



**THURBER** ENGINEERING LTD.

September 22, 2021

File No.: 32121

Alberta Transportation  
Provincial Building  
9621-96 Avenue  
Peace River, Alberta  
T8S 1T4

Attention: Mr. Ed Szmata

**ALBERTA TRANSPORTATION GRMP (CON0022164)  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING RESULTS – SPRING 2021**

**SECTION C**

**SITE PH033-1: HWY 744:04, JUDAH HILL (CNR SLIDE)  
SITE PH033-2: HWY 744:04, JUDAH HILL (TRUNK SLIDE)**

Dear Mr. Szmata:

This report provides the results of the bi-annual geotechnical instrumentation monitoring for the above-mentioned site as part of Alberta Transportation's Geohazard Risk Management Program for Peace Region – Peace River District (CON0022164).

It is a condition of this letter report that Thurber's performance of its professional services will be subject to the attached Statement of Limitations and Conditions.

**1. FIELD PROGRAM AND INSTRUMENTATION STATUS**

Two slope inclinometers (SI10-16 and SI10-17) and one pneumatic piezometer (PN10-16) were monitored at the Hwy 744:04 Judah Hill CNR Slide (PH033-1) site on July 11, 2021 by Mr. Niraj Regmi, G.I.T. and Mr. Long Le, both of Thurber Engineering Ltd.

Four slope inclinometers (SI98-6i, SI98-7i, SI10-10 and SI10-11) and four pneumatic piezometers (PN98-6, PN10-10, and PN10-11) were also monitored at the Hwy 744:04 Judah Hill Trunk Slide (PH033-2) site on July 11, 2021 by Mr. Niraj Regmi, G.I.T. and Mr. Long Le, of Thurber Engineering Ltd. Pneumatic piezometer PN98-7a was found to have been damaged at the top since the fall of 2020 readings and no reading could be obtained.

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 casings. The pneumatic piezometers were read using an RST C108 pneumatic piezometer readout.



## **2. DATA PRESENTATION**

### **2.1 General**

SI plots for A and B directions are included in Appendix A. Where movement has been recorded the resultant plot (X direction, if applicable) and rate of movement have also been provided. Piezometer and load cell reading plots are also included in Appendix A.

Slope inclinometer and piezometer reading summary tables are provided below. These tables also include instruments deleted from the GRMP program, for reference.

### **2.2 Zones of Movement**

Zones of new movement were not observed in the SIs since the previous readings in the fall of 2020.

Zones of movements are summarized in Tables PH033-1-1 and PH033-2-1 below. Tables PH032-1-1 and PH032-2-1 also provides a historical account of the total movement, the depth of movement and the maximum rate of movement that has occurred in the SIs since initialization.



**TABLE PH033-1-1  
 SPRING 2021 – HWY 744:04 JUDAH HILL CNR SLIDE  
 SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: July 11, 2021

<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>RATE OF MOVEMENT (mm/yr)</b>	<b>CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)</b>
SI10-16	September 23, 2010	14.2 mm over 11.7 m to 13.5 m depth in 70° direction	3.4 mm/yr in June 2014	Operational	October 15, 2020	1.0	1.4	-1.7
SI10-17	March 5, 2010	12.1 mm over 9.5 m to 11.3 m depth in 68° direction	3.3 mm/yr in June 2014	Operational	October 15, 2020	1.8	2.4	2.6

Drawings 32121-PH033-1 and 32121-PH033-2 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



**TABLE PH033-1-2**  
**SPRING 2021 – HWY 744:04 JUDAH HILL CNR SLIDE**  
**PNEUMATIC PIEZOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: July 11, 2021

<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 WATER LEVEL BGS (m)</b>	<b>PREVIOUS WATER LEVEL BGS (m)</b>	<b>CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)</b>
PN10-16 (33086)	Feb. 27, 2010	14.6	N/A	Active	10.62 on May 22, 2015	29.8	11.59	11.23	-0.36
<i>PN10-17 (33081)</i>	<i>Feb 27, 2010</i>	<i>11.6</i>	<i>N/A</i>	<i>No return (DRY)</i>	<i>11.55 on June 10, 2012</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Drawings 32121-PH033-1 and 32121-PH033-2 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

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



**TABLE PH033-2-1  
 SPRING 2021 – HWY 744:04 JUDAH HILL TRUNK SLIDE  
 SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: July 11, 2021

<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>RATE OF MOVEMENT (mm/yr)</b>	<b>CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)</b>
SI98-1i	Oct. 26, 2000	Not Known	Not Known	Destroyed	May 18, 2004	N/A	N/A	N/A
SI98-6i	Oct. 26, 2000	31.1 mm over 0.4 m to 3.4 m depth in 316° direction	17.0 mm/yr in May 2007	Operational	October 15, 2020	4.9	6.6	1.5
		16.6 mm over 6.5 m to 8.9 m depth in 316° direction	9.3 mm/yr in September 2013			No discernible movement	N/A	0.6
		64.2 mm over 0.4 m to 9.5 m depth in 316° direction	22.6 mm/yr In May 2013			5.1	6.9	0.4
SI98-7i	May 10, 2001	7.8 mm over 3.3 m to 4.5 m depth in 241° direction	8.1 mm/yr in September 2013	Operational	October 15, 2020	0.4	0.5	2.3
SI10-10	March 27, 2010	38.4 mm over 1.0 m to 8.3 m depth in 326° direction	6.4 mm/yr in June 2019	Operational	October 15, 2020	1.8	2.4	-3.4
		9.2 mm over 5.2 m to 8.3 m depth in 326° direction	5.3 mm/yr in June 2011			No discernible movement	N/A	-2.7
SI10-11	March 2010	63.4 mm over 2.0 m to 5.0 m depth in 241° direction	11.9 mm/yr in October 2020	Operational	October 15, 2020	3.7	5.0	-6.9

Drawings 32121-PH033-1 and 32121-PH033-2 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



**TABLE PH033-2-2**  
**SPRING 2021 – HWY 744:04 JUDAH HILL TRUNK SLIDE**  
**PNEUMATIC PIEZOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: July 11, 2021

<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 WATER LEVEL BGS (m)</b>	<b>PREVIOUS WATER LEVEL BGS (m)</b>	<b>CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)</b>
PN98-6 (22830)	Oct. 26, 2000	9.8	N/A	Active	9.14 on October 1, 2019	6.2	9.17	9.15	-0.02
PN98-6a (22833)	Oct. 26, 2000	16.2	N/A	<i>Not Operational</i>	<i>14.86 on October 4, 2016</i>	<i>N/A</i>	<i>N/A</i>	<i>15.58</i>	<i>N/A</i>
PN98-7 (22838)	May 10, 2001	7.8	N/A	<i>Not Operational</i>	<i>6.74 on October 4, 2002</i>	<i>N/A</i>	<i>N/A</i>	<i>7.36</i>	<i>N/A</i>
PN98-7a (22831)	May 10, 2001	16.2	N/A	<i>Damaged</i>	<i>9.77 on May 22, 2015</i>	<i>52.8</i>	<i>10.82</i>	<i>10.82</i>	<i>-0.12</i>
PN10-10 (33088)	March 13, 2010	18.0	N/A	Active	17.67 on September 23, 2010	2.3	17.75	17.78	0.03
PN10-11 (33077)	March 26, 2010	18.3	N/A	Active	18.03 on September 23, 2010	1.3	18.16	18.15	-0.01

Drawings 32121-PH033-1 and 32121-PH033-2 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Notes:

PN - pneumatic piezometer.  
 BGS - below ground surface.



### **3. INTERPRETATION OF MONITORING RESULTS**

#### Judah Hill CNR Slide (PH033-1)

SI10-16 showed a rate of movement of 1.4 mm/yr over 11.7 m to 13.5 m depth since the fall of 2020 readings. SI10-17 showed a rate of movement of 2.4 mm/yr over 9.5 m to 11.3 m depth since the fall of 2020 readings.

Pneumatic piezometer PN10-16 showed a decrease in groundwater level of 0.36 m since the fall of 2020 readings. The pneumatic piezometer readings are summarized in Table PH033-1-2, and are plotted in Figure PH033-1 (by depth) in Appendix A.

#### Judah Hill Trunk Slide (PH033-2)

SI98-6i showed a rate of movement of 6.6 mm/yr over 0.4 m to 3.4 m depth, no discernible movement over 6.5 m to 8.9 m depth and a rate of movement of 6.9 mm/yr over 0.4 m to 9.5 m depth since the fall of 2020 readings. SI98-7i showed a rate of movement of 0.5 mm/yr over 3.3 m to 4.5 m since the fall of 2020 readings.

SI10-10 showed a rate of movement of 2.4 mm/yr over 1.0 m to 8.3 m depth and no discernible movement over 5.2 m to 8.3 m depth since the fall of 2020 readings. SI10-11 showed a rate of movement of 5.0 mm/yr over 2.0 m to 5.0 m depth since the fall of 2020 readings.

Pneumatic piezometers PN98-6 and PN10-11 showed decreases in ground water level of 0.02 m and 0.01 m, respectively, since the fall of 2020 readings. PN10-10 showed an increase in groundwater level of 0.03 m since the fall of 2020 readings. The piezometer readings are summarized in Table PH033-2-2, and are plotted in Figure PH033-2 (by depth) in Appendix A.

### **4. RECOMMENDATIONS**

#### **4.1 Future Work**

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

#### **4.2 Instrumentation Repairs**

Pneumatic piezometers PN98-7a should be repaired to enable future ground water readings. The current tip has been chewed off by an animal. To allow a repair, the pneumatic tubes will need to be excavated to an approximate depth of 1 ft to splice on a new pneumatic piezometer tip. It is also recommended to install a stickup protector over PN98-7a to reduce the potential for future damage to the instrument.



## 5. CLOSURE

We trust this report meets your requirements at present. If you have any questions, please contact the undersigned at your convenience.

Yours very truly,  
Thurber Engineering Ltd.  
Don Proudfoot, M.Eng., P. Eng.  
Principal | Senior Geotechnical Engineer

Bruce Nestor, P.Eng.  
Geotechnical Engineer  
/jf

### Attachments:

- Statement of Limitations and Conditions
- Appendix A
  - Field Inspector's report
  - Site Plan Showing Approximate Instrument Locations (Drawings No. 32121-PH033-1 and 32121-PH033-2)
  - SI Reading Plots
  - Figure PH033-1 (Judah Hill CNR Slide Pneumatic Piezometer Readings)
  - Figure PH033-2 (Judah Hill Trunk Slide Pneumatic Piezometer Readings)



## STATEMENT OF LIMITATIONS AND CONDITIONS

### 1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

### 2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

### 3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

### 4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THURBER'S WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS THURBER MAY EXPRESSLY APPROVE. Ownership in and copyright for the contents of the Report belong to Thurber. Any use which a third party makes of the Report, is the sole responsibility of such third party. Thurber accepts no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without Thurber's express written permission.

### 5. INTERPRETATION OF THE REPORT

- a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.
- b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
- c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.
- d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

### 6. RELEASE OF POLLUTANTS OR HAZARDOUS SUBSTANCES

Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability to the Client under any circumstances, for the escape, release or dispersal of pollutants or hazardous substances, unless such pollutants or hazardous substances have been specifically and accurately identified to Thurber by the Client prior to the commencement of Thurber's professional services.

### 7. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or others who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes but is not limited to decisions made to develop, purchase or sell land.



**ALBERTA TRANSPORTATION GRMP (CON0022164)  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING RESULTS**

**SPRING 2021**

**APPENDIX A  
DATA PRESENTATION**

**SITE PH033-1: HWY 744:04, JUDAH HILL (CNR SLIDE)  
SITE PH033-2: HWY 744:04, JUDAH HILL (TRUNK SLIDE)**

**ALBERTA TRANSPORTATION  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING FIELD SUMMARY (PH033)  
SPRING 2021**

<b>Location:</b> Trunk and CNR Slide - Judah Hill (HWY 744:04 C1 59.451)	<b>Readout:</b> RST PN C108 Unit 6
<b>File Number:</b> 32121	<b>Casing:</b> 2.75
<b>Probe:</b> RST Set 5R / 8R	<b>Temp:</b> 25
<b>Cable:</b> RST Set 5R / 8R	<b>Read by:</b> NKR / LL

**SLOPE INCLINOMETER (SI) READINGS**

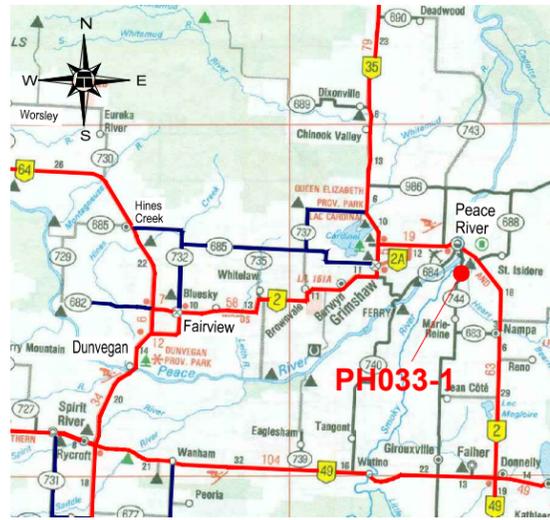
SI#	GPS Location (UTM 11)		Date	Stickup (m)	Depth from top of casing (ft)	Magn. North A+ Groove	Current Bottom Depth Readings				Probe/ Reel #	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-		
SI98-6i	482825.09	6230757.65	11-Jul-21	0.85	84 to 2	245	266	-289	-17	42	8R/8R	*See notes
SI98-7i	482795.09	6230746.64	11-Jul-21	0.40	66 to 2	225	486	-480	71	-71	8R/8R	*See notes
SI10-10	482874.96	6230715.49	11-Jul-21	1.17	106 to 4	300	290	-280	738	-750	5R/5R	
SI10-11	482851.63	6230772.35	11-Jul-21	0.75	102 to 4	255	-371	370	1010	-1028	5R/5R	
SI10-16	482662.27	6231329.62	11-Jul-21	0.84	64 to 4	11	100	-80	319	-317	5R/5R	
SI10-17	482673.49	6231342.93	11-Jul-21	1.17	60 to 4	5	1063	-1055	683	-672	5R/5R	

