

73-F-56	32-65	HWY. 127 & PAPINEAU CREEK	31F-68
W.O.	W.P.	LOCATION	GEOCRES NO.

• DATA ON FILE IN SOIL MECHANICS SECTION

REFER TO: W.P. FILE

REMARKS

**GEOCRES** INDEXING CARD FOR REPORTS NOT MICROFILMED

GI-20 AUG 74

SUPERIMPOSED DOCUMENT MAY  
APPEAR AS MULTI-FEED ON FILM

FOUND. FILE  
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. A. G. Stermac,  
Principal Foundations Engineer,  
Downsview, Ontario.

FROM: Structural Planning Office,  
Kingston, Ontario.

ATTENTION: Mr. M. Devata

DATE: 10 July 1973.

OUR FILE REF.

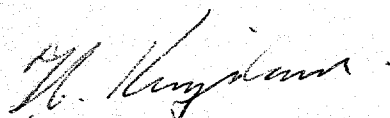
IN REPLY TO

SUBJECT: W.P. 32-65-00, Site 11-3,  
Papineau Creek Bridge,  
(3.9 miles north of Highway 62),  
Highway 127, District 10-Bancroft

73-11056

We are sending you herewith two prints of Bridge Site Plan E-5255-1 on which we have marked the proposed location of the above structure. Also enclosed are two copies of your Field Reconnaissance Report and photographs of the site.

We would be pleased if you will make arrangements for the necessary foundation investigation and to have your report, the scheduled date for which is August 29, 1973.



T. C. Kingsland  
Regional Structural Planning Engineer

TCK/hl  
encls.

c.c. H. Chyc  
R. Forrest  
C. S. Grebski - Att. K. Bassi (+ encl.)

8/1700

MDD AUG 29 1973

FIELD RECONNAISSANCE REPORT  
REQUIRED BY FOUNDATION SECTION  
FOR

FF-69  
SEPT. 1968

W.P. NO. 32-65-00 HIGHWAY NO. 127 DISTRICT 10 SITE PLAN NO. E-5255-1 PROFILE NO. \_\_\_\_\_  
RIVER CROSSING ☒ GRADE SEPARATION ☐ R.R. X. ☐ OTHER (SPECIFY) \_\_\_\_\_  
ALTERNATE SCHEME (IF ANY) No

EXISTING SITE CONDITIONS

DESCRIPTION:

TOPOGRAPHY: HILLY ☒ ROLLING ☐ VALLEY ☐ GULLIED ☐ FLAT ☐  
VEGETATION: TREES ☐ BRUSH ☐ GRASS ☒ SWAMP ☐ FARM CROPS ☐ CLEARED ☐  
SNOW COVER: 0"-6" ☒ 6"-12" ☐ >12" ☐  
ROCK OUTCROP (SPECIFY LOCATIONS) Not in immediate vicinity of structure

UNDERGROUND UTILITIES: UTILITY COMPANY TELEPHONE NO. FOR DEFINITE LOCATION

East side of Hwy. 1 Bell Canada  
2 (Cable attached to upstream side of structure)  
Aerial 3 Hydro wires  
West side of Hwy. 4 \_\_\_\_\_  
5 \_\_\_\_\_

EXISTING STRUCTURE(S):

FOUNDATIONS: SPREAD FOUNDATIONS ☒ SIZE \_\_\_\_\_ ELEVATION(S) \_\_\_\_\_  
PILES ☐ TYPE \_\_\_\_\_ LENGTH(S) \_\_\_\_\_  
DESIGN LOAD \_\_\_\_\_ T.S.F. \_\_\_\_\_ TONS/PILE \_\_\_\_\_  
CONDITION OF STRUCTURE Fair

APPROACHES: CUT ☐ FILL ☒ SIDE SLOPES \_\_\_\_\_  
BERMS YES ☐ NO ☒

OTHER OBSERVATIONS (USE BACK OF SHEET TO DESCRIBE ANY FAILURES IN AREA, PAST PERFORMANCE OF EXISTING APPROACHES & STRUCTURE, ETC.)

ACCESSIBILITY

IS STRUCTURE LOCATED ON D.H.O. RIGHT OF WAY? YES ☒ NO ☐ IF NO,  
HAS PERMISSION BEEN OBTAINED TO ENTER PROPERTY? YES ☐ NO ☐ IF NO,  
PROPERTY OWNER(S):

NAME ADDRESS TELEPHONE NO.

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_  
4 \_\_\_\_\_

WHO WILL OBTAIN NECESSARY PERMISSION? N/A

HAS SITE BEEN SURVEYED & STAKED? YES ☒ NO ☐ IF YES, DATE OF MOST RECENT SURVEY \_\_\_\_\_

WILL CLEARING BE NECESSARY TO ENTER SITE AREA? YES ☐ NO ☒

IS SITE ACCESSIBLE TO WHEELED VEHICLES? YES ☒ NO ☐

IF RIVER CROSSING:

WILL A RAFT BE NECESSARY? YES ☐ NO ☒ IF YES, GIVE MAX. DEPTH OF WATER 6 FT.

CURRENT: SWIFT ☐ MODERATE ☐ SLOW ☒

DRILLING OPERATIONS

NEAREST SOURCE OF WATER (GIVE HAULING DISTANCE, IF KNOWN) At site

ADDITIONAL INVESTIGATION REQUIRED FOR THE FOLLOWING PURPOSES:

ALTERNATE SCHEME: YES ☐ NO ☒ IF YES, SPECIFY \_\_\_\_\_

HYDROLOGIC REASONS: YES ☐ NO ☒ IF YES, SPECIFY (SCOUR, ETC.) \_\_\_\_\_

REMARKS

NEAREST AVAILABLE ACCOMODATION: Bancroft

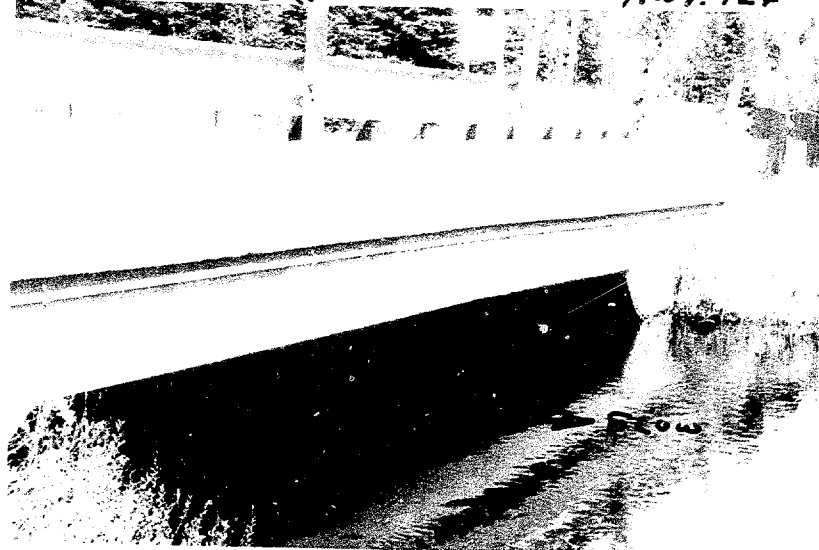
OTHER COMMENTS: \_\_\_\_\_

DATE 10 July 1973

REGIONAL ~~MANAGER~~ Structural ENGINEERING

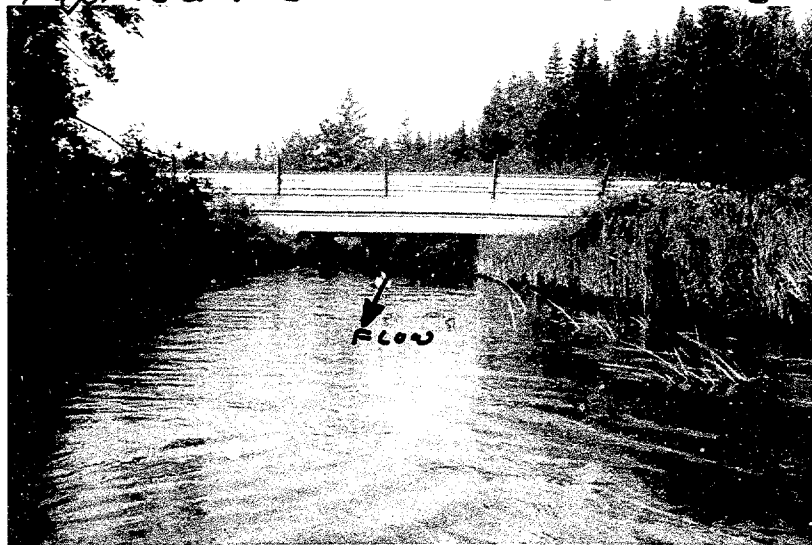
Papineau Cr.

Hwy. 127



Papineau Cr.

SITE 11-3



July 11/72

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. J. D. Harris,  
Principal Hydrology Engineer,  
Downsview, Ontario.

FROM: Structural Planning Office,  
Kingston, Ontario.

ATTENTION: Mr. K. Jorns

DATE: 10 September 1973.

OUR FILE REF.

IN REPLY TO

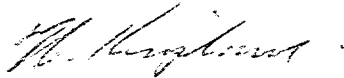
SUBJECT: W.P. 32-65-00, Site 11-3,  
Papineau Creek Crossing,  
Highway 127, District 10-Bancroft, BW-1261

73-11-056

Further to my telephone conversation last week with Mr. Jorns, I enclose herewith calculations, field hydrology notes, reduced E-Plan, etc., relating to the above crossing. Signed survey drawings are not yet available from Regional Systems Design office.

The estimate of peak 25-year runoff (using the Watershed Rating Method) is 1900 c.f.s. The Federal D.O.T. require a clear span of 30 ft. and a vertical clearance of 4 ft. above h.w.l. which we estimate to be at elevation 1302.5. A structure of the size required by D.O.T. for navigational purposes should be more than adequate hydraulically.

We understand that you have copies of the study carried out by Mr. A. P. Watt in 1965 and we shall be glad to receive your report and recommendations at an early date.



T. C. Kingsland  
Regional Structural Planning Engineer

TCK/hl  
encls.

c.c. A. J. Percy  
C. S. Grebski - Att. K. Bassi  
✓ A. G. Stermac - Att. M. Devata

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. T. C. Kingsland, (2)  
Regional Structural Planning Eng.,  
Eastern Region,  
Kingston, Ontario.

FROM: Foundations Office,  
Design Services Branch,  
West Bldg., Downsview.

ATTENTION:

DATE: September 17, 1973.

OUR FILE REF.

IN REPLY TO

SEP 20 1973

SUBJECT:

FOUNDATION INVESTIGATION REPORT  
For

The Proposed Crossing at  
Papineau Creek and Proposed  
King's Highway 127 Line 'T'  
Bridge Site 11-3

District No. 10 (Bancroft)  
W.O. 73-11056 -- W.P. 32-65-00  
CONT. 75-05

31F-58

31F-68  
GEOCRE No.

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.

AGS/ac

Attch.

c.c. E. J. Orr  
B. R. Davis  
A. Rutka  
A. J. Percy  
D. A. Osborne-White  
B. J. Giroux  
E. R. Saint  
G. A. Wrong  
B. A. Singh

Foundations Files  
Documents

*A. C. Stermac*  
A. C. Stermac,  
PRINCIPAL FOUNDATIONS ENGINEER.

