
To:	Amy Driessen	From:	Leslie Cho and Xiteng Liu
	Transportation and Economic Corridors		Stantec Consulting Ltd.
File:	123315222	Date:	October 18, 2024

Reference: North Central Region, Edson/Stony Plain, Site NC081 – Highway 16A:08 Evansburg Slide, Fall 2024 Instrumentation Monitoring Report

1.0 OBSERVATIONS

1.1 FIELD PROGRAM AND INSTRUMENTATION STATUS

The Fall 2024 reading cycle consisted of instrument readings of three slope inclinometers (BH20-02, BH21-01 and BH21-02) and four standpipe piezometers (BH20-01A, BH20-01B, BH20-02A, and BH20-02B). Figure 1 attached provides a schematic of the site. The instruments were read by Benjamin Lou, EIT and Olawale Odusi, Geotechnical Technologist on September 23, 2024.

The slope inclinometers (SI) were measured using an RST MEMS digital inclinometer probe with 0.5 m increments and RST handheld PC. The standpipe piezometers (SP) were measured using a Heron Instruments water tape.

GPS coordinates of all instruments were obtained using a Garmin eTrex 22x handheld unit.

2.0 INSTRUMENTATION READINGS

2.1 GENERAL

The SI plots are provided in the attachments and summarized in the following sections. Displacement-time plots in the resultant x-direction (i.e., slope movement direction) along with movement rates, total cumulative movement, maximum movement rates, and incremental movements are provided in Table NC081-1 and the attachments.

Standpipe piezometer results are summarized in Table NC081-2 and in the following sections with resulting plots attached.

2.2 ZONES OF MOVEMENT

No discernable zone of movement was observed in SIs BH21-01 and BH21-02 which were installed in piles P27 and P57, respectively. However, small movements were observed at the pile tops. These movements may reflect deflection and loading of the pile wall.

2.3 MONITORING RESULTS

2.3.1 Slope Inclinometers

BH20-02 has a discrete movement zone from 2.2 m to 4.2 m. The current rate of movement is less than 1 mm/yr during the Fall 2024 reading cycle. The current cumulative movement is 72 mm.

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BH21-01 may have a new movement zone over approximately 7.2 m to 9.7 m. Further readings are recommended to confirm. BH21-02 has no discernable movement zones.

2.3.2 Piezometers

Compared with water levels from the previous reading cycle, all piezometers show a decrease in water level ranging from less than 0.1 m to 0.4 m. The water levels at the site ranged from 2.3 m to 4.6 m below ground surface (bgs), with elevations ranging from 749.3 m to 751.7 m. For reference, the creek elevation is at approximately 750 m.

3.0 RECOMMENDATIONS

It is recommended that the next reading cycle take place in Spring 2025.

3.1 INSTRUMENTATION REPAIRS

No instruments require repair at this time.

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Table NC081-1: Fall 2024 Slope Inclinometer Summary

Instrument Name	Date Initialized	Coordinates ⁽¹⁾ (UTM 11U, NAD1983) (m)		Total Cumulative Resultant Movement and Depth of Movement to Date (mm)	Maximum Rate of Movement (mm/yr)	Current Status	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)
		Northing	Easting							
BH20-01	Sept. 23, 2020	5941007	630594	19 mm over 1.2 m to 3.8 m depth in 15° direction	39 mm/yr; September 2021	Non-Operational	Sept. 7, 2021	Found blocked at 3.0 m in October 2021		
BH20-02	Sept. 23, 2020	5940983	630615	72 mm over 2.2 m to 4.2 m depth in 346° direction	68 mm/yr; September 2022	Operational	May 16, 2024	< 1	< 1	0
BH21-01 (P27)	Oct. 21, 2021	5941012	630594	No discernable movement zone.		Operational	May 16, 2024	No discernable movement zone.		
BH21-02 (P57)	Oct. 21, 2021	5941014	630616	No discernable movement zone.		Operational	Sep 19, 2023	No discernable movement zone.		

(1) Operational instruments updated on September 23, 2024, with approximate accuracy of ± 3 m

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Table NC081-2: Fall 2024 Standpipe Piezometer Readings Summary

Instrument Name	Date Initialized	Coordinates ⁽¹⁾ (UTM 11U, NAD1983) (m)		Bottom Depth (mbgs), (Elevation)	Current Status	Maximum Water Level (m bgs)	Measured Water Level (Fall 2024) (m bgs), (Elevation)	Previous Water Level (Spring 2024) (Elevation), (m bgs)	Change in Water Level (m)
		Northing	Easting						
BH20-01A	Sept. 23, 2020	5941006	630595	5.0 (750.7 m)	Operational	2.8 (October 2021)	4.0 (751.7 m)	4.0 (751.8 m)	<-0.1
BH20-01B	Sept. 23, 2020	5941006	630595	10.0 (745.7 m)	Operational	3.9 (October 2020)	4.6 (751.2 m)	4.3 (751.5 m)	-0.3
BH20-02A	Sept. 23, 2020	5940984	630614	6.9 (745.7 m)	Operational	2.7 (May 2022)	3.3 (749.3 m)	3.1 (749.5 m)	-0.2
BH20-02B	Sept. 23, 2020	5940984	630614	4.9 (747.7 m)	Operational	1.7 (May 2022)	2.3 (750.3 m)	2.1 (750.5 m)	-0.2

(1) Updated on September 23, 2024, with approximate accuracy of ± 3 m

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4.0 CLOSING

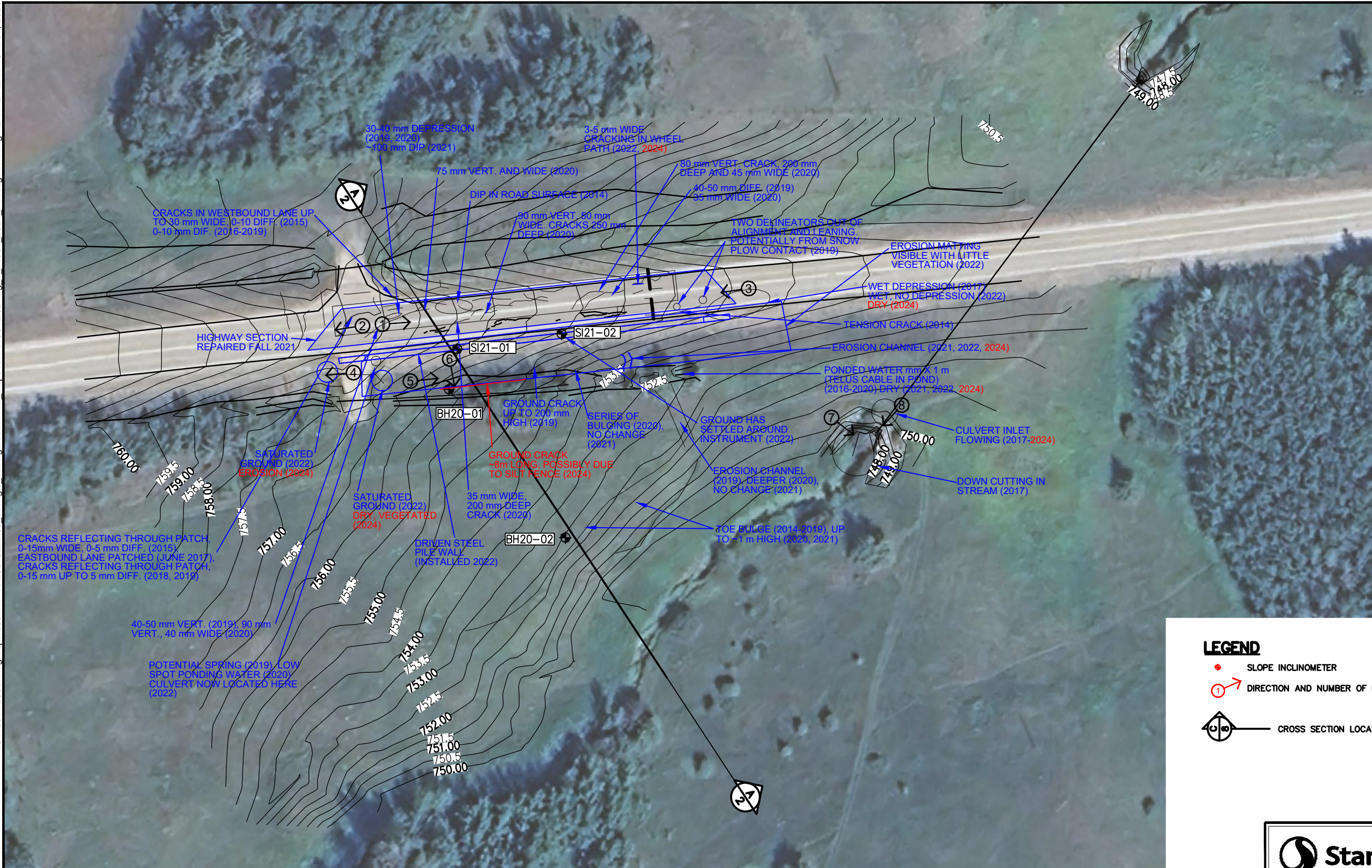
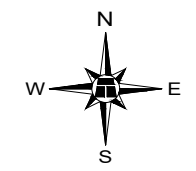
We trust this instrumentation report meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

