



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

FALL 2020

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 work, which consisted of a toe berm and subdrain system, was essentially completed by the end of November 2015. The two SIs were read on October 17, 2020 by Mr. Niraj Regmi, G.I.T. and Mr. Long Le, both of Thurber Engineering Ltd.

The SIs were read using an 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

No zones of new movement were observed in slope inclinometers SI15-01 and SI15-02 since the spring of 2020 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 inclinometer SI15-01 showed no discernible movement over 5.6 m to 7.4 m depth since the spring of 2020 readings; however, it is possible that there is a reading error for the current data in this SI as the difference with the previous reading is unlikely given the magnitude and previous trend. SI15-02 showed a rate of movement of 2.9 mm/yr over 4.6 m to 5.8 m depth since the fall of 2019 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 2021.

3.2 Instrumentation Repairs

No instrumentation repairs are required at this time.

**TABLE PH047-1-1
FALL 2020 – HWY 690:02 DEADWOOD SLIDE
SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: October 17, 2020

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AT NOTED DEPTH SINCE INITIAL READING (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS	DATE OF PREVIOUS READING	INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI15-01	October 14, 2015	48.1 mm over 5.6 m to 7.4 m depth in 188° direction	651 in October 2015	Operational	June 15, 2020	No discernible movement*	N/A	-12.6
SI15-02	October 14, 2015	63.4 mm over 4.6 m to 5.8 m depth in 152° direction	968 in October 2015	Operational	June 15, 2020	1.0	2.9	-0.5

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

* - There may have been an error in the Fall 2020 reading on this SI.

**TABLE PH047-1-2
FALL 2020 – HWY 690:02 DEADWOOD SLIDE
STANDPIPE PIEZOMETER INSTRUMENTATION READING SUMMARY**

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM GROUNDWATER LEVEL BGS (m)	GROUNDWATER LEVEL BGS (m)
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 2020 – HWY 690:02 DEADWOOD SLIDE
VIBRATING WIRE PIEZOMETER INSTRUMENTATION READING SUMMARY**

INSTRUMENT	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM GROUNDWATER ELEVATION (m)	GROUNDWATER ELEVATION (m)
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 2020

