

SITE NUMBER AND NAME: S008 Fisher Creek Pile Wall	HIGHWAY & KM: 762:02, 2.125	PREVIOUS INSPECTION DATE: May 28, 2024	INSPECTION DATE: May 26, 2025
LEGAL DESCRIPTION: 09-10-21-04 W5M	NAD 83 COORDINATES: UTM Northing Easting 11 5627342 678866	RISK ASSESSMENT: PF: 8 CF: 6 TOTAL: 48	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 1090 (north) & 1380 (south) (Reference No. 65170 & 60180)		CONTRACTOR MAINTENANCE AREA (CMA): 521	

SUMMARY OF SITE INSTRUMENTATION: December 2016 – January 2017 – 5 slope inclinometers (SI) installed in the cast-in-place concrete pile wall. February 13, 2025 – one SI and two vibrating wire piezometers (VWPs) were installed north of the pile wall. LAST READING DATE: May 20, 2025	INSPECTED BY: Chris Gräpel (KCB) Jorge Rodriguez (KCB) Doreen Wang (KCB) Karen Masterson (KCB) Alex Frotten (TEC) Rishi Adhikari (TEC)
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PRIMARY SITE ISSUE: Settlement of the embankment slope downslope of the existing pile wall and pavement distress (cracking and settlement) in the pavement north of the existing pile wall.
APPROXIMATE DIMENSIONS: Before 2017: 130 m long area of slope instability in the highway embankment, approximately 12 m high (embankment slopes vary from 3H:1V to 4H:1V). Previous reports indicated a failure surface (shear plane) approximately 5 m below the highway. The slide was repaired with a concrete pile wall. In 2020, settlement and new pavement cracking were observed north of the previous repair, indicating the slide is outflanking the concrete pile wall.
DATE OF ANY REMEDIAL ACTION: January 2017 – a cast-in-place concrete pile wall installed on west side of highway. The pile wall consists of cast-in-place, 1.2-m-diameter and 18-m-long concrete piles anchored in bedrock. Some piles encountered water bearing sand and gravel that required concrete to be tremied into place. Fall 2017 – pavement was resurfaced and the installation of a HTCB. Fall 2022 – pavement at the north end of the pile wall was resurfaced. Fall 2024 – pavement at the north end of the pile wall was resurfaced. February 2025 – a single borehole was drilled in the west (southbound) lane, and an SI and two VWPs were installed to monitor movement and groundwater, respectively. The borehole was drilled, and instruments were installed to support design work and future monitoring.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Pavement cracking in the east (northbound lane) north of the existing concrete pile wall. Pavement cracking is showing through regular pavement patches.	X	
Slope Movement	X		Slope movement in highway embankment downslope of pile wall.	X	
Erosion	X		Erosion has been observed between the concrete piles where downstream highway embankment slope has settled.	X	
Seepage		X	N/A – none observed during the 2025 inspection.		X

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Culvert Distress		X	N/A – none observed during the 2025 inspection.		X

COMMENTS

General:

- A proposal for a drilling investigation (including instrument installation) was initially submitted to TEC on December 15, 2022. Updating proposals were submitted on July 16, 2024, and January 9, 2025, to include design and tendering services. TEC approved the latest proposal in January 2025.
- In February 2025, a drilling investigation was performed by Mobile Augers and Research Ltd. (MARL) and monitored by KCB. One SI and two VWPs were installed to monitor movement and groundwater, respectively. The investigation was performed to support design work and improve instrumentation coverage at the site. The instruments will be incorporated into the fall 2025 Southern Region GRMP Section C readings. The geotechnical investigation report was issued to TEC on July 3, 2025.

S008:

- A pavement patch north of the concrete pile wall was completed between the 2024 and 2025 inspections (Photo 1).
- There is negligible movement being recorded in the pile-wall SIs, and no pavement cracking has been observed directly upslope of the pile wall.
- During the 2025 inspection, a thin pavement crack (approximately 10 mm wide) was observed in the east (northbound) lane that is reflecting through the pavement patch (Photo 2). The pavement crack begins approximately 7 m north of the existing pile wall. Cracking and settlement in the highway surface north of the pile wall have been observed since 2020. The pavement cracking and settlement north of the pile wall could indicate the slide has begun to outflank the pile wall.
- The height of the highway embankment is approximately 5 m to 6 m and well vegetated.
- A high-tension cable barrier (HTCB) is installed along the east (southbound) edge of the highway and extends across the whole length of the pile wall.
- In 2018, fill on the west side of the highway began settling around the concrete piles, creating tension cracks downslope of the pile wall and some localized sinkholes above the pile wall (Photos 3 through 6). The ground surface downslope of the pile wall appears to have settled between 0.4 m to 0.7 m, creating a ledge that could potentially pond water, leading to increased infiltration
- Surface water runoff has enlarged existing sinkholes at the pile locations (Photos 4 and 5) and likely has contributed to embankment settlement downslope of the pile wall.
- During the 2025 inspection, the east (northbound) ditch was well vegetated, dry, and in good condition (Photo 7).

