

DOCUMENT MICROFILMING IDENTIFICATION

G.I-30 SEPT. 1976

GEOCRES No. 30m12-80

DIST. 6 REGION CENTRAL

W.P. No. 131-71-05

CONT. No. 73-147

W. O. No. 73-F-041

STR. SITE No. N.A

HWY. No. N.A

LOCATION BRAMALEA CK. AND

PARKING LOT RD.

=====

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

REMARKS

73-F-041 131-71-05 Bramalea Ck. & Parking Lot Rd. 30M12-80
W.O. W.P. LOCATION GEOCREs NO.

● DATA ON FILE IN SOIL MECHANICS SECTION

REFER TO: WIEDEDE CONTRACT 73-147

REMARKS _____

GEOCREs INDEXING CARD FOR REPORTS NOT MICROFILMED

GI-20 AUG. 74

MEMORANDUM

TO: Mr. A. G. Stermac,
Principal Foundation Engineer,
West Building.

FROM: G. C. E. Burkhardt,
Structural Planning Office,
3501 Dufferin Street.

ATTENTION: Mr. R. G. Selby

DATE: June 7, 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: Bramalea "Go" Station,
W.P. 131-71-05,
District 6, Toronto.

In connection with the above mentioned project, your assistance in the form of structure foundation recommendations would be very much appreciated.

This project has a very high priority rating as discussed at the meeting of June 7, 1973. Could you therefore, please have a preliminary report forwarded to this office on or before June 15, 1973. The formal report could follow at your earliest convenience.

Any plans which become available will be forwarded to your office as soon as possible.

Your attendance would be appreciated at the next progress meeting which will be held in the Central Region, Structural Planning Office, on June 21, 1973, at 2:30 P.M.

DHB:lc

DHB
D. H. Bye,
STRUCTURAL PLANNING SUPERVISOR,
for:
G. C. E. Burkhardt,
REG. STRUCTURAL PLANNING ENG.

c.c. R. Fitzgibbon
J. Anderson
G. Celmins
C. Grebski

MDD. JUNE 15, 1973

MEMORANDUM

TO: Mr. G.C.E. Burkhardt,
Regional Structural Planning Engineer,
Structural Planning Office,
3501 Dufferin Street, Downsview.

FROM: Mr. K.G. Selby,
Supervising Foundations Engineer,
West Building,
Downsview.

ATTENTION:

DATE:

June 13, 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT:

Foundation Investigation
For
Proposed Crossing of
Tributary of Etobicoke Creek Diversion
and
Parking Lot Access Road,
Bramalca "GO" Station,
District #6, (Toronto),
W.O. 75-11041 -- W.P. 131-71-05.

As requested by you we have carried out a field investigation at the site of the above-mentioned structure. Drilling commenced on June 11th, 1973, and was completed on June 12th. In view of the urgency of the project we have prepared a summary of our findings containing factual data and specific foundation design recommendations in order that structural design may be commenced immediately. In order to assist us in arriving at our conclusions, particularly with regard to possible scour action, we have discussed some aspects of the project with Mr. K. Jorns of the Hydrology Office. Our report is as follows:-

1. Subsoil:

Subsoil at the site consists of about 6 to 7 ft. of firm to hard clayey silt with sand, overlying bedrock. The bedrock consists of calcareous shale interspersed with dolomite bands. The various layers are from 4 to 6 inches thick. The dolomite bands are essentially sound and the calcareous shale layers can be described as slightly weathered. Actual borehole results are given below:

Borehole	Location	Gravel El.	Bedrock Surface El.
1	Sta. 4 + 10 15 ft. rt.	610.1	603.3
2	Sta. 4 + 10 15 ft. lt.	609.2	603.2
3	Sta. 4 + 50 15 ft. rt.	609.7	602.9
4	Sta. 4 + 50 15 ft. lt.	609.1	603.1

June 13, 1973.

Locations of boreholes are referred to centre-line of stream diversion. Groundwater level was observed to be at elevation 606±.

2. Recommendations:

It is proposed to construct a bridge or culvert over the diverted section of the Etobicoke Creek Tributary to carry the access road to the future "GO" Station Parking Lot. The invert level of the diversion at the structure location is about elevation 605.4 and the profile grade of the access road about elevation 617.5. The average ground level in this area is about 609±, thus an approximate 4 foot deep channel will be required for the stream and an approximate 9 foot high approach embankment will be required for the access road. The width of the channel bed is not known by this Office at this time, but it appears to be in the order of 15 feet.

The new structure may be founded on footings placed within bedrock utilising a design pressure of up to 10 t.s.f. It will be necessary to provide a cover of at least 4 feet measured below the lowest possible future water level to ensure against frost penetration and consequent scouring by the stream. If a concrete box structure is built, or if a concrete lining is provided in the channel, the 4 foot frost protection will not be necessary.

The proposed channel should be constructed with 2 : 1 side slopes and protected against scour in the vicinity of the structure.

No stability problems are anticipated with regard to the access road embankment provided standard 2 : 1 slopes are constructed.

No dewatering or other construction problems are anticipated.

Our complete report will be forwarded to you in the near future.