**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 2020**

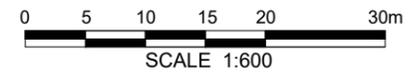
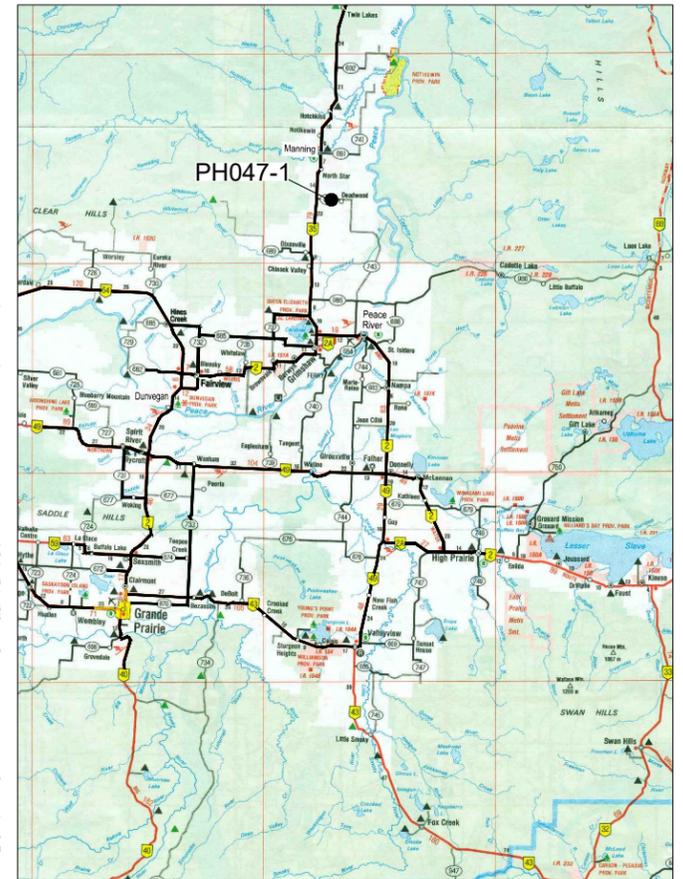
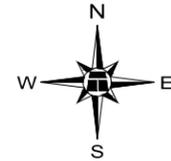
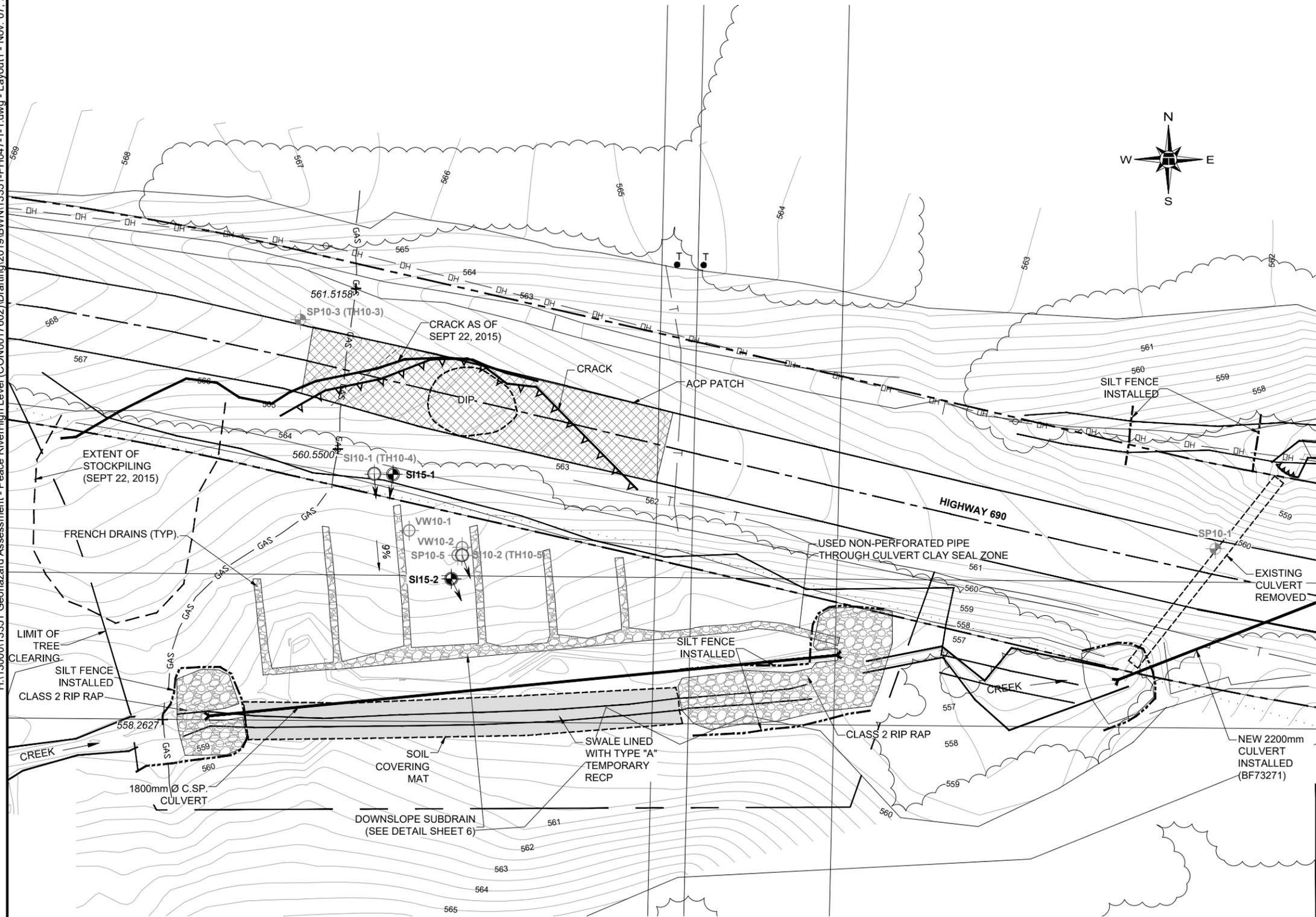
Location: Deadwood Slide (HWY 690:02 C1 2.431) File Number: 13351 Probe: RST SET 10 Cable: RST SET 10	Readout: Casing Size 3.34 Temp Degree C: -10 Read by: NKR/LL
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SLOPE INCLINOMETER (SI) READINGS

SI#	GPS Location (UTM 11)		Date	Stickup (m)	Depth from top of casing (ft)	Magn. North A+ Groove	Current Bottom Depth Readings				Probe/ Reel #	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-		
SI15-01	462963.71	6288741.66	17-Oct-20	0.84	52 to 2	172	-18	22	-761	755	10/10	**
SI15-02	462975.78	6288730.45	17-Oct-20	1.20	52 to 2	160	200	-199	-528	518	10/10	*

INSPECTOR REPORT

*USE DUMMY PROBE for next reading, about to shear at 22 ft
** Stiff pull at 24 ft. Use Dummy



LEGEND:

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



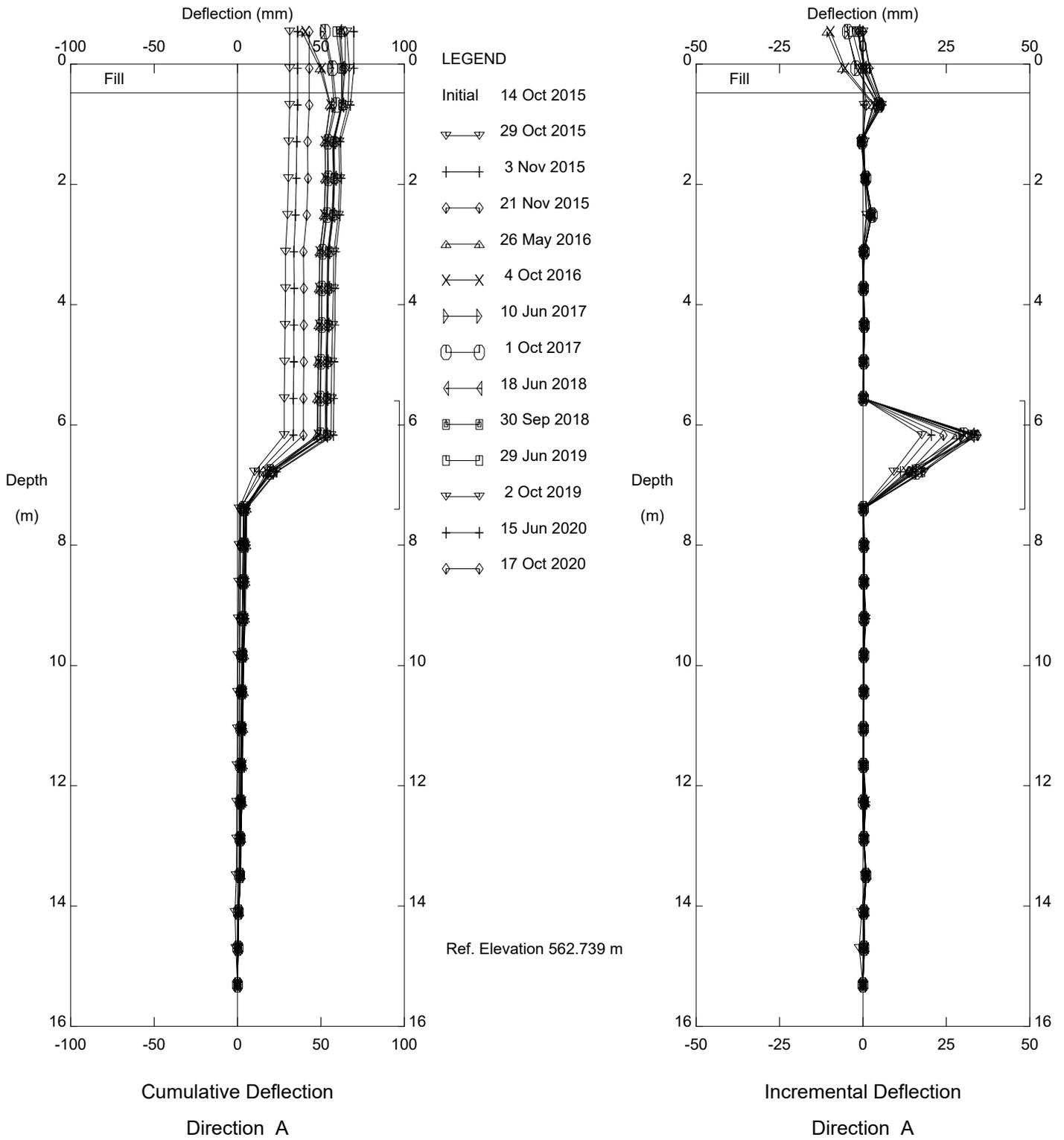
PEACE REGION (PEACE RIVER/ HIGH LEVEL)

