

Site Number	Location	Name	Hwy	km
PH034	HWY 744:04 C1 59.177	Fence Slide - Judah Hill	744:04	Km 59.2
<b>Legal Description:</b> 7-29-83-21 W5		<b>UTM Co-ordinates</b> 11U E 482858.86 N 6230922.58		

<b>Current Monitoring:</b>	24-May-2024	<b>Previous Monitoring</b>	11-Oct-2023
<b>Instruments Read By:</b>	Mr. Niraj Regmi, G.I.T and Mr. Nixon Mationg, of Thurber		

Instruments Read During This Site Visit			
<b>Slope Inclinometers (SIs):</b> SI05-15 SI10-15	<b>Pneumatic Piezometers (PN):</b> PN10- 12PN10-15	<b>Vibration Wire Piezometers (VW):</b> N/A	<b>Standpipe Piezometers (SP):</b>
<b>Load Cell (LC):</b> N/A	<b>Strain Gauges:</b> N/A	<b>SAAs:</b> N/A	<b>Others:</b>

Readout Equipment Used			
<b>Slope Inclinometers:</b> RST Digital Inclinator probe with 2 ft wheelbases and RST pocket readout	<b>Pneumatic Piezometers:</b> RST C108 pneumatic piezometer readout	<b>Vibration Wire Piezometers:</b>	<b>Standpipe Piezometers:</b>
<b>Load Cell:</b>	<b>Strain Gauges:</b>	<b>SAAs:</b>	<b>Others:</b>
<b>Note:</b>			

Discussion	
<b>Zones of New Movement:</b>	None
<b>Interpretation of Monitoring Results:</b>	<p>Slope inclinometer SI05-15, located at the top of the backslope outside the main slide area, has shown some reading noise but no discernible movement since installation in 2005.</p> <p>SI10-15 showed a rate of movement of 2.0 mm/yr over 2.4 m to 5.5 m depth since the fall of 2023 readings. The rate of movement has decreased by 3.2 mm/yr since the fall of 2023 readings. Over the long term, since 2011, movement rates at this depth have been relatively steady at about 4 mm/yr.</p> <p>Pneumatic piezometer PN10-12 showed an increase in groundwater level of 0.03 m since the fall of 2023 readings. PN10-15 showed a decrease in groundwater level of 0.03 m since the fall of 2023 readings..</p>
<b>Future Work:</b>	The instruments should be read again in the fall of 2024.
<b>Instrumentation Repairs:</b>	No instrument repairs are required at this time.
<b>Additional Comments:</b>	

<b>Attachments:</b>	<ul style="list-style-type: none"><li>• Table PH034-1: Spring 2024 – HWY 744:04 Judah Hill (Fence Slide) Slope Inclinometer Instrumentation Reading Summary</li><li>• Table PH034-2: Spring 2024 – HWY 744:04 Judah Hill (Fence Slide) Pneumatic Piezometer Instrumentation Reading Summary</li> <li>• Statement of Limitations and Conditions</li> <li>• APPENDIX A - PH034 SPRING 2024<ul style="list-style-type: none"><li>○ Field Inspector's report</li><li>○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32121 PH034)</li><li>○ SI Reading Plots</li><li>○ Figure PH034-1 (Pneumatic Piezometer Readings)</li></ul></li></ul>
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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.  
Roger Skirrow, M.Sc., P. Eng.  
Senior Geotechnical Engineer

Lucas Green, P.Eng.  
Geotechnical Engineer



**Table PH034-1: Spring 2024– HWY 744:04 Judah Hill (Fence Slide) Slope Incliner Instrumentation Reading Summary**

Date Monitored: May 24, 2024

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)
SI98-2i	Oct. 26, 2000	Not Known	Not Known	Destroyed	May 18, 2004	N/A	N/A	N/A
SI98-8i	Oct. 26, 2000	Not Known	Not Known	Destroyed	Oct. 22, 2005	N/A	N/A	N/A
SI05-15	Apr. 27, 2005	No discernible movement	No discernible movement	Operational	October 11, 2023	N/A	N/A	N/A
SI10-12	March 27, 2010	69.4 mm over 2.2 m to 4.6 m depth in 256° direction	23.3 mm/yr in September 2011	Sheared at 4.9 m depth	June 28, 2019	N/A	N/A	N/A
SI10-13	March 27, 2010	114.3 mm over 3.4 m to 9.4 m depth in 180° direction	111.2 mm/yr in September 2011	Sheared at 6.4 m depth	June 1, 2014	N/A	N/A	N/A
		7.5 mm over 10.7 m to 14.9 m depth in 225° direction	13.1 mm/yr in September 2011			N/A	N/A	N/A
SI10-14	March 27, 2010	70.9 mm over 3.4 m to 6.4 m depth in 230° direction	61.9 mm/yr in September 2011	Sheared at 5.7 m depth	September 16, 2014	N/A	N/A	N/A
SI10-15	March 27, 2010	56.3 mm over 2.4 m to 5.5 m depth in 251° direction	10.7 mm/yr in October 2020	Operational	October 11, 2023	1.2	2.0	-3.2

