

SUPPLEMENTARY
FOUNDATION INVESTIGATION REPORT

For

R.F.W. and Hwy. #27 Interchange,
Twp. of Stobbrooke, County of York,
District #6 (Toronto).
W.P. 275-64-1 and W.P. 275-64-4
A.J. 65-F-104

INTRODUCTION:

Since the original foundation investigation report for the above mentioned interchange was prepared, we have received the preliminary plans for the individual structures involved which show the exact locations of each. We have reviewed these plans with respect to the available soil information, and as a result of this review, we arranged for more borings to be carried out in the field to obtain additional information.

Field work, laboratory work, and the preparation of the Record of Borehole sheets, for the additional borings, were undertaken by Dominion Soil Investigation Ltd. at our request and according to a program decided upon by us.

The following pages contain a description of the subsoil conditions prevailing at each structure location, together with our final recommendations for the structure foundations.

This report was prepared by Mr. A. Barsvary, Senior Foundation Engineer, under the general supervision of Mr. K. G. Selby, Supervising Foundation Engineer.

STRUCTURE #14 - W.P. 278-61-7 - (cont'd.) ...

2. Recommendations: (cont'd.) ...

within the hard glacial till. By fulfilling the above requirements, a safe load of 4 t.m.f. may be employed on the footings.

The perched abutments should be supported on H-piles driven to sound bedrock, or to practical refusal. It is believed that practical refusal will be obtained between el. 361 ft. and 355 ft. On 12 BP 53 H-piles, a design load of 70 T/pile may be imposed.

Since the till deposit is rather impervious, no boiling of the excavation bottoms is anticipated.

Some seepage along the slopes of the excavations may be expected.

STRUCTURE #15 - W.P. 35-65 -

1. Soil Conditions:

Five boreholes were drilled in the vicinity of Bay. #27 overpass at North Queen St. Two of the borings - numbered 19 and 20, were carried out by the Foundation Section during the preliminary investigation, while holes #194, 195 and 196 were executed recently by Dominion Soil Investigation Ltd.

Below a 3 - 4 ft. thick gravelly sand fill, a sandy silt (glacial till) deposit was encountered at every borehole location extending down to approx. el. 360 ft., some 22 ft. below ground. The stratum contains traces of clay and gravel and has a "very dense" relative density. Following the sandy silt, a hard cohesive variation of the glacial deposit was found, the thickness of which ranged from 2 ft. to 10 ft. The predominant constituent of the layer is clayey silt, having also fragments of shale, and traces of sand and gravel. Sound shale bedrock with intermittent limestone bands, underlies the glacial till at el. 350 - 358 ft.

cont'd. /14...

STRUCTURE #15 - W.P. 35-65 - (cont'd.) ...

1. Soil Conditions: (cont'd.) ...

Some 4 - 5 ft. thickness of the bedrock was proved by drilling.

Groundwater was observed within the existing highway fill at el. 390 ft., again right below the sandy fill at el. 377 - 378 ft.

The locations and elevations of the boreholes, together with the estimated stratigraphical profile, are shown on Drawing #65-P-104F.

2. Recommendations:

The structure may be supported on spread footings, within the very dense glacial till. Considering a proposed single-span structure, the footings for both abutments may be placed at el. 375 ft., some 7 ft. below existing ground. Soil conditions, however, permit placing the footing of the north abutment on el. 377 ft., some 5 ft. only below present ground. For above foundations, a bearing pressure of 3 t.s.f. is assumed for design purposes.

In spite of the permeable nature of the sandy silt subsoil, no major dewatering problems are anticipated for the excavations, on account of the relatively shallow depths below the prevailing groundwater level.

cont'd. /15...

