

Ontario  
Department of Transportation and Communications  
~~DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS~~

MEMORANDUM

TO: Mr. B. R. Davis,  
Bridge Engineer,  
Bridge Office,  
Admin. Bldg.

FROM: Foundation Section,  
Room 107, Lab. Bldg.

ATTENTION: Mr. S. McCombie

DATE: June 18, 1971

OUR FILE REF.

IN REPLY TO

JUN 23 1971

SUBJECT:

FOUNDATION INVESTIGATION REPORT  
For

Proposed Structure

At the

Crossing of Belfield Expressway and  
Iron St. Extension (Bridge #3)

District No. 6 (Toronto)

W.O. 71-11037 -- W.P. 285-66

CONT 73-20

30 M11-113

Attached, we are forwarding to you our detailed foundation investigation report on the subsoil conditions existing at the above structure site.

We believe that the factual data and recommendations contained therein, will prove adequate for your design requirements. Should additional information be required, please feel free to contact our Office.

AGS/MdeP  
Attach.

cc: Messrs. B. R. Davis  
F. G. Allen  
D. W. Farren  
C. K. Hunter (2)  
H. Greenland  
G. C. E. Burkhardt (2)  
T. J. Kovich  
B. J. Giroux  
B. A. Singh  
De Leuw, Cather & Co. Ltd. - R. Barr  
Foundations Files  
Gen. Files

*A. G. Stermac*  
A. G. Stermac  
PRINCIPAL FOUNDATION ENGINEER

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FOUNDATION INVESTIGATION REPORT  
For  
Proposed Structure  
At the  
Crossing of Belfield Expressway and  
Iron St. Extension (Bridge #3)  
District No. 6 (Toronto)  
W.O. 71-11037      --      W.P. 285-66

1. INTRODUCTION:

The Foundation Section was requested to carry out a subsurface investigation at the crossing of proposed Belfield Expressway and Iron Street Extension, in the Borough of Etobicoke, York County. The request was contained in a memo from the Bridge Office (Mr. G. C. E. Burkhardt, Regional Bridge Planning Engineer), dated April 23, 1971. Subsequently, an investigation was carried out by this Section to determine the subsoil and groundwater conditions at the site.

The results of the investigation are presented in this report, together with our recommendations for the design of the structure foundations as well as the stability and settlement considerations associated with the approach fills.

2. SITE AND GEOLOGY:

The site is located approximately 600 ft. south of Belfield Road between Martin Grove Road on the east and Hwy. #27 on the west, in the Borough of Etobicoke, Metropolitan Toronto. The terrain is gently undulating in relief between about elevations 552 to 554. The area immediately to the north, however, has been developed for small industrial developments; many one and two storey factories and warehouses are located here.

The site is located in the physiographic region known as the "Peel Plain". The characteristic deposit in this region

2. SITE AND GEOLOGY: (cont'd.) ...

is a ground moraine laid down during the Wisconsin glacial age. In the vicinity of the area under investigation, the moraine is primarily composed of a basically cohesive, stoney glacial till whose thickness typically ranges between 75 and 85 feet. In this region the Humber River and Etobicoke Creek have cut deep valleys into the overburden. There is, therefore, no large undrained depression, swamp or bog, although in many of the interstream areas drainage is still imperfect.

The overburden is underlain by grey shale bedrock of the Meaford-Dundas formation, Ordovician Period. Available geologic information indicates that the surface of the bedrock varies somewhere between elevations 470 and 475.

3. FIELD AND LABORATORY WORK:

A total of five sampled boreholes, all of which were accompanied by the dynamic cone penetration test, was carried out at the site during the course of the field investigation. The boreholes and the cone penetration tests were advanced by means of a continuous flight auger machine (Penn drill) adapted for soil sampling purposes.

Samples were obtained at required depths in a 2-inch O.D. split-spoon sampler which was hammered into the soil. The method of driving the split-spoon conformed to the specifications for the Standard Penetration Test. The same method was used to advance the dynamic cone penetration tests.

During sampling and drilling operations, detailed logs of the borings were made; these logs contain a record of drilling and sampling techniques used, together with the soil types encountered.

The location and elevation of all the boreholes are shown in Drawing #71-11037A, together with a number of estimated stratigraphical sections across the site. Surveying at the site

3. FIELD AND LABORATORY WORK: (cont'd.) ...

was carried out by the personnel from the Draughting Section, Materials and Testing Office, Department of Transportation and Communications. The elevations given in this report are referred to a geodetic datum.

All samples were subjected to a careful visual examination in the field and subsequently in the laboratory. Following this examination, laboratory testing was carried out on selected representative samples to determine the following physical properties of the overburden:

Natural Moisture Content

Atterberg Limits

Grain-Size Distribution

The results of these tests are plotted on the Record of Borelog sheets as well as on the figures in the Appendix.

4. SUBSOIL CONDITIONS:

4.1) General:

The predominant stratum across the site is composed of a competent glacial till; this stratum was proven to extend a minimum of 71 ft. below existing ground surface.

