

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



Site Number	Location	Name	Hwy	km
GP040	Hwy 2, 5 km North of Rycroft	Spirit River Bridge	2	5 km North of Rycroft
Legal Description:		UTM Co-ordinates		
16-4-77-5 W6		11U E 394305	N	6184771

Current Monitoring:	17-June-2025	Previous Monitoring	25-Sept-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): SI17-3 and SI20-1	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	SAA's: N/A	Others: N/A

Readout Equipment Used			
Slope Inclinometers: RST Digital Inclinator probe with a 2 ft. wheelbase and a RST Pocket PC readout	Pneumatic Piezometers:	Vibrating Wire Piezometers:	Standpipe Piezometers:
Load Cell:	Strain Gauges:	SAA's:	Others:
Notes:			

Zones of New Movement:	None
Interpretation of Monitoring Results:	<p>Slope inclinometer SI17-3 was found to have been blocked or sheared at 3.27 m below the top of casing since June 22, 2020.</p> <p>SI20-1 is located within the pile wall on the east side of the south abutment. It showed a gentle tilt pattern of movement of 0.5 mm and a rate of movement of 0.7 mm/yr over 0.2 m to 14.2 m depth since the previous reading on September 25, 2024. This corresponds to a decrease in rate of movement of 3.4 mm/yr since the previous reading. The total pile head deflection to date has been 24.3 mm. The readings are consistent with the cantilevered concrete pile wall performance expectations.</p> <p>All of the pneumatic piezometers on this site were previously damaged.</p>
Future Work:	Due to there being only one active instrument left on the site, we recommend reading this site once annually. The instruments should be read again in the fall of 2026.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	Due to the relatively large, but expected, cumulative movement recorded in SI20-1, during the next site visit, it is recommended to inspect the timber lagging of the wall to confirm that the boards are still well supported by the flange of the "H" piles and are not slipping away.

<p>Attachments:</p>	<ul style="list-style-type: none"> • Table GP040-1 Spring 2025 – Hwy 2, 5 km North of Rycroft – Spirit River Head Slope Slide Slope Inclinator Instrumentation Reading Summary • Table GP040-2 Spring 2025 – Hwy 2, 5 km North of Rycroft – Spirit River Head Slope Slide Pneumatic Piezometer Instrumentation Reading Summary • Statement for Use and Interpretation of Report • APPENDIX A – GP040-1 SPRING 2025 <ul style="list-style-type: none"> ○ Field Inspector's report ○ Site Plan Showing Approximate Instrument Locations (Drawing No. GP040-1) ○ SI Reading Plots ○ Figure GP040-1 (Piezometric Elevations) ○ Figure GP040-2 (Piezometric Depths)
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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.
Renato Clementino, Ph.D., P. Eng.
Principal | Senior Geotechnical Engineer

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

Table GP040-1: Spring 2025 – Hwy 2, 5 km North of Rycroft – Spirit River Head Slope Slide Slope Inclinator Instrumentation Reading Summary

Date Monitored: June 17, 2025

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)
SI17-1	July 18, 2017	5.3 mm over 0.5 to 2.9 m depth in 316 ° direction	43.36 in August 2017	Sheared	September 6, 2017	N/A	31.8 mm/yr (September 2017)	N/A
		76.7 mm over 2.9 to 4.8 m depth in 316 ° direction	567.4 in August 2017				554.1 mm/yr (September 2017)	
SI17-2	July 18, 2017	84.2 over 1.8 m to 4.2 m depth in 34° direction	994.4 in July 2017	Sheared	August 18, 2017	N/A	994.4 mm/yr (August 2017)	N/A
SI17-3	July 18, 2017	37.9 over 0.2 m to 3.9 m depth in 341° direction	38.5 in January 2018	Sheared / Blocked at 3.27 m	June 22, 2020	N/A	19.4 mm/yr (June 2020)	N/A
SI20-1	October 22, 2020	24.3 over 0.2 m to 14.2 m depth in 250° direction	24.7 in April 2021	Operational	September 25, 2024	0.5	0.7	-3.36

