

28-9

Mr. F. E. Cavell,
 Superintendent of Buildings.
 Materials & Research Section.

July 10, 1959.

Re: Foundation Investigation
 for Proposed 4 Bay Garage,
 Jct. Hwy. 31 & 43, Winchester

Attention: Mr. J. Hamilton

This memorandum accompanies our report on the foundation conditions existing at the above noted garage site. The results of this investigation are summarized as follows:-

- (1) The subsoll encountered in the borings put down at this site consists of a shallow deposit of sandy clay, four feet in thickness, overlying bedrock.
- (2) It is recommended that footings for the proposed structure be founded directly upon the bedrock formation. Fragmented or badly weathered rock surfaces should be sealed prior to pouring the footings. Footing dimensions, typically 2'0" to 2'6" in width, will be adequate for the structure.
- (3) The ground water table elevation was determined at 3' below existing ground surface during the period of this investigation. Seepage into footing excavations will be of minor quantities and easily handled by low-capacity sump pumps.
- (4) Access roads and paved areas should be provided with a granular base at least 24 inches in total thickness. The thickness of granular should consist of 18 inches of G.B.C. class 'B' material, topped with 6 inches of G.B.C. 'A'. If paving is to be carried out, a 4-inch thickness of HL-4 is recommended.
- (5) A domestic supply of water was not proved up during the investigation. Residents in the area obtain their water from wells which are typically 50 feet in depth. The nearest water main is approximately 1 mile from the site.

If we can be of further assistance in the design of foundation members at this site, please contact our office.

Very truly
 yours,

cc: Messrs. F. E. Cavell
 E. E. McMillan
 H. A. Trappakes
 C. Lockberry
 G. S. Metherell
 J. E. Crispier

L. G. Roderman,
 PRINCIPAL CIVIL & PDS. ENGR.

Foundation Section
 Gen. Files.

FOUNDATION INVESTIGATION

F-59-53

No W.P.

Winchester 4-bay Garage. Jct. Hwy. #31 & #43.

Reference Plan in D.H.C. Files P-2451-16.

INTRODUCTION:

Presented in this report are the results of an investigation carried out at the location of a proposed four-bay garage for the Department of Highways. This proposed garage is to be located at the intersection of Highways #31 and #43, in the county of Dundas, Township of Winchester, Concession 5, Lot 4, and one mile south of the town of Winchester.

The investigation was carried out on the morning of May 21st 1959.

DESCRIPTION OF THE SITE AND ITS GEOLOGY:

The site is located in the Winchester clay plain which lies between the Glengarry till plain and the sand plains of Russell and Prescott counties. It is an area of low relief, lying almost entirely within the drainage basin of the South Nation River. Although the clay plains are dominant, the landscape has some complexity. In many places the underlying till protrudes and there are a number of low drumlins. In a few cases there are areas of shallow soil over bedrock. There are also several thousand acres of bog.

The site under investigation lies in one of those areas of shallow soil over bedrock.

DESCRIPTION OF FIELD & LABORATORY WORK.

The field work consisted of six boreholes and one standard dynamic cone penetration. Only one borehole was sampled. The investigation was carried out with a continuous flight auger, mounted on a trailer. Bedrock was encountered at a depth of 3' to 4' below ground

level, hence only one sample, this was classified by visual examination in the field, as sandy clay till. The location plan and subsoil profile are presented in Drawing No. F-59-53A.

SUBSOIL CONDITIONS:

The site is underlain by a sandy clay till overlying shale bedrock. This sandy clay till is soft and moist. This softness is borne out by a number of blows per foot while driving the dynamic cone.

The bedrock is relatively soft since it was possible to auger into it for about 6". The bedrock has not been proven by taking samples as the auger was not equipped to take rock core samples.

The water table was encountered at a depth of about 2' below ground level, that is approximately elevation 244.0. The bedrock is at approximately elevation 242 to 244.

CONCLUSIONS & RECOMMENDATIONS:

- 1) That spread footings be founded on bedrock at approximately elevation 242 to 243.
- 2) That a design load of $2\frac{1}{2}$ tons be used.
- 3) The water should not present too great a problem, but provision should be made for pumping during excavation.
- 4) Any areas to be paved on, which may be paved in the future, should have a minimum of 24 inches of granular material, i.e. 18" G.B.C. "B" or sand cushion and 6" of G.B.C. "A".
- 5) If water is required for services it should be available from a well. The depth of this well may be about 50 feet. Two other wells in the area obtained good supply of water at depths of 40' and 49' respectively. The nearest main water supply is approximately one mile from the site.

Iar J. Johnston
Project Foundation Engineer.

APPENDIX I.

