

Site Number	Location	Name	Hwy	km
PH044	HWY 35:08 C1 25.97	Meikle River Upper Slope Slides	35:08	Km 26.1 (Slide A) Km 25.8 (Slide B)
<b>Legal Description:</b>		<b>UTM Co-ordinates</b>		
6-7-94-22 W5		11U	E 467856.90 N	6332922.84

<b>Current Monitoring:</b>	24-May-2024	<b>Previous Monitoring</b>	18-Jun-2023
<b>Instruments Read By:</b>	Mr. Niraj Regmi, G.I.T., and Mr. Nixson Mationg, Thurber		

Instruments Read During This Site Visit			
<b>Slope Inclinometers (SIs):</b> SI-27 SI-42 SI-45	<b>Pneumatic Piezometers (PN):</b> N/A	<b>Vibration Wire Piezometers (VW):</b> N/A	<b>Standpipe Piezometers (SP):</b> N/A
<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> Two RST Digital Inclinometer probes with 2 feet wheelbases and RST Pocket PC readouts	<b>Pneumatic Piezometers:</b>	<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>All three SIs at this site are located upslope, east of the highway. Overall, the SIs showed slower rates of movement compared to the past several readings cycles.</p> <p>Slope inclinometer SI-27 has a distinct shear zone at about 33 m depth along which a slow movement rate of about 0.7 mm/yr has persisted since about 1998. An unusual upslope movement trend was measured since the Spring 2023 readings. Additional readings will be required to confirm if this is a change in the movement pattern or an anomalous reading.</p> <p>Slope inclinometer SI-42 has registered barely discernable movements at about 37 m depth since installation.</p> <p>Slope inclinometer SI-45 a rate of movement of 0.1 mm/yr over 36.6 m to 37.8 m depth since the spring of 2023 readings. SI-45 has shown an overall rate of movement 0.5 mm/yr since initialization.</p> <p>The location of instrumentation at this site is inadequate to assess the stability of the slides at this site.</p>
<b>Future Work:</b>	The instruments should be read again in the spring of 2025.
<b>Instrumentation Repairs:</b>	No instrument repairs are required at this time.

<b>Additional Comments:</b>	
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<b>Attachments:</b>	<ul style="list-style-type: none"><li>▪ Table PH044-1 Spring 2024 – Meikle River (Km 26.1 and Km 25.8, Slide A and B) Slope Inclinator Instrumentation Reading Summary</li><li>▪ Statement of Limitations and Conditions</li><li>▪ APPENDIX A - PH044- SPRING 2024<ul style="list-style-type: none"><li>□ Field Inspector's report</li><li>□ Site Plan Showing Approximate Instrument Locations (Drawings No. 32121 PH044)</li><li>□ SI Reading Plots</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 PH044-1 Spring 2023 – Meikle River (Km 26.1 And Km 25.8, Slide A And B) Slope Inclinometer 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)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI4	Aug. 12, 1994	N/A	N/A	Sheared Off	Oct. 25, 2005	N/A	N/A	N/A
SI21	Sept. 29, 1994	N/A	N/A	Destroyed	Oct. 25, 2005	N/A	N/A	N/A
SI22	May 24, 2006	Erratic reading	Erratic reading	Discontinued	May 24, 2006	Erratic reading	Erratic reading	Erratic reading
SI23	May 24, 2006	3.6 mm between 10.4 m and 12.8 m depth in 125° direction	9.2 between May and Oct. 2006	Sheared off at 27.4 m depth	June 2, 2014	N/A	N/A	N/A
		18.2 mm between 27.4 m and 29.3 m depth in 246° direction	8.6 in October 2012			N/A	N/A	N/A
SI-27	Nov. 15, 1994	21.8 mm between 31.5 m to 33.9 m depth in 232° direction	5.2 Between April and Nov. 1996	Operational	June 18, 2023	No discernible movement	N/A	-1.9
SI-42	Aug. 7, 1996	No discernible movement pattern	N/A	Operational	June 18, 2023	N/A	N/A	N/A
SI-45	Aug. 7, 1996	14.9 mm between 36.6 m to 37.8 m depth in 206° direction	1.9 in October 2020	Operational	June 18, 2023	0.1	0.1	0.2

Drawing 32121-PH044 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Note: km 26.1 and km 25.8 correspond to Stations 0 + 650 and 0 + 500 on older reports



## STATEMENT OF LIMITATIONS AND CONDITIONS

### 1. STANDARD OF CARE

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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.
- 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.

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**THURBER** ENGINEERING LTD.

