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GEOCRES No. 30 M 12 - 113

DIST. 6 REGION CENTRAL

W.P. No. 36-74-04

CONT. No. 77-21

W. O. No. _____

STR. SITE No. _____

HWY. No. 403

LOCATION Hwy 403 ? LITTLE

ETOBICOKE CREEK CULVERT

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 0

REMARKS: 2 documents to be unfolded before
microfilming



Ministry of
Transportation and
Communications

Memorandum

30M12-113
GEOCREs No.

To: G.C.E. Burkhardt (3)
Regional Structural Planning Engineer
Central Region
3501 Dufferin Street, Downsview

From: Soil Mechanics Section
Geotechnical Office
West Building, Downsview

Attention:

Date: March 3, 1976

Our File Ref. W.P. 36-74-04

In Reply to

MAR 09 1976

Subject:

FOUNDATION INVESTIGATION REPORT

W.P. 36-74-04
Hwy. 403, District 6, Toronto
Proposed Culvert at the Crossing of
Hwy. 403 and Little Etobicoke Creek (West Branch)
Just South of Matheson Blvd.

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 requirements. Should additional information be required, please do not hesitate to contact our Office.

M. Devata
M. DEVATA

Supervising Engineer

cc: R.S. Pillar
C.S. Grebski
B.J. Giroux
G.A. Wrong
M. R. Ernesaks
D. Gunter
H. Greenland
R. Hore
J. Anderson)
R. Fitzgibbon) memo only
G. Sloan)
Files

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FOUNDATION INVESTIGATION REPORT

for

W.P. 36-74-04

Hwy. 403, District 6, Toronto

Proposed Culvert at the Crossing of

Hwy. 403 and Little Etobicoke Creek (West Branch)

Just South of Matheson Blvd.

1. INTRODUCTION

The Soil Mechanics Section was requested to carry out a subsurface investigation at the site of the proposed culvert where Little Etobicoke Creek (West Branch) crosses Hwy. 403, north and south bound lanes. The request was contained in a memo from Mr. G.C.E. Burkhardt, Regional Structural Planning Engineer, Central Region, dated March 19, 1975. Subsequently, an investigation was carried out by this Section.

This report contains the results of the investigation, together with our recommendations pertaining to the foundation design of the proposed structure and the stability of the embankments in the immediate area.

2. DESCRIPTION OF THE SITE AND GEOLOGY

The culvert site is located between the first and second line east, about $\frac{1}{2}$ miles north of Eglinton Avenue West in the city of Mississauga, Regional Municipality of Peel.

The topography of the area is flat to undulating. Physiographically, the area is known as the "Peel Plain". The characteristic deposit in the area under investigation is a cohesive glacial till of variable thickness. Often the till deposit is underlain by granular deposit. The underlying bedrock in this area is known to be shale.

3. FIELD AND LABORATORY WORK

In the course of investigation five sampled boreholes were carried out by means of a bombardier mounted auger machine adapted for soil sampling purposes.

Sampling in granular and glacial till deposits was done by driving a 2" O.D. split-spoon sampler at required depths in accordance with the specifications for the Standard Penetration Test.

Groundwater level observations were made in the open boreholes during the period of investigation.

The soil and groundwater conditions encountered at the boring locations are presented in the Record of Borehole Sheets. The locations and ground elevations of the various boreholes were surveyed in the field by Engineering Surveys, Central Region, Toronto.

The borehole locations and elevations, together with estimated stratigraphical profile, are shown on Drawing No. 367404-A.

All samples were subjected to a careful examination in the field and subsequently, in the laboratory. Following this examination, laboratory testing was carried out on selected representative samples to determine various physical properties, namely:

- Atterberg Limits
- Natural Moisture Content
- Grain Size Distribution

The results of the laboratory and field testing are presented on the Record of Borehole Sheets and summarized on Figures 1 to 3 in the Appendix of this report.

4. SUBSOIL CONDITIONS

(4.1) General

The predominant stratum across the site is a deposit of glacial till consisting of a heterogeneous mixture of clayey silt, sand and gravel. The cohesive glacial till is underlain by a granular deposit of silty sand to silt. The overburden was investigated to a depth of 16.5 ft. below the ground level.