K. G. Selby

K. G. Selby,
Supervising Foundations Engineer,
West Building.

ECS/ks

c.c. C. Grebski
G. Celmins
R. Fitzgibbon
Foundation Files
Documents.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

30M12-80

TO: Mr. G.C.E. Burkhardt, (3)
Regional Structural Planning Eng.,
Central Region,
3501 Dufferin St.,
ATTENTION Downsview, Ontario.

FROM: Foundations Office,
Design Services Branch,
West Bldg., Downsview.

DATE: July 9, 1973.

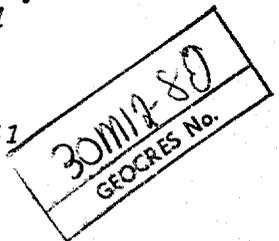
OUR FILE REF.

IN REPLY TO

JUL 12 1973

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For
Proposed Crossing of Tributary of
Etobicoke Creek Diversion and
Parking Lot Access Road
Bramalea "Go" Station
District #6 (Toronto)
W.P. 131-71-05 - W.O. 73-11041



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

We believe that the factual data and recommendations contained therein will prove adequate for your design requirements. Should additional information be required, please do not hesitate to contact our Office.

AGS/ao
Attch.

c.c. E. J. Orr
B. R. Davis
A. Rutka
R. S. Pillar
H. Greenland
B. J. Giroux
C. Mirza
G. A. Wrong
B. A. Singa

A. G. Stermac
A. G. Stermac,
PRINCIPAL FOUNDATIONS ENGINEER.

Foundations Files
Documents

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-

FOUNDATION INVESTIGATION REPORT
For
Proposed Crossing of Tributary of
Etobicoke Creek Diversion and
Parking Lot Access Road
Bramalea "Go" Station
District #6 (Toronto)
W.P. 131-71-05 -- W.O. 73-11041

1. INTRODUCTION:

On receiving a request from Mr. G.C.E. Burkhardt, Regional Structural Planning Engineer for the Central Region, dated June 7, 1973, a field and laboratory investigation was undertaken by this Office to determine the subsoil conditions at the crossing of the proposed Bramalea "Go" Station stream diversion and access road. Presented in this report are the results of the above investigations together with recommendations concerning the structure foundations.

2. DESCRIPTION OF SITE AND GEOLOGY:

The Bramalea "Go" Station will be situated just south of Steeles Avenue between Dixie Road and Bramalea Road. The area around the site is generally flat. The land use to the north of Steeles Avenue is industrial and to the south of Steeles Avenue is pasture. The stream meanders through the pasture and has caused a slight depression just south of Steeles Avenue about 4 to 5 feet in depth and about 300 feet across.

Geologically, the site is in the physiographic region known as the Peel Plain which consists mainly of clay soils over clay till. At this site the bedrock was found to be within 7 feet of the surface.

3. FIELD WORK AND LABORATORY INVESTIGATION:

The field work consisted of four sampled boreholes and four dynamic cone penetration tests. The boreholes were advanced by a C.M.E. 750, equipped with hollow stem augers. Split spoon samples were taken at regular intervals and standard penetration "N" values were obtained in driving the split spoon. Driving energy to advance the cones and split spoons was 350 ft-lbs. per blow. The resulting penetration "N" values are recorded in the Appendix.

Soil samples were identified in the field and again upon arrival in the laboratory. Moisture content, grain size analysis, and Atterberg Limit tests were carried out on representative samples.

The groundwater levels across the site were determined by recording the water levels in the open boreholes over the period of the investigation.

The locations and elevations of the boreholes as well as a stratigraphical profile are plotted on Drawing 73-11041A attached at the end of this report. The surveying of the site was carried out by personnel from the Central Region Engineering Section.

4. SUBSOIL CONDITIONS

4.1 GENERAL

Generally uniform subsoil conditions were found to prevail over the site. The subsoil consists of a shallow deposit of firm to very stiff clayey silt to silty clay with sand over the bedrock. The boundaries between different deposits are shown on the Record of Borehole sheets attached to the Appendix. The estimated stratigraphical profile on Drawing 73-11041A is based on this information. A description of the subsoil follows.

4.2 CLAYEY SILT TO SILTY CLAY

Subsoil at the site was found to consist of a 6.5 to 7 foot layer of brown to greyish brown clayey silt to silty clay overlying the bedrock. The consistency of this material can be described as firm to very stiff, corresponding to measured "N" values of 5 to 18 blows per foot. The grain size distribution of the soil is as follows: -

	Range %	Avg. Value %
Clay	12 - 24	17
Silt	38 - 64	52
Sand	12 - 24	17
Gravel	0 - 26	14

Liquid limit, plastic limit, and moisture content values were measured giving the following results.

Liquid limit	35 to 42%
Plastic limit	21 to 25%
Moisture content	12 to 23%

A typical grain size curve of this material is included in the Appendix as Figure 1.

4.3 BEDROCK

The bedrock consists of calcareous shale interspersed with dolomite bands. The various layers are from 4 to 6 inches thick. The dolomite bands are essentially sound and the calcareous shale layers can be described as slightly weathered. The elevations of the bedrock in the boreholes is as follows: -

BH 1	603.3
BH 2	603.2
BH 3	602.9
BH 4	603.1

5. GROUNDWATER

The following groundwater levels were observed during the course of the field investigation.

