

SITE NUMBER AND NAME: <b>S031-I &amp; II Mystery Culvert</b>		HIGHWAY & KM: 762:02, 8.187	PREVIOUS INSPECTION DATE: May 9, 2019	INSPECTION DATE: <b>July 8, 2020</b>
LEGAL DESCRIPTION: 07-19-022-04 W5M	NAD 83 COORDINATES: UTM Northing Easting 11 5639613 672917		RISK ASSESSMENT: PF: 1 CF: 1 TOTAL: 1 (Site I) (Not visited) PF: 11 CF: 4 TOTAL: 44 (Site II)	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 720 (north) (Ref No. 65170), 1420 (south) (Ref. No. 60180)			CONTRACTOR MAINTENANCE AREA (CMA): 27	

SUMMARY OF SITE INSTRUMENTATION:  None  LAST READING DATE: N/A	INSPECTED BY: Chris Morgan (KCB) Margot Lederman (KCB) Kristen Tappenden (AT) Alex Frotten (AT)
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PRIMARY SITE ISSUE: Monitoring of two repaired embankment failures. Prior to repair, the embankment failures were impacting the southbound lane at both site I and II.

APPROXIMATE DIMENSIONS:  
Site I – Approximately 45 m wide, up to 3 m into the highway. Cracking previously observed to the middle of the highway. Prior to the construction of the toe berm, the embankment was approximately 6 m high.  
  
Site II - Approximately 40 m wide, up to 2 m into the highway. Most of the cracking was observed on the west shoulder. The embankment is approximately 4 to 5 m high.

DATE OF ANY REMEDIAL ACTION: Repairs were completed at Site I and II in fall 2017. The Site I repair included excavation and replacement of embankment material and improved drainage. Site II was repaired using a toe berm, however new pavement cracking was observed within a year, and the pavement required patching in June 2020.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Overlay in 2017. Recent cracking noted at Site II. No issues observed at Site I.	X	
Slope Movement	X		New cracking noted at Site II.	X	
Erosion	X		Some erosion at Site I from water flowing out of poorly graded gravel drainage ditch.		X
Seepage	X		Wetland area at the toe of the embankments at both sites.		X
Culvert Distress	X		Culvert at Site II appears deformed.		X

**COMMENTS**

During the drive-by, Site I appears in good condition following 2017 repairs. Vegetation is establishing on the slope and no distress was observed in pavement. Site I can be visited every 2 years

Riprap armoured drainage ditch at Site I is not graded properly (centre of channel is higher than outside edges). Water is not flowing down the centre of the riprap channel and is discharging onto unarmoured fill on the south side of the channel, causing erosion. Either the channel needs to be reconstructed with a deeper section and enough freeboard to contain the water, or riprap armoured berms need to be constructed along the channel edge.

Site II appears to have ongoing movement. The site was repaired in 2017 using a toe berm and repaving, and the pavement cracked within the warranty period. A tension crack in the pavement was observed in 2019 and had continued to enlarge. In mid 2020, the MCI reported that the pavement had settled approximately 200 mm vertically and required patching in June 2020. Mid-slope tension cracking was noted along the west embankment between the north and south culverts.

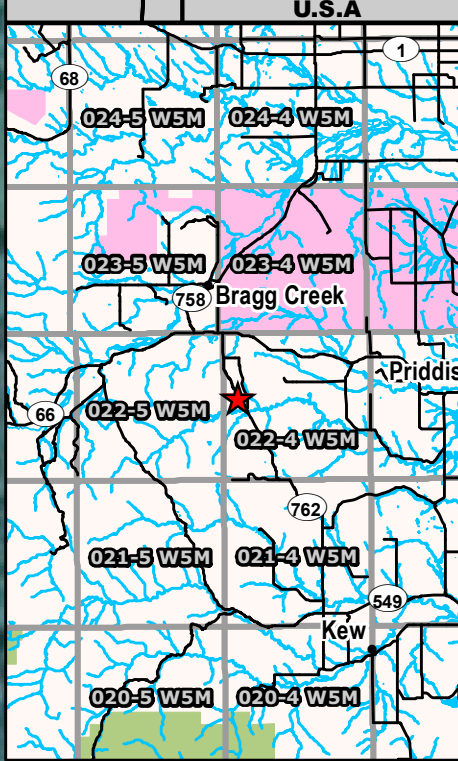
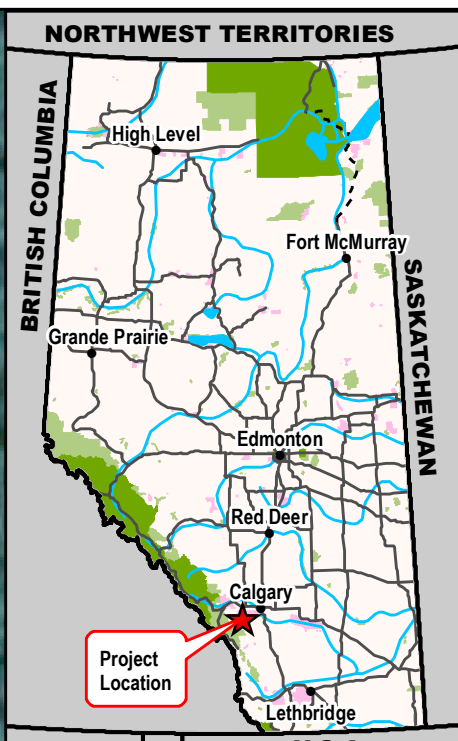
Site II should be visited annually.

The Site II side slopes were well vegetated at the time of the 2020 site visit.

Two culverts were noted at Site II. The southernmost culvert was replaced as part of the 2017 repair work, and the north culvert is outside the site limits. Both culverts appeared deformed and bowed beneath the highway embankment.

Candidate repair options for this site include: gravel-backfilled finger drains (with geotextile wrapped perforated drainage pipe), an H-pile wall, or a reinforced-earth slope with shear key.





**Legend**

- GPS Track (July 8, 2020)
- ✕ Barbed Wire Fence
- > Culvert

NOTES:  
 1. HORIZONTAL DATUM: NAD83  
 2. GRID ZONE: UTM Zone 11N  
 3. IMAGE SOURCE: 2020 Google Earth, 2020 CNES/Airbus.  
 Source date August 4, 2019

CLIENT

*Alberta*

**Klohn Crippen Berger**

PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM		
TITLE Site Plan S031-2 Mystery Culvert Hwy 762:02		
SCALE 1:1,000	PROJECT No. A05115A03	FIG No. 1

Time: 14:19:59 PM  
 Date: August 07, 2020  
 File: Z:\AEDM\A05115A03 ABT Southern Region GRMP\A00 Drawings\2020\2. Section BIM\XDS\031\_2\_200807.mxd

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**Photo 1** S031 Site II – West shoulder of highway where slide was repaired and new pavement patch. Photo was taken facing north on July 8, 2020.



**Photo 2** S031 Site II – Pavement cracking north of slide repair. Photo was taken facing east on July 8, 2020.





**Photo 3** S031 Site II – Pavement cracking north of slide repair. Photo was taken facing east on July 8, 2020.



**Photo 4** S031 Site II – Culvert appears bowed beneath highway. Photo was taken facing east on July 8, 2020.

