

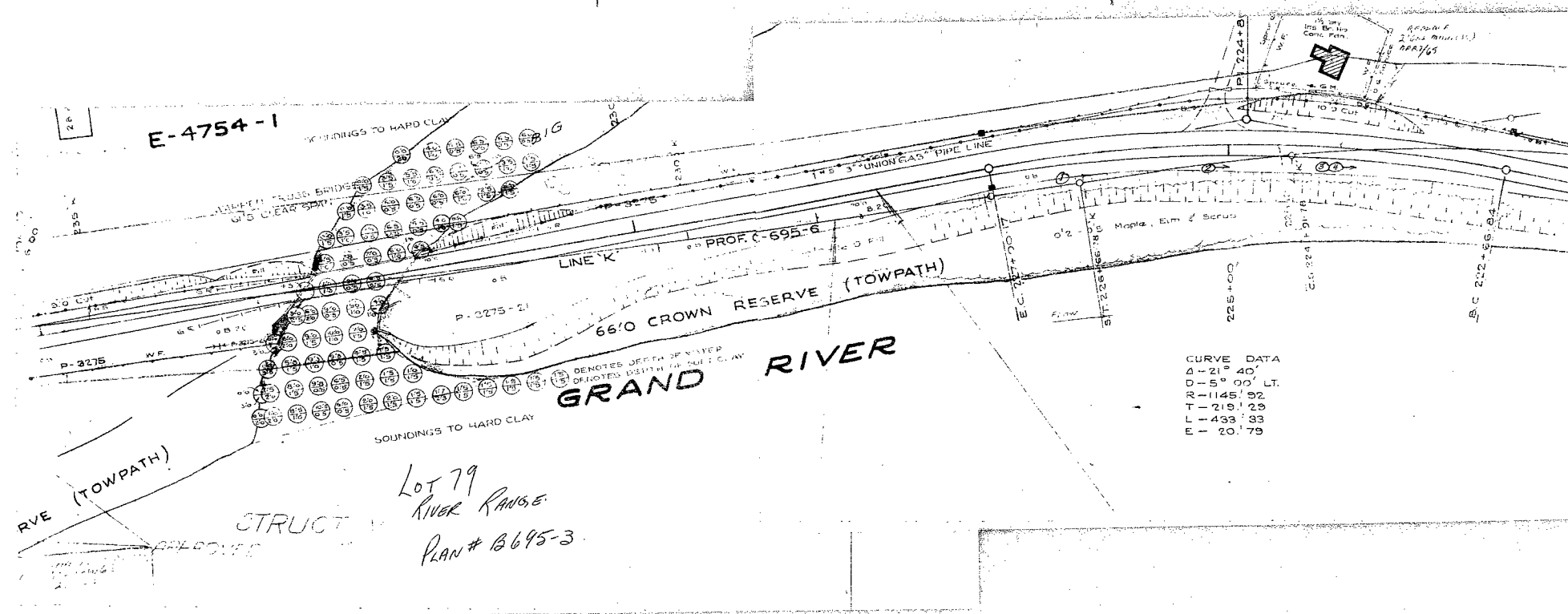
#68- F-59

W.P. #199-63-02

HWY. #54

CALEDONIA TO

ONONDAGA



SOME DEFECTS IN NEGATIVE DUE
TO CONDITION OF ORIGINAL DOCUMENTS

MEMORANDUM

TO: Mr. T. J. Kovich,
Regional Materials Engineer,
Room 134-A, Lab. Bldg.,
Downsview.

FROM: Foundation Section,
Materials & Testing Div.,
Room 107, Lab. Bldg.

DATE: July 12, 1966

OUR FILE REF.

IN REPLY TO

SUBJECT: Failure of Hwy. 54 between Sta. 223+00 and Sta. 228+00,
Caledonia to Onondaga, Hwy. 54, District 4 (Hamilton).
W.P. 199-63-02

Further to your memo of June 23, 1966, a site inspection has been carried out by the writer at the above-mentioned failure location. Recommendations resulting from this inspection have been discussed with you verbally and are summarized for your information as follows:

A failure took place on the south side of Hwy. 54 between Sta. 223+00 and Sta. 228+00. According to the available information, it was a progressive type of failure which might have occurred during the spring seasons of the last few years. From visual observation, it appears to be a shallow failure caused by seepage forces. The centre-line of the new roadway will be located some 23 ft. (maximum) south of the present alignment and approximately 2 to 10 ft. below the existing grade within the failure area.