TABLE OF CONTENTS

1. INTRODUCTION.
  2. DESCRIPTION OF SITE.
  3. FIELD WORK AND LABORATORY INVESTIGATION.
  4. SUBSOIL CONDITIONS.
    - 4.1 General.
    - 4.2 Sand With Gravel.
    - 4.3 Silt, Traces of Sand, Clay and Gravel.
    - 4.4 Fine Sand Traces of Silt.
    - 4.5 Sandy Silt.
    - 4.6 Bedrock.
  5. GROUNDWATER CONDITIONS.
  6. DISCUSSIONS AND RECOMMENDATIONS.
    - 6.1 General.
    - 6.2 Foundations.
      - a) Piles.
      - b) Spread Footings on Rock-Fill.
  7. MISCELLANEOUS.
-

FOUNDATION INVESTIGATION REPORT  
For

The Proposed Crossing At  
Papineau Creek and Proposed  
King's Highway 127 Line 'T'  
Bridge Site 11-3  
District No. 10 (Bancroft)  
W.O. 73-11056 - W.P. 32-65-00

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1. INTRODUCTION:

A foundations investigation was undertaken for the proposed replacement of Papineau Creek Bridge on Highway 127. The proposal consists of a single span structure. On receiving a request from Mr. T.C. Kingsland, Regional Structural Planning Engineer, for the Eastern Region, dated July 10, 1973, a field investigation was undertaken by this Office so as to determine the existing subsoil and groundwater conditions at the site. Presented in this report are the results of this investigation together with recommendations concerning the structure foundations.

2. DESCRIPTION OF SITE:

The terrain in the general area of the site is hilly and rolling. On either side of the road the land consists of forest. The creek is overgrown with brush and is about 4 to 5 feet deep and about 20' wide. Geologically the site is part of the physiographic region known as the Canadian Shield.

3. FIELD WORK AND LABORATORY INVESTIGATION:

The field work consisted of two sampled boreholes and four dynamic cone tests, with two of the cones being adjacent to the two boreholes. The drilling was done by a diamond drill



equipped for soil sampling and the holes were washbored using NX casing. The bedrock in BH #1 was cored using an AXT core bit and core barrel. Split spoon samples were taken at regular intervals and standard penetration tests were conducted in driving the split spoons. Where there was no recovery in the split spoons wash samples were taken. The penetration 'N' values are recorded in the Appendix. All field and laboratory test results are recorded on the accompanying borelog sheets.

Soil samples were identified in the field and again upon arrival in the laboratory. Laboratory tests to determine moisture content and grain size were carried out on representative samples.

Groundwater levels at the site were the same as the creek water level. The locations and elevations of the boreholes as well as a stratigraphical profile are plotted on Drawing No. 73-11056A attached at the end of this report.

#### 4. SUBSOIL CONDITIONS:

##### 4.1 General:

The soil found at the site consists of a deep deposit of granular material. From the surface down the different layers are as follows: sand with gravel; silt traces of sand, clay, and gravel; fine sand traces of silt; and sandy silt.

#### 4.2 Sand With Gravel:

This deposit was encountered in the first 8.5 to 10.5 feet between elevation 1,299 to 1,289. The 'N' values measured within this layer were 2 to 15 blows per foot corresponding to a relative density of very loose to compact. The moisture content was found to be between 14 and 20%. The grain size distribution analyses yield the following results:

Gravel	27 - 40 %
Sand	55 - 68 %
Clay and Silt	5 %

A typical grain size curve envelope is included in the Appendix as Figure 1.

#### 4.3 Silt, Traces of Sand, Clay and Gravel:

Following the sand with gravel, a layer of silt, traces of sand, clay and gravel was encountered. This layer was found to be 13 to 16 feet in thickness and extended between elevation 1,290 and 1,272. The penetration 'N' values were measured to be between 6 and 21 blows per foot corresponding to a relative density of loose to compact. The natural moisture content of this layer was measured to be 27 to 31%. Grain size distribution analyses produced the following result:

Gravel	0 - 4 %
Sand	0 - 6 %
Silt	90 - 96 %
Clay	1 - 4 %

A typical grain size curve envelope is reproduced in the Appendix as Figure 2.

#### 4.4 Fine Sand Traces of Silt:

This deposit was found to be 50 to 77 feet in thickness extending between elevation 1,277 and 1,200. In BH# 1 this layer was found on top of the bedrock. The penetration 'N' values measured within this deposit varied between 2 and 37 blows per foot corresponding to a relative density of very loose to dense. The natural moisture content was calculated to be between 19 and 27%. Grain size analyses of this layer produced the following distribution:

Gravel	0	%
Sand	88 - 98	%
Silt and Clay	2 - 12	%

A typical grain size curve envelope is included in the Appendix as Figure 3.

#### 4.5 Sandy Silt:

This was the lowest deposit sampled and was found only in BH #3. It is some 22 ft. thick and is on top of the bedrock. The grain size analyses indicated that this layer contains 46% sand and 54% silt and clay. An 'N' value of 8 blows per foot corresponding to a relative density of 'loose', was measured within this layer. One natural moisture content of 27% was obtained within this layer.

#### 4.6 Bedrock:

The bedrock at this site was encountered at elevation 1,199.8 in BH # 1 and elevation 1,199.9 in BH # 3 some 99.3 ft. below the ground surface. The bedrock in BH # 1 was cored for 5 ft. The rock was identified to be sound hornblende biotite gneiss.

#### 5. GROUNDWATER CONDITIONS:

The water level in both boreholes was measured to be at elevation 1,296.3 which is the same as the elevation of the creek. Because of the granular nature of the material the water level will vary with the seasons.

## 6. DISCUSSIONS AND RECOMMENDATIONS:

### 6.1 General:

The proposal at this site consists of a single span structure to replace the existing single span structure. The new structure will be 34 ft. wide and will have a span of 30 ft. The proposed profile grade at the time of the investigation was at elevation 1,309, a raise of some 6.5'. The subsoil consists of a deep deposit of very loose to compact granular material.

### 6.2 Foundations:

#### a) Piles:

This structure may be supported on end-bearing H-piles driven to bedrock, elevation 1,199. The maximum allowable design load for the particular steel section may be used.

As an alternative the structure may be supported on timber piles. It is recommended that these piles be treated, if they are not completely below the groundwater level. A safe load of 15 tons per pile may be used. It is estimated that these piles will achieve this load if driven to elevation 1,246. Piles are to be driven in accordance with Standard BD 82-7.

Settlement of the pile groups should take place during construction. Dewatering of footings and/or pile caps may be required if the excavations go below the water table. Because of the fine grained nature of the subsoil the excavation bottoms are highly susceptible to boiling.

#### b) Spread Footings on Rock-Fill:

The proposed structure may be founded on spread footings placed within rock fill approach embankments. Design pressures of up to 2 t.s.f. may be used. The footings should be placed so as to have at least 6 ft. of cover for frost protection. The rock-fill approach embankments should be built with  $1\frac{1}{2}$ :1 side and forward slopes at the structure locations, as shown in Figure 4. It would be advantageous to provide for shimming up the bridge deck to accommodate settlements which may occur after completion of the project.

Calculations by the Hydrology Office indicate that for Papineau Creek the average scour, because of the nature of the soil, may be as deep as 8 ft. below the creek bed. As a result it is recommended that an 18 inch thick blanket of rock should be placed in the creek in conjunction with the rock fills. This protection blanket should extend some 15 feet upstream and some 25 feet downstream.

As a further alternative a concrete twin box culvert or a flexible type culvert may be used in this crossing. These should be constructed according to pertinent M.T.C. standards with granular 'B' used for backfill and bedding.

The most economical proposal for this site should be chosen.

7. MISCELLANEOUS:

The field work was carried out from July 23 to July 28, 1973, under the supervision of M. P. Korgemagi, Project Foundations Engineer.

The equipment used was owned and operated by Canadian Longyear Limited, Rexdale, Ontario.

This report was written by Mr. P. Korgemagi and reviewed by Mr. K.G. Selby, Supervising Foundations Engineer.

*P. Korgemagi*  
P. Korgemagi, P. Eng.

*K. G. Selby*  
K.G. Selby, P. Eng.



PK/zh  
September 13, 1973.

APPENDIX I

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

## RECORD OF BOREHOLE NO 1

JOB 73-11056

LOCATION Sta. 298 + 14.5 o/s 17.8' Rt. Line 'T'

ORIGINATED BY PK

W.P. 32-65-00

BORING DATE July 23 to 25, 1973

COMPILED BY PK

DATUM Geodetic

BOREHOLE TYPE Washboring &amp; Cone Test

CHECKED BY *PK*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT					LIQUID LIMIT $W_L$ PLASTIC LIMIT $W_P$ WATER CONTENT $W$			BULK DENSITY $\gamma$ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		25	50	75	100	125	$W_P$	$W$	$W_L$		
1299.2	Ground Level															
0.0	Sand with gravel.															1296.3
	Very Loose to Compact		1	SS	2											27 68 ( 5 )
1290.7	Brown		2	SS	13											
8.5	Silt, traces of sand		3	SS	12	1290										4 5 90 1
	Compact		4	SS	10											
	Brown		5	SS	10											
1277.2			6	SS	9	1280										0 6 93 1
22.0	Fine Sand		7	SS	2											
	Very Loose to Dense		8	SS	5	1270										
			9	SS	3											0 98 ( 2 )
			10	WS												
			11	SS	5	1260										
			12	WS												
			13	SS	4											
			14	WS		1250										
			15	SS	4											
			16	WS												
			17	SS		1240										
			18	WS												
			19	SS		1230										
			20	WS												
	Brown		21	SS		1220										
	Grey		22	WS												
			23	SS		1210										
			24	WS												
1199.9						1200										
99.3	Bedrock															
1195.9	Hornblende Biotite Gneiss, Sound															
104.3	End of Borehole															

20  
15  $\phi$  5 % STRAIN AT FAILURE  
10

FOUNDATIONS OFFICE

JOB 73-11056

LOCATION Sta. 298 + 61 o/s 22.5' Rt. Ø Line 'T'

ORIGINATED BY PK

W.P. 32-65-00

BORING DATE July 28, 1973

COMPILED BY PK

DATUM Geodetic

BOREHOLE TYPE Cone Test

CHECKED BY AK

[illegible]

20  
15  $\phi$  5 % STRAIN AT FAILURE  
10



DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

## RECORD OF BOREHOLE NO 3

JOB 73-11056

LOCATION Sta. 298 + 58 o/s 18.5' Lt. Ø Line 'T'

ORIGINATED BY PK

W.P. 32-65-00

BORING DATE July 26, 1973

COMPILED BY PK

DATUM Geodetic

BOREHOLE TYPE Washboring &amp; Cone Test

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FCOT				LIQUID LIMIT — $w_L$ PLASTIC LIMIT — $w_p$ WATER CONTENT — $w$			BULK DENSITY $\gamma$ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		25	50	75	100	125	$w_p$	$w$	$w_L$	
1299.1	Ground Level														
0.0	Sand with gravel.														
	Grey		1	SS	15										1296.3
1288.6	Compact														40 55 (5)
10.5	Silt, traces of clay.		2	SS	6										0 1 95 L
	Grey		3	SS	13										0 0 96 L
			4	SS	21										
1272.1	Loose to Compact		5	SS	12										
27.0			6	SS	11										0 97 (3)
			7	SS	12										
	Fine sand, traces of silt.		8	SS	9										
	Grey		9	WS											
	Compact		10	SS	8										0 88 (12)
			11	WS											
1222.1															
77.0	Sandy silt		12	SS	8										0 46 (54)
	Loose														
	Grey														
1199.8															
99.3	End of Borehole Probable Bedrock														

20  
15 5 % STRAIN AT FAILURE  
10

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE N<sup>o</sup> 4

JOB 73-11056

LOCATION Sta. 298 + 17 o/s 19.5' Lt. Ø Line 'T'

