

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 cover¹. 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 B Background

Site B is located on Secondary Highway 762, approximately 19 km south of the junction with Highway 22X (as measured along the highway).

There is limited background information available regarding this site. Annual assessments have been performed at this site by AIT and AMEC personnel since the spring of 2000 and focused on minor settlement and cracking visible in the road surface. 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 assessment was overcast with light rain.

Observations

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

- Major instability occurred at this site during/following the significant rainfall on June 18 and June 19, 2005. Photos S10(B)-1 to S10(B)-3 show the damage to the road. It does not appear that this instability is related to the settlement and cracking noted during the previous annual inspections, or if it is, then the recent instability is of a greater order of magnitude than the settlement and cracking noted in previous years.
- The instability consisted of slumping of the west slope of the road embankment that extended through the southbound lane to the centerline of the road at the time of the site inspection. As a result of the slumping, the southbound lane of the road had experienced settlements of greater than 1 m on several occasions between being backfilled to original road grade with granular material in order to buttress the northbound lane.
- The slope face to the west of the road was deformed and bulged out in a pattern consistent with the slumping of the southbound lane of the road, as shown in Photo S10(B)-4. The toe of the instability appeared to be a few metres downslope (west) of the fenceline. Based on the geometry of the slumping visible at surface and the position of the headscarp and toe it appeared that the slumping extended down into the native soils underlying the road embankment. The natural area downslope/west of the fenceline slopes down to the west at approximately 10°. There were boggy areas and possible groundwater springs visible in this area. Several of the nearby trees were slightly tilted in various

directions which suggests that the wet ground conditions are long-term and normal and not entirely a result of the recent heavy rainfall.

- AMEC understands that during the week following the June 27, 2005 site inspection the slumping worsened and retrogressed all the way to the east shoulder of the road following additional heavy rains.

Please also refer to AMEC's June 30, 2005 report for further detailed description of the landsliding.

Discussion

As noted in AMEC's report on the June 21, 2005 call-out request to this site, it appears that the slumping and settlement of the southbound lane was caused by the lower portion of the road fill embankment becoming saturated by groundwater flow beneath the embankment. The presence of springs/boggy areas on the natural slope face downslope of the fence line to the west of the road suggests that groundwater typically flows down from the east and below the road fill embankment. With the significant

rainfall events during June 2005 the volume of groundwater flow was likely high enough to cause the groundwater level below the road to rise up into the base of the road fill, saturating this zone and causing it to slide along weak material in the fill and/or the contact between the road fill and underlying native soils. As this material slid downslope, the overlying road surface in the southbound lane slumped away.

Assessment and Risk Level

AMEC recommends the following Risk Level factors for this site:

- The Probability Factor should be set at 13 in order to reflect the active and high rate of landslide movement.
- The Consequence Factor should be set at 5 to reflect the partial closure of the road due to landslide movement, with the potential for full closure of the road/requirement for immediate temporary repairs if additional landslide movement occurs.

Therefore, the recommended Risk Level for this site is 65.

Recommendations

AMEC recommends the following future work for this site:

Perform a site survey, borehole drilling and repair measures design. This work is underway as of this writing.

Implement the repair measures as soon as possible after the design is completed.