
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 NC011 – Highway 40:30 5.5 km North of Highway 16 (Near Hinton), 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 two slope inclinometers (SI2 and SI22-01). **Figure 1** attached provides a schematic of the site. The instrument readings were taken by Benjamin Lou, EIT and Olawale Odusi, Geotechnical Technologist, on September 23, 2024.

SI22-02 was damaged during construction and was not readable.

The slope inclinometers (SI) were measured using an RST MEMS digital inclinometer probe with 0.5 m increments and RST handheld PC.

GPS coordinates of the instruments were confirmed using a Garmin eTrex 22x handheld GPS unit.

2.0 INTERPRETATION

2.1 GENERAL

The SI plots are provided in the attachments and summarized in the following sections. Plots in both directions along with movement rates, total cumulative movement, maximum movement rates, and incremental movements are provided in **Table NC011-1** and the attachments.

2.2 ZONES OF MOVEMENT

No new zones of movement were observed in SI2. However, SI22-01 has shown two potential movement zones at depths of 8 to 10 m and superficially at a depth of 0 to 2 m. While the deeper movement zone is very slight, the shallow movement zone is larger and is likely due to disturbance by ongoing construction. Directions of movement are referenced to the azimuth of the “A+” groove in each SI casing in **Table NC011-1**.

2.3 INSTRUMENTATION READINGS

2.3.1 Slope Inclinometers

SI22-01 was cut 2 m shorter due to construction for backslope flattening in April 2024. No discernible movement was observed in SI22-01. Some movement was observed in the upper 2 m of the casing and is likely due to frost effects and is likely not related to slope movement. SI22-01 may be experiencing some disturbance due to ongoing construction since spring 2024. As such, re-initialization may be required upon completion of construction.

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SI22-02 was damaged during backslope flattening during the current monitoring cycle.

SI2 showed little incremental movement (< 1 mm) since the last reading in May 2024. The current movement rate is less than 1 mm/yr.

3.0 RECOMMENDATIONS

3.1 FUTURE WORK

SI22-01 may require reinitialization upon completion of construction. It is recommended that the next reading cycle take place in Spring 2025.

3.2 INSTRUMENTATION REPAIRS

No instruments require repair at this time.

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Table NC011-1: Fall 2024 Slope Inclinometer Reading 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							
SI1	Oct 3, 1999	-	-	1 m over 11.4 m to 13.2 m depth in 342° direction (Fall 2015)	2.8 between May 2000 and Sept 2000	Non-operational	Oct. 1, 2015	Removed from reading cycle since Spring 2015.		
SI2	Oct 3, 1999	5914152	453047	20 mm over 4.5 m to 9.0 m depth in 17° direction	8.3 in October 2019	Operational	May 14, 2024	<1	<1	<1
SI4	Oct 3, 1999	-	-	No zone of movement observed since 2016		Non-operational	July 03, 2021	No zone of movement observed since 2016. Destroyed during construction in 2021/2022.		
SI22-01	Sept 8, 2022	5914413	453224	N/A		Operational	May 14, 2024	No discernible movement		
SI22-02	May 10, 2023	5914359	453246	N/A		Non-Operational	Sep 20, 2023	Damaged during construction in 2024		
Updated 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.

Stantec Consulting Ltd.

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Attachment: Figure 1 – Site Plan
SI22-01 and SI2 Slope Inclinator Plots

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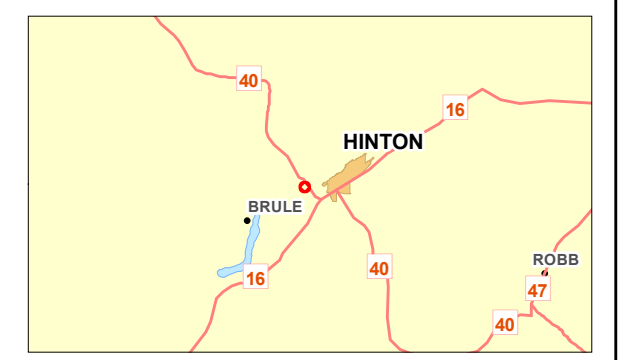


- Approximate Slope Inclinator Location
- 2021 Observation
- Previous Observation / Site Detail
- Ground Elevation Contours (m AMSL, LiDAR Sept. 2014)
- Cross Section Location
- Photo Number and Direction

N

0 15 30 metres
(At original document size of 11x17)
1:1,400

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 11N
 2. Imagery: Valtus, Imagery 2012



Project Location
Hinton, Alberta

Prepared by MK on 2023-06-06
Quality Review by LC on 2023-06-xx
Independent Review by CM on 2023-06-xx

