

MEMORANDUM

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

Attention: Mr. S. McCombie

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

Date: April 22, 1966

Our File Ref.

In Reply To

MAY 11 1966

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For

Proposed Crossing of Gravel Road and
Hwy. #401, Co. of Essex, Twp. of
Maldstone, Lot 17 & 18, Con. 2 & 3,
W.B.R. -- District #1 (Chatham).
W.J. 66-F-26 -- W.P. 126-64

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

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

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

AGS/MdeP
Attach.

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

Foundations Office
Gen. Files

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

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FOUNDATION INVESTIGATION REPORT

For

Proposed Crossing of Gravel Road and
Hwy. #401, Co. of Essex, Twp. of
Maidstone, Lot 17 & 18, Con. 2 & 3,
W.B.R. -- District #1 (Chatham).

W.J. 66-P-26 -- W.P. 126-64

1. INTRODUCTION:

A request to carry out a foundation investigation at a proposed gravel road and Hwy. #401 crossing, was received from the Bridge Location Section, dated November 29, 1965. It is proposed to erect a new bridge at this location to carry the gravel road over Hwy. #401. The site is located in the County of Essex, Twp. of Maidstone, Lot 17 & 18, Con. 2 & 3, W.B.R. At this location the chainage of the gravel road is from 14+00 to 16+00.

In order to determine the soil properties and decide on the type of foundation, an investigation was carried out by this Section. Results and discussion of the field and laboratory investigations, as well as conclusions and recommendations for the future design work, are contained in the following paragraphs of this report.

2. DESCRIPTION OF SITE:

The site of the future bridge is located in the County of Essex, Twp. of Maidstone, Lot 17 & 18, Con. 2 & 3, W.B.R. The surrounding area is generally flat terrain.

Physiographically, the site is located in the so-called St. Clair Clay Plains.

3. FIELD AND LABORATORY WORK:

In order to obtain sufficient information on the type and properties of the subsoil, five sampled boreholes and ten dynamic

cont'd. /2

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

Cone penetration tests were carried out at this site. Split-spoon and thin-walled samples were taken at various depth intervals. In-situ vane tests were performed in B.H. #6, 18" below the bottom of the thin-walled sampler, immediately after the samples were removed.

Samples recovered in the split-spoon and thin-walled samplers were used to determine the following physical properties:

1. Natural Moisture Contents.
2. Bulk Densities.
3. Grain Size Distribution.
4. Atterberg Limits.
5. Undrained Shear Strength.
6. Consolidation Curves.

Results of these laboratory tests are summarized in Appendix I of this report.

4. SUBSOIL CONDITIONS:

4.1) General:

The stratigraphy of the soil at the site was found to be generally uniform. A detailed description of various soil types encountered during the investigation, is shown in Appendix I of this report, and is also given in subsequent paragraphs. The estimated stratigraphical profile shown on Dwg. No. 66-P-26A, is based upon this information.

4.2) Clayey Silt with some Sand and traces of Gravel:

This layer starts immediately below the topsoil and extends down to approx. El. 503.0 for a depth of about 105'-0" to 108'-0". It may be classified as hard to stiff with an average 'N' value of 25 blows/foot. 'N' values varied from 10 blows/foot to 63 blows/foot. The upper 15 feet of the deposit is desiccated and has a consequent hard consistency. Below this level, the consistency ranges from stiff to very stiff.

cont'd. /3 ...

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

4.2) Clayey Silt with some Sand and traces of Gravel: (cont'd.) ...

Liquid limits for this material varied from 17.7% to 40.7%, while plastic limits ranged from 11.9% to 20.2%. The average moisture content was found to be 19%, ranging from 10.5% to 23.8%. A typical Plasticity Chart is given in Appendix I of this report.

Grain size distribution curves indicated that this stratum is composed of 45% silt, 39% clay, 14% sand, and the rest of 2%, is gravel. In-situ vane and unconfined shear strength tests carried out in this material showed good agreement. From the vane results, it is estimated that the undrained shear strength of this stratum below the crust zone varies from 680 lbs./sq.ft. to over 2000 lbs./sq.ft. Within the crust zone the strength is estimated to range from 4000 to 10,000 p.s.f.

