ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP NORTH CENTRAL (ATHABASCA AND FORT McMURRAY DISTRICTS) INSTRUMENTATION MONITORING - FALL 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:	16-Sep-2025	**Previous Monitoring**	24-May-2025
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Angelo Castillo, 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 VC1709, and VC1712 to VC1714	**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: VC1715 is malfunctioning and will be removed from the instrumentation reading program.			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	SI10-1, installed in the east highway ditch, showed no discernible movement since the spring of 2025 readings. SI10-3, installed at the bottom of the slope downslope of the pile wall location, also showed no discernible movement since the spring of 2025 readings. SI11-1 through SI11-3 showed no discernible movement since the spring of 2025 readings. The cumulative movements in the SIs installed in the piles were as follows: ▪ SI11-1 = 1.8 mm pile head movement over 0.7 to 14.8 m depth ▪ SI11-2 = 0.5 mm pile head movement over 0.7 to 14.7 m depth in the upslope direction. ▪ SI11-3 = -8.2 mm pile head movement over 0.5 to 14.6 m depth in the upslope direction. ▪ SI11-4 = -9.3 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 decreases in groundwater levels of 0.56 m and 0.14 m, respectively, since the spring of 2025 readings. Standpipe piezometer PB10-1, PB10-2, and PB10-4 showed decreases in groundwater level of 0.35 m, 1.55 m, and 0.80 m, respectively, since the spring of 2025 readings. Load cells VC1706, VC1707, VC1708, VC1709, VC1712, and VC1713 showed decreases in measured loads of 7.74 kN, 13.23 kN, 0.62 kN, 1.13 kN, 4.67 kN, and 3.53 kN, respectively since the spring of 2025 readings. Load cell VC1714 showed an increase in the measured load by1.85 kN. 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 spring of 2026.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

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

November 12, 2025
Your text here!

PROFESSIONAL ENGINEER ALBERTA
TAREK ABDELAZIZ
ID 91085
November 12 2025

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE: _____
RM APEGA ID #: 91085
DATE: November 12, 2025
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

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

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

Date Monitored: September 16, 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	8.2 over 4.4 m to 7.5 m depth in 308° direction	7.6 on Oct. 23, 2010	Operational	May 24, 2025	No discernible movement	N/A	-1.0
SI10-3	Oct. 12, 2010	25.4 over 9.9 m to 12.3 m depth in 291° direction	26.5 on Oct. 23, 2010	Operational	May 24, 2025	No discernible movement	N/A	-0.6
SI11-1 (Pile 9)	May 12, 2011	1.8 over 0.7 m to 14.8 m depth in 308° direction	87.6 on June 21, 2011	Operational	May 24, 2025	No discernible movement	N/A	0.4
SI11-2 (Pile 27)	May 12, 2011	-0.5 over 0.7 m to 14.7 m depth in 306° direction	146.6 on May 25, 2011	Operational	May 24, 2025	No discernible movement	N/A	1.5
SI11-3 (Pile 45)	May 25, 2011	-8.2 over 0.5 m to 14.6 m depth in 308° direction	14.2 on June 21, 2011	Operational	May 24, 2025	0.5	1.7	4.4
SI11-4 (Pile 60)	May 25, 2011	-9.3 over 0.8 m to 14.9 m depth in 349° direction	48.5 on June 21, 2011	Operational	May 24, 2025	0.7	2.2	5.5

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

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

Date Monitored: September 16, 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	44.1	2.06	1.50	-0.56
PN10-3	October 1, 2010	12.27	-	Active	0.75 on September 8, 2014	104.5	1.62	1.48	-0.14

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: Fall 2025 – Hwy 41:23 Kehiwin Lake (Km 7.8) Standpipe Piezometer Instrumentation Reading Summary

Date Monitored: September 16, 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	5.23	4.88	-0.35
PB10-2	Oct. 6, 2010	15.0	-	Operational	2.45 on May 12, 2011	3.93	2.38	-1.55
PB10-4	Oct. 6, 2010	18.6	-	Operational	1.03 on May 15, 2014	3.95	3.15	-0.80

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: Fall 2025 – Hwy 41:23 Kehiwin Lake (Km 7.8) Vibrating Wire Load Cells Instrumentation Reading Summary

Date Monitored: September 16, 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	202.77*	210.51*	-7.74
VC1707	G35L	290	July 23, 2011	247.83**	261.06**	-13.23
VC1708	G8U	240	July 23, 2011	215.03***	215.65***	-0.62
VC1709	G45L	290	July 25, 2011	189.65**	190.78**	-1.13
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	247.22*	251.89*	-4.67
VC1713	G27U	290	July 23, 2011	174.57*	178.10*	-3.53
VC1714	G17U	290	July 23, 2011	237.04*	235.19*	1.85
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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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 (CON0022163)
NORTH CENTRAL (ATHABASCA AND FORT McMURRAY DISTRICTS)
INSTRUMENTATION MONITORING RESULTS

FALL 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)
FALL 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):**	22
Cable:	RST SET 5R and 8R	**Read by:**	NKR/AFC

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	16-Sep-25	0.77	62 to 2	295	196	-191	1112	-1135	8R/8R	
SI10-3	506684.84	5988455.34	16-Sep-25	0.77	64 to 4	283	65	-61	519	-538	8R/8R	
SI11-1	506689.52	5988389.7	16-Sep-25	0.79	50 to 4	310	-484	490	-237	221	5R/5R	
SI11-2	506711.75	5988413.1	16-Sep-25	0.84	50 to 4	283	155	-153	255	-260	5R/5R	Pile Wall
SI11-3	506718.26	5988440.93	16-Sep-25	0.99	50 to 4	295	-202	207	138	-151	5R/5R	Pile Wall
SI11-4	506745.73	5988463.22	16-Sep-25	0.69	50 to 4	5572.1	-237	243	-160	139	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		16-Sep-25	44.1	33672
PN10-3	Attached to SI10-3		16-Sep-25	104.5	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	16-Sep-25	0.76	5.99	15.83	-	-	-	-
PB10-2	506723.56	5988401.99	16-Sep-25	0.76	4.69	15.76	-	-	-	-
PB10-4	506690.18	5988388.59	16-Sep-25	0.71	4.66	19.3	-	-	-	-

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)
FALL 2025

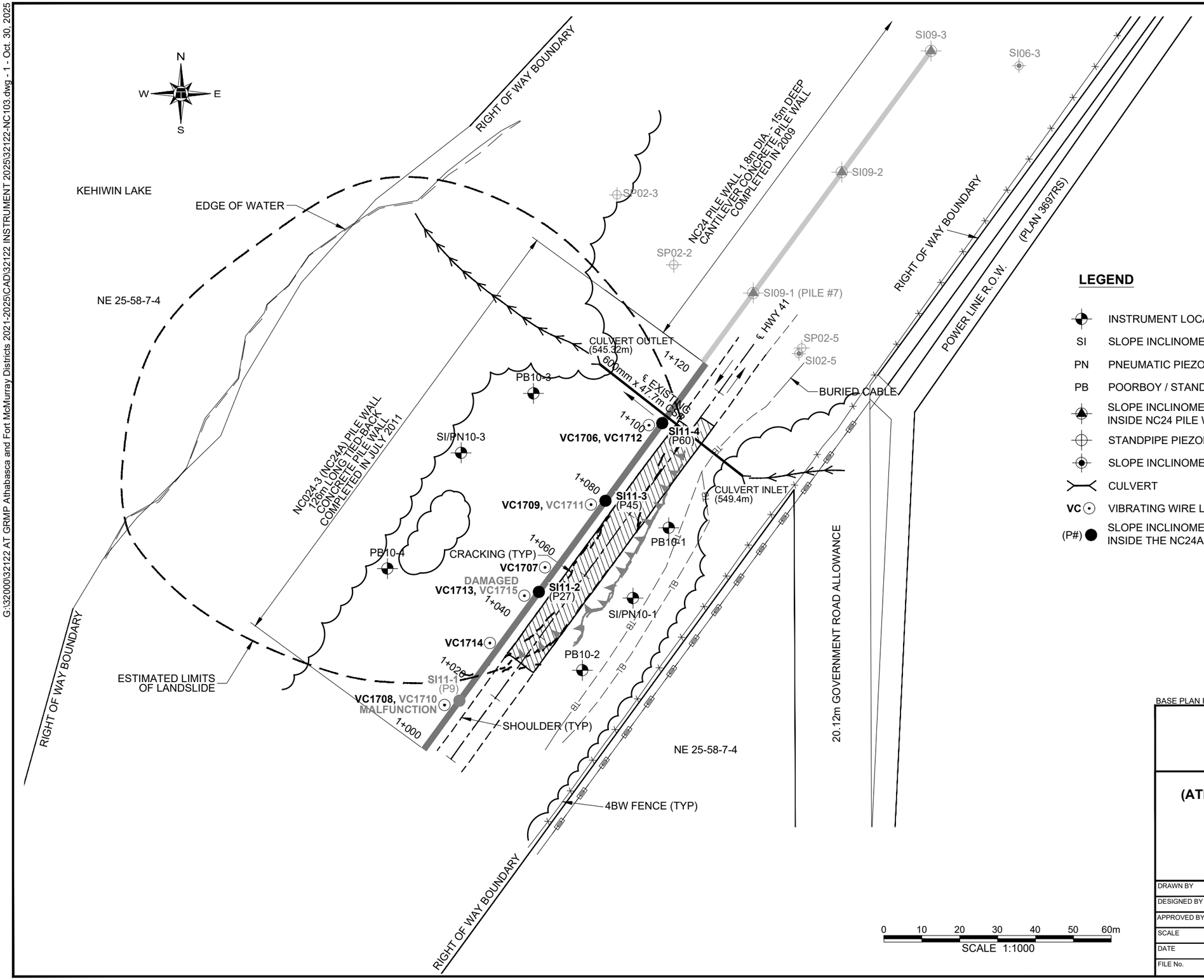
Location: Kehiwin Lake (HWY41:23 C1 7.894)	**Readout:** RST VW2106 Unit 1
File Number: 32122	**Read by:** NKR/AFC

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	16-Sep-25	6681.6/6189.1	13
VC1707*	506720.9	5988428.69	16-Sep-25	6267.2	12.5
VC1708	506690.18	5988388.59	16-Sep-25	6533.3/6056.5/6817.0	13.9
VC1709**	506728.08	5988440.94	16-Sep-25	6430	12.8
VC1712**	506744.42	5988463.22	16-Sep-25	6505.6/5924.8	No Temperature
VC1713**	506711.09	5988415.32	16-Sep-25	6848.7/6297.7	14.1
VC1714**	506700.64	5988401.96	16-Sep-25	6753.7/5829.4	13.8

INSPECTOR REPORT

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



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

0 10 20 30 40 50 60m

SCALE 1:1000

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	OCTOBER 2025
FILE No.	32122

