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Bridge Engineer,  
Bridge Division.

Attn: Mr. K. L. Kleinsteinber,  
Mun. Bridge Liaison Engr.

Mr. A. G. Stermac,  
Principal Foundation Engr.,  
Foundation Section,  
Materials & Research Division.

February 7, 1963

D.H.O. FOUNDATION INVESTIGATION REPORT -  
Egan Creek and Dev. Road No. 690, County  
of Hastings, Twp. Dunganon, District #10.  
W.J. 63-F-6

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

We believe you will find the factual data and  
recommendations contained therein, adequate for your future  
design work.

If there are any queries concerning this project,  
please do not hesitate to contact our Office.

KYL/MdeF  
Attach.

cc: Messrs. A. M. Toye (3)  
J. P. Howard  
C. I. R. Greer  
J. E. Gruspier  
A. Watt

Foundations Office  
Gen. Files. ✓

*K. Y. Lo*  
K. Y. Lo;  
SUPERVISING FOUNDATION ENGR.  
For:

A. G. Stermac,  
PRINCIPAL FOUNDATION ENGR.

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# FOUNDATION INVESTIGATION

For

Egan Creek and Dev. Road No. 690, County  
of Hastings, Township of Dungannon.

- W.J. 63-F-6 -- District #10.

## 1. INTRODUCTION:

A request, to carry out a foundation investigation, at the proposed new crossing of realigned Dev. Road No. 690 and Egan Creek, was received from the Regional Soils Engineer, Mr. T. J. Kovich, dated January 8, 1963.

It is proposed to erect a new bridge to carry the realigned Dev. Road No. 690 over Egan Creek. The site of the proposed bridge is located in the County of Hastings, Township of Dungannon. At this location, the chainage of the Dev. Road No. 690 is from 123+70 to 124+20.

In order to determine the soil properties and decide on the type of foundation, an investigation was carried out by this Section. Results and the discussion of the field and laboratory investigations, as well as conclusions and recommendations for future design work, are contained in the following paragraphs of this report.

## 2. DESCRIPTION OF SITE:

The site of the proposed bridge is located approx. 11 Miles North east of the Town of Bancroft and approx. 200 feet downstream of the existing bridge. The surrounding area is

cont'd. /2 ...

2. DESCRIPTION OF SITE: (cont'd.) ...

very hilly. The width of Egan Creek, at the proposed crossing is about 35 feet and the depth approx. 12 to 15 inches.

3. FIELD AND LABORATORY WORK:

In order to obtain sufficient information on the type and properties of the subsoil, two sampled boreholes, were drilled at this site. Split-spoon samples were taken at 5 foot intervals. Because of the dense nature of the soil, it was not possible to obtain undisturbed samples. Samples recovered in the split-spoon sampler were used to determine the following physical properties:

1. Natural Moisture Content.
2. Grain Size Distribution.

4. SUBSOIL CONDITIONS:

4.1) General:

The stratigraphy of the soil at the site was found to be generally uniform. A detailed description of various soil types encountered during the investigation, is shown in Appendix I of this report, and is also given in subsequent paragraphs. The estimated stratigraphical profile, shown on Dwg. No. 63-F-6A, is based upon this information.

4.2) Loose Sand and Boulders:

This stratum, which extends to approx. elevation 1006 for a depth of about 7'-0" to 9'-0", was found below the topsoil.

cont'd. /3 ...

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

4.2) Loose Sand and Boulders:

It may be classified as loose with an average "N" value of 4 blows/foot.

Boulders encountered in this layer vary in diameter from 12" to 36".

4.3) Very Dense Sandy Silt (Glacial Till):

Following the stratum of loose sand and boulders, is a containing layer of very dense sandy silt (Glacial Till). The overall stratum is in a very dense condition with an average "N" value in excess of 150 blows/foot.

5. GROUND WATER CONDITIONS:

The ground water level, at the time of the investigation, was found at elevation 1012.0.

No artesian water conditions were encountered.

