

MEMORANDUM

GEN. FILES
 128
 23-67-02

Mr. R. R. Davis,
 Bridge Engineer,
 Bridge Division.

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

Attention: Mr. S. McCombie

DATE: October 14, 1965

OUR FILE REF.

IN REPLY TO OCT 18 1965

SUBJECT:

FOUNDATION INVESTIGATION REPORT
 For
 New Underpass at Hwy. 401 & Maldstone
 Twp. Road, County of Essex, Twp. of
 Maldstone, Conc. V & VI. Lot 17 & 18,
 District No. 1 (Chatham)
 H.J. 65-F-79 -- W.P. 128-64

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 do not hesitate to contact our Office.

AGS/MdeF
 Attach.

cc: Messrs. B. R. Davis (2)
 H. A. Tregaskes
 D. W. Farren
 A. Gater
 F. C. Brown
 J. Roy
 A. Watt

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

Foundations Office
 Gen. Files

TABLE OF CONTENTS

1. INTRODUCTION.
 2. DESCRIPTION OF SITE AND GEOLOGY.
 3. FIELD AND LABORATORY WORK.
 4. SUBSOIL FINDINGS:
 - 4.1) General.
 - 4.2) Silty Sand and Gravel (Fill).
 - 4.3) Silty Clay to Clayey Silt.
 5. GROUND WATER.
 6. DISCUSSION AND RECOMMENDATIONS.
 7. SUMMARY.
 8. MISCELLANEOUS.
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FOUNDATION INVESTIGATION REPORT
For
New Underpass at Hwy. 401 & Maidstone
Twp. Road, County of Essex, Twp. of
Maidstone, Conc. V & VI, Lot 17 & 18,
District No. 1 (Chatham)
W.J. 65-F-79 -- W.P. 128-64

1. INTRODUCTION:

It is proposed to construct a 4-span underpass at Hwy. 401 and Maidstone Township Road intersection. At the request of Mr. G. Scott, Regional Bridge Location Engineer, memo dated April 2, 1965, a foundation investigation was carried out at this site.

Included in this report are the field and laboratory results with recommendations for the type of foundation support.

2. DESCRIPTION OF SITE AND GEOLOGY

The topography of the site is flat farmland, mostly cultivated with corn and tomatoes.

The physiography of the region is referred to as the "St. Clair Clay Plains". The bedrock is overlain by a glacial till layer which, in turn, is covered by lacustrine deposits from glacial lakes of Whittlesey and Warren.

3. FIELD AND LABORATORY WORK:

The field investigations were carried out by means of a Penn. Drill adapted for soil sampling. The work comprised of five sampled boreholes driven down to maximum 105 ft., and five dynamic

3. FIELD AND LABORATORY WORK: (cont'd.) ...

cone penetration tests. In cohesive soils, undisturbed samples were taken by pushing 2" I.D. Shelby tubes, while in granular soils, sampling was done by a 2" O.D. split-spoon sampler driven according to the specifications of the Standard Penetration Test.

The undisturbed samples were tested for Atterberg limits, unconfined compression and consolidation measurements, while other representative samples were tested for natural moisture content, bulk density and grain size distribution.

The location of boreholes and their logs are presented in the attached Drawing No. 65-F-79A.

4. SUBSOIL FINDINGS:

4.1) General:

The subsoil at the site is quite uniform. It is a deep deposit of silty clay to clayey silt with some sand and a trace of gravel. In boreholes No. 2 and 4, which are located on the side shoulders of existing Hwy. 401, about 6.5 ft. of silty sand and gravel fill material was encountered.

4.2) Silty Sand and Gravel (Fill):

A 6.5 ft. layer of fill material was encountered in B.H. No's 2 and 4. The material is mainly clayey, silty sand and gravel, in a loose state of compaction ($N = 5 - 7$ blows/ft.).

4.3) Silty Clay to Clayey Silt:

This layer was found throughout the entire explored depth of 105 ft. below ground level. The material is silty clay to clayey

cont'd. /3 ...

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

4.3) Silty Clay to Clayey Silt: (cont'd.) ...

silt with occasional admixtures of sand and small gravel. The plasticity of the material decreases with depth down to approximate elevation 550 from where it is higher again. The natural moisture content in the upper 15 to 20 ft. is below or close to the plastic limit, while at greater depth it is higher, giving a consistency index of around 0.6.

Grain size analyses carried out of the various samples from this layer are shown in the Appendix of this report.

Shear strength measurements show that the upper 20 ft. are very hard and have a shear strength considerably in excess of 2,000 lbs./sq.ft., while below that depth, the strength drops off quite rapidly to around 700 - 800 p.s.f., indicating a firm consistency. At greater depth, the shear strength becomes higher again - i.e., very stiff. The shear strength measurements are shown on the attached borehole logs.

There is also a difference in colour of the upper very hard desiccated crust which is brown, and the greyish underlying material.

5. GROUND WATER:

Due to the fact that the boring was done with a Penn. Drill - i.e., without wash water, it was possible to detect any water in the boreholes. The results indicate the presence of perched ground water in B.H. 1 at Elev. \pm 578 ft., and in B.H. 5 at Elev. \pm 567 ft. It is not certain that this gives the true ground

cont'd. /4 ...

5. GROUND WATER: (cont'd.) ...

water level which is believed to be at the elevation where brown crust material changes to grey material - i.e., at depths of 12 ft. to 18 ft. below the ground level.

6. DISCUSSION AND RECOMMENDATIONS:

The subsoil conditions are, in general, favourable for spread footing type foundations at this site.

Abutments - It is recommended to support the abutments on spread footings founded on a compacted granular fill with a safe bearing pressure of 2 t.s.f.

Consideration can also be given to pile support. The footings can be supported on 12-3/4" O.D. tubular steel piles. These piles, driven through the embankment fill down to elevation 594 ft. (not deeper), will provide 20 tons per pile design load.

Piers - The piers can be supported on spread footings. These footings can be placed at elevation 1600 ft. At this elevation, a safe bearing pressure of 3 t.s.f. is recommended.

Due to the variability of the subsoil, exact estimates for total and differential settlements have not been found to be practical. It is believed that these settlement problems will be taken care of, first, by constructing the approach embankments at least 6 months prior to the construction of the piers; second, by designing the bridge superstructure with simply supported spans.

Approach embankments placed with the standard 2:1 side slopes, will not present any stability problems.

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

Ground water - During the investigations, ground water was detected in B.H.'s 1 and 5 at a depth of 30 ft. and 40.5 ft., respectively, below the ground level. It is believed that this was in the form of perched water. No apparent water was detected in the other boreholes. It is also noted that the grey material in the lower layer is moist compared to the upper brown desiccated crust.

7. SUMMARY:

The subsoil conditions at the site are favourable for spread footing type foundations.

For abutments two alternatives are being proposed:

(a) Spread footings supported on well compacted granular fill with 2 t.s.f. safe design value.

(b) Footings can be supported on 12-3/4" O.D. tubular steel piles driven to elevation 594 ft. (Not deeper). These piles can be safely loaded with 20 T/pile.

Piers should be supported on spread footings placed at elevation 1600 ft. with a safe bearing pressure of 3 t.s.f.

In order to overcome the effects of anticipated differential settlements, it is recommended to construct the approach embankment fills at least 6 months prior to the construction of the piers, and also to design the bridge superstructure with simply supported spans.

The embankment fills constructed with the standard 2:1 side slope will not present any stability problem. No dewatering problems are anticipated.

cont'd. /6 ...

