ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP
PEACE REGION
(GRANDE PRAIRIE DISTRICT - NORTH)
INSTRUMENTATION MONITORING - FALL 2024

THURBER ENGINEERING LTD.

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:	24-Sep-2024	**Previous Monitoring**	27-May-2024
Instruments Read By:	Mr. Neil McDonald and Mr. Nixson Mationg 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, 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: Piezometer PN20-6B wasn't read due to the need for third party wildlife escort due to the known presence of bears in the area.			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	Overall, the SIs showed similar or accelerated rates of movement compared to the previous readings in the fall of 2023. SI20-1 showed current movement rates of 3.6 mm/yr over 3.7 m to 5.6 m depth and 2.8 mm/yr over 50.1 m to 54.3 m depth. SI20-7 showed rates of movement of 0.8 mm/yr over 17.8 m to 19.6 m and 1.2 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, PN20-4A, and PN20-7A showed increases in ground water levels of 2.18 m, 0.07 m, and 0.21 m, respectively, since the spring of 2024 readings. The water level elevation of 506.85 m measured in PN20-1A is the highest since the instrument was initialized. PN20-1B, PN20-2A, PN20-3B, PN20-5A, PN20-7B, PN20-8A, and PN20-8B showed decreases in groundwater

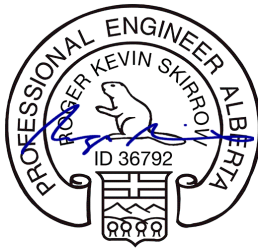
	level of 0.71 m, 0.63 m, 0.07 m, 0.57 m, 0.49 m, 4.01 m,0.07 m, and 1.69 m, respectively, since the spring of 2024 readings. PN20-2B appears to be malfunctioning and the reading wasn't tabulated this cycle. PN20-7B has shown a trend of decreasing pressures and readings over the last few reading cycles to near 0 PSI and is likely malfunctioning.
Future Work:	The instruments should be read again in the spring of 2025. PN20-2B and PN20-7B should be read again to confirm if they are still malfunctioning. If they are malfunctioning, they should be removed from future reading cycles. A third party wildlife escort should be considered to read PN20-6B due to the presence of a bear den near the instrument location.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	• Table PH023-1 Fall 2024 – HWY 64:02 Clear River East Hill (Site 5- Twin Pipes Landslide), Slope Inclinometer Instrumentation Reading Summary • Table PH023-2 Fall 2024 – HWY 64:02 Clear River East Hill (Site 5- Twin Pipes Landslide), Pneumatic Piezometer Instrumentation Reading Summary • Statement of Limitations and Conditions • APPENDIX A - PH023-1 FALL 2024 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.
Roger Skirrow, M.Sc., P. Eng.
Senior Geotechnical Engineer

2024-11-26



2024-11-26

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
RM SIGNATURE: _____
RM APEGA ID #: 51674
DATE: November 26, 2024
PERMIT NUMBER: P005186
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Lucas Green, P.Eng.
Geotechnical Engineer

Table Ph023-1 Fall 2024 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: September 24, 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)
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	92.9 mm over 3.7 m to 5.6 m depth in 7° direction	49.6 mm/yr in October 2022	Operational	May 27, 2024	1.2	3.6	-4.9
		14.4 mm over 50.1 m to 54.3 m depth in 7° direction	5.0 mm/yr in June 2022			0.9	2.8	0.2
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… Fall 2024 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: September 24, 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)
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	32.4 mm over 17.8 m to 19.6 m depth in 195° direction	52.3 mm/yr in October 2022	Operational	May 27, 2024	0.3	0.8	-0.7
		13.6 mm over 31.8 m to 33.6 m depth in 204° direction	6.5 mm/yr in June 2022			0.4	1.2	-0.6

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

Table Ph023-1 – Continued… Fall 2024 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Slope Inclinometer Instrumentation Reading Summary

Date Monitored: September 24, 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)
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 Fall 2024 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: September 24, 2024

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	181.3	506.85	504.67	2.18
PN20-1B (38581)	October 11, 2020	57.91	515.79	Operational	492.82 on October 11, 2020	279.9	486.42	487.13	-0.71
PN20-2A (38240)	October 11, 2020	5.79	506.27	Operational	506.46 on June 20, 2022	41.4	504.70	505.33	-0.63
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	95.1	491.59	491.66	-0.07
PN20-3B (37402)	October 11, 2020	30.48	497.13	Operational	491.89 on February 18, 2021	238.6	490.97	491.54	-0.57
PN20-4A (38241)	October 11, 2020	6.40	517.15	Operational	511.10 on November 26, 2020	1.4	510.89	510.82	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… Fall 2024 – Hwy 64:02, Clear River East Hill (Site 5 – Twin Pipes Landslide) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: September 24, 2024

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	18.6	485.19	485.68	-0.49
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	N/A	N/A	458.98	N/A
PN20-7A (38007)	October 11, 2020	13.41	492.55	Operational	484.56 on June 20, 2022	53.8	484.63	484.42	0.21
PN20-7B (38528)	October 11, 2020	53.34	492.55	Operational	450.81 on October 11, 2020	2.1	439.42	443.43	-4.01
PN20-8A (38239)	October 11, 2020	27.43	488.99	Operational	475.41 on October 1, 2022	131.0	474.92	474.99	-0.07
PN20-8B (38583)	October 11, 2020	44.20	488.99	Operational	469.75 on October 24, 2020	193.7	464.55	466.24	-1.69

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

THURBER

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.

2. COMPLETE 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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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 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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THURBER ENGINEERING LTD.

