

**ALBERTA TRANSPORTATION AND
ECONOMIC CORRIDORS GRMP
PEACE REGION – (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING - FALL 2024**



Site Number	Location	Name	Hwy	km
PH090	HWY 744:04 C1 59.0	Judah Hill Trunk Slide	744:04	Km 59.0
Legal Description: 2-29-83-21 W5		UTM Co-ordinates		
		11U E 482825.09	N	6230757.65

Current Monitoring:	22-Sep-2024	Previous Monitoring	23-May-2024
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Nixon Mationg, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI98-6i, SI98-7i, SI10-10 and SI10-11	Pneumatic Piezometers (PN): PN98-6, PN98-7a, PN10-10, and PN10-11	Vibrating Wire Piezometers (VW):	Standpipe Piezometers (SP): N
Load Cell (LC):	Strain Gauges:	SAAs:	Others:

Readout Equipment Used			
Slope Inclinometers: Two RST Digital Inclinometer probes with 2 ft. wheelbases and RST Pocket PC readouts	Pneumatic Piezometers: RST C108 pneumatic piezometer readout	Vibrating Wire Piezometers:	Standpipe Piezometers:
Load Cell:	Strain Gauges:	SAAs:	Others:
Note:			

Zones of New Movement:	SI98-7i showed an apparent movement between 15.5 m and 16.5 m depth, but it is expected this movement is a reading error. This will be confirmed during the spring 2025 readings.
Interpretation of Monitoring Results:	<p>SI98-6i showed no discernible movement over 0.4 m to 3.4 m depth, a rate of movement of 0.1 mm/yr over 6.5 m to 8.9 m depth, and no discernible movement over 0.4 m to 9.5 m depth since the spring of 2024 readings. SI98-7i showed a rate of movement of 0.3 mm/yr over 3.3 m to 4.5 m depth since the spring of 2024 readings.</p> <p>SI10-10 showed a rate of movement of 5.8 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 spring of 2024 readings. SI10-11 showed a rate of movement of 4.2 mm/yr over 2.0 m to 5.0 m depth since the spring of 2024 readings.</p> <p>Pneumatic piezometers PN98-6, and PN98-7a showed decreases in groundwater level of 0.40 m and 0.21 m, respectively, since the spring of 2024 readings. Pneumatic piezometers PN10-10 and PN10-11 showed increases in groundwater level of 0.01 and 0.03 m, respectively, since the spring of 2024 readings.</p>
Future Work:	The instruments should be read again in the spring of 2025. The apparent movement zone between 15.5 m and 16.5 m in SI98-7i should be confirmed.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	<ul style="list-style-type: none">• Table PH090-1: Fall 2024 – HWY 744:04 Judah Hill Trunk Slide Slope Inclinator Instrumentation Reading Summar• Table PH090-2: Fall 2024 – HWY 744:04 Judah Hill Trunk Slide Pneumatic Piezometer Instrumentation Reading Summary• Statement of Limitations and Conditions• APPENDIX A - PH090 FALL 2024<ul style="list-style-type: none">○ Field Inspector's report○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32121- PH090)○ SI Reading Plots○ Figure PH090-1 (Judah Hill Trunk Slide 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 PH090-1: Fall 2024 – HWY 744:04 Judah Hill Trunk Slide Slope Inclinometer 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)
SI98-1i	Oct. 26, 2000	Not Known	Not Known	Destroyed	May 18, 2004	N/A	N/A	N/A
SI98-6i	Oct. 26, 2000	22.3 mm over 0.4 m to 3.4 m depth in 316° direction	17.0 mm/yr in May 2007	Operational	October 11, 2023	No discernible movement	N/A	-8.6
		16.6 mm over 6.5 m to 8.9 m depth in 316° direction	9.3 mm/yr in September 2013			<0.1	0.1	<0.1
		55.0 mm over 0.4 m to 9.5 m depth in 316° direction	22.6 mm/yr In May 2013			No discernible movement	N/A	-10.4
SI98-7i	May 10, 2001	8.0 mm over 3.3 m to 4.5 m depth in 241° direction	8.1 mm/yr in September 2013	Operational	October 11, 2023	<0.1	0.3	0.4
SI10-10	March 27, 2010	54.2 mm over 1.0 m to 8.3 m depth in 326° direction	7.6 mm/yr in June 2023	Operational	October 11, 2023	1.9	5.8	-0.7
		8.7 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	-0.4
SI10-11	March 2010	74.7 mm over 2.0 m to 5.0 m depth in 241° direction	11.9 mm/yr in October 2020	Operational	October 11, 2023	1.4	4.2	3.6

Drawing 32121-PH090 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table PH090-2: Fall 2024 – HWY 744:04 Judah Hill Trunk Slide Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: September 22, 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)
PN98-6 (22830)	Oct. 26, 2000	9.8	N/A	Active	8.54 on October 11, 2023	4.9	9.30	8.90	-0.40
PN98-6a (22833)	Oct. 26, 2000	16.2	N/A	Not Operational	14.86 on October 4, 2016	N/A	N/A	N/A	N/A
PN98-7 (22838)	May 10, 2001	7.8	N/A	Not Operational	6.74 on October 4, 2002	N/A	N/A	N/A	N/A
PN98-7a (22831)	May 10, 2001	16.2	N/A	Active	9.77 on May 22, 2015	43.0	11.82	11.61	-0.21
PN10-10 (33088)	March 13, 2010	18.0	N/A	Active	17.67 on September 23, 2010	2.5	17.73	17.74	0.01
PN10-11 (33077)	March 26, 2010	18.3	N/A	Active	17.04 on October 11, 2023	1.7	18.11	18.14	0.03

Drawing 32121-PH090 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.

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

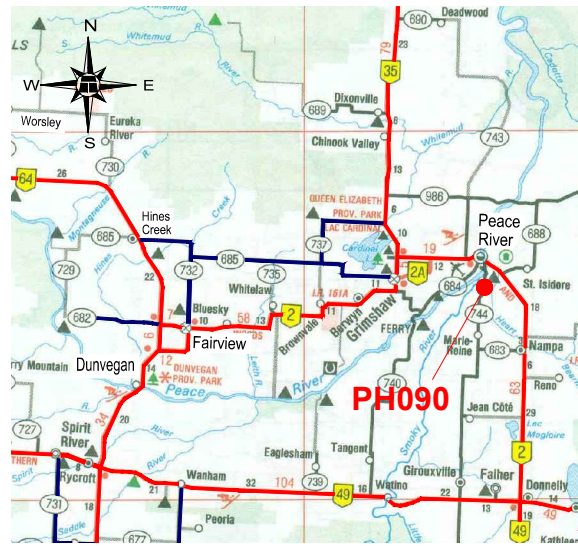
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**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022164)
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING RESULTS**

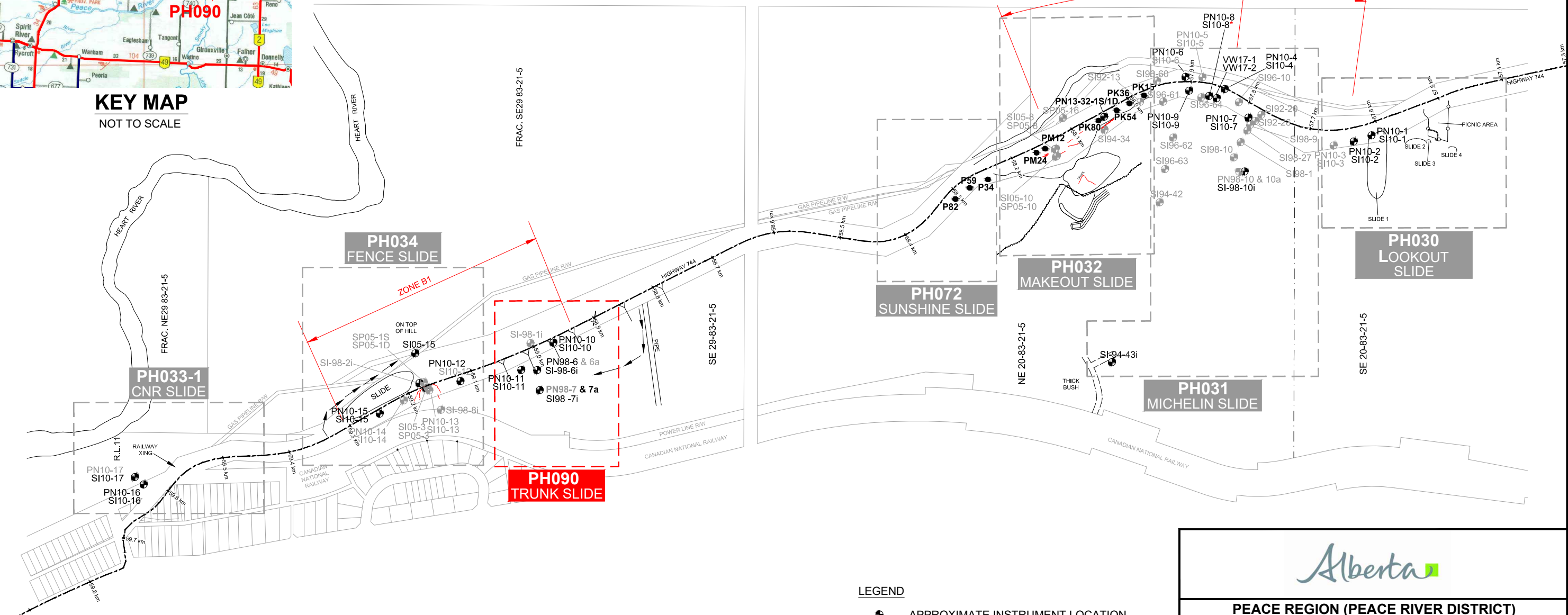
FALL 2024

**APPENDIX A
DATA PRESENTATION**


SITE PH090-1: HWY 744:04, JUDAH HILL (TRUNK SLIDE)



