ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP
PEACE REGION
(GRANDE PRAIRIE DISTRICT - NORTH)
INSTRUMENTATION MONITORING - SPRING 2025

Site Number	Location	Name	Hwy	km
PH023	HWY 64:02 km 24.10	Clear River East Hill (Site 5- Twin Pipes Landslide)	64:02	Km 24.1
Legal Description: 12-27-84-11 W6		**UTM Co-ordinates**		
		11U E 335453	N 6244315	

Current Monitoring:	15-June-2025	**Previous Monitoring**	24-Sep-2024
Instruments Read By:	Mr. Niraj Regmi, G.IT. and Mr. Godfred Etiendem of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI20-1 and SI20-7	**Pneumatic Piezometers (PN):** PN20-1A, 1B, 2A, 2B, 3A, 3B, 4A, 5A, 5B, 6A, 6B, 7A, 7B, 8A and 8B	**Vibration Wire Piezometers (VW):**	**Standpipe Piezometers (SP):**
Load Cell (LC):	**Strain Gauges:**	**SAAs:**	**Others:**

Readout Equipment Used			
Slope Inclinometers: Two RST Digital Inclinometer probes with 2 ft. wheelbase and RST Pocket PC readouts	**Pneumatic Piezometers:** RST C108 pneumatic piezometer readout	**Vibration Wire Piezometers:**	**Standpipe Piezometers:**
Load Cell:	**Strain Gauges:**	**SAAs:**	**Others:**
Notes: Piezometers PN20-5A, 5B, and PN20-6A, 6B were read during the annual site inspection on May 7, 2025. PN20-2B continued to be malfunctioning, and the reading wasn't tabulated this cycle. PN20-7B continued to show a trend of decreasing pressures and readings over the last few reading cycles to near 0 PSI and may be malfunctioning; this pattern should be confirmed during the next reading.			

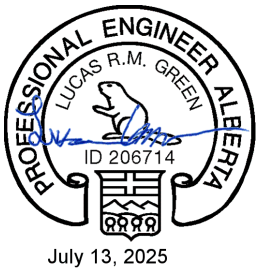
Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	Overall, the SIs showed slightly accelerated rates of movement compared to the previous readings in the fall of 2024. SI20-1 showed current movement rates of 5.8 mm/yr over 3.7 m to 5.6 m depth and 4.0 mm/yr over 50.1 m to 54.3 m depth. SI20-7 showed rates of movement of 1.8 mm/yr over 17.8 m to 19.6 m and 2.6 mm/yr over 31.8 m to 33.6 m depth. SI 20-1 and 20-7 are about 600 m apart but both show comparable movement rates and elevation of the deeper movement zones (both SI are moving at about elevation 460 m in a weak clay strata) which is a confirmation of a very large and deeply seated movement mass. The groundwater levels in piezometers PN20-1A, PN20-1B, PN20-4A, PN20-7A, PN20-8A, and PN20-8B showed decreases in groundwater levels of 0.63 m, 0.70 m, 0.07 m, 0.28 m, 0.07 m and 1.13 m, respectively, since the fall of 2024 readings. PN20-2A, PN20-3A,

	PN20-3B, and PN20-7B showed increases in groundwater level of 0.77 m, 0.07 m, 0.07 m, and 0.43 m, respectively, since the fall of 2024 readings. PN20-5A and PN20-6B were read during the annual site inspections on May 7, 2025. PN20-5A and PN20-6B showed increases in groundwater level of 0.42 m and 1.61 m, respectively, since their last readings in May 2024. PN20-2B appears to be malfunctioning and the reading wasn't tabulated this cycle. PN20-7B has shown a trend of decreasing pressures and readings over the last few reading cycles to near 0 PSI and may be malfunctioning; this pattern should be confirmed during the next reading.
Future Work:	The instruments should be read again in the fall of 2025. PN20-2B and PN20-7B are still malfunctioning and should be removed from future reading cycles. PN20-2B, 20-4B, 20-5B & 20-6A are inoperable and will not be read any more. Since TH 20-5 and 20-6 require bear scare escort personnel and these SI's have sheared, the two remaining operable piezometers (20-5A and 20-6B) where good base readings have been established, will not be read any more in the interest of cost effectiveness.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	• Table PH023-1 Spring 2025 – HWY 64:02 Clear River East Hill (Site 5- Twin Pipes Landslide), Slope Inclinometer Instrumentation Reading Summary
	• Table PH023-2 Spring 2025 – HWY 64:02 Clear River East Hill (Site 5- Twin Pipes Landslide), Pneumatic Piezometer Instrumentation Reading Summary
	• Statement Statement for Use and Interpretation of Report
	• APPENDIX A - PH023-1 SPRING 2025
	  o Field Inspector's report
	  o Site Plan Showing Approximate Instrument Locations (Drawing No. 32123-PH023)
	  o SI Reading Plots
	  o Figure PH023-1 (Piezometric Elevations)
	  o Figure PH023-2 (Piezometric Depths)

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.
Renato Clementino, Ph.D, P. Eng.
Principal | Senior Geotechnical Engineer



PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE:
RM APEGA ID #: 72376
DATE: July 14, 2025
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Lucas Green, P.Eng.
Geotechnical Engineer

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Table Ph023-1 Spring 2025 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: June 15, 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)
SI-9	*May 8, 1996*	*126.0 mm over 3.6 m to 7.9 m depth in 284° direction*	*159.3 mm/yr in October 2020*	*Sheared at 5.5 m below top of casing*	*October 18, 2021*	*N/A*	*N/A*	*N/A*
		36.2 mm over 9.7 m to 11.6 m depth in 116° direction	*43.0 mm/yr. in October 2020*			*N/A*	*N/A*	*N/A*
		16.9 mm over 11.6 m to 13.4 m depth in 116° direction	*14.7 mm/yr. in October 2020*			*N/A*	*N/A*	*N/A*
SI20-1	October 11, 2020	97.1 mm over 3.7 m to 5.6 m depth in 7° direction	49.6 mm/yr in October 2022	Operational	September 24, 2024	4.2	5.8	2.3
		17.3 mm over 50.1 m to 54.3 m depth in 7° direction	5.0 mm/yr in June 2022			2.9	4.0	1.2
SI20-2	*October 11, 2020*	*39.5 mm over 31.8 m to 34.2 m depth in 193° direction*	*59.6 mm/yr in July 2021*	*Sheared at 33.2 m below top of casing*	*October 18, 2021*	*N/A*	*N/A*	*N/A*
		4.2 mm over 42.1 m to 43.4 m depth in 213° direction	*7.1 mm/yr in October 2020*			*N/A*	*N/A*	*N/A*
SI20-3	*October 11, 2020*	*48.0 mm over 19.6 m to 21.4 m depth in 213° direction*	*75.1 mm/yr in July 2021*	*Sheared at 21.0 m below top of casing*	*October 18, 2021*	*N/A*	*N/A*	*N/A*

Drawing 32123-PH023 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site

Table Ph023-1 – Continued… Spring 2025 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: June 15, 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)
SI20-4	*October 11, 2020*	*49.8 mm over 6.2 m to 8.0 m depth in 197° direction*	*42.1 mm/yr in June 2022*	*Sheared at 7.6 m below top of casing*	*June 20, 2022*	*N/A*	*N/A*	*N/A*
		6.1 mm over 60.4 m to 62.3 m depth in 187° direction	*8.5 mm/yr in October 2020*			*N/A*	*N/A*	*N/A*
SI20-5	*October 11, 2020*	*70.9 mm over 9.4 m to 11.8 m depth in 200° direction*	*82.3 mm/yr in July 2021*	*Sheared at 11.6 m below top of casing*	*June 20, 2022*	*N/A*	*N/A*	*N/A*
		74.7 mm over 31.3 m to 35.6 m depth in 200° direction	*64.3 mm/yr in June 2022*			*N/A*	*N/A*	*N/A*
SI20-6	*October 11, 2020*	*33.9 mm over 18.3 m to 20.1 m depth in 230° direction*	*73.1 mm/yr in July 2021*	*Sheared at 20.1 m below top of casing*	*October 18, 2021*	*N/A*	*N/A*	*N/A*
		36.8 mm over 28.1 m to 31.1 m depth in 230° direction	*62.6 mm/yr in July 2021*			*N/A*	*N/A*	*N/A*
SI20-7	October 11, 2020	33.8 mm over 17.8 m to 19.6 m depth in 195° direction	52.3 mm/yr in October 2022	Operational	September 24, 2024	1.3	1.8	1.0
		15.5 mm over 31.8 m to 33.6 m depth in 204° direction	6.5 mm/yr in June 2022			1.9	2.6	1.4