Drawing GP040-1 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table GP029-2: Spring 2025 – Hwy 2, 5 km North of Rycroft – Spirit River Head Slope Slide Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: Not Monitored

INSTRUMENT #	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED WATER ELEVATION (m)	MEASURED PORE PRESSURE (kPa)	CURRENT WATER ELEVATION (m)	PREVIOUS WATER ELEVATION (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PN17-1A	July 6, 2017	841.96	865.43	Damaged	863.05 in July 2017	N/A	N/A	857.78 (August 18, 2017)	N/A
PN17-1B	July 6, 2017	852.48	865.43	Damaged	864.92 in July 2017	N/A	N/A	861.83 (June 22, 2020)	N/A
PN17-2	July 5, 2017	856.89	865.89	Damaged	866.59 in July 2017	N/A	N/A	858.58 (June 22, 2020)	N/A
PN17-3	July 5, 2017	837.23	851.56	Damaged	843.14 in July 2017	N/A	N/A	838.64 (October 5, 2017)	N/A

Drawing GP040-1 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

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 TO THE 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.

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022165)
PEACE REGION (GRANDE PRAIRIE DISTRICT – NORTH)
INSTRUMENTATION MONITORING RESULTS**

SPRING 2025

**APPENDIX A
DATA PRESENTATION**

SITE GP040: HWY 2, 5 km NORTH OF RYCROFT – SPIRIT RIVER HEAD SLOPE SLIDE

**ALBERTA TRANSPORTATION
PEACE REGION - GRANDE PRAIRIE AREA
SLOPE INCLINOMETER MONITORING FIELD SUMMARY
SPRING 2025**

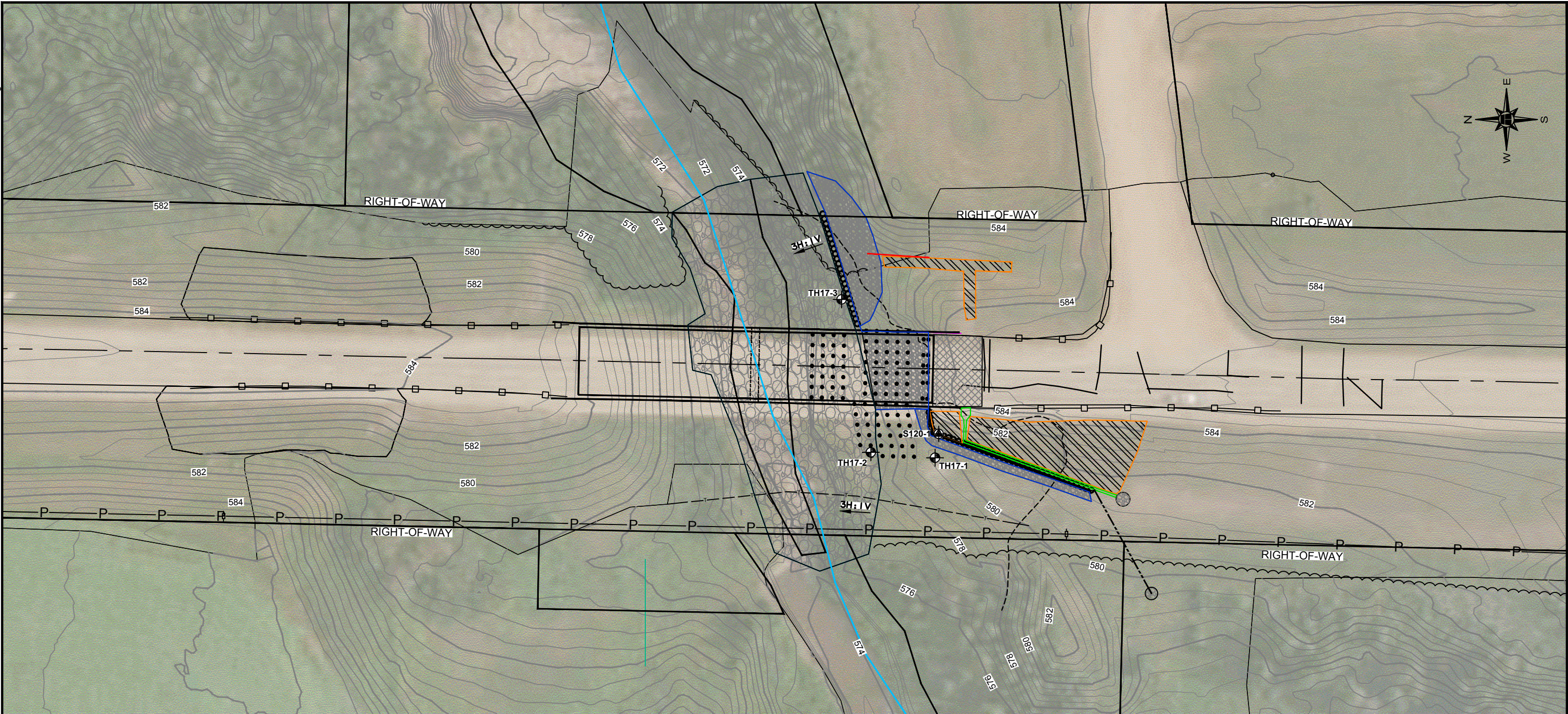
Location: Spirit River Bridge 5KM North of Rycroft File Number: 32122 Probe: RST SET 8R Cable: RST SET 8R	Readout: Casing Size 2.75 Temp: 23 Read by: NKR/GE
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SLOPE INCLINOMETER (SI) READINGS