The gradational variations within the glacial till, as determined at the various borehole locations, are shown on the accompanying borelog sheets. The stratigraphical sections, shown on Drawing No. W.O. 71-11037A, have been inferred from this data.

A brief description of the glacial till is presented in Sub-section 4.2).

4.2) Glacial Till Stratum:

The glacial till is present immediately beneath a thin topsoil cover (6 inches). This stratum was not fully penetrated

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

4.2) Glacial Till Stratum: (cont'd.) ...

at any of the boring locations; it was, however, proven to a depth of 71 feet below the existing ground level at B.H. #2. The upper 47.5 to 50.5 feet of the stratum is cohesive; it is composed of a matrix of clayey silt binding sand and gravel. Below this cohesive zone the glacial till is granular in nature - i.e., it is composed of a heterogeneous mixture of silt, sand and gravel with a trace of clay. Grain-size distribution curves for samples obtained within the two distinct zones are plotted in envelope form on the figures listed below.

Figure No. 1 - Upper Cohesive Glacial Till

Figure No. 2 - Lower Granular Glacial Till

These figures are located in Appendix I of this report.

Atterberg limit tests were carried out on samples from the glacial till. These are plotted on the Record of Borelog sheets and are summarized on the Plasticity Chart, Figure No. 3. The results are tabulated below.

		Upper Cohesive Zone		Lower Granular Zone	
		Range	(Average)	Range	(Average)
Liquid Limit	(W <sub>L</sub> )	17 - 29	(22)	13.5 - 17	(15)
(%)					
Plastic Limit	(W <sub>P</sub> )	11.5 - 18	(14)	11 - 13	(12)
(%)					
Natural Moisture Content	(W)	9 - 17	(12)	6.5 - 11	(8)
(%)					

Referring to the table, it can be seen that the upper cohesive portion of the glacial till is inorganic with a plasticity in the low range. The limited number of tests carried out on the granular portion of the glacial till, however, indicate that this material is basically non-plastic. The natural moisture content throughout the stratum is typically 2 to 4 percent below the plastic limit.

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

4.2) Glacial Till Stratum: (cont'd.) ...

Standard penetration testing was performed within the stratum; the values obtained are plotted on the borelog sheets. In the upper cohesive portion of the glacial till, the 'N' values range randomly from 10 to 113 blows/ft. being generally greater than 25 blows/ft. Based on these results, it is estimated that the consistency of this zone varies from stiff to hard. The 'N' values in the lower granular zone of the glacial till exceeded 100 blows/ft. The relative density of this material is, therefore, very dense.

5. GROUNDWATER CONDITIONS:

Groundwater level observations have been carried out, during the period of the investigation, in the open boreholes. The results are shown on the Record of Borelog sheets and summarized on Drawing No. W.O. 71-11037A. These observations indicate that the groundwater level varies between elevations 551 and 552, which corresponds to depths of from 0.5 to 2 ft. below existing ground surface.

6. DISCUSSION AND RECOMMENDATIONS:

6.1) General:

It is proposed to constr. an east - west expressway in the vicinity of Belfield Road which will connect Hwy. #401 in the Islington/Kipling area with the Toronto International Airport. The new Belfield Expressway will be 3.3 miles long and will require interchanges at Kipling Ave., Martin Grove Road, Atwell Road, new Hwy. #427 and Airport Road. In addition, structures will be required at the crossings of Iron Rd., Canadian National Railways, old Hwy. #27 and Mimico Creek with the proposed expressway.

6. DISCUSSION AND RECOMMENDATIONS: (cont'd.) ...

6.1) General: (cont'd.) ...

This discussion deals with the proposed underpass structure at the crossing of the Belfield Expressway and the Iron Street Extension. Discussions, with regard to other structures on the expressway, will be covered under separate foundation reports.

The proposed underpass at the Iron Street Extension and Belfield Road Expressway will be a two-span (77' - 65') structure incorporating a centre pier at the median and perched abutments within the approach fills. The new bridge will be 46 ft. wide. The profile grade of the Belfield Road Expressway at the underpass location will be at elevation 540 - i.e., be of the order of 12 to 13 ft. below the existing ground surface. The proposed grade of the Iron Street Extension within the proposed structure limits, varies from elevation 559 to elevation 560, which is some 6 to 8 ft. above the original ground surface. At these grades the maximum height of the approaches will be of the order of 20 ft.

The predominant stratum across the site is an extensive deposit of glacial till extending at least 71 ft. below the existing ground surface. The upper 47 to 50 ft. of the stratum is cohesive and below this zone the glacial till is granular.

The piers can be founded within the parent subsoil, while the abutments can be 'perched' within the proposed approaches. The foundation recommendations for these respective elements are discussed in the sections to follow.

6.2) Pier Foundation: (Ref. B.H. #2):

The natural subsoil (glacial till) is competent. The centre pier, therefore, can be founded on a spread footing, located within this stratum below the proposed grade (elev. 540) of the Belfield Expressway. Four feet of earth cover should be provided to the underside of the footing for frost protection



6. DISCUSSION AND RECOMMENDATIONS: (cont'd.) ...

6.2) Pier Foundation: (Ref. B.H. #2): (cont'd.) ...

purposes. Spread footing founded at or below elevation 536, can be designed using a safe bearing pressure of up to 3.0 t.s.f.