Drawing 32121-PH034 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site



**Table PH034-2: Spring 2024 – HWY 744:04 Judah Hill (Fence Slide) Pneumatic Piezometer Instrumentation Reading Summary**

Date Monitored: October 11, 2023

<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>
PN10-12 (33079)	March 26, 2010	18.0	N/A	Active	17.80 on May 14, 2010	0.8	17.90	17.93	0.03
PN10-13 (33078)	March 26, 2010	13.7	N/A	Blocked	13.45 on September 23, 2010	N/A	N/A	N/A	N/A
PN10-14 (33080)	March 26, 2010	14.5	N/A	Pinched/ Blocked	14.36 on September 23, 2010	N/A	N/A	N/A	N/A
PN10-15 (33092)	March 26, 2010	3.7	N/A	Active	1.66 on September 22, 2011	3.8	3.27	3.24	-0.03

Drawing 32121-PH034 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



## STATEMENT OF LIMITATIONS AND CONDITIONS

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- 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.
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**THURBER** ENGINEERING LTD.

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

**SPRING 2024**

**APPENDIX A  
DATA PRESENTATION**

**SITE PH034: HWY 744:04, JUDAH HILL (FENCE SLIDE)**

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING FIELD SUMMARY (PH034)  
SPRING 2024**

<b>Location:</b> Fence Slide - Judah Hill (HWY 744:04 C1 59.177)	<b>Readout:</b> RST PN C108 Unit 4
<b>File Number:</b> 32121	<b>Casing:</b> 2.27
<b>Probe:</b> RST SI SET 5R and 8R	<b>Temp:</b> 17
<b>Cable:</b> RST SI SET 5R and 8R	<b>Read by:</b> NKR

**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 #	Size (")	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-			
SI05-15	482858.86	6230922.58	24-May-24	0.25	127 to 3	245	581	-569	2686	-2694	8R/8R	2.27	See notes
SI10-15	482770.6	6230978.58	24-May-24	0.33	42 to 4	240	1411	-1399	-498	475	5R/5R	2.27	

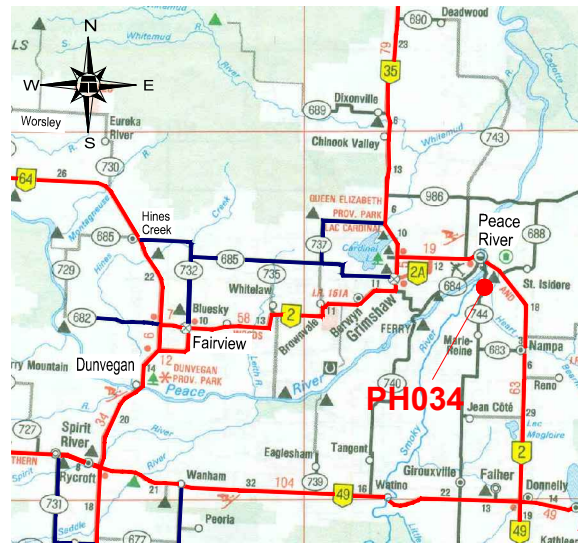
**PNEUMATIC PIEZOMETER READINGS**

PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN10-12	482817.23	6230854.85	24-May-24	0.8	33079
PN10-15	482770.60	6230978.58	24-May-24	3.8	33092

