

**ALBERTA TRANSPORTATION  
PEACE REGION (PEACE RIVER / HIGH LEVEL)  
INSTRUMENTATION MONITORING RESULTS**

**FALL 2017**

**SECTION C**

**SITE PH047-1: HWY 690:02, DEADWOOD SLIDE**

**1. OBSERVATIONS**

**1.1 Field Program and Instrumentation Status**

Two slope inclinometers (SI15-01 and SI15-02) were installed at the Hwy 690:02 Deadwood Slide site during construction in the fall of 2015. The majority of construction work was completed by the end of November 2015. The two SIs were read on October 1, 2017 by Mr. Niraj Regmi, G.I.T. and Mr. Aldrin Pascua, both of Thurber Engineering Ltd.

The SIs were read using a RST Digital Inclinometer probe with a 2 ft. wheelbase and a RST Pocket PC readout. Inclinometer reading depths were defined as per cable markings with respect to the top of the inclinometer casings.

**2. INTERPRETATION**

**2.1 General**

SI plots with A and B directions are presented in Section D and are summarized below. Where movement has been recorded, the resultant plot (X direction, if applicable) and a rate of movement have also been provided.

## **2.2 Zones of Movement**

Zones of new movement were not observed in slope inclinometers SI15-01 and SI15-02 since the spring of 2017 readings.

Zones of movement are summarized in Table PH047-1-1 at the end of this report. This table also provides a historical account of the total movement, the depth of movement and the maximum rate of movement that has occurred at this site since the initialization of the slope inclinometers.

## **2.3 Interpretation of Monitoring Results**

Slope indicator SI15-01 showed a rate of movement of 2.6 mm/yr over 5.6 m to 7.4 m depth since the spring of 2017 readings. SI15-02 showed a rate of movement of 1.1 mm/yr over 4.6 m to 5.8 m depth since the spring of 2017 readings.

Historical groundwater levels recorded in the piezometers are summarized in Tables PH047-1-2 and PH047-1-3 at the end of this report. All piezometers at this site were damaged prior to or during construction.

## **3. RECOMMENDATIONS**

### **3.1 Future Work**

The instruments should be read again during the spring of 2018.

### **3.2 Instrumentation Repairs**

No instrumentation repairs are required at this time.



**TABLE PH047-1-1  
FALL 2017 – HWY 690:02 DEADWOOD SLIDE  
SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: October 1, 2017

<b>INSTRUMENT #</b>	<b>DATE INITIALIZED</b>	<b>TOTAL CUMULATIVE RESULTANT MOVEMENT AT NOTED DEPTH SINCE INITIAL READING (mm)</b>	<b>MAXIMUM RATE OF MOVEMENT (mm/yr)</b>	<b>CURRENT STATUS</b>	<b>DATE OF PREVIOUS READING</b>	<b>INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)</b>	<b>CURRENT RATE OF MOVEMENT (mm/yr)</b>	<b>CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)</b>
SI15-01	October 14, 2015	46.4mm over 5.6 m to 7.4 m depth in 189° direction	650 in October 2015	Operational	June 10, 2017	0.8	2.6	-0.3
SI15-02	October 14, 2015	57.6 mm over 4.6 m to 5.8 m depth in 158° direction	971 in October 2015	Operational	June 10, 2017	0.3	1.1	0.9

Drawing 13351-PH047-1-1 in Section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.

**TABLE PH047-1-2  
FALL 2017 – HWY 690:02 DEADWOOD SLIDE  
STANDPIPE PIEZOMETER INSTRUMENTATION READING SUMMARY**

<b>INSTRUMENT #</b>	<b>DATE INITIALIZED</b>	<b>TIP DEPTH (m)</b>	<b>GROUND ELEV. (m)</b>	<b>CURRENT STATUS</b>	<b>MAXIMUM GROUNDWATER LEVEL BGS (m)</b>	<b>GROUNDWATER LEVEL BGS (m)</b>
SP10-1	November 4, 2010	9.66	559.54	Blocked at 1.7 mBGS	4.60 on November 4, 2010	4.69 (Sept. 25, 2013)
SP10-3	November 4, 2010	8.90	565.44	Destroyed	1.14 on May 27, 2011	1.89 (Oct. 1, 2012)
SP10-5	April 27, 2010	2.92	561.27	Damaged	0.63 on July 27, 2011	1.66 (Sept. 17, 2015)

Drawing 13351-PH047-1-1 in Section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.

**TABLE PH047-1-3  
FALL 2017 – HWY 690:02 DEADWOOD SLIDE  
VIBRATING WIRE PIEZOMETER INSTRUMENTATION READING SUMMARY**

<b>INSTRUMENT</b>	<b>DATE INITIALIZED</b>	<b>TIP ELEV. (m)</b>	<b>GROUND ELEV. (m)</b>	<b>CURRENT STATUS</b>	<b>MAXIMUM GROUNDWATER ELEVATION (m)</b>	<b>GROUNDWATER ELEVATION (m)</b>
VW10-1 (100D10918)	April 27, 2011	553.50	562.00	Destroyed	560.60 m on May 23, 2015 (1.40 mBGS)	560.60 (May 23, 2015)
VW10-2 (100D10917)	April 27, 2011	555.17	560.96	Destroyed	558.96 m on June 2, 2014 (2.00 mBGS)	558.96 (June 2, 2014)

Drawing 13351-PH047-1-1 in Section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.