8. MISCELLANEOUS:

The field work was carried out during July 16 to July 22, 1965, under the supervision of Mr. V. Korlu, Project Foundation Engineer, who also wrote this report. The report was reviewed by Mr. M. Devata, Senior Foundation Engineer.

The field equipment was provided by the Johnston Drilling Company of Toronto.

October 1965

APPENDIX I

FOUNDATION SECTION

ORIGINATED BY V.K.

COMPILED BY V.K.

CHECKED BY M.D. *SR*

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

RECORD OF BOREHOLE NO. 2

FOUNDATION SECTION

MATERIALS & TESTING DIVISION

JOB 65-F-79 LOCATION Hwy 401 & Maidstone Twp Rd., Sta 233+17, 63' Lt. ORIGINATED BY V.K.
W.P. 128-64 BORING DATE July 19, 1965. COMPILED BY V.K.
DATUM Geodetic BOREHOLE TYPE Pennndrill CHECKED BY M.D.

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	20	40	60	80	100	WP		
608.5	Groundlevel														
0.0	Silty sand and gravel fill		1	SS	7										
602.5			2	SS	18										
6.0	Brown (Stiff to v. hard)		3	SS	47										
596.5			4	SS	26										
12.0	Grey		5	SS	17										
	Silty clay to clayey silt, with some sand and occasional gravel (Firm to v. stiff)		6	TW	P										
			7	TW	P										
573.0			8	TW	P										
35.5	End of borehole														

Gr 2
Sa 16
Si 42
Cl 40
Gr 1
Sa 16
Si 42
Cl 41
Gr 3
Sa 14
Si 42
Cl 41
Gr 0
Sa 18
Si 47
Cl 35

FOUNDATION SECTION

CHECKED BY M.D. *AR*

SOIL PROFILE			SAMPLES	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W	BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER TYPE BLOWS / FOOT	ELEV. SCALE	WATER CONTENT % WP W WL 15 30 45	P.C.F.	
608.0	Ground level						
0.0	Brown (Stiff to V. hard)		1 SS 16	600			Gr 4 Sa 28 Si 43 Cl 25
			2 SS 20				Gr 1 Sa 16 Si 45 Cl 38
			3 SS 47				Gr 1 Sa 15 Si 43 Cl 41
			4 SS 54				Gr 0 Sa 14 Si 40 Cl 46
592.0			5 SS 22	590			
16.0	Grey Silty clay to clayey silt with some sand and occasional gravel. (Firm to v. stiff)		6 SS 26				
			7 TW P	580			
			8 TW P				
			9 TW P	570			
			10 TW P				
			11 TW P	560			
			12 TW P	550			Gr-0-0 Sa-13-1 Si-42-45 Cl-45-54
			13 TW P	540			
			14 TW P	530			Gr 1 Sa 2 Si 30 Cl 67
			15 TW P	520			
			16 SS 29	510			
			17 SS 34				
			18 SS 75				
503.0							Gr 0 Sa 21 Si 61 Cl 18
105.0	End of borehole						

FOUNDATION SECTION

JOB 65-F-79 LOCATION Hwy 401 & Maidstone Twp Rd., Sta. 232+22 63' Rt. ORIGINATED BY V.K.
W.P. 128-64 BORING DATE July 19, 1965. COMPILED BY V.K.
DATUM Geodetic BOREHOLE TYPE Penn-drill CHECKED BY M.D. *MD*

SOIL PROFILE		SAMPLES	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	Liquid Limit — WL	Bulk Density	REMARKS
ELEV. DEPTH	DESCRIPTION	NUMBER TYPE BLOWS / FOOT	20 40 60 80 100	PLASTIC LIMIT — WP	P.C.F.	
			SHEAR STRENGTH P.S.F. ● - UNCON. COMPRESSION	WATER CONTENT % WP W WL		
608.5	Groundlevel		400 800 1200 1600 2000	15 30 45		
0.0	Silty sand and gravel (fill)	1 SS 5				Gr 1 Sa 21 Si 50 Cl 28
602.0		2 SS 12				Gr 2 Sa 16 Si 38 Cl 44
6.5	Brown (Stiff to v. hard)	3 SS 38				Gr 5 Sa 14 Si 38 Cl 43
		4 SS 42				
593.0		5 SS 27				
15.5	Grey Silty clay to clayey silt with some sand and occasional gravel. (Firm to v. stiff)	6 TW P				
		7 TW P				
		8 TW P				
		9 TW P				
566.5		9A SS 31				
42.0	End of borehole.					

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 65-F-79

LOCATION Hwy 401 & Maidstone Twp Rd., Sta. 232+76 98' Rt.

ORIGINATED BY V.K.

w. p. 128-64

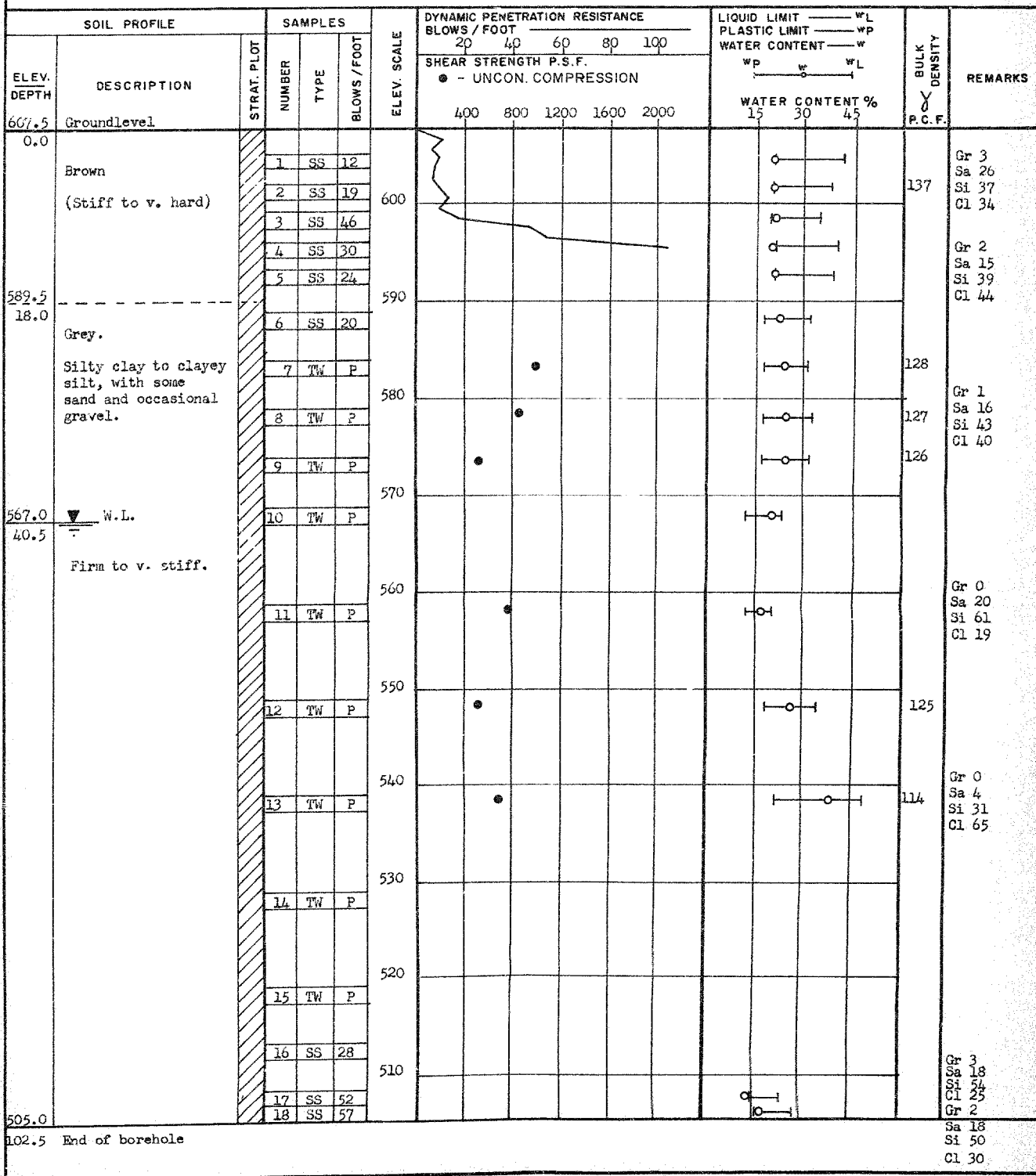
BORING DATE July 21, 1965.

