

DEPARTMENT OF HIGHWAYS

Bridge Division,  
August 25, 1961.

MEMORANDUM TO:

Mr. L. G. Goderman,  
Principal Soils &  
Foundations Engineer,  
Department of Highways,  
Room #107, Lab. Bldg.,  
Downsview, Ontario.

Attention: Mr. K. Selby

RE: W.O. 60-33741,  
Papineau Crk. Bridge -  
Line "A",  
Hwy. #62 - Dist. #10.

Enclosed find plan #02516 and profile #01382-2  
indicating the proposed crossing at station 423+85.

The District intends to ask for this structure  
as part of their Winter Works Program. We would  
appreciate your earliest consideration of this matter  
so we can get the design underway.

JBC/eh

J. L. Curtis,  
Bridge Location Engineer.

Mr. A. M. Toye,  
Bridge Engineer.  
Materials & Research Division,  
(Foundation Section).  
Attention: Mr. A. McCasbie.

November 8, 1961.

B.H.O. FOUNDATION INVESTIGATION  
REPORT.  
W.J. 61-F-85 -- W.O. 60-33741.

Re: Papineau Creek Bridge, Hwy. 62, Line 'A',  
APPROX. 10 MI. N. of Maynooth, Dist. #10.

This memo accompanies our detailed foundation  
report on the subsoil conditions existing at the above site.

We believe that the conclusions and recommendations  
contained in this report are self-explanatory and should prove  
adequate for your future design work.

However, should you require further assistance,  
please feel free to contact our Office.

WJS/mjs  
Attach.

cc: Messrs. A. M. Toye (2)  
H. A. Troganek  
H. D. McMillan  
J. Ford  
C. F. Robertson  
J. M. Grunpfer  
T. J. Kovich  
J. Roy  
E. R. Saint  
F. Norman  
A. Watt  
Foundations Office  
Gen. Files.

*A. G. Sternac*  
A. G. Sternac,  
PRINCIPAL FOUNDATION ENGINEER

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# FOUNDATION INVESTIGATION

AT

Papineau Creek Bridge on Hwy. 62, Line 'A',  
Approx. 10 Mi. North of Maynooth, Dist. #10,  
W.J. 61-P-35 -- W.O. 60-33741.

## 1. INTRODUCTION:

A field investigation was carried out at the site of the proposed new bridge where Hwy. 62, proposed Line 'A', crosses Papineau Creek 10 miles north of Maynooth. The purpose of the investigation was to determine the subsoil conditions in order to provide information for the foundation design for the proposed structure. The new structure is to be some 36.0 feet wide with a single 40.0 foot span.

## 2. DESCRIPTION OF THE SITE AND GEOLOGY:

The bridge site lies in undulating bush country within the Canadian Shield. The bush along Line 'A' of Hwy. 62, has been cleared for the width of the right-of-way, revealing fine sandy topsoil. Papineau Creek, some 35.0 ft. wide and 3.0 ft. deep, flows south, draining Papineau Lake into the York River.

## 3. FIELD AND LABORATORY INVESTIGATION:

The field work consisted of five boreholes and four dynamic cone penetration tests. The boreholes were cased in 12 and 32 size casing to depths varying from 31.0 feet in B.H. 1, to 5.5 ft. in B.H. 4, using a skid-mounted diamond coredrill and standard wash boring methods.

cont'd. /2 ...

3. FIELD AND LABORATORY INVESTIGATION: (cont'd.) ...

The dynamic cone penetration tests were carried out to practical refusal obtained at depths varying from 31.0 ft. in B.H. 2 to 40.0 ft. in B.H. 4.

A standard split spoon sampler was used to obtain 'N' values and disturbed samples in the subsoil. The samples so obtained, were visually identified in the field and returned to the laboratory for testing. The results of these tests are shown in the Appendix of this report, together with a plan of the site, Dag. No. 61-F-85A, showing the position of the boreholes and the inferred soil stratigraphy.

4. SUBSOIL CONDITIONS:

4.1) General:

The subsoil at the site consists of fine sand overlying a stratum of silty fine sand. Beneath this is a layer of silt followed by fine to coarse sand and gravel down to bedrock.

4.2) Fine Sand:

Fine sand was found to a depth of some 60 ft. in B.H.'s 1, 2 and 4. The 'N' values for this material vary from 7 in B.H. 1 to 15 in B.H. 4, with an average of 12, indicating it to have a medium relative density. In B.H. 3, silt was found instead of the fine sand. A grain size distribution curve for this material is found in the Appendix of this report. The 'N' value obtained in this silt was 17, indicating it to have a medium dense relative density.

