

ALBERTA TRANSPORTATION AND
ECONOMIC CORRIDORS GRMP
GRANDE PRAIRIE REGION –
(GRANDE PRAIRIE NORTH)
INSTRUMENTATION MONITORING - SPRING 2024



Site Number	Location	Name	Hwy	km
PH026	HWY 726:02 km 9.91, 10.30	North Eureka River Slide	726:02	Km 9.9, 10.3
Legal Description: 8-14-86-8 W6		UTM Co-ordinates		
		11U E 368433	N	6258811

Current Monitoring:	27-May-2024	Previous Monitoring	13-Oct-2023
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Nixson Mationg, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI11-3 and SI11-4 at Sites 5 and 6; SI12-P9U, SI12-P17U and SI12 P26U (Site 3 in the upper wall) SI12-P3L, SI12-P9L and SI12-P14L (Site 3 in the lower wall)	Pneumatic Piezometers (PN): PN11-3	Vibration Wire Piezometers (VW): VW11-7	Standpipe Piezometers (SP): N/A
Load Cell (LC): VC1759, VC1760, VC1761, VC1762, VC1763 and VC1764	Strain Gauges: N/A	SAs: 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 readout	Vibration Wire Piezometers: Geokon GK 404 vibrating wire readout	Standpipe Piezometers:
Load Cell: RST Multichannel DTLINK software	Strain Gauges:	SAs:	Others:
Notes:			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	<p>Slope inclinometer SI11-3 showed a rate of movement of 2.6 mm/yr over 0.5 m to 3.5 m depth since the fall of 2023 readings. This rate of movement has held more or less steady since 2013.</p> <p>SI11-4 continued to show no discernible movement.</p> <p>Slope inclinometers SI12-P9U, SI12-P17U, SI12-P26U were installed in the upper wall.</p> <p>Since the fall of 2023, SI12-P9U has shown barely discernible movement. The total pile head movement to date has been 15.9 mm in the upslope direction of about 2 mm of movement has occurred since 2014.</p>

	<p>SI12-P17U showed discernible movement. The total pile head movement to date has been 23.7 mm in the upslope direction of which about 8 mm of movement has occurred since 2014.</p> <p>SI12-P26U showed a rate of movement of 0.7 mm/yr over the length of the pile and waler from 2.5 m to 26.3 m depth and a rate of movement of 0.9 mm/yr over the length of the pile only from 4.9 m to 26.3 m depth. The total pile head movement to date has been 19.1 mm in the upslope direction of which about 7 mm has occurred since 2014.</p> <p>Slope inclinometers SI12-P3L, SI12-P9L and SI12-P14L were installed in the lower wall.</p> <p>SI12-P3L has shown a total pile head movement of 13.4 mm towards the river since installation, with no discernible movement since the fall of 2023 readings. SI12-P9L has shown a total pile head movement of 20.7 mm in the downslope direction since installation, with no discernible movement over the length of the pile since the fall of 2023 readings. SI12 P14L has shown a total pile head movement of 5.0 mm in the downslope direction since installation, with no discernible movement since the fall of 2023 readings.</p> <p>Since the previous readings in the fall of 2023, the groundwater level in pneumatic piezometer PN11-3 decreased by 0.46 m. Vibrating wire piezometer VW11-7 showed an increase in groundwater level of 0.04 m since the fall of 2023 readings.</p> <p>Since the fall of 2023, the load cells showed decreases in the measured load, ranging from 0.86 kN in VC1763 (anchor 26) to 2.94 kN in VC1759 (anchor 50U). The current readings on the load cells varied from 172.79 kN in VC1762 (anchor 77U) to 223.85 kN in VC1764 (anchor 27U). The anchor design load was 300 kN and the anchors were locked off at 240 kN.</p> <p>The load cells all showed a general trend of dropping load for the first 4 years after completion of construction. Since around 2018, anchors 26L, 27U and 50U have shown a trend of slowly increasing load, while Anchors 50L, 76L and 77U have continued to show a trend of decreasing load, although at a reduced rate compared to the initial period after completion of construction. This trend of diverging load trends is unlikely to be a concern for now but if it continues there may be a concern for the load sharing of the wall structure, which could overstress the wall.</p> <p>Initially, the load cells showed a gradual decrease in measured load since they were locked off. However, over the past several years, the load cell readings have been levelling off, indicating the pile wall may be reaching a point of equilibrium. (see comment for above paragraph)</p> <p>The instrument readings at this site indicate that the landslide repairs at this site have been successful in stabilizing the slope movements.</p>
Future Work:	The instruments should be read again in the fall of 2024.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	Refer to previous instrumentation reports for additions instrumentation details and discussion.

Attachments:

- Table PH026-1 Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 and 6), Slope Inclinometer Instrumentation Reading Summary
- Table PH026-2 Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 and 6), Pneumatic Piezometer Instrumentation Reading Summary
- Table PH026-3 Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 and 6), Vibrating Wire Piezometer Instrumentation Reading Summary
- Table PH026-4 Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 and 6), Standpipe Piezometer Instrumentation Reading Summary
- Table PH026-5 Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 and 6), Load Cells Instrumentation Reading Summary (Upper Pile Wall)
- Statement of Limitations and Conditions
- APPENDIX A - PH026-1 SPRING 2024
 - Field Inspector's report
 - Site Plan Showing Approximate Instrument Locations (Drawings No. 32123 PH026 1 and 32123-PH026-2)
 - SI Reading Plots
 - Figure PH026-1 (Piezometric Elevations)
 - Figure PH026-2 (Piezometric Depths)
 - Figure PH026-3 (Load Cell Readings)
 - Figure PH026-4 (Load Cell Temperatures)

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.
Roger Skirrow, M.Sc., P. Eng.
Senior Geotechnical Engineer

Lucas Green, P.Eng.
Geotechnical Engineer

Table PH026 -1: Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 And 6) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: May 27, 2024

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE 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)
SI08-1	Jan. 20, 2008	51.4 mm over 3.9 m to 5.1 m depth in 219° direction	102.6 mm/yr between May and Oct. 2008	Sheared off at 4.9 m	May 27, 2008	N/A	N/A	N/A
		22.8 mm over 5.1 m to 8.1 m depth in 219° direction	42.4 mm/yr between May and Oct. 2008			N/A	N/A	N/A
SI08-2	Jan. 20, 2008	7.4 mm over 8.1 m to 10.0 m depth in 270° direction	28.2 mm/yr between Jan and Feb. 2008	Sheared off at 9.8 m	Jan. 20, 2008	N/A	N/A	N/A
		17.7 mm over 11.8 m to 13.6 m depth in 270° direction	65.4 mm/yr between Jan. and Feb. 2008			N/A	N/A	N/A
SI08-3	Jan. 20, 2008	70.0 mm over 6.9 m to 10.0 m depth in 230° direction	142.5 mm/yr between May and Oct. 2008	Sheared off at 7.9 m	May 27, 2008	N/A	N/A	N/A
		43.7 mm over 8.1 m to 10.0 m depth in 260° direction	74.8 mm/yr between May and Oct. 2008			N/A	N/A	N/A
SI11-3	March 28, 2011	49.0 mm over 0.5 m to 3.5 m depth in 232° direction	42.3 mm/yr in October 2012	Active	October 13, 2023	1.6	2.6	2.6
SI11-4	March 27, 2011	No discernible movement	N/A	Active	October 13, 2023	N/A	N/A	N/A

Drawing 32123-PH026-1~2 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site

Table PH026-1 – Continued...Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 And 6) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: May 27, 2024

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)
SI11-5	March 27, 2011	40.4 mm over 8.2 m to 10.1 m depth in 216° direction	21.8 mm/yr in October 2012	Sheared at 8.7 m depth	September 25, 2013	N/A	N/A	N/A
SI11-6	March 25, 2011	48.3 mm over 16.2 m to 18.6 m depth in 256° direction	25.3 mm/yr In April 2011	Sheared at 17.1 m depth	September 25, 2013	N/A	N/A	N/A
SI11-7	March 24, 2011	35.9 mm over 17.4 m to 18.6 m depth in 246° direction	23.5 mm/yr In October 2012	Sheared off at 16.7 m	June 2, 2013	N/A	N/A	N/A
UPPER WALL								
SI12-P9U	October 2, 2012	-29.2 mm over 2.7 m to 29.5 m depth in 292° direction	-1040.4 mm/yr on August 8, 2013 *	Active	October 13, 2023	No discernible movement	N/A	-6.3
		-15.9 mm over 5.1 m to 29.5 m depth in 292° direction	-668.8 mm/yr on August 8, 2013 *			No discernible movement	N/A	-5.3
SI12-P17U	October 2, 2012	18.3 mm over 2.8 m to 29.0 m depth in 278° direction	-1920.7 mm/yr on August 10, 2013 *	Active	October 13, 2023	No discernible movement	N/A	-10.5
		-23.7 mm over 5.2 m to 29.0 m depth in 278° direction	-1189.1 mm/yr on August 10, 2013 *			No discernible movement	N/A	-5.5

Drawing 32123-PH026-1~2 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site



Table PH026-1 – Continued...Spring 2024 – Hwy 726:02 Eureka River (Sites 3, 5 And 6) Slope Inclinator Instrumentation Reading Summary

Date Monitored: May 27, 2024

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)
UPPER WALL								
SI12-P26U	October 2, 2012	-7.7 mm over 2.5 m to 26.3 m depth in 37° direction	-679.6 mm/yr on August 12, 2013 *	Active	October 13, 2023	0.4	0.7	0.4
		-19.1 mm over 4.9 m to 26.3 m depth in 37° direction	-465.6 mm/yr on August 12, 2013			0.6	0.9	5.4
LOWER WALL								
SI12-P3L	September 20, 2012	13.4 mm over 0.1 m to 19.6 m depth in 204° direction	10.6 mm/yr on September 20, 2014	Active	October 13, 2023	No discernible movement	N/A	-8.5
SI12-P9L	September 20, 2012	20.7 mm over 1.6 m to 19.9 m depth in 229° direction	85.1 mm/yr on August 14, 2013	Active	October 13, 2023	No discernible movement	N/A	-0.3
SI12-P14L	September 20, 2012	5.0 mm over 0.7 m to 20.2 m depth in 255° direction	4.8 mm/yr on October 22, 2021	Active	October 13, 2023	No discernible movement	N/A	-11.8

Drawing 32123-PH026-1~2 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site

Table PH026 -2: Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 And 6) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: May 27, 2024

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)
PN08-1	January 20, 2008	10.0	N/A	Removed	9.71 on Oct. 13, 2008	N/A	N/A	9.79 (Sep 24, 2011)	N/A
PN08-2	January 20, 2008	10.0	N/A	Removed	9.31 on Oct. 13, 2008	N/A	N/A	9.55 (Sep 24, 2011)	N/A
PN08-3	January 20, 2008	10.2	N/A	Removed	9.84 on Oct. 13, 2008	N/A	N/A	10.02 (Sep 24, 2011)	N/A
PN11-3	March 27, 2011	23.5	N/A	Active	6.97 on March 28, 2011	98.6	13.45	12.99	-0.46
PN11-4	March 26, 2011	24.1	N/A	Damaged	12.15 on March 28, 2011	N/A	N/A	16.36 (Oct 2, 2012)	N/A
PN11-6	March 25, 2011	18.8	N/A	Damaged	10.83 on Sept. 25, 2013	N/A	N/A	12.41 (Oct 3, 2017)	N/A

Drawing 32123-PH026-1 & -2 in Appendix A provide sketches of the approximate locations of the monitoring instrumentation for this site

Notes:

PN - pneumatic piezometer.

BGS- below ground surface.



Table PH026-3: Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 And 6) Vibrating Wire Piezometer Instrumentation Reading Summary

Date Monitored: May 27, 2024

INSTRUMENT	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED WATER LEVEL BGS (m)	CURRENT GROUNDWATER DEPTH (mBGS)	PREVIOUS GROUNDWATER DEPTH (mBGS)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW11-1U	March 28, 2011	N/A	N/A	Removed	5.23 mBGS on September 24, 2011	N/A	5.23 (Sep 24, 2011)	N/A
VW11-1L	March 28, 2011	N/A	N/A	Removed	8.98 mBGS on March 28, 2011	N/A	10.62 (Sep 24, 2011)	N/A
VW11-2U	March 27, 2011	N/A	N/A	Destroyed	6.34 mBGS on June 4, 2011	N/A	8.38 (Oct. 2, 2012)	N/A
VW11-2L	March 27, 2011	N/A	N/A	Damaged	12.14 mBGS on March 27, 2011	N/A	13.68 (June 13, 2012)	N/A
VW11-5	March 25, 2011	N/A	N/A	Removed	10.63 mBGS on March 25, 2011	N/A	19.61 (October 2, 2018)	N/A
VW11-7	March 25, 2011	N/A	N/A	Active	14.93 mBGS on June 3, 2014	16.05	16.09	0.04

Drawing 32123-PH026-1 & -2 in Appendix A provide sketches of the approximate locations of the monitoring instrumentation for this site



Table PH026-4: Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 And 6) Standpipe Piezometer Instrumentation Reading Summary

Date Monitored: Not Monitored

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV.* (m)	CURRENT STATUS	MAXIMUM MEASURED WATER LEVEL BGS (m)	MEASURED WATER LEVEL BGS (m)	PREVIOUS READING BGS (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
SP19-1	March 26, 2019	8.8	604.30	Removed during Construction	1.72 on June 22, 2022	N/A	2.93 (Oct. 2, 2022)	N/A
SP19-2	March 26, 2019	19.1	613.30	Removed during Construction	10.37 on June 19, 2020	N/A	11.48 (Oct. 2, 2022)	N/A

Drawing 32123-PH026-1& -2 in Appendix A provide sketches of the approximate locations of the monitoring instrumentation for this site.

SP19-1 and 19-2 were removed in the summer of 2023 during slide repair construction.

*Note: Elevations obtained from ARA in 2019. A different survey datum was used (~12.5 m higher than the previous datum)



Table PH026-5: Spring 2024 – HWY 726:02 Eureka River (Sites 3, 5 And 6) Load Cells Instrumentation Reading Summary (Upper Pile Wall)

Date Monitored: May 27, 2024

ANCHOR NUMBER/ROW	PILE # AND POSITION	SERIAL #	DESIGN LOAD / LOCK-OFF LOAD (kN)	MAXIMUM RECORDED LOAD (kN)	MEASURED LOAD ⁽¹⁾ (May 27, 2024) (kN)	PREVIOUS RECORDED LOAD ⁽¹⁾ (OCT. 13, 2023) (kN)	CHANGE IN LOAD SINCE PREVIOUS READING (kN)
26L	P9/center	VC1763	300 / 240	255.06 on August 24, 2013	209.32	210.18	0.97
27U	P9/south	VC1764	300 / 240	258.68 on August 28, 2013	223.85	226.01	0.94
50U	P17/center	VC1759	300 / 240	250.13 on August 28, 2013	205.61	208.55	1.42
50L	P17/center	VC1760	300 / 240	252.88 on August 28, 2013	187.13	189.23	0.06
76L	P26/north	VC1761	300 / 240	264.72 on August 15, 2013	182.40	184.67	-0.39
77U	P26/center	VC1762	300 / 240	261.41 on August 16, 2013	172.79 ⁽²⁾	173.70 ⁽²⁾	-0.37

Drawing 32123-PH026-1& -2 in Appendix A provides sketches of the approximate locations of the monitoring instrumentation for this site

Notes:

Load cell data is recorded twice daily with dataloggers on site. Dataloggers are downloaded twice annually during instrumentation readings. See Figures PH026-3 and PH026-4 Appendix A for complete historical instrument readings.

As of October 16, 2013, at 9:59 one of the vibrating wires in VC1762 (anchor 77U) has stopped working. The measured force is an average of two vibrating wires instead of three

The battery for the datalogger for load cells VC1759 and VC1760 was dead between September 18, 2019 and June 19, 2020. No data was collected between those dates.

U designates upper row anchors. L designates lower row anchors.



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THURBER ENGINEERING LTD.

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

SPRING 2024

**APPENDIX A
DATA PRESENTATION**

SITE PH026: HWY 726:02, EUREKA RIVER (SITES 3, 5 AND 6)

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (GRANDE PRAIRIE - NORTH DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH026)
SPRING 2024**

Location: North Eureka River Slide (HWY 726:02 C1 9.911) File Number: 32123 Probe: RST SI Set 5R & 8R Cable: RST SI Set 5R & 8R	Readout: RST PN C108 Unit 4, VW GIC 404, S/N 364 Casing size: 2.75 Temp: 22 Read by: NKR/NRM
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SLOPE INCLINOMETER (SI) READINGS

SI#	GPS Location (UTM 11)		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-			
SI11-3	368433	6258811	27-May-24	1.05	88 to 2	218	1628	-1614	-783	773	8R/8R	2.75	
SI11-4	368446.63	6258834.32	27-May-24	0.85	98 to 2	198	267	-257	1980	-1989	8R/8R	2.75	
Upper Wall													
SI12-P9U	368400.67	6258635.59	27-May-24	0.7	2 to 98	250	127	-114	-314	294	5R/5R	2.75	
SI12-P17U	368400.98	6258605.62	27-May-24	1.2	2 to 98	286	-553	565	362	-384	5R/5R	2.75	
SI12-P26U	368401.31	6258572.75	27-May-24	0.85	2 to 90	10	-412	421	-51	30	5R/5R	2.75	
SI12-P3L	368360	6258629	27-May-24	1.42	2 to 68	204	499	-489	264	-270	5R/5R	2.75	
SI12-P9L	368371.87	6258609.86	27-May-24	-0.4	2 to 63	200	409	-428	-212	221	5R/5R	2.75	*
SI12-P14L	368371.25	6258589.95	27-May-24	0.8	2 to 68	268	108	-96	-724	701	5R/5R	2.75	

PNEUMATIC PIEZOMETER READINGS

PN#	GPS Location (UTM 11)		Date	Reading (kPa)	Identification Number
	Easting (m)	Northing (m)			
PN11-3	368433.82	6258811.21	27-May-24	98.6	33812

VIBRATING WIRE PIEZOMETER (VW) READINGS

VW #	GPS Location (UTM 11)		Date	Reading (Dg/ ^o C)	Identification Number
	Easting (m)	Northing (m)			
VW11-7	368402.00	6258729.78	27-May-24	8286.2 / 4.2	16449