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Attachment: Figure 1 – Site Plan
BH20-02 Slope Inclinator Plots
BH21-01 Slope Inclinator Plots
BH21-02 Slope Inclinator Plots
Standpipe Piezometer Level Depth vs Time Plot
Standpipe Piezometer Level Elevation vs Time Plot



LEGEND

- SLOPE INCLINOMETER
- DIRECTION AND NUMBER OF PHOTO
- CROSS SECTION LOCATION

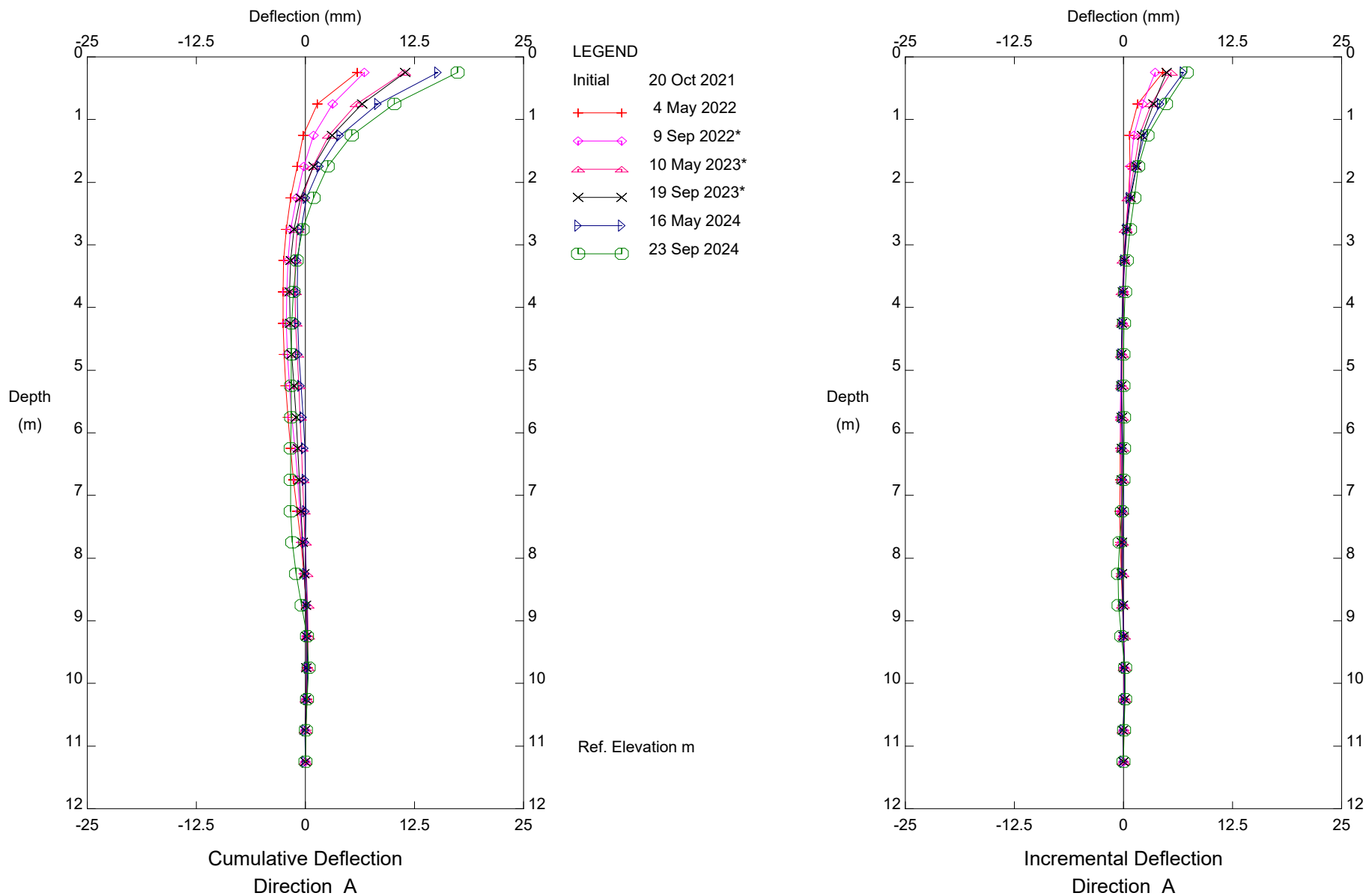
- NOTES :**
1. FEATURE LOCATIONS ARE APPROXIMATE.
 2. PREVIOUS OBSERVATIONS SHOWN IN BLUE
 3. 2024 OBSERVATIONS SHOWN IN RED

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TRANSPORTATION AND ECONOMIC CORRIDORS
 GEOHAZARD MONITORING PROGRAM
 NC81 HWY 16A:08, KM 8.23 EVANSBURG SLIDE
 SITE PLAN

