



THURBER ENGINEERING LTD.

November 16, 2022

File No.: 32121

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

Attention: Mr. Max Shannon

**ALBERTA TRANSPORTATION GRMP (CON0022164)
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING RESULTS – FALL 2022**

SECTION C

SITE PH031: HWY 744:04, JUDAH HILL (MICHELIN SLIDE)

Dear Mr. Shannon:

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

Four slope inclinometers (SI98-10i, SI10-4, SI10-7, and SI10-9) and five pneumatic piezometers (PN10-4, PN10-6 to PN10-9) were read at the Hwy 744:04 Judah Hill Michelin Slide site on September 28, 2022 by Mr. Niraj Regmi, G.I.T. and Mr. Kyle Crooymans, both of Thurber Engineering Ltd. SI94-43i was not read during the current readings cycle due to the risk of a bear encounter at the SI's location deep within the tree line.

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.

In addition to the above instruments, there is also a Shape Accelerometer Array (SAA), which was installed inside the casing of slope inclinometer SI10-8 in December 2014, and two vibrating wire piezometers (VW17-1 and VW17-2) which were installed by Thurber in June 2017 in a single test hole near SI10-8 to better correlate recorded SAA movement to changes in groundwater level. The SAA and VWs are connected to a Campbell Scientific CR1000 datalogger, which is currently programmed to take readings every 2 hours. The battery for this datalogger was stolen between the fall of 2019 reading and the spring of 2020 readings, so this datalogger is not currently able to take automated readings of the instruments connected



to it. However, during the current readings, a manual reading was able to be completed for the SAA and vibrating wire piezometers by connecting a 12-volt battery to the datalogger station and the results are included in this report.

2. DATA PRESENTATION

2.1 General

SI and SAA plots for A and B directions are presented in Appendix A and are summarized below. Where movement has been recorded, the resultant plot (X direction, if applicable) and rate of movement have also been provided. The slope inclinometer, SAA and piezometer data is summarized below. These summary tables also include instruments that are no longer included in the GRMP program, for reference.

2.2 Zones of Movement

No zones of new movement were identified in the SIs or SAA since the previous readings in the spring of 2022.

Zones of movement are summarized in Table PH031-1 below. 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 and SAA.



**TABLE PH031-1
FALL 2022 – HWY 744:04 JUDAH HILL (MICHELIN SLIDE)
SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: September 28, 2022

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)	RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI98-10i	Oct. 27, 2000	93.5 mm over 6.1 m to 7.4 m depth in 314° direction	14.0 mm/yr in September 2017	Operational	June 11, 2022	0.9	3.0	-0.6
		12.5 mm over 11.0 m to 12.2 m depth in 324° direction	2.9 mm/yr in October 2020			No discernible movement	N/A	-0.2
		95.6 mm over 14.1 m to 17.7 m depth in 314° direction	15.3 mm/yr in September 2017			1.0	3.4	1.5
		30.0 mm over 18.9 m to 20.2 m depth in 324° direction	5.0 mm/yr in September 2017			2.6	8.7	8.2
		33.5 mm over 21.4 m to 22.6 m depth in 341° direction	9.2 mm/yr in October 14, 2021			0.5	1.6	-0.5
		107.4 mm over 23.2 m to 26.9 m depth in 324° direction	13.5 mm/yr in October 2021			1.7	5.7	1.5

Drawing 32121-PH031 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



TABLE PH031-1 – CONTINUED...
FALL 2022 – HWY 744:04 JUDAH HILL (MICHELIN SLIDE)
SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY

Date Monitored: September 28, 2022

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)	RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI94-43i	Oct. 27, 2000	59.0 mm over 24.8 m to 27.2 m depth in 282° direction	10.2 mm/yr in October 2020	Operational, not read during current readings	July 10, 2021	N/A	N/A	N/A
SI10-4	March 26, 2010	8.3 mm over 5.7 m to 6.9 m depth in 86° direction	2.9 mm/yr in October 2021	Operational	June 11, 2022	1.0	3.2	3.5
		7.9 mm over 11.8 m to 17.9 m depth in 86° direction	3.4 mm/yr in September 2011			1.8	5.9	5.3
SI10-5	March 26, 2010	225.9 mm over 0.9 m to 11.9 m depth in 120° direction	196.4 mm/yr in September 2011	Sheared at 2.1 m depth	September 21, 2011	N/A	N/A	N/A
SI10-6	March 26, 2010	237.5 mm over 0.9 m to 5.8 m depth in 120° direction	130.5 mm/yr in September 2013	Sheared at 3.0 m depth	June 1, 2014	N/A	N/A	N/A
		7.2 mm over 11.9 m to 14.3 m depth in 110° direction	6.8 mm/yr in September 2011			N/A	N/A	N/A

Drawing 32121-PH031 in Appendix A D provides a sketch of the approximate location of the monitoring instrumentation for this site.



**TABLE PH031-1 – CONTINUED...
FALL 2022 – HWY 744:04 JUDAH HILL (MICHELIN SLIDE)
SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: September 28, 2022

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)	RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI10-7	March 26, 2010	26.9 mm over 1.9 m to 6.8 m depth in 325° direction	5.6 mm/yr in May 2010	Operational	June 11, 2022	0.4	1.2	-0.5
		16.2 mm over 8.6 m to 9.8 m depth in 336° direction	4.0 mm/yr in September 2013			<0.1	<0.1	-1.6
		8.3 mm over 14.1 m to 15.9 m depth in 336° direction	5.0 mm/yr in September 2020			No discernible movement	N/A	-0.7
SI10-8*	March 4, 2010	48.9* mm over 15.0 m to 16.5 m depth in 321° direction	16.1 mm/yr in September 2013	SAA Installed in SI10-8 Casing in December 2014	June 14, 2022	0.2	0.8	-1.9
SI10-9	March 4, 2010	4.0 mm over 6.5 m to 7.7 m depth in 3° direction	1.8 mm/yr in September 2013	Operational	June 11, 2022	No discernible movement	N/A	-0.2
		23.5 mm over 11.9 m to 14.4 m depth in 3° direction	12.5 mm/yr in September 2013			0.5	1.7	1.0

Drawing 32121-PH031 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

* Total cumulative movement is based on the movement of the SI prior to SAA installation plus the total movement recorded in the SAA to date.



TABLE PH031-2
FALL 2022 – HWY 744:04 JUDAH HILL (MICHELIN SLIDE)
PNEUMATIC PIEZOMETER INSTRUMENTATION READING SUMMARY

Date Monitored: September 28, 2022

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED WATER LEVEL BGS (m)	MEASURED PORE PRESSURE (kPa)	CURRENT WATER LEVEL BGS (m)	PREVIOUS WATER LEVEL BGS (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
<i>PN98-10 (22835)</i>	<i>N/A</i>	<i>7.0</i>	<i>N/A</i>	<i>Damaged</i>	<i>6.59 in May 2004</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
<i>PN98-10a (22827)</i>	<i>N/A</i>	<i>22.0</i>	<i>N/A</i>	<i>Damaged</i>	<i>8.64 in May 2009</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
PN10-4	March 26, 2010	19.4	516.401	Operational	18.37 in June 2020	1.5	19.25	19.29	0.04
<i>PN10-5</i>	<i>March 5, 2010</i>	<i>16.9</i>	<i>514.950</i>	<i>Blocked</i>	<i>11.12 in May 2013</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
PN10-6	March 5, 2010	10.2	513.055	Operational	7.73 in October 2020	21.8	7.98	7.84	-0.14
PN10-7	March 3, 2010	13.8	519.529	Operational	8.83 in September 2019	28.2	10.92	8.84	-2.08
PN10-8	February 27, 2010	17.5	514.522	Operational	11.75 in September 2013	39.0	13.52	13.29	-0.23
PN10-9	February 27, 2010	13.0	510.640	Operational	6.31 in September 2016	55.7	7.32	7.10	-0.22

Drawing 32121-PH031 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 PH031-3
FALL 2022 – HWY 744:04 JUDAH HILL (MICHELIN SLIDE)
VIBRATING WIRE PIEZOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: September 28, 2022

INSTRUMENT	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST RECORDED GROUNDWATER LEVEL (mBGS)	CURRENT GROUNDWATER DEPTH (mBGS)	PREVIOUS GROUNDWATER DEPTH (mBGS)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW17-1	June 6, 2017	502.52	514.52	Operational	10.40 on September 4, 2017	11.22	11.18	-0.04
VW17-2	June 6, 2017	496.38	514.52	Operational	DRY	DRY	DRY	N/A

Drawing 32121-PH031 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



3. INTERPRETATION OF MONITORING RESULTS

In slope inclinometer SI98-10i, which is installed beyond the toe of the Michelin slide, small incremental movements up to 2.6 mm were noticed along six distinct shear planes, since the spring 2022 readings. The sum of the movement of all these zones was 373 mm since its initialization in October 2000. The movement rates in these zones ranged from having no discernible movement to 8.7 mm/yr. The movement rates showed small changes since the previous readings in the spring of 2022, except for an increase in the rate of movement by 8.2 mm/yr over 18.9 to 20.2 m depth.

Slope inclinometer SI10-4 showed a rate of movement of 3.2 mm/yr over 5.7 m to 6.9 m depth and 5.9 mm/yr over 11.8 m to 17.9 m depth since the spring of 2022 readings. The movement is in the direction of the active landslide in the Heart River valley slope. SI10-7 showed rates of movement of 1.2 mm/yr, less than 0.1 mm/yr, and no discernible movement over 1.9 m to 6.8 m depth, 8.6 m to 9.8 m depth and 14.1 m to 15.9 m depth, respectively, since the spring of 2022 readings. SI10-9 showed no discernible movement over 6.5 m to 7.7 m depth and a rate of movement of 1.7 mm/yr over 11.9 m to 14.4 m depth, respectively, since the spring of 2022 readings.

The manual readings for SAA10-8 showed an incremental movement of 0.2 mm over 15.0 m to 16.5 m since the spring of 2022 readings, corresponding to an average rate of movement of 0.8 mm/yr over this zone. The overall trend of movement in the SAA seems to indicate that the average movement rate in the instrument has decelerated since the beginning of 2018, compared to the first three years of measurements.

Pneumatic piezometers PN10-4 showed an increase in groundwater level of 0.04 m since the spring of 2022 readings. Pneumatic piezometers PN10-6, PN10-7, PN10-8, and PN10-9 showed decreases in groundwater level of 0.14 m, 2.08 m, 0.23 m, and 0.22 m, respectively, since the spring of 2022 readings. Vibrating wire piezometer VW17-1 showed a decrease in groundwater level of 0.04 m since the spring of 2022 readings. Pneumatic piezometer readings are summarized in Table PH031-2.

The groundwater readings in the piezometers are plotted by depth and elevation in Figures PH031-1 and PH031-2, respectively, in Appendix A.

4. RECOMMENDATIONS

4.1 Future Work

The instruments should be read again in the spring of 2023.

4.2 Instrumentation Repairs

The battery powering the SAA in SI10-8, VW17-1 VW17-2 and the datalogger for these instruments should be replaced so that continual readings can resume. The battery for this datalogger has been stolen twice, so a more secure enclosure and battery system should be



considered to prevent future thefts. In the meantime, manual readings should continue to be made from these instruments using a 12-volt battery.

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 (Drawing No. 32121-PH031)
 - SI and SAA Reading Plots
 - Figure PH031-1 (Piezometric Depths)
 - Figure PH031-2 (Piezometric Elevations)



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.

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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**

FALL 2022

**APPENDIX A
DATA PRESENTATION**

SITE PH031: HWY 744:04, JUDAH HILL (MICHELIN SLIDE)

**ALBERTA TRANSPORTATION
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH031)
FALL 2022**

Location: Michelin Slide - Judah Hill (HWY 744:04 C1 57.664)	Readout: RST PN C108 Unit 1
File Number: 32121	Casing: 2.75, SI 94-43i 3.34
Probe: RST SI SET 5R and 8R	Temp: 15
Cable: RST SI SET 5R and 8R	Read by: NKR/KTC

SLOPE INCLINOMETER (SI) READINGS

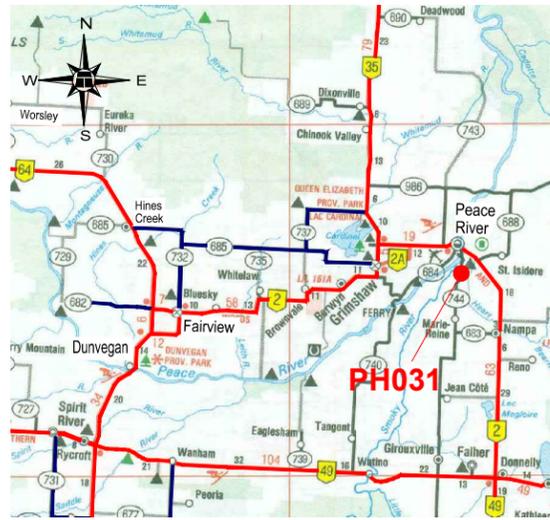
SI#	GPS Location (UTM 11)		Date	Stickup (m)	Depth from top of Casing (ft)	Magn. North A+ Groove degree	Current Bottom Depth Readings				Probe/ Reel #	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-		
SI98-10i	483125.92	6229725.01	28-Sep-22	0.57	116 to 2	305	1493	-1475	-808	816	8R/8R	See notes
SI94-43i	482827.64	6229848.63	28-Sep-22	0.85	118 to 2	10	-8	22	-2	7	8R/8R	Did not read
SI10-4	483255.50	6229708.92	28-Sep-22	0.74	106 to 4	85	448	-381	-156	-45	5R/5R	
SI10-7	483212.56	6229673.47	28-Sep-22	0.84	106 to 4	315	1231	-1210	-1538	1556	8R/8R	
SI10-9	483248.88	6229762.37	28-Sep-22	0.55	106 to 4	330	873	-856	342	350	8R/8R	

PNEUMATIC PIEZOMETER READINGS

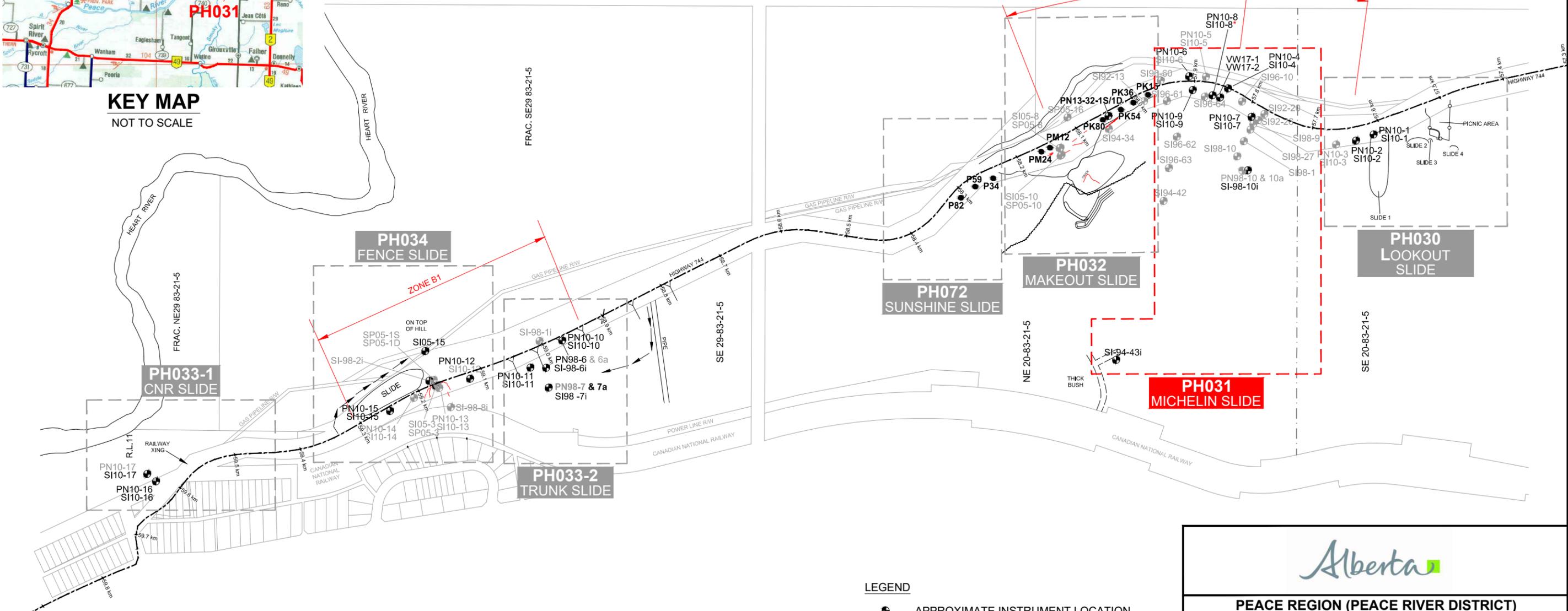
PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
10-4	483255.50	6229708.92	28-Sep-22	1.5	33094
10-6	483273.71	6229767.84	28-Sep-22	21.8	33084
10-7	483212.56	6229673.47	28-Sep-22	28.2	33085
10-8	483245.04	6229732.33	28-Sep-22	39.0	33082
10-9	483248.88	6229762.37	28-Sep-22	55.7	33087

INSPECTOR REPORT

For SI98-10i multiply readings by 2 to get the plot in Gtilt.
* Slowly increased
Need to replace battery for datalogger for SAA and VWs - take manual readings for datalogger during current readings - need 12 V battery



KEY MAP
NOT TO SCALE



NOTE:
* A SHAPE ACCELEROMETER ARRAY (SAA) WAS INSTALLED INSIDE THE S110-08 CASING IN DECEMBER 2014.

