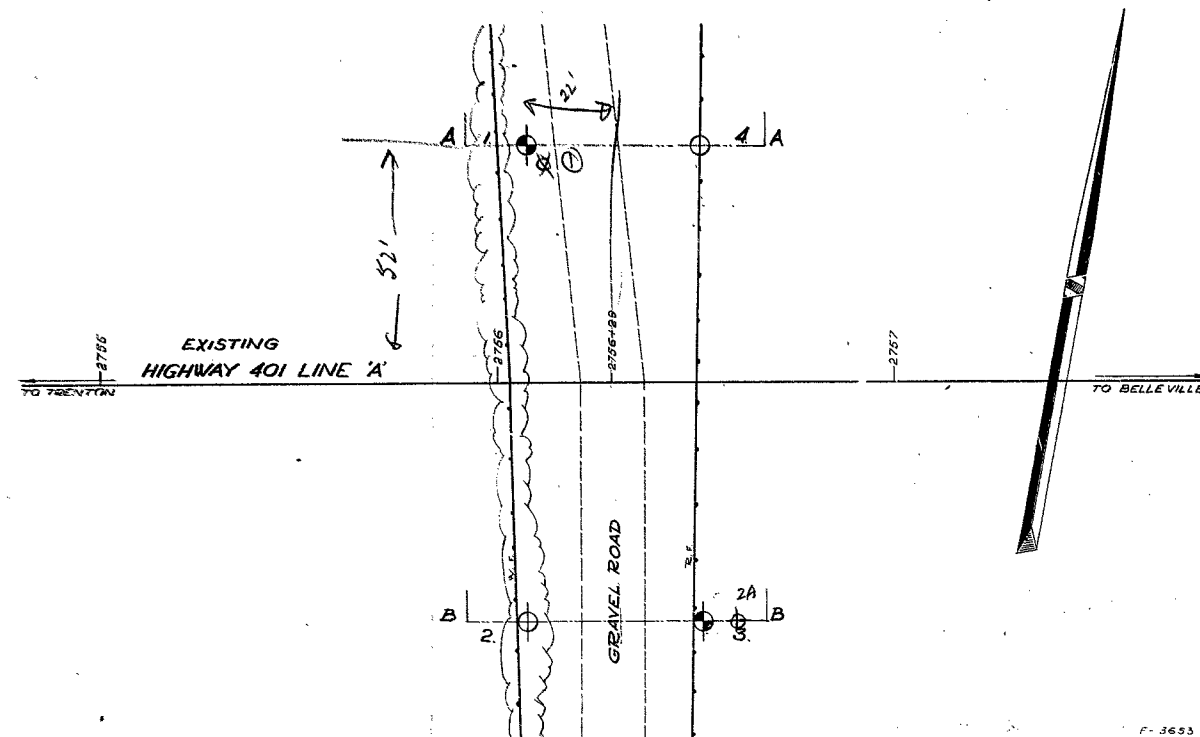
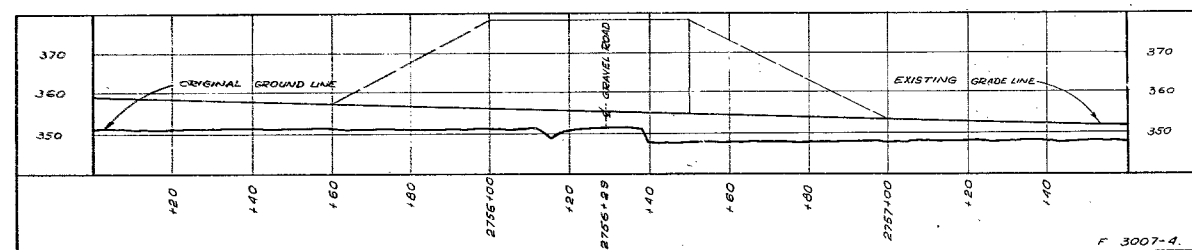


