Tables

Table 3.1 LENGTH OF EXISTING DRAINAGE CHANNELS

(Unit: km)

Drainage channel	DKI			Private Sector			Total
	Lined	Unlined	TotalA)	Lined	Unlined	Total(B)	(A)+(B)
(a) Cengkareng west area							
- Kamal	7.5	2.2	9.7	2.2	0	2.2	11.9
- Tanjungan	1.7	0.2	1.9	-	-		1.9
- PIK Junction	0.2	0.1	0.3	0	0	0	0.3
- Gede/Bor	1.5	1.5	3	1.9	0	1.9	4.9
- S, Cengkareng	3.4	0.8	4.2	-	-		4.2
- Pedongkelan	-	-		6.6	0	6.6	6.6
Total(a)	14.3	4.8	19.1	10.7	0	10.7	29.8
(b) Meruya area	0.6	0.6	1.2	0	0	0	1.2

Table 3.2 EXISTING RELATED STRUCTURES

No.	Structure		Work	Kamal		Tanjungan		PIK Junction	S.Cengkareng	Gede/bor		Meruya		Total
				(KM)	(KE)	(TM)	(TA)	(NM)	(CM)	(GM)	(GA)	(MM)	(MA)	
1-1	Bridge	Road, large **	Reconstruction*											0
1-2		Road, 3-lane	Reconstruction*						2					2
1-3		Road, 2-lane(W>5m)	Reconstruction*	4	7	4			6	5		9		35
1-4		Road, 1-lane(W<5m)	Reconstruction*	2	10			1	1	4				18
1-5		Pedestrian	Reconstruction*	4	3				4	2				13
1-6		Gate	Relocation					1	2	1				4
2-1	Culvert	Concrete pipe	Reconstruction*					2						2
2-2		Concrete box	Reconstruction*						1	1				2
3-1	Electric pole	Concrete, Left bank	Relocation	2		2		1	12	15		4		36
3-2		Concrete, Right bank	Relocation	11	13	1		10	5			14		54
3-3		Steel, Left bank	Relocation	1	8	1		5	4	15		1		35
3-4		Steel, Right bank	Relocation	9	8	11		3	2			8		41
4-1	Electric cable	Cable & duct	Reconstruction	4	3	1		2	2	10		1		23
4-2		Steel girder	Reconstruction	4		1			2	1				8
5	Transformer		Relocation							1				1
6-1	Telephone pole	Concrete, Left bank	Relocation							1		4		5
6-2		Concrete, Right bank	Relocation											0
6-3		Steel, Left bank	Relocation		6			2	6	14		22		50
6-4		Steel, Right bank	Relocation		20	2		3	2			8		35
7-1	Telephone line	Steel pipe duct	Reconstruction		5	1		1	2	3		1		13
7-2		Concrete duct	Reconstruction							1				1
7-3		Steel girder	Reconstruction	3		1								4
7-4		Manhole&conduit	Reconstruction			1						3		4
7-5		Control box	Relocation			1								1
8	Water tank	Steel	Relocation	2										2
9	Water pipe	Steel	Reconstruction						2	2				4
10	Gate structure		Relocation						1					1
11	Concrete structure		Removal	2										2
12	Monument		Relocation	3										3
13	Telecommunication anntena		Relocation	1										1
14	Water pump		Relocation			2								2
15-1	Advertising board	Large	Relocation											0
15-2		Small	Relocation			1		2	1					4
16-1	Road sign	Large	Relocation					1						1
16-2	board	Medium	Relocation											0
16-3		Small	Relocation					2						2
17	Traffic signal		Relocation					1						1

Note : * ; Reconstruction with same width or diameter ** ; Out of scope of work

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (1/13)

LOCATION : KAMAL DRAINAGE CHANNEL (1/2)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
KM 1	Electric pole	3-4	Right	Steel, 9 nos.	PLN	Relocation	
KM 2	Road bridge	1-4	-	2.63(W)x11.75(L)m	DKI JKT	Reconstruction	same width
KM 3	Electric pole	3-2	Right	Concrete, 1 no.	PLN	Relocation	
KM 4	Electric pole	3-2	Right	Concrete, 2 nos.	PLN	Relocation	
KM 5	Telecommunication antenna	13	Left	1 no.(out of order)	Post Office	Relocation	
KM 6	Water tank	8	Left	-	PAM JAYA	Relocation	
KM 7	Water tank	8	Left	-	PAM JAYA	Relocation	
KM 8	Electric pole	3-2	Right	Concrete : 1 no.	PLN	Relocation	
KM 9-1	Sluice gate	10	Right	1.5(H)x2.0(W)m	Bina Marga	Relocation	out of scope
KM 9-2	Culvert under Cengkareng Highway	1-1	Bed	W:10.8m, 2-lane	Bina Marga	Reconstruction	out of scope
KM 9-3	Sluice gate	10	Right	1.55(H)x2.0(W)m	Bina Marga	Relocation	out of scope
KM 10-1	Monument, Taman LKM D/K	12	Left	Kel.Kamal Muara Kec.Penjaringan	Local Govn.	Relocation	
KM 10-2	Monument (**)	12	Left		Local Govn.	Relocation	
KM 10-3	Monument, Taman Unit KORPRI	12	Left		Local Govn.	Relocation	
KM 11-1	Road bridge	1-3	-	5.5&7.4(W)x13.7(L)m	Bina Marga	Reconstruction	same width
KM 11-2	Electric cable duct, w/steel girder	4-1, 4-2	-	3 lanes	PLN	Reconstruction	
KM 12	Concrete pier (no gate)	11	bed	1 set (no function)	(**)	Removal	
KM 13	Electric pole	3-2	Right	Concrete, 2 nos.	PLN	Relocation	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (2/13)

LOCATION : KAMAL DRAINAGE CHANNEL (2/2)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
KM 14	Electric pole	3-2	Right	Concrete, 5 nos.	PLN	Relocation	
KM 15	Pedestrian bridge	1-5	-	2.69(W)x5.93(L)m	DKI JKT	Reconstruction	same width
KM 16	Electric pole	3-1, 3-3	Left	Conc.:1no. + Steel:1no.	PLN	Relocation	
KM 17-1	Electric cable duct, w/steel girder	4-1, 4-2	-	3 lanes	PLN	Reconstruction	
KM 17-2	Road bridge (skew)	1-3	-	5.5&7.95(W)x13.9(L)m	DKI JKT	Reconstruction	same width
KM 17-3	Telephone line duct (**), steel	7-3	-	-	Telkom (**)	Reconstruction	
KM 17-4	Electric pole	3-1	Left	Concrete : 1no.	PLN	Relocation	
KM 18	Aqueduct, for drainage	11	-	-	PAM JAYA	Removal	
KM 19	Pedestrian bridge	1-5	-	1.96(W)x10.35(L)m	DKI JKT	Reconstruction	same width
KM 20	Pedestrian bridge	1-5	-	1.94(W)x7.07(L)m	DKI JKT	Reconstruction	same width
KM 21-1	Telephone line duct (**), steel	7-3	-	-	Telkom (**)	Reconstruction	
KM 21-2	Road bridge	1-4	-	3.15(W)x5.7(L)m	DKI JKT	Reconstruction	same width
KM 22-1	Electric cable duct, w/steel girder	4-1, 4-2	-	4 lanes	PLN	Reconstruction	
KM 22-2	Telephone line duct (**), steel	7-3	-	-	Telkom (**)	Reconstruction	
KM 22-3	Pedestrian bridge	1-5	-	2.31(W)x16.6(L)m	DKI JKT	Reconstruction	same width
KM 22-4	Road bridge	1-3	-	6.5&8.93(W)x16.7(L)m	DKI JKT	Reconstruction	same width
KM 23-1	Electric cable duct, w/steel girder	4-1, 4-2	-	2 lanes	PLN	Reconstruction	
KM 23-2	Road bridge	1-3	-	6.07&8.98(W)x13.7(L)m	DKI JKT	Reconstruction	same width

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (3/13)

LOCATION : KAMAL BRANCH DRAINAGE CHANNEL (1/2)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
KE 1-1	Road bridge	1-4	-	2.6(W)x6.7(L)m	DKI JKT	Reconstruction	same width
KE 1-2	Electric cable duct, steel	4-1	-	Angle:1 lane	PLN	Reconstruction	
KE 2	Road bridge	1-4	-	3.8(W)x6.8(L)m	DKI JKT	Reconstruction	same width
KE 3-1	Electric cable duct, steel	4-1	-	Angle:2 lanes	PLN	Reconstruction	
KE 3-2	Road bridge (skew)	1-3	-	5.75(W)x5.6(L)m	DKI JKT	Reconstruction	same width
KE 3-3	Telephone line duct, steel pipe	7-1	-	D=14cmx6nos.,10cmx1no.	Telkom	Reconstruction	
KE 4	Road bridge, concrete slab	1-3	-	5.1(W)x5.1(L)x0.33(t)m	DKI JKT	Reconstruction	same width
KE 5	Road bridge, concrete slab	1-3	-	5.05(W)x4.8(L)x0.28(t)m	DKI JKT	Reconstruction	same width
KE 6	Road bridge, concrete arch slab	1-4	-	3.2(W)x4.3(L)x0.20(t)m	DKI JKT	Reconstruction	same width
KE 7	Road bridge	1-3	-	5.0(W)x3.1(L)m	DKI JKT	Reconstruction	same width
KE 8	Telephone line duct (**), steel pipe	7-1	-	Diam.:7cm x 1 no.	Telkom (**)	Reconstruction	
KE 9	Pedestrian bridge, concrete slab	1-5	-	1.27(W)x3.5(L)m	DKI JKT	Reconstruction	same width
KE 10-1	Road bridge, concrete slab	1-4	-	4.45(W)x3.05(L)x0.35(t)m	DKI JKT	Reconstruction	same width
KE 10-2	Telephone line duct (**), steel pipe	7-1	-	Diam.:12.5cm x 1 no.	Telkom (**)	Relocation	
KE 11	Telephone line duct (**), steel pipe	7-1	-	Diam.:12.5cm x 1 no.	Telkom (**)	Relocation	
KE 12	Road bridge, concrete slab	1-3	-	5.5(W)x3.0(L)x0.25(t)m	DKI JKT	Reconstruction	same width
KE 13-1	Electric pole, between KE 3 and 14	3-3	Left	Steel:2nos.	PLN	Relocation(**)	
	Electric pole, between KE 3 and 14	3-2, 3-4	Right	Concrete:13nos., Steel:8nos.	PLN	Relocation(**)	
KE 13-2	Telephone pole, between KE 3 and 14	6-3	Left	Steel:4nos.	Telkom	Relocation(**)	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (4/13)

LOCATION : KAMAL BRANCH DRAINAGE CHANNEL (2/2)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
KE 13-2	Telephone pole, between KE 3 and 14	6-4	Right	Steel:20nos.	Telkom	Relocation(**)	
KE 14	Road bridge, concrete slab	1-4	-	3.0(W)x2.45(L)x0.30(t)m	DKI JKT	Reconstruction	same width
KE 15-1	Road bridge, concrete slab	1-3	-	7.5(W)x2.7(L)x0.35(t)m	DKI JKT	Reconstruction	same width
KE 15-2	Road bridge (heavy traffic condition)	1-3	-	7.4(W)x2.7(L)x0.37(t)m	DKI JKT	Reconstruction	same width
KE 15-3	Electric cable duct, steel	4-1	-	1 lane	PLN	Reconstruction	
KE 15-4	Telephone line (**), cable	7-1	-	3 lines	Telkom (**)	Reconstruction	
KE 16	Road bridge, concrete slab	1-4	-	2.6(W)x1.9(L)x0.15(t)m	DKI JKT	Reconstruction	same width
KE 17-1	Road bridge, concrete slab	1-4	-	2.9(W)x1.7(L)x0.13(t)m	DKI JKT	Reconstruction	same width
KE 17-2	Electric & telephone pole	3-3	Left	Steel:1no.	PLN&Telkom	Relocation(**)	
KE 18	Pedestrian bridge, concrete slab	1-5	-	1.45(W)x1.4(L)x0.10(t)m	DKI JKT	Reconstruction	same width
KE 19	Pedestrian bridge, concrete slab	1-5	-	1.65(W)x1.25(L)x0.13(t)m	DKI JKT	Reconstruction	same width
KE 20-1	Road bridge, concrete slab	1-4	-	4.5(W)x1.08(L)m	DKI JKT	Reconstruction	same width
KE 20-2	Telephone pole	6-3	Left	Steel:1no.	Telkom	Relocation(**)	
KE 21	Telephone pole	6-3	Left	Steel:1no.	Telkom	Relocation(**)	
KE 22	Road bridge, concrete slab	1-4	-	4.6(W)x1.9(L)m	DKI JKT	Reconstruction	same width
KE 23	Electric & telephone pole	3-3	Left	Steel:3nos.	PLN&Telkom	Relocation	
KE 24-1	Road bridge, concrete slab	1-4	-	3.74(W)x1.69(L)m	DKI JKT	Reconstruction	same width
KE 24-2	Electric pole	3-3	Left	Steel:2nos.	PLN	Reconstruction	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (5/13)

LOCATION : TANJUNGAN DRAINAGE CHANNEL

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
TANJUNGAN DRAINAGE CHANNEL, MAIN							
TM 1	Road bridge	1-3	-	5.63(W)x4.88(L)m	DKI JKT	Reconstruction	same width
TM 2-1	Cross drain under Cengkareng HW	1-1	-	W:3.35m	Bina Marga	Reconstruction	Out of scope
TM 2-2	Water pumps with control box	14	Both	-	Bina Marga	Relocation	
TM 2-3	Electric pole between TM 2-1 drain	3-1, 3-3	Left	Conc.:2nos., Steel:1no.	PLN	Relocation	
	and 3-4bridge	3-2, 3-4	Right	Conc.:1no., Steel:9nos.	PLN	Relocation	
TM 3-1	Electric cable duct, w/steel girder	4-1, 4-2	-	4 lanes	PLN	Reconstruction	
TM 3-2	Telephone line duct (**)	7-1	-	Steel angle duct x 1lane	Telkom (**)	Reconstruction	
TM 3-3	Steel pipe for (**)	7-3	-	Diam.12.5cm, 1 lane	(**)	Reconstruction	
TM 3-4	Road bridge	1-3	-	8.5(W)x9.9(L)m	Bina Marga	Reconstruction	same width
TM 4-1	Advertising board with steel pole	15-2	Right	1 no.	(**)	Relocation	
TM 4-2	Telephone pole	6-4	Right	Steel, 2 nos.	Telkom	Relocation	
TM 4-3	Telephone control box	7-5	Right	1 no.	Telkom	Relocation	
TM 4-4	Telephone line manhole & conduit	7-4	Right	concrete, 1m square	Telkom	Reconstruction	
TM 4-5	Electric pole	3-4	Right	Steel, 2 nos.	PLN	Relocation	
TM 5	Road bridge, concrete slab	1-3	-	12.7(W)x2.0(L)x0.20(t)m	DKI JKT	Reconstruction	same width
TM 6	Road bridge(skew), concrete slab	1-3	-	11.8(W)x3.0(L)x0.30(t)m	DKI JKT	Reconstruction	same width
TANJUNGAN DRAINAGE CHANNEL, ALTERNATIVE							
TA 1	Advertising tower with concrete base	15-1	-	14.5(L)x1.5(W)m	(**)	no treatment	
TA 2	Advertising tower with concrete base	15-1	-	12.4(L)x2.48(W)m	(**)	no treatment	

Note : ** ; undeer confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (6/13)

LOCATION : PIK JUNCTION DRAINAGE CHANNEL

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
NM 1	Road sign board with steel poles	16-1	-	Steel plate (direction guide)	Bina Marga	Relocation	
NM 2	Telephone line duct (**), PVC pipe	7-1	-	-	Telkom (**)	Reconstruction	
NM 3-1	Traffic signal	17	-	Steel pole	Bina Marga	Relocation	
NM 3-2	Advertising board with steel pole	15-2	-	2 nos.	(**)	Relocation	
NM 3-3	Electric cable duct, steel	4-1	-	L:2.5m, 2 lanes	PLN	Reconstruction	
NM 4-1	Concrete pole (no cable)	3-1	Left	1 no.	(**)	Relocation?	
NM 4-2	Electric pole	3-2	Right	Concrete:5nos.	PLN	Relocation?	
NM 4-3	Telephone pole	6-4	Right	Steel:3nos.	Telkom	Relocation?	
NM 5-1	Concrete pipe culvert under road	2-1	-	L:8.1m, Diam.:60cm	DKI JKT	Reconstruction	same length
NM 5-2	Concrete entrance gate with lamp	1-6	Right	-	Local Govn.	Relocation?	
NM 5-3	Electric pole for light on gate	3-4	Right	Steel:1no.	PLN	Relocation?	
NM 6	Road sign board with steel pole	16-3	Left	Steel plate (no parking)	Bina Marga	Relocation	
NM 7-1	Electric cable duct, steel	4-1	-	L:2.2m, 2 lanes	PLN	Reconstruction	
NM 7-2	Electric pole between NM 5 and 7-1	3-3	Left	Steel:3nos.	PLN	Relocation?	
	Electric pole between NM 5 and 7-1	3-2	Right	Concrette:4nos.	PLN	Relocation?	
NM 8	Pipe culvert under road	2-1	-	L:3.1m, Diam.:60cm	DKI JKT	Reconstruction	same length
NM 9	Road sign board with steel pole	16-3	Left	Steel plate (no parking)	Bina Marga	Relocation	
NM 10-1	Telephone pole between NM 9 and 11	6-3	Left	Steel:2nos.	Telkom	Relocation?	
NM 10-2	Electric pole between NM 9 and 11	3-2, 3-4	Right	Steel:1no., Conc.:1no.	PLN	Relocation?	
NM 11	Road bridge, concrete slab	1-4	-	4.0(W)x1.7(L)x0.15(t)m	DKI JKT	Reconstruction	same width
NM 12	Electric pole, steel	3-3, 3-4	Both	Left:2nos., Right:1no.	PLN	Relocation?	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (7/13)

LOCATION : GEDE/BOR DRAINAGE CHANNEL (1/3)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
GM 1-1	Electric cable duct, steel	4-1	-	steel angle box, 2 lanes	PLN	Reconstruction	
GM 1-2	Road bridge (heavy traffic condition)	1-3	-	L:2.90m, 1 way	Bina Marga	Reconstruction	same width
GM 1-3	Electric cable duct, steel	4-1	-	1 lane	PLN	Reconstruction	
GM 1-3A	Electric cable duct, w/steel girder	4-1, 4-2	-	with cover	PLN	Reconstruction	
GM 1-3B	Steel pipe for electric cable (**)	4-1	-	-	PLN	Reconstruction	
GM 1-4	Road bridge (heavy traffic condition)	1-3	-	L:2.90m, 1 way	Bina Marga	Reconstruction	same width
GM 1-4A	Steel pipe for electric cable (**)	4-1	-	Diam. ? cm	PLN	Reconstruction	
GM 2	Telephone pole	6-1, 6-3	Left	Concrete:1no., steel:1no.	Telkom	Relocation (**)	
GM 3	Transformer on concrete poles	5	Left	1 unit	PLN	Relocation (**)	
GM 4	Electric pole	3-1, 3-3	Left	Concrete:2nos., Steel:14nos.	PLN	Relocation (**)	
GM 5	Pedestrian bridge, concrete slab	1-5	-	1.35(W)x4.25(L)m	DKI JKT	Reconstruction	same width
GM 6	Pedestrian bridge, concrete slab	1-5	-	5.1(W)x2.2(L)m	DKI JKT	Reconstruction	same width
GM 7	Road bridge, concrete I-beam	1-4	-	3.95(W)x4.0(L)m	DKI JKT	Reconstruction	same width
GM 8-1	Road bridge	1-4	-	3.1(W)x3.9(L)m	DKI JKT	Reconstruction	same width
GM 8-2	Masonry drain ditches	-	Left	W=0.85 & 1.4 m	(**)	Shorten	
GM 9	Road bridge, concrete slab	1-4	-	4.9(W)x2.7(L)m	DKI JKT	Reconstruction	same width
GM 10-1	Electric cable duct, steel	4-1	-	Angle:2 lanes,Cable:1 lane	PLN	Extension	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (8/13)

LOCATION : GEDE/BOR DRAINAGE CHANNEL (2/3)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
GM 10-2	Road bridge, concrete I-beam	1-3	-	6.4(W)x4.6(L)m	DKI JKT	Reconstruction	same width
GM 10-3	Gate with concrete posts	1-6	Left	-	Local Govn.	Relocation	
GM 10-4	Telephone line duct, concrete	7-2	-	W=1.04m	Telkom	Reconstruction	
GM 11-1	Electric cable duct	4-1	-	Steel angle:2 lanes	PLN	Reconstruction	
GM 11-2	Road bridge(heavy traffic condition)	1-3	-	6.24(W)x4.6(L)m	DKI JKT	Reconstruction	same width
GM 11-3	Telephone line duct, steel pipe	7-1	-	Diam.:12.5cm	Telkom	Reconstruction	
GM 11-4	Electric cable duct	4-1	-	Steel angle:1 lane	PLN	Reconstruction	
GM 12-1	Electric pole	3-1, 3-3	Left	Concrete:12nos., Steel:1no.	PLN	Relocation	
GM 12-2	Telephone pole	6-3	Left	Steel:13nos.	Telkom	Relocation	
GM 12-3	Electric & telephone pole	3-1	Left	Concrete:1no.	PLN&Telkom	Relocation	
GM 13-1	Road bridge, concrete slab	1-4	-	3.45(W)x3.1(L)m	DKI JKT	Reconstruction	same width
GM 13-2	Telephone line duct, steel pipe	7-1	-	Diam.:10.5cm	Telkom	Reconstruction	
GM 13-3	Masonry drain ditch	-	-	W:0.7m, H:0.5m	(**)	Shorten	
GM 14-1	Road bridge and	1-3	Left	7.7(W)x4.9(L)m	DKI JKT	Reconstruction	same width
GM 14-2	Culvert under road	-	Left	1.4-4.9(W)x7.7(L)m	DKI JKT	Reconstruction	
GM 14-3	Water pipe with valve, steel	9	Left	Diam.:20cm, L:7.9m	PAM JAYA	Reconstruction	
GM 14-4	Electric cable duct, steel	4-1	Left	Angle:2 lanes	PLN	Reconstruction	
GM 14-5	Telephone line duct, steel pipe	7-1	Left	Diam.:10.cm	Telkom	Reconstruction	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (9/13)

