

GEOHAZARD RISK MANAGEMENT PROGRAM

North Central Region – Edson / Stony Plain Area

2018 Inspection Report

Site Number	Site Name		Hwy	km
NC48	Fred Creek Slide		40:30	48.8
Legal Land Description	SE 28-53-1-W6M			
UTM Coordinates (NAD 83)	Zone 11U	N5940053	E428399	
Operational Site Instrumentation	Slope Inclinometers			0
	Pneumatic Piezometers			7
	Vibrating Wire Piezometers			0
	Standpipe Piezometers			0
Date of Last Instrumentation Readings	May 10, 2018			

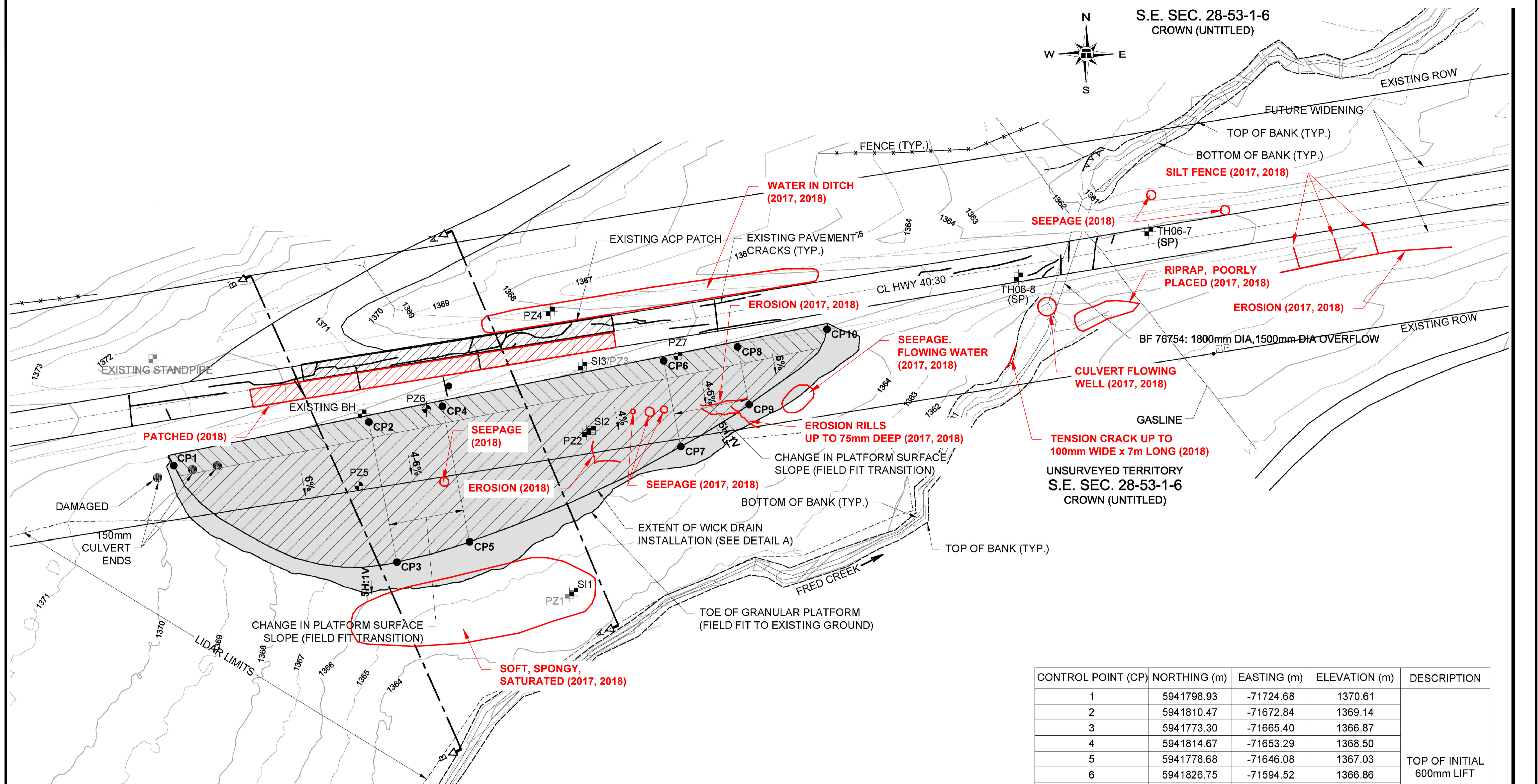
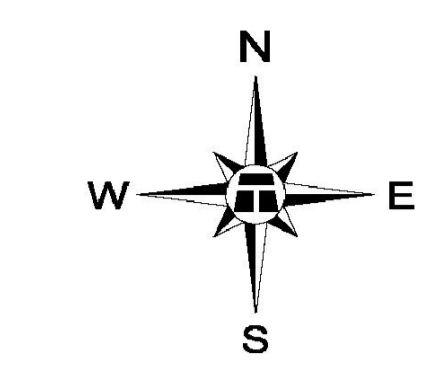
Risk Assessment	Date	PF	CF	Risk Ranking
Current Inspection	May 31, 2018	5	3	15
Previous Inspection	July 13, 2017	5	3	15
Report Attachments	<input checked="" type="checkbox"/> Photographs (10 photos)		<input checked="" type="checkbox"/> Site Plans (1 page)	