ORIGINATED BY PK

W.P. 32-65-00

BORING DATE July 28, 1973

COMPILED BY PK

DATUM Geodetic

BOREHOLE TYPE Cone Test

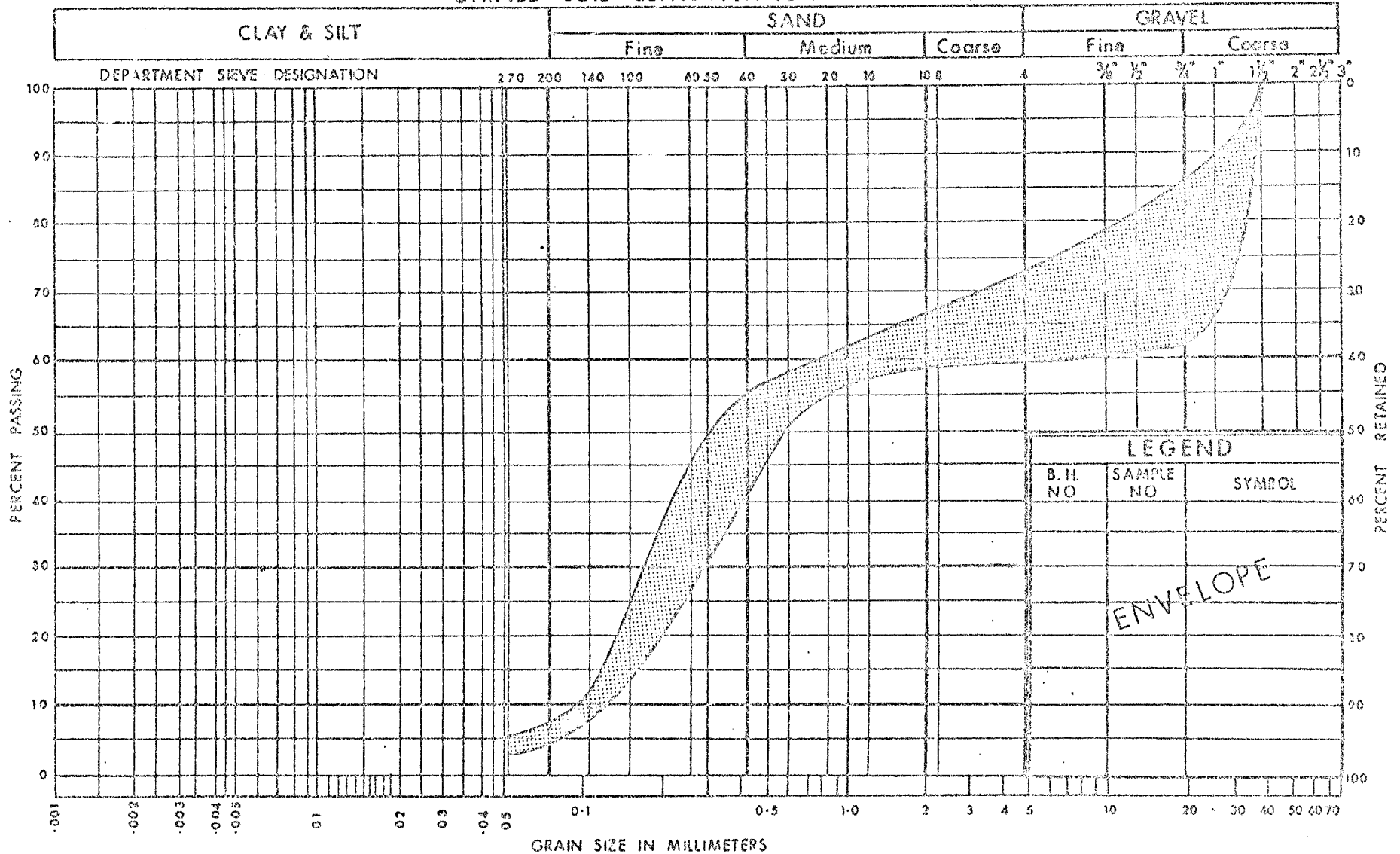
CHECKED BY gk

SOIL PROFILE		SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 25 50 75 100 125	LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$ $w_p$ — $w$ — $w_L$	BULK DENSITY $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE					
1299.6	Ground Level								
0.0									
1246.6									
43.0	End of Cone Test •								

OFFICE REPORT SOIL EXPLORATION

20  
15  $\phi$  5 % STRAIN AT FAILURE  
10

# UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT  
OF  
TRANSPORTATION AND COMMUNICATIONS

DESIGN SERVICES  
BRANCH

GRAIN SIZE DISTRIBUTION

SAND WITH GRAVEL

W.P. No. 32-65-00

JCD No. 73-11056

FIG. NO. 1

# UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY &amp; SILT

SAND

GRAVEL

**Fine**

Medium

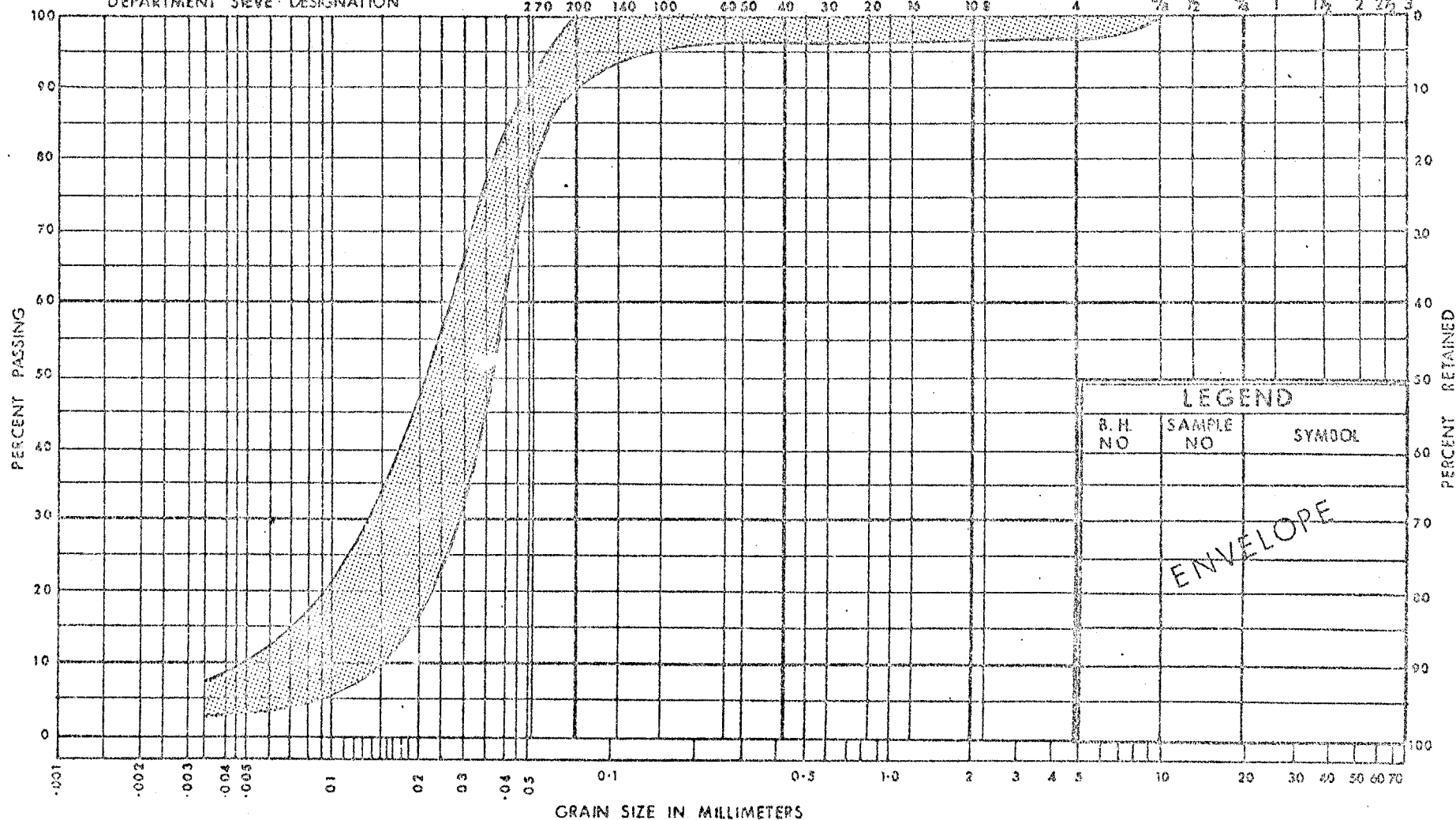
Course

**Fine**

## Course

DEPARTMENT SIEVE DESIGNATION

270	200	140	100	60	50	40	30	20	10	5	4	$\frac{3}{4}$ "	$\frac{1}{2}$ "	$\frac{3}{8}$ "	1"	1 $\frac{1}{2}$ "	2"	2 $\frac{1}{2}$ "	3"
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DEPARTMENT  
OF  
TRANSPORTATION AND COMMUNICATIONS



DESIGN SERVICES  
BRANCH

## GRAIN SIZE DISTRIBUTION

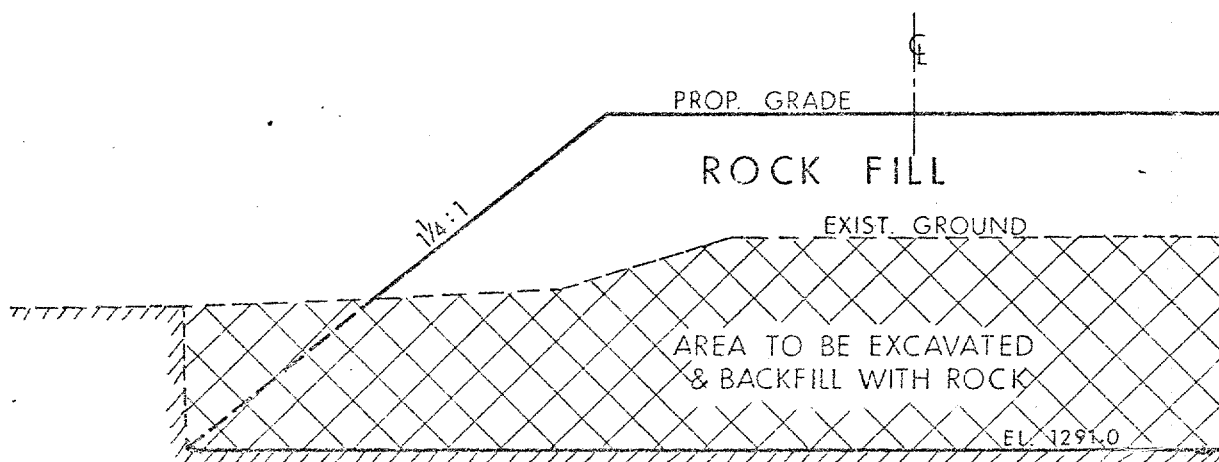
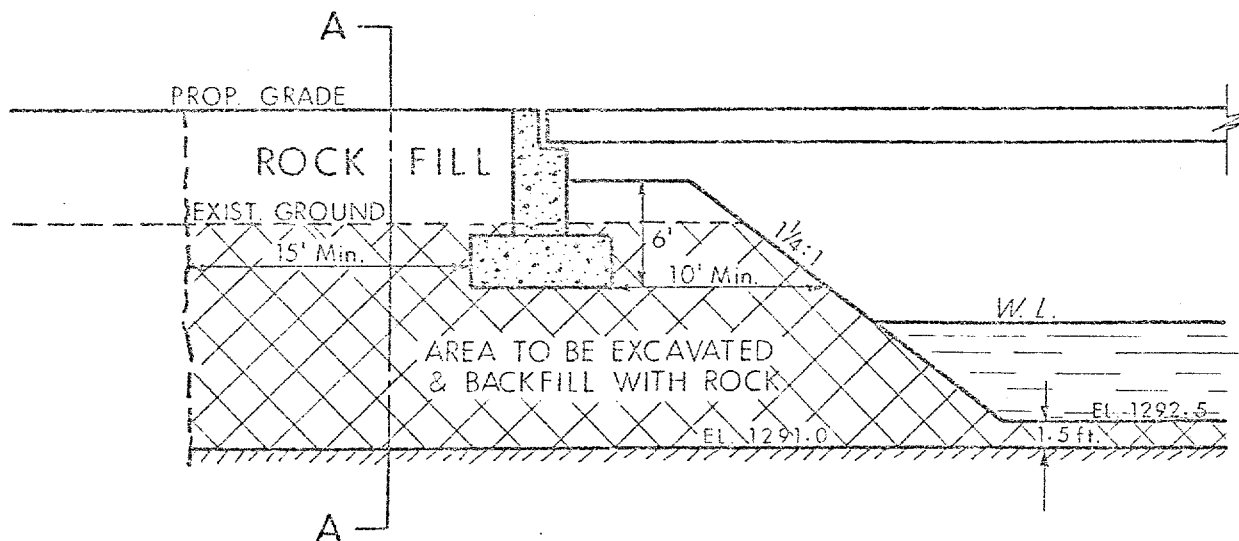
SILT, TRACES OF CLAY & SAND

