

Mr. B. R. Davis,
Bridge Design Engr.,
Bridge Division.

Mr. A. G. Stermac,
Principal Foundation Engr.,
Foundation Section,
Materials & Research Division.

Attention: Mr. C. Grebski

March 27, 1963

Spadina Bridge #1 -- W.P. 233-61-2-1
Spadina Bridge #2 -- W.P. 233-61-2-2
Spadina Bridge #3 -- W.P. 229-60

We have reviewed the Preliminary Plans D-5154-P1, D-5227-P2, and D-5226-P1, for the above structures which were designed with the assumption that soil conditions would be similar to those encountered at the location of Spadina Bridges No's. 4 - 23. Following a discussion with Mr. J. Curtis of the Bridge Planning Section, it was decided that some borings should be carried out at the site in order to confirm this assumption. These borings have now been completed and the log sheets, together with a plan showing the borehole locations, will be forwarded to you in the near future. Subsoil was found to consist of a heterogeneous mixture of clayey silt, silty clay, sand, and gravel, with a consistency varying from firm to hard.

As a result of our review of the information obtained from these borings, our recommendations pertaining to the proposed bridge foundations, are as follows:

Spadina Bridge #1:

At the elevations shown on Plan No. D-5154-P1, all footings may be designed using a safe net bearing pressure of 3 tons per square foot.

Spadina Bridge #2:

The bridge footings should be founded at or below el. 613.5 in which case, a safe net bearing pressure of 3 tons per square foot may be used for design purposes. The footings for the retaining walls may be founded at the elevations shown on Plan No. D-5227-P2 using a safe net bearing pressure of 2 tons per square foot.

Spadina Bridge #3:

The east abutment and the centre pier may be founded at the elevation shown on Plan No. D-5226-P1 - i.e., el. 618.0. The west abutment may be founded at or below el. 614.0. In all cases, a safe net bearing pressure of 4 tons per square foot may be assumed for design purposes. The retaining walls may be founded slightly higher (6" - 12") than the abutments in which case, a safe net bearing pressure of 2 tons per square foot may be employed.

Mr. B. R. Davis,
Bridge Design Engr.
Attn: Mr. C. Grebski

March 27, 1963

In view of the fact that slight variations in consistency of the subsoil at all three structure locations were observed, it would be advisable to have the footing excavations inspected by the Foundation Section prior to pouring concrete. Provision should also be made in the contract for deepening the foundations slightly, should this prove to be necessary.

If you have any further queries in connection with any of the above three projects, please contact this Office.

K. G. Selby

KGS/MdeF

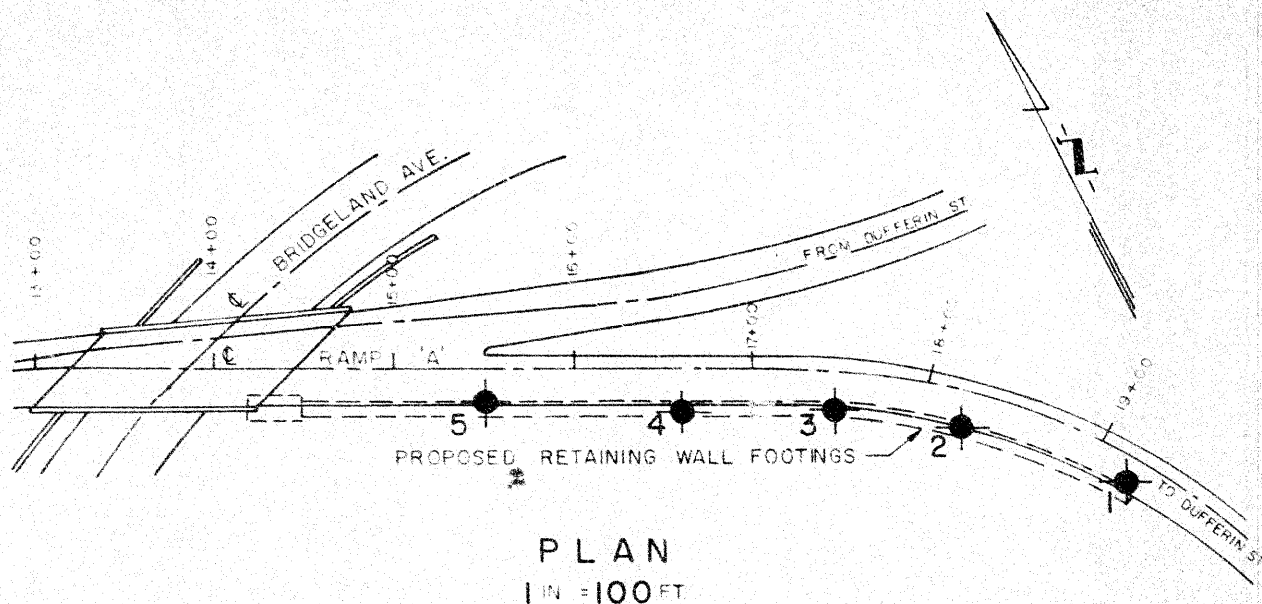
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K. G. Selby,
SENIOR FOUNDATION ENGR.
For:
A. G. Stermac,
PRINCIPAL FOUNDATION ENGR.

