

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 3/C-130

DIST. 10 REGION EASTERN

W.P. No. 26-73-01

CONT. No. 75-140

W. O. No. \_\_\_\_\_

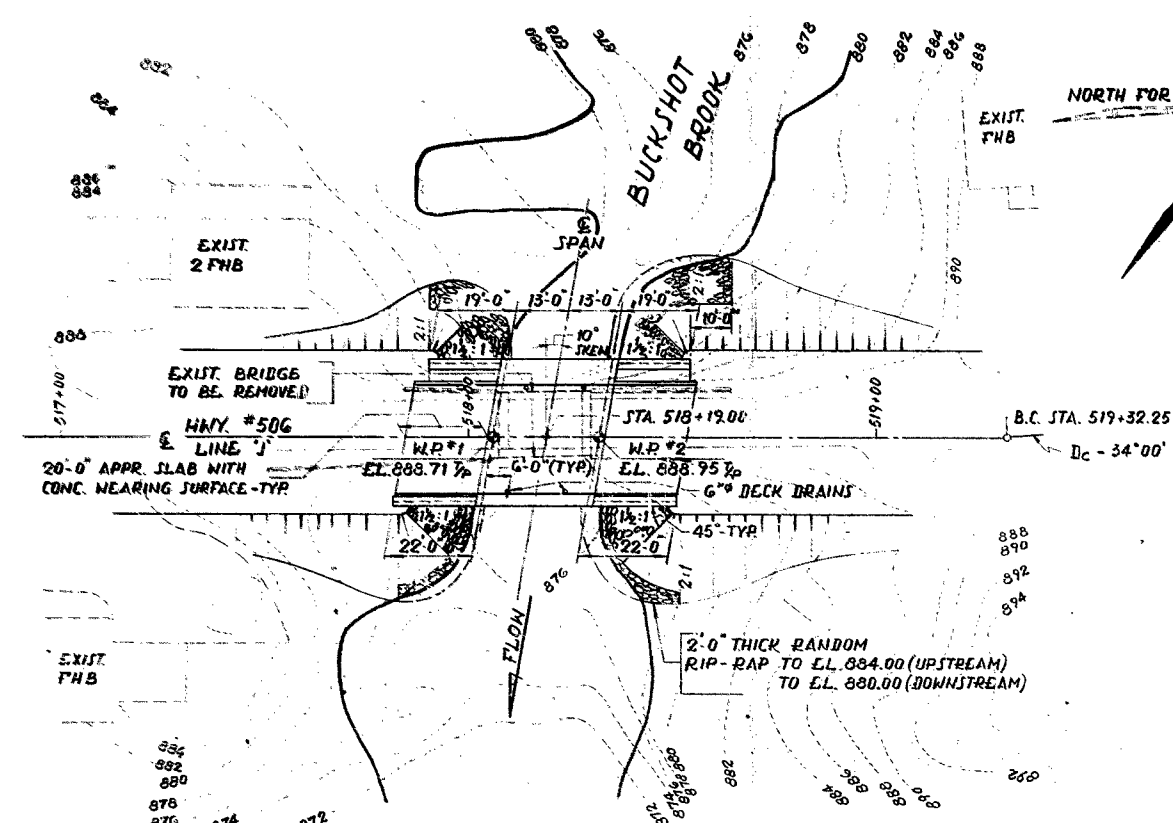
STR. SITE No. 7-5

HWY. No. 506

LOCATION BUCKSHOT BROOK

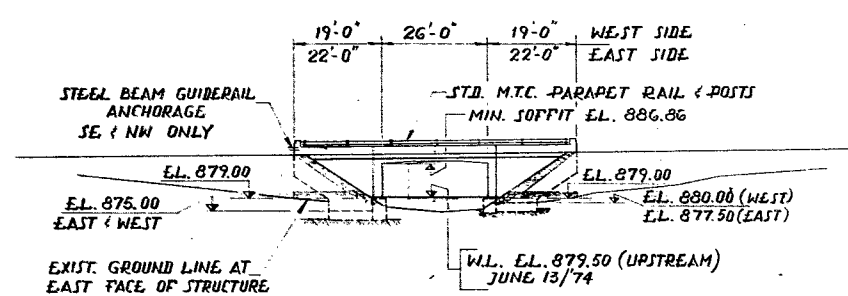
OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 2

REMARKS: documents to be unfolded  
before microfilmed

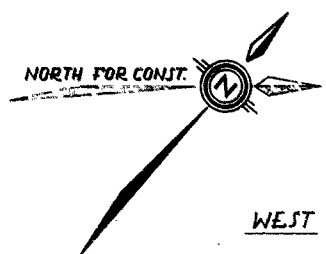


PLAN  
SCALE: 1" = 20'-0"

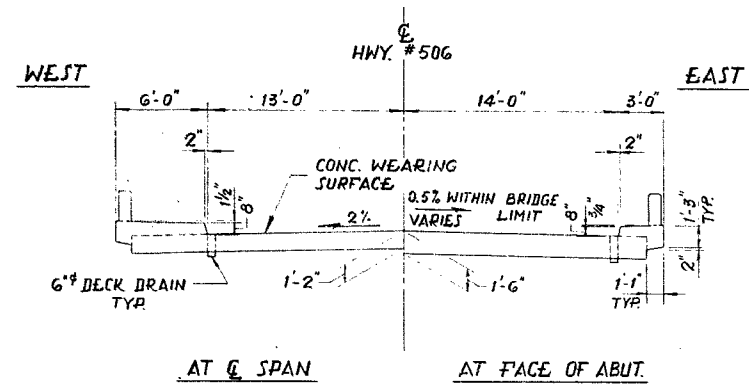
NOTE:  
• 1/8" DENOTES TOP OF FINISHED PAVEMENT  
• W.P. DENOTES WORKING POINT



ELEVATION  
SCALE: 1" = 20'-0"

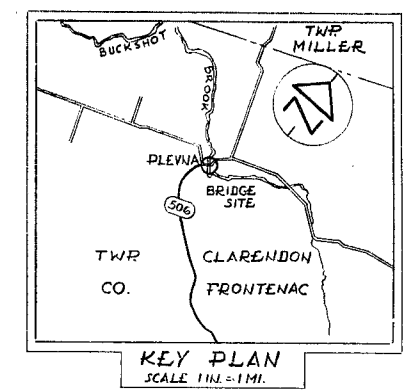


SKREW DATA - 10"  
SIN. - 0.173648  
COS. - 0.984808  
TAN. - 0.176327  
SEC. - 1.015427



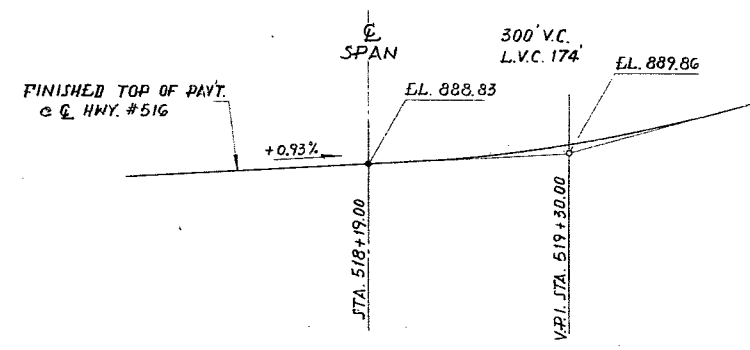
TYP DECK SECTION  
SCALE: 3/16" = 1'-0"

CONCRETE QUANTITIES  
CONCRETE QUANTITIES ARE LISTED BELOW FOR THE APPROPRIATE CONCRETE LUMP SUM TENDER ITEMS:  
1. CONCRETE IN BRIDGE — 84 cu. yd.  
2. CONCRETE IN RET. WALLS — 44 cu. yd.  
3. CONCRETE IN PARAPET WALLS — 9 cu. yd.  
4. CONCRETE IN APPROACH SLABS — 38 cu. yd.