LOCATION : GEDE/BOR DRAINAGE CHANNEL (3/3)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
GM 15-1	Drain culvert under road	2-2	Left	8.1(W)x1.9(L)m	DKI JKT	Reconstruction	
GM 15-2	Water pipe with valve, steel	9	Left	Diam.:20cm, L:7.9m	PAM JAYA	Reconstruction	
GM 15-3	Electric cable duct, steel	4-1	Left	Angle:1 lane	PLN	Reconstruction	
BRANCH DRAINAGE OF GEDE/BOR DRAINAGE CHANNEL							
No structures to be relocated/reconstructed							

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (10/13)

LOCATION : SALURAN CENGKARENG DRAINAGE CHANNEL (1/2)

No.	Facility	Category	Bank	Dimension/ Capacity	Responsible Agency	Work	Remarks
CM 1-1	Steel pipe for water supply(**)	9	-	Diam.45cm	PAM JAYA(**)	Reconstuction	
CM 1-2	Sluice gates, 2 sets	10	-	5.5(W)x2.47(t)x2(H)m	DGWRD	Reconstuction	
CM 1-3	Advertising pole	15-2	Right	Steel : 1no.	(**)	Relocation	
CM 1-4	Culvert under road	2-2	-	?(W)x5.5(L)m	DGWRD	Reconstuction	
CM 2	Electric pole between CM 1 and 3	3-2	Right	Concrete : 3 nos.	PLN	Relocation(**)	
CM 3	Road bridge, steel I-beam, H=35cm	1-3	-	8.7(W)x3.55(L)x0.2(t)m	DKI JKT	Reconstuction	same width
CM 4	Electric pole between CM 3 and 5	3-3	Left	Steel : 3 nos.	PLN	Relocation	
CM 5	Steel pipe for (**)	7-1	-	Diam.11.5cm	(**)	Reconstruction	
CM 6	Road bridge, conc. I-beam, H=43cm	1-4	-	4.15(W)x9.6(L)x0.15(t)m	DKI JKT	Reconstruction	same width
CM 7	Pedestrian bridge	1-5	-	1.0(W)x9.8(L)m	DKI JKT	Reconstruction	same width
CM 8-1	Electric pole between CM 7 and 9	3-1	Left	Concrete : 2 nos.	PLN	Relocation	
CM 8-2	Telephone pole between CM 7 and 9	6-3	Left	Steel : 2 nos.	Telkom	Relocation	
	Telephone pole between CM 7 and 9	6-4	Right	Steel : 1 no.	Telkom	Relocation	
CM 9	Road bridge, conc. I-beam	1-3	-	6.2(W)x11.3(L)m	DKI JKT	Reconstruction	same width
CM 10-1	Electric pole between CM 9 and 11	3-1	Left	Concrete : 4 nos.	PLN	Relocation	
CM 10-2	Telephone pole between CM 9 and 11	6-3	Left	Steel : 4 nos.	Telkom	Relocation	
CM 11	Road bridge with gate, conc. I-beam	1-3, 1-6	-	6.25(W)x11.2(L)m	DKI JKT	Reconstruction	same width
CM 12	Electric pole between CM 11 and 13	3-1	Left	Concrete : 2 nos.	PLN	Relocation	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (11/13)

LOCATION : SALURAN CENGKARENG DRAINAGE CHANNEL (2/2)

No.	Facility	Category	Bank	Dimension/ Capacity	Responsible Agency	Work	Remarks
CM 13	Pedestrian bridge, conc.pillar	1-5	-	2.2(W)x8.5(L)m	DKI JKT	Reconstruction	same width
CM 14	Electric pole	3-1, 3-3	Left	Conc.:2nos. + Steel:1no.	PLN	Relocation	
CM 15	Pedestrian bridge, steel I-beam, H=18cm	1-5	-	1.5(W)x8.4(L)m	DKI JKT	Reconstruction	same width
CM 16	Pedestrian bridge, steel I-beam, H=18cm	1-5	-	1.5(W)x8.35(L)m	DKI JKT	Reconstruction	same width
CM 17-1	Road bridge with gate, conc. I-beam	1-3, 1-6	-	6.4(W)x5.6(L)m	DKI JKT	Reconstruction	same width
CM 17-2	Telephone pole	6-4	Right	Steel : 1no.	Telkom	Relocation	
CM 17-3	Electric pole	3-4	Right	Steel : 1no.	PLN	Relocation	
CM 17-4	Telephone line duct, steel pipe	7-1	-	Diam.12cm	Telkom	Reconstruction	
CM 18-1	Electric cable duct, w/steel girder	4-1, 4-2	-	6 lanes:10.7m, 2 lanes:15.2m	PLN	Reconstruction	
CM 18-2	Water supply pipe, steel	9	-	Diam.36cm	PAM JAYA	Reconstruction	
CM 18-3	Electric pole	3-2, 3-4	Right	Conc.:1no.+Steel : 1no.	PLN	Relocation	
CM 18-4	Road bridge, at outer ring road	1-2	-	14.5(W)x5.58(L)m	Bina Marga	Reconstruction	same width
CM 19-1	Road bridge, at outer ring road	1-2	-	17.0(W)x9.7(L)m	Bina Marga	Reconstruction	same width
CM 19-2	Electric pole	3-2	Right	Concrete : 1no.	PLN	Relocation	
CM 19-3	Electric cable duct, w/steel girder	4-1, 4-2	-	2-lane:14.7m	PLN	Reconstruction	
CM 20	Road bridge, conc. I-beam, H=40cm	1-3	-	7.1(W)x8.9(L)m	DKI JKT	Reconstruction	same width
CM 21	Electric pole between CM 20 and 22	3-1	Left	Concrete : 2nos.	PLN	Relocation	
CM 22	Road bridge, conc.I-beam	1-3	-	9.1(W)x9.4(L)m	DKI JKT	Reconstruction	same width

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (12/13)

LOCATION : MERUYA DRAINAGE CHANNEL (1/2)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
MERUYA DRAINAGE CHANNEL, MAIN							
MM 1-1	Road flyover bridge	1-3	Left	-	Bina Marga	no treatment	
MM 1-2	Electric pole	3-3	Left	Steel, 1 no.	PLN	no treatment	
MM 2-1	Electric pole	3-2, 3-4	Right	Steel: 1no., Conc.: 1no.	PLN	Relocation (**)	
MM 2-2	Electric cable duct, steel angle	4-1	-	1 lane	PLN	Reconstruction	
MM 2-3	Road bridge, concrete slab	1-3	-	7.5(W)x2.06(L)x0.23(t)m	DKI JKT	Reconstruction	same width
MM 2-4	Steel pipe under bridge for (**)	7-1	-	1 lane	(**)	Reconstruction	
MM 3	Telephone pole between MM 2 and 4	6-4	Right	Steel : 1 no.	Telkom	Relocation	
MM 4-1	Electric pole	3-4	Right	Steel, 1 no.	PLN	Relocation	
MM 4-2	Telephone pole	6-3, 6-4	Both	Steel : 2 nos.	Telkom	Relocation	
MM 4-3	Road bridge, concrete slab	1-3	-	7.1(W)x2.3(L)m	DKI JKT	Reconstruction	same width
MM 5	Telephone pole between MM 4 and 6	6-3	Left	Steel : 2 nos.	Telkom	Relocation	
MM 6	Road bridge	1-3	-	6.7(W)x2.6(L)m	DKI JKT	Reconstruction	same width
MM 7	Telephone pole between MM 6 and 9	6-3	Left	Steel : 2 nos.	Telkom	Relocation (**)	
MM 8-1	Electric pole	3-2, 3-4	Right	Steel:3nos., Conc.: 1no.	PLN	Relocation	
MM 8-2	Telephone pole	6-3	Left	Steel : 2 nos.	Telkom	Relocation	
MM 9-1	Telephone cable manhole & conduit	7-4	Left	1 set (no function)	Telkom	Removal (**)	
MM 9-2	Telephone pole between MM 9-1 and 10	6-3	Left	Steel : 5 nos.	Telkom	Relocation	

Note : ** ; under confirmation

Table 3.3 LOCATION AND FEATURES OF RELATED STRUCTURES (13/13)

LOCATION : MERUYA DRAINAGE CHANNEL (2/2)

No.	Facility	Category	Bank	Dimension/Capacity	Responsible Agency	Work	Remarks
MM 9-3	Telephone pole between MM 9-1 and 10	6-4	Right	Steel : 1 no.	Telkom	Relocation	
MM 9-4	Electric pole	3-2, 3-4	Right	Steel:1no., Conc.:5nos.	PLN	Relocation	
KM 10	Road bridge	1-3	-	6.5(W)x0.75(L)m	DKI JKT	Reconstruction	same width
KM 11-1	Electric pole between MM 10 and 12	3-1	Left	Concrete :1no.	PLN	Relocation	
	Electric pole between MM 10 and 12	3-2, 3-4	Right	Steel:2nos., Conc.:7nos.	PLN	Relocation	
MM 11-2	Telephone pole between MM 10 and 12	6-1, 6-3	Left	Steel:7nos., Conc.:3nos.	Telkom	Relocation	
	Telephone pole between MM 10 and 12	6-4	Right	Steel : 2 nos.	Telkom	Relocation	
MM 11-3	Telephone cable manhole & conduit	7-4	Left	Concrete	Telkom	Reconstruction (**)	
MM 12	Road bridge	1-3	-	7.0(W)x1.3(L)m	DKI JKT	Reconstruction	same width
MM 13-1	Electric pole between MM 12 and 14	3-1, 3-3	Left	Steel:1no., Conc.:3nos.	PLN	Relocation	
MM 13-2	Telephone pole between MM 12 and 14	6-3	Left	Steel:3nos.	Telkom	Relocation	
	Telephone pole between MM 12 and 14	6-4	Right	Steel:3nos.	Telkom	Relocation	
MM 13-3	Telephone cable manhole & conduit	7-4	Left	1 set (function(**))	Telkom	Removal (**)	
MM 14-1	Road bridge, concrete slab	1-3	Left	7.2(W)x0.75(L)m	DKI JKT	Reconstruction	same width
MM 14-2	Road bridge, concrete slab	1-3	Right	7.0(W)x1.0(L)m	DKI JKT	Reconstruction	same width
MM 15	Telephone pole between MM 14 and 16	6-1	Left	Concrete : 1 no.	Telkom	Relocation	
MM 16	Road bridge, concrete culvert	1-3	-	7.1(W)x0.56(L)m	DKI JKT	Reconstruction	same width
MERUYA DRAINAGE CHANNEL, TRIBUTARY							
MA	Nothing						

Note : ** ; under confirmation

Table 4.2.1 COMPARATIVE STUDY ON CHANNEL WIDTH (1/7)

Name of Drainage : Kamal Drainage Channel (Main, KM)

Design channel gradient: 1/3200(0-2300m), 1/1800(2300- m)
W.L. at estuary(TTG.m): 0.2
Design riverbed .at estuary(TTG.m): -1.5

Case Name			Km10 Estuary	Km9 Highway	Km8	Km7 Conf.KH	Km7 before	Km6 Conf.KE	Km6 before	Km5	Private Sector
Design Flood Discharge(m3/s)			48.1	47.9			41.6		38.4		30.3
Side slope			1:2.0	1:0.5							
ddkm-a18	Bottom	W (m)	40.0	35.0	35.0	35.0	35.0	35.0	30.0	30.0	12.0
	Top	W (m)	46.8	36.6	36.6	36.6	36.6	36.4	31.4	31.4	13.8
	W.L	TTG.m	0.200	0.501	0.615	0.787	0.830	1.315	1.375	1.950	2.875
	Velocity	m/s	0.65	0.84	0.83	0.82	0.71	0.84	0.92	0.92	1.27
ddkm-e18	Bottom	W (m)	35.0	35.0	35.0	35.0	35.0	35.0	30.0	30.0	12.0
	Top	W (m)	41.8	36.7	36.7	36.7	36.7	36.4	31.4	31.4	13.8
	W.L	TTG.m	0.200	0.573	0.673	0.827	0.868	1.328	1.386	1.953	2.875
	Velocity	m/s	0.74	0.80	0.80	0.80	0.69	0.84	0.91	0.92	1.27
ddkm-k18	Bottom	W (m)	35.0	35.0	35.0	35.0	35.0	35.0	25.0	25.0	12.0
	Top	W (m)	41.8	36.7	36.7	36.7	36.7	36.4	26.4	26.5	13.9
	W.L	TTG.m	0.200	0.573	0.673	0.827	0.868	1.328	1.382	2.081	2.896
	Velocity	m/s	0.74	0.80	0.80	0.80	0.69	0.84	1.09	1.00	1.25
ddkm-h18	Bottom	W (m)	35.0	35.0	35.0	35.0	32.0	32.0	30.0	30.0	12.0
	Top	W (m)	41.8	36.7	36.7	36.7	33.7	33.5	31.4	31.4	13.9
	W.L	TTG.m	0.200	0.573	0.673	0.827	0.865	1.383	1.446	1.968	2.876
	Velocity	m/s	0.74	0.80	0.80	0.80	0.76	0.88	0.87	0.91	1.27
ddkm-g18	Bottom	W (m)	35.0	35.0	35.0	35.0	30.0	30.0	30.0	30.0	12.0
	Top	W (m)	41.8	36.7	36.7	36.7	31.7	31.5	31.5	31.4	13.9
	W.L	TTG.m	0.200	0.573	0.673	0.827	0.863	1.426	1.493	1.981	2.877
	Velocity	m/s	0.74	0.80	0.80	0.80	0.81	0.91	0.84	0.90	1.27
3dkm-i18	Bottom	W (m)	35.0	32.0	32.0	32.0	32.0	32.0	30.0	30.0	12.0
	Top	W (m)	41.8	33.7	33.7	33.7	33.7	33.5	31.4	31.4	13.9
	W.L	TTG.m	0.200	0.565	0.682	0.849	0.897	1.382	1.440	1.961	2.870
	Velocity	m/s	0.75	0.85	0.84	0.83	0.69	0.85	0.87	0.91	1.27
ddkm-j18	Bottom	W (m)	35.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	12.0
	Top	W (m)	41.8	31.7	31.7	31.7	31.8	31.5	31.5	31.4	13.9
	W.L	TTG.m	0.200	0.562	0.699	0.895	0.944	1.451	1.514	1.988	2.878
	Velocity	m/s	0.74	0.94	0.92	0.89	0.77	0.89	0.83	0.89	1.27
ddkm-f18	Bottom	W (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	12.0
	Top	W (m)	36.8	31.7	31.8	31.8	31.8	31.5	31.5	31.4	13.9
	W.L	TTG.m	0.200	0.659	0.774	0.947	0.992	1.468	1.529	1.993	2.878
	Velocity	m/s	0.85	0.89	0.88	0.87	0.75	0.88	0.82	0.89	1.27

Note: [ ] selected case

Table 4.2.1 COMPARATIVE STUDY ON CHANNEL WIDTH (2/7)

Name of Drainage : Kamal Drainage Channel (tributary, KE)

Design channel gradient: 1/1600

W.L. at conf. with KM(TTG.m): 1.4

Design riverbed at conf. with KM(TTG.m): 0.2

Case Name			Km6 Conf. KM	Ke1-2	Ke1	Ke0
Design Flood Discharge(m3/s)			13.0	10.1	0.9	0.9
Design Channel Gradient			1/1600			
dke-d	Bottom	W (m)	13.0	11.0	2.0	2.0
	Top	W (m)	14.2	12.2	3.1	2.9
	W.L	TTG.m	1.400	2.128	2.770	2.880
	Velocity	m/s	0.83	0.73	0.32	0.40
dke-f	Bottom	W (m)	13.0	11.0	4.0	4.0
	Top	W (m)	14.2	12.2	5.1	4.8
	W.L	TTG.m	1.400	2.128	2.763	2.793
	Velocity	m/s	0.83	0.73	0.18	0.25
dke-e	Bottom	W (m)	13.0	13.0	2.0	2.0
	Top	W (m)	14.2	14.2	3.0	2.9
	W.L	TTG.m	1.400	2.132	2.674	2.819
	Velocity	m/s	0.83	0.62	0.36	0.44
Design Channel Gradient			1/1700			
dke-d7	Bottom	W (m)	13.0	11.0	2.0	2.0
	Top	W (m)	14.2	12.2	3.1	2.9
	W.L	TTG.m	1.400	2.104	2.707	2.807
	Velocity	m/s	0.83	0.72	0.31	0.39
dke-g7	Bottom	W (m)	13.0	12.0	2.0	2.0
	Top	W (m)	14.2	13.2	3.1	2.9
	W.L	TTG.m	1.400	2.106	2.656	2.772
	Velocity	m/s	0.83	0.66	0.33	0.40
dke-e7	Bottom	W (m)	13.0	13.0	2.0	2.0
	Top	W (m)	14.2	14.2	3.0	2.9
	W.L	TTG.m	1.400	2.108	2.612	2.744
	Velocity	m/s	0.83	0.61	0.35	0.42
Design Channel Gradient			1/1800			
dke-c8	Bottom	W (m)	13.0	10.0	2.0	2.0
	Top	W (m)	14.2	11.2	3.2	3.0
	W.L	TTG.m	1.400	2.081	2.712	2.790
	Velocity	m/s	0.83	0.78	0.29	0.35
dke-d8	Bottom	W (m)	13.0	11.0	2.0	2.0
	Top	W (m)	14.2	12.2	3.1	3.0
	W.L	TTG.m	1.400	2.078	2.633	2.682
	Velocity	m/s	0.83	0.71	0.39	0.47
dke-g8	Bottom	W (m)	13.0	12.0	2.0	2.0
	Top	W (m)	14.2	13.2	3.1	2.9
	W.L	TTG.m	1.400	2.085	2.602	2.708
	Velocity	m/s	0.83	0.65	0.32	0.39
dke-e8	Bottom	W (m)	13.0	13.0	2.0	2.0
	Top	W (m)	14.2	14.2	3.1	2.9
	W.L	TTG.m	1.400	2.087	2.559	2.679
	Velocity	m/s	0.83	0.60	0.34	0.40
dke-h8	Bottom	W (m)	15.0	13.0	2.0	2.0
	Top	W (m)	16.2	14.1	3.0	2.9
	W.L	TTG.m	1.400	1.992	2.540	2.666
	Velocity	m/s	0.73	0.66	0.35	0.41

Note: [ ] selected case

Table 4.2.1 COMPARATIVE STUDY ON CHANNEL WIDTH (3/7)

Name of Drainage : Tanjungan Drainage Channel (TM)

Design channel gradient: 1/5000
W.L. at estuary(TTG.m): 0.2
Design riverbed at estuary(TTG.m): -1.3

Case Name			Tm4 Estuary	Tm3 Highway	Upstream of Tm3	Tm2 Bridge	Tm1
Design Flood Discharge(m3/s)			19.0	19.0	16.1	13.4	13.4
Side slope			1:2.0	1:0.5			
dtm-f	Bottom	W (m)	30.0	30.0	20.0	15.0	15.0
	Top	W (m)	36.0	31.4	21.4	16.4	16.4
	W.L	TTG.m	0.200	0.352	0.366	0.458	0.610
	Velocity	m/s	0.38	0.46	0.58	0.63	0.61
dtm-d	Bottom	W (m)	25.0	25.0	25.0	15.0	15.0
	Top	W (m)	31.0	26.4	26.4	16.4	16.4
	W.L	TTG.m	0.200	0.403	0.426	0.472	0.619
	Velocity	m/s	0.45	0.52	0.44	0.62	0.61
dtm-a	Bottom	W (m)	25.0	25.0	20.0	15.0	15.0
	Top	W (m)	31.0	26.4	21.4	16.4	16.4
	W.L	TTG.m	0.200	0.403	0.424	0.505	0.643
	Velocity	m/s	0.45	0.52	0.55	0.61	0.60
dtm-i	Bottom	W (m)	25.0	25.0	15.0	15.0	15.0
	Top	W (m)	31.0	26.4	16.4	16.5	16.5
	W.L	TTG.m	0.200	0.403	0.419	0.573	0.694
	Velocity	m/s	0.45	0.52	0.73	0.58	0.57
dtm-h	Bottom	W (m)	25.0	25.0	15.0	10.0	10.0
	Top	W (m)	31.0	26.4	16.4	11.5	11.6
	W.L	TTG.m	0.200	0.403	0.419	0.553	0.812
	Velocity	m/s	0.45	0.52	0.73	0.86	0.78
dtm-g	Bottom	W (m)	22.0	22.0	22.0	15.0	15.0
	Top	W (m)	28.0	23.5	23.5	16.4	16.5
	W.L	TTG.m	0.200	0.446	0.474	0.531	0.662
	Velocity	m/s	0.51	0.58	0.49	0.60	0.59
dtm-e	Bottom	W (m)	22.0	22.0	20.0	15.0	15.0
	Top	W (m)	28.0	23.5	21.5	16.4	16.5
	W.L	TTG.m	0.200	0.446	0.473	0.545	0.673
	Velocity	m/s	0.51	0.58	0.53	0.59	0.58
dtm-b	Bottom	W (m)	20.0	20.0	20.0	15.0	15.0
	Top	W (m)	26.0	21.5	21.5	16.5	16.5
	W.L	TTG.m	0.200	0.482	0.513	0.580	0.699
	Velocity	m/s	0.55	0.61	0.52	0.58	0.57
Side slope			1:3.0	1:0.5		1:0.0	
dtm-a'	Bottom	W (m)	25.0	25.0	20.0	15.0	15.0
	Top	W (m)	34.0	26.4	21.4	16.4	16.4
	W.L	TTG.m	0.200	0.390	0.409	0.479	0.633
	Velocity	m/s	0.43	0.46	0.49	0.65	0.62

