TABLES

Table 5.1.1 MONTHLY RAINY DAYS AT SEMARANG METEOROLOGICAL STATION (BMG)

Year		Rainfa	11	Inc	Cat	T.	Т.	Т	1					-γ	·	UNIT: da
	0 <	~	5 mm	Jan 0	Feb	Mar	Vbr	May		Jul		Sep	Oct	Nov	Dec	Total
	5 <	•••			$\frac{1}{0}$	0 _	. 0	1.1.	0	0	_ 0	0	0	0	3	4
1987	10 <	R <	10 mm		0	1 1	0	3	2	0	_ 0	0	l		6]4
	15 <	R <	15 mm		1 -1	2	.]	. 2	0	0	0	0	0	0	1	- 10
	30 <		30 mm	3	_5_	2	2	0_	1	1_1	0	0	0	3	4	21
 	0 <	R ma		9	6	4	0	1	0	1	0	0	0	4	9	34
	5 <	R <	5 mm			2	0	<u> </u>	_0	0	2	2	2	2	3	19
1988	10 <	R <	10 mm	L	2	3	0	11	1	J. i	0	I	-	3	1	18
1700	15 <	R <	15 mm		4	2	_0_	Ī	0	0	1	- i]	2	- 3 -	18
		R <	39 mm	2	6	3]_3_	4	1		0	0	4	2	4	30
	30 <	R mn		7	5	6	5	2	0	0	0	0	2	2	11	40
	0 <	R <	5 mm	3	2	2	2	3	4	3	1	2	4	2	3	31
1989	5 <	R <	10 mm	2	2	2	3	2	0	1		0	2	1-1	3	19
1707	10 <	, R < ,	15 mm	2	_ 5	<u>l</u>	3	1	2	2	0	0		4	0	21
	15 <	R <	30 mm	4	2	4	3	i	3	0	0	0	3	6	3	29
<u></u>	30 <	R mm		4	01	8	4	4	2	1	0	1	1-1-	3	5	43
,	0 <	R <	5 mm	6	2_	5	1	3	1		1	2		4	3	30
1990	5 <	R <	· 10 mm	2	2	3	2	1	0	1	2	1	2	<u> </u>	6	23
1330	10 <	R <	15 mm	1_1_	4	2		0	3	0	ī	1	2	2	2	19
	15 <	R <	30 mm	3	. 6	4	4	0	3	0	2	T	0	2	4	29
	30 <	R mm		8	1	2	1	2	i i	1	0	0	0	2	1	25
	0 <	R <	5 mm	5	6	2	3	0	2	0	0	0	2	4	5	29
1991	5 <	R <	10 mm	2	2	5	2	0	0	0	0	0	1	i	5	18
1991	10 <	R <	15 mm	2	1	0	6	1	0	1	0	0	_o_	<u>-</u> -	0	16
	15 <	R <	30 mm	6_	6	1	2	0	0	0	-0	0	1-0-	4	6	25
	30 <	R mm		10	4	2	4	2	0	0	0	0	0	3	2	27
	0 <	R <	5 mm	3	2	1	4	5	4	0	6	2	5	6	2	40
1000	5 <	R <	10 mm	2	2	3	4	0	1	1	0	<u> </u>	<u> </u> _3	4	0	21
1992	10 <	R <	15 mm	L	_ 3	5	3	3	0	0	0	2	4-	0	l- i	22
	15 <	R <	30 mm	3	4	6	2	2	2	0	1-1	2	4	<u> </u>	2	29
	30 <	R mm		4	_ 3	3	3	2	1	0	3	2	1	1	7	30
	0 <	R <	5 mm	6	_1	6	2	2	3	ı	1	1	0	i	3	27
1000	5 <	R <	10 mm	1	_4	5	4	0	1	1	2	2	1	2		24
1993	> 01	R <	15 mm	_ 2	3_[2	3	ī	1	1	1		0		3	20
	15 <	R <	30 mm	5	_ 3	1	2	0	3 -	ī	0	0	1	1	2	19
	30 <	R mm		6	4	3	4	T	77	0	0	1-1-	0		$\frac{2}{3}$	25
İ	0 <	R <	5 mm	2	0	-5	5	0	ī	1	2	0	0	6	2	24
	5 <	R <	10 mm	2	5	1	2	0	0	0	1	0	0	2	3	16
1994	10 <	R <	15 mm	4	3	0	1	1	0	-0	0	0	2	2	-3	16
. [15 <	R <	30 mm	6	5	9	3	2	0	-0	0	0	1	1	4	31
	30 <	R mm		9	2	8	2	0	0	0	-0	0		5	6	$-\frac{31}{33}$
	0 <	R <	5 mm	9	6	1	2	3	01	0	0	0	- <u>;</u> -	6	3	41
اا	5 <	R <	10 mm	2	1	5	5	2	2	0	0	0	3	0	4	
1995	10 <	R <	15 mm	1	2	3	1	1	2		0	0	1	4	- 2	24
	15 <	R <	30 mm	2	5	5	1		3	_ <u>_</u> _	$\left -\frac{\circ}{\circ} \right $		2	- 6		17
	30 <	R mm		6	4	6	0	3	2	0	0	<u>-i</u> -	0	$-\frac{6}{4}$	<u>-6</u> _	$\frac{32}{24}$
	0 <	R <	5 mm	7	3	4	4	3	$\frac{7}{1}$	3	2	2	9	-4	8	34
ا رور	5 <	R <	10 mm	4	0	3	2	-i-l	2	<u>-</u> -	2	ī	-4	- 5	4	46
1996	10 <	R <	15 mm	1	2	4	2		1	1		0		-	6	$\frac{31}{20}$
	15 <	R <	30 mm	8	11	4	1	一十	- 0 -		i 	 -	4		_5	<u>20</u>
	30 <	R mm		2	9	4	-0	\dashv	0	-0-		-	$-\frac{4}{1}$	$\frac{4}{2}$	3	$-\frac{38}{26}$
យ	0 <	R <	5 mm	4.5	2.3	2.8	2.3	2.1	2.6	0.9	1.5			2	5	26
AVERAGE	5 <	R <	10 mm	2.1	2	3.1	2.4	- <u></u>	0.9	0.6	0.8	1.1	2.4	3.5	3.1	29.1
즮	10 <		15 mm	2	2.8	2.1	2.1	1.2	0.9	0.5		0.6	1.8	2	3.5	20.8
5	15 <		30 mm	4.2	5.3	3.9	2.3	1.1	1.6	0.3	0.4	0.5	1.2	2.2	1.8	17.7
~	30 <	R mm		6.5	4.8	4.6	$\frac{2.3}{2.3}$	1.8	0.7	0.3		0.5	1.9	3	3.8	28.3
				.بلــــــــــــــــــــــــــــــــــــ					V.7	V.J	0.4	0.6	0.6	2.8	6.3	31.7

Table 5.1.2 MONTHLY WORKABLE DAYS FOR CONSTRUCTION WORKS [EARTH WORKS & FOUNDATION WORKS]