THURBER

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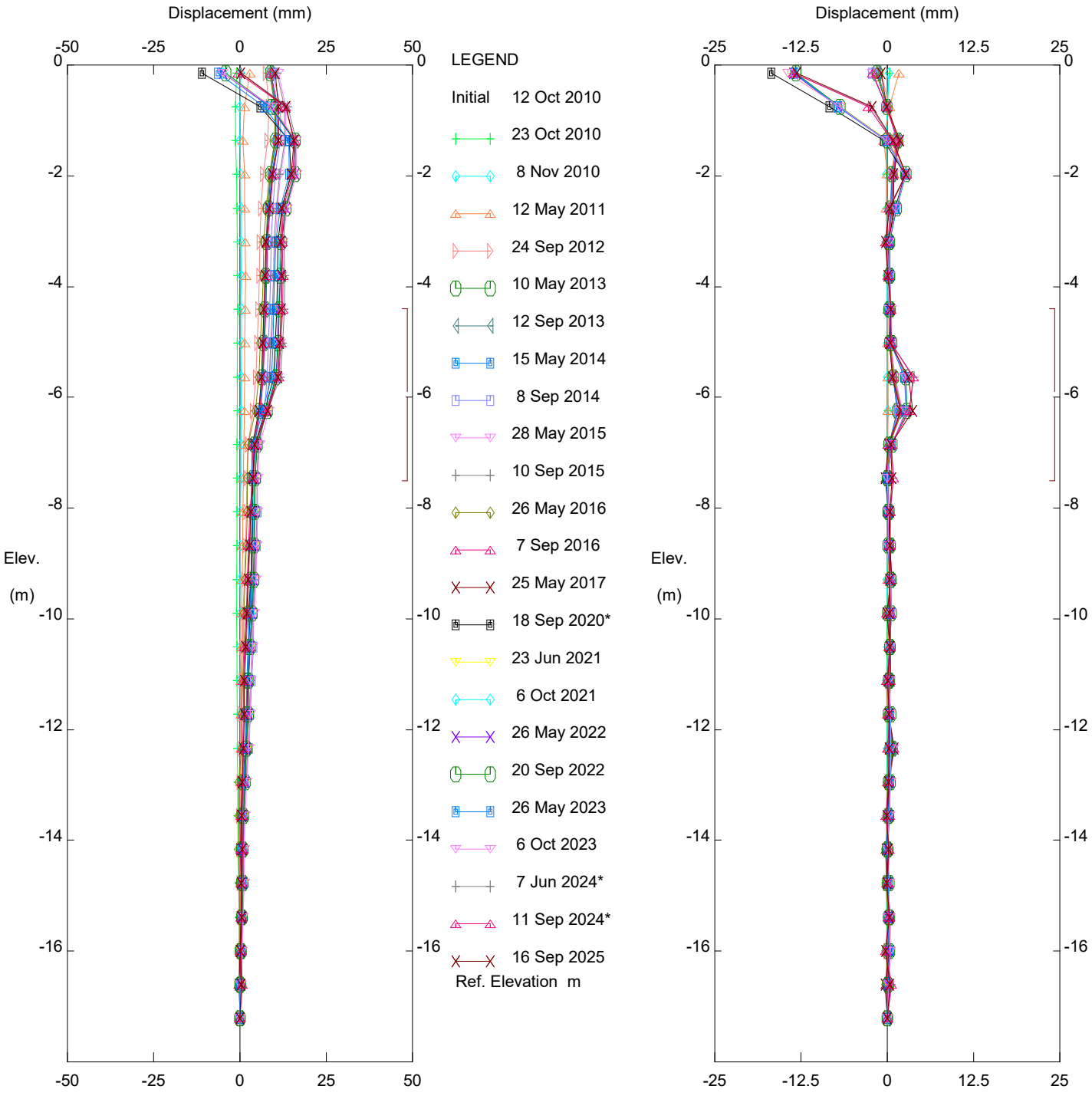

Cumulative Displacement

Direction A

Incremental Displacement

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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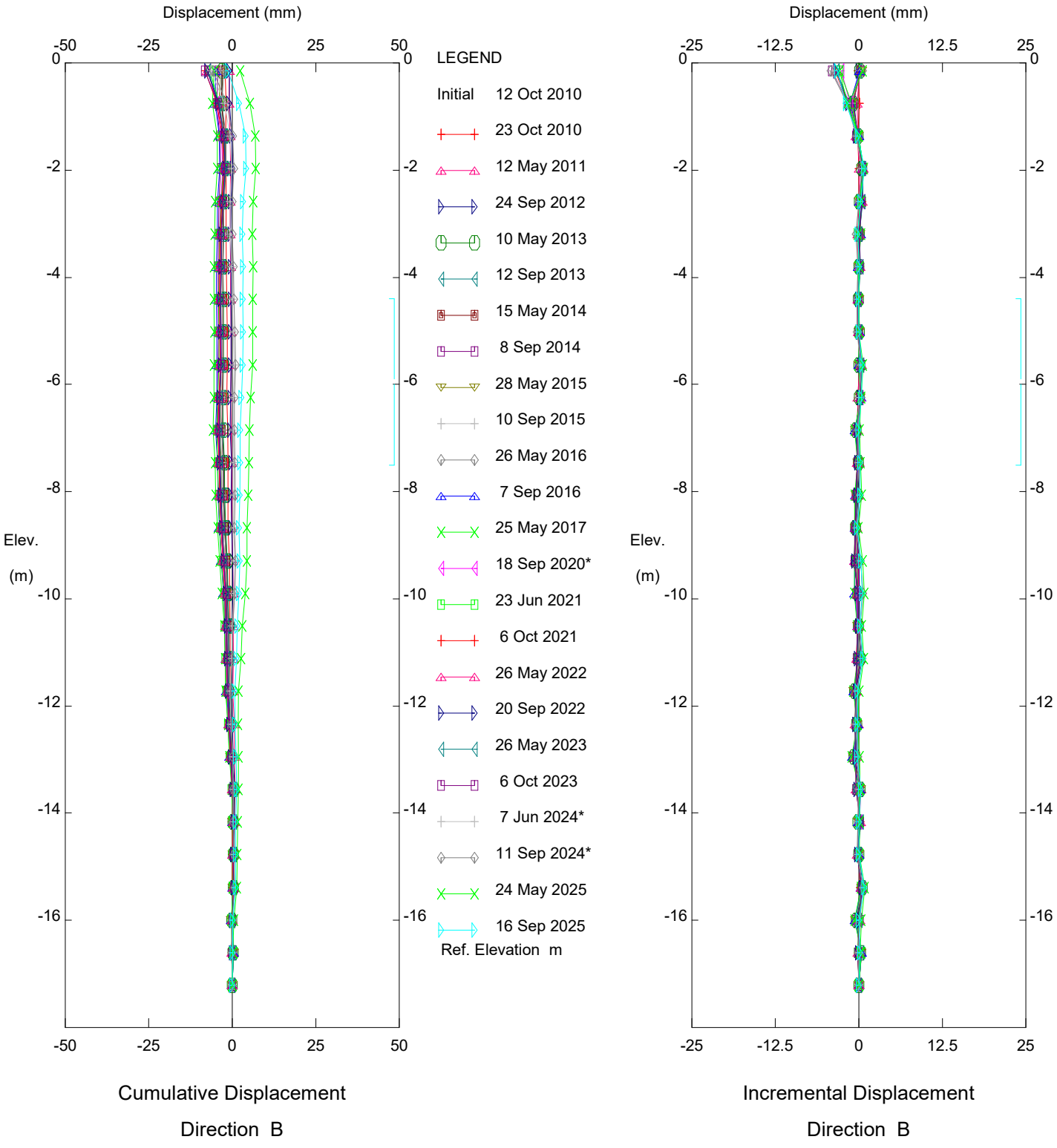

Cumulative Displacement

Direction B

Incremental Displacement

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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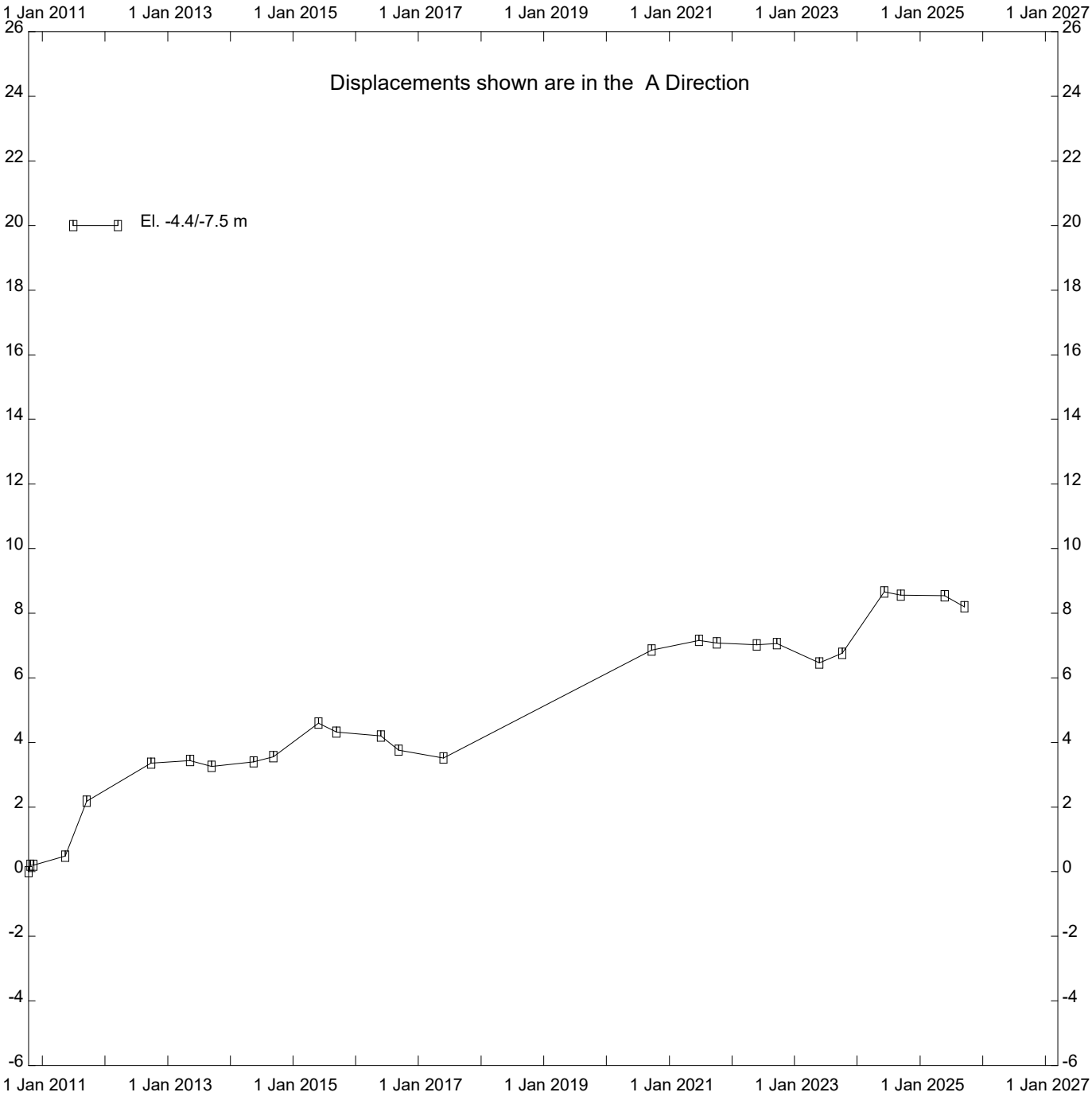

Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI10-1

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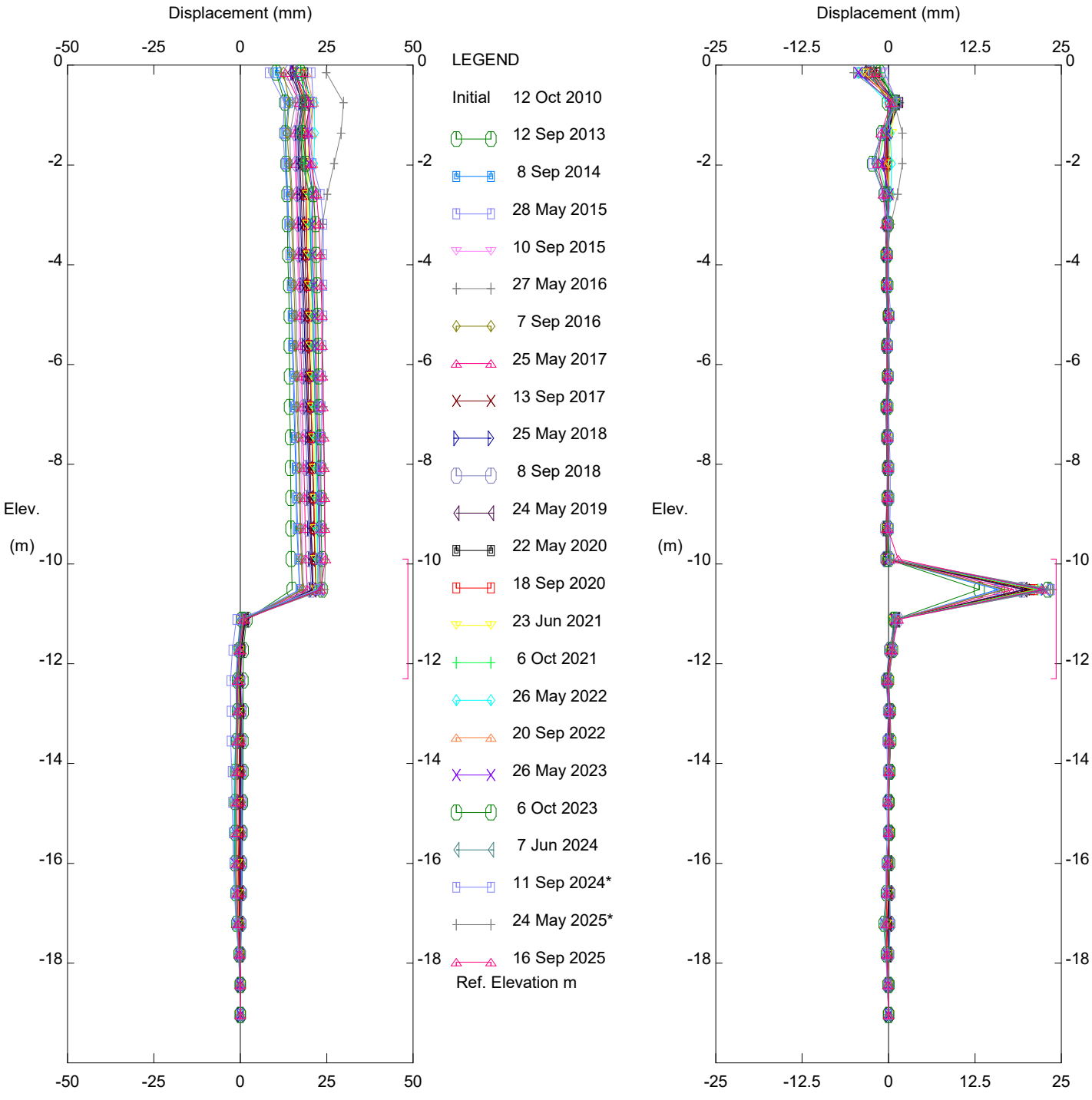

Cumulative Displacement

Direction A

Incremental Displacement

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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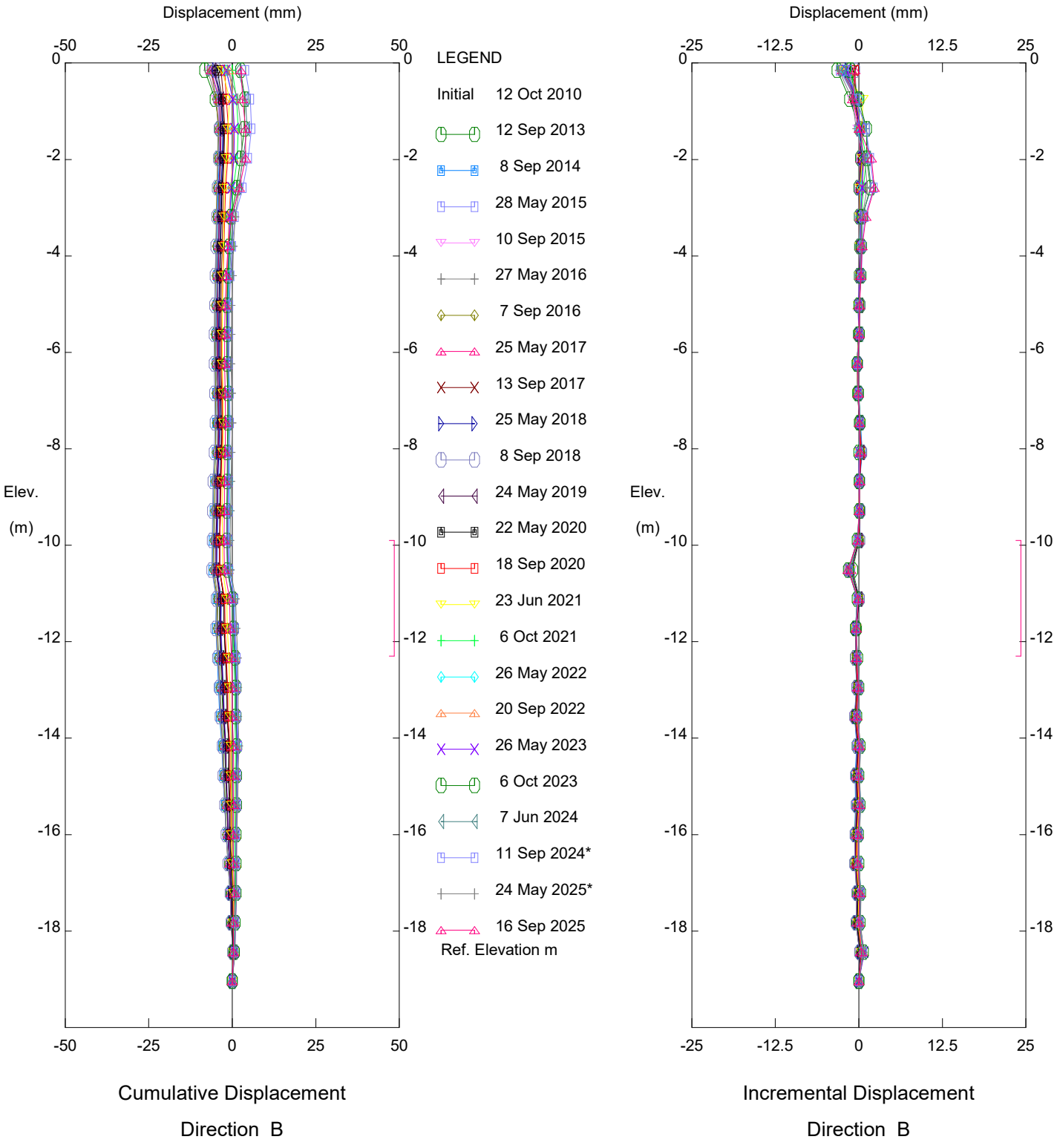

Cumulative Displacement

Direction B

Incremental Displacement

Direction B

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

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

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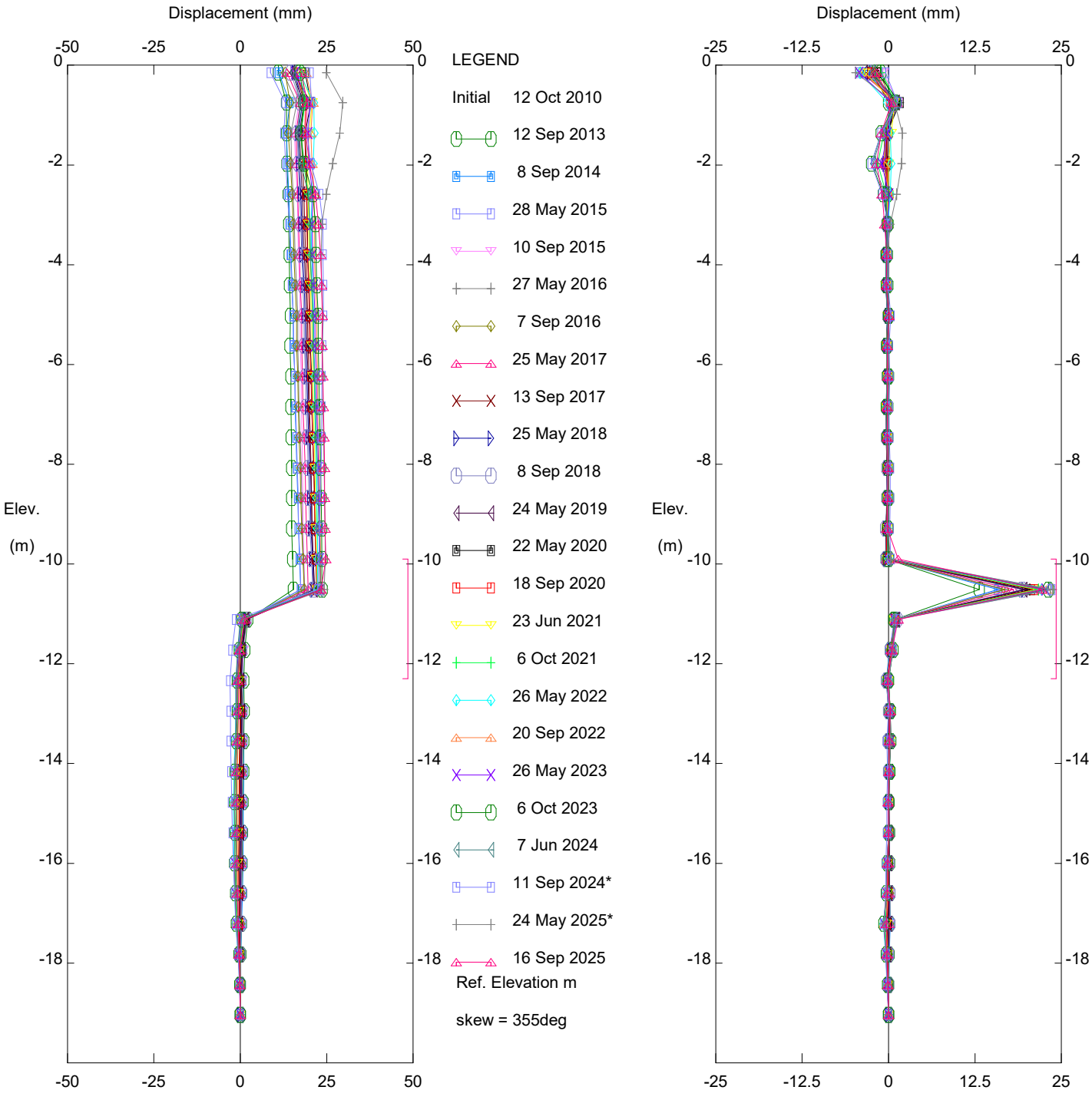


Cumulative Displacement

Direction X

Incremental Displacement

Direction X

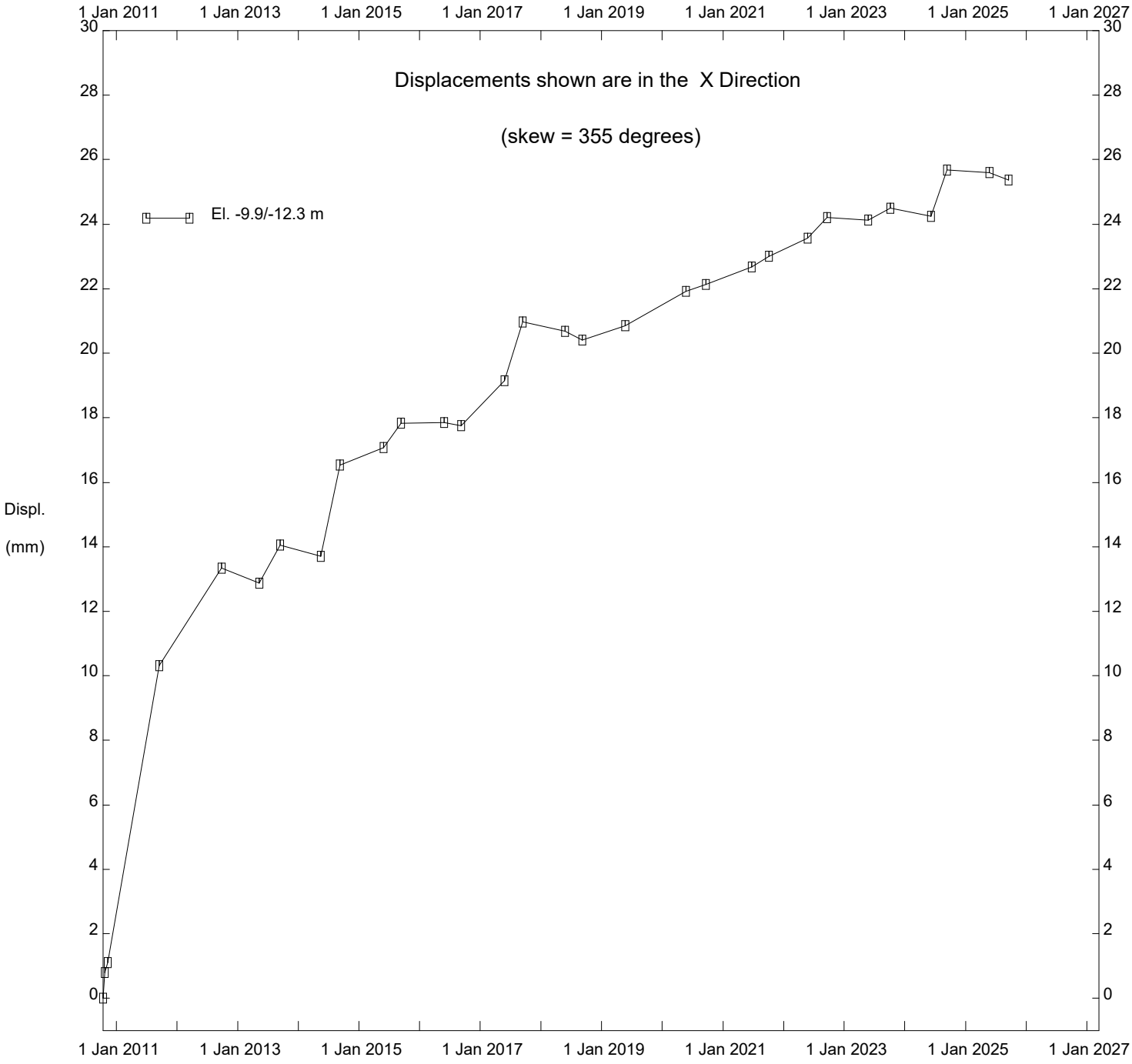
Hwy 41:23 Kehiwin Lake (NC103), Inclinometer SI10-3

