
To:	Amy Driessen Alberta Transportation	From:	Leslie Cho and Xiteng Liu Stantec Consulting Ltd.
File:	123315222	Date:	October 7, 2022

Reference: North Central Region, Edson/Stony Plain, Site NC011 – Highway 40:30 5.5 km North of Highway 16 (Near Hinton), Fall 2022 Instrumentation Monitoring Report

1.0 OBSERVATIONS

1.1 FIELD PROGRAM AND INSTRUMENTATION STATUS

The Fall 2022 reading cycle consisted of instrument readings of one slope inclinometer (SI-2). **Figure 1** attached provides a schematic of the site. The instrument readings were taken by Sonja Pharand, E.I.T. and Brian Qin, E.I.T. on September 8, 2022.

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 GPSmap 60Cx 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 any of the operational slope inclinometers. 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

SI-2 shows incremental movement of 4 mm since the Spring 2022 reading cycle. A total cumulative resultant movement of 23 mm has been observed since installation in 1999. The current rate of movement is approximately 12 mm/yr.

3.0 RECOMMENDATIONS

3.1 FUTURE WORK

It is recommended that the next reading cycle take place in Spring 2023.

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3.2 INSTRUMENTATION REPAIRS

No instruments require repair at this time.

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Table NC011-1: Fall 2022 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	Non-operational Removed from reading cycle since Spring 2015		
SI2	Oct 3, 1999	5914150	453047	23 mm over 4.5 m to 9.0 m depth in 101° direction	8.3 in October 2019	Operational	May 3, 2022	4	12	11
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.		

(1) Updated September 8, 2022 with approximate accuracy of ± 3 m.

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4.0 CLOSING

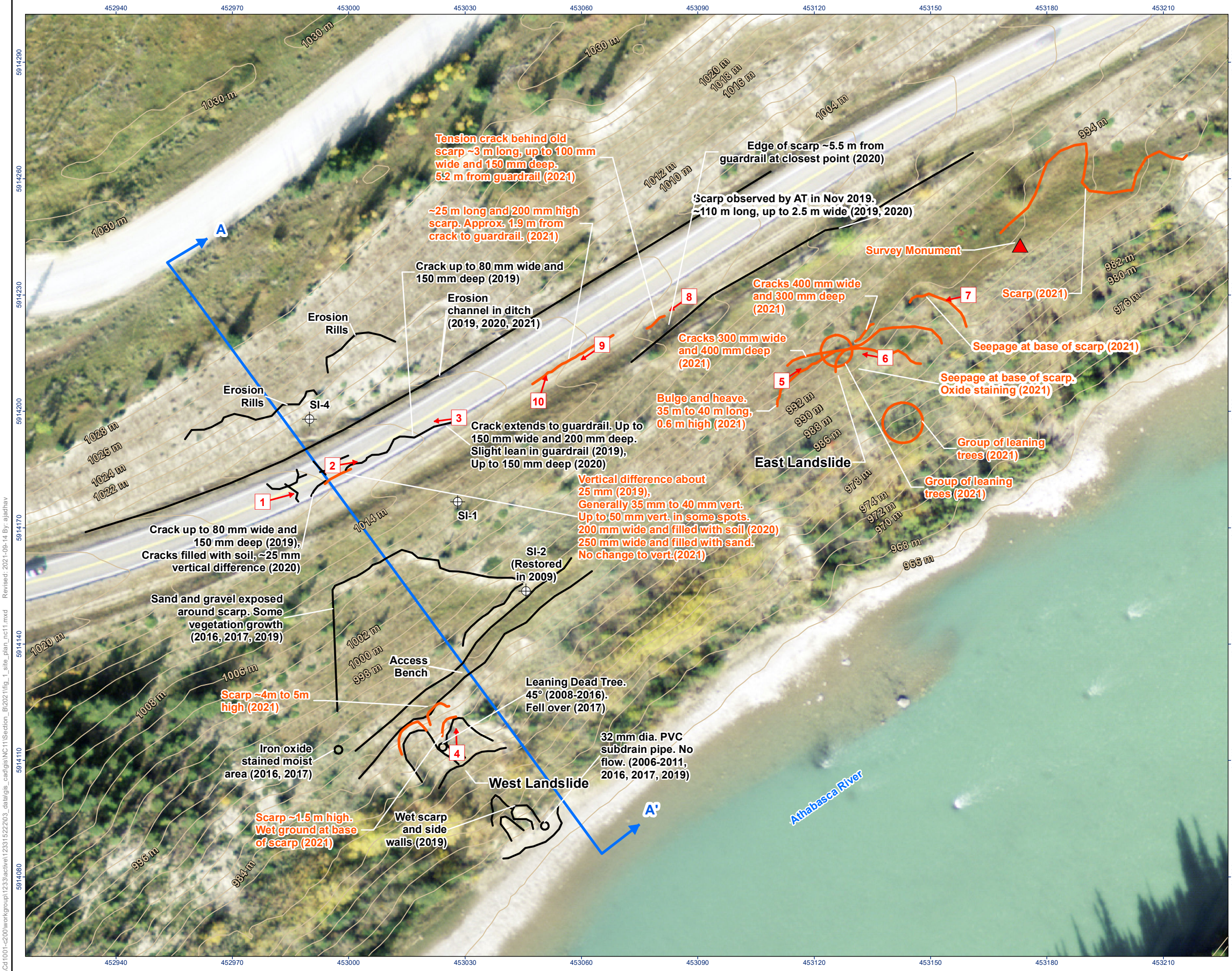
We trust this instrumentation report meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