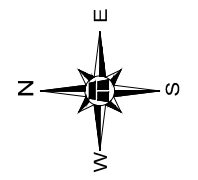
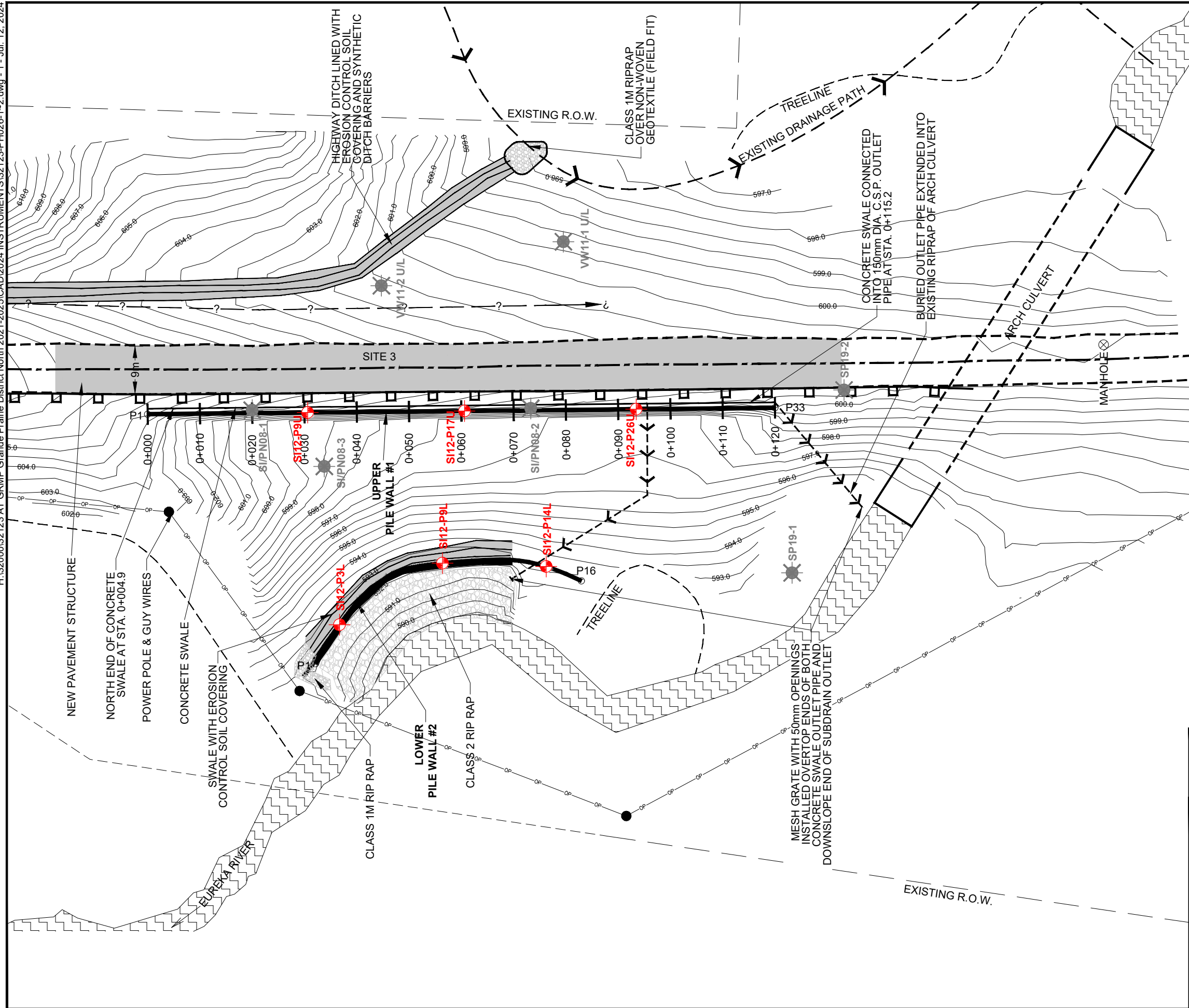
VIBRATING WIRE LOAD CELL (VC) READINGS

VC #	GPS Location (UTM 11)		Datalogger Serial #	Date	Comment
	Easting (m)	Northing (m)			
VC1759			RST 2699	27-May-24	Downloaded
VC1760					Downloaded
VC1761			RST 2700		Downloaded
VC1762					Downloaded
VC1763			RST 2701		Downloaded
VC1764					Downloaded



INSPECTOR REPORT

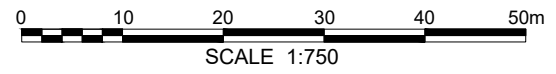
* SI12-P9L is -0.40m from ground surface inside Metal box
**SP19-2 is flushmounted in southbound highway lane
SP19-1 & SP19-2 have been destroyed during construction, skip Spring 2024


H:\32000\32123 AT GRMP Grande Prairie District North 2021-2025\CAD\2024 INSTRUMENTS\32123-PH026-1-2.dwg - 1 - Jul. 12, 2024



LEGEND

-  INSTRUMENTS LOCATED IN THE PILE WALLS
-  INSTRUMENT NOT IN USE






**PEACE REGION
(GRANDE PRAIRIE DISTRICT NORTH)**

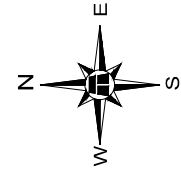
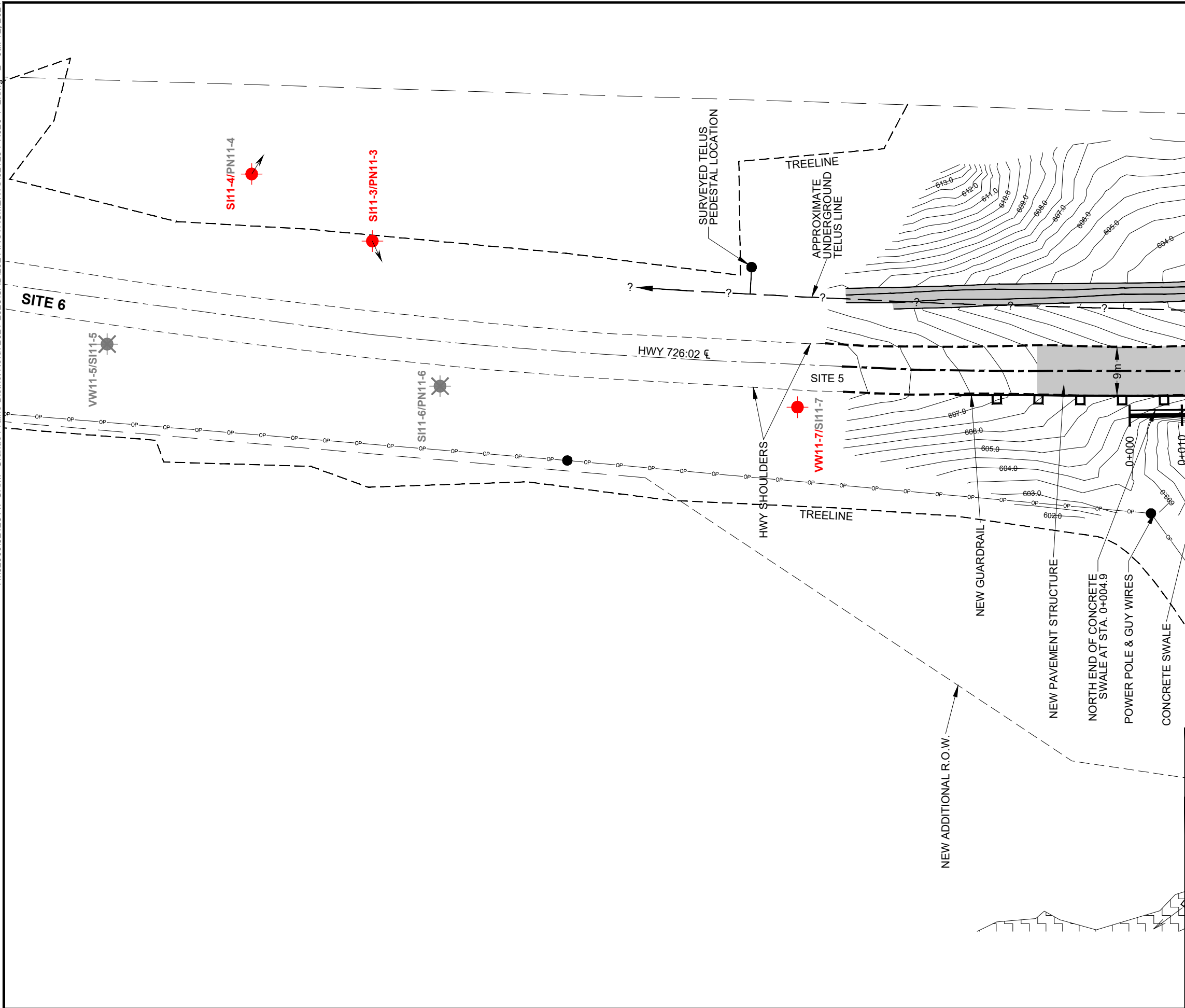
**PH026: HWY 726:02 S. OF WORSLEY, SITE #3
SITE PLAN SHOWING INSTRUMENT LOCATIONS**

DWG No. 32123-PH026-1

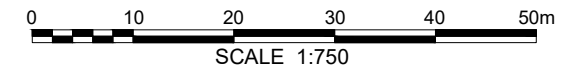
DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	1:750
DATE	JULY 2024
FILE No.	32123




THURBER ENGINEERING LTD.



- LEGEND**
- INSTRUMENT LOCATIONS (NOT SURVEYED)
 - DIRECTION OF MOVEMENT IN SLOPE INCLINOMETER
 - INSTRUMENT NOT IN USE






**PEACE REGION
(GRANDE PRAIRIE DISTRICT NORTH)**

**PH026: HWY 726:02 S. OF WORSLEY, SITES #5 & #6
SITE PLAN SHOWING INSTRUMENT LOCATIONS**

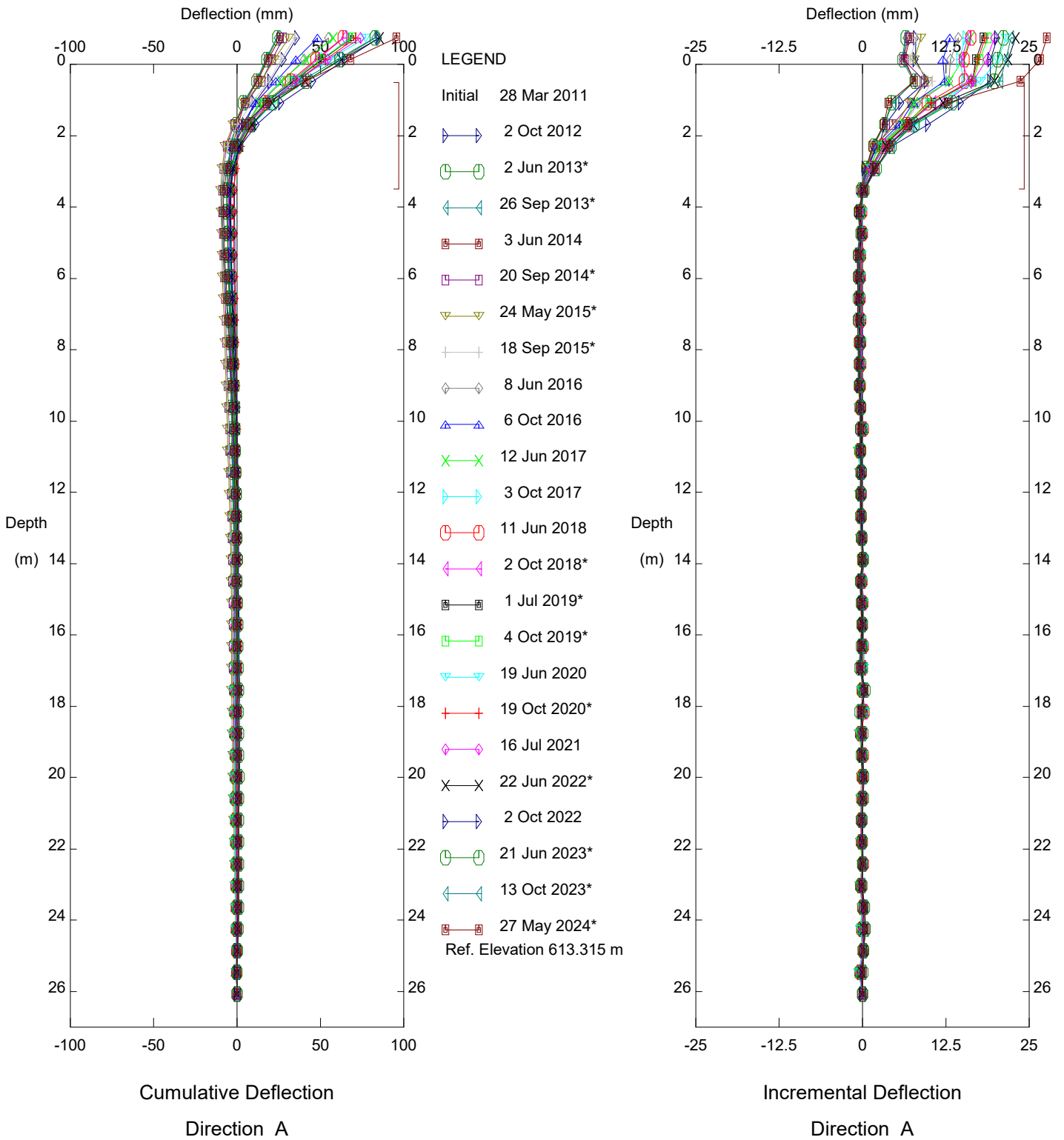
DWG No. 32123-PH026-2

DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	DWP
SCALE	1:750
DATE	JULY 2024
FILE No.	32123



THURBER ENGINEERING LTD.

Thurber Engineering Ltd.

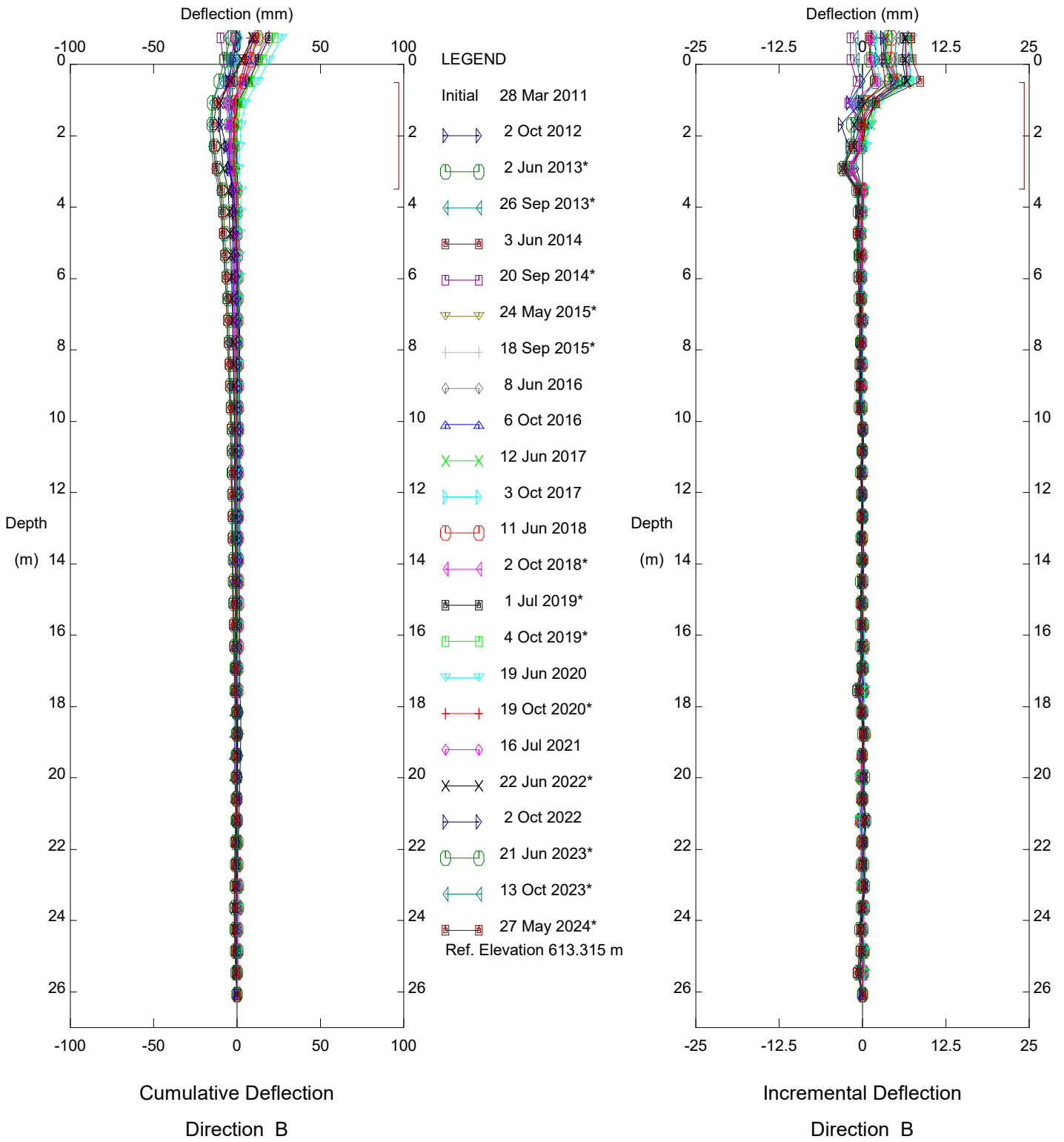


Hwy 726:02 Eureka River, PH026, Inclinometer SI11-3

Alberta Transportation

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

Thurber Engineering Ltd.

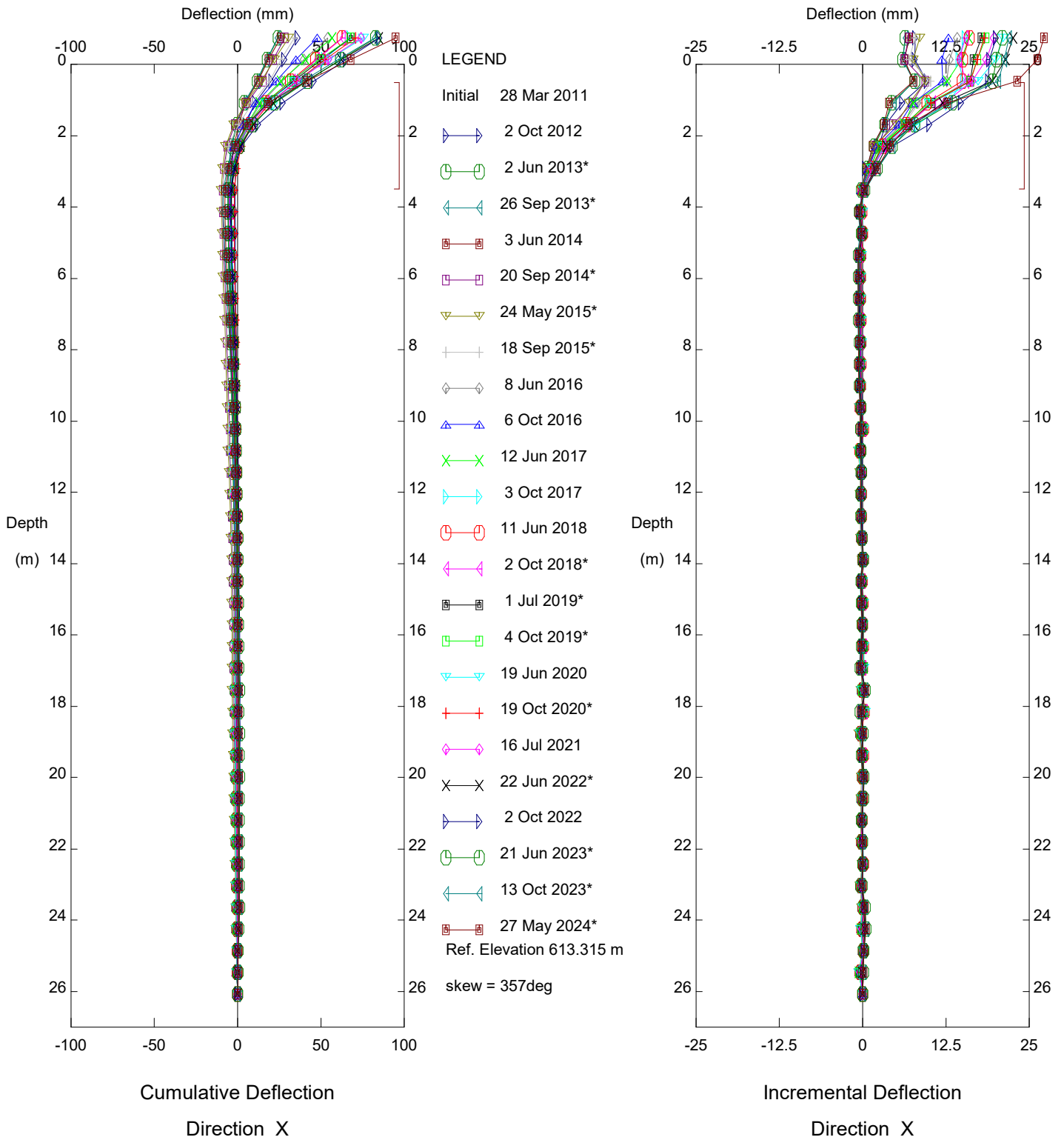


Hwy 726:02 Eureka River, PH026, Inclinometer SI11-3

Alberta Transportation

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

Thurber Engineering Ltd.

