

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

Current Monitoring:	22-Sep-2024	Previous Monitoring	24-May-2024
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Nixson Mationg, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI05-15 SI10-15	Pneumatic Piezometers (PN): PN10-12 PN10-15	Vibration Wire Piezometers (VW):	Standpipe Piezometers (SP):
Load Cell (LC):	Strain Gauges:	SAA's:	Others:

Readout Equipment Used			
Slope Inclinometers: RST Digital Inclinator probe with 2 ft wheelbases and RST pocket readout	Pneumatic Piezometers: RST C108 pneumatic piezometer readout	Vibration Wire Piezometers:	Standpipe Piezometers:
Load Cell:	Strain Gauges:	SAA's:	Others:
Note:			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	<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 4.4 mm/yr over 2.4 m to 5.5 m depth since the spring of 2024 readings. The rate of movement has increased by 2.4 mm/yr since the spring of 2024 readings. Over the long term, movement rates at this depth have been relatively steady at about 4 mm/yr since 2011. The movements are mostly in the undisturbed soil just below the geogrid reinforced fill placed in 2005. The reinforced fill appears to be moving as a confined mass.</p> <p>Pneumatic piezometer PN10-12 showed a decrease in groundwater level of 0.01 m since the spring of 2024 readings. PN10-15 showed no change in groundwater level since the spring of 2024 readings.</p>
Future Work:	The instruments should be read again in the spring of 2025.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	<ul style="list-style-type: none">• Table PH034-1: Fall 2024 – HWY 744:04 Judah Hill (Fence Slide) Slope Inclinator Instrumentation Reading Summary• Table PH034-2: Fall 2024 – HWY 744:04 Judah Hill (Fence Slide) Pneumatic Piezometer Instrumentation Reading Summary • Statement of Limitations and Conditions • APPENDIX A - PH034 FALL 2024<ul style="list-style-type: none">○ Field Inspector's report○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32121 PH034)○ SI Reading Plots○ Figure PH034-1 (Pneumatic Piezometer Readings)
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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: Fall 2024– HWY 744:04 Judah Hill (Fence Slide) Slope Inclinator Instrumentation Reading Summary

Date Monitored: September 22, 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	May 24, 2024	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	57.7 mm over 2.4 m to 5.5 m depth in 251° direction	10.7 mm/yr in October 2020	Operational	May 24, 2024	1.5	4.4	2.4

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

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

Date Monitored: September 24, 2024

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)
PN10-12 (33079)	March 26, 2010	18.0	N/A	Active	17.80 on May 14, 2010	0.7	17.91	17.90	-0.01
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	3.27	0

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

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.

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- 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.
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- 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.

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THURBER ENGINEERING LTD.

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

FALL 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)
FALL 2024**

Location: Fence Slide - Judah Hill (HWY 744:04 C1 59.177) File Number: 32121 Probe: RST SI SET 5R and 8R Cable: RST SI SET 5R and 8R	Readout: RST PN C108 Unit 4 Casing: 2.27 Temp: 18 Read by: NKR/NRM
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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 #	Size (")	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-			
SI05-15	482858.86	6230922.58	22-Sep-24	0.25	127 to 3	245	579	-565	2689	-2693	8R/8R	2.27	See notes
SI10-15	482770.6	6230978.58	22-Sep-24	0.33	42 to 4	240	1411	-1400	-489	487	5R/5R	2.27	

