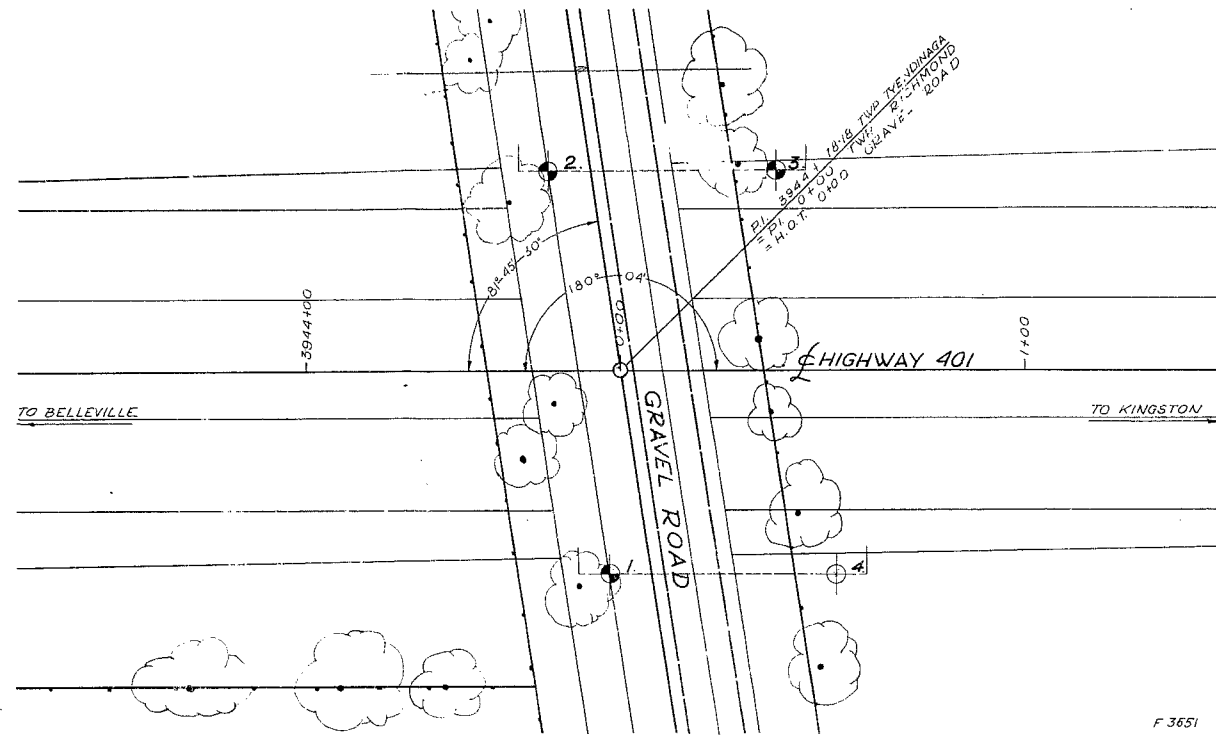
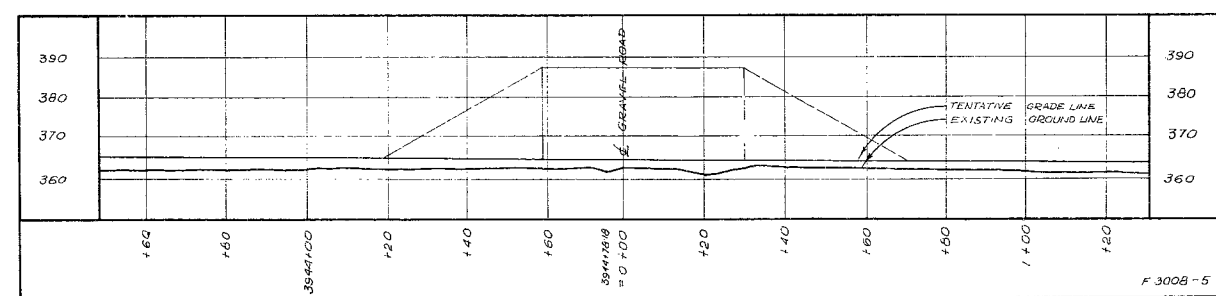


