

**ECONOMIC CORRIDORS GRMP  
NORTH CENTRAL (ATHABASCA AND FORT  
McMURRAY DISTRICTS)  
INSTRUMENTATION MONITORING- FALL 2024**



Site Number	Location	Name	Hwy	km
NC097	HWY 63:12 L1 0.093	Parsons Creek Interchange	63:12	km 0.09
<b>Legal Description:</b> 12-5-87-10 W6		<b>UTM Co-ordinates</b>		
		12V E 473714	N	6293608

<b>Current Monitoring:</b>	12-Sep-2024	<b>Previous Monitoring</b>	9-June-2024
<b>Instruments Read By:</b>	Mr. Niraj Regmi, G.I.T and Mr. Nixon Mationg, of Thurber		

Instruments Read During This Site Visit			
<b>Slope Inclinerometers (SIs):</b> SI14-05	<b>Pneumatic Piezometers (PN):</b> N/A	<b>Vibration Wire Piezometers (VW):</b> PZ14-15, PZ14-19, PZ14-20,	<b>Standpipe Piezometers (SP):</b> N/A
<b>Load Cell (LC):</b> N/A	<b>Strain Gauges:</b> N/A	<b>SAAs:</b> N/A	<b>Others:</b> <b>Settlement Cells:</b> (SC14-09, SC14-12)

Readout Equipment Used			
<b>Slope Inclinerometers:</b> RST Digital Inclinerometer probe with a 2 ft. wheelbase and an RST Pocket PC readout	<b>Pneumatic Piezometers:</b>	<b>Vibration Wire Piezometers:</b> RST VW2106 and a GEOKON GK-404 vibrating wire readout	<b>Standpipe Piezometers:</b>
<b>Load Cell:</b>	<b>Strain Gauges:</b>	<b>SAAs:</b>	<b>Others:</b> RST VW2106 and a GEOKON GK-404 vibrating wire readout
<b>Notes:</b>			
- Selected instruments, located in the general vicinity of the west headslope of the bridge, are typically read during the fall season. All instruments listed under Section C for this site are read during the spring season.			

Discussion	
<b>Zones of New Movement:</b>	None
<b>Interpretation of Monitoring Results:</b>	<p><b><u>Parsons Interchange:</u></b></p> <p>Slope inclinometer SI14-05, installed near the west headslope of the bridge, showed a rate of movement of 2.3 mm/yr over 1.5 m to 4.6 m and over 4.6 m to 9.4 m depth since the spring of 2024 readings.</p> <p>Vibrating wire piezometers PZ14-15 and PZ14-19 showed decreases in groundwater level of 0.20 m and 0.28 m, respectively, since the spring of 2024 readings. PZ14-20 showed an increase in groundwater level of 0.57 m, since the spring of 2024 readings.</p> <p>Settlement cells SC14-09 and SC14-12 showed increases in settlement of 39.67 mm and 14.27 mm, respectively, compared to the spring of 2024 readings.</p>

<b>Future Work:</b>	The operational instruments at this site should be read again in the spring of 2025.
<b>Instrumentation Repairs:</b>	No instrument repairs are required at this time.
<b>Additional Comments:</b>	

<b>Attachments:</b>	<ul style="list-style-type: none"> <li>• Table NC097-1 Fall 2024 – HWY 63:12 Parsons Creek Interchange, Slope Inclinator Instrumentation Reading Summary</li> <li>• Table NC097-2 Fall 2024 – HWY 63:12 Parsons Creek Interchange, Vibrating Wire Piezometer Instrumentation Reading Summary</li> <li>• Table NC097-3 Fall 2024 – HWY 63:12 Parsons Creek Interchange, Settlement Gauge Instrumentation Reading Summary</li> <li>• Statement of Limitations and Conditions</li> <li>• APPENDIX A – NC097-1 FALL 2024 <ul style="list-style-type: none"> <li>○ Field Inspector’s report</li> <li>○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32122-NC097)</li> <li>○ Parsons Interchange Instruments <ul style="list-style-type: none"> <li>▪ SI Reading Plot(s)</li> <li>▪ Vibrating Wire Piezometer Plots (Figures PZ1 through PZ2)</li> <li>▪ Vibrating Wire Settlement Cell Plots (Figures SC1 through SC3)</li> </ul> </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.  
Tarek Abdelaziz, Ph.D., P. Eng.  
Partner | Senior Geotechnical Engineer

Lucas Green, P.Eng.  
Geotechnical Engineer

**Table NC097-1: Fall 2024 – Hwy 63:12 Parsons Creek Interchange Slope Inclinator Instrumentation Reading Summary**

Date Monitored: September 12, 2024

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS OF SI	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)
<b>Parsons Interchange</b>								
SI14-05	August 27, 2014	73.8 mm over 1.5 m to 4.6 m in 98° direction	99.0 on May 28, 2015	Operational	June 9, 2024	0.6	2.3	-5.3
		102.6 mm over 4.6 m to 9.4 m in 98° direction	66.2 on October 15, 2014			0.6	2.3	1.9

Drawing 32122-NC097 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

**Table NC097-2: Fall 2024 – Hwy 63:12 Parsons Creek Interchange Vibrating Wire Piezometer Instrumentation Reading Summary**

Date Monitored: September 12, 2024

INSTRUMENT #	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM GROUNDWATER ELEV. (m)	CURRENT GROUNDWATER ELEV. (m)	PREVIOUS GROUNDWATER ELEV. (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
<b>Parsons Interchange</b>								
PZ14-15 (30825)	December 1, 2014	247.78	258.75	Operational	260.92 on June 28, 2015	252.52	252.72	-0.20
PZ14-19 (30827)	November 27, 2014	246.35	258.24	Operational	260.97 on June 28, 2015	252.60	252.88	-0.28
PZ14-20 (30828)	November 27, 2014	253.67	258.24	Operational	262.41 on August 15, 2015	254.13	253.56 (Oct. 2, 2024)	0.57

Drawing 32122-NC097 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

**Table NC097-3: Fall 2024 – Hwy 63:12 Parsons Creek Interchange Settlement Gauge Instrumentation Reading Summary**

Date Monitored: September 12, 2024

INSTRUMENT #	DATE INITIALIZED	CURRENT STATUS	CURRENT SETTLEMENT (mm)	PREVIOUS SETTLEMENT (mm)	CHANGE IN SETTLEMENT (mm) <sup>(1)</sup>
<b>Parsons Interchange</b>					
SC14-09	November 27, 2014	Operational	-816.97	-777.30	39.67
SC14-12	November 27, 2014	Operational	-1222.83	-1208.56	14.27

Drawing 32122-NC097 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

(1) Negative (-) change in settlement indicates upward movement (heave) of the ground surface and positive (+) change in settlement indicates downward movement (settlement) of the 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.