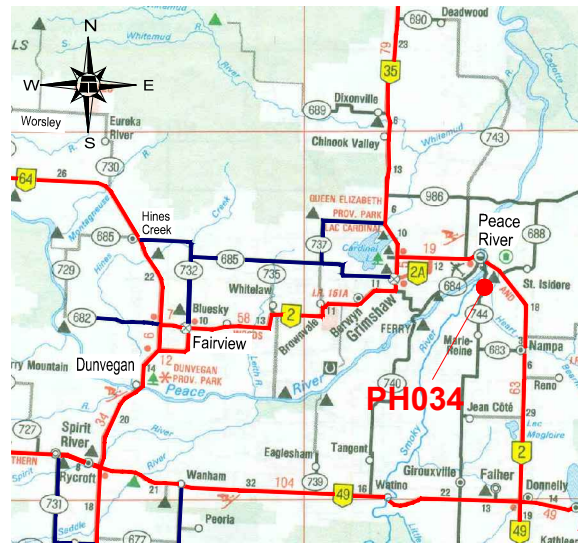
PNEUMATIC PIEZOMETER READINGS

PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN10-12	482817.23	6230854.85	22-Sep-24	0.7	33079
PN10-15	482770.60	6230978.58	22-Sep-24	3.8	33092

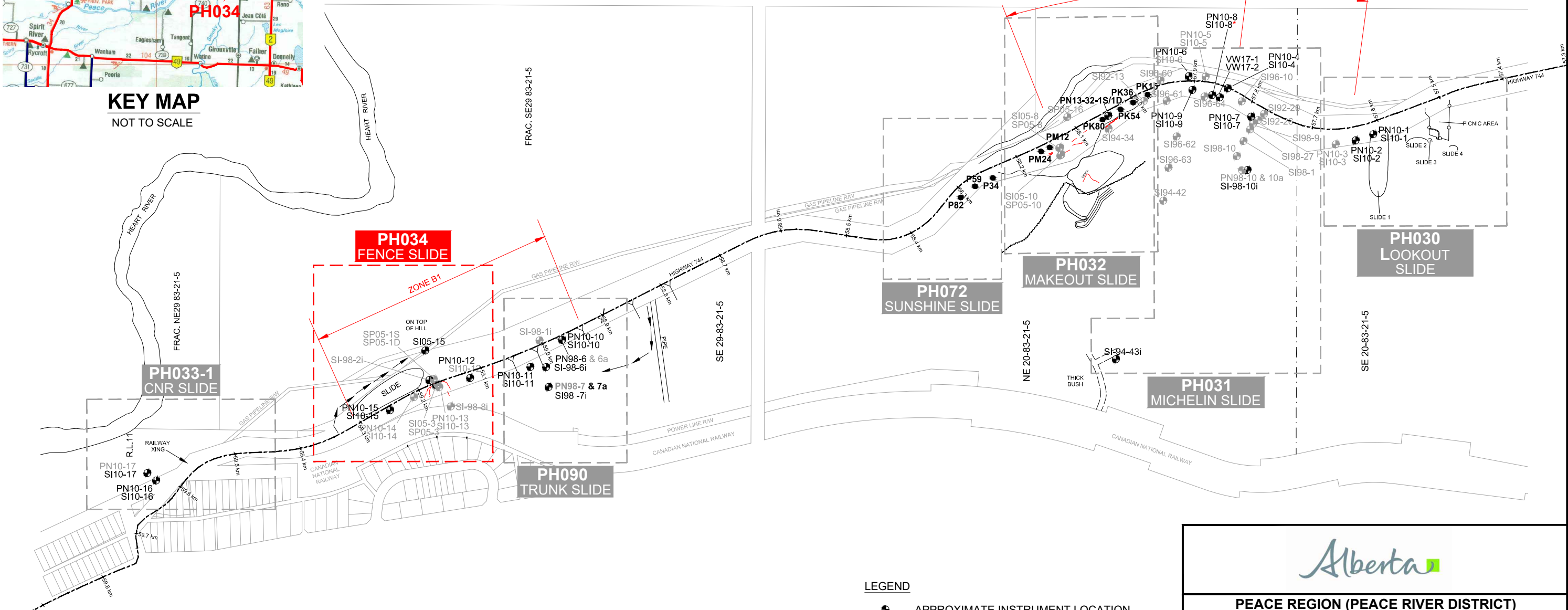
INSPECTOR REPORT

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


H:\32000\32121 AT GRMP Peace River District 2021-2025\CAD\2021-INSTRUMENT\32121-PH030, PH031, PH032, PH033, PH034, PH072.dwg - 34 - Sep. 08, 2021