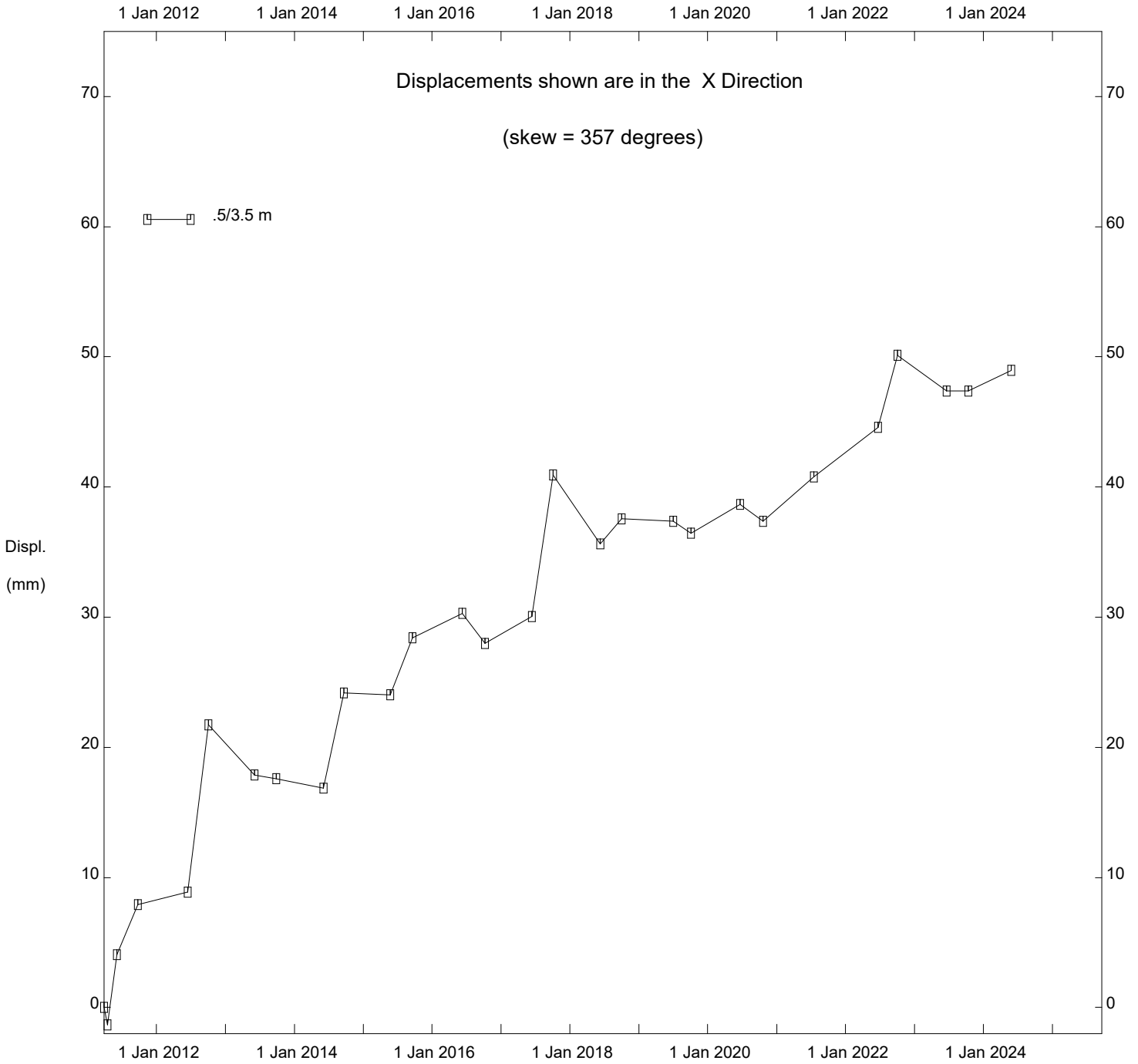


Hwy 726:02 Eureka River, PH026, Inclinometer SI11-3

Alberta Transportation

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

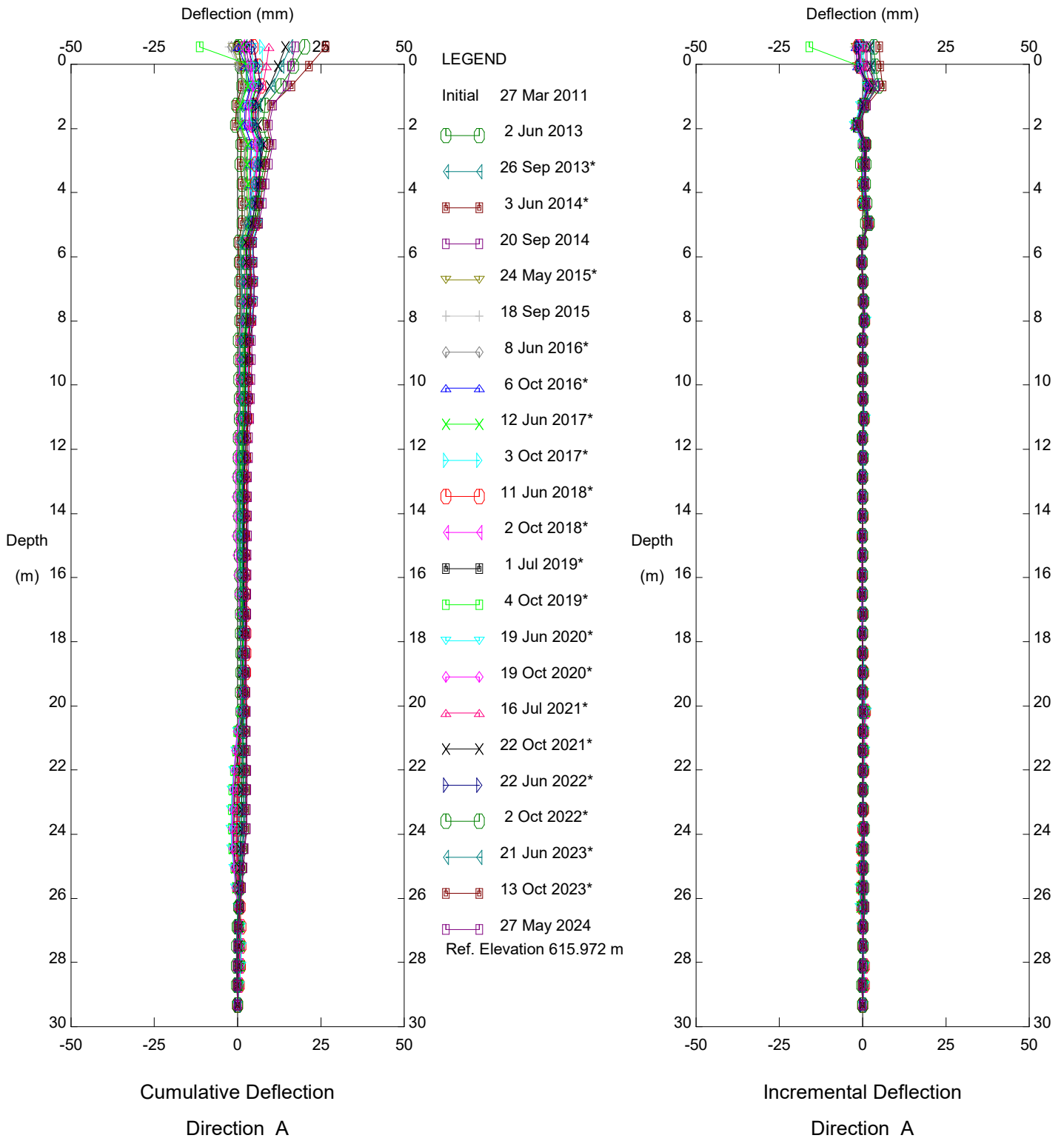
Thurber Engineering Ltd.



Hwy 726:02 Eureka River, PH026, Inclinator SI11-3

Alberta Transportation

Thurber Engineering Ltd.

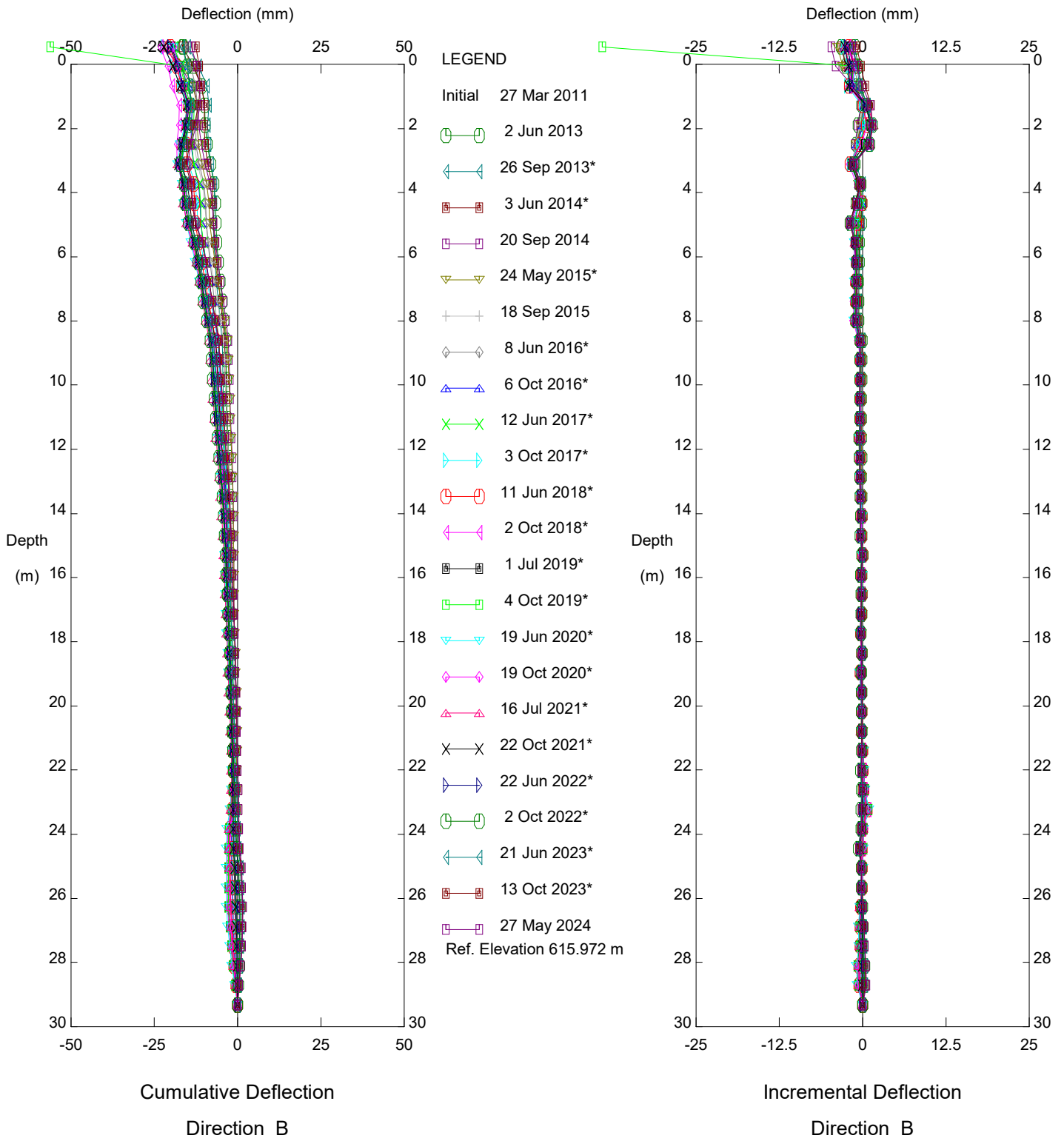


Hwy 726:02 Eureka River, PH026, Inclinometer SI11-4

Alberta Transportation

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

Thurber Engineering Ltd.

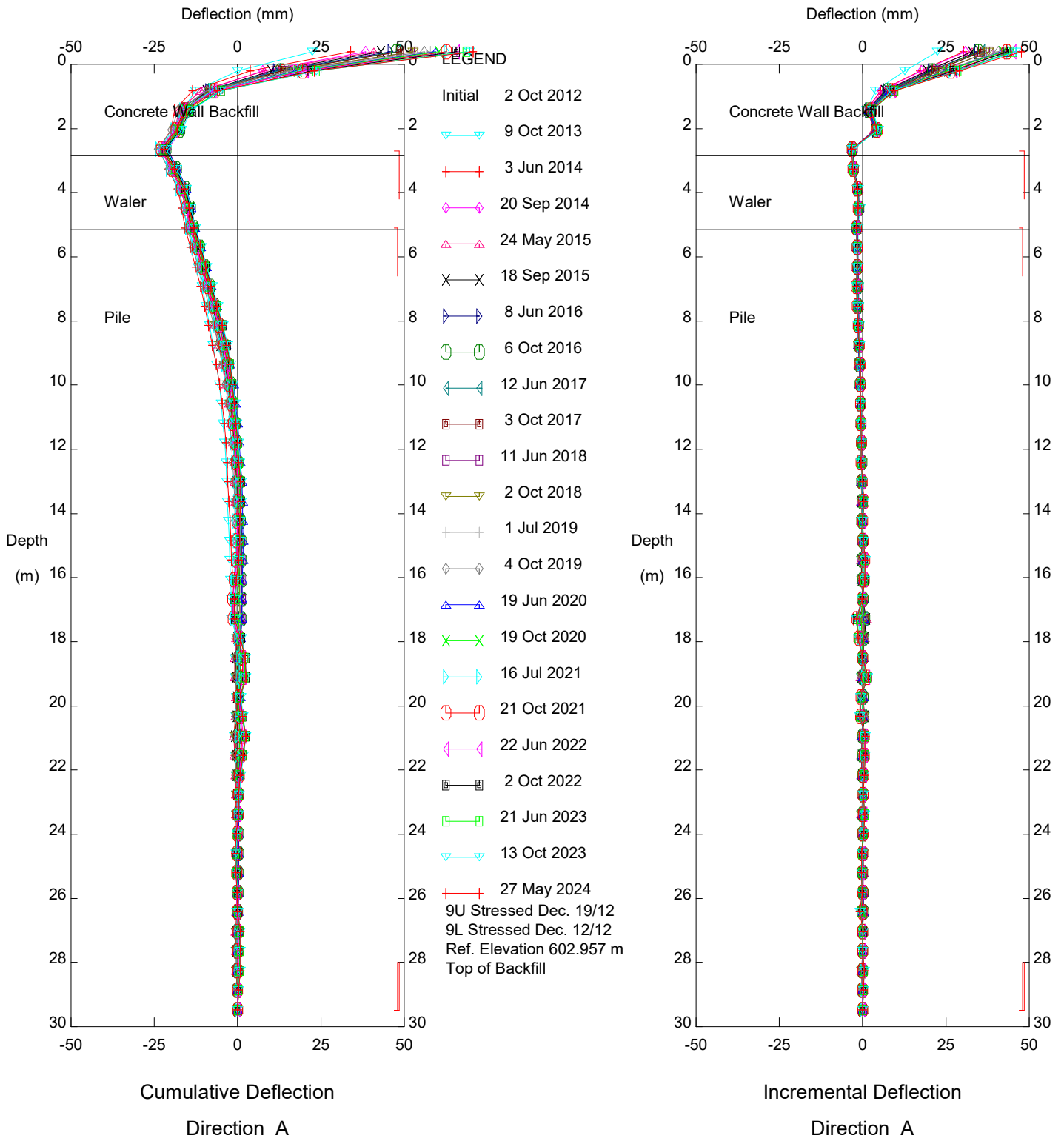


Hwy 726:02 Eureka River, PH026, Inclinometer SI11-4

Alberta Transportation

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

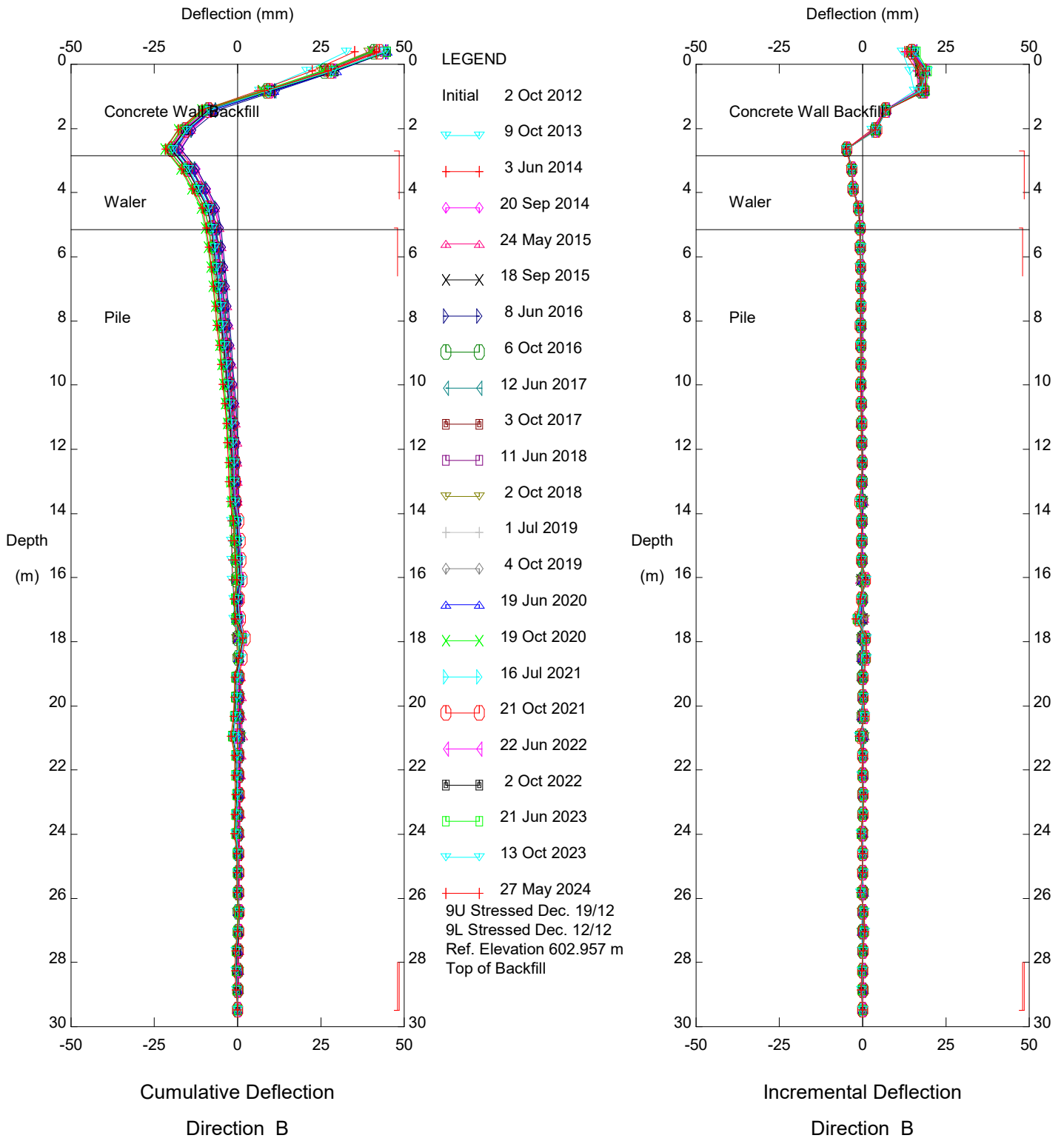
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PH026 Eureka River Upper Wall, Inclinometer SI12-P9U