Maintenance/Repair/Monitoring Recommendations:

Short-Term:

- The site should be regularly inspected by the Maintenance Contract Inspector (MCI).
- The site should be inspected every two years as part of the Southern Region GRMP Section B inspections.

- The instruments should be read twice per year (spring and fall) as part of the Southern Region GRMP Section C readings. The 2025 instruments should be incorporated into the Section C readings in fall of 2025.
- The pavement cracks should be sealed and the voids above the pile wall should be backfilled to reduce infiltration and potential erosion undermining the east (southbound) lane.
- A timber or welded plate lagging system should be installed between piles, and voids should be backfilled using coarse gravel, to provide containment, reduce infiltration and potential erosion undermining the east (southbound) lane.

Long-Term:

- If movements continue or accelerate, impacting the highway surface and road user safety, the pile wall should be extended north by at least 25 m to 30 m to stabilize the highway embankment.

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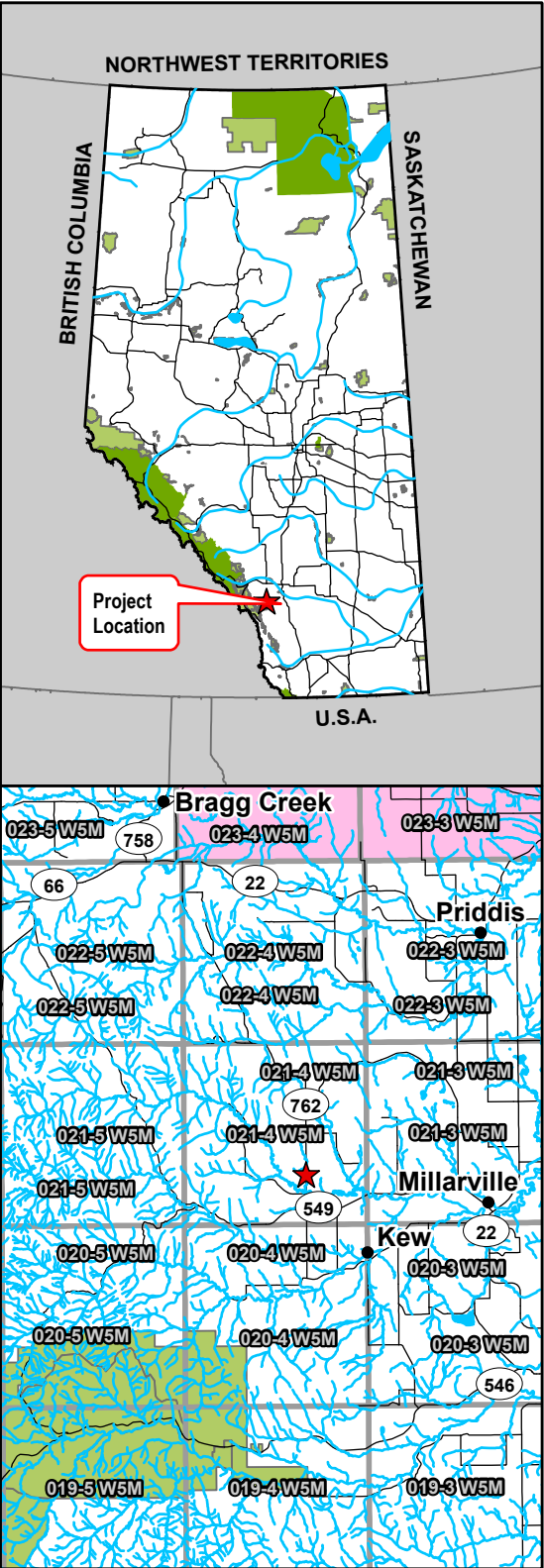
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2. The observations, findings and conclusions in this report are based on observed factual data and conditions that existed at the time of the work and should not be relied upon to precisely represent conditions at any other time.
3. The report is based on information provided to KCB by the Client or by other parties on behalf of the client (Client-supplied information). KCB has not verified the correctness or accuracy of such information and makes no representations regarding its correctness or accuracy. KCB shall not be responsible to the Client for the consequences of any error or omission contained in Client-supplied information.
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Jorge Rodriguez, Ph.D., M.Sc., P.Eng.
Geotechnical Engineer

File: Z:\ACGY\Alberta\A05116A03 ABT Southern Region GRMP\400 Drawings\2024\Section_C_2024.aprx Date: Time: Creator: HManandyan