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

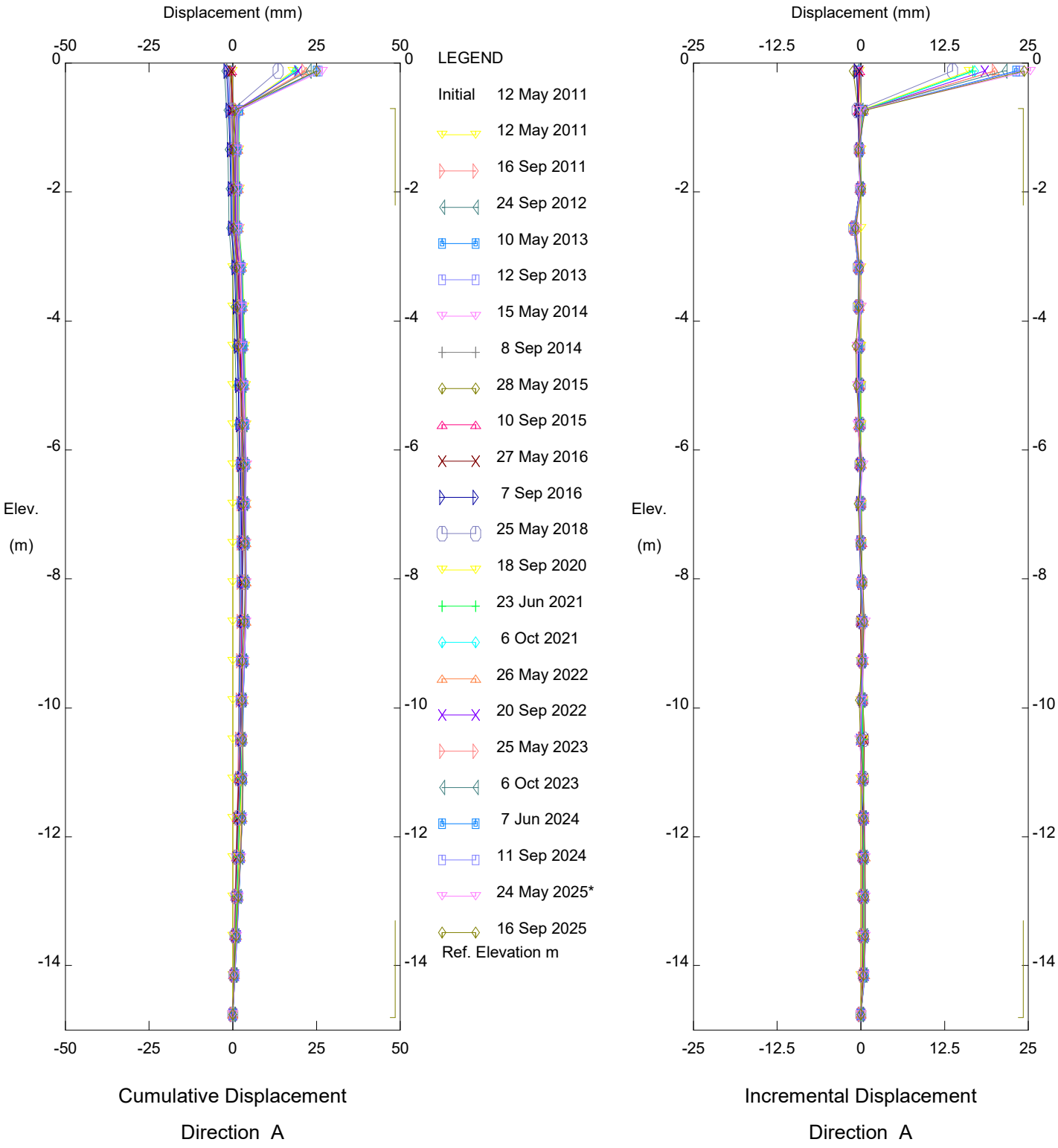
Thurber Engineering - Edmonton



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

Alberta Transportation

Thurber Engineering - Edmonton



Cumulative Displacement

Direction A

Incremental Displacement

Direction A

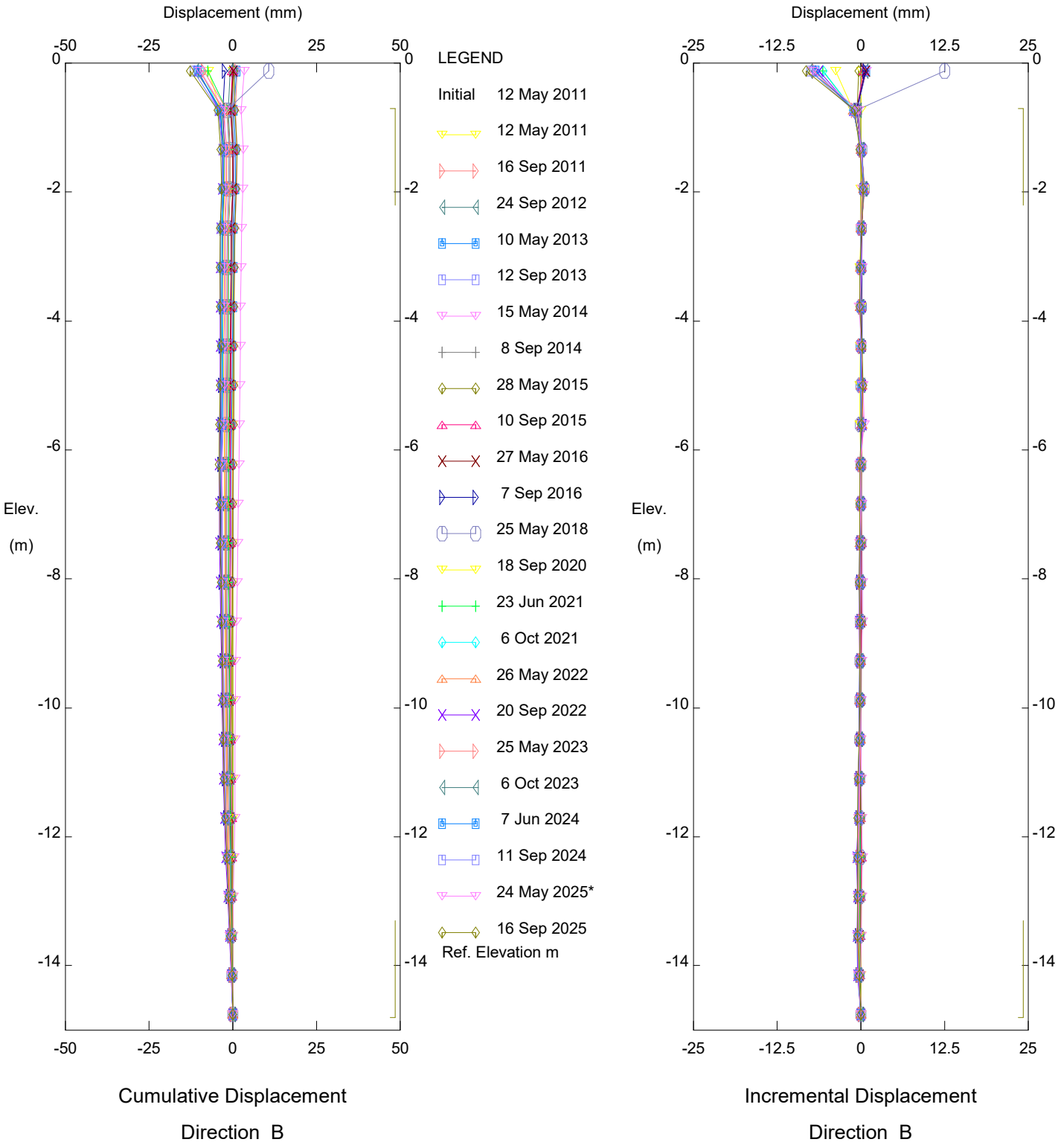
Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI11-1(P9)

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 - Edmonton



Cumulative Displacement

Direction B

Incremental Displacement

Direction B

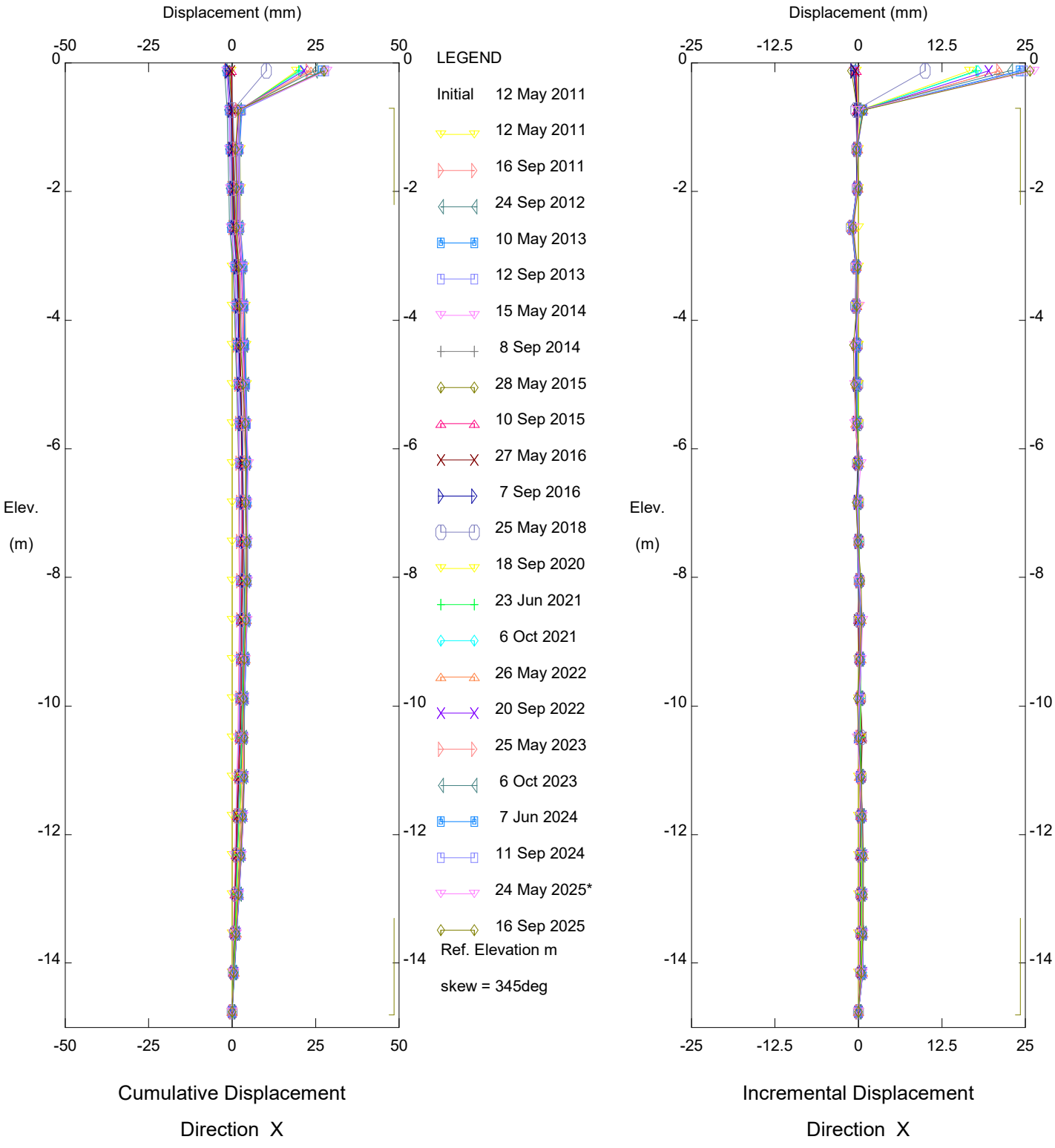
Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI11-1(P9)