W.P. No. 32-65-00

JOB No. 73-11056

FIG. NO. 2





SECTION A-A

ABBREVIATIONS & SYMBOLS USED IN THIS REPORTPENETRATION 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
$S_i$	SENSITIVITY

## GENERAL

$\pi$	= 3.1416
e	BASE OF NATURAL LOGARITHMS 2.7183
$\log_e \sigma$ OR $\ln \sigma$	NATURAL LOGARITHM OF $\sigma$
$\log_{10} \sigma$ OR $\log \sigma$	LOGARITHM OF $\sigma$ 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

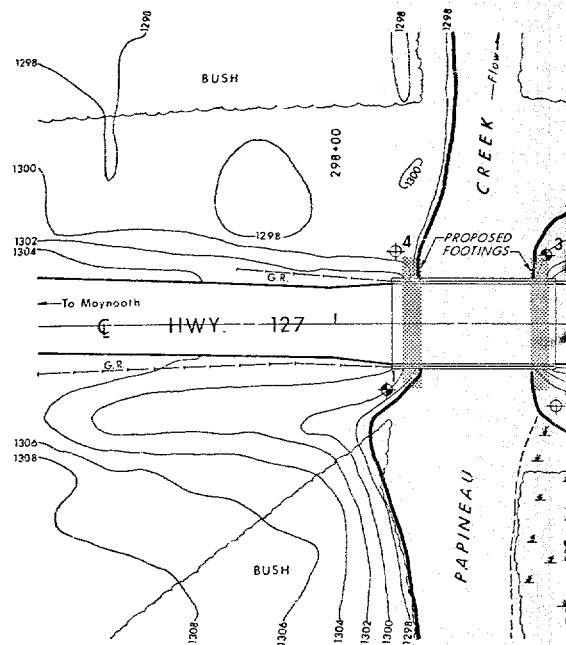
## FOUNDATIONS

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

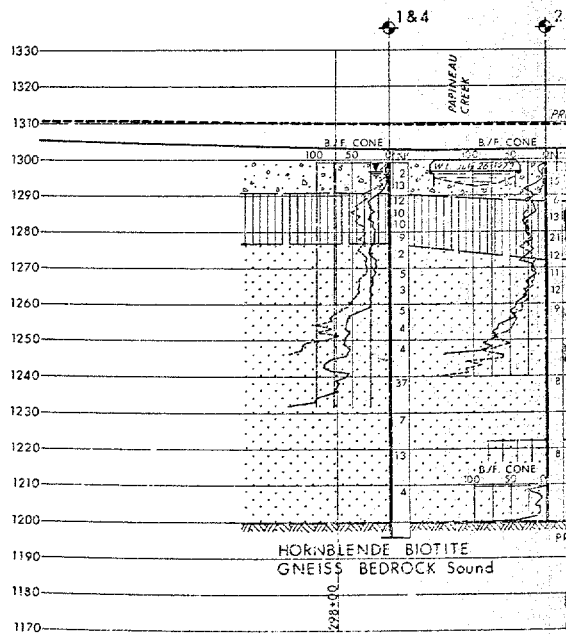
H	VERTICAL HEIGHT OF SLOPE
D	DEPTH BELOW TOE OF SLOPE TO HARD STRATUM
$\beta$	ANGLE OF SLOPE TO HORIZONTAL





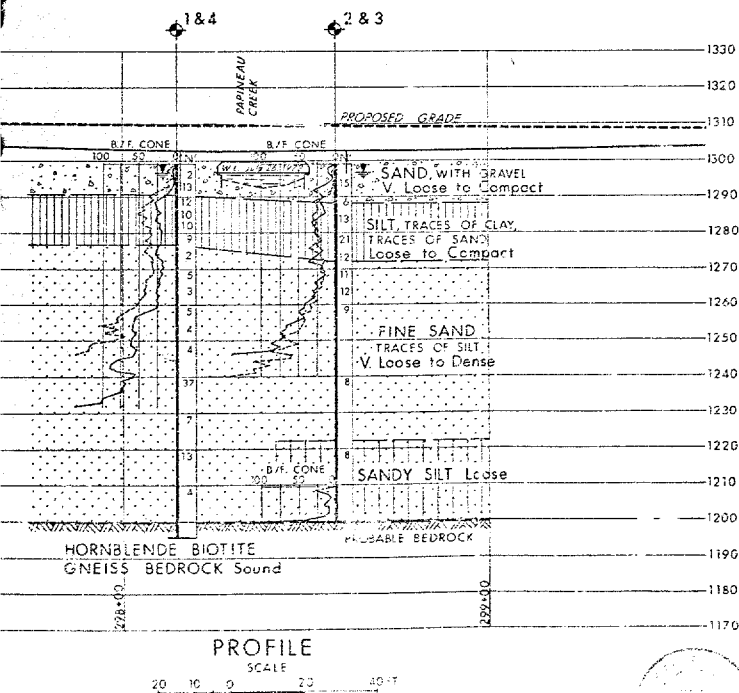
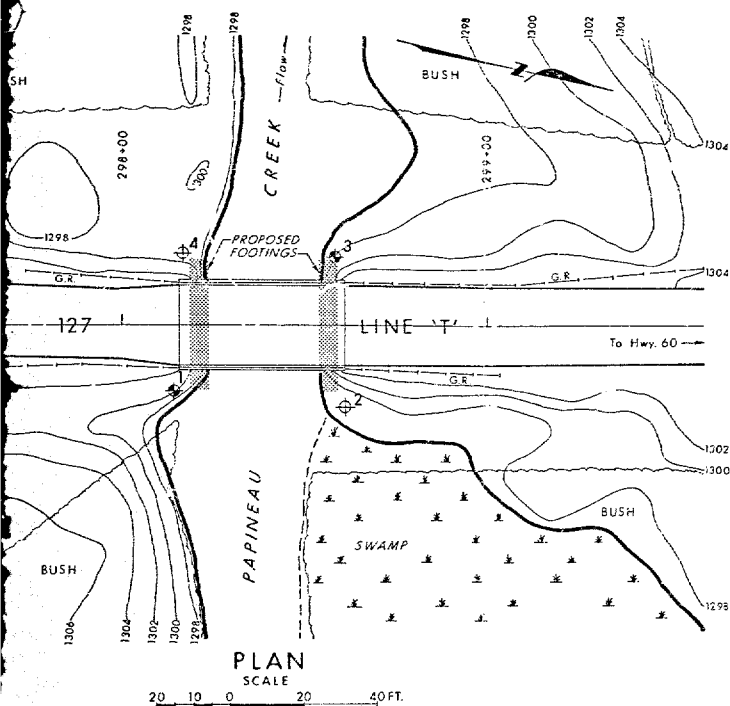
PLAN  
SCALE

20 10 0 20

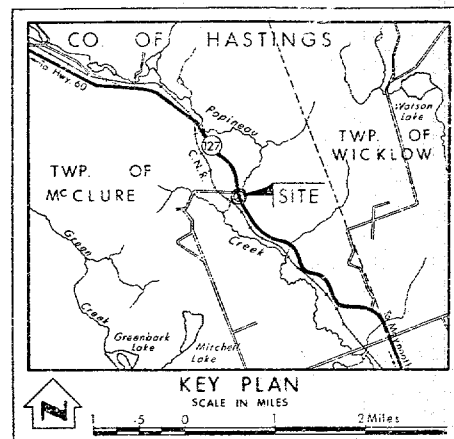


PROFILE  
SCALE

20 10 0 20



B-568-  
C-568-



### LEGEND

- Bore Hole
- Cone Penetration Test
- Bore Hole & Cone Test
- Water Levels established at time of field investigation, July 1973

NO.	ELEVATION	STATION	OFFSET
1	1299.2	298+14.5	17.8' RT.
2	1298.2	298+61	22.5' RT.
3	1299.1	298+58	18.5' LT.
4	1299.6	298+17	19.5' LT.

### CONTRACT DOCUMENT NOTE

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

### — NOTE —

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

REVISIONS	DATE	BY	DESCRIPTION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS—ONTARIO  
DESIGN SERVICES BRANCH—FOUNDATIONS OFFICE

### PAPINEAU CREEK

HIGHWAY NO. 127 LINE 'T' DIST. NO. 10  
CO. HASTINGS  
TWP. MCCLURE LOT 3 CON. VI

### BORE HOLE LOCATIONS & SOIL STRATA

SUBMIT P.Y.	CHECKED	WP NO. 32-55-73	DRAWING NO.
DRAWN	CHECKED	MO NO. 73-11055	73-11056A
DATE SENT	1973	SITE NO.	BRODIE DRAWING NO.
APPROVED	1973	CONT. NO.	

REF. NO. E-5255-1

FOUNDATIONS OFFICE

REVIEW OF DESIGN DRAWINGS:

W.P. 32-65-00.....

W.O. 22-11056.....

Foundation Report By:

..... P. Kopsa.....

Review of Design Drawings By:

..... L. T. Hodge.....

Design Drawing No.'s

..... 11-2-P1.....

1. Does footing design comply with our report or subsequent memos? *yes - pile's to bedrock - 6-7' cover (6' min)*
2. If answer to 1. is No, is present design acceptable?
3. Has sufficient field work been done? *yes*
4. Are estimated pile lengths shown on Drawings correct?  
If not, make a new list. *LENGTHS Not shown - preliminary drawing*
5. If excavation of unsuitable soil is recommended, is this shown on Drawings? *N/A*
6. Are approaches designed in accordance with our report? Check slopes and berm lengths. *yes*
7. Do you anticipate any construction problems?  
i.e., dewatering, stability of temporary slopes or excavations. *yes - dewatering*
8. Summarize your comments; on separate sheet if necessary.  
*① - Dewatering to place pile caps below ground water level*  
*② - For Report suggests scour protection on stream bed for min distance of 25' downstream - drawing shows protection for 15' downstream only*

Drawings Received *Nov. 29*.....19*73*..

Reviewed *Nov. 29*.....19*73*..

Signed *L. T. Hodge*.....

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. T.C. Kingsland  
Reg. Str. Planning Engineer  
Kingston Regional Office

FROM: Structural Design Office  
West Bldg.  
Downsview

ATTENTION:

DATE: November 16th, 1973

OUR FILE REF.

