

Site Number	Location	Name	Hwy	km
PH053	HWY 684:02 30 + 400 to 29 + 400	Shaftesbury Trail	684:02	28.35 to 30.30
<b>Legal Description:</b> 9-30-83-21 W5		<b>UTM Co-ordinates</b>		
		11U E 481072	N	6232048

<b>Current Monitoring:</b>	07-Jun-2025	<b>Previous Monitoring</b>	18-May-2024
<b>Instruments Read By:</b>	Mr. Niraj Regmi, G.I.T and Mr. Godfred Etiendem, of Thurber		

Instruments Read During This Site Visit			
<b>Slope Inclinometers (SIs):</b> SI20-2 and SI20-3	<b>Pneumatic Piezometers (PN):</b> N/A	<b>Vibrating Wire Piezometers (VW):</b> VW20-1 to VW20-3	<b>Standpipe Piezometers (SP):</b> N/A
<b>Load Cell (LC):</b> N/A	<b>Strain Gauges:</b> N/A	<b>SAA's:</b> N/A	<b>Others:</b>

Readout Equipment Used			
<b>Slope Inclinometers:</b> RST Digital Inclinator probe with 2 ft. wheelbase and RST Pocket PC readout	<b>Pneumatic Piezometers:</b>	<b>Vibrating Wire Piezometers:</b> Downloaded from Datalogger	<b>Standpipe Piezometers:</b>
<b>Load Cell:</b>	<b>Strain Gauges:</b>	<b>SAA's:</b>	<b>Others:</b>
<b>Notes:</b>			

Discussion	
<b>Zones of New Movement:</b>	None
<b>Interpretation of Monitoring Results:</b>	<p>SI20-2 showed a cumulative movement of 5.0 mm over 0 m to 1.3 m depth with a rate of movement of 0.6 mm/yr since the previous readings on May 18, 2024.</p> <p>SI20-3 showed a cumulative movement of 3.7 mm over 0 m to 1.3 m depth with a rate of movement of 1.0 mm/yr since the previous readings on May 18, 2024.</p> <p>Vibrating wire piezometer VW20-1 showed an increase in groundwater level of 0.38 m compared to the May 18, 2024 readings. VW20-2 was dry during the spring 2025 readings but showed water level above the tip between January 19 and October 11, 2024. VW20-3 showed a decrease in groundwater level of 0.04 m since the May 18, 2024 reading. VW20-3 has previously shown a trend of increasing groundwater levels until December 2024, showing a historical maximum groundwater elevation of 325.05 on December 1, 2024. Since December, it has shown a seasonal decrease in water level.</p>
<b>Future Work:</b>	The instruments should be read again in the spring of 2026.
<b>Instrumentation Repairs:</b>	No instrument repairs are required at this time.

<b>Additional Comments:</b>	
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<b>Attachments:</b>	<ul style="list-style-type: none"> <li>• Table PH053-1 Spring 2025 – HWY 684:02 Shaftesbury Trail, Slope Inclinator Reading Instrumentation Summary</li> <li>• Table PH053-2 Spring 2025 – HWY 684:02 Shaftesbury Trail Piezometer Instrumentation Reading Summary</li> <li>• Statement for Use and Interpretation of Report</li> <li>• APPENDIX A – PH053 SPRING 2025 <ul style="list-style-type: none"> <li>○ Field Inspector's report</li> <li>○ Site Plans Showing Approximate Instrument Locations (Drawing No.23838-2 and 23838-3)</li> <li>○ SI Reading Plots</li> <li>○ Figure PH053-1 (VW20-01 Piezometric Elevations)</li> <li>○ Figure PH053-2(VW20-02 Piezometric Elevations)</li> <li>○ Figure PH053-3 (VW20-03 Piezometric Elevations)</li> </ul> </li> </ul>
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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 PH053-1: Spring 2025 – Hwy 684:02 Shaftesbury Trail Inclinator Instrumentation Reading Summary**

Date Monitored: June 7, 2025

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)
SI20-2	August 14, 2020	5.0 mm over 0 m to 1.3 m depth in 77° direction	1.9 mm/yr in May 2021	Operational	May 18, 2024	0.7	0.6	-0.6
SI20-3	August 14, 2020	3.7 mm over 0 m to 1.6 m depth in 44° direction	1.6 mm/yr in April 2022	Operational	May 18, 2024	1.1	1.0	0.4

Drawings 23838-2 and 23838-3 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.

**Table PH053-2: Spring 2025 – Hwy 684:02 Shaftesbury Trail Vibrating Wire Piezometer Instrumentation Reading Summary**

Date Monitored: June 7, 2025

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)
VW20-1 (67880)	August 13, 2020	325.90	342.50	Operational	326.53 on December 21, 2022	326.46	326.08	0.38
VW20-2 (67876)	August 10, 2020	330.75	340.20	Operational	332.14 on May 14, 2021	Dry	Dry	N/A
VW20-3 (67877)	August 11, 2020	322.3	337.5	Operational	325.05 on December 1, 2024	324.53	324.57	-0.04

Drawings 23838-2 and 23838-3 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.

## STATEMENT FOR USE AND INTERPRETATION OF REPORT

### 1. STANDARD OF CARE

This Report has been prepared in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances at the same time and in the same or similar locality and in compliance with all applicable laws.

### 2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment, including this Statement For Use and Interpretation of Report, 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, AS DESCRIBED ABOVE. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE OF THE 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 for the development, design objectives, and/or purposes described to Thurber by the Client. **NO OTHER PARTY MAY USE OR RELY ON THE REPORT OR ANY PORTION THEREOF FOR OTHER THAN THE CLIENT'S BENEFIT IN CONNECTION WITH THE PURPOSES DESCRIBED IN THE REPORT.** Any use which a third party makes of the Report is the sole responsibility of such third party and is always subject to this Statement for Use and Interpretation of Report. Thurber accepts no liability or responsibility for damages suffered by any third party resulting from use of the Report for purposes outside the reasonable contemplation of Thurber at the time it was prepared or in any manner unintended by Thurber.