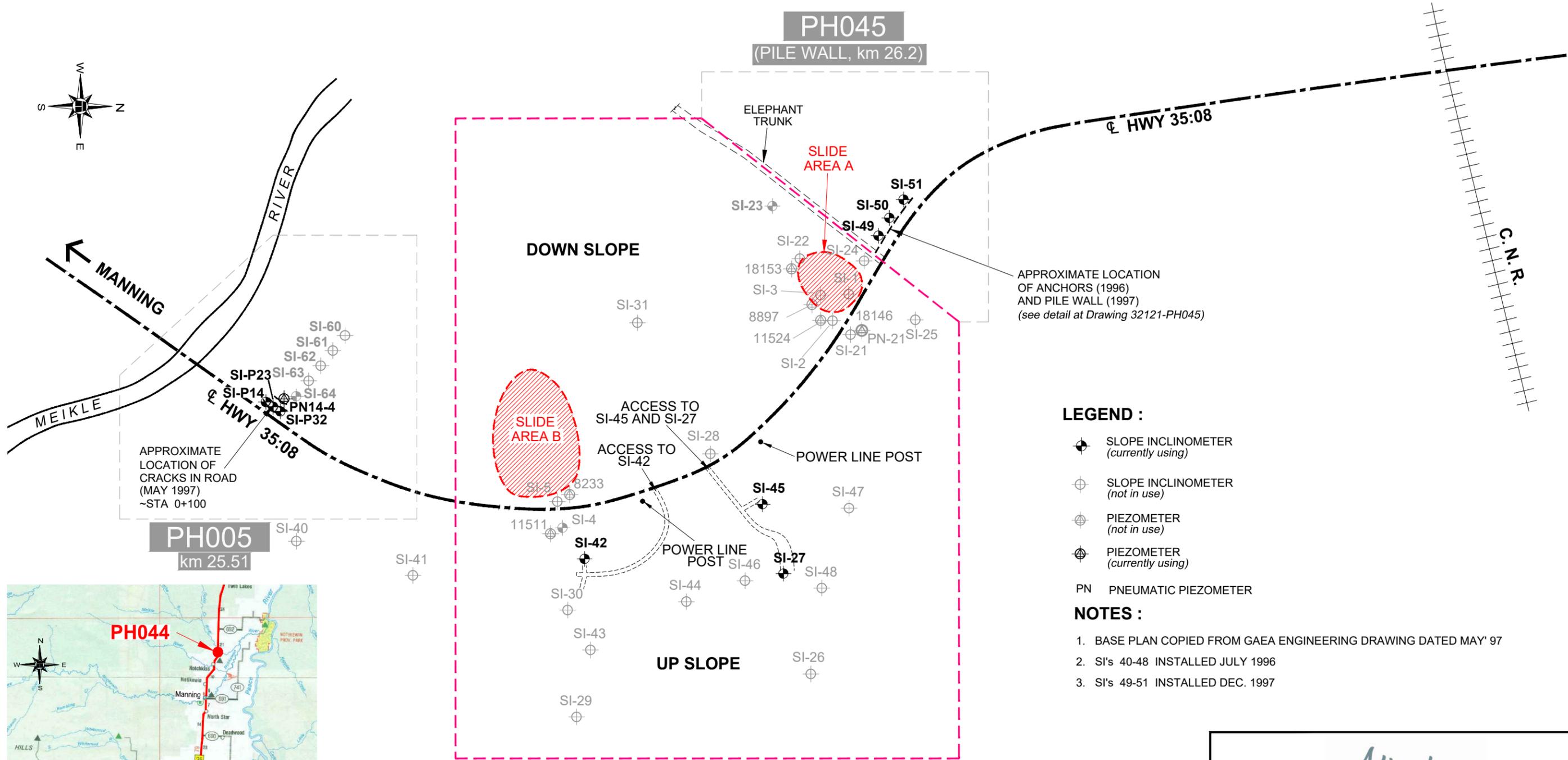
**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022164)  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING RESULTS**

**SPRING 2024**

**APPENDIX A  
DATA PRESENTATION**

**SITE PH044: HWY 35:08, MEIKLE RIVER  
(KM 26.1 AND KM 25.8, SLIDE A AND B)**





APPROXIMATE LOCATION OF CRACKS IN ROAD (MAY 1997) ~STA 0+100

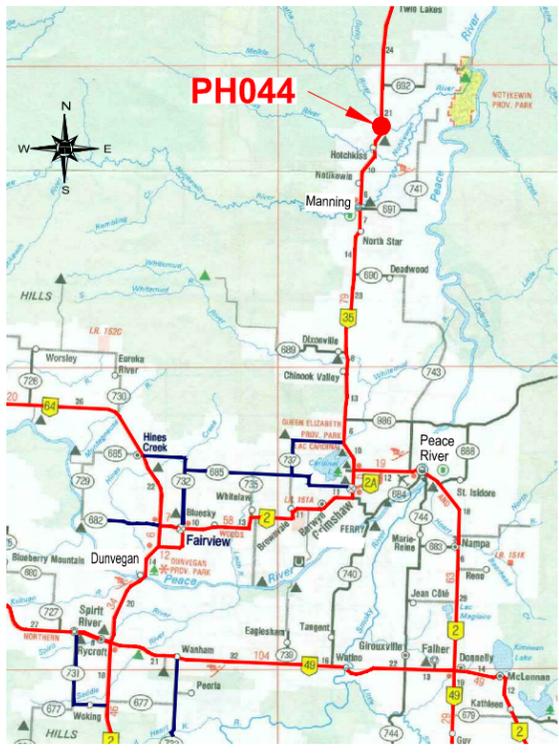
APPROXIMATE LOCATION OF ANCHORS (1996) AND PILE WALL (1997) (see detail at Drawing 32121-PH045)

**LEGEND :**

- SLOPE INCLINOMETER (currently using)
- SLOPE INCLINOMETER (not in use)
- PIEZOMETER (not in use)
- PIEZOMETER (currently using)
- PN PNEUMATIC PIEZOMETER

**NOTES :**

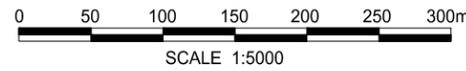
1. BASE PLAN COPIED FROM GAEA ENGINEERING DRAWING DATED MAY '97
2. SI's 40-48 INSTALLED JULY 1996
3. SI's 49-51 INSTALLED DEC. 1997