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)

PH090: HWY 744:02 - JUDAH HILL (TRUNK SLIDE)

INSTRUMENT LOCATIONS

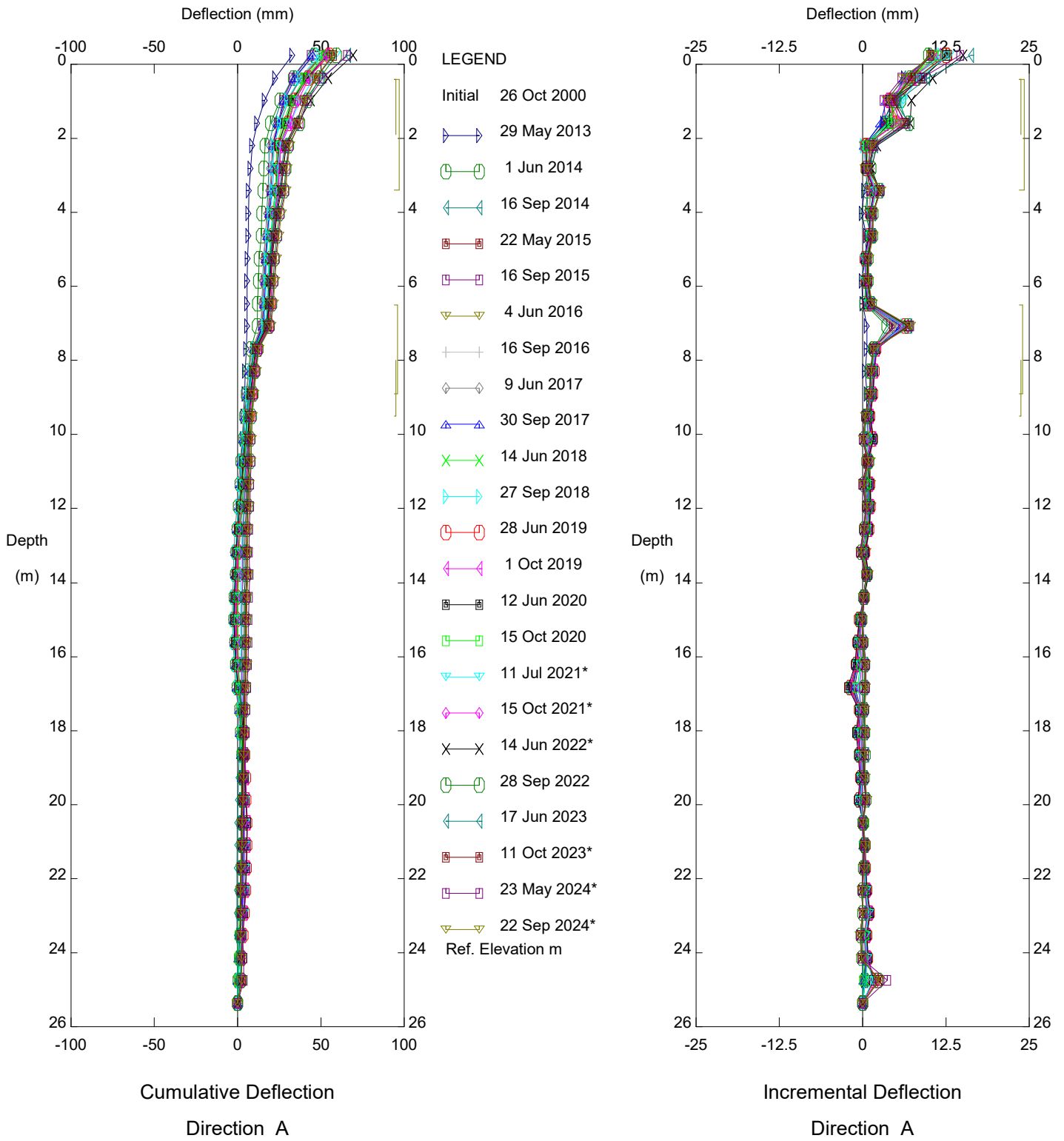
DWG No. 32121-PH090

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



THURBER ENGINEERING LTD.

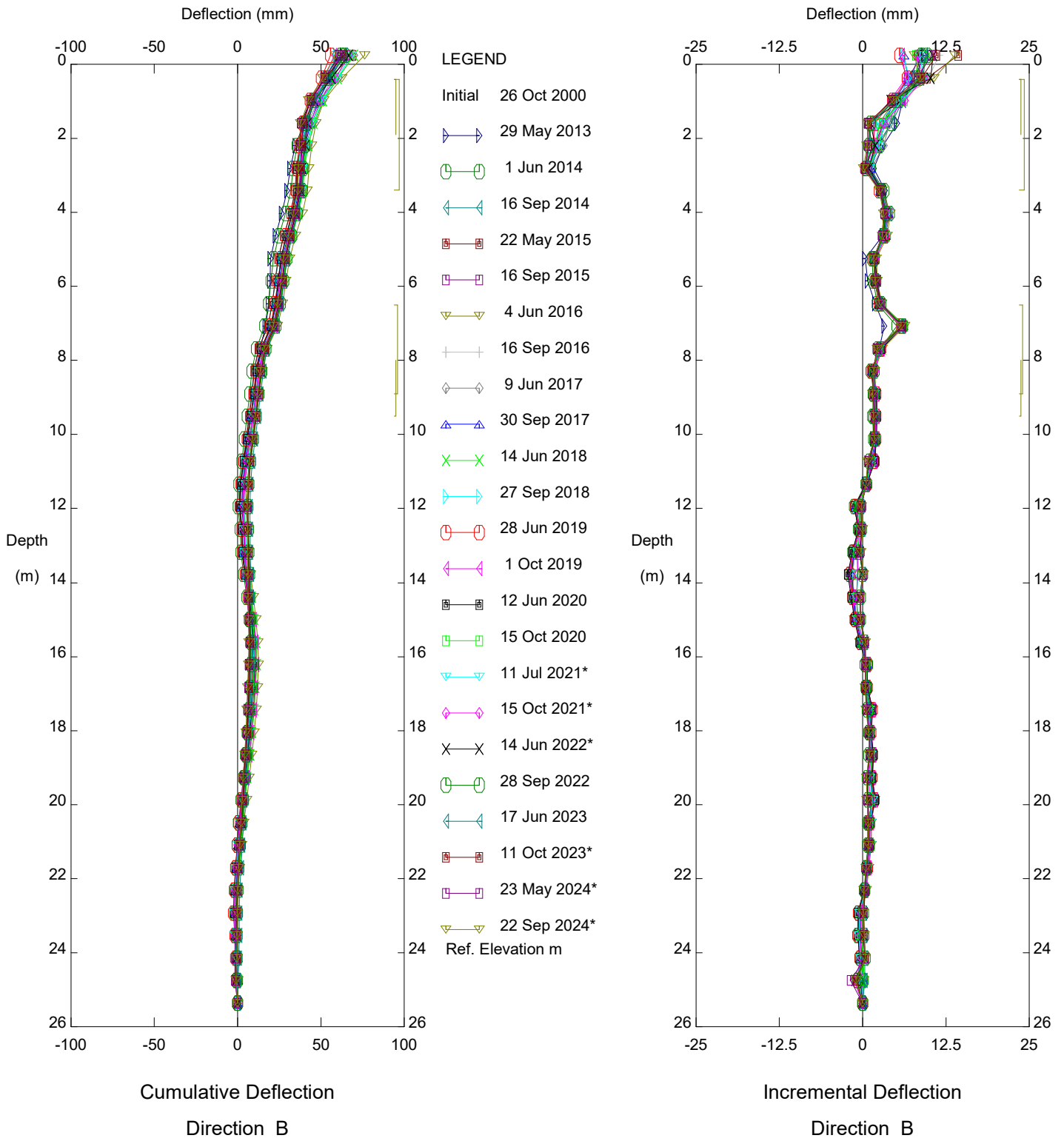
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PH090 Judah Hill Trunk Slide, Inclinometer SI98-6i

