

## GEOHAZARD RISK MANAGEMENT PROGRAM

### North Central Region – Edson / Stony Plain Area

#### 2020 Inspection Report

Site Number	Site Name	Hwy	km
NC13	Cattlepass West	633:02	0.8
Legal Land Description	NW 29-53-6-W5M		
UTM Coordinates (NAD 83)	Zone 11N	N5942619	E642207
Operational Site Instrumentation	Slope Inclinometers	3	
	Pneumatic Piezometers	0	
	Vibrating Wire Piezometers	3	
	Standpipe Piezometers	-	
Date of Last Instrumentation Readings	May 20, 2020		

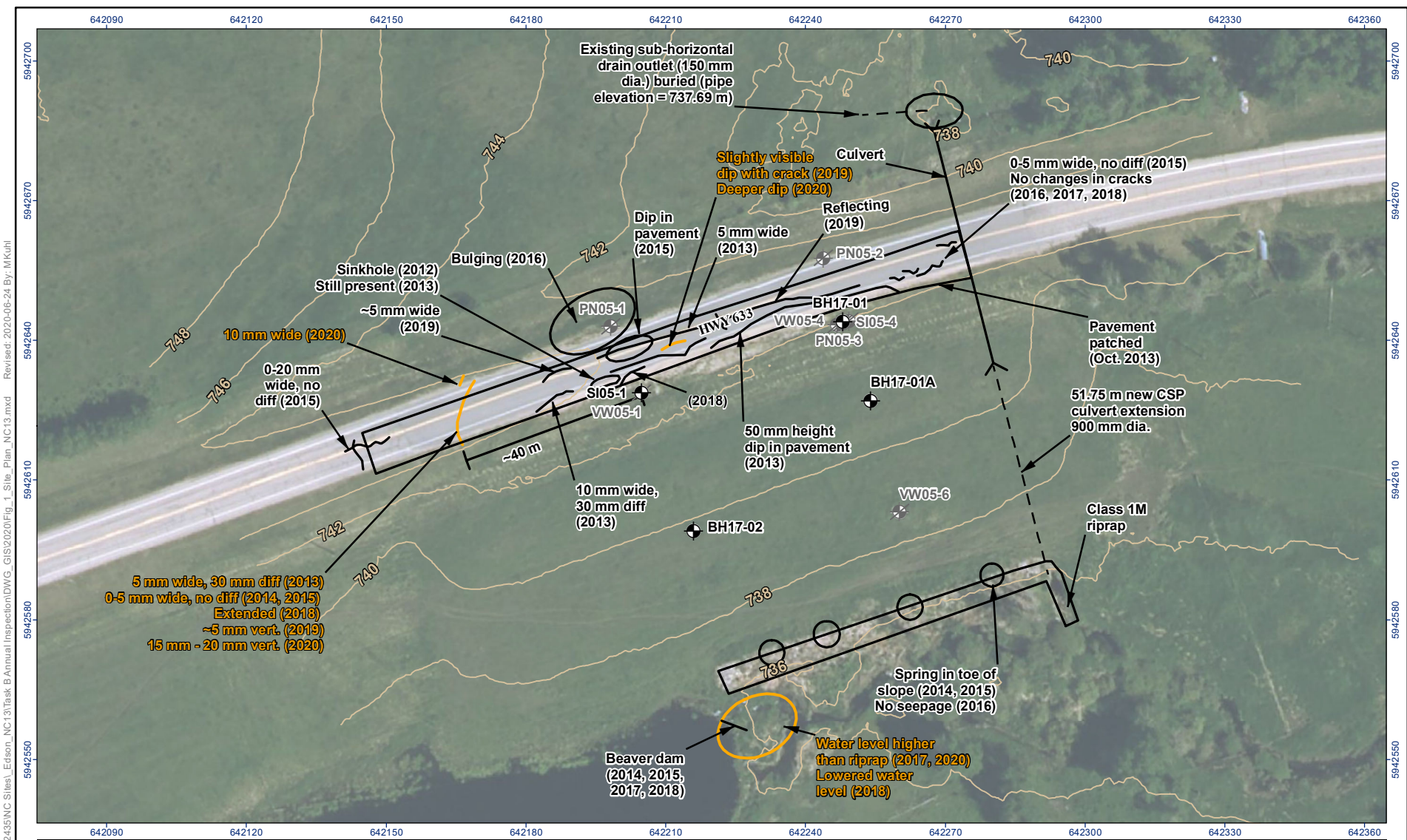
Risk Assessment	Date	PF	CF	Risk Ranking
Current Inspection	May 25, 2020	10	4	40
Previous Inspection	May 16, 2019	9	4	36
Report Attachments	<input checked="" type="checkbox"/> 6 Photographs		<input checked="" type="checkbox"/> Site Plan (1 Page)	

