ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP
PEACE REGION – (PEACE RIVER DISTRICT)
SPRING 2024

THURBER ENGINEERING LTD.

Site Number	Location	Name	Hwy	km
SH033	km 20.1 to km 20.3	West Prairie River Oxbow Slide	749:02	20.1 – 20.3
Legal Description: 12-36-73-17 W5		**UTM Co-ordinates**		
		11U E 532714	N 6136112	

Current Monitoring:	17-May-2024	**Previous Monitoring**	08-Oct-2023
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Nixson Mationg, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI21-P15, SI21-P25, and SI21-P35	**Pneumatic Piezometers (PN): N/A**	**Vibration Wire Piezometers (VW): N/A**	**Standpipe Piezometers (SP): N/A**
Load Cell (LC): N/A	**Strain Gauges: N/A**	**SAAs: N/A**	**Others:**

Readout Equipment Used			
Slope Inclinometers: RST Digital Inclinometer probe with 2 ft. wheelbase and RST Pocket PC readout	**Pneumatic Piezometers:**	**Vibration Wire Piezometers:**	**Standpipe Piezometers:**
Load Cell:	**Strain Gauges:**	**SAAs:**	**Others:**
Note:			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	Slope inclinometer SI21-P15 showed a cumulative movement of 2.7 mm over the combined length of the pile and waler and a current rate of movement of 0.5 mm/yr since the last set of readings on October 8, 2023. Slope inclinometer SI21-P25 showed a cumulative movement of 1.4 mm over the combined length of the pile and waler and no discernible movement since the last set of readings on October 8, 2023. Slope inclinometer SI21-P35 showed a cumulative movement of 3.0 mm over the combined length of the pile and waler and no discernible movement since the last set of readings on October 8, 2023. The pile wall has been effective in stabilizing the landslide movement at this site. The pile head deflection values, based on the SI readings, are well below the design values.
Future Work:	The instruments should be read again during the fall of 2024.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	▪ Table SH033-1 Spring 2024 – HWY 749:02 West Prairie River Oxbow Slide, Slope Inclinometer Reading Summary ▪ Statement of Limitations and Conditions ▪ APPENDIX A – SH033-1 SPRING 2024 □ Field Inspector's report □ Site Plan Showing Approximate Instrument Locations (Drawing No. 32121 SH033-1) □ 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.
Tarek Abdelaziz, Ph.D., P. Eng.
Partner | Senior Geotechnical Engineer

PROFESSIONAL ENGINEER ALBERTA
LUCAS R.M. GREEN
ID 206714

2024-07-15

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE: _____
RM APEGA ID #: 91085
DATE: July 15, 2024
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Lucas Green, P.Eng.
Geotechnical Engineer

Table SH033-1: Spring 2024– West Prairie River Oxbow Slide Slope Inclinometer Instrumentation Reading Summary

Date Monitored: May 17, 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.)
SI21-P15	September 20, 2021	2.7 mm over 0.3 m to 13.1 m depth in 187° direction	51.9 in October 2021	Operational	October 8, 2023	0.3	0.5	-0.6
SI21-P25	September 21, 2021	1.4 mm over 0.3 m to 12.5 m depth in 221° direction	77.1 in October 2021	Operational	October 8, 2023	No discernible movement	N/A	-0.8
SI21-P35	September 20, 2021	3.6 mm over 0.3 m to 12.5 m depth in 150° direction	61.4 on October 2021	Operational	October 8, 2023	No discernible movement	N/A	-0.6

Drawing 32121-SH033-1 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

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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.

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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

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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 SH033: HWY 749:02, WEST PRAIRIE RIVER OXBOW SLIDE

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (SH033)
SPRING 2024

Location:	Hwy 749:02 West Prairie River Oxbow Slide (km 20.1 to km 20.3)	**Readout:**	
File Number:	32121	**Casing:**	2.75
Probe:	RST Set 5R	**Temp:**	4/Flurries/rain
Cable:	RST Set 5R	**Read by:**	NKR/NRM

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-			
SI21-P15	532714	6136112	17-May-24	1.2	46 to 2	187	348	-338	209	-196	5R	2.75	
SI21-P25	532709	6136123	17-May-24	1.2	46 to 2	211	-486	497	324	-307	5R	2.75	
SI21-P35	532704	6136134	17-May-24	1.15	46 to 2	160	-362	379	-48	66	5R	2.75	

INSPECTOR REPORT

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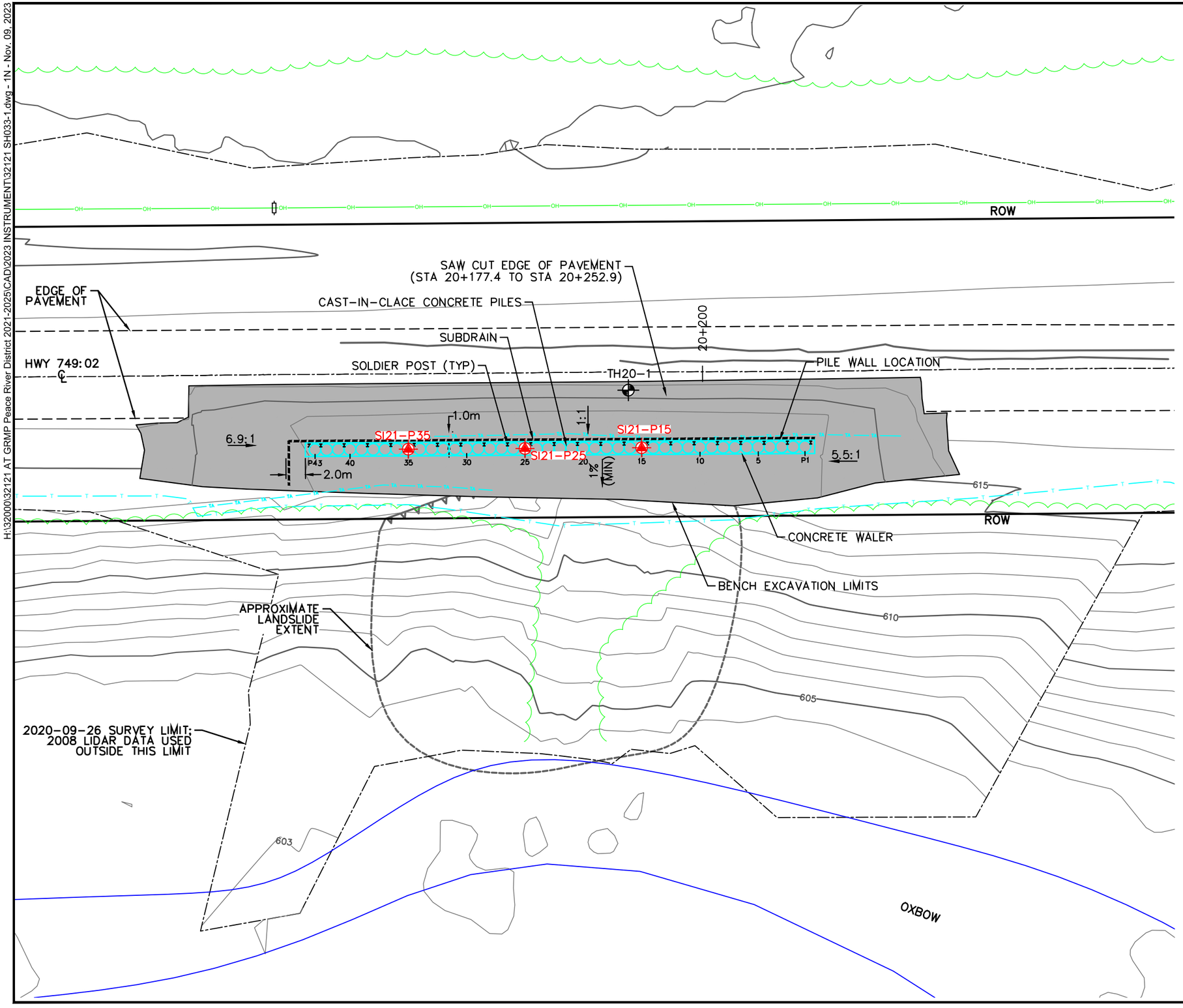