**SITE MAP**  
NOT TO SCALE

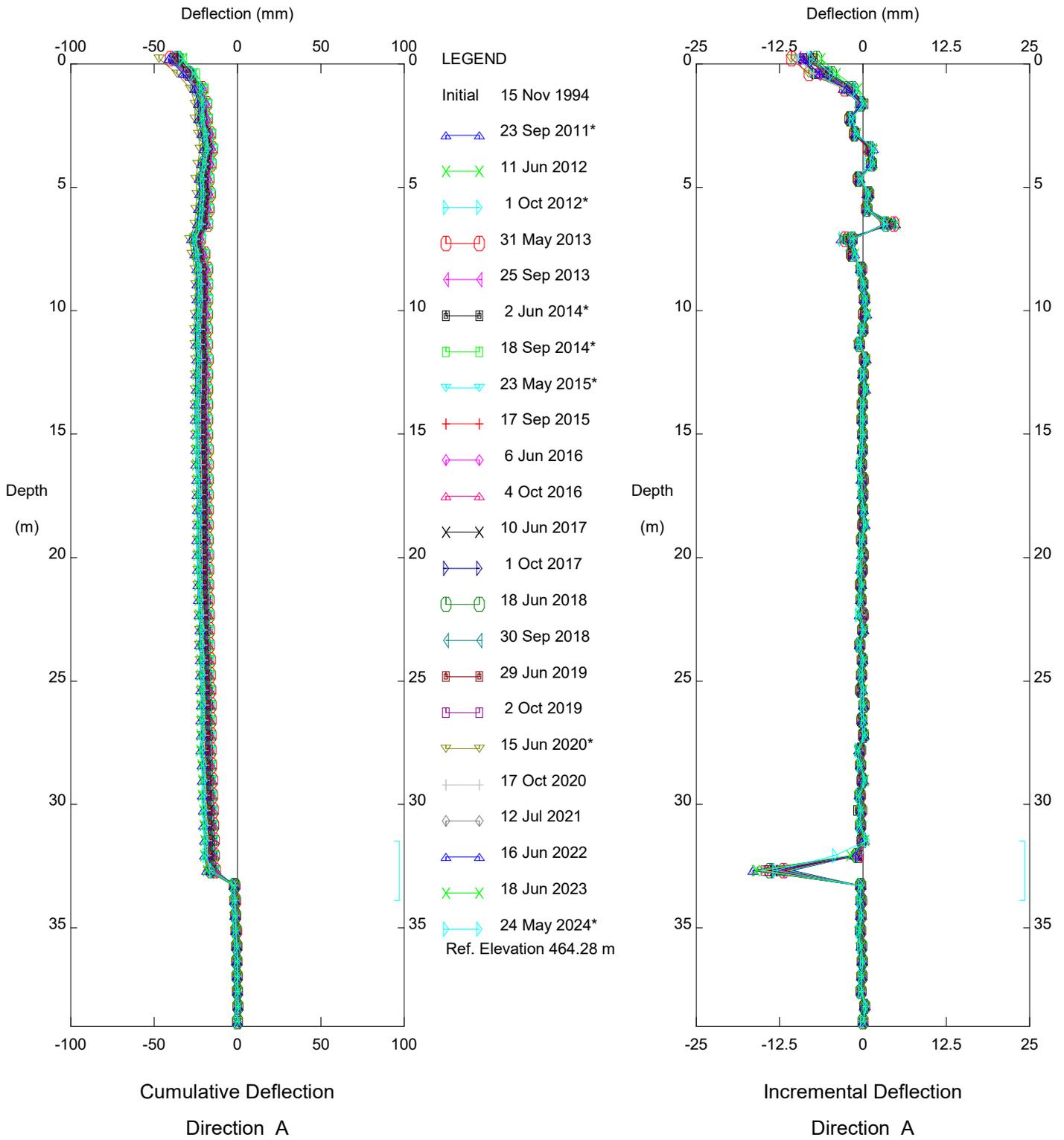
**PH044**  
km 26.13 and km 25.81

**SITE PLAN**  
SCALE 1:5000 (APPROX.)



<b>PEACE REGION (PEACE RIVER DISTRICT)</b>	
<b>PH044: HWY 35: 08 - MEIKLE RIVER (SLIDE A &amp; B - km 26.13 and 25.81) INSTRUMENT LOCATIONS AND READINGS</b>	
<b>DWG No. 32121-PH044</b>	
<small>DRAWN BY</small> ML	
<small>DESIGNED BY</small> BWN	
<small>APPROVED BY</small> DWP	
<small>SCALE</small> AS SHOWN	
<small>LAST UPDATED</small> SEPTEMBER 2021	
<small>FILE No.</small> 32121	

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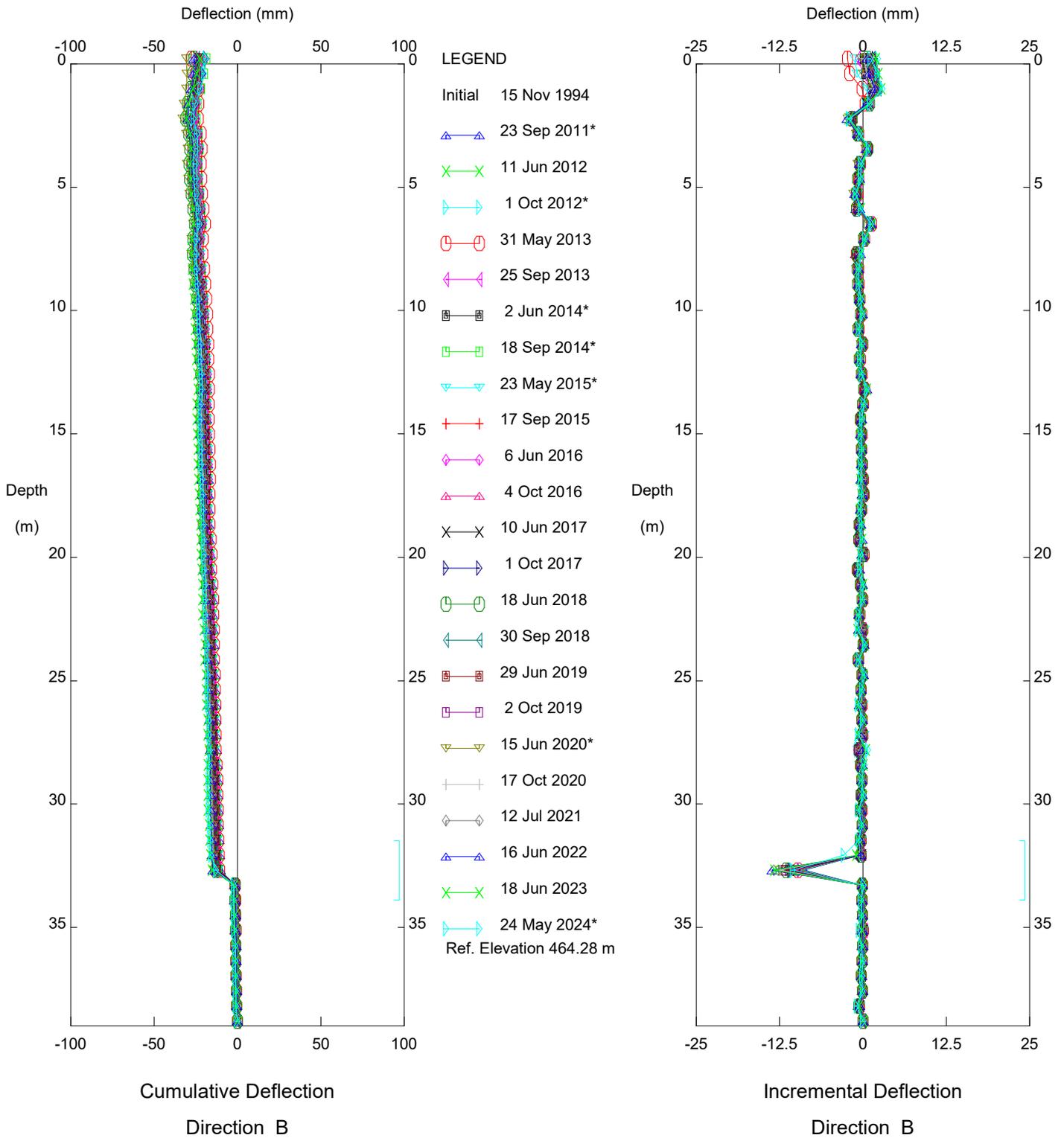