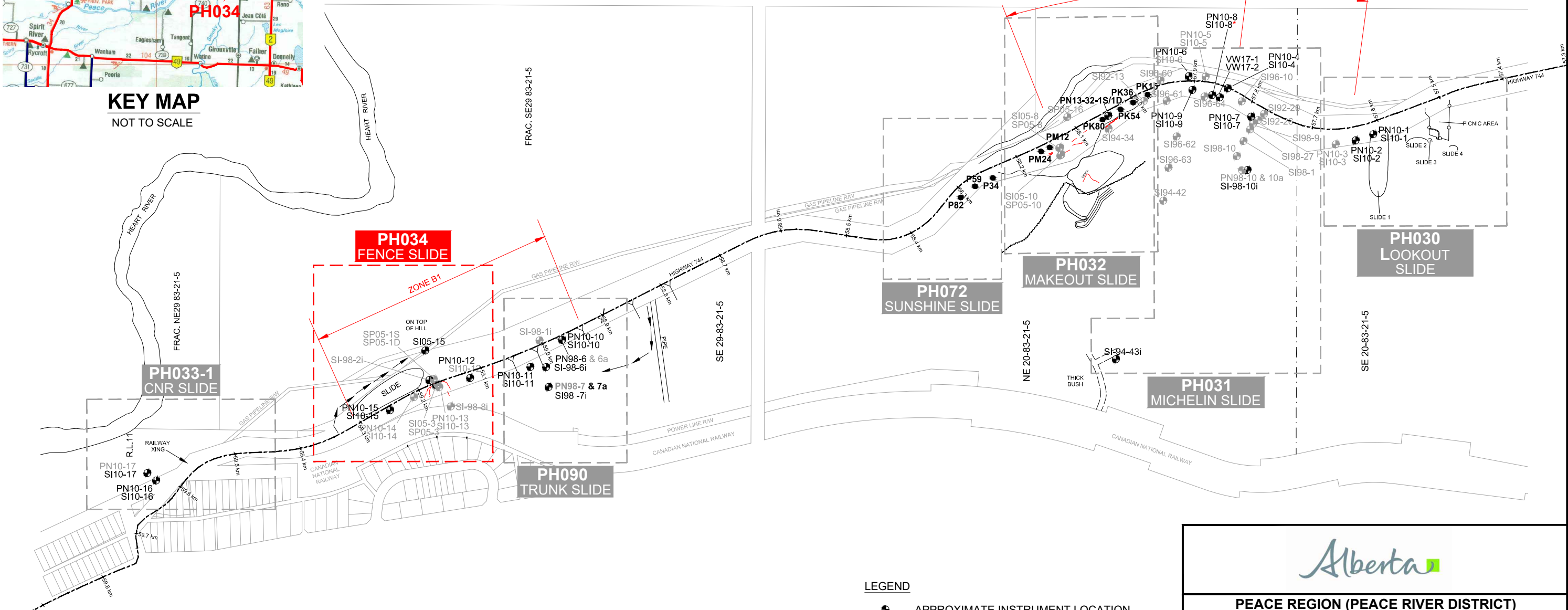
**INSPECTOR REPORT**

If using RST probe, need small diameter extension to read.


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**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)**