SI#	GPS Location (NAD83 UTM)		Date	Stickup (m)	Depth from top of CASING (ft)	Azimuth of A+ Groove	Current Bottom Depth Readings				Probe/ Reel #	Size (")	Remarks
	(N)	(E)					A+	A-	B+	B-			
SI20-1	6184691	394281	17-Jun-25	0.76	48 to 2	219	-569	575	283	-280	8R/8R	2.75	

INSPECTOR REPORT

SI17-3 not read due to being Sheared / Blocked at 3.27 m



LEGEND

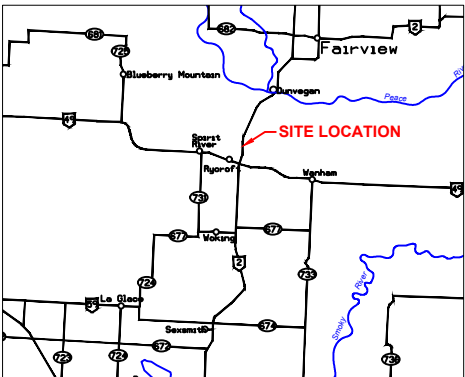
- APPROXIMATE TEST HOLE LOCATION(2017)
- APPROXIMATE SLOPE INCLINOMETER LOCATION (2020)
- TELUS CABLE
- OVERHEAD POWER LINE
- GUARD RAIL
- TREE LINE
- SOIL NAIL
- SUBDRAIN
- CONTROL POINT
- DIRECTION AND NUMBER OF PHOTO

NOTES:

- MAY 29, 2023 FEATURES SHOWN IN RED
- BASE PLAN PROVIDED BY WSP, SITE SURVEYED ON SEPTEMBER 5, 2017.
- CONTOURS OUTSIDE SURVEY LIMIT ARE FROM 2015 LIDAR DATA.
- NAD83 UTM 11 COORDINATE SYSTEM.
- CONTOUR INTERVALS 0.5m.