Drawing 32123-PH023 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site

Table Ph023-1 – Continued… Spring 2025 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: June 15, 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)
SI20-8	*October 11, 2020*	*48.4 mm over 34.1 m to 36.6 m depth in 194° direction*	*53.0 mm/yr in June 2022*	*Sheared at 36.2 m below top of casing*	*October 18, 2021*	*N/A*	*N/A*	*N/A*

Drawing 32123-PH023 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site

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Table Ph023-2 Spring 2025 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: June 15, 2025

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED GROUNDWATER ELEVATION (m)	MEASURED PORE PRESSURE (kPa)	CURRENT GROUNDWATER ELEVATION (m)	PREVIOUS GROUNDWATER ELEVATION (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PN20-1A (38006)	October 11, 2020	27.43	515.79	Operational	506.85 on September 24, 2024	175.1	506.22	506.85	-0.63
PN20-1B (38581)	October 11, 2020	57.91	515.79	Operational	492.82 on October 11, 2020	273.0	485.72	486.42	-0.70
PN20-2A (38240)	October 11, 2020	5.79	506.27	Operational	506.46 on June 20, 2022	49.0	505.47	504.70	0.77
PN20-2B (37405)	*October 11, 2020*	*36.58*	*506.27*	*Malfunctioning*	*497.81 on October 11, 2020*	*N/A*	*N/A*	*495.35 (May 27, 2024)*	*N/A*
PN20-3A (38242)	October 11, 2020	15.24	497.13	Operational	491.73 on October 12, 2023	95.8	491.66	491.59	0.07
PN20-3B (37402)	October 11, 2020	30.48	497.13	Operational	491.89 on February 18, 2021	239.2	491.04	490.97	0.07
PN20-4A (38241)	October 11, 2020	6.40	517.15	Operational	511.10 on November 26, 2020	0.70	510.82	510.89	-0.07
PN20-4B (38580)	*October 11, 2020*	*51.82*	*517.15*	*Non-operational*	*469.06 on November 26, 2020*	*N/A*	*N/A*	*469.06 (Nov. 26, 2020)*	*N/A*

Drawing 32123-PH023 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site

Table Ph023-2 – Continued… Spring 2025 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: June 15, 2025

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED GROUNDWATER ELEVATION (m)	MEASURED PORE PRESSURE (kPa)	CURRENT GROUNDWATER ELEVATION (m)	PREVIOUS GROUNDWATER ELEVATION (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PN20-5A (37853)	October 19, 2020	7.62	490.91	Operational	486.45 on June 20, 2022	22.8	485.61 (May 7, 2025)	485.19 (May 8, 2024)	0.42
PN20-5B (37403)	*October 19, 2020*	*49.99*	*490.91*	*Damaged*	*450.62 on October 19, 2020*	*0.7*	*N/A*	*440.99 (June 20, 2022)*	*N/A*
PN20-6A (38005)	*October 11, 2020*	*15.24*	*489.15*	*Malfunctioning*	*484.11 on July 15, 2021*	*N/A*	*N/A*	*473.98*	*N/A*
PN20-6B (37404)	October 11, 2020	38.40	489.15	Not Read	468.82 on October 11, 2020	96.5	460.59 (May 7, 2025)	458.98 (May 8, 2024)	1.61
PN20-7A (38007)	October 11, 2020	13.41	492.55	Operational	484.56 on June 20, 2022	51.0	484.35	484.63	-0.28
PN20-7B (38528)	October 11, 2020	53.34	492.55	Operational	450.81 on October 11, 2020	6.2	439.85	439.42	0.43
PN20-8A (38239)	October 11, 2020	27.43	488.99	Operational	475.41 on October 1, 2022	130.3	474.85	474.92	-0.07
PN20-8B (38583)	October 11, 2020	44.20	488.99	Operational	469.75 on October 24, 2020	182.7	463.42	464.55	-1.13

Drawing 32123-PH023 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

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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.

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

SPRING 2025

APPENDIX A
DATA PRESENTATION

SITE PH023: HWY 64:02, CLEAR RIVER EAST HILL
(SITE 5 – TWIN PIPES LANDSLIDE)

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (GRANDE PRAIRIE - NORTH DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH023)
SPRING 2025

Location:	Clear River East Hill - Site 5 (HWY 64:02 C1 24.101)	**Readout:**	
File Number:	32123	**Casing Size:**	2.75
Probe:	RST SET 8R	**Temp:**	11/Rain
Cable:	RST SET 8R	**Read by:**	NKR/GE

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-			
SI20-1	335453	6244315	15-Jun-25	0.83	196 to 2	340	-130	143	-34	38	8R/8R	3.34	
SI20-7	334956	6244086	15-Jun-25	0.82	178 to 2	180	-71	85	80	-77	8R/8R	3.34	

PNEUMATIC PIEZOMETER (PN) READINGS

PN#	GPS Location (UTM 11)		Date	Reading Psi	Identification Number
	Easting (m)	Northing (m)			
PN20-1A	335453	6244315	15-Jun-25	25.4	38006
PN20-1B	335453	6244315	15-Jun-25	39.6	38581
PN20-2A	335476	6244253	15-Jun-25	7.1	38240
PN20-2B*	335476	6244253	15-Jun-25	*	37405
PN20-3A	335579	6244143	15-Jun-25	13.9	38242
PN20-3B	335579	6244143	15-Jun-25	34.7	37402
PN20-4A***	335200	6244260	15-Jun-25	0.1***	38241
PN20-5A**	335235	6244111	07-May-25	3.3	37853
PN20-6B**	335332	6244073	07-May-25	14	37404
PN20-7A	334956	6244086	15-Jun-25	7.4	38007
PN20-7B	334956	6244086	15-Jun-25	0.9	38582
PN20-8A	332430	5933825	15-Jun-25	18.9	38239
PN20-8B	332430	5933825	15-Jun-25	26.5	38583

INSPECTOR REPORT

* Damaged, Pressure keeps climbing when bypass valve is open, 150 Psi and up
*** Possibly damaged
**Read during inspections.