REFERENCE BENCH MARK  
B.M. EL. 888.47  
GEODETIC DATUM  
N 1/4 IN W ROOT OF 1/3 SPR.  
30' LT. 517 + 10

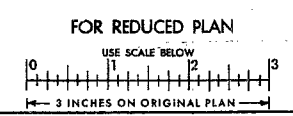
NOTES  
CLASS OF CONCRETE  
FOOTINGS — 3000 P.S.I.  
REMAINDER — 4000 P.S.I.  
CLEAR COVER ON REINF. STEEL  
DECK SLAB — 2 1/2" TOP, 1 1/2" BOTTOM  
CURBS & APPR. SLABS — 2"  
REMAINDER — 3"  
GRANULAR BACKFILL BEHIND THE FRAME SHALL BE PLACED SIMULTANEOUSLY IN LIFTS NOT EXCEEDING A DIFFERENCE OF 2 FT. ELEVATION FROM ONE SIDE TO THE OTHER.



PROFILE OF HWY. #506  
N.T.S.

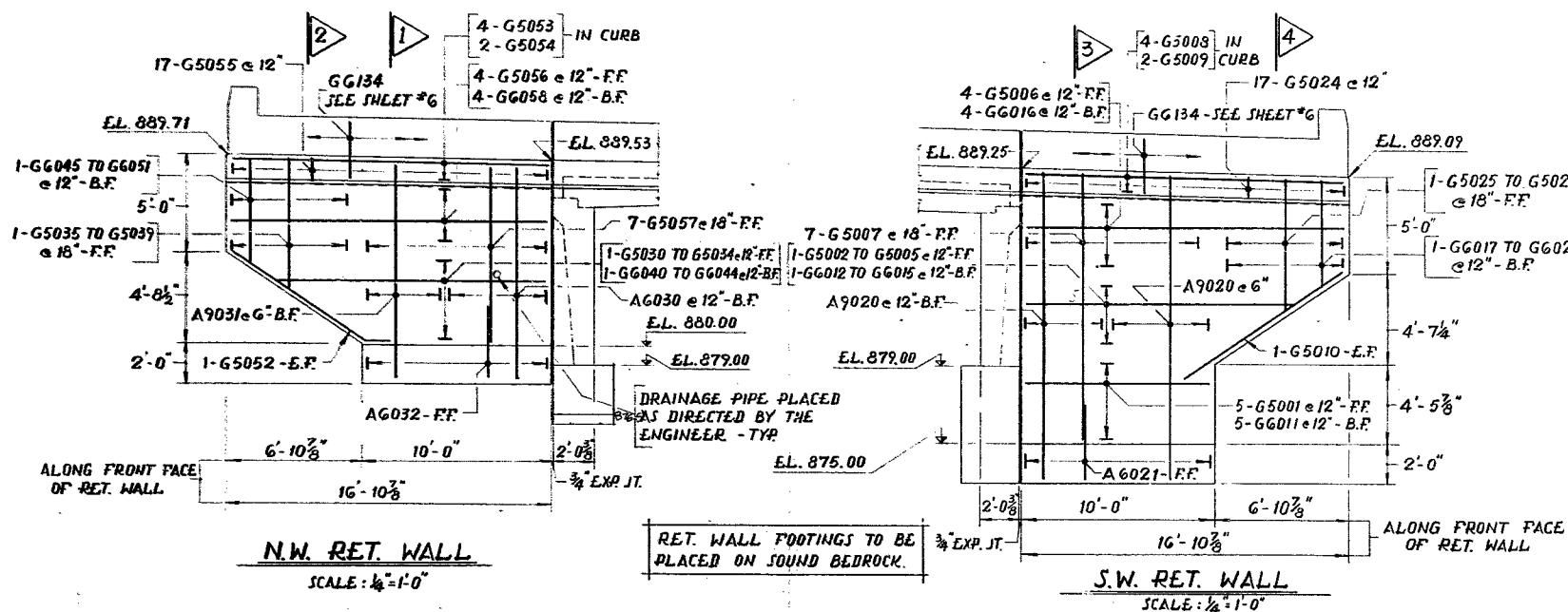
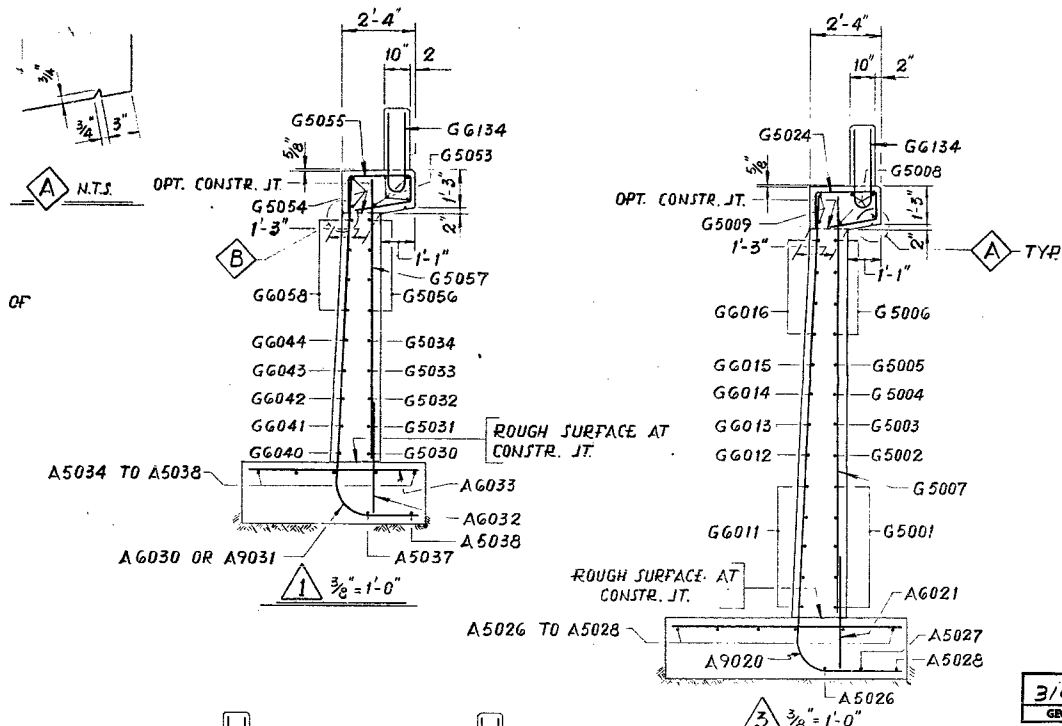
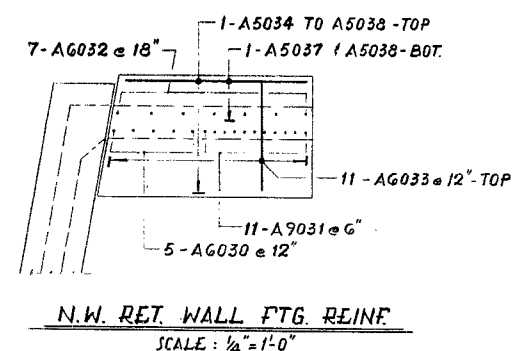
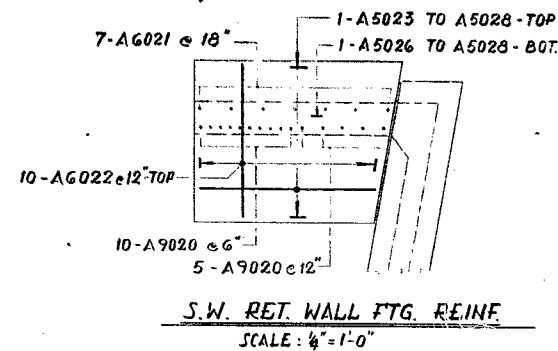
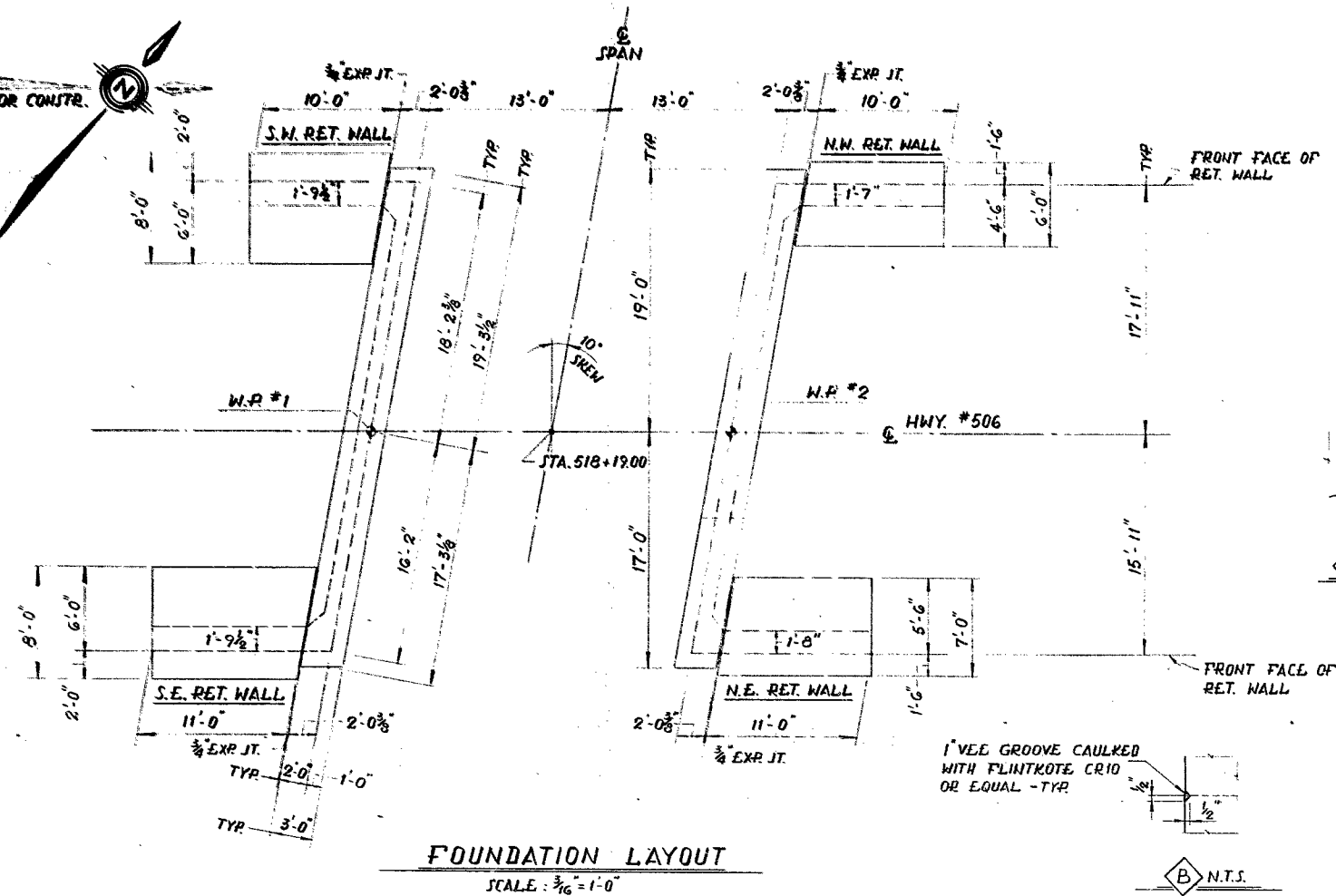
LIST OF DRAWINGS

