

## **S10 – SECONDARY HIGHWAY 762 MISCELLANEOUS SITES**

AMEC responded to a call-out request by AIT for the three miscellaneous sites along Highway 762 on June 21, 2005. The report for this call-out request was submitted to AIT under separate cover<sup>1</sup>. The following subsections summarize the observations from the June 27, 2005 site inspections by AMEC and AIT personnel, with reference to the report on the June 21, 2005 call-out.

### **Site C Background**

Site C is located on Secondary Highway 762, approximately 22 km south of the junction with Highway 22X (as measured along the highway) and approximately 550 m north of the junction with Secondary Highway 549.

There is limited background information available regarding this site. Settlement and cracking of the road surface has been noted at this site during previous assessments and weak foundation materials below the road embankment have been postulated as the cause. Previous assessments have also noted that the west ditch would pond water during wetter times of the year and therefore should be regraded. An overlay was placed at this site in July 2003.

Annual assessments have been performed at this site by AIT and AMEC personnel since the spring of 2000. AMEC also inspected the site during a call-out request by AIT on June 21, 2005.

### **Site Assessment**

The site assessment was performed on June 27, 2005. The weather at the time of the site assessments was overcast with light rain.

The site assessment covered the road surface through the Site C area as well as the west ditch to the north of the creek crossing.

### **Observations**

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

- Cracking was noted along an approximately 15 m segment of the road, the centre of which is approximately 45 m north of the culvert. Photos S10(C)-1 to S10(C)-3. The overall pattern of the cracking was arc-shaped and suggested slumping of the northbound lane down towards the east. The southern extent of the visible cracking encroached approximately 1.5 m into the southbound lane. From there, the cracking extended across the northbound lane in an arc and terminated in the east shoulder of the road.

- The aperture of the cracks ranged from approximately 10 to 20 mm and the differential settlement between opposite sides of the cracks was relatively minor with a maximum magnitude of 10 to 15 mm.
- It did not appear that the extent and magnitude of the cracking had increased significantly between the June 21 and June 27, 2005 site inspections.
- The east sideslope adjacent to the road in the cracking area varied between approximately 10 to 20° with no visible signs of slope instability. The creek channel flows along the toe of this sideslope. Based on the position of the creek channel relative to the cracking in the road surface and the condition of the sideslope face, it does not appear that creek erosion at the toe of the slope is causing slope movement leading to the cracking in the road surface.
- As noted in previous reports, the west ditch to the north of the culvert continues to pond water due to lack of positive drainage in either direction. Photo S10(C)-4 show the appearance of this segment of the ditch during the 2005 site inspection.
- The portion of the west ditch to the south of the culvert inlet was significantly eroded and damaged during the recent heavy rainfall, as shown in Photo S10(C)-5 from the June 21, 2005 call-out to this site.

### **Discussion**

The cracking in the road surface was not noted during the previous site inspections and it appears that it developed during or following the heavy rains during late June 2005. The damage to the road surface has not been significant to date although if settlement continues it may become necessary to establish a reduced speed limit at the site.

The erosion and damage in the west ditch to the south of the culvert occurred during the heavy rains during late June 2005 which were not representative of typical annual conditions at this site.

As noted in previous reports, the ponding of water in the west ditch is unfavorable from a geotechnical perspective because it provides a source of water that could contribute to instability of the road fill embankment and/or the road foundation.

### **Assessment and Risk Level**

AMEC recommends the following Risk Level factors for this site:

- The Probability Factor should be set at 9 to reflect the active settlement and cracking in the southbound lane that appears to have initiated during June

- The Consequence Factor should be set at 3 based on a judgment that continued settlement of the southbound lane can be treated as a maintenance issue and will likely not require partial closure of the road. If additional settlement of the southbound lane occurs it may be necessary to increase the recommended Consequence Factor.

Therefore, the recommended Risk Level for this site is 27, which is an increase from the value of 16 recommended after the 2004 assessment.

### **Recommendations**

AMEC recommends the following future work for this site:

**The open cracks in the southbound lane should be patched/sealed.** It may also be necessary to place an overlay at this site to repair the settlement that has occurred.

The erosion to the west road ditch should also be repaired and the ditch grade restored and re-lined.

**Drainage improvements should be made in the west ditch, north of the culvert crossing.** As discussed during previous site inspections, the most practical option appears to be the installation of a perforated drain pipe in a trench along the base of the existing ditch. The drain should flow to the south. A site survey will be required in order to design the trench excavation and specify the drain details. AMEC has submitted a proposal and cost estimate for this work to AIT.