Note: [ ] selected case

Table 4.2.1 COMPARATIVE STUDY ON CHANNEL WIDTH (4/7)

Name of Drainage : Gede/Bor Drainage Channel (GM)

Design channel gradient: 1/1600
W.L. at conf. with Mookervaat(TTG.m): 2.5
Design riverbed at conf.with Mookervaat(TTG.m): -1.3

Case Name			Gm3 Conf. with MKV	Gm2 Conf. with GA	Gm1 Private sector	Gm1 Private sector
Design Flood Discharge(m3/s)			16.9	15.5	(13.8)	
Side slop			1:0.5			
Design channel bed at conf.with Mookervaat(TTG.m) : 1.0						
dgm-d	Bottom	W (m)	12.0	11.0	7.0	7.0
	Top	W (m)	13.5	12.5	8.4	8.8
	W.L	TTG.m	2.500	2.837	3.216	4.725
	Velocity	m/s	0.88	0.91	1.25	1.00
dgm-c	Bottom	W (m)	11.0	11.0	7.0	7.0
	Top	W (m)	12.5	12.5	8.5	8.8
	W.L	TTG.m	2.500	2.888	3.237	4.726
	Velocity	m/s	0.96	0.88	1.23	1.00
dgm-b	Bottom	W (m)	11.0	10.0	7.0	7.0
	Top	W (m)	12.5	11.5	8.5	8.8
	W.L	TTG.m	2.500	2.884	3.292	4.728
	Velocity	m/s	0.96	0.96	1.18	0.99
dgm-a	Bottom	W (m)	10.0	10.0	7.0	7.0
	Top	W (m)	11.5	11.6	8.5	8.8
	W.L	TTG.m	2.500	2.946	3.317	4.729
	Velocity	m/s	1.05	0.92	1.16	0.99
Design channel bed at conf.with Mookervaat(TTG.m) : 0.9						
dgm-d09	Bottom	W (m)	12.0	11.0	7.0	7.0
	Top	W (m)	13.6	12.5	8.4	8.8
	W.L	TTG.m	2.500	2.786	3.136	4.626
	Velocity	m/s	0.83	0.88	1.23	1.00
dgm-c09	Bottom	W (m)	11.0	11.0	7.0	7.0
	Top	W (m)	12.6	12.6	8.5	8.8
	W.L	TTG.m	2.500	2.833	3.157	4.626
	Velocity	m/s	0.90	0.85	1.21	1.00
dgm-b09	Bottom	W (m)	11.0	10.0	7.0	7.0
	Top	W (m)	12.6	11.5	8.5	8.8
	W.L	TTG.m	2.500	2.832	3.210	4.629
	Velocity	m/s	0.90	0.93	1.17	0.99
dgm-a09	Bottom	W (m)	10.0	10.0	7.0	7.0
	Top	W (m)	11.6	11.6	8.5	8.8
	W.L	TTG.m	2.500	2.886	3.235	4.630
	Velocity	m/s	0.98	0.89	1.15	0.99
dgm-e09	Bottom	W (m)	10.0	9.0	7.0	7.0
	Top	W (m)	11.6	10.6	8.6	8.8
	W.L	TTG.m	2.500	2.881	3.298	4.633
	Velocity	m/s	0.98	0.99	1.10	0.99
Design channel bed at conf.with Mookervaat(TTG.m) : 0.8						
dgm-d08	Bottom	W (m)	12.0	11.0	7.0	7.0
	Top	W (m)	13.7	12.6	8.5	8.8
	W.L	TTG.m	2.500	2.742	3.061	4.527
	Velocity	m/s	0.77	0.84	1.21	1.00
dgm-b08	Bottom	W (m)	11.0	10.0	7.0	7.0
	Top	W (m)	12.7	11.6	8.5	8.8
	W.L	TTG.m	2.500	2.781	3.132	4.530
	Velocity	m/s	0.84	0.90	1.15	0.99
Design riverbed at conf.with Mookervaat(TTG.m) : 0.7						
dgm-d07	Bottom	W (m)	12.0	11.0	7.0	7.0
	Top	W (m)	13.8	12.6	8.5	8.8
	W.L	TTG.m	2.500	2.706	2.993	4.428
	Velocity	m/s	0.73	0.81	1.18	0.99

Note: [ ] selected case

Table 4.2.1 COMPARATIVE STUDY ON CHANNEL WIDTH (5/7)

Name of Drainage : Saluran Cengkareng Drainage Channel

Design channel gradient: 1/3000
W.L at conf. with Cengkareng FW (TTG.m) : 1.3
Design reverbed at conf. with Cengkareng FW (TTG.m): 0.3

Case Name			Cm3 Estuary	Starting Masonry	Cm2	Cm1-2	Cm1 Outer Ring	Cm0-2	Cm0
Design Flood Discharge(m3/s)			18.8	12	10	12.6	8.8	5.8	5.8
dcm-e	Bottom	W (m)	9.0	9.0	9.0	9.0	8.0	8.0	8.0
	Top	W (m)	9.0	11.0	11.1	11.1	9.9	9.9	9.7
	W.L	TTG.m	1.300	1.378	1.683	1.914	2.129	2.205	2.271
	Velocity	m/s	1.00	0.87	0.75	0.60	0.51	0.35	0.40
dcm-f	Bottom	W (m)	10.0	9.0	7.0	7.0	7.0	7.0	7.0
	Top	W (m)	10.0	11.0	9.0	9.2	9.1	9.0	8.8
	W.L	TTG.m	1.300	1.354	1.657	2.026	2.318	2.392	2.455
	Velocity	m/s	0.90	0.88	0.95	0.70	0.52	0.35	0.40
dcm-g	Bottom	W (m)	10.0	9.0	8.0	8.0	7.0	7.0	7.0
	Top	W (m)	10.0	11.0	10.1	10.1	9.0	8.9	8.8
	W.L	TTG.m	1.300	1.354	1.664	1.955	2.207	2.294	2.368
	Velocity	m/s	0.90	0.88	0.84	0.65	0.55	0.38	0.42
dcm-i	Bottom	W (m)	10.0	10.0	8.0	8.0	6.0	6.0	6.0
	Top	W (m)	10.0	12.0	10.0	10.1	8.0	8.0	7.8
	W.L	TTG.m	1.300	1.361	1.611	1.923	2.184	2.306	2.403
	Velocity	m/s	0.90	0.80	0.87	0.66	0.64	0.43	0.47
dcm-h	Bottom	W (m)	10.0	10.0	8.0	8.0	7.0	7.0	7.0
	Top	W (m)	10.0	12.0	10.0	10.1	9.0	8.9	8.7
	W.L	TTG.m	1.300	1.361	1.611	1.923	2.186	2.276	2.352
	Velocity	m/s	0.90	0.80	0.87	0.66	0.56	0.38	0.42
dcm-d	Bottom	W (m)	10.0	10.0	10.0	9.0	8.0	8.0	8.0
	Top	W (m)	10.0	12.0	12.0	11.0	9.9	9.8	9.6
	W.L	TTG.m	1.300	1.361	1.620	1.826	2.070	2.153	2.225
	Velocity	m/s	0.90	0.80	0.71	0.63	0.53	0.36	0.41
dcm-b	Bottom	W (m)	11.0	10.0	10.0	9.0	8.0	8.0	8.0
	Top	W (m)	11.0	12.0	12.0	11.0	9.9	9.8	9.6
	W.L	TTG.m	1.300	1.343	1.608	1.817	2.064	2.148	2.220
	Velocity	m/s	0.81	0.81	0.71	0.63	0.53	0.36	0.41
dcm-a	Bottom	W (m)	11.0	11.0	10.0	9.0	8.0	8.0	8.0
	Top	W (m)	11.0	13.0	12.0	10.9	9.8	9.8	9.6
	W.L	TTG.m	1.300	1.348	1.567	1.789	2.046	2.132	2.207
	Velocity	m/s	0.81	0.74	0.73	0.64	0.54	0.37	0.41
dcm-c	Bottom	W (m)	12.0	11.0	10.0	9.0	8.0	8.0	8.0
	Top	W (m)	12.0	13.0	11.9	10.9	9.8	9.8	9.6
	W.L	TTG.m	1.300	1.335	1.558	1.783	2.042	2.129	2.204
	Velocity	m/s	0.75	0.74	0.73	0.64	0.54	0.37	0.41

Note: [ ] selected case

Table 4.2.1 COMPARATIVE STUDY ON CHANNEL WIDTH (6/7)

Name of Drainage : New Drainage Channel

Design channel gradient: 1/600

Design riverbed at Nm2 (TTG.m) -0.8

Case Name			Nm2	Nm1
Design Flood Discharge(m3/s)			7.1	
Design Channel Gradient			1/600	
dnm-a2	Bottom	W (m)	3.0	3.0
	Top	W (m)	3.0	3.0
	W.L	TTG.m	0.900	1.642
	Velocity	m/s	1.39	1.91
dnm-c2	Bottom	W (m)	2.5	2.5
	Top	W (m)	2.5	2.5
	W.L	TTG.m	0.900	1.872
	Velocity	m/s	1.67	1.93
dnm-d	Bottom	W (m)	2.2	2.2
	Top	W (m)	2.2	2.2
	W.L	TTG.m	0.865	2.141
	Velocity	m/s	1.94	1.94
dnm-b2	Bottom	W (m)	2.0	2.0
	Top	W (m)	2.0	2.0
	W.L	TTG.m	1.055	2.256
	Velocity	m/s	1.91	1.91

Note: [ ] selected case

Table 4.2.1 COMPARATIVE STUDY ON CHANNEL WIDTH (7/7)

Name of Drainage : Meruya Drainage Channel (main, MM)

Case Name			Mm6 along H.W	Mm5	Mm4 Culvert	Mm3	Mm2	Mm1
Design Flood Discharge(m3/s)			9.4			7.6	5.9	3.0
Design Channel Gradient			1/1000 (Sec. MM00-20 - M19)				1/700	
dddmm-4	Bottom	W (m)	3.0	3.0	3.0	2.5	2.0	2.0
	Top	W (m)	3.0	3.0	3.0	2.5	2.0	2.0
	W.L	TTG.m	5.136	5.443	5.577	6.248	7.945	8.565
	Velocity	m/s	1.73	1.73	1.73	1.67	2.04	1.04
	Water Depth	m	1.809	1.809	1.809	1.825	1.445	1.442
dddmm-3	Bottom	W (m)	3.0	3.0	3.0	2.5	2.0	1.5
	Top	W (m)	3.0	3.0	3.0	2.5	2.0	1.5
	W.L	TTG.m	5.136	5.443	5.577	6.248	7.945	8.670
	Velocity	m/s	1.73	1.73	1.73	1.67	2.04	1.29
	Water Depth	m	1.809	1.809	1.809	1.825	1.445	1.547
Design Channel Gradient			1/1000 (Sec. MM00-20 - M19)				1/700	
dddmm-2	Bottom	W (m)	3.0	3.0	3.0	2.5	2.0	2.0
	Top	W (m)	3.0	3.0	3.0	2.5	2.0	2.0
	W.L	TTG.m	5.136	5.443	5.577	6.248	7.906	8.492
	Velocity	m/s	1.73	1.73	1.73	1.67	1.98	1.03
	Water Depth	m	1.809	1.809	1.809	1.825	1.491	1.455
dddmm-1	Bottom	W (m)	3.0	3.0	3.0	2.5	2.0	1.5
	Top	W (m)	3.0	3.0	3.0	2.5	2.0	1.5
	W.L	TTG.m	5.136	5.443	5.577	6.248	7.906	8.595
	Velocity	m/s	1.73	1.73	1.73	1.67	1.98	1.28
	Water Depth	m	1.809	1.809	1.809	1.825	1.491	1.558
Design Channel Gradient			1/1000 (Sec. MM00-20 - M19)				1/300	
ddmm-f	Bottom	W (m)	3.5	3.5	3.5	3.0	2.0	1.5
	Top	W (m)	3.5	3.5	3.5	3.0	2.0	1.5
	W.L	TTG.m	4.876	5.183	5.317	5.991	6.338	7.816
	Velocity	m/s	1.73	1.73	1.73	1.62	2.97	1.97
	Water Depth	m	1.549	1.549	1.549	1.568	0.992	1.017
ddmm-d	Bottom	W (m)	3.0	3.0	3.0	2.5	2.0	1.5
	Top	W (m)	3.0	3.0	3.0	2.5	2.0	1.5
	W.L	TTG.m	5.136	5.443	5.577	6.248	6.688	7.817
	Velocity	m/s	1.73	1.73	1.73	1.67	2.20	1.97
	Water Depth	m	1.809	1.809	1.809	1.825	1.342	1.018
ddmm-a	Bottom	W (m)	2.5	2.5	2.5	2.5	2.0	1.5
	Top	W (m)	2.5	2.5	2.5	2.5	2.0	1.5
	W.L	TTG.m	5.537	5.844	5.978	6.670	6.924	7.827
	Velocity	m/s	1.70	1.70	1.70	1.35	1.87	1.95
	Water Depth	m	2.210	2.210	2.210	2.247	1.578	1.028
Design Channel Gradient			1/2000 (MM101- M18)		1/260 (MM18- M25+90)		1/700(MM25+90-EP)	
dddm-f	Bottom	W (m)	5.0(+3.0)			2.5	2.2	1.2
	Top	W (m)	5.0(+3.0)			2.5	2.2	1.2
	W.L	TTG.m	5.932			7.323	7.686	8.633
	Velocity	m/s	1.31			1.45	2.26	1.17
	Water Depth	m	1.432			2.102	1.188	1.141

Note: [ ] selected case (for Step 2)

Table 4.3.1 SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (1/4)

Section	Type	Location *		Length (m)									Remarks
		B.P	E.P	L(E)	L(D)	L(P)	R(I)	R(II)	C(L)	C(D)	O/C	Others	
(1) Kamal Drainage Chennel (Main)													
Left (Total length = 4495.1 m)													
KM-LA		B.P	KM01+16.2									198.8	Excavation
KM-LB	L(E)	KM01+16.2	KM12+34.4	1057.0									
KM-LC		KM12+34.4	KM14+23.4									166.0	Gabion Protection
KM-LD		KM14+23.4	KM16+36.8									76.6	BINA MARGA's area
KM-LE	R(I)	KM16+36.8	KM18+12.8				144.7						
KM-LF	R(II)	KM18+12.8	KM26+28.8					593.7					
KM-LG	L(E)	KM26+28.8	KM32+60.9	485.7									
KM-LH	R(I)	KM32+60.9	KM35+140.6				288.2						
KM-LI	L(P)	KM35+140.6	KM45+2.2			492.9							
KM-LJ	L(E)	KM45+2.2	KM48+121.3	350.3									
KM-LK	R(I)	KM48+121.3	KM54				288.3						
KM-LL		KM54	KM57(E.P)									352.9	No works
Total				1893.0	0.0	492.9	721.2	593.7	0.0	0.0	0.0	794.3	
Right (Total length = 4547.9 m)													
KM-RA		B.P	KM00+73.4									135.4	Excavation
KM-RB	L(E)	KM00+73.4	KM13+77.9	1260.6									
KM-RC	R(I)	KM13+77.9	KM14+23.4				28.8						
KM-RD		KM14+23.4	KM16+22.8									62.6	BINA MARGA's area
KM-RE	R(I)	KM16+22.8	KM16+51.6				28.8						
KM-RF	L(E)	KM16+51.6	KM35+107.2	1509.3									
KM-RG	R(I)	KM35+107.2	KM38+90.4				161.6						
KM-RH	R(I)	KM38+90.4	KM45+2.2				364.7						
KM-RI	R(II)	KM45+2.2	KM47+70.9					233.6					
KM-RJ		KM47+70.9	KM48										Confluence with Branch channel
KM-RK	R(II)	KM48	KM57(E.P)					762.5					
Total				2769.9	0.0	0.0	583.9	996.1	0.0	0.0	0.0	198.0	

Levee/Revetment type

L(E) : Levee earth type
L(D) : Levee dump fill type
L(P) : Levee parapet wall type
R(I) : Revetment type I
R(II) : Revetment type II
C(L) : Concrete L-type wall
C(D) : Concrete ditch
O/C : Open culvert

Table 4.3.1 SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (2/4)

Section	Type	Location *		Length (m)									Remarks
		B.P	E.P	L(E)	L(D)	L(P)	R(I)	R(II)	C(L)	C(D)	O/C	Others	
(2) Kamal Drainage Chennel (Branch)													
Left (Total length = 2746.5 m)													
KE-LA		KE00(B.P)	KE00+8.2										Confluence with Branch channel
KE-LB	R(II)	KE00+8.2	KE02+50.0					175.8					
KE-LC		KE02+50.0	KE08+41.5									425.8	No works
KE-LD	R(II)	KE08+41.5	KE23					926.9					
KE-LE	R(I)	KE23	KE30+4.6				766.4						
KE-LF	C(D)	KE30+4.6	KE33(E.P)							451.6			
Total				0.0	0.0	0.0	766.4	1102.7	0.0	451.6	0.0	425.8	
Right (Total length = 2754.7 m)													
KE-RA	R(II)	KE00(B.P)	KE04+70.0					442.7					
KE-RB	R(I)	KE04+70.0	KE10+2.2				185.7						
KE-RC		KE10+2.2	KE12+47.6									205.1	No works
KE-RD		KE12+47.6	KE20+35.6									624.0	Heightening
KE-RE	R(II)	KE20+35.6	KE23+4.0					83.2					
KE-RF	R(I)	KE23+4.0	KE30+4.6				762.4						
KE-RG	C(D)	KE30+4.6	KE33(E.P)							451.6			
TotaL				0.0	0.0	0.0	948.1	525.9	0.0	451.6	0.0	829.1	
(3) Tanjungan Drainage Chennel													
Left (Total length = 2576.0 m)													
TM-LA	L(D)	TM00(B.P)	TM16+58.3		1453.8								
TM-LB		TM16+58.3	TM18+28.2									67.9	BINA MARGA's area
TM-LC	L(E)	TM18+28.2	TM21+18.8	283.4									
TM-LD	R(II)	TM21+18.8	TM23+16.2					203.6					
TM-LE	C(L)	TM23+16.2	E.P						567.3				
Total				283.4	1453.8	0.0	0.0	203.6	567.3	0.0	0.0	67.9	

Table 4.3.1 SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (3/4)

Section	Type	Location *		Length (m)									Remarks
		B.P	E.P	L(E)	L(D)	L(P)	R(I)	R(II)	C(L)	C(D)	O/C	Others	
Right (Total length = 2601.8 m)													
TM-RA	L(D)	TM00(B.P)	TM16+47.1		1442.1								
TM-RB		TM16+47.1	TM18+17.5									68.4	BINA MARGA's area
TM-RC		TM18+17.5	TM19									79.9	No works
TM-RD	L(D)	TM19	TM20+79.8		221.2								
TM-RE	L(E)	TM20+79.8	TM21+79.3	79.8									
TM-RF	R(II)	TM21+79.3	TM23+16.2					143.1					
TM-RG	C(L)	TM23+16.2	E.P						567.3				
Total				79.8	1663.3	0.0	0.0	143.1	567.3	0.0	0.0	148.3	
(4) Gede/Bor Drainage Chennel													
Left (Total length = 1203.0 m)													
GM-LA		B.P	GM02+0.1									20.0	Outlet structure
GM-LB	R(II)	GM02+0.1	GM10					599.8					
GM-LC	R(I)	GM10	GM12+99.3				264.8						
GM-LD	R(II)	GM12+99.3	E.P					318.4					
Total				0.0	0.0	0.0	264.8	918.2	0.0	0.0	0.0	20.0	
Right (Total length = 1203.0 m)													
GM-RA		B.P	GM02+0.1									20.0	Outlet structure
GM-RB	R(II)	GM02+0.1	E.P					1183.0					
Total				0.0	0.0	0.0	0.0	1183.0	0.0	0.0	0.0	20.0	
(5) Saluran Cengkareng Drainage Chennel													
Left (Total length = 4233.4 m)													
CM-LA		B.P	CM02+1.5									21.7	Outlet structure
CM-LB	O/C	CM02+1.5	CM05+20.0								390.7		
CM-LC	R(II)	CM05+20.0	CM15+25.8					850.4					
CM-LD	L(E)	CM15+25.8	CM26+82.8	1123.1									
CM-LE	L(P)	CM26+82.8	CM29+23.5			235.2							
CM-LF	L(E)	CM29+23.5	CM30+31.5	108.0									
CM-LG	L(P)	CM30+31.5	CM34+16.0			333.6							
CM-LH	L(E)	CM34+16.0	CM42+87.6	680.5									
CM-LI	R(I)	CM42+87.6	CM43+83.4				119.6						

Table 4.3.1 SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (4/4)

Section	Type	Location *		Length (m)									Remarks
		B.P	E.P	L(E)	L(D)	L(P)	R(I)	R(II)	C(L)	C(D)	O/C	Others	
CM-LJ	R(II)	CM43+83.4	CM45					55.7					
CM-LK	R(I)	CM45	E.P				314.9						
Total				1911.6	0.0	568.8	434.5	906.1	0.0	0.0	390.7	21.7	
Right (Total length = 4234.8 m)													
CM-RA		B.P	CM02+1.5									21.7	Outlet structure
CM-RB	O/C	CM02+1.5	CM05+20.0								390.7		
CM-RC	R(II)	CM05+20.0	CM15+6.0					830.6					
CM-RD	L(P)	CM15+6.0	CM17+84.5			287.5							
CM-RE	L(E)	CM17+84.5	CM23+53.0	529.9									
CM-RF	L(P)	CM23+53.0	CM29+18.8			563.6							
CM-RG	L(E)	CM29+18.8	CM38+35.0	758.9									
CM-RH	R(I)	CM38+35.0	CM40+20.5				113.9						
CM-RI	L(E)	CM40+20.5	CM42+87.6	247.8									
CM-RJ	R(I)	CM42+87.6	CM43+77.0				113.2						
CM-RK	R(II)	CM43+77.0	CM45					62.1					
CM-RL	R(I)	CM45	E.P				314.9						
Total				1536.6	0.0	851.1	542.0	892.7	0.0	0.0	390.7	21.7	
(6) PIK Junction Drainage Chennel													
(Total length = 765.4 m)													
NM-A	C(D)	B.P	E.P							765.4			
Total				0.0		0.0	0.0	0.0	0.0	765.4	0.0	0.0	
(7) Meruya Area Drainage Chennel													
(Total length = 2269.1 m)													
MM-A	C(D)	B.P	MM104+65.0								359.2		
MM-B		MM104+65.0	MM310									504.2	Box culvert
MM-C	C(D)	MM310	MM21+46.0							880.8			
MM-D		MM21+46.0	MM25+89.6										Box culvert
MM-E	C(D)	MM25+89.6	E.P							236.9		288.0	
Total				0.0	0.0	0.0	0.0	0.0	0.0	1117.7	359.2	792.2	

Note: * : Location is based on topographic cross section No.
the location of each section is shown in Fig.

