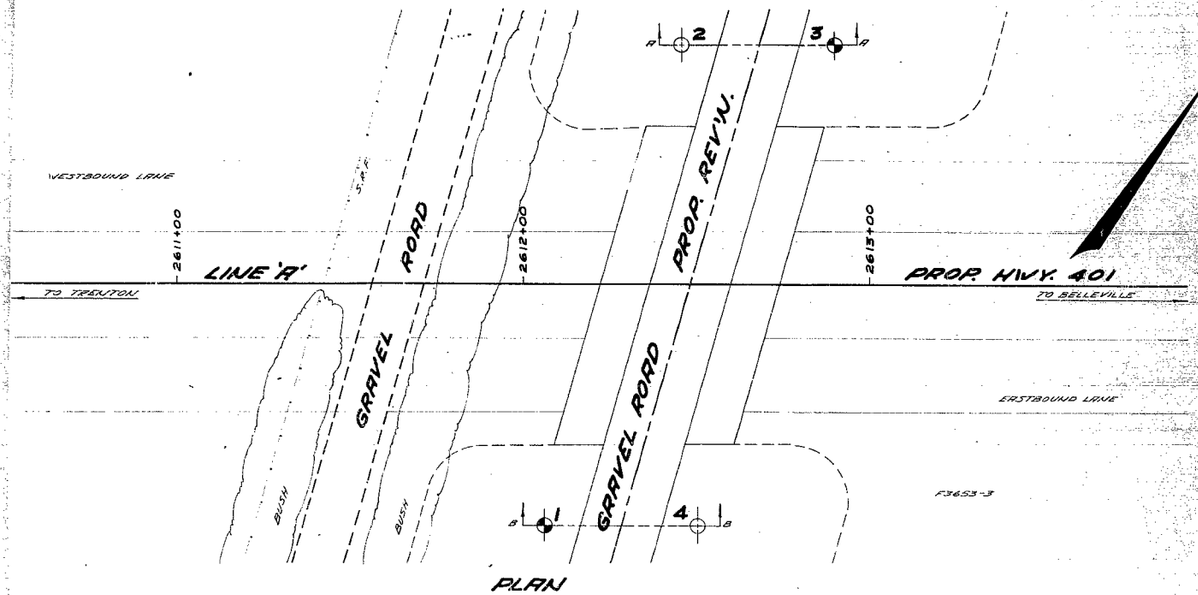
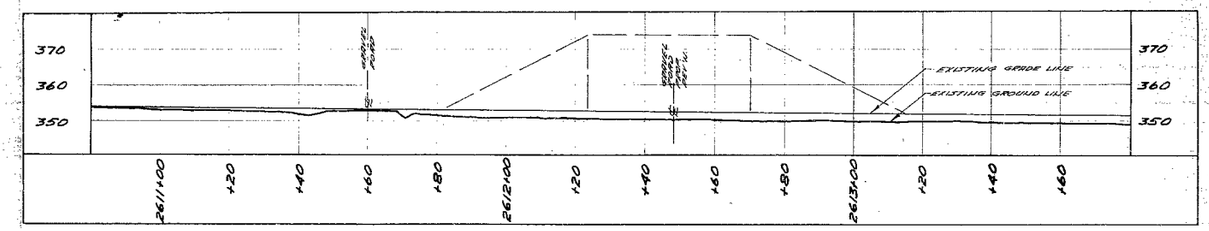
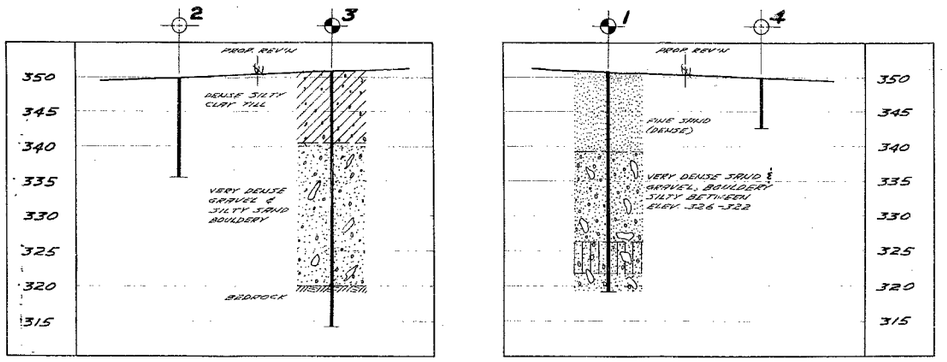
59-F-38
W.P. # 67-59
Hwy. # 401
CROSSING
REV. GRAVEL RD.
3½ MILES N.E. OF
TRENTON



PLAN



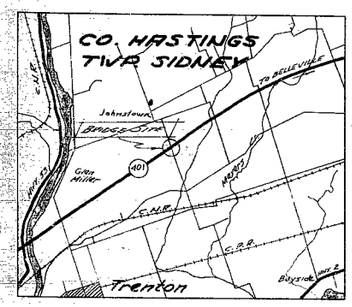
PROFILE



A-A

VERTICAL SCALE: 1 IN. = 10 FT.