**PNEUMATIC PIEZOMETER READINGS**

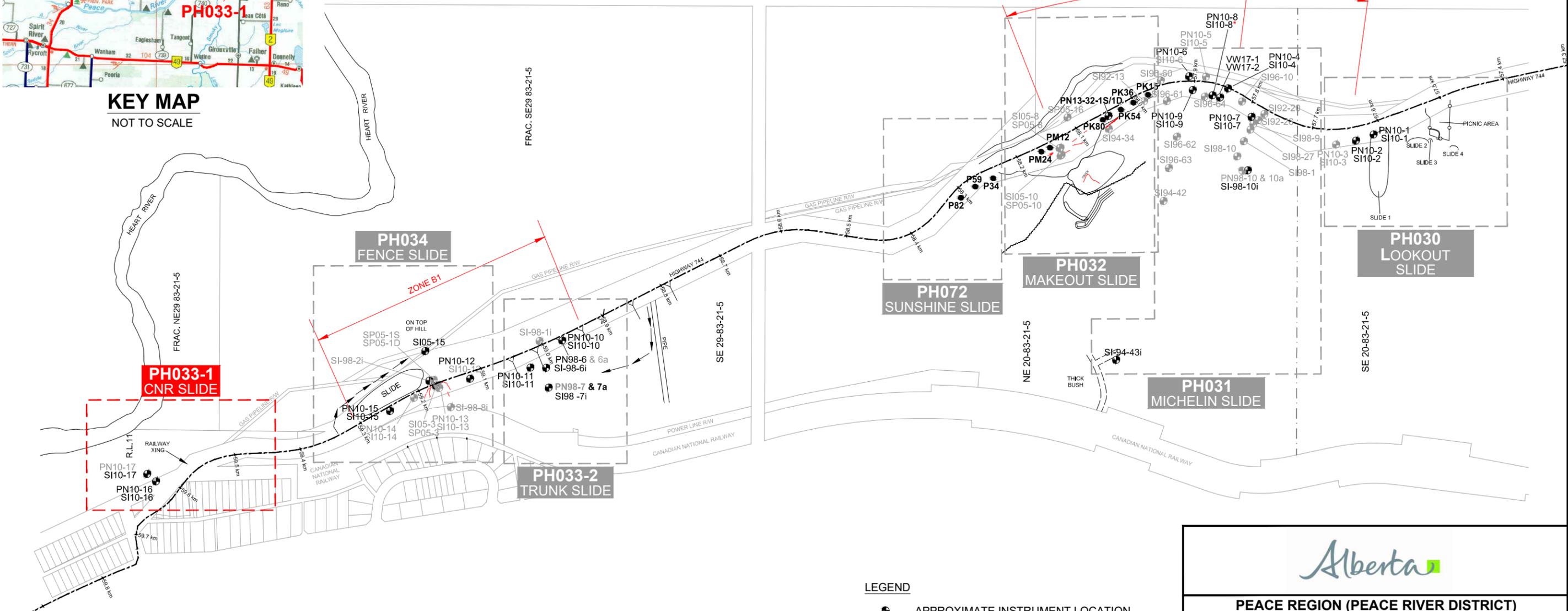
PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN98-6	482825.09	6230757.65	11-Jul-21	6.2	22830
PN98-7a	482795.09	6230746.64	11-Jul-21	52.8**	22831
PN10-10	482874.96	6230715.49	11-Jul-21	2.3	33088
PN10-11	482851.63	6230772.35	11-Jul-21	1.3	33077
PN10-16	482662.27	6231329.62	11-Jul-21	29.8	33086

**INSPECTOR REPORT**

* For SI98-6i & SI98-7i multiply readings by 2 to get the plot in Gtilt.
** PN top chewed by animal. Fix needed, have to dig down 1.0ft, splice and install PN top. No stickup protector on SI



**KEY MAP**  
NOT TO SCALE



- LEGEND**
- APPROXIMATE INSTRUMENT LOCATION
  - INSTRUMENT NOT IN USE
  - PN** PNEUMATIC PIEZOMETER
  - SP** STANDPIPE PIEZOMETER
  - SI** SLOPE INCLINOMETER
  - VW** VIBRATING WIRE PIEZOMETER
  - APPROXIMATE PILE LOCATION

**PEACE REGION (PEACE RIVER DISTRICT)**

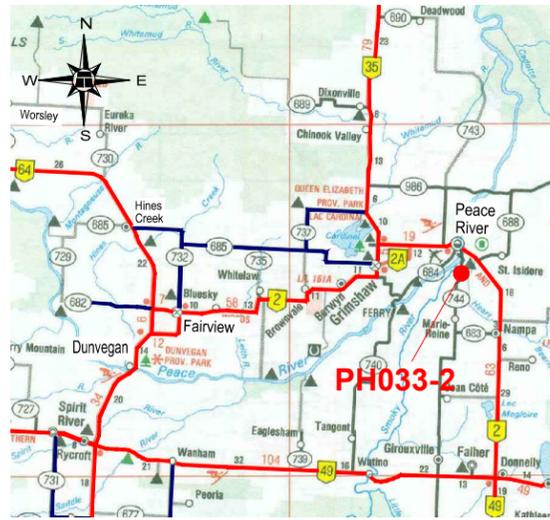
**PH033-1: HWY 744:02 - JUDAH HILL (CNR SLIDE)**

**INSTRUMENT LOCATIONS**

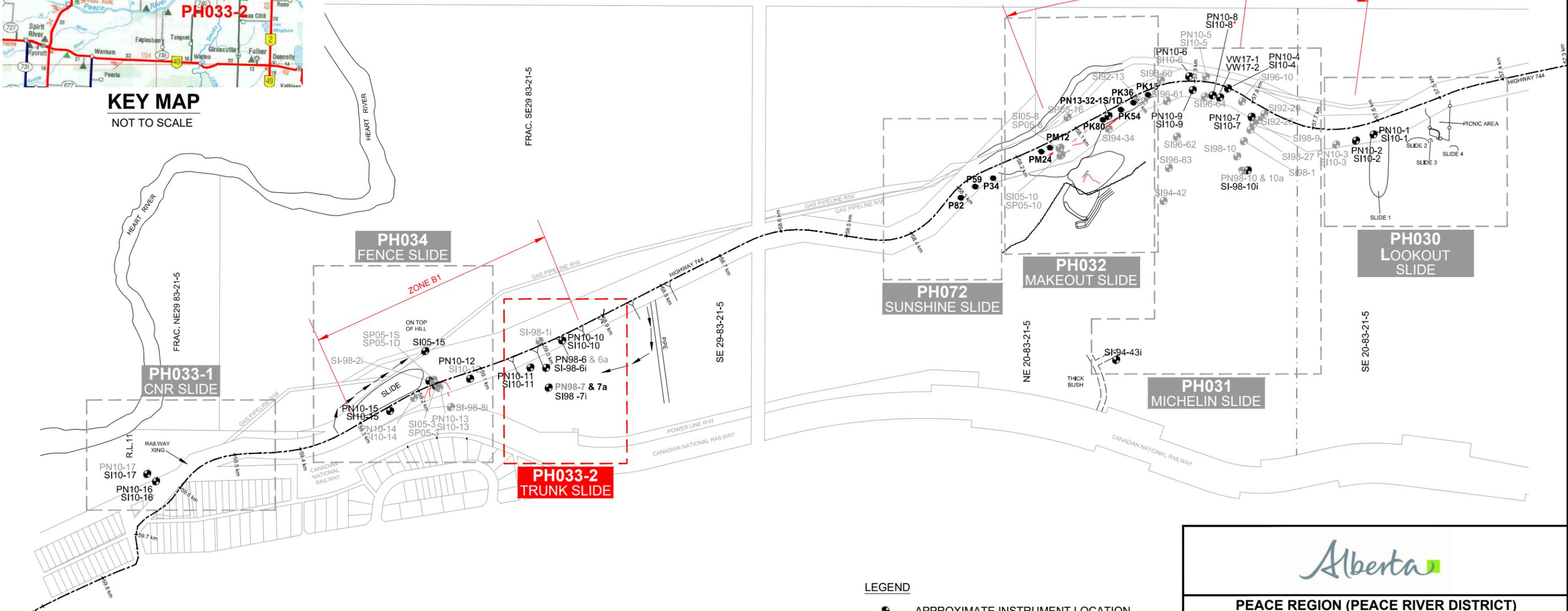
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DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	APPROX. 1:6000
DATE	SEPTEMBER 2021
FILE No.	32121

**THURBER ENGINEERING LTD.**



**KEY MAP**  
NOT TO SCALE



- LEGEND**
- APPROXIMATE INSTRUMENT LOCATION
  - INSTRUMENT NOT IN USE
  - PN PNEUMATIC PIEZOMETER
  - SP STANDPIPE PIEZOMETER
  - SI SLOPE INCLINOMETER
  - VW VIBRATING WIRE PIEZOMETER
  - APPROXIMATE PILE LOCATION



**PEACE REGION (PEACE RIVER DISTRICT)**

**PH033-2: HWY 744:02 - JUDAH HILL  
(TRUNK SLIDE)  
INSTRUMENT LOCATIONS**

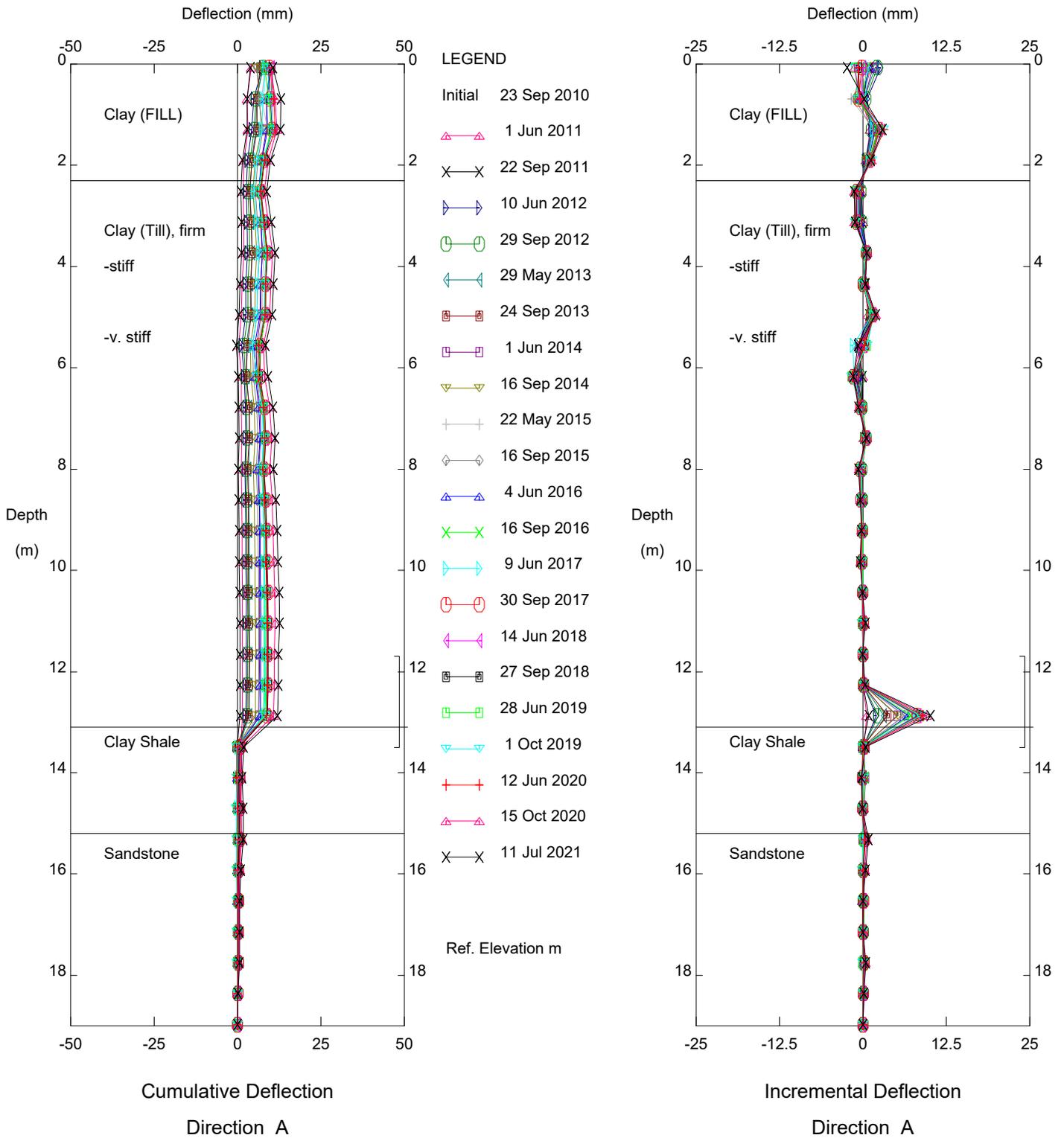
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FILE No.	32121



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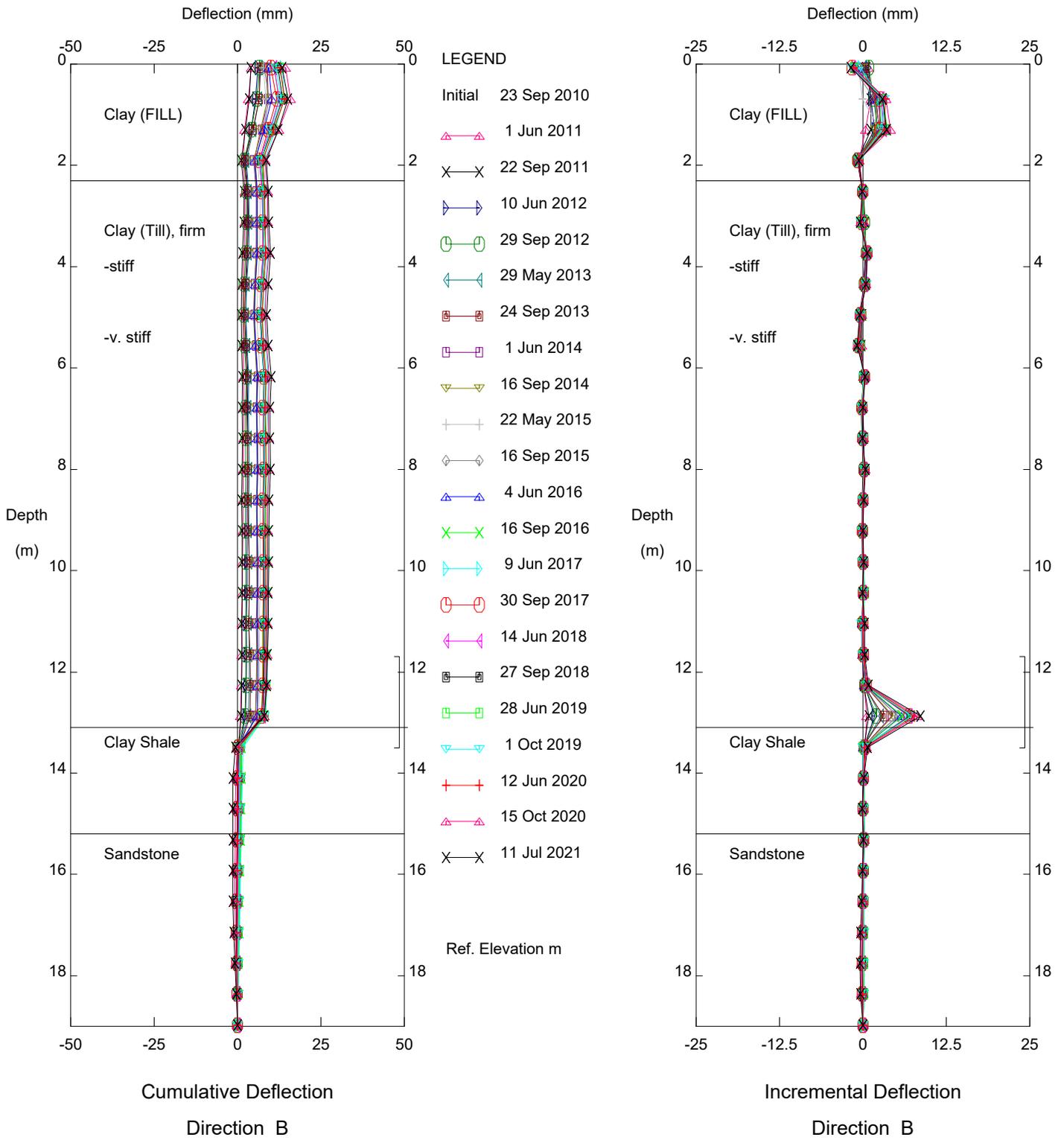
Thurber Engineering Ltd.