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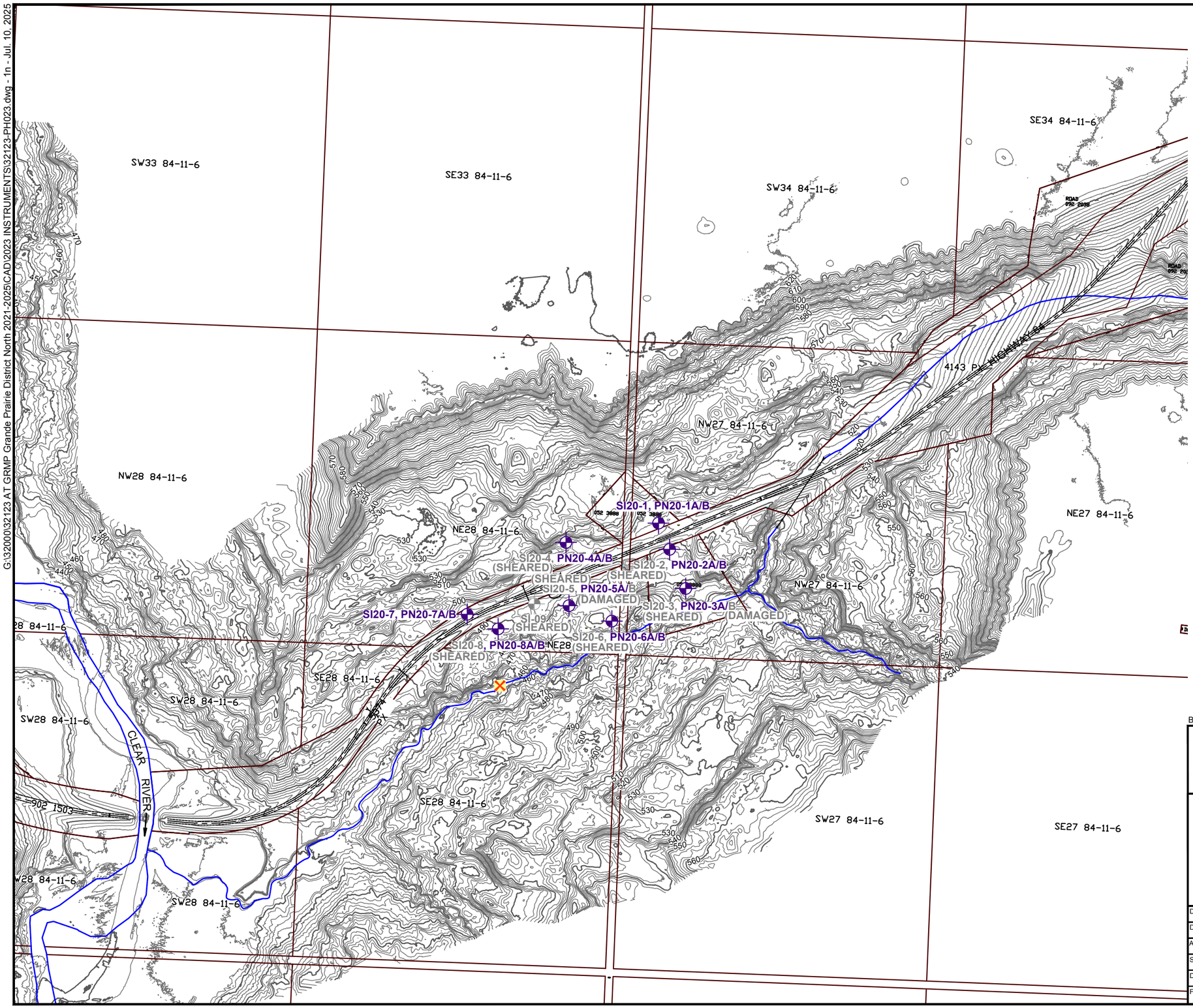

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LEGEND

- APPROXIMATE INSTRUMENT LOCATION
- PISCES TRANSECT 4.5 LOCATION (NAD83 ZN11 COORDINATES = 335041E 6243896N)
- APPROXIMATE TRIBUTARY CENTERLINE

0 100 200 300 400 500 600m

SCALE 1:10000

BASE PLAN PROVIDED BY WSP (LIDAR UAV FLOWN SEPT 29/30, 2020)

Alberta Transportation

PEACE REGION
(GRANDE PRAIRIE DISTRICT NORTH)

PH023: HWY 64:02 - CLEAR RIVER EAST HILL
SITE PLAN SHOWING APPROXIMATE INSTRUMENT LOCATIONS

DWG No. 32123-PH023

DRAWN BY	ML
DESIGNED BY	BNW
APPROVED BY	DWP
SCALE	1:10000
DATE	JULY 2025
FILE No.	32123

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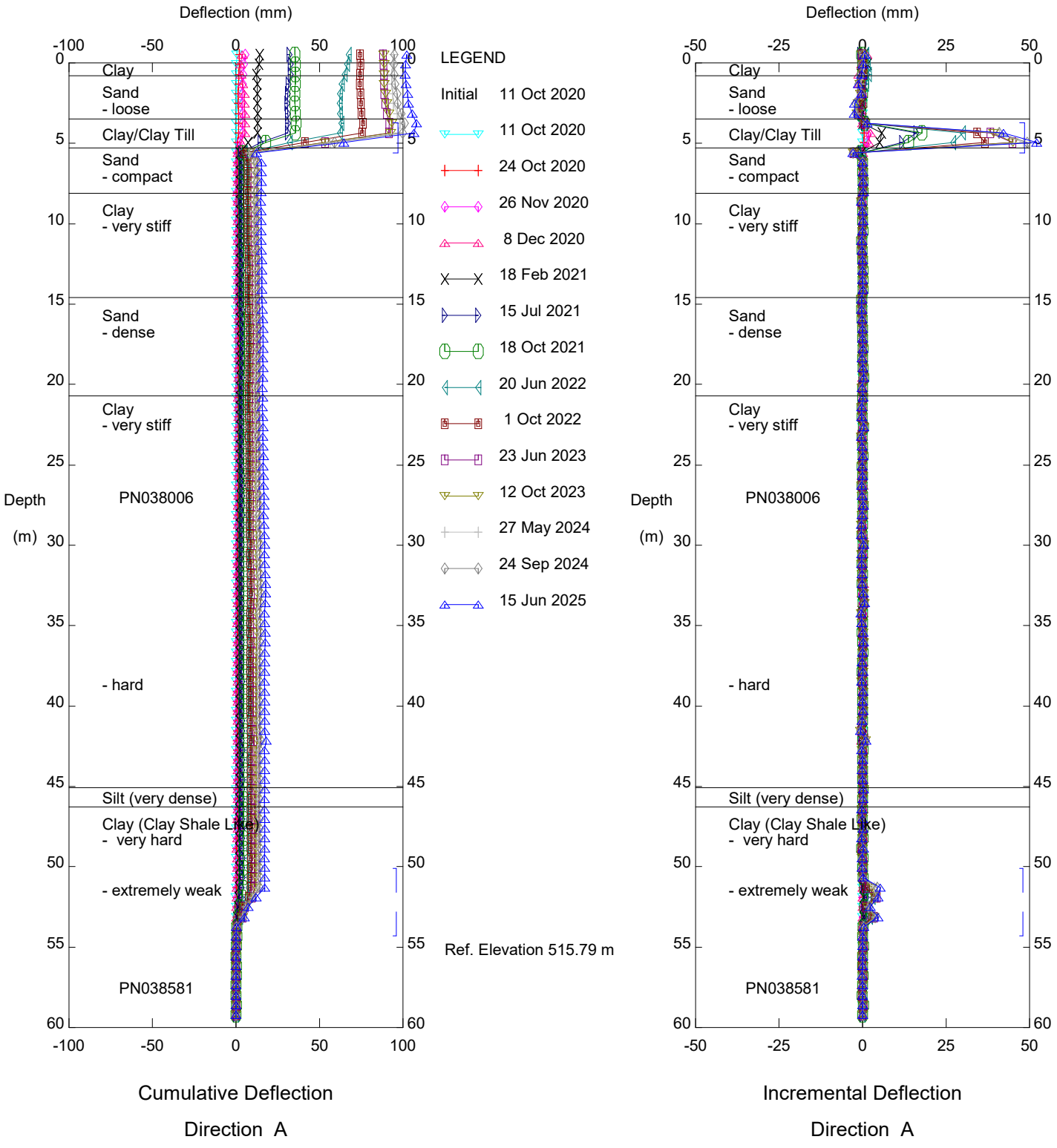

