GEOHAZARD ASSESSMENT PROGRAM

PEACE RIVER / HIGH LEVEL AREA

2011 CALL OUT INSPECTION

Government of Alberta ■ Transportation

THURBER ENGINEERING LTD.
GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS

Site Number	Location	Name	Hwy	km
PH5	North of Manning, AB	Meikle River (0+100)	35:08	Approx. 28
Legal Description		**UTM Co-ordinates**		
SW 7-94-22-5		11V N 6333992	E 467077	

	Date	PF	CF	Total
Previous Inspection:	June 06, 2011	11	4	44
Current Inspection:	Aug. 02, 2011	13	4	52
Road AADT:	1060		**Year:**	2010
Inspected By:	Don Proudfoot, Thurber Engineering Roger Skirrow and Erwin Kurz, Alberta Transportation			
Report Attachments:	☑ Photographs ☑ Plans ☐ Maintenance Items			

Primary Site Issue:	Slope Movement		
Dimensions:	See drawing		
Date of any remediation:	None in the last year		
Maintenance:	None in the last year	**Worsened?**	
Observations:	**Description**	**Yes**	**No**
☑ Pavement Distress	Significant increase in crack width and drop. Additional cracking extending to the north.	☑	☐
☑ Slope Movement	Additional cracks and increases in crack widths indicate ongoing slope movement.	☑	☐
☐ Erosion		☐	☐
☑ Seepage	Wet area at the back cut of the access bench	☑	☐
☐ Bridge/Culvert Distress		☐	☐
☑ Other	Deflection at the guard rail	☑	☐

Instrumentation:
No instrumentation remains operational: Slope inclinometer SI63 was sheared off between May 2007 and October 2007. Slope inclinometer SI64 was sheared off between October 2008 and May 2009.

Assessment (Refer to Figure PH5-1)**:**
A slope failure occurred prior to 1998 further downslope, which left a backscarp about 3 m in height. Continued slide movements have occurred in the area behind the backscarp. The movements have extended into the highway pavement.

Fresh cracks of up to 70 mm deep and 50 mm wide appeared at the asphalt patch as a result of heavy precipitation on July 27, 2011. The 200 mm deflection in the guard rail and increased cracking indicates that the rate of movement increased.

Recommendations:

- It is recommended to install a driven steel pile wall along the shoulder of the highway for a longitudinal length of about 60 m. The inferred slip surface is expected to be 2.5 to 3 m deep. Based on the similar projects the wall could cost in the order of $400 - $500 thousand dollars.
- Pavement patching is required immediately to maintain a smooth even road surface for traffic safety.
- Groundwater appears to be a contributing factor to the slide movements. It may be possible to install subdrains in the upslope ditch and/or French drains or drill subhorizontal drains in the sideslope to try to intercept groundwater flowing in silt and sand layers in the clay. Some surface grading could also be completed as a maintenance item to smooth out the drill access benches and reduce ponding of water on the slope.
- As an alternative, a gravel shear key and toe berm could be installed at the base of the slope. However a marshland environmental assessment should be carried out prior to installing a toe berm and the size of the berm would need to be substantial for this site.

Photo 1 - View of asphalt patch and cracks on Highway 35:08, looking northeast.

Photo 2 – Fresh Pavement cracks through ACP patch and near guard rail looking northeast.

Photo 3 – Fresh Cracks beyond and along the ACP patch, looking southwest

Photo 4 – Additional cracking along the ACP patch, looking southwest.

Photo 5 – Wet area at the back cut of access bench, looking southwest.