Alberta Transportation

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

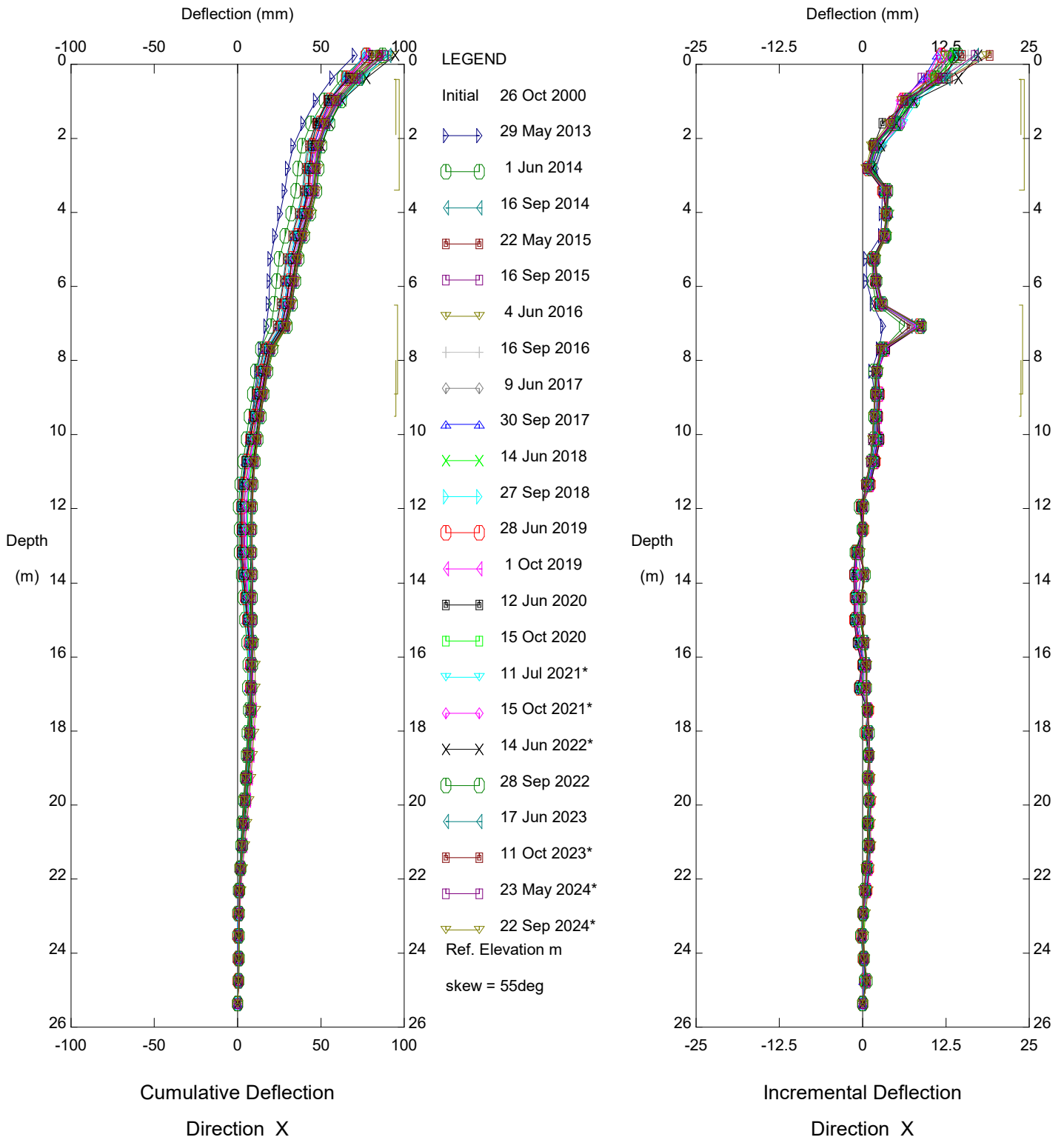


PH090 Judah Hill Trunk Slide, Inclinometer SI98-6i

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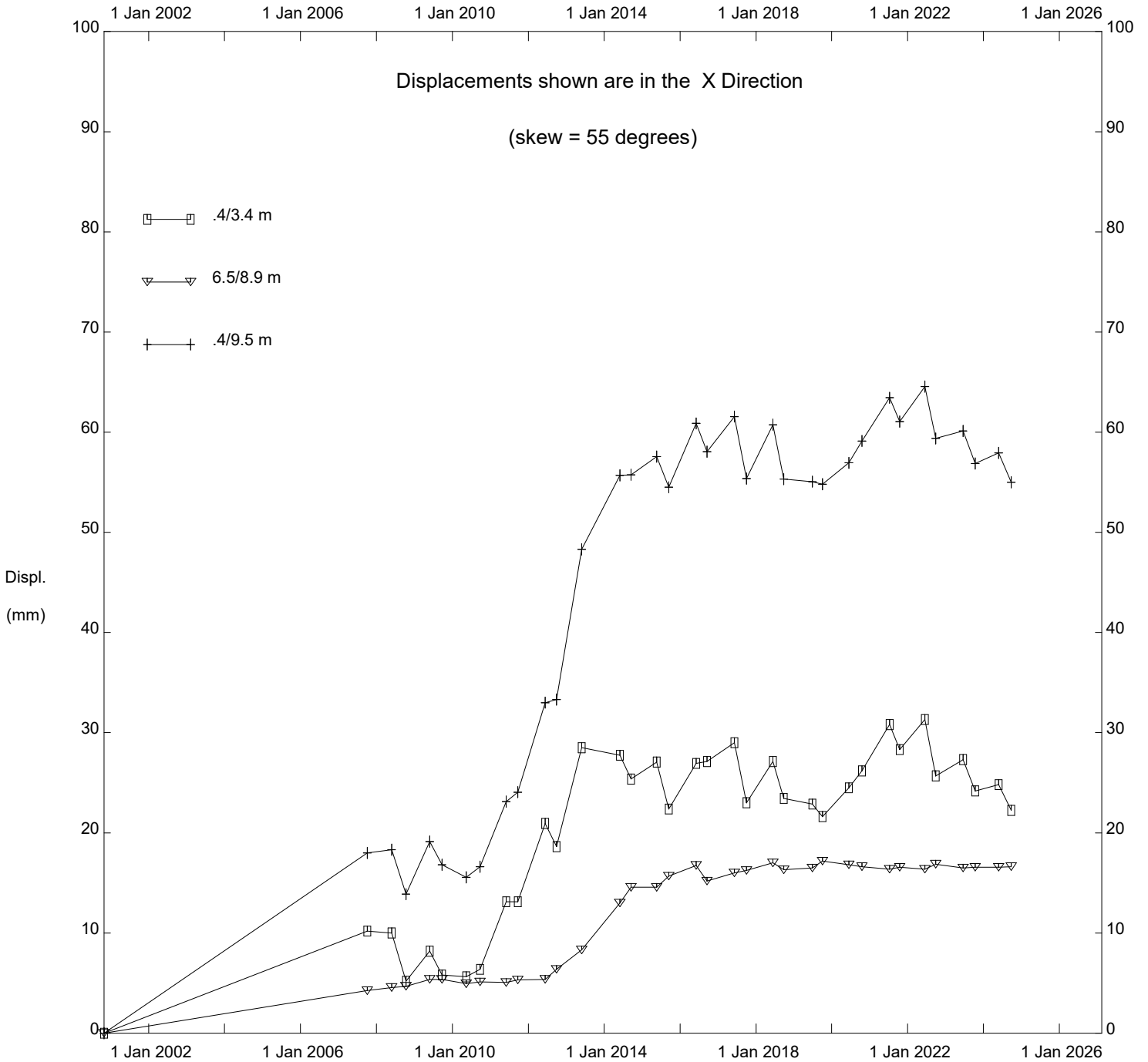