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 - Edmonton



Cumulative Displacement

Direction X

Incremental Displacement

Direction X

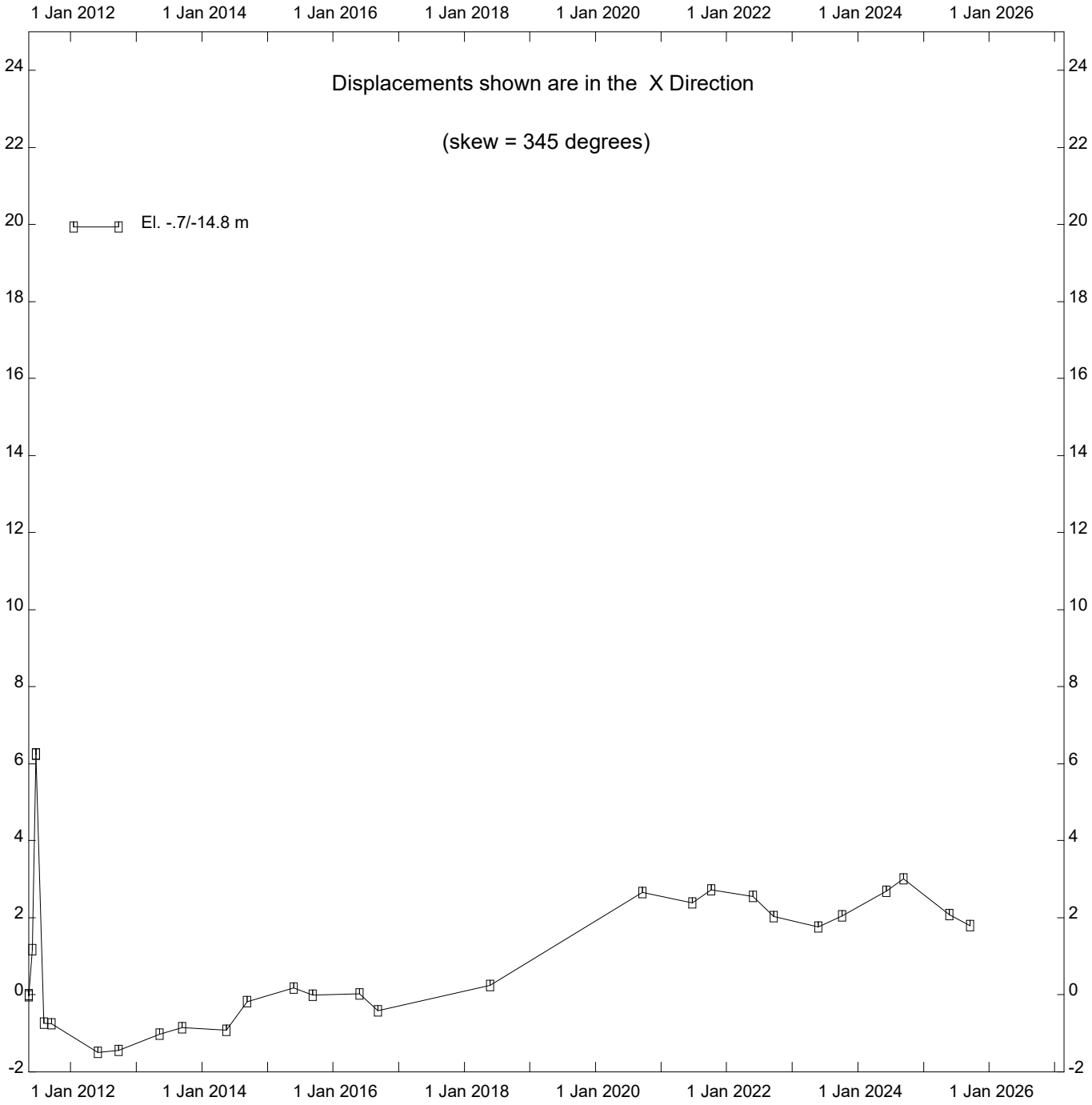
Hwy 41:23 Kehewin Lake (NC103), Inclinometer SI11-1(P9)