Re: B. R. Davis (2)
H. L. Tregaskis
H. P. Sullivan
C. L. Hunter
C. Fraser
V. J. Austin

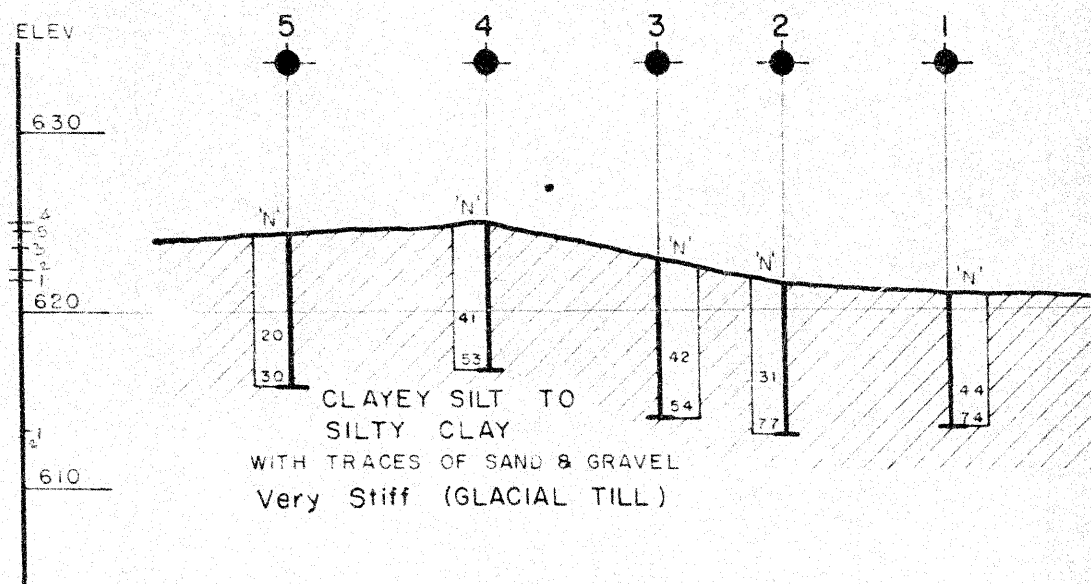
FOUNDATIONS ✓

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT



PLAN
1 IN = 100 FT

NOTE: FOOTING ELEVATION APPROX 5' BELOW EXISTING GROUND



PROFILE - LINE 'A'

SCALES: VERTICAL 1 IN = 10 FT
HORIZONTAL 1 IN = 100 FT

ORIGINATED - SELBY
DRAWN - J.C.
CHECKED - J.C.
APPROVED - J.C.
DATE - JUNE 10, 1963

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH SECTION
SPADINA BRIDGE NO. 1
RAMP 'A'
RETAINING WALL

SCALE AS SHOWN
W. P. NO. 233-61-2-1
JOB NO. 63-F-24
DWG. NO. 63-F-24B

Mr. B. R. Davis,
Bridge Design Engr.,
Bridge Division.