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

FALL 2024

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)
FALL 2024

Location:	Clear River East Hill - Site 5 (HWY 64:02 C1 24.101)	**Readout:**	RST PN C108 Unit 4
File Number:	32123	**Casing Size:**	2.75
Probe:	RST SI Set 8R	**Temp:**	15C
Cable:	RST SI Set 8R	**Read by:**	NNM/NRM

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	24-Sep-24	0.83	196 to 2	340	-119	138	-43	24	8R/8R	2.75	
SI20-7	334956	6244086	24-Sep-24	0.82	178 to 2	180	-72	85	78	-82	5R/5R	2.75	

PNEUMATIC PIEZOMETER (PN) READINGS

PN#	GPS Location (UTM 11)		Date	Reading Psi	Identification Number
	Easting (m)	Northing (m)			
PN20-1A	335453	6244315	24-Sep-24	26.3	38006
PN20-1B	335453	6244315	24-Sep-24	40.6	38581
PN20-2A	335476	6244253	24-Sep-24	6	38240
PN20-2B**	335476	6244253	24-Sep-24	89	37405
PN20-3A	335579	6244143	24-Sep-24	13.8	38242
PN20-3B	335579	6244143	24-Sep-24	34.6	37402
PN20-4A	335200	6244260	24-Sep-24	0.2	38241
PN20-5A	335235	6244111	24-Sep-24	2.7	37853
PN20-6B*	335332	6244073		-	37404
PN20-7A	334956	6244086	24-Sep-24	7.8	38007
PN20-7B	334956	6244086	24-Sep-24	0.3	38582
PN20-8A	332430	5933825	24-Sep-24	19	38239
PN20-8B	332430	5933825	24-Sep-24	28.1	38583

INSPECTOR REPORT

*Not read during the fall 2024 readings to avoid the need for bear escort services.
** Malfunctioning

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SW33 84-11-6

SE33 84-11-6

SW34 84-11-6

SE34 84-11-6

NW28 84-11-6

NE28 84-11-6

NW27 84-11-6

NE27 84-11-6

SW28 84-11-6

SE28 84-11-6

SW27 84-11-6

SE27 84-11-6

4143 PIPELINE

CLEAR RIVER

SI20-1, PN20-1A/B

SI20-4, PN20-4A/B (SHEARED)

SI20-2, PN20-2A/B (SHEARED)

SI20-5, PN20-5A/B (SHEARED)

SI20-3, PN20-3A/B (DAMAGED)

SI20-7, PN20-7A/B

SI-09 (SHEARED)

SI20-6, PN20-6A/B (SHEARED)

SI20-8, PN20-8A/B (SHEARED)

N

W E

S

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

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 2023
FILE No.	32123

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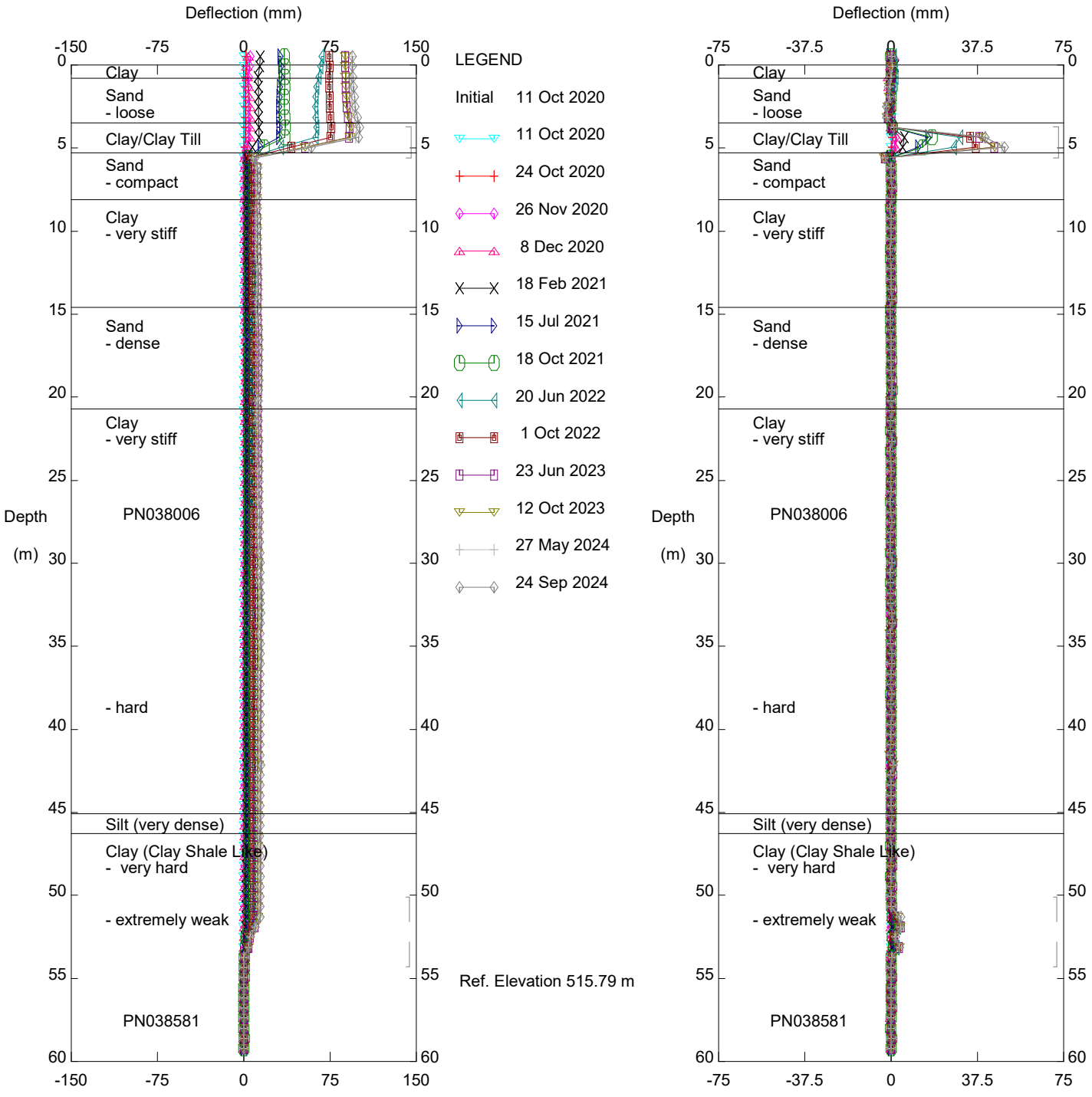