The boundaries of the various deposits as determined in the boreholes, are shown on the accompanying Record of Borehole Sheets. The stratigraphical profile shown on Drawing No. 367404-A has been inferred from this data. From ground surface downward, the various soil types encountered are as follows:

(4.2) Heterogeneous Mixture of Clayey Silt, Sand and Gravel - Glacial Till

This is the predominant stratum across the site. The material is mainly a heterogenous mixture of clayey silt, sand and gravel of glacial origin. The soil samples were tested for Atterberg Limits and Natural Moisture Content. The results which are shown on the Record of Borehole Sheets and on the Plasticity Chart (Fig. 1) are tabulated below:

	<u>Range</u>	<u>Average</u>
Liquid Limit %	16-28	19
Plastic Limit %	10-16	12
Natural Moisture Content %	6-13	11

Based on the above values it is estimated that the matrix of the glacial till is inorganic and of low plasticity.

The grain size distribution curves for samples of this cohesive deposit are shown in an envelope form on Fig. 2 in the Appendix.

The results of Standard Penetration Tests gave 'N' values ranging from 15 to 93 blows per foot. It is estimated that the cohesive glacial till deposit has a consistency ranging from very stiff to hard.

(4.3) Silty Sand to Silt

This granular deposit was found underlying the glacial till stratum. The composition of the granular deposit varied from silty sand to silt. The grain size distribution curves for samples of this granular deposit are shown on Fig. 3 in the Appendix.

The 'N' values obtained from Standard Penetration Tests ranged from 42 to over 100 blows per foot. The relative density of this deposit is estimated to be dense to very dense.

5. GROUNDWATER CONDITIONS

Groundwater level observations were carried out during the period of the field investigation by measuring the water levels in the open boreholes, as follows:

<u>B.H. No.</u>	<u>Ground Elevation</u>	<u>Groundwater Elevation</u>
1	499.2	499.2
2	500.0	494.0
3	496.0	494.0
4	495.0	495.0
5	493.5	493.5

6. DISCUSSION AND RECOMMENDATIONS

(6.1) General

In conjunction with the construction of Hwy. 403/410/401, it is proposed to construct a culvert where slightly realigned Little Etobicoke Creek (West Branch) crosses Hwy. 403. The proposed culvert will be a rigid frame concrete box culvert. It will have a uniform section of 8 ft. by 16 ft. and will be about 600 ft. long.

The predominant stratum across the site is a deposit of cohesive glacial till with underlying deposit of granular material.

(6.2) Culvert Foundations

(6.2.1) Rigid Frame Concrete Box Culvert

It is proposed to construct a rigid frame concrete box culvert. The invert of this culvert will be at elev. 497 ft. at the west end (inlet) and 493 ft. at the east end (outlet). At these grades the culvert will be located about 4.5 ft. to 0 ft. below the existing ground surface. The shallow excavations for the structure will extend at or just below the groundwater level recorded during the period of the field investigation. Over the area under consideration, the culvert will be located within the relatively impervious, cohesive glacial till. At the proposed invert elevations the subsoil is generally competent and can provide a safe bearing pressure up to 2.5 t.s.f. for the support of mat foundation of the proposed box culvert. It should be noted that the invert elevation is at or very close to the existing ground level. Accordingly, it must be made sure that the upper,

relatively disturbed, surficial material, if encountered, be completely removed and backfilled with well compacted granular type material, in order to provide a safe, even bedding for the mat foundations. In order to articulate the performance of the culvert below the high embankment, provision should be made for construction joints to accommodate for any differential settlements. These joints should be preferably located underneath the outside shoulders and the centreline of the median. During excavations in localized soft areas it will be necessary to use temporary shoring in order to prevent any local unstable conditions. It may be necessary to divert the existing channel in order to carry the excavations and construct the culvert in dry conditions. Any minor inflow of water may be handled by pumping from sumps. Since the structure is designed as a rigid frame, a coefficient of earth pressure at rest (K_0) of 0.5 should be assumed for the granular material placed behind the wall when designing the wall sections. In all cases, the design should incorporate the full effect of the surcharge located above the culvert.

(6.3) Stability and Settlement of Embankment

The embankment in the vicinity of the culvert will be up to 32 ft. in height. The subsoil is generally competent and no stability problems are anticipated for fills constructed with 2 horizontal to 1 vertical slopes. It is recommended that any surficial organic or soft material in the creek bed should be excavated prior to the construction of the embankment.

The underlying soil will settle under the weight of the embankment. The settlements in the granular deposit will be elastic in nature and occur as the fill is placed. Settlements within the glacial till deposit will be both instantaneous and long term. It is estimated that the elastic settlements will be up to 1 inch. In addition, the long term settlements will be in the order of 1-1½ inches.

The settlements within the fill itself may be up to 3 inches depending upon the type of material and compactive effort.