The footing will be located below the groundwater level recorded during the period of the investigation. In view of the relatively impervious nature of the cohesive subsoil, no major dewatering problems are anticipated, during the footing excavation phase. Any minor groundwater seepage or surface run-off into the excavation could be handled using standard techniques, such as pumping from sumps, etc.

Settlement of the foundation subsoil will take place due to the induced footing pressure. For a footing, inducing the aforementioned bearing pressure, the settlement will be negligible, since the foundation subsoil is competent. Further, this settlement will be elastic in nature - i.e., take place during or immediately following the construction period.

6.3) Abutment Foundations: (Ref. B.H.'s #1, 3, 4 and 5):

The proposed abutments may be 'perched' within the approaches and supported on spread footings immediately below the existing ground surface within the glacial till stratum. A minimum of 4 ft. earth cover should be provided to the underside of the abutment footings for frost protection purposes. Spread footings, meeting the aforementioned requirements, can be designed using a safe bearing pressure of 2.5 t.s.f. at or below elevation 550.

No major dewatering problems are anticipated for the construction of abutments in view of the relatively impervious nature of the subsoil.

Settlements induced due to the footing pressure will be elastic in nature. These settlements will be negligible and will take place during or immediately following the construction of the structure.

6. DISCUSSION AND RECOMMENDATIONS: (cont'd.) ...

6.3) Abutment Foundations: (Ref. B.E.'s #1, 3, 4 and 5): -  
(cont'd.) ...

Alternatively, the abutments may be supported on spread footings placed within the approach fills. The fill material below the tops of the footings should consist of well compacted Granular 'A' material and should extend for a horizontal distance of at least 10 ft. from the footing edges in the plane of the footing tops. This portion of the fill should be built with side slopes of 2:1. The remainder of the fill should be completed to about profile grade for a distance of about 50 ft. behind the abutments before re-excavating for the abutment foundations. Spread footings for the abutments, on well compacted granular fill, can be designed using an allowable safe bearing pressure of 2.0 t.s.f.

The differential settlements between the pier and abutment footings should not exceed 1/2 inch.

6.4) Approach Embankments and Cuts:

The proposed profile grades of the Belfield Expressway and Iron Street Extension will be approximately at elev. 540 and 560, respectively. In order to achieve these grades at the approaches, embankments of the order of 7 ft., and cuts up to a maximum depth of 13 ft., will be required. No stability problems are anticipated for the proposed approach fills and cuts with standard 2:1 slopes.

The glacial till subsoil will settle due to the surcharge loading of the approach fills. The settlement will be elastic in nature and negligible in magnitude.

7. MISCELLANEOUS:

The field work was performed during the period of April 26 to May 3, 1971, under the supervision of Mr. V. Korlu, Project Foundation Engineer.

Equipment used was owned and operated by F. E. Johnston Drilling Co. Ltd., Toronto.

The investigation was carried out under the general supervision of Mr. M. Devata, Supervising Foundation Engineer, who also reviewed this report.

June, 1971

APPENDIX I

DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS & TESTING OFFICE

## RECORD OF BOREHOLE No. 1

FOUNDATION SECTION

JOB 71-11037 LOCATION Co-ord's: 878,046 N. 978,722 E ORIGINATED BY V.K.  
 W.P. 285-66 BORING DATE April 26, 1971 COMPILED BY S.O.  
 DATUM Geodetic BOREHOLE TYPE Pen Drill CHECKED BY JS

SOIL PROFILE		SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE	LIQUID LIMIT	PLASTIC LIMIT	WATER CONTENT	BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS/FOOT		BLOWS/FOOT	PO	100	W <sub>p</sub>		
						SHEAR STRENGTH: P.S.F.			WATER CONTENT %		
						○ UNCONFINED      + FIELD VANE			W <sub>p</sub> W <sub>L</sub>		
						● QUICK TRIAXIAL    x LAB. VANE			10      20      30		
552.7	Ground Level										P.C.F. GR SA SI CL
0.0	Het. Mix of Clayey Silt, Sand and Trace of Gravel	1	SS	49	550						W.L. 550.9
	Very Stiff-Hard (Brown)	2	SS	64							2 23 54 2
	(Grey)	3	SS	76							4 30 46 2
		4	SS	113							
		5	SS	99	540						
		6	SS	46							
		7	SS	33							
		8	SS	48							
		9	SS	34	530						
	Glacial Till	10	SS	43							
		11	SS	35							
		12	SS	44	520						
		13	SS	27	510						
505.0											
47.7	Het. Mix. of Silt Sand with trace of gravel and clay.	14	SS	169	500						
496.7	Very Dense	15	SS	10075"							8 39 44
56.0	End of Borehole				490						

DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS & TESTING OFFICE

## RECORD OF BOREHOLE No. 2

FOUNDATION SECTION

JOB 71-11037

LOCATION Co-ord's: 877,992 N. 978,701 E.

