

**ALBERTA TRANSPORTATION AND  
ECONOMIC CORRIDORS  
GEOHAZARD ASSESSMENT PROGRAM  
PEACE REGION (PEACE RIVER DISTRICT)  
2025 INSPECTION**



Site Number	Location	Name	Hwy	km
PH092	North of Manning	Gravina Creek	692:02	3.13-3.30
Legal Description		UTM Co-ordinates		
SW15-95-22-W5M		11 E 491,100	N	6,425,466

	Date	PF	CF	Total
<b>Previous Inspection:</b>	30-May-2024	11	4	44 (Erosion)
<b>Current Inspection:</b>	13-May-2025	11	4	44 (Erosion)
<b>Road AADT:</b>	140		<b>Year:</b>	2024
<b>Inspected By:</b>	Rocky Wang, TEC Ken Froese, Thurber Don Proudfoot, Thurber			
<b>Report Attachments:</b>	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

<b>Primary Site Issue:</b>	Deep, wide, and actively enlarging erosion gully adjacent to the highway embankment is destabilizing the embankment.	
<b>Dimensions:</b>	The erosion gully is about 70 m long, 20 m wide and up to 4 m deep.	
<b>Date of Remediation:</b>	None	
<b>Maintenance:</b>	2018: Approach and culvert at km 2.845 replaced and paved 2021: Riprap replaced and grouted at km 2.845 (see Photos 1 and 2)	
<b>Observations:</b>	<b>Description</b>	<b>Worsened?</b>
<input type="checkbox"/> Pavement Distress	Highway overlaid in Fall 2023 including new strong-post guardrail installation.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	Downcut of gully has caused shallow slides within the embankment fill above the erosion. The slides have retrogressed towards the highway at about 0.6 m to 0.7 m per year until about 2021.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Erosion	Aggressive downcutting at NW corner of the north embankment fill at BF74654 has undermined the gabion mattress that lined the ditch and transition slope along the fill and valley slope. The steep slope is now unprotected against erosive flows.	<input checked="" type="checkbox"/>
<input type="checkbox"/> Seepage		<input type="checkbox"/>
<input checked="" type="checkbox"/> Bridge/Culvert	800 mm Approach Culvert (km 2.845): intact but has washed out twice previously; inlet invert corroding. BF74654 (3.495m, km 3.333): culvert in good condition, gully forming near the inlet.	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Other	There may be downstream impacts related to the transport of sediment from the eroded ditch. These impacts have not been assessed.	<input type="checkbox"/>

**Instrumentation:** None

**Assessment:**

The Gravina Creek culvert, BF74654, and associated embankment fill were installed in 1983. The north ditch leading into the creek valley from the west was lined with a gabion mattress, perhaps as part of the culvert project. The mattress extends from the eroded embankment area to about 130 m to the west towards a township road approach at km 2.845. There may have been additional robust erosion control measures placed along the steeply dipped intersection between the native valley slope and the embankment fill. The distress at this site is understood to have started some time before 2015 and began as erosion in the northwest corner of the hwy embankment. The ongoing erosion has progressed and led to shallow slumping of the highway embankment sideslope. A GRMP call-out was done in 2022, followed by a geotechnical investigation in 2023. A preliminary engineering assessment was subsequently provided in a Thurber report dated February 29, 2024. Input from a hydrotechnical consultant in the ongoing design of the repair measures suggests that the high gradients could have led to piping failure below the previous erosion measures which would have undermined the structures causing the collapse and complete failure seen now. Once erosion began at some point in the system, this failure would have resulted and will continue to regress/enlarge until a new equilibrium is reached or a repair is implemented.

At the time of the call-out in 2022, Mr. Kurz, TEC's Maintenance Contract Inspector (MCI) for the area, reported that the slumping of the highway embankment had not gotten worse since 2021. The conditions observed in 2024/2025 also noted that there had not been significant retrogression of the erosion features to the west or south. The locations of the edges of the erosion gully were noted for future reference. Comparisons to the 2022 call-out were difficult as grading and guardrail replacement had occurred since then. An erosion gully was noted near the inlet of the Bridge File culvert which had not been observed in 2022.

The flow in this ditch also resulted in the approach culvert at km 2.845 washing out in 2018. The approach was rebuilt, paved (to increase erosion resistance if overtopped again), and additional riprap placed. It was repaired again in the fall of 2021 when the culvert became plugged with displaced riprap. As part of this repair, the riprap at the culvert inlet was grouted in place. At the time of 2025 inspection, this approach and culvert appeared to be stable.