AIR PHOTO FROM ESRI WORLD IMAGERY EXPORTED ON AUGUST 23, 2023



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Transportation

PEACE REGION (GRANDE PRAIRIE)

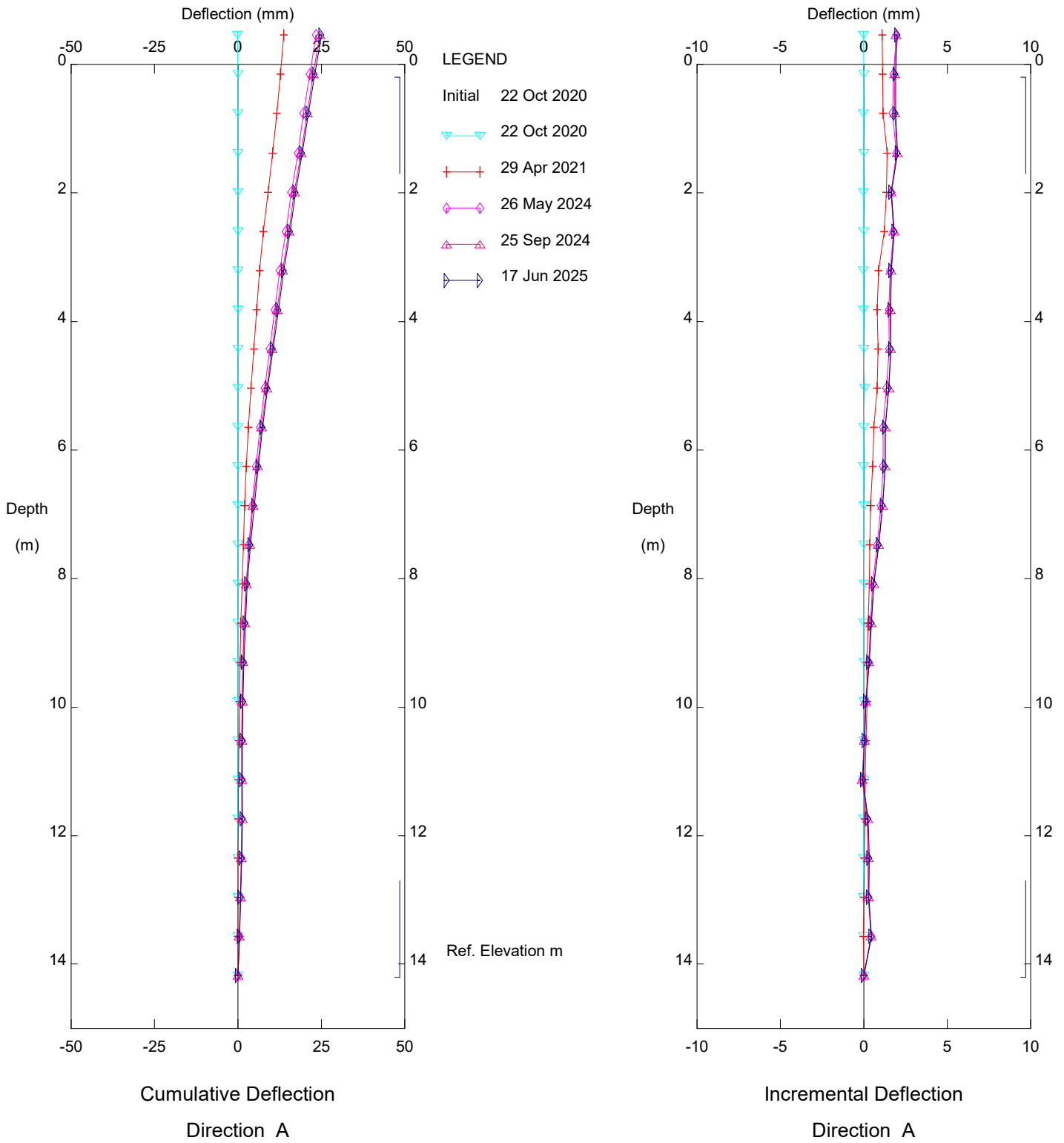
GP040-1: HWY 2:68 - SPIRIT RIVER BRIDGE (BF75106)
2023 INSPECTION PLAN

