

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



Site Number	Location	Name	Hwy	km
SH003	HWY 49:12 C1 0.678	Little Smoky River (N of Bridge)	49:12	0.7
<b>Legal Description:</b>		<b>UTM Co-ordinates</b>		
14-34-74-21 W5		11U E 490629	N	6145958

<b>Current Monitoring:</b>	6-June-2025	<b>Previous Monitoring</b>	17-May-2024
<b>Instruments Read By:</b>	Mr. Niraj Regmi, G.I.T., and Mr. Godfred Etiendem, Thurber		

Instruments Read During This Site Visit			
<b>Slope Inclinometers (SIs):</b> SI96-4 SI96-5 SI96-6 SI31a	<b>Pneumatic Piezometers (PN):</b> PZ01-1 PZ01-3	<b>Vibrating Wire Piezometers (VW):</b> VW07-1 VW07-1A	<b>Standpipe Piezometers (SP):</b> N/A
<b>Load Cell (LC):</b> N/A	<b>Strain Gauges:</b> N/A	<b>SAA:</b> N/A	<b>Others:</b>

Readout Equipment Used			
<b>Slope Inclinometers:</b> Two RST Digital Inclinometer probes with 2 ft wheelbases and RST Pocket PC readouts	<b>Pneumatic Piezometers:</b> RST C108 pneumatic piezometer readout	<b>Vibrating Wire Piezometers:</b> GEOKON GK 404 vibrating wire readout	<b>Standpipe Piezometers:</b>
<b>Load Cell:</b>	<b>Strain Gauges:</b>	<b>SAA:</b>	<b>Others:</b>
<b>Note</b>			

Discussion	
<b>Zones of New Movement:</b>	None
<b>Interpretation of Monitoring Results:</b>	<p>Slope inclinometers SI96-4, SI96-5, and SI96-6 continued to show no discernible movement patterns. Based on the readings from other sheared inclinometers, these SIs are likely too shallow to capture the main slide movements.</p> <p>SI31a sheared off at 22.5 m depth in September 1999. Readings were continued above this shear plane. SI31a showed no definite movement zone above the former shear zone since the spring of 2024 readings.</p> <p>Pneumatic piezometer PZ01-1 showed a decrease in groundwater level of 0.07 m since the spring of 2024 readings and has been relatively stable for the last decade. PZ01-3 showed an increase in groundwater level of 0.17 m since the spring of 2024 readings since a historic low reading in October 2023 although the overall trend has been decreasing water level since 2009. Pneumatic piezometer results are summarized in Table SH003-2 and are plotted in Figures SH003-1 (by elevation) and SH003-2 (by depth) in Appendix A.</p> <p>Vibrating wire piezometers VW07-1 and VW07-1A showed decreases in groundwater level of 0.61 m and 0.42 m, respectively, since the spring of 2024 readings. The vibrating wire piezometer results are</p>

	summarized in Table SH003 3 and are plotted in Figure SH003-3 in Appendix A.
<b>Future Work:</b>	The piezometers instruments should be read again in the fall of 2025. It is recommended that slope indicator readings be continued biennially unless movement zones develop. The next SI readings would be in spring of 2027.
<b>Instrumentation Repairs:</b>	No instrument repairs are required at this time.
<b>Additional Comments:</b>	

<b>Attachments:</b>	<ul style="list-style-type: none"> <li>• Table SH003-1 Spring 2025 – HWY 49:12 Little Smoky River (North of Bridge), Slope Inclinator Instrumentation Reading Summary</li> <li>• Table SH003-2 Spring 2025 – HWY 49:12 Little Smoky River (North of Bridge), Pneumatic Piezometer Instrumentation Reading Summary</li> <li>• Table SH003-3 Spring 2025 – HWY 49:12 Little Smoky River (North of Bridge), Vibrating Wire Piezometer Instrumentation Reading Summary</li> <li>• Statement of Limitations and Conditions</li> <li>• APPENDIX A – SH003 SPRING 2025 <ul style="list-style-type: none"> <li>○ Field Inspector's report</li> <li>○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32121 SH003)</li> <li>○ SI Reading Plots</li> <li>○ Figure SH003-1 (Pneumatic Piezometer Elevations)</li> <li>○ Figure SH003-2 (Pneumatic Piezometer Depths)</li> <li>○ Figure SH003-3 (Vibrating Wire Piezometer Depths)</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.  
Don Proudfoot, M.Eng., P. Eng.  
Partner | Senior Geotechnical Engineer

Lucas Green, P.Eng.  
Geotechnical Engineer

**Table SH003-1 Spring 2025 – Hwy 49:12 Little Smoky River (North Of Bridge) Slope Inclinator Instrumentation Reading Summary**

Date Monitored: June 6, 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)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI96-4	November 6, 1996; new initial reading of June 5, 2017, used	No discernible movement	N/A	Operational	May 17, 2024	N/A	N/A	N/A
SI96-5		No discernible movement	N/A	Operational	May 17, 2024	N/A	N/A	N/A
SI96-6		No discernible movement	N/AS	Operational	May 17, 2024	N/A	N/A	N/A
SI31a	December 16, 1998; new initial reading of June 5, 2017, used	3.3 mm over 15.7 m to 16.9 m depth in 286°	3.1 mm/yr in October 2021	Operational (read from above shear plane at 22.5 m)	May 17, 2024	No Discernible Movement	N/A	-0.5
SI01-3	January 19, 2001	8.7 mm over 22.5 m to 24.9 m in 325° direction	-	Discontinued by Alberta Transportation in Spring 2014	October 22, 2013	N/A	N/A	N/A
		10.0 mm over 34.1 m to 39.0 m in 280° direction	-					
		52.0 mm over 48.1 m to 49.3 m in 310° direction	-					

Drawing 32121-SH003 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

**Table SH003-2 Spring 2025 – Hwy 49:12 Little Smoky River (North Of Bridge) Pneumatic Piezometer Instrumentation Reading Summary**

Date Monitored: June 6, 2025

INSTRUMENT #	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM GROUNDWATER ELEVATION (m)	MEASURED PORE PRESSURE (kPa)	CURRENT GROUNDWATER ELEVATION (m)	PREVIOUS GROUNDWATER ELEVATION (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PZ01-1	January 20, 2001	528.33	542.96	Operational	543.44 in January 2001	114.3	539.98	540.05	-0.07
PZ01-3	January 13, 2001	502.20	517.00	Operational	515.98 in January 2001	126.1	515.05	514.88	0.17

Drawing 32121-SH003 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

**Table SH003-3 Spring 2025 – Hwy 49:12 Little Smoky River (North Of Bridge) Vibrating Wire Piezometer Instrumentation Reading Summary**

Date Monitored: June 6, 2025

INSTRUMENT	DATE INITIALIZED	TIP DEPTH (m)	CURRENT STATUS	MAXIMUM GROUNDWATER LEVEL (mBGS)	CURRENT GROUNDWATER DEPTH (mBGS)	PREVIOUS GROUNDWATER DEPTH (mBGS)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW07-1	March 27, 2007	35.60	Operational	13.33 in June 2014	14.53	13.92	-0.61
VW07-1A	March 27, 2007	50.60	Operational	17.50 in May 2007	18.75	18.33	-0.42
VW07-1B	March 27, 2007	66.10	Damaged	8.95 in May 2007	N/A	N/A	N/A