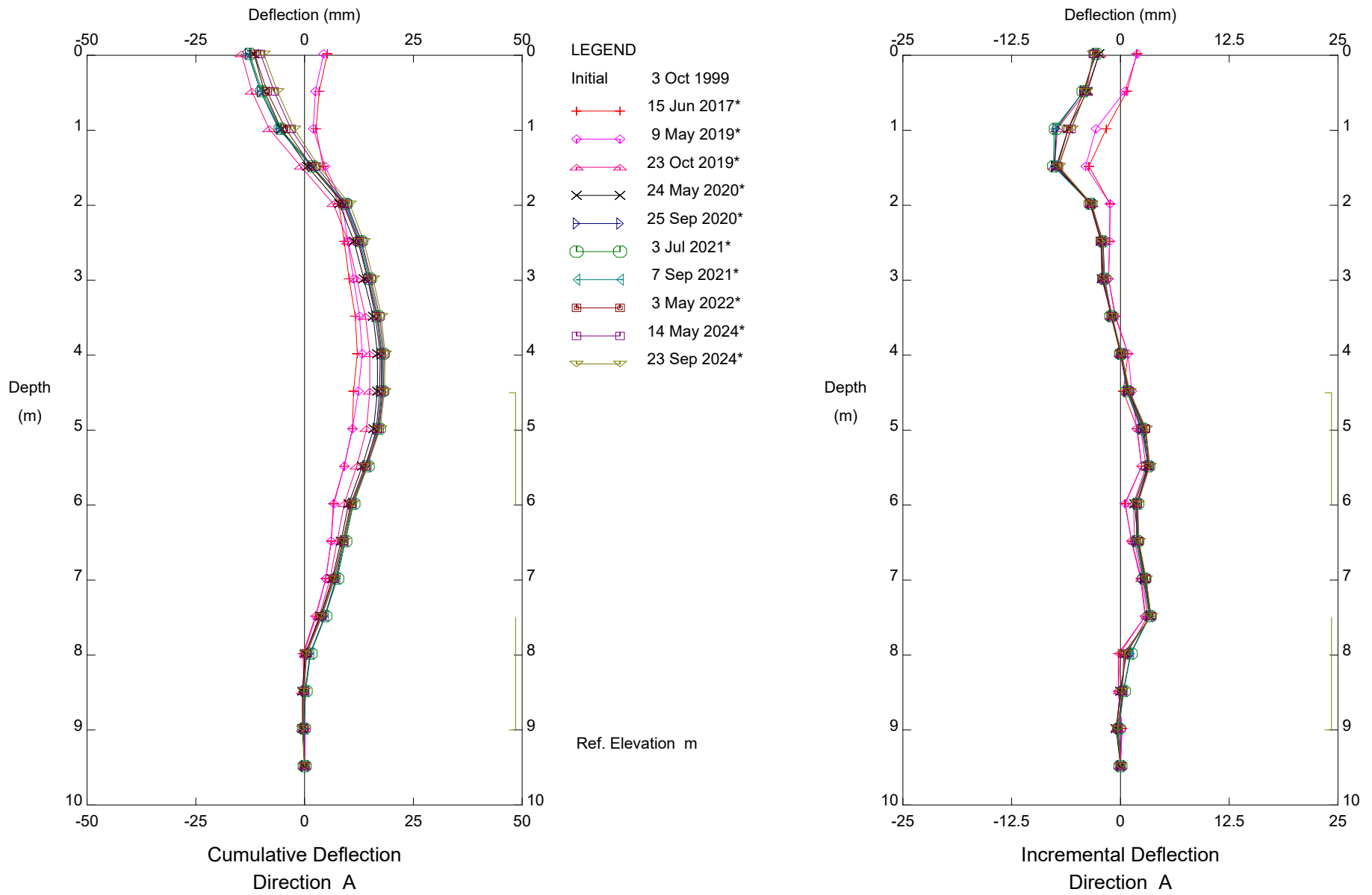
Client/Project
Alberta Transportation
Geohazard Monitoring Program
NC11 5.5 km North of Hwy 16 (Near Hinton)

