



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

**FALL 2020**

**SECTION C**

**SITE PH005-1: HWY 35:08, MEIKLE RIVER SLIDE (km 25.5)**

**1. OBSERVATIONS**

**1.1 Field Program and Instrumentation Status**

In the spring of 2015, a tangent cantilever pile wall was installed at the Hwy 35:08 (km 25.5) Meikle River site. Three slope inclinometers (SI-P14, SI-P23, and SI-P32) were installed in the pile wall during construction. The SIs were read on October 17, 2020 by Mr. Niraj Regmi, G.I.T. and Mr. Long Le, both of Thurber Engineering Ltd. One pneumatic piezometer (PN14-4), installed downslope of the pile wall location prior to construction, was also read.

The SIs were read using two RST Digital Inclinometer probes with 2 ft. wheelbases and RST Pocket PC readouts. Inclinometer reading depths were defined as per cable markings with respect to the top of the inclinometer casing. The pneumatic piezometer was read using a RST C108 pneumatic piezometer readout.

**2. INTERPRETATION**

**2.1 General**

No new zones of movement were identified in the SIs since the spring of 2020 readings.

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 movement are summarized in Table PH005-1-1 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**

The movement zones for the slope inclinometers installed in the piles are defined over the length of the pile and water. SI-P14 showed a movement rate of 5.8 mm/yr since the spring of 2020 readings. SI-P23 showed a rate of movement of 7.2 mm/yr over 0.4 m to 17.5 m depth. SI-P32 showed no discernible movement over 0 m to 16.4 m. These three SIs have measured total pile head deflections to date ranging from 7.5 mm to 8.3 mm.

The water level in pneumatic piezometer PN14-4 decreased by 0.18 m since the spring of 2020 readings. The pneumatic piezometer readings are summarized in Table PH005-1-2 below and are plotted on Figures PH005-1-1 (by elevation) and PH005-1-2 (by depth) in Section D.

## **3. RECOMMENDATIONS**

### **3.1 Future Work**

The instruments should be read again in the spring of 2021.

### **3.2 Instrumentation Repairs**

No instruments need repair at this site.

**TABLE PH005-1-1  
FALL 2020 – HWY 35:08 MEIKLE RIVER SLIDE  
SLOPE INCLINOMETER READING SUMMARY**

Date Monitored: October 17, 2020

<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>
SI-P14	July 1, 2015	7.5 mm over 0.1 m to 17.8 m depth in 297° direction	12.1 mm/yr in September 2015	Operational	June 15, 2020	2.0	5.8	6.9
SI-P23	July 1, 2015	8.3 mm over 0.4 m to 17.5 m depth in 293° direction	7.7 mm/yr in October 2017	Operational	June 15, 2020	2.4	7.2	6.9
SI-P32	July 1, 2015	7.9 mm over 0.0 m to 16.4 m depth in 294° direction	5.8 mm/yr in September 2015	Operational	June 15, 2020	No discernible movement	N/A	-3.3

Drawing 13351-PH005-1-1 in Section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.

**TABLE PH005-1-2  
FALL 2020 – HWY 35:08 MEIKLE RIVER SLIDE  
PNEUMATIC PIEZOMETER READING SUMMARY**

Date Monitored: October 17, 2020

<b>INSTRUMENT #</b>	<b>DATE INITIALIZED</b>	<b>TIP DEPTH (m)</b>	<b>GROUND ELEV. (m)</b>	<b>CURRENT STATUS</b>	<b>HIGHEST MEASURED WATER LEVEL BGS (m)</b>	<b>MEASURED PORE PRESSURE (kPa)</b>	<b>CURRENT GROUNDWATER ELEVATION (m)</b>	<b>PREVIOUS GROUNDWATER ELEVATION (m)</b>	<b>CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)</b>
PN14-4 (35819)	November 18, 2014	4.5	415.6	Operational	413.62 on June 15, 2020	22.9	413.44	413.62	-0.18

Drawing 13351-PH005-1-1 in Section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Notes:

- PN - pneumatic piezometer.
- BGS - below ground surface.



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

**FALL 2020**

**SECTION D  
DATA PRESENTATION**

**SITE PH005-1: HWY 35:08, MEIKLE RIVER SLIDE (km 25.5)**

**ALBERTA TRANSPORTATION  
PEACE REGION (PEACE RIVER / HIGH LEVEL)  
INSTRUMENTATION MONITORING FIELD SUMMARY (PH005-1)  
FALL 2020**

<b>Location:</b> Miekle River (HWY 35:08 C1 25.419)	<b>Readout:</b> RST PN C108 Unit 6
<b>File Number:</b> 13351	<b>Extension:</b> 2.75"
<b>Probe:</b> RST SET 5R and 10	<b>Temp:</b> -10
<b>Cable:</b> RST SET 5R and 10	<b>Read by:</b> NKR/LL

**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-		
SI-P14	467717.67	6332455.26	17-Oct-20	0.83	60 to 2	273	59	-56	-210	203	10/10	
SI-P23	467712.34	6332470.88	17-Oct-20	1.11	60 to 2	277	324	-308	521	-517	5R/5R	
SI-P32	467724.40	6332465.22	17-Oct-20	0.95	58 to 2	278	180	-160	24	-23	5R/5R	








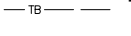
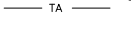
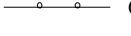

**PNEUMATIC PIEZOMETER READINGS**

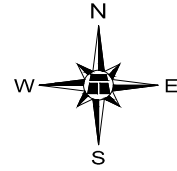
PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN14-4	467716.45	6332454.15	17-Oct-20	22.9	35819

**INSPECTOR REPORT**


H:\13000\13351 Geohazard Assessment - Peace River\High Level (CON0017602)\Drafting\2018\INST - FALL\13351-PH005-1-1.dwg - 5 - Dec. 03, 2018