6. DISCUSSION AND RECOMMENDATIONS:

As can be seen from the previously described soil stratigraphy, the soil consists of loose sand and boulders, followed by very dense sandy silt (Glacial Till).

Spread footings founded at approx. elevation 1005.0 can support a safe load of 3 tons/sq. ft. A dewatering scheme will be necessary as excavations will be carried out below creek or ground water table levels. If wood or steel sheeting is used for this, it should be driven about 2 feet below the

cont'd. /4 ...

6. DISCUSSION AND RECOMMENDATIONS: (cont'd.) ...

footings' bottom into the sandy silt deposit. No stability problems for the approach fills are anticipated.

7. SUMMARY:

1. The stratification of the soil is quite uniform. The relative density of the material encountered varies from loose to very dense.

2. Because of the density of the upper layers, spread footings are recommended for the structure.

3. The bottom of the footings should be at approx. elevation 1005.0. A safe bearing pressure of 3 tons/sq. ft. may be used.

4. A dewatering scheme will be necessary as excavations will be carried out below creek or ground water table levels. Recommendations contained in the body of the report should be followed.

5. No stability problems for the approach fills are anticipated.

8. MISCELLANEOUS:

The field work, performed during the period from Jan. 22 to Jan. 26, 1963, together with the preparation of this report, was undertaken by Mr. W. W. Kulmatickas. The investigation was carried out under the general supervision of Mr. K. G. Selby, who also reviewed this report.

January 1963.

APPENDIX I.

DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS & RESEARCH DIVISION

# RECORD OF BOREHOLE NO. 1

FOUNDATION SECTION

JOB 63-F-6 LOCATION Dev. Rd. No. 690 and Egan Creek Ch. 123/35-3'-0" Lt. ORIGINATED BY W.W.K.  
W.P. 62-70459 BORING DATE Jan. 22-25, 1963. COMPILED BY W.W.K.  
DATUM 1014.5 BOREHOLE TYPE BX Casing Run and Wash Boring CHECKED BY \_\_\_\_\_

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT		LIQUID LIMIT ——— WL PLASTIC LIMIT ——— WP WATER CONTENT. ——— W		BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		SHEAR STRENGTH P.S.F.		WP	WL		
1014.5	Ground Elevation											
0.0	Black organic topsoil											
1012.0												
2.5	Loose sand and boulders up to 3'-0" Ø.		1	SS	7	1010.0						
1006.3			2	SS	113							
8.2	Very dense sandy silt. (Glacial Till Dark Grey)		3	SS	136	1000.0						
			4	SS	191							
			5	SS	200	990.0						
984.0			6	SS	200							
30.0	End of borehole.					980.0						
						970.0						

WL EL.  
1012.0  
Observed in casing.



DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS & RESEARCH DIVISION

# RECORD OF BOREHOLE NO. 2

FOUNDATION SECTION

JOB 63-F-6 LOCATION Dev. Road No. 690 & Egan Creek Ch. 124+20-5'-0" Lt. ORIGINATED BY W.W.K.  
W.P. 62-70459 BORING DATE Jan. 26-28, 1963. COMPILED BY W.W.K.  
DATUM 1016.3 BOREHOLE TYPE BX Casing Run and Washboring. CHECKED BY \_\_\_\_\_

SOIL PROFILE			SAMPLES		ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT		LIQUID LIMIT ——— % PLASTIC LIMIT ——— % WATER CONTENT ——— %		BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE		SHEAR STRENGTH P.S.F.		W <sub>p</sub>	W <sub>L</sub>		
1016.3	Ground Elevation										
0.0	Black organic topsoil										
1013.6											
3.0	Loose sand and boulders up to 3'-0" Ø		1	SS	8	1010.0					
1006.6											
9.3	Very dense sandy silt		2	SS	25						
	(Glacial Till Dark Grey)		3	SS	127	1000.0					
			4	SS	176						
			5	SS	174	990.0					
986.3											
30.0	End of borehole.		6	SS	134						
						980.0					

W.L. El.  
1012.0  
Observed in casing.

#  
63-F-6  
DEV. ROAD # 690  
EGAN  
CREEK.

