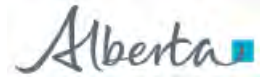




**NORTH CENTRAL REGION GRMP
EDSON / STONY PLAIN
SITE INSPECTION FORM**



SITE NUMBER AND NAME: NC083 – West of Wildhay River	HIGHWAY AND KM: 40:30, km 37.368	PREVIOUS INSPECTION: May 26, 2020	CURRENT INSPECTION: July 15, 2021
LEGAL DESCRIPTION: SE-08-53-27-W5	NAD83 COORDINATES: UTM11U 5935069N, 437757E		RISK ASSESSMENT: PF: 10 CF: 4 Total: 40
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 1,260 (2020)		CONTRACTOR MAINTENANCE AREA (CMA): 508	

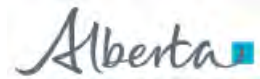
SUMMARY OF INSTRUMENTATION: Three slope inclinometers and three vibrating wire piezometers functional	INSPECTED BY: Stantec: Leslie Cho and Carrie Murray AT: Bernard Ching, Rishi Adhikari, Kathleen Davis, Howard Hawley, and Dave Farr
LAST READING DATE: July 3, 2021	
PRIMARY SITE ISSUE: Embankment failure due to shallow groundwater levels and weak foundation soils.	
APPROXIMATE DIMENSIONS: 75 m wide. Unclear where the toe is.	
DATE OF ANY REMEDIAL ACTION: Southbound lane (SBL) patched in 2016. SBL patched with 25 tonnes of asphalt in summer 2017.	

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Cracking over both lanes at intersection with access road. Pavement breaks with rutting around entrance to gravel pit.		X
Slope Movement	X		Toe bulging along south slope. Semi-circular crack along SBL from BH17-02 to BH17-03. Pavement crack with vertical displacement at shoulder of SBL northwest of BH17-03.		X
Erosion	X		Erosion under Hwy 40 centerline (C/L) culvert outlet.	X	
Seepage	X		Seepage on south slope near culvert and at vehicle tracks. Seepage at Hwy 40 C/L culvert inlet.	X	
Bridge/Culvert Distress		X			

COMMENTS
<ul style="list-style-type: none"> • Pavement crack pattern appeared mostly unchanged compared to the previous inspection and consisted of: <ul style="list-style-type: none"> – 50 mm high crack along SBL shoulder northwest of BH17-03. Vehicles may be breaking hard as they travel across the crack as evidenced by tire marks on the pavement. – Semi-circular crack along SBL along between BH17-02 and BH17-03. • A new pavement crack about 20 mm wide was observed along the alignment of the C/L culvert. • The north ditch was dry during this inspection. This allowed for a new seepage location to be observed adjacent and west of the C/L culvert inlet. The seepage was draining into the culvert. • Both culverts at the site appear to be in good condition. • The south slope appeared to have a “hummocky” appearance and was soft and spongy to traverse. • An erosion channel about 400 mm wide and deep was observed at the C/L culvert outlet.



**NORTH CENTRAL REGION GRMP
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- Seepage was observed at the south slope in the previously observed vehicle tracks.
- All three SIs at the site continues to show movement with movement rates ranging from less than 1 mm/year to 10 mm/year. The rates of movement have decreased since the Fall 2020 readings, possibly due to the relatively dry year experienced in the area.
- Piezometric levels remain high ranging from 0.4 m to 0.8 m below ground surface.

RECOMMENDATIONS

- All pavement cracks should be sealed to reduce surface water infiltration into the landslide.
- Riprap or gravel should be placed at the C/L culvert outlet. If the erosion is left unchecked, it could lead to further channeling and embankment movement.
- It is understood that this section of the highway is planned to be widened, and that slope stabilization will be included with the highway widening works. Remediation options could include installing a pile wall along the south edge of pavement or constructing a gravel toe berm south of the highway and/or considering light weight fill for the highway widening work. Any remediation measures undertaken should include drainage measures such as trench drains, sand drains, or wick drains to reduce pore pressures.
- The site should continue to be inspected annually.
- Instrumentation monitoring should continue semi-annually.

