CENTRAL REGION GRMP
SITE INSPECTION FORM

SITE NUMBER AND NAME: **C019 Upper Slide**	HIGHWAY & KM: 575:04, 25.654	PREVIOUS INSPECTION DATE: June 12, 2018	INSPECTION DATE: **May 30, 2022**
LEGAL DESCRIPTION: 02-27-29-21-W4M	NAD 83 COORDINATES: UTM 12 Northing 5707581 Easting 369918	RISK ASSESSMENT: PF: 5 CF: 4 TOTAL: 20	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 980 (west) & 1170 (east) (Reference No. 106230)		CONTRACT MAINTENANCE AREA (CMA): 517	

SUMMARY OF SITE INSTRUMENTATION:	INSPECTED BY:
There is no instrumentation at the C019 site. LAST READING DATE: N/A	Chris Gräpel (KCB) James Lyons (KCB) Rocky Wang (AT) Carson Elliot (AT)
PRIMARY SITE ISSUE: A slide on a steep embankment slope in a narrow valley on the north side (westbound lane) of Hwy 575:04.	
APPROXIMATE DIMENSIONS: The slide is approximately 30 m wide, and the highway embankment is approximately 30 m high sloped at approximately 3H:1V. A 5 m wide bench is located at an approximate height of 8 m.	
DATE OF ANY REMEDIAL ACTION: Summer 2007 – soil nails were installed in the upper slope, and the highway was repaired; between November 2010 and January 2011 – the lower slide, which occurred in the summer of 2010, was reconstructed with geogrid reinforced gravel fill; 2016 – pavement was patched.	

ITEM	**CONDITION EXISTS**		**DESCRIPTION AND LOCATION**	**NOTICABLE CHANGE FROM LAST INSPECTION**	
	YES	NO		YES	NO
Pavement Distress	X		Pavement cracks and settlement have been observed at the head of the slide	X	
Slope Movement	X		The geogrid reinforced fill at the lower slide is exposed and is failing. No ground cracks were observed upslope of the failed geogrid.	X	
Erosion		X	N/A – none observed		X
Seepage		X	N/A – none observed		X
Culvert Distress		X	N/A – no culvert at the site		X

COMMENTS

Exposed geogrid is located at the lower portion of the slide (northwest of WP 148) (Photo 1 and 3). The exposed geogrid is from a previous repair near the toe of the slope and is approximately 20 m to 25 m from the existing creek and the embankment is approximately 8 m in height. The exposed material appeared to be sand and rounded gravel and some cobbles. The rounded granular material does not provide a strong interlock with geogrid.

The lower slide repair is not seated against the west (left) abutment.

The slide appears to be deforming along the valley slope towards the northeast and existing creek near the toe of the slope (Photo 1 and 2). Visible movement was observed at the toe of the slide, but no visible cracks were observed at the head of the slide of along the slope. However, evidence of movement (i.e., ground cracks) may have been obscured by tall grass.

The pavement patch completed in 2016 and the north (westbound) guardrail has settled since the 2018 inspection (Photo 4). The guardrail also appears low due to the regular pavement patching completed at the site. The MCI told KCB that he has had reports of several vehicles going off the road at the site in the winter due to the pavement settlement (i.e., dip).

The vegetation cover near the top of the slope is poor (Photo 1).

It is recommended that the site is inspected once per contract cycle.

Maintenance/Repair/Monitoring Recommendations:

- Previous repairs at the site include soil nails and geogrid reinforced fill. However, both options appear unsuccessful. KCB believes the next repair should include a steel H-pile wall installed along the north (westbound) edge of the highway. Additionally, KCB believes drainage improvements are required to help stabilize the slope. However, with high pressure water main in upslope ditch approximately 7 m below ground surface, this limits the drainage repair options (e.g., a cutoff trench located in the south (eastbound) ditch).
- One borehole could be drilled through the highway surface to assess ground conditions and to install instruments to monitor ground water and slope movement. Assessing the depth of movement would be used to determine the installation depth of a H-pile wall to attempt to intercept the existing failure plane.

