

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



Site Number	Location	Name	Hwy	km
NC093	HWY 813:06, C1 4.631	Rock Island Bridge	813:06	km 4.6
Legal Description: 9-5-74-22 W4		UTM Co-ordinates		
		12U E 351689	N	6139948

Current Monitoring:	17-Sep-2024	Previous Monitoring	13-Jun-2024
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Nixon Mationg, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): N/A	Pneumatic Piezometers (PN): N/A	Vibration Wire Piezometers (VW): VW20-1A and VW20-1B	Standpipe Piezometers (SP): N/A
Load Cell (LC): N/A	Strain Gauges: N/A	SAA's: N/A	Others:

Readout Equipment Used			
Slope Inclinometers:	Pneumatic Piezometers:	Vibration Wire Piezometers: GEOKON GK 404 vibrating wire readout	Standpipe Piezometers:
Load Cell:	Strain Gauges:	SAA's:	Others:
Notes:			

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	Vibrating wire piezometers VW20-1A and VW20-1B showed decreases in groundwater level of 0.37 m and 0.34 m, respectively, since the spring of 2024 readings. The current groundwater levels are within the historical levels.
Future Work:	The instruments should be read again in the spring of 2025.
Instrumentation Repairs:	Consideration should be given to repairing SI20-1 to continue monitoring the landslide movement rate at this site. A mechanical or hydrovac excavation will be required to repair the SI.
Additional Comments:	

<p>Attachments:</p>	<ul style="list-style-type: none"> • Table NC0931-1 Fall 2024 – HWY 813 Rock Island River Bridge NW Approach Fill Landslide (Bf79692), Slope Inclinator Instrumentation Reading Summary • Table NC0931-2 Fall 2024 – HWY 813 Rock Island River Bridge NW Approach Fill Landslide (Bf79692), Vibrating Wire Piezometer Instrumentation Reading Summary • Statement of Limitations and Conditions • APPENDIX A – NC093-1 FALL 2024 <ul style="list-style-type: none"> ○ Field Inspector’s report ○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32122-NC093) ○ SI Reading Plots ○ Figure NC093-1 (Piezometric Data Plot)
----------------------------	--

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 NC093-1: Fall 2024 – Hwy 813 Rock Island River Bridge NW Approach Fill Landslide (Bf79692) Slope Inclinator Instrumentation Reading Summary

Date Monitored: Not Monitored

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)
<i>SI20-1</i>	<i>December 21, 2020</i>	<i>37.6 over 1.9 m to 3.8 m depth in 192° direction</i>	<i>76.9 in June 2021</i>	<i>Sheared / Blocked</i>	<i>June 2, 2023</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Drawing 32122-NC093 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

Table NC093-2: Fall 2024 – Hwy 813 Rock Island River Bridge NW Approach Fill Landslide (Bf79692) Vibrating Wire Piezometer Instrumentation Reading Summary

Date Monitored: September 17, 2024

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED GROUNDWATER LEVEL BGS (m)	CURRENT GROUNDWATER DEPTH BGS (m)	PREVIOUS GROUNDWATER DEPTH BGS (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW20-1A (70928)	December 21, 2020	5.80	-	Operational	2.45 on June 29, 2021	2.94	2.57	-0.37
VW20-1B (70929)	December 21, 2020	11.89	-	Operational	2.28 on June 29, 2021	2.75	2.41	-0.34
VW20-2A (70927)	December 21, 2020	7.62	-	<i>Damaged</i>	4.91 on December 21, 2021	N/A	5.12 (June 4, 2022)	N/A
VW20-2B (70930)	December 21, 2020	11.89	-	<i>Damaged</i>	5.71 on June 29, 2021	N/A	5.92 (June 4, 2022)	N/A

Drawing 32122-NC093 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



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 (CON0022163)
NORTH CENTRAL (ATHABASCA AND FORT McMURRAY DISTRICTS)
INSTRUMENTATION MONITORING RESULTS**

FALL 2024

**APPENDIX A
DATA PRESENTATION AND SITE PLANS**

**SITE NC093: HWY 813 ROCK ISLAND RIVER BRIDGE NW APPROACH FILL LANDSLIDE
(BF79692)**

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
 NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS
 INSTRUMENTATION MONITORING FIELD SUMMARY (NC093)
 FALL 2024**