UNIT: day

ltem						Мо	onth			- P- P-10*			VII: day
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
(1) Rainy Day & Suspended Day		! !		: :	:	1		:		:			
Calendar	31	28	31	30	31	30	31	31	30	31	30	31	365
5 <r<10 :="" day<="" mm="" rainy="" td=""><td>2.1</td><td>2</td><td>3.1</td><td>2.4</td><td>1</td><td>0.9</td><td>0.6</td><td>0.8</td><td>0.6</td><td>1.8</td><td>2</td><td>3.5</td><td>20.8</td></r<10>	2.1	2	3.1	2.4	1	0.9	0.6	0.8	0.6	1.8	2	3.5	20.8
: Suspended Day	0	0	0	0	0	0	0	0	0	0	0	0	0.0
(Rainy Day x 0.0)						: !		:	! !				‡ ÷
10 <r<15 :="" day<="" mm="" rainy="" td=""><td>2</td><td>2.8</td><td>2.1</td><td>2.1</td><td>1.2</td><td>0.9</td><td>0.5</td><td>0.4</td><td>0.5</td><td>1.2</td><td>2.2</td><td>1.8</td><td>17.7</td></r<15>	2	2.8	2.1	2.1	1.2	0.9	0.5	0.4	0.5	1.2	2.2	1.8	17.7
: Suspended Day	0	0	0	0	0	0	. 0	0	0	0	0	0	0.0
(Rainy Day x 0.0)		! ;	İ				:			1			
15 <r<30 :="" day<="" mm="" rainy="" td=""><td>4.2</td><td>5.3</td><td>3.9</td><td>2.3</td><td>1.1</td><td>1.6</td><td>0.3</td><td>0.4</td><td>0.5</td><td>1.9</td><td></td><td>2.0</td><td>20.2</td></r<30>	4.2	5.3	3.9	2.3	1.1	1.6	0.3	0.4	0.5	1.9		2.0	20.2
: Suspended Day	4.2	5.3	3.9	2.3	1.1		0.3	0.4	0.5	1.9	3	3.8 3.8	28.3 28.3
(Rainy Day x 1.0)		J.J.	3-7	2.3	1.1	1.0	0.3	0.4	0.5	1.7	3	3.6	20.3
										; !			
30 mm < : Rainy Day	6.5	4.8	4.6	2.3	1.8	0.7	0.3	0.4	0.6	0.6	2.8	6.3	31.7
: Suspended Day	13	9.6	9.2	4.6	3.6	1.4	0.6	0.8	1.2	1.2	5.6	12.6	63.4
(Rainy Day x 2.0)		1					<u>.</u>	•					
(2) Total of Rainy Day	14.8	14.9	13.7	9.1	5.1	4.1	1.7	2	2.2	5.5	10	15.4	98.5
(3) Total of Suspended Day	17.2	14.9	13.1	6.9	4.7	3	0.9	1.2	1.7	3.1	8.6	16.4	91.7
(4) Suspended Rate: (3)/(1)%	55.5	53.2	42.3	23.0	15.2	10.0	2.9	3.9	5.7	10.0	28.7	52.9	25.1
(5) Sunday & National Holiday	7	4	5	7	7	4	5	6	4	4	6	5	64.0
(6) Rainy Day in Sunday & National Holiday (5) x (4)	3.9	2.1	2.1	1.6	1.1	0.4	0.1	0.2	0.2	0.4	1.7	2.6	16.6
(7) Non Workable Day : (3)+(5)-(6)	20.3	16.8	16.0	12.3	10.6	6.6	5.8	7.0	5.5	6.7	12.9	18.8	139.1
(8) Workable Day : (1)-(7)	10.7	11.2	15.0	17.7	20.4	23.4	25.2	24.0	24.5	24.3	17.1	12.2	225.9
(9) Workable Rate : (8)/(1)%	34.5	40.1	48.4	59.0	65.7	78.0	81.4	77.5	81.8	78.4	57.1	39.5	61.9
(10) Applied Workable Day	11	11	15	18	20	23	25	24	25	24	17	12	225

Note: Data of average rainy day is given from 1987 to 1996 at Semarang Meteorological Station (BMG)

Table 5.1.3 MONTHLY WORKABLE DAYS FOR CONSTRUCTION WORKS [CONCRETE WORKS & GATE INSTALLATION]

UNIT: day Month Item Total Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec (1) Rainy Day & Suspended Day Calendar 31 28 31 30 31 30 31 31 30 31 30 31 365 5<R<10 mm Rainy Day 2.0 3.1 2.4 1.0 0.9 0.6 0.8 0.6 1.8 2.0 20.8 3.5 Suspended Day 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 (Rainy Day x 0.0) 10<R<15 mm : Rainy Day 2.0 2.8 2.1 2.1 0.5 1.2 0.9 0.4 0.5 1.2 2.2 1.8 17.7 Suspended Day 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.00.0 0.0 (Rainy Day x 0.0) 15<R<30 mm : Rainy Day 4.2 5.3 3.9 2.3 1.1 1.6 0.3 0.4 0.5 1.9 3.0 3.8 28.3 Suspended Day 4.2 5.3 3.9 2.3 1.1 1.6 0.3 0.5 0.4 1.9 3.0 3.8 28.3 (Rainy Day x 1.0) 30 mm < Rainy Day 6.5 4.8 4.6 2.3 1.8 0.7 0.3 0.4 0.6 0.6 2.8 6.3 31.7 Suspended Day 6.5 4.8 4.6 2.3 1.8 0.7 0.3 0.4 0.6 0.6 2.8 6.3 31.7 (Rainy Day x 2.0) (2) Total of Rainy Day 14.8 14.9 13.7 9.1 5.1 4.1 1.7 2.0 2.2 5.5 10.0 15.4 98.5 (3) Total of Suspended Day 10.7 10.1 8.5 4.6 2.9 2.3 0.6 0.8 1.1 2.5 5.8 10.1 60.0 (4) Suspended Rate: (3)/(1)% 34.5 36.1 27.4 | 15.3 9.4 7.7 1.9 2.6 3.7 8.1 19.3 32.6 16.4 (5) Sunday & National Holiday 7.0 4.0 5.0 7.0 7.0 4.0 5.0 6.0 4.0 4.0 6.0 5.0 64.0 (6) Rainy Day in Sunday & 2.4 1.4 1.4 1.1 0.7 0.3 0.0 0.2 0.1 0.3 1.2 1.6 10.7 National Holiday (5) x (4) (7) Non Workable Day: (3)+(5)-(6) 12.7 12.1 15.3 10.5 9.2 6.0 5.6 6.6 5.0 6.2 10.6 13.5 113.3 (8) Workable Day: (1)-(7) 15.7 15.3 21.8 18.9 19.5 24.0 25.0 25.4 24.4 24.8 19.4 17.5 251.7 (9) Workable Rate: (8)/(1)% 50.7 54.8 60.9 64.9 70.2 80.0 81.9 78.6 83.5 80.1 64.5 56.5 69.0 (10) Applied Workable Day 16 15 19 20 22 24 25 24 25 25 19 18 252

Note: Data of average rainy day is given from 1987 to 1996 at Semarang Meteorological Station (BMG)

Table 5.1.4 WORKABLE DAYS

()

Work Items	Precipitation	Suspension	Jan Feb		Mar Apr May	Apr	May	Jun	Jul A	Aug Scp	Scp	Oct Nov Dec	Nov	Dec	Total
Earth Works R≥ 15 mm/day	R≥15 mm/day	one(1) day suspension	=	=	1.5	18 20	20	- 60	25	24	25	24	17	12	225
Foundation Works R≥30 mm/day	R≥30 mm/day	two(2) day suspension		; .	}	?	3	3			}		;	;	
Concrete Works	D > 15 mm/dos.	D > 15 mm/dow (1) dow energeneion	16	16 15 19	:	. 00	, ,	24 25	, ; ;	24	ر بر	۶.	0	×	757
Gate Installation	N = 15 man ady	מאסנפווסלפחפ לחח (ז)סווס	?	}		3	;	,	}	 i ,		3	``.	· ·	

Table 5.1.5

SEASONAL WORKABLE DAYS

Work Items	Dry Season (Apr. ~ Nov.)	Rainy Season (Dec. ~ Mar.)	Through a year
Earth Works	176 days /	49 days / = 12 days / mth	225 days / = 18 days / mith
Foundation Works	/ 8 mth - 22 days / 111111	4 mth - 12 cm/5 / 11111	, אפשר בי יייניי
Concrete Works	184 days / = 23 days / with	68 days / 4 = 17 days / mth	252 days / = 21 days / mth
Gate Installation	8 mth	mu ,	4 year 4 year

Table 5.2.1

į)

Worl: Itom	1		1 st year	2 nd year	3 rd year	ı
		Anumary -	1 2 3 4 5	> T & 6	0 1 2 1 2 1 4 1 5 1 2 1 2 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3	12
	-				+ 7 7 4	31
						į.,
1. Preparation		-				
Office, Others						
2. River Improvement						
Dredging	E E	58,400				1
						$\neg \vdash$
3. Dike Raising						
Earth works	L.S.	-				T
Wet Stone Masonry	ີຂ	1.670				
						-
						0.50
4. Closure of All Drainage Outlets						1
into Semarang River	nos.	56				T
						1000
5. Inspection Road						T -
Pavement	"E	58,700				1
						100
						100
						7.7.