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### 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.

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### 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.

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**THURBER** ENGINEERING LTD.

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022163)  
NORTH CENTRAL (ATHABASCA AND FORT McMURRAY DISTRICTS)  
INSTRUMENTATION MONITORING RESULTS**

**FALL 2024**

**APPENDIX A  
DATA PRESENTATION**

**SITE NC097: HWY 63:12 PARSONS CREEK INTERCHANGE**

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS  
INSTRUMENTATION MONITORING FIELD SUMMARY (NC097)  
FALL 2024**

<b>Location:</b> Parsons Creek Interchange (Hwy 63:12 L1 0.093) <b>File Number:</b> 32122 <b>Probe:</b> RST SI Set 8R <b>Cable:</b> RST SI Set 8R	<b>Readout:</b> <b>Casing Diameter</b> 2.75"/3.34" <b>Temp:</b> 12 <b>Read by:</b> NRM/NKR
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**SLOPE INCLINOMETER (SI) READINGS**

SI#	GPS Location 3TM EBA Scaled		Date	Stickup (m)	Depth from top of Casing (ft)	Azimuth of A+ Groove	Current Bottom Depth Readings				Probe/ Reel #	Size (")	Remarks
	Northing	Easting					A+	A-	B+	B-			
<b>Parsons Interchange</b>													
SI14-05	6296408	-26266	12-Sep-24	1.10	30 to 6	85	-87	102	-497	499	8R/8R	3.34	
SI15-14	6296510	-26349		1.15	46 to 4	322	1671	-1702	-333	322	8R/8R	2.75	
<b>HWY 686 Cut Slope</b>													
SI14-09A	6296436	-27145		0.91	89 to 5	132	-146	158	297	-300	8R/8R	3.34	
SI14-13	6296181	-27073		1.04	54 to 6	30	-414	425	467	-491	8R/8R	3.34	
SI14-14	6296236	-27082		1.00	36 to 6	356	819	-809	198	207	8R/8R	3.34	
SI14-19	6296200	-26857		2.23	52 to 6	349	9	9	96	-100	8R/8R	3.34	

**INSPECTOR REPORT**

Only Read SI14-05 in Fall 2024



**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS  
INSTRUMENTATION MONITORING FIELD SUMMARY (NC097)  
FALL 2024**

<b>Location:</b> Parsons Creek Interchange (Hwy 63:12 L1 0.093) <b>File Number:</b> 32122	<b>Readout:</b> GK404 SN 364/ VW 2106 Unit 3 <b>Temp:</b> <b>Read by:</b>
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**VIBRATING WIRE PIEZOMETER (VW) READINGS**

VW#	Date	Reading		Identification Number	Monitoring Station	Datalogger Serial	3TM EBA Scaled		Comment
		B Unit	Temp.				Northing	Easting	
<b>Parsons Interchange</b>									
PZ14-15	12-Sep-24	8495.8	7.7	30825	MS-09	4123	6296421	-26343	
PZ14-19	12-Sep-24	8428.9	-	30827	MS-09	4123	6296421	-26343	
PZ14-20	12-Sep-24	8859.3	4.4	30828	MS-09	4123	6296421	-26343	
PZ15-03		8869.9	6.3	31641	MS-08	3881	6296343	-26371	
PZ15-04		8426.0	5.3	31642	MS-08	3881	6296343	-26371	
PZ15-05		8525.7	5.8	30959	MS-08	3881	6296365	-26435	
PZ15-06		8212.3	4.9	30960	MS-08	3882	6296365	-36435	
PZ15-07		8423.2	5.0	30961	MS-08	3882	6296365	-26435	
PZ15-09		8900.2	4.2	30955	MS-09	4002	6296443	-26415	
PZ15-10		8826.4	-	30956	MS-09	4002	6296443	-26415	

**INSPECTOR REPORT**

* PZ14-20 functioning during Fall 2024 Readings
Only Read PZ14-15, PZ14-19, PZ14-20 in Fall 2024.

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
 NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS  
 INSTRUMENTATION MONITORING FIELD SUMMARY (NC097)  
 FALL 2024**

<b>Location:</b> Parsons Creek Interchange (Hwy 63:12 L1 0.093)	<b>Readout:</b> GK 404 SN 364/ VW 2106 Unit 3
<b>File Number:</b> 32122	<b>Temp (deg C):</b>
	<b>Read by:</b>

**VIBRATING WIRE PIEZOMETER (VW) READINGS**

VW#	Date	Reading		Identification Number	3TM EBA Scaled		Comment
		B Unit	Temp.		Northing	Easting	
<b>HWY 686 Cut Slope</b>							
PZ14-28a				28239	6296436	-27145	
PZ14-29a				28240	6296436	-27145	
PZ14-30a				28241	6296436	-27145	
PZ14-33				29841	6296338	-27090	
PZ14-34				21878	6296113	-27056	
PZ14-35				21879	6296113	-27056	
PZ14-36				28235	6296113	-27056	
PZ14-37				29842	6296181	-27073	
PZ14-38				29848	6296181	-27073	
PZ14-39				29843	6296236	-27082	
PZ14-40				18140	6296538	-26935	
PZ14-41				21880	6296538	-26935	
PZ14-42				28244	6296538	-26935	
PZ14-43				29844	6296434	-26914	
PZ14-46				28236	6296077	-26851	
PZ14-47				28237	6296077	-26851	
PZ14-48				28238	6296077	-26851	
PZ14-49				17575	6296200	-26857	
PZ14-50				18817	6296200	-26857	

