e. down to the right, as seen in this photo). The cracks have been sealed by the maintenance contractor. It is not known when the cracks formed or if the slumping is active. The vertical downdrop of the southbound lane to the west of the cracks varied up to a maximum of 25 mm at the time of the inspection.

Photo 2 (bottom) – Facing north across the same area shown in Photo 1. The potential slumping affects the southbound land and encroaches slightly into the northbound lane.