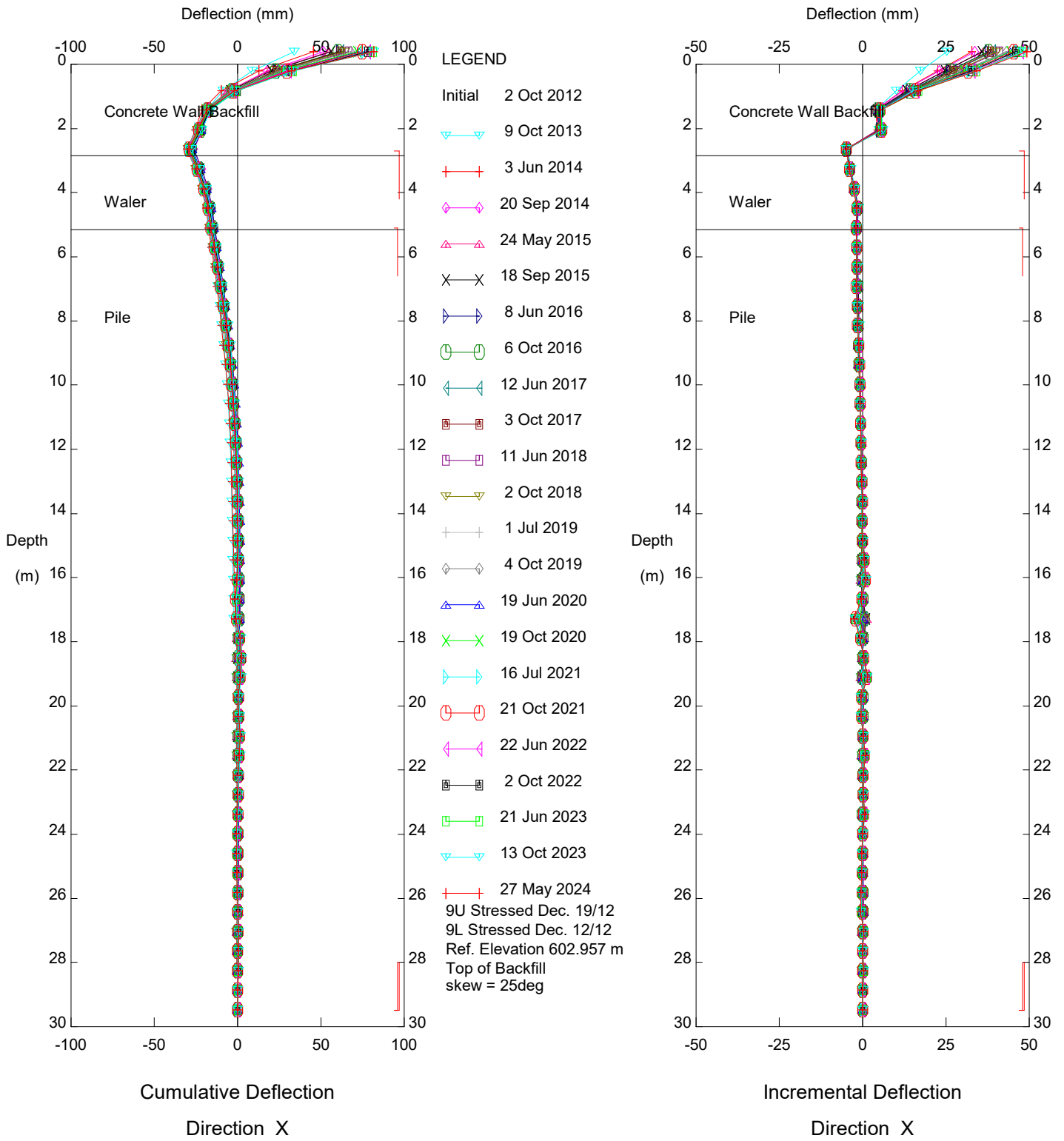
Alberta Transportation

Thurber Engineering Ltd.



PH026 Eureka River Upper Wall, Inclinometer SI12-P9U

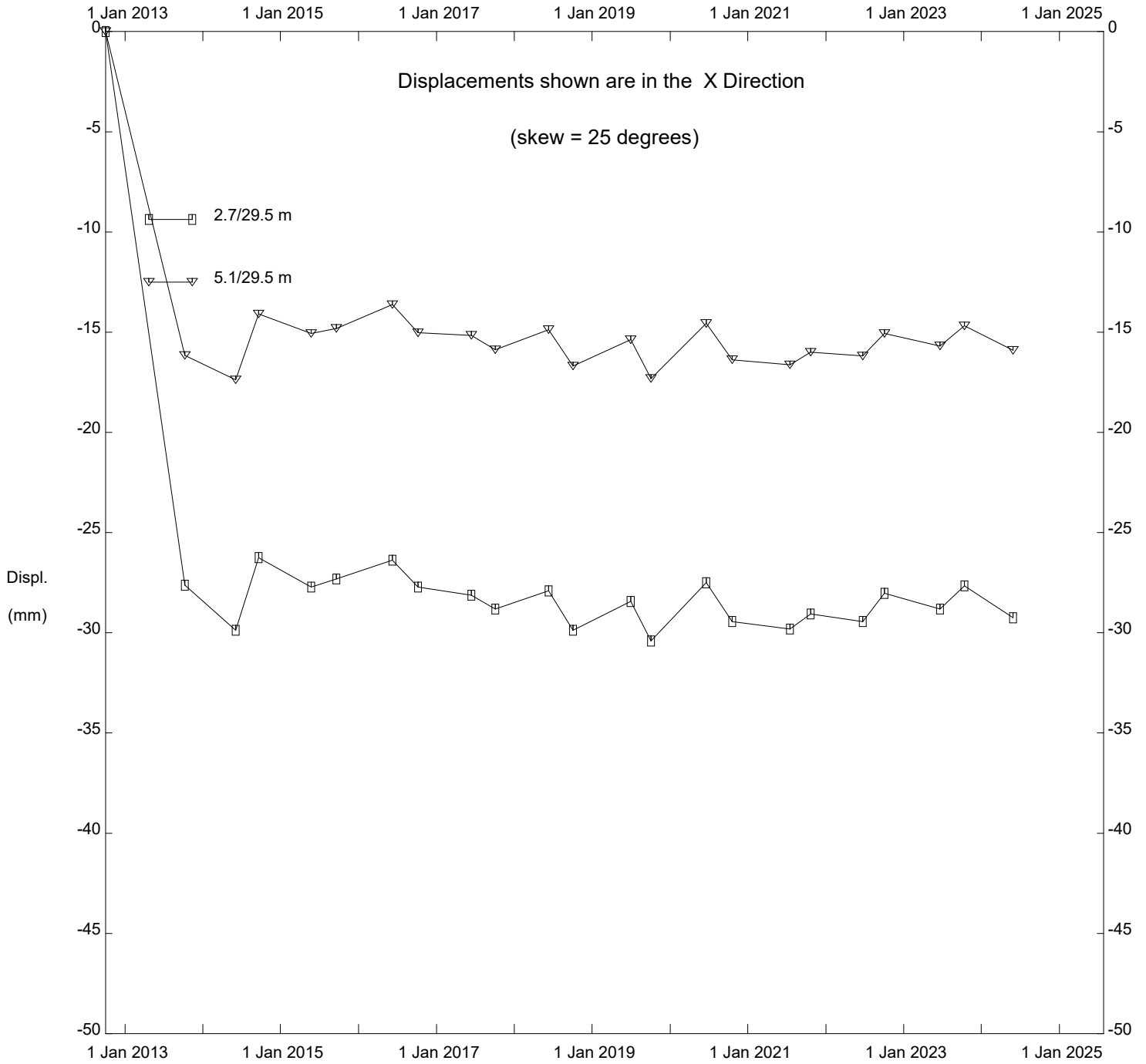
Alberta Transportation



PH026 Eureka River Upper Wall, Inclinometer SI12-P9U

Alberta Transportation

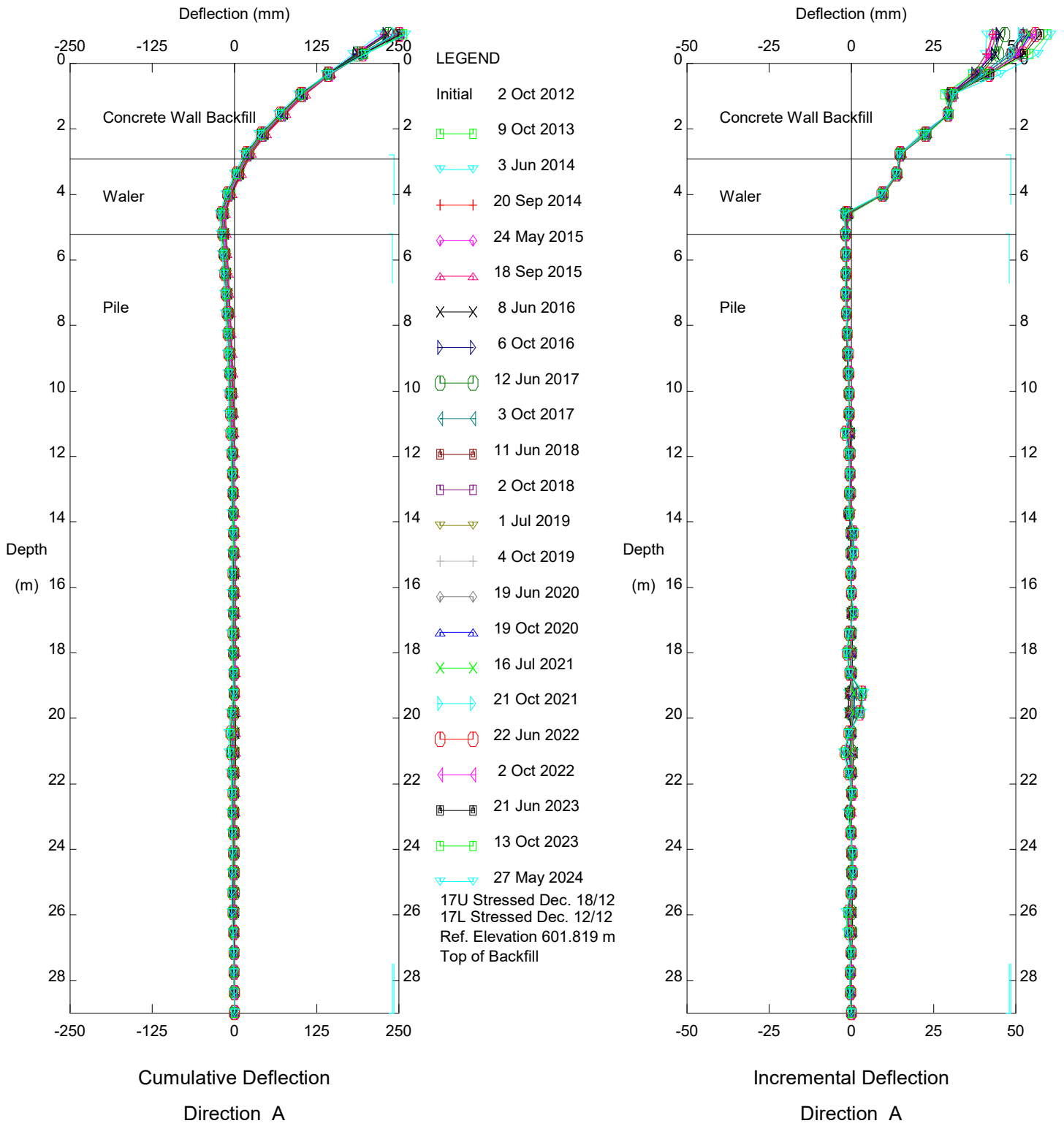
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PH026 Eureka River Upper Wall, Inclinator SI12-P9U

Alberta Transportation

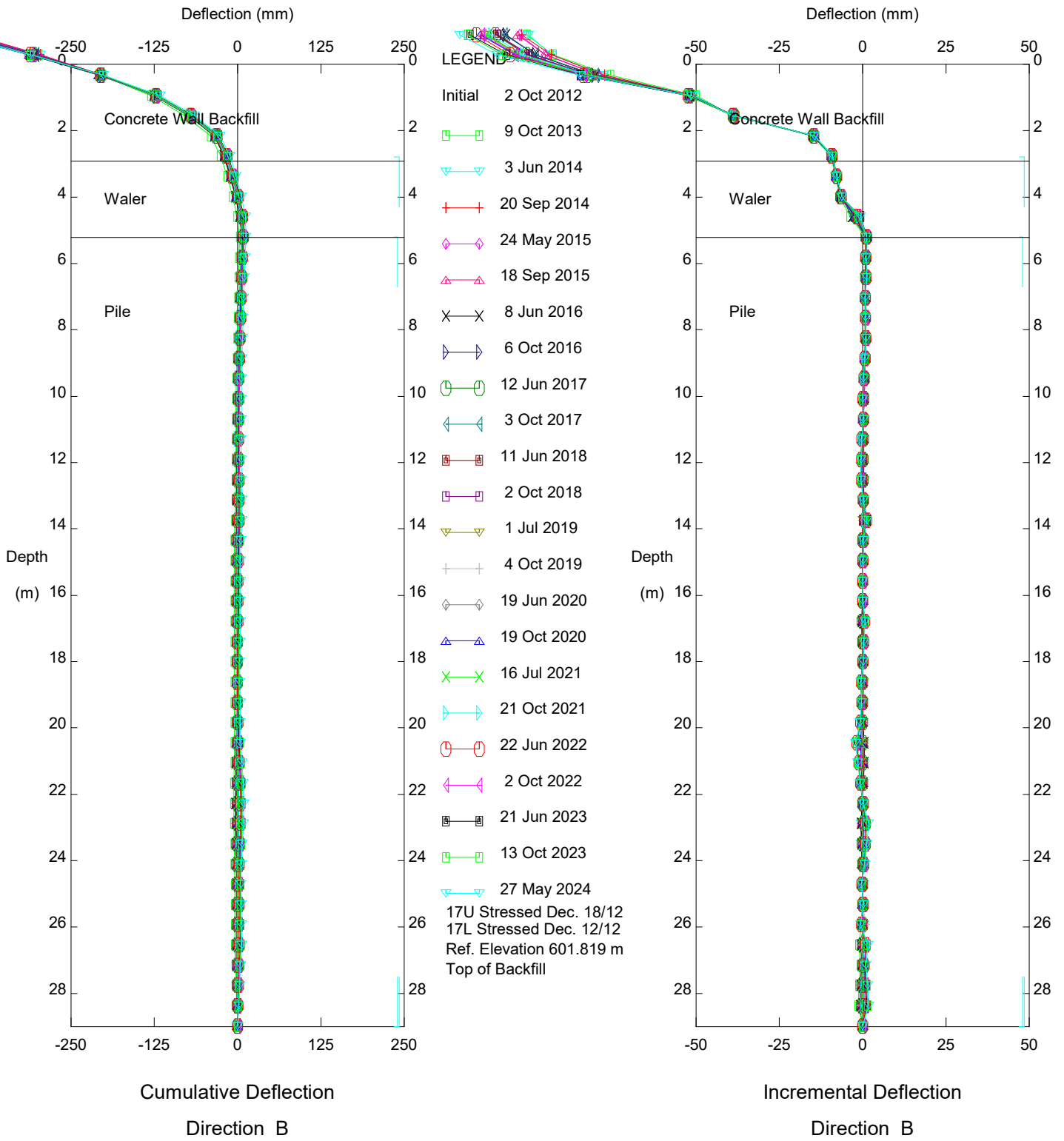
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PH026 Eureka River Upper Wall, Inclinator SI12-P17U

Alberta Transportation

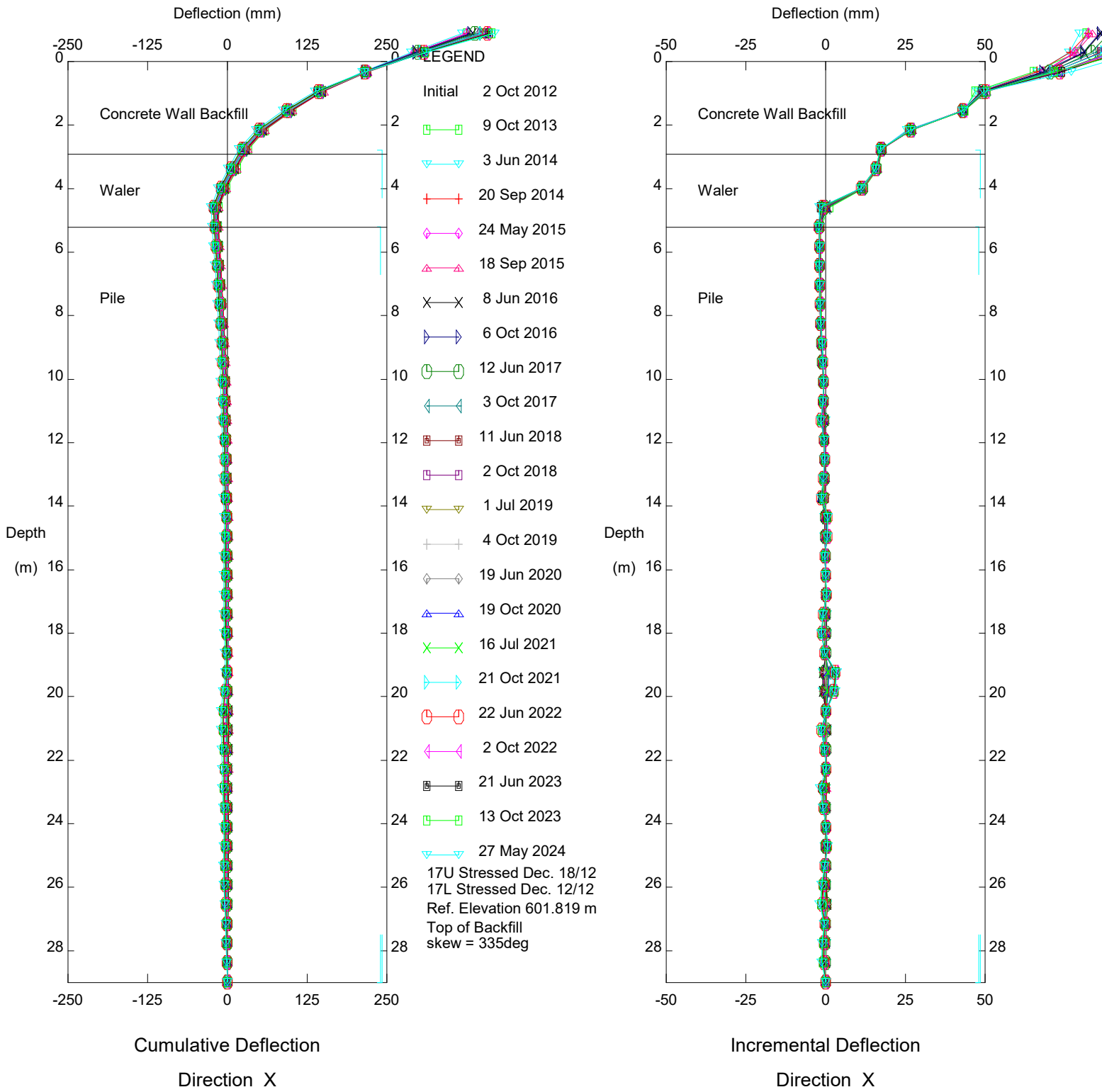
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Alberta Transportation