**INSPECTOR REPORT**

Not Read Fall 2024

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
 NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS  
 INSTRUMENTATION MONITORING FIELD SUMMARY (NC097)  
 FALL 2024**

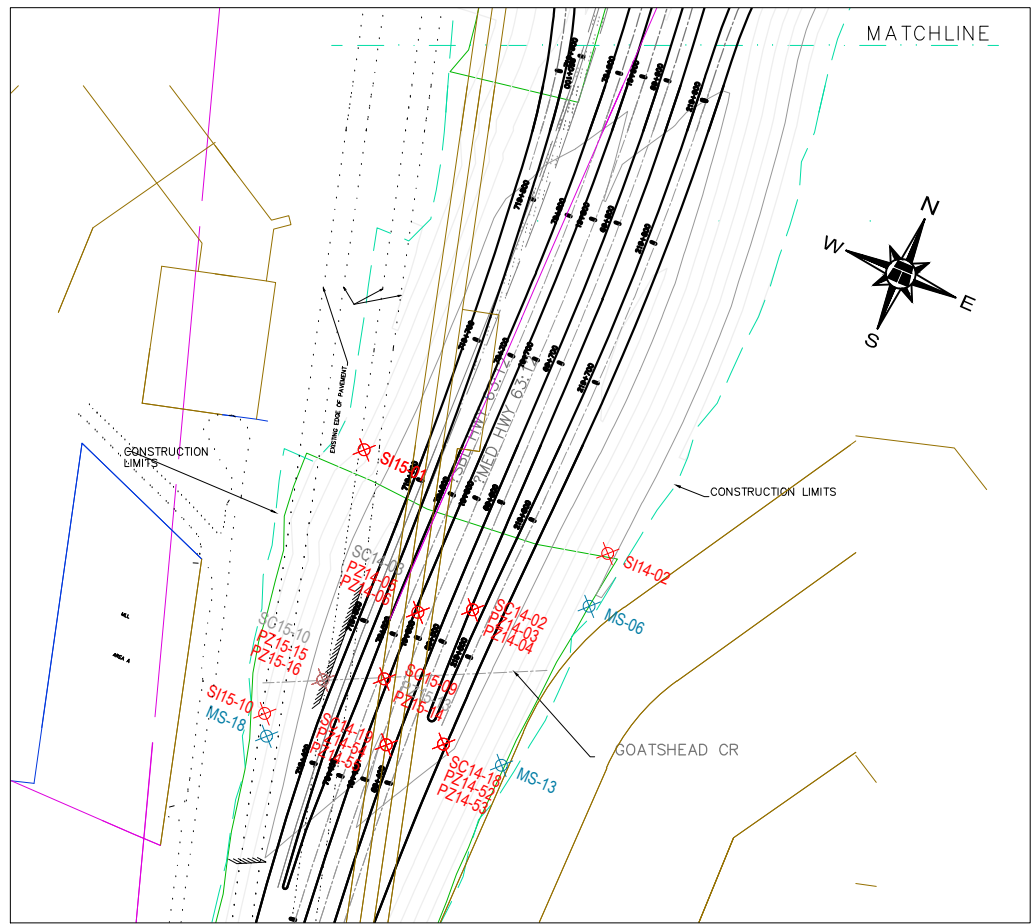
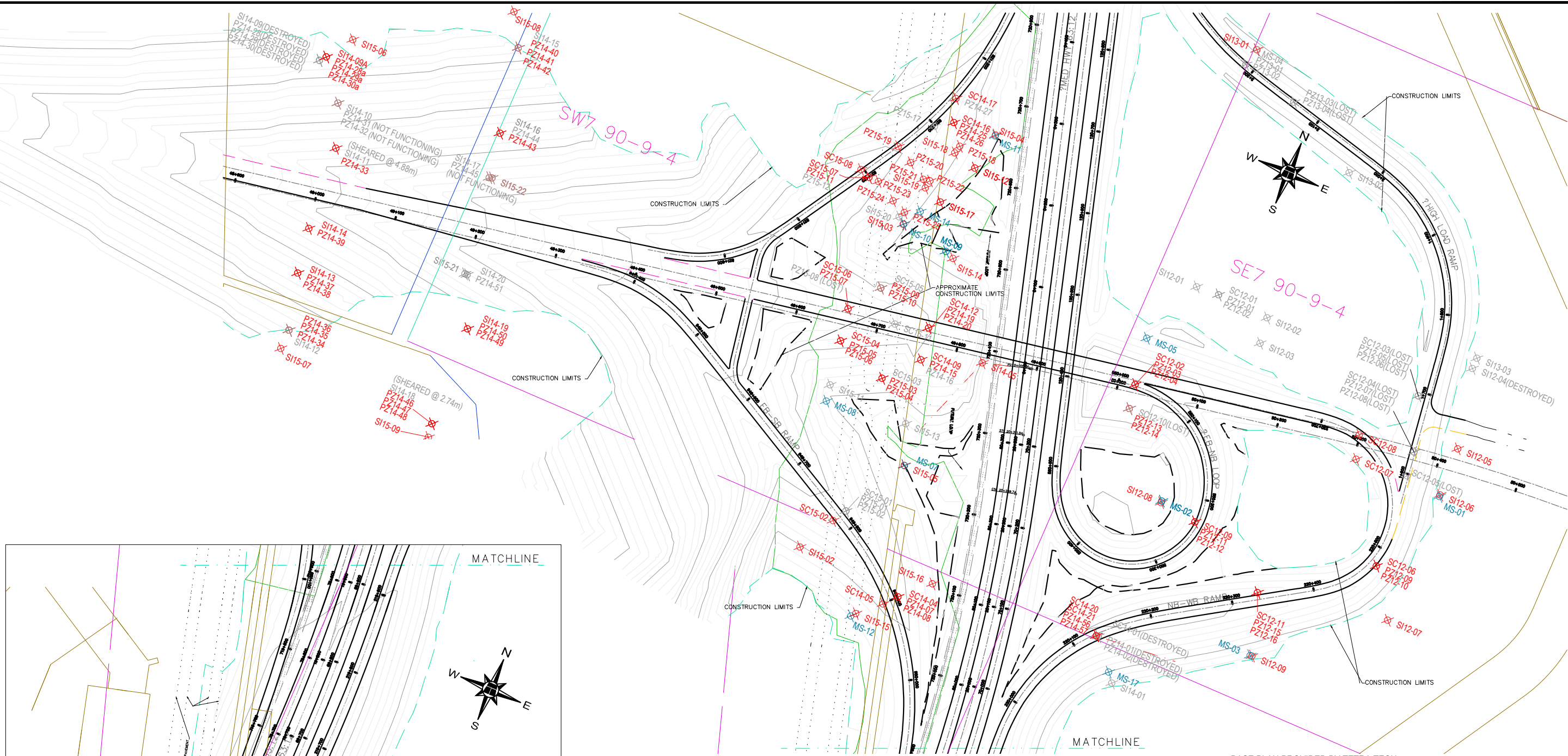
<b>Location:</b> Parsons Creek Interchange (Hwy 63:12 L1 0.093) <b>File Number:</b> 32122	<b>Readout:</b> GK 404 SN 364/ VW 2106 Unit 3 <b>Temp:</b> 12 <b>Read by:</b> NRM/NKR
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**SETTLEMENT CELL READINGS**

