

SITE NUMBER AND NAME: S041 East Coulee Slide		HIGHWAY & KM: 564:10, 32.353	PREVIOUS INSPECTION DATE: June 24, 2021	INSPECTION DATE: May 31, 2022
LEGAL DESCRIPTION: 04-21-27-18 W4M	NAD 83 COORDINATES: UTM Northing Easting 12 5686022 396402		RISK ASSESSMENT: PF: 8 CF: 5 TOTAL: 40	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 60 (south) (Reference No. 113210)			CONTRACT MAINTENANCE AREA (CMA): 521	

SUMMARY OF SITE INSTRUMENTATION: There are no instruments at the S041 site. LAST READING DATE: N/A	INSPECTED BY: Chris Gräpel (KCB) James Lyons (KCB) Rocky Wang (AT) Justin Corbeill (AT MCI)
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PRIMARY SITE ISSUE: A natural slope failure on the west side (southbound lane) of Hwy 564 that was triggered by highway widening (i.e., cut and fill placement) in 1979.

APPROXIMATE DIMENSIONS: The slide is approximately 120 m wide at the crest and 250 m wide near the mid-slope. Below where the slope was previous repaired, the slope is approximately 50 m high sloped at 3H:1V.

DATE OF ANY REMEDIAL ACTION: 2008 – 800 soils nails were launched, and a geosynthetic reinforced toe berm was constructed to support the highway; 2021 – the highway was realigned to the south into the upslope ditch.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	Gravel appears to be added to road surface and periodically graded.		X
Slope Movement	X		Guardrail was settling before being repaired in 2021. Slide head scarp is outflanking the existing soil nail wall to the northeast.		X
Erosion	X		Erosion caused by surface water runoff		X
Seepage		X	N/A – none observed		X
Culvert Distress		X	N/A – none observed		X

COMMENTS

The slide appears to be a translational slide with some rotation that is sliding on a weak layer (depth of weak layer is unknown due to lack of instrumentation data, but a depth of between 6 m and 17 m below ground surface has been estimated based on visual observations). The downslope crest of the slide tips back towards the highway. Tension cracks observed during 2017 inspection appear to have been filled. Since the 2017 inspection, the slide is starting to outflank the existing soil nail wall to the northeast.

Drainage at the site is poor. A shallow ditch exists on the south side of the highway but is periodically filled with gravel during grading. The old geocell in the ditch has also been damaged and buried during grading operations.

In 2021, the guardrail was raised and shifted south up to approximately 3 m as part of realigning the highway/road narrowing (Photo 1). The highway surface was shifted/realigned south into the south (eastbound) ditch and a "Road Narrows – 35 km/hr" sign was installed in beside the south (westbound) lane at the east end of the site (i.e., near the top of the hill) (Photo 3).

During the 2021 realignment work, the south (eastbound) ditch was narrowed considerably (from a wide flat ditch to a “v-ditch”) (Photo 4) and the highway was graded towards the downslope direction. To reduce the likelihood/degree of surface water runoff from the highway infiltrating into the slide zone, a gravel “berm” was built below the guardrail (Photo 2).

The area downslope of the guardrail was graded during the 2021 work, but no vegetation has begun to grow (Photo 3).

During the 2021 work, the back slope was not impacted, and the toe remains in the same location as during previous inspections (Photo 1 through 3).

Maintenance/Repair/Monitoring Recommendations:

- The site was repaired in 2021. The site should continue to be monitored and inspected once per contract cycle as part of the Southern Region GRMP Section B inspections.
- The site should be inspected by AT’s MCI and if vegetation does not begin to grow downslope of the guardrail, the area should be seeded with a seed mix suitable for the Alberta Badlands.

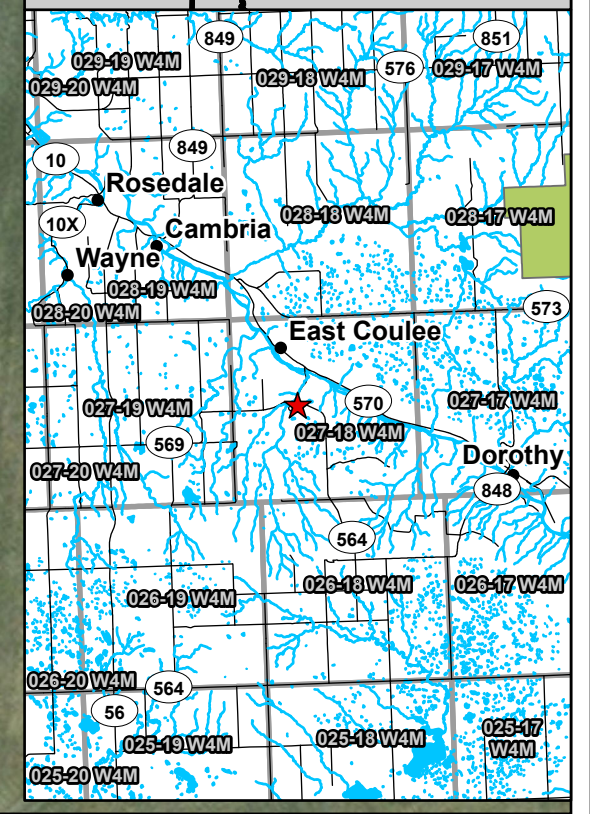
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<p>Chris Gräpel, M.Eng., P.Eng. Senior Civil Engineer, Associate</p>	
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- Legend**
- GPS Track (May 30, 2022)
 - Flow Direction
 - - - Drain
 - ~ ~ ~ Crack
 - Scarp
 - Guardrail
 - Dimension



NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM ZONE 12N
 3. IMAGE SOURCE: BING MAPS, MICROSOFT CORPORATION 2020. SOURCE DATE: APRIL 3, 2012

CLIENT

Alberta

Klohn Crippen Berger

PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM		
TITLE Site Plan S041 - East Coulee Slide Hwy 564:10, km 32.353		
SCALE 1:1,500	PROJECT No. A05116A03	FIG No. 1

File: Z:\A\EDM\A05116\A02\ABT Central Region GRMP\400 Drawings\GIS\MXD\2022\S041_220621.aprx Date: Time: Creator: aharrison

Inspection Photographs

Photo 1 Aerial photo of the S041 East Coulee Slide site indicated the approximate locations of the CSP slope drain (indicated by red arrow), length of highway and guardrail shifted south in November 2021 (indicated by red bracket), and location of previous repairs. Photo taken May 31, 2022, facing south.

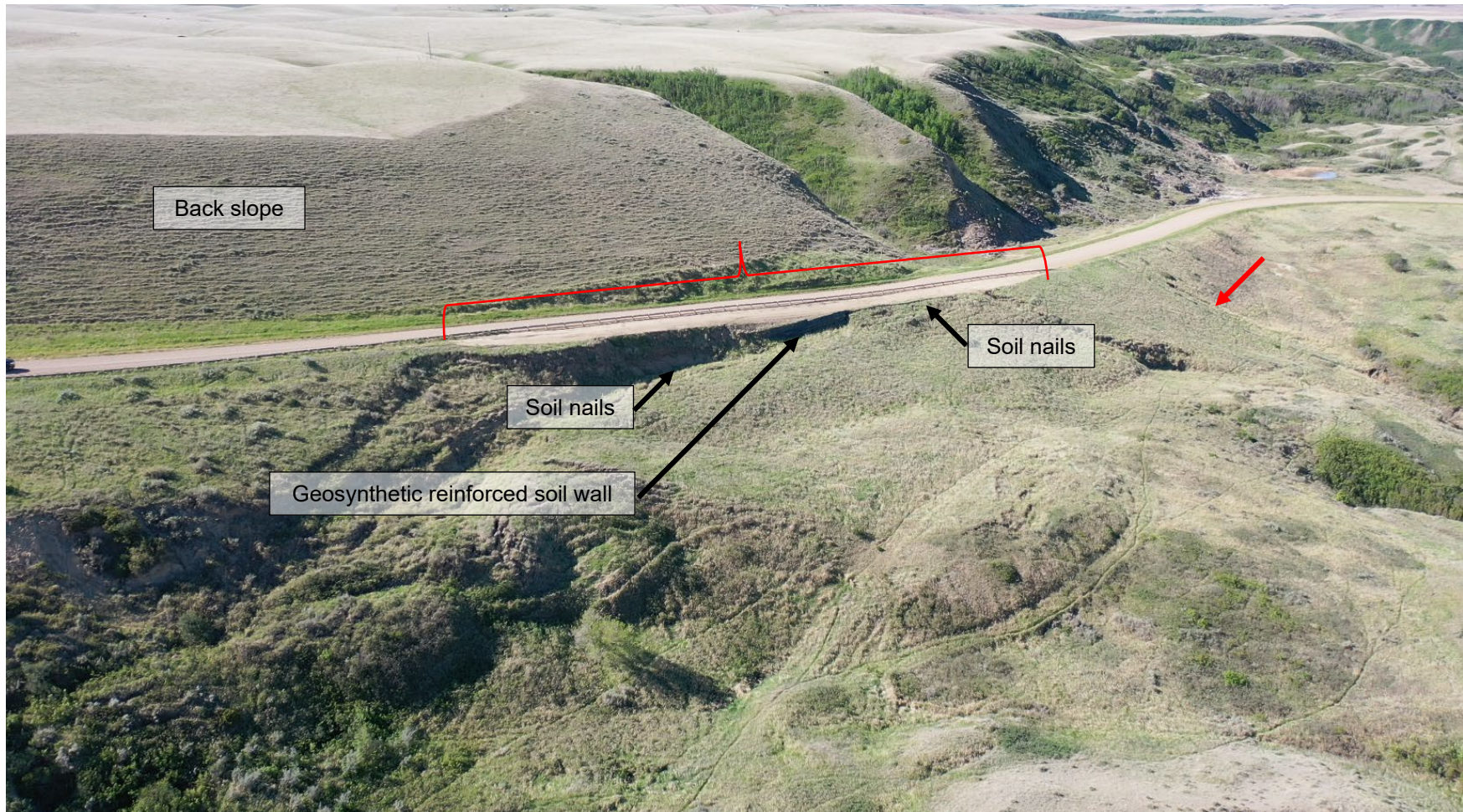


Photo 2 The guardrail and highway has been shifted approximately 3 m south towards the back slope, narrowing the highway and south (eastbound) ditch. Photo taken May 31, 2022, facing southwest.



Photo 3 North side of the guardrail has been graded but does not have any vegetation cover. Photo taken May 31, 2022, facing southwest.



Photo 4 A “Road Narrows – 35 km/hr” sign was installed near the top of the hill east of the site. Photo taken May 31, 2022, facing north.



Photo 5 The south (eastbound) ditch was narrowed during the highway realignment and is now a v-ditch. Photo taken May 31, 2022, facing southwest.

