ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP NORTH CENTRAL (ATHABASCA AND FORT McMURRAY DISTRICTS) INSTRUMENTATION MONITORING - SPRING 2025

Site Number	Location	Name	Hwy	km
NC103 (NC024-3)	HWY 41:23 C1 7.89	Kehiwin Lake	41:23	km 7.8
Legal Description: 9-25-58-7 W4		**UTM Co-ordinates**		
		12U E 506737.94	N 5988417.59	

Current Monitoring:	24-May-2025	**Previous Monitoring**	11-Sep-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): SI10-1, SI10-3, SI11-1 to 4	**Pneumatic Piezometers (PN):** PN10-1 and PN10 3	**Vibration Wire Piezometers (VW):** N/A	**Standpipe Piezometers (SP):** PB10-1, PB10-2, and PB10-4
Load Cell (LC): VC1706 to VC1710, and VC1712 to VC1715	**Strain Gauges:** N/A	**SAAs:** N/A	**Others:**

Readout Equipment Used			
Slope Inclinometers: Two RST Digital Inclinometer probes with 2 ft. wheelbases and RST Pocket PC readouts	**Pneumatic Piezometers:** RST C108 pneumatic piezometer reader	**Vibration Wire Piezometers:**	**Standpipe Piezometers:** DGSI dipmeter
Load Cell: VW2106 RST readout unit	**Strain Gauges:**	**SAAs:**	**Others:**
Notes: - The single remaining vibrating wire in Load Cell VC1715 has shown continued dropping readings since 2018 and is considered likely to be malfunctioning.			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	SI10-1, installed in the east highway ditch, showed no discernible movement since the fall of 2024 readings. SI10-3, installed at the bottom of the slope downslope of the pile wall location, showed no discernible movement since the fall of 2024 readings. SI11-1 through SI11-4 showed no discernible movement since the fall of 2024 readings. The cumulative movements in the SIs installed in the piles were as follows: • SI11-1 = 2.1 mm pile head movement over 0.7 to 14.8 m depth • SI11-2 = 0.4 mm pile head movement over 0.7 to 14.7 m depth in the upslope direction. • SI11-3 = -8.7 mm pile head movement over 0.5 to 14.6 m depth in the upslope direction. • SI11-4 = -9.9 mm pile head movement over 0.8 m to 14.9 m depth in the upslope direction.

	Pneumatic piezometers PN10-1 and PN10-3 showed increases in groundwater levels of 0.08 m and 1.49 m, respectively, since the fall of 2024 readings. Standpipe piezometer PB10-1 showed a decrease in groundwater level of 0.20 m since the fall of 2024 readings. Standpipe piezometers PB10-2 and PB10-4 showed increases in groundwater level of 0.26 m and 0.73 m, respectively, since the fall of 2024 readings. Load cells VC1706, VC1707, VC1708, VC1712, and VC1713 showed increases in the measured load of 2.45 kN, 0.91 kN, 1.52 kN, 4.42 kN, and 2.15 kN, respectively since the fall of 2024 readings. Load cells VC1709 and VC1714 showed decreases in measured loads by 5.89 kN and 1.64 kN, respectively. The operational load cells have shown decreases in measured loads, when compared to the lock off load, ranging from 10.0 percent to 38.6 percent. However, the load cells with the largest variations in load values have lost one or more vibrating wire channels over several reading cycles. In addition, the reductions in the loads have not been consistent with the observed movement patterns of the walls, based on the slope inclinometer readings. If significant reductions in anchor loads occur in the future in response to the wall deflection towards west, the anchors will need to be restressed to maintain the wall's lateral deflection within the design limit.
Future Work:	The instruments should be read again in the fall of 2025. Load cell VC1715 has shown a trend of gradually increasing loads for several reading cycles, indicating the load cell may be malfunctioning. Load cell VC1715 should be removed from future reading cycles.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	• Table NC103-1 Spring 2025 – HWY 41:23 Kehiwin Lake (7.8), Slope Inclinometer Instrumentation Reading Summary • Table NC103-2 Spring 2025 – HWY 41:23 Kehiwin Lake (7.8), Pneumatic Piezometer Instrumentation Reading Summary • Table NC103-3 Spring 2025 – HWY 41:23 Kehiwin Lake (7.8), Standpipe Piezometer Instrumentation Reading Summary • Table NC103-4 Spring 2025 – HWY 41:23 Kehiwin Lake (7.8), Vibrating Wire Load Cells Instrumentation Reading Summary • Statement of Limitations and Conditions • APPENDIX A – NC103-1 Spring 2025 o Field Inspector's report o Site Plan Showing Approximate Instrument Locations (Drawing No. 32122-NC103) o SI Reading Plots o Figure NC103-1 (Piezometric Depths) o Figure NC103-2 (Load Cell Readings

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

June 20, 2025

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE:
RM APEGA ID #: 91085
DATE: June 20, 2025
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Lucas Green, P.Eng.
Geotechnical Engineer

Table NC103-1: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 7.8) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: May 24, 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)
SI10-1	Oct. 12, 2010	8.5 over 4.4 m to 7.5 m depth in 308° direction	7.6 on Oct. 23, 2010	Operational	September 11, 2024	No discernible movement	N/A	0.3
SI10-3	Oct. 12, 2010	25.6 over 9.9 m to 12.3 m depth in 291° direction	26.5 on Oct. 23, 2010	Operational	September 11, 2024	No discernible movement	N/A	-5.6
SI11-1 (Pile 9)	May 12, 2011	2.1 over 0.7 m to 14.8 m depth in 308° direction	87.6 on June 21, 2011	Operational	September 11, 2024	No discernible movement	N/A	-5.6
SI11-2 (Pile 27)	May 12, 2011	-0.4 over 0.7 m to 14.7 m depth in 306° direction	146.6 on May 25, 2011	Operational	September 11, 2024	No discernible movement	N/A	-3.7
SI11-3 (Pile 45)	May 25, 2011	-8.7 over 0.5 m to 14.6 m depth in 308° direction	14.2 on June 21, 2011	Operational	September 11, 2024	No discernible movement	N/A	-4.9
SI11-4 (Pile 60)	May 25, 2011	-9.9 over 0.8 m to 14.9 m depth in 349° direction	48.5 on June 21, 2011	Operational	September 11, 2024	No discernible movement	N/A	-5.9

Drawing 32122-NC103 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table NC103-2: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 7.8) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: May 24, 2025

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED GROUNDWATER LEVEL BGS (m)	MEASURED PORE PRESSURE (kPa)	CURRENT GROUNDWATER LEVEL BGS (m)	PREVIOUS GROUNDWATER LEVEL BGS (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PN10-1	October 5, 2010	6.55	-	Active	0.26 on May 15, 2014	49.6	1.50	1.58	0.08
PN10-3	October 1, 2010	12.27	-	Active	0.75 on September 8, 2014	105.9	1.48	2.97	1.49

Drawing 32122-NC103 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

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Table NC103-3: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 7.8) Standpipe Piezometer Instrumentation Reading Summary

Date Monitored: May 24, 2025

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED GROUNDWATER LEVEL BGS (m)	CURRENT GROUNDWATER DEPTH BGS (m)	PREVIOUS GROUNDWATER DEPTH BGS (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PB10-1	Oct. 6, 2010	15.0	-	Operational	3.59 on June 23, 2021	4.88	4.68	-0.20
PB10-2	Oct. 6, 2010	15.0	-	Operational	2.45 on May 12, 2011	2.38	2.64	0.26
PB10-4	Oct. 6, 2010	18.6	-	Operational	1.03 on May 15, 2014	3.15	3.88	0.73

Drawing 32122-NC103 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

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Table NC103-4: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 7.8) Vibrating Wire Load Cells Instrumentation Reading Summary

Date Monitored: May 24, 2025

SERIAL #	ANCHOR NUMBER	DESIGN LOCK OFF LOAD (kN)	DATE INSTALLED	MEASURED LOAD (kN)	PREVIOUS READING (kN)	CHANGE IN LOAD SINCE PREVIOUS READING (kN)
VC1706	G60L	290	July 27, 2011	210.51*	208.06*	2.45
VC1707	G35L	290	July 23, 2011	261.06**	260.15**	0.91
VC1708	G8U	240	July 23, 2011	215.65***	214.13***	1.52
VC1709	G45L	290	July 25, 2011	190.78**	196.67**	-5.89
VC1710	*G8L*	*240*	*July 23, 2011*	*No Reading*	*No Reading*	*N/A*
VC1711	*G45U*	*290*	*July 25, 2011*	*No Reading*	*No Reading*	*N/A*
VC1712	G60U	290	July 27, 2011	251.89*	247.47*	4.42
VC1713	G27U	290	July 23, 2011	178.10*	175.95*	2.15
VC1714	G17U	290	July 23, 2011	235.19*	236.83*	-1.64
VC1715	G27L	290	July 23, 2011	Malfunctioning	Malfunctioning	*N/A*

Drawing 32122-NC103 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Note: * This reading is an average of two readings as only two of the vibrating wires are operational.
** This reading is based on one vibrating wire channel as only one of the vibrating wires is operational.
*** This reading is based on the average of three vibrating wires as three of the vibrating wires are operational.

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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.

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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.

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ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022163)
NORTH CENTRAL (ATHABASCA AND FORT McMURRAY DISTRICTS)
INSTRUMENTATION MONITORING RESULTS

SPRING 2025

APPENDIX A
DATA PRESENTATION AND SITE PLANS

SITE NC103

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS
INSTRUMENTATION MONITORING FIELD SUMMARY (NC103)
SPRING 2025

Location: Kehiwin Lake (HWY41:23 C1 7.894)	**Readout:** RST PN C109, Unit 8
File Number: 32122	**Casing Diameter:** 2.75"
Probe: RST SET 5R and 8R	**Temp (deg C):** 16
Cable: RST SET 5R and 8R	**Read by:** NKR/GE

SLOPE INCLINOMETER (SI) READINGS

SI#	GPS Location (UTM 12)		Date	Stickup m	Depth from top of **CASING** (ft)	Azimuth of A+ Groove	Current Bottom Depth Readings				Probe/ Reel #	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-		
SI10-1	506737.94	5988417.59	24-May-25	0.77	62 to 2	295	215	-204	1136	-1133	8R/8R	
SI10-3	506684.84	5988455.34	24-May-25	0.77	64 to 4	283	70	-54	537	-537	8R/8R	
SI11-1	506689.52	5988389.70	24-May-25	0.79	50 to 4	310	-478	486	-239	225	5R/5R	
SI11-2	506711.75	5988413.10	24-May-25	0.84	50 to 4	283	143	-137	295	-300	5R/5R	Pile Wall
SI11-3	506718.26	5988440.93	24-May-25	0.99	50 to 4	295	-210	218	187	-190	5R/5R	Pile Wall
SI11-4	506745.73	5988463.22	24-May-25	0.69	50 to 4	5572.1	-228	229	-135	132	5R/5R	Pile Wall

PNEUMATIC PIEZOMETER (PN) READINGS

PN #	GPS Location		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN10-1	Attached to SI10-1		24-May-25	49.6	33672
PN10-3	Attached to SI10-3		24-May-25	105.9	33668

STANDPIPE PIEZOMETER (SP) READINGS

PB#	GPS Location (UTM 12)		Date	Stick-up (m)	Water level below top of pipe (m)	Total length of pipe (m)	Poor Boy Probe Depth below top of pipe to bottom of probe (m)			
	Easting (m)	Northing (m)					4'	3'	2'	1'
PB10-1	506746.42	5988436.52	24-May-25	0.76	5.64	15.83	-	-	-	-
PB10-2	506723.56	5988401.99	24-May-25	0.76	3.14	15.76	-	-	-	-
PB10-4	506690.18	5988388.59	24-May-25	0.71	3.86	19.30	-	-	-	-

INSPECTOR REPORT

Only water levels recorded in Poor boys.

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS
VIBRATING WIRE LOAD CELL FIELD SUMMARY (NC103)
SPRING 2025

Location: Kehiwin Lake (HWY41:23 C1 7.894)	**Readout:** RST VW2106 Unit 1
File Number: 32122	**Read by:** NKR

3 WIRES VIBRATING WIRE LOAD CELL (VC) READINGS

VC#	GPS Location (UTM 12)		Date	Reading (B Units)	Comments
	Easting (m)	Northing (m)			Temperature degree C
VC1706	506744.42	5988463.22	24-May-25	6639.2/6162.4	5.3
VC1707	506720.90	5988428.69	24-May-25	6209.2	4.9
VC1708	506690.18	5988388.59	24-May-25	6432.3/6856.3/6110.0	6.4
VC1709	506728.08	5988440.94	24-May-25	6455	5.5
VC1712	506744.42	5988463.22	24-May-25	6465.0/5924.0	7.5
VC1713	506711.09	5988415.32	24-May-25	6784.9/6330.7	6.6
VC1714	506700.64	5988401.96	24-May-25	6674.2/5925.1	6.7
VC1715	506711.09	5988415.32	24-May-25	5368	4.7

INSPECTOR REPORT

* Only 1 VW is working
** Only 2 VWs are working
Note: 3 SENSORS ON VW MONITOR SETTING
VW1714. only 1 sensor working.