ORIGINATED BY V.K.

W.P. 285-66

BORING DATE April 27, 1971

COMPILED BY S.O.

DATUM Geodetic

BOREHOLE TYPE Pen Drill

CHECKED BY

SOIL PROFILE		SAMPLES		ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT		PLASTIC LIMIT		BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	NUMBER	TYPE		BLOWS/FOOT	SHEAR STRENGTH PSF	WATER CONTENT %	W <sub>L</sub>	W <sub>P</sub>	W		
552.5	Ground Level											
0.0	Het. Mix. of Clayey Silt, Sand and Trace of gra. Very Stiff-Hard (Brown)	1	SS	36	550							W.L. 551.5
		2	SS	46								
		3	SS	63								
	(Grey)	4	SS	40	540							4 28 52 16
		5	SS	32								
		6	SS	30								
		7	SS	34	530							3 23 56 18
		8	SS	44								
	Glacial Till	9	SS	22	520							
		10	SS	68								
		11	SS	25	510							
505.5		12	SS	33								
47.0	Het. Mix. of Silt, Sand and Trace of Gravel and Clay. Very dense.	13	SS	100/5"	500							7 42 42 9
		14	SS	100/5"	490							
481.5		15	SS	100/2"	480							9 56 24 1
71.0	End of Borehole											

DEPARTMENT OF HIGHWAYS- ONTARIO  
MATERIALS & TESTING OFFICE

## RECORD OF BOREHOLE No. 3

FOUNDATION SECTION

JOB 71-11037 LOCATION Co-ord's: 877,905 N. 978,677 E. ORIGINATED BY V.K.  
 W.P. 285-66 BORING DATE April 27, 1971 COMPILED BY S.O.  
 DATUM Geodetic BOREHOLE TYPE Pen Drill CHECKED BY

SOIL PROFILE		SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT $w_L$		BULK DENSITY	REMARKS
ELEV DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS/FOOT		BLOWS/FOOT	RESISTANCE	PLASTIC LIMIT $w_p$	WATER CONTENT $w$		
552.2	Ground Level										
0.0	Het. Mix. of Clayey Silt, Sand with Trace of Grs.	1	SS	29	550						
	Hard	2	SS	30							
	(Brown)	3	SS	38	540						
	(Grey)	4	SS	47							
	Glacial Till	5	SS	27							
		6	SS	29							
		7	SS	38	530						
		8	SS	49							
		9	SS	38	520						
		10	SS	67							
		11	SS	79	510						
		12	SS	24							
502.2		13	SS	100/6"	500						
50.0	Het. Mix. of Silt, Sand & Gravel with Trace of clay	14	SS	100/6"							
491.6	Very dense.	15	SS	100/2"	490						
60.6	End of Borehole										

DEPARTMENT OF HIGHWAYS- ONTARIO		<b>RECORD OF BOREHOLE No. 4</b>		FOUNDATION SECTION	
MATERIALS & TESTING OFFICE					
JOB <u>71-11037</u>	LOCATION Co-ord's: <u>E77,906 N. 978,729 E.</u>	ORIGINATED BY <u>V.K.</u>			
W.P. <u>285-66</u>	BORING DATE <u>April 29, 1971</u>	COMPILED BY <u>S.O.</u>			
DATUM <u>Geodetic</u>	BOREHOLE TYPE <u>Pen Drill</u>	CHECKED BY _____			

SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT — $w_L$		BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT	ELEV. SCALE	BLOWS/FOOT	PLASTIC LIMIT — $w_p$		
551.8	Ground Level							WATER CONTENT — $w$		
0.0	Het. Mix. of clayey silt, Sand with Trace of Gravel. Stiff to Hard (Brown) (Grey)		1	SS	10	550				
			2	SS	31					
			3	SS	47	540				
			4	SS	40					
			5	SS	37					
			6	SS	37					
			7	SS	36	530				
			8	SS	28					
	Glacial Till		9	SS	25	520				
			10	SS	25	510				
502.3	Het. Mix. of silt & sand with clay. very dense.		11	SS	18 5/6"	500				
500.3	End of Borehole									



DEPARTMENT OF HIGHWAYS- ONTARIO  
MATERIALS & TESTING OFFICE

## RECORD OF BOREHOLE No. 5

FOUNDATION SECTION

JOB 71-11037

LOCATION Co-ord's: E78,048 N. 978,675 E.

ORIGINATED BY V.T.

W.P. 285-66

BORING DATE April 30, 1971

COMPILED BY S.O.

