

## ***1.2 Drainage channel***

### ***1.2.1 Drainage channel***

Summary of Quantities, Drainage Channel

Package 1

Item No.	Description	Unit	Total Package 1	Kamal		
				Stage 1	Stage 2	Stage 3
				Total	main	branch
2.1	Drainage Channel					
/ 01	Excavation	cu.m	205,452	59,975	89,479	55,998
/ 02	Demolishing, hauling and disposing concrete structures	cu.m	48		28	20
/ 03	Demolishing, hauling and disposing asphalt/masonry	cu.m	5,133	786	1,521	2,826
						388
						2,438

Package 2

Item No.	Description	Unit	Total Package 2	Tanjungan	PIK Junction
2.1	Drainage Channel				
/ 01	Excavation	cu.m	41,894	41,894	
/ 02	Demolishing, hauling and disposing concrete structures	cu.m	2,437	2,435	2
/ 03	Demolishing, hauling and disposing asphalt/masonry	cu.m	160	160	

Package 3

Item No.	Description	Unit	Total Package 3	Gede/bor	Saluran Cengkareng	Meruya
2.1	Drainage Channel					
/ 01	Excavation	cu.m	46,241	17,925	28,316	
/ 02	Demolishing, hauling and disposing asphalt/masonry	cu.m	5,463	1,444	4,019	

**SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT**

	Name of Drainage Channel	Drainage Channel (m)	Sluiceway (sites)	Bridge/Culvert (sites)
Package-1	Kamal (Main)	4462.9	15	9
	Kamal (Branch)	2754.7	8	19
Package-2	Tanjungan	2535.8	7	5
	PIK Junction	765.4	1	4
Package-3	Gede/Bor	1203.0	5	13
	Saluran Cengkareng	4231.2	15	10
	Meruya	2269.1	0	16

SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (1/5)

Section	Type	Location *		L(E)	L(D)	L(P)	R(I)	C(L)	C(D)	O/C	Others	Remarks
		B.P	E.P									
<b>(1) Kamal Drainage Channel (Main)</b>												
Left (Total length = 4495.1 m)												
KM-LA	B.P		KM01+16.2								198.8	Excavation
KM-LB	L(E)		KM01+16.2	1057.0								
KM-LC			KM12+34.4									
KM-LD			KM14+23.4									
KM-LE	R(I)		KM16+36.8				144.7					
KM-LF	R(II)		KM18+12.8									
KM-LG	L(E)		KM26+28.8	485.7								
KM-LH	R(I)		KM32+60.9				288.2					
KM-LI	L(P)		KM35+140.6			492.9						
KM-LJ	L(E)		KM45+2.2	350.3								
KM-LK	R(I)		KM48+121.3				288.3					
KM-LL			KM54								552.9	No works
Total				1893.0	0.0	492.9	721.2	0.0	0.0	0.0	794.3	
Right (Total length = 4547.9 m)												
KM-RA	B.P		KM00+73.4									
KM-RB	L(E)		KM00+73.4	1260.6							135.4	Excavation
KM-RC	R(I)		KM13+77.9				28.8					
KM-RD			KM14+23.4									
KM-RE	R(I)		KM16+22.8				28.8					
KM-RF	L(E)		KM16+51.6	1509.3								
KM-RG	R(I)		KM35+107.2				161.6					
KM-RH	R(I)		KM38+90.4				364.7					
KM-RI	R(II)		KM45+2.2				233.6					
KM-RJ			KM47+70.9									
KM-RK	R(II)		KM48				762.5					
Total				2769.9	0.0	0.0	583.9	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												

SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (2/5)

Section	Type	Location *		L(E)	L(D)	L(P)	R(I)	R(II)	C(L)	C(D)	O/C	Others	Remarks
		B.P	E.P										
<b>(2) Kamal Drainage Channel (Branch)</b>													
Left (Total length = 2746.5 m)													
KE-LA		KE00(B.P)	KE00+8.2										
KE-LB	R(II)	KE00+8.2	KE02+50.0					175.8					Confluence with Branch channel
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	
<b>(3) Tanjungan Drainage Channel</b>													
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										
TM-LC	L(E)	TM18+28.2	TM21+18.8	283.4									67.9 BINA MARGA's area
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	

CH-A

**SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (3/5)**

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		
<b>Right (Total length = 2601.8 m)</b>														
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	0.0	148.3	
<b>(4) Gede/por Drainage Channel</b>														
<b>Left (Total length = 1203.0 m)</b>														
GM-LA		B.P	GM02+0.1											
GM-LB	R(II)	GM02+0.1	GM10					599.8					20.0	Outlet structure
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	0.0	20.0	
<b>Right (Total length = 1203.0 m)</b>														
GM-RA		B.P	GM02+0.1											
GM-RB	R(II)	GM02+0.1	E.P					1183.0					20.0	Outlet structure
Total				0.0	0.0	0.0	0.0	1183.0	0.0	0.0	0.0	0.0	20.0	
<b>(5) Saluran Cengkareng Drainage Channel</b>														
<b>Left (Total length = 4233.4 m)</b>														
CM-LA		B.P	CM02+1.5											
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							

**SUMMARY OF DRAINAGE CHANNEL IMPROVEMENT (4/5)**

Section	Type	Location *		L(E)	L(D)	L(P)	R(I)	Length (m)			Remarks	
		B.P	E.P					R(II)	C(L)	C(D)		O/C
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
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) PK Junction Drainage Channel												
(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	0.0	765.4	0.0	0.0
(7) Meruya Area Drainage Channel												
(Total length = 2269.1 m)												
MM-A	C(D)	B.P	MM104+65.0								359.2	
MM-B		MM104+65.0	MM310									504.2
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.

Name of work: Excavation for drainage channel

No. 2.1/01

Package 1

Name of channel: Kamal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total Volume (m <sup>3</sup> )	Stage
	(m)	unit (m)	Area		Volume (m <sup>3</sup> )	Area		Volume (m <sup>3</sup> )		
			unit (m <sup>2</sup> )	average (m <sup>2</sup> )		unit (m <sup>2</sup> )	average (m <sup>2</sup> )			
B.P(new)										
KM-00	62.0	62.0				52.24	26.12	1,620	1,620	
KM-01	182.6	120.6	0.81	0.41	49	35.24	43.74	5,276	5,325	
KM-02	269.1	86.5	4.94	2.88	249	66.81	51.03	4,414	4,663	
KM-03	321.8	52.7	2.64	3.79	200	41.56	54.19	2,856	3,056	
KM-05	441.1	119.3	12.91	7.78	928	68.13	54.85	6,544	7,472	
KM-06	543.8	102.7		6.46	663	51.40	59.77	6,138	6,801	
KM-07	659.5	115.7				42.16	46.78	5,413	5,413	
KM-08	805.6	146.1	2.96	1.48	217	24.23	33.20	4,850	5,067	
KM-09	868.5	62.9	3.34	3.15	199	21.29	22.76	1,432	1,631	
KM-10	978.1	109.6	8.76	6.05	664	24.28	22.79	2,498	3,162	
KM-11	1,064.3	86.2	10.58	9.67	834	30.86	27.57	2,377	3,211	
KM-12	1,179.4	115.1	7.29	8.94	1,029	30.05	30.46	3,506	4,535	
KM-13	1,266.9	87.5	4.53	5.91	518	44.20	37.13	3,249	3,767	
KM-14	1,357.3	90.4	4.71	4.62	418	31.27	37.74	3,412	3,830	
KM14+23.4	1,380.7	23.4		2.36	56		15.64	366	422	59,975
			Bina Marga's Area			Bina Marga's Area				
KM16+22.8	1,443.3	22.8				22.35				
KM16+36.8	1,457.3	14.0	11.78			22.35	22.35	313	313	
KM16+51.6	1,472.1	14.8				22.35	22.35	331	331	
KM-17	1,482.5	10.4	11.78	11.78	123	22.35	22.35	233	356	
KM-18	1,589.2	106.7	5.04	8.41	898	47.11	34.73	3,706	4,604	
KM-20	1,702.5	113.3	7.18	6.11	693	38.40	42.76	4,845	5,538	
KM-21	1,733.2	30.7	6.19	6.69	206	26.92	32.66	1,003	1,209	
KM-22	1,821.2	88.0	6.06	6.13	539	21.04	23.98	2,111	2,650	
KM-23	1,916.7	95.5	2.29	4.18	399	39.64	30.34	2,898	3,297	
KM-24	1,988.7	72.0	4.75	3.52	254	39.73	39.69	2,858	3,112	
KM-25	2,084.6	95.9	3.91	4.33	416	38.94	39.34	3,773	4,189	
KM-26	2,166.9	82.3	3.53	3.72	307	45.76	42.35	3,486	3,793	
KM-27	2,286.8	119.9	2.70	3.12	374	26.36	36.06	4,324	4,698	
KM-28	2,395.4	108.6	16.65	9.68	1,051	12.19	19.28	2,094	3,145	
KM-29	2,473.2	77.8	16.03	16.34	1,272	12.86	12.53	975	2,247	
KM-31	2,540.7	67.5	28.87	22.45	1,516	14.32	13.59	918	2,434	
KM-32	2,614.2	73.5	15.36	22.12	1,626	16.89	15.61	1,147	2,773	
KM-33	2,713.9	99.7	20.72	18.04	1,799	21.09	18.99	1,894	3,693	
KM-34	2,769.5	55.6	23.86	22.29	1,240	17.37	19.23	1,070	2,310	
KM-35	2,822.7	53.2	21.04	22.45	1,195	11.27	14.32	762	1,957	
KM-38	3,001.1	178.4	14.25	17.65	3,148	38.70	24.99	4,458	7,606	
KM-40	3,126.7	125.6	11.05	12.65	1,589	29.10	33.90	4,258	5,847	
KM-42	3,281.6	154.9	2.65	6.85	1,062	32.32	30.71	4,757	5,819	
KM-43	3,393.3	111.7	2.27	2.46	275	25.84	29.08	3,249	3,524	
KM-45	3,454.0	60.7	6.74	4.51	274	47.25	36.55	2,219	2,493	
KM-46	3,527.4	73.4		3.37	248	50.49	48.87	3,588	3,836	
KM-47	3,618.9	91.5	15.07	7.54	690	27.41	38.95	3,564	4,254	
KM-48	3,700.4	81.5	39.81	27.44	2,237	2.36	14.89	1,214	3,451	89,479
KM-50	3,831.3	130.9	27.29	33.55	4,392	15.71	9.04	1,183	5,575	
KM-51	3,926.0	94.7	39.58	33.44	3,167	12.57	14.14	1,340	4,507	
KM-52	4,022.9	96.9	7.55	23.57	2,284	24.64	18.61	1,803	4,087	
KM-54	4,110.0	87.1	1.53	4.54	396	37.42	31.03	2,703	3,099	
KM-55	4,247.9	137.9		0.77	106	42.41	39.92	5,505	5,611	
KM-56	4,370.6	122.7	No works			38.54	40.48	4,967	4,967	
KM-57	4,462.9	92.3	No works			21.24	29.89	2,759	2,759	30,605
Total					39,800			140,259	180,059	180,059



Name of work: Excavation for drainage channel

No. 2.1/01

Package 1

Name of channel: Kamal Drainage Channel (Branch)

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
KE00									
KE01	36.6	36.6	1.33	0.67	25	10.00	5.00	183	208
KE02	134.0	97.4	0.86	1.10	107	8.31	9.16	892	999
KE03	272.3	138.3		0.43	60	11.89	10.10	1,397	1,457
KE04	372.7	100.4				11.38	11.64	1,168	1,168
KE07	486.8	114.1				21.01	16.20	1,848	1,848
KE08	568.3	81.5				18.26	19.64	1,600	1,600
KE10	626.2	57.9	14.42	7.21	418	4.83	11.55	668	1,086
KE11	714.3	88.1	10.76	12.59	1,110		2.42	213	1,323
KE12	785.9	71.6	11.67	11.22	803	3.23	1.62	116	919
KE13	894.7	108.8		5.84	635	9.49	6.36	692	1,327
KE14	944.7	50.0				12.67	11.08	554	554
KE15	1020.1	75.4	10.71	5.36	404		6.34	478	882
KE16	1107.7	87.6	11.28	11.00	964				964
KE17	1174.1	66.4	10.26	10.77	716				716
KE18	1265.4	91.3	11.56	10.91	997				997
KE19	1376.9	111.5	18.93	15.25	1,700				1,700
KE20	1421.9	45.0	10.20	14.57	656				656
KE21	1497.0	75.1	9.75	9.98	750	1.35	0.68	51	801
KE23	1536.7	39.7	8.83	9.29	369	8.83	5.09	202	571
KE24	1637.4	100.7	3.10	5.97	601	3.25	6.04	608	1,209
KE25	1718.5	81.1	2.00	2.55	207	4.55	3.90	316	523
KE26	1870.3	151.8	1.55	1.78	270	2.85	3.70	562	832
KE27	1988.1	117.8	4.15	2.85	336	2.45	2.65	312	648
KE28	2058.7	70.6	3.69	3.92	277	4.81	3.63	256	533
KE29	2132.0	73.3	3.95	3.82	281	3.29	4.05	297	578
KE30	2298.5	166.5	3.32	3.64	606	4.98	4.14	688	1,294
KE31	2474.4	175.9	Concrete ditch			Concrete ditch			
KE32	2580.3	105.9	Concrete ditch			Concrete ditch			
KE33	2754.7	174.4	Concrete ditch			Concrete ditch			
Total					12,292			13,101	25,393

Name of work: Excavation for drainage channel

No. 2.1/01

Package 2

Name of channel: Tanjung Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
TM00			17.01			18.14			
TM01	95.3	95.3	16.44	16.73	1,594	16.66	17.40	1,659	3,253
TM02	192.3	97.0	11.71	14.08	1,366	22.47	19.57	1,898	3,264
TM03	281.2	88.9	17.89	14.80	1,316	11.28	16.88	1,501	2,817
TM04	363.7	82.5	16.69	17.29	1,427	10.87	11.08	914	2,341
TM05	464.7	101.0	12.61	14.65	1,480	10.60	10.74	1,085	2,565
TM06	581.7	117.0	9.99	11.30	1,323	12.10	11.35	1,328	2,651
TM07	654.3	72.6	12.19	11.09	806	12.32	12.21	887	1,693
TM08	754.1	99.8	6.17	9.18	917	3.56	7.94	793	1,710
TM10	858.2	104.1	17.23	11.70	1,218	17.27	10.42	1,085	2,303
TM11	949.5	91.3		8.62	787		8.64	789	1,576
TM12	1039.6	90.1							
TM13	1082.6	43.0	3.64	1.82	79	4.35	2.18	94	173
TM14	1198.3	115.7		1.82	211		2.18	252	463
TM15	1281.2	82.9							
TM16	1357.3	76.1							
TM16+47.1	1404.4	47.1							
TM16+58.3	1415.6	11.2							
			Bina Marga's Area			Bina Marga's Area			
TM18+17.5	1472.8		Bina Marga's Area			Bina Marga's Area			
TM18+28.2	1483.5	10.7	14.95						
TM19	1552.7	69.2	14.95	14.95	1,035	6.10	3.05	212	1,247
TM20	1652.8	100.1	14.61	14.78	1,480	5.87	5.99	600	2,080
TM21	1746.1	93.3	17.38	16.00	1,493	9.76	7.82	730	2,223
TM22	1840.4	94.3	14.09	15.74	1,484	4.99	7.38	696	2,180
TM23	1952.3	111.9	13.19	13.64	1,527	5.77	5.38	603	2,130
TM25	1977.7	25.4	12.39	12.79	325	0.75	3.26	83	408
TM26	2011.9	34.2	15.57	13.98	479	0.33	0.54	19	498
TM30	2043.8	31.9	10.52	13.05	417	7.40	3.87	124	541
TM33	2181.2	137.4		5.26	723	18.05	12.73	1,749	2,472
TM34	2306.4	125.2				10.07	14.06	1,761	1,761
TM35	2415.0	108.6					5.04	547	547
TM36	2508.2	93.2				13.44	6.72	627	627
EP	2535.8	27.6				13.44	13.44	371	371
Total					21,487			20,407	41,894

