

SITE NUMBER AND NAME: NC086 – Poplar Creek Slide	HIGHWAY AND KM: 39:06, km 4.915	PREVIOUS INSPECTION: June 2, 2023	CURRENT INSPECTION: June 14, 2024
LEGAL DESCRIPTION: SW 11-49-06-W5	NAD83 COORDINATES: UTM11U 5897673N, 648158E		RISK ASSESSMENT: PF: 9 CF: 3 Total: 27
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 3,530 (2023)		CONTRACTOR MAINTENANCE AREA (CMA): 509	

SUMMARY OF INSTRUMENTATION: One slope inclinometer functional.	INSPECTED BY: Stantec: Leslie Cho, Sonja Pharand TEC: Kristen Tappenden, Wilf Cousineau
LAST READING DATE: June 18, 2024	
PRIMARY SITE ISSUE: Slope failure southeast of the intersection of Highway 39 and Township Road (TWP RD) 491A.	
APPROXIMATE DIMENSIONS: 35 m wide by 60 m long	
DATE OF ANY REMEDIAL ACTION: 2018 – Pile wall installed. Culvert under TWP RD 491A realigned. Centerline culvert at Highway 39 grouted and abandoned. Rock check dams installed in north ditch of Highway 39.	

ITEM	CONDITIONS EXIST		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Separation along joint of new and old pavement west of pile wall.		X
Slope Movement	X		Slope movement downslope of pile wall. Slide scarp retrogressing north towards highway. Leaning light post on south side of highway east of intersection.	x	
Erosion		X			X
Seepage	X		Landslide mass is wet.		X
Bridge/Culvert Distress		X			X

