

<b>SITE NUMBER AND NAME:</b> NC039 – South of Sturgeon River Crossing	<b>HIGHWAY AND KM:</b> 825:02, km 9.1	<b>PREVIOUS INSPECTION:</b> May 21, 2020	<b>CURRENT INSPECTION:</b> June 1, 2023
<b>LEGAL DESCRIPTION:</b> NW 28-55-22-W4M	<b>NAD83 COORDINATES:</b> UTM12U 5962150N, 353532E		<b>RISK ASSESSMENT:</b> PF: 3 CF: 4 Total: 12
<b>AVERAGE ANNUAL DAILY TRAFFIC (AADT):</b> 3,860 (2022)		<b>CONTRACTOR MAINTENANCE AREA (CMA):</b> 510	

<b>SUMMARY OF INSTRUMENTATION:</b> No instruments.	<b>INSPECTED BY:</b> Stantec: Leslie Cho and Sonja Pharand AT: Rocky Wang, Amy Driessen, Pramaya Kannel and Dean Kokotyn
<b>PRIMARY SITE ISSUE:</b> Erosion and slumping east of north bridge abutment.	
<b>APPROXIMATE DIMENSIONS:</b> 10 m wide x 12 m long	
<b>DATE OF ANY REMEDIAL ACTION:</b> 2004/ 2005 riprap was added in the west ditch south of bridge. Pavement dip patched in 2006. Ditch regraded with riprap added in the west ditch south of the bridge in 2015. Highway milled and re-paved in 2016. Highway patched north of bridge in mid-May 2020. Bridge superstructure replaced, highway milled and paved, bridge embankments and highway ditches repaired in 2022.	


ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	Fresh pavement.		X
Slope Movement	X		Slump on east side of north bank, undermining irrigation pipe.		X
Erosion	X		Erosion channel between slump and river on the east side of the north bank.		X
Seepage		X			X
Bridge/Culvert Distress	X		Standing water at inlet and outlet of culvert across entrance to Township Rd 555	X	

<b>COMMENTS</b>
<ul style="list-style-type: none"> <li>Highway 825 was recently widened at this site, which included milling and replacing the existing pavement (total 100 mm thick), adding a 'leveling' layer above the existing pavement profile, and finishing with 120 mm of asphalt overlay. Total pavement thickness is a minimum of 220 mm.</li> <li>No cracking or pavement distress was observed during the site visit (Photo 1).</li> <li>Standing water was observed in the ditch at both sides of the entrance to Township Road 555 which cuts across the ditch. Two culverts have been installed across this entrance. Stantec was informed by TEC that this area is part of the next widening project/ contract (Photo 2).</li> <li>A gravel wedge was added to the edge of the pavement structure, at the top of each bank into the ditch. The west and east ditch were both regraded and erosion control blankets and georidges were installed.</li> <li>The east ditch was observed to be wet, with sparse grasses (revegetation is ongoing) (Photo 3).</li> </ul>

- The west ditch was observed to be mostly dry with some moisture near the north extent of the remediation. There was no vegetation within the ditch (Photo 4).
- Gabion mattresses were installed on the west side of the north bridge abutment (Photo 5).
- Three tiers of straw wattles (first tier at the edge of the river bank) have been placed southeast from the gabion mattresses installed in the slope (Photo 5).
- Tension cracking and soft soils were observed on the exposed slopes on the west and east sides of the gabion mattresses. Vegetation was just beginning to sprout on these slopes during the site visit (Photo 5).
- Class 1 riprap was installed approximately 0.45 m thick above non-woven geotextile on the headslope under the bridge, up to the west side of the failure on the north bank (Photo 5 and 6).
- The failure on the north bank appears to have been backfilled with Class 1 riprap and other material on the slope above the irrigation pipe. The backfilled area is largely vegetated with long grasses. At the irrigation pipe the slump remains approximately 6 m wide, and the material below the pipe on either side of the erosion channel has become well vegetated with long grasses (Photo 6 and 7).
- The erosion channel below the undermined irrigation pipe to the river is approximately 1.5 m wide.
- No instruments are being monitored at this site. A standpipe was previously observed adjacent to the slump, however it appears to have been removed during the remediation activities in 2022.
- The Probability Factor and Consequence Factor for the site have been reduced due to the repairs undertaken in 2022.