PH033-1 Judah Hill Trunk & CNR, Inclinometer SI10-16

Alberta Transportation

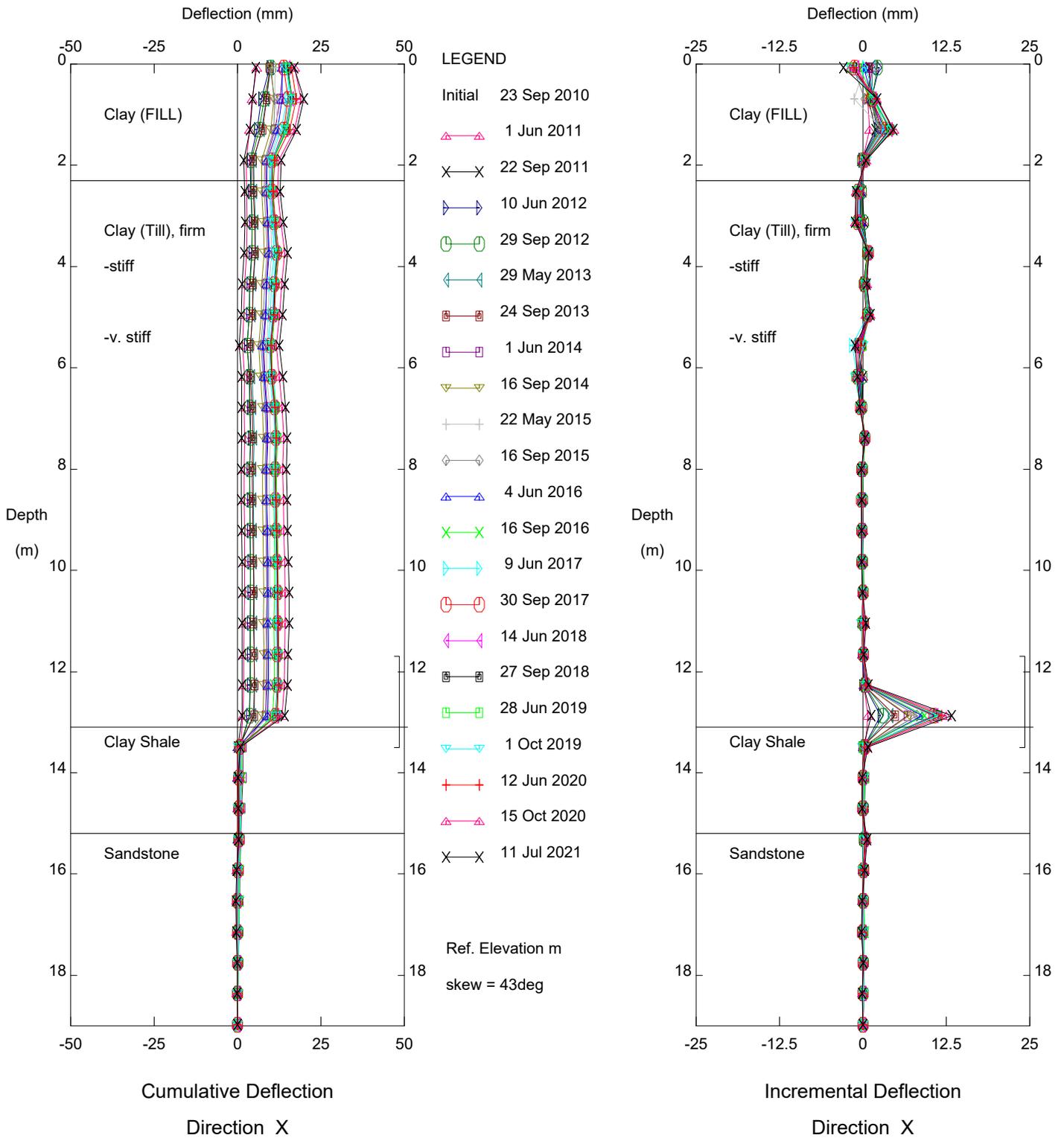
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PH033-1 Judah Hill Trunk & CNR, Inclinometer SI10-16

Alberta Transportation

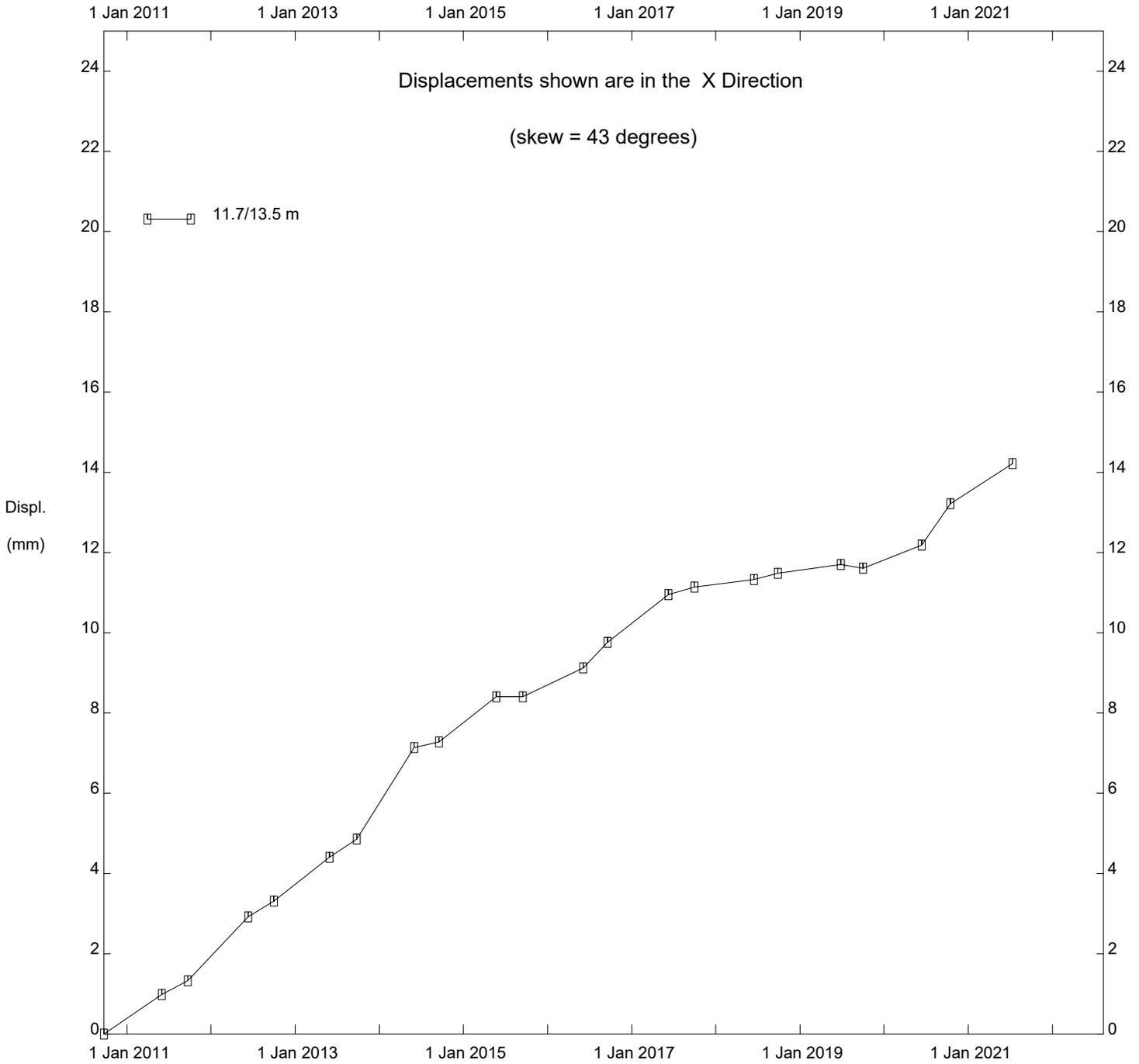
Thurber Engineering Ltd.



PH033-1 Judah Hill Trunk & CNR, Inclinometer SI10-16

Alberta Transportation

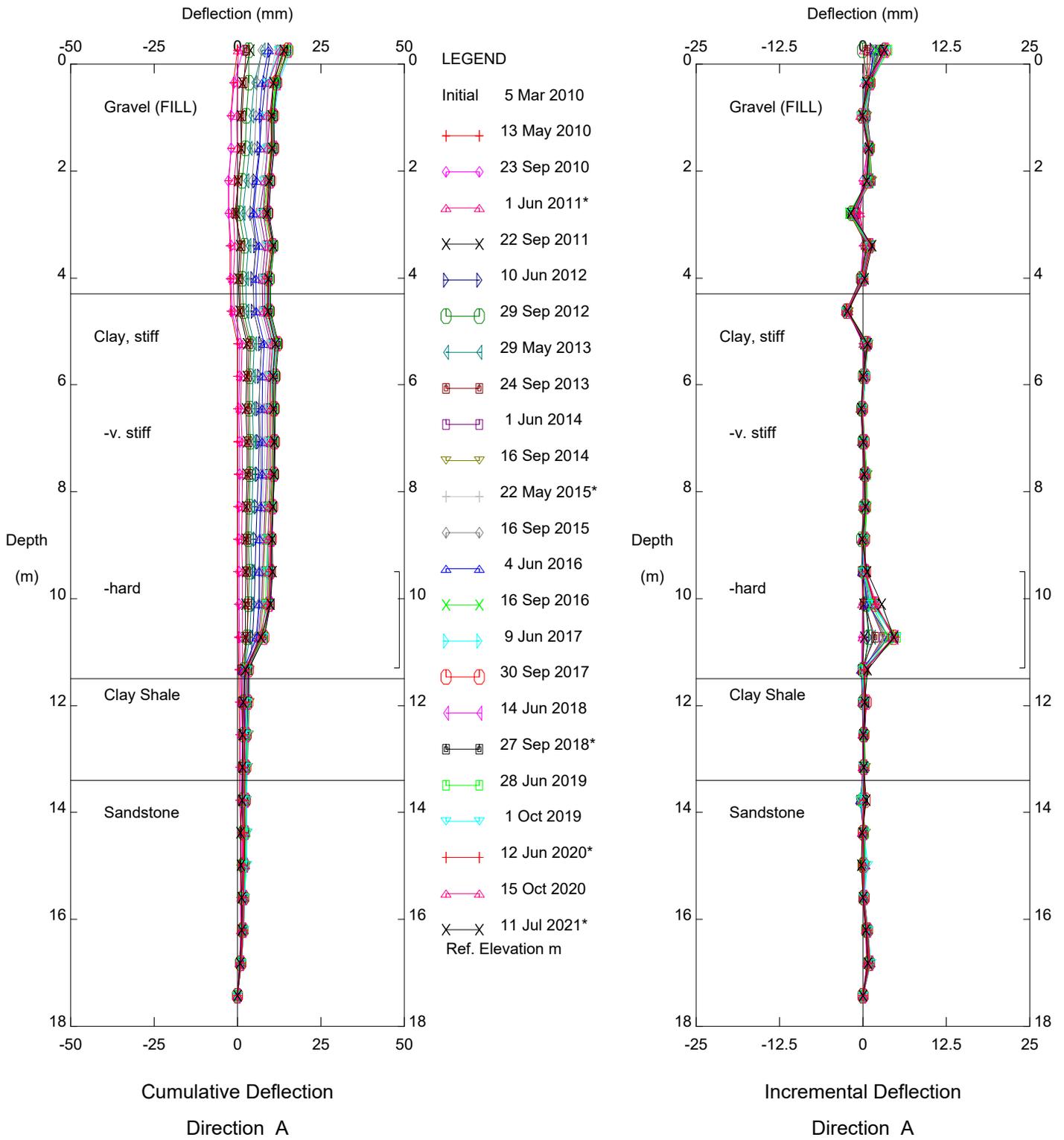
Thurber Engineering Ltd.



PH033-1 Judah Hill Trunk & CNR, Inclinator SI10-16

Alberta Transportation

Thurber Engineering Ltd.

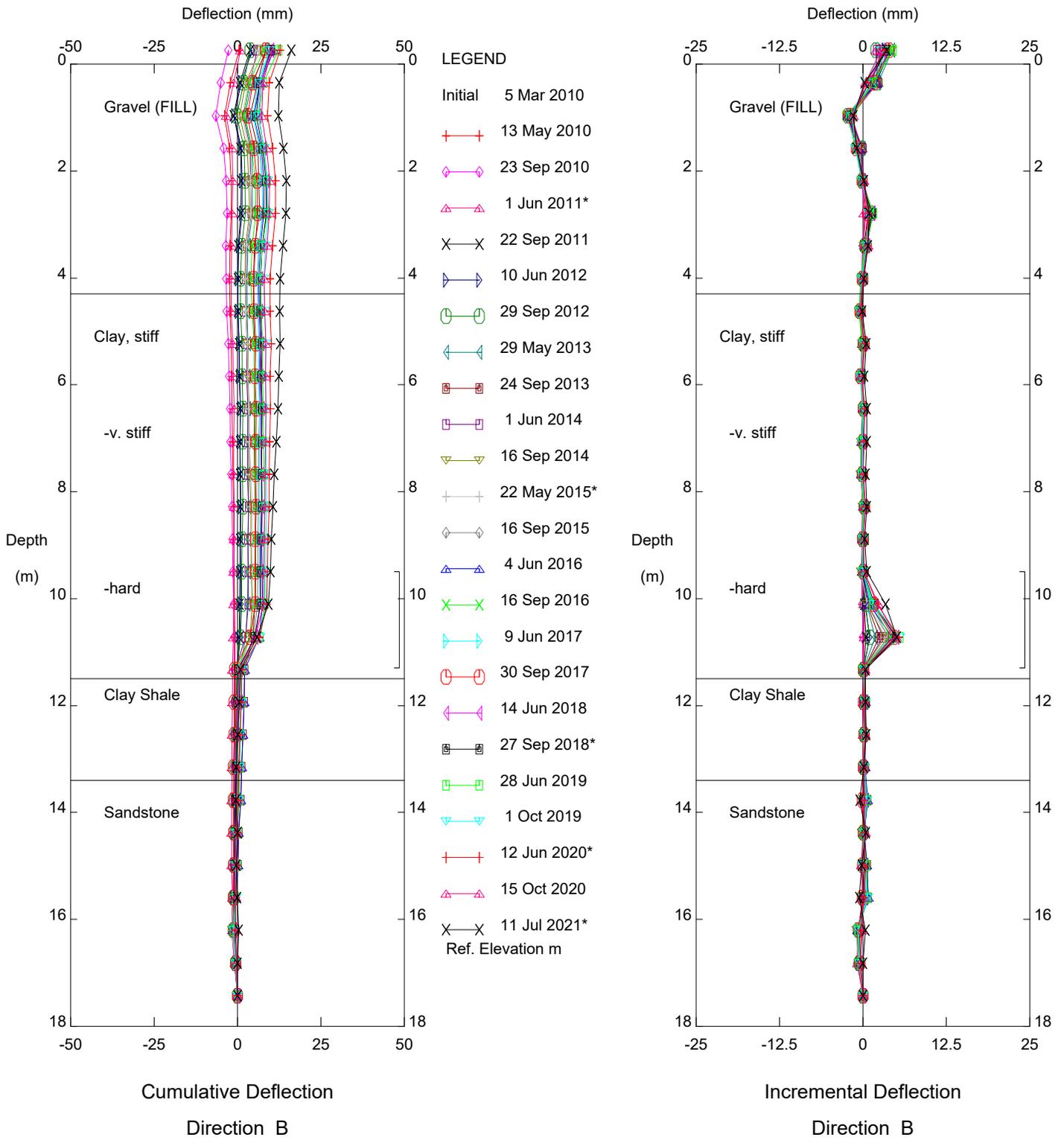


PH033-1 Judah Hill Trunk & CNR, Inclinometer SI10-17

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Sets marked \* include zero shift and/or rotation corrections.