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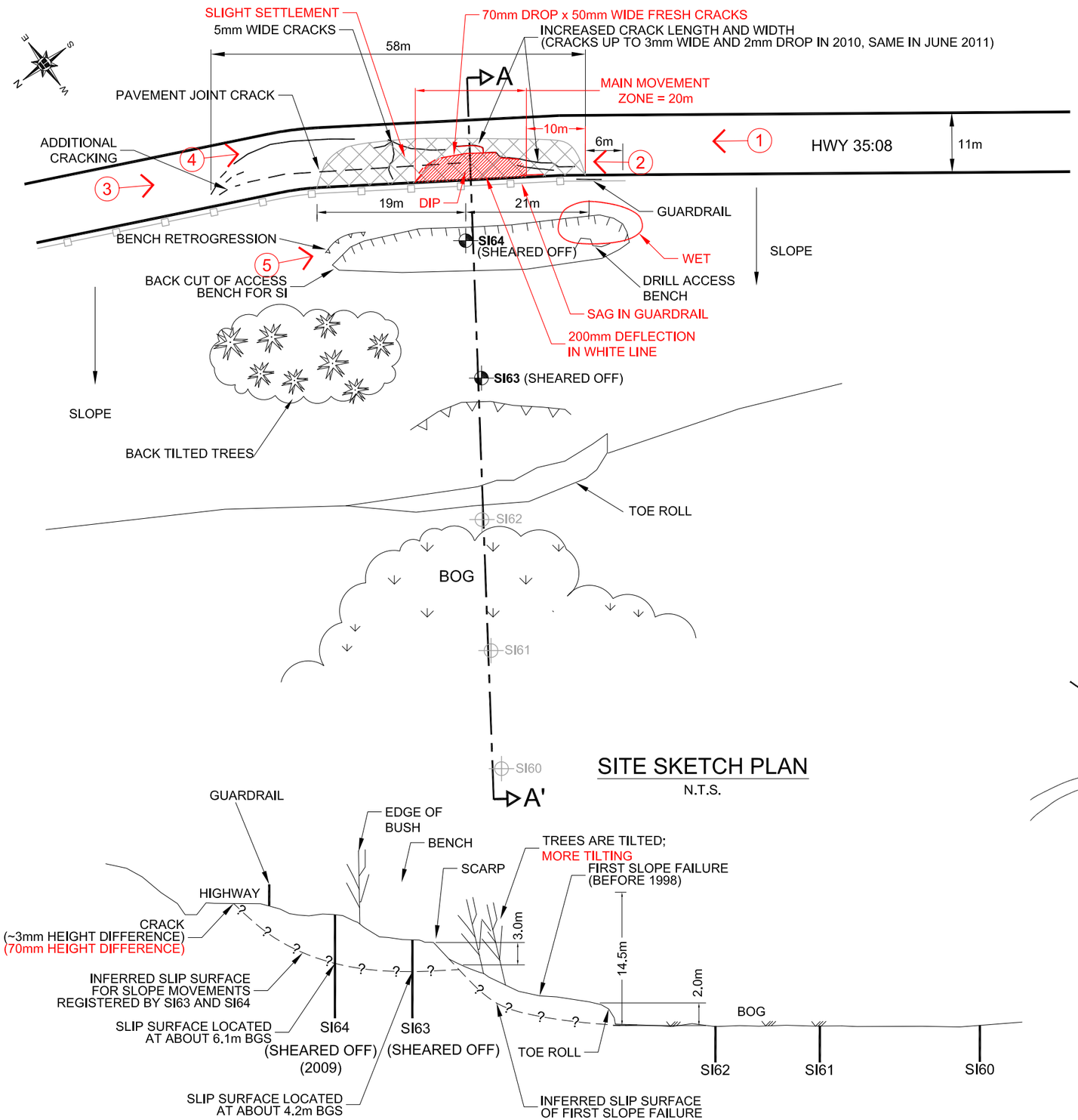


SITE SKETCH PLAN

N.T.S.

