ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP
PEACE REGION – (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING - SPRING 2025

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)
Legal Description:		**UTM Co-ordinates**		
6-7-94-22 W5		11U E 467856.90		N 6332922.84

Current Monitoring:	11-June-2025	**Previous Monitoring**	24-May-2024
Instruments Read By:	Mr. Niraj Regmi, G.I.T., and Mr. Godfred Etiendem, Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI-27 SI-42 SI-45	**Pneumatic Piezometers (PN):** N/A	**Vibrating Wire Piezometers (VW):** N/A	**Standpipe Piezometers (SP):** N/A
Load Cell (LC): N/A	**Strain Gauges:** N/A	**SAAs:** N/A	**Others:** N/A

Readout Equipment Used			
Slope Inclinometers: Two RST Digital Inclinometer probes with 2 feet wheelbases and RST Pocket PC readouts	**Pneumatic Piezometers:**	**Vibrating Wire Piezometers:**	**Standpipe Piezometers:**
Load Cell:	**Strain Gauges:**	**SAAs:**	**Others:**
Note:			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	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. Slope inclinometer SI-27 has a distinct shear zone over 31.5 m to 33.9 m depth along which an overall movement rate of about 0.8 mm/yr has persisted since about 1998. The incremental rate of movement is 1.3 mm/yr since the fall of 2024 readings. Slope inclinometer SI-42 has not developed a discernable movement pattern. Slope inclinometer SI-45 has a rate of movement of 0.04 mm/yr over 36.6 m to 37.8 m depth since the fall of 2024 readings. This current rate is similar to the overall rate of movement of 0.5 mm/yr since initialization. The location of instrumentation at this site is inadequate to assess the stability of the slides at this site.
Future Work:	The instruments should be read again in the spring of 2026.
Instrumentation Repairs:	No instrument repairs are required.

Additional Comments:	

Attachments:	• Table PH044-1 Spring 2025 – Meikle River (km 26.1 and km 25.8, Slide A and B) Slope Inclinometer Instrumentation Reading Summary • Statement for Use and Interpretation of Report • APPENDIX A - PH044- SPRING 2024 o Field Inspector's report o Site Plan Showing Approximate Instrument Locations (Drawings No. 32121 PH044) o SI Reading Plots

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.
Senior Geotechnical Engineer

July 13, 2025

PROFESSIONAL ENGINEER ALBERTA
DONALD PROUDFOOT
ID 51674

July 11, 2025

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE: Don Proudfoot
RM APEGA ID #: 51674
DATE: July 11, 2025
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Yasir Khan, E.I.T.
Geotechnical Engineer-In-Training

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Table PH044-1 Spring 2024 – 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	23.1 mm between 31.5 m to 33.9 m depth in 219° direction	5.2 Between April and Nov. 1996	Operational	May 24, 2024	1.3	1.2	2.9
SI-42	Aug. 7, 1996	No discernible movement pattern	N/A	Operational	J May 24, 2024	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	May 24, 2024	<0.1	<0.1	-0.1

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

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STATEMENT FOR USE AND INTERPRETATION OF REPORT

1. STANDARD OF CARE

This Report has been prepared in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances at the same time and in the same or similar locality and in compliance with all applicable laws.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment, including this Statement For Use and Interpretation of Report, 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, AS DESCRIBED ABOVE. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TOTHE WHOLE OF THE 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 for the development, design objectives, and/or purposes described to Thurber by the Client. **NO OTHER PARTY MAY USE OR RELY ON THE REPORT OR ANY PORTION THEREOF FOR OTHER THAN THE CLIENT'S BENEFIT IN CONNECTION WITH THE PURPOSES DESCRIBED IN THE REPORT**. Any use which a third party makes of the Report is the sole responsibility of such third party and is always subject to this Statement for Use and Interpretation of Report. Thurber accepts no liability or responsibility for damages suffered by any third party resulting from use of the Report for purposes outside the reasonable contemplation of Thurber at the time it was prepared or in any manner unintended by Thurber.

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 is inherently judgement-based. 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 parties making use of such documents or records with or without our express written consent need to 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 parties. Some conditions are subject to change over time and those making use of the Report need to be aware of this possibility and understand that the Report only presents the interpreted conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client must 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 based on conditions in evidence at the time of site inspections and based on 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 resulting from misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other parties 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 is recommended to 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 need to 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 to confirm and document that the site conditions do not materially differ from those 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. INDEPENDENT JUDGEMENTS OF CLIENT

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 other parties 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, unless such decisions expressly form part of the stated purpose of the Report as described in Paragraph 3.

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

SPRING 2025

APPENDIX A
DATA PRESENTATION

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

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH044)
SPRING 2025

Location:	Meikle River Upper Slope Slides (HWY 35:08 C1 25.974)	**Readout:**	
File Number:	32121	**Casing Size**	3.34" Ø
Probe:	RST 5R and 8R	**Temp:**	11
Cable:	RST 5R and 8R	**Read by:**	NKR/GE

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 #	Size (")	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-			
SI-27	467856.90	6332922.84	11-Jun-25	0.83	128 to 2	357	-761	767	326	-347	5R/5R	3.34	
SI-42	467862.74	6332763.27	11-Jun-25	0.66	144 to 2	195	52	-38	1146	-1147	5R/5R	3.34	
SI-45	467820.40	6332898.97	11-Jun-25	0.61	148 to 2	185	619	-603	159	-159	8R/8R	3.34	

INSPECTOR REPORT

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PH045
(PILE WALL, km 26.2)

MANNING

MEIKLE RIVER

℄ HWY 35:08

C.N.R.