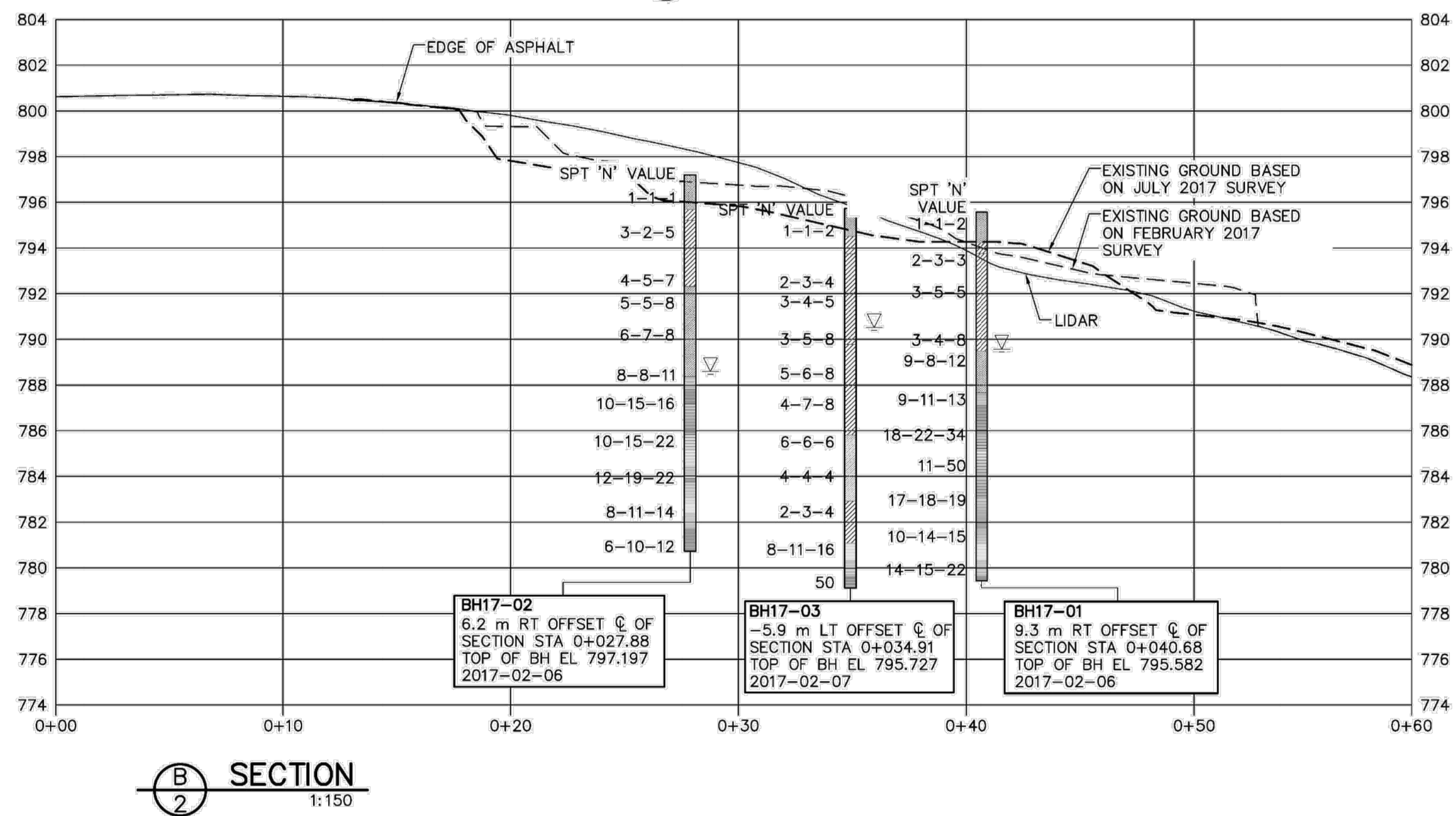
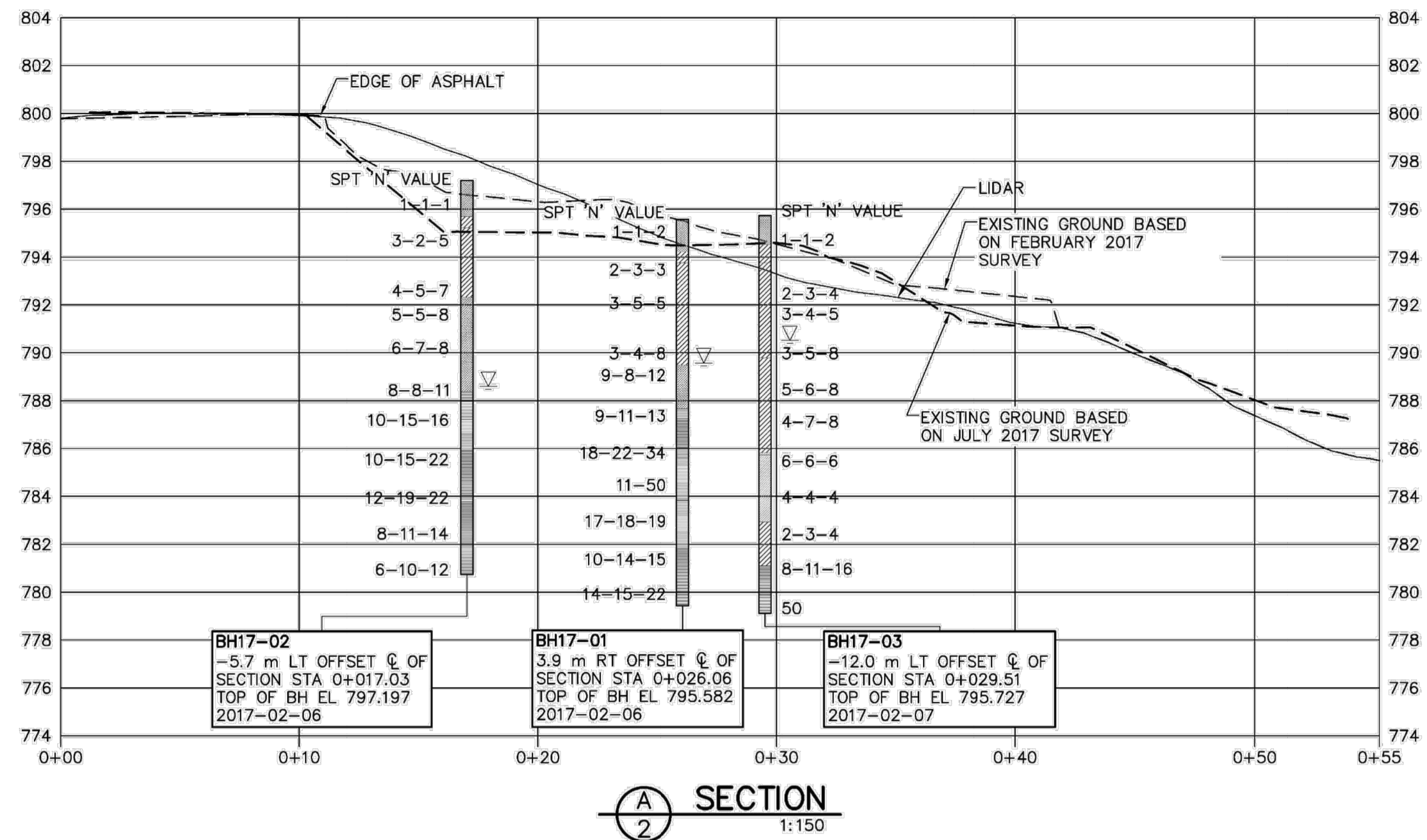
COMMENTS
<ul style="list-style-type: none"> The landslide downslope of the wall is progressing (Photos 1 to 3). A measurement from the top of pile wall to the top of ground was taken between the 9th and 10th guardrail post south of the stop sign. The height was measured to be 3.6 m, same as the previous inspection. The landslide mass appears to have extended east beyond the limits of the pile wall. The current east limit is approximately 5.6 m east from the light standard. This is approximately in line with the east limit of the pile wall. The scarp is approximately 8.7 m south of the guardrail, meaning that the slide has retrogressed 0.8 m since the 2023 inspection. The scarp has also increased in height, varying between about 2 and 3 m high. The southeast extent of the scarp has also extended into the tree line. The tension cracks above the current landslide scarp observed during the previous inspection were not seen, possibly due to vegetation. SI1 showed a negligible cumulative movement of less than 1 mm at a depth of about 14 m in the clay shale since initialization in 2018.