PREPARED BY: Leslie Cho, M.Eng., P.Eng.

REVIEWED BY: Carrie Murray, M.Eng., P.Eng.

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2021 Site Inspection Photos at NC083



Photo 1: Pavement cracking at shoulder of SBL. Note tire marks just past the crack. Looking southeast.



Photo 2: Pavement cracking near BH17-02. Looking southeast.

2021 Site Inspection Photos at NC083



Photo 3: Pavement crack along C/L culvert alignment. Looking southwest.



Photo 4: North ditch at C/L culvert inlet. Seepage location circled. Looking southwest.

2021 Site Inspection Photos at NC083



Photo 5: Erosion at C/L culvert outlet. Looking northwest.

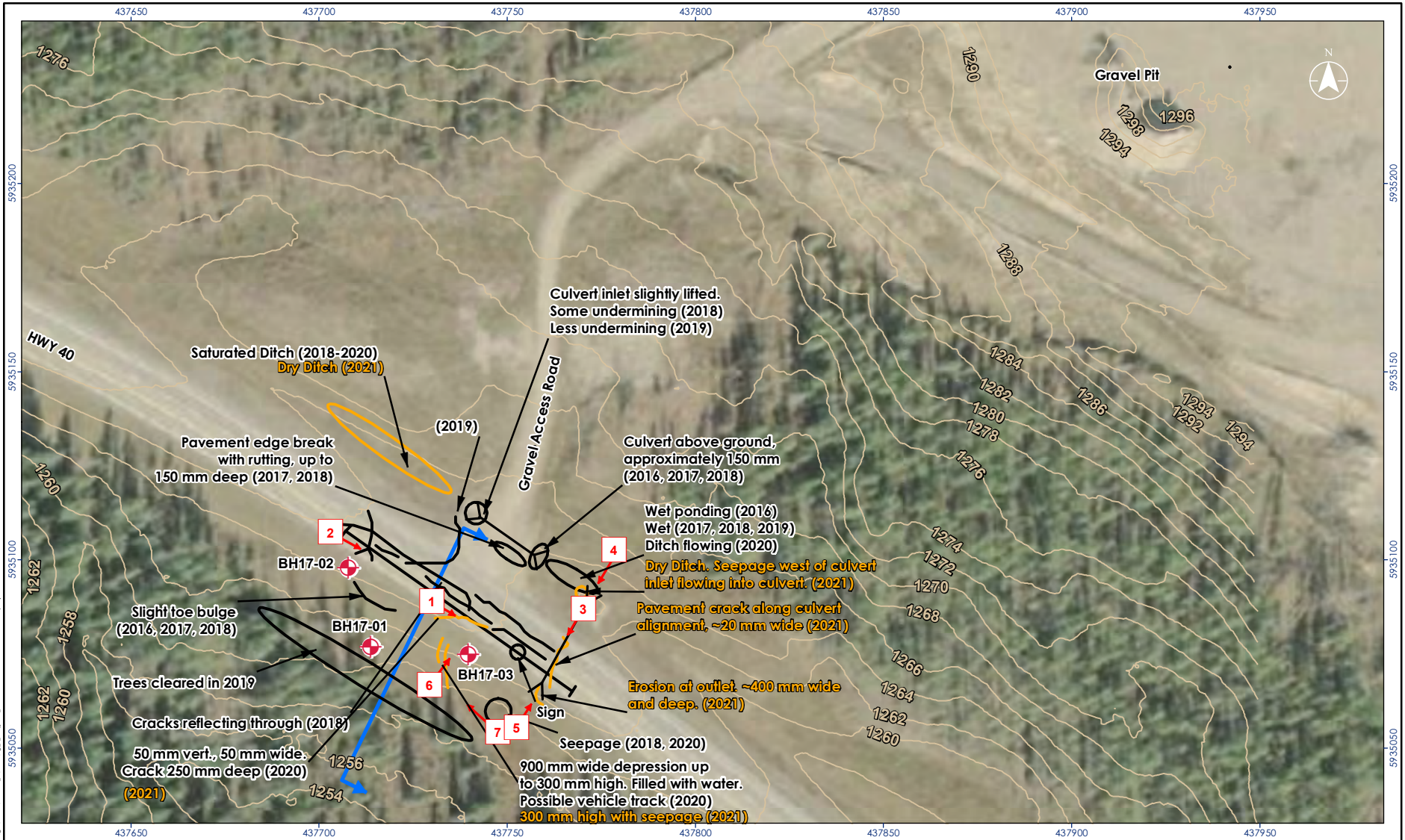


Photo 6: Seepage in vehicle track. 300 mm deep track. Looking down.

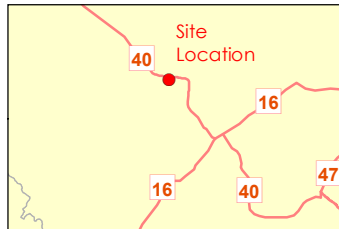
2021 Site Inspection Photos at NC083



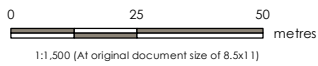
Photo 7: Overall view of south slope. Looking northwest.



V:\CD1001_2020\workspace\123315222_00_00\Info\03_cool\03\NCE3\Section 8_2021\Fig 1 - site plan - ecd\road - Revised 2021-09-14.rvt - gpb/brn



- Borehole Location
- Approximate Culvert Location
- Previous Observation
- 2021 Observation
- Ground Elevation Contours (m AMSL, LiDAR Sept. 2014)
- Cross Section Location
- Photo Number and Direction