4.3) Clayey Silt with Sand (Glacial Till):

Following the layer of clayey silt with some sand and gravel is a stratum of clayey silt with sand (glacial till). It may be classified as very dense with an average 'N' value in excess of 150 blows/foot. No samples were recovered in this layer, owing to its extremely high density.

5. GROUND WATER CONDITIONS:

The ground water level, at the time of the investigation, was found to be between elevation 599.0 and 601.0. It may be assumed that the ground water level will vary with the seasons of the year.

No artesian water conditions were encountered.

6. DISCUSSION AND RECOMMENDATIONS:

As was described in the previous paragraphs, the subsoil basically consists of clayey silt with some sand and traces of gravel, with a relative density ranging from stiff to hard, followed by very

cont'd. /4

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

dense clayey silty sand (glacial till). The investigation has revealed that within the upper 20 feet of the deposit, the properties are such that adequate support for spread footings can be obtained. It is recommended to place the footings approximately 5'-0" below existing original ground levels at approximate El. 603.0. A net allowable pressure of 2.5 t.s.f. may be assumed for design purposes.

If perched abutments are used, they may be founded within the approach fills on $12\frac{3}{4}$ " x $\frac{1}{4}$ " steel tube piles, or 12" \emptyset concrete piles driven to approx. El. 595.0. A design load of 30 tons per pile may be used in this event. Piles should not be driven below El. 595.0 since the soil tends to decrease in strength below this level.

Due to the fact that subsoil consists of an extensive deposit of compressible cohesive material, some settlements and consequently, differential settlements will occur due to consolidation. It is estimated that differential settlements in the order of $1\frac{1}{2}$ to 2 inches will occur over a long-term period. The structure should be designed accordingly.

Since the subsoil consists of relatively impervious material and the water level is low, dewatering should not present problems. No stability problems are anticipated with the approach fills.

7. SUMMARY:

The stratification of the soil, which consists of clayey silt with some sand and traces of gravel, followed by clayey silt with sand (glacial till), is quite uniform. The density of the material encountered, varies from hard to stiff. Because of the stiffness of the upper layers, spread footings may be used for the proposed footings with a design load of 2.5 t.s.f. If perched abutments are used, they may be founded within the approach fills on $12\frac{3}{4}$ " x $\frac{1}{4}$ " steel tube piles, or 12" \emptyset concrete piles driven to approx. El. 595.0. A design load of 30 tons per pile may be used in this event.

7. SUMMARY: (Cont'd.) ...

Dewatering of the excavations should not present major problems. No stability problems are anticipated for the approach fills.

8. MISCELLANEOUS:

The field work, performed during the period from March 11, 1966 to March 18, 1966, together with the preparation of this report, was undertaken by Mr. W. W. Kulmattickas, Project Foundation Engineer. The investigation was carried out under the general supervision of Mr. K. G. Selby, Supervising Foundation Engineer, who also reviewed this report.

April 1966

APPENDIX I

DEPARTMENT OF HIGHWAYS - ONTARIO

RECORD OF BOREHOLE NO. 1

FOUNDATION SECTION

MATERIALS & TESTING DIVISION

JOB 66-F-26

LOCATION Hwy. #401 & Gravel Road Ch 15/99 17'-0" Rt.

ORIGINATED BY W.W.K.

W.P. 126-64

BORING DATE March 14 & 15, 1966.

COMPILED BY W.W.K.

DATUM 608.0

BOREHOLE TYPE Washboring NX Casing.

CHECKED BY K.G.S. *ll*

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	SHEAR STRENGTH P.S.F.	Wp	w	WL		
608.0	Groundlevel												
606.5	Black org. topsoil.												
	Clayey silt with some sand and traces of gravel. Hard to stiff.		1	SS	30		600						
			2	SS	57								
			3	SS	23		590						
			4	SS	22								
			5	SS	25		580						
			6	SS	10		570						
			7	SS	15		560						
			8	SS	14		550						
			9	SS	12		540						
			10	SS	15		520						
507.5													
100.5	Very dense glacial till End of borehole.						510						

W.L. Elev.
599.4
Observed in
Casing.