PH090 Judah Hill Trunk Slide, Inclinometer SI98-6i

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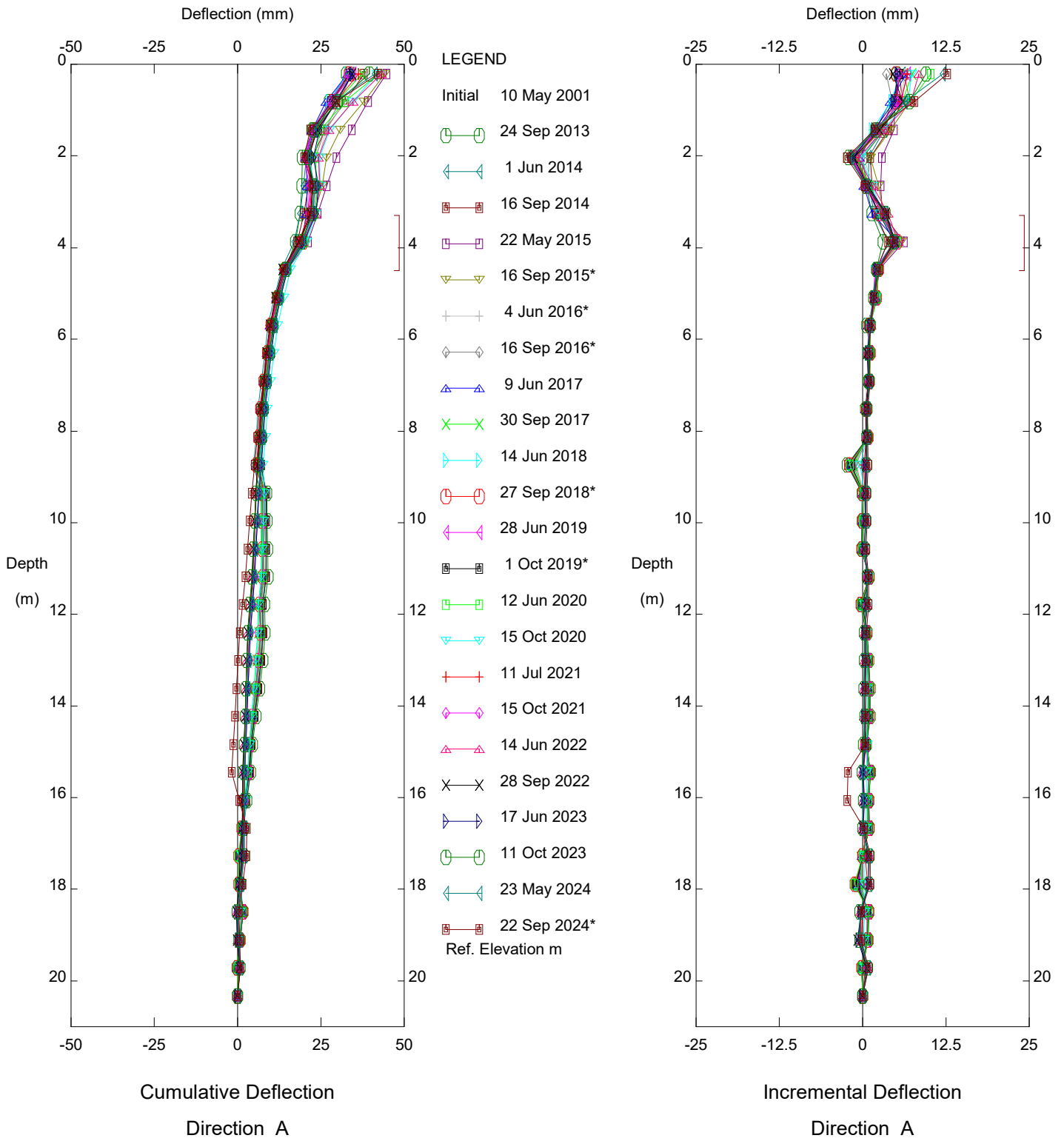
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PH090 Judah Hill Trunk Slide, Inclinator SI98-6i

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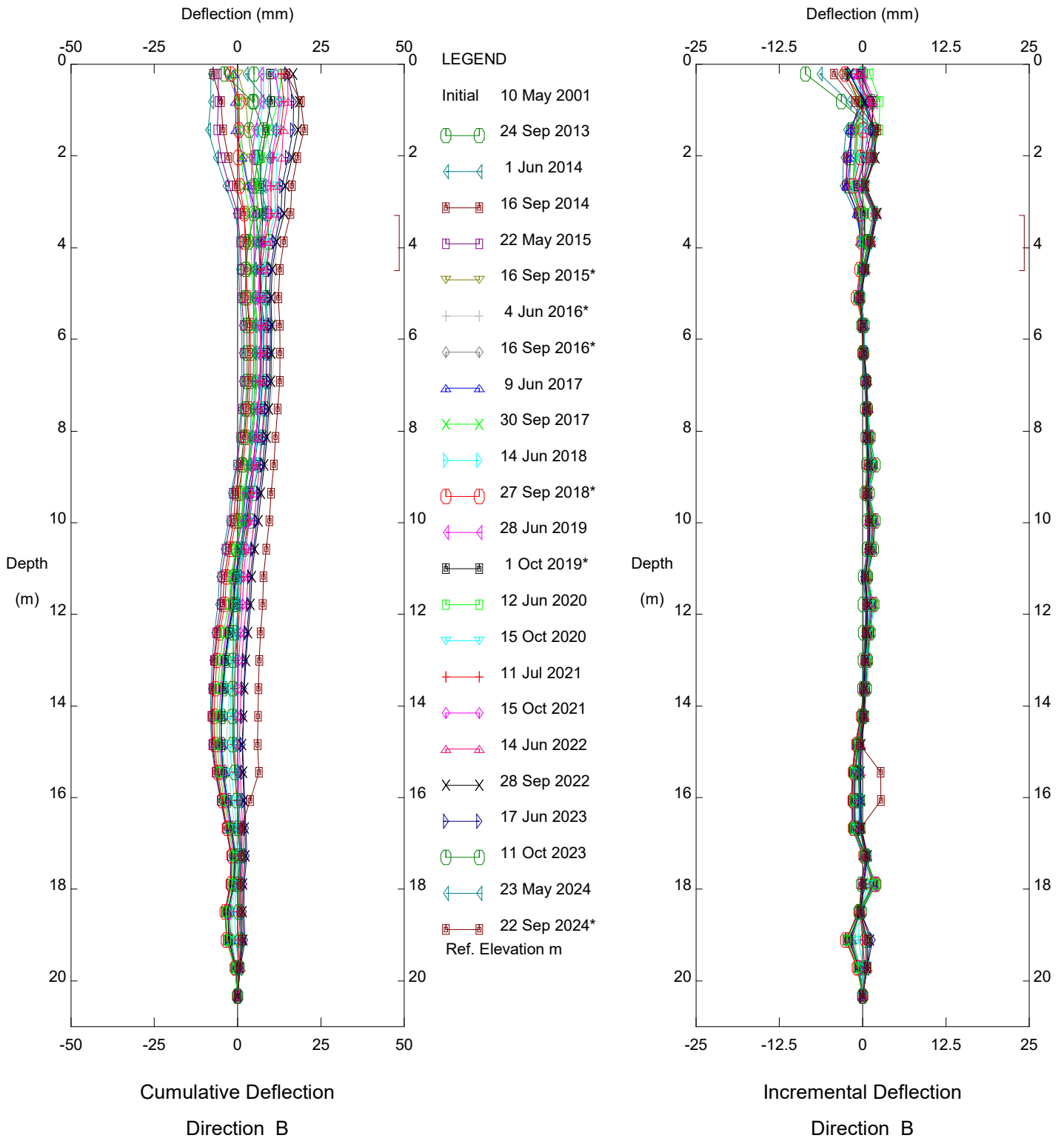


PH090 Judah Hill Trunk Slide, Inclinometer SI98-7i

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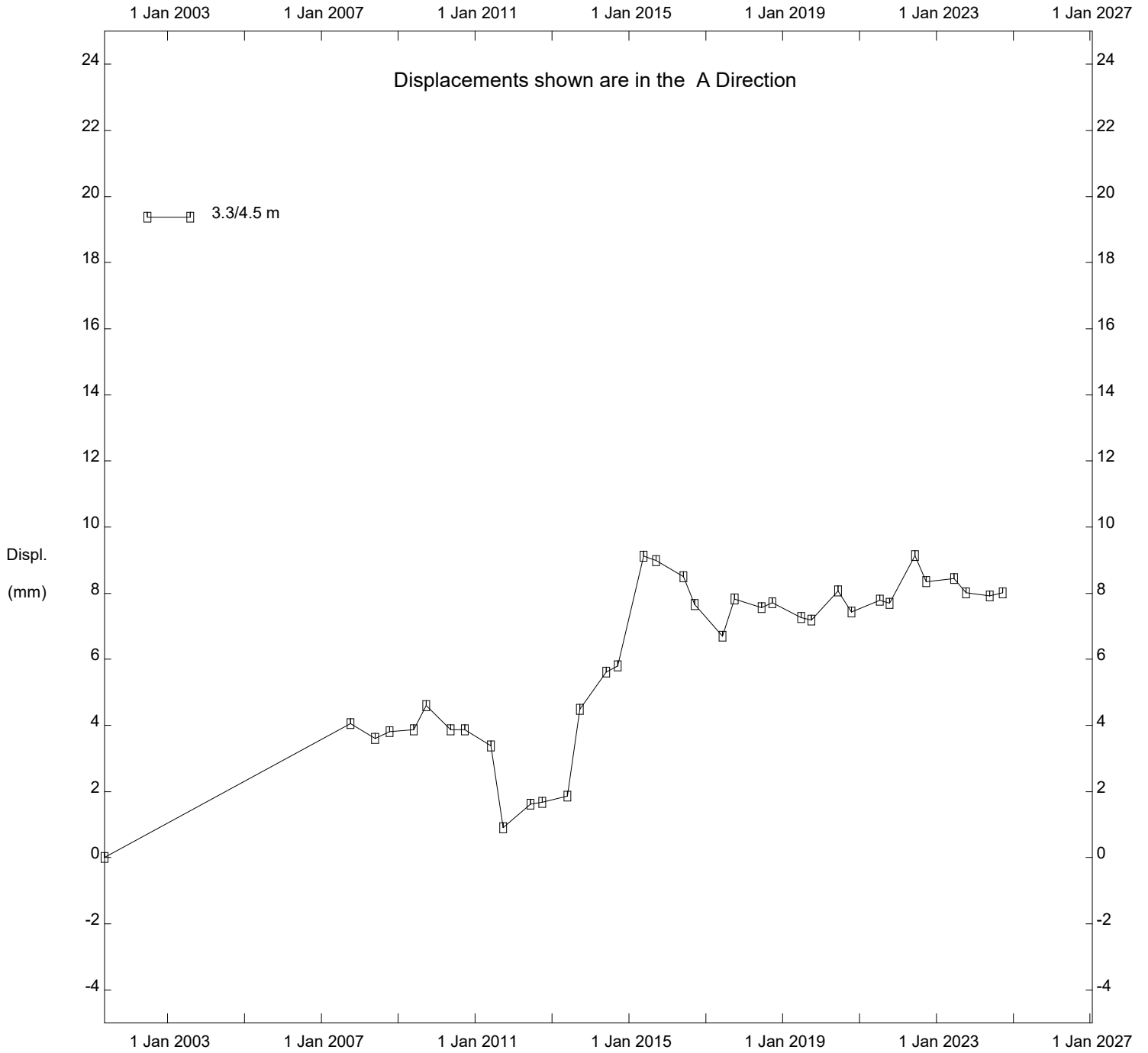