4. SUBSOIL CONDITIONS: (cont'd.) ...

4.3) Silty Fine Sand:

This stratum of silty fine sand varies in thickness from 13.0 ft. in B.H. 3 to 34.0 ft. in B.H. 4. The 'N' values vary widely from 3 at a depth of 15.0 ft. in B.H. 3 to 16 at a depth of 7.0 ft. in B.H. 2, with an overall average of 9, indicating the material to have a loose relative density. In B.H. 1, fine sandy silt is found to a depth of 20.0 ft. beneath which is the silty fine sand. 'N' values for this material vary from 20 at a depth of 7.0 ft. to 9 at a depth of 16.0 ft., with an average of 11. Grain size distribution curves for representative samples of this material are found in the Appendix of this report.

4.4) Silt:

Silt was found below the silty fine sand in B.H.'s 1 and 3. It varies in thickness from 5.0 ft. in B.H. 1 to 9.0 ft. in B.H. 3. The moisture content for the material varies between 24.7% and 31.2%. 'N' values vary between 16 and 27 with an average of 22, indicating the material to have a medium dense relative density.

4.5) Fine to Coarse Sand and Gravel and Boulders:

Fine to coarse sand and gravel was found in all the boreholes on top of the bedrock. It varies in thickness from 4.0 ft. in B.H. 1 to 13.0 ft. in B.H. 4. Boulders varying in diameter between 1.0 and 2.0 ft. were found in B.H.'s 2, 3 and 4. Grain size distribution curves for samples obtained in this stratum are found in the rear of this report. 'N' values vary between 22 and 30, with an average of 44.

cont'd. A ...

4. SOIL CONDITIONS: (cont'd.) ...

4.6) Bedrock:

The bedrock was proved in all the boreholes. In the case of B.H. 3, a very poor rock core recovery was obtained for the first 30 ft., and this is thought to be due to the presence of soft mica in the rock. Sound bedrock was obtained at a depth of 430 ft.

5. GROUND WATER CONDITIONS:

The water levels in the boreholes were approximately at creek level at the time of the investigation. Creek level was at elev. 991.5.

6. DISCUSSION & RECOMMENDATIONS:

Structure - It is understood that a single-span structure has been proposed for this location. Due to the loose relative density of the silty fine sand, it is recommended that the proposed structure be founded on timber piles, driven to bedrock or to practical refusal in the bouldery sand gravel layer. A safe design load of 20 tons/pile can be used. This method should not involve excavations below the water table, hence no dewatering should be necessary. As the pile tops will be above the water table, they should be treated to prevent rotting of the timber.

Approaches - No stability problems are anticipated with regard to the approach embankments. Protection of the slopes in the form of rip-rap to an elevation above the H.W.L., should be provided.

7. SUMMARY:

The subsoil at the site consists of a layer of fine sand overlying a stratum of silty fine sand. Beneath this is a layer of silt followed by fine to coarse sand gravel and boulders, down to the bedrock. The abutments of the proposed structure should be founded on treated timber piles driven to bed rock, or to refusal in the bouldery sand gravel layer.

A safe design load of 20 tons/pile can be used.

No stability problems are anticipated with regard to the approach fills. The slopes should be protected against scour to an elevation above the H.W.L.

8. MISCELLANEOUS:

The field work was carried out during the period 29th Aug. to 13th Sept., 1961, by the Johnston Drilling Co., Ltd. The field work was supervised for the D.H.O. by T. F. Widdis.

October 1961

REPORT PREPARED BY:

*B.M.S. Lachari*  
.....  
T. F. Widdis,  
PROJECT FOUNDATION ENGINEER.

REPORT APPROVED BY:

*H. G. Selby*  
.....  
H. G. Selby,  
CH. PROJECT FOUNDATION ENGINEER.



APPENDIX I.

