

#58-F-221-C

OTTAWA,

QUEENSWAY &

CARLING AVE.

MAY 59



June 157

Photograph #1

Taken from C.N.R. tracks in S.E. direction.

Stake in top left centre is Station 4400. C.I.P. at 3460 approx.

Showing wedge of fill dumped over bank. Removal recommended (4000 c.y. approx.) material on natural slope (not suitable for fill) to be stripped to depth of 3 feet.

Material in narrow ridge on left acceptable

B 837

WP 8.58



June 1959

## Photograph #2

Taken from C.N.R. tracks in  
S.E. direction.

Stake Lt. centre is 6/00 E  
Showing ~~area~~<sup>of</sup> loose wet fine to  
very fine sandy loam material which  
is recommended to be stripped to a  
depth of 3 feet. Material not suit-  
able for fill.

B 837

WP 5-15

# MCROSTIE & ASSCCIATES

CONSULTING ENGINEERS AND SURVEYORS

OTTAWA 1  
CANADA

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BA 594  
58-F-221C

## Foundation Investigation - Structure No. 5

### 1. FIELD WORK

Four boreholes were made at the site with our test drilling rig in the locations shown on Plate One. Two inch split barrel samples were taken in the soil layers, standard penetration tests made, and samples visually classified.

The underlying rock was diamond drilled for a depth of at least 10 feet into the rock and cores recovered for identification and inspection. Detailed measurements of core recovery percentages were made to aid in evaluating the structure and soundness of the rock, and a careful record was made of any discontinuities encountered in the drilling.

Groundwater levels were observed during the field programme.

### 2. OBSERVATIONS

The site is covered with 3 to 8 feet of soil, portions of which are organic deposits a few feet thick. A thin layer of glacial lies over the rock. Rock at the site is weathered for the first foot in some places, and is composed of a gray crystalline limestone with occasional thin shale interbedding. The limestone bedding thickness range from 4 inches to 8 inches, and the shale interbedding is generally some fraction of an inch. During the careful test drilling procedure, several vertical discontinuities or 'drops' were observed in each hole. These drops were more frequent near the upper surface of the rock and we feel that they may represent layers which have been eroded or altered by the flow of groundwater through the upper rock layers. This opinion is strengthened by the observation that drilling water was lost in one of the holes at shallow depth which indicates a layer or seam of high permeability.

Groundwater levels at or near the rock surface can be considered typical for any but the wettest seasons when groundwater would likely reach the surface.

### 3. RECOMMENDATIONS

#### 3.1 Soil and Rock Strengths

Soils at the site are not likely to be used for the support of structures, but bearing values can be recommended for the rock as follows:

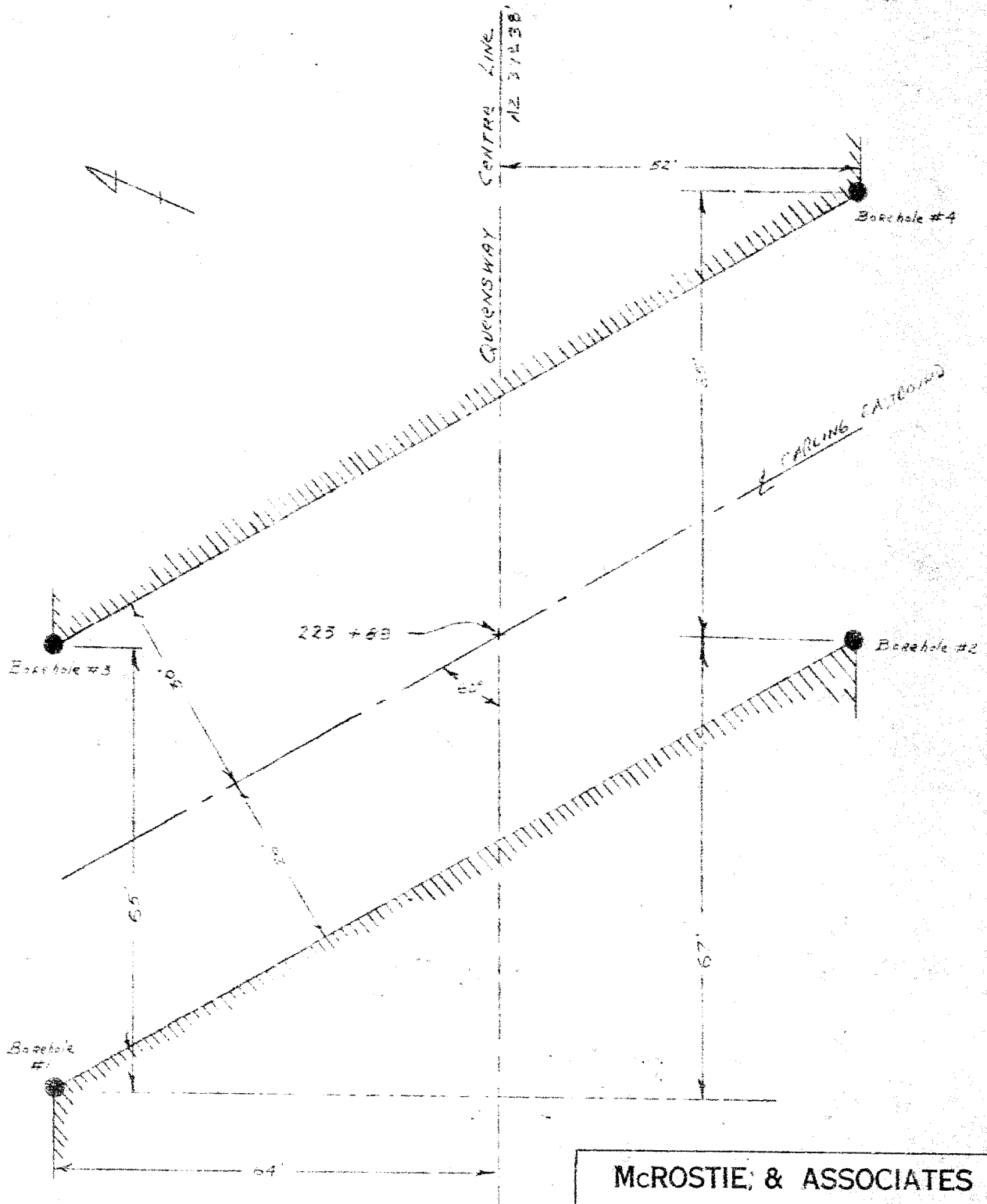
Rock below El. 240 (or unweathered limestone occurring higher)	30,000 pounds per sq. foot, but construction grouting required.
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#### 3.2 Construction Grouting

While the limestone is reasonably sound, the possible occurrence of voids or seams immediately below heavily loaded areas must be realized and measures taken to make the rock mass monolithic. We recommend that grout holes be drilled in the base of the foundations to a depth of at least 10 feet, and grouting be attempted in the holes so that any possible openings in the rock would be filled.

#### 3.3 Groundwater Control

Owing to the permeability of the upper rock layers and our experience with a rock excavation at an adjacent site, we feel that a considerable flow of groundwater is to be expected. This can be controlled if sufficient pumping capacity is kept available or the grouting operation could be planned to seal the excavation area sides before excavation commenced. The depth of required excavation would be the deciding factor in this choice.



**McROSTIE & ASSOCIATES**  
CONSULTING ENGINEERS

**BOREHOLE LOCATIONS**  
Queensway & Carling Ave (Eastward)  
Bridge #5

SCALE 1" = 20'

PLATE 1

SEE SK II - 72 HING

# McROSTIE & ASSOCIATES

## CONSULTING ENGINEERS

### OTTAWA CANADA

# SOIL PROFILE AND SUMMARY

## OF LABORATORY TESTS

Queensway & Carling Ave (Eastward)  
Bridge #5

ELEVATION OF GROUND SURFACE (ZERO DEPTH) 2466 (Geodetic Datum)  
REMARKS FOR QUEENSWAY TILL # 11-11 (e.g. 2465.9)

HOLE NO.