Notes

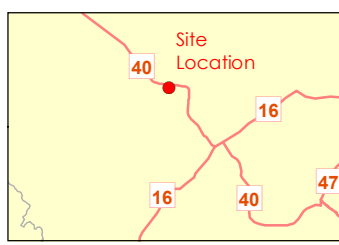
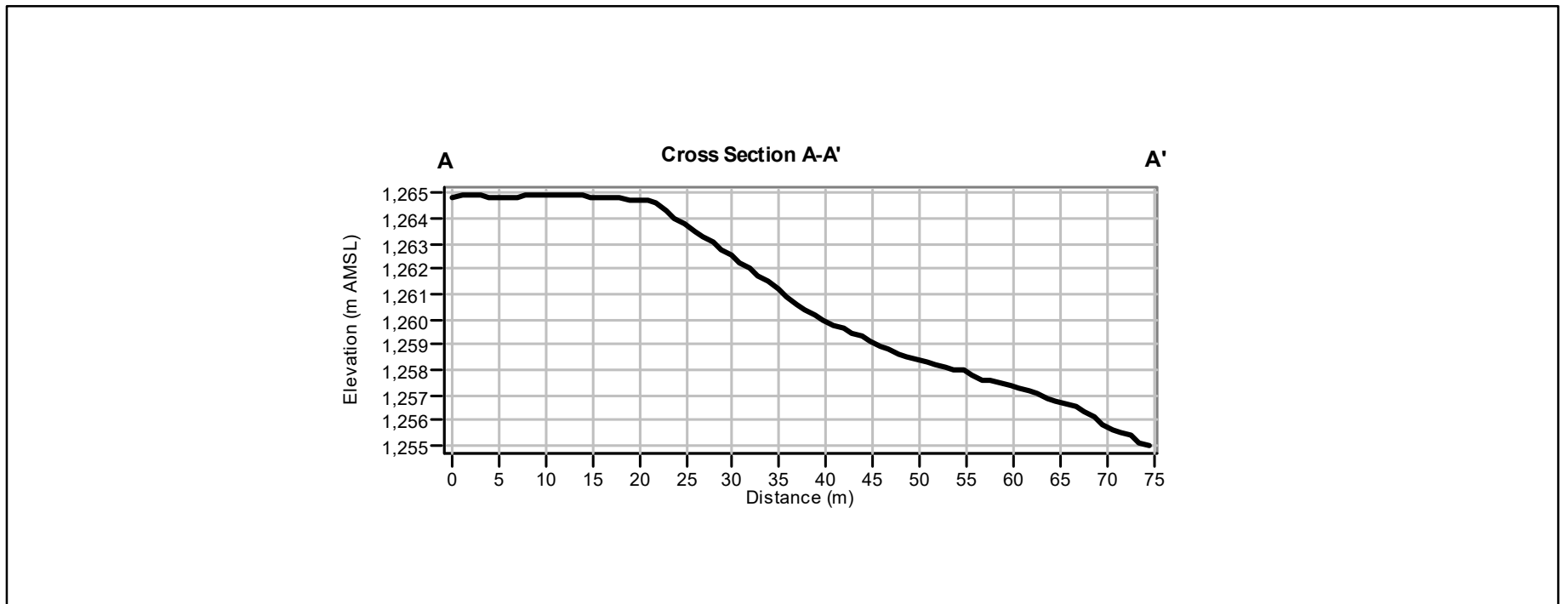
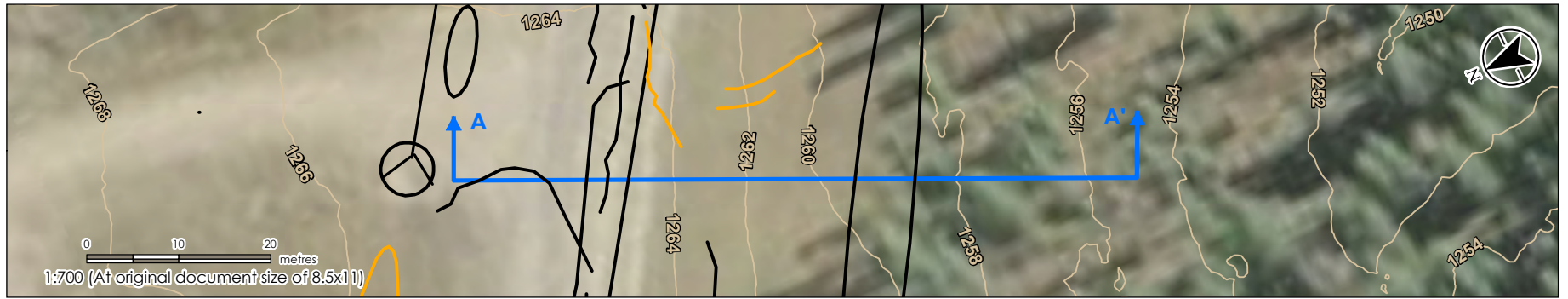
1. Coordinate System: NAD 1983 UTM Zone 11N
2. Base features: Geogratis, @Department of Natural Resources Canada. All rights reserved.
3. Imagery: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geomapping, Aerogrid, iGN, IGP, swiststopa, and the GIS User Community

Project Location: SE 8-53-27 W5M, Yellowhead County, Alberta
 Prepared by AJ on 2021-09-02
 Quality Review by LC on 2021-09-09
 Independent Review by CM on 2021-09-09
 12331 5222

Client/Project: Alberta Transportation
 Geohazard Monitoring Program
 NC83 - West of Wildhay River

Figure No.: 1
 Title: Site Plan





- Approximate Culvert Location
- Previous Observation
- 2020 Observation
- Ground Elevation Contours (m AMSL, LiDAR Sept. 2014)
- Cross Section Location

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 11N
 2. Base Features: Geogratis, ©Department of Natural Resources Canada. All rights reserved.
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Client/Project: Alberta Transportation
 Geohazard Monitoring Program
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Figure No. **2**

Title: **Ground Profile of Section A-A'**

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