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

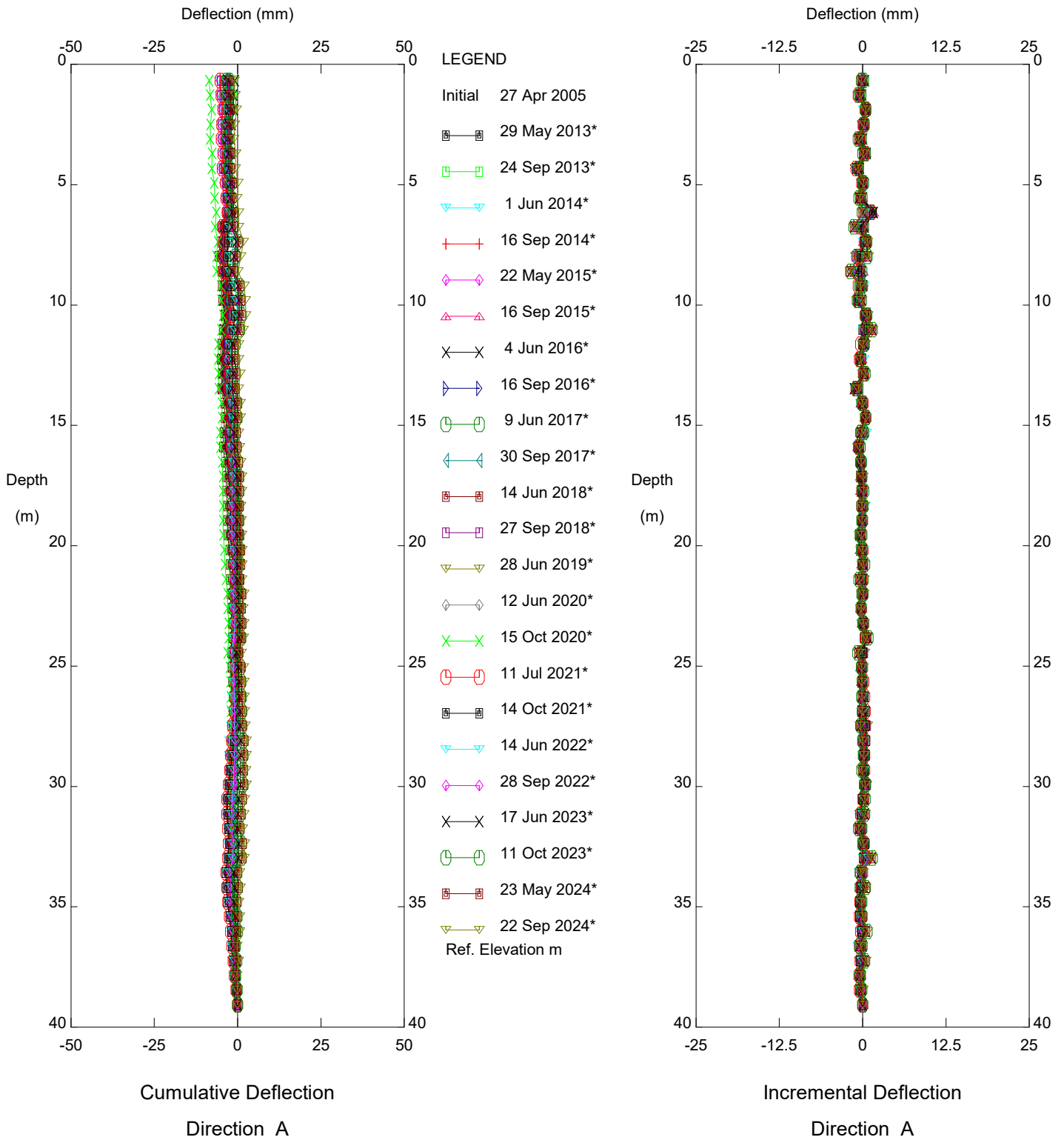
DWG No. 32121-PH034