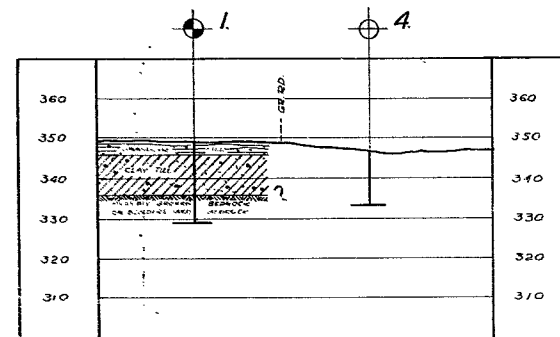
59-F-39
W.P. # 66-59
Hwy. # 401
CROSSING
GRAVEL RD.
6 MILES E. OF
BELLEVILLE



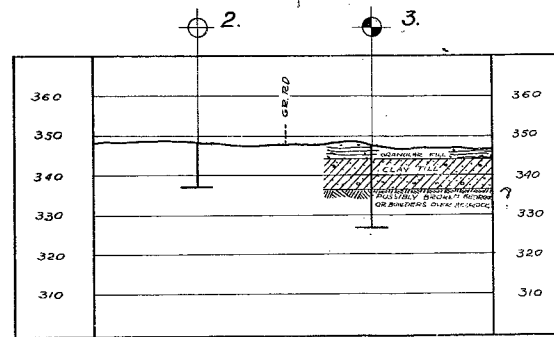
PLAN



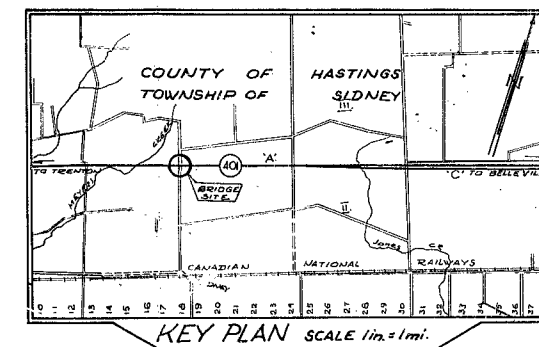
PROFILE



A - A



B - B



LEGEND			
BORE & PENETRATION			
PENETRATION HOLE			
HOLE NO.	ELEVATION	STATION	DISTANCE FROM E
1.	349.5	2756+07	60' RT.
2.	349.4	2756+07	60' LT.
3.	347.2	2756+51	60' LT.
4.	346.8	2756+51	60' RT.