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

DWG No. 13351-PH047-1-1

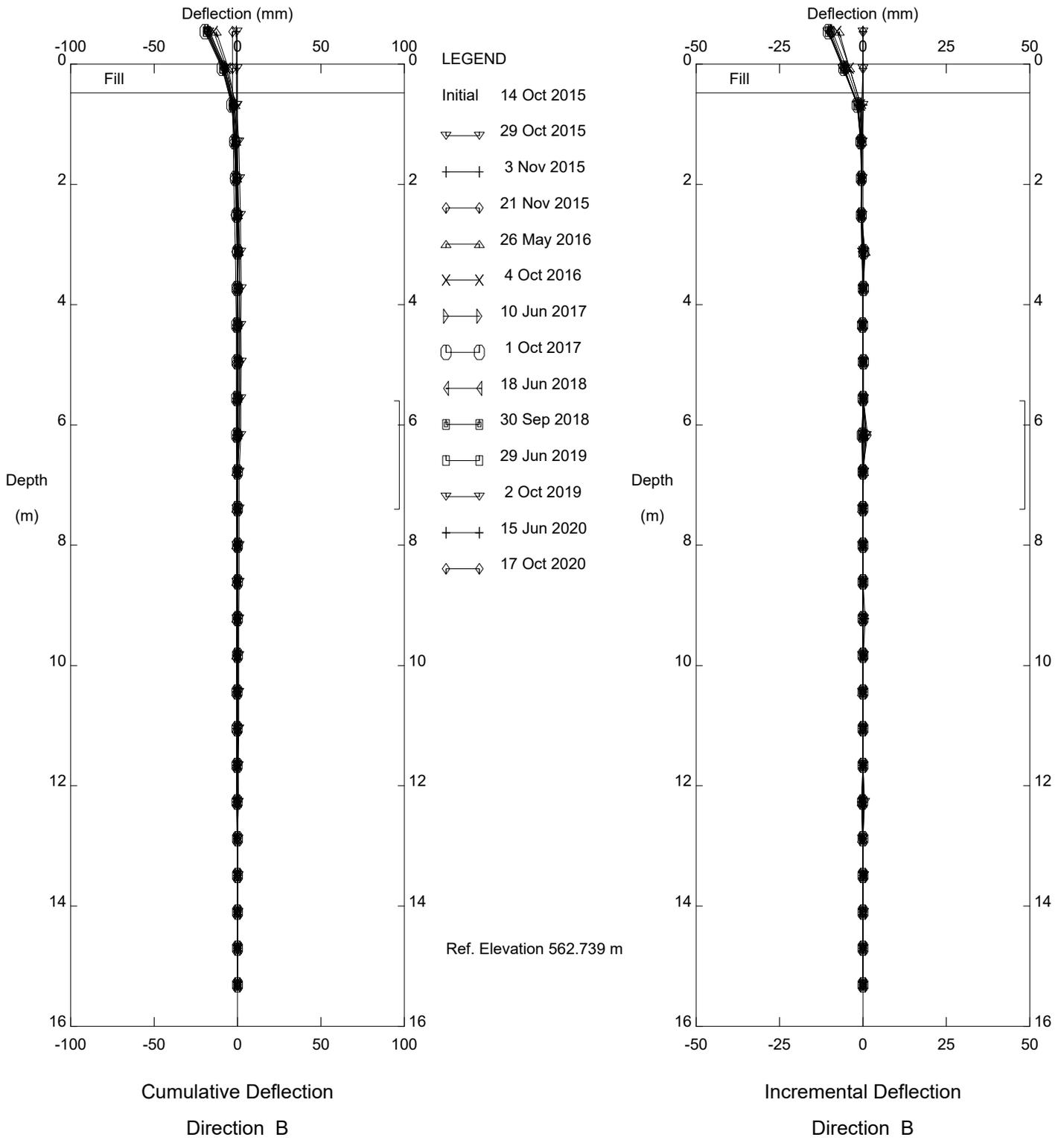
DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	1:600
LAST UPDATED	NOVEMBER 2019
FILE No.	13351