	Stantec	Alberta Transportation
Inspected By	Leslie Cho	Kristen Tappenden and Kathleen Davis
Date of Remediation	Wick drains and toe berm constructed in 2011	
Recent Maintenance	Pavement overlays in 2011 and 2013. Gravel placed on shoulder of eastbound lane in 2015	

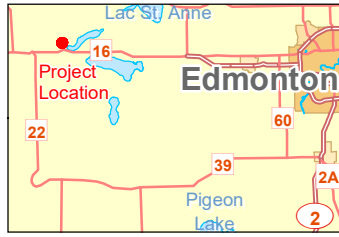
<b>Primary Site Issue</b>	Relatively high embankment over soft clay with high groundwater level leading to slope instability.		
<b>Observations</b>	<b>Description and Location</b>	<b>Change from Previous Inspection</b>	
<input checked="" type="checkbox"/> Pavement Distress	Pavement cracking along Highway 633. Increased vertical difference about 40 m west of SI05-1.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Culvert Distress		<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Bridge Distress		<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input checked="" type="checkbox"/> Slope Movement	Increased pavement cracks along highway	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> Erosion		<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Seepage		<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Other		<input type="checkbox"/> Yes	<input type="checkbox"/> No

<b>Discussion</b>	<p>Highway 633 was last overlaid in October 2013. The crack patterns have since reflected through the overlay as shown in Photos 1 to 5. The circular crack west of SI05-1 increased its vertical difference to about 15 mm to 20 mm. The crack northeast of SI05-1 appeared to have a deeper dip in the pavement.</p> <p>The overall highway embankments are shown in Photos 6 and 7. No obvious signs of slope instability on the embankment slope were observed.</p> <p>The seepage observed in 2015 along the toe of the berm near the riprap was not observed during this inspection. The water level in the pond to the south appeared to be similar to the 2019 inspection as shown in Photo 8.</p>
<b>Assessment</b>	<p>The SI readings shows signs of creep movement, especially in BH17-02. Together with the development of new pavement cracks suggests that slope movement is ongoing.</p> <p>The overall pore water pressures at the site remains high with a trend of increasing pore pressures. The Spring 2020 instrumentation reading showed pore pressures as high as 0.2 m below ground surface. Artesian conditions were observed prior to remediation in 2011.</p>

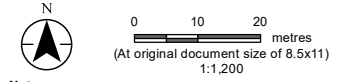
<b>Recommendations</b>	<p>Short term recommendations include sealing any new cracks to reduce surface water infiltration into the slope.</p> <p>The culverts and drains at the site should be inspected on a regular basis to reduce the risk of pore pressures building up in the berm and slope and to confirm functionality.</p> <p>Since the site is preloaded, a grade reduction to improve slope performance may be considered. Alternatively, lightweight fill may be considered to reduce the overall driving force on the embankment.</p> <p>Site inspections should be completed annually. Instrumentation monitoring should continue to be collected semi-annually.</p>
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\\Cd1001-c200\workgroup\123312435\NC Sites\Edson\_NC13\Task B Annual Inspection\DWG\_c\GIS\2020\Fig\_1\_Site\_Plan\_NC13.mxd Revised: 2020-06-24 By: MKuhf



- Borehole Location
- Non-Operational Instrument
- Previous Observation
- 2020 Observation
- Ground Elevation Contours (m AMSL, LiDAR Nov. 2014)



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 11N
  2. Data Sources: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
  3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project Location: Hwy 633, Parkland County, Alberta  
 Prepared by MK on 2020-06-11  
 Quality Review by LC on 2020-06-19  
 Independent Review by XL on 2020-06-19

Client/Project: Alberta Transportation, Geohazard Monitoring Program, NC13 Cattle Pass West  
 123312435

Figure No.: **1**  
 Title: **Site Plan**



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Reference: 2020 Annual Inspection Photographs at NC13 – Cattlepass West  
File Number: 123312435



**Photo 1:** Circular crack approximately 40 m west of SI05-1. Looking south



**Photo 2:** Semi-circular pavement crack about 10 m east of Photo 1. Looking west.

Reference: 2020 Annual Inspection Photographs at NC13 – Cattlepass West  
File Number: 123312435



**Photo 3:** Crack on shoulder north of S105-1 unchanged. Looking east.



**Photo 4:** Cracking on eastbound lane northwest of BH17-01 Looking west.

Reference: 2020 Annual Inspection Photographs at NC13 – Cattlepass West  
File Number: 123312435



**Photo 5:** Semi-circular crack along C/L and eastbound lane north of BH17-01 Looking west.



**Photo 6:** Overall view of north side of highway embankment. Looking west.

Reference: 2020 Annual Inspection Photographs at NC13 – Cattlepass West  
File Number: 123312435



**Photo 7:** Overall view of south side of highway embankment. Looking east.



**Photo 8:** Pond at toe of slope. Looking south.