ELEPHANT TRUNK

SLIDE AREA A

SLIDE AREA B

DOWN SLOPE

UP SLOPE

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

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

ACCESS TO SI-45 AND SI-27

ACCESS TO SI-42

POWER LINE POST

POWER LINE POST

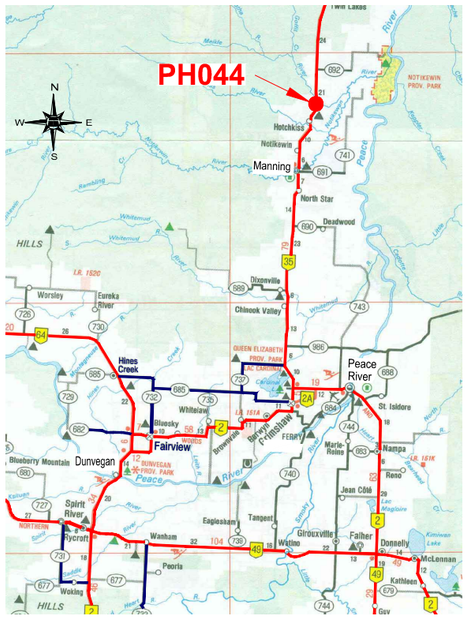
SI-23, SI-51, SI-50, SI-49, SI-22, SI-24, 18153, SI-1, SI-3, 8897, 18146, SI-25, 11524, PN-21, SI-21, SI-2, SI-31, SI-28, SI-5, 8233, SI-45, SI-47, 11511, SI-4, SI-42, SI-46, SI-27, SI-48, SI-44, SI-30, SI-43, SI-26, SI-29, SI-60, SI-61, SI-62, SI-63, SI-64, SI-P23, SI-P14, PN14-4, SI-P32, SI-40, SI-41

PH005
km 25.51

PH044
km 26.13 and km 25.81

SITE PLAN
SCALE 1:5000 (APPROX.)

0 50 100 150 200 250 300m
SCALE 1:5000



SITE MAP
NOT TO SCALE

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

Alberta Transportation

PEACE REGION (PEACE RIVER DISTRICT)

PH044: HWY 35: 08 - MEIKLE RIVER
(SLIDE A & B - km 26.13 and 25.81)
INSTRUMENT LOCATIONS AND READINGS

DWG No. 32121-PH044

DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	AS SHOWN
LAST UPDATED	JULY 2025
FILE No.	32121

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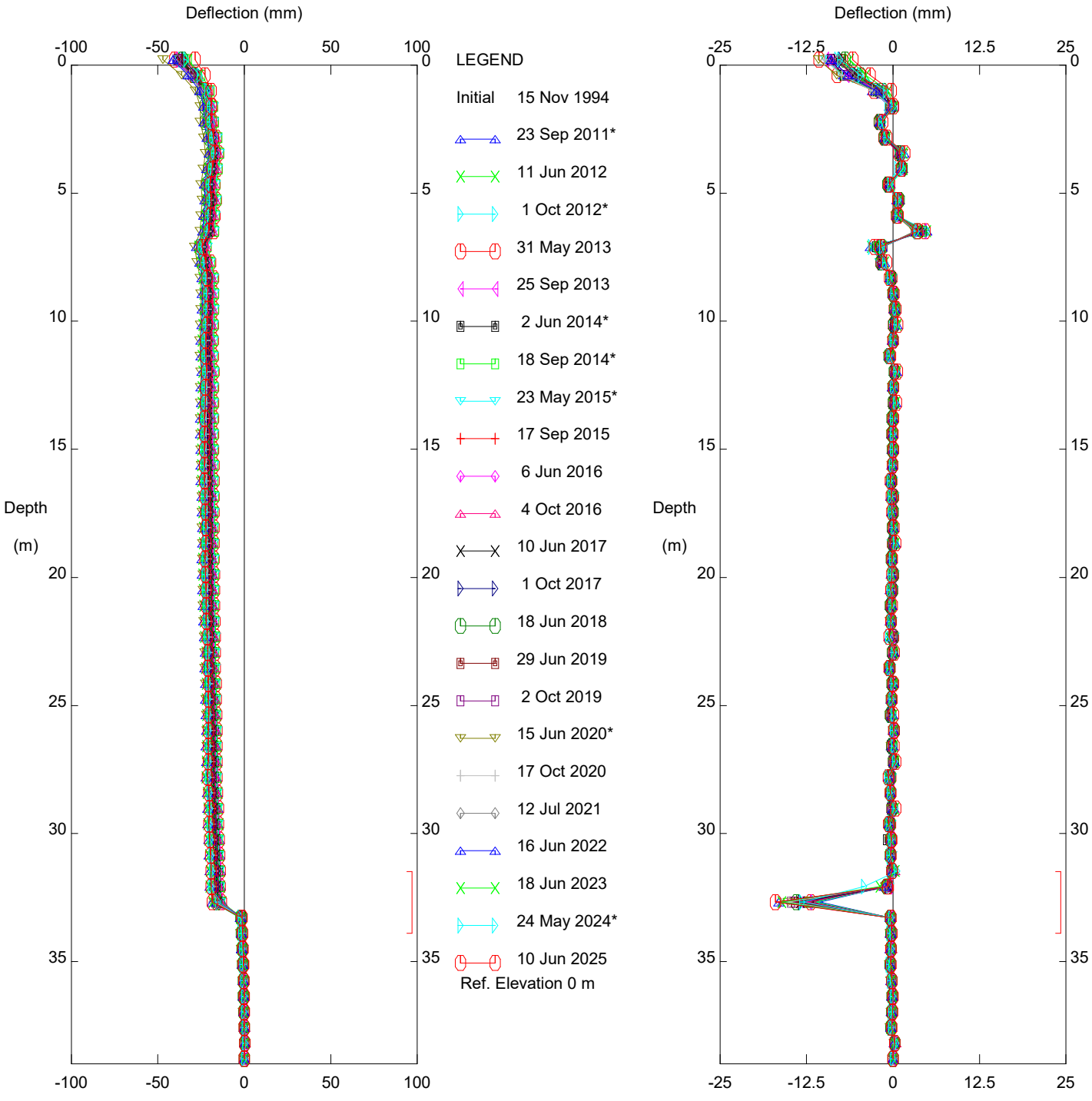