### 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 is inherently judgement-based. 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 parties making use of such documents or records with or without our express written consent need to 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 parties. Some conditions are subject to change over time and those making use of the Report need to be aware of this possibility and understand that the Report only presents the interpreted conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client must 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 based on conditions in evidence at the time of site inspections and based on 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 resulting from misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other parties 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 is recommended to 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 need to 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 to confirm and document that the site conditions do not materially differ from those 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. INDEPENDENT JUDGEMENTS OF CLIENT

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

**SPRING 2025**

**APPENDIX A  
DATA PRESENTATION**

**SITE PH053: HWY 684:02, SHAFTESBURY TRAIL**

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING FIELD SUMMARY (PH053)  
SPRING 2025**

<b>Location:</b> Hwy 684:02 Shaftesbury Trail Km 28.35 to Km 30.30	<b>Readout:</b>
<b>File Number:</b> 32121	<b>Casing size:</b> 2.75
<b>Probe:</b> RST SET 8R	<b>Temp:</b> 22
<b>Cable:</b> RST SET 8R	<b>Read by:</b> GE/NKR

**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 20-2	481372	6231482	07-Jun-25	0.88	52 to 2	61	587	-578	-334	339	8R/8R	
SI 20-3	481429	623132	7-Jun-25	0.57	52 to 2	44	-496	510	716	-721	8R/8R	

**VIBRATING WIRE READINGS**

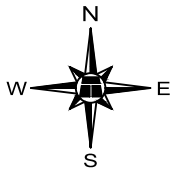
VW	GPS Location (UTM 11)		VW Serial #	Datalogger Serial #	Date	Comment
	Easting (m)	Northing (m)				
VW20-1	481072	6232048	67880	DT20238	07-Jun-25	Downloaded
VW20-2(Attached to SI 20-2)	481372	6231482	67876	DT20198	07-Jun-25	Downloaded
VW20-3(Attached to SI20-3)	481429	623132	67877	DT20200	07-Jun-25	Downloaded

**INSPECTOR REPORT**

Found old SP between TH20-2 and TH20-3, Labelled as 8

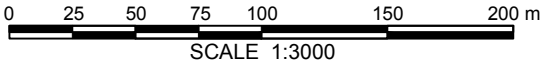


G:\23000\23838 PH53 Hwy 684\02 km 28.4 to 30.3 Embankment Stability Assessment\Drafting\2025\23838-1 2025.dwg - 2N - Jul. 03, 2025



LEGEND

- APPROXIMATE TEST HOLE LOCATION
- APPROXIMATE INSTRUMENT LOCATION
- VW VIBRATING WIRE PIEZOMETER



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 1 OF 4)

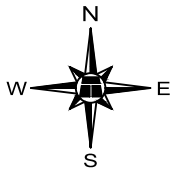
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DESIGNED BY	LGM
APPROVED BY	DWP
SCALE	1:3000
DATE	JULY 2025
FILE No.	23838



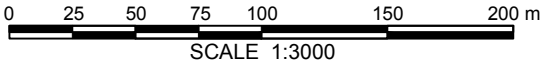


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LEGEND

- 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 2 OF 4)

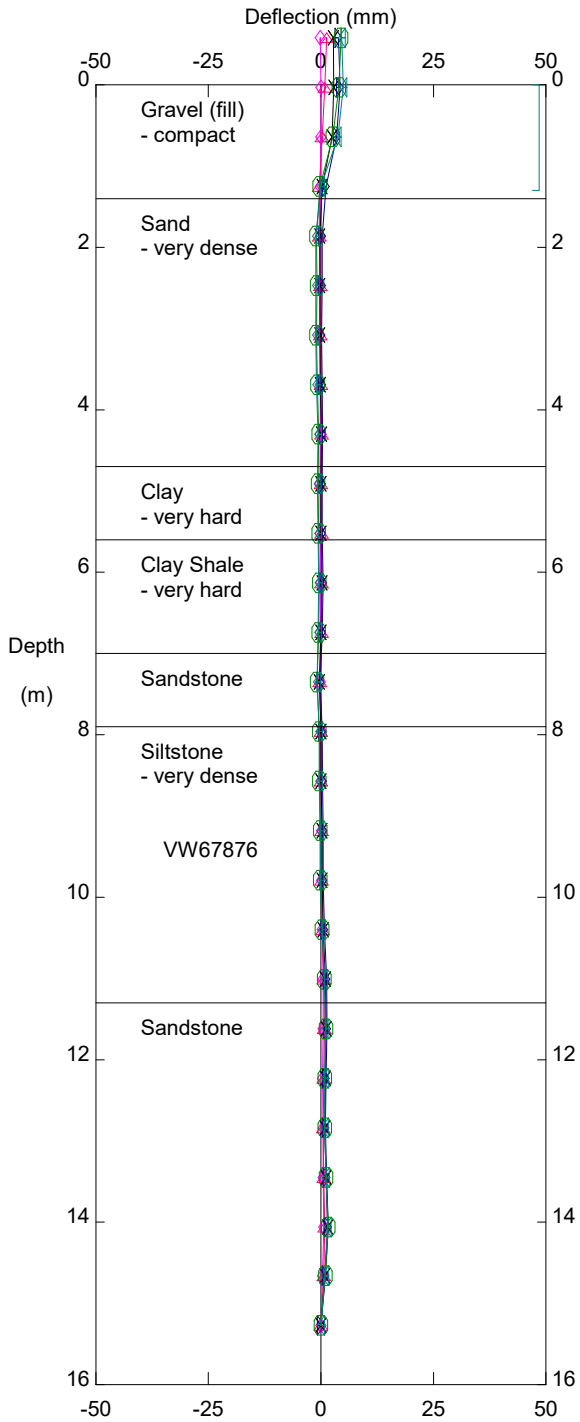
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APPROVED BY	DWP
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FILE No.	23838