LEGEND

- APPROXIMATE TEST HOLE LOCATION
- APPROXIMATE INSTRUMENT LOCATION
- SI — SLOPE INCLINOMETER
- ACTIVE LANDSLIDE CRACK
- CRACK
- TEMPORARY TELUS CABLE EXPOSED
- TA — ABANDONED TELUS CABLE
- OH — OVERHEAD POWER LINE AND POWER POLE
- GROUND SURFACE CONTOUR (1m INTERVAL)
- TREE LINE
- P1 — PILE NUMBER

NOTES
1. FEATURE LOCATIONS ARE APPROXIMATE.

0 5 10 15 20 25m

SCALE 1:400

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PEACE REGION (PEACE RIVER DISTRICT)

SH033: HWY 749:02, WEST PRAIRIE RIVER OXBOW SLIDE SITE PLAN SHOWING APPROXIMATE INSTRUMENT LOCATIONS

DWG NO. 32121-SH033-1

DRAWN BY	ML
DESIGNED BY	NFR
APPROVED BY	DWP
SCALE	1:400
DATE	NOVEMBER 2023
FILE No.	32121

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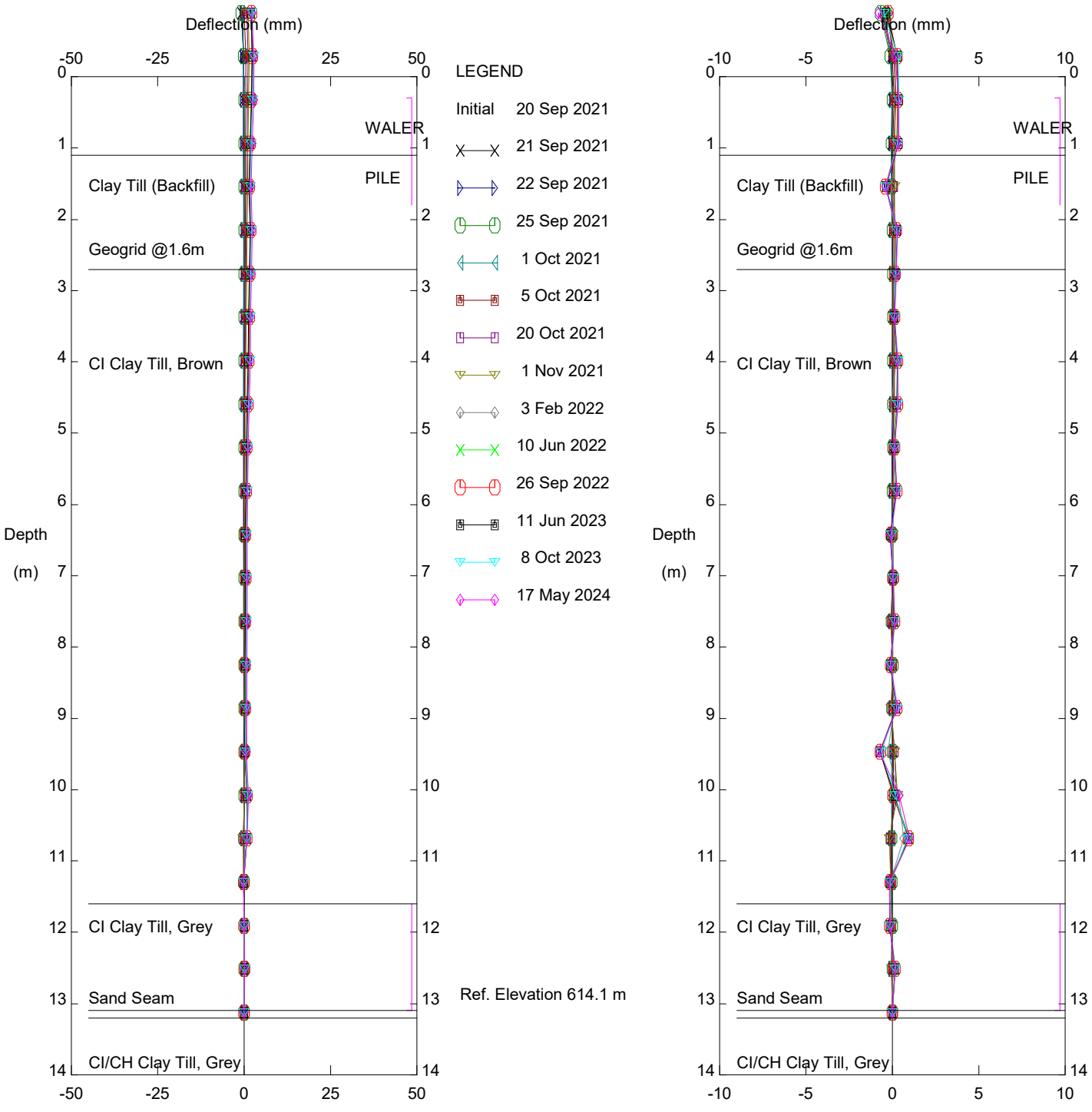

