



**ALBERTA TRANSPORTATION  
NORTH CENTRAL REGION – ATHABASCA AREA  
INSTRUMENTATION MONITORING RESULTS**

**FALL 2020**

**SECTION C**

**SITE NC049-1: HWY 41:22 NORTH SASKATCHEWAN RIVER BRIDGE  
(NORTH ABUTMENT) ELK POINT**

**1. OBSERVATIONS**

**1.1 Field Program and Instrumentation Status**

One slope inclinometer (SI-01) was read at the Hwy 41:22 North Saskatchewan River Bridge south of Elk Point on September 17, 2020 by Mr. Niraj Regmi, G.I.T. and Mr. Long Le, both of Thurber Engineering Ltd. The SI is located in the north abutment approach slab of the bridge. The SI location is shown on Figures NC049-1-1 and NC049-1-2 in Section D.

The SI was read using a RST Digital Inclinometer probe with a 2 ft. wheelbase and a RST Pocket PC readout. Inclinometer reading depths were defined as per cable markings with respect to the top of the inclinometer casing.

**2. INTERPRETATION**

**2.1 General**

SI plots for A and B directions are presented in Section D and are summarized below. Where movement has been recorded the resultant plot (X direction) and rate of movement have also been provided.

## **2.2 Zones of Movement**

Zones of new movement were not observed in SI-01 since the last set of readings in the spring of 2020.

Zones of old movement are summarized on Table NC049-1-1 at the end of this report. This table also provides a historical account of the total movement, the depth of movement, and the maximum rate of movement that has occurred at this site since the initialization of the slope inclinometer.

## **2.3 Interpretation of Monitoring Results**

Since the previous readings in the spring of 2020, SI-01 has shown no discernible movement over 1.5 m to 4.0 m and 13.1 m to 17.4 m of depth. SI-01 has shown a creep rate of movement of 0.3 mm/yr over 19.2 m to 20.4 m depth.

## **3. RECOMMENDATIONS**

### **3.1 Future Work**

SI-01 should be read again in the spring of 2021.

### **3.2 Instrumentation Repairs**

No repairs are required at this time.

**TABLE NC049-1-1  
FALL 2020 – NORTH SASKATCHEWAN RIVER BRIDGE SOUTH OF ELK POINT  
SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY**

Date Monitored: September 17, 2020

<b>INSTRUMENT #</b>	<b>DATE REINITIALIZE D</b>	<b>TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)</b>	<b>MAXIMUM RATE OF MOVEMENT (mm/yr)</b>	<b>CURRENT STATUS OF SI</b>	<b>DATE OF PREVIOUS READING</b>	<b>INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)</b>	<b>CURRENT RATE OF MOVEMENT (mm/yr)</b>	<b>CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)</b>
SI-01	27 Jul. 2004	10.9 over 1.5 m to 4.0 m depth in 185° direction	10.8 in June 2005	Operational	May 20, 2020	No discernible movement	N/A	-1.3
		12.0 mm over 13.1 m to 17.4 m depth in 185° direction	4.4 mm/yr in Nov. 2004			No discernible movement	N/A	-0.4
		8.1 mm over 19.2 m to 20.4 m depth in 185° direction	1.1 mm/yr In Nov. 2004			0.1	0.3	0.0

Drawings 13357-NC049-1-1 and 13357-NC049-1-2 in section D provide a sketch of the approximate location of the monitoring instrumentation for this site.



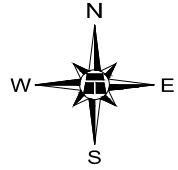
**ALBERTA TRANSPORTATION  
NORTH CENTRAL REGION – ATHABASCA AREA  
INSTRUMENTATION MONITORING RESULTS**

**FALL 2020**

**SECTION D  
DATA PRESENTATION**

**SITE NC049-1: HWY 41:22 NORTH SASKATCHEWAN RIVER BRIDGE  
(NORTH ABUTMENT) ELK POINT**





REFER TO  
FIGURE NC49-2  
FOR DETAILS

HIGHWAY 41

TO ELK POINT

TO VERMILION



NORTH

BRIDGE  
CROSSING

SASKATCHEWAN

RIVER

**LEGEND**

⌚ SI CASING (FLUSH MOUNTED)