- 7-5-1 GENERAL LAYOUT
- 2 BORE HOLE LOCATIONS & SOIL STRATA
- 3 FOUND. LAYOUT - N.W. & S.W. RET. WALLS
- 4 ABUT. FTG. REINF. - S.E. & N.E. RET. WALLS
- 5 RIGID FRAME
- 6 PARAPET WALL DETAILS
- 7 STEEL PARAPET RAILING
- 8 20'-0" APPROACH SLABS
- 7-5-9 STANDARD DETAILS



REVISIONS	
DATE	DESCRIPTION
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO	
BUCKSHOT BROOK BRIDGE IN PLEVNA	
KING'S HIGHWAY No. 506	DIST. No. 10
CO. FRONTENAC	
TWP. CLARENDON NWR (SWR) LOT 40	CON.
- GENERAL LAYOUT -	
APPROVED <i>R.K.</i>	CONTRACT No.
DESIGN <i>R.K.</i> CHECK <i>R.K.</i>	W.P. No. 26-73-01
DRAWING <i>A.A.</i> CHECK <i>R.K.</i>	SITE No. 7-5 SHEET 1
DATE <i>JAN/75</i> LOADING <i>HS 20-44</i>	





- NOTES:
- F.F. DENOTES FRONT FACE
  - B.F. DENOTES BACK FACE
  - E.F. DENOTES EACH FACE
  - THIS DRAWING TO BE READ IN CONJUNCTION WITH SHEET #4 & #5.

FOR REDUCED PLAN  
USE SCALE BELOW  
10 12 3  
3 INCHES ON ORIGINAL PLAN

REVISIONS			
DATE	BY	DESCRIPTION	

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO			
BUCKSHOT BROOK BRIDGE IN PLEVNA			
KING'S HIGHWAY No. 506		DIST. No. 10	
CO. FRONTENAC		TWP. CLARENDON N.W.R. / S.W.R. LOT 40 CON.	
FOUND. LAYOUT - N.W. & S.W. RET. WALLS			
APPROVED	DESIGN	CHECK	CONTRACT No.
DATE			W.P. No.
			26-73-01
			SITE No. 7-5
			SHEET 3





## Memorandum

To: T. C. Kingsland (2)  
Regional Structural Planning Engr.  
Eastern Region  
Kingston, Ontario

From: Soil Mechanics Section  
Geotechnical Office

Attention: Date: April 1, 1975

Our File Ref. W.P. 26-73-01

In Reply to

APR - 2 1975

Subject:

*CONT. 75-140*  
FOUNDATION INVESTIGATION REPORT  
for



Proposed Crossing At  
Hwy. 506 and Buckshot Brook  
Village of Plevna, Twp. of Clarendon  
District No.10 (Bancroft)  
Site 7-5 W.P. 26-73-01

Attached we are forwarding to you our detailed foundation investigation report on the subsoil conditions existing at the above-mentioned site.

We believe that the factual data and recommendations contained therein will prove adequate for your design requirements. Should additional information be required, please do not hesitate to contact our Office.

*M. Devata*  
M. DEVATA  
Supervising Engineer.

c.c. E. J. Orr  
B. R. Davis  
A. J. Percy  
D. A. Osborne-White  
B. J. Giroux  
E. R. Saint  
G. A. Wrong  
P. Lewycky  
Files  
Record Services  
J. Anderson)  
R. Forrest ) memo only

# FOUNDATION INVESTIGATION REPORT

for

Proposed Crossing at Hwy. 506 and Buckshot Brook  
Village of Plevna, Twp. of Clarendon  
District No.10 (Bancroft)  
Site 7-5 W.P. 26-73-01

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## 1. INTRODUCTION

A request for a foundation investigation at the crossing of Hwy. 506 and the Buckshot Brook was received from Mr. T. C. Kingsland, Regional Structural Planning Engineer, Kingston, in a memorandum dated July 4, 1974.

During a site meeting between Mr. Kingsland of the Regional Structural Office and Mr. M. Devata, Supervising Engineer, Soil Mechanics Section on July 8, 1974, it was decided that no field investigation was necessary until the footing locations were finalized.

Drawings indicating the finalized footing locations were received by this Office February 17, 1975. A field investigation was subsequently carried out by the Soil Mechanics Section to determine the subsoil and bedrock conditions at the site. This report contains the results of this investigation and our recommendations pertaining to the design of the structure foundations.

