

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



Site Number	Location	Name	Hwy	km
NC102 (NC024-2)	HWY 41:23 C1 8.88	Kehiwin Lake	41:23	Km 8.8
Legal Description: 3-31-58-6 W4		UTM Co-ordinates		
		12U E 507287.34	N	5989236.19

Current Monitoring:	23-May-2025	Previous Monitoring	05-June-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 SI11-3, SI15-1 to SI15-4, SI16-1 and SI16 2	Pneumatic Piezometers (PN): PN10-1, PN10-3, PN10-5, PN10-6 and PN15 1 to PN15 4	Vibration Wire Piezometers (VW): N/A	Standpipe Piezometers (SP): PB10-1 and PB10-3 to PB10-4
Load Cell (LC): N/A	Strain Gauges: N/A	SAA's: N/A	Others:

Readout Equipment Used			
Slope Inclinometers: Two RST Digital Inclinomometer 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:	Strain Gauges:	SAA's:	Others:
Notes: - The stickup protector of PB10-3 was noted to be bent and the instrument was blocked at 0.96 m below the top of the protector.			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	Slope inclinometer SI10-1, installed in the highway east ditch upslope of the NC24B pile wall, continued to show no discernible movement. SI10-3 installed downslope of the NC24B pile wall, showed a rate of movement of 0.5 mm/yr over 0.0 m to 2.4 m of depth since the spring of 2024 readings. SI11-1 through SI11-3 were installed in piles P7, P16 and P24, respectively, of the NC24B pile wall. SI11-1 to SI11-3 showed no discernible movement since the spring of 2024 readings. SI11-1 and SI11-2 have shown total pile head movements of 1.9 mm and 1.8 mm, respectively, since installation. SI11-3 has shown a total pile head movement of 0.1 mm in the upslope direction since installation (i.e., likely reflecting probe accuracy).

	Slope inclinometer SI15-1, installed in the highway east ditch upslope of the NC24D pile wall, has shown no discernible movement since initialization. SI15-2, installed immediately downslope of the NC24D pile wall, showed a rate of movement of 0.3 mm/yr over 3.0 m to 4.8 m depth since the spring of 2024 readings. SI15-4, installed near the west edge of the highway to the south of the NC24D pile wall, showed a rate of movement of 0.4 mm/yr over 1.6 m to 3.4 m depth and a rate of movement of 0.5 mm/yr over 3.4 m to 4.7 m depth since the spring of 2024. SI16-1, installed in the 2016 pile wall (NC24D), showed no discernible movement over the length of the pile from 0.0 m to 12.2 m depth since the spring of 2024 readings. SI16-1 has shown a total pile head movement of 4.3 mm to date. SI16-2, also installed in the 2016 pile wall, showed a rate of movement of less than 1 mm/yr over the length of the pile from 0.0 m to 12.2 m depth since the spring of 2024 readings. SI16-2 has shown a total pile head movement of 4.3 mm to date. Pneumatic piezometers PN10-1, PN10-3, PN10-6, and PN15-4 showed decreases in groundwater level of 0.09 m, 0.09 m, 0.15 m, and 0.03 m, respectively, since the spring of 2024 readings. PN10-5, PN15-1, PN15-2, and PN15-3 showed increases in groundwater levels of 0.05 m, 0.06 m, 0.16 m, and 0.15 m, respectively, since the spring of 2024 readings. Standpipe piezometer PB10-1 showed an increase in groundwater level of 0.72 m since the spring of 2024 readings. Standpipe piezometer PB10-4 showed a decrease in groundwater level of 0.05 m since the spring of 2024 readings. In general, the pile walls appear to have performed well since the completion of construction.
Future Work:	The instruments should be read again in the spring of 2026.
Instrumentation Repairs:	The damage to PB10-3 should be inspected to determine whether repairs by hand are possible.
Additional Comments:	

Attachments:	• Table NC102-1 Spring 2025 – HWY 41:23 Kehiwin Lake (Km 8.8), Slope Inclinometer Instrumentation Reading Summary • Table NC102-2 Spring 2025 – HWY 41:23 Kehiwin Lake (Km 8.8), Pneumatic Piezometer Instrumentation Reading Summary • Table NC102-3 Spring 2025 – HWY 41:23 Kehiwin Lake (Km 8.8), Standpipe Piezometer Instrumentation Reading Summary • Statement of Limitations and Conditions • APPENDIX A – NC102-1 SPRING 2025 - o Field Inspector's report - o Site Plan Showing Approximate Instrument Locations (Drawing No. 32122-NC102) - o SI Reading Plots - o Figure NC102-1 (Piezometer Depths, 2010 Instruments) - o Figure NC102-2 (Piezometer Depths, 2015 Instruments)
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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.
Tarek Abdelaziz, Ph.D., P. Eng.
Partner | Senior Geotechnical Engineer

Lucas Green, P.Eng.
Geotechnical Engineer

Table NC102-1: Spring 2025– Hwy 41:23 Kehiwin Lake (Km 8.8) Slope Inclinator Instrumentation Reading Summary

Date Monitored: May 23, 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	October 13, 2010	No discernible movement	No discernible movement	Operational	June 5, 2024	No discernible movement	N/A	N/A
SI10-3	October 13, 2010	135.6 over 0.0 m to 2.4 m depth in 323° direction	30.3 in May 2011	Operational	June 5, 2024	0.5	0.5	-1.6
SI11-1 (P7)	June 21, 2011	1.9 over 0.1 m to 9.3 m depth in 275° direction	5.1 in August 2011	Operational	June 5, 2024	No discernible movement	N/A	-1.2
SI11-2 (P16)	June 21, 2011	1.8 over 0.1 m to 9.9 m depth in 346° direction	11.0 in August 2011	Operational	June 5, 2024	No discernible movement	N/A	-2.3
SI11-3 (P24)	June 21, 2011	-0.1 over 0.4 m to 9.6 m depth in 358° direction	4.5 in September 2018	Operational	June 5, 2024	No discernible movement	N/A	-2.6
SI15-1	August 20, 2015	No discernible movement	No discernible movement	Operational	June 5, 2024	N/A	N/A	N/A
SI15-2	August 20, 2015	16.8 over 3.0 m to 4.8 m depth in 328° direction	15.4 in September 2020	Operational	June 5, 2024	0.2	0.3	0.1
SI15-3	August 20, 2015	87.3 over 1.7 to 3.5 m depth in 337° direction	233.8 in September 2020	Sheared off at 3.7 m below top of casing	May 27, 2022	N/A	N/A	N/A

Figure 32122-NC102 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table NC102-1 – Continued: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 8.8) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: May 23, 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)
SI15-4	August 20, 2015	12.7 over 1.6 to 3.4 m depth in 328° direction	19.6 in September 2020	Operational	June 5, 2024	0.4	0.4	0.5
		13.7 over 3.4 to 4.7 m depth in 328° direction	9.3 in September 2020			0.5	0.5	0.1
SI16-1 (P04)	October 19, 2016	4.3 over 0.0 to 12.2 m depth in 308° direction	9.2 in March 2017	Operational	June 5, 2024	No discernible movement	N/A	-0.1
SI16-2 (P08)	October 19, 2016	4.3 over 0.0 to 12.2 m depth in 323° direction	8.9 in November 2016	Operational	June 5, 2024	<0.1	<0.1	0.7

Figure 32122-NC102 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table NC102-2: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 8.8) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: May 23, 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 7, 2010	5.9	-	Active	2.76 on October 8, 2010	20.6	3.82	3.73	-0.09
PN10-2A	October 8, 2010	3.9	-	Non-Operational	0.90 on May 31, 2012	N/A	N/A	N/A	N/A
PN10-2B	October 8, 2010	11.9	-	Not Functioning	1.39 on May 31, 2012	N/A	N/A	N/A	N/A
PN10-3	October 10, 2010	10.0	-	Active	2.48 on September 24, 2012	49.6	4.95	4.86	-0.09
PN10-5	October 9, 2010	4.8	-	Active	0.41 on May 26, 2016	33.7	1.33	1.38	0.05
PN10-6	October 9, 2010	9.9	-	Active	1.48 on September 12, 2013	57.0	4.09	3.94	-0.15

Figure 32122-NC102 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table NC102-2 – Continued: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 8.8) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: May 23, 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)
PN15-1	August 20, 2015	8.4	-	Active	1.14 on May 25, 2017	57.1	2.56	2.62	0.06
PN15-2	August 20, 2015	9.1	-	Active	0.96 on May 25, 2017	76.1	1.39	1.55	0.16
PN15-3	August 20, 2015	3.8	-	Active	1.07 on May 27, 2022	25.7	1.19	1.34	0.15
PN15-4	August 20, 2015	6.1	-	Active	1.23 on May 25, 2017	32.9	2.75	2.72	-0.03

Figure 32122-NC102 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table NC102-3: Spring 2025 – Hwy 41:23 Kehiwin Lake (Km 8.8) Standpipe Piezometer Instrumentation Reading Summary

Date Monitored: May 23, 2025

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS		MAXIMUM GROUNDWATER LEVEL BGS (m)	MEASURED GROUNDWATER DEPTH BGS (m)	PREVIOUS READING BGS (m)	CHANGE IN GROUNDWATER LEVEL SINCE PREVIOUS READING (m)
PB10-1	October 7, 2010	19.7	-	Operational		0.63 on May 25, 2017	2.46	3.18	0.72
PB10-2	October 7, 2010	20.0	-	Blocked		3.03 on May 12, 2011	N/A	3.60 (June 22, 2021)	N/A
PB10-3	October 10, 2010	20.0	-	Damaged		0.62 on May 25, 2017	N/A	1.15 (June 5, 2024)	N/A
PB10-4	October 10, 2010	19.6	-	Operational (blocked at 1.59 m BGS)		0.98 on June 22, 2021	1.18	1.13	-0.05

Drawing 32122-NC102 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

STATEMENT OF LIMITATIONS AND CONDITIONS

1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

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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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The Report has been prepared for the specific site, development, design objectives and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

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- a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.
- b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
- c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.
- d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

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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 NC102 (NC024-2): HWY 41:23 KEHIWIN LAKE (km 8.8)

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS
INSTRUMENTATION MONITORING FIELD SUMMARY (NC102)
SPRING 2025**

Location: Kehiwin Lake (HWY 41:23 C1 8.888)
File Number: 32122
Probe: RST Set 5R and 8R
Cable: RST Set 5R and 8R

Readout: RST C109 Unit 8/ DGS1 Dipmeter
Casing Diameter: 2.75"
Temp: 15
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 #	Size (")	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-			
SI10-1	507287.34	5989236.19	23-May-25	0.89	66 to 4	275	-666	674	361	-382	5R/5R	2.75"	
SI10-3	507262.45	5989246.17	23-May-25	0.95	64 to 4	305	79	-73	337	-336	8R/8R	2.75"	
SI11-1	507254.65	5989210.55	23-May-25	0.77	32 to 2	282	-387	400	-12	15	8R/8R	2.75"	Pile Wall NC24B
SI11-2	507268.34	5989246.18	23-May-25	0.81	34 to 2	308	240	-227	-689	688	8R/8R	2.75"	Pile Wall NC24B
SI11-3	507279.42	5989276.23	23-May-25	1.10	34 to 2	315	-527	534	611	-609	8R/8R	2.75"	Pile Wall NC24B
SI15-1	507254.71	5989170.50	23-May-25	0.93	32 to 2	297	422	-414	404	-426	5R/5R	2.75"	
SI15-2	507236.37	5989178.26	23-May-25	1.00	48 to 2	300	402	-388	687	-686	8R/8R	2.75"	
SI15-4	507242.28	5989168.25	23-May-25	1.13	48 to 2	310	421	-413	553	-575	5R/5R	2.75"	
SI16-1	507238.05	5990972.19	23-May-25	0.95	42 to 2	290	293	-278	139	-137	8R/8R	2.75"	Pile Wall NC24D (SIP04)
SI16-2	507238.82	5990957.80	23-May-25	0.97	42 to 2	285	-41	56	119	-121	8R/8R	2.75"	Pile Wall NC24D (SIP08)

PNEUMATIC PIEZOMETER (PN) READINGS

PN #	GPS Location (UTM 12)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN10-1	Attached to SI10-1		23-May-25	20.6	33669
PN10-3	Attached to SI10-3		23-May-25	49.6	33666
PN10-5	Attached to SI10-5		23-May-25	33.7	32863
PN10-6	Attached to SI10-6		23-May-25	57	33664
PN15-1	Attached to SI15-1		23-May-25	57.1	36682
PN15-2	Attached to SI15-2		23-May-25	76.1	36689
PN15-3	Attached to SI15-3		23-May-25	25.7	36688
PN15-4	Attached to SI15-4		23-May-25	32.9	36685

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	507293.20	5989259.57	23-May-25	0.76	3.22	20.46	-	-	-	-
PB10-3	507270.27	5989271.77	23-May-25	0.76		21.04	-	-	-	-
PB10-4	507247.00	5989219.00	23-May-25	0.76	1.94	2.35**	-	-	-	-

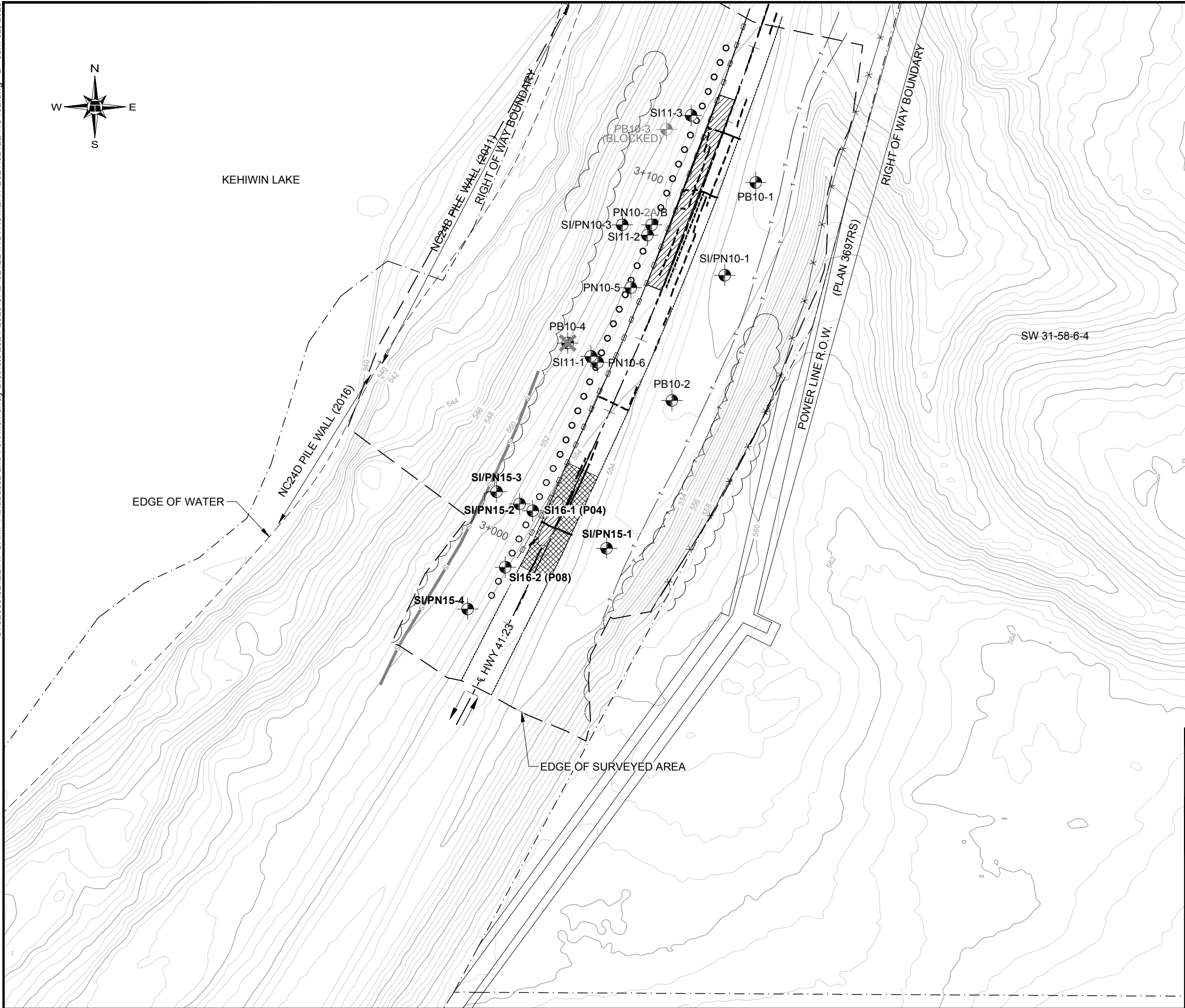
INSPECTOR REPORT

Only water levels recorded in the poor boys.

**** Blocked at 2.35m, Original pipe depth was 6.19m**

PB10-3 Blocked at 0.96m. Stickup protector slanted looks like hit by Mower, see photos.

G:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\CAD\32122 INSTRUMENT 2021-2025\CAD\32122-NC102.dwg - 2 - Jun. 02, 2025

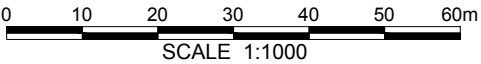


LEGEND

- km 8.8 PILE WALL
- FENCE LINE
- BUSH LINE
- ACTIVE SLIDE CRACKS ON HIGHWAY
- INACTIVE SLIDE CRACKS ON HIGHWAY
- TEST HOLE LOCATION
- SI SLOPE INCLINOMETER
- PN PNEUMATIC PIEZOMETER
- PB POORBOY / STANDPIPE
- DAMAGED/BLOCKED INSTRUMENT
- 550 GROUND SURFACE CONTOUR
- P OVERHEAD POWER LINE (APPROXIMATE)
- T TELUS LINE (APPROXIMATE)
- S SILT FENCE
- GUARD RAIL
- HIGHWAY DIP AREA
- ACP PATCH
- (P04) PILE NUMBER

NOTES:

- CONTOUR INTERVAL IS 0.5m.
- CONTOURS INSIDE SURVEYED AREA WERE SURVEYED BY WSP. ELEVATION CONTOURS OUTSIDE SURVEYED AREA WERE DERIVED FROM LIDAR DATA.
- NC24D PILE WALL IS AN EXTENSION TO THE ORIGINAL NC24B PILE WALL CONSTRUCTED IN 2011.



NORTH CENTRAL
(ATHABASCA AND FORT MCMURRAY DISTRICTS)

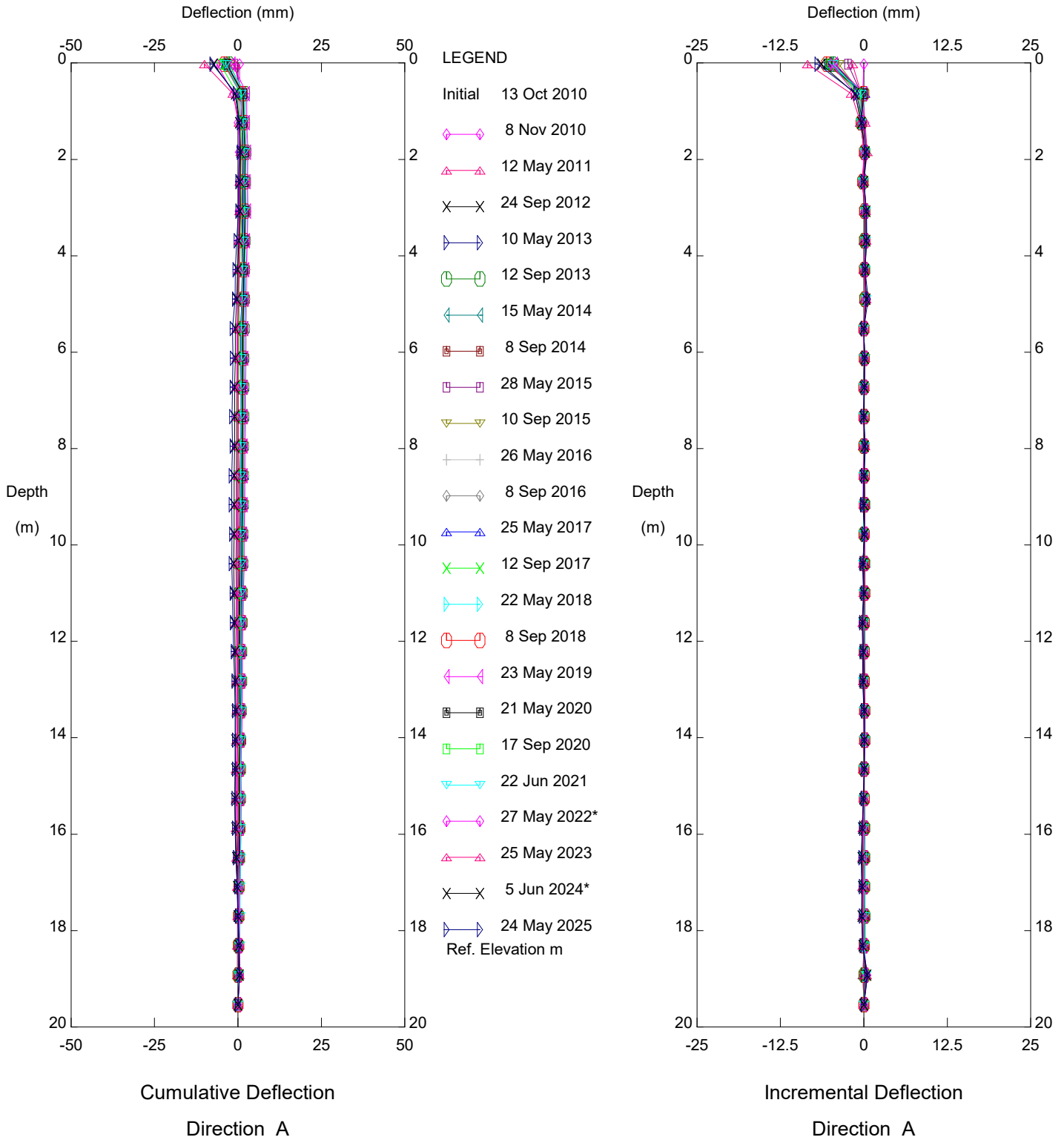
NC102: HWY 41:23 SLIDE (km8.8)
SITE PLAN SHOWING APPROXIMATE
INSTRUMENT LOCATIONS

DWG NO. 32122-NC102

DRAWN BY	CF
DESIGNED BY	BWN
APPROVED BY	TSA
SCALE	1:1000
DATE	JUNE 2025
FILE No.	32122



Thurber Engineering Ltd.