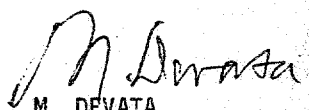
7. MISCELLANEOUS

The field work performed during the period of December 4/5, 1975, was supervised by Mr. V. Korlu, Project Engineer, who also prepared this Report.

Equipment was owned and operated by Johnston Drilling Co. of Toronto.

The investigation was carried out under the general supervision of Mr. M. Devata, Supervising Engineer, who also reviewed this Report.


V. KORLU
Project Engineer


M. DEVATA
Supervising Engineer



March, 1976

APPENDIX

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO
ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 1

WP 36-74-04 LOCATION Co-ords. 15,851,390 N; 962, 116 E. ORIGINATED BY VK
 DIST 6 HWY 403 BORING DATE December 4, 1975 COMPILED BY VK
 DATUM Geodetic BOREHOLE TYPE CME M.V.H.S. CHECKED BY [Signature]

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT W_L PLASTIC LIMIT W_P WATER CONTENT w			UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	W_p	w	W_L		
499.2	Ground Level															
0.0	Het. mix of clayey silt, sand and gravel Glacial Till		1	SS	15											6 39 42 13
487.7	Very Stiff to Hard		2	SS	43	490										3 30 61 6
11.5	End of Borehole															

ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 2

WP 36-74-04 LOCATION Co-ords. 15,851,508 N; 962,186 E. ORIGINATED BY VK
 DIST 6 HWY 403 BORING DATE December 4, 1975 COMPILED BY VK
 DATUM Geodetic BOREHOLE TYPE CME M.V.H.S. CHECKED BY [Signature]

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT W_L PLASTIC LIMIT W_P WATER CONTENT W			UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	W_P W W_L				
							SHEAR STRENGTH					WATER CONTENT %				
500.0	Ground Level															
0.0	Het. mix. of clayey silt, sand & gravel Glacial Till		1	SS	49										9 24 45 22	
	Hard															
488.0			2	SS	81	490									21 30 37 12	
12.0	Silty Sand															
483.5	Very Dense		3	SS	56										0 61 35 4	
16.5	End of Borehole															

ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 3

WP 36-74-04

LOCATION Co-ords. 15,851,638 N; 962,259 E.

ORIGINATED BY VK

DIST 6 HWY 403

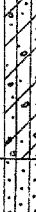
BORING DATE December 5, 1975

COMPILED BY VK

DATUM Geodetic

BOREHOLE TYPE CME M.V.H.S.

CHECKED BY *SP*

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT W_L PLASTIC LIMIT W_P WATER CONTENT W			UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	N' VALUES		20	40	60	80	100	W_P	W	W_L		
496.0	Ground Level															
0.0	Het. mix. of clayey silt, sand & gravel Glacial Till		1	SS	20	490										4 30 48 18
484.0	Very Stiff to Hard		2	SS	93											
12.0	Silty Sand															
479.5	Very Dense		3	SS	165/8"	480										0 88 (12)
16.5	End of Borehole															

RECORD OF BOREHOLE NO 4

WP 36-74-04 LOCATION Co-ords. 15,851,769 N; 962,334 E. ORIGINATED BY VK
 DIST 6 HWY 403 BORING DATE December 5, 1975 COMPILED BY VK
 DATUM Geodetic BOREHOLE TYPE CME M.V.H.S. CHECKED BY JP