B-B



KEY PLAN

SCALE 1 IN. = 1 MI.

LEGEND

BORE HOLE

PENETRATION HOLE

BORE & PENETRATION HOLE

HOLE NO.	ELEVATION	STATION	DISTANCE FROM ℄
1	351.0	2612+06	69' RT.
2	351.0	2612+45	69' LT.
3	351.0	2612+90	69' LT.
4	350.0	2613+50	69' 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 AND MAY BE SUBJECT TO CONSIDERABLE ERROR.

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & RESEARCH SECTION

GRAVEL ROAD REV'N. PROPOSED CROSSING

SHOWING POSITIONS & ELEVATIONS OF HOLES

HWY. 401 LINE 'A' DISTRICT 9 COUNTY HASTINGS

TOWNSHIP SIDNEY LOT 6 & 7 CON. II

LOCATION RAP. 3½ MI. N.E. OF TRENTON

DRAWN BY: T. MELLORS	CHECKED BY:	W.P. 67-53
DATE: 29 DEC. 59	APPROVED BY: AHC.	DRAWING NO. F59-38A
SCALE 1 IN. = 20 FT.		

cc: Foundation Section

83-68-206

Mr. A. M. Toye,
Bridge Engineer.
Materials & Research Section.

January 15, 1960.
D.H.C. SUBSOIL INVESTIGATION -
W.P. 67-59 -- W.J. F 59-38.

Attention: Mr. D. McCombie.

Re: Existing Hwy. 401 & Revised Gravel Road Crossing, Approximately 3 1/2 Miles E.E. of Trenton.

As requested, we have carried out a subsoil investigation at the above noted underpass structure location. Presented herein are the results of the field and laboratory findings as presented in the borehole logs and summarized in Table No. 1. The locations of the boreholes and their subsoil profile are shown in the accompanying Drawing No. F-59-38A.

The site under consideration, is located on the shoreline of old Glacial Lake Iroquois. Numerous drumlins are visible in the vicinity of the site. Subsoil at the site consists of a 10-ft. thick layer of dense fine sand or dense clay till overlying a stratum of very dense bouldery sand and gravel, approximately 20 ft. in thickness, underlain by granite bedrock. The upper fine sand encountered in Boring 1, or the upper silty clay till encountered in Boring 3, above the very dense bouldery sand and gravel stratum, exists in a dense condition with 'N' values well in excess of 30 registered during sampling operations. The lower stratum of sand and gravel contains numerous boulders and exists in a very dense condition. Bedrock is composed of sound fine-grained granite. No ground water was encountered during the exploration programme.

cont'd. /2 ...

Strength and compressibility characteristics are such that spread footing support can be obtained in the upper layer of dense fine sand or dense clay till at Elev. 344' or below. At this elevation or below, for footings typically 7' to 10' in width, a safe allowable bearing pressure of at least 3 t.s.f. can be used for spread footing design. Total and differential settlements are considered tolerable.

No ground water seepage problems with respect to footing excavations are anticipated.

No approach fill stability problems are anticipated.

If we can be of further assistance in the foundation design of this structure, please contact our Office.

L. C. Soderman,
PRINCIPAL SOILS & FOUNDATIONS ENGR.
per:

AKLoh

(A. K. Loh,
Project Foundation Engr.)

AKL/MdeF
Encls.

cc: Messrs. A. M. Toye (2)
B. A. Tregaskes
D. G. Ramsay
H. J. Ford
T. A. Sharpe
J. S. Gruspier
A. Watt

Foundation Section
Gen. Files.

APPENDIX I.

1M-58-5569

SUMMARY OF FIELD & LABORATORY TESTS

JOB F-59-38
W.P. 67-59

HOLE NO	SAMP NO	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS FT	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH psf.	UNIT WEIGHT pcf.	REMARKS
1	S 1	3'-4.5'	Dense fine sand	22	-	-	-	-	-	
	S 2	6'-7.5'	"	34	6.3	-	-	-	-	
	S 3	9'-10.5'	"	50	-	-	-	-	-	
	S 4	12'-13.5'	V. Dense Sand & gravelbouldery	98	-	-	-	-	-	
	S 5	15'-16.5'	"	78	6.2	-	-	-	-	
	S 6	20'-21.5'	"	112	-	-	-	-	-	
	S 7	29.8'-30.7	"	180	7.0	-	-	-	-	
2										Dynamic Cone Penetration test
3	S 1	3'-4.5'	Dense brown silty clay till	38	-	-	-	-	-	
	S 2	6'-7.5'	"	83	29.8	-	-	3170	128.1	
	T 3	9'-10.5'	"	68	-	-	-	-	-	
	S 4	12'-13.5'	V. Dense gravel & silty sand bouldery	57	7.4	-	-	-	156.5	
	S 5	15'-15.5'	"	119	7.6	-	-	-	-	
	S 6	20'-20.7'	"	107	-	-	-	-	-	
	S 7	25'-26'	"	153	10.2	-	-	-	-	
	S 8	30.5'-31.1	"	107	-	-	-	-	-	
	RC	31'-36.1'	Bedrock-fine grained granite							
4										Dynamic Cone Penetration test

S. Denotes Split Spoon sample
R.C. rock core sample

OFFICE REPORT ON SOIL EXPLORATION

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS AND RESEARCH SECTION

W.P. 67-59 BORE HOLE NO. 1

JOB F-59-38 STATION 2612+06 (69' RT)

DATUM 351.0' COMPILED BY I.J.J.