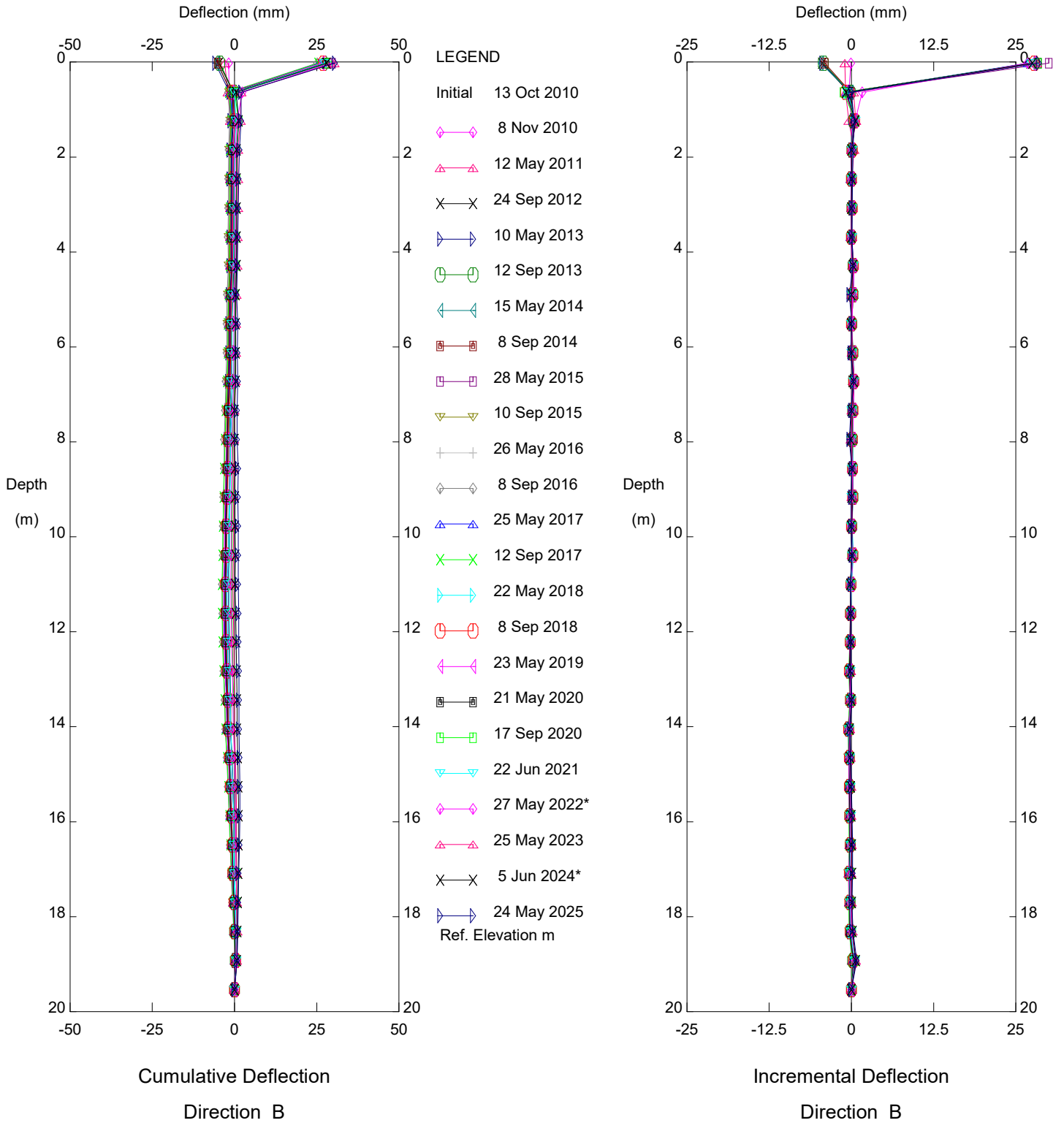


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI10-1

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

Thurber Engineering Ltd.

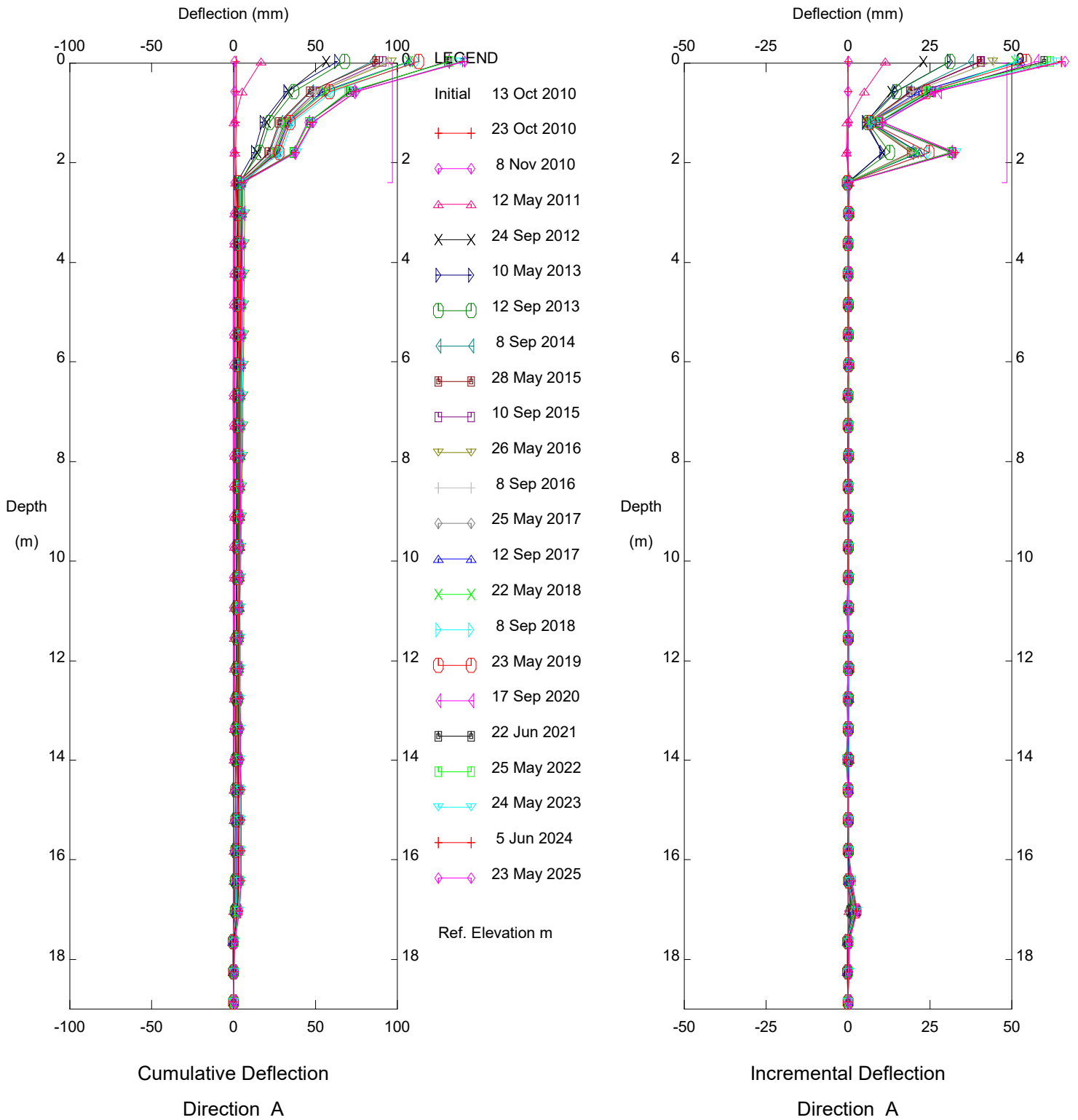


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI10-1

Alberta Transportation

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

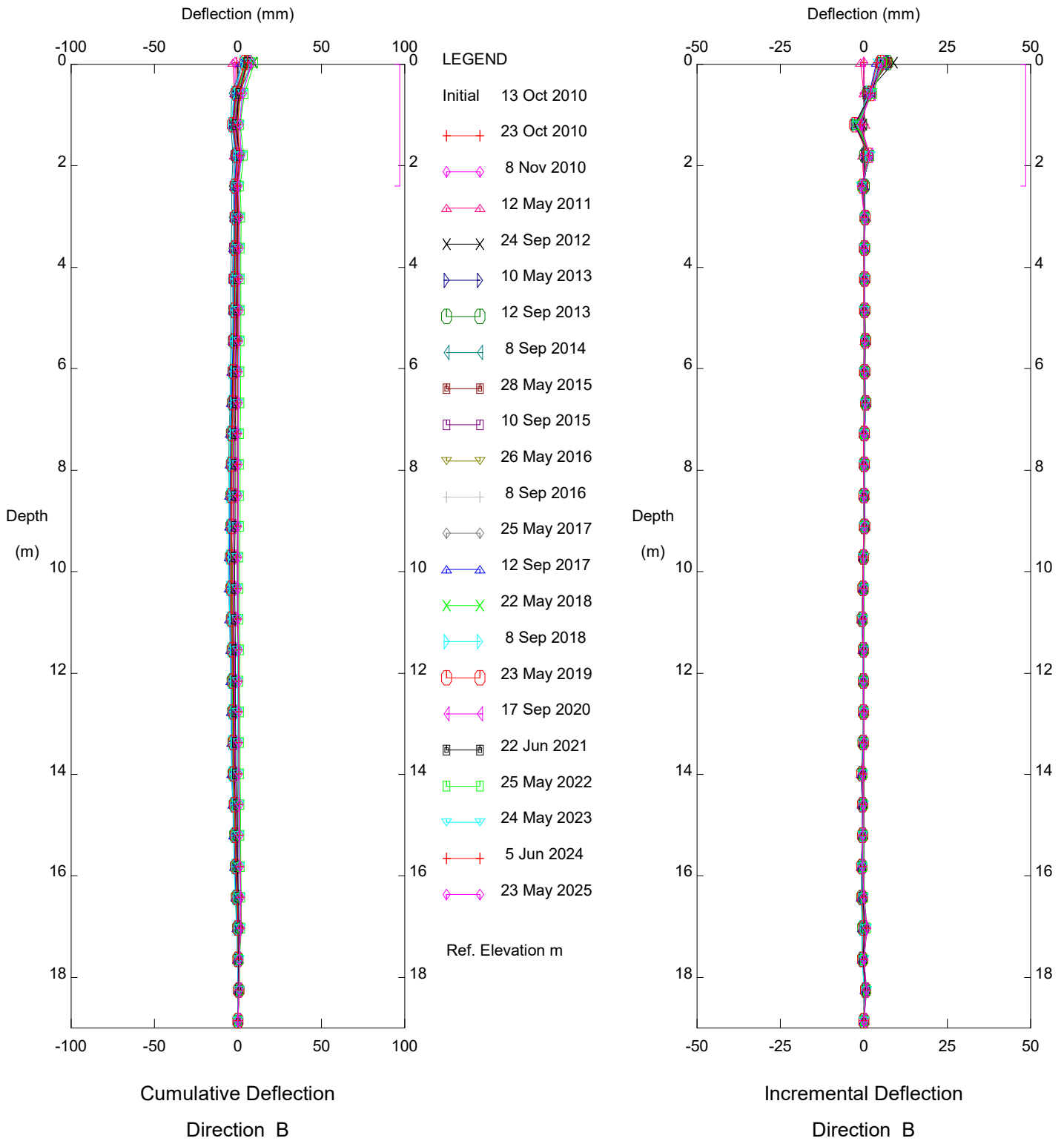
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI10-3

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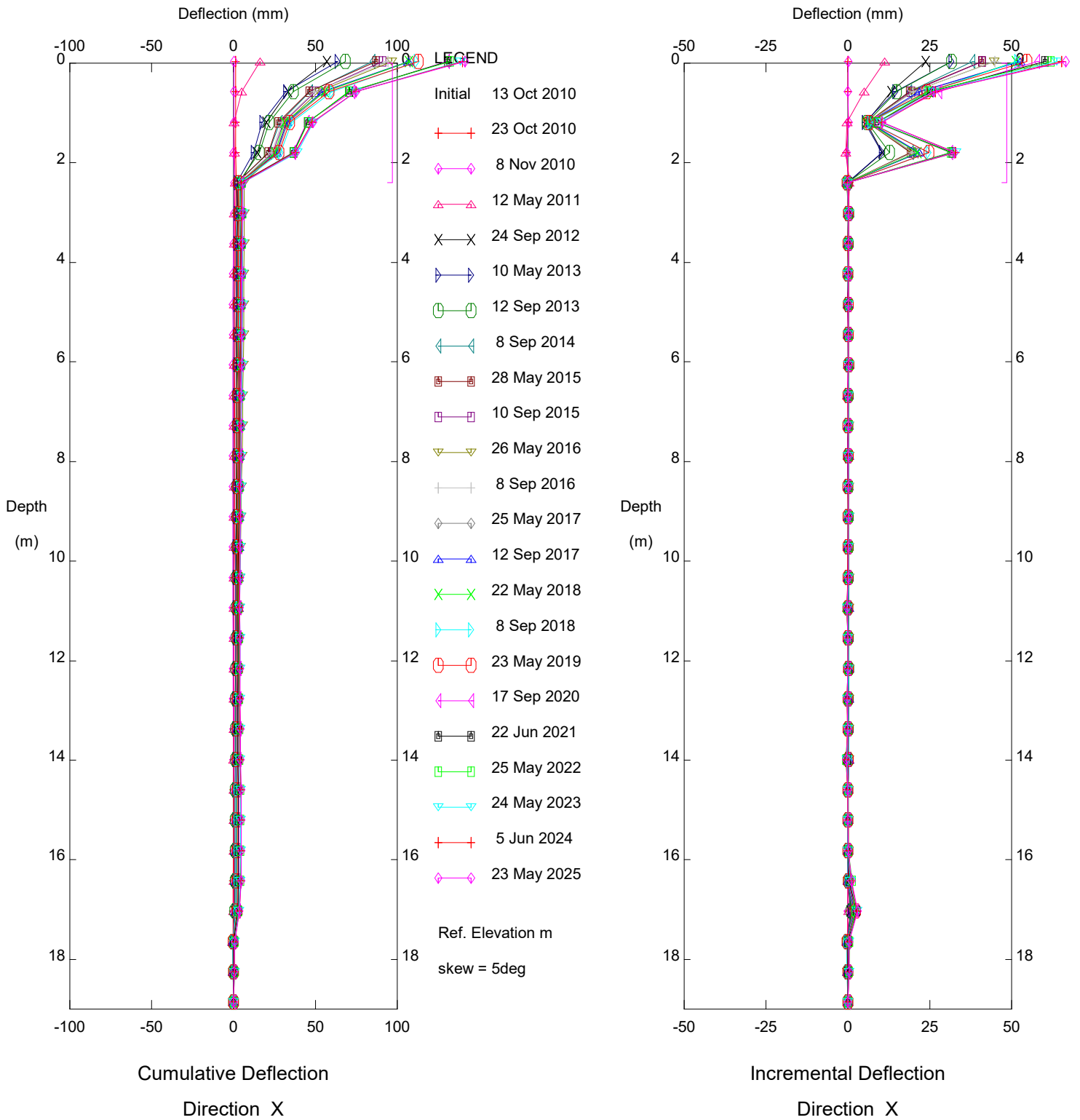
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI10-3

Alberta Transportation

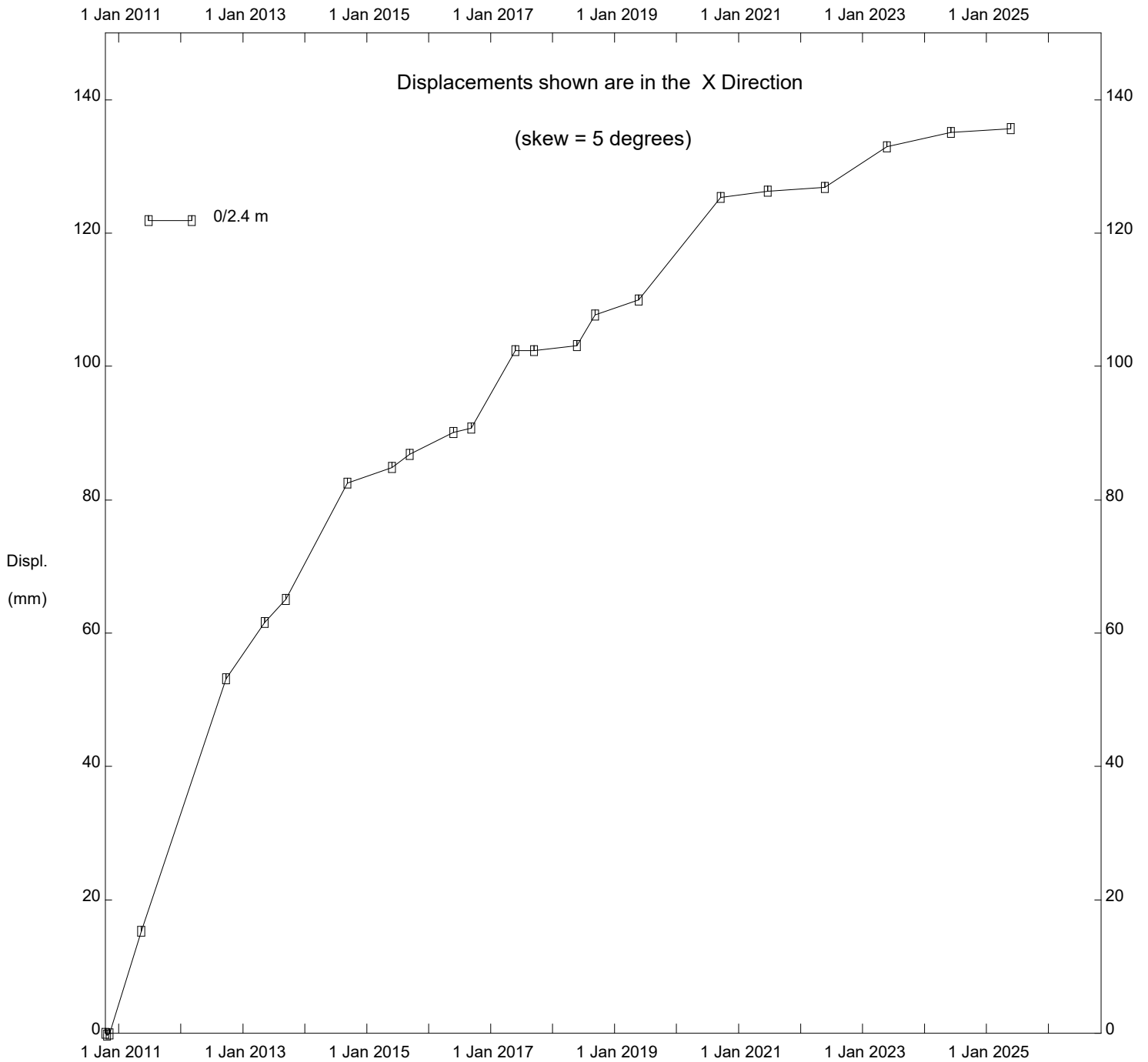
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI10-3

