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

Site Number	Location	Name	Hwy	km
PH006	North of Paddle Prairie	Tompkins Landing	697:02	Km 17.5
Legal Description:		**UTM Co-ordinates**		
12-30-103-19 W5		11U E 491173.98	N 6425582.21	

Current Monitoring:	12-Jun-2025	**Previous Monitoring**	24-May-2024
Instruments Read By:	Mr. Niraj Regmi, G.I.T., and Mr. Godfred Etiendem, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI-5 and SI-13	**Pneumatic Piezometers (PN):** PN02-3	**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 ft. wheelbases and RST Pocket PC readouts	**Pneumatic Piezometers:** RST C108	**Vibrating Wire Piezometers:**	**Standpipe Piezometers:**
Load Cell:	**Strain Gauges:**	**SAAs:**	**Others:**
Note: -SI-1 and PN02-5 are broken and will require repairs to continue reading. Skipped during spring 2025 readings.			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	SI-5 showed a movement rate of 8.8 mm/yr over 0.1 m to 11.1 m depth since the spring of 2024 readings. This rate is consistent with the long term trend since 1999. Of note, there are long periods of time where movement rates exceed or fall short of the long term trendline. Since the fall of 2020, the movement rate is about 15 mm/yr indicating that there has been some recent acceleration in the slide movements. Slope inclinometer SI13 showed a rate of movement of 10.3 mm/yr over 1.7 m to 14.5 m depth compared to the overall rate of 13.0 mm/year. From installation in 1998 to the spring of 2020, the overall movement rate was 10.4 mm/yr. Since the fall of 2020, the overall rate has accelerated to 21.5 mm/yr. This accelerated movement coincides with the acceleration observed in SI-5 and an increase in groundwater level as noted below. Based on previous instrument readings and site observations, it appears that the two operational SIs at this site were installed too shallow to intercept the main slip surface of the slide; however, they are nonetheless moving significantly within the overall slide blocks. The groundwater level increased in pneumatic piezometer PN02-3 by 0.05 m since the spring of 2024. PN02-3 showed a trend of increasing

	groundwater levels between the fall of 2020 and the spring of 2023 but has since levelled off within the historic range of the instrument.
Future Work:	The instruments should be read again during the spring of 2026.
Instrumentation Repairs:	SI-1 and PN02-5 are damaged and would require significant additional cost to investigate and repair. If TEC requests Thurber can refine a cost estimate for investigation and repair of the damaged instruments at this site.
Additional Comments:	This road surface at this site will be converted to gravel during the summer of 2025 which will include lowering of the highway profile, regrading of the upslope ditch, and replacement of damaged culverts.

Attachments:	• Table PH006-1 Spring 2025 – HWY 697:02 Tompkins Landing, Slope Inclinometer Instrumentation Reading Summary • Table PH006-2 Spring 2025 – HWY 697:02 Tompkins Landing, Pneumatic Piezometer Instrumentation Reading Summary • Statement for Use and Interpretation of Report • APPENDIX A - PH006-1 SPRING 2025 o Field Inspector's report o Site Plan Showing Approximate Instrument Locations (Drawing No.32121 PH006) o SI Reading Plots o Figure PH006-1 (Piezometric Depths)

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

PROFESSIONAL ENGINEER ALBERTA
LUCAS R.M. GREEN
ID 206714
July 14, 2025

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE: Don Proudfoot
RM APEGA ID #: 51674
DATE: July 14, 2025
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Lucas Green, P.Eng.
Geotechnical Engineer

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Table PH006-1 Spring 2025 – Hwy 697:02, Tompkins Landing Slope Inclinometer Instrumentation Reading Summary

Date Monitored: June 12, 2025

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS OF SI	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)
SI-1	*Aug. 21, 1990*	*No discernible movement*	*N/A*	*Blocked / Sheared at 2.7 m*	*June 18, 2023*	*N/A*	*N/A*	*N/A*
SI-2	*Aug. 21, 1990*	*Not Known*	*Not Known*	*Destroyed (2004)*	*May 24, 2004*	*N/A*	*N/A*	*N/A*
SI-5	Apr. 28, 1996	443.9 mm over 0.1 m to 11.1 m depth in 105° direction	116.9 mm/yr in May 1998	Operational	May 24, 2024	9.2	8.8	0.5
SI-12	*April 11, 1998*	*53.4 mm over 6.7 m to 8.5 m depth in 100° direction*	*28.0 mm/yr in Oct. 1998*	*Sheared at 7.9 m (2022)*	*July 12, 2021*	*N/A*	*N/A*	*N/A*
		14.6 mm over 11.5 m to 12.8 m depth in 100° direction	*8.4 mm/yr in Oct. 1998*			*N/A*	*N/A*	*N/A*
SI-13	Oct. 2, 1998	348.1 mm over 1.7 m to 14.5 m depth in 113° direction	64.5 mm/yr in October 2020	Operational	May 24, 2024	10.9	10.3	-10.0

Drawing 32121-PH006 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Table PH006-1 – Continued Spring 2025 – Hwy 697:02, Tompkins Landing Slope Inclinometer Instrumentation Reading Summary

Date Monitored: Not Monitored

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS OF SI	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)
SI02-1	*Sept. 25, 2002*	*45.4 mm over 13.4m to 15.8m depth in 74° direction*	*38 mm/yr between May and Oct. 2006*	*Destroyed (2007)*	*Oct. 6, 2007*	*N/A*	*N/A*	*N/A*
SI02-2	*Sept. 25, 2002*	*4.1 mm over 8.5 m to 11.6 m depth in 93° direction*	*2.8 mm/yr Between Sept. 2003 and May 2004*	*Sheared Off at 2.8 m (2004)*	*Oct. 13, 2004*	*N/A*	*N/A*	*N/A*
SI02-3	*Sept. 25, 2002*	*28.8 mm over 20.5 m to 21.9 m depth in 71° direction*	*9.3 mm/yr between Oct. 2007 and May, 2008*	*Sheared Off at 21.0 m (2008)*	*May 26, 2008*	*N/A*	*N/A*	*N/A*
SI02-4	*Sept. 25, 2002*	*44.5 mm over 12.8 m to 14.0 m depth in 99° direction*	*31.2 mm/yr between May and Oct. 2005*	*Sheared Off at 13.1 m (2006)*	*May 24, 2006*	*N/A*	*N/A*	*N/A*
SI02-5	*Sept. 25, 2002*	*109.1 mm over 17.1 m to 18.9 m depth in 90° direction*	*99.7 mm/yr between May and Oct. 2006*	*Sheared Off at 17.1 m (2007)*	*Oct. 6, 2007*	*N/A*	*N/A*	*N/A*

