

# Appendix A

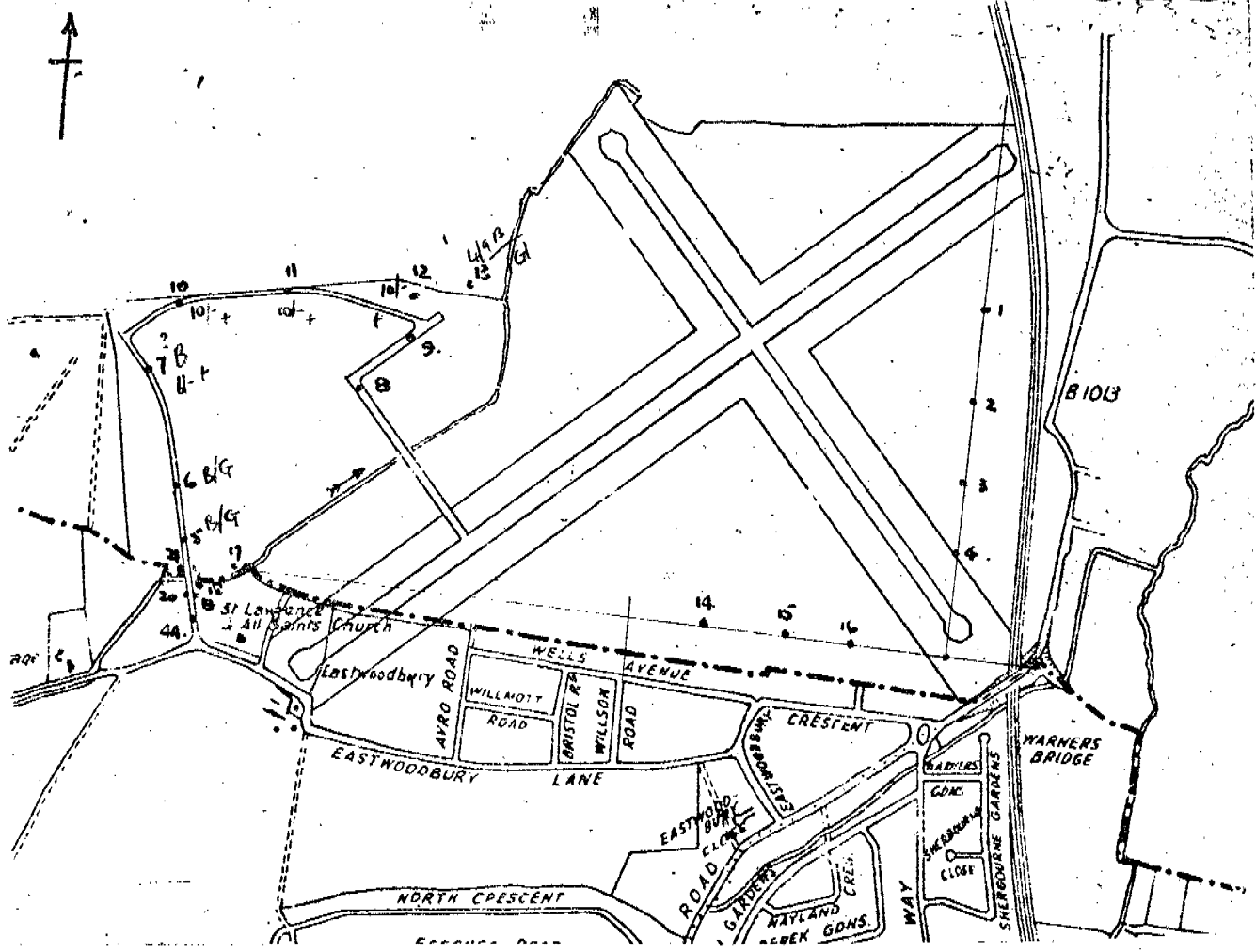
## Borehole Records

Source: British Geological Survey

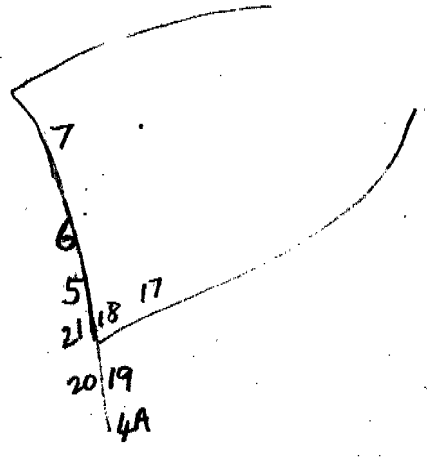
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TQ88NE/68-88

# ROCHFORD



N.B. First Terrace channel deposits under gravel layer.



BOREHOLE RECORD No. 29

(p. 495)

*[Handwritten mark]*

Job..... SOUTHENT AIRPORT.....

Date of Borehole..... Dec 64.....

File No..... Date.....

Taken by..... G. Soper.....

Source of Information.....

Dia of Boring.....

Ground level..... A.O.D. Newlyn

Lining Tubes.....

Type of Boring.....

B.H. No 19

Change of Strata			Description of Strata	Remarks
Depth ft.	Legend	Level		
0	(0.34m)	W.L. V	Topsoil - Clayey sub-soil.	B.H. 19 186 8604 8888
5	(2.04m)		Clay - brown/grey mottled, with odd pebbles. <i>Brickash</i> .	
10	(2.38m)		Sand - Gravel with clay. <i>Terrace</i>	
10	(3.38m)		Clay, brown - grey with pockets of fine sand. <i>Brickash</i> .	
15				
20				
25			Sand - Gravel. <i>Terrace</i> .	
30				
35				
40	(12.19m)			
40		W.L. F	<i>Topsoil</i> Clay, brown slightly sandy. <i>Brickash</i>	B.H. 20. 187
45			Sand - gravel with clay from 60-70. <i>Terrace</i>	
50			Clay - brown with clay patches. <i>Brickash</i>	
55				
60			Sand - Gravel. <i>Terrace</i> at least to 40'0.	
65				
70				
75				

TQ 88NE/218

WENDLEY LABORATORIES LIMITED

BOREHOLE RECORD

SITE ROCHFORD ROAD - PHASE 4 BOREHOLE No. SEVEN  
 REF. No. KWH/CJC OUR REF. 477/EEH  
 BOREHOLE STARTED 13.8.1971 BOREHOLE FINISHED 13.8.1971  
 O.D. LEVEL \_\_\_\_\_ DIAMETER OF BOREHOLE 8 ins.