12331 5222

Figure No.
1

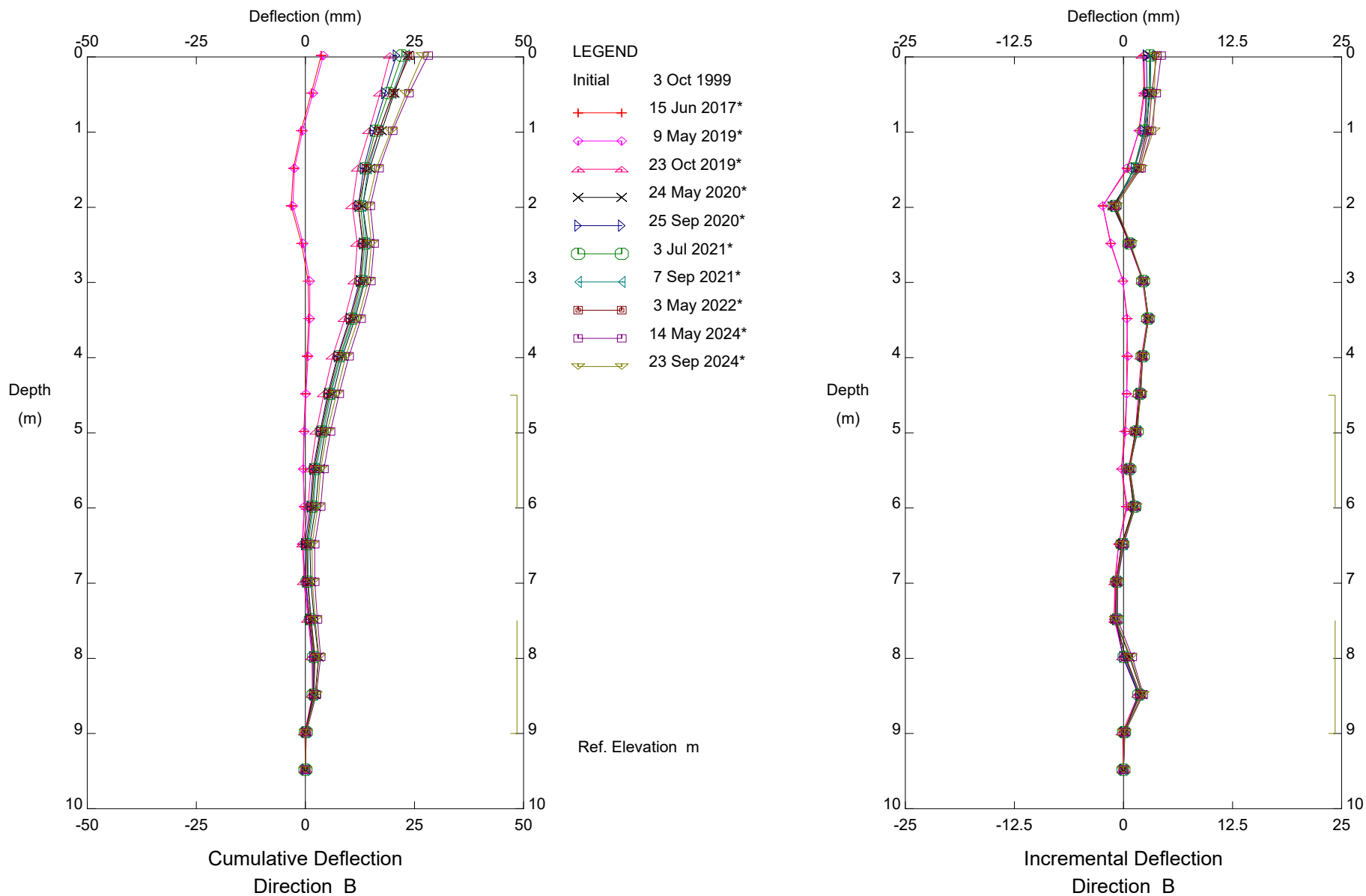
Title
Site Plan

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