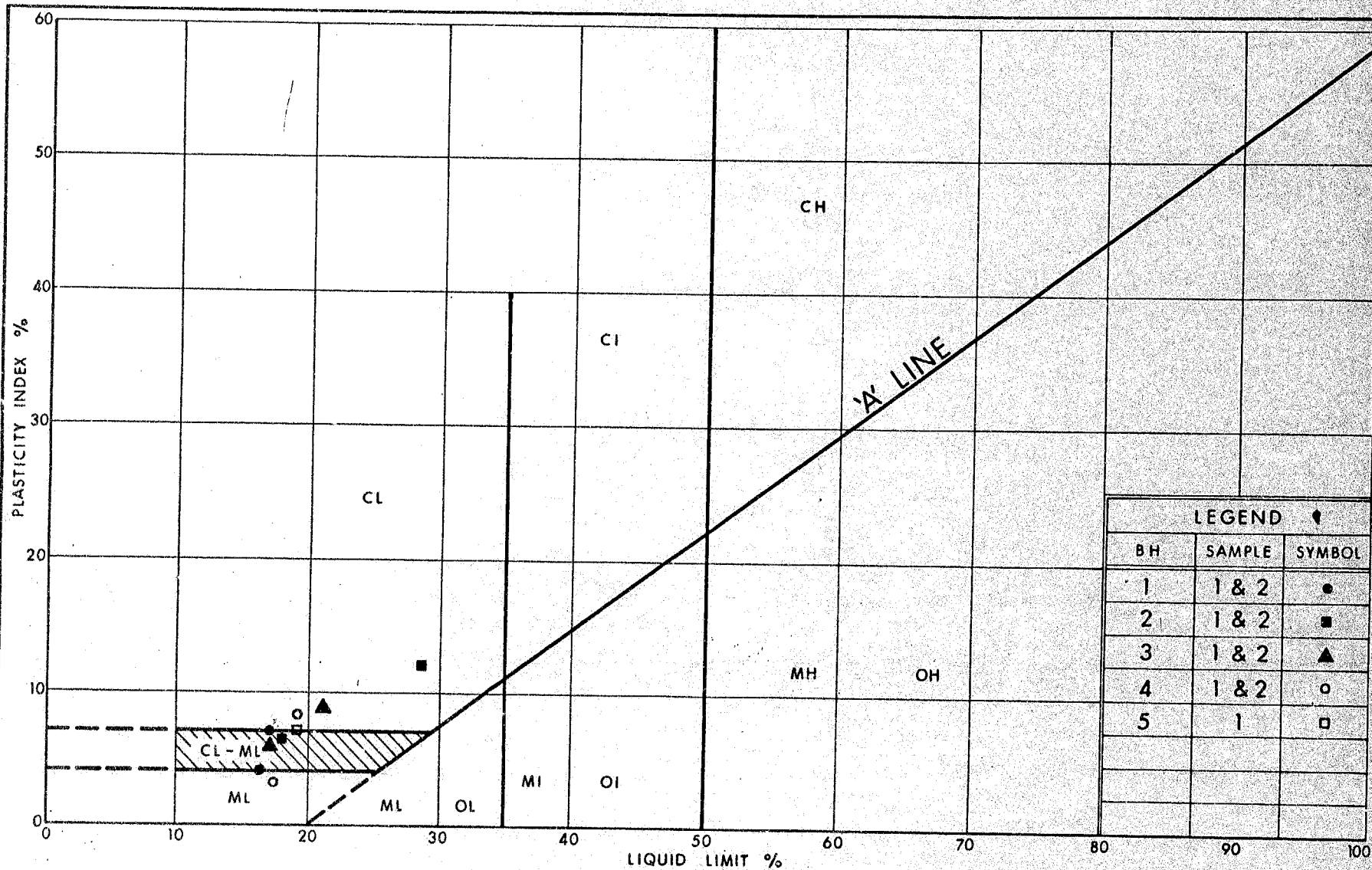
SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT ——— w_L PLASTIC LIMIT ——— w_p WATER CONTENT — w			UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20 40 60 80 100					w_p — w — w_L				
							SHEAR STRENGTH ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE					WATER CONTENT % 10 20 30				
495.0	Ground Level					LEV										
0.0	Het. mix. of clayey silt, sand & gravel															
	Glacial Till		1	SS	27	490									4 31 50 15	
	Very Stiff to Hard		2	SS	61										5 20 69	
483.0	Silt to sandy silt															
478.5	Very Dense		3	SS	133	480									0 10 88	
16.5	End of Borehole															

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO
ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 5

WP 36-74-04 LOCATION Co-ords. 15,851,902 N; 962,412 E. ORIGINATED BY VK
DIST 6 HWY 403 BORING DATE December 5, 1975 COMPILED BY VK
DATUM Geodetic BOREHOLE TYPE CME M.V.H.S. CHECKED BY *ph*

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT W_L PLASTIC LIMIT W_P WATER CONTENT W			UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	W_P	W	W_L		
493.5	Ground Level															
0.0	Het. mix. of clayey silt, sand & gravel															
	Glacial Till		1	SS	19	490										3 35 50 12
484.5	Very Stiff															
9.0	Silty sand, some gravel															
482.0	dense		2	SS	42											
11.5	End of Borehole															