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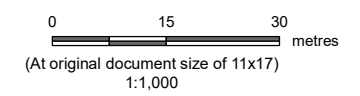
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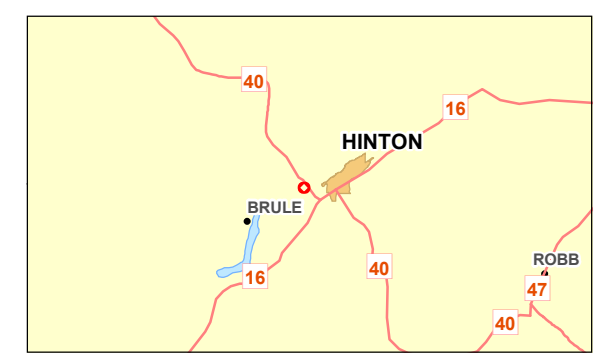
Attachment: Figure 1 – Site Plan
SI2 Slope Inclinator Plots



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



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



Project Location
Hinton, Alberta

Prepared by MK on 2021-08-31
Quality Review by LC on 2021-09-14
Independent Review by CM on 2021-09-14

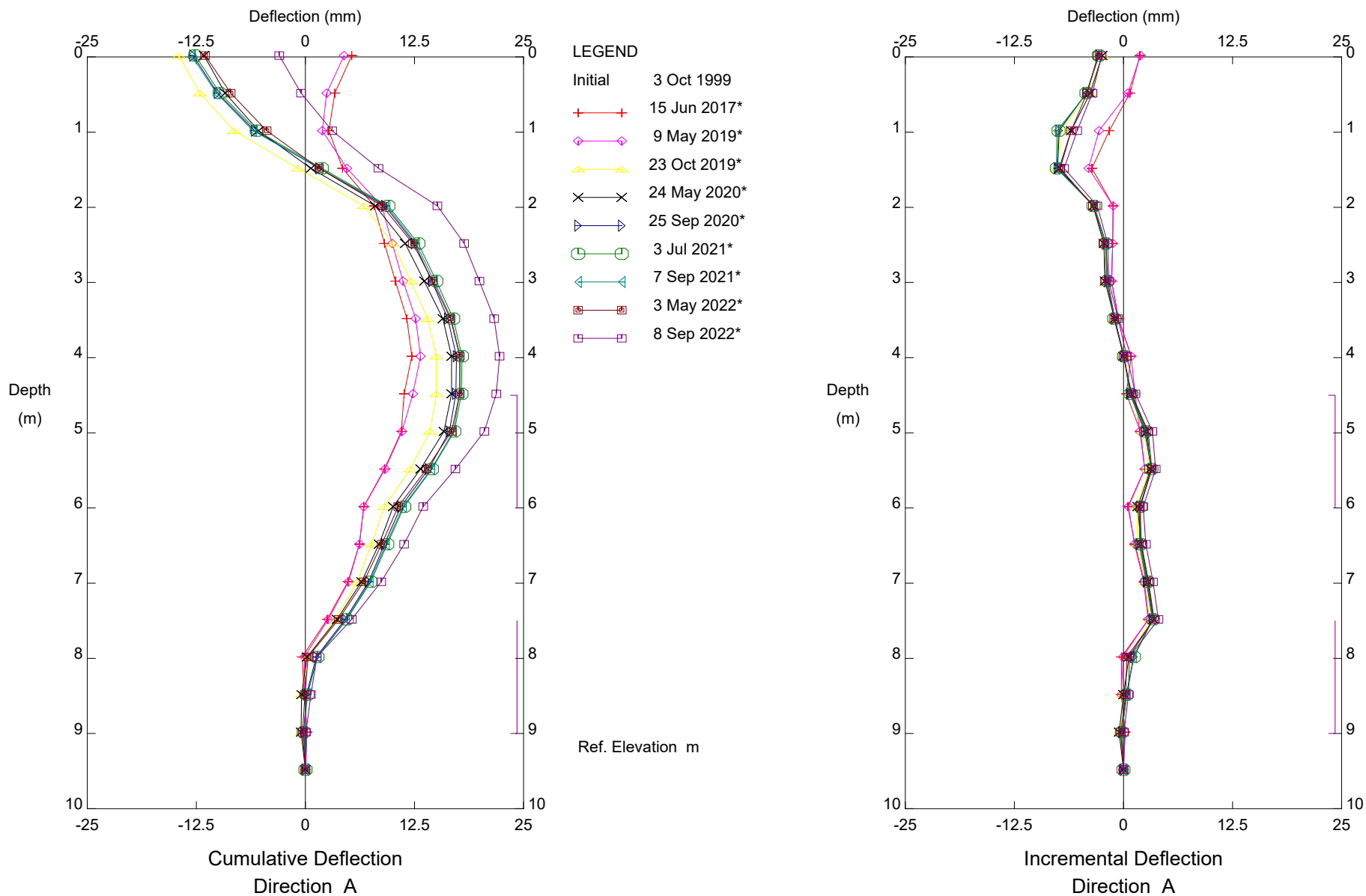
Client/Project
Alberta Transportation
Geohazard Monitoring Program
NC11 5.5 km North of Hwy 16 (Near Hinton)

