

Site Number	Location	Name	Hwy	km
PH081	HWY 684:02 28+600 to 28+400	Shaftesbury Trail	684:02	28.35 to 30.30
Legal Description: 1-30-83-21 W5		UTM Co-ordinates		
		11U E 481435	N	6230499

Current Monitoring:	18-May-2024	Previous Monitoring	07-Oct-2023
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Nixon Mationg, of Thurber		

Instruments Read During This Site Visit			
Slope Inclonometers (SIs): SI20-6, SI20-7	Pneumatic Piezometers (PN): N/A	Vibration Wire Piezometers (VW): VW20-6A, VW20-6B, VW20-7, VW20-8	Standpipe Piezometers (SP): N/A
Load Cell (LC): N/A	Strain Gauges: N/A	SAA's: N/A	Others:

Readout Equipment Used			
Slope Inclonometers: RST Digital Inclonometer probe with 2 ft. wheelbase and RST Pocket PC readout	Pneumatic Piezometers:	Vibration Wire Piezometers: Downloaded from Datalogger	Standpipe Piezometers:
Load Cell:	Strain Gauges:	SAA's:	Others:
Notes:			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	SI20-6 showed a cumulative movement of 1.4 mm over 6.6 m to 8.4 m depth, with no discernible movement since the previous readings on June 14, 2023. SI20-7 showed a cumulative movement of 12.4 mm over 0.3 m to 13.7 m depth, with a rate of movement of 1.9 mm/yr since the previous readings on June 14, 2023. Vibrating wire piezometer VW20-6A was found to be dry since January 6, 2024. Vibrating wire VW20-6B and VW20-8 showed decreases in groundwater levels of 1.17 m and 0.19 m, respectively, compared to the June 14, 2023 readings. Vibrating wire piezometer VW20-7 has been dry since the instrument was initialized.
Future Work:	The instruments should be read again in the spring of 2025.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	<ul style="list-style-type: none"> ▪ Table PH081-1 Spring 2024 – HWY 684:02 Shaftesbury Trail, Slope Inclinometer Reading Instrumentation Summary ▪ Table PH081-2 Spring 2024 – HWY 684:02 Shaftesbury Trail Piezometer Instrumentation Reading Summary ▪ Statement of Limitations sand Conditions ▪ APPENDIX A – PH081 SPRING 2024 <ul style="list-style-type: none"> □ Field Inspector’s report □ Site Plans Showing Approximate Instrument Locations (Drawing No.23838-5) □ SI Reading Plots □ Figure PH081-1 (VW20-06A and VW20-6B Piezometric Elevations) □ Figure PH081-2 (VW20-07 Piezometric Elevations) ○ Figure PH081-3 (VW20-08 Piezometric Elevations)
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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.
Don Proudfoot, M.Eng., P. Eng.
Partner | Senior Geotechnical Engineer

Lucas Green, P.Eng.
Geotechnical Engineer

Table PH081-1: Spring 2024 – Hwy 684:02 Shaftesbury Trail Inclinator Instrumentation Reading Summary

Date Monitored: May 18, 2024

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AT NOTED DEPTH SINCE INITIAL READING (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS	DATE OF PREVIOUS READING	INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)	RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI20-6	August 14, 2020	1.4 mm over 6.6 m to 8.4 m depth in 91° direction	5.3 mm/yr in October 2020	Operational	June 14, 2023	No discernible movement	N/A	<0.1
SI20-7	August 14, 2020	12.4 mm over 0.3 m to 13.7 m depth in 114° direction	8.4 mm/yr in April 2022	Operational	June 14, 2023	1.7	1.9	0.7

Drawings 23838-5 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Table PH081-2: Spring 2024 – Hwy 684:02 Shaftesbury Trail Vibrating Wire Piezometer Instrumentation Reading Summary

Date Monitored: May 18, 2024

INSTRUMENT #	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED WATER ELEVATION (m)	CURRENT WATER ELEVATION (m)	PREVIOUS WATER ELEVATION (June 14, 2023) (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW20-6A (67875)	August 11, 2020	326.20	334.70	Operational	326.85 on February 11, 2021	Dry	326.47	N/A
VW20-6B (67881)	August 11, 2020	314.7	334.8	Operational	317.64 on August 15, 2021	315.76	316.93	-1.17
VW20-7 (67882)	August 12, 2020	327.30	345.40	Operational	Dry since initialization	Dry	Dry	N/A
VW20-8 (67879)	August 12, 2020	334.40	346.70	Operational	341.81 on December 21, 2022	340.58	340.77	-0.19

Drawings 23838-4 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Notes:
 VW – vibrating wire piezometer.
 BGS - below ground surface.



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- 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.
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THURBER ENGINEERING LTD.

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022164)
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING RESULTS**

SPRING 2024

**APPENDIX A
DATA PRESENTATION**

SITE PH081: HWY 684:02, SHAFTESBURY TRAIL

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH81)
SPRING 2024**

Location: Hwy 684:02 Shaftesbury Trail Km 28.35 to Km 30.30 File Number: 23838 Probe: RST Set 8R Cable: RST Set 8R	Readout: Casing size: 2.75 Temp: 5 Read by: NRM/NKR
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SLOPE INCLINOMETER (SI) READINGS

SI#	GPS Location (UTM 11V)		Date	Stickup (m)	Depth from top of casing (ft)	Azimuth of A+ Groove	Current Bottom Depth Readings				Probe/ Reel #	Remarks
	Easting (m)	Northing (m)					A+	A-	B+	B-		
SI 20-6	481435	6230499	18-May-24	-0.13	64 to 2	95	-1417	1425	366	-369	8R/8R	Flushmount on Edge of Shoulder
SI 20-7	481390	6230327	18-May-24	0.87	66 to 2	113	556	-536	-1127	1128	8R/8R	

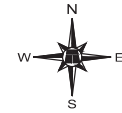
VIBRATING WIRE READINGS

VW	GPS Location (UTM 11)		VW Serial #	Datalogger Serial #	Date	Comment
	Easting (m)	Northing (m)				
VW20-6A(Attached to SI20-6)	481435	6230499	67875	DT20197	18-May-24	Downloaded
VW20-6B(Attached to SI20-6)	481435	6230499	67881	DT20239	18-May-24	Downloaded
VW20-7(Attached to SI20-7)	481390	6230327	67882	DT20258	18-May-24	Downloaded
VW20-8	481372	6230267	67879	DT 20229	18-May-24	Downloaded



INSPECTOR REPORT

VW 20-6A and B attached to SI but wire trenched to the stickup Protector on side of Guard Rail.