**PH034: HWY 744:02 - JUDAH HILL (FENCE SLIDE)**

**INSTRUMENT LOCATIONS**

**DWG No. 32121-PH034**

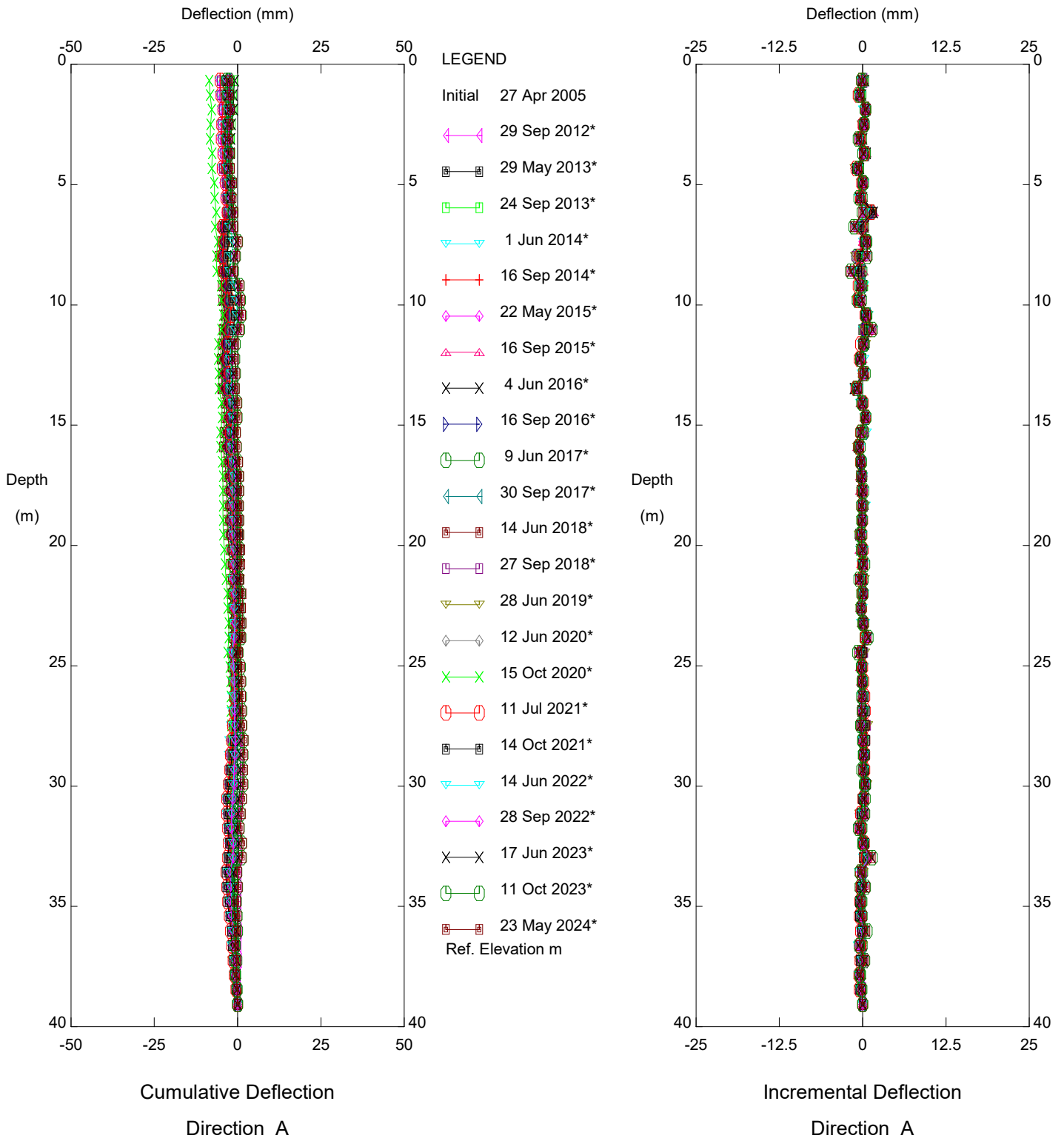
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DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	APPROX. 1:6000
DATE	SEPTEMBER 2021
FILE No.	32121



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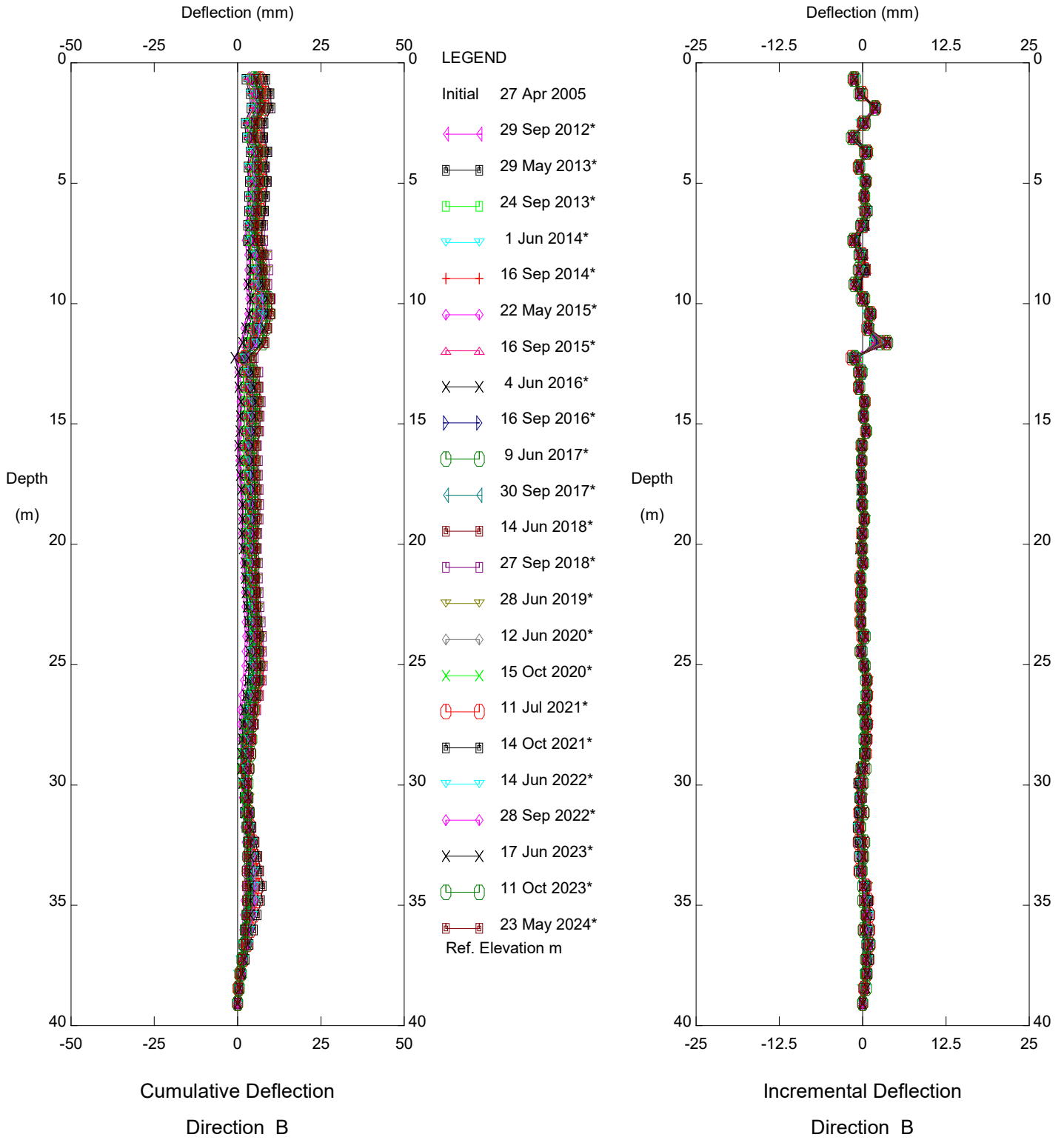