Cumulative Deflection

Direction A

Incremental Deflection

Direction A

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

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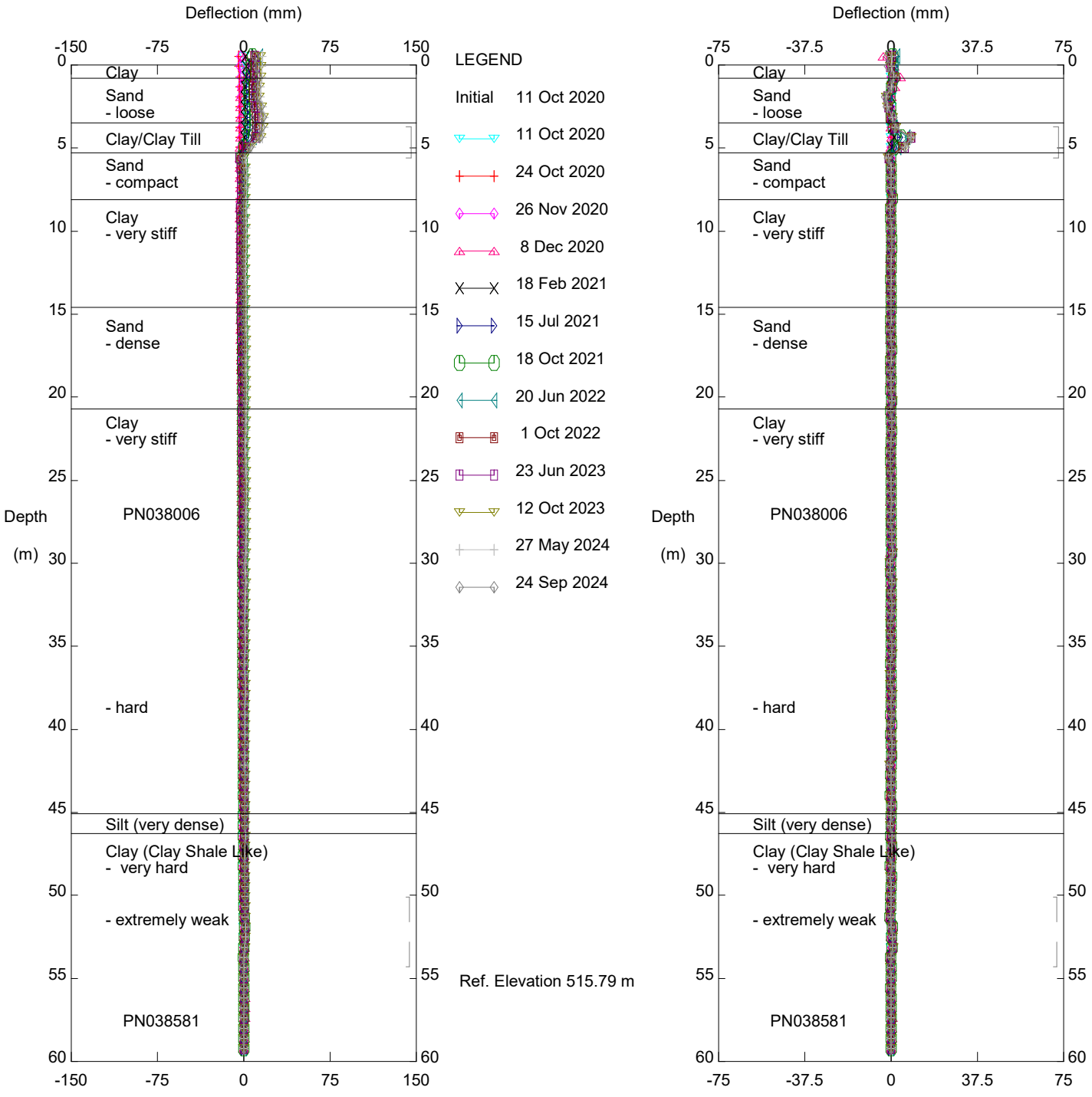

Cumulative Deflection

Direction B

Incremental Deflection

Direction B

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

Alberta Transportation

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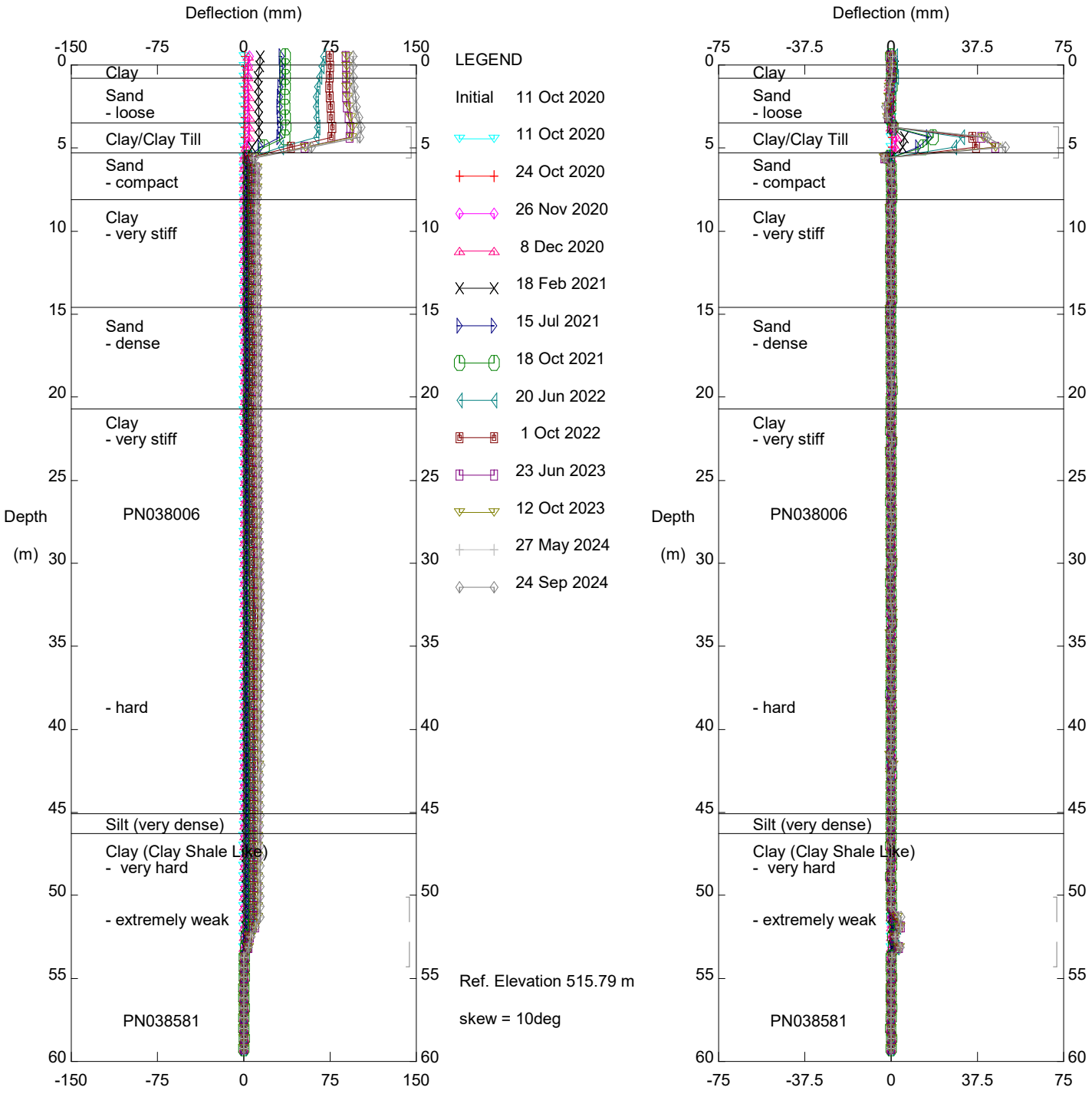
Thurber Engineering Ltd.