An investigation consisting of 4 power auger borings and three hand borings, was carried out in order to determine the subsoil conditions existing at the above-mentioned site. The purpose of this investigation was to obtain the necessary information in order to decide whether the new alignment will be feasible under normal design and construction practices and to recommend measures that will prevent reoccurrence of the above-mentioned slope failure.

The investigation revealed that the subsoil immediately below the existing grade of present Hwy. 54, consists mainly of 6 to 8 ft. of hard clayey silt followed by 6 to 7 ft. of stratified clay with silt seams followed by very stiff clayey silt. A considerable amount of seepage was observed in the borehole from the stratified deposit. The water level was found to be some 8 to 10 ft. below the existing grade of Hwy. 54 within the failure area. In addition, an open trench was dug at the toe of the failure zone at Sta. 226+75 centre-line (new Hwy. 54) about 5 ft. below the ground surface. The seepage from the silt seams filled the trench with water some 1 ft. below ground surface.

cont'd. /2 ...

JF

Mr. T. J. Kovich,
Regional Materials Engr.,
Room 134-A, Lab. Bldg.

- 2 -

July 12, 1966

Since the seeping ground water is the main cause of instability, it is recommended that the future slopes be designed and constructed in such a manner so as to provide adequate and effective drainage that will eliminate possible seepage forces. A suggested typical section of the new roadway of Hwy. 54 (Scheme D) at Sta. 226+75, including subdrains at the toe and at the top of the cut on the north side of the proposed roadway, is shown on the enclosed drawing.

The 6" Ø perforated pipe subdrains backfilled with suitable granular filter material, should be located at least 4 ft. below the ground surface to provide for adequate frost protection. The slopes should be sodded, staked and wire-meshed as per D.H.O. Standard DD-403.

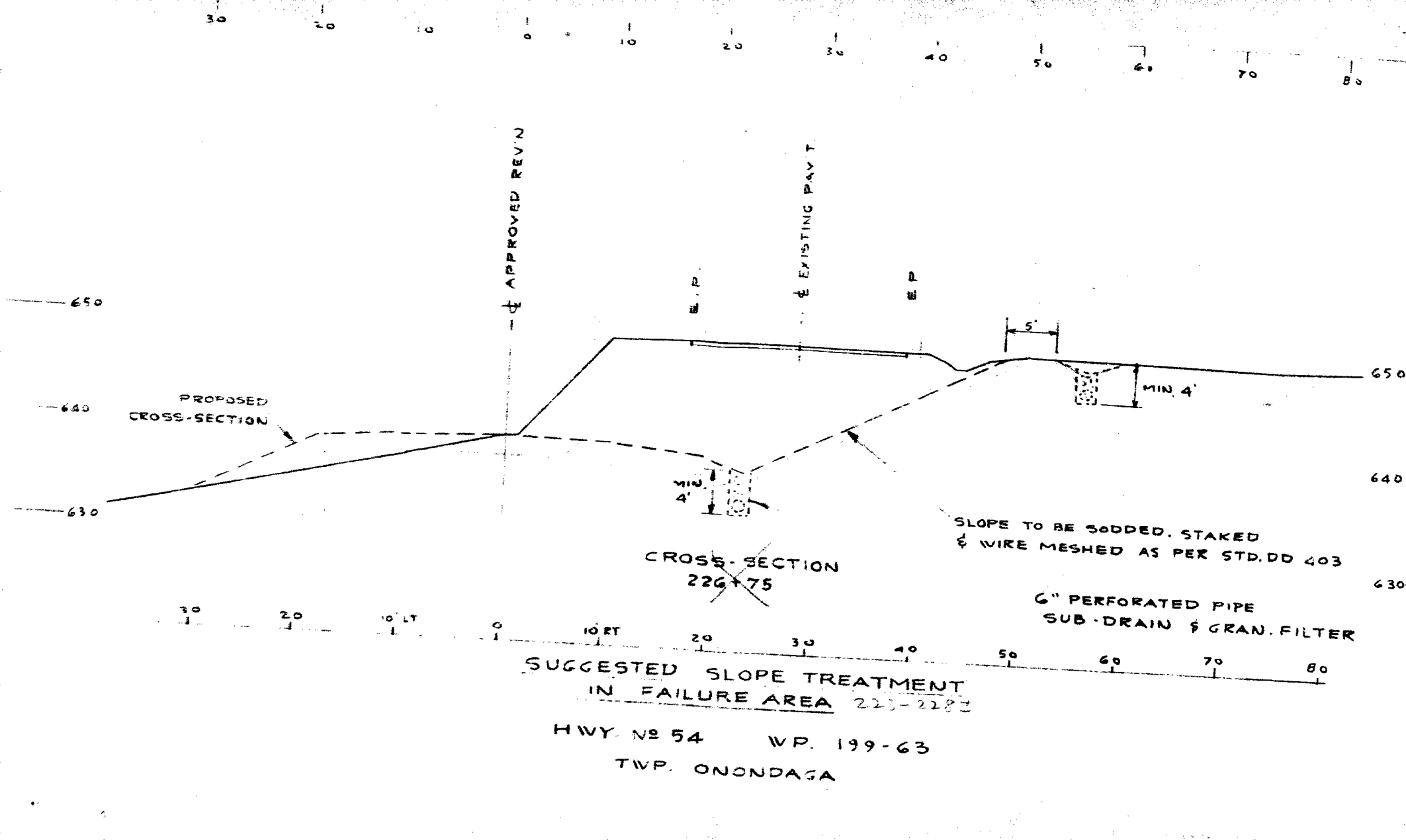
We believe that the foregoing information is sufficient for your present design purposes; however, if we can be of further assistance, please contact this office.