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

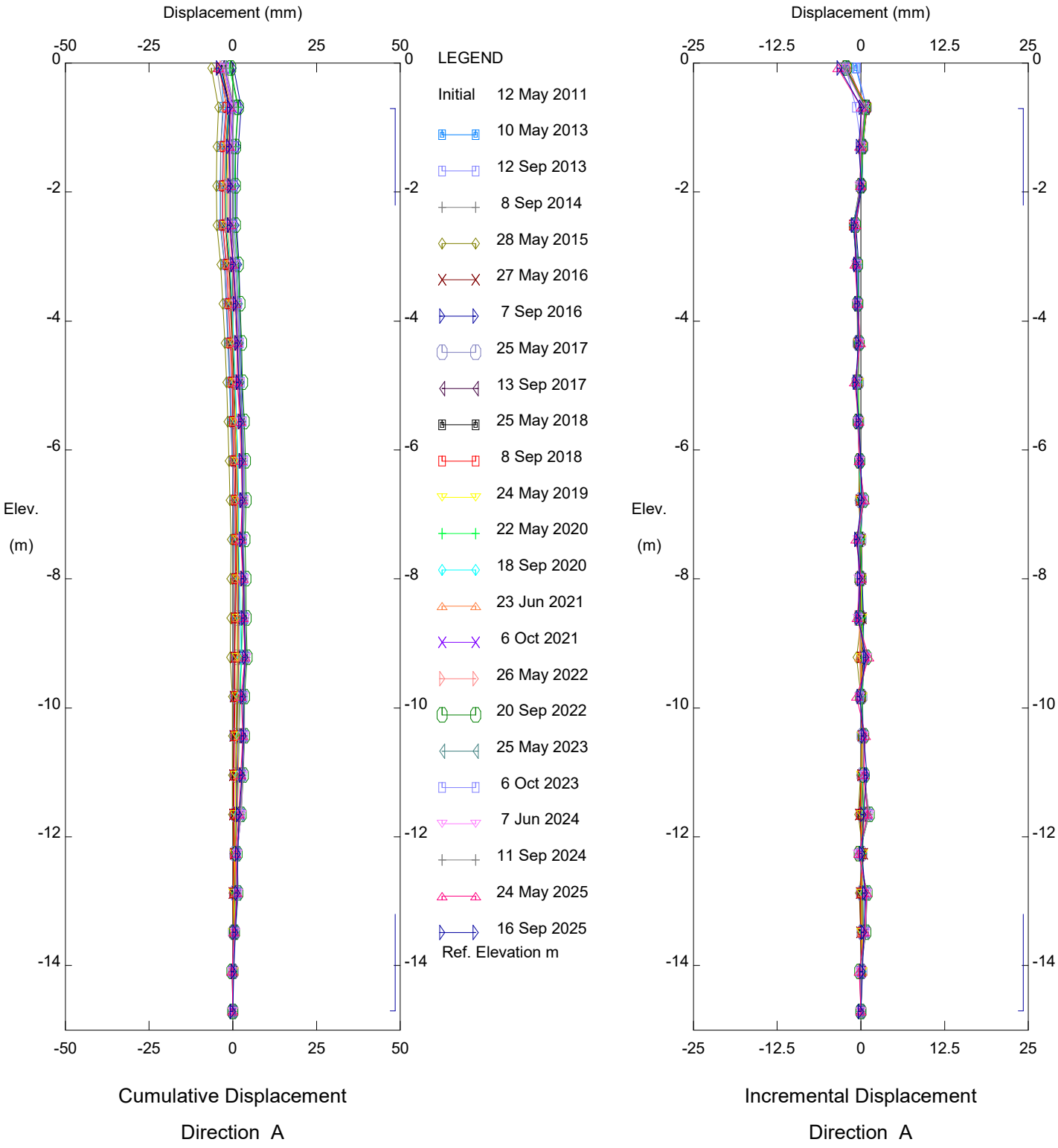
Thurber Engineering - Edmonton



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

Alberta Transportation

Thurber Engineering - Edmonton



Cumulative Displacement

Direction A

Incremental Displacement

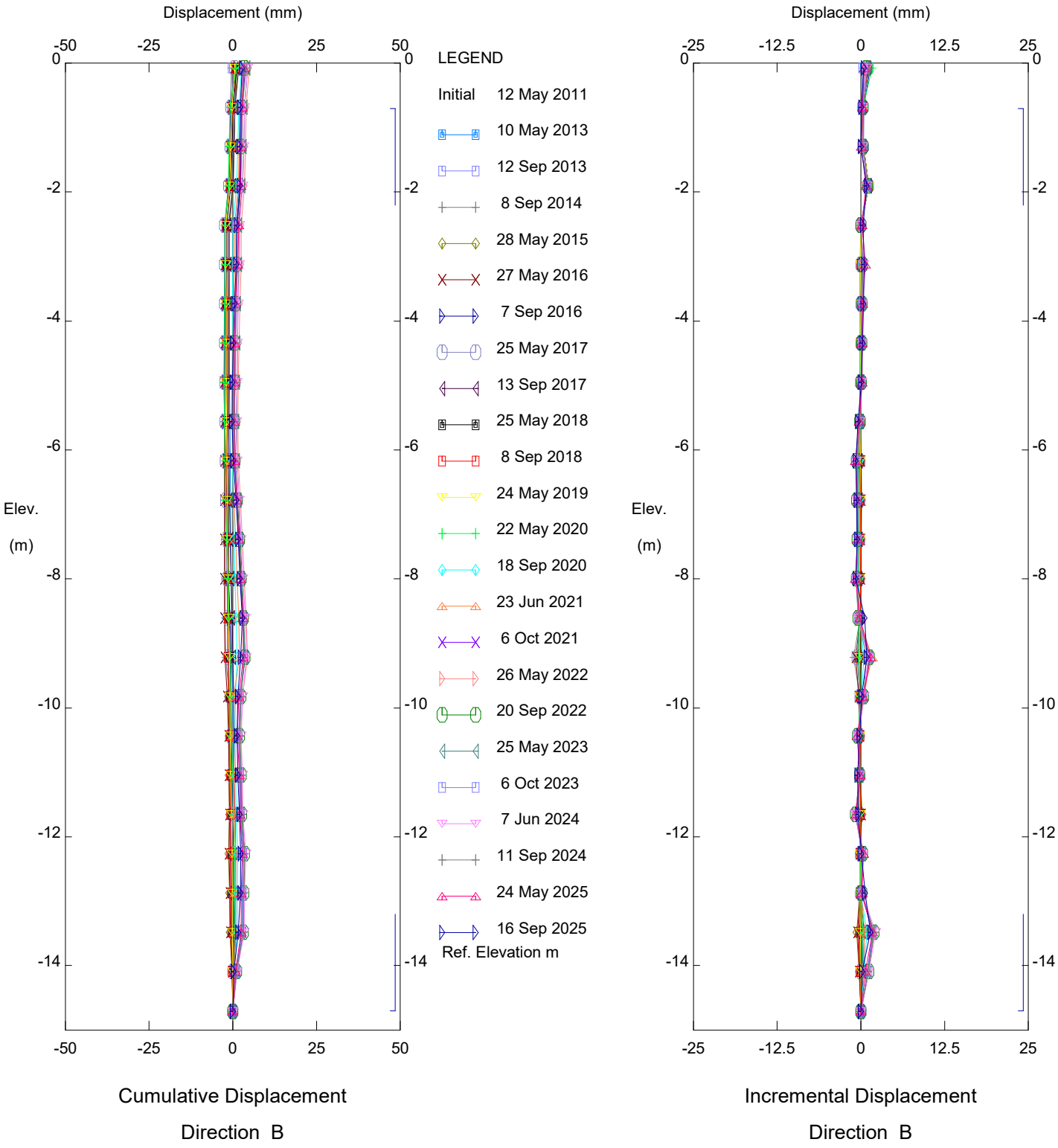
Direction A

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 - Edmonton



Cumulative Displacement

Direction B

Incremental Displacement

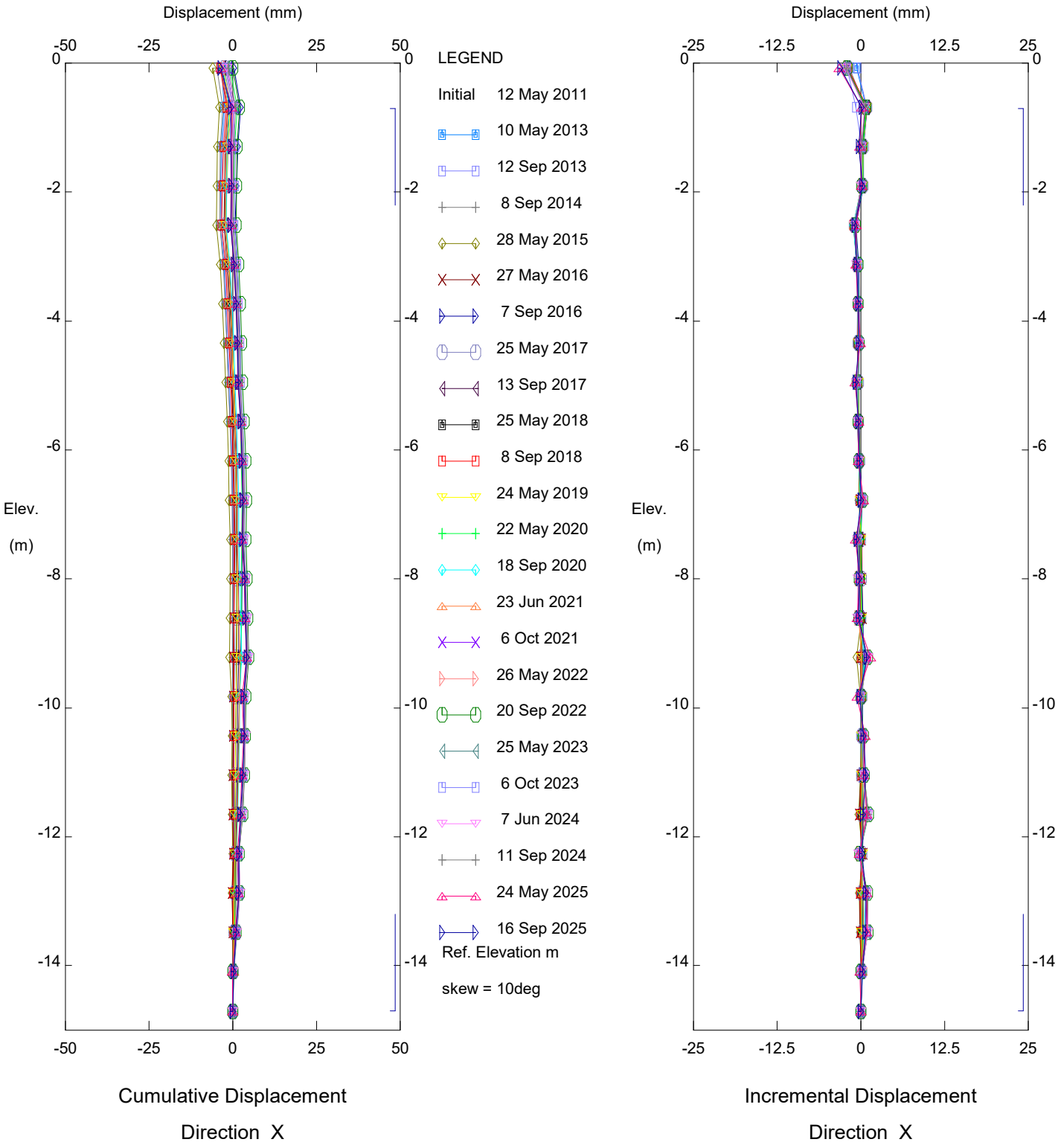
Direction B

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 - Edmonton



Cumulative Displacement