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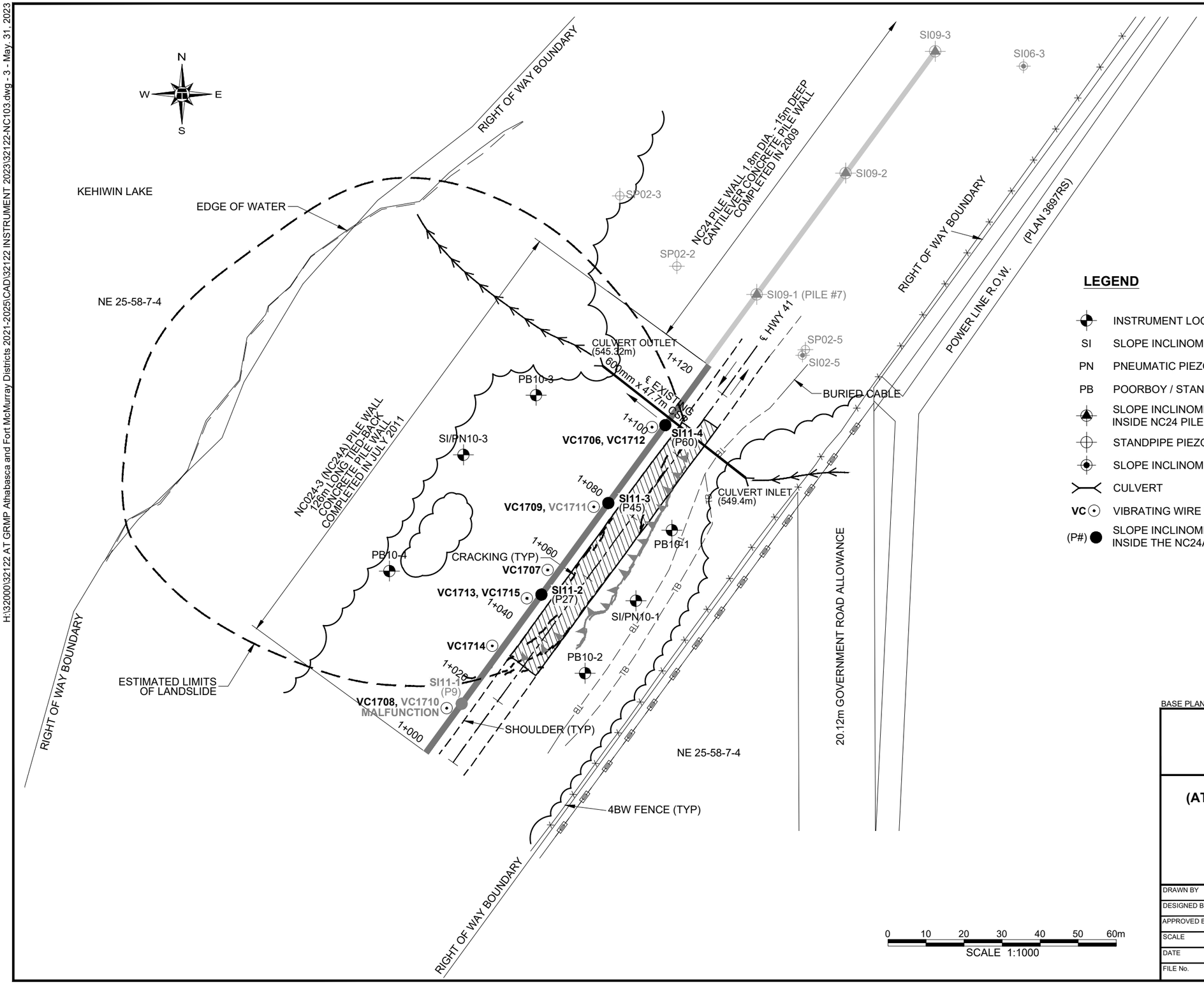

ANCHOR	VIBRATING WIRE LOAD CELL
G8U	VC1708
G8L	VC1710
G17U	VC1714
G27U	VC1713
G27L	VC1715
GL35	VC1707
G45U	VC1711
G45L	VC1709
G60U	VC1712
G60L	VC1706

LEGEND

- INSTRUMENT LOCATION
- SI — SLOPE INCLINOMETER
- PN — PNEUMATIC PIEZOMETER
- PB — POORBOY / STANDPIPE
- SLOPE INCLINOMETER INSTALLED INSIDE NC24 PILE WALL
- STANDPIPE PIEZOMETER (EXISTING)
- SLOPE INCLINOMETER (EXISTING)
- CULVERT
- VC — VIBRATING WIRE LOAD CELL
- (P#) — SLOPE INCLINOMETER INSTALLED INSIDE THE NC24A PILE WALL (PILE #)
- ACP PATCH
- FENCE LINE
- TB — TELUS LINE
- BUSH LINE
- CRACK
- POWER POLE
- GULLY
- LANDSLIDE REFLECTIVE CRACK

BASE PLAN PROVIDED BY WSP

Alberta

NORTH CENTRAL
(ATHABASCA AND FORT MCMURRAY DISTRICTS)

NC103: HWY41:23 KEHIWIN LAKE (km 7.8)
SITE PLAN SHOWING APPROXIMATE INSTRUMENT LOCATIONS

DWG No. 32122-NC103

DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	TSA
SCALE	1:1000
DATE	MAY 2023
FILE No.	32122

THURBER ENGINEERING LTD.

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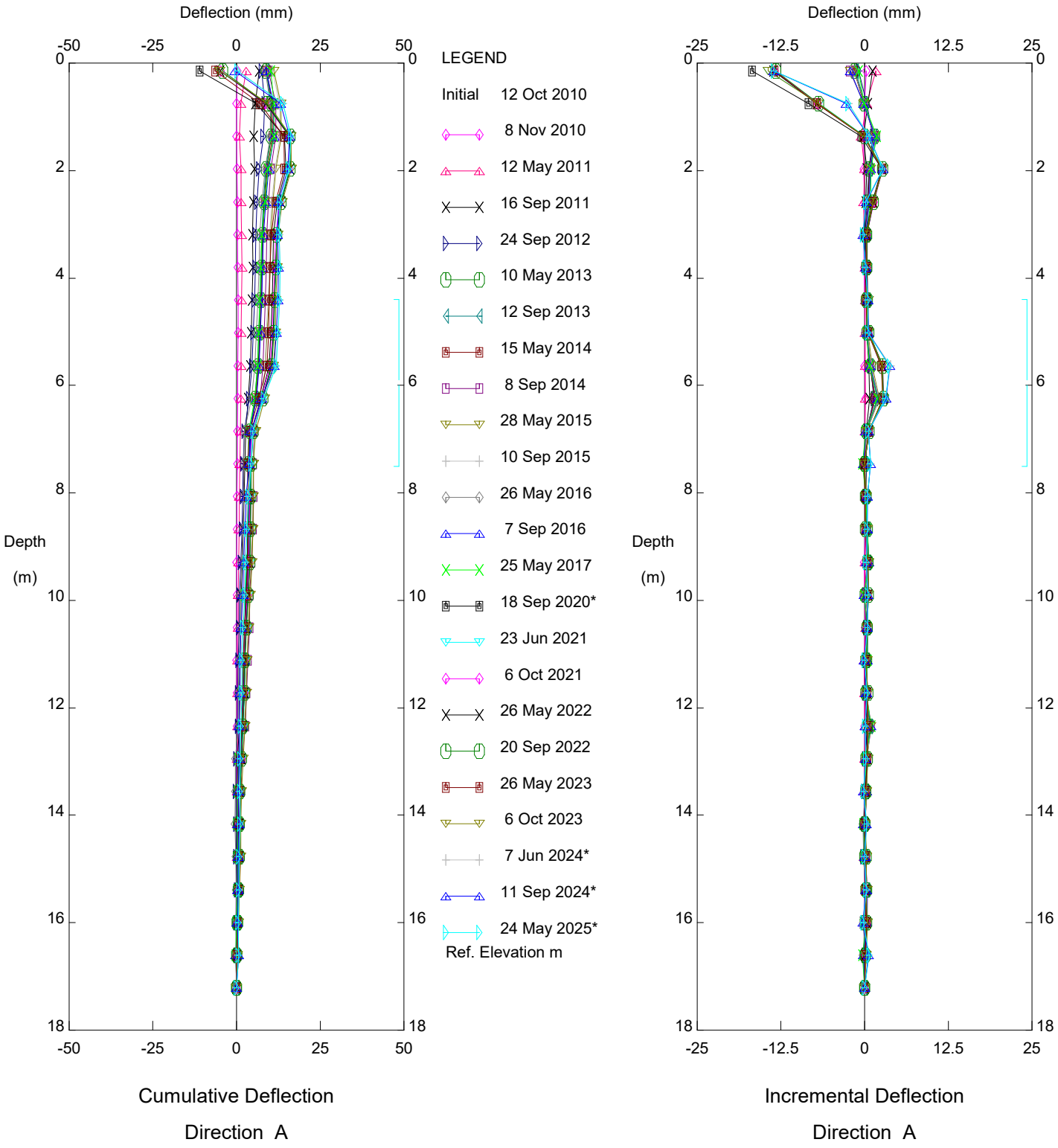

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI10-1

Alberta Transportation

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

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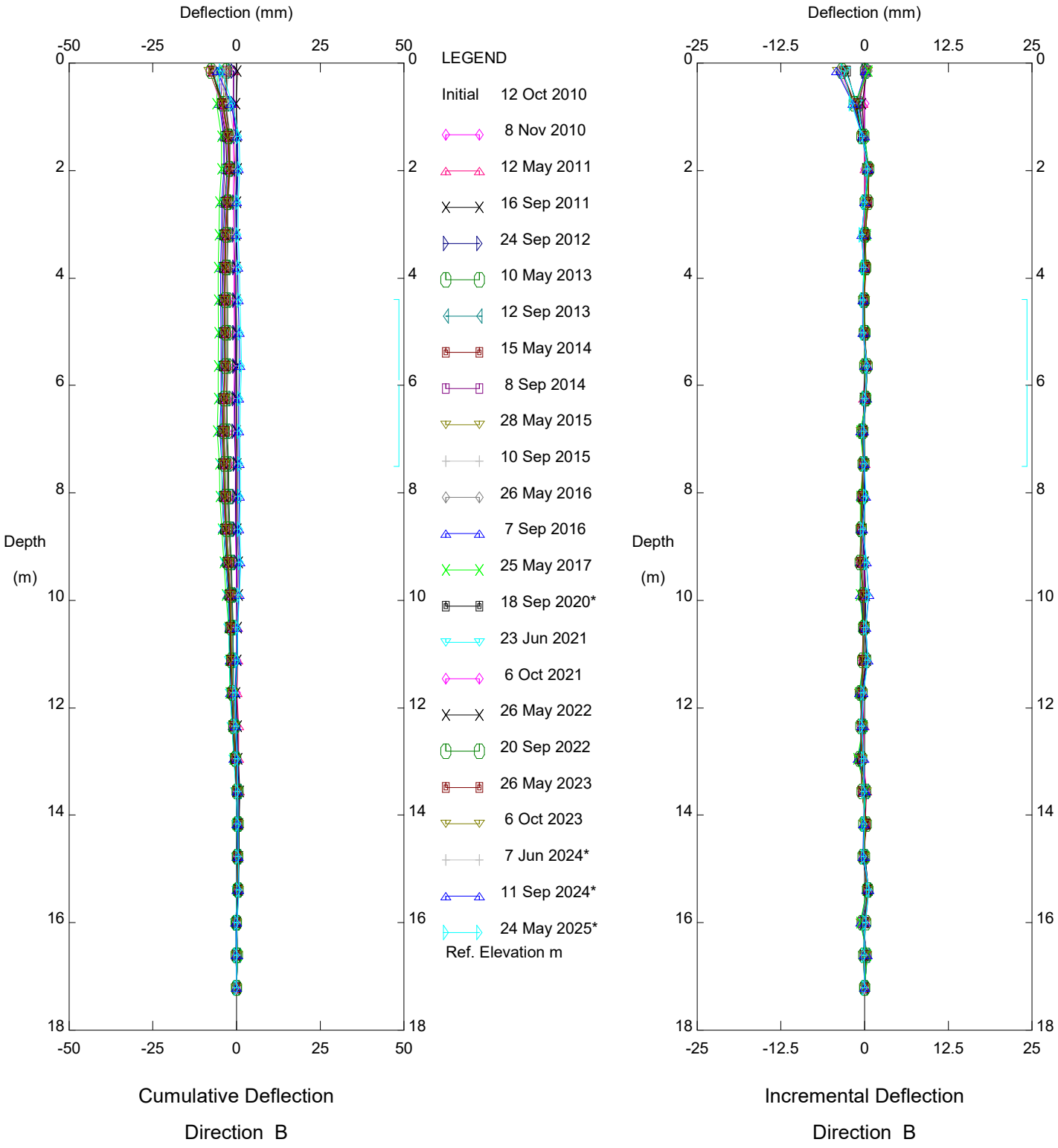