Drawing 32121-SH003 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Note: BGS = below ground surface

## 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 (CON0022164)  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING RESULTS**

**SPRING 2025**

**APPENDIX A  
DATA PRESENTATION**

**SITE SH003: HWY 49:12, LITTLE SMOKY RIVER (NORTH OF BRIDGE)**

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING FIELD SUMMARY (SH003)  
SPRING 2025**

**Location:** Little Smoky River (N of Bridge ) (HWY 49:12 C1 0.678)  
**File Number:** 32121  
**Probe:** RST SET 5R and 8R  
**Cable:** RST SET 5R and 8R

**Readout:** RST PN C108 Unit 8,/ GK404, SN364  
**Extension:** 2.75" SI 31a 3.34"  
**Temp:** 19  
**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	Northing					A+	A-	B+	B-			
SI96-4	490629	6145958	06-Jun-25	1.18	88 to 4	30	224	-221	-855	841	5R	2.75	
SI96-5	490497	6145890	06-Jun-25	0.92	154 to 4	72	149	-127	933	-931	8R	2.75	
SI96-6	490776	6145923	06-Jun-25	1.08	100 to 4	62	106	-91	-561	564	8R	2.75	
SI31a	490736	6146016	06-Jun-25	0.80	74 to 4	245	184	-179	-154	137	5R	3.34	

### PNEUMATIC PIEZOMETER (PN) READINGS

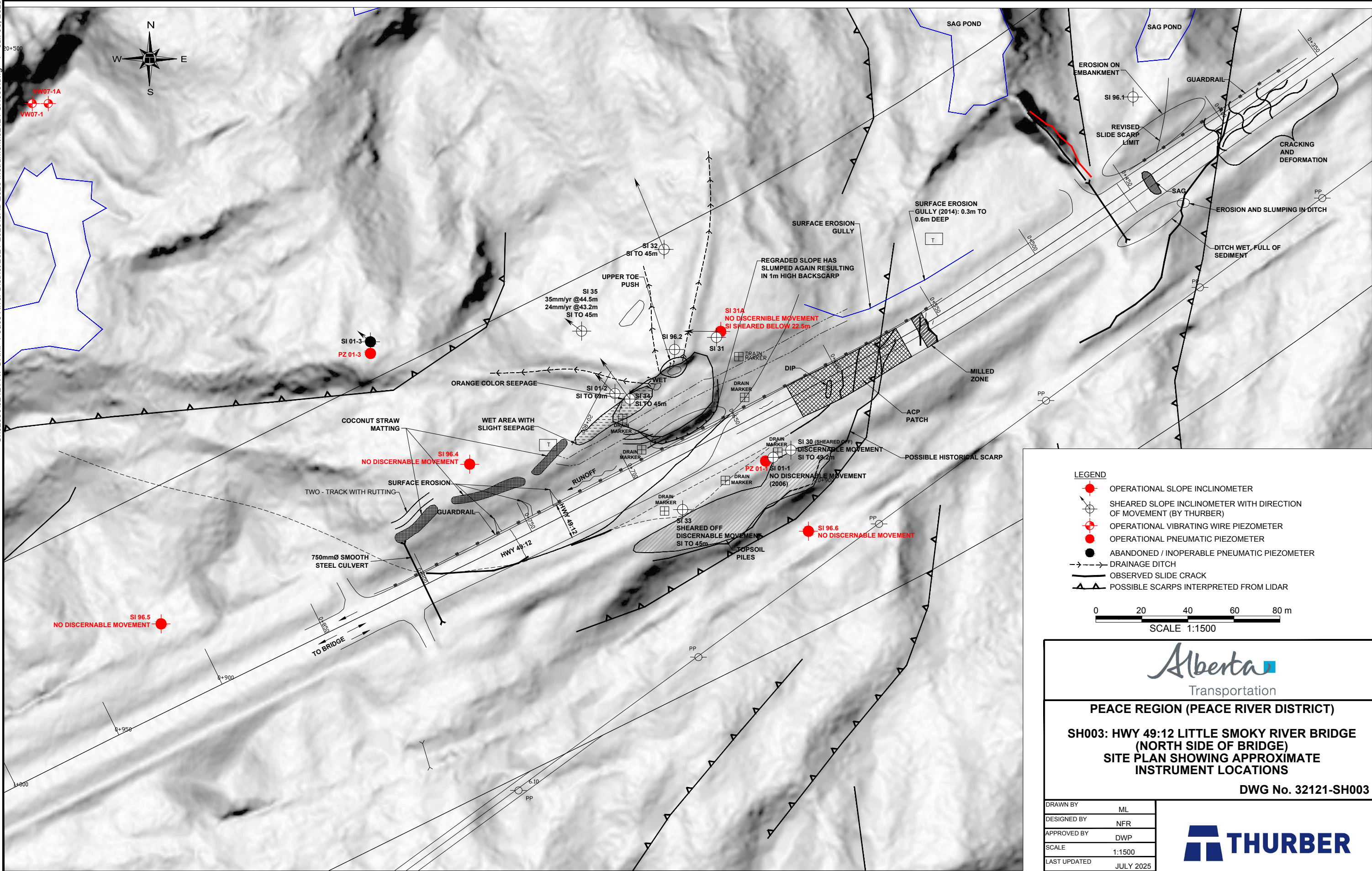
PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting	Northing			
PZ01-1	490755	6145954	06-Jun-25	114.3	26247
PZ01-3	490523	6146388	06-Jun-25	126.1	26246

VW#	GPS Location (UTM 11)		Date	Reading (B)	Temp (°C)	Identification Number
	Easting	Northing				
VW07-1	490441	6146116	06-Jun-25	6718.9	4.5	88268
VW07-1A	490448	6146116	06-Jun-25	6405.9	6.1	88905

## DAILY INSPECTOR REPORT




G:\32000\32121 AT GRMP Peace River District 2021-2025\CAD\2025 Instrument\32121 SH003.dwg - 1 - Jul. 03. 2025



LEGEND

- OPERATIONAL SLOPE INCLINOMETER
- SHEARED SLOPE INCLINOMETER WITH DIRECTION OF MOVEMENT (BY THURBER)
- OPERATIONAL VIBRATING WIRE PIEZOMETER
- OPERATIONAL PNEUMATIC PIEZOMETER
- ABANDONED / INOPERABLE PNEUMATIC PIEZOMETER
- DRAINAGE DITCH
- OBSERVED SLIDE CRACK
- POSSIBLE SCARPS INTERPRETED FROM LIDAR

0 20 40 60 80 m  
SCALE 1:1500



PEACE REGION (PEACE RIVER DISTRICT)