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

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

Alberta Transportation

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

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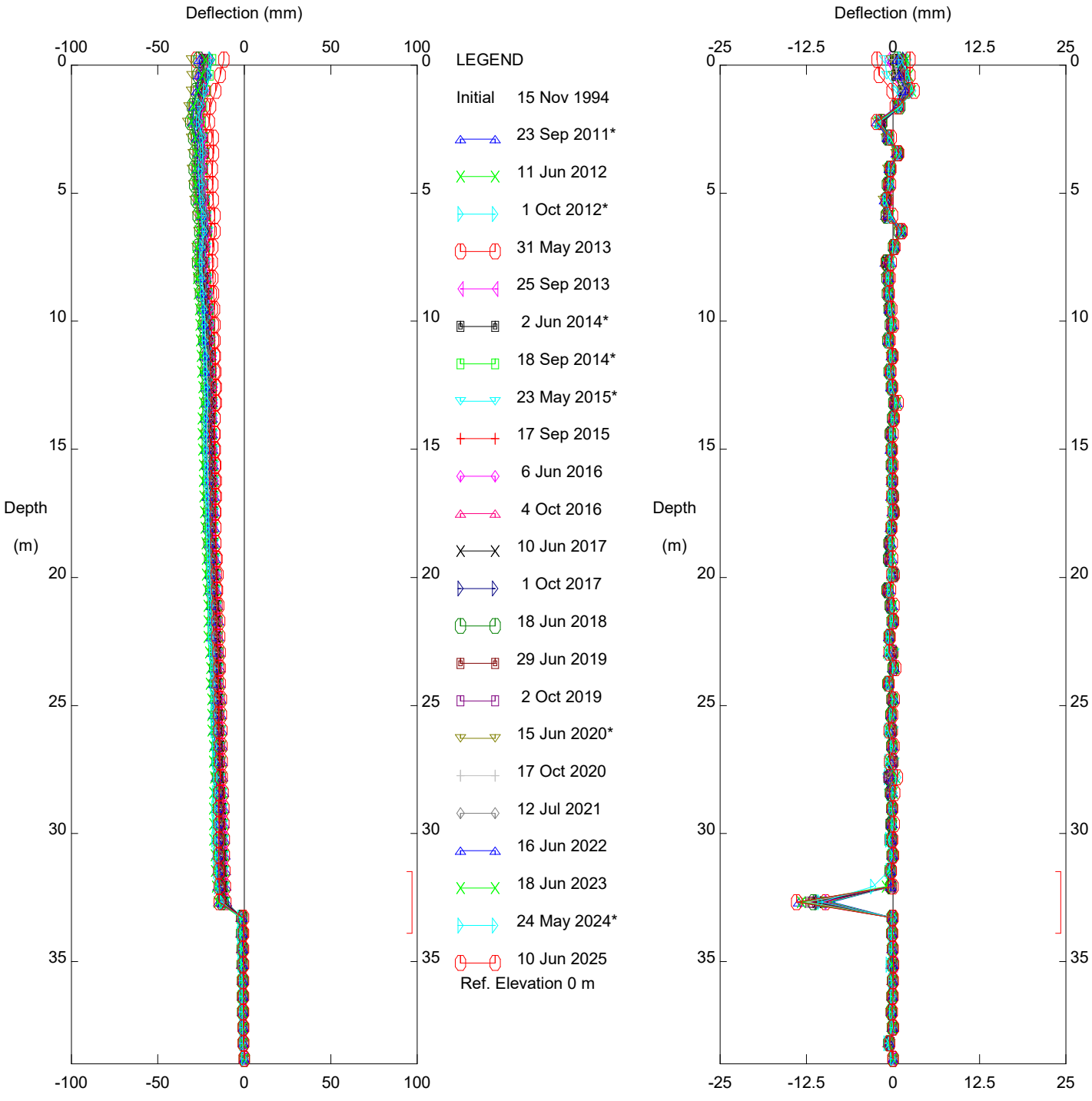