CONSTRUCTION TIME SCHEDULE OF ASIN RIVER DRAINAGE SYSTEM IMPROVEMENT (PACKAGE 2) Table 5.2.2

]			-	st year			2 nd vear				3 art wester	}	4.	
1.5	work them	ă		18 2	2	 m	10111	1.2.3	5	8	10 11	4 5	1 8 1		1 1 1 6	ر ا د ا
L.S.									-			-		- 100 mil	-1	
L.S. L.S.	1. Preparation							377			200					
L.S. J. J. J. J. J. J. J.	Treutment Facilities	L.S.	-							 —						
wart L.S. 1 Section S																
1.8 1 2 2 2 2 2 2 2 2 2	2. Relocation of Semarang River															
certain II.S. 1 I.S. Collicing	1. S.	-		П						38:						
ent L.S. 1 250	Earth Works	L.S.				- Ω				-						
cuvation m ² 68.300 cm	Revetment	8								_						
Line Line							3								2 / S	
on 1,250 1,2	3. River Improvement				_	-										
covation m' 68300 c c c c c c c c c c c c c c c c c c	Coffering	L.S.		U								n		- - 		-
m 134	Dredging and Excavation	Ë	68,300								234					; ;
on Los 2 Los 2 Los 1,260 m² 1,260 m² 1,320 m² 1,320 nat Los 1 Lo	Revetment	8	2,330											 		
L.S. 2 2 2 2 2 2 2 2 2 2	Box Culvert	a	26													
L.S. 2	Bridges	L.S.	7											 		:
on m² 1,260 % wt pilos L.S. 1 L.S. 11 L.S. 11 M. 31,000 m³ 3,560 m² 3,560 m² 3,560 m² 3,560 m² 3,560	Relocation	L.S.	7							-				Î		
ona m³ 1,260 C<						_										-
m² 1260 m² 1260 m² 1260 m² 1260 m² 1320 m² 1260 m²	4. Asia Pump Station															-
Thick L.S. 1 1,020	Excuvation	Ē	1,260		-											
m² 1,020 m² 1,320	PC piles and Sheet piles	ĽS.	<u> </u>							П	32					
m, 1,320 m 1,320 m m 1,320 m m m m m m m m m	Embankment	, E					65 A	4			n		-			-
1. S. 1 1 </th <th>Concrete</th> <th>Œ</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th> </th> <th>n</th> <th></th> <th></th> <th>-</th> <th></th> <th>-</th>	Concrete	Œ								 	n			-		-
L.S. 1 Compound L.S. 1 Compound L.S. 1 <th>Pump installation</th> <th>L.S.</th> <th>-</th> <th></th> <th>_</th> <th></th> <th></th> <th></th> <th></th> <th>_</th> <th>n</th> <th></th> <th></th> <th></th> <th></th> <th><u> </u></th>	Pump installation	L.S.	-		_					_	n					<u> </u>
ice Compound L.S. 1 Image: Compound of the compound	Gate works	L.S.	-1													
LS. 1 20ad 2	Management Office Compound	Ľ.S.	-1							-						
Poad m³ 31,000 m³ <	Operation Test	L.S.														<u> </u>
20nd m ¹ 31,000											<u> </u>	33				
L.S. 1 (5. Asin Retarding Pond															1
L.S. 1 C	Excuvation	~E	31,000													
n ² 3,560 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Revetment	L.S.	1		<u>i</u>								-			1
m² 3,560 % % % % % % % % % % % % % % % % % % %			- 1								2000 2000 2000 2000					-
	6. Inspection Road	ı,	- 1	V 44									- 	<u> </u>		

Table 5.2.3 CONSTRUCTION TIME SCHEDULE OF BANDARHARJO DRAINAGE SYSTEM IMPROVEMENT (PACKAGE 3)

Work Item	Cart	t Ouantiry	_		2 nd year	3 rd year	4 th vear
ı			1 2 3 4 5 6 7 8	9 10 11 12 1 2 3 4	1 5 6 1 7 8 9 9 10 11 12 12 2 13	4 5 6 7 8	9 110 11 12 1 2 3 3 4 5
The state of the s	-						-
1. Preparation							
2. River Improvement							
Dredging and Everyation	T	30 100					
Division	3 1	+					
The state of the s	= 5						
Closure of Liversion Cate	L.S.						
							(
3. Baru Pump Station							
Excavation	m ³	860					7/24 7/20 7/20 7/20 7/20 7/20 7/20 7/20 7/20
PC piles and Sheet piles	L.S.						
Concrete	Ê	1,070					
Embankment	Ê	1,030					
Pump installation	L.S.						
Gate works	L.S.]		
Management Office Compound	L.S.						
Operation Test	5						
	1						
+. Baru Ketarding Pond	- -	_4					
Excavation	Ē	30,400					
Revetment	e						
5. Baru Conveyance Channel	E	069					
						3	
6. West Secondary Channel	E	580					
7. East Secondary Channel	E	120					
		- 1					
8. Inspection Road	E	15,000					

Table 5.2.4 MOBILIZATION AND DEMOBILIZATION OF CONSTRUCTION EQUIPMENT OF SEMARANG RIVER

(1)

(

181 years 192 years 193 years 194 S 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1		3	4			·	7.1	-,	T	T	Ţ <u>.</u> .		T-	1	T]	T
3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 1 2 1 2 3 4 5 6 7 8 9 10 11 12 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2		<u></u>			"		, cy	2	-	200	, e	6	~	"	9	123	
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Table 5.2.5 MOBILIZATION AND DEMOBILIZATION OF CONSTRUCTION EQUIPMENT OF ASIN RIVER

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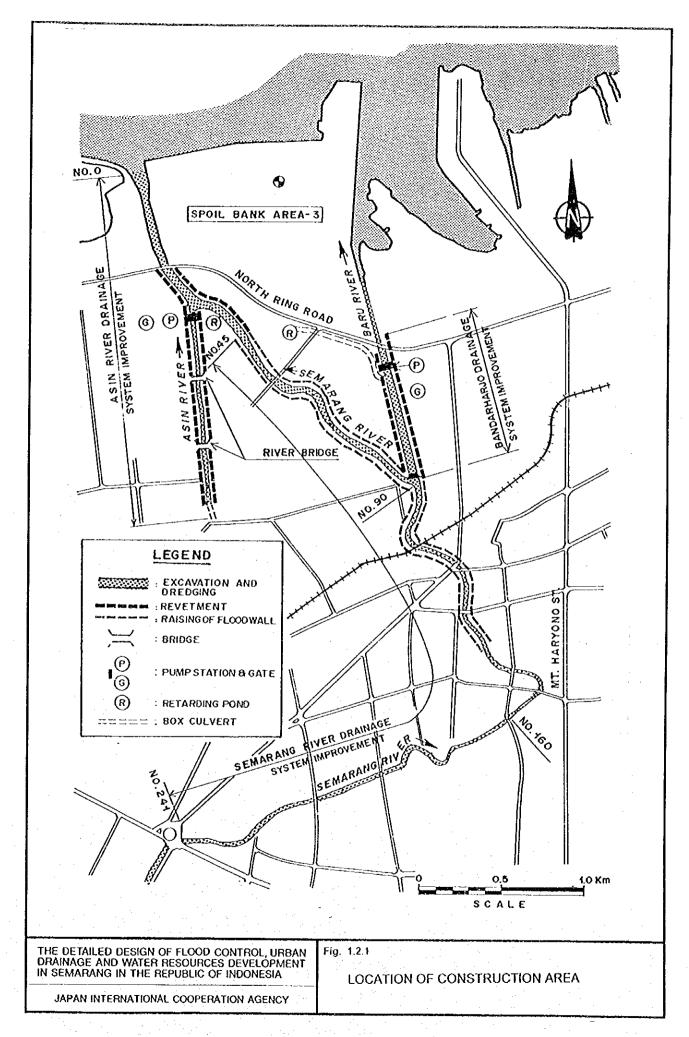
Table 5.2.6 MOBILIZATION AND DEMOBILIZATION OF CONSTRUCTION EQUIPMENT OF BANDARHARJO