H:\23000\23838 PH53 Hwy 68402 km 28.4 to 30.3 Embankment Stability Assessment\Drafting\2022\23838-1 OCTOBER 28 2022.dwg -5N - Oct 31, 2022



LEGEND

-  APPROXIMATE TEST HOLE LOCATION
-  APPROXIMATE INSTRUMENT LOCATION
- VW** VIBRATING WIRE PIEZOMETER
- SI** SLOPE INCLINOMETER
- PH053** GEOHAZARD SITE NUMBER



AIR PHOTO FROM ESRI WORLD IMAGERY EXPORTED ON APRIL 18, 2022



**SHAFTESBURY TRAIL - HWY 684, km 28.3 TO 30.3
GEOTECHNICAL INVESTIGATION AND PRELIMINARY
ENGINEERING ASSESSMENT
DETAIL PLAN
(SHEET 4 OF 4)**

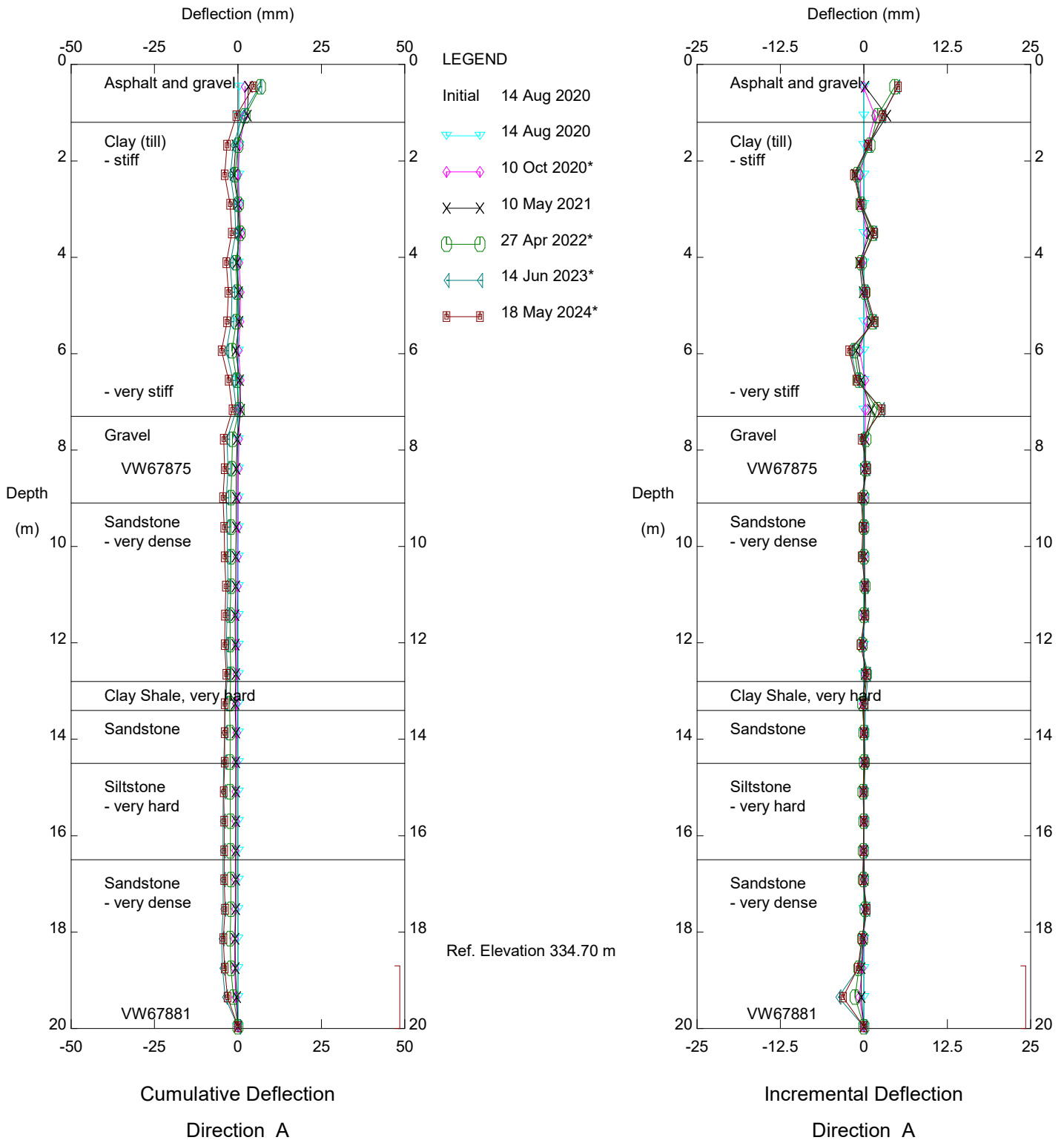
DWG No. 23838-5

DRAWN BY	ML
DESIGNED BY	LGM
APPROVED BY	DWP
SCALE	1:3000
DATE	OCTOBER 2022
FILE No.	23838



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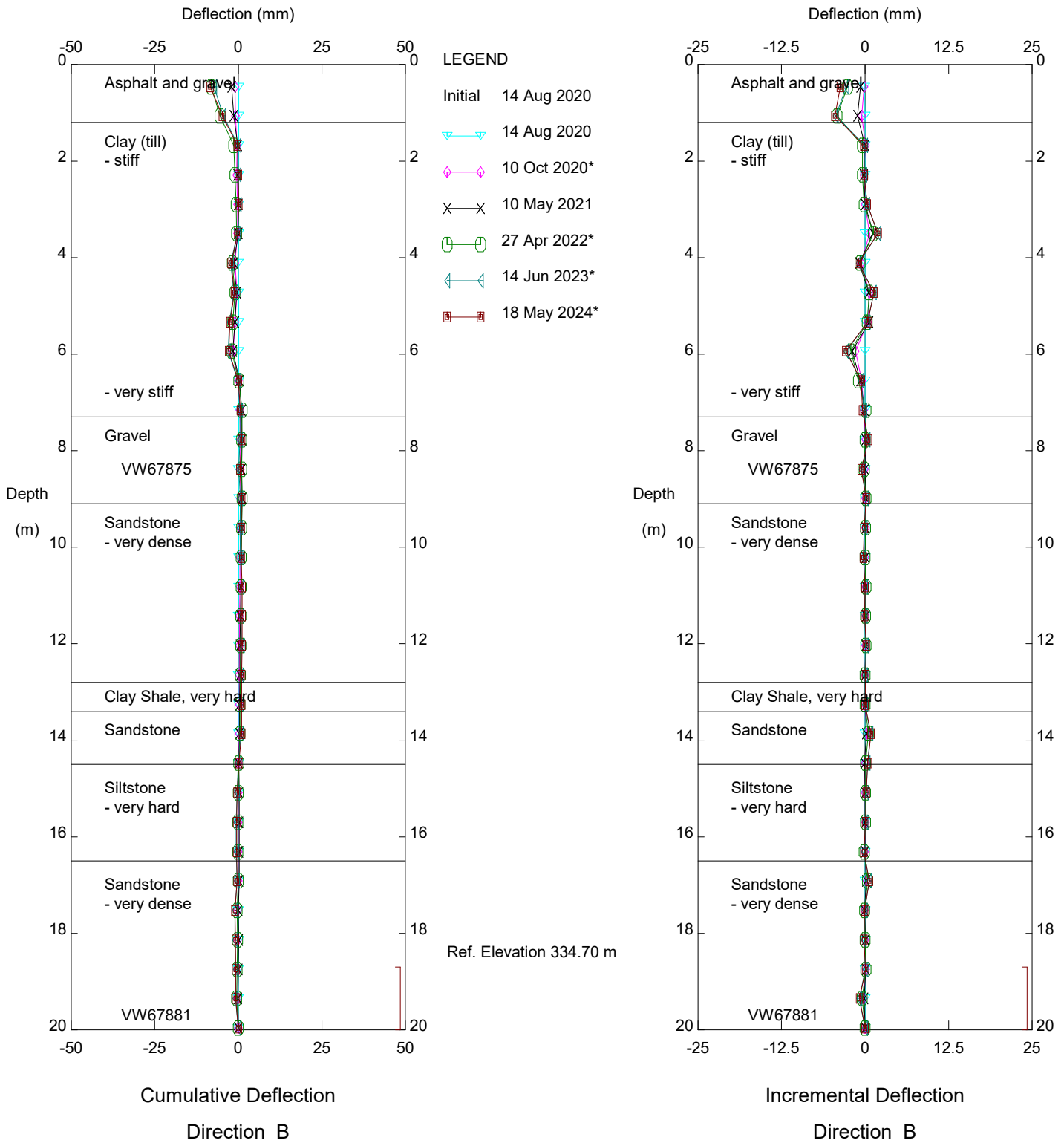


HWY 684 Shaftesbury trail, Inclinometer SI20-6

Alberta Transportation

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

Thurber Engineering Ltd.