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

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

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

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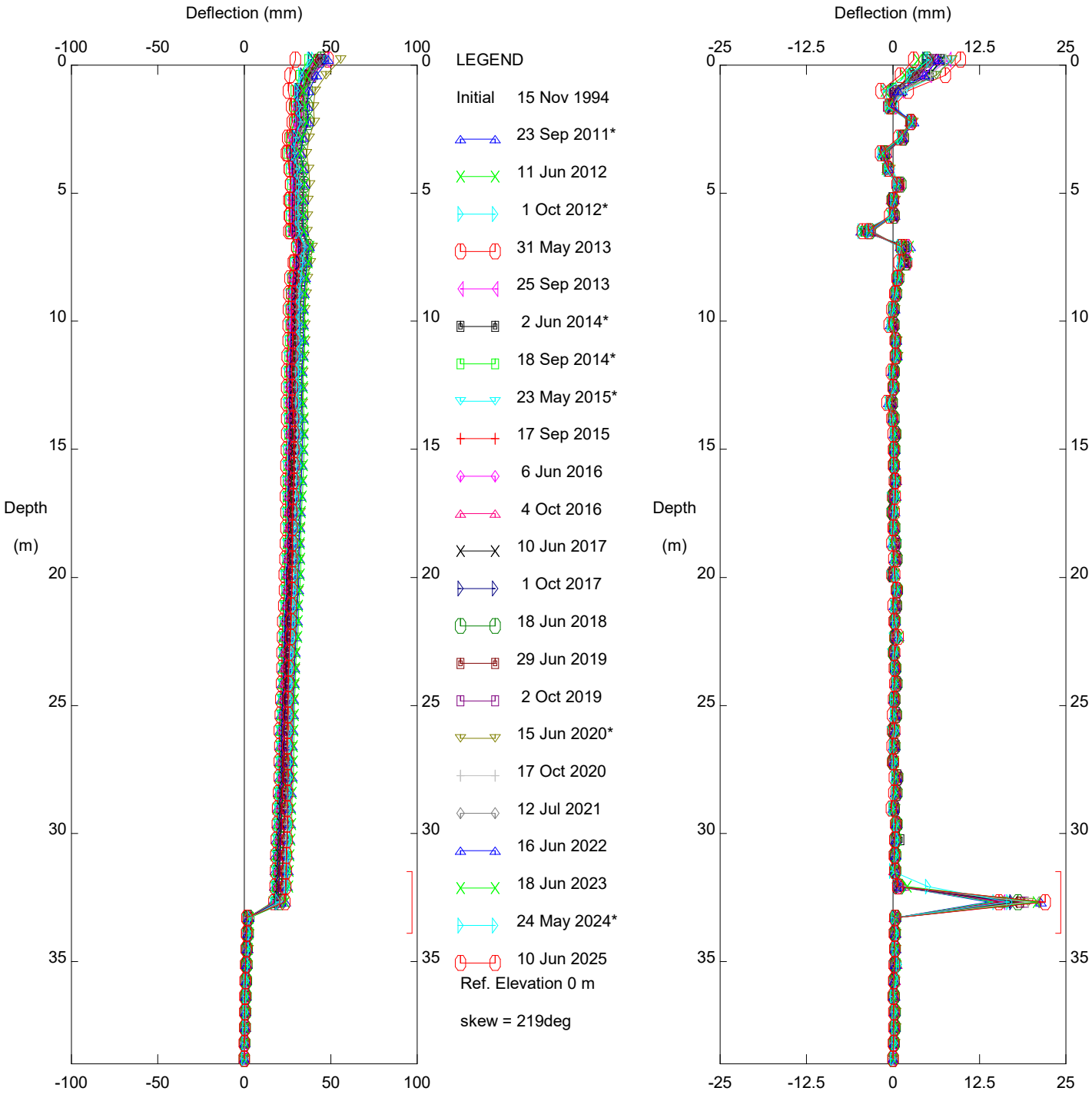

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