COMPILED BY V.K.

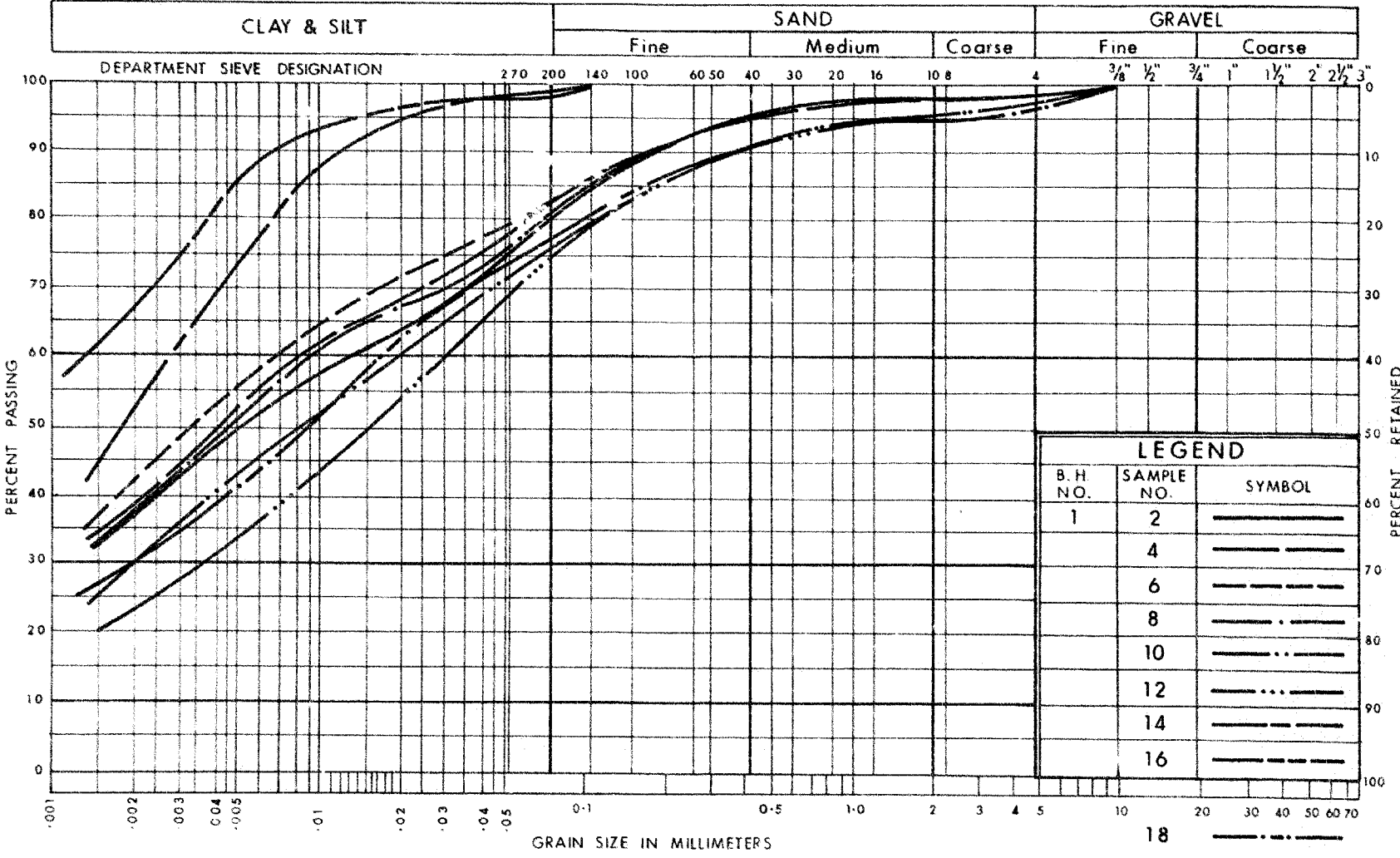
DATUM Geodetic

BOREHOLE TYPE Penndrill

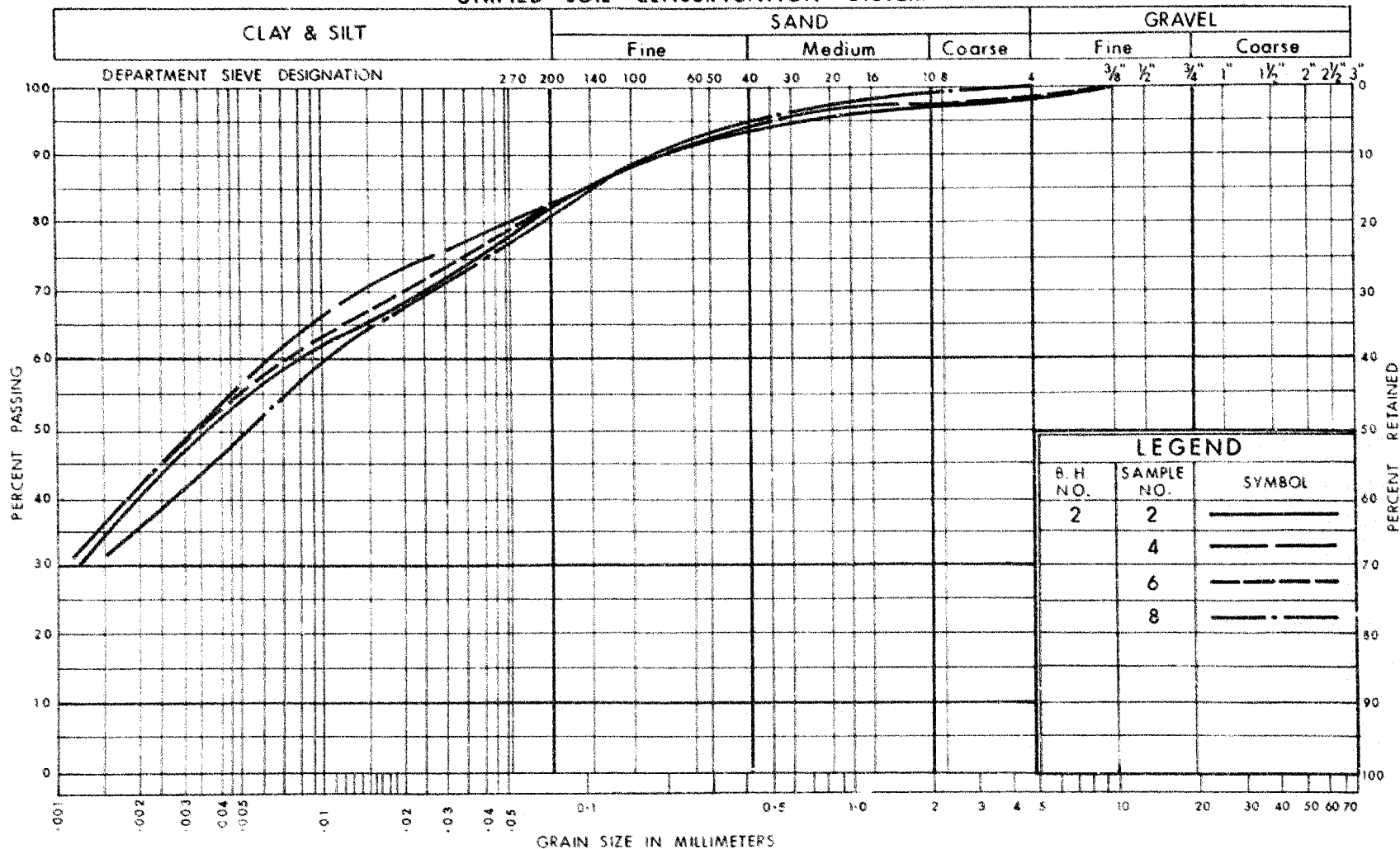
CHECKED BY M.D. 42