Ontario
ENGINEERING SERVICES BRANCH

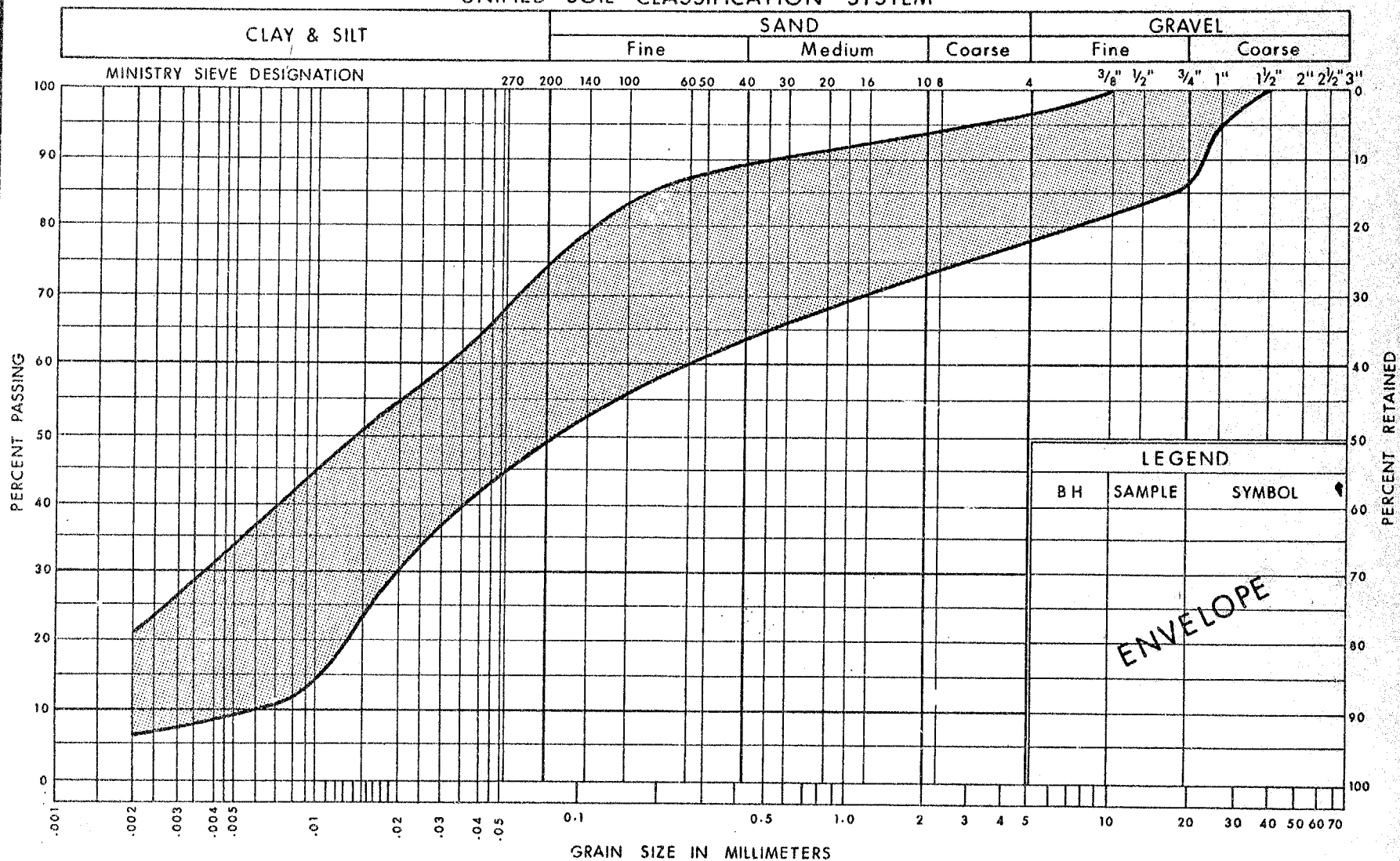
Ministry of
Transportation and
Communications

PLASTICITY CHART HET. MIXTURE OF CLAYEY SILT, SAND & GRAVEL (Glacial Till)