Drawing 32121-PH006 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

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Table PH006-2 Spring 2025 – Hwy 697:02, Tompkins Landing Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: June 12, 2025

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)
PN02-1 (27707)	*May 26, 2003*	*11.0*	*N/A*	*Destroyed (2008)*	*1.28 on May 26, 2008*	*N/A*	*N/A*	*1.28 (May 26, 2008)*	*N/A*
PN02-3 (27708)	May 26, 2003	20.0	N/A	Active	4.81 on Oct. 15, 2006	133.3	6.41	6.46	0.05
PN02-4 (27709)	*May 26, 2003*	*15.8*	*N/A*	*Damaged (2006)*	*14.02 on May 26, 2003*	*N/A*	*N/A*	*15.55 (Oct. 25, 2005)*	*N/A*
PN02-5 (27706)	*May 26, 2003*	*20.7*	*N/A*	*Damaged (2021)*	*10.99 on June 15, 2020*	*N/A*	*N/A*	*10.99 (June 15, 2020)*	*N/A*

Drawing 32121-PH006 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Notes:
PN - pneumatic piezometer.
BGS - below ground surface.

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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 PH006: HWY 697:02, TOMPKINS LANDING

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH006)
SPRING 2025

Location:	Tompkins Landing (HWY 697:02 C1 17.451)	**Readout:**	RST PN C108 Unit 8
File Number:	32121	**Casing diammeter**	3.34"
Probe:	RST SET 8R	**Temp:**	13
Cable:	RST SET 8R	**Read by:**	NKR/GE

SLOPE INCLINOMETER (SI) READINGS

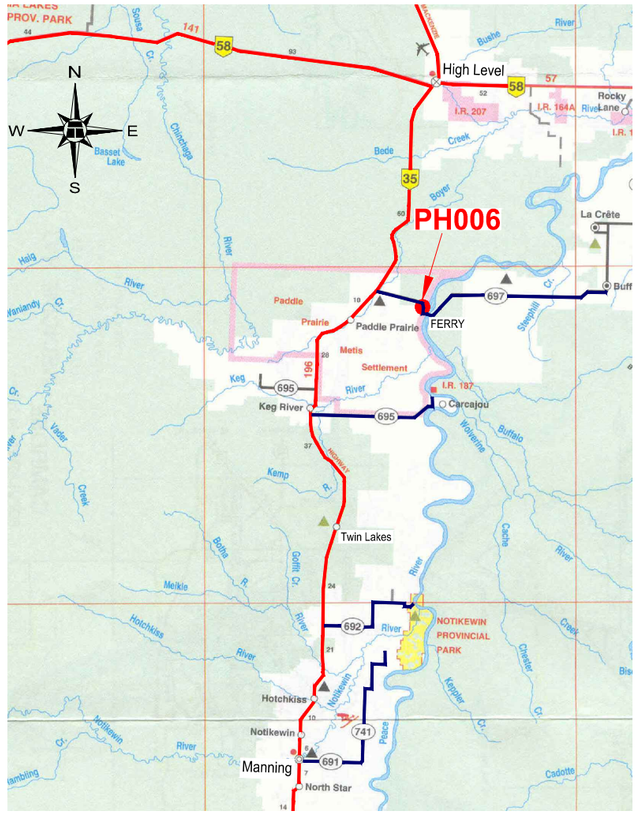
SI#	GPS Location (UTM 11)		Date	Stickup (m)	Depth from top of casing (ft)	Magn. North A+ Groove	Current Bottom Depth Readings				Probe/ Reel #	Size (")	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-			
SI-1	491173.98	6425582.21		0.85	36 to 2	83	1097	-1081	-1097	1082	5R/5R	3.34	*
SI-5	491205.48	6425567.22	12-Jun-25	1.10	38 to 2	94	1502	-1489	-878	881	8R/8R	3.34	**
SI-13	491191.55	6425500.45	12-Jun-25	0.70	48 to 2	55	875	-862	356	-357	8R/8R	3.34	

PNEUMATIC PIEZOMETER READINGS

PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN02-3	491129.53	6425541.45	12-Jun-25	133.3	27708
PN02-5	491201.52	6425541.29			27706

INSPECTOR REPORT

** SI-5 - Stop 6 inches below 38 feet when lowering the probe, otherwise the probe may get stuck.
* Repaired SI-1 stickup, when started reading, probe wont go past 9.0ft. SKIP IN SPRING 2025
PN02-5 Broken by lawn mower, Pn airline pinched inside casing protector , and casing protector is sunk 4 ft in the ground - SKIP IN SPRING 2025