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 2

FOUNDATION SECTION

JOB 66-F-26LOCATION Hwy. #401 & Gravel Road Ch 15/99 17'-0" Lt.ORIGINATED BY W.W.K.W.P. 126-64BORING DATE March 15, 1966.COMPILED BY W.W.K.DATUM 608.0BOREHOLE TYPE Penetration Only.CHECKED BY K.G.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		20	40	60	80	100	WATER CONTENT % WP — W — WL				
608.0	Groundlevel															
0.0	Penetration Only.															
591.0																
17.0	End of Penetration.															

Penetration Only.

End of Penetration.

FOUNDATION SECTION

CHECKED BY K.G.S.

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	PLASTIC LIMIT ——— WP			WATER CONTENT ——— W
							20 40 60 80 100	SHEAR STRENGTH P.S.F.			WP W WL
WATER CONTENT %									P.C.F.		
608.0	Groundlevel										
0.0	Penetration Only.										
595.0											
13.0	End of Penetration.										

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 4

FOUNDATION SECTION

JOB 66-P-26

LOCATION Hwy. #401 & Gravel Road Ch 15463 17'-0" Lt.

ORIGINATED BY W.W.K.

W.P. 126-64

BORING DATE March 17, 1966

COMPILED BY W.W.K.

DATUM 608.0

BOREHOLE TYPE Washboring NX Casing.

CHECKED BY K.G.S.

SOIL PROFILE			SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — w _L PLASTIC LIMIT — w _p WATER CONTENT — w			BULK DENSITY Y P.C.F.	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT 20 40 60 80 100					w _p w w _L				
							SHEAR STRENGTH P.S.F.					WATER CONTENT % 10 20 30				
608.0	Groundlevel															
606.0	Black org. topsoil															
2.0																
	Clayey silt with some sand and traces of gravel. Hard to stiff.		1	SS	24											
			2	SS	45											
			3	SS	29											
			4	SS	20											
				5	SS	21										
			6	SS	12											
41.5	End of borehole.															

Clayey silt with
some sand and
traces of gravel.

Hard to stiff.