Cumulative Deflection

Direction X

Incremental Deflection

Direction X

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

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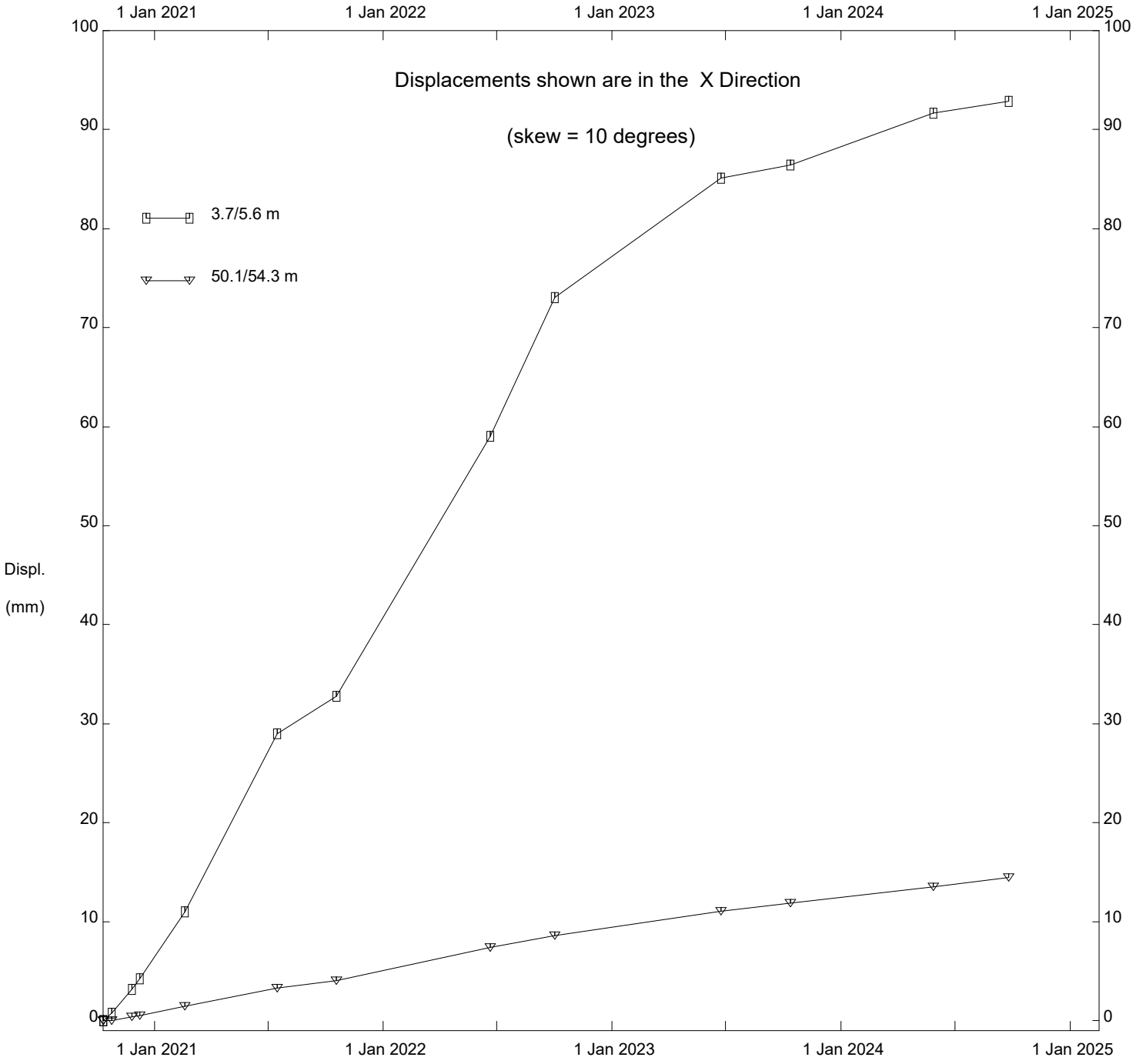
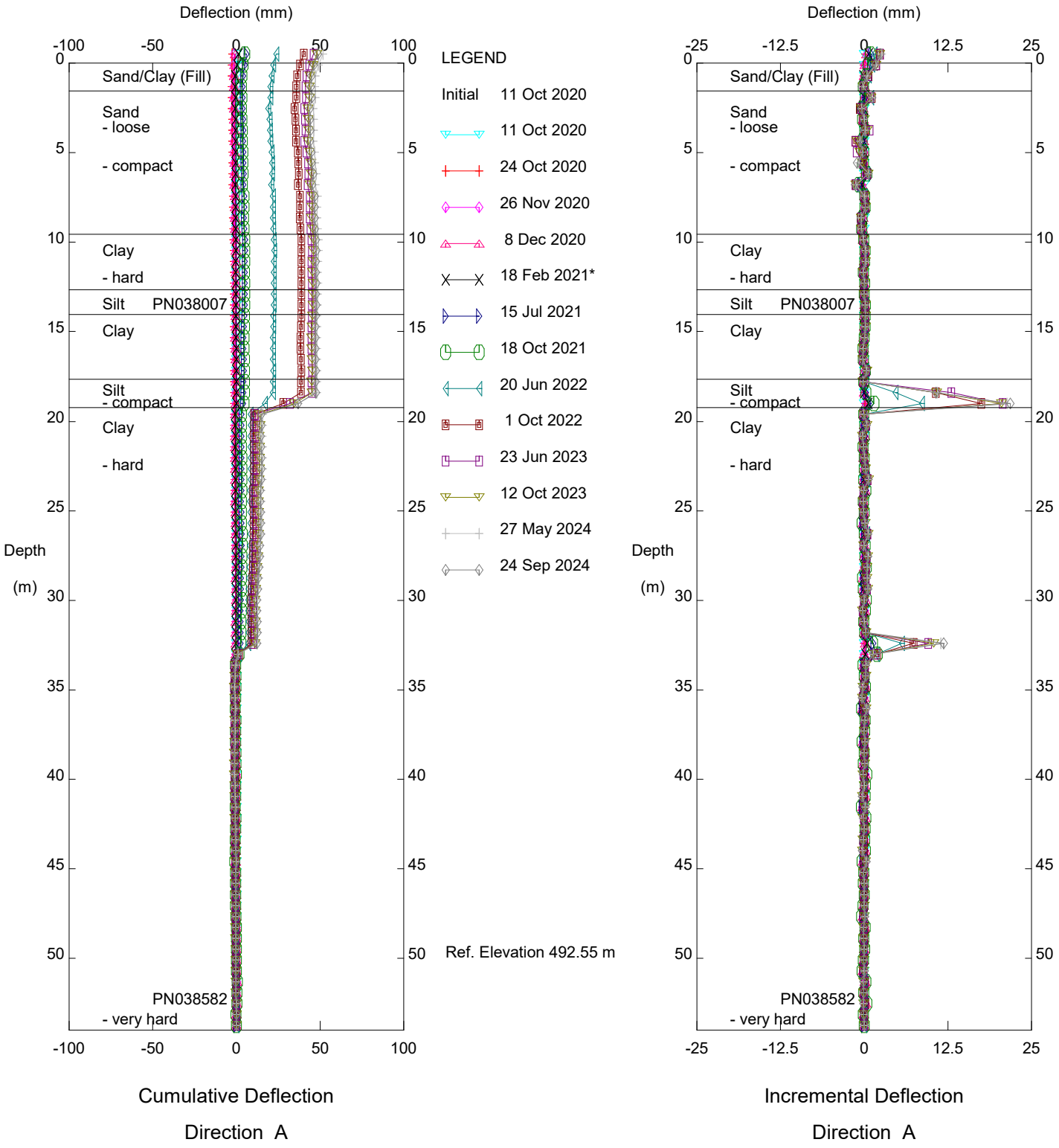
Thurber Engineering Ltd.