59-F-36
W.P. # 73-59
Hwy. # 401
CROSSING
COUNTY RD.
3½ MILES E. OF
MARYSVILLE



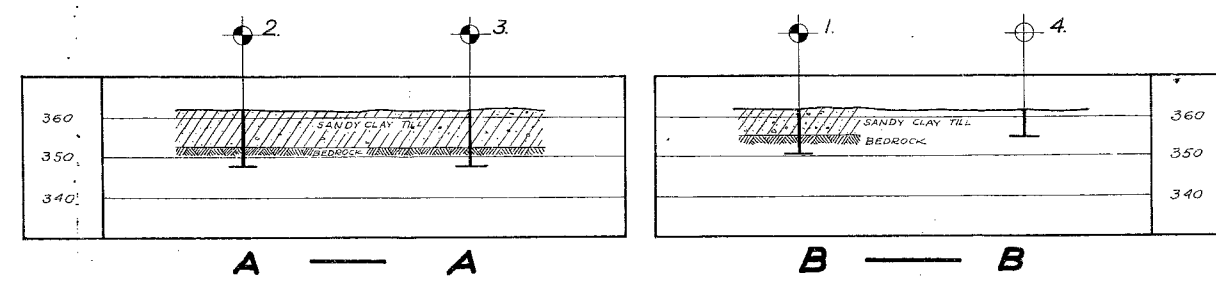
PLAN

F 3651



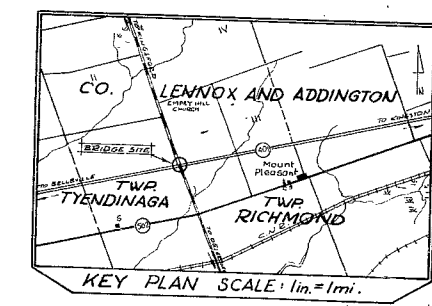
PROFILE

F 300B-5



A — A

B — B



KEY PLAN SCALE: 1 in. = 1 mi.

LEGEND				
BORE & PENETRATION HOLE				
PENETRATION HOLE				
HOLE NO.	ELEVATION	STATION	DISTANCE FROM #	
1.	362'0	3944+68	50' RT	
2.	362'0	3944+60	50' LT	
3.	362'5	0+37	50' LT	
4.	362'5	0+45	50' 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