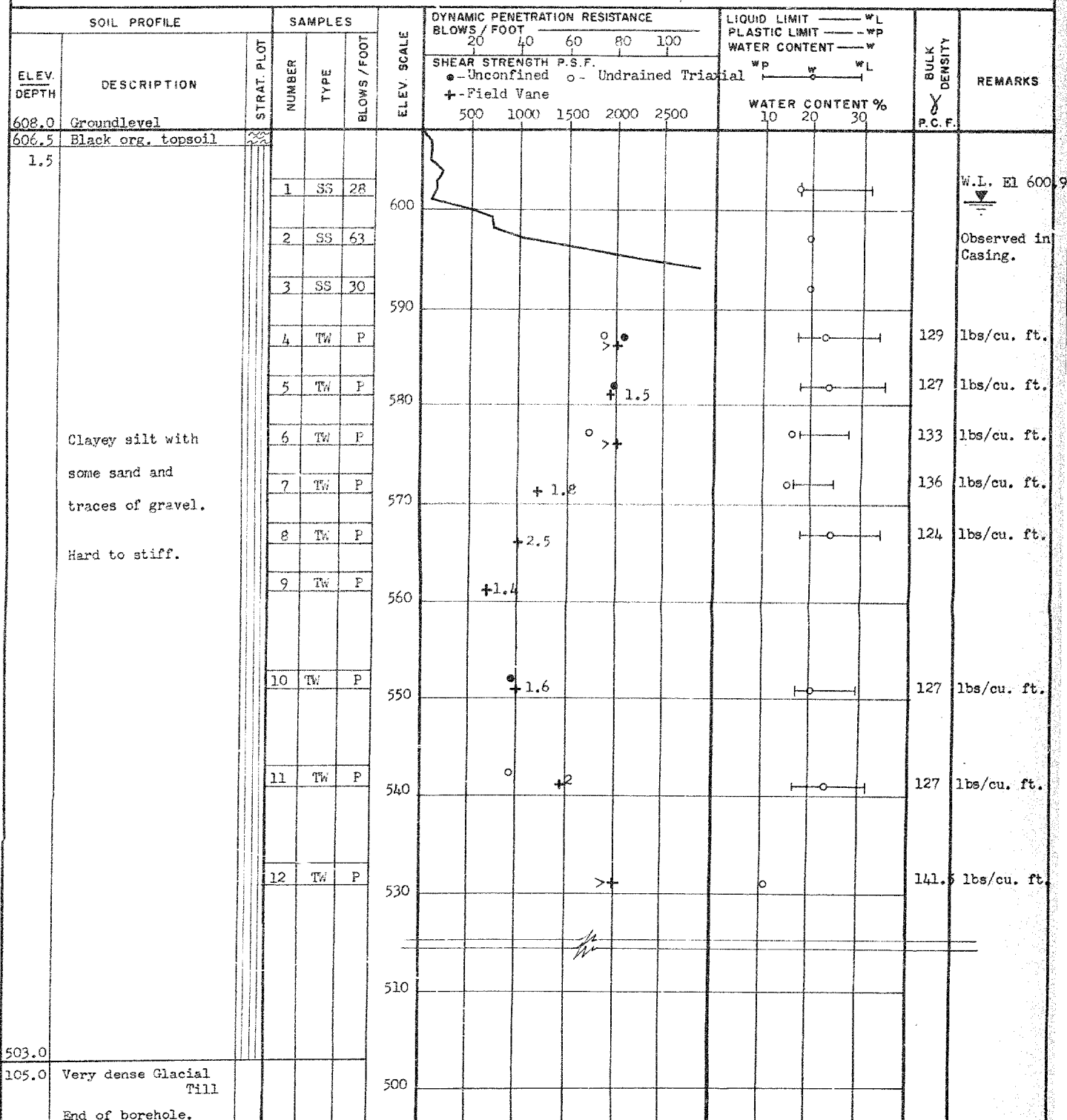
W.L. Elev.
▼ 599.7
Observed
in Casing.

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 6

FOUNDATION SECTION

JOB 66-F-26 LOCATION Hwy. #401 & Gravel Rd. Ch 15400 17'-0" Lt. ORIGINATED BY W.W.K.
W.P. 126-64 BORING DATE March 15 & 16, 1966. COMPILED BY W.W.K.
DATUM 608.0 BOREHOLE TYPE Washboring NX Casing. CHECKED BY K.G.S. *AK*



DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 66-F-26

LOCATION Hwy. #401 & Gravel Rd. Ch 14/38 - 17'-0" Lt.

ORIGINATED BY W.H.K.

W.P. 126-64

BORING DATE March 16 & 17, 1966.

COMPILED BY W.H.A.

DATUM 608.0

BOREHOLE TYPE Washboring NX Casing.

CHECKED BY K.G.S.

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100	SHEAR STRENGTH P.S.F.	LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W WP — W — WL WATER CONTENT % 10 20 30	BULK DENSITY P.C.F.	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT						
608.0	Groundlevel										
606.0	Black org. topsoil										
2.0	Clayey silt with some sand and traces of gravel. Hard to stiff.		1	SS	15	600					
			2	SS	50						
			3	SS	26	590					
			4	SS	20						
			5	SS	19	580					
			6	SS	22	570					
566.5											
41.5	End of borehole.					560					

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 66-F-26

W P 126-64

DATUM 608.0

RECORD OF BOREHOLE NO. 9

LOCATION Hwy. #401 & Gravel Rd. Ch. 14/03 - 17'-0" Lt.

BORING DATE March 26, 1966.

