September 10, 2001 File: 15-76-11

Alberta Transportation
Room 223, Provincial Building
4709-44 Avenue
Stony Plain, Alberta T7Z 1N4

Attention: Mr. Gordon Zack, P.Eng.

NORTH CENTRAL REGION LANDSLIDE ASSESSMENT
SH 757:02 PARKLAND COUNTY BOUNDARY (NC16)
2001 ANNUAL INSPECTION REPORT

Dear Sir:

This letter documents the results of the 2001 annual site inspection of a portion of Secondary Highway 757:02 located approximately 15 km north of Highway 16. The work was undertaken by Thurber Engineering Ltd. (Thurber) in partial fulfillment of our Geotechnical Services, Monitoring and Assessment of Instrumentation and Landslides contract with Alberta Transportation (AT).

The inspection was undertaken on June 25, 2001 by Mr. Don Law, P.Eng. of Thurber. The site visit was carried out in the presence of Mr. Roger Skirrow, P.Eng., Mr. Fred Cheng, P.Eng. and Mr. Stephan Zitterer of AT.

1. BACKGROUND

The location of previous roadway distress is in an area of embankment fill with an overall slope height of approximately 12 m and a side slope angle of approximately 5H:1V. The site history is summarized below, with more detail provided in Section A of the binder.

Vertical realignment (grade raising) of this section of roadway was undertaken in the fall of 1990. A 100 m long section of the highway was impacted by the slope failure during construction, which included cracking of the pavement surface and development of a toe bulge at the bottom of the slope.

Continued….

Geotechnical investigation was undertaken in the spring of 1991. The stratigraphy encountered during drilling indicated 13 m to 19 m of clay till overlying weathered clay shale bedrock. A water bearing coal seam was encountered at the clay till/bedrock interface below the embankment.

Slope inclinometers installed during the investigation indicated that the failure plane was approximately 15 m deep.

Seepage was noted from the back slope above the roadway and within the east ditch.

Repair of the failed area was undertaken in the fall of 1991. The following remedial measures were undertaken. These measures are shown schematically in plan and cross-section on Figures NC16-1 and NC16-2 in Section F.

- The failed area was sub excavated and replaced with 3.5 m of compacted lightweight fill (sawdust). A clay cap was placed over the sawdust prior to replacing the pavement structure.
- Five stone columns (600 mm dia x 18.3 m long) were installed on the east shoulder of the roadway to relieve water pressure in the underlying coal layer.
- A trench drain was installed at the site. The proposed drain layout is shown on the site plan and cross-section. Record of the actual location and depth of the drain was not available in the files.

A tension crack was noted in November 1991 in the side slope of the east ditch, parallel to the roadway surface. This crack was determined by AI personnel to be a result of settlement of the clay cap, and not an indication of slope instability.

Some geotextile fabric and sawdust was visible on the side slope in the repair area in 1992. No indication of what action was taken was provided in the geotechnical files.

A sinkhole was noted in July of 1994 in the side slope. The sinkhole was directly above an 800 mm diameter culvert handling a small creek flowing east to west, located north of the repair area. The sinkhole was attributed to separation of one of the culvert joints, which allowed piping of the soil into the culvert. No distress was noted in the highway or side slopes in the area of repair (i.e. south of the sinkhole) at that time. The culvert and sinkhole area were repaired.

2. SITE OBSERVATIONS

The highway roadway surface, back slopes and side slopes were inspected in the vicinity of the slide repair during the 2001 site reconnaissance. The following

Continued….

points summarize the observations made during the reconnaissance. Photographs from the reconnaissance are included in Section F of the binder.

- No distress was noted in the side slope or on the pavement surface. No signs of instability (i.e. cracking, bulging, seepage) were noted on the side slope or in the toe area of the embankment.
- The culvert outlet at the north end of the embankment appeared to be performing satisfactorily.
- No signs of instability or settlement were noted in the east ditch.

There has been no change noted from the conditions observed during the 2000 site visit.

3. ASSESSMENT AND RECOMMENDATIONS

Based on the above noted observations, the repair appears to be performing satisfactorily. Therefore, no action is recommended at this site.

Since there has been no change since the previous (2000) site visit, consideration may be given to dropping this site from the landslide assessment program. Continued occasional monitoring by the MCI for the area is recommended.

4. RISK LEVEL

A risk level of 6 is considered applicable to this site, based on a Probability Factor of 2 (inactive, low probability of remobilisation) and a Consequence Factor of 3.