NOTE

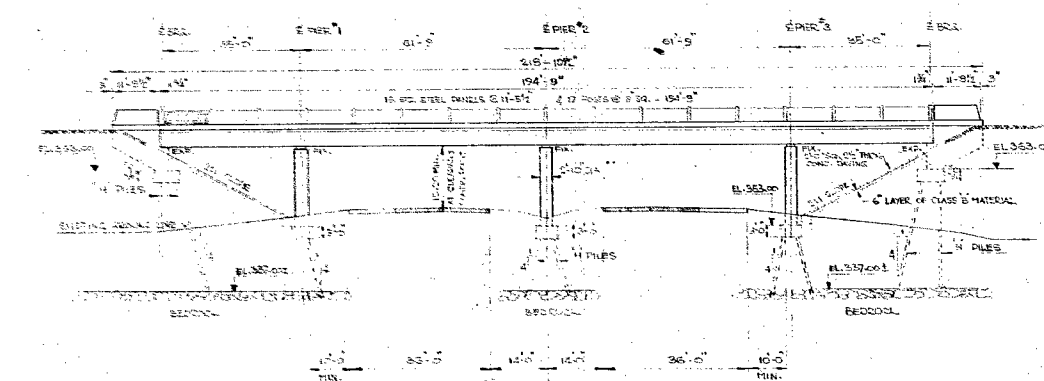
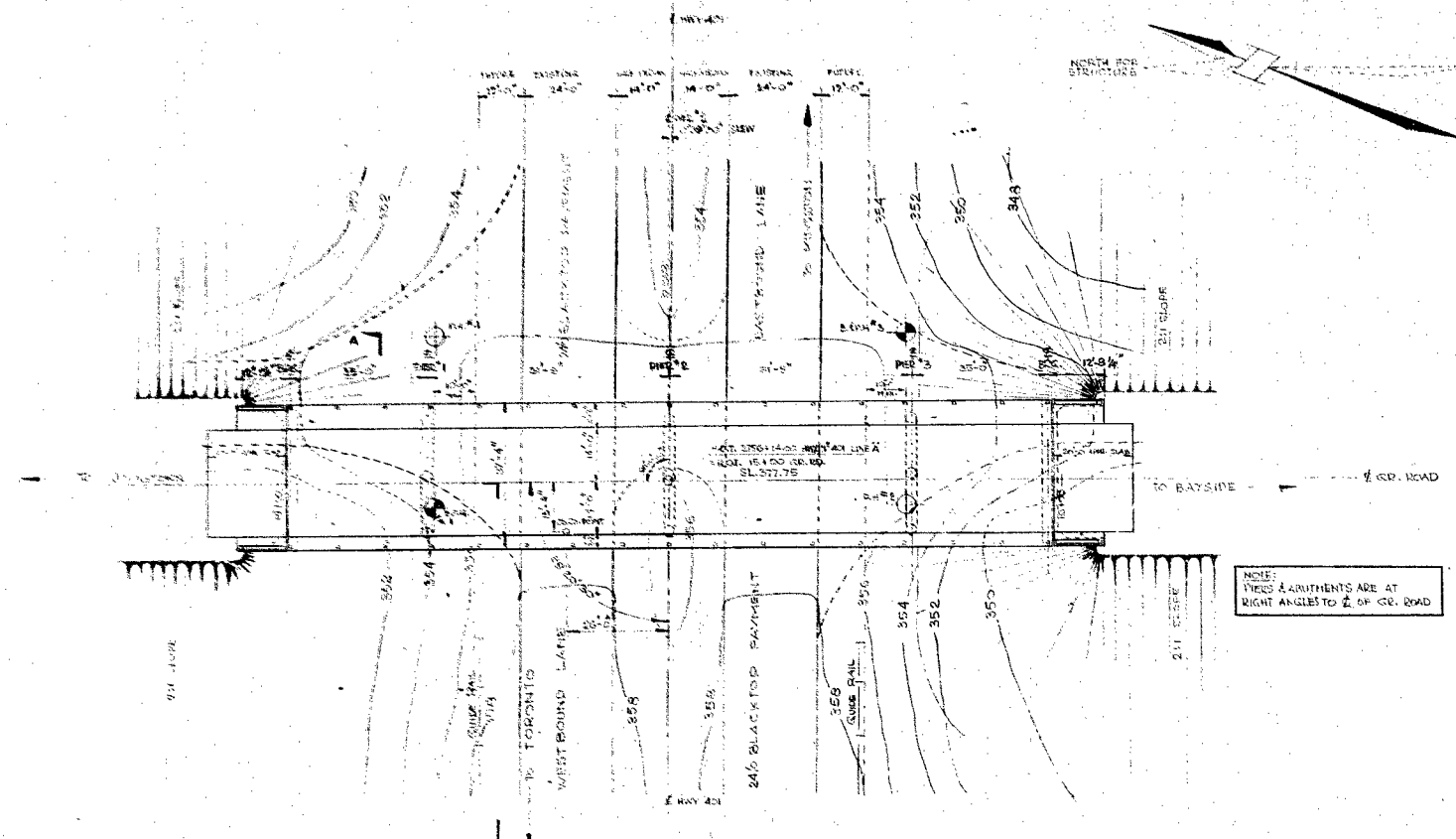
THE BOUNDARIES BETWEEN SOIL STRATA HAVE BEEN ESTABLISHED ONLY AT BORE HOLE LOCATIONS. BETWEEN BORE HOLES THE BOUNDARIES ARE ASSUMED FROM GEOLOGICAL EVIDENCE AND MAY BE SUBJECT TO CONSIDERABLE ERROR.