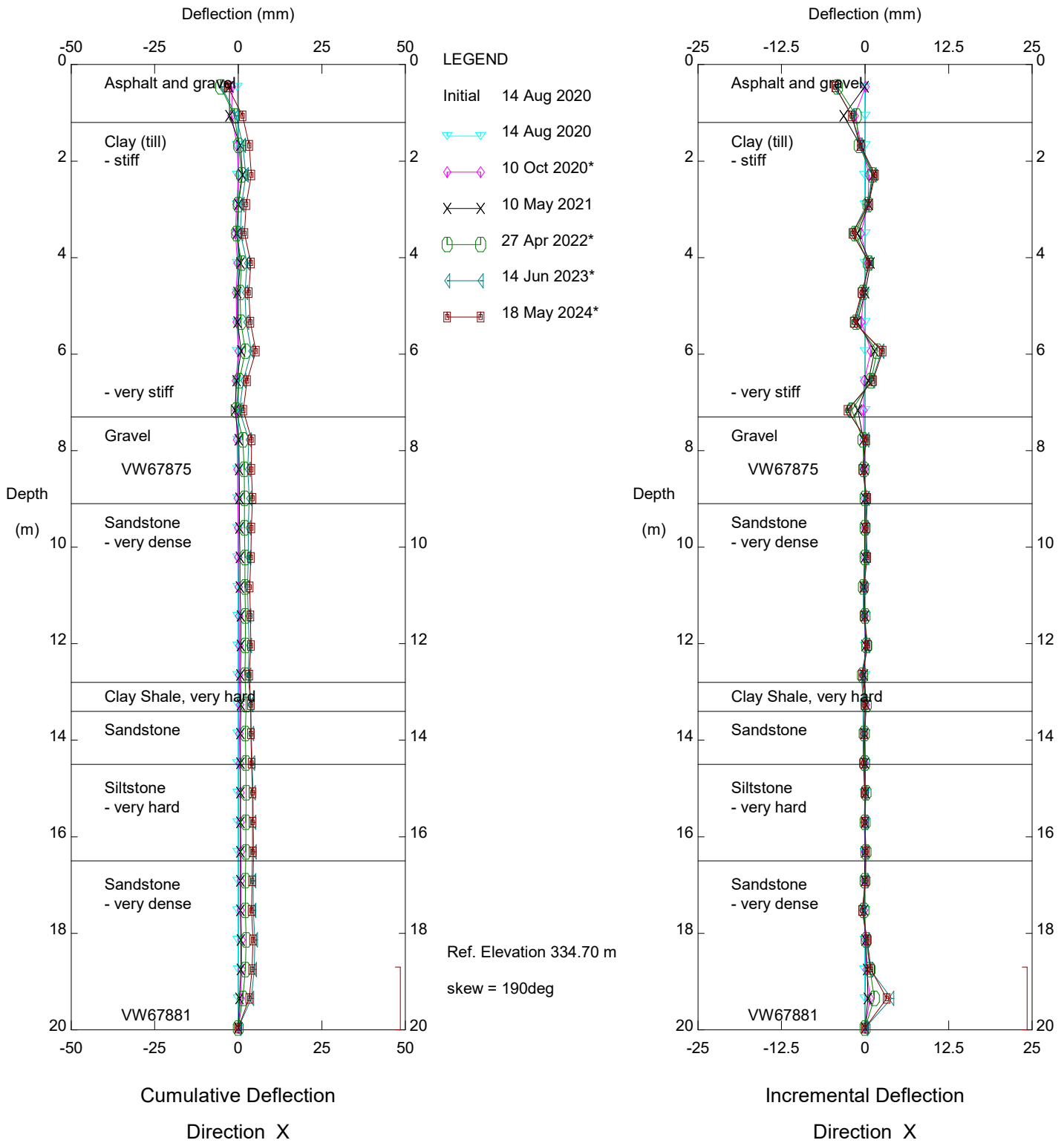


HWY 684 Shaftesbury trail, Inclinometer SI20-6

Alberta Transportation

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

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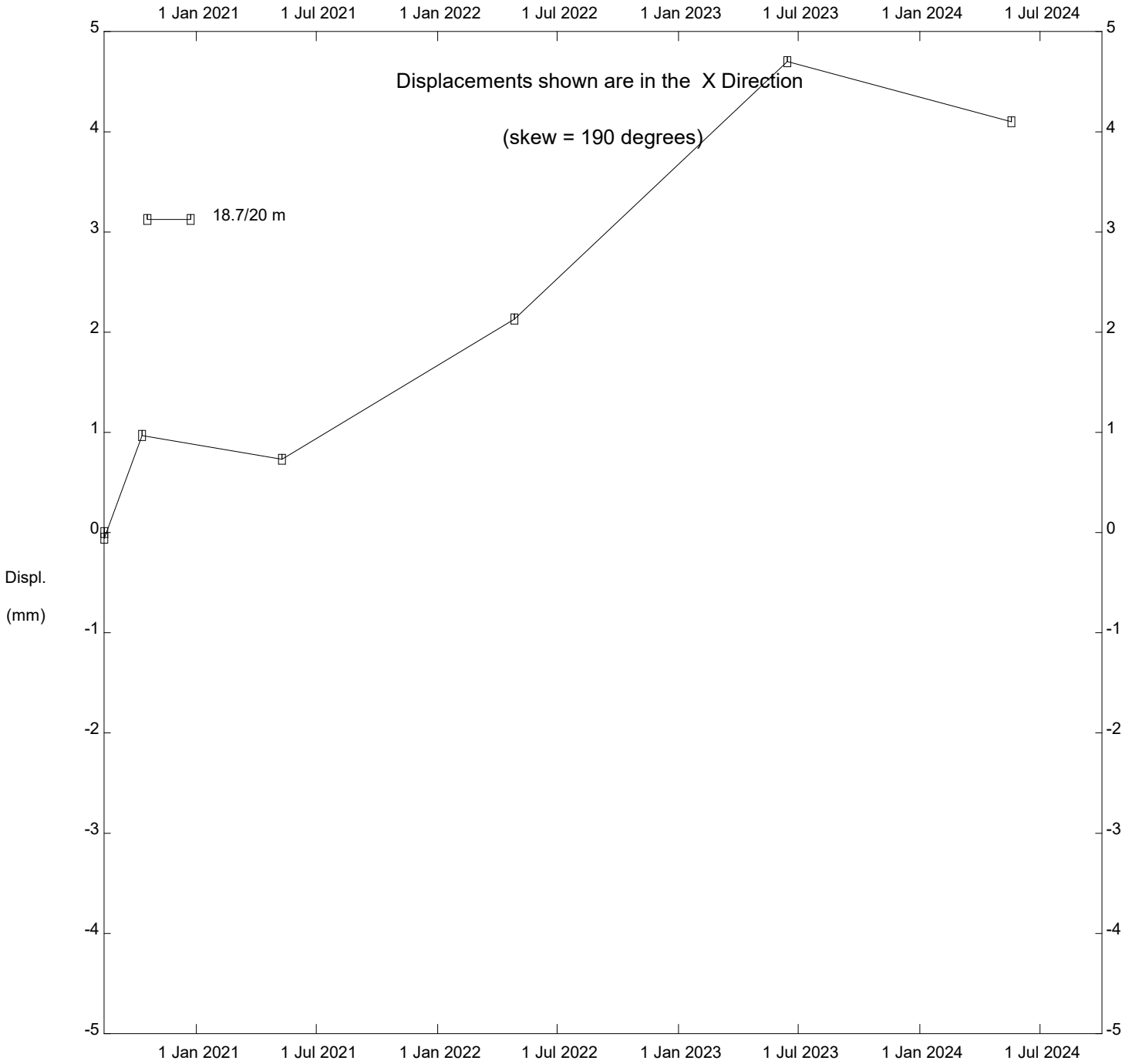


