

**ALBERTA TRANSPORTATION AND
ECONOMIC CORRIDORS
GEOHAZARD ASSESSMENT PROGRAM
PEACE REGION (PEACE RIVER DISTRICT)
2024 INSPECTION**



Site Number	Location	Name	Hwy	km
PH045-1	North of Manning, AB	Meikle River (Pile Wall)	35:08	26.2
Legal Description		UTM Co-ordinates		
SW7-94-22-W5M		11U E 467,581	N	6,333,081

	Date	PF	CF	Total
Previous Inspection:	3-June-2022	11	4	44
Current Inspection:	30-May-2024	11	4	44
Road AADT:	1600		Year:	2024
Inspected By:	Rocky Wang, TEC Robert Senior, TEC Erwin Kurz, TEC		Ken Froese, Thurber Tyler Clay, Thurber	
Report Attachments:	<input checked="" type="checkbox"/> Photographs		<input checked="" type="checkbox"/> Plans	<input type="checkbox"/> Maintenance

Primary Site Issue:	Slope movement and erosion affecting highway and sideslope	
Dimensions:	115 m pile wall	
Date of Remediation:	2016: Install H-pile and lagging formwork to backfill behind and below existing cap beam with fillcrete; highway overlaid; new HTSC guardrail installed 2018: HTSC replaced by W-Beam guardrail	
Maintenance:	2011: Pitrun placed to repair erosion at drain and repair elephant trunk Until 2016: Frequent patching of voids behind cap beam	
Observations:	Description	Worsened?
<input checked="" type="checkbox"/> Pavement Distress	Pile wall starting to pull away again – crack opened up against waler in 2022	<input type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	North slide graben starting to move (2022) and taking lagging wall with it. Lower slope movement commenced in 2024.	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Erosion	Erosion beneath wall and around drain pipes repaired;	<input type="checkbox"/>
<input checked="" type="checkbox"/> Seepage	Pile wall voids repaired; subdrain pipe in lower portion of slope exposed and extended; only trace moisture observed	<input type="checkbox"/>
<input checked="" type="checkbox"/> Bridge/Culvert	Cracking concrete was noted in the catch basin with water ponding in the exposed guardrail post sleeves.	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Other	H-piles and timber lagging damaged by slope movement and pulling away from the waler	<input checked="" type="checkbox"/>

Instrumentation (as of Fall 2024):	
Inclinometers	Three slope inclinometers (SI-49, -50 and -51) within the cap beam remain operational. Cumulative pile head movements are currently 81 mm to 163 mm with rates of movement of 3.6 mm/year to 18.3 mm/year, which are similar to the previous few readings. Rate plots show steady movement at SI-49, accelerating trend at SI-50, and variable trend at SI-51 (but with overall steady trend) with no obvious long-term improvement from the 2016 repairs. The new SI23-100 installed below the wall has shown 16 mm of deflection at about 6 m below ground surface. The current movement rate of 9 mm/year is slightly slower than the overall rate of 12 mm/year. There are indications of a deep zone of movement which



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.

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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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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.