PH090 Judah Hill Trunk Slide, Inclinometer SI98-7i

Alberta Transportation

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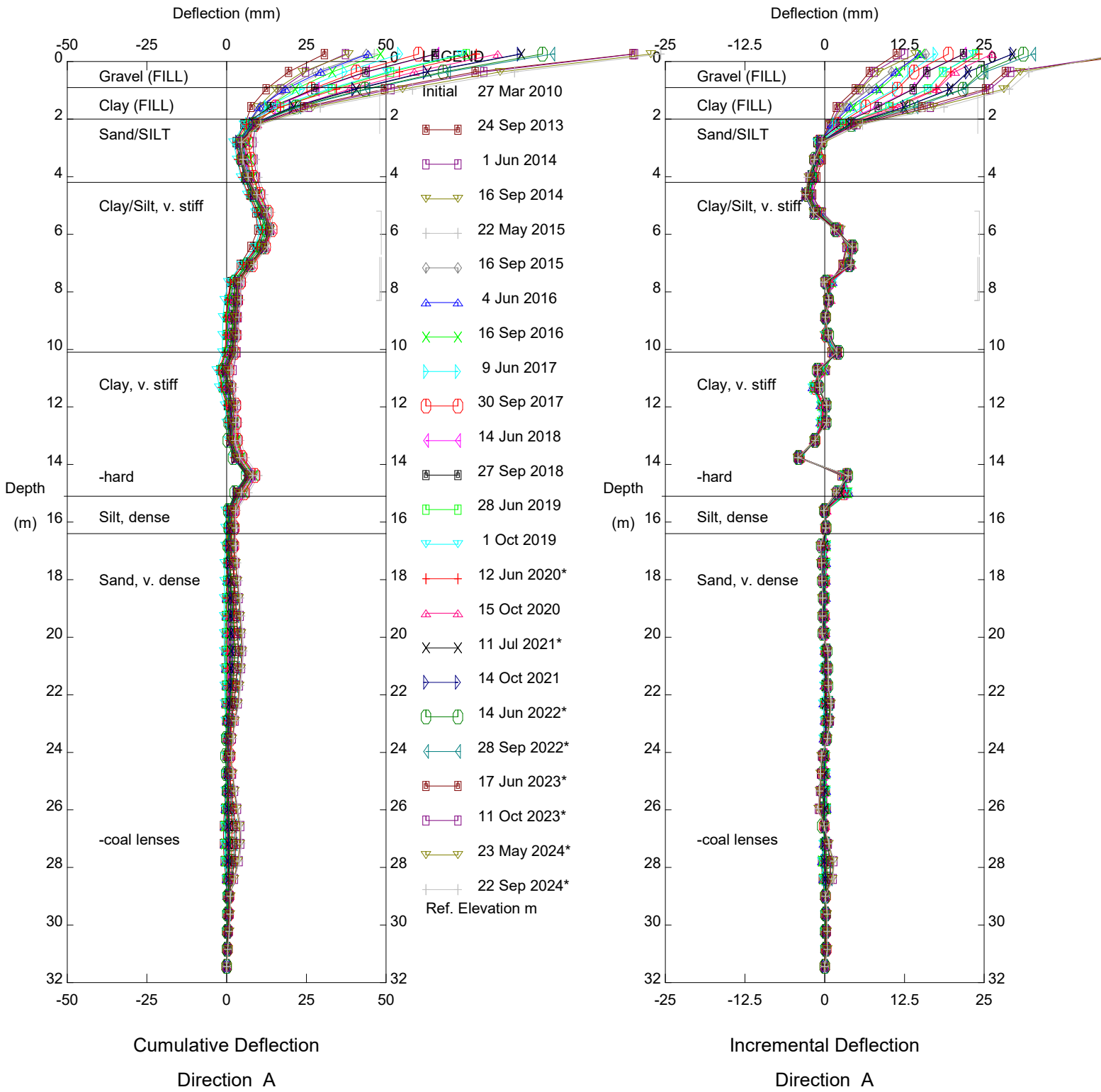
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PH090 Judah Hill Trunk Slide, Inclinator SI98-7i

Alberta Transportation

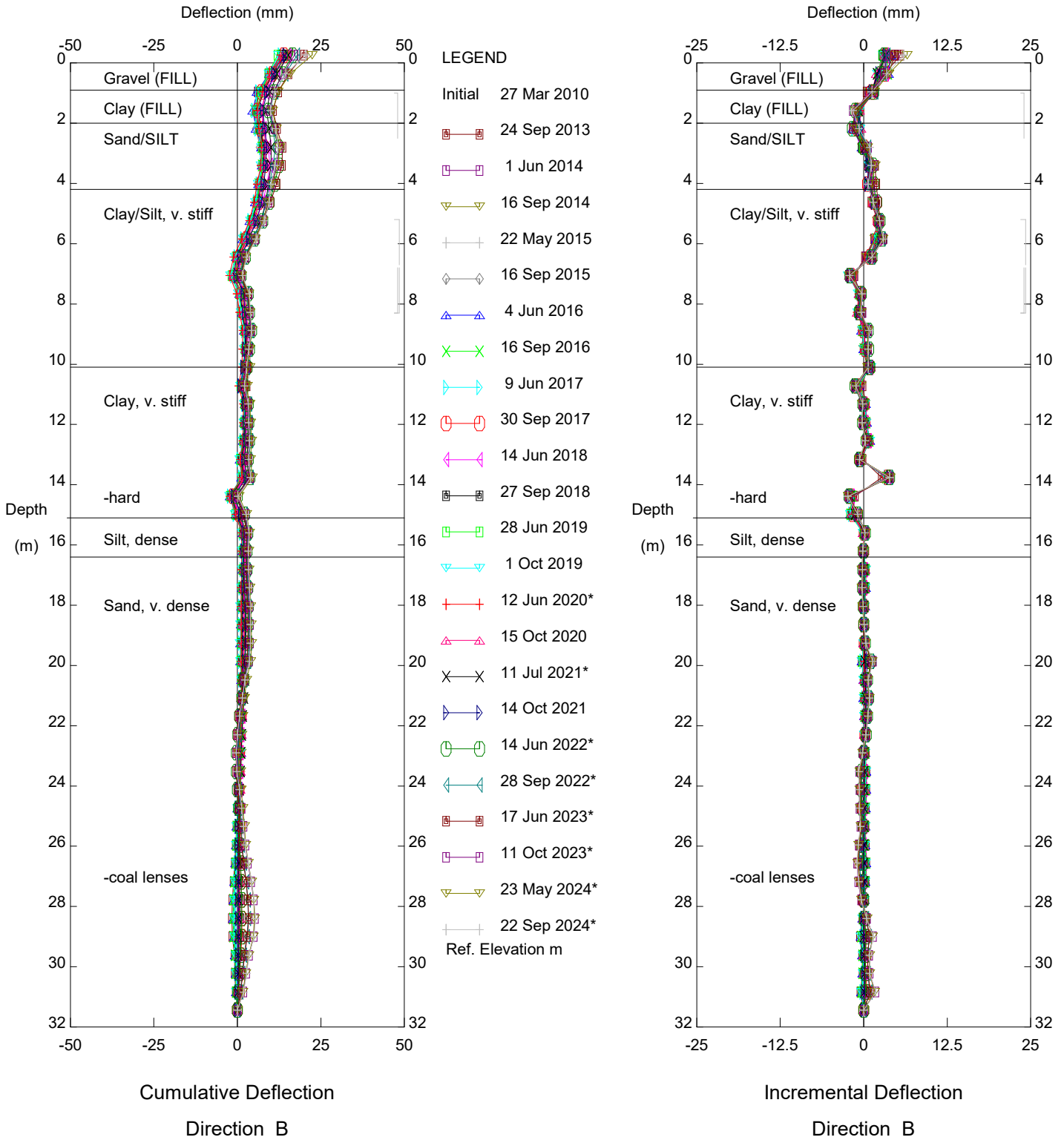
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PH090 Judah Hill Trunk Slide, Inclinometer SI10-10