FIG No 1

W P 36-74-04

UNIFIED SOIL CLASSIFICATION SYSTEM



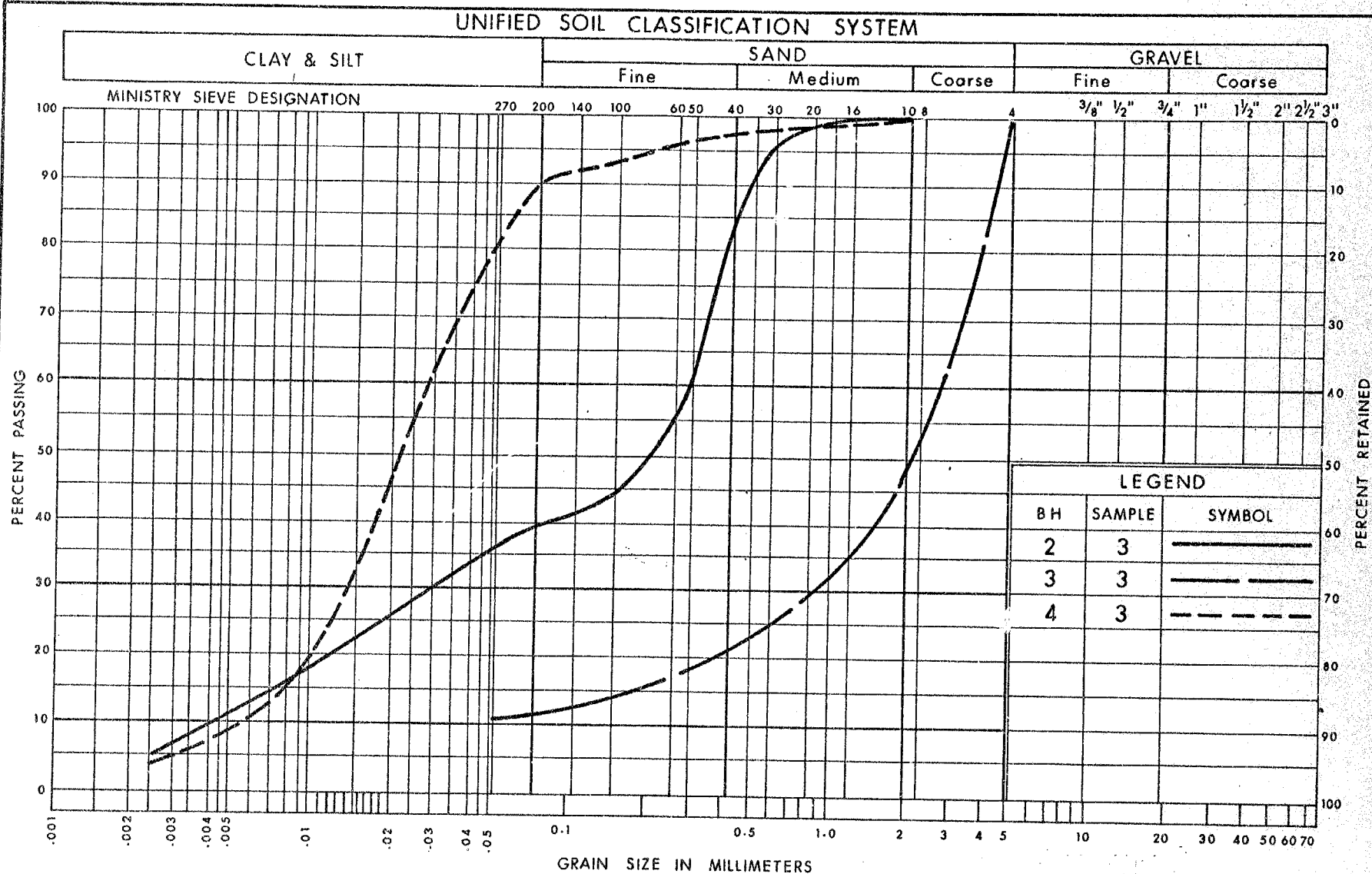
ENGINEERING SERVICES BRANCH

 Ministry of
Transportation and
Communications

GRAIN SIZE DISTRIBUTION
HET. MIXTURE OF
CLAYEY SILT, SAND & GRAVEL (Glacial Till)

FIG No 2

W P 36-74-04



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GRAIN SIZE DISTRIBUTION
SILT TO SILTY SAND

FIG No 3

WP 36-74-04

ABBREVIATIONS & SYMBOLS USED IN THIS REPORT

PENETRATION 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./SQ. 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
CIU	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
$\log_e a$ OR $\ln a$	NATURAL LOGARITHM OF a
$\log_{10} a$ OR $\log a$	LOGARITHM OF a 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

