

<b>SITE NUMBER AND NAME:</b> NC105 – Hwy 32:10 Backslope Slump	<b>HIGHWAY AND KM:</b> 32:10, km 18.943	<b>PREVIOUS INSPECTION:</b> N/A	<b>CURRENT INSPECTION:</b> June 17, 2022
<b>LEGAL DESCRIPTION:</b> SW 26-58-13-W5M	<b>NAD83 COORDINATES:</b> UTM11U 5988362N, 576370E		<b>RISK ASSESSMENT:</b> PF: 5 CF: 2 Total: 10
<b>AVERAGE ANNUAL DAILY TRAFFIC (AADT):</b> 1,790 (2021)		<b>CONTRACTOR MAINTENANCE AREA (CMA):</b> 508	

<b>SUMMARY OF INSTRUMENTATION:</b> No instruments at this site. <b>LAST READING DATE:</b> N/A	<b>INSPECTED BY:</b> Stantec: Leslie Cho, Sonja Pharand AT: Rocky Wang, Amy Driessen, Kathleen Davis, Tim Germyn
<b>PRIMARY SITE ISSUE:</b> Failure of the backslope on the inside corner along Highway 32.	
<b>APPROXIMATE DIMENSIONS:</b> 60 m long by 60 m wide.	
<b>DATE OF ANY REMEDIAL ACTION:</b> Pavement patching completed in past years (exact dates unknown).	


ITEM	CONDITIONS EXIST		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Significant transverse and longitudinal pavement cracking within northbound lane (NBL) and southbound lane (SBL).		
Slope Movement	X		The backslope has visibly failed with well defined toe bulging. Leaning/fallen trees within the slide mass.		
Erosion	X		Erosion channel located near toe of the slope failure and on failure mass.		
Seepage		X			
Bridge/Culvert Distress		X			

<b>COMMENTS</b>
<ul style="list-style-type: none"> <li>Based on information from the MCI, the private landowner (Busted Knuckle) at the top of the hill constructed a parking lot and garage at the top of the hill approximately 7 years ago. Based on Google Earth imagery, there appears to be some land development at the crest of the hill at the landslide location between 2014 and 2018 images. It is surmised that the surface drainage pattern was likely altered during development of the Busted Knuckle property to direct surface water towards the landslide area.</li> <li>Significant pavement cracking was observed in both the longitudinal and transverse directions. The NBL appears to have more cracks than the SBL. Small pavement patches can be seen along cracks within the north bound lane. (Photos 1 to 3). The pavement cracks are likely unrelated to the landslide.</li> <li>The north extent of the toe bulge begins approximately 30 m south from the 'Logging Trucks Turning' sign. The current toe is approximately 4 m from the edge of pavement at its closest point. The slope failure and the scarps are very well vegetated. The height of the toe bulge is about 1 m to 2 m. (Photos 4 to 6).</li> <li>Ditch drainage appears to be impeded by the toe bulge but does not appear to be fully blocked.</li> </ul>

- An erosion channel was noted close to the toe and near the centre of the slope failure, approximately 3 m long. A sinkhole/scour hole approximately 0.6 m in diameter and 0.2 m deep was observed approximately 1 m away from the top of the erosion channel.
- A crack on the north side of the failure approximately 2 m above the toe was observed to be approximately 2 m long, 1 m wide, and 0.2 m deep.
- The MCI noted that the toe of the slope has not appeared to have moved in a couple of years.

**RECOMMENDATIONS**

- Short term recommendations include sealing of any cracks to reduce surface water infiltration into the slope and pavement structure.
- The MCI should continue to monitor the slope for movement.
- The toe bulge should be regraded to improve surface water flow within the ditch. The cost estimate for minor regrading works is in the order of \$5,000 to \$10,000 for construction only.
- Site inspections should continue every 2 years.

<b>PREPARED BY:</b> Sonja Pharand, E.I.T.	<b>PREPARED BY:</b> Leslie Cho, M.Eng., P.Eng.	<b>REVIEWED BY:</b> Xiteng Liu, M.Sc., P.Eng.
		

2022 Site Inspection Photos at NC105



**Photo 1:** Pavement cracks along Highway 32, near slope failure. Looking south.



**Photo 2:** Pavement cracks along Highway 32, north of slope failure. Looking north.

2022 Site Inspection Photos at NC105



**Photo 3:** Pavement cracks along Highway 32, north of slope failure. Looking northeast.



**Photo 4:** Slope failure. Looking west.

2022 Site Inspection Photos at NC105



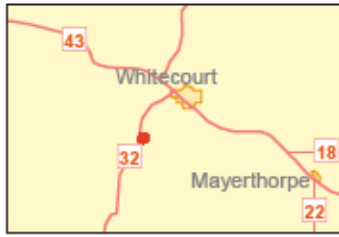
**Photo 5:** South side of slope failure. Looking north.






**Photo 6:** North side of slope failure. Looking southwest.



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 Revised: 2022-10-13 By: DRobertson



-  Photo Number and Direction
-  2022 Observation
-  Slope failure toe



- Notes**
1. Coordinate System: NAD 1983 3TM 114
  2. Base features: Geogratis, Department of Natural Resources Canada, All rights reserved.
  3. Imagery: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project Location: Woodlands County, Alberta  
 Prepared by DR on 2022-09-28  
 Quality Review by LC on 2022-09-28  
 Independent Review by XL on 2022-09-28

Client/Project: Alberta Transportation  
 Geo/Cad Monitoring Program  
 NC105  
 123315222

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



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