NORTH CENTRAL REGION GRMP
EDSON / STONY PLAIN
SITE INSPECTION FORM

SITE NUMBER AND NAME:	HIGHWAY AND KM:	PREVIOUS INSPECTION:	CURRENT INSPECTION:
NC031 – Deer Lodge	22:32, km 28.857	July 14, 2021	May 31, 2023
LEGAL DESCRIPTION:	**NAD83 COORDINATES:**		**RISK ASSESSMENT:**
SE 20-56-08-W5M	UTM11U 5968389N, 622217E		PF: 3 CF: 5 Total: 15
AVERAGE ANNUAL DAILY TRAFFIC (AADT):		**CONTRACTOR MAINTENANCE AREA (CMA):**	
1,160 (2022)		509	

SUMMARY OF INSTRUMENTATION:	INSPECTED BY:
Two vibrating wire piezometers and one standpipe piezometer functional. **LAST READING DATE:** May 15, 2023	Stantec: Leslie Cho and Sonja Pharand TEC: Rocky Wang and Amy Driessen
PRIMARY SITE ISSUE: Slope failure due to combination of high groundwater table, poor drainage, and weak foundation soils.	
APPROXIMATE DIMENSIONS: 70 m wide by 15 m long	
DATE OF ANY REMEDIAL ACTION: Highway patched in 2010 and 2015. Toe berm with drainage constructed in 2016.	

ITEM	CONDITIONS EXIST		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Semi-circular pavement cracking near SI-1R / SP1. Additional longitudinal cracking at both ends of the site.	X	
Slope Movement	X		Pavement crack with dip towards southbound lane (SBL).		X
Erosion		X			
Seepage		X			
Bridge/Culvert Distress	X		Sag in culvert, approximately one-third to one-quarter of the way in from outlet, likely under highway.		X

COMMENTS

- The site appears similar to the previous inspection.
  - A semi-circular pavement crack was observed north of SI-1R. A slight dip of about 5 mm to 10 mm towards the west was observed since 2020. The crack is mostly contained within the SBL with a small section (about 1 m to 2 m long) that encroaches into the northbound lane (NBL) by about 0.3 m (Photos 1 to 3).
  - Longitudinal cracking observed on the SBL in front of the farm access at the north limits of the site. Additional longitudinal cracks within the NBL in front of the farm access were noted during the recent site visit. These new cracks do not appear to be related to landslide activity.
  - A longitudinal crack and a transverse crack have formed within the pavement at the south end of the site, in the NBL. These new cracks do not appear to be related to landslide activity.
- The culvert was not flowing during the current inspection. There was ponded water at both the inlet and outlet. The invert at the outlet appears to be graded backwards.
- As previously observed, a sag exists about one-quarter to one-third of the way in from the outlet, approximately below the west highway edge (Photo 4).
- A shallow groundwater table continues to be observed at the site with current readings showing the water level approximately 0.2 m to 2.8 m below ground surface.

• The Consequence Factor remains at 5 since the slope failure may lead to closure of the SBL with partial loss of the NBL. In addition, the culvert could be damaged from slide movements. • A potential detour at this location would be to drive around the site using Township Road 562 and 563. The detour is expected to require less than 15 minutes travel time. However, the township roads are gravel surfaced and may not be suitable for semi-trucks or other large vehicles.
RECOMMENDATIONS
• Pavement cracks should be sealed to reduce surface water infiltration into the embankment. • Both SIs are inoperable, therefore replacement slope inclinometers could be considered to monitor the site. • Site inspections should continue to be completed annually. • Instrumentation monitoring should continue to be completed annually in the spring.