HWY 35:08 (PH044), Inclinometer SI-27

Alberta Transportation

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

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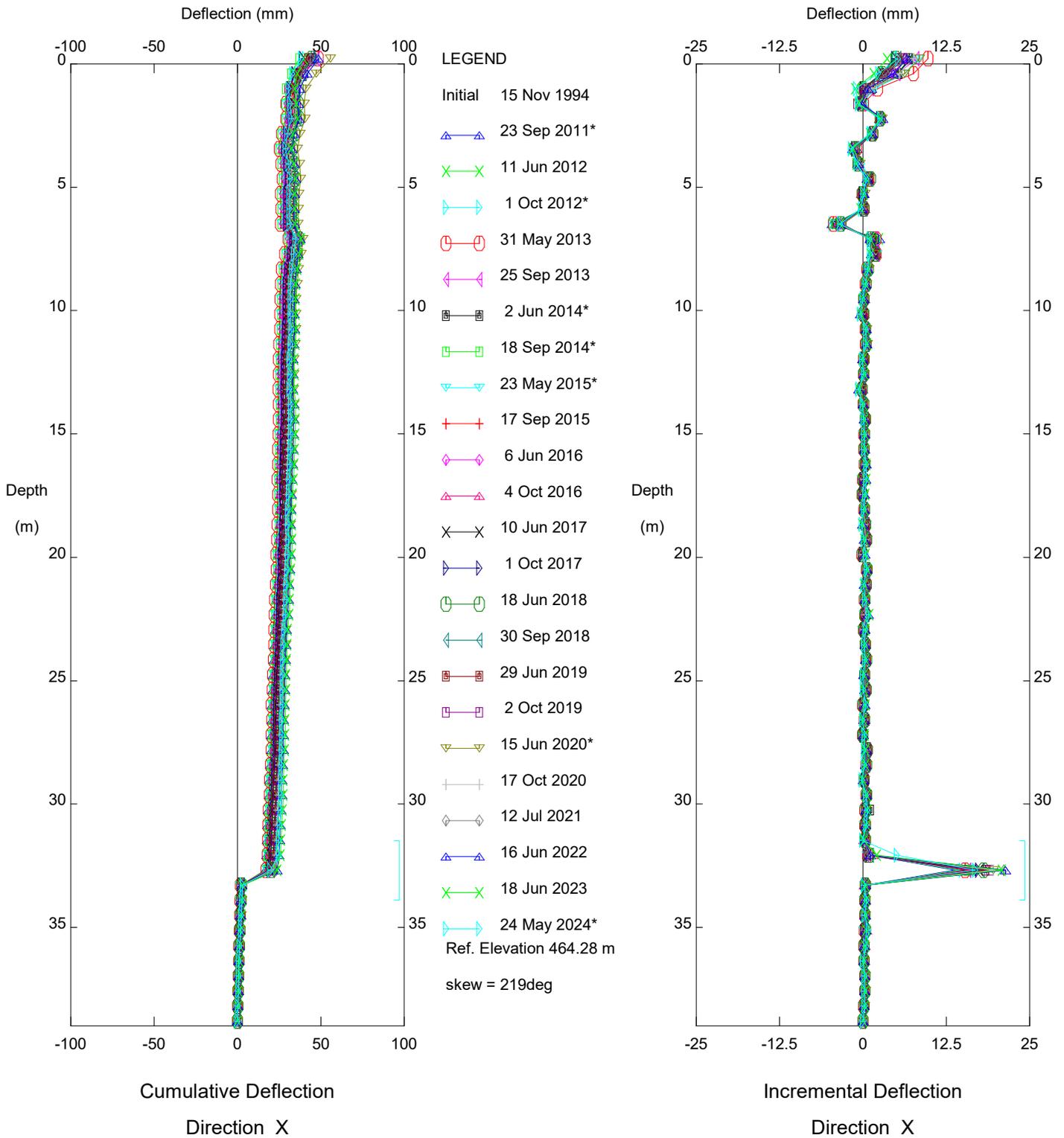


HWY 35:08 (PH044), Inclinometer SI-27

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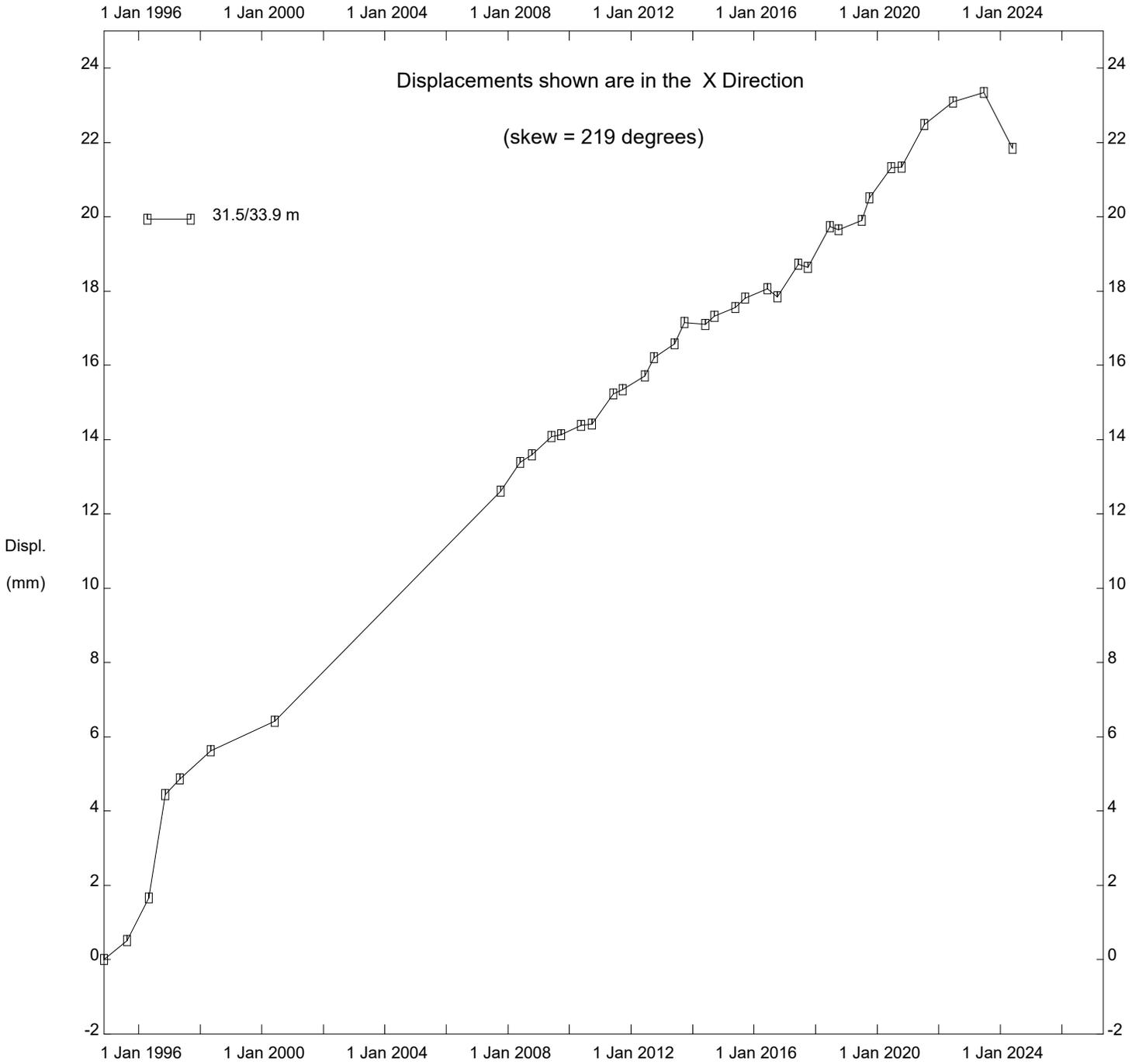