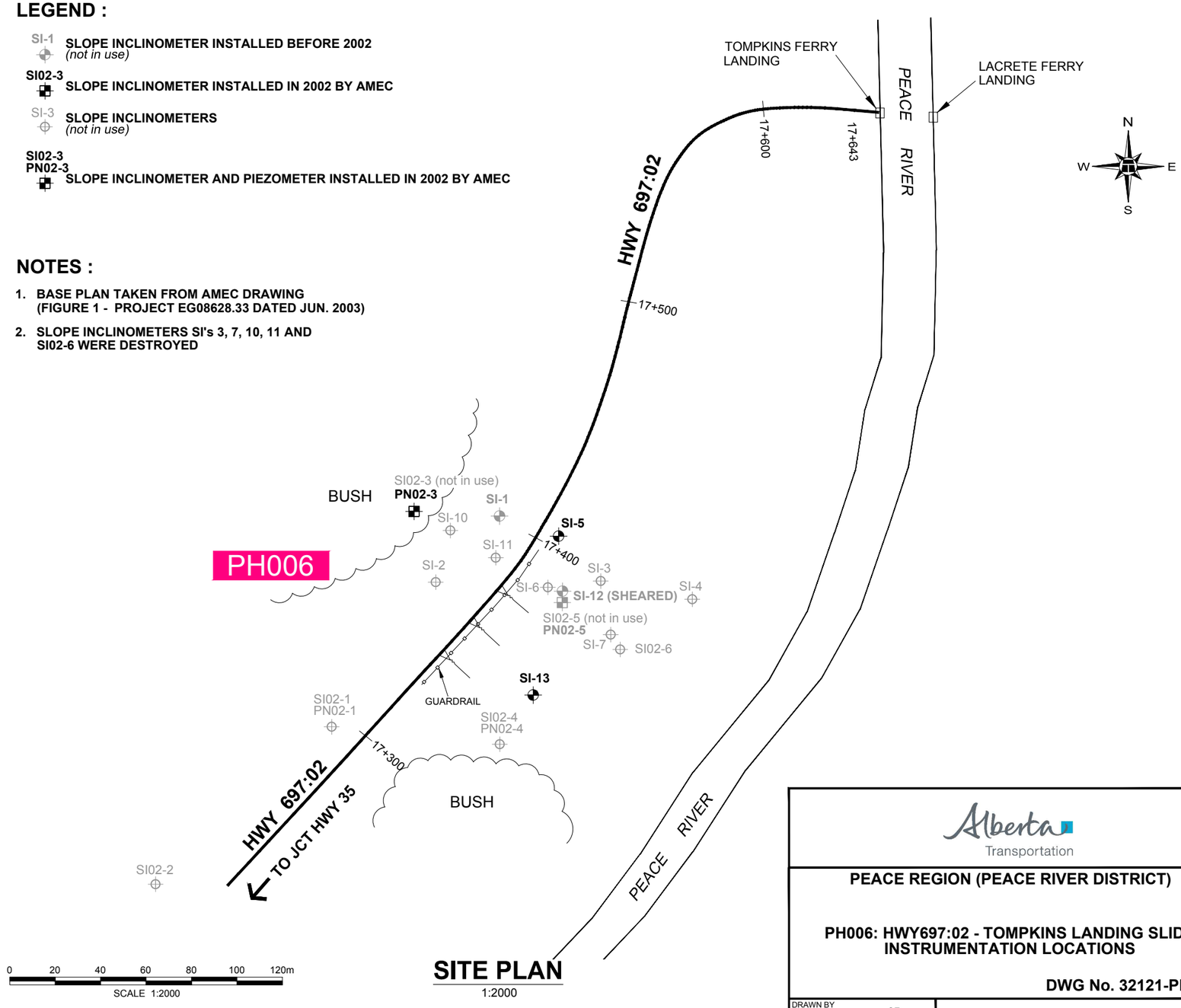
SITE MAP
NOT TO SCALE

LEGEND :

- SI-1 — **SLOPE INCLINOMETER INSTALLED BEFORE 2002** *(not in use)*
- **SI02-3** — **SLOPE INCLINOMETER INSTALLED IN 2002 BY AMEC**
- SI-3 — **SLOPE INCLINOMETERS** *(not in use)*
- **SI02-3 / PN02-3** — **SLOPE INCLINOMETER AND PIEZOMETER INSTALLED IN 2002 BY AMEC**

NOTES :

1. **BASE PLAN TAKEN FROM AMEC DRAWING (FIGURE 1 - PROJECT EG08628.33 DATED JUN. 2003)**
2. **SLOPE INCLINOMETERS SI's 3, 7, 10, 11 AND SI02-6 WERE DESTROYED**



0 20 40 60 80 100 120m
SCALE 1:2000

SITE PLAN
1:2000

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PEACE REGION (PEACE RIVER DISTRICT)