SC#	Date	Reading		Identification Number	Monitoring Station	Datalogger Serial	3TM EBA Scaled		Comment
		B Unit	Temp.				Northing	Easting	
<b>Parsons Interchange</b>									
SC14-09	12-Sep-24	7624	4.9	1426083	MS-09	4002	6296382	-26336	
SC14-12	12-Sep-24	7449.2	5	1426084	MS-09	4001	6296421	-26343	
SC15-04		7495.4	4.6	1426091	MS-08	3881	6296365	-26435	
SC15-06		8423.2	5.0	1426092	MS-08	3882	6296404	-26442	

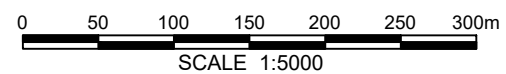
**INSPECTOR REPORT**

Only Read SC14-09 and SC14-12 in Fall 2024



**LEGEND**

- ⊗ APPROXIMATE INSTRUMENT LOCATION
- SI STANDPIPE PIEZOMETER
- SC SETTLEMENT CELL
- PZ VIBRATING WIRE PIEZOMETER
- MS MONITORING STATION



BASE PLAN PROVIDED BY TETRA TECH



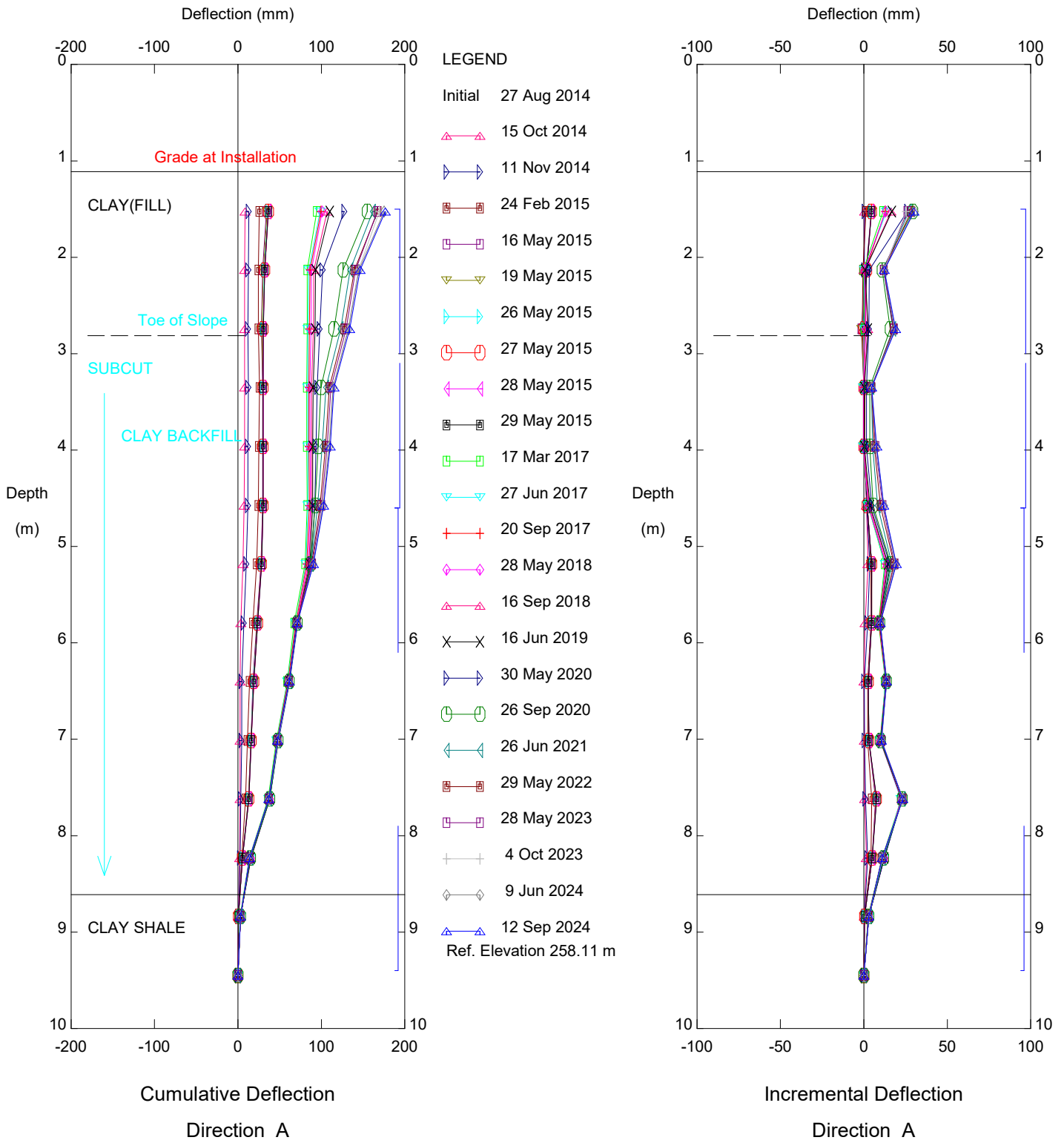
**NORTH CENTRAL  
(ATHABASCA AND FORT MCMURRAY DISTRICTS)  
NC097: HWY 63:12 PARSONS CREEK INTERCHANGE  
SITE PLAN SHOWING INSTRUMENT LOCATIONS**