**RECOMMENDATIONS**

- The site should be monitored regularly by the MCI for retrogression of the scarp towards the roadway and bridge structure.
- The contractor should be asked to return to the site and re-seed the west ditch as no vegetation had sprouted at the time of the site visit.
- Any pavement cracks that may appear should be crack sealed to reduce infiltration of water into the highway structure.
- It's recommended that the site inspection frequency remain at every 2 years.

<b>PREPARED BY:</b> Sonja Pharand, P.Eng.	<b>PREPARED BY:</b> Leslie Cho, M.Eng., P.Eng.
	
<b>REVIEWED BY:</b> Xiteng Liu, M.Sc., P.Eng., PMP	<b>PERMIT TO PRACTICE</b>

2023 Site Inspection Photos at NC039



**Photo 1:** Highway 825, looking south.



**Photo 2:** Ponded water in east ditch by culvert outlets. Looking northeast.

2023 Site Inspection Photos at NC039

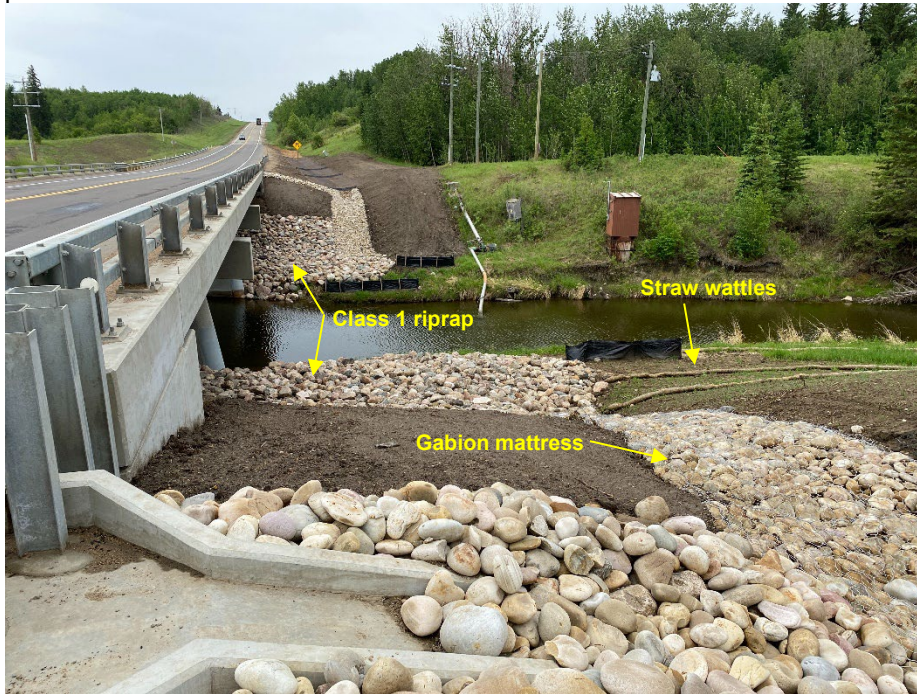


**Photo 3:** Erosion control blankets and georidges in east ditch, looking south.



**Photo 4:** Erosion control blankets and georidges in west ditch. No vegetation observed in the ditch. Looking southwest.