12331 5222

Figure No.
1

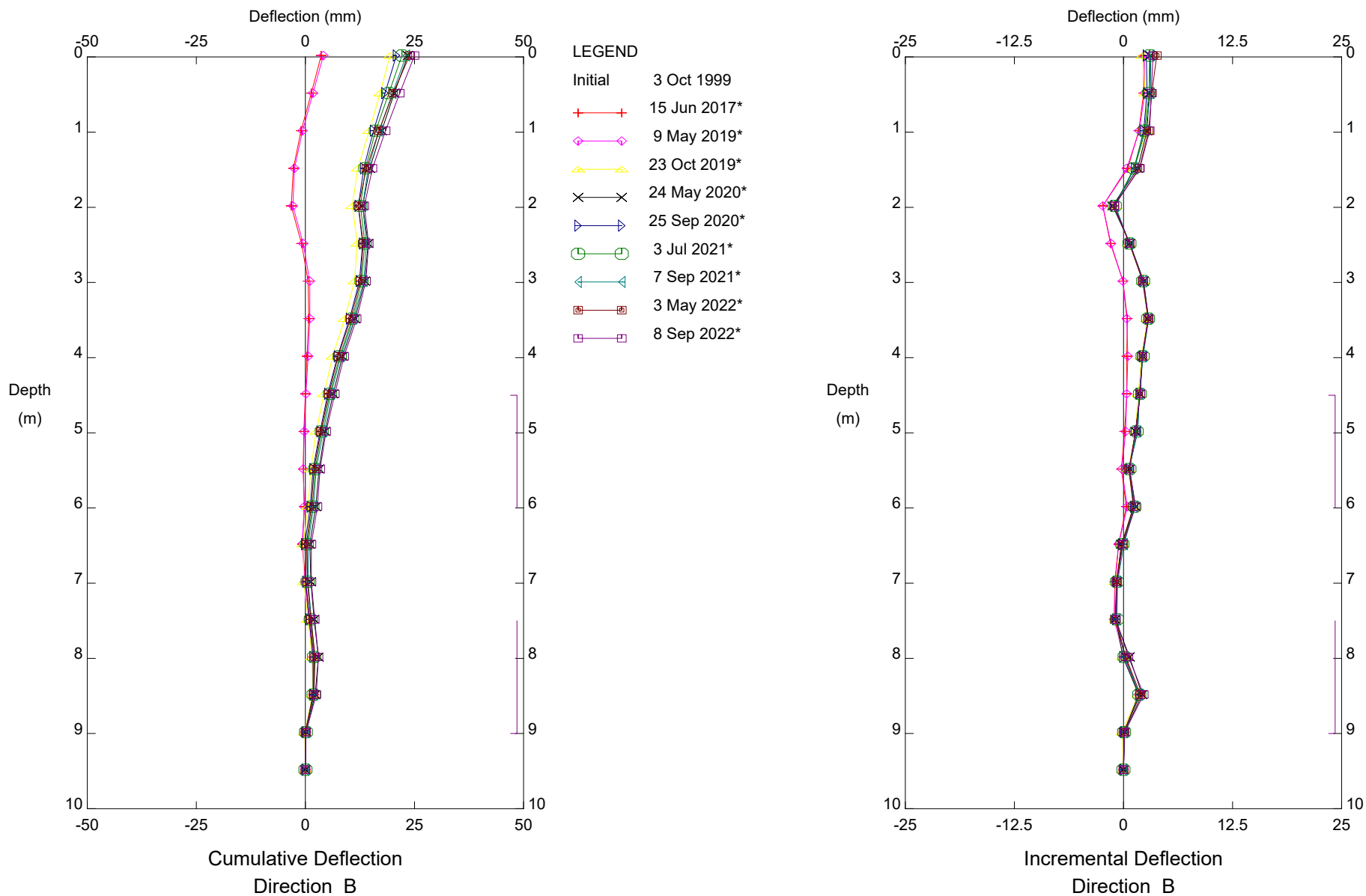
Title
Site Plan

\\Cd1001-c200\workgroup\12331\active\12331\5222\203_data\gis_cad\gis_nc11\Section_B\2021\fig_1_site_plan_nc11.mxd Revised: 2021-09-14 By: aljadhav