MD/MdeP
Attach.

cc: Foundations Office
Gen. Files

M. Devata

M. Devata,
SENIOR FOUNDATION ENGINEER
For:
A. G. Stermac,
PRINCIPAL FOUNDATION ENGINEER



J. Barclay,
Regional Superintendent of
Engineering Surveys.

T. J. Kavich.

June 23, 1966.

Re: W. P. 199-63; Hwy. 54,
Caledonia to Onondaga.

As you may be aware a slide failure has occurred since the field inspection in the south slope between stations 223+30 and 227+30. In order to analyse the problem we would like to get five detailed cross-sections in this area. These sections should extend to the undisturbed area near the river and should be in sufficient detail to outline the slope of the depression and the bulge.

In order to speed up the process you can submit the field notes to us and we will plot the cross-sections ourselves.

TJK:sm



T. J. Kavich,
Regional Materials Engineer.

c. c. G. A. Wrono

A. Stermac,
Principal Foundation Engineer.

T. J. Kovich.

Attention: M. Devata

June 23, 1966.

Re: Hwy. 54, Caledonia to Onondaga;
W. P. 199-63.

Your assistance is requested in solving the stability problem which has occurred between station 2254 and 2274. I will attempt to get the requested cross-section as soon as possible.



T. J. Kovich,
Regional Materials Engineer.

TJK:sm

C. C. G. A. Wroeg

EDGE OF LIFT

SLOPE TO BE SOODED,
STAKED AND WIRE MESHED
AS PER STANDARD DD-403

PROPOSED SLOPE

2:1

2:1

1' MIN.

CL PROPOSED

E.P. AXIS. PAVT.

6" GBC A'