BORING DATE May 4/59 CHECKED BY B.K.

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) O
VANE TEST (C) AND SENSITIVITY (S) +S
NATURAL MOISTURE AND LIQUIDITY INDEX LI X
LIQUID LIMIT
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET
	↓ Ground Level	351.0	0
	Dense Fine sand.	339.5	10
	Very dense Sand and gravel Bouldery Silty between elevs. 326'-322'	319.3	20
	End of borehole Penetration resistance profile shown obtained by driving a 2" dia cone from ground surface to depth noted. Cone driven with energy equal to 350 ft. lb. per blow.		30 40

STRENGTH AND PENETRATION RESISTANCE
P.S.F.
50 100 150 200 BLOWS/FT.
113 BLOWS FOR 8"
FOR 10"
113 BLOWS FOR 14"
REFUSAL

CONSISTENCY
MOIST. CONTENT - % DRY WT.
10 20 30

SAMPLE	NATURAL UNIT WT. P.C.F.
SS 1	-
SS 2	-
SS 3	-
SS 4	-
SS 5	-
SS 6	-
SS 7	-

FORM OB-ML-126 (REV. 1959.)—58-5691

OFFICE REPORT ON SOIL EXPLORATION

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS AND RESEARCH SECTION

W.P. 67-59 BORE HOLE NO. 2

JOB F-59-38 STATION 2612+45(69'LT)

DATUM 350.0' COMPILED BY I.J.J.

BORING DATE May 4/59 CHECKED BY B.K.

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) O
VANE TEST (C) AND SENSITIVITY (S) +S
NATURAL MOISTURE AND LIQUIDITY INDEX LI X
LIQUID LIMIT
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET
	↓ Ground Level	350.0	0
	Penetration resistance profile shown obtained by driving a 2" dia cone from ground surface to depth noted. Cone driven with energy equal to 350 ft. lb. per blow.		

STRENGTH AND PENETRATION RESISTANCE P.S.F.

BLOWS/FT. 50 100 150 200

10 20 30 40

REFUSAL AT ELEV. 335.8'

HAMMER BOUNCING

CONSISTENCY

MOIST. CONTENT - % DRY WT.

SAMPLE

NATURAL UNIT WT. P.C.F.

FORM OB-ML 126 (REV. 1959.)—58-5691

OFFICE REPORT ON SOIL EXPLORATION

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS AND RESEARCH SECTION

W.P. 67-59 BORE HOLE NO. 3

JOB F-59-38 STATION 2612+90(69'LT)

DATUM 351.0' COMPILED BY I.J.J.

BORING DATE May 4/59 CHECKED BY B.K.

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Qu)
VANE TEST(C) AND SENSITIVITY(S)
NATURAL MOISTURE AND LIQUIDITY INDEX
LIQUID LIMIT
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET
	↓ Ground Level	351.0	0
	Dense brown silty clay till		
	Very dense gravel and silty sand. bouldery	340.75	10
			20
	Bedrock Fine-grained granite	319.92	30
	End of borehole	314.92	40

STRENGTH AND PENETRATION RESISTANCE P.S.F.

50 100 150 200 BLOWS/FT.

HAMMER BOUNCING.

FAR 6"

CONSISTENCY

MOIST. CONTENT - % DRY WT.

SAMPLE	NATURAL UNIT WT. P.C.F.
SS 1	-
SS 2	128.1
SS 3	-
SS 4	156.5
SS 5	-
SS 6	-
SS 7	-
SS 8	-

FORM CS-ME-126 (REV. 1959.)—58-5891

OFFICE REPORT ON SOIL EXPLORATION

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS AND RESEARCH SECTION

W.P. 62-59 BORE HOLE NO. 4

JOB F-59-38 STATION 2612+50 (69' RT)

DATUM 350.0' COMPILED BY I.J.J.

BORING DATE May 4/59 CHECKED BY B.K.

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Qu)
VANE TEST (C) AND SENSITIVITY (S)
NATURAL MOISTURE AND LIQUIDITY INDEX
LIQUID LIMIT
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE P.S.F.	CONSISTENCY MOIST. CONTENT - % DRY WT.	SAMPLE	NATURAL UNIT WT. P.C.F.
	↓ Ground Level	350.0	0	50 100 150 200 BLOWS/FT.			
			10	226 BLOWS FOR 3" REFUSAL AT EL. 342'			
	Penetration resistance profile shown obtained by driving a 2" dia cone from ground surface to depth noted with an energy equal to 350 ft. lb. per blow.		20				
			30				
			40				