B.H. 1	606.3
B.H. 2	605.9
B.H. 3	605.9
B.H. 4	605.3

6. RECOMMENDATIONS:

It is proposed to construct a bridge or culvert over the diverted section of the Etobicoke Creek Tributary to carry the access road to the future "GO" Station Parking Lot. The invert level of the diversion of the structure location is about elevation 605.4 and the profile grade of the access road about elevation 617.5. The average ground level in this area is about 609+, thus an approximate 4 foot deep channel will be required for the stream and an approximate 9 foot high approach embankment will be required for the access road. The width of the channel bed is not known by this Office at this time, but it appears to be in the order of 15 feet.

The new structure may be founded on footings placed within bedrock utilizing a design pressure of up to 10 t.s.f. On exposure any weathered bedrock should be excavated so that the footings rest on sound bedrock. The condition of the weathered rock is such that there is a possibility that eventually the weathered portion may be scoured out and under certain conditions; i.e., very low water level, frost may enter the weathered shale and cause damage.

The proposed channel should be constructed with 2:1 side slopes and protected against scour in the vicinity of the structure.

No stability problems are anticipated with regard to the access road embankment provided standard 2:1 slopes are constructed.

No dewatering or other construction problems are anticipated.

7. MISCELLANEOUS:

The field work was carried out from June 11 to June 12, 1973 and was supervised by Mr. P. Korgemagi Project Foundations Engineer.

The equipment used was owned and operated by Dominion Soils Investigation Ltd., Toronto.

This report was prepared by Mr. P. Korgemagi and reviewed by Mr. K. G. Selby, Supervising Foundations Engineer.



P. Korgemagi
P. Korgemagi, P. Eng.
Projects Foundations Engineer

K. G. Selby
K. G. Selby, P. Eng.
Supervising Foundations Engineer

KGS/jjs
June 25, 1973.

APPENDIX I

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 1

JOB 73-11041

LOCATION Sta. 4 + 10 15' Rt. Trav. 'B'

ORIGINATED BY PK

WP 131-71-05

BORING DATE June 11, 1973

COMPILED BY

DATUM Geodetic

BOREHOLE TYPE Auger & Cone Test

CHECKED BY

SOIL PROFILE		SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 25 50 75 100 125	LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w	BULK DENSITY	REMARKS	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE						BLOWS/FOOT
610.1	Ground Level									
0.0	Clayey silt, some sand and gravel. 6.8 Bedrock, slightly weathered calcareous shale interbedded with sound shaley dolomite		1	SS	0					
603.3			2	SS	15					
603.3		Stiff		3	SS		100			
6.8				4	SC		85%			
596.1	End of borehole									
14.0										

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 2

JOB 73-11021

LOCATION Sta. L + 10 15' Lt. Trav. '8'

ORIGINATED BY BK

W.P. 131-71-05

BORING DATE June 12, 1973

COMPILED BY BK

DATUM Geodetic

BOREHOLE TYPE Auger & Cone Test

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 25 50 75 100 125	LIQUID LIMIT — % PLASTIC LIMIT — % WATER CONTENT — % WATER CONTENT %	BULK DENSITY Y	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT					
609.2	Ground Level									
0.0	Clayey silt, some sand		1	SS	6					
603.2	Firm to Very Stiff		2	SS	14					
6.0	Bedrock, slightly weathered calcareous shale interbedded with sound shaley dolomite		3	SS	10					
595.7	End of Borehole		4	BC NCL	75%					
13.5	End of Borehole									

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 3

JOB 73-11041
 W.P. 131-71-05
 DATUM Geodetic

LOCATION Sta. 4 + 50 15' Rt. Trav. 'B'
 BORING DATE June 11, 1973
 BOREHOLE TYPE Auger & Cone Test

ORIGINATED BY EK
 COMPILED BY PK
 CHECKED BY [Signature]

SOIL PROFILE			SAMPLES		ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 25 50 75 100 125	LIQUID LIMIT W_L PLASTIC LIMIT W_p WATER CONTENT W	BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE					
609.7	Ground Level								
6.0	Clayey silt with sand and gravel. Stiff to Very Stiff	[Strat. Plot]	1	SS	9	[Graph]			26 24 38 12
			2	SS	18				
602.9			3	SS	100				
6.8	Bedrock, slightly weathered calcareous shale interbedded with sound shaley dolomite	[Strat. Plot]		RC	600				
596.2			4	NXL					
13.5	End of Borehole								

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 4

JOB 73-110L1

LOCATION Sta. L + 50 15' Lt. Trav. 'B'

