

SUPPLEMENTARY
FOUNDATION INVESTIGATION REPORT
For

Q.E.W. and Hwy. #27 Interchange,
Twp. of Etobicoke, County of York,
District #6 (Toronto).
W.P. 275-64-1 and W.P. 275-64-4
W.J. 65-P-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. Barevary, Senior Foundation Engineer, under the general supervision of Mr. K. G. Selby, Supervising Foundation Engineer.

65-1-104
 Hwy. 481 & Leslie St.,
 Downsview, Ontario.

June 6, 1966

Materials and Testing Division

Dominion Soil Investigation Ltd.,
 77 Crockford Blvd.,
 Scarborough, Ontario.

Attention: Mr. K. E. King, Chief Engr.

Re: Letter of Authority - Foundation Investigation -	
W.P. 235-61-1	Bridge No. 2
-2	3
-3	4
-4	5
W.P. 277-64	6
W.P. 238-61-5	7
W.P. 34-65-1	8
-2	10
-3	12
W.P. 238-61-6	13
W.P. 238-61-7	14
W.P. 34-65	15
W.P. 278-64	16
W.P. 231-61-3	20

G.E.W. and Hwy. #27 Interchange, Dist. 6 (Toronto)

Dear Sir:

This is to authorize you to carry out a foundation investigation at the above mentioned site.

You are requested to carry out borings at locations which will be specified by us, to carry out all field and laboratory work necessary to define the soil conditions at each boring, and to furnish us with completed borelog sheets, and where necessary, summaries of laboratory tests.

Arrangements will be made to have the borehole locations staked out in the field by personnel from District #6 construction staff.

This work should be started immediately, and you are requested to submit eleven (11) copies of each borelog sheet, and

cont'd. /2 ...

Dominion Soil Investigation Ltd.,
77 Greshford Blvd.,
Scarborough, Ont.
Attn: Mr. E. H. King, Chief Engr.

- 2 -

June 6, 1966

where applicable, the same number of laboratory test result sheets.

Charges for the work will be in accordance with your Schedule of Rates effective April 1, 1966, and the invoice should be addressed to the attention of the undersigned.

We are attaching Purchase Order J 34815, covering the purchase of any new material required for this work, in order that you may use this as a basis for exemption from the Federal Tax for such purchases. The Exemption Certificate is printed thereon.

Yours very truly,

a.l

IGS/ndef
Attach.

A. Rutka,
MATERIALS & TESTING ENGINEER

cc: Messrs. S. McCombie
G. K. Hunter
J. C. Thatcher
T. J. Kovich
Mrs. I. Steinberg
A. Crowley
H. Szymanski (2) ✓
H. Konings
Foundations Office
Gen. Files (2)

DOMINION SOIL INVESTIGATION LIMITED
77 CROCKFORD BOULEVARD - SCARBOROUGH ONTARIO CANADA - TELEPHONE 751-6565

BRANCH
363 QUEENS AVENUE
LONDON, ONTARIO
TELEPHONE GE. 3-3851



FOUNDATION ENGINEERS

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

W.O.# 2391-65489

3rd November 1966.

Notes on bedrock encountered on Job No: 6-10-21

Bedrock was encountered in all eight boreholes, approximately at the elevations shown on the preliminary subsoil profiles.

The bedrock consisted of a brown to grey shale with layers of limestone and occasional clay seams. The upper surface of the shale in each borehole was weathered for approximately 2 to 4 feet. This weathered layer would be relatively easy to excavate by mechanical means.

Even below the weathered zone the shale exhibits numerous cleavage planes. Consequently it could be excavated without resorting to blasting techniques, although this would greatly expedite matters.

In a nearby excavation, it was observed that a large backhoe had penetrated about 5 feet into the shale. By questioning the work crew concerned it was found that the excavation had taken several days.

In summation: It is considered that mechanical excavation of up to 5 feet of bedrock is practical. The length of time taken for excavation can, however, not be estimated with any degree of accuracy.



MEMORANDUM

To: Mr. A. Stermac,
Principal Foundation Engineer.

FROM: Mr. A. Rutka,

DATE: August 23, 1966.

OUR FILE REF.

IN REPLY TO:

SUBJECT: Elevation of Bedrock, Vicinity of Q.E.W. & Hwy. 27

With reference to your memorandum of August 19, 1966, to Mr. Kovich, I would comment as follows:

1. The definition of rock excavation in Form 200, Section 207-01, is as follows:

"material excavated from solid masses of igneous, sedimentary or metamorphic rock which, prior to removal, was integral with the parent mass".

As you can see this definition incorporates weathered rock.

2. I do not think we need a new definition for rock. The problem seems to be one of identifying and classifying the boundaries of over burden, weathered rock and solid rock, during the soils investigation. This is the function of Materials and Testing, and it can be done by having knowledge of the geology of the area, and also of past experiences during construction.
3. It has been our practice to indicate the physical condition of the rock with respect to weathering, and we have left the decision as to the type of excavation equipment necessary, to the contractor. I think this procedure should still continue. A lot of literature is available on the rippability of bedrock, and it is possible to rip even sound sedimentary rock, depending upon the size of the ripper, and the size of the tractor. Therefore, it would not be possible for us to decide on the type of excavation equipment required in most instances.

A. Rutka

A. Rutka,
Materials & Testing Engineer.

AR:pa
c.c. T. Kovich,
G. Wrong.

MEMORANDUM

23-68-10
W.P. 275-64-1

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

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

Attention: Mr. S. McCombie

DATE: February 21, 1966

OUR FILE REF.

IN REPLY TO **FEB 24 1966**

SUBJECT:

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

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

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

Should additional information be required, please feel free to contact our Office.

AGS/MdeF
Attach.

cc: Messrs. B. R. Davis (2)
H. A. Tregaskes
D. W. Farren
G. K. Hunter (2)
J. C. Thatcher
T. J. Kovich
A. Watt
De Leuw, Cather & Co. Canada Ltd. (2)

A. G. Stermac
A. G. Stermac,
PRINCIPAL FOUNDATION ENGINEER

Foundations Office
Gen. Files

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

1. INTRODUCTION:

A request for a foundation investigation at the site of the proposed new Q.E.W. and Hwy. #27 interchange, was received from the Bridge Location Section, in a memo dated August 10, 1965. Due to the fact that about twenty new structures would be involved in this project and also, that the final geometrics were not then available, it was decided that the field investigation would be of a preliminary nature only, with one or two sampled boreholes being drilled for each structure or group of structures.

A preliminary foundation investigation was subsequently carried out by this Section to determine the subsoil conditions existing at the site of the proposed interchange. This report contains the results of the investigation together with recommendations pertaining to the foundations of the various proposed structures.

When the final geometrics for each structure are decided upon, it may be necessary to carry out more borings in the field. Recommendations given in this report are, therefore, to be regarded as conditional only, and as such, are subject to revision at a later date when and if new field information becomes available.

2. DESCRIPTION OF SITE:

The site is located in the general area of the intersection of Hwy. #27 and the Q.E.W. in the Twp. of Etobicoke, Metropolitan Toronto. The area covered by the investigation is bounded on the south by Evans Rd., on the north by the C.P.R., and extends easterly

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

along the Q.E.W. about 1/2 mile, and westerly, about one mile. The surrounding district is heavily built up both of light industry and residential buildings. The topography of this area may be described as flat to gently undulating.

Physiographically, the area is situated in the low-lying part of the region referred to as the Iroquois Plain which was formed during the late Pleistocene period by the body of water since designated Lake Iroquois. Soils in this part of the region are mainly heavy textured shale and limestone tills.