DRAWN	SP	CHECK	XL	APPROVE	LC
DATE	30 SEP 2024	SCALE	AS SHOWN	PROJECT #	123315222

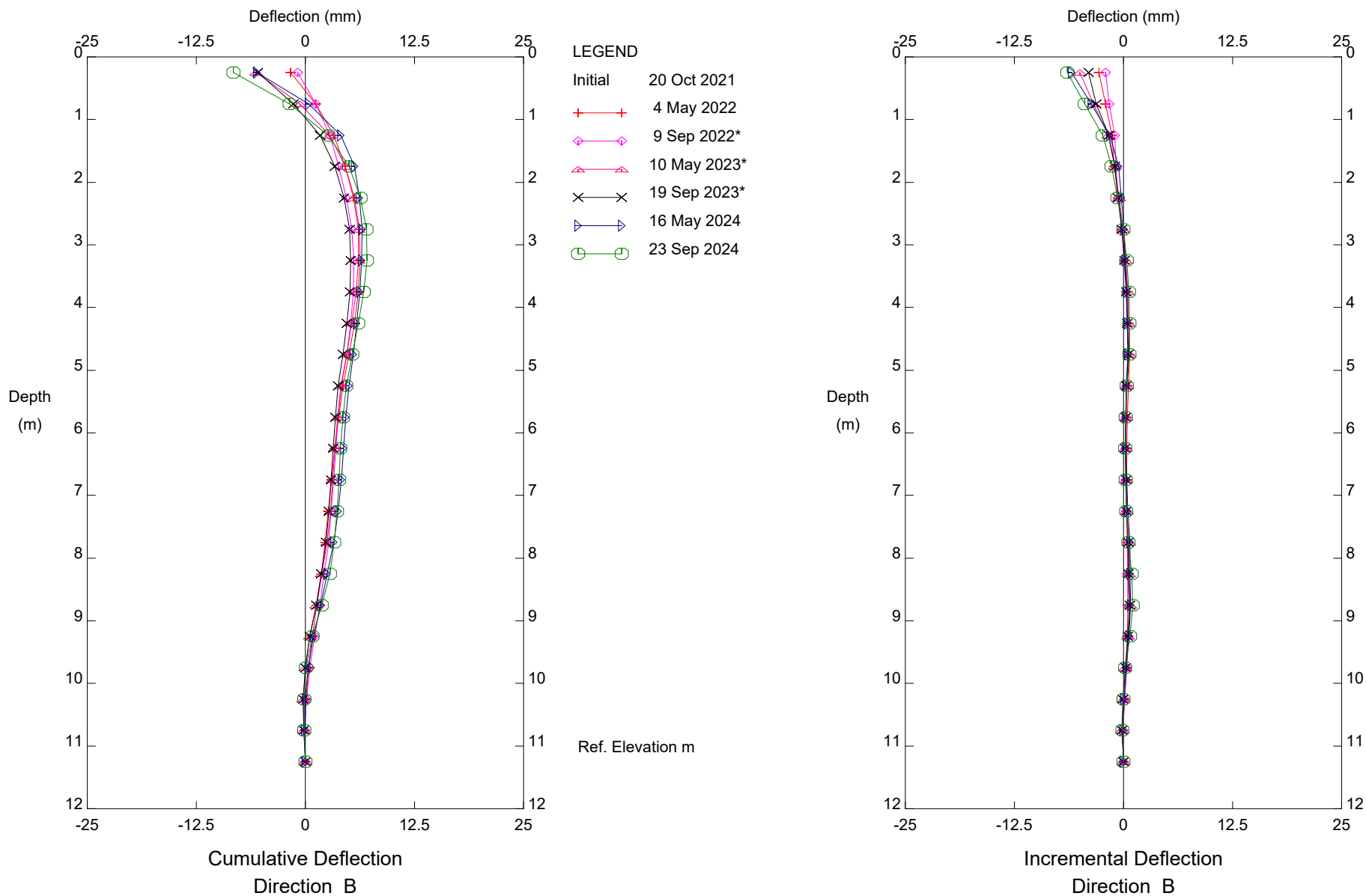
FIGURE - 1



NC81 - 16A Evansburg, Inclinometer SI 21-01,P27

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