THICKNESS		DESCRIPTION OF STRATA	LEG. END	DEPTH		O.D. LEVELS	SAMP. LES	IN-SITU TESTS	WATER OBSERVATIONS			
ft.	in.			ft.	in.				Date	Time	Struck	Standing
5	6	MADE GROUND (mainly soft clay fill & hardcore)		0	0	M	43 44 45		13.8	pm		4'0"
1	0	Firm brown sandy CLAY		5	6	1.68	44		13.8	am	6'6"	
2	6	Loose GRAVEL with some SAND		6	6	1.98	45					
4	6	Firm to stiff brown/grey sandy CLAY with some laminations		9	0	2.74	46	N				
5	6	Medium compact brown/green SAND with some clay pockets		13	6	4.11	47 48	N				
6	0	Medium compact SAND with traces of silt and some GRAVEL		19	0	5.79	49	N				
				25	0	7.62		N				

STANDARD PENETRATION TESTS CARRIED OUT AT:

FROM 4' TO 5'	N = 11	BLOWS
FROM 9' TO 10'	N = 9	BLOWS
FROM 14' TO 15'	N = 20	BLOWS
FROM 19' TO 20'	N = 27	BLOWS
FROM 24' TO 25'	N = 32	BLOWS
FROM _____ TO _____	N = _____	BLOWS
FROM _____ TO _____	N = _____	BLOWS
FROM _____ TO _____	N = _____	BLOWS
FROM _____ TO _____	N = _____	BLOWS

SCALE 5 ft. to 1 inch  
 WATER SAMPLES TAKEN AT: 4'0"  
 UNDISTURBED SAMPLE -   
 DISTURBED SAMPLE -   
 WATER SAMPLE -   
 STANDARD PENETRATION TEST -   
 VANE TEST -   
 REMARKS Pit dug to commence borehole

Surface level +12.4 m (+40.5 ft)  
 Water struck at +7.1 m (+23.5 ft)  
 Shell, 203 mm diameter  
 February 1973

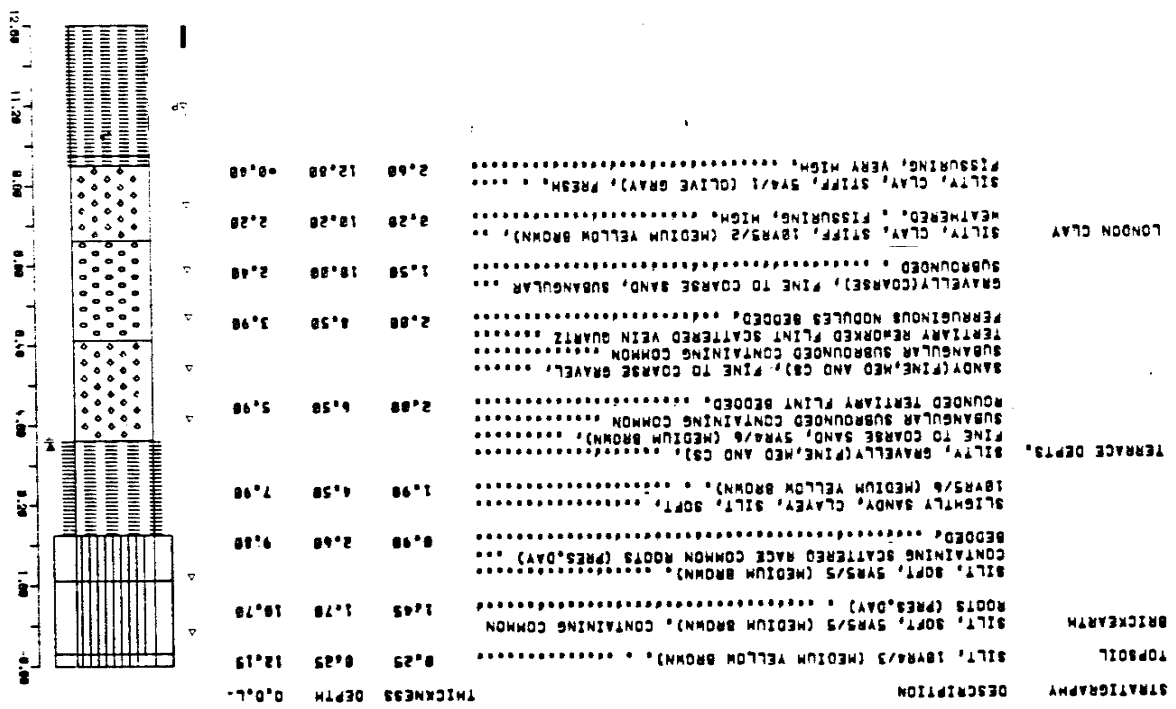
Overburden 4.50 m  
 Mineral 5.50 m  
 Bedrock 2.80 m<sup>+</sup>

## LOG

Geological Classification	Lithology	Thickness m	Depth m
Soil	Silt, dark yellowish brown	0.25	0.25
Brickearth	Silt, light brown, with roots, (becoming more abundant with depth). Pebbles of race from 1.70 m to base	2.35	2.60
	Sandy clayey silt, moderate yellowish orange	1.90	4.50
Buried Channel Deposits	Gravel Mainly fine gravel, some coarse with medium to coarse sand. Gravel fraction increasing and fines fraction decreasing with depth. Gravel composed of subangular to subrounded flint and rounded quartzite and flint pebbles. Some vein quartz. Coarse sand contains shards of flint patina. Scattered cobbles at base	5.50	10.00
London Clay	Silty clay, stiff, medium yellowish brown (weathered) becoming olive grey (unweathered) at 10.20 m	2.80+	12.80

## GRADING

Mean for Deposit	%		Depth below surface (m)		Bulk Samples Percentages						
	%	mm	%	From	To	Fines -1/16	+1/16-1/4	Sand +1/4-1	+1-4	Gravel +4-16	+16
Gravel	52	+16	19	4.5	5.5	13	7	32	12	24	12
		-16+4	33	5.5	6.5	5	3	41	9	31	11
				6.5	7.5	6	4	28	10	36	16
Sand	43	-4+1	11	7.5	8.5	1	2	12	8	48	29
		-1+1/4	29	8.5	10.0	2	1	28	15	29	25
		-1/4+1/16	3								
Fines	5	-1/16	5								

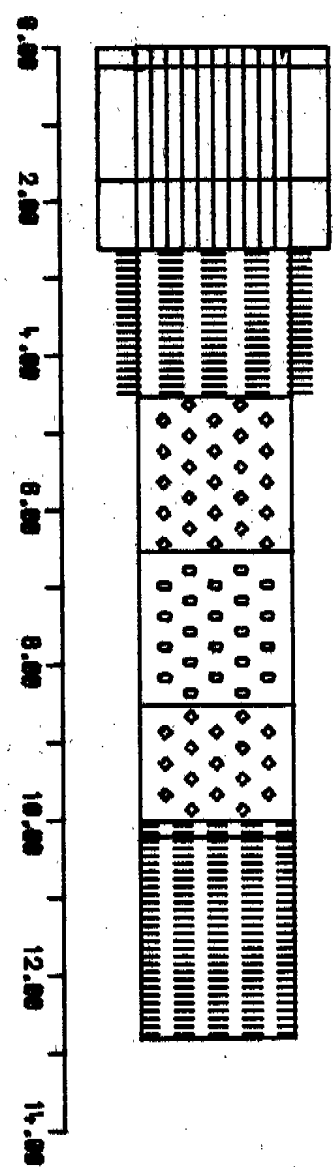


BOREHOLE LOG  
 NATIONAL GRID REF. 566628 189230  
 DRILLED BY FORAKY  
 RECORDED BY M. SIMMONS  
 DATE COMPLETED 2 FEB 1973  
 SURFACE LEVEL 12.48 M. OD.  
 C.S.U. REF. 100009 881 FIELD STAFF REF. 10000255  
 870 586620 189230  
 TQ 88 NE 255