Alberta Transportation

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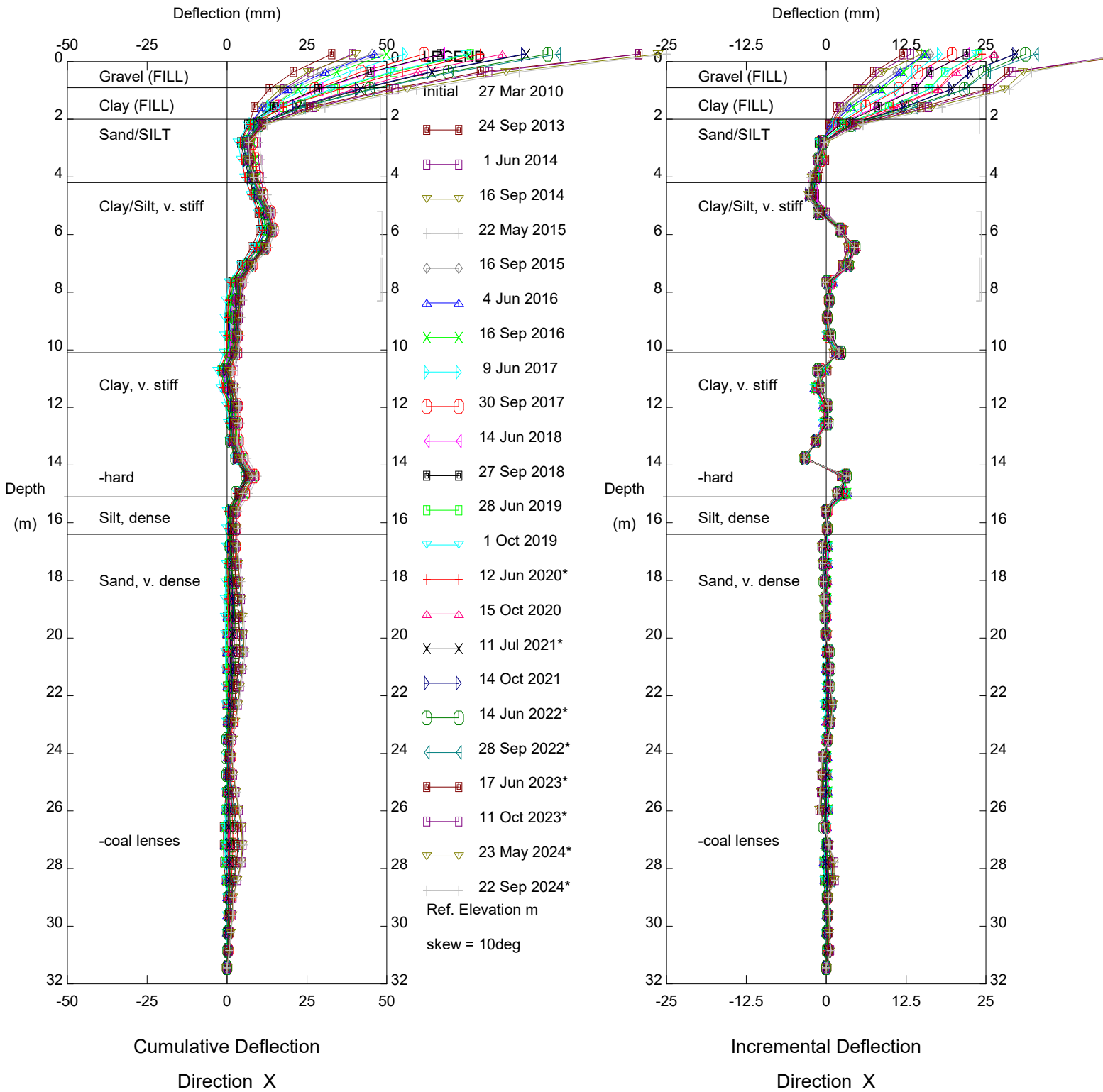


PH090 Judah Hill Trunk Slide, Inclinometer SI10-10

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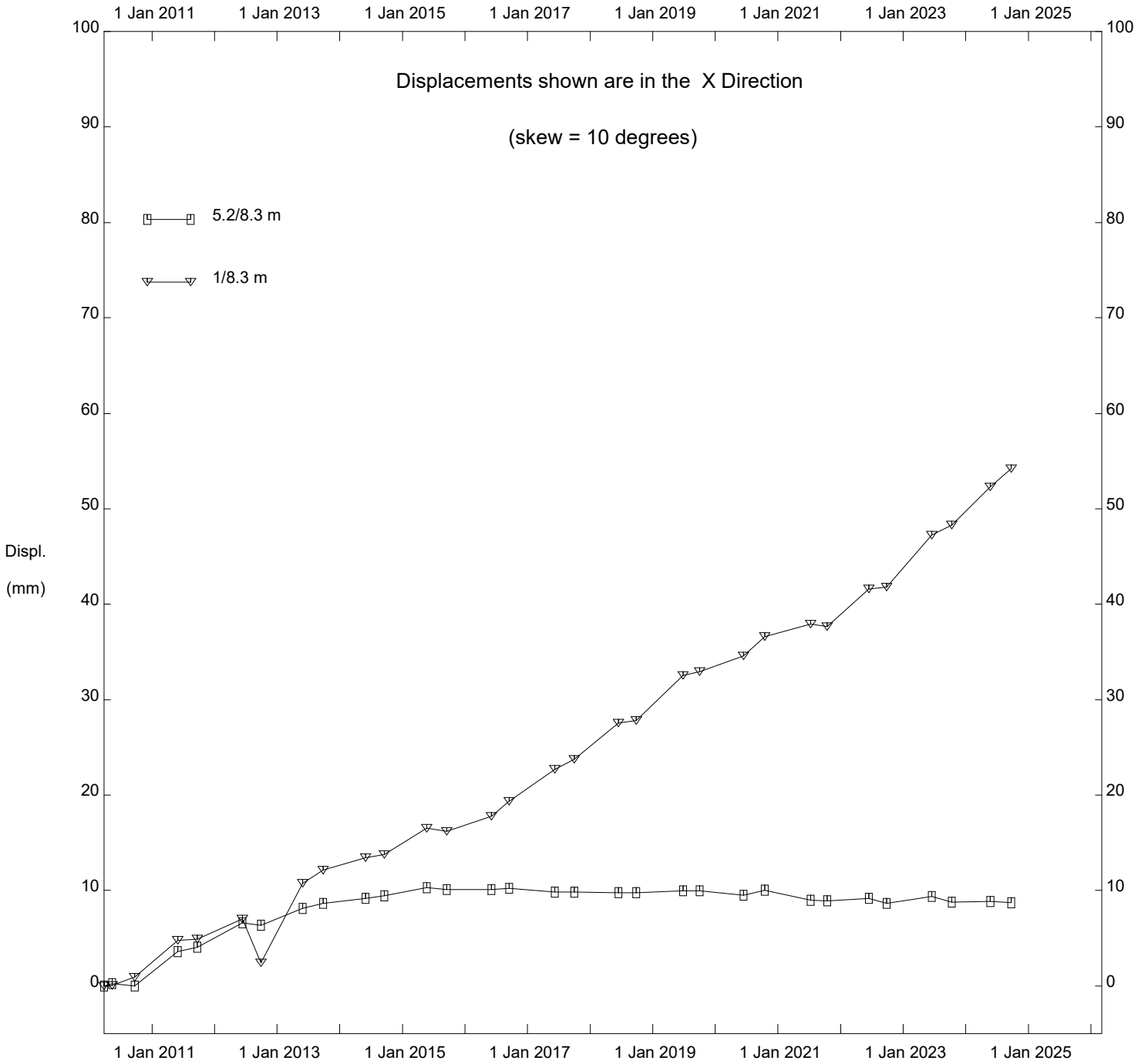