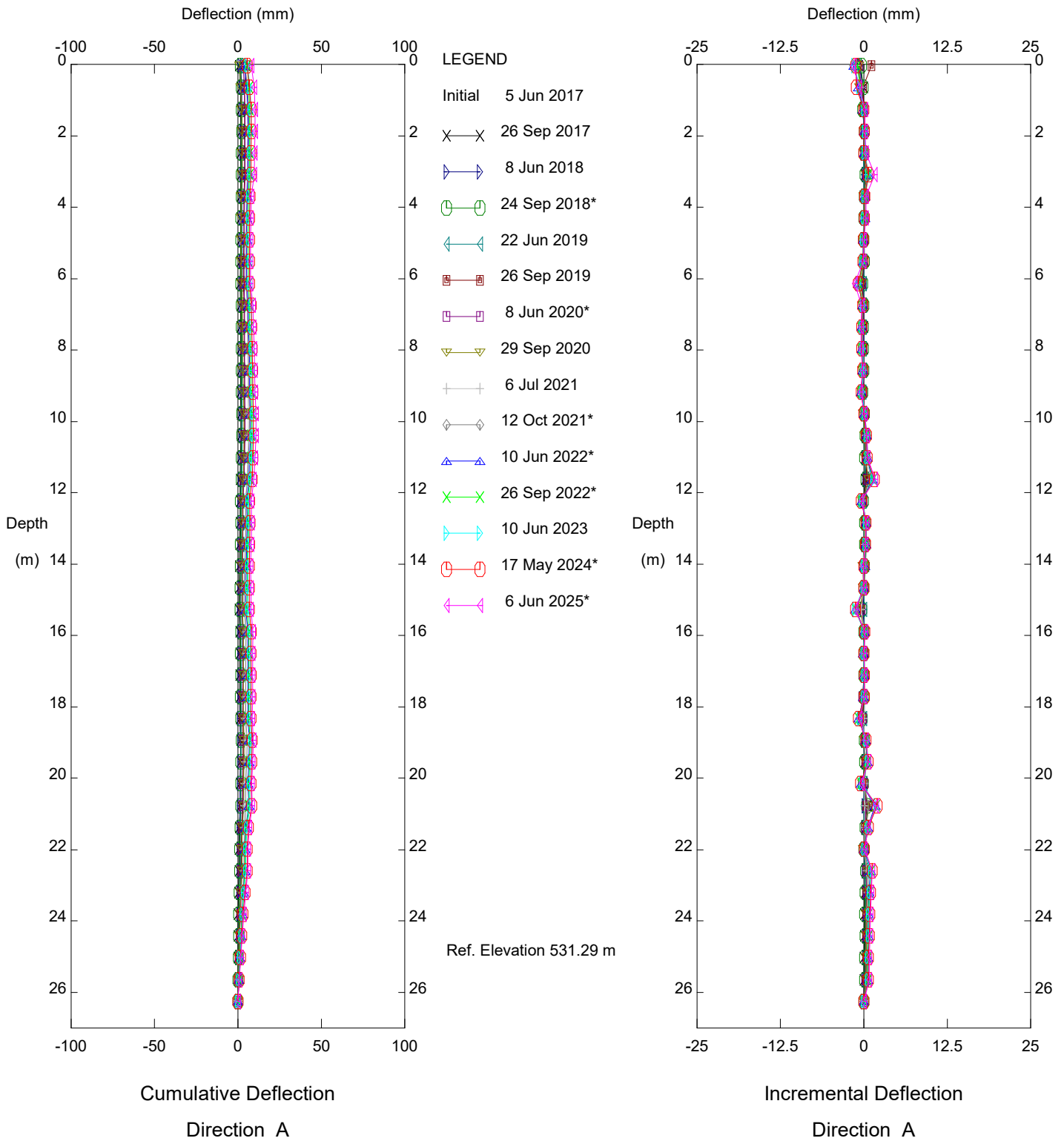
SH003: HWY 49:12 LITTLE SMOKY RIVER BRIDGE  
(NORTH SIDE OF BRIDGE)  
SITE PLAN SHOWING APPROXIMATE  
INSTRUMENT LOCATIONS