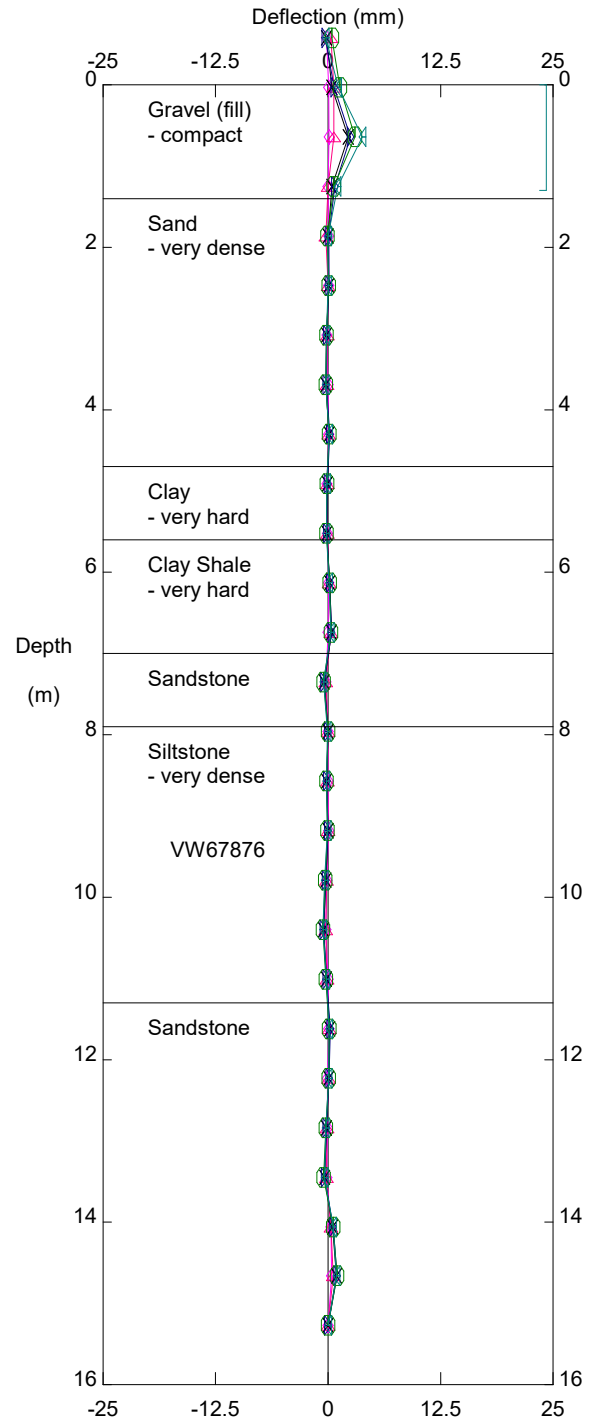
Thurber Engineering Ltd.



Cumulative Deflection  
Direction A



Ref. Elevation 340.20



Incremental Deflection  
Direction A

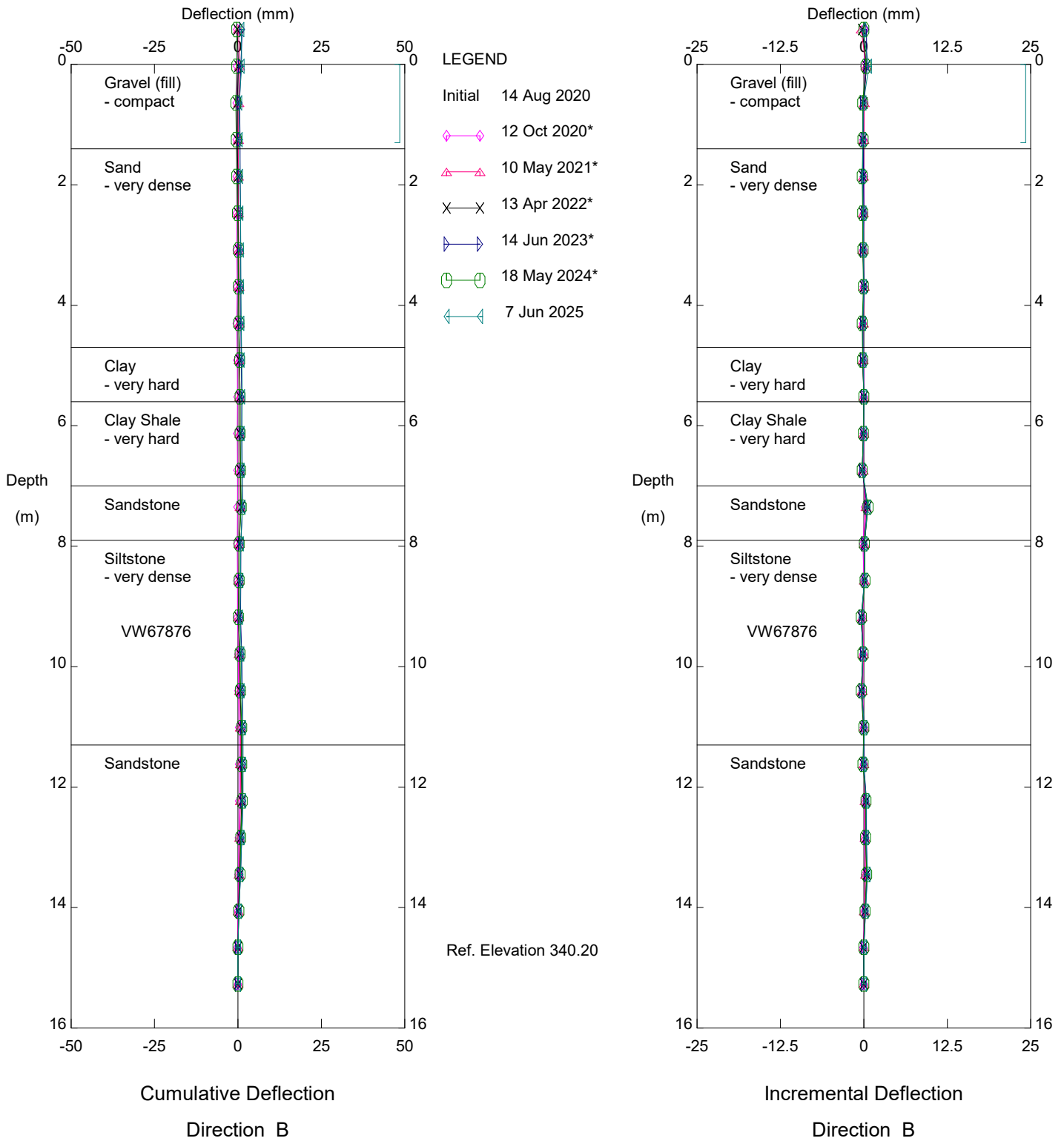
HWY 684 Shaftesbury Trail, Inclinator SI20-2