Attention: Mr. C. Grebski

A. G. Stermac,
Principal Foundation Engr.,
Foundation Section,
Materials & Research Division.
April 19, 1963.

Spadina Bridge #2
W.P. 233-61-2-2

Following our discussion of Thursday April 11th, 1963 regarding the foundations for the above-mentioned proposed structure, we are sending you some revised recommendations, in view of the fact that a smaller design load has been proposed.

The bridge footings may be founded at the elevation shown on Plan #D-5227-P2 (i.e. el. 614.75) using a safe net bearing pressure of 2 T.S.F. A note should be made on the bridge drawings to point out that mass concrete may have to be provided below the footings, if loose material is observed below el. 614.75. It is estimated that not more than a 2' thickness of mass concrete will be necessary.

If you have any further queries in connection with this matter, please contact this Office.

KGS/tt

cc: Foundations Office
Gen. Files

K. G. Selby
K. G. Selby,
SENIOR FOUNDATION ENGR.
For:
A. G. Stermac,
PRINCIPAL FOUNDATION ENGR.

Foundations Section.
Att.: Mr. A. Stermac.
Principal Foundations Engineer.
Room 107, Lab. Bldg.
Downsview, Ontario.

Mr. J. Curtis
Bridge Location Engineer
Bridge Division

J. L. Keen

May 24, 1963.

Spadina Bridge #1,
W.P. 233-61-2-1,
Hwy. #401 Dist. #6,
Hwy. 401 Widening vicinity of Dufferin St.

RE: Proposed Retaining Wall adjacent to
ramp carrying traffic from Hwy. 401
to south on Dufferin Street

As this wall will be about 480 to 500 feet in length it will extend well beyond the area investigated for the original structure of Spadina #1. For the majority of this length (about 85%) the bearing pressures will not exceed two tons/S.F. at a depth of about five (or more) feet below the existing ground elevation. Would you please have the Foundations Section review and confirm this value for allowable bearing or as an alternative recommend elevations at which two tons/S.F. could be attained. In reviewing existing foundation investigation data I find boreholes 4A and 3A of the investigation for Spadinas' 1, 2 & 3 (Job 63F-24 Dwg. No. 63-F-24A) closest to the proposed wall site of any investigation done to date.

The plan supplied us (M. W. Dillon Co. Job 5840-1x1-1 dated Apr. 29/63) indicates the ground contours and no existing building structures on the path of the retaining wall footing. Would you confirm whether or not there are excavations such as building basements, etc. or any other obstruction that may affect the depth of footings and the design of the retaining wall.

JLK:go
c.c. Fdns. Section
(Att.: A. Stermac)
F. Gornek

J. L. Keen,
Sr. Bridge Project Engineer.

Fieldwork Completed May 30th 63
No problems anticipated. - Int. given
by phone to J. Keen.
Report will be sent after
we have received wall plan
from J. Keen

W. J. Sullivan
May 31st 63

Mr. B. P. Davis,
Bridge Design Engr.,
Bridge Division.

Attention: Mr. J. Keen

Mr. A. G. Stermac,
Principal Foundation Engr.,
Foundation Section,
Materials & Research Division.
July 9, 1963

D.H.O. FOUNDATION INVESTIGATION --
Spadina Bridge #1 - Proposed Retaining Wall
Adjacent to Ramp from Hwy. #401 to Dufferin St.,
South, Hwy. #401, Toronto By-Pass, District #6.
W.J. 63-F-24 -- W.P. 233-61-2-1

As requested by you in your memo dated May 24, 1963,
we have carried out five borings at the site of the above-
mentioned retaining wall.

Subsoil was found to consist of very stiff, clayey silt
to silty clay containing traces of gravel.

At a depth of approximately 5 feet below ground level,
a design load of 2 tons per square foot may be used for the
proposed wall footings.

The locations and elevations of the borings, together
with the estimated subsoil stratigraphy, are shown on the
accompanying Drawing No. 63-F-24B.

