

**ALBERTA TRANSPORTATION
GEOHAZARD ASSESSMENT PROGRAM
PEACE REGION – GRANDE PRAIRIE DISTRICT
2017 INSPECTION**



Site Number	Location	Name	Hwy	km
GP43 Callout	No Name Creek	Undermined Culvert	40:36	38.5
Legal Description		UTM Co-ordinates (NAD 83)		
SE21-59-6-W6		11U N 5,997,793	E 380,279	

	Date	PF	CF	Total
Previous Inspection:				
Current Inspection:	May 30, 2017	12	4	48 (Erosion Risk Scale)
Road AADT:	920	Year:		2016
Inspected By:	Barry Meays, Don Proudfoot, Nicole Wilder (Thurber) Ed Szmata, Rocky Wang, Dwayne Lowen, Ted Prue (AT)			
Report Attachments:	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

Primary Site Issue:	An approximate 6 m long portion of the 1.5 m diameter CSP culvert inlet on the west side of the highway is protruding upwards, and creek flow is entering the culvert at this broken location.	
Dimensions:	~6 m length of damaged CSP (1.5m diameter) and erosion beneath it.	
Date of any remediation:		
Maintenance:		
Observations:	Description	Worse?
<input type="checkbox"/> Pavement Distress		<input type="checkbox"/>
<input type="checkbox"/> Slope Movement		<input type="checkbox"/>
<input checked="" type="checkbox"/> Erosion	Active erosion activity is occurring beneath the existing damaged culvert inlet that is protruding upwards.	<input type="checkbox"/>
<input type="checkbox"/> Seepage		<input type="checkbox"/>
<input checked="" type="checkbox"/> Bridge/Culvert Distress	The first 6 m length of 1.5 m diameter CSP is damaged, and needs a new inlet piece attached onto the existing undamaged portion.	<input type="checkbox"/>
<input type="checkbox"/> Other		<input type="checkbox"/>

Instrumentation: None

Assessment:

It is thought that the inlet of the culvert became eroded and that during a high flow event the water got under the pipe and pushed up the inlet section causing it to separate from the rest of the pipe at the first joint.

The highway was not affected by the undermined culvert at the time of our inspection, however with time, continued erosion could eventually affect the highway sideslope if not dealt with. The broken culvert will impede flow during a future high flow event, with the risk of water backing up behind the highway and more severe erosion occurring.

Recommendations:

Short to Medium Term:

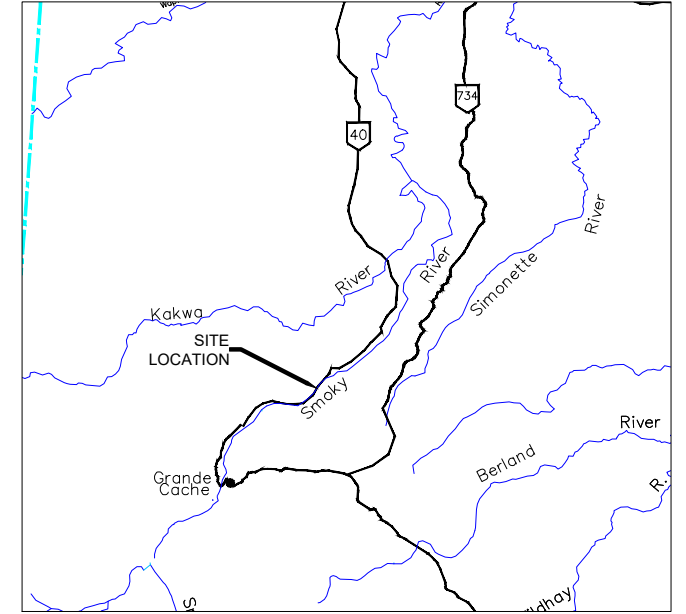
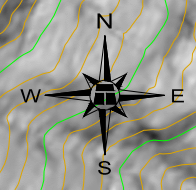
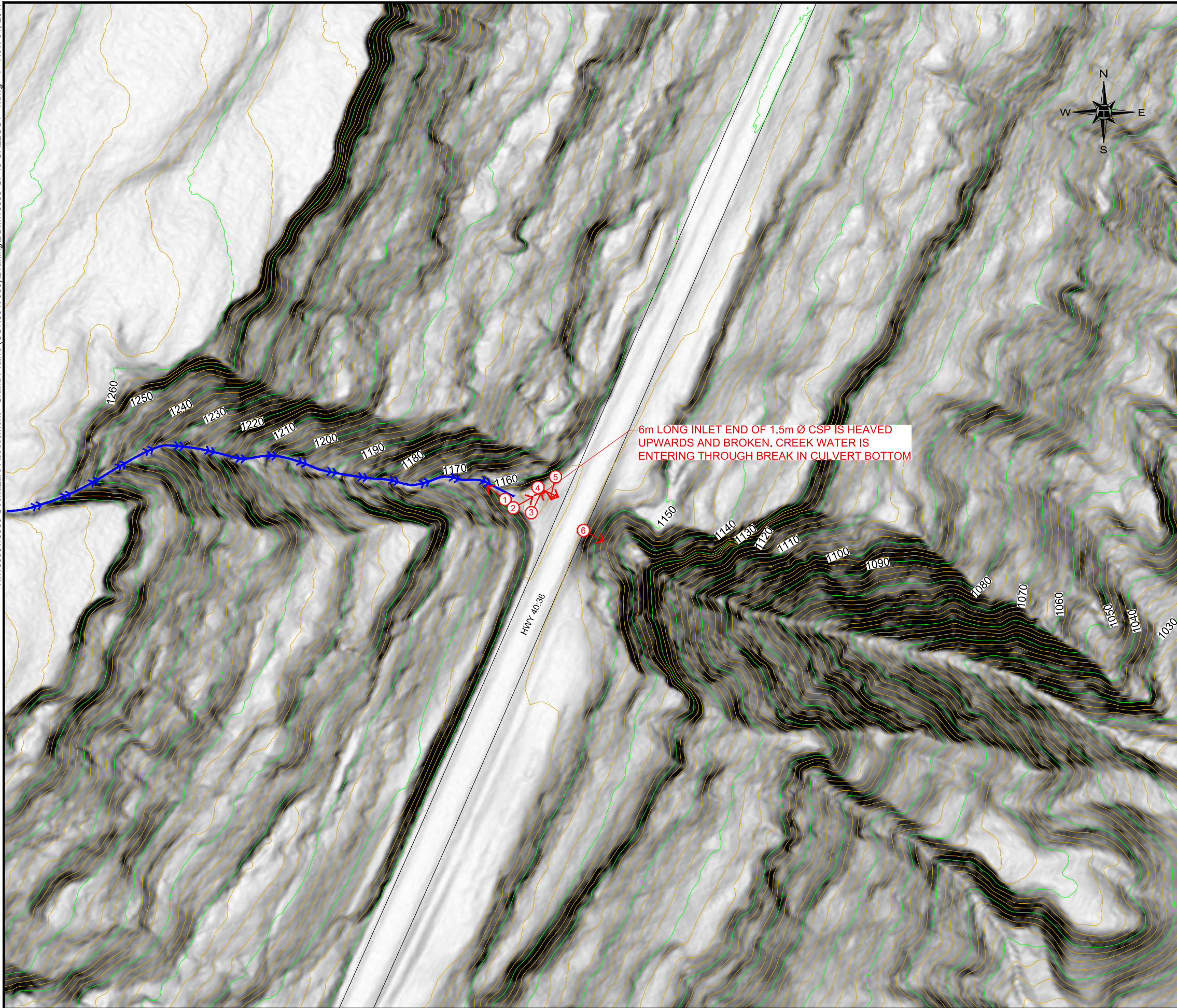
The repair of the CSP culvert inlet should consist of the following:

- 1) Remove the damaged 6 m long portion of the culvert inlet
- 2) Remove the existing (typical Class 1 sized) riprap, and salvage it for re-use
- 3) Restore the eroded creek channel bed with the salvaged riprap

- 4) Place and securely fasten a new section of 1.5 m diameter CSP culvert onto the existing undamaged pipe portion
- 5) Construct a new concrete headwall around the new inlet location
- 6) Place properly sized riprap along the stream bed leading up to the culvert headwall

Ballpark Cost ~ \$50,000

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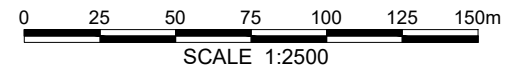
KEY PLAN
SCALE: 1:2 000 000

LEGEND

- CONTOUR LINE (CONTOUR INTERVAL =2.5m)
- CREEK FLOW
- DIRECTION AND NUMBER OF PHOTO

NOTES :

1. FEATURE LOCATIONS ARE APPROXIMATE.
2. MAY 30, 2017 FEATURES SHOWN IN RED.



BASE PLAN FROM 2005 LIDAR



**2017 GP43 CALLOUT, HWY 40:36, km 38.5
UNDERMINED CULVERT
SE 21-59-6-W6M**

SITE PLAN

DWG No. 13353-GP43-CALLOUT-1

DRAWN BY	ML
DESIGNED BY	BDM
APPROVED BY	DWP
SCALE	1:2500
DATE	MAY 30, 2017
FILE No.	13353





Photo 1 – Looking upstream (west) at the creek flowing into the culvert – no significant erosion.



Photo 2 – Looking east at the lifted/undermined culvert inlet and highway embankment.



Photo 3 – Looking northeast at the culvert inlet and northwest highway runoff ditch.



Photo 4 – Close-up view looking down at the culvert inlet.



Photo 5 – Looking south at the lifted/undermined culvert inlet.



Photo 6 – Looking east at the downstream highway embankment towards the culvert outlet.