Alberta Transportation

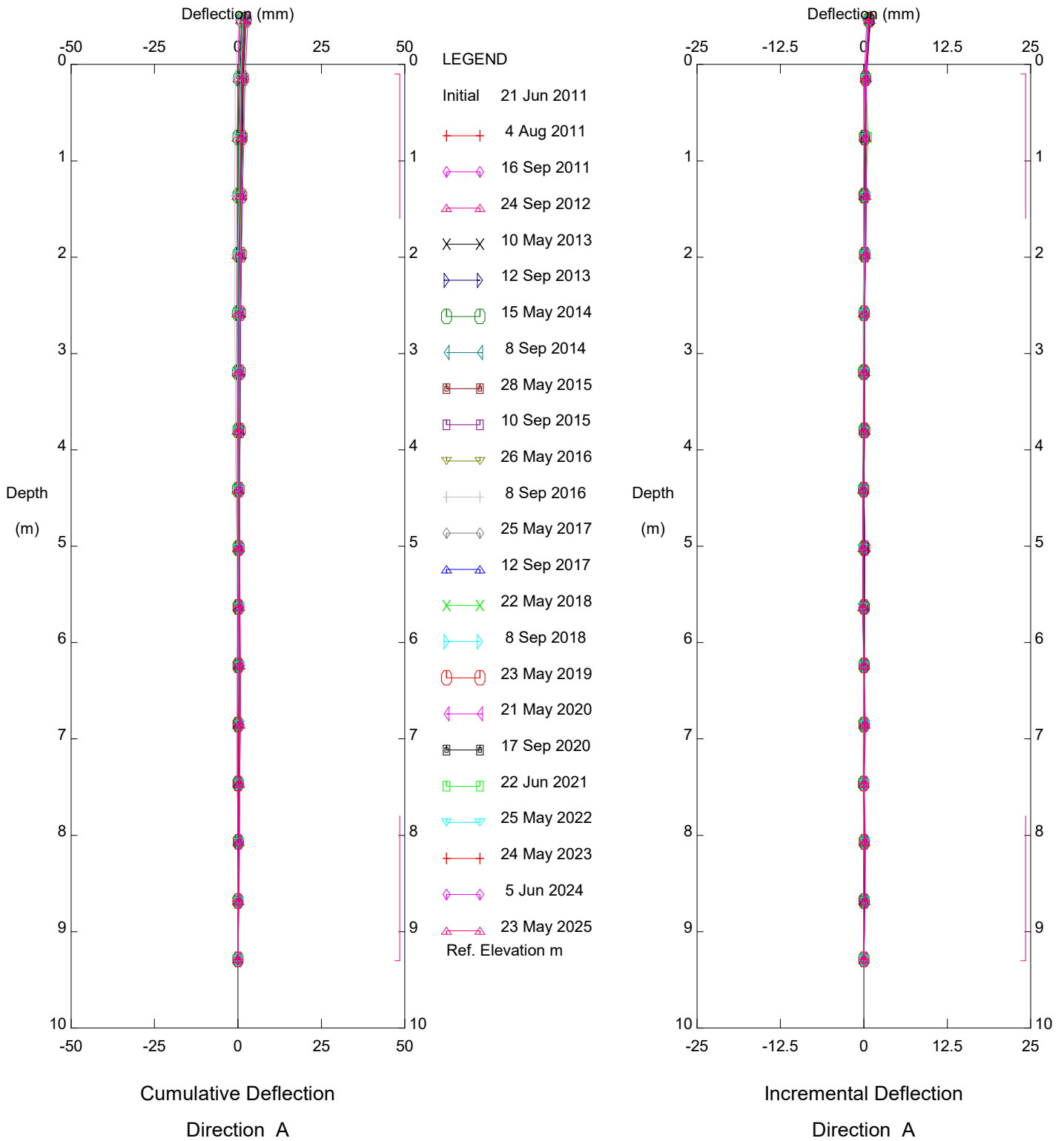
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI10-3

Alberta Transportation

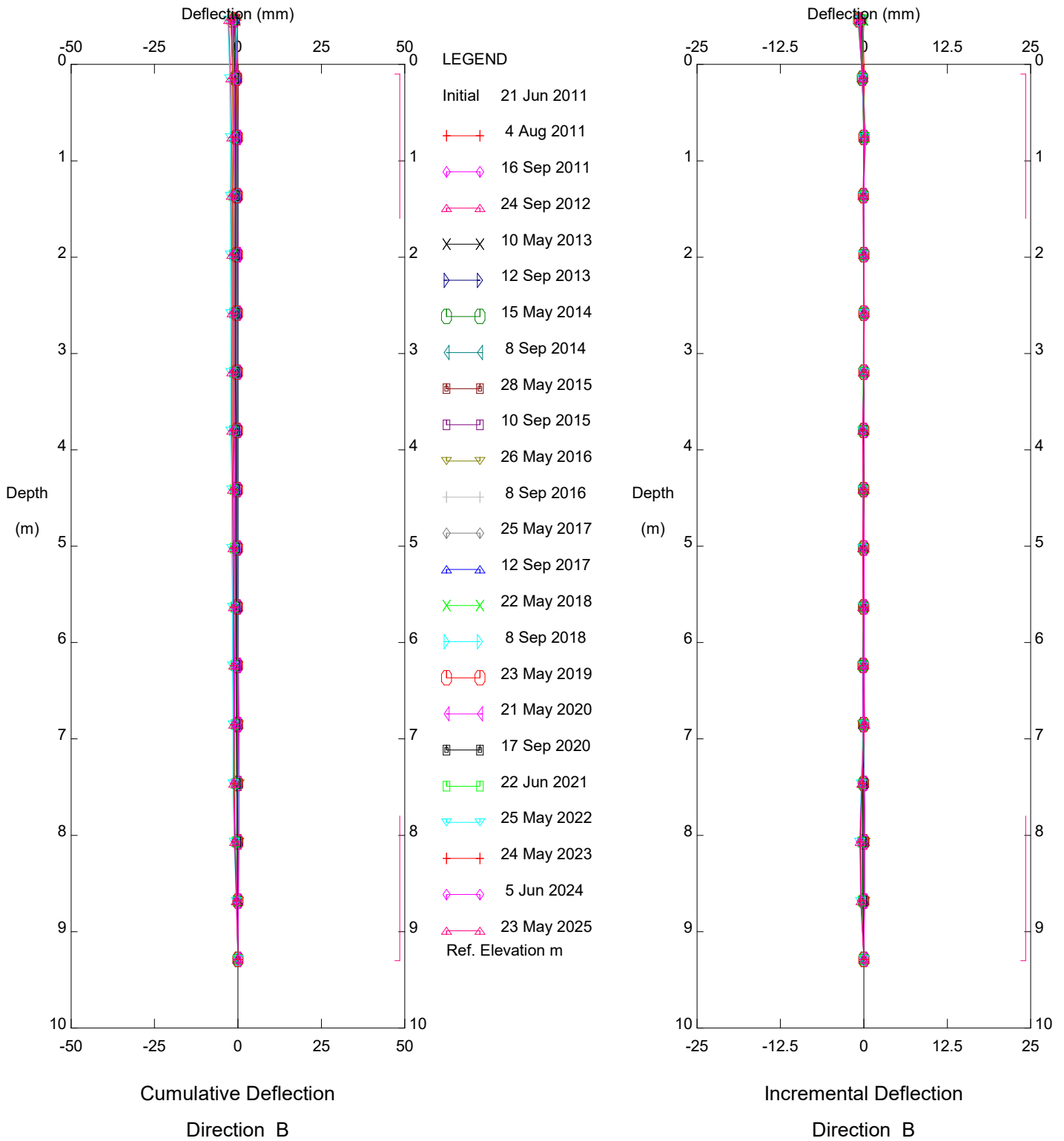
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI11-1 (P7)

Alberta Transportation

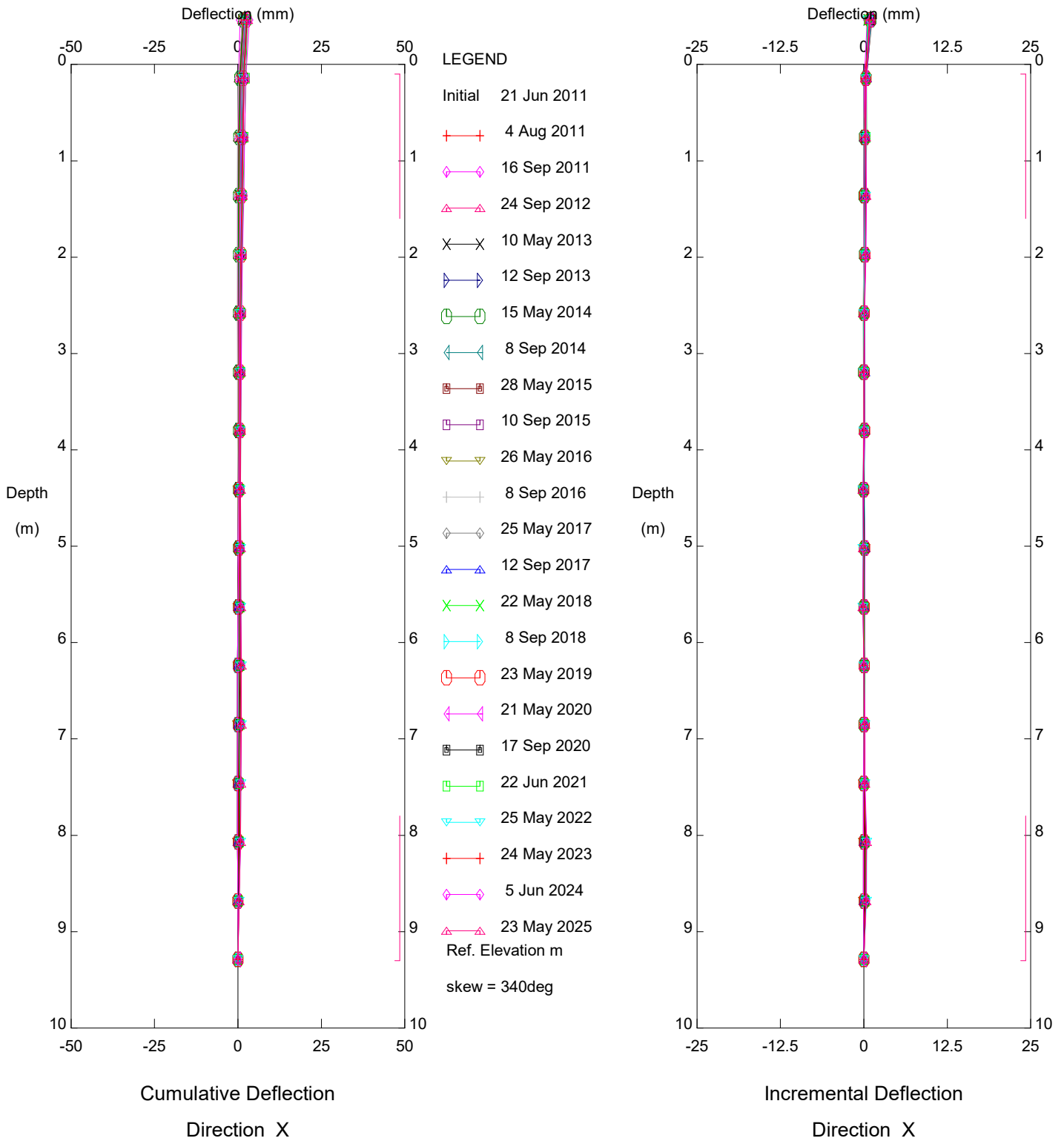
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI11-1 (P7)

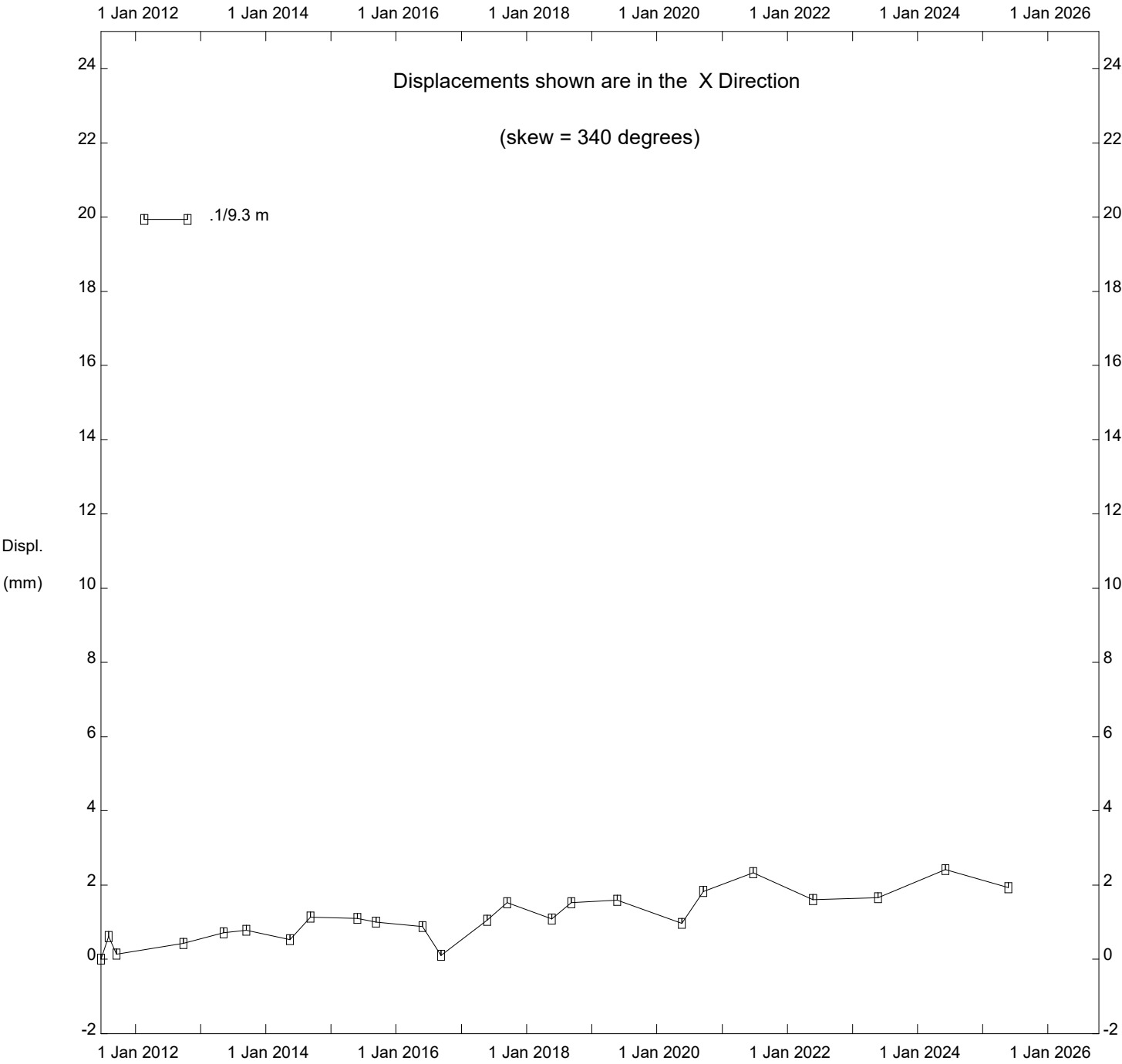
Alberta Transportation

Thurber Engineering Ltd.



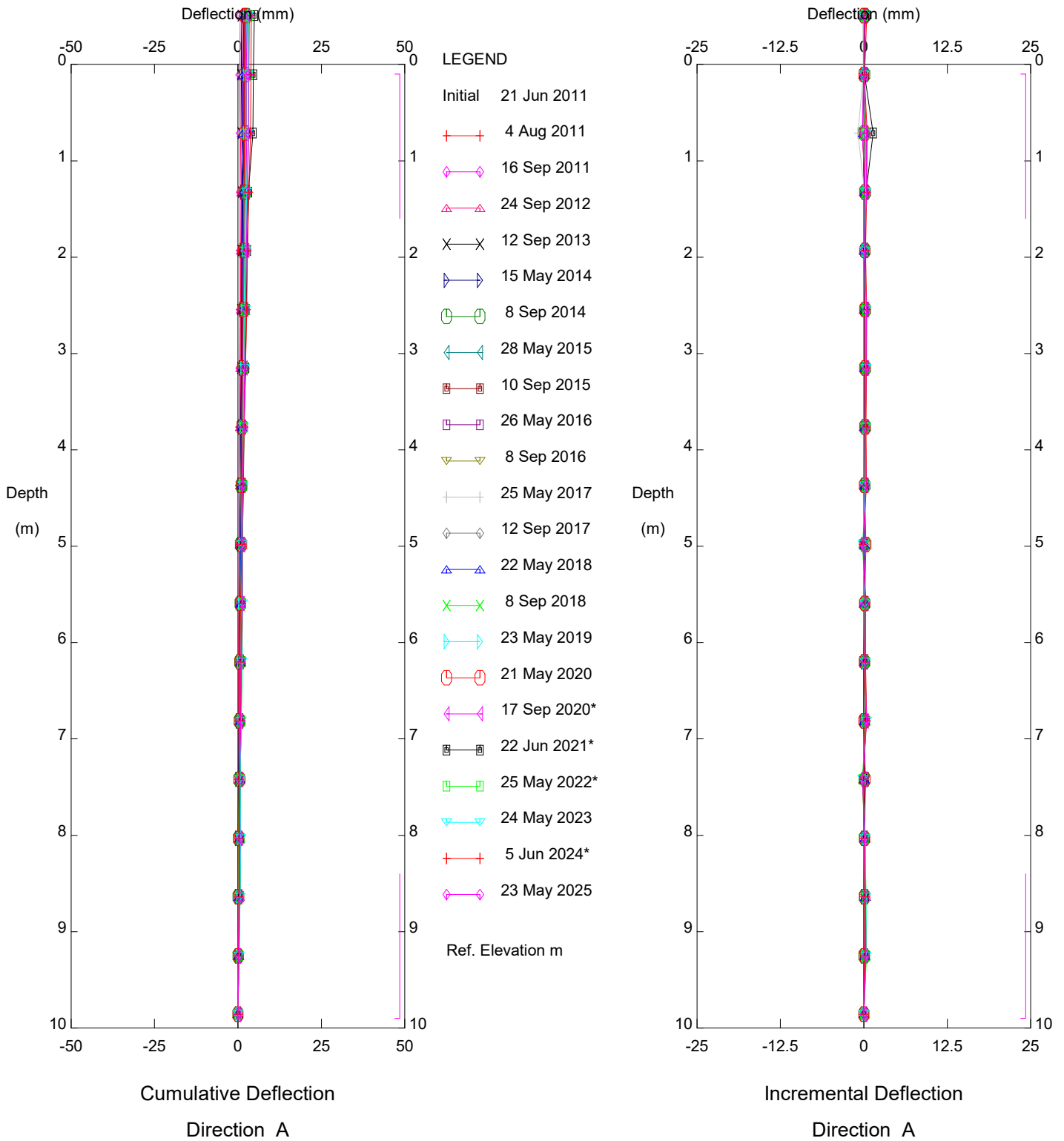
Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI11-1 (P7)

Alberta Transportation



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI11-1 (P7)

Thurber Engineering Ltd.

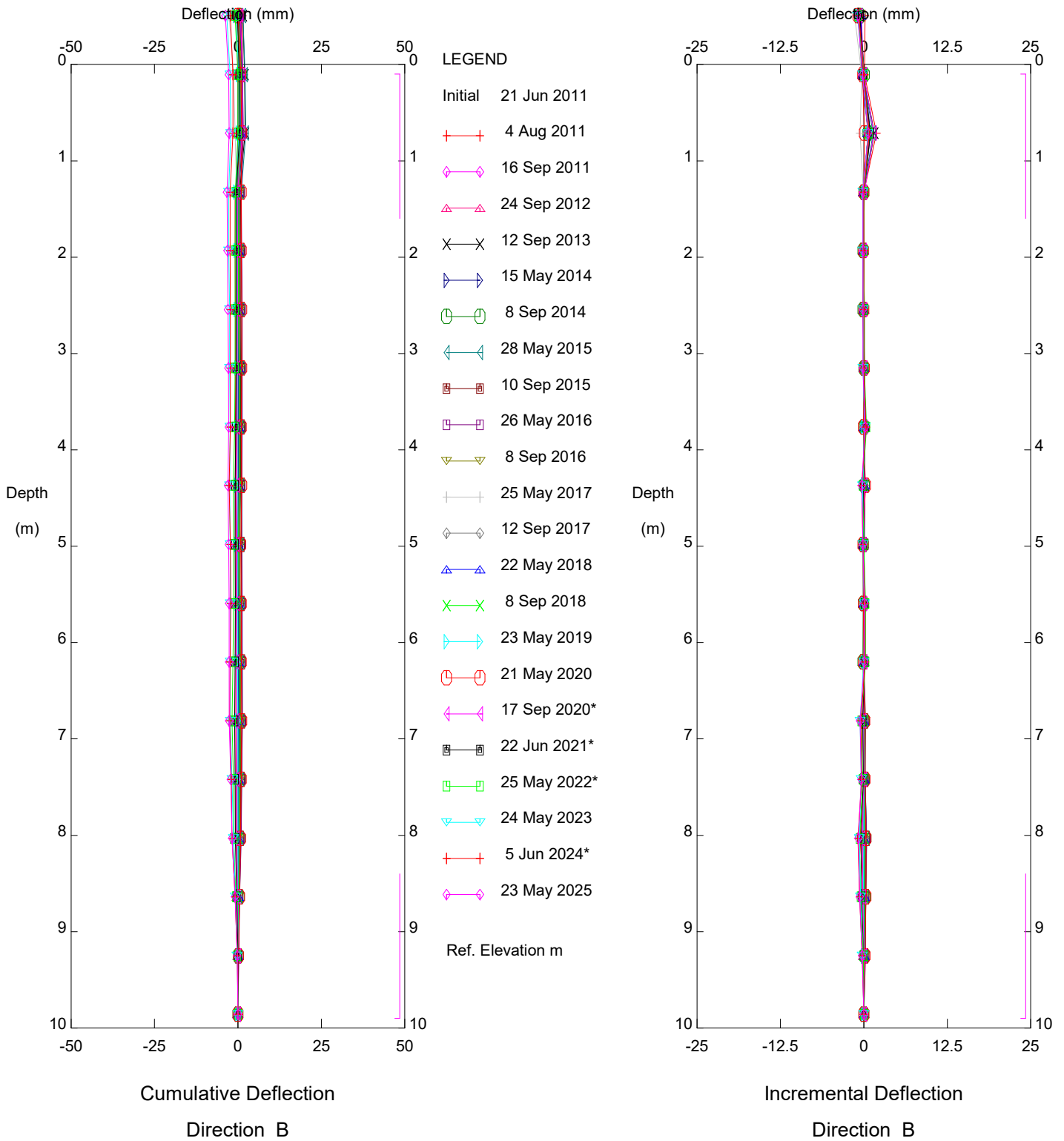


Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI11-2 (P16)

Alberta Transportation

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

Thurber Engineering Ltd.

