

**ALBERTA TRANSPORTATION GEOHAZARD ASSESSMENT PROGRAM
PEACE REGION – PEACE-HIGH LEVEL
2015 INSPECTION**

Site Number	Location	Name	Hwy	km
PH2	East Hill	33+850 Retaining Wall	2:60	33.85
Legal Description		UTM Co-ordinates		
SW27-083-21 W5M		11V E 485345	N 6230685	

	Date	PF	CF	Total
Previous Inspection:	16-Jun-2014	11	5	55
Current Inspection:	1-Jun-2015	11	5	55
Road AADT:	4169		Year:	2010
Inspected By:	Ed Szmata Roger Skirrow		Don Proudfoot Luis Martinez	
Report Attachments:	<input checked="" type="checkbox"/> Photographs		<input type="checkbox"/> Maintenance Items	
	<input checked="" type="checkbox"/> Plans			

Primary Site Issue:	Instability of fill within an infilled ravine was previously mitigated with a cantilevered, cast-in-place concrete pile wall reinforced with steel wide-flange with a concrete header beam (Photo 2-9 and 2-10). Fill slope below wall continues to fail and piles are becoming exposed.	
Dimensions:	Unstable ravine width: 65 m Retaining wall length: 40 m	
Maintenance:	No maintenance activity since 2011.	
Observations:	Description	Worsened?
<input type="checkbox"/> Pavement Distress		<input type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	The fill slope below the wall within ravine is unstable and appears to continue to move steady downslope (monitoring started in 2008). Soil sloughing-in from underneath the geotextile reinforcement (just upslope from pile wall) may have altered the reference surface (just downslope from pile wall) used for slope movement measurements (Figure PH2-3), since the readings this year are suggesting that no movement has occurred.	<input checked="" type="checkbox"/>

<input type="checkbox"/> Erosion		<input type="checkbox"/>
<input type="checkbox"/> Seepage		<input type="checkbox"/>
<input type="checkbox"/> Bridge/Culvert Distress		<input type="checkbox"/>
<input checked="" type="checkbox"/> Other	Concrete piles (0.6 m dia. CIP @ 1.5 m spacing reinforced with HP310x110?) show signs of cracking (shear cracking is evident at the top of piles 14 and 15). Concrete header beam (40m Lx0.5m Wx1.0m D) is bowing noticeably towards slope at point of greatest vertical ground displacement. Soil behind piles is mainly supported by geotextile. The geogrid is not providing enough support and is failing because it was oriented perpendicular to the direction of loading. Pile spacing appears too wide for soil arching (Photo 2-11). Ground subsidence is about 300 mm directly behind the pile wall (Photo 2-12).	<input checked="" type="checkbox"/>
Instrumentation: Two slope inclinometers installed in 2010 on downslope side of roadway: <ul style="list-style-type: none"> • SI 10-1 - upslope of wall between header beam and guardrail. Exhibiting small deformations in three zones; between 0 m and 3 m with a rate of 0.3 mm/yr, 3.6 m and 6.6 m with a rate of 3.6 mm/yr, and 26.2 m and 28 m with a rate of 2.6 mm/yr. • SI 10-2 - middle of slide mass; below pile wall. Sheared at 6.1 m after spring 2011 readings. 		
Assessment: Conditions at this site continue to degrade which is supported by visual observations, vertical deformation monitoring and the slope inclinometers. Retaining wall is experiencing more distress yearly.		
Recommendations:		Cost
Continue to visually monitor as part of annual inspection of PH2. Slope inclinometer SI10-1 should continue to be monitored twice annually.		-
Design and implementation of retaining wall mitigation measures. A retrofit design to add anchors and support the soil between the piles is anticipated to be required at this time.		\$ 1,000,000