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH SECTION

GRAVEL ROAD PROPOSED CROSSING

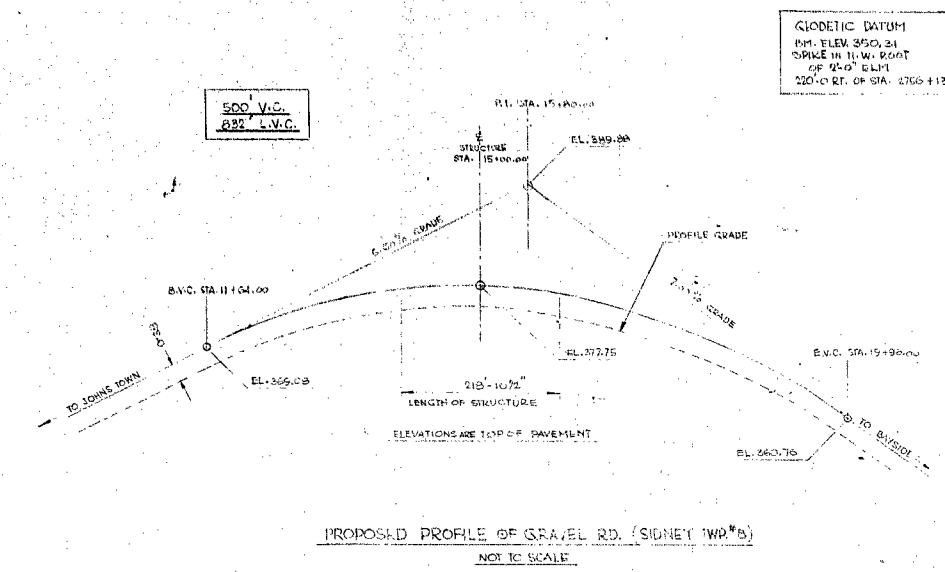
SHOWING POSITIONS & ELEVATIONS OF HOLES

HWY. 401	DISTRICT 8	COUNTY HASTINGS
TOWNSHIP SIDNEY	LOT 18-19	CON. 1-11
LOCATION 6 MILES EAST OF BELLEVILLE		
DRAWN BY: J. J. J. J.	CHECKED BY: J. J. J. J.	W.P. 66-59
DATE 29 DEC. 1959	APPROVED BY: J. J. J. J.	DRAWING NO. F-59-39 A.
SCALE 1 INCH = 20 FEET.		



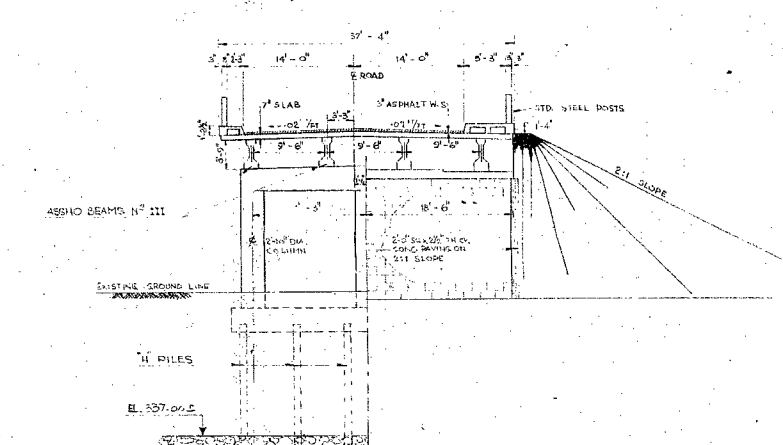
PLAN
SCALE: 1" = 20'

ELEVATION
SCALE: 1" = 20'

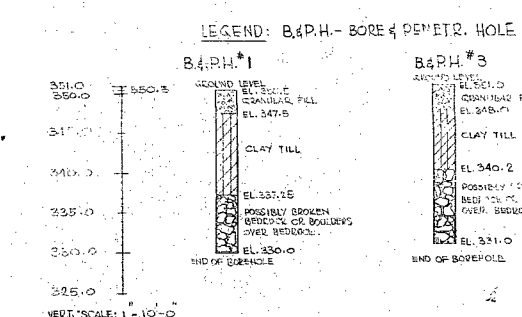


PROPOSED PROFILE OF GRAVEL RD. (SIDNEY TWP #8)
NOT TO SCALE

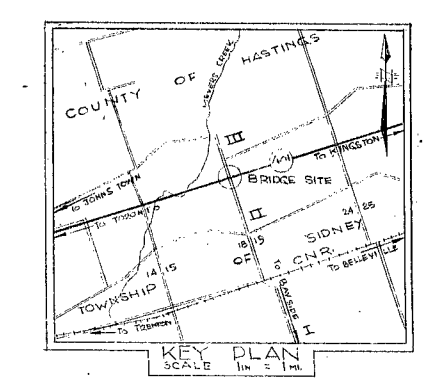
NOTE: ALL ELEVATIONS ON PROFILE DWG. F-3007-4 ARE TO BE LOWE, E.L. 1'50"



SECTION A-A
SCALE: 1" = 10'-0"



BORE HOLE DATA



KEY PLAN
SCALE: 1" = 1 MI.