BOREHOLE TYPE Penetration Only.

FOUNDATION SECTION

ORIGINATED BY W.W.K.

COMPILED BY H.W.K.

CHECKED BY K.G.S.

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION
JOB 66-F-26
W.P. 126-64
DATUM 608.0

RECORD OF BOREHOLE NO. 10

FOUNDATION SL ON

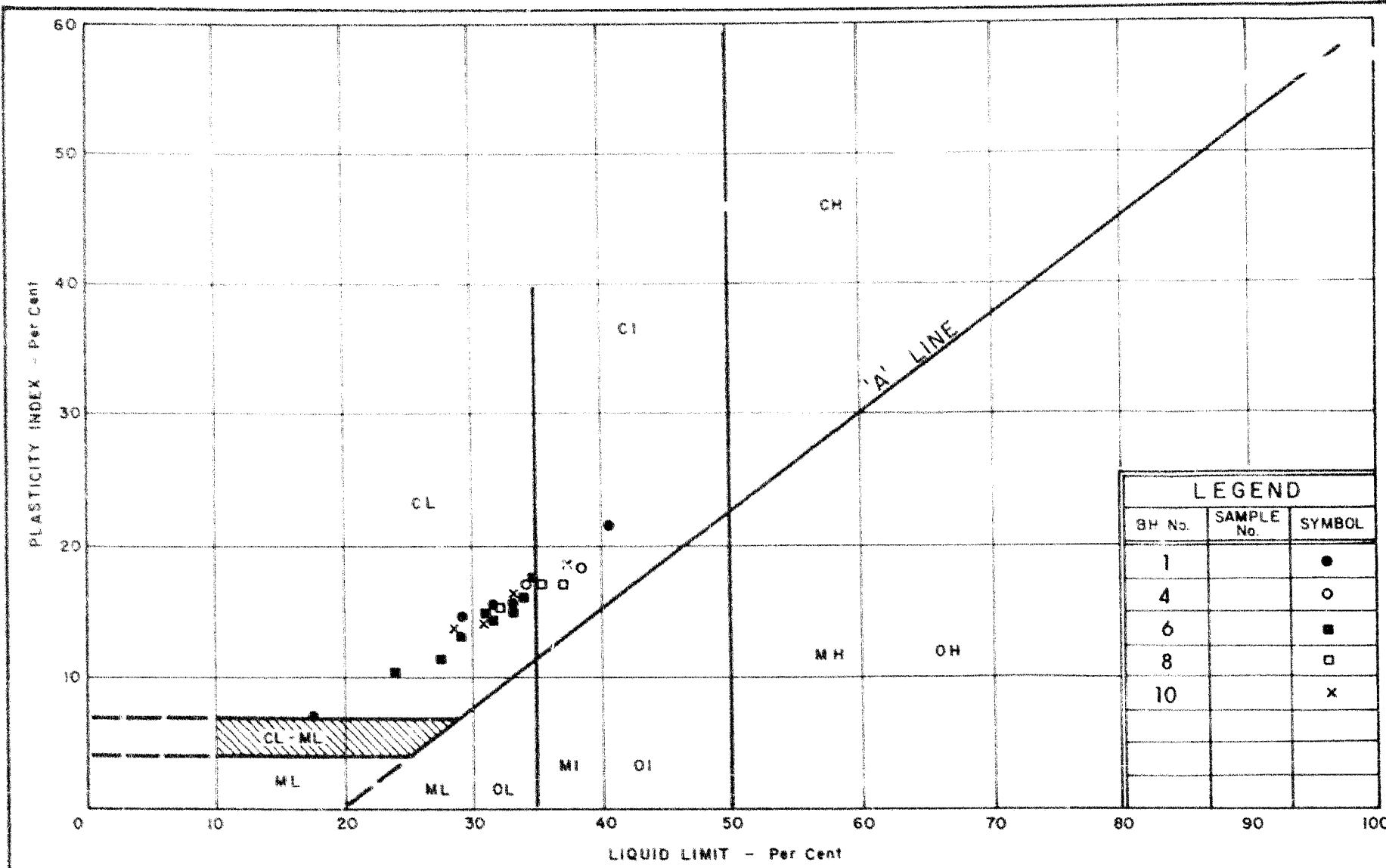
LOCATION Hwy. #401 & Gravel Rd. Ch 14/03 - 17'-0" Rt.
BORING DATE March 14 & 15, 1966.
BOREHOLE TYPE Washboring NX Casing.