**LEGEND**

-  2015 SLOPE INCLINOMETER LOCATION
-  2014 TEST HOLE LOCATION
-  SLOPE INCLINOMETER
-  PNEUMATIC PIEZOMETER
-  LANDSLIDE SCARP
-  CRACKS
-  ACP PATCH
-  TELUS LINE (BELOW GROUND)
-  TELUS LINE (ABOVE GROUND)
-  GUARD RAIL
-  TREE LINE



HWY RW LIMIT

400mm Ø 1/2 C.S.P. DRAIN PIPE  
(DOWNSLOPE SECTIONS SHINGLED  
UNDER UPSLOPE SECTIONS)

SPLASH PAD

SUBDRAIN EXTENDED AT ~1% GRADIENT FROM  
BOTTOM OF WALER, DAYLIGHTING ON SPLASH PAD

1/2 C.S.P. DRAIN PIPE CAST INSIDE  
END WALL OF CONCRETE GUTTER

90° ELBOW FOR SUBDRAIN

CONCRETE GUTTER  
CONCRETE WALER OVER PILE WALL

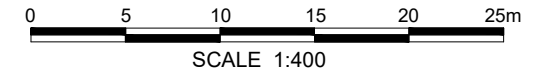
PN14-4

SI-P32

SI-P23

SI-P14

SW 7 94-22-5



BASE PLAN PROVIDED BY WSP



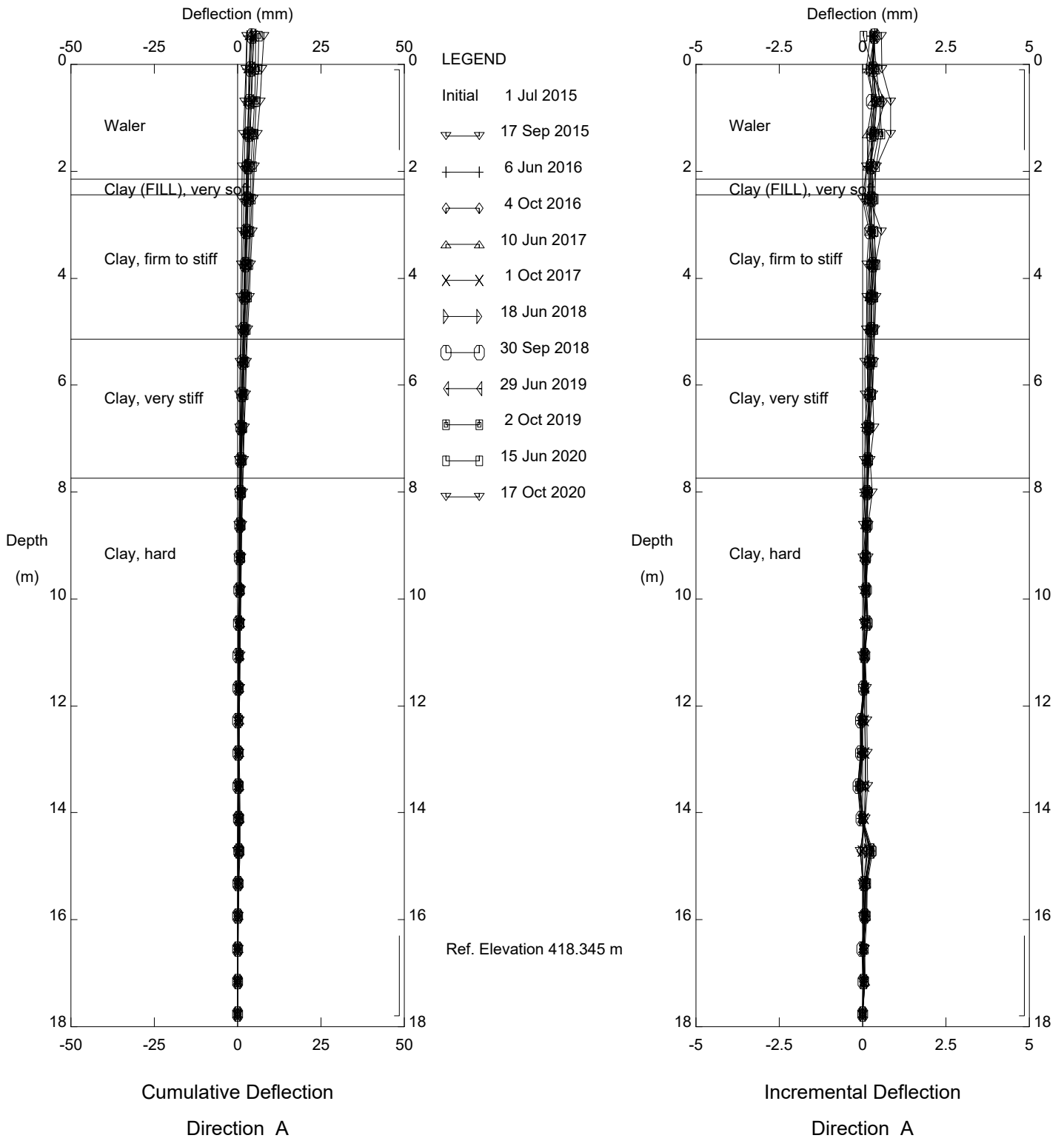
PEACE REGION (PEACE RIVER / HIGH LEVEL)

PH005-1: HWY 35:08 (km 25.5) - MEIKLE RIVER SLIDE  
INSTRUMENTATION LOCATIONS

DWG No. 13351-PH005-1-1

DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	1:400
LAST UPDATED	JULY 2018
FILE No.	13351