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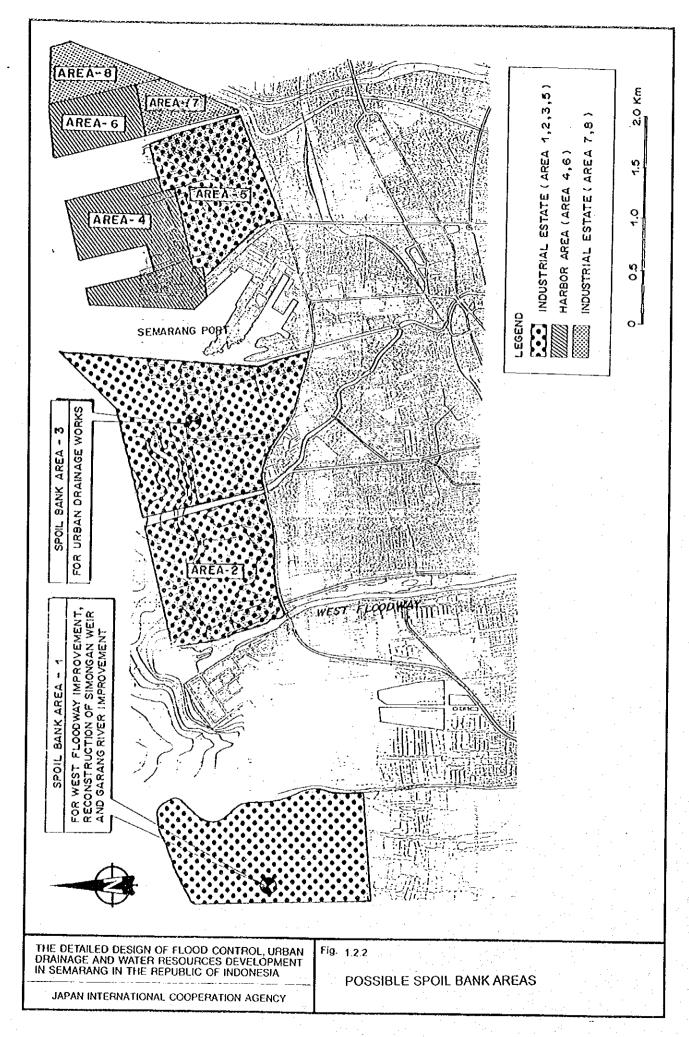
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	Capacity/ Specification	15 ton	0.20 m³	0.35 m³	0.35 m ³	10 ton	4 ton	20 ton	100 ton	60 kW	90 kw	3.5 ton	0.20 m³	60/100 kg	10 ton	8/12 ton	8/12 ton	2.8 m	11.0 m ³	
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	Construction Equipment	Bulldozer A	Backhoe B	Backhoe C	Backhoe D (Long arm)	Dump Truck B	Truck with Crane A	Truck Crane A	Crawler Crane C	Vibratary Pile Driver A	Vibratury Pile Driver B	Diesel Pile Hammer	Portable Concrete Mixer A	Tamper	Vibrating Roller B	Tire Roller	Tundem Roller	Motor Grader	Air Compressor B	
8		01 Bulk	CO Back	03 Back	Ot Back	S C P	8 Tg	07 Truc	8 0 8	o Vibr	10 Vibra	11 Dies	12 Port	13 Tum	14 Vibr	15 Tire	16 Tund	17 Mok	18 Air (_

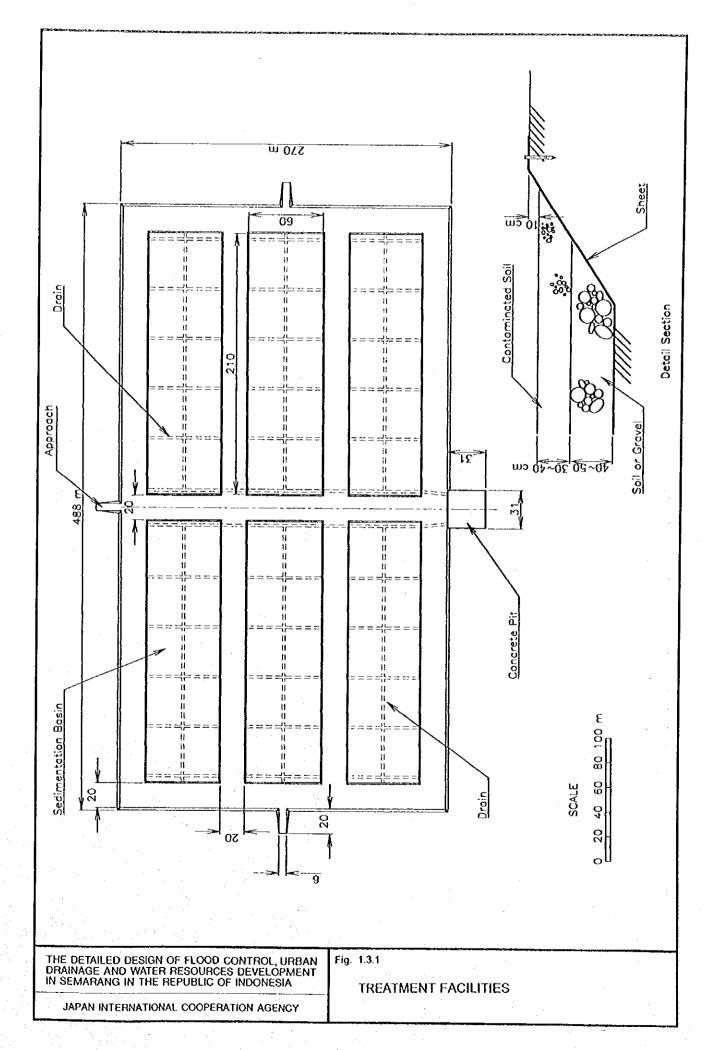
FIGURES



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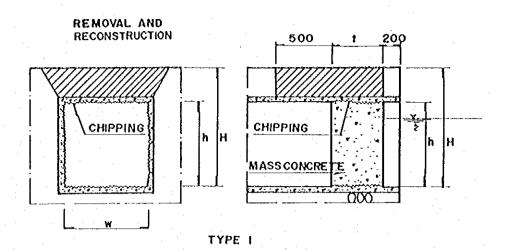
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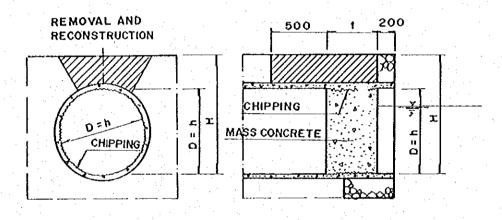




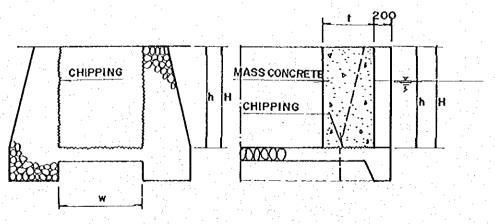
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TYPE II