Name of work: Excavation for drainage channel

No. 2.1/01

Package 3

Name of channel: Gede/Bor Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P			Outlet structure			Outlet structure			
GM-00	2.8	2.8	Outlet structure			Outlet structure			
GM-02	19.9	17.1	Outlet structure			Outlet structure			
GM02+0.1	20.0	0.1	3.69			36.13			
GM-03	49.5	29.5	3.69	3.69	109	36.13	36.13	1,066	1,175
GM-04	169.6	120.1	7.92	5.81	698	4.34	20.24	2,431	3,129
GM-05	258.6	89.0	3.78	5.85	521	9.26	6.80	606	1,127
GM-06	374.1	115.5	8.10	5.94	687	9.20	9.23	1,067	1,754
GM-07	423.5	49.4	5.69	6.90	341	12.28	10.74	531	872
GM-08	536.3	112.8	8.19	6.94	783	4.88	8.58	968	1,751
GM-10	619.8	83.5	10.93	9.56	799	3.79	4.34	362	1,161
GM-11	697.1	77.3	13.92	12.43	961		1.90	147	1,108
GM-12	785.3	88.2	8.94	11.43	1,009	0.78	0.39	35	1,044
GM-13	886.6	101.3	3.79	6.37	645	7.65	4.22	427	1,072
GM-14	974.7	88.1	1.74	2.77	244	8.72	8.19	722	966
GM-15	1072.2	97.5		0.87	85	12.08	10.40	1,014	1,099
GM-16	1150.1	77.9				13.01	12.55	978	978
E.P	1203.0	52.9				13.01	13.01	689	689
Total					6,882			11,043	17,925

Name of work: Excavation for drainage channel

No. 2.1/01

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9							
CM04	292.3	137.7							
CM05	392.4	100.1							
CM5+20.0	412.4	20.0	7.27			7.74			
CM06	466.4	54.0	7.27	7.27	393	7.74	7.74	418	811
CM07	569.0	102.6	7.53	7.40	760	11.94	9.84	1,010	1,770
CM08	636.6	67.6	7.07	7.30	494	6.21	9.08	614	1,108
CM09	808.2	171.6	4.47	5.77	991	4.29	5.25	901	1,892
CM10	884.9	76.7	1.38	2.93	225	7.53	5.91	454	679
CM12	962.9	78.0	2.33	1.86	145	6.02	6.78	529	674
CM13	1056.9	94.0	6.08	4.21	396	4.14	5.08	478	874
CM14	1173.6	116.7	2.40	4.24	495	5.46	4.80	561	1,056
CM15	1237.0	63.4	1.03	1.72	109	9.99	7.73	490	599
CM16	1312.8	75.8	1.53	1.28	98	0.96	5.48	416	514
CM17	1446.0	133.2	0.11	0.82	110	3.20	2.08	278	388
CM18	1544.5	98.5	6.52	3.32	327	0.34	1.77	175	502
CM19	1613.6	69.1	7.45	6.99	483	0.26	0.30	21	504
CM20	1740.7	127.1	1.83	4.64	590		0.13	17	607
CM21	1832.5	91.8	0.33	1.08	100	2.29	1.15	106	206
CM22	1901.7	69.2		0.17	12	7.67	4.98	345	357
CM23	2001.5	99.8	3.37	1.69	169	2.47	5.07	506	675
CM24	2102.9	101.4	3.22	3.30	335	0.07	1.27	129	464
CM25	2194.3	91.4	1.15	2.19	200	1.35	0.71	65	265
CM26	2304.8	110.5	0.80	0.98	108	2.75	2.05	227	335
CM27	2448.0	143.2	1.55	1.18	169	5.20	3.98	570	739
CM29	2599.3	151.3	6.55	4.05	613	3.25	4.23	640	1,253
CM30	2698.3	99.0	1.95	4.25	421	0.85	2.05	203	624
CM31	2803.5	105.2	0.75	1.35	143	2.80	1.83	192	335
CM32	2933.5	130.0	1.14	0.95	123	2.10	2.45	319	442
CM34	3047.4	113.9	11.88	6.51	742	9.62	5.86	668	1,410
CM36	3095.6	48.2	1.91	6.90	333	4.76	7.19	347	680
CM37	3219.0	123.4	3.96	2.94	363	0.12	2.44	302	665
CM38	3339.1	120.1	2.72	3.34	402	3.22	1.67	201	603
CM39	3425.5	86.4	2.69	2.71	234	5.15	4.19	362	596
CM40	3467.5	42.0	13.36	8.03	338	2.47	3.81	161	499
CM41	3556.9	89.4	1.96	7.66	685	4.29	3.38	303	988
CM42	3653.4	96.5	1.37	1.67	161	4.94	4.62	446	607
CM43	3777.2	123.8	4.46	2.92	361	0.99	2.97	368	729
CM45	3916.3	139.1		2.23	311	13.88	7.44	1,035	1,346
CM47	4022.2	105.9	2.04	1.02	109	3.55	8.72	923	1,032
CM48	4110.3	88.1	1.82	1.93	171	3.48	3.52	310	481
CM49	4230.2	119.9	5.53	3.68	441	5.75	4.62	554	995
E.P	4231.2	1.0	5.53	5.53	6	5.57	5.66	6	12
Total					12,666			15,650	28,316

### ***1.2.2 Levee and inspection/relocation road***

Summary of Work Quantities, Levee and Inspection Road

Package 1

Item No.	Description	Unit	Total	Kamal				
				Stage1 main	Stage2 main	Total	Stage3	
							main	branch
2.2	Levee and Inspection/Relocation Road							
/ 01	Coffering and care of water including dewatering	L.S.						
/ 02	Stripping, grubbing and clearing	sq.m	37,097	9,352	17,250	10,495	2,003	8,492
/ 03	Excavation	cu.m	20,949	9,573	9,410	1,966	527	1,439
/ 04	Embankment	cu.m	30,812	8,886	14,071	7,855	813	7,042
/ 05	Filling-up by random material	cu.m	1,146	591	529	26		26
/ 06	Geo-textile, t=1.5mm	sq.m	30,988	16,022	14,309	657		657
/ 07	Sod facing	sq.m	11,518	3,325	5,234	2,939	319	2,640
/ 08	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	22,911	11,837	10,579	495		495
/ 09	Sub-base course	cu.m	3,563	495	1,241	1,827	577	1,250
/ 10	Base-course	cu.m	2,672	371	930	1,371	433	938
/ 11	Asphalt pavement	sq.m	17,794	2,472	6,197	9,125	2,881	6,244

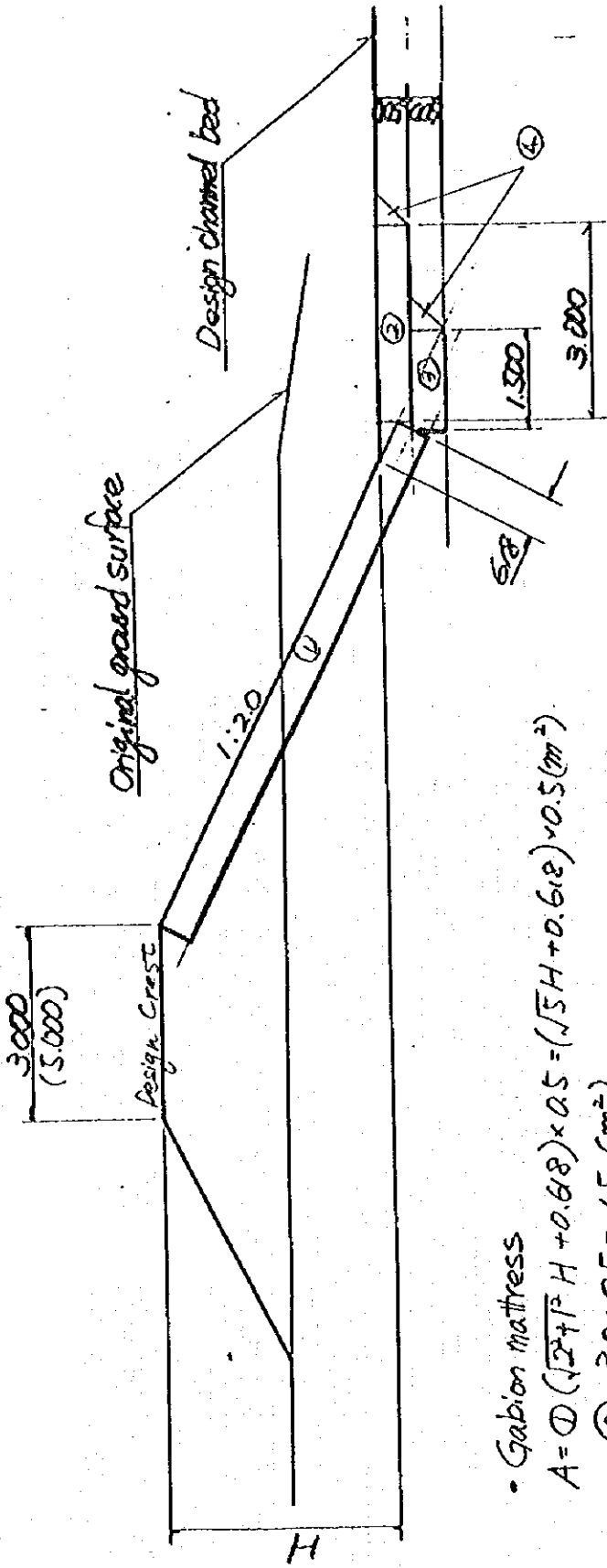
Package 2

Item	Description	Unit	Total Package 2	Tanjungan	PIK Junction
2.2	Levee and Inspection/Relocation Road				
/ 01	Coffering and care of water including dewatering	L.S.			
/ 02	Stripping, grubbing and clearing	sq.m	4,634	4,634	
/ 03	Excavation	cu.m	3,042	3,042	
/ 04	Embankment	cu.m	2,956	2,956	
/ 05	Dump filling with provision of pollution prevention measures	cu.m	46,580	46,580	
/ 06	Filling-up by random material	cu.m	180	180	
/ 07	Geo-textile, t=1.5mm	sq.m	4,495	4,495	
/ 08	Sod facing	sq.m	1,070	1,070	
/ 09	Cobble/rubble for rip-rap	sq.m	11,585	11,585	
/ 10	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	3,402	3,402	
/ 11	Bamboo mat	sq.m	4,866	4,866	
/ 12	Bamboo waling	lin.m	46,335	46,335	
/ 13	Bamboo pile, diam. 80-100mm	lin.m	64,772	64,772	
/ 14	Sub-base course	cu.m	400	400	
/ 15	Base-course	cu.m	300	300	
/ 16	Asphalt pavement	sq.m	2,000	2,000	

Package 3

Item No.	Description	Unit	Total Package 3	Gede/Bor	Saturan Cengkareng	Meruya
2.2	Levee and Inspection/Relocation Road					
/ 01	Coffering and care of water including dewatering	L.S.				
/ 02	Stripping, grubbing and clearing	sq.m	32,834	1,484	31,350	
/ 03	Excavation	cu.m	15,583		15,583	
/ 04	Embankment	cu.m	37,247	1,053	31,577	4,617
/ 05	Backfilling with selected material	cu.m	293		293	
/ 06	Filling-up by random material	cu.m	864		864	
/ 07	Geo-textile, t=1.5mm	sq.m	24,448		24,448	
/ 08	Sod facing	sq.m	10,274	290	9,984	
/ 09	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	17,828		17,828	
/ 10	Sub-base course	cu.m	4,058	212	3,145	701
/ 11	Base-course	cu.m	3,045	159	2,360	526
/ 12	Asphalt pavement	sq.m	20,280	1,060	15,715	3,505