## SUMMARY OF FIELD &amp; LABORATORY TESTS

JOB 61-F-85W.P. -

HOLE NO.	SAMP. NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
1	S1	3'-4.5'	Fine sand with trace of organic matter. Loose. Grey to brown.	7	-	-	-	-	-	
	S2	6.5'-8'	Silt with fine sand. Med. dense. Grey.	20	22.6	-	-	-	-	
	S3	9.5'-11'	Same as S. 2.	13	26.6	-	-	-	-	
	S4	15.5'-17'	Silt with fine sand. Loose. Grey.	9	-	-	-	-	-	
	S5	20.5'-22'	Fine sand with silt. Loose. Grey.	10	-	-	-	-	-	
	S6	25'-26.5'	Fine sand. Medium dense. Grey.	15	-	-	-	-	-	
	S7	30'-31.5'	Silt. Nonplastic. Med. dense. Grey.	24	27.7	-	-	-	-	
	S8	35'-36.5'	Gravel and sand. Wellgraded. Dense.	36	-	-	-	-	-	
	S9	39'-39.2'	No sample.	100-2"	-	-	-	-	-	
	RC10	39.2'-44'	4.5' recovery bedrock.	-	-	-	-	-	-	
	RC11	44'-51'		-	-	-	-	-	-	
2	S1	3'-4.5'	Fine to med. sand. Loose.	13	-	-	-	-	-	
	S2	7'-8.5'	Fine sand with silt. Med. dense grey.	16	-	-	-	-	-	
	S3	10'-11.5'	Fine sand with silt. Loose. grey.	9	-	-	-	-	-	
	S4	15'-16.5'	Same as S. 3.	6	-	-	-	-	-	

## SUMMARY OF FIELD &amp; LABORATORY TESTS

JOB 61-P-85W.P. -

HOLE NO.	SAMP. NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
2	S5	20'-21.5'	Fine sand with silt. Loose. Grey.	5	-	-	-	-	-	
	S6	25'-25.3'	No sample. 2.0' Boulder.	144-4"	-	-	-	-	-	
	S7	30'-31.2'	Fine to coarse sand and gravel. Dense. Grey.	33-8"	-	-	-	-	-	
	RC8	31.2'-35'	2.0' Recovery.	-	-	-	-	-	-	
	RC9	35'-40'	4.0' Recovery.	-	-	-	-	-	-	
	RC10	40'-43.5'	2.75' Recovery.	-	-	-	-	-	-	
3	S1	4'-5.5'	Silt. Nonplastic. Med. dense. Grey.	17	24.7	-	-	-	-	
	S2	7'-8.5'	Fine to coarse sand, with silt. Medium dense. Grey.	24	-	-	-	-	-	
	S3	10'-11.5'	Fine sand. Loose. Grey.	6	-	-	-	-	-	
	S4	15.5'-17'	Fine sand.V.Loose. "	3	-	-	-	-	-	
	S5	20'-21.5'	Silt. Nonplastic. Med. dense. Grey.	27	24.7	-	-	-	-	
	S6	25'-26.5'	Same as S. 5.	16	31.2	-	-	-	-	
	S7	30'-31.3'	Fine to coarse sand. Dense grey. Boulder at 31.5'	38-10"	-	-	-	-	-	
	RC8	35'-43'	12" recovery - soft mica.	-	-	-	-	-	-	
	RC9	43'-48.2'	4'-8" recovery sound bedrock.	-	-	-	-	-	-	

## SUMMARY OF FIELD &amp; LABORATORY TESTS

JOB 61-F-85W.P. -

HOLE NO.	SAMP. NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
4	S1	3'-4.5'	Fine sand medium dense. Brown.	15	-	-	-	-	-	
	S2	6'-7.5'	Fine sand with silt. Medium dense. Grey.	15	-	-	-	-	-	
	S3	9'-11'	Same as S. 2.	17	-	-	-	-	-	
	S4	15'-16.5'	Same as S. 2.	11	-	-	-	-	-	
	S5	20'-21.5'	Fine sand with silt. Loose. Grey.	9	-	-	-	-	-	
	S6	25'-26.5'	Fine to coarse sand and gravel. Loose. Grey.	7	-	-	-	-	-	
	S7	30'-31.5'	Fine sand. Loose. Grey.	11	-	-	-	-	-	
	S8	35'-36.5'	Fine sand. Medium dense. Grey.	21	-	-	-	-	-	
	S9	39'-40'	Fine to coarse sand and gravel. Very dense. Grey.	68	-	-	-	-	-	
	S10	42.0'-43.5'	Same as S. 9.	80	-	-	-	-	-	
	S11	47.25-48.25	Lost.	46	-	-	-	-	-	
	S12	48.5-50.0	Fine to coarse sand and gravel. Medium dense.	22	-	-	-	-	-	