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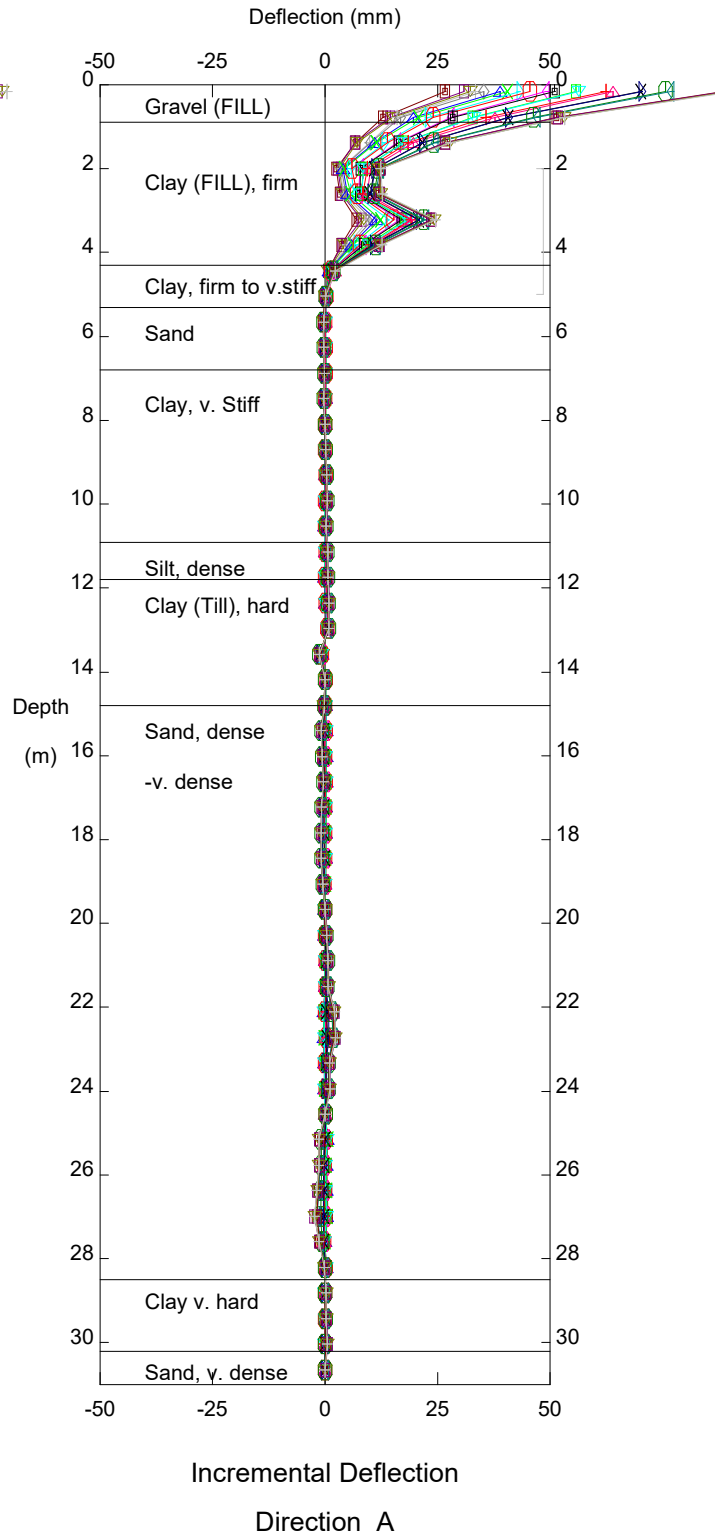
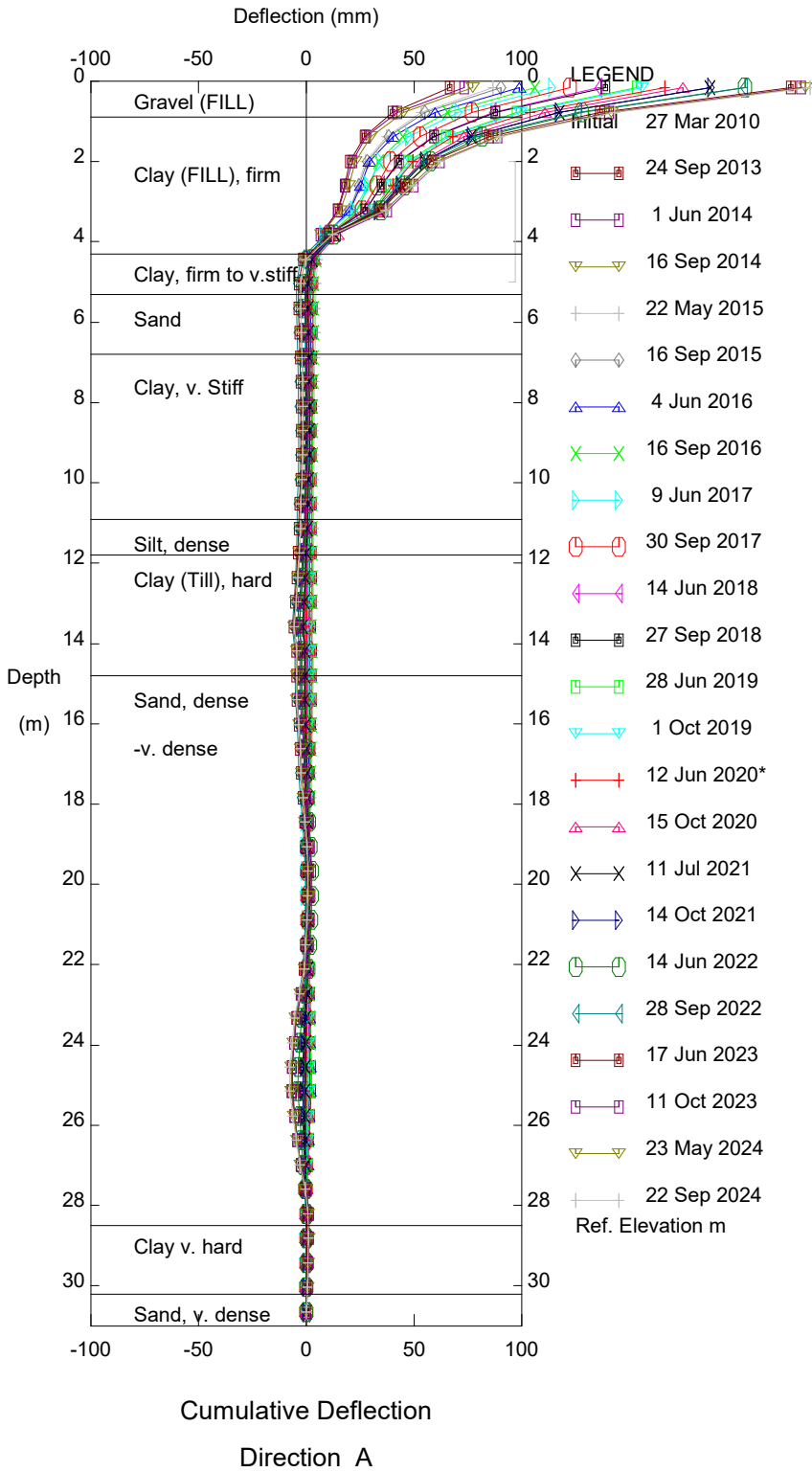
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PH090 Judah Hill Trunk Slide, Inclinator SI10-10

Alberta Transportation

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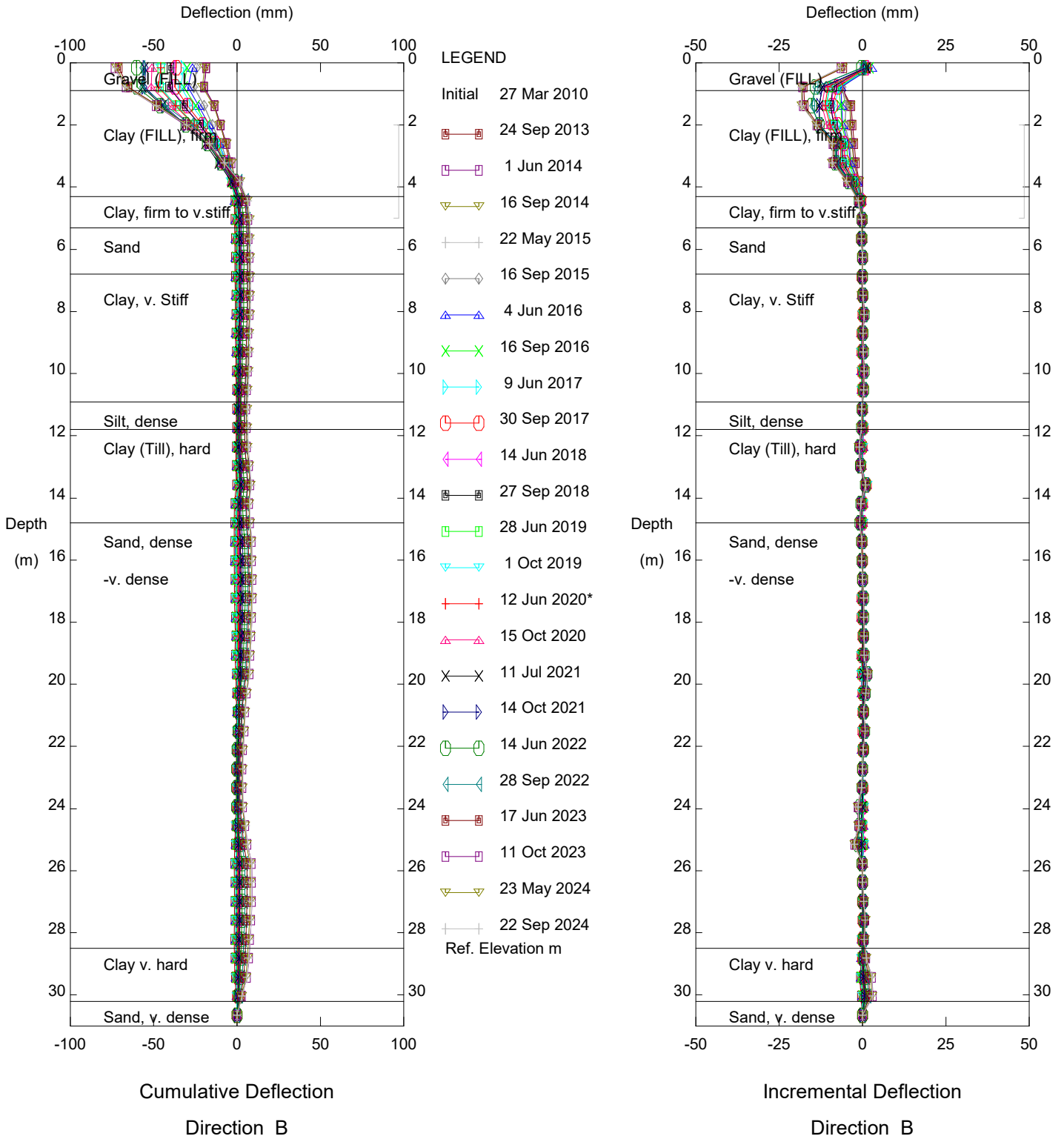