TQ 88 NE / 255

TQ8689 1

DEPTH IN METRES

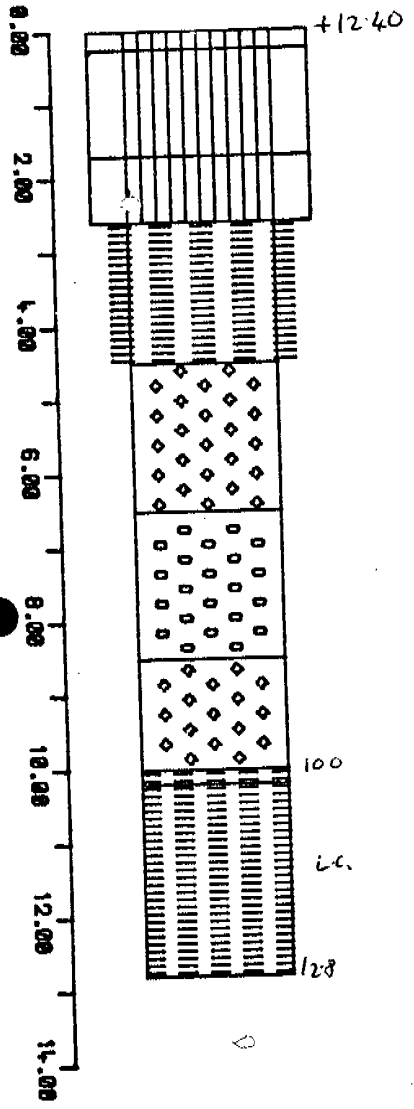


Plot



TQ 88 NE / 255

TQ8<sup>6</sup>89 1



Borehole Reg No: <b>TQ88NE 255</b> Temp. borehole No: <b>TQ88NE C</b> Nat Grid Ref: <b>86628923</b> Locality: Surface level: <b>12.40 m O.D. (40.7 ft O.D.)</b> Drilled by: <b>Foraky</b> Drill type: <b>Shell</b> Hole diameter: <b>8" (200 mm)</b> Depth(s) bailed: <b>2.6m - 11.3m</b> Date started: <b>31/1/73 - 2/2/73</b> Date finished: Recorded by: <b>M. Simmons</b>	Classification of ground  Overburden  Mineral  Bedrock	Thickness in  4.5 m  5.5 m  2.8 m +	Nature  Topsoil, Buckworts Terrace silt.  Terrace sand & gravel  London Clay
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Remarks The 6" borer was used at when the sand rose from 8.50m to 5.6m. A good disturbed sample could not be obtained in London Clay as it tended to crumble along firm planes, therefore a u/s was taken.

Explanation	▽ Groundwater depth first encountered a ▽ Morning water level p ▽ Evening water level	——— Casing depth ——— Borehole depth W Water sample	U <sub>s</sub> sample; solid ornament shows fraction recovered ● Spot disturbed sample } Bulk sample S.P.T. Standard Penetration Test
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Geological Classification	Description of Strata	Sampling	Sample Nos	Water Level	Drilling and Casing progress
Topsoil ↑ Buckworts Upper ↓ Lower 8.5m ↓ Terrace Sand & Gravel.	Silt 10YR 4/3 Smooth textured silt with roots which became more abundant with depth 5YR 5/5	● 0.6 ● 0.75	88NECD1		
	As above but with a little race.	● 1.7 ● 1.9	88NECD2		
	As above but with race				
	Soft slightly sandy, clayey silt 10YR 5/6				
	Sandy silty gravel becoming gravelly sand with depth. Sand coarse to fine at top of sample, but medium to fine only towards base. Subang. - subrounded. Gravel coarse to fine, subangular to subrounded flints & rounded Terharies. 35:60:5				
	Gravelly sand becoming slightly more gravelly with depth 25:70:5 otherwise as above				
	Sandy gravel 50:45:5. Gravel coarse to fine, the coarse being mainly subangular to subrounded flints, the fine subrounded flints or rounded Terharies. Sand, coarse to fine, the coarse being mainly flakes of patina & flint. Medium to fine sand, subangular to subrounded clear quartz & flint				
	Sandy gravel 75:20:5. Gravel as above, sand as above contains consolidated nodules ~ 50mm max. diameter with concentric layering 5YR 4/6 (Depth uncertain due to rising sand)				
	Gravelly sand 40:55:5. Gravel as above, sand as above. Gravel becomes coarser with depth. Cobbles at base				

TQ 88NE/255

Borehole Reg No TQ88NE C

Sheet 2 of 2

Geological Classification	Description of Strata	Sampling	Sample Nos	Water Level	Drilling and casing notes
<p>Weathered 10.3</p> <p>Unweathered</p> <p>London Clay</p>	<p>Stiff v. highly fissured, silty clay 5y<sub>4</sub>+ 10YR 5/2</p> <p>Stiff, v. highly fissured silty clay 5y<sub>4</sub>/1</p>	<p>10</p> <p>11</p> <p>12</p>	<p>11.0</p> <p>11.3</p> <p>88NECP3</p> <p>12.3</p> <p>88NECU4</p>		
<p>12.3</p> <p>12.8</p>	<p>As above</p>	<p>13</p>			