## SUMMARY OF FIELD &amp; LABORATORY TESTS

JOB 61-F-85W.P. -

HOLE NO.	SAMP. NO.	SAMPLE DEPTH (FEET)	MATERIAL DESCRIPTION	PENET'N RESIST. BLOWS/FT.	MOIST. CONT. %	PLASTIC LIMIT %	LIQUID LIMIT %	SHEAR STRENGTH p.s.f.	UNIT WEIGHT p.c.f.	REMARKS
4	RC13	51.5-57.0	4.0' recovery.	-	-	-	-	-	-	
	RC14	57.0-61.0	4.0' recovery.	-	-	-	-	-	-	
5	RC1	50.0-55.5	4.5' recovery.  S denotes split spoon sample. RC " rock core "	-	-	-	-	-	-	

# DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

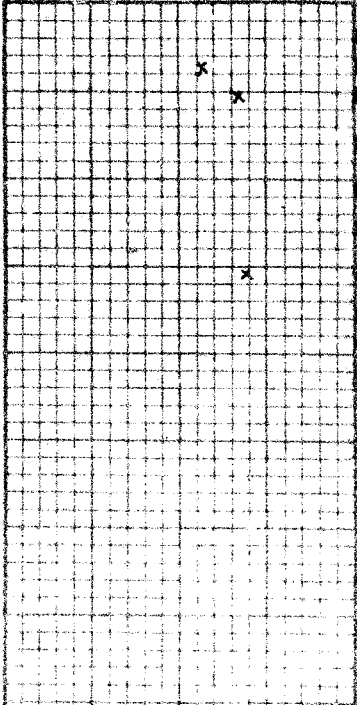
W.P. --- BORE HOLE NO. 1  
JOB 61-F-85 STATION 424+12 (15.0' Lt.)  
DATUM 994.5' COMPILED BY B.K.  
BORING DATE Aug. 29/61. CHECKED BY T.F.W.

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) --- +  
NATURAL MOISTURE AND LIQUIDITY INDEX --- LI  
LIQUID LIMIT --- X  
PLASTIC LIMIT ---

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P. S. F.	BLOWS/FT.
	Ground Level	994.5	0		
	Fine sand with trace of organic matter loose. Grey to brown.	992.0			
	Silt with fine sand. Medium dense to loose. Grey.	988.0	10		
		974.0	20		
	Fine sand with silt. Loose to med. dense Grey.	964.5	30		
	Silt. Clayey. Med. dense. Grey.	959.5			
	Gravel & sand. Well graded. Dense.	955.5	40		
	Bedrock.	943.5	50		
	End of borehole.		60		
	Penetration resistance profile shown; obtained by driving a 2" dia. cone from ground level to depth noted with an energy of 350 ft. lb. per blow.		70		
			80		

CONSISTENCY				SAMPLE	NATURAL
MOIST. CONTENT - % DRY WT.					UNIT WY.
0	10	20	30		P. C. F.
				S1	-
				S2	-
				S3	-
				S4	-
				S5	-
				S6	-
				S7	-
				S8	-
				S9	-
				RC10	-
				RC11	-

DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS AND RESEARCH SECTION

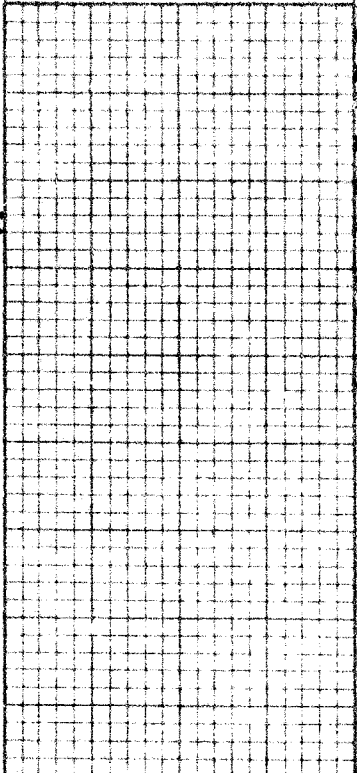
W.P. \_\_\_\_\_ BORE HOLE NO. 2  
JOB 61-F-85 STATION 424+06 (16' Rt.)  
DATUM 991.5' COMPILED BY B.K.  
BORING DATE Aug. 31/61. CHECKED BY T.F.W.