Thurber Engineering Ltd.

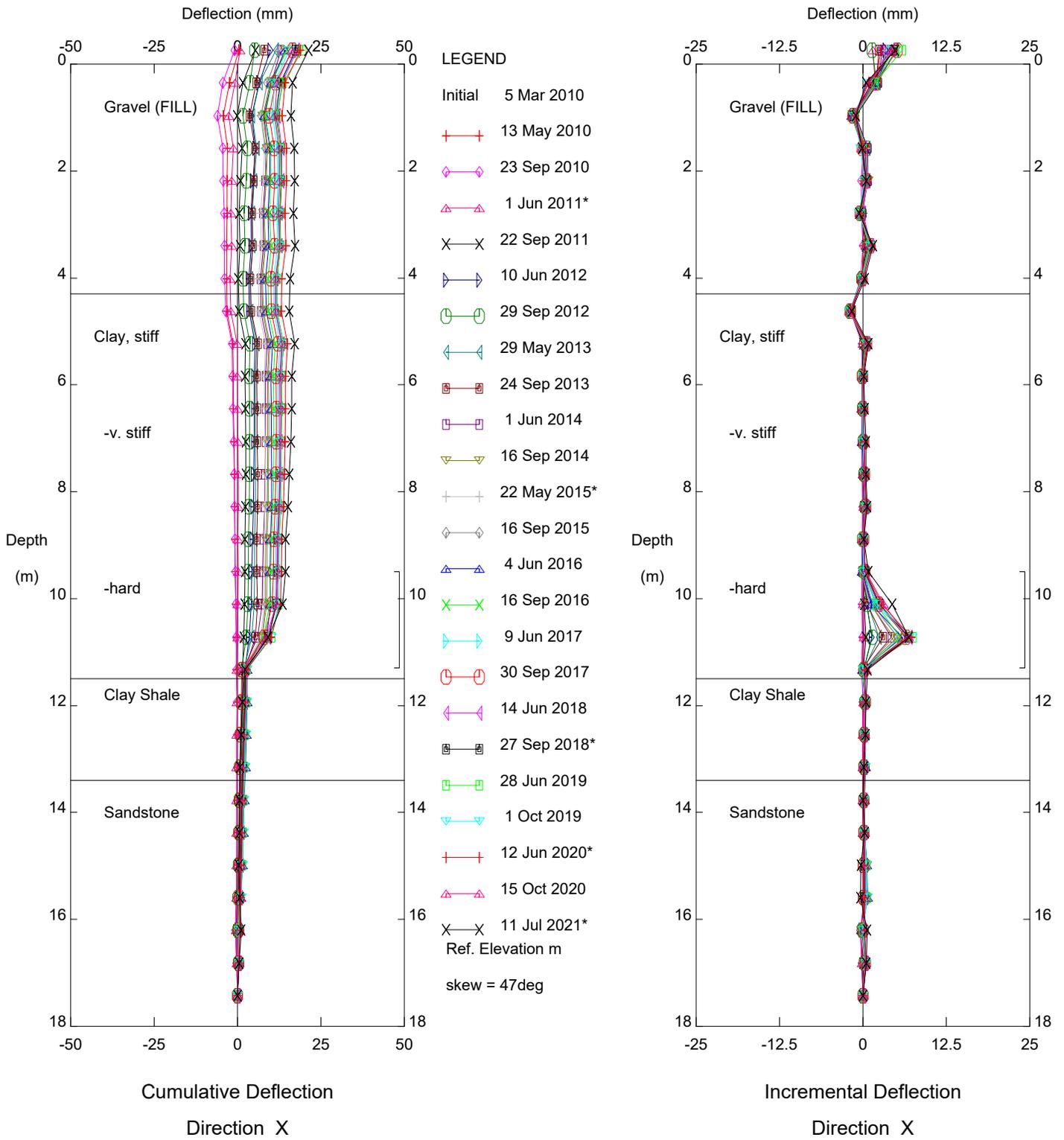


PH033-1 Judah Hill Trunk & CNR, Inclinometer SI10-17

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Sets marked \* include zero shift and/or rotation corrections.

Thurber Engineering Ltd.

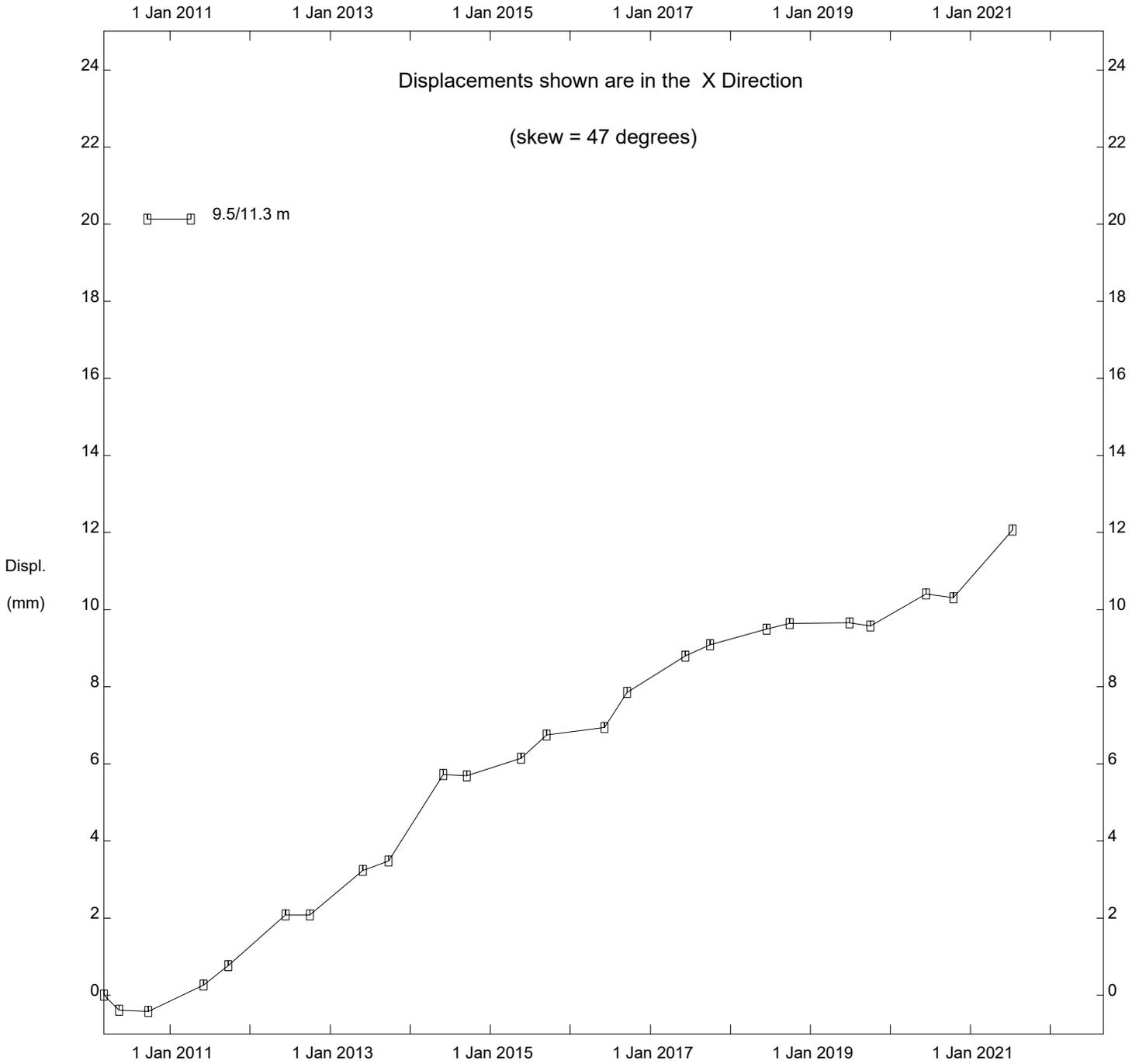


PH033-1 Judah Hill Trunk & CNR, Inclinometer SI10-17

Alberta Transportation

Sets marked \* include zero shift and/or rotation corrections.

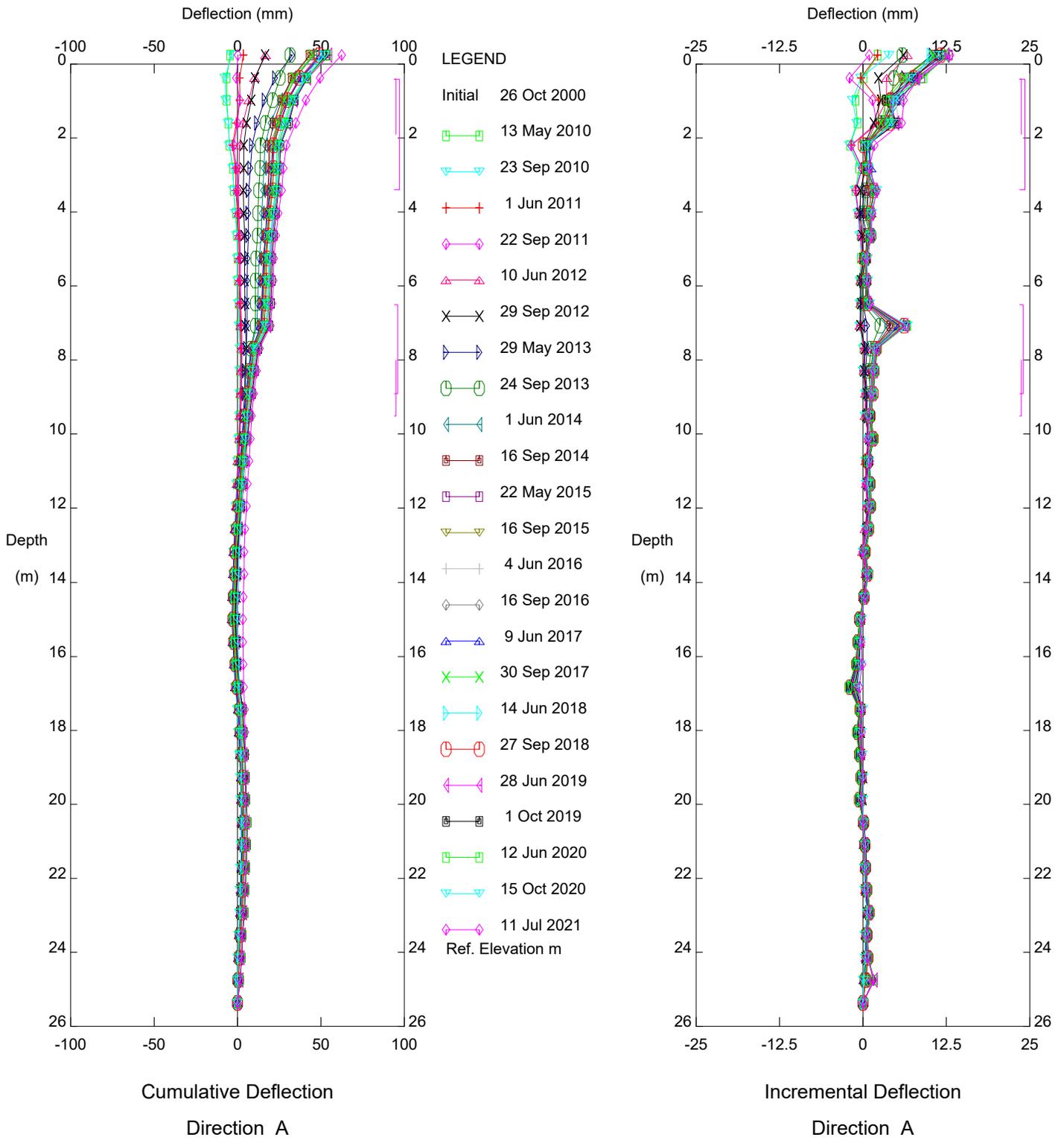
Thurber Engineering Ltd.



PH033-1 Judah Hill Trunk & CNR, Inclinator SI10-17

Alberta Transportation

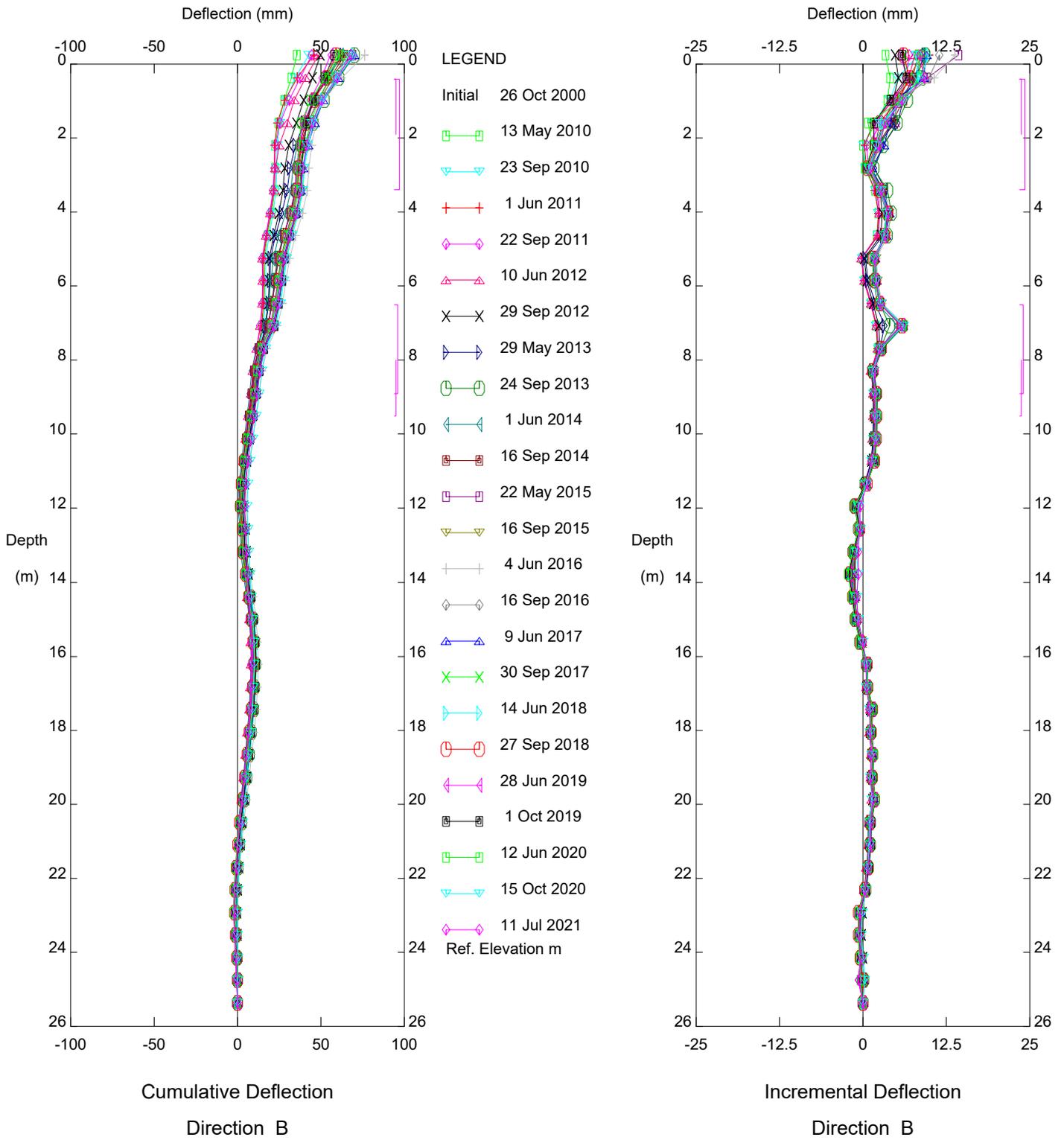
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HWY 744:04 - STA. 59+000, Inclinometer SI98-6i