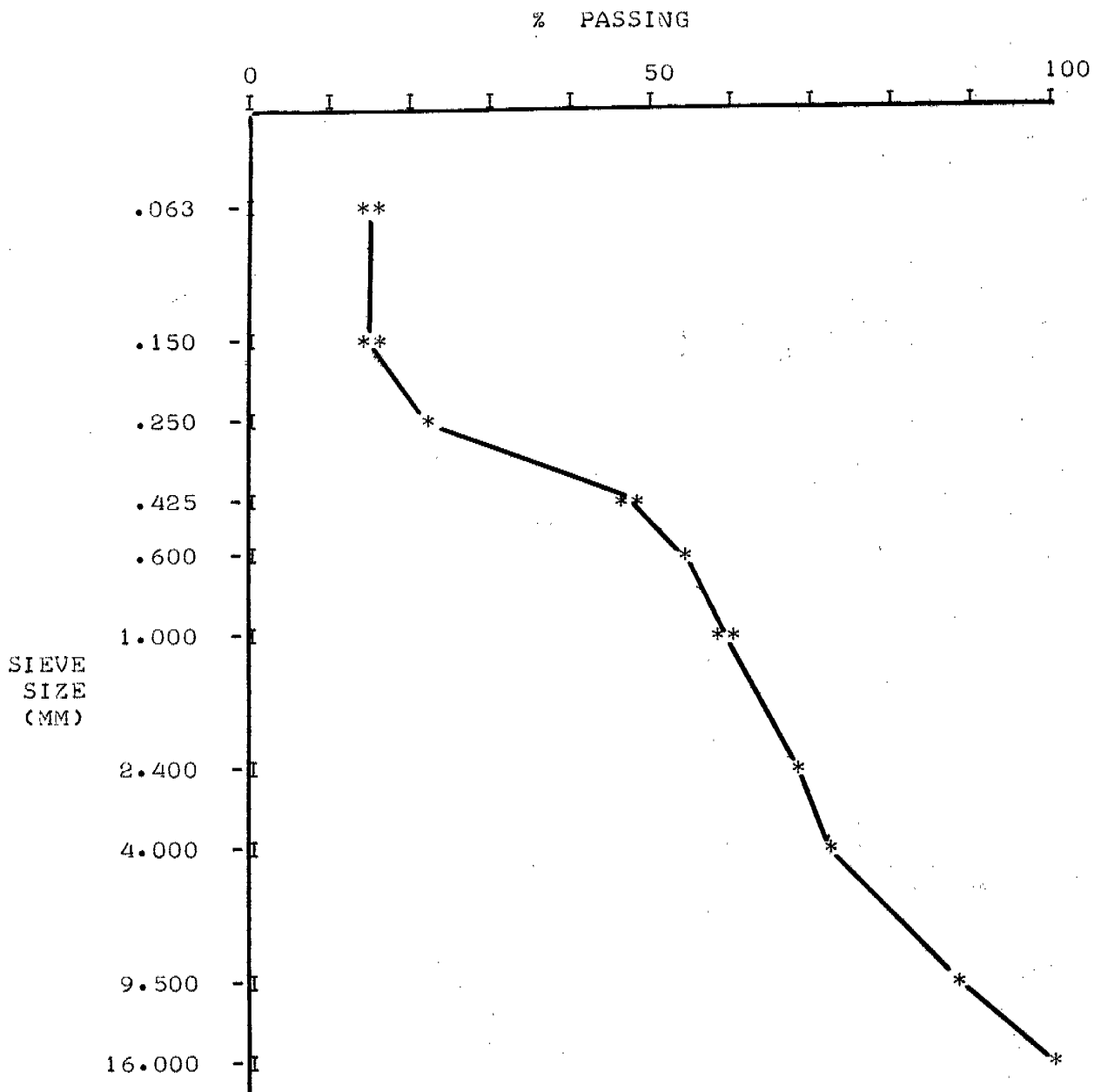
# TQ 88 NE (C) 255

26/8

14/2

FB 457

SIEVE	37.5	16	9.5	4	2.4	1	.6	.425	.25	.15	.063
%PASS (-37.5)	100	100	88	72	68	59	54	47	22	15	15
%PASS (TOT)	88	83	77	64	60	52	48	41	20	13	13



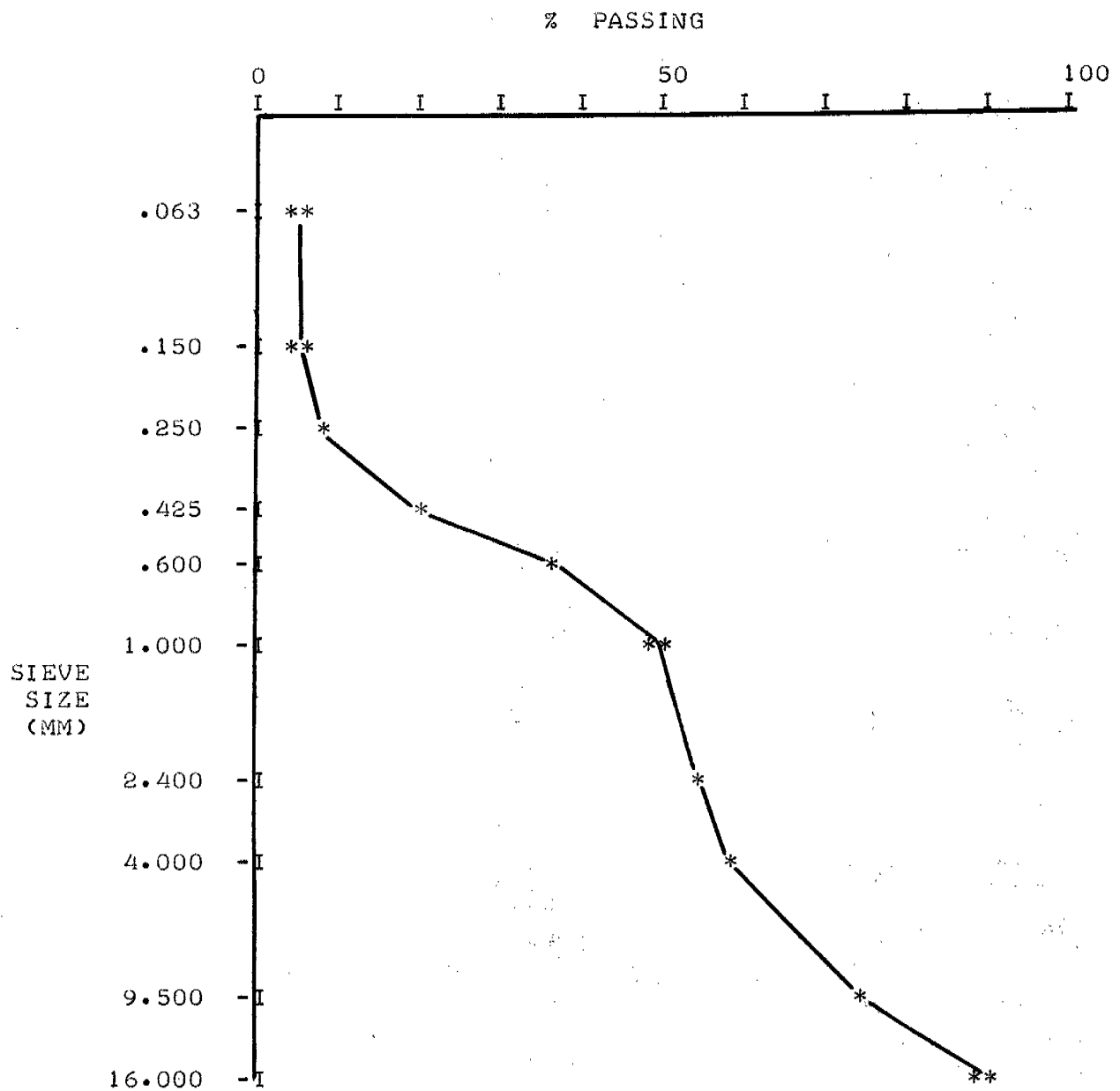
TQ 88 NE / 255

27/22

15/2

FB 458

SIEVE	37.5	16	9.5	4	2.4	1	.6	.425	.25	.15	.063
%PASS (-37.5)	100	89	74	58	54	49	36	20	8	5	5
%PASS (TOT)	100	89	74	58	54	49	36	20	8	5	5