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI10-1

Alberta Transportation

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

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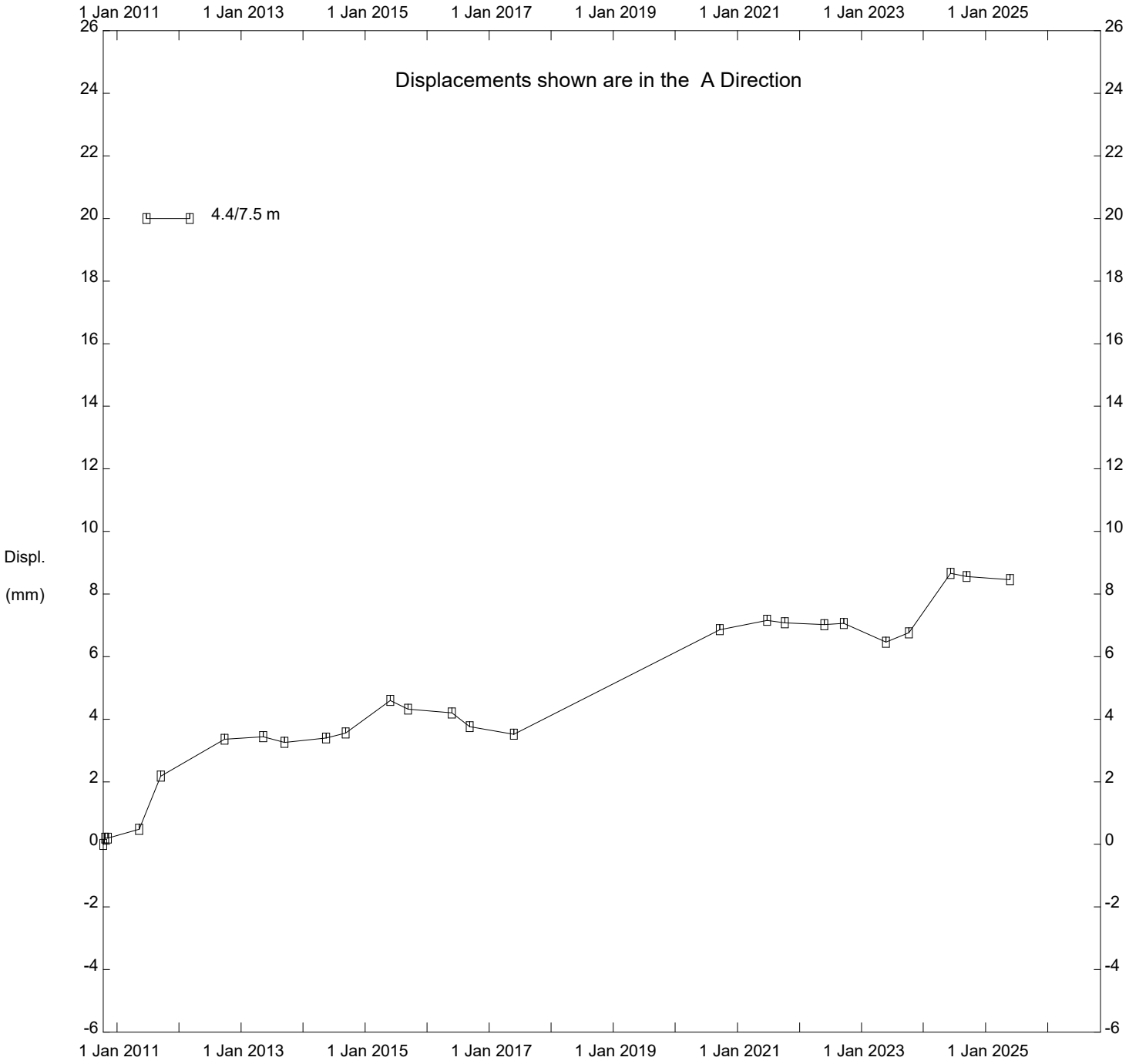

Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI10-1

Alberta Transportation

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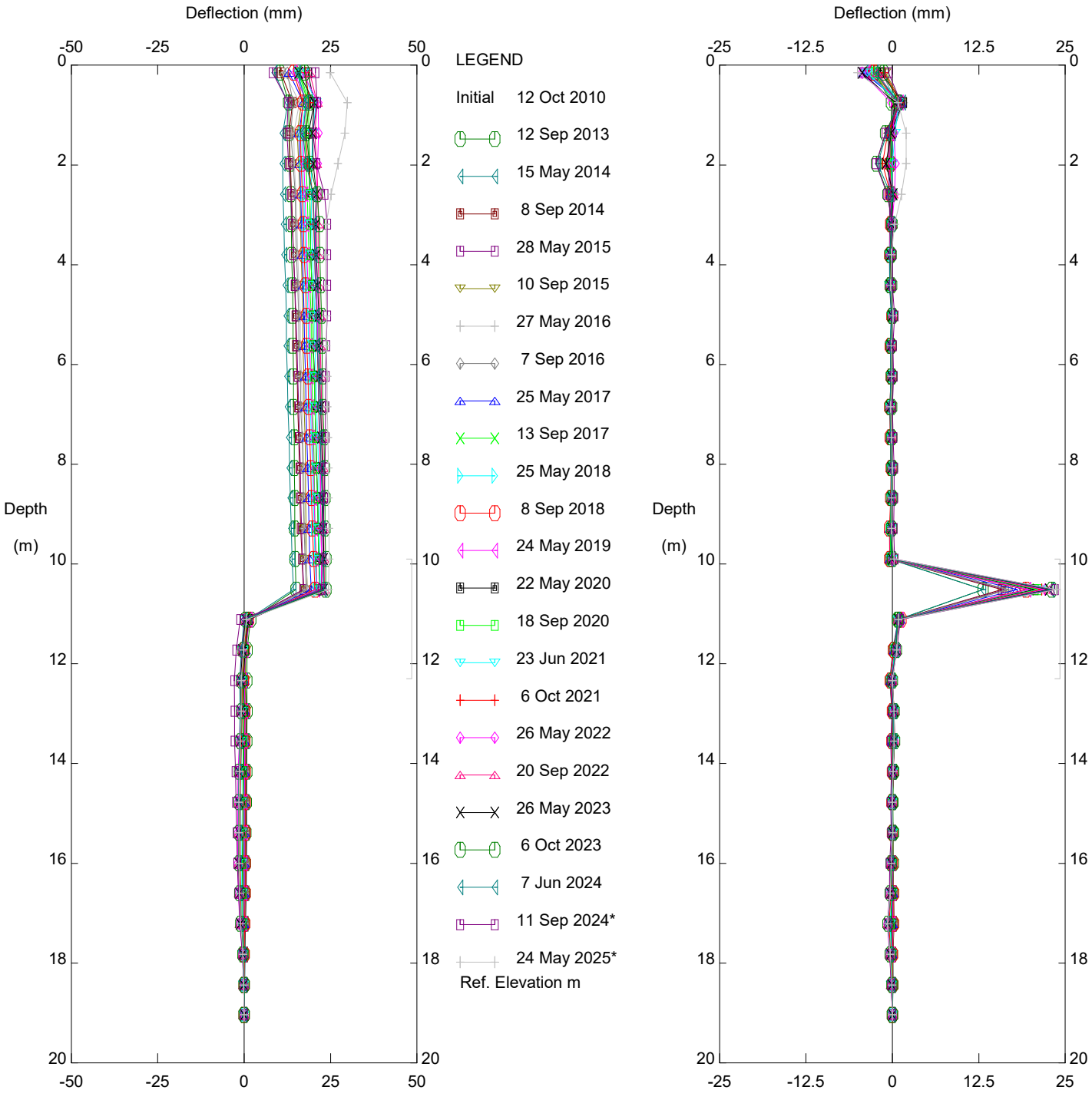

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI10-3

Alberta Transportation

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

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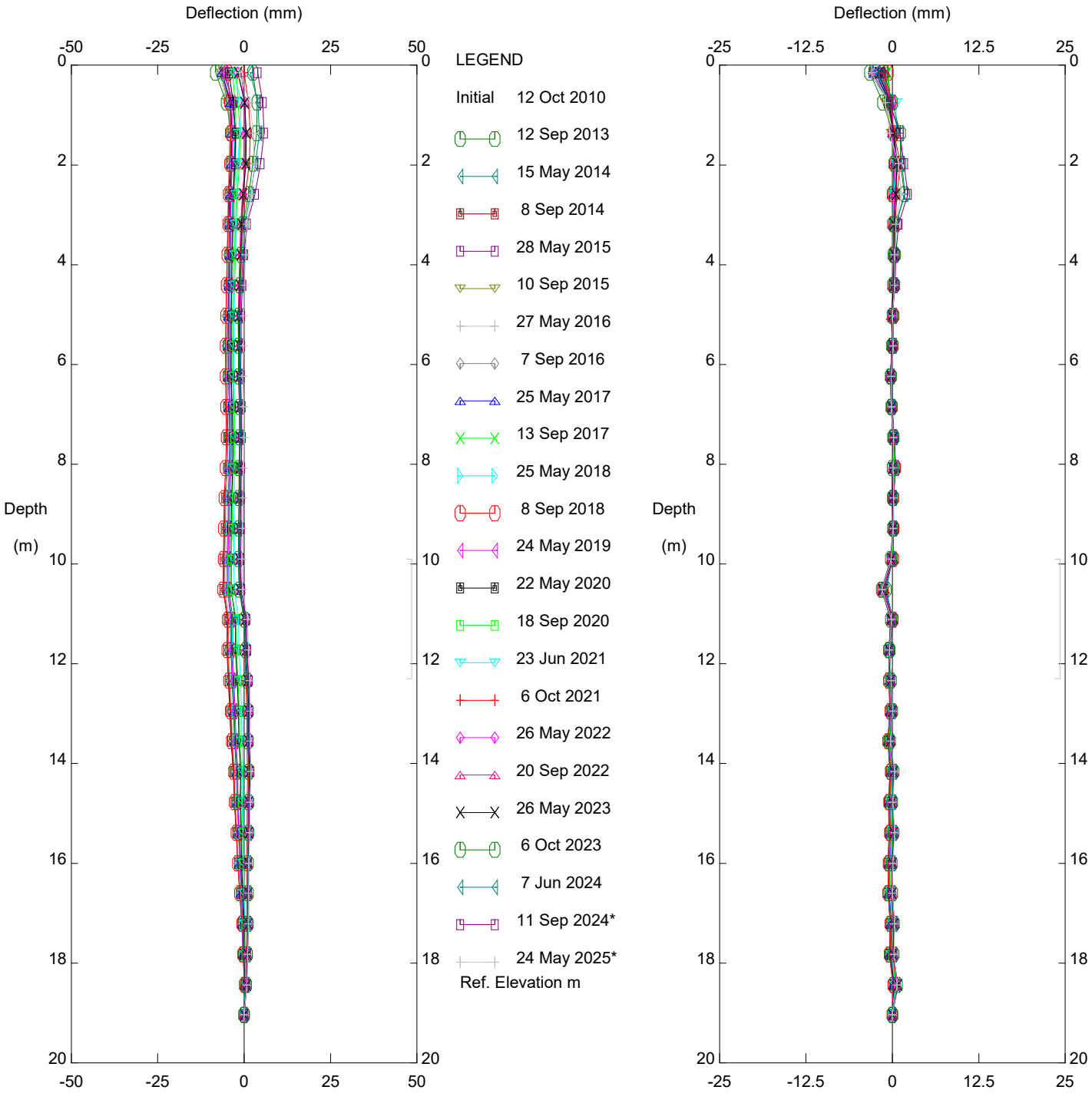
Thurber Engineering Ltd.