- 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)

PH031: HWY 744:04 - JUDAH HILL (MICHELIN SLIDE) INSTRUMENT LOCATIONS

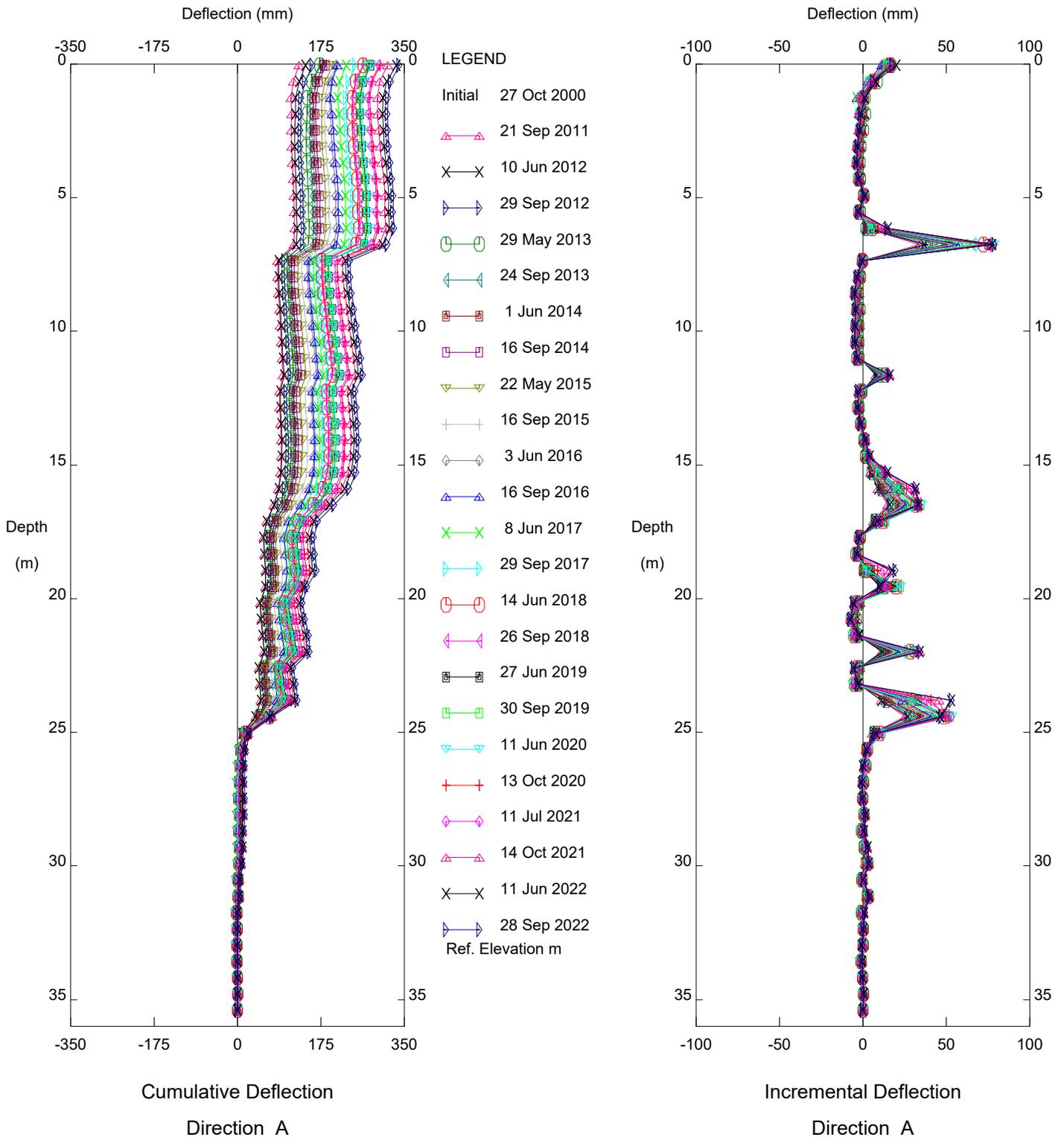
DWG No. 32121-PH031

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



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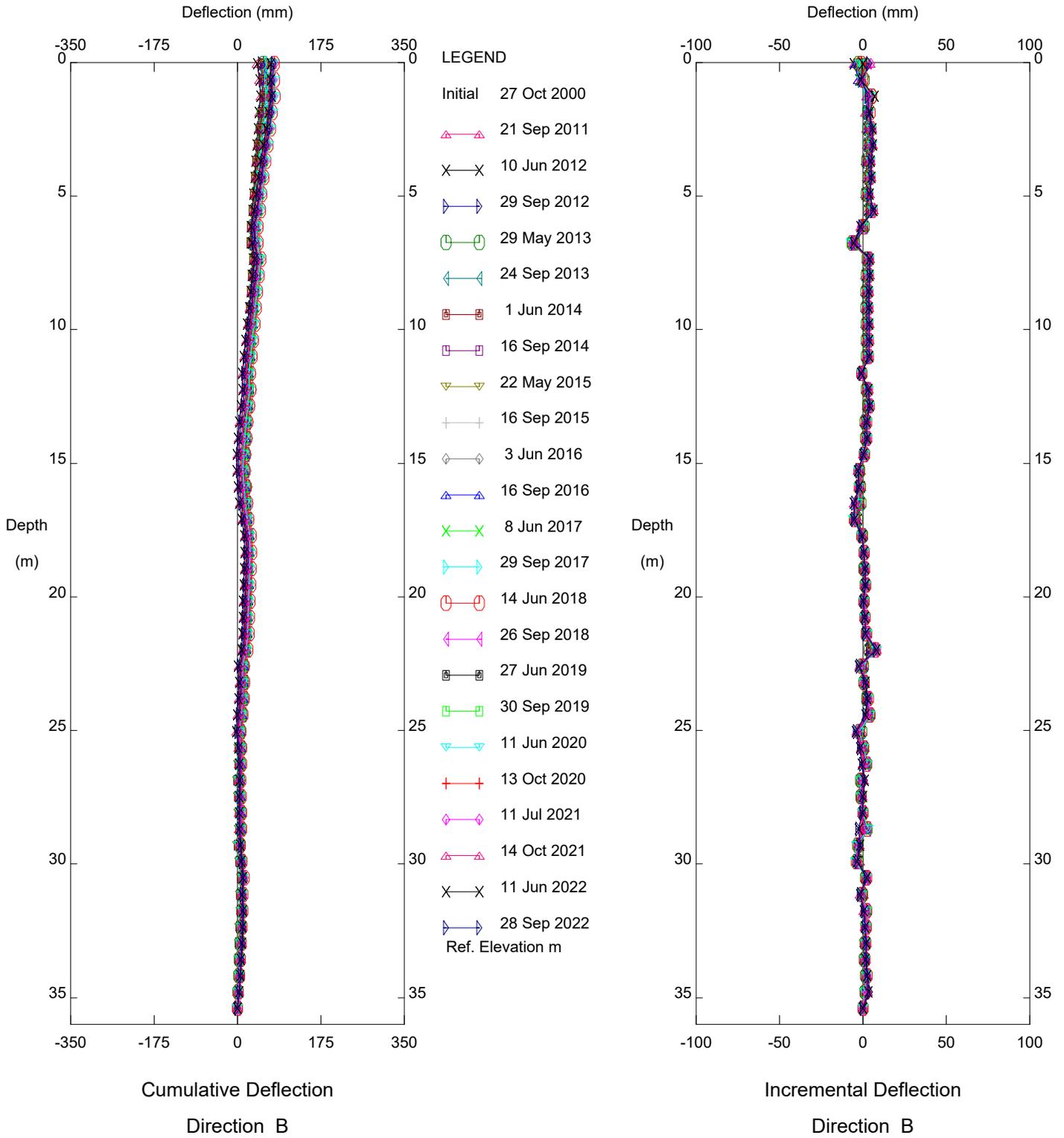
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinometer SI98-10i

Alberta Transportation

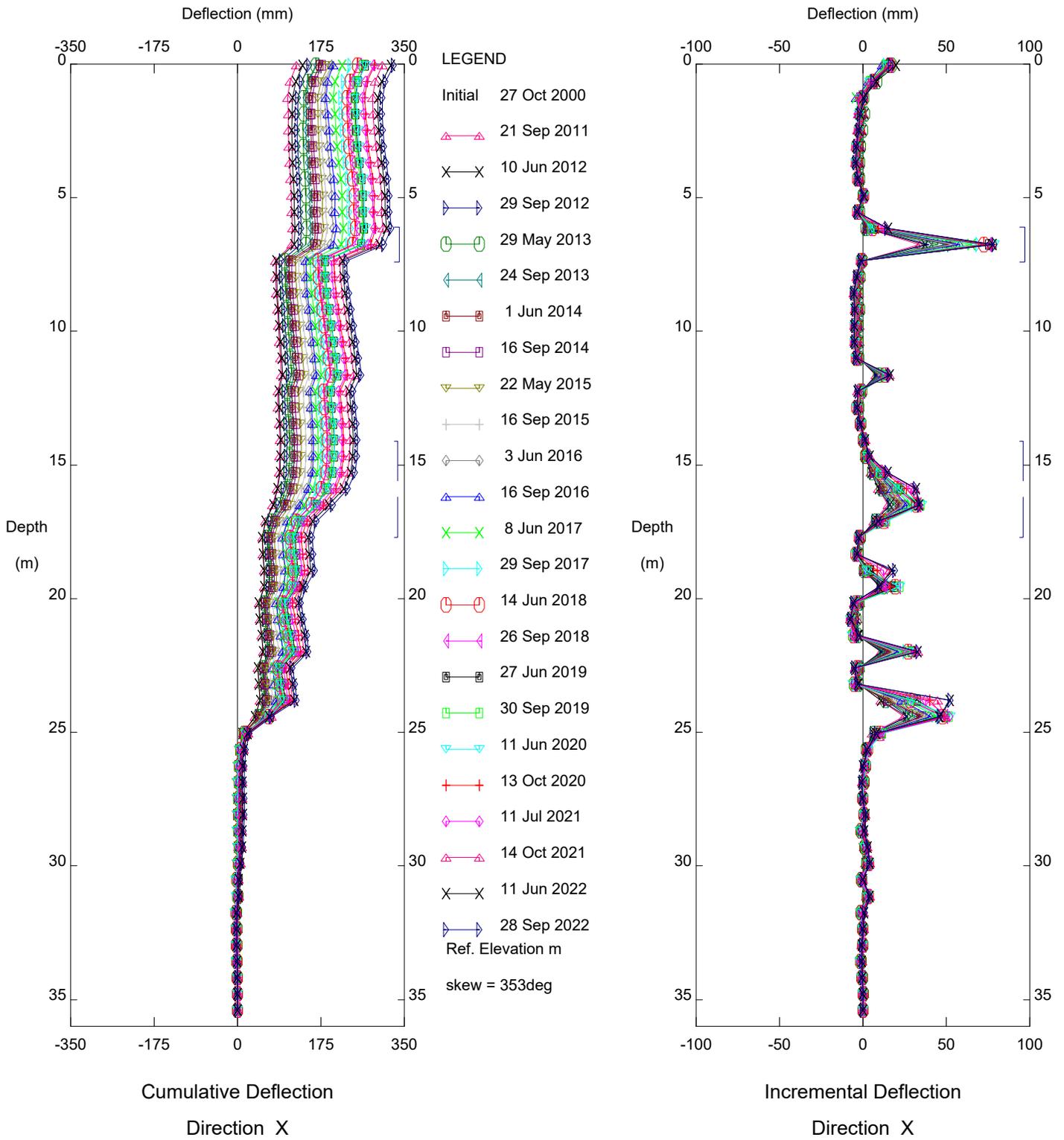
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinator SI98-10i

Alberta Transportation

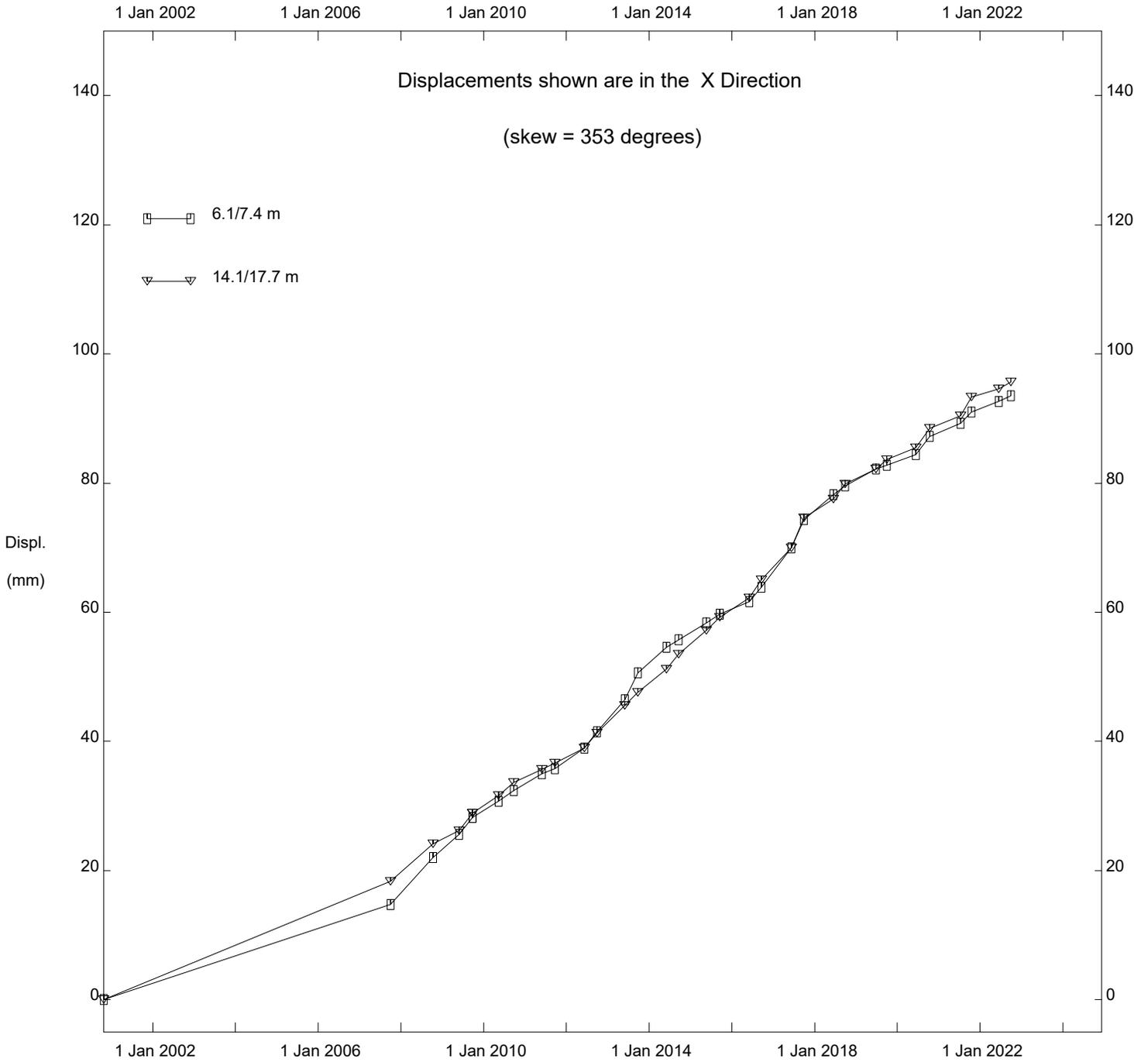
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinometer SI98-10i