UNIFIED SOIL CLASSIFICATION SYSTEM



UNIFIED SOIL CLASSIFICATION SYSTEM



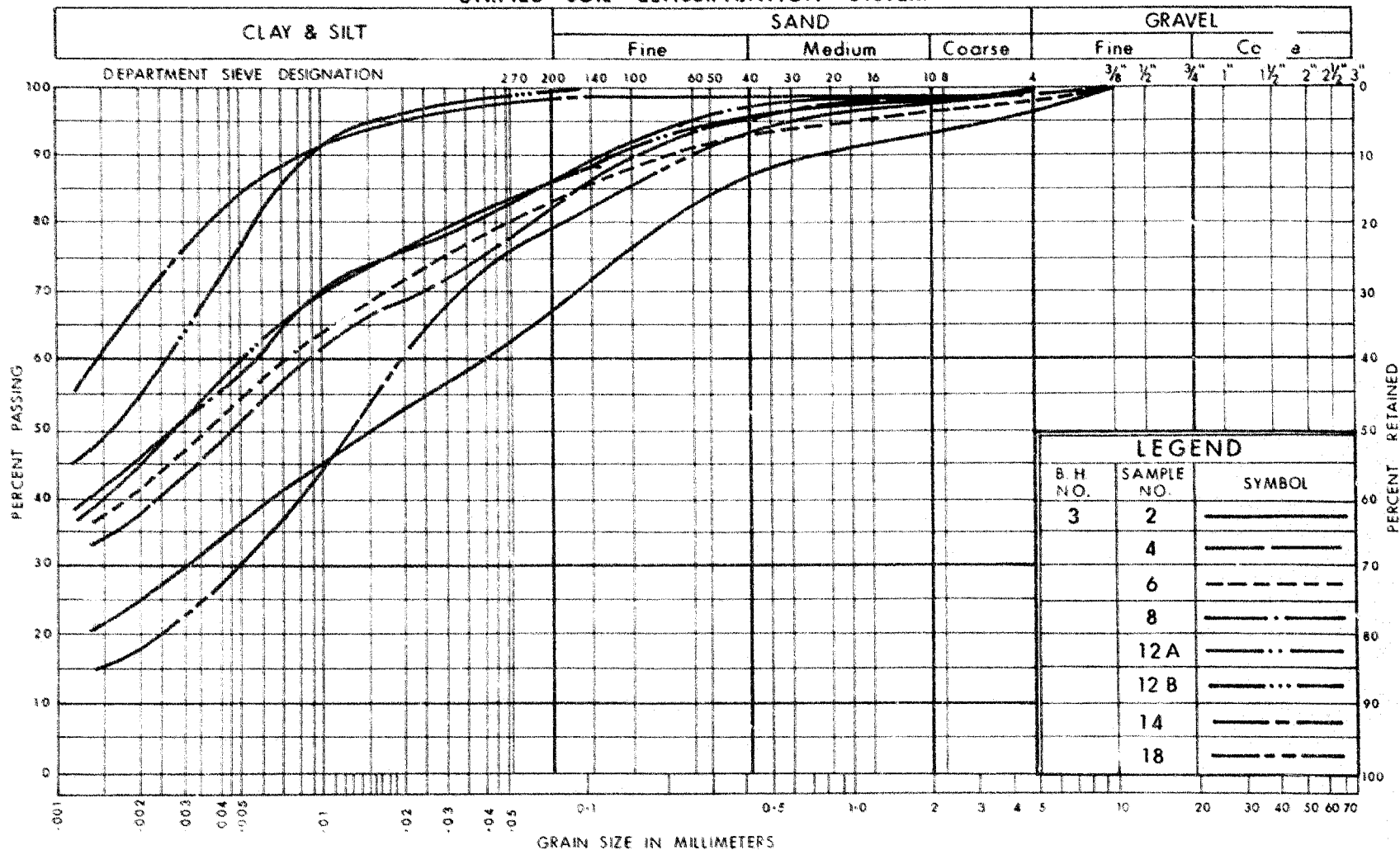
DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