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

Alberta Transportation

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

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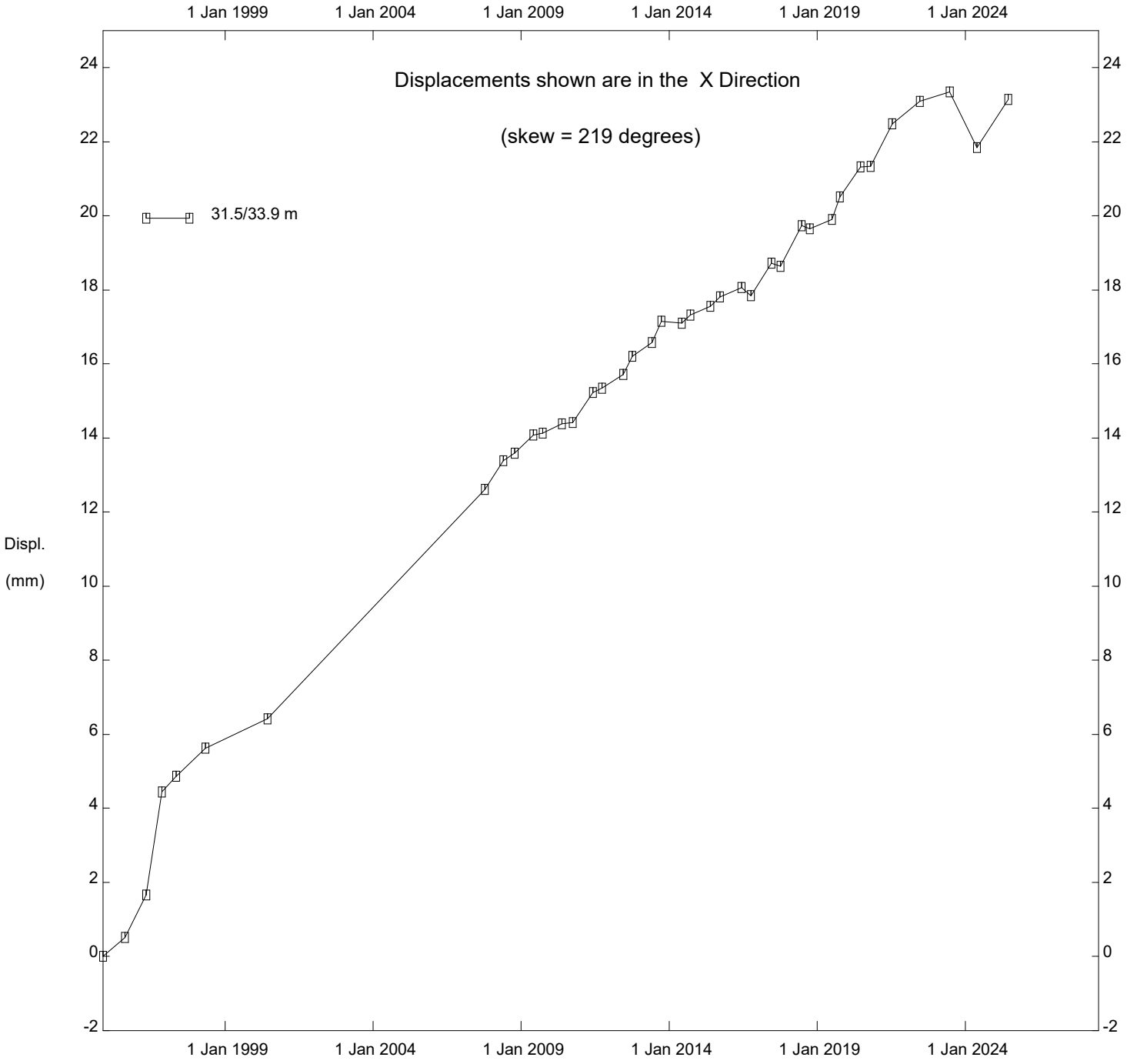
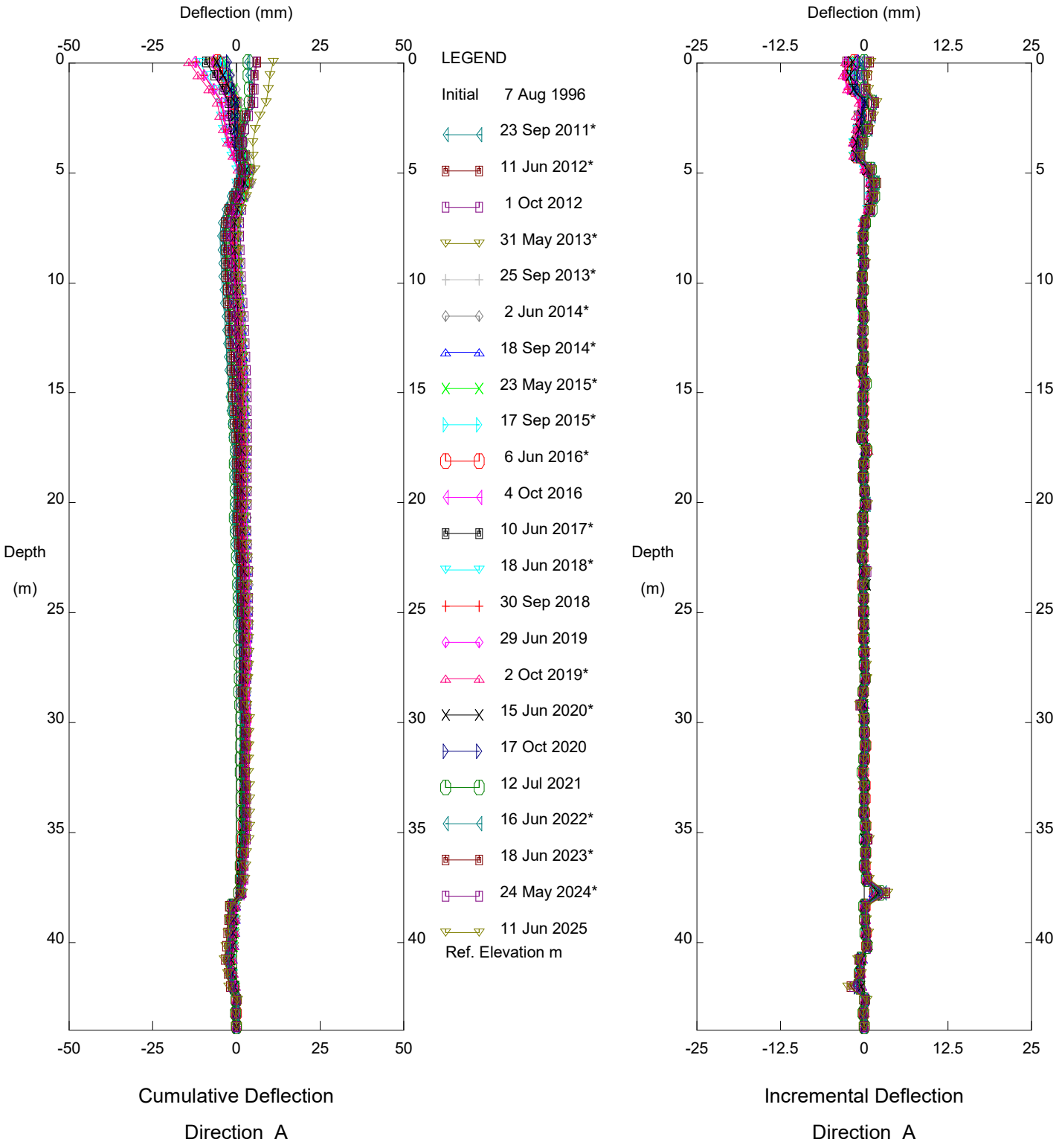