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-1

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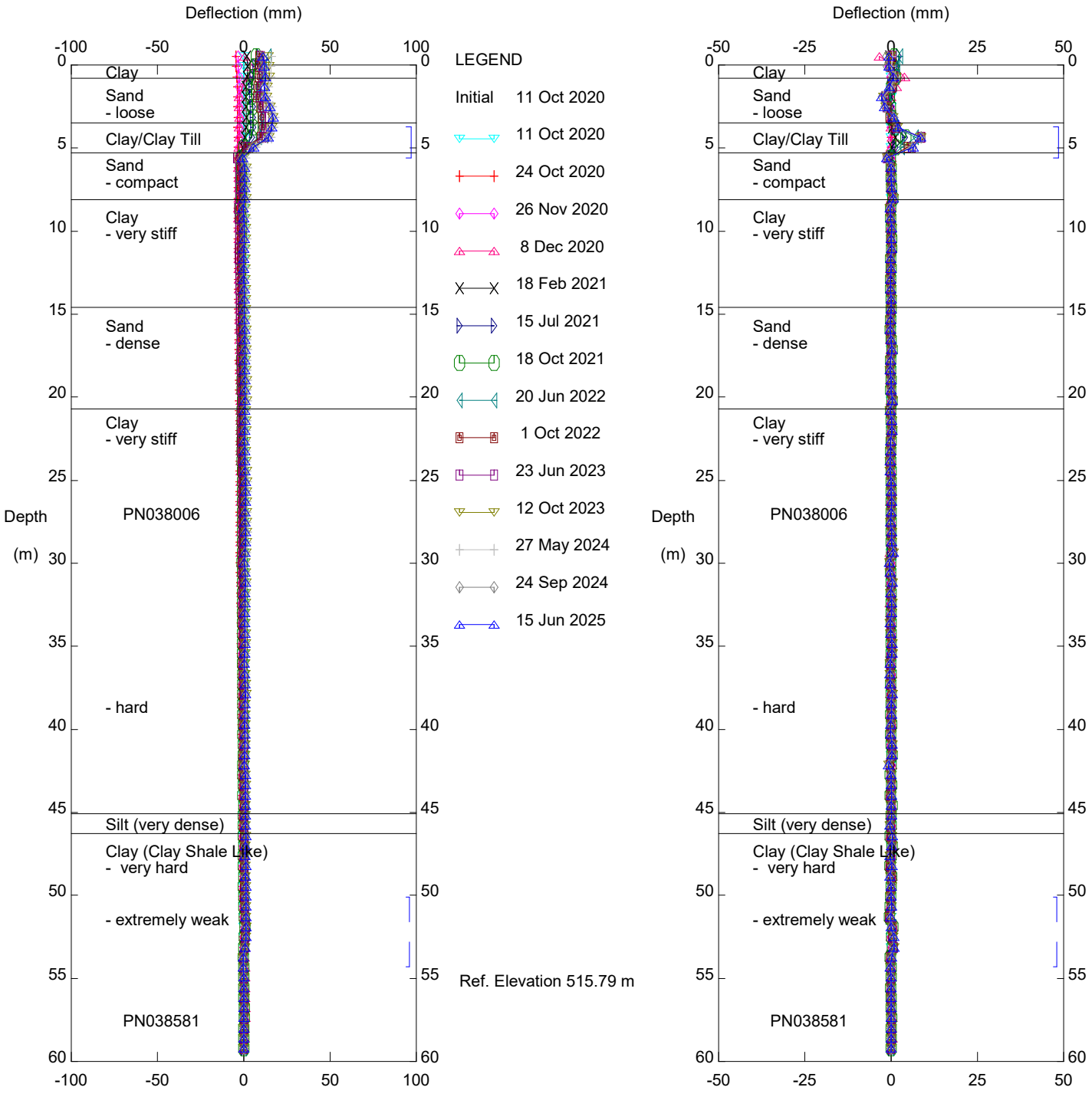

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-1

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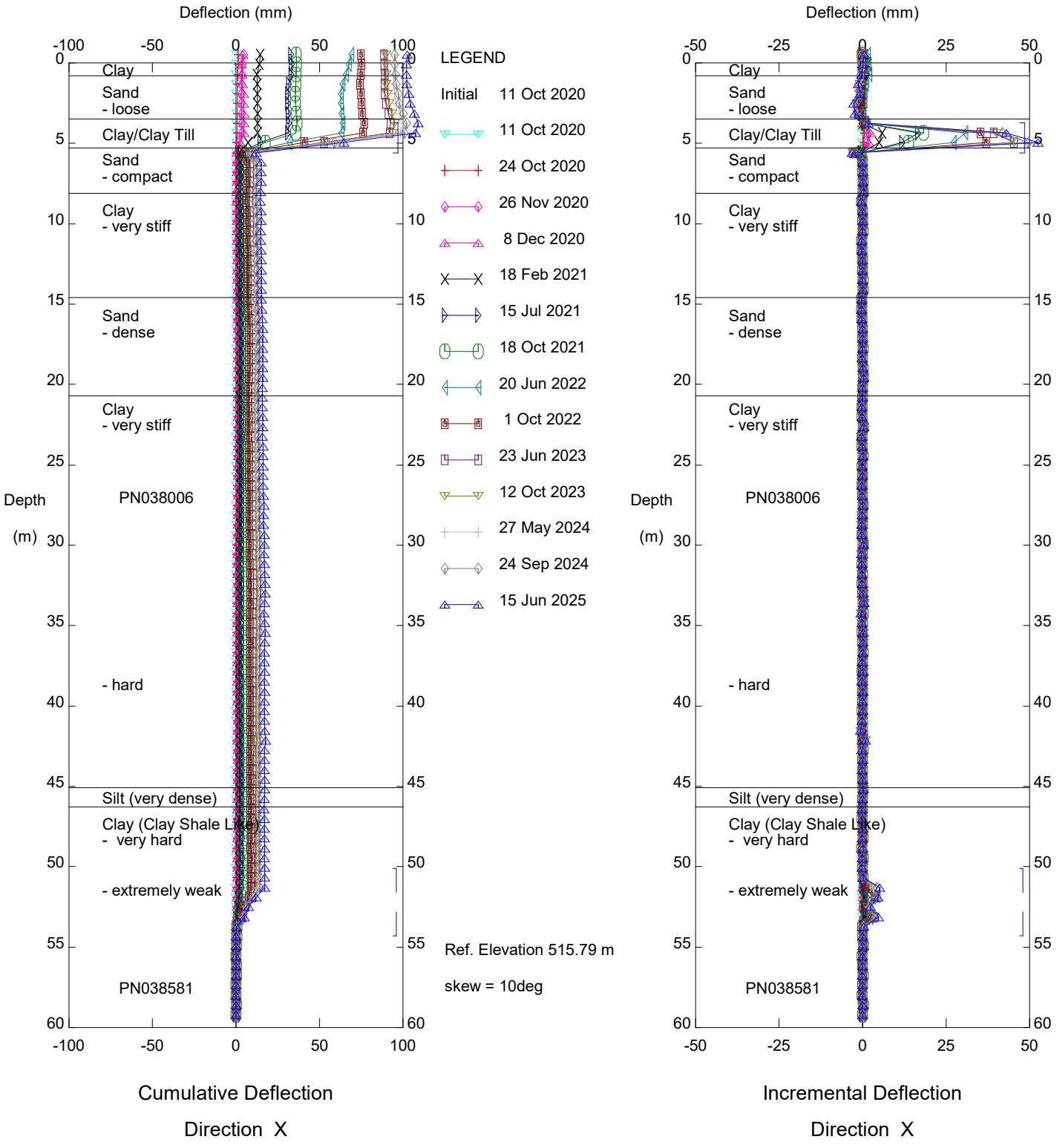