Table 4.3.2 DESIGN DISCHARGE AT SLUICEWAY/DRAIN-DITCH SITES

Left Bank					Right Bank				
No.	Location	Drainage Area (km2)	Specific Discharge (m3/s/km2)	Discharge (m3/s)	No.	Location	Drainage Area (km2)	Specific Discharge (m3/s/km2)	Discharge (m3/s)
Kamal Drainage Channel (main)									
DKM-1L	KM01+24m	0.012	12.5	0.15	SKM-1R	KM17-20m	0.479	11.0	5.27
SKM-1L	KM20+16m	0.252	11.6	2.92	SKM-2R	KM21+6m	0.316	11.2	3.54
SKM-2L	KM24+35m	0.234	11.7	2.74	SKM-3R	KM27+42m	0.367	11.1	4.07
SKM-3L[1)]	KM26+2m	-	-	[2)] 1.00	SKM-4R	KM40+32m	0.076	12.0	0.91
SKM-4L	KM29+19m	0.067	12.0	0.80	SKM-5R	KM45+6m	0.042	12.5	0.53
SKM-5L	KM31+56m	0.126	11.9	1.50	SKM-6R	KM50+31m	0.038	12.0	0.46
SKM-6L	KM38+3m	0.162	11.8	1.91	SKM-7R	KM54-26m	0.168	11.8	1.98
SKM-7L	KM42+7m	0.080	12.0	0.96					
SKM-8L	KM46+35m	0.109	12.0	1.30					
CKM-1L	KM52-2m	0.131	11.9	1.56					
Kamal Drainage Channel (branch)									
SKE-1L	KE01+5m	0.078	12.0	0.94	CKE-1R	KE01+5m	0.109	12.0	1.31
SKE-2L	KE12-32m	0.007	12.5	0.09	SKE-1R	KE21+5m	0.027	12.5	0.34
SKE-3L	KE13+0m	0.005	12.5	0.06	SKE-2R	KE25-5m	0.108	12.0	1.30
CKE-1L	KE15-8m	0.053	12.0	0.64	SKE-3R	KE31+0m	0.018	12.5	0.22
DKE-1L	KE18+54m	0.097	12.0	1.16					
DKE-2L	KE21-37m	0.024	12.5	0.30					
SKE-4L	KE25-5m	0.068	12.0	0.82					
CHKE-1L	KE30-10m	0.701	10.75	7.54					
SKE-5L	KE31-43m	0.018	12.5	0.22					
Tanjungan Drainage channel									
STM-1L	TM25-13m	0.063	12.0	0.76	STM-1R	TM25-13m	0.048	12.5	0.60
STM-2L	TM30-10m	0.255	11.6	2.96	STM-2R	TM30+3m	0.015	12.5	0.19
STM-3L	TM30+16m	0.077	12.0	0.92	STM-3R	TM35+0m	0.050	12.0	0.60
STM-4L	TM33+13m	0.131	11.9	1.56					
Gede /Bor Drainage Chennel									
DGM-1L	GM04-46m	0.040	12.5	0.50	DGM-1R	GM03+0m	0.018	12.5	0.23
DGM-2L	GM06-37m	0.047	12.5	0.59	SGM-1R	GM04+44m	0.074	12.0	0.89
DGM-3L	GM06-26m	0.085	12.0	1.02	DGM-2R	GM06+13m	0.0082	12.5	0.10
SGM-1L	GM12+0m	0.061	12.0	0.73	DGM-3R	GM08-41m	0.017	12.5	0.21
SGM-2L[3)]	GM14-5m	-	-	-	SGM-2R	GM12+0m	0.051	12.0	0.61
SGM-3L	GM15+24m	0.090	12.0	1.08					
Saluran Cengkareng Drainage Channel									
SCM-1L	CM05-5m	0.181	11.8	2.14	DCM-1R	CM09-44m	0.121	11.9	1.44
SCM-2L	CM16+12m	0.421	11.0	4.63	SCM-1R	CM15-10m	0.173	11.8	2.04
SCM-3L	CM20+10m	0.148	11.9	1.76	SCM-2R	CM16-4m	0.171	11.8	2.02
SCM-4L	CM27-21m	0.163	11.8	1.92	SCM-3R	CM26+1m	0.126	11.9	1.50
SCM-5L	CM30+0m	0.147	11.9	1.75	SCM-4R	CM30+0m	0.138	11.9	1.64
SCM-6L	CM37+30m	0.173	11.8	2.04	SCM-5R	CM37+0m	0.142	11.9	1.69
SCM-7L	CM41+0m	0.164	11.8	1.94	SCM-6R	CM43-30m	0.187	11.8	2.21
SCM-8L	CM47+34m	0.147	11.9	1.75	SCM-7R	CM47+53m	0.04	12.5	0.50
PIK Junction Drainage Channel									
					SNM-1R	NM34+0m	0.148	11.9	1.76

Note: 1):Sluiceway for existing secondary channel
2):Flow capacity of existing secondary channel
3):Sluiceway for flushing Saluran Cengkareng Drainage Channel

Table 4.3.3 DESIGN OF SLUICEWAY AND DRAIN- DITCH (1/3)

Left/ Right	No.	Facilities	Location	Levee /Revet. type	Q (m3/s)	EL Channel bed(m)	EL HWL (m)	EL Levee crest(m)	EL Inland (m)	Sluiceway conduit/Ditch Nos. of lane	Inlet EL(m)	Outlet EL(m)	Length (m)	Slope 1 : n	Width (m)	Height (m)	Gate Type
(1)Kamal drainage channel (Main channel)																	
Left	DKM-1L	Ditch	KM01+24m	G	0.15	-1.455	0.221	0.746	0.0	The existing ditch (0.7 m x 0.8 m) shall be used with no gate.							
	SKM-1L	Sluiceway	KM20+16m	R(II)	2.92	-0.982	0.688	1.230	0.5	1	-0.602	-0.682	9.671	120	1.2	1.2	Slide
	SKM-2L	Sluiceway	KM24+35m	R(II)	2.74	-0.887	0.798	1.327	0.9	1	-0.527	-0.587	6.564	110	1.1	1.1	Slide
	SKM-3L	Sluiceway	KM26+2m	R(II)	-	-0.841	0.850	1.374	0.7	1	-0.541	-0.541	0.300	Level	1.5	1.3	Slide
	SKM-4L	Sluiceway	KM29+19m	L(E)	0.80	-0.736	0.948	1.477	0.3	1	-0.357	-0.436	6.309	80	0.8	0.8	Slide
	SKM-5L	Sluiceway	KM31+56m	L(E)	1.50	-0.678	0.974	1.511	0.5	1	-0.315	-0.378	6.324	100	1.0	1.0	Slide
	SKM-6L	Sluiceway	KM38+3m	L(P)	1.91	-0.451	1.097	1.672	0.5	1	-0.094	-0.151	5.700	100	1.0	1.0	Slide
	SKM-7L	Sluiceway	KM42+7m	L(P)	0.96	-0.293	1.207	1.794	0.8	1	0.324	0.243	5.700	70	0.7	0.7	Slide
	SKM-8L	Sluiceway	KM46+35m	L(E)	1.30	-0.141	1.323	1.911	1.0	1	0.223	0.159	6.426	100	1.0	1.0	Slide
	CKM-1L	Culvert	KM52-2m	R(I)	1.56	0.113	1.530	2.107	1.2	The existing culvert (1.0 m x 1.0 m) shall be used with no gate.							
Right	SKM-1R	Sluiceway	KM17-20m	L(E)	5.27	-1.062	0.592	1.148	-0.1	2	-0.722	-0.762	4.362	110	1.1	1.1	Slide
	SKM-2R	Sluiceway	KM21+6m	L(E)	3.54	-0.976	0.695	1.236	0.0	1	-0.640	-0.676	4.331	120	1.2	1.2	Slide
	SKM-3R	Sluiceway	KM27+42m	L(E)	4.07	-0.792	0.907	1.425	0.1	1	-0.459	-0.492	4.284	130	1.3	1.3	Slide
	SKM-4R	Sluiceway	KM40+32m	R(I)	0.91	-0.365	1.156	1.739	0.9	1	-0.019	-0.065	3.692	80	0.8	0.8	Slide
	SKM-5R	Sluiceway	KM45+6m	R(II)	0.53	-0.199	1.280	1.868	1.2	1	0.171	0.101	5.544	80	0.8	0.8	Slide
	SKM-6R	Sluiceway	KM50+31m	R(II)	0.46	0.025	1.455	2.039	1.3	1	0.395	0.325	5.542	80	0.8	0.8	Slide
	SKM-7R	Sluiceway	KM54-26m	R(II)	1.98	0.148	1.561	2.134	1.6	1	0.514	0.448	6.536	100	1.0	1.0	Slide
(2)Kamal drainage channel (Branch channel)																	
Left	SKE-1L	Sluiceway	KE01+5m	R(II)	0.94	0.223	1.425	1.970	1.1	1	0.523	0.523	0.300	Level	0.8	0.8	Slide
	SKE-2L	Sluiceway	KE12-32m	R(II)	0.09	0.619	1.836	2.174	1.8	1	1.274	1.274	0.300	Level	0.4	0.4	Flap
	SKE-3L	Sluiceway	KE13+0m	R(II)	0.06	0.697	1.916	2.242	1.8	1	1.342	1.342	0.300	Level	0.4	0.4	Flap
	CKE-1L	Culvert	KE15-8m	R(II)	0.64	0.763	1.982	2.299	1.9	1	1.181	1.063	7.100	60	0.6	0.6	-
	DKE-1L	Ditch	KE18+54m	R(II)	1.16	0.933	2.141	2.449	2.1	1	1.687	1.649	3.000	80	0.8	0.8	-
	DKE-2L	Ditch	KE21-37m	R(II)	0.30	1.011	2.206	2.517	2.2	1	1.967	1.917	3.000	60	0.6	0.6	-
	SKE-4L	Sluiceway	KE25-5m	R(I)	0.82	1.152	2.328	2.641	1.9	1	1.497	1.452	3.557	80	0.8	0.8	Slide
	CHKE-1L	Channel	KE30-10m	R(I)	7.54	1.471	2.627	2.920	2.2	A tertiary channel shall be newly provided by Private Sctor.							
	SKE-5L	Sluiceway	KE31-43m	C(D)	0.22	1.551	2.645	2.925	2.5	1	2.025	2.025	0.300	Level	0.4	0.4	Flap

Table 4.3.3 DESIGN OF SLUICEWAY AND DRAIN- DITCH (2/3)

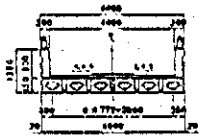
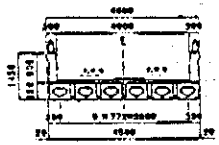
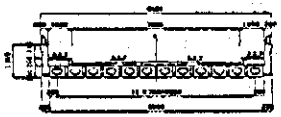
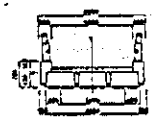
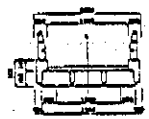
Left/ Right	No.	Facilities	Location	Levee /Revet. type	Q (m3/s)	EL				Sluiceway conduit/Ditch							Gate
						Channel bed(m)	HWL (m)	Levee crest(m)	Inland (m)	Nos. of lane	Inlet EL(m)	Outlet EL(m)	Length (m)	Slope 1 : n	Width (m)	Height (m)	Type
Right	CKE-1R	Culvert	KE01+5m	R(II)	1.31	0.223	1.425	1.970	1.4	1	0.612	0.523	7.100	80	0.8	0.8	-
	SKE-1R	Sluiceway	KE21+5m	R(II)	0.34	1.035	2.225	2.538	1.8	1	1.335	1.335	0.300	Level	0.8	0.8	Slide
	SKE-2R	Sluiceway	KE25-5m	R(I)	1.30	1.152	2.328	2.641	1.9	1	1.525	1.452	6.557	90	0.9	0.9	Slide
	SKE-3R	Sluiceway	KE31+0m	C(D)	0.22	1.575	2.649	2.925	2.5	1	2.025	2.025	0.300	Level	0.4	0.4	Flap
(3)Tanjungan drainage channel																	
Left	STM-1L	Sluiceway	TM25-13m	R(II)	0.76	-0.907	0.478	0.903	0.40	1	-0.607	-0.607	0.300	Level	0.8	0.8	Slide
	STM-2L	Sluiceway	TM30-10m	C(L)	2.96	-0.893	0.496	0.922	-0.10	2	-0.593	-0.593	0.300	Level	1.0	1.0	Slide
	STM-3L	Sluiceway	TM30+16m	C(L)	0.92	-0.888	0.504	0.929	0.40	1	-0.588	-0.588	0.300	Level	0.8	0.8	Slide
	STM-4L	Sluiceway	TM33+13m	C(L)	1.56	-0.861	0.544	0.965	0.20	1	-0.561	-0.561	0.300	Level	1.0	1.0	Slide
Right	STM-1R	Sluiceway	TM25-13m	R(II)	0.60	-0.907	0.478	0.903	0.20	1	-0.607	-0.607	0.300	Level	0.8	0.8	Slide
	STM-2R	Sluiceway	TM30+3m	C(L)	0.19	-0.890	0.500	0.926	0.10	1	-0.139	-0.290	6.050	40	0.4	0.4	Flap
	STM-3R	Sluiceway	TM35+0m	C(L)	0.60	-0.817	0.608	1.024	-0.80	1	-0.446	-0.517	5.700	80	0.8	0.8	Slide
(4)PIK Junction drainage channel																	
Right	SNM-1R	Sluiceway	NM34+0m	C(D)	1.76	0.308	1.973	2.273	1.50	1	0.608	0.608	0.300	Level	1.1	1.1	Slide
(5)Saluran Cengkareng drainage channel																	
Left	SCM-1L	Sluiceway	CM05-5m	O/C	2.14	-0.677	1.381	1.726	1.3	1	-0.177	-0.177	0.300	Level	1.3	1.3	Slide
	SCM-2L	Sluiceway	CM16+12m	L(E)	4.63	-0.364	1.675	2.020	0.7	2	-0.014	-0.064	5.939	120	1.2	1.2	Slide
	SCM-3L	Sluiceway	CM20+10m	L(E)	1.76	-0.222	1.799	2.153	0.7	1	0.138	0.078	5.958	100	1.0	1.0	Slide
	SCM-4L	Sluiceway	CM27-21m	L(P)	1.92	0.004	1.948	2.343	0.9	1	0.304	0.304	0.300	Level	1.1	1.1	Slide
	SCM-5L	Sluiceway	CM30+0m	L(E)	1.75	0.094	2.030	2.414	1.5	1	0.634	0.594	4.018	100	1.0	1.0	Slide
	SCM-6L	Sluiceway	CM37+30m	L(E)	2.04	0.278	2.142	2.558	1.1	1	0.633	0.578	6.082	110	1.1	1.1	Slide
	SCM-7L	Sluiceway	CM41+0m	L(E)	1.94	0.380	2.192	2.626	1.7	1	0.736	0.680	6.118	110	1.1	1.1	Slide
	SCM-8L	Sluiceway	CM47+34m	R(I)	1.75	0.547	2.254	2.689	1.8	1	0.887	0.847	3.618	90	0.9	0.9	Slide
Right	DCM-1R	Ditch	CM09-44m	R(II)	1.44	-0.551	1.490	1.844	1.5	The existing ditch (1.0 m x 1.2 m) shall be used with no gate.							

Table 4.3.3 DESIGN OF SLUICEWAY AND DRAIN- DITCH (3/3)

Left/ Right	No.	Facilities	Location	Levee /Revet. type	Q (m3/s)	EL				Sluiceway conduit/Ditch							Gate
						Channel bed(m)	HWL (m)	Levee crest(m)	Inland (m)	Nos. of lane	Inlet EL(m)	Outlet EL(m)	Length (m)	Slope 1 : n	Width (m)	Height (m)	Type
	SCM-1R	Sluiceway	CM15-10m	R(II)	2.04	-0.396	1.632	1.989	1.3	1	0.204	0.204	0.300	Level	1.2	1.2	Slide
	SCM-2R	Sluiceway	CM16-4m	L(P)	2.02	-0.369	1.669	2.015	0.6	1	-0.069	-0.069	0.300	Level	1.2	1.2	Slide
	SCM-3R	Sluiceway	CM26+1m	L(P)	1.50	-0.037	1.920	2.311	0.7	1	0.263	0.263	0.300	Level	1.0	1.0	Slide
	SCM-4R	Sluiceway	CM30+0m	L(E)	1.64	0.094	2.030	2.414	1.1	1	0.454	0.394	6.018	100	1.0	1.0	Slide
	SCM-5R	Sluiceway	CM37+0m	L(E)	1.69	0.268	2.137	2.550	1.1	1	0.609	0.568	4.076	100	1.0	1.0	Slide
	SCM-6R	Sluiceway	CM43-30m	L(E)	2.21	0.444	2.206	2.650	1.3	1	0.781	0.744	4.138	110	1.1	1.1	Slide
	SCM-7R	Sluiceway	CM47+53m	R(I)	0.50	0.553	2.257	2.692	1.8	1	0.936	0.853	6.617	80	0.8	0.8	Slide
(6)Gede/Bor drainage channel																	
Left	DGM-1L	Ditch	GM04-46m	R(II)	0.50	0.975	2.562	2.968	2.70	The existing ditch (1.0 m x 1.2 m) shall be used with no gate.							
	DGM-2L	Ditch	GM06-37m	R(II)	0.59	1.109	2.675	3.089	2.70	The existing ditch (0.7 m x 0.7 m) shall be used with no gate.							
	DGM-3L	Ditch	GM06-26m	R(II)	1.02	1.116	2.681	3.095	2.70	The existing ditch (1.0 m x 1.2m) shall be used with no gate.							
	SGM-1L	Sluiceway	GM12+0m	R(I)	0.73	1.389	2.930	3.343	2.30	1	1.772	1.689	6.607	80	0.8	0.8	Slide
	SGM-2L	Sluiceway	GM14-5m	R(II)	-	1.504	3.039	3.447	-	2	1.204	1.137	6.704	100	1.0	1.0	Slide
	SGM-3L	Sluiceway	GM15+24m	R(II)	1.08	1.583	3.115	3.519	2.50	1	1.996	1.883	9.000	80	0.8	0.8	Slide
Right	DGM-1R	Ditch	GM03+0m	R(II)	0.23	0.929	2.524	2.926	3.70	The existing ditch (0.7 m x 2.5 m) shall be used with no gate.							
	SGM-1R	Sluiceway	GM04+44m	R(II)	0.89	1.032	2.609	3.019	2.40	1	1.532	1.532	0.300	Level	0.8	0.8	Slide
	DGM-2R	Ditch	GM06+13m	R(II)	0.10	1.140	2.702	3.117	2.60	1	2.367	2.317	3.000	60	0.6	0.8	-
	DGM-3R	Ditch	GM08-41m	R(II)	0.21	1.208	2.762	3.179	2.80	The existing ditch (0.3 m x 0.4 m) shall be used with no gate.							
	SGM-2R	Sluiceway	GM12+0m	R(II)	0.61	1.389	2.930	3.343	2.60	1	1.689	1.689	0.300	Level	0.8	0.8	Slide

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (1/8)

KAMAL(MAIN)

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT (tf·m) MU	ML	S·F	NOTES
BKM-8		4.600	13.100	13.600	0.450	B.M. 70T	1	107.3			1	-103.4			1	44.7	89.4	90.10	68.20	1.32	BM70-05 (1) 1+i=1.326
							2	63.1			2	-63.9			2	0.0	0.0				
							3	170.3			3	-167.3			3	20.0	20.0				
							4	45.9	> -18.0	○	4	132.1	< 200.0	○	4	64.7	109.4				
							5	158.7	< 160.0	○	5	-16.6	> -18.0	○							
BKM-1		4.600	16.100	16.600	0.550	B.M. 70T	1	121.7			1	-116.7			1	58.5	117.0	132.90	96.10	1.38	BM70-07 (2) 1+i=1.317
							2	52.4			2	-53.2			2	0.0	0.0				
							3	174.0			3	-169.9			3	20.0	20.0				
							4	53.1	> -18.0	○	4	132.2	< 200.0	○	4	78.5	137.0				
							5	159.7	< 160.0	○	5	-11.3	> -18.0	○							
BKM-10 BKM-11		9.600	12.500	13.000	0.450	B.M. 70T	1	100.4			1	-96.9			1	87.5	175.0	90.10	69.80	1.29	BM70-05 (3) 1+i=1.326
							2	69.0			2	-69.9			2	4.3	8.6				
							3	169.4			3	-166.8			3	40.0	40.0				
							4	40.6	> -18.0	○	4	136.8	< 200.0	○	4	131.8	223.6				
							5	157.9	< 160.0	○	5	-17.0	> -18.0	○							
BKM-3 BKM-5		9.600	13.650	14.150	0.500	B.M. 70T	1	103.7			1	-100.1			1	100.0	200.0	104.40	80.30	1.30	BM70-06 (4) 1+i=1.323
							2	61.4			2	-62.4			2	4.7	9.4				
							3	165.0			3	-162.6			3	40.0	40.0				
							4	43.2	> -18.0	○	4	126.7	< 200.0	○	4	144.7	249.3				
							5	153.4	< 160.0	○	5	-17.3	> -18.0	○							
BKM-9		2.500	12.100	12.600	0.400	P	1	104.8			1	-101.3			1	18.9	37.8	53.500	38.90	1.87	PB-03 (5) PERSON LOAD 0.35t/m2 1+i=1.000
							2	21.2			2	-21.4			2	4.2	8.4				
							3	126.0			3	-122.7			3	0.0	0.0				
							4	51.3	> -18.0	○	4	58.4	< 200.0	○	4	23.1	46.2				
							5	111.3	< 160.0	○	5	-16.7	> -18.0	○							
BKM-4 BKM-6 BKM-7		2.500	12.650	13.150	0.450	P	1	100.6			1	-97.8			1	21.7	43.5	69.900	46.10	2.03	PB-04 (6) PERSON LOAD 0.35t/m2 1+i=1.000
							2	18.4			2	-18.7			2	4.4	8.7				
							3	118.9			3	-116.5			3	0.0	0.0				
							4	76.4	> -18.0	○	4	53.5	< 200.0	○	4	26.1	52.2				
							5	127.3	< 160.0	○	5	-17.2	> -18.0	○							