Direction X

Incremental Displacement

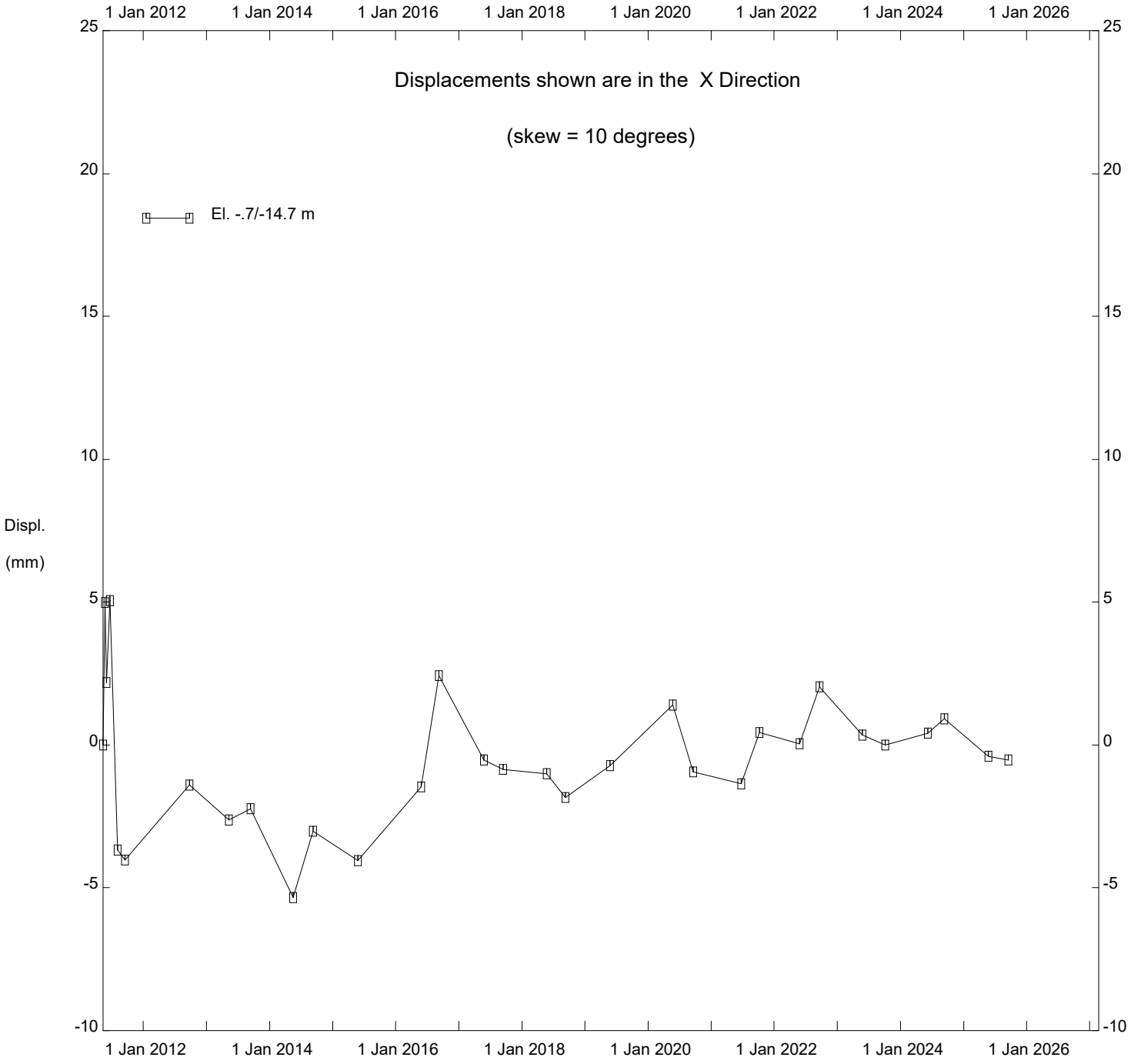
Direction X

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

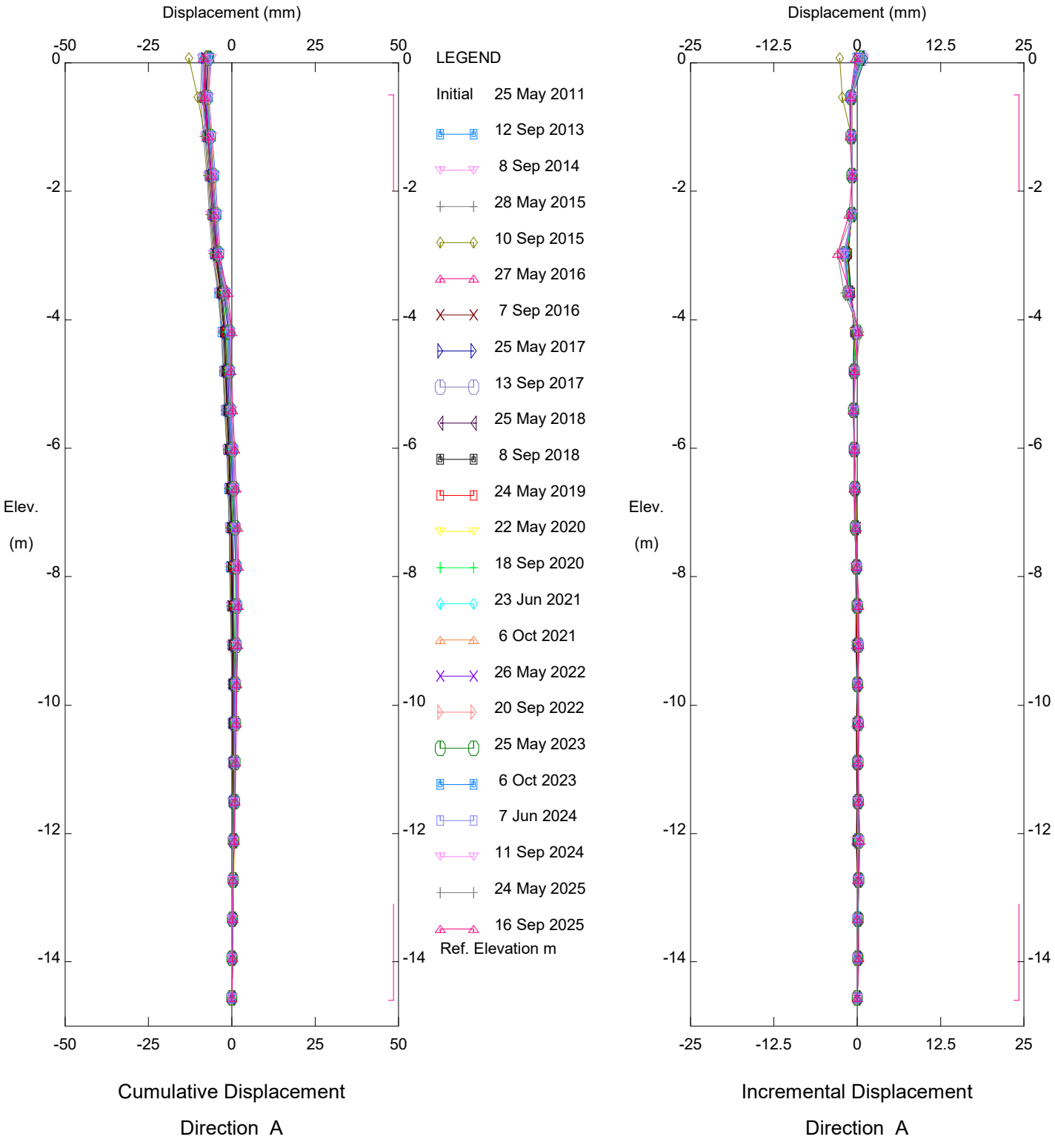
Thurber Engineering - Edmonton



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

Alberta Transportation

Thurber Engineering - Edmonton



Cumulative Displacement

Direction A

Incremental Displacement

Direction A

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

Alberta Transportation

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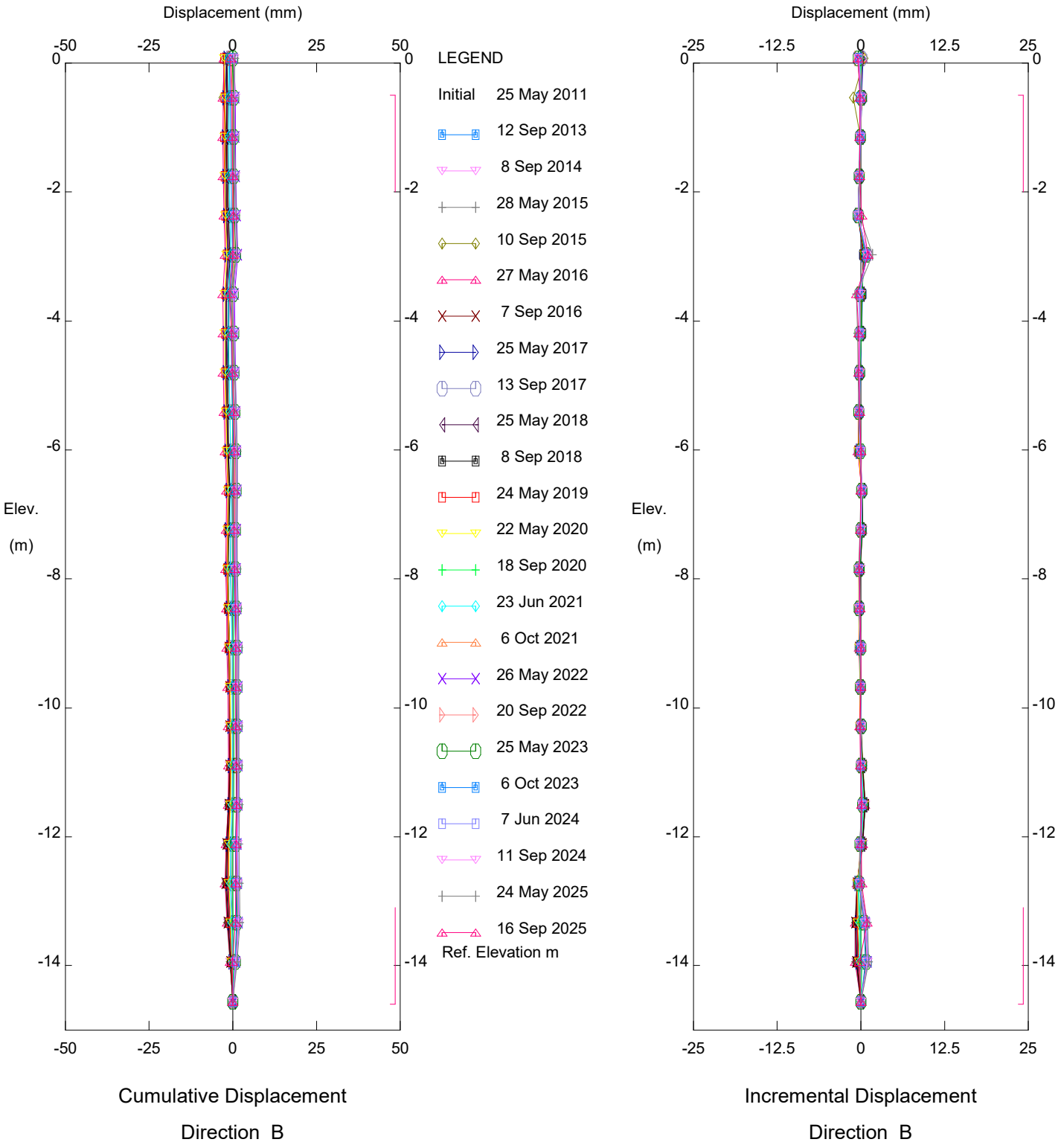
Thurber Engineering - Edmonton