HWY 684 Shaftesbury trail, Inclinator SI20-6

Alberta Transportation

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

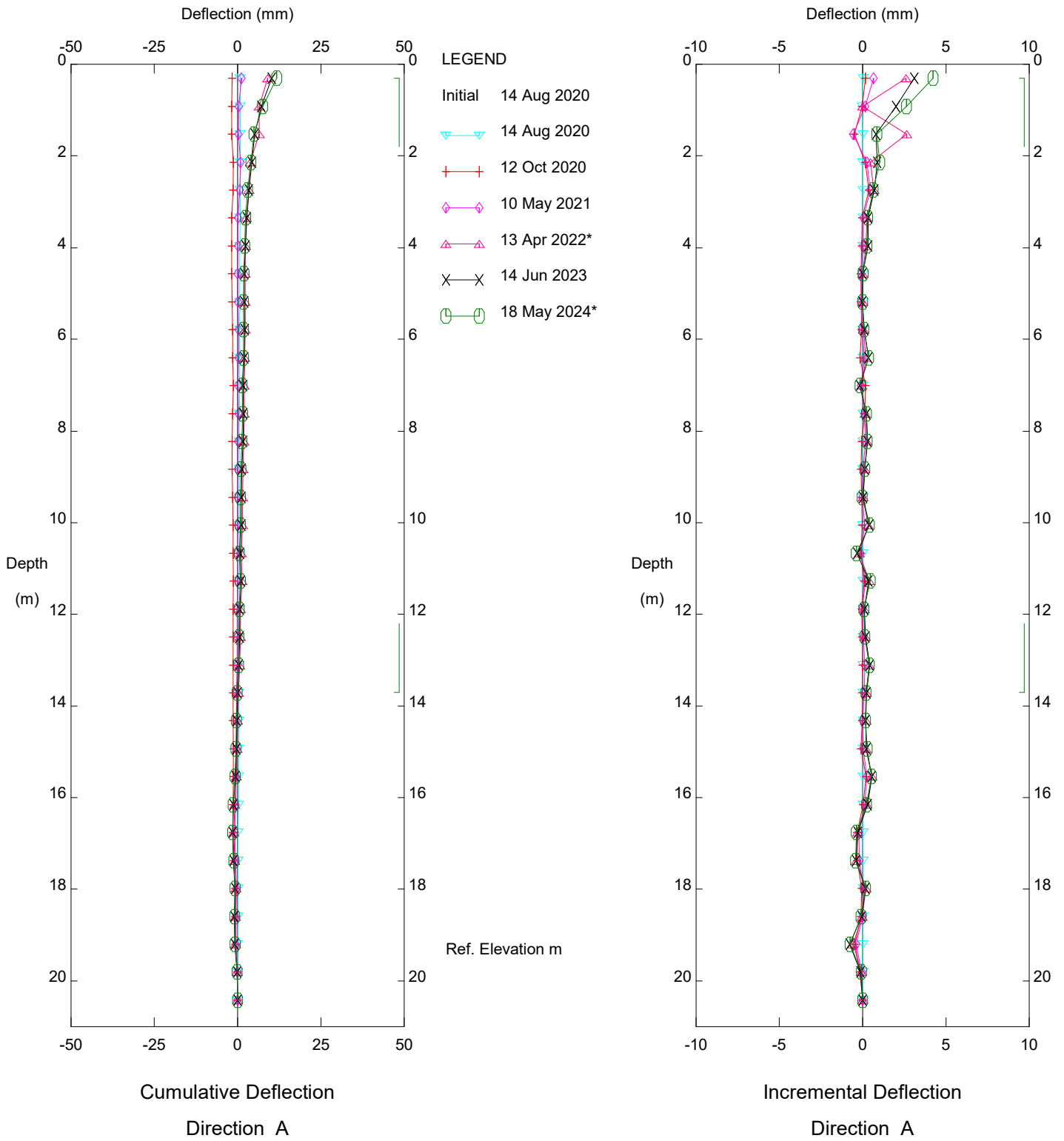
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HWY 684 Shaftesbury trail, Inclinator SI20-6

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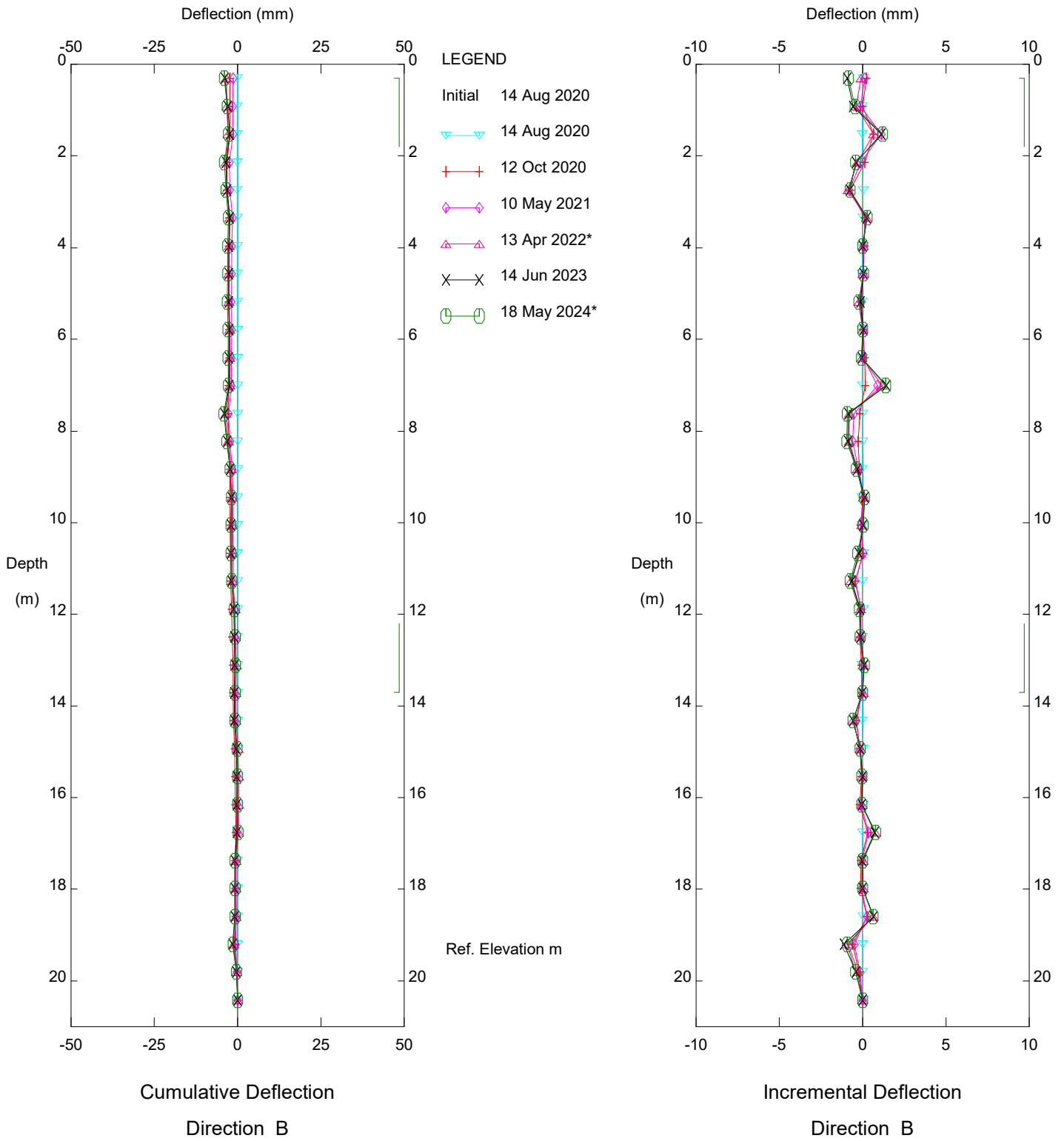
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HWY 684 Shaftesbury trail, Inclinator SI20-7