PH006: HWY697:02 - TOMPKINS LANDING SLIDE INSTRUMENTATION LOCATIONS

DWG No. 32121-PH006

DRAWN BY	CF
DESIGNED BY	LRG
APPROVED BY	DWP
SCALE	AS SHOWN
LAST UPDATED	JUNE 2025
FILE No.	32121

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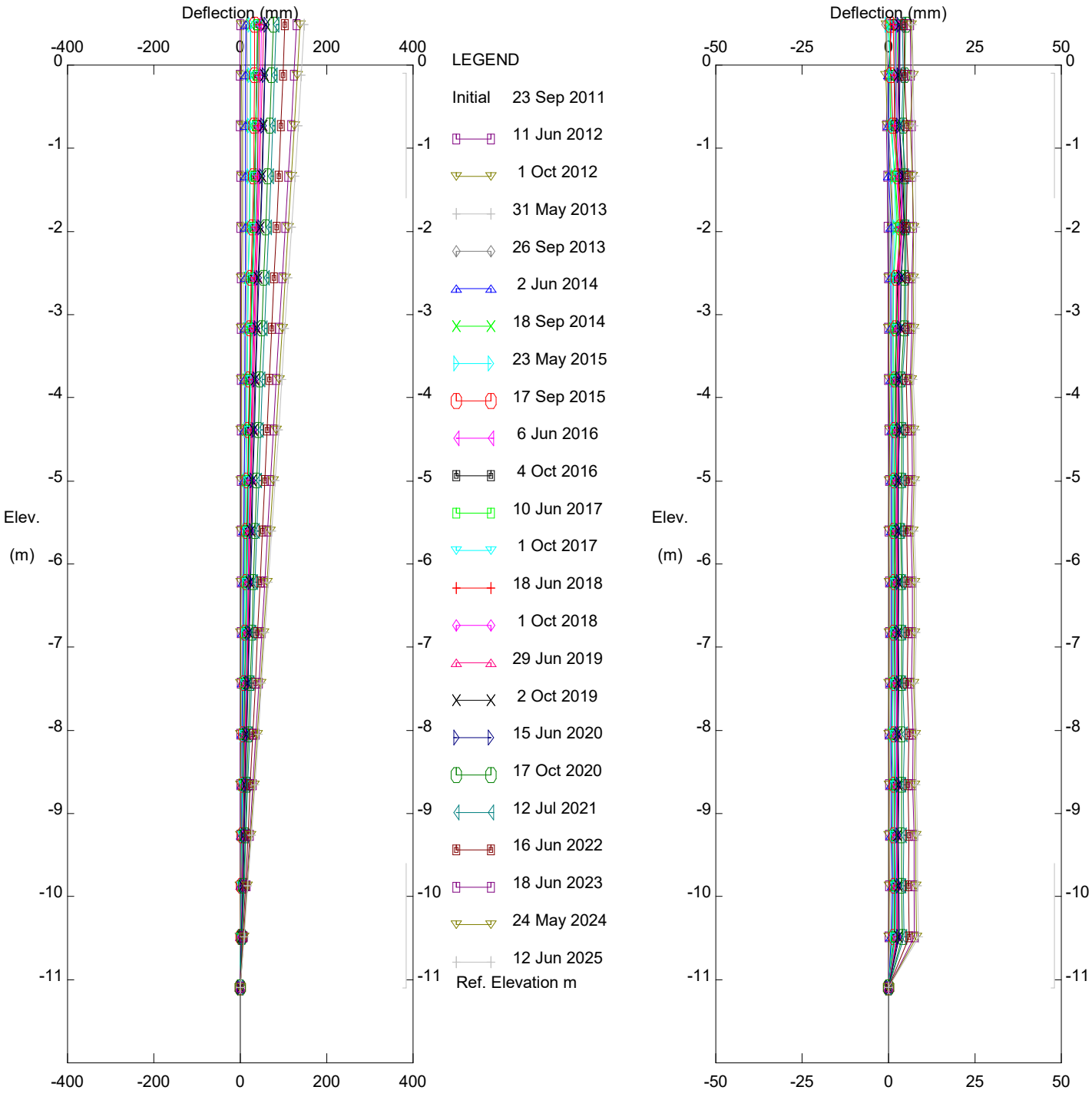

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

HWY 697:02 - STA. 17+360, Inclinometer SI-5

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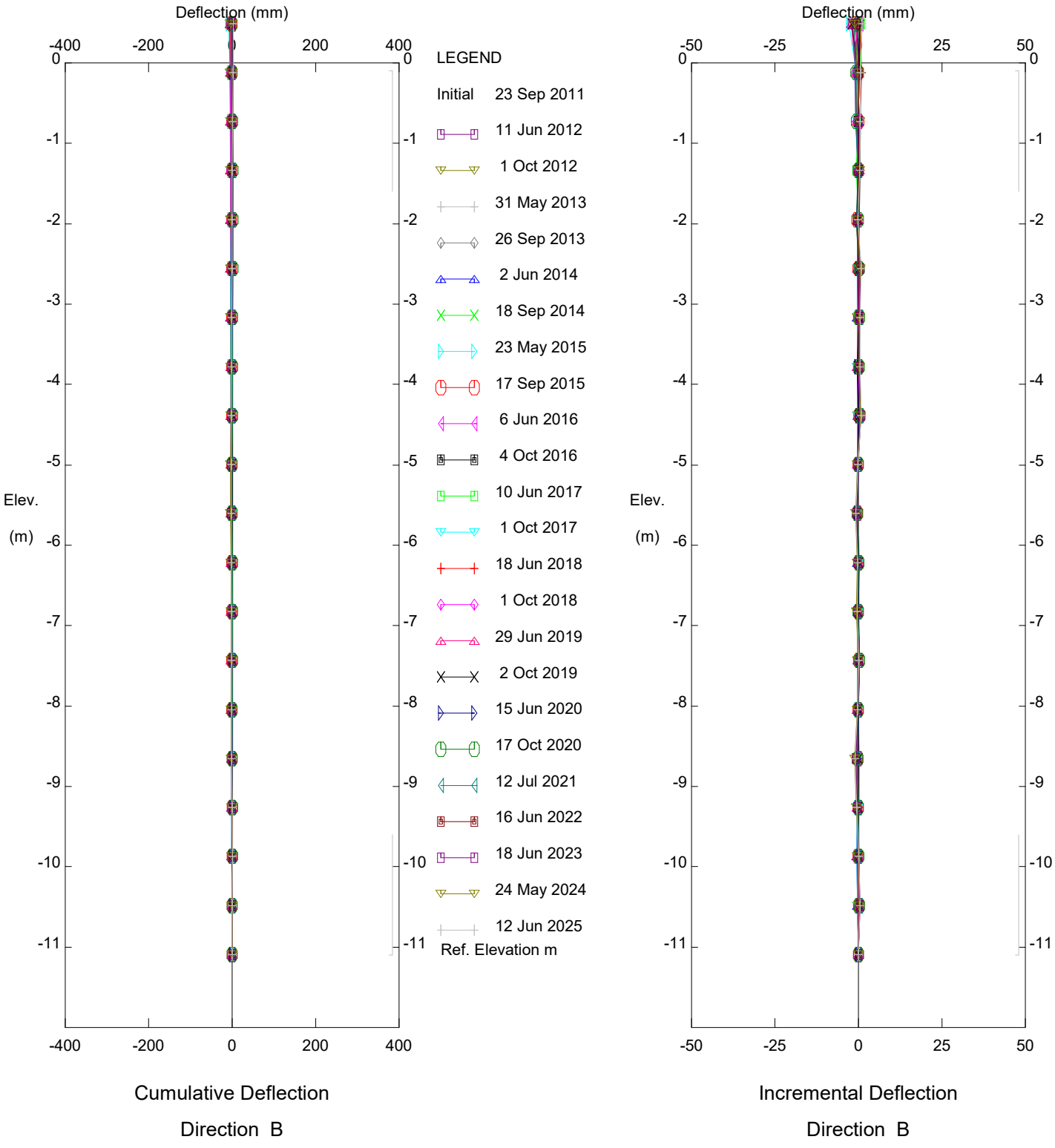