DWG No. 32123-GP040-1

DRAWN BY	ML
DESIGNED BY	NPW
APPROVED BY	DWP
SCALE	1:750
DATE	JULY 2025
FILE No.	32123

THURBER

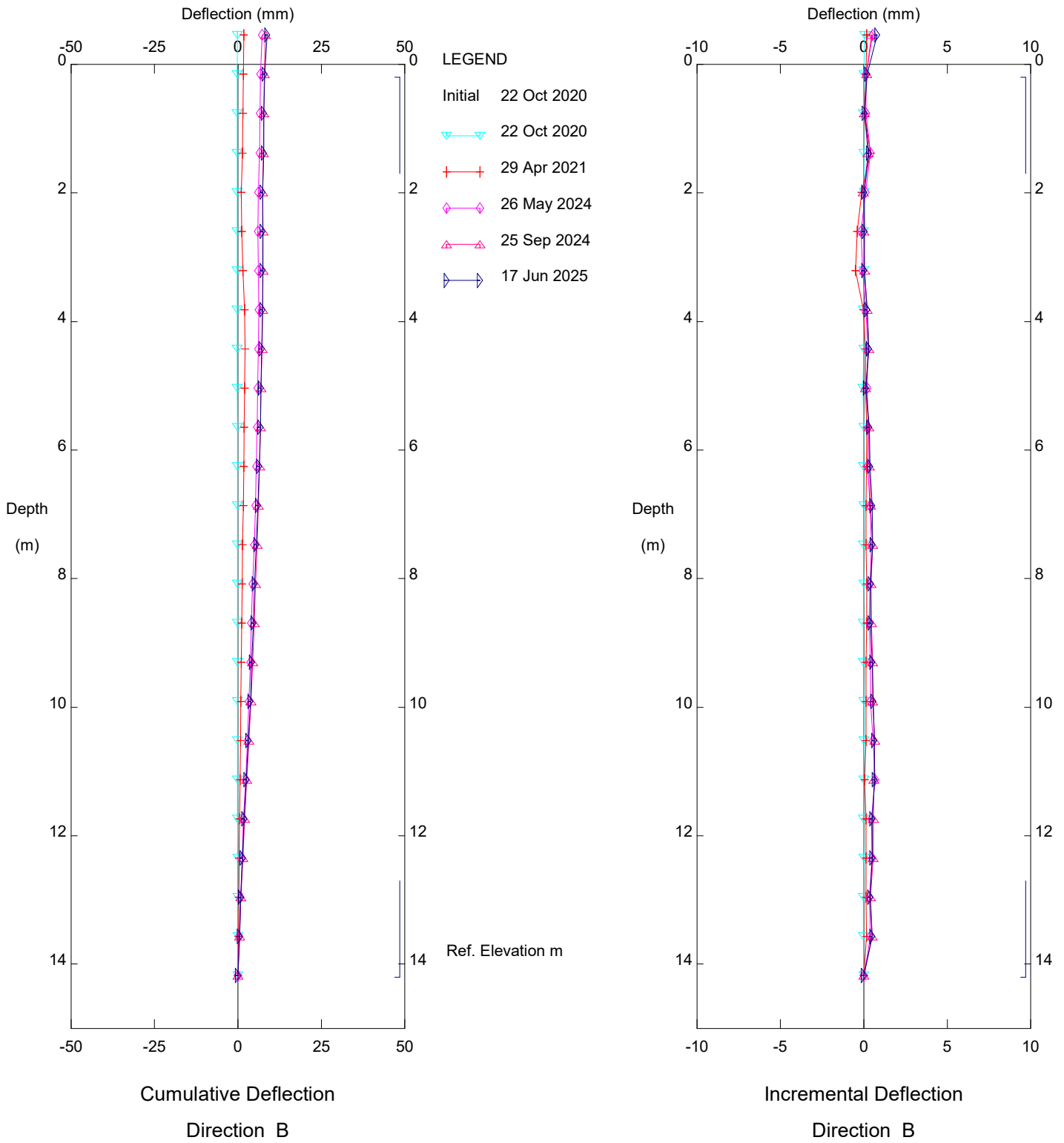
Thurber Engineering Ltd.