IN REPLY TO

SUBJECT: Papineau Creek Bridge  
3.9 mi. north of Hwy. 62  
W.P. 32-65-00, Site 11-3  
Hwy. #127, District #10

73-11-056

Attached herewith are prints of the Preliminary Bridge Plan Drawing D-11-3-P1 for the above-mentioned structure.

The estimated cost of the proposed structure is \$105,000. which includes tender, materials, engineering, and sundry construction.

Any comments or revisions you may have should be submitted within four weeks.



C.S. Grebski  
Structural Design Engineer

CSG:AMF

Attached

c.c. L.R. Davis  
W. Birch  
A.R. McKim  
W. McFarlane  
M. Stoyanoff  
A. Stermac  
J. Anderson  
E. Forrest  
J. Harris

No comments

ARoxas

Dec 14/73

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. A. Stermac  
Principal Foundation Engineer  
Room 107, West Bldg.

FROM: C.S. Grebski  
Structural Design Engineer  
Structural Office,  
West Bldg.

ATTENTION:

DATE: January 16th, 1974

OUR FILE REF.

IN REPLY TO

SUBJECT: Papineau Creek Bridge  
(3.9 mi. north of Hwy. 62)  
W.P. 32-65-00, Site 11-3  
Hwy. 127, District 10

73-11-056

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.



C.S. Grebski  
Structural Design Engineer

CSG:AMF

Attached

c.c. Foundation Office

No comments

K. A. Gully

Myron submitted  
on Feb 27/74

M. A.  
Jan 17/75

FOUNDATIONS OFFICE

REVIEW OF DESIGN DRAWINGS:

W.P. .... 32-65-00 .....  
W.O. .... 73-11056 .....

Foundation Report By: ..... P KORGEMAGI .....  
Review of Design Drawings By: ..... W. ALCOCK .....  
Design Drawing No.'s: ..... 11-3-1 ..... 11-3-3 .....

1. Does footing design comply with our report or subsequent memos? YES
2. If answer to 1. is No, is present design acceptable? N/A
3. Has sufficient field work been done? YES
4. Are estimated pile lengths shown on Drawings correct?  
If not, make a new list. PILE LENGTHS SHOWN ARE APPROXIMATELY 2' TOO LONG
5. If excavation of unsuitable soil is recommended, is this shown on Drawings? N/A
6. Are approaches designed in accordance with our report? Check slopes and berm lengths. YES
7. Do you anticipate any construction problems?  
i.e., dewatering, stability of temporary slopes or excavations. DEWATERING WILL BE REQUIRED TO PREVENT BOILING DURING EXCAVATION
8. Summarize your comments; on separate sheet if necessary.
  1. PILE LENGTHS COULD BE REDUCED BY 2' & STILL ALLOW 2' EXTRA FOR DAMAGE TO TOP OF PILE & LOWER ELEV<sup>N</sup> OF BEDROCK THAN PREDICTED.
  2. DEWATERING WILL BE REQUIRED TO PREVENT BOILING OF BOTTOM OF EXCAVATION FOR PILE CAPS.
  3. FOUNDATION REPORT RECOMMENDS 25' RIPRAP DOWNSTREAM (ONLY 15' IS SHOWN) FOR SCOUR PROTECTION

Drawings Received ..... JAN. 16 ..... 1974 ..  
Reviewed ..... JAN. 18 ..... 1974 ..

Signed ..... W. J. Alcock .....

## LISTING OF VERIFIED BIDS

## NOTICE OF AWARD OF CONTRACT

TENDER OPENING NO. 3DATE April 16th, 1975CONTRACT NO. 75-05

## DESCRIPTION

GRADING, DRAINAGE, GRANULAR BASE, HOT MIX PAVING AND STRUCTURE  
NECESSARY AVAILABLE RATING IS ( 5 ) IN ( G ) ( S ) OR ( P )Maple Leaf Westerly to 1.2 Miles South of Maynooth, Excluding 0.53 Mile in  
Maynooth and 0.94 Mile North of Highway 62 Northerly, including Papineau  
Creek North Bridge

HIGHWAY: 62 &amp; 127

BANCROFT DISTRICT ✓

MILEAGE: 13.4

E & E Seegmiller Limited	\$ 1,272,362.08
Smiths Construction Company Arnprior Limited	1,287,277.44
Warren Bitulithic Limited	1,367,728.99
H. J. McFarland Construction Company Limited	1,371,724.00

AWARDED TO: E & E SEEGBILLER LIMITED,  
669 CHARLES ST. E.,  
KITCHENER, ONTARIO.DATE APRIL 24th, 19 75.

PILE DRIVING

75-05

JUNE 3/75

Pile Driver being equipped with Delmag - D-12.

JUNE 4/75

Pile Driver equipped with Delmag - D-12.  
Started pile No. 18 @ 10:00 A.M. at 61'±.  
Difficulty in driving pile (231 blows/ft.)

Mr. F.L. Delyea on job and recommended a larger Hammer.  
Also to continue using Delmag - D-12 until reaching ten  
(10) blows per inch on future piles.

Contractor Drove Piles:-

- No. 17 to a depth of 54'± @ 10 blows per inch.
- No. 16 58'± @ 10 blows per inch.
- No. 15 56'± @ 10 blows per inch.

Contractor resumed driving pile No. 17±

At 8:15 P.M.	Depth 54'±	120	Blows/Ft.
8:30 P.M.	60'±	240	Blows/Ft.
8:45 P.M.	62'±	240	Blows/Ft.
8:55 P.M.	63'±	456	Blows/Ft.
9:30 P.M.	67'±	360	Blows/Ft.
10:00 P.M.	73'±	456	Blows/Ft.

JUNE 5/75

- Contractor Drove Piles:

No. 12	to	61'±	10 Blows per inch
No. 11	to	66'±	10 Blows per inch
No. 5	to	58'±	10 Blows per inch
No. 6	to	57'±	10 Blows per inch

JUNE 6/75

- Contractor Drove Piles:

No. 2	to	62'±	10 Blows per inch
No. 3	to	58'±	10 Blows Per inch
No. 7	to	57'±	10 Blows per inch
No. 8	to	54'±	10 Blows per inch
No. 9	to	55'±	10 Blows per inch
No. 14	to	52'±	10 Blows per inch.

(continued.....)



PILE DRIVING - cont'd

75-25

JUNE 9/75

- Pile Driver being equipped with a larger hammer - a Delmag D-30.
- Started Pile No. 2 with D-30.

64'±	37 Blows/Ft.
68'±	41 Blows/Ft.
73'±	39 Blows/Ft.

No. 3#

63'±	20 Blows/Ft.
68'±	22 Blows/Ft.
70'±	22 Blows/Ft.
73'±	22 Blows/Ft.
77'±	29 Blows/Ft.
81'±	31 Blows/Ft.
84'±	41 Blows/Ft.
86'±	43 Blows/Ft.
88'±	47 Blows/Ft.
90'±	64 Blows/Ft.
94'±	66 Blows/Ft.
96'±	70+ N.F.P.

JUNE 10/75

- Instructed by J. Ryan (re Phone Call Toronto) that 70 Blows Per Foot with Delmag D-30 sufficient about 93'± penetration.

Pile No. 2    78'± 81 Blows/Ft.  
85'± 62 Blows/Ft.  
89'± 71 Blows/Ft.  
93'± N.F.P.

Pile No. 5    60'± 46 Blows/Ft.  
67'± 49 Blows/Ft.  
74'± 43 Blows/Ft.  
84'± 68 Blows/Ft.  
88'± 76 Blows/Ft.  
93'± 78 N.F.P.

Pile No. 6    60'± 36 Blows/Ft.  
63'± 43 Blows/Ft.  
75'± 34 Blows/Ft.  
77'± 58 Blows/Ft.  
80'± 81 Blows/Ft.  
87'± 64 Blows/Ft.  
92'± 67 Blows/Ft.  
94'± 70 Blows/Ft.

Pile No. 8    58'± 30 Blows/Ft.  
60'± 27 Blows/Ft.  
65'± 32 Blows/Ft.  
68'± 36 Blows/Ft.  
71'± 44 Blows/Ft.  
83'± 39 Blows/Ft.  
93'± 34 Blows/Ft.  
98'± 70 N.F.P.

Pile No. 1    18'± 1 Blow/Ft.  
25'± 2 Blows/Ft.  
27'± 10 Blows/Ft.  
33'± 9 Blows/Ft.  
42'± 12 Blows/Ft.  
51'± 13 Blows/Ft.  
57'± 16 Blows/Ft.  
62'± 19 Blows/Ft.  
64'± 12 Blows/Ft.

(Continued.....)

PILE DRIVING - cont'd

75-05

Pile No. 7 61'± 28 Blows/Ft.  
64'± 35 Blows/Ft.  
66'± 33 Blows/Ft.  
70'± 36 Blows/Ft.  
76'± 43 Blows/Ft.  
79'± 40 Blows/Ft.  
84'± 41 Blows/Ft.  
87'± 50 Blows/Ft.  
90'± 39 Blows/Ft.  
93'± 156 Blows/Ft.  
95'± 480 N.F.P.

Pile No. 1 68'± 13 Blows/Ft.  
(cont'd) 85'± 30 Blows/Ft.  
87'± 29 Blows/Ft.  
91'± 33 Blows/Ft.  
93'± 70+ N.F.P.

Pile No. 4 23'± 3 Blows/Ft.  
45'± 8 Blows/Ft.  
52'± 12 Blows/Ft.  
54'± 13 Blows/Ft.  
62'± 17 Blows/Ft.  
80'± 38 Blows/Ft.  
89'± 49 Blows/Ft.  
94'± 65 Blows/Ft.  
97'± 70+ N.F.P.

June 11/75

Pile No. 18 73'± 60 Blows/Ft.

JUNE 12/75

Pile No. 19 17'± 2 Blows/Ft.

Pile No. 11 69'± 40 Blows/Ft.  
77'± 39 Blows/Ft.  
82'± 45 Blows/Ft.  
87'± 68 Blows/Ft.  
90'± 62 Blows/Ft.  
92'± 68 Blows/Ft.  
94'± 70+ N.F.P.

Pile No. 17 74'± 54 Blows/Ft.  
78'± 58 Blows/Ft.  
84'± 59 Blows/Ft.  
86'± 54 Blows/Ft.  
89'± 55 Blows/Ft.  
94'± 60 Blows/Ft.  
96'± 62-76 N.F.P.

Pile No. 12 64'± 26 Blows/Ft.  
69'± 21 Blows/Ft.  
75'± 31 Blows/Ft.

Pile No. 14 54'± 45 Blows/Ft.  
62'± 47 Blows/Ft.  
71'± 51 Blows/Ft.  
80'± 49 Blows/Ft.  
90'± 48 Blows/Ft.  
93'± 55 Blows/Ft.  
96'± 60 Blows/Ft.  
97'± 77 N.F.P.

Pile No. 18 80'± 40 Blows/Ft.  
83'± 40 Blows/Ft.  
86'± 40 Blows/Ft.  
88'± 39 Blows/Ft.  
90'± 42 Blows/Ft.  
92'± 44 Blows/Ft.  
94'± 45 Blows/Ft.  
96'± 56 Blows/Ft.  
98'± 80 N.F.P.

Pile No. 15 63'± 35 Blows/Ft.  
72'± 34 Blows/Ft.  
78'± 29 Blows/Ft.  
83'± 30 Blows/Ft.  
88'± 27 Blows/Ft.  
94'± 45 Blows/Ft.  
96'± 50 Blows/Ft.  
98'± 90 N.F.P.

(continued.....)

