

SECTION A – FILE REVIEW

Site Location

- These two sites are located along Highway 507:02, west of Pincher Creek, AB.

- Eastbound Lane (EBL) Site
 - UTM coordinates: Easting 282956, Northing 5485254(NAD 83, Zone 12U)
 - SE-20-6-30 W4M
 - NTS mapsheet 82 H/5

- Westbound Lane (WBL) Site
 - UTM coordinates: Easting 711332, Northing 5484201 (NAD 83, Zone 11U)
 - NW-16-6-1 W5M
 - NTS mapsheet 82 G/8

Chronological Background

Table A1 provides a chronological background for these sites.

Site Geology, Hydrogeologic And Geomorphologic Setting

Eastbound Lane Site

1. The highway is located along the crest of the north slope of the Pincher Creek valley. This valley is a broad, relatively flat-bottomed valley incised approximately 30 m into a relatively flat plain to the west of the town of Pincher Creek, AB.
2. The local segment of the highway is straight along a bearing of 074/254 and is approximately tangent to the crest of the north valley slope as shown on the plan view of the site. Please refer to Section F for a plan view and cross-section of the site.
3. Published regional geology maps show that the upland areas adjacent to the Pincher Creek valley are covered with glacial till soil (described as typically having sandy silt to silty sand texture). The underlying bedrock is shown as the Cretaceous-age Belly River – St. Mary River Succession which includes a variety of marine and nonmarine sandstones and shales.
4. There is no site-specific hydrogeological information for this site.

Westbound Lane Site

1. At this site the highway is oriented along a bearing of 060/240 and crosses the approximately 8 to 10 m deep valley of an unnamed, seasonal creek that drains north towards the Castle River. The valley is relatively flat-bottomed with a marshy base to

the south (upstream) of the highway. Please refer to Section F for a plan view and cross-section of the site.

2. Published regional geology maps show that the upland areas adjacent to the Pincher Creek valley are covered with glacial till soil (described as typically having sandy silt to silty sand texture). The underlying bedrock is shown as the Cretaceous-age Belly River – St. Mary River Succession which includes a variety of marine and nonmarine sandstones and shales.
3. There is no site-specific hydrogeological information for this site.

Description Of Past Site Problems

AMEC understands from AT that settlement and damage to the road surface at both the EBL and WBL sites was first noted by Municipal District of Pincher Creek personnel (who were responsible for the maintenance of Highway 507 at the time) in 1995 after a period of severe precipitation and flooding along local waterways. Since 1995, the settlement and cracking at both sites has been treated as a maintenance issue and the road surface has typically been patched and resurfaced every one to two years to maintain the road grade. In recent years, the maintenance responsibility for these sites has been transferred to AT.

Eastbound Lane Site

There is a settlement and cracking area along an approximately 50 m long segment of the eastbound lane. This segment consists of a fill embankment approximately 3 to 4 m high that was placed to maintain the road grade across an area where the highway alignment crosses below the crest of the north valley slope and is across the upper valley slope.

Westbound Lane Site

There is a settlement and cracking area along an approximately 40 m long segment of the westbound lane. At the time of the September 2006 inspection, the aperture of the open cracks was up to approximately 25 mm and the vertical settlement at the cracks was typically around 50 to 75 mm. There was no visible deformation or bulging of the northwest embankment slope below the damaged segment of the westbound lane.

Description Of Past Investigations

There are no records of past investigations at either site, aside from the September 2006 call-out site inspection.

Description Of Mitigative Measures Implemented

It is understood that the road surface at each site has been patched and resurfaced as required in recent years in order to maintain a smooth road surface.



**Table A1 – S24 – Highway 507:02 Sites, West Of Pincher Creek, AB
 Chronological Background**

Date	Description
1995	Settlement and damage to the road surface at both sites first noted after a period of severe precipitation and flooding along local waterways.
September 28, 2006	<p>Call-out site inspection of both sites by AMEC.</p> <p>Settlement and cracking of the road surface noted at both sites.</p> <p>Recommended Risk Level of 18 for the Eastbound Lane Site. Recommended a series of probe boreholes to evaluate the composition and condition of the embankment fill and evaluating if it would be worthwhile to excavate and reconstruct the settlement area with competent backfill or attempt to stabilize it with soil nails.</p> <p>Recommended Risk Level of 27 for the Westbound Lane Site. Recommended a series of probe boreholes to determine the composition and condition of the fill material both within and adjacent to the damaged area as well as to check for voids within the embankment, and then using that information to select one of several repair options for the site.</p>
June 20, 2007	<p>Annual site inspection by AMEC and AT personnel.</p> <p>Both sites had been recently repaved and the cracking and settlement damage had not re-formed at the time of the June 2007 inspection. No changes to the assessment or recommended Risk Level for each site. It was recommended that the annual site inspections be discontinued unless a longer-term repair is implemented and follow-up inspections to check on the effectiveness of the repairs are required.</p>