**ALBERTA TRANSPORTATION  
PEACE REGION (PEACE RIVER / HIGH LEVEL)  
INSTRUMENTATION MONITORING RESULTS**

**FALL 2017**

**SECTION D  
DATA PRESENTATION**

**SITE PH047-1: HWY 690:02, DEADWOOD SLIDE**

**ALBERTA TRANSPORTATION  
PEACE REGION (PEACE RIVER / HIGH LEVEL)  
INSTRUMENTATION MONITORING FIELD SUMMARY (PH047-1)  
FALL 2017**

<b>Location:</b> Deadwood Slide (HWY 690:02 C1 2.431) <b>File Number:</b> 13351 <b>Probe:</b> RST Set 8R <b>Cable:</b> RST Set 8R	<b>Readout:</b> <b>Extension:</b> 3.34 <b>Temp:</b> 2 <b>Read by:</b> NKR/AMP
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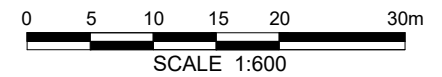
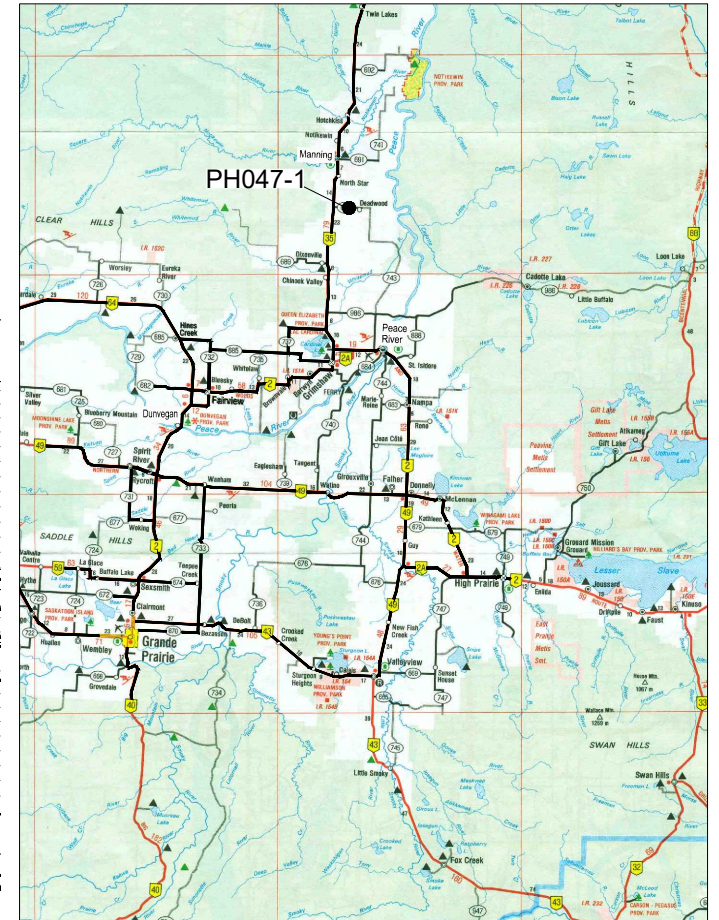
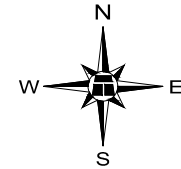
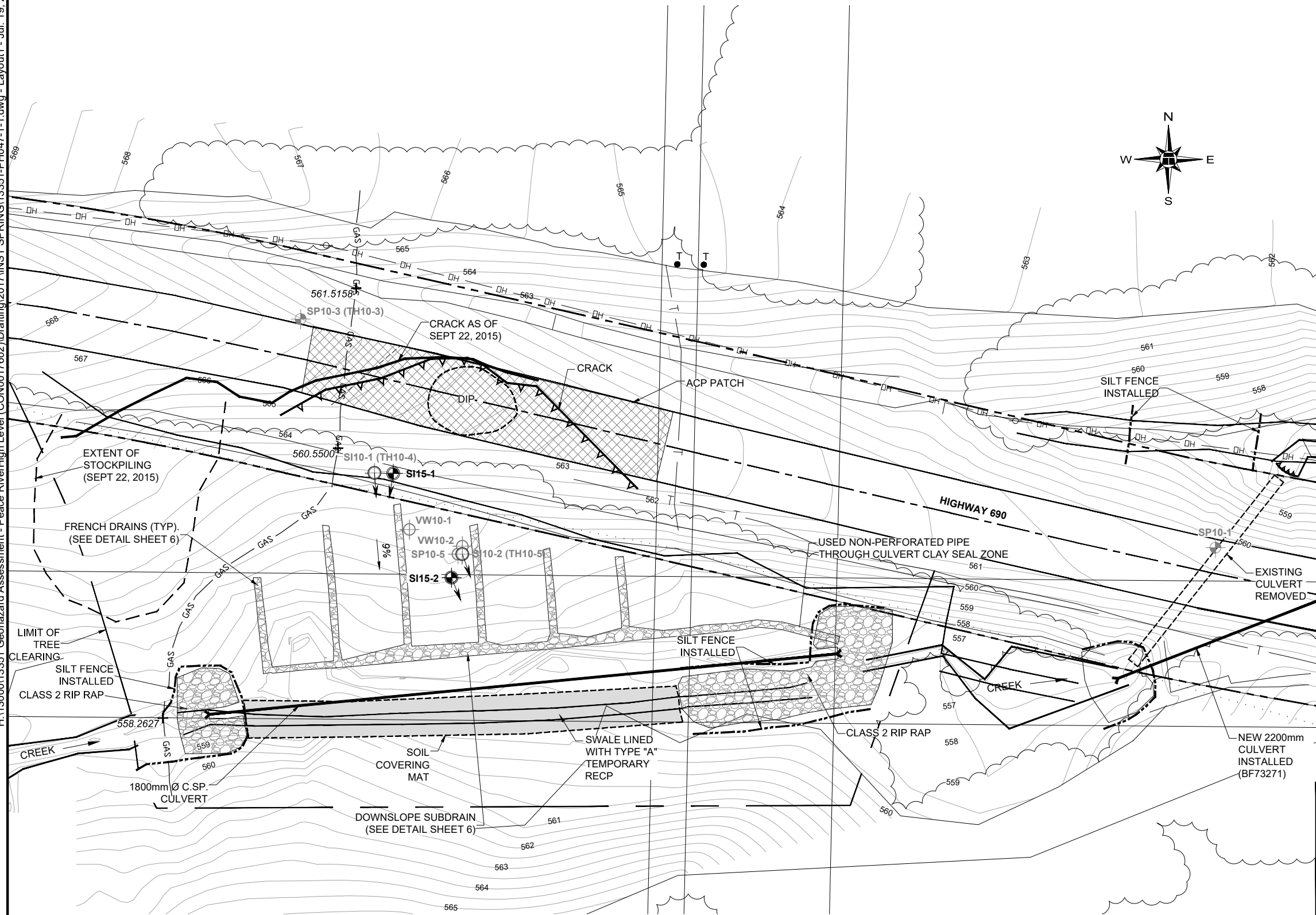
**SLOPE INCLINOMETER (SI) READINGS**

