

4.8 S10 – SECONDARY HIGHWAY 762 MISCELLANEOUS SITES

The following subsections summarize the observations from the May 30, 2006 site inspections by AMEC and AIT personnel.

4.8.1 Site A Background

Site A is located on Secondary Highway 762, approximately 12 km south of the junction with Highway 22X (as measured along the highway).

The highway is oriented roughly north/south along a cross slope down to the west at this site. There is limited background information available regarding this site. It is understood that there was a failure at this site in the mid-1990's – either a failure of the road subgrade and/or slope instability in the underlying native soil and the slope face downslope (west) of the road. This instability required temporary closure of at least the southbound lane of the road prior to repair. There are no details currently available on the associated investigation and repair aside from that the road was reconstructed with granular fill.

Settlement and cracking of the road surface at this site has been ongoing since approximately 2000. Asphalt overlays have been placed at this site at least annually since 2002.

Annual assessments have been performed at this site by AIT and AMEC personnel since the spring of 2000.

Site Assessment

The site assessment was performed on May 30, 2006. The weather at the time of the site assessment was sunny and clear.

The site assessment covered the highway surface as well as the slope face below (west) the highway.

Observations

The following points summarize the observations made during the site assessment. Please also refer to Appendix S10 for annotated photographs.

- The road at this site was freshly paved at the time of the 2006 site inspection (Photos S10(A)-1 and S10(A)-2). It appeared that the repaving had been done less than 2 weeks prior to the inspection. The thickness of the overlay was typically 50 to 75 mm along the east edge of the road and up to 175 mm along the west edge of the road.
- Due to the recent repaving, any development of the previously-observed cracking and settlement area on the road surface since the 2005 inspection could not be confirmed. Photos S10(A)-3 and S10(A)-4 show the cracking and settlement of the road surface as

seen in the 2005 inspection and illustrate the typical condition of the road surface in previous years. The pattern and magnitude of the semi-circular cracking noted during the previous annual inspections suggests a slump failure down towards the west.

Discussion

Overall, the site condition does not appear to have changed significantly, however there were no meaningful observations of the road surface condition relative to the previously-noted cracking and settlement due to the recent repaving.

Assessment and Risk Level

The repaving of the road surface shortly before the 2006 site inspection precluded current observations of the condition of the road surface settlement and cracking that previously suggested a slump affecting the road. Therefore, there is no basis to revise the overall assessment and risk level from the 2005 inspection. In summary:

- The settlement and cracking has been treated as a maintenance issue to date and in recent years has required at least annual repaving of the site. The size of the portion of the road affected by the settlement and cracking at this site does not seem to have changed significantly since the annual assessments started in 2000, however the magnitude of the cracking noted during the 2005 inspection was greater than previously noted. It appears that the instability may extend into the native soils underlying the road embankment, however there is some uncertainty regarding this in the absence of information on the subsurface conditions and the instability mechanism(s).

Therefore, AMEC recommends the following Risk Level factors for this site:

- A Probability Factor of 11 because the rate and magnitude of the cracking and settlement has increased over the past two years.
- A Consequence Factor of 4 based on the understanding that the mid-1990's failure caused the closure of at least one lane of traffic and the assumption that the recently observed settlement and cracking could cause the same damage if full reactivation of the movement occurred or if it is not repaired as required on an ongoing basis.

Therefore, the recommended Risk Level for this site is 44, which is the same value recommended after the 2005 assessment.

Recommendations

AMEC recommends the following future work for this site:

Perform a site investigation and follow-up instrumentation readings in order to gather information on the subsurface and stability conditions and provide a basis for the design of remedial measures. AMEC submitted a proposal for this work to AIT in 2005 and will update and resubmit the proposal to AIT during in 2006 as discussed on site.

Remedial measures should be considered for this site. As noted, the information from the recommended site investigation is required in order to fully consider practical options for remedial measures and their approximate costs.

AIT and/or maintenance contractor personnel should check the settlement and cracking conditions at this site regularly. This would provide a level of due diligence in case the rate of settlement accelerates and cautionary signage and/or repaving is required promptly.

The annual site assessments should be continued.

4.8.2 New Site – “S” Curve Site

Background

This is a new site identified by AIT that was inspected by AMEC and AIT for the first time on May 30, 2006. This site is located on Secondary Highway 762, approximately 14 km south of the junction with Highway 22X (as measured along the highway).

The highway forms an “S” curve on the north and east sides of an unnamed creek as it follows the creek valley flowing eastwards through a gap between two north/south oriented ridges.

AIT has noted that cracking and settlement of the road surface has formed repeatedly at this site during the past couple of years. The cracking and settlement has been treated as a maintenance concern to date with overlays placed in the fall of 2005 and in the spring of 2006. The spring 2006 overlay appeared to have been placed within 2 weeks prior to the site inspection.

Site Assessment

The site assessment was performed on May 30, 2006. The weather at the time of the site assessment was sunny and clear.

The site assessment consisted of general observations of the highway surface and discussions of the site background with AIT personnel.

Observations

The following point summarize the observations made during the site assessment. Please also refer to Appendix S10 for annotated photographs.

- The site had been recently repaved and therefore the settlement and cracking of the road surface that had been previously noted by AIT could not be inspected directly. Photos S10(“S” Curve)-1 and S10(“S” Curve)-2 show typical view of the site.
- Segments of the ditch along the north side of the segment of the road where cracking and settlement had previously been noted contained standing water.

- There was an exposure of bedrock at one point along the cut slope to the north of the road, as shown on Photo S10("S" Curve)-2.

Discussion

The condition of the road surface settlement and cracking previously noted by AIT could not be inspected due to the recent repaving.

It was agreed that geotechnical boreholes with instrumentation would be of value in further assessing the site conditions and determining the cause of the settlement and cracking. However, the scope of drilling and the borehole locations should be determined after the location and pattern of the ongoing settlement and cracking becomes visible later in 2006.

Assessment and Risk Level

AMEC recommends the following Risk Level factors for this site:

- The Probability Factor should be set at 5 to reflect the reports of active cracking and settlement but with an indeterminate (at present) movement pattern.
- The Consequence Factor should be set at 2 to reflect the impacts upon the road to date, i.e. annual to semi-annual repaving required to maintain a smooth running surface.

Therefore, the recommended Risk Level for this site is 10.

Recommendations

AMEC recommends the following future work for this site:

Borehole drilling and instrument installations/follow-up readings (if warranted) to gather further information on the subsurface conditions at this site and investigate the cause of the settlement and cracking of the road surface. As noted above, the scope and locations of the borehole drilling should be determined only after the location and pattern of the cracking and settlement becomes visible later in 2006. AMEC will follow-up with AIT re. this issue later in 2006 and if required prepare a proposal and cost estimate for work at this site.