

## SECTION A – FILE REVIEW

### Site Location

- This site is located on Secondary Highway 762, approximately 14 km south (as measured along the highway) of the junction with Highway 22X. The site is located near the west end of a pronounced “S” curve in the highway alignment.
- NW-27-21-4 W5M
- UTM coordinates: Easting 677519, Northing 5632337 (NAD 83, Zone 11U)
- NTS mapsheet 82 J/16

### Chronological Background

Table A1 provides a chronological background of this site.

### Site Geology, Hydrogeologic And Geomorphologic Setting

The road fill embankment at this site is underlain by up to approximately 1 m of organic soils (likely due to incomplete stripping of organic materials from the ground surface prior to construction), which is in turn underlain by medium to high plastic varved clay and silt, low to medium plastic clay till and bedrock (typically siltstone to sandstone, but with some shale). The top of the bedrock is in the order of 15 m below the highway surface. Please refer to the description of the March 2007 borehole drilling in the reports included in Section G of this binder for further details on the site geology.

The only hydrogeologic data available for this site is from the two pneumatic piezometers that were installed below the south shoulder of the highway in March 2007. The pressures measured in these piezometers correspond to groundwater levels at or slightly above the base of the road embankment fill as illustrated on the cross-sections included in the reports in Section G of this binder. Overall, the local groundwater table is expected to be linked to the water level in the creek at the base of the valley, possibly with seasonal seepage points on the lower valley slope between the highway and the creek bank.

With respect to the geomorphologic setting at this site – the creek valley at this site passes through a gap in two northwest/southeast trending, bedrock controlled ridges. The highway is located along the north/west side of the broad creek valley with gentle valley slopes in the order of 10° or less. The base of the creek valley is covered with the above-noted clay till deposits, overlain by the varved clay and silt soils which are interpreted to be glaciolacustrine deposits in this relatively low-lying area shortly after the retreat of the most recent glaciation. Bedrock was encountered at roughly 14 m depth below the highway surface, which corresponds to roughly 5 m below the creek elevation. The creek channel is undersized relative to the broad, flat base of the valley and as a result it has a low gradient and meanders significantly. The outside of one of the meander bends is along the toe of the slope below the road, however it does not appear that the creek channel is eroding aggressively towards the highway.

### **Description Of Past Site Problems**

There are no records of geotechnical problems at this site. However, it is understood that there has been persistent settlement and cracking of the road surface at this site since the early 2000's despite repeated patches and overlays.

### **Description Of Past Investigations**

A geotechnical site investigation was performed in March 2007 in order to gather further information on the soil, bedrock and groundwater conditions at the site and investigate the cause of the settlement and cracking of the road surface. A total of four auger boreholes were drilled along the south shoulder of the highway in the settlement and cracking area. Two slope inclinometers and two pneumatic piezometers were installed in the boreholes. The initial and follow-up readings of the instruments were taken between April and September 2007. Please refer to Sections B and C of this binder for further information on the geotechnical assessment and characterization of this site.

### **Description Of Mitigative Measures Implemented**

There are no records of mitigative measures implemented at this site in the past. Based on the site appearance, it is inferred that numerous patches and overlays have been placed in order to temporarily mitigate the effects of the settlement and cracking.



**Table A1 – S22 – “S Curve” Slide – Chronological Background**

Date	Description
May 30, 2006	<p>First inspection by AMEC and AT personnel. AT personnel had noted that cracking and settlement of the road surface at this site had formed repeatedly in recent years despite patching and overlays. It was judged that slope movement towards the creek and/or settlement was causing the damage to the road surface.</p> <p>Recommended Risk Level = 10.</p> <p>Recommendations for borehole drilling, instrument installation and readings in order to gather further information on the subsurface conditions at this site and investigate the cause of the settlement and cracking of the road surface.</p>
March/April 2007	<p>Borehole drilling, instrument installations (2 slope inclinometers, two pneumatic piezometers), initial instrument readings and site survey by AMEC.</p>
April, June and September 2007	<p>Follow-up instrument readings by AMEC. Active slope movement confirmed in the native soils below the highway.</p>
June 18, 2007	<p>Site inspection by AMEC and AIT personnel. An overlay had been placed at the site since the May 2006 inspection and the cracking and settlement was beginning to re-form.</p> <p>Recommended Risk Level increased to 20 due to confirmation of active slope movement in the native soils underlying the highway.</p> <p>Recommended that repair options for this site be developed from the borehole and instrument data along with an increased level of visual monitoring of the site by AIT/maintenance contractor personnel in case the rate of settlement accelerates and cautionary signage and/or repaving is required promptly.</p>
March 2008	<p>Report on repair options submitted to AIT. Six repair options considered, and drainage trenches installed with one-pass trenching equipment recommended as the most practical and likely most cost-effective option for this site.</p>
May 2008	<p>Semi-annual instrument readings by AMEC. Additional slope movement since Fall 2007 in the previously-noted movement zones. The slope inclinometer in Borehole 2007-7 could not be read to full depth because the ongoing slope movement had deformed the casing such that the SI probe could not pass below 7.4 m depth.</p>



June 2008	Site inspection by AMEC and AT personnel. Ongoing damage to the road surface noted. No significant changes to the site conditions since the 2007 inspection. Recommended Risk Level kept at 20.
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