

Site Number	Location	Name	Hwy	km
SH014	HWY 750:02 C1 30.582	Salt Creek Slide	750:02	Km 30.6
Legal Description:		UTM Co-ordinates		
16-34-76-14 W5		11U E 558275	N	6165556

Current Monitoring:	16-May-2024	Previous Monitoring	07-Oct-2023
Instruments Read By:	Mr. Niraj Regmi, G.I.T., and Mr. Nixson Mationg, Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): SI23-1	Pneumatic Piezometers (PN): N/A	Vibration Wire Piezometers (VW): N/A	Standpipe Piezometers (SP): SP02-3
Load Cell (LC): N/A	Strain Gauges: N/A	SAA: N/A	Others:

Readout Equipment Used			
Slope Inclinometers: RST Digital Inclinator probe with a 2 ft wheelbase and an RST Pocket PC readout	Pneumatic Piezometers:	Vibration Wire Piezometers:	Standpipe Piezometers: DGS1 Dipmeter
Load Cell:	Strain Gauges:	SAA:	Others:
Note:			

Discussion	
Zones of New Movement:	Near ground surface movements show some unusual reversals in movement direction. The SI will be evaluated during the fall of 2024 readings and may be reinitialized.
Interpretation of Monitoring Results:	SI23-1 has a rate of movement of 17.4 mm/yr over 0 m to 2.4 m depth since the fall 2023 readings. This corresponds to an incremental movement of 10.6 mm, and a change in the rate of movement of 18.8 mm/yr. This SI has previously shown movement over 0 m to 2.4 m depth during the February and March 2023 readings, but the subsequent readings indicated movement in the opposite direction, so this previously observed zone does not represent actual slope movement. The movement previously observed can likely be attributed either to frost action, poor grouting near the top of the SI, or some other disturbance near the top of the SI casing. Standpipe piezometer SP02-3 showed an increase in groundwater level of 0.27 m since the fall of 2023 readings. The current water level in SP02-3 of 1.87 m below ground surface is the highest since the instrument was initialized.
Future Work:	The instruments should be read again in the fall of 2024. The movement zone in SI23-1 over 0 m to 2.4 m depth should be checked to confirm if it represents actual movement.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

--	--

Attachments:	<ul style="list-style-type: none">• Table SH014-1 Spring 2024 – HWY 750:02 Salt Creek Slide, Slope Inclinometer Instrumentation Reading Summary• Table SH014-2 Spring 2024 – HWY 750:02 Salt Creek Slide, Standpipe Piezometer Instrumentation Reading Summary• Statement of Limitations and Conditions• APPENDIX A – SH014 SPRING 2024<ul style="list-style-type: none">○ Field Inspector's report○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32121-SH014)○ SI Reading Plots○ Figure SH014-1 (Standpipe Piezometer 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.
Don Proudfoot, M.Eng., P. Eng.
Partner | Senior Geotechnical Engineer

Lucas Green, P.Eng.
Geotechnical Engineer

Table SH014-1 Spring 2024 – Hwy 750:02 Salt Creek Slide Slope Inclinator Instrumentation Reading Summary

Date Monitored: May 16, 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)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI23-1	January 13, 2023	2.5 over 0 to 2.4 m depth in the 268° direction	63.1 on February 7, 2023	Operational	October 7, 2023	10.6	17.4	18.8

Drawing 32121-SH014 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



Table SH014-2 Spring 2024 – Hwy 750:02 Salt Creek Slide Standpipe Piezometer Instrumentation Reading Summary

Date Monitored: May 16, 2024

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST RECORDED GROUNDWATER LEVEL (mBGS)	MEASURED WATER DEPTH (mBGS)	PREVIOUS WATER DEPTH (mBGS)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
SP02-3	August 7, 2002	3.59	N/A	Operational	1.87 in May 2024	1.87	2.14	0.27
SP02-4	August 7, 2002	8.38	N/A	Damaged	2.45 in October 2007	N/A	DRY (Sep. 22, 2017)	N/A

Drawing 32121-SH014 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Note: BGS = below ground surface



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

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF REPORT

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.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THURBER'S WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS THURBER MAY EXPRESSLY APPROVE. Ownership in and copyright for the contents of the Report belong to Thurber. Any use which a third party makes of the Report, is the sole responsibility of such third party. Thurber accepts no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without Thurber's express written permission.