Legend

- ▣ Slope Inclinator (SI)
- ⊕ Borehole
- ~~~~ Crack
- ×× Fence
- Pile Wall Extent



NOTES:
1. HORIZONTAL DATUM: NAD83
2. GRID ZONE: UTM ZONE 12N
3. IMAGE SOURCE: AB COUNTY, CHALLENGER GEOMATICS LTD.

CLIENT

Alberta

Klohn Crippen Berger

PROJECT
SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
Site Plan
S008 - Fisher Creek Pile Wall
Hwy 762:02, km 2.125

SCALE 1:1,500 PROJECT No. A05116A03 FIG No. 1

Inspection Photographs

Photo 1 Between the 2024 and 2025 inspections a pavement patch was completed north of the existing concrete pile wall (indicated by red rectangle). Photo taken May 26, 2025, facing south.

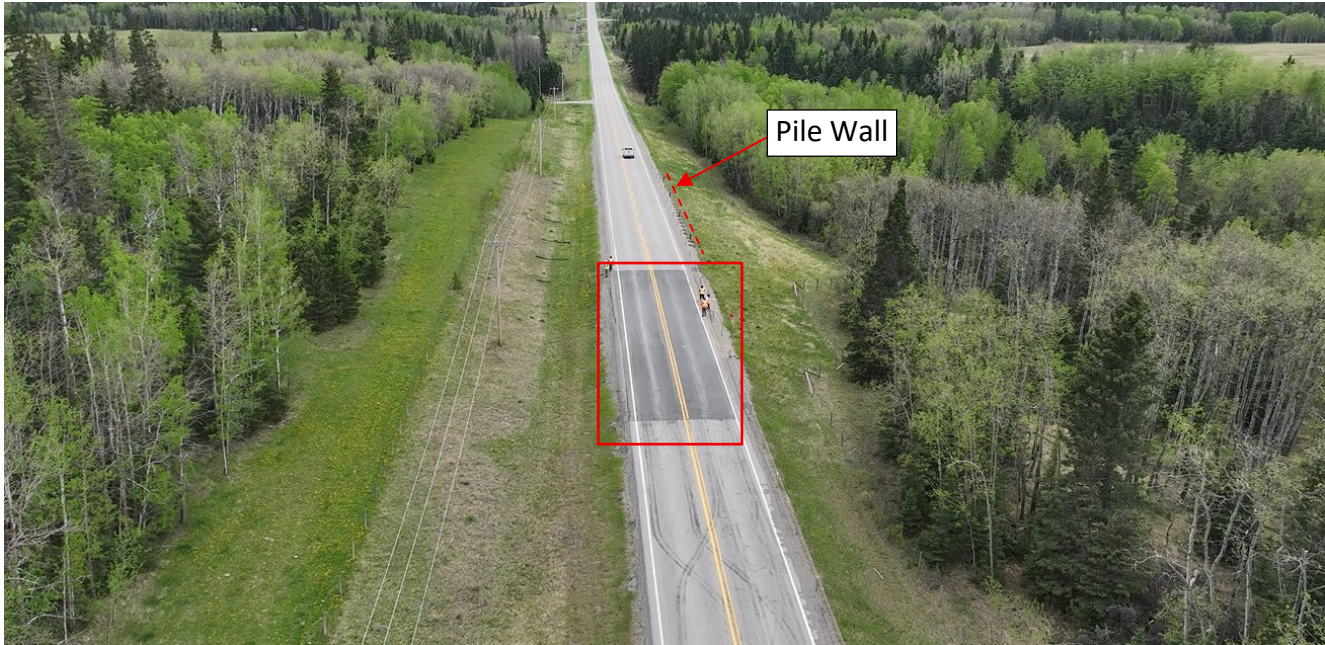


Photo 2 A thin pavement crack (red dashed line) beginning approximately 7 m north of the concrete pile wall was observed during the 2025 inspection. Photo taken May 26, 2025, facing south.



