

**ALBERTA TRANSPORTATION  
GEOHAZARD ASSESSMENT PROGRAM  
PEACE REGION – SWAN HILLS  
2020 INSPECTION**



Site Number	Location	Name	Hwy	km
SH022-7	Little Smoky River	Little Smoky River Valley, North Hill – Site #7	744:02	19-58-19.70*
<b>Legal Description</b>		<b>UTM Co-ordinates</b>		
SW21-76-22-W5M		11U E 477,732	N	6,161,398

	Date	PF	CF	Total
<b>Previous Inspection:</b>	11-Jun-2019	10	4	40
<b>Current Inspection:</b>	2-Jun-2020	10	4	40
<b>Road AADT:</b>	240		<b>Year:</b>	2020
<b>Inspected By:</b>	Rocky Wang, TRANS		Ken Froese, Thurber	
<b>Report Attachments:</b>	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

<b>Primary Site Issue:</b>	Highway traverses deep-seated, retrogressive landslides with ongoing creep movements due partly to erosion at toe by the Little Smoky River and Peavine Creek resulting in cracking and sagging of the pavement surface at numerous locations. Approx. 4 km of the highway crosses this unstable north valley slope. Site #7 is 70 m above and 480 m away from the Peavine Creek.	
<b>Dimensions:</b>	120 m length of highway affected by cracking and distortion * - Division between SH22-7 and SH12-8 appears arbitrary.	
<b>Date of Remediation:</b>	Approximately 1 m thick GBC “sandwich” placed at this site.	
<b>Maintenance:</b>	Routine ACP crack sealing, milling, and patching (2014 and 2015), when required. <u>Spring 2017:</u> Both sideslopes regraded <u>Fall 2017:</u> Patch over the entire site <u>Spring 2019:</u> Milling over most of the site 2020: Line painting	
<b>Observations:</b>	<b>Description</b>	<b>Worsened?</b>
<input checked="" type="checkbox"/> Pavement Distress	Recent patching was carried out. Numerous longitudinal and traverse cracks have reflected through 2017 patches as well as significant pavement distortion.	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	Site is located on an active deep-seated landslide moving toward the Little Smoky River in one direction and Peavine Creek in another. This site crosses over and along a main scarp.	<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 type="checkbox"/> Other		<input type="checkbox"/>

**Instrumentation:**

None.

**Assessment:**

The overall valley slope is moving as several separate slide blocks in response to the toe erosion and downcutting of two different rivers resulting in numerous scarps, sag ponds, and differential movement zones going in slightly different directions. The highway intersects the scarps of these blocks at several locations resulting in an uneven highway surface and cracking.

Site #7 intersects a major scarp which parallels the highway resulting in significant pavement distortions and requires frequent patching and milling to maintain a safe driving surface. This site is more active than Sites #5 and #6. The major scarp crack had reflected through the 2017 patch in less than a year., The differential heights had been reduced in 2019 due to the recent milling but have been re-established. More undulation of the driving surface was observed in 2020.