Cumulative Deflection

Direction B

Incremental Deflection

Direction B

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI10-3

Alberta Transportation

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

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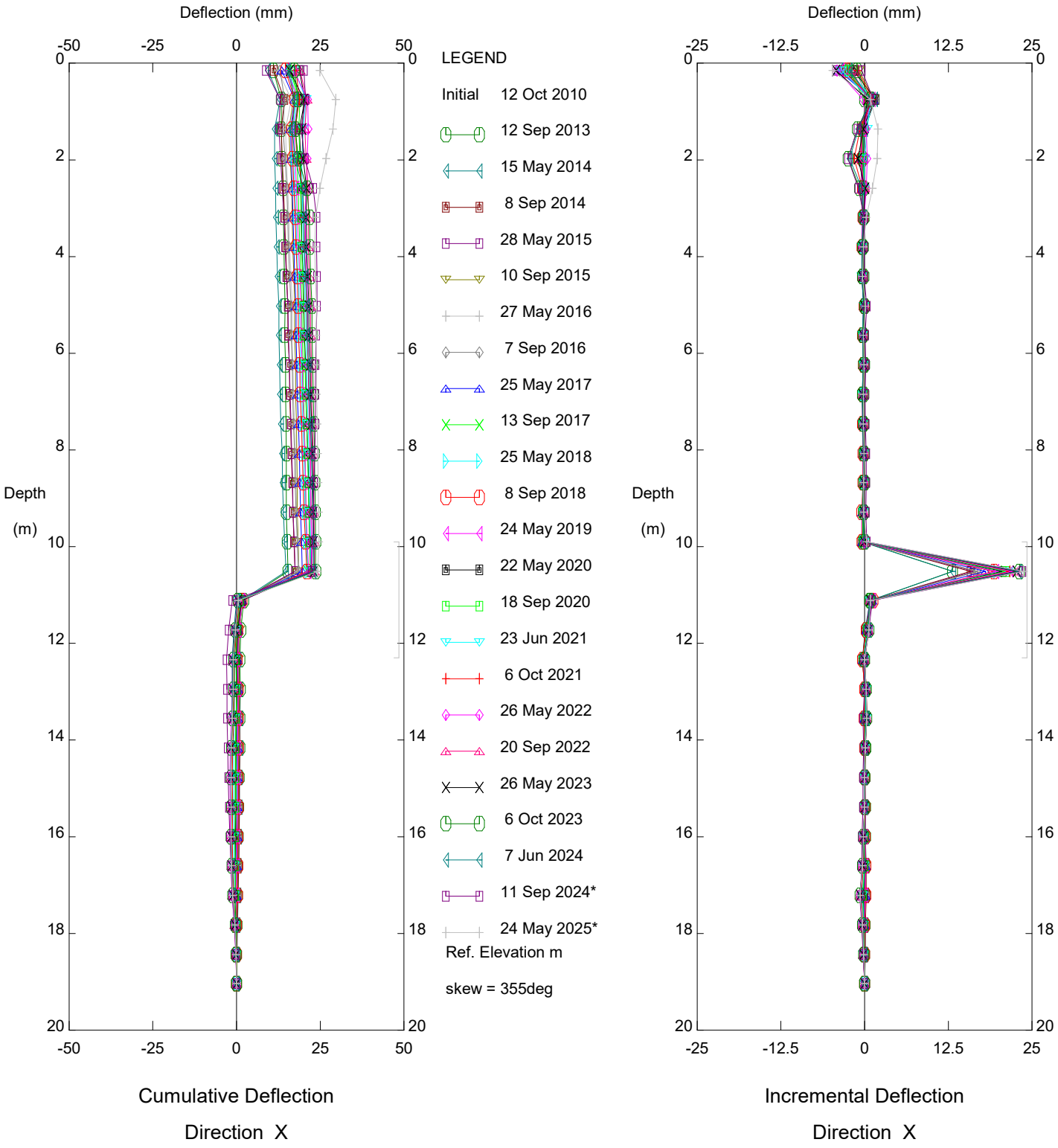


Cumulative Deflection

Direction X

Incremental Deflection

Direction X

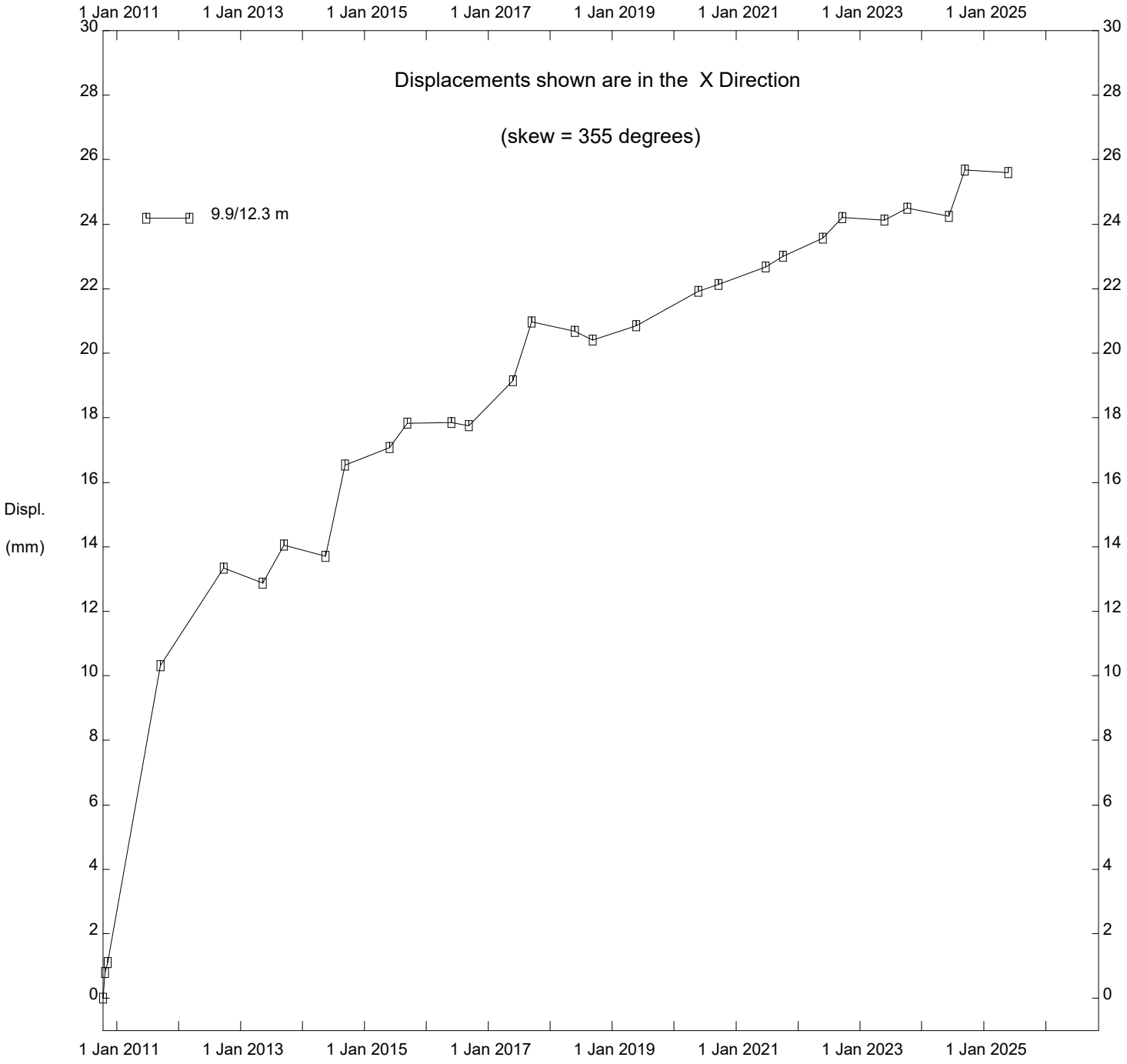
Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI10-3

Alberta Transportation

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

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI10-3 (1).gtl

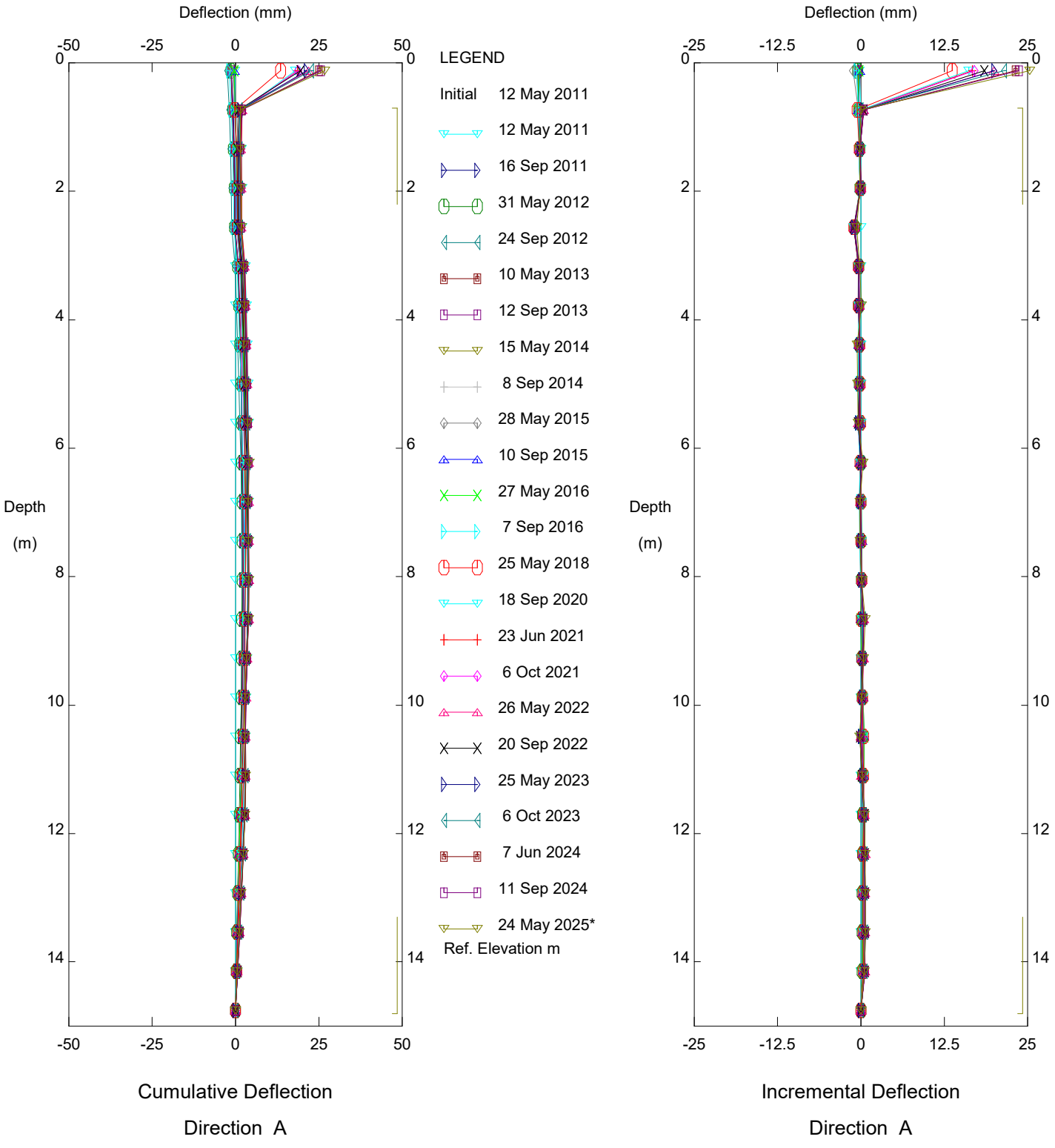
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI10-3

Alberta Transportation

Thurber Engineering Ltd.



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

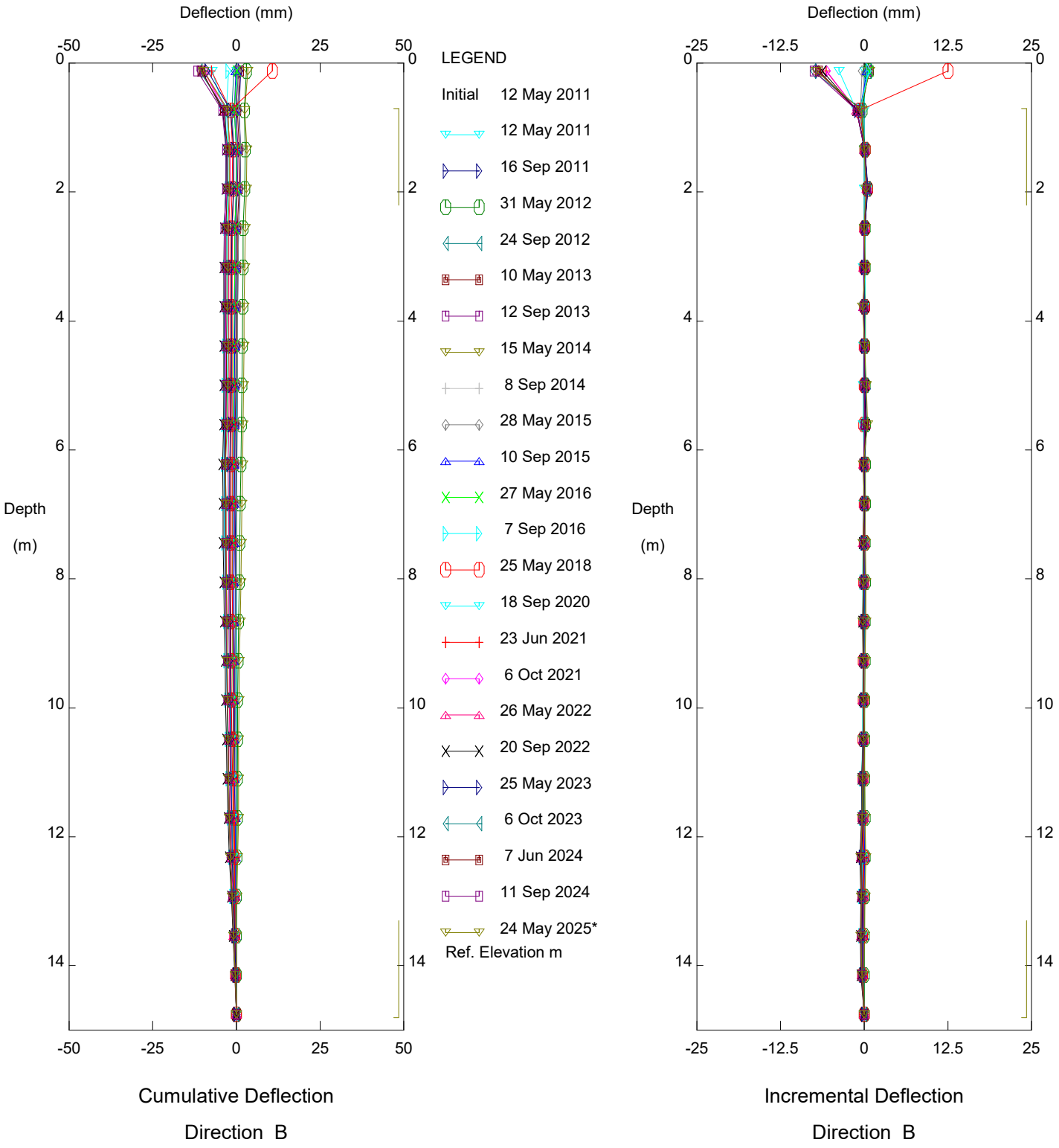
Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI11-1(P9)

Alberta Transportation

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

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-1(km 7.8).gtl

Thurber Engineering Ltd.