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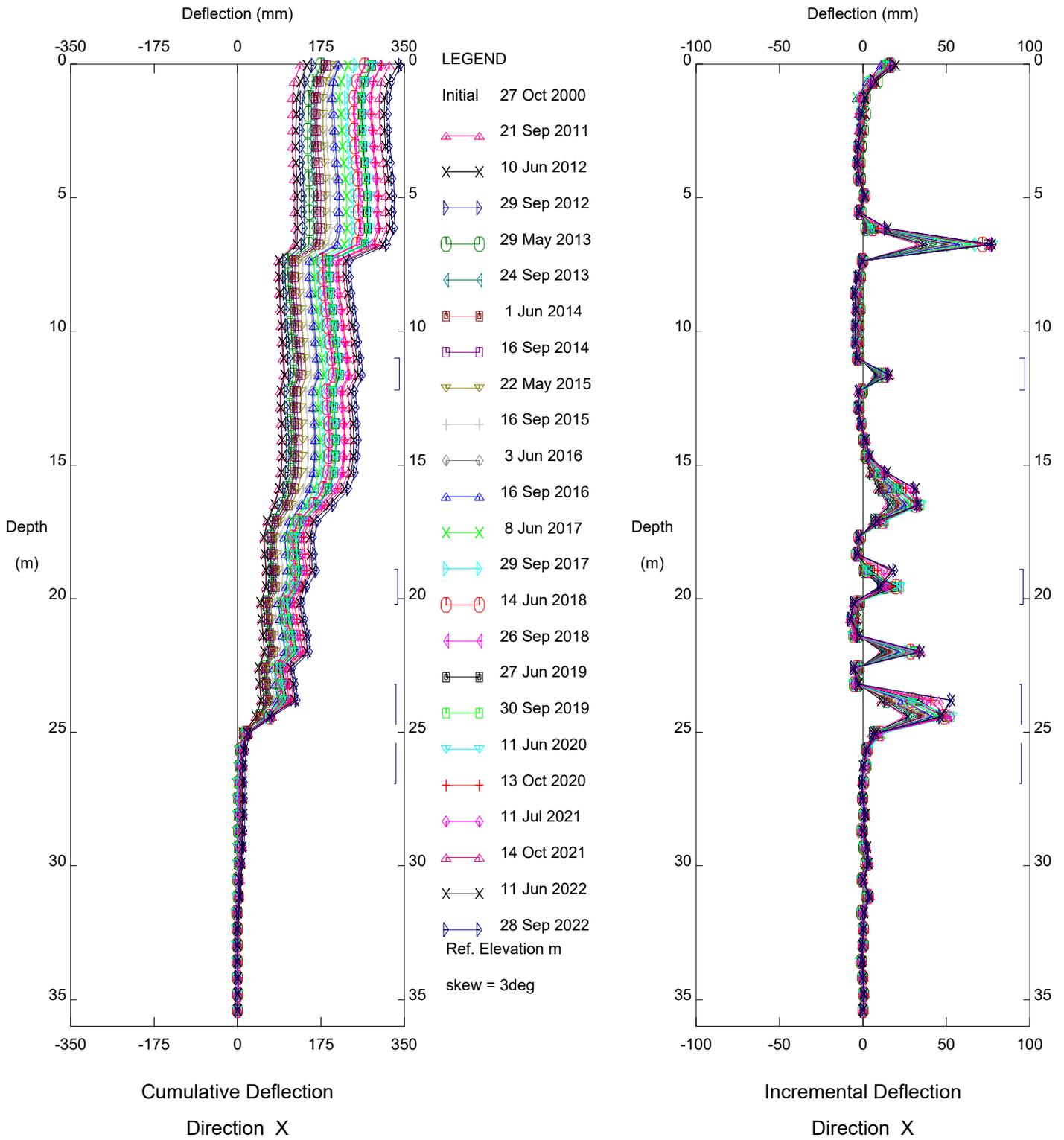
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinator SI98-10i

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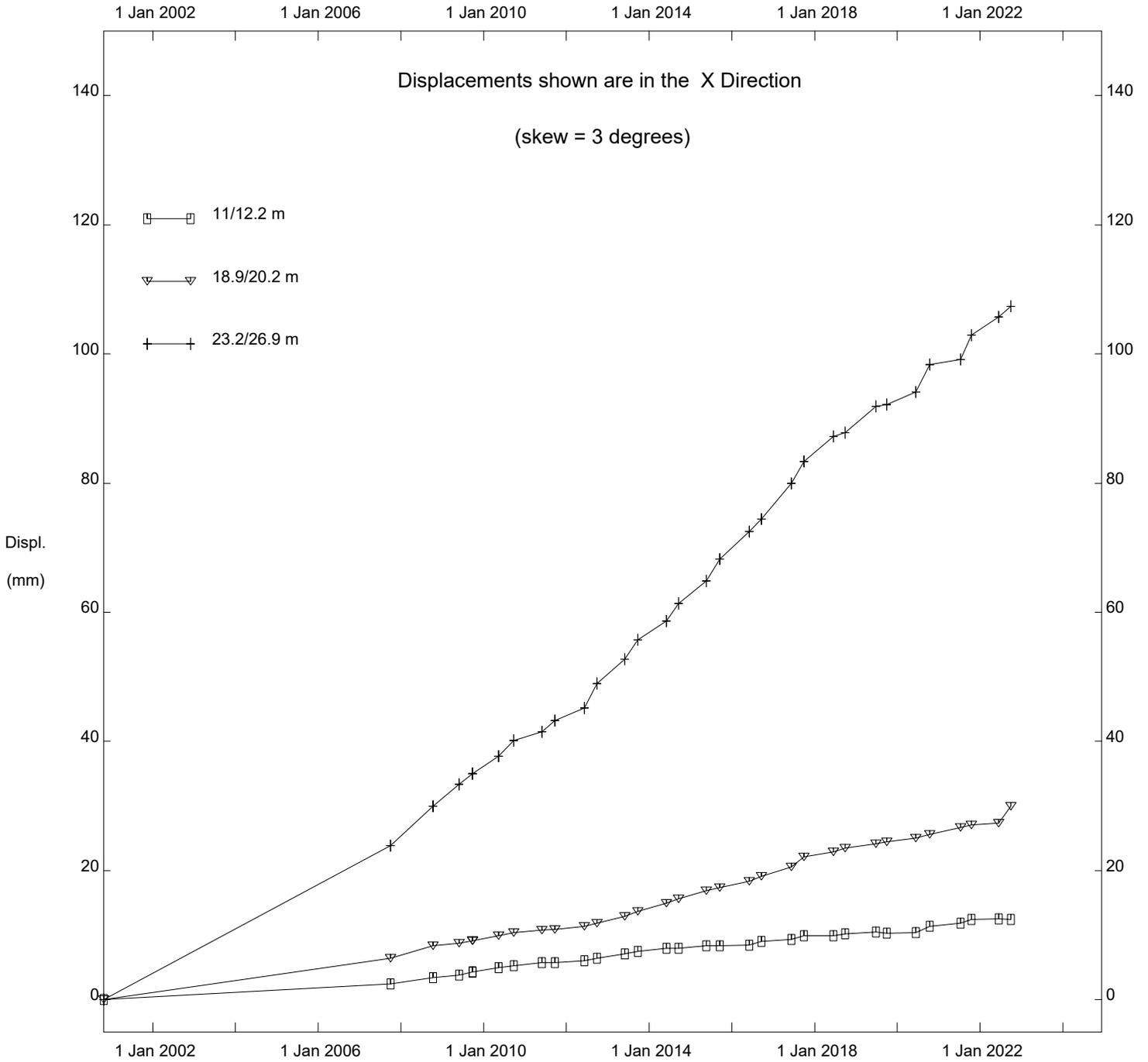
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinator SI98-10i

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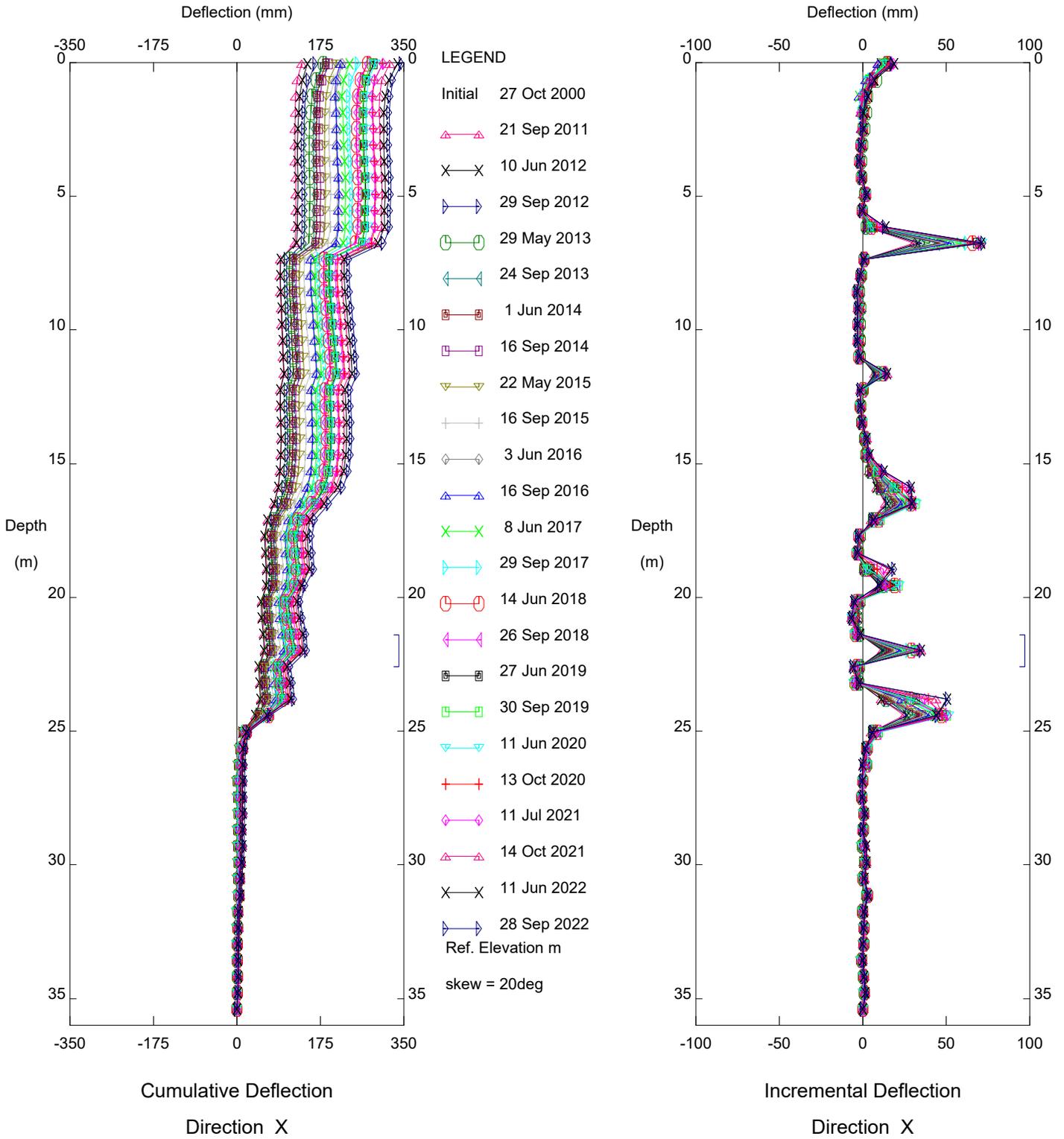
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinator SI98-10i

Alberta Transportation

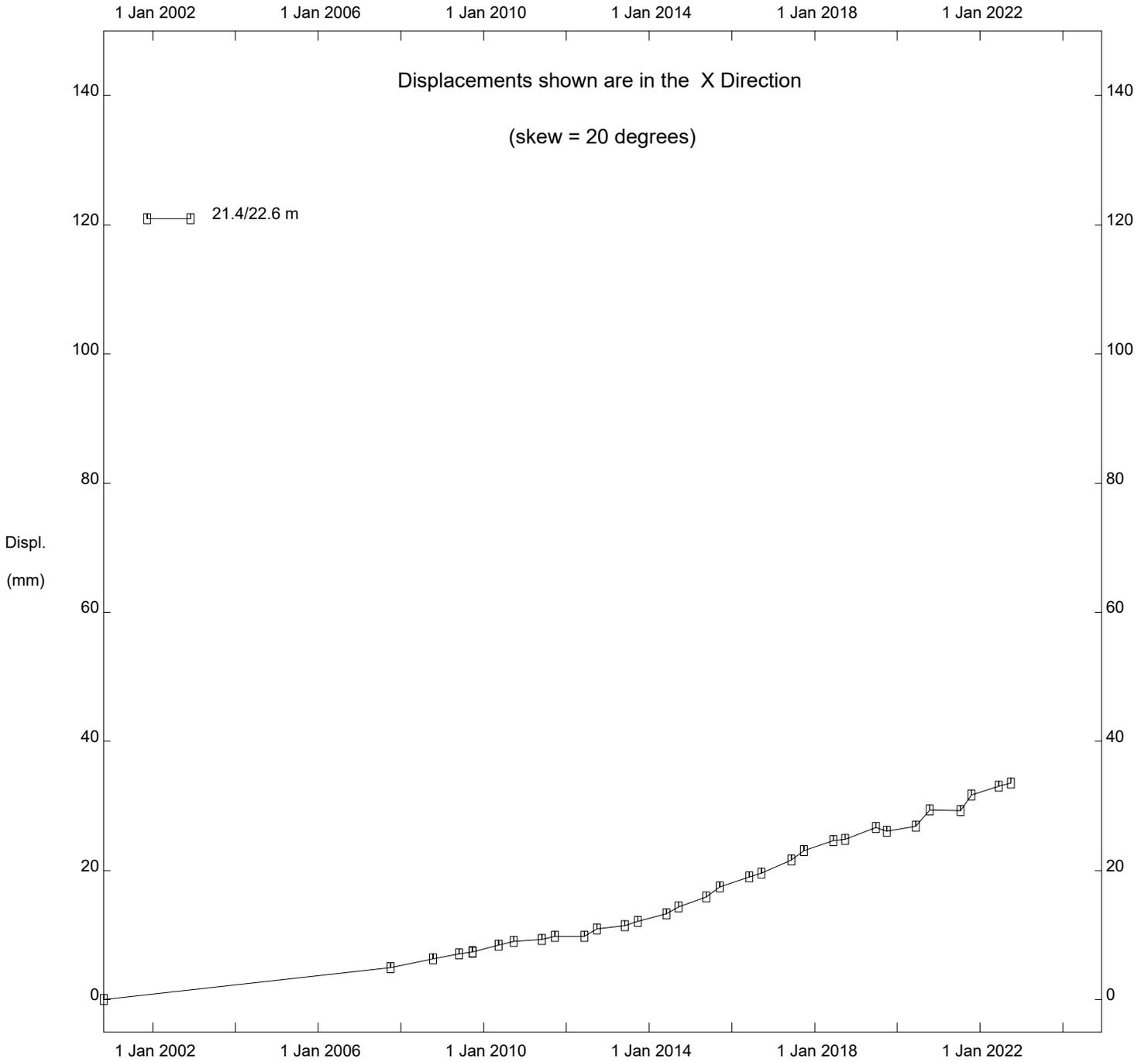
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinator SI98-10i