NOTES

TO DISTRICT ENGINEER

CONCRETE WORK ON THIS STRUCTURE MUST NOT BE COMMENCED UNTIL MONUMENTS TO FIX CONTROL POINTS HAVE BEEN ERECTED AND CHECKED BY THE DISTRICT ENGINEER.

TO CONTRACTOR

STRUCTURE TO BE BUILT IN ACCORDANCE WITH FORM NO. 9 AND THE SPECIAL PROVISIONS, EXTRA COPIES OF WHICH MAY BE OBTAINED FROM THE DISTRICT ENGINEER.

CONCRETE MIX

	MINIMUM STRENGTH AT 28 DAYS	MAXIMUM SIZE OF AGGREGATE
BEAMS	3000 PSI	3/4"
ELSEWHERE	3000 PSI	3/4"

APPROVED MONUMENTS SUPPLIED BY THE DISTRICT ENGINEER WILL BE ADDED TO ALL CONCRETE AS SPECIFIED BY THE ENGINEER.

BORING DATA

THE COMPLETE SOIL INVESTIGATION REPORT BA-589 MAY BE EXAMINED AT THE BRIDGE OFFICE. DOWNVIEW, THE DEPARTMENT DOES NOT GUARANTEE THE ACCURACY OF THIS REPORT OR THE ABBRIDGED VERSION SHOWN ON THESE PLANS.

CLEAR COVER ON REINFORCING STEEL

FOOTINGS
ABUTMENT
DECK
HANDRAILS

CONSTRUCTION NOTES

ALL EXPOSED EDGES TO BE CHAMFERED 1" X 1" EXCEPT AS NOTED.

ALL CONSTRUCTION JOINTS MUST BE APPROVED BY THE BRIDGE ENGINEER.

THE GENERAL CONTRACTOR IS RESPONSIBLE FOR FINISHING THE BRIDGE SEATS DEAD LEVEL TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF PLUS OR MINUS 1/8 INCH. IF THEY ARE GASTED TOO HIGH THEY SHALL BE HAMMERED DOWN BY THE GENERAL CONTRACTOR. IF THEY ARE GASTED TOO LOW THE GENERAL CONTRACTOR SHALL PROVIDE FULL BEARING SURFACES TO BRING THEM UP TO THE CORRECT ELEVATIONS. THE USE OF GROUT IS PROHIBITED. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT FINAL DECK ELEVATIONS CONFORM WITH THE ELEVATIONS SHOWN.

NO CONCRETE SHALL BE PLACED ABOVE BRIDGE SEAT UNTIL CONCRETE IN DECK HAS BEEN PLACED.

WD 66-59

DEPARTMENT OF HIGHWAYS-ONTARIO
BRIDGE OFFICE - TORONTO

SIDNEY TWP #8
1.4 MILE WEST OF HWY. 14

THE KING'S HIGHWAY NO. 401 DIST. NO. 8

CO. HASTINGS

TWP. SIDNEY LOT 18 2.19 CON. II

PRELIMINARY GENERAL PLAN

APPROVER

BRIDGE ENGINEER DESIGN ENGINEER

REVISION	DATE	BY	REVISION
1	10/1/59	RAE	1
2	10/1/59	RAE	2
3	10/1/59	RAE	3
4	10/1/59	RAE	4
5	10/1/59	RAE	5
6	10/1/59	RAE	6
7	10/1/59	RAE	7
8	10/1/59	RAE	8
9	10/1/59	RAE	9
10	10/1/59	RAE	10

BRIDGE NUMBER 44867-P1

W.P. 66-59

Mr. A. M. Toye,
Bridge Engineer.
Materials & Research Section.