3. FIELD WORK:

A total of 22 sampled boreholes and 21 dynamic cone penetration tests was carried out during the course of the field work. Boring was achieved by means of conventional diamond drilling equipment adapted for soil sampling purposes. Samples were recovered at various depths by means of split-spoon samplers which were driven into the soil by means of a 140-lb. hammer imparting an energy of 350 foot lbs. per blow. Samples were visually examined and classified in the field before being transported to the laboratory. Ground water observations were carried out both during and after boring operations.

The boreholes were located and surveyed in the field by personnel from the construction staff of District #6. Drawing No. 65-F-104A shows the locations and elevations of the boreholes and Drawing No. 65-F-104B shows various estimated stratigraphical profiles through the area investigated.

4. LABORATORY TESTING:

A careful visual inspection of all samples was carried out in the laboratory. Tests were then carried out on a number of selected samples, primarily for classification purposes. These tests consisted of moisture content determinations and particle size analyses. The results are summarized on the borelog sheets contained in the Appendix of the report.

cont'd. /3

5. SOIL TYPES AND SOIL CONDITIONS:

5.1) General:

Subsoil over the site area consists generally of deposits of silty sand followed by clayey silt, sand and gravel (glacial till), followed by shale bedrock. The depth to bedrock ranges from about 4 feet (el. 365.0) at the south end of the project to about 30 feet (el. 350.0) at the north end. The boundaries between the different deposits are shown on the borelog sheets contained in the Appendix. The estimated stratigraphical profiles shown on Drawing No. 65-F-104B are based upon this information. A description of the various soil types follows:

5.2) Fill Material:

The fill material contained in the highway embankments in this area consists generally of borrow material obtained from the underlying glacial till and silty sand deposits. The properties of the fill material are in the main, similar to those of the underlying deposits except as regards relative density or consistency. Borings which intersected the fill showed the material to be in a loose to dense state in the case of the granular soils, and stiff to hard in the case of the cohesive soils.

5.3) Silty Sand:

This material covers most of the area and has an average depth of about 5 feet. Grain size distribution curves indicate the following average composition: gravel 7%, sand 63%, silt 26%, clay 4%. The average moisture content is in the order of 10%. The relative density varies from loose to very dense, but is generally in the compact range.

5.4) Clayey Silt with Sand and Gravel:

This is the predominant subsoil deposit at the site. The material consists of a heterogeneous mixture of clayey silt, sand and gravel, and has a generally hard consistency. Mechanic analyses indicate the following average grain size composition: gravel 23%,

5. SOIL TYPES AND SOIL CONDITIONS: (cont'd.) ...

5.4) Clayey Silt with Sand and Gravel: (cont'd.) ...

sand 25%, silt 36%, clay 16%. The average liquid and plastic limits are approximately 29% and 17%, respectively. The average moisture content is in the order of 11%.

5.5) Bedrock:

Bedrock was encountered in all borings and is of the Dundas shale of Ordovician age. This rock is a thin to medium bedded, grey-green, soft platy shale containing numerous thin, hard limey beds that occur in the top section of the formation.

6. GROUND WATER CONDITIONS:

Over most of the site area, ground water in the boreholes ranged from about three to five feet below ground level. No artesian conditions were observed. The various levels established in the boreholes are shown on the borelog sheets and on Drawing No. 65-F-104B.

7. DISCUSSION AND RECOMMENDATIONS:

It is proposed to widen the Q.E.W. and Hwy. #27 at this location. This will involve the construction of a completely new interchange and about twenty new bridge structures. Generally speaking, subsoil conditions over the whole site area are favourable for spread footing type foundations, but this depends to a large extent on the finished grade levels. In some cases it may be necessary to resort to piles where footings can be located more economically within fill material.

The individual structures are identified by number on Drawing No. 65-F-104A, which shows a plan of the new interchange. Drawing No. 65-F-104B shows the estimated stratigraphical profiles at the sites of individual structures or groups of structures. The various structures are discussed individually or collectively where convenient, below:

cont'd. /5

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

Structure No. 1 -

Spread footings may be founded at or below el. 358.0 assuming a design load of 3 t.s.f. Perched abutments can be founded on steel H-piles driven to bedrock.

Structure No. 4 -

Spread footings may be founded at or below el. 360.0 assuming a design load of 3.5 t.s.f. Perched abutments can be founded on steel H-piles driven to bedrock.

Structures No's 2, 3, & 5 -

Spread footings may be founded at or below el. 363.0 assuming a design load of 3 t.s.f. Perched abutments can be founded on steel H-piles driven to bedrock.

Structure No. 6 -

Spread footings may be founded at or below el. 353.0 assuming a design load of 3 t.s.f. Perched footings can be founded on steel H-piles driven to bedrock.

Structures No's 7, 8, 10, 11, & 12 -

Spread footings may be founded directly on bedrock assuming a design load of up to 10 t.s.f. The bedrock surface in this area is at approximate elevation 365.0. The degree of weathering cannot be determined precisely until such time as the surface of the rock is uncovered; provision should therefore be made for additional excavation below el. 365.0 of any badly weathered rock. Perched footings can be founded on steel H-piles driven to bedrock.

Structures No's 13 & 14 -

Spread footings may be founded within the glacial till stratum at or below el. 368.0. A safe pressure of 4.0 t.s.f may be assumed for design purposes. Perched footings can be founded on steel H-piles driven to bedrock.

cont'd. /6

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

Structure No. 15 -

Spread footings may be founded at or below el. 375.0. A safe pressure of 3.0 t.s.f. may be assumed for design purposes. Perched footings can be founded on steel H-piles driven to bedrock or to practical refusal in the dense till stratum at about el. 360.0. Design loads for the piles should be the maximum allowable for the section used.

Structure No. 16 -

Structure footings may be founded either on spread footings at or below el. 382.0 assuming a design load of 3.0 t.s.f., or on steel H-piles driven to approximate elevation 370.0. In the case of the piles, the design loads should be the maximum allowable for the section used.

Structures No's 17, 18, & 19 -

These structures may be founded on spread footings at or below el. 360.0 assuming a safe pressure of 2.5 t.s.f., or on steel H-piles driven to bedrock. Design loads for the piles should be the maximum allowable for the pile section used.

Structure No. 20 -

Spread footings may be founded at or below el. 356.0 assuming a design pressure of 4.0 t.s.f. Perched footings within fill material can be supported on steel H-piles driven to bedrock. Design loads for the piles should be the maximum allowable for the section used.

Structure No. 21 -

This structure is the crossing of Q.E.W. over Etobicoke Creek. No borings were carried out at the site since shale bedrock outcrops over the entire area. The structure can be founded within the bedrock, allowing sufficient cover for frost protection and hydrological requirements. Design pressures may be as high as 10 t.s.f. if footings are placed on sound rock.

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

Piled Foundations -

Although spread footing type foundations are feasible at all structure sites on this project, consideration should be given to the use of concrete caissons in order to utilize the high bearing capacity of the bedrock. In the event that serious consideration is given to this type of foundation, some drilling tests in the field are recommended in order to obtain information on the behaviour of ground water at the rock surface and in the weathered zone. This information would be particularly important in the case of 'belled-out' caissons. For estimating purposes it can be assumed that safe pressures of about 20 t.s.f. of base area can be achieved by caissons founded on sound bedrock.

8. SUMMARY:

A foundation investigation at the site of the proposed Q.E.W. and Hwy. #27 is reported. About twenty bridge structures will be constructed at this location. The foundation investigation is to be regarded as preliminary only, and further investigation may be necessary when the exact locations and final geometrics of the various structures are known. Recommendations contained in this report are conditional only, and are subject to change when and if new field information becomes available.