- The light standard south of Highway 39 and about 20 m from the intersection had a 3° lean towards the slide mass. The MCI previously informed Stantec that many light standards in this area have a similar lean. The metal at the base of the light standard appears to be peeling and rotting away.
- The guardrail was dented between the light standard and the utility box on the south side of the highway.
- Settlement of the ground was noted around the base of the utility box to the east of the light standard on the south side of the highway.
- The culvert and ditch across TWP RD 491A were dry. The riprap at both ends of the culvert was cracked (Photo 6).
- The separation between the new and old pavement could not be observed as the area was covered in dirt and gravel.
- Transverse pavement cracks up to 60 mm wide were observed east of the intersection (Photo 4). A pothole around 0.1 m diameter and 50 mm deep was observed within one of the cracks. Longitudinal cracking of Highway 39 was observed and appeared to have widened, with cracks up to 10 mm wide (Photo 5). The observed cracking does not appear to be related to landslide activity.
- The north ditch of Highway 39 was dry. Both check dams were observed to the east of the light standard, with the check dam furthest west partially obscured by vegetation.

RECOMMENDATIONS

- The site should be regularly monitored by the MCI. In particular, the landslide should be monitored for additional progression towards the light standard which would indicate the slide is beyond the extent of the pile wall. In addition, the depth of the landslide from the top of the pile wall should be checked to ensure that it does not exceed the design cantilever height of 6 m.
- To facilitate monitoring of the slide, lathe may be installed within the slide zone, and to the northeast of the slide zone, to provide repeatable reference points. Measurements between lathe and from features outside of the slide zone could be taken during the annual instrument readings in the spring.
- Should the landslide progress beyond the east extent of the pile wall, the pile wall can be extended to protect the highway. The high-level cost of extending the pile wall by 20 m is \$300,000, excluding engineering. Conflicts with streetlight power and communications cable are expected if the pile wall is extended east.
- Pavement cracks should be sealed to reduce surface water infiltration into the slope.
- The ditch on the north side of Highway 39 should be regraded for water flow. Additional check dams or other structures should be installed to reduce surface water flow velocity.
- Site inspections should continue annually.
- Instrumentation readings should continue to be read annually in the spring. Consideration may be given to installing an additional SI to the northeast of the slide area.

PREPARED BY: Sonja Pharand, P.Eng.	PREPARED BY: Xiteng Liu, M.Sc., P.Eng., PMP	PERMIT TO PRACTICE:



LEGEND:

- | | | | |
|--|-------------------------|--|--------------------------------|
| | FILL-SOFT, CLAY (CI-CH) | | EXTREMELY WEAK, CLAYSHALE (BR) |
| | CLAY (CH) | | FIRM, GREY, SANDY CLAY (CL) |
| | VERY STIFF, CLAY (Ci) | | WATER LEVEL |

TRANSPORTATION AND ECONOMIC CORRIDORS
GEOHAZARD MONITORING PROGRAM
NC86 HWY 39:06 POPLAR CREEK SLIDE
CROSS SECTION A & B

DRAWN	SP	CHECK	LC	APPROVE	XL
DATE	6 OCT 2024	SCALE	AS SHOWN	PROJECT #	123315222

FIGURE -2

2024 Site Inspection Photos at NC086



Photo 1: Slope movement downslope of pile wall. Looking northeast.



Photo 2: Slope movement downslope of pile wall. Looking southwest.

2024 Site Inspection Photos at NC086



Photo 3: Vegetated scarp. Looking northeast.



Photo 4: Crack on east side of intersection. Looking north.

2024 Site Inspection Photos at NC086



Photo 5: Pavement condition at intersection. Looking west.



Photo 6: Culvert outlet south of the pile wall. Looking northeast.