Levee = earth type  
Gabion mattress & Geotextile mat



• Gabion mattress

$$A = ① (\sqrt{2^2 + 1^2} H + 0.618) \times 0.5 = (\sqrt{5} H + 0.618) \times 0.5 (m^2)$$

$$② 3.0 \times 0.5 = 1.5 (m^2)$$

$$③ 1.5 \times 0.5 = 0.75 (m^2)$$

• Geotextile mat

$$l = 0.5 + (\sqrt{5} H + 0.618) + 0.25 + 0.5$$

$$= 1.25 + (\sqrt{5} H + 0.618) (m)$$

• Back filling

$$④ 0.5 \times 0.5 = 0.25 (m^2)$$

Dump fill type : Slope of levee = 1:3.0

Gabion mattress

$$① (\sqrt{10} H + 0.831) \times 0.5 (m^2)$$

$$② 1.5 (m^2)$$

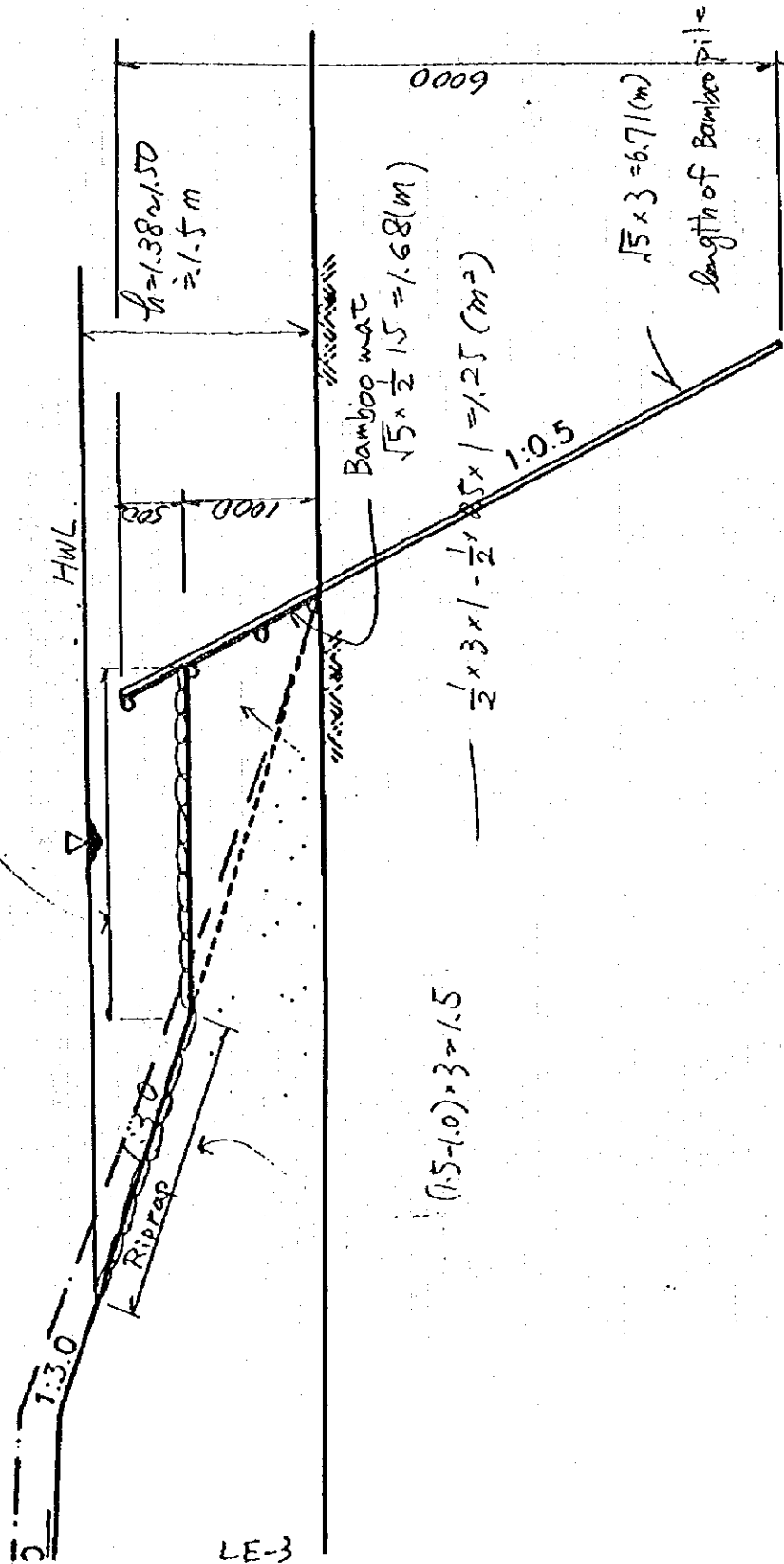
$$③ 0.75 (m^2)$$

Geotextile

$$1.25 + (\sqrt{10} H + 0.831)$$

length of riprap = 4.0m.

Riprap  
 $3 - 0.5 = 2.5$





Name of work: Stripping, grubbing and clearing

No. 2.2/02

Package 1

Name of channel: Kamal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total Area (m <sup>2</sup> )	Stage	
	(m)	unit (m)	length		Area (m <sup>2</sup> )	length		Area (m <sup>2</sup> )			
			unit (m)	average (m)		unit (m)	average (m)				
B.P(new)											
KM-00	62.0	62.0									
KM-01	182.6	120.6				5.40	2.70	326	326		
KM-02	269.1	86.5					2.70	234	234		
KM-03	321.8	52.7	5.50	2.75	145	5.90	2.95	156	301		
KM-05	441.1	119.3		2.75	329		2.95	352	681		
KM-06	543.8	102.7	5.60	2.80	288				288		
KM-07	659.5	115.7	8.00	6.80	787	6.70	3.35	388	1,175		
KM-08	805.6	146.1	3.80	5.90	862	7.80	7.25	1,060	1,922		
KM-09	868.5	62.9	4.60	4.20	265	8.90	8.35	526	791		
KM-10	978.1	109.6		2.30	253	6.40	7.65	839	1,092		
KM-11	1,064.3	86.2				6.20	6.30	544	544		
KM-12	1,179.4	115.1	1.60	0.80	93	6.20	6.20	714	807		
KM-13	1,266.9	87.5		0.80	70	5.70	5.95	521	591		
KM-14	1,357.3	90.4				6.00	5.85	529	529		
KM14+23.4	1,380.7	23.4					3.00	71	71	9,352	
			Bina Marga's Area			Bina Marga's Area					
KM16+22.8	1,443.3	22.8									
KM16+36.8	1,457.3	14.0									
KM16+51.6	1,472.1	14.8									
KM-17	1,482.5	10.4				7.00	3.50	37	37		
KM-18	1,589.2	106.7				3.30	5.15	550	550		
KM-20	1,702.5	113.3				4.40	3.85	437	437		
KM-21	1,733.2	30.7				5.00	4.70	145	145		
KM-22	1,821.2	88.0				6.80	5.90	520	520		
KM-23	1,916.7	95.5				3.80	5.30	507	507		
KM-24	1,988.7	72.0				3.80	3.80	274	274		
KM-25	2,084.6	95.9				3.60	3.70	355	355		
KM-26	2,166.9	82.3				3.00	3.30	272	272		
KM-27	2,286.8	119.9	7.70	3.85	462	7.80	5.40	648	1,110		
KM-28	2,395.4	108.6	7.90	7.80	848	8.70	8.25	896	1,744		
KM-29	2,473.2	77.8	8.60	8.25	642	8.30	8.50	662	1,304		
KM-31	2,540.7	67.5	6.60	7.60	513	5.20	6.75	456	969		
KM-32	2,614.2	73.5	8.40	7.50	552	5.90	5.55	408	960		
KM-33	2,713.9	99.7	6.90	7.65	763	4.60	5.25	524	1,287		
KM-34	2,769.5	55.6	7.00	6.95	387	4.90	4.75	265	652		
KM-35	2,822.7	53.2	3.80	5.40	288	6.00	5.45	290	578		
KM-38	3,001.1	178.4		1.90	339		3.00	536	875		
KM-40	3,126.7	125.6	6.30	3.15	396	3.80	1.90	239	635		
KM-42	3,281.6	154.9	6.30	6.30	976	3.80	3.80	589	1,565		
KM-43	3,393.3	111.7		3.15	352	5.30	4.55	509	861		
KM-45	3,454.0	60.7					2.65	161	161		
KM-46	3,527.4	73.4	6.60	3.30	243				243		
KM-47	3,618.9	91.5	6.90	6.75	618				618		
KM-48	3,700.4	81.5	7.60	7.25	591				591	17,250	
KM-50	3,831.3	130.9		3.80	498				498		
KM-51	3,926.0	94.7									
KM-52	4,022.9	96.9				6.20	3.10	301	301		
KM-54	4,110.0	87.1					3.10	271	271		
KM-55	4,247.9	137.9									
KM-56	4,370.6	122.7	No works			6.00	3.00	369	369		
KM-57	4,462.9	92.3	No works			6.20	6.10	564	564	2,003	
Total					11,560			17,045	28,605	28,605	

LE-4

Name of work: Stripping, grubbing and clearing

No. 2.2/02

Package 1

Name of channel: Kamal Drainage Channel (Branch)

Section No.	Distance		Left Bank			Right Bank			Total Area (m <sup>2</sup> )
	(m)	unit (m)	length		Area (m <sup>2</sup> )	length		Area (m <sup>2</sup> )	
			unit (m)	average (m)		unit (m)	average (m)		
KE00									
KE01	36.6	36.6							
KE02	134.0	97.4							
KE03	272.3	138.3							
KE04	372.7	100.4							
KE07	486.8	114.1							
KE08	568.3	81.5							
KE10	626.2	57.9							
KE11	714.3	88.1							
KE12	785.9	71.6							
KE13	894.7	108.8							
KE14	944.7	50.0							
KE15	1020.1	75.4							
KE16	1107.7	87.6							
KE17	1174.1	66.4							
KE18	1265.4	91.3							
KE19	1376.9	111.5							
KE20	1421.9	45.0							
KE21	1497.0	75.1							
KE23	1536.7	39.7							
KE24	1637.4	100.7	4.30	2.15	217	7.0	3.50	353	570
KE25	1718.5	81.1	5.30	4.80	390	7.5	7.25	588	978
KE26	1870.3	151.8	5.40	5.35	813	7.3	7.40	1,124	1,937
KE27	1988.1	117.8	4.30	4.85	572	7.5	7.40	872	1,444
KE28	2058.7	70.6	3.90	4.10	290	7.1	7.30	516	806
KE29	2132.0	73.3	5.10	4.50	330	7.3	7.20	528	858
KE30	2298.5	166.5	3.90	4.50	750	6.5	6.90	1,149	1,899
KE31	2474.4	175.9							
KE32	2580.3	105.9							
KE33	2754.7	174.4							
Total					3,362			5,130	8,492

Name of work: Stripping, grubbing and clearing

No. 2.2/02

Package 2

Name of channel: Tanjungan Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Area (m <sup>2</sup> )
	(m)	unit (m)	length		Area (m <sup>2</sup> )	length		Area (m <sup>2</sup> )	
			unit (m)	average (m)		unit (m)	average (m)		
TM00									
TM01	95.3	95.3							
TM02	192.3	97.0							
TM03	281.2	88.9							
TM04	363.7	82.5							
TM05	464.7	101.0							
TM06	581.7	117.0							
TM07	654.3	72.6							
TM08	754.1	99.8							
TM10	858.2	104.1							
TM11	949.5	91.3							
TM12	1039.6	90.1							
TM13	1082.6	43.0							
TM14	1198.3	115.7							
TM15	1281.2	82.9							
TM16	1357.3	76.1							
TM16+47.1	1404.4	47.1							
TM16+58.3	1415.6	11.2							
TM18+17.5	1472.8		Bina Marga's Area			Bina Marga's Area			
TM18+28.2	1483.5	10.7	Bina Marga's Area			Bina Marga's Area			
TM19	1552.7	69.2	3.5	1.75	122				122
TM20	1652.8	100.1	3.3	3.40	341				341
TM21	1746.1	93.3	3.1	3.20	299				299
TM22	1840.4	94.3		1.55	147	4.9	2.45	232	379
TM23	1952.3	111.9					2.45	275	275
TM25	1977.7	25.4							
TM26	2011.9	34.2							
TM30	2043.8	31.9				5.6	2.80	90	90
TM33	2181.2	137.4				5.5	5.55	763	763
TM34	2306.4	125.2				6.2	5.85	733	733
TM35	2415.0	108.6				8.2	7.20	782	782
TM36	2508.2	93.2				6.3	7.25	676	676
EP	2535.8	27.6				6.3	6.30	174	174
Total					909			3,725	4,634

Name of work: Stripping, grubbing and clearing  
 Package 3

No. 2.2/02

Name of channel: Gede/Bor Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Area (m2)
	(m)	unit (m)	length		Area (m2)	length		Area (m2)	
			unit (m)	average (m)		unit (m)	average (m)		
B.P									
GM-00	2.8	2.8							
GM-02	19.9	17.1							
GM02+0.1	20.0	0.1							
GM-03	49.5	29.5							
GM-04	169.6	120.1							
GM-05	258.6	89.0							
GM-06	374.1	115.5							
GM-07	423.5	49.4							
GM-08	536.3	112.8							
GM-10	619.8	83.5	5.2	2.60	218				218
GM-11	697.1	77.3	5.3	5.25	406				406
GM-12	785.3	88.2	6.6	5.95	525				525
GM-13	886.6	101.3		3.30	335				335
GM-14	974.7	88.1							
GM-15	1072.2	97.5							
GM-16	1150.1	77.9							
E.P	1203.0	52.9							
Total					1,484				1,484

Name of work: Stripping, grubbing and clearing  
 Package 3

No. 2.2/02

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Area (m <sup>2</sup> )
	(m)	unit (m)	length		Area (m <sup>2</sup> )	length		Area (m <sup>2</sup> )	
			unit (m)	average (m)		unit (m)	average (m)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9				5.4	2.70	359	359
CM04	292.3	137.7					2.70	372	372
CM05	392.4	100.1							
CM5+20.0	412.4	20.0							
CM06	466.4	54.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4							
CM16	1312.8	75.8	10.5	5.25	398				398
CM17	1446.0	133.2	9.2	9.85	1,313				1,313
CM18	1544.5	98.5	7.8	8.50	838	11.2	5.60	552	1,390
CM19	1613.6	69.1	8.6	8.20	567	6.4	8.80	609	1,176
CM20	1740.7	127.1	7.9	8.25	1,049	6.3	6.35	808	1,857
CM21	1832.5	91.8	10.9	9.40	863	5.4	5.85	538	1,401
CM22	1901.7	69.2	11.5	11.20	776	4.1	4.75	329	1,105
CM23	2001.5	99.8	9.8	10.65	1,063	5.1	4.60	460	1,523
CM24	2102.9	101.4	5.9	7.85	796		2.55	259	1,055
CM25	2194.3	91.4	10.5	8.20	750				750
CM26	2304.8	110.5	9.5	10.00	1,105				1,105
CM27	2448.0	143.2		4.75	681				681
CM29	2599.3	151.3							
CM30	2698.3	99.0	5.8	2.90	288	8.9	4.45	441	729
CM31	2803.5	105.2		2.90	306	8.8	8.85	932	1,238
CM32	2933.5	130.0				8.2	8.50	1,105	1,105
CM34	3047.4	113.9					4.10	467	467
CM36	3095.6	48.2	5.5	2.75	133	7.5	3.75	181	314
CM37	3219.0	123.4	11.5	8.50	1,049	7.9	7.70	951	2,000
CM38	3339.1	120.1	9.7	10.60	1,274	9.1	8.50	1,021	2,295
CM39	3425.5	86.4	10.7	10.20	882	3.4	6.25	540	1,422
CM40	3467.5	42.0		5.35	225		1.70	72	297
CM41	3556.9	89.4	7.3	3.65	327	5.1	2.55	228	555
CM42	3653.4	96.5	6.9	7.10	686	6.4	5.75	555	1,241
CM43	3777.2	123.8	7.2	7.05	873	5.5	5.95	737	1,610
CM45	3916.3	139.1		3.60	501	7.1	6.30	877	1,378
CM47	4022.2	105.9				6.8	6.95	737	737
CM48	4110.3	88.1	4.2	2.10	186	7.1	6.95	613	799
CM49	4230.2	119.9		2.10	252		3.55	426	678
E.P	4231.2	1.0							
Total					17,181			14,169	31,350