Alberta Transportation

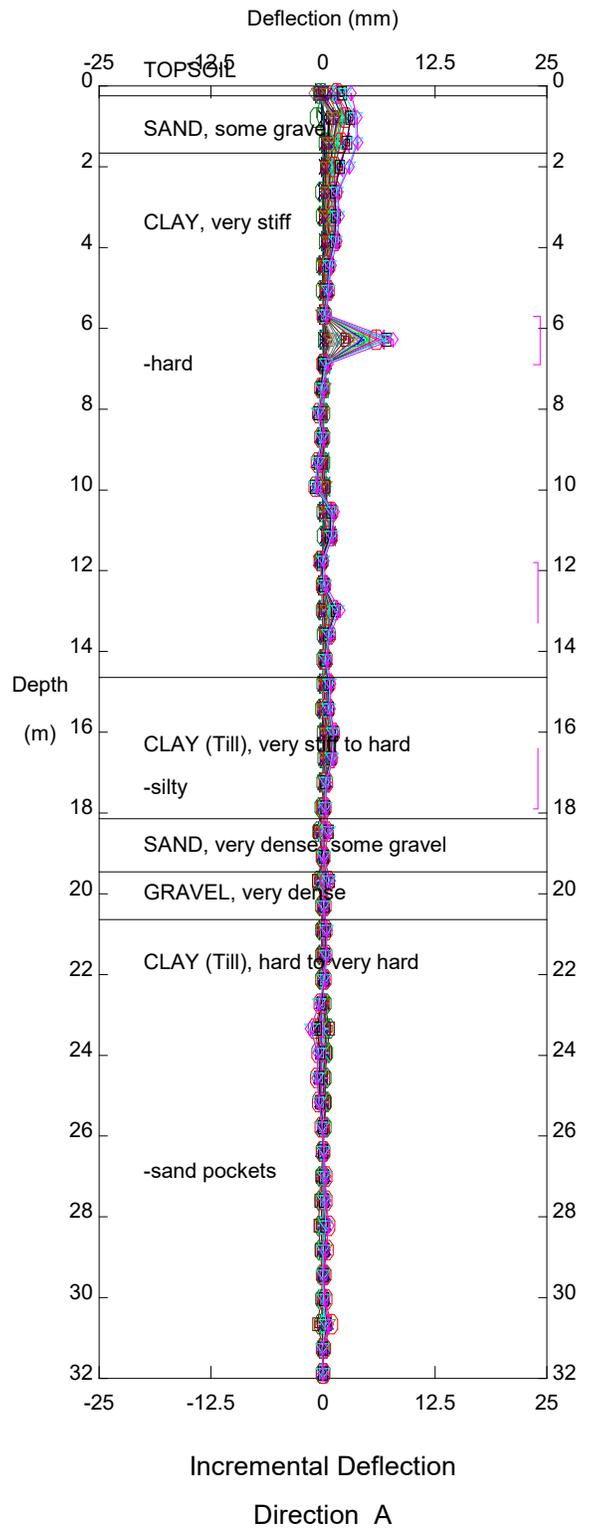
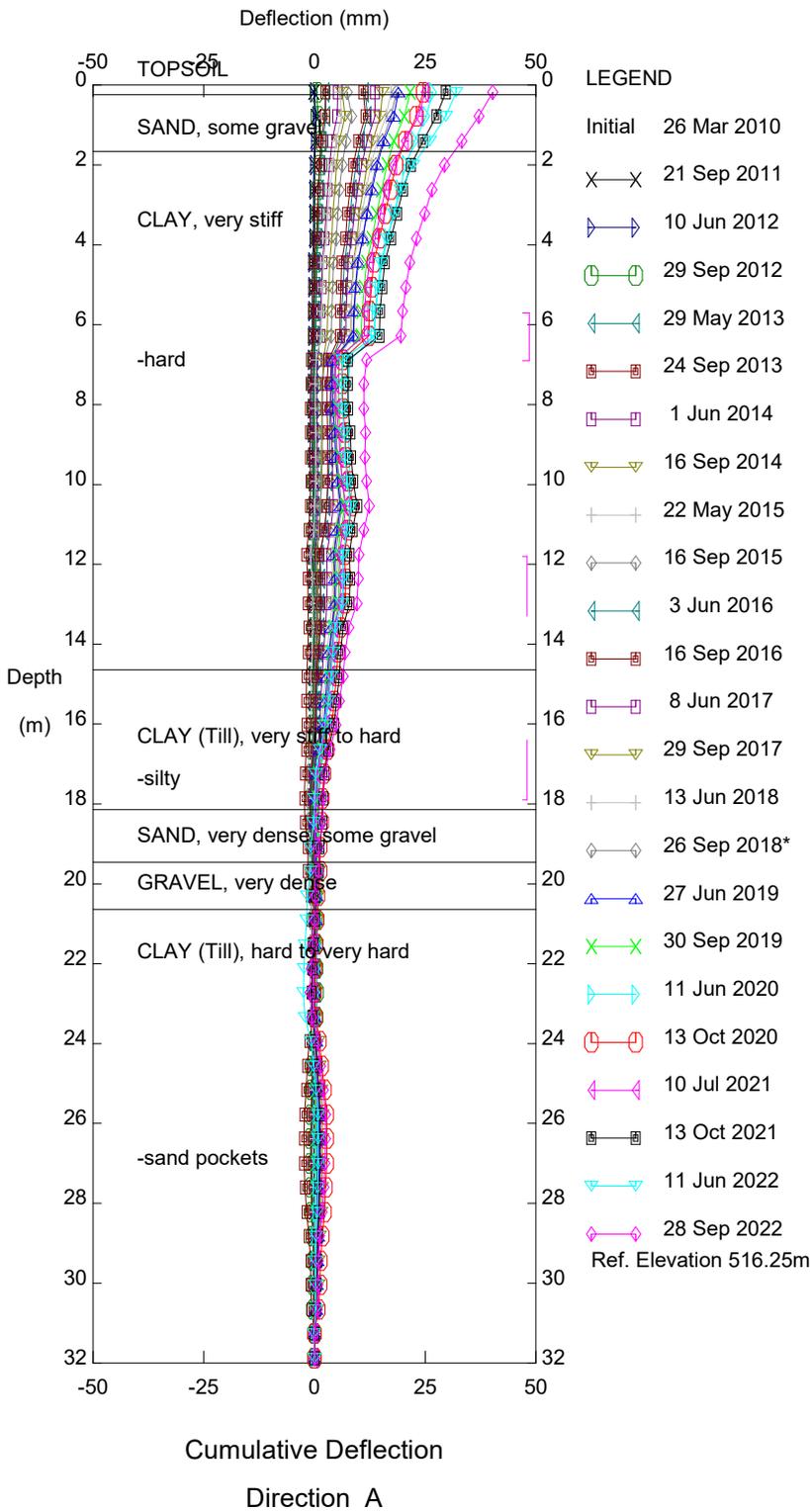
Thurber Engineering Ltd



HWY 744:04 - STA. 57+700 to 58+000, Inclinator SI98-10i

Alberta Transportation

Thurber Engineering Ltd.