## 2. DESCRIPTION OF SITE AND FIELD WORK

The site of the proposed crossing is situated within the Village of Plevna at the Hwy. 506 crossing of Buckshot Brook. The area in the immediate vicinity is quite hilly and rugged. Bedrock outcrops are located throughout the area.

The existing structure is a one lane, 18 ft. single span structure with a concrete deck supported on steel beams. The foundations of the existing structure are spread footings on bedrock.

The field work consisted of four sampled boreholes to determine the nature and extent of the overburden and the depth to sound bedrock. Rock cores were taken from each borehole to determine the engineering properties of the bedrock. The drill used was a conventional skid mounted diamond drill.

### 3. SUBSOIL CONDITIONS

#### (3.1) Overburden

In B.H. 1 and 2, located on the west side of the structure, the topsoil consists of 2.0 ft. and 0.7 ft. respectively, of soft organic material. In B.H. 1 the topsoil is underlain by 2.2 ft. of very dense sand and gravel followed by bedrock. Bedrock was proven directly beneath the topsoil in B.H. 2.

In B.H. 3 and 4, located on the east side of the structure, the overburden consisted of 2.5 ft. and 0.5 ft. respectively, of compact sand and gravel underlain by bedrock.

#### (3.2) Bedrock

At each borehole bedrock was proven. The bedrock is a dark grey, fine grained, very hard biotite gneiss. Rock cores from B.H. 1 revealed that the upper 0.5 ft. is weathered bedrock, before sound bedrock is encountered. Proven elevations of bedrock are tabulated below:

<u>B.H.</u>	<u>Location</u>	<u>Bedrock Elevations (Geodetic)</u>
1	Sta. 518+10, 24 ft. lt.	873.5
2	Sta. 518+46, 20 ft. lt.	880.0
3	Sta. 517+99, 20 ft. rt.	873.1
4	Sta. 518+35, 13 ft. rt.	875.9

### 5. DISCUSSION AND RECOMMENDATIONS

It is proposed to replace the outdated single lane structure carrying Hwy. 506 across Buckshot Brook. The new structure is expected to be a 26 ft. single span rigid frame structure.

It is understood the foundations will be spread footings keyed into sound bedrock and for design purposes an allowable load of up to 20 t.s.f. is recommended. The coefficient of frictional resistance between bedrock and the base of the spread footings may be assumed to be 1.0. Since the proposed structure will be rigid and no lateral movements of the abutments is anticipated, it is recommended that an earth pressure coefficient,  $K_0$ , of 0.5, be used. Backfill for the abutments consisting of free-draining granular

material as per current M.T.C. standards should be carried out and, provision for drainage from this material should be made to ensure that no excess hydrostatic or ice pressure builds up behind the walls. Due to the sloping nature of the bedrock it may be advantageous to have the north abutment footings stepped or constructed on mass concrete keyed into sound bedrock.

It is anticipated a dewatering scheme will be necessary for the construction of footings. This could be accomplished by diverting the flow with a temporary earth fill dike.

#### 4. MISCELLANEOUS

The field work was carried out during March 13, 14 & 15, 1975, under the supervision of Mr. C. McKercher, Student Field Technician. This report was written by Mr. M. MacLean, Project Foundation Engineer.

The investigation was under the general supervision of Mr. M. Devata, Supervising Foundation Engineer, who also reviewed this report.

The equipment was owned and operated by the Atcost Drilling Co. Ltd.

March, 1975

RECORD OF BOREHOLE NO 1

W.P. 26-73-01

LOCATION STN: 518+10, 24 FT. LEFT

ORIGINATED BY C. MCK

DIST. 10 HWY. 506

BORING DATE MARCH 14, 1975

COMPILED BY C. MCK

DATUM GEODETIC

BOREHOLE TYPE DIAMOND DRILL WITH SKID MOUNTED MACHINE

CHECKED BY P. J.

SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$			UNIT WEIGHT $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	$w_p$	$w$	$w_L$		
877.7	GROUND LEVEL															
875.7	Organic Topsoil		1	SS	3/2"											
873.5	Sand and Gravel		1a	SS	87											
4.2	Weathered Sound Biotite Gneiss		2	BXL	100%	870										Borehole located approximately 3 ft. below creek level
863.2	Bedrock		3	BXL	100%											
14.5	End of Borehole					860										



## RECORD OF BOREHOLE No 2

W.P. 26-73-01

LOCATION STN. 518+46, 20 FT. LEFT

ORIGINATED BY C. McK.

DIST. 10 HWY. 506

BORING DATE MARCH 15, 1975

COMPILED BY C. McK.

DATUM GEODETIC

BOREHOLE TYPE DIAMOND DRILL WITH SKID MOUNTED MACHINE

CHECKED BY M. T.

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$			UNIT WEIGHT $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	VALUES		20	40	60	80	100	$w_p$	$w$	$w_L$		
880.7	GROUND LEVEL		1	SS	17.9	ELEV. 880										
0.7	Organic Topsoil		2	EX	100%											
	Sound		3	BXL	100%											
873.7	Biotite Gneiss		4	BXL	100%											
	Bedrock															
7.0	End of Borehole					870										

## ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

## RECORD OF BOREHOLE NO 3

W.P. 26-73-01

LOCATION STN: 517+99, 20 FT. RIGHT

ORIGINATED BY C. McK.

DIST. 10 HWY. #506

BORING DATE MARCH 13, 1975

COMPILED BY C. McK.

DATUM GEODETIC

BOREHOLE TYPE DIAMOND DRILL WITH SKID MOUNTED MACHINE

CHECKED BY H. S.

SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT $W_L$ PLASTIC LIMIT $W_P$ WATER CONTENT $W$			UNIT WEIGHT $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	$W_P$	$W$	$W_L$		
875.6	GROUND LEVEL															GR. SA. SI. CL.
873.1	Sand & Gravel		1	AS												Borehole located approx.
2.5	Sound		2	BXL	100%											
867.3	Biotite Gneiss Bedrock		3	AX	100%	870										
8.3	End of Borehole															1 ft. below creek level
						860										

ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 4

W.P. 26-73-01 LOCATION STN: 518+35, 13 FT. RIGHT ORIGINATED BY C. McK.  
 DIST. 10 HWY. 506 BORING DATE MARCH 15, 1975 COMPILED BY C. McK.  
 DATUM GEODETIC BOREHOLE TYPE DIAMOND DRILL WITH SKID MOUNTED MACHINE CHECKED BY M. T.

SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$			UNIT WEIGHT $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	$w_p$	$w$	$w_L$		
876.4	GROUND LEVEL		1	SS	127.5											
875.9	Sand and gravel		2	BXL	100%											
.5	Sound Biotite Gneiss		3	BXL	100%											
867.0	Bedrock		4	BXL	100%	870										Borehole located approximate 2 ft. below creek level
9.4						860										

## ABBREVIATIONS & SYMBOLS USED IN THIS REPORT

### PENETRATION RESISTANCE

'N' STANDARD PENETRATION RESISTANCE : - THE NUMBER OF BLOWS REQUIRED TO ADVANCE A STANDARD SPLIT SPOON SAMPLER 12 INCHES INTO THE SUBSOIL, DRIVEN BY MEANS OF A 140 POUND HAMMER FALLING FREELY A DISTANCE OF 30 INCHES.

DYNAMIC PENETRATION RESISTANCE : - THE NUMBER OF BLOWS REQUIRED TO ADVANCE A 2 INCH, 60 DEGREE CONE, FITTED TO THE END OF DRILL RODS, 12 INCHES INTO THE SUBSOIL, THE DRIVING ENERGY BEING 350 FOOT POUNDS PER BLOW.