Alberta Transportation

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



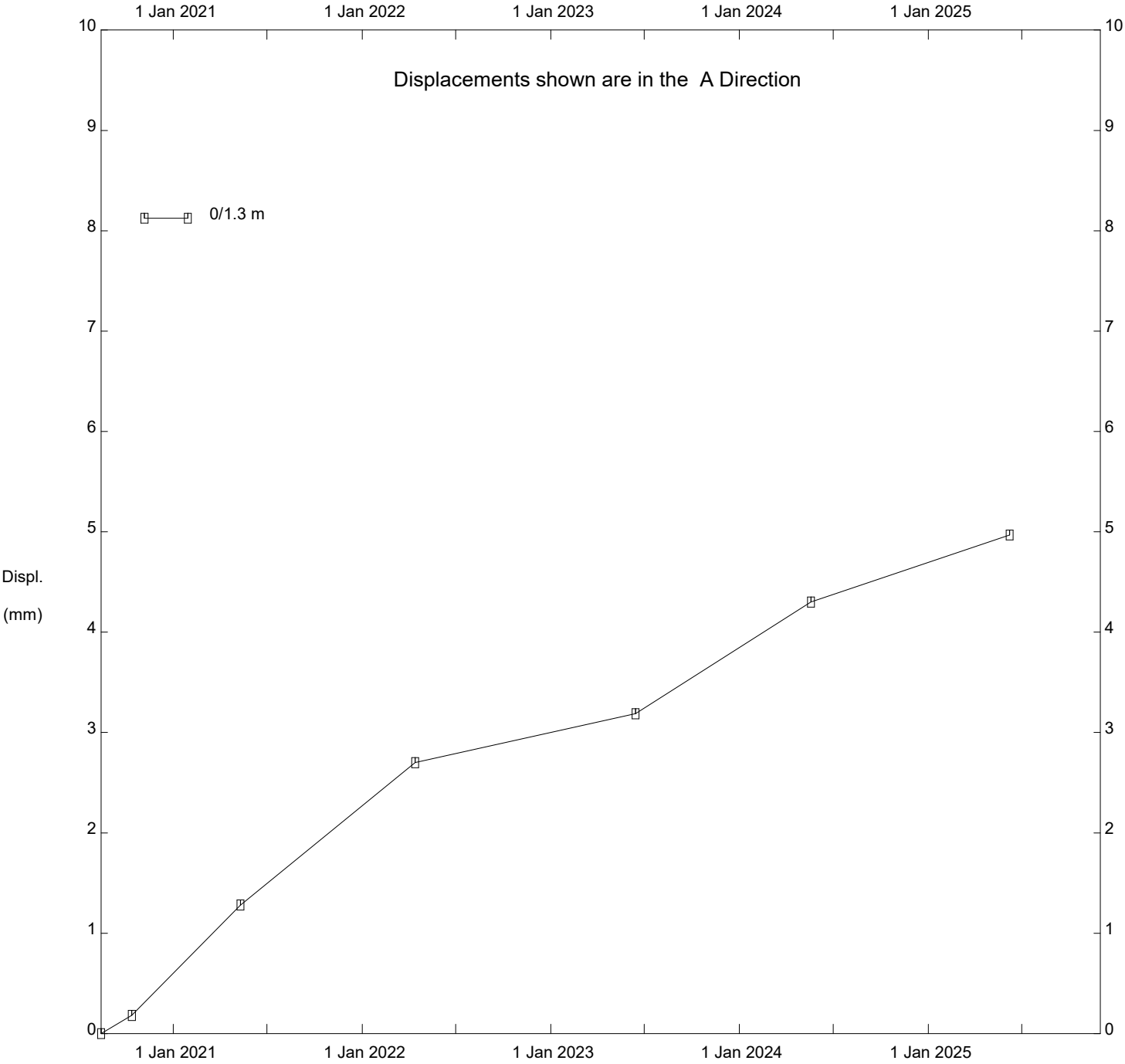
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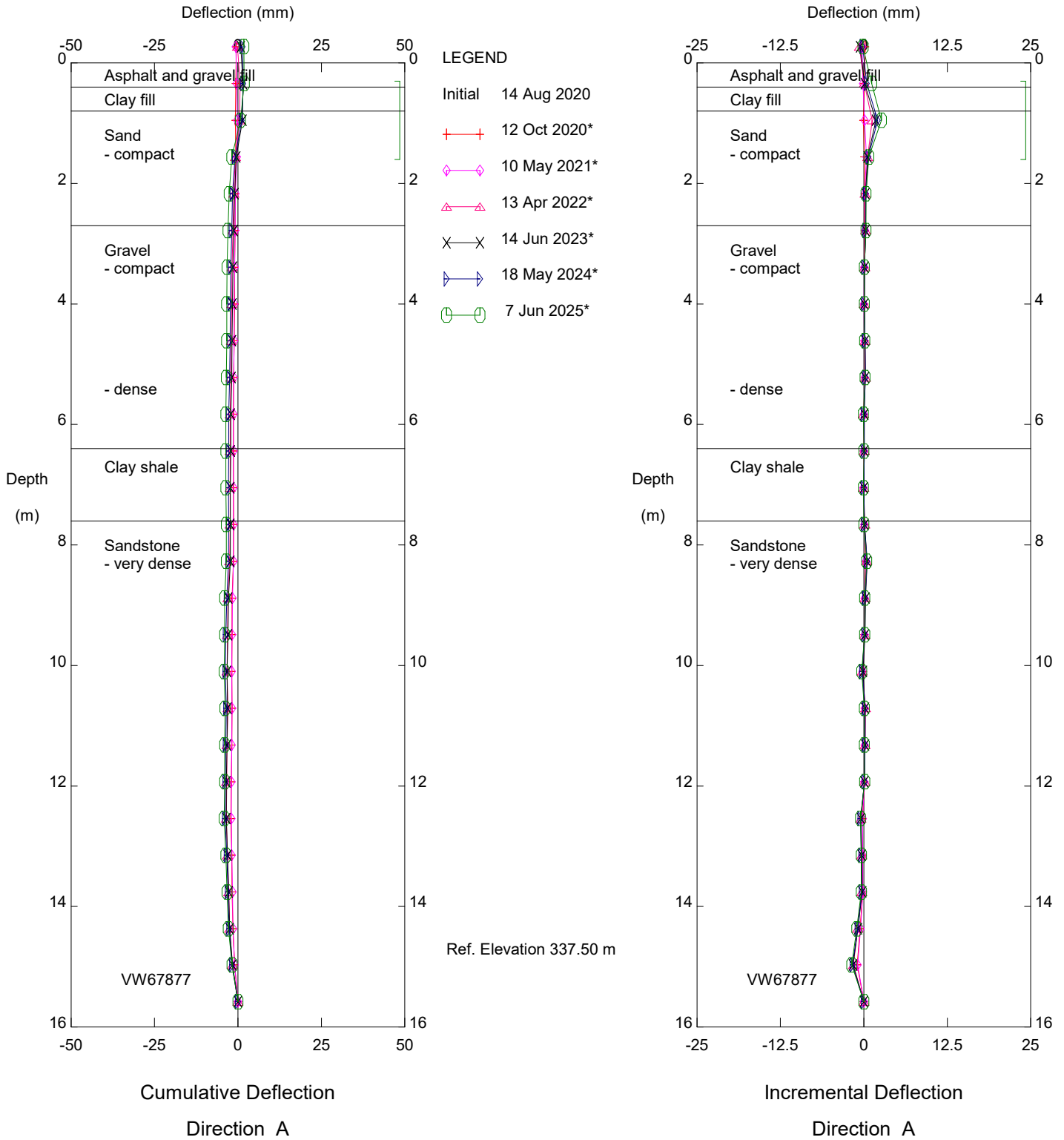
HWY 684 Shaftesbury Trail, Inclinator SI20-2