October 7 2022
I.D. # 58463

Chris Gräpel, M.Eng., P.Eng.
Senior Civil Engineer, Associate

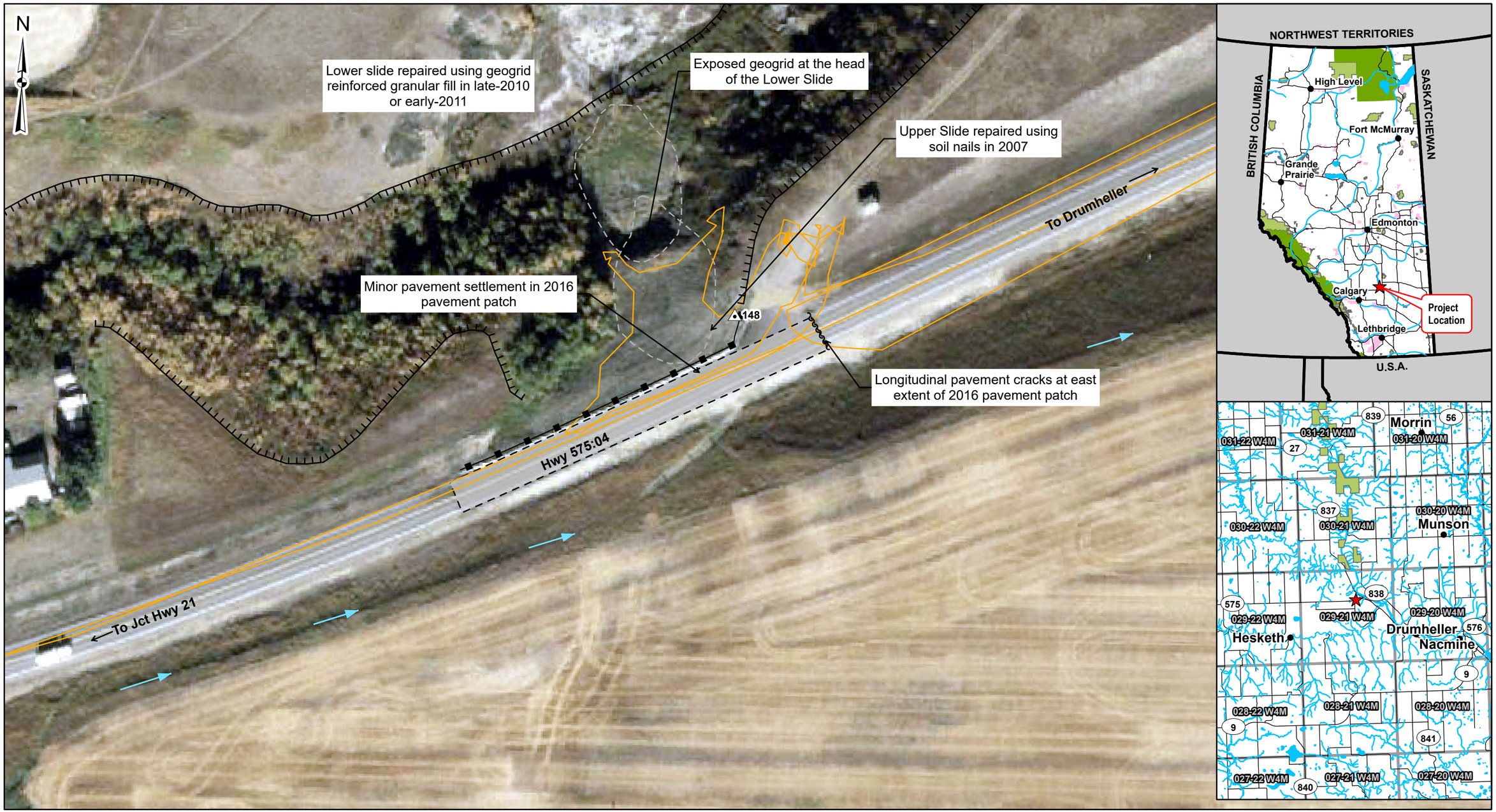
PERMIT TO PRACTICE
KLOHN CRIPPEN BERGER LTD.

RM SIGNATURE: _____

RM APEGA ID #: 187607

DATE: 7 Oct. 2022

PERMIT NUMBER: P009196
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)



Legend

- GPS Waypoint (May 30, 2022)
- GPS Track (May 30, 2022)
- Flow Direction
- Top of Slope
- Guardrail
- Crack
- Slide Extent
- Asphalt Patch

0 50 Metres

NOTES:
1. HORIZONTAL DATUM: NAD83
2. GRID ZONE: UTM ZONE 12N
3. IMAGE SOURCE: ABACUS DATAGRAPHICS LTD. IMAGE DATED JULY 5, 2011 TO OCTOBER 7, 2011

CLIENT: Alberta

Klohn Crippen Berger

PROJECT: CENTRAL REGION GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE: Site Plan
C019 - Upper Slide
Hwy 575:04, km 25.654

SCALE	PROJECT No.	FIG No.
1:1,000	A05116A02	1

File: Z:\AE\DM\A05116A02 ABT Central Region GRMP-400 Drawings\GIS\MXD\2022\C019_220609\C019_220609.aprx Date: Time: Creator: : aharrison

Inspection Photographs

Photo 1 **Oblique view of the C019 site, indicating poor vegetation cover at the top of the highway embankment (indicated by red polyline), the failing geogrid reinforced lower slide completed in late-2010 or early-2011 (indicated by red circle), and previous pavement patch (indicated by red arrow). Photo taken May 30, 2022, facing southeast.**

Photo 2 **Aerial photo of the C019 site from the upslope (south) side of Hwy 575:04, showing the failing geogrid reinforced lower slide (indicated by red arrow) and pavement patch (indicated by red polyline). Photo taken May 30, 2022, facing north.**

Photo 3 **Failed geogrid reinforcement at the lower portion of the slide (northwest of WP 148). The slope is located approximately 20 m to 25 m from the creek and is approximately 8 m in height. Photo taken May 30, 2022, facing northwest.**

Photo 4 **The pavement and guardrail have continued to settle since the 2018 inspection. The guardrail is low due to the regular pavement patching. Photo taken May 30, 2022, facing southeast.**