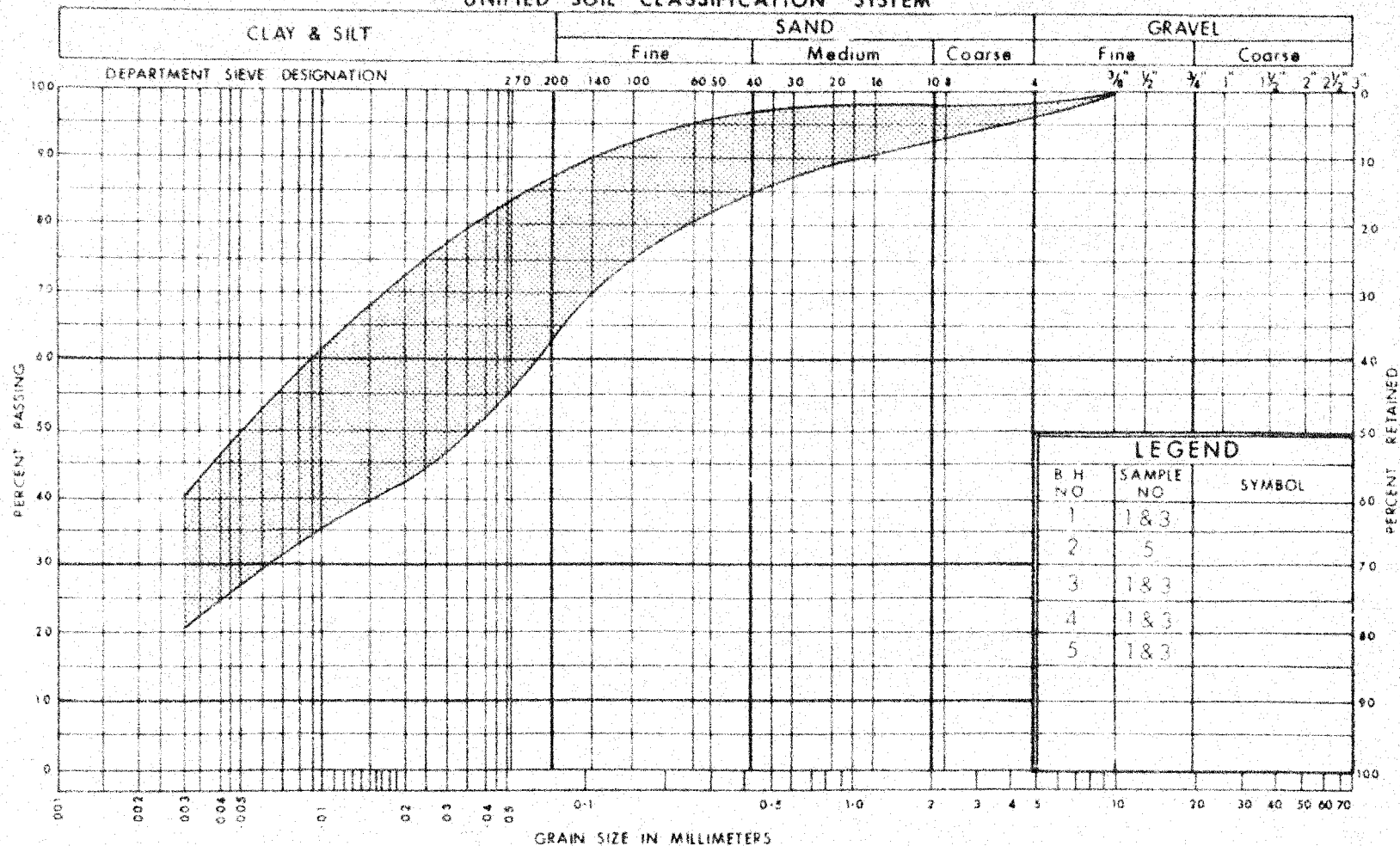
DATUM Geodetic

BOREHOLE TYPE Pen Drill

CHECKED BY

SOIL PROFILE		SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT		LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$		BULK DENSITY $\gamma$	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE		SHEAR STRENGTH PSF		WATER CONTENT %			
						○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB. VANE		$w_p$ — $w$ — $w_L$			
								WATER CONTENT % 10 20 30			
53.0	Ground Level										GR. SA. SI. CL
0.0	Het. Mix. of Clayey Silt, Sand with trace of Grs.		1	SS	41	550			○ —		W.L. 552.0 21 44 31
			2	SS	62						
			3	SS	72				○ —		33 48 15
	Hard		4	SS	57	540					
	(Brown)		5	SS	44				○ —		
	(Grey)		6	SS	39						
			7	SS	31	530			○ —		
			8	SS	36						
	Glacial Till		9	SS	40	520			○ —		
			10	SS	43	510					
502.5			11	SS	100/6"	500			○ —		
50.5	Het. Mix. of Silt, Sand with Trace of Gravel, Clay										
491.5	very dense		12	SS	200/6"	490			○ —		3 41 47 9
61.5	End of Borehole										

# UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT OF HIGHWAYS  
MATERIALS and  
TESTING  
DIVISION

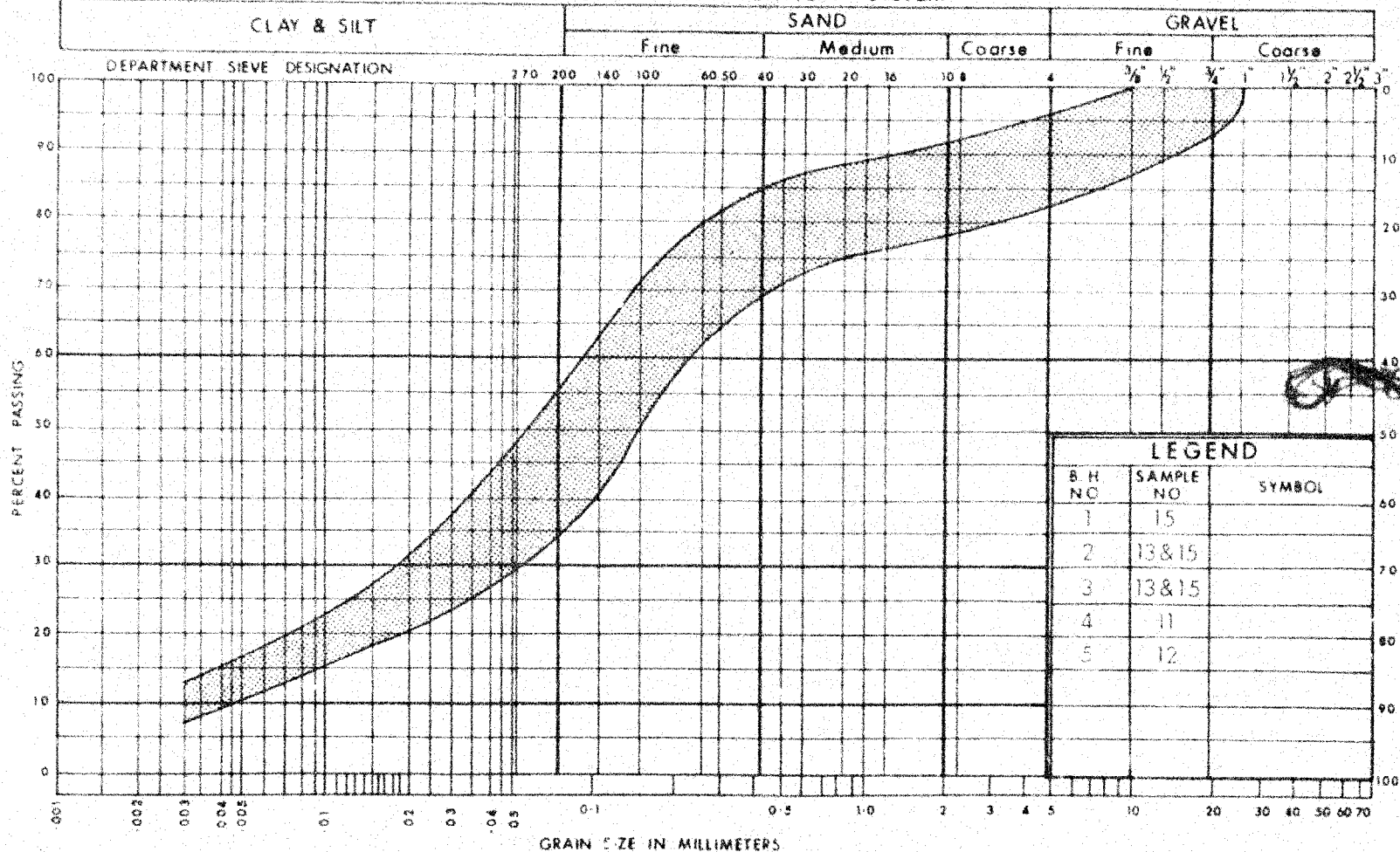
GRAIN SIZE DISTRIBUTION  
GLACIAL TILL  
CLAYEY SILT WITH SAND, TRACE OF GRAVEL

WP No. 285-66

JOB No. 71-11037

FIG. 1

# UNIFIED SOIL CLASSIFICATION SYSTEM



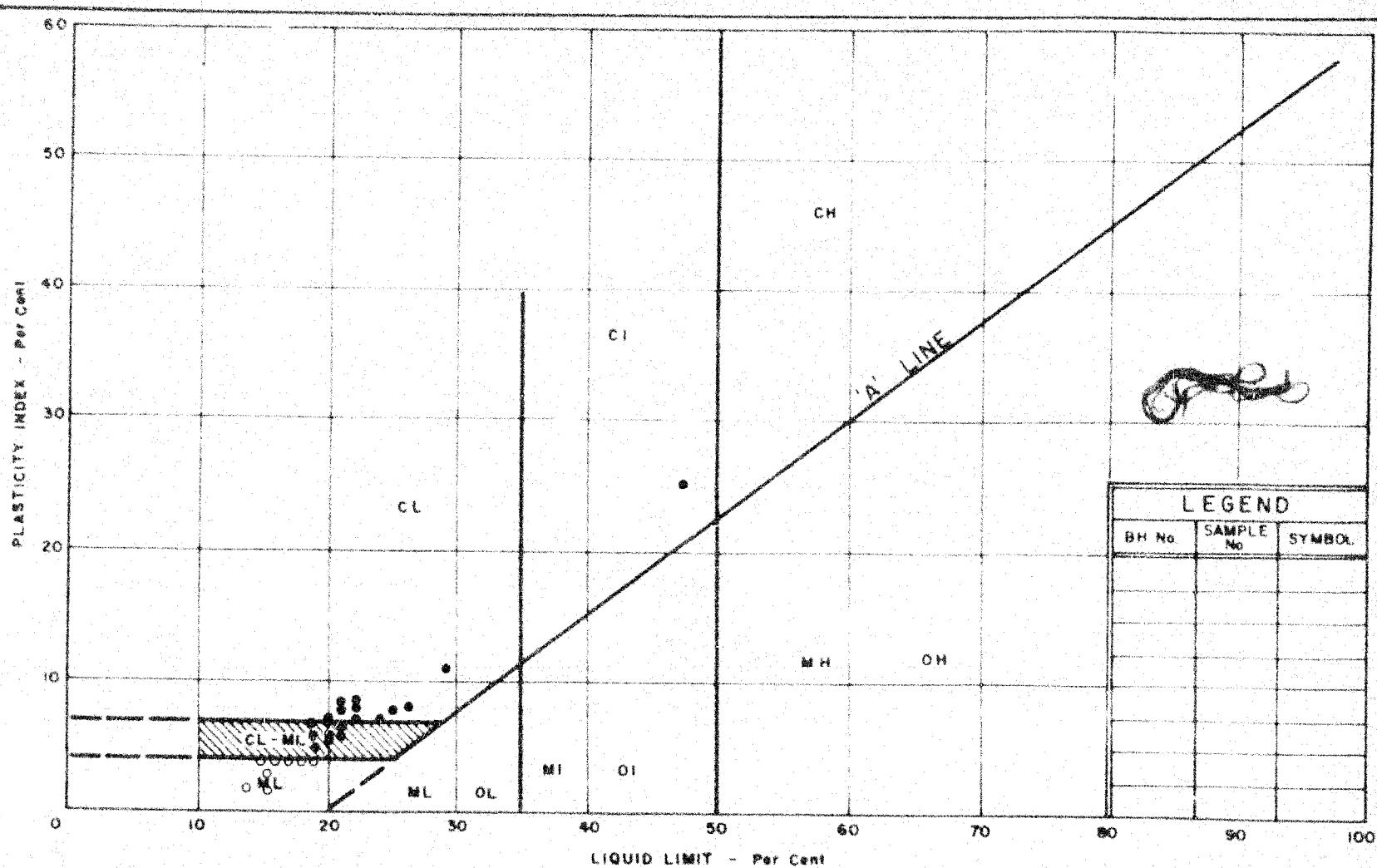
DEPARTMENT OF HIGHWAYS  
MATERIALS and  
TESTING  
DIVISION

GRAIN SIZE DISTRIBUTION  
GLACIAL TILL  
HET. MIXTURE OF SILT, SAND & GRAVEL

W.P. No. 285-66

JOB No. 71-11037

FIG 2



DEPARTMENT OF HIGHWAYS  
MATERIALS and  
TESTING  
DIVISION

# PLASTICITY CHART

\* COHESIVE MAT'L      o NON COHESIVE MAT'L

WP No. 285 - 66

JOB No. 71-11037

FIG. 3

Department of Highways Ontario

Copy for the information of

Mr. A. Stermac

Mr. G. Burkhardt,  
Regional Bridge Planning  
Engineer,  
98 Floral Parkway, Downsview.

Structural Office,  
West Building,  
Downsview.

November 1, 1971.

Iron Street Underpass,  
W.P. #285-66, Sits #37-965,  
Belfield Expressway, District #6.

71-11-037

Attached herewith are prints of the Preliminary  
Bridge Plan Drawing D-7007-P1 for the above-mentioned  
structure.

The estimated cost of the proposed structure is  
\$126,000 which includes tender, materials, engineering  
and sundry construction.

Any comments or revisions you may have should be  
submitted within three weeks.

C. S. Grebski,  
Structural Design Engineer.

CSC/mh

ENCLOSURE

cc: A. McKim,  
B. Davis,  
A. Stermac (2),  
J. Anderson,  
R. Fitzgibbons.

The structure location has been revised since the  
foundation Investigation Report submitted. This action will  
carry out additional borings to determine the subsurface  
conditions. For preliminary design purposes, the foundation  
requirements appear to be satisfactory.

M. J. Devate  
SUPERVISING FOUNDATION ENGINEER

9th Nov 71

## MEMORANDUM

Mr. A. G. Stermac,  
Principal Foundation Engineer,  
Room 107,  
Lab. Building.

FROM: G. C. E. Burkhardt,  
Bridge Planning Section,  
Central Building.

ATTENTION:

DATE: April 23, 1971

OUR FILE REF.

IN REPLY TO

SUBJECT: Iron St. Underpass (Bridge #3),  
W.P. 285-66. Site 37-965,  
Belfield Expressway,  
District 6.