Name of work: Excavation for Levee

No. 2.2/03

Package 1

Name of channel: Kanal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total	Stage
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)			
B.P(new)										
KM-00	62.0	62.0								
KM-01	182.6	120.6	3.27	1.6	198	4.37	2.19	264	462	
KM-02	269.1	86.5	4.27	3.8	327	5.35	4.86	421	748	
KM-03	321.8	52.7	5.16	4.7	249	4.63	4.99	263	512	
KM-05	441.1	119.3	5.45	5.3	633	5.30	4.97	593	1,226	
KM-06	543.8	102.7		2.7	280	5.43	5.37	551	831	
KM-07	659.5	115.7				3.80	4.62	534	534	
KM-08	805.6	146.1	4.10	2.1	300	3.70	3.75	548	848	
KM-09	868.5	62.9	4.70	4.4	277	3.40	3.55	224	501	
KM-10	978.1	109.6	4.74	4.7	518	4.11	3.76	412	930	
KM-11	1,064.3	86.2	4.55	4.6	401	4.22	4.17	360	761	
KM-12	1,179.4	115.1	5.15	4.9	559	4.17	4.20	483	1,042	
KM-13	1,266.9	87.5	4.54	4.8	424		2.09	183	607	
KM-14	1,357.3	90.4	5.31	4.9	446				446	
KM14+23.4	1,380.7	23.4	5.31	5.3	125	Bina Marga's Area			125	9,573
			Bina Marga's Area							
KM16+22.8	1,443.3	22.8		2.7	61				61	
KM16+36.8	1,457.3	14.0								
KM-17	1,482.5	25.2				3.92	1.96	50	50	
KM-18	1,589.2	106.7				5.15	4.54	484	484	
KM-20	1,702.5	113.3				4.76	4.96	562	562	
KM-21	1,733.2	30.7				3.97	4.37	135	135	
KM-22	1,821.2	88.0				4.05	4.01	353	353	
KM-23	1,916.7	95.5				4.96	4.51	431	431	
KM-24	1,988.7	72.0				4.92	4.94	356	356	
KM-25	2,084.6	95.9				5.16	5.04	484	484	
KM-26	2,166.9	82.3				4.90	5.03	414	414	
KM-27	2,286.8	119.9	4.20	2.1	252	3.80	4.35	522	774	
KM-28	2,395.4	108.6	4.10	4.2	451	3.40	3.60	391	842	
KM-29	2,473.2	77.8	4.24	4.2	325	4.74	4.07	317	642	
KM-31	2,540.7	67.5	4.76	4.5	304	4.70	4.72	319	623	
KM-32	2,614.2	73.5	4.17	4.5	329	4.45	4.58	337	666	
KM-33	2,713.9	99.7		2.1	208	4.66	4.56	455	663	
KM-34	2,769.5	55.6				4.53	4.60	256	256	
KM-35	2,822.7	53.2				4.31	4.42	236	236	
KM-38	3,001.1	178.4					2.16	385	385	
KM-40	3,126.7	125.6								
KM-42	3,281.6	154.9								
KM-43	3,393.3	111.7								
KM-45	3,454.0	60.7								
KM-46	3,527.4	73.4								
KM-47	3,618.9	91.5	4.45	2.2	204				204	
KM-48	3,700.4	81.5	4.70	4.6	373				373	8,994
KM-50	3,831.3	130.9		2.4	308				308	
KM-51	3,926.0	94.7								
KM-52	4,022.9	96.9								
KM-54	4,110.0	87.1								
KM-55	4,247.9	137.9								
KM-56	4,370.6	122.7								
KM-57	4,462.9	92.3								
Total					7,552			11,323	18,875	18,875

Name of work: Excavation for Levee

No. 2.2/03

Package 2

Name of channel: Tanjungan Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
TM00									
TM01	95.3	95.3							
TM02	192.3	97.0							
TM03	281.2	88.9							
TM04	363.7	82.5							
TM05	464.7	101.0							
TM06	581.7	117.0							
TM07	654.3	72.6							
TM08	754.1	99.8							
TM10	858.2	104.1							
TM11	949.5	91.3							
TM12	1039.6	90.1							
TM13	1082.6	43.0							
TM14	1198.3	115.7							
TM15	1281.2	82.9							
TM16	1357.3	76.1							
TM16+47.1	1404.4	47.1							
TM16+58.3	1415.6	11.2							
TM18+17.5	1472.8		Bina Marga's Area			Bina Marga's Area			
TM18+28.2	1483.5	10.7	4.75			4.80			
TM19	1552.7	69.2	4.57	4.66	323	4.80	4.80	52	52
TM20	1652.8	100.1	4.76	4.67	467	5.00	4.90	340	663
TM21	1746.1	93.3	4.81	4.79	447	5.00	5.00	501	968
TM22	1840.4	94.3		2.41	227	4.80	4.90	458	905
TM23	1952.3	111.9					2.40	227	454
TM25	1977.7	25.4							
TM26	2011.9	34.2							
TM30	2043.8	31.9							
TM33	2181.2	137.4							
TM34	2306.4	125.2							
TM35	2415.0	108.6							
TM36	2508.2	93.2							
EP	2535.8	27.6							
Total					1,464			1,578	3,042

Name of work: Excavation for Levee

No. 2.2/03

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM03	154.6	134.4							
CM04	292.3	137.7							
CM05	392.4	100.1							
CM06	466.4	74.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1,056.9	94.0							
CM14	1,173.6	116.7							
CM15	1,237.0	63.4							
CM16	1,312.8	75.8	3.26	1.63	124				124
CM17	1,446.0	133.2	3.14	3.20	427				427
CM18	1,544.5	98.5	4.56	3.85	380	1.90	0.95	94	474
CM19	1,613.6	69.1	4.12	4.34	300	4.36	3.13	217	517
CM20	1,740.7	127.1	3.48	3.80	483	2.53	3.45	438	921
CM21	1,832.5	91.8	2.77	3.13	287	5.32	3.93	361	648
CM22	1,901.7	69.2	1.45	2.11	147	4.92	5.12	355	502
CM23	2,001.5	99.8	4.29	2.87	287	4.71	4.82	481	768
CM24	2,102.9	101.4	4.66	4.48	454		2.36	239	693
CM25	2,194.3	91.4	3.30	3.98	364				364
CM26	2,304.8	110.5	3.40	3.35	371				371
CM27	2,448.0	143.2		1.70	244				244
CM29	2,599.3	151.3							
CM30	2,698.3	99.0	4.06	2.03	201	3.88	1.94	193	394
CM31	2,803.5	105.2		2.03	214	4.21	4.05	426	640
CM32	2,933.5	130.0				3.48	3.85	500	500
CM34	3,047.4	113.9	6.15	3.08	351	5.51	4.50	512	863
CM36	3,095.6	48.2	3.31	4.73	228	3.48	4.50	217	445
CM37	3,219.0	123.4	3.15	3.23	399	3.56	3.52	435	834
CM38	3,339.1	120.1	3.65	3.40	409	3.23	3.40	408	817
CM39	3,425.5	86.4	4.06	3.86	334		1.62	140	474
CM40	3,467.5	42.0	5.37	4.72	199				199
CM41	3,556.9	89.4	4.46	4.92	440	4.65	2.33	208	648
CM42	3,653.4	96.5	4.04	4.25	411	4.03	4.34	419	830
CM43	3,777.2	123.8		2.02	251		2.02	250	501
CM45	3,916.3	139.1							
CM47	4,022.2	105.9							
CM48	4,110.3	88.1							
CM49	4,230.2	119.9							
E.P	4,231.2	1.0							
Total					7,305			5,893	13,198



Name of work: Excavation for inspection/relocation road

No. 2.2/03

Package 1

Name of channel: Kamal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total	Stage
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)			
B.P(new)										
KM-00	62.0	62.0								
KM-01	182.6	120.6								
KM-02	269.1	86.5								
KM-03	321.8	52.7								
KM-05	441.1	119.3								
KM-06	543.8	102.7								
KM-07	659.5	115.7								
KM-08	805.6	146.1								
KM-09	868.5	62.9								
KM-10	978.1	109.6								
KM-11	1,064.3	86.2								
KM-12	1,179.4	115.1								
KM-13	1,266.9	87.5								
KM-14	1,357.3	90.4								
KM14+23.4	1,380.7	23.4								
			Bina Marga's Area			Bina Marga's Area				
KM16+22.8	1,443.3	22.8								
KM16+36.8	1,457.3	14.0								
KM16+51.6	1,472.1	14.8								
KM-17	1,482.5	10.4								
KM-18	1,589.2	106.7								
KM-20	1,702.5	113.3								
KM-21	1,733.2	30.7								
KM-22	1,821.2	88.0								
KM-23	1,916.7	95.5								
KM-24	1,988.7	72.0								
KM-25	2,084.6	95.9								
KM-26	2,166.9	82.3								
KM-27	2,286.8	119.9								
KM-28	2,395.4	108.6								
KM-29	2,473.2	77.8								
KM-31	2,540.7	67.5								
KM-32	2,614.2	73.5								
KM-33	2,713.9	99.7								
KM-34	2,769.5	55.6								
KM-35	2,822.7	53.2								
KM-38	3,001.1	178.4	1.42	0.71	127				127	
KM-40	3,126.7	125.6		0.71	90				90	
KM-42	3,281.6	154.9								
KM-43	3,393.3	111.7								
KM-45	3,454.0	60.7				1.4	0.70	43	43	
KM-46	3,527.4	73.4				1.25	1.33	98	98	
KM-47	3,618.9	91.5					0.63	58	58	
KM-48	3,700.4	81.5								
KM-50	3,831.3	130.9								
KM-51	3,926.0	94.7				0.7	0.35	34	34	
KM-52	4,022.9	96.9					0.35	34	34	
KM-54	4,110.0	87.1								
KM-55	4,247.9	137.9				1.15	0.58	80	80	
KM-56	4,370.6	122.7		No works			0.58	71	71	
KM-57	4,462.9	92.3		No works						
Total					217			418	635	
									635	

Name of work: Excavation for inspection/relocation road

No. 2.2/03

Package 1

Name of channel: Kamat Drainage Channel (Branch)

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
KE00									
KE01	36.6	36.6				1.60	0.80	30	30
KE02	134.0	97.4				1.60	1.60	156	156
KE03	272.3	138.3				1.60	1.60	222	222
KE04	372.7	100.4				1.60	1.60	161	161
KE07	486.8	114.1				1.60	1.60	183	183
KE08	568.3	81.5				1.60	1.60	131	131
KE10	626.2	57.9				1.60	1.60	93	93
KE11	714.3	88.1					0.80	71	71
KE12	785.9	71.6							
KE13	894.7	108.8							
KE14	944.7	50.0	1.60	0.80	40.0				40
KE15	1020.1	75.4		0.80	61.0				61
KE16	1107.7	87.6							
KE17	1174.1	66.4	1.60	0.80	54.0				54
KE18	1265.4	91.3	1.60	1.60	147.0				147
KE19	1376.9	111.5		0.80	90.0				90
KE20	1421.9	45.0							
KE21	1497.0	75.1							
KE23	1536.7	39.7							
KE24	1637.4	100.7							
KE25	1718.5	81.1							
KE26	1870.3	151.8							
KE27	1988.1	117.8							
KE28	2058.7	70.6							
KE29	2132.0	73.3							
KE30	2298.5	166.5							
KE31	2474.4	175.9	Concrete ditch			Concrete ditch			
KE32	2580.3	105.9	Concrete ditch			Concrete ditch			
KE33	2754.7	174.4	Concrete ditch			Concrete ditch			
Total					392.0			1,047	1,439

Name of work: Excavation for inspection/relocation road

No. 2.2/03

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9				2.10	1.05	140	140
CM04	292.3	137.7				7.10	4.60	634	634
CM05	392.4	100.1				8.05	7.58	759	759
CM5+20.0	412.4	20.0					4.03	81	81
CM06	466.4	54.0				1.40	0.70	38	38
CM07	569.0	102.6	1.32	0.66	68		0.70	72	140
CM08	636.6	67.6	1.44	1.38	94				94
CM09	808.2	171.6		0.72	124				124
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4							
CM16	1312.8	75.8							
CM17	1446.0	133.2							
CM18	1544.5	98.5				0.12	0.06	6	6
CM19	1613.6	69.1					0.06	5	5
CM20	1740.7	127.1							
CM21	1832.5	91.8							
CM22	1901.7	69.2							
CM23	2001.5	99.8							
CM24	2102.9	101.4							
CM25	2194.3	91.4							
CM26	2304.8	110.5							
CM27	2448.0	143.2							
CM29	2599.3	151.3							
CM30	2698.3	99.0							
CM31	2803.5	105.2							
CM32	2933.5	130.0							
CM34	3047.4	113.9				1.00	0.50	57	57
CM36	3095.6	48.2	2.05	1.03	50		0.50	25	75
CM37	3219.0	123.4		1.03	127				127
CM38	3339.1	120.1							
CM39	3425.5	86.4							
CM40	3467.5	42.0	1.58	0.79	34				34
CM41	3556.9	89.4		0.79	71				71
CM42	3653.4	96.5							
CM43	3777.2	123.8							
CM45	3916.3	139.1							
CM47	4022.2	105.9							
CM48	4110.3	88.1							
CM49	4230.2	119.9							
E.P	4231.2	1.0							
Total					568			1,817	2,385

Name of work: Embankment for levee earth type  
 Package 1  
 Name of channel: Kamal Drainage Channel (Main)