Alberta Transportation

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



Thurber Engineering Ltd.

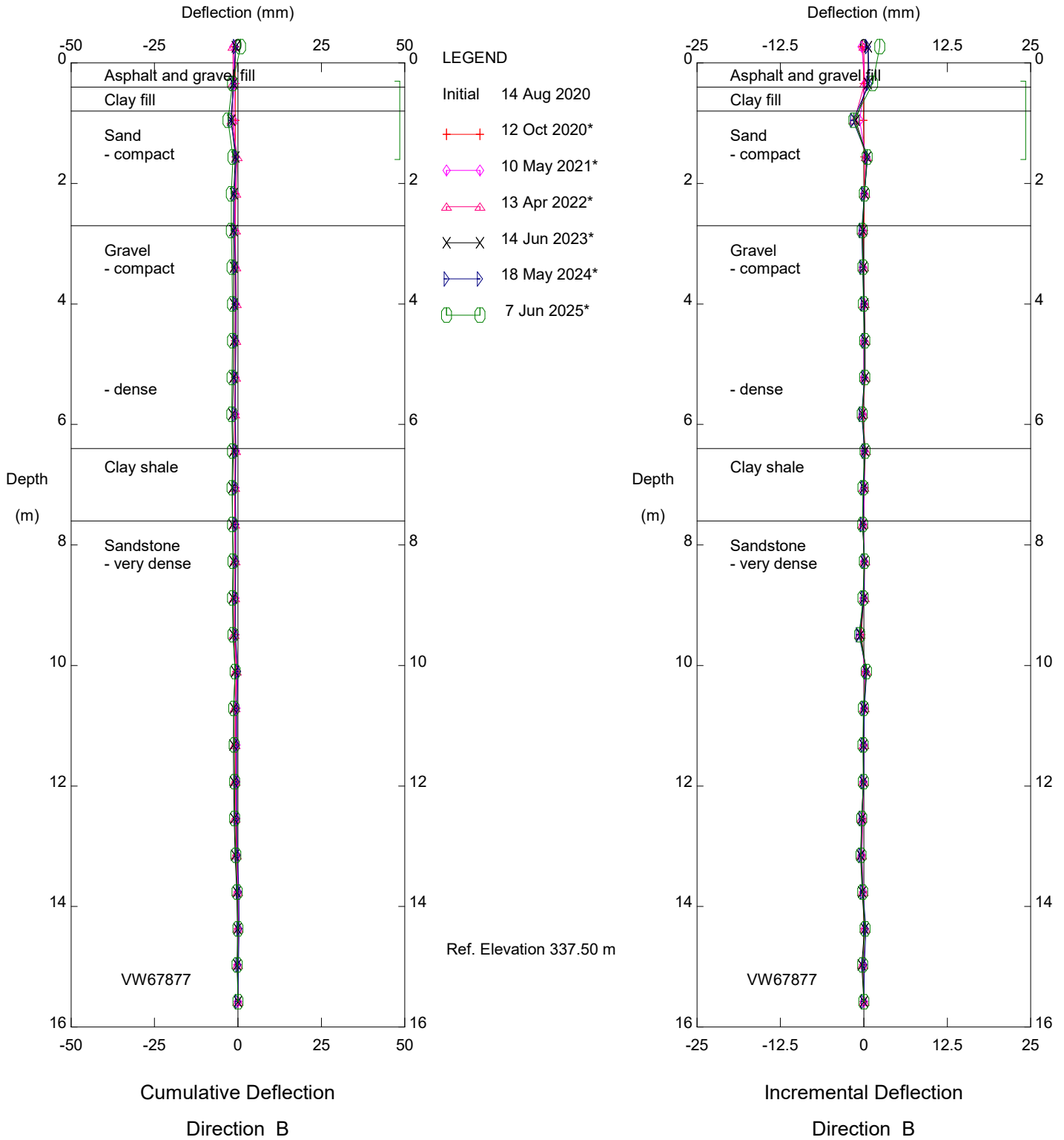


HWY 684 Shaftesbury trail, Inclinometer SI20-3

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