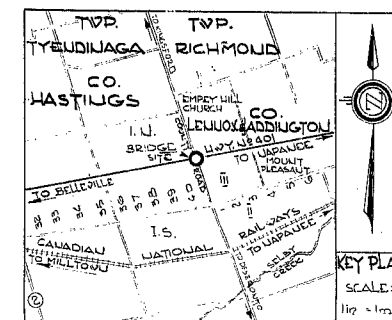
**GRAVEL ROAD
PROPOSED CROSSING**

SHOWING POSITIONS & ELEVATIONS OF HOLES

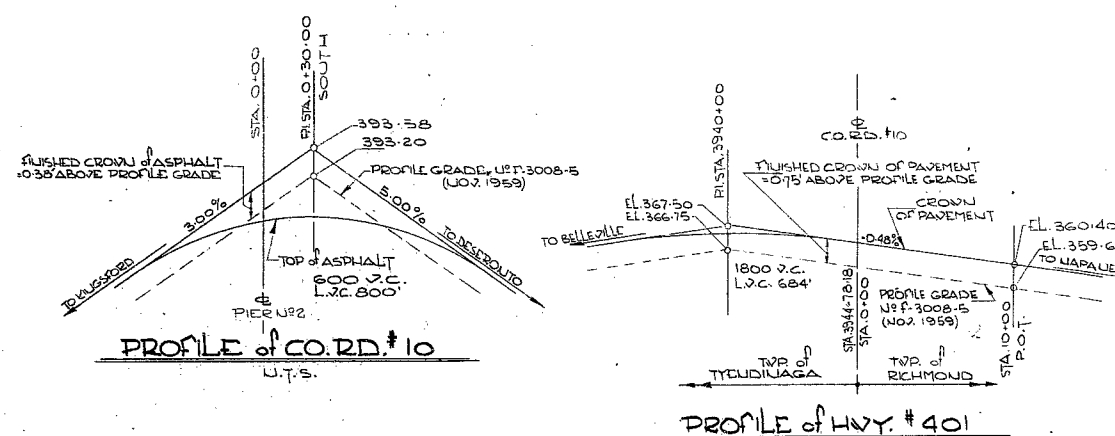
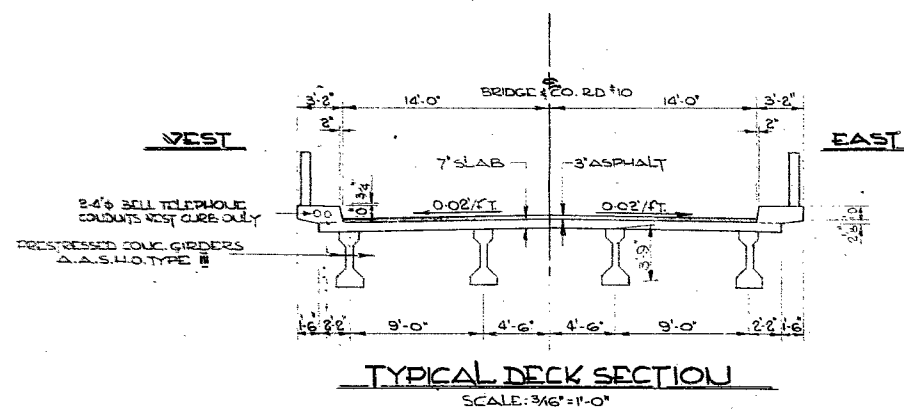
HWY. 401 DISTRICT 8 COUNTY LENNOX AND ADDINGTON
TOWNSHIP TYENDINAGA RICHMOND LOT 40-1 TWP. 18-18
LOCATION APPROX 3 1/2 MILE EAST OF MARYSVILLE

DRAWN BY: J. J. J. CHECKED BY: J. J. J. DATE: 21 OCT. 1959 SCALE: 1 inch = 20 feet

APPROVED BY: J. J. J. DRAWING NO. 73-59 F-59-36A



SKEW DATA
B° 14' 30"
 SKEW = 0.14335
 COS. = 0.98967
 TAN. = 0.14484
 SEC. = 1.01044

[illegible]

DEPARTMENT OF HIGHWAYS ONTARIO			
BRIDGE DIVISION			
COUNTY RD. #10 UNDERPASS			
5 MI. WEST OF JCT. HWY. 404			
KING'S HIGHWAY No. 401		DIST. No. 8	
CO. LEJUNO & ADDINGTON			
TWP. RICHMOND & TRENDING		CON. 3 & 11	
PRELIMINARY			
APPROVED		SITE No. 10-31	
BRIDGE ENGINEER		W.F. No. 73-59	
DESIGN	K.G.B.	CHECK	
DRAWING	E.A.	CHECK	
		AS SHOWN	
DATE	MAY 1962	LOADING	
		12.5	
		516	
		DRAWING No.	D-5267-P1

DIER NO 1 SHOULD BE PLACED AT ELEV. 357.00
OTHERWISE GOOD.
H.W. Allen, June/63.

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

Mr. A. G. Stermac,
Principal Foundation Engr.,
Foundation Section,
Materials & Research Division.

Attention: Mr. A. Watt

June 27, 1963

W.P. 73-59 : County Rd. No. 10 Underpass
W.P. 74-59 : County Rd. Underpass
W.P. 177-61 : Mallorytown Rd. Interchange Underpass
District No. 8

We have received and reviewed the Preliminary Plans for the above-mentioned structures and herewith, submit our comments for your consideration:

At all three sites bedrock was found at relatively shallow depth. The subsoil overlying bedrock is dense and can be considered as good bearing ground.

All footings for structure W.P. 177-61 are founded on bedrock, either as spread footings or footings on piles resting on bedrock. In this way, identical conditions are created for all supports, piers and abutments.

For the other two structures (W.P. 73-59 and W.P. 74-59), the piers are founded on spread footings resting above bedrock within the overburden, while the abutments are founded on piles driven to bedrock. From the above, it is evident that conditions for the different supports are not identical. In view of the very dense state of packing of the overburden and its relatively small thickness, the difference in support has no significance.