SI#	GPS Location (UTM 11)		Date	Stickup (m)	Depth from top of casing (ft)	Magn. North A+ Groove	Current Bottom Depth Readings				Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-	
SI15-01	462963.71	6288741.66	1-Oct-17	0.84	52 to 2	172	-19	36	-758	758	
SI15-02	462975.78	6288730.45	1-Oct-17	1.20	52 to 2	160	206	-189	-523	521	*

**INSPECTOR REPORT**

*USE DUMMY PROBE for next reading

H:\13000\13351\Geohazard Assessment - Peace River\High Level (CON0017602)\Drafting\2017\INST SPRING\13351-PH047-1-1.dwg - Layout1 - Jul. 19. 2017



**LEGEND:**

- INSTRUMENT LOCATION
- INSTRUMENT NOT IN USE
- SI** SLOPE INCLINOMETER
- SLOPE INCLINOMETER MOVEMENT DIRECTION



**PEACE REGION (PEACE RIVER/ HIGH LEVEL) 2017**

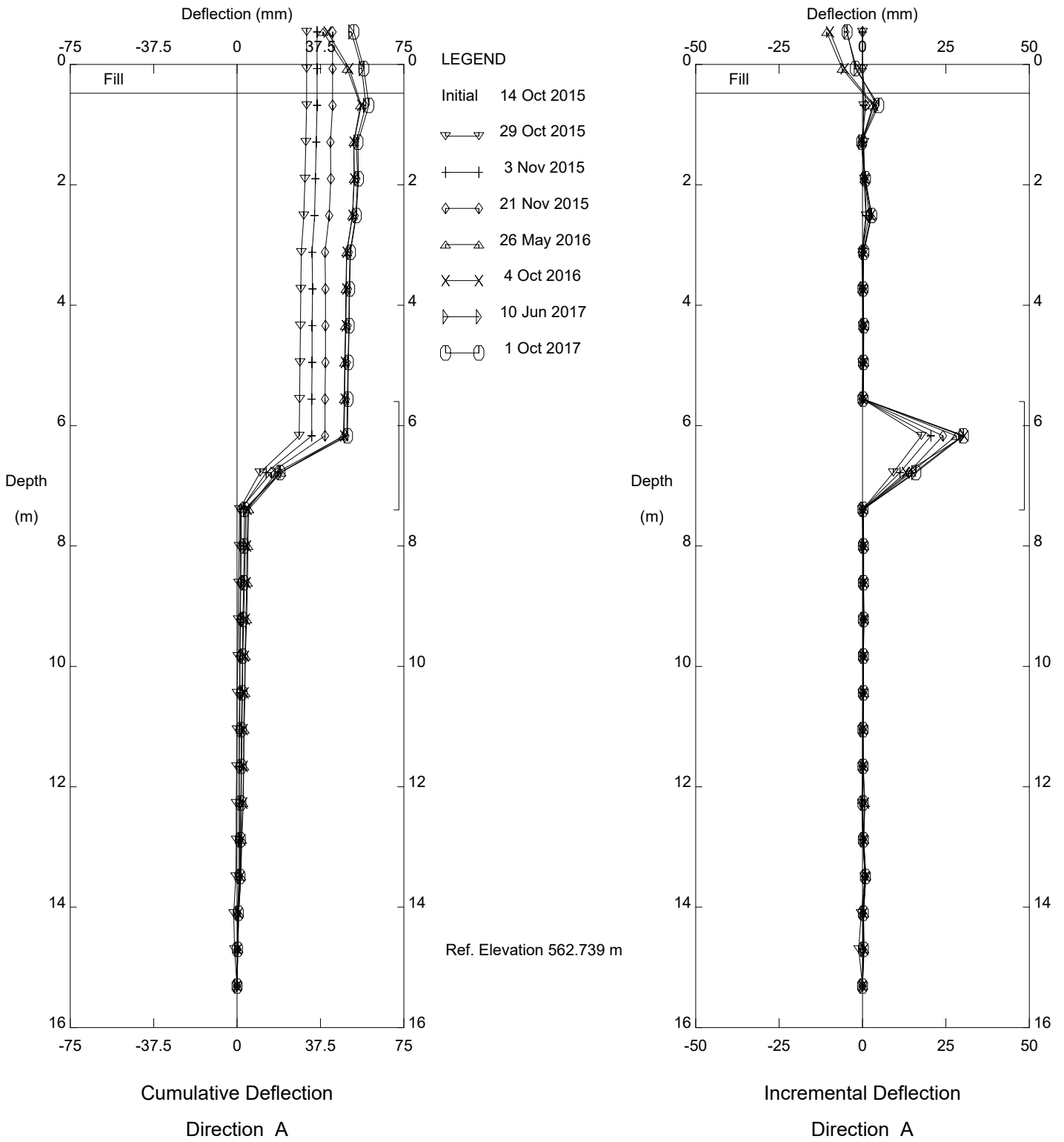
**PH047-1: HWY 690:02 - DEADWOOD SLIDE INSTRUMENT LOCATIONS**