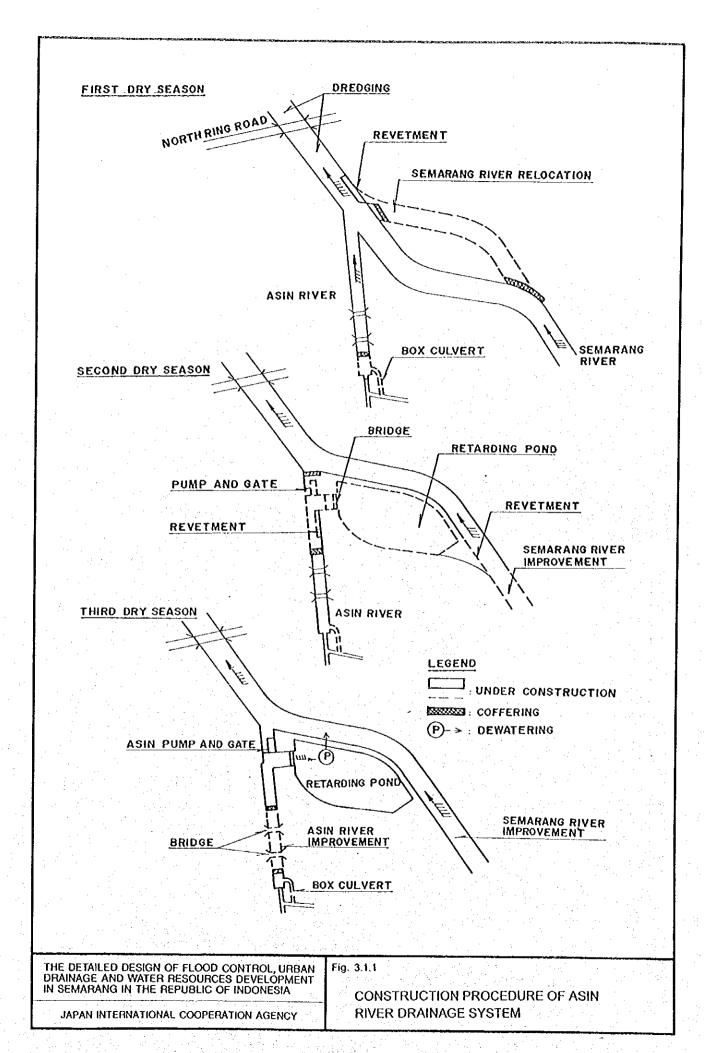
TYPE III

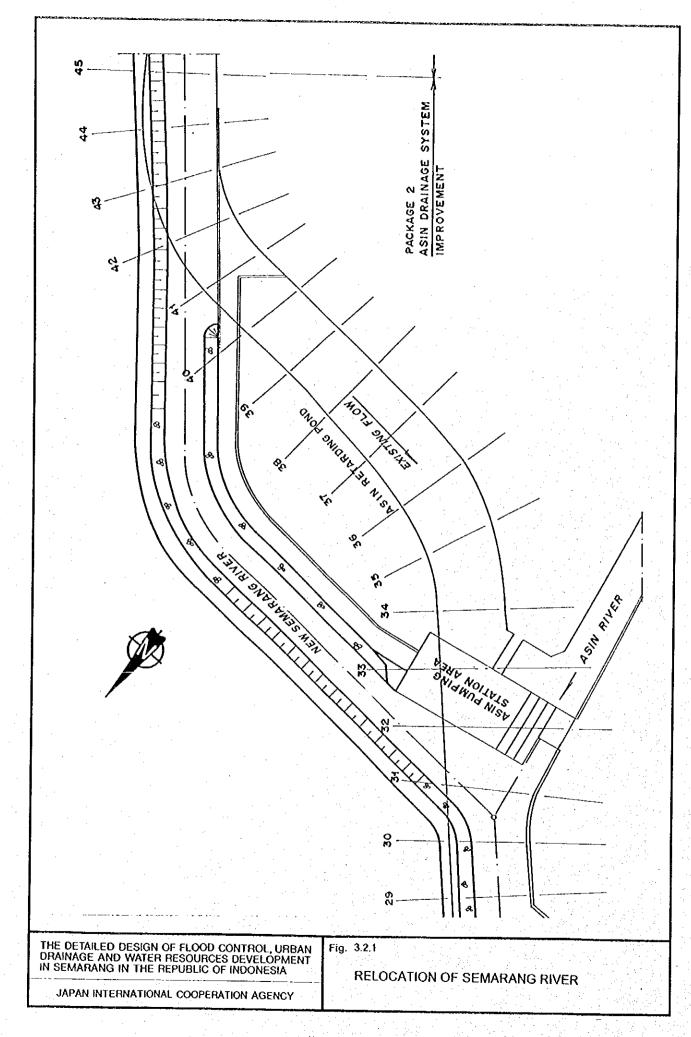
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