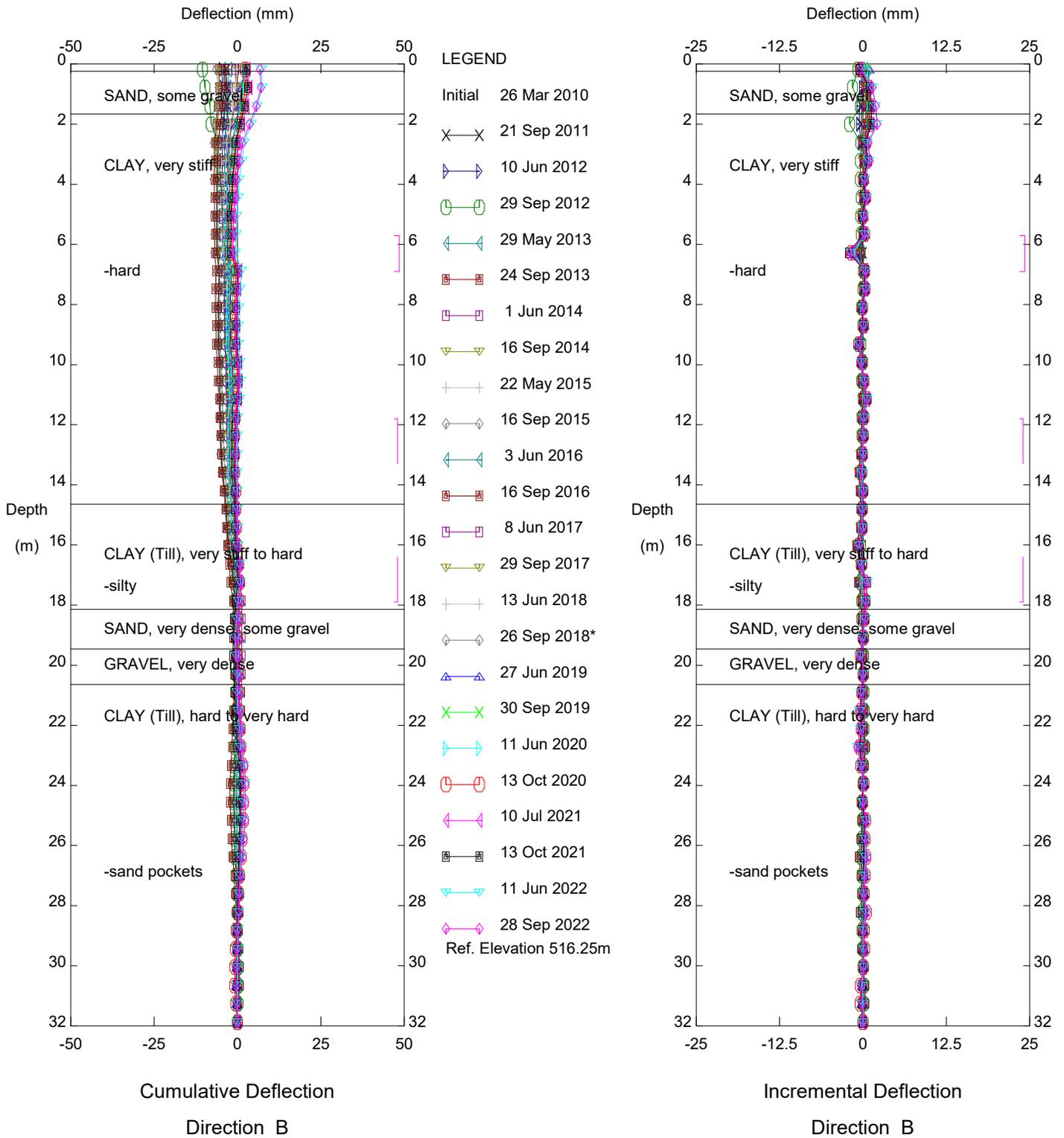


PH031 Judah Hill Michelin Slide, Inclinator SI10-4

Alberta Transportation

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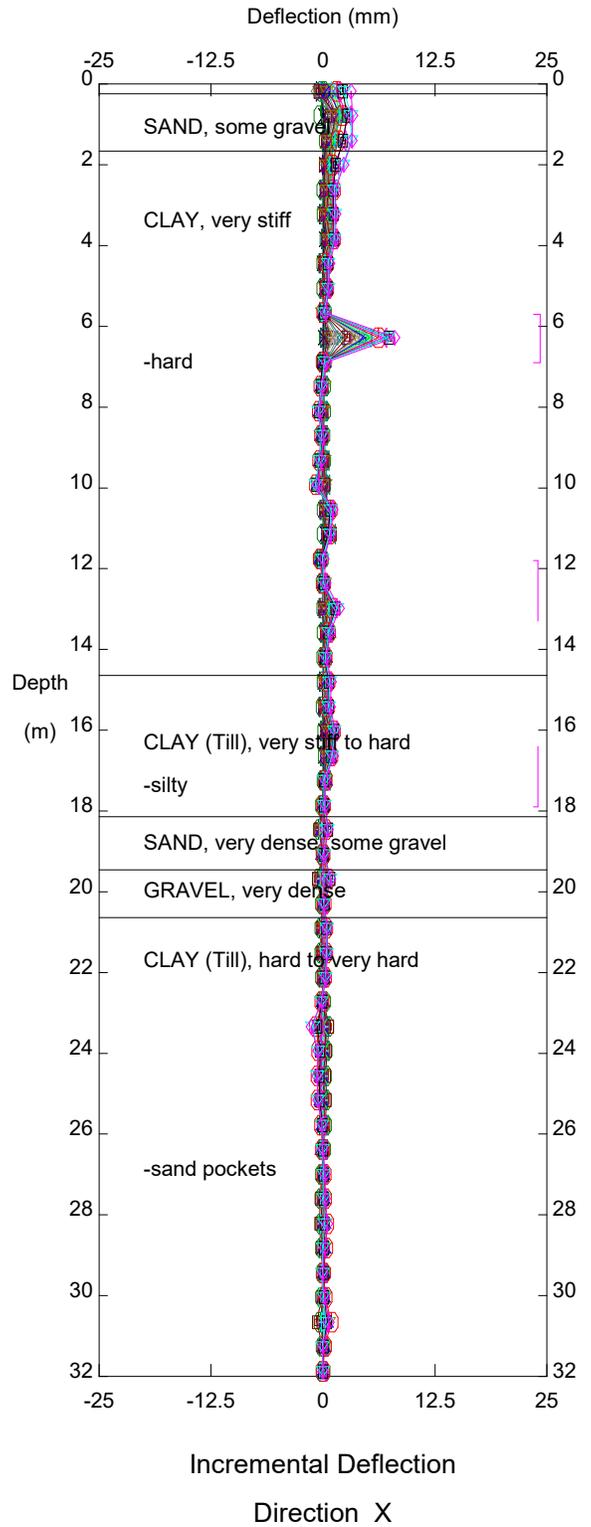
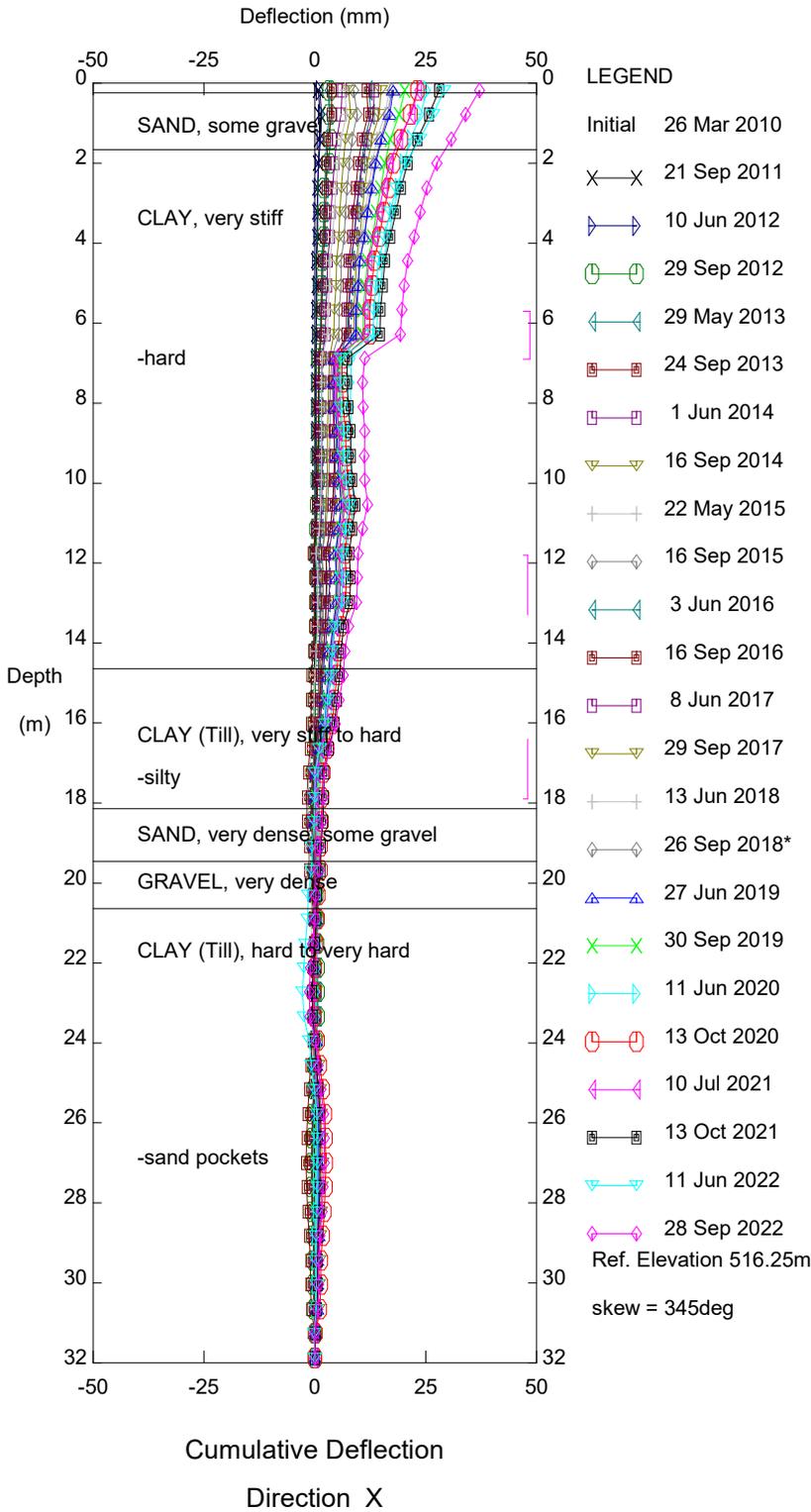
Thurber Engineering Ltd.



PH031 Judah Hill Michelin Slide, Inclinometer SI10-4

Alberta Transportation

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

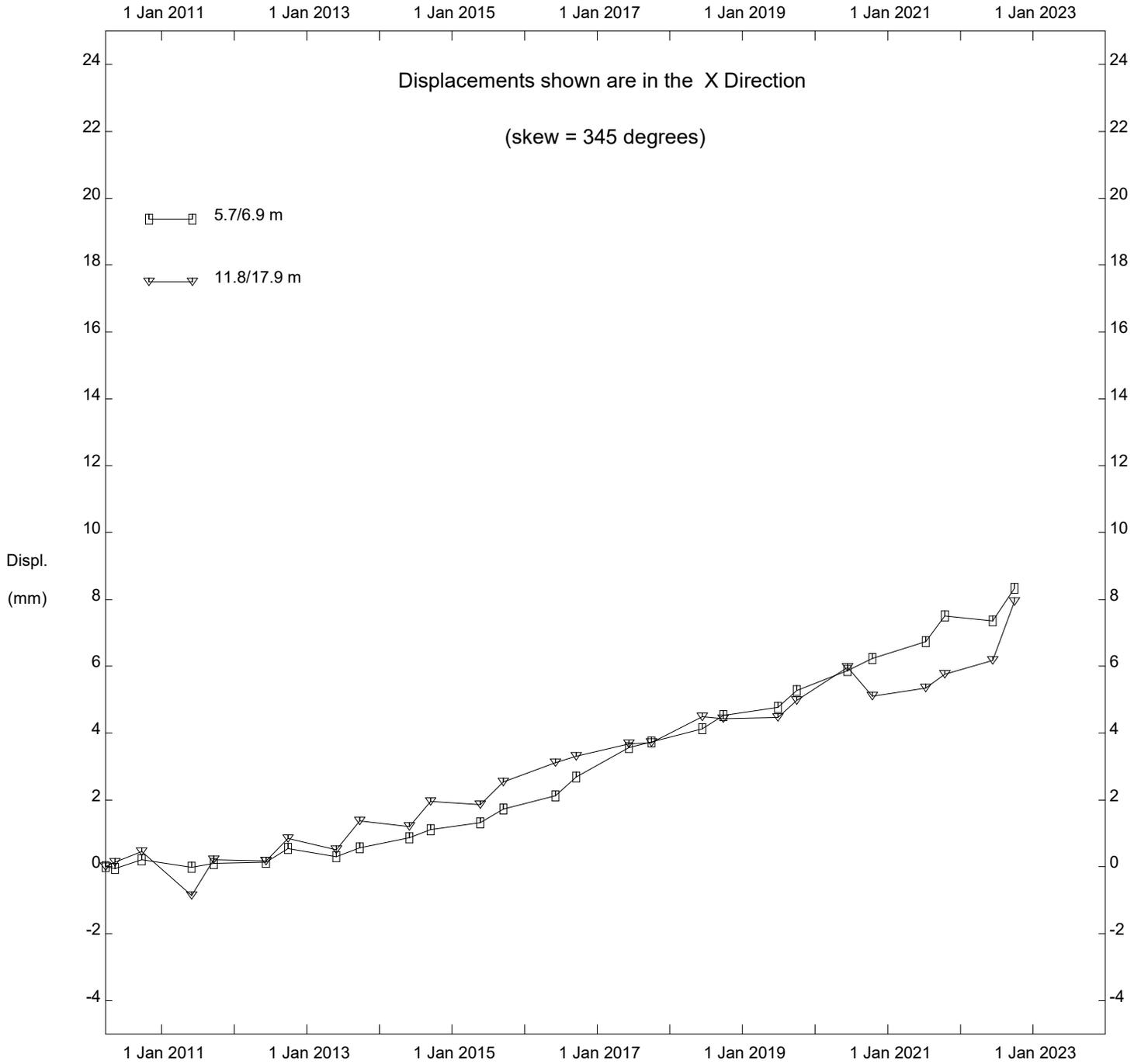


PH031 Judah Hill Michelin Slide, Inclinator SI10-4

Alberta Transportation

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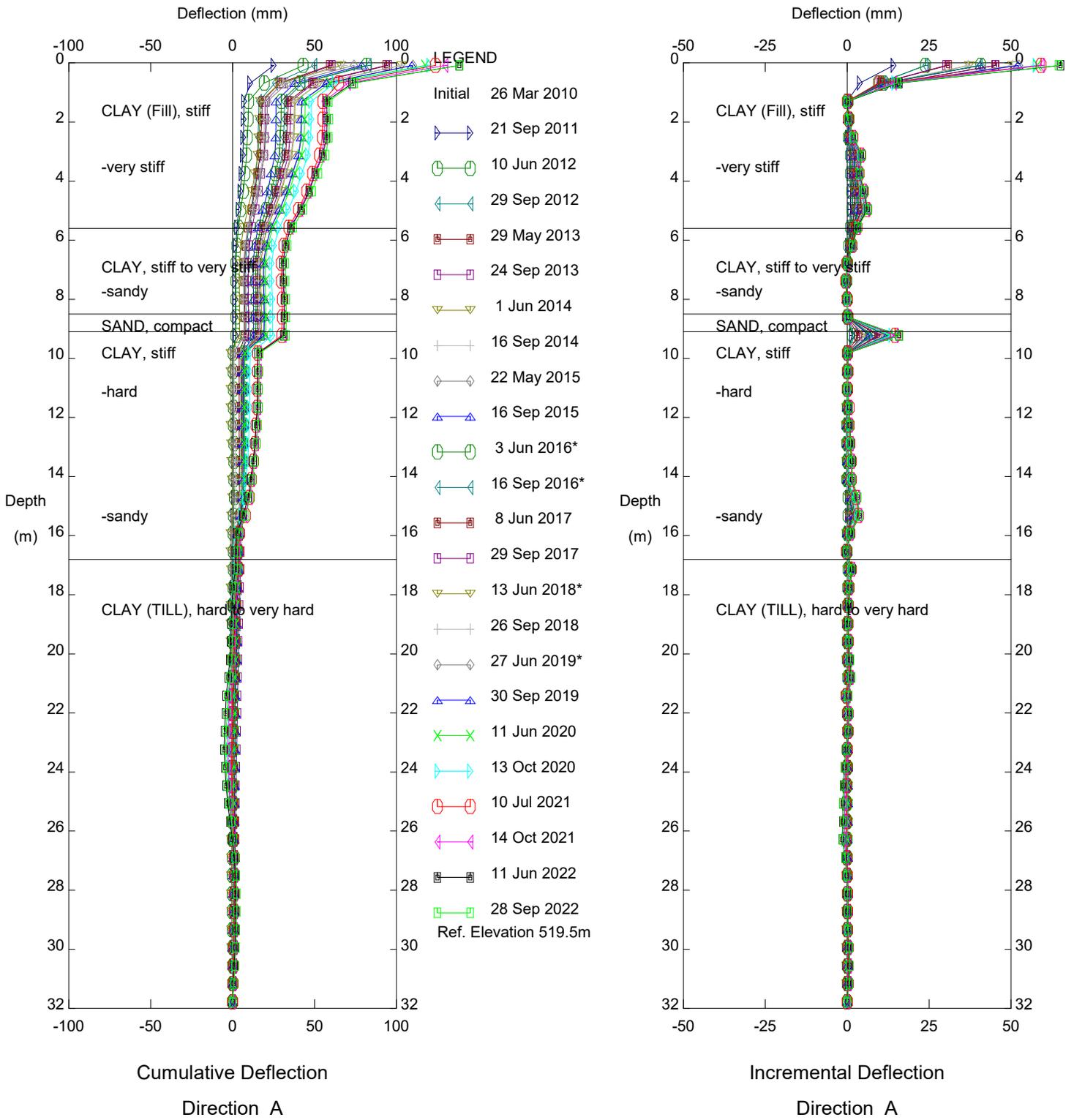
Thurber Engineering Ltd.



PH031 Judah Hill Michelin Slide, Inclinator SI10-4

Alberta Transportation

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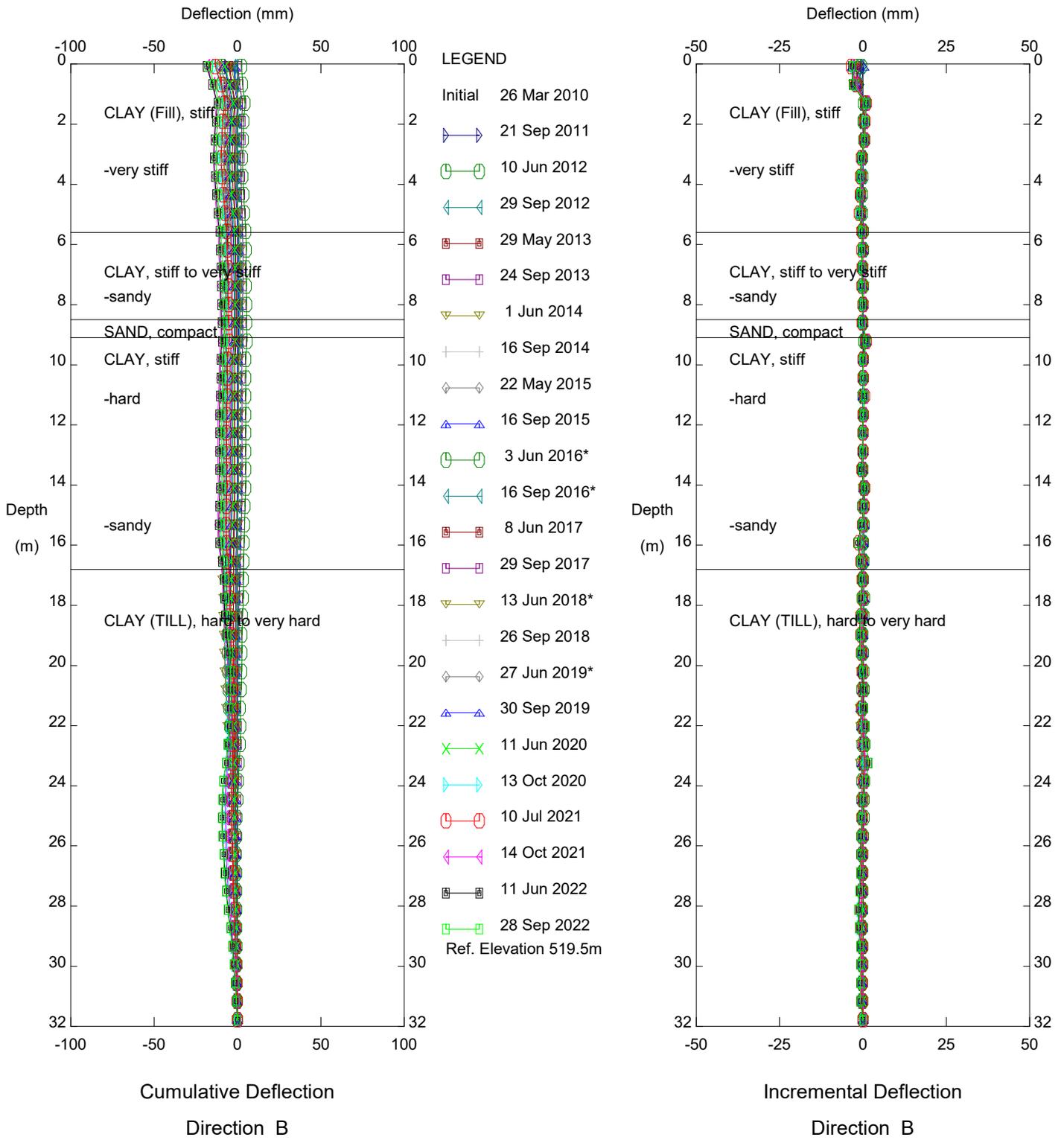


PH031 Judah Hill Michelin Slide, Inclinometer SI10-7

Alberta Transportation

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

Thurber Engineering Ltd.