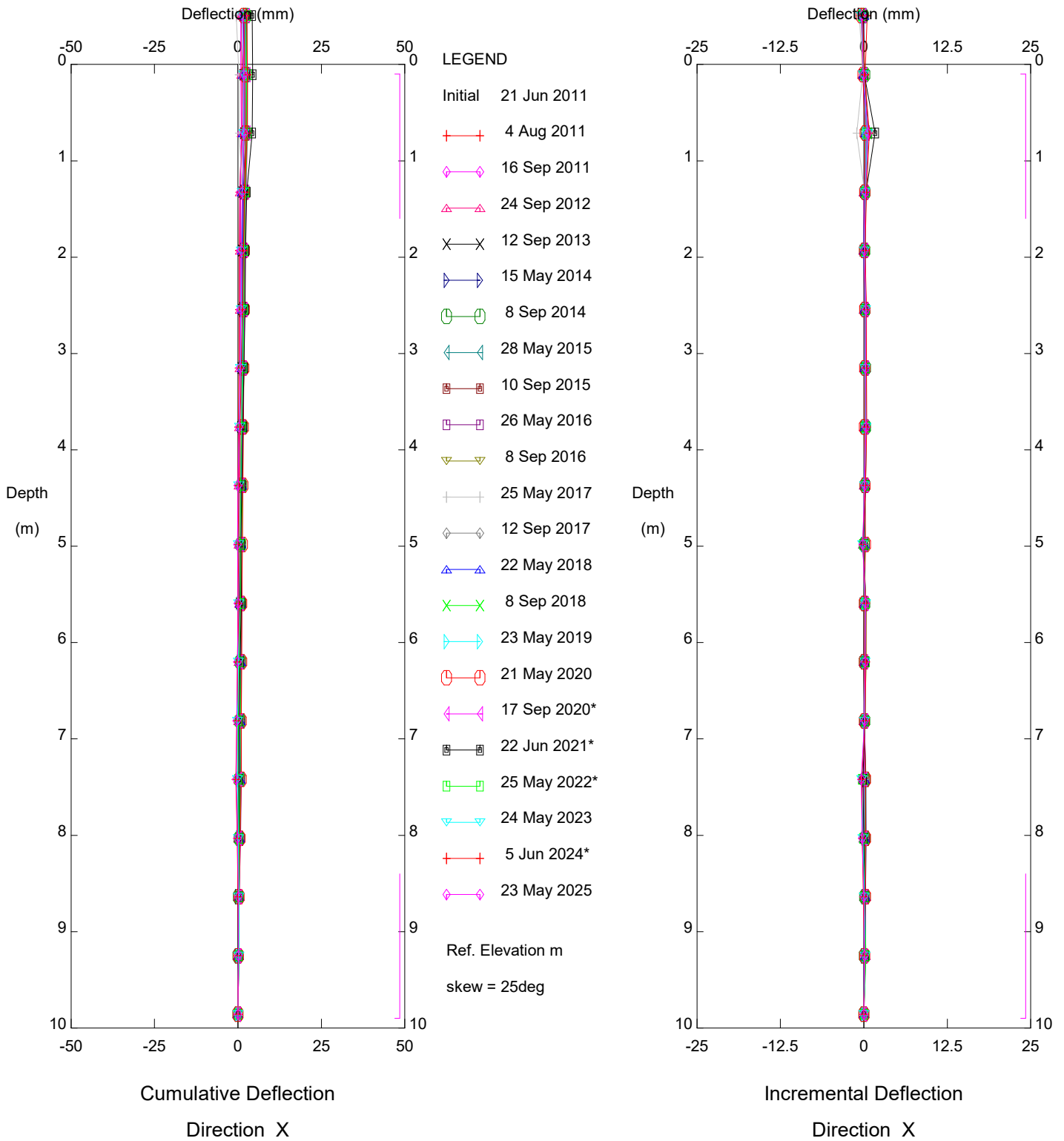


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI11-2 (P16)

Alberta Transportation

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

Thurber Engineering Ltd.

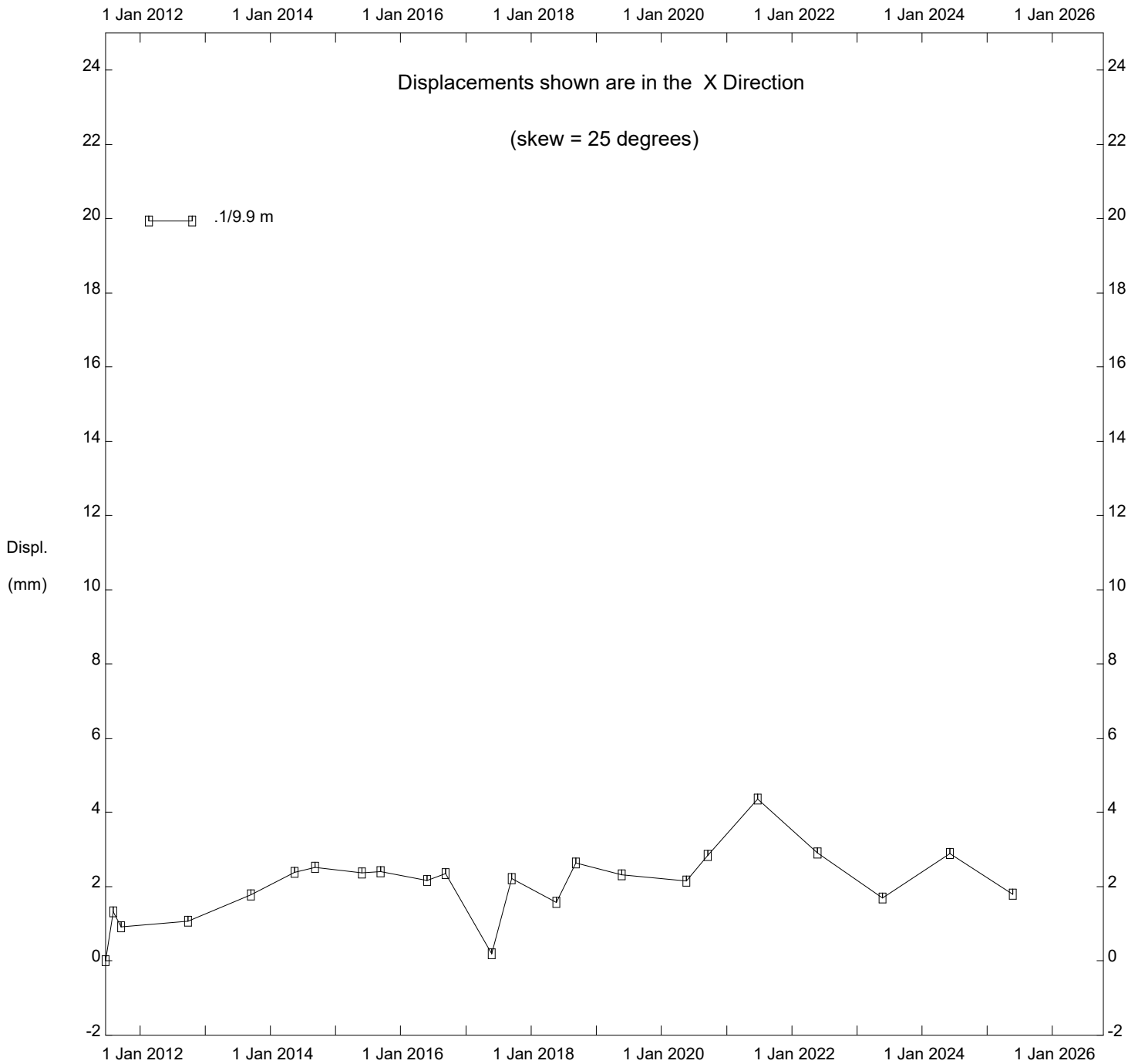


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI11-2 (P16)

Alberta Transportation

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

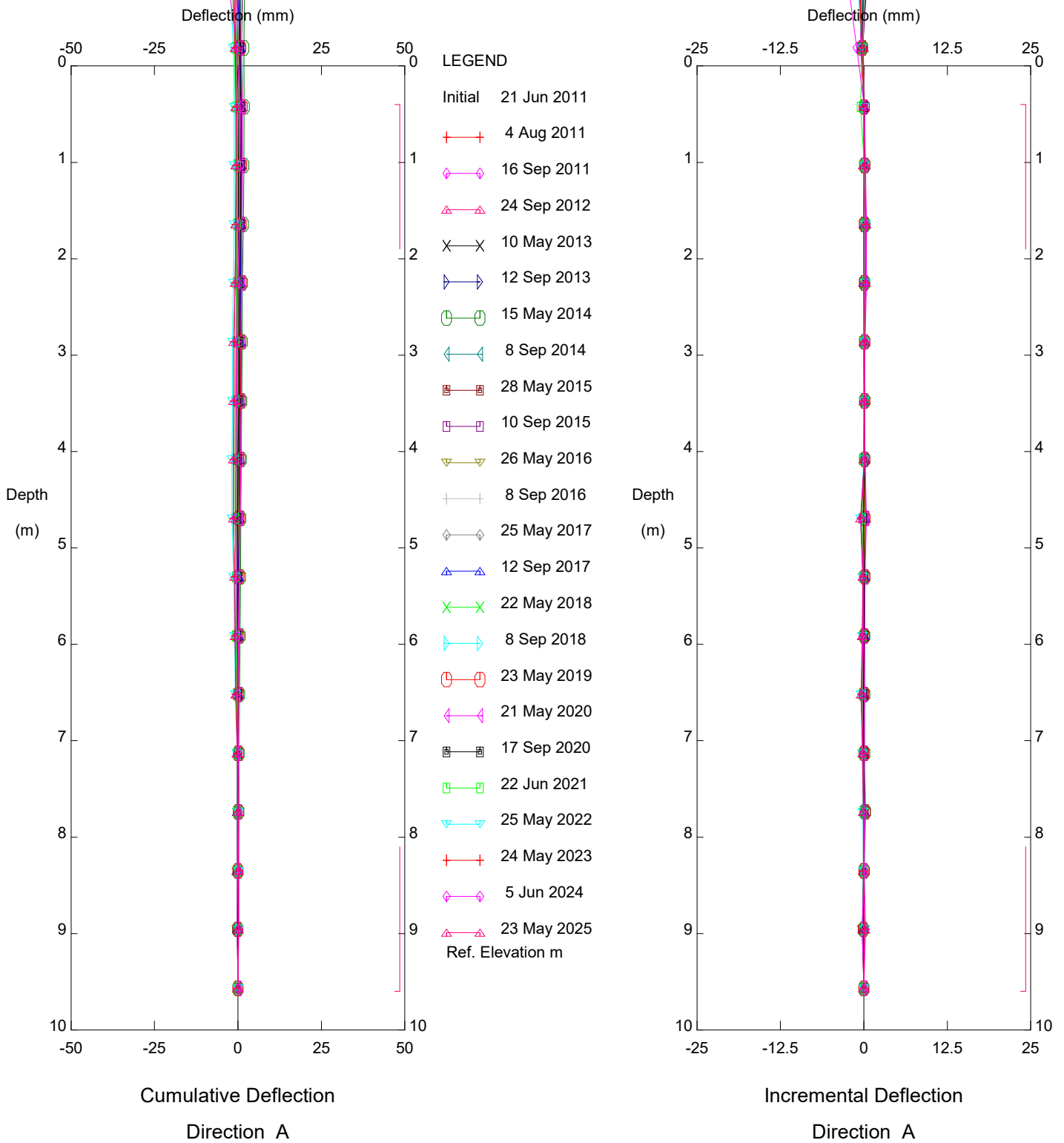
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI11-2 (P16)

Alberta Transportation

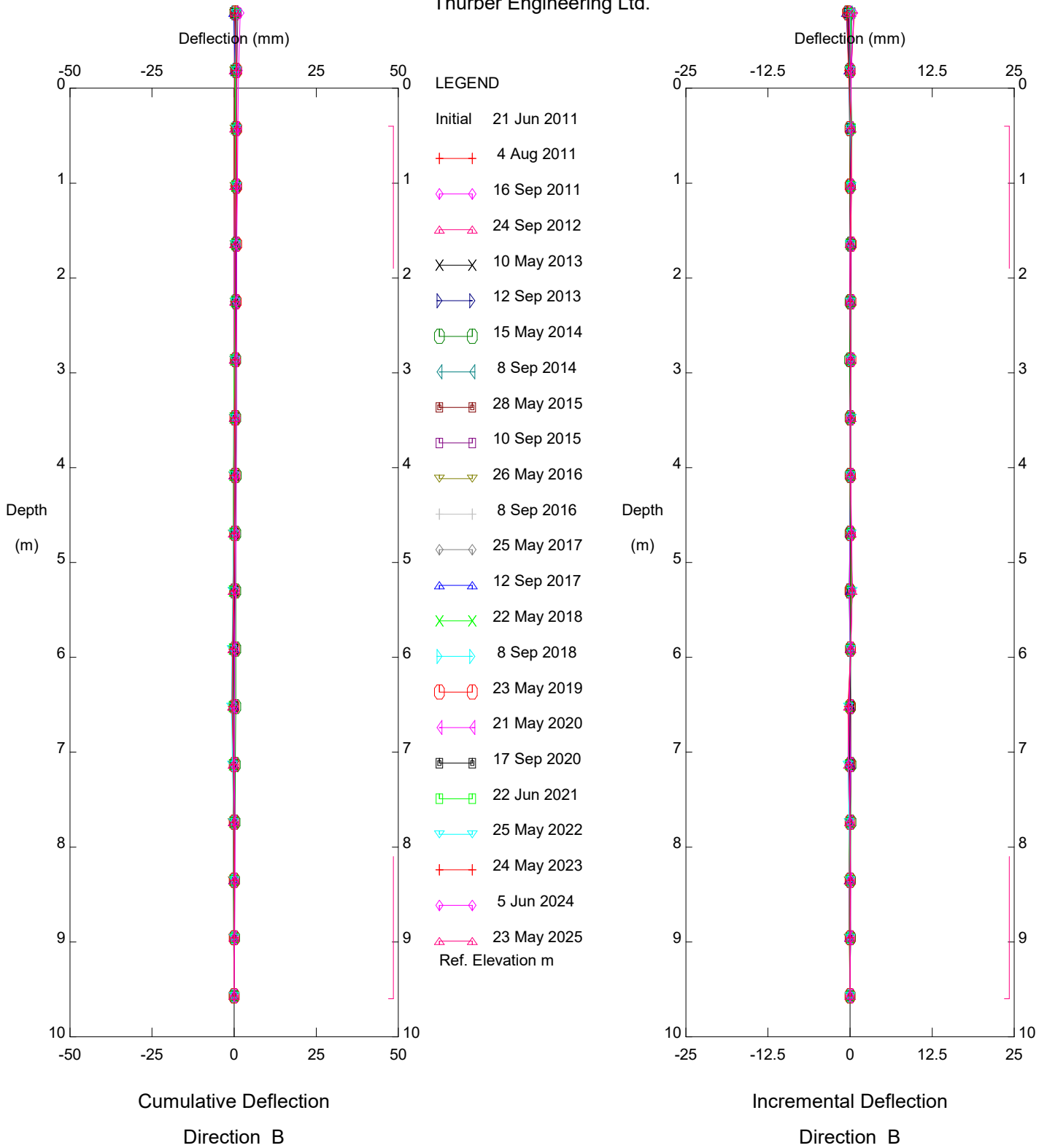
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI11-3 (P24)

Alberta Transportation

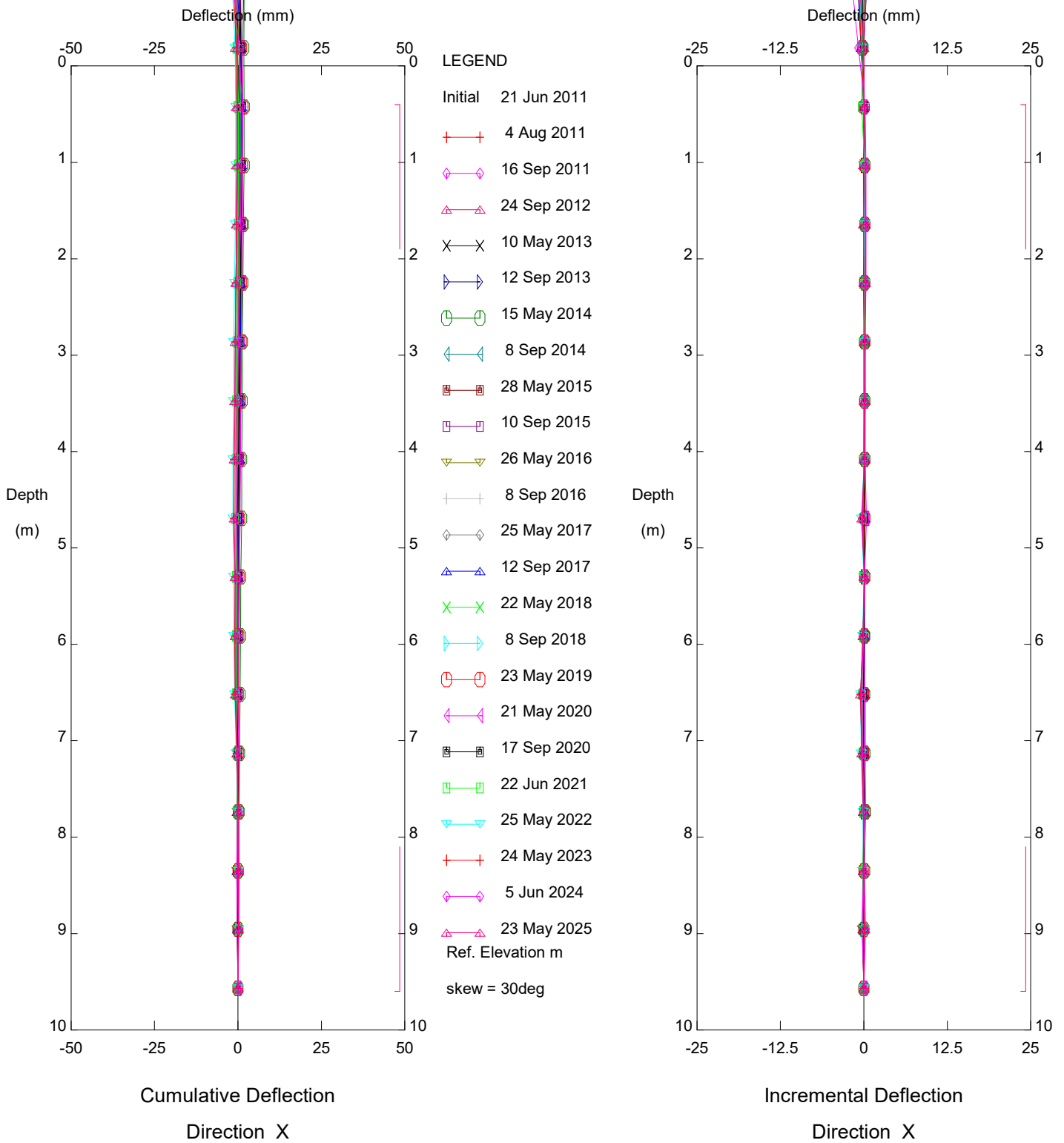
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Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI11-3 (P24)

Alberta Transportation

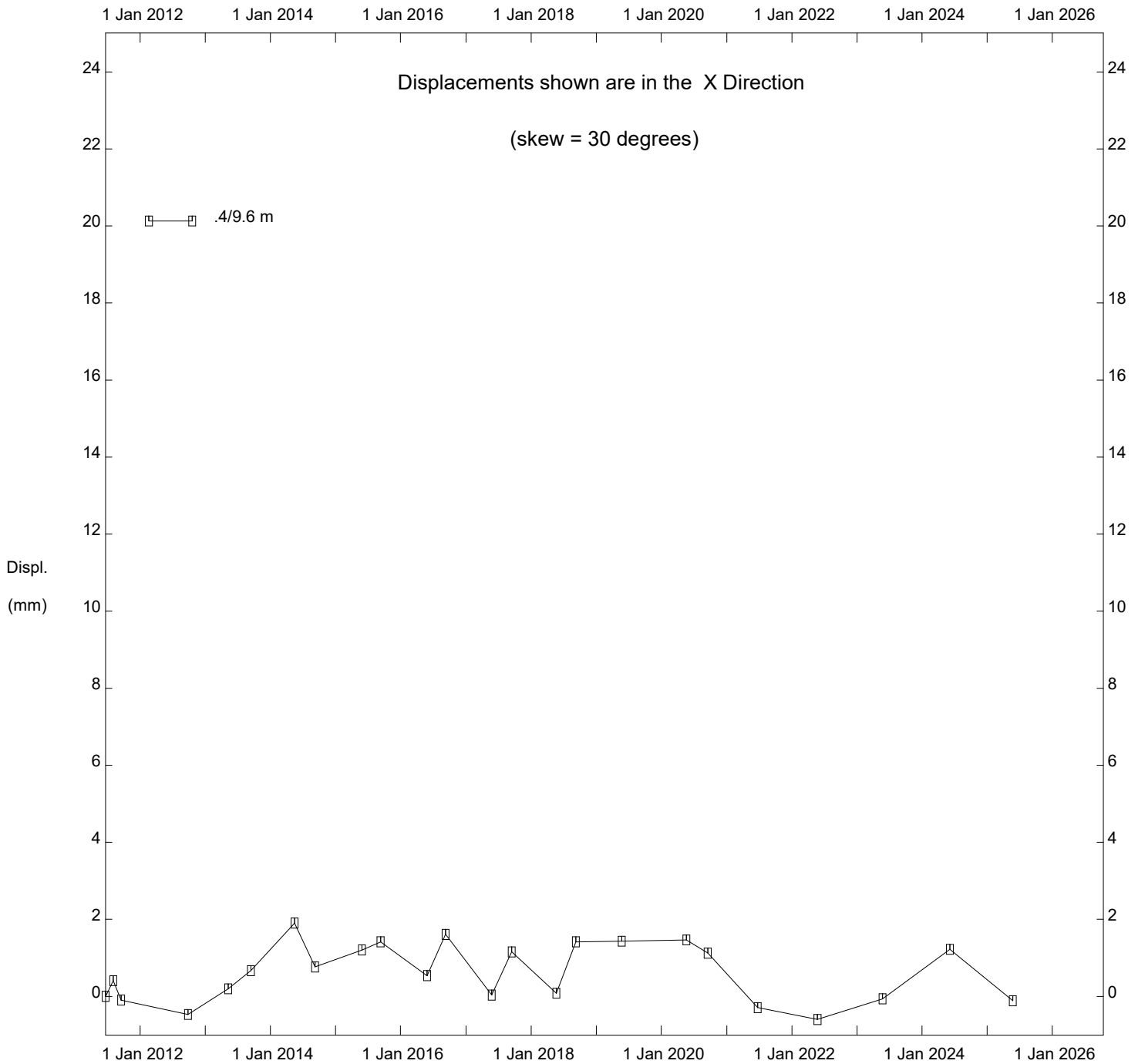
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Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI11-3 (P24)