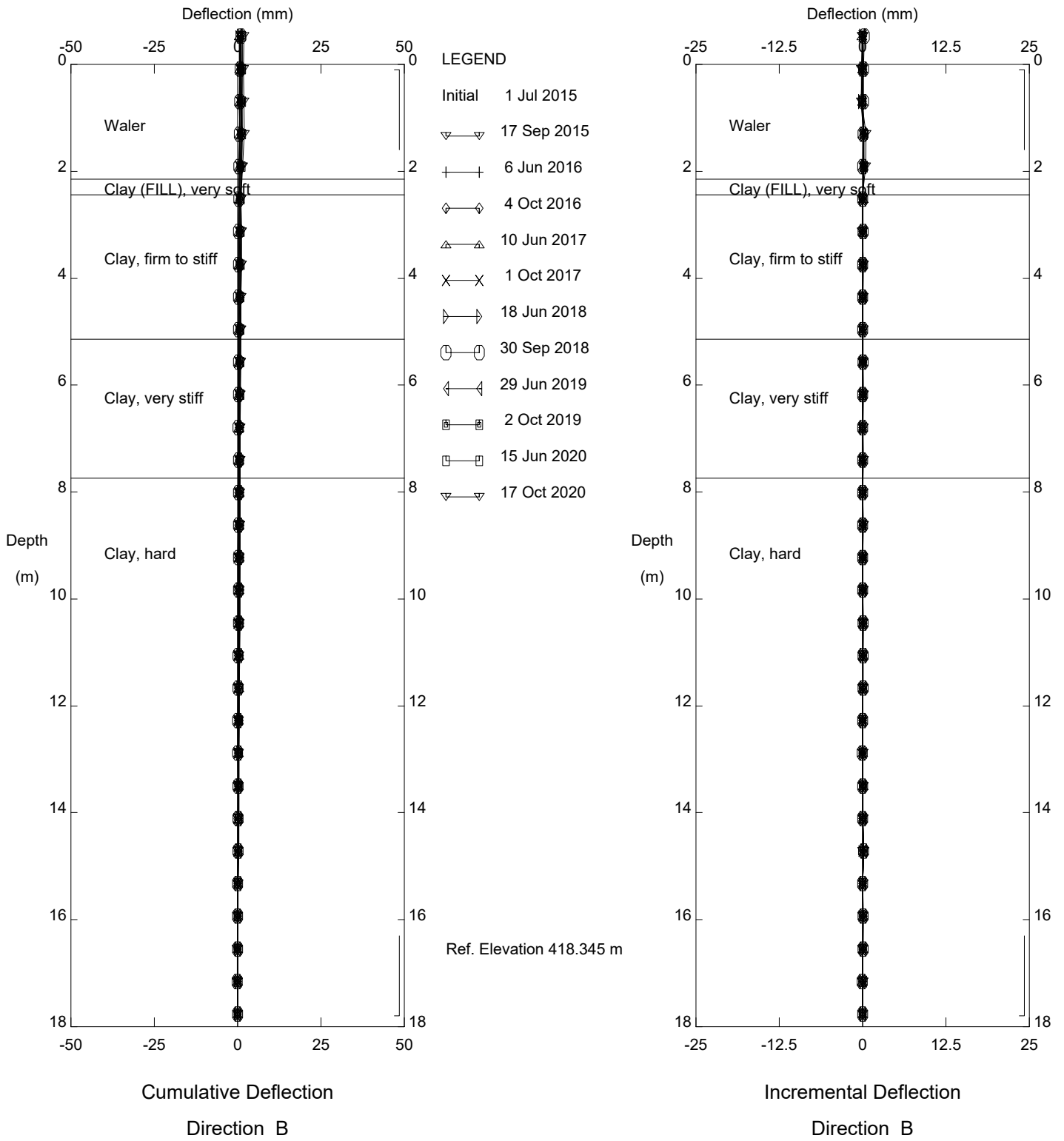


HWY 35:08 Meikle River, Inclinometer SI-P14

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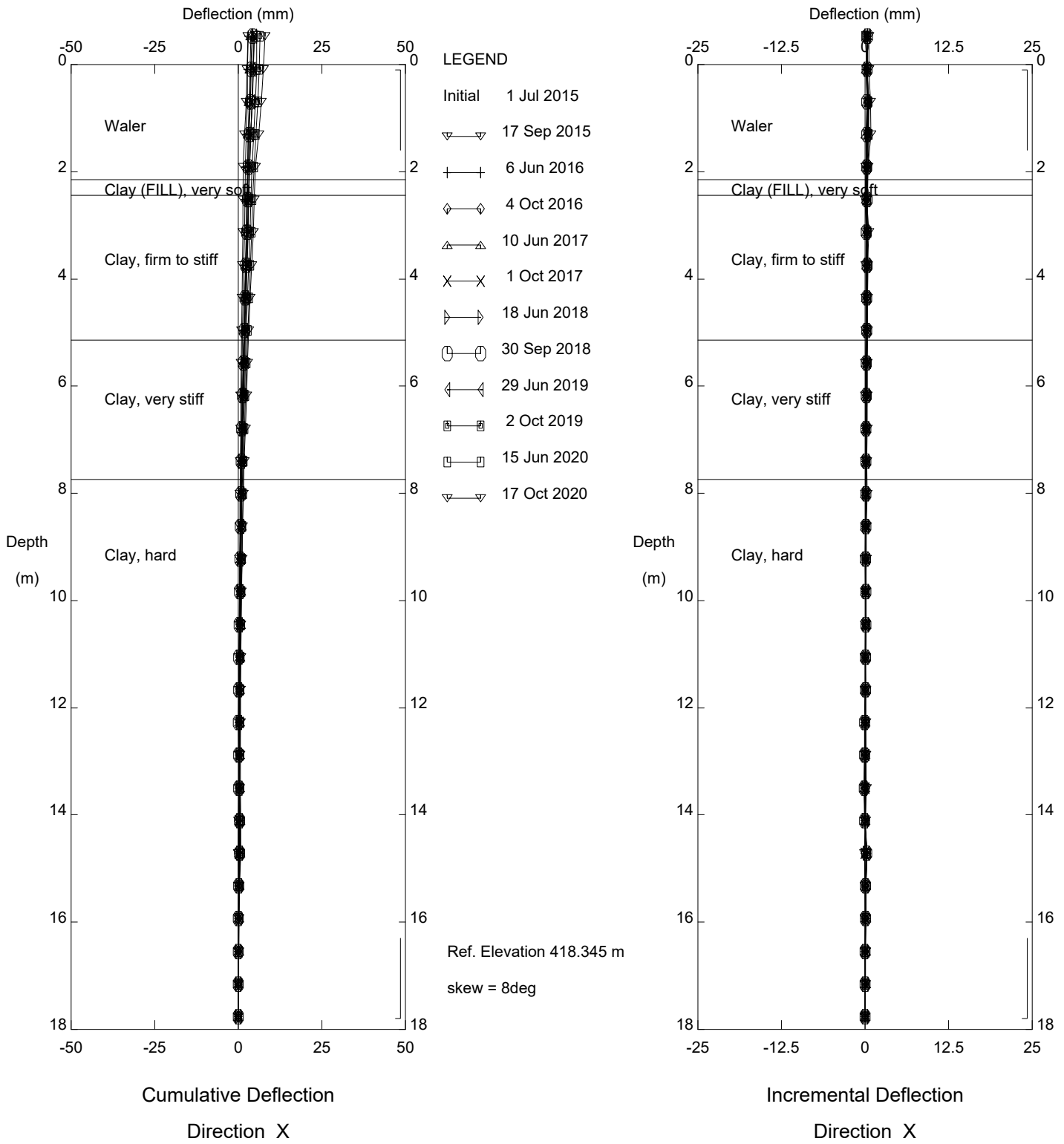
Thurber Engineering Ltd.