January 14, 1960.

SUBSOIL INVESTIGATION - D.H.C
W.P. 66-59 -- W.J. F 59-39.

Attention: Mr. S. McCombie.

Re: Existing Hwy. 401 and Gravel Road Crossing
6 Miles East of Belleville
District No. 2.

We have carried out a subsoil investigation at the above noted structure location where existing Hwy. 401 underpasses the gravel road in Lots 18 & 19, Twp. of Sydney at approximately 6 miles East of Belleville. Attached hereto are the borehole logs as well as Drawing No. F 59-39A, showing the locations of our borings and their subsoil profile.

Subsoil at the site consists of a 3-ft. thick layer of granular fill material overlying a layer of clay till, approximately 7' to 10' in thickness, underlain by bedrock. The clay till overburden exists in a rather soft condition and is considered not suitable as a bearing stratum for the structure. Bedrock is composed of limestone of the Trenton Series. Generally boulders were encountered immediately above the bedrock surface. Bedrock was proven at approx. Elev. 337' in Boring 1, and at approx. Elev. 339' in Boring 3. ^{338'}

The structure can be safely founded on spread footings bearing directly on bedrock. Any boulders, shattered or weathered bedrock, if encountered during excavations, should be removed

cont'd. /2 ...

prior to placing the footings in order to ensure that the footings are placed on sound bedrock. A conservative bearing pressure of 10 t.s.f. can be used for design. Due to the impermeable nature of the clay till overburden, ground water seepage during excavations, will be local and of minor quantities only. The approach embankments will be stable at standard 2:1 side slopes.

L. G. Soderman,
PRINCIPAL SOILS & FOUNDATIONS ENGR.
per:

AKGL

AKL/MdeP
Encls.

(A. K. Loh,
Project Foundation Engineer)

cc: Messrs. A. M. Toye (2)
H. A. Tregaskes
D. C. Ramsay
~~I. Campbell~~ H. J. Ford
T. A. Sharpe
J. E. Crispier
A. Watt
Foundation Section ✓
Gen. Files.

APPENDIX I.

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 66-59 BORE HOLE NO. 1.

JOB F-59-39. STATION 2756+07(60' LT.)

DATUM Geodetic _____ COMPILED BY I. J. J.

BORING DATE May 1/59. CHECKED BY B. K.

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
2" SHELBY
CASING

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) _____	O
VANE TEST (C) AND SENSITIVITY (S) _____	+S
NATURAL MOISTURE AND	
LIQUIDITY INDEX _____	L
LIQUID LIMIT _____	X
PLASTIC LIMIT _____	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Ground Level.	350.5	335	50	100 150 200
	Granular Fill.	347.5 3'0"		BLOWS/FT.	
	Clay Till.	337.25 13'25"	10	REFUSAL 13'4"	
	Possibly broken bedrock or boulders over bedrock.	330.0 20'0"	20		
	End of Borehole.		30		

CONSISTENCY	SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT- % DRY WT.		
		R.C.

Borehole No. 1

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 66-59 BORE HOLE NO. 2
JOB F-59-39 STATION 2756+07/60' RT.
DATUM Geodetic COMPILED BY I. J. J.
BORING DATE May 4/59 CHECKED BY B. K.

2" DIA. SPLIT TUBE _____
2" SHELBY TUBE _____
2" SPLIT TUBE _____
2" DIA. CONE _____
2" SHELBY _____
CASING _____

LEGEND

1/2 UNCONFINED COMPRESSION (QU)	---	○
VANE TEST (C) AND SENSITIVITY (S)	---	+ ⁵
NATURAL MOISTURE AND		
LIQUIDITY INDEX	---	LI
		X
LIQUID LIMIT	---	
PLASTIC LIMIT	---	○

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Ground Level.	350.0		<div style="display: flex; justify-content: space-between; padding: 0 10px;"> 50 100 150 200 </div> <div style="text-align: right; padding-right: 10px;">BLOWS/FT.</div>	
			10		
			20		
			30		

[illegible]

Borehole No. 2.