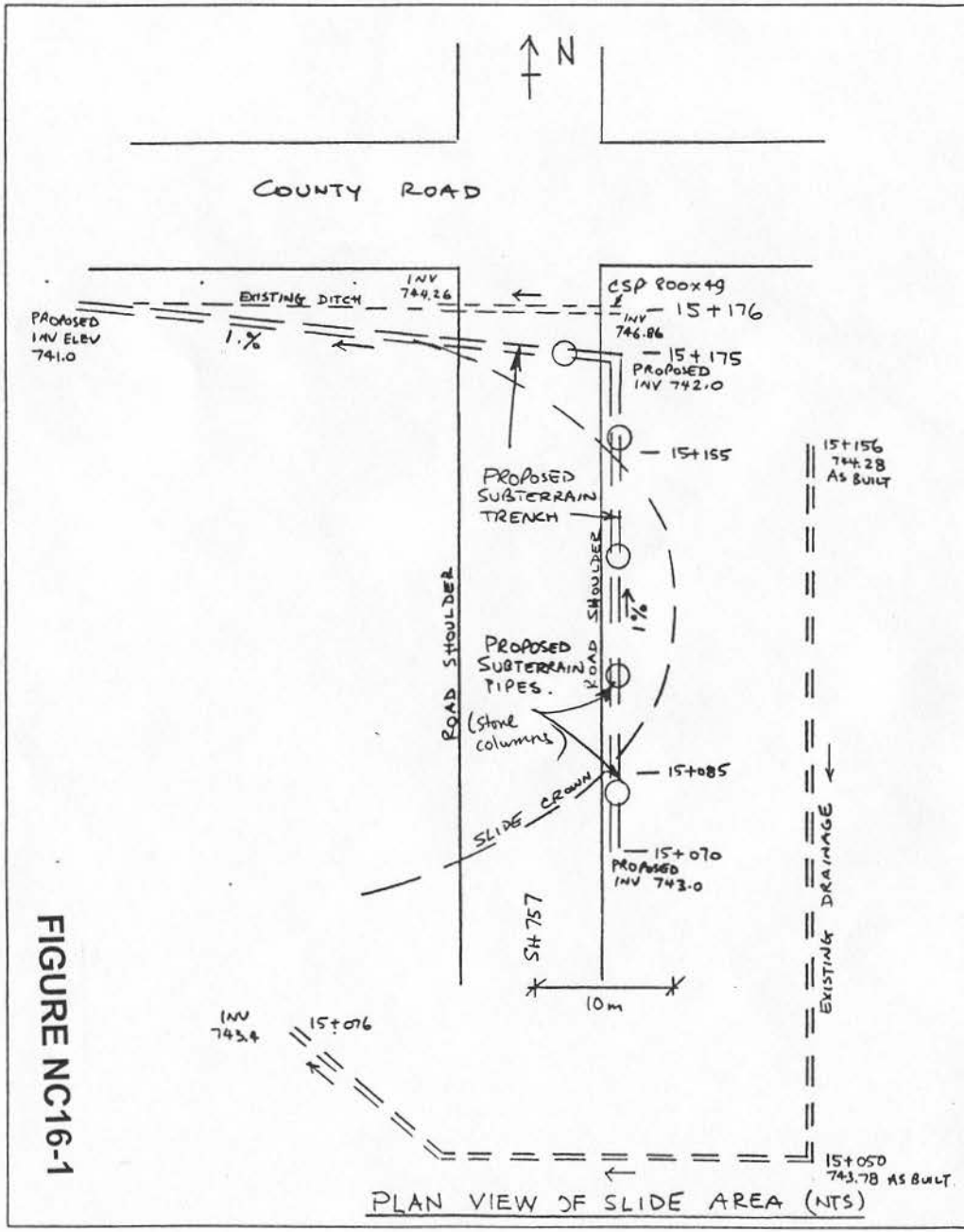
5. CLOSURE

We trust this assessment meets with your needs at this time. Please contact the undersigned should questions or concerns arise.

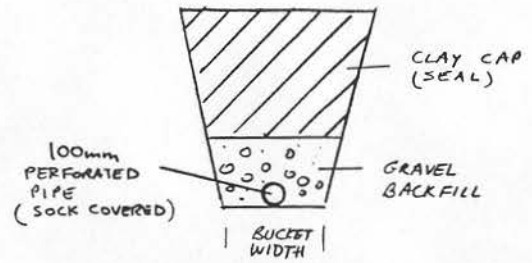
Yours very truly,
Thurber Engineering Ltd.
D.J. Law, P.Eng.
Project Engineer

D. Papanicolas, P.Eng.
Review Principal

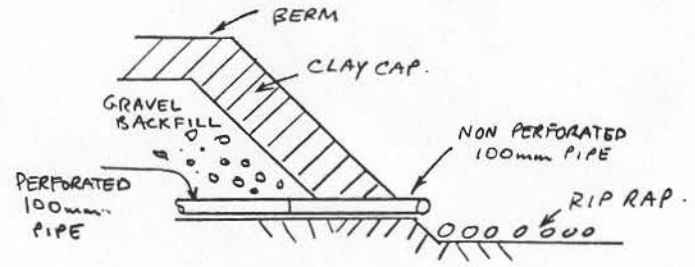
attachments



PLAN VIEW OF SLIDE AREA (NTS)



TYPICAL CROSS-SECTION OF TRENCH (NTS)



TYPICAL LAYOUT FOR DAYLIGHTING DRAIN PIPE (NTS).