This memo and the drawing should be attached to Foundation
Report No. 63-F-24.

If you have any further queries regarding this matter,
please contact this Office.

KGS/MdeF
Attach.

cc: Messrs. B. P. Davis (2)
H. A. Tregaskes
H. D. McMillan
G. K. Hunter (2)
C. Fraser
T. J. Kovich

K. G. Selby
K. G. Selby
SENIOR FOUNDATION ENGR.
For:
A. G. Stermac,
PRINCIPAL FOUNDATION ENGR.
Foundations Office
Gen. Files

FOUNDATION SECTION

ORIGINATED BY B.M.G.

COMPILED BY B.M.G.

CHECKED BY: K.G.S.

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH DIVISION

RECORD OF BOREHOLE NO. 1B

FOUNDATION SECTION

JOB 63-F-24 LOCATION 218/17 98' Rt. ORIGINATED BY B.M.G.
W.P. 229-60 BORING DATE March 22, 1963. COMPILED BY B.M.G.
DATUM Geodetic BOREHOLE TYPE Pennsylvania Auger - 4 1/2" Ø CHECKED BY K.G.S.

SOIL PROFILE			SAMPLES		BLOWS / FOOT	ELEV SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — W _L PLASTIC LIMIT — W _P WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLT	NUMBER	TYPE			20	40	60	80	100	W _P	W	W _L		
623.3	Groundlevel															
619.3	Topsoil and fill material. Firm to stiff. Brown and black.		1	SS	9	620										
4.0			2	SS	13											
	Silty clay and clayey silt with trace of sand and fine gravel. (Glacial Till) Stiff to v. stiff Brown changing grey at El. 616		3	SS	29	615										
609.8			4	SS	25	610										
13.6	End of borehole.					605										

v El. 613.6

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH DIVISION

RECORD OF BOREHOLE NO. 10

FOUNDATION SECTION

JOB 63-F-24 LOCATION 218+35 102' Lt. ORIGINATED BY B.M.G.
W.P. 229-60 BORING DATE March 25, 1963. COMPILED BY B.M.G.
DATUM Geodetic BOREHOLE TYPE Pennsylvania Auger - 4 1/2" Ø CHECKED BY K.G.S.

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT ——— w_L			BULK DENSITY ρ P.C.F.	REMARKS	
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT	ELEV SCALE	BLOWS / FOOT					PLASTIC LIMIT ——— w_p				
							20 40 60 80 100					WATER CONTENT ——— w				
							SHEAR STRENGTH P.S.F.					w_p ——— w ——— w_L				
WATER CONTENT %																
623.0	Groundlevel															
0.0	Topsoil and fill material V. stiff to hard. Brown and black.					620										
618.4			1	SS	32											
4.6			2	SS	30											
	Silty clay and clayey silt with traces of sand and fine gravel. (Glacial Till)		3	SS	31	615										
	V. stiff to hard.															
	Brown changing to grey at El. 613.		4	SS	37	610										
			5	SS	27											
						605										
601.5			6	SS	36											
21.5	End of borehole.					600										
VWL 605.0 18.0																

SWL 605.0
18.0

FOUNDATION SECTION

ORIGINATED BY B.M.G.

COMPILED BY B.M.G.

CHECKED BY K.G.S.

SOIL PROFILE			SAMPLES	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	LQUID LIMIT ——— W _L PLASTIC LIMIT —— WP WATER CONTENT ——— W	BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER TYPE	BLOWS / FOOT		P.C.F.	
623.9	Groundlevel Topsoil						
0.6							
	Silty clay and clayey silt with some sand and gravel. (Glacial Till)		1 SS	23	620		
	V. Stiff to Hard.		2 SS	36	615		
	Brown changing to grey at El. 614.		3 SS	86	610		
			4 TW	P	605		
			5 SS	41	600		
			6 SS	65	595		
592.4			7 SS	74			
31.6	End of borehole						

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH DIVISION

RECORD OF BOREHOLE NO. 25

FOUNDATION SECTION

JOB 63-F-24 LOCATION 219/25 120' It. ORIGINATED BY B.M.G.
W.P. 229-60 BORING DATE March 22, 1963. COMPILED BY B.M.G.
DATUM Geodetic BOREHOLE TYPE Pennsylvania Auger - 4 1/2" Ø CHECKED BY K.G.S.