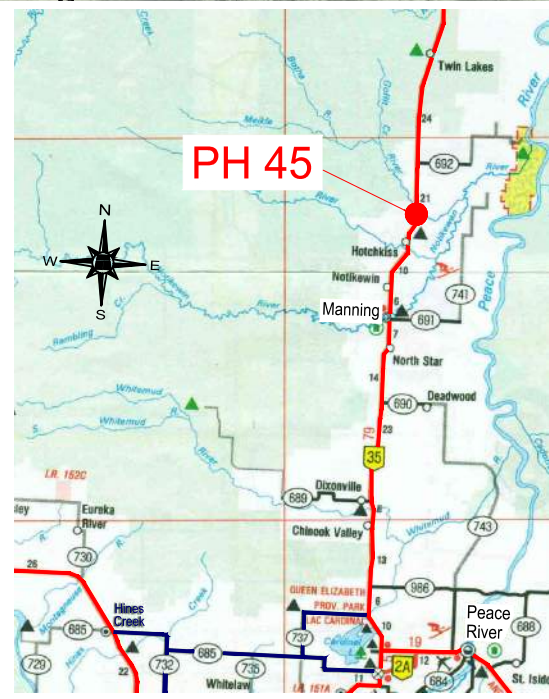
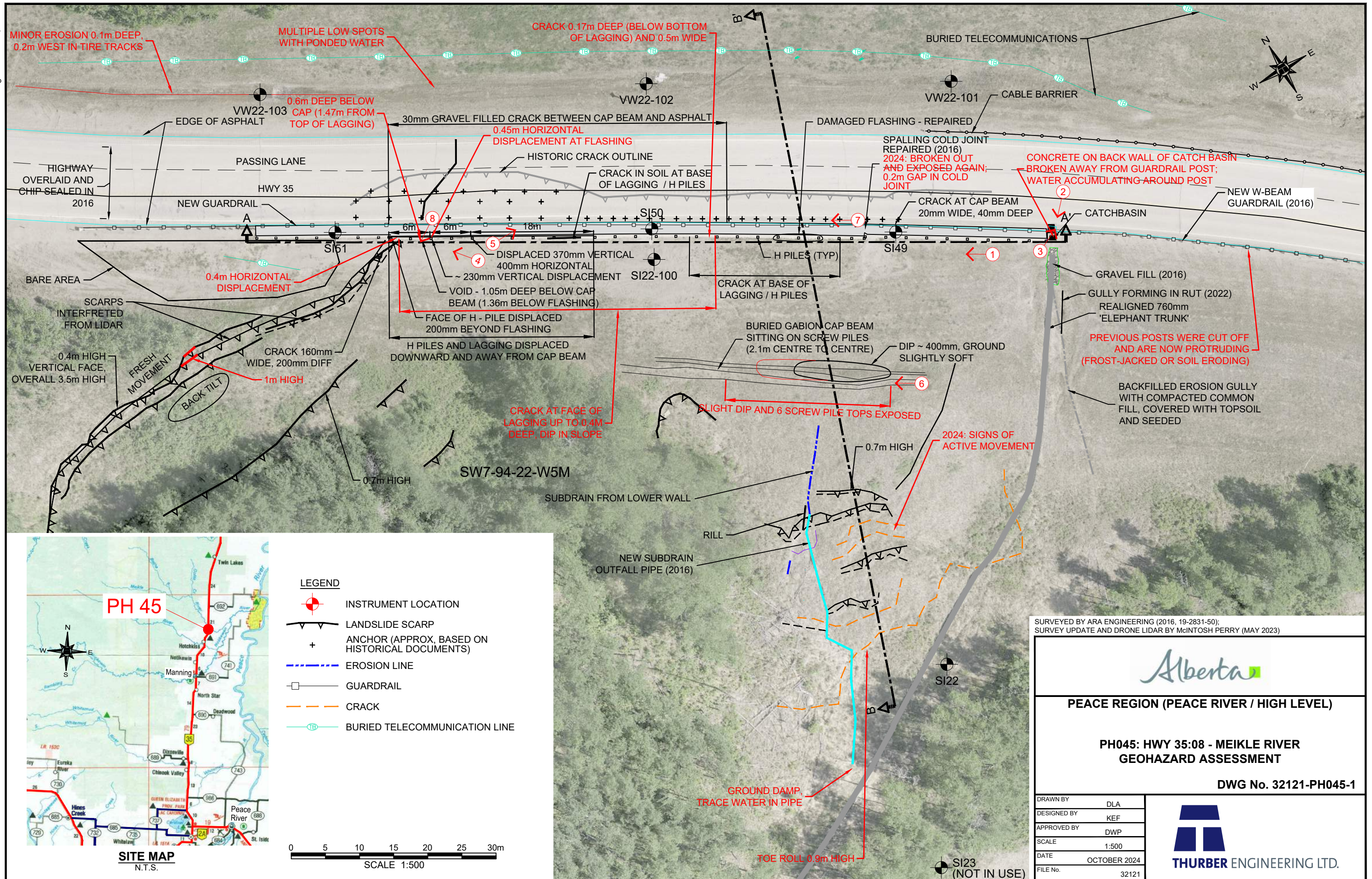
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Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability 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

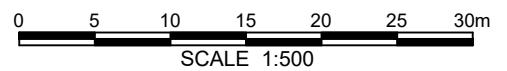
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SITE MAP
N.T.S.