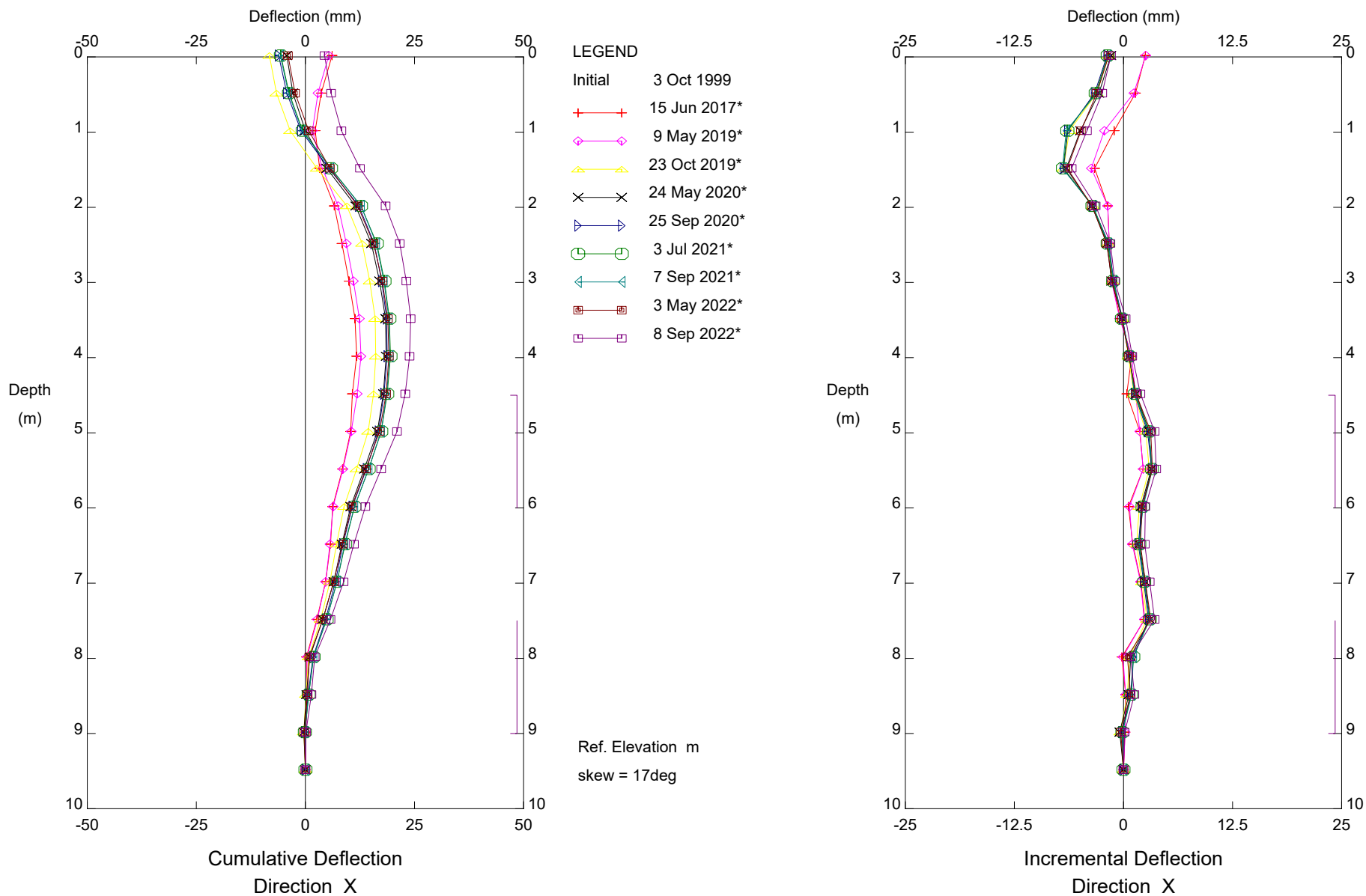
Hwy 40:30, North of Hinton (NC11), Inclinometer SI2
 Alberta Transportation