**DWG No. 13351-PH047-1-1**

DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	1:600
DATE	JUNE 2017
FILE No.	13351



Thurber Engineering Ltd

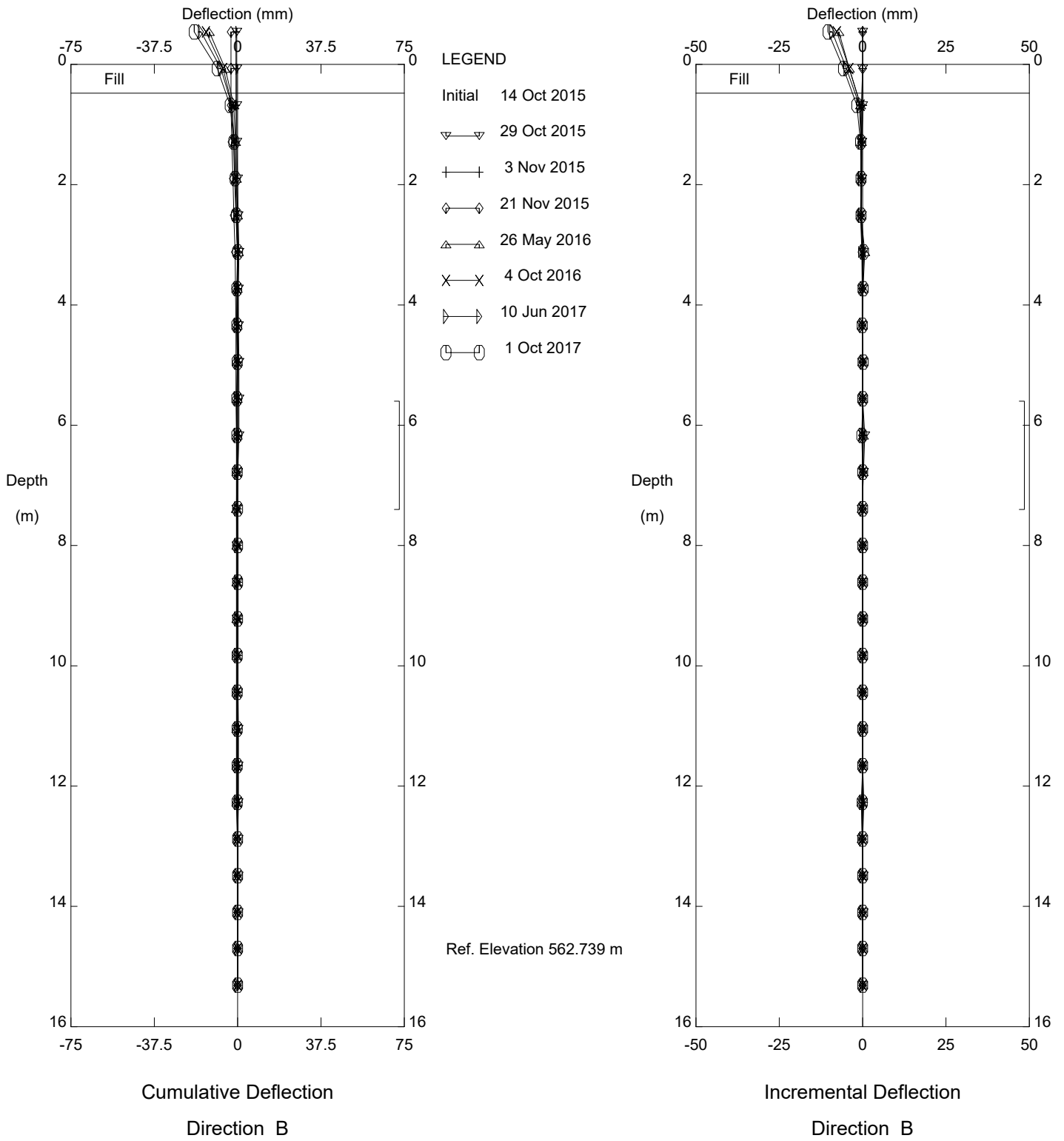


PH047-1 Deadwood Slide, Inclinometer SI15-01

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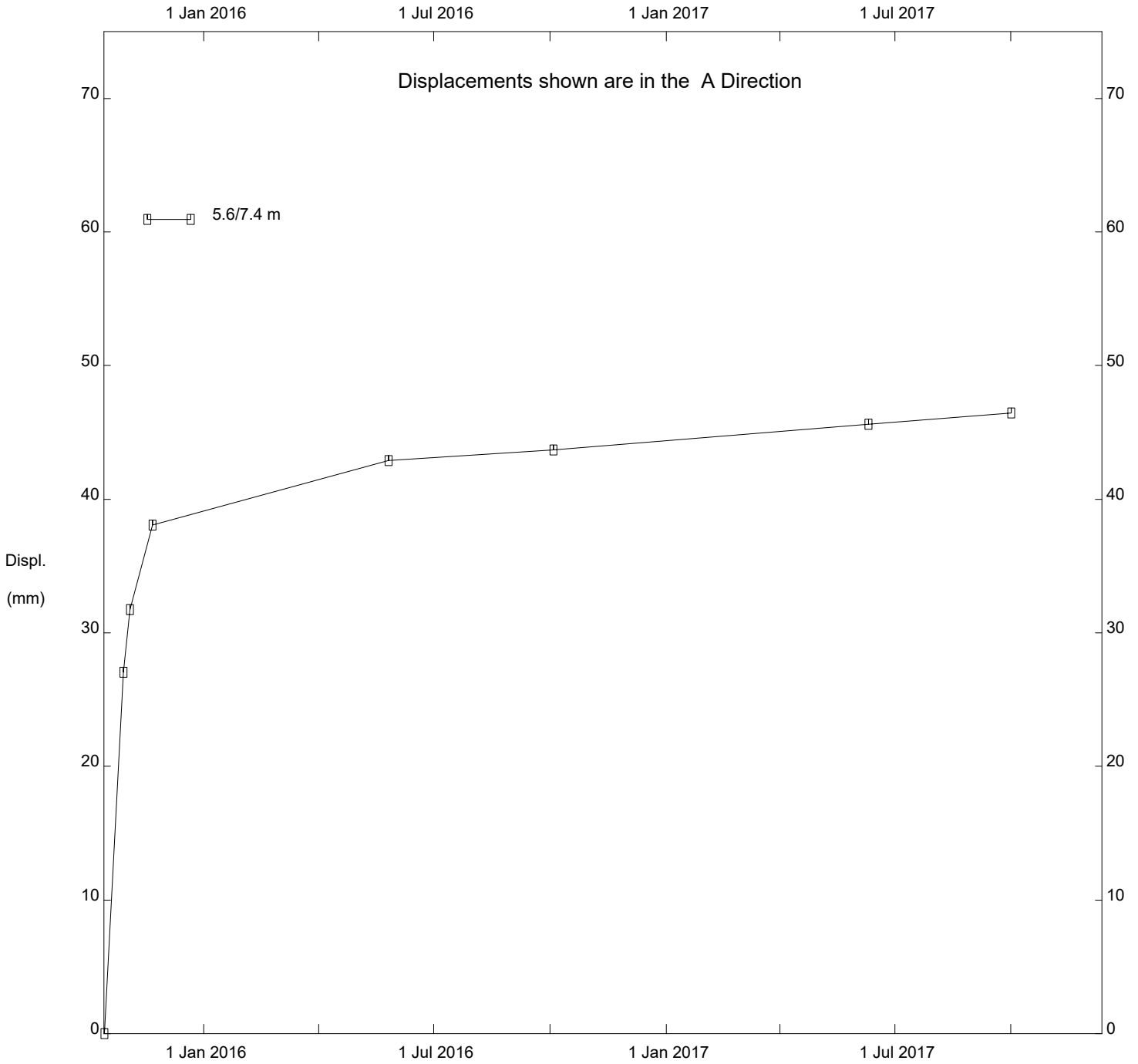
Thurber Engineering Ltd