FOUNDATION SECTION

CHECKED BY

DOMINION SOIL INVESTIGATION LIMITED

77 CROCKFORD BOULEVARD - SCARBOROUGH ONTARIO CANADA - TELEPHONE 421-2567

BRANCH
365 QUEENS AVENUE
LONDON, ONTARIO
TELEPHONE GE 3-3881



FOUNDATION ENGINEERS

ASSOCIATED COMPANY
SOIL TESTING AND ENGINEERING LTD.
34 BRENTFORD ROAD,
KINGSTON 5, JAMAICA, WEST INDIES
TELEPHONE: 66896

July 18, 1966.

Our Ref. No. 6-6-24
Your Ref. W. P. 35-65

Mr. A. G. Stermac,
Principal Foundation Engineer,
Materials and Testing Division,
Department of Highways,
Downsview Avenue,
Downsview, Ontario.

Attention: Mr. K. Selby, P. Eng.

Re: Soil Investigation for Q. E. W. and Hwy. #27
Interchange, Bridge No. 15.

Dear Sirs:

At your request three boreholes were put down at the site of the above structure. The results of the borings and laboratory tests are attached to this letter.

Our boreholes No. 104, 105, and 106 in conjunction with your boreholes No. 19 and 20 indicate uniform and favourable subsurface conditions for spread footing design at the proposed foundation level.

We trust that you will find the information presented on the borehole logs and grain size distribution curves sufficient for your requirements. However, if you feel that we can be of further assistance to you please do not hesitate to contact us.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED,

I. P. Lieszkowsky
I. P. Lieszkowsky, P. Eng.,
Project Engineer.

IPL/ds

METHOD OF BORING AUGERING & WASHBORING
DIAMETER OF BOREHOLE 2 3/8" ENCLOSURE NO
DATE JUNE 24 & 25, 1966
W. P. 35-65

VERTICAL SCALE: 1 IN. TO 5 FT

CLIENT: D. H. O.
 PROJECT: Q.E.W. & HWY. NO 27 INTERCHANGE
 LOCATION: 180, 620 N; 208,356 E.
 DATUM ELEVATION: G. S. C.

METHOD OF BORING AUGERING & WASHBORING
 DIAMETER OF BOREHOLE 2 3/8"
 DATE JUNE 27 & 28, 1966
 W.P. 35 - 65

ENCLOSURE NO.

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %			REMARKS
				NUMBER	TYPE	N or Advance of Sampler	2,0	4,0	6,0	8,0	10,0	PL	W	LI	
							SHEAR STRENGTH lbs/sq ft								
400.6	0	GROUND SURFACE													
	5	Compact Brown GRAVELLY SAND with some SILT (FILL)		1	S.S.	15									
395.0	10			2	S.S.	23									
390.0	15			3	S.S.	26									
385.0	18.5	Compact Dark Brown to Reddish Brown SANDY SILT with ORGANIC MATTER		4	S.S.	23									
382.1	20			5	W.S.										
380.0	23.5	Very Dense (boulder)		6	R.C.										
377.1	25	Brown Grey SILT with some SAND and a trace of CLAY		7	S.S.	79/6"									Sa. 40 % ; Si 60 %
375.0	30	(GLACIAL TILL)		8	S.S.	84/6"									
370.0	35			9	S.S.	30/1"									Sa. 18 % ; Si. 75 % Cl. 5 %
365.0	40			10	S.S.	95/6"									
360.0	42.8	Grey SHALE with bands of LIMESTONE BEDROCK		12	R.C.	29.2 %									
357.8	45			13	R.C.	80.7 %									
355.0	48.25	END OF BOREHOLE													
352.2	50														
350.0															

W.L. 381.0 Ft.
JUNE 28 1966.

GEOTECHNICAL DATA SHEET FOR BOREHOLE . 10.6 .

OUR REFERENCE NO. 6 - 6 - 24

CLIENT: D.H.O.
PROJECT: Q.E.W. & HWY. NO 27 INTERCHANGE
LOCATION: 180, 640 N; 208, 460 E.
DATUM ELEVATION: G. S. C.