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



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

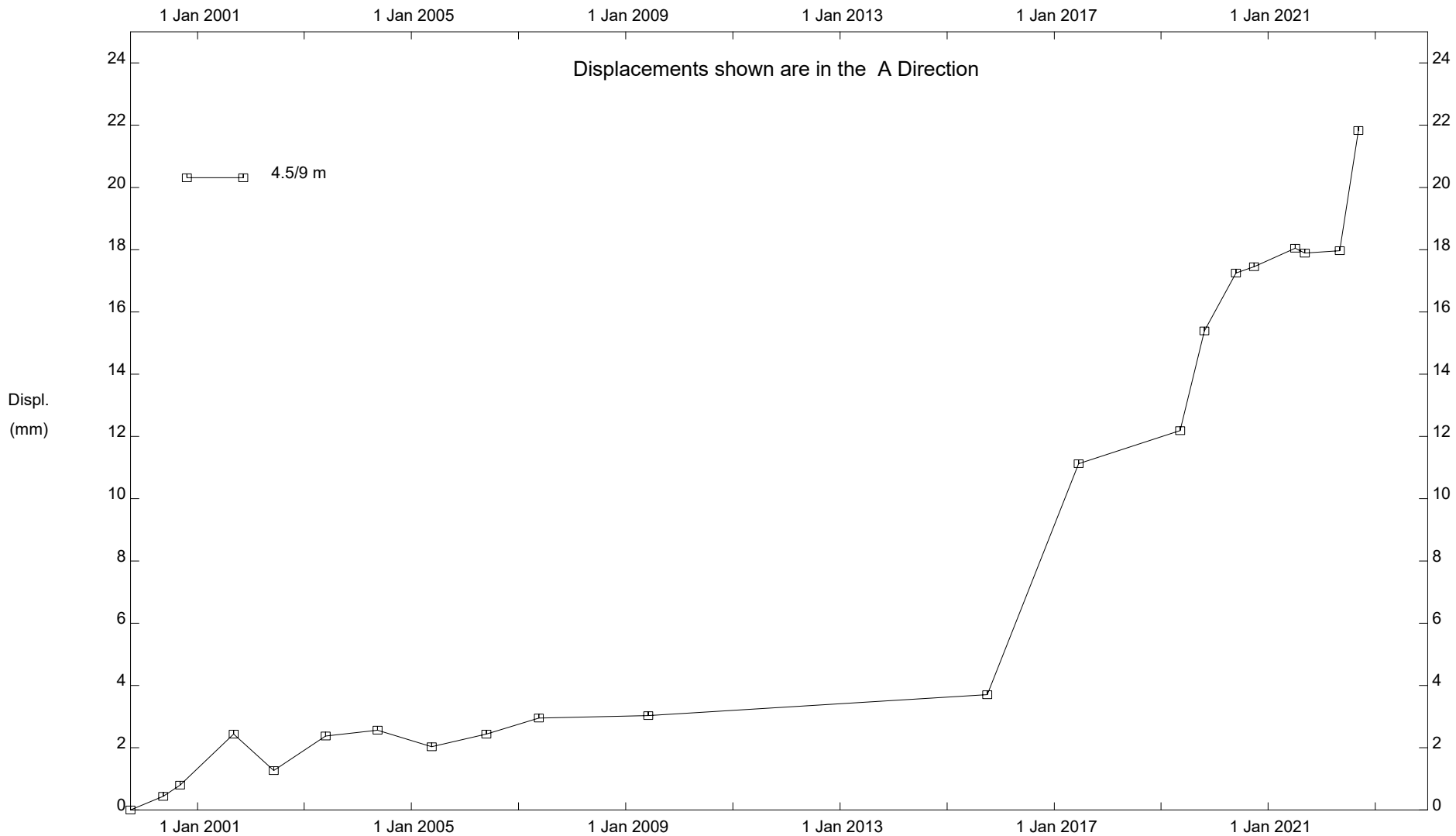
Sets marked * include zero shift and/or rotation corrections.



Hwy 40:30, North of Hinton (NC11), Inclinator SI2
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Sets marked * include zero shift and/or rotation corrections.