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P15

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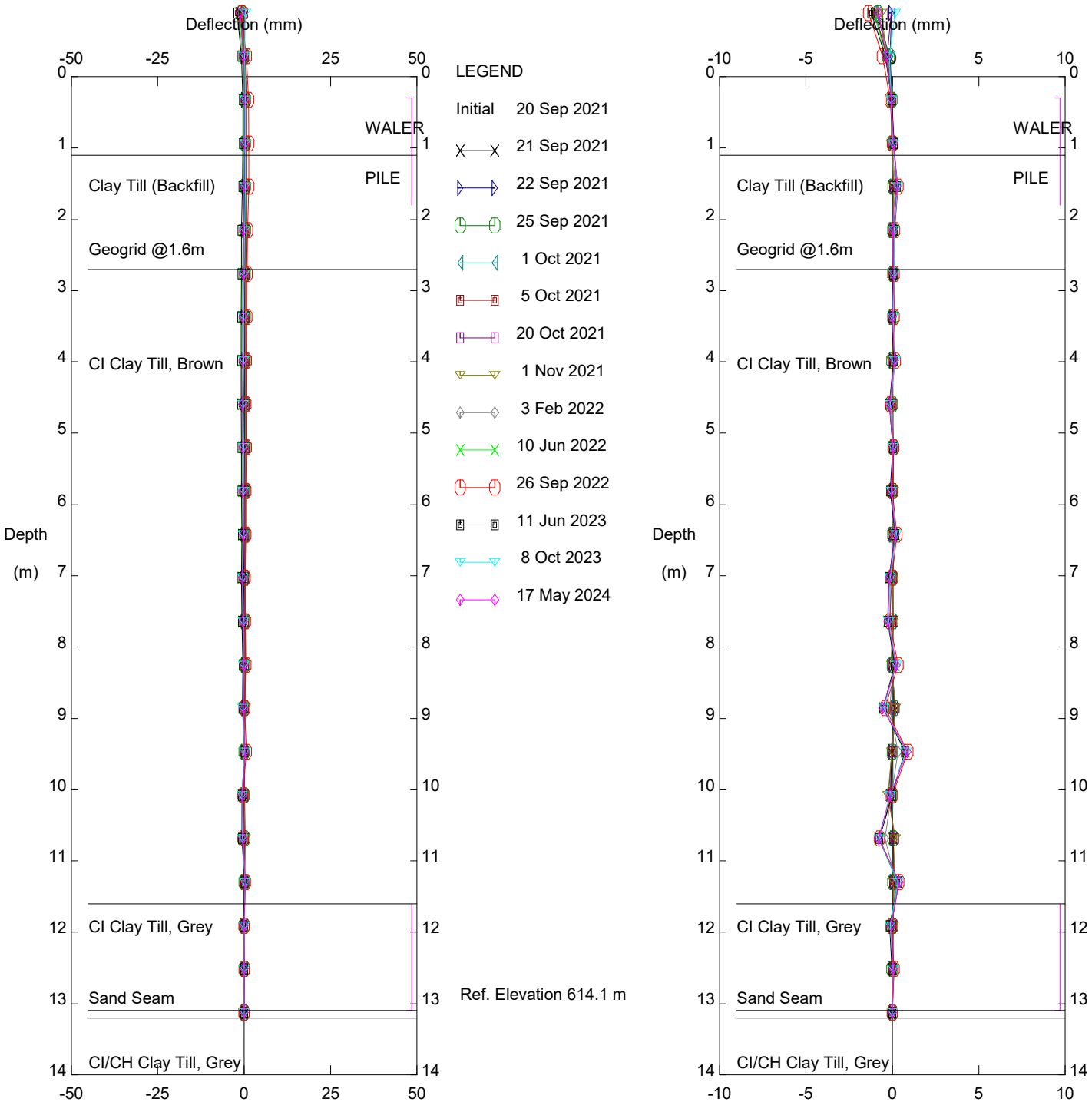

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P15

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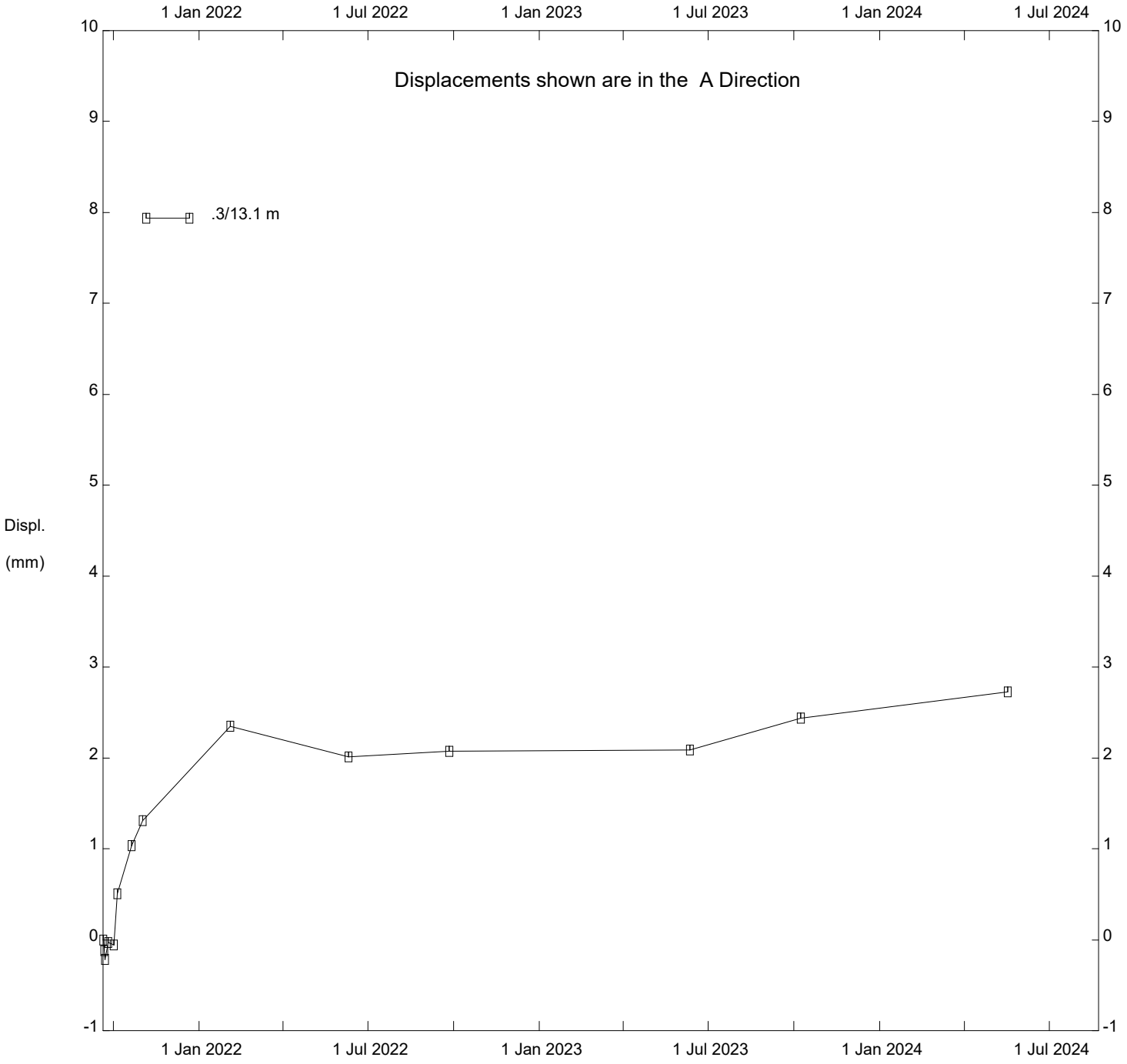