Spirit River Bridge, Inclinator SI20-1

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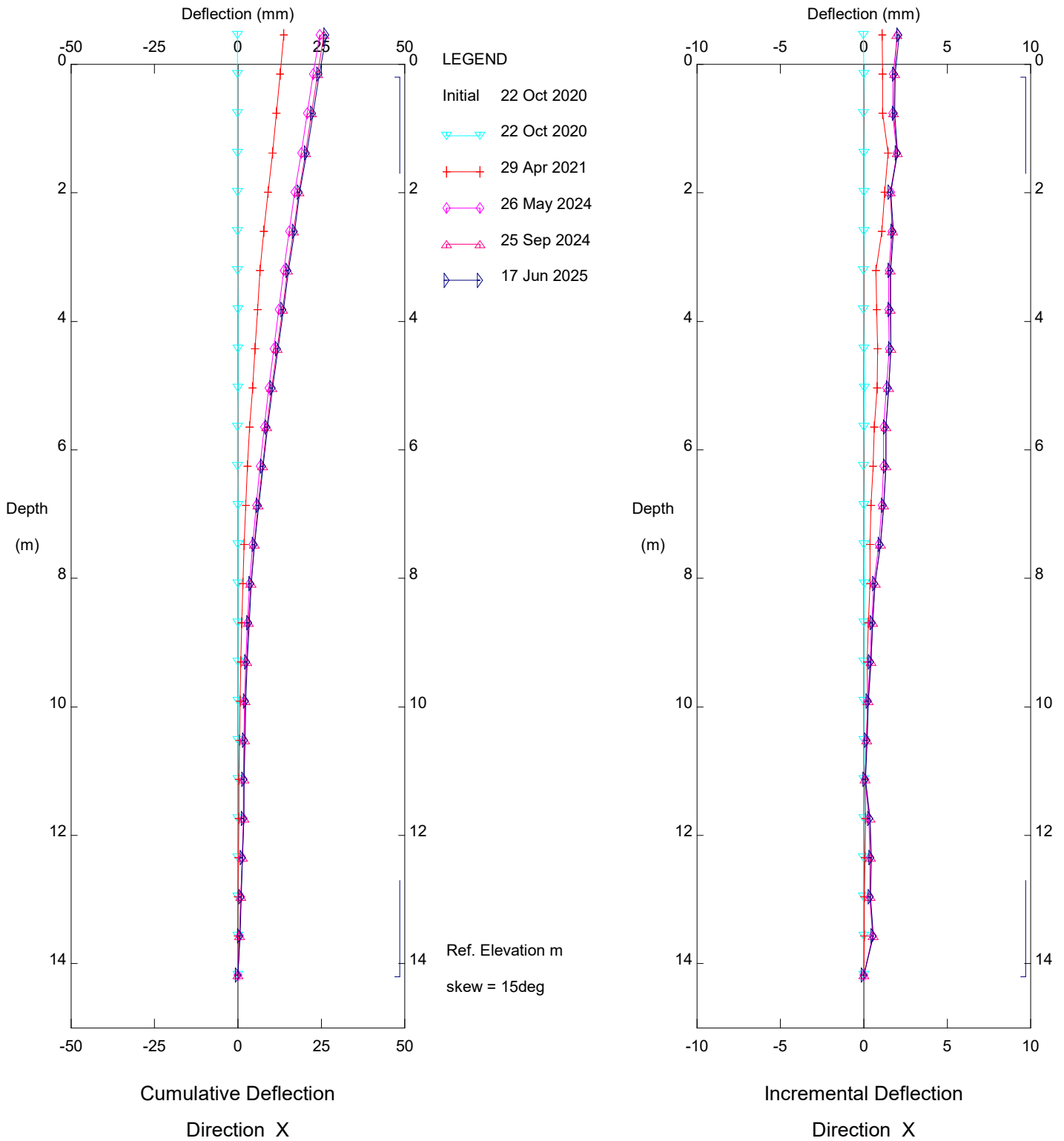
Thurber Engineering Ltd.