### DESCRIPTION OF SOIL

THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE DENSITY OR DENSENESS OF COHESIONLESS SOILS ARE DESCRIBED IN THE FOLLOWING TERMS :-

<u>CONSISTENCY</u>	<u>c LB./SQ. FT.</u>	<u>DENSENESS</u>	<u>'N' BLOWS / FT.</u>
VERY SOFT	0 - 250	VERY LOOSE	0 - 4
SOFT	250 - 500	LOOSE	4 - 10
FIRM	500 - 1000	COMPACT	10 - 30
STIFF	1000 - 2000	DENSE	30 - 50
VERY STIFF	2000 - 4000	VERY DENSE	> 50
HARD	> 4000		

TERMS TO BE USED IN DESCRIBING SOILS:-

TRACE < 10% , SOME 10-25% , WITH 25-40% , > 40% SILTY, SANDY, GRAVELLY, CLAYEY ETC.

### TYPE OF SAMPLE

S.S.	SPLIT SPOON	T.W.	THINWALL OPEN
W.S.	WASHED SAMPLE	T.P.	THINWALL PISTON
S.T.	SLOTTED TUBE SAMPLE	O.S.	OESTERBERG SAMPLE
A.S.	AUGER SAMPLE	F.S.	FOIL SAMPLE
C.S.	CHUNK SAMPLE	R.C.	ROCK CORE

P.H. SAMPLE ADVANCED HYDRAULICALLY

P.M. SAMPLE ADVANCED MANUALLY

### SOIL TESTS

U	UNCONFINED COMPRESSION	L.V.	LABORATORY VANE
UU	UNCONSOLIDATED UNDRAINED TRIAXIAL	F.V.	FIELD VANE
CU	CONSOLIDATED ISOTROPIC UNDRAINED TRIAXIAL	C	CONSOLIDATION
CID	" " DRAINED "	S	SENSITIVITY
CAU	" ANISOTROPIC UNDRAINED "		
CAD	" " DRAINED "		

# ABBREVIATIONS & SYMBOLS USED IN THIS REPORT

## SOIL PROPERTIES

$\gamma$	UNIT WEIGHT OF SOIL (BULK DENSITY)
$\gamma_s$	UNIT WEIGHT OF SOLID PARTICLES
$\gamma_w$	UNIT WEIGHT OF WATER
$\gamma_d$	UNIT DRY WEIGHT OF SOIL (DRY DENSITY)
$\gamma'$	UNIT WEIGHT OF SUBMERGED SOIL
G	SPECIFIC GRAVITY OF SOLID PARTICLES $G = \frac{\gamma_s}{\gamma_w}$
e	VOID RATIO
n	POROSITY
w	WATER CONTENT
$S_r$	DEGREE OF SATURATION
$w_L$	LIQUID LIMIT
$w_P$	PLASTIC LIMIT
$I_P$	PLASTICITY INDEX
$w_S$	SHRINKAGE LIMIT
$I_L$	LIQUIDITY INDEX = $\frac{w - w_P}{I_P}$
$I_C$	CONSISTENCY INDEX = $\frac{w_L - w}{I_P}$
$e_{max}$	VOID RATIO IN LOOSEST STATE
$e_{min}$	VOID RATIO IN DENSEST STATE
$I_D$	DENSITY INDEX = $\frac{e_{max} - e}{e_{max} - e_{min}}$
	RELATIVE DENSITY $D_r$ IS ALSO USED
h	HYDRAULIC HEAD OR POTENTIAL
q	RATE OF DISCHARGE
v	VELOCITY OF FLOW
i	HYDRAULIC GRADIENT
k	COEFFICIENT OF PERMEABILITY
j	SEEPAGE FORCE PER UNIT VOLUME
$m_v$	COEFFICIENT OF VOLUME CHANGE = $\frac{-\Delta e}{(1+e)\Delta\sigma}$
$c_v$	COEFFICIENT OF CONSOLIDATION
$C_c$	COMPRESSION INDEX = $\frac{\Delta e}{\Delta \log_{10} \sigma}$
$T_v$	TIME FACTOR = $\frac{c_v t}{d^2}$ (d, DRAINAGE PATH)
U	DEGREE OF CONSOLIDATION
$\tau_f$	SHEAR STRENGTH
$c'$	EFFECTIVE COHESION INTERCEPT
$\phi'$	EFFECTIVE ANGLE OF SHEARING RESISTANCE, OR FRICTION
$c_u$	APPARENT COHESION
$\phi_u$	APPARENT ANGLE OF SHEARING RESISTANCE, OR FRICTION
$\mu$	COEFFICIENT OF FRICTION
$S_t$	SENSITIVITY

## GENERAL

$\pi$	= 3.1416
e	BASE OF NATURAL LOGARITHMS 2.7183
$\log_e a$ OR $\ln a$	NATURAL LOGARITHM OF a
$\log_{10} a$ OR $\log a$	LOGARITHM OF a TO BASE 10
t	TIME
g	ACCELERATION DUE TO GRAVITY
V	VOLUME
W	WEIGHT
M	MOMENT
F	FACTOR OF SAFETY

## STRESS AND STRAIN

u	PORE PRESSURE
$\sigma$	NORMAL STRESS
$\sigma'$	NORMAL EFFECTIVE STRESS ( $\bar{\sigma}$ IS ALSO USED)
$\tau$	SHEAR STRESS
$\epsilon$	LINEAR STRAIN
$\gamma$	SHEAR STRAIN
$\nu$	POISSON'S RATIO ( $\mu$ IS ALSO USED)
E	MODULUS OF LINEAR DEFORMATION (YOUNG'S MODULUS)
G	MODULUS OF SHEAR DEFORMATION
K	MODULUS OF COMPRESSIBILITY
$\eta$	COEFFICIENT OF VISCOSITY

## EARTH PRESSURE

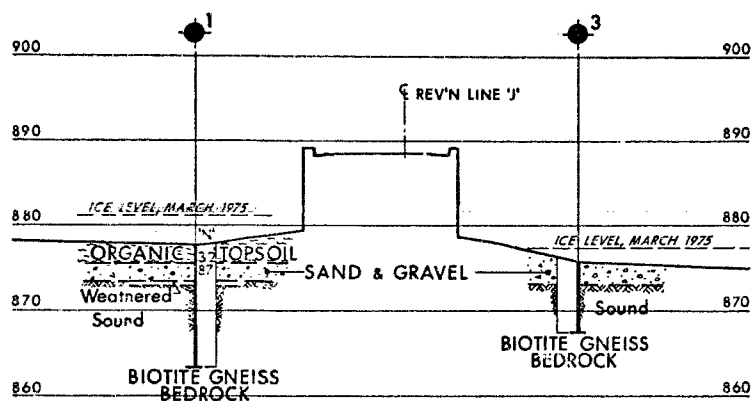
d	DISTANCE FROM TOP OF WALL TO POINT OF APPLICATION OF PRESSURE
$\delta$	ANGLE OF WALL FRICTION
K	DIMENSIONLESS COEFFICIENT TO BE USED WITH VARIOUS SUFFIXES IN EXPRESSIONS REFERRING TO NORMAL STRESS ON WALLS
$K_0$	COEFFICIENT OF EARTH PRESSURE AT REST

## FOUNDATIONS

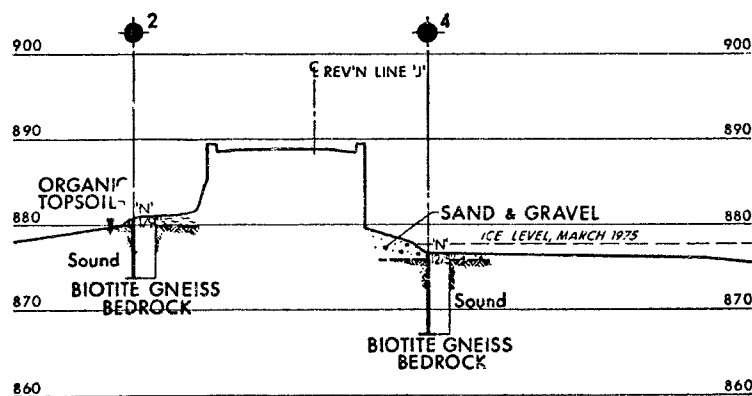
B	BREADTH OF FOUNDATION
L	LENGTH OF FOUNDATION
D	DEPTH OF FOUNDATION BENEATH GROUND
N	DIMENSIONLESS COEFFICIENT USED WITH A SUFFIX APPLYING TO SPECIFIC GRAVITY, DEPTH AND COHESION ETC. IN THE FORMULA FOR BEARING CAPACITY
$k_s$	MODULUS OF SUBGRADE REACTION

