NORTH CENTRAL REGION GRMP
EDSON / STONY PLAIN
SITE INSPECTION FORM

SITE NUMBER AND NAME:	HIGHWAY AND KM:	PREVIOUS INSPECTION:	CURRENT INSPECTION:
NC018 – Pembina River Bridge (North of Cherhill)	764:02, km 12.052	June 13, 2024	May 22, 2025
LEGAL DESCRIPTION:	**NAD83 COORDINATES:**		**RISK ASSESSMENT:**
NW-15-57-5-W5	UTM11U 5978069 N, 652940 E		PF: 3 CF: 10 Total: 30
AVERAGE ANNUAL DAILY TRAFFIC (AADT):		**CONTRACTOR MAINTENANCE AREA (CMA):**	
460 (2024)		509	

SUMMARY OF INSTRUMENTATION:	INSPECTED BY:
Five slope inclinometers and two standpipe piezometers functional. **LAST READING DATE:** May 8, 2025	Stantec: Leslie Cho, Sonja Pharand and Carrie Murray TEC: Kristen Tappenden

PRIMARY SITE ISSUE:

Washed out head slope at north abutment of BF9333.

APPROXIMATE DIMENSIONS:

35 m wide by 13 m long

DATE OF ANY REMEDIAL ACTION:

Major bridge and slope repairs undertaken in 1997 including constructing a buttress fill along the east side of the north approach fill, placing free-draining coarse granular material on the north abutment head slope, unloading the south abutment which required installation of another bridge pier and extending the bridge deck south, and installing a horizontal and vertical subdrain system to relieve artesian pressures.

In 2024, the north embankment slope was repaired and lined with riprap. Additionally, the northeast ditch was regraded to the tree line.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X			X
Slope Movement		X			X
Erosion	X		North abutment head slope and riprap channel area repaired. Erosion rills present along east side of repair and below concrete drainage troughs on both sides of north abutment.	X	
Seepage		X			X
Bridge/Culvert Distress		X	North head slope repaired.	X	
Other		X			X

COMMENTS

- The highway surface contains some cracks and potholes, but does not appear to have been affected by the previous failure of the northern head slope (Photos 1 to 4).
- Erosion and sedimentation was observed at the concrete troughs on both sides of the north abutment. Gaps were observed between the trough and the highway surface, where surface water is undermining the trough (Photo 5). Additionally, erosion rills were observed on the slope below each concrete trough.
- The significant drift accumulation observed on the upstream side of the bridge during the 2023 call-out inspection was largely removed or washed away (Photo 6).
- The north head slope was repaired in 2024, and armoured with riprap. The previous riprap channel was regraded and covered with riprap along the slope (Photos 6 to 9). The ditch on the northeast side of the