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



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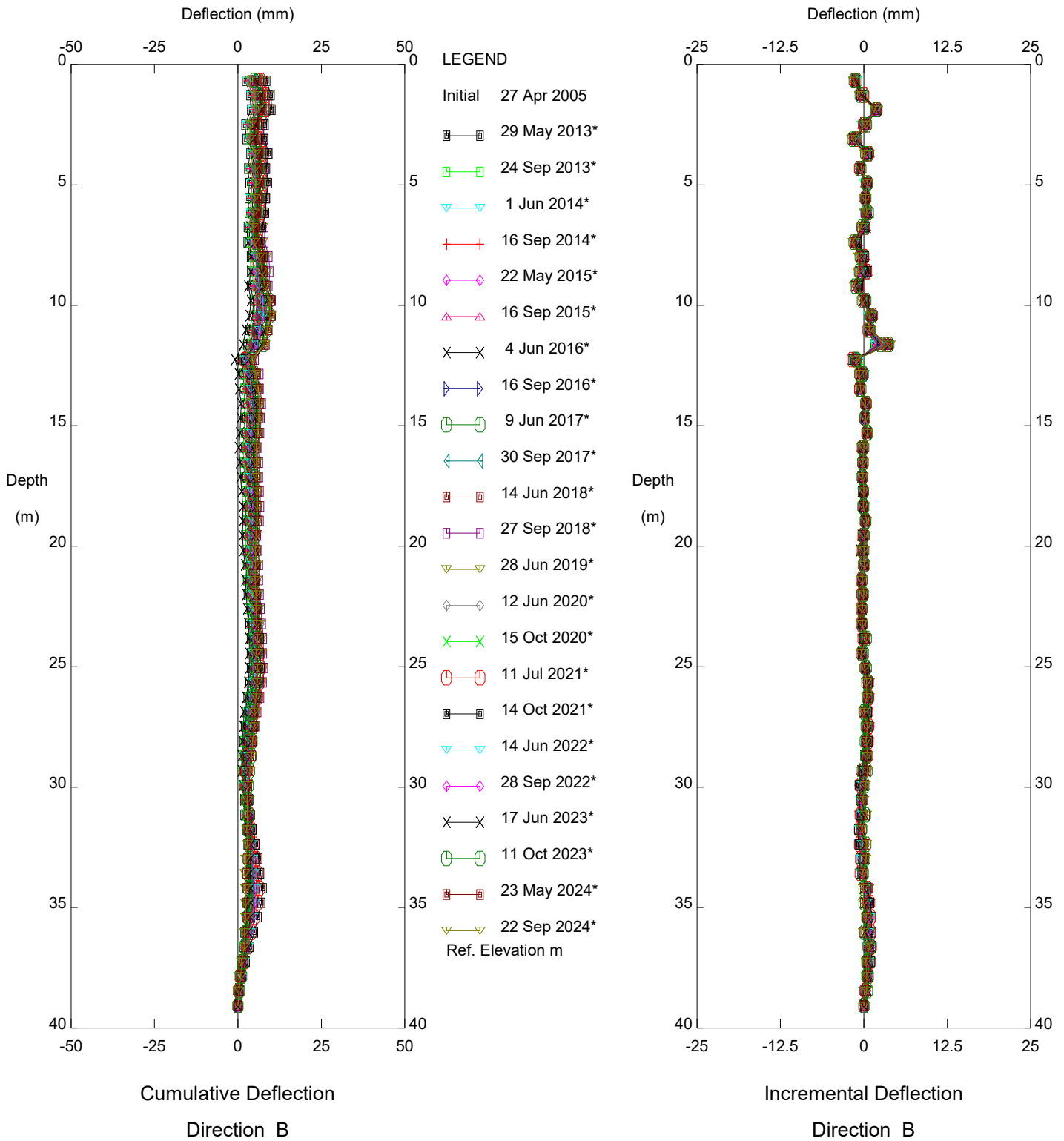