Spirit River Bridge, Inclinator SI20-1

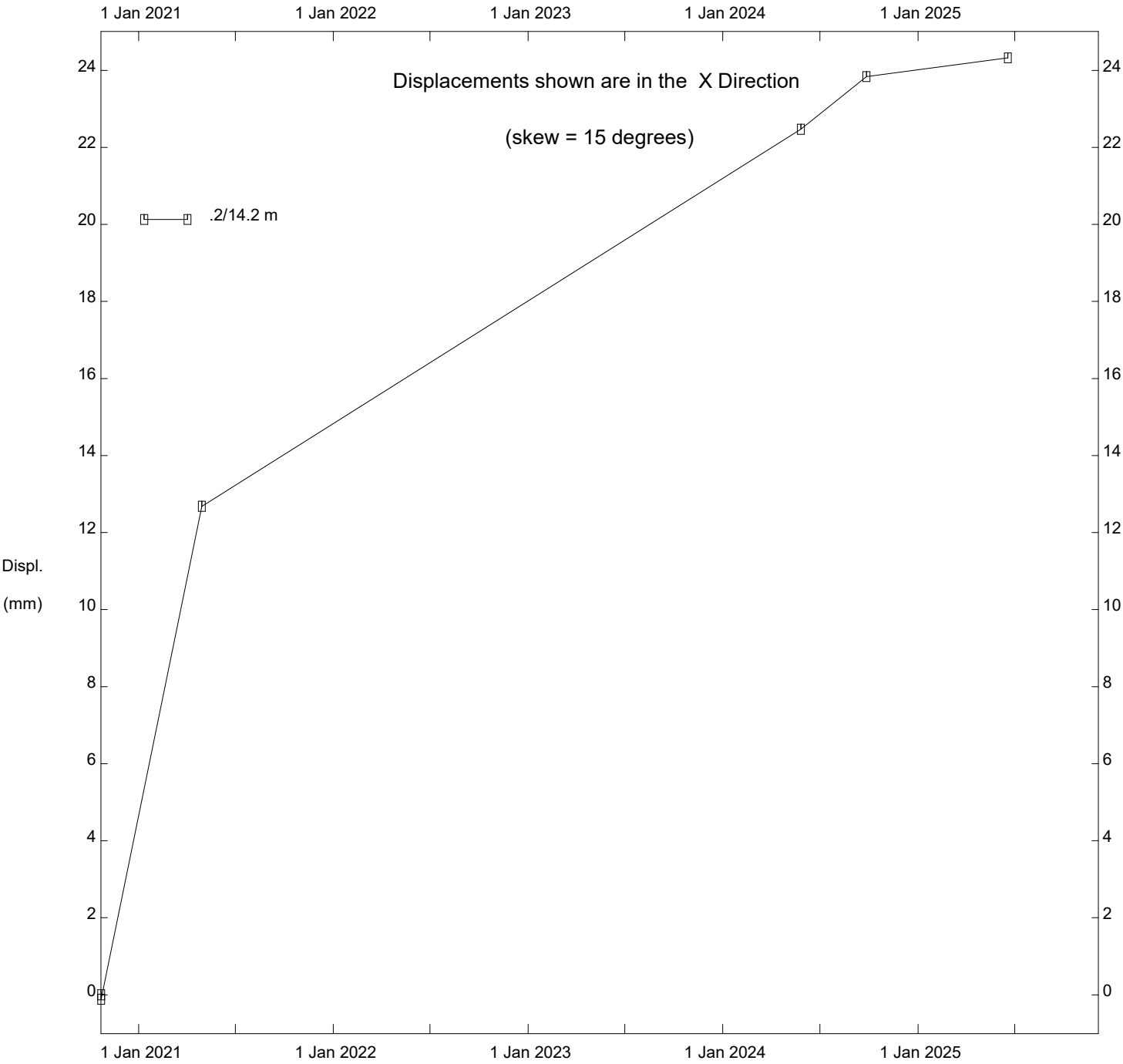
Alberta Transportation

Thurber Engineering Ltd.