# Thurber Engineering Ltd.

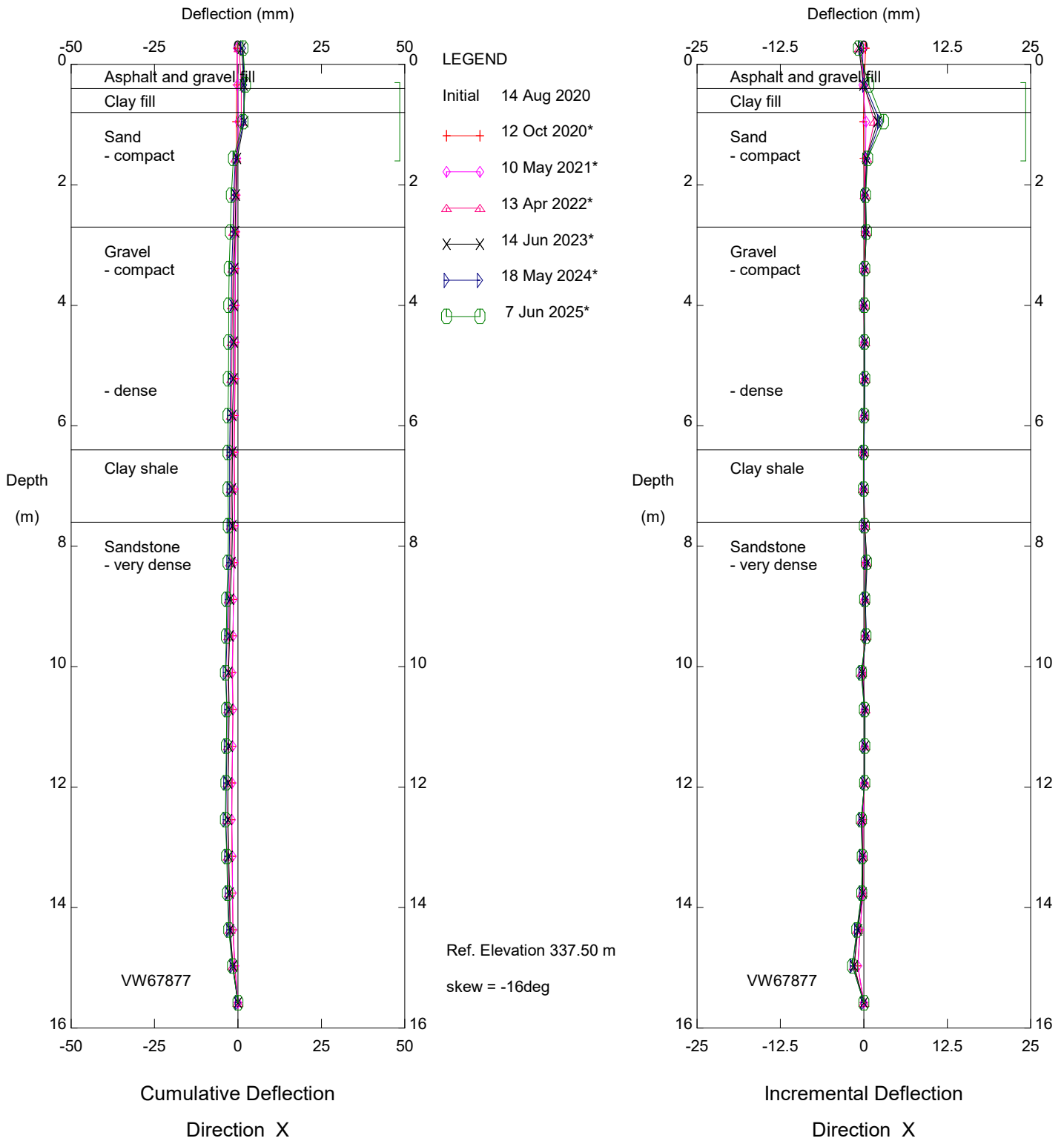


HWY 684 Shaftesbury trail, Inclinometer SI20-3

Alberta Transportation

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

# Thurber Engineering Ltd.

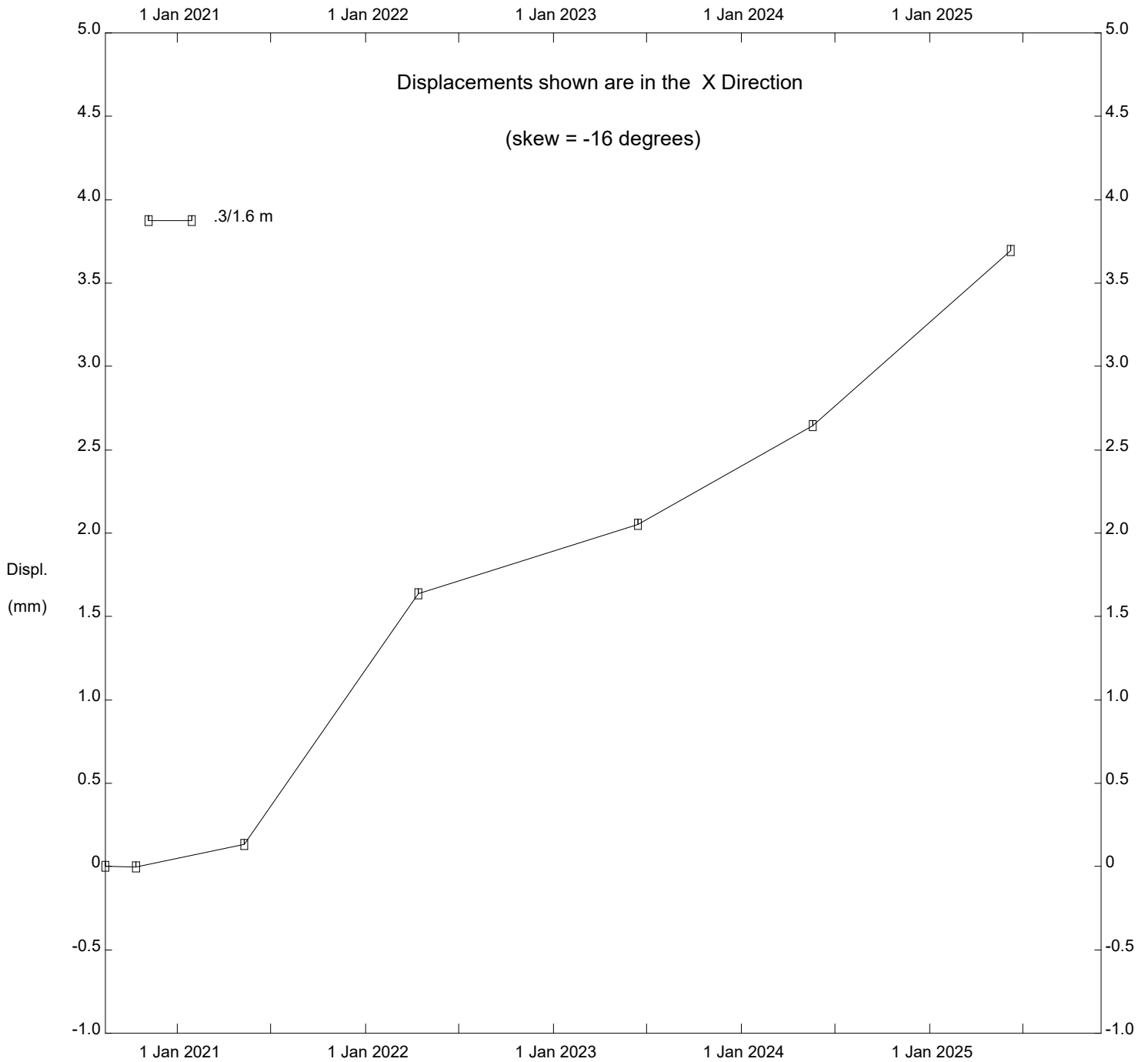


HWY 684 Shaftesbury trail, Inclinometer SI20-3