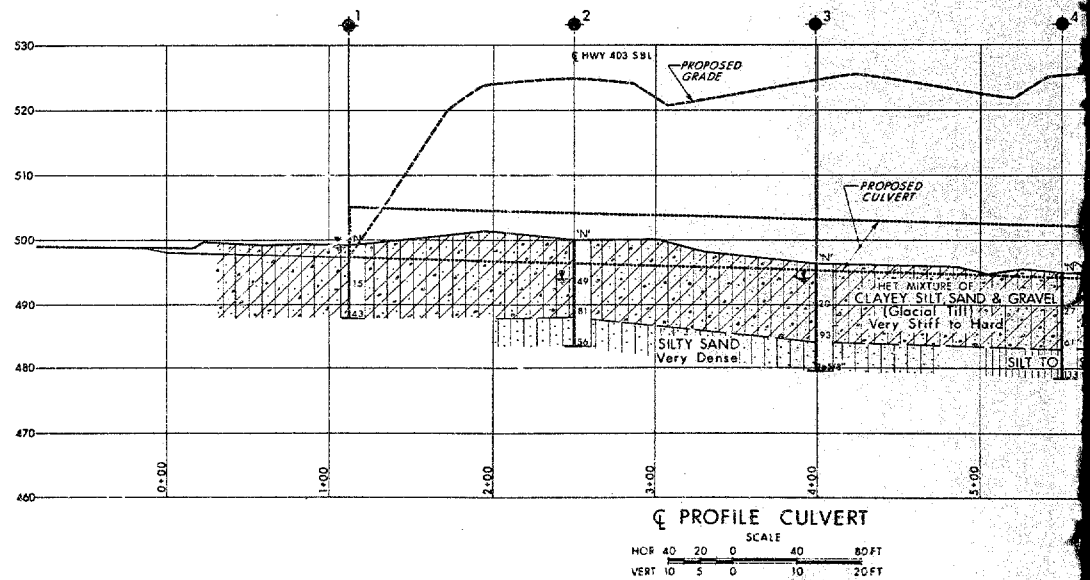
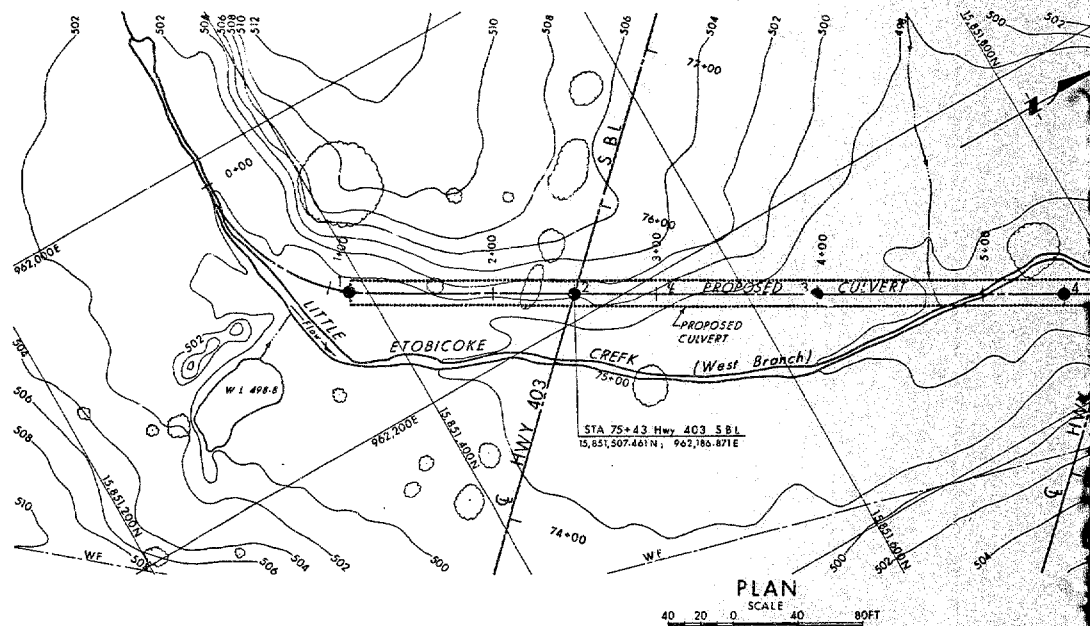
d	DISTANCE FROM TOP OF WALL TO POINT OF APPLICATION OF PRESSURE
δ	ANGLE OF WALL FRICTION
K	DIMENSIONLESS COEFFICIENT TO BE USED WITH VARIOUS SUFFIXES IN EXPRESSIONS REFERRING TO NORMAL STRESS ON WALLS
K_0	COEFFICIENT OF EARTH PRESSURE AT REST