PH047-1 Deadwood Slide, Inclinometer SI15-01

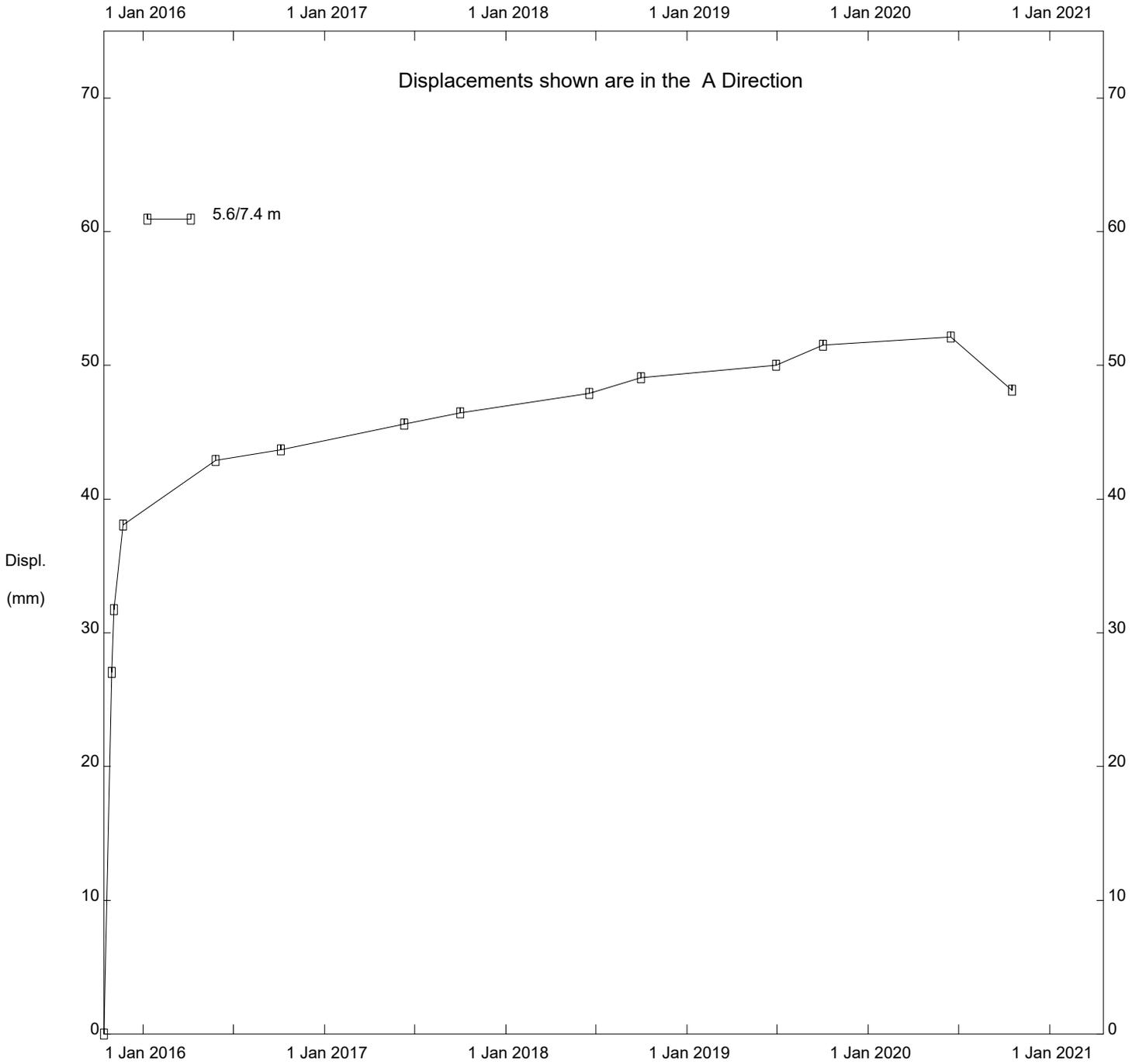
Alberta Transportation



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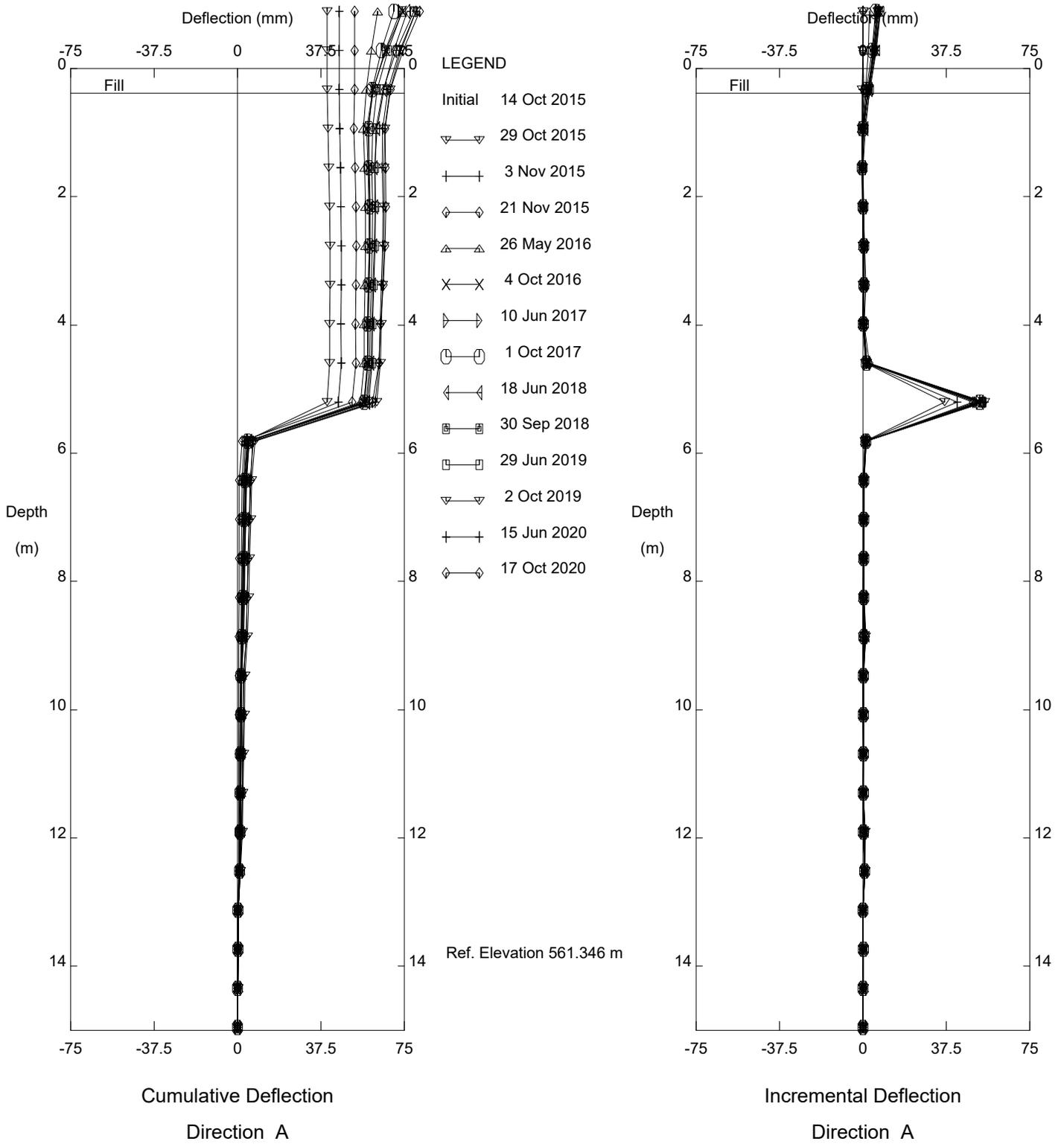
Alberta Transportation