PH034 Judah Hill Fence Slide, Inclinometer SI05-15

Alberta Transportation

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

Thurber Engineering Ltd.

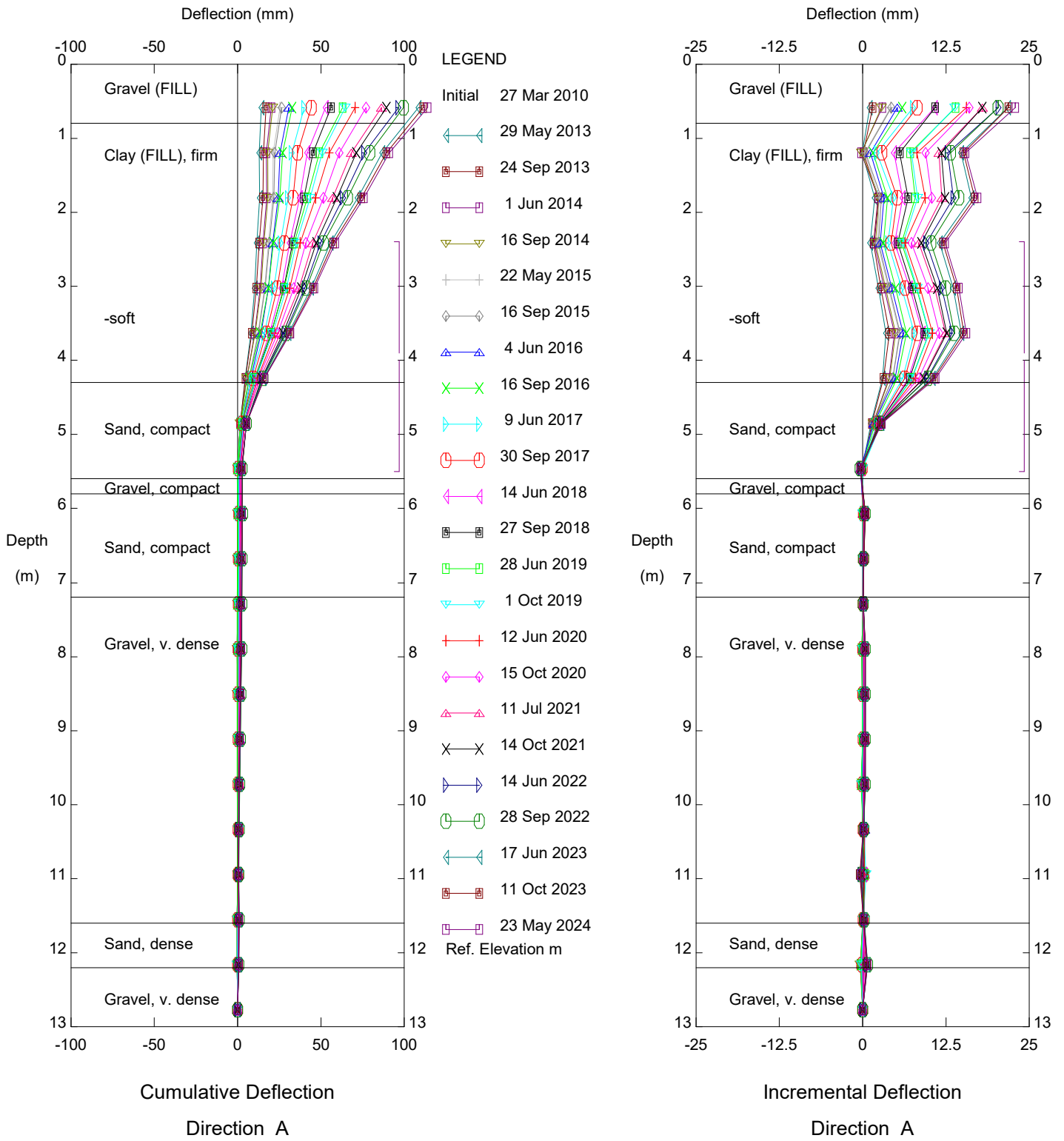


PH034 Judah Hill Fence Slide, Inclinometer SI05-15