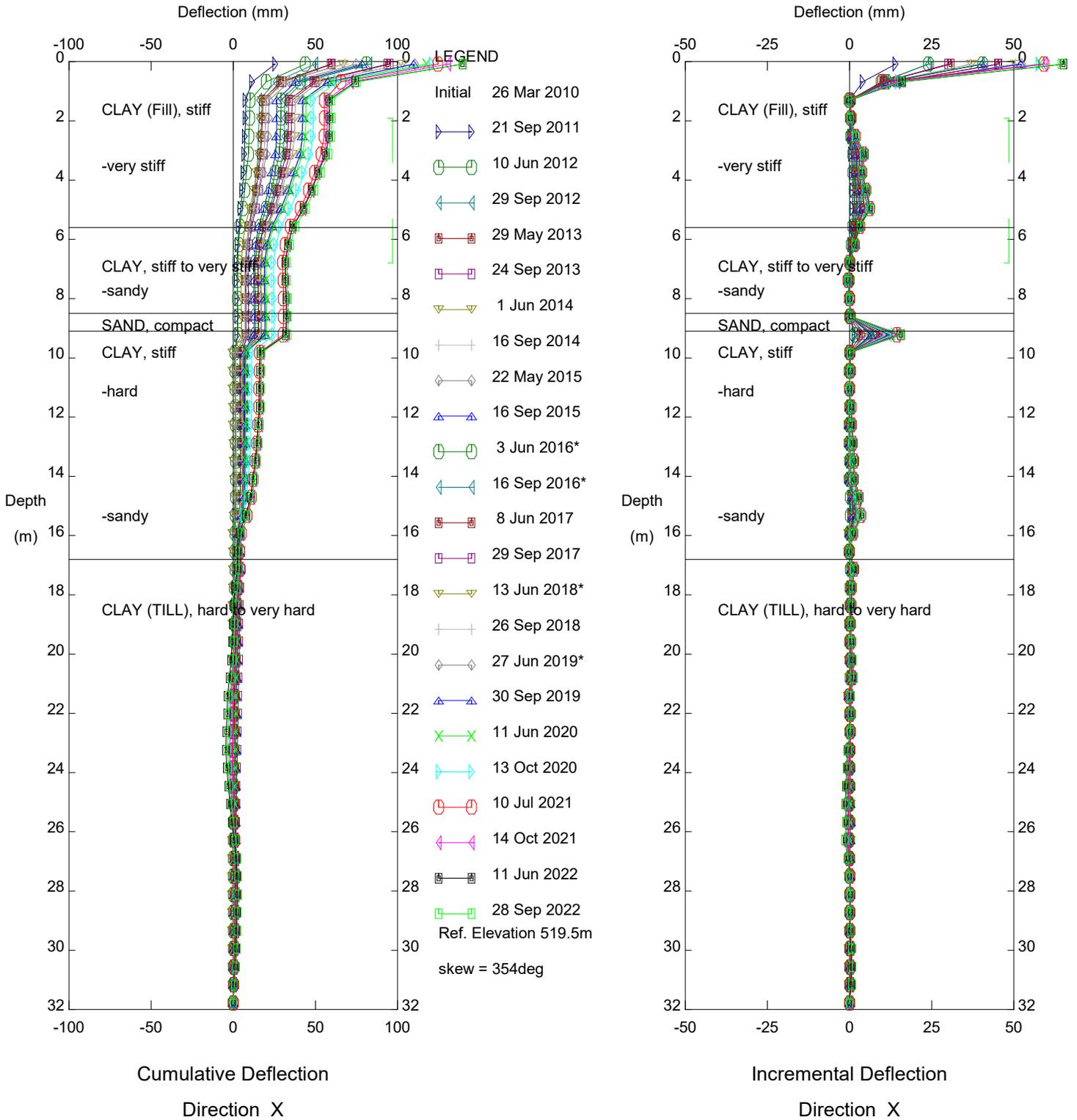


PH031 Judah Hill Michelin Slide, Inclinometer SI10-7

Alberta Transportation

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

Thurber Engineering Ltd.

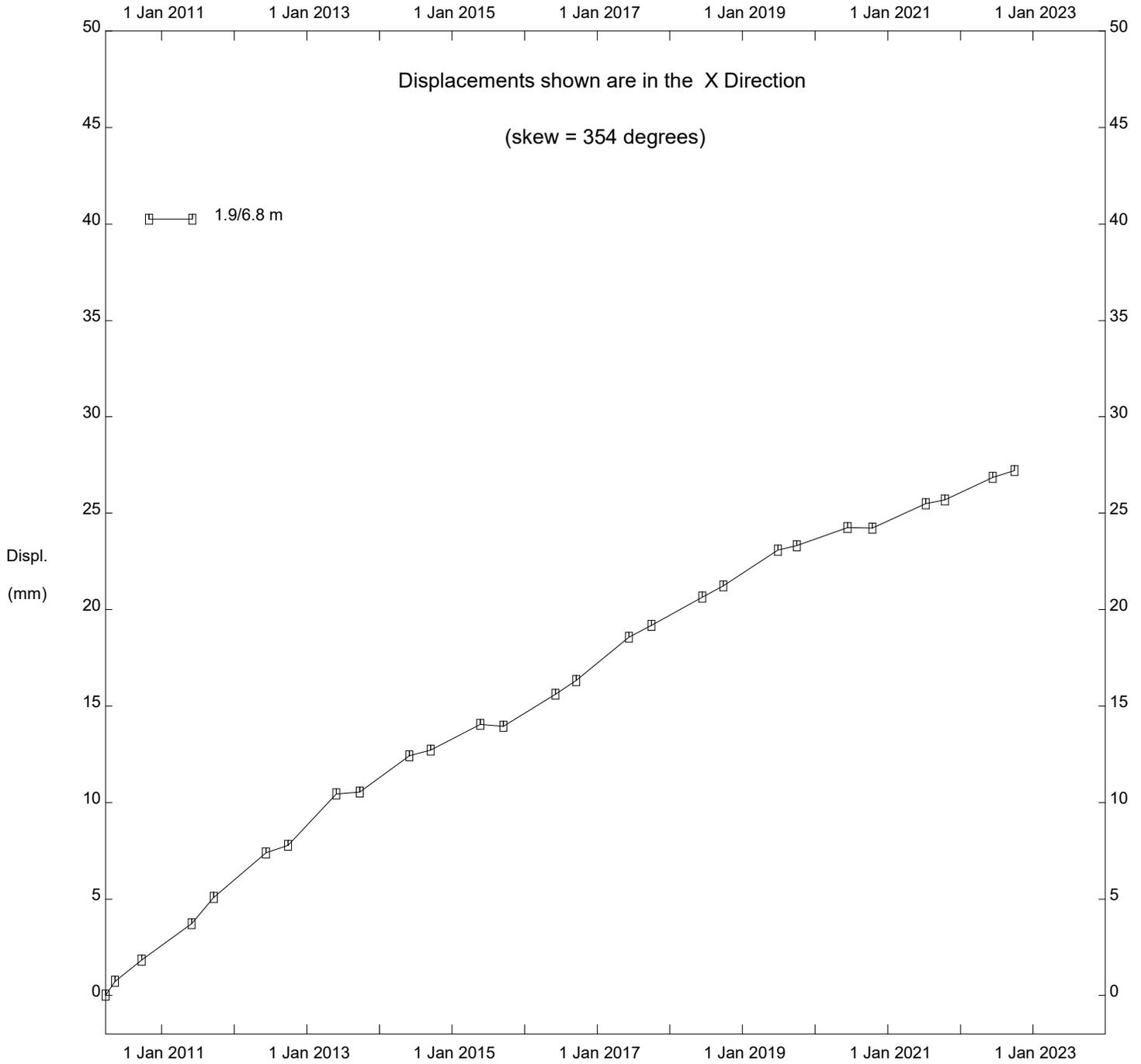


PH031 Judah Hill Michelin Slide, Inclinometer SI10-7

Alberta Transportation

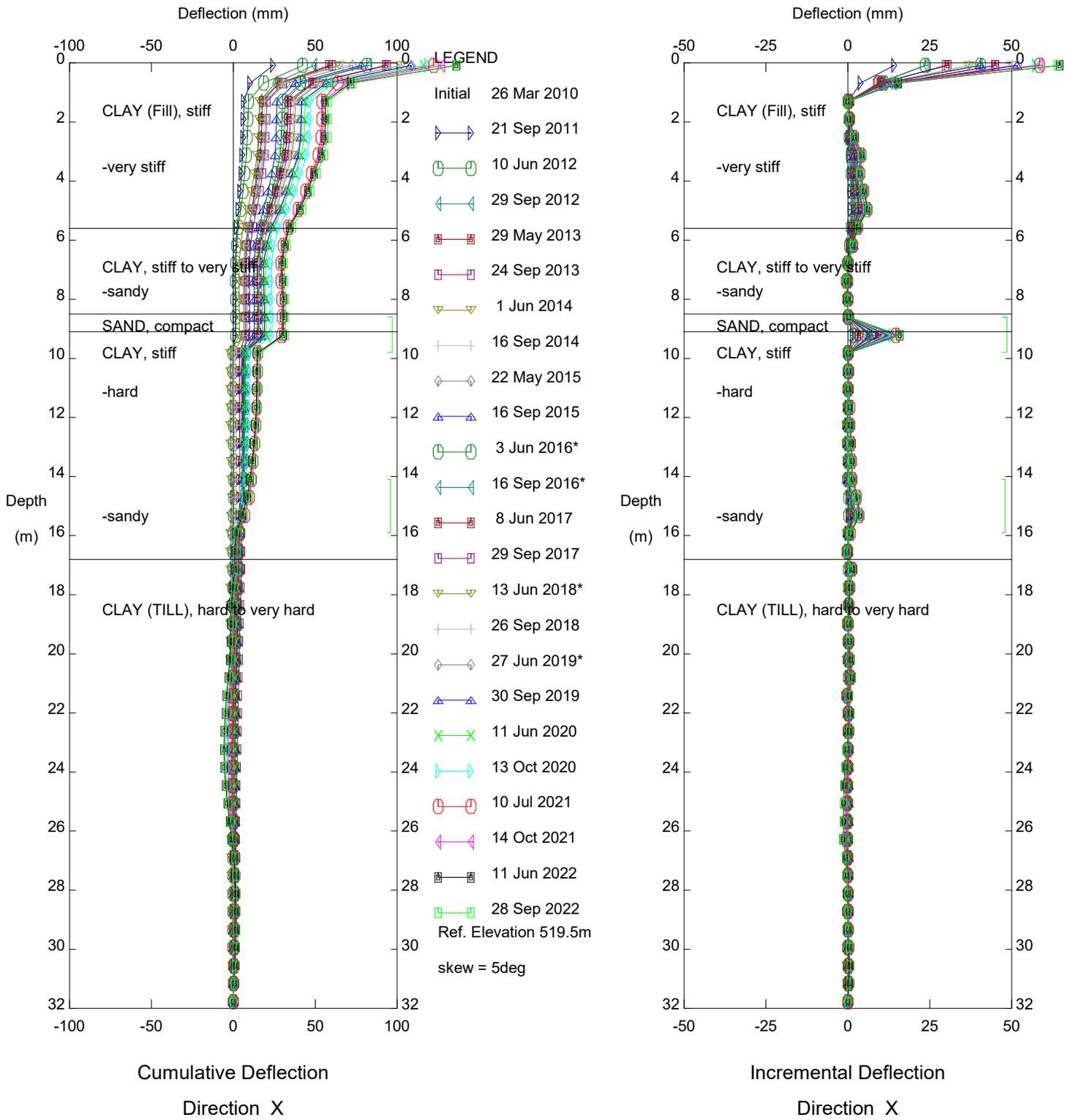
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Thurber Engineering Ltd.