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) \_\_\_\_\_ +  
NATURAL MOISTURE AND LIQUIDITY INDEX \_\_\_\_\_ LI  
LIQUID LIMIT \_\_\_\_\_ X  
PLASTIC LIMIT \_\_\_\_\_

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P. S. F.	BLOWS/FT.
	↓ Groundlevel w.l. 991.5	991.5	0		25 50 75 100
	Fine to medium sand. Loose.	984.5	10		
	Fine sand with silt. Loose. Grey.	967.5	20		
	Fine to coarse sand and gravel. Dense. Grey.	960.3	30		
	Bedrock.	948.0	40		
	End of borehole.		50		
	Penetration resistance profile shown; obtained by driving a 2" dia. cone from groundlevel to depth noted with an energy of 350 ft. lb. per blow.		60		
			70		
			80		

CONSISTENCY		SAMPLE	NATURAL
MOIST. CONTENT - % DRY WT.			UNIT WT P.C.P.
		S1	-
		S2	-
		S3	-
		S4	-
		S5	-
		S6	-
		S7	-
		RC8	-
		RC9	-
		RC10	-

# DEPARTMENT OF HIGHWAYS - ONTARIO

## MATERIALS AND RESEARCH SECTION

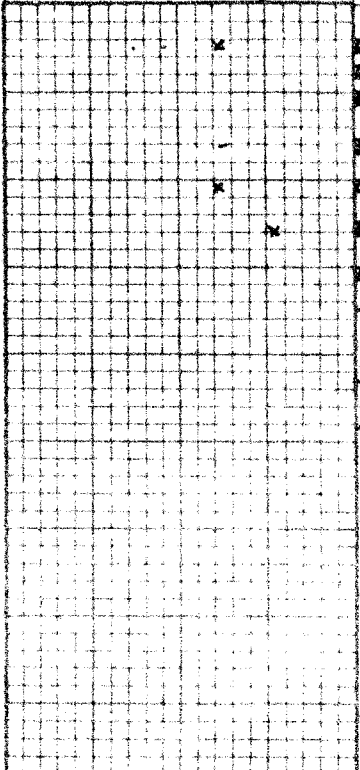
W.P. \_\_\_\_\_ BORE HOLE NO. 3  
 JOB 61-F-85 STATION 423+63 (21' Rt.)  
 DATUM 991.5' COMPILED BY B.K.  
 BORING DATE Sept. 5/61. CHECKED BY T.F.W.

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.	BLOWS/FT.
	↓ Groundlevel	992.5	0		25 50 75 100
	Silt. Nonplastic. Med. dense. Grey.	991.5			
	Fine to coarse sand with silt. Med. dense.	985.5			
	Fine sand. Loose. Grey.	980.0	10		
	Silt nonplastic. Medium dense. Grey.	972.5	20		
	Fine to coarse sand.	963.5	30		
	Bedrock.	957.5	40		
	End of borehole.	944.3	50		
	Penetration resistance profile shown; obtained by driving a 2" dia. cone from groundlevel to depth noted with an energy of 350 ft. lb. per blow.				

CONSISTENCY		SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT - % DRY WT.			
0	10      20      30		
		S1	-
		S2	-
		S3	-
		S4	-
		S5	-
		S6	-
		S7	-
		RC8	-
		RC9	-



## DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS AND RESEARCH SECTIONW.P. \_\_\_\_\_ BORE HOLE NO. 4JOB 61-F-85 STATION 423/63 (17.5' It.)DATUM 992.5' COMPILED BY B.K.BORING DATE Sept. 5/61. CHECKED BY T.F.W.

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.	
	↓ Groundlevel	994.5	0	25 50 75 100 BLOWS/FT.	
	Fine sand. Med. dense. Brown. w.l. <u>y</u>	991.5			
		989.5			
	Fine sand with silt. Med. dense to loose. Grey.		10		
			20		
		969.5	30		
	Fine sand. Medium dense. To loose grey.		40		
		955.5	50	Penetration ends @ elev. <u>951.5'</u>	
	Fine to coarse sand and gravel. Medium dense to very dense.	943.5	60		
	Bedrock.		70		
	End of borehole.		80		
				Penetration resistance profile shown; obtained by driving a 2" dia. cone from groundlevel to depth noted with an energy of 350 ft. lb. per blow.	