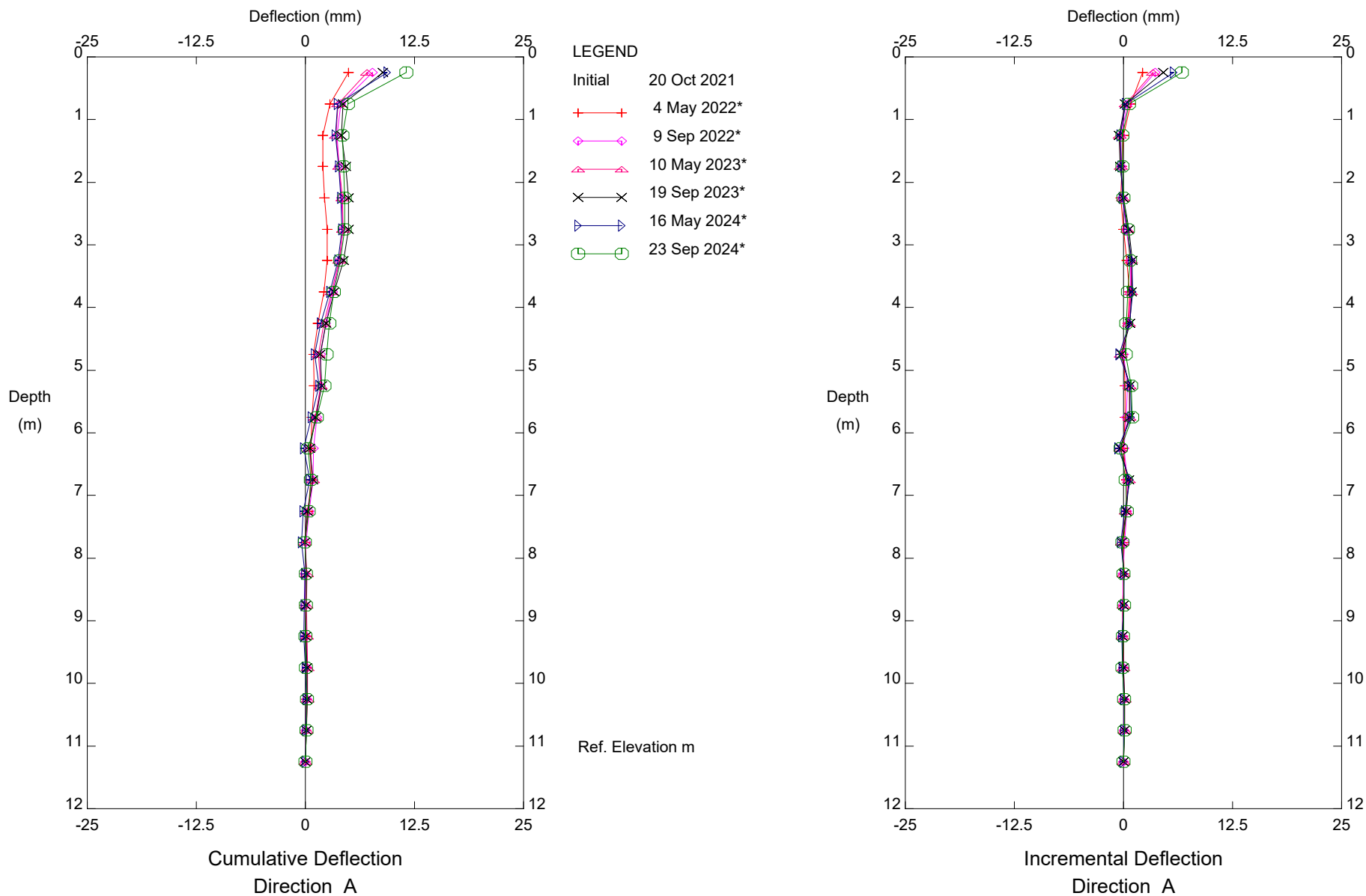
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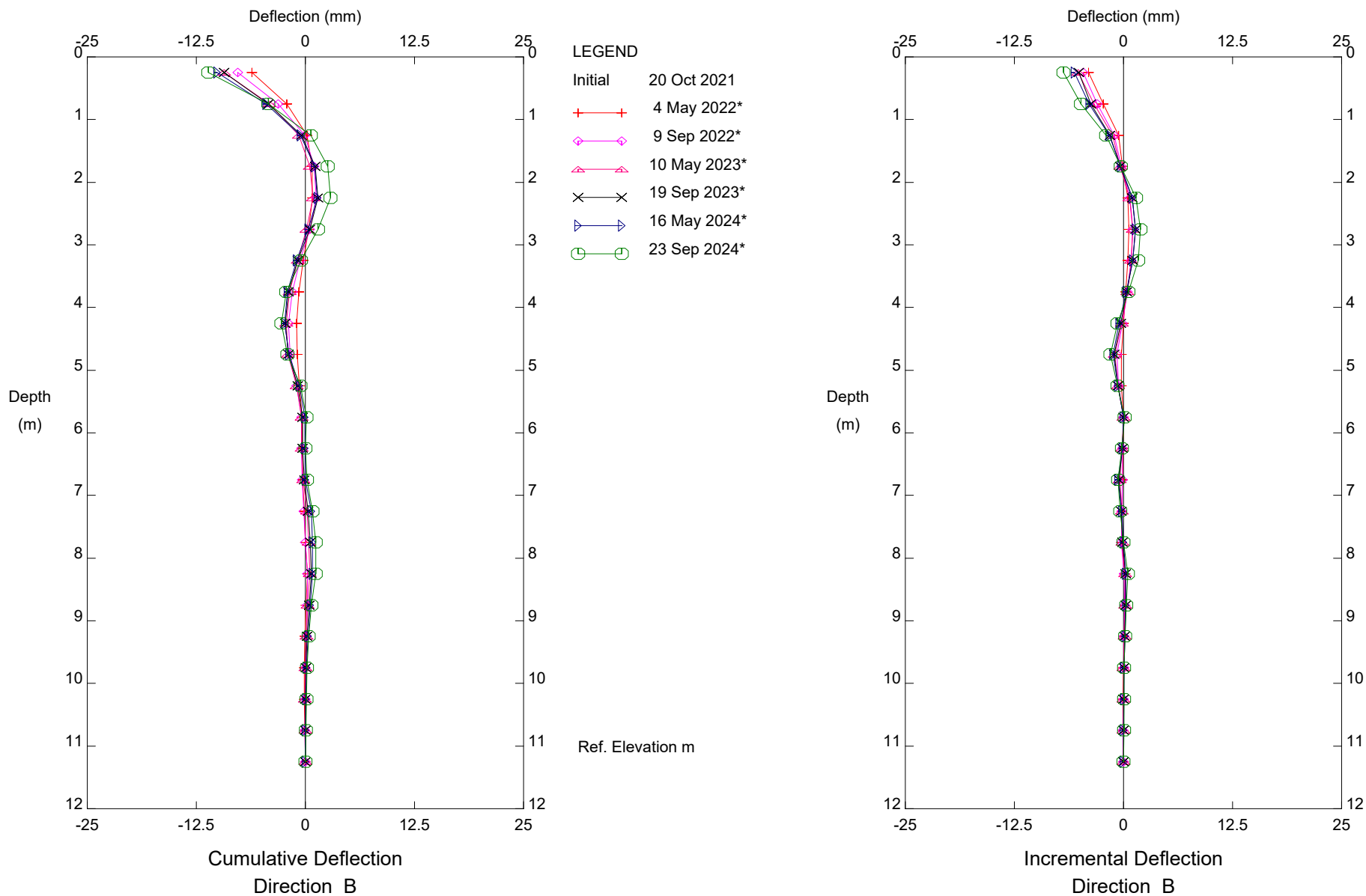
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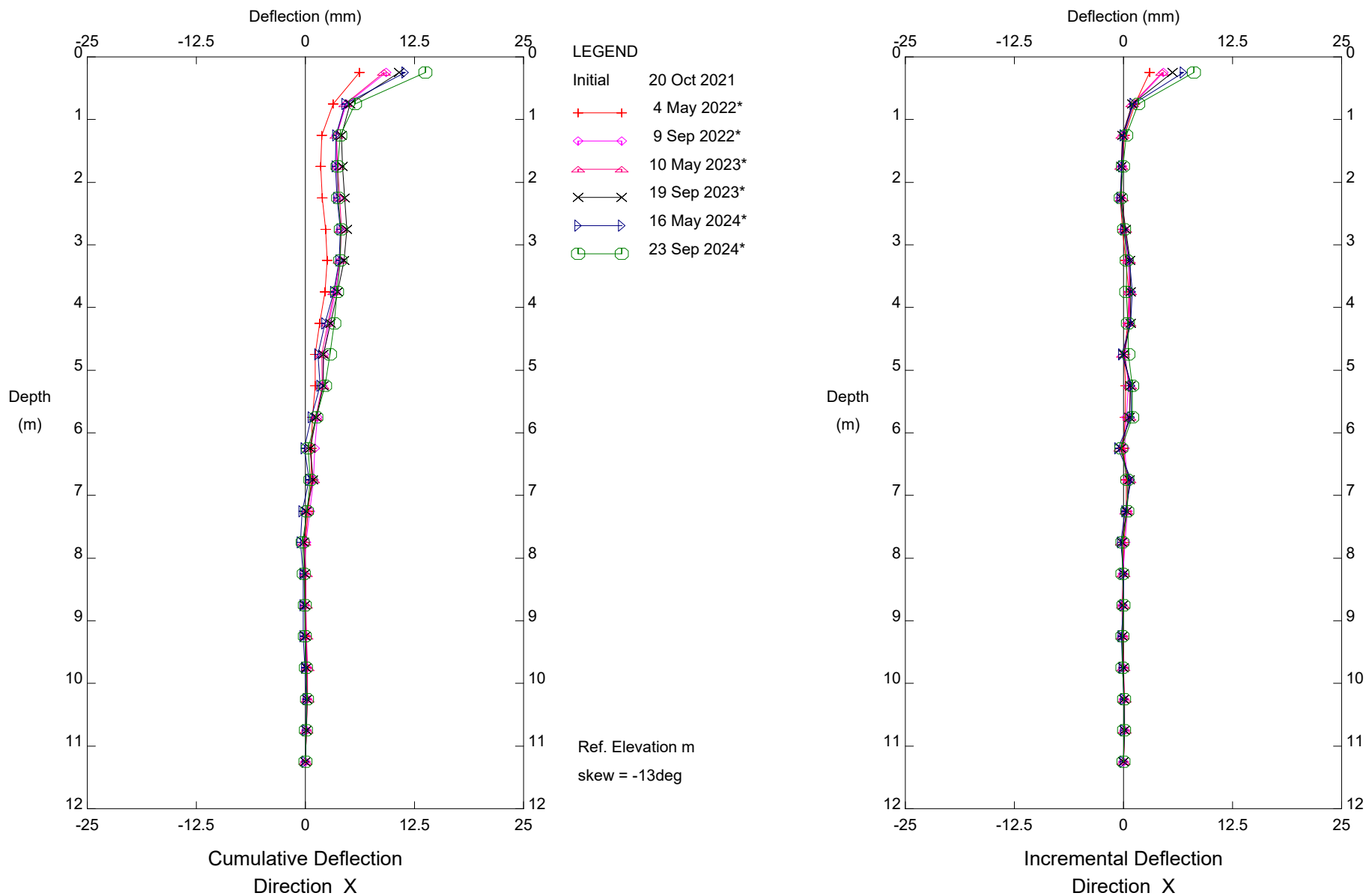