PILE DRIVING - cont'd

Pile No. 16 59'± 30 Blows/Ft.  
65'± 38 Blows/Ft.  
70'± 34 Blows/Ft.  
78'± 32 Blows/Ft.  
82'± 34 Blows/Ft.  
88'± 40 Blows/Ft.  
91'± 69 Blows/Ft.  
95'± 81 N.F.P.

JUNE 13/75

Pile No. 13 @ 20'± 1 Blows/Ft.  
32'± 2 Blows/Ft.  
38'± 9 Blows/Ft.  
60'± 21 Blows/Ft.  
69'± 27 Blows/Ft.  
83'± 66 Blows/Ft.  
88'± 67 Blows/Ft.  
94'± 74 N.F.P.

Pile No. 10 @ 22'± 7 Blows/Ft.  
30'± 6 Blows/Ft.  
40'± 13 Blows/Ft.  
50'± 12 Blows/Ft.  
51'± 11 Blows/Ft.  
72'± 37 Blows/Ft.  
84'± 44 Blows/Ft.  
88'± 53 Blows/Ft.  
92'± 76 N.F.P.

Pile No. 12 @ 87'± 50 Blows/Ft.  
91'± 59 Blows/Ft.  
92'± 66 Blows/Ft.  
94'± 70 Blows/Ft.

NOTE: Completed Pile Driving At 1:45 P.M.

## OVERSIZED DRAWINGS

2. → notification of Intent to Claim

CONTRACT NO. 75-05

RE: Contractor's Intent To Claim,  
Pile Driving - Dated June 13/75

Delmag D-12 Hammer arrived on job June 2/75. Contractor converted Dragline Boom to pile driving leads June 3/75 and started driving piles in North abut. At 10:00 A.M. June 4th, it took 10 blows per inch penetration and this increased to 20 blows per inch at 61'.

I contacted Ken Kirchner, District Const. Engineer in regards to the above noted. In the meantime, the Contractor moved to another pile with similar results.

F.L. Delyea, Construction Supvr. arrived on job in late P.M. June 4th with instructions that Bridge Office definitely wanted piles driven to bedrock. As shown on the plan, they anticipated breaking through dense material at 55'-70'.

On Pile #17 Contractor continued driving (8:15 P.M.) from 54' at 120 blows, 1 ft. to 73' at 456 blows per foot (10:00 P.M.). (see attached sheet showing blows per foot at various depths).

Mr. Delyea stated that Bridge Office felt that D-12 Hammer was not heavy enough to drive piles to required depth. I informed Contractor of this.

On June 5th, Contractor continued driving remainder of piles with D-12 until a resistance of 10 blows per inch was obtained. This occurred at depth 52'-66' as shown on attached sheets. Contractor completed driving piles to this penetration with D-12 June 6th, 3:00 P.M. and started changing leads, etc. to accept D-30 Hammer.

Monday, June 9th Contractor continued working to install D-30 Hammer and was ready to start driving at 5:00 P.M. Mr. Ken Carter from Bridge Office on job in A.M. but had to leave for Renfrew in P.M.

I called Ken Kirchner 8:30 A.M., June 10th, and gave him results of D-30 Hammer, driving pile #7, South abutment (see attached). He called Bridge Office and later called me back at 4:30 P.M. stating that 70 blows/Ft. at 93' would be bedrock and would be sufficient. I informed Inspector and Pile Driving Foreman of this.

Contractor continued driving remainder of piles to a resistance of 70 blows per foot which averaged from 92'-98'. Completed driving piles June 13th at 1:45 P.M. and dismantled and moved D-30 Hammer off job June 13th. D-12 Hammer removed from job June 17th.

*James E. Ryan*

J.E. Ryan,  
Project Supervisor.

Mr. F. G. Allen,  
Executive Director,  
Operations Division.

J. W. MacDougall,  
Claims Engineer.

June 20, 1975

*please note &  
prepare your  
comment  
wjm*

*CONT 75-05*

Claim on Contract 75-05  
E. & E. Seegmiller Limited  
Bancroft District #10

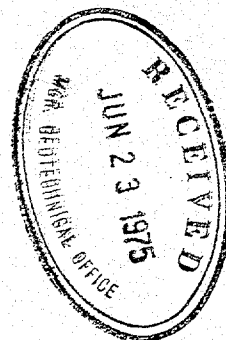
Attached please find for your information, copy of Notification  
of Intent to Claim dated June 13, 1975, from E. & E. Seegmiller Limited,  
regarding the above contract.

ORIGINAL SIGNED  
BY  
J. W. MacDOUGALL

J. W. MacDougall,  
Claims Engineer.

JWM/jm  
attach.

cc: J. B. Wilkes  
W. G. Wigle  
P. D. Billings  
H. F. Kivi  
J. M. Crannie  
D. A. Osborne-White

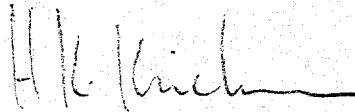


June 24th, 1975.

MEMO TO: File

RE: Telephone Discussion With K. Carter and  
K. Selby Regarding Pile Driving at  
Papineau Creek Bridge,  
Contract No. 75-05.

- June 4/75 - Phoned K. Carter when it appeared that the D-12 hammer was not getting results beyond 53'. He contacted K. Selby and returned the call to indicate that the D-12 was not sufficient and that the contractor should bring in a larger hammer. He stressed the requirement to drive to bedrock. Carter indicated that he would try to visit the contract Monday, June 9th, 1975.
- June 5/75 - Phoned K. Selby to confirm first hand the need for the larger hammer and the requirement to drive to bedrock.
- June 10/75 - Following a site visit with D. White and B. Howe, phoned K. Selby with ~~results~~<sup>8332</sup> of driving with D-30 hammer as results were not obtained past 95'. Selby indicated that a distinct change in driving between 70 and 100 blows per foot would indicate bedrock.



HKK/lo

H.K. Kirchner,  
Construction Engineer.

ACTION SLIP

June 23/75

A. Rutka

G. WIGLE

ENGINEERING SERVICES BRANCH

☐ PREPARE REPLY FOR MY SIGNATURE

☐ TAKE APPROPRIATE ACTION

ORE

☐ PER YOUR REQUEST

☐ FOR YOUR SIGNATURE

☐ FOR YOUR INFORMATION

UR

☐ INVESTIGATE AND REPORT

☐



ACTION REQUEST

7540-1037 (2-72)

DATE

June 23/75

TO

Mr. C. Miliza

FROM

A. RUTKA

TELEPHONE NO.

☐ - PLEASE CALL

☐ - WISHES APPOINTMENT

☐ - RETURNED YOUR CALL

☐ - WILL CALL BACK

☐ - NOTE AND FILE

☐ - PROVIDE MORE DETAILS

☐ - PLEASE ANSWER

☐ - NOTE AND FORWARD

☐ - FOR YOUR INFORMATION

☐ - DRAFT REPLY FOR MY SIGNATURE

☐ - NOTE AND RETURN

☐ - FOR YOUR APPROVAL

☐ - INVESTIGATE AND REPORT

☐ - NOTE AND SEE ME

☐ - FOR YOUR SIGNATURE

☐ - TAKE APPROPRIATE ACTION

☐ - RETURN WITH COMMENTS

☐ - PER YOUR REQUEST

☐

COMMENTS:

Comments on this please.

a.R.

CALL TAKEN BY:

TIME



ACTION REQUEST

7540-1037 (2-72)

DATE

June 24/75

TO

Mr. Devata - K. F. Selby

FROM

Cam

TELEPHONE NO.

☐ - PLEASE CALL

☐ - WISHES APPOINTMENT

☐ - RETURNED YOUR CALL

☐ - WILL CALL BACK

☐ - NOTE AND FILE

☐ - PROVIDE MORE DETAILS

☐ - PLEASE ANSWER

☐ - NOTE AND FORWARD

☐ - FOR YOUR INFORMATION

☐ - DRAFT REPLY FOR MY SIGNATURE

☐ - NOTE AND RETURN

☐ - FOR YOUR APPROVAL

☐ - INVESTIGATE AND REPORT

☐ - NOTE AND SEE ME

☐ - FOR YOUR SIGNATURE

☐ - TAKE APPROPRIATE ACTION

☐ - RETURN WITH COMMENTS

☐ - PER YOUR REQUEST

☐

COMMENTS:

If you think Ken should handle this, please give it to him. I would check w/ Al McKinn for details.

CALL TAKEN BY:

TIME

PFI has not received file

drawing records yet.

Mr. F. G. / Mr. Executive / Mr. Operations / Mr.



MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

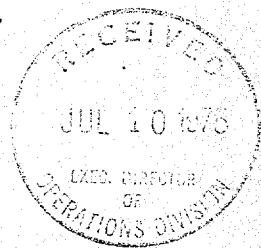
Copy for the information of

MR. F.G. ALLEN

Mr. J.W. MacDougall,  
Claims Engineer,  
Ministry of Transportation and Communications,  
DOWNSVIEW 464, Ontario.

District #10-Bancroft

July 8th, 1975.



RE: Intent to Claim,  
Contract No. 75-05,  
E. & E. Seegmiller Limited,  
Bancroft District.

Attached is a report by the Project Supervisor on Contract No. 75-05 outlining the sequence of events which resulted in the Notification of Intent to Claim.

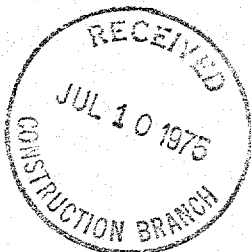
As indicated in the report, the contractor was informed that:

- (i) piles were definitely to be driven to bedrock (103' to 108' as determined from soils investigations), and
- (ii) that he would have to use a hammer sufficient to drive the piles to bedrock.

Instructions in this regard were made to the field staff following telephone conversations with Ken Carter, Structural Inspection Engineer, Construction Branch, and Ken Selby, Supervising Engineer, Soil Mechanics Section, as indicated in the attached memo to File. Reference should also be made to Form 9.03.09 (c) - "Penetration".

Information regarding the design load of the pile which is mentioned in the Intent to Claim was not supplied by District personnel.

Detailed records of the pile driving operation have been kept by the field staff and are available for your perusal.



H.K. Kirchner,  
Construction Engineer.

HKK/lo  
Encl.

For: D.A.O. White,  
District Engineer.

cc. Mr. F.G. Allen.

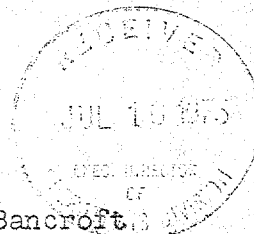
OVERSIZED DRAWINGS

preliminary report on contractors  
intent to claim



Ministry of  
Transportation and  
Communications

## Memorandum



To: Mr. F.G. Allen,  
Executive Director,  
Operations,  
Ministry of Transportations & Communications,  
DOWNSVIEW 464, Ontario.

From: District #10-Bancroft

Attention:

Date: July 15, 1975.

Our File Ref.

In Reply to

Subject:

Re: Contract No. 75-05,  
District #10-Bancroft.

Attached herewith is your copy of "Preliminary Report on Contractor's Intent to Claim", covering claim for extra time and equipment required to drive piles.

V. Wheeler,  
Eng. Office Supvr.,

VW/eh

Enc.

For D.A.O. White,  
District Engineer.