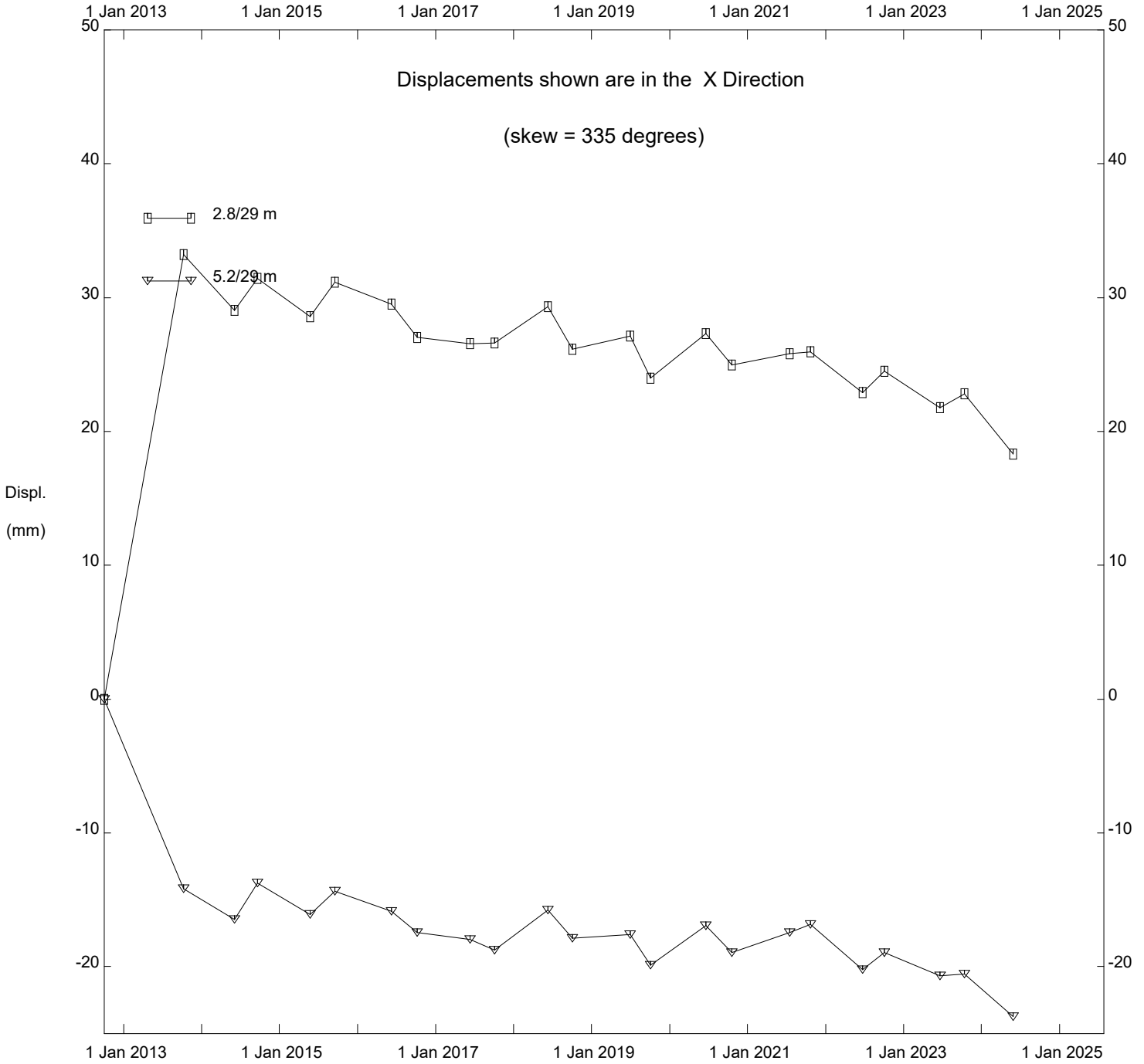
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Alberta Transportation

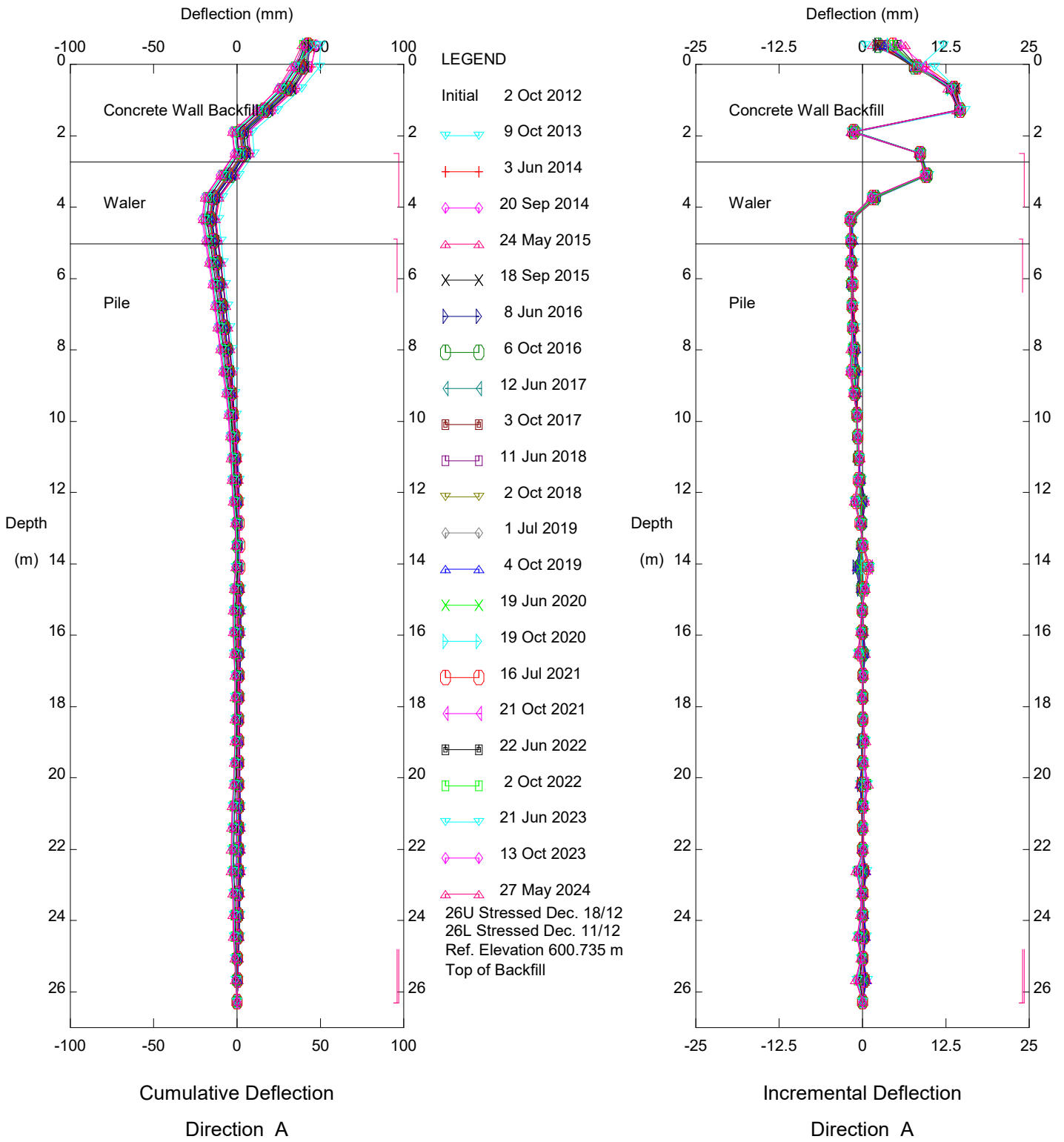
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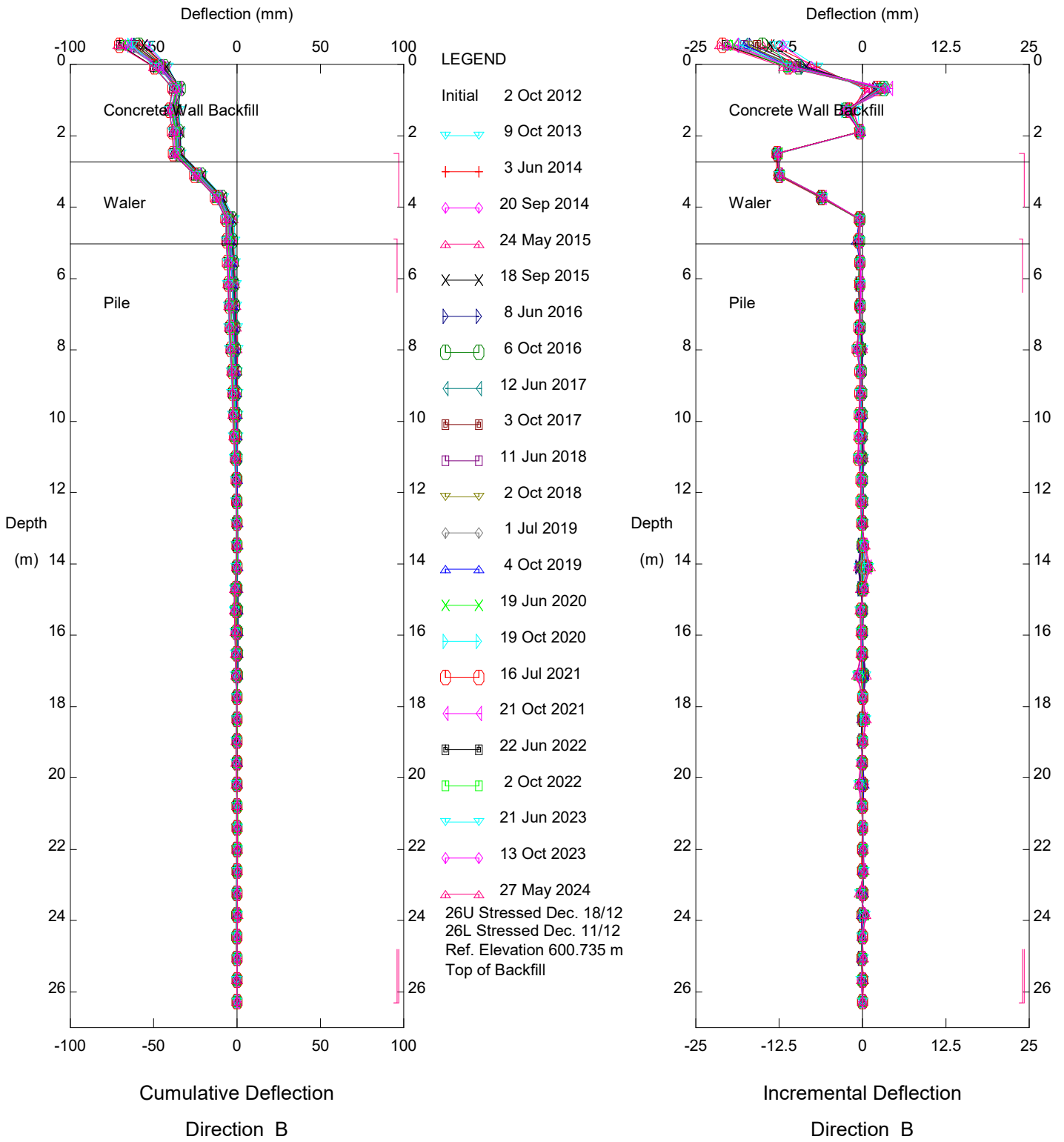
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Alberta Transportation

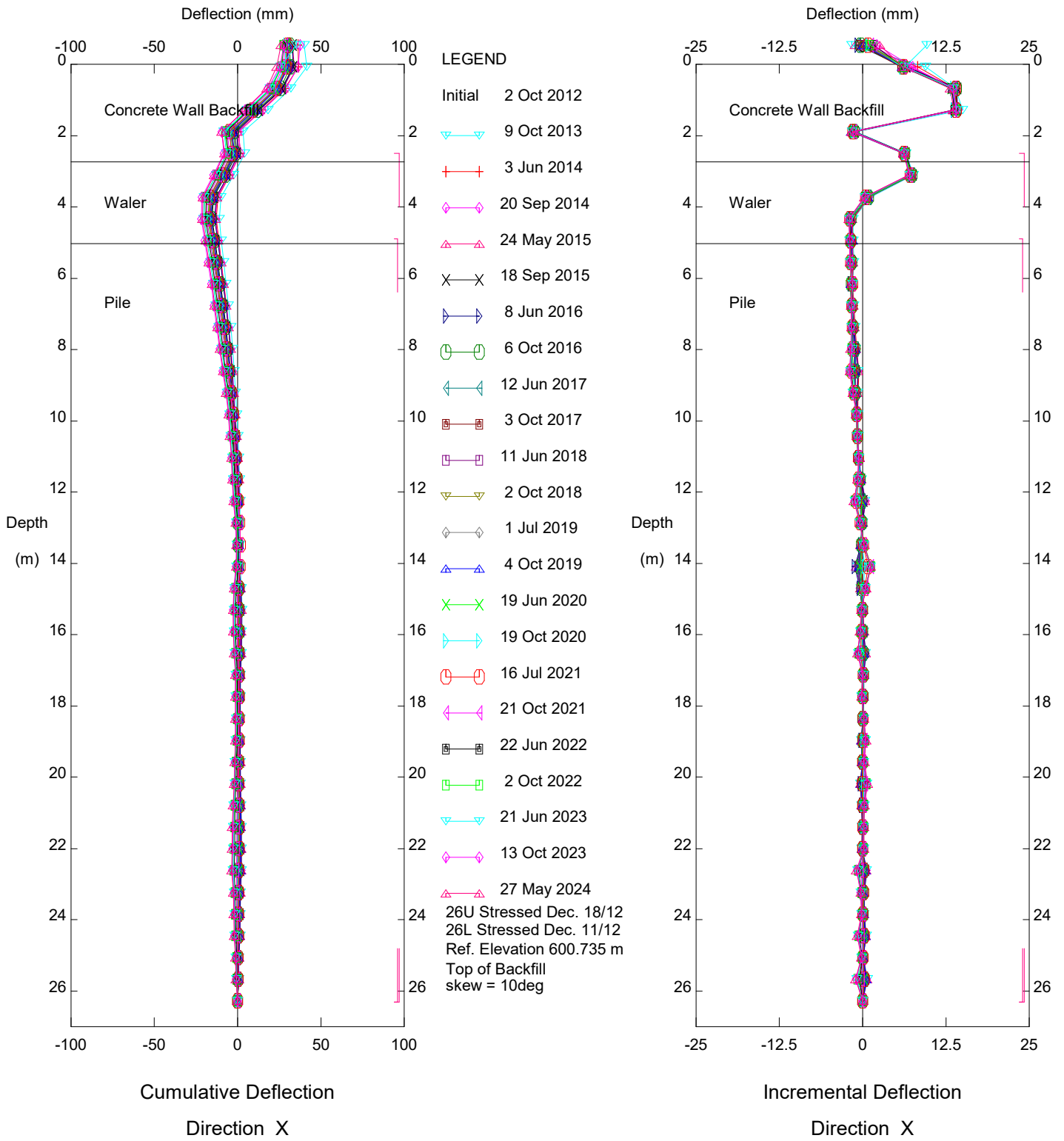
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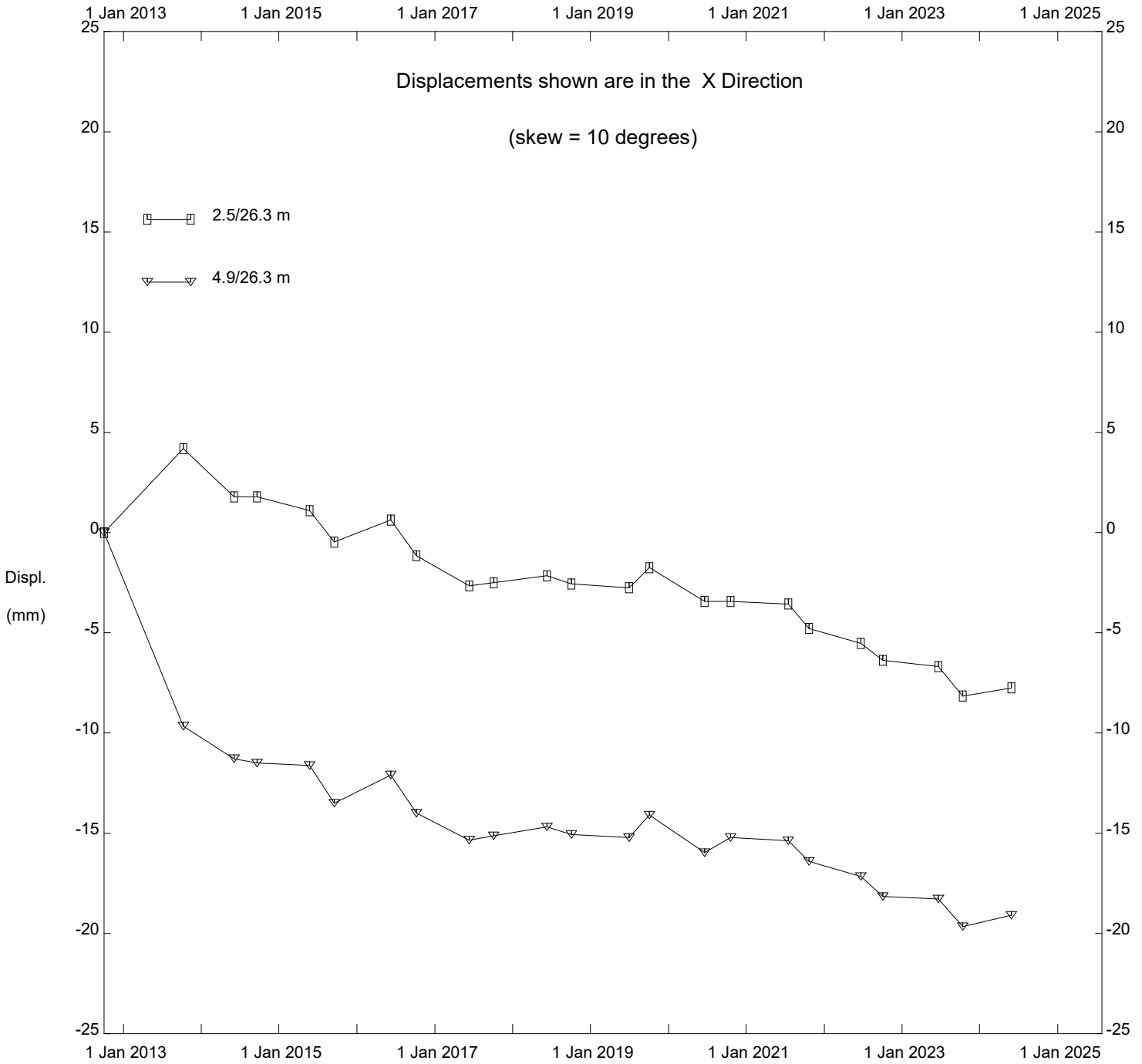
Alberta Transportation

Thurber Engineering Ltd.