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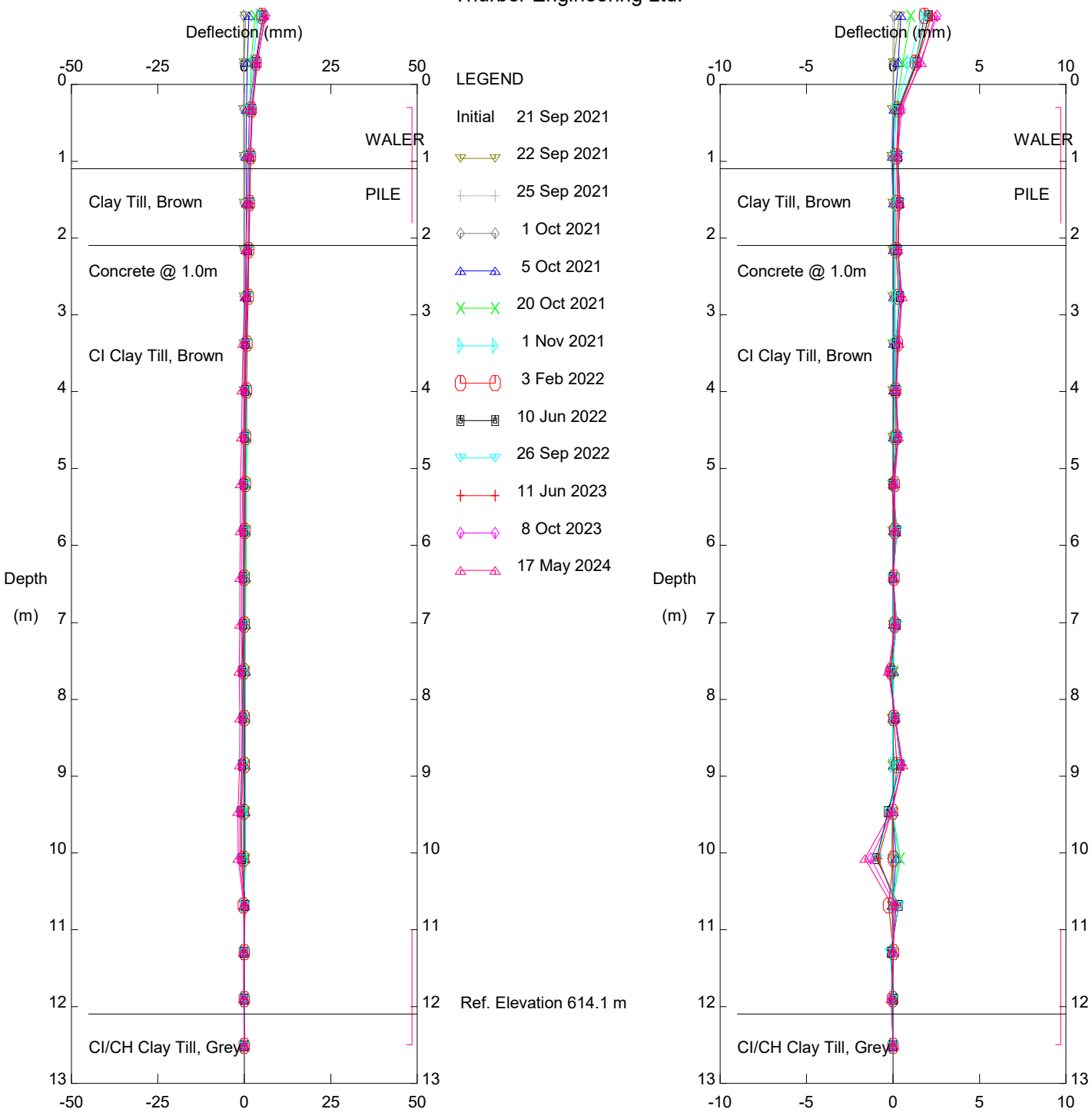