Cumulative Deflection

Direction B

Incremental Deflection

Direction B

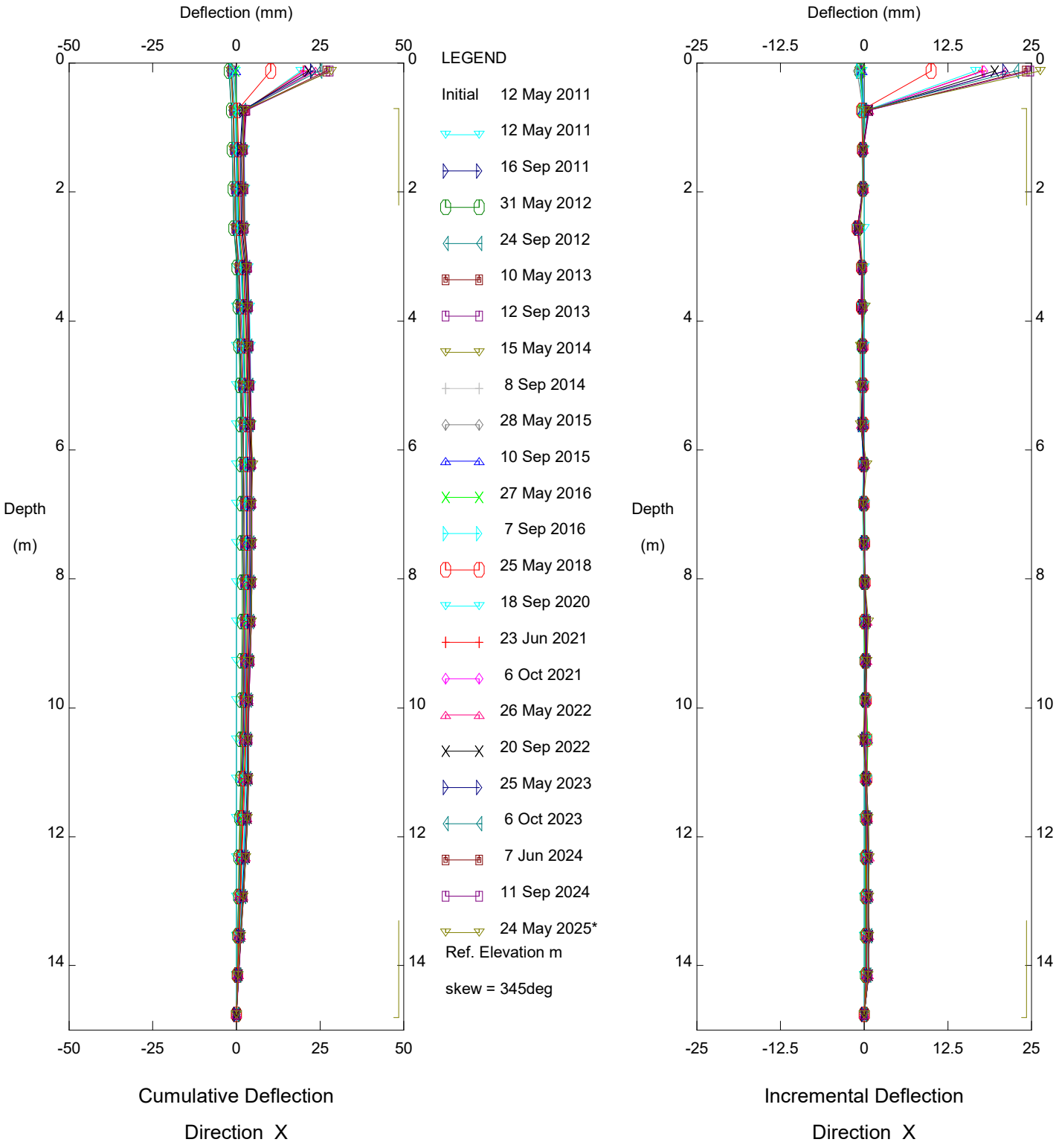
Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI11-1(P9)

Alberta Transportation

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

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-1(km 7.8).gtl

Thurber Engineering Ltd.



Cumulative Deflection

Direction X

Incremental Deflection

Direction X

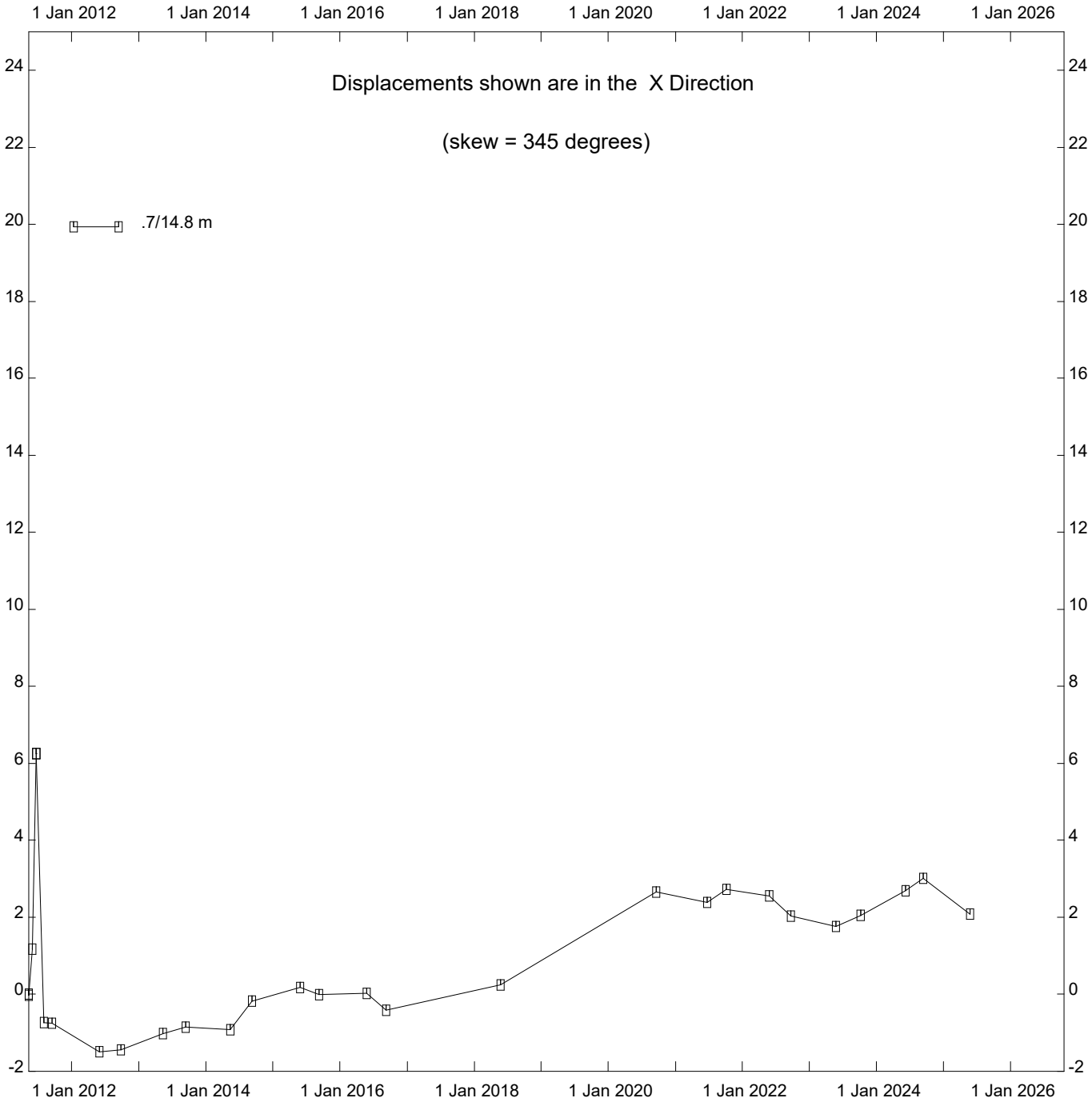
Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI11-1(P9)

Alberta Transportation

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

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-1(km 7.8).gtl

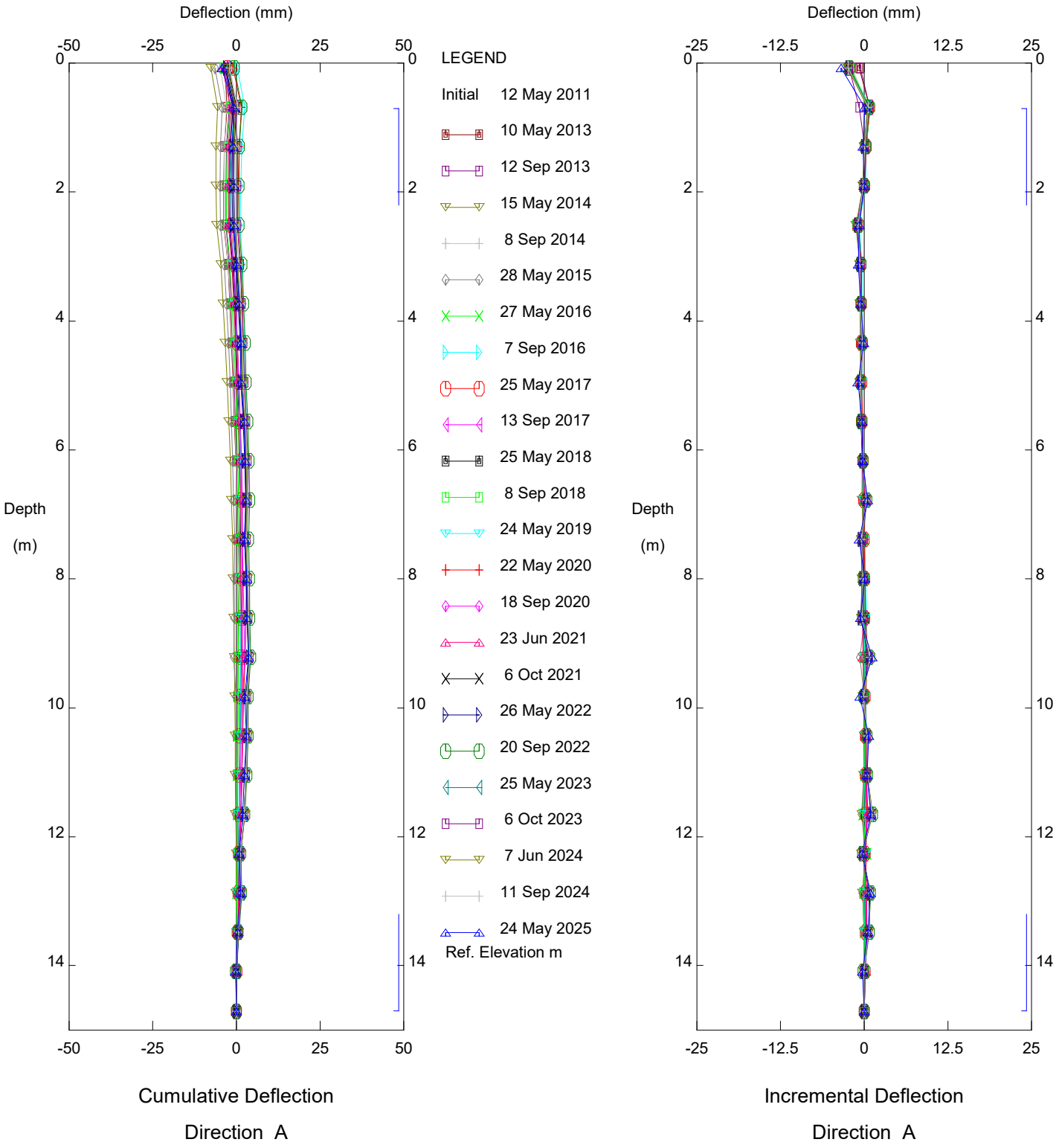
Thurber Engineering Ltd.



Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI11-1(P9)

Alberta Transportation

Thurber Engineering Ltd.