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-1

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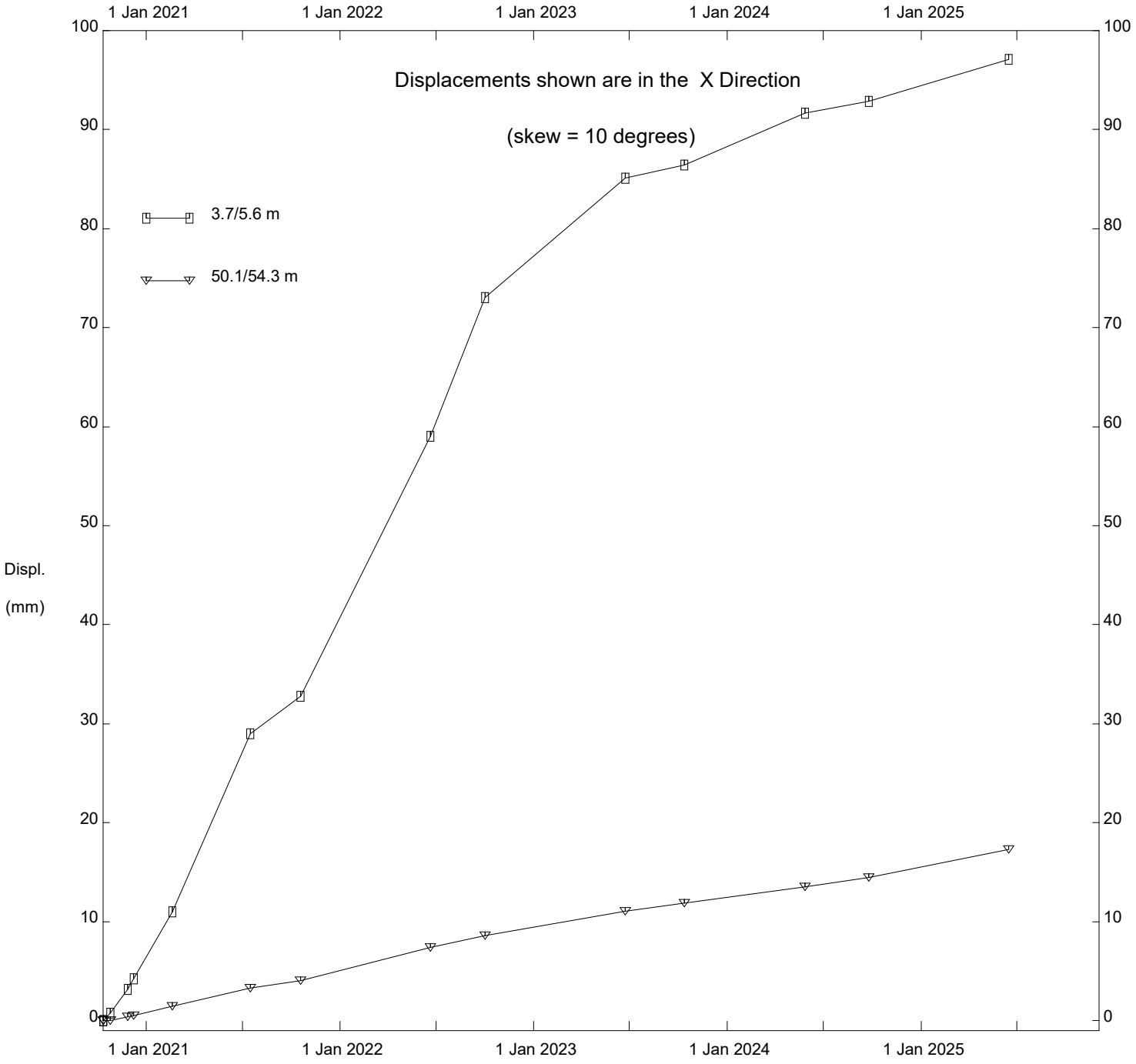
Thurber Engineering Ltd.



Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-1

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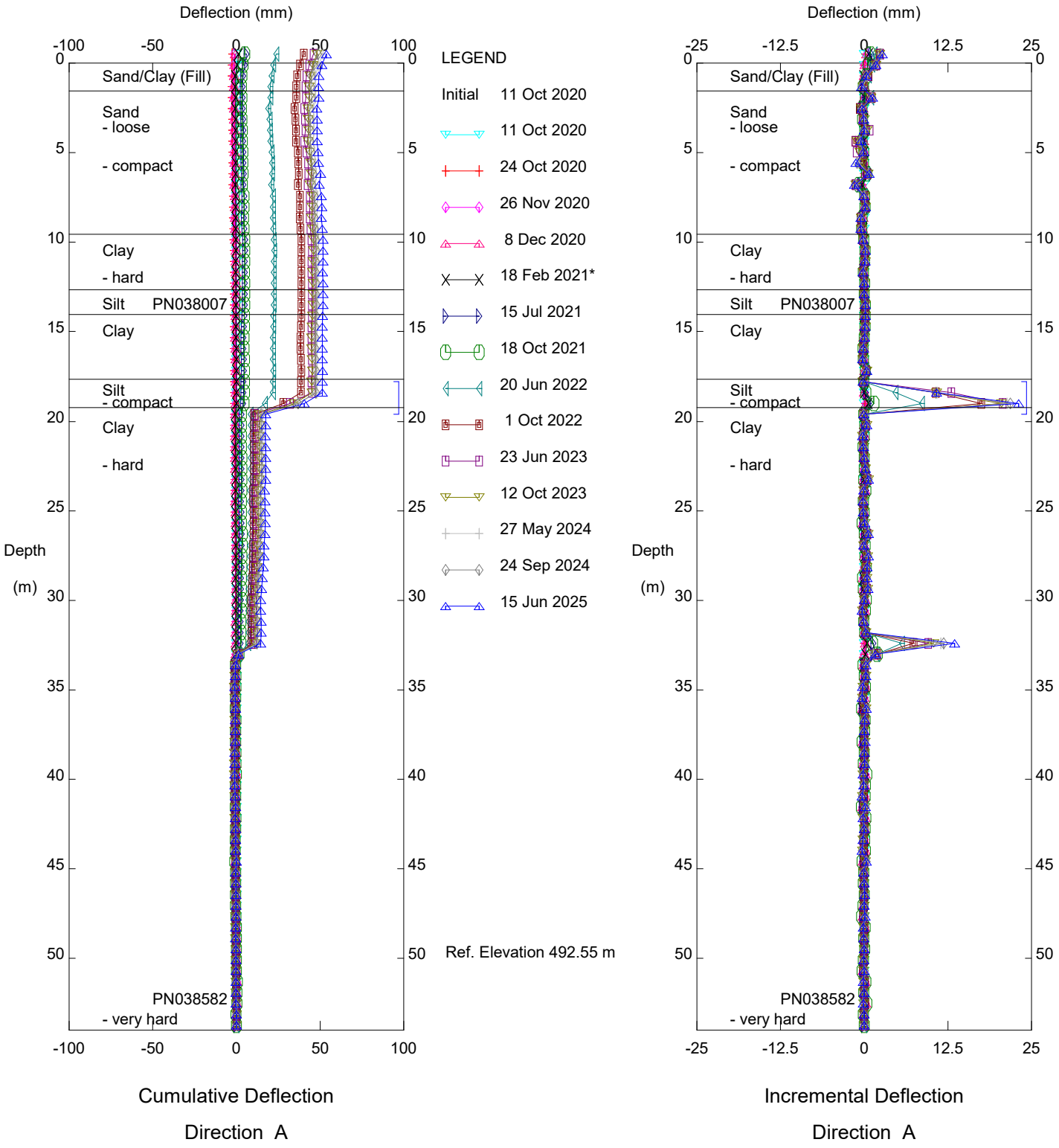
Thurber Engineering Ltd.