HWY 35:08 Meikle River, Inclinometer SI-P14

Alberta Transportation

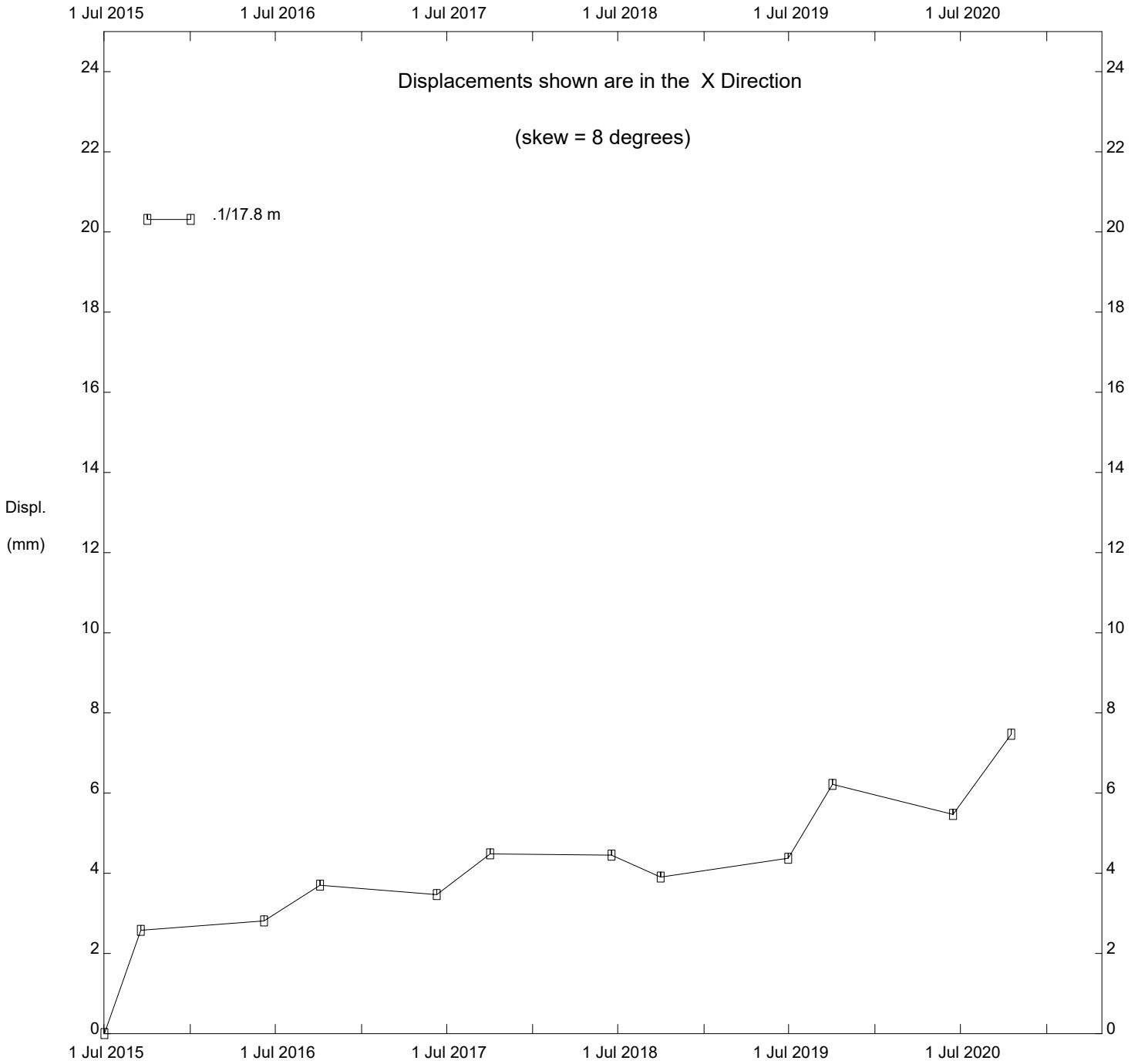
Thurber Engineering Ltd.