Alberta Transportation

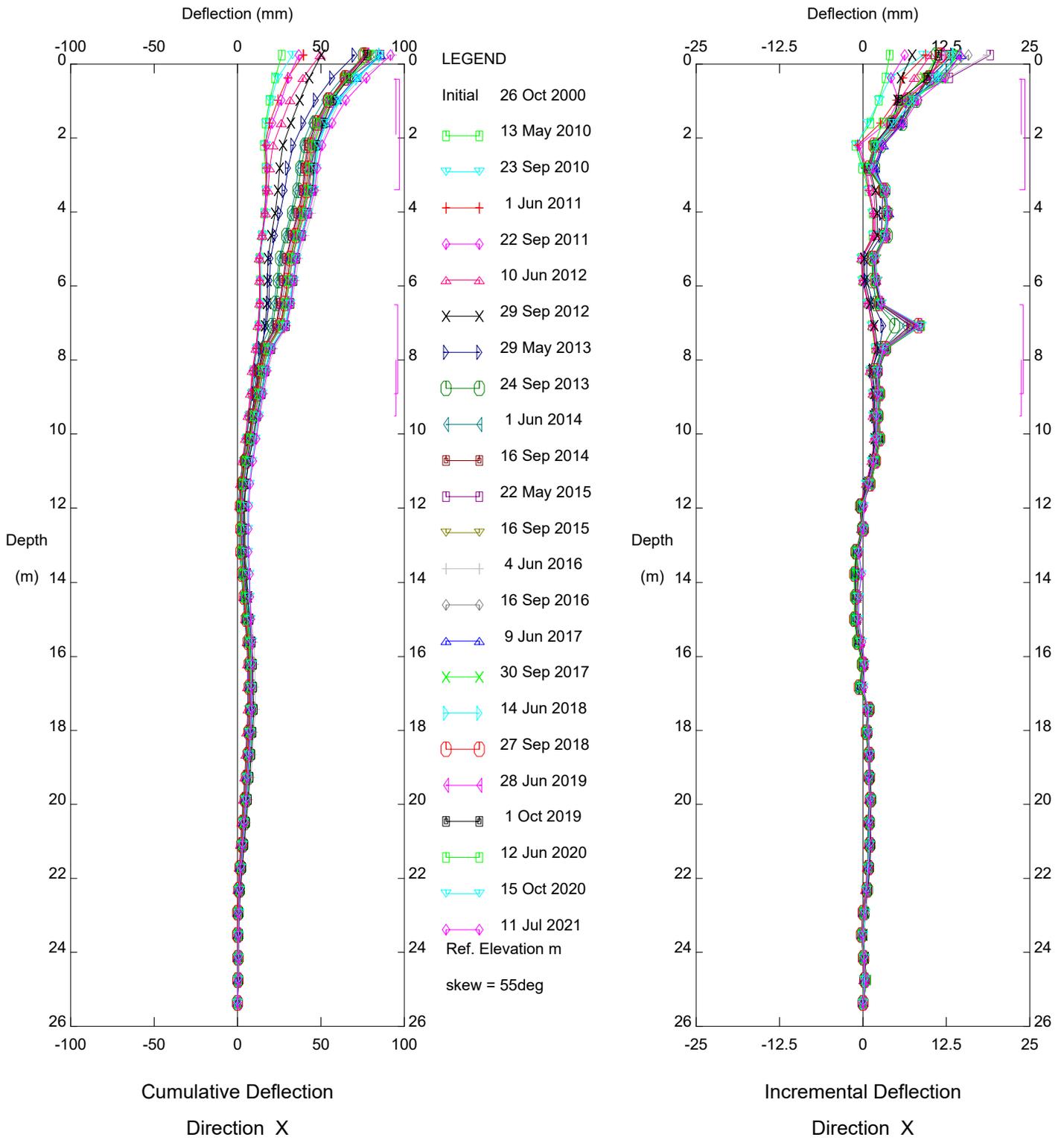
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HWY 744:04 - STA. 59+000, Inclinometer SI98-6i

Alberta Transportation

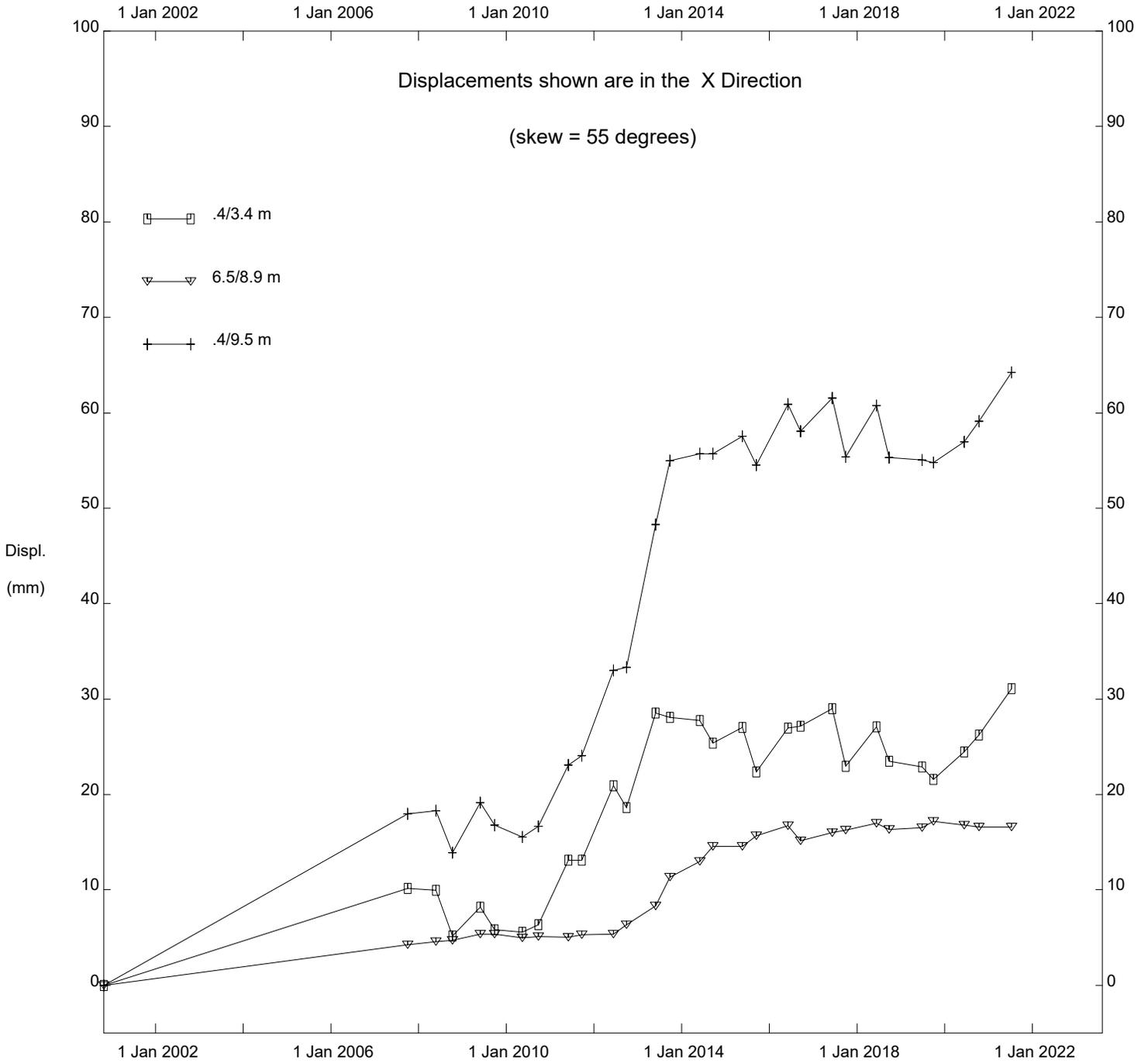
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Alberta Transportation

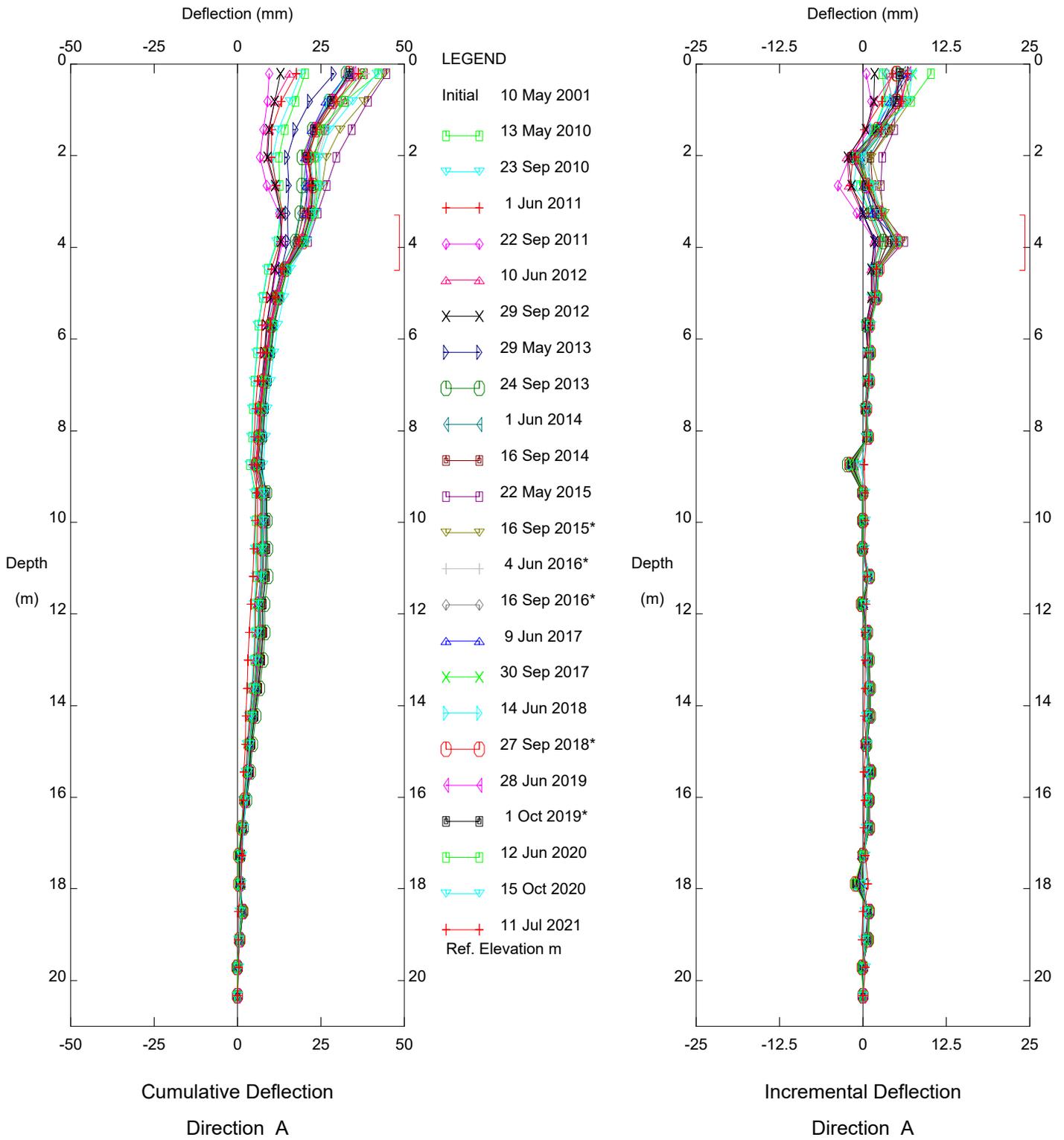
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Alberta Transportation

Thurber Engineering Ltd.

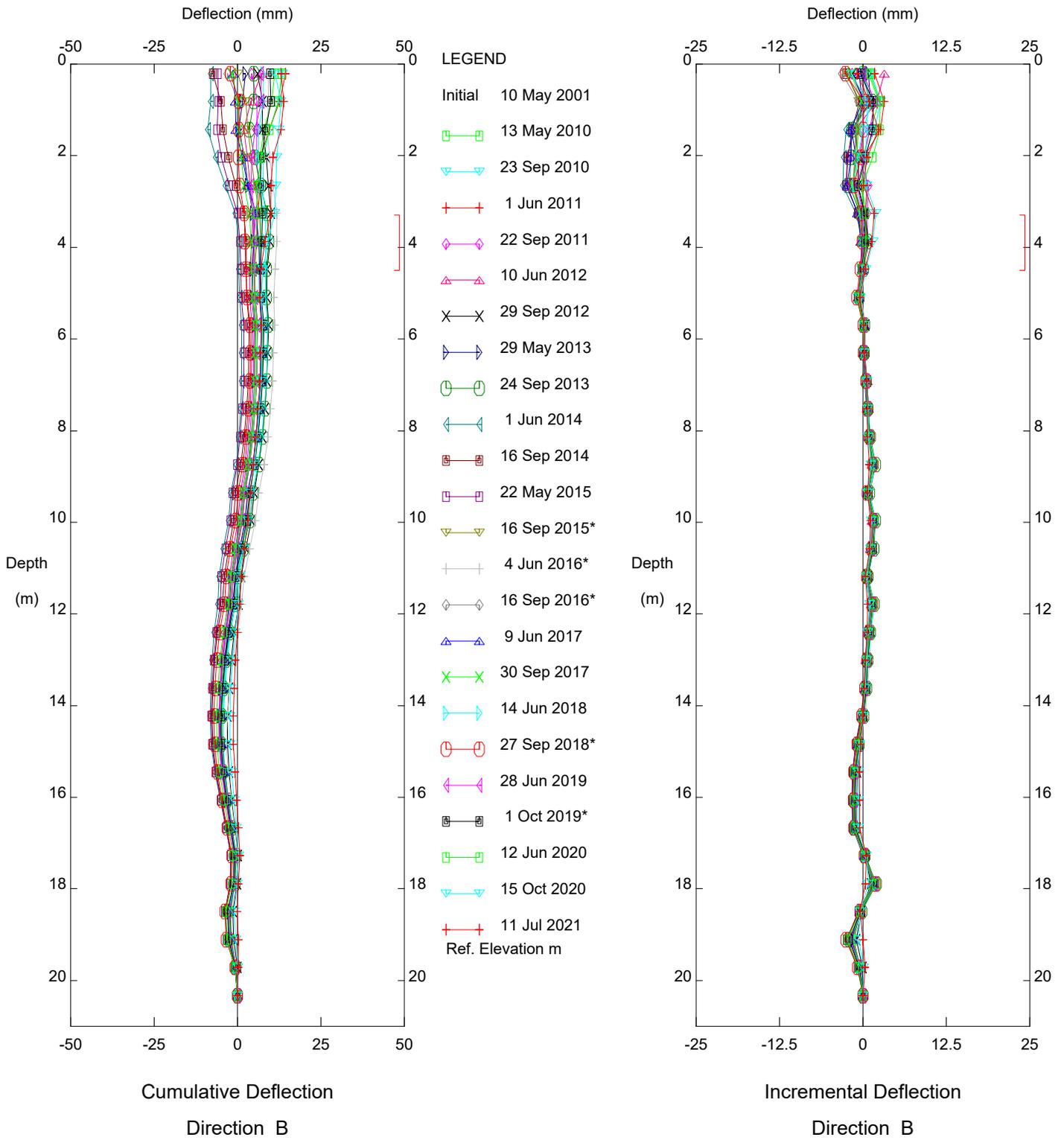


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Alberta Transportation

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Thurber Engineering Ltd.

