

57-F-227C

ST. LAURENT BLVD.

QUEENSWAY

OTTAWA

BA 677

MCROSTIE & ASSOCIATES

CONSULTING ENGINEERS

OTTAWA 1

CANADA

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(C O P Y)

Foundation Investigation - St.Laurent Blvd. at Queensway

1. FIELD WORK

Three boreholes were made to supplement the information obtained in the one previous borehole. Since the shale will be the supporting strata for the structure, holes were carried down into the shale until about ten feet of core was recovered having percentage recoveries above 75%.

2. SAMPLE TESTING

Standard penetration tests were made in the boreholes and samoles visually classified.

Cores recovered from diamond drilling were examined in detail for the slope and thickness of the bedding planes since a non-uniform slope of the planes indicates a broken condition.

3. OBSERVATIONS

A few feet of loose or organic soils are found beneath the surface, under these is a thin layer of glacial till which is in turn underlain by shale at 5 to 6 feet.

The upper few feet of the shale is broken and indicates weathering or ancient ice action during the glacial period. The soundness of the shale increases in general with depth and at about ten feet is not weathered or broken. The shale is, however, basically a soft laminated deposit with bedding planes only a few inches thick and hence cannot be loaded to high rock bearing values.

Groundwater levels were within a foot or two of the surface and can be considered as nearly at the seasonal low. During wet weather the site is subject to flooding.

4. DESIGN RECOMMENDATIONS

4.1 Strengths

Above El. 210 - Soils not likely for support of structures.

El. 210 - 206 - broken shale considered as granular material, bearing capacity 5,000 pounds per sq. ft. except at Hole 2 where sound shale at El. 208.

Below El. 206 - bearing capacity of shale 15,000 pounds per sq. foot.

4.2 Soil Compressibility

Not a factor at this site.

4.3 Soil Shrinkage and Swelling

Not a factor at this site.

4.4 Foundation type

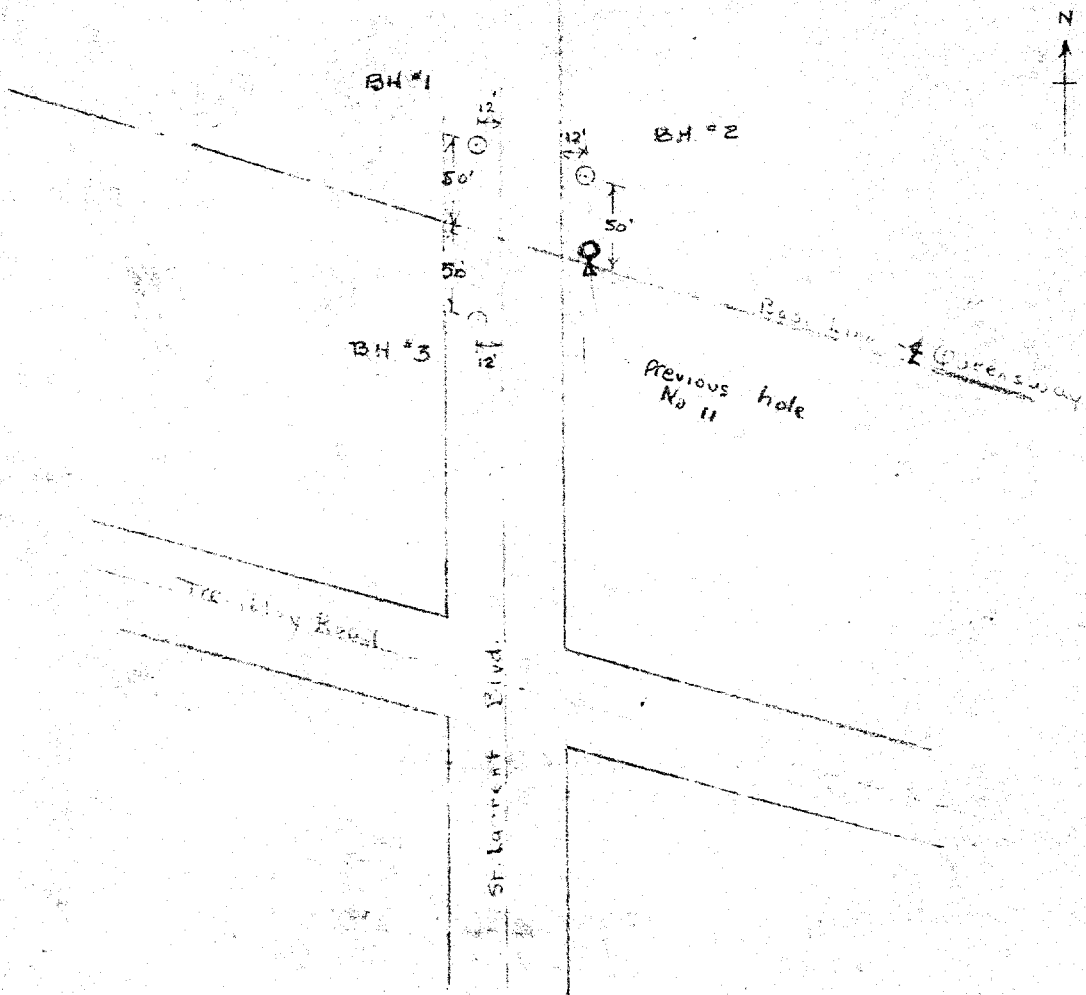
The poor quality of the upper shale layers may make the use of piles, driven from the present ground surface, an interesting alternative to pier foundations, excavated into the shale. We have found that most pile types will penetrate several feet into the soft shale and when pile lengths are estimated, penetration to El. 200 can be assumed. This reasoning should not, however, be used in the contract documents since different pile types have different effects on broken shale and the unbroken shale.