For the structure W.P. 73-59, the north abutment footing is only about 3 feet above natural ground. It appears to us that instead of using piles here, a more economical way would be to place this footing on well compacted fill. On the south side, the abutment is about 10 - 11 feet above natural ground and maybe, even here, it would be more economical to put the abutment footing on well compacted fill.

In case of structure W.P. 74-59, the compacted fill would have to be on both abutment locations, in the order of 10 - 13 feet.

AGS/MdeF

cc: Foundations Office
Gen. Files

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

DEPARTMENT OF HIGHWAYS ONTARIO

MEMORANDUM

TO: Mr. A. G. Stermac
Principal Foundations Engineer
Lab. Bldg.

FROM: A. P. Watt

DATE: June 10, 1963

OUR FILE REF.

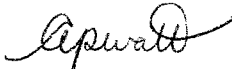
IN REPLY TO

SUBJECT: W.P. 73-59
Bridge Site #18-51,
County Rd. #10 Underpass,
5 miles west of Jct. Hwy. 41
Hwy. 401, District #8.

Enclosed please find one copy of the preliminary plan
D-5267-P1 for the above structure.

We would appreciate any comments you wish to make.

APW/ew
c.c. Mr. N. D. Smith.


A. P. Watt
Bridge Location Engineer.

Mr. B. R. Davis,
Bridge Design Engr.,
Bridge Division.

Attention: Mr. J. Keen

Mr. A. G. Sternac,
Principal Foundation Engr.,
Foundation Section,
Materials & Research Division.

May 24, 1963

Re: W.P. 73-59 & W.P. 74-59
Foundation Depth - Review

You have verbally requested on May 23, 1963, that we review the recommendations of the two above-mentioned reports concerning the foundation depths. We herewith, submit our comments for your consideration:

1. W.P. 73-59:

A safe load of 4.0 T/sq.ft. can be used for footings founded 5 ft. below ground level (elev. 357.0) in the dense and hard sandy clay till layer. Settlements should be negligible.

2. W.P. 74-59:

A safe load of 4.0 T/sq.ft. for footings founded at 6.0 ft. below ground surface (elev. 311.0) in the layer of stiff to hard brown silty clay. Settlements should be negligible.

In both above-mentioned cases, bedrock will be close to the foundation bottoms. However, it is felt that if very high bearing pressures are of no special advantage, the footings should be kept higher - i.e., at elevations that satisfy both the criteria of adequate bearing capacity and adequate frost protection. The above-quoted elevations have been determined on that basis.

AGS/MdeF

cc: Foundations Office
Gen. Files

A. G. Sternac
A. G. Sternac,
PRINCIPAL FOUNDATION ENGINEER

23-63-266

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

October 21, 1959.
FOUNDATION REPORT - D.H.O.
W.J. F 59-36 -- W.P. 73-59.

Attention: Mr. S. McCombie.

Re: Hwy. 401 Line 'A' & County Road Crossing,
Twps. of Richmond & Tyendenaga,
Approx. 3 1/2 Miles East of Marysville.

Enclosed herewith is our report on the subsoil conditions existing at the above noted site. Reference to the contents of the report shows that the subsoil stratigraphy consists of a shallow overburden of sandy clay till overlying limestone bedrock. Spread footing support can be obtained at shallow depths with footings bearing directly upon the limestone bedrock.

If shattered or weathered rock is encountered, a nominal amount of scaling will have to be carried out prior to the placing of the footings. A conservative bearing capacity of 10 tons/sq.ft. for footings placed directly on bedrock has been indicated. Bedrock is at Elev. 352' - 355'.

No excessive seepage problems are anticipated during footing excavations.

No approach fill stability problems are anticipated.

If you have any queries with regard to this report, please contact our office.

AKL/MdeF
Attach.

cc: Messrs. A. M. Toye
H. A. Tregaskes
D. G. Ramsay
I. Campbell
T. A. Sharpe
J. E. Gruspier
A. Watt
Foundation Section.
Gen. Files.