Subsoil at the site generally consists of sandy silt or silty sand overlying a very dense or hard deposit of clayey silt, sand and gravel (glacial till). The glacial till deposit is underlain by shale bedrock. Depth to bedrock ranges from about 4 feet to about 30 feet below existing original ground level.

Generally speaking, spread footing type foundations are feasible for all structures: recommended design pressures for spread footings in overburden range from 2.5 to 4.0 t.s.f. For spread footings on rock, a design pressure of 10 t.s.f. is recommended.

cont'd. /8

8. SUMMARY: (cont'd.) ...

For footings located in fill material, piled foundations are recommended. For steel H-piles driven to refusal on bedrock or to practical refusal in the glacial till stratum, the maximum allowable design loads for the particular pile section adopted should be used.

Consideration should be given to the use of concrete caissons as an alternative to other types of foundation. Concrete caissons founded on bedrock should achieve a safe capacity of 20 tons per square foot of base area. If it is desired to use concrete caissons, field drilling tests should be carried out.

9. MISCELLANEOUS:

The field work for this project was carried out during the period September 28 - November 17, 1965. Equipment used was owned and operated by Master Soil Investigation Ltd. Supervision of the field work was carried out by Mr. P. McGlone, Project Foundation Engineer. This report was written by Mr. K. G. Selby, Senior Foundation Engineer.

February 1966

APPENDIX I

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 65-F-104

LOCATION 177,399N 209,331E

W.P. 275-64-1

BORING DATE Oct. 19, 1965.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX & BX Casing.

FOUNDATION SECTION

ORIGINATED BY P. Mc

COMPILED BY H.S.

CHECKED BY AK

RECORD OF BOREHOLE NO. 2

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 65-F-104

LOCATION 178,359 N 209,622 E

ORIGINATED BY P. Mc

W. P. 275-64-1

BORING DATE Oct. 20, 1965.

COMPILED BY _____ H.S.

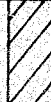
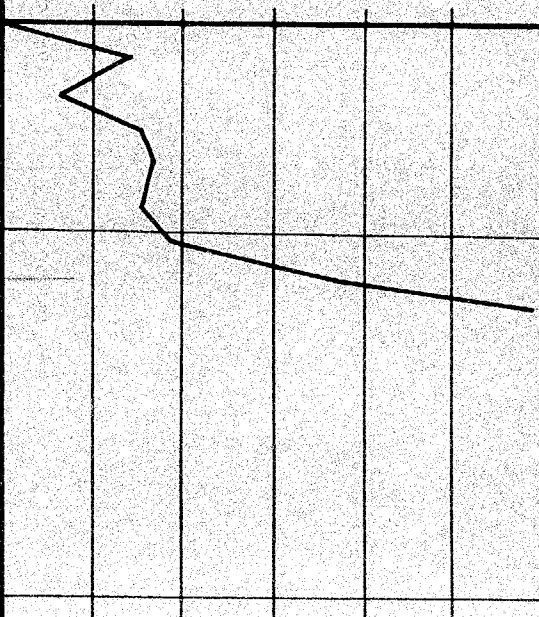
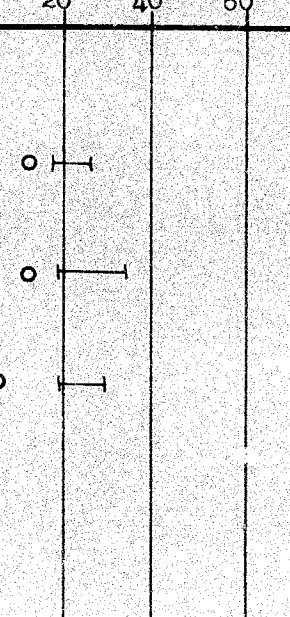



DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY

RECORD OF BOREHOLE NO. 3

FOUNDATION SECTION

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT ——— WL		BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	SHEAR STRENGTH P.S.F.	PLASTIC LIMIT ——— WP	WATER CONTENT ——— W		
365.6	Groundlevel											
0.0	(Fill) Clayey silt with some sand, fragments of shale & occasional gravel.		1	SS	39	360						W.L. 2.6' Gr 8% Sa 33% Si & Cl 59%
358.6	(Glacial Till)		2	SS	86							
353.1	Dense to v. dense.		3	SS	81 for 9"							
12.5	Shaley limestone with intermittent limestone.	4	RC	97%								
349.2	End of borehole.	5	RC	81%	350							

FOUNDATION SECTION

CHECKED BY OK

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 65-F-104

LOCATION 177,995 N 209,509 E

ORIGINATED BY P. Mc

W. P. 275-64-1

BORING DATE Oct. 25, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 65-F-104

W.P. 275-64-1

DATUM G.S.C.

LOCATION 177,020 N 208.060 E

BORING DATE Oct. 18, 1965.

BOREHOLE TYPE Washboring - NX & BX Casing.

RECORD OF BOREHOLE NO. 6

FOUNDATION SECTION

ORIGINATED BY P. Mc

COMPILED BY H.S.

CHECKED BY AK

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 7

FOUNDATION SECTION

JOB 65-F-104

LOCATION 176.838 N 207.716 E

ORIGINATED BY P. Mc

W.P. 275-64-1

BORING DATE Oct. 15, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY *HL*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE				LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	BLOWS / FOOT	BLOWS / FOOT	BLOWS / FOOT	Wp	W	WL		
364.3	Groundlevel														
0.0	Sand & Gravel (Till)														
	Fine sand to sandy silt.		1	SS	40	360									
	Dense		2	SS	50 for 3"										
358.3															
6.0	Clayey silt with some sand, gravel and fragments of shale.		3	SS	75										
	(Glacial Till)		4	SS	53 for 6"										
	V. dense.					350									
			5	SS	40 for 2"										
344.8															
19.5	Shaley limestone with intermittent limestone.		6	RC	90%										
			7	RC	95%	340									
337.3															
27.0	End of borehole.														
						330									

Gr7%Sa26%
Si45%Cl 22%

CWL
5.6'

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 8

FOUNDATION SECTION

JOB 65-F-104

LOCATION 178,658 N 209,540 E

ORIGINATED BY F. Mc

W.P. 275-64-1

BORING DATE Oct. 1, 1965

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - BX Casing.

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — w_L			BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT					PLASTIC LIMIT — w_p				
							25	50	75	100	125	WATER CONTENT — w				
							SHEAR STRENGTH P.S.F.					w_p — w — w_L				
												WATER CONTENT % 20 40 60				
369.0	Groundlevel															
0.0	Silty sand. Loose.		1	SS	5										Blocked dry 4.0'	
5.0	Clayey silt with some sand & gravel. (Glacial Till) Very dense.		2	SS	88 for 9"											
			3	SS	50 for 3"	360										
356.0			4	RC	59%											
13.0	Shaley limestone with intermittent limestone.		5	RC	94%	350										
349.0																
20.0	End of borehole.															

Refusal at 5.4'

Blocked dry
4.0'

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 9

FOUNDATION SECTION

JOB 65-F-104 LOCATION 178,469 N 209,183 E ORIGINATED BY P.Mc
W.P. 275-64-1 BORING DATE Oct. 22, 1965. COMPILED BY H.S.
DATUM G.S.C. BOREHOLE TYPE Washboring - NX Casing. CHECKED BY HR

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		25	50	75	100	125	WP	W	WL		
367.6	Groundlevel															
0.5	Topsoil															
	Silty sand.															
363.6	Compact.		1A	SS	17											
4.0	Clayey silt with some sand & gravel. (Glacial Till) Very dense.		1B													
			2	SS	55 for 2"											
					360											
			3	RC	50%											
354.1																
13.5	Shaley limestone with limestone.		4	RC	92%											
					350											
348.6																
19.0	End of borehole.															