HWY 35:08 (PH044), Inclinometer SI-27

Alberta Transportation

Thurber Engineering Ltd.



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

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

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

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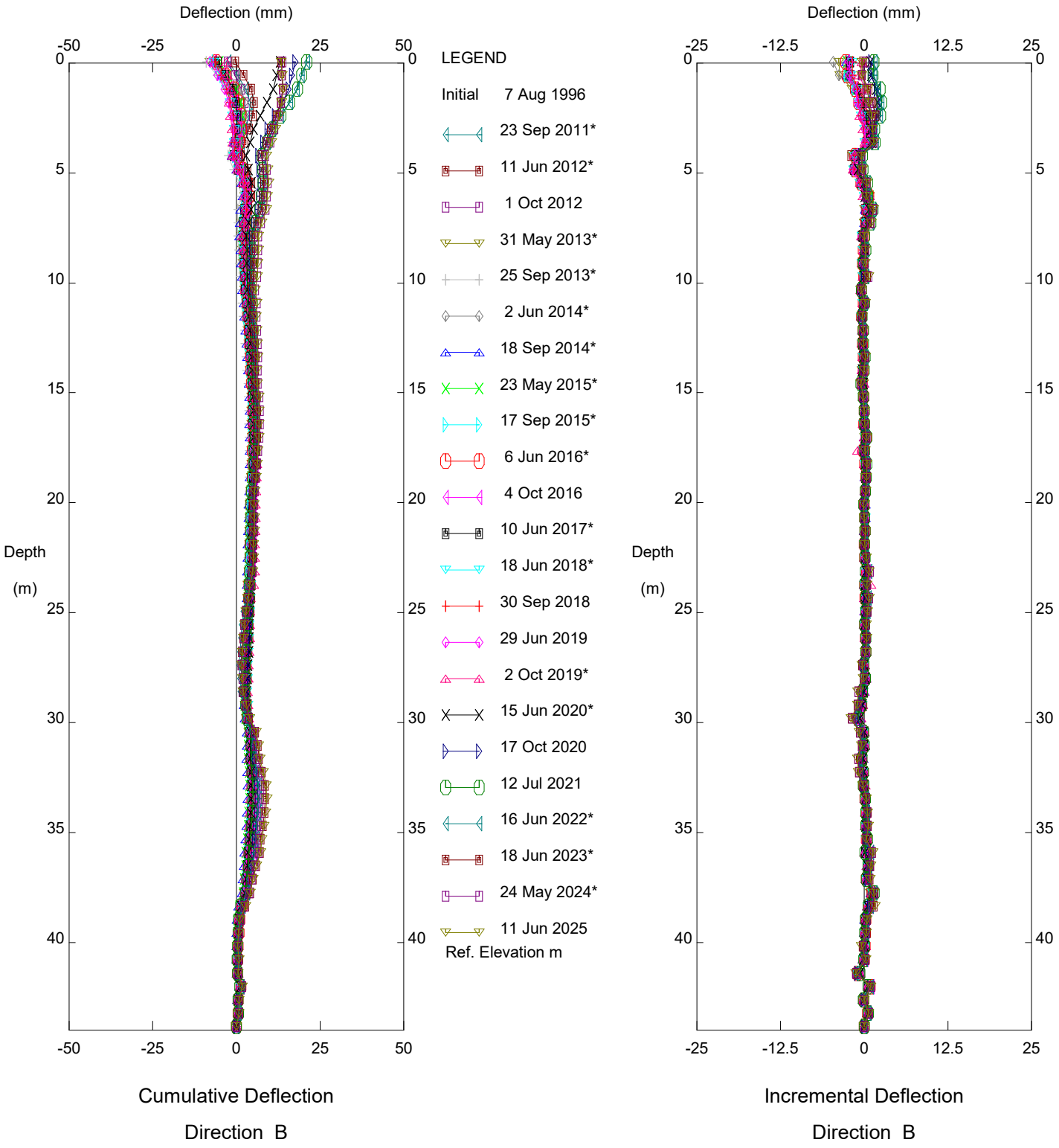

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

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

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

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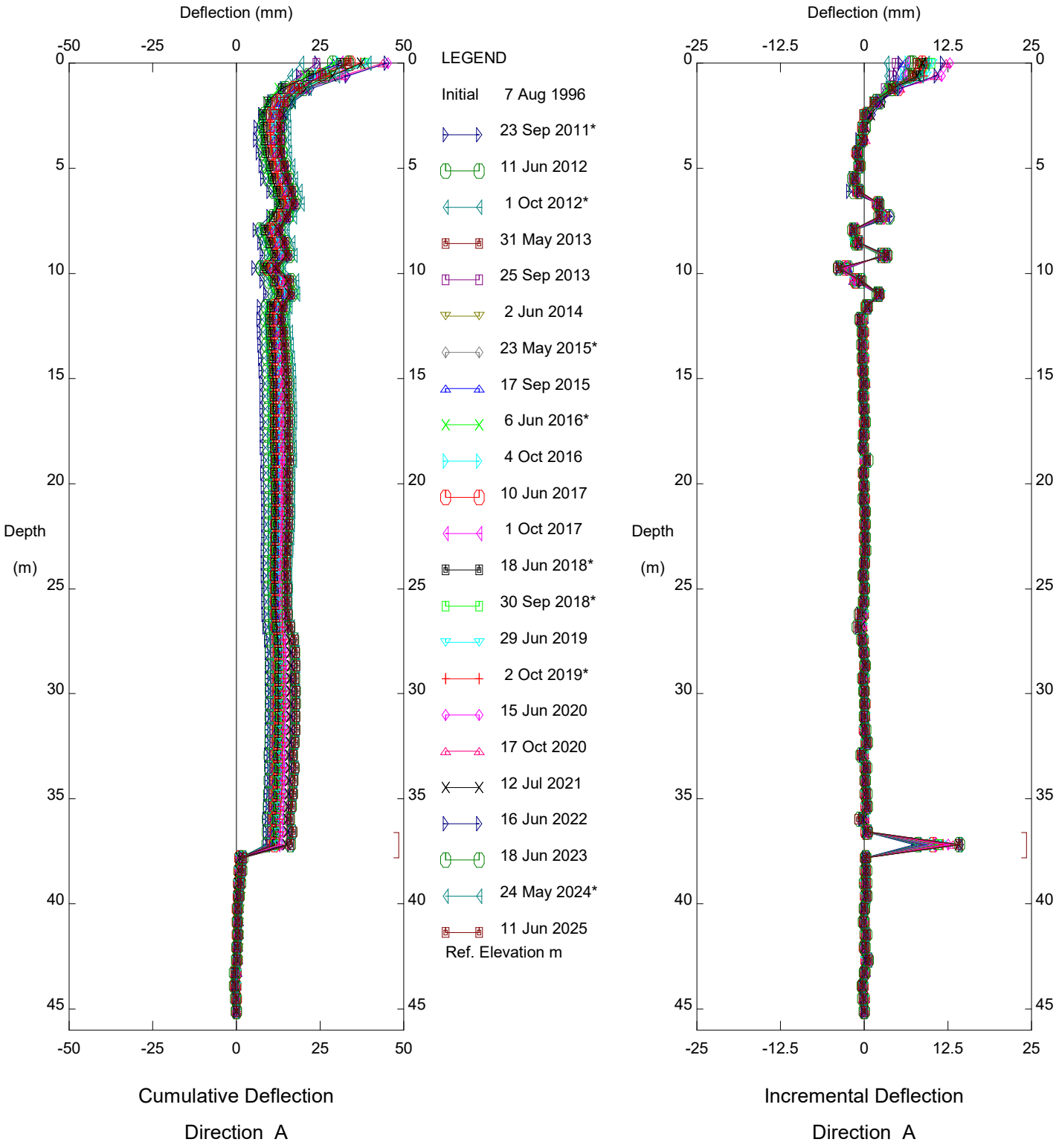