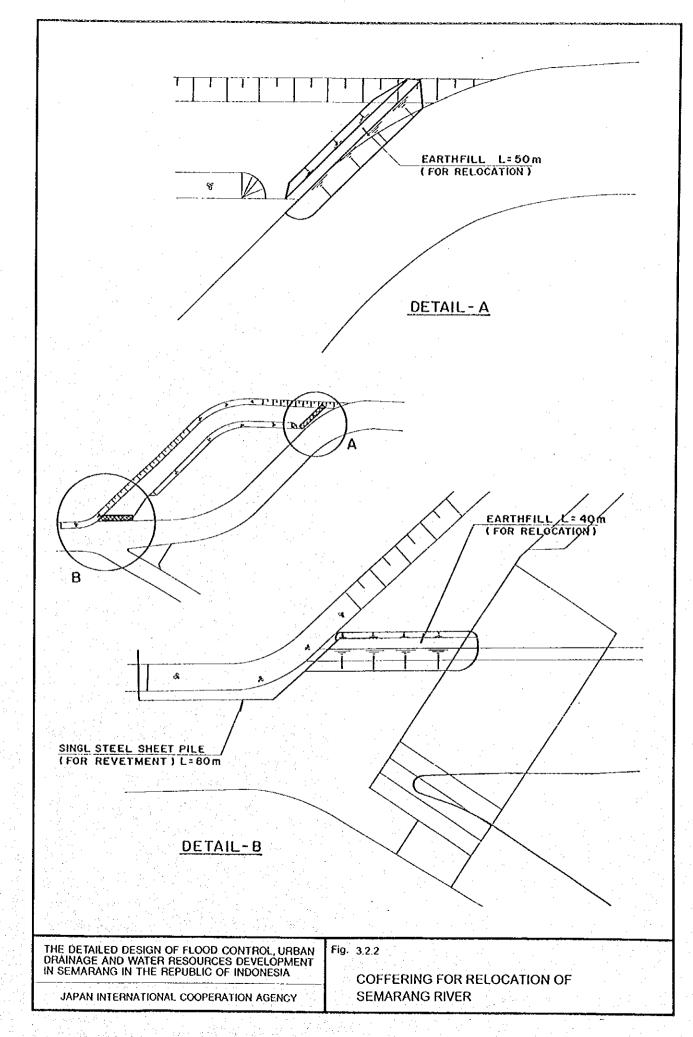
Fig. 2.3.1

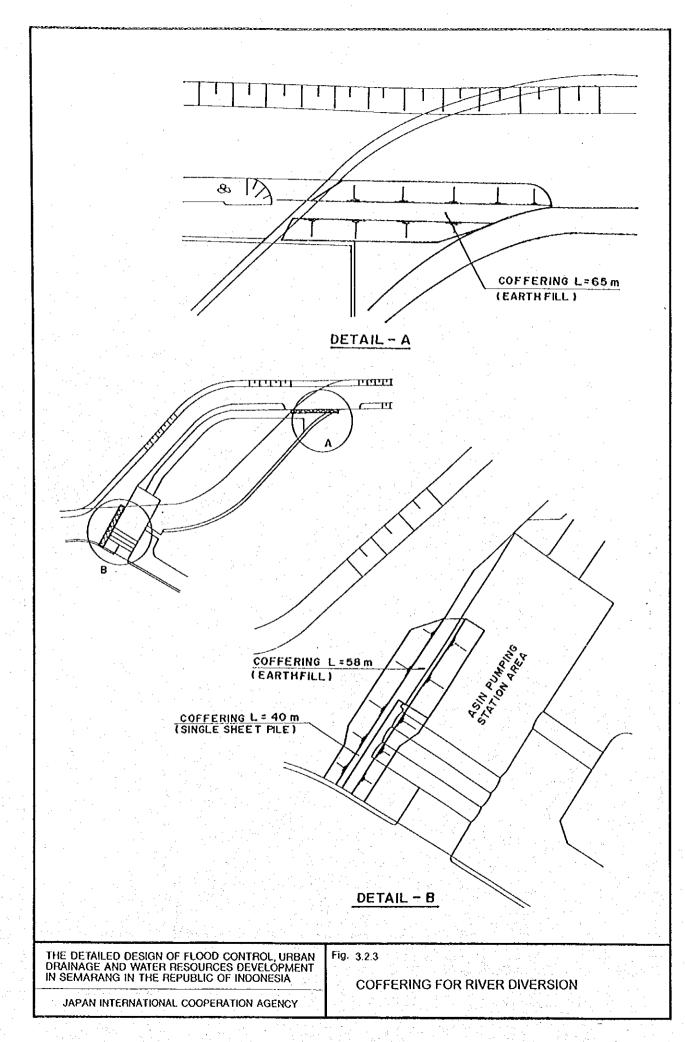
DRAINAGE OUTLETS TO SEMARANG RIVER



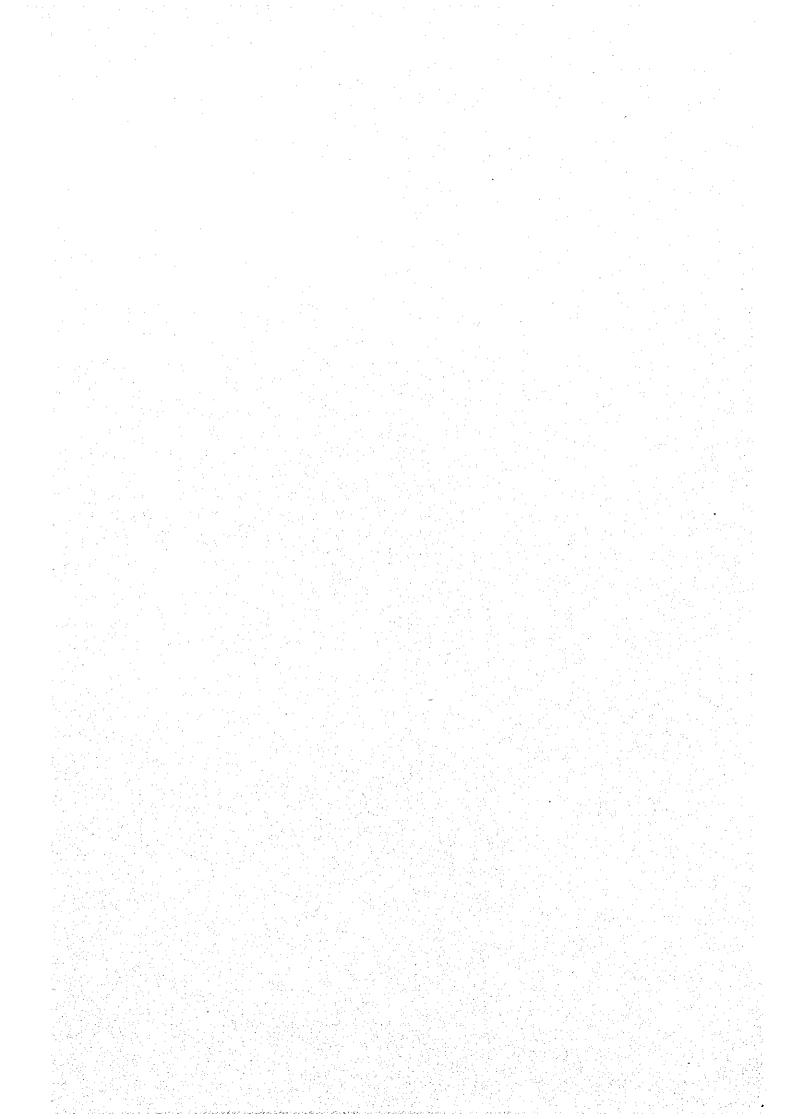


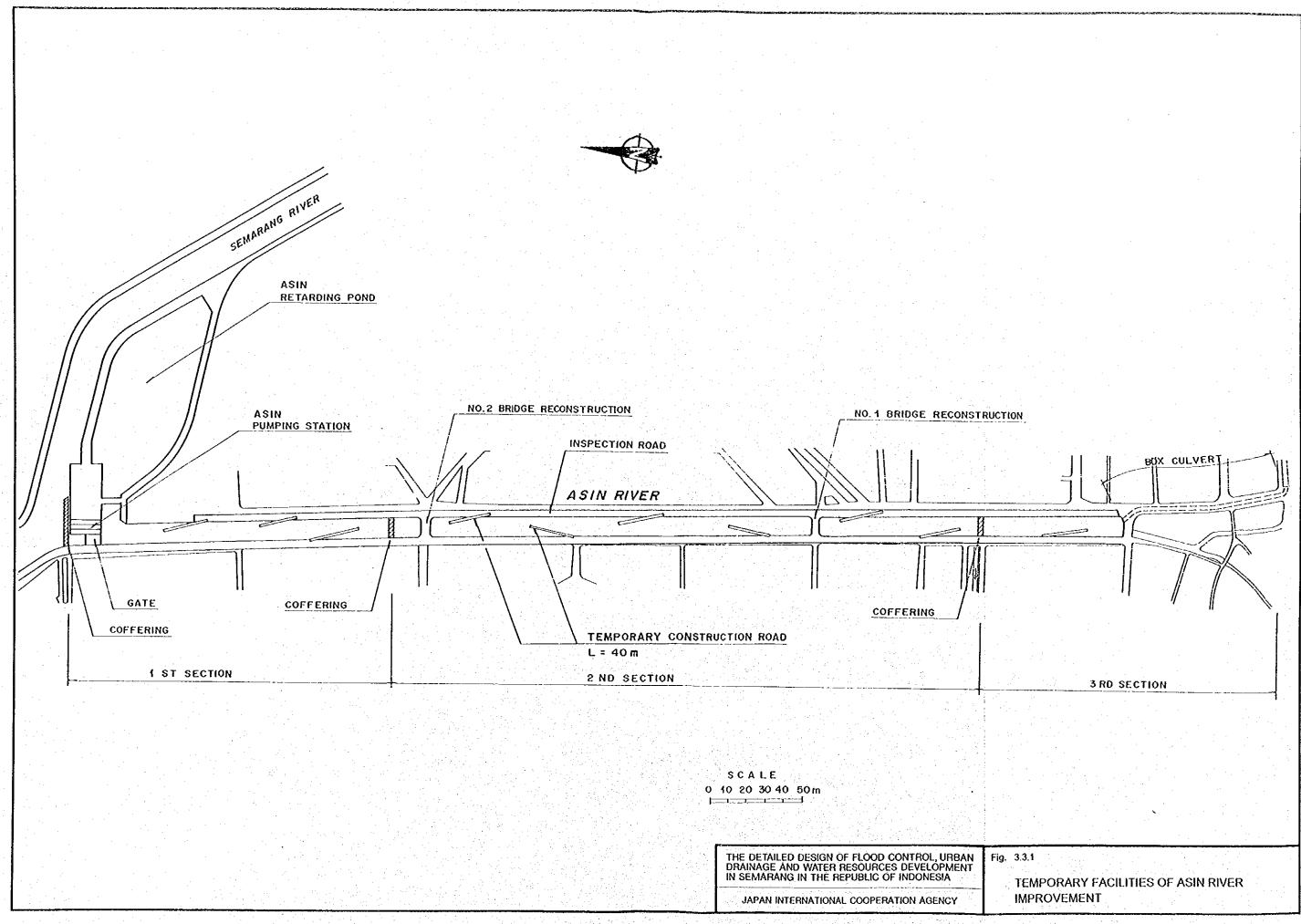
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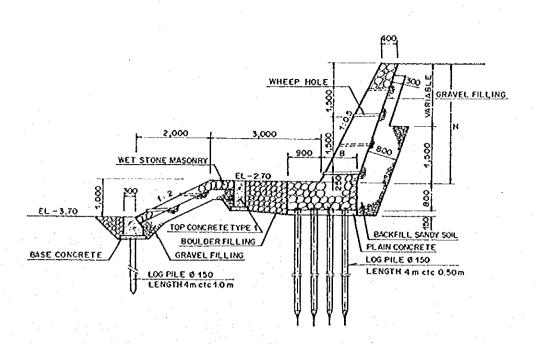




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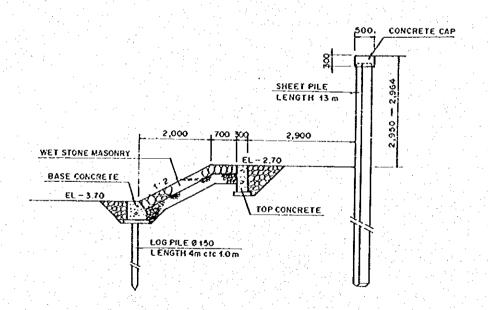






TYPE A-2 (LOW WATER)

TYPE B



TYPE A-2 (LOW WATER)

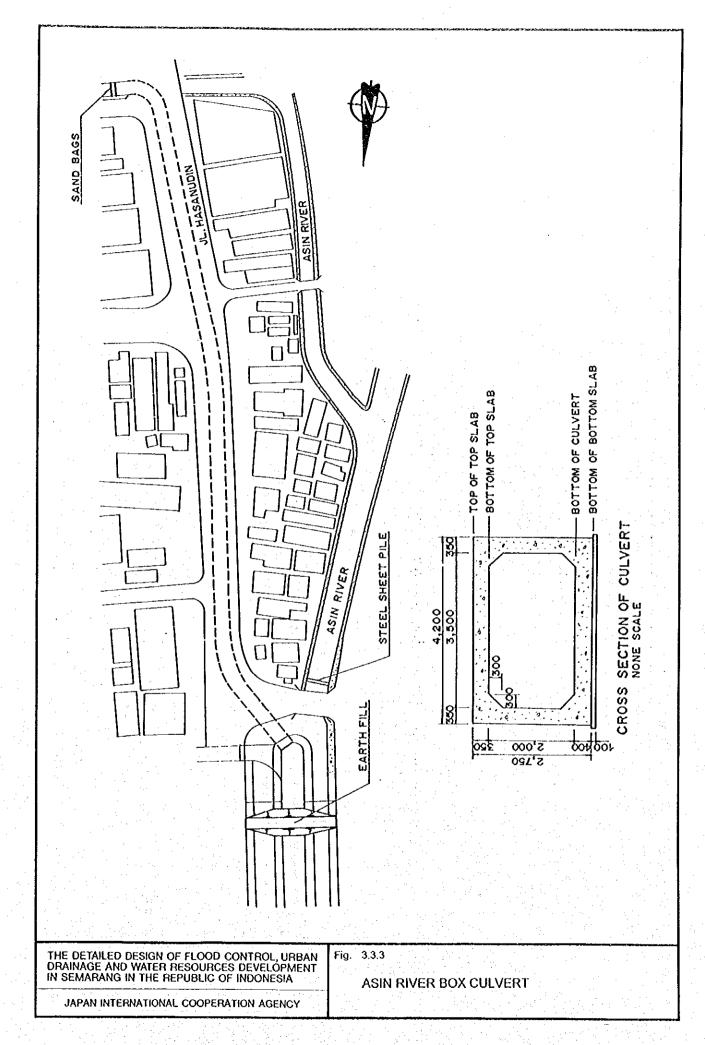
TYPE C (CONCRETE SHEET PILE)