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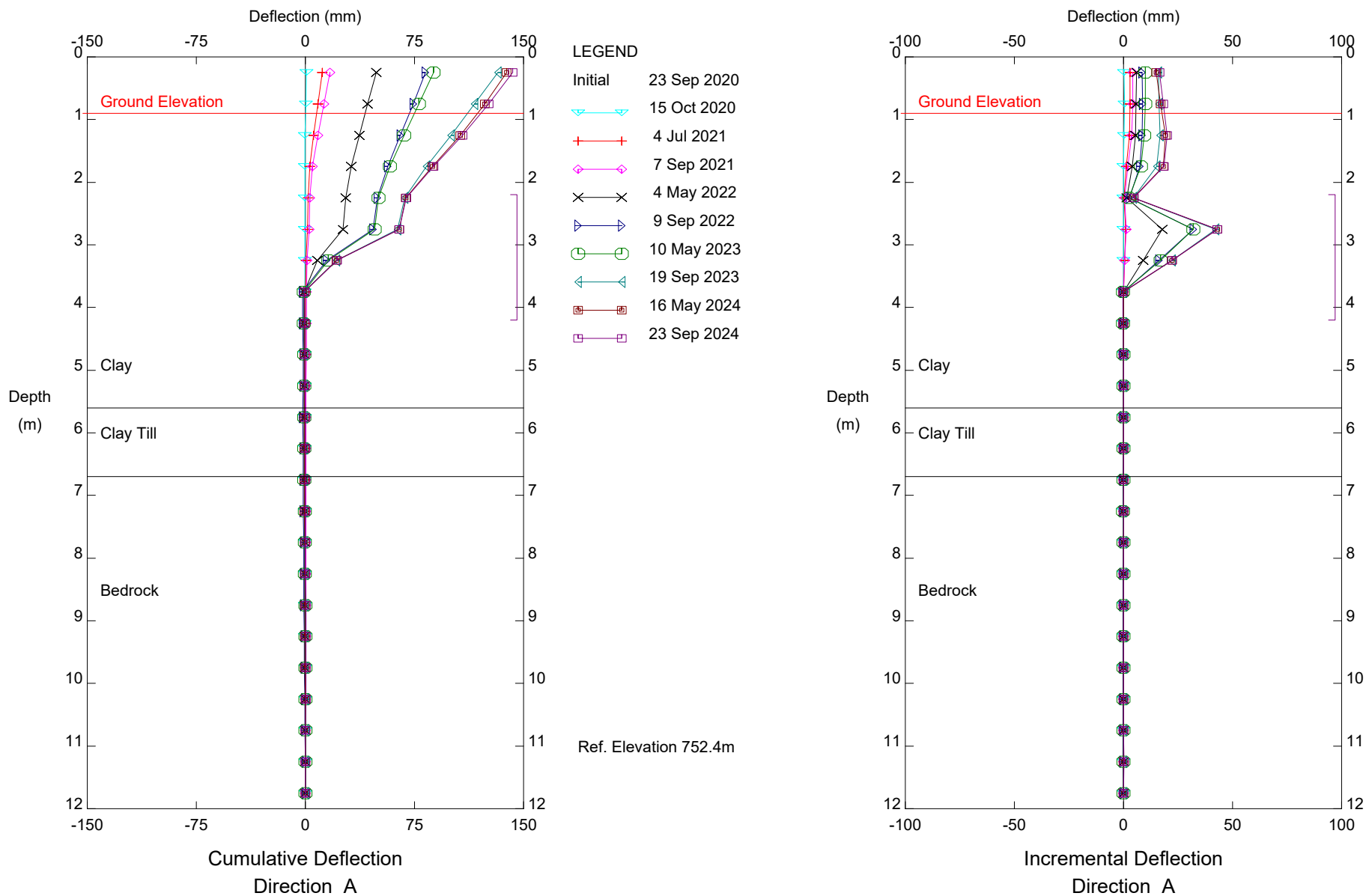
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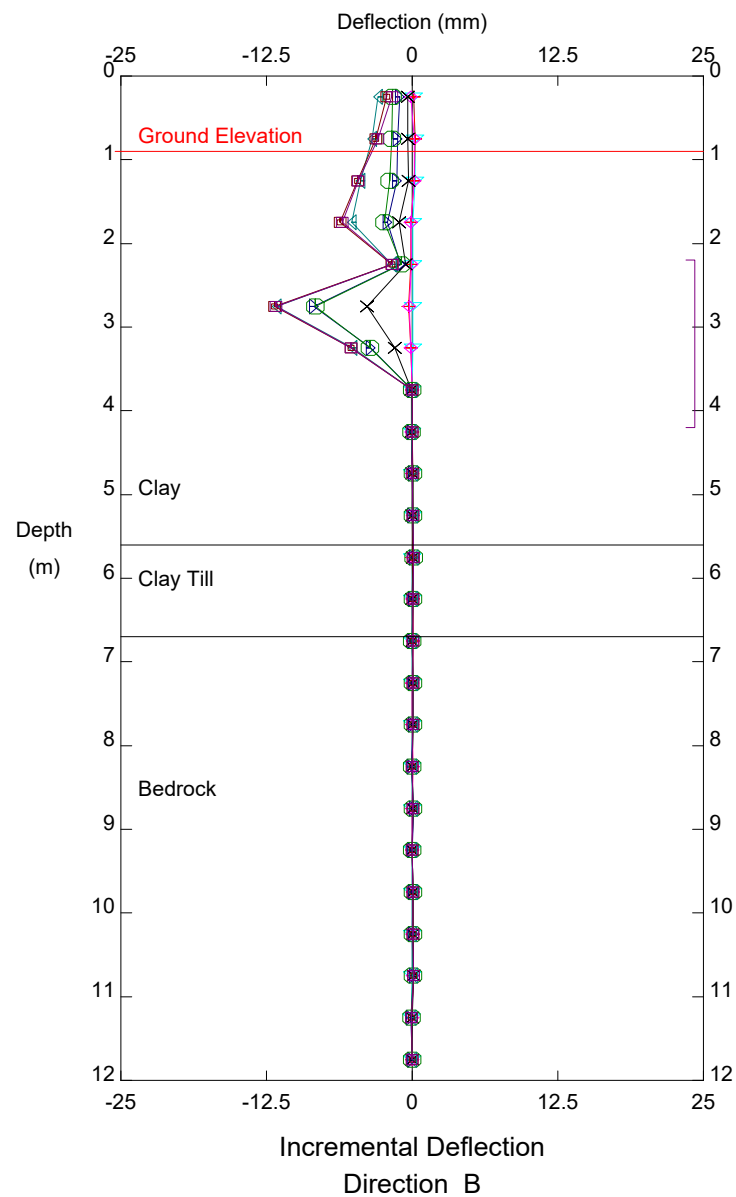
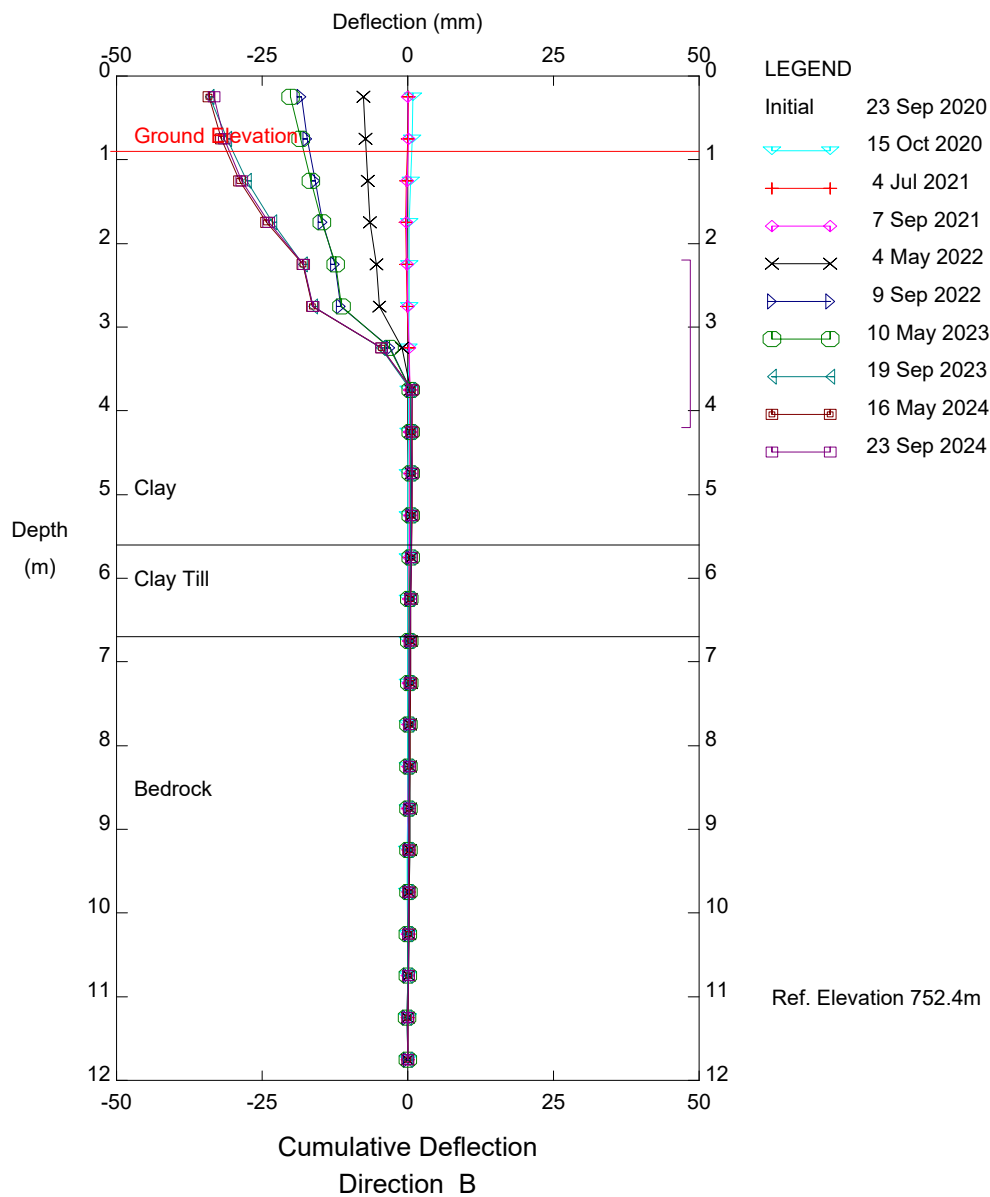