ORIGINATED BY FR

W.P. 131-71-05

BORING DATE June 12, 1973

COMPILED BY BK

DATUM Geodetic

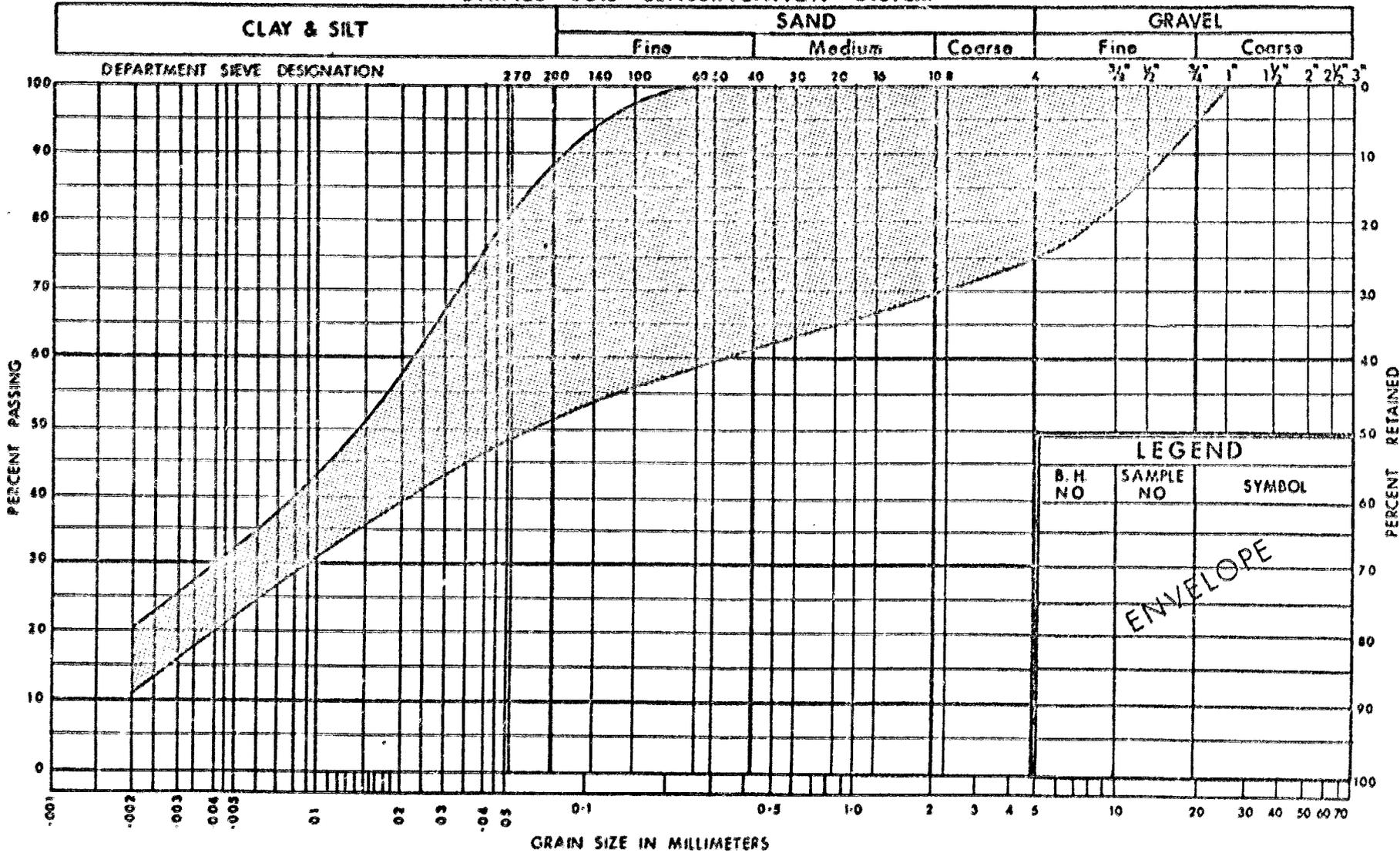
BOREHOLE TYPE Auger & Cone Test

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 25 50 75 100 125	LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w	BULK DENSITY γ P.C.F.	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	BLOWS/FOOT					
609.1	Ground Level									
0.0	Clayey silt, some sand.		1	SS	5					
603.1	Firm to Stiff		2	SS	10					
6.0	Bedrock, slightly weathered calcareous shale interbedded with sound shaley dolomite		3	SS	100					
595.6			4	SC NXL	62					
13.5	End of Borehole									

OFFICE REPORT ON SOIL EXPLORATION

UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT
OF
TRANSPORTATION AND COMMUNICATIONS

**DESIGN SERVICES
BRANCH**

GRAIN SIZE DISTRIBUTION

CLAYEY SILT, SOME SAND & GRAVEL

W.P. No. 131-71-05

JOB No. 73-11041

FIG. NO. 1

FD-117 (Rev. Jan 73)

ABBREVIATIONS & SYMBOLS USED IN THIS REPORTPENETRATION RESISTANCE

'N' STANDARD PENETRATION RESISTANCE :- THE NUMBER OF BLOWS REQUIRED TO ADVANCE A STANDARD SPLIT SPOON SAMPLER 12 INCHES INTO THE SUBSOIL, DRIVEN BY MEANS OF A 140 POUND HAMMER FALLING FREELY A DISTANCE OF 30 INCHES.

DYNAMIC PENETRATION RESISTANCE :- THE NUMBER OF BLOWS REQUIRED TO ADVANCE A 2 INCH, 60 DEGREE CONE, FITTED TO THE END OF DRILL RODS, 12 INCHES INTO THE SUBSOIL, THE DRIVING ENERGY BEING 350 FOOT POUNDS PER BLOW.