Photo 3 Settlement of the highway embankment slope and void formation along the top of the concrete piles. Photo taken May 26, 2025, facing southeast.



Photo 4 Settlement of the highway embankment slope and void formation along the top of the concrete piles. Photo taken May 26, 2025, facing east.

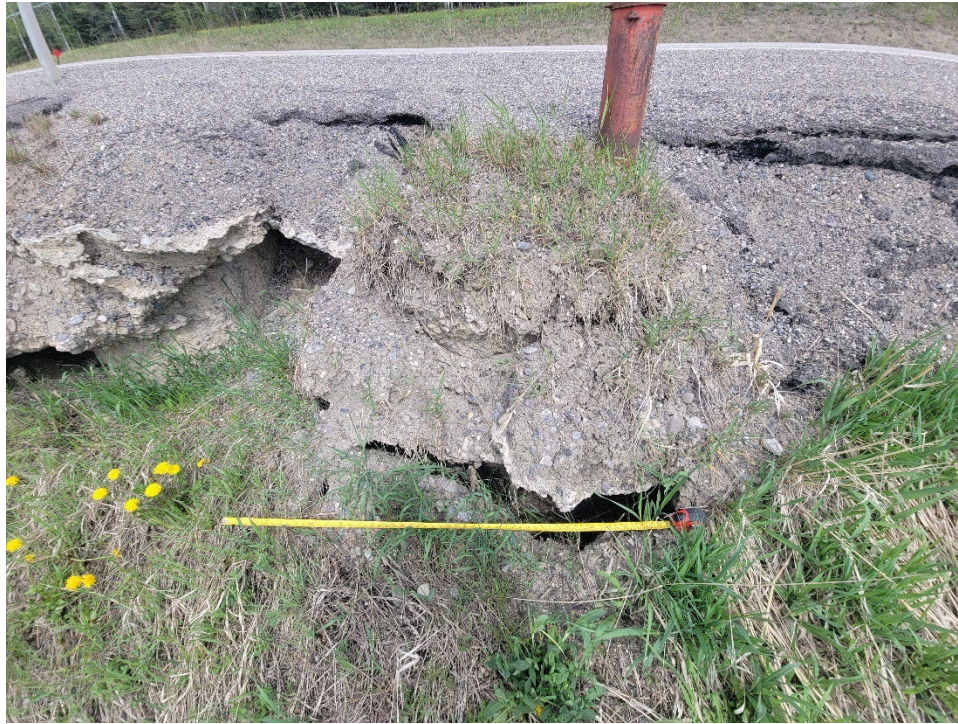


Photo 5 Settlement of the highway embankment slope and void formation along the top of the concrete piles. Photo taken May 26, 2025, facing east.



Photo 6 The highway embankment slope and circular erosion features formed between piles along the top of the wall, as well as pavement Patches north of the pile wall.
Photo taken May 26, 2025, facing top down.

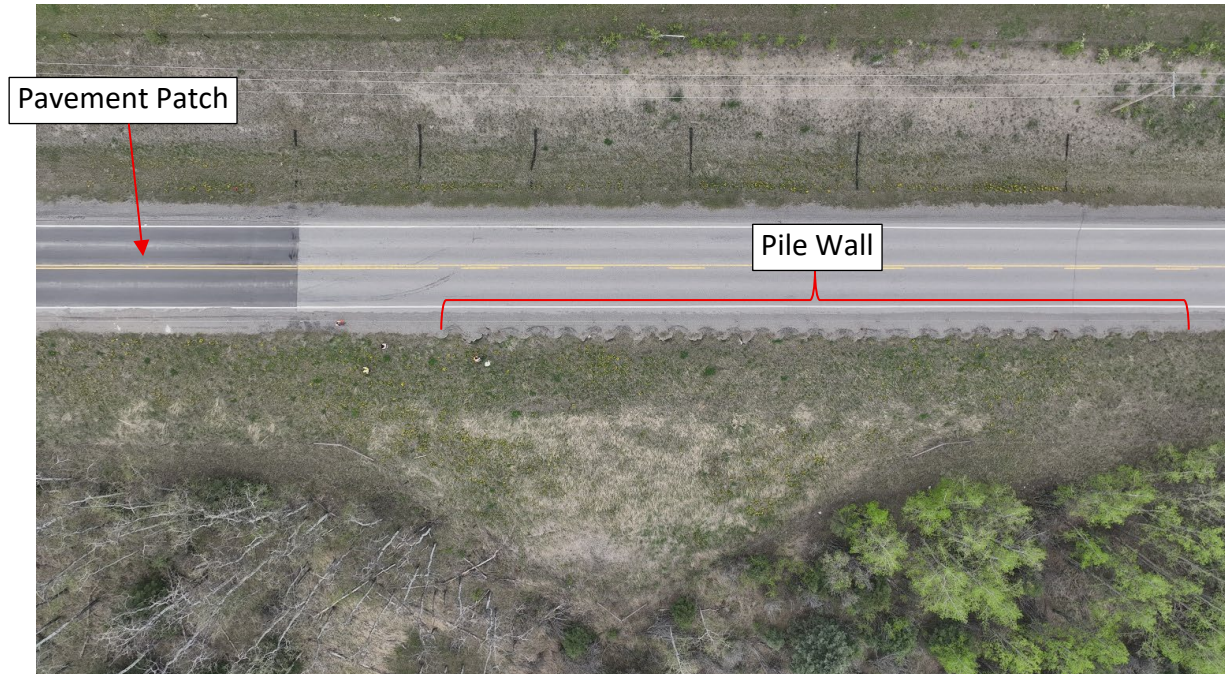


Photo 7 The east (northbound) ditch is well vegetated and is in good condition. Plastic ditch blocks previously installed at an unknown date. Photo taken May 26, 2025, facing south.