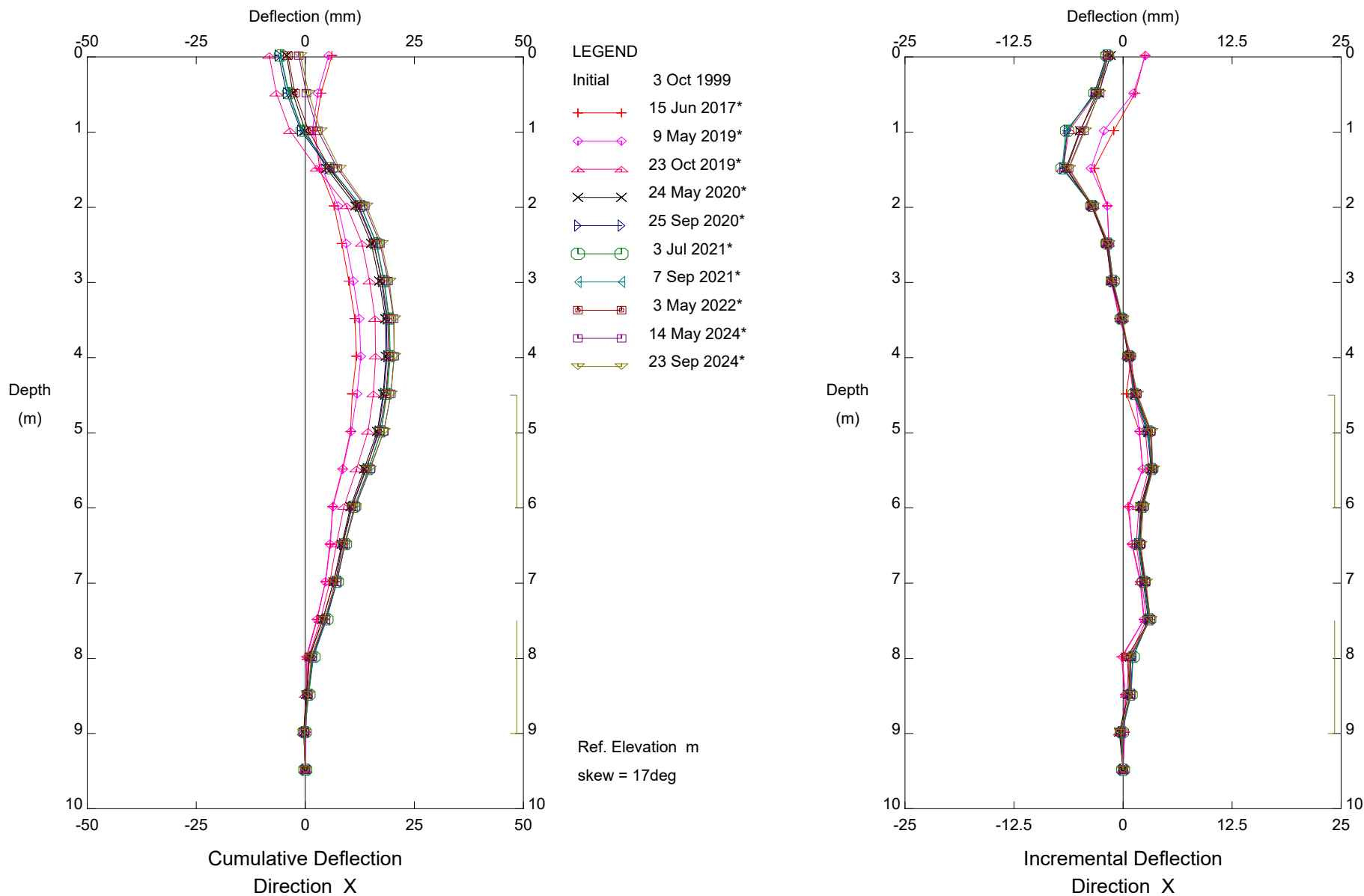
Hwy 40:30, North of Hinton (NC11), Inclinator SI2
 Alberta Transportation