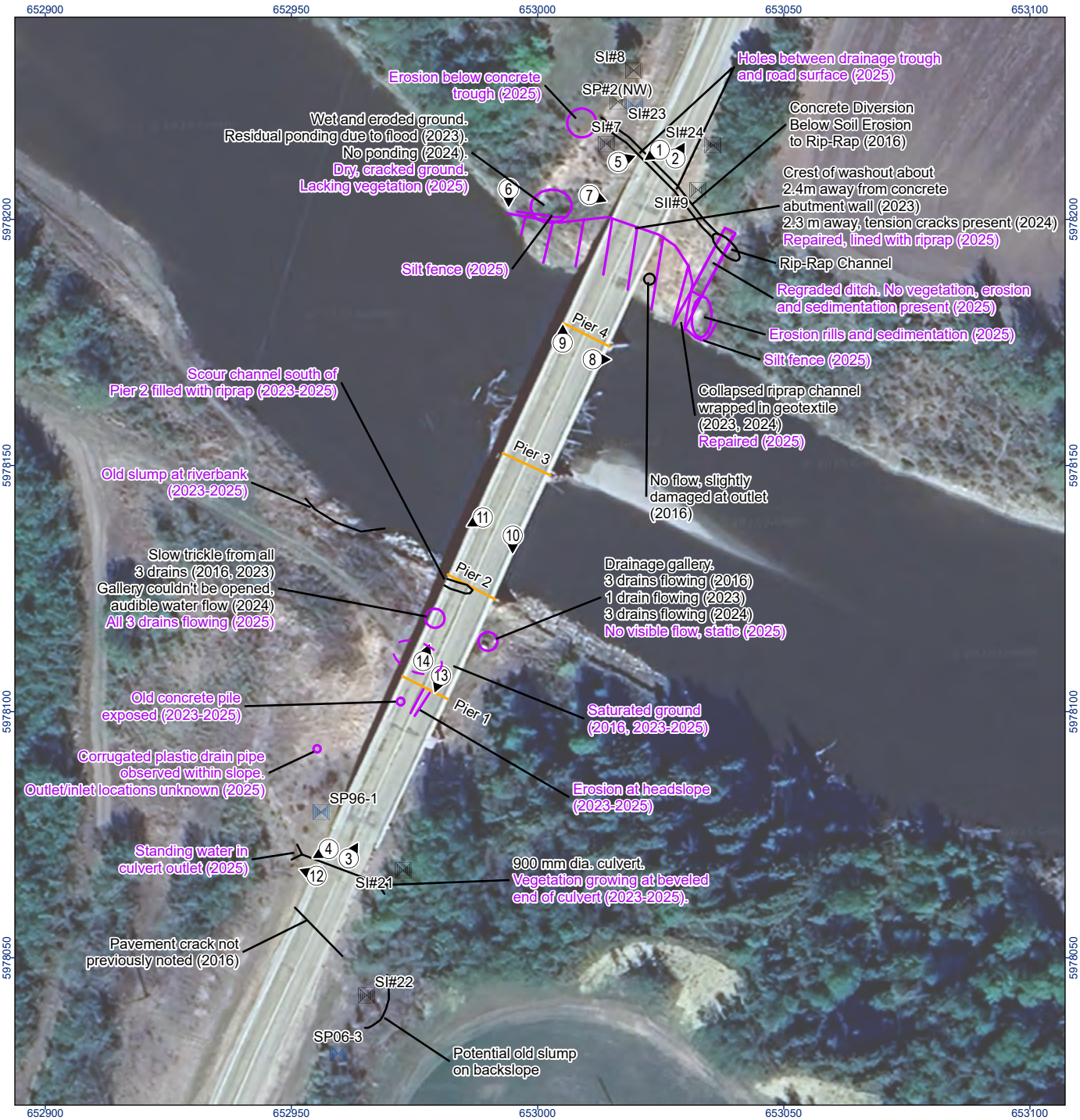
headslope was regraded, however vegetation has not taken to this area yet. Minor erosion and sedimentation was observed within the ditch and down to the river (Photo 7).

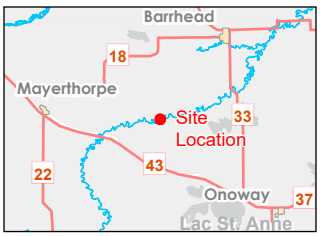
- Riprap armouring was observed along the water line on the south riverbank (Photos 10 & 11). A small slump along the riverbank was observed about 15 m to 20 m west of the south abutment and appeared to be in a similar state as observed during the past two inspections. It is unlikely this slump is affecting the bridge.
- The culvert outlet near the southeast abutment was observed to be in a similar condition to the previous inspections. Standing water was observed in the culvert. The outlet channel is lined with riprap and well vegetated (Photo 12).
- A small erosion channel exists along the south head slope, and appeared to be in a similar condition to 2024 (Photo 13).
- The area between the south head slope and drainage galleries was observed to be wet, similar to 2024 (Photo 14). Water was pooling in this area and the ground was very soft.
- All three drains in the western gallery were flowing. There was no visible flow from the drains in the eastern drainage gallery, and the water appeared static. Siltation within both drainage galleries was apparent.
- A black plastic corrugated drain pipe was observed within the south embankment, approximately midslope on the west side of the bridge. The outlet and inlet locations are unknown.
- The slope inclinometers show no appreciable change in movement rates other than seasonal variations since about 2005. The spring 2025 monitoring cycle showed movement rates of less than 1 mm/year.
- The water levels in SP2 and SP96-1 are 8.0 m and 4.2 m below ground surface, respectively. The water level measured in SP96-1 has generally been increasing since 2002, while the water level in SP-2 has been relatively steady since 2002 with minor variations year to year.
- A Probability Factor of 3 was assessed as the north embankment slope is expected to be inactive following repair and has also been armoured with riprap. The south embankment slope is well vegetated. Minor erosion exists on both banks. Given that the site involves a bridge over a fish bearing river, the Consequence Factor remains at 10.