DWG No. 32122-NC097

DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	TSA
SCALE	1:5000
DATE	JUNE 2022
FILE No.	32122



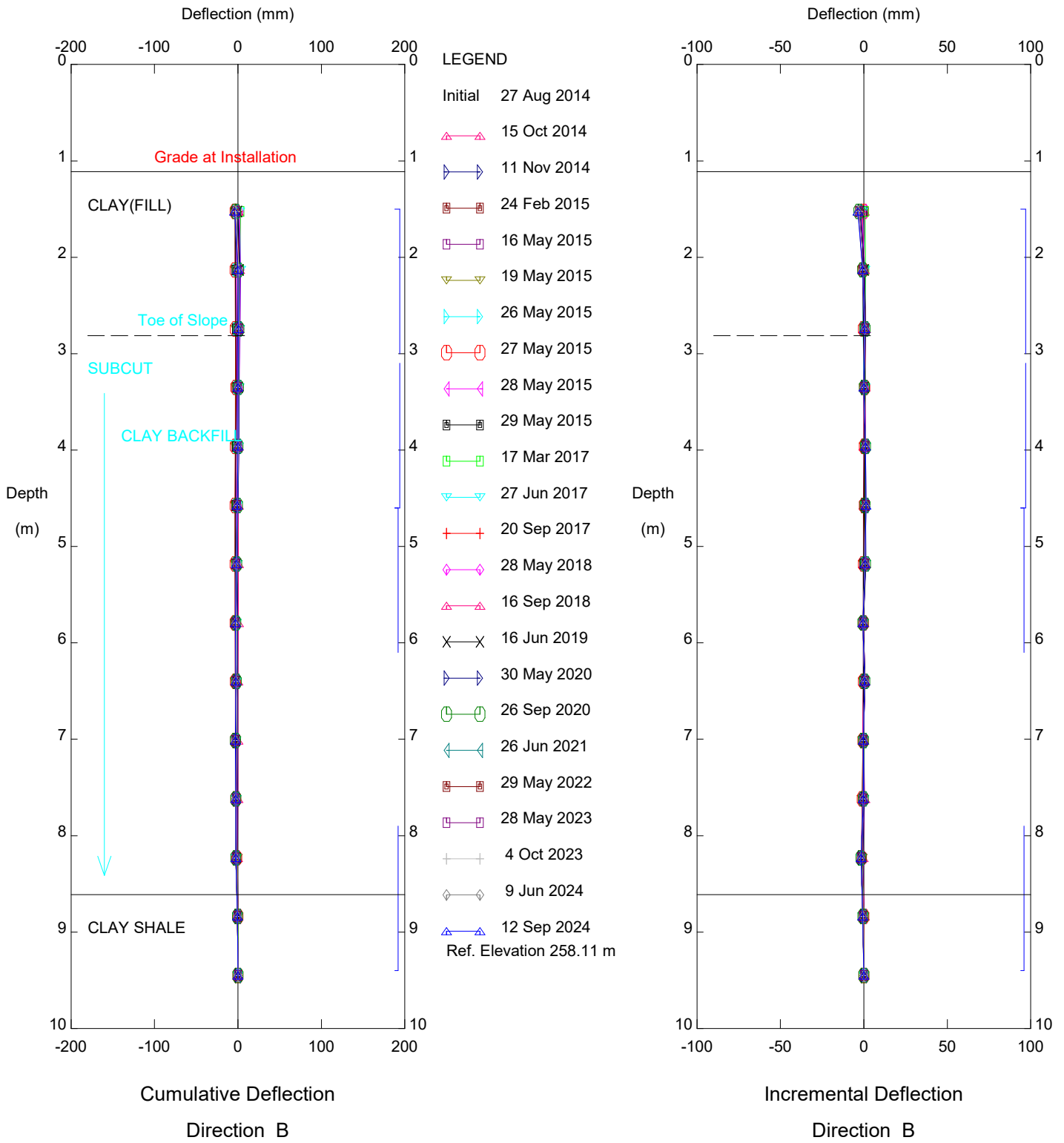
Thurber Engineering Ltd.