ORIGINATED BY W.W.K.
COMPILED BY W.W.K.
CHECKED BY K.G.S.

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		20	40	60	80	100	WP	W	WL		
608.0	Groundlevel															
606.0	Black org. topsoil.															
2.0																
			1	SS	16	600										
			2	SS	47											
			3	SS	19	590										
			4	SS	16											
						580										
			5	SS	27											
						570										
			6	SS	18											
						560										
			7	SS	13											
						550										
			8	SS	14	540										
						530										
			9	SS	10											
						520										
			10	SS	20	510										
						500										
499.4																
108.6	Very dense glacial fill.															

End of borehole.

W.L. Elev.
599.3
Observed in
Casing.



LEGEND		
BH No.	SAMPLE No.	SYMBOL
1		●
4		○
6		■
8		□
10		x



DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

PLASTICITY CHART

W.P. No. 126 - / 4
JOB No. 66-F-26

ABBREVIATIONS USED IN THIS REPORT

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>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 _c	DRAINED TRIAXIAL	S	SENSITIVITY

ABBREVIATIONS 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
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
$\bar{\sigma}$	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 TOE 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

MEMORANDUM

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

From: Bridge Division,
Downsview, Ontario.

Date: November 29, 1965.

Our File Ref.

IN REPLY TO

SUBJECT: W.P. 126-64,
Site 6-236,
Maldstone Twp. Road
Concession Underpass,
Hwy. 401 - District 1.

We are sending herewith two (2) prints of Bridge Site Plan B-4362-1 on which we have marked in red the proposed location of the above structure.

The bridge site is readily accessible. It is 10.5 miles west of Hwy. 77.

Please make the necessary arrangements for foundation soils investigation. We will be pleased to have your report in due course.

NZ/is
cc. S. McCombie
G. Scott
N. D. Smith

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

Mr. A. P. Watt,
Regional Bridge Location Engr.,
Regional Office, London.

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

July 22, 1966

6-26-66

W.P. 126-64, Bridge Site No. 6-236,
Maidstone Twp. Rd., Con. 3 Underpass,
10.5 Miles West of Hwy. 77, Hwy. 401,
District 1 (Chatham).

The Preliminary Plan for the above mentioned structure has been reviewed.

The designer appears to have complied with the recommendations contained in the foundation report.

12 to Selby

KGS/MdeF

K. G. Selby,
SUPERVISING FOUNDATION ENGR.
For:
A. G. Stermac,
PRINCIPAL FOUNDATION ENGR.

cc: Foundations Office
Gen. Files

MEMORANDUM

To: Mr. A. G. Stermac
Principal Foundation Engineer
Lab Building
D O W N S V I E W

FROM: A. P. Watt

DATE: July 5, 1966

OUR FILE REF.

IN REPLY TO:

SUBJECT: WP 126-64, Bridge Site #6-236,
Maidstone Twp. Rd. Con. 3 Underpass,
10.5 miles west of Hwy. 77,
Hwy. 401,
District 1, Chatham.

W. J. 66-5-26.

Attached please find one copy of the preliminary
plan D-5957-F1 for the above structure.

Would you kindly review the bridge foundations
proposed and inform us if they are satisfactory.