CROSS-SECTION A-A'

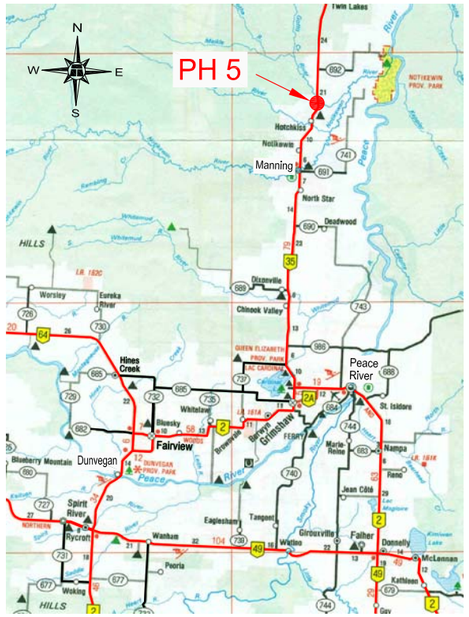
N.T.S.

LEGEND

- SLOPE INCLINOMETER (AND DEPTH OF MOVEMENT)
- GUARDRAIL
- ASPHALT PATCH
- CRACKS IN PAVEMENT
- SI61 — SLOPE INCLINOMETERS *(not in use)*
- 1 → PHOTO AND DIRECTION
- SCARP
- mBGS — METERS BELOW GROUND SURFACE

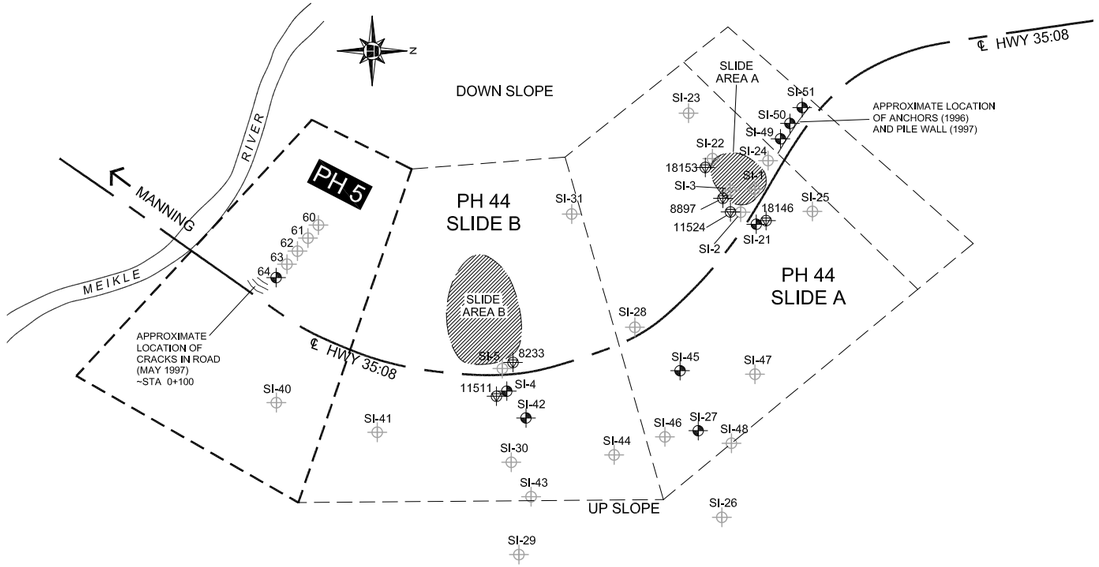
NOTES

1. FEATURE LOCATIONS ARE APPROXIMATE.
2. PREVIOUS OBSERVATIONS SHOWN IN BLACK
3. JULY 27, 2011 STORM TRIGGERED MOVEMENTS
4. AUGUST 2011 OBSERVATIONS SHOWN IN RED



SITE MAP

NOT TO SCALE



SITE PLAN

N.T.S.

FIGURE PH5-CALLOUT SITE PLAN

PH5 : HWY 35:08 - MEIKLE RIVER STA 0+100

PEACE REGION (PEACE RIVER / HIGH LEVEL) GEOHAZARD ASSESSMENTS

DATE : AUGUST 2011

THURBER PROJECT #15-16-264

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