Cumulative Deflection

Direction A

Incremental Deflection

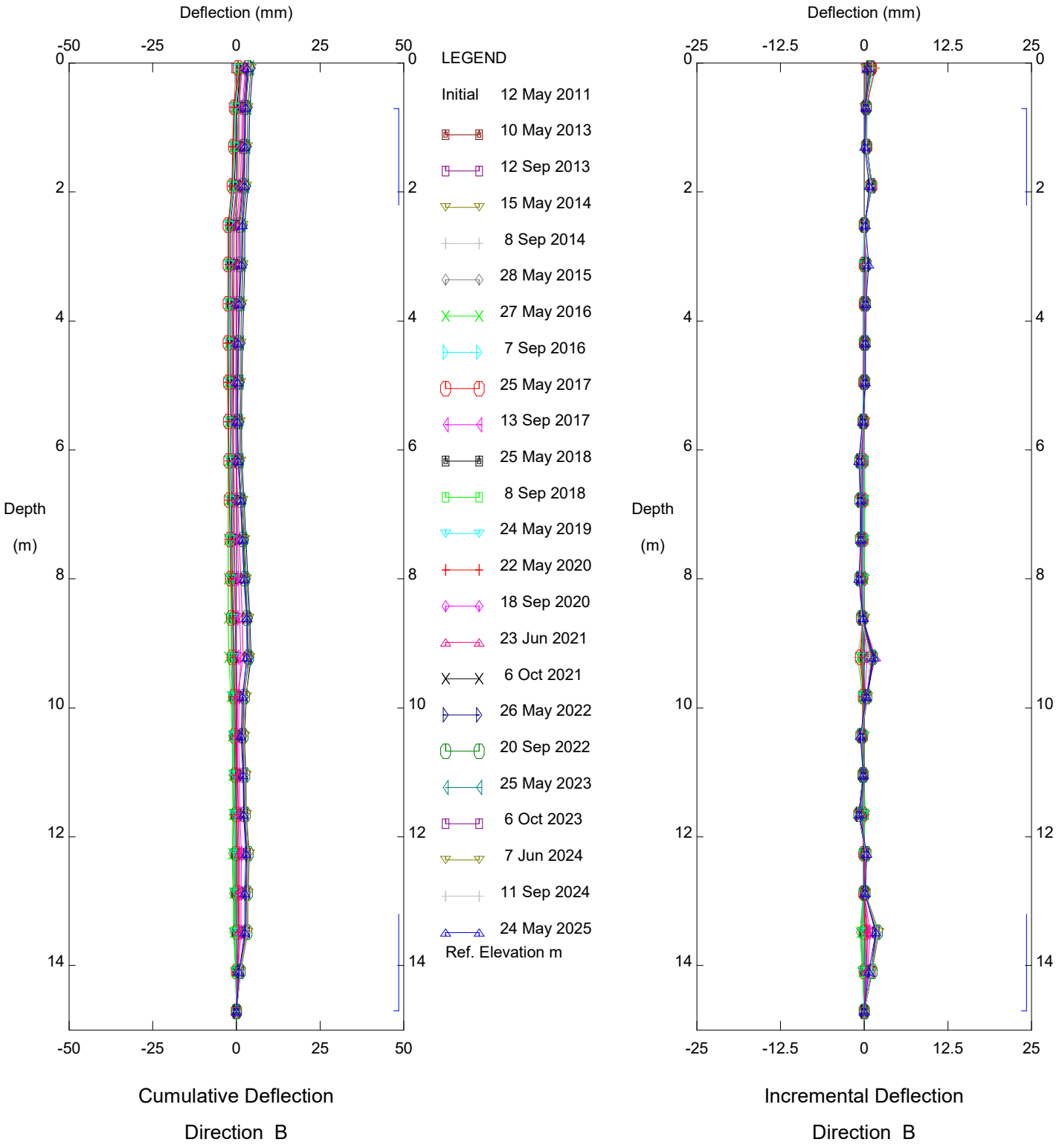
Direction A

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-2 (P27)

Alberta Transportation

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-2(km 7.8).gtl

Thurber Engineering Ltd.



Cumulative Deflection

Direction B

Incremental Deflection

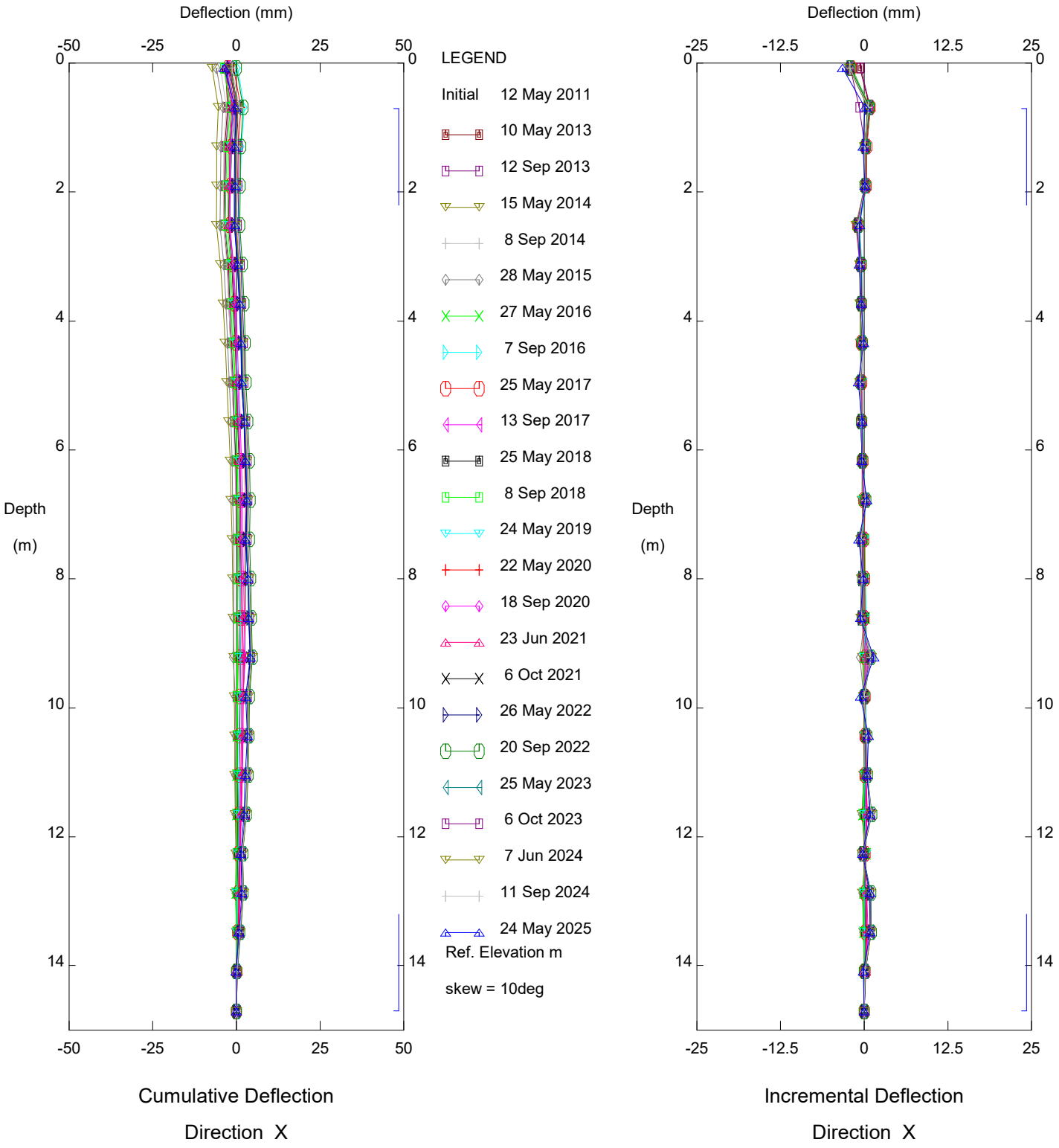
Direction B

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-2 (P27)

Alberta Transportation

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-2(km 7.8).gtl

Thurber Engineering Ltd.



Cumulative Deflection

Direction X

Incremental Deflection

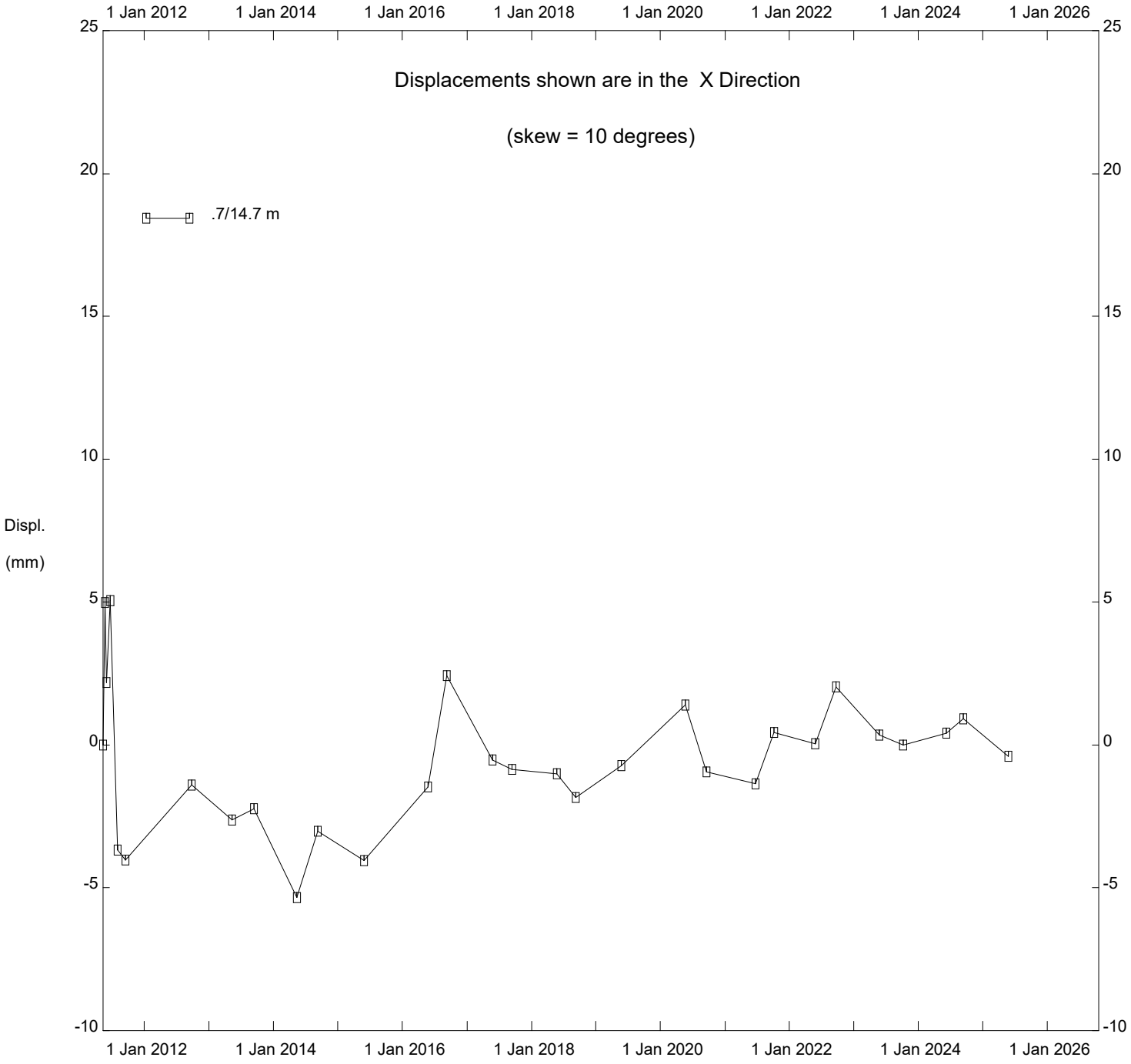
Direction X

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-2 (P27)