A. P. WATT
REGIONAL BRIDGE LOCATION ENGINEER

APW:gf
Encl.

c.c. Mr. S. McCombie

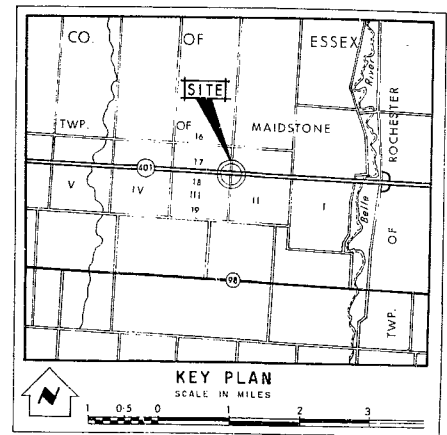
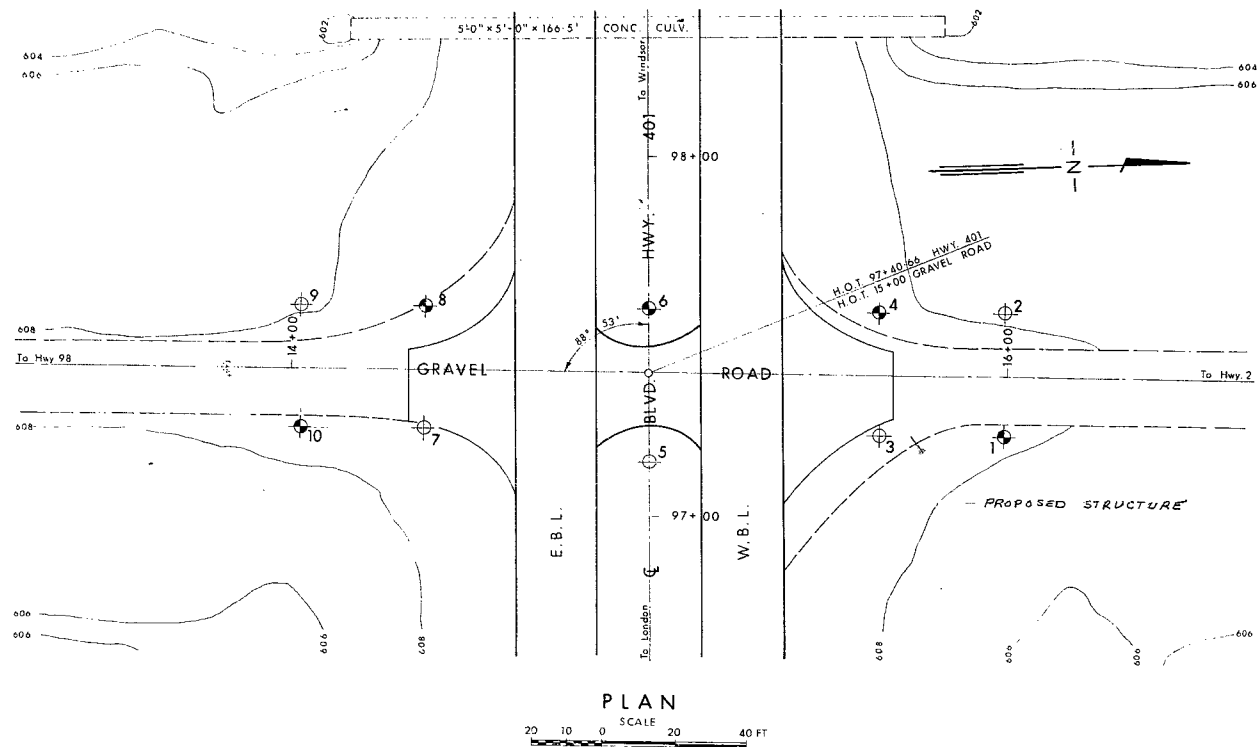
#66-F-26

W.P. #126-64

Hwy. #401 E

MAIDSTONE

TWP. RD.