PH047-1 Deadwood Slide, Inclinometer SI15-01

Alberta Transportation

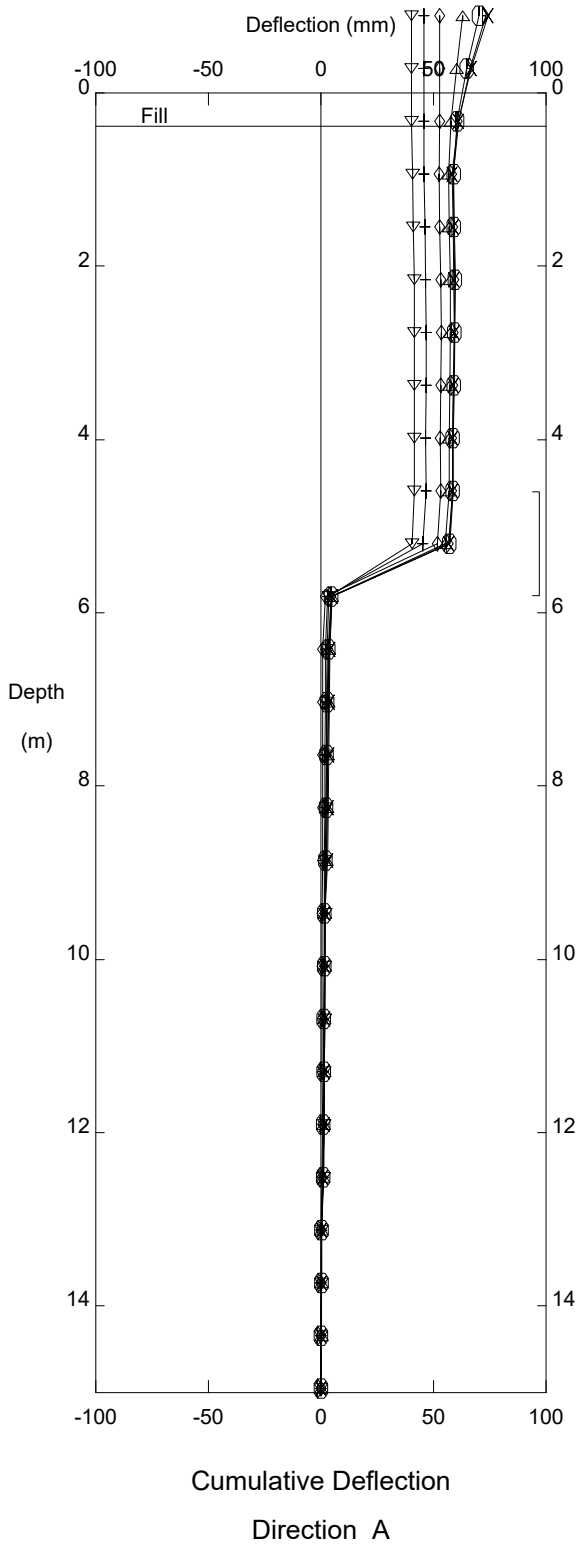
Thurber Engineering Ltd



PH047-1 Deadwood Slide, Inclinator SI15-01

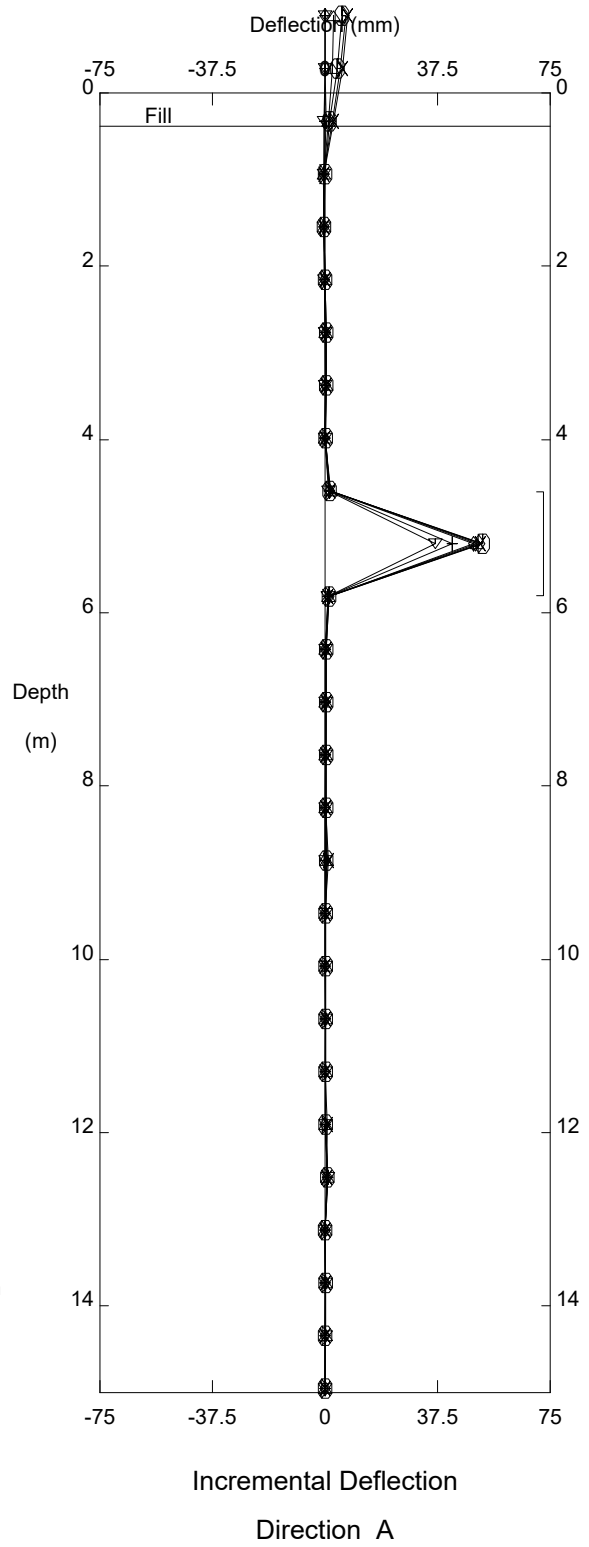
Alberta Transportation