- LEGEND**
- INSTRUMENT LOCATION
 - LANDSLIDE SCARP
 - ANCHOR (APPROX, BASED ON HISTORICAL DOCUMENTS)
 - EROSION LINE
 - GUARDRAIL
 - CRACK
 - BURIED TELECOMMUNICATION LINE



SURVEYED BY ARA ENGINEERING (2016, 19-2831-50);
SURVEY UPDATE AND DRONE LIDAR BY McINTOSH PERRY (MAY 2023)



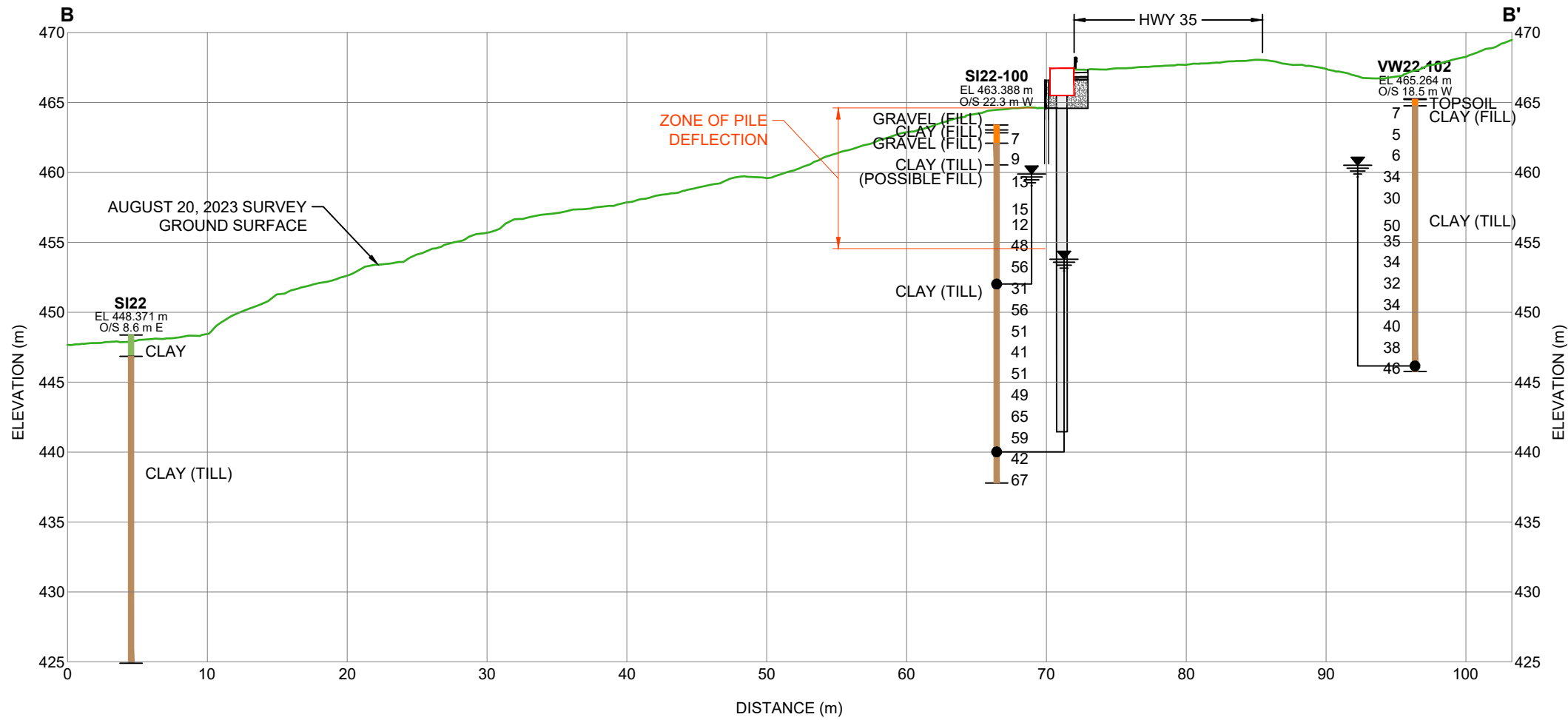
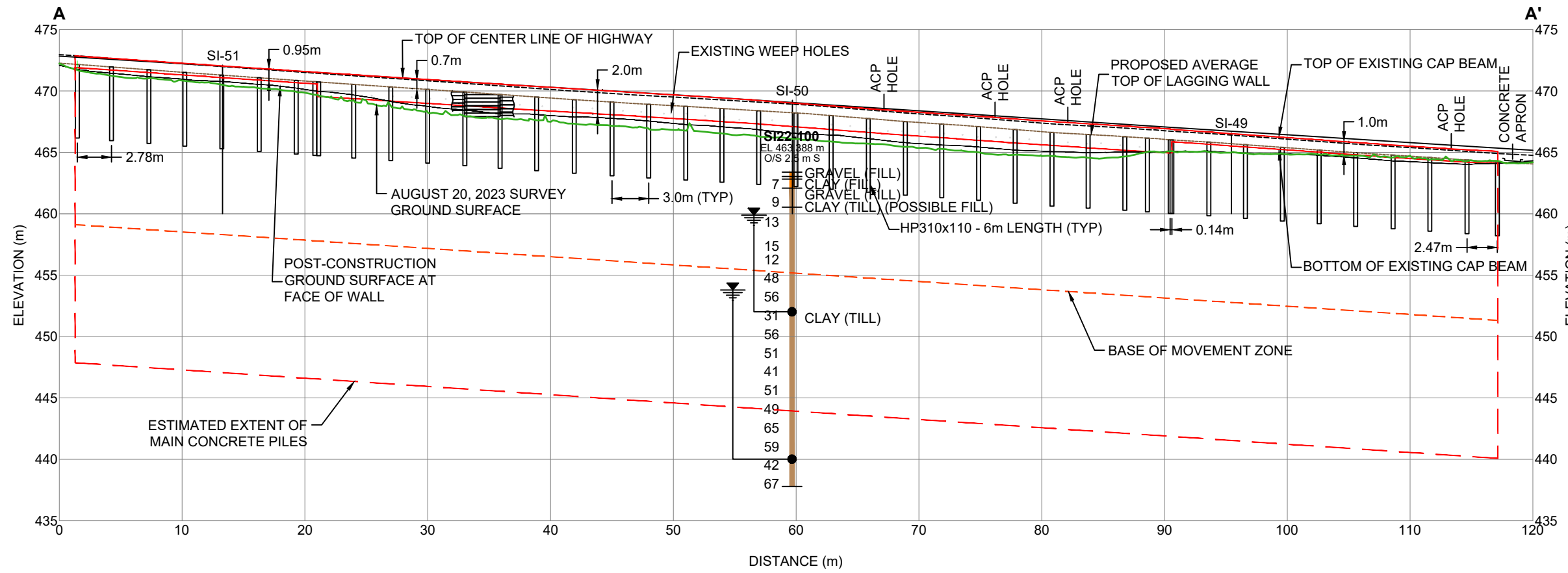
PEACE REGION (PEACE RIVER / HIGH LEVEL)