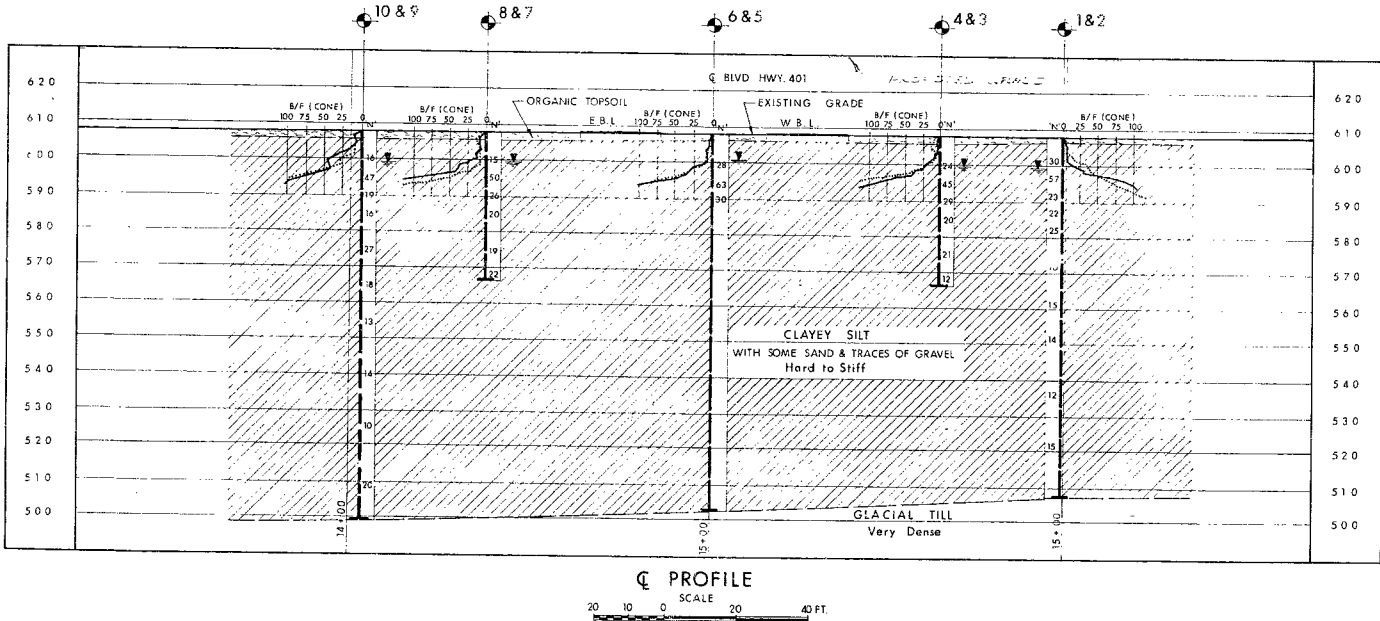


LEGEND

- Bore Hole
- ⊕ Cone Penetration Hole
- ⊕ Bore & Cone Penetration Hole
- Water Levels established at time of field investigation, MAR. 1966

NO.	ELEVATION	STATION	OFFSET
1	608.0	15+99	17" RT.
2	608.0	15+99	17" LT.
3	608.0	15+63	17" RT.
4	608.0	15+63	17" LT.
5	608.0	15+00	25" RT.
6	608.0	15+00	17" LT.
7	608.0	14+38	17" RT.
8	608.0	14+38	17" LT.
9	608.0	14+03	17" LT.
10	608.0	14+03	17" 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.



REVISIONS

NO.	DATE	BY	DESCRIPTION

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

MAIDSTONE TWP. ROAD - CON. III

KING'S HIGHWAY NO. 401 DIST. NO. 1
CO. ESSEX
TWP. MAIDSTONE LOT 17 & 18 CON. II & III

BORE HOLE LOCATIONS & SOIL STRATA

SUBM'D. W.K. CHECKED	W.P. NO. 126-64	M.B.T. DRAWING NO.
DRAWN S.C. CHANGED	DOB NO. 66-F-26	66-F-26 A
DATE 10 MAY 1966	SITE NO.	BRIDGE DRAWING NO.
APPROVED <i>[Signature]</i>	CONT. NO.	

PRINT RECORD

NO.	FOR	DATE

REF. NO. E-4362-1