DWG No. 32121-SH003

DRAWN BY	ML
DESIGNED BY	NFR
APPROVED BY	DWP
SCALE	1:1500
LAST UPDATED	JULY 2025
FILE No.	32121



# Thurber Engineering Ltd.

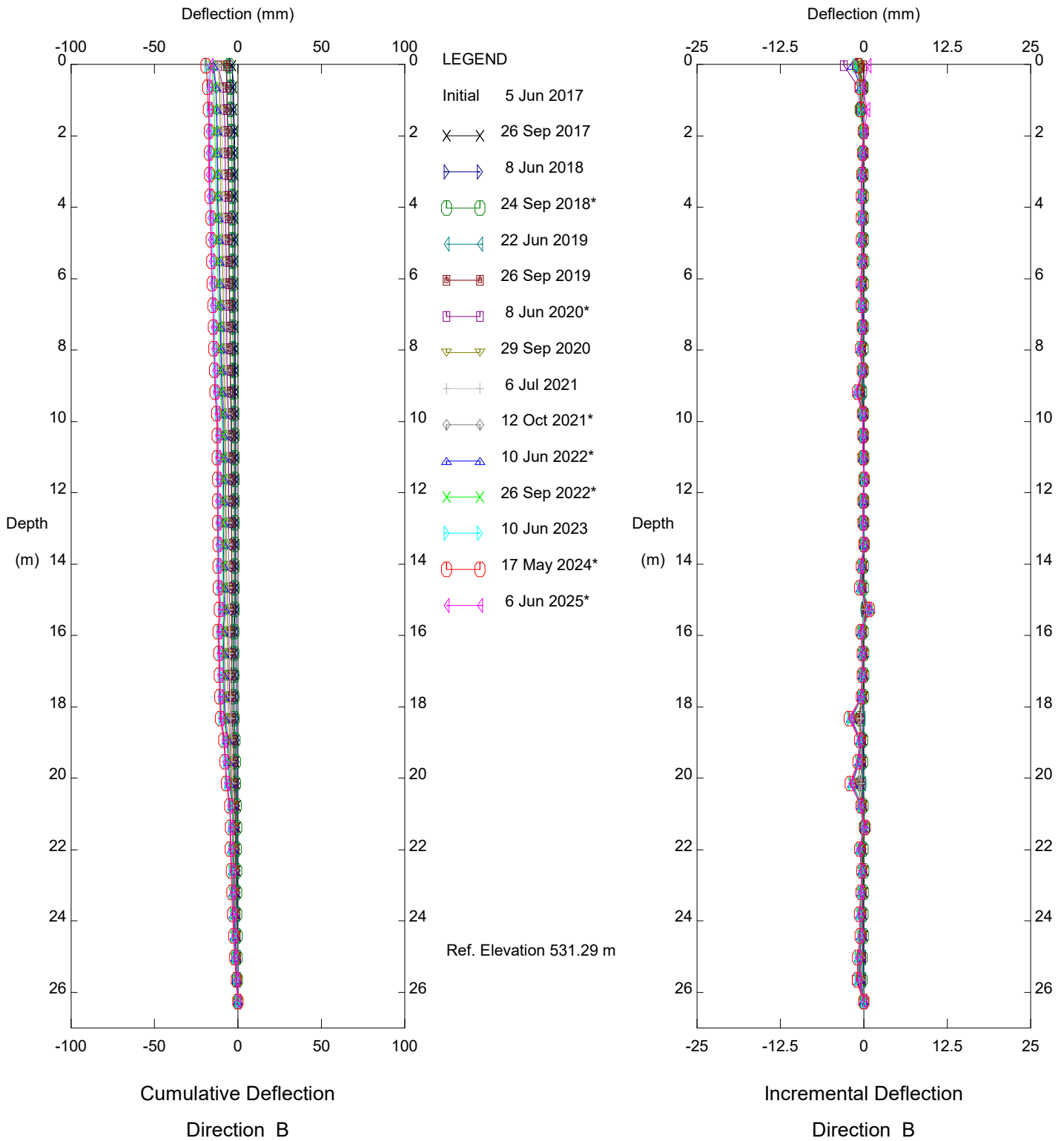


SH003, North of Little Smoky Bridge, Inclinometer SI 96-4

Alberta Transportation

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