HWY 35:08 Meikle River, Inclinometer SI-P14

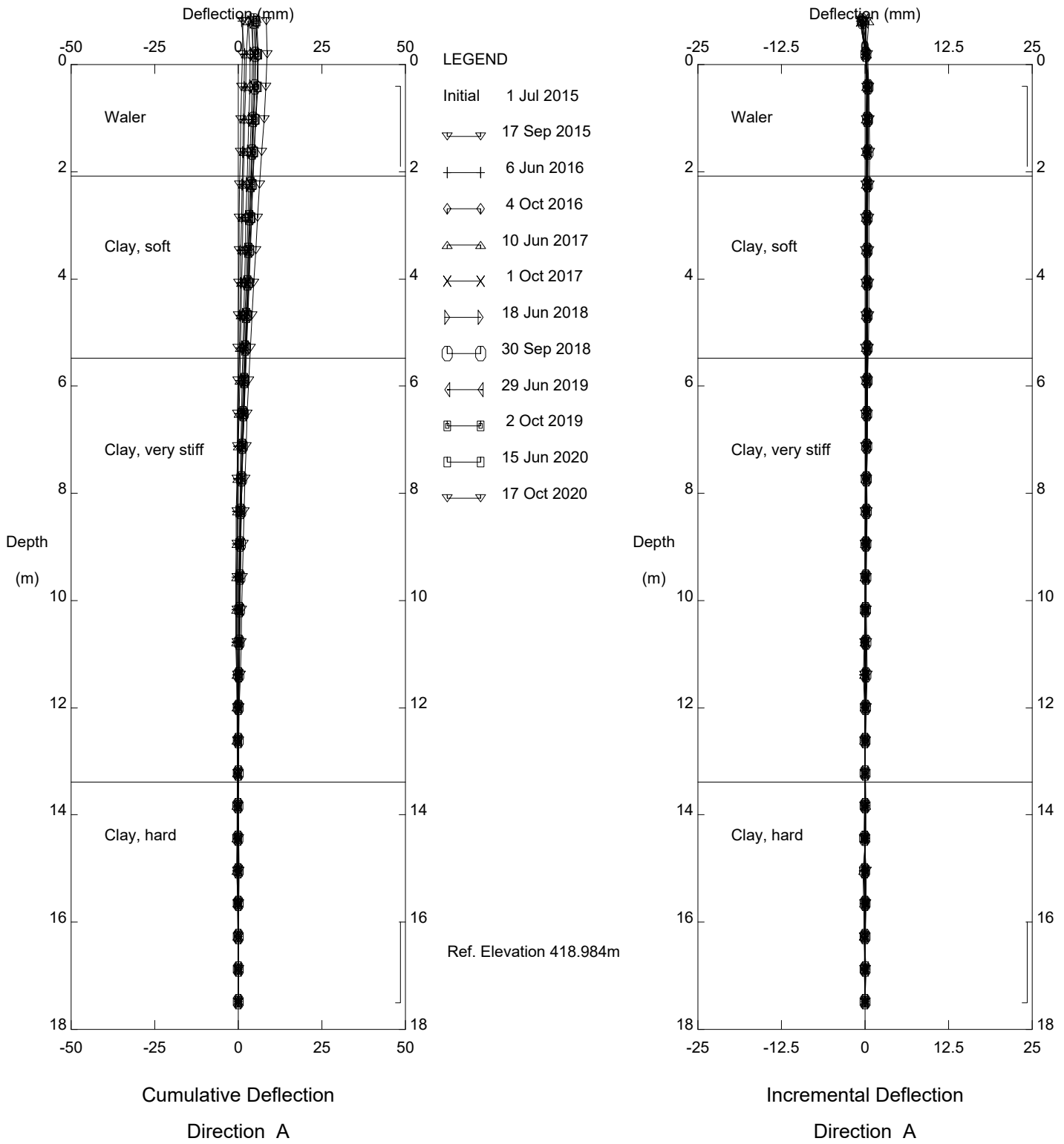
Alberta Transportation

Thurber Engineering Ltd.



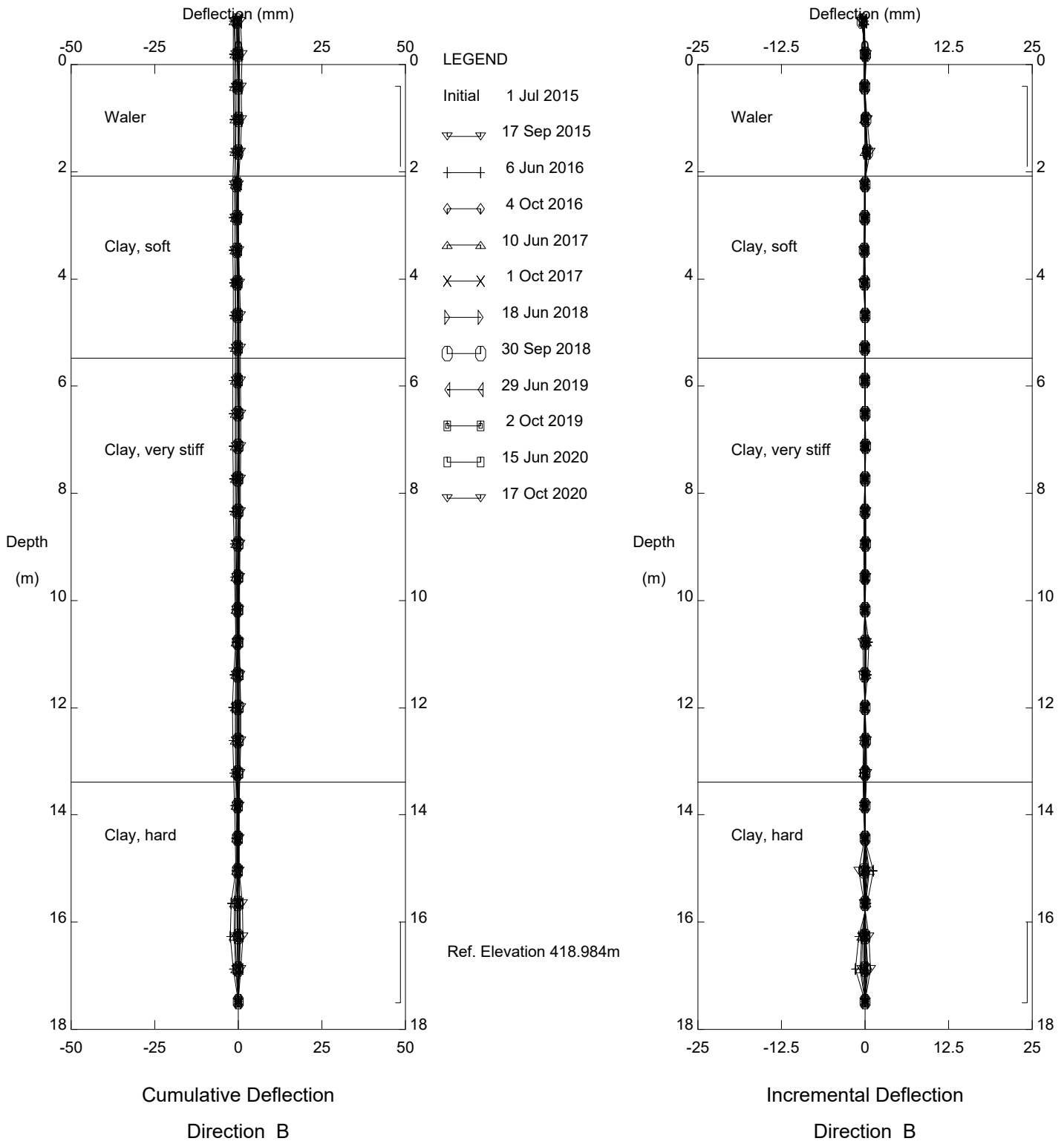
HWY 35:08 Meikle River, Inclinator SI-P14