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

AKKL
(A. K. Loh,
Project Foundation Engr.)

FOUNDATION REPORT

on

Hwy. 401 Line 'A' & County Road Crossing,
Twp. of Richmond & Tyendinaga,
Approx. 3 1/2 Miles East of Marysville.

Plan No: F-3174

Profile No: F-3174-1

Distribution:

Mr. A. M. Toye,
Bridge Engineer. (2)

Mr. H. A. Tregaskes,
Construction Engineer. (1)

Mr. D. G. Ramsay,
Pd. Design Engineer. (1)

Mr. I. Campbell,
Sr. Project Design Engr. (1)

Mr. T. A. Sharpe,
Dist. Engr., Kingston. (1)

Mr. J. E. Gruspier,
Regional Soils Engineer. (1)

Mr. A. Watt,
Ontario Water Resources Comm. (1)

Foundation Section. (1)

Gen. Files. (1)

W.J. F-59-36

W.P. 73-59

INTRODUCTION:

A subsoil investigation was carried out at a structure location where proposed Hwy. #401 Line 'A' crosses the County Road between the Townships of Richmond and Tyendenaga (Sta. 3944+78, Profile No. F-3174-1).

The field work was carried out from April 24th to April 28th, 1959.

DESCRIPTION OF THE SITE & ITS GEOLOGY:

The site and its surrounding area are generally level farmlands. The site under consideration is located on the Napanee Limestone Plain. The area is a flat to undulating plain from which the glaciers have stripped most of the overburden. While the soil is shallow over much of the region, some deeper glacial till occurs in the stream valleys and towards the North where the region borders on the limestone moraines. Bedrock outcrops are visible in the vicinity of the site.

DESCRIPTION OF THE FIELD WORK:

The field work consisted of three boreholes with accompanying dynamic cone penetration tests, and one separate cone penetration test. The work was carried out by two core drills adapted for soil sampling and using standard wash boring procedures. No samples were taken in the shallow overburden, but bedrock was drilled and cored 5 feet to determine its quality and soundness.

SUBSOIL CONDITIONS:

From the results of the dynamic cone penetration tests and boreholes, it was obvious that bedrock was very close to the surface; therefore, no soil samples were taken. However, the soil was classified by visual examination in the field.

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

Medium dense brown sandy clay till was encountered from the surface to a depth varying from 6' - 9' below the surface. At this depth bedrock was encountered. Core samples of the bedrock were recovered and these showed some fractures and also contained some shaley seams. The rock was a limestone. This was encountered between elevations 352.0' to 355.0'.

RECOMMENDATIONS & CONCLUSIONS:

- (1) That spread footings be used to support the proposed structure and that this footing be founded on bedrock between elevations 352.0' and 355.0'.
- (2) That a working load of 10 tons be used for design purposes.
- (3) That if shattered or weathered rock is encountered, it should be removed before placing the foundations.
- (4) No excessive seepage problems are anticipated during footing excavations. Even if seepage does occur, the inflow will be local and of minor quantities, only.
- (5) No approach fill stability problems are anticipated.

AKG
Ian J. Johnston,
Project Foundation Engr.

APPENDIX I.

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 73-59 BORE HOLE NO. 1

JOB F-59-36 STATION 3944+68 (50' Rt 2)

DATUM Ely. 362' _____ COMPILED BY I.J.J. _____

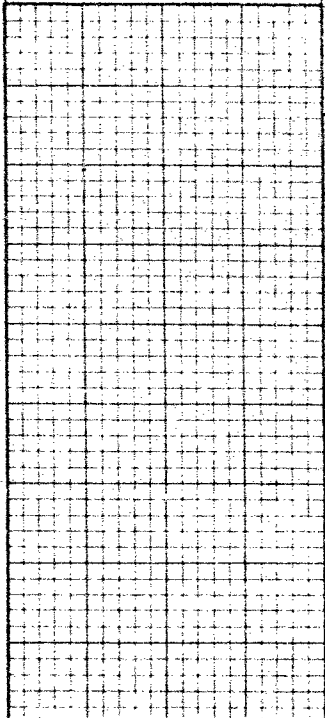
BORING DATE Apr. 24/59 CHECKED BY B.K.