GRAIN SIZE DISTRIBUTION
BOREHOLE NO. 2

W.P. No. 128-64

JOB No. 65-F-79

UNIFIED SOIL CLASSIFICATION SYSTEM

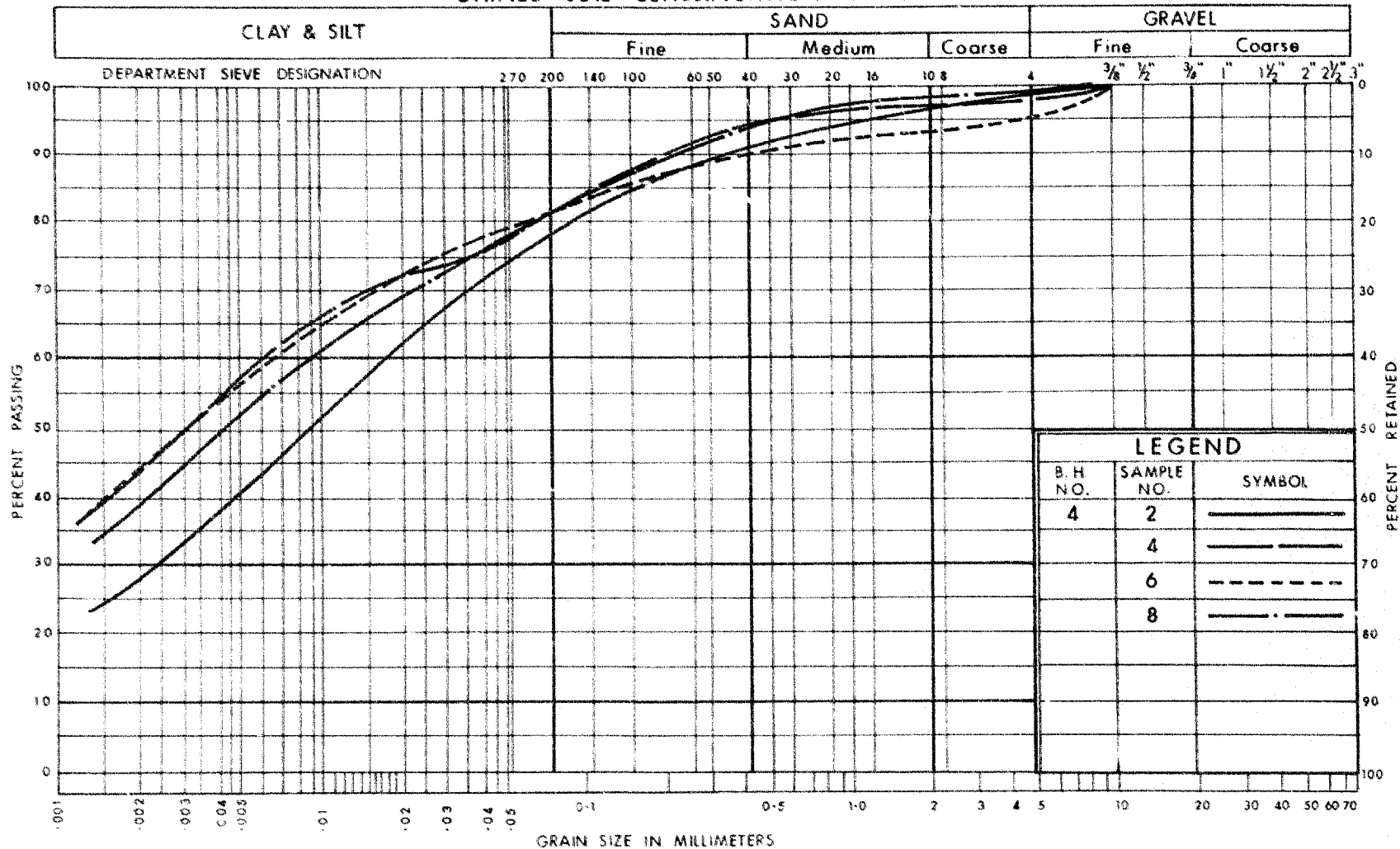


DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

GRAIN SIZE DISTRIBUTION BOREHOLE NO. 3

W.P. No. 128-64
JOB No. 65-F-79

UNIFIED SOIL CLASSIFICATION SYSTEM

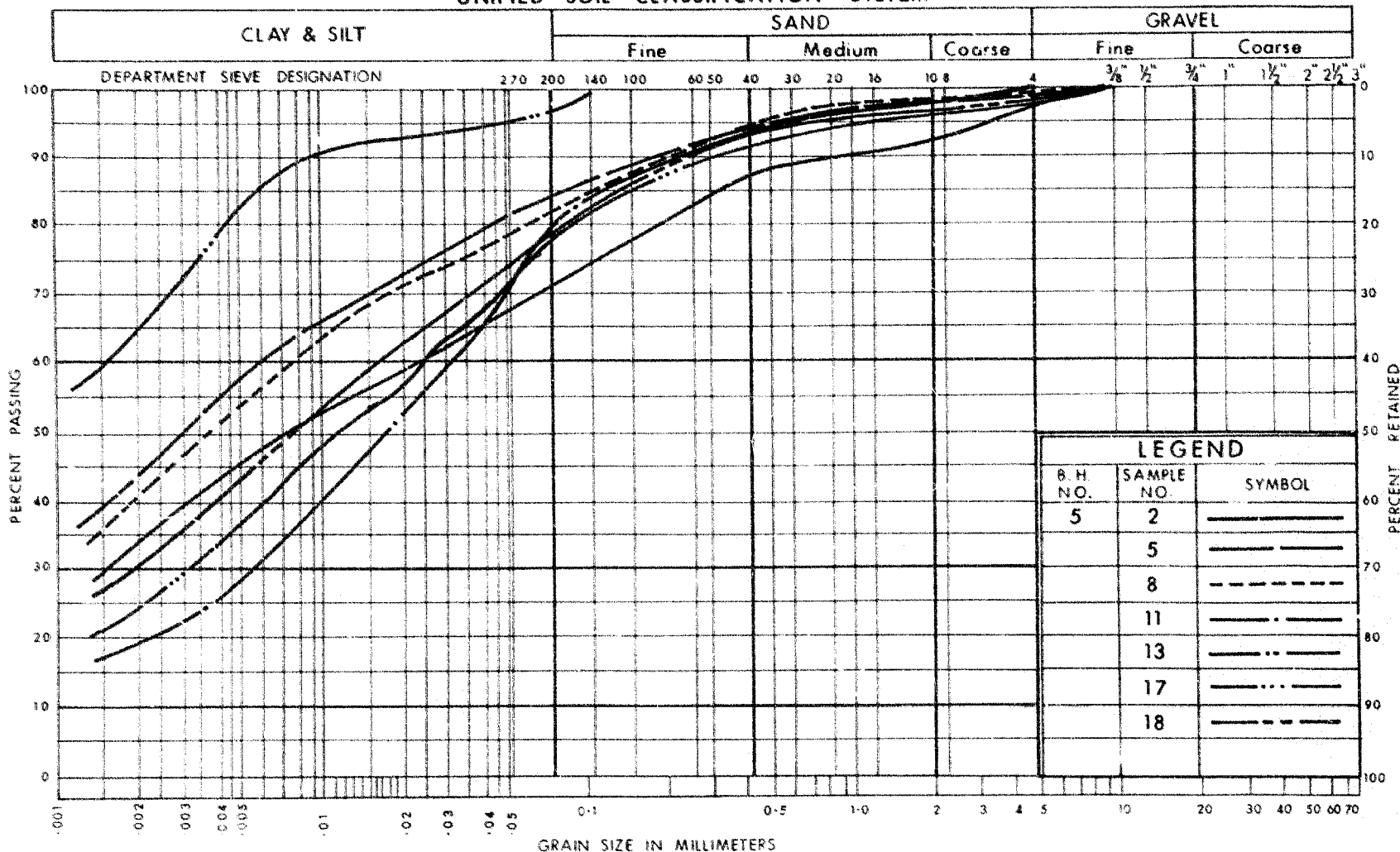


DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

GRAIN SIZE DISTRIBUTION BOREHOLE NO. 4

W.P. No. 128-64
JOB No. 65-F-79

UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

GRAIN SIZE DISTRIBUTION
BOREHOLE NO. 5

W.P. No. 128-64

JOB No. 65-F-79

PENETRATION RESISTANCE

STANDARD PENETRATION RESISTANCE 'N' - 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>'N' BLOWS/FT.</u>	<u>c LB./SQ.FT.</u>	<u>DENSENESS</u>	<u>'N' BLOWS/FT.</u>
VERY SOFT	0 - 2	0 - 250	VERY LOOSE	0 - 4
SOFT	2 - 4	250 - 500	LOOSE	4 - 10
FIRM	4 - 8	500 - 1000	COMPACT	10 - 30
STIFF	8 - 15	1000 - 2000	DENSE	30 - 50
VERY STIFF	15 - 30	2000 - 4000	VERY DENSE	> 50
HARD	> 30	> 4000		

TYPE OF SAMPLE

S.S.	SPLIT SPOON	T.W.	THINWALL OPEN
W.S.	WASHED SAMPLE	T.P.	THINWALL PISTON
S.B.	SCRAPER BUCKET SAMPLE	O.S.	OESTERBERG SAMPLE
A.S.	AUGER SAMPLE	F.S.	FOIL SAMPLE
C.S.	CHUNK SAMPLE	R.C.	ROCK CORE
S.T.	SLOTTED TUBE SAMPLE		
	P.H.		SAMPLE ADVANCED HYDRAULICALLY
	P.M.		SAMPLE ADVANCED MANUALLY

SOIL TESTS

Q _u	UNCONFINED COMPRESSION	L.V.	LABORATORY VANE
Q	UNDRAINED TRIAXIAL	F.V.	FIELD VANE
Q _{cu}	CONSOLIDATED UNDRAINED TRIAXIAL	C	CONSOLIDATION
Q _d	DRAINED TRIAXIAL	S	SENSITIVITY

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
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
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_o	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

Bridge Division,
Downsview, Ontario,
November 1, 1965.