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

Alberta Transportation

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

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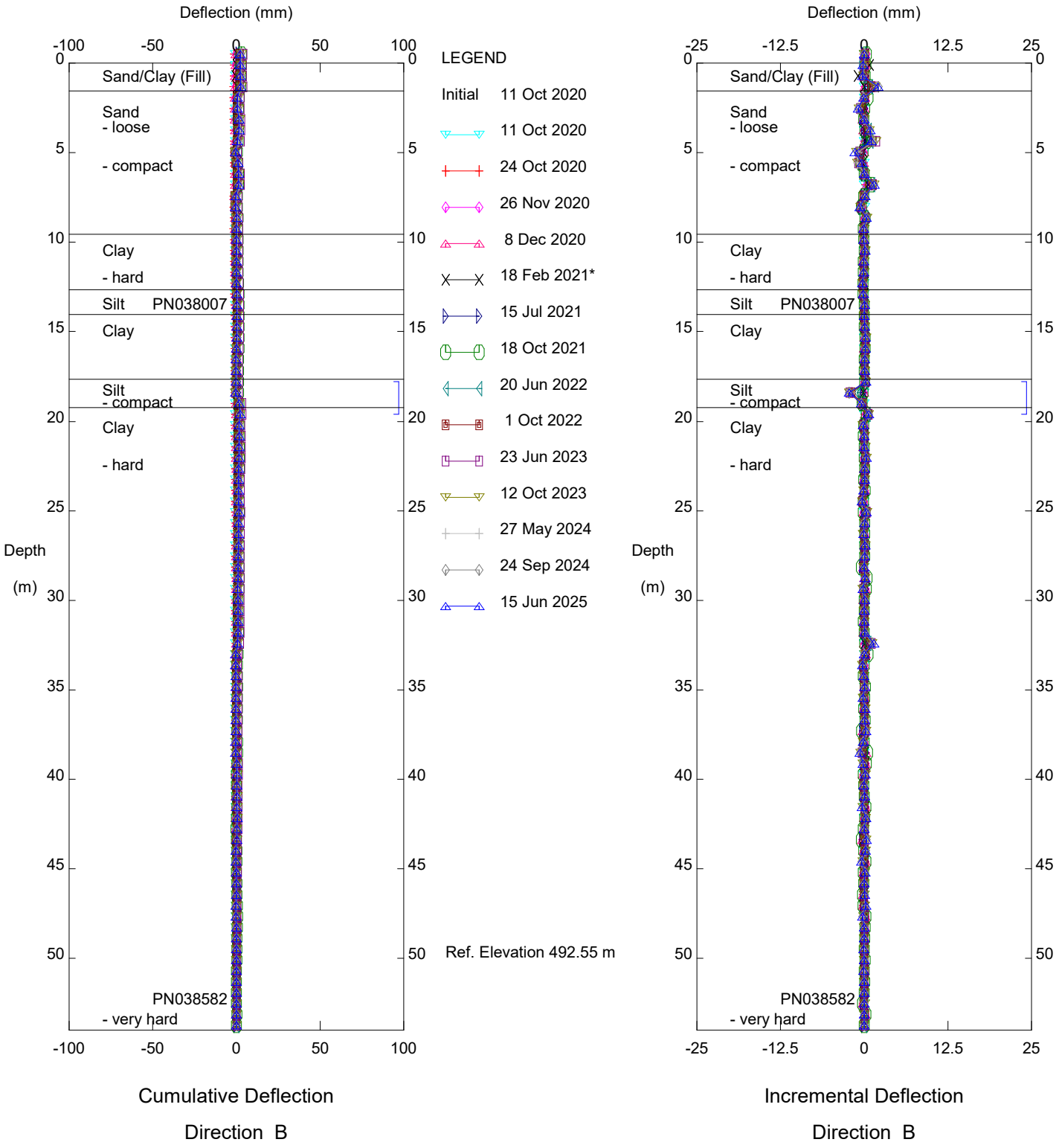

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

Alberta Transportation

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

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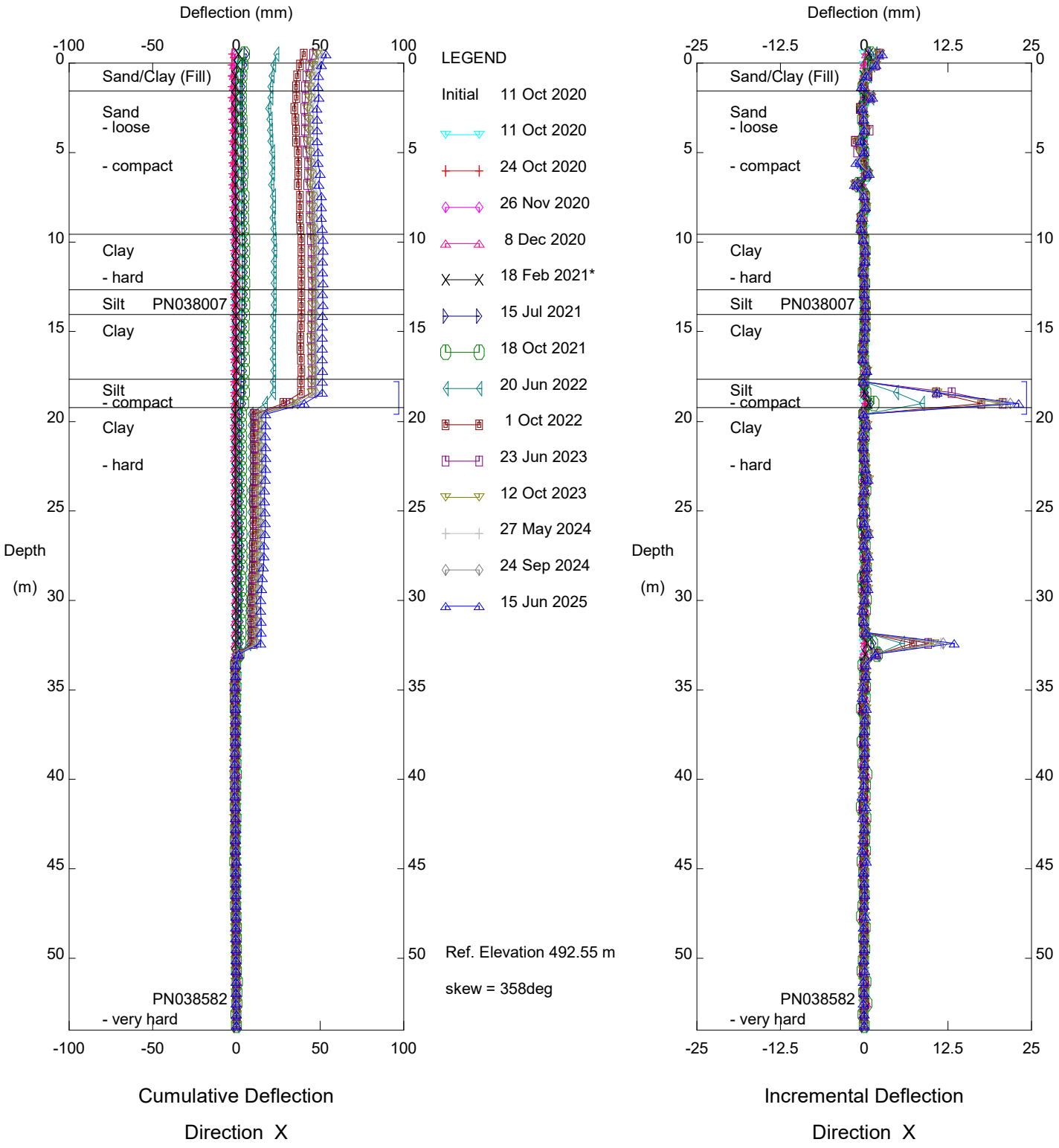