HWY 35:08 (PH044), Inclinometer SI-27

Alberta Transportation

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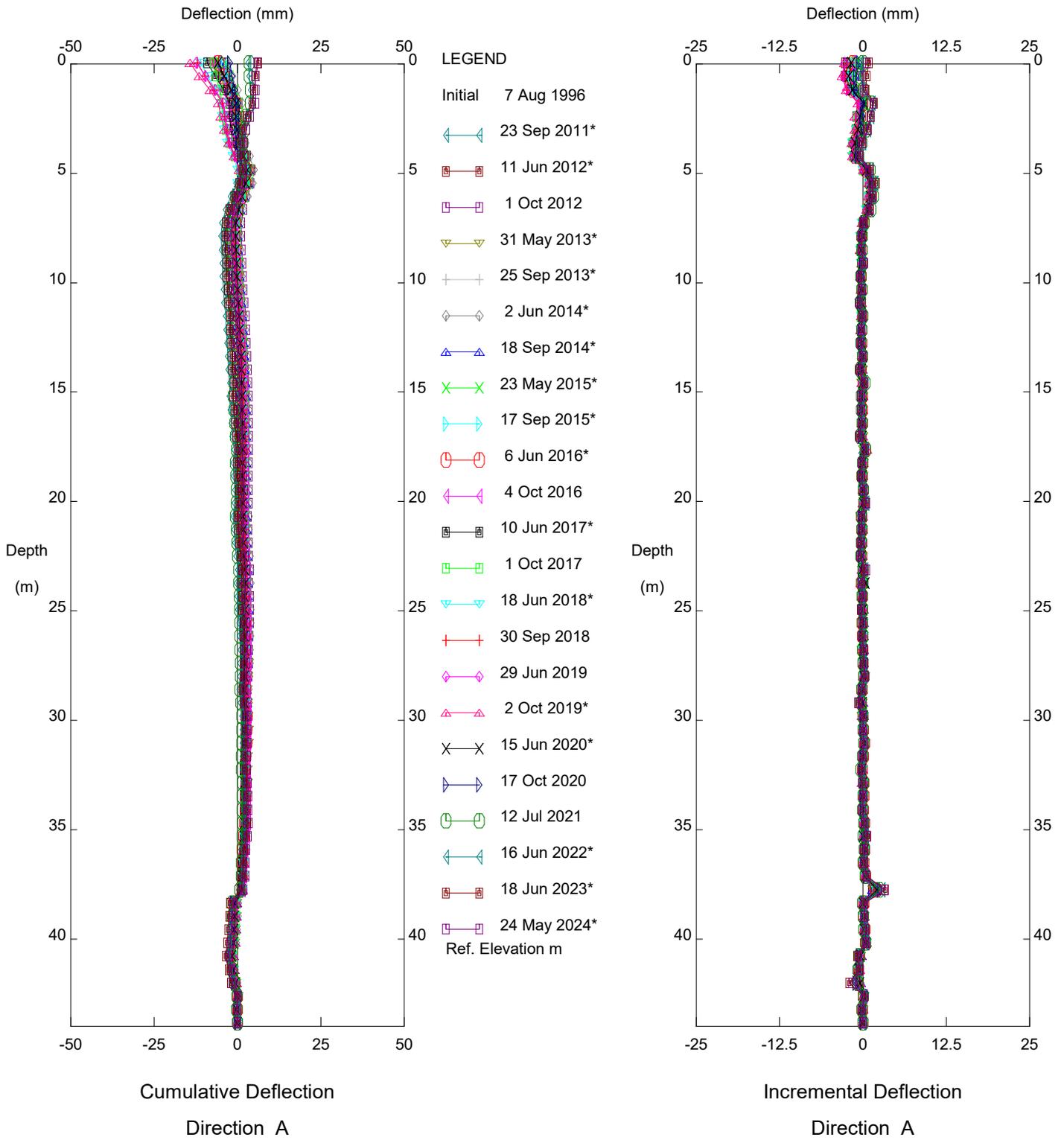
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HWY 35:08 (PH044), Inclinator SI-27