DESCRIPTION OF SOIL

THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE DENSITY OR DENSENESS OF COHESIONLESS SOILS ARE DESCRIBED IN THE FOLLOWING TERMS :-

<u>CONSISTENCY</u>	<u>c LB/30 FT</u>	<u>DENSENESS</u>	<u>'N' BLOWS / FT.</u>
VERY SOFT	0 - 250	VERY LOOSE	0 - 4
SOFT	250 - 500	LOOSE	4 - 10
FIRM	500 - 1000	COMPACT	10 - 30
STIFF	1000 - 2000	DENSE	30 - 50
VERY STIFF	2000 - 4000	VERY DENSE	> 50
HARD	> 4000		

TERMS TO BE USED IN DESCRIBING SOILS :-

TRACE < 10% , SOME 10-25% , WITH 25-40% , > 40% SILTY, SANDY, GRAVELLY, CLAYEY ETC.

TYPE OF SAMPLE

S.S	SPLIT SPOON	T.W.	THINWALL OPEN
W.S	WASHED SAMPLE	T.P	THINWALL PISTON
S.T	SLOTTED TUBE SAMPLE	O.S	OESTERBERG SAMPLE
A.S	AUGER SAMPLE	F.S	FOIL SAMPLE
C.S	CHUNK SAMPLE	R.C	ROCK CORE

P.H SAMPLE ADVANCED HYDRAULICALLY

P.M. SAMPLE ADVANCED MANUALLY

SOIL TESTS

U	UNCONFINED COMPRESSION	L.V.	LABORATORY VANE
UU	UNCONSOLIDATED UNDRAINED TRIAXIAL	F.V.	FIELD VANE
CU	CONSOLIDATED ISOTROPIC UNDRAINED TRIAXIAL	C	CONSOLIDATION
CID	" " DRAINED "	S	SENSITIVITY
CAU	" ANISOTROPIC UNDRAINED "		
CAD	" " DRAINED "		

ABBREVIATIONS & SYMBOLS USED IN THIS REPORT

SOIL PROPERTIES

γ	UNIT WEIGHT OF SOIL (BULK DENSITY)
γ_s	UNIT WEIGHT OF SOLID PARTICLES
γ_w	UNIT WEIGHT OF WATER
γ_d	UNIT DRY WEIGHT OF SOIL (DRY DENSITY)
γ'	UNIT WEIGHT OF SUBMERGED SOIL
G	SPECIFIC GRAVITY OF SOLID PARTICLES $G = \frac{\gamma_s}{\gamma_w}$
e	VOID RATIO
n	POROSITY
w	WATER CONTENT
S_r	DEGREE OF SATURATION
w_L	LIQUID LIMIT
w_p	PLASTIC LIMIT
I_p	PLASTICITY INDEX
w_s	SHRINKAGE LIMIT
I_L	LIQUIDITY INDEX = $\frac{w - w_p}{I_p}$
I_c	CONSISTENCY INDEX = $\frac{w_L - w}{I_p}$
e_{max}	VOID RATIO IN LOOSEST STATE
e_{min}	VOID RATIO IN DENSEST STATE
I_D	DENSITY INDEX = $\frac{e_{max} - e}{e_{max} - e_{min}}$
	RELATIVE DENSITY D_r IS ALSO USED
h	HYDRAULIC HEAD OR POTENTIAL
q	RATE OF DISCHARGE
v	VELOCITY OF FLOW
i	HYDRAULIC GRADIENT
k	COEFFICIENT OF PERMEABILITY
j	SEEPAGE FORCE PER UNIT VOLUME
m_v	COEFFICIENT OF VOLUME CHANGE = $\frac{-\Delta e}{(1+e)\Delta\sigma}$
c_v	COEFFICIENT OF CONSOLIDATION
C_c	COMPRESSION INDEX = $\frac{\Delta e}{\Delta \log_{10} \sigma}$
T_v	TIME FACTOR = $\frac{c_v t}{d^2}$ (d, DRAINAGE PATH)
U	DEGREE OF CONSOLIDATION
τ_f	SHEAR STRENGTH
c'	EFFECTIVE COHESION INTERCEPT
ϕ'	EFFECTIVE ANGLE OF SHEARING RESISTANCE, OR FRICTION
c_u	APPARENT COHESION
ϕ_u	APPARENT ANGLE OF SHEARING RESISTANCE, OR FRICTION
μ	COEFFICIENT OF FRICTION
S_t	SENSITIVITY

GENERAL

π	= 3.1416
e	BASE OF NATURAL LOGARITHMS 2.7183
$\log_e \sigma$ OR $\ln \sigma$	NATURAL LOGARITHM OF σ
$\log_{10} \sigma$ OR $\log \sigma$	LOGARITHM OF σ TO BASE 10
t	TIME
g	ACCELERATION DUE TO GRAVITY
V	VOLUME
W	WEIGHT
M	MOMENT
F	FACTOR OF SAFETY

STRESS AND STRAIN

u	PORE PRESSURE
σ	NORMAL STRESS
σ'	NORMAL EFFECTIVE STRESS ($\bar{\sigma}$ IS ALSO USED)
τ	SHEAR STRESS
ϵ	LINEAR STRAIN
γ	SHEAR STRAIN
ν	POISSON'S RATIO (μ IS ALSO USED)
E	MODULUS OF LINEAR DEFORMATION (YOUNG'S MODULUS)
G	MODULUS OF SHEAR DEFORMATION
K	MODULUS OF COMPRESSIBILITY
η	COEFFICIENT OF VISCOSITY