**Recommendations:****Short-Term:**

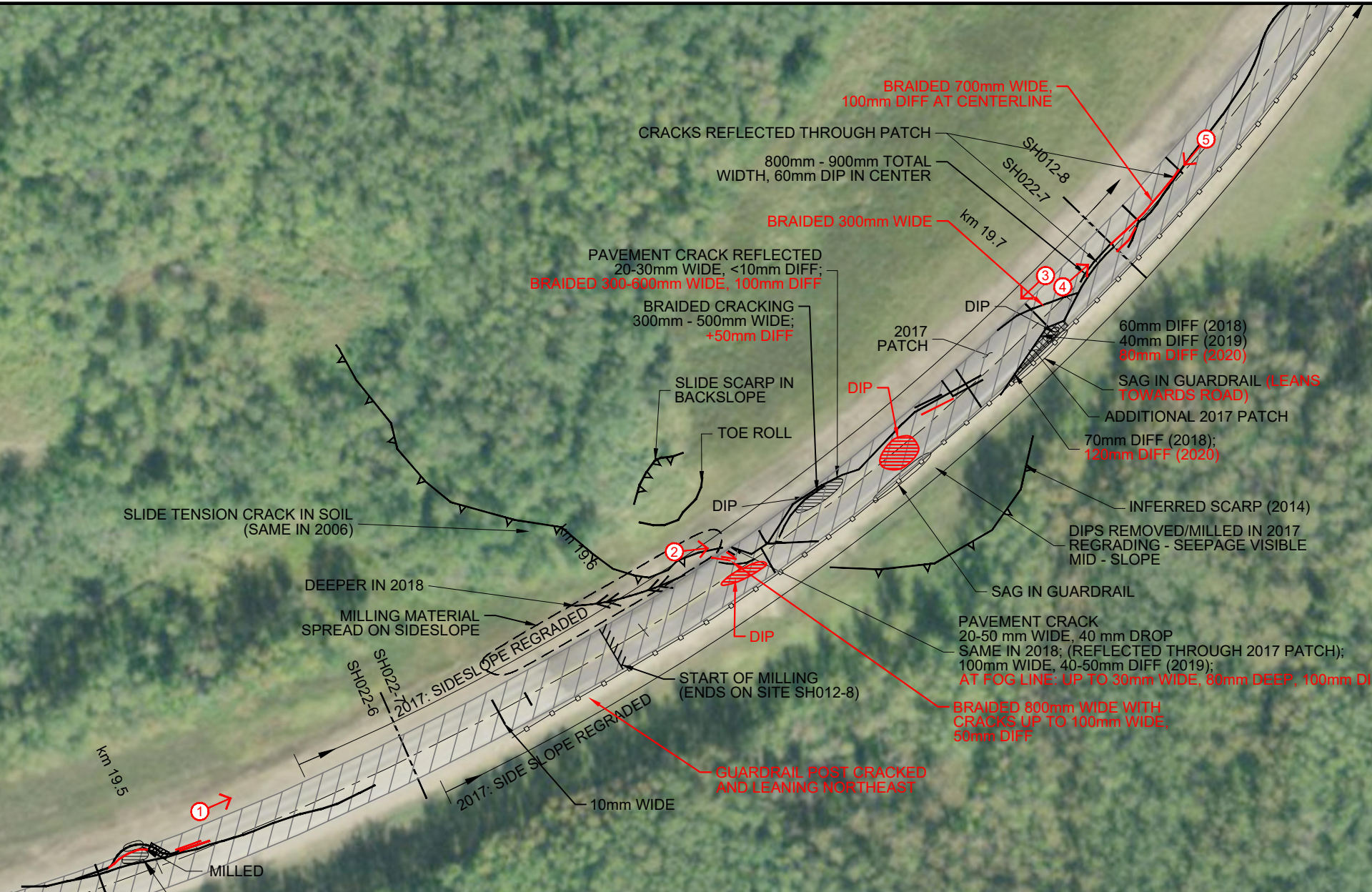
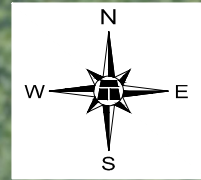
- Road maintenance should continue as necessary to maintain a safe roadway surface and may consist of milling, patching, and crack sealing of the ACP.

**Long-Term:**

It is understood that, at this time, the only long-term remediation option under consideration is realignment of the entire north hill section of Highway 744. However, given the high cost of this option and as it is a low volume highway, it is unlikely that realignment will be undertaken in the near future. Consideration is also being given to a shorter realignment which would include this Site #7.