PH034 Judah Hill Fence Slide, Inclinometer SI05-15

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

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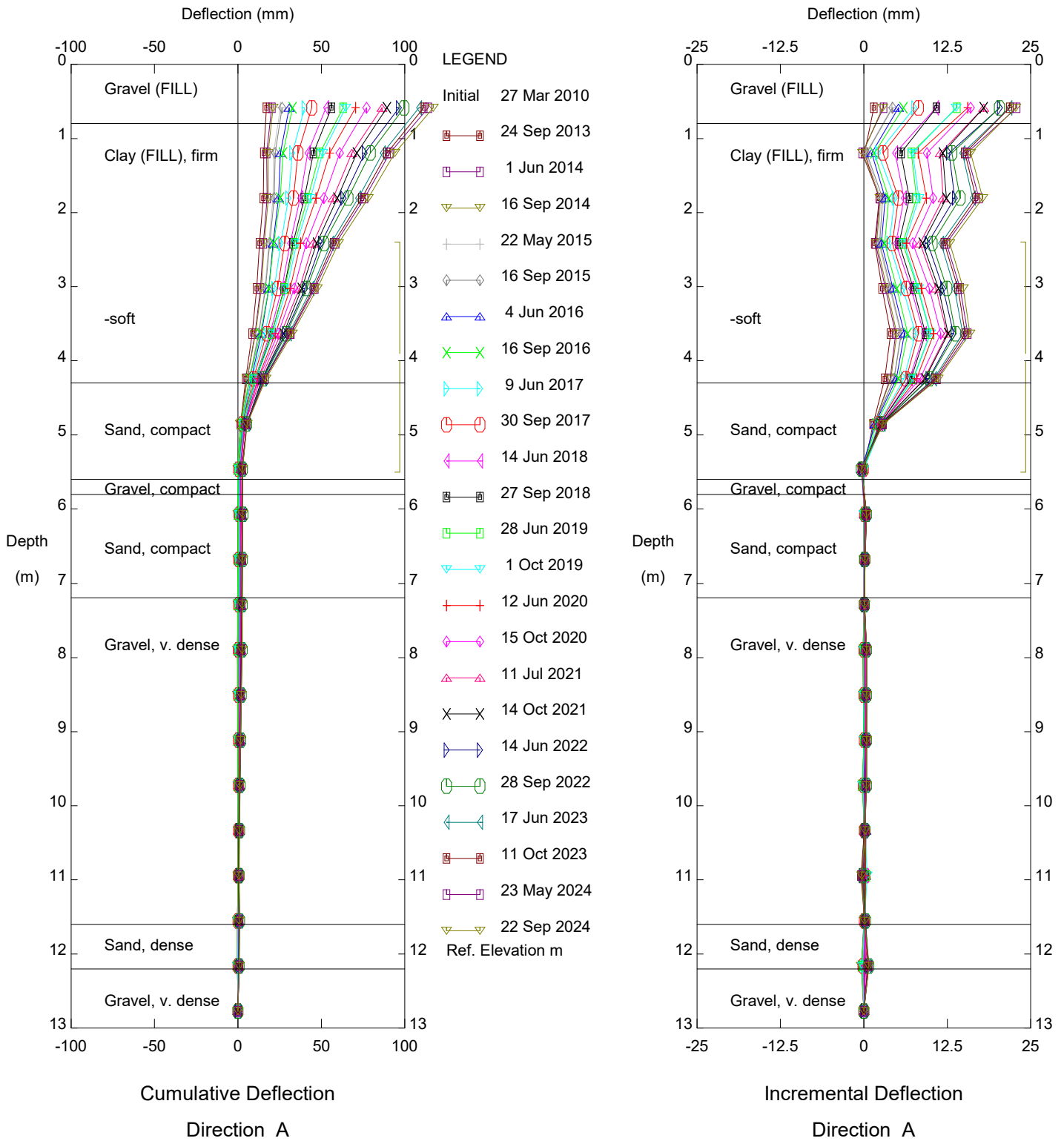