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

HWY 697:02 - STA. 17+360, Inclinometer SI-5

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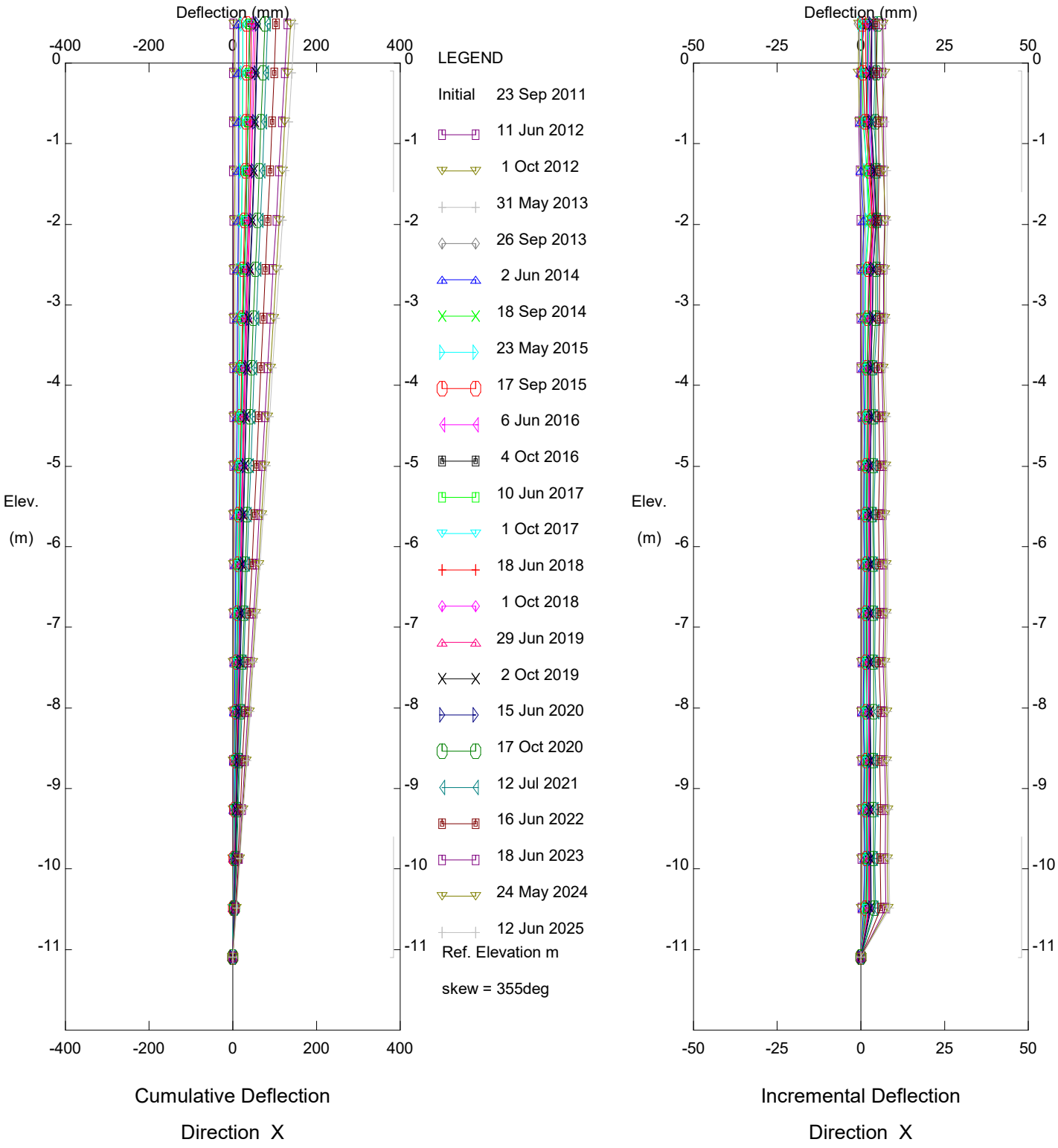