REV.	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			
6			

REVISIONS

APPROVED
V. Bondjan
ASSISTANT DIRECTOR
GEOTECHNICAL SERVICES SECTION
DATE July 7/91

Alberta Transportation and Utilities
MATERIALS ENGINEERING BRANCH
GEOTECHNICAL SERVICES SECTION

SH 757:02
STA 15+140
SLIDE

DESIGNED DRAWN BY REVIEWED BY: FC, LTA

DATE	PROJECT No.	DESCRIPTION	DISTRICT	DIV.	SHEET No.	DRAWING No.

FIGURE NC16-1

FIGURE NC16-1

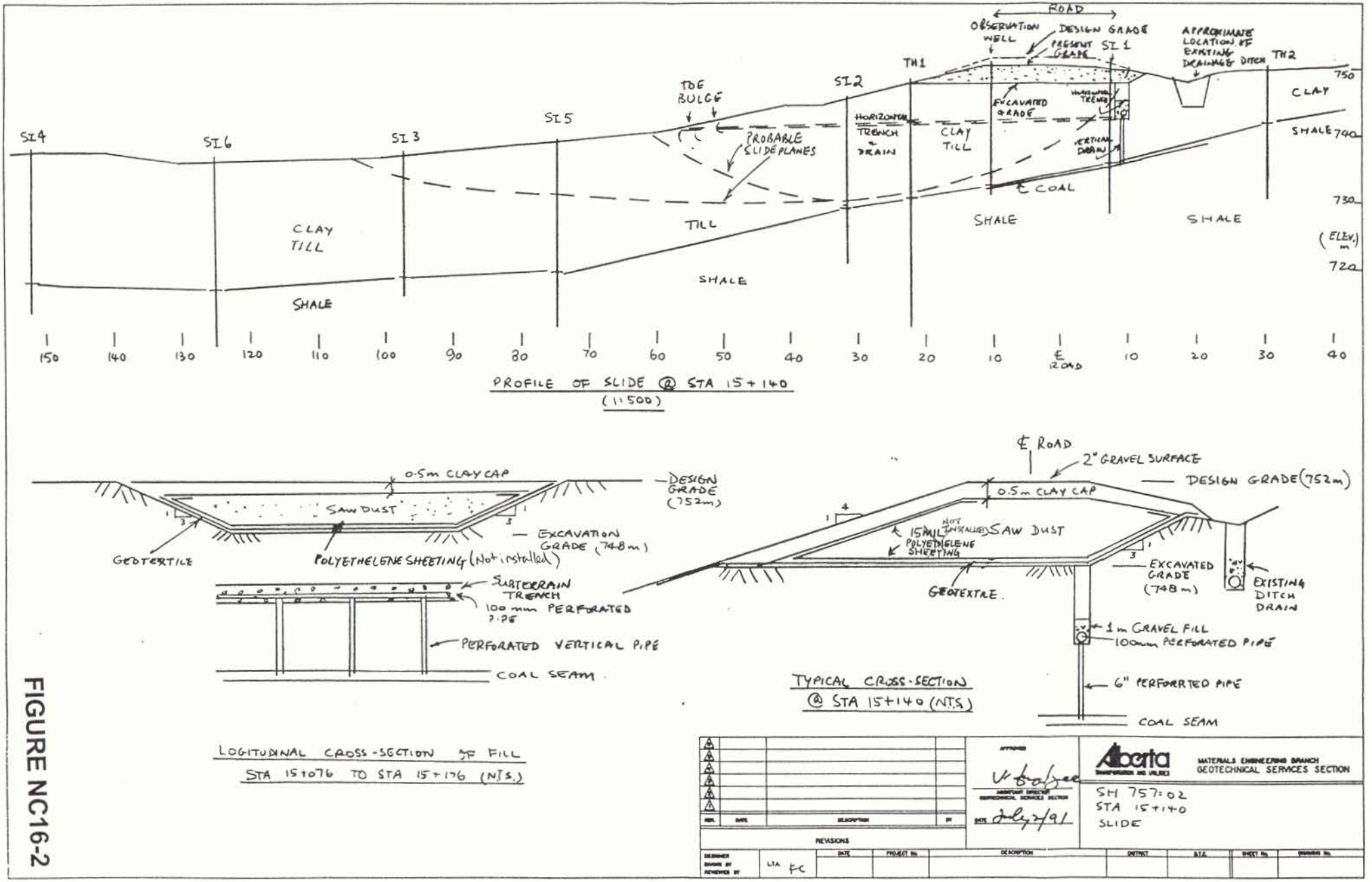


FIGURE NC16-2

FIGURE NC16-2

PHOTO NC16-1 LOOKING SOUTHEAST AT EMBANKMENT REPAIR AREA
CULVERT OUTLET IN BOTTOM RIGHT CORNER

PHOTO NC16-2 LOOKING NORTH FROM SOUTH END OF REPAIR AREA

THURBER

PHOTOS BY STEPHAN ZITTERER, AT.
JUNE 25, 2001
THURBER PROJECT #15-76-11

PHOTO NC16-3 CULVERT OUTLET ON WEST SIDE OF EMBANKMENT