EARTH PRESSURE

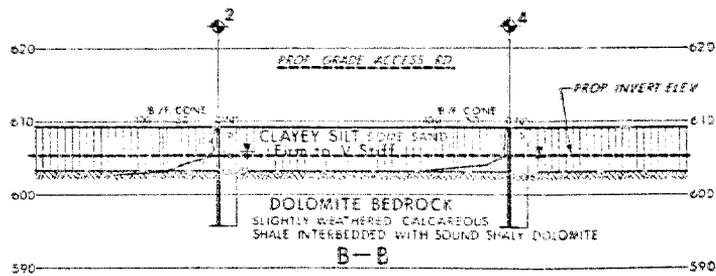
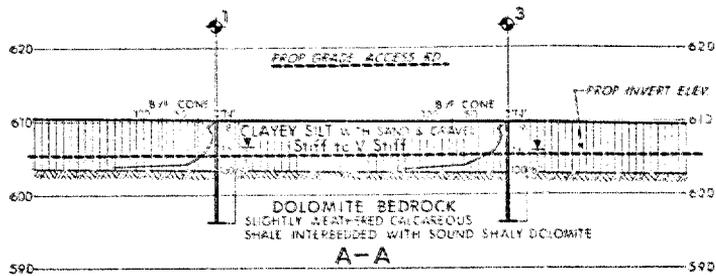
d	DISTANCE FROM TOP OF WALL TO POINT OF APPLICATION OF PRESSURE
δ	ANGLE OF WALL FRICTION
K	DIMENSIONLESS COEFFICIENT TO BE USED WITH VARIOUS SUFFIXES IN EXPRESSIONS REFERRING TO NORMAL STRESS ON WALLS
K_0	COEFFICIENT OF EARTH PRESSURE AT REST

FOUNDATIONS

B	BREADTH OF FOUNDATION
L	LENGTH OF FOUNDATION
D	DEPTH OF FOUNDATION BENEATH GROUND
N	DIMENSIONLESS COEFFICIENT USED WITH A SUFFIX APPLYING TO SPECIFIC GRAVITY, DEPTH AND COHESION ETC. IN THE FORMULA FOR BEARING CAPACITY
k_s	MODULUS OF SUBGRADE REACTION