**Recommendations:**

**Short-Term:**

- Routine monitoring by MCI or Maintenance Contractor to confirm that the erosion and embankment deterioration has not undermined the guardrail or the highway. This will be particularly important during the spring snow melt.

**Long-Term:**

- Detailed design and tender preparation (#25025) to reconstruct the Twp road approach culvert, the ditch, and install new erosion control measures extending from the Twp road to Gravina Creek is nearly complete. The design includes re-lining the upper flat section of the highway ditch with TRM and the steeper sections that descend along the west side of the embankment fill with riprap, after placing compacted clay in the eroded section to buttress the embankment sideslope. A flow stilling pool will be incorporated into the new lined channel in the flat area at the base of the embankment. Environmental submissions (to DFO, AEPA, and HRA), and land issue requests/permissions (TFA, FNC, and a TWS to the private land owner), are currently underway. Construction is targeted for 2026.

**Closure**

It is a condition of this letter report that Thurber's performance of its professional services will be subject to the attached Statement for Use and Interpretation of Report.

Don Proudfoot, M.Eng., P.Eng.  
Partner | Senior Geotechnical Engineer

Barry Meays, P.Eng.  
Associate | Senior Geotechnical Engineer

## STATEMENT FOR USE AND INTERPRETATION OF REPORT

### 1. STANDARD OF CARE

This Report has been prepared in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances at the same time and in the same or similar locality and in compliance with all applicable laws.

### 2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment, including this Statement For Use and Interpretation of Report, 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.

### 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 for the development, design objectives, and/or purposes described to Thurber by the Client. **NO OTHER PARTY MAY USE OR RELY ON THE REPORT OR ANY PORTION THEREOF FOR OTHER THAN THE CLIENT'S BENEFIT IN CONNECTION WITH THE PURPOSES DESCRIBED IN THE REPORT.** Any use which a third party makes of the Report is the sole responsibility of such third party and is always subject to this Statement for Use and Interpretation of Report. Thurber accepts no liability or responsibility for damages suffered by any third party resulting from use of the Report for purposes outside the reasonable contemplation of Thurber at the time it was prepared or in any manner unintended by Thurber.

### 5. INTERPRETATION OF THE REPORT

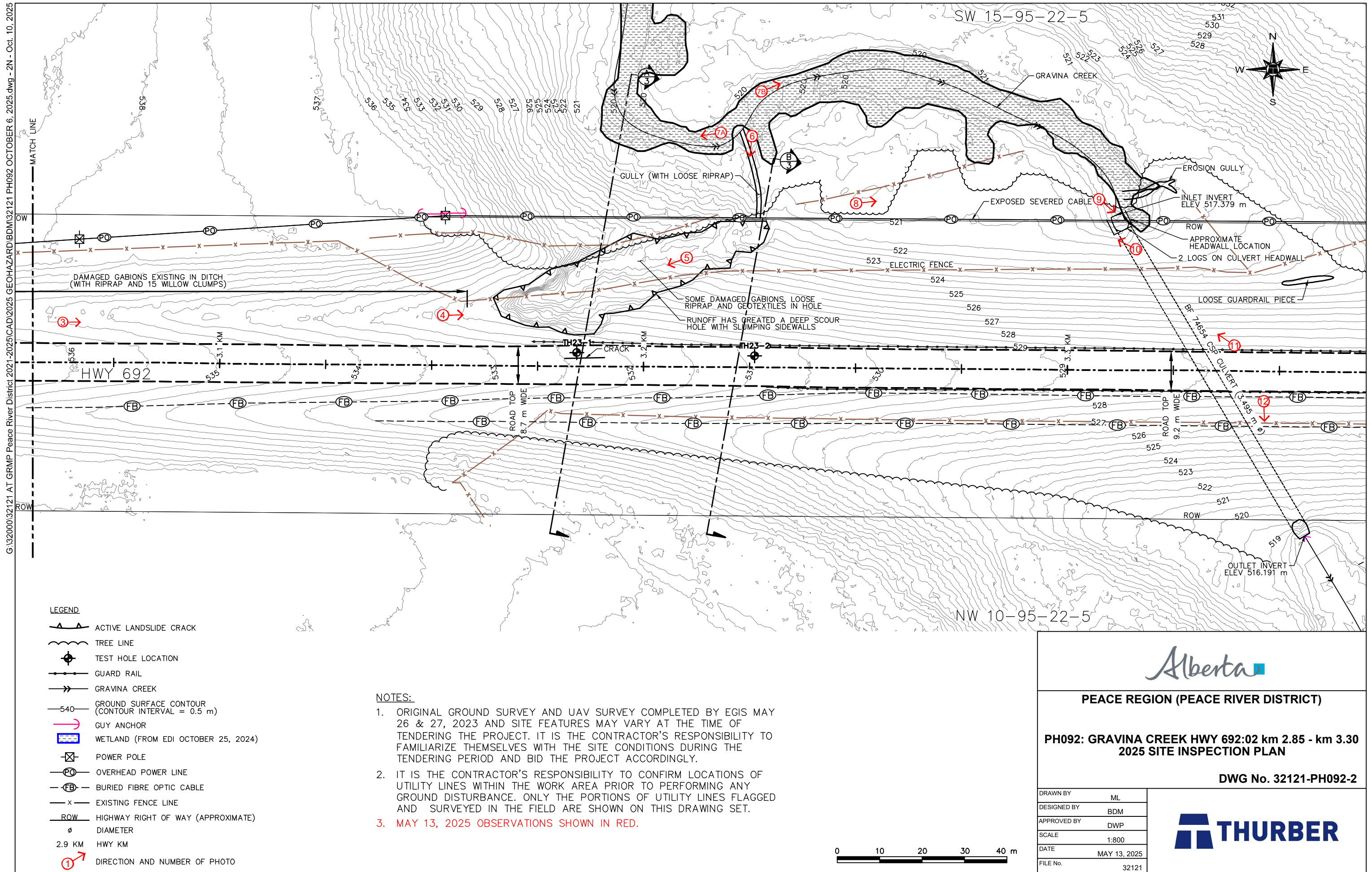
- a) **Nature and Exactness of Soil and Contaminant Description:** Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors is inherently judgement-based. 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 parties making use of such documents or records with or without our express written consent need to 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 parties. Some conditions are subject to change over time and those making use of the Report need to be aware of this possibility and understand that the Report only presents the interpreted conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client must 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 based on conditions in evidence at the time of site inspections and based on 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 resulting from misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other parties 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 is recommended to 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 need to 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 to confirm and document that the site conditions do not materially differ from those 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. INDEPENDENT JUDGEMENTS OF CLIENT