GWL 1.3'
Gr 3% Sa 17%
Si 58% Cl 22%

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 10

FOUNDATION SECTION

JOB 65-F-104

LOCATION 178,867 N 209,520 E

ORIGINATED BY P. Mc

W.P. 275-64-1

BORING DATE Oct. 4, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - BX Casing.

CHECKED BY HL

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		25	50	75	100	125	WP	W	WL		
368.9	Groundlevel															
367.9	Topsoil															
1.0	Silty Sand															
363.9	Dense		1	SS	48											
5.0	Clayey silt with sand and gravel (Glacial Till) Very dense.		2	SS	75											
358.9																
10.0	Shaley limestone with intermittent limestone.		3	RC	76%											
			4	RC	89%											
352.7																
16.2	End of borehole.															

Blocked dry
1.3'

Gr16%Sa65%
Si&Cl 19%

Refusal at 8.1'

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 11

FOUNDATION SECTION

JOB 65-F-104

LOCATION 178,622 N 208,935E

ORIGINATED BY P.Mc

W.P. 275-64-1

BORING DATE Oct. 22, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY *all*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT					WATER CONTENT %				
							25	50	75	100	125	WP	W	WL		
371.7	Groundlevel						SHEAR STRENGTH P.S.F.									
0.4	Topsoil					370										
	Sandy silt with some clay & gravel (Fill)		1	SS	16											
366.7	Compact.															
5.0	Sand		2	SS	23											
363.7	Compact															
8.0	Clayey silt with some sand & gravel (Glacial Till)		3	RC	-											
359.7	V. dense.					360										
12.0	Shaley limestone		4	RC	70%											
356.2																
15.5	End of borehole.					350										

Blocked with wet sand 5.6

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 65-F-104

LOCATION 179,225 N 208,969 E

ORIGINATED BY P.Mc

W. P. 275-64-1

BORING DATE Sept. 28, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY JK

RECORD OF BOREHOLE NO. 13

FOUNDATION SECTION

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 25 50 75 100 125 SHEAR STRENGTH P.S.F.	LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W WP — W — WL WATER CONTENT % 20 40 60	BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT					
368.6	Groundlevel									
	Topsoil									
0.2	Sand									
364.8	Loose to compact.									
3.8	Weathered shale.		1	SS	20					
362.6					for 3"					
6.0	Shaley limestone.			RC		360				
354.0										
14.6	End of borehole.					350				

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 14

FOUNDATION SECTION

JOB 65-F-104LOCATION 179,305 N 209,344 EORIGINATED BY P. McW.P. 275-64-1BORING DATE Sept. 29, 1965.COMPILED BY H.S.DATUM G.S.C.BOREHOLE TYPE Washboring - NX Casing.CHECKED BY SL

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		25	50	75	100	125	WATER CONTENT %				
							SHEAR STRENGTH P.S.F.					wp	w	wL		
369.8	Groundlevel															
0.3	Topsoil															
	Sand															
364.8	Loose to dense.															
5.0	Weathered shale.															
363.3																
6.5	Shaley limestone with intermittent limestone		1	RC	77%	360										
			2	RC	87%											
			3	RC	80%											
			4	RC	93%											
352.2																
17.6	End of borehole.					350										

Refusal at 5.4'

G.W.L.

2.7'

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 15

FOUNDATION SECTION

JOB 65-F-104

LOCATION 178,926 N 210,305 E

ORIGINATED BY P. Mc

W.P. 275-64-1

BORING DATE Oct. 1, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - BX Casing.

CHECKED BY

H.S.

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		25	50	75	100	125	WP	W	WL		
368.2	Groundlevel															
0.4	Topsoil															
	Silty Sand															
	Compact		1	SS	27											
362.2																
6.0			2	SS	41											
	Clayey silt with sand & gravel. (Glacial Till) Dense to v. dense (with fragment of shale below elev. 355.4)		3	SS	87	360										
			4	SS	50											
			5	RC	100%											
352.2																
16.0	Shaley limestone		6	RC	96%	350										
347.7																
20.5	End of borehole.															

GWL
7.1'

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 16

FOUNDATION SECTION

JOB 65-F-104 LOCATION 178,674 N 210,466 E ORIGINATED BY P.Mc
W.P. 275-64-1 BORING DATE Oct. 20, 1965. COMPILED BY H.S.
DATUM G.S.C. BOREHOLE TYPE Washboring - NX Casing. CHECKED BY LL

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — WL PLASTIC LIMIT — WP			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT 25 50 75 100 125					WATER CONTENT — W WP — W — WL WATER CONTENT % 20 40 60				
367.5	Ground level															
0.6																
362.5	Silty Sand		1	SS	6											
5.0	Loose to v. dense.		2	SS	57	360										
358.0			3A													
9.5	Clayey silt with some sand & gravel (Glacial Till) Very dense		3B	SS	139											
			4	SS	93											
			5	RC	58%											
			6	RC	89%											
350.0						350										
17.5	Shaley limestone.		7	RC	64%											
			8	RC	93%											
343.0																
24.5	End of borehole.					340										

GWL
4.4'

Gr4%Sa79%
Sil4%Cl 3%

DEPARTMENT OF HIGHWAYS - ONTARIO

RECORD OF BOREHOLE NO. 17

FOUNDATION SECTION

MATERIALS & TESTING DIVISION

JOB 65-F-104

LOCATION 179,502 N 208,862 E

ORIGINATED BY P. Mc

W.P. 275-64-1

BORING DATE Sept. 30, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - BX Casing.

CHECKED BY *HL*

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT	ELEV. SCALE	BLOWS / FOOT	25	50	75	100	125	SHEAR STRENGTH P.S.F.		
382.5	Groundlevel														
0	Clayey silt with sand some gravel & organics @ El 371.5 (Fill)		1A	SS	5										
	Loose		2	SS	6										
371.5			3	SS	11										
11.0	Silty sand														
369.3	Compact		4	SS	20										
13.2	Clayey silt with sand & fragments of shale & limestone. (Glacial Till)		5	S											
364.5	V. dense.		5	RC	65%										
18.0	Shaley limestone with intermittent limestone.		6	RC	100%										
357.5															
357.5															
25.0	End of borehole.														

▼ G.W.L.
13.5'

DEPARTMENT OF HIGHWAYS - ONTARIO

RECORD OF BOREHOLE NO. 19

FOUNDATION SECTION

MATERIALS & TESTING DIVISION

JOB 65-F-104

LOCATION 180,545 N 208,214 E

ORIGINATED BY P. Mc

W.P. 275-64-1

BORING DATE Oct. 12, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS	
ELEV. DEPTH	DESCRIPTION	STRAT. PLT	NUMBER	TYPE	BLOWS / FOOT	ELEV. SCALE	BLOWS / FOOT	25	50	75	100	125	Wp			W
381.6	Groundlevel															
379.1	Topsoil	X				380										
2.5			1A	SS	11											
			1B													
			2	SS	85											
			3	SS	82											
			4	SS	70	370										
					for 5"											
			5	SS	91											
					for 5 1/2"											
			6	SS	80											
					for 6"											
360.6			7	SS	104	360										
21.0					for 8"											
			8	SS	104											
					for 2"											
350.6			9	RC		350										
31.0																
346.6						340										
35.0																

Groundlevel

Topsoil

Silt to fine sand with occasional pockets of clayey silt and gravel.
(Glacial Till)

Very dense.

