

GEOHAZARD ASSESSMENT PROGRAM

PEACE REGION – PEACE-HIGH LEVEL

2015 INSPECTION



Site Number	Location	Name	Hwy	km
PH46	Fairview	South Rings Creek	64:06	25.96
Legal Description		UTM Co-ordinates		
SW¼ 24-081-04 W6M		11V E 406752	N 6210542	

	Date	PF	CF	Total
Previous Inspection:	4-Jun-2013	13	4	52
Current Inspection:	3-Jun-2015	3	4	12
Road AADT:	500		Year:	2015
Inspected By:	Roger Skirrow, TRANS		Don Proudfoot, Thurber Shawn Russell, Thurber	
Report Attachments:	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

Primary Site Issue:	A slide occurred along the east sideslope of the highway embankment above a multiplate culvert.	
Dimensions:	Slide mass was about 25 m wide by about 50 m in length and about 2 m to 3 m in depth.	
Maintenance:	Asphalt patch in fall 2014.	
Observations:	Description	Worsened?
<input checked="" type="checkbox"/> Pavement Distress	Slide backscarp extended 0.7 m into the edge of the paved roadway over a length of 7.5 m. Pavement lost in slide below cracked area. Longitudinal cracks are also present. Repaired in 2013 under Contract 14929.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	The slide had retrogressed into the east highway shoulder and sideslope to the north of the centerline culvert. Repaired in 2013 under Contract 14929.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Erosion	Erosion along NW, NE and SE crotches of fill per June 2012 observations. Repaired in 2013 under Contract 14929.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Seepage	Seepage on the west sideslope at 26+890.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Bridge/Culvert Distress	Slide material had accumulated above culvert at inlet, obstructing water flow. Repaired in 2013 under Contract 14929.	<input type="checkbox"/>
<input type="checkbox"/> Other		<input type="checkbox"/>
Instrumentation:		
No instruments are currently installed at this site.		

Assessment:

Soils at this site appear to be particularly susceptible to erosion by concentrated flowing water. It is likely that high precipitation events combined with a progressive loss of cohesion in the clay embankment fill due to weathering were the triggering mechanism for this landslide.

Local experience suggests that for embankments constructed using high plastic clay fill, failures begin to occur sometime between 10 years and 20 years after construction (this structure was first re-built in 1990). Long-term stable slopes in similar materials are typically 5H: 1V, while current highway clay sideslopes slopes are at angles of 2.75H: 1V to 3H: 1V.

Recommendations:**Cost**

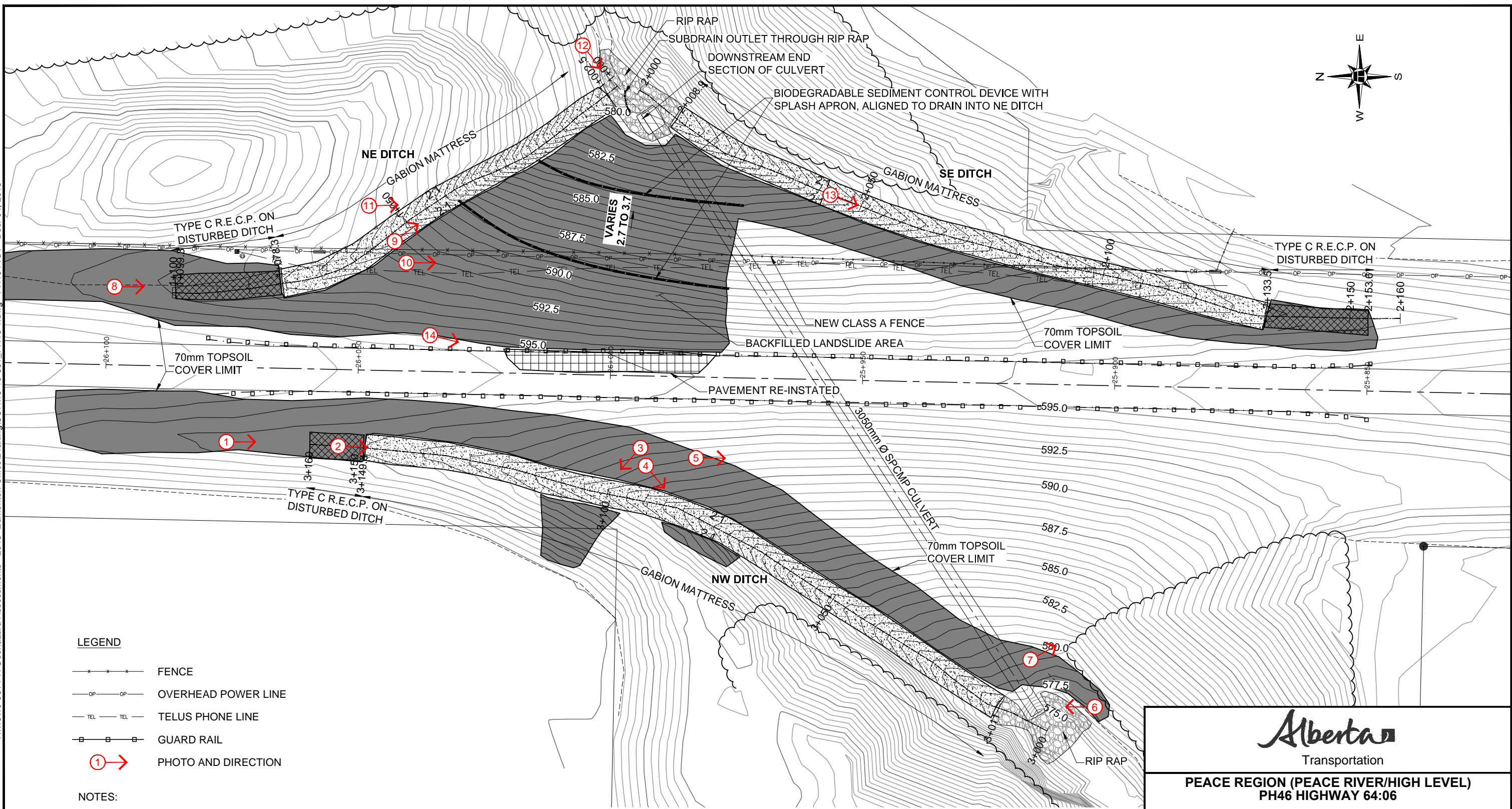
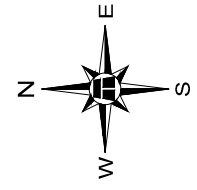
Landslide repair work was completed under TRANS Contract 14929 by In-Line Contracting Partnership in 2013 and 2014.