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Alberta Transportation

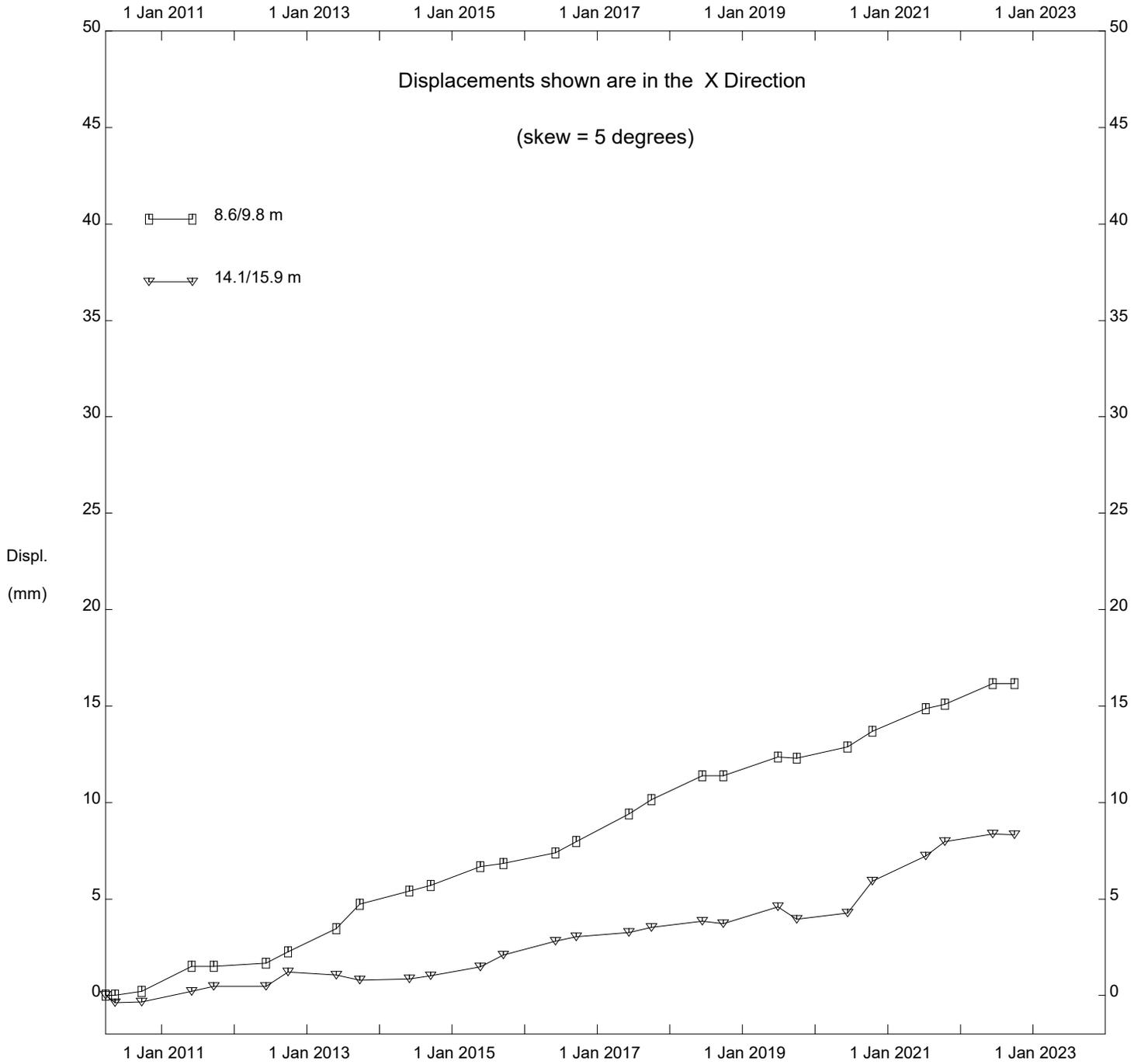


PH031 Judah Hill Michelin Slide, Inclinometer SI10-7

Alberta Transportation

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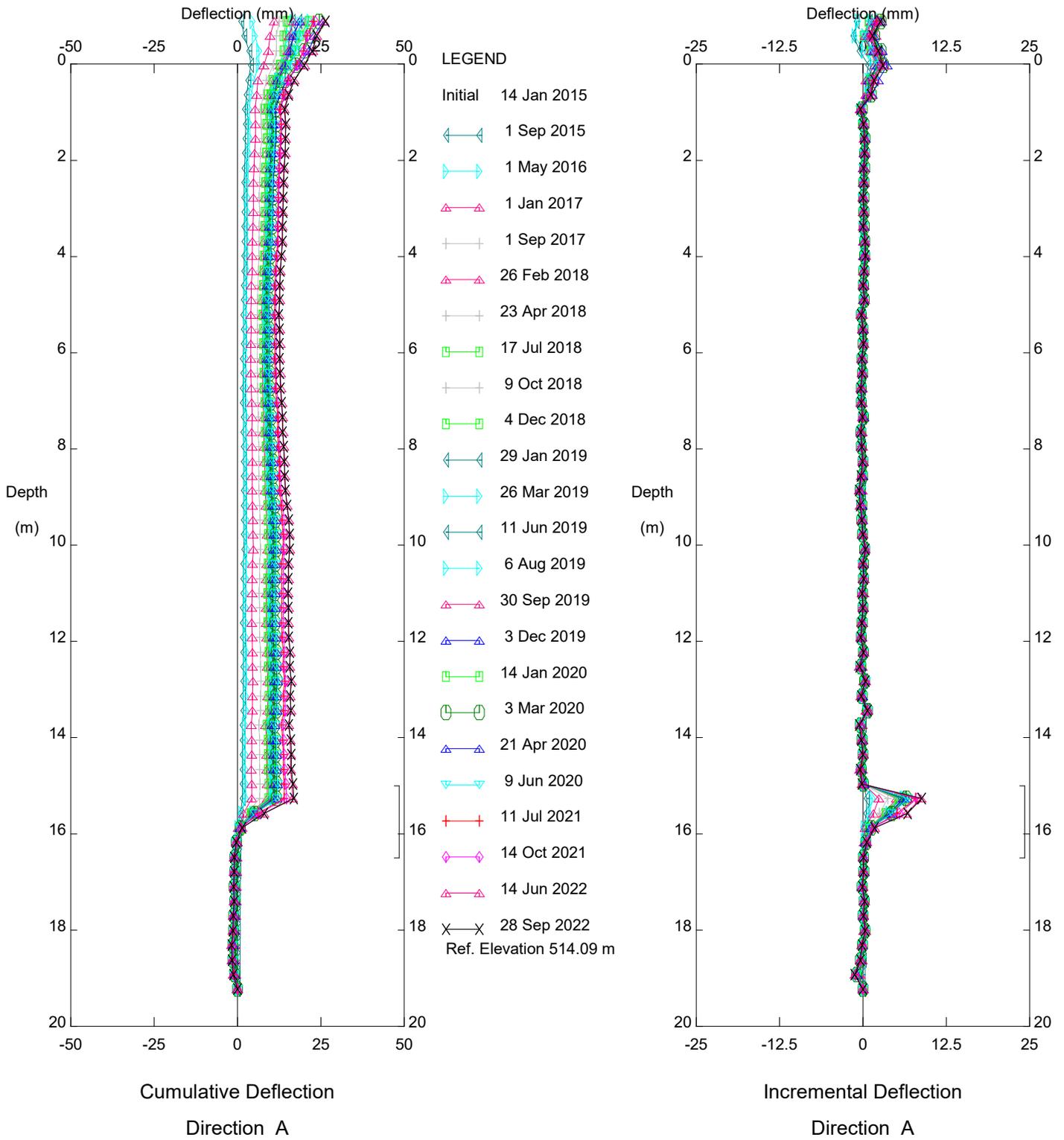
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Alberta Transportation

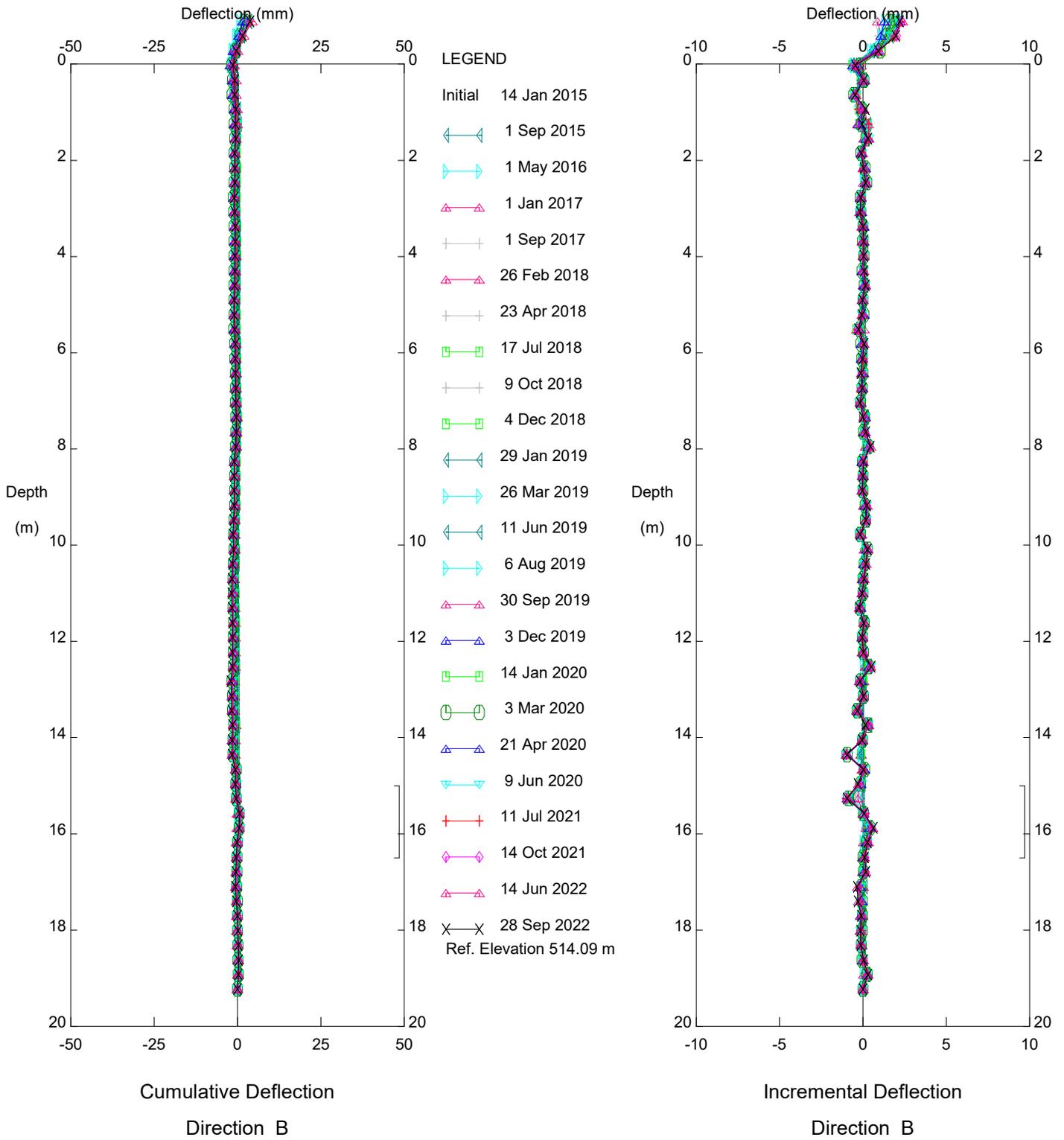
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PH031 Judah Hill Michelin Slide, Inclinometer SAA10-8

Alberta Transportation

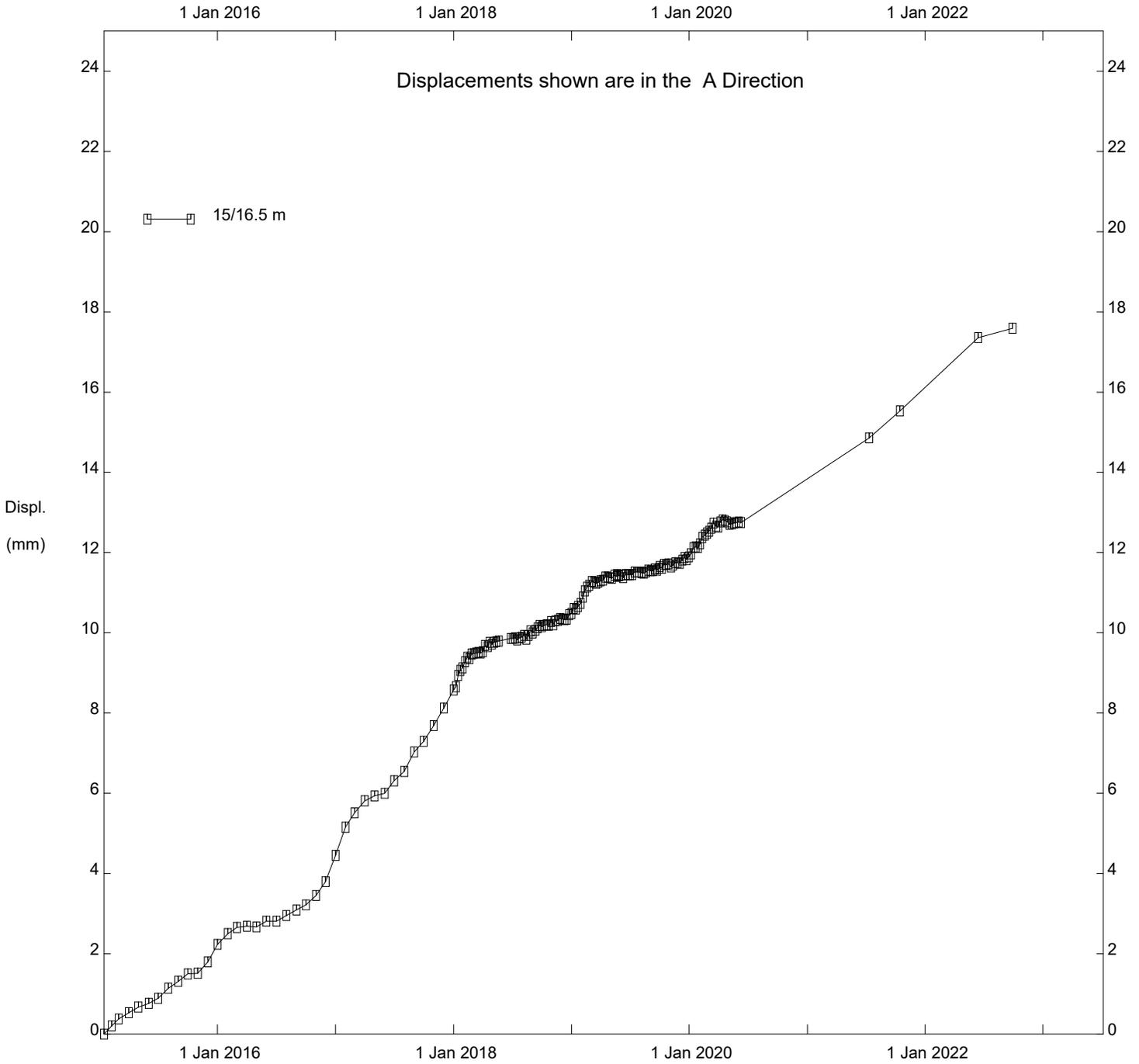
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PH031 Judah Hill Michelin Slide, Inclinometer SAA10-8

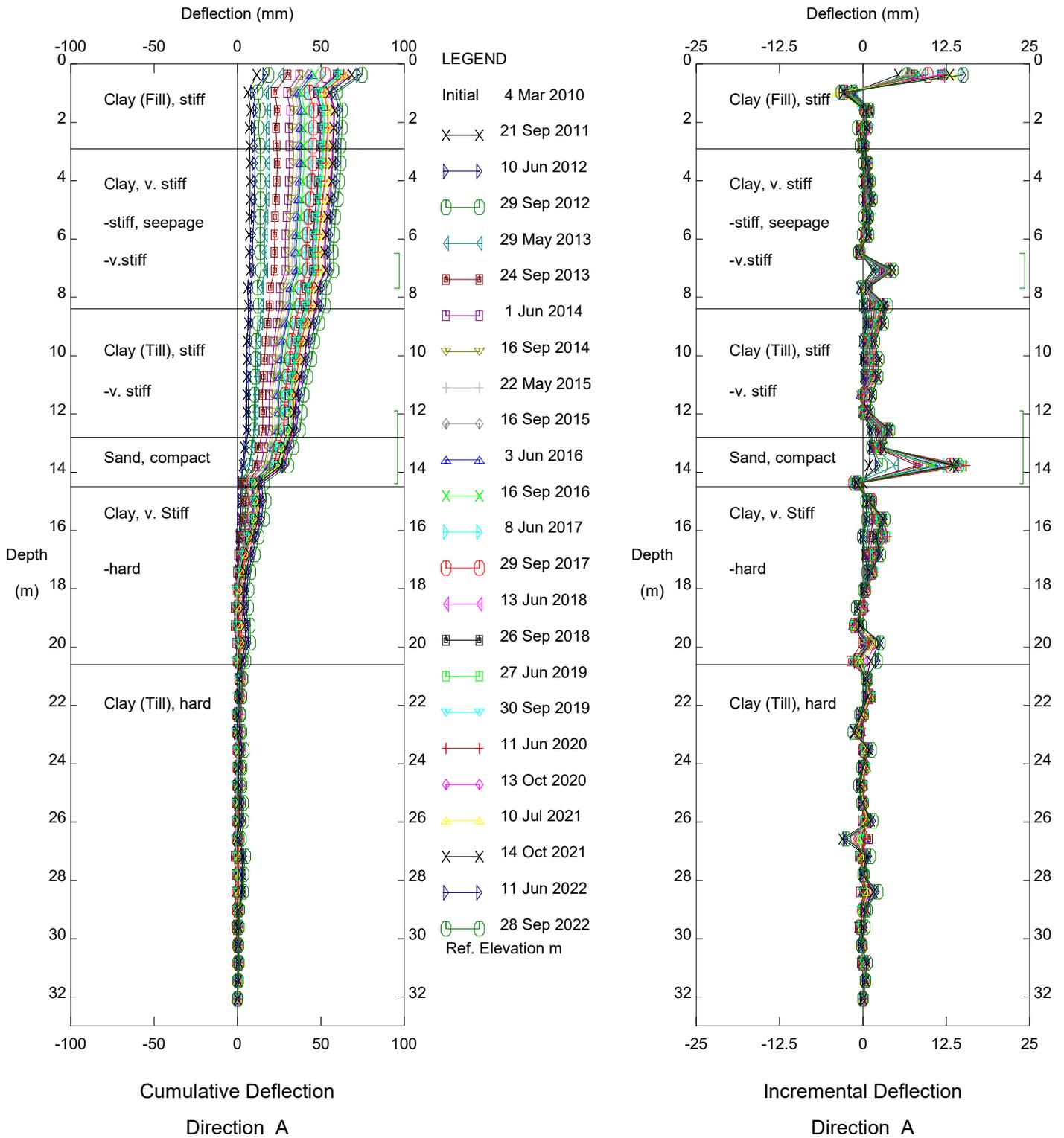
Alberta Transportation

Thurber Engineering Ltd.