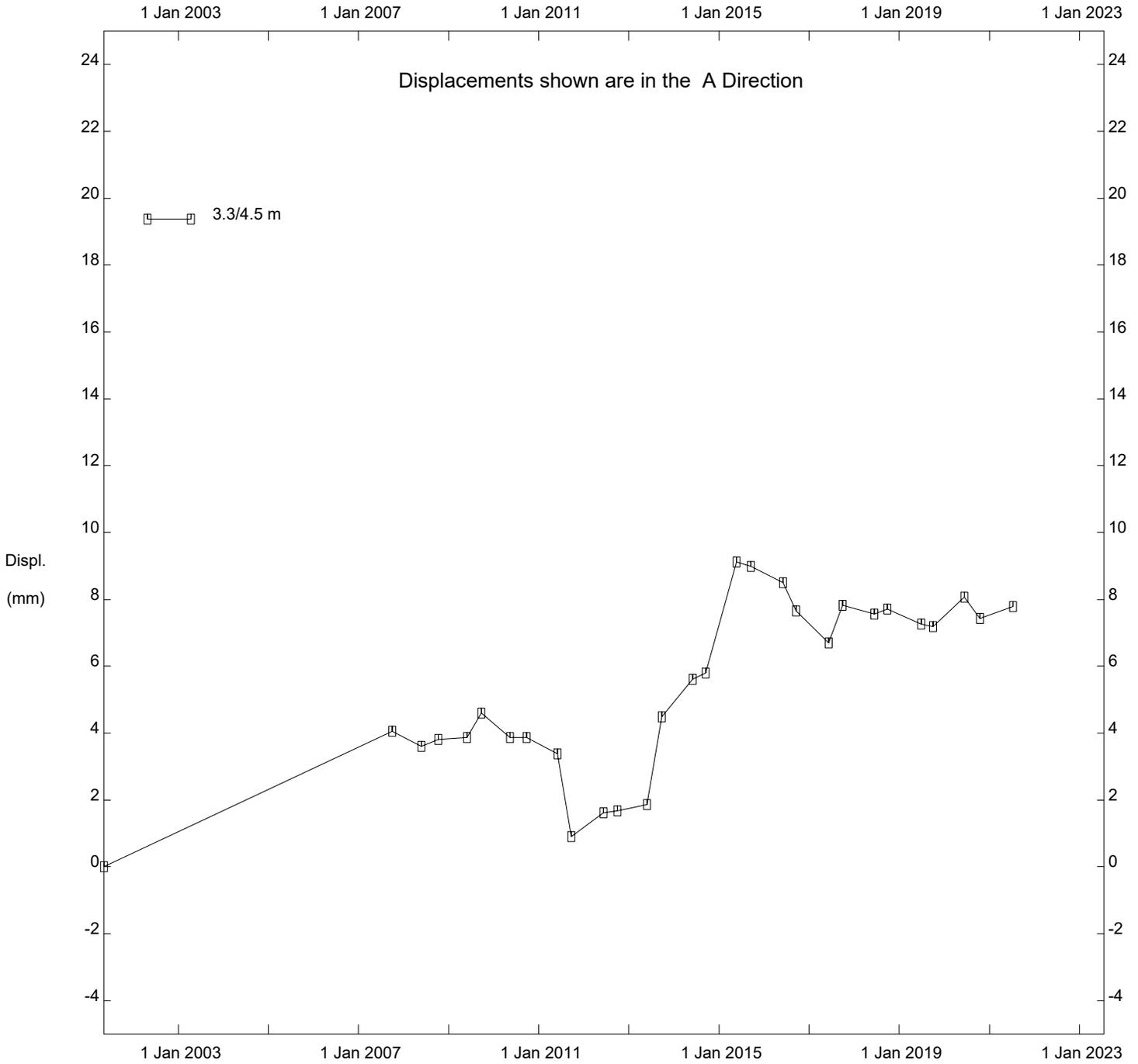


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Alberta Transportation

Sets marked \* include zero shift and/or rotation corrections.

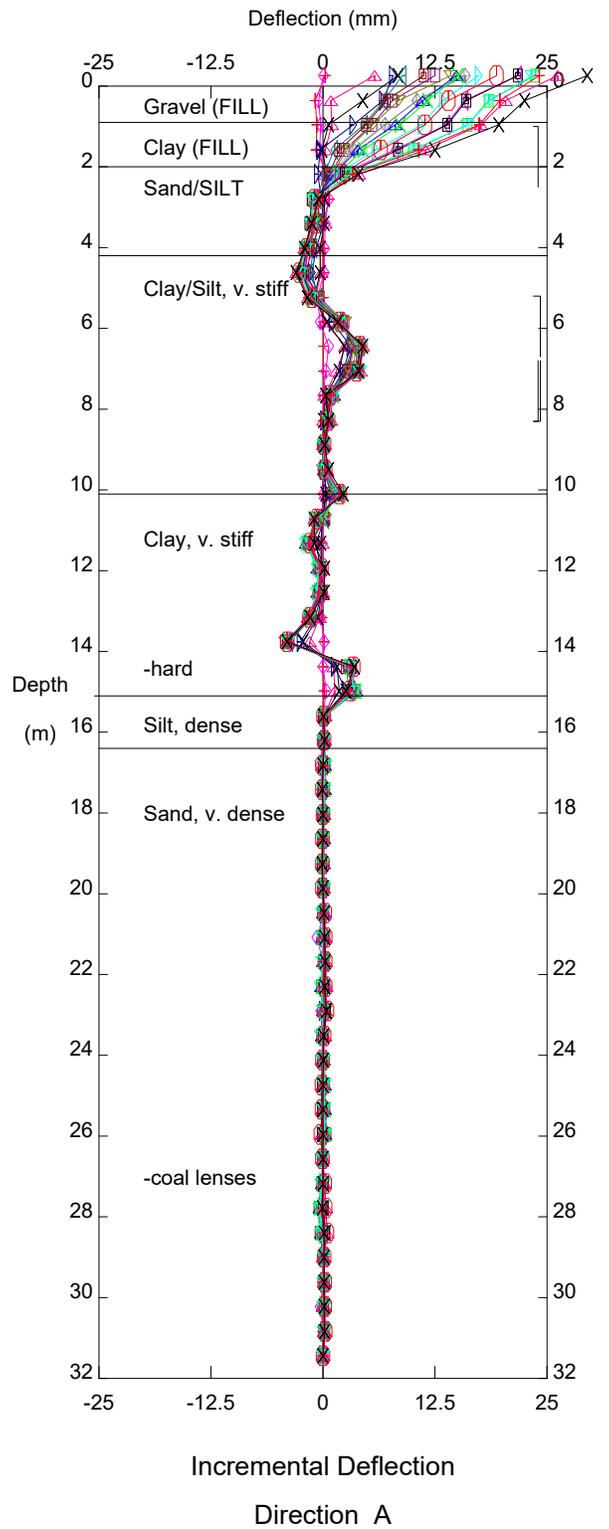
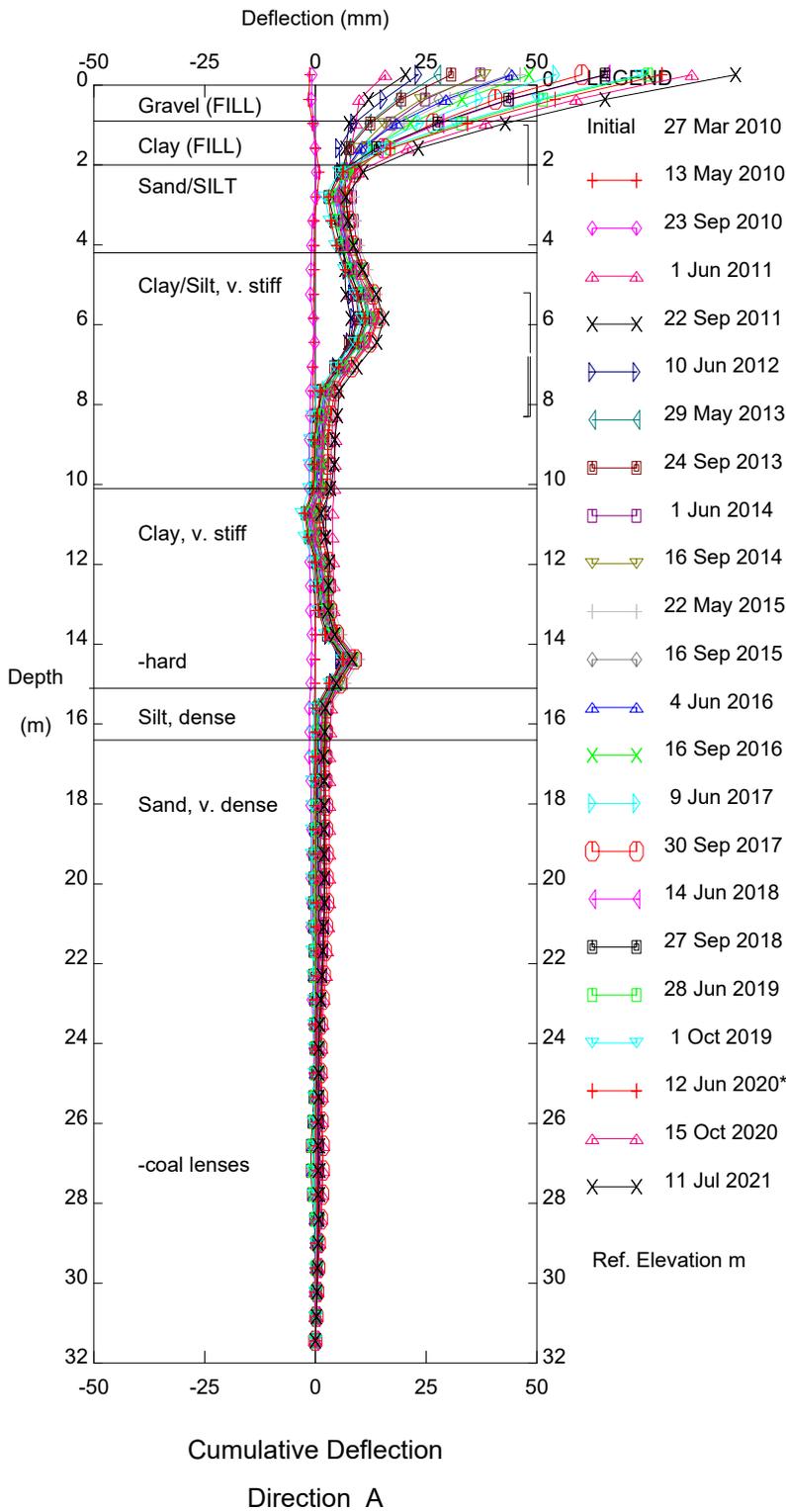
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Alberta Transportation

Thurber Engineering Ltd.

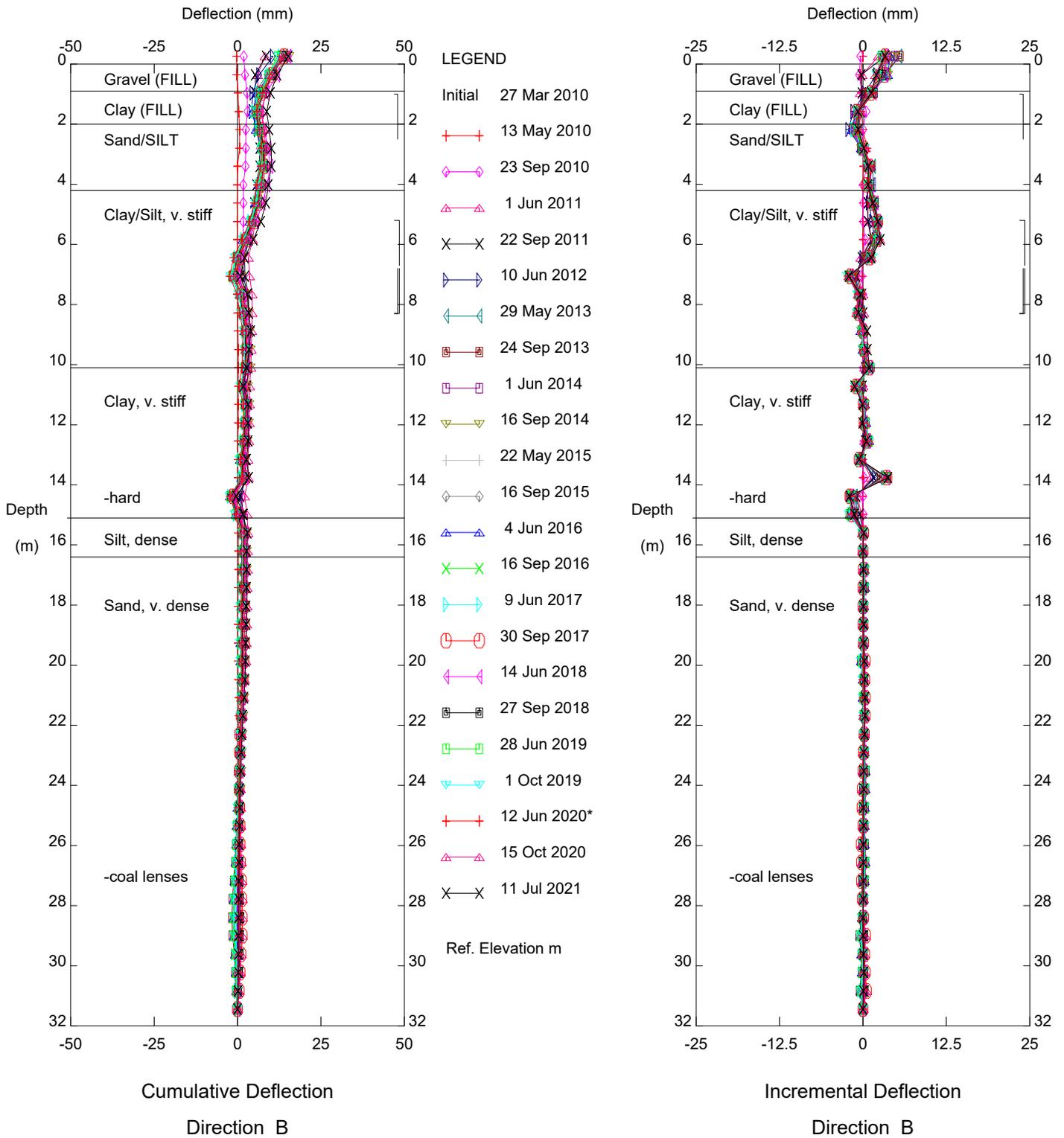


PH033 Judah Hill Trunk & CNR, Inclinator SI10-10

Alberta Transportation

Sets marked \* include zero shift and/or rotation corrections.