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HWY 35:08 Meikle River, Inclinator SI-P23

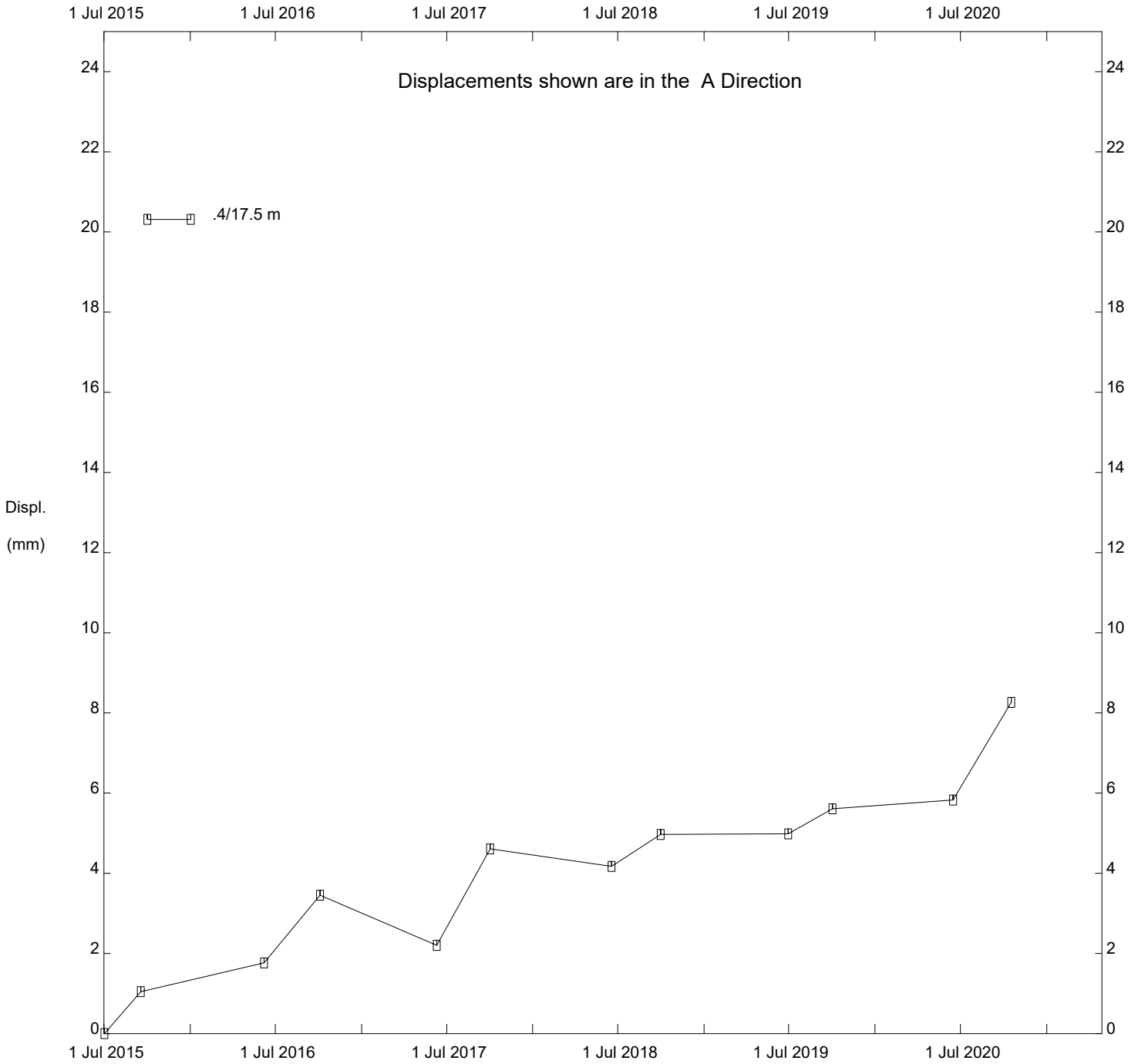
Alberta Transportation



HWY 35:08 Meikle River, Inclinator SI-P23