PH031 Judah Hill Michelin Slide, Inclinometer SAA10-8

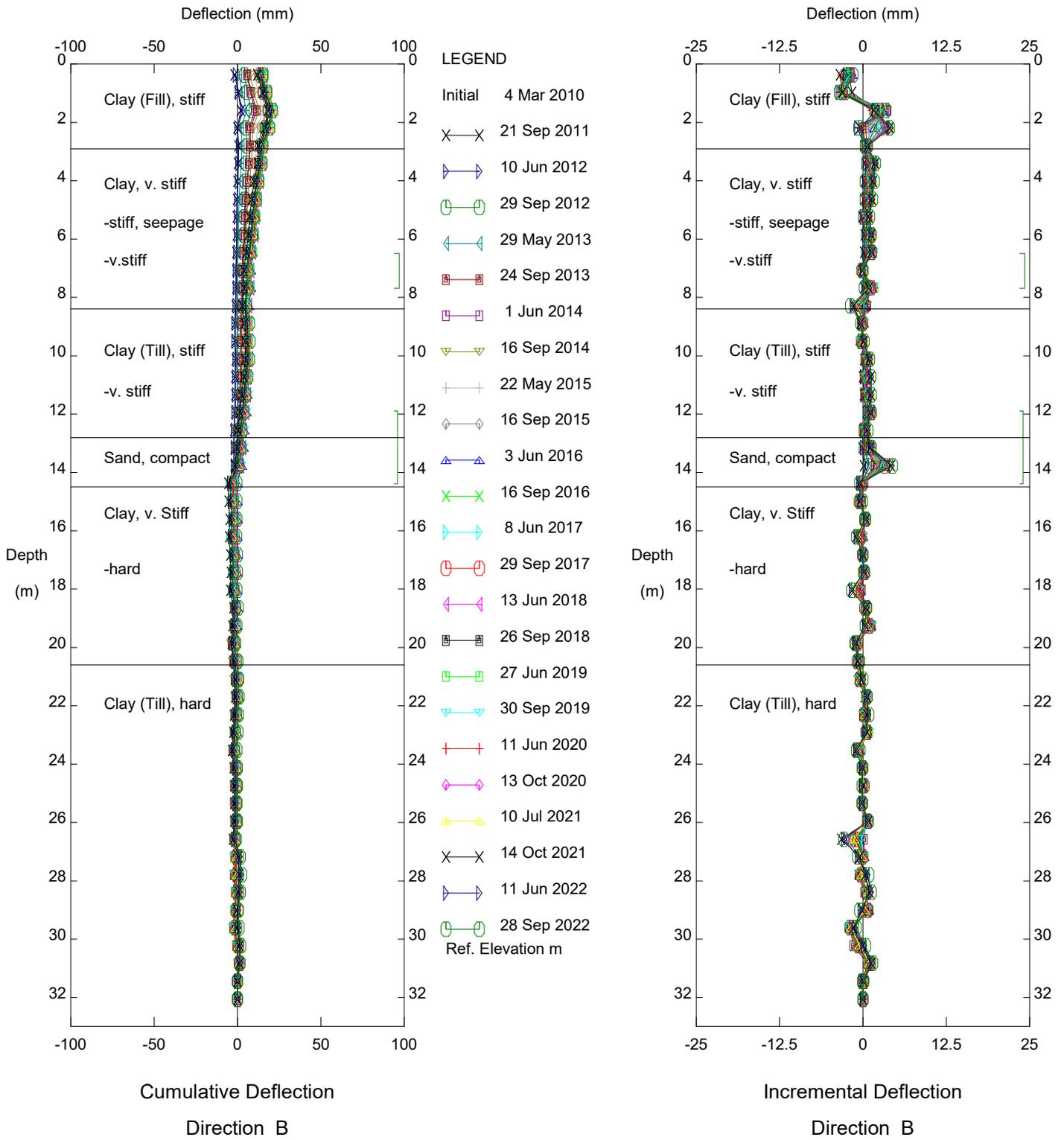
Alberta Transportation



PH031 Judah Hill Michelin Slide, Inclinometer SI10-9

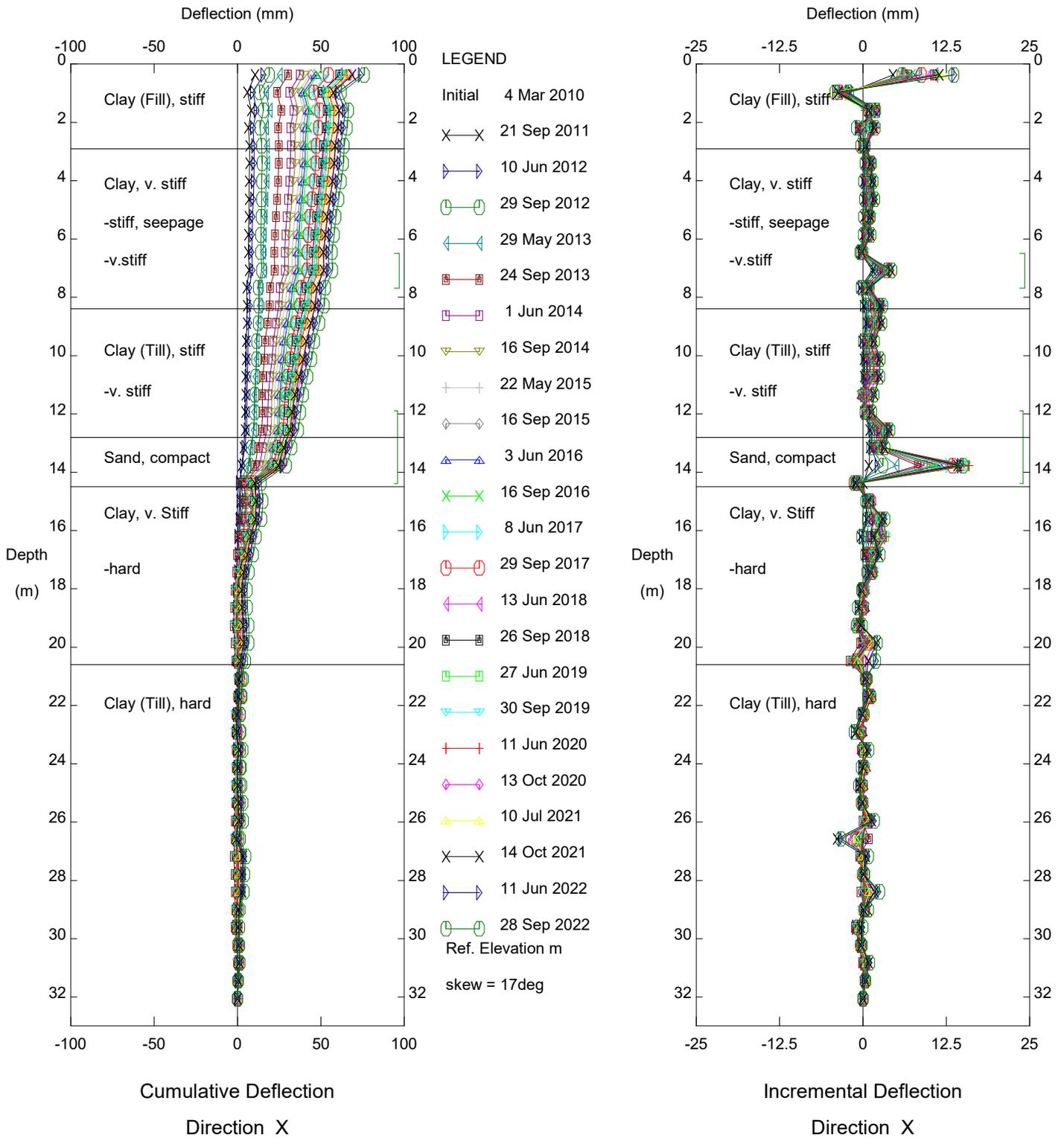
Alberta Transportation

Thurber Engineering Ltd.



PH031 Judah Hill Michelin Slide, Inclinometer SI10-9

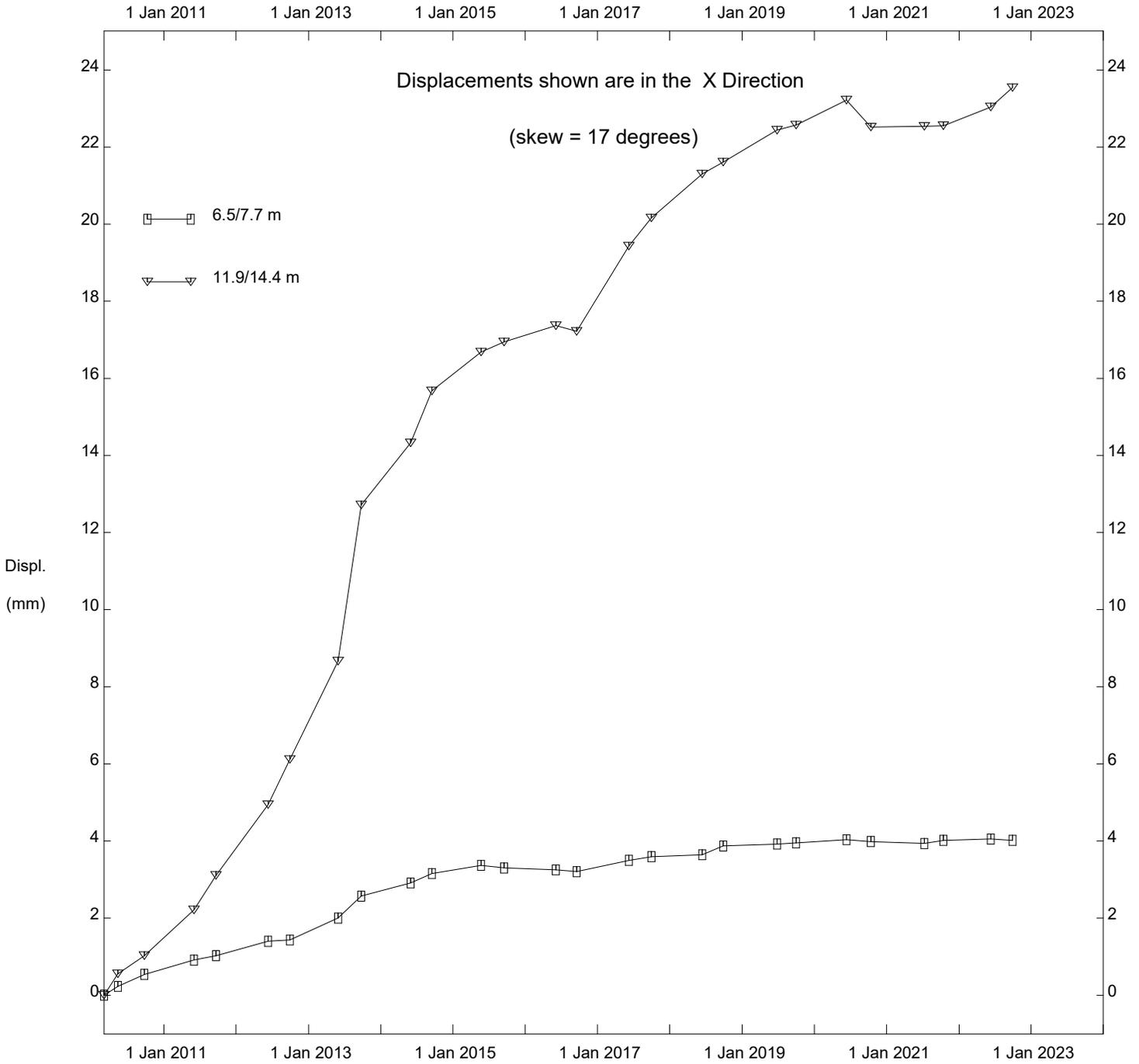
Alberta Transportation



PH031 Judah Hill Michelin Slide, Inclinometer SI10-9

Alberta Transportation

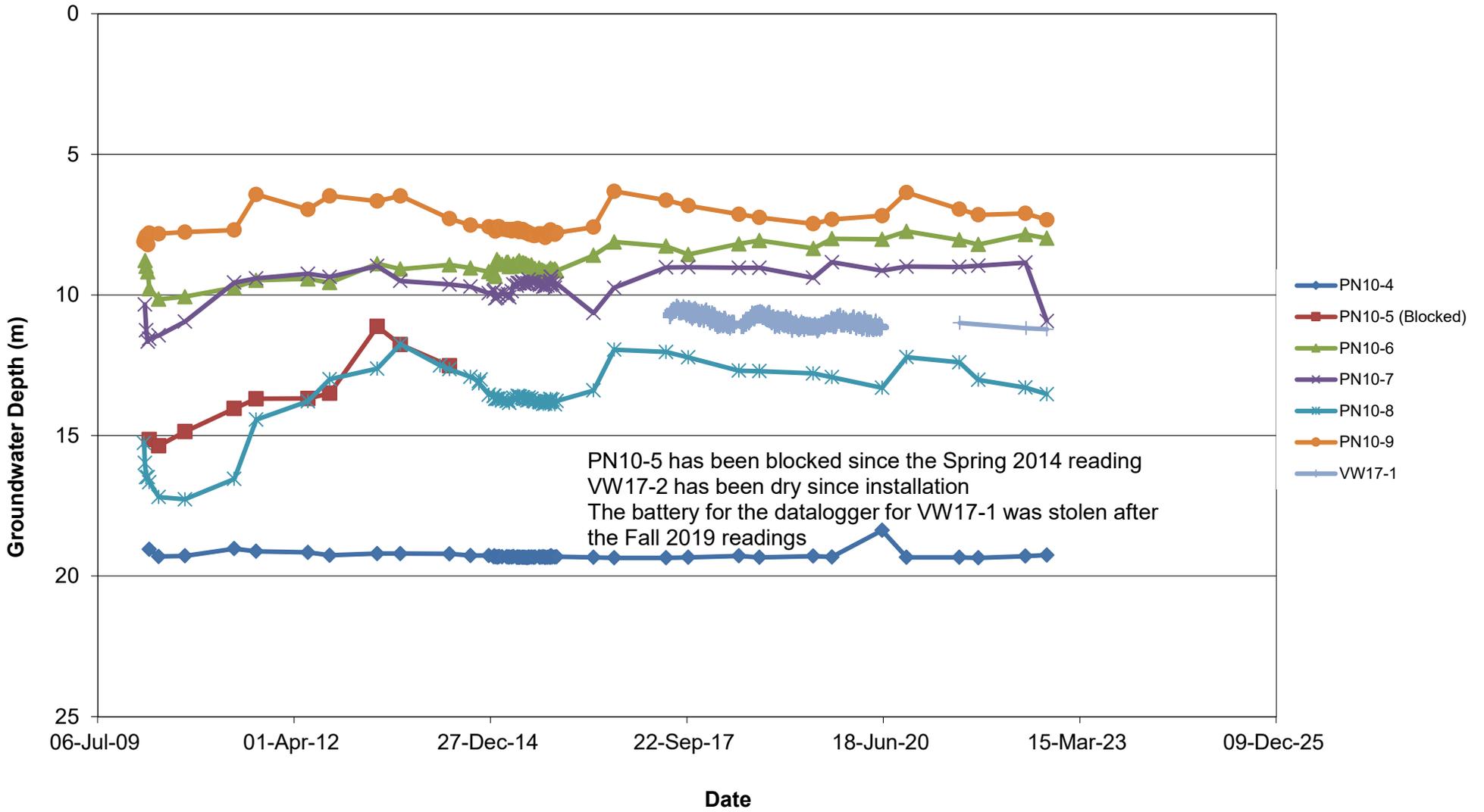
Thurber Engineering Ltd.



PH031 Judah Hill Michelin Slide, Inclinator SI10-9

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**FIGURE PH031-1
PIEZOMETRIC DEPTHS FOR HWY 744:04 JUDAH HILL (MICHELIN SLIDE)**



**FIGURE PH031-2
PIEZOMETRIC ELEVATIONS FOR HWY 744:04 JUDAH HILL (MICHELIN SLIDE)**