Clayey silt with sand & gravel and fragments of shale.
(Glacial Till)

Very dense

Shaley limestone.

End of borehole.

WATER CONTENT %

20 40 60

Wp W WL

BULK DENSITY
P.C.F.

REMARKS

GWL Below 4.0'

DEPARTMENT OF HIGHWAYS - ONTARIO

RECORD OF BOREHOLE NO. 20

FOUNDATION SECTION

MATERIALS & TESTING DIVISION

JOB 65-P-104 LOCATION 180,808 N 208,422 E ORIGINATED BY P.Mc
W.P. 275-64-1 BORING DATE Oct. 5, 1965. COMPILED BY H.S.
DATUM G.S.C. BOREHOLE TYPE Washboring - BX Casing. CHECKED BY HL

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	25	50	75	100	125	WP	W		
382.4	Groundlevel															
377.9	Sand, silt, clay and gravel. (Fill) Compact.		1	SS	27	380							○			
4.5			2	SS	64 for 9"								○			
			3	RC												
			4	RC												
	Clayey silt with some sand & gravel and fragments of shale. (Glacial till) Very dense.					370										
			5	SS	140 for 6"								○			
			6	RC												
			7	SS	50 for 3"								○			
			8	SS	50 for 1"								○			
358.4						360										
24.0	Shaley limestone.		9	RC	97%											
353.8																
28.6	End of borehole.					350										

GWL
4.2'

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 21

FOUNDATION SECTION

JOB 65-F-104

LOCATION 181,875 N - 208,101 E

ORIGINATED BY P. Mc

W. P. 275-64-1

BORING DATE Oct. 7, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY LR

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE			LIQUID LIMIT — WL PLASTIC LIMIT — wp WATER CONTENT — w			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT	ELEV. SCALE	BLOWS / FOOT 25 50 75 100 125		SHEAR STRENGTH P.S.F.		WATER CONTENT % 20 40 60		
393.4	Groundlevel												
	Sand & gravel. Loose to dense. (Fill)												
	Organics		1A	SS	40	390							
			1B										
386.6	Organics		2A										
6.8			2B	SS	16								
	Clayey silt with some sand and traces of gravel.		3	SS	62								
	Dense to very dense. (Glacial till)		4	SS	75	380							
			5	SS	42								
			6	SS	74 for 10"								
371.4	Layers of weathered shale and silty clay.		Drill			370							
22.0			Drill										
366.4			Drill		5%								
27.0	Shaley limestone with intermittent limestone.		Drill		63%								
361.4			Drill		100%								
32.0	End of borehole.					360							

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 22

FOUNDATION SECTION

JOB 65-F-104

LOCATION 181,788 N 207,854 E

ORIGINATED BY P.Mc

W.P. 275-64-1

BORING DATE Oct. 13, 1965.

COMPILED BY H.S.

DATUM G.S.C.

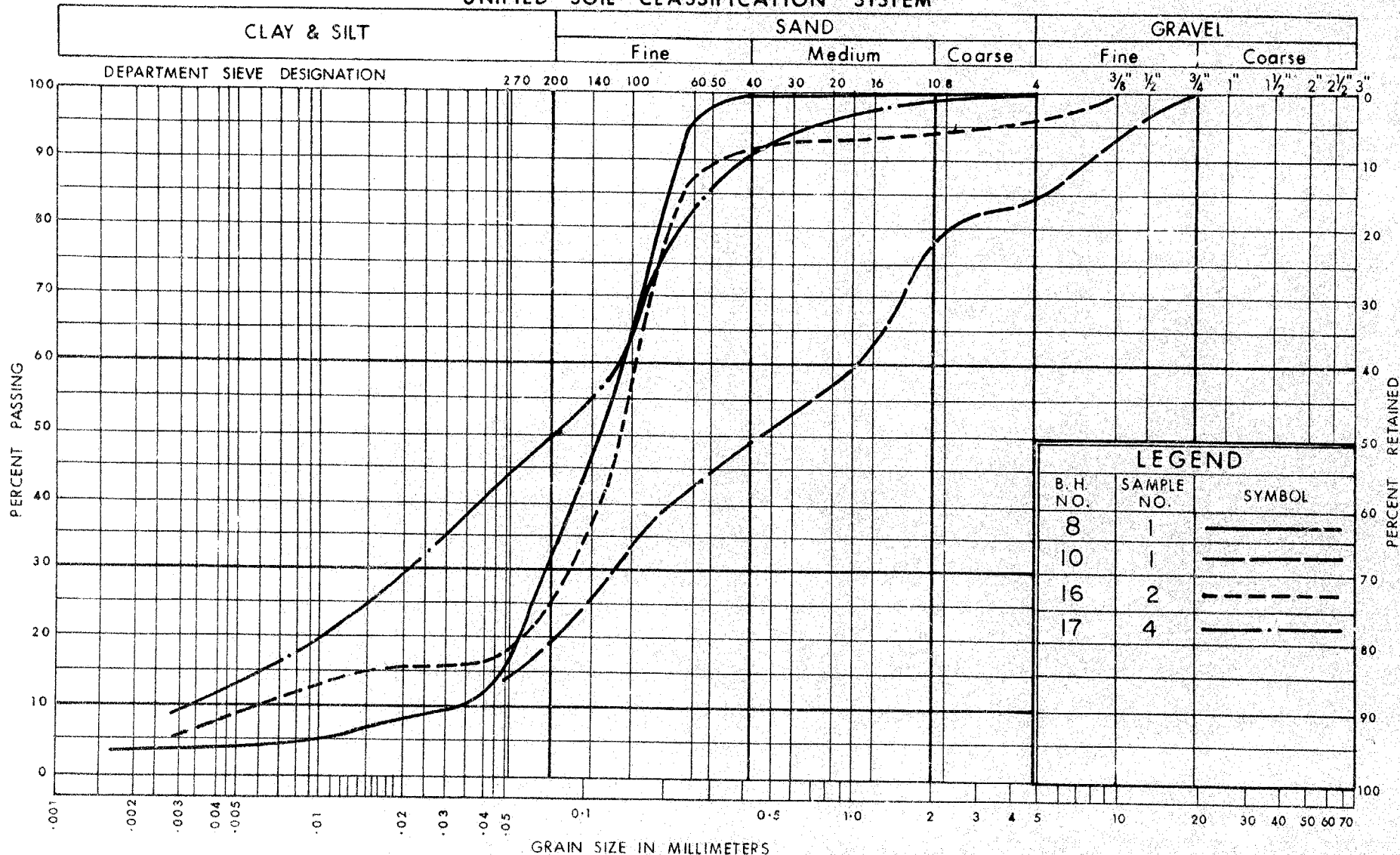
BOREHOLE TYPE Washboring - NX & EX Casing.