Thurber Engineering Ltd.



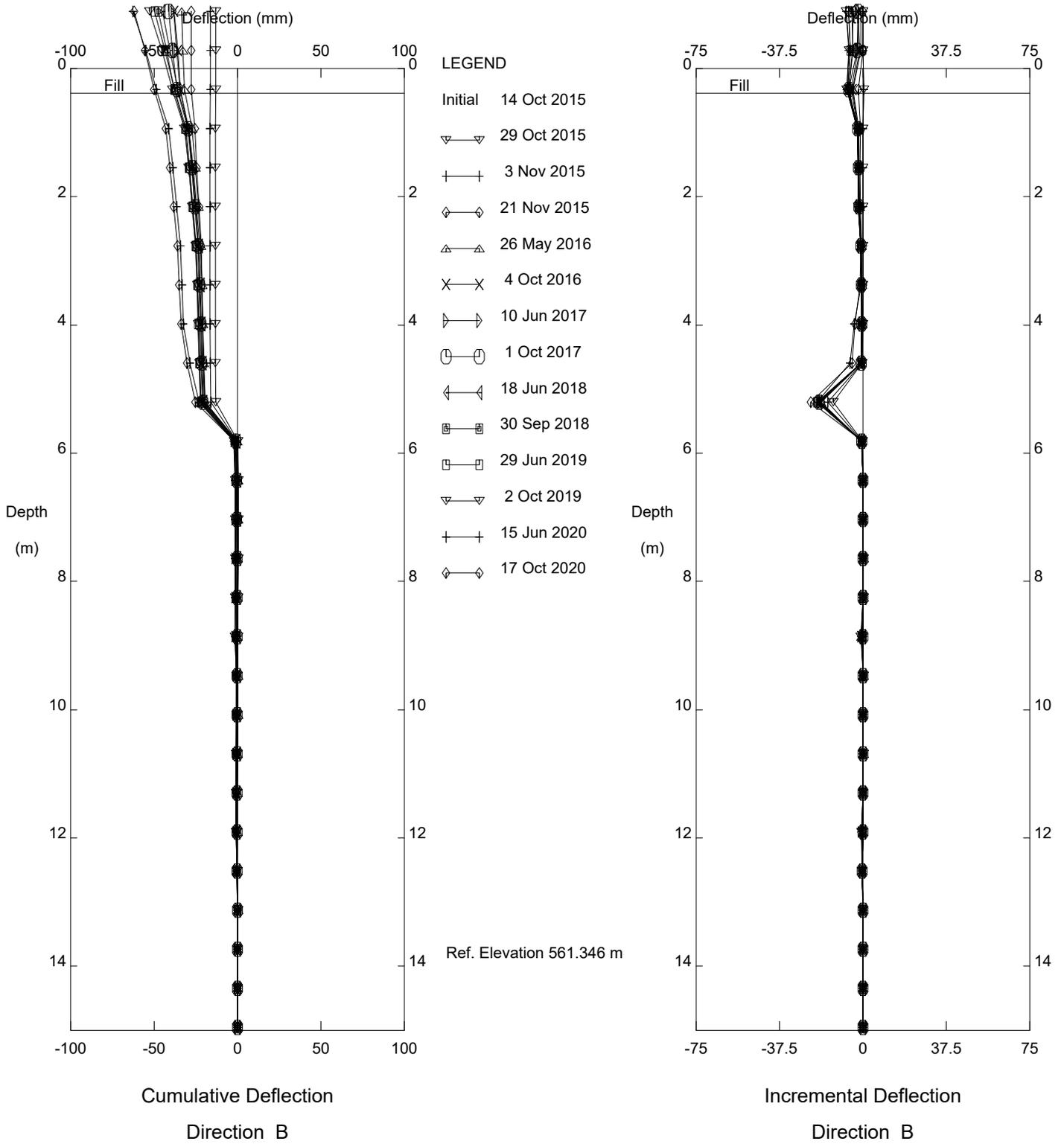
PH047-1 Deadwood Slide, Inclinator SI15-01