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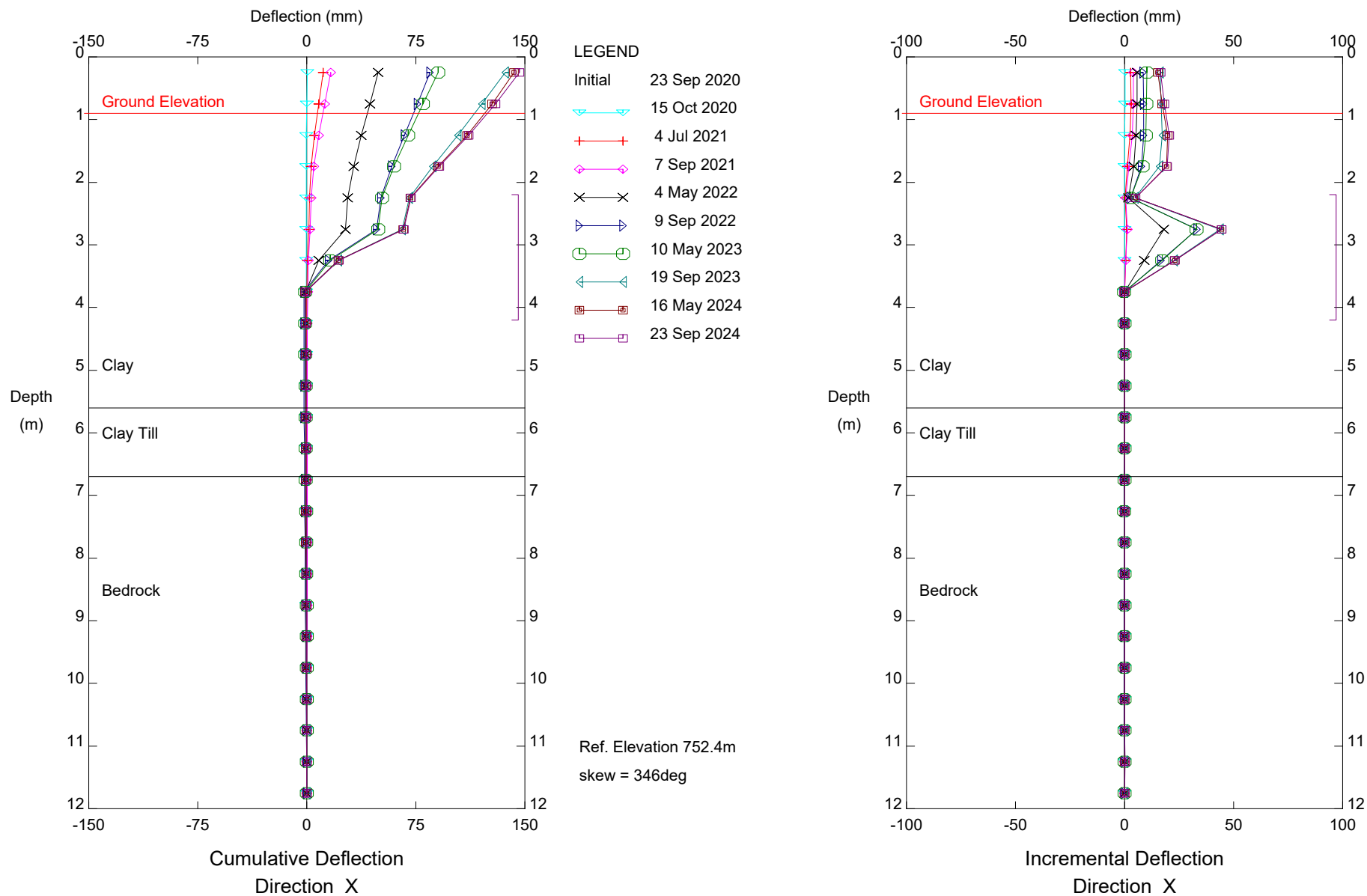
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NC81 - 16A Evansburg, Inclinometer BH20-02
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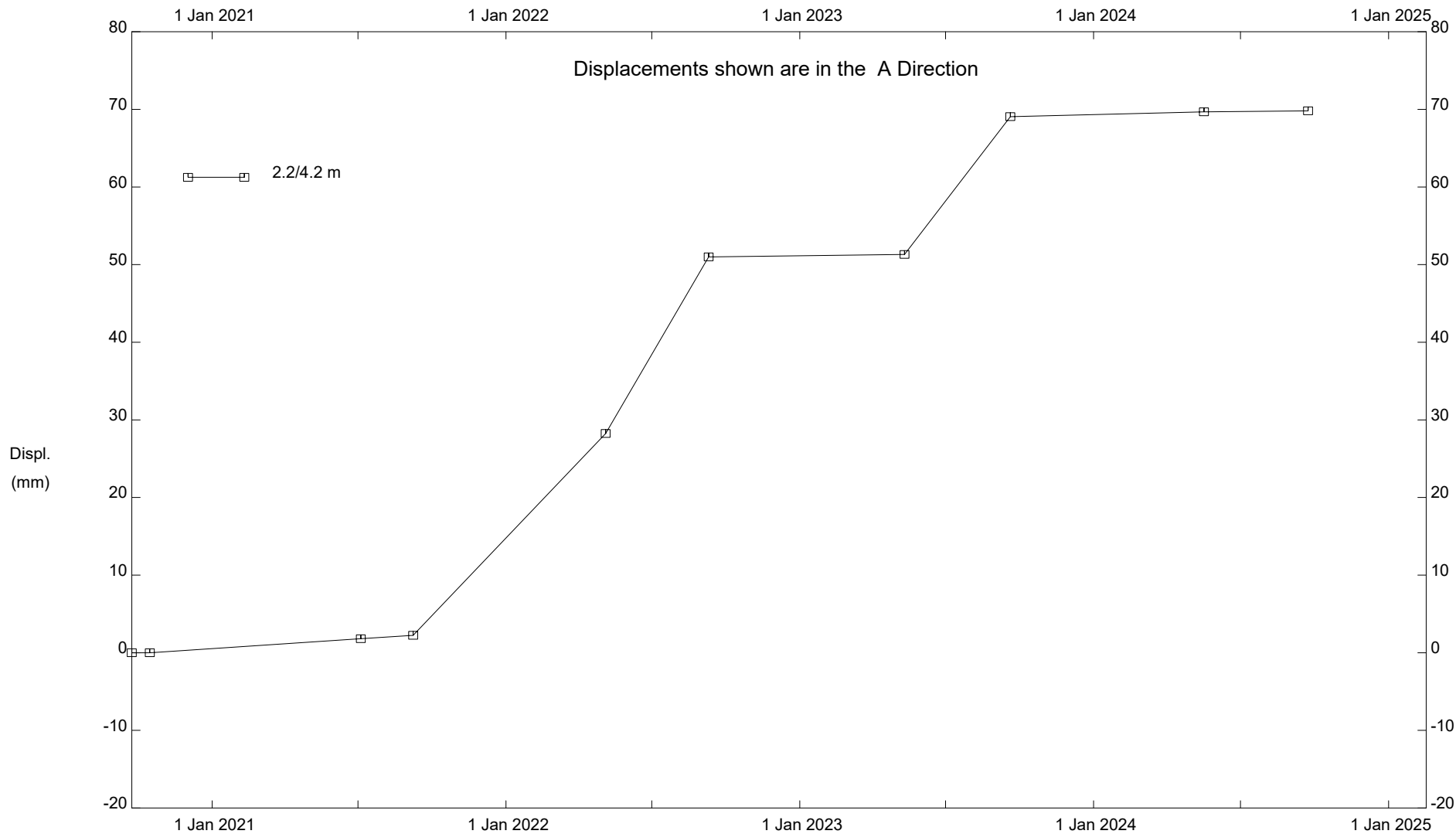