Location: Rock Island Bridge (Hwy 813:06, C1 4.631)	Readout: GK 404 SN 364
File Number: 32122	Casing Diameter: 2.75"
Probe: RST Set 8R	Temp: 15
Cable: RST Set 8R	Read by: NKR/NRM

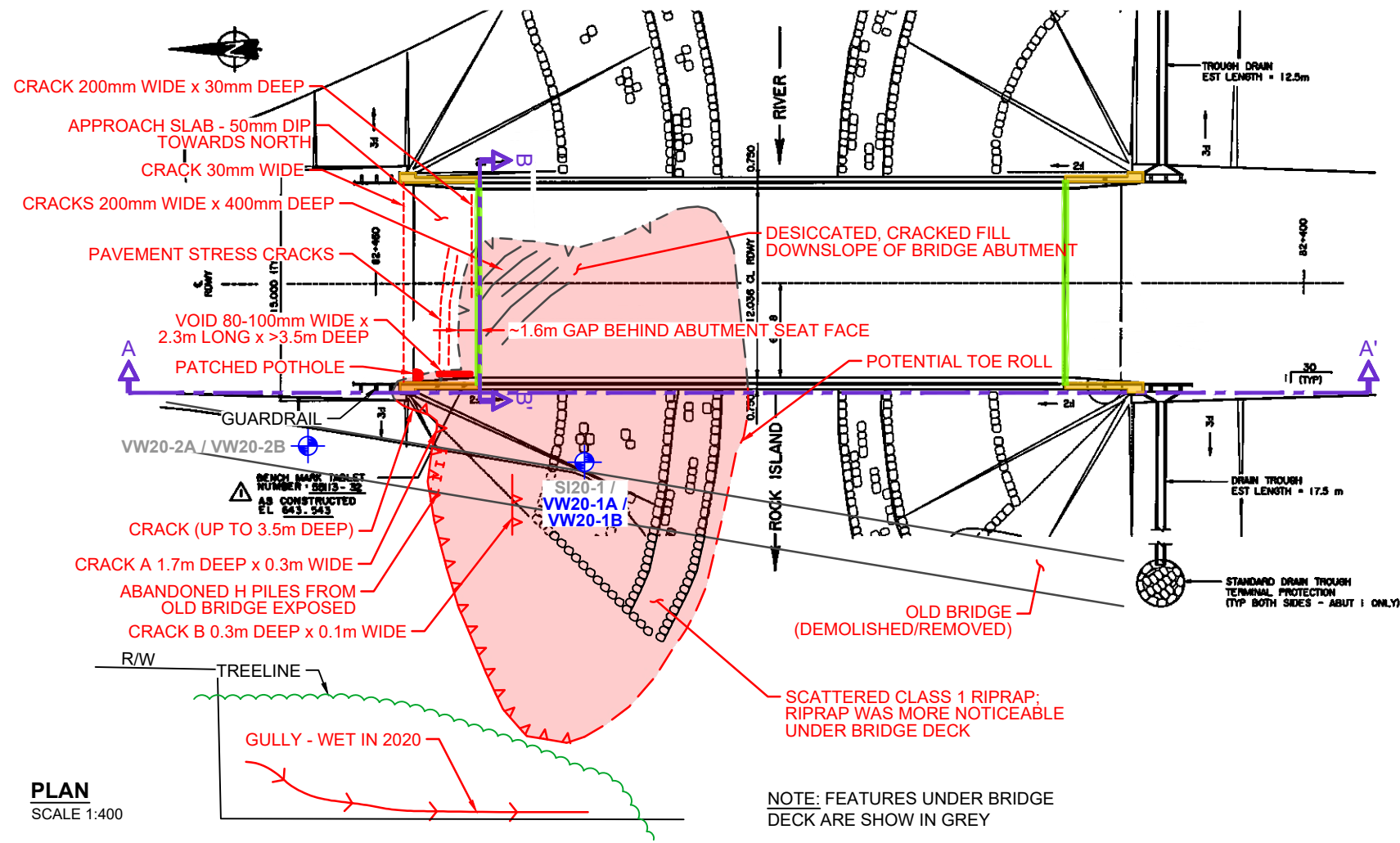
VIBRATING WIRE READINGS

VW	Serial	GPS Location		Date	Reading B(units)	Temp degree C
		Latitude	Longitude			
VW20-1A	70928	351689	6139948	17-Sep-24	8950.3	4.2
VW20-1B	70929	351689	6139948	17-Sep-24	8082.5	4.4
VW20-2A	70927	351691	6139963	Not Read		
VW20-2B	70930	351691	6139963	Not Read		

