

## MEMORANDUM

TO: Mr. A. P. Watt,,  
Regional Structural Plan. Engineer,  
Southwestern Region,  
London, Ontario.

FROM: Foundations Office,  
Design Services Branch,  
West Building, Downsview.

ATTENTION:

DATE: November 16, 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: Additional Borings  
St. Thomas Expressway - CNR Spur Line  
Overpass  
W.O. 71-11068 -- W.P. 89-69-05/06

We have recently put down five additional borings at the above site. These borings were necessitated by a shift in the alignment of the St. Thomas Expressway at the structure and a change in the original crossing scheme of twin 3 span structures to a concrete rigid frame tunnel founded on spread footings.

Our investigation has disclosed subsoil conditions across the entire area, covered by the new structure, to be similar to those reported in the original Foundation Investigation Report W.O. 71-11068. As such, our comments and recommendations contained in the original report remain unchanged. We would like to emphasize, however, that for a safe design bearing capacity of 3.5 TSF, the founding elevations of the bottoms of the spread footings must not be above elevation 783 and that a minimum earth cover of 4 feet over the footing bottoms should be provided for frost protection purposes.

The results of our recent field investigation are contained in the enclosed Record of Borehole sheets No. 11-15 inclusive and a new stratigraphical Drawing 71-11068B has been made incorporating subsoil information from both foundation investigations. Please consider this memo as part of Foundation Investigation Report 71-11068 and attach it together with the Record of Borehole sheets and Drawing 71-11068B to that report.

If we can be of any further assistance in this matter, please contact this office.

JH/ji  
Attch.

c.c. E. J. Orr  
B. R. Davis  
A. Rutka  
A. Wittenberg  
L. E. Walker  
B. J. Giroux  
J. R. Roy  
G. A. Wrong  
B. A. Singh  
Fenco (Mr. R. Temple)

*J. Hodge*  
J. Hodge,  
Project Foundations Engineer,  
For: K. G. Selby,  
Supervising Foundations Engineer.

Foundations Files  
Documents

RECEIVED  
BRIDGE PLANNING  
DEC 3 1973  
SOUTHWESTERN REGION



DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

# RECORD OF BOREHOLE NO 11

JOB 71-11068

LOCATION Co-ords.. 558,021 N; 339,473 E.

ORIGINATED BY LJH

W.P. 89-69-05/06

BORING DATE Nov. 7, 1973

COMPILED BY LJH

DATUM Geodetic

BOREHOLE TYPE Cont. Flight Auger

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100					LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$			BULK DENSITY $\gamma$ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE					WATER CONTENT %				
787.5	Ground Level															
0.0	Clayey silt, some sand, trace of gravel		1	SS	20	780										
	Very Stiff		2	SS	19											
	Hard		3	SS	26											
771.0			4	SS	35											
16.5	End of Borehole					770										

OFFICE REPORT ON SOIL EXPLORATION

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## RECORD OF BOREHOLE NO 12

JOB 71-11068

LOCATION Co-ords. 558,098 N; 339,398 E.

W.P. 89-69-05/06

BORING DATE Nov. 8, 1973

ORIGINATED BY LJH

COMPILED BY LJH

DATUM Geodetic

BOREHOLE TYPE Cont. Flight Auger

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT — $w_L$		BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLAT	NUMBER	TYPE	BLOWS/FOOT		BLOWS/FOOT	BLows / FOOT	PLASTIC LIMIT — $w_p$	WATER CONTENT — $w$		
788.2	Ground Level											
0.0	Clayey silt, some sand traces of gravel.		1	SS	28							
			2	SS	54							
	Very Stiff to Hard		3	SS	33							
771.7			4	SS	45							
16.5	End of Borehole											

Hole Dry

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## RECORD OF BOREHOLE NO 13

JOB 71-11068

LOCATION Co-ords. 558,208 N; 339,405 E.