Cumulative Displacement

Direction B

Incremental Displacement

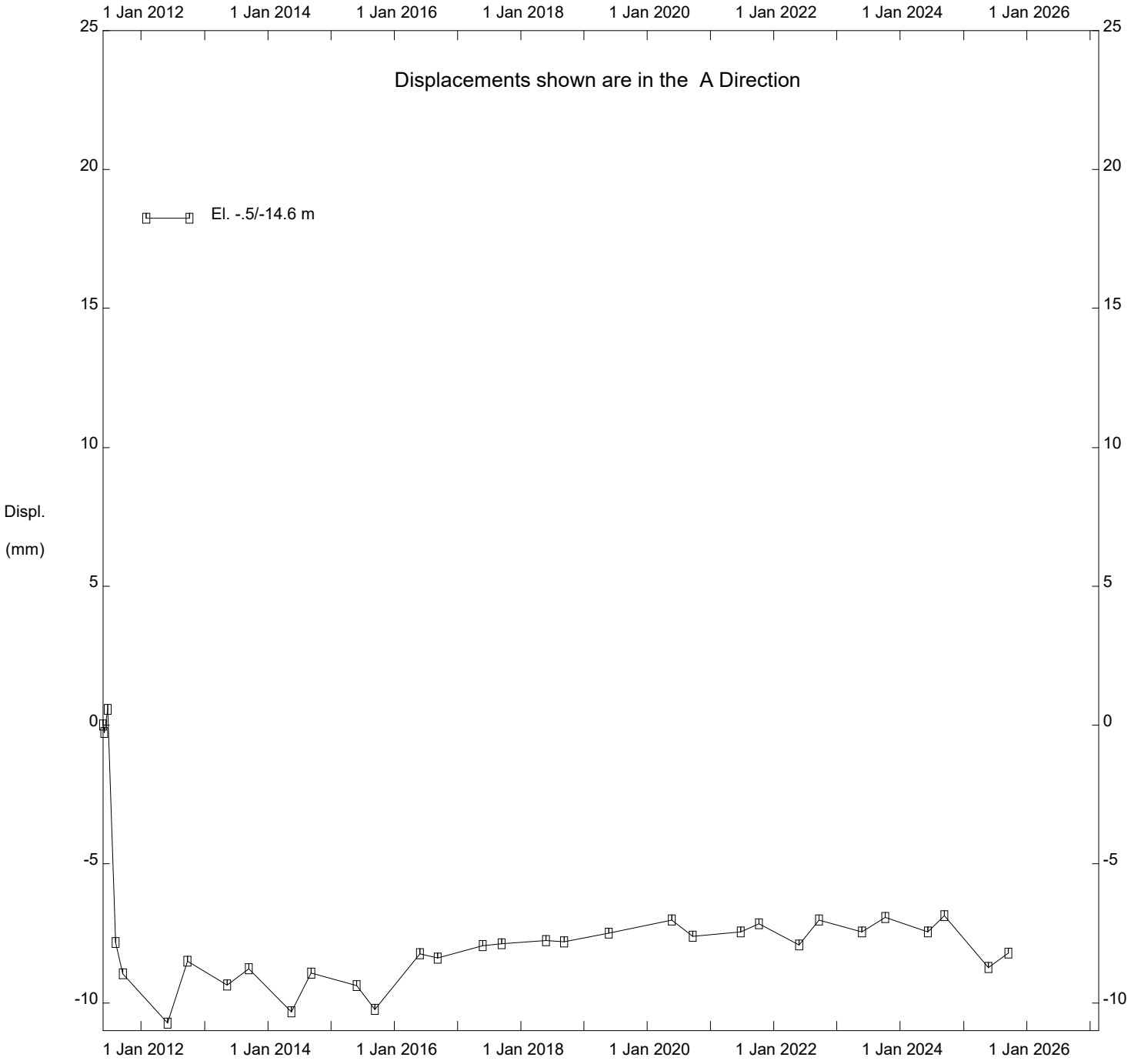
Direction B

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

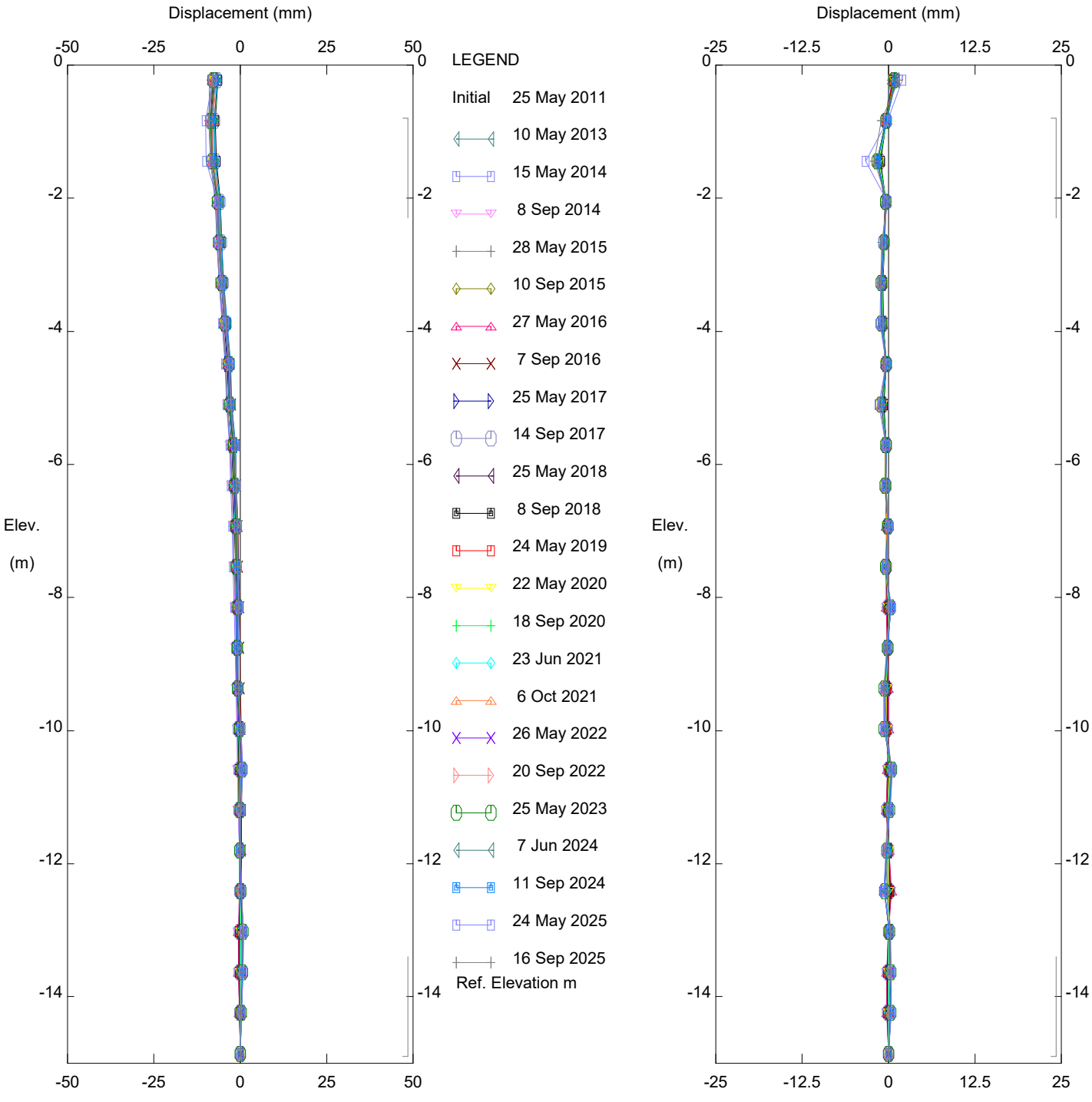
Thurber Engineering - Edmonton



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

Alberta Transportation

Thurber Engineering - Edmonton



Cumulative Displacement

Direction A

Incremental Displacement

Direction A

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

Alberta Transportation

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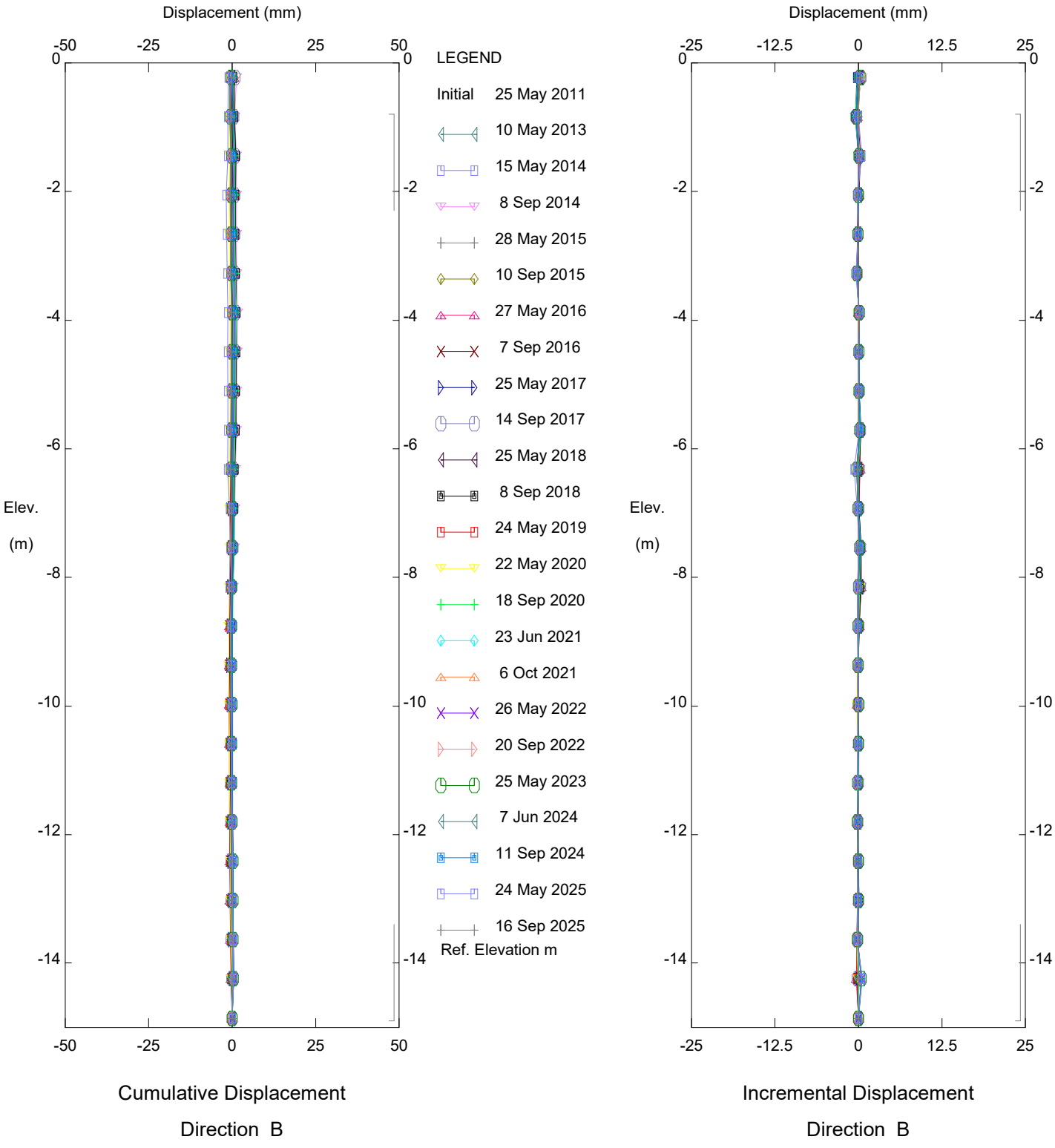
Thurber Engineering - Edmonton



Cumulative Displacement

Direction B

Incremental Displacement

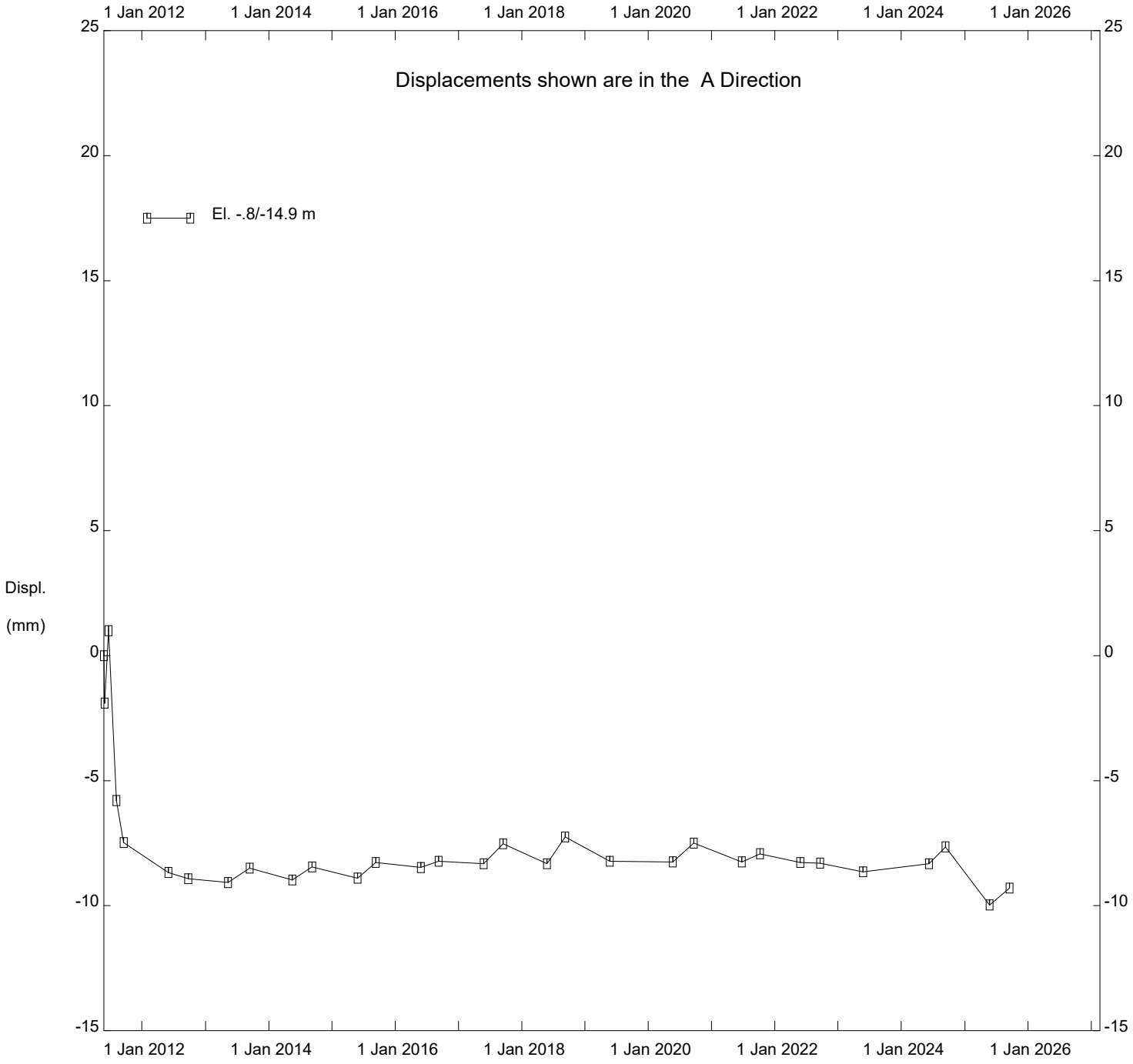
Direction B

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

Thurber Engineering - Edmonton



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)

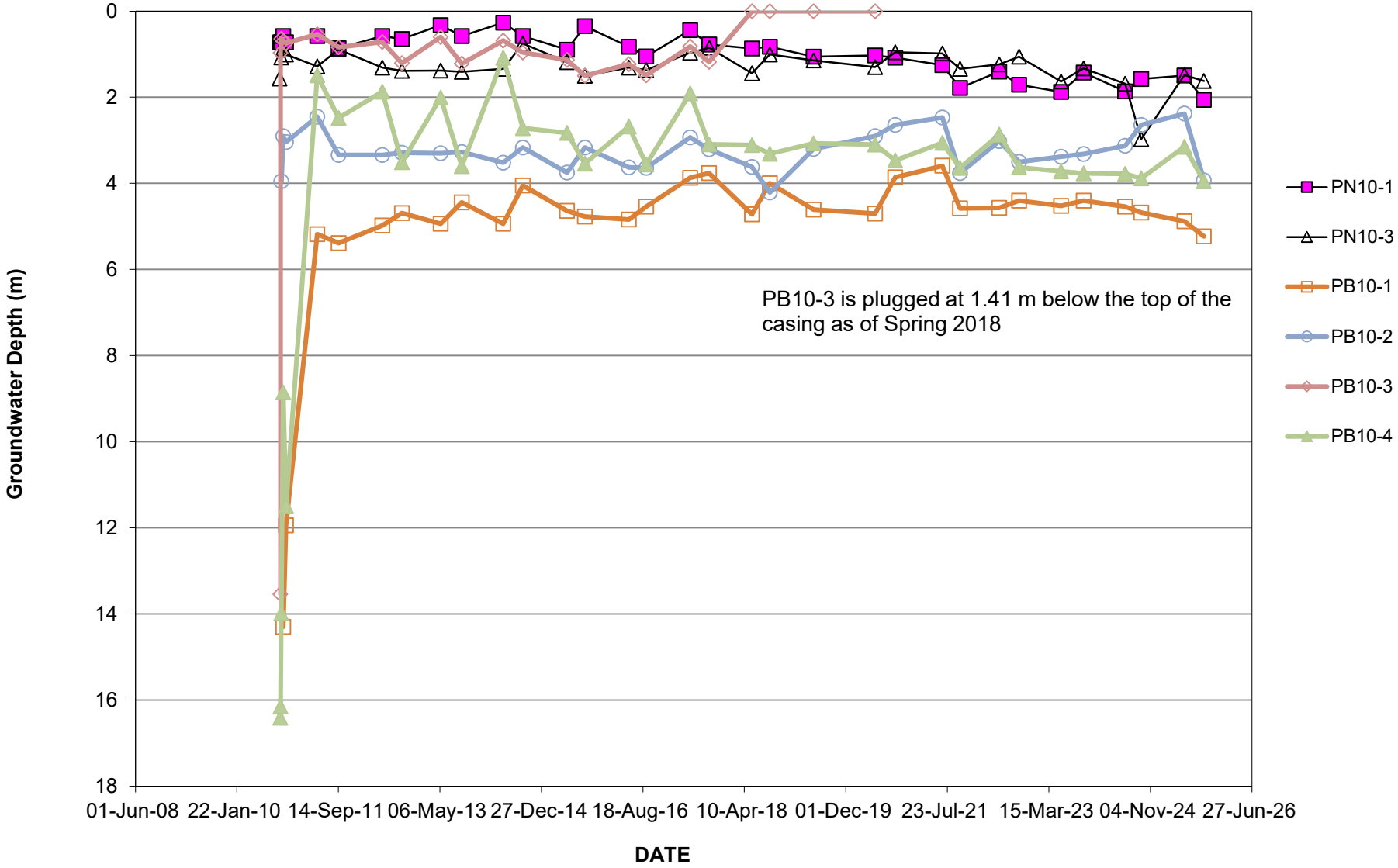


FIGURE NC103-2
VIBRATING WIRE LOAD CELL DATA FOR
HWY 41:23, KEHIWIN LAKE (km 7.8)