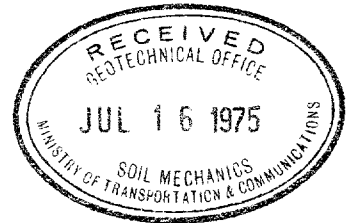
*To  
Don  
Hendy  
- ch. Investigate whether  
any contribution is due*

Mr. W.G. Wagle  
Director  
Engineering Services Branch  
West building

Soil Mechanics Section  
Geotechnical Office  
West building, Downsview

July 16, 1975

INTENT TO CLAIM ON CONTRACT 75-05  
E. & E. Seegmiller Ltd.  
Bancroft Dist. #10



The claim on this Contract concerns the driving of 'H' piles to bedrock. Initially the Contractor used a Delmag D12, (Energy = 22,500 ft./lbs.) which apparently could not drive the piles beyond el. 1245 $\frac{1}{2}$ , bedrock being located at el. 1200 $\frac{1}{2}$ . After the first two or three piles had been driven, Mr. Kirchener, Dist. Construction Engineer contacted Mr. K. Selby, Soil Mechanics Section for advice. Mr. Selby stated that in his opinion the hammer being used was too light and suggested that a heavier hammer be obtained. This advice was followed by the District and the piles were finally driven to bedrock using a Delmag D3002 (Energy = 62,900 ft./lbs.).

In his letter the Contractor refers to Section 9.03.09 (b) (ii) which in effect states that the driving energy should not be less than 14000 ft. lbs./blow. Section 9.03.09 (c) however, states "In case the required penetration is not obtained by the use of a hammer complying with the above minimum requirements the Contractor shall, at his own expense provide a heavier hammer or resort to such other measures as may be required to advance the pile to the required elevation."

An argument might be made later by the Contractor that soil conditions as shown in the Contract Documents, led him to believe that driving would not be as difficult as it actually turned out to be: this argument, in our view, would have some merit since the Standard Penetration Test 'N' Values probably indicated a lesser degree of soil denseness than actually was the case.

A. Rutka  
Manager  
Geotechnical Office

KRS/rjc

c.c. Files  
Record Services

Aug 11/75

C Mirza.

re 75-05 Intent to Claim.

A copy of this was sent to your Div. back in June. I've attached some more info from the Dist.

Court. office feels there should be no extra payment on condition that Ford info accurate.

D White feels penetration data indicated a much looser material than encountered.

Would you please review & advise.

K Selby has been <sup>involved</sup> in the recommendation not to drive to bed rock.

Gell.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO  
FOUNDATIONS OFFICE  
**VISUAL CLASSIFICATION SHEET**

PROJECT 73-11056 SITE \_\_\_\_\_ BOREHOLE No. 1 GROUND ELEVATION \_\_\_\_\_

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION					DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL	SAND	SILT & CLAY										
1	3-5		ss												FINE SAND SOME SILT & ORG GREY	
2	6-8														SAND TR GR. GREY & BROWN	
3	9-10.5														SILT	
4	12-13.5														"	
5	15-16.5														"	
6	20-21.5														FINE SAND TO SILT	
7	25-26.5														FINE SAND TR SILT	
8	30-31.5														"	
9	35-36.5														"	

NOTES:- VISUAL CLASSIFICATION MUST BE CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

# VISUAL CLASSIFICATION SHEET

PROJECT 73-11056 SITE \_\_\_\_\_ BOREHOLE No. 1 GROUND ELEVATION \_\_\_\_\_

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION					DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL	SAND	SILT & CLAY										
10	35-40		WS												FINE SAND.	
11	40-42		SS N/R													
12	40-45		WS												"	
13	45-47		SS. N/R													
14	50-52		N/R													
15	50-60		WS												"	
16	60-62		N/R													
17	60-70		WS												SAND.	
18	70-72		N/R												FINE TO MED SAND	

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO  
FOUNDATIONS OFFICE  
**VISUAL CLASSIFICATION SHEET**

PROJECT B-11056 SITE \_\_\_\_\_ BOREHOLE No. 1 GROUND ELEVATION \_\_\_\_\_

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION					DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL	
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE													
				GRAVEL	SAND	SILT & CLAY											
7	70-80		WS												SAND	GREY	
20	80-82		SS														
21	80-90		WS												SAND		
22	90-91.5		NR														
23	90-92.4		WS												FINE SAND	GREY	

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-



MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO  
FOUNDATIONS OFFICE  
**VISUAL CLASSIFICATION SHEET**

PROJECT <u>73-11056</u>		SITE _____		BOREHOLE No. <u>3</u>		GROUND ELEVATION _____										
SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION					DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	TOMBAS
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL	SAND	SILT & CLAY										
1	5-6.5		SS													
2	10-11.5														SILT TR OF SAND GRAY	
3	15-16.5														"	
4	20-21.5		N/R													
5	25-26.5		SS												"	
6	30-31.5														FINE SAND GRAY	
7	35-36.5														"	
8	40-41.5		N/R													
9	40-60		WS												"	

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

# VISUAL CLASSIFICATION SHEET

PROJECT 73-11056 SITE \_\_\_\_\_ BOREHOLE No. 3 GROUND ELEVATION \_\_\_\_\_

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION					DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL	SAND	SILT & CLAY										
0	60-61.5		SS													
11	60-80		US												FINE SAND GREY	
12	80-81.5		SS												FINE SAND TR SILT GREY	
13																

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

OVERSIZED DRAWINGS

General Layout  
Foundation Layout : Reinforcement

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 31F-68

DIST. 10 REGION EASTERN

W.P. No. 32-65

CONT. No. 75-05

W. O. No. 73-F-56

STR. SITE No. 11-3

HWY. No. 127

LOCATION HWY. 127 AND PINEAUX  
CREEK

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 5

REMARKS: DOCUMENTS TO BE UNFOLDED  
BEFORE MICROFILMED

G.I.-30 SEPT. 1976



DEPARTMENT OF HIGHWAYS

31F-68  
GEOCRES No.

NOTIFICATION OF INTENT TO CLAIM

ASSISTANT DEPUTY MINISTER, (ENGINEERING),  
DEPARTMENT OF HIGHWAYS ONTARIO.

Date June 13 19 75

Against Contract No. 75-05

District BANCROFT

Location Hw. 127

Contractor E. & E. SEEGMILLER

669 Charles St. East

Kitchener, Ontario.

In accordance with Section 104 "Control of the Work" of the "General Conditions of the Contract" D.H.O. Form 100, I/We declare my/our intention to file a claim against the above contract due to the following (Give complete details, attaching separate sheets if necessary.)

For the extra time and special equipment required to drive 18 pile 12 x 53 to approx. 95' depth at bed rock. A cost summary of the moving in of special equipment, the rental of same and return to supplier of a Delmag 3002 hammer will follow.

Form 9.03.09 (11) indicates a minimum hammer of 8000 foot pounds. With a design load on the pile of 70 tons a 14,000 ft. pound hammer was required. We provided a Delmag 12 capable of producing 22,500 foot lbs. or 50% more than required. The Delmag 12 could not drive the pile beyond approximately 55 ft. depth, a heavier hammer was requested by the M.T.C. for which we feel compensation is due.

The time to complete this work was a week longer than planned which very well may have a bearing on the working days necessary to FINISH the contract.



NOTE: Contractor must give this notice to the Assistant Deputy Minister, (Engineering) and District Engineer within 7 days of his date of commencement on the work out of which this claim arises - Refer - Section 104 "General Conditions of the Contract" D.H.O. Form 100.

Signed [Signature]  
Contractor or Authorized Representative.

Matt Hunter, General

TO BE MADE IN QUINTUPPLICATE BY THE CONTRACTOR  
COPIES 1, 2, 3, TO BE SENT TO ASSISTANT DEPUTY MINISTER, (ENGINEERING)  
COPY 4 TO BE SENT TO DISTRICT ENGINEER  
COPY 5 TO BE RETAINED BY CONTRACTOR

(2) ASSISTANT DEPUTY MINISTER (ENGINEERING)



DEPARTMENT OF HIGHWAYS

NOTIFICATION OF INTENT TO CLAIM

ASSISTANT DEPUTY MINISTER, (ENGINEERING),  
DEPARTMENT OF HIGHWAYS ONTARIO.

Date June. 13 19 75

Against Contract No. 75-05

District BANCROFT

Location Hw. 127

Contractor E. & E. SEDGMILLER

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Kitchener, Ontario.

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The time to complete this work was a week longer than planned which very well may have a bearing on the working days necessary to FINISH the contract.

NOTE: Contractor must give this notice to the Assistant Deputy Minister, (Engineering) and District Engineer within 7 days of his date of commencement on the work out of which this claim arises - Refer - Section 104 "General Conditions of the Contract" D.H.O. Form 100.

Signed W. D. Hunter

Contractor or Authorized Representative

TO BE MADE IN QUINTUPPLICATE BY THE CONTRACTOR W. D. Hunter, General  
COPIES 1, 2, 3, TO BE SENT TO ASSISTANT DEPUTY MINISTER, (ENGINEERING)  
COPY 4 TO BE SENT TO DISTRICT ENGINEER  
COPY 5 TO BE RETAINED BY CONTRACTOR

(3) ASSISTANT DEPUTY MINISTER (ENGINEERING), (FOR ENGINEERING AUDIT)

of  
Transportation  
and  
Communications

PRELIMINARY REPORT ON CONTRACTOR'S INTENT TO CLAIM

**CONFIDENTIAL**

Contract No. 75-05

Date July 14th, 1975

District #10-Bancroft

Location Hwy. 127 - 0.94 Miles North  
Hwy. 62 N'y 6.46 Miles.

Contractor E. & E. Seegmiller Limited

Date of notification of intent to claim June 13th, 1975

District's preliminary report:

The Notification of Intent to Claim was filed for "Extra Time and Special Equipment" required to drive piles at Papineau Creek Structure to bedrock.

The Contract Drawings state that piles are to be driven to bedrock. (approx. 103'-104'). Sheet 53.

The Contractor was using a Delmag D-12 Hammer and driving was commenced on June 4th, 1975. When it became obvious that D-12 would not drive piles beyond 60'± K. Carter, Construction Branch Structural Office, and K. Selby, Soils Mechanics Section, were contacted. They advised that piles had to be driven to bedrock and that a larger hammer would be required. The Contractor continued to drive piles to 10 blows per inch with D-12 until June 6th, 1975.

D-30 Hammer was brought in and began driving on June 9th, 1975 and continued until June 13th, 1975. Piles were driven to 95'± where 70-100 blows per foot were being recorded. Driving at this elevation was discontinued on advice from K. Selby.

With reference to M.T.C. Specification Form 9, Section 9.03.09 (h) (II) - Hammers, it is our opinion that Specification 9.03.09 (c) - Penetration would take precedence in this instance as piles were to be driven to a specified penetration.

Detailed records have been kept for the entire pile driving operation.