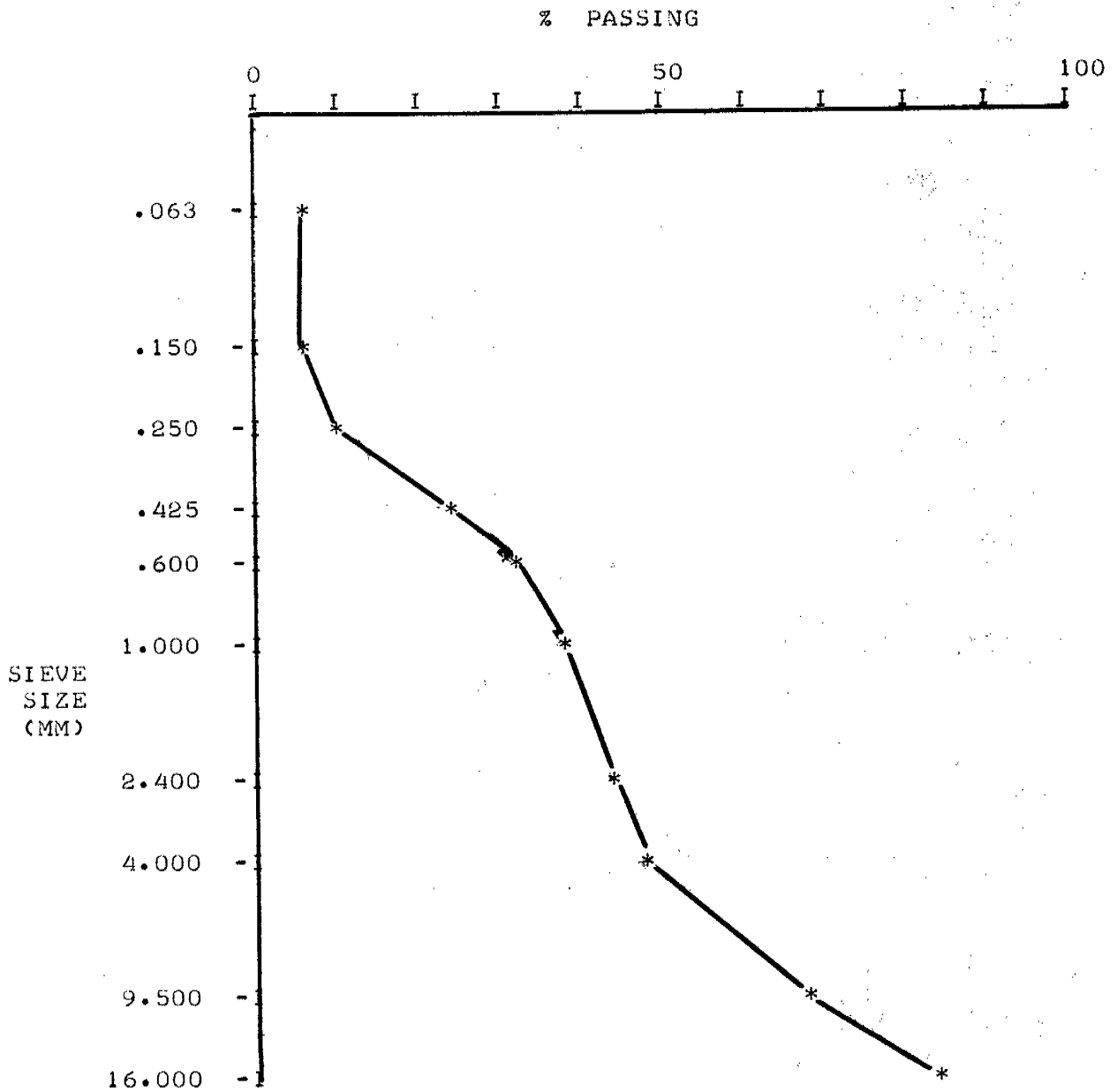
27/29

15/2

TQ 88 NE / 255

FB 459

SIEVE	37.5	16	9.5	4	2.4	1	.6	.425	.25	.15	.063
%PASS (-37.5)	100	84	68	48	44	38	32	24	10	6	6
%PASS (TOT)	100	84	68	48	44	38	32	24	10	6	6