No. 2.2/04

Section No.	Distance		Left Bank			Right Bank			Total	Stage
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)			
B.P(new)										
KM-00	62.0	62.0				4.52				
KM-01	182.6	120.6	0.82	0.41	50	4.52	4.52	546	596	
KM-02	269.1	86.5	0.58	0.70	61		2.26	196	257	
KM-03	321.8	52.7	3.25	1.92	101	5.11	2.56	135	236	
KM-05	441.1	119.3		1.63	194		2.56	305	499	
KM-06	543.8	102.7	2.44	1.22	126				126	
KM-07	659.5	115.7	5.45	3.95	457	7.15	3.58	414	871	
KM-08	805.6	146.1	2.80	4.13	603	8.85	8.00	1,169	1,772	
KM-09	868.5	62.9	3.35	3.08	194	11.4	10.13	637	831	
KM-10	978.1	109.6	1.31	2.33	256	6.22	8.81	966	1,222	
KM-11	1,064.3	86.2	1.84	1.58	136	5.72	5.97	515	651	
KM-12	1,179.4	115.1	0.32	1.08	125	5.65	5.69	655	780	
KM-13	1,266.9	87.5		0.16	14	5.15	5.40	473	487	
KM-14	1,357.3	90.4				5.7	5.43	491	491	
KM14+23.4	1,380.7	23.4					2.85	67	67	8,886
			Bina Marga's Area			Bina Marga's Area				
KM16+22.8	1,443.3	22.8								
KM16+36.8	1,457.3	14.0								
KM16+51.6	1,472.1	14.8								
KM-17	1,482.5	10.4				7.2	3.60	38	38	
KM-18	1,589.2	106.7				1.5	4.35	465	465	
KM-20	1,702.5	113.3				3.05	2.28	258	258	
KM-21	1,733.2	30.7				3.95	3.50	108	108	
KM-22	1,821.2	88.0				7.14	5.55	488	488	
KM-23	1,916.7	95.5				2.38	4.76	455	455	
KM-24	1,988.7	72.0				2.45	2.42	174	174	
KM-25	2,084.6	95.9				1.93	2.19	211	211	
KM-26	2,166.9	82.3				1.85	1.89	156	156	
KM-27	2,286.8	119.9	6.00	3.00	360	8.9	5.38	645	1,005	
KM-28	2,395.4	108.6	6.90	6.45	701	11.15	10.03	1,089	1,790	
KM-29	2,473.2	77.8	7.75	7.33	570	10	10.58	823	1,393	
KM-31	2,540.7	67.5	3.95	5.85	395	4.65	7.33	495	890	
KM-32	2,614.2	73.5	7.80	5.88	432	5.65	5.15	379	811	
KM-33	2,713.9	99.7		3.90	389	3.5	4.58	457	846	
KM-34	2,769.5	55.6				3.1	3.30	184	184	
KM-35	2,822.7	53.2				6.2	4.65	248	248	
KM-38	3,001.1	178.4					3.10	554	554	
KM-40	3,126.7	125.6								
KM-42	3,281.6	154.9								
KM-43	3,393.3	111.7								
KM-45	3,454.0	60.7								
KM-46	3,527.4	73.4	2.43	1.22	90				90	
KM-47	3,618.9	91.5	4.24	3.34	306				306	
KM-48	3,700.4	81.5	5.65	4.95	404				404	10,874
KM-50	3,831.3	130.9		2.83	370				370	
KM-51	3,926.0	94.7								
KM-52	4,022.9	96.9								
KM-54	4,110.0	87.1								
KM-55	4,247.9	137.9								
KM-56	4,370.6	122.7	No works							
KM-57	4,462.9	92.3	No works							370
Total					6,334			13,796	20,130	20,130

Name of work: Embankment for levee earth type

No. 2.2/04

Package 2

Name of channel: Tanjungan Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
TM00									
TM01	95.3	95.3							
TM02	192.3	97.0							
TM03	281.2	88.9							
TM04	363.7	82.5							
TM05	464.7	101.0							
TM06	581.7	117.0							
TM07	654.3	72.6							
TM08	754.1	99.8							
TM10	858.2	104.1							
TM11	949.5	91.3							
TM12	1039.6	90.1							
TM13	1082.6	43.0							
TM14	1198.3	115.7							
TM15	1281.2	82.9							
TM16	1357.3	76.1							
TM16+47.1	1404.4	47.1							
TM16+58.3	1415.6	11.2							
TM18+17.5	1472.8		Bina Marga's Area			Bina Marga's Area			
TM18+28.2	1483.5	10.7	Bina Marga's Area						
TM19	1552.7	69.2	1.85	1.85	129				129
TM20	1652.8	100.1	1.60	1.73	173				173
TM21	1746.1	93.3	1.25	1.43	133				133
TM22	1840.4	94.3		0.63	59	4.1	2.05	194	253
TM23	1952.3	111.9					2.05	230	230
TM25	1977.7	25.4							
TM26	2011.9	34.2							
TM30	2043.8	31.9							
TM33	2181.2	137.4							
TM34	2306.4	125.2							
TM35	2415.0	108.6							
TM36	2508.2	93.2							
EP	2535.8	27.6							
Total					494			424	918

Name of work: Embankment for levee earth type

No. 2.2/04

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2		Outlet structure			Outlet structure		
CM02	20.2	3.0		Outlet structure			Outlet structure		
CM02+1.5	21.7	1.5		Outlet structure			Outlet structure		
CM03	154.6	132.9		Open culvert			Open culvert		
CM04	292.3	137.7		Open culvert			Open culvert		
CM05	392.4	100.1		Open culvert			Open culvert		
CM5+20.0	412.4	20.0							
CM06	466.4	54.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4							
CM16	1312.8	75.8	15.70	7.85	596				596
CM17	1446.0	133.2	10.05	12.88	1,715				1,715
CM18	1544.5	98.5	5.55	7.80	769	9.6	4.80	473	1,242
CM19	1613.6	69.1	6.95	6.25	432	6.9	8.25	571	1,003
CM20	1740.7	127.1	6.70	6.83	868	6.15	6.53	830	1,698
CM21	1832.5	91.8	13.80	10.25	941	6.13	6.14	564	1,505
CM22	1901.7	69.2	16.73	15.27	1,057	2.96	4.55	315	1,372
CM23	2001.5	99.8	12.94	14.84	1,481	4.02	3.49	349	1,830
CM24	2102.9	101.4	2.96	7.95	807		2.01	204	1,011
CM25	2194.3	91.4	12.45	7.71	705				705
CM26	2304.8	110.5	10.51	11.48	1,269				1,269
CM27	2448.0	143.2		5.26	753				753
CM29	2599.3	151.3							
CM30	2698.3	99.0	5.23	2.62	259	8.93	4.47	443	702
CM31	2803.5	105.2		2.62	276	8.84	8.89	935	1,211
CM32	2933.5	130.0				7.25	8.05	1,046	1,046
CM34	3047.4	113.9					3.63	413	413
CM36	3095.6	48.2	1.75	0.88	43	8.39	4.20	203	246
CM37	3219.0	123.4	15.94	8.85	1,092	11.16	9.78	1,207	2,299
CM38	3339.1	120.1	10.64	13.29	1,597	12.7	11.93	1,433	3,030
CM39	3425.5	86.4	13.35	12.00	1,037	2.15	7.43	642	1,679
CM40	3467.5	42.0		6.68	281		1.08	46	327
CM41	3556.9	89.4	5.42	2.71	243	4.15	2.08	186	429
CM42	3653.4	96.5	4.08	4.75	459	6.77	5.46	527	986
CM43	3777.2	123.8		2.04	253		3.39	420	673
CM45	3916.3	139.1							
CM47	4022.2	105.9							
CM48	4110.3	88.1							
CM49	4230.2	119.9							
E.P	4231.2	1.0							
Total					16,933			10,807	27,740

Name of work: Embankment for inspection/relocation road

No. 2.2/04

Package 1

Name of channel: Kanal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total	Stage
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)			
B.P(new)										
KM-00	62.0	62.0								
KM-01	182.6	120.6								
KM-02	269.1	86.5								
KM-03	321.8	52.7								
KM-05	441.1	119.3								
KM-06	543.8	102.7								
KM-07	659.5	115.7								
KM-08	805.6	146.1								
KM-09	868.5	62.9								
KM-10	978.1	109.6								
KM-11	1,064.3	86.2								
KM-12	1,179.4	115.1								
KM-13	1,266.9	87.5								
KM-14	1,357.3	90.4								
KM14+23.4	1,380.7	23.4								
			Bina Marga's Area			Bina Marga's Area				
KM16+22.8	1,443.3	22.8								
KM16+36.8	1,457.3	14.0								
KM16+51.6	1,472.1	14.8								
KM-17	1,482.5	10.4								
KM-18	1,589.2	106.7								
KM-20	1,702.5	113.3								
KM-21	1,733.2	30.7								
KM-22	1,821.2	88.0								
KM-23	1,916.7	95.5								
KM-24	1,988.7	72.0								
KM-25	2,084.6	95.9								
KM-26	2,166.9	82.3								
KM-27	2,286.8	119.9								
KM-28	2,395.4	108.6								
KM-29	2,473.2	77.8								
KM-31	2,540.7	67.5								
KM-32	2,614.2	73.5								
KM-33	2,713.9	99.7	3.80	1.90	190				190	
KM-34	2,769.5	55.6	4.20	4.00	223				223	
KM-35	2,822.7	53.2	3.25	3.73	199				199	
KM-38	3,001.1	178.4		1.63	290				290	
KM-40	3,126.7	125.6	3.49	1.75	220	2.64	1.32	166	386	
KM-42	3,281.6	154.9	4.21	3.85	597	2.66	2.65	411	1,008	
KM-43	3,393.3	111.7		2.11	236	5.98	4.32	483	719	
KM-45	3,454.0	60.7					2.99	182	182	
KM-46	3,527.4	73.4								
KM-47	3,618.9	91.5								
KM-48	3,700.4	81.5								
KM-50	3,831.3	130.9								
KM-51	3,926.0	94.7								
KM-52	4,022.9	96.9				2.05	1.03	100	100	
KM-54	4,110.0	87.1					1.03	90	90	
KM-55	4,247.9	137.9								
KM-56	4,370.6	122.7	No works			1.4	0.70	86	86	
KM-57	4,462.9	92.3	No works			2.2	1.80	167	167	443
Total					1,955			1,685	3,640	3,640

Name of work: Embankment for inspection/relocation road

No. 2.2/04

Package 1

Name of channel: Kamal Drainage Channel (Branch)

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
KE00									
KE01	36.6	36.6							
KE02	134.0	97.4							
KE03	272.3	138.3							
KE04	372.7	100.4							
KE07	486.8	114.1							
KE08	568.3	81.5							
KE10	626.2	57.9							
KE11	714.3	88.1							
KE12	785.9	71.6							
KE13	894.7	108.8							
KE14	944.7	50.0							
KE15	1020.1	75.4							
KE16	1107.7	87.6							
KE17	1174.1	66.4							
KE18	1265.4	91.3							
KE19	1376.9	111.5							
KE20	1421.9	45.0							
KE21	1497.0	75.1							
KE23	1536.7	39.7	3.81						
KE24	1637.4	100.7	3.81	3.81	384	4.74	2.37	239	623
KE25	1718.5	81.1	6.48	5.15	418	6.12	5.43	441	859
KE26	1870.3	151.8	6.20	6.34	963	4.98	5.55	843	1,806
KE27	1988.1	117.8	3.66	4.93	581	6.02	5.50	648	1,229
KE28	2058.7	70.6	2.95	3.31	234	4	5.01	354	588
KE29	2132.0	73.3	5.55	4.25	312	5	4.50	330	642
KE30	2298.5	166.5	2.95	4.25	708	2.05	3.53	587	1,295
KE31	2474.4	175.9							
KE32	2580.3	105.9							
KE33	2754.7	174.4							
Total					3,600			3,442	7,042



Name of work: Embankment for inspection/relocation road

No. 2.2/04

Package 2

Name of channel: Tanjung Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
TM00									
TM01	95.3	95.3							
TM02	192.3	97.0							
TM03	281.2	88.9							
TM04	363.7	82.5							
TM05	464.7	101.0							
TM06	581.7	117.0							
TM07	654.3	72.6							
TM08	754.1	99.8							
TM10	858.2	104.1							
TM11	949.5	91.3							
TM12	1039.6	90.1							
TM13	1082.6	43.0							
TM14	1198.3	115.7							
TM15	1281.2	82.9							
TM16	1357.3	76.1							
TM16+47.1	1404.4	47.1							
TM16+58.3	1415.6	11.2							
			Bina Marga's Area			Bina Marga's Area			
TM18+17.5	1472.8		Bina Marga's Area						
TM18+28.2	1483.5	10.7							
TM19	1552.7	69.2							
TM20	1652.8	100.1							
TM21	1746.1	93.3							
TM22	1840.4	94.3							
TM23	1952.3	111.9							
TM25	1977.7	25.4							
TM26	2011.9	34.2							
TM30	2043.8	31.9				1.34	0.67	22	22
TM33	2181.2	137.4				1.07	1.21	166	166
TM34	2306.4	125.2				3.15	2.11	265	265
TM35	2415.0	108.6				11.05	7.10	772	772
TM36	2508.2	93.2				4.00	7.53	702	702
EP	2535.8	27.6				4.00	4.00	111	111
Total								2,038	2,038

Name of work: Embankment for inspection/relocation road

No. 2.2/04

Package 3

Name of channel: Gede/Bor Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
GM-00	2.8	2.8							
GM-02	19.9	17.1							
GM02+0.1	20.0	0.1							
GM-03	49.5	29.5							
GM-04	169.6	120.1							
GM-05	258.6	89.0							
GM-06	374.1	115.5							
GM-07	423.5	49.4							
GM-08	536.3	112.8							
GM-10	619.8	83.5	2.35	1.18	99				99
GM-11	697.1	77.3	2.80	2.58	200				200
GM-12	785.3	88.2	6.65	4.73	417				417
GM-13	886.6	101.3		3.33	337				337
GM-14	974.7	88.1							
GM-15	1072.2	97.5							
GM-16	1150.1	77.9							
E.P	1203.0	52.9							
Total					1,053				1,053

Name of work: Embankment for inspection/relocation road  
 Package 3

No. 2.2/04

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9							
CM04	292.3	137.7							
CM05	392.4	100.1							
CM5+20.0	412.4	20.0							
CM06	466.4	54.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4							
CM16	1312.8	75.8							
CM17	1446.0	133.2							
CM18	1544.5	98.5							
CM19	1613.6	69.1							
CM20	1740.7	127.1							
CM21	1832.5	91.8							
CM22	1901.7	69.2							
CM23	2001.5	99.8							
CM24	2102.9	101.4							
CM25	2194.3	91.4							
CM26	2304.8	110.5							
CM27	2448.0	143.2							
CM29	2599.3	151.3							
CM30	2698.3	99.0							
CM31	2803.5	105.2							
CM32	2933.5	130.0							
CM34	3047.4	113.9							
CM36	3095.6	48.2							
CM37	3219.0	123.4							
CM38	3339.1	120.1							
CM39	3425.5	86.4							
CM40	3467.5	42.0							
CM41	3556.9	89.4							
CM42	3653.4	96.5							
CM43	3777.2	123.8	4.25	2.13	264	6.4	3.20	397	661
CM45	3916.3	139.1		2.13	296	9.05	7.73	1,075	1,371
CM47	4022.2	105.9				4.1	6.58	697	697
CM48	4110.3	88.1	4.30	2.15	190	4.6	4.35	384	574
CM49	4230.2	119.9		2.15	258		2.30	276	534
E.P	4231.2	1.0							
Total					1,008			2,829	3,837

Name of work: Embankment for inspection/relocation road  
 Package 3

No. 2.2/04

Name of channel: Meruya Area

Section No.	Distance		Left Bank		Volume (m3)
	(m)	unit (m)	Area		
			unit (m2)	average (m2)	
MM101					
MM102	98.9	98.9			
MM103	201.3	102.4			
MM104	294.2	92.9			
MM104+65	359.2	65.0			
MM104+115	409.2	50.0			
MM00-20	465.9	56.7			
MM302-10	504.3	38.4			
MM302	514.3	10.0			
MM303a	590.6	76.3			
MM303b	647.1	56.5			
MM307	714.7	67.6			
MM308	772.3	57.6			
MM309	819.1	46.8			
MM310	863.4	44.3			
MM310+4.7	868.1	4.7			
MM10	883.3	15.2	4.67	2.34	36
MM11	952.7	69.4	8.02	6.35	441
MM12	1047.6	94.9	6.93	7.48	710
MM13	1129.6	82.0	0.93	3.93	323
MM14	1196.3	66.7	5.92	3.43	229
MM15	1318.6	122.3	5.92	5.92	725
MM17	1442.3	123.7	4.93	5.43	672
MM18	1505.6	63.3	5.64	5.29	335
MM19	1600.1	94.5	5.12	5.38	509
MM20	1665.6	65.5	6.78	5.95	390
MM21	1698.2	32.6	5.16	5.97	195
MM21+20.0	1718.2	20.0		2.58	52
MM21+46.0	1744.2	26.0			
MM22	1775.2	31.0			
MM22+42.2	1817.4	42.2			
MM23	1829.4	12.0			
MM24	1893.8	64.4			
MM25	1942.6	48.8			
MM25+89.6	2032.2	89.6			
MM26	2053.5	21.3			
MM27	2161.3	107.8			
MM28	2268.5	107.2			
EP	2269.1	0.6			
Total					4,617