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P25

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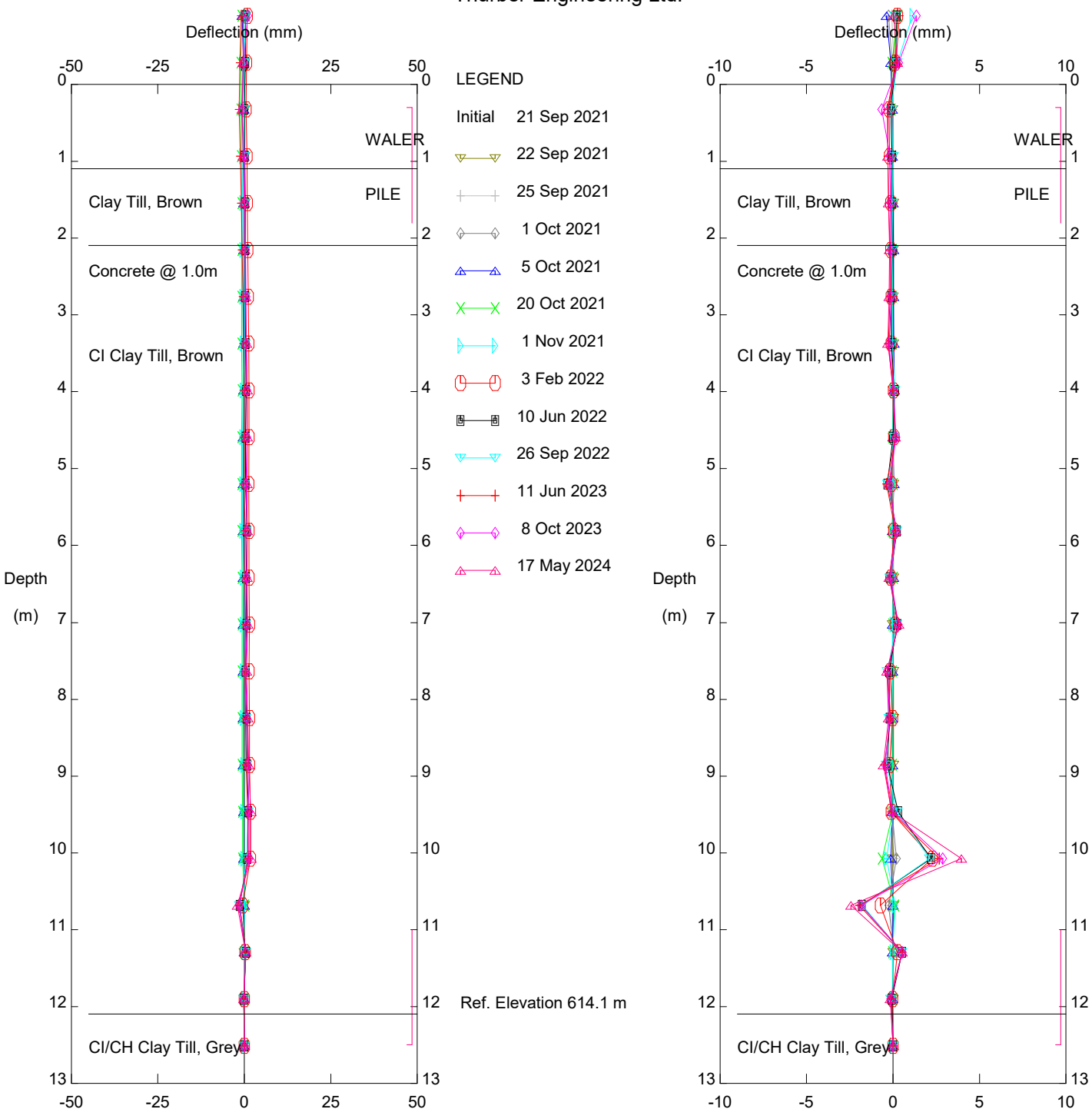

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P25

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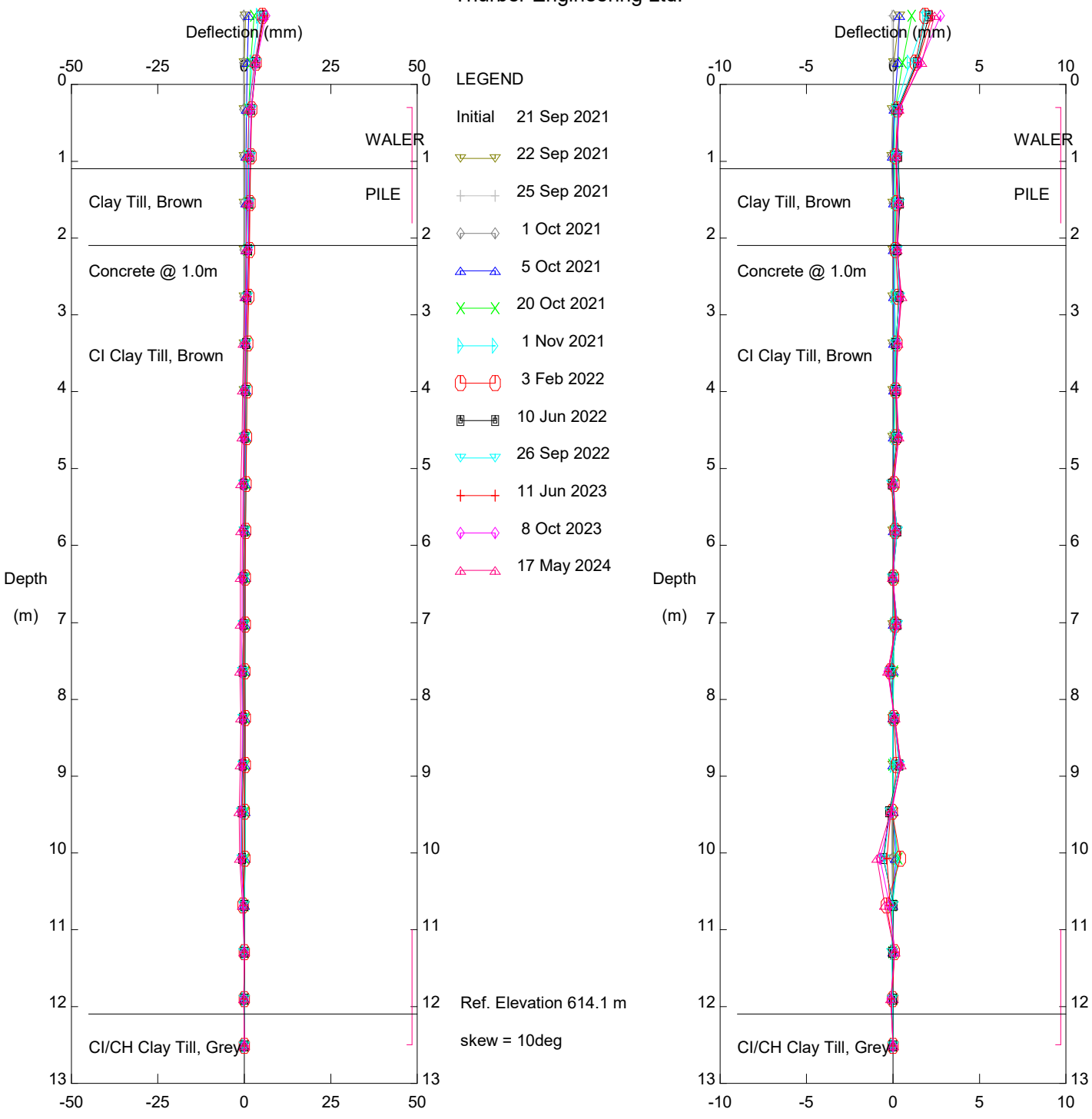