PH090 Judah Hill Trunk Slide, Inclinator SI10-11

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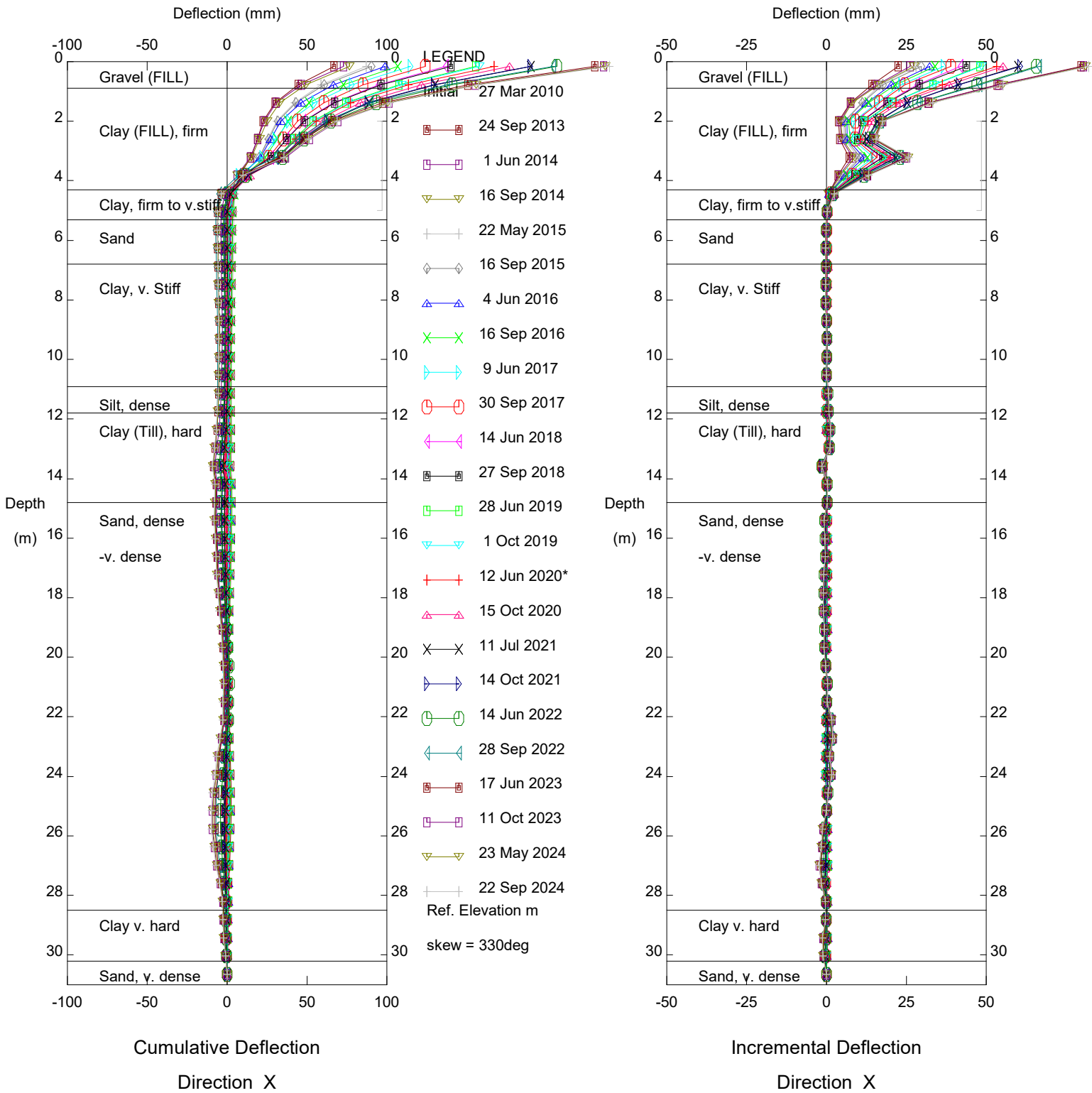


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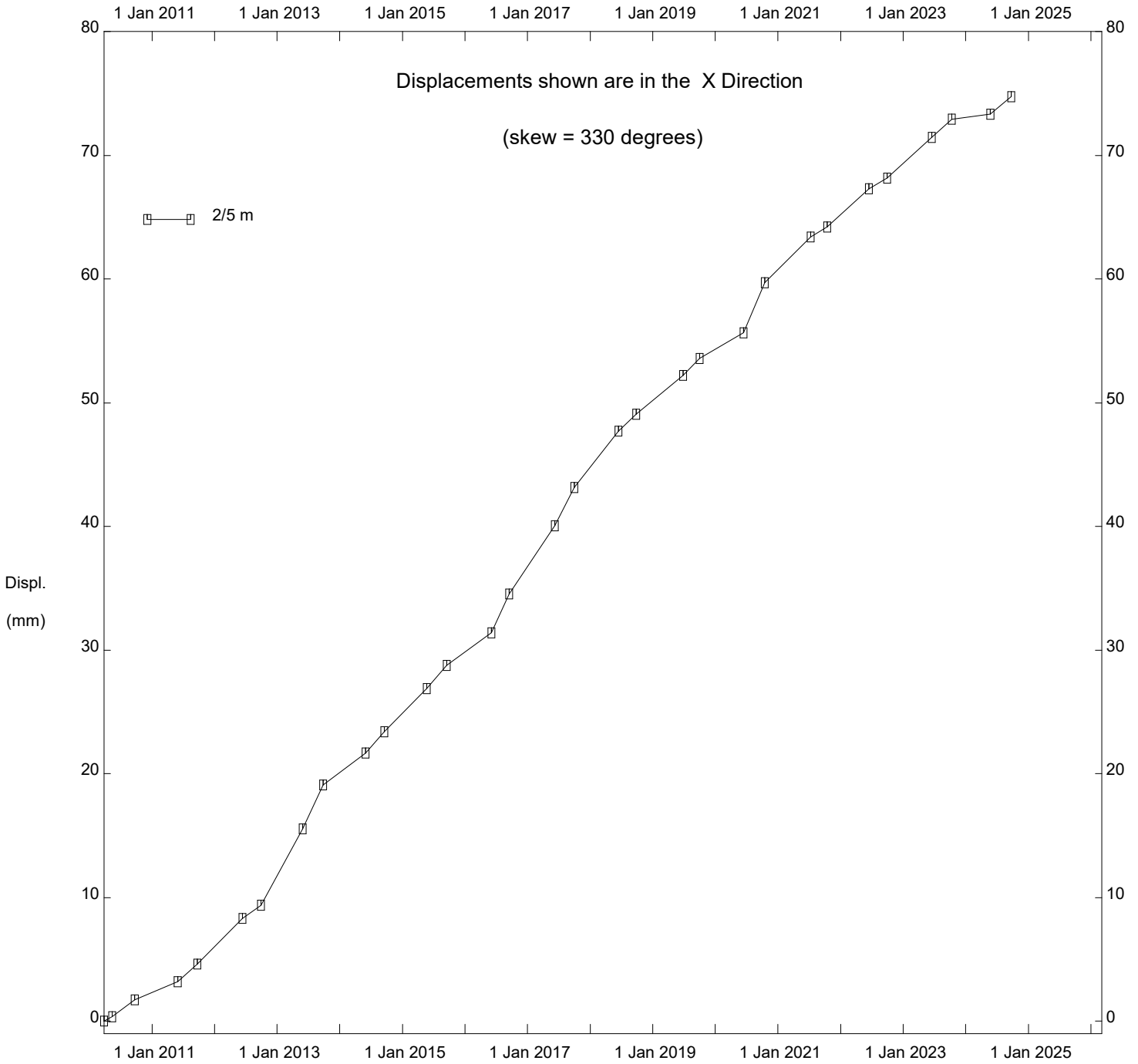


PH090 Judah Hill Trunk Slide, Inclinometer SI10-11

Alberta Transportation

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PH090 Judah Hill Trunk Slide, Inclinator SI10-11

Alberta Transportation

**FIGURE PH090-1
PIEZOMETER DATA FOR HWY 744:04: JUDAH HILL TRUNK SLIDE**