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.

6. RELEASE OF POLLUTANTS OR HAZARDOUS SUBSTANCES

Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability to the Client under any circumstances, for the escape, release or dispersal of pollutants or hazardous substances, unless such pollutants or hazardous substances have been specifically and accurately identified to Thurber by the Client prior to the commencement of Thurber's professional services.

7. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or others who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes but is not limited to decisions made to develop, purchase or sell land.



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 SH014: HWY 750:02 (SALT CREEK SLIDE)

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (SH014)
SPRING 2024**

Location: Salt Creek Slide (HWY 750:02 C1 30.582) File Number: 32121 Probe: RST SET 5R Cable: RST SET 5R	Readout: DGSI Dipmeter Size 2.75" Temp: 5/rain Read by: NKR/NRM
---	--

SLOPE INCLINOMETER (SI) READINGS

SI#	GPS Location (UTM 11)		Date	Stickup (m)	Depth from top of casing (ft)	Magn. North A+ Groove degree	Current Bottom Depth Readings				Probe/ Reel #	Size (")	Remarks
	Easting	Northing					A+	A-	B+	B-			
SI23-1	558275	6165556	16-May-24	0.98	62 to 2	263	-634	445	-502	488	5R	2.75	

STANDPIPE PIEZOMETER READINGS

SP#	GPS Location (NAD83)		Date	Stick-up (m)	Reading below top of pipe (m)	Bottom Pipe Depth (below ground (m))
	Latitude (N)	Longitude (W)				
SP02-3	55 37 57.9	116 04 27.2	16-May-24	0.84	2.71	3.59

INSPECTOR REPORT

Site is on Hwy 750, 100 m south of TWP 770. About 30 km North on Hwy 750 from Hwy 2 and Hwy 750 intersection

H:\32000\32121 AT GRMP Peace River District 2021-2025\CAD\2023 INSTRUMENT\32121-SH014-1.dwg - 1N - Jun. 29, 2023



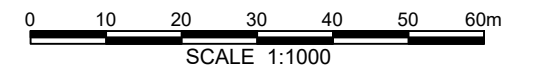
NE 34-76-14-5

LEGEND

- SCARP
- TENSION CRACK
- TREE LINE
- ASPHALT PATCH
- PP POWER POLE
- FENCE
- HWY RIGHT - OF - WAY
- EXISTING TEST HOLE LOCATION
- MOVEMENT VECTOR DIRECTION
- ACTIVE INSTRUMENT LOCATION
- SI SLOPE INCLINOMETER
- SP STANDPIPE PIEZOMETER

NOTES:

1. SITE FEATURES ARE APPROXIMATE
2. SITE SURVEY PERFORMED BY EXH ENGINEERING IN APRIL, 2006.



AIR PHOTO FROM ESRI WORLD IMAGERY EXPORTED ON JANUARY 4, 2023



**PEACE REGION (PEACE RIVER DISTRICT)
SH014-1: HWY 750:02 SALT CREEK SLIDE**

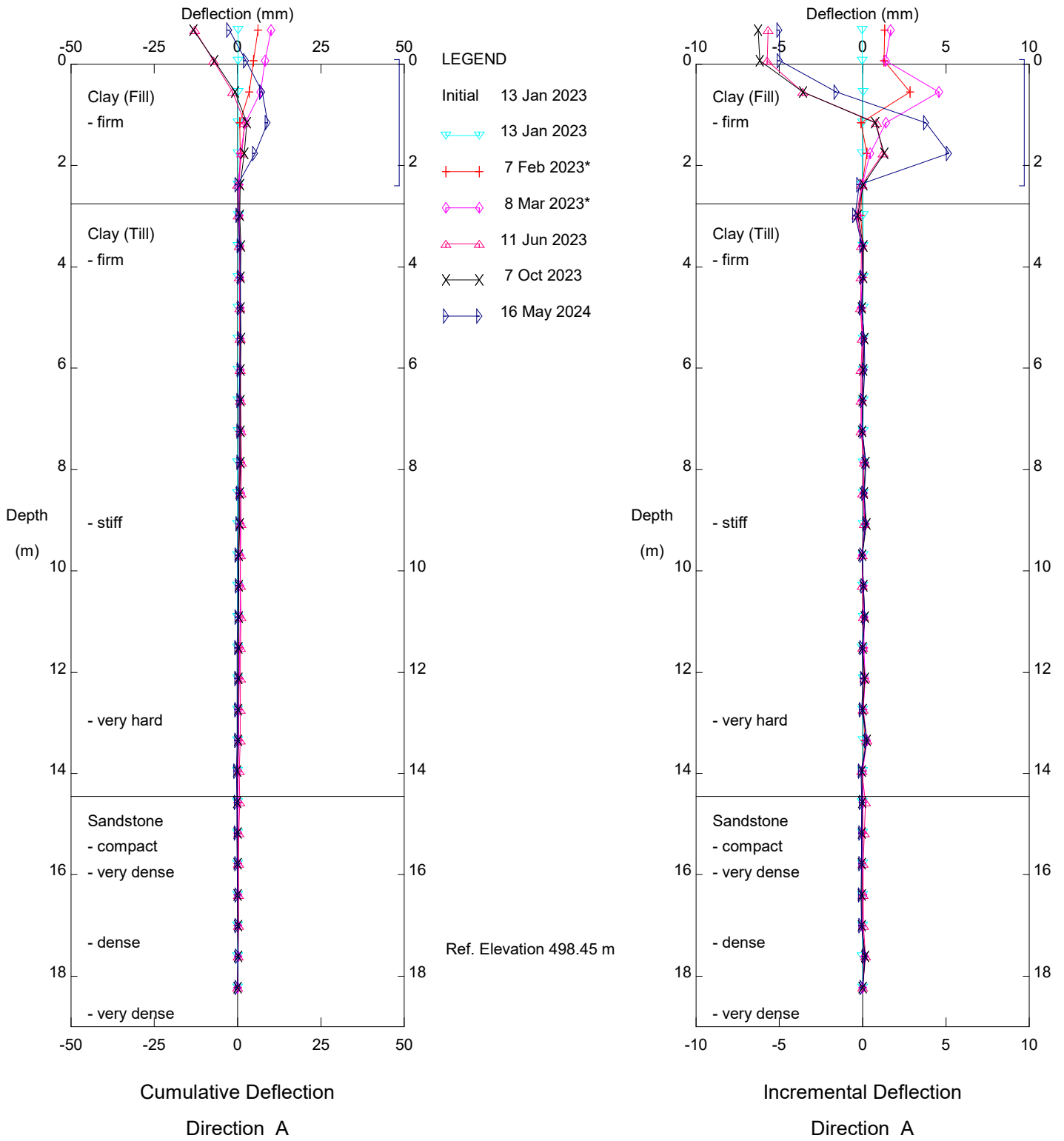
**SITE PLAN SHOWING APPROXIMATE
INSTRUMENT LOCATIONS**

DWG NO. 32121-SH014-1

DRAWN BY	ML
DESIGNED BY	NPW
APPROVED BY	RVC
SCALE	1:1000
DATE	JUNE 2023
FILE No.	32121



Thurber Engineering Ltd.