Hwy 686, 49+833.7 o/s +6.6m, Inclinometer S114-05

Alberta Transportation

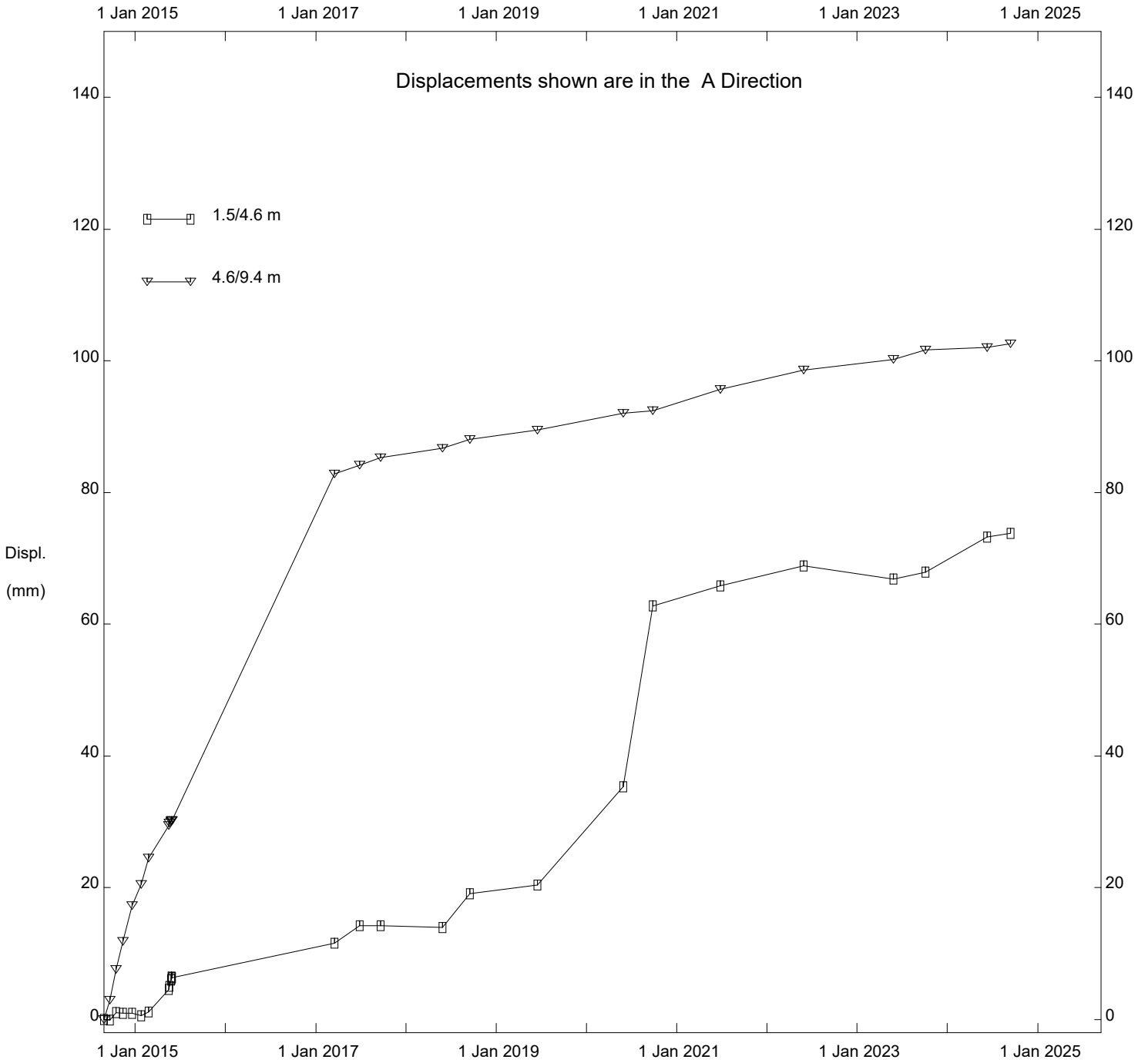
Thurber Engineering Ltd.



Hwy 686, 49+833.7 o/s +6.6m, Inclinometer S114-05

Alberta Transportation

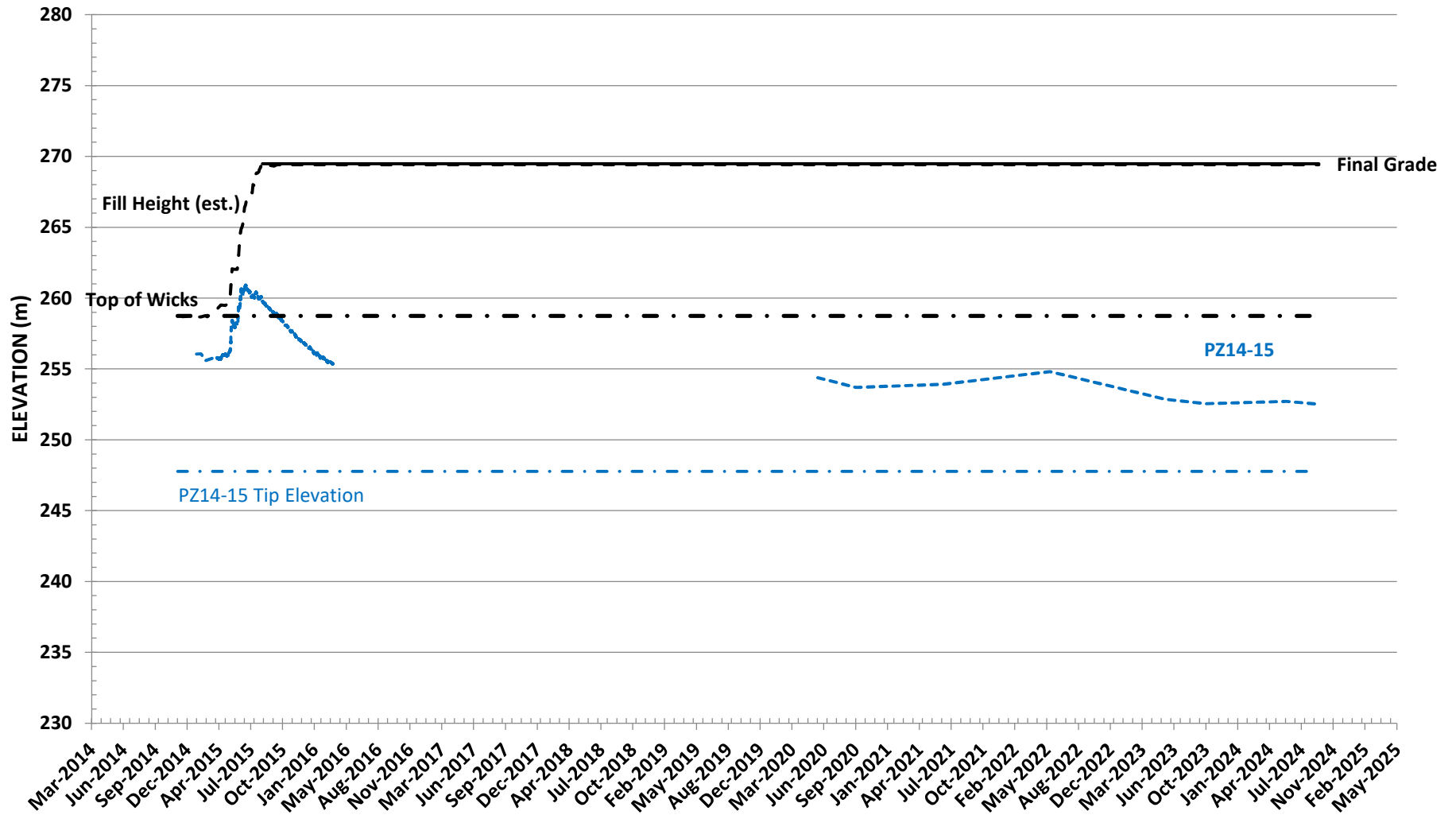
Thurber Engineering Ltd.