ORIGINATED BY LJH

W.P. 89-69-05/06

BORING DATE Nov. 7, 1973

COMPILED BY LJH

DATUM Geodetic

BOREHOLE TYPE Cont. Flight Auger

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT		LIQUID LIMIT — $w_L$ PLASTIC LIMIT — $w_p$ WATER CONTENT — $w$ $w_p$ — $w$ — $w_L$		BULK DENSITY $\gamma$ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE		WATER CONTENT %			
789.0	Ground Level											
0.0	Clayey silt, some sand, traces of gravel.		1	SS	11							
			2	SS	10							
	Stiff to Hard		3	SS	30	780						
772.5			4	SS	38							
16.5	End of Borehole					770						

776.5

OFFICE REPORT ON SOIL EXPLORATION

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# RECORD OF BOREHOLE NO 14

JOB 71-11068

LOCATION Co-ords. .558,263 N; 339,337 E.

ORIGINATED BY LJH

W.P. 89-69-05/06

BORING DATE Nov. 8, 1973

COMPILED BY LJH

DATUM Geodetic

BOREHOLE TYPE Cont. Flight Auger

CHECKED BY *[Signature]*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT			LIQUID LIMIT — $w_L$ PLASTIC LIMIT — $w_p$ WATER CONTENT — $w$			BULK DENSITY $\gamma$ P.C.F.	REMARKS	
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED      + FIELD VANE ● QUICK TRIAXIAL    x LAB VANE			$w_p$ — $w$ — $w_L$ WATER CONTENT %					
789.4	Ground Level														
0.0	Clayey silt, some sand, traces of gravel.		1	SS	9	780								Hole Dry	
			2	SS	23										
	Very Stiff to Hard		3	SS	30										
772.9			4	SS	52										
16.5	End of Borehole					770									

OFFICE REPORT ON SOIL EXPLORATION

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## RECORD OF BOREHOLE NO 15

JOB 71-11068

LOCATION Co-ords. 558,286 N; 339,400 E.