METHOD OF BORING: WASHBORING
DIAMETER OF BOREHOLE: 2 3/8"
DATE: JUNE 25-27, 1966
W P. 35 - 65

ENCLOSURE NO.

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE		CONSISTENCY		REMARKS
				NUMBER	TYPE	N —					

W.L. 376.2 Ft.
JUNE 28, 1966.
Gr. 7 % ; Sa. 32 %
Si 49 % ; Cl. 12 %
Gr. 8 % ; Sa. 46 %
Si. 46 %

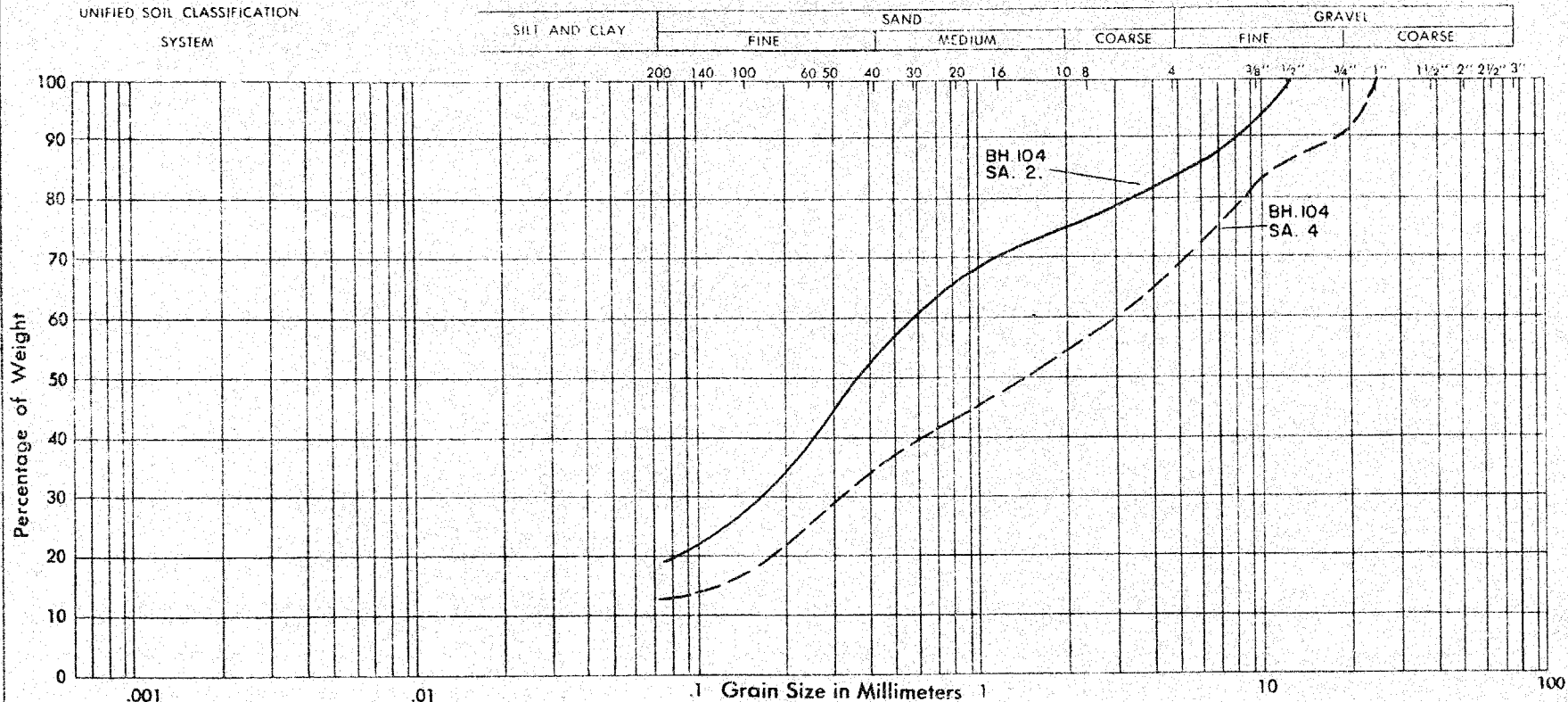
Sa. 15 % ; Si 80 %
CL. 5 %

Sa. 40 % ; Si. 60 %

DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6-6-24
YOUR REF. No. W.P. 35-65



PROJECT: Q.E.W. & HWY. No. 27. INTERCHANGE

LOCATION: BRIDGE No. 15.