Cumulative Deflection

Direction X

Incremental Deflection

Direction X

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

Alberta Transportation

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

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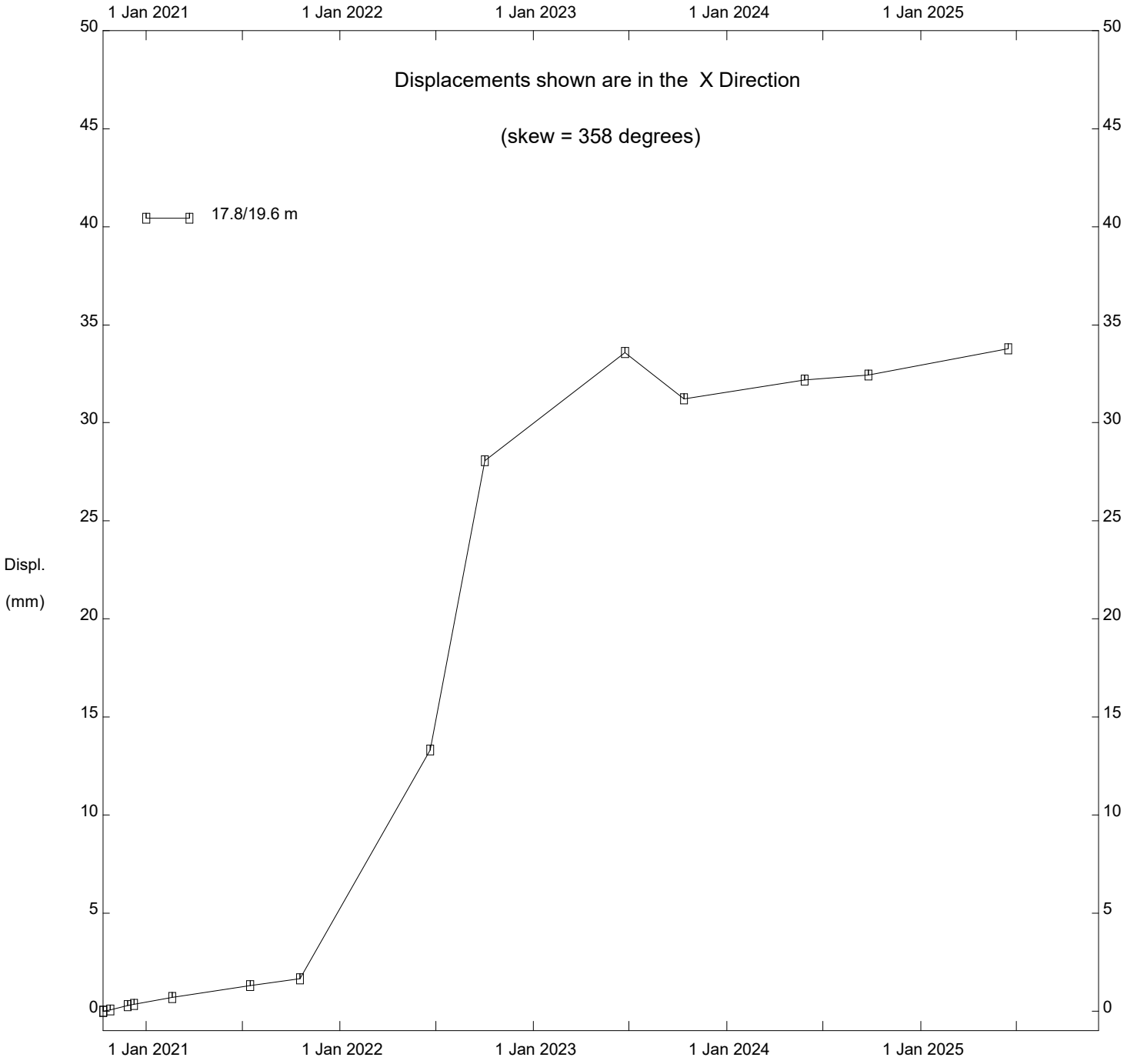
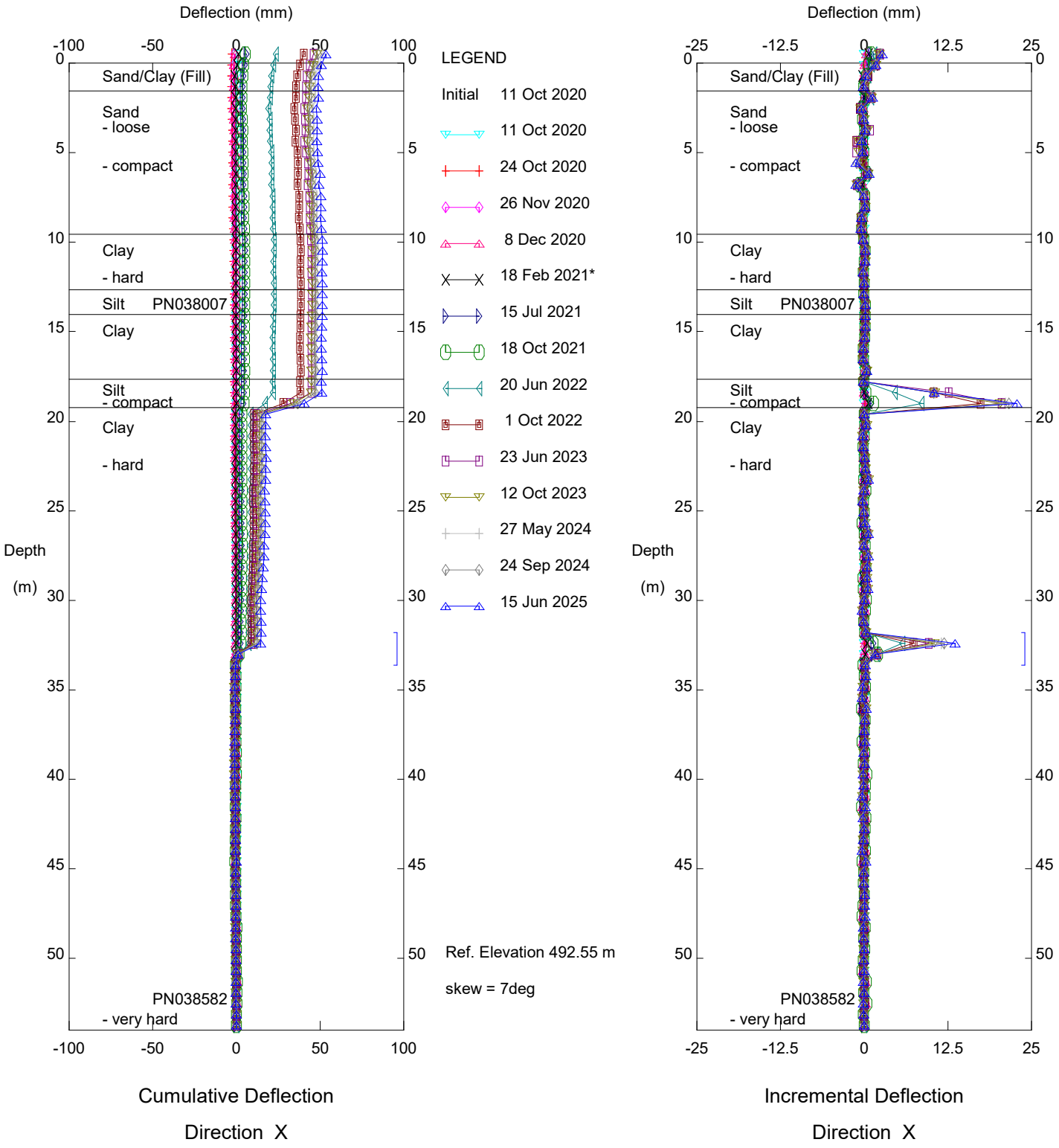


Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

Alberta Transportation

Thurber Engineering Ltd.