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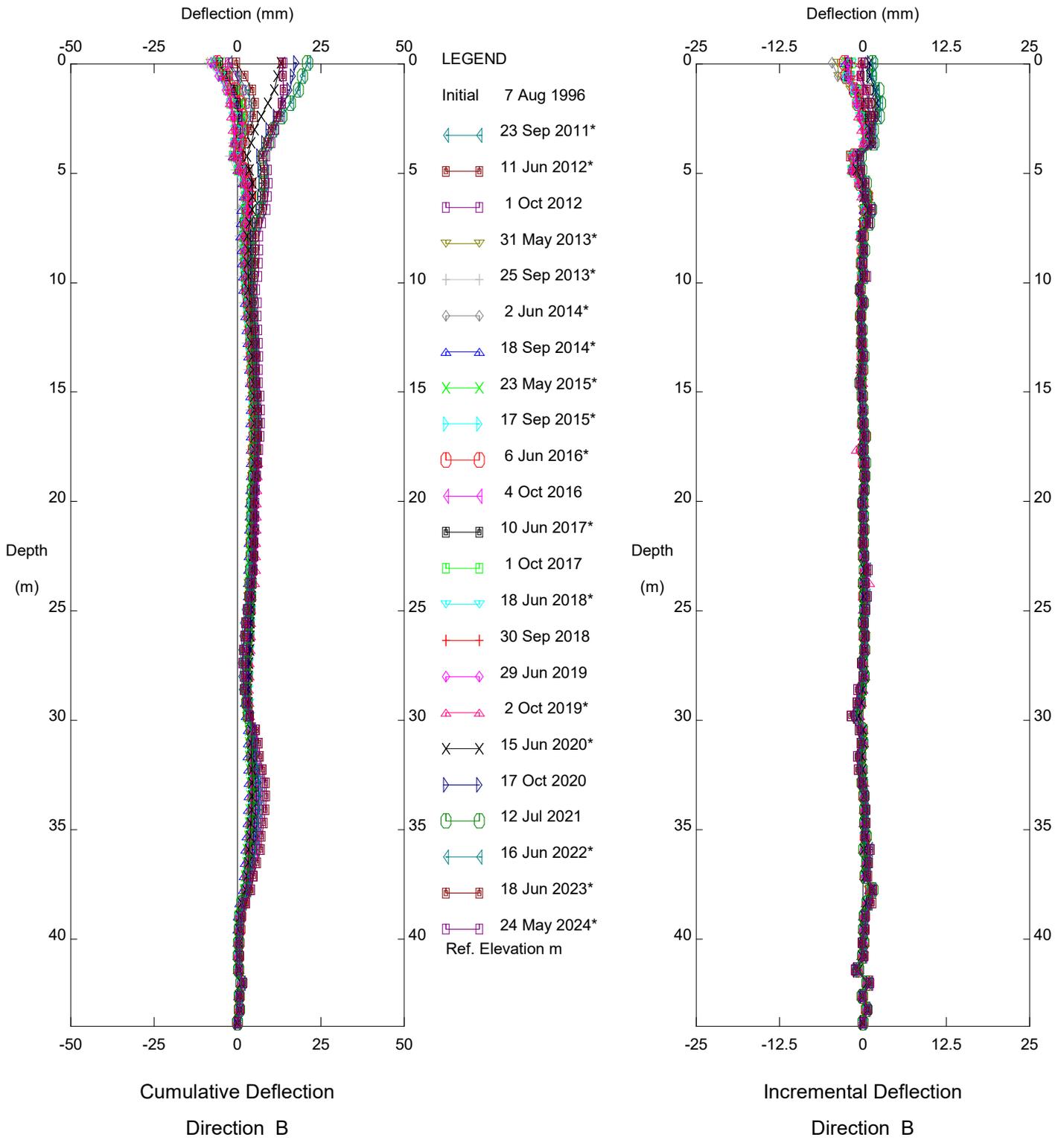


HWY 35:08 (PH044), Inclinometer SI-42

Alberta Transportation

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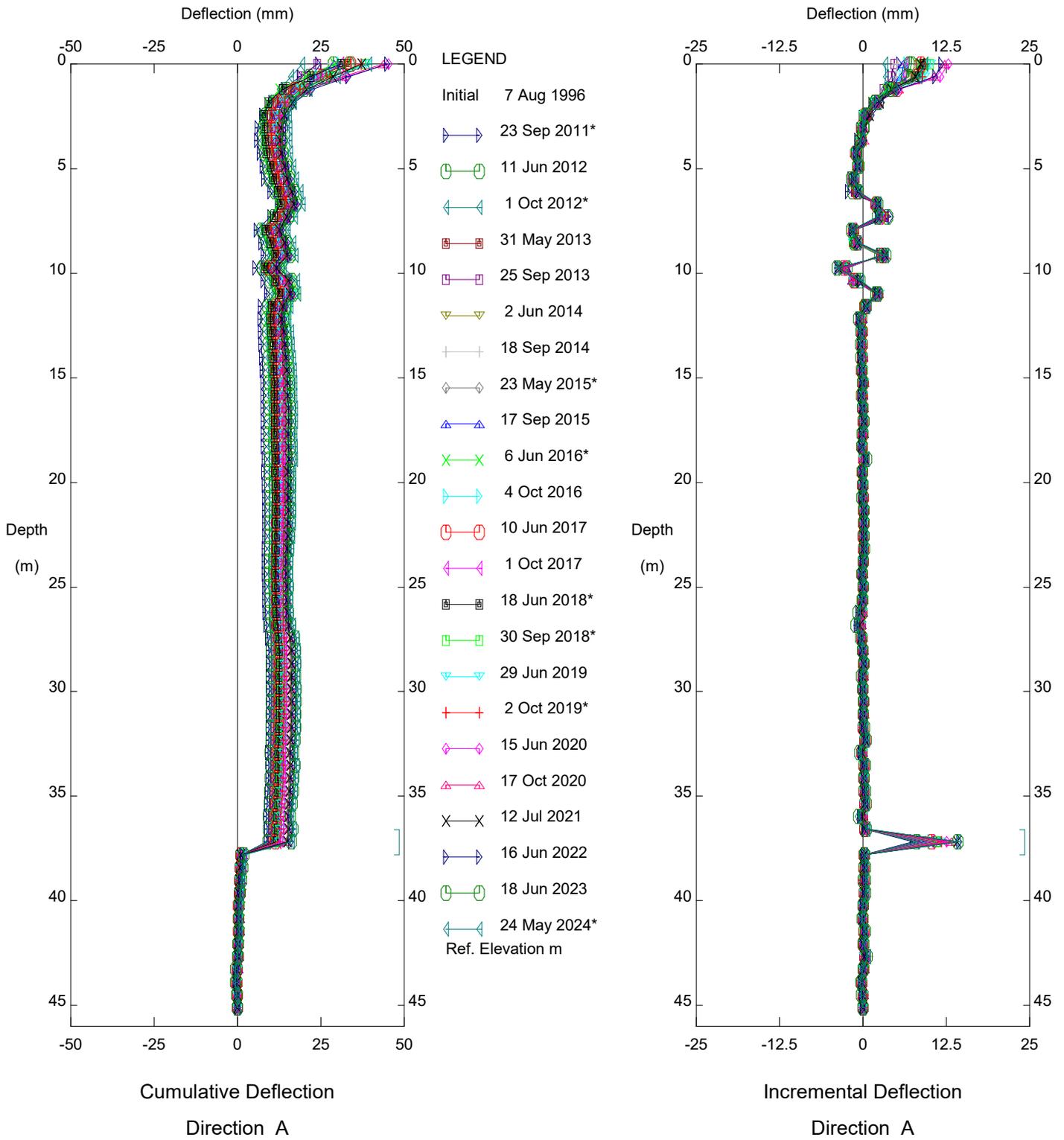


