

**NORTH CENTRAL - EDSON**  
**GEOHAZARD RISK ASSESSMENT**  
**SITE INSPECTION FORM**



SITE NUMBER AND NAME: <b>NC60 – Groat Creek</b>		HIGHWAY & KM 32:10 km 23 to 24	PREVIOUS INSPECTION DATE: June 11, 2007	INSPECTION DATE: June 15, 2009
LEGAL DESCRIPTION: NE2 & SE11-59-13-W5M	UTM COORDINATES (NAD83): 11 N 5993127 E 576628		RISK ASSESSMENT PF: 8 CF: 1 TOTAL: 8	

SUMMARY OF SITE INSTRUMENTATION: None	INSPECTED BY: Ken Froese (Thurber) Don Law (Thurber) Roger Skirrow (AT) Neil Kjelland (AT) Reg Faulkner (AT) Cliff Corner (AT) Kate Siddle (AT)
LAST READING DATE: NA	
PRIMARY SITE ISSUE:	Pavement dips, larger ones associated with culverts. Formed shortly after grade lowering and widening undertaken in 2005.
APPROXIMATE DIMENSIONS:	Affects about 1 km of highway
DATE OF ANY REMEDIAL ACTION:	2006: Patching of Dips 1 through 4

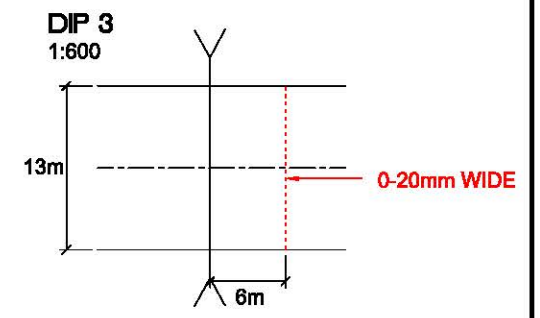
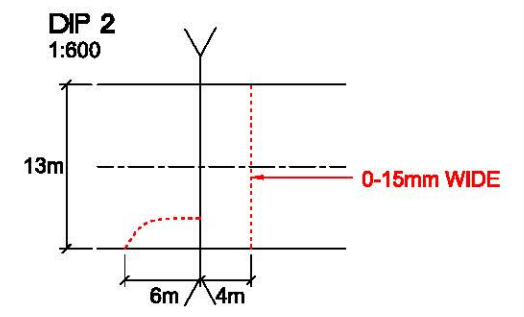
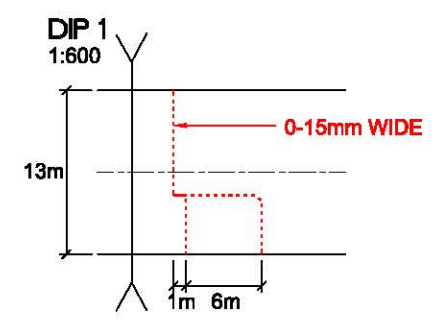
ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Undulations more pronounced; cracks over Dips 1, 2 & 3; pavement fatigue noted	X	
Slope Movement		X			X
Erosion		X			X
Seepage		X			X
Culvert Distress	X		Undulation more pronounced over the three culverts located in this section	X	
Water Ponding	X		Ponded water in upslope ditch north of Dip 3 and at Dip 3 culvert outlet		X

**COMMENTS (Refer to Figure NC60-1)**  
The four main dips are located: km 23.88 (Dip 1), km 23.63 (Dip 2), km 23.15 (Dip 3), and km 22.98 (Dip 4). There are 910 mm diameter culverts located beneath Dip 1 through Dip 3. Dip 4 is located in only the downslope (east) lane. An additional dip was noted at km 23.70 between Dips 1 and 2 and several shallower dips were present between Dips 2 and 4. In 2007, it was observed that water may be bypassing the culvert inlet at Dip 2 and water was ponding between Dips 2 and 3 in the upslope (west) ditch. The grade was lowered through this area between 0.8 m and 1.6 m and was noted to have soft subgrade conditions and required lime stabilization. Pavement fatigue was noted at several locations in 2009.

**RECOMMENDATIONS**  
The distress is likely caused by insufficient compaction of the culvert backfill and soft subgrade conditions resulting from frost action failing under traffic loading. Although the McLeod River is located nearby (to the east) large-scale slope movement is not likely and LiDAR information provided by AT shows no obvious signs of movement.  
In the short-term, patching is recommended to maintain ride quality. The long-term solution is to reduce the potential for water to soften the subgrade. The west ditch should be regraded to reduce ponding and a subdrain should be installed starting at or north of Dip 1 and continuing at least 700 m south to where the ditch grade will allow gravity drainage. Additional details regarding this subdrain were provided in the 2007 Annual Inspection Report. It is recommended to continue bi-annual inspections at this site.