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



Hwy 40:30, North of Hinton (NC11), Inclinator SI2
 Alberta Transportation

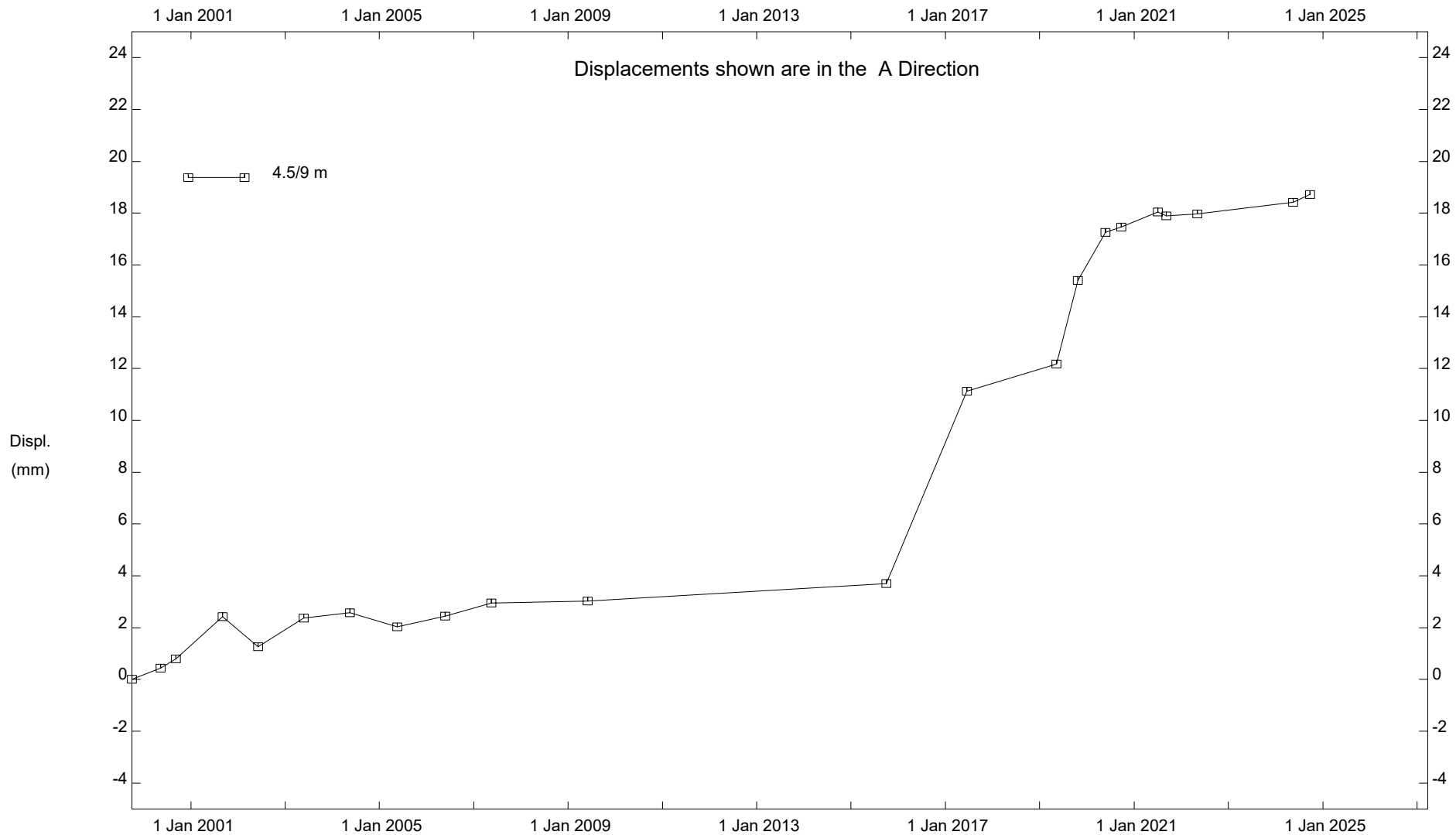
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Hwy 40:30, North of Hinton (NC11), Inclinator SI2
Alberta Transportation