MEMORANDUM:

To File

RE: proposed structures on Hwy. 401,
located 3.6 miles to 6.9 miles
East of Hwy. 98,
District No. 1, Chatham.
W.F. 127-64, 128-64, 129-64,
131-64, 132-64, 309-64, 310-64,
669-64 and 670-64.

At a meeting between Mr. M. Devata of Foundations Branch
and K. Rossi of Bridge Division, concerning the above structures
held on October 28, 1965 at the Bridge Office, it was
agreed that:

1. The spread footings for all the piers can be designed for
a bearing capacity of $2\frac{1}{2}$ tons/ft.².
2. The abutment piles for all the structures if driven in
accordance with the recommendations given in the indi-
vidual Foundation Reports, can be designed to carry
30 Tons/pile.
3. The structures should be designed to tolerate a maximum
differential settlement between the abutments and shoulder
piers in the order of 1 to $1\frac{1}{2}$ inches.

RMH/CS
c.c. A. G. Stornas
G. Scott.

K. G. Rossi,
Bridge Project Engineer.

10 JUL 5 11 31 25

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CHAT DOWN 4 JUL 8/65 320P VR

R V LANGLANDS NTCE ENGR

RE:

(1) PROPOSED CROSSING AT HWY 401 AND ROAD ALLOWANCE BETWEEN
CONCESSION 5 & 6 COUNTY OF ESSEX TWP OF HAIDSTONE

V J 65-F-79 DIST 1

(2) PROPOSED GARAGE AT COTTAM COUNTY OF ESSEX, TWP OF GOSFIELD
CONCESSION 5 HWY 3 VJ65-SR78

FOUNDATION INVESTIGATION WORK WILL COMMENCE ON JUL 13/65 FOR THE
ABOVE MENTIONED JOBS. THIS IS FOR YOUR INFORMATION

M DEVATA M & T DIV

MEMORANDUM

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

From: Bridge Division,
Downsview, Ontario.

Date: December 3, 1965.

Our File Ref.

In Reply To

SUBJECT:

W.P. 128-64, Site 6-241,
Maidstone Twp. Rd. Concession VI
Underpass,
0.8 miles east of Hwy. 98,
Hwy. 401, District 1.

We are sending to you herewith one print of
Preliminary Plan D 5827-P1 of the above structure.

Would you please let us have your written
comments.



NZ/ag
c.c. S. McCombie
G. Scott

N. Zoltay,
for G. Scott,
Regional Bridge Location Engineer.

Mr. S. McCombie,
Bridge Planning Engineer,
Bridge Division.

Attn: Mr. G. Scott

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

December 14, 1965

Preliminary Review of the Bridge Plans for the
Proposed Structures on Hwy. 401, located 0.6 miles
to 8.9 miles East of Hwy. 98, Hwy. 401, District
No. 1 (Chatham) - S.R. 127-64, 128-64, 129-64,
309-64, 310-64, 369-64, and 670-64.

We have reviewed the preliminary bridge drawings for
the above-mentioned structures. The foundation design for each
structure appears to comply with recommendations contained in
our Foundation reports.

Very truly,
Sincerely,

M. Levata,
SENIOR FOUNDATION ENGINEER
For:
A. C. Starnac,
ASST. CHIEF FOUNDATION ENGINEER

cc: Foundations Office

encl. Files

*Foundations
Office*

Mr. F. C. Brown,
District Engineer,
Chatham, Ontario.

Materials & Testing Division.

Attn: Mr. P. Peacock.

April 5, 1966.

Installation of Settlement Plates at the
Approach fill locations on Hwy. 401, Dist. #1.

Further to our telephone conversation, we are enclosing the list of various structure which are scheduled to be built in your district. We may wish to instrument some of these projects and request you to advise us at least two weeks prior to the commencement of approach fill construction of each project.

- WP127-64 County Rd. to Puce Interchange No. 4 8.9 Miles East of Hwy. 98.
- WP131-64 Sandwich S. Twp. Rd., Concession XI, Underpass 3.2 Miles East of Hwy. 98.
- WP132-64 Essex County Rd. 27 Underpass 1.5 Miles East of Hwy. 98.
- WP309-64 Maldstone Twp. Rd. Concession VII Underpass 7.1 Miles East of Hwy. 98.
- WP310-64 Maldstone Twp. Rd. Concession IX Underpass 5.4 Miles East of Hwy. 98.
- WP123-64 Maldstone Twp. Rd. Concession VI Underpass 3.0 Miles East of Hwy. 98. 65-6-79
- WP129-64 Maldstone Twp. Rd. Concession XII Underpass 6.3 Miles East of Hwy. 98.
- WP669-64 Sandwich S. Twp. Rd. Concession X Underpass 2.3 Miles East of Hwy. 98.
- WP670-64 Sandwich S. Twp. Rd. Concession XII Underpass 0.6 Miles East of Hwy. 98.