CONSISTENCY	SAMPLE	NATURAL UNIT WT. P. C. F.
MOIST. CONTENT - % DRY WT.		
	S1	-
	S2	-
	S3	-
	S4	-
	S5	-
	S6	-
	S7	-
	S8	-
	S9	-

DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS AND RESEARCH SECTION

W.P. - BORE HOLE NO. 5  
JOB 61-F-85 STATION 423465 E  
DATUM 994.0' COMPILED BY B.K.  
BORING DATE Sept. 12/61. CHECKED BY T.F.W.

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

## LEGEND

1/2 UNCONFINED COMPRESSION (Qu) \_\_\_\_\_ 0  
VANE TEST (C) AND SENSITIVITY (S) \_\_\_\_\_ +  
NATURAL MOISTURE AND LIQUIDITY INDEX \_\_\_\_\_ LI  
LIQUID LIMIT \_\_\_\_\_ X  
PLASTIC LIMIT \_\_\_\_\_

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Groundlevel	994.0	0	BLOWS/FT.	
	Probably sand with silt.		10		
		20			
		30			
		40			
		50			
		60			
		70			
		80			
	Bedrock.	944.5 939.5			
	End of borehole.				

CONSISTENCY		SAMPLE	NATURAL UNIT WT. F.C.F.