W.R. None

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. None BORE HOLE NO. 1

JOB F-59-53 STATION see sketch

DATUM Geodetic COMPILED BY I.J.J.

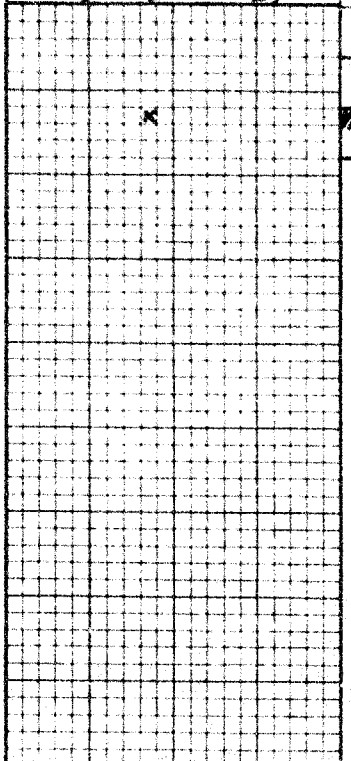
BORING DATE May 21/59. CHECKED BY B.K.

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

LEGEND

1/2 UNCONFINED COMPRESSION (Qu) _____ Q
VANE TEST (C) AND SENSITIVITY (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. BLOWS/FT.	
	↓ Ground Level	247.0	0	50	100 150 200
	Sandy clay till			HAMMER BOUNCING	
		244.0			
	Bouldery sandy till	243.3			
	Bedrock (not proven)	3.7'	5		
	End of borehole		10		
			15		
			20		

CONSISTENCY				SAMPLE	NATURAL
MOIST. CONTENT - % DRY WT.					UNIT WT. P.C.F.
5	10	15		SS1	
					

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. None BORE HOLE NO. 2
JOB F-59-53 STATION see sketch
DATUM Geodetic COMPILED BY I.J.J.
BORING DATE May 21/59 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 -----	LI
LIQUID LIMIT -----	X
PLASTIC LIMIT -----	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE				
				P.S.F.				
	↓ Ground Level	2476'	0	50	100	150	200	BLOWS/FT.
	Sandy clay	2450						
	Dry sandy till	2430						
	Bedrock (not proven)	32'						
	End of borehole		5					
			10					
			15					
			20					

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. None BORE HOLE NO. 3
JOB F-59-53 STATION see sketch
DATUM Geodetic COMPILED BY I.J.J.
BORING DATE May 21/50 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) — +
NATURAL MOISTURE AND LIQUIDITY INDEX — LI
LIQUID LIMIT — X
PLASTIC LIMIT —

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE				
				P. S. F.				
	↓ Ground Level	246.0	0	50	100	150	200	BLOWS FT.
	Sandy clay till	244.0						
	Dry sandy powdered till	242.8						
	Bedrock (not proven) end of borehole	3.2'	5					
			10					
			15					
			20					

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. None BORE HOLE NO. 4
JOB F-59-53 STATION see sketch
DATUM Geodetic COMPILED BY I.J.J.
BORING DATE May 21/59. CHECKED BY D.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 -----	o

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE				
				P.S.F.				
				BLOWS/FT.				
				50	100	150	200	
	Ground Level	246.0	0					
	Sandy clay till	W.L. 243.8 243.9						
	Dry sandy powdery till	242.2						
	End of borehole	3.8'	5					
	Bedrock (not proven)		10					
			15					
			20					

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. None BORE HOLE NO. 5
 JOB P-59-53 STATION see sketch
 DATUM Geodetic COMPILED BY I.J.J.
 BORING DATE May 21/59 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	
LIQUIDITY INDEX	LI
LIQUID LIMIT	X
PLASTIC LIMIT	

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE				
				P.S.F.				
	↓ Ground Level	247.0	0	50	100	150	200	BLOWS/FT.
	Sandy clay till	243.8						
	Bedrock (not proven)	3.2'	5					
			10					
			15					
			20					

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS AND RESEARCH SECTION

W.P. None BORE HOLE NO. 6
JOB P-59-53 STATION see sketch
DATUM Geodetic COMPILED BY I.J.J.
BORING DATE May 21/59 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)	---	+*
NATURAL MOISTURE AND		
LIQUIDITY INDEX	---	LI
LIQUID LIMIT	---	X
PLASTIC LIMIT	---	---

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE				
				P. S. F. BLOWS/FT.				
				50	100	150	200	
↓	Ground Level	251.0	0					
	Sandy clay till							
		247.5						
	SANDY POWDERED TILL	241.0						
	Bedrock (not proven)		5					
	End of borehole							
			10					
			15					
			20					

[illegible]

59-F-53

Hwy. #31 E

Hwy. #43 Jct.

4-BAY GARAGE

WINCHESTER