## SLOPES

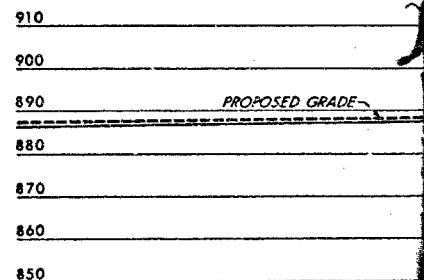
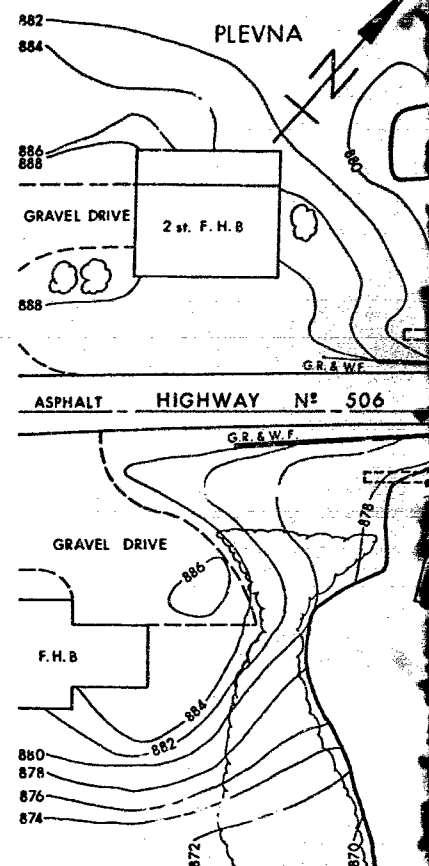
H	VERTICAL HEIGHT OF SLOPE
D	DEPTH BELOW TOE OF SLOPE TO HARD STRATUM
$\beta$	ANGLE OF SLOPE TO HORIZONTAL

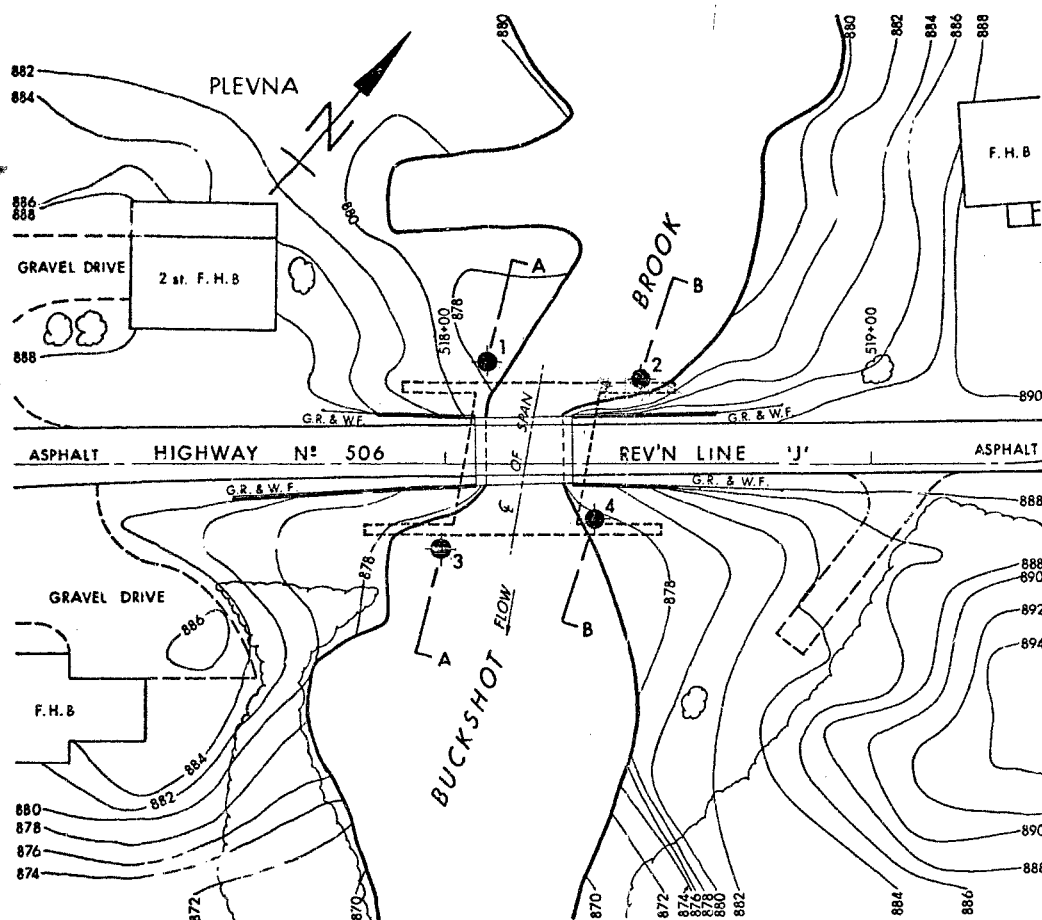


A-A



B-B

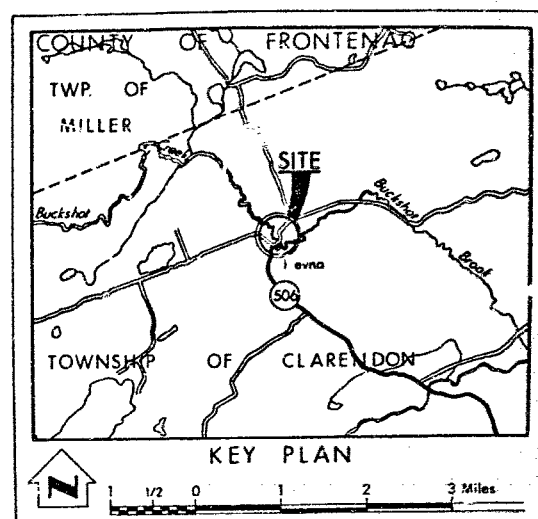




PLAN  
SCALE 20 10 0 20 40 FT.

#### NOTE FOR CONTRACT DOCUMENT

The complete foundation investigation report for this structure may be examined at the Structural Office and Foundations Office, Downsview, and at the BANCROFT District Office.



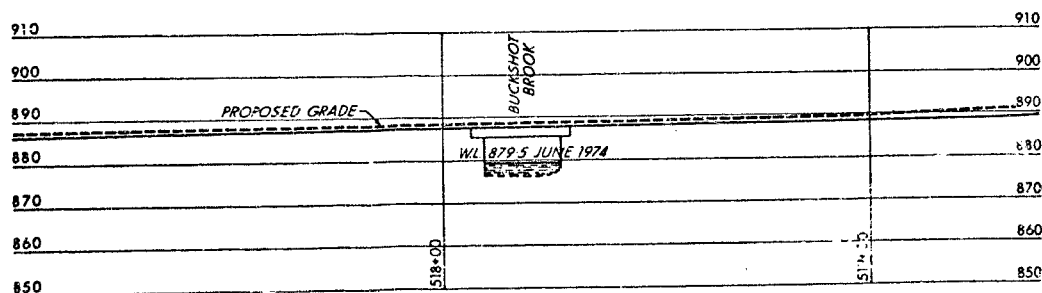
#### LEGEND

- Bore Hole
- ⊕ Dynamic Cone Penetration Resistance Test
- ⊕ Bore Hole & Cone Test
- ⊕ Water Levels established at time of field investigation, MARCH 1975.