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

HWY 697:02 - STA. 17+360, Inclinometer SI-5

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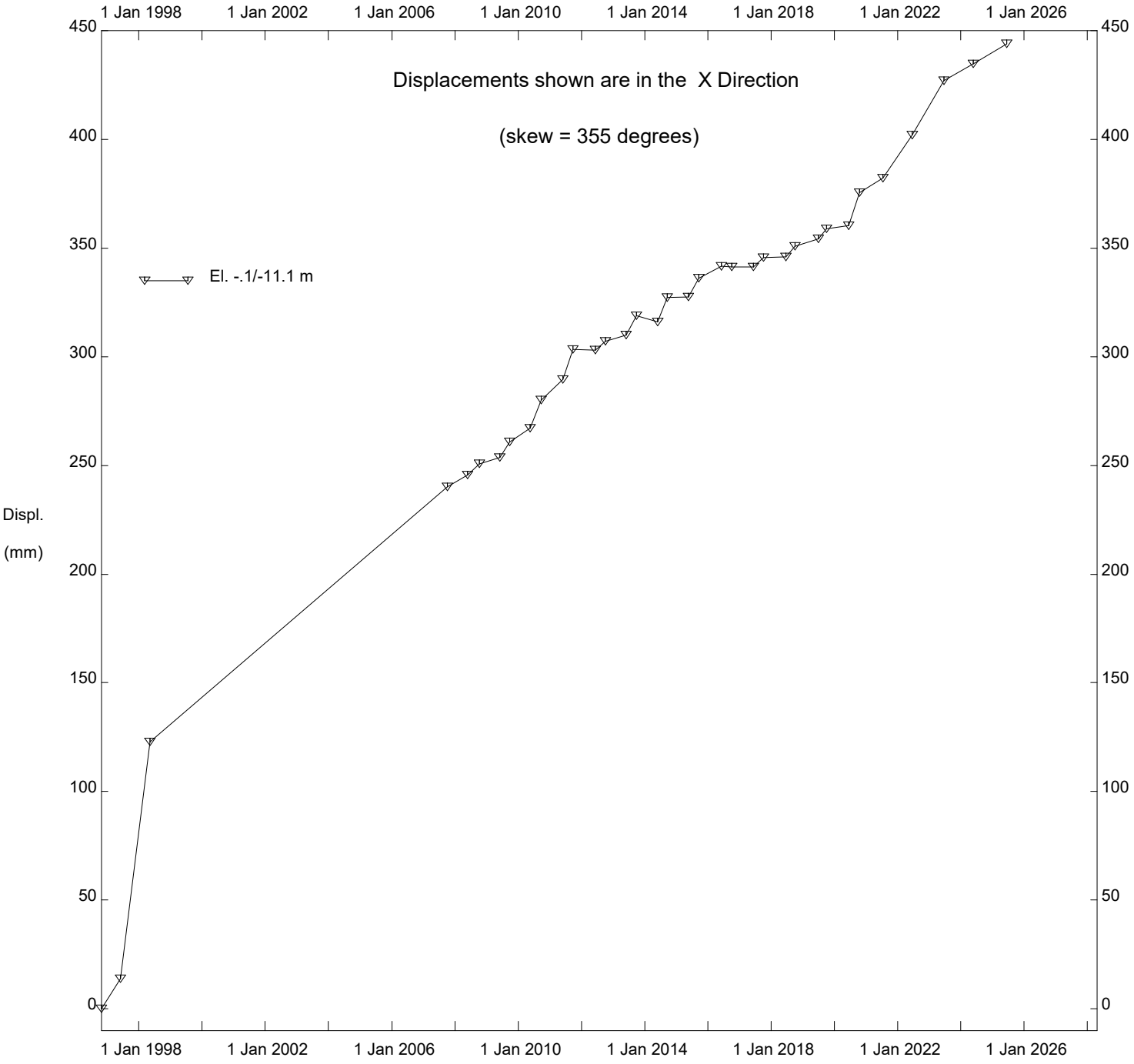

HWY 697:02 - STA. 17+360, Inclinometer SI-5

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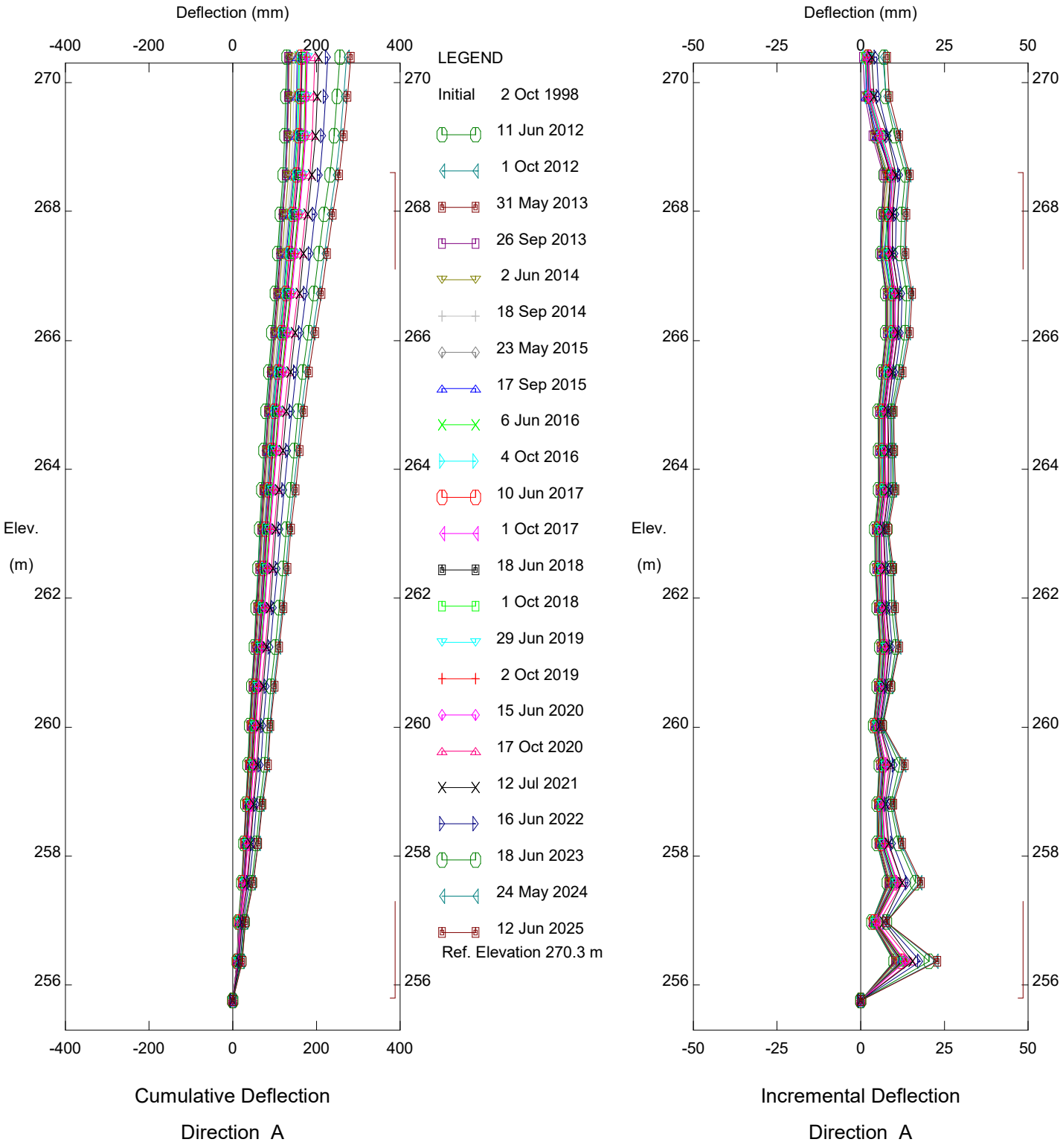