Alberta Transportation

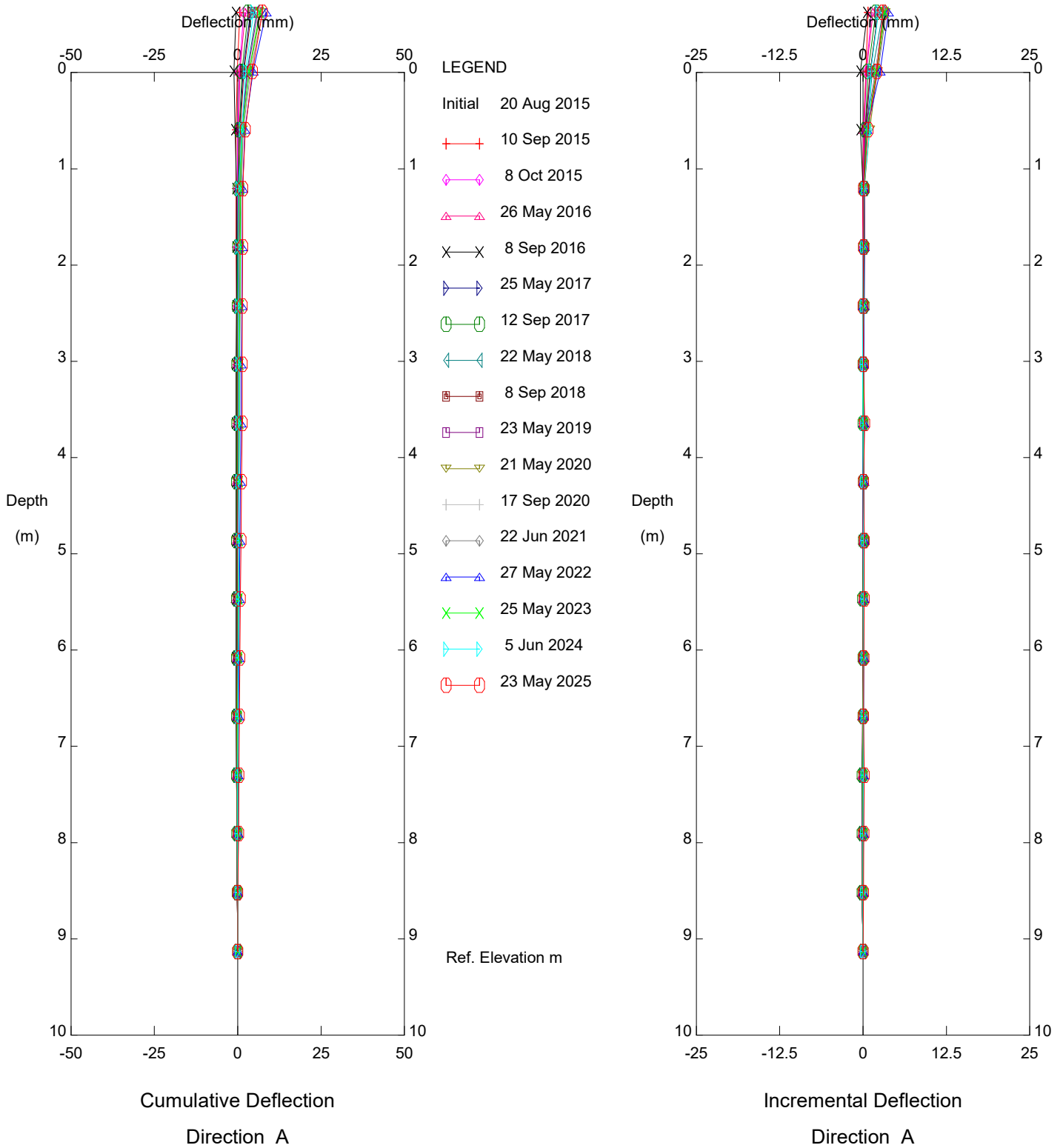
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI11-3 (P24)

Alberta Transportation

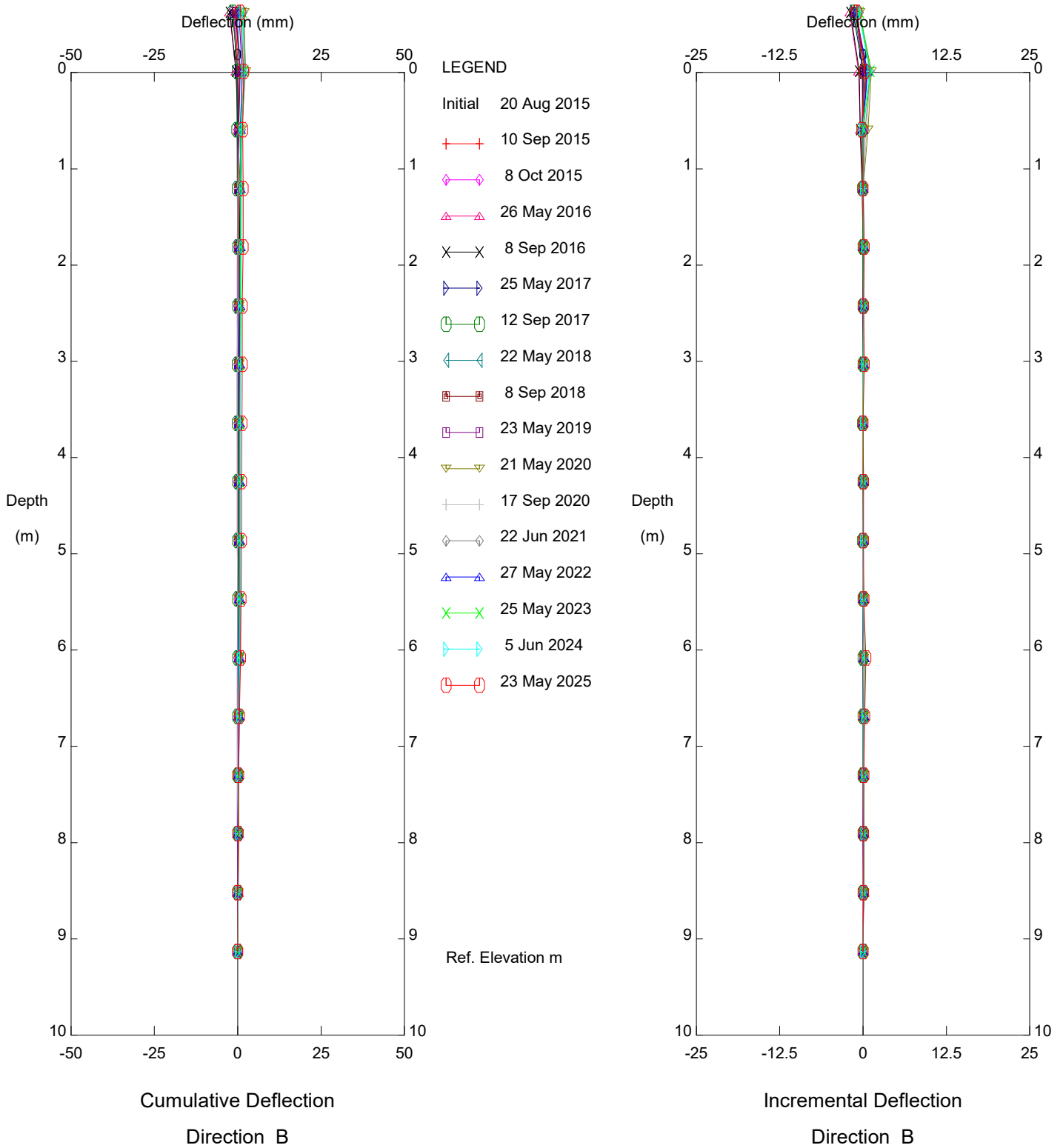
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI15-1

Alberta Transportation

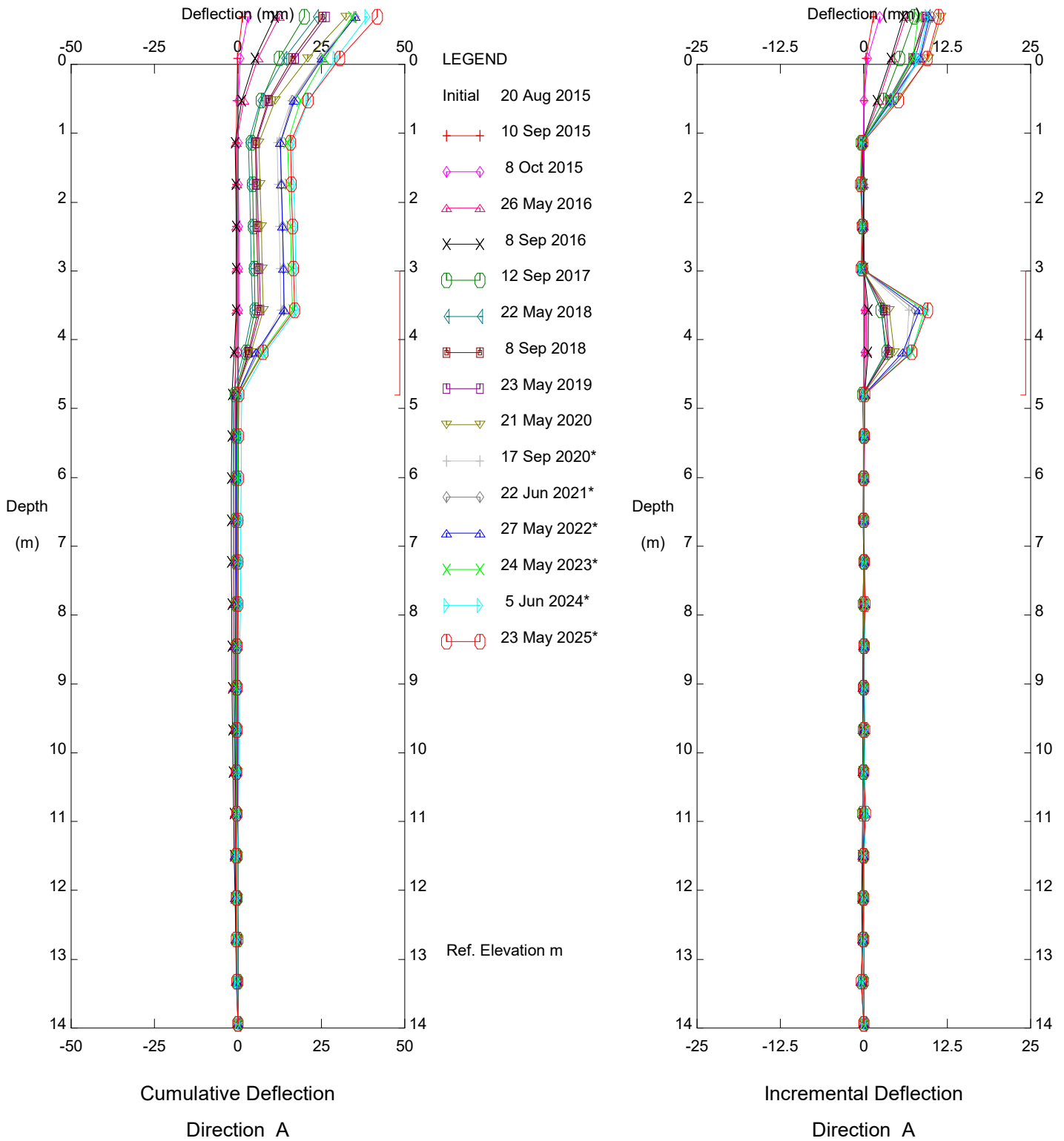
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI15-1

Alberta Transportation

Thurber Engineering Ltd.

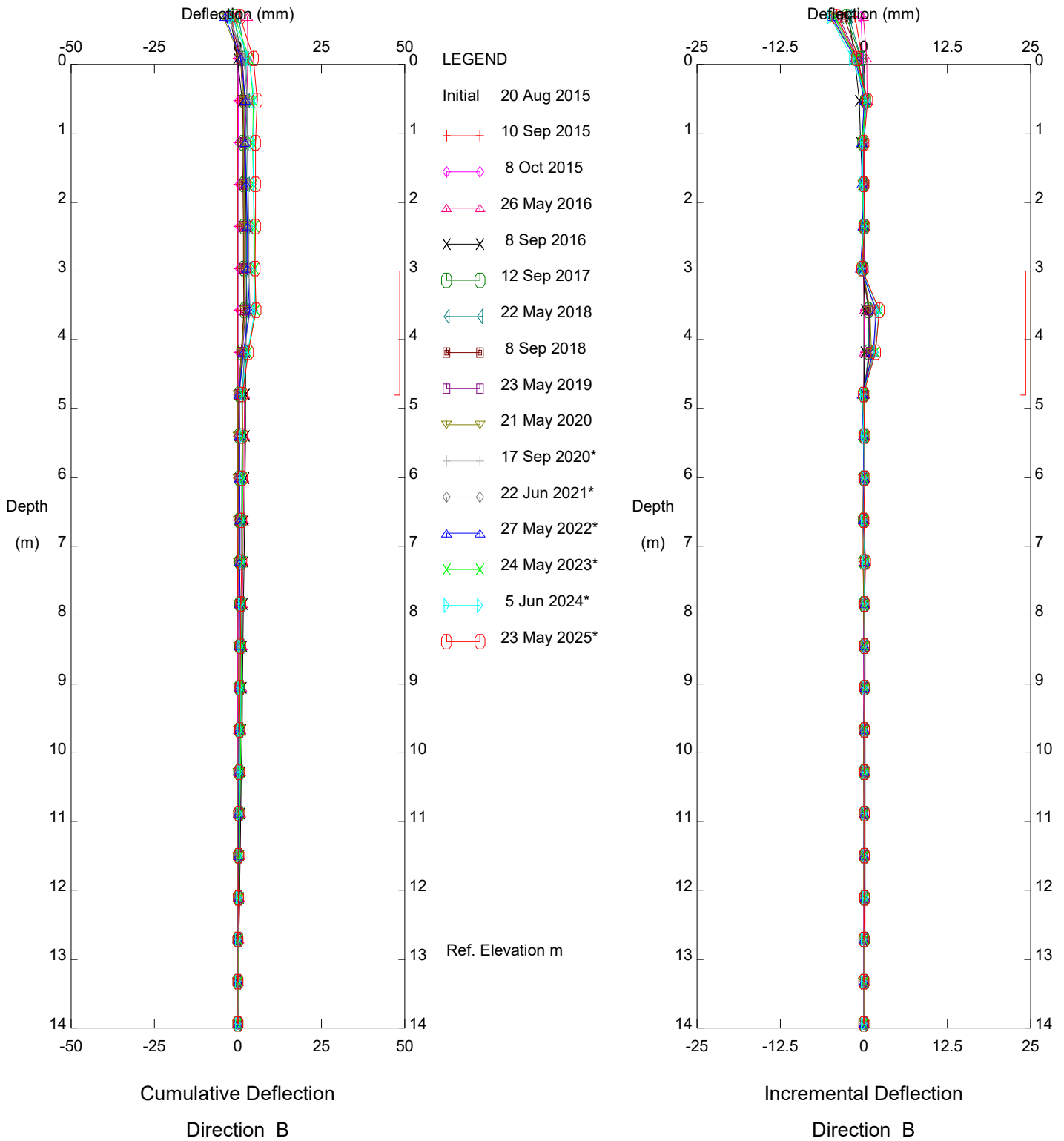


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI15-2

Alberta Transportation

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

Thurber Engineering Ltd.

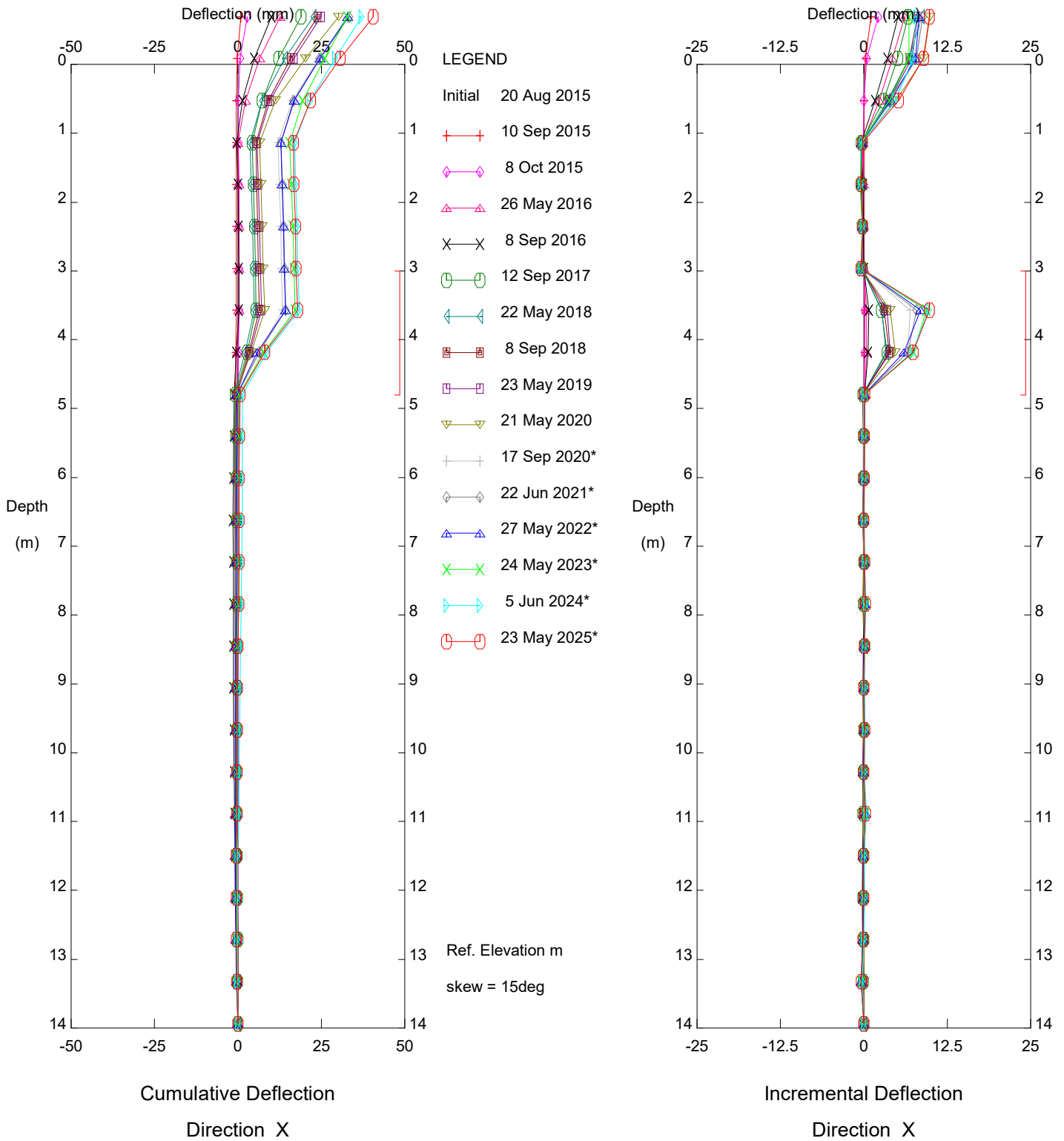


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI15-2

Alberta Transportation

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

Thurber Engineering Ltd.