PH034 Judah Hill Fence Slide, Inclinometer SI05-15

Alberta Transportation

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

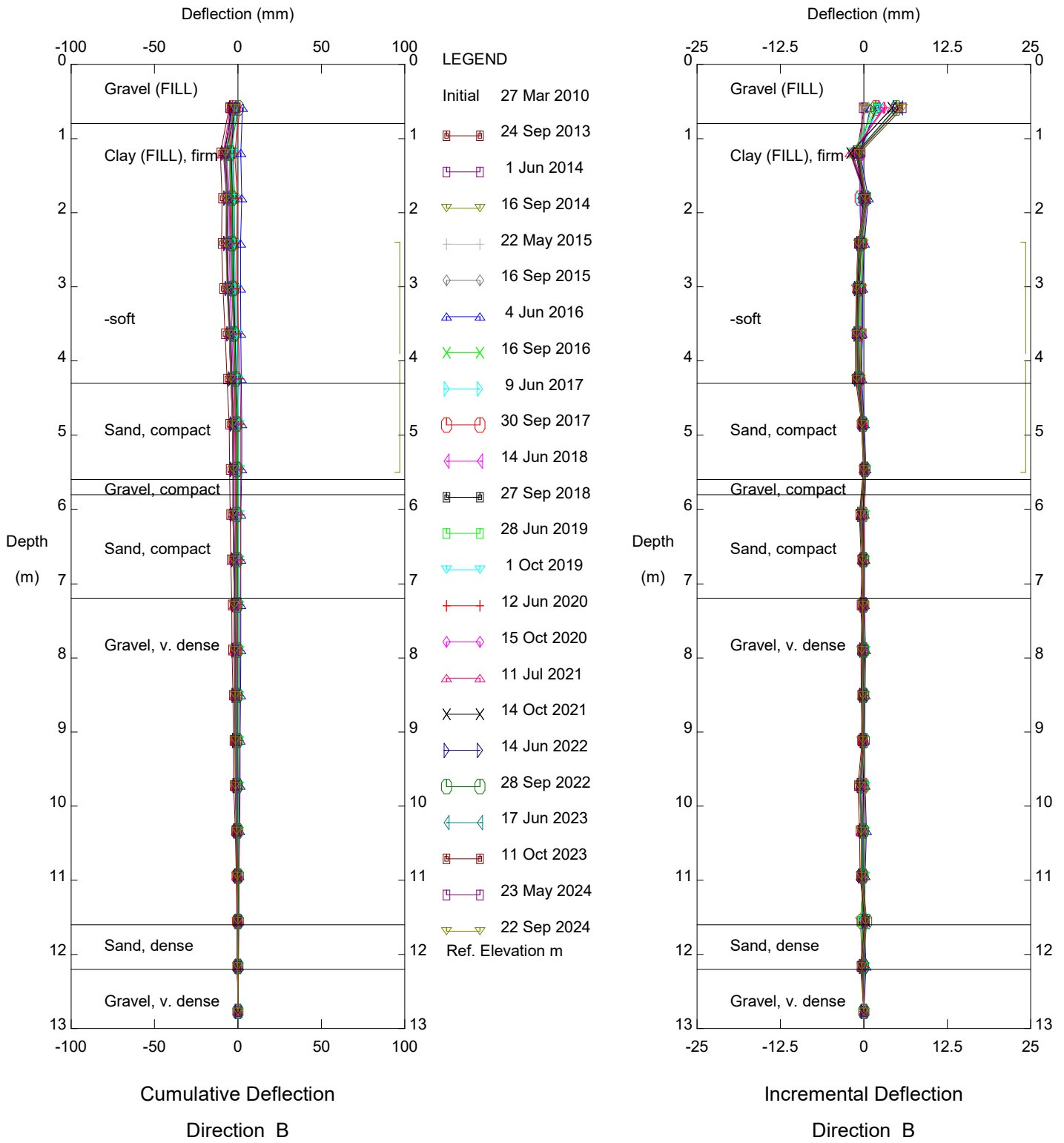
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PH034 Judah Hill Fence Slide, Inclinometer SI10-15