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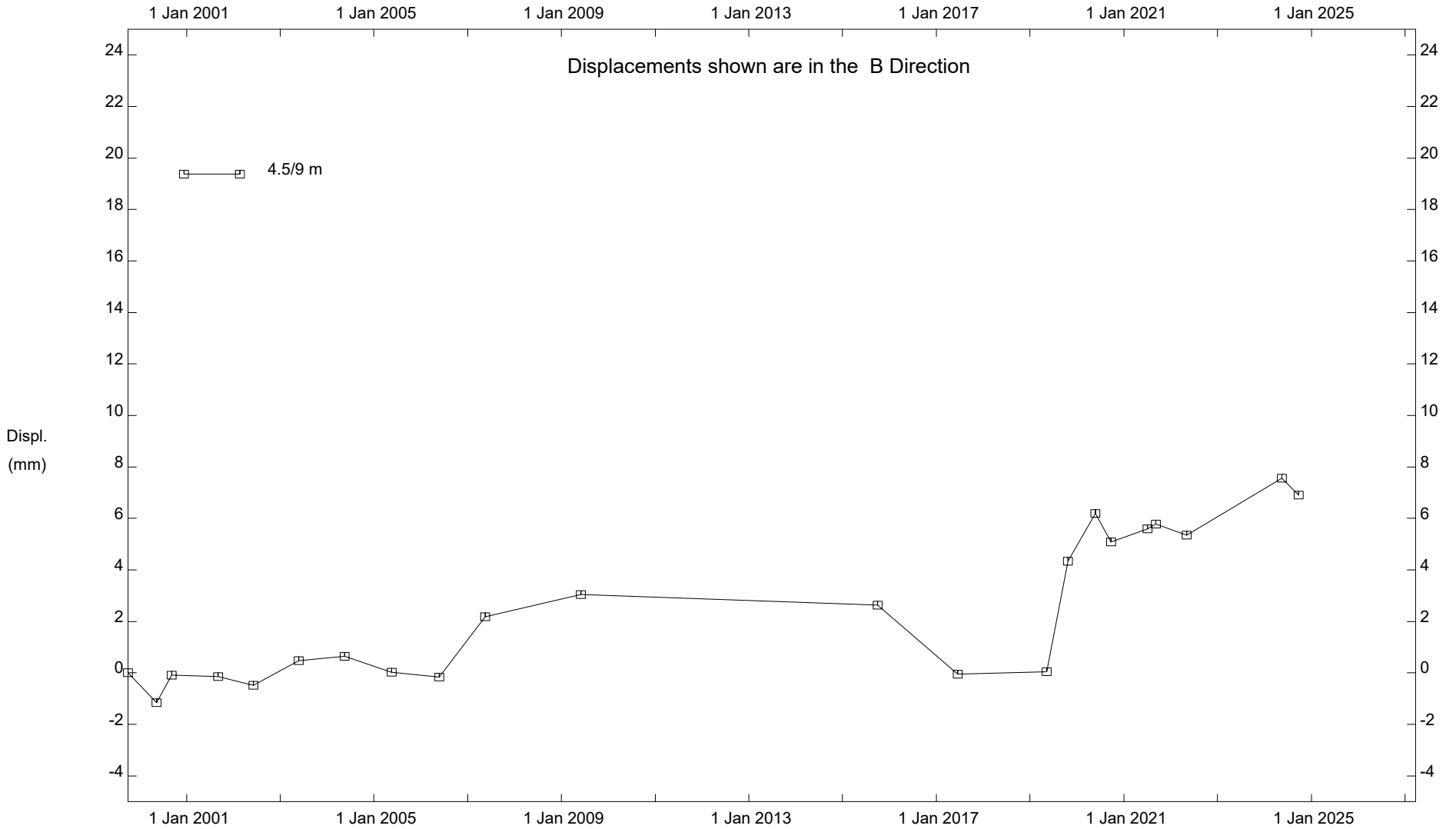
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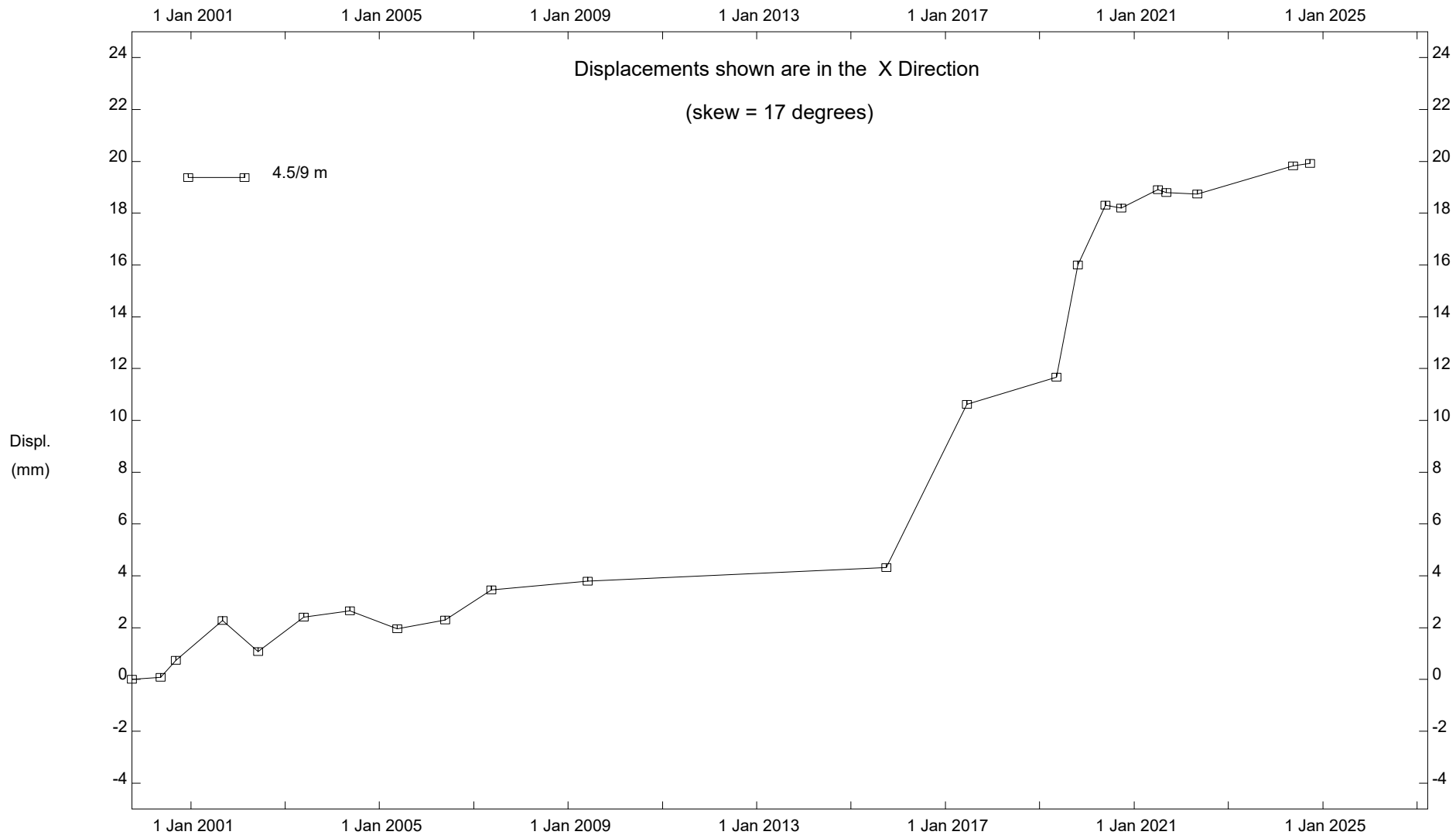
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Hwy 40:30, North of Hinton (NC11), Inclinator SI2