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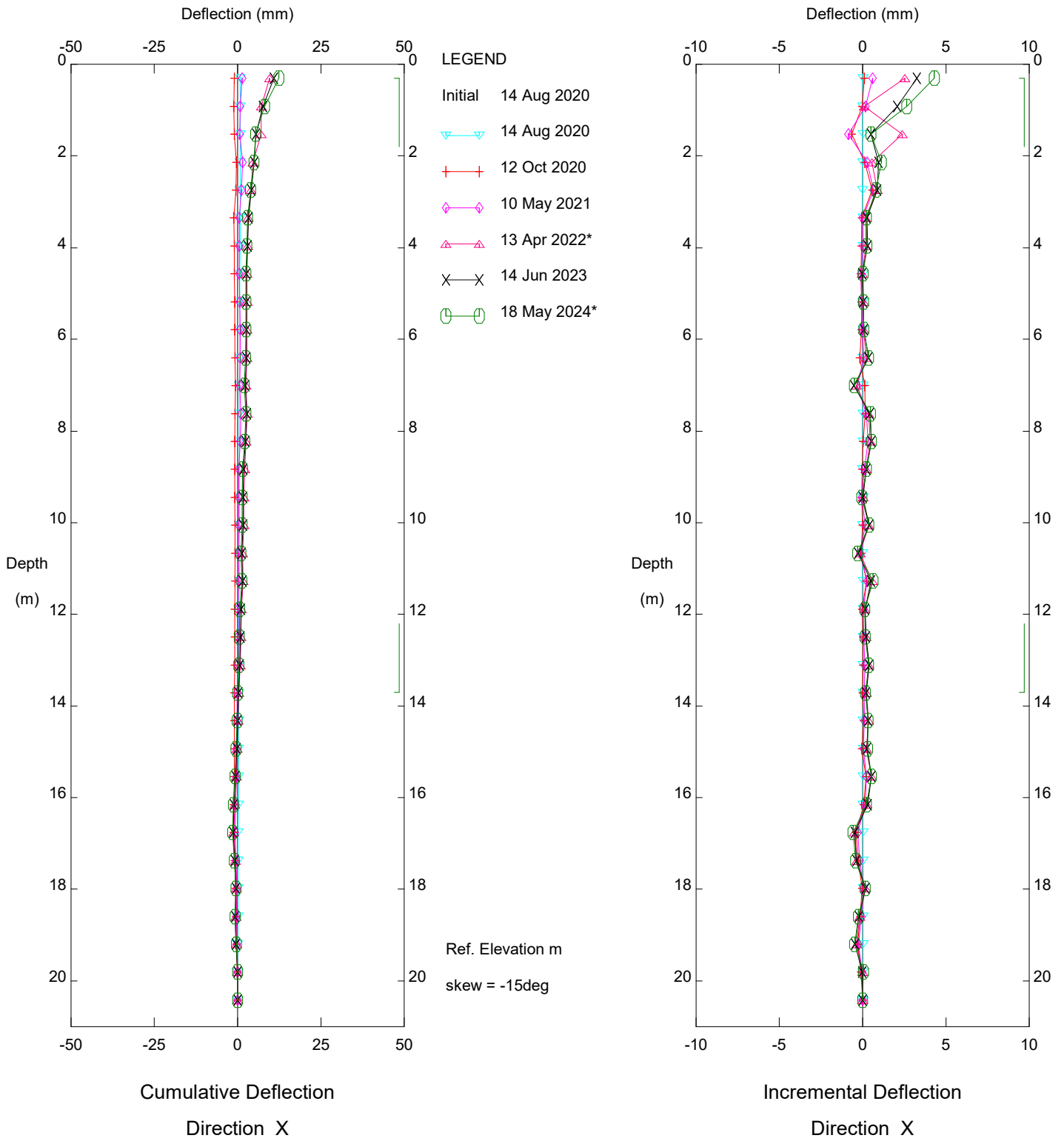
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HWY 684 Shaftesbury trail, Inclinator SI20-7