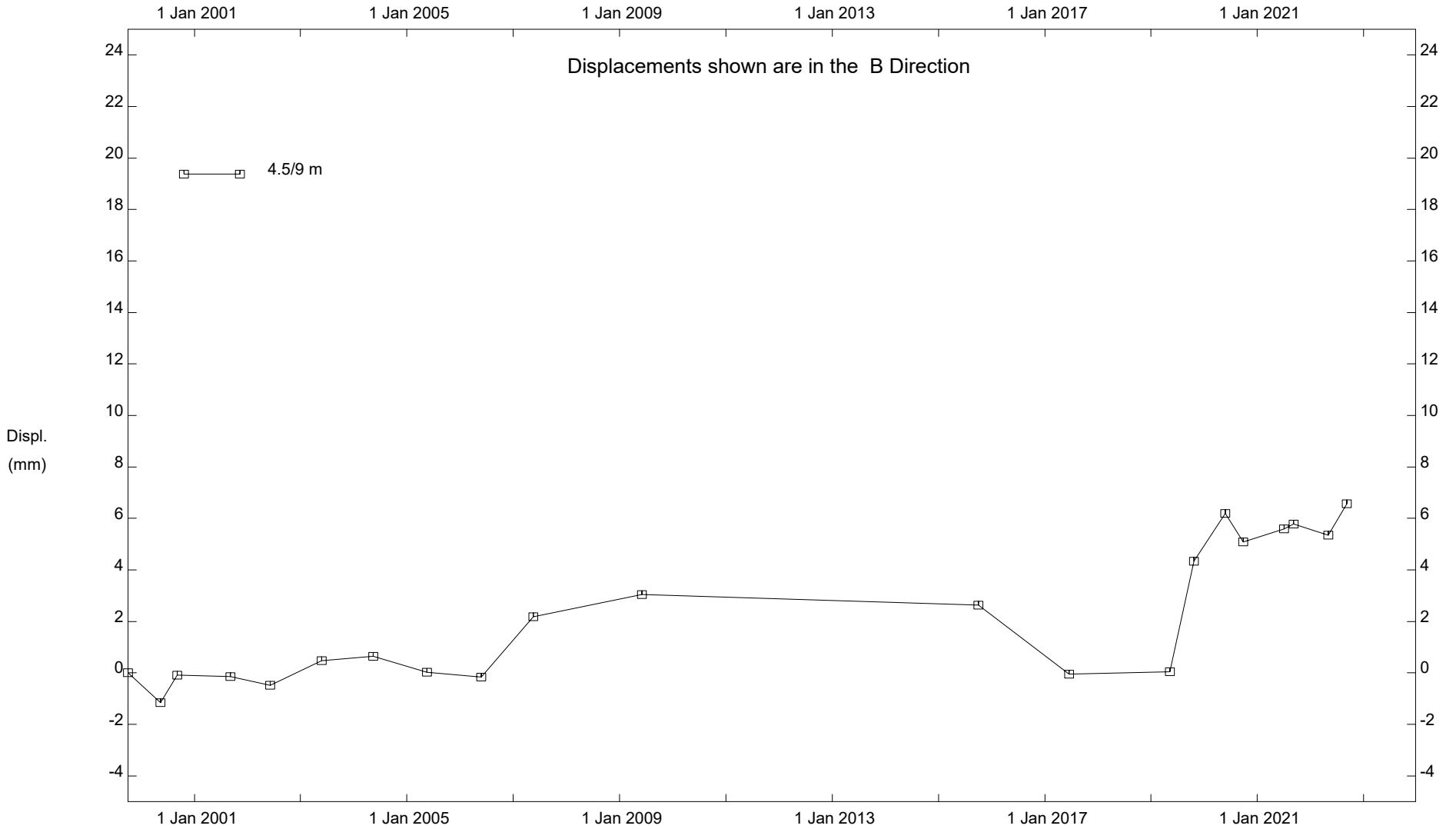
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