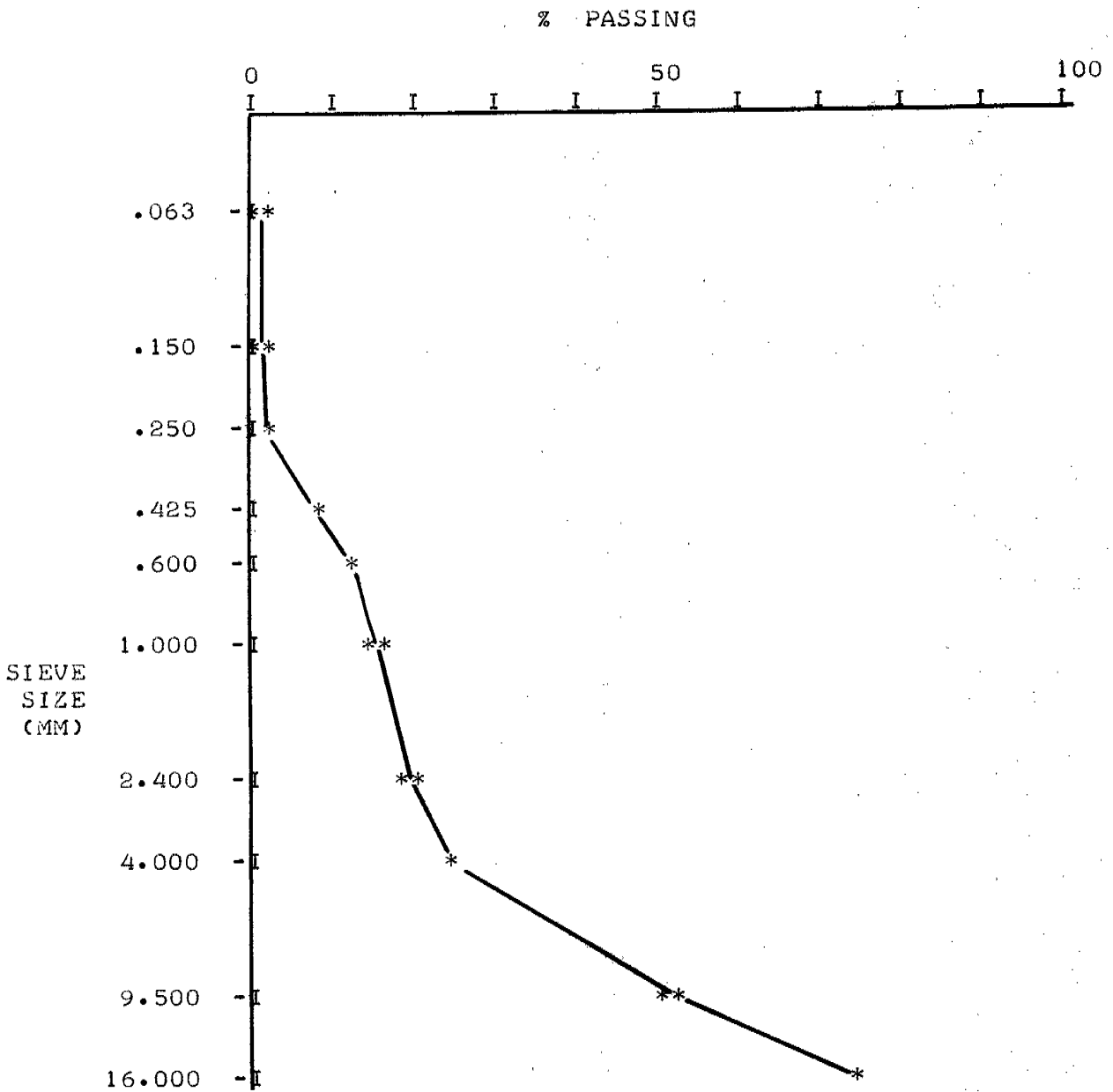
28/2

15/2

TQ 88 NE/255

FB 460

SIEVE	37.5	16	9.5	4	2.4	1	.6	.425	.25	.15	.063
%PASS (-37.5)	100	74	51	24	19	15	12	8	2	1	1
%PASS (TOT)	96	71	50	23	18	15	11	8	3	1	1



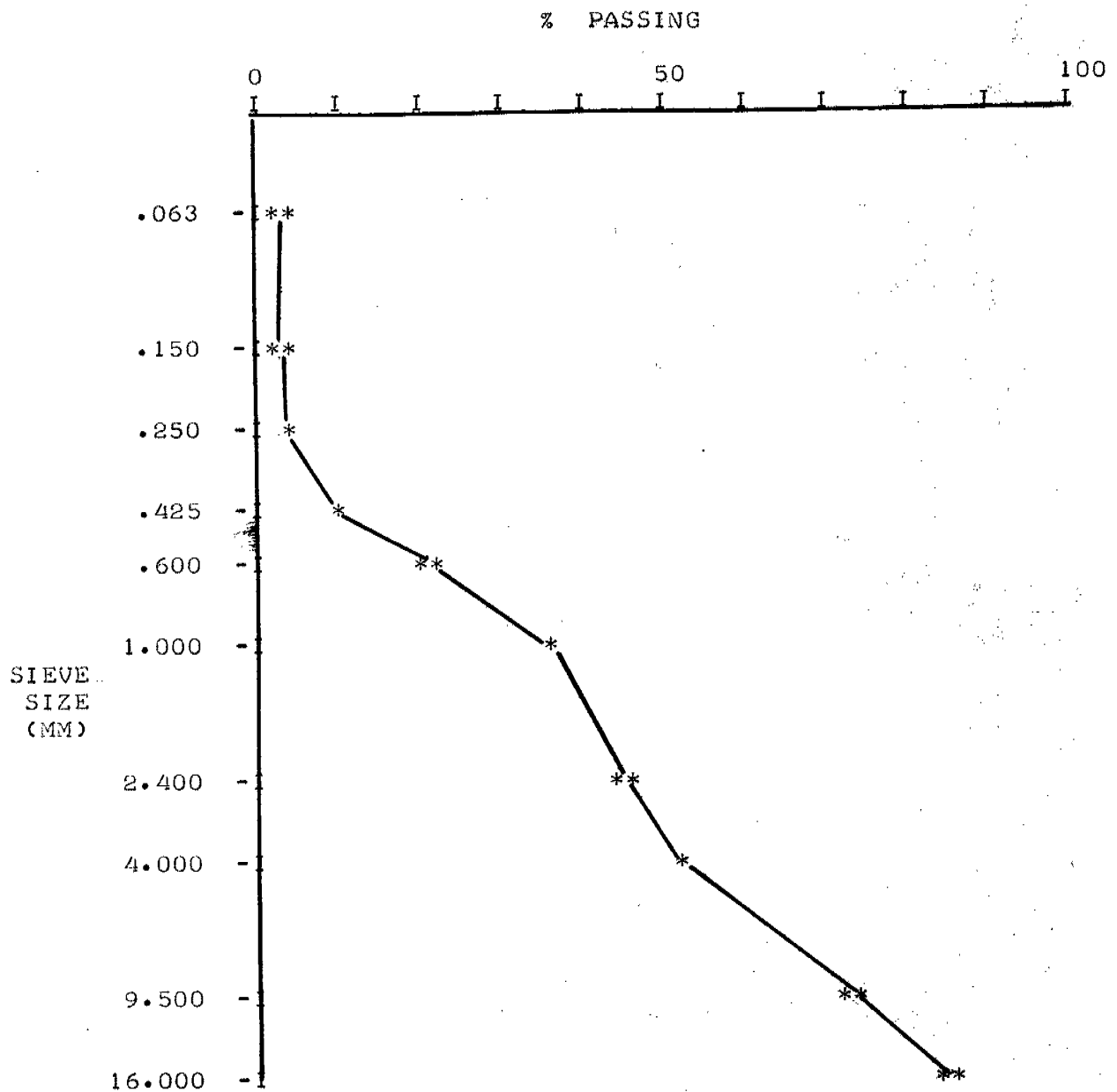
TO 88 NE/255

27/21

15/2

FB 461

SIEVE	37.5	16	9.5	4	2.4	1	.6	.425	.25	.15	.063
%PASS (-37.5)	100	85	73	52	45	36	21	10	4	3	3
%PASS (TOT)	88	75	65	46	39	31	18	9	3	2	2