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

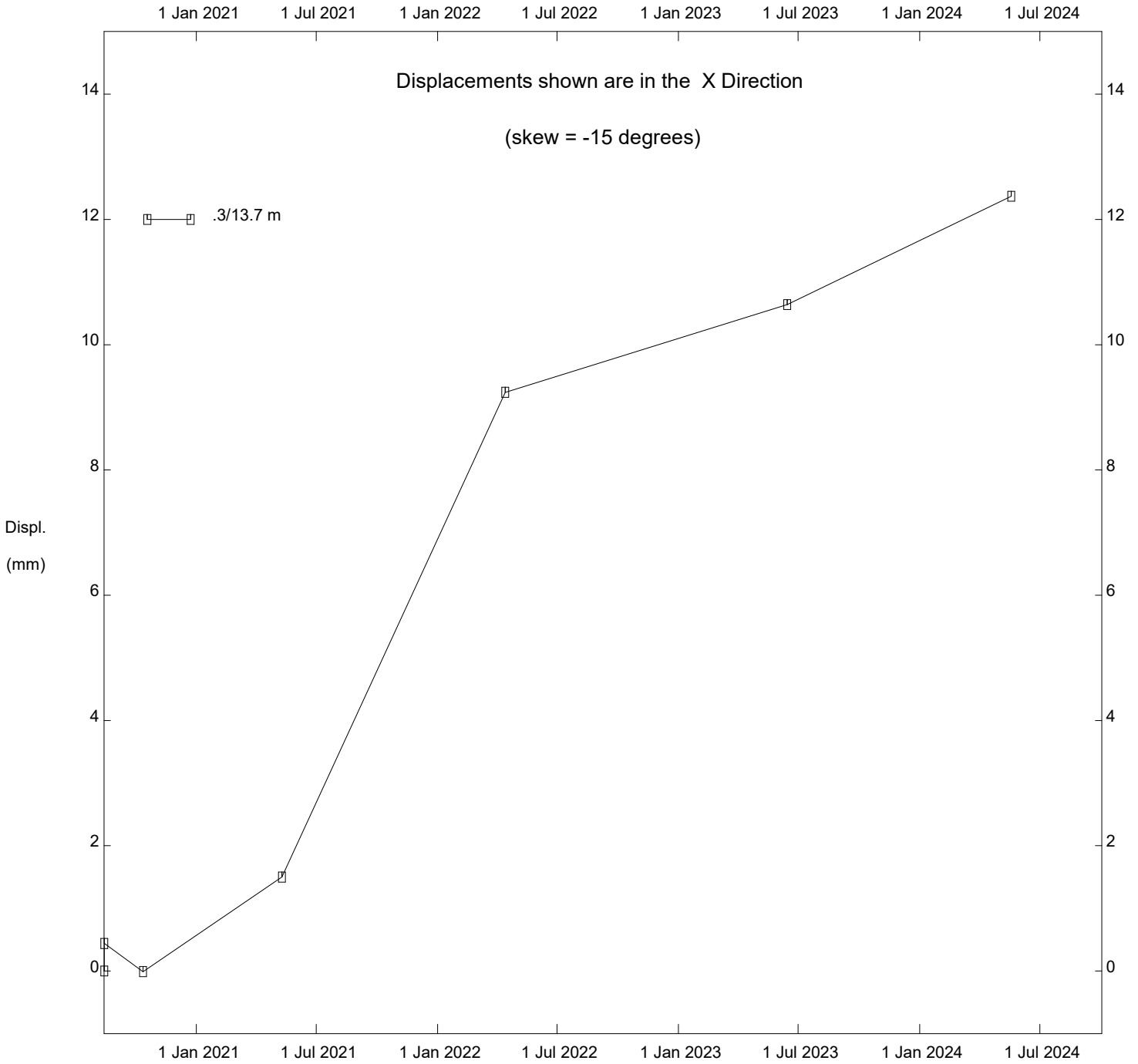
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HWY 684 Shaftesbury trail, Inclinator SI20-7

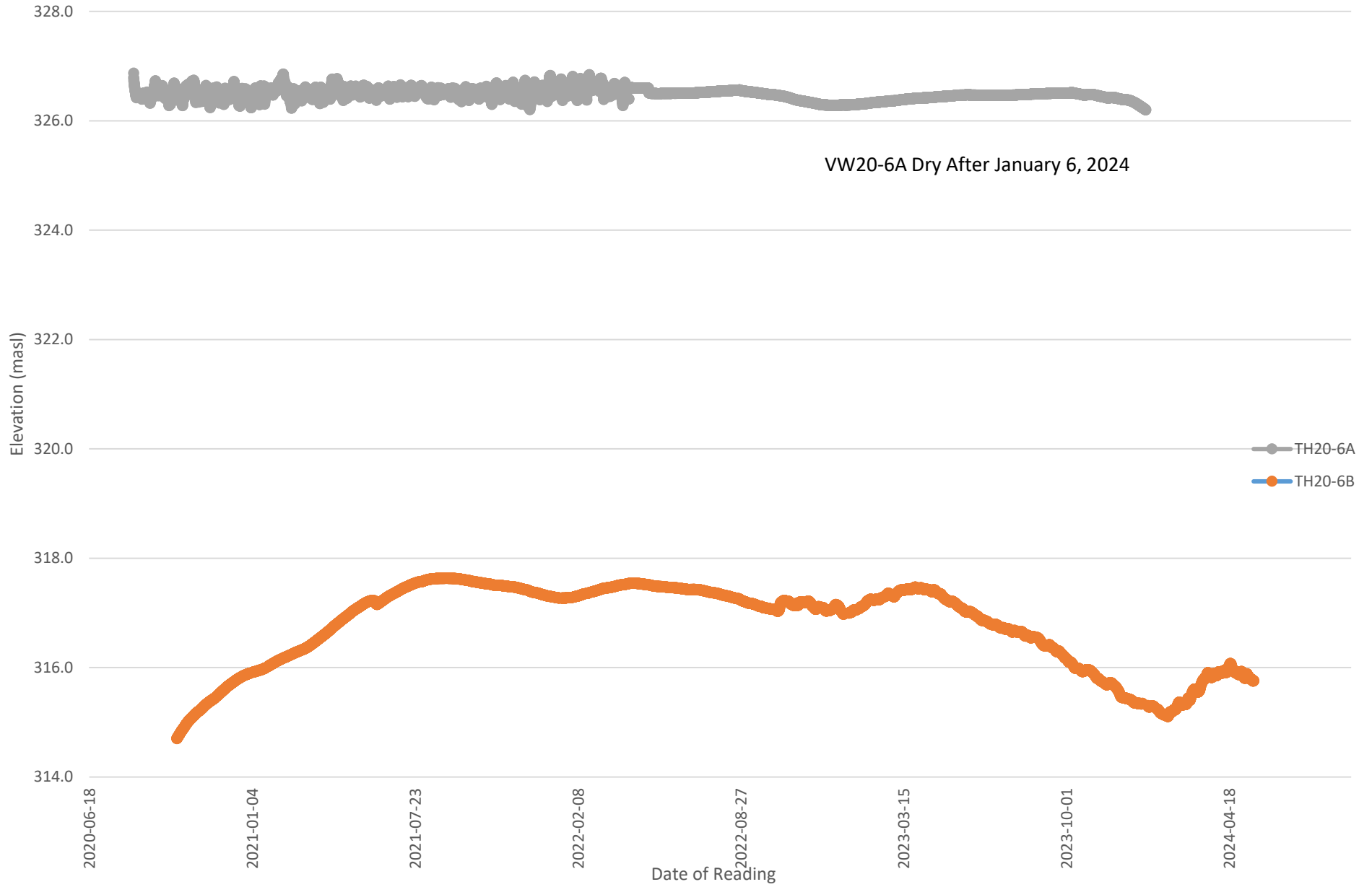
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Thurber Engineering Ltd.