Thurber Engineering Ltd.

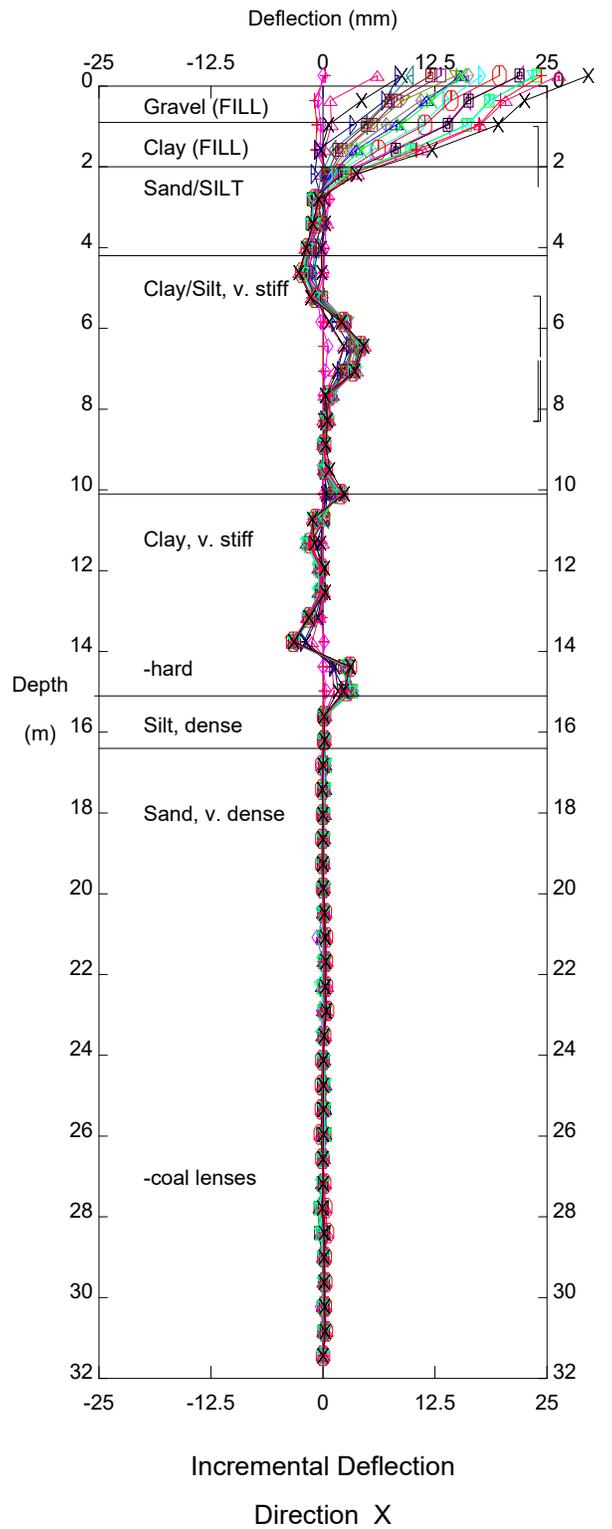
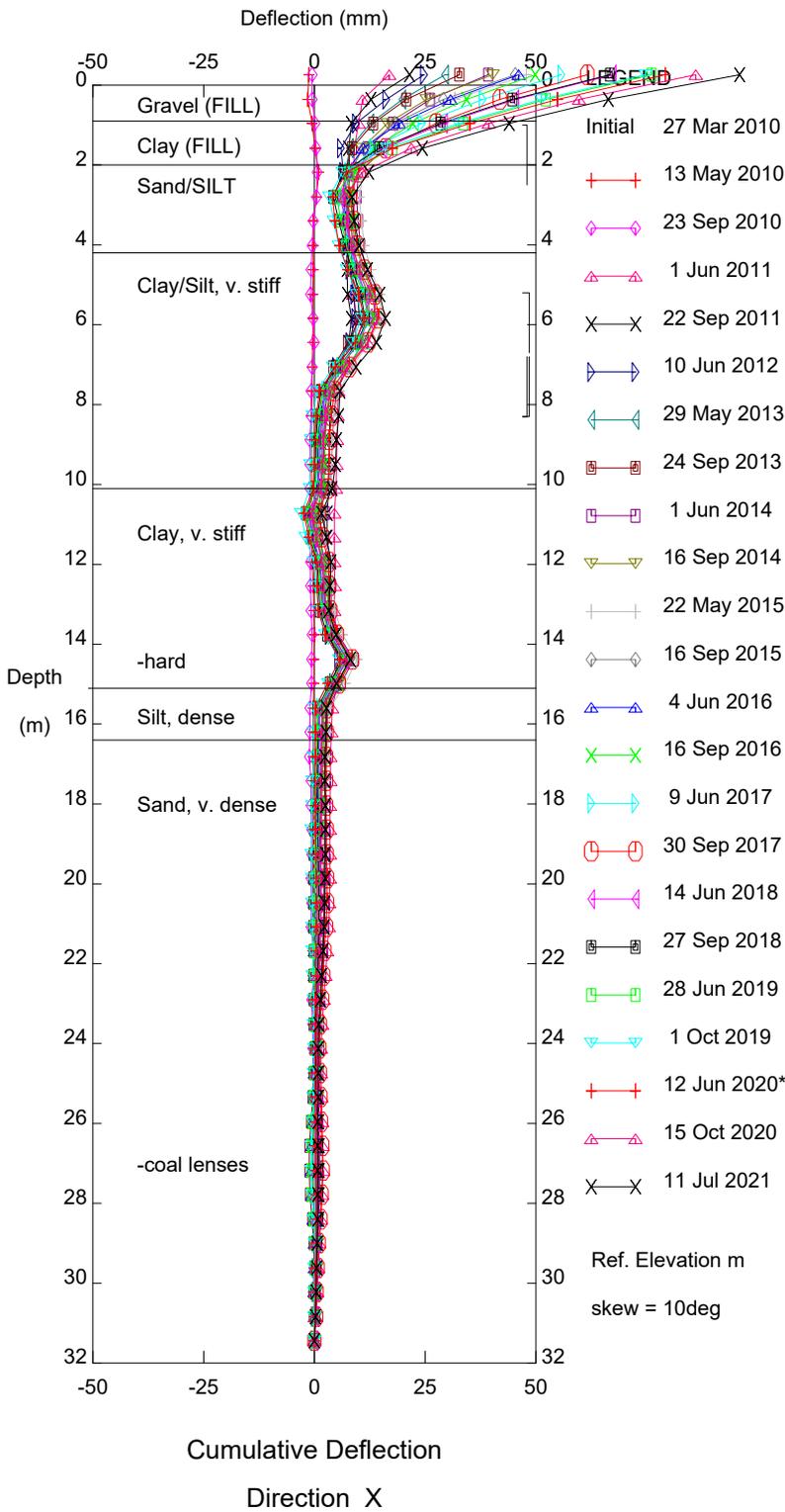


PH033 Judah Hill Trunk & CNR, Inclinometer SI10-10

Alberta Transportation

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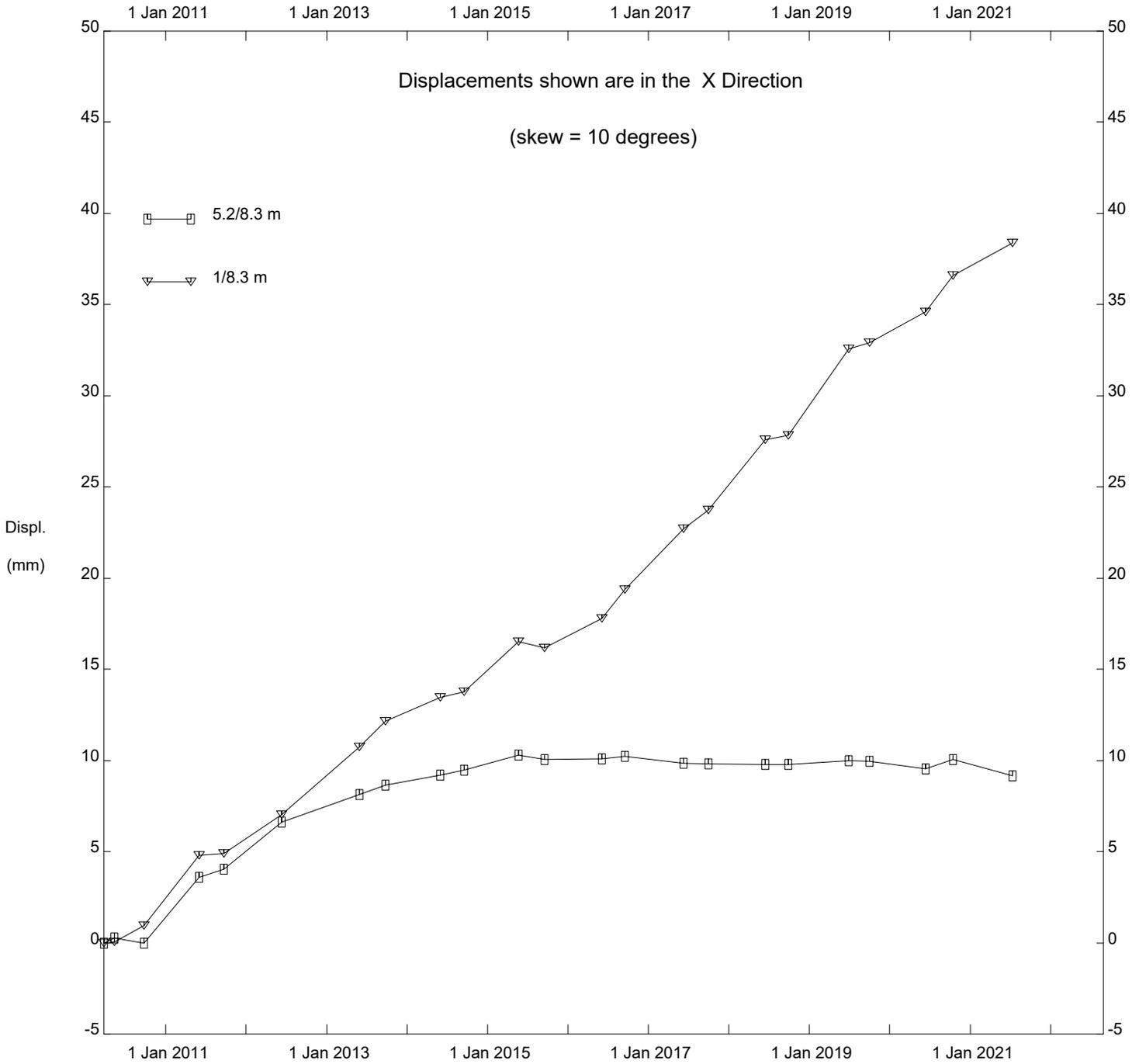
Thurber Engineering Ltd.



PH033 Judah Hill Trunk & CNR, Inclinator SI10-10

Alberta Transportation

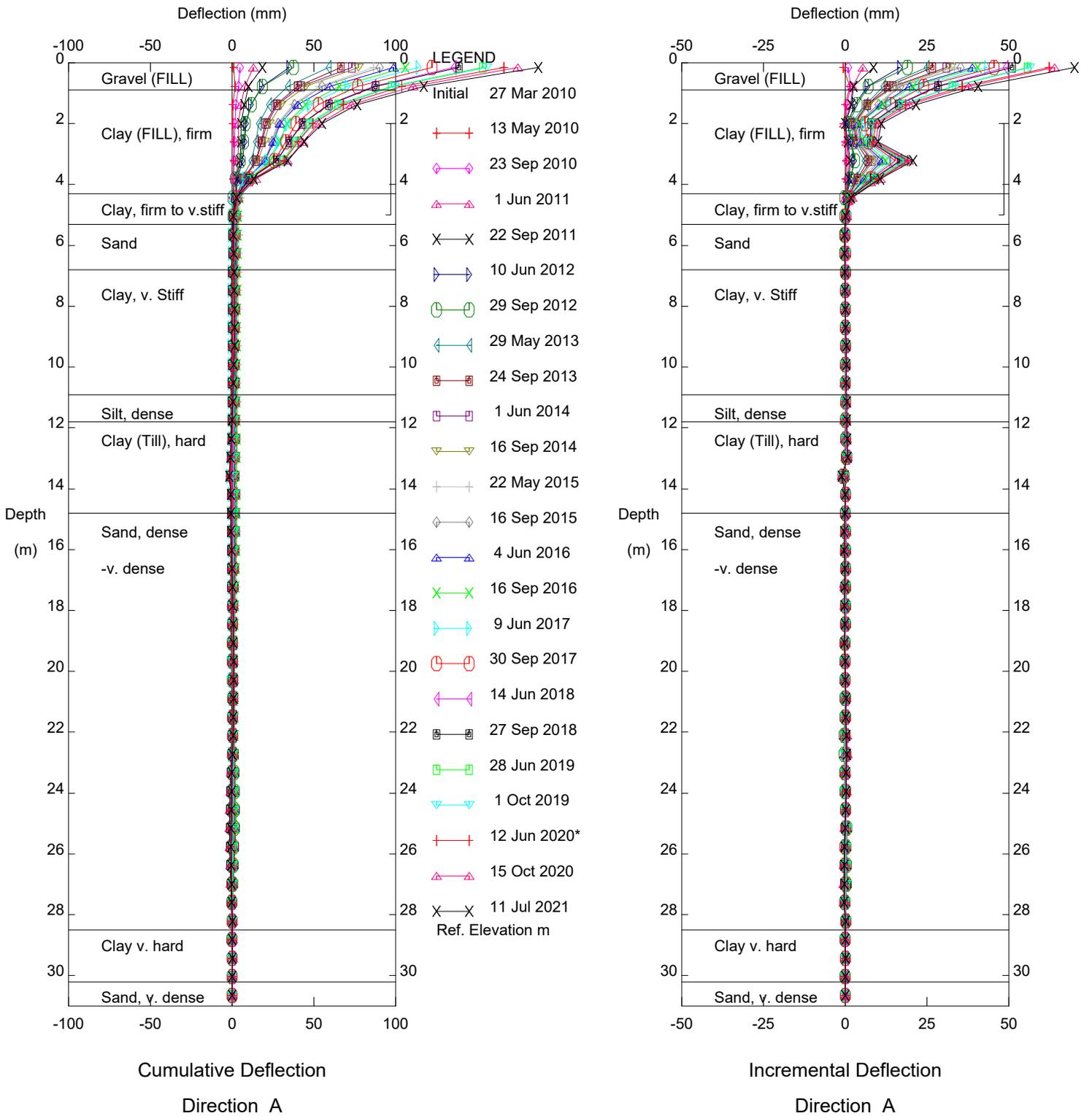
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PH033 Judah Hill Trunk & CNR, Inclinator SI10-10

Alberta Transportation

Thurber Engineering Ltd.