Cumulative Deflection

Direction X

Incremental Deflection

Direction X

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

Alberta Transportation

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

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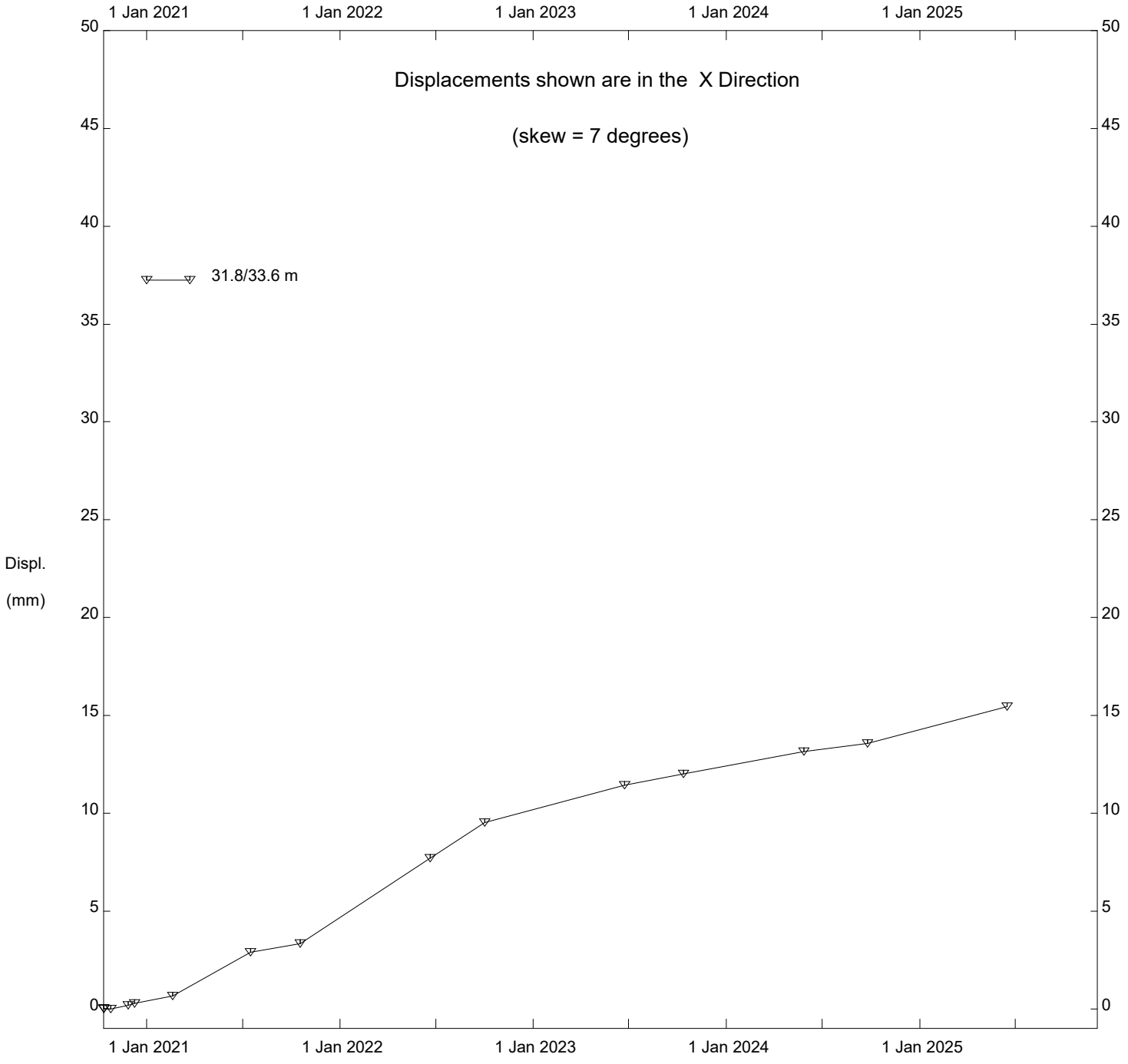

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

Alberta Transportation

FIGURE PH023-1
HWY 64:02 - CLEAR RIVER EAST HILL - (SITE #5)
PIEZOMETRIC ELEVATIONS

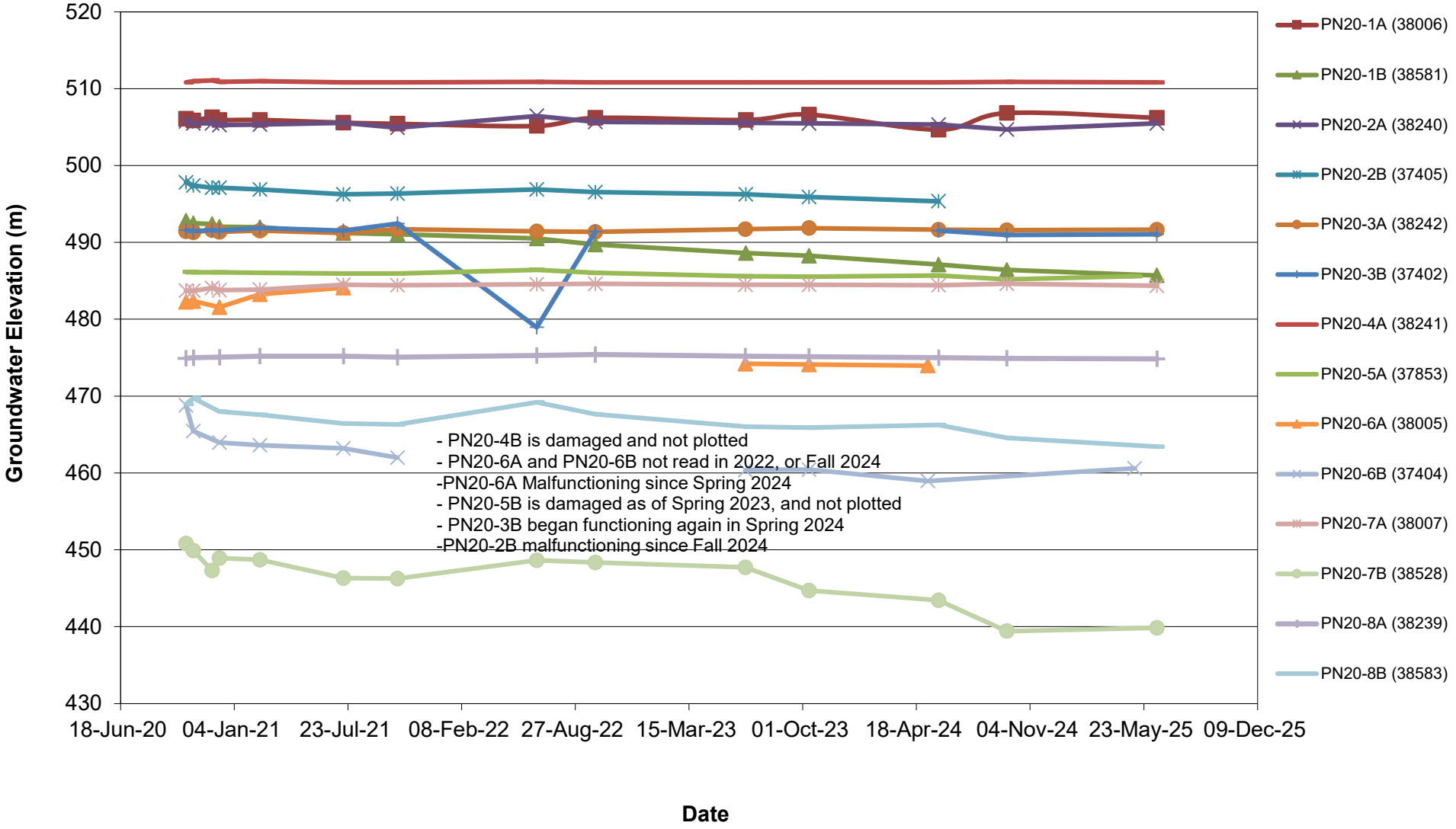

FIGURE PH023-2
HWY 64:02 - CLEAR RIVER EAST HILL - (SITE #5)
PIEZOMETRIC DEPTHS