# Thurber Engineering Ltd.

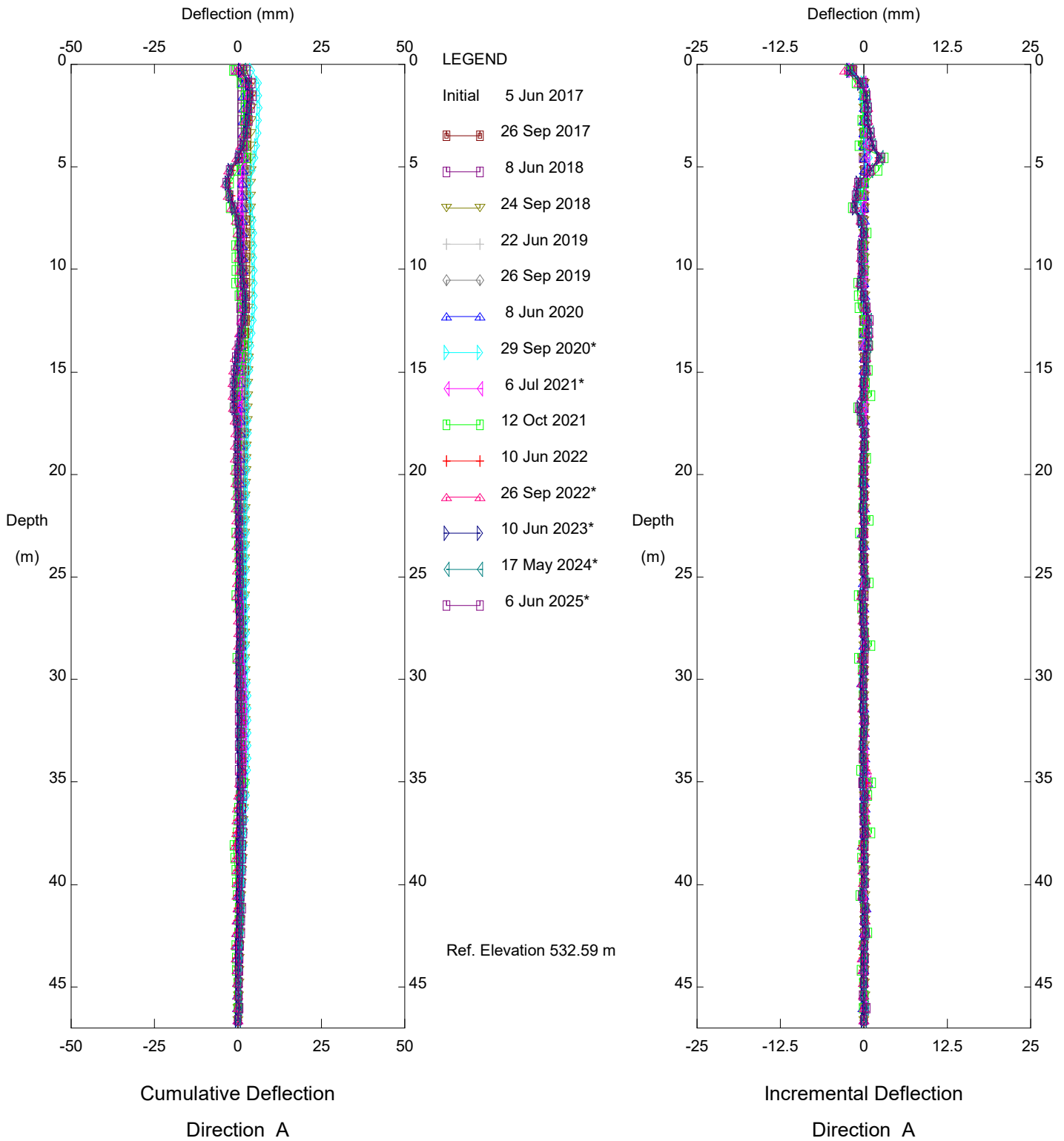


SH003, North of Little Smoky Bridge, Inclinometer SI 96-4

Alberta Transportation

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

# Thurber Engineering Ltd.



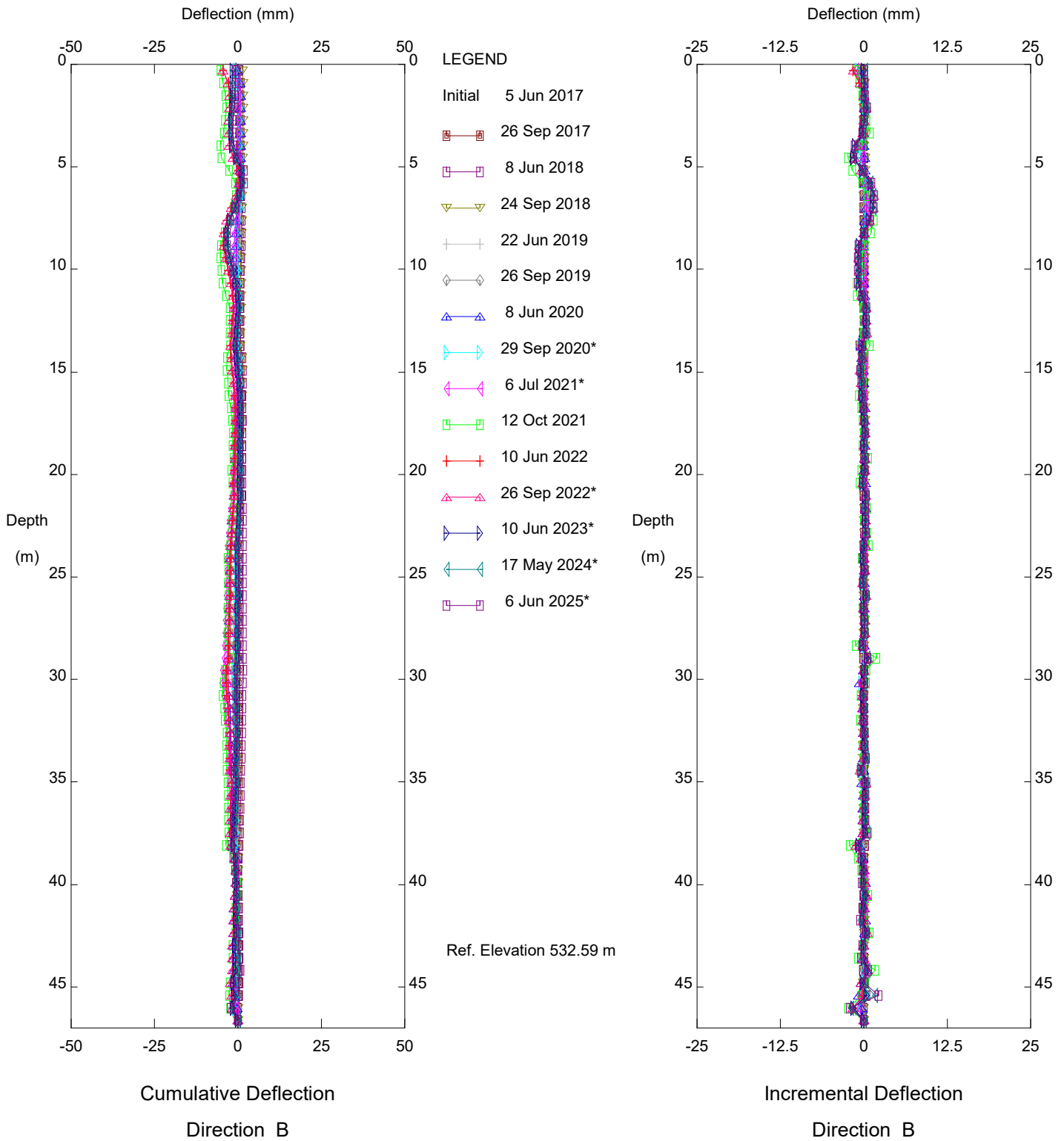
SH003, North of Little Smoky Bridge, Inclinometer SI 96-5