DATE Nov 30, 57

UNCONFINED COMPRESSIVE STRENGTH KIPS/FT. <sup>2</sup>	SMALL SCALE PENETROMETER KIPS/FT. <sup>2</sup>	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	2466		
				Topsoil	1	2456		
	5 for 6 10		1-1	Loose Till	25	2441		
	17 8 for 8		2-1	Medium Dense Till	39	2428		
				Limestone (drilled) (CORE RECOVERY 50%)				
					35	2381		
				Limestone (drilled) (CORE RECOVERY 53%)				
					135	2331		
				Bottom of Hole				
							% WATER CONTENT	
							PLATE 2	

## SOIL PROFILE AND SUMMARY OF LABORATORY TESTS

QUEENSWAY & CARLING AVE (EASTWARD)  
BRIDGE #5

ELEVATION OF GROUND SURFACE (ZERO DEPTH) 2436" (Geodetic Datum)  
REMARKS Ref. Queensway B.M. # 11-1 (cf. 246.09)

HOLE NO.

DATE Nov. 30/57

2

UNCONFINED COMPRESSIVE STRENGTH KIPS/FT. <sup>2</sup>	SMALL SCALE PENETROMETER KIPS/FT. <sup>2</sup>	STANDARD PENETRATION BLOW/FT.	SAMPLE NUMBER	DESCRIPTION OF SOIL	DEPTH IN FEET	ELEVATION	PENETRATION TEST		
							LB. HAMMER	NO CASING	BLOWS PER FOOT
							INCH DROP	INCH DIA. ROD	
				GROUND SURFACE	0	2476			
			1-2	Fill					
			2-2	ORGANIC		2471			
			3-2	Loose Clayey Fine Sand / Silt with some well-sorted Sand / Gravel		2465			Overnight Water Level 52
			4-2	Dense Till		2431			
				Limestone (drilled) (CORE RECOVERY 94%)		2368			
				Limestone (drilled) (CORE RECOVERY 90%)		2318			
				Bottom of Hole					
							% WATER CONTENT		PLATE 3

# McROSTIE & ASSOCIATES

## CONSULTING ENGINEERS

### OTTAWA CANADA

#### SOIL PROFILE AND SUMMARY OF LABORATORY TESTS

Queensway & Carling Ave (Eastward)  
Bridge #5

ELEVATION OF GROUND SURFACE (ZERO DEPTH) 2453 (Geodetic Datum)

REMARKS Ref. QUEENSWAY E.M. # 11-11 (sf. 24600)

HOLE NO.

3

DATE Nov 30, 57

UNCONFINED COMPRESSIVE STRENGTH KIPS/FT. <sup>2</sup>	SMALL SCALE PENETROMETER KIPS/FT. <sup>2</sup>	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	2453		
				ORGANIC				
			13					
			2					
			2	Very Loose Fine Sand & Silt	2.5	2438		
			62	Weathered Limestone	4	2418		
				Limestone (drilled)				
				(CORE RECOVERY 88%)				
					35	2367		
				Limestone (drilled)				
				(CORE RECOVERY 92%)				
						2305		
				Bottom of Hole				
							% WATER CONTENT	PLATE
								4

# McROSTIE & ASSOCIATES

## CONSULTING ENGINEERS

### OTTAWA CANADA

#### SOIL PROFILE AND SUMMARY OF LABORATORY TESTS

QUEENSWAY & CARLING AVE (EASTWARD)  
BRIDGE #5

ELEVATION OF GROUND SURFACE (ZERO DEPTH) 2455' (Geodetic Datum)

HOLE NO.

REMARKS: QUEENSWAY E.M. #1111 (el. 245.08)

DATE Nov 30/57

4

UNCONFINED COMPRESSIVE STRENGTH KIPS/FT. <sup>2</sup>	SMALL SCALE PENETROMETER KIPS/FT. <sup>2</sup>	STANDARD PENETRATION BLOWS/FT.	SAMPLE NUMBER	DESCRIPTION OF SOIL	DEPTH IN FEET	ELEVATION	PENETRATION TEST	
							LB. HAMMER	NO CASING
							INCH DROP	INCH DIA. ROD
GROUND SURFACE							BLOWS PER FOOT	
					0	245.8		
					1			
					2	245.3		
				ORGANIC	4	244.9		
				Boulders	17			
				Medium Dense Till	34			
				Dense Till	44	241.3		
					50	240.6		
				Limestone (grit)				
				(CORE RECOVERY 33%)				
					120	235.1		
				Limestone (grit)				
				(CORE RECOVERY 33%)				
					150	232.1		
				Limestone (grit)				
				(CORE RECOVERY 33%)				
					180	229.6		
				Bottom of Hole				
							% WATER CONTENT	
							PLATE	
							5	