PREPARED BY: Sonja Pharand, P.Eng.	**PREPARED BY:** Leslie Cho, M.Eng., P.Eng.
	PROFESSIONAL ENGINEER ALBERTA LESLIE CHO September 18, 2023 ID# 139079
REVIEWED BY: Xiteng Liu, M.Sc., P.Eng., PMP	**PERMIT TO PRACTICE**
	PERMIT TO PRACTICE **STANTEC CONSULTING LTD.** Signature _____ Date 2023-09-19 **PERMIT NUMBER: P 0258** The Association of Professional Engineers and Geoscientists of Alberta

2023 Site Inspection Photos at NC031

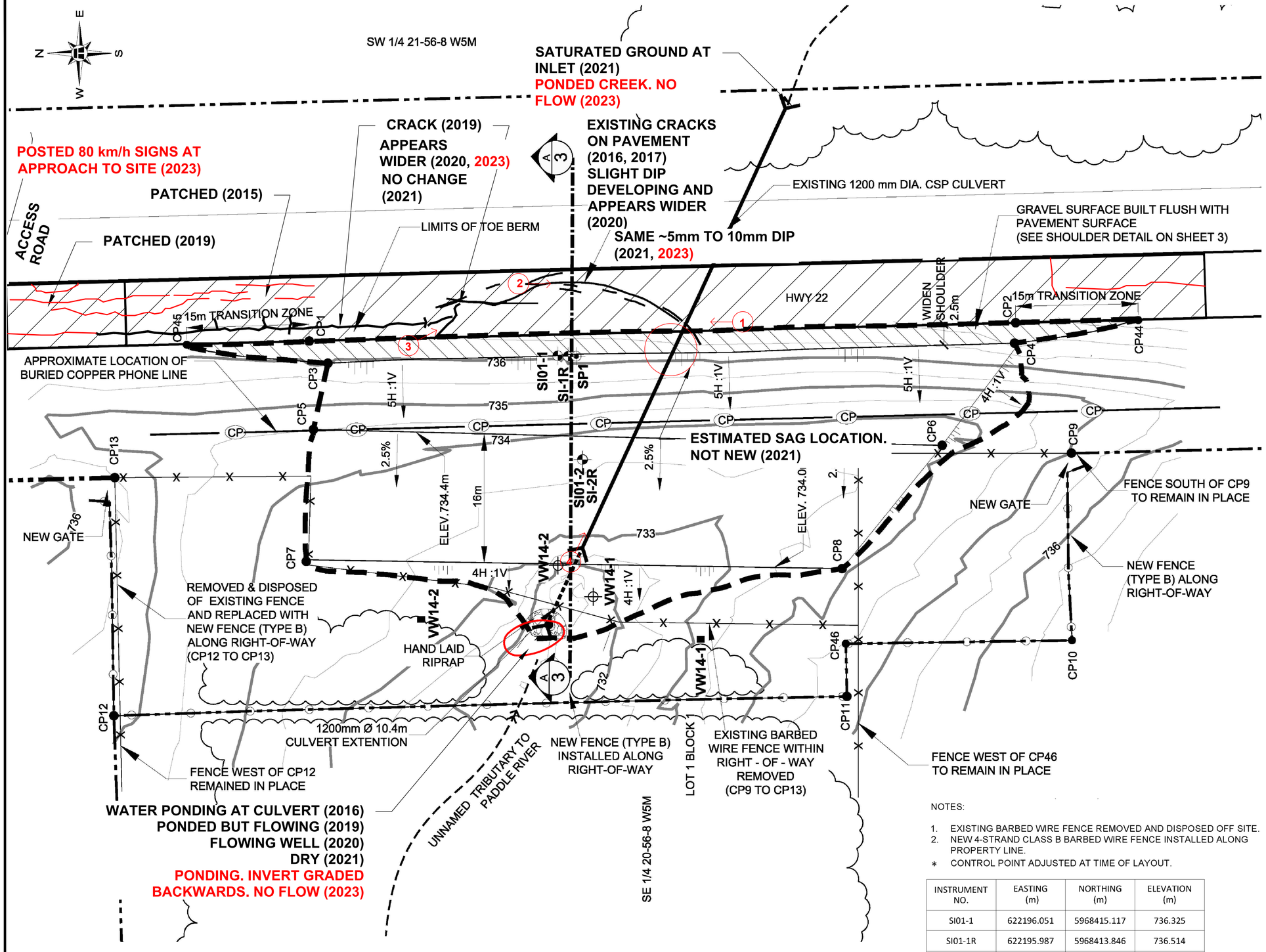
Photo 1: South limits of semi-circular crack. Looking north.