HWY 35:08 (PH044), Inclinometer SI-42

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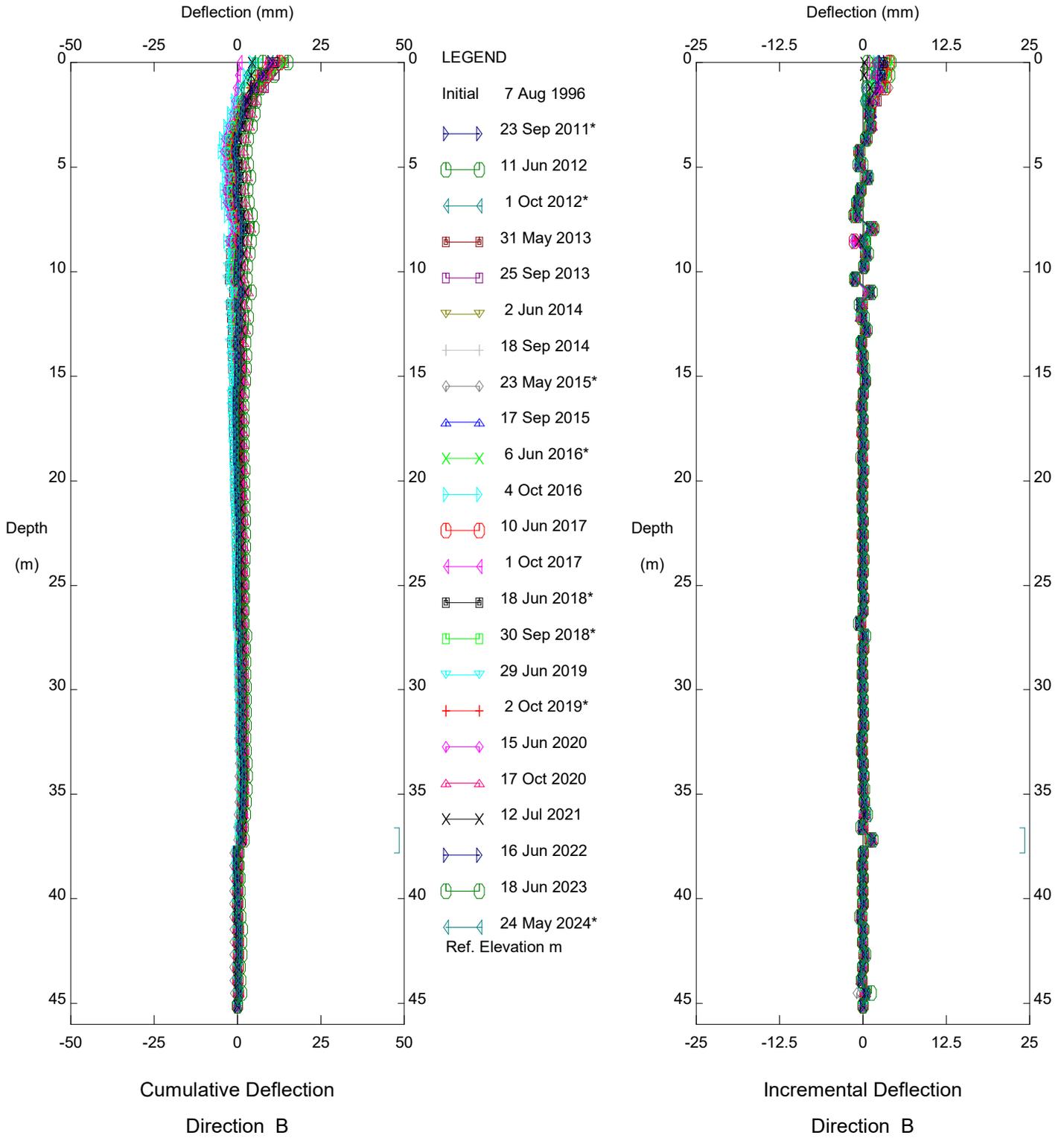