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	
PLASTIC LIMIT	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				P.S.F.	
	↓ Ground level	362.0		100	200 300 400
	W.L. 359.0				
	Sandy clay till	355.2			
	Bedrock limestone	350.2			
	End of borehole				
	Penetration resistance profile shown obtained by driving a 2" dia. cone from ground surface to depth noted with an energy of 350 ft. lb. per blow.				

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



DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 73-59 BORE HOLE NO. 2
JOB F-59-36 STATION 3944+60 (50' L
DATUM Elev. 362' COMPILED BY I.J.J.
BORING DATE Apr. 28/59 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	362.0			100	200	300	400
	Sandy clay till	352.7						
	Bedrock	347.7	10					
	limestone							
	End of borehole							
	Penetration resistance profile shown obtained by driving a 2" dia. cone from ground surface to depth noted with an energy of 350 ft. lb. per blow.		20					

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

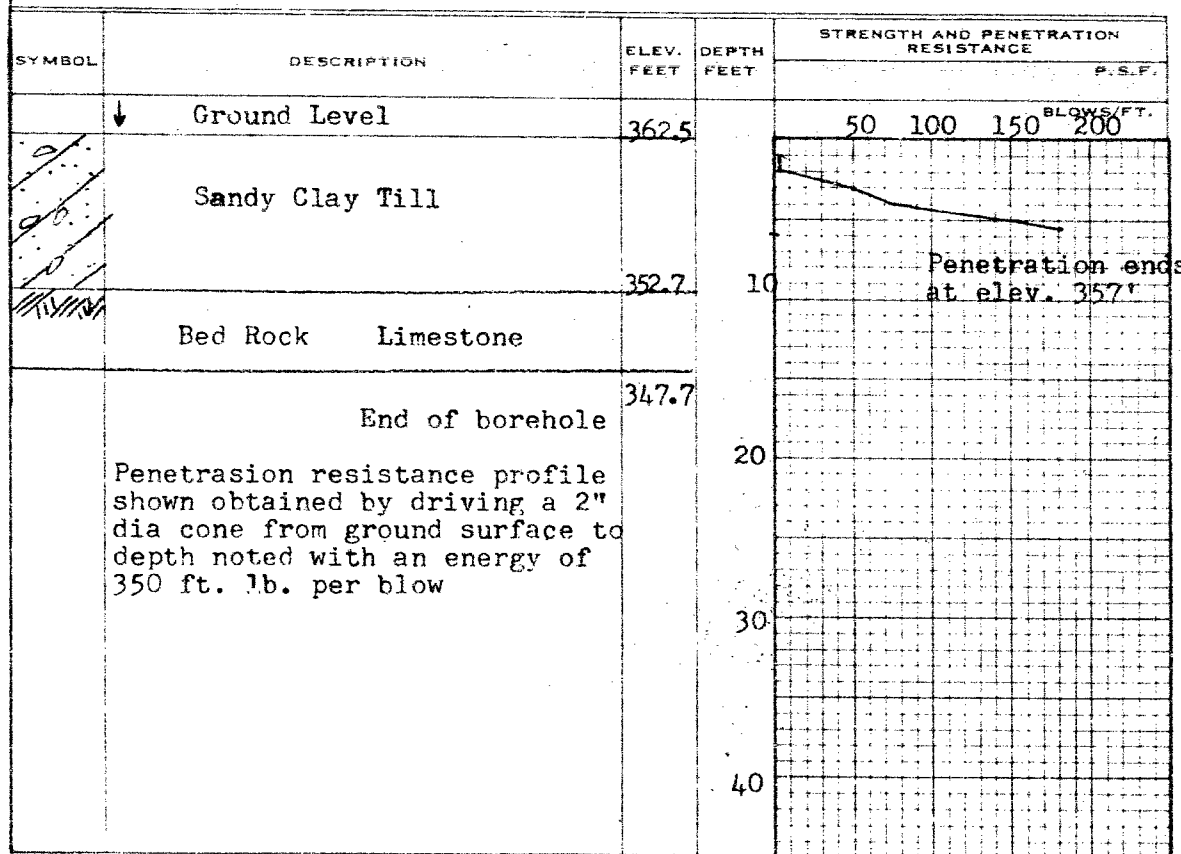
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 73-59 BORE HOLE NO. 3
JOB F 59-36 STATION 0+37 (50' LT.)
DATUM Elev. 362.5 COMPILED BY IJJ
BORING DATE Apr. 27/59 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) +
NATURAL MOISTURE AND LIQUIDITY INDEX LI
LIQUID LIMIT X
PLASTIC LIMIT