ORIGINATED BY FJH

W.P. 89-69-05/06

BORING DATE November 7, 1973

COMPILED BY LJH

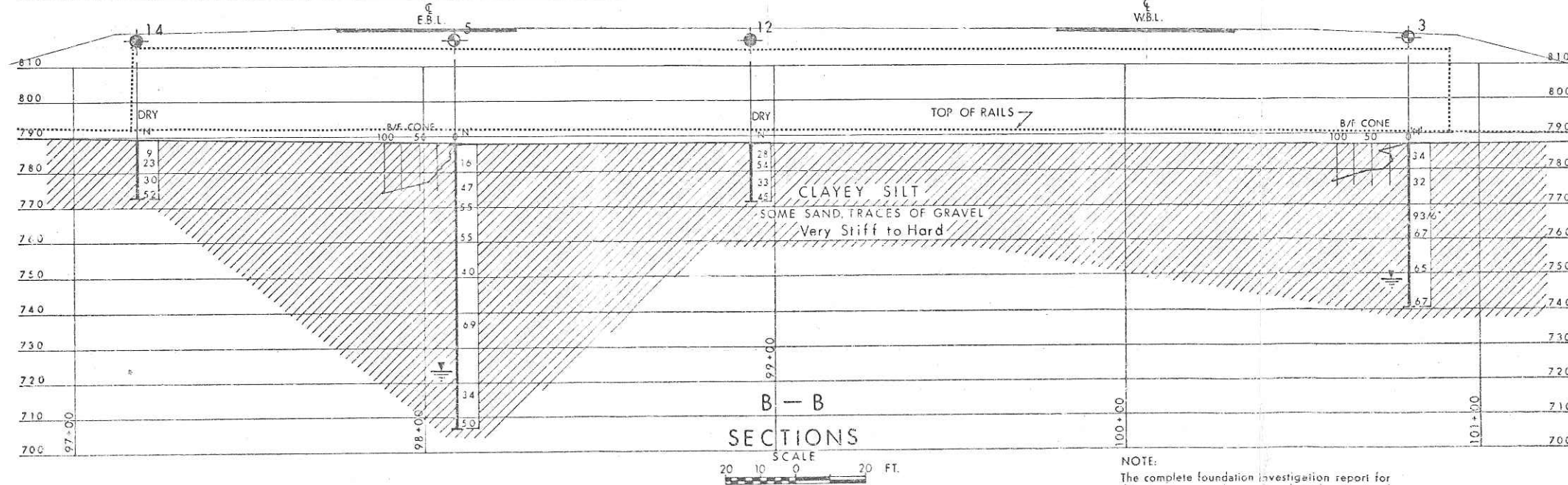
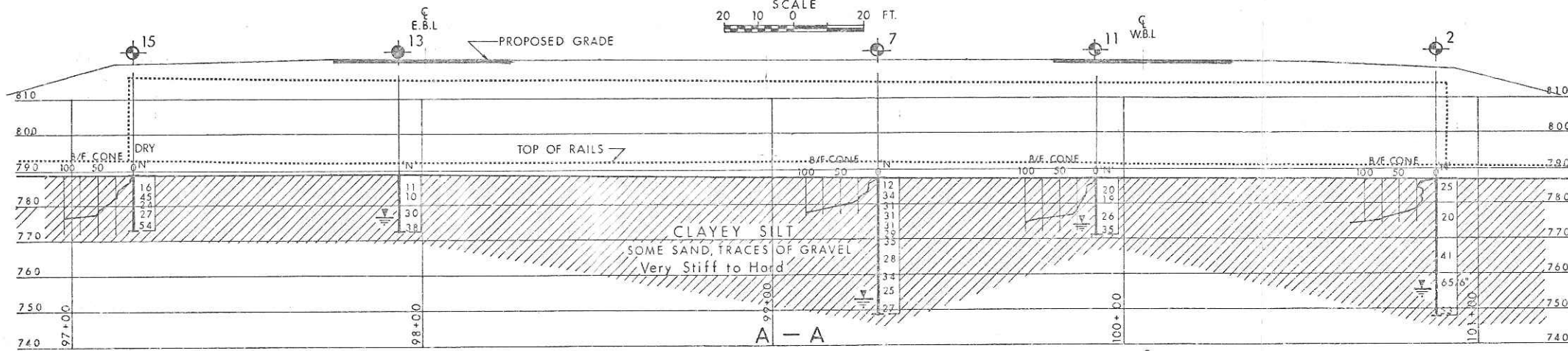
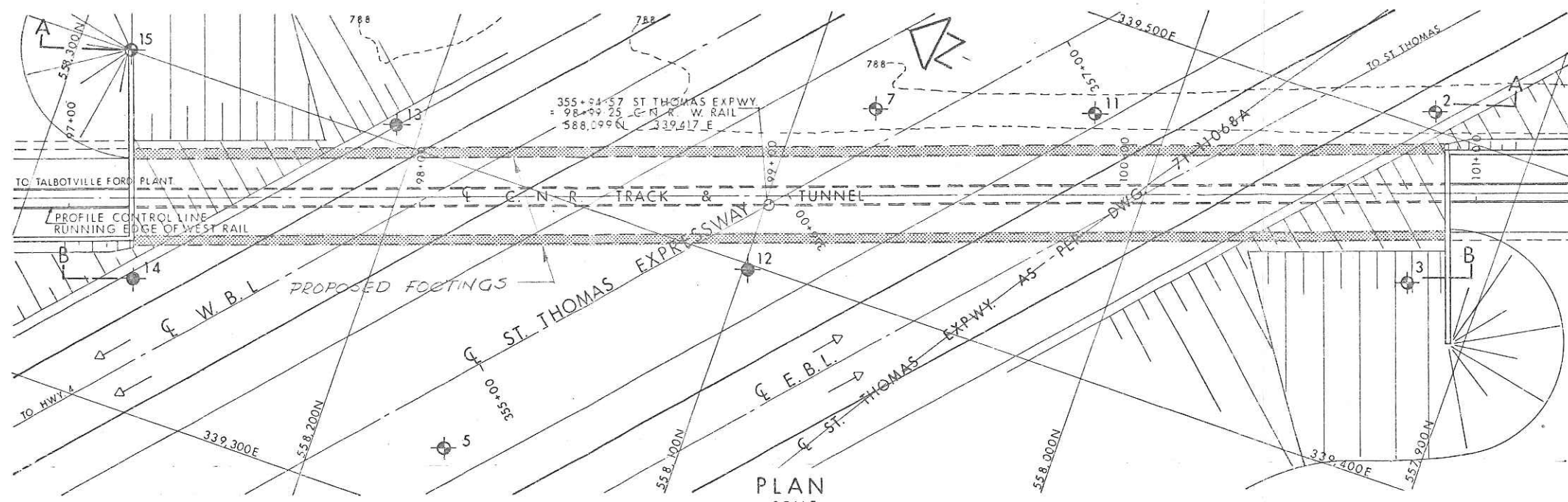
DATUM Geodetic