Hwy 686, 49+833.7 o/s +6.6m, Inclinator SI14-05

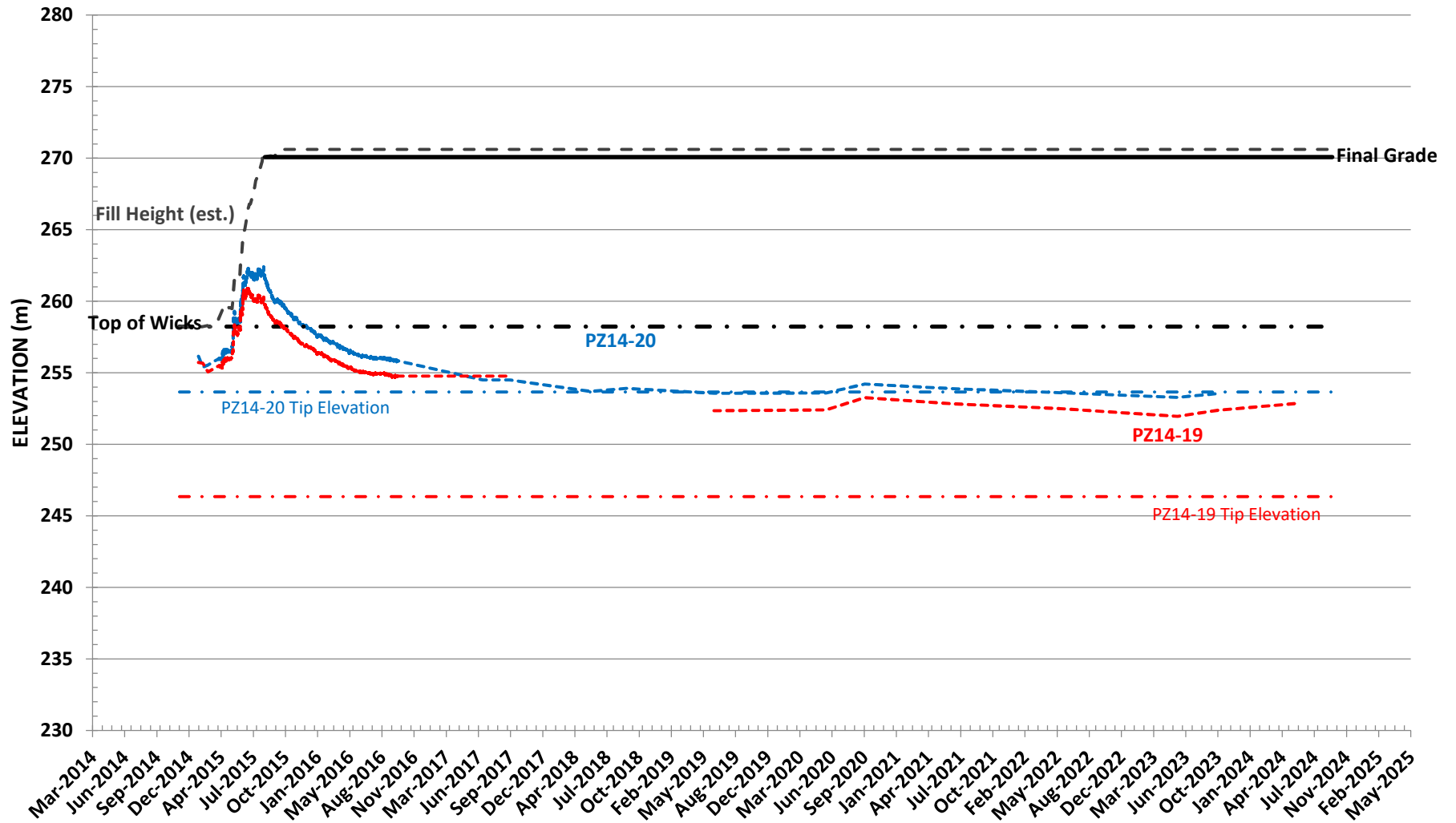
Alberta Transportation

STATION 49+760 o/s +20m  
HWY 686:20  
Piezometer Plot

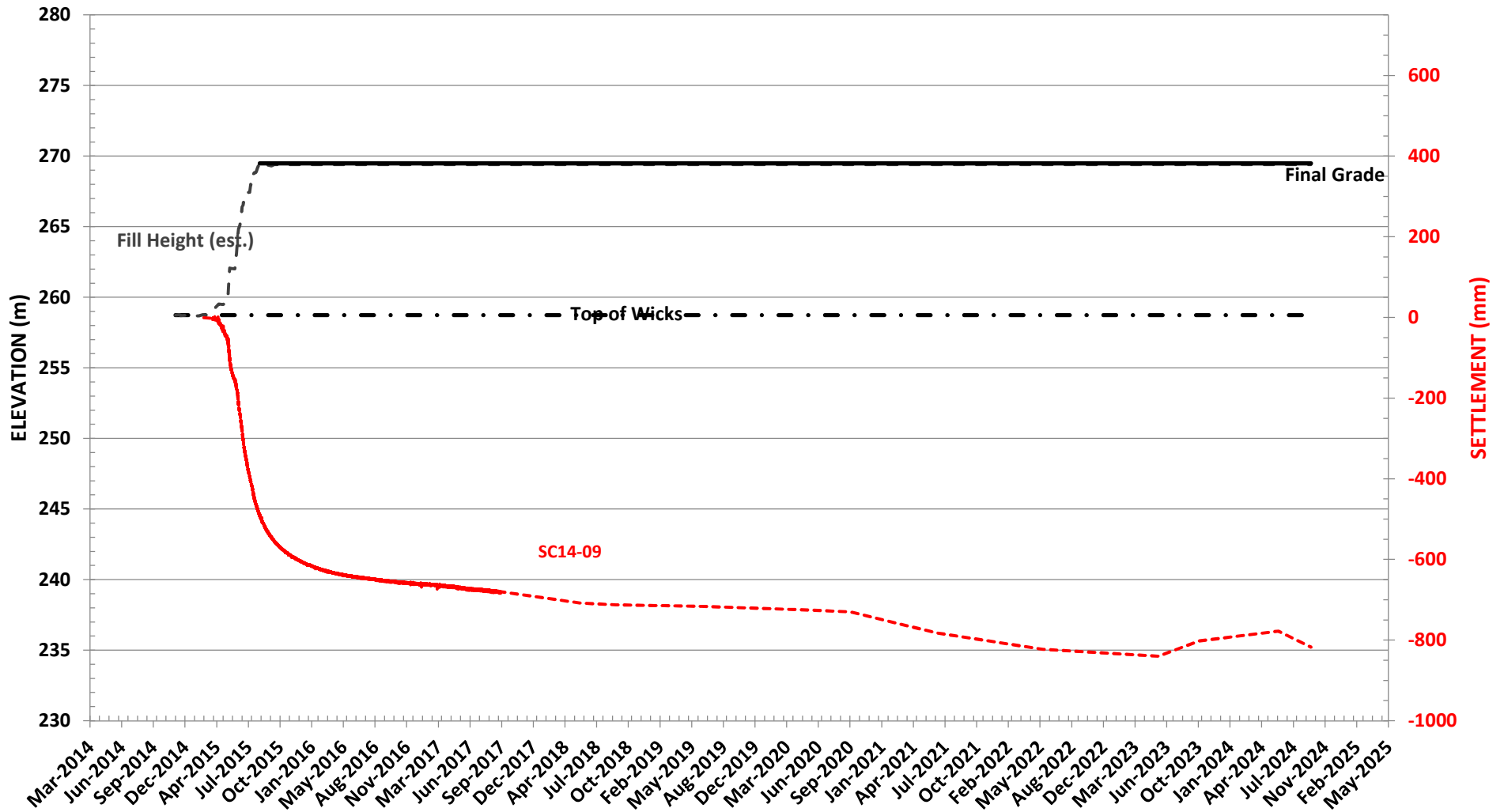




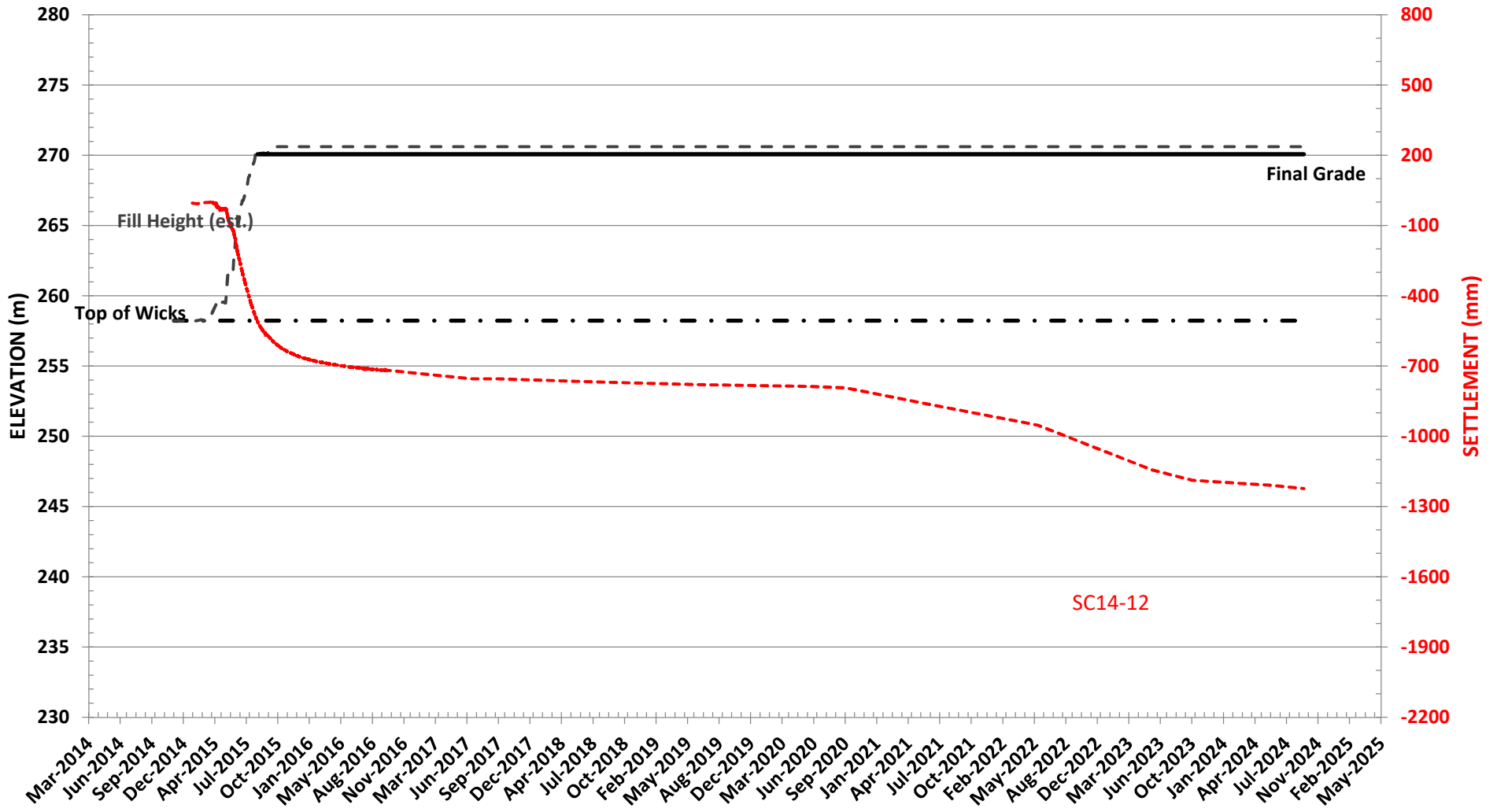
STATION 49+760 o/s 20.1m  
HWY 686:20  
Piezometer Plot



STATION 49+760 o/s +20m  
HWY 686:20  
Settlement Plot



STATION 49+760 o/s -19.7m  
HWY 686:20  
Settlement Plot



STATION 49+693 o/s -54m  
HWY 686:20  
Settlement Plot