INSPECTOR REPORT

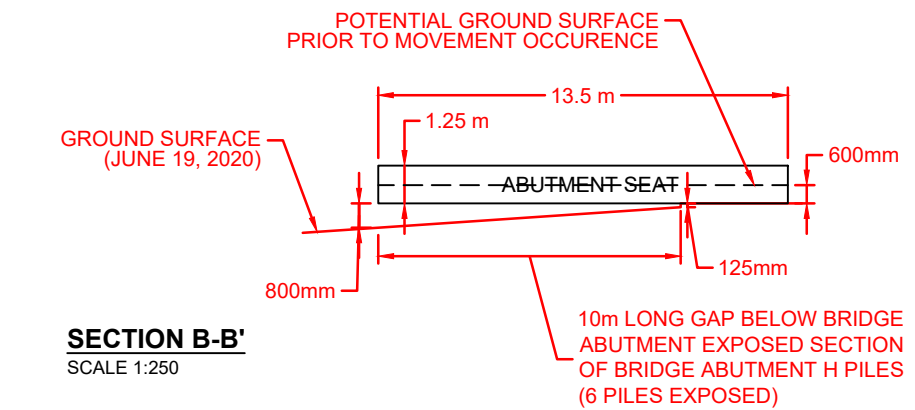
Site is KM marker 70 on Hwy 813
VW20-2A & VW20-2B attempted to repair need mechanical excavator if repair needed, skip reading for Fall 2024.

H:\32000\32122 AT GRMP Athabasca and Fort McMurray Districts 2021-2025\CAD\32122 INSTRUMENT 2021\32122-NC093.dwg - 1 - Jul. 29, 2021