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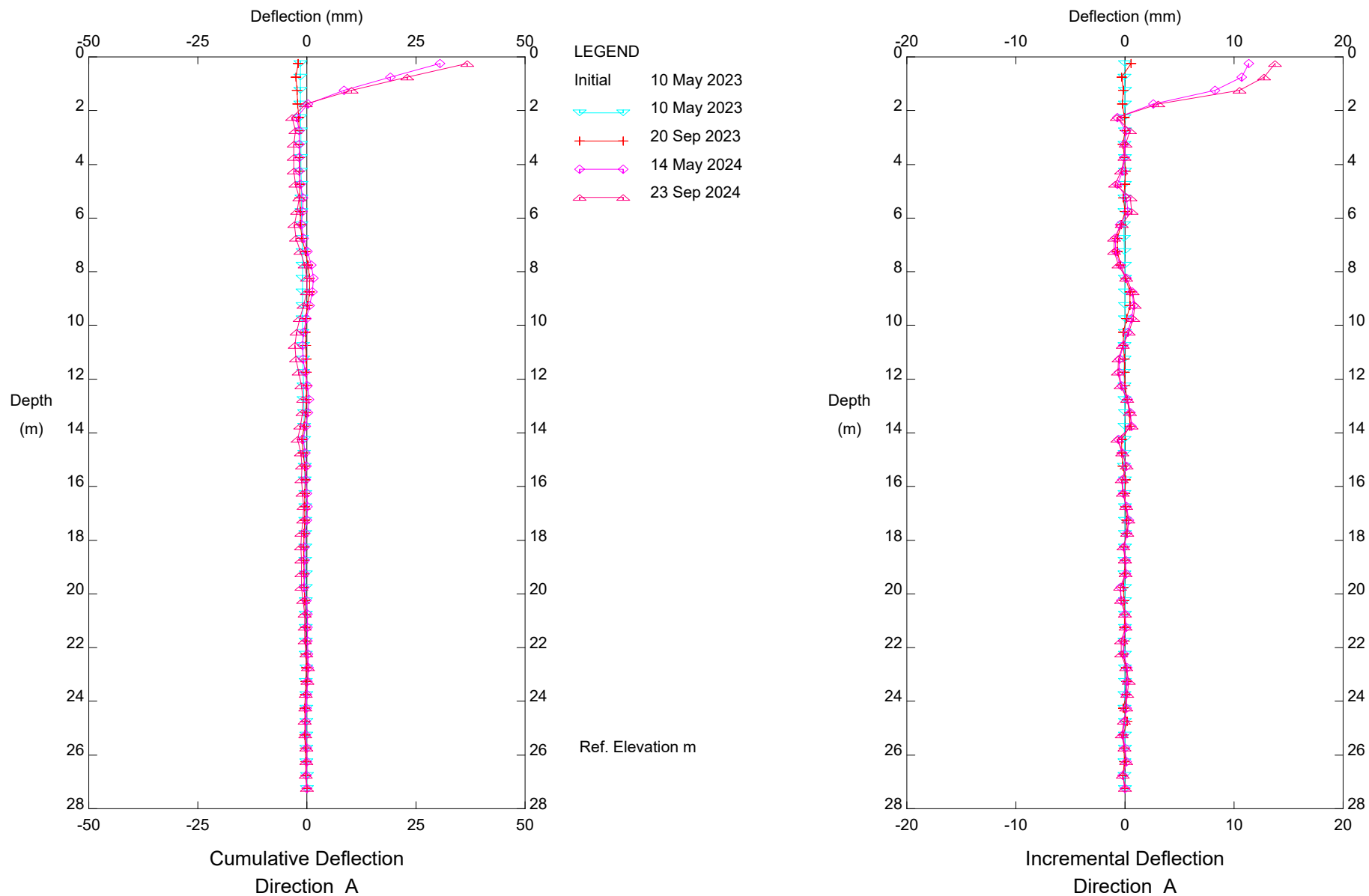
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Hwy 40:30, North of Hinton (NC11), Inclinometer SI2