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

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

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

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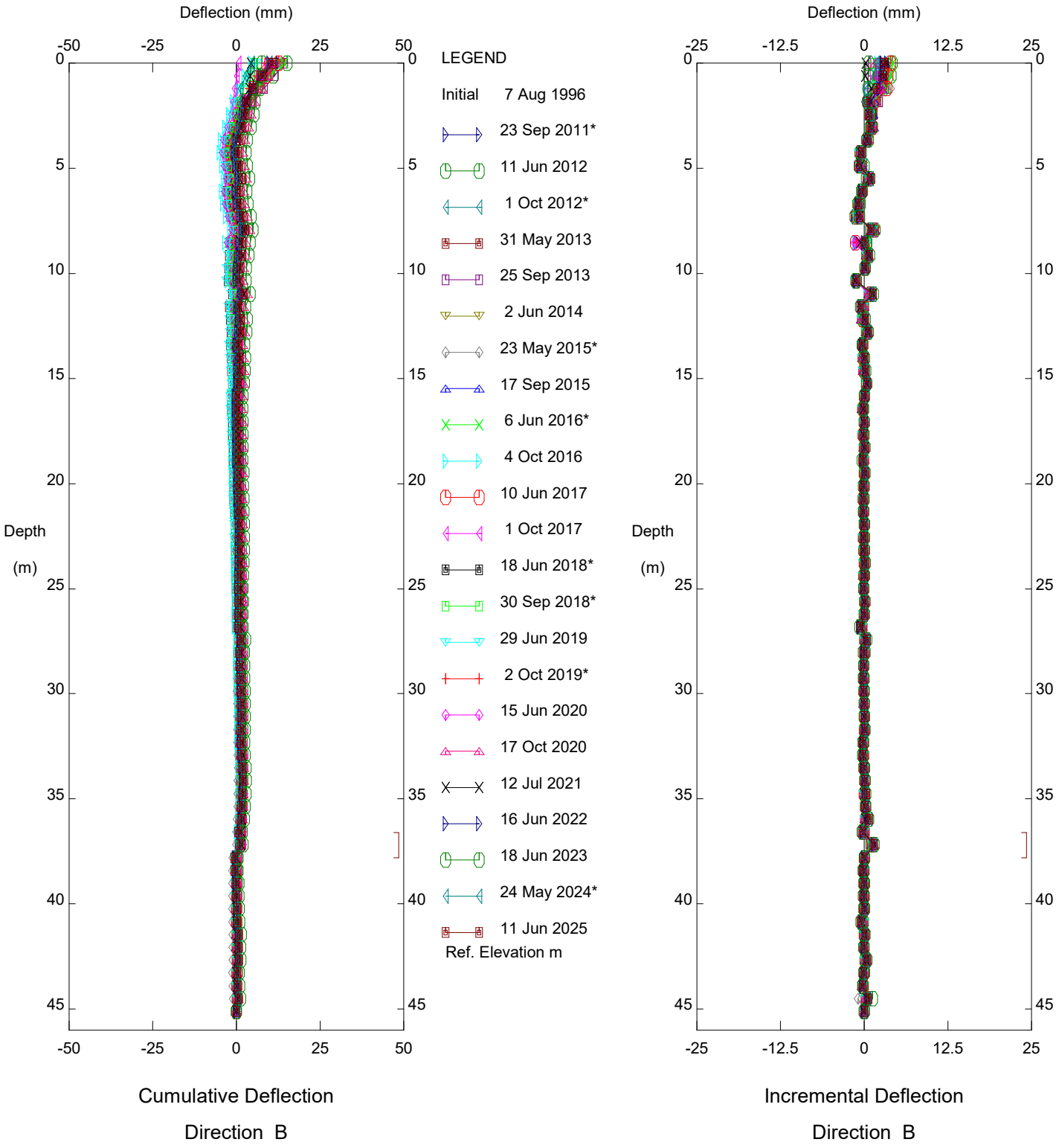

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

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

Alberta Transportation

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

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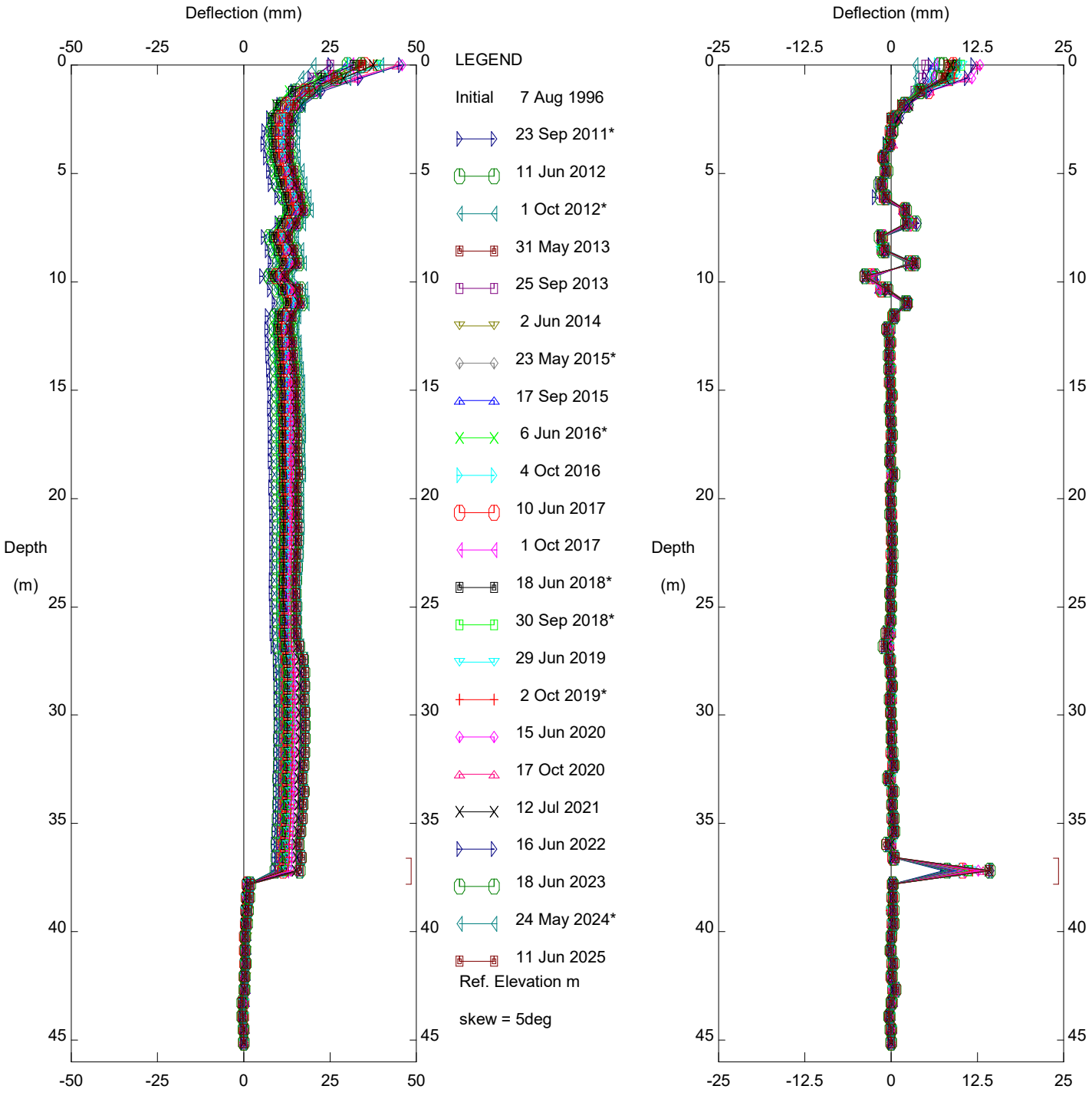