N <sup>o</sup>	ELEVATION	STATION	OFFSET
1	877.7	518+10	24' LT.
2	880.7	518+46	20' LT.
3	875.6	517+99	20' RT.
4	876.1	518+35	13' RT.

#### - NOTE -

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.



PROFILE  
SCALE 20 10 0 20 40 FT.

REVISIONS	DATE	BY	DESCRIPTION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO  
ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

#### BUCKSHOT BROOK

HIGHWAY NO. 506 REV'N LINE 'J' DIST NO. 10

CO. FRONTENAC

TWP. CLARENDON LOT 40 CONNER & SWR

#### BORE HOLE LOCATIONS & SOIL STRATA

SUBV. C.A.F. (CHECKED)	WP NO. 26-73-01	DRAWING NO. 267301-A
DRAWN N.T. (CHECKED)	ALD NO.	BRIDGE DRAWING NO.
DATE MARCH 20, 1975	ST. NO. 7-5	
APPROVED	CONT. NO.	

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. M. Devata,  
Supervising Foundations Engineer,  
Soil Mechanics Section,  
Downsview, Ontario.

FROM: Structural Planning Office,  
Kingston, Ontario.

ATTENTION:

DATE: 4 July 1974.

OUR FILE REF.

IN REPLY TO

SUBJECT:

W.P. 26-73-01, Site 7-5  
Buckshot Brook Bridge in Plevna  
Highway 506, District 10-Bancroft

Please find enclosed two prints of preliminary Bridge Site Plan E-5259-1 on which we have marked the proposed location of the replacement structure and the revised profile. Also enclosed are two copies of your Field Reconnaissance Report.

We should be pleased if you will treat this letter as a request for a foundation investigation at the above site.

As discussed with you by telephone, we will be meeting to view the site and determine the extent of any investigation. A superficial inspection may be all that is necessary owing to the visible presence of bedrock at the site.

I confirm that I will be meeting you at the Patrol Yard at the north end of the village of Cloyne at 10:30 a.m. on Monday, July 8.

The scheduled date for the Foundation Report is August 21, 1974.

T. C. Kingsland  
Regional Structural Planning Engineer

TCK/hl  
encls.

c.c. H. Chyc  
R. Forrest  
C. S. Grebski - Att. K. Bassi (with enc.)



*Due date sept 4/74.*



Mr. T.C. Kingsland,  
Reg. Structural Planning Engineer,  
Eastern Region, Kingston.

Soil Mechanics Section,  
Geotechnical Office,  
West Building, Downview.

July 9th, 1974.

RE: Bucksbot Brook Bridge in Plevna,  
Highway 506, District #10, Bancroft,  
W.P. 26-73-01, Site 7-5.

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We have received the request for a Foundation Investigation of the abovementioned site from your Office dated July, 1974. As agreed previously a site meeting was arranged for Monday, July 8th, 1974, to review the surficial conditions.

The meeting was attended by the writer and Mr. T.C. Kingsland, Regional Structural Planning Engineer. Since the bedrock is exposed in the immediate vicinity of the structure site it was concluded that no field investigation will be carried out at this stage. However, at a later date when structure scheme and footing locations are finalized, preferably after the issue of the preliminary structure drawing, this section will carry out necessary field work to establish precise elevations of bedrock surface at the finalized footing locations. It should be noted that the bedrock surface is undulating in the immediate vicinity of the structure and in order to minimize the number of borings, we suggest that you should request Regional Engineering Surveys Section to establish detailed contour plans of the proposed footing areas.

For preliminary design purposes, it can be assumed that the footings for the single span structure can be founded on spread footings located on sound bedrock surface with an allowable load up to 20.0 t.s.f. A dewatering scheme may be necessary for the construction of the footings. Alternatively, the single span structure abutments can be located within the approach fills constructed either of rock fill or Granular 'A' material. In this case a safe allowable load of 2.5 t.s.f. may be used for design purposes. This alternative may not require a dewatering scheme, if footing bases are located above the Creek water level.

Mr. T.C. Kingsland - RE: W.P. 26-73-01.

Photographs taken at the site visit are retained in our files for future reference purposes. Should you require any further information, please feel free to contact this Office.

*M. Devata*

M. Devata,  
Supervising Engineer.

MD/mj

c.c. C.S. Grebaki (attn: K. Bassi)  
E.R. Saint  
A.J. Percy  
R. Forrest  
Files  
Documents



Ministry of  
Transportation and  
Communications

## Memorandum

To: Mr. T. C. Kingsland,  
Reg. Structural Planning Engineer,  
Eastern Region, Kingston.

From: Structural Office,  
West Building, Downsview.

Attention:

Date: December 18th, 1974.

Our File Ref.

In Reply to

Subject: Buckshot Brook Bridge in Plevna,  
W.P. 26-73-01, Site 7-5,  
Highway 506, District #10

Attached herewith are prints of the detailed Preliminary Bridge Plan Drawing 7-5 -P1 for the above-mentioned structure.

The estimated cost of the proposed structure is \$66,000.00 which includes tender, materials, engineering and sundry construction.

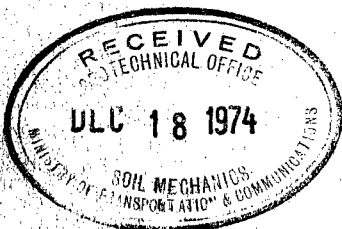
We have sent a copy of the Preliminary Plan to the Hydrology Office for their comments.

Any comments or revisions you may have should be submitted at your earliest convenience.

CSG/cf

C. S. Grebski,  
Structural Design Engineer.

C.C. B. R. Davis  
W. D. Birch  
A. E. McKim  
K. G. Bassi  
M. Stoyanoff  
C. Mirza  
J. Harris  
J. Anderson  
R. Forrest  
S. Edwards





Ministry of  
Transportation and  
Communications

## Memorandum

To: Mr. C. Mirza,  
Head, Soils Mechanics Section,  
West Building, Downsview.

From: Structural Office,  
West Building, Downsview.

Attention:

Date: February 17th, 1975.

Our File Ref.

In Reply to

Subject: Buckshot Brook Bridge,  
W. P. 26-73-01, Site 7-5,  
Hwy. 506, District #10

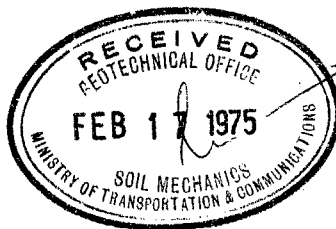
Attached herewith we are submitting the final bridge drawings which show the foundation design for this structure.

Kindly give us your comments at your earliest convenience.

WL/cf

*W. Lin*  
W. Lin,

for: C. S. Grebski,  
Structural Design Engineer.



*507-26-73-01-75*  
To file  
to be used  
to locate  
Boreholes  
identify  
prior to  
approval by  
us of this  
drawg  
prior to  
review.  
*[Signature]*

Soil Mechanics Section  
Geotechnical Office  
West Building  
1201 Wilson Avenue  
Downsview, Ontario.  
M3M 1J8

Tel: (416) 248-3282

March 17, 1975

Atcost Soil Drilling Inc.,  
2160 Highway 7,  
Concord, Ontario.  
L4K 1B6

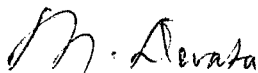
Dear Sirs:

This letter confirms our request by telephone of 10th March 1975, for the supply of a diamond drill - skid mounted (Item No. 1.1.a), together with all necessary equipment, as per your Tender for Supply Contract S-74-2110, at Plevna, Ontario, on March 12, 1975.

Mobilization will be from Belleville, Ontario.

Our Project Number is W.P. 26-73-01.

Yours truly,



M. DEVATA  
Supervising Engineer.

c.c. W. W. Fry  
(Attn: Mrs. M. Porter)

Files (2)  
Record Services.