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P25

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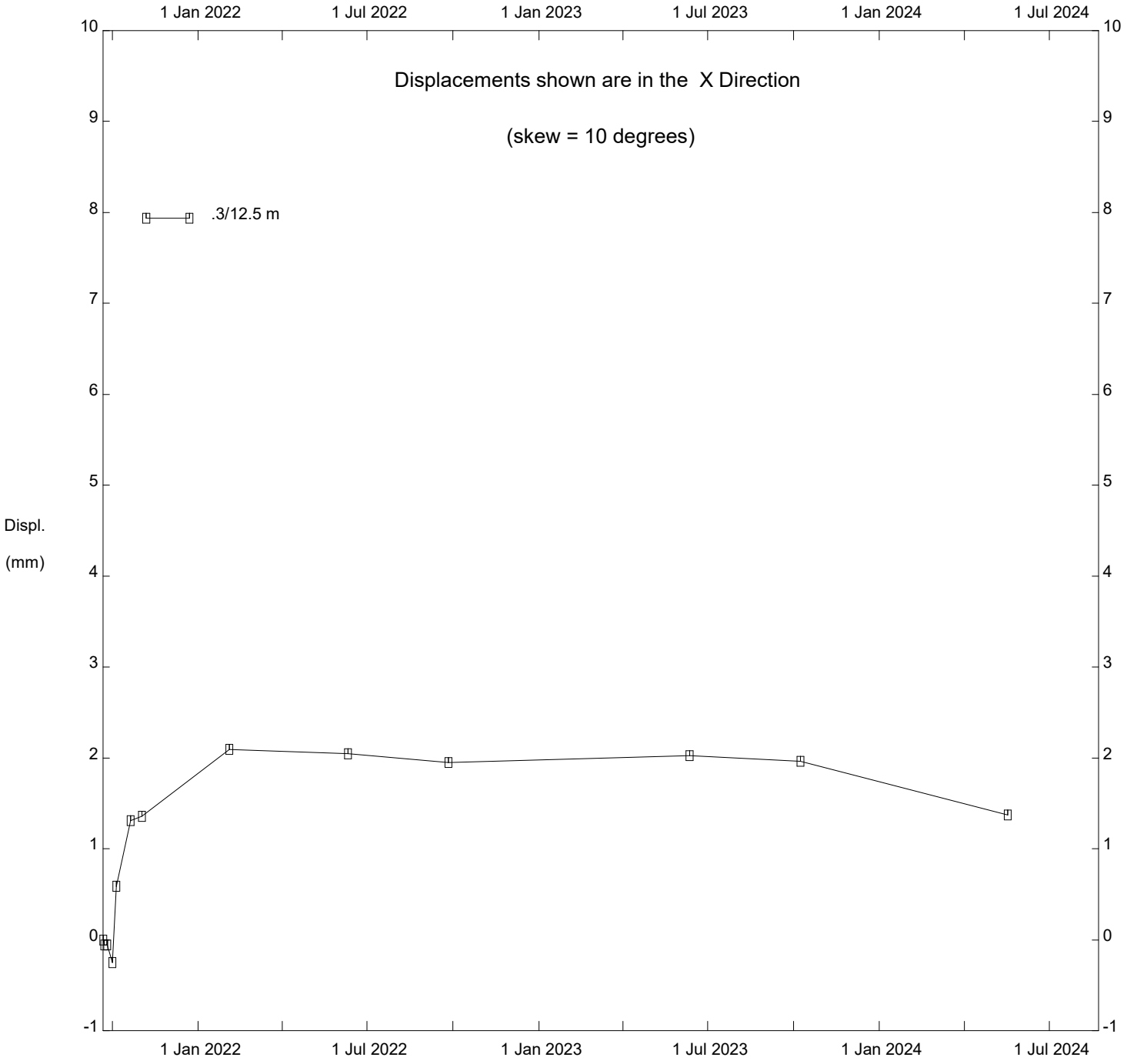

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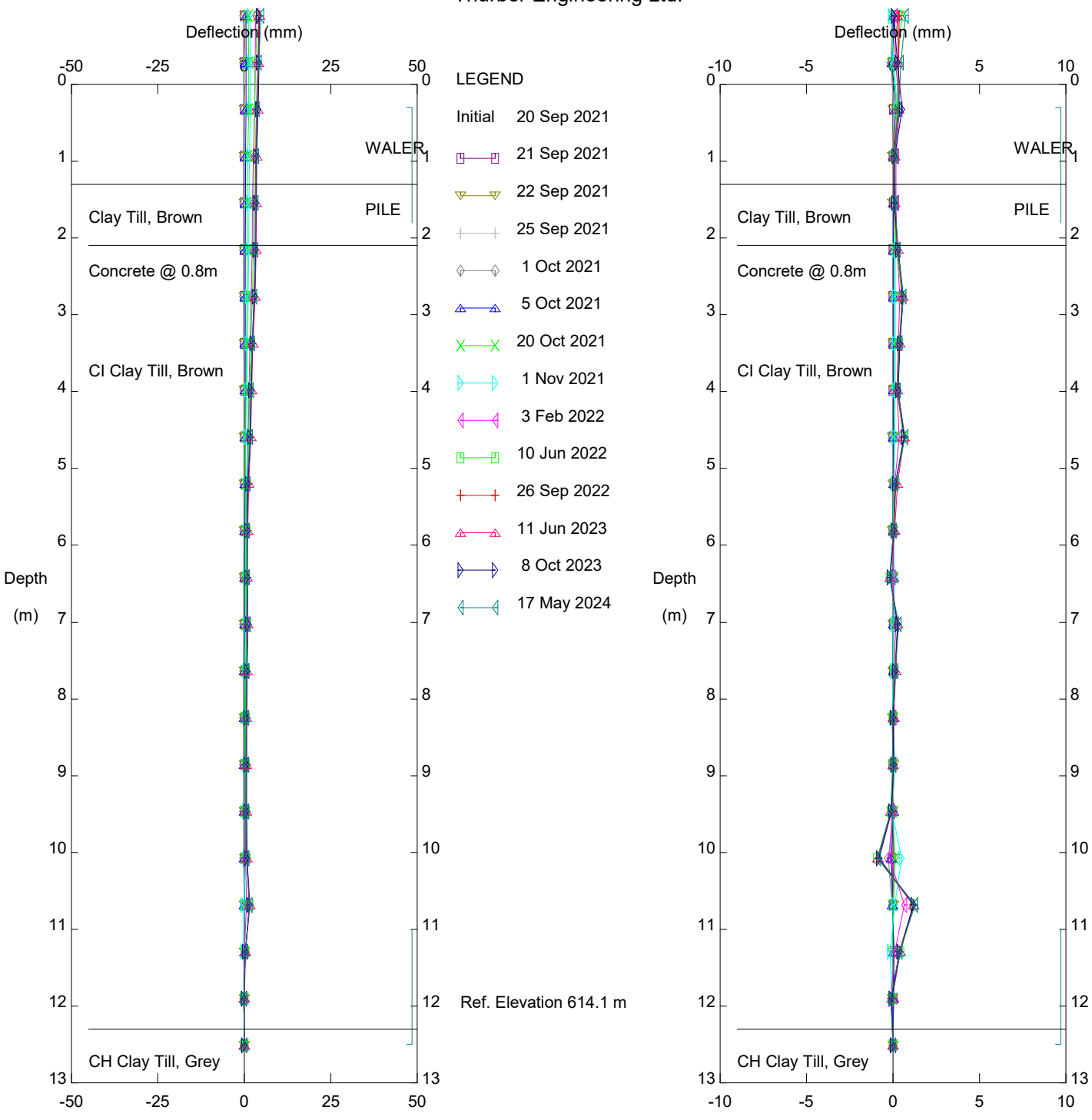

