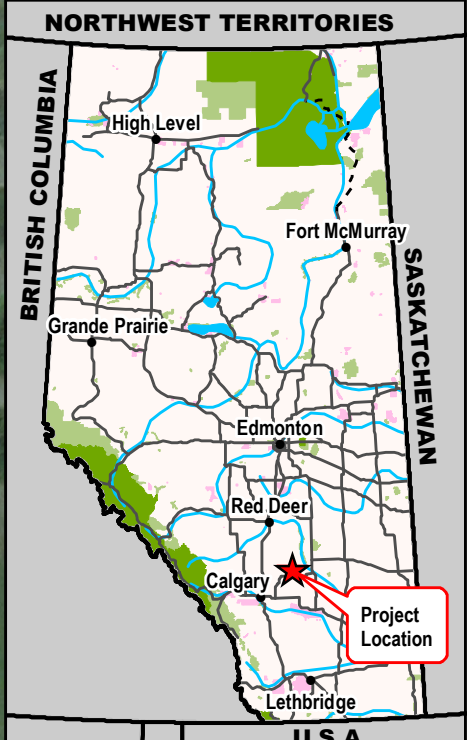


SITE NUMBER AND NAME: C067 Kneehill Creek Slide		HIGHWAY & KM: 21:14, 12.988	PREVIOUS INSPECTION DATE: June 23, 2016	INSPECTION DATE: July 11, 2019
LEGAL DESCRIPTION: 19-29-23-W4M	NAD 83 COORDINATES: UTM Northing Easting 12 5707671 344892		RISK ASSESSMENT: PF: 8 CF: 5 TOTAL: 40	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 893 (southbound) and 844 (northbound) (Ref No. 60211450)			CONTRACT MAINTENANCE AREA (CMA): 20	

SUMMARY OF SITE INSTRUMENTATION: Operational: One slope inclinometer (SI) installed in 2016, five SIs installed in April 2017 and one standpipe installed in 2016. LAST READING DATE: May 15, 2019.	INSPECTED BY: Chris Gräpel (KCB) Ryan Gazley (KCB) Rishi Adhikari (AT) Tony Penney (AT)
PRIMARY SITE ISSUE: Two embankment slope failures along the west slope (southbound) lane of highway referred to as Site A and Site B.	
APPROXIMATE DIMENSIONS: Site A is approximately 80 m wide, and Site B is approximately 40 m wide. The slopes at both sites are approximately 15 m high and sloped at 4H:1V.	
DATE OF ANY REMEDIAL ACTION: In April 2017, a 15-m deep, 80-m long H-pile was installed at Site A and a 16-m deep, 42.5 m long H-pile wall was installed at Site B.	

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	No new cracking or deformations observed in pavement surface at Site A and B.	X	
Slope Movement		X	No signs of slope movement at Site A and B.	X	
Erosion		X	None observed.		X
Seepage		X	None observed.		X
Culvert Distress		X	None observed.		X

COMMENTS
No new pavement cracking, deformations, or slope movement was observed during the inspection. The pavement cracks that appeared following construction of the pile wall have been sealed, and do not appear to have gotten worse since 2018. The condition of the high-tension cable barrier (HTCB) is good; however, some of the metal brackets holding the cables against the posts have been sheared off.
The operable SIs have been recording decreasing rates of movement in the pile wall at Site A and B since installation. The current maximum rate of movement in the pile-wall SIs is 5.7 mm/year. The previous maximum recorded rate of movement in the pile-wall SIs was 345.1 mm/year. In total, the pile walls have deflected up to a maximum of 20 mm. Based on KCB's 2017 design report, the pile walls are expected to deflect up to 200 mm in the three to four years following construction.
KCB recommends that the SIs should continue to be read until movement attenuates after which the site can be removed from the central region GRMP and be inspected by AT operations on an as-needed basis, i.e. if deformations are observed.



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Legend

- ▣ Slope Inclinerometer (SI)
- ▣ Slope Inclinerometer (SI) (inoperable)
- ⊕ Standpipe Piezometer (SP) (inoperable)
- GPS Track (July 11, 2019)
- ⊥⊥ H-Pile Wall

NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM Zone 12N
 3. IMAGE SOURCE: Bing Maps 2018, Microsoft Corporation. Image dated August 2013
 4. Location of instruments is approximate (not surveyed)

CLIENT

Alberta

Klohn Crippen Berger

PROJECT CENTRAL REGION GEOHAZARD RISK MANAGEMENT PROGRAM		
TITLE Site Plan C067 - Kneehill Creek Slide Hwy 21:14, km 12.988		
SCALE 1:3,000	PROJECT No. A05115A02	FIG No. 1

Time: 10:37:03 AM
 Date: August 01, 2019
 File: Z:\AEDM\A05115A02\ABT Central Region GRM\PI\00 Drawings\2019\2. Section B12. 2019 Site Inspections\MXD\C067_190801.mxd

Photo 1 No new pavement cracks or deflection observed at the C067 Site A. The location of SI17-C67-02 indicated by red circle. Photo taken July 11, 2019 looking north.



Photo 2 View of pavement surface north at C067 Site B. Sealed pavement cracks (red arrows) do not appear to have gotten worse since 2018. Photo taken July 11, 2019 looking northwest.