NOTES

LOAD TYPE B.M.100T:WHEEL LOAD 10.0tf
B.M. 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

ST:STATE
1. STRESS OF DEAD LOAD
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

JU:JUDGEMENT

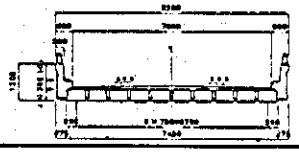
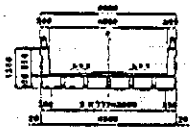
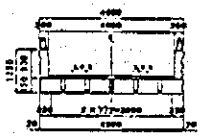
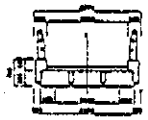
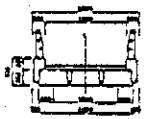
1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i=FACTER OF IMPACT

KAMAL (BRANCH)

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (2/8)

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT (tf·m) MU	ML	S·F	NOTES
BKE-12 BKE-13		8.200	8.100	8.400	0.400	B.M. 70T	1	54.9			1	-53.0			1	48.5	97.0	61.20	45.90	1.33	BM70-01 (7) 1+i=1.351
							2	72.9			2	-71.7			2	0.0	0.0				
							3	127.7			3	-124.7			3	40.0	40.0				
							4	38.9	> -18.0	○	4	102.0	< 200.0	○	4	88.5	137.0				
							5	135.3	< 160.0	○	5	-16.8	> -18.0	○							
BKE-18		4.600	9.200	9.500	0.400	B.M. 70T	1	66.2			1	-63.8			1	32.1	64.3	61.20	44.10	1.39	BM70-01 (8) 1+i=1.351
							2	63.1			2	-62.1			2	0.0	0.0				
							3	129.3			3	-125.9			3	20.0	20.0				
							4	48.8	> -18.0	○	4	93.6	< 200.0	○	4	52.1	84.3				
							5	136.9	< 160.0	○	5	-17.5	> -18.0	○							
BKE-2 BKE-6 BKE-9 BKE-11		4.600	9.900	10.300	0.450	B.M. 70T	1	65.5			1	-63.4			1	37.8	75.6	69.90	49.50	1.41	BM70-02 (9) 1+i=1.345
							2	52.7			2	-52.1			2	0.0	0.0				
							3	118.2			3	-115.5			3	20.0	20.0				
							4	50.6	> -18.0	○	4	77.8	< 200.0	○	4	57.8	95.6				
							5	126.4	< 160.0	○	5	-17.6	> -18.0	○							
BKE-10		6.600	8.200	8.500	0.400	B.M. 70T	1	49.9			1	-48.1			1	36.0	72.0	61.10	47.20	1.29	BM70-01 (10) 1+i=1.351
							2	78.3			2	-77.0			2	0.0	0.0				
							3	128.2			3	-125.1			3	40.0	40.0				
							4	40.7	> -18.0	○	4	101.2	< 200.0	○	4	76.0	112.0				
							5	135.7	< 160.0	○	5	-17.9	> -18.0	○							
BKE-3 BKE-4 BKE-5 BKE-		6.600	8.800	9.200	0.450	B.M. 70T	1	49.6			1	-47.9			1	42.7	85.5	69.90	52.50	1.33	BM70-02 (11) 1+i=1.345
							2	66.0			2	-65.3			2	0.0	0.0				
							3	115.6			3	-113.2			3	40.0	40.0				
							4	42.0	> -18.0	○	4	85.9	< 200.0	○	4	82.7	125.5				
							5	123.7	< 160.0	○	5	-16.3	> -18.0	○							
BKE-8		2.500	8.700	9.100	0.350	P	1	63.4			1	-61.9			1	12.2	24.5	24.800	18.40	1.35	PB-02 (12) PERSON LOAD 0.35t/m2 1+i=1.000
							2	14.3			2	-14.6			2	3.0	6.1				
							3	77.8			3	-76.5			3	.0	.0				
							4	45.5	> -18.0	○	4	29.4	< 200.0	○	4	15.3	30.5				
							5	82.1	< 160.0	○	5	-16.6	> -18.0	○							
BKE-16 BKE-17		2.500	8.200	8.500	0.350	P	1	56.4			1	-55.2			1	11.4	22.9	22.800	16.30	1.40	PB-01 (13) PERSON LOAD 0.35t/m2 1+i=1.000
							2	12.7			2	-13.0			2	2.8	5.7				
							3	69.1			3	-68.2			3	.0	.0				
							4	51.0	> -18.0	○	4	24.0	< 200.0	○	4	14.3	28.5				
							5	82.2	< 160.0	○	5	-16.8	> -18.0	○							

NOTES

LOAD TYPE B.M.100T:WHEEL LOAD 10.0tf
B.M. 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

ST:STATE
1. STRESS OF DEAD LOAD
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

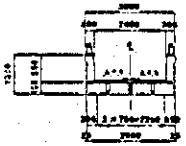
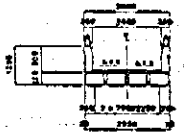
JU:JUDGEMENT
1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i=FACTER OF IMPACT

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (3/8)

KAMAL (BRANCH)

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT(tf·m) MU	ML	S·F	NOTES
BKE-14 BKE-15		3.000	8.000	8.300	0.400	B.M. 70T	1	54.0			1	-52.1			1	20.2	40.4	61.20	46.40	1.32	BM70-01 (14) 1+i=1.351
							2	74.4			2	-73.2			2	0.0	0.0				
							3	128.3			3	-125.3			3	20.0	20.0				
							4	39.1	> -18.0	○	4	102.6	< 200.0	○	4	40.2	60.4				
							5	135.8	< 160.0	○	5	-17.6	> -18.0	○							
BKE-1		3.000	8.600	9.000	0.450	B.M. 70T	1	54.0			1	-52.9			1	23.6	47.1	69.90	52.10	1.34	BM70-02 (15) 1+i=1.345
							2	59.8			2	-60.9			2	0.0	0.0				
							3	113.8			3	-113.8			3	20.0	20.0				
							4	40.6	> -18.0	○	4	87.3	< 200.0	○	4	43.6	67.1				
							5	122.0	< 160.0	○	5	-16.4	> -18.0	○							

NOTES

LOAD TYPE B.M. 100T:WHEEL LOAD 10.0tf
B.M. 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD
0.35tf/m2

ST:STATE
1. STRESS OF DEAD LOAD
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

JU:JUDGEMENT

1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i=FACTER OF IMPACT

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (4/8)

TANJUGAN

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT (tf·m) MU	ML	S·F	NOTES
BTM-3		10.600	13.300	13.800	0.500	B.M. 100T	1	93.0			1	-89.1			1	107.2	214.4	116.00	88.90	1.30	BM100-02 (16)
							2	78.6			2	-79.5			2	4.8	9.7				
							3	171.6			3	-168.6			3	64.5	64.5				1+i=1.326
							4	37.5	> -18.0	○	4	158.3	< 200.0	○	4	176.5	288.6				
							5	153.8	< 160.0	○	5	-9.6	> -18.0	○							
BTM-4 BTM-5		12.200	10.500	11.000	0.450	B.M. 70T	1	68.5			1	-66.3			1	96.8	193.5	81.40	59.40	1.37	BM70-03 (17)
							2	65.1			2	-66.0			2	0.0	0.0				
							3	133.6			3	-132.3			3	60.0	60.0				I+i=1.338
							4	51.8	> -18.0	○	4	98.2	< 200.0	○	4	156.8	253.5				
							5	138.5	< 160.0	○	5	-16.4	> -18.0	○							
BTM-1		6.600	14.400	14.900	0.550	B.M. 70T	1	103.0			1	-99.1			1	74.8	149.6	132.90	102.30	1.30	BM70-07 (18)
							2	69.8			2	-70.9			2	0.0	0.0				
							3	172.8			3	-170.0			3	40.0	40.0				1+i=1.317
							4	39.2	> -18.0	○	4	158.7	< 200.0	○	4	114.8	189.6				
							5	144.5	< 160.0	○	5	-14.3	> -18.0	○							

NOTES

LOAD TYPE B.M 100T:WHEEL LOAD 10.0tf
B.M 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

ST:STATE
1. STRESS OF DEAD LOAD
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

JU:JUDGEMENT

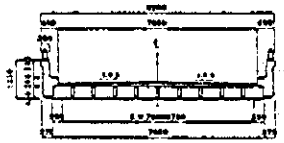
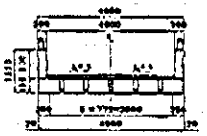
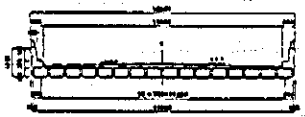
1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i=FACTER OF IMPACT

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (5/8)

PIK JUNCTION

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT (tf-m) MU	ML	S-F	NOTES
BNM-1		8.200	8.900	9.300	0.450	B.M. 70T	1	56.1			1	-54.4			1	58.5	116.9	69.90	51.90	1.35	BM70-02 (19)
							2	61.6			2	-60.9			2	0.0	0.0				1+i=1.345
							3	117.8			3	-115.3			3	40.0	40.0				
							4	42.7	> -18.0	○	4	85.2	< 200.0	○	4	98.5	156.9				
							5	125.9	< 160.0	○	5	-17.8	> -18.0	○							
BNM-2 BNM-3		4.600	9.900	10.300	0.450	B.M. 70T	1	65.5			1	-63.4			1	37.8	75.6	69.90	49.50	1.41	BM70-02 (20)
							2	52.7			2	-52.1			2	0.0	0.0				1+i=1.345
							3	118.2			3	-115.5			3	20.0	20.0				
							4	50.6	> -18.0	○	4	77.8	< 200.0	○	4	57.8	95.6				
							5	126.4	< 160.0	○	5	-17.6	> -18.0	○							
BNM-4		12.200	9.400	9.800	0.450	B.M. 100T	1	53.8			1	-51.6			1	86.2	172.4	88.70	58.30	1.52	BM100-01 (21)
							2	73.9			2	-72.5			2	0.0	0.0				1+i=1.345
							3	127.7			3	-124.1			3	70.1	70.1				
							4	38.3	> -18.0	○	4	124.5	< 200.0	○	4	156.3	242.5				
							5	129.0	< 160.0	○	5	3.1	> -18.0	○							

NOTES

LOAD TYPE B.M. 100T:WHEEL LOAD 10.0tf
B.M. 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

ST:STATE
1. STRESS OF DEAD LOAD
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

JU:JUDGEMENT

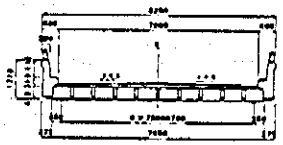
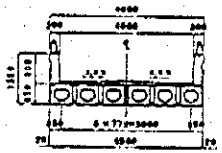
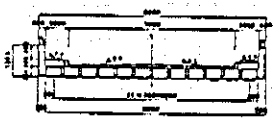
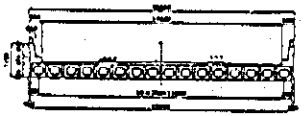
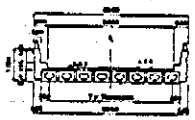
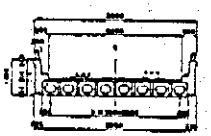
1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i=FACTER OF IMPACT

SALURAN

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (6/8)

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT (tf·m) MU	ML	S-F	NOTES
BCM-13		8.200	10.800	11.300	0.450	B.M. 70T	1	8.08			1	-77.7				70.8	141.7	88.80	64.70	1.37	BM70-04 (22) 1+i=1.333
							2	71.2			2	-69.8				0.0	0.0				
							3	152.0			3	-147.5				40.0	40.0				
							4	49.8	> -18.0	○	4	113.9	< 200.0	○		110.8	181.7				
							5	153.6	< 160.0	○	5	-17.8	> -18.0	○							
BCM-3		4.600	18.300	18.800	0.650	B.M. 70T	1	129.8			1	-124.7			1	73.2	146.4	174.30	128.20	1.36	BM70-08 (23) 1+i=1.306
							2	44.2			2	-45.3			2	0.0	0.0				
							3	174.0			3	-169.9			3	20.0	20.0				
							4	57.0	> -18.0	○	4	124.7	< 200.0	○	4	93.2	166.4				
							5	158.9	< 160.0	○	5	-12.2	> -18.0	○							
BCM-14		9.600	11.200	11.700	0.450	B.M. 70T	1	87.4			1	-84.1			1	87.6	175.2	88.80	62.80	1.41	BM70-04 (24) 1+i=1.333
							2	64.6			2	-63.4			2	3.9	7.7				
							3	152.1			3	-147.5			3	40.0	40.0				
							4	53.7	> -18.0	○	4	110.3	< 200.0	○	4	131.5	222.9				
							5	153.4	< 160.0	○	5	-17.2	> -18.0	○							
BCM-1 BCM-2		9.600	17.700	18.200	0.650	B.M. 70T	1	124.9			1	-120.2			1	146.2	292.3	174.20	128.80	1.35	BM70-08 (25) 1+i=1.306
							2	49.3			2	-50.4			2	6.0	142.				
							3	174.2			3	-170.6			3	40.0	40.0				
							4	52.7	> -18.0	○	4	128.4	< 200.0	○	4	192.2	344.4				
							5	159.1	< 160.0	○	5	-13.7	> -18.0	○							
BCM-11 BCM-12		12.200	14.600	15.100	0.550	B.M. 100T	1	91.7			1	-87.5			1	129.9	259.8	132.80	104.70	1.27	BM100-03 (26) 1+i=1.317
							2	78.7			2	-79.9			2	0.0	0.0				
							3	170.4			3	-167.4			3	79.9	79.9				
							4	40.8	> -18.0	○	4	143.0	< 200.0	○	4	209.8	339.7				
							5	156.4	< 160.0	○	5	-12.8	> -18.0	○							
BCM-6 BCM-10		6.600	14.400	14.900	0.550	B.M. 70T	1	103.0			1	-99.1			1	74.8	149.6	132.90	102.30	1.30	BM70-07 (27) 1+i=1.317
							2	69.8			2	-70.9			2	0.0	0.0				
							3	172.8			3	-170.0			3	40.0	40.0				
							4	39.2	> -18.0	○	4	144.5	< 200.0	○	4	114.8	189.6				
							5	158.7	< 160.0	○	5	-14.3	> -18.0	○							
BCM-5		6.600	16.800	17.300	0.650	B.M. 70T	1	114.3			1	-110.1			1	94.6	189.2	174.20	132.20	1.32	BM70-08 (28) 1+i=1.308
							2	60.0			2	-60.4			2	0.0	0.0				
							3	174.3			3	-171.5			3	40.0	40.0				
							4	45.3	> -18.0	○	4	134.9	< 200.0	○	4	134.6	229.2				
							5	159.4	< 160.0	○	5	-16.3	> -18.0	○							

NOTES

LOAD TYPE B.M. 100T:WHEEL LOAD 10.0tf
B.M. 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

ST:STATE 1. STRESS OF DEAD LOAD JU:JUDGEMENT
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

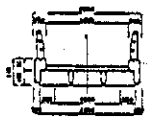
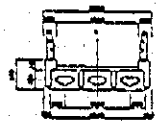
1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i=FACTER OF IMPACT

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (7/8)

SALURAN

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT (tf·m) MU	ML	S·F	NOTES
BCM-7 BCM-8 BCM-9		2.500	13.700	14.200	0.450	P	1	117.9			1	-114.2			1	23.5	46.9	81.50	54.10	1.51	PB-05 (29) PERSON LOAD 0.35t/m2 1+i=1.000
							2	21.5			2	-21.8			2	4.7	9.4				
							3	139.4			3	-136.1			3	0.0	0.0				
							4	84.1	> -18.0	○	4	68.2	< 200.0	○	4	28.2	56.4				
							5	144.5	< 160.0	○	5	-17.0	> -18.0	○							
BCM-4		2.500	15.600	16.100	0.450	P	1	138.4			1	-132.7			1	23.4	46.9	84.50	63.30	1.33	PB-06 (30) PERSON LOAD 0.35t/m2 1+i=1.000
							2	28.5			2	-28.9			2	5.4	10.7				
							3	166.9			3	-161.5			3	.0	.0				
							4	71.8	> -18.0	○	4	97.5	< 200.0	○	4	28.8	57.6				
							5	155.7	< 160.0	○	5	-16.4	> -18.0	○							

NOTES

LOAD TYPE B.M 100T:WHEEL LOAD 10.0tf
B.M 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

ST:STATE
1. STRESS OF DEAD LOAD
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

JU:JUDGEMENT

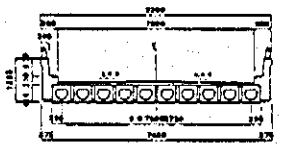
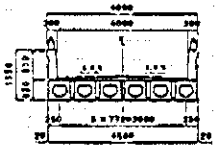
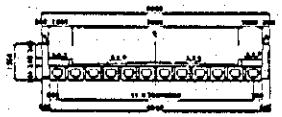
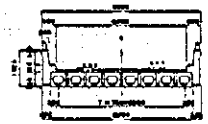
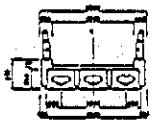
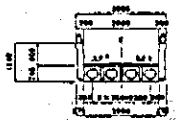
1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i:FACTER OF IMPACT

CEDE/BOR

Table 4.4.1 STRESS SHEET AT MAXIMUM GIRDER LENGTH (8/8)

NAME	CROSS SECTION	WIDTH	SPAN	LIMITED LENGTH	GIRDER HIGHT	LOAD TYPE	UPPER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	LOWER STRESS (kgf/cm2) ST	STRESS	ALLOWABL	JU	REACTION (tf) ST	ABUTMENT	PIER	ULTIMATE MOMENT (tf·m) MU	ML	S·F	NOTES
BGM-12 CANCELLED		8.200	17.300	17.800	0.650	B.M. 70T	1	120.5			1	-116.0			1	121.2	242.3	174.20	127.60	1.37	BM70-08 (31) 1+i=1.306
							2	51.8			2	-53.0			2	0.0	0.0				
							3	172.3			3	-169.0			3	40.0	40.0				
							4	49.1	> -18.0	○	4	131.6	< 200.0	○	4	161.2	282.3				
							5	157.3	< 160.0	○	5	-12.8	> -18.0	○							
BGM-5 BGM-6 BGM-7 BGM-11 CANCELLED		4.600	18.300	18.800	0.650	B.M. 70T	1	129.8			1	-124.7			1	73.2	146.4	174.30	128.20	1.36	BM70-08 (32) 1+i=1.306
							2	44.2			2	-45.3			2	0.0	0.0				
							3	174.0			3	-169.9			3	20.0	20.0				
							4	57.0	> -18.0	○	4	124.7	< 200.0	○	4	93.2	166.4				
							5	158.9	< 160.0	○	5	-12.2	> -18.0	○							
BGM-1 BGM-2		9.600	17.700	18.200	0.650	B.M. 70T	1	124.9			1	-120.2			1	146.2	292.4	174.10	128.20	1.36	BM70-08 (33) 1+i=1.306
							2	49.3			2	-50.4			2	6.0	12.0				
							3	174.2			3	-170.6			3	40.0	40.0				
							4	52.7	> -18.0	○	4	124.8	< 200.0	○	4	192.2	344.4				
							5	159.1	< 160.0	○	5	-13.7	> -18.0	○							
BGM-4 BGM-8 BGM-9		6.600	16.800	17.300	0.650	B.M. 70T	1	114.3			1	-110.1			1	94.6	189.2	174.10	132.20	1.32	BM70-08 (34) 1+i=1.308
							2	60.0			2	-61.4			2	0.0	0.0				
							3	174.3			3	-171.5			3	40.0	40.0				
							4	45.3	> -18.0	○	4	134.9	< 200.0	○	4	134.6	229.2				
							5	159.4	< 160.0	○	5	-16.3	> -18.0	○							
BGM-3		2.500	16.500	17.000	0.500	P	1	135.7			1	-130.3			1	26.3	52.5	97.500	74.300	1.31	PB-07 (35) PERSON LOAD 0.35t/m2 1+i=1.000
							2	26.3			2	-26.7			2	5.7	11.3				
							3	162.0			3	-157.0			3	.0	.0				
							4	69.9	> -18.0		4	150.7	< 200.0		4	31.9	63.8				
							5	91.9	< 160.0		5	-16.8	> -18.0								
BGM-10		3.500	16.600	17.100	0.700	B.M. 70T	1	118.3			1	-115.0			1	56.3	112.7	191.80	144.40	1.33	BM70-09 (36) 1+i=1.306
							2	52.0			2	-53.5			2	0.0	0.0				
							3	170.3			3	-168.5			3	20.0	20.0				
							4	38.2	> -18.0	○	4	134.7	< 200.0	○	4	76.3	132.7				
							5	154.5	< 160.0	○	5	-16.5	> -18.0	○							

NOTES

LOAD TYPE B.M. 100T:WHEEL LOAD 10.0tf
B.M. 70T:WHEEL LOAD. 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

ST:STATE
1. STRESS OF DEAD LOAD
2. STRESS OF LIVE LOAD
3. SUMMATION (1+2)
4. AT IMMEDIATELY AFTER PRESTRESSING
5. STRESS OF SERVICE STATE