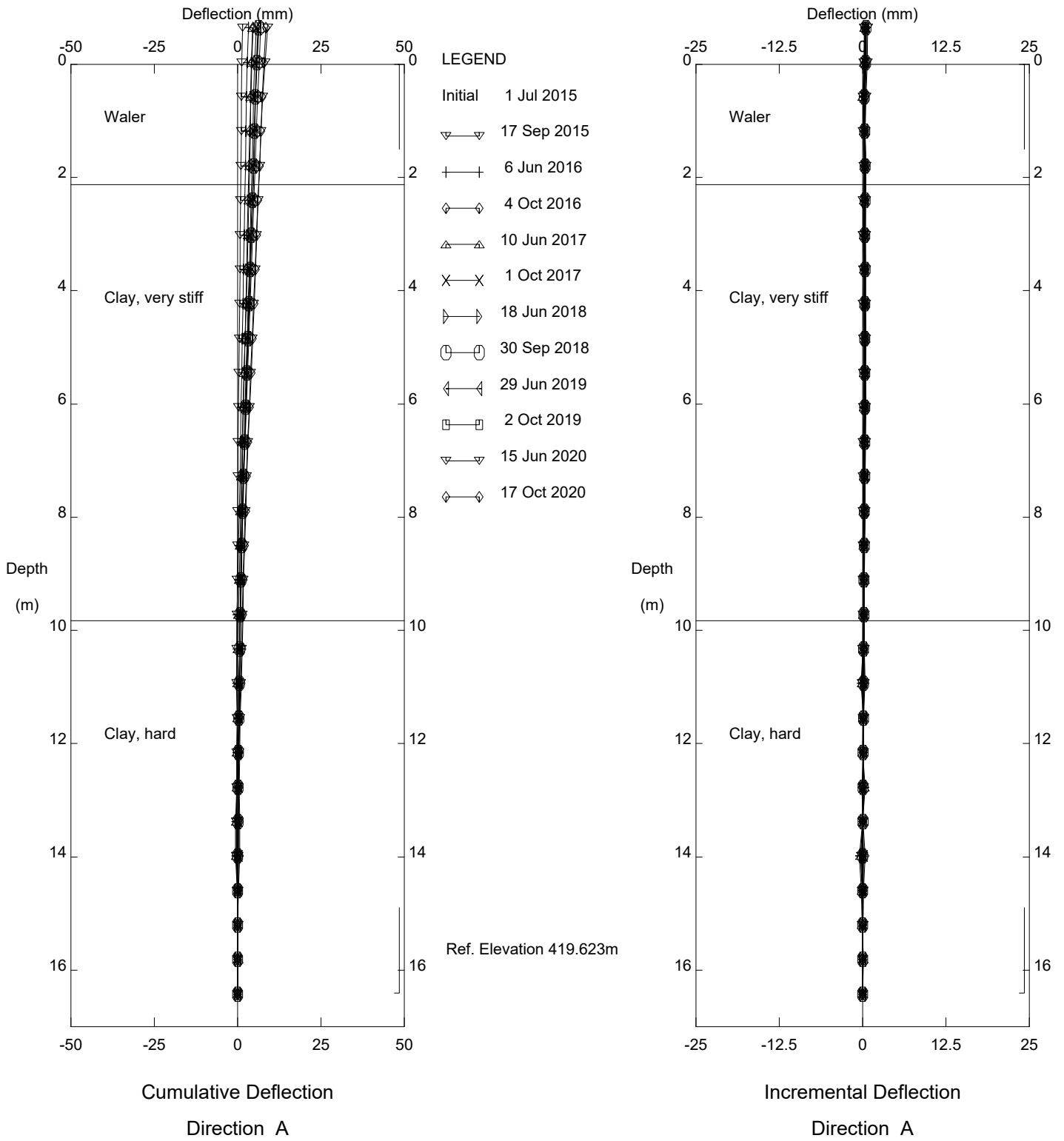
Alberta Transportation

Thurber Engineering Ltd.



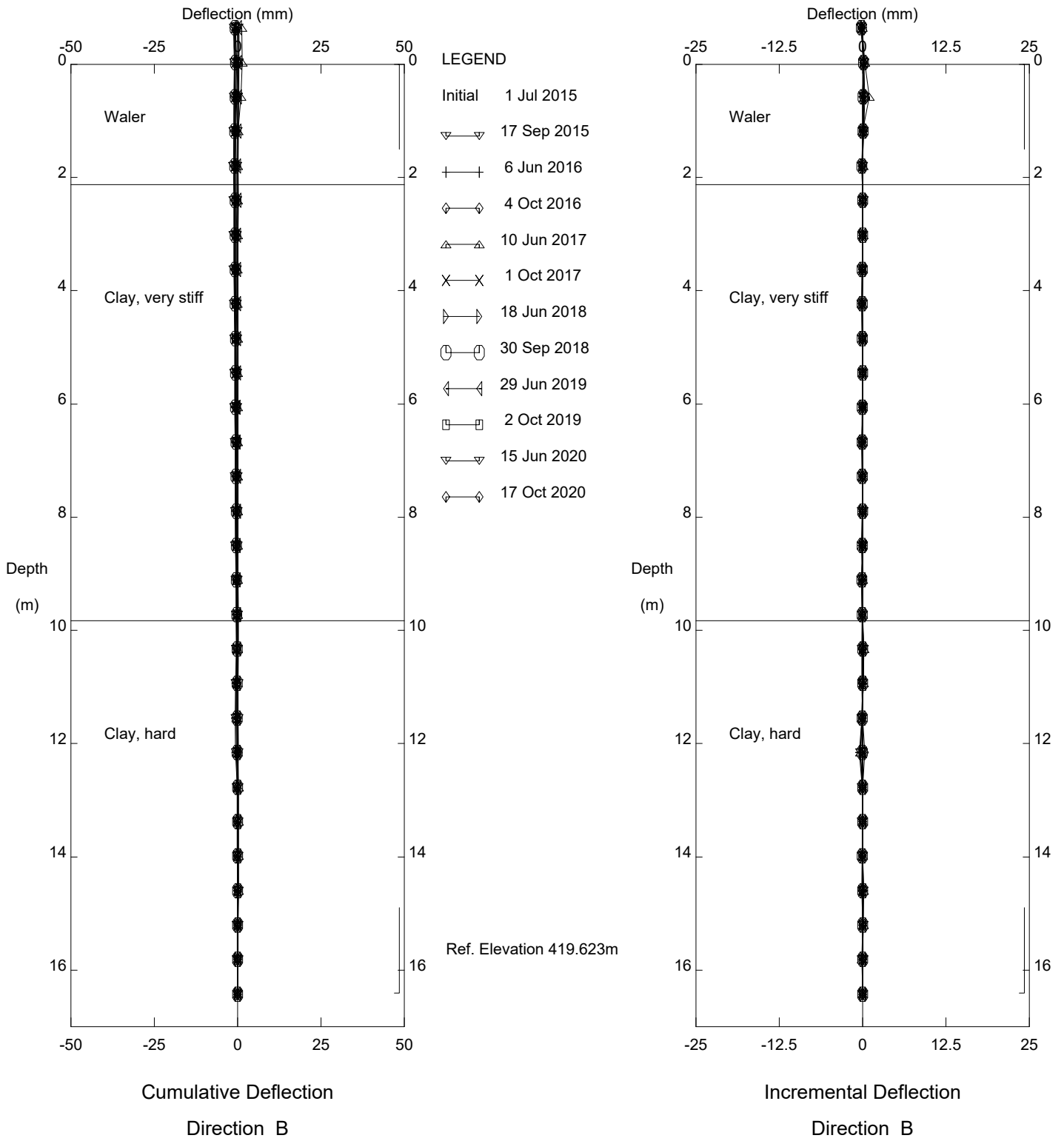
HWY 35:08 Meikle River, Inclinator SI-P23