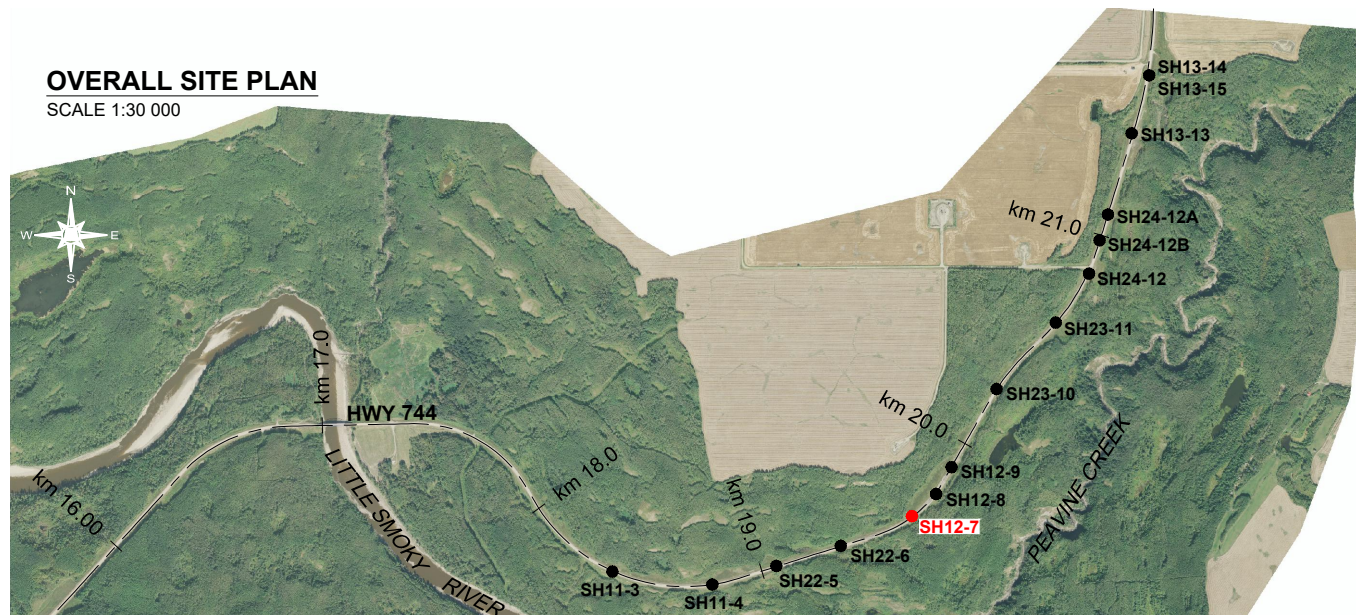
**Ongoing Investigation:**

- It is recommended that the annual GeoHazard inspection should continue as scheduled.
- As a more active Site along Highway 744, consideration should be given to installing one or two slope inclinometers to measure movement rates at this site.



**DETAILED SITE PLAN**  
SCALE 1:1000

**OVERALL SITE PLAN**  
SCALE 1:30 000

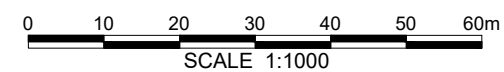


**LEGEND**

- DRAINAGE CHANNEL
- GUARDRAIL
- ASPHALT PATCH
- DIRECTION AND NUMBER OF PHOTO

**NOTES**

1. FEATURE LOCATIONS ARE APPROXIMATE.
2. PREVIOUS OBSERVATIONS SHOWN IN BLACK (2013-2015 FROM AMEC FIGURE 1, PROJECT EG10030, PROVIDED BY ALBERTA TRANSPORTATION).
3. JUNE 2020 OBSERVATIONS SHOWN IN RED.



SATELLITE IMAGE FROM VALTUS IMAGERY (DATED 2014)



PEACE REGION (SWAN HILLS)

**SH022-7: HWY 744:02 LITTLE SMOKY RIVER VALLEY  
2020 SITE INSPECTION PLAN**

DWG No. 13355-SH022-7

DRAWN BY	KLW
DESIGNED BY	KEF
APPROVED BY	DWP
SCALE	AS SHOWN
DATE	OCTOBER 2020
FILE No.	13355





Photo 1 – Looking east from west end of site.



Photo 2 – Looking up-chainage at cracks and milling where main scarp crosses highway.



Photo 3 – Looking down chainage at main scarp crack along highway surface.



Photo 4 – Looking up-chainage at milling over main scarp crack.



Photo 5 – Looking down-chainage at patch near east end of Site #7 (back towards Photo #6).  
Note growing width of crack pattern.