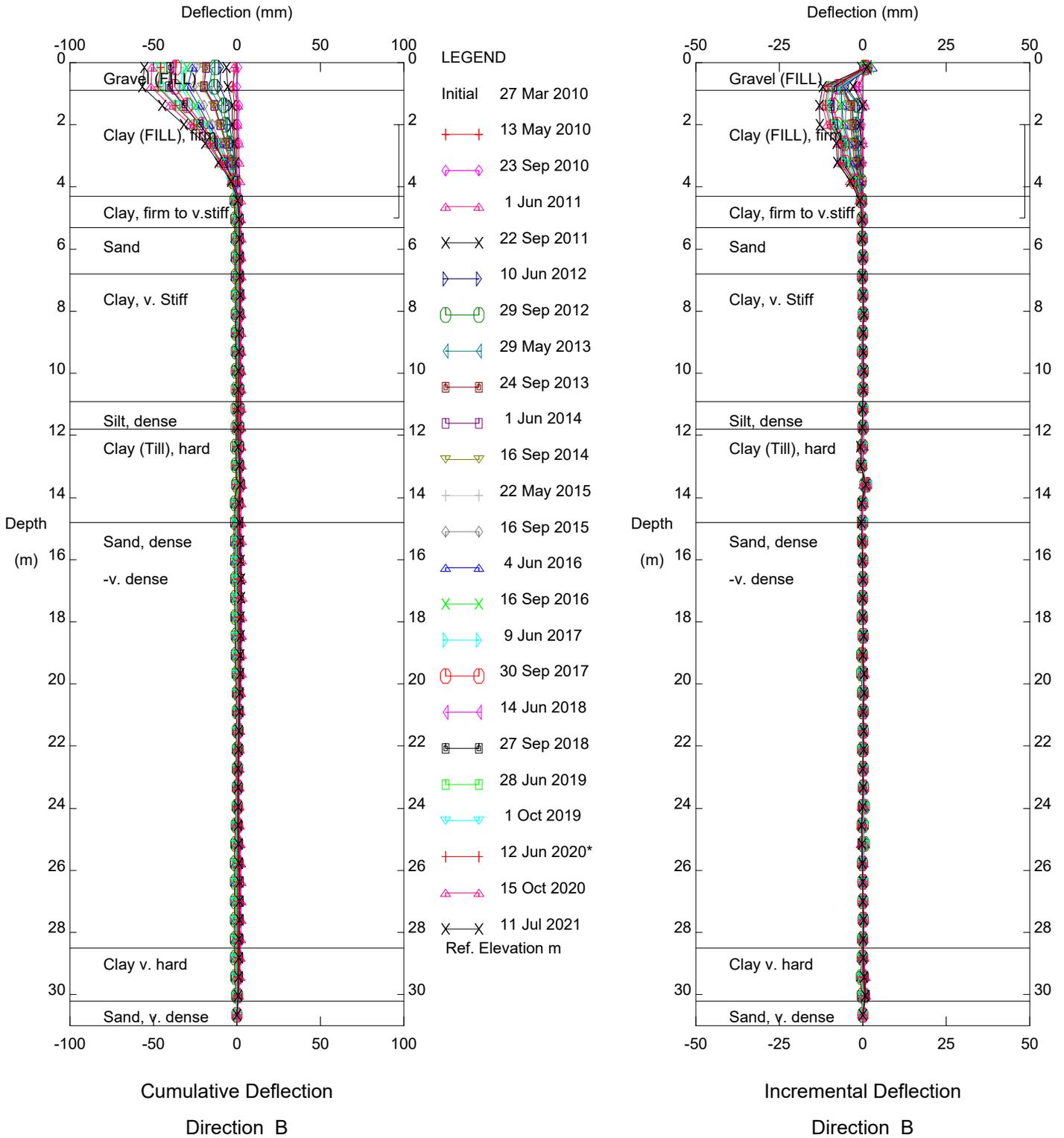


PH033 Judah Hill Trunk & CNR, Inclinometer SI10-11

Alberta Transportation

Sets marked \* include zero shift and/or rotation corrections.

Thurber Engineering Ltd.

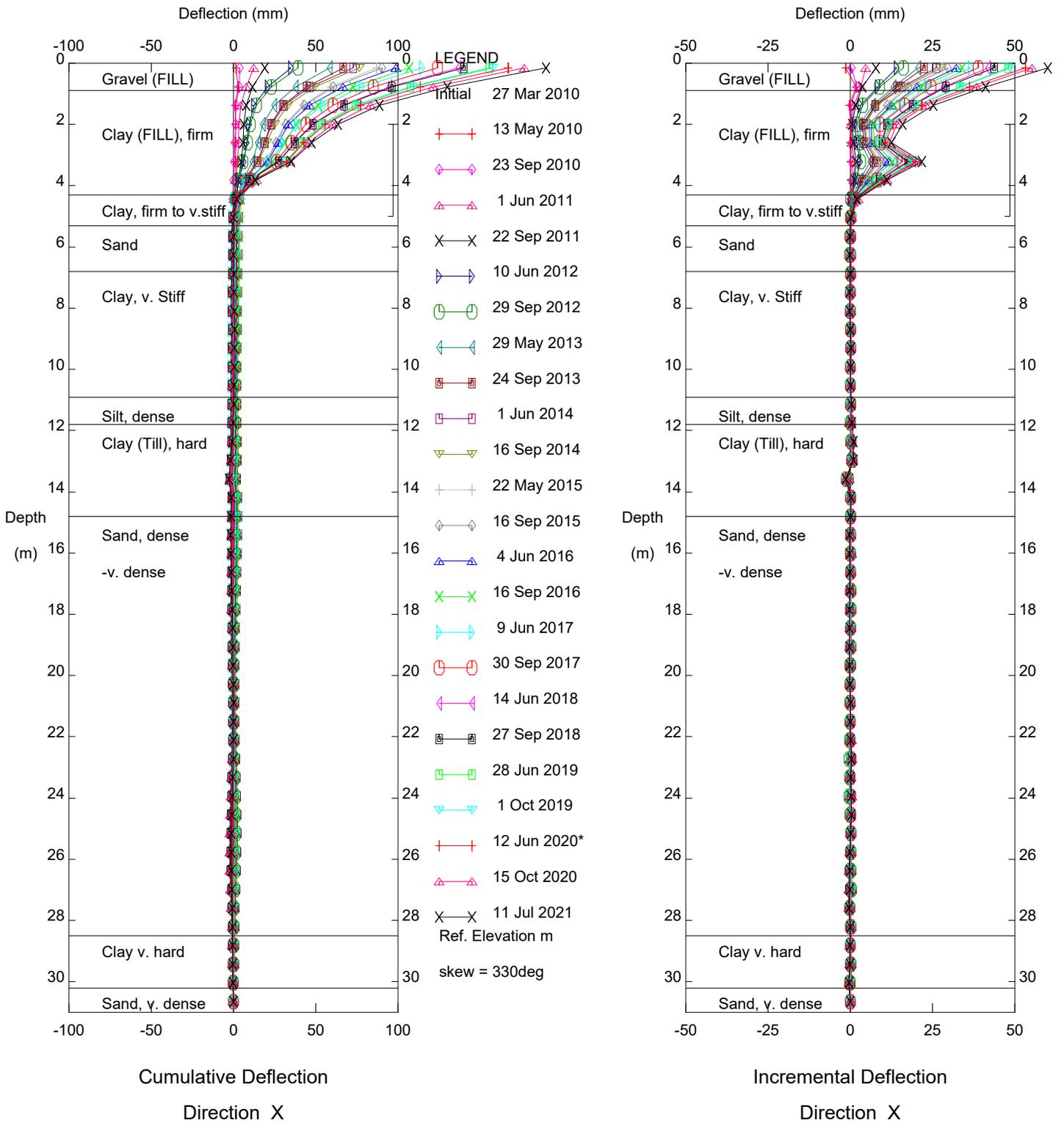


PH033 Judah Hill Trunk & CNR, Inclinometer SI10-11

Alberta Transportation

Sets marked \* include zero shift and/or rotation corrections.

Thurber Engineering Ltd.

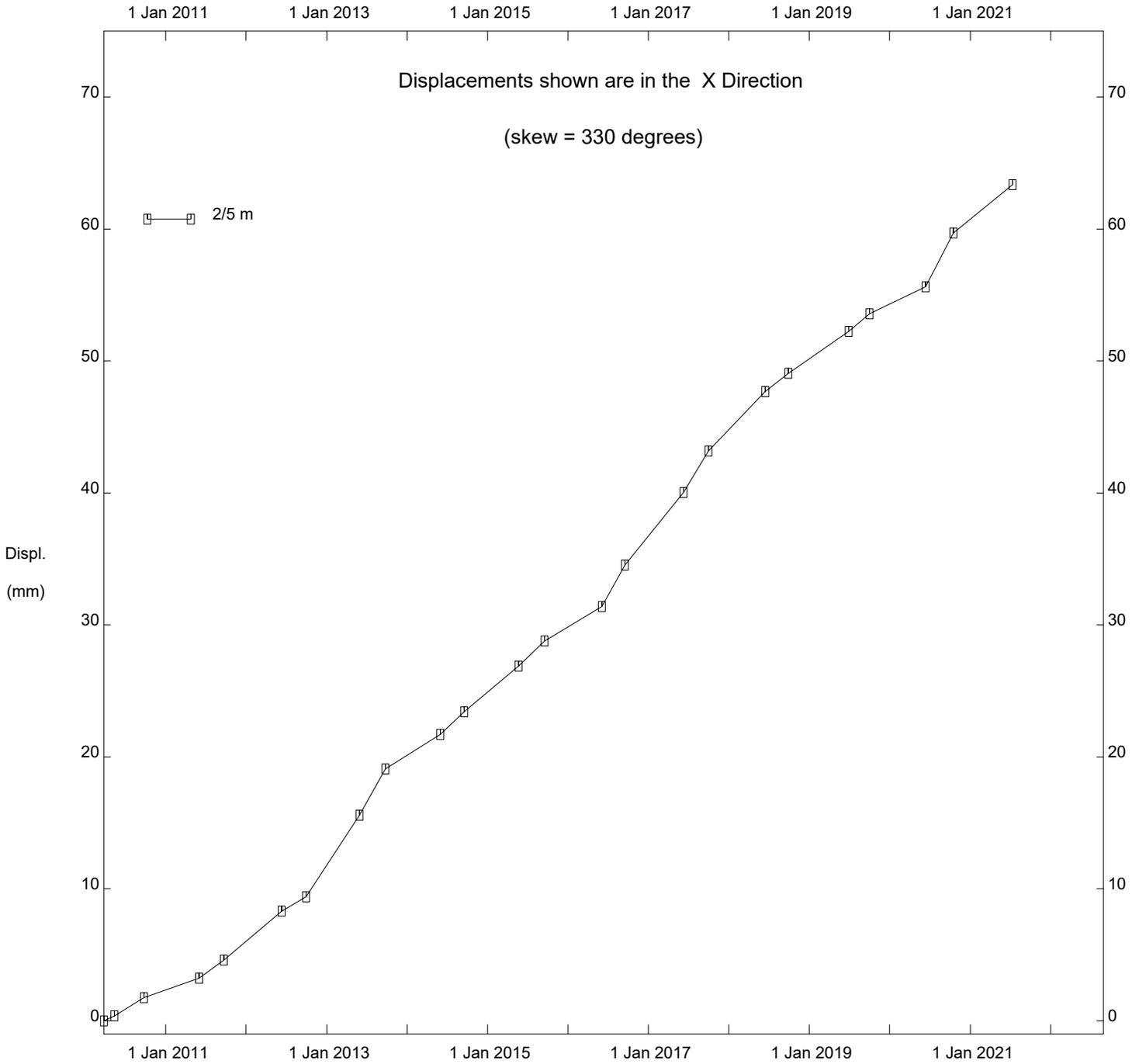


PH033 Judah Hill Trunk & CNR, Inclinometer SI10-11

Alberta Transportation

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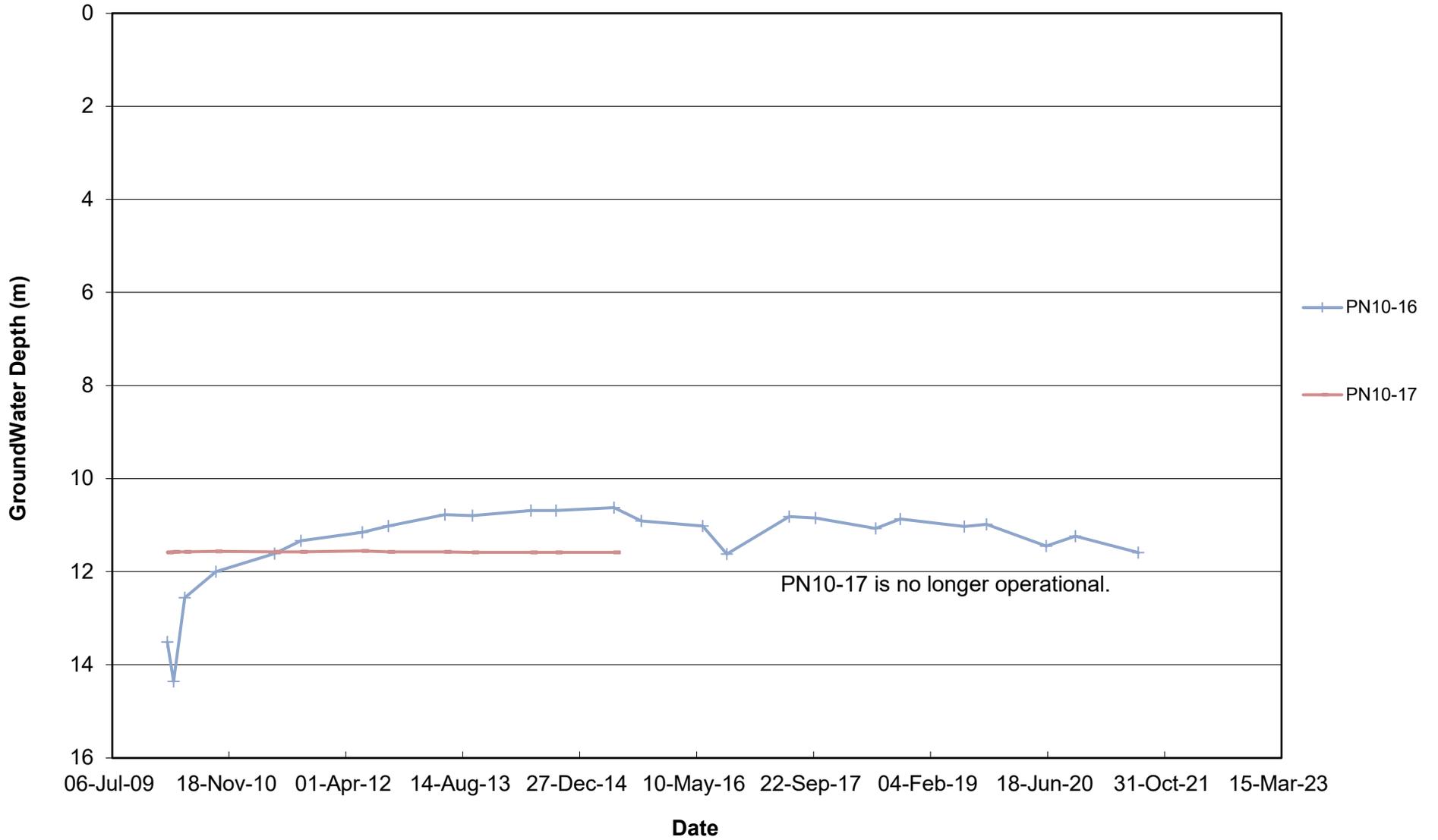
Thurber Engineering Ltd.



PH033 Judah Hill Trunk & CNR, Inclinometer SI10-11

Alberta Transportation

**FIGURE PH033-1**  
**PIEZOMETER DATA FOR HWY 744:04: JUDAH HILL CNR SLIDE**



**FIGURE PH033-2  
PIEZOMETER DATA FOR HWY 744:04: JUDAH HILL TRUNK SLIDE**