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

HWY 697:02 - STA. 17+360, Inclinometer SI-13

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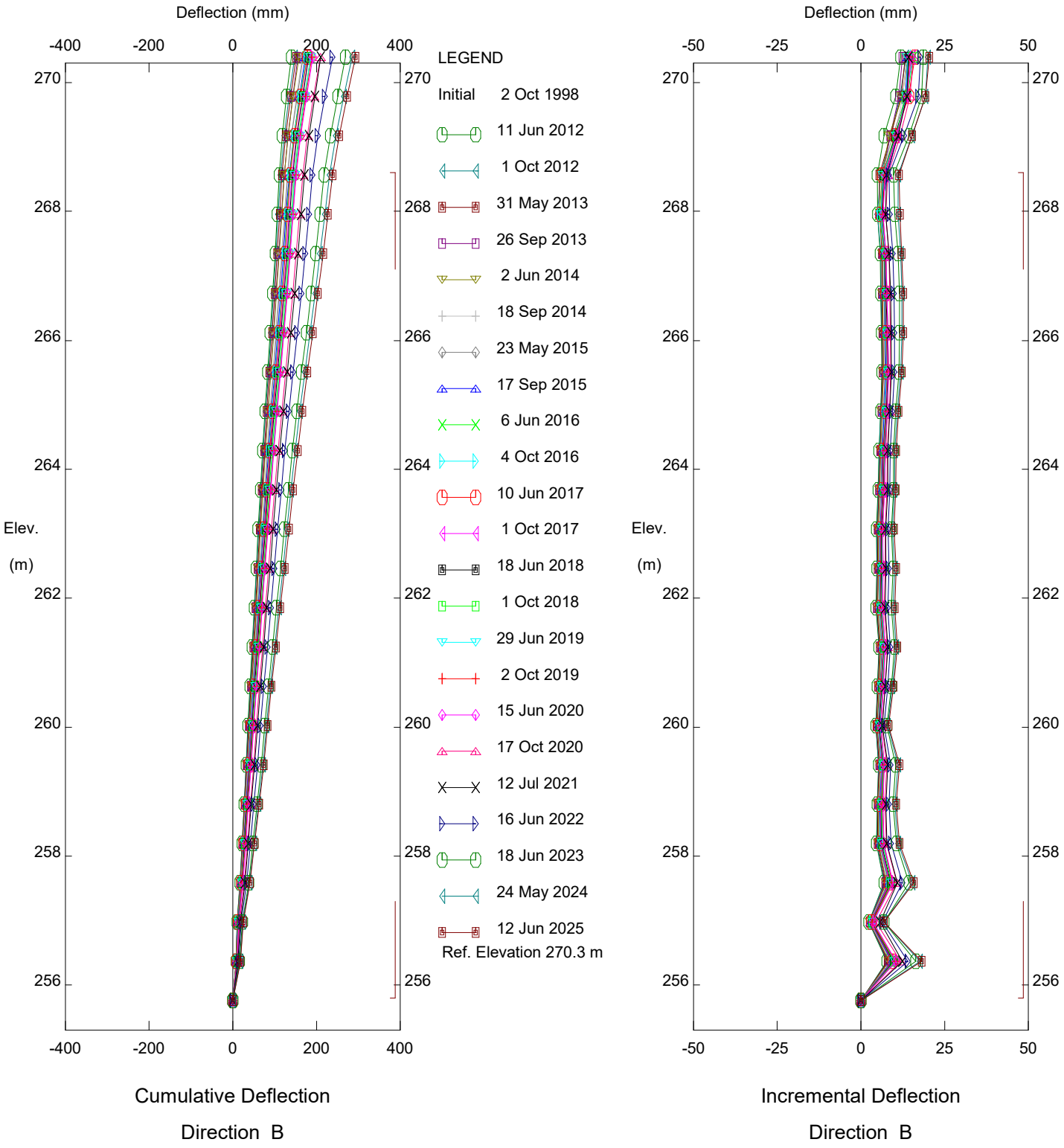

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

HWY 697:02 - STA. 17+360, Inclinometer SI-13

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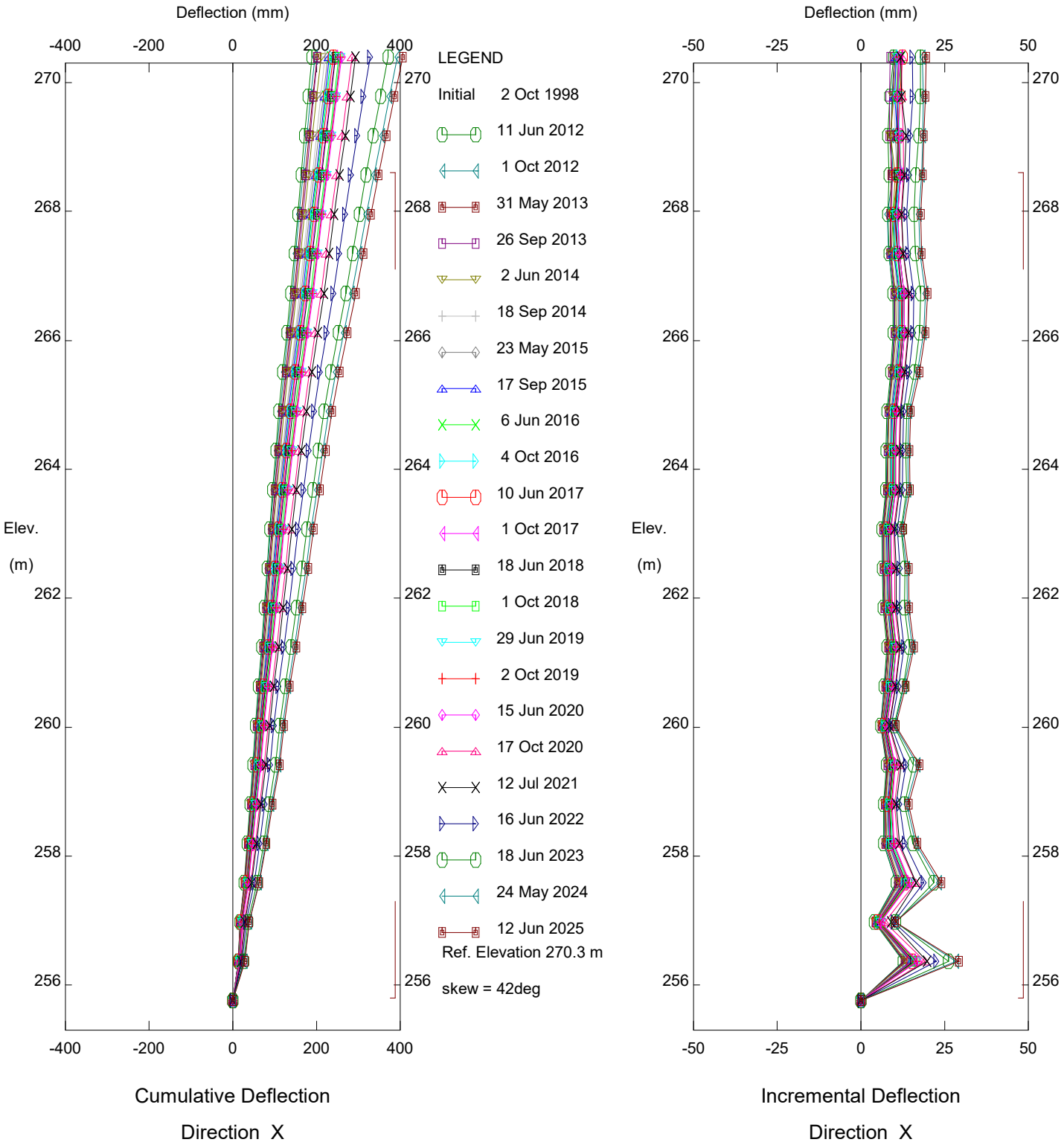