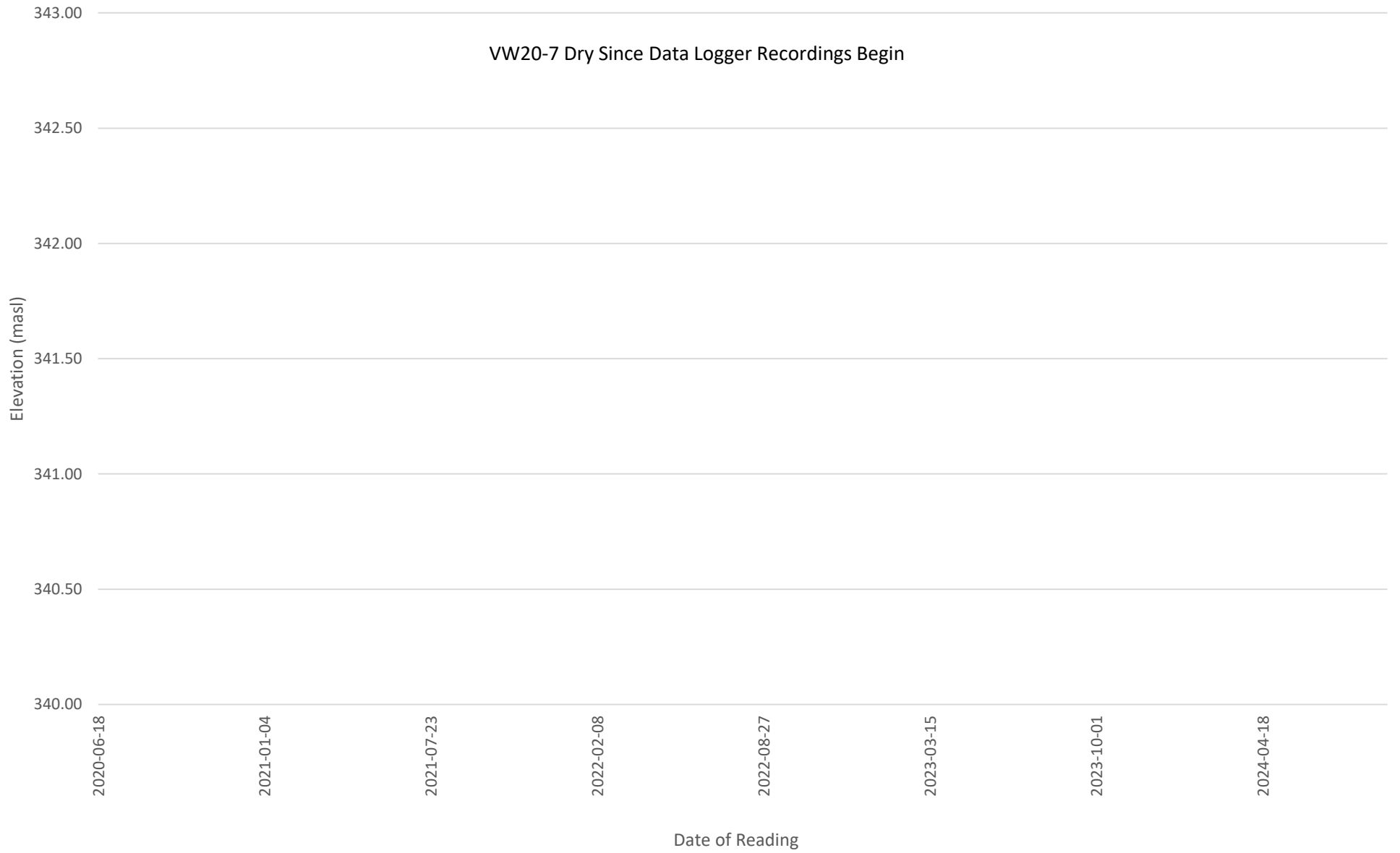
HWY 684 Shaftesbury trail, Inclinator SI20-7

PH081-1-VW20-6A and VW20-6B



PH081-2-VW20-7A

VW20-7 Dry Since Data Logger Recordings Begin



PH081-3-VW20-8