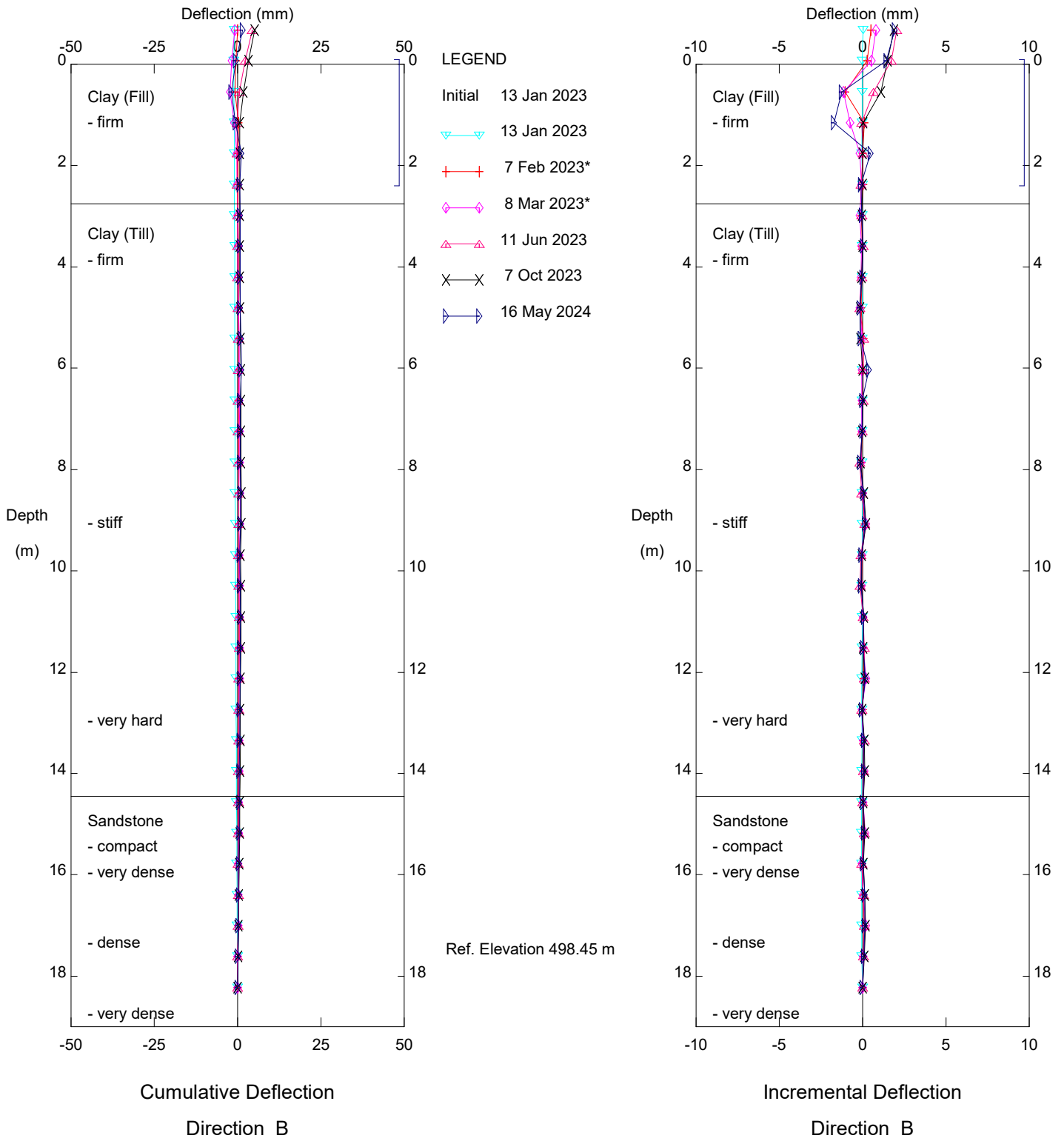


Hwy 750:02 (SH014) Salt Creek, Inclinometer SI23-1

TEC

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

Thurber Engineering Ltd.