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

Alberta Transportation

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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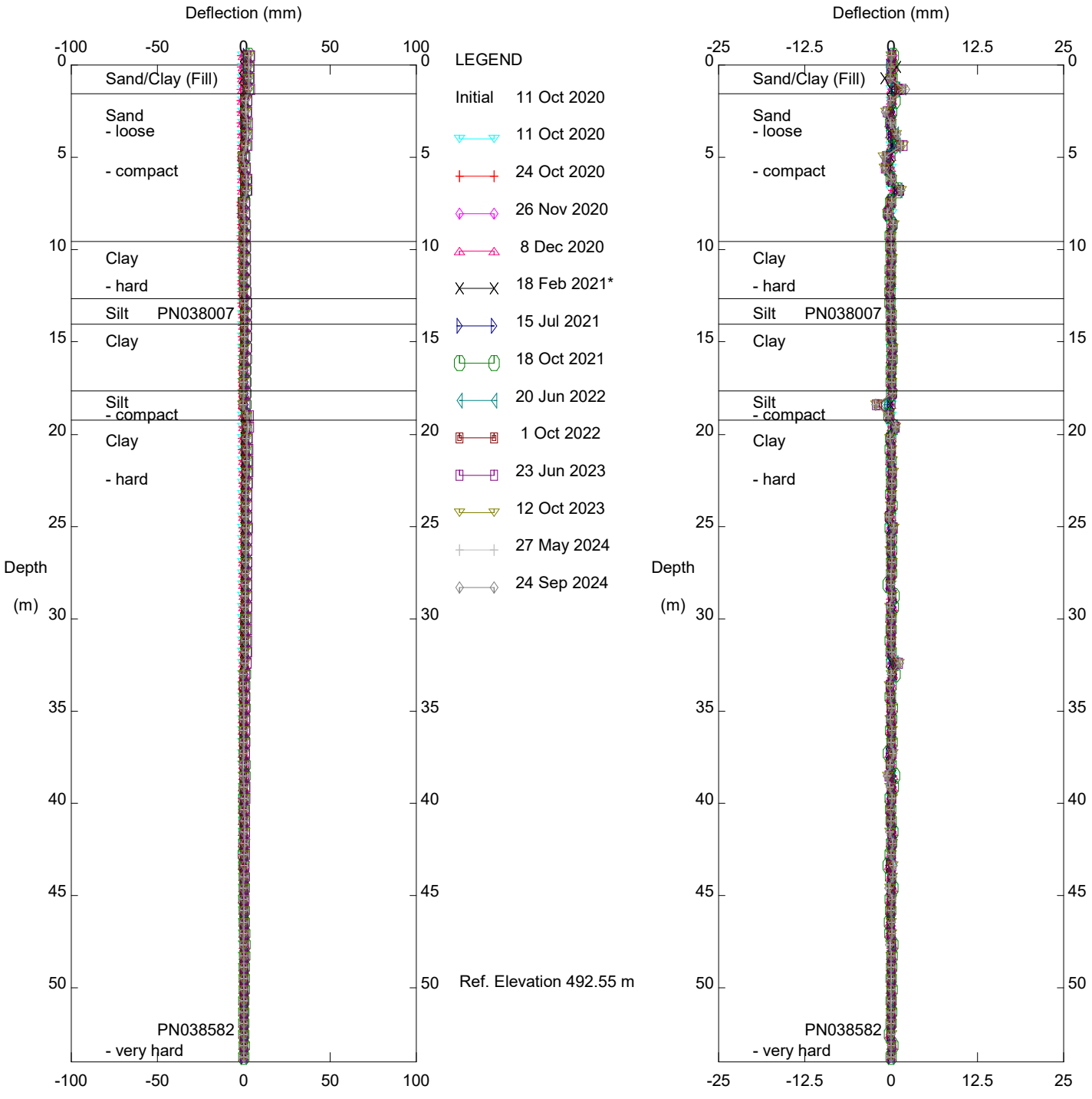

