

SITE NUMBER AND NAME: S043 Pine Ridge		HIGHWAY & KM: 6:04, 10.000	PREVIOUS INSPECTION DATE: June 1, 2017	INSPECTION DATE: May 2, 2018
LEGAL DESCRIPTION: 02-09-003-29 W4M	NAD 83 COORDINATES: UTM Northing Easting 12 5452673 292619		RISK ASSESMENT: PF: 8 CF: 4 TOTAL: 32	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 353 (north), 328 (south), (Ref No. 60060410)			CONTRACTOR MAINTENANCE AREA (CMA): 26	

SUMMARY OF SITE INSTRUMENTATION: None LAST READING DATE: n/a	INSPECTED BY: Chris Gräpel (KCB) Peter Roy (KCB) Alex Frotten (AT) Roger Skirrow (AT)
PRIMARY SITE ISSUE: Embankment sliding and/or settlement causing cracks in pavement extending across the southbound lane.	
APPROXIMATE DIMENSIONS: Approximately 30 m to 35 m wide, extending 3 m into the southbound lane. Embankment fill and natural sloped approximately 1.5H:1V. Fill is approximately 8 m high with natural slope approximately 20 m high below the fill.	
DATE OF ANY REMEDIAL ACTION: No recent remedial measures have been undertaken. An overlay appears to have been placed approximately 20 years ago, according to AT.	

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	x		Cracking of the pavement extends to the middle of the southbound lane and near centreline.		x
Slope Movement	x		Slope below the highway is exhibiting signs of movement.	x	
Erosion		x	None observed		
Seepage		x	None observed		
Culvert Distress		x	None observed		

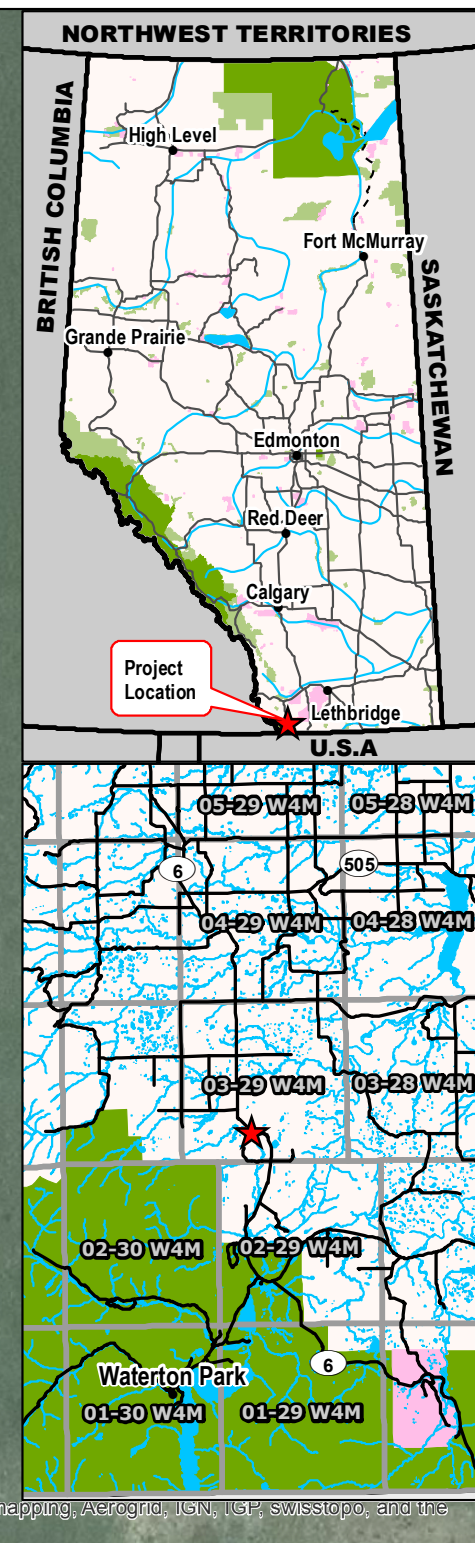
COMMENTS
There is an existing draw feature at the site that was likely filled in as part of the highway construction works.
Cracks up to 50 to 75 mm wide at southern extent of the failure area, with up to 50 mm of settlement. The cracking extends to the middle of the southbound lane. The extent of cracking in the middle of the southbound lane has not changed since 2017.
The guard rail above the failure zone on the highway has dropped and a dip is apparent.
Ponding water is occurring in the upslope ditch opposite the slide zone with infiltration into the slide mass. Standing water in ditch at the time of the inspection.
Up to 1 to 1.2 m of asphalt was observed at various points along the highway shoulder on the crest of the downslope embankment. However, this could be overspill from the last overlay.
A high density of vegetation was observed at the fill-natural soil contact at the toe of the embankment downslope of the highway. The density of vegetation could indicate seepage at the fill-foundation contact.

There is a noticeable deflection (approximately 1 - 2 m) of a barbed wire fence running parallel to the highway, located approximately 5 m below the highway.

The embankment failure appears to be due to groundwater seepage and seepage from the adjacent drainage ditch leading to instability downslope. The ponding water in the drainage ditch is allowing water to infiltrate into the adjacent highway embankment. It may also be possible that any organic material present beneath the embankment was left in-situ or drainage not included to drain springs as was a common highway construction practice in the past.





Short Term:

- The drainage ditch should be regraded to allow water to pass through this area without ponding and assess if movements cease. If not, the ditch should be lined with a geomembrane to limit infiltration into the embankment fill. Additional stabilization measures such as a pile wall may be required if current rates of movement accelerate significantly.
- The AT pavement LiDAR data could be reviewed at this site to assess if long term deformation is occurring at this site. This site is an ideal location to assess the use of the pavement LiDAR data for change detection due to the relatively long period since the last overlay which predates AT's use of pavement LiDAR.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

-  GPS Track (May 2, 2018)
-  Crack
-  Fence
-  Flow Direction



NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM Zone 12N
 3. IMAGE SOURCE: World Imagery from ESRI ArcGIS Online.
 Source date January 2015

CLIENT




PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM		
TITLE Site Plan S043 - Pine Ridge Hwy 6:04, km 10.000		
SCALE 1:1,000	PROJECT No. A05115A03	FIG No. 1

Time: 15:31:46 PM
 Date: August 08, 2018
 File: \\nt.kohn.com\ProjData\A\EDM\A05115A03\ABT_Southern Region GRMP\400 Drawings\2018\2_Section BIMXD\S043_180705.mxd

Photo 1 Cracks at south end of failed area extending to middle of southbound lane. Photo was taken facing northwest on May 2, 2018.



Photo 2 Drainage ditch on upslope side of site. Ponded water observed in the poorly graded ditch. Photo was taken facing northwest on May 2, 2018.