Spirit River Bridge, Inclinator SI20-1

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Spirit River Bridge, Inclinator SI20-1

FIGURE GP040-1
PIEZOMETRIC ELEVATIONS FOR HWY 2:68 4.7 km NORTH OF RYCROFT

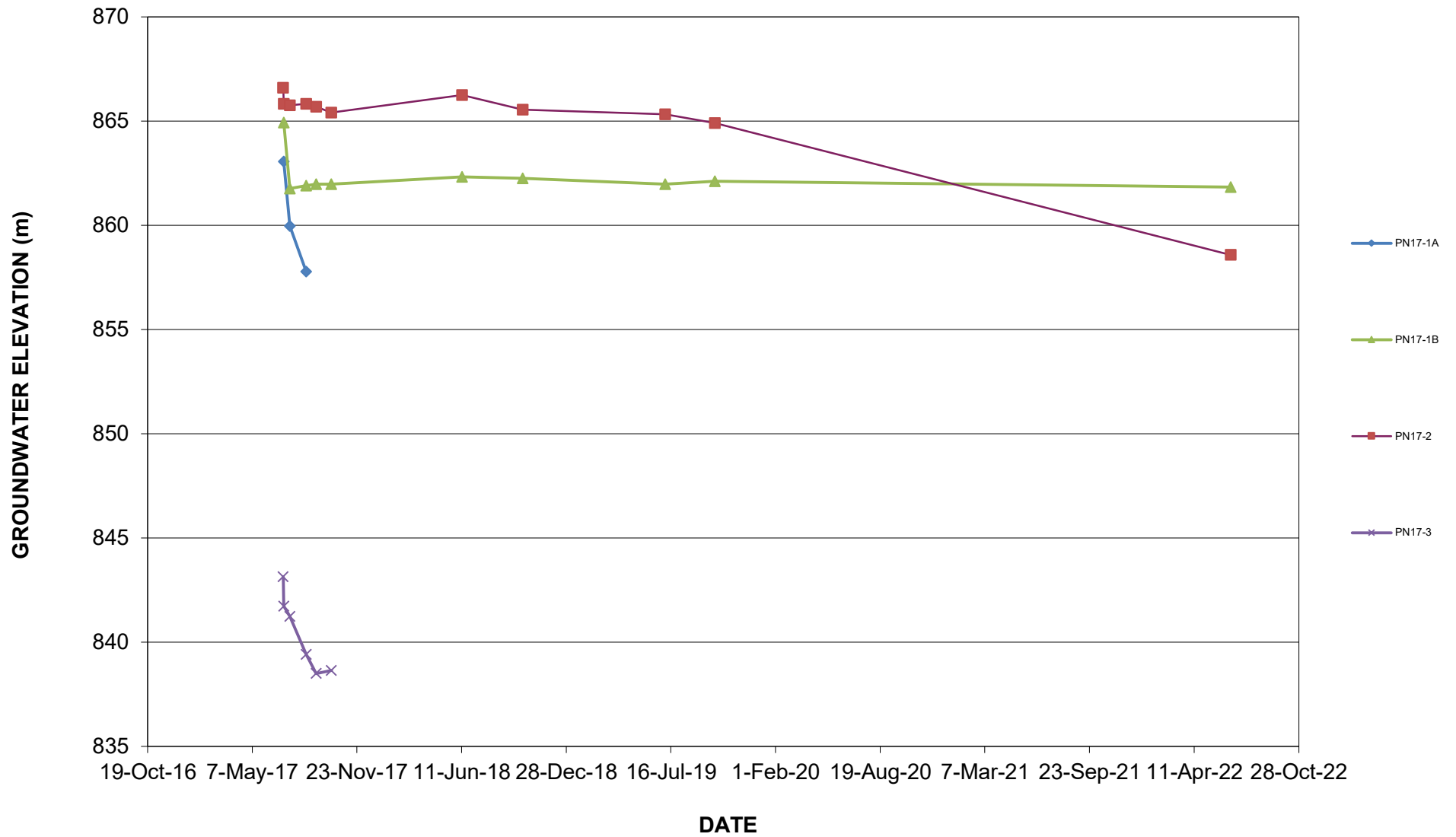


FIGURE GP040-2
PIEZOMETRIC DEPTHS FOR HWY 2:68 4.7 km NORTH OF RYCROFT