Cumulative Deflection

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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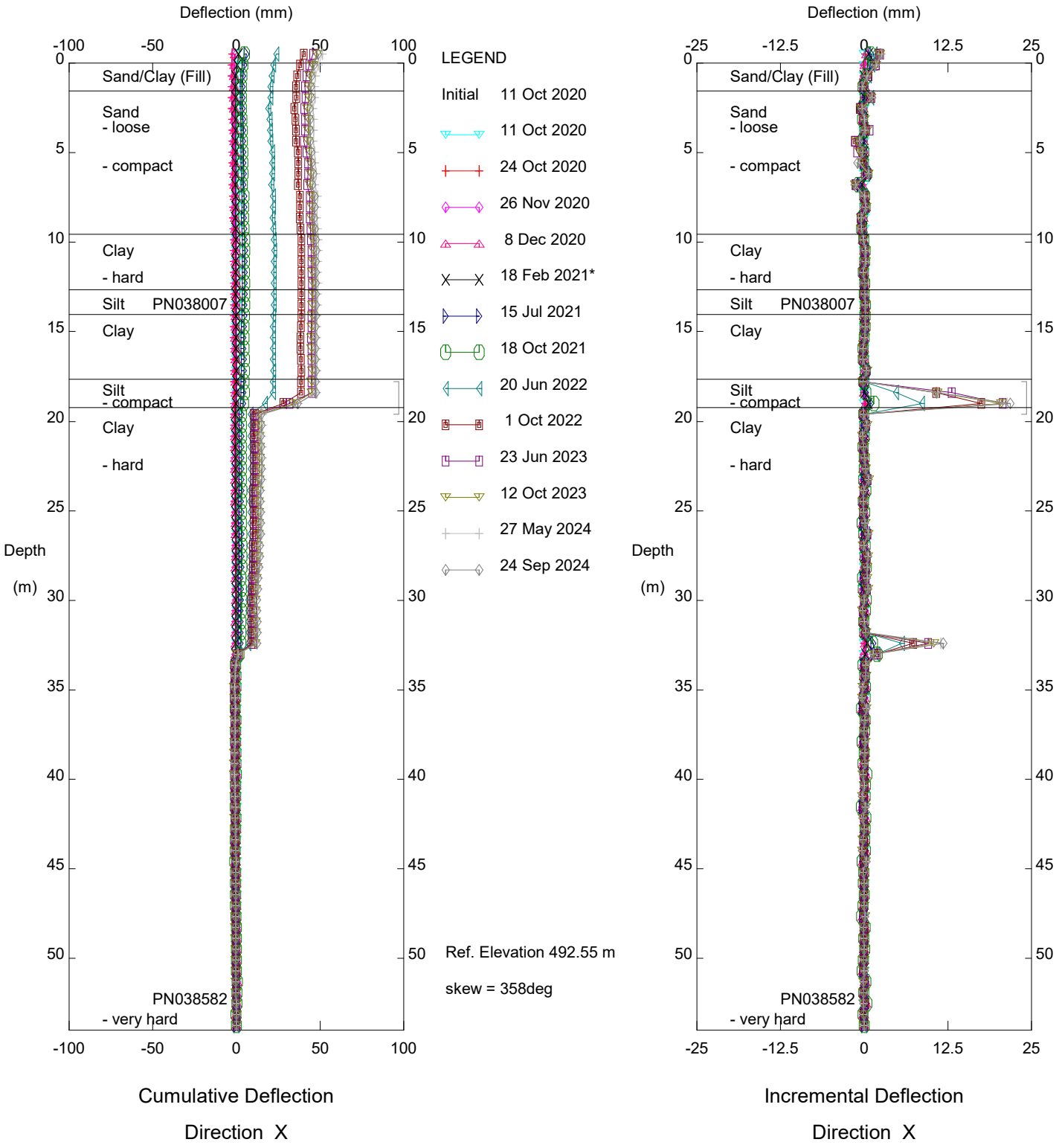