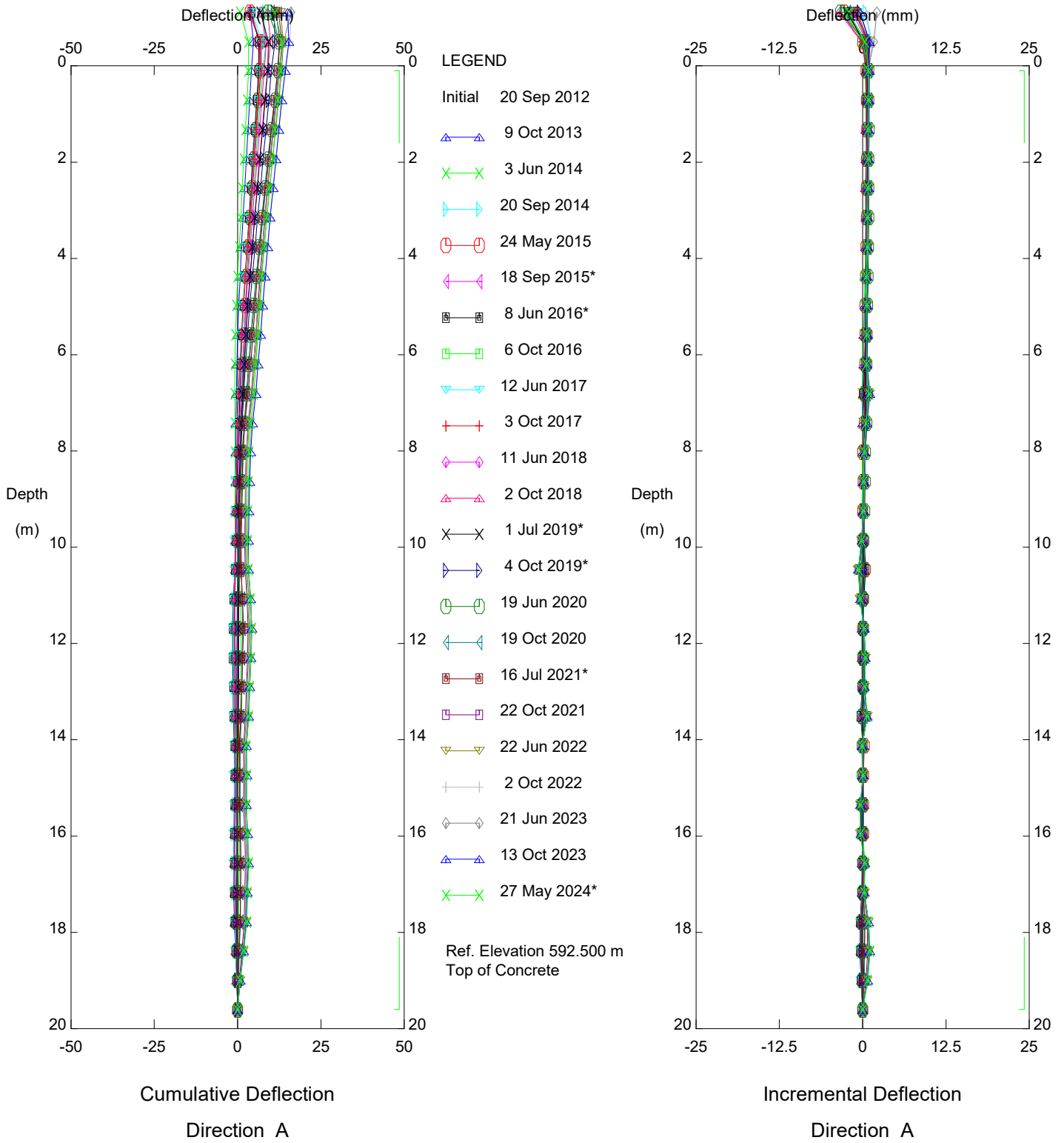
PH026 Eureka River Upper Wall, Inclinometer SI12-P26U

Alberta Transportation



PH026 Eureka River Upper Wall, Inclinator SI12-P26U

Alberta Transportation

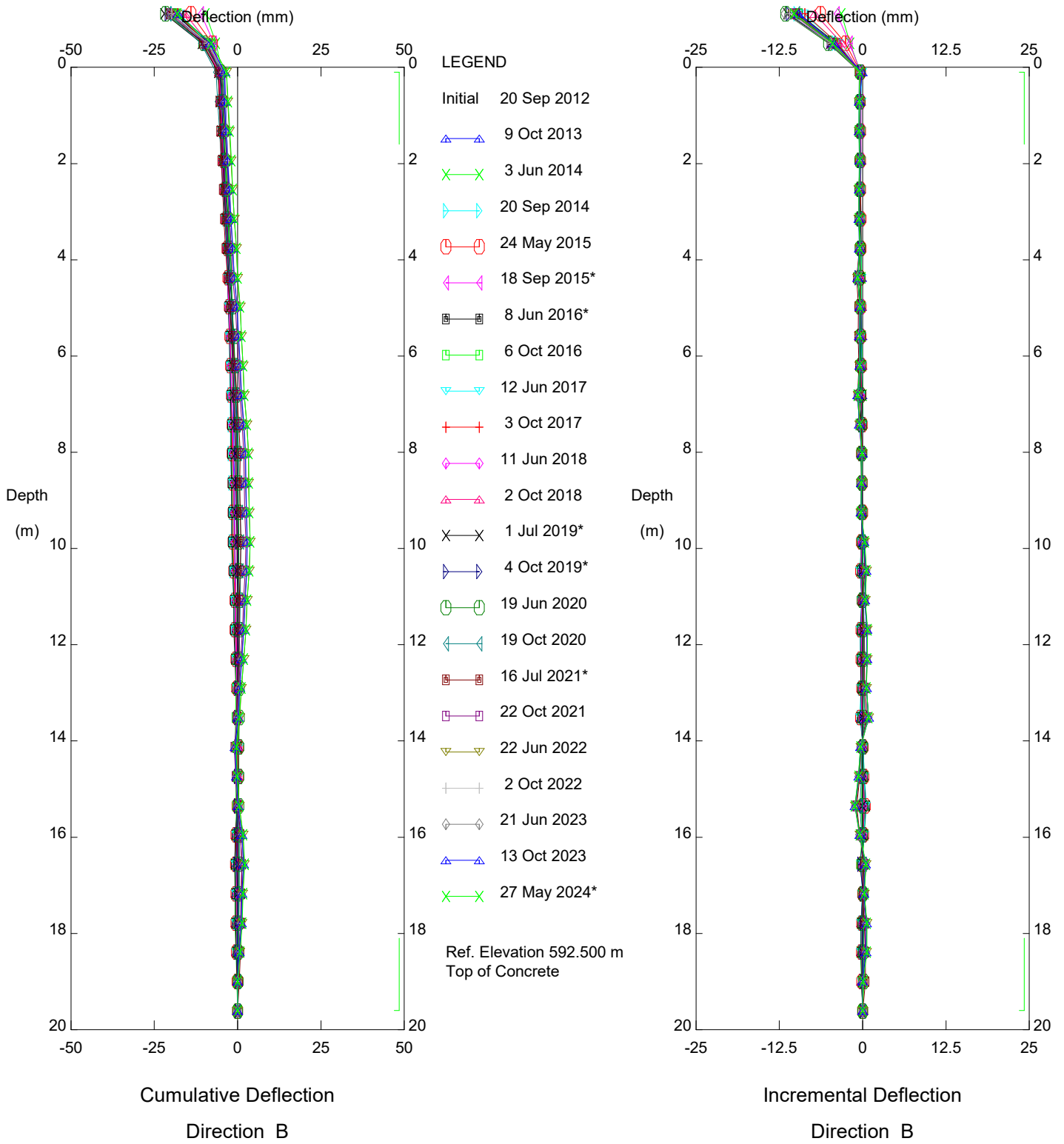


PH026 Eureka River Lower Wall, Inclinometer SI12-P3L

Alberta Transportation

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

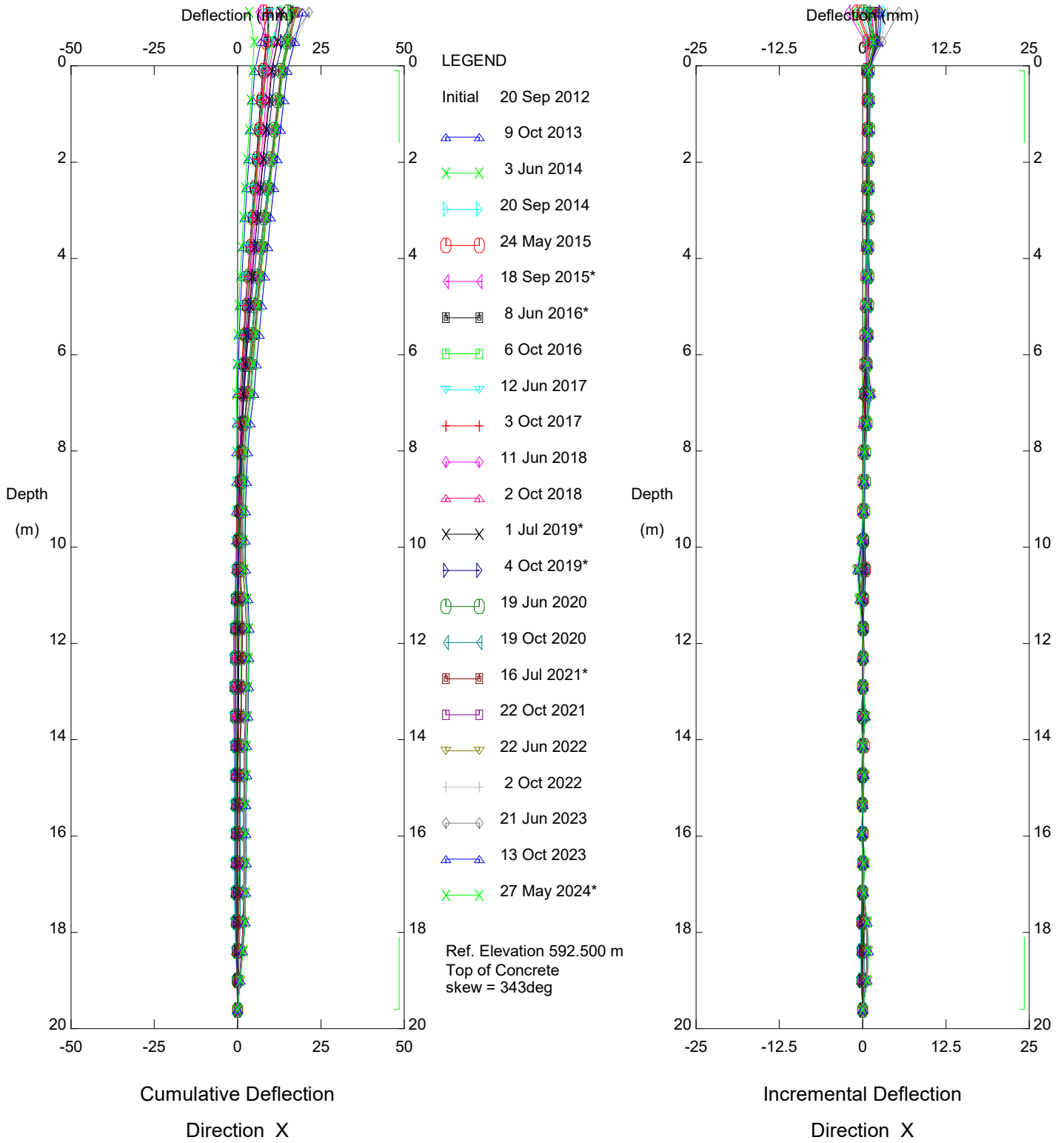
Thurber Engineering Ltd.



PH026 Eureka River Lower Wall, Inclinometer SI12-P3L

Alberta Transportation

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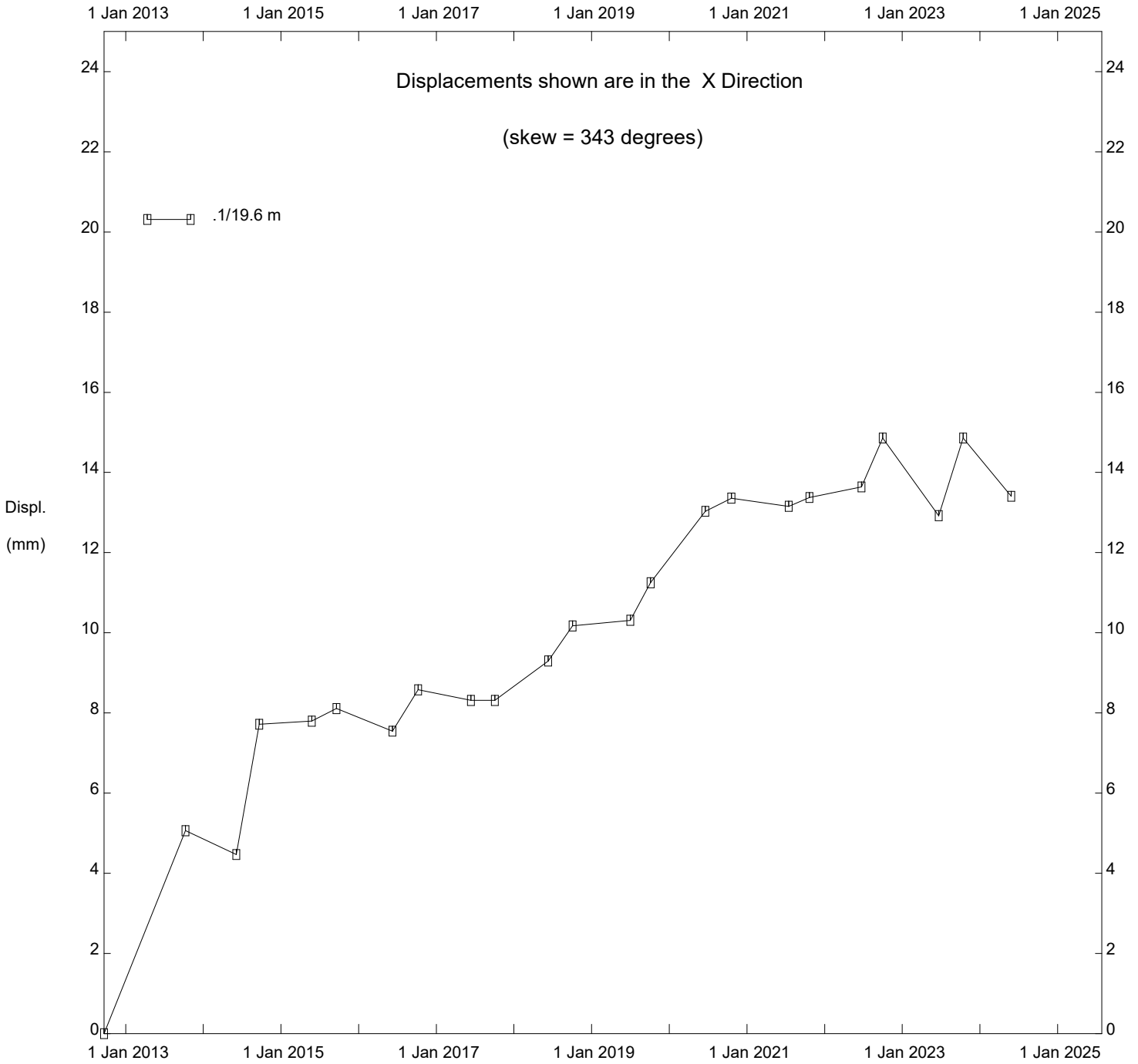


PH026 Eureka River Lower Wall, Inclinometer SI12-P3L

Alberta Transportation

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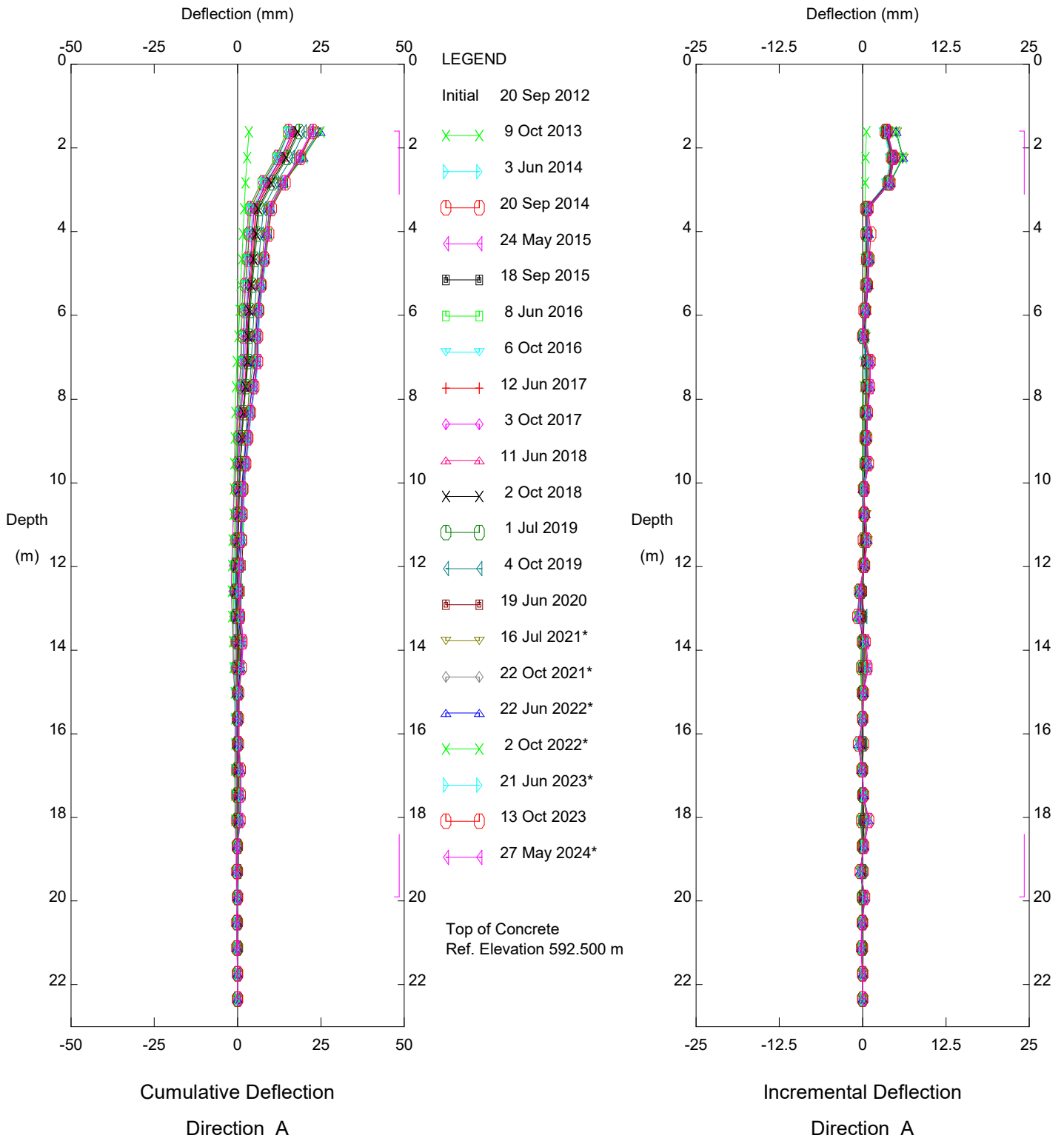
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Alberta Transportation

Thurber Engineering Ltd.