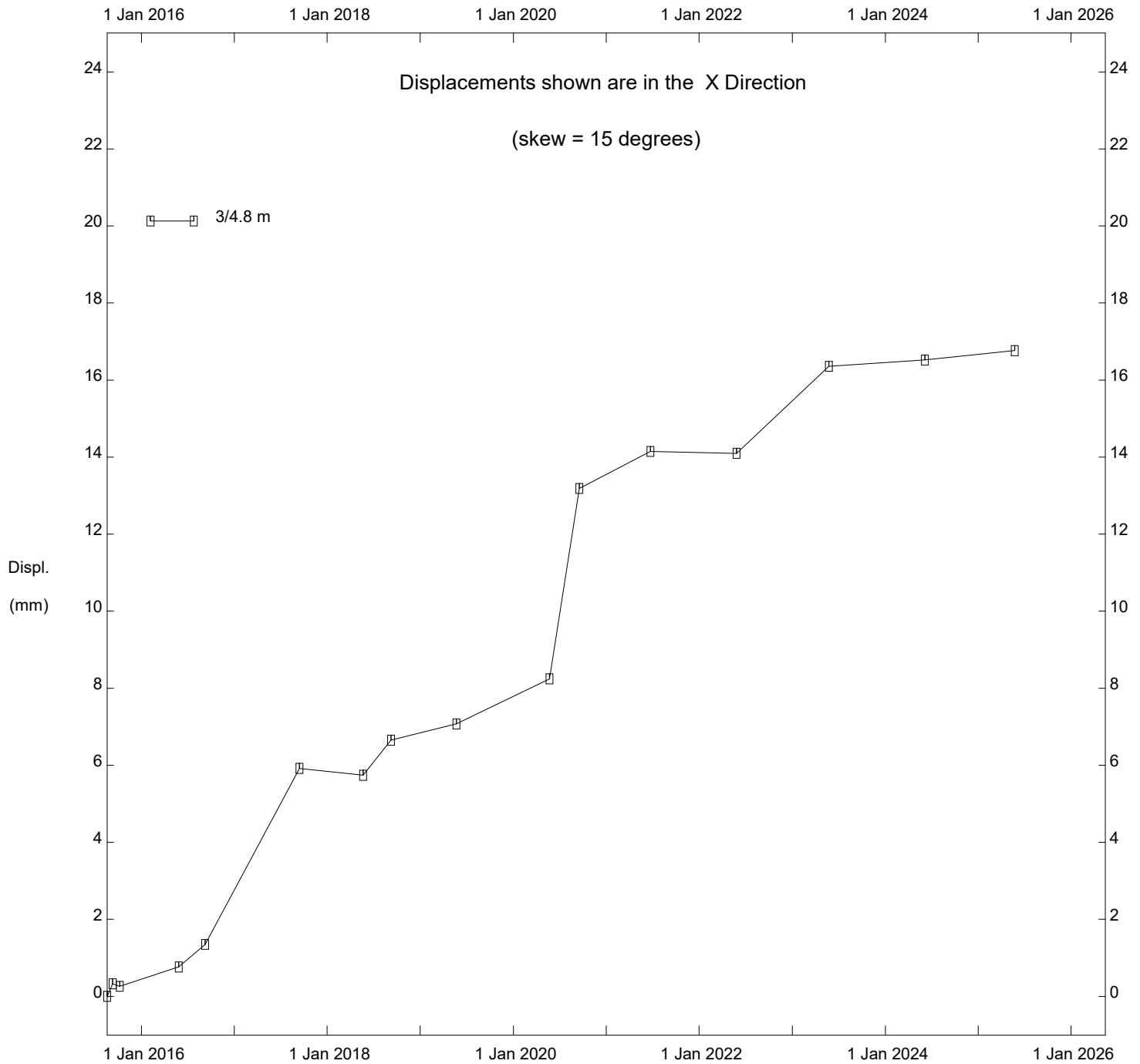


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Alberta Transportation

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

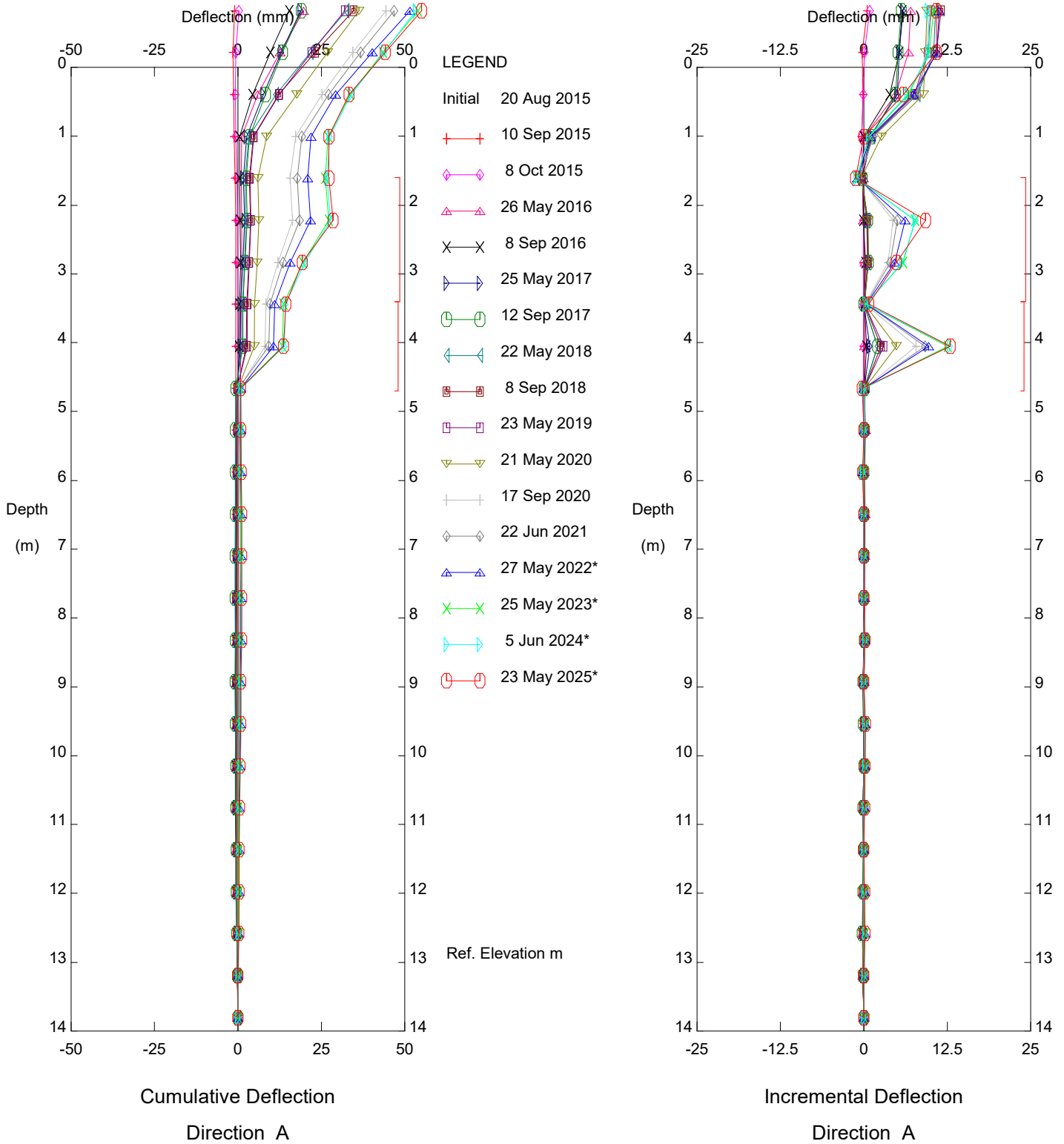
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI15-2

Alberta Transportation

Thurber Engineering Ltd.

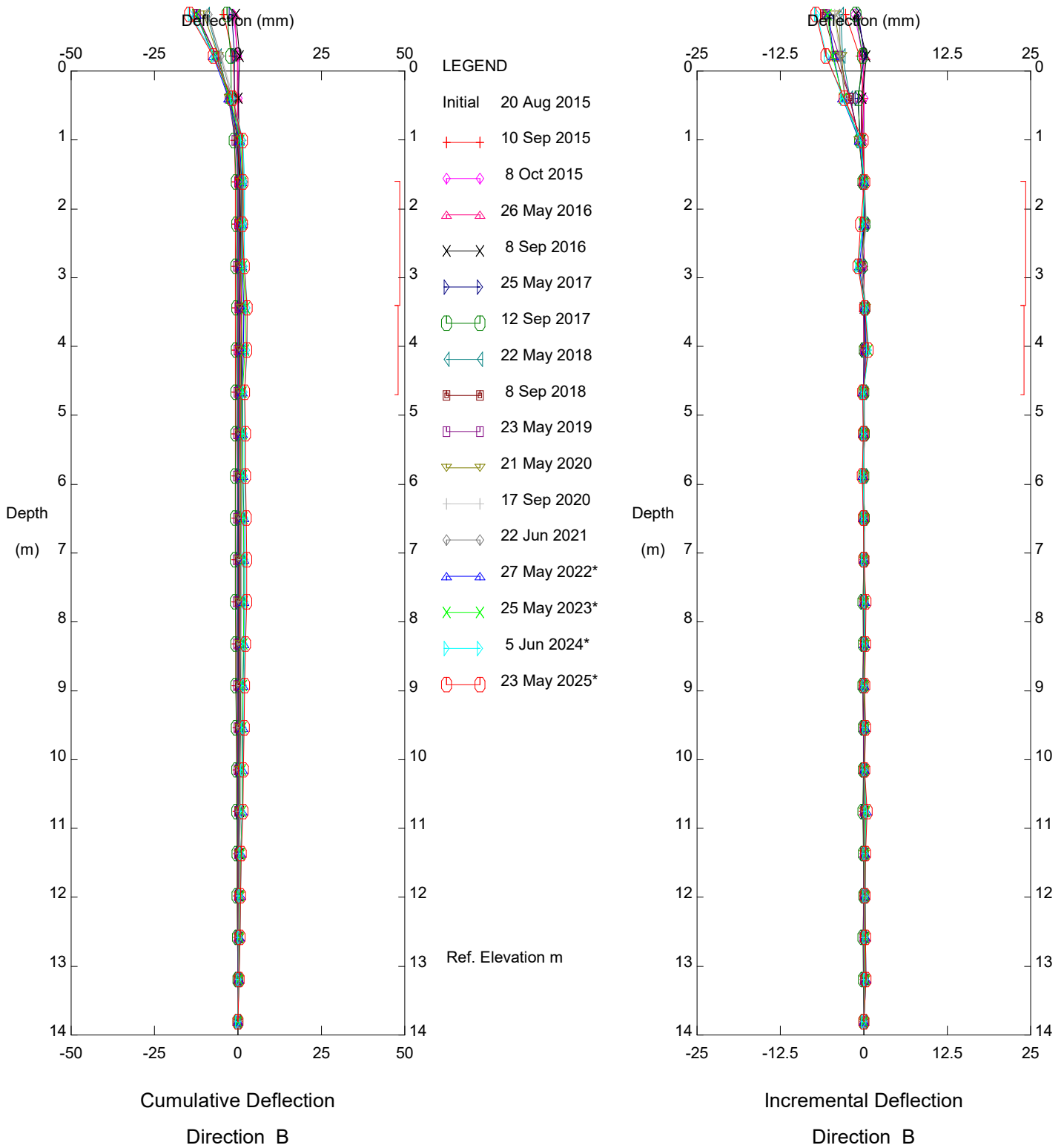


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI15-4

Alberta Transportation

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

Thurber Engineering Ltd.

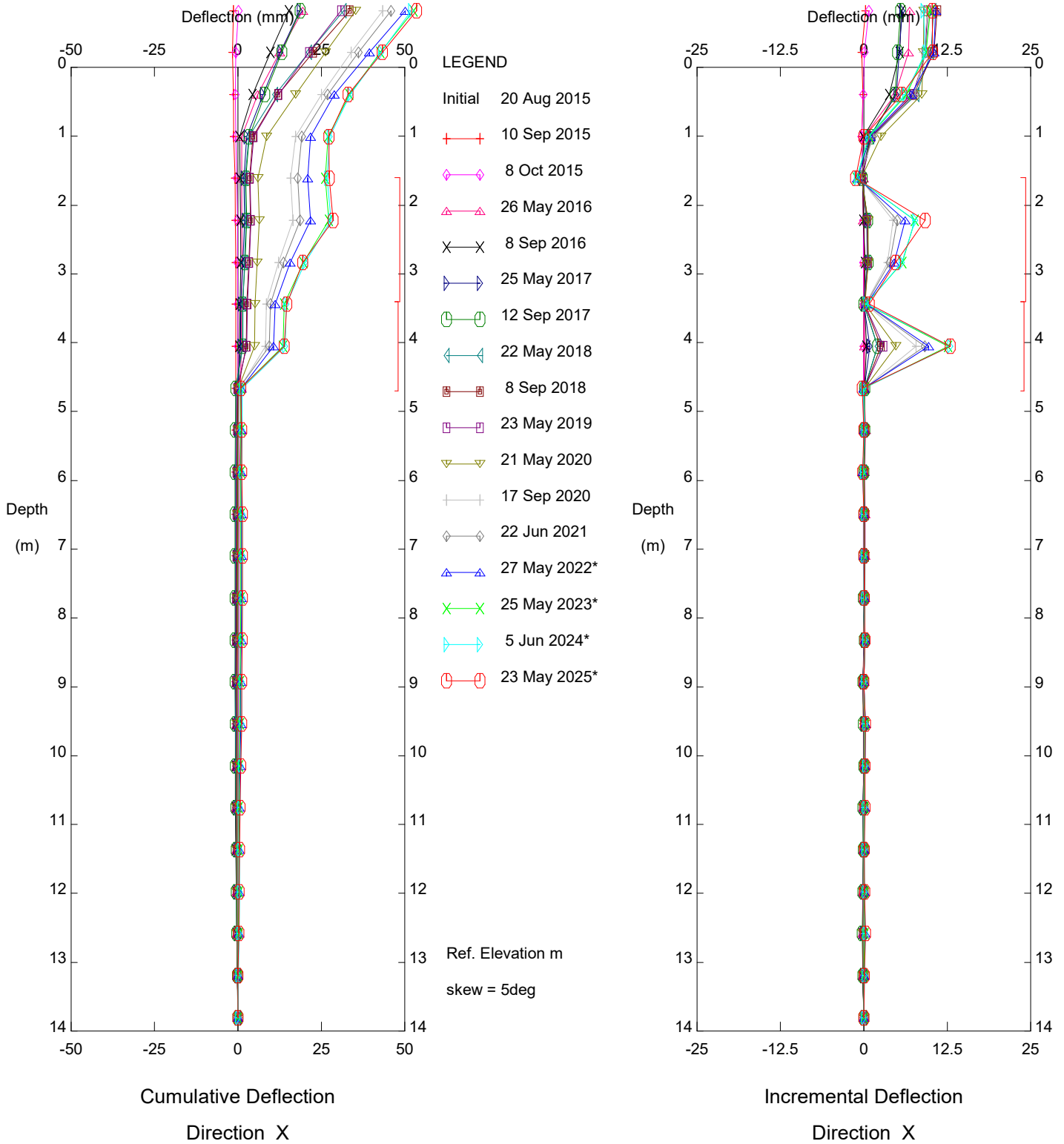


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI15-4

Alberta Transportation

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

Thurber Engineering Ltd.

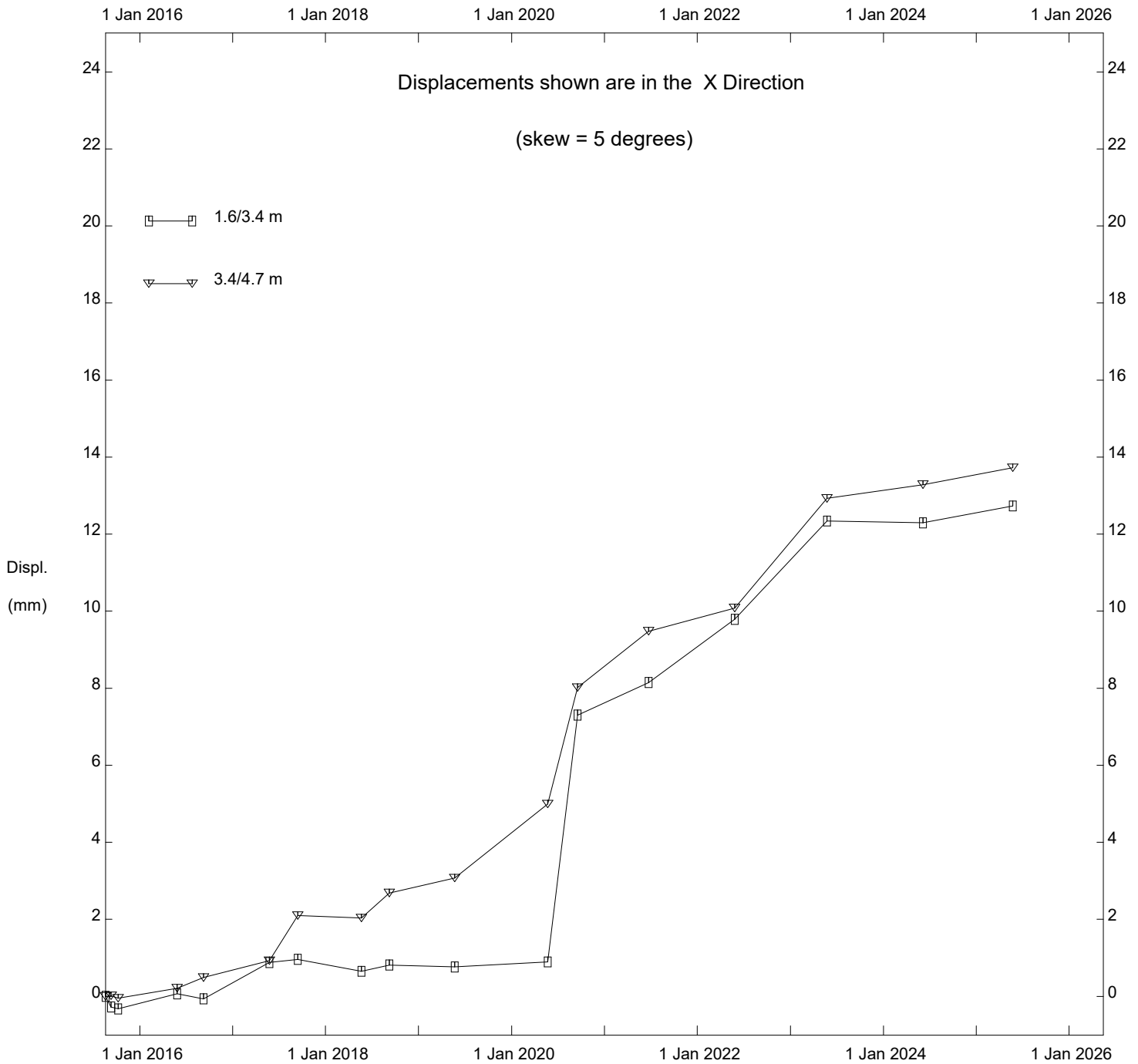


Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI15-4

Alberta Transportation

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

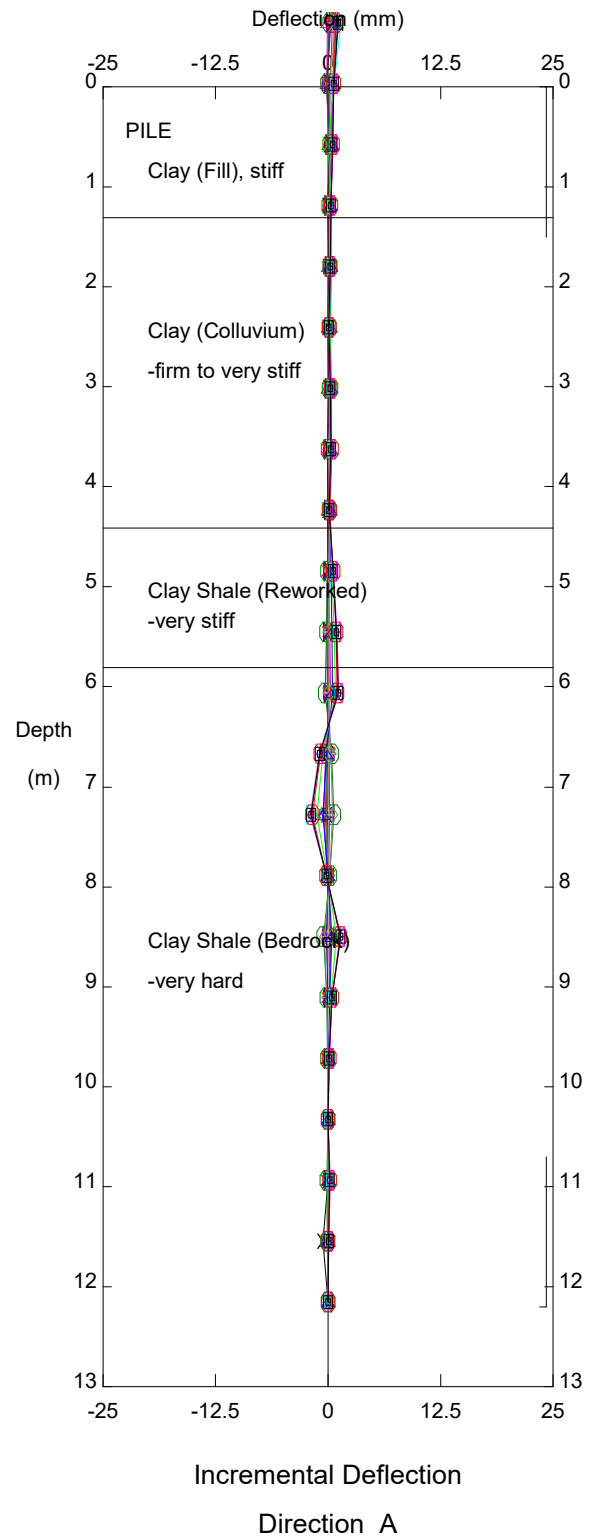
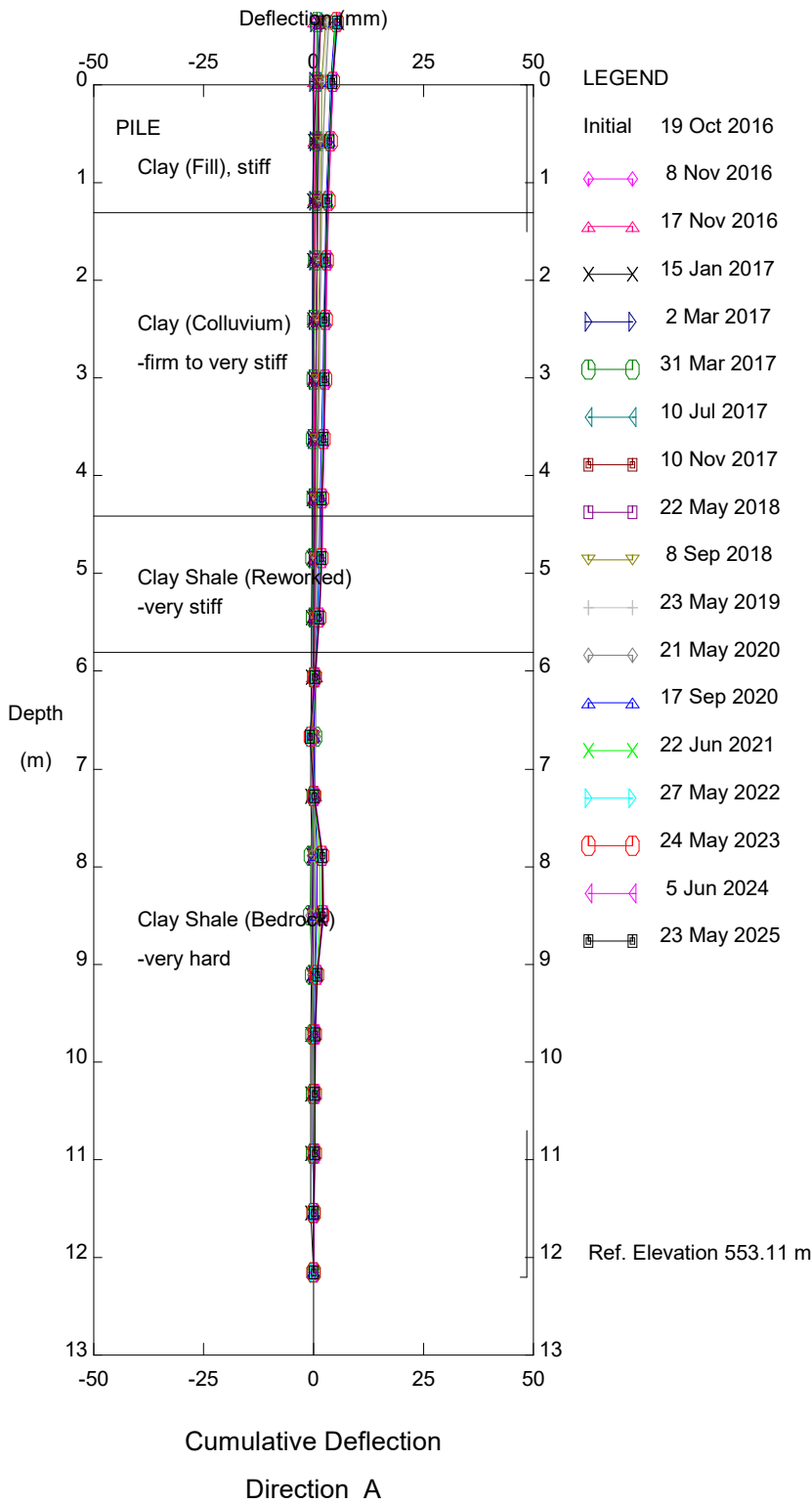
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI15-4

Alberta Transportation

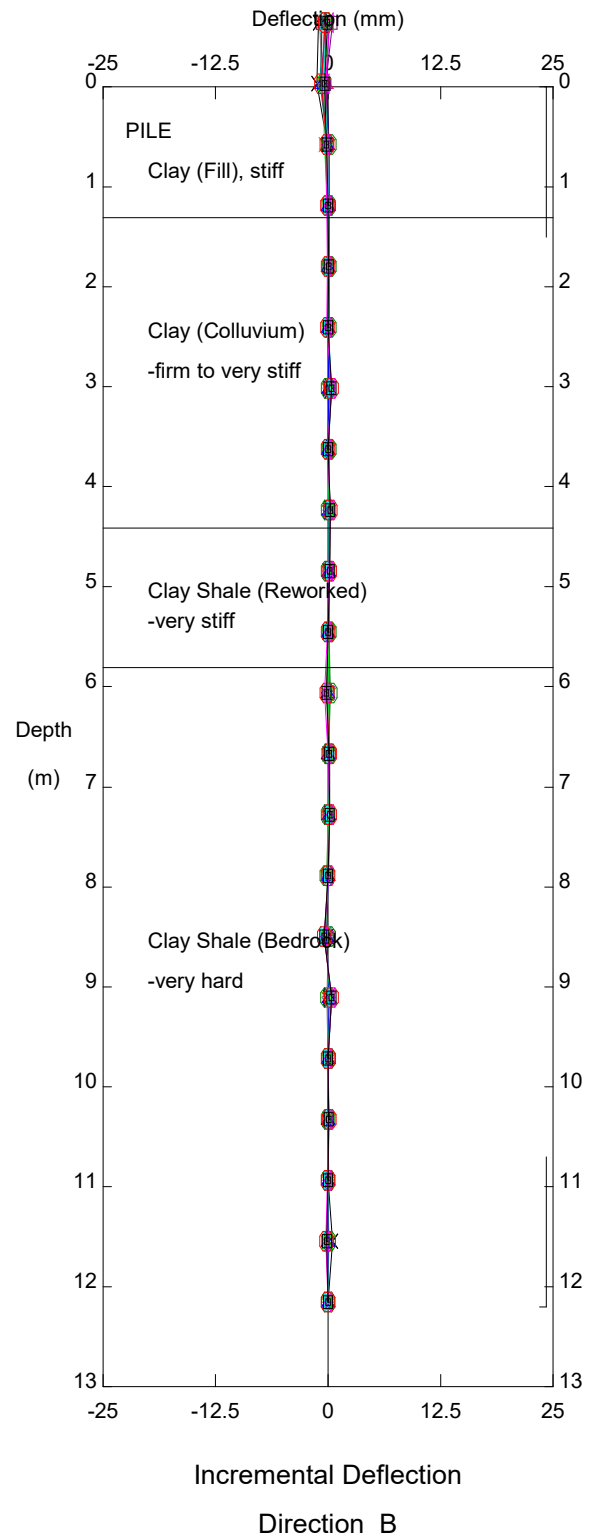
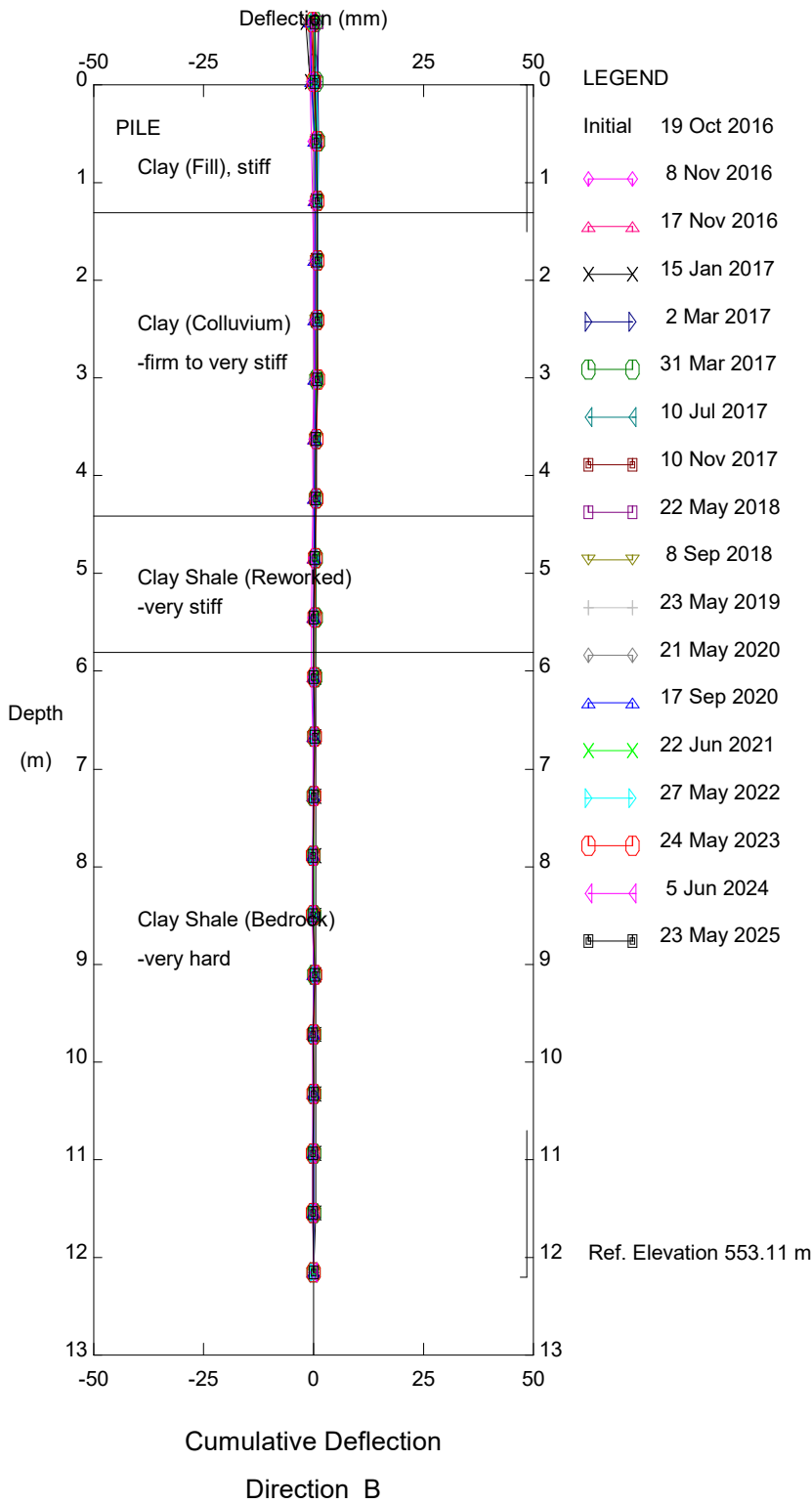
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI16-1 (P04)

Alberta Transportation

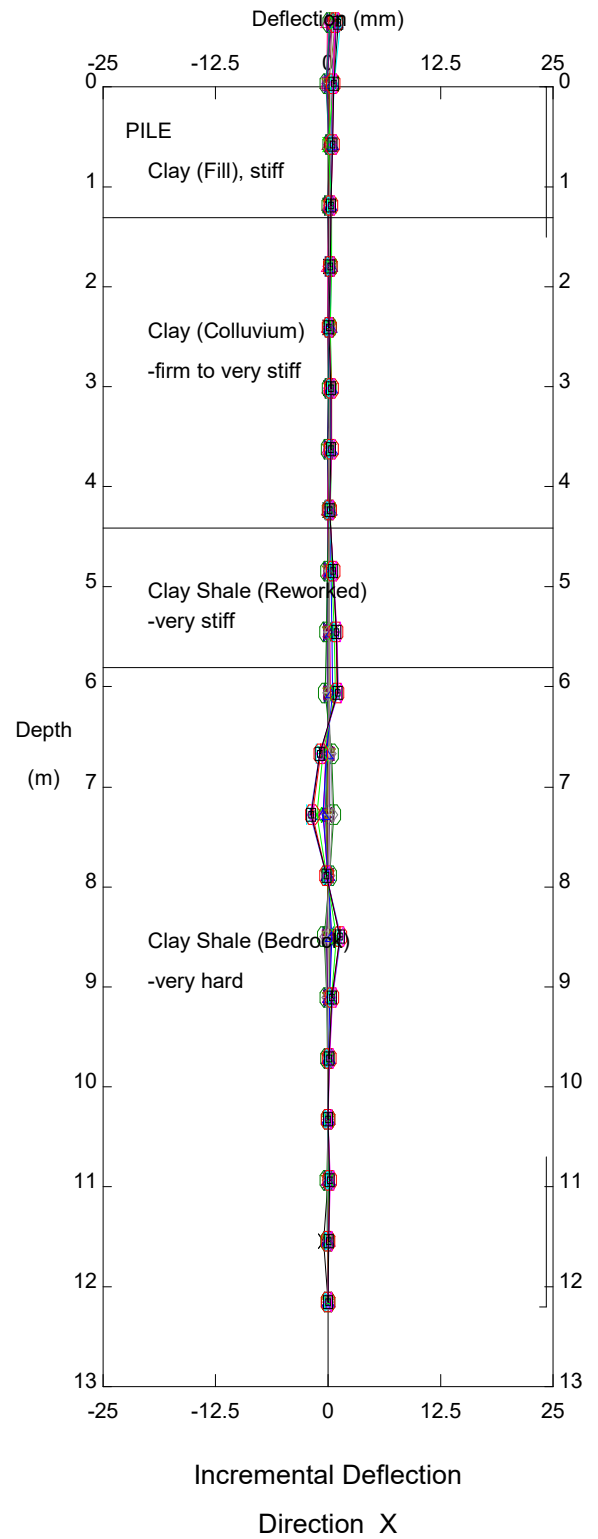
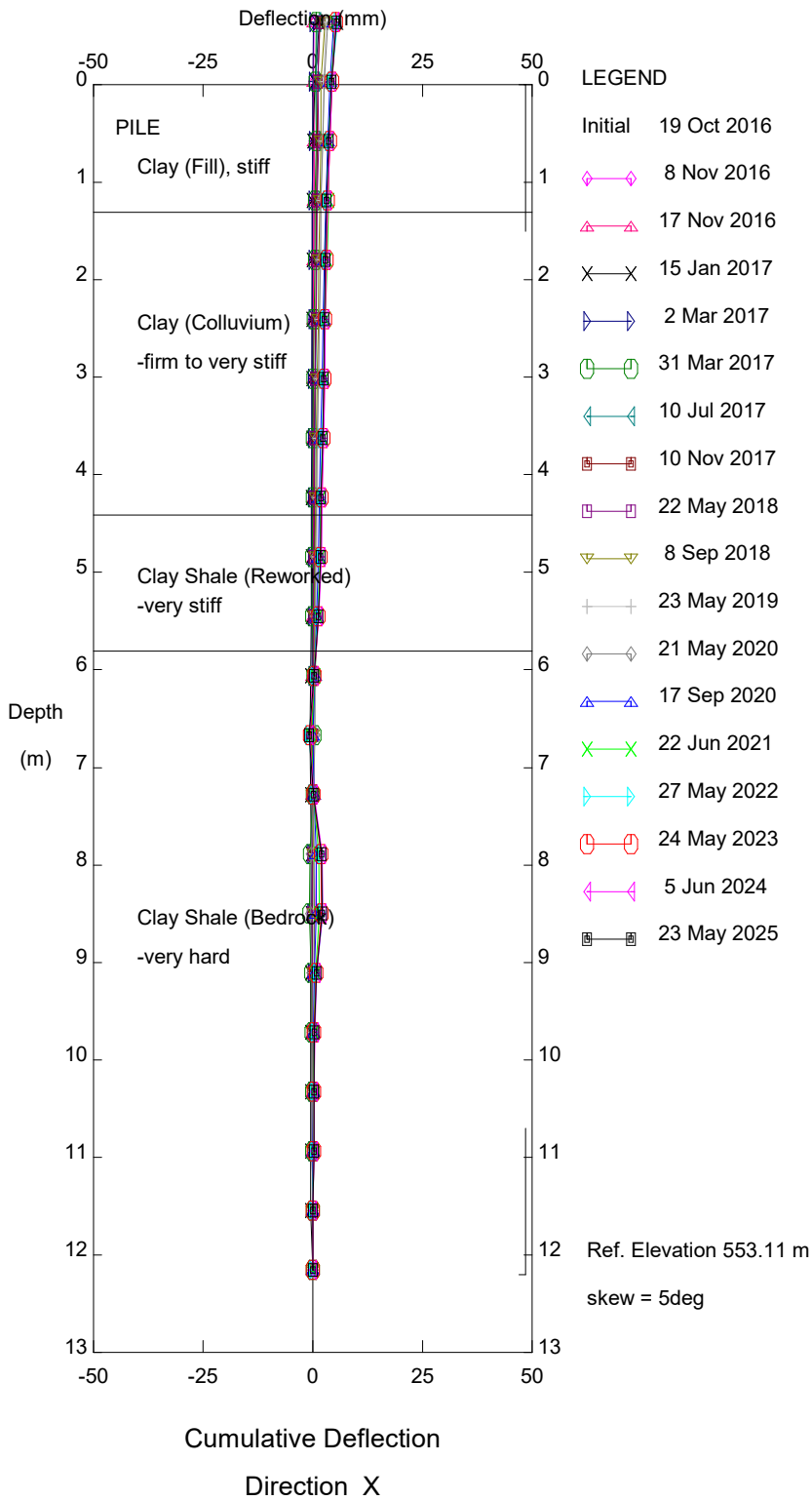
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI16-1 (P04)

Alberta Transportation

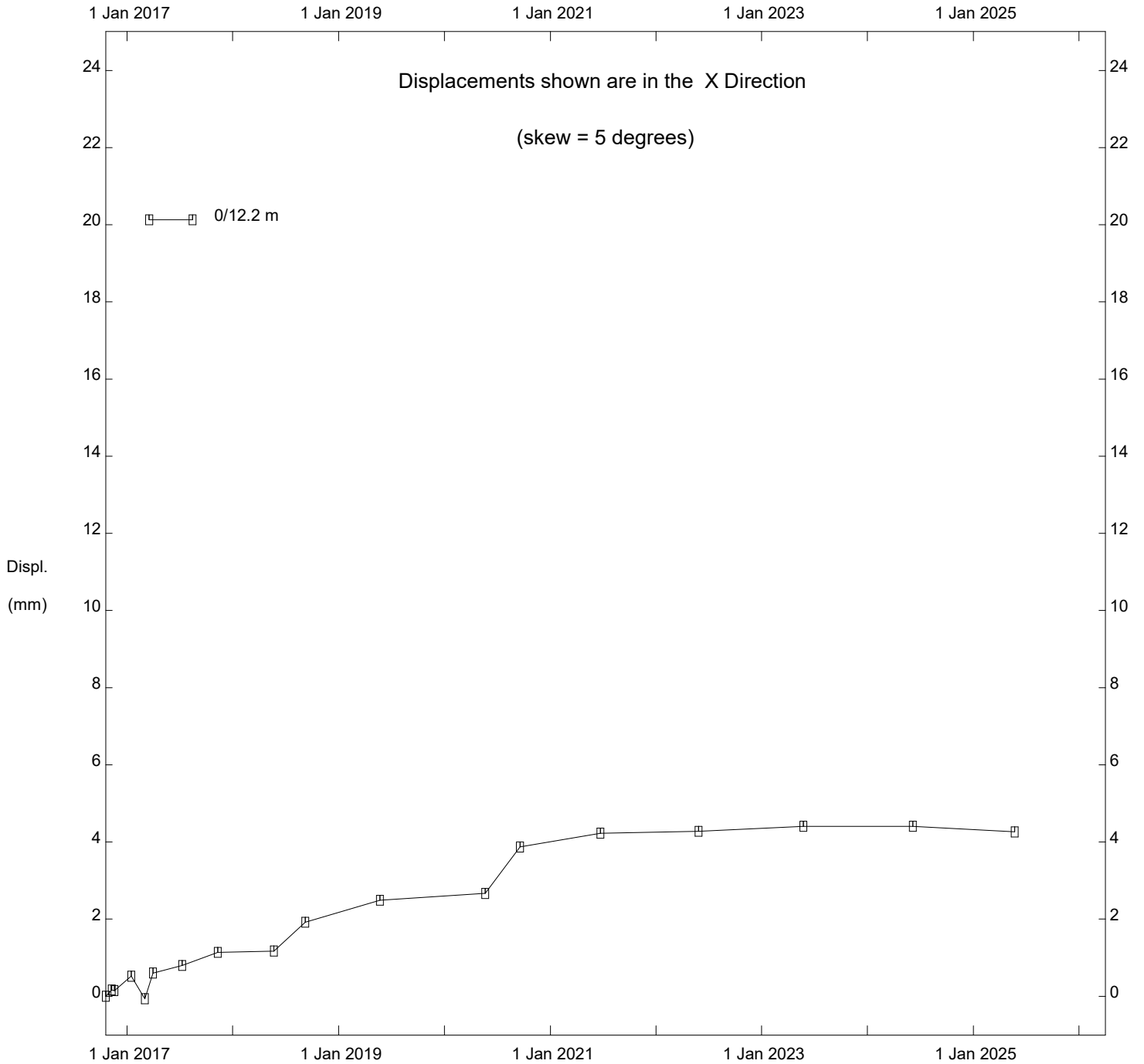
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Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI16-1 (P04)

Alberta Transportation

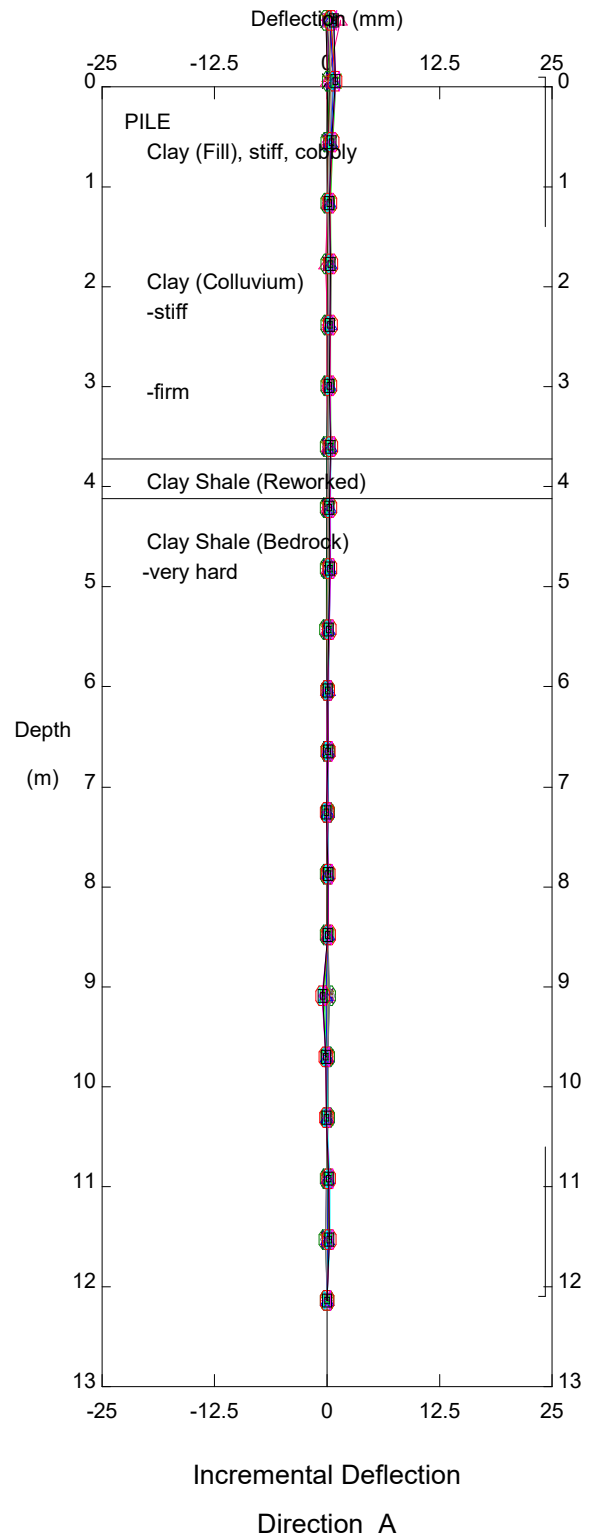
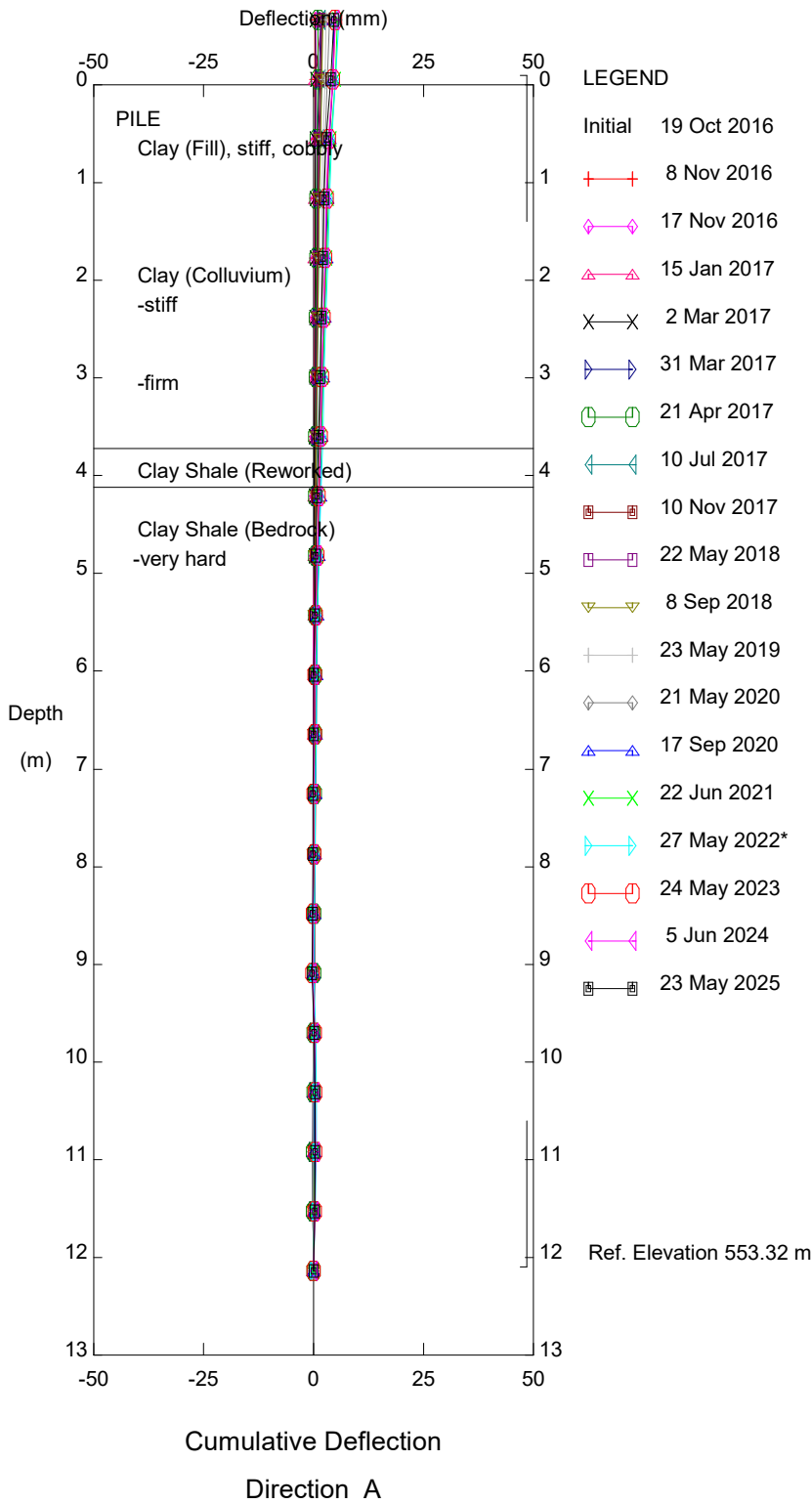
Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI16-1 (P04)

Alberta Transportation

Thurber Engineering Ltd.

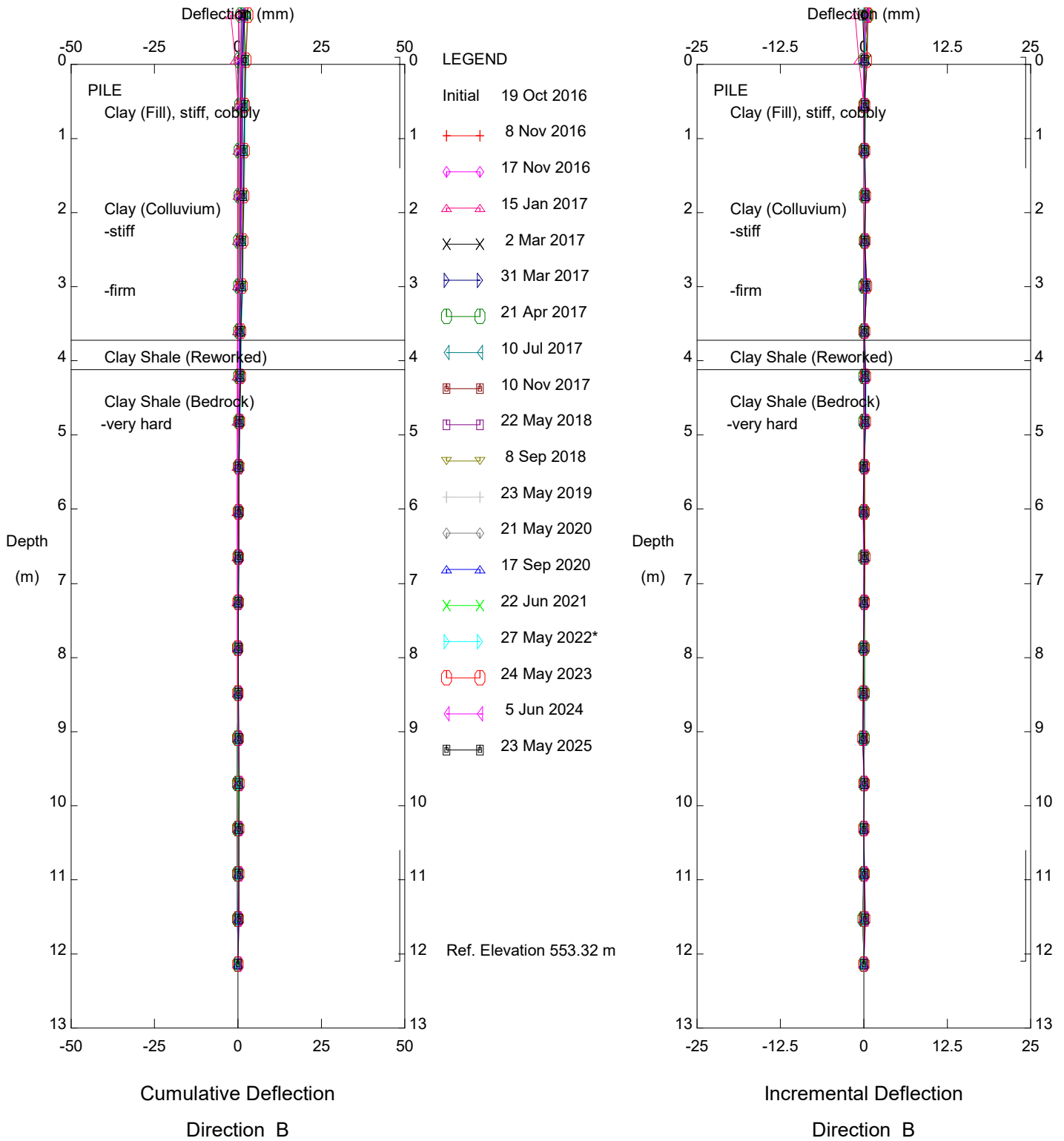


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI16-2 (P08)

Alberta Transportation

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

Thurber Engineering Ltd.

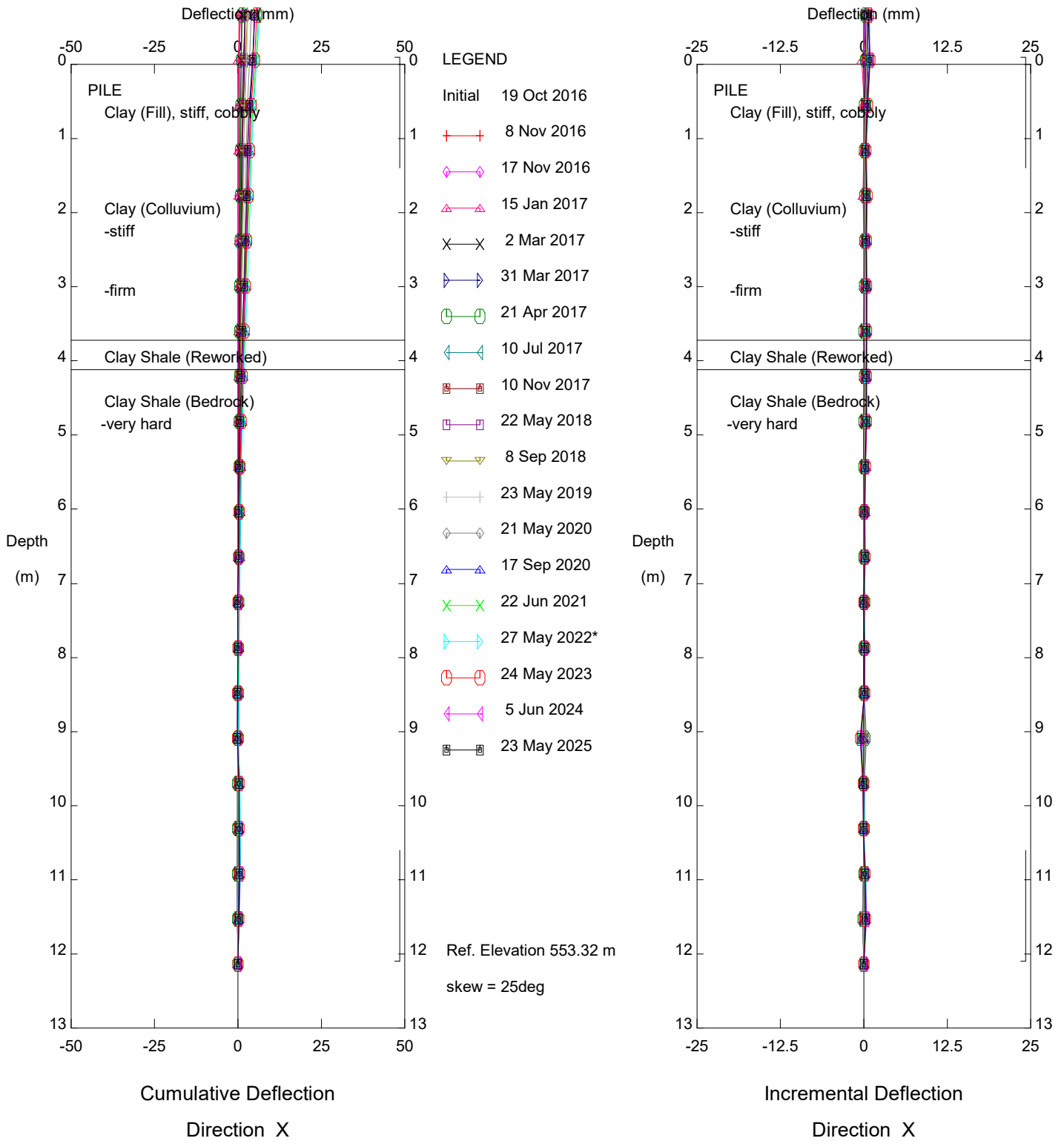


Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI16-2 (P08)

Alberta Transportation

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

Thurber Engineering Ltd.

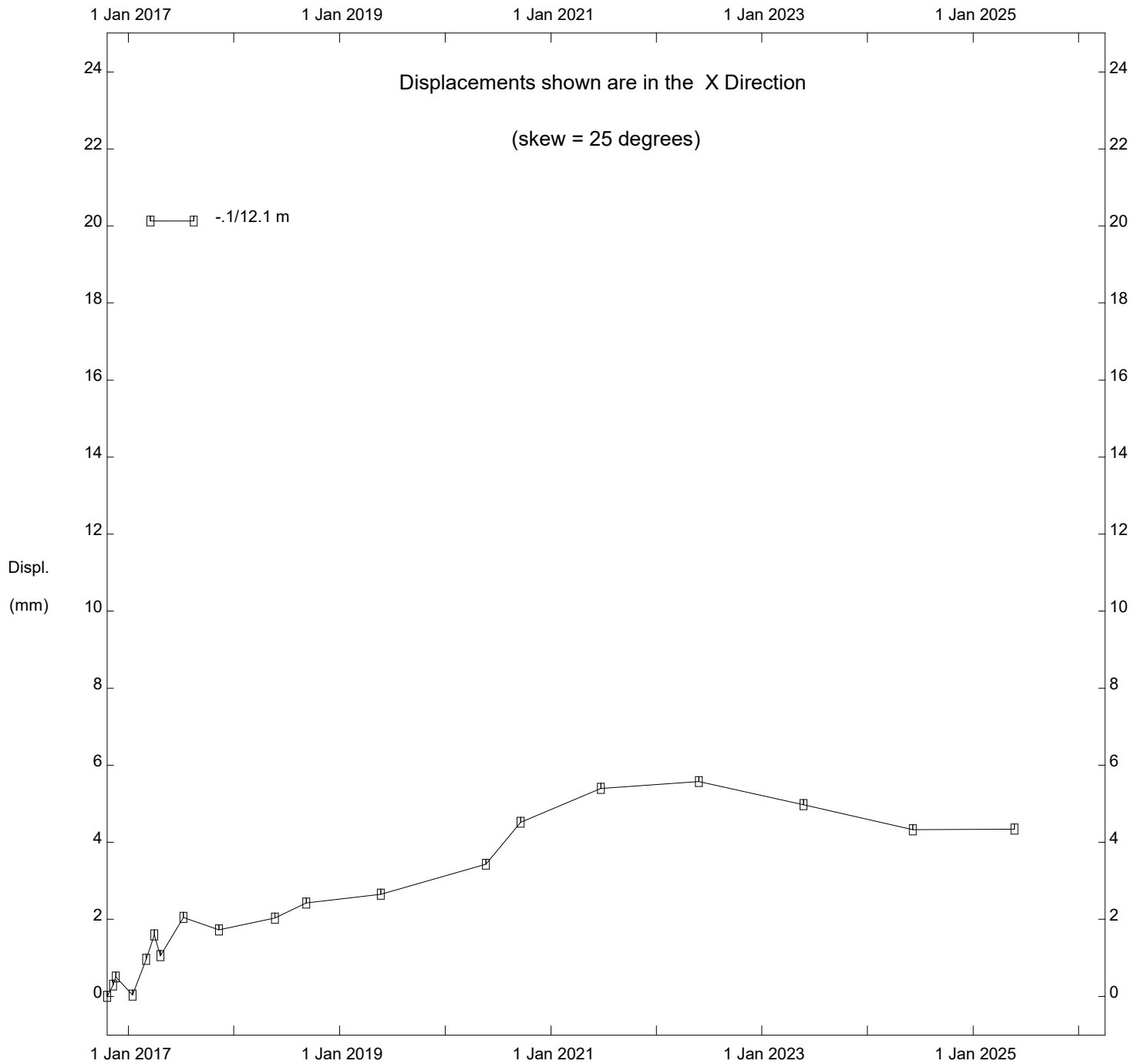


Hwy 41:23 Kehiwin Lake (NC102), Inclinometer SI16-2 (P08)

Alberta Transportation

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

Thurber Engineering Ltd.



Hwy 41:23 Kehiwin Lake (NC102), Inclinator SI16-2 (P08)

Alberta Transportation

FIGURE NC102-1
PIEZOMETER DATA (2010 INSTRUMENTS) FOR NC024-2, KEHIWIN LAKE, km 8.89

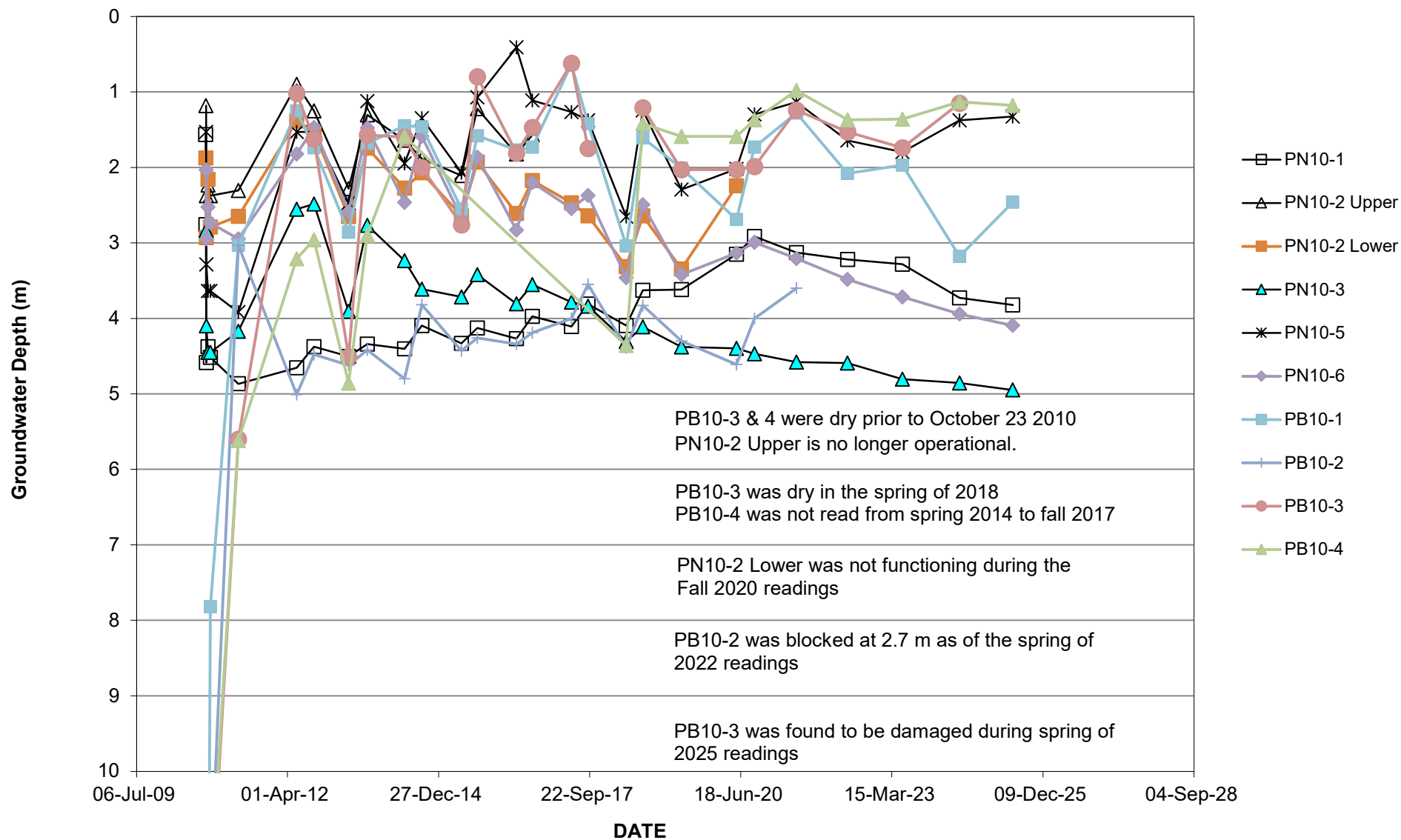


FIGURE NC102-2
PIEZOMETER DATA (2015 INSTRUMENTS) FOR NC024-2, KEHIWIN LAKE, km 8.89