BOREHOLE NO.: 104 ; 104

SAMPLE NO.: 2 4

DEPTH OF SAMPLE:

ELEVATION OF SAMPLE:

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

Classification of Sample and Group Symbol:

GRAVELLY SAND with some SILT

PLASTIC PROPERTIES:

LIQUID LIMIT % =

PLASTIC LIMIT % =

PLASTICITY INDEX % =

MOISTURE CONTENT % =

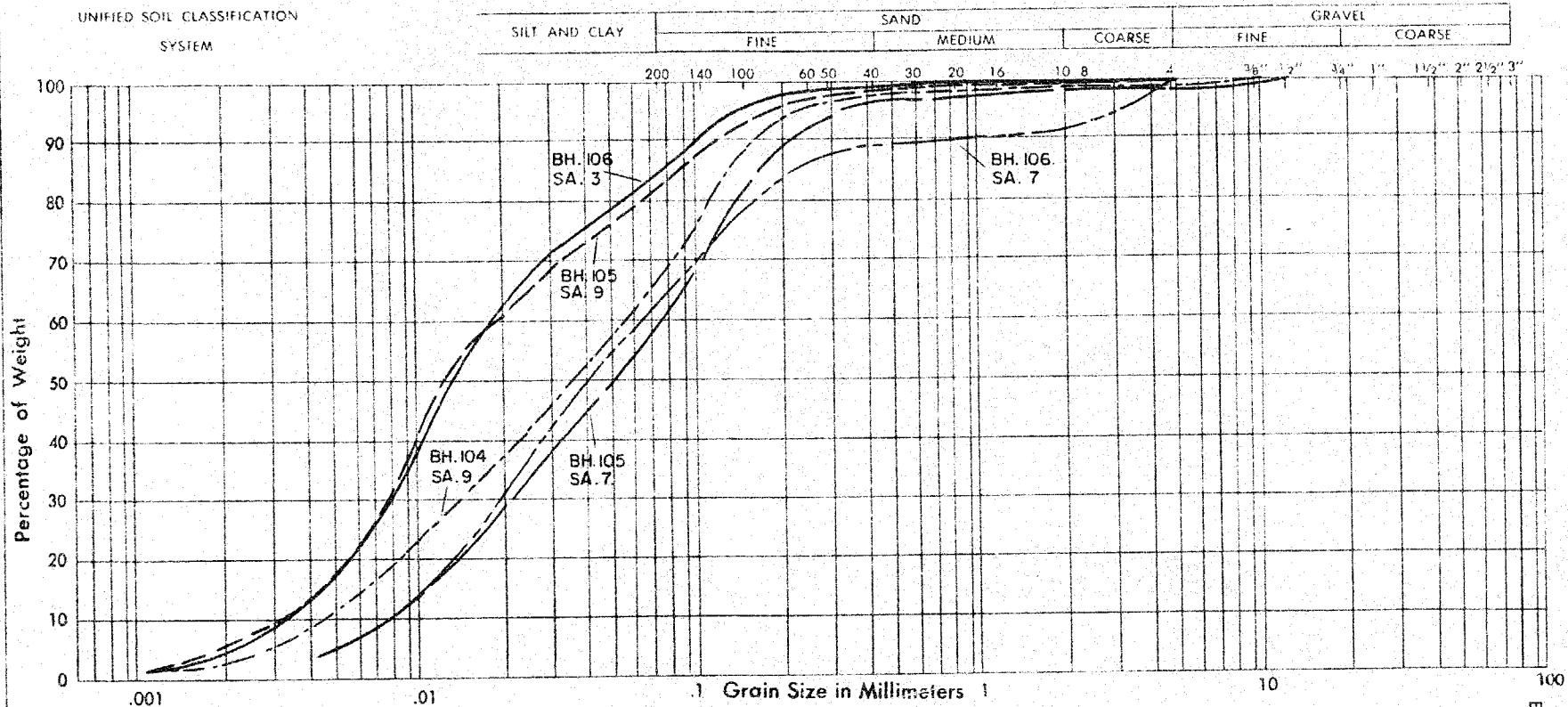
ACTIVITY =

Enclosure No.

DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6-6-24
YOUR REF. No. W.P. 35-65



PROJECT: Q.E.W. & HWY. No. 27. INTERCHANGE

