LANDSLIDE RISK ASSESSMENT
SOUTHERN REGION

# SITE S6: CASTLE RIVER BRIDGE

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|---|---|
| LEGAL LOCATION: | **LSD 12-27-06-02 W5M** |
| REFERENCE LOCATION ALONG HIGHWAY | **TBD** |
| UTM COORDINATES: | **N 5486850 E 703000** (NAD27)<br>NTS Map Sheet 82 G/9 (Blairmore) |
| AI FILE: | **SH507:02** |
| AI PLAN & PROFILE: | |
| Date of Initial Observation: | September, 1987 |
| Date of Last Inspection: | July, 1988 |
| Instruments Installed: | 1987 - 4 Slope Inclinometers |
| Instruments Operational: | not known |
| Risk Assessment: | PF(3) * CF(4) = **12** |
| Last updated by: | AGRA Earth & Environmental Limited, May 2000 |
| Comments: | |

## Location

The site is the south approach fill for the Secondary Highway 507 bridge crossing the Castle River. The site is located about 25 km west of Pincher Creek in Southern Alberta

## General Description of Instability

The instability was observed during the construction of the approach fill in September, 1987. The failure surface was contained within the fill and the fill appears to have been low plastic soils that were significantly wet of optimum. The slide initiated upon excavation of the toe of the fill for pier construction.

## Geologic Setting

The native soils below the fill appear to consist of a few meters of sand and gravel underlain by primarily shale bedrock. The south approach fill was about 15 m high and was variable composition, containing a large percentage of non plastic silt. The fill was placed as much as 10 to 15 percent above optimum and compacted to 95 to 97 percent of the standard proctor.

## Chronological Background

Table A1 provides the Chronological Background of the slide.

## Past Investigations

Alberta Infrastructure conducted initial testpit and drilling investigations, followed up by slope indicator monitoring.

## Mitigative Measures Taken

The slide was repaired by replacement of the approach fill materials with granular fill.

## Monitoring Overview

No monitoring data subsequent to 1989 were available. The monitoring shows no to little movement, which would indicate that the repair measures were effective.

**Table A1 –S6 – Castle River Bridge - Chronological Background**

| YEAR | MONTH | DESCRIPTION |
|---|---|---|
| 1987 | Sept. | Slide activity observed in approach fill during or shortly after construction. Initiated by cut at toe of fill for abutment construction. Test pit investigation indicated that failure contained within fill. Slope Indicators installed. |
| | Nov. | Slide repaired by replacement of initial fill with granular fill. Visual inspection indicated that repair was good. New SI's installed through new fill. |
| 1988 | Summer | New cracking noted in abutment fill. Subsequent inspections indicated that this cracking was more likely related to fill settlement rather than reactivation of the instability. SI readings did not indicate problems at the site. |
| 1989 | August | Inspection of the area indicated some erosion problems near the toe of the abutment, along with other nearby sites. Erosion control measures were recommended |
| 1989 | Oct. | Erosion control measures implemented. |
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