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

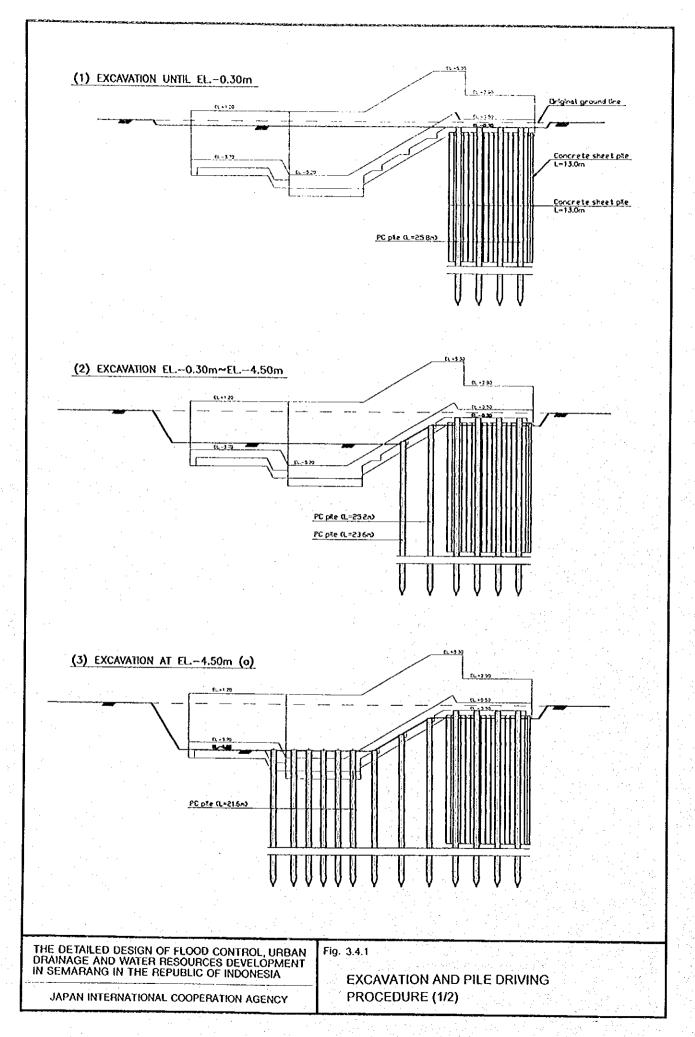
JAPAN INTERNATIONAL COOPERATION AGENCY

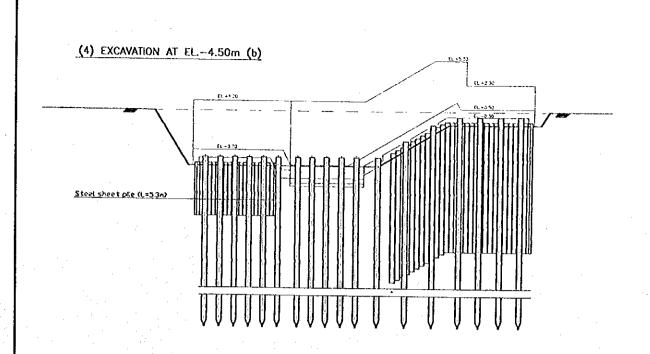
Fig. 3.3.2

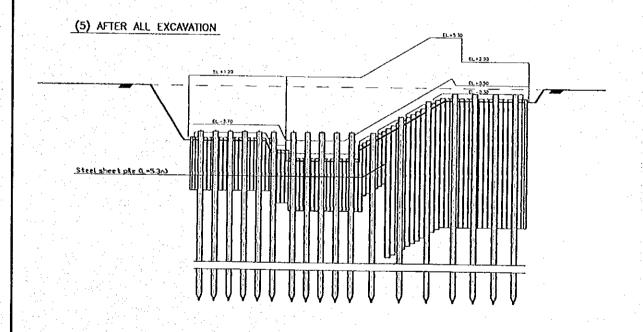
REVETMENT OF ASIN RIVER



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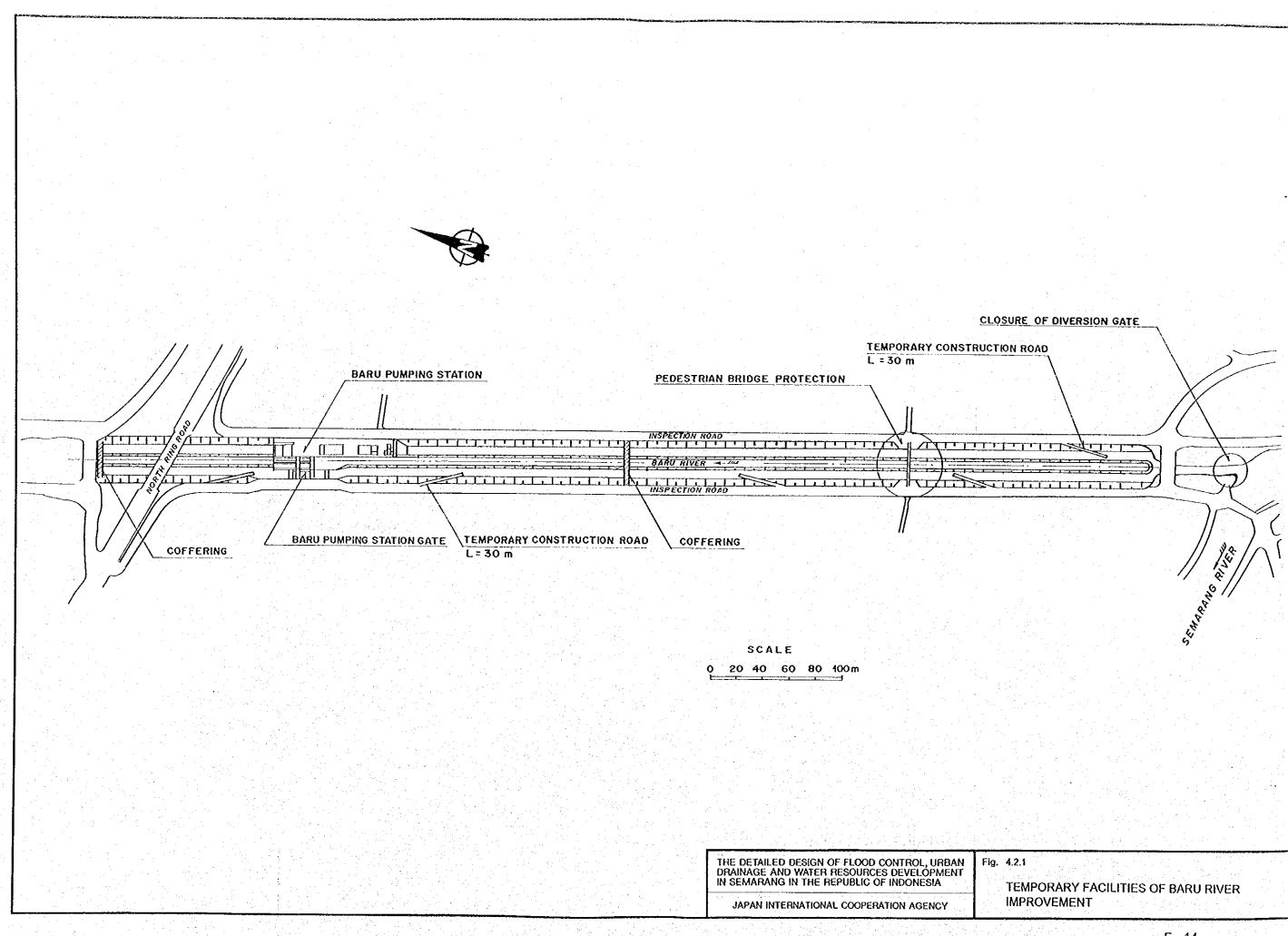