MD/tt
cc: Foundations Office
Gen. Files

L. Davata
M. Davata
SENIOR FOUNDATION ENGINEER

For: A. G. Stermac
PRINCIPAL FOUNDATION ENGINEER

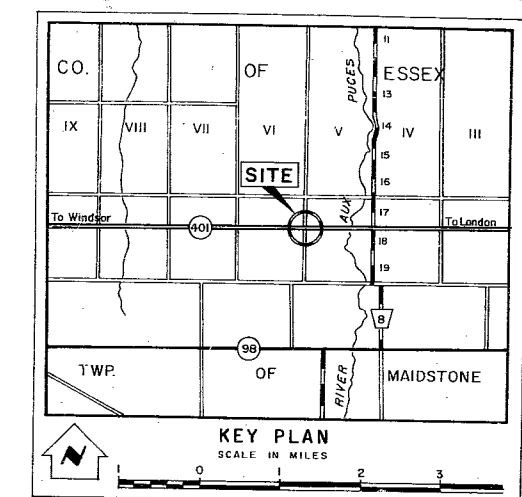
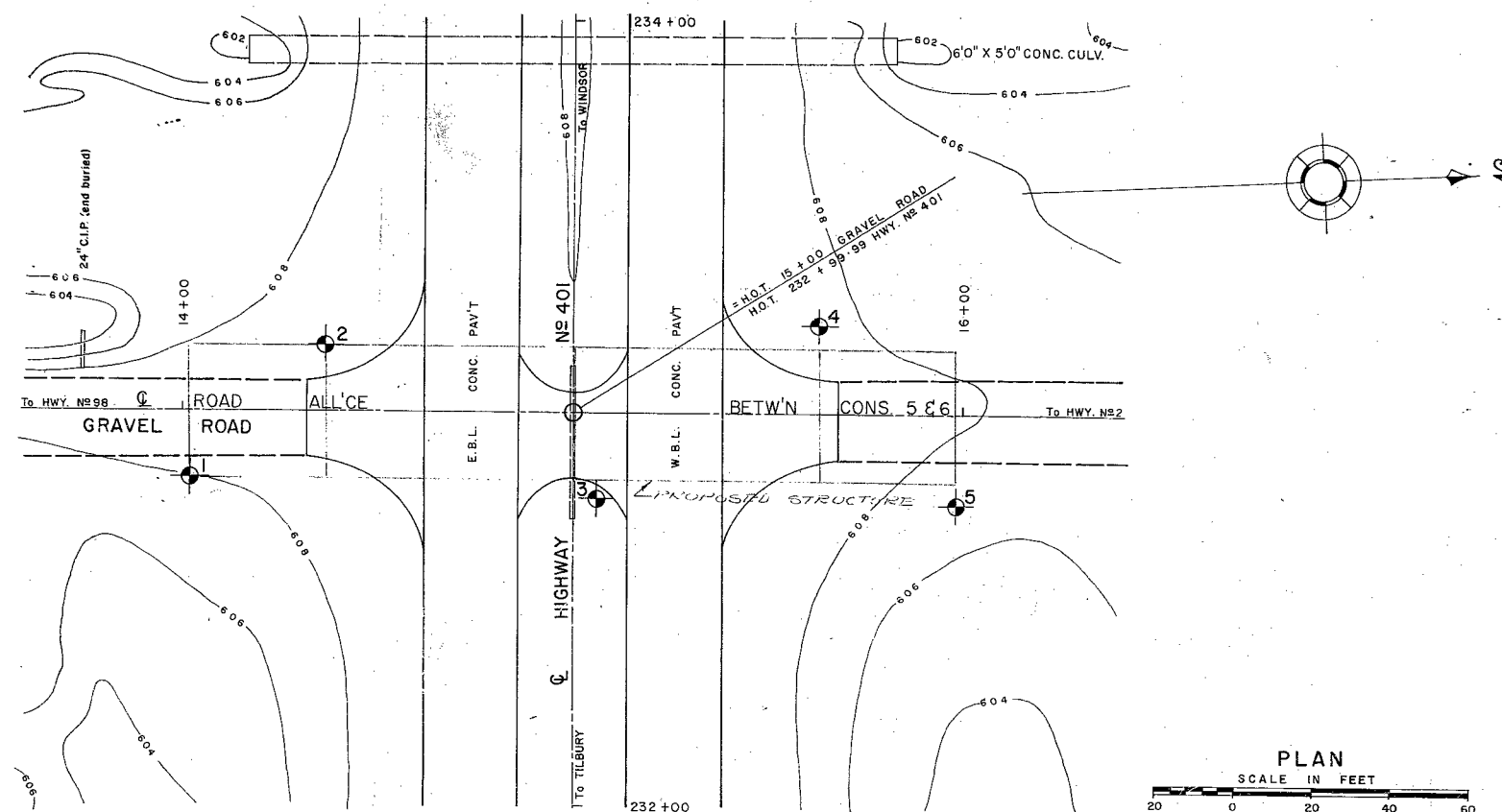
#65-F-79





W.P. #128-64

HWY #401 &

MAIDSTONE

TWP. RD.



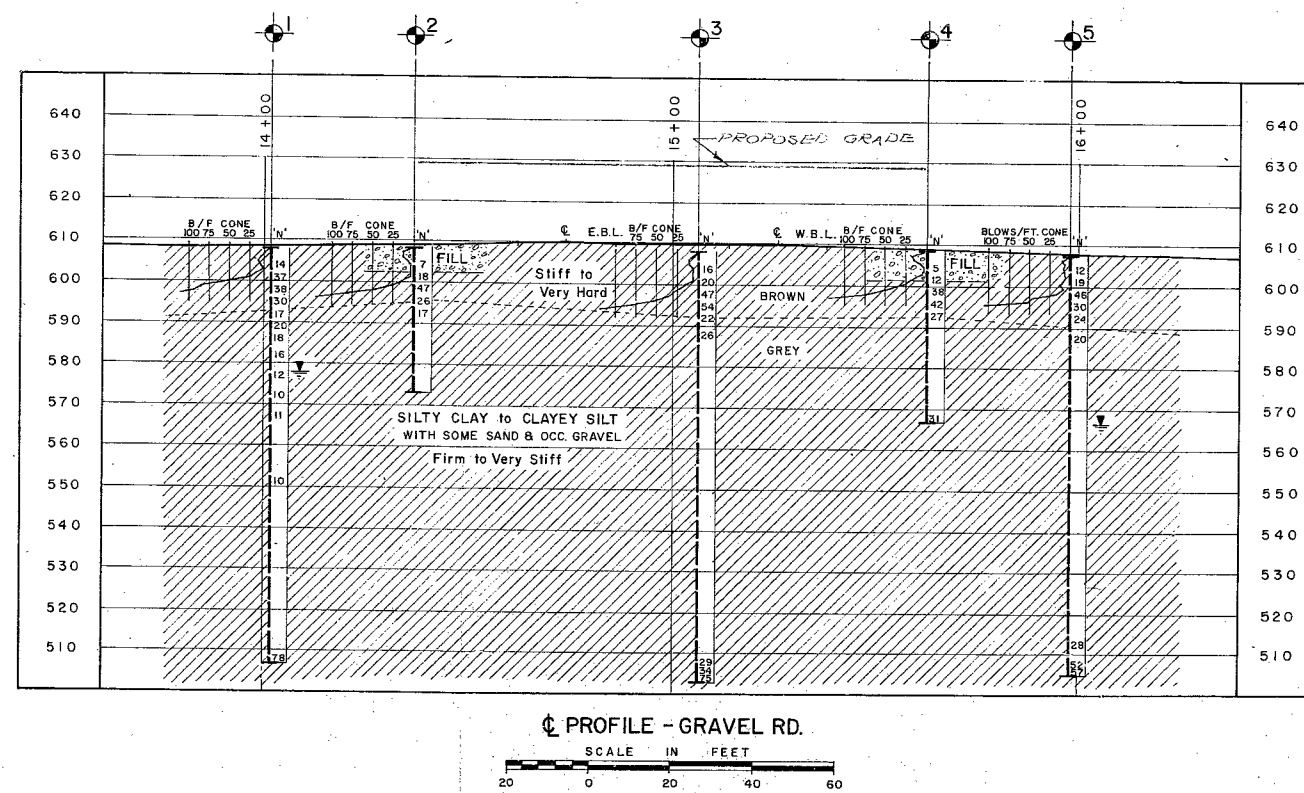
LEGEND			
	Bore Hole		
	Cone Penetration Hole		
	Bore & Cone Penetration Hole		
	Water Levels established at time of field investigation. July 1965		
NO.	ELEVATION	STATION	OFFSET
1	6 0 8'0	232 + 83	98' LT.
2	6 0 8'5	233 + 17	63' LT.
3	6 0 8'0	232 + 78	6' RT.
4	6 0 8'5	232 + 22	63' RT.
5	6 0 7'5	232 + 76	98' RT.

- NOTE -

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence and may be subject to considerable error.

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS & TESTING DIVISION - FOUNDATION SECTION	
MAIDSTONE TOWNSHIP ROAD - CON. VI	
KING'S HIGHWAY NO. 401 CO. ESSEX	DIST. NO. 1
TWP. MAIDSTONE	LOT 17 & 18 CON. V & VI
BORE HOLE LOCATIONS & SOIL STRATA	
SUBMD. V.K. CHECKED <i>W.S.</i> W.P. NO. 128-64	M.B.T. DRAWING NO.
DRAWN D.G.H. CHECKED <i>W.S.</i> JOB NO. 65-F-79	65-F-79A
DATE 20 AUG / 65	BRIDGE DRAWING NO.
APPROVED <i>A.G. Bennett</i> PRINCIPAL, FOUNDATION ENG. INC.	CONT. NO.