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT ——— W _L		BULK DENSITY	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	SHEAR STRENGTH P.S.F.	PLASTIC LIMIT ——— W _P	WATER CONTENT ——— W		
624.5	Ground level											
623.5	Topsoil and fill material											
1.0												
	Silty clay and clayey silt with trace of sand and fine gravel.		1	SS	38	620						
	(Glacial Till)		2	SS	35							
	Hard		3	SS	45	615						
	Brown changing to grey at El. 614		4	SS	30	610						
			5	SS	35							
						605						
603.0			6	SS	40							
21.5	End of borehole					600						

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH DIVISION

RECORD OF BOREHOLE NO. 3B

FOUNDATION SECTION

JOB 63-F-24 LOCATION 218+95 470' Rt. ORIGINATED BY B.M.G.
W.P. 233-61-2-2 BORING DATE March 21, 1963. COMPILED BY B.M.G.
DATUM Geodetic BOREHOLE TYPE Pennsylvania Auger - 4 1/2" Ø CHECKED BY K.G.S.

SOIL PROFILE		STRAT. PLT	SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT					LIQUID LIMIT ——— % PLASTIC LIMIT ——— % WATER CONTENT ——— %			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION		NUMBER	TYPE	BLOWS / FOOT		20	40	60	80	100	wp	w	wL		
620	Topsoil	SS														
0.6	Clayey silt and silty clay with trace of sand and fine gravel. (Glacial Till) Trace of organics to El. 616 V. stiff to hard. Brown changing to grey at El. 609'		1	SS	16											
			2	SS	34	615										
			3	SS	58	610										
			4	SS	59											
			5	SS	32	605										
598.5			6	SS	41	600										
21.6	End of borehole.					595										

El. 605.2

#63-F-24

W.P. 229-60

W.P. 233-61-2-1

W.P. 233-61-2-2

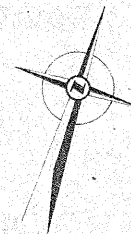
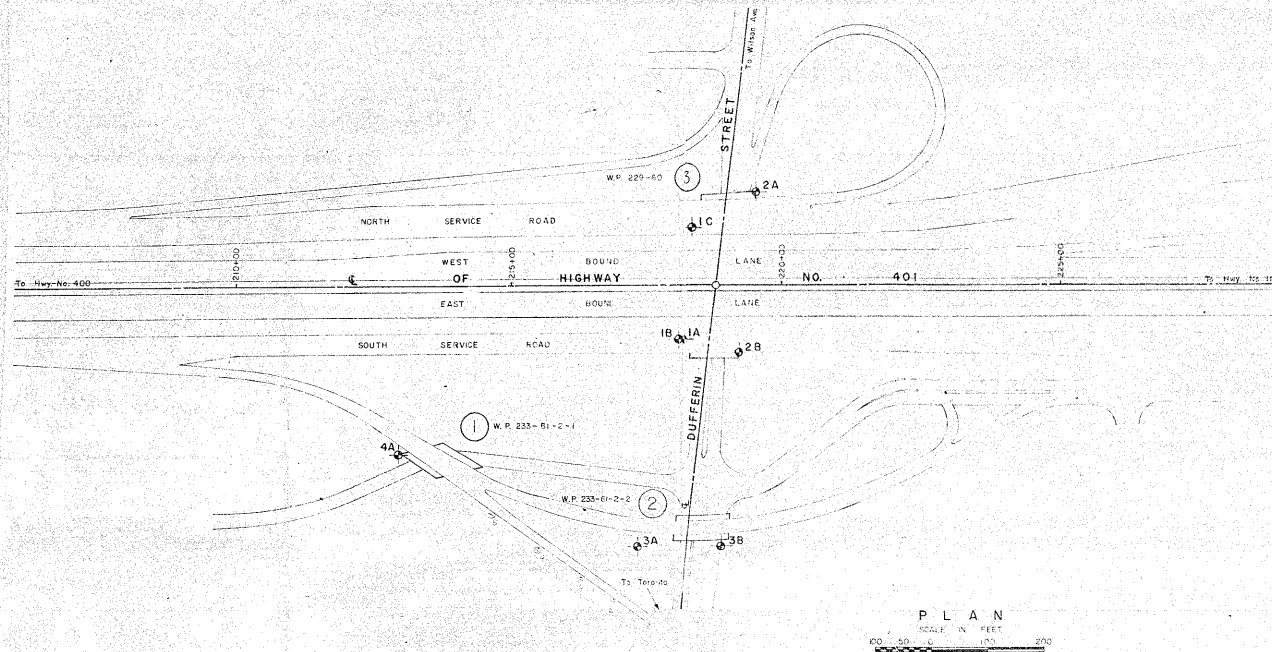
HWY 401