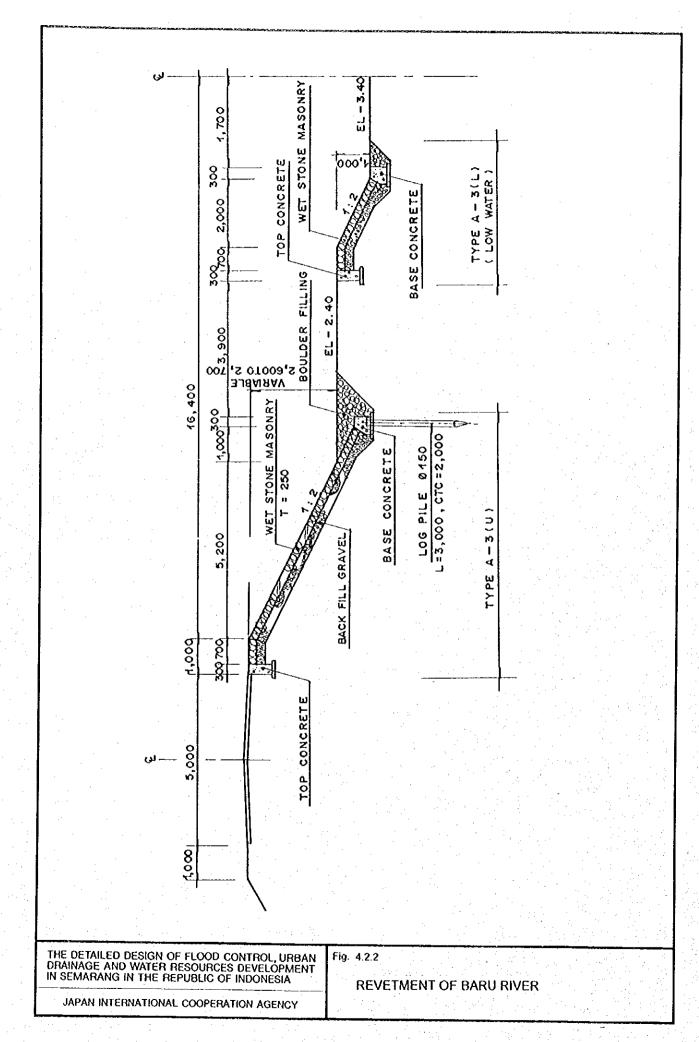
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

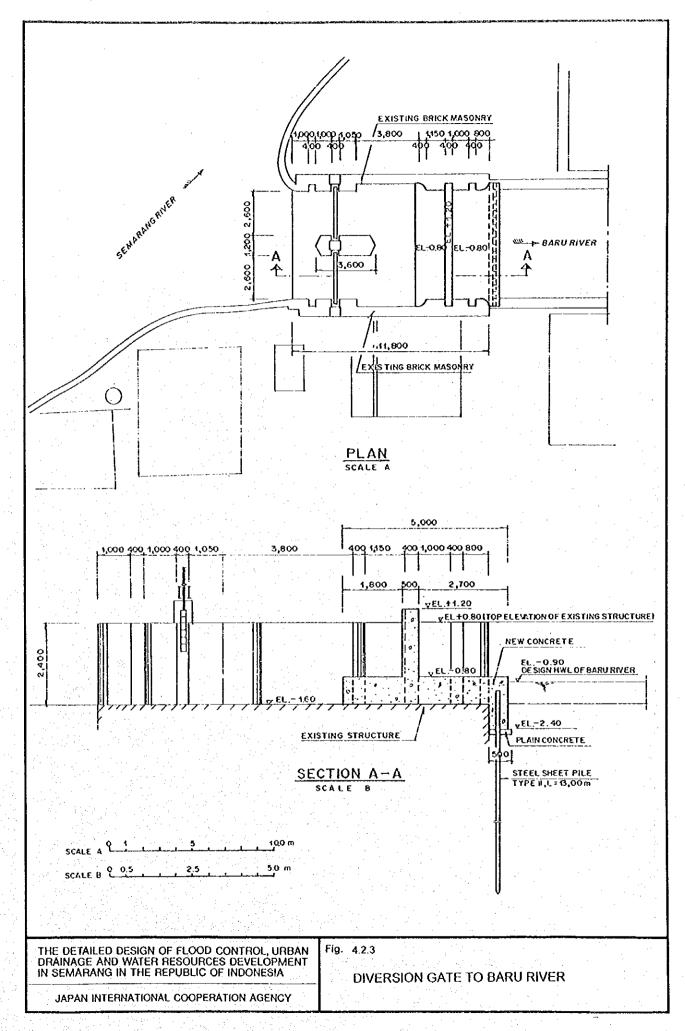
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3.4.1

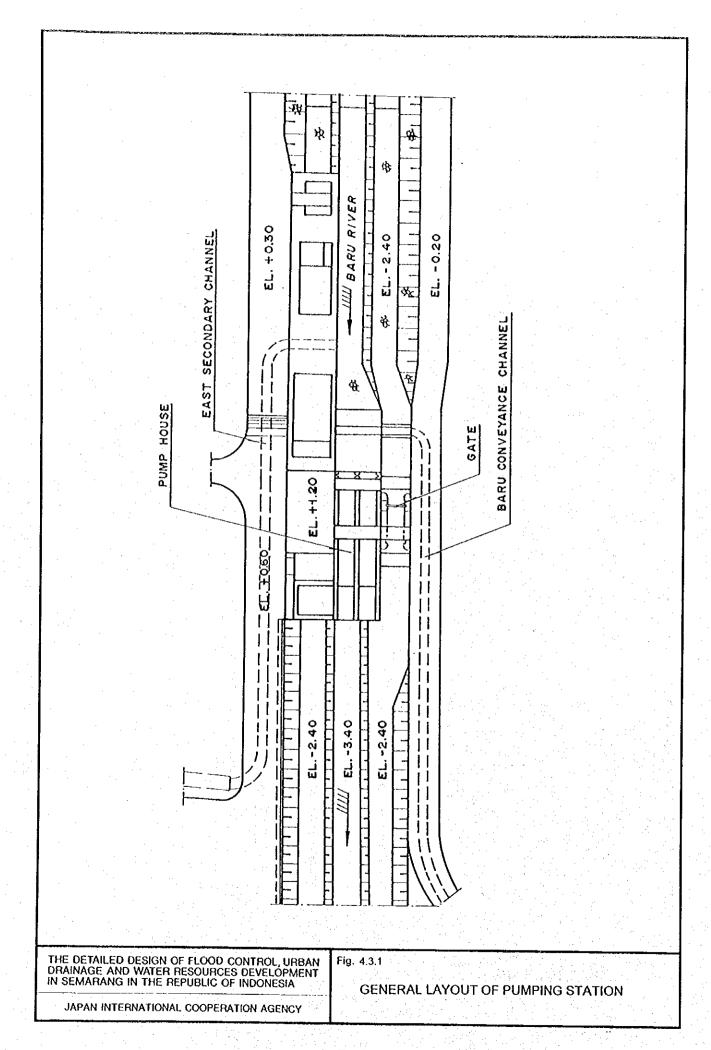
EXCAVATION AND PILE DRIVING PROCEDURE (2/2)

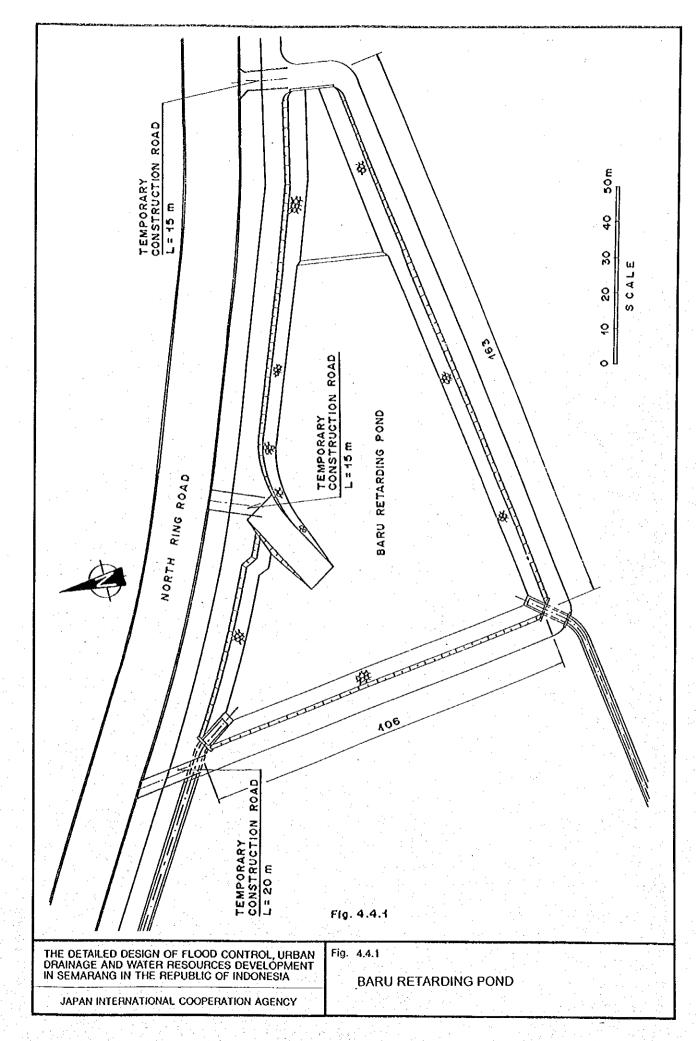






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