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 66-59 BORE HOLE NO. 3.
JOB F-59-39. STATION 2756+51(60' RT.)
DATUM Geodetic. COMPILED BY I. J. J.
BORING DATE May 1/59. CHECKED BY B. K.

2" DIA. SPLIT TUBE _____
2" SHELBY TUBE _____
2" SPLIT TUBE _____
2" DIA. CONE _____
2" SHELBY _____
CASING _____

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) _____ 0
VANE TEST (C) AND SENSITIVITY (S) _____ +5
NATURAL MOISTURE AND _____ LI
LIQUIDITY INDEX _____ X
LIQUID LIMIT _____ 0
PLASTIC LIMIT _____ 1

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Ground Level.	351.0	335	50 100 150 200	
	Granular Fill.	348.0			
	Clay Till.	340.2	34		
	Possibly broken bedrock or boulders over bedrock.	331.0	20	REFUSAL 11" 21"	
	End of Borehole.	320.0	30		

[illegible]

Borehole No. 3.

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 66-59 BORE HOLE NO. 4.

JOB F-59-39. STATION 2756+51. (60' RT.)

DATUM Geodetic. COMPILED BY I. J. J.

BORING DATE May 4/59. CHECKED BY B. K.

2" DIA. SPLIT TUBE _____
2" SHELBY TUBE _____
2" SPLIT TUBE _____
2" DIA. CONE _____
2" SHELBY _____
CASING _____

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) _____	O
VANE TEST (C) AND SENSITIVITY (S) _____	+s
NATURAL MOISTURE AND	
LIQUIDITY INDEX _____	X
LIQUID LIMIT _____	
PLASTIC LIMIT _____	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Ground Level.	351.0		50	100 150 200
				BLOWS/FT.	
			10	REFUSAL 12T IN	
			20		
			30		

[illegible]

Borehole No. 4.

DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS AND RESEARCH SECTION

W.P. 66-59 BORE HOLE NO. 1A
 JOB F-59-39 STATION _____
 DATUM 356' COMPILED BY A.K.L.
 BORING DATE Apr 12/60 CHECKED BY _____

2" DIA. SPLIT TUBE _____
 2" SHELBY TUBE _____
 2" SPLIT TUBE _____
 2" DIA. CONE _____
 2" SHELBY _____
 CASING _____

LEGEND

1/2 UNCONFINED COMPRESSION (Q_u) _____ O
 VANE TEST (C) AND SENSITIVITY (S) _____ +S
 NATURAL MOISTURE AND LIQUIDITY INDEX _____ LI
 LIQUID LIMIT _____ X
 PLASTIC LIMIT _____

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	Existing Ground level	354.5	0	10 20 30 40	BLOWS/FT.
	Granular Fill				
	Loose silty sand with stones	350.5	5		
	changed to soft sandy clay with stones @				
	Elev. 349	345	10		
	Dense brown silty clay till				
	stony	341	15		
	Referred to engineering				
	probably bedrock				

CONSISTENCY	SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT - % DRY WT.		
	SS.1	
	T.W.2 PUSHED	
	SS.4	

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 66-59 BORE HOLE NO. 2A
 JOB E-59-39 STATION _____
 DATUM 356 COMPILED BY A.K.L.
 BORING DATE Apr 12/60 CHECKED BY _____

2" DIA. SPLIT TUBE _____ ☒
 2" SHELBY TUBE _____ ☒
 2" SPLIT TUBE _____ ☐
 2" DIA. CONE _____ ☐
 2" SHELBY _____ ☐
 CASING _____ ☒ ☒

LEGEND

1/2 UNCONFINED COMPRESSION (Q_u) _____ ☐
 VANE TEST (C) AND SENSITIVITY (S) _____ ☐
 NATURAL MOISTURE AND LIQUIDITY INDEX _____ ☒
 LIQUID LIMIT _____ ☐
 PLASTIC LIMIT _____ ☐

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	Existing Ground level \downarrow	355	0	10	20 30 40
	Granular fill				
	Black sandy clay with organic matter	351	5		
	Brown stony sandy silt	348.5			
	Dense sandy silt, stony with sand clay (till)	347	10		
	Refers to auger probably bedrock	341.5	15		

CONSISTENCY	SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT - % DRY WT.		
	SS.1	
	SS.2	
	SS.3	

~~W.P. 66-59~~

Mr. Bruce Davis,

April 20, 1960.