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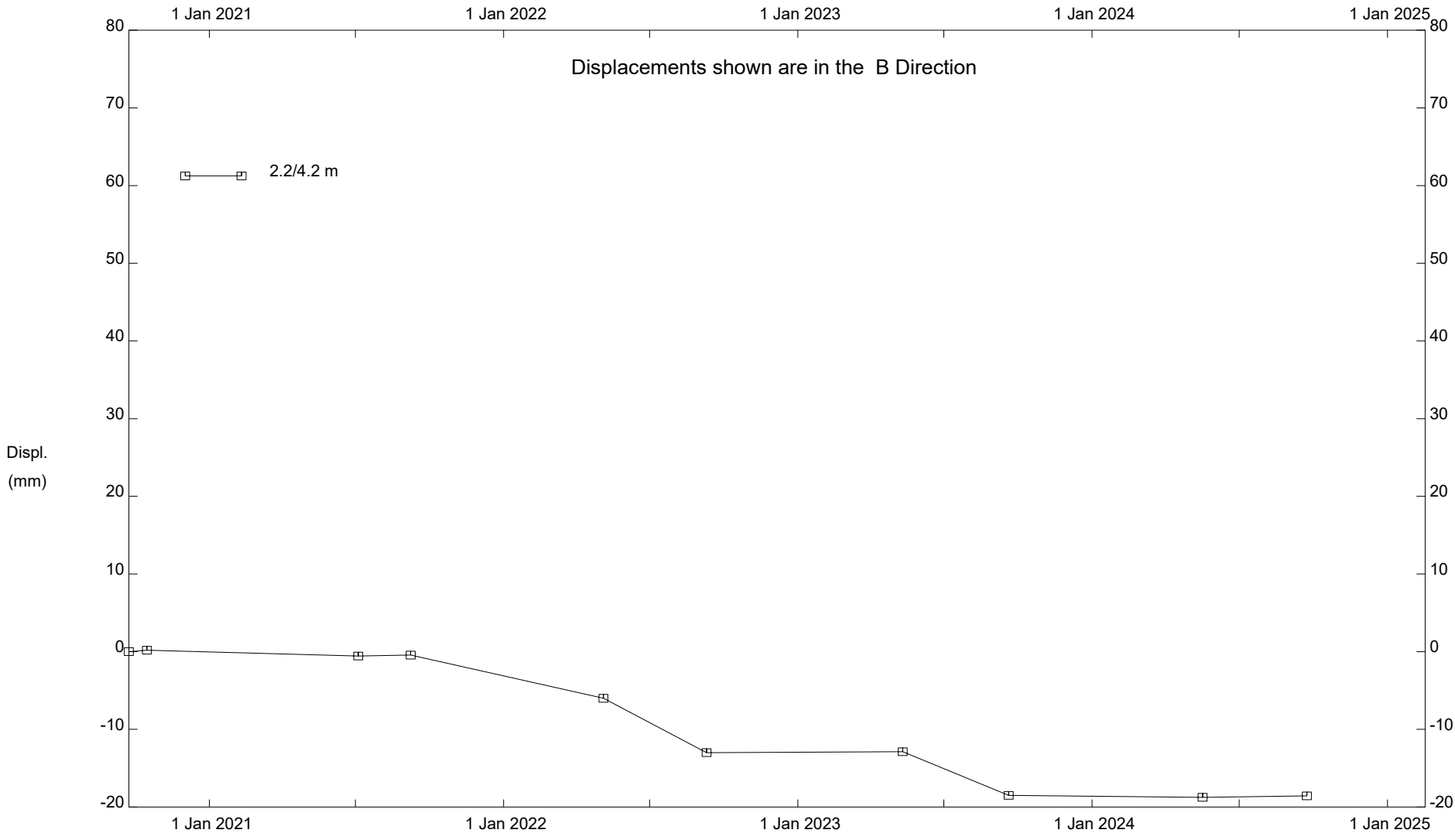
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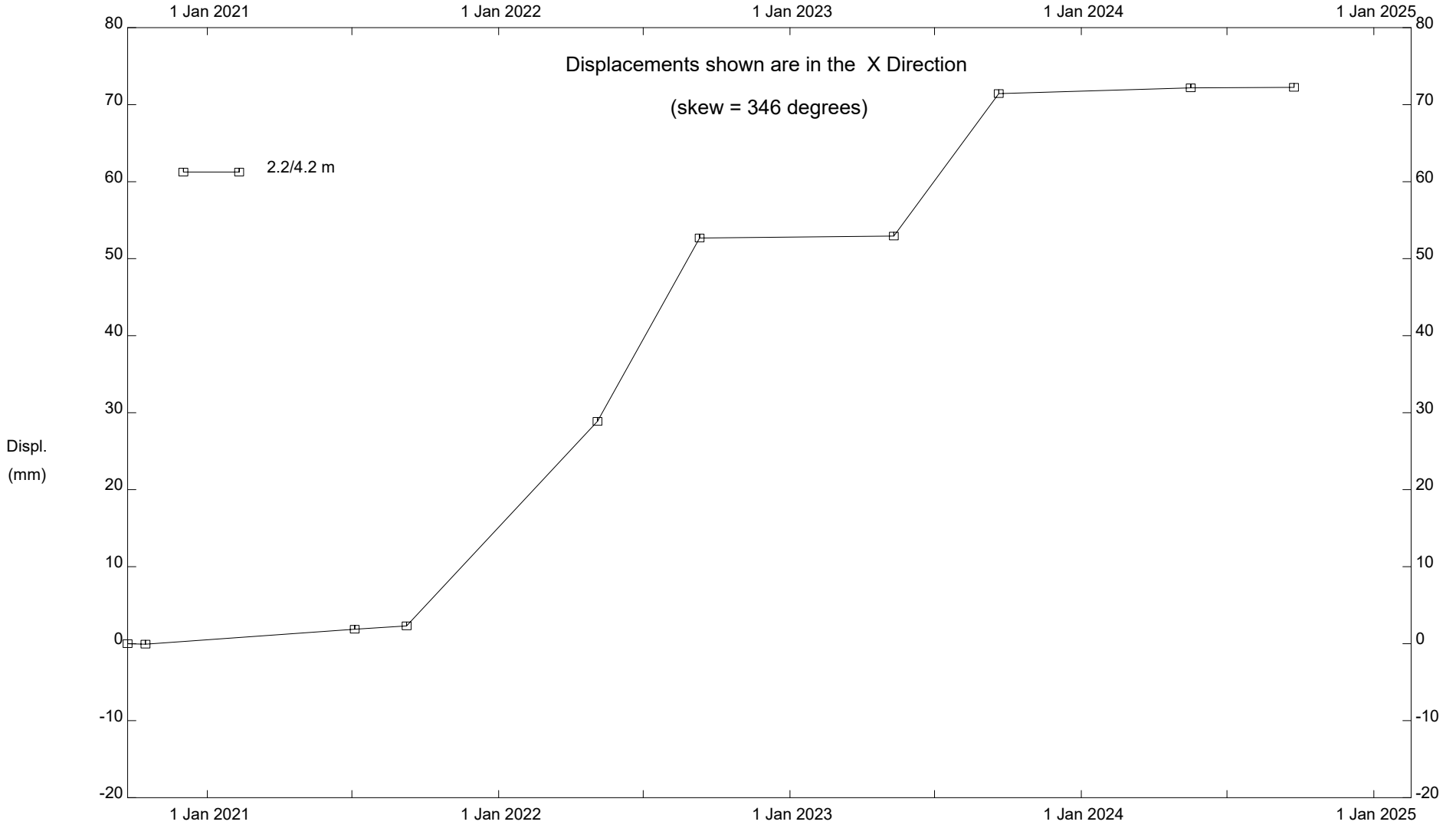