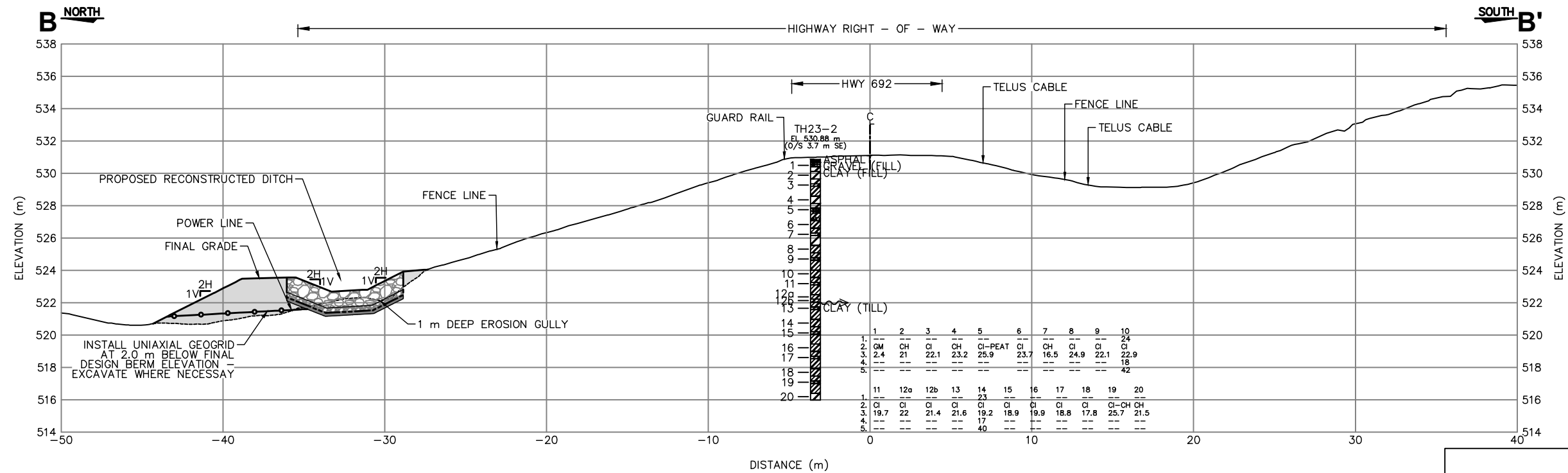
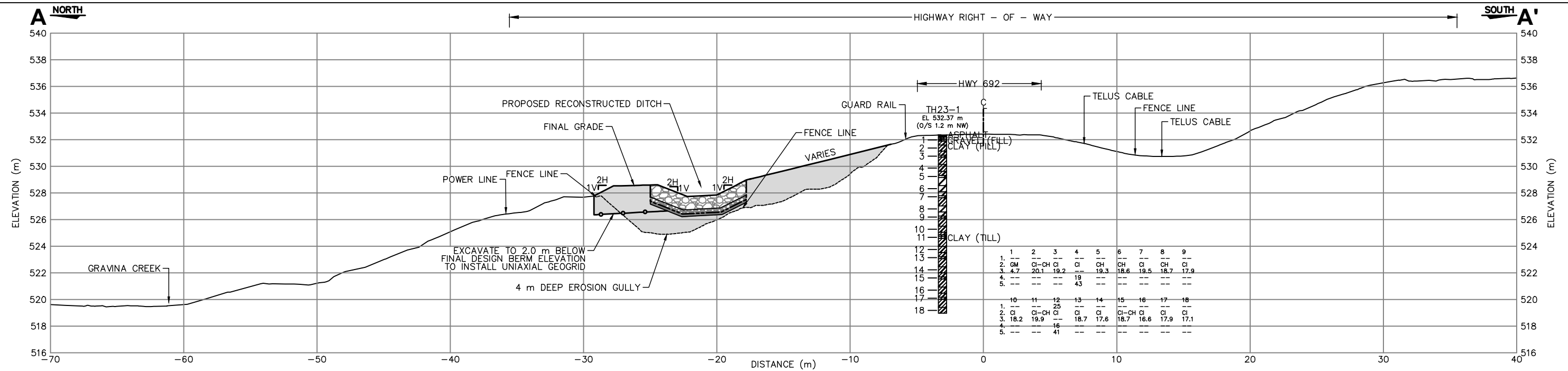
The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or other parties 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, unless such decisions expressly form part of the stated purpose of the Report as described in Paragraph 3.