5. CONSTRUCTION PRECAUTIONS

The loose upper soils will be below groundwater during construction and an enlarged excavation will probably be found necessary. A flow of water in the upper shale is also to be expected but can usually be controlled by pumping from pits inside the excavation.

6. CO-ORDINATION

We would be glad to discuss further any points arising from the report.



McROSTIE & ASSOCIATES
CONSULTING ENGINEERS

BOREHOLE LOCATIONS
ST. LAURENT AT QUEENSWAY

SCALE 1" = 100'

PLATE 1

McROSTIE & ASSOCIATES
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OTTAWA CANADA

SOIL PROFILE AND SUMMARY OF LABORATORY TESTS

ST. LAURENT BLVD.
 & QUEENSWAY

ELEVATION OF GROUND SURFACE (ZERO DEPTH) 216.1

REMARKS _____ GEODETIC DATUM _____

HOLE No.

DATE JUNE 3-4 '57

						DATE JUNE 3-4 '57		
UNCONFINED COMPRESSIVE STRENGTH KIPS/FT. ²	SMALL SCALE PENETROMETER KIPS/FT. ²	STANDARD PENETRATION BLOWS/FT.	SAMPLE NUMBER	DESCRIPTION OF SOIL	DEPTH IN FEET	ELEVATION	PENETRATION TEST	
							LB. HAMMER INCH DROP	NO CASING INCH DIA. ROD BLOWS PER FOOT
				GROUND SURFACE →	0	216.1		
				TOP SOIL	1.0			
				LOOSE	2			← OVERNIGHT WATER LEVEL
				ORGANIC SOIL				
	11	1-1			4.0	-212.1		
				MEDIUM DENSE TILL	5.5			
14 for 6"		1-2		VERY DENSE TILL	6.1	-210.0		
40 for 8"								
				BROKEN SHALE 1' TO 1 1/2'	8			
				(DRILLED - 69% RECOVERY)	10.1	-206.0		
				SHALE ROCK				
				(DRILLED - 50% RECOVERY)	12			
					13.7			
					14			
					16			
				SHALE ROCK				
				(DRILLED - 100% RECOVERY)	18			
					20			
					21.2	-184.9		
				→ BOTTOM OF HOLE				
					</			