Bridge Design Engineer.

Materials & Research Section.

Attention: Mr. M. J. Gvildys.

Re: Existing Hwy. 401 & Gravel Road Crossing
6 Miles East of Belleville
W.P. 66-59 - W.J. F-59-39
Foundation Support for Abutment Wingwalls.

In response to a request by your Mr. M. J. Gvildys, we have reviewed the subsoil conditions with respect to the foundation support for the abutment wingwalls at the above noted structure location.

al

We have recently completed two additional borings at the above noted site and the results of these two additional borings indicate that subsoil conditions are similar to our previous findings as detailed in our Foundation Report F-59-39. In general, the subsoil consists of 4 ft. of granular fill material overlying 4 ft. to 5 ft. of loose or soft silty sand or sandy clay with stones, underlain by 4 ft. to 6 ft. of medium dense glacial till of sandy clay or silty sand with stones. Underneath the medium dense glacial till, bedrock was encountered. The medium dense glacial till was contacted at approx. Elev. 347' - 345'. Limestone bedrock was encountered at approx. 341'.

The material above the medium dense glacial till layer (i.e., above Elev. 347' - 345') cannot be relied upon to provide adequate foundation support for the abutment wingwalls.

cont'd. /2 ...

The retaining walls can be satisfactorily supported on spread footings founded in the medium dense glacial till at Elev. 345'. An allowable net soil pressure of 1.5 t.s.f. can be used for design. Your attention is drawn to the fact that footings should only be founded in this medium dense glacial till layer if the bearing material is not softened during footing excavations. If it is observed during footing excavations that the material has been softened, excavations should be carried out approximately 4 ft. deeper such that the footings will be founded on the limestone bedrock.

For earth pressure computations, the coefficient of passive earth pressure, K_p of at least unity can be used for retaining wall design. The value of K_p depends upon the state of compaction of the backfill material.

If we can be of further assistance, please contact our Office.

L. G. Soderman,
PRINCIPAL SOILS & FOUNDATIONS ENGR.
Per:

AKL

AKL/MdeF

(A. K. Loh,
PROJECT FOUNDATION ENGR.)

cc: Foundations Office
Gen. Files.

MAY 1959

DEPT. OF HIGHWAYS ONTARIO
MATERIALS & RESEARCH SECTION

Field Boring Log

Date *April 2*
 Job No.
 W. P. No.
 Location *FS9-39A*

Driller
 Hours Work
 Hours Delay
 Footage

Borehole No. *1A* Elevation _____ Height Datum Above Ground _____

Remarks: *18" below \pm elev. 401 @ gravel rd.*

Depth From	Feet To	Description	Sample No.	Blows Per Ft.
		Water level - start of day		
0	4'	<i>dark sand & gravel with some clay & silt (fill)</i>		
4	5 1/2'	<i>grey - some brown sandy silty sand with stones - becoming wetter @ 5' probably original ground.</i>	SS1	3-3-2
4	7	<i>anger brown wet & soft stony sandy clay.</i>		
7	8 1/2'	<i>(some cone) end appears to be black (topcast?) - grey sandy silty clay poor recovery (sample not worked)</i>	TW2	P
7	9	<i>anger brown & some black silty clay with some stones & sand - appears soft and closer to 6 1/2'.</i>		
9	9 1/2'	<i>attempt shelly unable to push</i>	TW3	
9 1/2'	11	<i>to shelly - brown hard friable banded (1/2" to 1 1/2") silty clay some stones & near P.C.</i>	SS4	4-5-6
9	13	<i>anger brown silty stony clay</i>		
13	14 1/2'	<i>refusal @ 13' - 1 or 2' new 1 7/8" broken rock.</i>	SS5	16 lb hammer on rock
		<i>5' water in hole w/T approx 5' below surface of hole.</i>		
		Water level - end of day		

Field Boring Log

60539

Borehole No.	Elevation	Height Datum Above Ground
2A		

Remarks: 30' from \angle gravel Rd. (east) and 60' from \angle 401 (south)

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT