

*TABLES*

*XIV CONSTRUCTION PLAN*



**Table XIV.1.1 NATIONAL HOLIDAYS**

NO.	DATE	NAME OF HOLIDAY
1	1 -Jan	New Year
2	10 -Jan	Isra' Mi'raj Day
3	13 -Mar	Hindu Day
4	14 -Mar	Fasting Hariraya
5	15 -Mar	Fasting Hariraya
6	1 -Apr	Good Friday
7	12 -May	Kenaikan Isa Almasih
8	21 -May	Haji Day
9	25 -May	Vesak Day
10	11 -Jun	Moslem New Year
11	17 -Aug	Independence Day
12	20 -Aug	Birth of Prophet Mohammed
13	25 -Dec	Christmas Day
14	30 -Dec	Isra' Mi'raj Day

(As of 1994)

Table XIV.1.2 (1/7) MONTHLY RAINY DAY (STATION NO. 19014)

		Unit : day												
Year	Rainfall	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1977	0-4 mm	18	23	22	16	27	24	28	24	26	28	12	22	270
	5-9 mm	4	1	4	2	0	1	3	0	0	0	2	2	19
	10-14 mm	2	0	1	3	1	2	0	2	1	2	7	0	21
	15-29 mm	5	1	3	4	0	2	0	4	3	0	3	2	27
	>30 mm	2	3	1	5	3	1	0	1	0	1	6	5	28
1978	0-4 mm	18	24	21	18	23	28	27	29	24	18	23	12	265
	5-9 mm	3	0	2	4	3	0	1	1	1	3	2	5	25
	10-14 mm	5	2	3	4	3	1	0	0	0	4	2	2	26
	15-29 mm	2	2	3	3	1	1	3	1	3	1	0	5	25
	>30 mm	3	0	2	1	1	0	0	0	2	5	3	7	24
1979	0-4 mm	19	20	22	17	28	20	26	26	23	20	8	20	249
	5-9 mm	4	3	4	2	0	3	2	1	4	1	6	3	33
	10-14 mm	3	2	1	2	0	2	1	3	0	5	3	1	23
	15-29 mm	4	2	3	5	2	3	1	0	1	4	10	4	39
	>30 mm	1	1	1	4	1	2	1	1	2	1	3	3	21
1980	0-4 mm	28	22	21	22	20	24	25	26	21	25	17	26	277
	5-9 mm	0	3	2	2	2	2	1	1	4	3	5	3	28
	10-14 mm	0	2	3	2	0	1	1	2	2	2	1	0	16
	15-29 mm	1	0	2	1	5	3	2	2	2	1	1	1	21
	>30 mm	2	2	3	3	4	0	2	0	1	0	6	1	24
1981	0-4 mm	25	21	20	14	18	29	27	29	17	15	25	26	266
	5-9 mm	2	1	1	3	3	0	0	2	5	2	2	3	24
	10-14 mm	2	0	2	1	1	0	0	0	4	5	0	2	17
	15-29 mm	0	5	4	5	5	0	0	0	2	6	3	0	30
	>30 mm	2	1	4	7	4	1	4	0	2	3	0	0	28
1982	0-4 mm	19	19	19	17	21	23	30	24	24	21	19	23	259
	5-9 mm	4	1	6	4	1	0	1	3	2	4	3	3	32
	10-14 mm	2	2	1	3	3	3	0	1	2	2	3	3	25
	15-29 mm	3	4	1	2	2	1	0	3	1	2	2	2	23
	>30 mm	3	2	4	4	4	3	0	0	1	2	3	0	26
1983	0-4 mm	16	8	23	22	23	25	23	27	21	24	26	22	260
	5-9 mm	4	4	3	4	4	1	4	1	4	2	2	4	37
	10-14 mm	4	5	1	1	0	1	0	0	1	2	1	0	16
	15-29 mm	4	8	2	1	3	3	3	1	3	1	1	4	34
	>30 mm	3	3	2	2	1	0	1	2	1	2	0	1	18
1984	0-4 mm	19	25	18	18	21	23	21	28	24	25	17	23	262
	5-9 mm	3	2	3	4	2	3	4	1	4	3	3	1	33
	10-14 mm	1	0	5	1	1	0	0	1	0	2	4	3	18
	15-29 mm	6	1	2	4	3	3	3	1	2	1	5	1	32
	>30 mm	2	1	3	3	4	1	3	0	0	0	1	3	21
1985	0-4 mm	22	20	19	23	20	27	25	22	19	22	19	19	257
	5-9 mm	5	3	6	2	4	2	4	3	3	1	5	5	43
	10-14 mm	1	1	3	2	1	1	0	3	3	2	1	3	21
	15-29 mm	3	3	3	2	4	0	2	2	2	2	1	4	28
	>30 mm	0	1	0	1	2	0	0	1	3	4	4	0	16
1986	0-4 mm	19	22	12	18	27	27	24	28	21	17	21	12	248
	5-9 mm	3	4	5	5	2	0	2	0	5	5	1	7	39
	10-14 mm	1	0	3	2	0	0	1	1	3	1	4	2	18
	15-29 mm	3	0	5	5	1	1	1	1	1	4	4	7	33
	>30 mm	5	2	6	0	1	2	3	1	0	4	0	3	27
Ave	0-4 mm	20.3	20.4	19.7	18.5	22.8	25.0	25.6	26.3	22.0	21.5	18.7	20.5	261.3
	5-9 mm	3.2	2.2	3.6	3.2	2.1	1.2	2.2	1.3	3.2	2.4	3.1	3.6	31.3
	10-14 mm	2.1	1.4	2.3	2.1	1.0	1.1	0.3	1.3	1.6	2.7	2.6	1.6	20.1
	15-29 mm	3.1	2.6	2.8	3.2	2.6	1.7	1.5	1.5	2.0	2.2	3.0	3.0	29.2
	>30 mm	2.3	1.6	2.6	3.0	2.5	1.0	1.4	0.6	1.2	2.2	2.6	2.3	23.3

Table XIV.1.2 (2/7) MONTHLY RAINY DAY (STATION NO. 19015)

														Unit:day
Year	Rainfall	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1983	0-4 mm	17	22	26	19	20	25	25	26	25	24	24	23	276
	5-9 mm	8	1	1	2	2	2	4	2	1	4	2	2	31
	10-14 mm	1	2	2	2	3	0	0	1	0	0	2	1	14
	15-29 mm	3	2	2	2	3	2	1	1	1	0	2	4	23
	>30 mm	2	1	0	5	3	1	1	1	3	3	0	1	21
1984	0-4 mm	16	20	23	18	14	24	24	29	24	26	12	24	254
	5-9 mm	0	2	1	4	5	2	4	0	2	3	5	3	31
	10-14 mm	5	2	2	0	0	0	1	1	1	0	7	1	20
	15-29 mm	5	2	4	7	8	3	0	1	1	1	4	0	36
	>30 mm	5	3	1	1	4	1	2	0	2	1	2	3	25
1985	0-4 mm	22	21	18	24	24	28	25	26	17	24	22	23	274
	5-9 mm	3	3	6	2	2	1	2	2	4	2	1	4	32
	10-14 mm	1	3	5	2	2	1	0	2	1	1	4	1	23
	15-29 mm	3	0	2	1	1	0	3	1	2	3	2	2	20
	>30 mm	2	1	0	1	2	0	1	0	6	1	1	1	16
1986	0-4 mm	21	23	11	19	21	27	28	27	20	22	25	21	265
	5-9 mm	1	3	7	5	6	1	2	2	3	4	2	1	37
	10-14 mm	3	1	4	2	0	1	1	1	2	3	2	5	25
	15-29 mm	1	1	2	3	3	1	0	1	2	1	0	3	18
	>30 mm	5	0	7	1	1	0	0	0	3	1	1	1	20
1987	0-4 mm	21	25	16	16	15	26	31	25	25	25	23	25	273
	5-9 mm	3	1	1	5	5	2	0	2	5	3	5	1	33
	10-14 mm	1	1	4	1	3	1	0	1	0	1	0	0	13
	15-29 mm	3	0	8	5	4	1	0	2	0	1	2	5	31
	>30 mm	3	1	2	3	4	0	0	1	0	1	0	0	15
1988	0-4 mm	12	18	12	14	18	24	23	14	9	25	17	21	207
	5-9 mm	6	3	2	5	6	4	5	4	8	3	8	3	57
	10-14 mm	4	3	1	7	3	0	2	4	7	2	3	3	39
	15-29 mm	5	5	12	4	4	2	1	6	2	1	2	3	47
	>30 mm	4	0	4	0	0	0	0	3	4	0	0	1	16
1989	0-4 mm	15	17	21	19	24	27	27	27	23	21	14	17	252
	5-9 mm	6	3	7	6	4	1	3	3	1	4	3	4	45
	10-14 mm	1	1	1	3	0	1	0	0	1	1	4	2	15
	15-29 mm	6	7	1	2	3	1	1	0	3	4	6	6	40
	>30 mm	3	0	1	0	0	0	0	1	2	1	3	2	13
1990	0-4 mm	25	12	22	25	25	25	24	31	25	17	18	17	266
	5-9 mm	1	2	3	3	0	1	2	0	3	5	6	6	32
	10-14 mm	1	3	2	0	2	1	4	0	1	4	0	2	20
	15-29 mm	3	10	1	2	2	2	0	0	1	4	3	4	32
	>30 mm	1	1	3	0	2	1	1	0	0	1	3	2	15
1991	0-4 mm	14	23	14	20	19	28	27	26	27	23	19	9	249
	5-9 mm	3	1	6	6	6	0	1	2	0	3	4	12	44
	10-14 mm	1	1	2	1	2	0	0	1	2	2	3	4	19
	15-29 mm	9	2	7	1	3	1	2	1	0	2	2	4	34
	>30 mm	4	1	2	2	1	1	1	1	1	1	2	2	19
1992	0-4 mm	22	23	18	20	21	28	17	28	22	27	16	27	269
	5-9 mm	3	3	6	5	2	2	6	3	2	2	3	1	38
	10-14 mm	0	2	4	1	2	0	4	0	3	1	2	0	19
	15-29 mm	5	1	2	3	3	0	3	0	2	0	4	2	25
	>30 mm	1	0	1	1	3	0	1	0	1	1	5	1	15
Ave	0-4 mm	18.5	20.4	18.1	19.4	20.1	26.2	25.1	25.9	21.7	23.4	19.0	20.7	258.5
	5-9 mm	3.4	2.2	4.0	4.3	3.8	1.6	2.9	2.0	2.9	3.3	3.9	3.7	38.0
	10-14 mm	1.8	1.9	2.7	1.9	1.7	0.5	1.2	1.1	1.8	1.5	2.7	1.9	20.7
	15-29 mm	4.3	3.0	4.1	3.0	3.4	1.3	1.1	1.3	1.4	1.7	2.7	3.3	30.6
	>30 mm	3.0	0.8	2.1	1.4	2.0	0.4	0.7	0.7	2.2	1.1	1.7	1.4	17.5

Table XIV.1.2 (3/7) MONTHLY RAINY DAY (STATION NO. 20001)

		Unit:day												
Year	Rainfall	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1983	0-4 mm	23	24	26	18	27	27	24	27	21	22	22	18	279
	5-9 mm	3	1	1	3	1	0	2	1	0	4	2	4	22
	10-14 mm	1	2	1	4	0	3	2	1	3	2	1	3	23
	15-29 mm	3	0	1	4	2	0	1	1	3	1	1	3	20
	>30 mm	1	1	2	1	1	0	2	1	3	2	4	3	21
1984	0-4 mm	22	19	21	22	24	23	27	27	20	25	21	17	268
	5-9 mm	6	2	3	2	2	2	1	0	2	0	5	3	28
	10-14 mm	2	2	2	3	0	1	1	1	3	2	2	3	22
	15-29 mm	1	5	2	1	1	0	0	1	3	1	1	6	22
	>30 mm	0	1	3	2	4	4	2	2	2	3	1	2	26
1985	0-4 mm	21	22	20	26	19	28	30	28	25	17	20	22	278
	5-9 mm	2	2	2	0	7	2	0	1	2	2	0	2	22
	10-14 mm	4	0	4	1	1	0	0	0	2	1	4	0	17
	15-29 mm	2	3	4	1	1	0	0	1	1	6	3	3	25
	>30 mm	2	1	1	2	3	0	1	1	0	5	3	4	23
1986	0-4 mm	17	24	17	20	26	26	23	30	24	16	16	18	257
	5-9 mm	3	1	4	3	0	0	2	0	3	3	3	2	24
	10-14 mm	3	0	1	3	2	2	2	0	0	3	2	3	21
	15-29 mm	6	0	5	4	1	1	3	1	1	3	3	4	32
	>30 mm	2	3	4	0	2	1	1	0	2	6	6	4	31
1987	0-4 mm	21	24	23	21	25	24	25	26	20	17	23	16	265
	5-9 mm	5	0	1	2	2	2	1	3	5	2	2	6	31
	10-14 mm	1	1	2	2	0	0	3	1	1	5	1	2	19
	15-29 mm	4	2	3	2	1	3	2	0	0	4	2	4	27
	>30 mm	0	1	2	3	3	1	0	1	4	3	2	3	23
1988	0-4 mm	21	21	18	18	23	23	26	18	19	23	21	15	246
	5-9 mm	4	2	3	6	2	1	1	4	4	5	1	4	37
	10-14 mm	2	1	3	1	2	0	1	3	2	1	4	2	22
	15-29 mm	0	2	6	4	3	3	2	3	5	1	2	6	37
	>30 mm	4	3	1	1	1	3	1	3	0	1	2	4	24
1989	0-4 mm	16	19	25	23	22	27	25	24	21	18	14	18	252
	5-9 mm	3	2	3	1	2	0	1	3	5	4	9	4	37
	10-14 mm	3	4	2	3	4	0	2	1	3	1	2	2	27
	15-29 mm	2	2	0	3	3	1	1	3	0	4	4	3	26
	>30 mm	7	1	1	0	0	2	2	0	1	4	1	4	23
1990	0-4 mm	25	19	22	19	22	27	25	26	22	19	14	20	260
	5-9 mm	3	4	4	1	1	0	3	2	5	3	6	2	34
	10-14 mm	0	0	3	4	3	0	0	2	1	1	1	2	17
	15-29 mm	2	1	2	5	4	0	0	0	2	6	4	4	30
	>30 mm	1	4	0	1	1	3	3	1	0	2	5	3	24
1991	0-4 mm	19	26	17	19	26	23	30	25	25	22	17	17	266
	5-9 mm	5	1	0	3	1	4	0	2	2	3	2	4	27
	10-14 mm	2	0	3	4	1	2	0	1	0	1	4	2	20
	15-29 mm	3	1	2	2	1	1	0	1	3	1	4	5	24
	>30 mm	2	0	9	2	2	0	1	2	0	4	3	3	28
1992	0-4 mm	21	15	21	29	18	25	23	25	19	18	18	19	251
	5-9 mm	3	5	4	0	5	2	2	4	3	3	4	6	41
	10-14 mm	0	2	2	0	5	2	2	1	5	3	1	2	25
	15-29 mm	3	5	2	0	3	1	1	1	2	6	3	2	29
	>30 mm	4	2	2	1	0	0	3	0	1	1	4	2	20
Ave	0-4 mm	20.6	21.3	21.0	21.5	23.2	25.3	25.8	25.6	21.6	19.7	18.6	18.0	262.2
	5-9 mm	3.7	2.0	2.5	2.1	2.3	1.3	1.3	2.0	3.1	2.9	3.4	3.7	30.3
	10-14 mm	1.8	1.2	2.3	2.5	1.8	1.0	1.3	1.1	2.0	2.0	2.2	2.1	21.3
	15-29 mm	2.6	2.1	2.7	2.6	2.0	1.0	1.0	1.2	2.0	3.3	2.7	4.0	27.2
	>30 mm	2.3	1.7	2.5	1.3	1.7	1.4	1.6	1.1	1.3	3.1	3.1	3.2	24.3

Table XIV.1.2 (4/7) MONTHLY RAINY DAY (STATION NO. 20002)

Unit : day

Year	Rainfall	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1983	0-4 mm	14	23	25	24	17	22	22	24	24	22	15	17	249
	5-9 mm	7	2	1	3	4	2	1	1	4	2	3	7	37
	10-14 mm	2	0	1	0	1	1	3	1	1	2	3	1	16
	15-29 mm	3	2	1	2	4	3	2	1	0	2	5	1	26
	>30 mm	5	1	3	1	5	2	3	4	1	3	4	5	37
1984	0-4 mm	15	13	15	14	15	21	26	21	20	18	19	21	218
	5-9 mm	7	7	6	4	6	2	1	4	4	6	6	2	55
	10-14 mm	4	1	5	3	1	1	1	1	2	0	1	1	21
	15-29 mm	1	6	1	5	6	4	1	3	3	4	2	6	42
	>30 mm	4	2	4	4	3	2	2	2	1	3	2	1	30
1985	0-4 mm	19	24	14	21	16	28	21	26	22	21	21	12	245
	5-9 mm	3	1	4	3	4	0	4	3	3	2	4	9	40
	10-14 mm	1	2	5	4	3	1	1	0	1	1	1	3	23
	15-29 mm	3	0	4	1	5	1	4	1	3	2	3	2	29
	>30 mm	5	1	4	1	3	0	1	1	1	5	1	5	28
1986	0-4 mm	17	19	21	15	25	26	21	30	19	18	19	15	245
	5-9 mm	5	5	1	2	2	0	3	1	2	3	3	4	31
	10-14 mm	3	2	2	3	0	2	4	0	4	2	0	2	24
	15-29 mm	2	2	3	3	1	1	2	0	1	2	1	6	24
	>30 mm	4	0	4	7	3	1	1	0	4	6	7	4	41
1987	0-4 mm	16	22	18	24	23	25	23	27	24	23	21	24	270
	5-9 mm	3	1	2	4	1	0	6	2	1	4	0	2	26
	10-14 mm	6	1	4	1	1	2	1	0	2	1	0	3	22
	15-29 mm	5	3	7	0	4	1	1	1	2	1	6	2	33
	>30 mm	1	1	0	1	2	2	0	1	1	2	3	0	14
1988	0-4 mm	22	22	24	23	21	25	28	25	25	26	20	21	282
	5-9 mm	3	2	2	2	1	1	1	1	0	2	5	4	24
	10-14 mm	0	1	0	1	3	1	1	2	1	2	4	1	17
	15-29 mm	5	3	4	3	2	1	1	1	3	0	1	2	26
	>30 mm	1	1	1	1	4	2	0	2	1	1	0	3	17
1989	0-4 mm	15	22	22	21	21	26	27	27	24	22	11	12	250
	5-9 mm	7	2	1	5	3	1	1	0	3	3	3	2	31
	10-14 mm	1	1	0	1	1	0	1	2	0	1	2	5	15
	15-29 mm	3	2	5	2	2	2	2	0	2	3	11	6	40
	>30 mm	5	1	3	1	4	1	0	2	1	2	3	6	29
1990	0-4 mm	23	19	23	22	21	28	24	27	20	20	21	11	259
	5-9 mm	2	4	0	1	2	1	2	1	4	6	2	4	29
	10-14 mm	4	3	1	1	2	0	0	0	4	1	5	3	24
	15-29 mm	1	1	5	5	3	1	2	0	1	3	2	6	30
	>30 mm	1	1	2	1	3	0	3	3	1	1	0	7	23
1991	0-4 mm	17	22	19	16	20	23	29	28	26	26	11	14	251
	5-9 mm	1	2	2	6	4	3	0	1	2	2	7	5	35
	10-14 mm	2	1	1	2	3	1	0	0	0	3	1	2	16
	15-29 mm	7	1	5	3	3	3	1	1	2	0	3	7	36
	>30 mm	4	2	4	3	1	0	1	1	0	0	8	3	27
1992	0-4 mm	18	18	21	20	21	23	24	27	21	19	12	17	241
	5-9 mm	1	5	4	2	5	3	1	3	2	5	4	2	37
	10-14 mm	4	1	3	4	2	0	2	0	3	0	2	7	28
	15-29 mm	6	2	1	2	3	3	1	1	0	6	6	4	35
	>30 mm	2	3	2	2	0	1	3	0	4	1	6	1	25
Ave	0-4 mm	17.6	20.4	20.2	20.0	20.0	24.7	24.5	26.2	22.5	21.5	17.0	16.4	251.0
	5-9 mm	3.9	3.1	2.3	3.2	3.2	1.3	2.0	1.7	2.5	3.5	3.7	4.1	34.5
	10-14 mm	2.7	1.3	2.2	2.0	1.7	0.9	1.4	0.6	1.8	1.3	1.9	2.8	20.6
	15-29 mm	3.6	2.2	3.6	2.6	3.3	2.0	1.7	0.9	1.7	2.3	4.0	4.2	32.1
	>30 mm	3.2	1.3	2.7	2.2	2.8	1.1	1.4	1.6	1.5	2.4	3.4	3.5	27.1

Table XIV.1.2 (5/7) MONTHLY RAINY DAY (STATION NO. 20106)

		Unit : day												
Year	Rainfall	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1983	0-4 mm	17	21	22	20	22	22	26	22	21	22	20	15	250
	5-9 mm	5	3	1	2	2	2	1	2	4	2	4	3	31
	10-14 mm	3	1	2	2	3	2	0	1	1	1	1	3	20
	15-29 mm	3	2	5	2	4	4	1	3	2	3	4	4	37
	>30 mm	3	1	1	4	0	0	3	3	2	3	1	6	27
1984	0-4 mm	18	16	15	20	19	24	23	21	20	21	17	16	230
	5-9 mm	3	7	3	1	4	1	2	4	3	3	4	3	38
	10-14 mm	1	0	2	1	3	2	0	0	0	1	4	2	16
	15-29 mm	7	5	3	3	2	1	2	6	4	4	0	3	40
	>30 mm	2	1	8	5	3	2	4	0	3	2	5	7	42
1985	0-4 mm	15	20	16	22	20	27	24	24	22	16	12	18	236
	5-9 mm	3	2	4	1	4	1	2	2	1	3	4	3	30
	10-14 mm	3	1	4	0	3	2	2	2	2	4	4	2	29
	15-29 mm	3	3	4	5	3	0	2	2	3	2	6	4	37
	>30 mm	7	2	3	2	1	0	1	1	2	6	4	4	33
1986	0-4 mm	16	24	13	12	27	26	28	28	17	14	16	12	233
	5-9 mm	6	3	4	5	1	1	1	1	3	5	4	3	37
	10-14 mm	4	1	4	4	0	1	0	0	1	3	2	5	25
	15-29 mm	2	0	3	4	0	2	0	2	4	4	2	6	29
	>30 mm	3	0	7	5	3	0	2	0	5	5	6	5	41
1987	0-4 mm	23	25	21	17	23	24	24	27	22	20	21	16	263
	5-9 mm	2	1	1	2	1	3	1	1	0	0	3	3	18
	10-14 mm	3	0	2	2	1	1	0	0	2	2	0	3	16
	15-29 mm	1	2	3	5	4	1	4	3	4	6	4	5	42
	>30 mm	2	0	4	4	2	1	2	0	2	3	2	4	26
1988	0-4 mm	17	23	21	19	19	23	28	22	21	22	22	17	254
	5-9 mm	5	3	4	4	4	2	0	2	3	2	2	6	37
	10-14 mm	2	2	1	1	1	3	0	1	1	1	1	3	17
	15-29 mm	3	1	2	3	5	2	1	3	4	5	3	3	35
	>30 mm	4	0	3	3	2	0	2	3	1	1	2	2	23
1989	0-4 mm	19	22	24	20	23	26	28	23	21	22	14	19	261
	5-9 mm	3	0	2	1	0	0	0	2	2	2	4	2	18
	10-14 mm	1	0	2	3	3	1	0	1	3	4	0	2	20
	15-29 mm	5	3	3	2	4	2	2	3	3	3	6	5	41
	>30 mm	3	3	0	4	1	1	1	2	1	0	6	3	25
1990	0-4 mm	22	15	22	18	21	22	24	27	24	18	18	16	247
	5-9 mm	2	1	2	6	2	1	2	1	1	0	1	4	23
	10-14 mm	2	2	0	1	3	0	3	2	2	5	2	1	23
	15-29 mm	2	3	4	3	3	4	0	0	1	4	6	6	36
	>30 mm	3	7	3	2	2	3	2	1	2	4	3	4	36
1991	0-4 mm	20	25	21	22	20	27	28	27	23	26	19	17	275
	5-9 mm	4	0	2	2	3	1	0	0	1	0	1	4	18
	10-14 mm	1	0	2	2	0	1	1	1	1	2	2	2	15
	15-29 mm	4	2	3	2	4	1	1	1	3	1	5	5	32
	>30 mm	2	1	3	2	4	0	1	2	2	2	3	3	25
1992	0-4 mm	21	23	25	22	26	27	26	27	21	22	17	15	272
	5-9 mm	1	3	4	2	2	1	1	0	4	3	3	3	27
	10-14 mm	2	2	2	2	1	1	1	0	0	2	2	5	20
	15-29 mm	3	1	0	1	2	1	0	3	2	3	6	5	27
	>30 mm	4	0	0	3	0	0	3	1	3	1	2	3	20
Ave	0-4 mm	18.8	21.4	20.0	19.2	22.0	24.8	25.9	24.8	21.2	20.3	17.6	16.1	252.1
	5-9 mm	3.4	2.3	2.7	2.6	2.3	1.3	1.0	1.5	2.2	2.0	3.0	3.4	27.7
	10-14 mm	2.2	0.9	2.1	1.8	1.8	1.4	0.7	0.8	1.3	2.5	1.8	2.8	20.1
	15-29 mm	3.3	2.2	3.0	3.0	3.1	1.8	1.3	2.6	3.0	3.5	4.2	4.6	35.6
	>30 mm	3.3	1.5	3.2	3.4	1.8	0.7	2.1	1.3	2.3	2.7	3.4	4.1	29.8



Table XIV.1.2 (6/7) MONTHLY RAINY DAY (STATION NO. 20107)

		Unit : day												
Year	Rainfall	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1982	0-4 mm	23	22	23	22	25	26	29	25	29	24	22	18	288
	5-9 mm	2	5	2	1	0	2	0	4	0	1	2	2	21
	10-14 mm	1	0	2	5	0	1	1	2	0	1	2	3	18
	15-29 mm	4	0	3	1	3	0	0	0	0	3	2	4	20
	>30 mm	1	1	1	1	3	1	1	0	1	2	2	4	18
1983	0-4 mm	19	26	29	22	23	25	26	26	23	22	22	20	365
	5-9 mm	6	1	0	0	1	1	2	3	4	2	1	3	24
	10-14 mm	1	1	1	3	3	1	0	0	1	1	4	2	18
	15-29 mm	4	0	0	1	2	1	1	1	1	2	0	5	18
	>30 mm	1	0	1	4	2	2	2	1	1	4	3	1	22
1984	0-4 mm	18	17	18	16	25	24	26	26	24	21	21	20	256
	5-9 mm	2	3	5	3	2	1	2	2	2	3	1	2	28
	10-14 mm	4	4	3	5	0	4	2	1	3	4	2	3	35
	15-29 mm	3	4	3	2	1	0	0	2	1	1	2	4	23
	>30 mm	4	1	1	5	3	1	1	0	0	2	4	2	24
1985	0-4 mm	23	23	18	25	23	30	26	24	17	21	19	22	271
	5-9 mm	3	2	4	0	7	0	0	2	8	2	3	1	32
	10-14 mm	1	0	2	2	1	0	1	1	3	3	5	3	22
	15-29 mm	2	1	5	2	0	0	3	2	1	2	2	2	22
	>30 mm	2	2	2	1	0	0	1	2	1	3	1	3	18
1986	0-4 mm	20	21	17	22	27	25	28	29	26	18	22	21	276
	5-9 mm	2	2	4	2	0	1	1	2	2	5	3	3	27
	10-14 mm	1	2	3	1	1	2	0	0	0	3	0	4	17
	15-29 mm	6	2	6	3	2	1	2	0	2	4	4	2	34
	>30 mm	2	1	1	2	1	1	0	0	0	1	1	1	11
1987	0-4 mm	25	25	27	25	25	25	30	28	24	23	22	18	297
	5-9 mm	0	1	1	2	2	1	1	0	2	3	1	4	18
	10-14 mm	1	1	0	1	1	1	0	2	2	2	2	2	15
	15-29 mm	4	0	2	1	3	3	0	1	0	3	3	3	23
	>30 mm	1	1	1	1	0	0	0	0	2	0	2	4	12
1989	0-4 mm	19	20	25	19	20	25	25	27	24	22	16	19	261
	5-9 mm	3	5	4	6	4	3	1	0	1	2	4	3	36
	10-14 mm	0	0	0	3	2	0	2	0	0	1	0	1	9
	15-29 mm	6	2	1	1	3	1	2	4	3	3	7	6	39
	>30 mm	3	1	1	1	2	1	1	0	2	3	3	2	20
1990	0-4 mm	23	19	24	23	24	23	26	28	23	24	20	15	272
	5-9 mm	4	2	0	1	0	1	2	2	0	3	1	3	19
	10-14 mm	0	1	4	1	1	1	1	0	1	2	2	7	21
	15-29 mm	3	4	0	0	3	3	0	1	4	0	2	2	22
	>30 mm	1	2	3	5	3	2	2	0	2	2	5	4	31
1991	0-4 mm	23	22	22	19	22	28	28	28	25	28	16	17	278
	5-9 mm	0	2	3	1	0	1	2	1	1	0	3	0	14
	10-14 mm	2	0	1	5	4	1	1	1	0	0	2	5	22
	15-29 mm	6	3	2	3	4	0	0	0	2	2	4	2	28
	>30 mm	0	1	3	2	1	0	0	1	2	1	5	7	23
1992	0-4 mm	24	20	23	21	22	24	26	27	23	20	17	18	265
	5-9 mm	3	3	3	2	2	1	0	2	1	1	5	3	26
	10-14 mm	1	0	0	1	1	1	2	1	1	2	1	3	14
	15-29 mm	2	5	2	3	2	2	1	1	3	4	2	1	28
	>30 mm	1	1	3	3	4	2	2	0	2	4	5	6	33
Ave	0-4 mm	21.7	21.5	22.6	21.4	23.6	25.5	27.0	26.8	23.8	22.3	19.7	18.8	282.9
	5-9 mm	2.5	2.6	2.6	1.8	1.8	1.2	1.1	1.8	2.1	2.2	2.4	2.4	24.5
	10-14 mm	1.2	0.9	1.6	2.7	1.4	1.2	1.0	0.8	1.1	1.9	2.0	3.3	19.1
	15-29 mm	4.0	2.1	2.4	1.7	2.3	1.1	0.9	1.2	1.7	2.4	2.8	3.1	25.7
	>30 mm	1.6	1.1	1.7	2.5	1.9	1.0	1.0	0.4	1.3	2.2	3.1	3.4	21.2

Table XIV.1.2 (7/7) MONTHLY RAINY DAY (STATION NO. 20108)

														Unit : day
Year	Rainfall	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1983	0-4 mm	14	21	25	26	24	27	24	29	19	26	15	19	269
	5-9 mm	1	3	1	0	1	2	3	1	4	2	6	4	28
	10-14 mm	4	1	0	0	1	1	3	1	3	0	5	0	19
	15-29 mm	8	3	1	3	4	0	0	0	3	1	0	5	28
	>30 mm	4	0	4	1	1	0	1	0	1	2	4	3	21
1984	0-4 mm	14	16	18	16	15	20	25	25	21	22	18	26	236
	5-9 mm	4	3	5	2	0	2	2	4	2	3	2	1	30
	10-14 mm	3	1	1	2	4	1	2	0	1	1	3	2	21
	15-29 mm	3	6	4	2	5	5	0	2	4	4	2	1	38
	>30 mm	7	3	3	8	7	2	2	0	2	1	5	1	41
1985	0-4 mm	18	19	12	23	19	27	24	26	20	24	19	18	249
	5-9 mm	3	0	5	2	4	1	4	1	5	2	2	4	33
	10-14 mm	3	3	6	2	2	0	0	2	0	1	2	4	25
	15-29 mm	5	5	4	1	4	0	1	0	3	3	3	2	31
	>30 mm	2	1	4	2	2	2	2	2	2	1	4	3	27
1986	0-4 mm	21	21	13	16	27	24	26	26	15	16	19	15	249
	5-9 mm	2	4	7	5	1	3	2	1	4	4	2	4	33
	10-14 mm	4	0	2	3	1	3	1	0	2	2	1	4	25
	15-29 mm	2	1	4	5	0	0	2	3	6	6	5	3	31
	>30 mm	2	2	5	1	2	0	0	1	3	3	3	5	27
1987	0-4 mm	23	22	19	16	20	25	26	26	19	22	24	20	239
	5-9 mm	4	2	2	4	4	2	1	0	3	5	0	4	39
	10-14 mm	1	2	4	3	2	0	2	0	2	0	1	0	23
	15-29 mm	3	0	4	4	2	2	2	0	3	1	2	5	37
	>30 mm	0	2	2	3	3	1	0	5	3	3	3	2	27
1988	0-4 mm	22	25	27	20	23	28	27	19	17	22	21	25	262
	5-9 mm	2	1	0	2	1	1	2	3	5	4	4	1	31
	10-14 mm	2	0	0	0	1	0	0	2	2	4	1	1	17
	15-29 mm	4	2	1	2	1	1	2	3	4	0	3	1	28
	>30 mm	1	1	3	6	5	0	0	4	2	1	1	3	27
1989	0-4 mm	23	22	17	20	25	9	30	26	22	20	12	15	276
	5-9 mm	3	0	2	3	3	2	0	0	0	2	2	4	26
	10-14 mm	3	2	3	2	0	0	1	1	2	1	5	2	13
	15-29 mm	1	3	5	2	2	18	0	1	3	2	5	5	24
	>30 mm	1	1	4	3	1	1	0	3	3	6	6	5	27
1990	0-4 mm	22	16	21	23	24	26	26	29	26	21	19	18	241
	5-9 mm	4	3	3	0	2	1	0	1	1	1	2	2	21
	10-14 mm	3	2	1	1	0	2	2	1	0	3	2	2	22
	15-29 mm	1	1	2	3	3	1	0	0	2	2	6	5	47
	>30 mm	1	6	4	3	2	0	3	0	1	4	1	4	34
1991	0-4 mm	18	21	19	22	23	26	27	27	22	24	17	13	259
	5-9 mm	2	1	4	4	2	2	1	2	2	1	4	6	31
	10-14 mm	6	3	1	0	1	1	0	0	2	2	3	2	21
	15-29 mm	3	2	6	3	0	1	2	1	2	3	4	8	35
	>30 mm	2	1	1	1	5	0	1	1	2	1	2	2	19
1992	0-4 mm	20	20	25	21	23	26	24	25	16	26	16	20	262
	5-9 mm	3	1	1	0	2	2	2	3	3	2	0	3	22
	10-14 mm	2	2	1	4	2	1	1	1	4	0	6	3	27
	15-29 mm	5	2	1	3	1	1	2	2	4	3	4	4	32
	>30 mm	1	4	3	2	3	0	2	0	3	0	4	1	23
Ave	0-4 mm	19.5	20.3	19.6	20.3	22.3	23.8	25.9	25.8	19.7	22.3	18.0	18.9	256.4
	5-9 mm	2.8	1.8	3.0	2.2	2.0	1.8	1.7	1.6	2.9	2.6	2.4	3.3	28.1
	10-14 mm	3.1	1.6	1.9	1.7	1.4	0.9	1.2	0.8	1.8	1.4	2.9	2.0	20.7
	15-29 mm	3.5	2.5	3.2	2.8	2.2	2.9	1.1	1.2	3.4	2.5	3.4	3.9	32.6
	>30 mm	2.1	2.1	3.3	3.0	3.1	0.6	1.1	1.6	2.2	2.2	3.3	2.9	27.5

**Table XIV.1.3 MONTHLY WORKABLE DAY FOR CONSTRUCTION WORKS**  
**Concrete Work**

Unit : day

Station No.	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
19014	20	20	21	20	19	23	24	23	23	22	21	22	258
19015	14	19	17	19	16	23	23	22	19	22	19	20	233
20001	17	18	17	20	18	21	21	21	21	15	16	15	220
20002	19	21	20	21	18	22	23	23	23	22	20	20	252
20106	14	18	15	14	17	22	20	20	17	16	14	12	199
20107	17	19	19	17	17	22	23	23	21	18	16	15	227
20108	20	20	20	20	19	22	24	23	21	22	20	20	251

**Earthwork**

Unit : day

Station No.	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
19014	16	18	16	15	16	21	21	22	21	19	17	18	220
19015	14	19	17	19	16	23	23	22	19	22	19	20	233
20001	17	18	17	20	18	21	21	21	21	15	16	15	220
20002	14	19	16	17	14	21	21	20	21	18	14	14	209
20106	14	18	15	14	17	22	20	20	17	16	14	12	199
20107	17	19	19	17	17	22	23	23	21	18	16	15	227
20108	16	16	14	15	14	21	22	20	17	18	14	15	202

**Table XIV.1.4 (1/7) MONTHLY WORKABLE DAY FOR CONCRETE WORKS  
(STATION No.19014)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.2	2.2	3.6	3.2	2.1	1.2	2.2	1.3	3.2	2.4	3.1	3.6	31.3
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	2.1	1.4	2.3	2.1	1.0	1.1	0.3	1.3	1.6	2.7	2.6	1.6	20.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.1	2.6	2.8	3.2	2.6	1.7	1.5	1.5	2.0	2.2	3.0	3.0	29.2
: Suspended Day (Rainy Day x 1.0)	3.1	2.6	2.8	3.2	2.6	1.7	1.5	1.5	2.0	2.2	3.0	3.0	29.2
>30 mm : Rainy Day	2.3	1.6	2.6	3.0	2.5	1.0	1.4	0.6	1.2	2.2	2.6	2.3	23.3
: Suspended Day (Rainy Day x 1.0)	2.3	1.6	2.6	3.0	2.5	1.0	1.4	0.6	1.2	2.2	2.6	2.3	23.3
<b>(2) Total of Rainy Day</b>	10.7	7.8	11.3	11.5	8.2	5.0	5.4	4.7	8.0	9.5	11.3	10.5	103.9
<b>(3) Total of Suspended Day</b>	5.4	4.2	5.4	6.2	5.1	2.7	2.9	2.1	3.2	4.4	5.6	5.3	52.5
<b>(4) Suspended Rate : (3)/(1)%</b>	17.4	15.0	17.4	20.7	16.5	9.0	9.4	6.8	10.7	14.2	18.7	17.1	14.4
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	1.2	0.6	1.0	1.0	1.3	0.5	0.5	0.4	0.4	0.7	0.7	0.9	9.2
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	11.2	7.6	10.4	10.2	11.8	7.3	7.4	7.7	6.8	8.7	8.9	9.4	107.3
<b>(8) Workable Day : (1)-(7)</b>	19.8	20.4	20.6	19.8	19.2	22.8	23.6	23.3	23.2	22.3	21.1	21.6	257.7
<b>(9) Workable Rate : (8)/(1)%</b>	63.9	72.9	66.6	66.1	62.0	75.8	76.0	75.2	77.4	72.0	70.5	69.5	70.6
<b>(10) Applied Workable Day</b>	20	20	21	20	19	23	24	23	23	22	21	22	258

*Note : Data of average rainy day is given from 1977 to 1986 at Station No. 19014*

**Table XIV.1.4 (2/7) MONTHLY WORKABLE DAY FOR CONCRETE WORKS  
(STATION No.19015)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.4	2.2	4.0	4.3	3.8	1.6	2.9	2.0	2.9	3.3	3.9	3.7	38.0
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	1.8	1.9	2.7	1.9	1.7	0.5	1.2	1.1	1.8	1.5	2.7	1.9	20.7
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	4.3	3.0	4.1	3.0	3.4	1.3	1.1	1.3	1.4	1.7	2.7	3.3	30.6
: Suspended Day (Rainy Day x 1.0)	4.3	3.0	4.1	3.0	3.4	1.3	1.1	1.3	1.4	1.7	2.7	3.3	30.6
>30 mm : Rainy Day	3.0	0.8	2.1	1.4	2.0	0.4	0.7	0.7	2.2	1.1	1.7	1.4	17.5
: Suspended Day (Rainy Day x 1.0)	3.0	0.8	2.1	1.4	2.0	0.4	0.7	0.7	2.2	1.1	1.7	1.4	17.5
<b>(2) Total of Rainy Day</b>	12.5	7.9	12.9	10.6	10.9	3.8	5.9	5.1	8.3	7.6	11.0	10.3	106.8
<b>(3) Total of Suspended Day</b>	7.3	3.8	6.2	4.4	5.4	1.7	1.8	2.0	3.6	2.8	4.4	4.7	48.1
<b>(4) Suspended Rate : (3)/(1)%</b>	23.5	13.6	20.0	14.7	17.4	5.7	5.8	6.5	12.0	9.0	14.7	15.2	13.2
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	1.6	0.5	1.2	0.7	1.4	0.3	0.3	0.4	0.5	0.5	0.6	0.8	8.4
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	12.7	7.3	11.0	8.7	12.0	6.4	6.5	7.6	7.1	7.3	7.8	8.9	103.7
<b>(8) Workable Day : (1)-(7)</b>	18.3	20.7	20.0	21.3	19.0	23.6	24.5	23.4	22.9	23.7	22.2	22.1	261.3
<b>(9) Workable Rate : (8)/(1)%</b>	59.2	74.1	64.5	71.1	61.3	78.6	79.0	75.4	76.3	76.3	74.0	71.2	71.6
<b>(10) Applied Workable Day</b>	20	20	21	20	19	23	24	23	23	22	21	22	258

Note : Data of average rainy day is given from 1983 to 1992 at Station No. 19015

**Table XIV.1.4 (3/7) MONTHLY WORKABLE DAY FOR CONCRETE WORKS  
(STATION No.20001)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.7	2.0	2.5	2.1	2.3	1.3	1.3	2.0	3.1	2.9	3.4	3.7	30.3
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	1.8	1.2	2.3	2.5	1.8	1.0	1.3	1.1	2.0	2.0	2.2	2.1	21.3
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	2.6	2.1	2.7	2.6	2.0	1.0	1.0	1.2	2.0	3.3	2.7	4.0	27.2
: Suspended Day (Rainy Day x 1.0)	2.6	2.1	2.7	2.6	2.0	1.0	1.0	1.2	2.0	3.3	2.7	4.0	27.2
>30 mm : Rainy Day	2.3	1.7	2.5	1.3	1.7	1.4	1.6	1.1	1.3	3.1	3.1	3.2	24.3
: Suspended Day (Rainy Day x 1.0)	2.3	1.7	2.5	1.3	1.7	1.4	1.6	1.1	1.3	3.1	3.1	3.2	24.3
<b>(2) Total of Rainy Day</b>	10.4	7.0	10.0	8.5	7.8	4.7	5.2	5.4	8.4	11.3	11.4	13.0	103.1
<b>(3) Total of Suspended Day</b>	4.9	3.8	5.2	3.9	3.7	2.4	2.6	2.3	3.3	6.4	5.8	7.2	51.5
<b>(4) Suspended Rate : (3)/(1)%</b>	15.8	13.6	16.8	13.0	11.9	8.0	8.4	7.4	11.0	20.6	19.3	23.2	14.1
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	1.1	0.5	1.0	0.7	1.0	0.4	0.4	0.4	0.4	1.0	0.8	1.2	9.0
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	10.8	7.3	10.2	8.3	10.7	7.0	7.2	7.9	6.9	10.4	9.0	11.0	106.5
<b>(8) Workable Day : (1)-(7)</b>	20.2	20.7	20.8	21.8	20.3	23.0	23.8	23.1	23.1	20.6	21.0	20.0	258.5
<b>(9) Workable Rate : (8)/(1)%</b>	65.2	74.1	67.1	72.5	65.3	76.7	76.8	74.7	77.1	66.6	69.9	64.4	70.8
<b>(10) Applied Workable Day</b>	20	20	21	20	19	23	24	23	23	22	21	22	258

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20001*

**Table XIV.1.4 (4/7) MONTHLY WORKABLE DAY FOR CONCRETE WORKS  
(STATION No.20002)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.9	3.1	2.3	3.2	3.2	1.3	2.0	1.7	2.5	3.5	3.7	4.1	34.5
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	2.7	1.3	2.2	2.0	1.7	0.9	1.4	0.6	1.8	1.3	1.9	2.8	20.6
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.6	2.2	3.6	2.6	3.3	2.0	1.7	0.9	1.7	2.3	4.0	4.2	32.1
: Suspended Day (Rainy Day x 1.0)	3.6	2.2	3.6	2.6	3.3	2.0	1.7	0.9	1.7	2.3	4.0	4.2	32.1
>30 mm : Rainy Day	3.2	1.3	2.7	2.2	2.8	1.1	1.4	1.6	1.5	2.4	3.4	3.5	27.1
: Suspended Day (Rainy Day x 1.0)	3.2	1.3	2.7	2.2	2.8	1.1	1.4	1.6	1.5	2.4	3.4	3.5	27.1
<b>(2) Total of Rainy Day</b>	13.4	7.9	10.8	10.0	11.0	5.3	6.5	4.8	7.5	9.5	13.0	14.6	114.3
<b>(3) Total of Suspended Day</b>	6.8	3.5	6.3	4.8	6.1	3.1	3.1	2.5	3.2	4.7	7.4	7.7	59.2
<b>(4) Suspended Rate : (3)/(1)%</b>	21.9	12.5	20.3	16.0	19.7	10.3	10.0	8.1	10.7	15.2	24.7	24.8	16.2
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	1.5	0.5	1.2	0.8	1.6	0.5	0.5	0.5	0.4	0.8	1.0	1.2	10.4
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	12.3	7.0	11.1	9.0	12.5	7.6	7.6	8.0	6.8	8.9	10.4	11.5	112.8
<b>(8) Workable Day : (1)-(7)</b>	18.7	21.0	19.9	21.0	18.5	22.4	23.4	23.0	23.2	22.1	19.6	19.5	252.2
<b>(9) Workable Rate : (8)/(1)%</b>	60.4	75.0	64.3	70.0	59.6	74.7	75.5	74.1	77.4	71.2	65.3	63.0	69.1
<b>(10) Applied Workable Day</b>	19	21	20	21	18	22	23	23	23	22	20	20	252

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20002*

**Table XIV.1.4 (5/7) MONTHLY WORKABLE DAY FOR CONCRETE WORKS  
(STATION No.20106)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.4	2.3	2.7	2.6	2.3	1.3	1.0	1.5	2.2	2.0	3.0	3.4	27.7
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	2.2	0.9	2.1	1.8	1.8	1.4	0.7	0.8	1.3	2.5	1.8	2.8	20.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.3	2.2	3.0	3.0	3.1	1.8	1.3	2.6	3.0	3.5	4.2	4.6	35.6
: Suspended Day (Rainy Day x 1.0)	3.3	2.2	3.0	3.0	3.1	1.8	1.3	2.6	3.0	3.5	4.2	4.6	35.6
>30 mm : Rainy Day	3.3	1.5	3.2	3.4	1.8	0.7	2.1	1.3	2.3	2.7	3.4	4.1	29.8
: Suspended Day (Rainy Day x 1.0)	3.3	1.5	3.2	3.4	1.8	0.7	2.1	1.3	2.3	2.7	3.4	4.1	29.8
<b>(2) Total of Rainy Day</b>	12.2	6.9	11.0	10.8	9.0	5.2	5.1	6.2	8.8	10.7	12.4	14.9	113.2
<b>(3) Total of Suspended Day</b>	6.6	3.7	6.2	6.4	4.9	2.5	3.4	3.9	5.3	6.2	7.6	8.7	65.4
<b>(4) Suspended Rate : (3)/(1)%</b>	21.3	13.2	20.0	21.3	15.8	8.3	11.0	12.6	17.7	20.0	25.3	28.1	17.9
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp;     National Holiday (5)x(4)</b>	1.5	0.5	1.2	1.1	1.3	0.4	0.5	0.8	0.7	1.0	1.0	1.4	11.5
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	12.1	7.2	11.0	10.3	11.6	7.1	7.9	9.1	8.6	10.2	10.6	12.3	117.9
<b>(8) Workable Day : (1)-(7)</b>	18.9	20.8	20.0	19.7	19.4	22.9	23.1	21.9	21.4	20.8	19.4	18.7	247.1
<b>(9) Workable Rate : (8)/(1)%</b>	60.9	74.4	64.5	65.6	62.5	76.4	74.7	70.5	71.4	67.1	64.7	60.3	67.7
<b>(10) Applied Workable Day</b>	20	20	21	20	19	23	24	23	23	22	21	22	258

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20106*



**Table XIV.1.4 (6/7) MONTHLY WORKABLE DAY FOR CONCRETE WORKS  
(STATION No.20107)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	2.5	2.6	2.6	1.8	1.8	1.2	1.1	1.8	2.1	2.2	2.4	2.4	24.5
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	1.2	0.9	1.6	2.7	1.4	1.2	1.0	0.8	1.1	1.9	2.0	3.3	19.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	4.0	2.1	2.4	1.7	2.3	1.1	0.9	1.2	1.7	2.4	2.8	3.1	25.7
: Suspended Day (Rainy Day x 1.0)	4.0	2.1	2.4	1.7	2.3	1.1	0.9	1.2	1.7	2.4	2.8	3.1	25.7
>30 mm : Rainy Day	1.6	1.1	1.7	2.5	1.9	1.0	1.0	0.4	1.3	2.2	3.1	3.4	21.2
: Suspended Day (Rainy Day x 1.0)	1.6	1.1	1.7	2.5	1.9	1.0	1.0	0.4	1.3	2.2	3.1	3.4	21.2
<b>(2) Total of Rainy Day</b>	9.3	6.7	8.3	8.7	7.4	4.5	4.0	4.2	6.2	8.7	10.3	12.2	90.5
<b>(3) Total of Suspended Day</b>	5.6	3.2	4.1	4.2	4.2	2.1	1.9	1.6	3.0	4.6	5.9	6.5	46.9
<b>(4) Suspended Rate : (3)/(1)%</b>	18.1	11.4	13.2	14.0	13.5	7.0	6.1	5.2	10.0	14.8	19.7	21.0	12.8
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	1.3	0.5	0.8	0.7	1.1	0.4	0.3	0.3	0.4	0.7	0.8	1.0	8.2
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	11.3	6.7	9.3	8.5	11.1	6.8	6.6	7.3	6.6	8.9	9.1	10.5	102.7
<b>(8) Workable Day : (1)-(7)</b>	19.7	21.3	21.7	21.5	19.9	23.3	24.4	23.7	23.4	22.1	20.9	20.5	262.3
<b>(9) Workable Rate : (8)/(1)%</b>	63.4	75.9	70.0	71.7	64.1	77.5	78.7	76.5	78.0	71.4	69.6	66.3	71.9
<b>(10) Applied Workable Day</b>	20	20	21	20	19	23	24	23	23	22	21	22	258

Note : Data of average rainy day is given from 1982 to 1992 at Station No. 20107

**Table XIV.1.4 (7/7) MONTHLY WORKABLE DAY FOR CONCRETE WORKS  
(STATION No.20108)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	2.8	1.8	3.0	2.2	2.0	1.8	1.7	1.6	2.9	2.6	2.4	3.3	28.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	3.1	1.6	1.9	1.7	1.4	0.9	1.2	0.8	1.8	1.4	2.9	2	20.7
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.5	2.5	3.2	2.8	2.2	2.9	1.1	1.2	3.4	2.5	3.4	3.9	32.6
: Suspended Day (Rainy Day x 1.0)	3.5	2.5	3.2	2.8	2.2	2.9	1.1	1.2	3.4	2.5	3.4	3.9	32.6
>30 mm : Rainy Day	2.1	2.1	3.3	3	3.1	0.6	1.1	1.6	2.2	2.2	3.3	2.9	27.5
: Suspended Day (Rainy Day x 1.0)	2.1	2.1	3.3	3.0	3.1	0.6	1.1	1.6	2.2	2.2	3.3	2.9	27.5
<b>(2) Total of Rainy Day</b>	11.5	8.0	11.4	9.7	8.7	6.2	5.1	5.2	10.3	8.7	12.0	12.1	108.9
<b>(3) Total of Suspended Day</b>	5.6	4.6	6.5	5.8	5.3	3.5	2.2	2.8	5.6	4.7	6.7	6.8	60.1
<b>(4) Suspended Rate : (3)/(1)%</b>	18.1	16.4	21.0	19.3	17.1	11.7	7.1	9.0	18.7	15.2	22.3	21.9	16.5
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	1.3	0.7	1.3	1.0	1.4	0.6	0.4	0.5	0.7	0.8	0.9	1.1	10.5
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	11.3	7.9	11.2	9.8	11.9	7.9	6.8	8.3	8.9	8.9	9.8	10.7	113.6
<b>(8) Workable Day : (1)-(7)</b>	19.7	20.1	19.8	20.2	19.1	22.1	24.2	22.7	21.1	22.1	20.2	20.3	251.4
<b>(9) Workable Rate : (8)/(1)%</b>	63.4	71.6	63.7	67.2	61.5	73.6	77.9	73.4	70.5	71.2	67.3	65.5	68.9
<b>(10) Applied Workable Day</b>	20	20	20	20	19	22	24	23	21	22	20	20	251

Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20108

**Table XIV.1.5 (1/7) MONTHLY WORKABLE DAY FOR EARTHWORKS  
(STATION No.19014)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.2	2.2	3.6	3.2	2.1	1.2	2.2	1.3	3.2	2.4	3.1	3.6	31.3
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	2.1	1.4	2.3	2.1	1.0	1.1	0.3	1.3	1.6	2.7	2.6	1.6	20.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.1	2.6	2.8	3.2	2.6	1.7	1.5	1.5	2.0	2.2	3.0	3.0	29.2
: Suspended Day (Rainy Day x 1.0)	3.1	2.6	2.8	3.2	2.6	1.7	1.5	1.5	2.0	2.2	3.0	3.0	29.2
>30 mm : Rainy Day	2.3	1.6	2.6	3.0	2.5	1.0	1.4	0.6	1.2	2.2	2.6	2.3	23.3
: Suspended Day (Rainy Day x 3.0)	6.9	4.8	7.8	9.0	7.5	3.0	4.2	1.8	3.6	6.6	7.8	6.9	69.9
<b>(2) Total of Rainy Day</b>	10.7	7.8	11.3	11.5	8.2	5.0	5.4	4.7	8.0	9.5	11.3	10.5	103.9
<b>(3) Total of Suspended Day</b>	10.0	7.4	10.6	12.2	10.1	4.7	5.7	3.3	5.6	8.8	10.8	9.9	99.1
<b>(4) Suspended Rate : (3)/(1)%</b>	32.3	26.4	34.2	40.7	32.6	15.7	18.4	10.6	18.7	28.4	36.0	31.9	27.2
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	2.3	1.1	2.1	2.0	2.6	0.8	0.9	0.6	0.7	1.4	1.4	1.6	17.4
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	14.7	10.3	14.5	15.2	15.5	8.9	9.8	8.7	8.9	12.4	13.4	13.3	145.7
<b>(8) Workable Day : (1)-(7)</b>	16.3	17.7	16.5	14.8	15.5	21.1	21.2	22.3	21.1	18.6	16.6	17.7	219.3
<b>(9) Workable Rate : (8)/(1)%</b>	52.4	63.1	53.1	49.4	50.0	70.3	68.4	72.1	70.5	60.1	55.5	57.1	60.1
<b>(10) Applied Workable Day</b>	16	18	16	15	16	21	21	22	21	19	17	18	220

Note : Data of average rainy day is given from 1977 to 1986 at Station No. 19014

**Table XIV.1.5 (2/7) MONTHLY WORKABLE DAY FOR EARTHWORKS  
(STATION No.19015)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.4	2.2	4.0	4.3	3.8	1.6	2.9	2.0	2.9	3.3	3.9	3.7	38.0
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	1.8	1.9	2.7	1.9	1.7	0.5	1.2	1.1	1.8	1.5	2.7	1.9	20.7
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	4.3	3.0	4.1	3.0	3.4	1.3	1.1	1.3	1.4	1.7	2.7	3.3	30.6
: Suspended Day (Rainy Day x 1.0)	4.3	3.0	4.1	3.0	3.4	1.3	1.1	1.3	1.4	1.7	2.7	3.3	30.6
>30 mm : Rainy Day	3.0	0.8	2.1	1.4	2.0	0.4	0.7	0.7	2.2	1.1	1.7	1.4	17.5
: Suspended Day (Rainy Day x 3.0)	9.0	2.4	6.3	4.2	6.0	1.2	2.1	2.1	6.6	3.3	5.1	4.2	52.5
<b>(2) Total of Rainy Day</b>	12.5	7.9	12.9	10.6	10.9	3.8	5.9	5.1	8.3	7.6	11.0	10.3	106.8
<b>(3) Total of Suspended Day</b>	13.3	5.4	10.4	7.2	9.4	2.5	3.2	3.4	8.0	5.0	7.8	7.5	83.1
<b>(4) Suspended Rate : (3)/(1)%</b>	42.9	19.3	33.5	24.0	30.3	8.3	10.3	11.0	26.7	16.1	26.0	24.2	22.8
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	3.0	0.8	2.0	1.2	2.4	0.4	0.5	0.7	1.1	0.8	1.0	1.2	14.6
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	17.3	8.6	14.4	11.0	15.0	7.1	7.7	8.7	10.9	9.2	10.8	11.3	132.5
<b>(8) Workable Day : (1)-(7)</b>	13.7	19.4	16.6	19.0	16.0	22.9	23.3	22.3	19.1	21.8	19.2	19.7	232.5
<b>(9) Workable Rate : (8)/(1)%</b>	44.2	69.2	53.6	63.3	51.7	76.4	75.2	71.8	63.6	70.3	64.1	63.6	63.7
<b>(10) Applied Workable Day</b>	14	19	17	19	16	23	23	22	19	22	19	20	233

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 19015*

**Table XIV.1.5 (3/7) MONTHLY WORKABLE DAY FOR EARTHWORKS  
(STATION No.20001)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.7	2.0	2.5	2.1	2.3	1.3	1.3	2.0	3.1	2.9	3.4	3.7	30.3
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	1.8	1.2	2.3	2.5	1.8	1.0	1.3	1.1	2.0	2.0	2.2	2.1	21.3
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	2.6	2.1	2.7	2.6	2.0	1.0	1.0	1.2	2.0	3.3	2.7	4.0	27.2
: Suspended Day (Rainy Day x 1.0)	2.6	2.1	2.7	2.6	2.0	1.0	1.0	1.2	2.0	3.3	2.7	4.0	27.2
>30 mm : Rainy Day	2.3	1.7	2.5	1.3	1.7	1.4	1.6	1.1	1.3	3.1	3.1	3.2	24.3
: Suspended Day (Rainy Day x 3.0)	6.9	5.1	7.5	3.9	5.1	4.2	4.8	3.3	3.9	9.3	9.3	9.6	72.9
<b>(2) Total of Rainy Day</b>	10.4	7.0	10.0	8.5	7.8	4.7	5.2	5.4	8.4	11.3	11.4	13.0	103.1
<b>(3) Total of Suspended Day</b>	9.5	7.2	10.2	6.5	7.1	5.2	5.8	4.5	5.9	12.6	12.0	13.6	100.1
<b>(4) Suspended Rate : (3)/(1)%</b>	30.6	25.7	32.9	21.7	22.9	17.3	18.7	14.5	19.7	40.6	40.0	43.9	27.4
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	2.1	1.0	2.0	1.1	1.8	0.9	0.9	0.9	0.8	2.0	1.6	2.2	17.6
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	14.4	10.2	14.2	10.4	13.3	9.3	9.9	9.6	9.1	15.6	14.4	16.4	146.5
<b>(8) Workable Day : (1)-(7)</b>	16.6	17.8	16.8	19.6	17.7	20.7	21.1	21.4	20.9	15.4	15.6	14.6	218.5
<b>(9) Workable Rate : (8)/(1)%</b>	53.7	63.7	54.1	65.3	57.2	68.9	68.2	68.9	69.6	49.8	52.0	47.1	59.8
<b>(10) Applied Workable Day</b>	17	18	17	20	18	21	21	21	21	15	16	15	220

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20001*

**Table XIV.1.5 (4/7) MONTHLY WORKABLE DAY FOR EARTHWORKS  
(STATION No.20002)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.9	3.1	2.3	3.2	3.2	1.3	2.0	1.7	2.5	3.5	3.7	4.1	34.5
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	2.7	1.3	2.2	2.0	1.7	0.9	1.4	0.6	1.8	1.3	1.9	2.8	20.6
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.6	2.2	3.6	2.6	3.3	2.0	1.7	0.9	1.7	2.3	4.0	4.2	32.1
: Suspended Day (Rainy Day x 1.0)	3.6	2.2	3.6	2.6	3.3	2.0	1.7	0.9	1.7	2.3	4.0	4.2	32.1
>30 mm : Rainy Day	3.2	1.3	2.7	2.2	2.8	1.1	1.4	1.6	1.5	2.4	3.4	3.5	27.1
: Suspended Day (Rainy Day x 3.0)	9.6	3.9	8.1	6.6	8.4	3.3	4.2	4.8	4.5	7.2	10.2	10.5	81.3
<b>(2) Total of Rainy Day</b>	13.4	7.9	10.8	10.0	11.0	5.3	6.5	4.8	7.5	9.5	13.0	14.6	114.3
<b>(3) Total of Suspended Day</b>	13.2	6.1	11.7	9.2	11.7	5.3	5.9	5.7	6.2	9.5	14.2	14.7	113.4
<b>(4) Suspended Rate : (3)/(1)%</b>	42.6	21.8	37.7	30.7	37.7	17.7	19.0	18.4	20.7	30.6	47.3	47.4	31.1
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	3.0	0.9	2.3	1.5	3.0	0.9	1.0	1.1	0.8	1.5	1.9	2.4	19.9
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	17.2	9.2	15.4	12.7	16.7	9.4	9.9	10.6	9.4	13.0	16.3	17.3	157.5
<b>(8) Workable Day : (1)-(7)</b>	13.8	18.8	15.6	17.3	14.3	20.6	21.1	20.4	20.6	18.0	13.7	13.7	207.5
<b>(9) Workable Rate : (8)/(1)%</b>	44.5	67.0	50.2	57.8	46.2	68.6	67.9	65.8	68.8	58.2	45.6	44.1	56.8
<b>(10) Applied Workable Day</b>	14	19	16	17	14	21	21	20	21	18	14	14	209

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20002*

**Table XIV.1.5 (5/7) MONTHLY WORKABLE DAY FOR EARTHWORKS  
(STATION No.20106)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	3.4	2.3	2.7	2.6	2.3	1.3	1.0	1.5	2.2	2.0	3.0	3.4	27.7
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	2.2	0.9	2.1	1.8	1.8	1.4	0.7	0.8	1.3	2.5	1.8	2.8	20.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.3	2.2	3.0	3.0	3.1	1.8	1.3	2.6	3.0	3.5	4.2	4.6	35.6
: Suspended Day (Rainy Day x 1.0)	3.3	2.2	3.0	3.0	3.1	1.8	1.3	2.6	3.0	3.5	4.2	4.6	35.6
>30 mm : Rainy Day	3.3	1.5	3.2	3.4	1.8	0.7	2.1	1.3	2.3	2.7	3.4	4.1	29.8
: Suspended Day (Rainy Day x 3.0)	9.9	4.5	9.6	10.2	5.4	2.1	6.3	3.9	6.9	8.1	10.2	12.3	89.4
<b>(2) Total of Rainy Day</b>	12.2	6.9	11.0	10.8	9.0	5.2	5.1	6.2	8.8	10.7	12.4	14.9	113.2
<b>(3) Total of Suspended Day</b>	13.2	6.7	12.6	13.2	8.5	3.9	7.6	6.5	9.9	11.6	14.4	16.9	125.0
<b>(4) Suspended Rate : (3)/(1)%</b>	42.6	23.9	40.6	44.0	27.4	13.0	24.5	21.0	33.0	37.4	48.0	54.5	34.2
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	3.0	1.0	2.4	2.2	2.2	0.7	1.2	1.3	1.3	1.9	1.9	2.7	21.9
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	17.2	9.7	16.2	16.0	14.3	8.3	11.4	11.2	12.6	14.7	16.5	19.2	167.1
<b>(8) Workable Day : (1)-(7)</b>	13.8	18.3	14.8	14.0	16.7	21.8	19.6	19.8	17.4	16.3	13.5	11.8	197.9
<b>(9) Workable Rate : (8)/(1)%</b>	44.5	65.2	47.9	46.7	53.9	72.5	63.3	63.7	58.1	52.5	45.1	38.1	54.2
<b>(10) Applied Workable Day</b>	14	18	15	14	17	22	20	20	17	16	14	12	199

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20106*

**Table XIV.1.5 (6/7) MONTHLY WORKABLE DAY FOR EARTHWORKS  
(STATION No.20107)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	2.5	2.6	2.6	1.8	1.8	1.2	1.1	1.8	2.1	2.2	2.4	2.4	24.5
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	1.2	0.9	1.6	2.7	1.4	1.2	1.0	0.8	1.1	1.9	2.0	3.3	19.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	4.0	2.1	2.4	1.7	2.3	1.1	0.9	1.2	1.7	2.4	2.8	3.1	25.7
: Suspended Day (Rainy Day x 1.0)	4.0	2.1	2.4	1.7	2.3	1.1	0.9	1.2	1.7	2.4	2.8	3.1	25.7
>30 mm : Rainy Day	1.6	1.1	1.7	2.5	1.9	1.0	1.0	0.4	1.3	2.2	3.1	3.4	21.2
: Suspended Day (Rainy Day x 3.0)	4.8	3.3	5.1	7.5	5.7	3.0	3.0	1.2	3.9	6.6	9.3	10.2	63.6
<b>(2) Total of Rainy Day</b>	9.3	6.7	8.3	8.7	7.4	4.5	4.0	4.2	6.2	8.7	10.3	12.2	90.5
<b>(3) Total of Suspended Day</b>	8.8	5.4	7.5	9.2	8.0	4.1	3.9	2.4	5.6	9.0	12.1	13.3	89.3
<b>(4) Suspended Rate : (3)/(1)%</b>	28.4	19.3	24.2	30.7	25.8	13.7	12.6	7.7	18.7	29.0	40.3	42.9	24.5
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	2.0	0.8	1.5	1.5	2.1	0.7	0.6	0.5	0.7	1.5	1.6	2.1	15.7
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	13.8	8.6	12.0	12.7	13.9	8.4	8.3	7.9	8.9	12.5	14.5	16.2	137.6
<b>(8) Workable Day : (1)-(7)</b>	17.2	19.4	19.0	17.3	17.1	21.6	22.7	23.1	21.1	18.5	15.5	14.8	227.4
<b>(9) Workable Rate : (8)/(1)%</b>	55.4	69.2	61.1	57.8	55.0	71.9	73.3	74.4	70.5	59.5	51.7	47.9	62.3
<b>(10) Applied Workable Day</b>	17	19	19	17	17	22	23	23	21	18	16	15	227

*Note : Data of average rainy day is given from 1982 to 1987 and 1989 to 1992 at Station No. 20107*



**Table XIV.1.5 (7/7) MONTHLY WORKABLE DAY FOR EARTHWORKS  
(STATION No.20108)**

Unit : day

Item	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
<b>(1) Rainy Day &amp; Suspended Day</b>													
Calendar Day	31	28	31	30	31	30	31	31	30	31	30	31	365
5-9 mm : Rainy Day	2.8	1.8	3.0	2.2	2.0	1.8	1.7	1.6	2.9	2.6	2.4	3.3	28.1
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14 mm : Rainy Day	3.1	1.6	1.9	1.7	1.4	0.9	1.2	0.8	1.8	1.4	2.9	2	20.7
: Suspended Day (Rainy Day x 0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-29 mm : Rainy Day	3.5	2.5	3.2	2.8	2.2	2.9	1.1	1.2	3.4	2.5	3.4	3.9	32.6
: Suspended Day (Rainy Day x 1.0)	3.5	2.5	3.2	2.8	2.2	2.9	1.1	1.2	3.4	2.5	3.4	3.9	32.6
>30 mm : Rainy Day	2.1	2.1	3.3	3	3.1	0.6	1.1	1.6	2.2	2.2	3.3	2.9	27.5
: Suspended Day (Rainy Day x 3.0)	6.3	6.3	9.9	9.0	9.3	1.8	3.3	4.8	6.6	6.6	9.9	8.7	82.5
<b>(2) Total of Rainy Day</b>	11.5	8.0	11.4	9.7	8.7	6.2	5.1	5.2	10.3	8.7	12.0	12.1	108.9
<b>(3) Total of Suspended Day</b>	9.8	8.8	13.1	11.8	11.5	4.7	4.4	6.0	10.0	9.1	13.3	12.6	115.1
<b>(4) Suspended Rate : (3)/(1)%</b>	31.6	31.4	42.3	39.3	37.1	15.7	14.2	19.4	33.3	29.4	44.3	40.6	31.5
<b>(5) Sunday &amp; National Holiday</b>	7.0	4.0	6.0	5.0	8.0	5.0	5.0	6.0	4.0	5.0	4.0	5.0	64.0
<b>(6) Rainy Day in Sunday &amp; National Holiday (5)x(4)</b>	2.2	1.3	2.5	2.0	3.0	0.8	0.7	1.2	1.3	1.5	1.8	2.0	20.2
<b>(7) Non-Workable Day : (3)+(5)-(6)</b>	14.6	11.5	16.6	14.8	16.5	8.9	8.7	10.8	12.7	12.6	15.5	15.6	158.9
<b>(8) Workable Day : (1)-(7)</b>	16.4	16.5	14.4	15.2	14.5	21.1	22.3	20.2	17.3	18.4	14.5	15.4	206.1
<b>(9) Workable Rate : (8)/(1)%</b>	52.9	58.8	46.6	50.6	46.7	70.3	72.0	65.0	57.8	59.3	48.2	49.8	56.5
<b>(10) Applied Workable Day</b>	16	16	14	15	14	21	22	20	17	18	14	15	202

*Note : Data of average rainy day is given from 1983 to 1992 at Station No. 20108*

Table XIV.1.6. SUMMARY OF RECONNAISSANCE FOR DAMSITES

Item	Damsite		
	Kampar Kiri No. 1	Kampar Kiri No. 2	
Location - District - Subdistrict - Nearest village	Kampar Kampar Kiri Tanjungbelit	Indragiri Hulu Singingi Pulaupadang	Indragiri Hulu Kuantan Mudik Lubukkambacang/Kotokombu
River	Sibayang River	Singingi River	Kuantan River
Accessibility - Provincial road	Pekanbaru-Tumbang: 80 km	Pekanbaru-Muaralembu : 130 km	Pekanbaru-Jake - Lubukjambi : 150 km : 190 km
- Feeder road	Tumbang-Gema : 28 km	Muaralembu-Pulaupadang: 6 km	Jake-Kotokombu : 20 km
- Access road	Gema-damsite : 12 km	Pulaupadang-damsite : 4 km	Libukjambi-Lubukkambacang: 11 km
- Total distance*	120 km	140 km	Kotokombu-damsite : 10 km 180 km
Availability - Construction material	Upstream/downstream river bed Upstream/downstream river bed 2.5 km downstream right bank ridge Tanjungbelit (downstream) hillside	Downstream riverbed Downstream riverbed Upstream less than 1 km Sungai Sepuh (upstream/left bank) or Muaralembu (downstream)	Downstream river bed Downstream river bed Damsite
- Sand			
- Gravel			
- Rock			
- Core material			
- Electricity	Available up to Gem (220 V)	Available at Muaralembu & Pulaupadang (220 V/PLN diesel generator)	Available up to Lubukjambi (220 V) Jake & Kotokombu are not available
- Telephone/telecommunication	Not available	Not available	Not available
- Water supply	River water		Shallow well/Lubukkambakang
- Medical care	Clinic/Tanjungbelit, Muarabio	Clinic/Muaralembu	Clinic/Lubukkambacang
Others			
- Navigation	For transportation	For transportation	For transportation
- Historical monument	None	None	None

\* From Pekanbaru

**Table XIV.2.1 NUMBER OF HOUSES TO BE SUBMERGED IN KUANTAN RESERVOIR**

Kec. Desa Elev. (m)	Sijunjung	Tanjung Gadang							Perwakilan Tanjung Gadang				Total
	Durian Gadang	Padang Tarap	Pintu Batu	Tanjung Keling	Air Amo	Lubuk Kapie	Mudik Kimik	Banjar Tengah	Batang Karing	Sungai Mandar	Timpeh IV	Timpeh V	
100	0	109	32	154	66	55	73	109	0	0	0	0	598
110	0	109	32	154	66	55	73	109	0	0	0	0	598
115	224	109	32	154	191	55	73	109	104	3	0	0	1,054
120	237	109	32	154	245	55	73	109	110	3	92	0	1,219
125	276	109	32	154	451	55	73	109	114	8	147	378	1,906

- Note
- : Small Huts are not included
  - : Name of village is based on the map of 1: 50,000
  - : Sungai Mandar is named from the river flowing nearby
  - : Timpeh IV & V are new transmigrasi area
  - : Elevation (m) is a reservoir water level

**Table XIV.2.2 ROAD LENGTH AND NUMBER OF BRIDGES TO BE SUBMERGED**

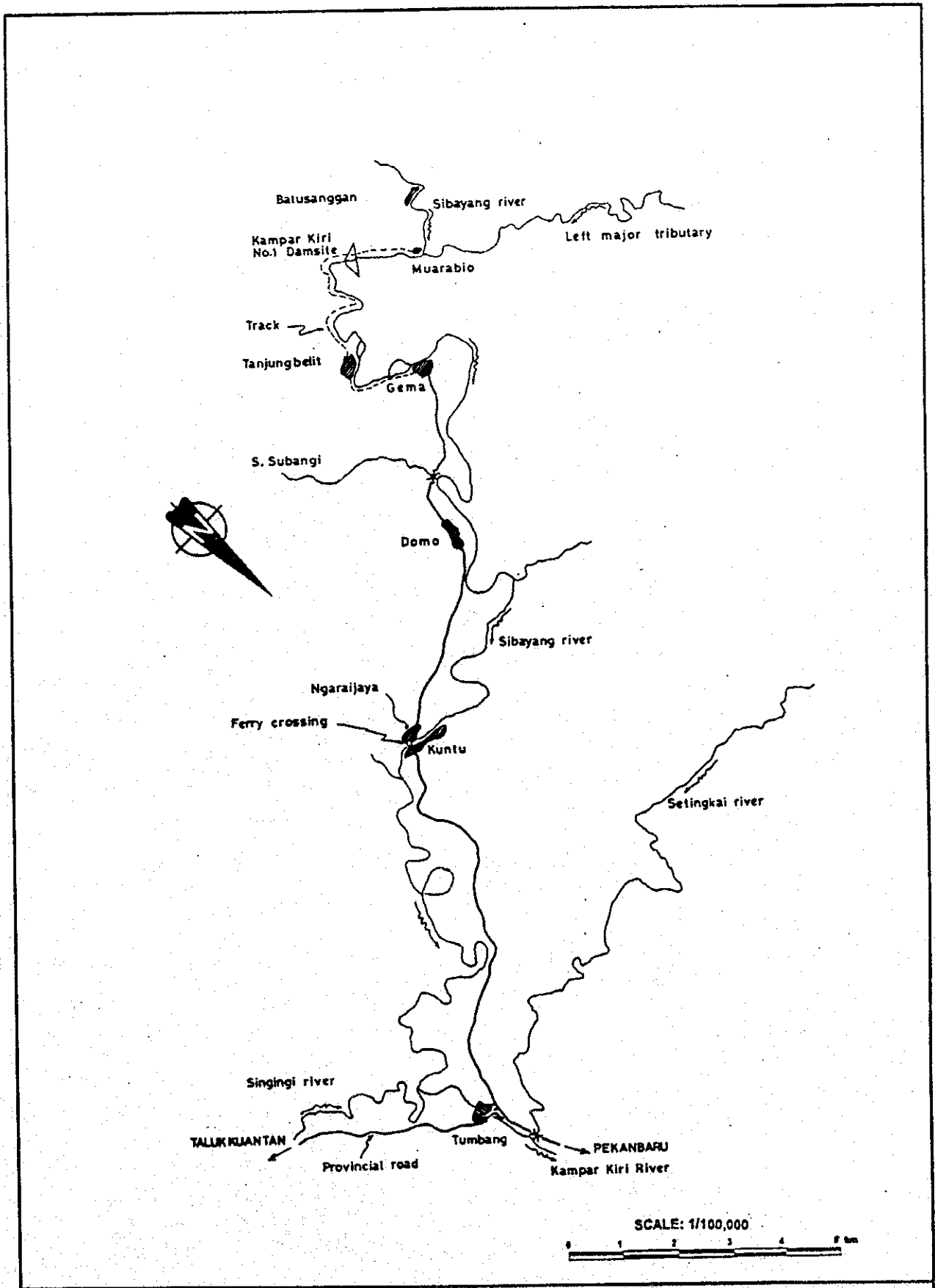
Kec.	Desa	Unit	Sijunjung	Tanjung Gadang								Perwakilan Tanjung Gadang				Total
			Durian Gadang	Padang Tarap	Pintu Batu	Tanjung Keling	Air Amo	Lubuk Kapiek	Mudik Kimik	Banjar Tengah	Bukit Langgam	Batang Karing	Sungai Mandar	Timpeh IV	Timpeh V	
Elev. (m)																
100	(1)	km	0	0	0	0	0	0	0	0	0	0	0	0	0	
	(2)	km	0	1.4	1.3	5.3	2.6	5.5	1	3.3	2.5	0	0	0	0	
	(3)	km	0	0	0	0	0	0	0	0	0	0	0	0	0	
	(4)	no.	0	0	1*	0	0	0	0	0	0	0	0	0	0	
	(5)	no.	0	0	0	0	0	0	0	0	0	0	0	0	0	
110	(1)	km	0	0	0	0	0	0	0	0	0	0	0	0	0	
	(2)	km	0	1.4	1.3	5.3	2.6	5.5	1	4.3	2.7	0	0	0	0	
	(3)	km	0.05	0	0	0	0	0	0	0	0	0	0	0	0	
	(4)	no.	0	0	1*	0	0	0	0	0	0	0	0	0	0	
	(5)	no.	0	0	0	0	0	0	0	0	0	0	0	0	0	
115	(1)	km	0	0	0	0	0	0	0	0	2.4	0	0	0	0	
	(2)	km	0	1.4	1.3	5.3	4	5.5	1	6.1	2.8	0.8	0.4	0	0	
	(3)	km	5.4	0	0	0	0	0	0	0	0	0	0	0	0	
	(4)	no.	4	0	1*	0	0	0	0	0	0	3	0	0	0	
	(5)	no.	0	0	0	0	0	0	0	0	0	3	0	0	0	
120	(1)	km	0	0	0	0	0	0	0	0	3.5	0	0	0	0	
	(2)	km	0	1.4	1.3	5.3	4	5.5	1	6.1	2.8	2.1	0.7	4.7	0	
	(3)	km	5.4	0	0	0	0	0	0	0	0	0	0	0	0	
	(4)	no.	4	0	1*	0	0	0	0	0	0	3	0	0	0	
	(5)	no.	0	0	0	0	0	0	0	0	0	3	0	4	0	
125	(1)	km	0	0	0	0	0	0	0	0	4.1	0	0	0	0	
	(2)	km	0	1.4	1.3	5.3	6.8	5.5	1	6.6	3.5	3	0.9	9.3	14.6	
	(3)	km	5.4	0	0	0	0	0	0	0	0	0	0	0	0	
	(4)	no.	4	0	1*	0	0	0	0	0	0	4	0	2	0	
	(5)	no.	0	0	0	0	1	0	0	0	0	3	0	12	8	

Note : (1) Trans-Sumatra Highway (2) District, village and logging roads (3) Foot Path (4) Bridges (5) Culverts, \* Suspension bridge

*FIGURES*

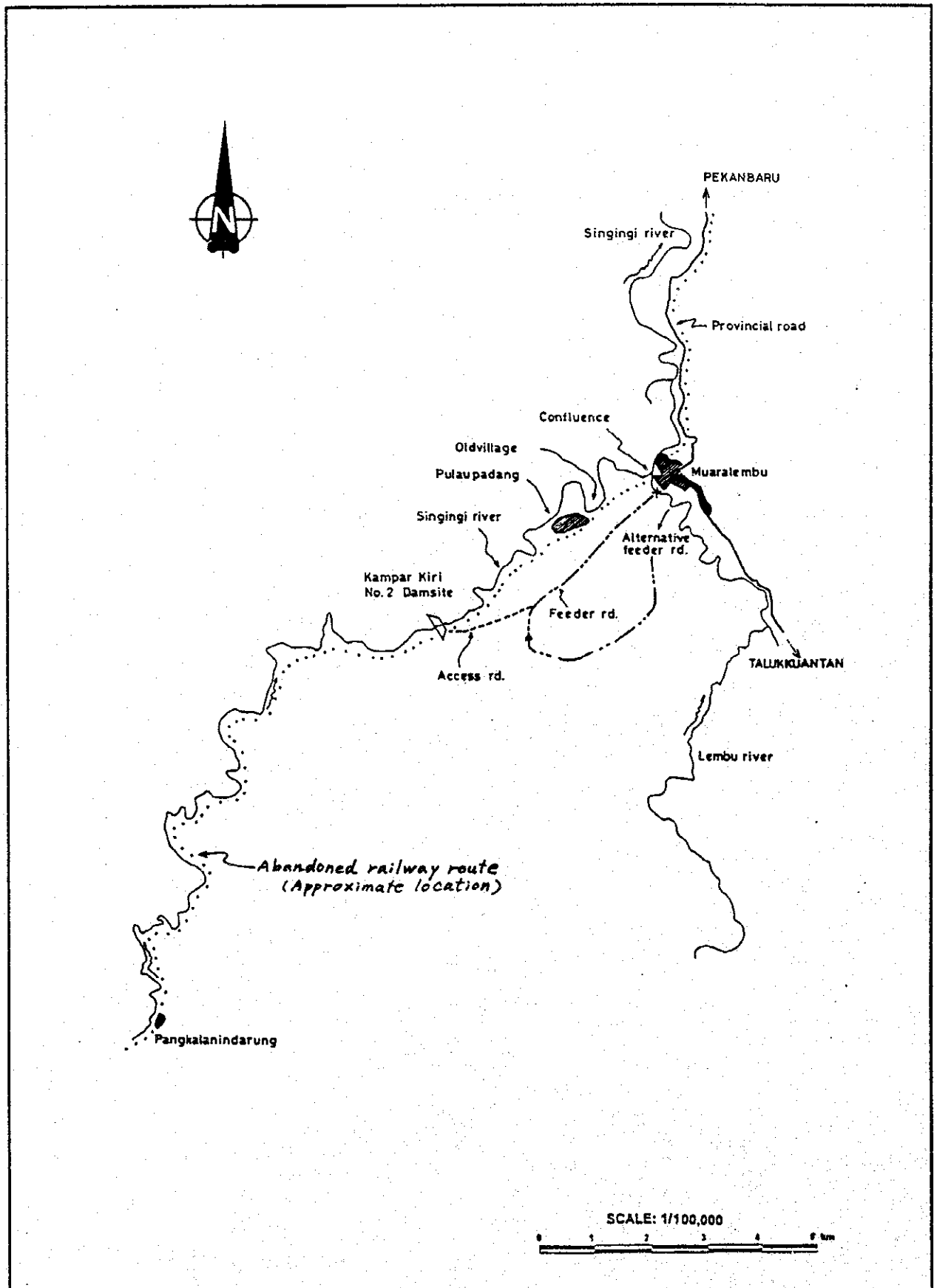
*XIV CONSTRUCTION PLAN*





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Fig. XIV.1.1 ACCESS ROUTE TO KAMPAR KIRI NO. 1 DAMSITE

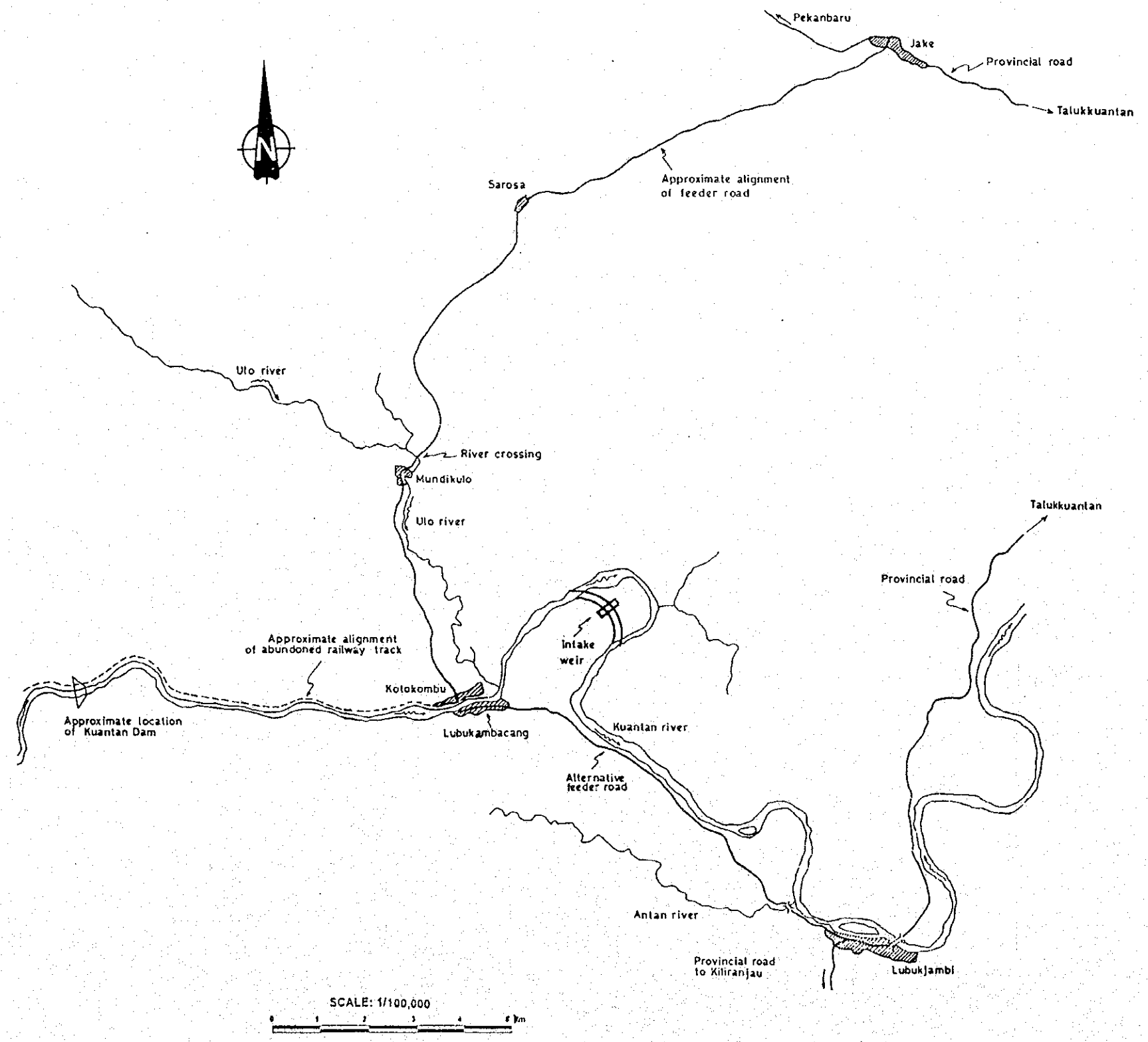


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Fig. XIV.12 ACCESS ROUTE TO KAMPAR KIRI NO. 2 DAMSITE



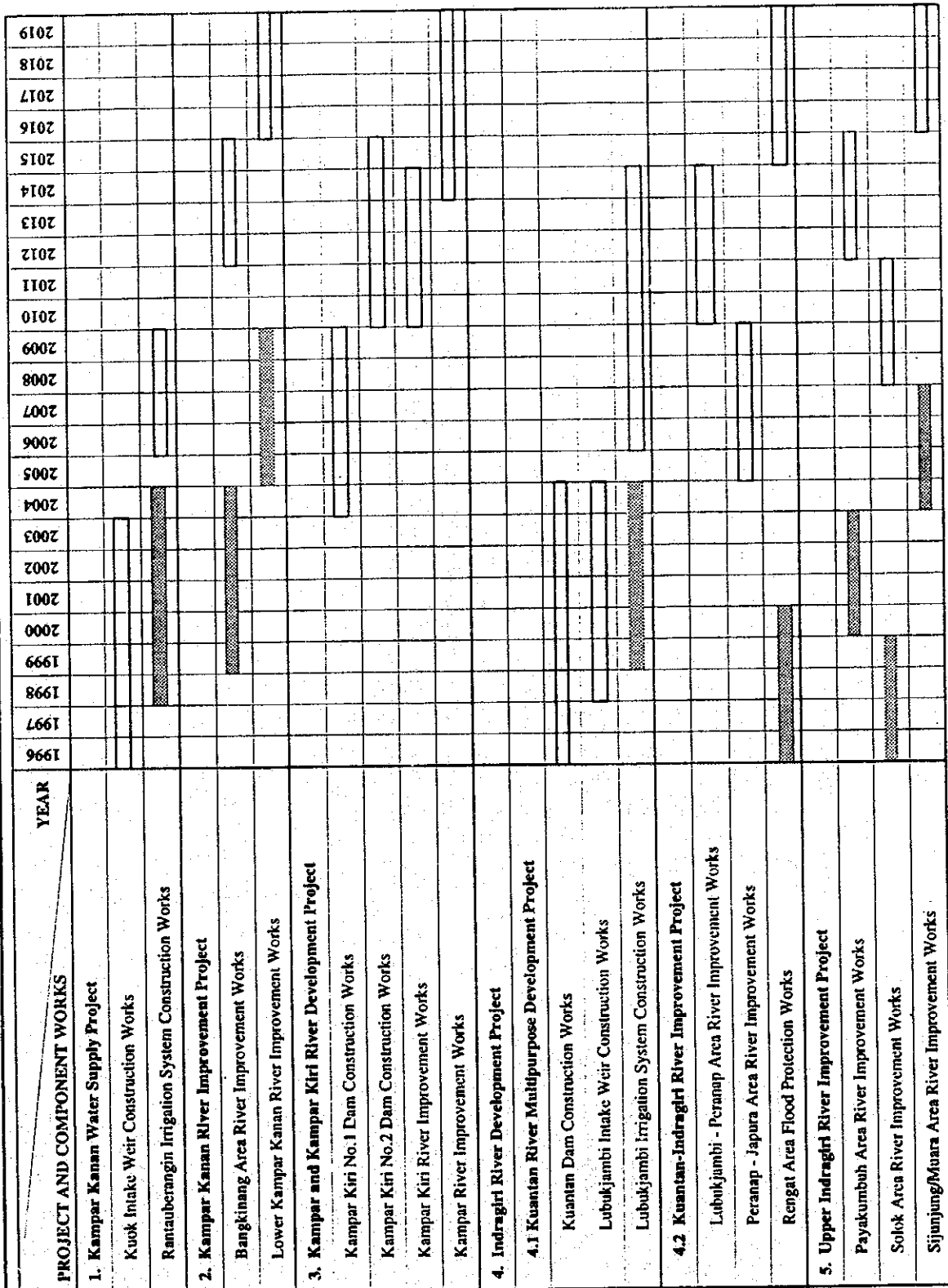




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Fig. XIV.13 ACCESS ROUTE TO KUANTAN DAMSITE



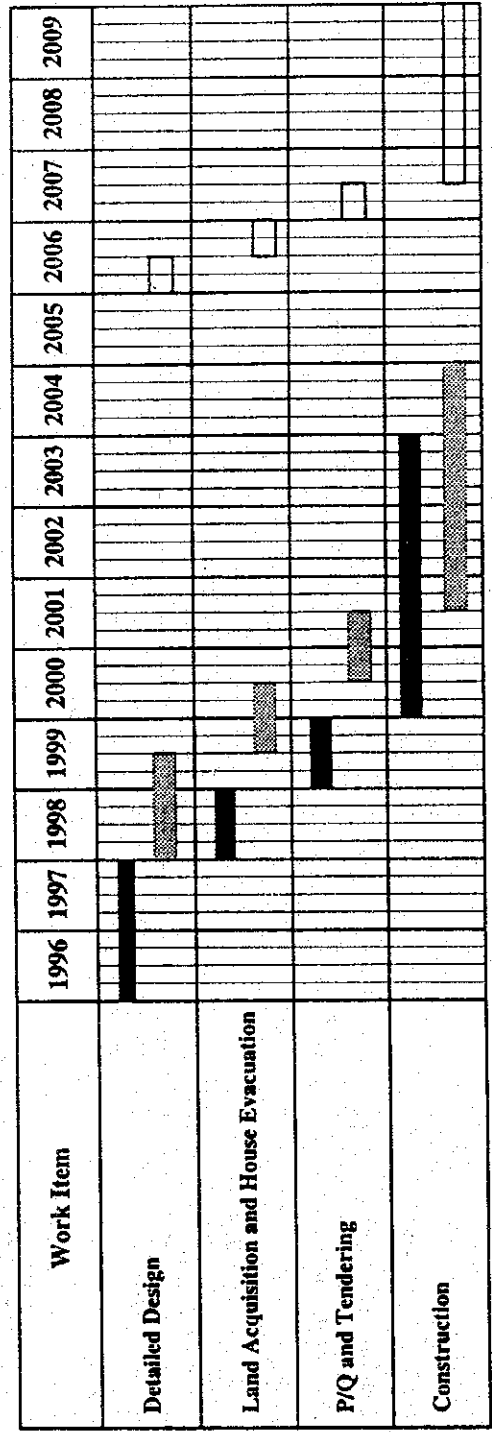


LEGEND: Initial Phase Final Phase

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Fig. XIV.14 IMPLEMENTATION SCHEDULE FOR OVERALL DEVELOPMENT PLAN

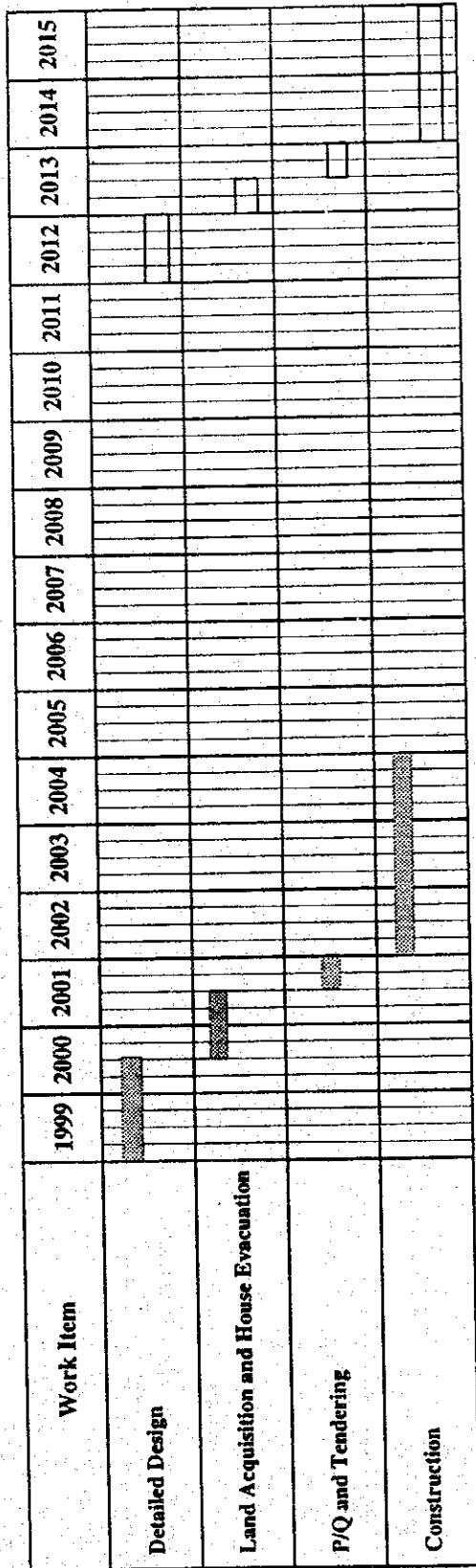
**KUOK INTAKE WEIR / RANTAUBERANGIN IRRIGATION SYSTEM CONSTRUCTION WORKS**



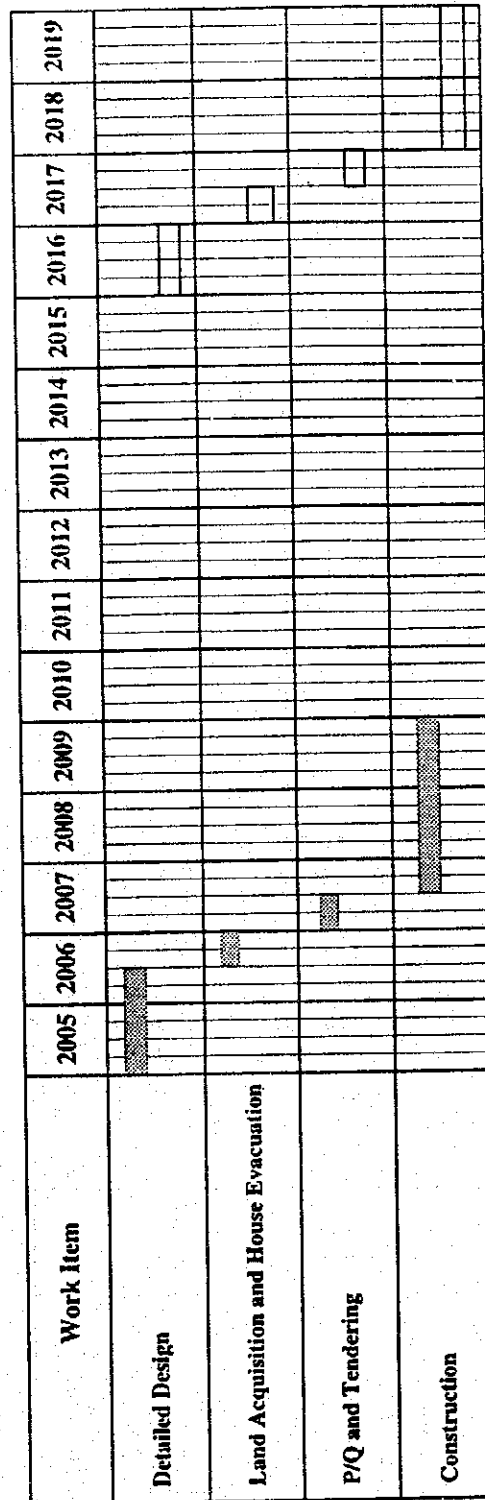
Initial Phase  
 Final Phase  
 Kuok Intake Weir  
 Rantauberangin Irrigation System

**Fig. XIV.1.5 IMPLEMENTATION SCHEDULE OF KAMPAR KANAN WATER SUPPLY PROJECT**

**BANGKINANG AREA RIVER IMPROVEMENT WORKS**



**LOWER KAMPAR KANAN RIVER IMPROVEMENT WORKS**





LEGEND : Initial Phase  Final Phase 

Fig. XIV.1.6 IMPLEMENTATION SCHEDULE OF  
KAMPAR KANAN RIVER  
IMPROVEMENT PROJECT

**KAMPAR KIRI NO. 2 DAM CONSTRUCTION WORKS**

Work Item	2010	2011	2012	2013	2014	2015
Detailed Design	■					
Land Acquisition and House Evacuation		■				
P/Q and Tendering			■			
Construction					■	■

**KAMPAR KIRI NO. 1 DAM CONSTRUCTION WORKS**

Work Item	2004	2005	2006	2007	2008	2009
Detailed Design	■					
Land Acquisition and House Evacuation		■				
P/Q and Tendering			■			
Construction					■	■

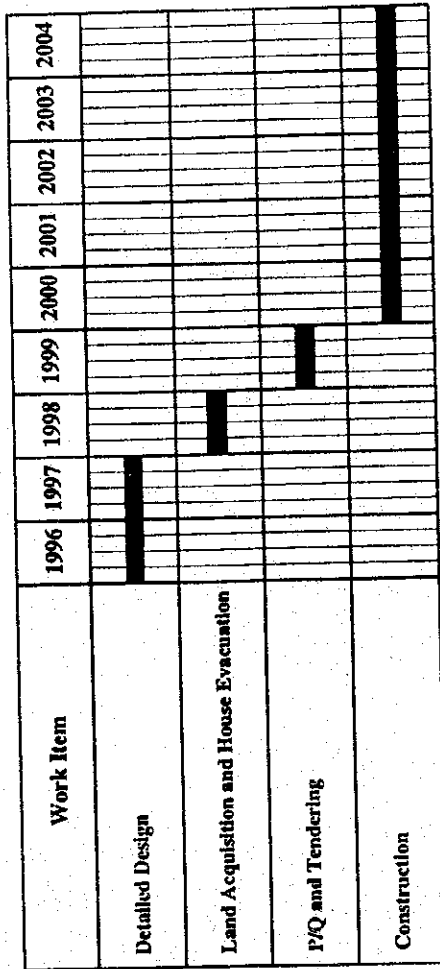
**KAMPAR RIVER IMPROVEMENT WORKS**

Work Item	2014	2015	2016	2017	2018	2019
Detailed Design	■					
Land Acquisition and House Evacuation		■				
P/Q and Tendering			■			
Construction					■	■

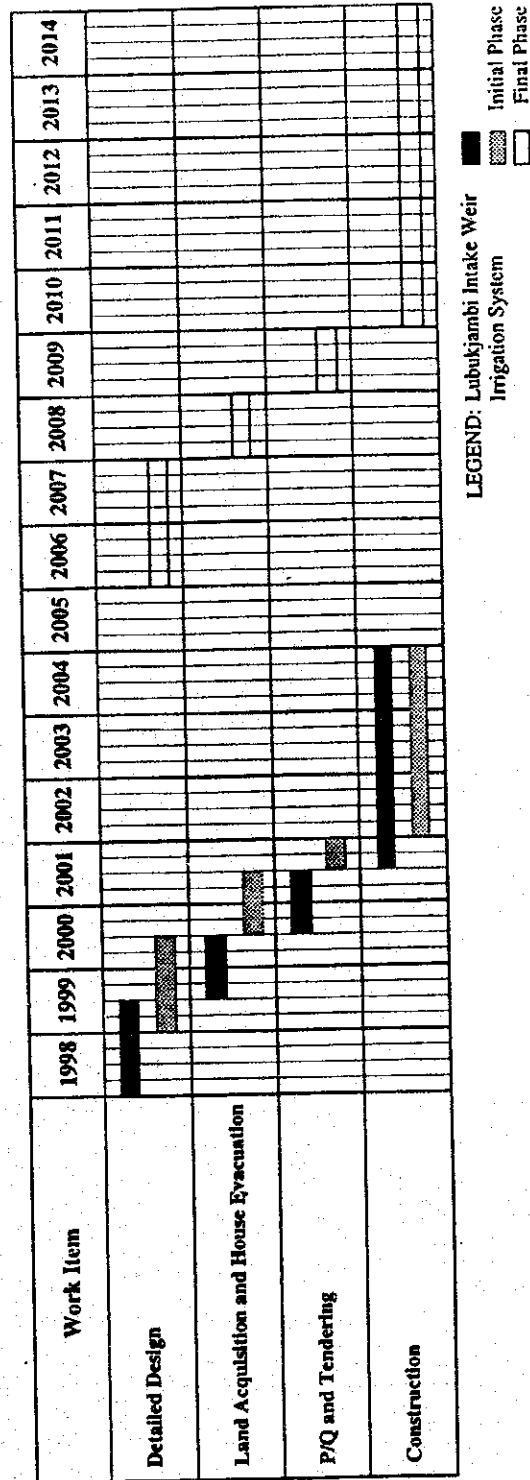
**KAMPAR KIRI RIVER IMPROVEMENT WORKS**

Work Item	2010	2011	2012	2013	2014
Detailed Design	■				
Land Acquisition and House Evacuation		■			
P/Q and Tendering			■		
Construction					■

**KUANTAN DAM CONSTRUCTION WORKS**



**LUBUKJAMBI INTAKE WEIR / IRRIGATION SYSTEM CONSTRUCTION WORKS**



LEGEND: Lubukjambi Intake Weir  
 Irrigation System  
 Initial Phase  
 Final Phase

Fig. XIV.1.8 IMPLEMENTATION SCHEDULE OF  
 KUANTAN RIVER MULTIPURPOSE  
 DEVELOPMENT PROJECT



LUBUKJAMBI - PERANAP AREA RIVER IMPROVEMENT WORKS

Work Item	2010	2011	2012	2013	2014
Detailed Design	■				
Land Acquisition and House Evacuation		■			
P/Q and Tendering		■			
Construction			■	■	■

PERANAP - JAPURA AREA RIVER IMPROVEMENT WORKS

Work Item	2005	2006	2007	2008	2009
Detailed Design	■				
Land Acquisition and House Evacuation		■			
P/Q and Tendering		■			
Construction			■	■	■

RENGAT AREA FLOOD PROTECTION WORKS

Work Item	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Detailed Design	■																								
Land Acquisition and House Evacuation		■																							
P/Q and Tendering		■																							
Construction			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

LEGEND: Initial Phase ■ Final Phase □

PAYAKUMBUH AREA RIVER IMPROVEMENT WORKS



Work Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Detailed Design	Initial Phase												Final Phase			
Land Acquisition and House Evacuation		Initial Phase												Final Phase		
P/Q and Tendering			Initial Phase												Final Phase	
Construction			Initial Phase	Initial Phase	Initial Phase											Final Phase

SOLOK AREA RIVER IMPROVEMENT WORKS

Work Item	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Detailed Design	Initial Phase												Final Phase			
Land Acquisition and House Evacuation		Initial Phase												Final Phase		
P/Q and Tendering			Initial Phase												Final Phase	
Construction			Initial Phase	Initial Phase	Initial Phase											Final Phase

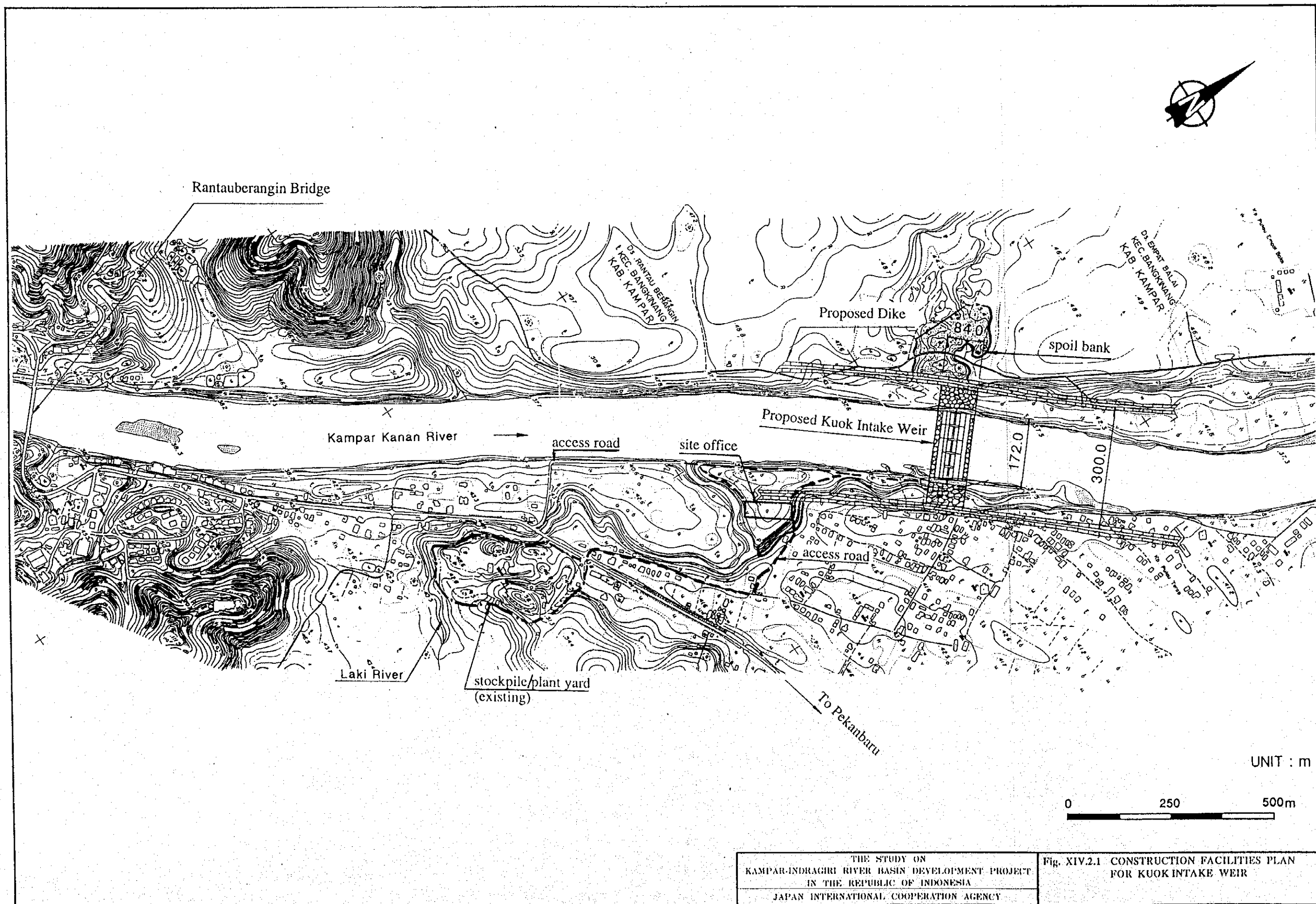
SIJUNJUNG/MUARA AREA RIVER IMPROVEMENT WORKS

Work Item	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Detailed Design	Initial Phase												Final Phase			
Land Acquisition and House Evacuation		Initial Phase												Final Phase		
P/Q and Tendering			Initial Phase												Final Phase	
Construction			Initial Phase	Initial Phase	Initial Phase											Final Phase

LEGEND: Initial Phase   
Final Phase 

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Fig. XIV.1.10 IMPLEMENTATION SCHEDULE OF  
UPPER INDRAGIRI RIVER  
IMPROVEMENT PROJECT



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Fig. XIV.2.1 CONSTRUCTION FACILITIES PLAN  
FOR KUOK INTAKE WEIR



### KUOK INTAKE WEIR

Work Item	Quantity	2000	2001	2002	2003
1. Preparatory Works	1 l.s.				
2. Head Works					
- Temporary Cofferdam	1 l.s.				
- Excavation	13,400 cu m				
- Backfill	3,300 cu m				
- Embankment	12,300 cu m				
- Weir					
Foundation Works	1 l.s.				
Concrete	7,750 cu m				
Apron	7,000 sq m				
Riverbed Protection	5,600 sq m				
Gate	481 sq m				
Revetment	1,460 sq m				
- Intake					
Foundation Works	1 l.s.				
Concrete	1,920 cu m				
Gate	137 sq m				
- Flushing Gate					
Foundation Works	1 l.s.				
Concrete	630 cu m				
Gate	47 sq m				
- Steel Stop Log	41 ton				
- Control Bridge	1,895 sq m				
- Control House	0 sq m				

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Fig. XIV.2.2 CONSTRUCTION SCHEDULE OF KUOK  
INTAKE WEIR

### RANTAUBERANGIN IRRIGATION SYSTEM - INITIAL PHASE

Work Item	Quantity	Initial			
		2001	2002	2003	2004
1. Preparatory Works	1 l.s.	—			
2. Irrigation Facilities					
a. Head Reach & Main Canal					
- Left Bank (L=44 km)					
Excavation	924,000 cu m	—	—	—	—
Embankment	396,000 cu m	—	—	—	—
Concrete Lining	36,100 cu m				
Footing	44,000 cu m				
Expansion Joint	82,000 m				
Weep Hole	1,200 units				
Gravel Metaling	26,400 cu m				
Regulation Ponds	1 l.s.				
- Right Bank (L=40 km)					
Excavation	407,000 cu m	—	—	—	—
Embankment	210,000 cu m	—	—	—	—
Concrete Lining	24,000 cu m				
Footing	44,000 cu m				
Expansion Joint	88,000 m				
Weep Hole	1,600 units				
Gravel Metaling	24,000 cu m				
Regulation Ponds	1 l.s.				
b. Left Bank Irrigation System					
- Existing/Existing *	1,837 ha				
- Existing/Rainfed	553 ha				
- Existing/Undeveloped	2,781 ha				
- New/Undeveloped	4,429 ha				
c. Right Bank Irrigation System					
- Existing/Existing *	1,822 ha				
- Existing/Rainfed	375 ha				
- Existing/Undeveloped	2,141 ha				
- New/Undeveloped	277 ha				

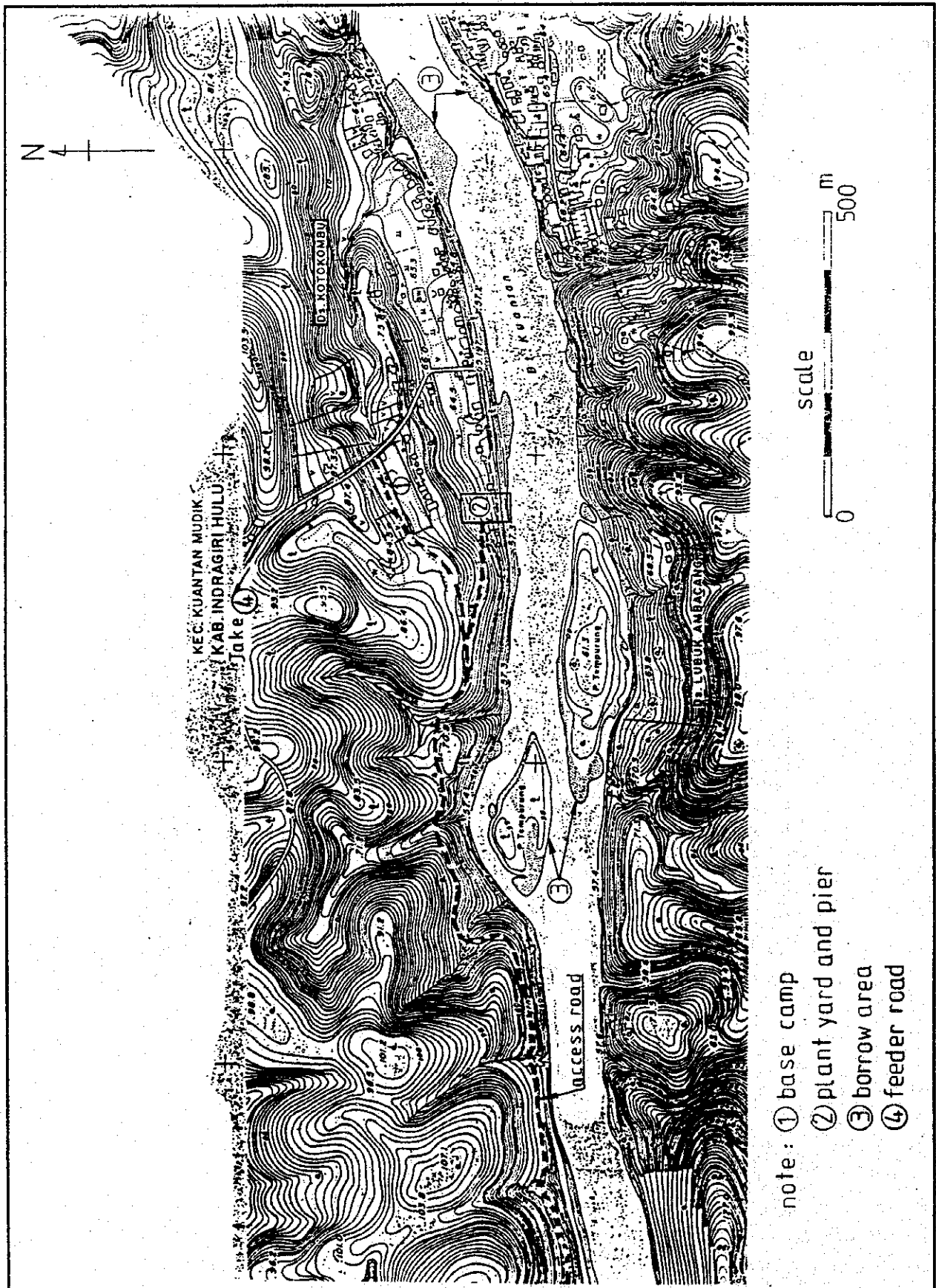
\* No construction work is generated because the existing irrigation facilities are to be utilized for water distribution.

**BANGKINANG AREA - INITIAL PHASE**

Work Item	Quantity	Initial		
		2002	2003	2004
1. Preparatory Works	1 ls			
2. Main Civil Works				
a. Dredging/Excavation	5,600,000 cu m			
b. Earth Dike				
- Stripping/Clearing	1,970,000 sq m			
- Embankment	4,170,000 cu m			
- Sodding	1,551,000 sq m			
- Filter	0 cu m			
- Gravel Metaling	44,000 cu m			
c. Concrete Dike	0 m			
d. Sluice				
- Type A	8 units			
- Type B	5 units			
- Type C	8 units			
- Type D	8 units			
- Type E	4 units			
- Type F	0 unit			
- Type G	0 unit			
- Type H	0 unit			
e. Revetment				
- Low Water Channel	113,000 sq m			
- High Water Channel	35,400 sq m			
f. Groin	57 sets			
g. Bridge				
- Footbridge	0 sq m			
- Road Bridge	4,200 sq m			
h. Miscellaneous	1 l.s.			

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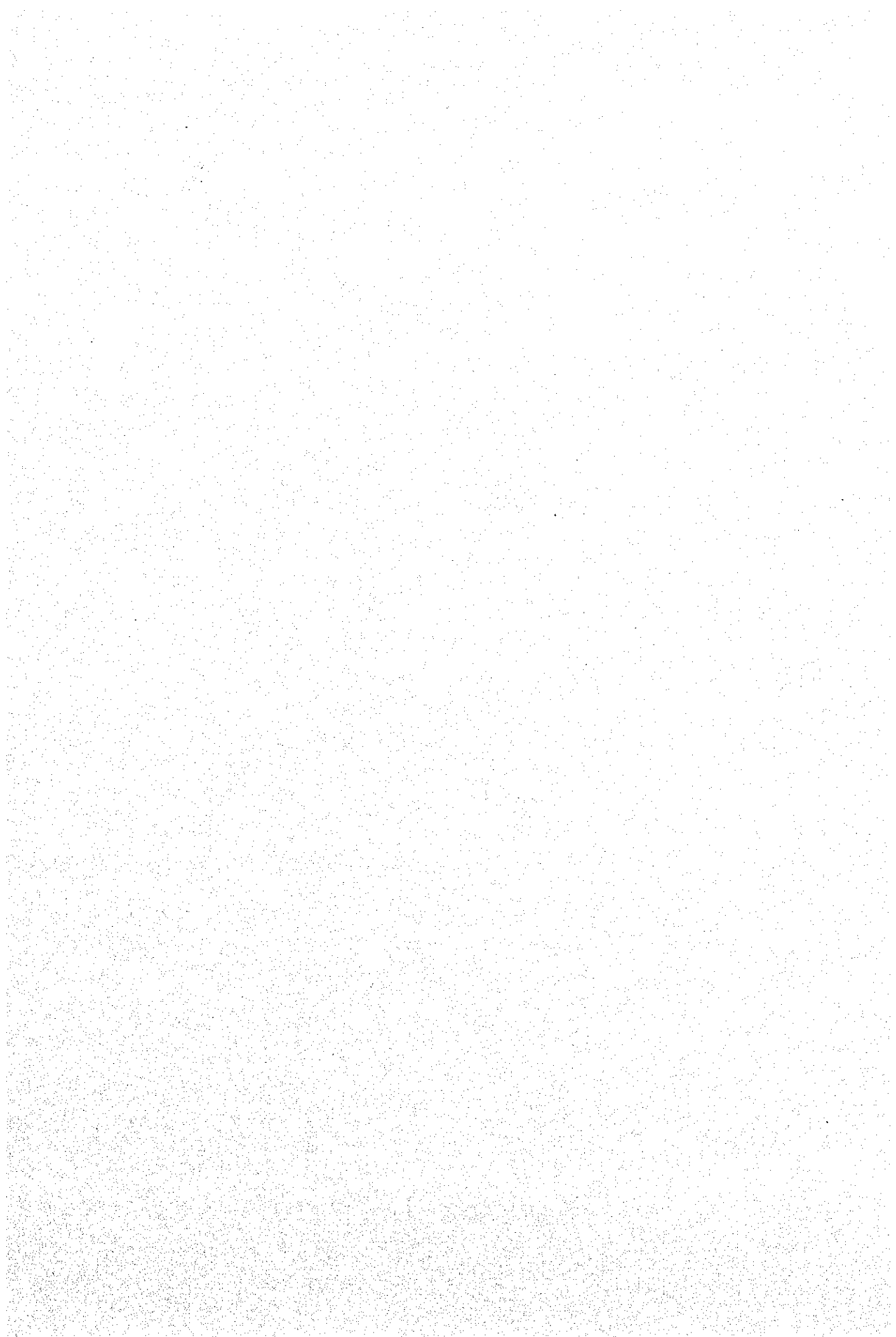
Fig. XIV.2.4 CONSTRUCTION SCHEDULE OF  
KAMPAR KANAN RIVER IMPROVEMENT  
PROJECT-BANGKINANG AREA

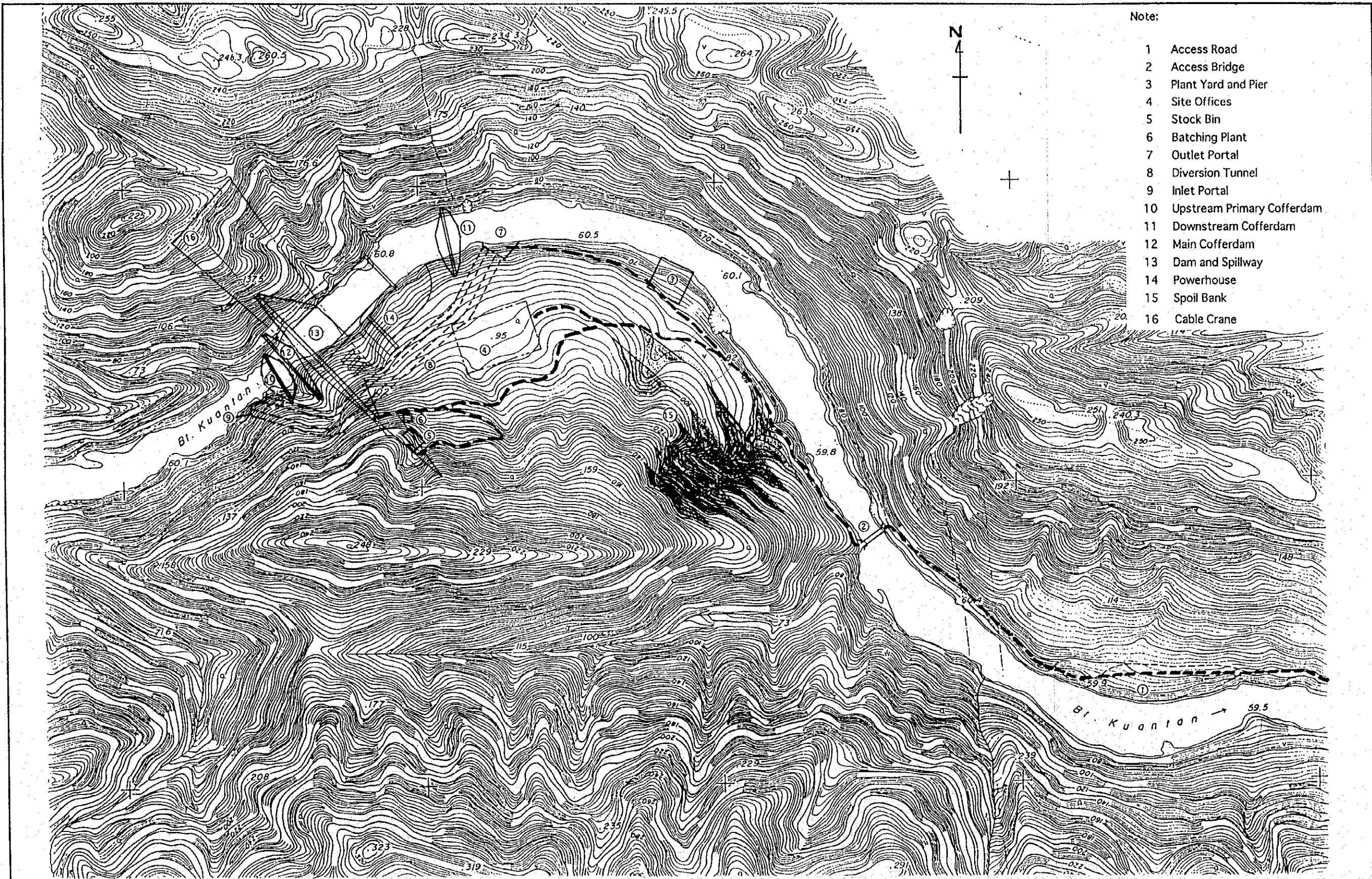


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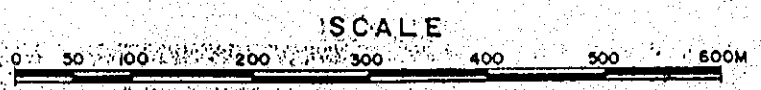
Fig. XIV.2.5 CONSTRUCTION FACILITIES PLAN FOR KUANTAN DAM (KOTOKOMBU)







- Note:
- 1 Access Road
  - 2 Access Bridge
  - 3 Plant Yard and Pier
  - 4 Site Offices
  - 5 Stock Bin
  - 6 Batching Plant
  - 7 Outlet Portal
  - 8 Diversion Tunnel
  - 9 Inlet Portal
  - 10 Upstream Primary Cofferdam
  - 11 Downstream Cofferdam
  - 12 Main Cofferdam
  - 13 Dam and Spillway
  - 14 Powerhouse
  - 15 Spoil Bank
  - 16 Cable Crane



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Fig. XIV.2.6 CONSTRUCTION FACILITIES PLAN FOR  
 KUANTAN DAM (DAMSTIE)

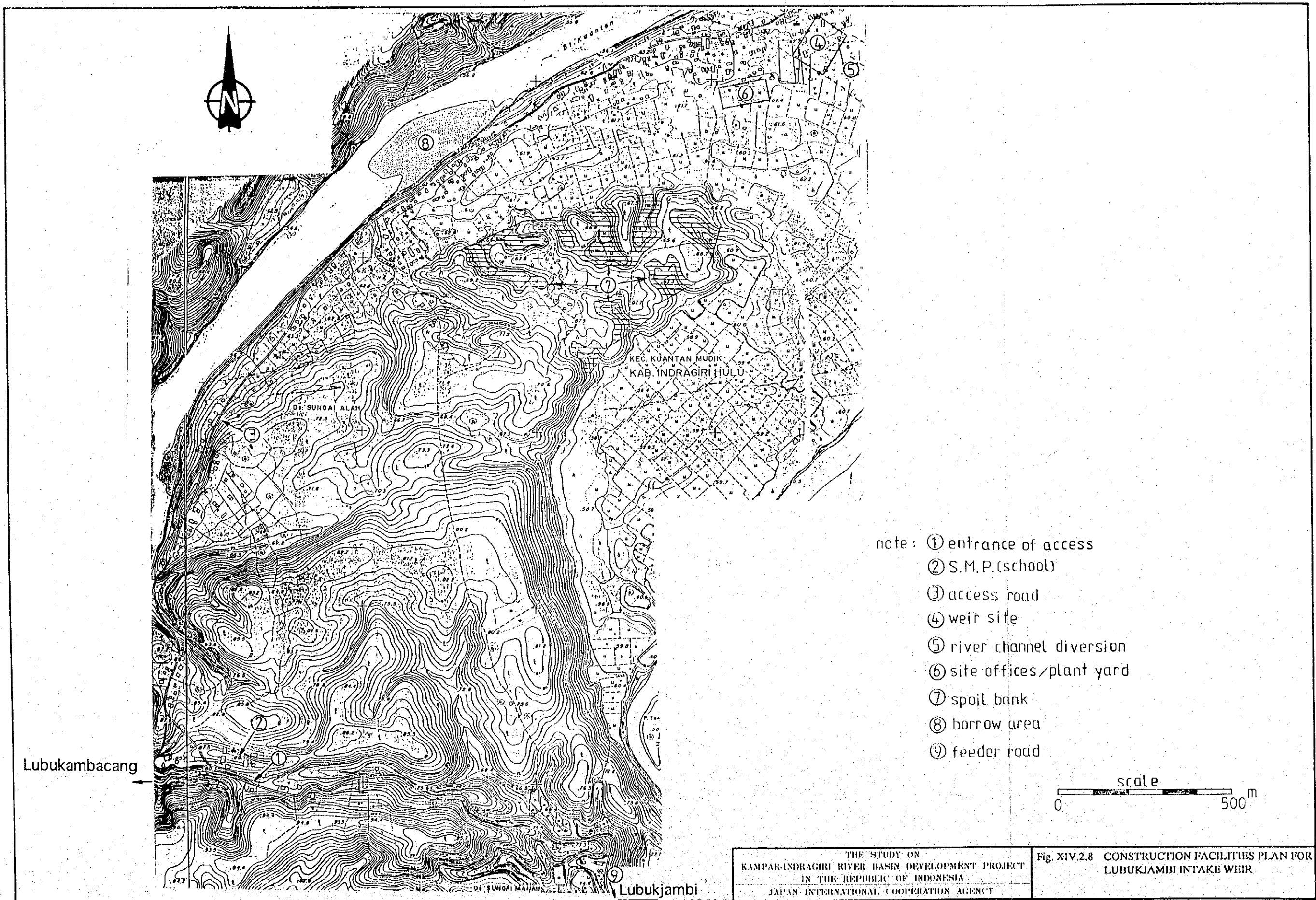


**KUANTAN DAM**

Work Item	Quantity	2000	2001	2002	2003	2004
1. Preparatory Works	1 l.s.					
2. Access Road						
a. Road (New and Relocation)	32,000 m					
b. Bridge	300 m					
3. Main Civil Works						
a. Diversion Tunnel						
- Open Excavation	6,400 cu m					
- Tunnel Excavation	81,200 cu m					
- Concrete Lining	22,300 cu m					
b. Cofferdam						
- Initial cofferdam embankment	7,200 cu m					
- Open Excavation	4,300 cu m					
- Mass Concrete (Main Cofferdam)	16,600 cu m					
c. Main Dam and Spillway						
- Open Excavation	190,400 cu m					
- Mass Concrete, Dam	339,100 cu m					
- Concrete, Spillway	43,400 cu m					
- Grouting	16,900 m					
d. Penstock						
- Trench Excavation	21,600 cu m					
- Fill and Backfill	16,200 cu m					
e. Powerhouse and Tailrace						
- Open Excavation	129,500 cu m					
- Concrete (Reinforced)	29,200 cu m					
f. Switchyard						
- Open Excavation	2,300 cu m					
- Concrete, Switchyard	600 cu m					
4. Hydro-Mechanical Works						
a. Diversion Tunnel Gates (Slide)	220 ton					
b. Spillway Gates (Radial)	1,100 ton					
c. River Outlet Intake Screen	5 ton					
d. River Outlet Gate (Roller)	15 ton					
e. River Outlet Main Valve	1 l.s.					
f. River Outlet Steel Pipe	30 ton					
g. Power Intake Screen	60 ton					
h. Power Intake Gate (Roller)	290 ton					
i. Power Tailrace Gate (Roller)	90 ton					
j. Power Steel Penstock	720 ton					
5. Generating Equipment	1 l.s.					
6. Transmission Line	1 l.s.					

THE STUDY ON  
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Fig. XIV.2.7 CONSTRUCTION SCHEDULE OF  
KUANTAN DAM



- note :
- ① entrance of access
  - ② S.M.P.(school)
  - ③ access road
  - ④ weir site
  - ⑤ river channel diversion
  - ⑥ site offices /plant yard
  - ⑦ spoil bank
  - ⑧ borrow area
  - ⑨ feeder road

scale  
0 500 m

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Fig. XIV.2.8 CONSTRUCTION FACILITIES PLAN FOR LUBUKJAMBI INTAKE WEIR



### LUBUKJAMBI INTAKE WEIR

Work Item	Quantity	2001	2002	2003	2004
1. Preparatory Works	1 l.s.	—			
2. Head Works					
- Temporary Cofferdam	0 l.s.				
- Excavation	814,000 cu m				
- Backfill	18,000 cu m				
- Embankment	800 cu m				
- Weir					
Foundation Works	1 l.s.				
Concrete	13,200 cu m				
Apron	10,130 sq m				
Riverbed Protection	6,190 sq m				
Gate	553 sq m				
- Intake					
Foundation Works	1 l.s.				
Concrete	1,200 cu m				
Gate	84 sq m				
- Flushing Gate					
Foundation Works	1 l.s.				
Concrete	820 cu m				
Gate	57 sq m				
- Steel Stop Log	85 ton				
- Control Bridge	1,142 sq m				
- Control House	315 sq m				

### LUBUKJAMBI IRRIGATION SYSTEM - INITIAL PHASE

Work Item	Quantity	2001	2002	2003	2004
1. Preparatory Works	1 l.s.				
2. Irrigation Facilities					
a. Head Reach & Main Canal					
- Left bank (L=76 km)					
Excavation	1,254,000 cu m				
Embankment	35,000 cu m				
Concrete Lining	60,800 cu m				
Footing	76,000 cu m				
Expansion Joint	87,000 m				
Weep Hole	1,500 unit				
Gravel Metaling	45,600 cu m				
Regulation Ponds	1 l.s.				
b. Left Bank Irrigation System					
- Existing/Existing *	1,670 ha				
- Existing/Rainfed	376 ha				
- Existing/Undeveloped	2,096 ha				
- New/Undeveloped	5,234 ha				

\* No construction work is generated because the existing irrigation facilities are to be utilized for water distribution.

THE STUDY ON  
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Fig. XIV.2.9 CONSTRUCTION SCHEDULE OF KUANTAN  
RIVER MULTIPURPOSE DEVELOPMENT  
PROJECT-INTAKE WEIR/IRRIGATION  
SYSTEM



RENGAT AREA - INITIAL PHASE

Work Item	Quantity *	Initial		
		1998	1999	2000
1. Preparatory Works	1 l.s.			
2. Main Civil Works				
a. Dredging/Excavation	0 cu m			
b. Earth Dike				
- Stripping/Clearing	271,000 sq m			
- Embankment	472,000 cu m			
- Sodding	245,600 sq m			
- Filter	0 cu m			
- Gravel Metaling	9,100 cu m			
c. Concrete Dike	1,400 m			
d. Control Gate (2 spans x 2.5W x 2.0H)	5 units			
e. Sluice				
- Type A	0 unit			
- Type B	0 unit			
- Type C	0 unit			
- Type D	0 unit			
- Type E	0 unit			
- Type F	0 unit			
- Type G	0 unit			
- Type H	0 unit			
- 5 spans x 7.0W x 5.2H	1 unit			
e. Drainage Pumping Station				
- Excavation	3,200 cu m			
- Embankment	3,400 cu m			
- Reinforced Concrete	690 cu m			
- Control House	300 sq m			
- Mechanical Works	1 l.s.			
f. Revetment				
- Low Water Channel	4,400 sq m			
- High Water Channel	0 sq m			
g. Groin	8 sets			
h. Bridge				
- Footbridge	0 sq m			
- Road Bridge	35 sq m			
i. Miscellaneous	1 l.s.			



***XV PROJECT COST ESTIMATE***



**SECTOR XV  
PROJECT COST ESTIMATE**

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## CHAPTER 1 OVERALL DEVELOPMENT PLAN

### 1.1 General

The construction cost estimate for the Overall Development Plan is based on the design and implementation schedule described in SECTOR XIV, CONSTRUCTION PLAN. Basic unit costs, labor wages, construction materials and heavy equipment were surveyed in Pekanbaru, adjacent construction sites and some manufacturers near the study area. The project cost required for the implementation of the Overall Development Plan was estimated, as described below.

### 1.2 Conditions for Cost Estimate

Project cost was estimated on the basis of design, construction schedule and the following basic concepts:

- (1) All unit costs are based on the price level as of July 1994.
- (2) Currency conversion rates are assumed at US\$1.00 = Rp. 2,175 and ¥1.00 = Rp. 21.90 as of July 1994.
- (3) Project cost is composed of construction base cost, compensation cost, administration cost, engineering cost, price contingency, physical contingency and value added tax. The calculation was carried out as follows:
  - (a) Construction Base Cost = Work Quantity × Unit Price
  - (b) Compensation Cost = Area of Land and/or Number of Houses × Unit Price
  - (c) Administration Cost = 5 % of [(a) + (b)]
  - (d) Engineering Cost = 10% of (a)
  - (e) Price Contingency (Financial Cost only): Annual escalation rate of foreign currency portion is 3% and local portion, 8%.
  - (f) Physical Contingency = 10% of [(a) + (b) + (d) + (e)]
  - (g) Value Added Tax (Financial Cost only) = 10% of [(a) + (b) + (c) + (d) + (e) + (f)]
- (4) Unit prices of construction materials

Unit prices of construction materials available in the local market and those that have to be imported are based on current market prices (refer to Table XV.1.1)

## XV Project Cost Estimate

### (5) Labor Wages

Labor wages were carefully examined and determined and the results are shown in Table XV.1.2.

### (6) Unit Prices of Heavy Equipment

The unit prices of heavy are given in Table XV.1.3.

### (7) Compensation for House Evacuation and Land Acquisition

Referring to the available data mainly provided by the Provincial Public Works of Riau and West Sumatra provinces and through discussions with the officials concerned, the unit costs of compensation for house evacuation and land acquisition were determined and are summarized in Table XV.1.4.

### (8) Foreign Currency and Local Currency Portions

Project cost consists of the foreign currency portion (F.C.) and the local currency portion (L.C.). The components of major items are given as follows:

Item	F.C. (%)	L.C. (%)
(1) Labor Cost	0	100
(2) Owning Cost of Heavy Equipment	100	0
(3) Material Unit Cost		
- Cement	50	50
- Aggregate	0	100
- Fuel	50	50
- Oil	50	50
- Reinforced Bar	80	20
- Structural Steel	80	20
(4) Compensation Cost	0	100
(5) Administration Cost	0	100

### (9) Financial and Economic Costs

Financial costs are estimated as real expenses of the project owner; whereas, project cost in economic evaluation is reckoned in terms of usage of real sources. Contractor's profit, price contingency and value added tax are, therefore, not considered in the economic costs. Hence, market prices are converted to economic prices in the economic evaluation. Conversion factors for economic prices are described in SECTOR XVI, ECONOMIC EVALUATION.



### 1.3 Project Cost Estimate

Financial costs of the project components were figured out, as shown in Tables XV.1.5 to XV.1.19. Tabulated below is a summary of financial costs for the five major projects broken down into foreign currency (F.C.) and local currency (L.C.) portions.

Unit: Rp. 10<sup>6</sup>

Major Projects	F.C.	L.C.	Total
(1) Kampar Kanan Water Supply Project	155,256	127,068	282,324
(2) Kampar Kanan River Improvement Project	444,751	423,859	868,610
(3) Kampar and Kampar Kiri River Development Project	1,018,100	793,692	1,811,792
(4) Indragiri River Development Project	1,328,732	1,172,919	2,501,651
- Kuantan River Multipurpose Development Project	503,705	422,283	925,988
- Kuantan-Indragiri River Improvement Project	825,027	750,636	1,575,663
(5) Upper Indragiri River Improvement Project	360,022	307,215	667,237
Grand Total	3,306,861	2,824,753	6,131,614

Note: Price Contingency is not included.

The breakdown of financial cost of each project component is given below (refer to Tables XV.1.5 to XV.1.19).

Unit: Rp. 10<sup>6</sup>

Project	F.C.	L.C.	Total
(1) Kampar Kanan Water Supply Project	155,256	127,068	282,324
1-1 Kuok Intake Weir/Rantauberangin Irrigation System Construction Works (Initial Phase)	107,874	87,942	195,816
1-2 Rantauberangin Irrigation System Construction Works (Final Phase)	47,382	39,126	86,508
(2) Kampar Kanan River Improvement Project	444,751	423,859	868,610
2-1 Bangkinang Area River Improvement Works (Initial Phase)	126,915	120,397	247,312
2-2 Bangkinang Area River Improvement Works (Final Phase)	45,135	59,125	104,260
2-3 Lower Kampar Kanan River Improvement Works (Initial Phase)	216,755	181,406	398,161
2-4 Lower Kampar Kanan River Improvement Works (Final Phase)	55,946	62,931	118,877

XV Project Cost Estimate

(3) Kampar and Kampar Kiri River Development Project	1,018,100	793,692	1,811,792
3-1 Kampar Kiri No. 1 Dam Construction Works	379,796	274,195	653,991
3-2 Kampar Kiri No. 2 Dam Construction Works	158,568	143,113	301,681
3-3 Kampar Kiri River Improvement Works	50,113	33,800	83,913
3-4 Kampar River Improvement Works	429,623	342,584	772,207
(4) Indragiri River Development Project	1,328,732	1,171,919	2,501,651
4-1 Kuantan River Multipurpose Development Project	503,705	422,283	925,988
4-1-1 Kuantan Dam Construction Works	256,976	210,292	467,268
4-1-2 Lubukjambi Intake Weir / Irrigation System Construction Works (Initial Phase)	100,591	85,693	186,284
4-1-3 Lubukjambi Intake Weir / Irrigation System Construction Works (Final Phase)	146,138	126,298	272,436
4-2 Kuantan-Indragiri River Improvement Project	825,027	750,636	1,575,663
4-2-1 Lubukjambi-Peranap Area River Improvement Works	275,053	290,878	565,931
4-2-2 Peranap-Japura Area River Improvement Works	338,925	304,315	643,240
4-2-3 Rengat Area Flood Protection Works (Initial Phase)	21,704	17,932	39,636
4-2-4 Rengat Area Flood Protection Works (Final Phase)	189,345	137,511	326,856
(5) Upper Indragiri River Improvement Project	360,022	307,215	667,237
5-1 Payakumbuh Area River Improvement Works (Initial Phase)	131,335	99,581	230,916
5-2 Payakumbuh Area River Improvement Works (Final Phase)	63,799	63,523	127,322
5-3 Solok Area River Improvement Works (Initial Phase)	52,499	41,410	93,909
5-4 Solok Area River Improvement Works (Final Phase)	16,793	26,489	43,282
5-5 Sijunjung/Muara Area River Improvement Works (Initial Phase)	72,077	54,586	126,663

5-6	Sijunjung/Muara Area River Improvement Works (Final Phase)	23,519	21,626	45,145
Grand Total		3,306,861	2,824,753	6,131,614

Note: Price Contingency is not included.

#### 1.4 Operation and Maintenance Cost

The annual operation and maintenance costs include the salaries of project administrative and operation staff, the material and labor costs for operation, repair and maintenance of O&M equipment, and the running costs for project facilities. The annual O&M costs were estimated to be 0.5% of the total construction base cost except for the Kampar Water Supply Project (Kuok Intake Weir and Rantauberangin Irrigation Project) and the Lubukjambi Intake Weir and Irrigation Project. Annual O&M cost for the Kampar Water Supply Project is estimated at Rp. 813×10<sup>6</sup>/year (Rp. 569×10<sup>6</sup>/year for the initial phase and Rp. 244×10<sup>6</sup>/year for the final phase), and annual cost for the Lubukjambi Intake Weir and Irrigation Project is Rp. 1,206×10<sup>6</sup>/year (Rp. 375×10<sup>6</sup>/year for the initial phase and Rp. 831×10<sup>6</sup>/year for the final phase).

#### 1.5 Replacement Cost

Some of the facilities, especially mechanical and electrical equipment, have shorter useful life than the civil works. However, only the rubber gates for the Kuok Intake Weir are to be replaced after 25 years upon completion and the other costs could be met by the O&M costs.

#### 1.6 Annual Disbursement Schedule

Annual disbursement of investment costs was estimated on the basis of the implementation schedule. The disbursement schedules of financial costs are given in Tables XV.1.20 to XV.1.24 and those of economic costs are shown in Tables XV.1.25 to XV.1.29.

## CHAPTER 2 FEASIBILITY STUDY

### 2.1 General

The following four priority projects were recommended as objective projects for the Feasibility Study.

- (1) Kampar Kanan Water Supply Project
- (2) Bangkinang Area River Improvement Works (Initial Phase)
- (3) Kuantan River Multipurpose Development Project
- (4) Rengat Area Flood Protection Works (Initial Phase)

### 2.2 Project Cost Estimate and Disbursement Schedule for Priority Projects

The estimation of project cost for priority projects was made as described below.

#### (1) Conditions for Cost Estimate

The same conditions as the Overall Development Plan were applied for the estimation of project costs.

#### (2) Project Cost

The financial costs of project components were estimated as shown in Tables XV.2.1 to XV.2.5. A summary of the financial costs of the four projects broken down into foreign currency and local currency portions is given below (refer to Tables XV.2.6 to XV.2.9).

Unit: Rp. 10<sup>6</sup>

Project	F.C.	L.C.	Total
(1) Kampar Kanan Water Supply Project (Initial Phase)	107,874	87,942	195,816
(2) Bangkinang Area River Improvement Works (Initial Phase)	126,915	120,397	247,312
(3) Kuantan River Multipurpose Development Project (Initial Phase)	391,848	348,477	740,325
3-1 Kuantan Dam Construction Works	291,257	261,765	553,022
3-2 Lubukjambi Intake Weir/Irrigation System Construction Works (Initial Phase)	100,591	86,712	187,303
(4) Rengat Area Flood Protection Works (Initial Phase)	22,222	18,073	40,295
Grand Total	648,859	574,889	1,223,748

Note: Physical Contingency and Value Added Tax are included. Price Contingency is excluded.

(3) Operation, Maintenance and Replacement Cost

The same conditions as the Overall Development Plan are applied for the estimation of operation, maintenance and replacement costs.

(4) Annual Disbursement Schedule

The annual disbursement schedules of the financial costs are given in Tables XV.2.6 to XV.2.9, and those of the economic costs are shown in Tables XV.2.10 to XV.2.13.

Based on the allocation of Kuantan Dam construction cost for hydropower generation, discussed in SECTOR XI, the disbursement schedule for the cost of hydropower generation was worked out as shown in Table XV.2.14 (financial cost only).