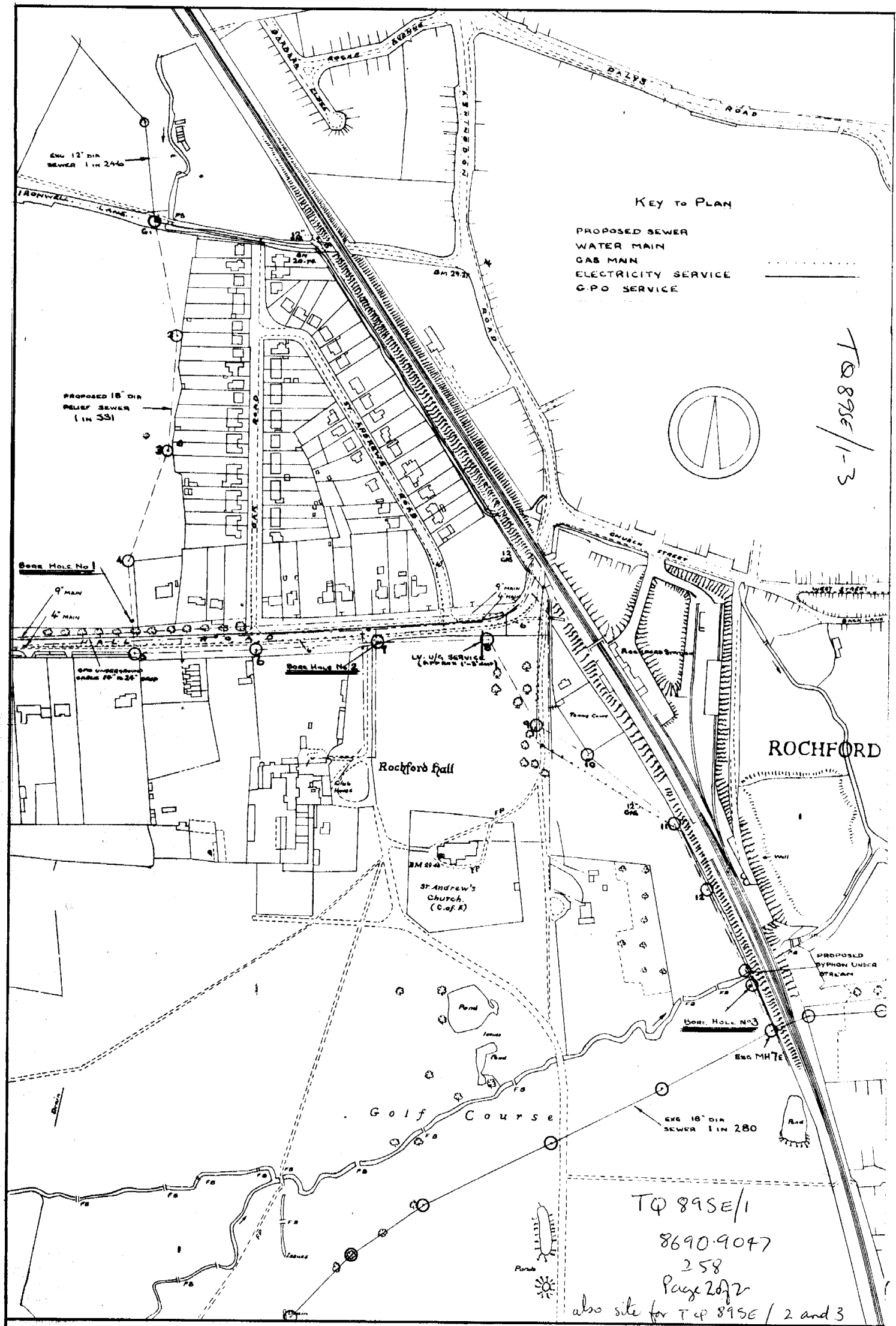


TQ 89SE / 3  
 8743.9018  
 258

TOP SOIL	1'-6" (0.46m)
BROWN MOTTLED CLAY AND GRAVEL	3'-4" (1.02m)
GRAVEL AND CLAY	6'-6" (1.98m)
HARD BROWN MOTTLED CLAY	10'-0" (3.05m)
DARK BROWN CLAY	12'-0" (3.66m)
BROWN CLAY	16'-0" (4.88m)
DARK GREY CLAY WATER STRUCK AT 5'-0", AFTER DRAWING CABING STANDING WL 19'-0"	20'-0" (6.10m)

Bore Hole No 3

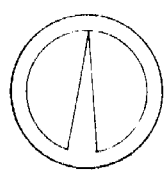
ILS



Key to Plan

- PROPOSED SEWER
- WATER MAIN
- GAS MAIN
- ELECTRICITY SERVICE
- G.P.O. SERVICE

TQ 89SE/1-3



ROCHFORD RURAL DISTRICT

ROCHFORD RELIEF S

PLAN SHOWING LINE OF PROPOSED SEWER AND PUBLIC SERVICES

TQ 89SE/1  
 8690.9047  
 258  
 Page 2 of 2  
 also site for TQ 89SE/2 and 3

Surface level +11.3 m (+37.0 ft)  
 Water struck at +5.9 m (+19.5 ft)  
 Shell, 203 mm diameter  
 January 1973

Overburden 5.40 m  
 Mineral 4.10 m  
 Bedrock 1.00 m+

## LOG

Geological Classification	Lithology	Thickness m	Depth m
Soil	Clayey silt	0.20	0.20
Brickearth	Clayey silt, light to medium yellowish brown. Race nodules common. Scattered pebbles towards base	2.20	2.40
Buried Channel Deposits	Mainly fine sand with clay and silt. Some scattered pebbles of flint. Pale yellowish orange to yellowish brown	3.00	5.40
	'Clayey' sandy gravel Medium sand with fine and coarse gravel. Gravel, composed of angular and well rounded flint, predominantly in upper 1.60 m. Sand percentage increasing with depth	4.10	9.50
London Clay	Stiff silty clay, greenish to olive black	1.00+	10.50

## GRADING

	Mean for Deposit			Depth below surface (m)		Bulk Samples Percentages					
	%	mm		%	From	To	Fines -1/16	+1/16- $\frac{1}{4}$	Sand + $\frac{1}{4}$ -1	+1-4	Gravel +4-16
Gravel	43	+16	17	5.4	7.0	10	2	17	6	35	30
		-16+4	26	7.0	9.2	16	7	40	10	20	7
Sand	43	-4+1	8								
		-1+ $\frac{1}{4}$	30								
		- $\frac{1}{4}$ +1/16	5								
Fines	14	-1/16	14								

BOREHOLE LOG

E.G.U. REF. T08690 001 FIELD STAFF REF. TQ89SE 55

87b TQ 89 SE / 55  
586570 190460

NATIONAL GRID REF, 586570 190460

SURFACE LEVEL 11.38 M. OD.

DRILLED BY M&C FRENCH

DRILL TYPE SHELL&AUGER

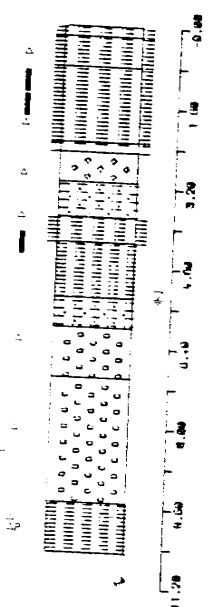
DATE COMPLETED 11 JAN 1973

RECORDED BY R. ELLISON

FIRST WATER DEPTH 5.40M.