Alberta Transportation

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

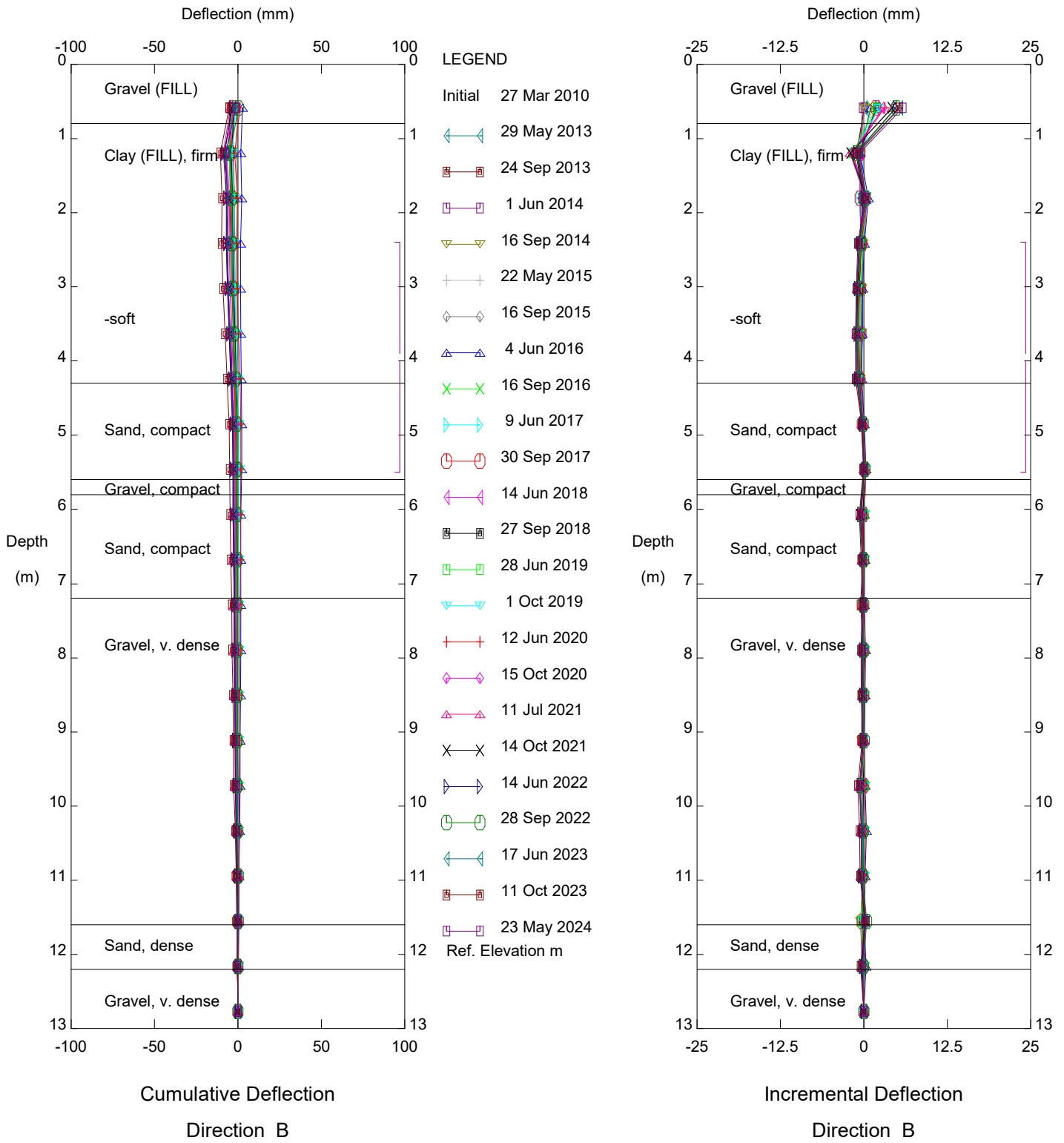
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PH034 Judah Hill Fence Slide, Inclinometer SI10-15