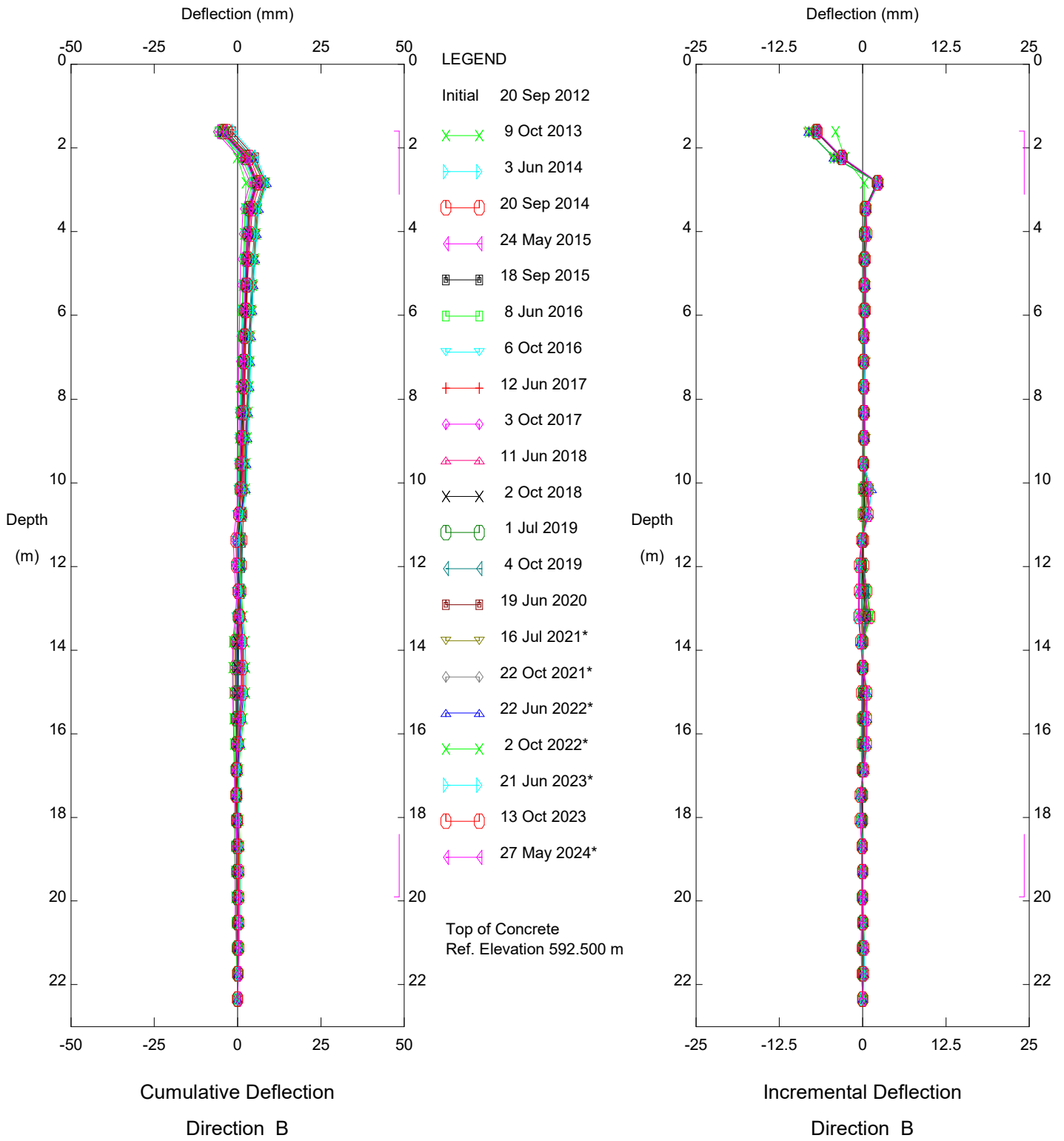


PH026 Eureka River Lower Wall, Inclinometer SI12-P9L

Alberta Transportation

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

Thurber Engineering Ltd.

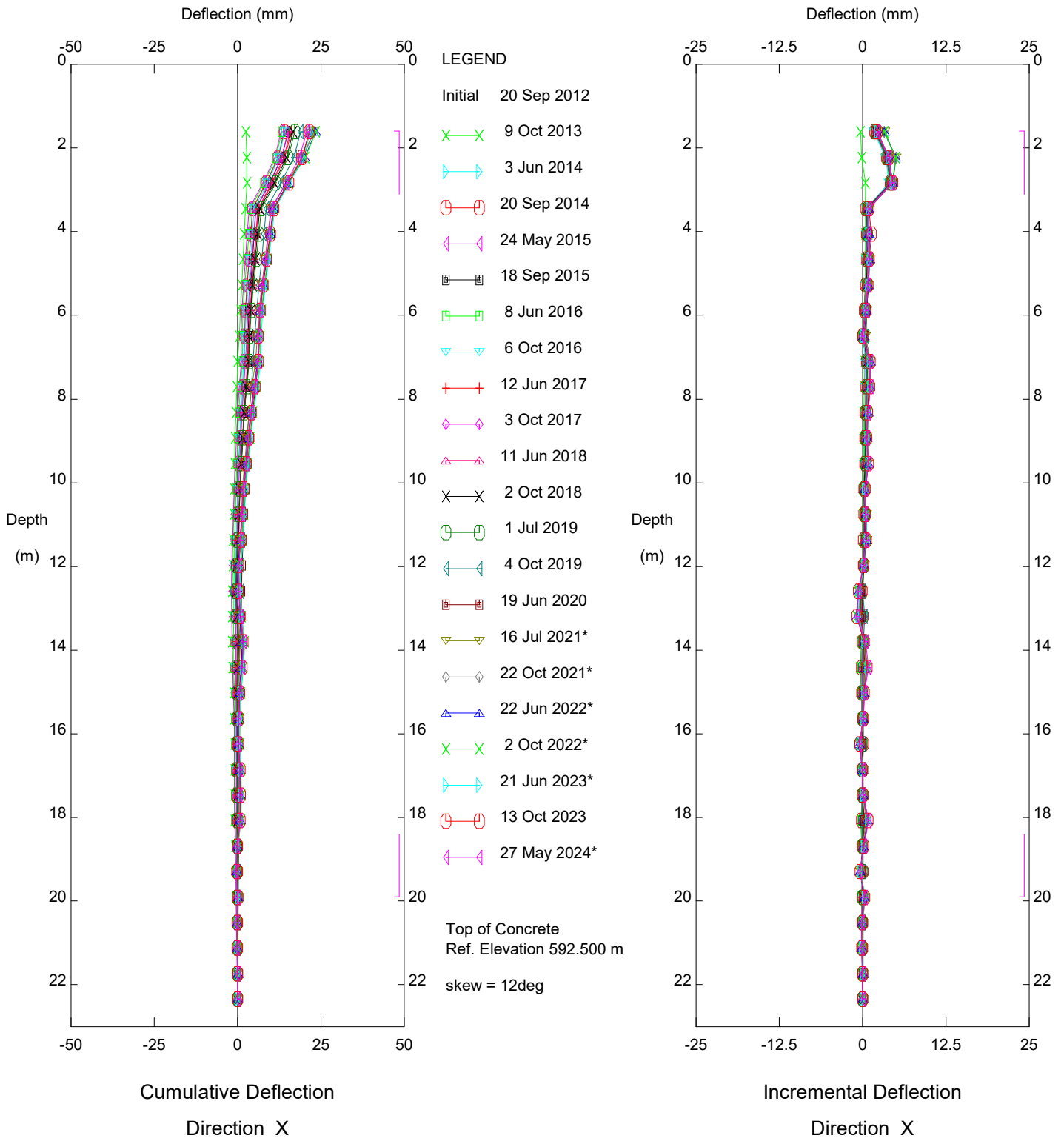


PH026 Eureka River Lower Wall, Inclinometer SI12-P9L

Alberta Transportation

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

Thurber Engineering Ltd.

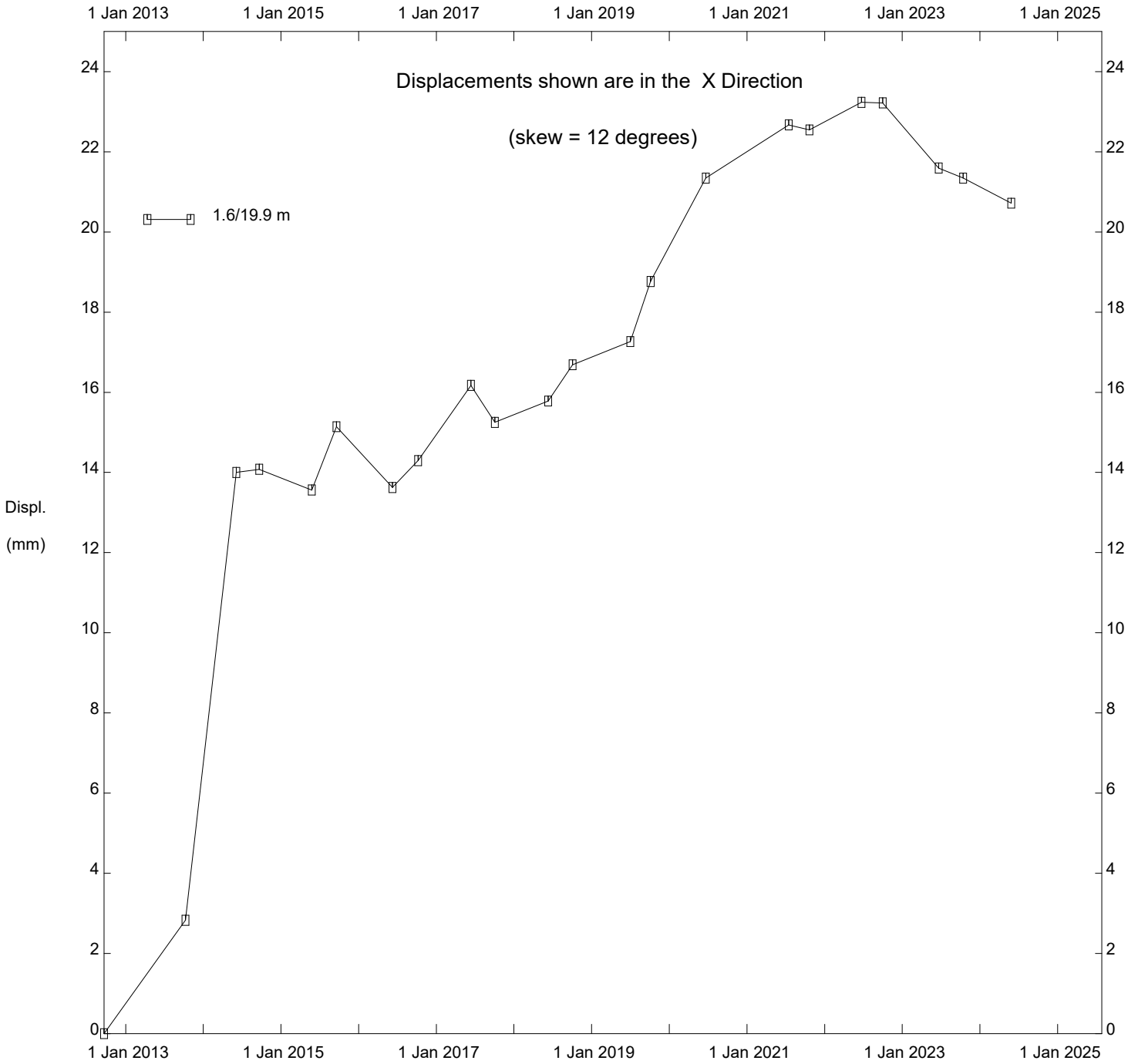


PH026 Eureka River Lower Wall, Inclinometer SI12-P9L

Alberta Transportation

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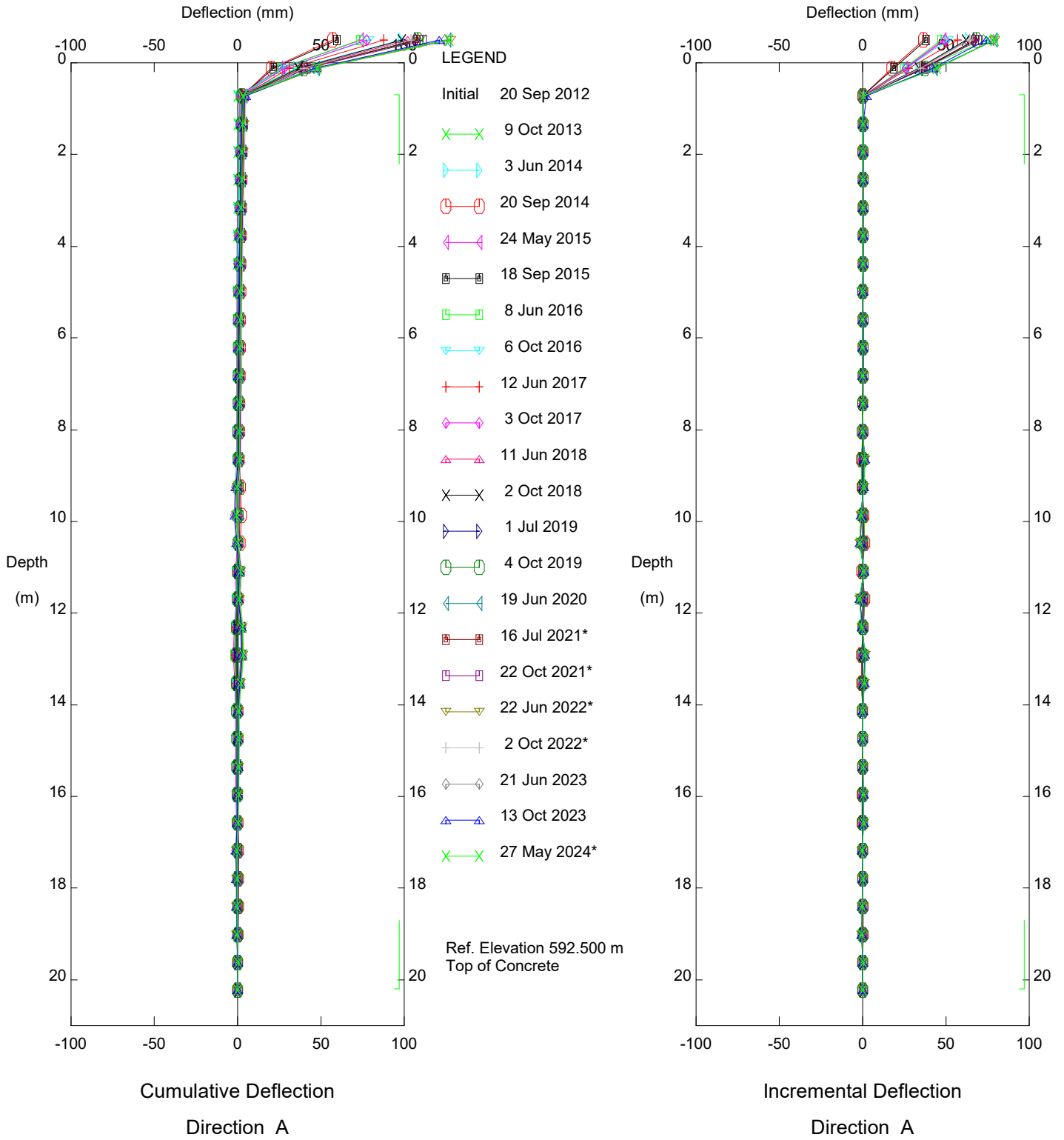
Thurber Engineering Ltd.



PH026 Eureka River Lower Wall, Inclinator SI12-P9L

Alberta Transportation

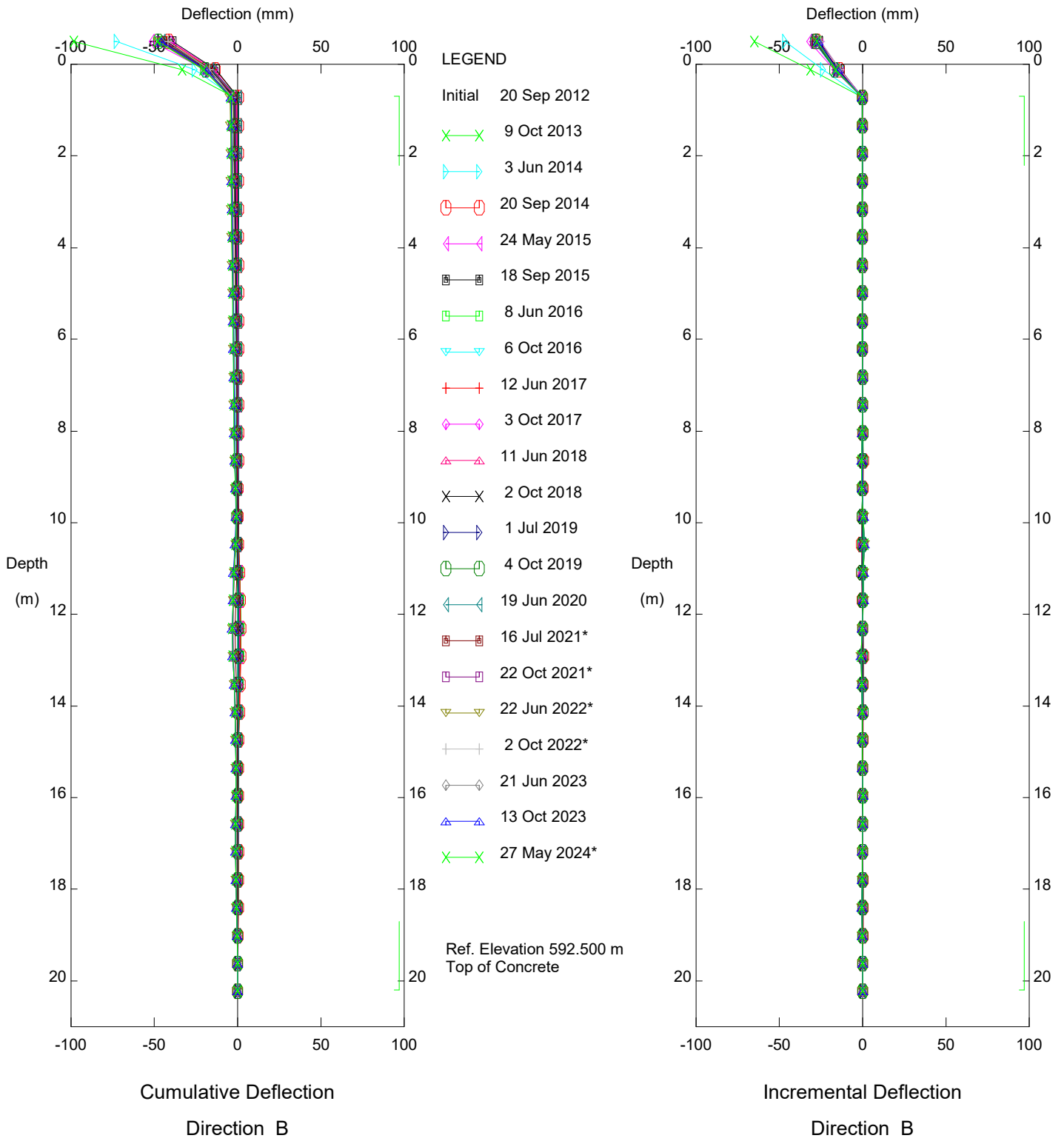
Thurber Engineering Ltd.