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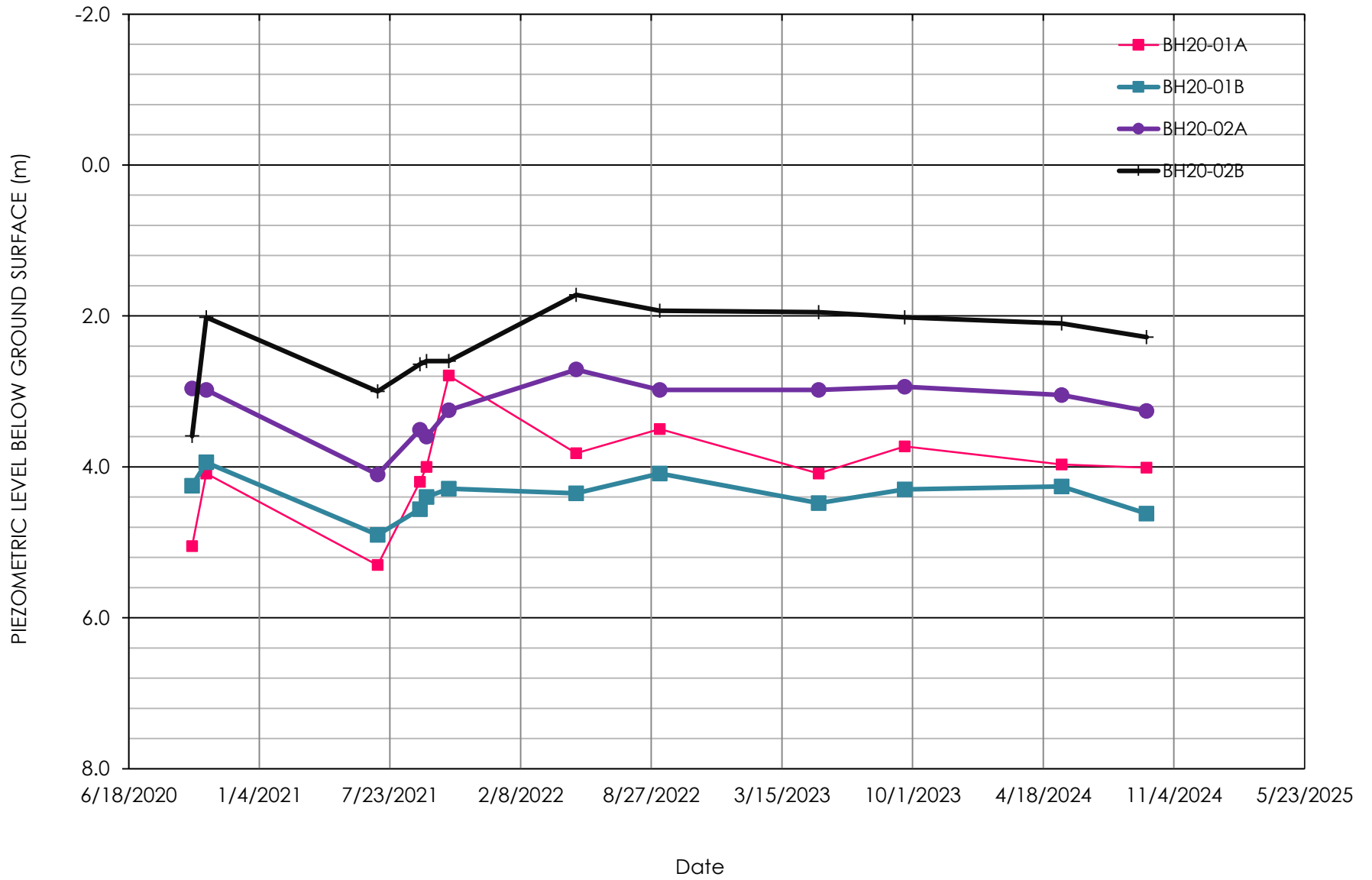
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PIEZOMETER DATA



PIEZOMETER DATA