Alberta Transportation

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



# Thurber Engineering Ltd.

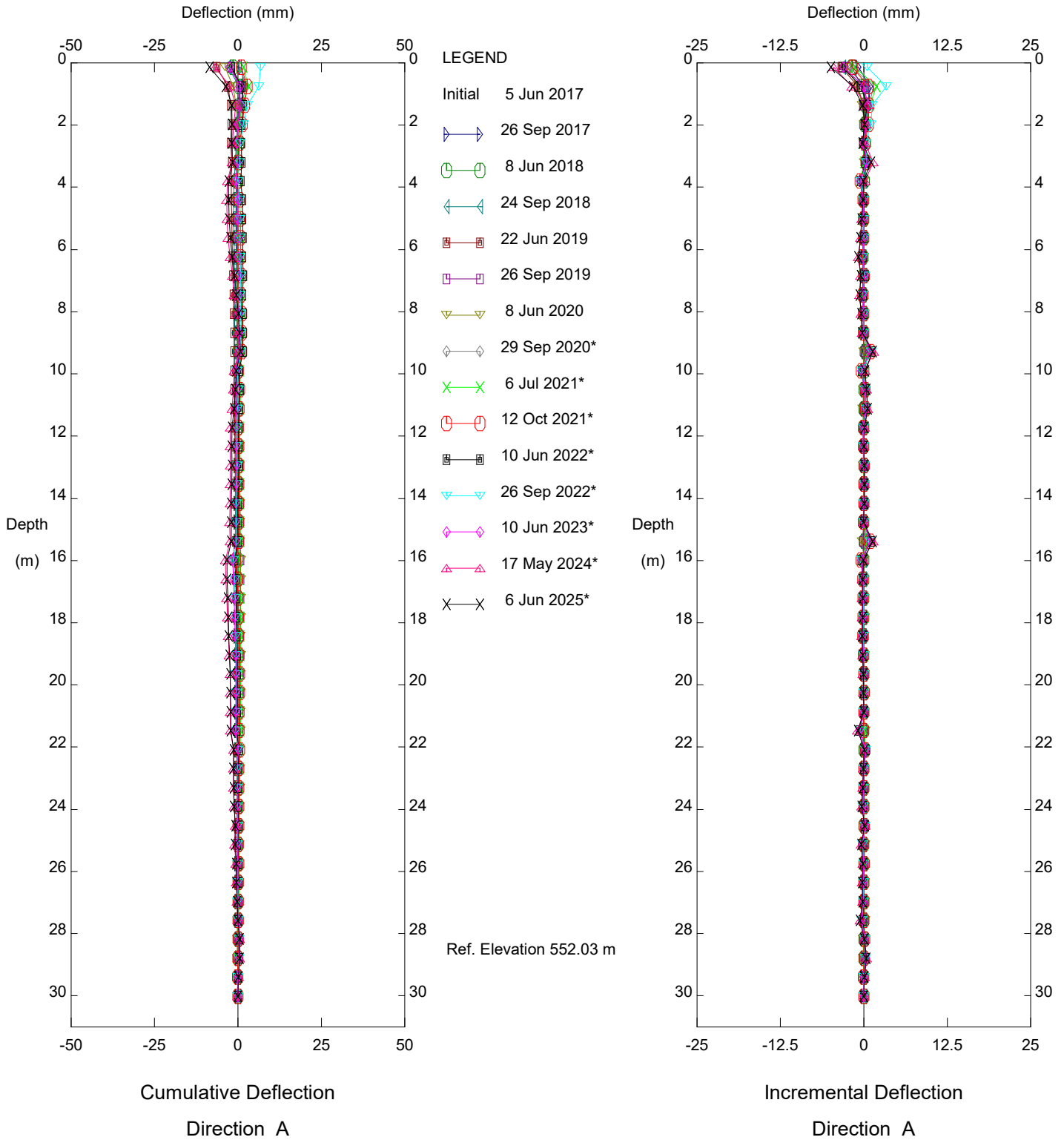


SH003, North of Little Smoky Bridge, Inclinometer SI 96-5

Alberta Transportation

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

# Thurber Engineering Ltd.

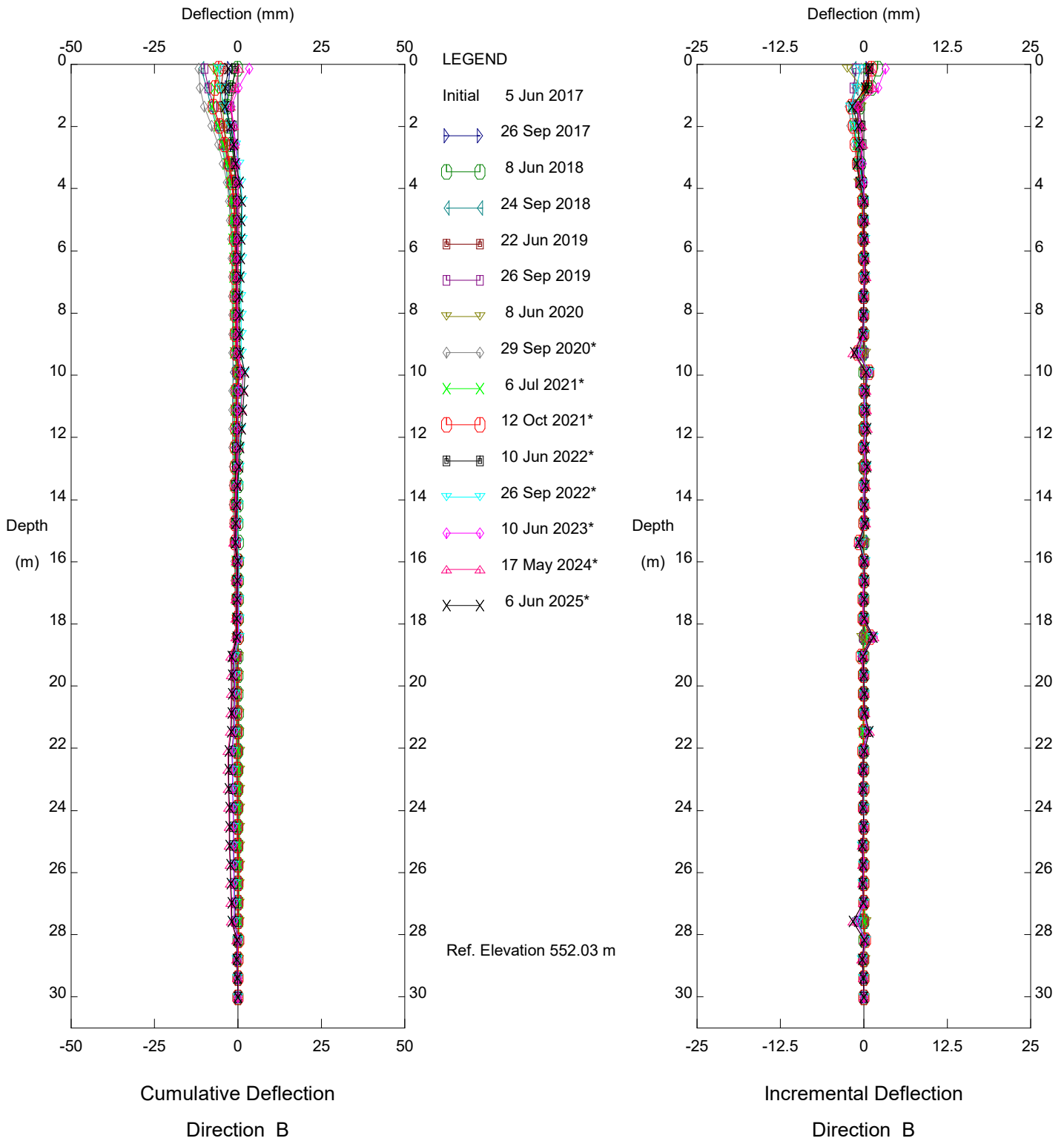


SH003, North of Little Smoky Bridge, Inclinometer SI 96-6

Alberta Transportation

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

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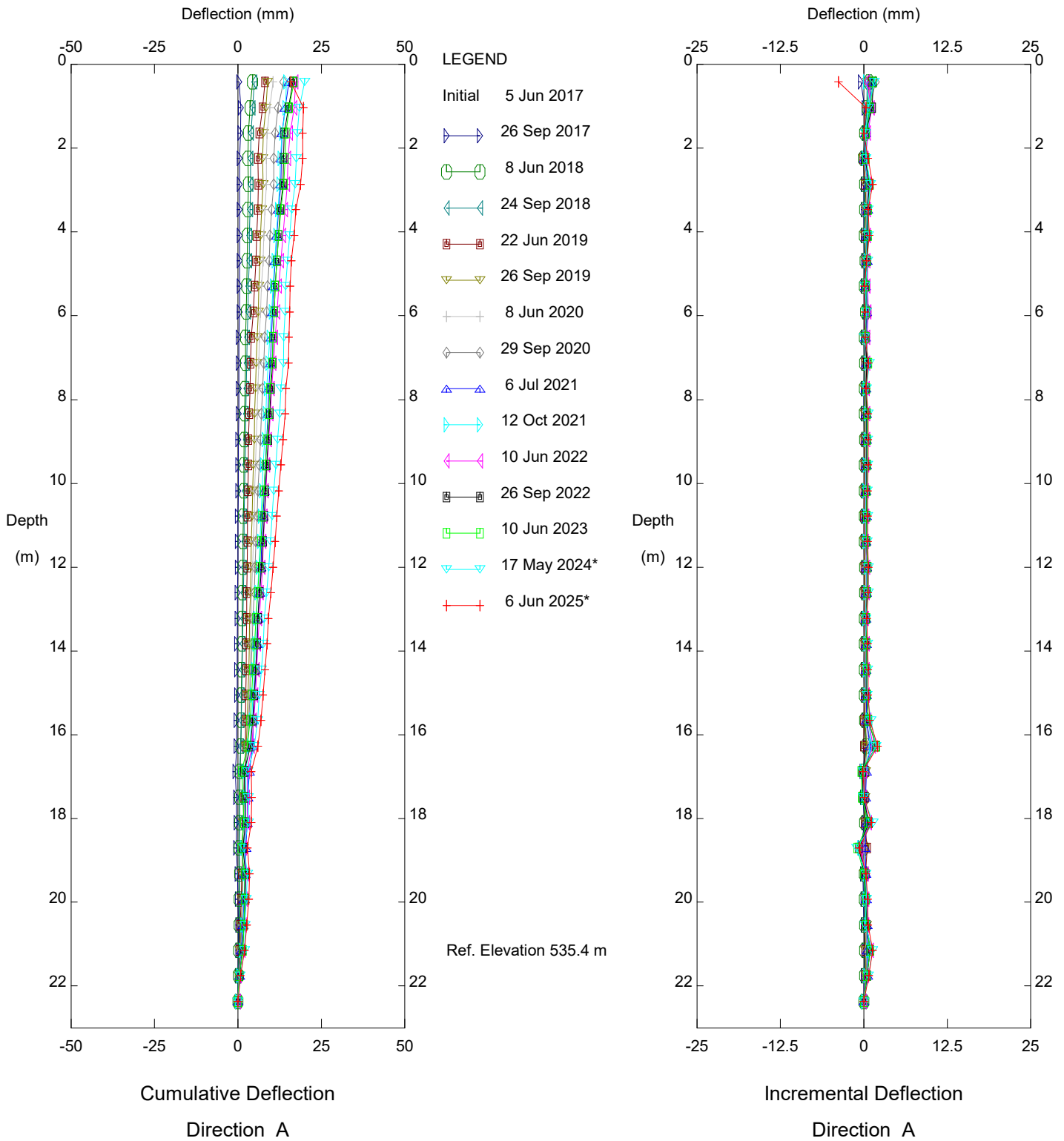