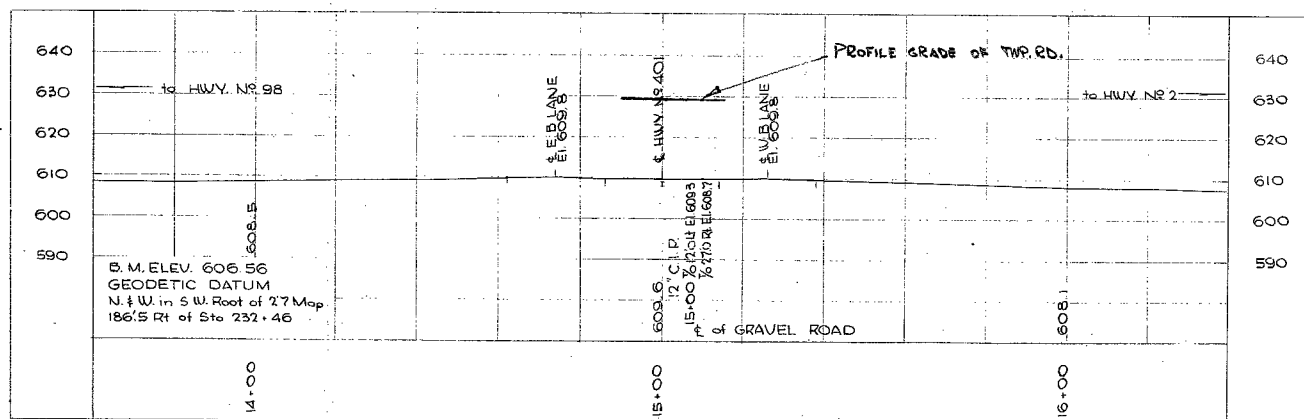
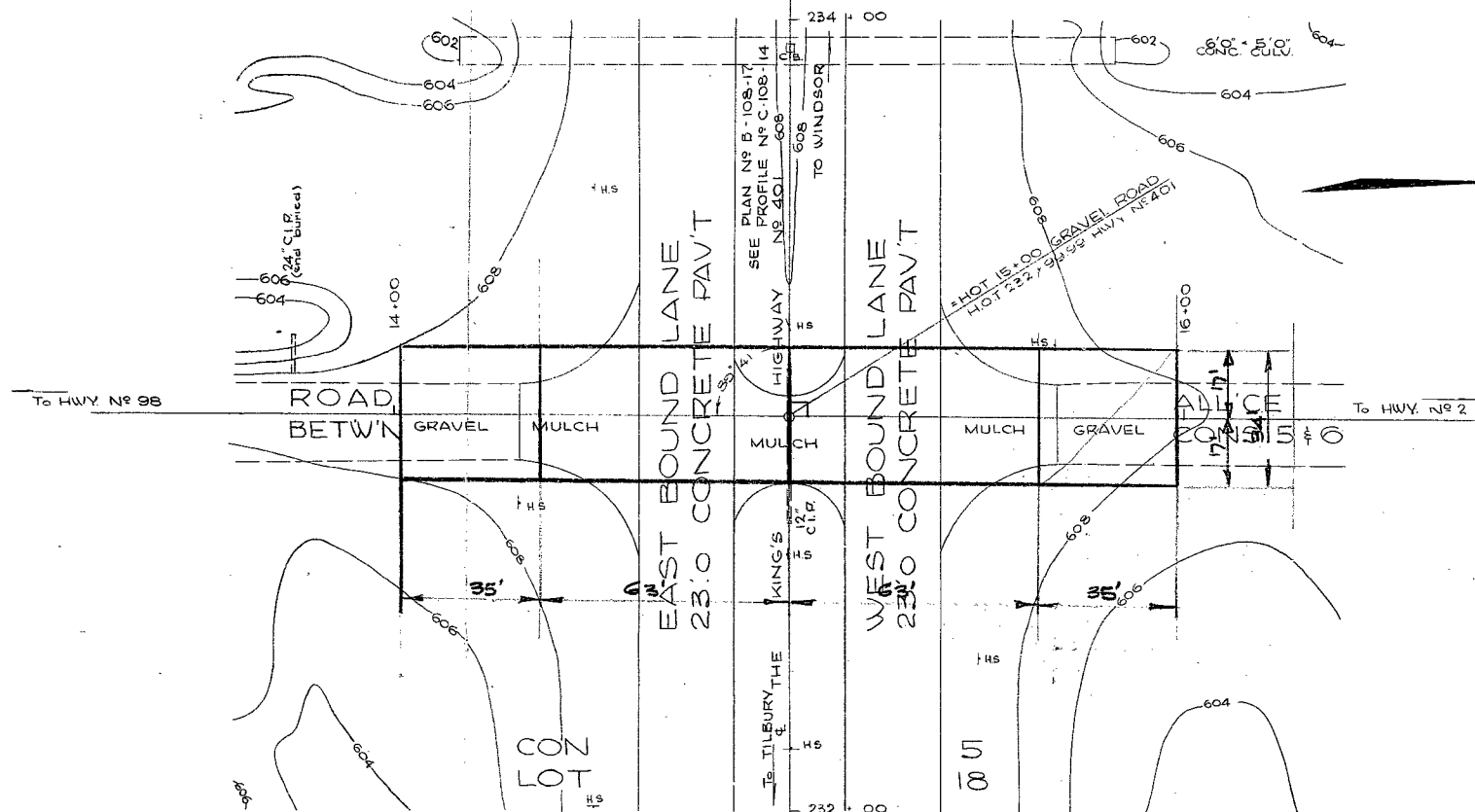
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1-4344-E

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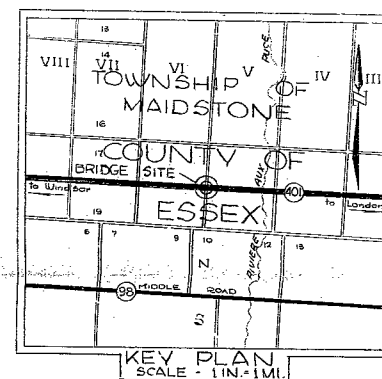
COUNTY OF ESSEX
TOWNSHIP OF MAIDSTONE

CON. 6
LOT 18



FILE COPY

NOTE: SKETCH SHOWING PROPOSED
LOCATION OF BRIDGE AS SUBMITTED
FOR FOUNDATION INVESTIGATION.
APRIL 2, 65.



W.P. 128-64

65-F-79

DATE	REVISIONS & ADDITIONS	BY	CHK'D
DEPARTMENT OF HIGHWAYS - ONTARIO			
DESIGN BRANCH			
ENGINEERING SURVEYS DIVISION			
BRIDGE SITE			
PROPOSED CROSSING			
AT			
THE KING'S HWY. NO. 401			
AND			
ROAD ALL'CE BETW'N CON. 5 & 6			
TOWNSHIP OF MAIDSTONE COUNTY OF ESSEX			
LOT 18 CON. 5 & 6			
SCALE AS SHOWN	DISTRICT NPI CHATHAM	REGION S. WESTERN	
W.O. 9392-64-105	Date of Survey JAN '65 Plan MAR '65	SITE NO.	
SURVEY BY		DRAWN BY	
Chief of Party	R. SCHAEFER	Draftsman	P. HALL & J. COSSEY
Supervisor	G. BAUN	Supervisor	J. CAMILLERI
CHECKED BY		PLAN	
Draftsman	P. DMYTRENKO	NO. E-4344-1	
Supervisor	J. CAMILLERI		