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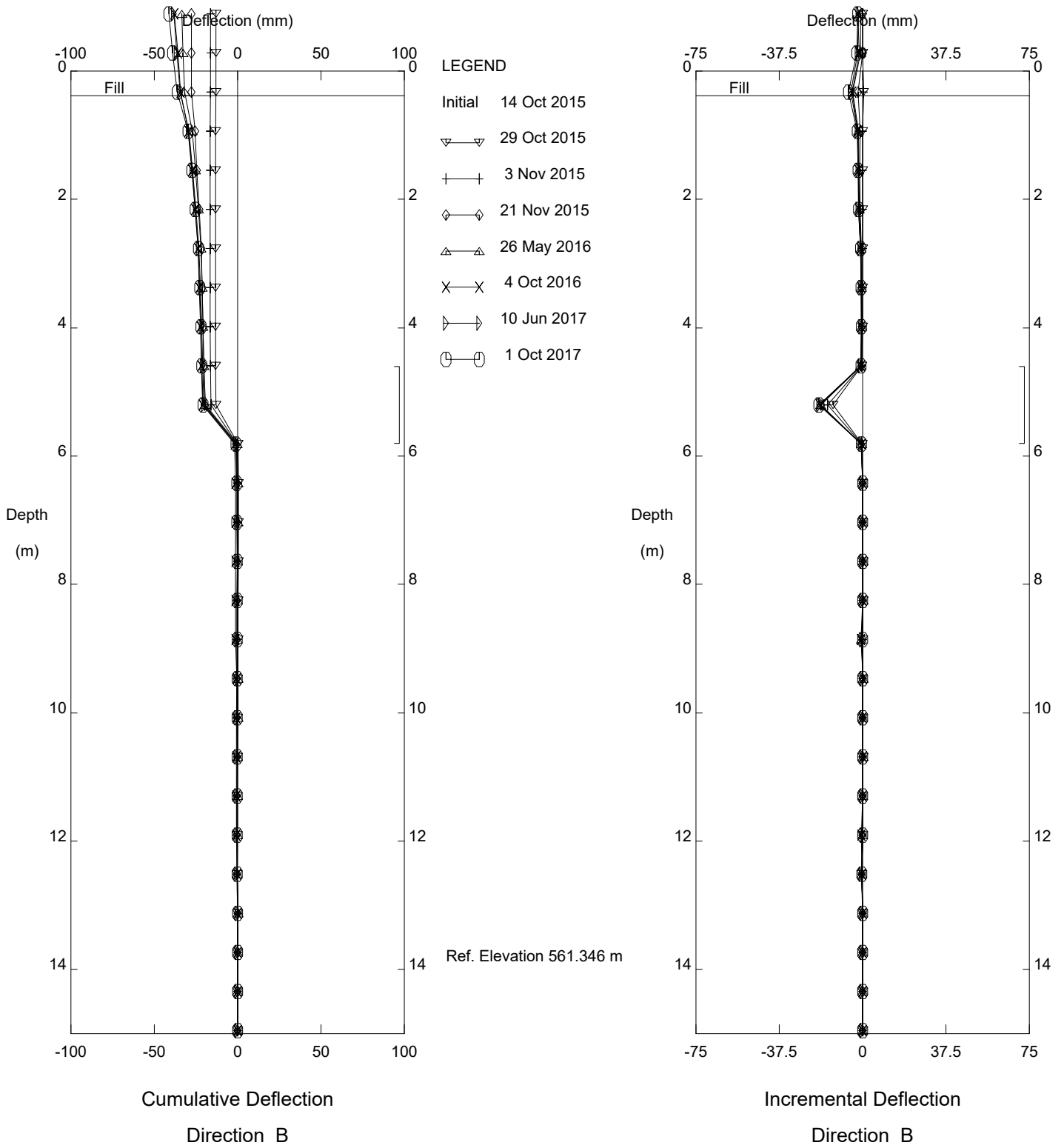
- LEGEND
- Initial 14 Oct 2015
  - ▽ 29 Oct 2015
  - + 3 Nov 2015
  - ◇ 21 Nov 2015
  - △ 26 May 2016
  - × 4 Oct 2016
  - ▷ 10 Jun 2017
  - 1 Oct 2017