	Stantec	Alberta Transportation
Inspected By	Junwen Yang and Leslie Cho	Rishi Adhikari, Kathleen Davis, Paul Macaraeg, Howard Hawley
Date of Remediation	2016 – Berm with granular blanket and wick drains installed	

Recent Maintenance	2012: Asphalt patched. Upstream end piece of upper culvert repaired. 2015: Asphalt patch. 2017/2018: Asphalt appears recently patched but no record from AT	
Primary Site Issue	Shallow slide with high pore pressures	
Observations	Description and Location	Change from Previous Inspection
<input checked="" type="checkbox"/> Pavement Distress	Pavement cracks reflecting through patch in westbound lane.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/> Culvert Distress		<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Bridge Distress		<input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Slope Movement	Tension crack east of BF76754	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Erosion	Erosion rills south of PZ7. Erosion along ditches east of culvert BF76754. New erosion south of PZ2.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Seepage	Seepage south of PZ7 near erosion rills. New seepage south of PZ6.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Other		<input type="checkbox"/> Yes <input type="checkbox"/> No

Discussion	<p>The highway appeared to have been patched since the 2017 inspection. The crack patterns appeared similar to the 2014 inspection as shown in Photos 1 and 2 and reflected through the recent patch.</p> <p>In 2016, the south slope was remediated with a berm containing a granular blanket and wick drains to promote drainage.</p> <p>Several seepage locations continued to be observed at the site. Photo 3 shows seepage at the east end of the silt fencing. Photo 4 shows a newly observed seepage location south of PZ6. The erosion rills observed south of PZ7 in 2017 appeared similar during the current inspection as shown in Photo 5.</p> <p>The ground outside of the constructed granular platform near S11 was observed to be wet and spongy. No signs of instability were observed within the rehabilitated slope. Photo 6 shows an overall view of the remediated slope near PZ2.</p> <p>Culvert BF76754 appeared to be in good working condition as shown in Photo 7. However, erosion of the ditches leading to the culvert inlet was observed as shown in Photos 8 and 9. Additionally, a new tension crack was observed southwest of the inlet at BF76754 as shown in Photo 10. The new crack was up to 100 mm wide and 7 m long.</p>
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Assessment	<p>High pore pressures continued to be observed in the piezometers at the site despite the wick drain installation. The most recent instrumentation readings showed an overall increase in pore pressure of up to 0.3 m for all piezometers.</p> <p>During the Spring 2018, instrumentation measurements, both SI1 and SI2 were found to be blocked near ground surface and may suggest on-going slope movements at the remediated portion of the site.</p> <p>The new slope movements as evidenced by the tension crack by BF76754 may be occurring due to a combination of erosion and high pore-water pressure.</p>
Recommendations	<p>Short term recommendations should consist of sealing any pavement cracks to reduce surface water infiltration into the slope and pavement structure.</p> <p>The silt fences should be maintained by the contractor so that water can flow away from the site to help reduce pore pressures. Additionally, riprap can be placed along the ditches to improve erosion control.</p> <p>The instruments should continue to be read semi-annually with site inspections completed annually.</p>