Name of work: Dump filling

No. 2.2/05

Package 2

Name of channel: Tanjungan Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
Estuary		31.7	10.50	10.50	333	10.50	10.50	333	666
TM00			4.35			5.40			
TM01	95.3	95.3	1.45	2.90	277	5.95	5.68	541	818
TM02	192.3	97.0	11.75	6.60	641	12.85	9.40	912	1,553
TM03	281.2	88.9	4.35	8.05	716	13.09	12.97	1,154	1,870
TM04	363.7	82.5	4.75	4.55	376	11.99	12.54	1,035	1,411
TM05	464.7	101.0	12.22	8.49	857	6.02	9.01	910	1,767
TM06	581.7	117.0	13.85	13.04	1,526	11.65	8.84	1,034	2,560
TM07	654.3	72.6	8.90	11.38	826	11.45	11.55	839	1,665
TM08	754.1	99.8	15.60	12.25	1,223	20.10	15.78	1,575	2,798
TM10	858.2	104.1	4.35	9.98	1,039	4.35	12.23	1,273	2,312
TM11	949.5	91.3	25.25	14.80	1,352	25.70	15.03	1,372	2,724
TM13	1082.6	133.1	17.15	21.20	2,822	16.85	21.28	2,832	5,654
TM14	1198.3	115.7	31.62	24.39	2,822	31.35	24.10	2,789	5,611
TM15	1281.2	82.9	32.83	32.23	2,672	32.89	32.12	2,663	5,335
TM16	1357.3	76.1	29.44	31.14	2,370	33.17	33.03	2,514	4,884
TM16+47.1	1404.4	47.1	29.44	29.44	1,387	33.17	33.17	1,563	2,950
TM16+58.3	1415.6	11.2	29.44	29.44	331	Bina Marga's Area			331
TM18+17.5	1472.8		Bina Marga's Area			Bina Marga's Area			
TM18+28.2	1483.5	10.7							
TM19	1552.7	69.2				7.27	3.64	252	252
TM20	1652.8	100.1				7.24	7.26	727	727
TM21	1746.1	93.3				6.87	7.06	659	659
TM21+9.5	1755.6	9.5					3.44	33	33
TM22	1840.4	84.8							
TM23	1952.3	111.9							
TM25	1977.7	25.4							
TM26	2011.9	34.2							
TM30	2043.8	31.9							
TM33	2181.2	137.4							
TM34	2306.4	125.2							
TM35	2415.0	108.6							
TM36	2508.2	93.2							
EP	2535.8	27.6							
Total					21,570			25,010	46,580

Name of work: Backfilling with selected material

No. 2.2/05

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9							
CM04	292.3	137.7							
CM05	392.4	100.1							
CM5+20.0	412.4	20.0							
CM06	466.4	54.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4							
CM16	1312.8	75.8							
CM17	1446.0	133.2							
CM18	1544.5	98.5							
CM19	1613.6	69.1							
CM20	1740.7	127.1							
CM21	1832.5	91.8							
CM22	1901.7	69.2							
CM23	2001.5	99.8							
CM24	2102.9	101.4							
CM25	2194.3	91.4							
CM26	2304.8	110.5							
CM27	2448.0	143.2							
CM29	2599.3	151.3							
CM30	2698.3	99.0							
CM31	2803.5	105.2							
CM32	2933.5	130.0							
CM34	3047.4	113.9							
CM36	3095.6	48.2							
CM37	3219.0	123.4							
CM38	3339.1	120.1							
CM39	3425.5	86.4							
CM40	3467.5	42.0							
CM41	3556.9	89.4							
CM42	3653.4	96.5							
CM43	3777.2	123.8							
CM45	3916.3	139.1	2.39	1.19	166			166	
CM47	4022.2	105.9		1.19	127			127	
CM48	4110.3	88.1							
CM49	4230.2	119.9							
E.P	4231.2	1.0							
Total					293			293	

Name of work: Sod facing

No. 2.2/07

Package 1

Name of channel: Kamal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total Area (m2)	Stage	
	(m)	unit (m)	length		Area (m2)	length		Area (m2)			
			unit (m)	average (m)		unit (m)	average (m)				
B.P(new)											
KM-00	62.0	62.0									
KM-01	182.6	120.6				2.0	1.00	121	121		
KM-02	269.1	86.5					1.00	87	87		
KM-03	321.8	52.7	0.8	0.40	22	2.7	1.35	72	94		
KM-05	441.1	119.3		0.40	48		1.35	162	210		
KM-06	543.8	102.7	0.3	0.15	16				16		
KM-07	659.5	115.7	2.5	1.40	162	2.5	1.25	145	307		
KM-08	805.6	146.1	1.0	1.75	256	3.0	2.75	402	658		
KM-09	868.5	62.9	1.3	1.15	73	4.0	3.50	221	294		
KM-10	978.1	109.6		0.65	72	2.6	3.30	362	434		
KM-11	1,064.3	86.2				2.5	2.55	220	220		
KM-12	1,179.4	115.1	1.7	0.85	98	2.5	2.50	288	386		
KM-13	1,266.9	87.5		0.85	75	2.1	2.30	202	277		
KM-14	1,357.3	90.4				2.2	2.15	195	195		
KM14+23.4	1,380.7	23.4					1.10	26	26	3,325	
			Bina Marga's Area			Bina Marga's Area					
KM16+22.8	1,443.3	22.8									
KM16+36.8	1,457.3	14.0									
KM16+51.6	1,472.1	14.8									
KM-17	1,482.5	10.4				2.2	1.10	12	12		
KM-18	1,589.2	106.7				0.5	1.35	145	145		
KM-20	1,702.5	113.3				0.7	0.60	68	68		
KM-21	1,733.2	30.7				1.5	1.10	34	34		
KM-22	1,821.2	88.0				2.8	2.15	190	190		
KM-23	1,916.7	95.5				1.1	1.95	187	187		
KM-24	1,988.7	72.0				1.1	1.10	80	80		
KM-25	2,084.6	95.9				0.9	1.00	96	96		
KM-26	2,166.9	82.3				0.5	0.70	58	58		
KM-27	2,286.8	119.9	2.00	1.00	120	3.0	1.75	210	330		
KM-28	2,395.4	108.6	2.30	2.15	234	3.8	3.40	370	604		
KM-29	2,473.2	77.8	2.60	2.45	191	3.6	3.70	288	479		
KM-31	2,540.7	67.5	1.50	2.05	139	1.6	2.60	176	315		
KM-32	2,614.2	73.5	2.50	2.00	147	2.3	1.95	144	291		
KM-33	2,713.9	99.7	1.30	1.90	190	1.5	1.90	190	380		
KM-34	2,769.5	55.6	1.40	1.35	76	1.7	1.60	89	165		
KM-35	2,822.7	53.2	1.40	1.40	75	2.4	2.05	110	185		
KM-38	3,001.1	178.4		0.70	125		1.20	215	340		
KM-40	3,126.7	125.6	1.40	0.70	88	1.3	0.65	82	170		
KM-42	3,281.6	154.9	1.60	1.50	233	1.3	1.30	202	435		
KM-43	3,393.3	111.7		0.80	90	2.6	1.95	218	308		
KM-45	3,454.0	60.7					1.30	79	79		
KM-46	3,527.4	73.4	0.90	0.45	34				34		
KM-47	3,618.9	91.5	1.40	1.15	106				106		
KM-48	3,700.4	81.5	2.10	1.75	143				143	5,234	
KM-50	3,831.3	130.9		1.05	138				138		
KM-51	3,926.0	94.7									
KM-52	4,022.9	96.9				0.8	0.40	39	39		
KM-54	4,110.0	87.1					0.40	35	35		
KM-55	4,247.9	137.9									
KM-56	4,370.6	122.7	No works			0.6	0.30	37	37		
KM-57	4,462.9	92.3	No works			0.9	0.75	70	70	319	
Total					2,951			5,927	8,878	8,878	

Name of work: Sod facing

No. 2.2/07

Package 1

Name of channel: Kamal Drainage Channel (Branch)

Section No.	Distance		Left Bank			Right Bank			Total Area (m <sup>2</sup> )
	(m)	unit (m)	length		Area (m <sup>2</sup> )	length		Area (m <sup>2</sup> )	
			unit (m)	average (m)		unit (m)	average (m)		
KE00									
KE01	36.6	36.6							
KE02	134.0	97.4							
KE03	272.3	138.3							
KE04	372.7	100.4							
KE07	486.8	114.1							
KE08	568.3	81.5							
KE10	626.2	57.9							
KE11	714.3	88.1							
KE12	785.9	71.6							
KE13	894.7	108.8							
KE14	944.7	50.0							
KE15	1020.1	75.4							
KE16	1107.7	87.6							
KE17	1174.1	66.4							
KE18	1265.4	91.3							
KE19	1376.9	111.5							
KE20	1421.9	45.0							
KE21	1497.0	75.1							
KE23	1536.7	39.7							
KE24	1637.4	100.7	2.8	1.40	141	1.6	0.80	81	222
KE25	1718.5	81.1	2.4	2.60	211	1.6	1.60	130	341
KE26	1870.3	151.8	2.8	2.60	395	1.2	1.40	213	608
KE27	1988.1	117.8	1.8	2.30	271	1.8	1.50	177	448
KE28	2058.7	70.6	1.4	1.60	113	1.5	1.65	117	230
KE29	2132.0	73.3	2.3	1.85	136	1.8	1.65	121	257
KE30	2298.5	166.5	1.4	1.85	309	0.9	1.35	225	534
KE31	2474.4	175.9							
KE32	2580.3	105.9							
KE33	2754.7	174.4							
Total					1,576			1,064	2,640



Name of work: Sod facing

No. 2.2/08

Package 2

Name of channel: Tanjungan Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Area (m2)
	(m)	unit (m)	length		Area (m2)	length		Area (m2)	
			unit (m)	average (m)		unit (m)	average (m)		
TM00									
TM01	95.3	95.3							
TM02	192.3	97.0							
TM03	281.2	88.9							
TM04	363.7	82.5							
TM05	464.7	101.0							
TM06	581.7	117.0							
TM07	654.3	72.6							
TM08	754.1	99.8							
TM10	858.2	104.1							
TM11	949.5	91.3							
TM12	1039.6	90.1							
TM13	1082.6	43.0							
TM14	1198.3	115.7							
TM15	1281.2	82.9							
TM16	1357.3	76.1							
TM16+47.1	1404.4	47.1							
TM16+58.3	1415.6	11.2							
TM18+17.5	1472.8		Bina Marga's Area			Bina Marga's Area			
TM18+28.2	1483.5	10.7	Bina Marga's Area						
TM19	1552.7	69.2	0.6	0.30	21				21
TM20	1652.8	100.1	0.5	0.55	56				56
TM21	1746.1	93.3	0.4	0.45	42				42
TM22	1840.4	94.3		0.20	19	1.6	0.80	76	95
TM23	1952.3	111.9					0.80	90	90
TM25	1977.7	25.4							
TM26	2011.9	34.2							
TM30	2043.8	31.9				0.6	0.30	10	10
TM33	2181.2	137.4				0.6	0.60	83	83
TM34	2306.4	125.2				0.8	0.70	88	88
TM35	2415.0	108.6				3.6	2.20	239	239
TM36	2508.2	93.2				1.5	2.55	238	238
EP	2535.8	27.6				6.3	3.90	108	108
Total					138			932	1,070

Name of work: Sod facing

No. 2.2/08

Package 3

Name of channel: Gede/Bor Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Area (m <sup>2</sup> )
	(m)	unit (m)	length		Area (m <sup>2</sup> )	length		Area (m <sup>2</sup> )	
			unit (m)	average (m)		unit (m)	average (m)		
B.P			Outlet structure			Outlet structure			
GM-00	2.8	2.8	Outlet structure			Outlet structure			
GM-02	19.9	17.1	Outlet structure			Outlet structure			
GM02+0.1	20.0	0.1							
GM-03	49.5	29.5							
GM-04	169.6	120.1							
GM-05	258.6	89.0							
GM-06	374.1	115.5							
GM-07	423.5	49.4							
GM-08	536.3	112.8							
GM-10	619.8	83.5	0.5	0.25	21				21
GM-11	697.1	77.3	0.7	0.60	47				47
GM-12	785.3	88.2	2.0	1.35	120				120
GM-13	886.6	101.3		1.00	102				102
GM-14	974.7	88.1							
GM-15	1072.2	97.5							
GM-16	1150.1	77.9							
E.P	1203.0	52.9							
Total					290				290

Name of work: Sod facing

No. 2.2/08

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Area (m <sup>2</sup> )
	(m)	unit (m)	length		Area (m <sup>2</sup> )	length		Area (m <sup>2</sup> )	
			unit (m)	average (m)		unit (m)	average (m)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9				0.4	0.20	27	27
CM04	292.3	137.7					0.20	28	28
CM05	392.4	100.1							
CM5+20.0	412.4	20.0							
CM06	466.4	54.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4							
CM16	1312.8	75.8	2.4	1.20	91				91
CM17	1446.0	133.2	3.1	2.75	367				367
CM18	1544.5	98.5	1.7	2.40	237	2.3	1.15	114	351
CM19	1613.6	69.1	0.9	1.30	90	2.9	2.60	180	270
CM20	1740.7	127.1	1.0	0.95	121	2.3	2.60	331	452
CM21	1832.5	91.8	3.9	2.45	225	1.9	2.10	193	418
CM22	1901.7	69.2	5.0	4.45	308	1.2	1.55	108	416
CM23	2001.5	99.8	3.6	4.30	430	2.7	1.95	195	625
CM24	2102.9	101.4	1.1	2.35	239		1.35	137	376
CM25	2194.3	91.4	4.0	2.55	234				234
CM26	2304.8	110.5	3.4	3.70	409				409
CM27	2448.0	143.2		1.70	244				244
CM29	2599.3	151.3							
CM30	2698.3	99.0	1.8	0.90	90	2.9	1.45	144	234
CM31	2803.5	105.2		0.90	95	2.7	2.80	295	390
CM32	2933.5	130.0				2.5	2.60	338	338
CM34	3047.4	113.9					1.25	143	143
CM36	3095.6	48.2	1.1	0.55	27	2.9	1.45	70	97
CM37	3219.0	123.4	4.2	2.65	328	3.7	3.30	408	736
CM38	3339.1	120.1	3.3	3.75	451	4.1	3.90	469	920
CM39	3425.5	86.4	3.8	3.55	307	0.8	2.45	212	519
CM40	3467.5	42.0		1.90	80		0.40	17	97
CM41	3556.9	89.4	1.9	0.95	85	1.8	0.90	81	166
CM42	3653.4	96.5	1.5	1.70	165	2.7	2.25	218	383
CM43	3777.2	123.8	1.6	1.55	192	2.5	2.60	322	514
CM45	3916.3	139.1		0.80	112	2.7	2.60	362	474
CM47	4022.2	105.9				1.5	2.10	223	223
CM48	4110.3	88.1	1.8	0.90	80	1.8	1.65	146	226
CM49	4230.2	119.9		0.90	108		0.90	108	216
E.P	4231.2	1.0							
Total					5,115			4,869	9,984