The repairs for this slide consisted of:

- Digging out the slide and northbound lanes of the highway and rebuilding the east sideslope with gravel fill.
- NW, NE and SW ditch erosion repairs with gabion mats and RECP.
- Enhancements to rip rap to accommodate gabion matting at culvert inlet and outlet.

The repair measures implemented under Contract 14929 have performed well since their implementation.

H:\15\16-361 PH Geohazard Assessments - 2015- Edmonton Office\Drafting\SGR\15-16-361 PH46-1.dwg - PH46 FIG1 - Dec. 04. 2015



LEGEND

- x — x — x — FENCE
- OP — OP — OVERHEAD POWER LINE
- TEL — TEL — TELUS PHONE LINE
- □ — □ — GUARD RAIL
- ① → PHOTO AND DIRECTION

NOTES:

1 LOCATION DATA RECORDED USING HAND HELD GPS RECEIVER. ALL LOCATIONS ARE APPROXIMATE AND ARE FOR ILLUSTRATIVE PURPOSES ONLY.

2 JUNE 3, 2015 OBSERVATIONS SHOWN IN RED



**PEACE REGION (PEACE RIVER/HIGH LEVEL)
PH46 HIGHWAY 64:06**

2015 PH46 INSPECTION PLAN

FIGURE 1

DRAWN BY	KLW
DESIGNED BY	SGR
APPROVED BY	DWP
SCALE	1:750
DATE	JUNE 2015
FILE No.	15-16-361

THURBER ENGINEERING LTD.



Photo 1.
Looking south at RECP and gabion mattress placed in 2014 in NW corner of the site in ditch along the cut/fill contact.



Photo 2.
Looking south at gabion mattress placed in 2014 in NW corner of the site in ditch along the cut/fill contact.



Photo 3.
Looking northwest at a repaired backslope slump in the NW corner of the site. Failure was excavated in June 2014, a perforated subdrain pipe was placed in the resulting base, the excavation backfilled with compacted clay and the disturbed area was topsoiled and seeded. Vegetation has taken well with a few sparse areas along the perimeter of the disturbed area.



Photo 4.
Looking southwest at a backslope failure above the northwest ditch that was repaired in June 2014 using the same method as the failure shown in Photo 3. Vegetation is sparse along the east side of the gabion mattress.



Photo 5.
Looking south along the west side of the highway. Vegetation is sparse above the gabion mattresses.



Photo 6.
Looking north at outlet (west end) of the multi-plate culvert under the highway. Enhancements to the rip rap armouring were performed in June 2014 and northwest ditch gabion mattress was launched in the rip rap.



Photo 7.
Looking southeast at small erosion rills along the downstream end of the ditch in the SW corner of the site. No significant change since 2014.



Photo 8.
Looking south at RECP and gabion mattresses installed in June 2014 along the ditch bottom. Vegetation is sparse upslope towards the highway.



Photo 9.
Looking southeast along gabion mattresses installed in northeast ditch in June 2014.



Photo 10.
Looking south from northeast ditch at new type A fence and main landslide repair in highway sideslope. The failed rea was excavated in the fall of 2013 and backfilled with pit run gravel with a subdrain placed at the base extending into the centerline culvert inlet rip bowl. The disturbed area was then capped with clay, topsoiled and seeded in June 2014.



Photo 11.
Looking southwest at culvert inlet. Two biodegradable sediment control devices were placed diagonally across the repaired sideslope to shed the water gradually towards the gabion mattresses. Vegetation along the constructed sideslope is relatively sparse when compared to the existing grass of the undisturbed sideslope in the background.



Photo 12.
Looking southwest at the highway centerline culvert inlet. The landslide debris had buried the culvert inlet in 2013. The culvert clay cap was exposed and the rip rap replaced and enhanced to accommodate the gabion mattress tie-in overlaps from the northeast and southeast ditches.



Photo 13.
Looking southwest along the southeast ditch gabion mattress. Vegetation is sparse in the disturbed area along the highway sideslope (to the left of the mattresses).



Photo 14.
Looking southwest from the north end of the previous landslide backscarp in the roadway pavement. The asphalt pavement from the 2013/2014 repair has performed well. Some settlement is visible along the sawcuts and are reflecting through the new patch from October 2014.