The attached marked up print #271-03 details the approximate location of the proposed footings for the above detailed structure. Also enclosed are prints taken from the Functional Planning Report showing the proposed grade.

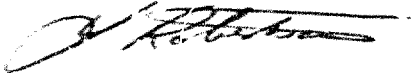
Due to the tight schedule on this project, field reconnaissance reports are not available at this time but will be forwarded in the near future.

Would you kindly arrange to have a foundation investigation of sufficient magnitude to allow the Bridge Office to proceed with the structure design.

As this project is considered urgent we would appreciate any priority you may be able to extend to it.

JSR:lc  
Encl.

c.c. R. Fitzgibbon  
R. Strain

  
J. S. Robertson,  
REG. BRIDGE PLANNING SUPERVISOR,  
for:  
G. C. E. Burkhardt,  
REG. BRIDGE PLANNING ENGINEER.

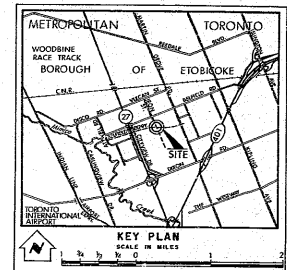
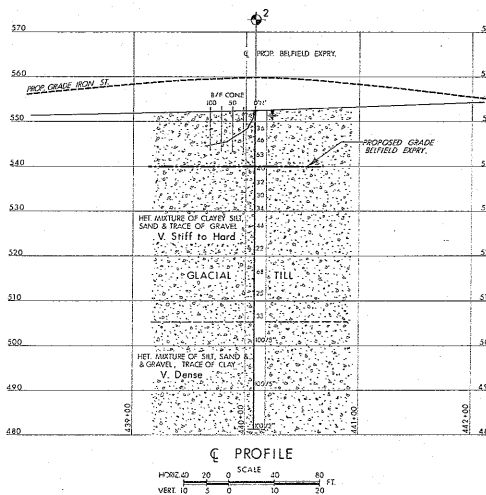
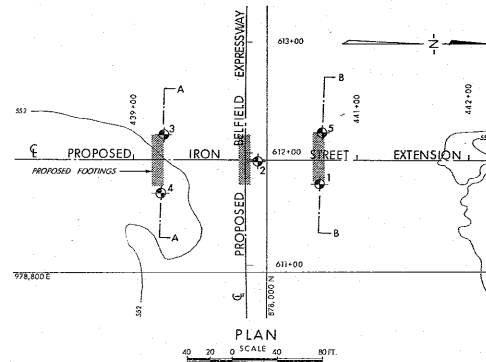
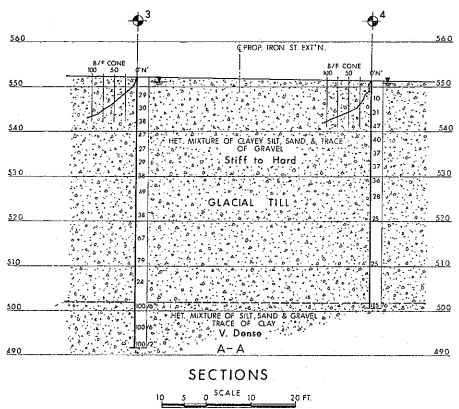
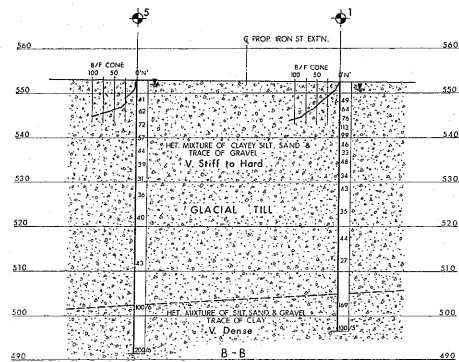
CONT. 73-20

BELFIELD 4

IRON ST. EXT.

DIST. 6

30M11-113



LEGEND			
	Bore Hole		
	Cone Penetration Hole		
	Bore & Cone Penetration Hole		
	Water Levels established at time of field investigation, APRIL 1971		

NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	552.7	878,046	978,722
2	552.5	877,992	978,701
3	552.2	877,907	978,677
4	551.8	877,906	978,729
5	553.0	878,048	978,675

**- 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.

NO.	DESCRIPTION
1	
2	
3	
4	
5	

6800RES NO. 3041H-113  
DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS & TESTING OFFICE - FOUNDATION SECTION

**IRON STREET EXTENSION**  
(BRIDGE NO. 3)

KING'S HIGHWAY NO. BELFIELD EXPRESSWAY DIST. NO. 6  
CO. YORK METROPOLITAN TORONTO  
TWP. ETOBICOKE LOT CON.

**BORE HOLE LOCATIONS & SOIL STRATA**

DESIGNED BY V.K. CHECKED BY	W.P. NO. 285-66	D.A.T. DRAWING NO.
DRAWN BY S.C. CHECKED BY	JOB NO. 71-11037	71-11037A
DATE 15 MAY 1971	SITE NO.	BRIDGE DRAWING NO.
APPROVED BY	JOINT NO.	