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P35

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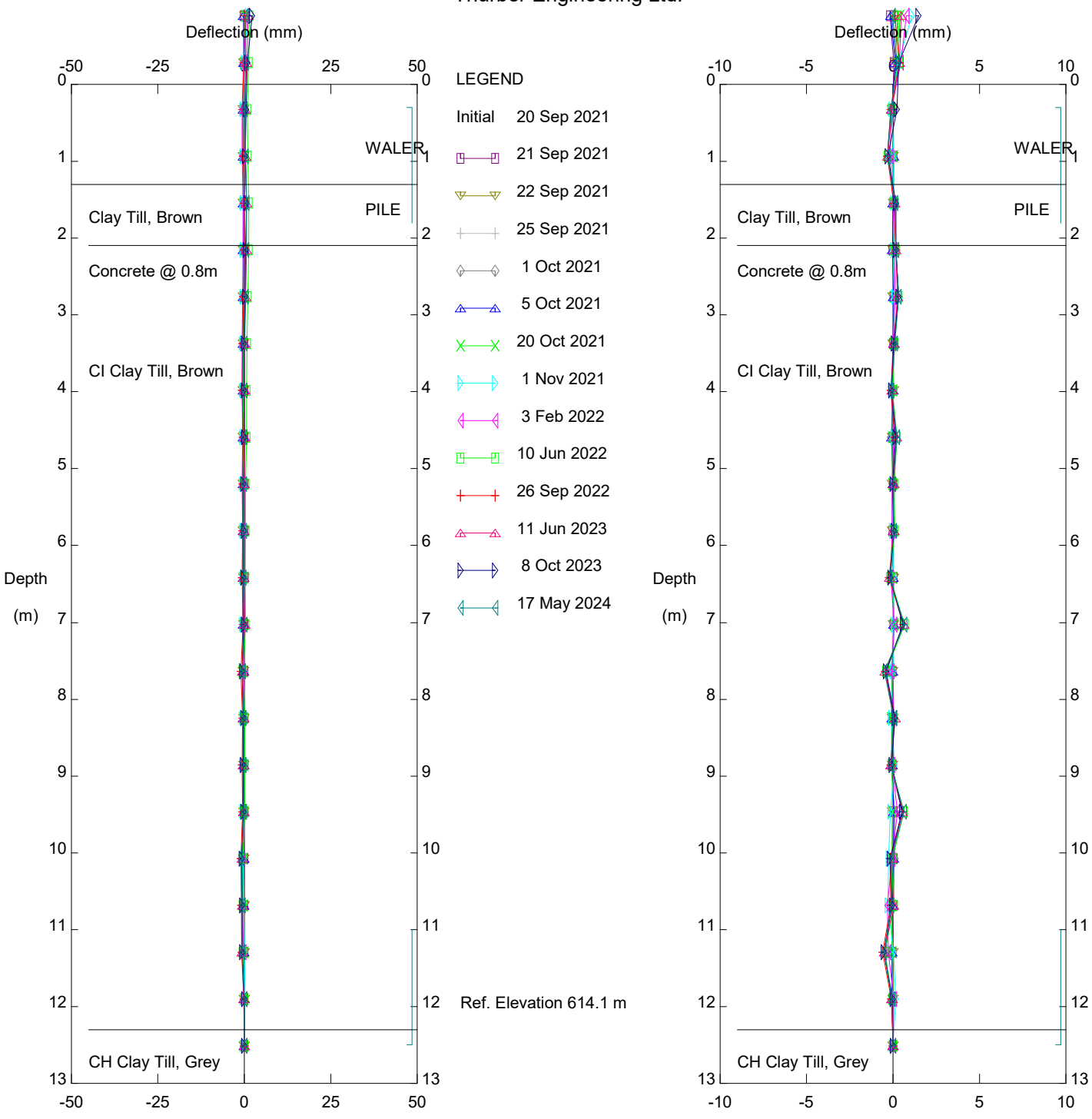