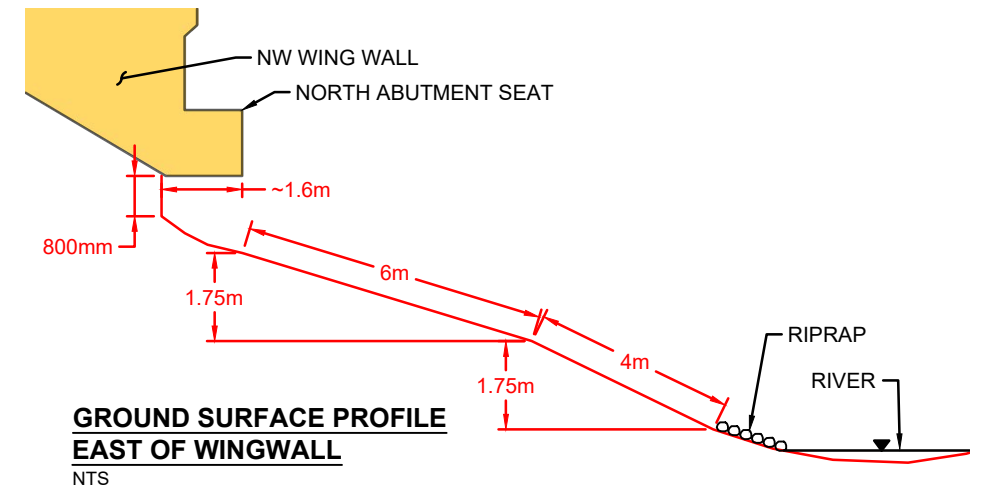


PLAN
SCALE 1:400

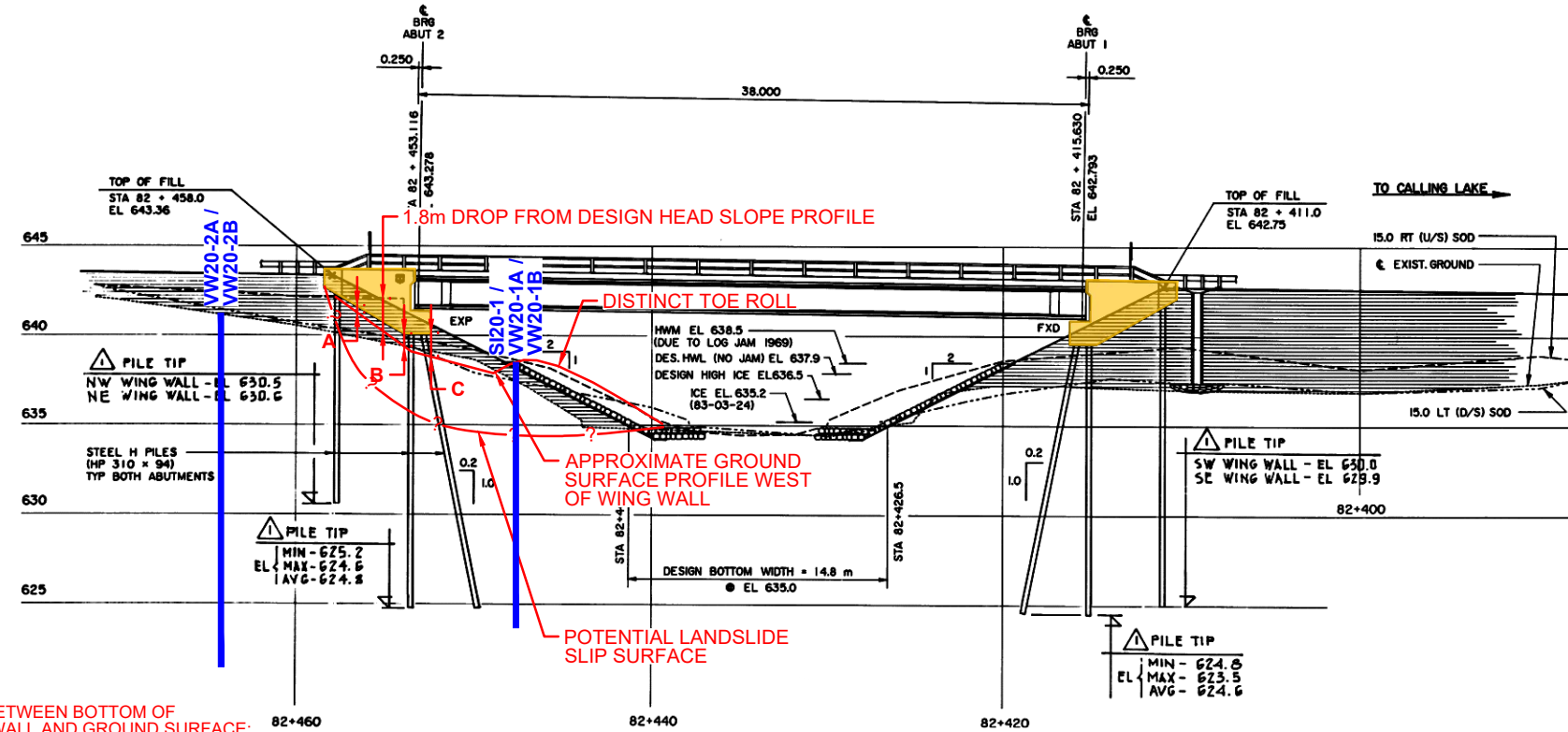
NOTE: FEATURES UNDER BRIDGE DECK ARE SHOWN IN GREY



SECTION B-B'
SCALE 1:250



GROUND SURFACE PROFILE
EAST OF WINGWALL
NTS



SECTION A-A'
SCALE 1:400

LEGEND

- APPROXIMATE INSTRUMENT LOCATION
- HEADSCARP CRACK
- WING WALL
- GULLY/DITCH
- EXISTING RIPRAP
- BRIDGE EXPANSION JOINT
- POTENTIAL EXTENT OF LANDSLIDE
- SLOPE INCLINOMETER
- VIBRATING WIRE PIEZOMETER
- DEPTH (m) OF VIBRATING WIRE PIEZOMETER OR SLOPE INCLINOMETER



GAP BETWEEN BOTTOM OF WINGWALL AND GROUND SURFACE:
A: 300mm
B: 200mm
C: 800mm

**NORTH CENTRAL
(ATHABASCA AND FORT McMURRAY DISTRICTS)**
NC093 HWY 813 ROCK ISLAND RIVER
BRIDGE NW APPROACH FILL
SITE PLAN SHOWING APPROXIMATE
INSTRUMENT LOCATIONS
DWG NO. 32122-NC093

DRAWN BY	ML
DESIGNED BY	BWN
APPROVED BY	TSA
SCALE	AS SHOWN
DATE	JULY 2021
FILE No.	32122

THURBER ENGINEERING LTD.

**FIGURE NC093-1
 HWY 813 ROCK ISLAND RIVER BRIDGE (BF79692)
 VIBRATING WIRE PIEZOMETER DATA**