**PLANS SHOWING CRACK PATTERNS**

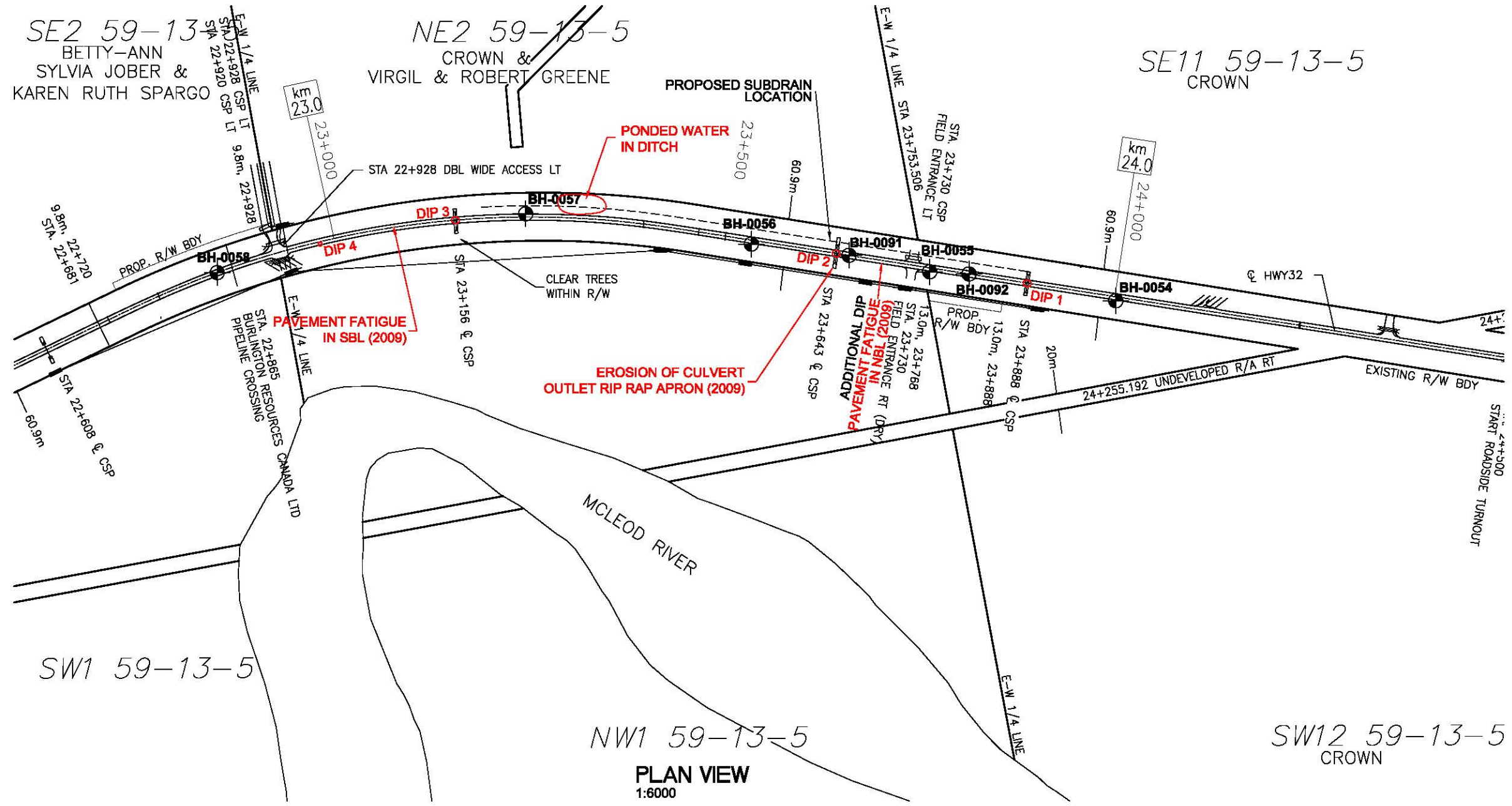


NOTE: DISTANCES ARE APPROXIMATE.

SE2 59-13-13  
BETTY-ANN  
SYLVIA JOBER &  
KAREN RUTH SPARGO

NE2 59-13-5  
CROWN &  
VIRGIL & ROBERT GREENE

SE11 59-13-5  
CROWN



NW1 59-13-5

SW12 59-13-5  
CROWN

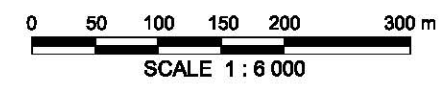
PLAN VIEW  
1:6000

**LEGEND**

- BORE HOLE LOCATIONS
- CULVERT

**NOTES:**

- 2009 OBSERVATIONS SHOWN IN RED.



BASE PLAN PROVIDED BY: ALBERTA TRANSPORTATION

THURBER PROJECT #15-16-226

ALBERTA TRANSPORTATION

NC60 GOAT CREEK  
SITE PLAN

NORTH CENTRAL 2009  
GEOHAZARDS ASSESSMENT

NE2-59-13-5  
HWY 32:10, Km 23-24  
SOUTH OF WHITECOURT, AB



**THURBER ENGINEERING LTD.**  
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

ENGINEER: KEF	DRAWN: KLW	APPROVED: DJL
DATE: AUGUST 2009	SCALE: AS SHOWN	DRAWING No. FIGURE NC60-1

Z:\1515-16-226\15-16-226 FIGURE NC60.dwg - Layout1 - Aug. 28, 2009 11:38am



Photo 1 – Looking at crack that formed over Dip 1 (June 15, 2009).



Photo 2 – Looking south at Dip 2.



Photo 3 – Looking at pavement fatigue near Dip 2.



Photo 4 – Looking at transverse crack over Dip 2.



Photo 5 – Looking south at patch over Dip 3.



Photo 6 – Transverse crack just north of culvert at Dip 3.



Photo 7 – Ponding water at outlet of culvert at Dip 3.



Photo 8 – Looking southeast at Dip 4.