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

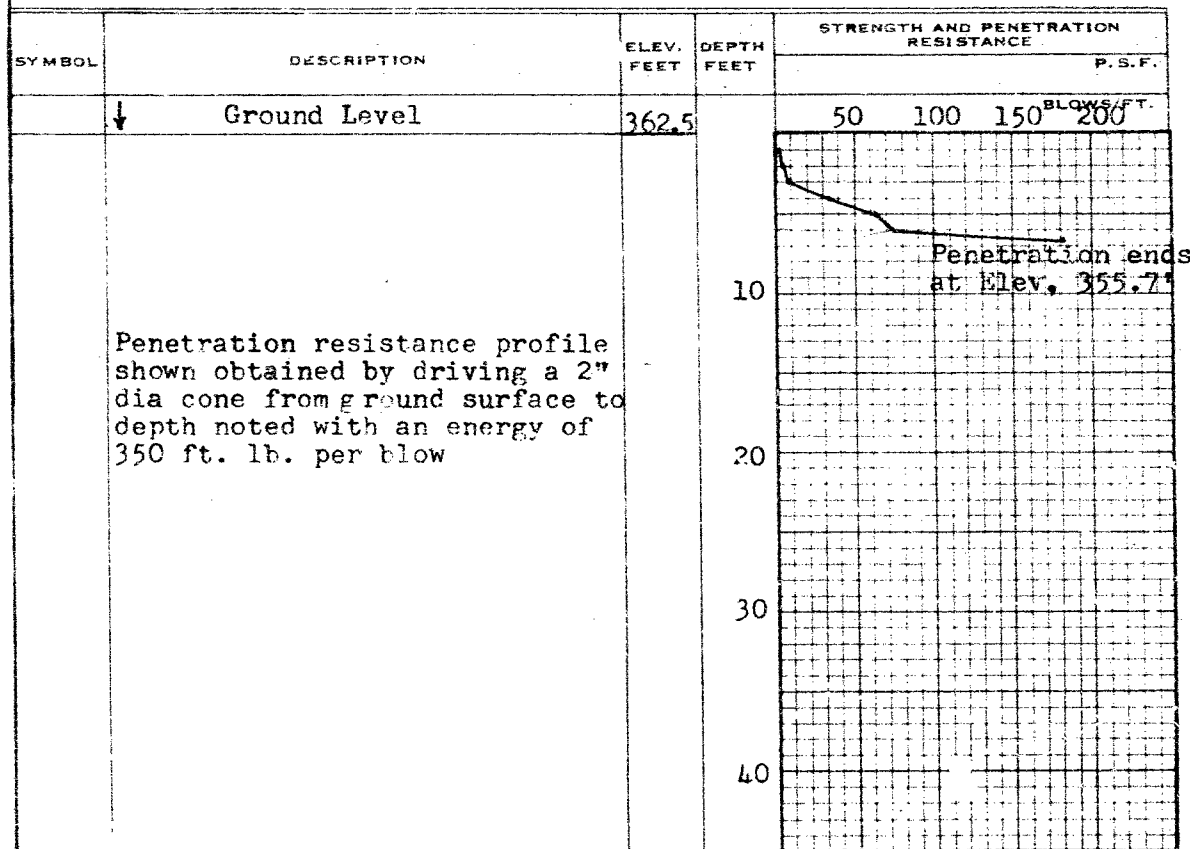
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. 73-59 BORE HOLE NO. 4
JOB F 59-36 STATION 0+45 (50' BT)
DATUM Elev. 362.5 COMPILED BY IJJ
BORING DATE Apr. 28/59 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	L
LIQUIDITY INDEX	X
LIQUID LIMIT	
PLASTIC LIMIT	

[illegible]