PH026 Eureka River Lower Wall, Inclinometer SI12-P14L

Alberta Transportation

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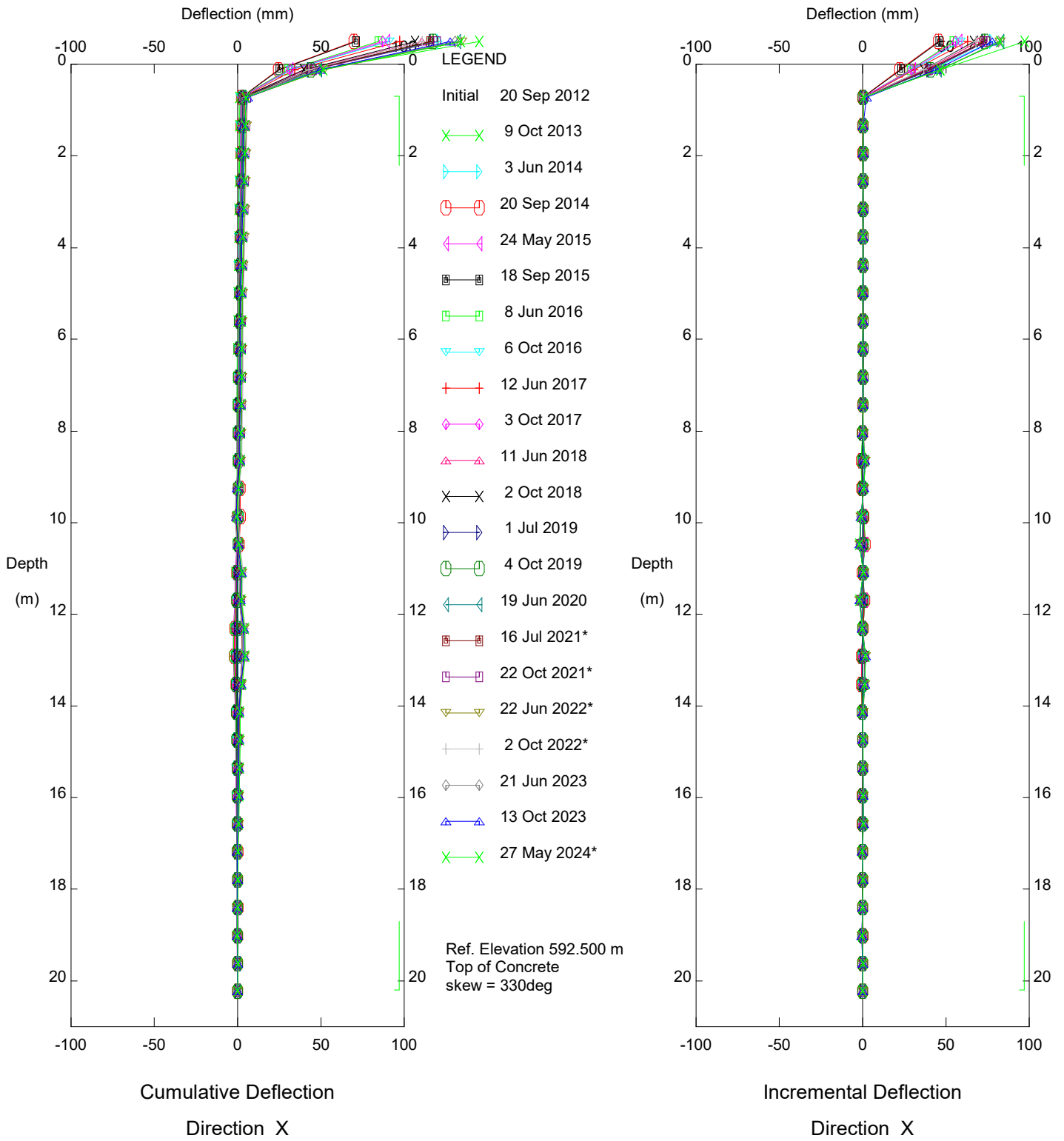


PH026 Eureka River Lower Wall, Inclinator SI12-P14L

Alberta Transportation

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Thurber Engineering Ltd.

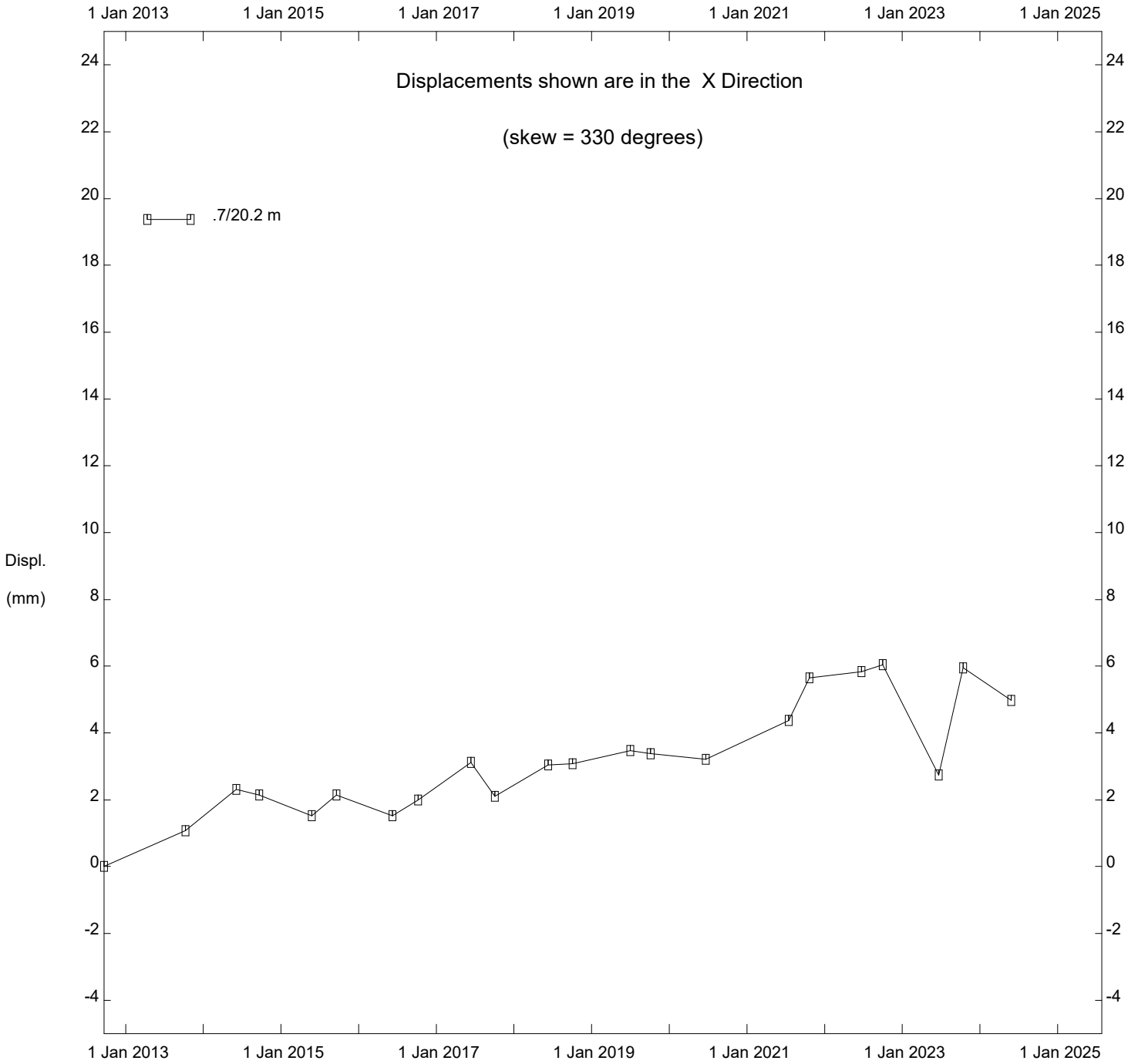


PH026 Eureka River Lower Wall, Inclinometer SI12-P14L

Alberta Transportation

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

Thurber Engineering Ltd.



PH026 Eureka River Lower Wall, Inclinometer SI12-P14L

Alberta Transportation

**FIGURE PH026-1
PIEZOMETRIC ELEVATIONS FOR HWY 726:02 EUREKA RIVER (SITE 3, 5 AND 6)**

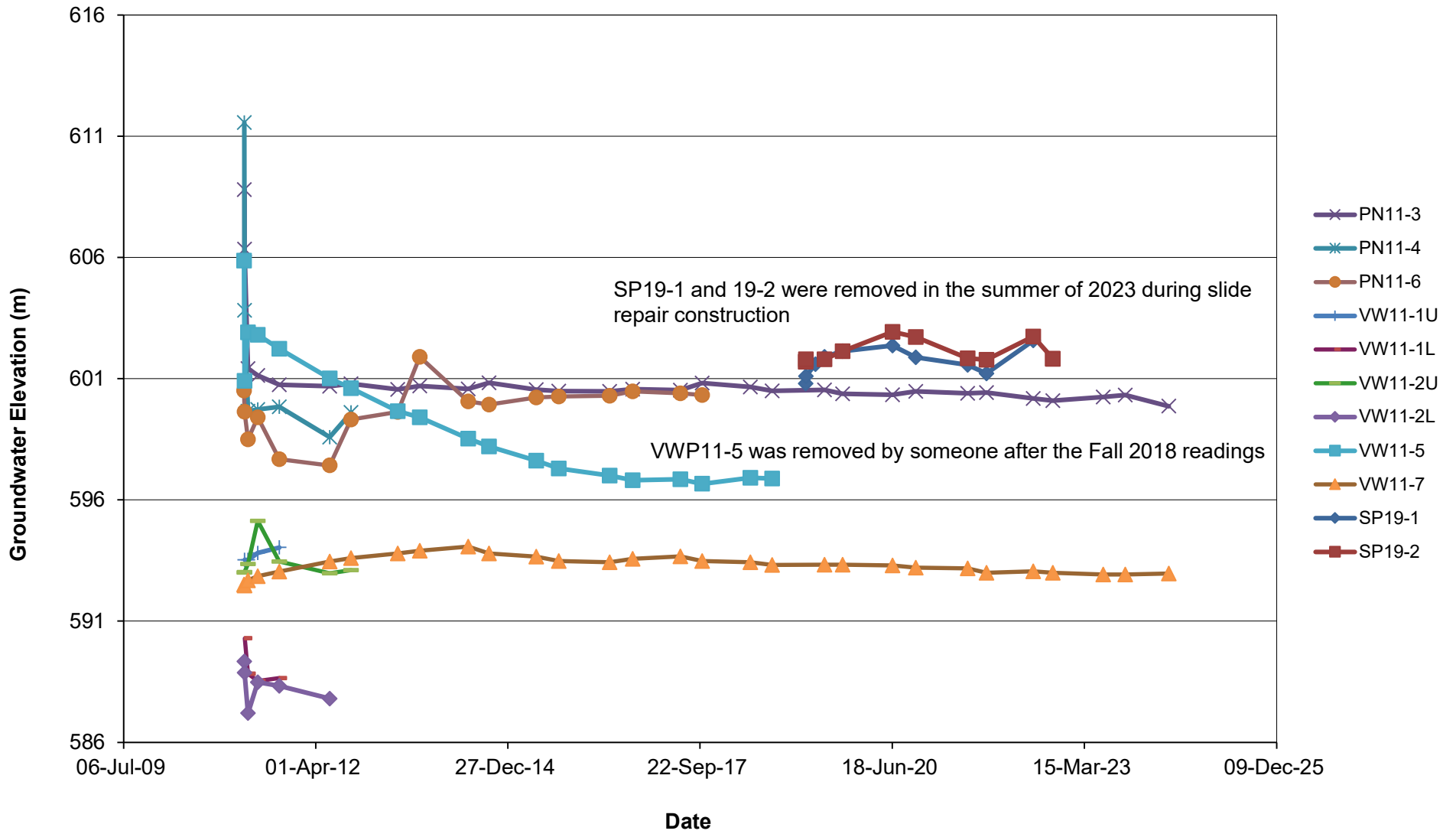


FIGURE PH026-2
PIEZOMETRIC DEPTHS FOR HWY 726:02 EUREKA RIVER (SITE 3, 5 AND 6)

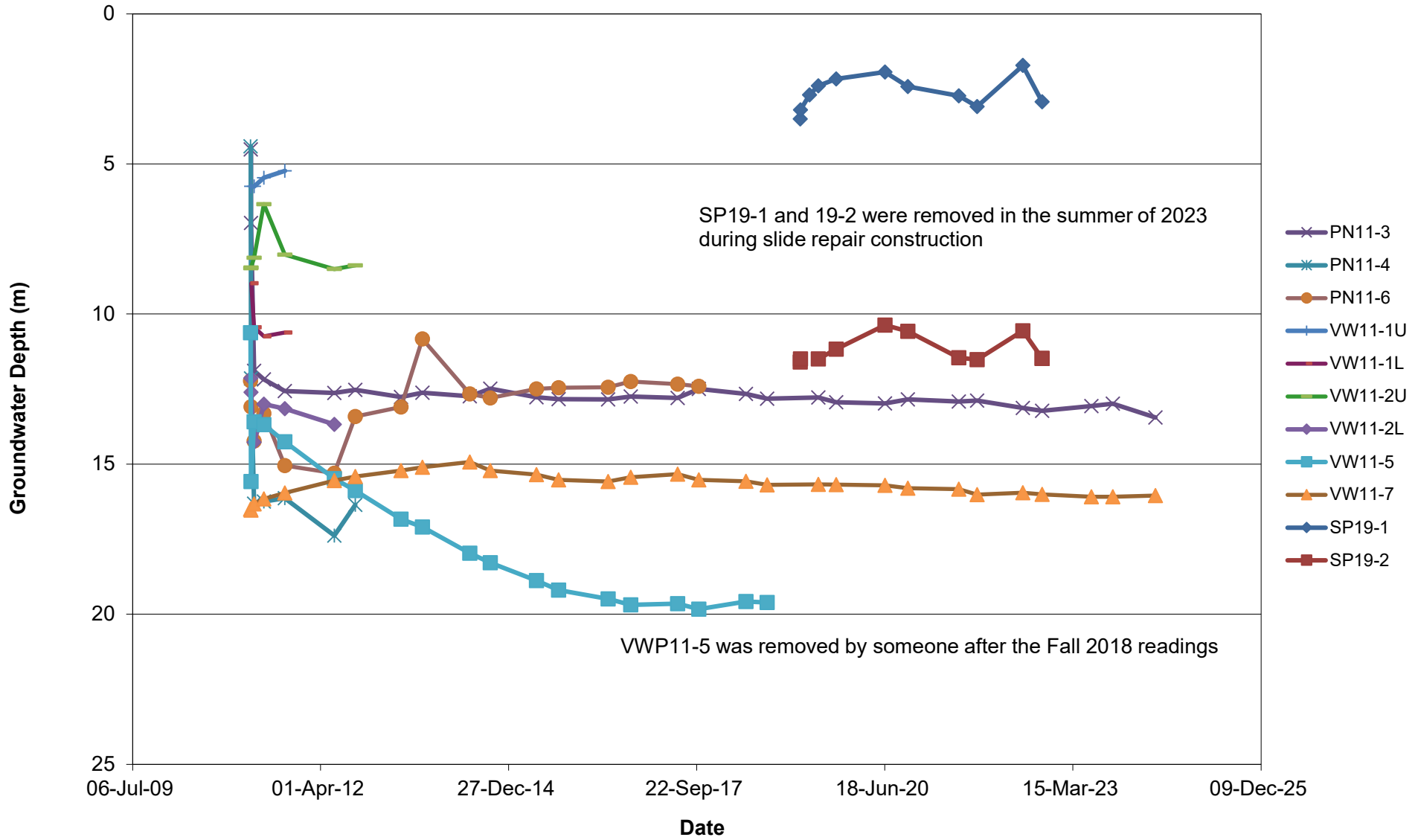


FIGURE PH026-3
LOAD CELL DATA FOR HWY 726:02 UPPER PILE WALL ANCHORS

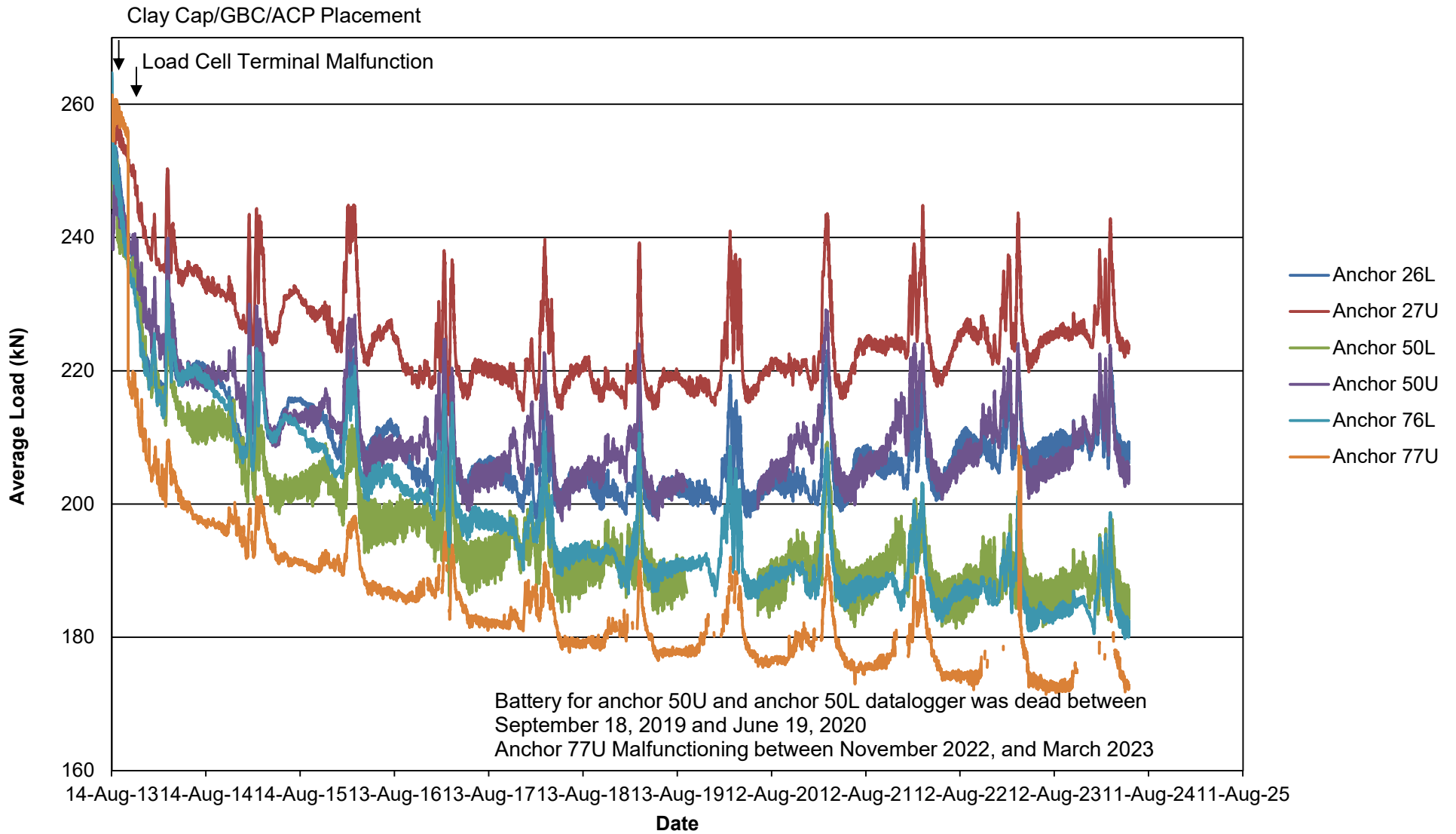


FIGURE PH026-4
LOAD CELL TEMPERATURES FOR HWY 726:02 UPPER PILE WALL ANCHORS