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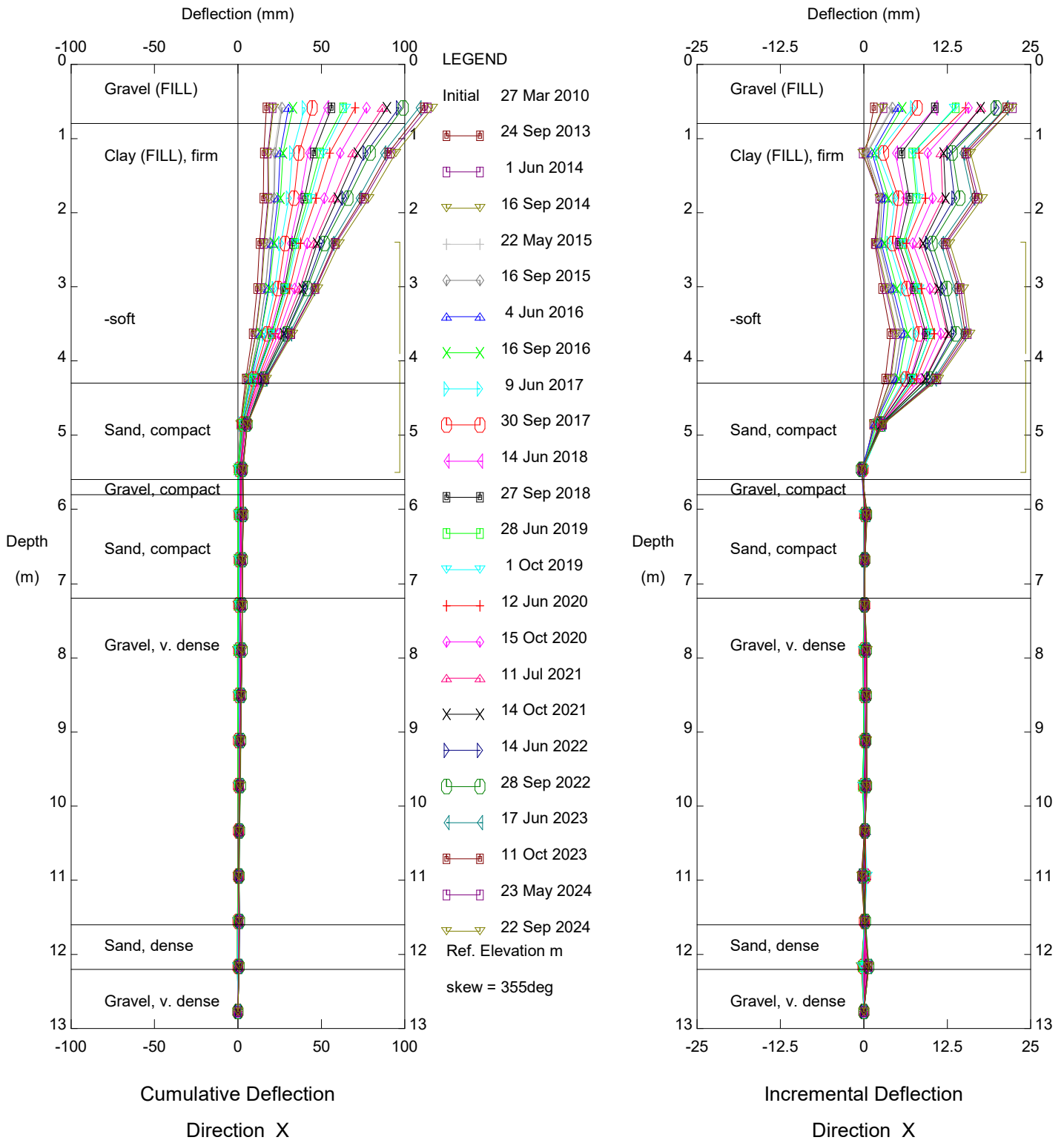
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PH034 Judah Hill Fence Slide, Inclinometer SI10-15