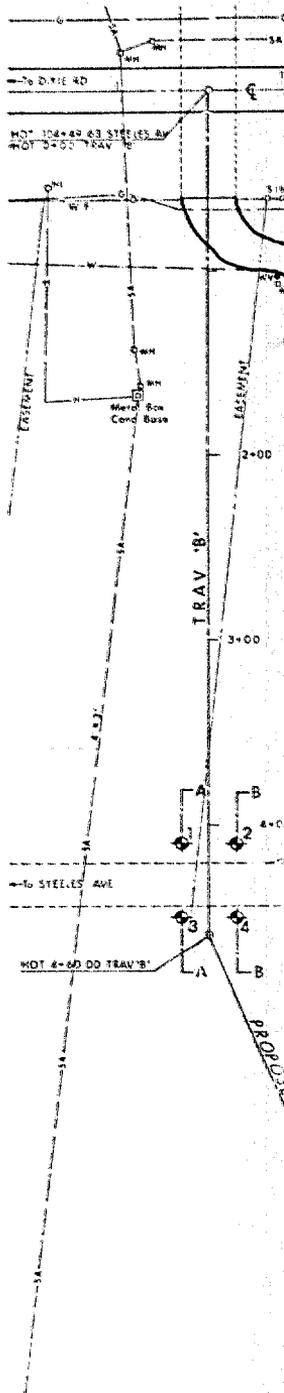
SLOPES

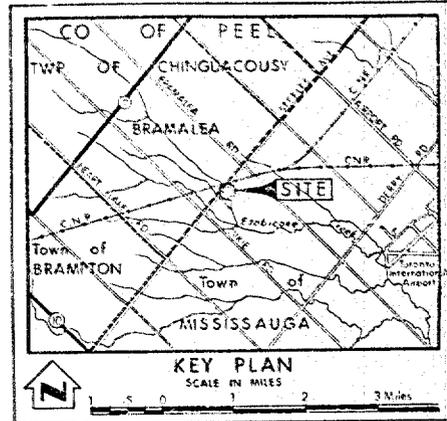
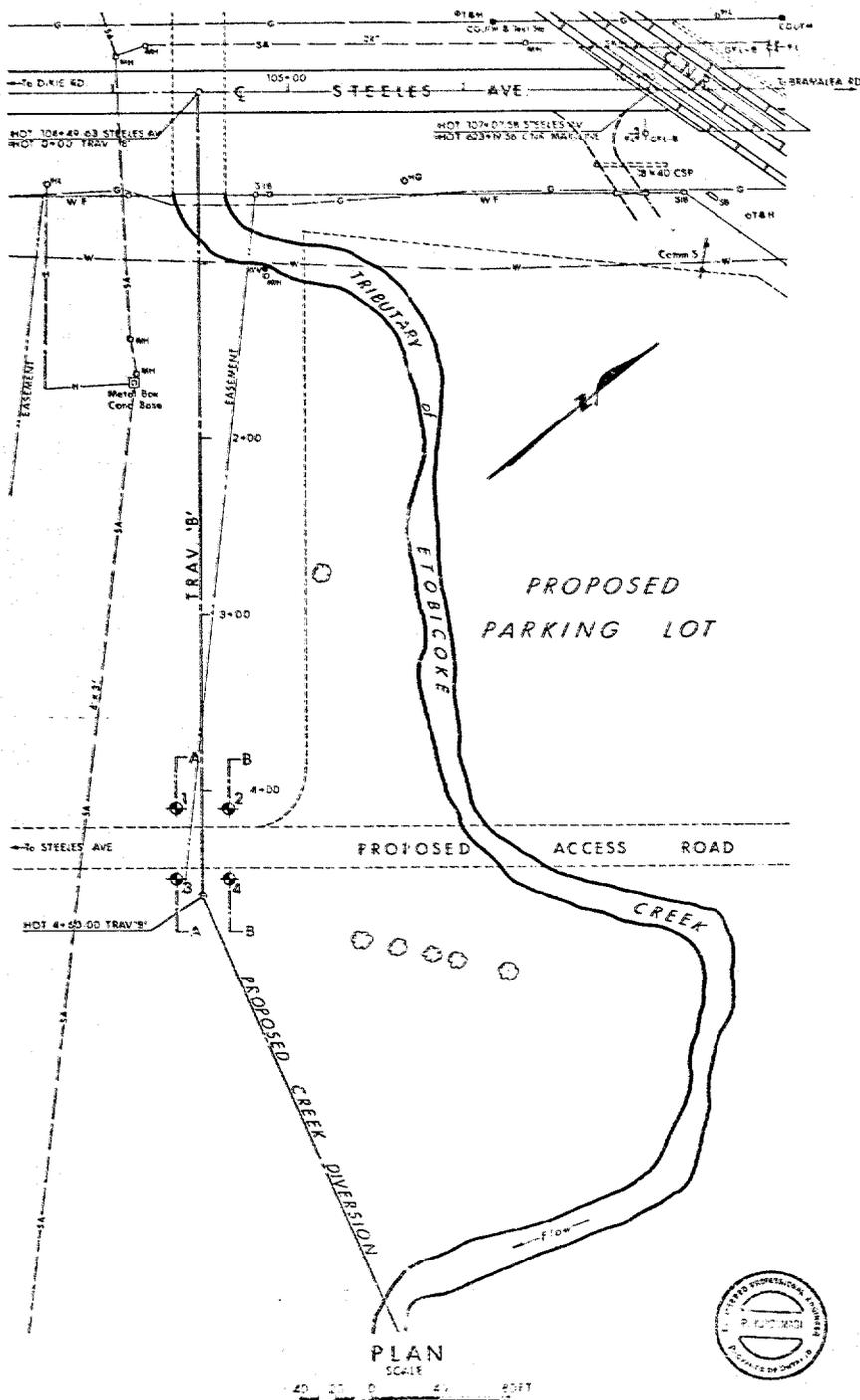
H	VERTICAL HEIGHT OF SLOPE
D	DEPTH BELOW TOE OF SLOPE TO HARD STRATUM
β	ANGLE OF SLOPE TO HORIZONTAL



SECTIONS

SCALE
10 0 10 20 FT





LEGEND

- Bore Hole
- Cone Penetration Test
- Bore Hole & Cone Test
- Water Levels established at time of field investigation June, 1973

NO.	ELEVATION	STATION	OFFSET
1	610.1	4+10	15' RT.
2	609.2	4+10	15' LT.
3	609.7	4+50	15' RT.
4	609.1	4+50	15' LT.

— NOTE —

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.

REVISIONS	DATE	BY	DESCRIPTION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS—ONTARIO
DESIGN SERVICES BRANCH—FOUNDATIONS OFFICE

BRAMALEA 'GO' STATION
(Stream Diversion, Tributary of Etobicoke Creek)

HIGHWAY PROP. ACCESS RD to 'GO' STATION DIST NO 6
CO PEELE Town of MISSISSAUGA
TWP LOT 15 CON IV East

BORE HOLE LOCATIONS & SOIL STRATA

SUBWD P.K.	CHECKED BY (TWP NO 121-23-25)	DRAWING NO.
DATE	CHECKED BY (IND NO 73-11021)	73-11041A
APPROVED BY	DATE	SCALE

BRIDGE DRAWING NO. _____



PLAN
SCALE 1" = 40 FT

MEMORANDUM

TO: Mr. G. C. E. Burkhardt, (3)
 Regional Structural Planning Eng.,
 Central Region,
 3501 Dufferin St.,
 Downsview, Ontario.

FROM: Foundations Office,
 Design Services Branch,
 West Bldg., Downsview.

DATE: July 16, 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT:

FOUNDATION INVESTIGATION REPORT
 For
 Proposed Crossing of Tributary of
 Etobicoke Creek Diversion and
 Parking Lot Access Road
 Bramalea "Go" Station
 District #6 (Toronto)
 W.P. 131-71-05 - W.O. 73-11041

With reference to the above-mentioned report dated July 9, 1973, please remove page 4 and replace it with the attached corrected copy.