RECOMMENDATIONS

- The bridge should be monitored regularly (in the spring following freshet and following high precipitation events) for adverse impacts from debris washing downstream and high river levels.
- A periodic subdrain cleaning program should be implemented to reduce risk of potential siltation and clogging of subdrains. The cleaning method may consist of pressure washing the insides of the subdrains and removing the dirty water and sediment from the collection points with a hydrovac. The outlet pipes to the river should be temporarily plugged until the collection points have been cleaned out to reduce migration of dirty water into the river. The outlet should also be flushed by forcing water out from the drainage galleries. The anticipated cost for subdrain cleaning is $6,000 excluding any consulting effort.
- The site inspection frequency could be reduced to once per contract cycle.

PREPARED BY: Sonja Pharand, P.Eng.	**REVIEWED BY:** Leslie Cho, M.Eng., P.Eng.	**PERMIT TO PRACTICE**
PROFESSIONAL ENGINEER ALBERTA SONJA A. PHARAND ID 286545 2025-10-11		PERMIT TO PRACTICE STANTEC CONSULTING LTD. Signature ID# 74389 Date 15 - Oct - 2025 PERMIT NUMBER: P 0258 The Association of Professional Engineers and Geoscientists of Alberta





- Photos and Direction
- Approximate Location of Slope Inclinometer (SI)
- Approximate Location of Stand Piezometer (SP)
- Current Observation
- Pier
- Previous Observation

0 10 20 metres
(At original document size of 8.5x11)
1:1,200

N

Stantec

Project Location	Prepared by MK on 2025-09-02
Hwy 764:02, km 12.052, Alberta	TR by SP on 2025-09-03
	IR by LC on 2025-09-04
Client/Project	123315222
Transportation and Economic Corridors	
Geohazard Monitoring Program, NC18 Hwy 764:02, km 12.052	
Figure No.	
1	
Title	
Site Plan	

Notes
1. Coordinate System:
Name: NAD 1983 UTM Zone 11N
2. Data Sources: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Background: Light Gray Base: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
Google Satellite: © OpenStreetMap (and) contributors, CC-BY-SA

2025 Inspection Photos at NC018

Photo 1: Highway surface at north abutment. Looking southwest.

Photo 2: Highway surface at north abutment. Looking northeast.

2025 Inspection Photos at NC018

Photo 3: Highway surface at south abutment. Looking north.

Photo 4: Highway surface at south abutment. Looking southwest.

2025 Inspection Photos at NC018

Photo 5: Hole in concrete trough at northwest bridge abutment allowing water to drain through. Facing northeast.

Photo 6: Few driftwood present, north headslope armoured with riprap. Looking south.

2025 Inspection Photos at NC018

Photo 7: North abutment head slope repaired and armoured with riprap. Looking southeast.

Photo 8: East side repair with riprap at north abutment. Looking northeast.

2025 Inspection Photos at NC018

Photo 9: West extent of repair at north abutment. Looking north.

Photo 10: East side of south abutment. Looking southeast.

2025 Inspection Photos at NC018

Photo 11: Upstream side of south abutment. Looking southwest.

Photo 12: Culvert outlet near southeast abutment. Looking northwest.

2025 Inspection Photos at NC018

Photo 13: South abutment head slope. Looking southwest.

Photo 14: Saturated ground between drainage galleries and Pier 1. Looking northeast.