Cumulative Deflection

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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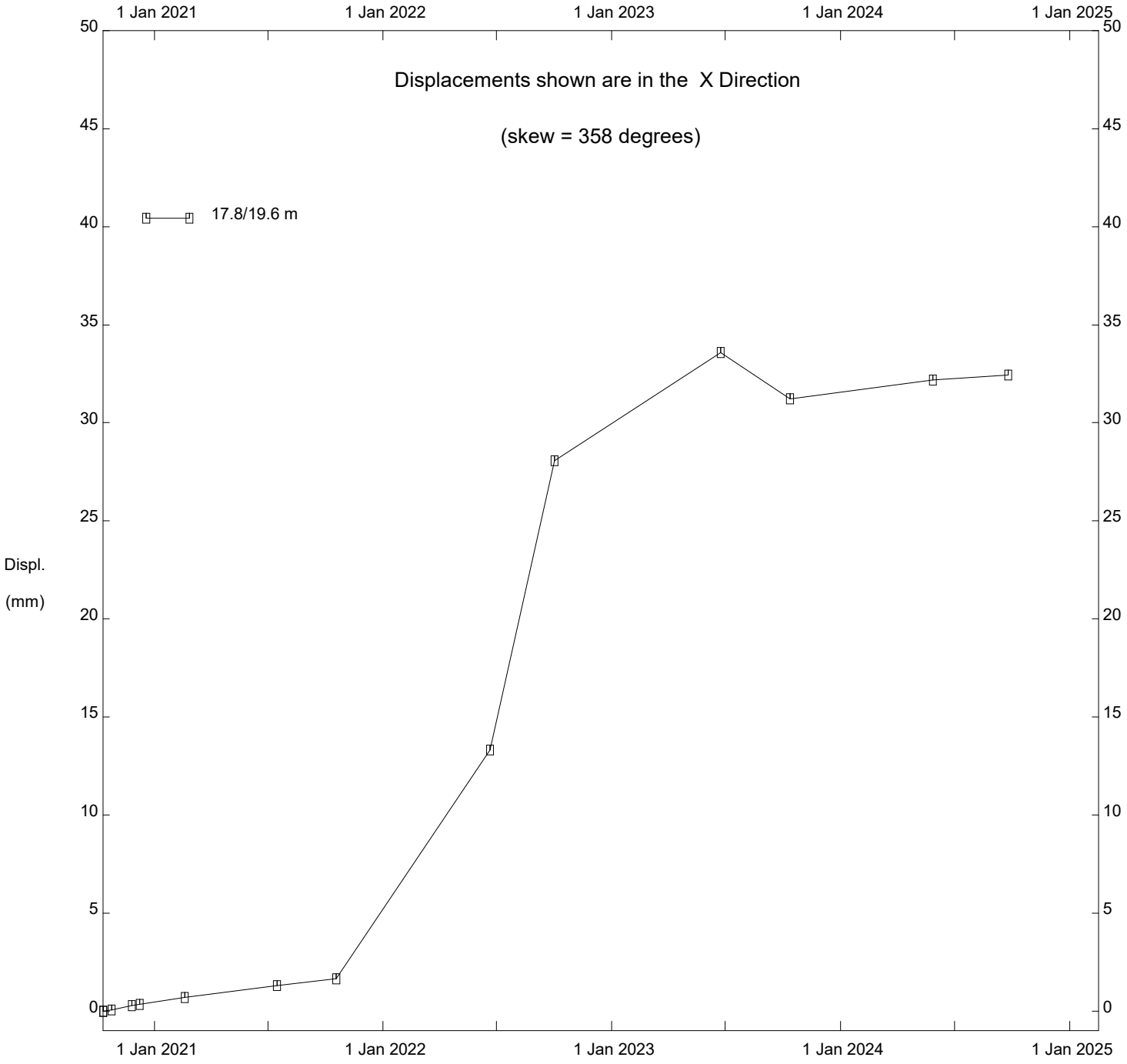
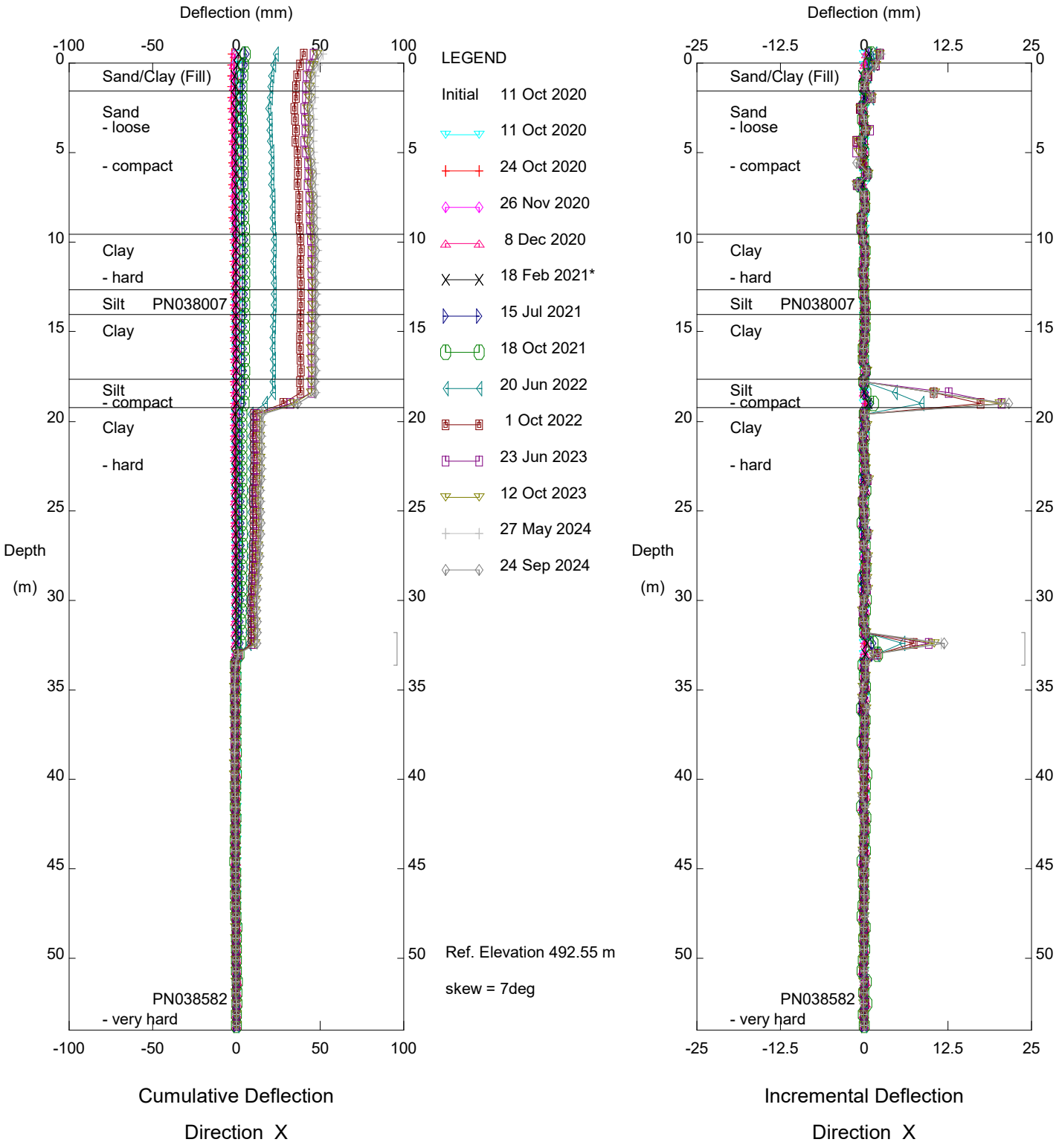


Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

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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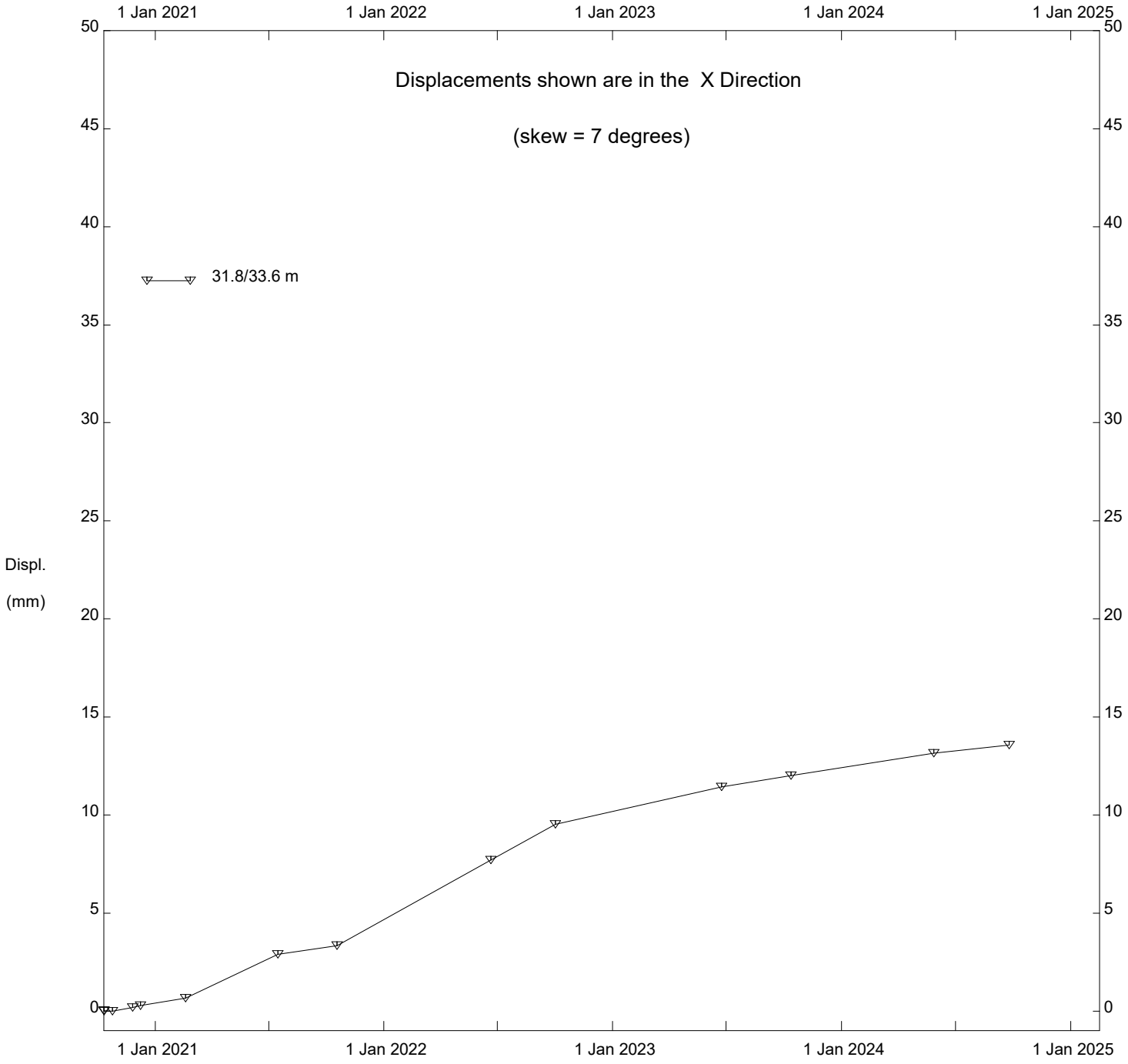

Hwy 64:02 Twin Pipes Landslide (PH023), Inclinometer SI20-7

Alberta Transportation

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

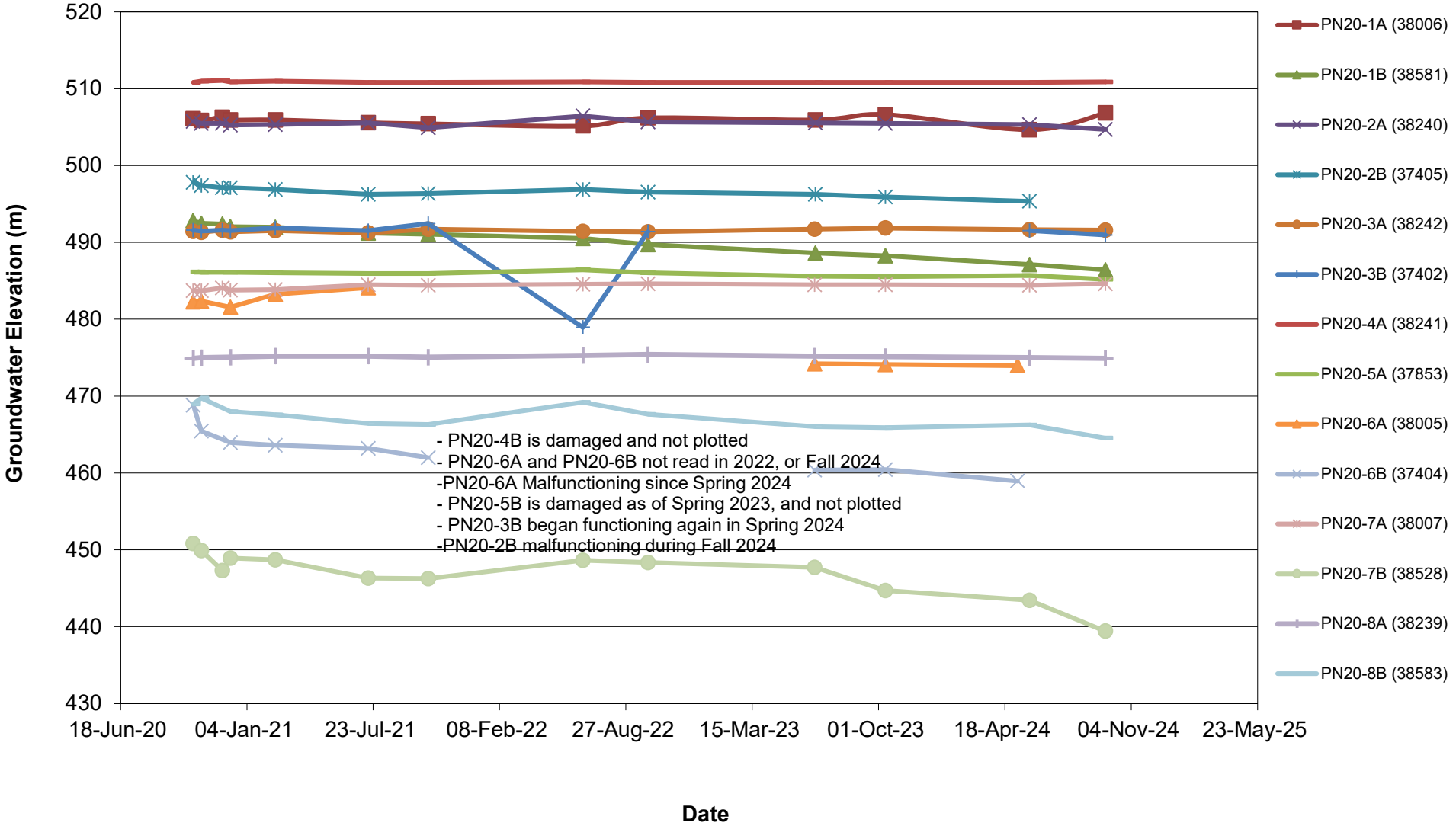

FIGURE PH023-2
HWY 64:02 - CLEAR RIVER EAST HILL - (SITE #5)
PIEZOMETRIC DEPTHS