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HWY 35:08 Meikle River, Inclinometer SI-P32

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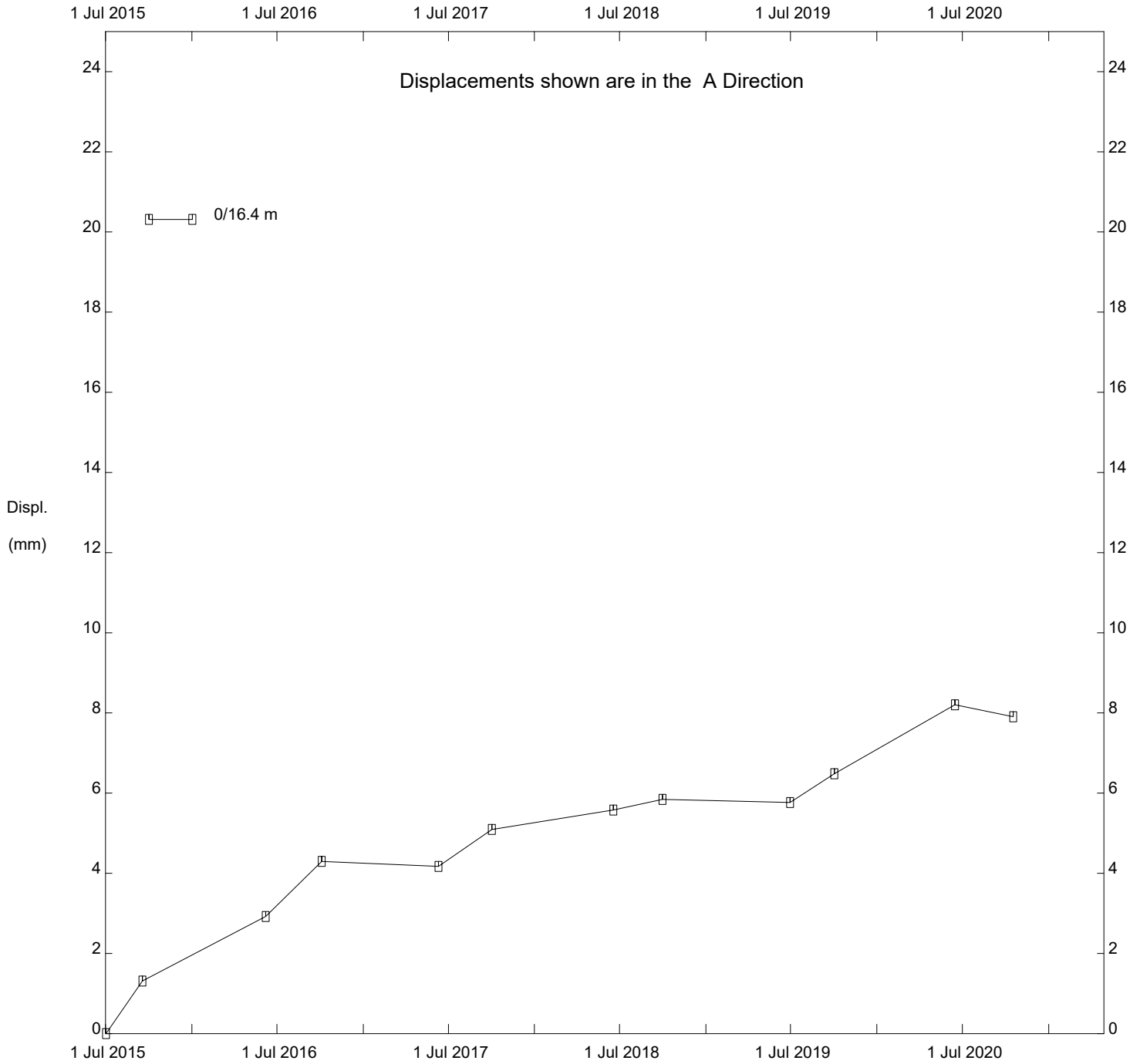


HWY 35:08 Meikle River, Inclinator SI-P32

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HWY 35:08 Meikle River, Inclinator SI-P32

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**FIGURE PH005-1-1**  
**PIEZOMETER DATA FOR HWY 35:08 (PH005-1) MEIKLE RIVER LANDSLIDE**