LOCATION: BRIDGE No. 15.

BOREHOLE NO.: 104; 105; 105; 106; 106

SAMPLE NO.: 9 7 9 3 7

DEPTH OF SAMPLE:

ELEVATION OF SAMPLE:

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

Classification of Sample and Group Symbol:

SILT with some SAND
and a trace of CLAY

PLASTIC PROPERTIES:

LIQUID LIMITED	%	=
PLASTIC LIMIT	%	=
PLASTICITY INDEX	%	=
MOISTURE CONTENT	%	=
ACTIVITY	=	

Enclosure No.

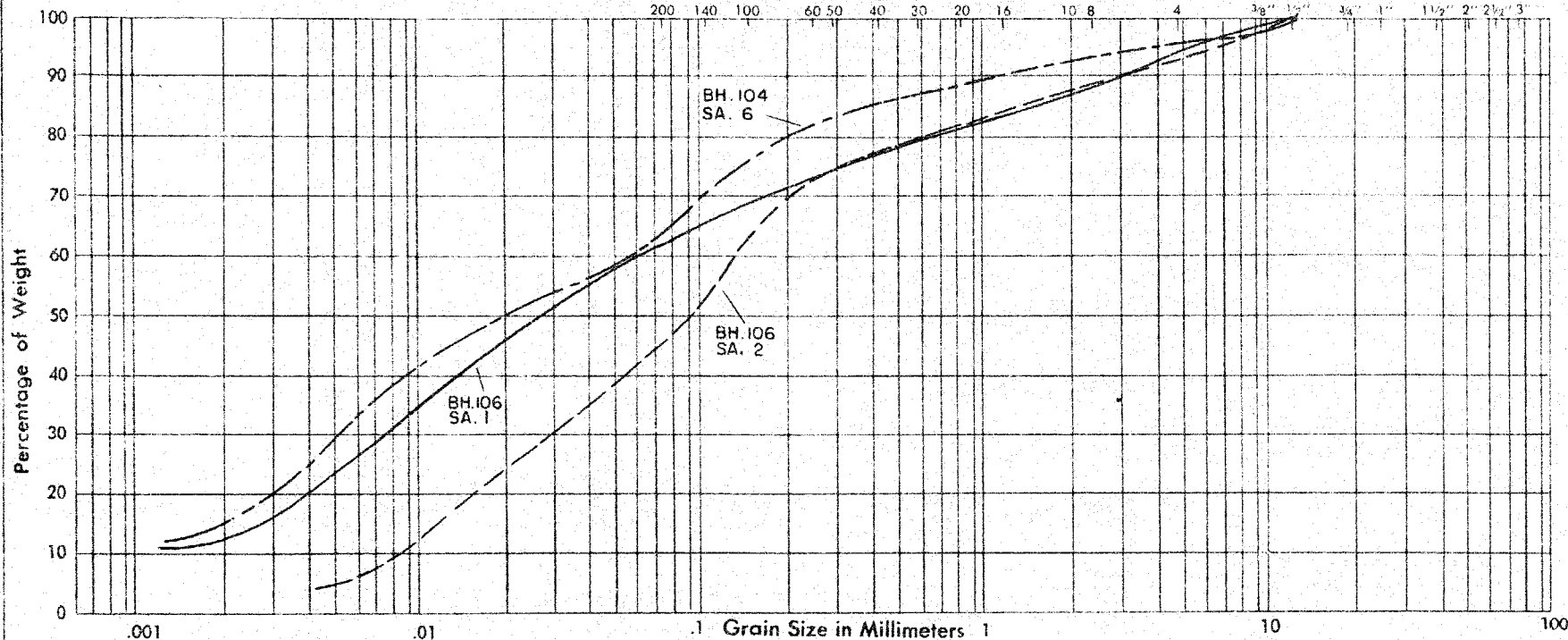
DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6-6-24
YOUR REF. No. W.P. 35-65