CHECKED BY *HL*

SOIL PROFILE			SAMPLES			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	ELEV. SCALE	SHEAR STRENGTH P.S.F.					WATER CONTENT %				
							25	50	75	100	125	wp	w			wL
390.1	Groundlevel															
389.2	Topsoil															
0.9	Clayey silt with some sand & gravel & organics. Compact.															
186.8	(Fill)		1	SS	14											
3.3	Sand with organics. Compact.															
383.7			2	SS	44											
5.5			3	SS	57	380										
6.4			4	SS	41											
	Clayey silt.		5	SS	73 for 6"											
	Sand and gravel.															
	V. dense.		6	SS	130 for 6"	370										
	(Glacial Till)															
	Contains shale boulders below 20.0'		7	SS	93 for 3"											
361.1																
29.0	Shaley limestone with intermittent limestone.					360										
355.1																
35.0	End of borehole.					350										

GWL
6.3'Gr 3% S 45%
Si 50% Cl 2

UNIFIED SOIL CLASSIFICATION SYSTEM



ONTARIO

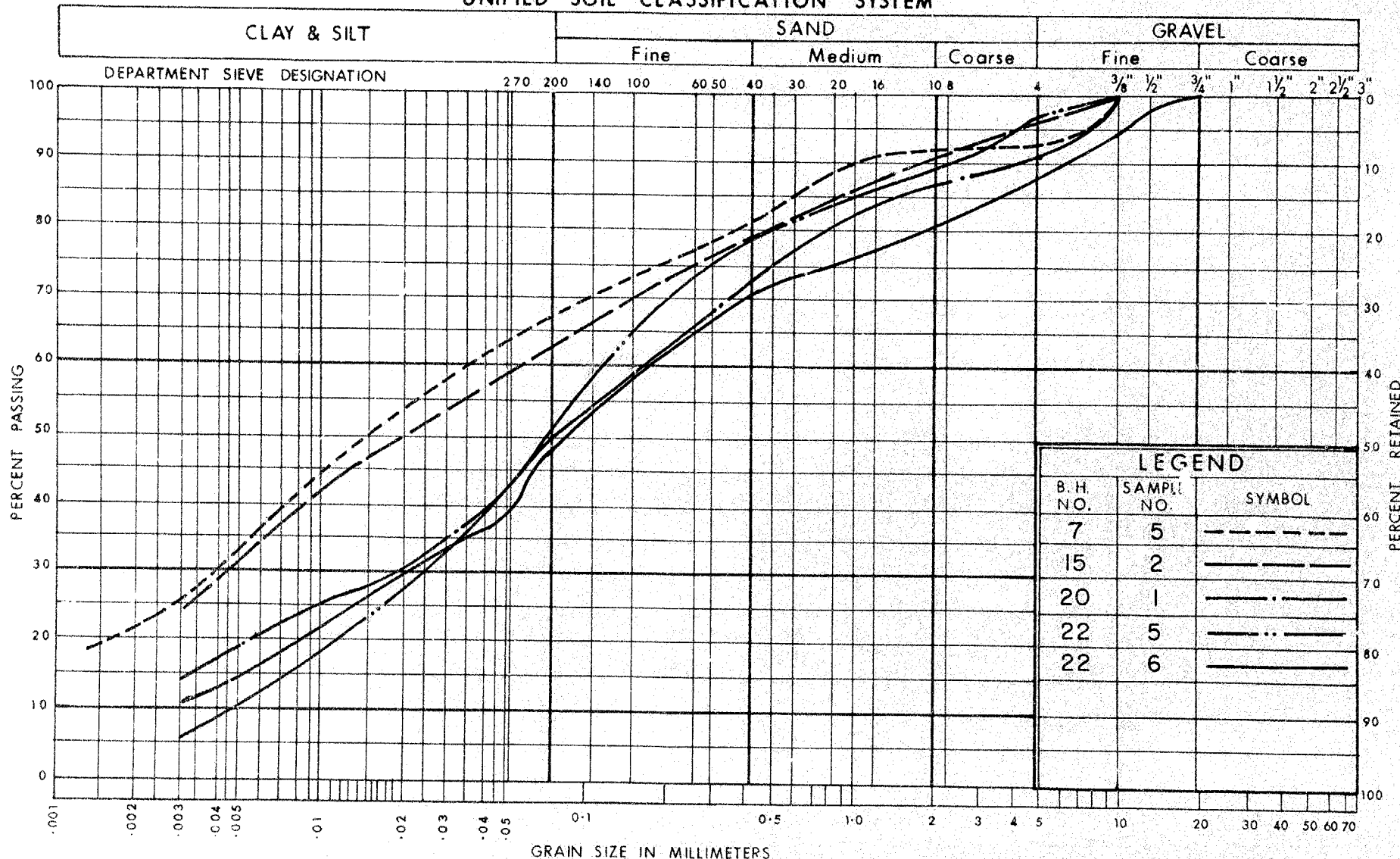
DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

GRAIN SIZE DISTRIBUTION
SILTY SAND to SANDY SILT

W.P. No.

JOB No. 65-F-104

UNIFIED SOIL CLASSIFICATION SYSTEM



ONTARIO

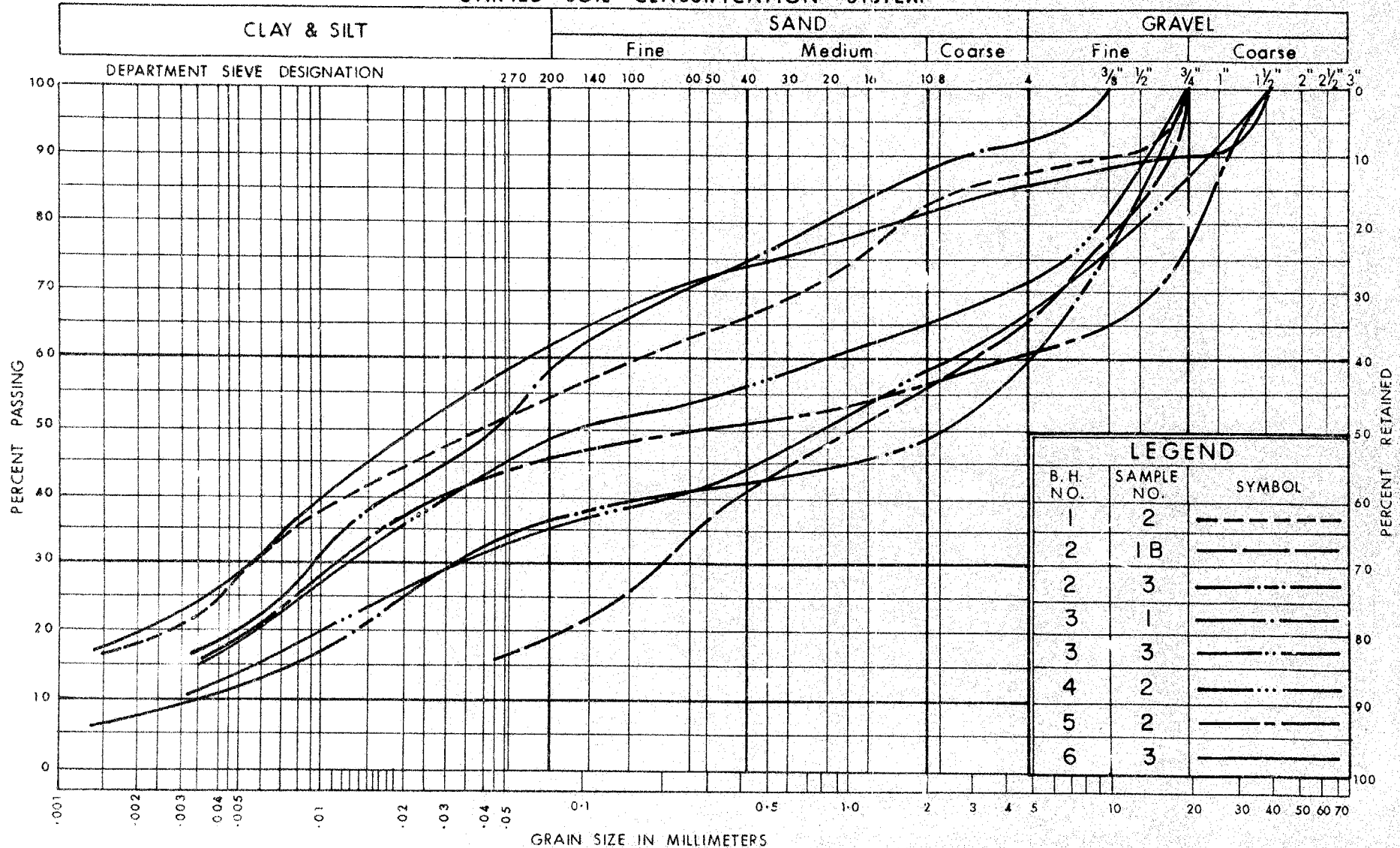
DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

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

W.P. No.