JU:JUDGEMENT

1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)

ML:ULTIMATE MOMENT
MU:RESISTANT MOMENT

1+i=FACTER OF IMPACT

Table 4.4.2 TYPICAL SECTION OF GIRDER (1/5)

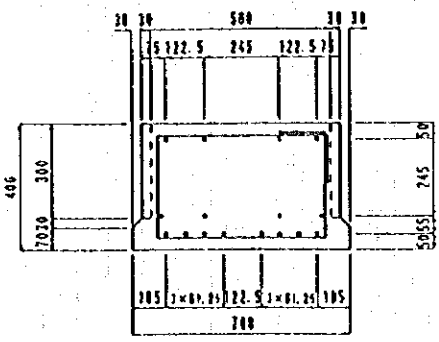
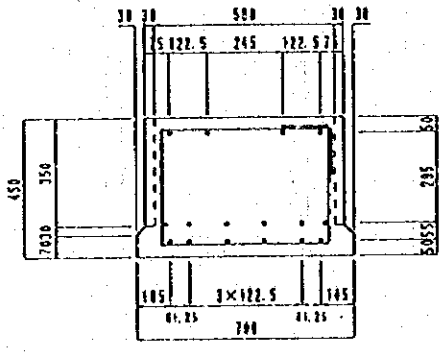
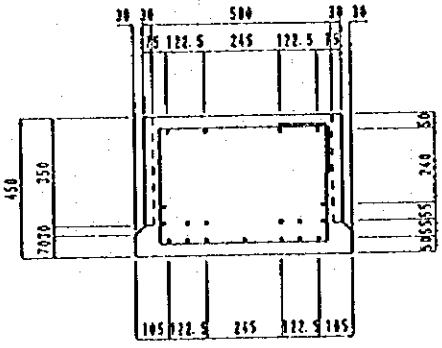
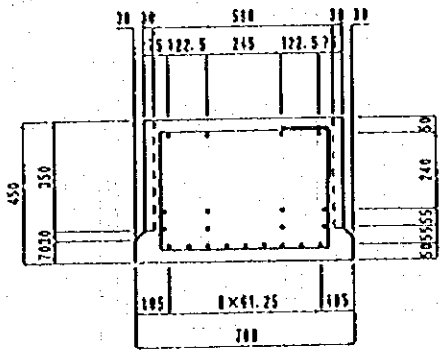
GIRDER NAME	SPAN	G.L.	BRIDGE NAME	CROSS SECTION
BM70-01 [1],[5],[18],[29]	7.00	7.30	BKE-10 BKE-12 BKE-13 BKE-14 BKE-15 BKE-18	
BM70-02 [2],[6],[19],[30]	8.00	8.40	BNM-1 BKE-4 BNM-2 BKE-5 BNM-3 BKE-6 BKE-1 BKE-9 BKE-2 BKE-11 BKE-3 BKE-7	
BM70-03 [17]	9.10	9.60	BTM-4 BTM-5	
BM70-04 [3],[11]	10.00	10.50	BCM-13 BCM-14	

Table 4.4.2 TYPICAL SECTION OF GIRDER (2/5)

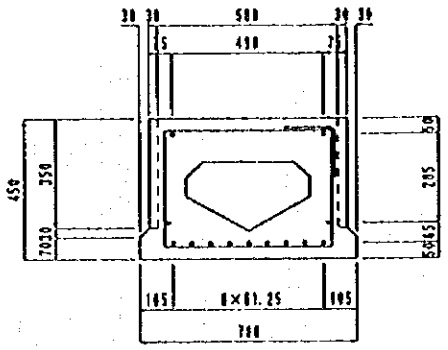
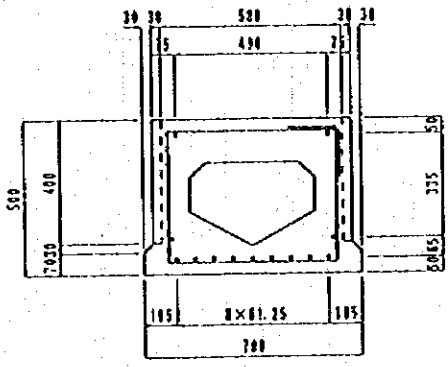
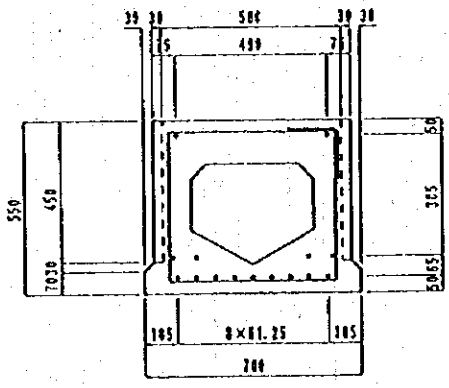
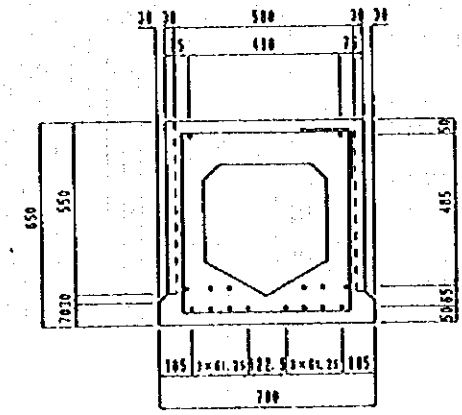
GIRDER NAME	SPAN	G.L.	BRIDGE NAME	CROSS SECTION
BM70-05 [7],[12]	11.40	11.90	BKM-8 BKM-10 BKM-11	
BM70-06 [13],[25],[26]	11.85	12.35	BKM-3 BKM-5	
BM70-07 [8],[20]	13.00	13.50	BKM-1 BTM-1 BCM-6 BCM-10	
BM70-08 [4],[9],[14],[21]	15.30	15.80	BGM-1 BGM-9 BGM-2 BGM-11 BGM-4 BGM-12 BGM-5 BCM-1 BGM-6 BCM-2 BGM-7 BCM-3 BGM-8 BCM-4	

Table 4.4.2 TYPICAL SECTION OF GIRDER (3/5)

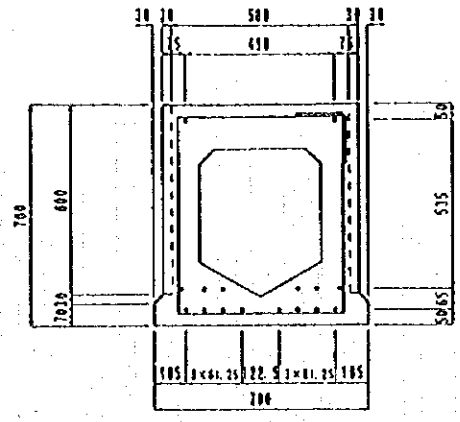
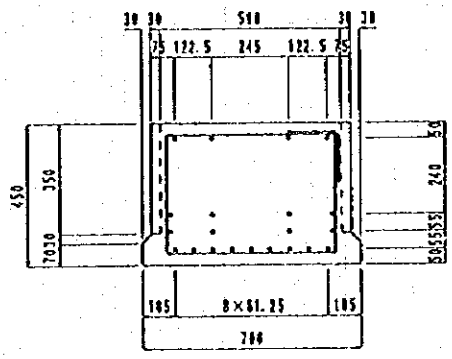
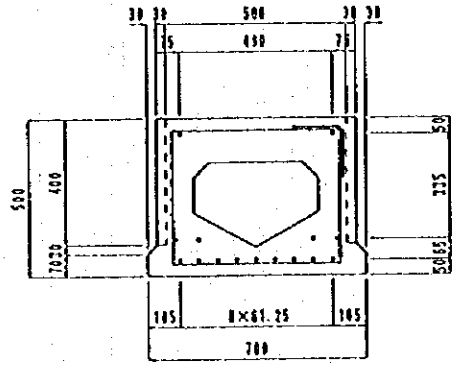
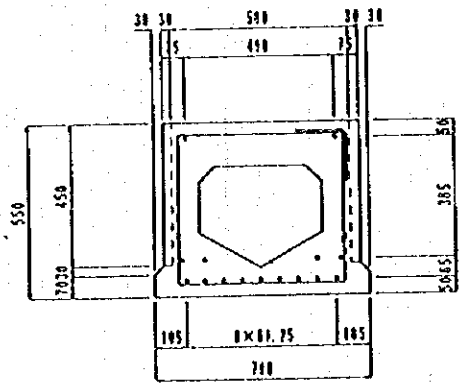
GIRDER NAME	SPAN	G.L.	BRIDGE NAME	CROSS SECTION
BM70-09 [31]	15.30	15.80	BGM-10	
BM100-01 [15]	8.00	8.40	BNM-4	
BM100-02 [10]	11.40	11.90	BTM-3	
BM100-03 [16]	13.00	13.50	BCM-11 BCM-12	

Table 4.4.2 TYPICAL SECTION OF GIRDER (4/5)

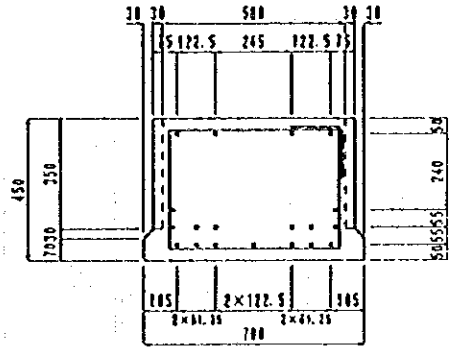
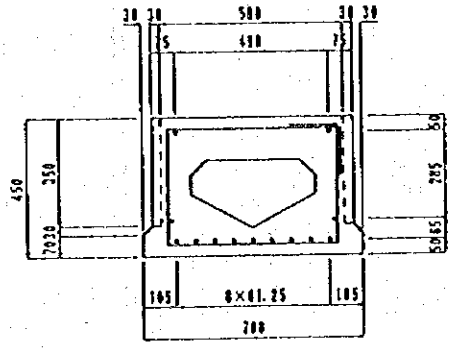
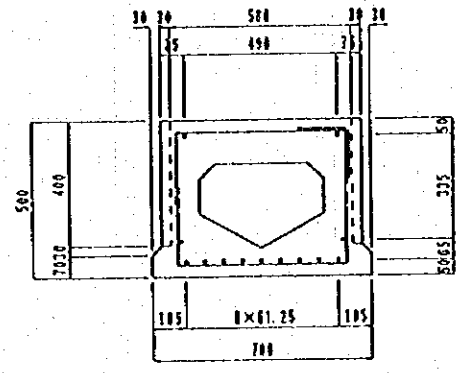
GIRDER NAME	SPAN	G.L.	BRIDGE NAME	CROSS SECTION
PB-05 [20]	12.10	12.60	BCM-7 BCM-8 BCM-9	
PB-06 [27]	14.10	14.60	BCM-4	
PB-07 [28]	15.30	15.80	BCM-3	

Table 4.4.2 TYPICAL SECTION OF GIRDER (5/5)

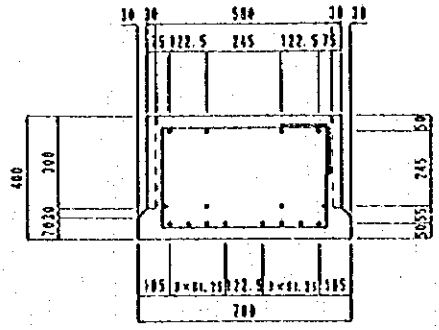
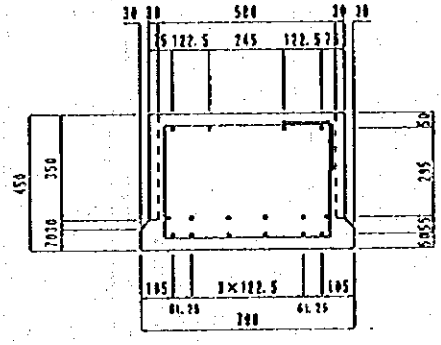
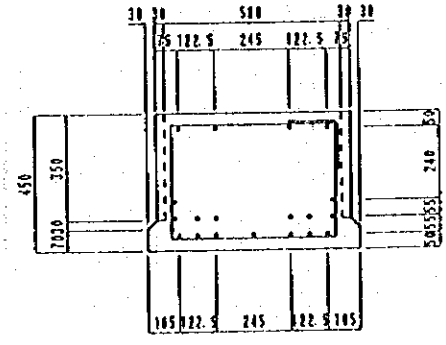
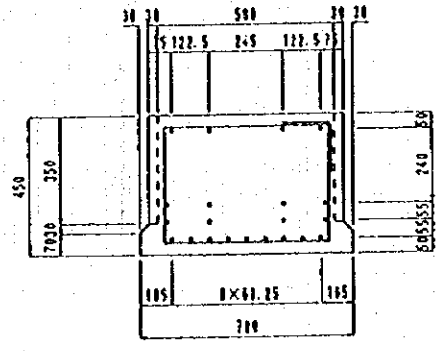
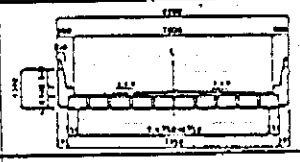
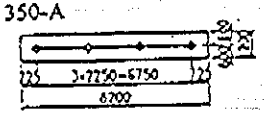
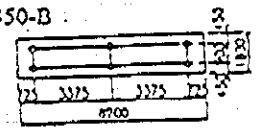
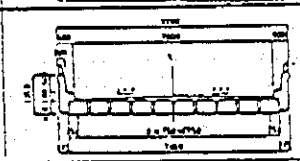
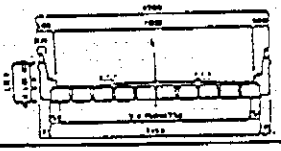
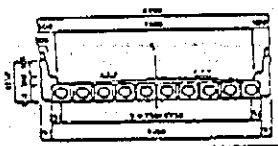
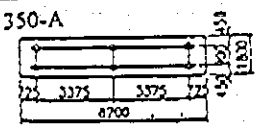
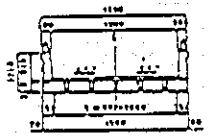
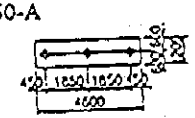
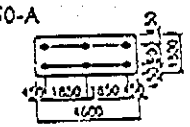
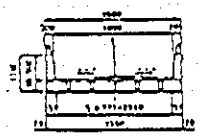
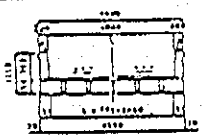
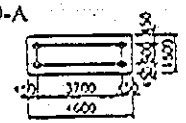
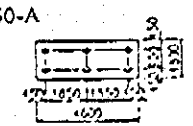
GIRDER NAME	SPAN	G.L.	BRIDGE NAME	CROSS SECTION
BM70-01 [1],[5],[18],[29]	7.00	7.30	BKE-10 BKE-12 BKE-13 BKE-14 BKE-15 BKE-18	
BM70-02 [2],[6],[19],[30]	8.00	8.40	BNM-1 BKE-4 BNM-2 BKE-5 BNM-3 BKE-6 BKE-1 BKE-9 BKE-2 BKE-11 BKE-3 BKE-7	
BM70-03 [17]	9.10	9.60	BTM-4 BTM-5	
BM70-04 [3],[11]	10.00	10.50	BCM-13 BCM-14	

Table 4.4.3 FINAL PILE ARRANGEMENT (1/6)

	NA ME	CROSS SECTION	WIDTH	SPAN	GIRDER LENGTH	GIRDER HIGHT	LOAD TYPE	ST	REACTION (tf) ABU	REACTION (tf) PIER	No of PILE	PILE ARRANGEMENT ABUTMENT	PILE ARRANGEMENT PIER	REMARKS
B - 1 (WITHOUT)	IBKE-12, BKE-13		8.200	7.000	7.300	0.400	B.M. 70T	1	42.2	84.3		350-A 	350-B 	
								2	0.0	0.0	na=2.4 (4)			
								3	40.0	40.0				
								4	82.2	124.3				
								5	18.6	33.3	np=3.8 (6)			
								6	100.0	157.6				
	IBNM-1		8.200	8.000	8.400	0.450	B.M. 70T	1	52.0	105.6		350-A		
								2	0.0	0.0	na=2.5 (4)			
								3	40.0	40.0		same as above		
								4	92.6	145.6				
								5	18.6	33.3	np=3.9 (6)			
								6	100.8	179.2				
	IBCM-13		8.200	10.000	10.500	0.450	B.M. 70T	1	66.0	132.0				
								2	0.0	0.0	na=4.3 (6)			
								3	40.0	40.0				
								4	106.0	172.0		same as above		
								5	18.6	33.3				
								6	124.6	205.3				
	IBDM-12		8.200	15.300	15.800	0.600	B.M. 70T	1	103.3	206.7		350-A 		
								2	0.0	0.0	na=3.0 (6)			
								3	40.0	40.0				
								4	143.3	24.6				
								5	33.3	33.3				
								6	176.6	200.0				
IV - 1 (WITHOUT)	IBKE-10		4.600	7.000	7.300	0.400	B.M. 70T	1	24.7	49.4		350-A 	350-A 	
								2	0.0	0.0	na=1.3 (2)			
								3	20.0	20.0				
								4	44.7	69.4				
								5	10.4	18.6	np=1.9 (6)			
								6	55.1	88.0				
	(BKE2 BKE6 BKE9 BKE11) IBNM-2, BNM-3)		4.600	8.000	8.400	0.500	B.M. 70T	1	33.1	66.3		350-A	SAME AS ABOVE FOR BKE2,6,9 AND 11	
								2	0.0	0.0	na=1.3 (2)			
								3	20.0	20.0				
								4	53.1	86.3		same as above		
								5	10.4	18.6				
								6	63.5	104.9				
	IBKM-8		4.600	11.400	11.900	0.450	B.M. 70T	1	39.3	78.5		350-A 	350-A 	
								2	0.0	0.0	na=1.9 (4)			
								3	20.0	20.0				
								4	59.3	90.5				
								5	10.7	18.6	np=2.9 (6)			
								6	70.1	117.2				

NOTES

LOAD TYPE B.M 100T:WHEEL LOAD 10.0tf
B.M 70T:WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION(1+2+3)
5. SELF WEIGHT
6. TOTAL

Table 4.4.3 FINAL PILE ARRANGEMENT (2/6)

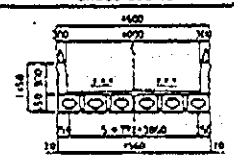
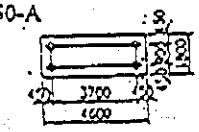
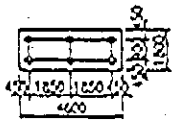
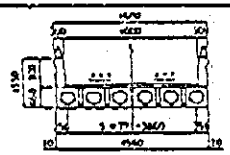
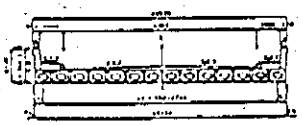
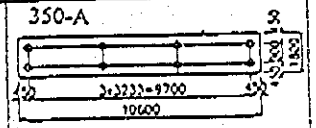
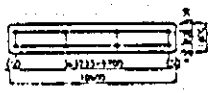
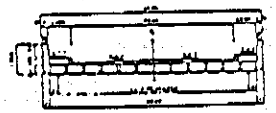
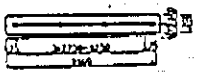
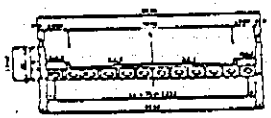
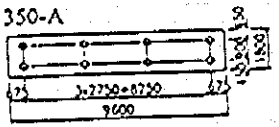
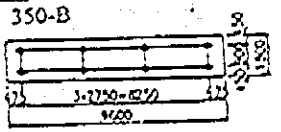
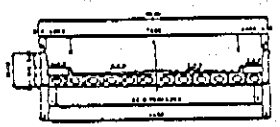
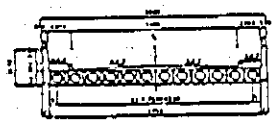
	NAME	CROSS SECTION	WIDTH	SPAN	GIRDER LENGTH	GIRDER HIGHT	LOAD TYPE	REACTION (t)			No of PILE	PILE ARRANGEMENT		REMARKS
								ST	ABUTMENT	PIER		ABUTMENT	PIER	
IV - 1 (WITHOUT)	IBKM-1I		4,600	13,000	13,500	0.500	B.M. 70T	1	46.6	93.2		350-A 	350-B 	
								2	0.0	0.0	na=2.1 (4.0)			
								3	20.0	20.0				
								4	66.6	113.2				
								5	18.7	18.6	np=3.1 (6.0)			
								6	85.3	127.6				
	IBCM-3I IBOM-5, BOM-6, BOM-7, BOM-11I		4,600	15,300	15,800	0.600	B.M. 70T	1	59.4	118.9		350-A same as above		
								2	0.0	0.0	na=2.4 (4.0)			
								3	20.0	20.0				
								4	79.4	138.9				
								5	18.7	18.6				
								6	98.1	157.5				
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						
NOTES							LOAD TYPE B.M 100T:WHEEL LOAD 10.0t/ B.M 70T:WHEEL LOAD 7.0t/ P:HUMAN/ANIMALS LOAD 0.35t/m2	1. DEAD LOAD 2. PERSON 3. LIVE LOAD 4. SUMMATION (1+2+3) 5. SELF WEIGHT 6. TOTAL						

Table 4.4.3 FINAL PILE ARRANGEMENT (3/6)