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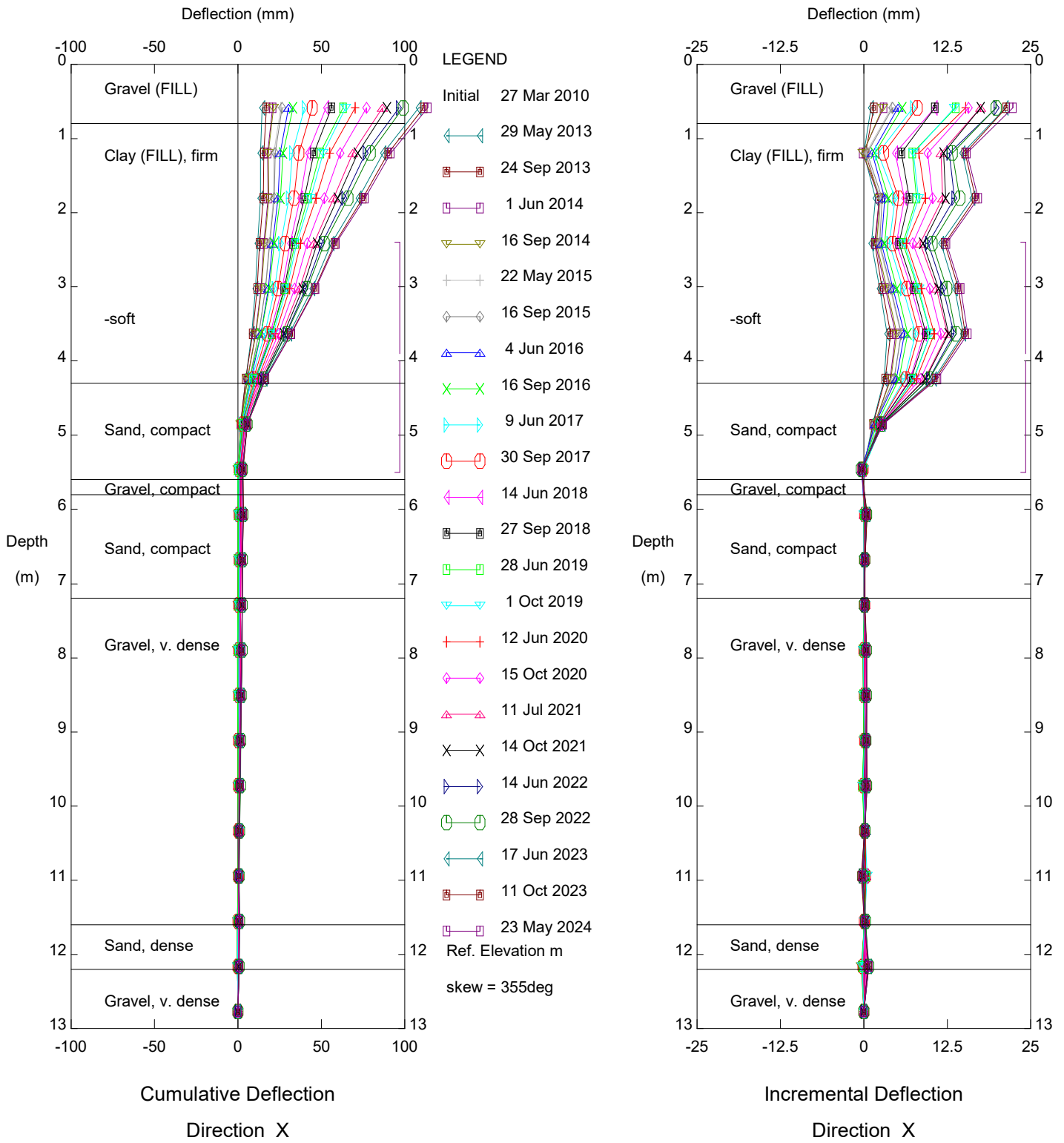
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PH034 Judah Hill Fence Slide, Inclinometer SI10-15