SH003, North of Little Smoky Bridge, Inclinator SI 96-6

Alberta Transportation

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

# Thurber Engineering Ltd.



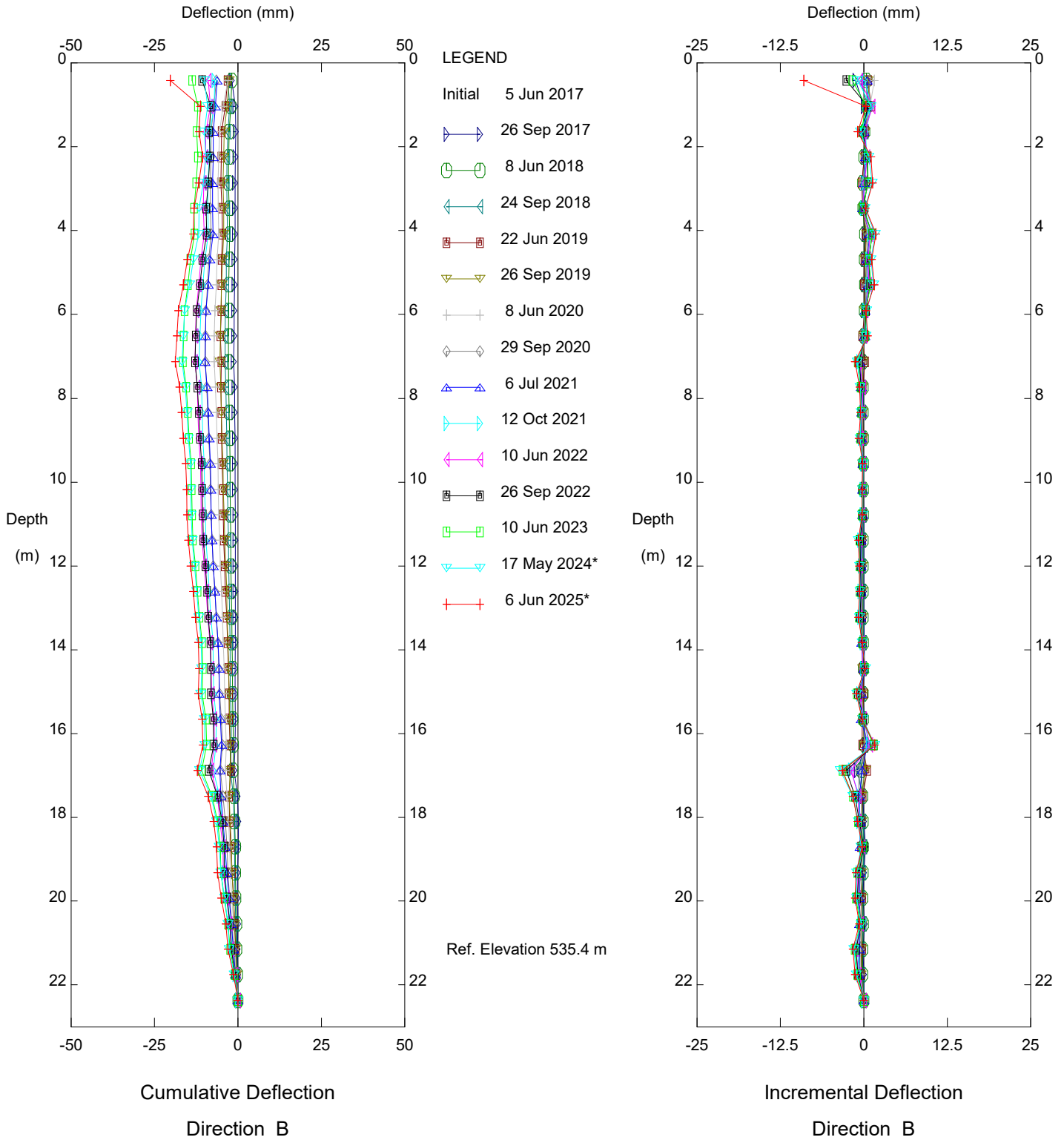
SH003, North of Little Smoky Bridge, Inclinometer SI31a

Alberta Transportation

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



# Thurber Engineering Ltd.

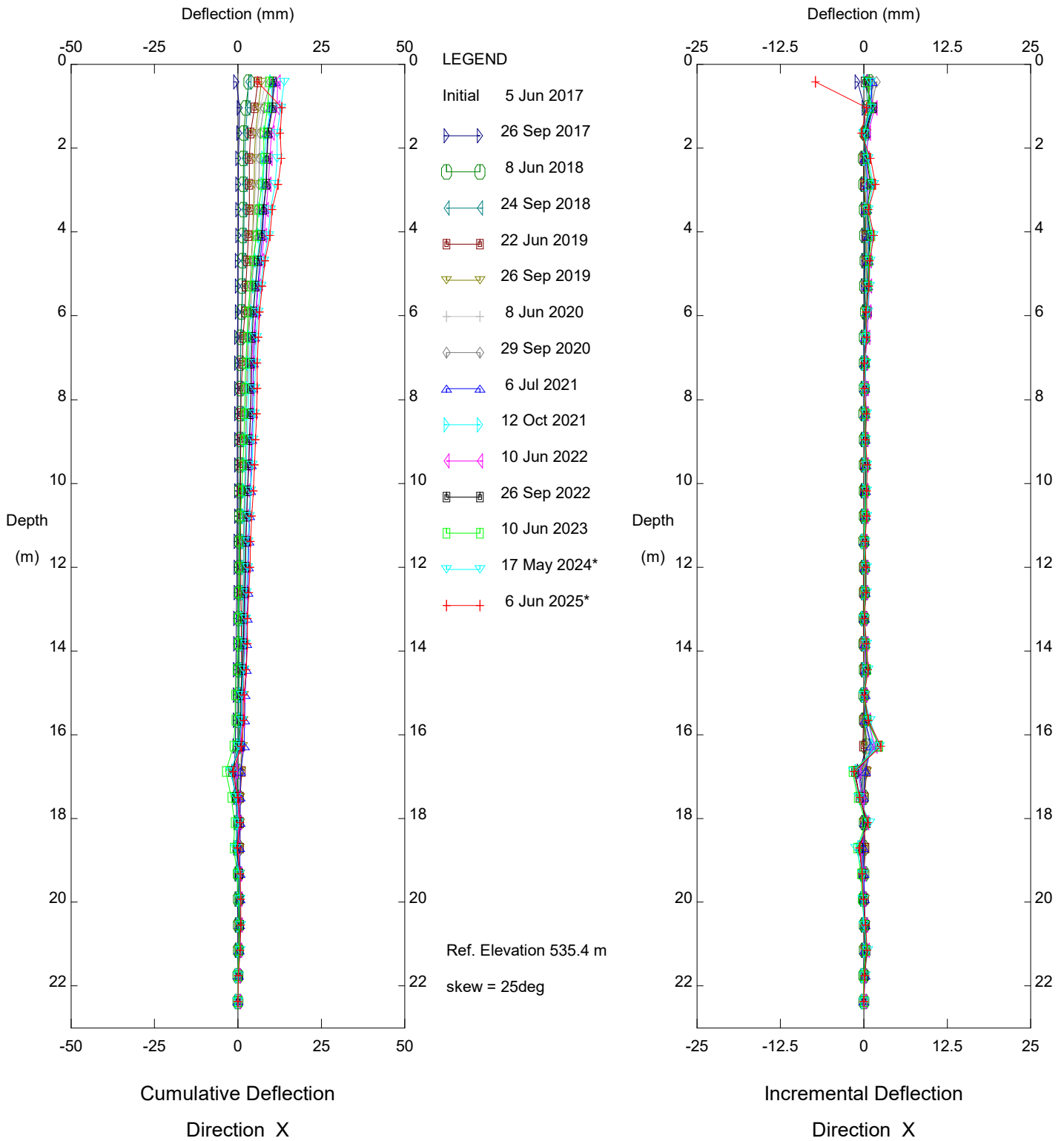


SH003, North of Little Smoky Bridge, Inclinometer SI31a

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

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SH003, North of Little Smoky Bridge, Inclinometer SI31a