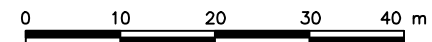
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- LEGEND**
- EXISTING GROUND SURFACE FROM UAV SURVEY COMPLETED BY EGIS MAY 26 & 27, 2023 (OUTSIDE DESIGN AREA)
  - EXISTING GROUND SURFACE WITHIN DESIGN AREA
  - DESIGN GRADE
  - NON-WOVEN GEOTEXTILE - TYPE C
  - COMMON FILL
  - RIPRAP
  - DES 1 CL 10 SAND
  - SEEPAGE IN TEST HOLE

**NOTE:**

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.



PEACE REGION (PEACE RIVER DISTRICT)

PH092: GRAVINA CREEK HWY 692:02 km 2.85 - km 3.30  
STRATIGRAPHIC CROSS - SECTIONS

DWG No. 32121-PH092-3

DRAWN BY	ML
DESIGNED BY	BDM
APPROVED BY	DWP
SCALE	1:300
DATE	MAY 13, 2025
FILE No.	32121







**Photo 1 – Looking east at the grouted riprap at the inlet of the 800 mm dia. culvert at km 2.845 approach.**



**Photo 2 – Looking east along the north ditch over the outlet of the culvert at the km 2.845 approach. Note the standing water.**





**Photo 3 – Looking east at the damaged gabions with some erosion along the north hwy ditch.**



**Photo 4 – Looking east along the north ditch and north hwy embankment at the beginning of the erosion where erosion gully slumping is closest to the highway.**





**Photo 5 – Looking southwest at the runoff erosion gully in the north hwy embankment, where the damaged gabion mattress and underlying nonwoven geotextile is exposed.**



**Photo 6 – Looking southwest near the bottom of the fill where the runoff erosion gully on the north hwy embankment turns to enter Gravina Creek.**





**Photo 7A – Looking west (upstream) along Gravina Creek below the hwy embankment runoff erosion channel.**



**Photo 7B – Looking east (downstream) along Gravina Creek below the hwy embankment runoff erosion channel**





**Photo 8 – Looking east along the area between the hwy right-of-way and Gravina Creek.**



**Photo 9 – Looking southeast at the inlet of the 3.5 m dia. BF culvert. Note the erosion gully on the east channel bank north of the entrance.**





**Photo 10 – Looking northwest overtop the 3.5 m dia. culvert inlet.**



**Photo 11 – Looking northwest at the 3.5 m dia. culvert inlet and the north hwy embankment areas.**





**Photo 12 – Looking southeast over the south hwy embankment and 3.5 m dia. culvert outlet area.**