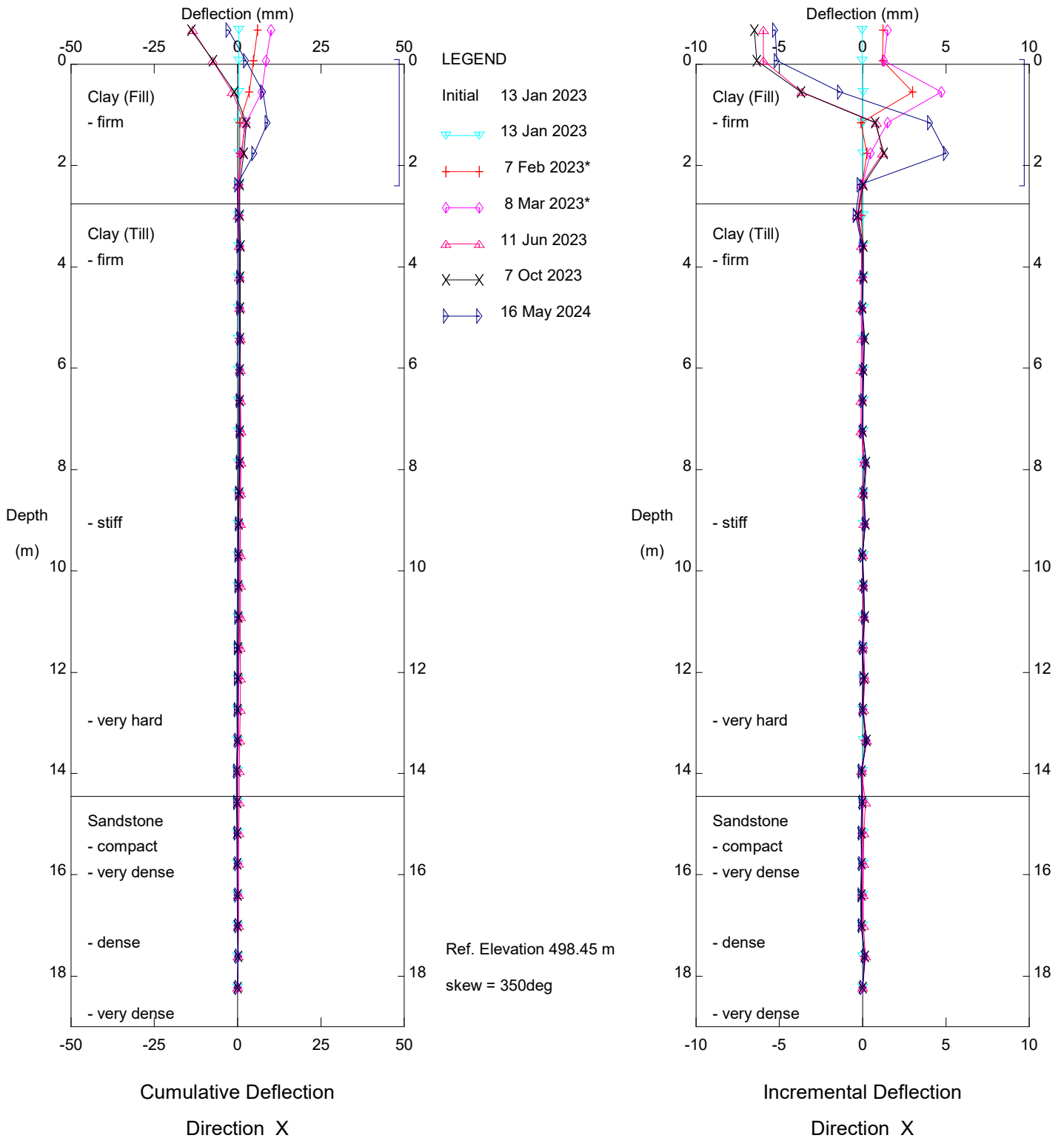


Hwy 750:02 (SH014) Salt Creek, Inclinometer SI23-1

TEC

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

Thurber Engineering Ltd.