A. Dechato

for A. G. Stermac,
 PRINCIPAL FOUNDATIONS ENGINEER.

/ao
 Atch.

- c.c. E. J. Orr
 B. R. Davis
 A. Rutka
 R. S. Pillar
 H. Greenland
 B. J. Giroux
 C. Mirza
 G. A. Wrong
 B. A. Singh

Foundations Files
 Documents

None
July 19/73

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. A. G. Stermac,
Principal Foundation Engineer,
West Building.

FROM: G. C. E. Burkhardt,
Structural Planning Office,
3501 Dufferin Street.

ATTENTION: Mr. K. Selby

DATE: August 7, 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: Proposed Structure on Access Road
to Bramalea Go Station,
W.P. 131-71-11, Site 24-150,
District 6, Toronto.

Could you please arrange to have a Foundation Investigation Report prepared for the area of the above mentioned structure. Report W.O. 73-11041 has already been prepared but since then the alignment of the access road and the location of the parking lot has been revised. The revised scheme has been discussed with Mr. Selby of your office.

Mr. Selby has in his possession a copy of a site plan for the new scheme. I have enclosed a partial plan detailing the scheme further. As well, please find enclosed a cross-section through Steeles Avenue at Etobicoke Creek showing the ultimate scheme.

The proposed access road will follow a profile similar to that of existing Steeles Avenue. A detail drawing of the profile is not available as yet but as soon as it is, the plan will be forwarded to your office.

Since this project is still of a very high priority, could you please prepare a preliminary report as soon as possible to be followed at a later date by the final report.

Some negotiations are still taking place regarding the acquisition of the property, therefore no firm completion dates can be given.

DHB:lc
Encl.

D.H. Bye
D. H. Bye,
STRUCTURAL PLANNING SUPERVISOR,
for:
G. C. E. Burkhardt,
REG. STRUCTURAL PLANNING ENG.

c.c. R. Fitzgibbon
J. Anderson
G. Celmins
J. Barclay

73-11-041

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. A. G. Stermac,
Principal Foundation Engineer,
West Building.

FROM: G. C. E. Burkhardt,
Structural Planning Office,
3501 Dufferin Street.

ATTENTION: Mr. K. G. Selby

DATE: August 21, 1973.

OUR FILE REF.

IN REPLY TO

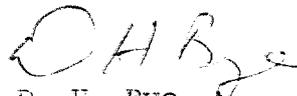
SUBJECT: Proposed Bramalea Go Transit
Station and Parking Lot,
W.P. 131-71-10, Site 24-337,
W.P. 131-71-11, Site 24-150,
District 6, Toronto.

Due to a recent decision by the "Go" Transit Office, the location of the above mentioned project has been changed from the S.W. quadrant to the S.E. quadrant of the Steeles Avenue - C.N.R. crossing.

With the abandonment of the old site our request of August 7, 1973, for a Foundation Investigation Report should be cancelled.

In the event that there are further developments in this project involving structures we will be in contact with your office.

DHB:lc



D. H. Bye,
STRUCTURAL PLANNING SUPERVISOR,
for:
G. C. E. Burkhardt,
REG. STRUCTURAL PLANNING ENG.

c.c. R. Fitzgibbon
J. Anderson
G. Celmins
J. D. Barclay

VISUAL CLASSIFICATION SHEET

PROJECT 73-11041 SITE _____ BOREHOLE No. 4 GROUND ELEVATION _____

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION					DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL	SAND	SILT & CLAY										
1	0 to 1.5				20	80									CLAYEY SILT	
2	3 to 4.5				20	80									CLAYEY SILT TO SILT	
3	6 to 7.5														SHALE	

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO
FOUNDATIONS OFFICE
VISUAL CLASSIFICATION SHEET

PROJECT 73-11041 SITE _____ BOREHOLE No. 3 GROUND ELEVATION _____

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION			DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL		
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL											SAND	SILT & CLAY
1	0 1.5			10	20	80				MD			CLAYEY SILT SOME SAND			
2	3 4.5				20	80				"			CLAYEY SILT 70 SILT			
3	6												SHALE			

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO
FOUNDATIONS OFFICE

VISUAL CLASSIFICATION SHEET

PROJECT 73-11041 SITE _____ BOREHOLE No. 2 GROUND ELEVATION _____

SAMPLE NO.	DEPTH	GRAIN SIZE DISTRIBUTION			DRY STRENGTH	SHINE	DILATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL		
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL											SAND	SILT & CLAY
1	0.15												CLAYEY SILT SOME SAND			
2	3.45												"			
3	6.1												DOLOMITE			

NOTES:- VISUAL CLASSIFICATION MUST BE CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO
FOUNDATIONS OFFICE
VISUAL CLASSIFICATION SHEET

PROJECT 73-11041 SITE _____ BOREHOLE No. 1 GROUND ELEVATION _____

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION			DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL		
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL											SAND	SILT & CLAY
1	0-1.5												CL	CLAYEY SILT WITH SAND.		
2	3 to 4.5															
3A	6 to 7.3													SHALE		
3B	"													SHALE		

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-