Alberta Transportation

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-2(km 7.8).gtl

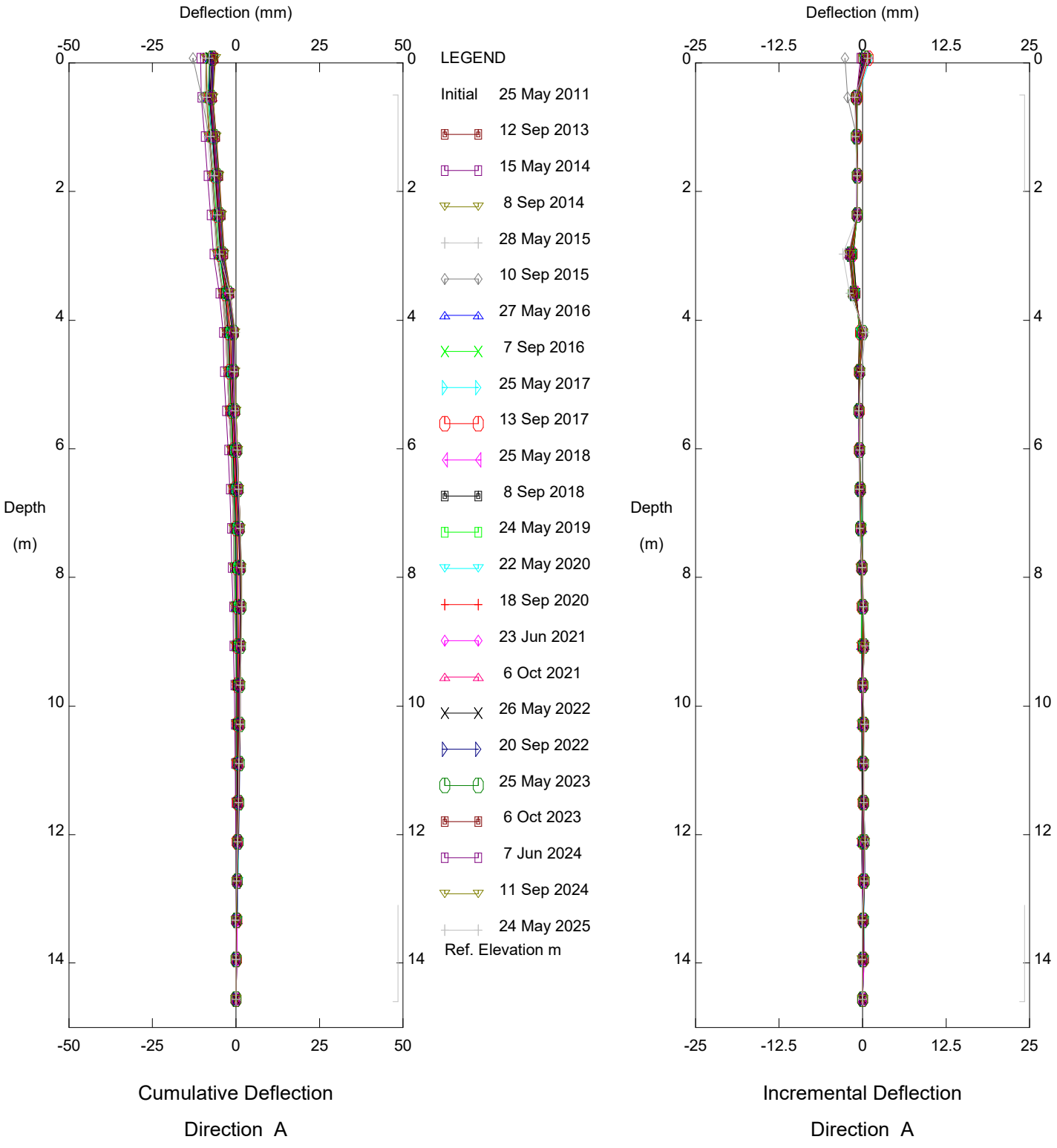
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-2 (P27)

Alberta Transportation

Thurber Engineering Ltd.



Cumulative Deflection

Direction A

Incremental Deflection

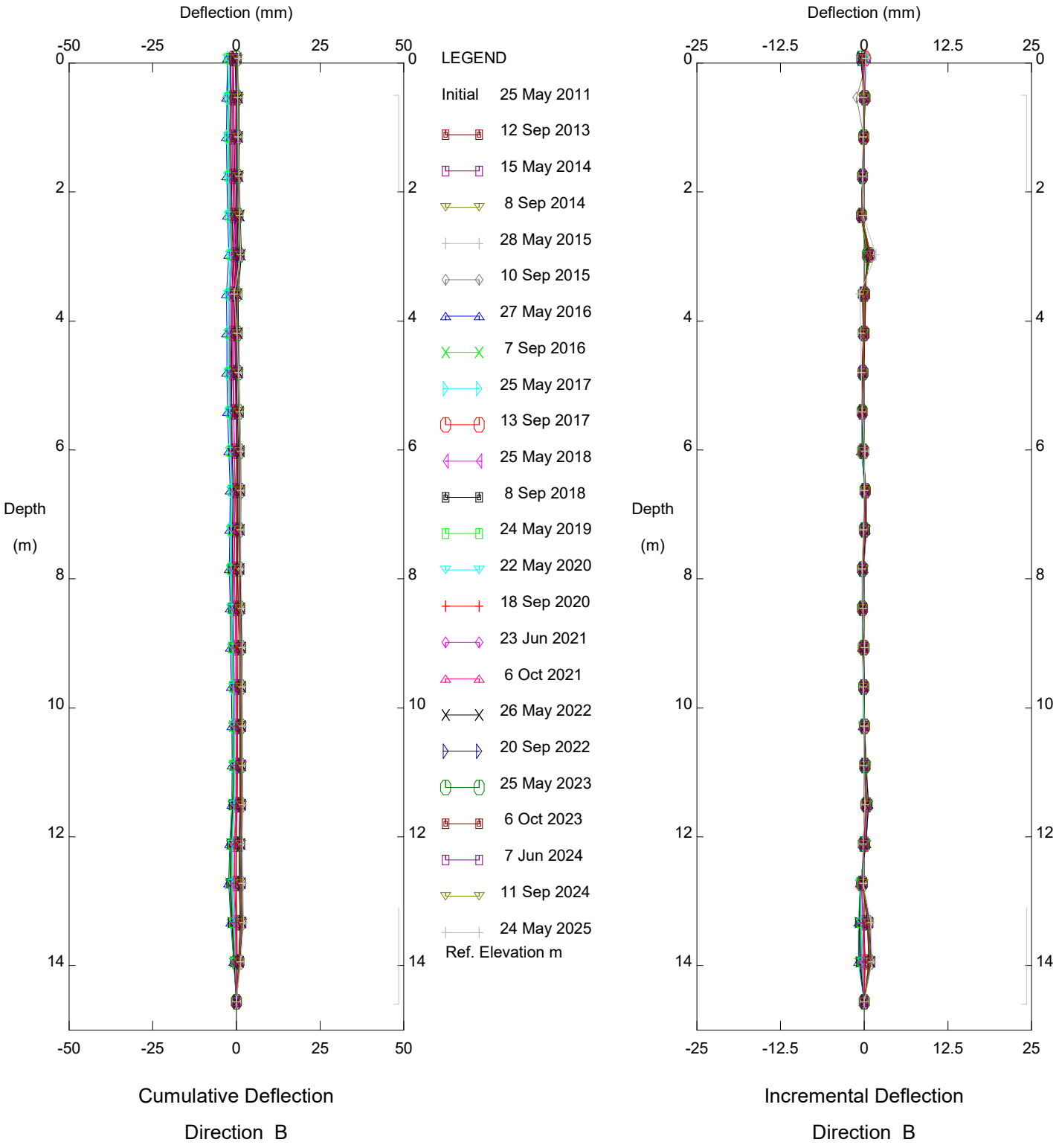
Direction A

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-3(P45)

Alberta Transportation

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-3(km 7.8).gtl

Thurber Engineering Ltd.



Cumulative Deflection

Direction B

Incremental Deflection

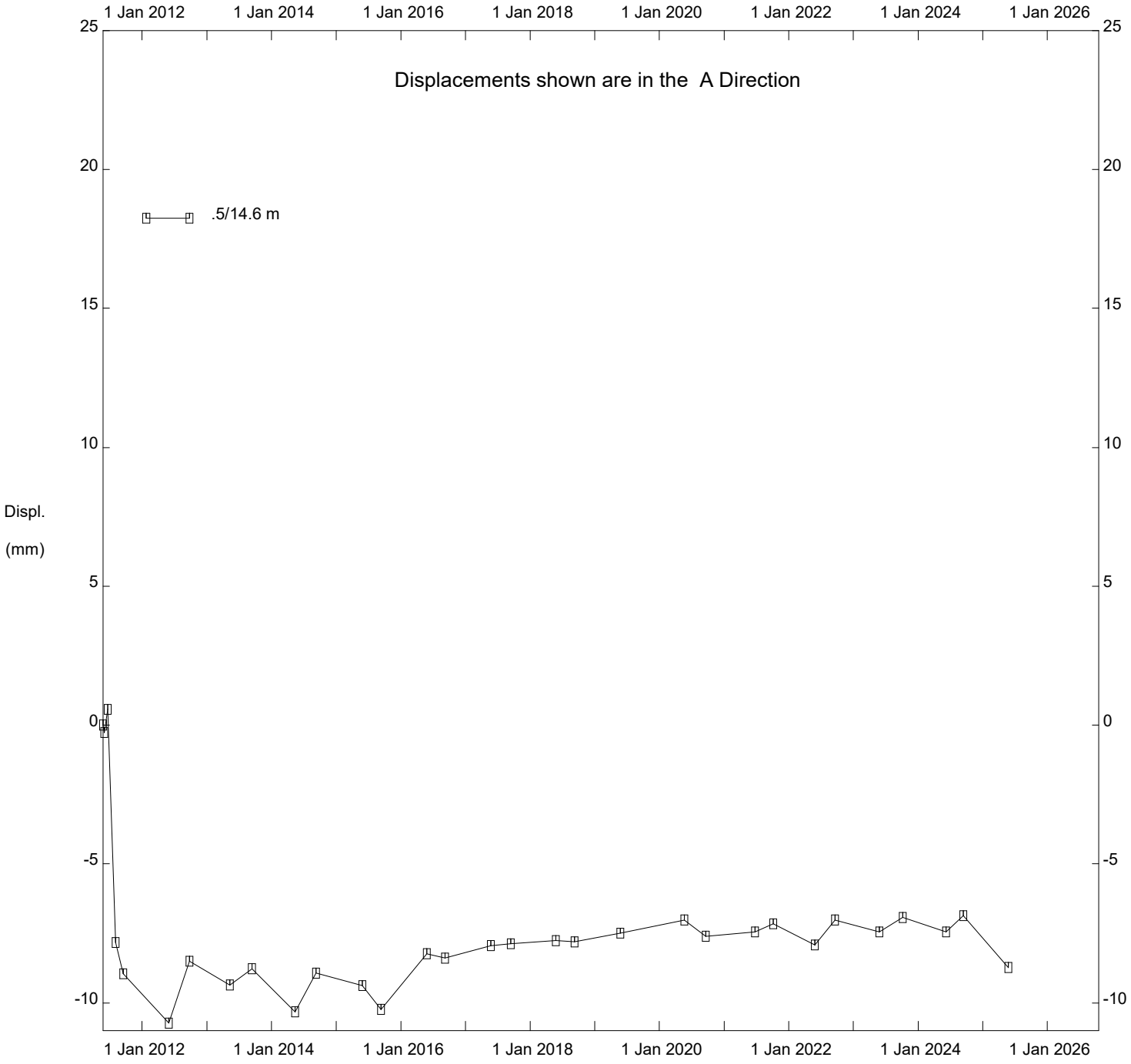
Direction B

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-3(P45)

Alberta Transportation

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-3(km 7.8).gtl

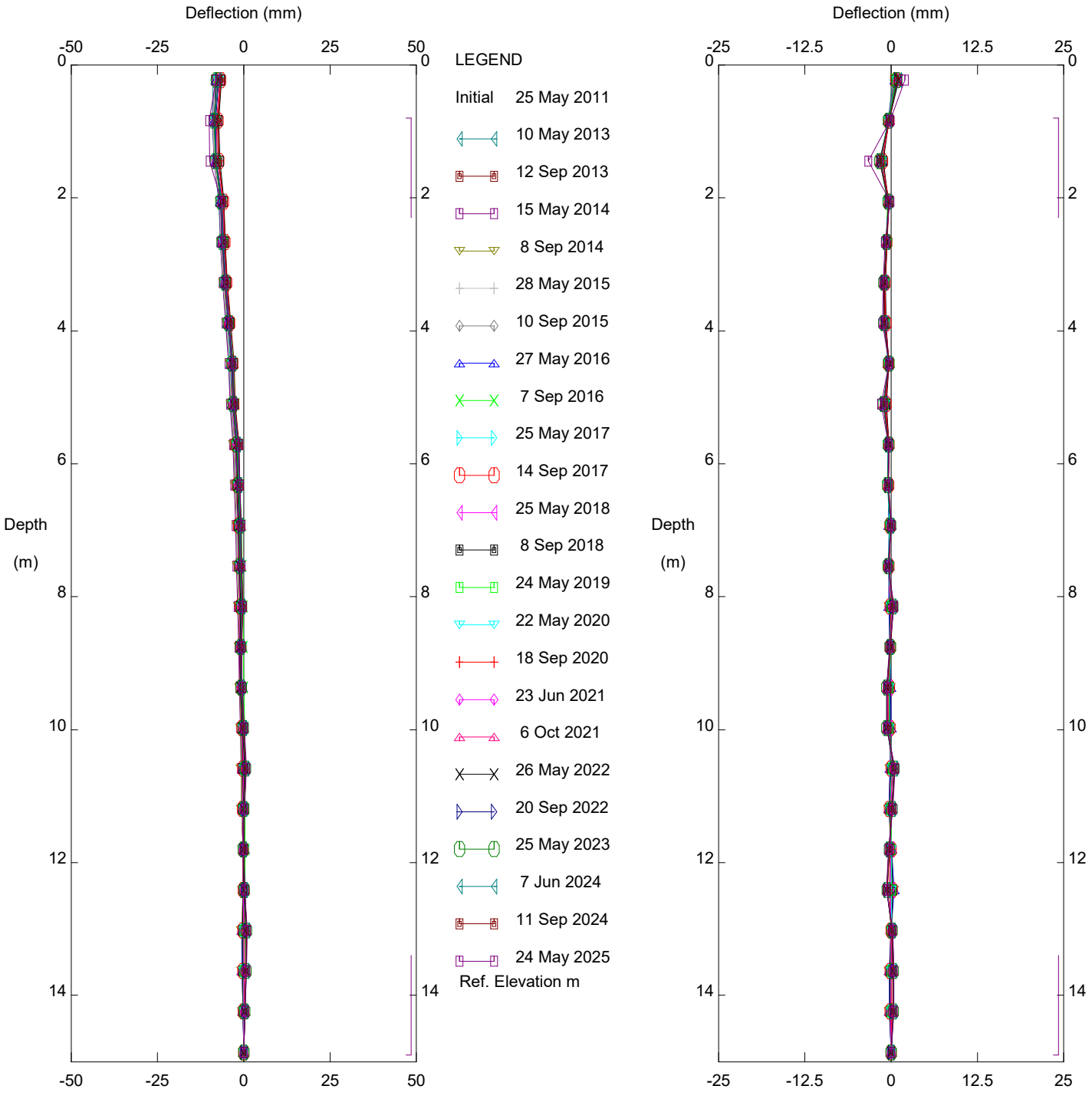
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-3(P45)

Alberta Transportation

Thurber Engineering Ltd.