UNIFIED SOIL CLASSIFICATION
SYSTEM

SILT AND CLAY	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE



PROJECT: Q.E.W. & HWY. No. 27. INTERCHANGE

LOCATION: BRIDGE No. 15.

BOREHOLE NO.: 104 ; 106 ; 106

SAMPLE NO.: 6 1 2

DEPTH OF SAMPLE:

ELEVATION OF SAMPLE:

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

PLASTIC PROPERTIES:

LIQUID LIMITED %

PLASTIC LIMIT %

PLASTICITY INDEX %

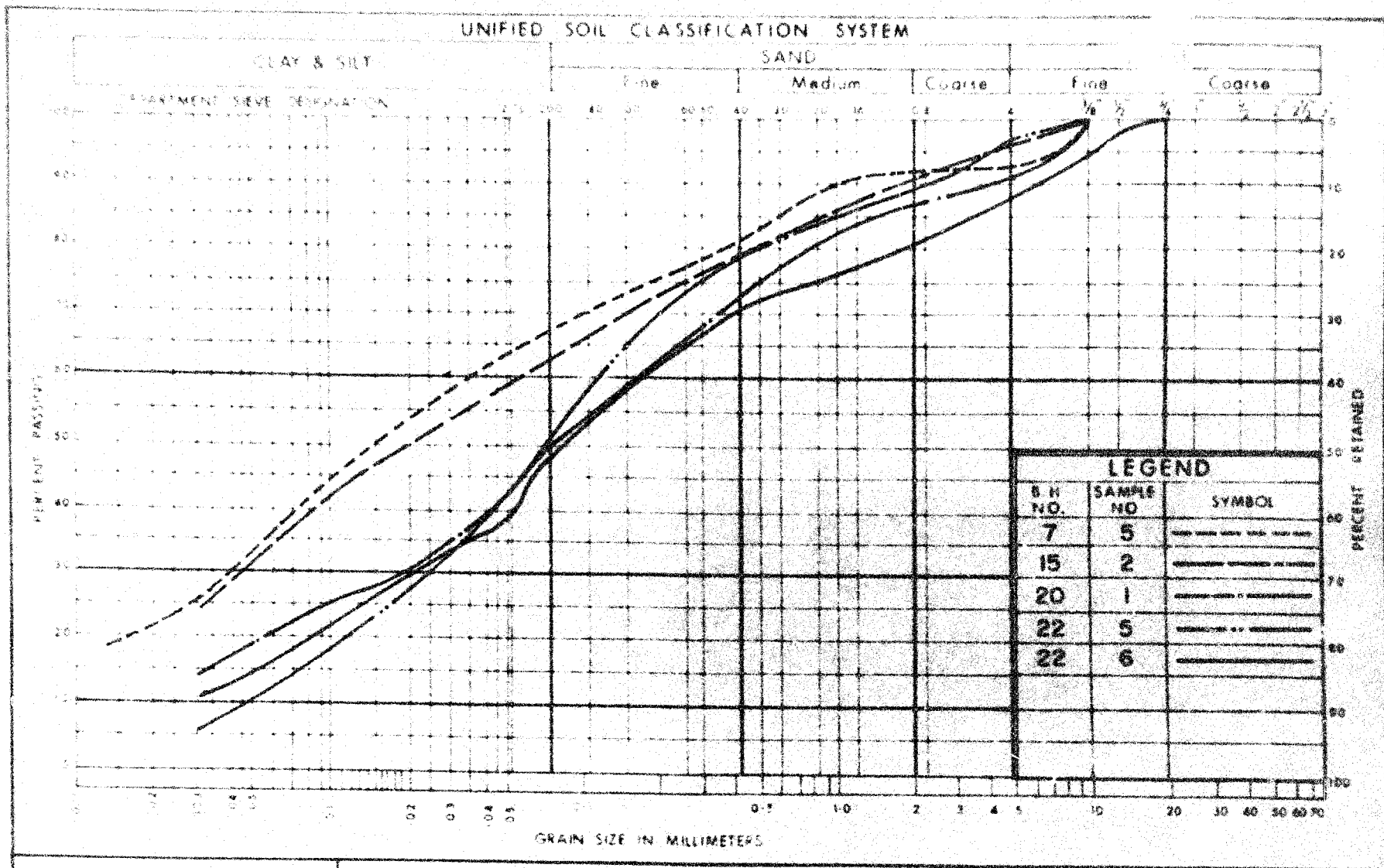
MOISTURE CONTENT %

ACTIVITY

Classification of Sample and Group Symbol:

SAND and SILT
with a trace of GRAVEL and CLAY

Enclosure No.



ONTARIO

DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

**GRAIN SIZE DISTRIBUTION
CLAYEY SILT, SAND & GRAVEL
(GLACIAL TILL)**

W.P. No.

JOB No. 65-F-104

MEMORANDUM

To: Mr. B. R. Davis,
Bridge Engineer,
Bridge Division.

Attention: Mr. S. McCombie

From: Foundation Section,
Materials & Testing Div.,
Room 107, Lab. Bldg.

Date: August 15, 1966

Our File Ref:

In Reply To:

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For
Q.E.W. and Hwy. #27 Interchange
Twp. of Etobicoke, County of York,
District #6 (Toronto)
W.J. 65-F-104 -- W.P. 275-64-1

Enclosed, please find the results of our final