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

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

Alberta Transportation

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

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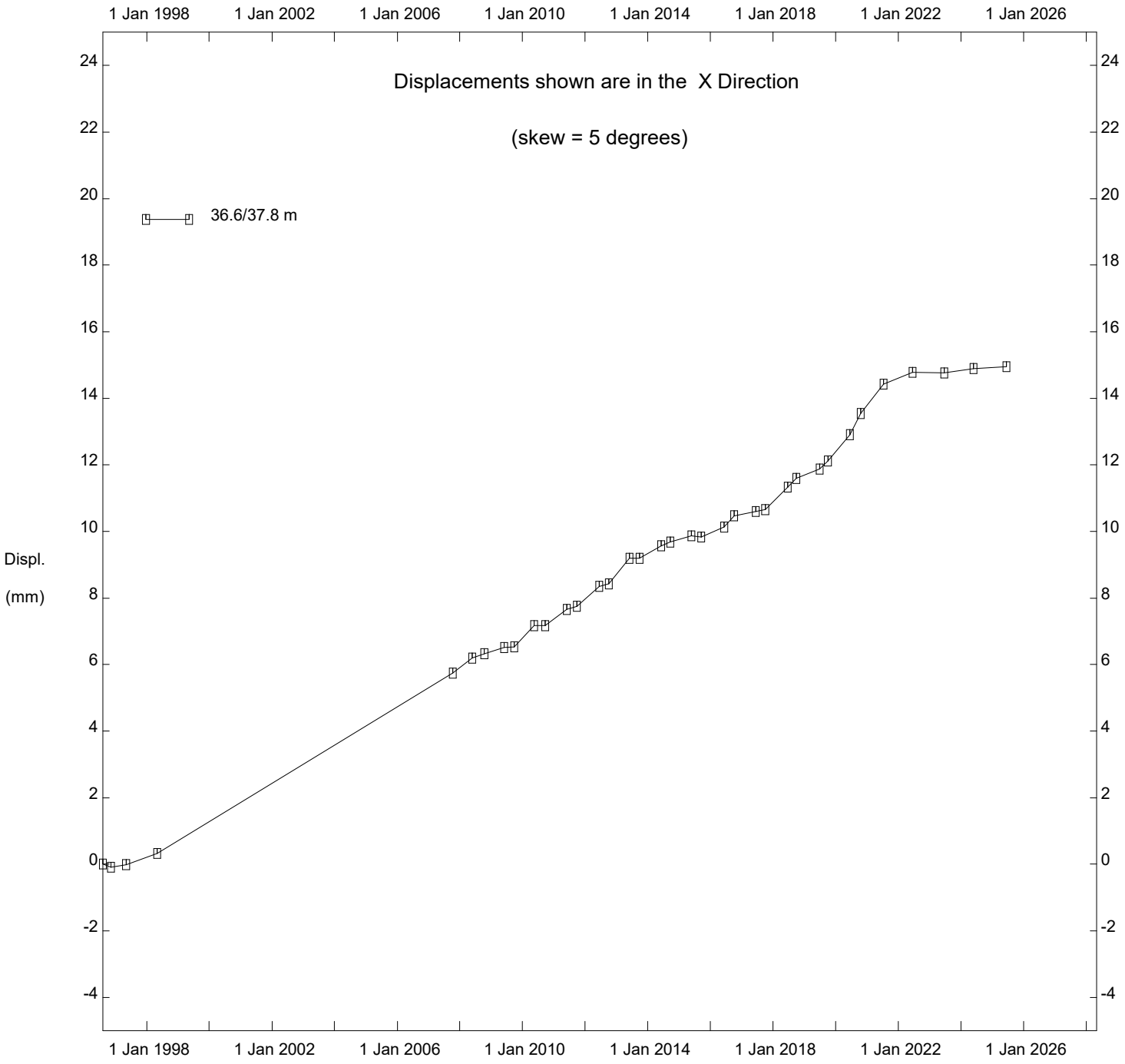

HWY 35:08 (PH044), Inclinometer SI-45

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