## Memorandum

To: Mr. A.J. Percy,  
Regional Manager,  
Reg. Planning and Design,  
Kingston Region.

From: Structural Office,  
West Building,  
Downsview, Ontario,

Attention:

Date: June 13, 1975.

Our File Ref.

In Reply to

Subject: W.P. 26-73-01, Site 7-5  
Buckshot Brook Bridge  
Buckshot Brook in Plevna  
Hwy. #506, District #10

Based on the bore hole information supplied by Soil Mechanics Section, Geotechnical Office, the rigid frame and retaining wall footings have been revised. Consequently, the bridge D4 should be revised as follows:

- (1) Add the following tender item:  
"9- Earth Excavation for Bridge and  
Retaining Wall Foundations - cu.yd. - 39"
- (2) Change the quantity of Rock Excavation for  
Bridge and Retaining Wall Foundations to read:  
15 cu.yd.
- (3) Change the quantity of Concrete in Bridge and  
ing Wall Foundations to read: 60 cu.yd.  
the quantity of Reinforcing Steel (Bridge)  
d: 17 tons
- (4) the quantity of Cement (Bridge) to read:  
tons.  
Please adjust the costs accordingly.  
(Cement = \$2,070.00 Total = \$2,450.00)
- (6) The granular backfill to bridge and retaining walls  
is now 130 cu.yd. It is for your Water for  
Compaction item.

RK/ac

c.c. J. Wear  
A.O. White  
K.C. Howe  
B. Giroux  
A.E. McKim  
T. Kingsland  
K. Bassi ✓  
N. Zoltav

R. Kan,  
Structural Project Engineer

*R. Kan*  
7-5-4  
-3  
-5  
-8.  
*Small drawings*



## Memorandum

To: Mr. M. Devata,  
Soils Mechanics Section,  
West Building, Downsview.

From: Structural Office,  
West Building,  
Downsview, Ontario.

Attention:

Date: June 18, 1975.

Our File Ref.

In Reply to

Subject:

Buckshot Brook Bridge in Plevna  
W.P. 26-73-01, Site 7-5  
Hwy. #506, District #10, Bancroft

*Final Review*

We have revised the bridge drawings to comply with the Foundation Report which was issued subsequent to completion of the bridge design. Attached are prints of plans 7-5-1 and -3 to -5 showing the footing details.

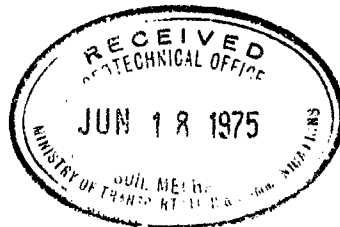
We will be pleased to receive your comments as soon as possible.

K.G. Bassi,  
Reg. Structural Design Engineer.

KGB/ac

Attached

c.c. T.C. Kingsland



*No comment  
M. Devata  
8/ July/75.*

*FINALIZED*



## Memorandum

To: See Below

From: Structural Office,  
West Building,  
Downsview, Ontario.

Attention:

Date: August 19, 1975.

Our File Ref.

In Reply to

Subject: Buckshot Brook Bridge,  
Hwy. 506, District #10,  
Site 7-5, W.P. 26-73-01.



The above mentioned structure is to be constructed under the same contract as Myer Cave Bridge.

As Myer Cave Bridge has already been reviewed by the Committee, it remains to process Buckshot Brook Bridge.

This is to advise that a meeting of the Structural Review Committee will be held on August 27th, at 9:00 a.m. in Boardroom B, West Building, to review this structure. *M.D.*

Would you please arrange for either yourself or your representative to attend.

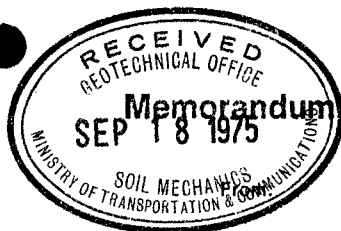
*M. Stoyanoff*

M. Stoyanoff,  
Secretary,  
Structural Review Committee.

MS/DS

TO: A.E. McKim  
✓ C. Mirza  
J. Harris  
C. Grebski  
W. Birch





*M. Devata*

To: Mr. A. McKim,  
Chairman,  
Structural Review Committee,  
Downsview, Ontario.

Structural Planning Office,  
Kingston, Ontario.

Attention: Mr. F. Gormek

Date: 17 September 1975

Our File Ref.

In Reply to

Subject: W.P. 26-73-01, Site 7-5  
Buckshot Brook Bridge  
Highway 506, District 10

Referring to the minutes of the Structural Review Committee meeting on 27 August 1975, I have the following comments on the points raised at the meeting concerning the bailey bridge detour:

- 1) The consensus of the Committee was that the grade set by the Region for the detour could be lowered approximately 2 ft. since the differential between the detour grade and high water level is sufficient to permit lowering. The bailey bridge drawings and quantities which were about to be sent to the Region were immediately modified in accordance with the above recommendation before they were dispatched to this office.

The grade originally submitted by the Region took into account many factors such as property constraints, difficult approach geometrics, visibility and other problems. Thus, the submitted grade was considered by the Region to be the only really practicable one. The drawings and quantities sent to us by Structural Maintenance office will therefore have to be revised to reflect the originally submitted profile.

We would suggest that in future any proposals by the Committee to carry out design modifications should be referred back to the Region before any changes to drawings or quantities are made.

- 2) Mr. Gormek commented to the Committee that requests for bailey detours should be submitted sooner to permit sufficient time for design of same. Some guidance is requested on this point.

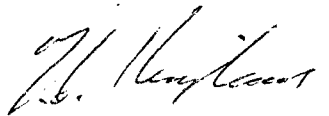
In the case of Buckshot Brook, design information for the bailey detour was submitted to Structural Maintenance office on 15th July 1975, and the bailey bridge drawing and quantities were returned on 11th September 1975. Thus it would appear that

Cont'd....

2) cont'd:

a period of two months or more may be required for  
bailey bridge detour design purposes.

We should be glad to receive Mr. Gormek's estimate  
of the time required for future scheduling purposes.



T. C. Kingsland  
Regional Structural Planning Engineer

TCK/hl

c.c. C. S. Grebski  
M. Stoyanoff  
V. Boehnke  
✓ M. Devata  
J. B. Wilkes  
W. Wigle  
A. Argue  
B. R. Davis  
W. McFarlane  
A. Radkowski  
K. Bassi  
J. Keen  
W. Lin  
P. D. Billings  
S. C. J. Radbone

Mr. R.S. Chapman,  
District Engineer,  
District #10, Bancroft.

Construction Office,  
Third Floor, Central Building.  
Downsview.

Mr. H.R. Kirchner,  
Dist. Constr. Engineer.

June 18th, 1976.

Contract 75-140, Buckshot Brook Bridge in Plevna,  
Site No. 7-5, H.P. 26-73-07, Hwy. 506, District 10.

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This will confirm the conversations I had with T. Belyea and C. Ellis regarding the south abutment and retaining wall footings.

Since the south abutment footing is already excavated 3' to 3.5' into rock it need not be excavated any further. This will mean some modification of the reinforcing steel. Some A6003 will have to be omitted and the A6006 bars will have to be cut to suit.

The top footing elevation for the south-east retaining wall will become 878.14 thus eliminating the need for bars G5060 and G6075 and making it necessary to cut bars A9040 and G5068 to suit.

The top of footing elevation for the south-west retaining wall will become 879.49 thus eliminating bars G5001 and G6011 and making it necessary to cut bars A9020 and G5007 to suit.

This will still mean that 1' to 2' of rock excavation will be required in the areas of the south retaining wall footings.

K.C. Carter,  
Structural Construction Engineer.

KCC:jg

cc: R.A. Dorton ✓  
G. Martins



*Cam,*  
Discussed with Ken Carter and he is very sorry for not informing Soil Mechanics Section about this. He assured me that he will keep us in the picture in future.  
*M. Hanna  
Aug 26/76.*