foundation investigations for Structures No's 4, 14
and 15.

Please attach these to your copy(s) of
Foundation Report #65-F-104.

AGS/MdeF
Attach.

cc: Messrs. B. R. Davis (2)
H. A. Tregaskes
D. W. Farren
G. K. Hunter (2)
P. Allen
T. J. Kovich
W. S. Melinyshyn
A. Watt

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

Foundations Office
Gen. Files

MEMORANDUM

To: Mr. B. R. Davis,
Bridge Engineer,
Bridge Division.

Attention: Mr. S. McCombie

From: Foundation Section,
Materials & Testing Div.,
Room 107, Lab. Bldg.

Date: November 21, 1966

Our File Ref.

In Reply To:

Subject:

FOUNDATION INVESTIGATION REPORT
For
O.E.W. and Hwy. #27 Interchange,
Twp. of Etobicoke, County of York,
District #6 (Toronto)
W.J. 65-P-104 -- W.P. 275-64-1

Enclosed please find the results of our final
foundation investigations for Structures No's 2, 3, 8,
12, and 20.

Please attach these to your copy(s) of
Foundation Report #65-P-104.

AGS/MdeP
Attach.

cc: Messrs. B. R. Davis (2)
H. A. Treaskes
D. W. Parren
G. K. Hunter (2)
P. Allen
T. J. Kovlich
W.S. Melnyshyn
A. Hall

Foundations Office
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Altman
A.G. Sternad,
PRINCIPAL FOUNDATION ENGINEER