**NORTH CENTRAL REGION - ATHABASCA AREA**

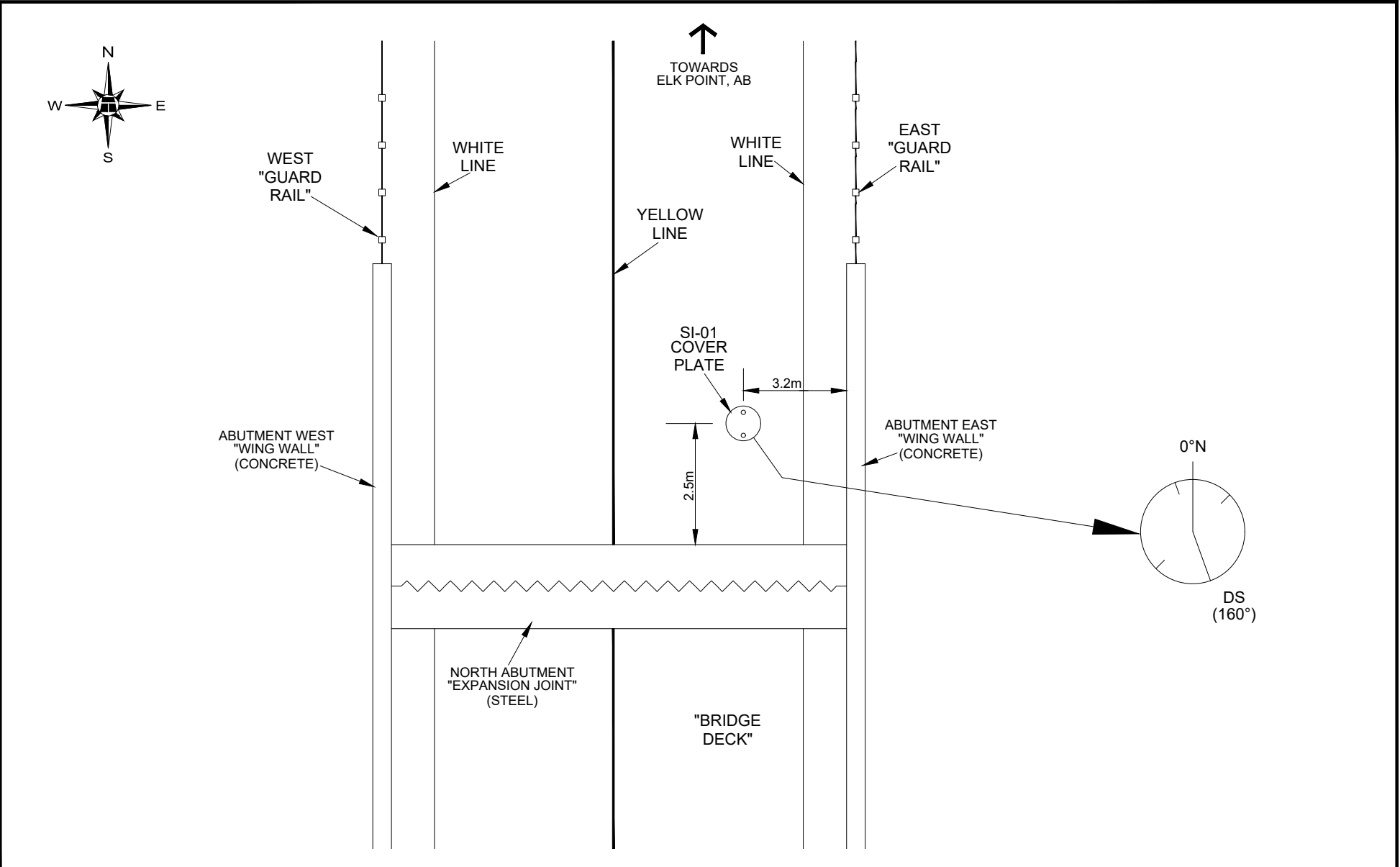
**NC049-1: HWY 41:22 SOUTH OF ELK POINT  
SITE PLAN SHOWING INSTRUMENT LOCATION**

**DWG NO. 13357-NC049-1-1**

DRAWN BY	ML
DESIGNED BY	NFR
APPROVED BY	DWP
SCALE	N. T. S.
DATE	AUGUST 2018
FILE No.	13357



**THURBER ENGINEERING LTD.**



**NORTH CENTRAL REGION - ATHABASCA AREA**

**NC049-1: HWY 41:22 SOUTH OF ELK POINT  
SITE SKETCH FOR SI-01**

**DWG NO. 13357-NC049-1-2**

DRAWN BY	ML
DESIGNED BY	NFR
APPROVED BY	DWP
SCALE	N. T. S.
DATE	AUGUST 2018
FILE No.	13357



**THURBER ENGINEERING LTD.**