Left bank  
 Stage1

No 2.2.08	No 2.2.06	No 2.2.05
KM06+68.9 - KM05+84.6		
L= 355.1 m H= 2.20 m		
Gabion mattress (1) A1= 2769 m <sup>2</sup> V1= 1093.874 m <sup>3</sup> (2) V2= 592.650 m <sup>3</sup> (3) V3= 296.325 m <sup>3</sup>	Geo-textile l= 6.787 m	Back filling
Total V= 1982.85 m <sup>3</sup>	A= 2681.62 m <sup>2</sup>	V= 98.78 m <sup>3</sup>
KM07+90.9 - KM12+34.4		
L= 446.8 m H= 2.21 m		
Gabion mattress (1) A1= 2780 m <sup>2</sup> V1= 1242.006 m <sup>3</sup> (2) V2= 670.200 m <sup>3</sup> (3) V3= 335.1 m <sup>3</sup>	Geo-textile l= 6.810 m	Back filling
Total V= 2147.31 m <sup>3</sup>	A= 3042.51 m <sup>2</sup>	V= 111.70 m <sup>3</sup>
KM12+34.4 - KM14+23.4		
L= 166.0 m H= 2.21 m		
Gabion mattress (1) A1= 2780 m <sup>2</sup> V1= 461.443 m <sup>3</sup> (2) V2= 249.000 m <sup>3</sup> (3) V3= 124.5 m <sup>3</sup>	Geo-textile l= 6.810 m	Back filling
Total V= 834.94 m <sup>3</sup>	A= 1130.39 m <sup>2</sup>	V= 41.50 m <sup>3</sup>

Stage2

KM16+28.8 - KM32+60.9		
L= 455.7 m H= 2.21 m		
Gabion mattress (1) A1= 2780 m <sup>2</sup> V1= 1330.139 m <sup>3</sup> (2) V2= 728.550 m <sup>3</sup> (3) V3= 364.275 m <sup>3</sup>	Geo-textile l= 6.810 m	Back filling
Total V= 2442.96 m <sup>3</sup>	A= 3307.40 m <sup>2</sup>	V= 121.43 m <sup>3</sup>
KM46+63.5 - KM48		
L= 112.4 m H= 2.04 m		
Gabion mattress (1) A1= 2590 m <sup>2</sup> V1= 291.085 m <sup>3</sup> (2) V2= 168.600 m <sup>3</sup> (3) V3= 84.3 m <sup>3</sup>	Geo-textile l= 6.429 m	Back filling
Total V= 543.68 m <sup>3</sup>	A= 722.67 m <sup>2</sup>	V= 28.10 m <sup>3</sup>

Stage 3

KM48 - KM48+121.3		
L= 102.1 m H= 2.04 m		
Gabion mattress (1) A1= 2590 m <sup>2</sup> V1= 264.410 m <sup>3</sup> (2) V2= 153.150 m <sup>3</sup> (3) V3= 76.575 m <sup>3</sup>	Geo-textile l= 6.429 m	Back filling
Total V= 494.14 m <sup>3</sup>	A= 656.45 m <sup>2</sup>	V= 25.53 m <sup>3</sup>

Right bank

No 2.2.08	No 2.2.06	No 2.2.05
Estuary		
L= 85.6 m H= 2.20 m		
Gabion mattress (1) A1= 2769 m <sup>2</sup> V1= 236.992 m <sup>3</sup> (2) V2= 128.400 m <sup>3</sup> (3) V3= 64.2 m <sup>3</sup>	Geo-textile l= 6.787 m	Back filling
Total V= 429.59 m <sup>3</sup>	A= 590.98 m <sup>2</sup>	V= 21.40 m <sup>3</sup>
KM00+73.4 - KM13+77.9		
L= 1260.6 m H= 2.21 m		
Gabion mattress (1) A1= 2780 m <sup>2</sup> V1= 3304.191 m <sup>3</sup> (2) V2= 1820.900 m <sup>3</sup> (3) V3= 945.45 m <sup>3</sup>	Geo-textile l= 6.810 m	Back filling
Total V= 6100.54 m <sup>3</sup>	A= 8584.13 m <sup>2</sup>	V= 315.45 m <sup>3</sup>

KM16+51.6 - KM33+107.2		
L= 1509.3 m H= 2.21 m		
Gabion mattress (1) A1= 2780 m <sup>2</sup> V1= 4195.522 m <sup>3</sup> (2) V2= 2263.950 m <sup>3</sup> (3) V3= 1131.98 m <sup>3</sup>	Geo-textile l= 6.810 m	Back filling
Total V= 7591.45 m <sup>3</sup>	A= 10277.67 m <sup>2</sup>	V= 377.33 m <sup>3</sup>

Working Division: Levee and inspection road / Gabion mattress(PVC coated), Geotextile, and Back filling  
 Package 2

No. 2.2 /10, /07 and 06

Name of Channel: Tanjungan Drainage Channel  
 Left bank

Right bank

No.2.2/10	No.2.2/07	No.2.2/06
Estuary (Levee dump fill type)		
L= 63.5 m H= 1.90 m		
Gabion mattress	Geo-textile	Back filling
(1) A1= 3.419 m <sup>2</sup> V1= 217.132 m <sup>3</sup> (2) V2= 95.250 m <sup>3</sup> (3) V3= 47.625 m <sup>3</sup>	I= 8.089 m	
Total	V= 360.01 m <sup>3</sup>	A= 513.64 m <sup>2</sup> V= 15.88 m <sup>3</sup>

No.2.2/10	No.2.2/07	No.2.2/06
Estuary (Levee dump fill type)		
L= 61.4 m H= 1.90 m		
Gabion mattress	Geo-textile	Back filling
(1) A1= 3.419 m <sup>2</sup> V1= 209.951 m <sup>3</sup> (2) V2= 92.100 m <sup>3</sup> (3) V3= 46.05 m <sup>3</sup>	I= 8.089 m	
Total	V= 348.10 m <sup>3</sup>	A= 496.65 m <sup>2</sup> V= 15.35 m <sup>3</sup>

TM18+28.2 - TM21+18.0	L= 283.4 m H= 1.83 m	
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.355 m <sup>2</sup> V1= 667.390 m <sup>3</sup> (2) V2= 425.100 m <sup>3</sup> (3) V3= 212.55 m <sup>3</sup>	I= 5.960 m	
Total	V= 1305.04 m <sup>3</sup>	A= 1689.03 m <sup>2</sup> V= 70.65 m <sup>3</sup>

TM19.0 - TM20+79.8 transition (Levee dump fill type)	L= 244.2 m H= 1.83 m	
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.355 m <sup>2</sup> V1= 575.076 m <sup>3</sup> (2) V2= 366.300 m <sup>3</sup> (3) V3= 183.15 m <sup>3</sup>	I= 5.960 m	
Total	V= 1124.53 m <sup>3</sup>	A= 1455.40 m <sup>2</sup> V= 61.05 m <sup>3</sup>

TM20+79.8 - TM21+79.3 transition	L= 56.8 m H= 1.82 m	
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.344 m <sup>2</sup> V1= 133.126 m <sup>3</sup> (2) V2= 85.200 m <sup>3</sup> (3) V3= 42.6 m <sup>3</sup>	I= 5.938 m	
Total	V= 260.93 m <sup>3</sup>	A= 332.25 m <sup>2</sup> V= 14.20 m <sup>3</sup>

Working Division: Levee and inspection road / Gabion mattress(PVC coated), Geotextile, and Back filling

No. 2.2 /09, /07 and 06

Package 3

Name of Channel: Saluran Cengkareng Drainage Channel

Left bank

Right bank

No.2.2/09	No.2.2/07	No.2.2/06
CM15+25.8 - CM26+82.8		
L= 1123.1 m H= 2.38 m		
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.970 m <sup>2</sup> V1= 3335.427 m <sup>3</sup> (2) V2= 1684.650 m <sup>3</sup> (3) V3= 842.325 m <sup>3</sup>	I= 7.190 m	
Total	V= 5862.40 m <sup>3</sup>	A= 8074.71 m <sup>2</sup> V= 280.78 m <sup>3</sup>

No.2.2/09	No.2.2/07	No.2.2/06
CM17+84.5 - CM23+53.0		
L= 529.9 m H= 2.38 m		
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.970 m <sup>2</sup> V1= 1573.718 m <sup>3</sup> (2) V2= 794.850 m <sup>3</sup> (3) V3= 397.425 m <sup>3</sup>	I= 7.190 m	
Total	V= 2765.99 m <sup>3</sup>	A= 3809.81 m <sup>2</sup> V= 132.48 m <sup>3</sup>

CM29+23.5 - CM30+31.5	L= 108.0 m H= 2.33 m	
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.914 m <sup>2</sup> V1= 314.706 m <sup>3</sup> (2) V2= 162.000 m <sup>3</sup> (3) V3= 81 m <sup>3</sup>	I= 7.078 m	
Total	V= 557.71 m <sup>3</sup>	A= 764.41 m <sup>2</sup> V= 27.00 m <sup>3</sup>

CM29+18.8 - CM38+35.0	L= 758.9 m H= 2.30 m	
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.880 m <sup>2</sup> V1= 2185.936 m <sup>3</sup> (2) V2= 1138.350 m <sup>3</sup> (3) V3= 569.175 m <sup>3</sup>	I= 7.011 m	
Total	V= 3893.45 m <sup>3</sup>	A= 5320.50 m <sup>2</sup> V= 189.73 m <sup>3</sup>

CM34+16.0 - CM42+87.6	L= 680.5 m H= 2.29 m	
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.869 m <sup>2</sup> V1= 1952.504 m <sup>3</sup> (2) V2= 1020.750 m <sup>3</sup> (3) V3= 510.375 m <sup>3</sup>	I= 6.958 m	
Total	V= 3483.63 m <sup>3</sup>	A= 4753.63 m <sup>2</sup> V= 170.13 m <sup>3</sup>

CM40+20.5 - CM42+57.6	L= 247.8 m H= 2.27 m	
Gabion mattress	Geo-textile	Back filling
(1) A1= 2.847 m <sup>2</sup> V1= 705.452 m <sup>3</sup> (2) V2= 371.700 m <sup>3</sup> (3) V3= 185.85 m <sup>3</sup>	I= 6.944 m	
Total	V= 1263.00 m <sup>3</sup>	A= 1720.65 m <sup>2</sup> V= 61.95 m <sup>3</sup>

Name of work: Cobble/rubble for rip-rap No. 2.2/09  
 Bamboo mat No. 2.2/11  
 Bamboo waling No. 2.2/12  
 Bamboo pile No. 2.2/13

**Package 2**

Name of channel: Tanjungan Drainage Channel

		Left Bank TM00 - TM16+58.3		Right Bank TM00 - TM16+47.1		Total (m <sup>2</sup> )
L (m)		1,453.8		1,442.1		
No.		Unit length l (m)	A (m <sup>2</sup> )	Unit length l (m)	A (m <sup>2</sup> )	
2.2/09	Rip rap	4.0	5,815.2	4.0	5,768.4	11,583.6
2.2/11	Bamboo mat	1.68	2,442.4	1.68	2,422.7	4,865.1

No.		nos.	Length (m)	nos.	Length (m)	Total length (lin.m)
2.2/12	Bamboo waling	16	23,260.8	16	23,073.6	46,334.4
2.2/13	Bamboo pile*	4,846	32,516.7 (= n x 6.71m)	4,807	32,255.0 (= n x 6.71m)	64,771.6

Note:  $A = l \times L$  (m<sup>2</sup>)

L : length of levee dump-fill type

\* Bamboo pile  $n = L/0.3$ (m) : Nos. of bamboo pile  
 length of bamboo pile = 6.71 m/pile

Working Division: Levee and Inspection/Relocation Road /

Sub-base course

No. 2.2/09

Base course

No. 2.2/10

Asphalt pavement

No. 2.2/11

Package 1

Thickness: Base course 0.15 m Sub-base course 0.20 m

Width of Inspection road: 4.0 m

No.	Location	Left bank			Right bank						
		Length L(m)	Sub-base course (m3)	Base course (m3)	2.2/11 Asphalt (m2)	Length L(m)	Sub-base course (m3)	Base course (m3)	2.2/11 Asphalt (m2)		
Kamal Drainage Channel (main)											
KM02 - KM10	Stage1	618.0	494.4	370.8	2472.0						
KM26 - KM36	Stage2	791.4	633.1	474.8	3165.6						
KM36 - KM48	Stage2	757.7	606.2	454.6	3030.8						
KM48 -	Stage3	102.1	81.7	61.3	408.4						
Kamal Drainage Channel (branch)											
KE13 - KE14	Stage3	74.0	59.2	44.4	296.0						
KE17 - KE18	Stage3	115.0	92.0	69.0	460.0						
Total		2458.20	1966.56	1474.92	9832.80			1989.80	1591.84	1193.88	7959.20

Working Division: Levee and Inspection/Relocation Road /

Sub-base course

No. 2.2/14

Base course

No. 2.2/15

Asphalt pavement

No. 2.2/16

Package 2

Thickness : Base course 0.15 m      Sub-base course 0.20 m

Width of Inspection road : 4.0 m

No.	Location	Left bank			Right bank		
		2.2/14 Sub-base course (m3)	2.2/15 Base course (m3)	2.2/16 Asphalt (m2)	2.2/14 Sub-base course (m3)	2.2/15 Base course (m3)	2.2/16 Asphalt (m2)
		Length L(m)			Length L(m)		
	Tanjungan Drainage Channel				500.0		2000.0
					400.0	300.0	
	Total				500.00	400.00	2000.00