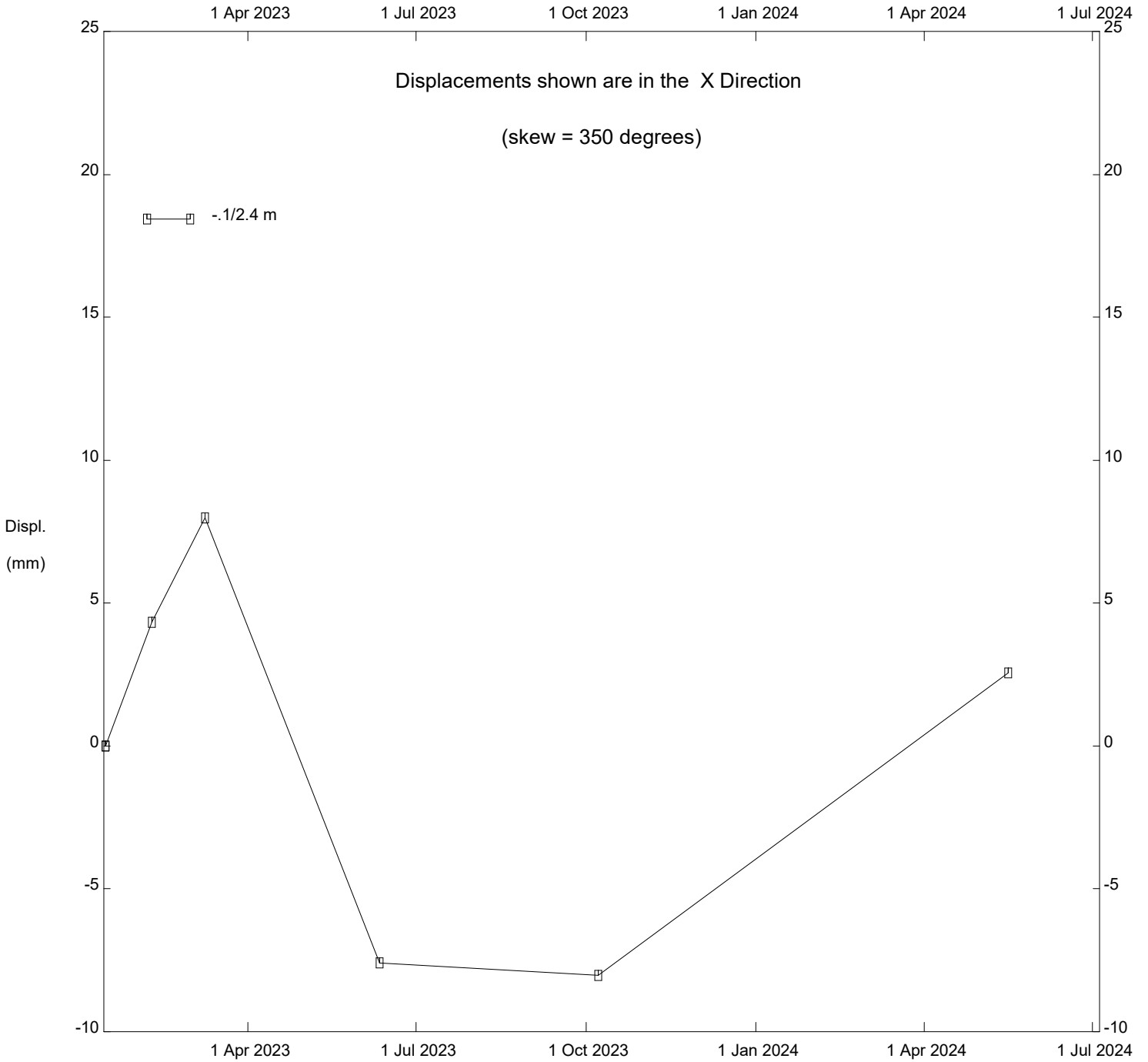


Hwy 750:02 (SH014) Salt Creek, Inclinometer SI23-1

TEC

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

Thurber Engineering Ltd.



Hwy 750:02 (SH014) Salt Creek, Inclinator SI23-1

TEC

**FIGURE SH014-1
HWY 750:04 SALT CREEK STANDPIPE PIEZOMETER DATA**