SAND CUSHION

APPROXIMATE SLOPE - APRIL 1967

EXISTING SLOPE - AUG. 1966

APPROXIMATE SLIP PLANE

RECOMMENDED FILL SLOPE TREATMENT

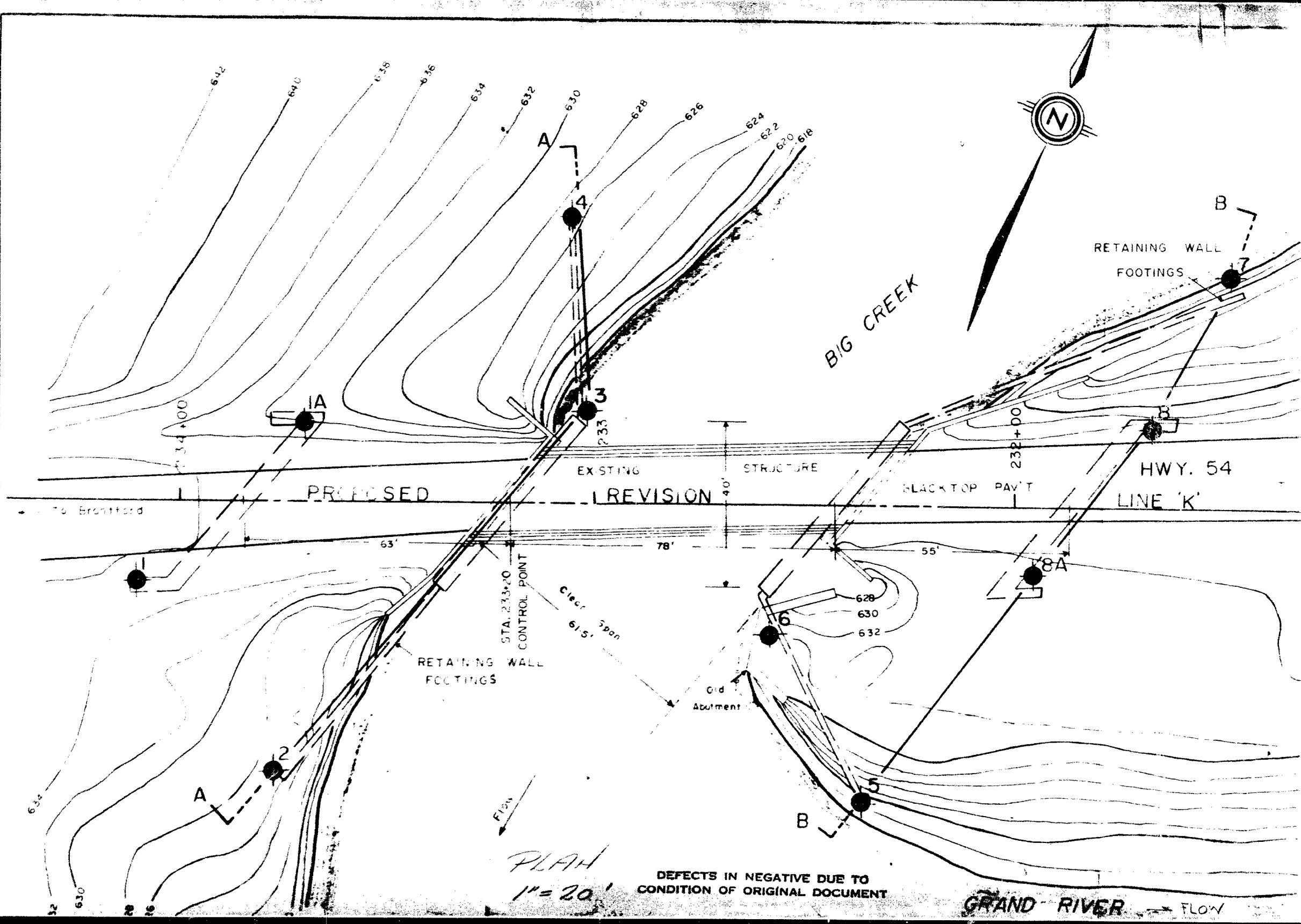
IN FAILED AREA STA. 226+75 - 228+50

HWY #54

W.P. 199-63

DWG #2

5/12/67



GRAND RIVER

Flow

PLAN

SCALE



620

ICE

SILTY CLAY

610

BROKEN

BEDROCK

600

CONTROL POINT

1

1A

3

6

8A

8

PROPOSED

GRADE

EXISTING GROUND

SILTY CLAY

Varved, Stiff to

Firm, Brown to Grey

WEATHERED

BEDROCK

Gypsiferous Mudstone, Sound

BEDROCK

ICE

BIG CREEK

FILL

CLAYEY SILT

WEATHERED

Gypsiferous

Firm to

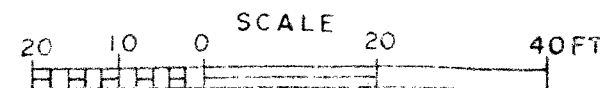
ORGANIC SILT

Stiff, Varved, Brown to Grey

BEDROCK

and Dolomitic Shale

Q PROFILE LINE 'K'