CONTROL POINT (CP)	NORTHING (m)	EASTING (m)	ELEVATION (m)	DESCRIPTION
1	5941798.93	-71724.68	1370.61	TOP OF INITIAL 600mm LIFT
2	5941810.47	-71672.84	1369.14	
3	5941773.30	-71665.40	1366.87	
4	5941814.67	-71653.29	1368.50	
5	5941778.68	-71646.08	1367.03	
6	5941826.75	-71594.52	1366.86	
7	5941803.95	-71589.95	1365.93	
8	5941830.43	-71574.87	1366.42	
9	5941815.14	-71571.79	1365.48	
10	5941835.11	-71551.11	1365.51	

LEGEND

- APPROXIMATE EXISTING INSTRUMENT LOCATION
- DAMAGED INSTRUMENT
- TH TEST HOLE
- SP STANDPIPE PIEZOMETER
- PZ PIEZOMETER (PNEUMATIC)
- SI SLOPE INCLINOMETER
- NEW PNEUMATIC PIEZOMETER LOCATION
- CP1 CONTROL POINT
- WICK DRAINS INSTALLED AT 1.5m TRIANGULAR SPACING
- WICK DRAINS INSTALLED AT 1.0m TRIANGULAR SPACING

NOTES

1. FEATURE LOCATIONS ARE APPROXIMATE.
2. 1m CONTOURS FROM ARA SURVEY AND LIDAR PROVIDED BY ALBERTA TRANSPORTATION.
3. GRADE WIDENING NOT SHOWN FOR CLARITY.
4. PREVIOUS OBSERVATIONS SHOWN IN BLACK
5. 2018 OBSERVATIONS SHOWN IN RED

REFERENCE

THURBER ENGINEERING LTD. PROJECT No.15-16-324, PLAN No. RD-19126-p
DATE: JAN 2015 (BASE PLAN PROVIDED BY ARA ENGINEERING LTD., 2007)

STANTEC CONSULTING
10160-112 STREET
EDMONTON ALBERTA CANADA

ALBERTA TRANSPORTATION
GEOHAZARD MONITORING PROGRAM
NC48 HWY 40:30, km 48.8 - FRED CREEK
SITE PLAN

DRAWN MK	CHECK CDM	APPROVE ID	
DATE 14 AUG. 2018	SCALE AS SHOWN	PROJECT # 123312435	

FIGURE -1

Reference: 2018 Annual Inspection Photographs at NC48 – Fred Creek Slide
File Number: 123312435



Photo 1: Pavement cracks reflecting through 2014 patch in front of access road. Looking west.



Photo 2: Pavement cracks reflecting through new patch in front of access road. Looking east.

Reference: 2018 Annual Inspection Photographs at NC48 – Fred Creek Slide
File Number: 123312435



Photo 3: Flowing seepage along east end of silt fencing in repair area. Looking southwest.



Photo 4: New seepage south of PZ6. Looking north.

Reference: 2018 Annual Inspection Photographs at NC48 – Fred Creek Slide
File Number: 123312435



Photo 5: Erosion gully approximately 150 mm wide south of PZ7. Looking northwest.



Photo 6: Rehabilitated slope near PZ2. Looking west.

Reference: 2018 Annual Inspection Photographs at NC48 – Fred Creek Slide
File Number: 123312435



Photo 7: Culvert BF76754. Looking northeast.



Photo 8: Erosion along drainage ditch east of culvert BF76754. Looking west.

Reference: 2018 Annual Inspection Photographs at NC48 – Fred Creek Slide
File Number: 123312435



Photo 9: Rip rap to the south of BF76754 poorly placed. Erosion channel leading into culvert inlet.



Photo 10: Tension crack about 100 mm wide southwest of BF76754. Looking east.