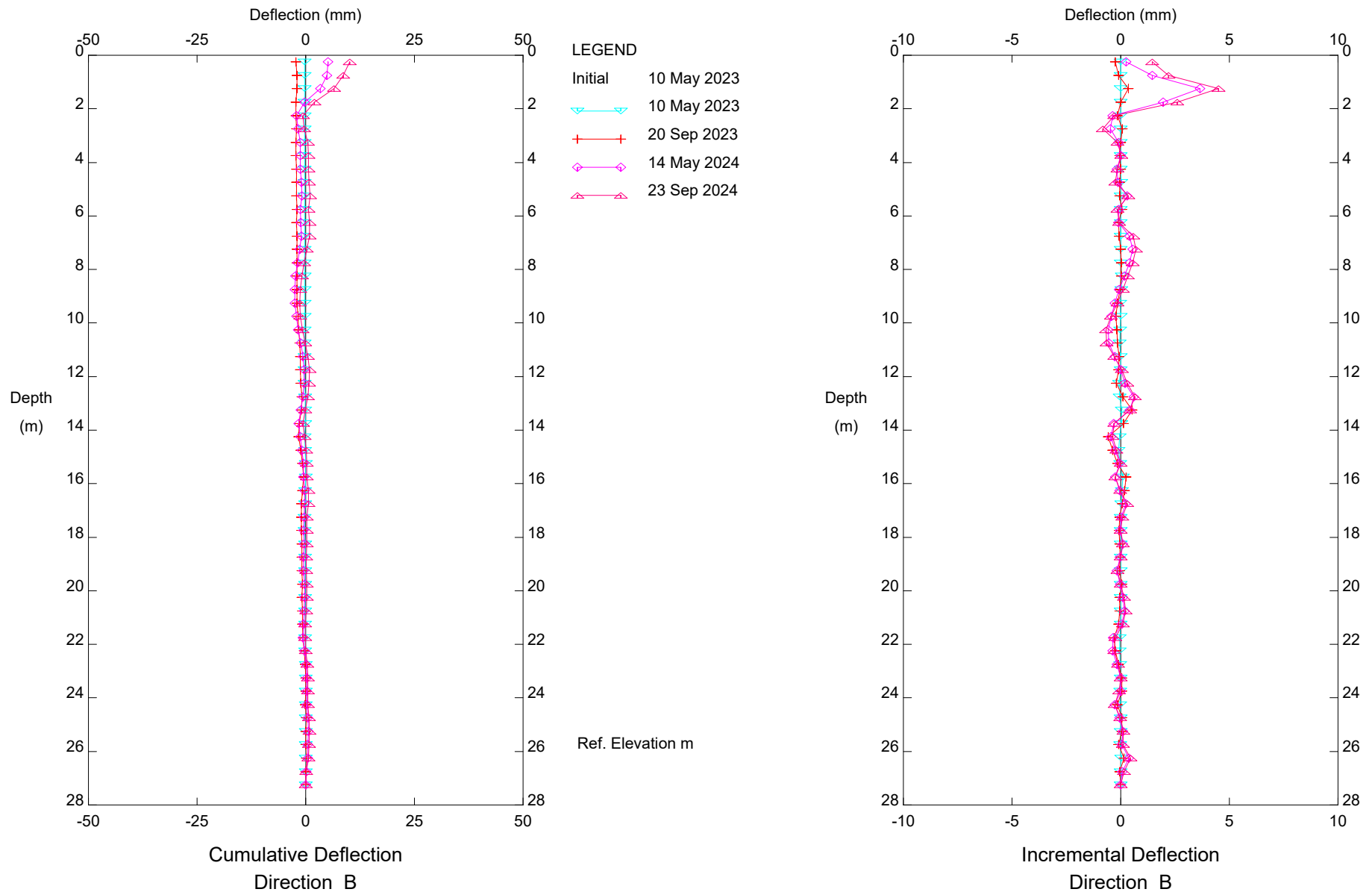
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Hwy 40:30, North of Hinton (NC11), Inclinator SI22-01

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Hwy 40:30, North of Hinton (NC11), Inclinator SI22-01