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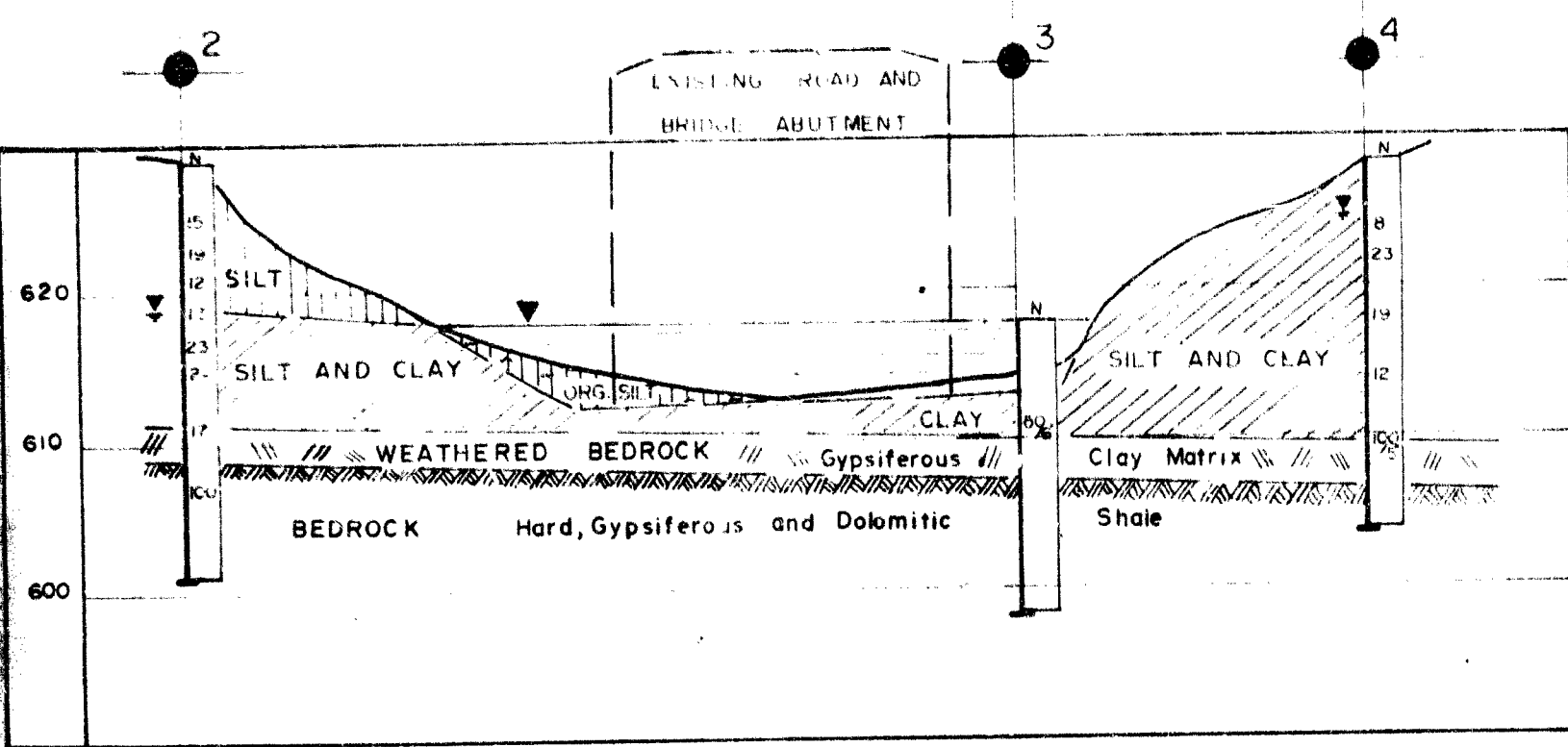
SECTIONS