Ref. Elevation 561.346 m



PH047-1 Deadwood Slide, Inclinator SI15-02  
Alberta Transportation

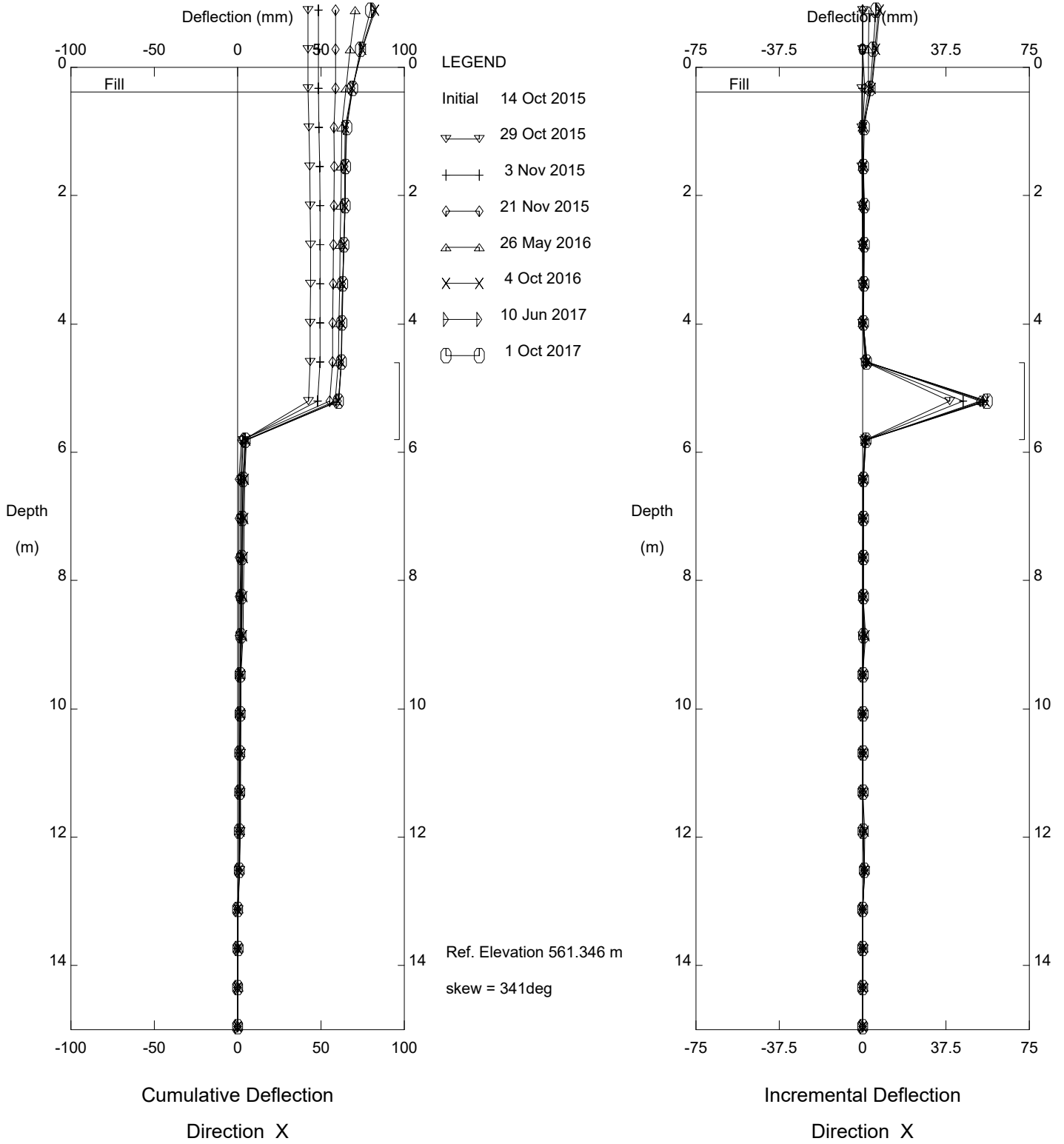
Thurber Engineering Ltd



PH047-1 Deadwood Slide, Inclinometer SI15-02

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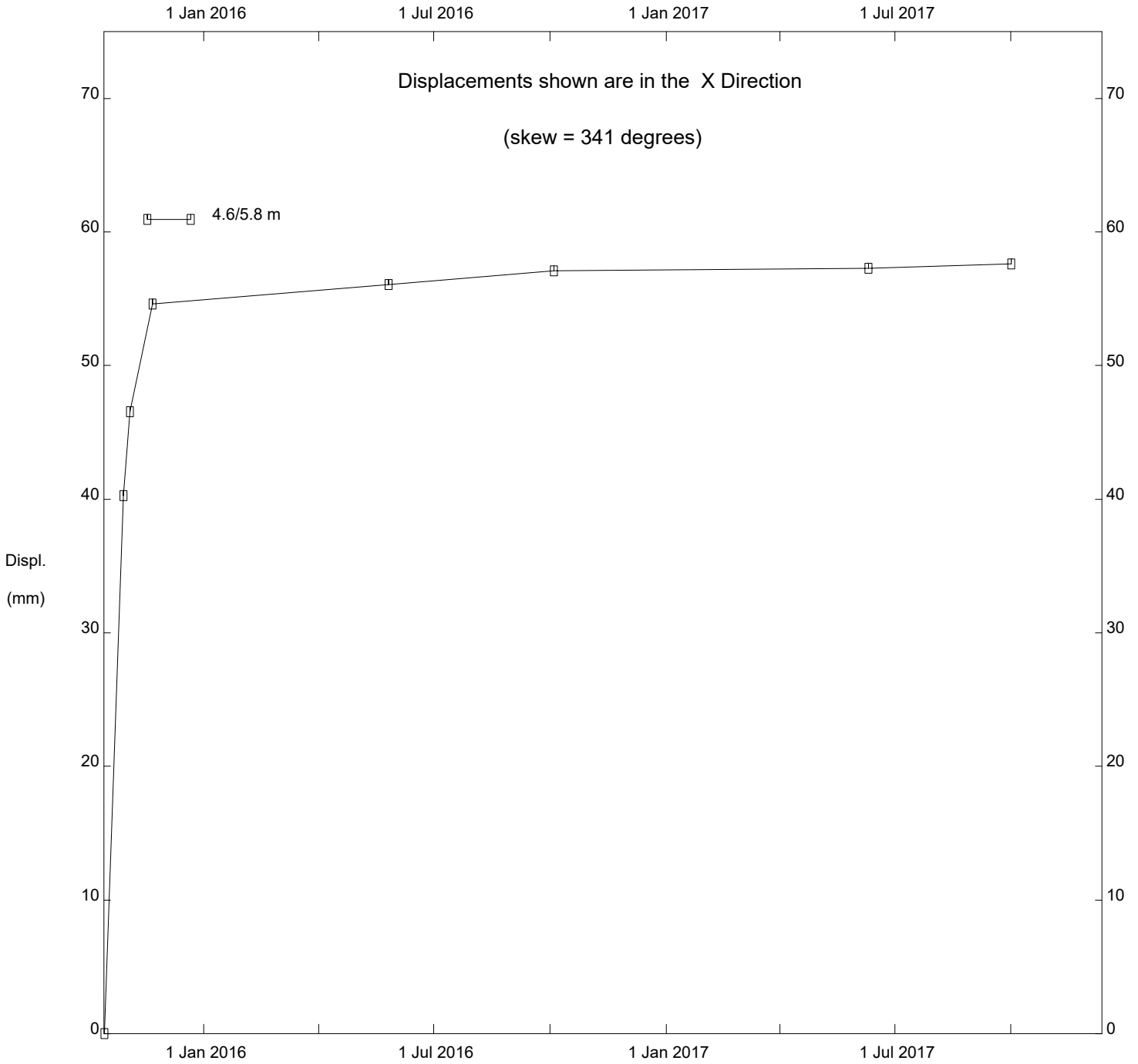
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PH047-1 Deadwood Slide, Inclinometer SI15-02

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PH047-1 Deadwood Slide, Inclinometer SI15-02

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