	NAME	CROSS SECTION	WIDTH	SPAN	GIRDER LENGTH	GIRDER HIGHT	LOAD TYPE	ST	REACTION (tf) ABUTMENT	REACTION (tf) PIER	No of PILE	PILE ARRANGEMENT ABUTMENT	PILE ARRANGEMENT PIER	REMARKS
I - 2 (WITH)	IBIM-31		10.600	11.400	11.900	0.500	B.M. 70T	1	93.0	105.9		350-A 	350-B 	
								2	4.2	8.3	na=2.5 (0)			
								3	61.6	61.6				
								4	151.7	255.0				
								5	47.0	33.1	np=7.0 (0)			
								6	101.7	200.9				
II - 2 (WITH)	IBCM-14		9.600	10.400	10.500	0.450	B.M. 70T	1	70.6	157.2		350-B 		
								2	3.5	6.9	na=3.5 (4)			
								3	40.0	40.0				
								4	122.1	204.2				
								5	21.0	10.0				
								6	143.9	227.2				
	IBKM-10, BKM-11		9.600	11.400	11.900	0.450	B.M. 70T	1	80.3	160.6		350-A 	350-B 	
								2	3.9	7.9	na=4.0 (0)			
								3	40.0	40.0				
								4	124.2	200.5				
								5	30.9	30.0	np=5.0 (0)			
								6	163.1	230.5				
	IBKM-3, BKM-5I		9.600	11.050	12.350	0.500	B.M. 70T	1	87.7	175.4		350-A same as above	400-B same as above	
								2	4.1	8.2	na=4.2 (0)			
								3	40.0	40.0				
								4	131.8	223.6				
								5	30.9	30.0	np=6.2 (0)			
								6	170.7	253.6				
	IBCM-1, BCM-2I, IBOM-1, BOM-2I		9.600	15.300	15.000	0.600	B.M. 70T	1	122.2	244.4		350-A same as above		
								2	5.2	10.5	na=5.0 (0)			
								3	40.0	40.0				
								4	167.4	294.9				
								5	30.9	30.0				
								6	206.3	324.9				
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						

NOTES

LOAD TYPE B.M 100T:WHEEL LOAD 10.0tf
B.M 70T,WHEEL LOAD 7.0tf
P:HUMAN/ANIMALS LOAD 0.35tf/m2

1. DEAD LOAD
2. PERSON
3. LIVE LOAD
4. SUMMATION (1+2+3)
5. SELF WEIGHT
6. TOTAL

Table 4.4.3 FINAL PILE ARRANGEMENT (4/6)

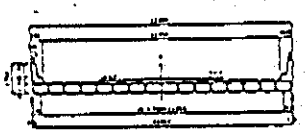
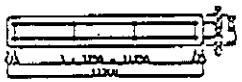
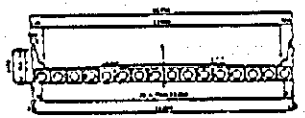
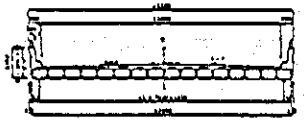
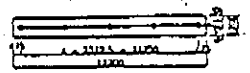
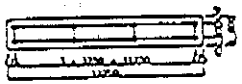
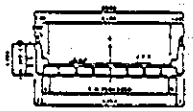
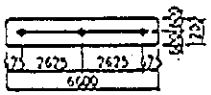
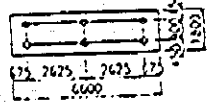
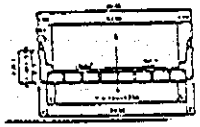
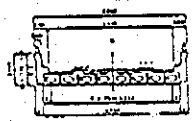
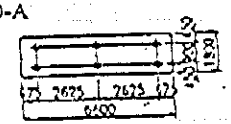
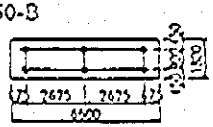
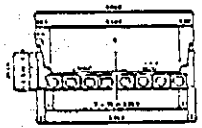
	NAME	CROSS SECTION	WIDTH	SPAN	GIRDER LENGTH	GIRDER HIGHT	LOAD TYPE	ST	REACTION (tf) ABUTMENT	REACTION (tf) PIER	No of PILE	PILE ARRANGEMENT ABUTMENT	PILE ARRANGEMENT PIER	REMARKS
I - 3 (PARTICULAR)	IBNM-4		12.200	8.000	8.400	0.450	B.M. 100T	1	73.9	147.8	na=4.1 (0)	350-A 		
								2	0.0	0.0				
								3	67.5	67.5				
								4	141.4	215.3				
								5	27.7	27.0				
								6	169.1	720.1				
	IBCM-11, BCM-12		12.200	13.000	13.500	0.550	B.M. 100T	1	116.7	233.4	na=6.8 (0)	350-A same as above		
								2	0.0	0.0				
								3	76.9	76.9				
								4	193.6	310.3				
								5	49.5	39.4				
								6	243.1	349.7				
II - 3 (PARTICULAR)	IBTM-4, BTM-5		12.200	9.100	9.600	0.450	B.M. 70T	1	84.4	168.9	na=4.2 (5) np=6.5 (0)	350-A 	350-B 	
								2	0.0	0.0				
								3	60.0	60.0				
								4	144.4	228.9				
								5	27.7	30.4				
								6	172.1	267.3				
III - 3 (PARTICULAR)	IBKE-101		6.600	7.000	7.300	0.400	B.M. 70T	1	30.9	61.9	na=2.1 (3) np=2.0 (6)	350-A 	350-A 	
								2	0.0	0.0				
								3	40.0	40.0				
								4	70.9	101.9				
								5	15.0	20.6				
								6	85.9	122.5				
	IBKE-3, BKE-4, BKE-5, BKE-71		6.600	8.000	8.400	0.450	B.M. 70T	1	39.0	78.0	na=2.3 (3) np=3.2 (4)	350-A same as above	350-B same as above	
								2	0.0	0.0				
								3	40.0	40.0				
								4	79.0	118.0				
								5	15.0	20.6				
								6	94.0	138.6				
	(BCM-10) IBTM-1		6.600	13.000	13.500	0.500	B.M. 70T	1	64.7	129.5	na=3.2 (6) np=4.6 (6)	350-A 	350-B 	
								2	0.0	0.0				
								3	40.0	40.0				
								4	104.7	169.5				
								5	26.0	20.6				
								6	131.5	190.1				
	IBCM-5, IBOM-4, BOM-6, BOM-91		6.600	15.000	15.000	0.600	B.M. 70T	1	83.0	166.9	na=3.7 (6)	350-A same as above		
								2	0.0	0.0				
								3	40.0	40.0				
								4	123.0	206.9				
								5	26.0	20.6				
								6	149.0	226.5				
NOTES		LOAD TYPE B.M 100T:WHEEL LOAD 10.0tf B.M 70T:WHEEL LOAD 7.0tf P:HUMAN/ANIMALS LOAD 0.350tf/m2							1. DEAD LOAD 2. PERSON 3. LIVE LOAD 4. SUMMATION (1+2+3) 5. SELF WEIGHT 6. TOTAL					

Table 4.4.3 FINAL PILE ARRANGEMENT (5/6)

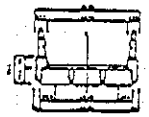
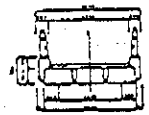
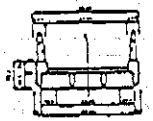
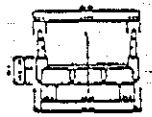
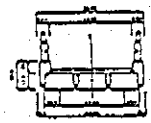
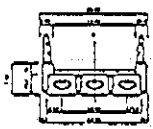
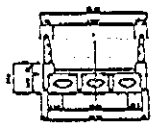
	NA ME	CROSS SECTION	WIDTH	SPAN	GIRDER LENGTH	GIRDER HIGHT	LOAD TYPE	REACTION (tf) ST	ABUTMENT	PIER	No of PILE	PILE ARRANGEMENT ABUTMENT	PIER	REMARKS
□ - 2' (PEDESTRIAN)	18KE-16, 8KE-17		2.500	7.000	7.300	0.350	P	1	9.0	17.6		350-A 	350-B 	
								2	2.4	4.9	na=0.4 (2)			
								3	0.0	0.0				
								4	12.3	24.5				
								5	5.7	4.7	np=0.7 (2)			
								6	10.0	29.2				
	18KE-81		2.500	8.000	8.400	0.350	P	1	11.3	22.6		350-A	350-B	
								2	2.0	5.6	na=0.5 (2)			
								3	0.0	0.0				
								4	14.1	28.2		same as above	same as above	
								5	5.7	4.7	np=0.8 (2)			
								6	19.0	32.9				
	18KM-91		2.500	11.000	11.500	0.400	P	1	17.2	34.5		350-A	400-B	
								2	3.0	7.6	na=0.7 (2)			
								3	0.0	0.0				
								4	21.1	42.1		same as above	same as above	
								5	5.7	7.0	np=1.2 (2)			
								6	26.0	49.9				
	18KM-4, 8KM-6, 8KM-7		2.500	11.650	12.150	0.450	P	1	20.1	40.2		350-A	400-B	
								2	4.0	8.1	na=0.7 (2)			
								3	0.0	0.0				
								4	24.1	48.2		same as above	same as above	
								5	5.7	7.0	np=1.4 (2)			
								6	29.0	55.0				
	18CM-7, 8CM-8, 8CM-91		2.500	12.100	12.600	0.450	P	1	20.8	41.7		350-A		
								2	3.1	7.0	na=0.7 (2)			
								3	0.0	0.0				
								4	23.9	49.5		same as above		
								5	5.7	7.0				
								6	29.6	57.3				
	18CM-41		2.500	14.100	14.600	0.450	P	1	21.3	42.6		350-A		
								2	4.9	9.7	na=0.8 (2)			
								3	0.0	0.0				
								4	26.2	42.3		same as above		
								5	5.7	7.0				
								6	34.9	60.1				
	18OM-31		2.500	15.300	15.000	0.500	P	1	24.5	49.9		350-A		
								2	5.3	10.5	na=0.9 (2)			
								3	0.0	0.0				
								4	29.7	59.4		same as above		
								5	5.7	7.0				
								6	35.4	67.2				
NOTES		LOAD DTL D.M 100T:WHEEL LOAD 10.0tf D.M 70T:WHEEL LOAD 7.0tf P:HUMAN/ANIMALS LOAD 0.35t/m2						1. DEAD LOAD 2. PERSON 3. LIVE LOAD 4. SUMMATION (1+2+3) 5. SELF WEIGHT 6. TOTAL						

Table 4.4.3 FINAL PILE ARRANGEMENT (6/6)

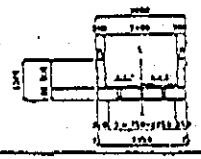
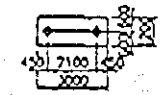
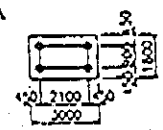
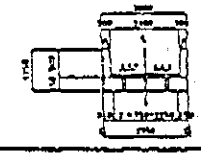
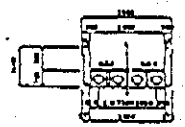
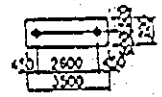
	NAME	CROSS SECTION	WIDTH	SPAN	GIRDER LENGTH	GIRDER HIGHT	LOAD TYPE	REACTION (t) ST	REACTION (t) ABUTMENT	REACTION (t) PIER	No of PILE	PILE · ARRANGEMENT ABUTMENT	PILE · ARRANGEMENT PIER	REMARKS
N - S (WITHOUT)	(BKE-14, BKE-15)		3.000	7.000	7.300	0.400	B.M. 70T	1	17.0	35.5		350-A 	350-A 	
								2	0.0	0.0	na=1.1 (2)			
								3	20.0	20.0				
								4	37.0	55.5				
								5	6.0	9.36	np=1.5 (4)			
								6	44.6	64.9				
	(BKE-11)		3.000	8.000	8.400	0.450	B.M. 70T	1	22.0	44.0		350-A same as above	350-A same as above	
								2	0.0	0.0	na=1.2 (2)			
								3	20.0	20.0				
								4	42.0	64.0				
								5	6.0	9.36	np=1.7 (4)			
								6	48.0	73.4				
	(BOM-10)		3.500	15.300	15.800	0.650	B.M. 70T	1	50.1	100.2		350-A 	————	
								2	0.0	0.0	na=2.0 (2)			
								3	20.0	20.0				
								4	70.1	120.2				
								5	14.2	10.9				
								6	84.3	131.1				
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						
								1						
								2						
								3						
								4						
								5						
								6						
NOTES		LOAD TYPE B.M 100T:WHEEL LOAD 10.0t B.M 70T:WHEEL LOAD 7.0t P:HUMAN/ANIMALS LOAD 0.35t/m2						1. DEAD LOAD 2. PERSON 3. LIVE LOAD 4. SUMMATION (1+2+3) 5. SELF WEIGHT 6. TOTAL						

Table 4.4.4 STANDARD OF GEOMETRIC ROAD ALIGNMENT

DESIGN SPEED (KM/H)	MAX.GRADE (%)	STANDARD MIN.RADIUS OF VERTICAL CURVATURE (M)		STANDERD MIN. LENGTH OF VERTICAL CURVE (M)	APPLICATION
		(CREST)	(SAG)		
100	3	6500	3000	85	
80	4	3000	2000	70	
60	5	1400	1000	50	I -1, -2 AND -3.
50	6	800	700	40	II/III-1, -2 AND -3.
40	7	450	450	35	
30	8	250	250	25	III/IV-1, -2 AND -3
20	9	100	100	20	IV-1

NOTE: 1)THIS IS QUOTED FROM INDONESIAN GEOMETRIC DESIGN STANDERD.
2) THE ROAD CLASSES INDICATED IN APPLICATION COLUMN ARE RECOMMENDABLE.

Table 4.4.5 CLASSIFICATION OF EMBANKMENT HEIGHT AND ROAD SIDE PROTECTION

CLASS height of embankment (m)	[A'] 0<h<0.5 and h=0	[A] 0.5<h<1.0 and h=1.0	[B] 1.0<h<1.5 and h=1.5	[C] 1.5<h<2.0 and h=2.0	[D] 2.0<h<2.5 and h=2.5	[E] 2.5<h<3.0 and h=3.0	TOTAL
KAMAL(MAIN)	0	0	3(1)	3(2**)	3(2**)	0	9(1),(4**)
KAMAL(BRANCH)	2(2*)	0	3	9(1**)	5(1**)	0	19(2*),(2**)
TANJUNGAN	0	0	0	2(1)	3(1**)	0	5(1**)
PIK JUNCTION	0	0	1	2(2)	1	0	4(2)
CENGKARENG	0	3(1)	2(1**)	3	3(1),(1**)	2(2**)	13(2),(4**)
GEDE/BOR	0	1	1	2(1**)	4	2	10(1**)
MERUYA	16(16*)	0	0	0	0	0	16(16*)
TOTAL	18(18*)	4(1)	10(1),(1**)	21(3),(4**)	19(1),(5**)	4(2**)	76(6),(18*),(12**)

Remarks:1) The number shown in parenthesis, i.e.( ) indicates that of sod facing.
2) One asterisk is the number of no protection.
3) Two asterisk is that of stairs for pedestrian bridge.
4) No mark is the number of retaining wall.
5) Above all, the number of every protection method are as follows:
no embankment ;23,sad facing ;6, stairs;12 and retaining wall;43.
6) The total number of bridge from 1.0 to 2.5 m height except pedestrian bridge are 41
,which occupies 71% of road bridre,58.

Table 4.4.6 LENGTH OF ACCESS ROAD (1/8)

KAMAL

UNIT:M

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	ST	SAG	TOTAL	RADIUS [CREST][SAG]	NORTH	SOUTH	P.T.M	
BKM 1	B	4.60	IV -1	2.283	0.910	1.373	0.09	15.256	15.256	0.000	15.256	* 30.512	266.229	FIELD S.T.ROAD	RESIDENCE THREE INTER	S.P	FEW TRAFFIC
BKM 2	B	-		-													EXCLUDED
BKM 3	B	(7.0) 9.60	II/III -2	2.647	0.850	1.797	0.06	29.950	[30.56] 29.950	0.000	29.950	[60.51]* 59.900	[800][700] 783.976	FIELD S.T.ROAD	RESIDENCE THREE INTER	R.W	MUCH TRAFFIC
BKM 4	P	2.50		2.81	0.680	2.130	0.1	4.5* 21.300	-	21.300	-	21.300		FIELD S.T.ROAD	RESIDENCE THREE INTER	S.A	
BKM 5	(SK) B	(7.0) 9.60	II/III -2	3.059	1.900	1.159	0.06	19.317	[30.560] 19.317	0.000	[26.740] 19.317	[57.300]* 38.634	[800][700] 505.645	RESIDENCE C.ROAD	RESIDENCE C.ROAD	R.W	MUCH TRAFFIC
BKM 6	P	2.50		2.999	1.430	1.569	0.1	3.2* 15.690	-	15.690	-	15.690		RESIDENCE	RESIDENCE	S.A	CROWDED RESIDENCE
BKM 7	P	2.50		3.057	0.970	2.087	0.1	4.2* 20.870	-	20.870	-	20.870		RESIDENCE	RESIDENCE	S.A	
BKM 8	B	4.60	IV -1	3.166	1.060	2.106	0.09	* 23.400	20.000	3.400	20.000	43.400	349.016	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BKM 9	P	2.50		3.185	1.610	1.575	0.1	3.2* 15.750	-	15.750	-	15.750		RESIDENCE	RESIDENCE	S.A	
BKM 10	B	(7.0) 9.60	II/III -2	3.366	2.180	1.186	0.06	19.767	[30.560] 19.767	0.000	[26.740] 19.767	[57.300]* 39.534	[800][700] 517.424	RESIDENCE THREE INTER	RESIDENCE INTER	R.W	HEAVY CARS
BKM 11	B	(7.0) 9.60	II/III -2	3.716	2.140	1.576	0.06	26.267	[30.560] 26.267	0.000	[26.740] 26.267	[57.300]* 52.534	[800][700] 687.569	RESIDENCE S.T ROAD	RESIDENCE THREE INTER	R.W	HEAVY CARS

Table 4.4.6 LENGTH OF ACCESS ROAD (2/8)

KAMAL(BRANCH)

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	ST	SAG	TOTAL	RADIUS (CREST)(SAG)	NORTH	SOUTH	P.T.M	
BKE 1	B	3.00	IV -S	3.182	1.440	1.742	0.09	* 19.356	19.356	0.000	19.356	38.712	337.816	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	CROWDED RE. FEW TRAFFIC
BKE 2	B	4.60	IV -1	3.450	1.920	1.530	0.09	* 17.000	17.000	0.000	17.000	34.000	296.697	RESIDENCE NEW ROAD	RESIDENCE RAMP	R.W	LIGHT CARS FEW TRAFFIC
BKE 3	(SK) B	6.60	III/IV -3	3.553	2.160	1.393	0.08	* 17.413	17.413	0.000	17.413	34.826	341.893	RESIDENCE C.ROAD	RESIDENCE C.ROAD	R.W	FEW TRAFFIC
BKE 4	B	6.60	III/IV -3	3.649	1.820	1.829	0.08	* 22.863	22.863	0.000	22.863	45.726	448.901	RESIDENCE INTER	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BKE 5	B	6.60	III/IV -3	3.739	1.890	1.849	0.08	* 23.113	23.113	0.000	23.113	46.226	453.809	RESIDENCE INTER	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BKE 6	B	4.60	IV -1	3.772	1.920	1.852	0.09	* 20.578	20.000	0.578	20.000	40.578	349.056	RESIDENCE THREE INTER	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BKE 7	B	6.60	III/IV -3	3.831	1.820	2.011	0.08	* 25.138	25.000	0.138	25.000	50.138	490.859	RESIDENCE INTER	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BKE 8	B	2.50		3.724	1.870	1.854	0.1	3.7* 18.540	0.000	18.540	0.000	18.540	-	RESIDENCE S.T ROAD	RESIDENCE THEE INTER	S.A	FEW TRAFFIC
BKE 9	B	4.60	IV -1	3.903	2.360	1.543	0.09	* 17.144	17.144	0.000	17.144	34.288	299.210	RESIDENCE INTER	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BKE 10	B	6.60	III/IV -3	3.832	2.000	1.832	0.08	* 22.900	22.900	0.000	22.900	45.800	449.627	RESIDENCE THREE INTER	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BKE 11	B	4.60	IV -1	3.857	2.430	1.427	0.09	* 15.856	15.856	0.000	15.856	31.712	276.731	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC

Table 4.4.6 LENGTH OF ACCESS ROAD (3/8)

KAMAL(BRANCH)

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	ST	SAG	TOTAL	RADIUS [CREST][SAG]	NORTH	SOUTH	P.T.M	
BKE 12	B	8.20	III/IV -1	3.906	2.410	1.496	0.08	18.700	18.700	0.000	18.700	* 37.400	367.163	RESIDENCE THREE INTER	RESIDENCE S.T ROAD	R.W	MATCH TRAFFIC
BKE 13	B	8.20	III/IV -1	3.918	2.670	1.248	0.08	15.600	15.600	0.000	15.600	* 31.200	306.296	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	MATCH TRAFFIC
BKE 14	B	3.00	IV -S	3.954	1.750	2.204	0.09	* 24.489	20.000	4.498	20.000	44.498	349.056	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC CROWD RE.
BKE 15	B	3.00	IV -S	4.031	1.900	2.131	0.09	* 23.678	20.000	3.678	20.000	43.678	349.056	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC CROWD RE.
BKE 16	P	2.50		4.034	1.870	2.164	0.1	4.3* 21.640	-	21.640	-	21.640		RESIDENCE	RESIDENCE	S.A	CROWD RE.
BKE 17	P	2.50		4.070	2.170	1.900	0.1	3.8* 19.000	-	19.000	-	19.000		RESIDENCE	RESIDENCE	S.A	CROWD RE.
BKE 18	B	4.60	IV -1	4.198	2.050	2.148	0.09	* 23.867	20.000	3.867	20.000	43.867	349.056	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC CROWD RE.
BKE 19	(SL) B	4.60	IV -1	2.380	2.380	-	-	-	-	-	-	-	LEVEL	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	-	FEW TRAFFIC CROWD RE.
BKE 20	(SL) B	4.60	IV -1	2.630	2.630	-	-	-	-	-	-	-	LEVEL	RESIDENCE S.T ROAD	RESIDENCE THREE ROAD	-	FEW TRAFFIC CROWD RE.