SCALES

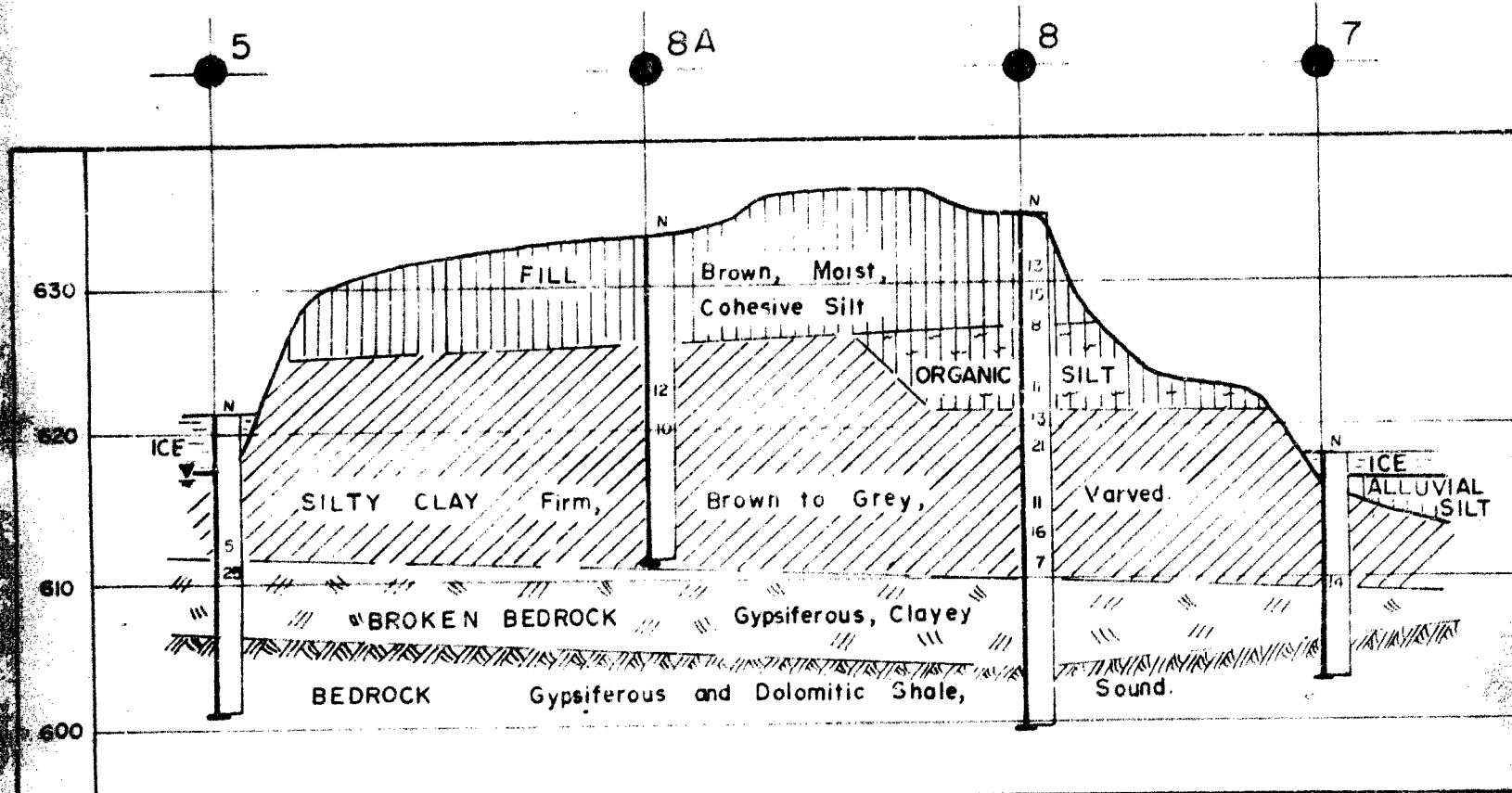
HORIZONTAL



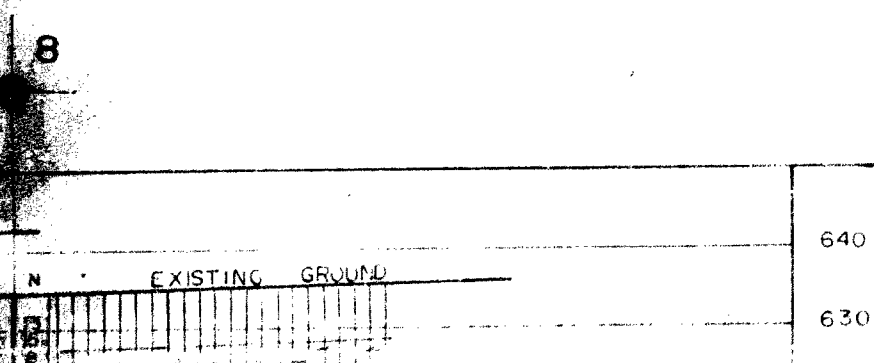
VERTICAL



A-A



B-B



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