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

HWY 697:02 - STA. 17+360, Inclinometer SI-13

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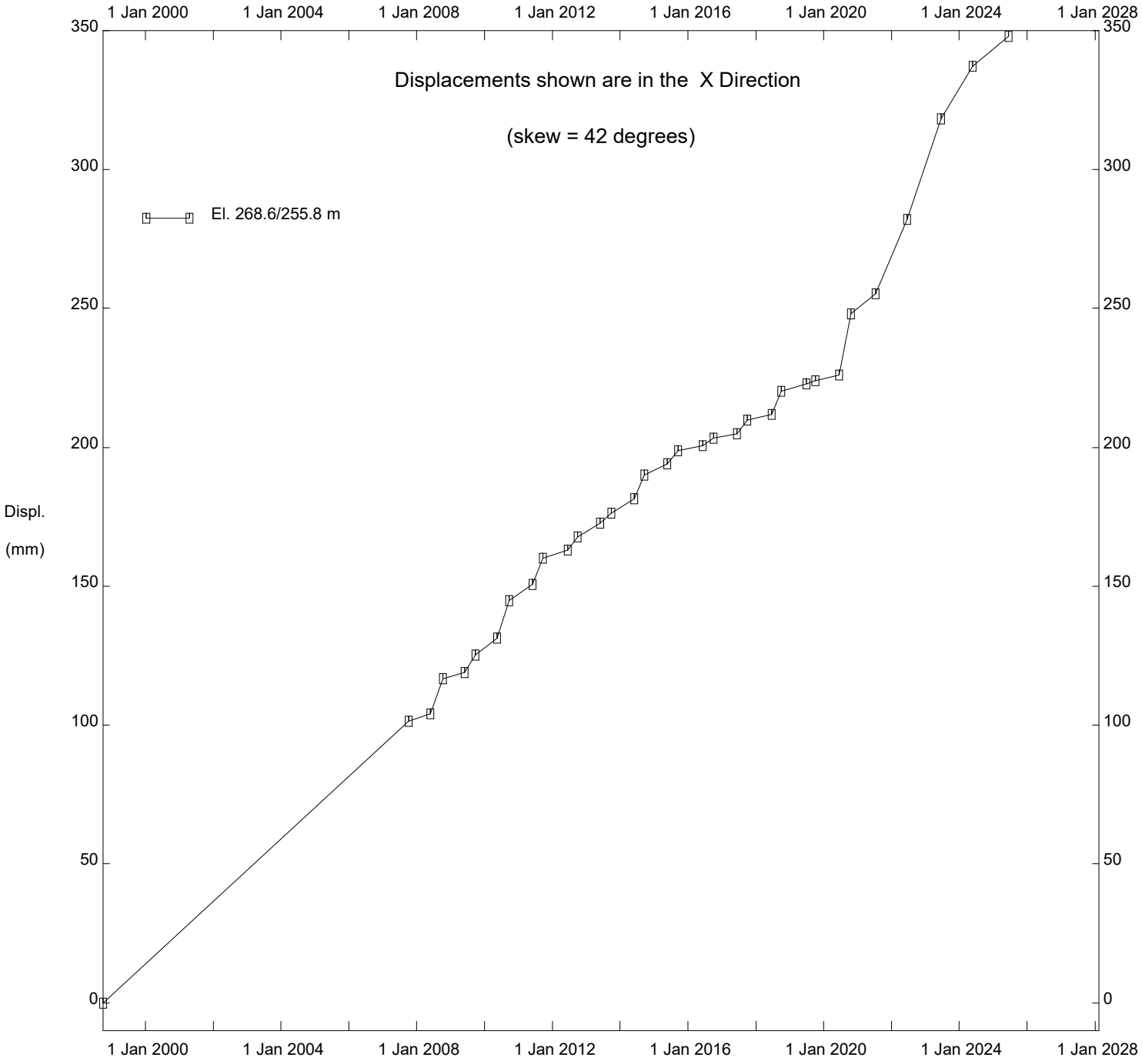

HWY 697:02 - STA. 17+360, Inclinometer SI-13

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FIGURE PH006-1
PIEZOMETER DATA FOR HWY 697:02 TOMPKINS LANDING