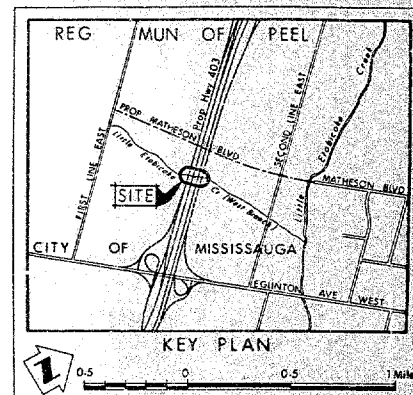
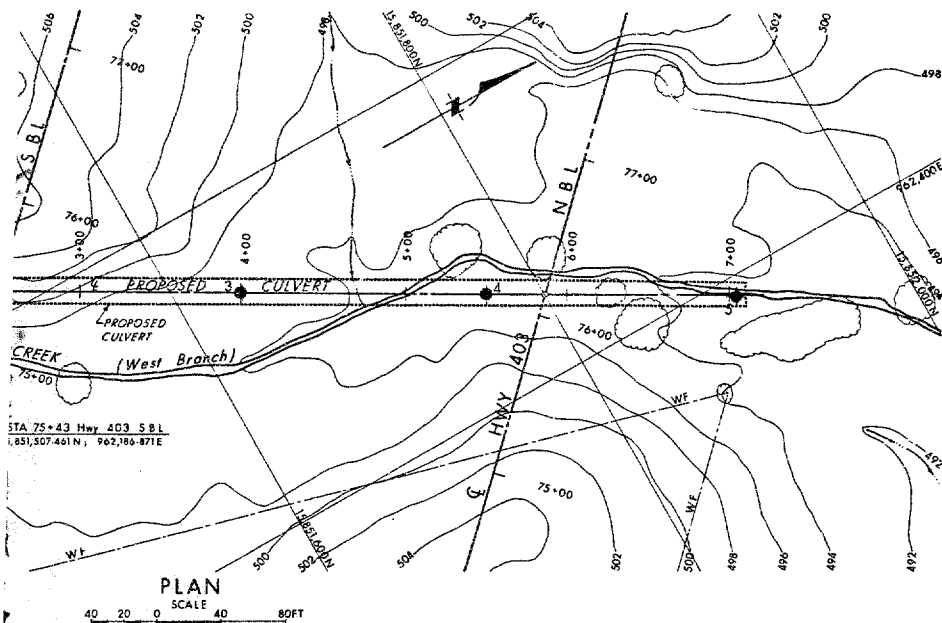
FOUNDATIONS

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





LEGEND			
	Bore Hole		
	Dynamic Cone Penetration Resistance Test B/F CONE - Blow/Ft. Cone Test (3000 lbs. weight/blow)		
	Bore Hole & Cone Test		
	Water Levels established at time of field investigation, Dec. 1975		
NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	499.2	15,851,390	962,116
2	500.0	15,851,508	962,186
3	496.0	15,851,638	962,259
4	495.0	15,851,769	962,334
5	493.5	15,851,902	962,412

— 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 ENGINEERING SERVICES BRANCH—GEOTECHNICAL OFFICE—SOIL MECHANICS SECTION				
LITTLE ETOBICOKE CREEK (West Branch) (CULVERT)				
HIGHWAY NO. 403		DIST NO. 6		
Regional Municipality of PEEL				
City of MISSISSAUGA		LOT CON		
BORE HOLE LOCATIONS & SOIL STRATA				
SURVED V.K.		CHECKED A.W.P. NO. 36-76-04	DRAWING NO.	
DATE Feb. 10, 1976		SITE NO.	367404-A	
APPROVED		CONT. NO.	BRIDGE DRAWING NO.	

Soil Mechanics Section,
Geotechnical Office,
West Building,
1201 Wilson Avenue,
Downsview, Ontario.
M3M 1J8

Tel: (416) 248-3282

December 8, 1975.

F.E. Johnston Drilling Co. Ltd.,
377 Munster Avenue,
Toronto, Ontario.
M8Z 3C8

Dear Sirs:

This letter confirms our request by telephone of December 3, 1975 for the supply of a type I Auger Machine (M.V. mounted) (Item No. 5.1.i), together with all necessary equipment, as per your Tender for Supply Contract S-75-1922 at Mississauga, Ontario (Hwy. 403 & Little Etobicoke Cr.) on December 4, 1975.

Mobilization will be from our Project W.P. 36-74-02/03.

Our Project Number is W.P. 36-74-04.

Yours truly,

M. Devata,
Supervising Engineer.

cc: W.W. Fry,
(Attn: V. Di Marco)
Files,
Record Services.