Alberta Transportation

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

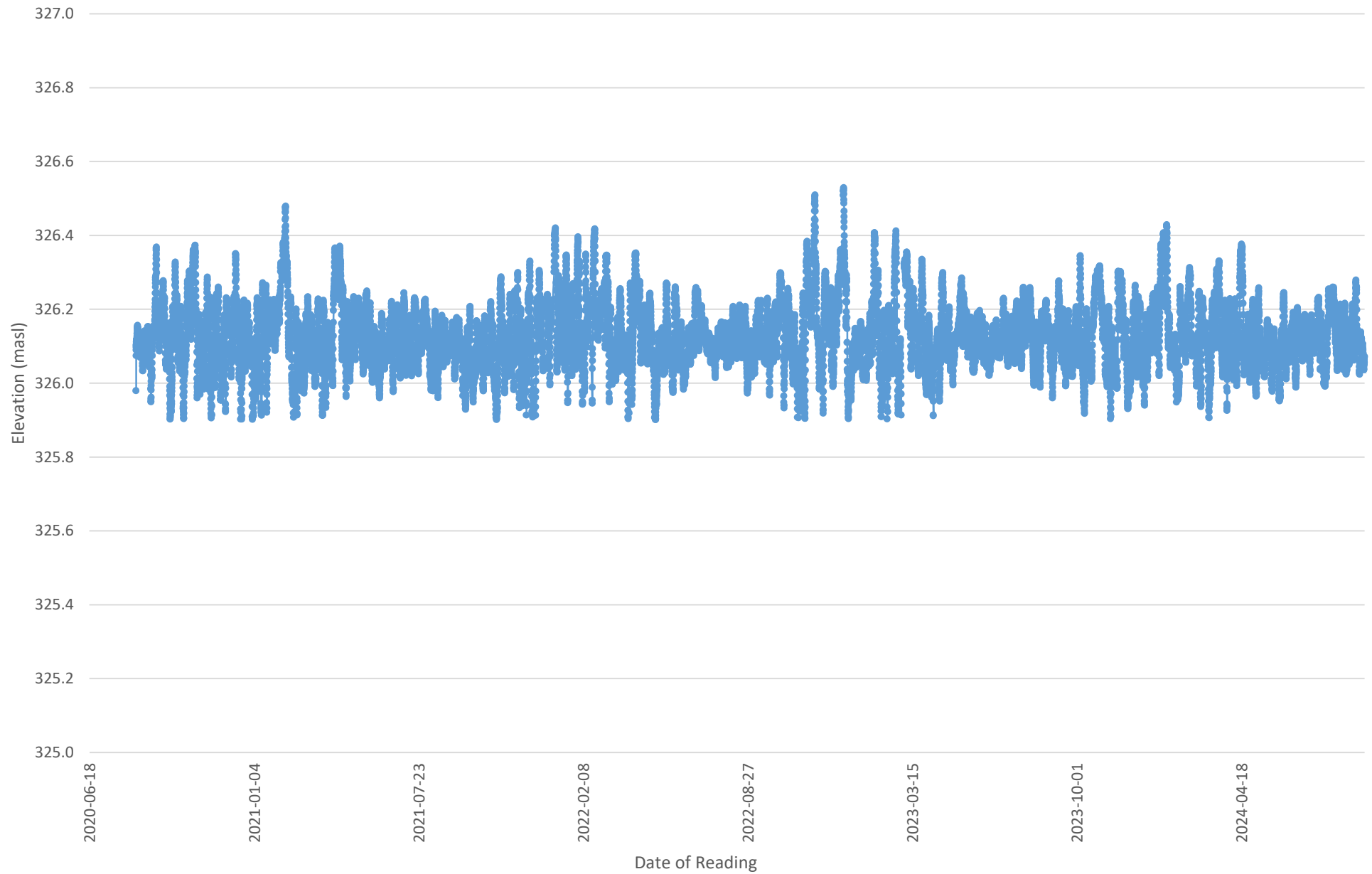
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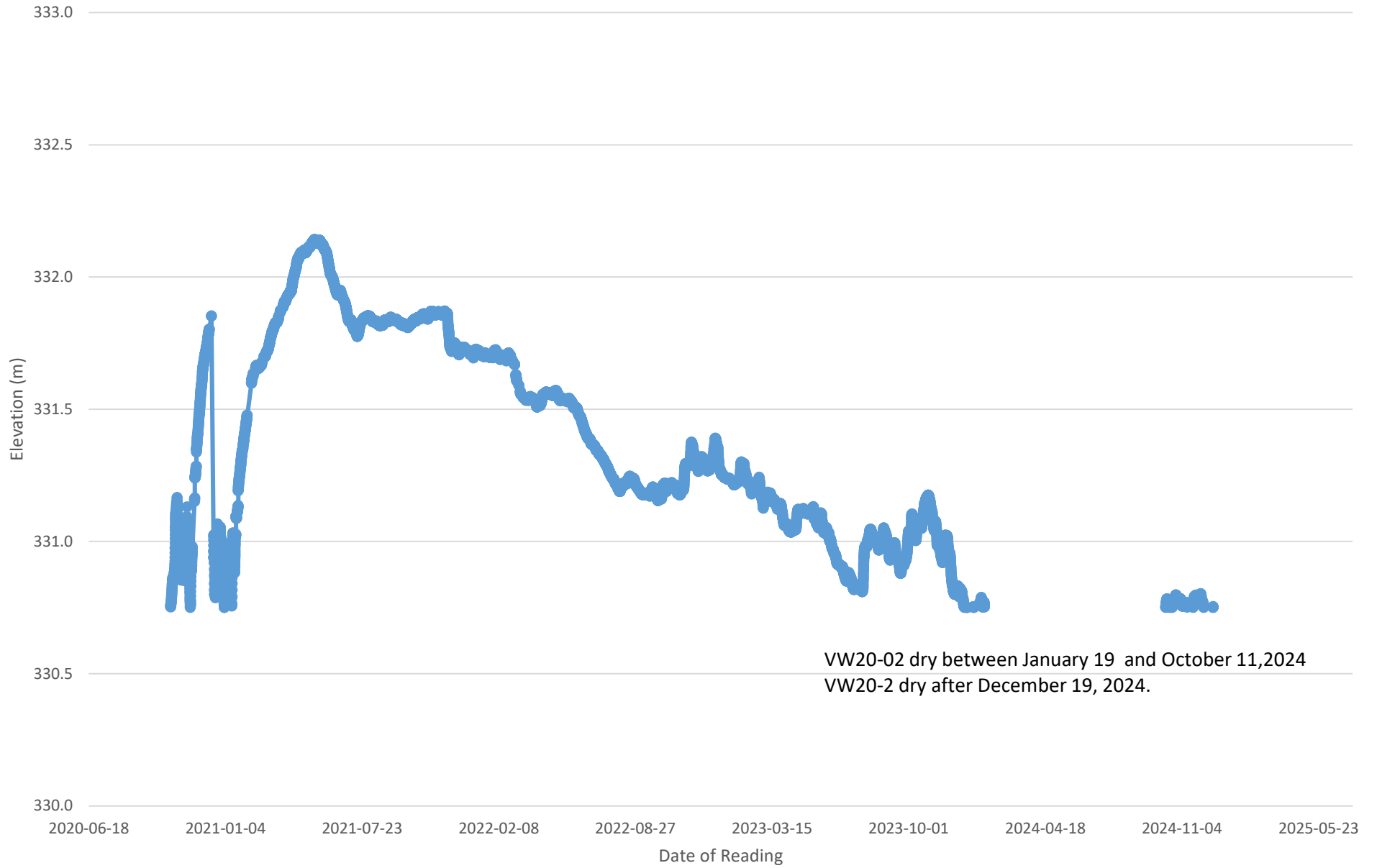
HWY 684 Shaftesbury trail, Inclinator SI20-3