2023 Site Inspection Photos at NC039



**Photo 5:** Remediation on west side of bridge, looking south.



**Photo 6:** North ditch at C/L culvert inlet. Looking southwest.

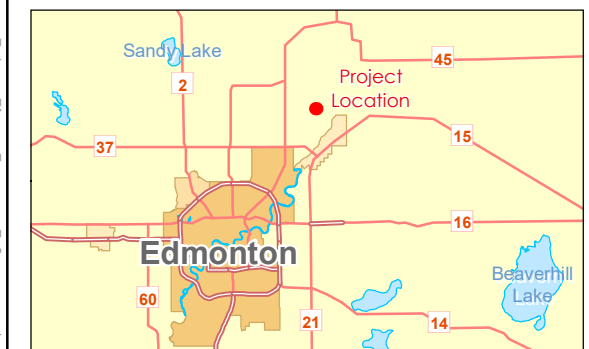
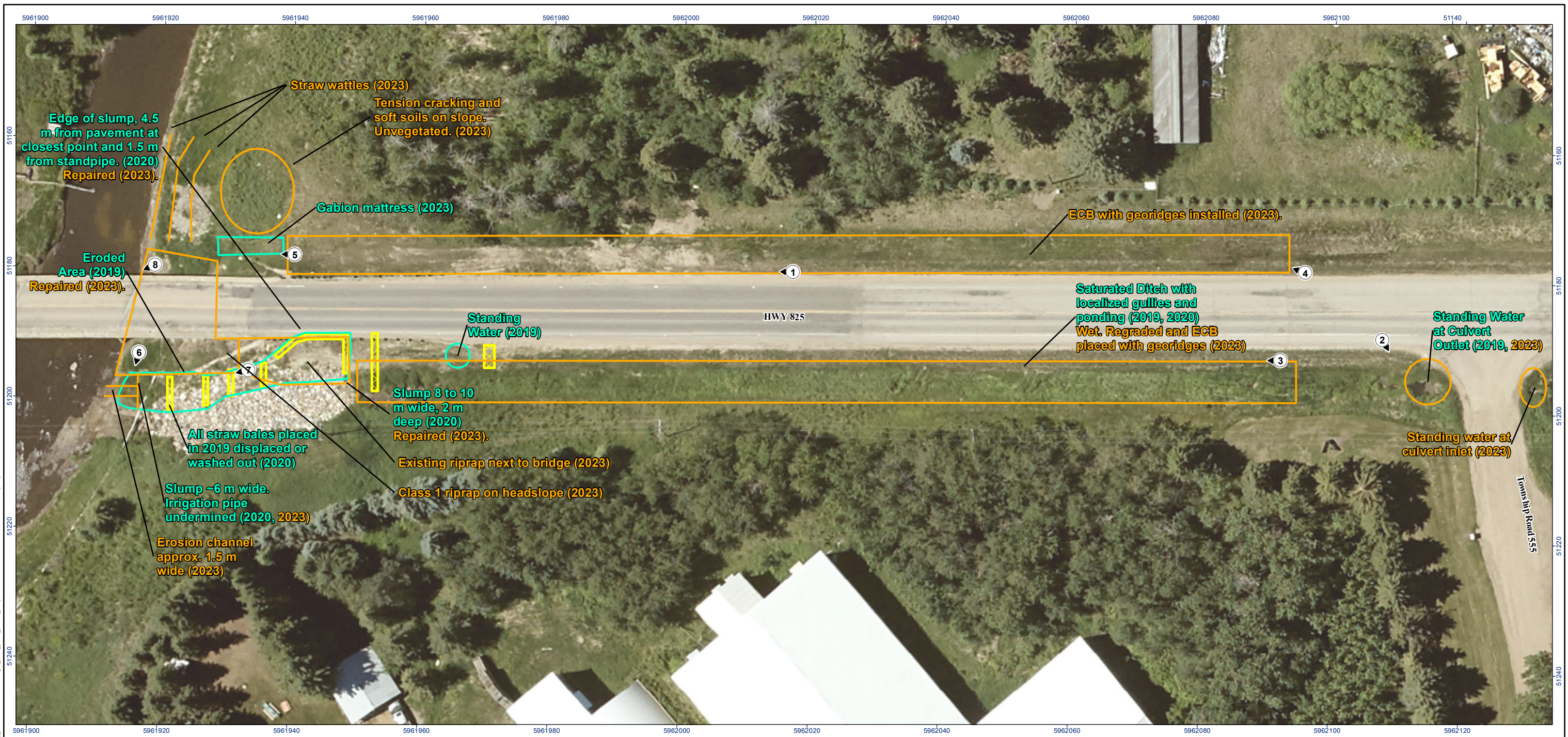
2023 Site Inspection Photos at NC039



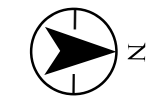
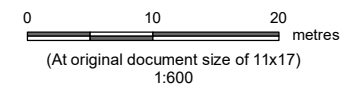
**Photo 7:** Failure on east side of north bank has been backfilled with riprap and finer soils. Well vegetated. Looking southeast.



**Photo 8:** Condition of bridge structure after remediation activities. Looking southeast.



- Previous Observation
- 2023 Observation
- Straw Bale (2020)



**Project Location**  
 NW-28-055-22 W4M,  
 Alberta

**Client/Project**  
 Transportation and Economic Corridors  
 Geohazard Monitoring Program  
 NC39 - Hwy 825 at Sturgeon River

**Figure No.**  
 1

**Title**  
 Site Plan

**Notes**  
 1. Coordinate System: NAD 1983 3TM 114  
 2. Data Sources: Geogratis, ©Department of Natural Resources Canada, All rights reserved.  
 3. Background Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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