JOB No. 65-F-104

UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

ONTARIO

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

W.P. No.

JOB No. 65-F-104

MEMORANDUM

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

FROM: Bridge Division,
Downsview, Ontario.

DATE: August 10, 1965.

OUR FILE REF.

IN REPLY TO

SUBJECT: Q.E.W. and Highway 27 Interchange,
District 6 - W.P. 275-64-1.

This confirms our conversation with you on August 6.


Enclosed please find a copy of the Functional Planning Report of above mentioned interchange as promised.

There are 20 bridge structures as shown on the key plan (page 43 and 44 of accompanying report).

For your convenience let me point out that pages 20 to 41 inclusive cover only abandoned schemes. The interchange is shown on pages 75 and 76 and 93 and 94. It is superimposed over the existing conditions. Since no better plans are available at this time, we hope that this will be sufficient information for you to conduct a foundation investigation.

According to the latest schedule the foundation report should be available on October 13, 1965.

KBJ/im
cc. G. K. Hunter
R. Fitzgibbon


W. B. Jorns,
for J. B. Curtis,
Regional Bridge Location Engineer.

Dundas

Blair

Blair Burnhatterpe Rd.

Rathburn Rd.

275-64-1

HWY 27 QEW TO C.P.R.

W.P. 275-64-1

W.J. 65-F-104

Mr. D. Jarvis,
Engr. Designer,
Regional Road Design Office,
Central Bldg.

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

January 20, 1966

Soil Conditions - Hwy. #27 and The Queensway,
W.P. 275-64-01 -- W.J. 65-F-104

As requested, we have prepared a summary of soil conditions at a number of locations on Hwy. #27, in the vicinity of the Queensway and North Queen St. The information has been obtained from borings recently carried out for Project #65-F-104.

<u>B.H.</u>	<u>Ground Elev.</u>	<u>-- Location --</u>	<u>-- Subsoil Conditions --</u>
12	369.7	179, 146 N. 208, 716 E.	0'- 5.3' Sand - Loose to Dense. 5.3'- 9.0' Weathered Shale. 9.0'-14.0' Shaley Limestone. Ground Water Level -
13	368.7	179, 225 N. 208, 969 E.	0'- 3.8' Sand - Loose to Compact. 3.8'- 6.0' Weathered Shale. 6.0'-14.6' Shaley Limestone. Ground Water Level -
14	369.8	179, 305 N. 209, 344 E.	0'- 5.0' Sand - Loose to Dense. 5.0'- 6.5' Weathered Shale. 6.5'-17.6' Shaley Limestone. Ground Water Level 2.7'
17	382.5	179, 502 N. 208, 862 E.	0'-11.0' Clayey Silt, Sand, Gravel & Organics - Loose. 11.0'-13.2' Silty Sand - Compact. 13.2'-18.0' Clayey Silt, Sand & Gravel - Very Dense. 18.0'-25.0' Shaley Limestone. Ground Water Level 13.5'

cont'd. /2

Mr. D. Jarvis,
Engr. Designer,
Reg. Ed. Design Office
Central Bldg.

- 2 -

January 20, 1966

<u>B.H.</u>	<u>Elev.</u>	<u>-- Location --</u>	<u>-- Subsoil Conditions --</u>
18	375.4	179, 809 N. 208, 521 E.	0'-6.3' Silty Sand - Compact. 6.3'-14.0' Clayey Silt, Sand & Gravel - Very Dense. 14.0'-20.9' Shaley Limestone. Ground Water Level 4.0'
19	381.6	180, 545 N. 208, 214 E.	0'-2.5' Topsoil. 2.5'-21.0' Silt to Fine Sand - Very Dense. 21.0'-31.0' Clayey Silt, Sand & Gravel - Very Dense. 31.0'-35.0' Shaley Limestone. Ground Water Level 4.0'
20	382.4	180, 808 N. 208, 422 E.	0'-4.5' Sand and Silt - Compact. 4.5'-24.0' Clayey Silt, Sand & Gravel. Very Dense. 24.0'-28.6' Shaley Limestone. Ground Water Level 4.2'

If you have any farther queries regarding this matter,
please contact this Office.

K. G. Selby

KGS/mierP

K. G. Selby,
SENIOR FOUNDATION ENGR.

For:

A. G. Sternac,
PRINCIPAL FOUNDATION ENGR.

cc: Foundations Office
Gen. Files

MEMORANDUM

TO: Mr. A. Stermac,
Principal Foundation Engineer,
Room 107,
Lab. Building.

FROM: Bridge Division,
Downsview, Ontario.

DATE: May 24th, 1966.

OUR FILE REF.

IN REPLY TO:

SUBJECT: Structures Q.E.W. and Hwy. #27 Interchange,

W.P. 238-61-1	Bridge #2 ✓	D-5844-P
W.P. 238-61-2	Bridge #3 ✓	D-5845-P
W.P. 238-61-3	Bridge #4 ✓	D-5846-P2
W.P. 238-61-4	Bridge #5 ✓	D-5847-1
W.P. 277-64	Bridge #6 ✓	D-5848-P2
W.P. 238-61-5	Bridge #7 ✓	D-5849-P
W.P. 34-65-1	Bridge #8 ✓	D-5850-P
W.P. 34-65-2	Bridge #10 ✓	D-5851-P1
W.P. 34-65-3	Bridge #12 ✓	D-5853-P1
W.P. 238-61-6	Bridge #13 ✓	D-5854-P1
W.P. 238-61-7	Bridge #14 ✓	D-5855-P1
W.P. 35-65	Bridge #15 ✓	D-5856-P
W.P. 278-64	Bridge #16 ✓	D-5857-1P
W.P. 238-61-8	Bridge #20 ✓	D-5859-1

Attached are two prints of preliminary plans for the above structures. A general investigation of this area has already been carried out and report BA2270 (W.J. 65-F-104) with recommendations has been issued. These preliminary plans will enable you to carry out any further boring which you think may be necessary to confirm or ammend your recommendations contained in the general report.

Structure #16; the widening of the C.P.R. Overhead is being designed by a consultant. The consultant has asked that borings be carried out to confirm footing elevations and specifically that a hole be put down behind each existing abutment at the centre median.

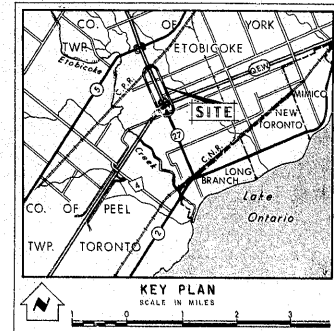
If you require any further information please do not hesitate to call us.

J.C. McAllister






JCMcA/cew
Attach.