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PH047-1 Deadwood Slide, Inclinometer SI15-02

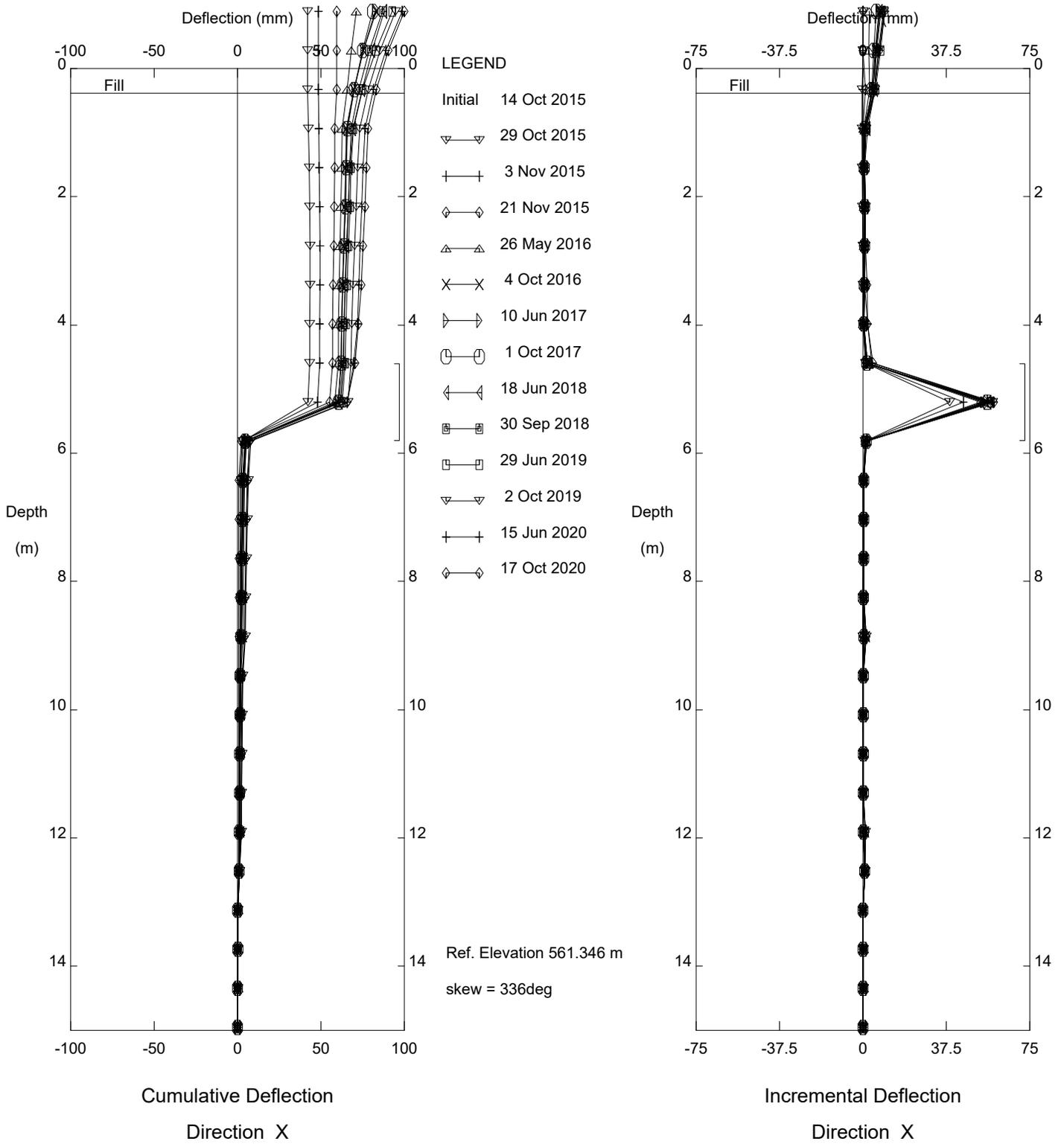
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PH047-1 Deadwood Slide, Inclinometer SI15-02