Table 4.4.6 LENGTH OF ACCESS ROAD (4/8)

TANJUNGAN

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	ST	SAG	TOTAL	RADIUS [CREST][SAG]	NORTH	SOUTH	P.T.M	
BTM 1	B	6.60	III/IV -3	2.208	0.240	1.968	0.08	* 24.600	24.600	0.000	24.600	49.200	483.006	FIELD S.T ROAD	FIELD S.T ROAD	S.P	FEW TRAFFIC
BTM 2	N/A	-															
BTM 3	B	(8.00) 10.60	I -2	2.375	0.430	1.945	0.05	38.900	[44.565]* 38.900	0.000	38.900	[83.465] 77.800	[1400][1000] 1222.044	FIELD S.T ROAD	FIELD S.T ROAD	S.P	HEAVY CARS
BTM 4	B	12.20	II -3	2.375	0.310	2.065	0.06	* 34.417	34.417	0.000	34.417	68.834	901.008	FACTORY S.T ROAD	FACTORY S.T ROAD	R.W	NORMAL TRA.
BTM 5	(SK) B	12.20	II -3	2.413	0.390	2.023	0.06	* 33.717	33.717	0.000	33.717	67.434	882.683	FACTORY S.T ROAD	FACTORY S.T ROAD	R.W	NORMAL TRA.

PIK JUNCTION

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	STRAIGH	SAG	TOTAL	RADIUS [CREST][SAG]	NORTH	SOUTH	P.T.M	
BNM 1	B	8.20	II/III -1	3.612	1.850	1.762	0.06	28.767	[30.560] 28.767	0	28.767	[59.327]* 57.534	[800][700] 753.0960875	FIELD INTER	FIELD S.T ROAD	S.P	HEAVY CARS
BNM 2	B	4.60	IV -1	3.733	2.250	1.483	0.08	* 28.125	25	3.125	25	50.312	490.859375	FIELD RAMP	FIELD S.T ROAD	R.W	FEW TRAFFIC
BNM 3	B	4.60	IV -1	3.916	1.490	2.426	0.08	* 30.325	25	5.325	25	50.525	490.859375	FIELD RAMP	FIELD S.T ROAD	R.W	FEW TRAFFIC
BNM 4	B	12.20	I -1	3.622	1.820	1.802	0.05	* 36.04	[44.568] 36.04	0	36.04	[80.608] 72.08	[1400][1000] 1132.1966	FIELD INTER	FIELD S.T ROAD	S.P	FEW TRAFFIC

Table 4.4.6 LENGTH OF ACCESS ROAD (5/8)

SALURAN CENGKARENG

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	ST	SAG	TOTAL	RADIUS [CREST][SAG]	NORTH	SOUTH	P.T.M	
BCM 1	B	-7 9.60	II/III -2	3.21	2.17	1.04	0.06	17.333	[30.560] 17.333	0	[26.740] 17.333	[57.320]* 34.666	[800][700] 453.711	FIELD S.T ROAD	FIELD S.T ROAD	S.P	MUCH TRAFFIC
BCM 2	B	(7.00) 9.60	II/III -3	3.271	1.330	1.941	0.08	* 24.263	24.263	0	24.263	48.526	476	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BCM 3	B	4.60	IV -1	3.274	1.730	1.544	0.09	* 19.3	19.3	0	19.3	38.6	336.8	RESIDENCE THREE INT	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BCM 4	P	2.50		3.056	1.680	1.376	0.1	2.8* 13.76	-	13.76	-	13.76		RESIDENCE	RESIDENCE	S.A	CROWED RE.
BCM 5	B	6.60	III/IV -3	3.412	2.000	1.412	0.08	* 17.65	17.65	0	17.65	35.3	346.507	RESIDENCE THREE INT	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BCM 6	B	6.60	III/IV -3	3.401	1.600	1.801	0.08	* 22.513	22.513	0	22.513	45.026	441.978	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BCM 7	P	2.50		3.404	0.840	2.564	0.1	5.2* 25.64	-	25.64	-	25.64		RESIDENCE	RESIDENCE	S.A	
BCM 8	P	2.50		3.563	1.460	2.103	0.1	4.2* 21.03	-	21.03	-	21.03		RESIDENCE	RESIDENCE	S.A	
BCM 9	P	2.50		3.646	1.050	2.596	0.1	5.2* 25.96	-	25.96	-	25.96		RESIDENCE	RESIDENCE	S.A	
BCM 10	B	6.60	III/IV -3	3.857	1.550	2.307	0.08	* 28.838	25	3.838	25	53.834	490.8	RESIDENCE INTER	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BCM 11	B	12.20	I -3	4.033	3.060	0.973	0.05	19.46	19.46	0	19.46	* 38.92	611.265	FIELD S.T ROAD	FIELD S.T ROAD	S.P	HEAVY CARS
BCM 12	B	12.20	I -3	4.081	1.730	2.351	0.05	47.02	47.02	0	47.02	* 84.04	1476.964	FIELD S.T ROAD	FIELD S.T ROAD	S.P	HEAVY CARS
BCM 13	B	8.20	II/III -1	4.016	3.170	0.846	0.06	14.1	14.1	0	14.1	* 28.2	369.083	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BCM 14	B	(7.00) 9.60	II/III -3	4.068	3.240	0.828	0.06	13.8	13.8	0	13.8	* 27.6	361.231	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC

Table 4.4.6 LENGTH OF ACCESS ROAD (6/8)

GEDE/BOR

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	ST	SAG	TOTAL	RADIUS [CREST][SAG]	NORTH	SOUTH	P.T.M	
BGM 1	B	(7.00) 9.60	II/III -2	4.790	4.290	0.500	0.06	8.000	[30.560] 8.000	0.000	[26.740] 8.000	[57.300]* 16.000	[800][700] 209.409	SHOP S.T ROAD	SHOP S.T ROAD	R.W	HEAVY CARS
BGM 2	B	(7.00) 9.60	II/III -2	4.814	3.800	1.014	0.06	8.900	[30.560] 8.900	0.000	[26.740] 8.900	[57.300]* 17.800	[800][700] 232.968	SHOP S.T ROAD	SHOP S.T ROAD	R.W	HEAVY CARS
BGM 3	P	2.50		4.702	2.790	1.912	0.1	3.8* 19.120	-	19.120	-	19.120		SHOP	SHOP	S.A	FEW TRAFFIC
BGM 4	B	6.60	III/IV -3	4.965	2.080	2.885	0.08	* 27.063	25.000	2.063	25.000	52.126	490.803	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BGM 5	B	4.60	IV -1	4.955	2.080	2.875	0.09	* 31.944	20.000	11.944	20.000	51.944	349.016	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BGM 6	B	4.60	IV -1	4.982	2.750	2.232	0.09	* 24.8	20	4.8	20	44.8	349.0155556	RESIDENCE THREE INT	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BGM 7	B	4.60	IV -1	4.982	2.660	2.322	0.09	* 25.800	20.000	5.800	20.000	45.800	349.016	RESIDENCE THREE INT	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BGM 8	B	6.60	III/IV -3	5.054	3.300	1.754	0.08	* 21.925	21.925	0.000	21.925	43.850	430.434	RESIDENCE THREE INT	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BGM 9	B	6.60	III/IV -3	5.099	2.950	2.149	0.08	26.863	25.000	1.863	25.000	* 51.863	490.803	SHOP THREE INT	SHOP S.T ROAD	R.W	HEAVY CARS
BGM 10	B	3.50	IV -S	5.107	2.910	2.197	0.09	24.411	20.000	4.411	20.000	* 44.411	349.016	RESIDENCE S.T ROAD	RESIDENCE S.T ROAD	R.W	FEW TRAFFIC
BGM 11	B	4.60	IV -1	5.302	2.910	2.392	0.09	26.578	20.000	6.578	20.000	* 46.578	349.016	FACTORY S.T ROAD	FACTORY S.T ROAD	R.W	FEW TRAFFIC
BGM 12	B	8.20	II/III -1	5.390	3.020	2.370	0.06	39.500	39.500	0.000	39.500	* 79.000	1033.959	RESIDENCE C.ROAD	RESIDENCE C.ROAD	R.W	HEAVY CARS

Table 4.4.6 LENGTH OF ACCESS ROAD (7/8)

MERUYA

No of :	ROAD LENTH													ENVIRONMENT			NOTE
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	
Bridge	FC	Width		B.E.L	E.G.E	D	I	LENTH	CREST	ST	SAG	TOTAL	RADIUS [CREST][SAG]	NORTH	SOUTH	P.T.M	
BMM 1	NO	-															
BMM 2	(SL) B	9	úKD^úL	6.49	6.19	-	-	-	-	-	-	-	N0 ALLOWANCE	RESIDENCE	FIELD	-	NORMAL TRA. HEIGHT:2.0M
BMM 3	(SL) B	9.6	úM	5.83	6.12	-	-	-	-	-	-	-	AS ABOVE	FIELD	FIELD	-	FEW TRA. HEIGHT:2.0M
BMM 4	(SL) B	9	úM	6.23	6.26	-	-	-	-	-	-	-	AS ABOBE	FIELD	FIELD	-	FEW TRA. HEIGHT:2.0M
BMM 5	(SL) B	7.5	úM	6.7	6.63	-	-	-	-	-	-	-	AS AVOVE	FIELD	FIELD	-	FEW TRA. HEIGHT:2.0M
BMM 6	(SL) B	7.5	úM	8.56	7.06	-	-	-	-	-	-	-	AS ABOVE	FIELD	FIELD	-	FEW TRA. HEIGHT:2.0M
BMM 7	C	7.5	úM	8.66	8.18	-	-	-	-	-	-	-	AS ABOBE	FIELD	FIELD	-	FEW TRA. HEIGHT:2.0M
BMM 8	C	7.5	úM	8.63	8.35	-	-	-	-	-	-	-	AS AVOVE	FIELD	FIELD	-	FEW TRA. HEIGHT:2.0M
BMM 9	C	7.5	úM	8.83	8.07	-	-	-	-	-	-	-	AS AVOVE	FIELD	FIELD	-	FEW TRA. HEIGHT:1.8M

Table 4.4.6 LENGTH OF ACCESS ROAD (8/8)

REMARKS :

a) for each items

1. FA - facilities, B - road bridge, P - pedestrian bridge,(SK) - skew,(SL) - in-situ slab bridge.
2. WD - width of crossing structure and road class.
3. B.E.L - elevation of bridge surface.
4. E.G.E - ground elevation of existing road surface approx.20m apart from the end of existing bridge.
5. D - elevation gap between B.E.L and E.G.E.
6. I - gradient degree of access road.
7. LENGTH - length of access road computed with Item 6.
8. CREST - transition length by crest curvature, [ ] - that of allowable min. radius.
9. ST - straight curve length lies between crest and sag curvature.
10. SAG - transition length by sag curvature,[ ] - that of allowable min. radius.
11. TOTAL - total length of transition length,[ ] - that of crest plus sag.
12. RADIUS - transition radius by crest and sag,[ ] - allowable min. radius.
13. NORTH - surrounding situation of north side of bridge, C.ROAD - curve road, S.T. ROAD — straight road. THREE INT- three crossing, INTER - intersection
14. SOUTH - same as above.
15. PTM - protection method of embankment, S.P - slope protection, R.W - retaining wall.

NOTE . CROWDED RE. - crowded residence

b) note for *: proposed length of access road ,i.e. straight curve for few traffic road, stairs for pedestrian road ,insertion of transition curve for National Road and match traffic road.

Table 5.1 TOTAL PROJECT COST

	Description	Amount (1,000 US $)		
		Foreign Portion	Local Portion	Total
A	Construction Cost	14,511	9,384	23,895
	1 Package 1	5,304	3,617	8,921
	Stage I	791	472	1,263
	Stage II	2,196	1,544	3,740
	Stage III	2,317	1,601	3,918
	2 Package 2	2,733	1,592	4,325
	Tanjungan	2,579	1,490	4,069
	PIK Junction	154	102	256
	3 Package 3	6,474	4,175	10,649
	Gede/Bor	1,039	816	1,855
	Saluran Cengkareng	4,283	2,525	6,808
	Meruya	1,152	834	1,986
B	Government Administrative Expense	0	1,195	1,195
C	Engineering Services	6,975	3,810	10,785
	Total A to C	21,486	14,389	35,875
D	Compensation Cost	0	29,996	29,996
E	Physical Contingency (10 % for A to D)	2,149	4,438	6,587
F	Price Escalation (3 % p.a. for A to E)	3,203	5,155	8,358
G	Tax (10 % for A, C and E&F for A&C)	0	4,332	4,332
H	Interest during Construction	1,178	2,647	3,825
	Total Project Cost	28,016	60,957	88,973

Table 5.2 OVERALL DISBURSEMENT SCHEDULE (1/2)

Description	Total Cost (1,000 US$)			1997			1998			1999			2000			2001		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
A Construction Cost	14,511	9,384	23,895	0	0	0	0	0	0	0	0	0	1,139	771	1,910	1,210	824	2,034
1 Package 1	5,304	3,617	8,921	0	0	0	0	0	0	0	0	0	1,139	771	1,910	1,210	824	2,034
Stage I	791	472	1,263	0	0	0	0	0	0	0	0	0	237	142	379	198	118	316
Stage II	2,196	1,544	3,740	0	0	0	0	0	0	0	0	0	439	309	748	549	386	935
Stage III	2,317	1,601	3,918	0	0	0	0	0	0	0	0	0	463	320	783	463	320	783
2 Package 2	2,733	1,592	4,325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tanjungan	2,579	1,490	4,069	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PIK Junction	154	102	256	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Package 3	6,474	4,175	10,649	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gede/Bor	1,039	816	1,855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saluran Cengkareng	4,283	2,525	6,808	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meruya	1,152	834	1,986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B Government Administrative Expense	0	1,195	1,195		72	72		96	96		143	143		143	143		167	167
C Engineering Services	6,975	3,810	10,785	0	0	0	0	0	0	209	114	323	698	381	1,079	977	533	1,510
Total A to C	21,486	14,389	35,875	0	72	72	0	96	96	209	257	466	1,837	1,295	3,132	2,187	1,524	3,711
D Compensation Cost	0	29,996	29,996		851	851		627	627		2,318	2,318		3,366	3,366		7,519	7,519
E Physical Contingency (10 % for A to D)	2,149	4,438	6,587	0	92	92	0	72	72	21	258	279	184	466	650	219	904	1,123
F Price Escalation (2 % p.a. for A to E)	3,203	5,155	8,358	0	0	0	0	16	16	9	114	123	124	314	438	198	820	1,018
G Tax (10 % for A, C and E&F for A&C)	0	4,332	4,332		0	0		0	0		37	37		349	349		422	422
H Interest during Construction	1,178	2,647	3,825	0	15	15	0	43	43	4	70	74	39	178	217	105	347	452
Total Project Cost	28,016	60,957	88,973	0	1,030	1,030	0	854	854	243	3,054	3,297	2,184	5,968	8,152	2,709	11,536	14,245
		100.00%			1.16%			0.96%			3.71%			9.16%			16.01%	

Basic Data

Foreign exchange rates	Rp/US$	2,350		Yen/US$	115													
A Progress rate of construction works																		
Package 1, Stage I	100%	100%		0%	0%		0%	0%		0%	0%		30%	30%		25%	25%	
Package 1, Stage II	100%	100%		0%	0%		0%	0%		0%	0%		20%	20%		25%	25%	
Package 1, Stage III	100%	100%		0%	0%		0%	0%		0%	0%		20%	20%		20%	20%	
Package 2, Tanjungan	100%	100%		0%	0%		0%	0%		0%	0%		0%	0%		0%	0%	
Package 2, PIK Junction	100%	100%		0%	0%		0%	0%		0%	0%		0%	0%		0%	0%	
Package 3, Gede/Bor	100%	100%		0%	0%		0%	0%		0%	0%		0%	0%		0%	0%	
Package 3, S. Cengkareng	100%	100%		0%	0%		0%	0%		0%	0%		0%	0%		0%	0%	
Package 3, Meruya	100%	100%		0%	0%		0%	0%		0%	0%		0%	0%		0%	0%	
B Government Administrative Expense	5%	100%			6%			8%			12%			12%			14%	
C Engineering Services	100%	100%		0%	0%		0%	0%		3%	3%		10%	10%		14%	14%	
D Compensation Cost																		
E Physical Contingency (10 % for A to D)		10%																
F Price Escalation (2 % p.a. for A to E)				0.00%	0.00%		2.00%	2.00%		4.04%	4.04%		6.12%	6.12%		8.24%	8.24%	
G Tax (10 % for A, C and E&F for A&C)		10%																
H Interest during Construction																		
Annual amount				0	1,015		0	811		239	2,984		2,145	5,790		2,604	11,189	
Due Amount				0	508		0	1,436		120	2,346		1,316	5,949		3,486	11,563	
Rate				3%	3%		3%	3%		3%	3%		3%	3%		3%	3%	
Interest during Construction				0	15		0	43		4	70		39	178		105	347	
Disbursed Amount at the end year				0	1,030		0	854		243	3,054		2,184	5,968		2,709	11,536	

Table 5.2 OVERALL DISBURSEMENT SCHEDULE (2/2)

Description	Total Cost (1,000 US$)			2002			2003			2004			2005			2006		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
A Construction Cost	14,511	9,384	23,895	1,286	880	2,166	1,965	1,247	3,212	4,067	2,568	6,635	2,780	1,734	4,514	2,064	1,360	3,424
1 Package 1	5,304	3,617	8,921	1,286	880	2,166	977	669	1,646	692	473	1,165	0	0	0	0	0	0
Stage I	791	472	1,263	158	94	252	119	71	190	79	47	126	0	0	0	0	0	0
Stage II	2,196	1,544	3,740	549	386	935	395	278	673	264	185	449	0	0	0	0	0	0
Stage III	2,317	1,601	3,918	579	400	979	463	320	783	349	241	590	0	0	0	0	0	0
2 Package 2	2,733	1,592	4,325	0	0	0	988	578	1,566	1,101	642	1,743	644	372	1,016	0	0	0
Tanjungan	2,579	1,490	4,069	0	0	0	903	522	1,425	1,032	596	1,628	644	372	1,016	0	0	0
PIK Junction	154	102	256	0	0	0	85	56	141	69	46	115	0	0	0	0	0	0
3 Package 3	6,474	4,175	10,649	0	0	0	0	0	0	2,274	1,453	3,727	2,136	1,362	3,498	2,064	1,360	3,424
Gede/Bor	1,039	816	1,855	0	0	0	0	0	0	416	326	742	291	228	519	332	262	594
Saluran Cengkareng	4,283	2,525	6,808	0	0	0	0	0	0	1,628	960	2,588	1,499	884	2,383	1,156	681	1,837
Meruya	1,152	834	1,986	0	0	0	0	0	0	230	167	397	346	250	596	576	417	993
B Government Administrative Expense	0	1,195	1,195		167	167		120	120		120	120		96	96		71	71
C Engineering Services	6,975	3,810	10,785	1,046	572	1,618	1,186	648	1,834	1,046	572	1,618	977	533	1,510	836	457	1,293
Total A to C	21,486	14,389	35,875	2,332	1,619	3,951	3,151	2,015	5,166	5,113	3,260	8,373	3,757	2,363	6,120	2,900	1,888	4,788
D Compensation Cost	0	29,996	29,996		8,143	8,143		3,884	3,884		2,052	2,052		1,236	1,236		0	0
E Physical Contingency (10 % for A to D)	2,149	4,438	6,587	233	976	1,209	315	590	905	511	531	1,042	376	360	736	290	189	479
F Price Escalation (2 % p.a. for A to E)	3,203	5,155	8,358	267	1,118	1,385	437	819	1,256	836	869	1,705	710	680	1,390	622	405	1,027
G Tax (10 % for A, C and E&F for A&C)	0	4,332	4,332		460	460		625	625		1,043	1,043		776	776		620	620
H Interest during Construction	1,178	2,647	3,825	124	531	655	147	504	651	218	369	587	273	325	598	268	265	533
Total Project Cost	28,016	60,957	88,973	2,956	12,847	15,803	4,050	8,437	12,487	6,678	8,124	14,802	5,116	5,740	10,856	4,080	3,367	7,447
		100.00%			17.76%			14.03%			16.64%			12.20%			8.37%	

Basic Data																		
Foreign exchange rates	Rp/US$	2,350																
A Progress rate of construction works																		
Package 1, Stage I	100%	100%		20%	20%		15%	15%		10%	10%		0%	0%		0%	0%	
Package 1, Stage II	100%	100%		25%	25%		18%	18%		12%	12%		0%	0%		0%	0%	
Package 1, Stage III	100%	100%		25%	25%		20%	20%		15%	15%		0%	0%		0%	0%	
Package 2, Tanjungan	100%	100%		0%	0%		35%	35%		40%	40%		25%	25%		0%	0%	
Package 2, PIK Junction	100%	100%		0%	0%		55%	55%		45%	45%		0%	0%		0%	0%	
Package 2, Gede/Bor	100%	100%		0%	0%		0%	0%		40%	40%		28%	28%		32%	32%	
Package 3, S. Cengkareng	100%	100%		0%	0%		0%	0%		38%	38%		35%	35%		27%	27%	
Package 3, Meruya	100%	100%		0%	0%		0%	0%		20%	20%		30%	30%		50%	50%	
B Government Administrative Expense	5%	100%			14%			10%			10%			8%			6%	
C Engineering Services	100%	100%		15%	15%		17%	17%		15%	15%		14%	14%		12%	12%	
D Compensation Cost																		
E Physical Contingency (10 % for A to D)		10%																
F Price Escalation (2 % p.a. for A to E)				10.41%	10.41%		12.62%	12.62%		14.87%	14.87%		17.17%	17.17%		19.51%	19.51%	
G Tax (10 % for A, C and E&F for A&C)		10%																
H Interest during Construction																		
Annual amount				2,832	12,316		3,903	7,933		6,460	7,755		4,843	5,415		3,812	3,102	
Due Amount				4,125	17,694		4,908	16,814		7,280	12,315		9,100	10,832		8,928	8,842	
Rate				3%	3%		3%	3%		3%	3%		3%	3%		3%	3%	
Interest during Construction				124	531		147	504		218	369		273	325		268	265	
Disbursed Amount at the end year				2,956	12,847		4,050	8,437		6,678	8,124		5,116	5,740		4,080	3,367	