J.C. McAllister,
for W. Melinyshyn,
Regional Bridge Location Engineer.

PROPOSED INTERCHANGE



LEGEND

	Bore Hole
	Cone Penetration Hole
	Bore & Cone Penetration Hole
	Water Levels established at time of field investigation.
	Structure Number

NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	340.4	177.495	209.600
2	358.7	177.399	209.331
3	358.7	177.399	209.331
4	364.4	175.945	209.652
5	364.4	175.945	209.652
6	364.4	177.299	209.500
7	364.4	177.299	209.500
8	364.4	177.299	209.500
9	364.4	176.838	209.716
10	364.4	176.838	209.716
11	364.4	176.838	209.716
12	364.4	176.838	209.716
13	364.4	176.838	209.716
14	364.4	176.838	209.716
15	364.4	176.838	209.716
16	364.4	176.838	209.716
17	364.4	176.838	209.716
18	364.4	176.838	209.716
19	364.4	176.838	209.716
20	364.4	176.838	209.716
21	364.4	176.838	209.716
22	364.4	176.838	209.716

- NOTE -

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REVISIONS			
	DATE	BY	DESCRIPTION

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

PRELIMINARY INVESTIGATION

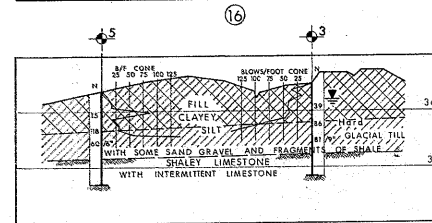
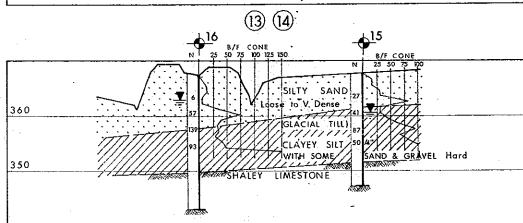
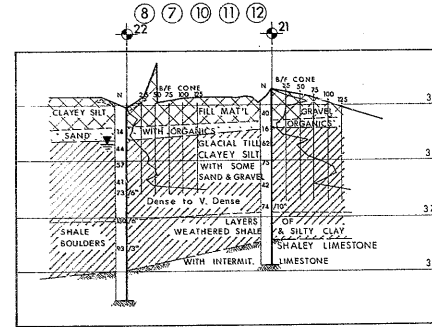
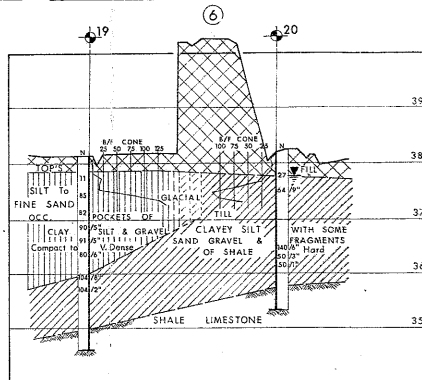
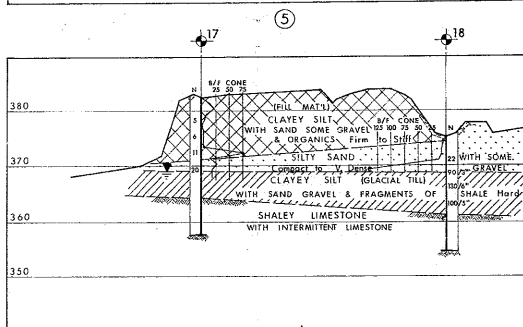
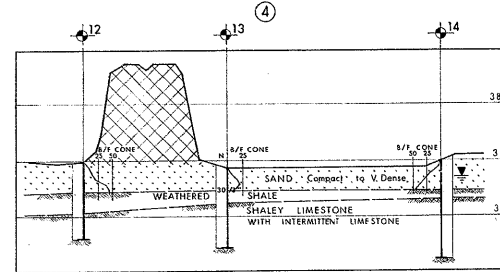
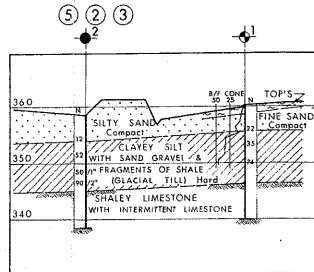
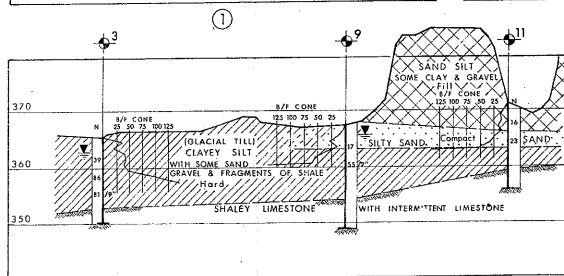
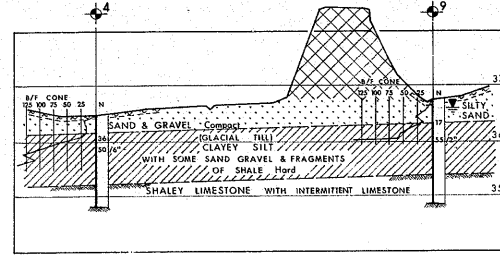
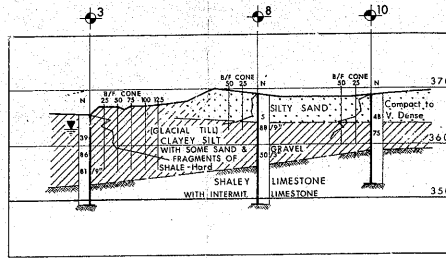
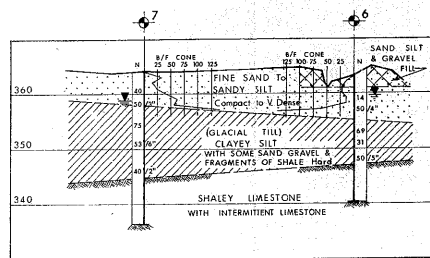
HIGHWAY No.27 & Q.E.W. INTERCHANGE

KING'S HIGHWAY NO. _____ DIST. NO. 6
CO. YORK M. TORONTO METROPOLITAN TORONTO
TWP. ETOBICOKE LOT _____ CON. _____

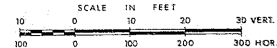
BORE HOLE LOCATIONS

SUBM'D P.M.E.	CHECKED	W.P. NO.	M.B.T. DRAWING NO.
DRAWN D.G.H.	CHECKED <i>W</i>	JOB NO. 65-F-104	65-F-10
DATE 13 DEC. 1965		SITE NO.	BRIDGE DRAWING NO.
APPROVED <i>A. J. Thomas</i>		CONT. NO.	





SECTIONS AT STRUCTURES



①⑧⑦






②

SEE DRAWING No.65-F-104A

KEY PLAN
SCALE IN MILES

SCALE IN MILES

LEGEND

-  Bore Hole
 Cone Penetration Hole
 Bore & Cone Penetration Hole
 Water Levels established at time of field investigation.
 Structure Number

- | NO. | ELEVATION | STATION | OFFSET |
|-----|-----------|---------|--------|
|-----|-----------|---------|--------|

- NOTE -

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REVISIONS			
DATE	BY	DESCRIPTION	

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

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PRELIMINARY INVESTIGATION
HIGHWAY No.27 & Q.E.W. INTERCHANGE

HIGHWAY No.27 & Q.E.W. INTERCHANGE

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SUB - SOIL STRATIGRAPHY