BOREHOLE TYPE Cont. Flight Auger

CHECKED BY

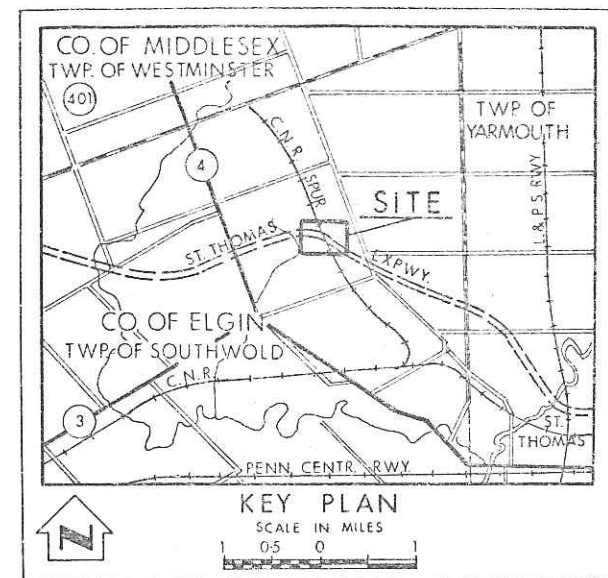
SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100	LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$ $w_p$ — $w$ — $w_L$	BULK DENSITY $\gamma$ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT					
789.3	Ground Level									
0.0	Clayey silt, some sand, traces of gravel.		1	SS	16					
			2	SS	15					
			3	SS	24					
	Very Stiff to Hard		4	SS	27					
772.8			5	SS	54					
16.5	End of Borehole									Hole Dry





NOTE:  
The complete foundation investigation report for this structure may be examined at the Structural Office and Foundations Office, Downsview, and at the LONDON District Office.

REF NO. FENCO 3802-9T-109



### LEGEND

- Bore Hole
- Cone Penetration Test
- Bore Hole & Cone Test
- Water Levels established at time of field investigation, July 1971, July 1973

NO.	ELEVATION	CO--ORDINATES		
		NORTH	EAST	
2	787.0	557,929	339,505	} July 71
3	787.0	557,920	339,456	
5	788.3	558,163	339,320	
7	787.8	558,080	339,453	
11	787.5	558,021	339,473	} July 73
12	788.2	558,098	339,398	
13	789.0	558,208	339,405	
14	789.4	558,263	339,337	
15	789.3	558,286	339,400	

### NOTE

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.

REVISIONS	DATE	BY	DESCRIPTION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO  
DESIGN SERVICES BRANCH-FOUNDATIONS OFFICE

### C.N.R. SPUR LINE OVERPASS

HIGHWAY NO. PROP. ST. THOMAS EXPWY DIST. NO. 2  
CO. ELGIN  
TWP. SOUTHWOLD LOT 42 & 43 CON. E.S.T.R.

### BORE HOLE LOCATIONS & SOIL STRATA

SUBMD J.H. CHECKED <input checked="" type="checkbox"/>	WP NO 89-69-05/06	DRAWING NO.
DRAWN O.L.J. CHECKED <input checked="" type="checkbox"/>	WO NO 71-11068	71-11068B
DATE 22 NOV. 1973	SITE NO.	BRIDGE DRAWING NO.
APPROVED	CONT NO.	