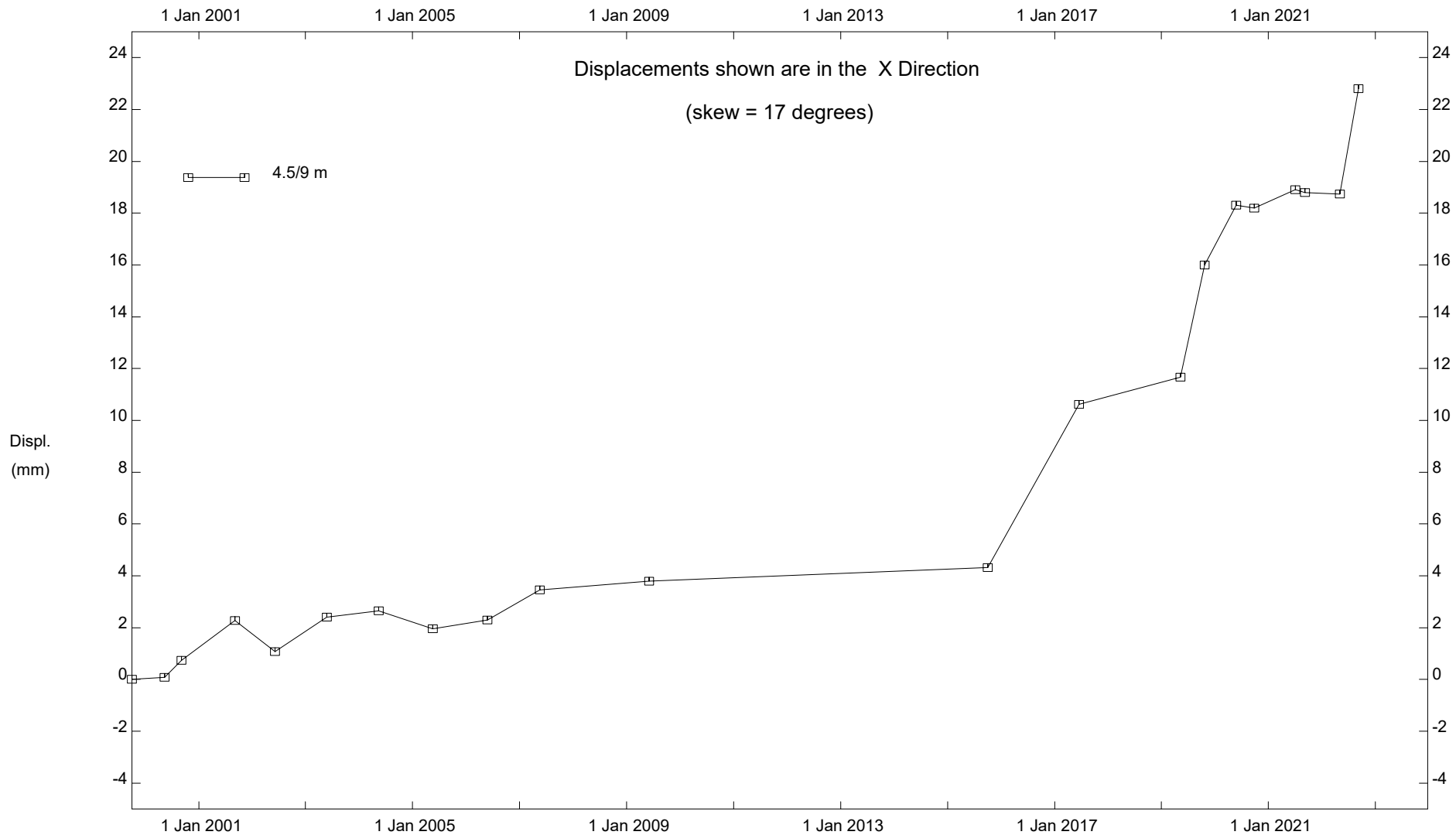
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