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P35

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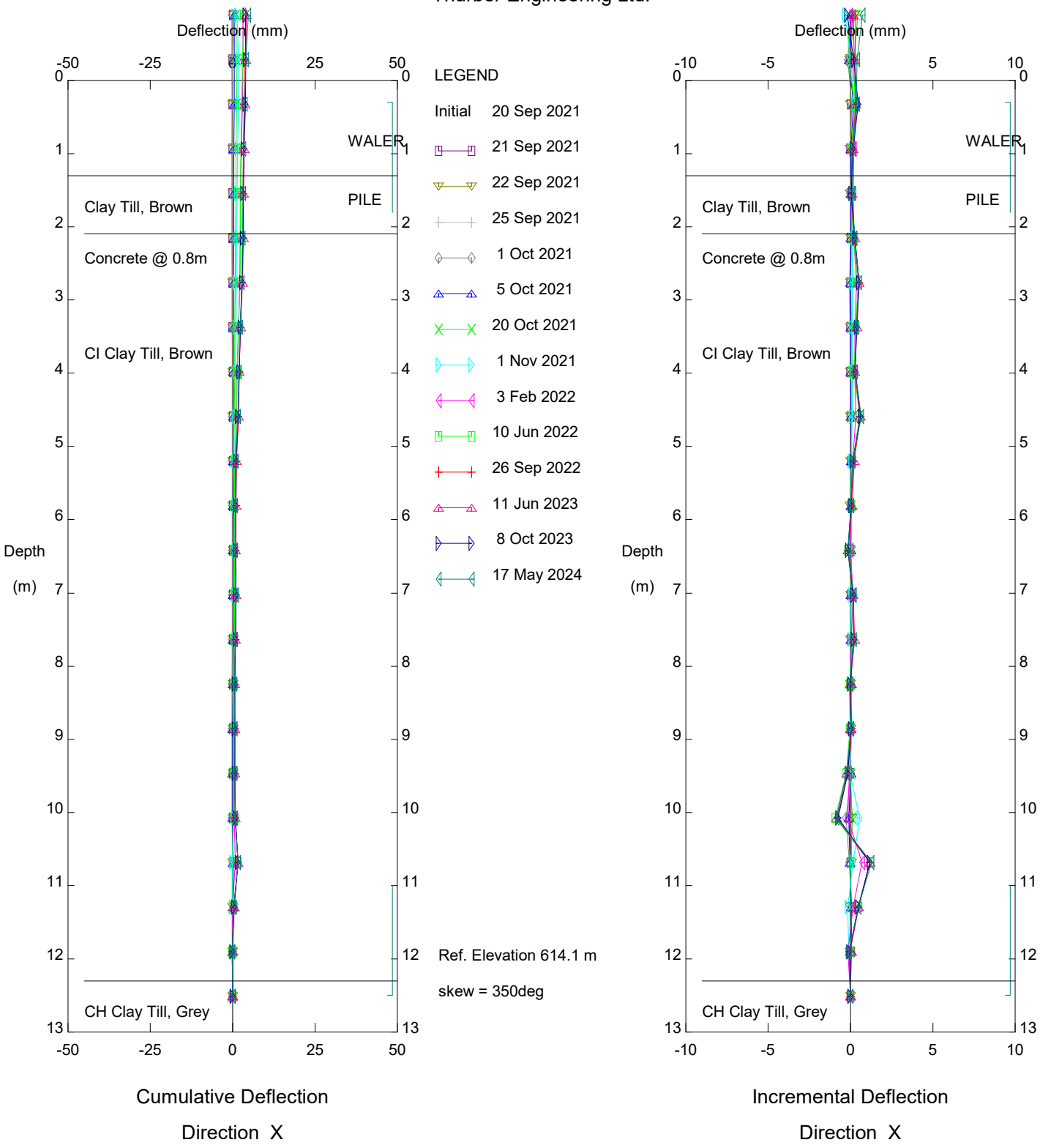

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

SH033: Hwy 749:02 West Prairie River, Inclinometer SI21-P35

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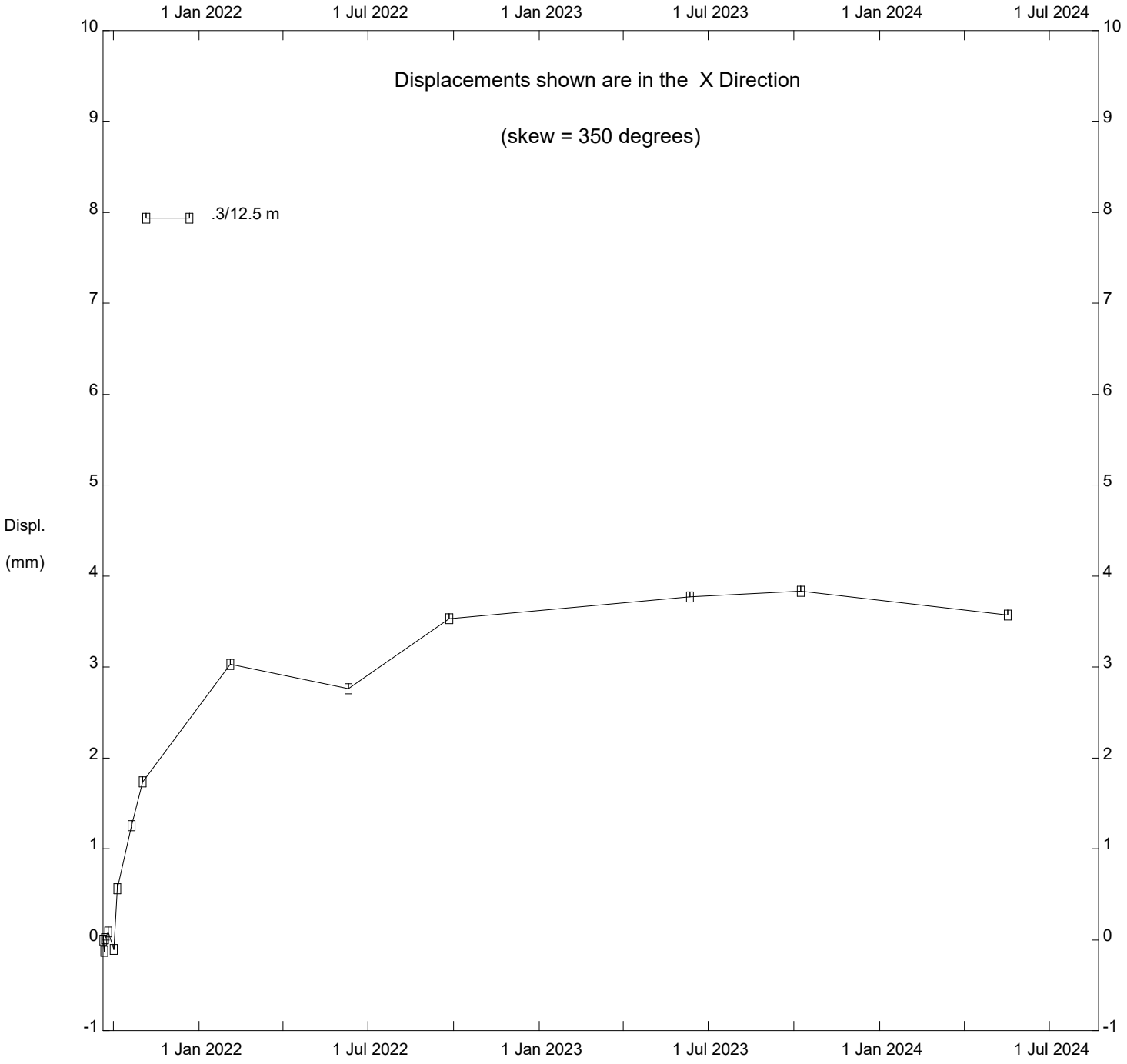

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