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| SITE NUMBER AND NAME: S046-I and -III Rosebud Slides | HIGHWAY & KM: 840:02, 32.422 | PREVIOUS INSPECTION DATE: July 10, 2019 | INSPECTION DATE: June 26, 2023 |
| LEGAL DESCRIPTION: 12-18-027-21 W4M | NAD 83 COORDINATES: UTM Northing Easting 12 5685886 363665 | RISK ASSESSMENT: S046-I PF: 1 CF: 1 TOTAL: 1 S046-III PF: 1 CF: 1 TOTAL: 1 | |
| AVERAGE ANNUAL DAILY TRAFFIC (AADT): 320 (south) 460 (north)(Reference No. 107240, 105210) | | CONTRACT MAINTENANCE AREA (CMA): 521 | |

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| SUMMARY OF SITE INSTRUMENTATION: There is no instrumentation at the S046 site. LAST READING DATE: N/A | INSPECTED BY: Chris Gräpel (KCB) James Lyons (KCB) Tony Penney (TEC) Rishi Adhikari (TEC) Pramaya Kannel (TEC) |
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PRIMARY SITE ISSUE: S046-I and -III: adjacent shallow slope failures in the highway embankment fill where Hwy 840 crosses a creek valley. The slides are located on the west (southbound) highway embankment slope. The slope failure at S046-III occurred in June 2016 (repaired in 2018/2019) just north of the S046-I site, which was repaired in 2014.

APPROXIMATE DIMENSIONS: S046-I: the reconstructed slope is approximately 20 m wide. S046-III: the reconstructed slope is approximately 25 m wide. The height of the highway embankment is approximately 8 m high at the S046-I and -III sites.

DATE OF ANY REMEDIAL ACTION: 2014 – S046-I and -II slope failures were repaired with gravel fill; 2018/2019 – S046-III slope was repaired (repair details not provided to KCB).

| ITEM | CONDITION EXISTS | | DESCRIPTION AND LOCATION | NOTICABLE CHANGE FROM LAST INSPECTION | |
|-------------------|------------------|----|--|---------------------------------------|----|
| | YES | NO | | YES | NO |
| Pavement Distress | X | | Longitudinal pavement cracking in west (southbound) lane upslope of the S046-I and -III repairs. | | X |
| Slope Movement | | X | S046-I and -III slides repaired in 2014 and 2018/2019, respectively. | | X |
| Erosion | | X | N/A – none observed during the 2023 inspection. | | X |
| Seepage | | X | N/A – none observed during the 2023 inspection. | | X |
| Culvert Distress | | X | N/A – none observed during the 2023 inspection. | | X |

COMMENTS

General:

- The fence downslope of S046-I and -III is deflected towards the west (downslope direction). However, the deflection most likely occurred before the repairs were completed, or directly afterwards, as a minor dip/area of settlement was observed near the upper portion of the repaired embankment approximately 2.5 m west of the guardrail (Photo 1). This dip/area of settlement may be attributed to settlement of the fill material used to repair the slide.
- The guardrail along the west (southbound) lane is deflected between the S046-I and -III slides and is believed to been caused by a vehicle accident or road maintenance activities (i.e., plowing) (Photo 2).
- There is a longitudinal pavement crack in the west (southbound) lane, upslope of S046-I and -III slides. The pavement crack does not appear to have changed since the 2019 inspection (Photo 3).
- The S046-II site has not been inspected since 2016.

S046-I:

- The S046-I site was repaired in 2014 and the repair appears to be performing well.
- The repaired slope is well vegetated, and the coconut matting is intact.

S046-III:

- The S046-III site was repaired in 2018 or 2019 and the repair appears to be performing well.
- The repaired slope is well vegetated, and the coconut matting is intact (Photo 4).

Maintenance/Repair/Monitoring Recommendations:

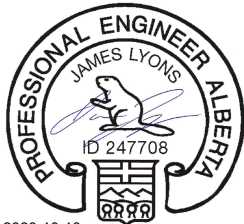
- The site should continue to be inspected by TEC's Highway Maintenance Contractor (HMC).
- KCB recommends the S046 site be removed the active list of sites and no longer be inspected as part of the Southern Region GRMP Section B Inspections.