**PH045: HWY 35:08 - MEIKLE RIVER
GEOHAZARD ASSESSMENT**

DWG No. 32121-PH045-1

DRAWN BY	DLA
DESIGNED BY	KEF
APPROVED BY	DWP
SCALE	1:500
DATE	OCTOBER 2024
FILE No.	32121





LEGEND

- 15 I SPT N VALUE
- WATER LEVEL IN PIEZOMETER
- PNEUMATIC PIEZOMETER TIP LOCATION

NOTES:

1. DATA CONCERNING THE VARIOUS STRATA HAVE BEEN OBTAINED AT THE TEST HOLE LOCATIONS ONLY. THE SOIL STRATIGRAPHY BETWEEN TEST HOLES HAS BEEN INFERRED FROM GEOLOGICAL EVIDENCE AND SO MAY VARY FROM THAT SHOWN.
2. GROUND SURFACE OBTAINED FROM DRONE LIDAR FLOWN BY MCINTOSH PERRY MAY 27, 2023.



PEACE REGION (PEACE RIVER / HIGH LEVEL)

**PH045: HWY 35:08 - MEIKLE RIVER
GEOHAZARD ASSESSMENT**

DWG No. 32121-PH045-2

DRAWN BY	DLA
DESIGNED BY	KEF
APPROVED BY	DWP
SCALE	1:400
DATE	OCTOBER 2024
FILE No.	32121





Photo 1 – Looking northwest along the pile wall.



Photo 2 – Catch basin inlet at the south end of the wall leading to the elephant trunk downpipe.



Photo 3 – The thin concrete on the side of the catchbasin (red circle) has crack and water from the surface (red arrow) is ponding in the void left during pouring of the basin.



Photo 4 – Looking north at the displaced H-pile and timber lagging wall near the scarp at the north end of the wall.



Photo 5 – Crack and void opening up below the timber lagging.



Photo 6 – Looking northwest at the gabion basket wall a newly-protruding screw pile.



Photo 7 – Looking at the crack that is opening up again between the cap beam and asphalt.



Photo 8 – Looking west at graben block northwest of the wall, which appears to have become re-activated.