SPADINA

EXPRESSWAY

BRIDGES

1, 2 & 3



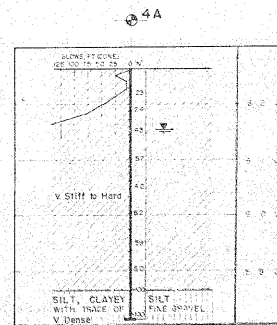
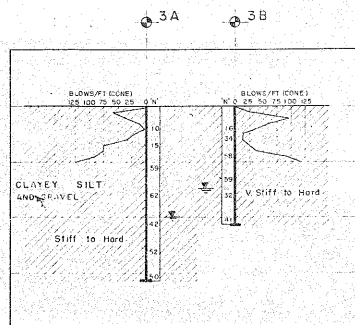
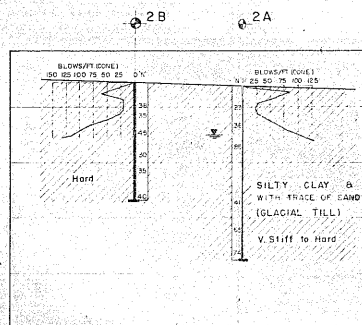
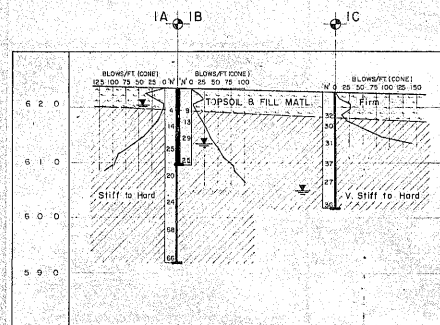
LEGEND

- 1. Borehole
- 2. Soil Profile
- 3. Water Table
- 4. Groundwater

WATER TABLE (1963)

Borehole	Station	Depth (ft)
1A	625+3	218+00
1B	625+3	218+00
1C	625+3	218+00
2A	625+3	218+00
2B	625+3	218+00
3A	625+3	218+00
3B	625+3	218+00
4A	625+3	218+00

NOTE
The data presented in this report were obtained only if the data were obtained from the boreholes and soil profiles. The data were obtained from the boreholes and soil profiles.



DEPARTMENT OF HIGHWAYS - ONTARIO

SPADINA EXPRESSWAY
BRIDGES 1, 2, & 3 AT DUFFERIN ST.

W.P. NO. 401
METROPOLITAN TORONTO DIST. NO. 6

ORE HOLE LOCATIONS & SOIL STRATA

ORE HOLE	SOIL STRATA	DEPTH (ft)
1A	CLAYEY SILT AND GRAVEL	0-24
1B	CLAYEY SILT AND GRAVEL	0-24
1C	CLAYEY SILT AND GRAVEL	0-24
2A	CLAYEY SILT AND GRAVEL	0-24
2B	CLAYEY SILT AND GRAVEL	0-24
3A	CLAYEY SILT AND GRAVEL	0-24
3B	CLAYEY SILT AND GRAVEL	0-24
4A	CLAYEY SILT AND GRAVEL	0-24

63-F-24 A