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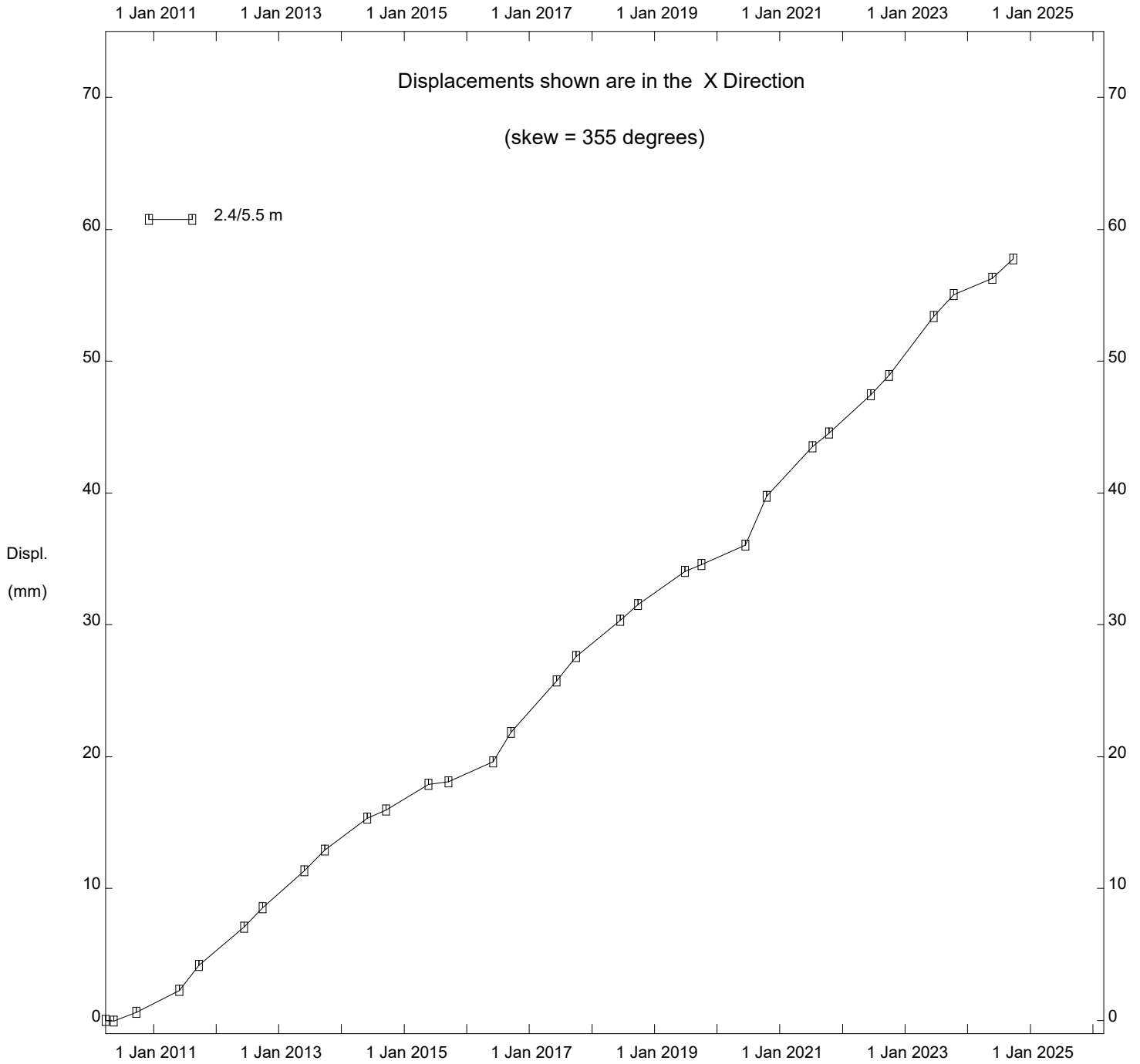
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PH034 Judah Hill Fence Slide, Inclinometer SI10-15

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PH034 Judah Hill Fence Slide, Inclinometer S110-15

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