HWY 35:08 (PH044), Inclinometer SI-45

Alberta Transportation

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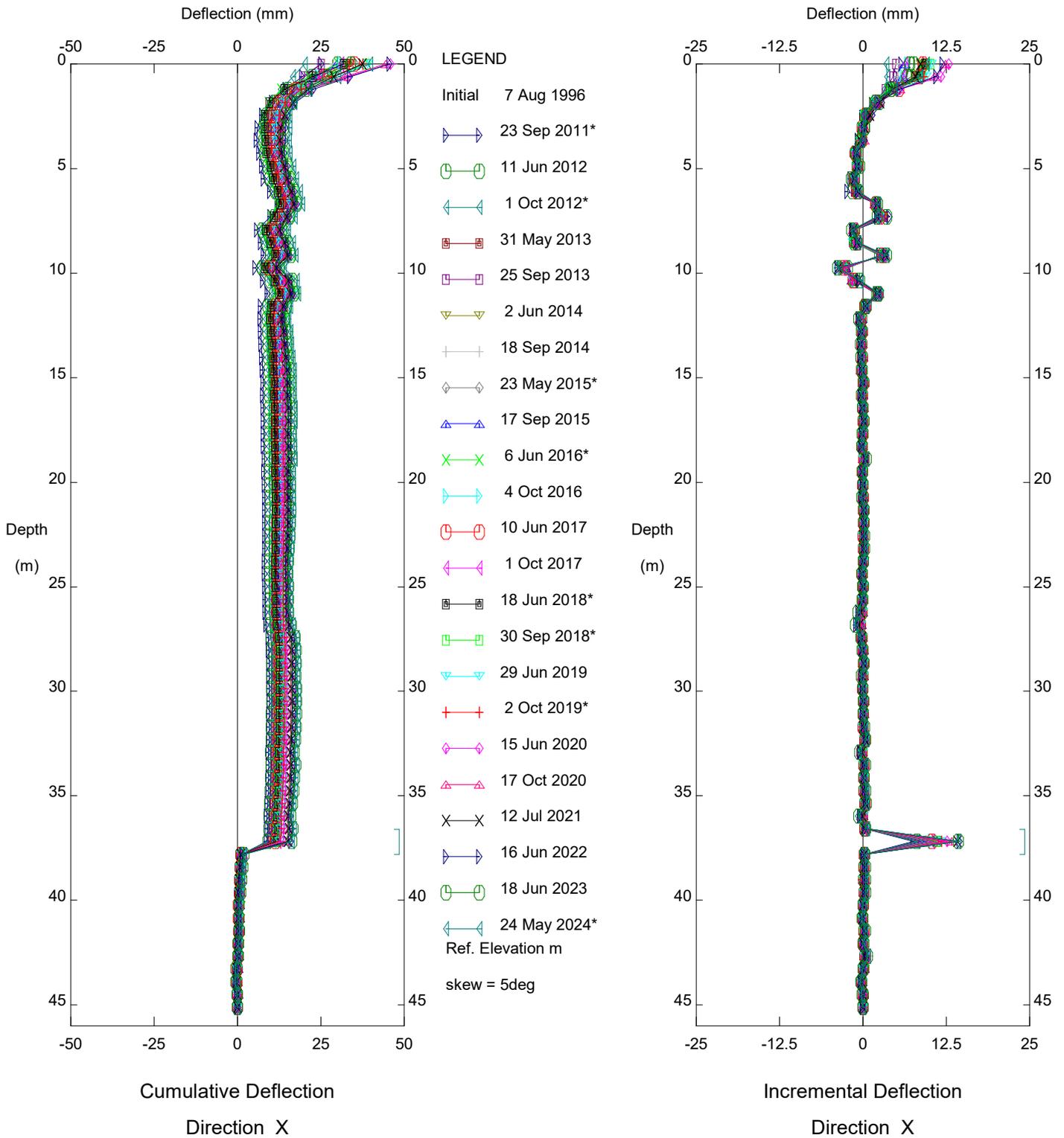


HWY 35:08 (PH044), Inclinometer SI-45

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Thurber Engineering Ltd.

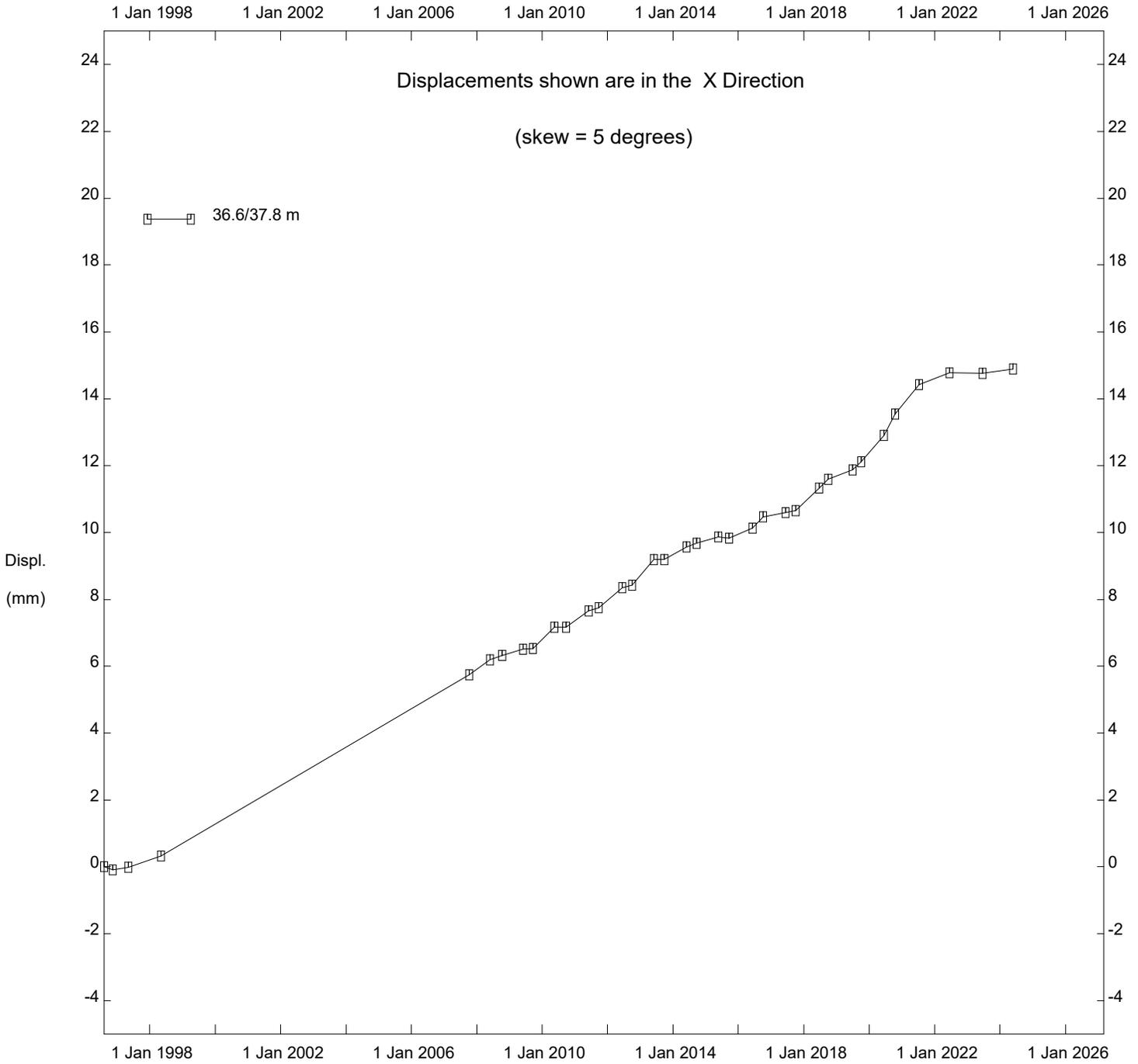


HWY 35:08 (PH044), Inclinometer SI-45

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HWY 35:08 (PH044), Inclinator SI-45

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