Alberta Transportation

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

**FIGURE SH003-1**  
**HWY 49:12 LITTLE SMOKY RIVER (NORTH OF BRIDGE)**  
**PNEUMATIC PIEZOMETER READINGS**

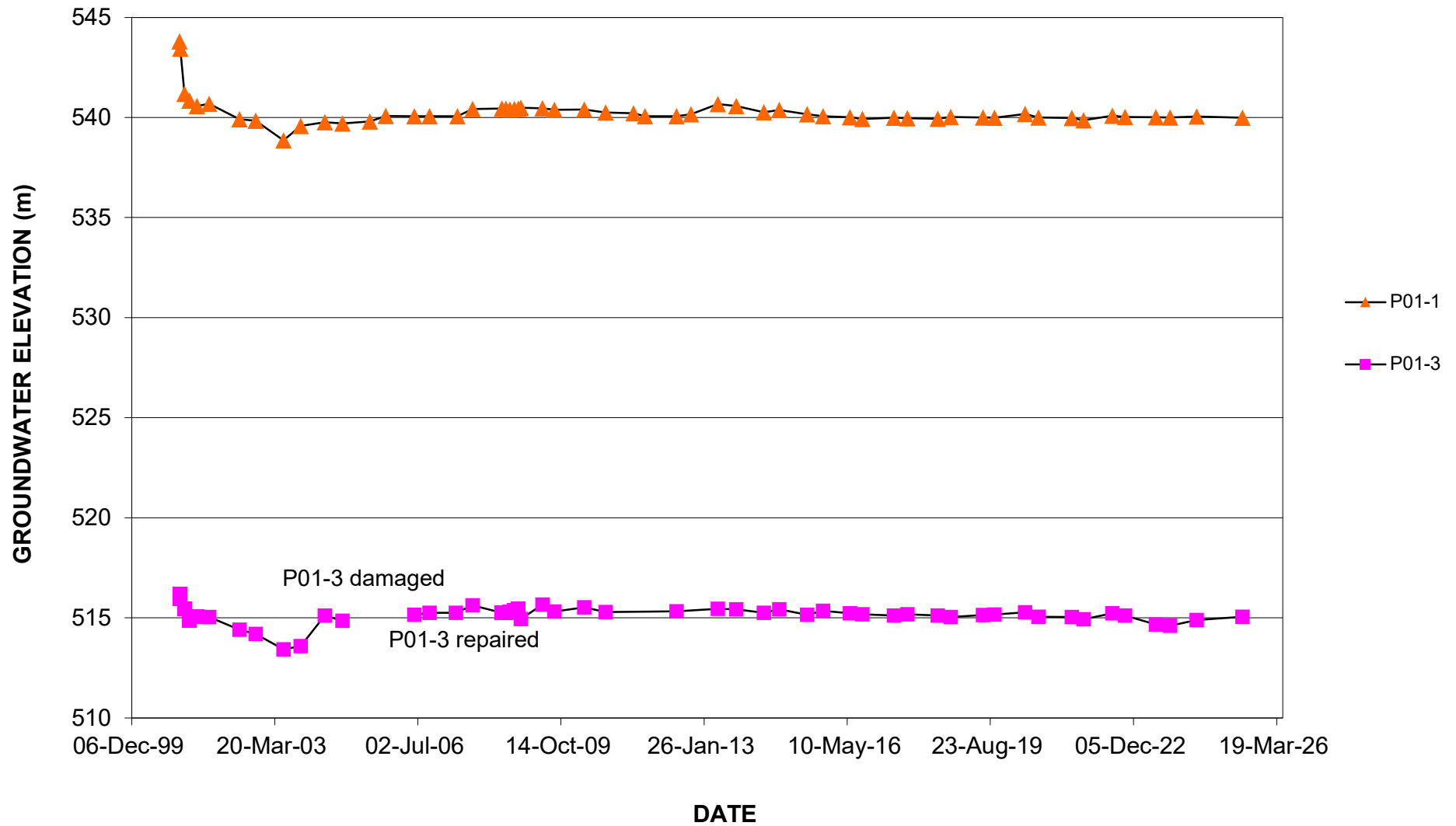


FIGURE SH003-2  
HWY 49:12 LITTLE SMOKY RIVER (NORTH OF BRIDGE)  
PNEUMATIC PIEZOMETER READINGS

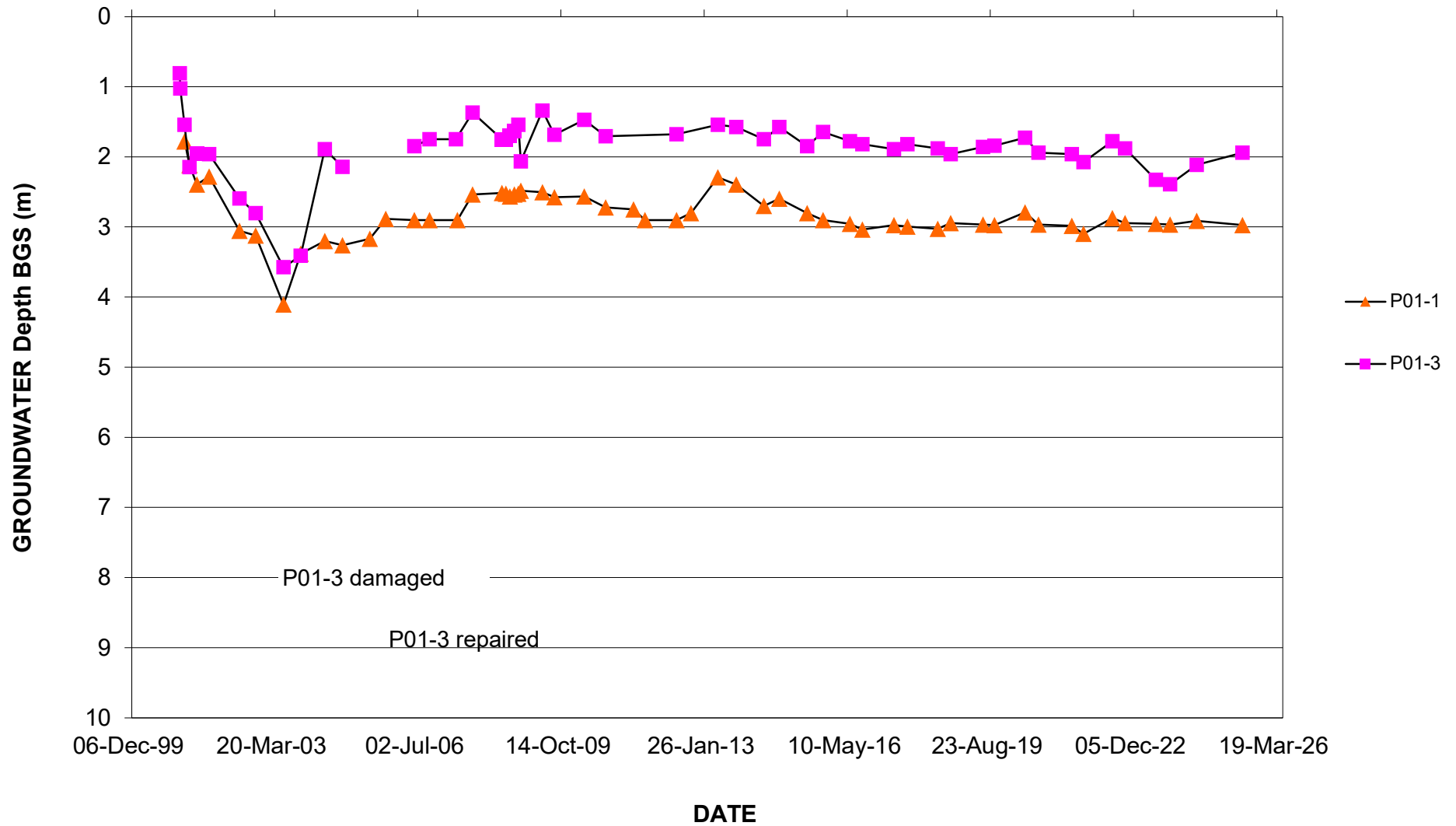


FIGURE SH003-3  
HWY 49:12 LITTLE SMOKY RIVER (NORTH OF BRIDGE)  
VIBRATING WIRE PIEZOMETER READINGS