Photo 2: Approximately midway of semi-circular crack near SI-1R. Looking south.

2023 Site Inspection Photos at NC031

Photo 3: North limits of semi-circular crack. Looking southeast.

Photo 4: Culvert outlet. Looking southeast.



CONTROL POINT	EASTING (m)	NORTHING (m)	ELEVATION (m)
CP1 *	622197.842	5968445.499	736.370
CP2 *	622200.084	5968359.093	737.360
CP3 *	622195.134	5968443.221	736.340
CP4 *	622197.658	5968359.225	737.300
CP5	622187.030	5968444.997	734.400
CP6	622185.091	5968368.076	734.400
CP7	622170.902	5968445.871	733.812
CP8	622170.016	5968380.318	734.000
CP9	622184.152	5968352.271	735.666
CP10*	622161.251	5968352.202	736.760
CP11*	622154.395	5968379.736	734.780
CP12*	622152.026	5968469.401	735.150
CP13	622181.142	5968469.288	735.598
CP44*	622200.405	5968344.096	737.730
CP45*	622197.402	5968460.492	736.290
CP46*	622160.831	5968379.865	734.500

LEGEND

- SLOPE INCLINOMETER LOCATION (SI)
- APPROXIMATE STANDPIPE PIEZOMETER LOCATION (SP)
- VIBRATING WIRE PIEZOMETER TIP LOCATION (VW)
- TREE LINE (APPROX.)
- EXISTING GROUND SURFACE CONTOUR - SURVEYED ON OCTOBER 13, 2015 (CONTOUR INTERVAL = 0.5m)
- CRACK ON HIGHWAY
- PROPERTY LINE
- APPROXIMATE BURIED COPPER PHONE LINE
- APPROXIMATE FENCE LINE (EXISTING)
- FENCE LINE (TYPE B) (NEW)
- CONTROL POINT
- VIBRATING WIRE PIEZOMETER LEADS STEEL PROTECTOR (APPROX.)
- PHOTO NUMBER AND DIRECTION

NOTES:

1. EXISTING BARBED WIRE FENCE REMOVED AND DISPOSED OFF SITE.
2. NEW 4-STRAND CLASS B BARBED WIRE FENCE INSTALLED ALONG PROPERTY LINE.

* CONTROL POINT ADJUSTED AT TIME OF LAYOUT.

INSTRUMENT NO.	EASTING (m)	NORTHING (m)	ELEVATION (m)
SI01-1	622196.051	5968415.117	736.325
SI01-1R	622195.987	5968413.846	736.514
SP1	622195.987	5968413.846	736.514
SI01-2	622183.351	5968412.101	734.319
SI-2R	622183.360	5968412.034	734.412
VW14-1 TIP	622166.586	5968410.779	-
VW14-1 CASING	622161.356 (APPROX.)	5968397.620 (APPROX.)	-
VW14-2 TIP	622170.402	5968415.079	-
VW14-2 CASING	622163.808 (APPROX.)	5968431.793 (APPROX.)	-

NOTES

1. PREVIOUS OBSERVATIONS SHOWN IN BLACK
2. 2023 OBSERVATIONS SHOWN IN RED

REFERENCE

THURBER ENGINEERING LTD, JOB No.15-16-322, PLAN No. RD19252-C
DATE NOVEMBER 25, 2015.

Stantec
STANTEC CONSULTING
300-10220 103 AVENUE NW
EDMONTON, ALBERTA, CANADA
T5J 0K4

TRANSPORTATION AND ECONOMIC CORRIDORS
GEOHAZARD MONITORING PROGRAM
NC31 HWY 22-32
SITE PLAN

DRAWN WW/MK/KE	CHECK XL	APPROVE LC
DATE 18 JULY 2023	SCALE AS SHOWN	PROJECT # 123312435

FIGURE - 1 -