TABLES

Table 1 Temperature in Jakarta

Station: Jakarta, Seokarno-Hatta International Airport

Monthly Mean Temperature

(unit: Celcius degree)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Mean
Jan.	26.0	25.8	26.5	26.2	25.8	26.1	26.2	25.9	25.0	26.5	25.9	26.0
Feb.	26.1	25.8	26.5	25.4	26.4	25.9	26.3	25.9	26.2	26.2	26.0	26.1
Mar.	26.4	26.7	26.9	26.3	26.5	26.7	26.8	26.3	26.0	26.2	26.6	26.5
Apr.	26.9	27.0	27.3	26.8	27.3	26.7	26.8	26.5	26.6	27.0	27.0	26.9
May	27.1	27.2	27.3	26.8	27.0	27.0	27.1	27.0	26.4	27.3	27.1	27.0
Jun.	26.8	27.2	26.6	26.5	26.6	26.8	26.9	26.7	26.5	26.9	27.0	26.8
July	26.0	26.6	26.4	26.5	26.1	26.5	26.2	26.6	25.6	26.4	27.0	26.4
Aug.	25.7	26.2	26.4	26.5	26.2	26.2	26.3	26.5	25.8	26.6	26.8	26.3
Sep.	26.1	26.9	26.9	26.8	26.7	26.8	26.5	26.6	26.3	26.6	26.9	26.6
Oct.	26.7	27.9	26.9	29.0	27.5	27.4	26.3	27.0	27.4	27.0	-	27.3
Nov.	26.3	27.7	27.1	27.2	27.7	27.4	26.3	26.7	27.6	26.4	-	27.0
Dec.	26.8	26.8	25.9	26.4	26.5	26.6	26.2	26.6	27.1	26.3	-	26.5

Monthly Maximum Temperature

(unit: Celcius degree)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Max
Jan.	31.6	32.2	32.4	31.4	32.1	31.4	32.4	31.8	31.2	32.4	32.1	32.4
Feb.	32.6	32.0	32.4	30.2	32.8	31.4	33.5	31.6	32.0	32.0	31.0	33.5
Mar.	32.6	33.2	33.4	32.8	33.6	31.8	32.2	33.7	33.0	32.0	32.1	33.7
Apr.	33.4	32.8	33.5	34.2	34.5	33.4	33.4	33.2	32.4	33.2	34.8	34.8
May	33.4	34.2	33.3	32.2	34.9	33.4	33.0	33.2	32.8	33.2	33.1	34.9
Jun.	33.6	33.2	33.1	33.4	33.0	34.4	32.8	33.2	32.7	32.9	33.2	34.4
July	33.9	32.8	32.5	33.2	32.6	33.2	32.4	32.4	32.3	32.1	32.7	33.9
Aug.	32.6	33.6	33.2	32.6	32.2	33.2	32.1	33.0	33.0	33.2	32.8	33.6
Sep.	32.7	33.4	33.8	33.9	32.8	34.2	32.7	33.5	34.2	33.2	33.2	34.2
Oct.	33.2	35.2	34.2	34.2	34.0	34.9	33.0	33.2	35.0	33.1	-	35.2
Nov.	33.5	35.2	34.4	33.6	35.2	33.4	33.0	33.6	34.4	32.8	-	35.2
Dec.	32.8	33.5	33.5	31.8	32.5	33.6	33.2	33.0	33.6	33.4	-	33.6
Max.	33.9	35.2	34.4	34.2	35.2	34.9	33.5	33.7	35.0	33.4	34.8	35.2

Monthly Mininum Temperature

(unit: Celcius degree)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Min
Jan.	20.2	22.0	21.9	20.0	22.2	22.8	22.1	22.4	22.0	22.6	22.0	20.0
Feb.	21.6	21.6	22.4	22.0	22.6	22.8	22.0	22.0	21.6	22.4	21.4	21.4
Mar.	22.4	22.8	22.9	21.8	22.7	22.8	23.0	22.0	22.7	22.6	22.0	21.8
Apr.	22.3	22.9	21.0	22.4	22.8	22.6	22.9	22.1	22.6	22.8	22.7	21.0
May	20.5	22.6	23.2	22.0	22.5	22.3	22.4	22.4	21.0	22.2	22.1	20.5
Jun.	21.3	22.2	21.6	21.6	21.0	20.3	21.6	22.0	21.0	22.9	21.6	20.3
July	18.5	21.3	21.3	21.2	20.7	20.6	21.0	21.6	18.6	21.8	22.0	18.5
Aug.	18.5	19.9	21.4	21.2	21.8	21.2	21.5	21.4	17.4	21.4	21.7	17.4
Sep.	20.0	20.6	21.2	21.9	21.6	20.8	21.8	21.3	19.7	21.4	21.6	19.7
Oct.	21.4	22.4	22.4	22.2	22.0	21.4	22.5	22.0	21.2	22.8	-	21.2
Nov.	21.8	23.0	22.9	22.0	22.0	22.6	22.1	22.0	22.8	22.5	-	21.8
Dec.	22.2	22.0	21.0	22.4	22.4	22.3	21.7	22.2	22.6	22.3	-	21.0
Min	18.5	19.9	21.0	20.0	20.7	20.3	21.0	21.3	17.4	21.4	21.4	17.4

Table 2 Relative Humidity in Jakarta

Station : Jakarta, Soekarno-Hatta International Airport

Monthly Mean Relative Humidity

(unit: %)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Mean
Jan.	88	87	86	87	88	88	88	88	88	87	86	87
Feb.	86	88	85	88	87	89	88	87	86	87	88	87
Mar.	85	84	85	84	86	87	87	83	87	87	85	85
Apr.	85	84	84	82	83	87	86	85	85	85	80	84
May	83	82	86	86	83	84	86	84	82	84	81	84
Jun.	83	81	83	83	83	93	83	84	80	85	79	83
July	82	79	80	81	83	80	82	81	78	83	79	81
Aug.	82	76	81	83	85	80	82	82	76	80	80	81
Sep.	83	76	78	80	82	77	83	79	75	80	80	79
Oct.	83	76	81	79	80	77	85	80	75	83	-	80
Nov.	84	77	81	80	80	83	83	83	79	85	-	82
Dec.	83	84	85	86	87	86	85	84	82	84	-	85

Monthly Maximum Relative Humidity

(unit: %)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Max
Jan.	98	98	100	100	98	99	98	98	98	98	98	100
Feb.	98	98	98	100	98	98	98	98	99	98	99	100
Mar.	97	98	98	98	99	98	98	98	98	98	99	99
Apr.	98	98	98	98	100	98	98	98	98	97	98	100
May	98	98	98	99	98	99	98	100	98	98	97	100
Jun.	98	98	99	98	98	98	98	98	98	98	98	99
July	98	98	99	98	98	97	98	98	98	98	97	99
Aug.	98	97	98	98	98	99	98	98	97	97	98	99
Sep.	100	97	98	98	98	98	98	98	98	97	98	100
Oct.	98	97	98	98	98	97	99	98	98	97	-	99
Nov.	98	97	97	97	98	99	98	98	98	98	-	99
Dec.	98	98	98	98	99	98	99	97	98	97	-	99
Max.	100	98	100	100	100	99	99	100	99	98	99	100

Monthly Minimum Relative Humidity

(unit: %)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Min
Jan.	64	62	53	63	64	65	67	66	59	60	57	53
Feb.	56	62	59	68	60	65	59	62	57	59	65	56
Mar.	58	58	55	58	63	63	54	54	57	58	57	54
Apr.	60	58	49	48	52	59	50	57	54	56	49	48
May	57	49	63	60	41	55	52	51	53	54	51	41
Jun.	53	50	49	49	53	49	51	54	51	58	56	49
July	46	43	47	45	54	47	50	52	39	50	44	39
Aug.	42	42	51	52	54	49	50	49	36	49	48	36
Sep.	55	44	48	43	51	47	55	41	40	45	52	40
Oct.	55	46	49	49	54	48	58	49	43	56	-	43
Nov.	53	40	50	52	51	50	55	53	52	59	-	40
Dec.	55	53	51	61	62	59	51	56	51	59	-	51
Min	42	40	47	43	41	47	50	41	36	45	44	36

Table 3 Prevailing Wind in Jakarta

Station: Jakarta, Seokarno-Hatta International Airport

Monthly Mean Speed of Prevailing Wind

(unit: Knots, 1Knot=1,852m/h)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Mean
Jan.	6	5	4	4	5	7	5	6	7	6	7	6
Feb.	4	4	5	6	5	7	5	6	7	6	7	6
Mar.	5	4	5	8	6	5	5	5	5	6	5	5
Apr.	4	4	6	7	5	5	5	4	5	5	5	5
May	4	5	5	5	6	5	5	4	5	5	5	5
Jun.	4	4	5	6	5	5	6	5	5	5	5	5
July	4	4	5	6	5	6	6	5	5	5	5	5
Aug.	4	4	5	5	6	6	5	6	7	5	6	5
Sep.	4	5	6	5	6	6	5	5	5	5	5	5
Oct.	4	5	6	5	7	6	4	5	6	5	-	5
Nov.	5	5	5	7	6	5	4	5	5	5	-	5
Dec.	4	6	7	5	6	5	7	6	6	7	-	6

Monthly Maximum Speed of Prevailing Wind

(unit: Knots, 1Knot=1,852m/h)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Max
Jan.	18	18	18	28	38	42	50	54	60	52	46	60
Feb.	24	18	18	28	22	46	50	54	60	52	52	60
Mar.	24	16	28	42	32	50	34	44	44	42	38	50
Apr.	16	18	22	36	26	44	50	42	40	58	38	58
May	18	20	40	18	38	40	36	38	46	60	52	60
Jun.	25	20	22	28	20	49	36	42	40	46	38	49
July	18	16	22	26	36	28	44	36	38	46	42	46
Aug.	20	18	24	28	40	36	36	38	42	34	46	46
Sep.	20	18	24	24	40	26	44	38	34	42	44	44
Oct.	20	24	34	22	46	28	39	44	42	44	-	46
Nov.	28	22	28	26	52	38	46	52	40	56	-	56
Dec.	16	20	34	30	48	70	48	56	50	46	-	70
Max.	28	24	40	42	52	70	50	56	60	60	52	70

Direction of Prevailing Wind

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Jan.	NW	NW	NW	N	W	W	N	W	NW	W	N
Feb.	NW	NW	W	W	W	SW	N	W	NW	W	NW
Mar.	NW	NW	W	W	W	E	NE	N	W	W	NE
Apr.	NE	E	E	W	NE	W	NE	SW	N	E	NE
May	SE	S	SW	S	NE	E	NE	E	E	N	NE
Jun.	E	E	E	SW	SE	E	NE	E	NE	N	NE
July	E	E	E	E	S	E	E	E	NE	E	NE
Aug.	NE	E	S	N	NE	E	S	E	E	NE	NE
Sep.	NW	E	NE	N	S	E	SW	NE	NE	NE	NE
Oct.	NW	NE	SW	S	S	NE	W	NE	NE	NE	-
Nov.	W	W	W	W	SW	S	N	W	NE	SW	-
Dec.	NW	SW	W	N	W	SW	W	W	W	W	-

Table 4 Rainfall in Jakarta

Station: Jakarta, Seokarno-Hatta International Airport

Monthly Rainfall

(unit: mm/month)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Mean
Jan.	503	644	371	209	533	349	398	494	392	403	346	422
Feb.	369	384	227	441	174	394	198	345	328	328	546	339
Mar.	195	104	106	155	73	197	255	88	341	198	116	166
Apr.	164	116	73	68	106	241	108	108	146	131	172	130
May	77	89	276	208	162	22	140	74	34	98	124	119
Jun.	23	13	67	41	57	30	78	54	40	112	57	52
July	93	68	17	51	124	-	35	41	-	115	74	69
Aug.	268	-	50	4	153	10	114	60	-	18	36	79
Sep.	124	5	17	64	57	-	88	36	-	48	105	60
Oct.	58	5	98	35	35	6	107	71	1	102	-	52
Nov.	114	81	52	35	29	91	131	102	102	244	-	98
Dec.	237	280	313	284	325	117	278	177	55	250	-	232
Total	2,225	-	1,667	1,595	1,828	-	1,930	1,650	-	2,047	-	1,818

Maximum Daily Rainfall

(unit: mm/day)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Max
Jan.	175	189	101	56	83	58	116	101	58	77	86	189
Feb.	133	118	47	71	36	98	50	136	85	50	107	136
Mar.	110	35	43	40	20	91	58	17	85	44	42	110
Apr.	46	45	27	15	27	58	48	25	31	35	55	58
May	58	55	57	78	56	15	41	37	21	39	55	78
Jun.	6	10	30	14	29	24	16	18	27	37	26	37
July	32	27	14	22	39	-	15	18	-	76	73	(76)
Aug.	77	-	22	2	43	10	67	39	-	18	15	(77)
Sep.	47	4	7	50	55	-	36	18	-	22	35	(55)
Oct.	26	5	23	23	19	6	25	50	1	38	-	(50)
Nov.	23	34	15	8	11	52	22	39	42	67	-	(67)
Dec.	79	71	87	86	77	28	108	39	16	80	-	(108)
Max	175	(189)	101	86	83	(98)	116	136	(85)	80	(107)	189

Rainy Days

(unit: days/month)

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Mean
Jan.	22	27	21	14	26	25	16	23	25	24	16	22
Feb.	14	22	12	25	15	21	16	14	16	23	24	18
Mar.	13	11	13	16	10	10	14	12	19	23	11	14
Apr.	12	12	6	12	12	13	8	13	14	13	14	12
May	4	5	13	13	13	4	11	7	3	9	8	8
Jun.	8	2	7	7	8	3	11	7	5	11	4	7
July	8	4	2	8	9	-	4	6	-	9	3	(6)
Aug.	9	-	9	3	12	1	7	7	-	3	7	(6)
Sep.	12	2	3	3	2	-	6	6	-	6	8	(5)
Oct.	8	1	11	7	5	1	17	7	2	10	-	7
Nov.	16	7	14	10	7	11	16	11	9	19	-	12
Dec.	9	16	19	20	21	15	16	15	12	14	-	16
Total	135	-	130	138	140	-	142	128	-	164	-	140

Table 5 Elevation of Bench Marks (1)

Bench Mark No.	Elevation (m)	Remarks
TTG.281	14.131	Reference point
TTG.280(NWP.514)	11.969	Reference point
TTG.177(NWP.60)	40.138	Reference point
TTG.279	13.090	Recovered point
TTG.278	6.841	Recovered point
TTG.276	5.144	Recovered point
TTG.275(PP.743)	3.503	Recovered point
TTG.271(PB.012)	2.137	Recovered point
TTG.270A	3.414	Recovered point
TTG.260(PP.809)	2.507	Recovered point
PP.101A	1.348	Recovered point
PP.103A	0.932	Recovered point
PP.107A	0.772	Recovered point
PP.1088B	11.566	Recovered point
PP.108A	1.124	Recovered point
PP.1110B	5.368	Recovered point
PP.1114B	2.910	Recovered point
PP.1271B	2.342	Recovered point
PP.1299B	3.014	Recovered point
PP.1302B	3.345	Recovered point
PP.316	0.012	Recovered point
PP.407	58.453	Recovered point
PP.701	1.881	Recovered point
PP.707	2.256	Recovered point
PP.716	3.132	Recovered point
PP.722A	2.947	Recovered point
PP.733B	5.250	Recovered point
PP.745A	4.153	Recovered point
PP.765	2.484	Recovered point
PP.767	3.097	Recovered point
PP.814B	4.031	Recovered point
PP.815B	3.304	Recovered point
PP.822	6.454	Recovered point
PP.823B	5.774	Recovered point
PP.824B	4.355	Recovered point
PP.845A	6.313	Recovered point
PP.876A	9.642	Recovered point
PP.1290B	3.146	Recovered point
PP.1291B	2.149	Recovered point
PP.1296B	3.282	Recovered point
PP.1300B	3.232	Recovered point
BATAS(TP)	5.550	Recovered point
DKI.1058	4.607	Recovered point
DKI.1082	4.219	Recovered point
DKI.1167	3.213	Recovered point
DKI.127	3.026	Recovered point
DKI.389	4.783	Recovered point

Table 6 Elevation of Bench Marks (2)

DKI.521	5.959	Recovered point
DKI.535	1.034	Recovered point
DKI.580	4.333	Recovered point
DKI.671	4.474	Recovered point
DKI.701	3.515	Recovered point
DKI.704	2.472	Recovered point
DTK.094	3.350	Recovered point
DTK.258	0.403	Recovered point
DTK.372	8.489	Recovered point
DTK.384	10.064	Recovered point
DTK.960	3.118	Recovered point
CF.0	2.418	Recovered point
BM.01	1.703	Recovered point
BM.02	0.574	Recovered point
BM.06	3.204	Recovered point
BM.09	0.641	Recovered point
GPS.1005	1.968	Recovered point
GPS.1005A	3.577	Established point
GPS.2034	9.320	Established point
96001	1.574	Established point
96002	1.679	Established point
96003	2.178	Established point
96004	3.898	Established point
960041	4.194	Established point
96006	2.452	Established point
96007	1.547	Established point
96008	0.891	Established point
96009	1.348	Established point
96010	1.948	Established point
96011	0.013	Established point
96012(BATAS)	0.918	Recovered point
96014	2.074	Established point
96015	1.950	Established point
96016	1.933	Established point
96017	0.853	Established point
96018	3.270	Established point
96019	2.717	Established point
96020	1.846	Established point
96021(GPS.2030)	5.656	Established point
96022(GPS.2031)	4.074	Established point
96023	5.621	Established point
96024	7.037	Established point
96025	11.194	Established point
96026(HL.23)	1.906	Recovered point
96027(HW.2)	1.411	Recovered point

Table 7 Coordinates of GPS Points

Point No.	North(m)	East(m)	Height(m)*	Remarks
1002	9,319,222.72	688,525.64	3.54	Reference Point
1005	9,318,745.17	691,122.74	1.00	Reference Point
1006	9,322,254.90	694,141.55	0.62	Reference Point
1008	9,326,097.42	690,431.26	0.06	Reference Point
1011	9,312,998.14	699,713.56	9.63	Reference Point
2026	9,322,291.24	691,443.37	1.55	
2027	9,321,833.06	691,433.31	1.18	
2028	9,318,285.96	693,504.96	3.26	
2029	9,318,129.35	693,165.65	1.20	
2030	9,315,714.29	693,216.78	3.32	
2031	9,315,445.60	693,155.15	4.77	
2032	9,312,193.22	694,474.77	16.73	
2033	9,312,235.48	694,095.31	10.86	
2034	9,314,571.85	691,155.41	8.30	
2035	9,314,879.80	691,394.48	10.87	
2036	9,320,707.80	687,981.99	3.73	
2037	9,321,090.58	688,117.23	4.10	
2038	9,323,301.89	688,023.13	2.22	
2039	9,322,785.00	688,578.89	2.20	
1005A	9,319,235.24	691,098.80	1.63	
1006A	9,321,936.63	694,056.50	0.79	
1008A	9,325,962.77	690,175.47	0.10	
W1-1-1	9,323,208.91	691,590.29	-0.52	Recovered Point
W1-1-2	9,323,347.95	691,679.05	-0.31	Additional Point
W2-1R	9,314,855.14	691,763.67	9.15	Recovered Point
W2-2R	9,314,619.89	691,869.78	7.40	Recovered Point

Note: * Height of GPS points is indirect level to calculated using the earth ellipsoid (WGS-84)

Table 8 Physical Properties of Soils

Hole	Depth (m)	Type of Soil	Gs	Wn (%)	gn t/m3	gd (t/m3)	gsat (t/m3)	en	n (%)	Sr (%)	Wsat (%)	% Fines (%)	%Clay (%)	LL (%)	PL (%)	PI (%)
A-1	6-45-7	sandy silt	2.752	43.85	1.56	1.087	1.692	1.533	60.5	78.73	55.7	62.1	22	59.7	24.3	35.3
	8-45-9	clay	2.729	98.07	1.462	0.738	1.468	2.697	72.953	99.226	98.8	94.1	34	145.4	35.9	109.5
	14-45-15	sady silt	2.738	47.44	1.676	1.137	1.722	1.409	58.48	92.21	51.45	64.4	6	55.3	26.2	29.1
	18-45-19	silty clay	2.711	57.93	1.676	1.061	1.67	1.555	60.86	101.02	57.34	97.5	41	99.6	29.4	70.2
	21-22	silty sand	2.71	42.2	1.54	1.085	1.685	1.498	59.96	76.38	55.26	92.2	52	106.5	48.2	58.3
	23-45-24	silty clay	2.661	42.79	1.819	1.274	1.795	1.089	52.13	104.57	40.9	92.8	41	84.2	30	54.2
	28-45-29	clay	2.768	41.14	1.846	1.308	1.835	1.116	52.75	102	40.53	95.1	42	112.4	27.7	84.7
	33-45-34	clay	2.57	45.44	1.789	1.23	1.751	1.089	52.14	107.2	42.39	97.6	40	129	27.8	101.3
B-1	2-4-2.9	silty sand	2.755	28	1.65	1.29	1.8	1.136	53.17	67.9	41.22	30	11	40.7	16.1	24.6
	4-45-5	sandy silt	2.666	43.16	1.907	1.332	1.832	1.001	50.04	115	37.56	54.8	4	113.1	34.7	78.3
	9-45-10	silty clay	2.78	71.52	1.43	0.834	1.534	2.334	70.01	85.17	83.97	92.7	39	91.1	24.1	67
	14-45-15	clayey silt	2.688	65.09	1.606	0.973	1.611	1.763	63.81	99.23	65.59	92.7	28	104.6	45.7	59
	17-17.5	silty clay	2.662	52.18	1.699	1.116	1.697	1.384	58.06	100.34	52	76.6	18	117.4	38.6	78.8
	21.3-21.7	silty clay	2.685	41.44	1.685	1.191	1.743	1.231	55.18	89.5	46.3	94.9	60	132.6	36.4	96.2
	28-45-29	clay/silt	2.629	23.86	1.895	1.53	1.948	0.781	41.8	87.3	27.3	95.8	60	94.5	24.2	70.3
B-2	4-45-5	clay	2.48	59.62	1.617	1.013	1.605	1.448	59.15	102.1	58.39	97.6	44	84.5	28.8	55.7
	10-10.55	clay	2.663	52.11	1.661	1.092	1.682	1.439	59	96.45	54.02	69	16	70.9	29	42
	11-11.7	clayey silt	2.686	49.9	1.501	1.002	1.629	1.682	62.7	79.6	62.62	78.9	35	82.1	40.4	41.7
	15-15.35	sand/clay /silt	2.722	44.9	1.71	1.18	1.747	1.307	56.6	93.54	48	64.5	8	66.2	26.5	39.7
	22.45-22.9	clay + silt, sandy	2.633	55.56	1.669	1.073	1.665	1.454	59.25	100.6	55.23	76.9	24	95.4	27.7	67.7
	25-25.35	clay + silt	2.733	64.7	1.636	0.993	1.63	1.751	63.66	101	64.01	90	37	101	32.3	68.6
C-1	5.5-5.9	clay	2.554	63.08	1.607	0.985	1.6	1.592	61.42	101.2	62.33	95.2	38	91.1	30.4	60.7
	10.6	silty sand	2.727	26.23	1.753	1.389	1.879	0.964	49.1	74.23	35.54	36.4	5			
	15-15.3	silty clay	2.571	55.15	1.651	1.064	1.65	1.416	58.61	100.1	55.08	85.8	20	91.7	28.1	63.6
	19-19.25	silty clay	2.428	59.25	1.558	0.978	1.575	1.482	59.7	97.1	61.03	90.9	18	108.9	38.8	70.1
D-1	5-5.3	silt + clay, sandy	2.454	78.61	1.495	0.837	1.496	1.932	65.9	99.8	78.72	83	18	72.3	34.8	37.6
	12-13	silty sand	2.775	30.1	1.879	1.445	1.924	0.921	47.94	90.61	33.19	21.8	3			
O-1	5-5.45	silty clay	2.574	57.21	1.671	1.063	1.65	1.422	58.7	103.6	55.23	94.4	42	128	33	95
	10-10.35	silty clay	2.438	84.84	1.442	0.78	1.46	2.125	68	97.3	87.17	95.8	41	138.6	54.2	84.4
	14-4-15	sandy siltstone	2.57	30.5	1.696	1.3	1.794	0.978	49.43	80.19	38.04	61.5	22	59.5	32.7	26.8
B-2	proctor	clay + silt, sands	2.556	28.96	1.985			13.6	93.15	5.45	5.32	72.9	36	55.2	19.1	36.2

Table 9 Results of Unconfined and Triaxial Compression Tests

Sample Hole	Depth (m)	Soil nature Type of Soil	% Fines (%)	%Clay (%)	Unconf. compression qu kg/cm2	Triaxial Tests c (kg/cm2)	UU c(kg/cm2)	UU ϕ°	CU c(kg/cm2)	CU ϕ°	CU c'(kg/cm2)	CU ϕ °	CD c(kg/cm2)	CD ϕ°
A-1	8.45-9	clay	94.1	34	0.19	0.095	0.11	3.8						
	14.45-15	sady silt	64.4	6	0.34	0.17	0.62	27					0.62	27
	18.45-19	silty clay	97.5	41	0.34	0.17			1.01	9.3	0.28	27		
	23.45-24	silty clay	92.8	41	0.47	0.235	0.36	8.5						
	28.45-29	clay	95.1	42	0.64	0.32	0.66	4.6						
	33.45-34	clay	97.6	40	0.51	0.255	0.194	2.5						
B-1	4.45-5	sandy silt	54.8	4	0.24	0.12							0.25	29
	9.45-10	silty clay	92.7	39	0.2	0.1	0.401	6.7						
	14.45-15	clayey silt	92.7	38	0.67	0.335	0.46	8.6						
	17-17.5	silty clay	76.6	18	0.61	0.305	0.6	2.5						
	21.3-21.7	silty clay	94.9		0.63	0.315	0.4	3.3						
	28.45-29	clay/silt	95.8		0.7	0.35	0.6	3.9						
B-2	4.45-5	clay	97.6	44	0.35	0.175	0.28	9.7						
	10-10.55	clay	69	16	0.28	0.14	0.3	6.9						
	15-15.35	sand/clay /silt	64.5	8	0.35	0.175							0.36	25
	22.45-22.9	clay + silt, sandy	76.9	24	0.17	0.085			0.09	17.1	0.07	21.4		
	25-25.35	clay + silt	90	37	0.19	0.095	0.5	9						
C-1	5.5-5.9	clay	95.2	38	0.17	0.085	0.181	9						
	10.6	silty sand	36.4		0.23	0.115								
	15-15.3	silty clay	85.8	30		0	0.3	8.1						
	19-19.25	silty clay	90.9	18	0.24	0.12	0.85	3.7						
D-1	5-5.3	silt + clay, sands	83	18	0.15	0.075	0.47	9.1	0.33	9.8	0.14	32.3		
O-1	5-5.45	silty clay	94.4	42	0.25	0.125	0.214	9.2						
	10-10.35	silty clay	95.8	41	0.17	0.085	0.47	9.1						
B-2	proctor	clay + silt, sandy	72.9						0.34	20.6	0.4	25.4		
D-1	proctor	clay + silt, sandy	88.4						0.45	13.4	0.31	35.3		

Table 10 Results of Consolidation Tests

Hole	Depth (m)	Soil	LL (%)	Wn (%)	eo (%)	Pc Kg/cm2	Cc	Cv cm2/day	OCR %
A-1	8.45-9	clay	145.4	98.07	2.697	0.64	0.874	382.9	0.91
	14.45-15	sady silt	55.3	47.44	1.409	2.2	0.35	711.0	1.2
	18.45-19	silty clay	99.6	57.93	1.555	1.7	0.4	324.8	1.1
	23.45-24	silty clay	84.2	42.79	1.089	2.2	0.2	380.9	1
	28.45-29	clay	112.4	41.14	1.116	1.8	0.25	323.9	0.87
	33.45-34	clay	129	45.44	1.089	1.7	0.31	536.8	0.62
B-1	4.45-5	sandy silt	113.1	43.16	1.001	0.67	0.58	230.3	2.2
	9.45-10	silty clay	91.1	71.52	2.334	2.7	0.62	205.1	3.5
	14.45-15	clayey silt	104.6	65.09	1.763	3.6	0.45	630.8	3.7
	17-17.5	silty clay	117.4	52.18	1.384	2.1	0.43	469.9	1.85
	21.3-21.7	silty clay	132.6	41.44	1.231	2	0.36	472.0	1.36
	28.45-29	clay/silt	94.5	23.86	0.781	1.8	0.22	541.5	0.87
B-2	4.45-5	clay	84.5	59.62	1.448	1.55	0.66	287.5	2.63
	10-10.55	clay	70.9	52.11	1.439	2.1	0.38	450.8	2.1
	15-15.35	sand/clay /silt	66.2	44.9	1.307	2.05	0.31	562.7	1.62
	22.45-22.9	clay + silt, sandy	95.4	55.56	1.454	2.1	0.49	496.3	1.3
	25-25.35	clay + silt	101	64.7	1.751	2	0.39	423.9	1.04
C-1	5.5-5.9	clay	91.1	63.08	1.592	1.9	0.32	505.6	2.6
	15-15.3	silty clay	91.7	55.15	1.416	3	0.3	476.2	2.27
	19-19.25	silty clay	108.9	59.25	1.482	2.8	0.34	557.5	1.7
D-1	5-5.3	silt + clay, sandy	72.3	78.61	1.932	2.1	0.92	584.8	5.3
O-1	5-5.45	silty clay	128	57.21	1.422	2.9	0.39	473.6	3.28
	10-10.35	silty clay	138.6	84.84	2.125	2.2	0.37	410.1	1.5
B-2	proctor	clay + silt, sandy	55.2	28.96	13.6	2.6	0.31	559.5	
D-1	proctor	clay + silt, sandy	93.6	50.2	26.19	3	0.31	505.3	

Table 11 Result of Fresh Water Quality Analysis

Item	Parameter	Unit	Maximum Limit	ST-A	ST-B	ST-C	ST-D	ST-E	ST-F	ST-G	ST-H	ST-I
A	Physical											
	1 Temperature	C		28	29	27	28	28	27	27	27	27
	2 Total Dissolved Solids	mg/l		734	118	113	252	1696	1040	1433	516	472
B	Chemical											
	1 Mercury	mg/l	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	2 Ammonia Nitrogen	mg/l	0.02	5.44	1.14	1.33	2.13	7.19	5.83	5.74	3.36	3.05
	3 Arsenic	mg/l	0.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	4 Fluoride	mg/l	1.5	0.4	0.13	0.12	0.23	0.45	0.42	1.68	0.41	0.35
	5 Cadmium	mg/l	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	6 Chlorine	mg/l	0.003	0.02	0.02	0.04	0.06	0.03	0.03	0.02	0.14	0.15
	7 Chromium	mg/l	cero	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	8 Nitrite	mg/l	0.06	0.038	0.101	0.212	<0.005	<0.002	<0.005	<0.005	<0.005	0.091
	9 Dissolved Oxygen	mg/l	>3	0	2.5	1.7	1.5	0	0	0	0	0
	10 pH	units	6.0 - 8.5	6.5	6.6	6.7	6.8	7.1	6.9	7.2	7	6.8
	11 Selenium	mg/l	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	12 Zinc	mg/l	0.02	0.57	0.01	0.02	0.04	0.04	0.05	0.03	0.06	0.05
	13 Cyanide	mg/l	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	14 Hydrogen Sulfide	mg/l	0.002	1.468	<0.002	<0.002	<0.002	1.244	0.308	0.549	<0.002	<0.002
	15 Copper	mg/l	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	16 Lead	mg/l	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
	17 Phenol	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	0.787	0.685	0.85	0.203	0.114
	18 Oil & Grease	mg/l	0.5	5.2	2	3.2	4.8	6.4	4	2.4	4.8	4.4
	19 Detergents	mg/l	2.00E-01	3.42	2.48	1.69	1.31	12.88	7.45	6.22	2.78	2.06
	20 BOD	mg/l		35.8	7.6	8.5	19	47	32.8	45.5	15.2	23.8
	21 COD	mg/l		83.6	17.6	21	46.2	118.8	70.4	96.8	45.1	63.8

ST : Sampling Station
Maximum Limit :Standard Decree of DKI Jakarta for Surface Water, Fisheries, and Aquaculture
Source : UNILAB PERDANA pt - Environmental Laboratory
Cengkar Barat, December 21, 1996

Table 12 Result of Oceanic Water Analysis

Item	Parameter	Unit	SEA WATER STANDARD	ST-J	ST-K	ST-L
A	Physical					
	1 Temperature	C		29	29	29
	2 Salinity	0/00	10% Dev.N	3.06	3.03	
	3 Suspended Solids	mg/l	< 80	2	3	
B	Chemical					
	1 Mercury	mg/l	0.003	<0.001	<0.001	<0.001
	2 Ammonia Nitrogen	mg/l	<1	0.16	0.21	1.41
	3 Arsenic	mg/l	0.01	<0.005	<0.005	<0.005
	4 Niquel	mg/l	<0.002	<0.002	<0.002	
	5 Cadmium	mg/l	<0.01	<0.005	<0.005	<0.005
	6 Silver	mg/l	<0.05	<0.02	<0.02	
	7 Chromium	mg/l	<0.01	<0.01	<0.01	<0.01
	8 Nitrite	mg/l	0	<0.005	<0.005	<0.005
	9 Dissolved Oxygen	mg/l	>4	5.6	6.1	2.5
	10 pH	units	6 - 9	7.6	7.7	7
	11 Selenium	mg/l	<0 005	<0.002	<0.002	<0.002
	12 Zinc	mg/l	<0.1	0.05	0.05	0.05
	13 Cyanide	mg/l	0.2	<0.005	<0.005	<0.005
	14 Hydrogen Sulfide	mg/l	<0.03	<0.002	<0.002	<0.002
	15 Copper	mg/l	<0.06	<0.02	<0.02	<0.02
	16 Lead	mg/l	<0.01	<0.01	<0.01	<0.03
	17 Phenol	mg/l		<0.001	<0.01	<0.001
	18 Oil & Grease	mg/l	<5	2	1.2	2.8
	19 Detergents	mg/l		0.12	0.08	1.48
	20 BOD	mg/l	<45	15.4	12.2	10
	21 COD	mg/l	<80	41.3	37.5	24.2

ST : Sampling Station
Sea Water Standard : Kep. 02/MenKLH/I/88, for biotic life.
Source : UNILAB PERDANA pt - Environmental Laboratory
Jakarta Bay, December 21, 1996.

FIGURES

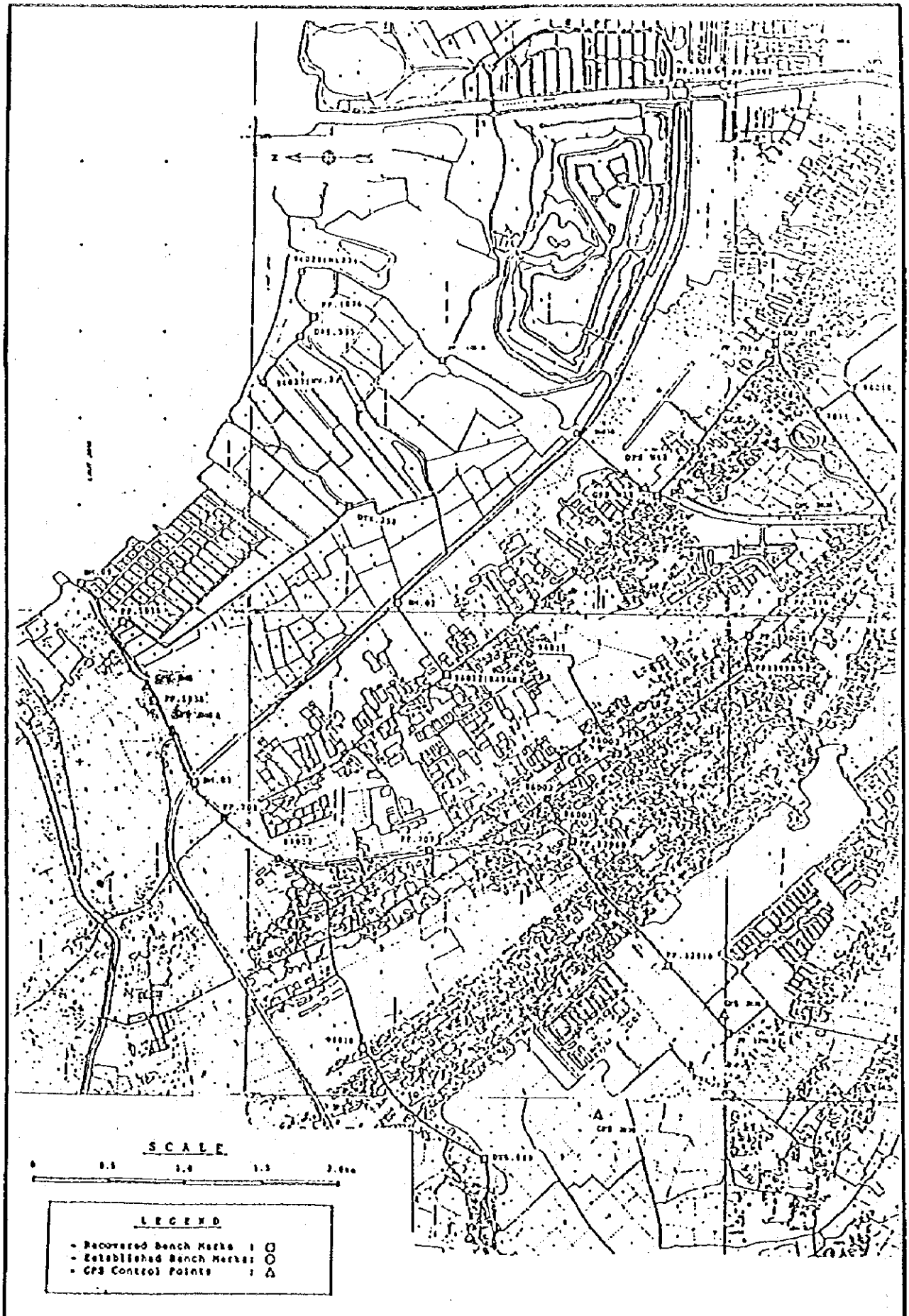


Fig. 1 Location Map of Bench Marks and GPS Control Points (1)

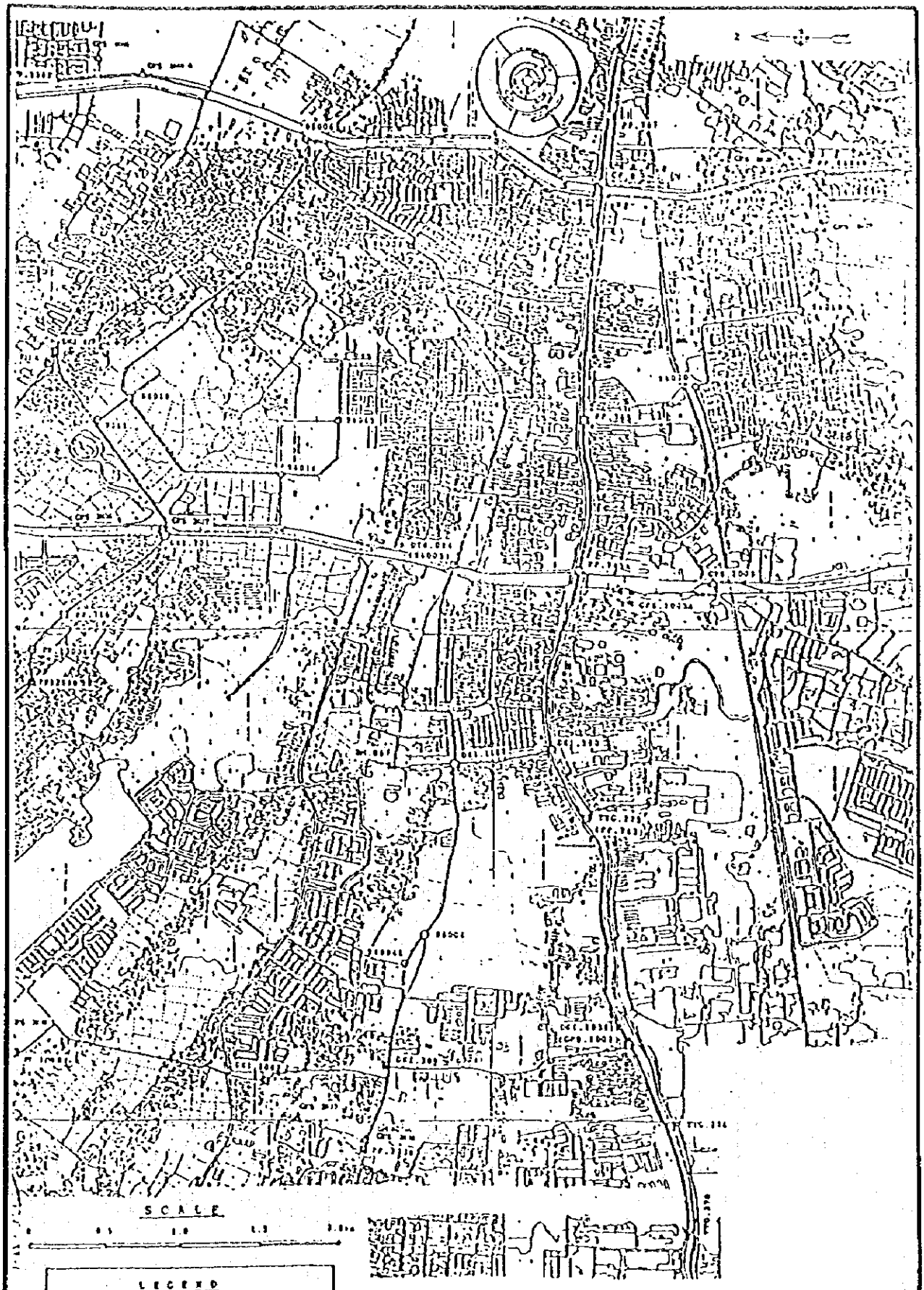


Fig. 2 Location Map of Bench Marks and GPS Control Points (2)

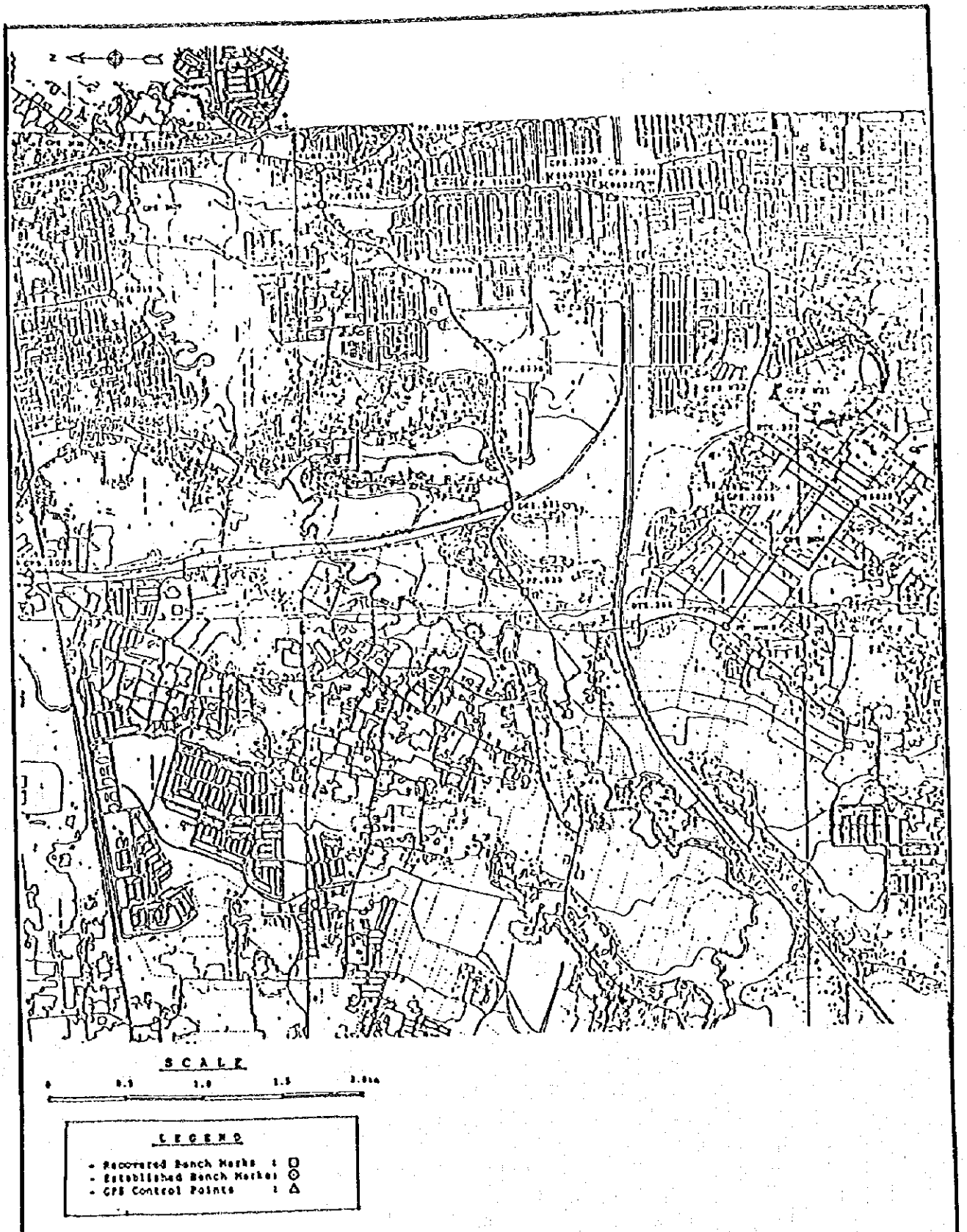


Fig. 3 Location Map of Bench Marks and GPS Control Points (3)

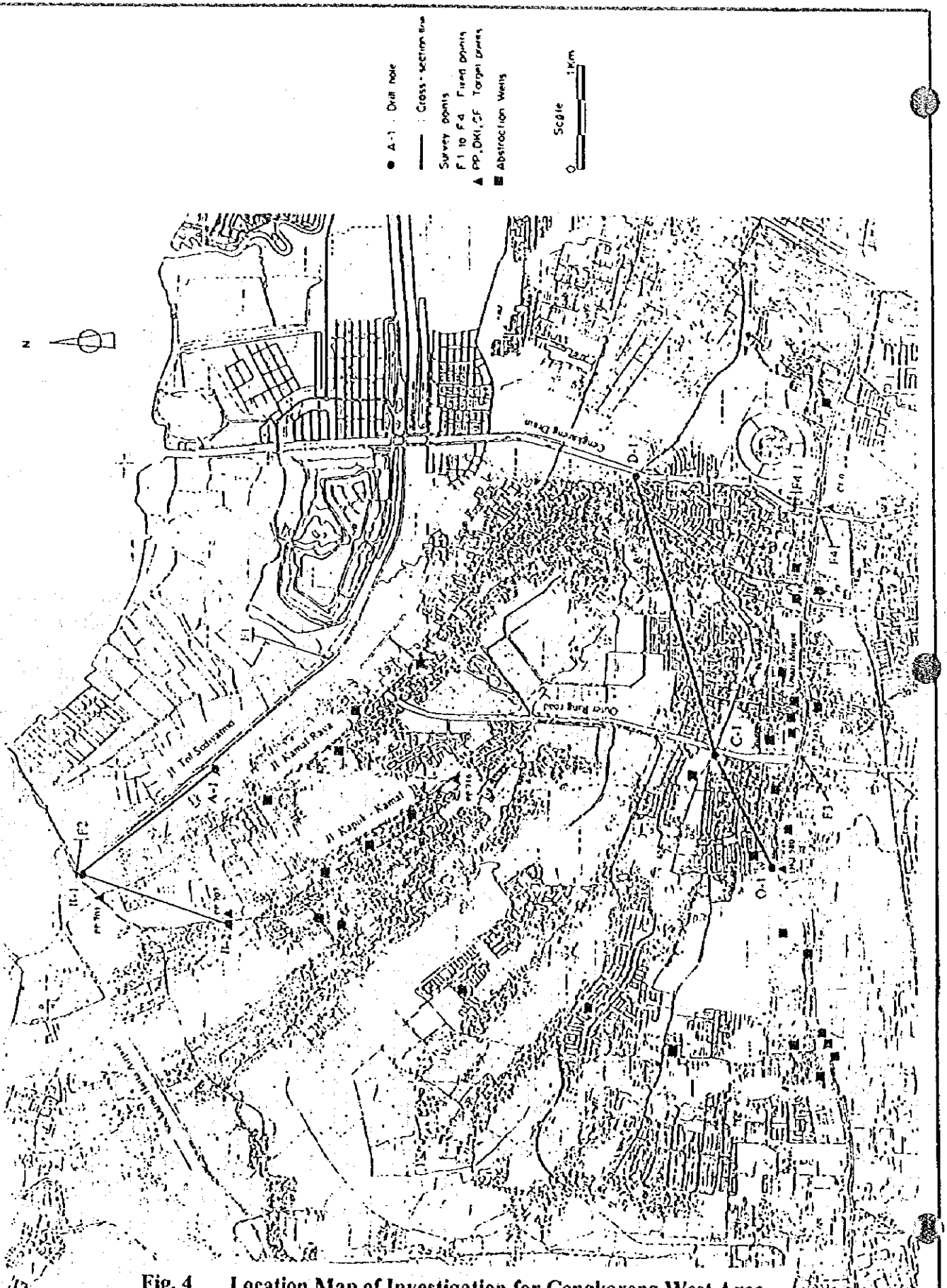


Fig. 4 Location Map of Investigation for Cengkareng West Area

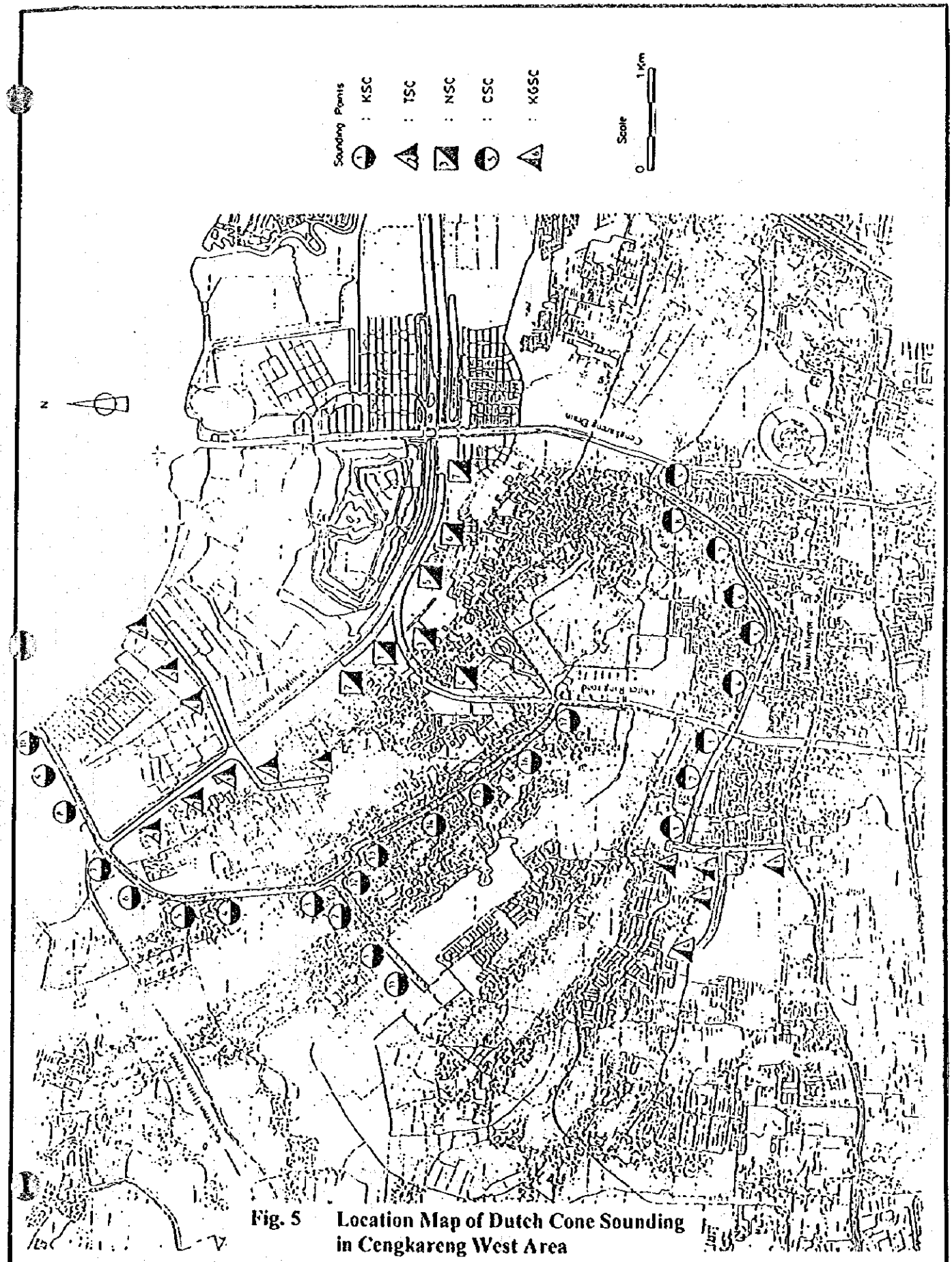


Fig. 5 Location Map of Dutch Cone Sounding in Cengkareng West Area

Fig. 6 Drill Log, Hole No. A - 1

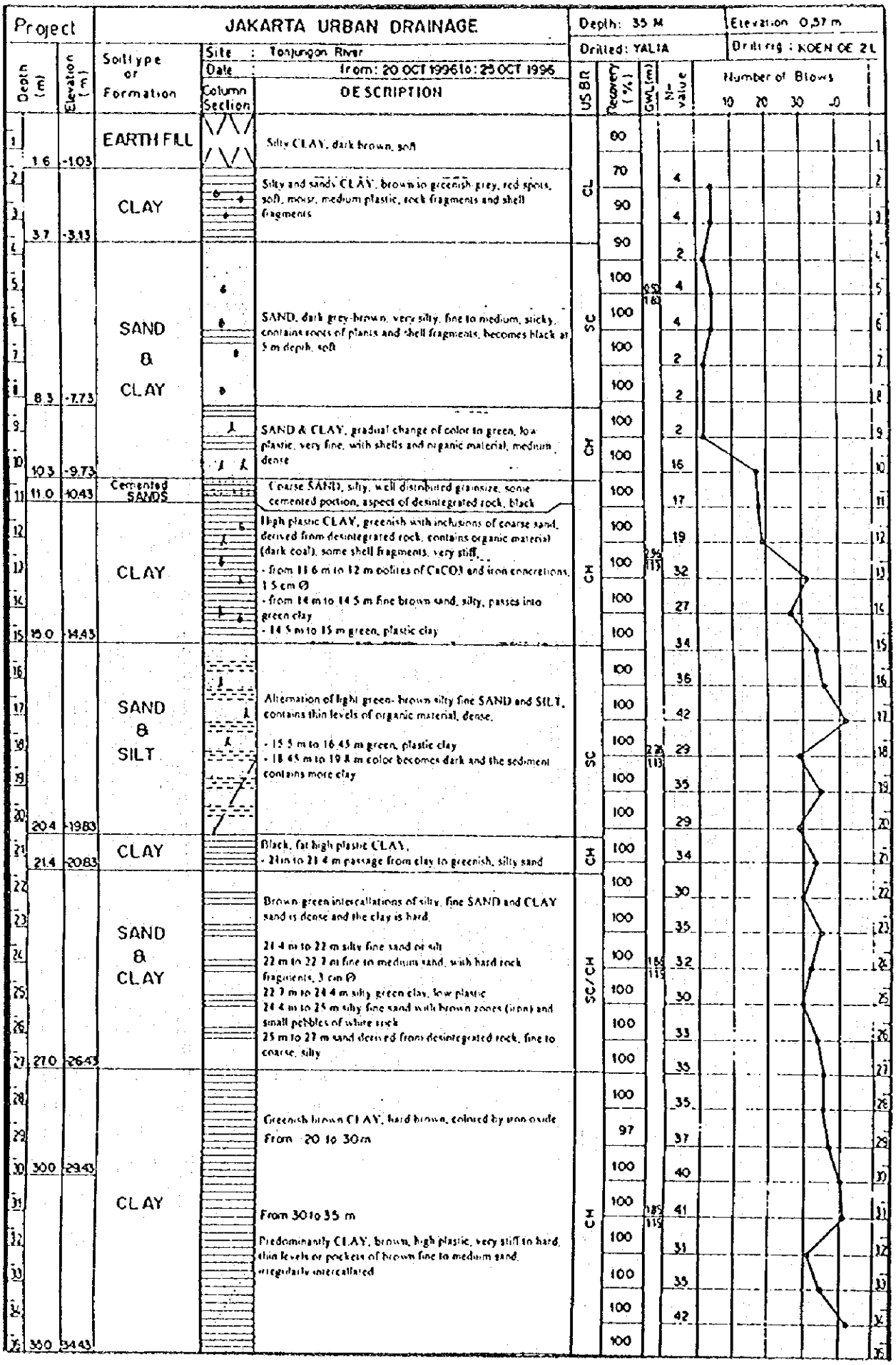


Fig. 7 Drill Log, Hole No. B - 1

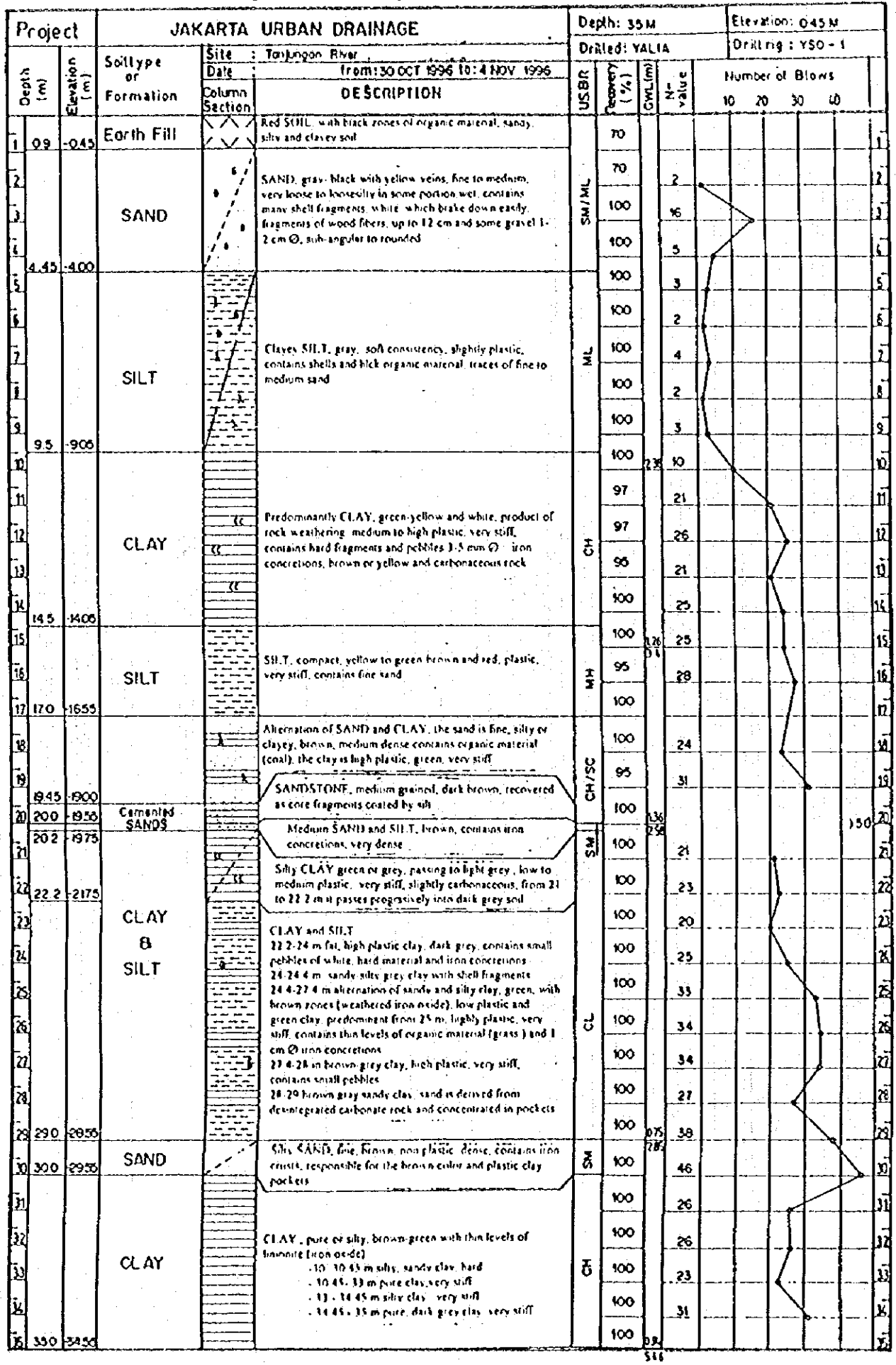


Fig. 8 Drill Log, Hole No. B - 2

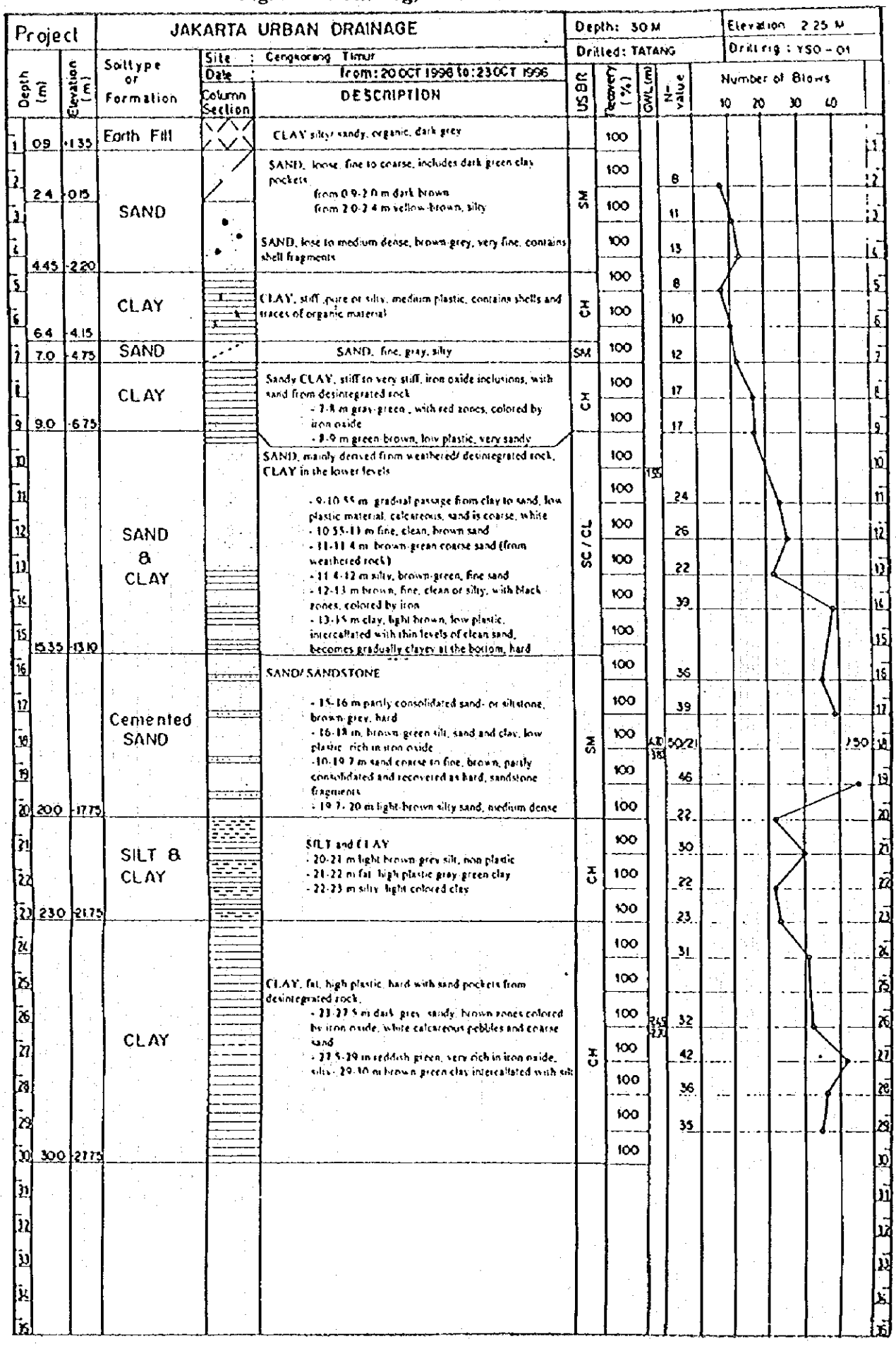


Fig. 9 Drill Log, Hole No. C - 1

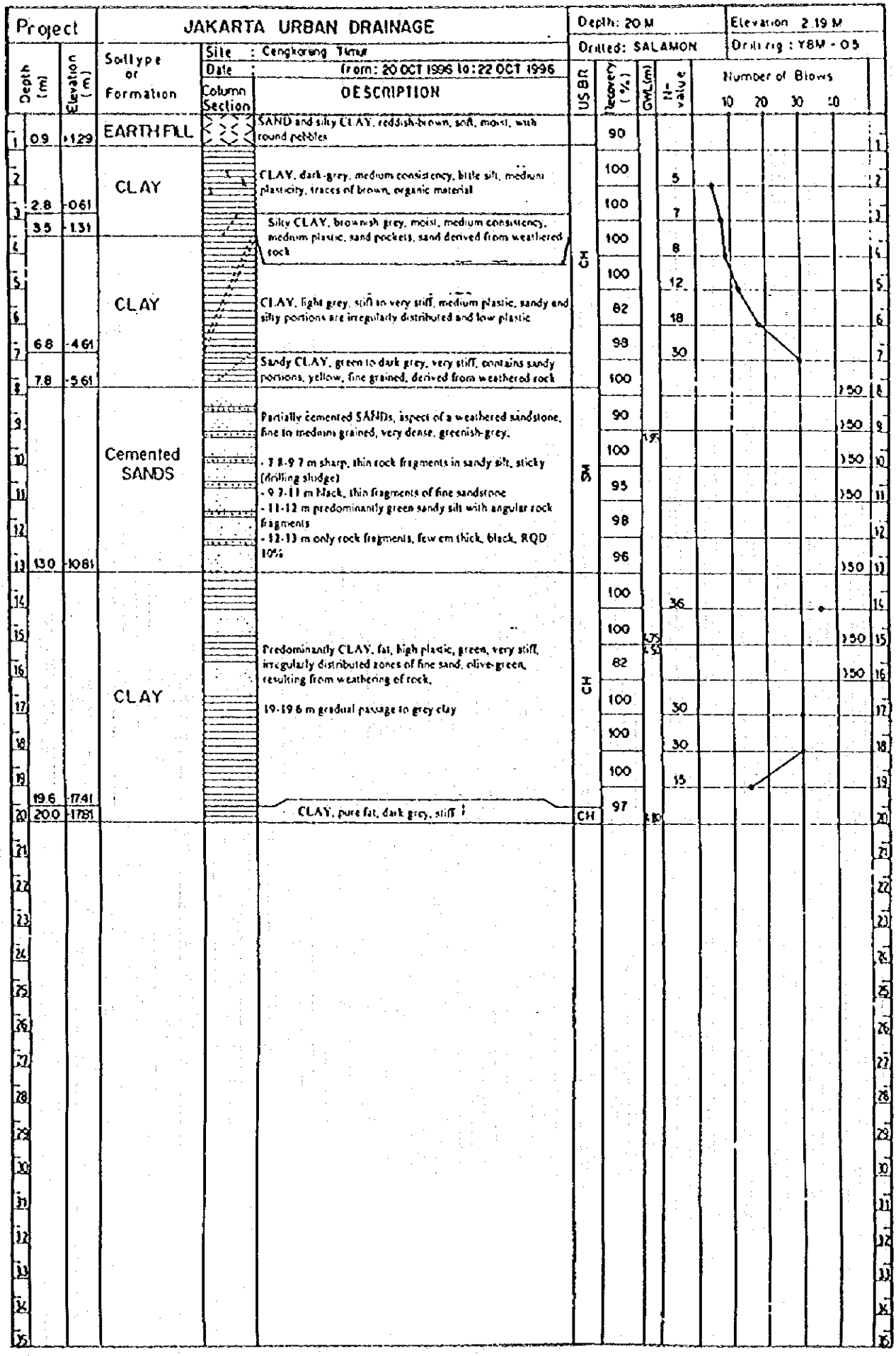


Fig. 10 Drill Log, Hole No. D - 1

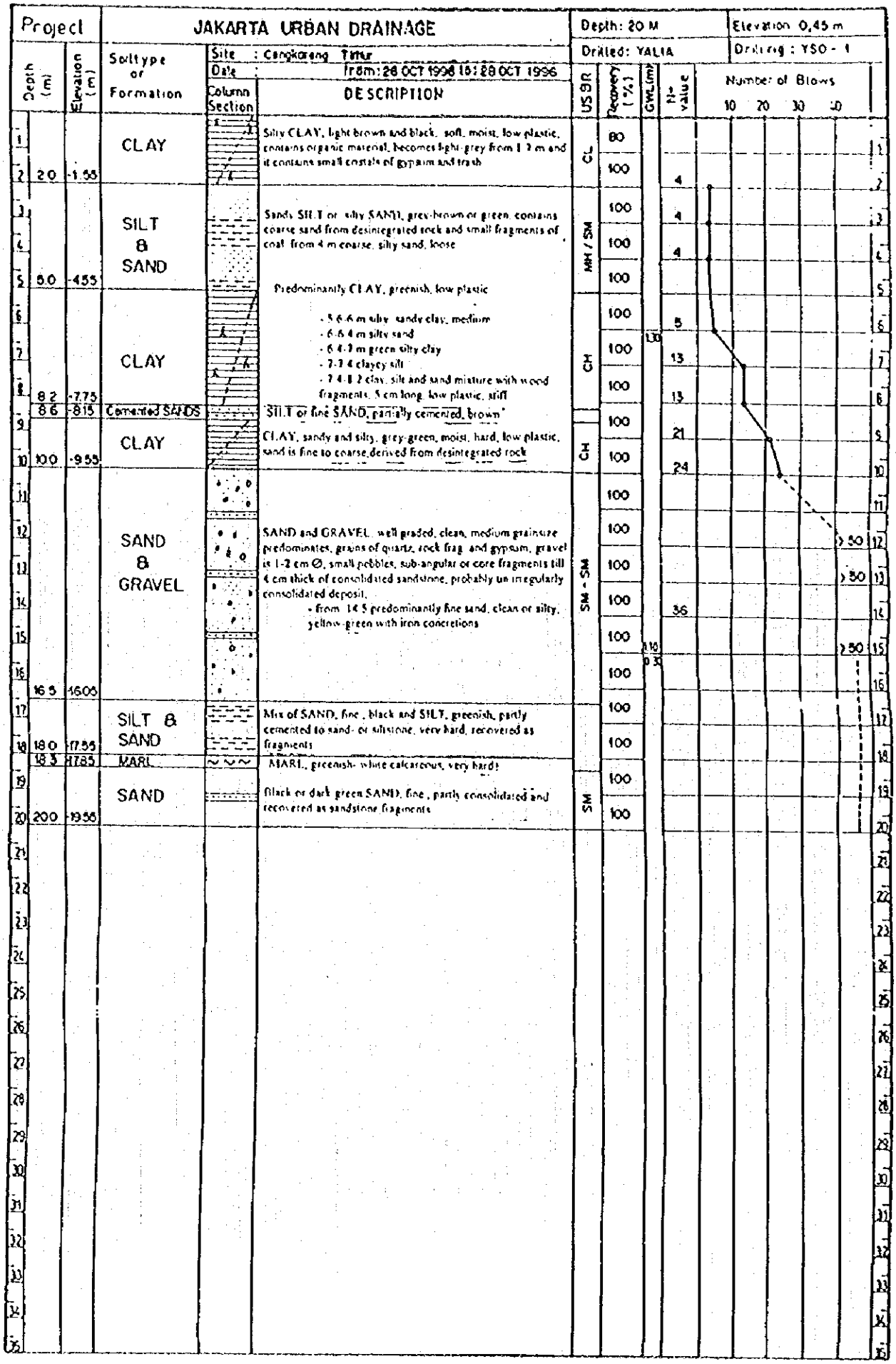
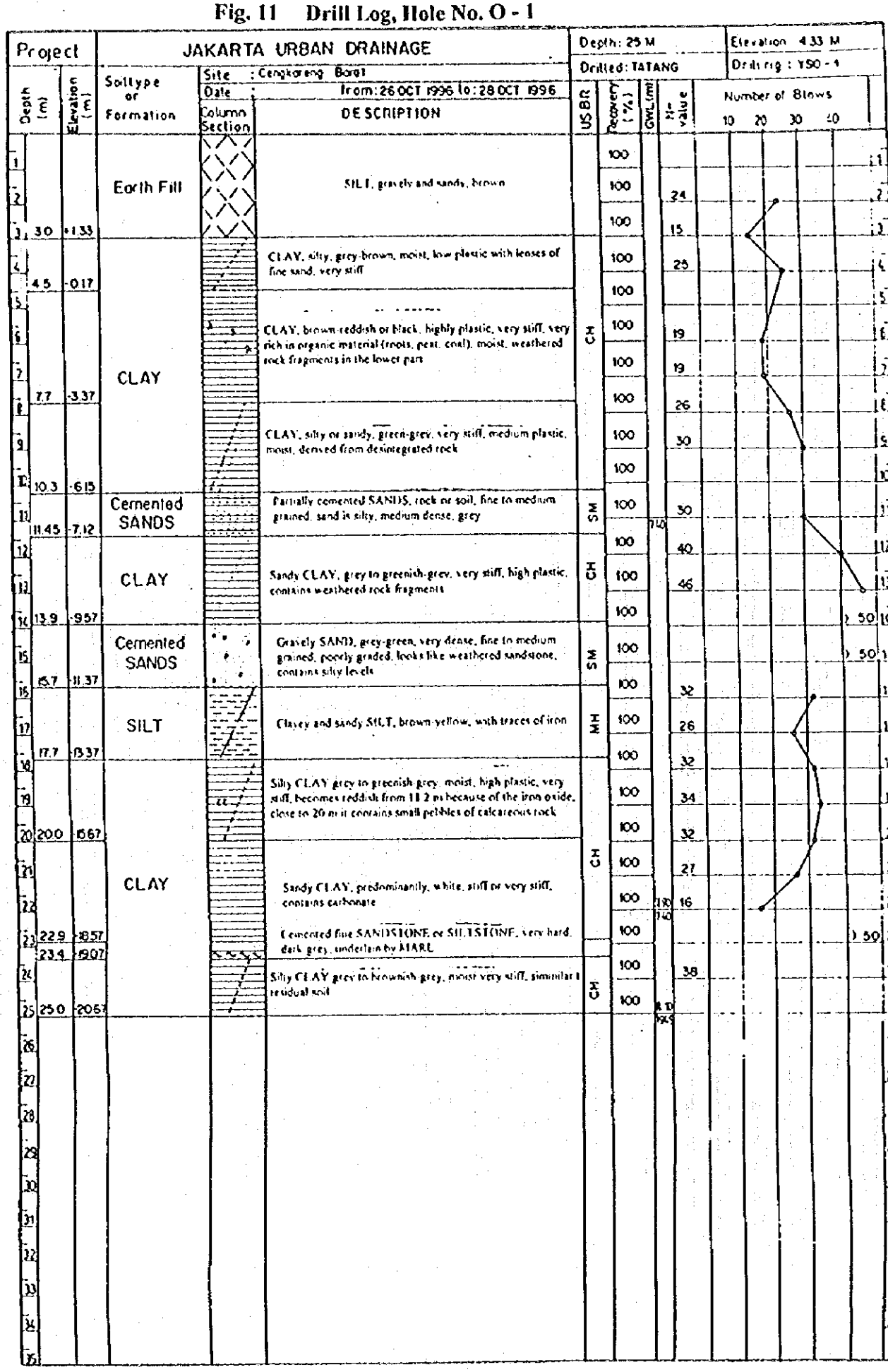


Fig. 11 Drill Log, Hole No. O - 1



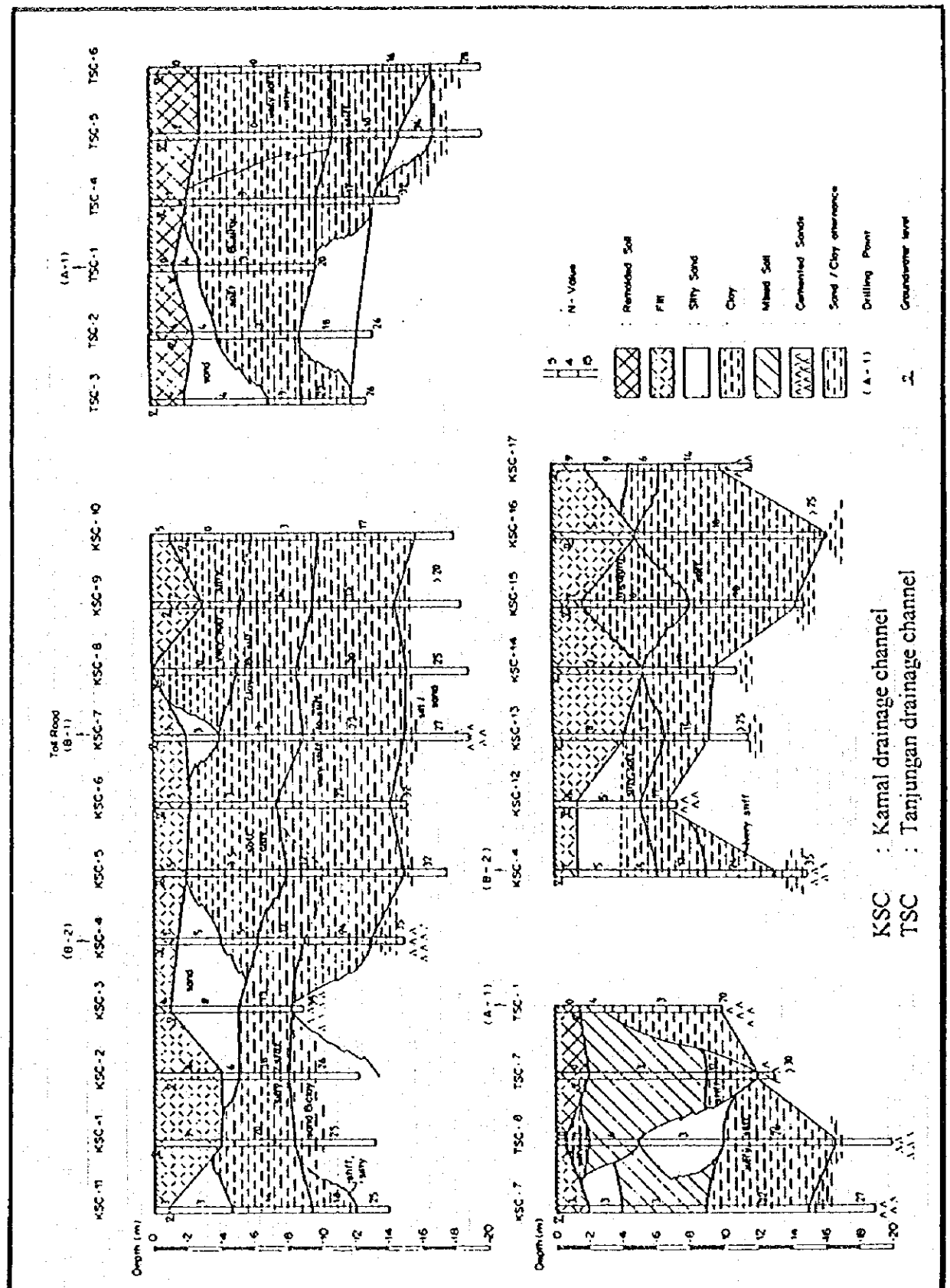


Fig. 12 Profiles of Dutch Cone Sounding for Kamal and Tanjungan Drainage Channels

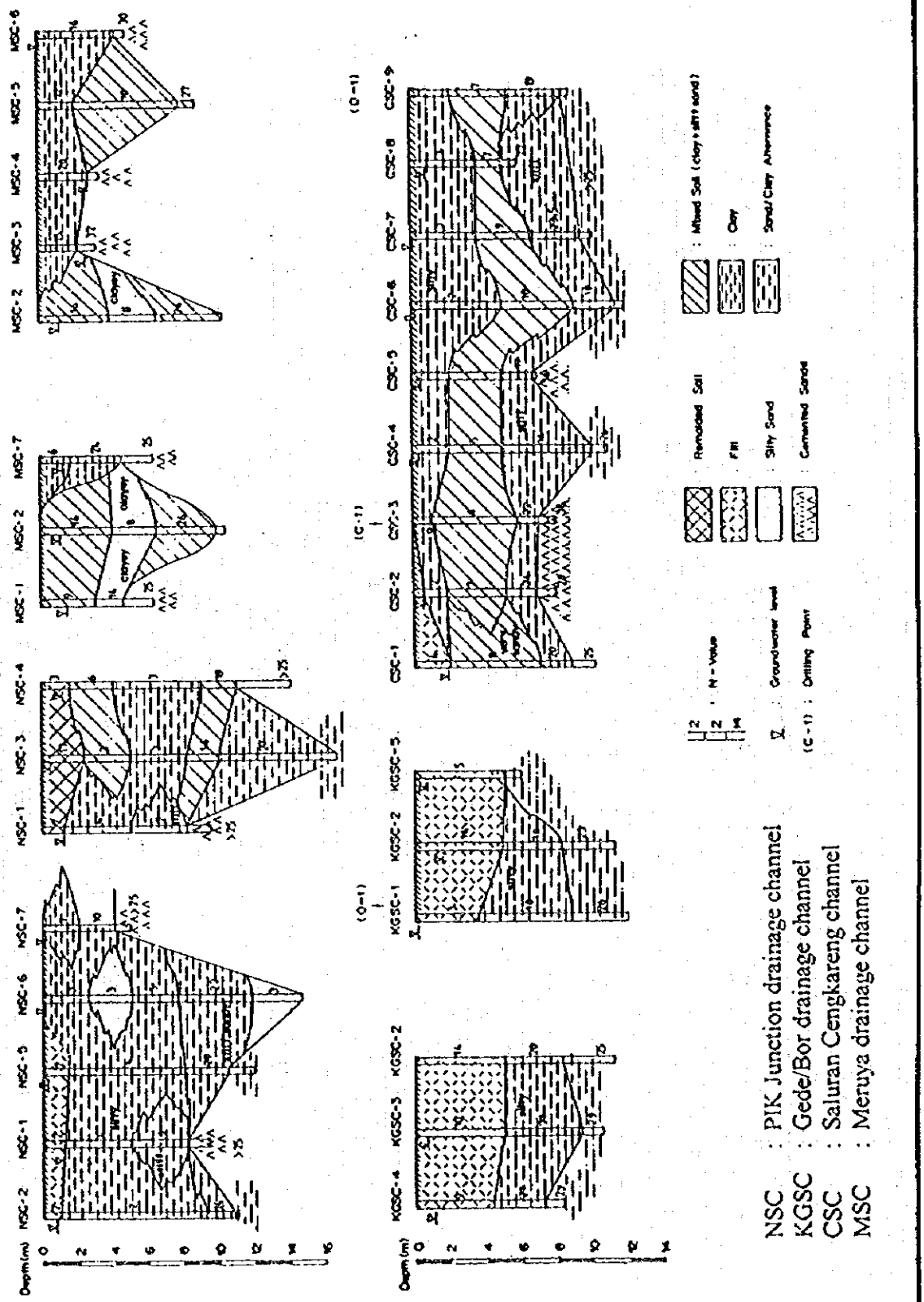


Fig. 13 Profiles of Dutch Cone Sounding for PIK Junction (New Channel), Gede/Bor, Saluran Cengkareng and Meruya Drainage Channels

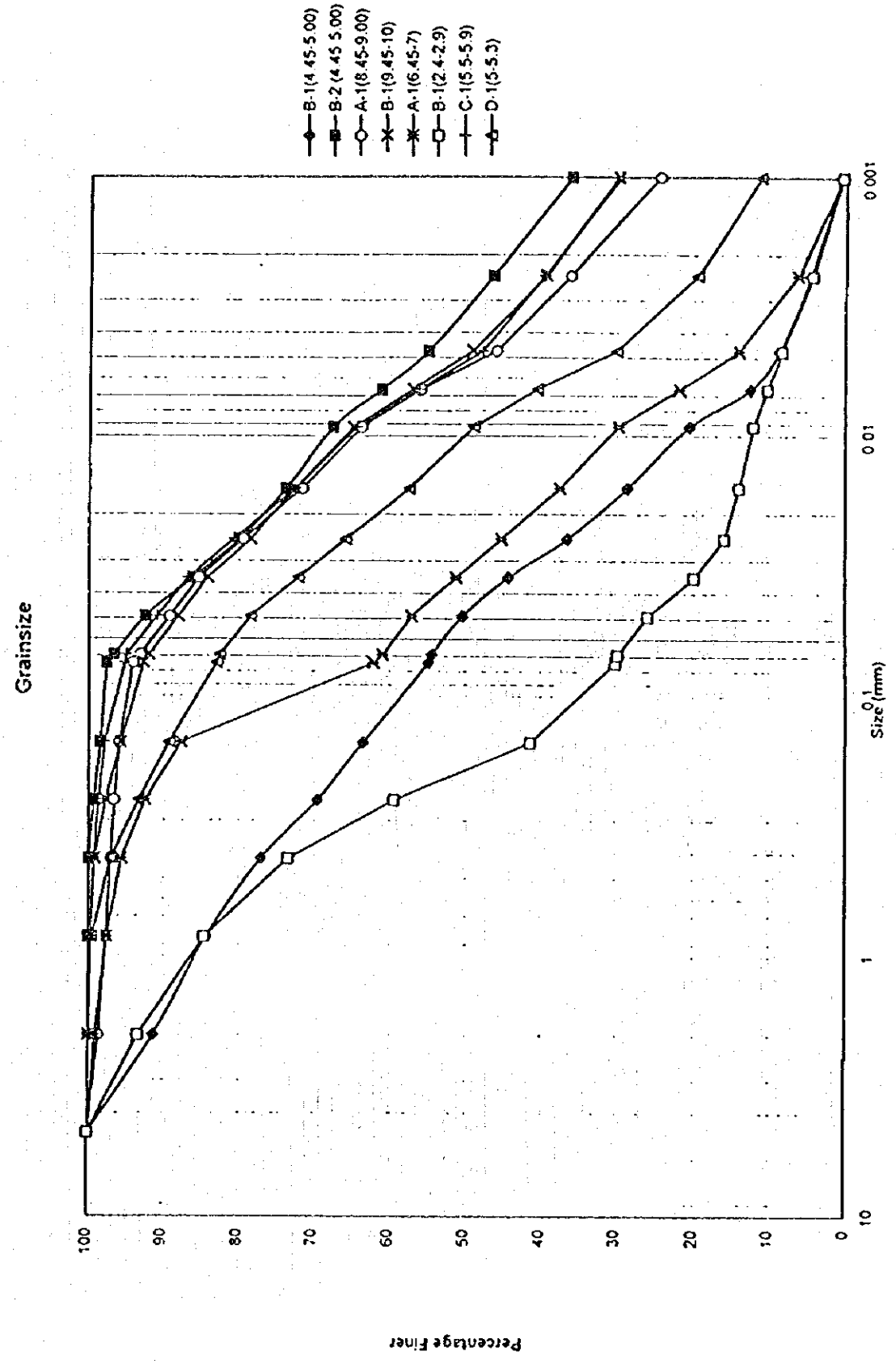


Fig. 14 Grain Size Curves, Shallow Soil

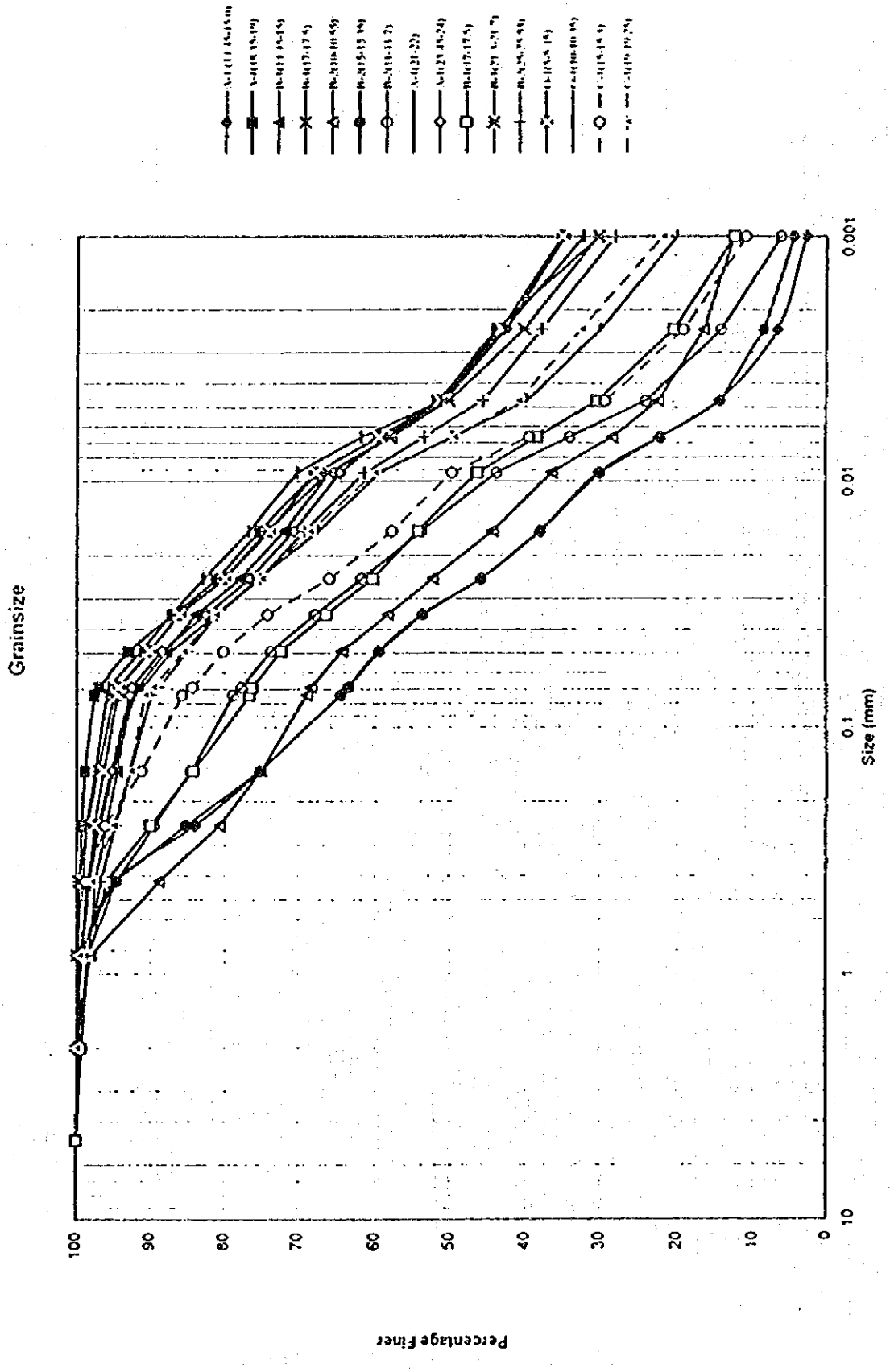


Fig. 15 Grain Size Curves, Deep Soil

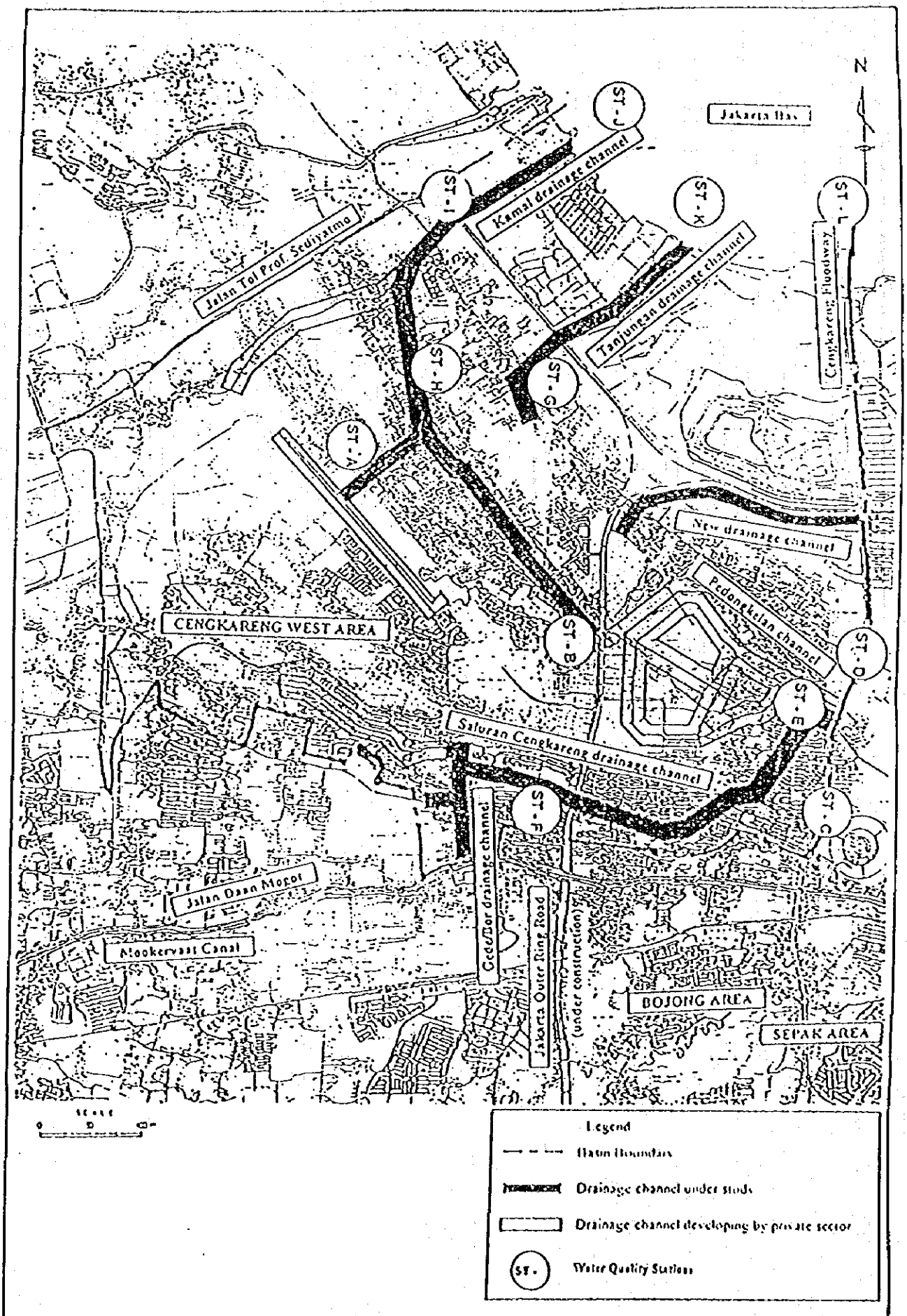


Fig. 16 Sampling Locations for Water Quality

PART II - TECHNICAL SPECIFICATIONS

VOLUME III PART II

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1. TEMPORARY WORKS : COFFERING WORKS, CARE OF WATER AND DEWATERING WORKS

1.1 General

The works under this Chapter consist of but not limited to :

- The required coffering works, care of water and dewatering works during the construction of drainage channel works including new channel, levee embankment, foundations of bridges and other drainage structures such as parapet walls, revetments, concrete stairs, sluiceways, drainage connection canals and cross drains, etc., relocation of drainage pipes and relocation and construction of approach roads,

- Stream diversion of the existing drainage channels and local drain ditches which flow into the channels in the areas covered by this Project and other miscellaneous diversion works,

- The required temporary road works such as detours and service roads, stagings and temporary bridges, etc., and

- The removal and demolishing of the existing structures as directed by the Engineer.

These works shall be performed in the manner as specified hereinafter or as directed by the Engineer.

The Contractor shall furnish all labour, tools, equipment, spares and materials required for construction, operation and maintenance of the temporary cofferings, diversions, care of water, dewatering and water disposal from the Works including temporary roads, stagings and bridges, removal and demolishing of the existing structures shown on the approved construction drawings or as directed by the Engineer.

After these temporary facilities have achieved their purpose, the same shall, with the approval of the Engineer, be removed from the places or leveled to give a sightly appearance as there were and shall, if considered necessary, be left at the places during the period of Operation and Maintenance unless otherwise directed by the Engineer.

No interruption or interference or injurious contamination with natural water flow and drains shall,

without the approval of the Engineer, be made by such works as coffering, diverting, caring of water, dewatering and water disposal from the Works which shall be operated by the Contractor during the specified period.

Other Temporary Works such as concrete plant, water supply system, electric power supply system, telecommunication system, buildings including the Contractor's site office and the Engineer's site office, etc., shall conform to the requirements stipulated in Chapter G8 in Vol. III, Part I - General Specifications.

1.2 Construction Plans and Detailed Drawings

The Contractor shall prepare in accordance with the provisions of Sub-clauses G4.2 in Vol. III, Part I - General Specifications, the construction plans and detailed drawings on the coffering, diverting, caring of water, dewatering and water disposal from the Works and shall submit to the Engineer for his approval at least thirty (30) days before the commencement of the Works.

The plan may be placed in operation upon approval, but the approval shall not relieve the Contractor from full responsibility for the adequacy of the care and diversion works.

The Contractor shall be totally responsible for furnishing labour, equipment and materials needed in regard to the diversion and care of the water during the period such diversion and care is necessary. The works pertaining to the diversion and care of the water shall be performed in accordance with the Contractor's plan and all applicable specifications, drawings, procedures, safety programmes, etc.

Some physical data which are presented in the tables in Chapter G2 in Vol. III, Part I - General Specifications, are only for general information to be used by the Contractor in regard to work volume and timing of his construction operations.

The Employer will, however, not be responsible for any deductions, conclusions or interpretations which may be made by the Contractor from this information and for any damage and delay of the Works attributed to the Contractor's design and drawings which may have been reviewed and approved by the Engineer.

The diversion arrangements are designed to safely pass the floods during the construction period. The Contractor shall fully prepare his water control and handling plan against occurrence of the floods and shall assume the responsibility for the stability of the cofferings and other structures up

to the water levels anticipated.

1.3 Temporary Coffering Works

1.3.1 Coffering works

The works under this Clause shall consist of supply of all labour, materials, and equipment and the performance of all works in respect to the coffering works for the construction of all the drainage structures, bridges and revetments, etc. covered under this Contract. The coffering works shall be designed in detail by the Contractor. Not less than thirty (30) days before commencement of any part of the coffering works, the Contractor shall submit to the Engineer detailed construction drawings, construction programme and method for his approval. The coffering for bridge foundations shall be carried out in the dry season.

Notwithstanding the approval of his plans by the Engineer, the Contractor shall remain fully responsible for a proper design, construction, maintenance and removal of the cofferings.

Coffering works shall be executed in accordance with the provisions in Chapter 2, Earthwork, of these Technical Specifications and in such a manner as shown on the approved construction drawings or as directed by the Engineer.

1.3.2 Steel sheet piling for coffering works

Where the steel sheet piles may be used for the coffering works, the furnishing and installation of all steel sheet piles including all beams, tie-rods with turnbuckles, ring joints, nuts and washers shall conform to the following :

(1) Material requirements

The Contractor shall submit the mill certificates of all the material for the Engineer's approval. Materials used for steel sheet piling shall conform to the requirements of the following applicable standards or approved equivalent standard :

Steel sheet piles	:	JIS A5528 SY295 or SNI 005-87-A
Walling materials,	:	JIS G 3102 or SNI 0722-89-A for material and channel steel, and
H-beam	:	JIS G 3192 or SNI 2295-88 for dimension

The steel sheet piles supplied shall be of U-shaped type, YSPF, W = 400 mm.

(2) Construction method

The Contractor shall not construct cofferdam or other obstacles totally stopping the stream water in the drainage channels in the Project area during construction.

Prior to driving the sheet piles, the Contractor shall provide and construct the access or temporary staging for piling equipment to the required alignment and properly set out and establish the centre of each pile position in accordance with the approved construction drawings or as directed by the Engineer.

The steel sheet piles shall be driven with a suitable equipment and in a manner as specified in Chapter 4, Piling Work, of these Technical Specifications. During driving sheet piles, the Contractor shall take the following records under supervision of the Engineer : tip depth of pile, number of blows per ten (10) cm for the last fifty (50) cm penetration and per fifty (50) cm for the last two (2) m penetration, accumulated number of blows and drop height of ram.

Walling and struts of steel sheet piles shall be made in such a manner as shown on the approved construction drawings or as directed by the Engineer on each row of piles.

1.4 Temporary Diversion Works

During the construction of sluiceways, drainage connection channels and relocation of drainage pipes and the likes, if necessary, the Contractor shall construct the temporary diversion channel not to damage the function of the existing drainage channels and pipes.

The temporary diversion channel as well as method of execution of the work shall be designed in detail by the Contractor and submitted to the Engineer for his approval. The diversion method shall be designed in such a way that none of the works are interrupted. The Contractor shall ensure that all diverted water shall be disposed without causing any damage or interference to the properties and operation of the Works.

The temporary diversion channel shall be maintained for the period directed by the Engineer. After the completion of the work for which it was constructed and under the direction of the Engineer, the temporary channel shall be backfilled with materials approved by the Engineer,

compacted and trimmed to the satisfaction of the Engineer.

The Contractor shall remain fully responsible for a proper design, construction, maintenance and removal of the temporary diversion channel and approval of his plans as well as method of execution of diversion channel by the Engineer shall in no way relieve the Contractor of his responsibility.

1.5 Dewatering During Construction

1.5.1 General

All excavated areas in open-air shall be drained-off. The required drainage facilities will consist of pits, trenches, pump sumps, pumps, pipe lines, generators and all auxiliary equipment and materials required for a safe and continuous operation of the dewatering system.

The Contractor shall furnish, install, maintain and operate all pumping and other equipment or methods which may be required for dewatering the various parts of the Works on the surface, in open-cut excavations and for keeping the foundation and other parts of the work free from water as necessary for constructing each part of the Works, and as may be required after any part of the Works is completed for such things as inspection, safety, installation by others or for any reason determined to be necessary by the Engineer.

The Contractor shall design temporary drainage facilities required for construction sites including for emergency in such a way that water originated from any source can be drained. The Contractor shall submit general design drawings, working procedures and time schedule to the Engineer for approval at least thirty (30) days prior to commencement of any works under this Clause. These documents shall state the quantity, type, capacity, arrangement and location of the required equipment. The Contractor shall submit, if so desired by the Engineer, detailed calculations carried out for arriving at the proposed dewatering system.

If the excavation should extend below the water table, the water table shall be lowered in advance of the excavation. The dewatering shall be accomplished in a manner that will maintain the stability of the slopes and the bottom of open-cut excavation, and will result in all construction operations being performed in the dry, where "in the dry" means that the construction operation will not be performed in an appreciable amount of free, running or standing water.

The Contractor shall pump all water from and shall keep the working areas free of water while

excavating, preparing foundations, placing embankment materials, backfilling, pouring concrete or as may otherwise be required for completing the Works. The Contractor shall be responsible for and shall repair at his own expense any damage to foundations, excavated slopes, structures or any other parts of the Works caused by water including flooding.

1.5.2 Construction method

The Contractor shall supply all labour, materials, equipment and installations for the temporary drainage facilities. The Contractor shall carry out all the works necessary for the construction and installation required for connecting, diverting and evacuating by free-flow or by pumping of all the water encountered.

If the Engineer judges that the temporary drainage facilities are not enough, he may order the Contractor to provide additional facilities.

The Contractor shall maintain and regularly clean all dewatering equipment and accessories during the construction time on all construction works and shall remain fully responsible for proper disposal of water at all times.

1.5.3 Starting and duration of water drainage

The duration of water drainage will be determined according to the construction time schedule.

Pump operation shall not be removed or altered in any way without the written permission of the Engineer. The pumps and water drainage facilities shall be kept in proper working conditions without extra payment, until the Engineer notifies the time of removal.

The removal shall be made in a manner that will have a sightly appearance and will nor interfere with the operation or usefulness of the Works. In such case, the removal and disposal of the structures including incidental repairs and adjustments of remaining structures shall be performed by the Contractor at no extra cost to the Employer.

1.6 Temporary Road and Bridge Works

1.6.1 General

The Contractor shall furnish, maintain, and remove on completion of the works for which they are

required, all temporary road works such as detours and service roads, stagings and temporary crossings or bridges over streams or unstable ground, and he shall make them suitable in every respect for carrying all Construction Plant and Equipment required for the Works, for providing access and traffic for himself or others, or for any other purposes.

Such temporary roads and bridges shall be constructed to the satisfaction of the Engineer, but the Contractor shall nevertheless be responsible for any damage done to or caused by such temporary road works.

1.6.2 Construction requirements

Before constructing temporary roads, the Contractor shall make all necessary arrangements, if required, with the public authorities or landowners concerned, for the use of the land and he shall obtain the approval of the Engineer. Such approval will not, however, relieve the Contractor of his responsibility. Upon completion of the Works, the Contractor shall clean up and restore the land to the satisfaction of the Engineer or the landowner concerned.

Where, in the opinion of the Engineer, a detour is not feasible or a sufficient area is not obtained for detour, construction shall be undertaken only over half of the full width and shall be permitted under the approval of the related authorities. The length of such half-width construction shall be kept as short as possible.

Stagings and temporary bridges shall be designed for D-Loading (Muatan-D) specified in Indonesian Standard, provided that allowable stress of fifty (50) percent can be increased for temporary load and force during construction.

1.7 Removal and Demolishing of Existing Structures

Prior to the execution of construction of the new channels, levee, revetments and the new sluiceways and bridges as well as extension of the existing sluiceways, etc., the Contractor, where directed, shall remove or demolish the existing structures such as channel revetment, culverts, bridges, levees, parapet walls and other related structures stated in the Bill of Quantities in the respective items of work or as directed by the Engineer excluding the following facilities :

(1) Water supply pipe line under PDAM,
(2) Electrical cable, pole, transmission and supply line under P.T. PLN,
(3) Telephone cable under P.T. TELKOM,

(4) Public utilities,
(5) Private utilities, and
(6) Existing irrigation facilities, if any, under DGWRD.

The Contractor shall submit the construction drawings, removal and demolishing plan, and time schedule to any public authority, company or person belonging to, controlling or concerning the above mentioned existing facilities, and negotiate with them in respect of various matters which may occur in the execution of the removal and demolishing works. The Contractor shall confirm in writing to the Engineer that he has obtained the consent of the concerned authority before taking up such demolition and removal. The Contractor shall fully indemnify the Employer against any claim, action, expense, loss, damage or injury incurred in this respect.

1.8 Measurement and Payment

1.8.1 Temporary coffering works, care of water including dewatering

The payment for temporary coffering works, care of water including dewatering stated in the respective items of works in the Bill of Quantities will be made at the lump sum prices tendered therefor which shall include the full compensation for the cost of construction, maintenance, removal of coffering work, furnishing materials, labour and equipment for coffering work including care of water and dewatering during construction and channel diversion works, if any. But those which are not itemized in the Bill of Quantities shall be deemed to be included in the cost of the respective works for which the coffering works is required.

Payment for the lump sum price shall be made upon the basis as follows:

(i) Eighty (80) percent of the lump sum price will be paid after completion of dry up in the coffering works duly certified by the Engineer,

(ii) The remaining twenty (20) percent of the lump sum price will be paid after completion of removal of the coffering works and the site restored to the original state duly certified by the Engineer.

No separate payment will be made for control and removal of water from the various foundations, all types of excavation and when placing embankment or backfill material during construction. All cost incurred from the works for control and removal of water shall be deemed to be included in the appropriate unit or lump sum prices for the respective work items for excavation, backfilling,

embankment, etc. tendered therefor in the Bill of Quantities.

1.8.2 Temporary road and bridge works

The payment for temporary road and bridge works will be made at the lump sum price tendered for Item No. 0/01 in the Bill of Quantities which shall include the full compensation for the cost of construction, maintenance and removal of temporary roads, stagings and bridges including furnishing materials, labour and equipment.

Payment for the lump sum price will be made upon the basis as follows :

(i) Eighty (80) percent of the lump sum price will be paid after completion of the temporary roads, stagings and/or bridges duly certified by the Engineer,

(ii) The remaining twenty (20) percent will be paid after completion of removal of the structures above and site restored to original state duly certified by the Engineer.

1.8.3 Removal and demolishing of existing structures

The payment for removal and demolishing of the existing structures stated in the respective items of works in the Bill of Quantities will be made at the lump sum prices tendered therefor in accordance with the Drawings, Specifications and/or as directed by the Engineer and duly certified by the Engineer in the Bi-Monthly Statement of Account.

The lump sum price shall include the full compensation for furnishing all the equipment and labour for removal and demolishing of the existing structures including any incidental works such as preparation and negotiation with the owners, authorities, etc. in accordance with the Specifications.