REST WATER DEPTH M.

STRATIGRAPHY	DESCRIPTION	THICKNESS	DEPTH	O.D.L.
TOPSOIL	CLAYEY, SILT. ....	0.20	0.20	11.18
BRICK EARTH	CLAYEY, SILT, SOFT, 5YR5/4 (MEDIUM BROWN), CONTAINING SCATTERED CARBONACEOUS MATERIAL. ....	2.60	0.80	10.58
	CLAYEY, SILT, FIRM, 5YR5/4 (MEDIUM BROWN) GRADING 10YR4/4 (MEDIUM YELLOW BROWN), CONTAINING RACE, SCATTERED CARBONACEOUS MATERIAL FISSURING, MODERATE, SMOOTH, PLANAR. ....	1.50	2.30	9.08
TERRACE DEPTS.	CLAYEY, SANDY, SILT, WITH SOME FINE GRAVEL. 12YR5/4 (MODERATE YELLOW BROWN) CONTAINING RACE. ....	0.20	2.50	8.88
	CLAYEY, GRAVELLY (FINE, MED AND CS). COARSE SAND. ....	0.60	3.10	8.28
	CLAYEY, FINE SAND, SOFT. 18YR6/5 (MEDIUM YELLOW BROWN) MOTTLED 5B7/1 (LIGHT BLUISH GRAY), CONTAINING FLINT. ....	0.70	3.80	7.58
	SANDY, CLAYEY, SILT, WITH SOME GRAVEL, FIRM, 5YR5/6 (LIGHT BROWN), 10YR6/5 (MEDIUM YELLOW BROWN), WITH SUBSIDIARY CLAYEY, FINE SAND. ....	0.50	4.30	7.08
	SILTY, CLAY, SOFT, 5YR5/6 (LIGHT BROWN), 10YR6/2 (PALE YELLOWISH BROWN), WITH SUBSIDIARY CLAYEY, FINE SAND. ....	1.10	5.40	5.98
	GRAVELLY (FINE AND MED). CLAYEY, FINE SAND, CONTAINING FLINT. ....	0.60	6.00	5.38
	SANDY (MED AND CS). FINE & MEDIUM GRAVEL, CONTAINING TERTIARY REWORKED FLINT, ROUNDED TERTIARY FLINT. ....	1.00	7.00	4.38
	SANDY (MED AND CS). FINE & MEDIUM GRAVEL. ....	2.50	9.50	1.88
LONDON CLAY	SILTY, CLAY, STIFF, 5Y2/1 (OLIVE BLACK), 5G2/1 (GREENISH BLACK), FISSURING, HIGH. ....	1.00	10.50	0.88



Borehole Reg No: **TQ 89SE 55**  
 Temp. borehole No: **TQ 89SEF**  
 Nat Grid Ref: **TQ 8657 9046**  
 Locality: **ROCHFORD**  
 Surface level: **11.3** m O.D. (**36.9** ft O.D.)  
 Drilled by: **FRENCH**  
 Drill type: **SHELL- ANGER**  
 Hole diameter: **8"**  
 Depth(s) bailed: **5.40 - 9.50**  
 Date started: **10.1.73**  
 Date finished: **11.1.73**  
 Recorded by: **R.A. GILSON**

Classification of ground	Thickness m	Nature
OVERBURDEN	5.40	clayey silts
MINERAL	4.10	MC sand - FM gravel
BEDROCK	1.00	London clay

Remarks

Explanation

- ▽ Groundwater depth first encountered
- a▽ Morning water level
- p▽ Evening water level
- ==== Casing depth
- Borehole depth
- W Water sample
- U, sample: solid ornament shows fraction recovered
- Spot disturbed sample
- Bulk sample

S.P.T. Standard Penetration Test

Geological Classification	Description of Strata	Sampling	Sample Nos	Water level	Drilling and Casing progress
10' soft	clayey silty soil	20			
	clayey silt. soft. 5125/4				
	50' clayey silt. firm 5125/4 scattered carbonaceous remains				
	55' As above with fissuring - moderate, straight, smooth.	1			
	140' As above with race.				
	150' clayey silt. firm. 10424/4. Common race	2			
	230' clayey sandy silt. C-sand in patches. 10426/4. Common race. Some F gravel.				
	250' clayey gravelly sand, mainly C-sand + FM gravel	3			
	270' clayey fine sand. Soft 10426/5 + 567/1 mottling. Contains stiff nodules of fine sand and angular frags of sst - med grains + some sst flints				
	300' clayey silt and clayey fine sand patches. firm. occasional sst and gravel fragments. Mottled 5125/6 and 10426/5 + some 10428/6	4			
	430' Patchy silty clay and clayey fine sand (5125/6) (10426/2, soft)	5			
5.40	520' As above with up to 20% FM gravel - mainly angular flint and patina.				
	540' mainly MC sand + MF gravel. Testrines + ang. flints + rounded flints. 5:55:40	6			
	7:30 MC sand - FM gravel. 5:65:30	7			
	8' MC sand - FM gravel.	8			
	9' Silty clay, stiff. 542/1 and 562/1. Fissuring high 120° striations on fissure surfaces.	9			

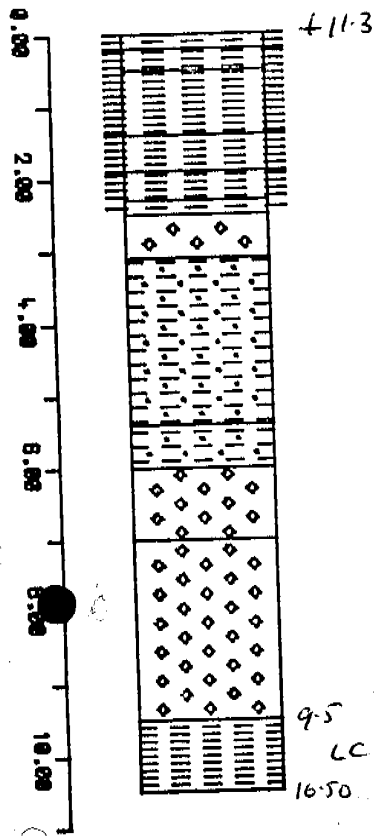
ESTUARINE ALLUVIAL (inflated channel deposits)

Borehole Reg No: TQ 89SE 65  
 Temp. borehole No: TQ 89SE F

**CONFIDENTIAL**

Geological Classification	Description of Strata	Sampling	Sample Nos	Water level	Drilling and Casing progress
(312') 9.50 LONDON CLAY 10.50	9.50 Silty clay. Silt. 5-12/1 - 562/1. Irregular fissure surfaces increasing high. 10-	970 990 990 10.30	77 98		11.1.73
	(END OF BOREHOLE 10.50)				

TQ 89 SE 55  
TQ869 1



3

4503

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