MOIST. CONTENT - % DRY WT.			
		RC1	-

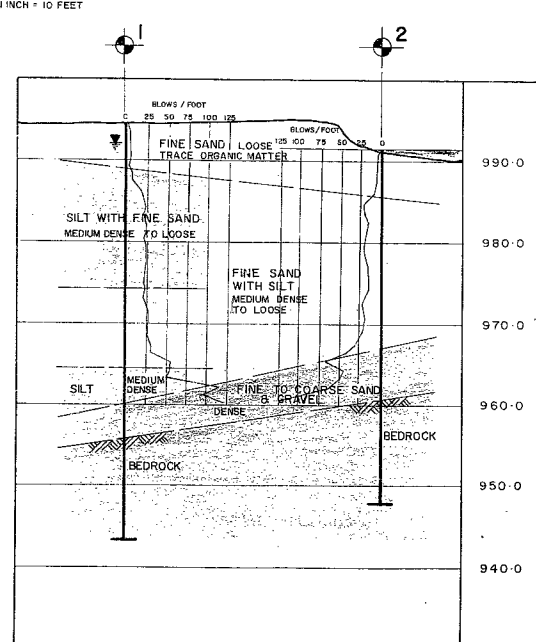
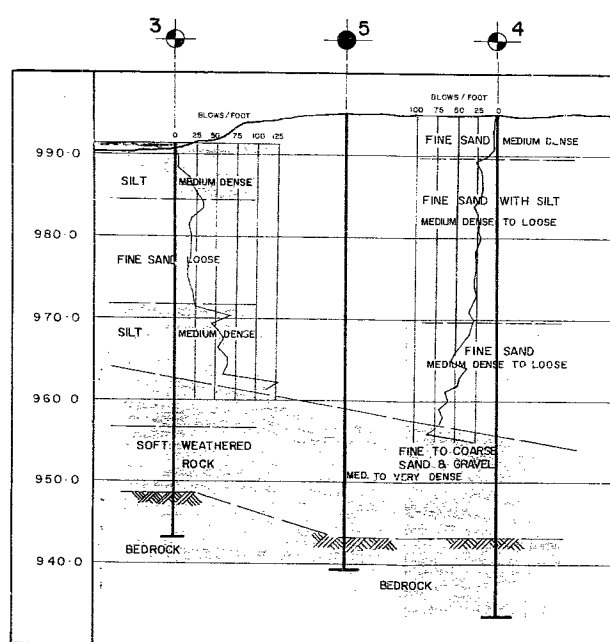
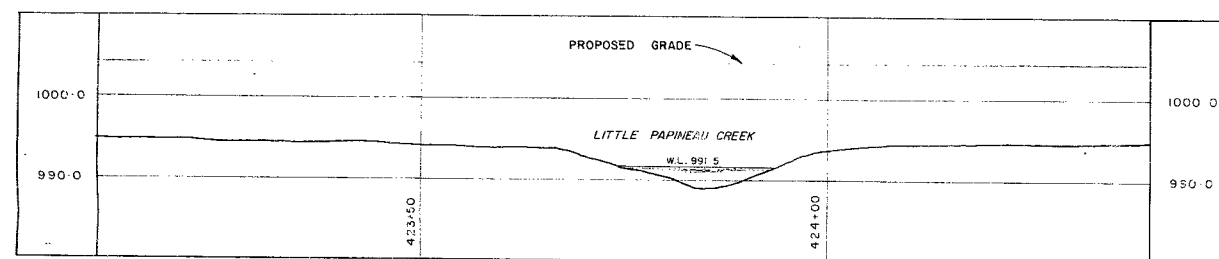
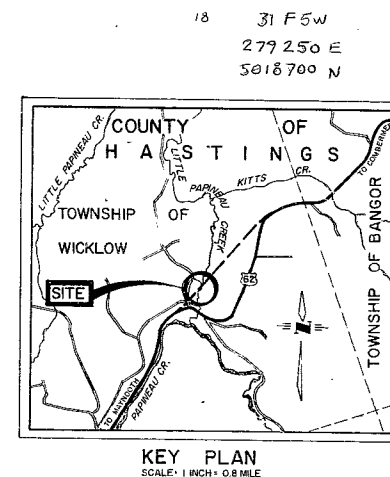
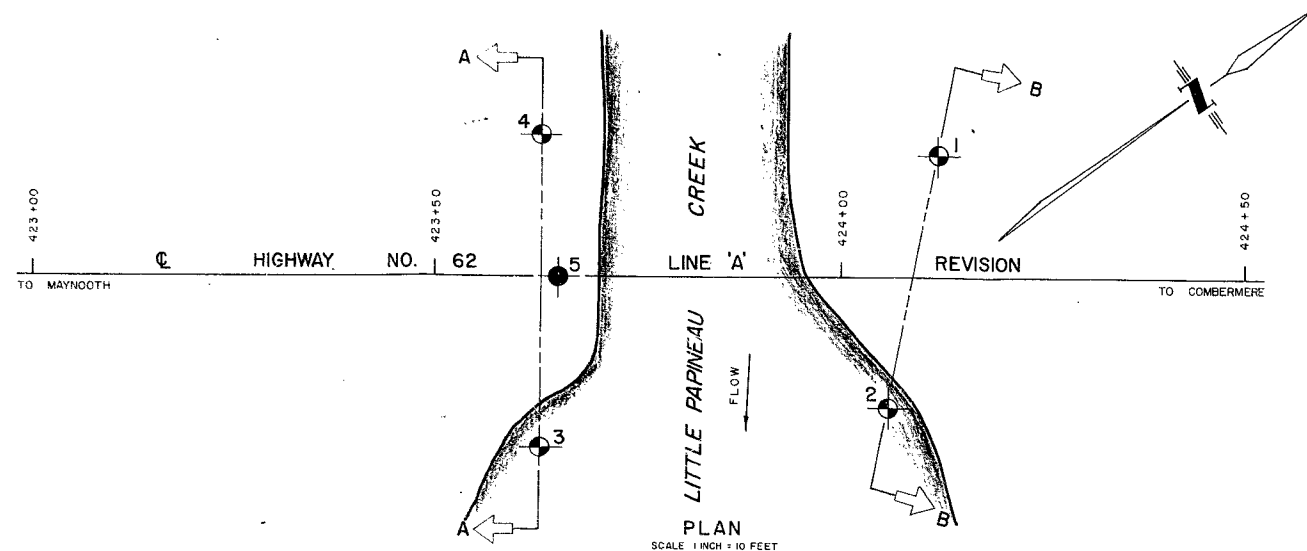
#

61-F-85

Hwy #62

LITTLE PAPINEAU

CREEK



LEGEND			
	BORE & PENETRATION HOLE		
	BORE HOLE		
	WATER LEVELS - Established at time of field investigation AUG 30, SEPT 3, 1961		
HOLE	ELEVATION	STATION	OFFSET
1	994.5	424+12	15' LT.
2	991.5	424+06	16' RT.
3	991.5	423+63	21' RT.
4	994.5	423+63	17.5' LT.
5	994.5	423+65	0

— 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		
LITTLE PAPINEAU CREEK		
AND		
HIGHWAY NO. 62		
LINE 'A' REVISION		
ORIGINATED T. WOODS	DISTRICT NO. 10	DATE NOV. 29, 1961
DRAWN F. CLARK	W.P. NO.	JOB NO. 61-F-85
CHECKED <i>[Signature]</i>	SCALE	DRAWING NO.
APPROVED <i>[Signature]</i>	AS SHOWN	61-F-85A