Alberta Transportation

# PH053-1 - VW20-01

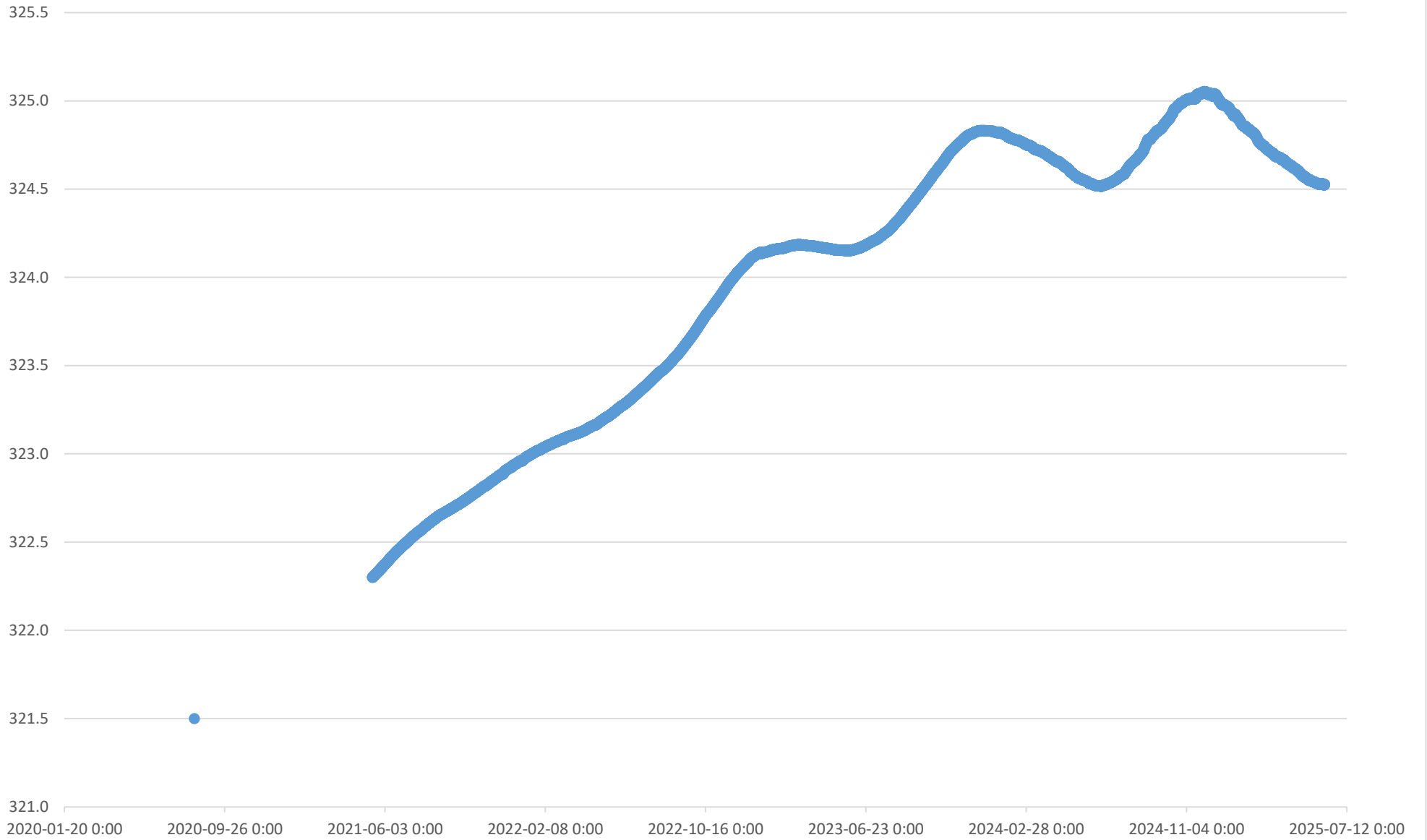


# PH053 - 2 - VW20-02





# PH053 - 3 - VW20-3



TH20-3