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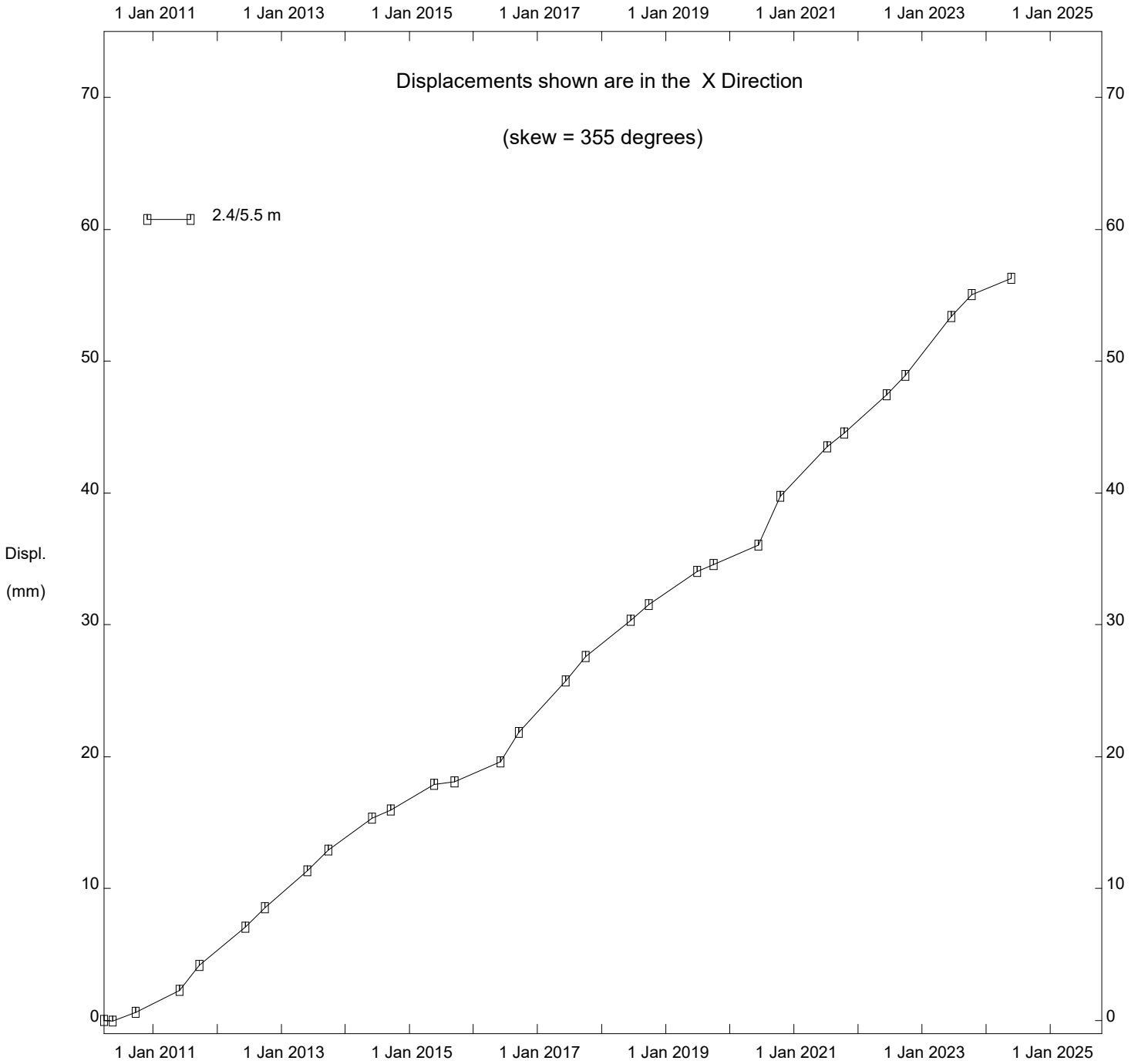
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PH034 Judah Hill Fence Slide, Inclinometer SI10-15

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PH034 Judah Hill Fence Slide, Inclinometer SI10-15

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**FIGURE PH034-1  
PIEZOMETER DATA FOR HWY 744:04, JUDAH HILL (FENCE SLIDE)**