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2023-10-13

James Lyons, P.Eng.
Civil Engineer

Inspection Photographs

Photo 1 Settlement parallel to the highway surface, approximately 2.5 m west from the guardrail (indicated by red arrow). The settlement is believed to be caused by settlement of the repair fill. Photo taken June 26, 2023, facing north.



Photo 2 Minor guardrail deflection (indicated by red arrow) upslope of S046-I, most likely attributed to a vehicle accident or road maintenance activities since the 2019 inspection. Photo taken June 26, 2023, facing north.

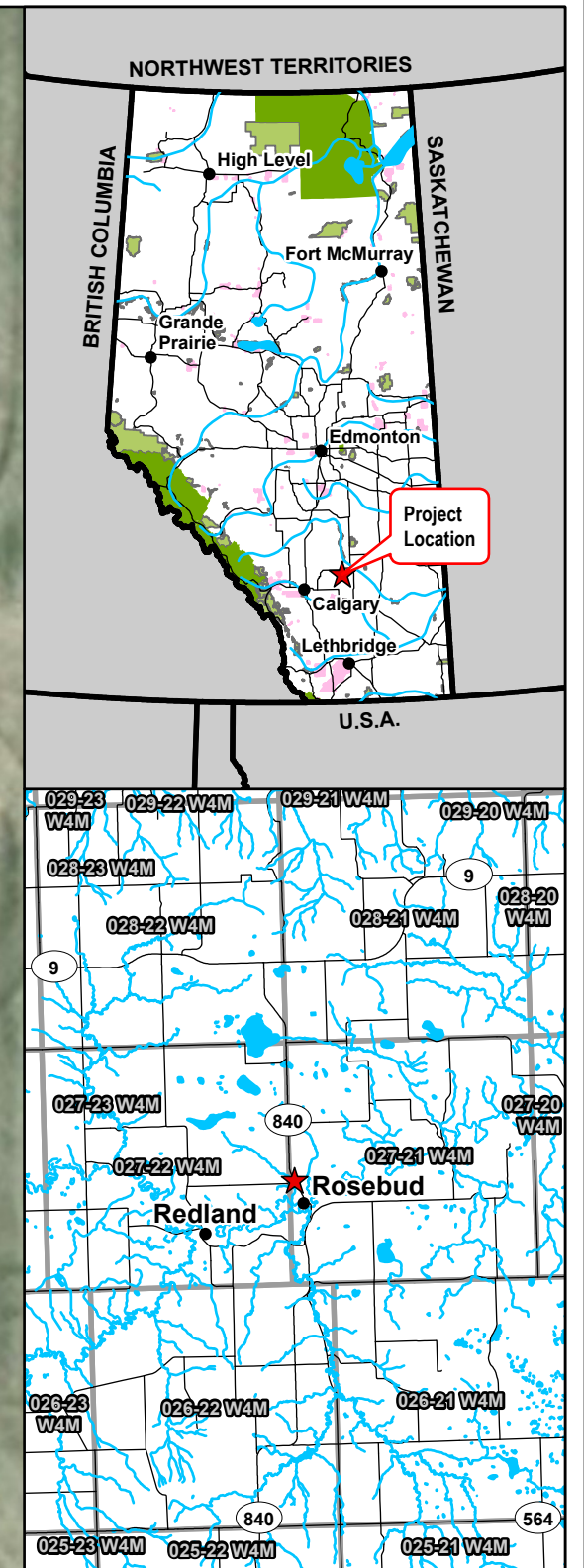


Photo 3 Longitudinal pavement crack in the west (southbound) lane upslope of S046-I and -III. Photo taken June 26, 2023, facing south.



Photo 4 The west highway embankment slope and S046-I and -III repairs are well vegetated and appear to be performing well. The fence near the embankment toe is deflected towards the west, and may be attributed to slope movement before construction, or settlement of the repair fill. Photo taken June 26, 2023, facing north.





Legend

- ▲ GPS Waypoint (June 26, 2023)
- ~~~~ Crack
- > Culvert
- × Fence
- Guardrail



NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM ZONE 12N
 3. IMAGE SOURCE: 2023 MICROSOFT CORPORATION, 2023 MAXAR CNES, DISTRIBUTION AIRBUS DS



PROJECT
SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
 Site Plan
 S046-I and -III - H840 Rosebud Slides
 Hwy 840:02, km 32.442

SCALE 1:750 PROJECT No. A05116A03 FIG No. 1

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