1. Has contractor submitted Intent to claim form in accordance with time limitation as per section 104-2 of form 100-YES ☒ NO ☐

2. If "NO" Infraction report date: \_\_\_\_\_

3. Name of any outside third parties involved (Utilities, Townships, etc.) \_\_\_\_\_

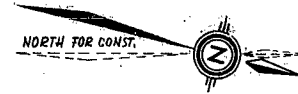
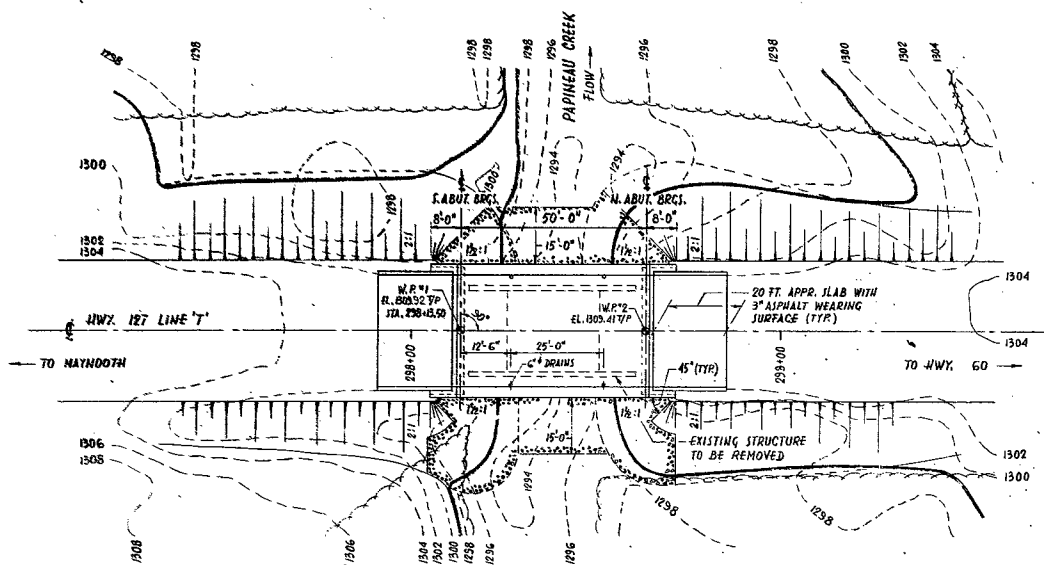
4. Date of letter notifying outside third parties of a possible claim. \_\_\_\_\_  
(attach copy of the letter)

Signed \_\_\_\_\_  
District Engineer

TO BE COMPLETED NOT LATER THEN 30 DAYS FROM RECEIPT OF THE NOTICE OF INTENT TO CLAIM.  
TO BE MADE IN QUINTUPPLICATE BY THE DISTRICT

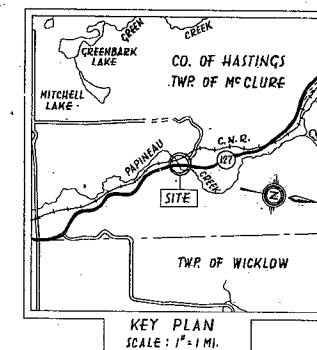
COPY 1 TO BE SENT TO CLAIMS ENGINEER.  
COPY 2 TO BE SENT TO OPERATIONS DIVISION (EXEC. DIR.).  
COPY 3 TO BE SENT TO AUDIT BRANCH (DIR.).  
COPY 4 TO BE SENT TO QUALIFICATION ACCOUNTANT.  
COPY 5 TO BE RETAINED BY DISTRICT ENGINEER.

31F-68  
GEOCRES No.

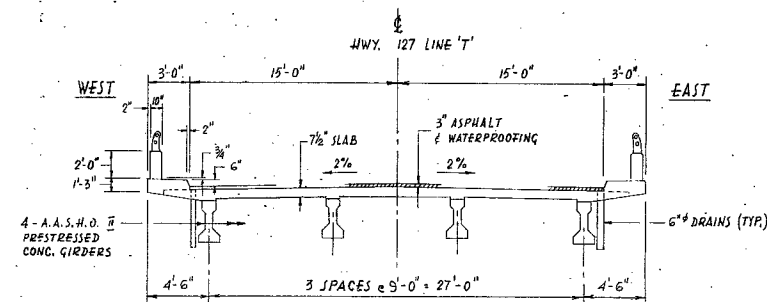


NOTES:  
T/F DENOTES TOP OF FINISHED PAVEMENT.  
W.P. DENOTES WORKING POINT.

- LIST OF DRAWINGS**
- SHEET 1 GENERAL LAYOUT  
2 BORE HOLE LOCATIONS & SOIL STRATA  
3 FOUNDATION LAYOUT & REINFORCEMENT  
4 ABUTMENTS  
5 PRESTRESSED GIRDERS & BEARINGS  
6 DECK  
7 PARAPET WALL DETAILS  
8 STANDARD STEEL PARAPET RAIL  
9 20 FT. APPROACH SLAB  
10 STANDARD DETAILS I  
11 STANDARD DETAILS II  
SHEET 12 BAILEY BRIDGE FOR DETOUR



G.B.M. No. 345-G EL. 1317.073  
C.N.R. LARGE CONCRETE BOX CULVERT, 200 FEET  
SOUTH OF ROADCROSSING AT STATION; BOLT IN SOUTH  
END OF EAST FACE, 6 INCHES BELOW COPING.  
195' RT. OF STA. 477+09  
QUAD. 45078 PAGE 4 LINE 89 LAKE ST. PETER.

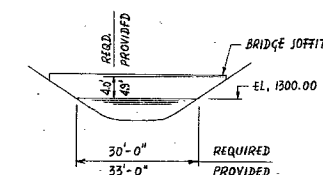
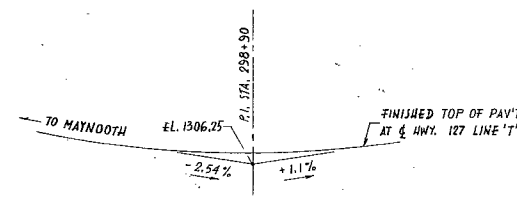
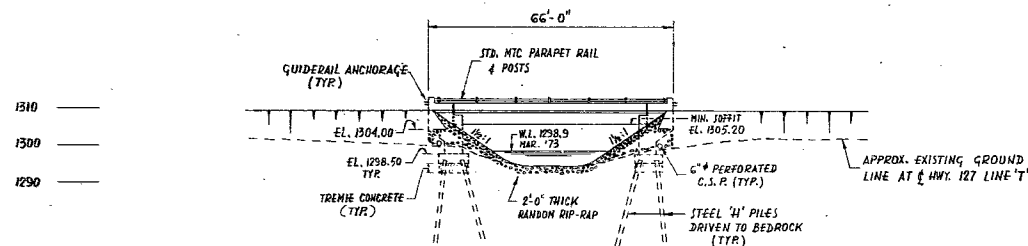


NOTES:  
**CLASS OF CONCRETE**  
DECK, CURBS & PARAPET WALLS — 4000 P.S.I.  
GIRDERS — 5000 P.S.I.  
REMAINDER — 3000 P.S.I.

**CLEAR COVER ON REIN. STEEL**  
FOOTINGS & ABUTMENTS 3"  
CURBS & APPROACH SLABS 2"  
TOP OF DECK 1 1/2" BOTT. 1"  
PARAPET WALLS 1 1/2"

**CONSTRUCTION NOTES**  
THE CONTRACTOR IS RESPONSIBLE FOR FINISHING THE  
BEARING SEATS TO THE SPECIFIED ELEVATIONS WITH  
A TOLERANCE OF ± 3/8".  
NO CONCRETE SHALL BE PLACED ABOVE THE ABUTMENT  
BEARING SEATS UNTIL THE CONCRETE IN THE DECK  
HAS BEEN PLACED.

**CONCRETE QUANTITIES**  
CONCRETE QUANTITIES ARE LISTED BELOW FOR THE  
APPROPRIATE CONCRETE TENDER ITEMS:  
CONCRETE IN ABUTMENTS & WINGWALLS — 65 CU. YDS. — 3000 PSI  
— 3 CU. YDS. — 4000 PSI  
CONCRETE IN DECK & DIAPHRAGMS — 59 CU. YDS. — 4000 PSI  
CONCRETE IN PARAPET WALLS — 9 CU. YDS. — 4000 PSI  
CONCRETE IN APPROACH SLABS — 41 CU. YDS. — 3000 PSI



REVISIONS	DATE	BY	DESCRIPTION

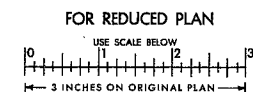
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS  
ONTARIO

**PAPINEAU CREEK BRIDGE**  
(3.9 MI. NORTH OF HWY. 62)

KING'S HIGHWAY No. 127 DIST. No. 10  
CO. HASTINGS  
TWP. MCCLURE LOT 3 CON. VI

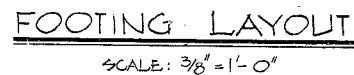
**GENERAL LAYOUT**

APPROVED [Signature] CONTRACT No. 32-65-00  
DESIGN H. K. J. CHECK R.K. W.P. No. 32-65-00  
DRAWING R.K. CHECK H.K.J. DATE JAN. 74 LOADING 4320-44 SITE No. 11-3 SHEET 1



317-68  
GEOGRAPHIC No.



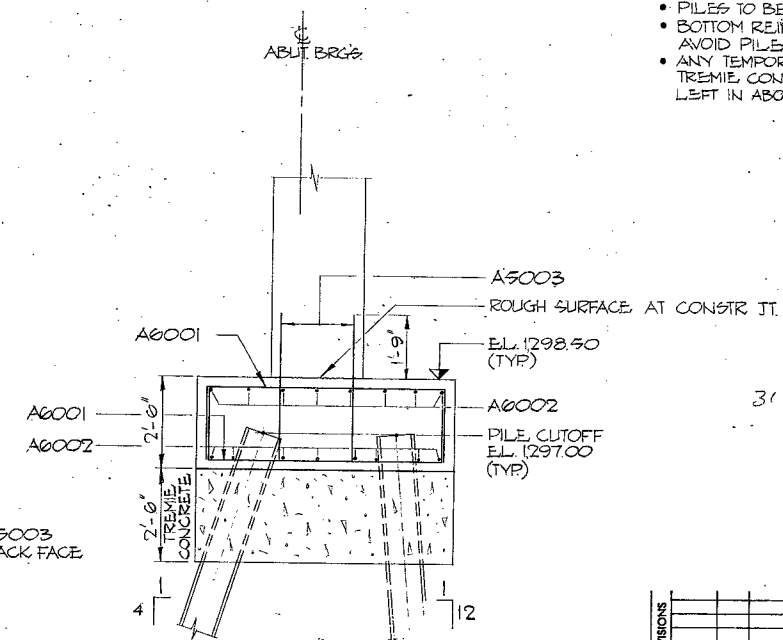


### PILE DATA

LOCATION	No. REQ'D	BATTER	LENGTH	TYPE
S. ABUT.	5	1:4	108'-0"	HP12x53
	4	1:12	103'-0"	
N. ABUT.	5	1:4	108'-0"	
	4	1:12	103'-0"	

NOTES:

- DIMENSIONS, REINFORCEMENT & PILE LAYOUT SIMILAR FOR BOTH ABUT FIGS.
- PILE SPACINGS TO BE MEASURED AT UNDERSIDE OF POURED-IN-PLACE FOOTINGS
- PILES TO BE DRIVEN TO BEDROCK
- BOTTOM REINFORCEMENT TO BE SPACED TO AVOID PILES.
- ANY TEMPORARY SHEETING USED FOR PLACING TREMIE CONCRETE IN FOOTINGS MUST NOT BE LEFT IN ABOVE E.L. 1298.5.



31800 4 lbs — 62,700


REVISIONS			
	DATE	BY	DESCRIPTION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS  
ONTARIO

PAPINEAU CREEK BRIDGE  
(3.9 MI. NORTH OF HWY. 62)

KING'S HIGHWAY No. 127 DIST. No. 10  
CO. H. TINGS  
TWP. MCCLURE LOT 3 CON. VI

FOUNDATION LAYOUT & REINFORCEMENT

<div style="text-align: center;">  </div>	<div style="text-align: center;"> <b>CONTRACT No.</b> </div>
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APPROVED			
STRUCTURAL ENGINEER			
DESIGN	H V T	CHECK	KP
		WR No	22-65-00

DESIGN	H.K.J.	CHECK	H.K.J.	DATE	12/1/14
DRAWING	T.B.L.	CHECK	H.K.J.	SITE No.	11-3
DATE	12/1/14	PROJECT	11-3	SHEET	3

DATE	JAN. 74	LOADING	H520-44	TYPE	11	✓	SHEET	✓
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31F-68  
GEOCRES No.