Cumulative Deflection

Direction A

Incremental Deflection

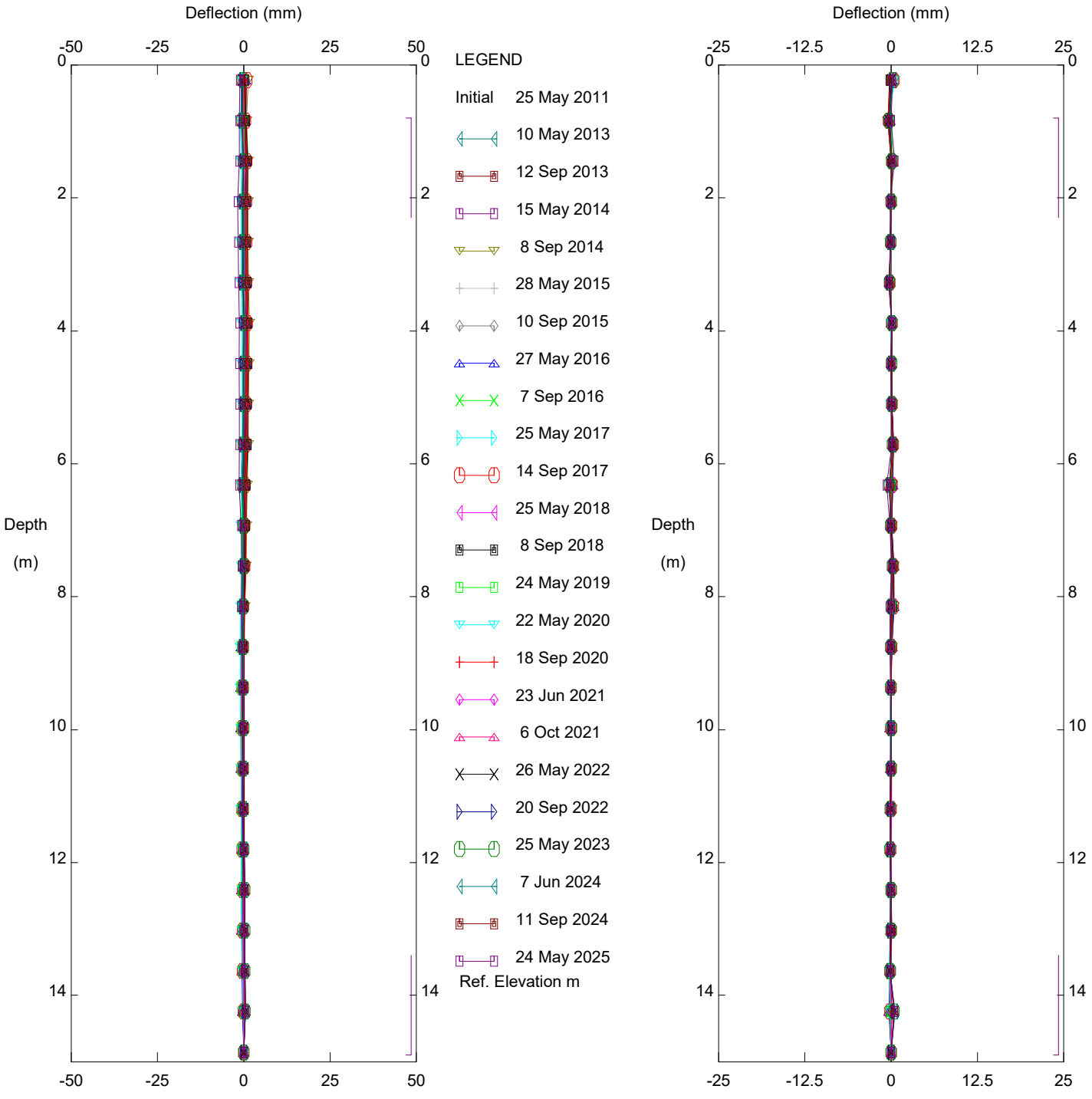
Direction A

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-4 (P60)

Alberta Transportation

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-4(km 7.8).gtl

Thurber Engineering Ltd.



Cumulative Deflection

Direction B

Incremental Deflection

Direction B

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-4 (P60)

Alberta Transportation

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\Section C\2025A-Spring\SI Readings\NC103\SI11-4(km 7.8).gtl

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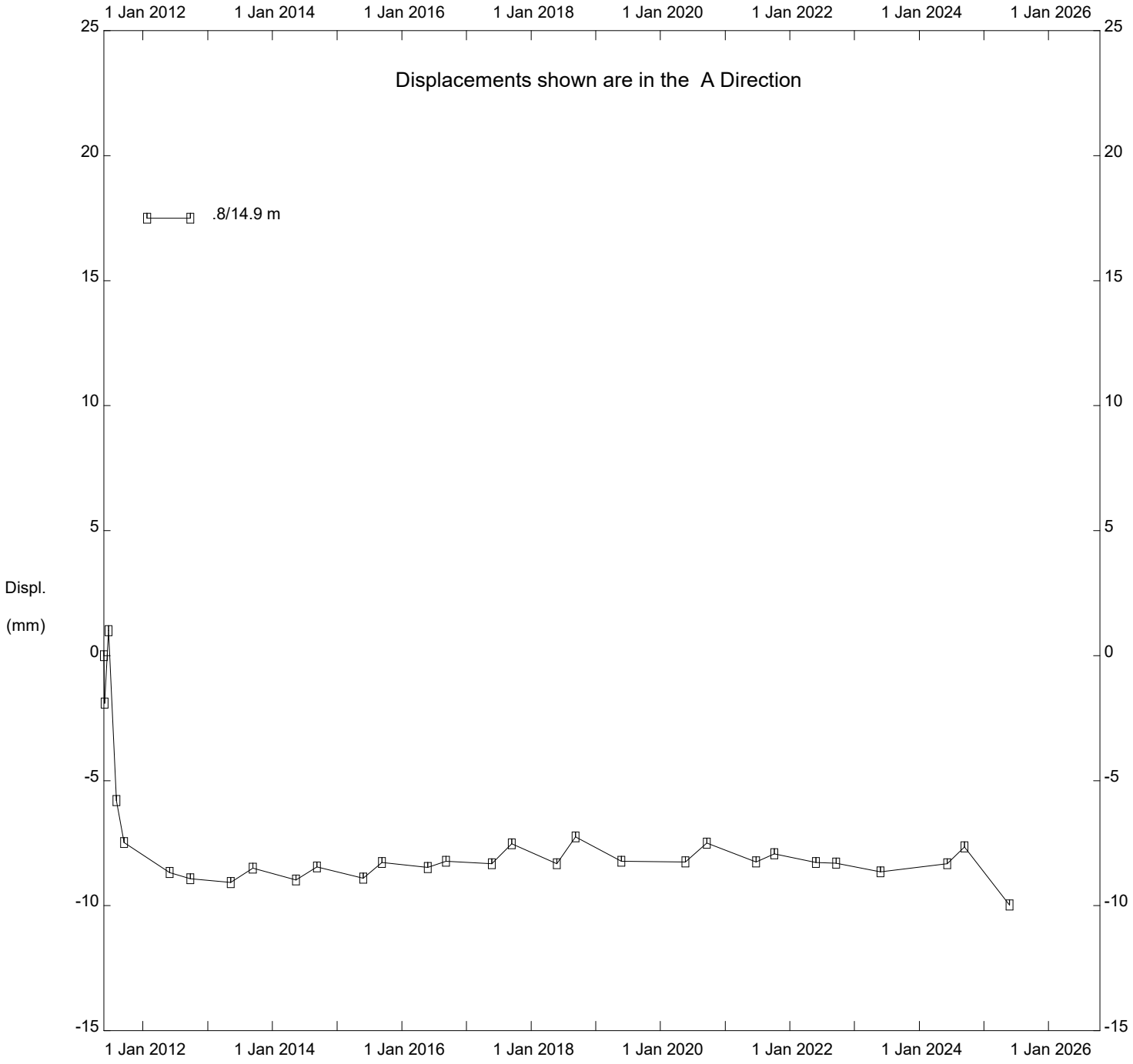

Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI11-4 (P60)

Alberta Transportation

FIGURE NC103-1
PIEZOMETER DATA FOR HWY 41:23, KEHIWIN LAKE (KM 7.8)

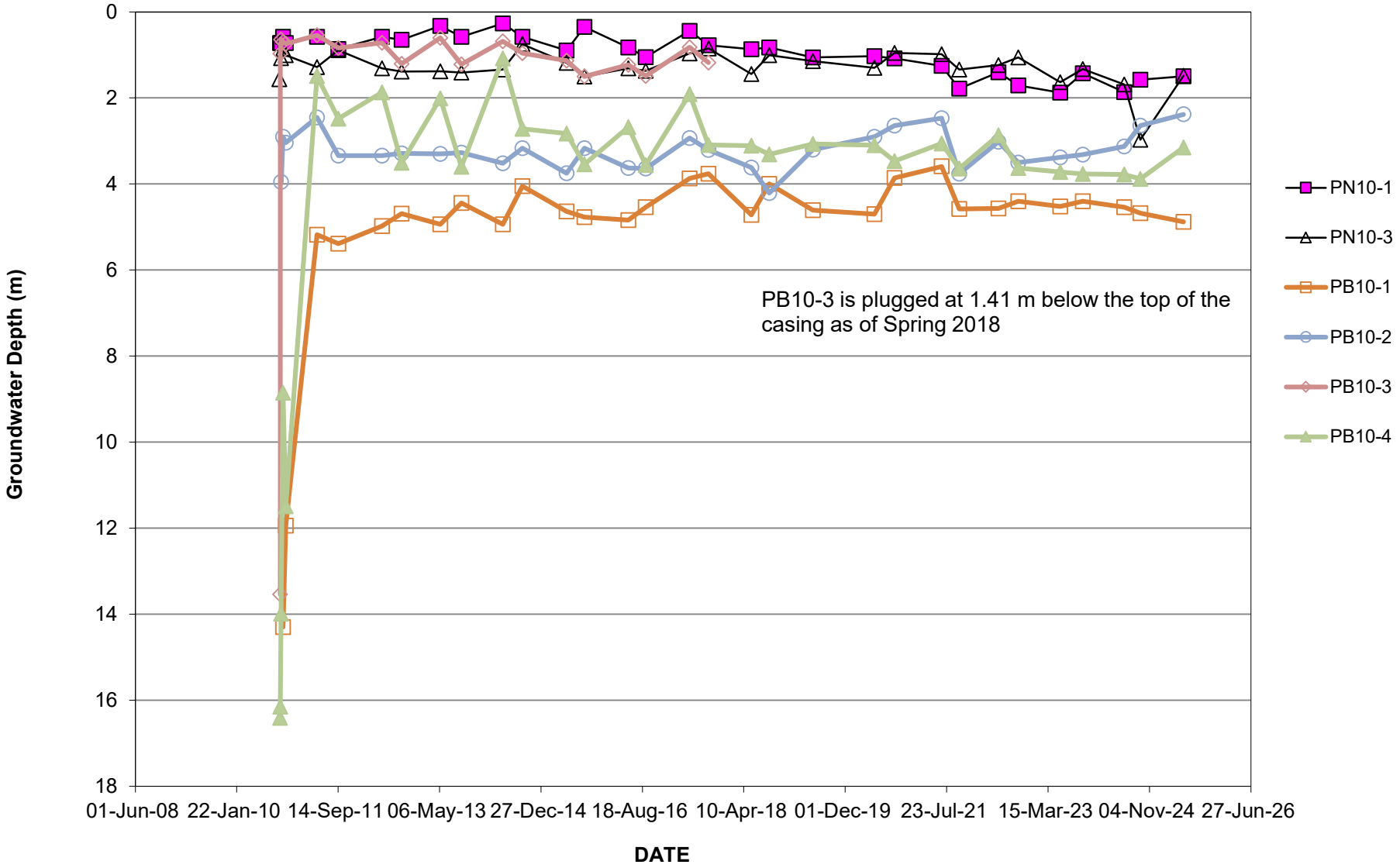

FIGURE NC103-2
VIBRATING WIRE LOAD CELL DATA FOR
HWY 41:23, KEHIWIN LAKE (km 7.8)