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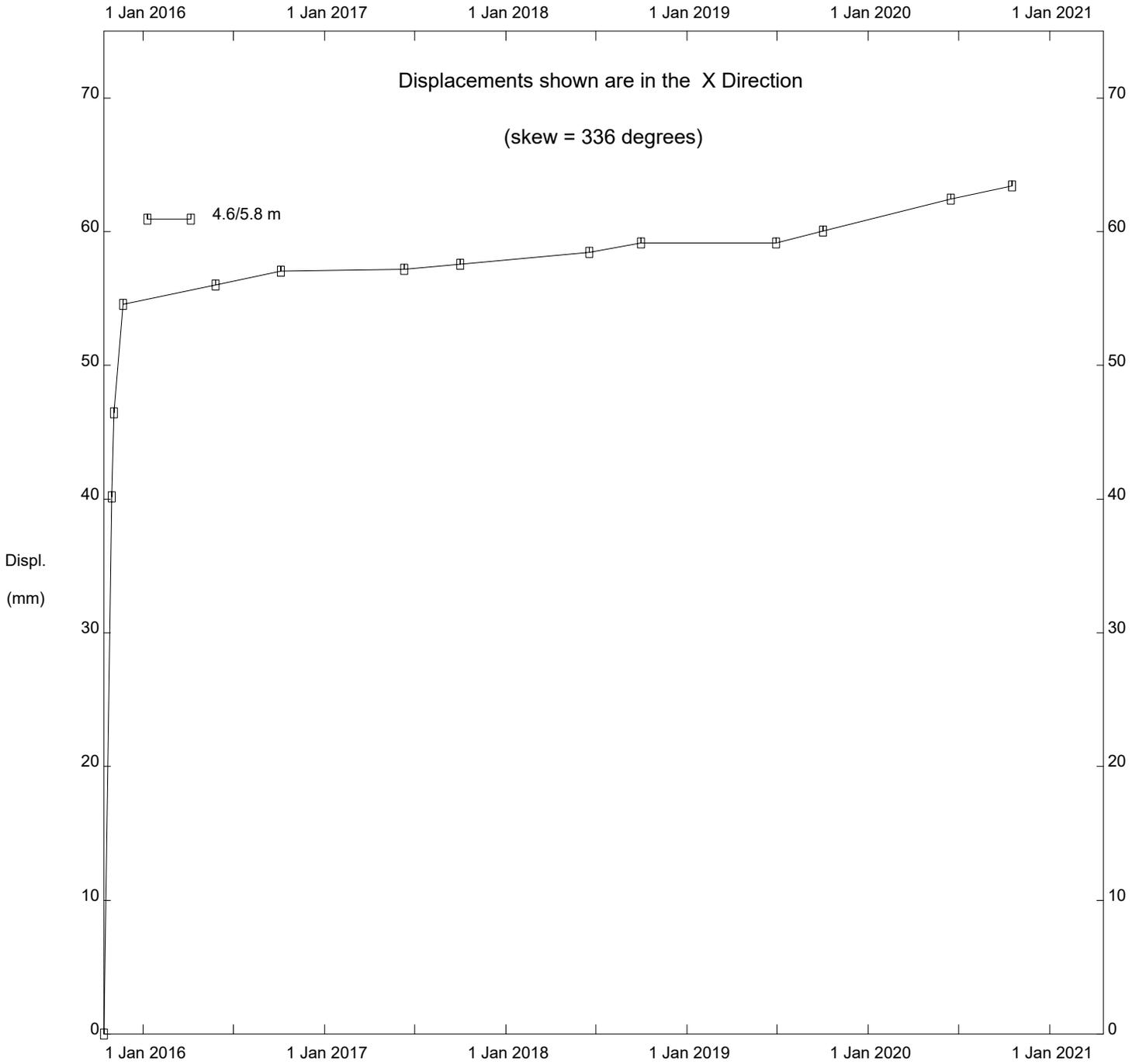
Thurber Engineering Ltd.



PH047-1 Deadwood Slide, Inclinometer SI15-02

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PH047-1 Deadwood Slide, Inclinator SI15-02

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