Working Division: Levee and Inspection/Relocation Road /

Sub-base course

No. 2.2/10

Base course

No. 2.2/11

Asphalt pavement

No. 2.2/12

Package 3

Thickness : Base course 0.15 m Sub-base course 0.20 m

Width of Inspection road : 4.0 m

No.	Location	Left bank				Right bank				
		Length L(m)	Sub-base course (m3)	2.2/11 Base course (m3)	2.2/12 Asphalt (m2)	No.	Length L(m)	Sub-base course (m3)	2.2/11 Base course (m3)	2.2/12 Asphalt (m2)
	Gede/Bor Drainage Channel GM10 - GM13	264.8	211.8	158.9	1059.2					
	Saluran Cengkareng Drainage Channel									
	CM08 - CM15	655.0	524.0	393.0	2620.0					
	CM15 - CM26	1176.9	941.5	706.1	4707.6	CM04 - CM07	533.0	426.4	319.8	2132.0
	CM37 - CM43	800.1	640.1	480.1	3200.4	CM29 - CM36	448.4	358.7	269.0	1793.6
	Meruya Area MM310 - MM21	876.1	700.9	525.7	3504.4	CM45 - CM49	314.9	251.9	188.9	1259.6
	Total	3772.9	3018.32	2263.74	15091.6		1296.3	1037.04	777.78	5185.2

### ***1.2.3 Concrete parapet wall***



Summary of Work Quantities, Concrete Parapet Wall

Package 1

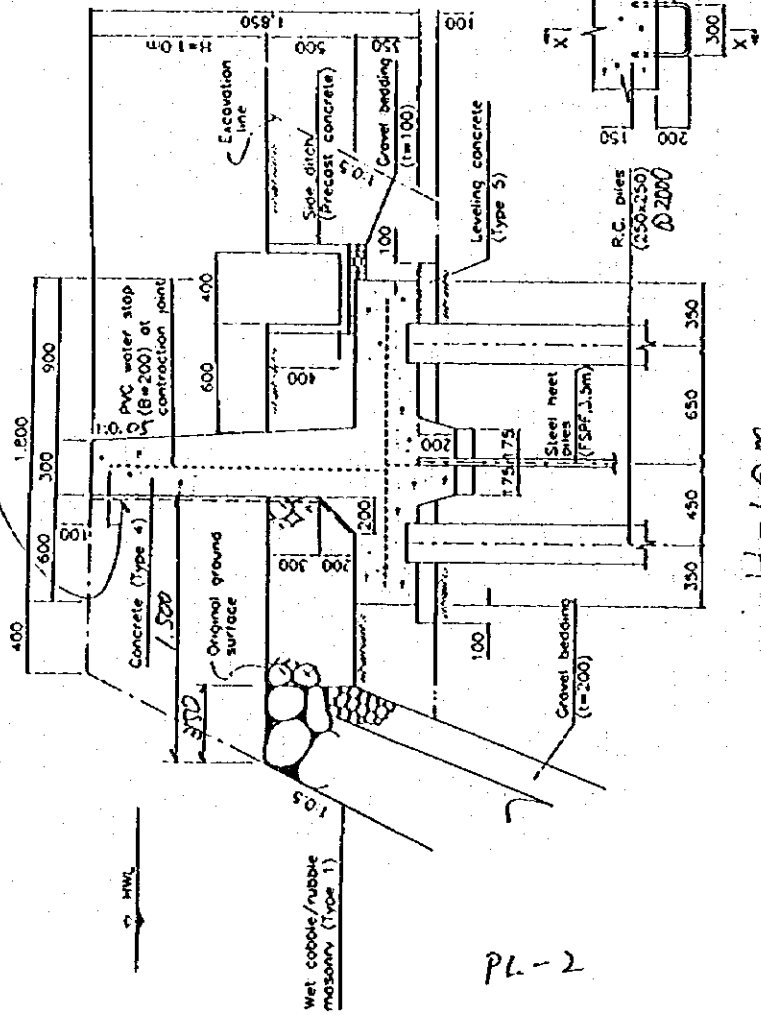
Item No.	Description	Unit	Total Package 1	Kamal		
				Stage1 main	Stage2 main	Stage3 main,branch
2.3	Concrete Parapet Wall					
/ 01	Excavation for footing of parapet wall	cu.m	1,616		1,616	
/ 02	Backfilling with selected material	cu.m	726		726	
/ 03	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	288		288	
/ 04	Furnishing steel sheet pile, YSPF W= 400mm	sq.m	1,726		1,726	
/ 05	Driving steel sheet pile, for Item No. 2.3/04	sq.m	1,726		1,726	
/ 06	Furnishing RC piles, 250 x 250 mm	lin.m	3,684		3,684	
/ 07	Driving RC piles, for Item No. 2.3/06	lin.m	3,684		3,684	
/ 08	Concrete, type 4, for footing and wall	cu.m	707		707	
/ 09	Concrete, type 5, for leveling	cu.m	114		114	
/ 10	Form, type F1, for Item No. 2.3/08	sq.m	381		381	
/ 11	Form, type F2, for Item No. 2.3/08	sq.m	1,427		1,427	
/ 12	Reinforcing bars, for Item No. 2.3/08	kg	56,450		56,450	
/ 13	PVC waterstop, W=200 mm	lin.m	1,955		1,955	
/ 14	Rubber joint filler, t=10 mm	sq.m	2		2	
/ 15	Bitumen coating	sq.m	119		119	
/ 16	Furnishing and installing trap	kg	187		187	

Package 2  
Non

Package 3

Item No.	Description	Unit	Total Package 3	Gede/Bor	Meruya	
					Saluran Cengkareng	Meruya
2.3	Concrete Parapet Wall					
/ 01	Coffering and care of water including dewatering	L.S.				
/ 02	Excavation for footing of parapet wall	cu.m	4,889		4,889	
/ 03	Backfilling with selected material	cu.m	2,310		2,310	
/ 04	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	856		856	
/ 05	Furnishing steel sheet pile, YSPF W= 400mm	sq.m	4,877		4,877	
/ 06	Driving steel sheet pile, for Item No. 2.3/05	sq.m	4,877		4,877	
/ 07	Furnishing RC piles, 250 x 250 mm	lin.m	10,476		10,476	
/ 08	Driving RC piles, for Item No. 2.3/07	lin.m	10,476		10,476	
/ 09	Concrete, type 4, for footing and wall	cu.m	2,065		2,065	
/ 10	Concrete, type 5, for leveling	cu.m	321		321	
/ 11	Form, type F1, for Item No. 2.3/09	sq.m	1,080		1,080	
/ 12	Form, type F2, for Item No. 2.3/09	sq.m	4,371		4,371	
/ 13	Reinforcing bars, for Item No. 2.3/09	kg	165,011		165,011	
/ 14	PVC waterstop, W=200 mm	lin.m	5,693		5,693	
/ 15	Rubber joint filler, t=10 mm	sq.m	2		2	
/ 16	Bitumen coating	sq.m	350		350	
/ 17	Furnishing and installing trap	kg	602		602	

Form:  $1.3 + 0.283 = 1.583$



H = 1.0 m

TRAPS

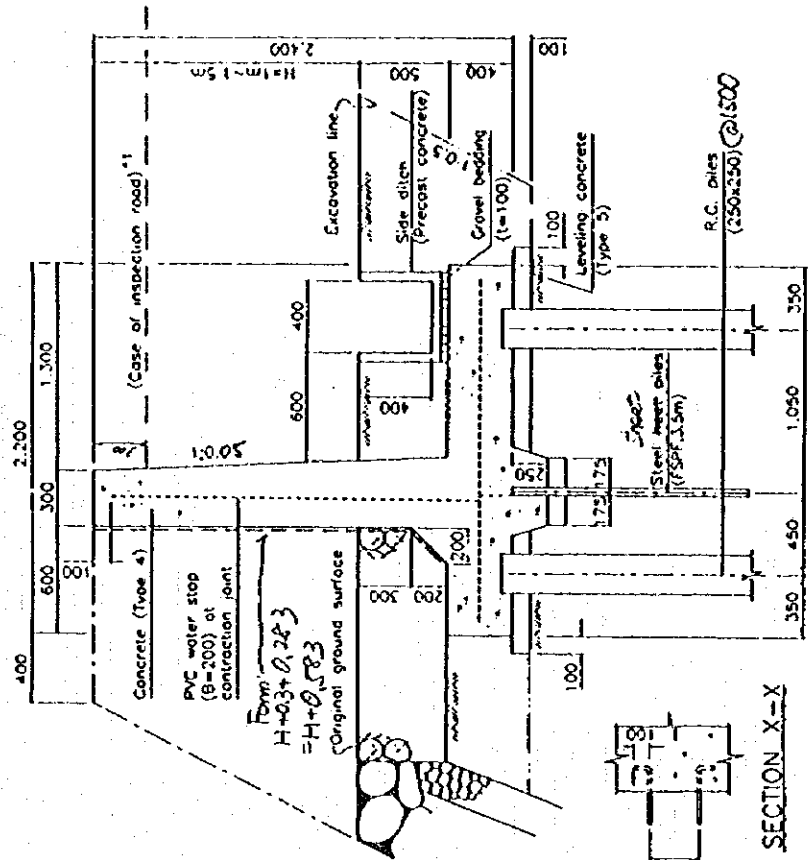
Concrete (Type 4)  $A_c = 1.8 \times 0.35 + (0.3 + 0.35) \times 1.5 \times \frac{1}{2} + \frac{1}{2} \times 0.2 \times 0.2$   
 $+ \frac{1}{2} (0.5 + 0.35) \times 0.2$

$= 1.24 \text{ (m}^2\text{)}$

Length of water stop  $l = 1.575 + 1.6 + 0.4 = 3.575 \text{ (m)}$

Gabion mattress  $A_g = (1.5 - 0.35) \times 0.5 = 0.575 \text{ (m}^2\text{)}$

Trap  $0.3 + 0.35 \times 2 + 0.1 \times 2 = 1.2 \text{ m / piece}$



$1.0 < H \leq 1.5 \text{ m}$

H = 1.5

$A_c = 2.2 \times 0.4 + (0.3 + 0.3085H) \times (H + 0.5) \times \frac{1}{2} + \frac{1}{2} \times 0.2 + \frac{1}{2} (0.5 + 0.35) \times 0.25$   
 $= 1.006 + (0.3 + 0.25H) \times 0.5 + H \text{ (m}^2\text{)}$

$l = H + 0.6 + 2.0 + 0.4 = H + 3.0 \text{ (m)}$

$A_g = (1.0 + 0.5H) - 0.35 \times 0.5 = 0.325 + 0.25H \text{ (m}^2\text{)}$

Name of work: Excavation for parapet wall

No. 2.3/01

Package 1

Name of channel: Kamal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P(new)									
KM-00	62.0	62.0							
KM-01	182.6	120.6							
KM-02	269.1	86.5							
KM-03	321.8	52.7							
KM-05	441.1	119.3							
KM-06	543.8	102.7							
KM-07	659.5	115.7							
KM-08	805.6	146.1							
KM-09	868.5	62.9							
KM-10	978.1	109.6							
KM-11	1,064.3	86.2							
KM-12	1,179.4	115.1							
KM-13	1,266.9	87.5							
KM-14	1,357.3	90.4							
KM14+23.4	1,380.7	23.4							
			Bina Marga's Area			Bina Marga's Area			
KM16+22.8	1,443.3	22.8							
KM16+36.8	1,457.3	14.0							
KM16+51.6	1,472.1	14.8							
KM-17	1,482.5	10.4							
KM-18	1,589.2	106.7							
KM-20	1,702.5	113.3							
KM-21	1,733.2	30.7							
KM-22	1,821.2	88.0							
KM-23	1,916.7	95.5							
KM-24	1,988.7	72.0							
KM-25	2,084.6	95.9							
KM-26	2,166.9	82.3							
KM-27	2,286.8	119.9							
KM-28	2,395.4	108.6							
KM-29	2,473.2	77.8							
KM-31	2,540.7	67.5							
KM-32	2,614.2	73.5							
KM-33	2,713.9	99.7							
KM-34	2,769.5	55.6							
KM-35	2,822.7	53.2							
KM-38	3,001.1	178.4	3.32	1.66	297				297
KM-40	3,126.7	125.6	3.01	3.17	398				398
KM-42	3,281.6	154.9	3.26	3.14	486				486
KM-43	3,393.3	111.7	2.92	3.09	346				346
KM-45	3,454.0	60.7		1.46	89				89
KM-46	3,527.4	73.4							
KM-47	3,618.9	91.5							
KM-48	3,700.4	81.5							
KM-50	3,831.3	130.9							
KM-51	3,926.0	94.7							
KM-52	4,022.9	96.9							
KM-54	4,110.0	87.1							
KM-55	4,247.9	137.9							
KM-56	4,370.6	122.7	No works						
KM-57	4,462.9	92.3	No works						
Total					1,616				1,616

Name of work: Excavation for parapet wall

No. 2.3/02

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9							
CM04	292.3	137.7							
CM05	392.4	100.1							
CM5+20.0	412.4	20.0							
CM06	466.4	54.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4				3.90	1.95	124	124
CM16	1312.8	75.8				3.90	3.90	296	296
CM17	1446.0	133.2				2.86	3.38	451	451
CM18	1544.5	98.5					1.43	141	141
CM19	1613.6	69.1							
CM20	1740.7	127.1							
CM21	1832.5	91.8							
CM22	1901.7	69.2							
CM23	2001.5	99.8							
CM24	2102.9	101.4				5.67	2.84	288	288
CM25	2194.3	91.4				4.42	5.05	462	462
CM26	2304.8	110.5				4.23	4.33	478	478
CM27	2448.0	143.2	4.07	2.04	292	3.08	3.66	524	816
CM29	2599.3	151.3	4.07	4.07	616		1.54	234	850
CM30	2698.3	99.0		2.04	202				202
CM31	2803.5	105.2	2.61	1.31	138				138
CM32	2933.5	130.0	3.87	3.24	422				422
CM34	3047.4	113.9		1.94	221				221
CM36	3095.6	48.2							
CM37	3219.0	123.4							
CM38	3339.1	120.1							
CM39	3425.5	86.4							
CM40	3467.5	42.0							
CM41	3556.9	89.4							
CM42	3653.4	96.5							
CM43	3777.2	123.8							
CM45	3916.3	139.1							
CM47	4022.2	105.9							
CM48	4110.3	88.1							
CM49	4230.2	119.9							
E.P	4231.2	1.0							
Total					1,891			2,998	4,889

Name of work: Backfilling for parapet wall

No. 2.3/02

Package 1

Name of channel: Kamal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P(new)									
KM-00	62.0	62.0							
KM-01	182.6	120.6							
KM-02	269.1	86.5							
KM-03	321.8	52.7							
KM-05	441.1	119.3							
KM-06	543.8	102.7							
KM-07	659.5	115.7							
KM-08	805.6	146.1							
KM-09	868.5	62.9							
KM-10	978.1	109.6							
KM-11	1,064.3	86.2							
KM-12	1,179.4	115.1							
KM-13	1,266.9	87.5							
KM-14	1,357.3	90.4							
KM14+23.4	1,380.7	23.4							
			Bina Marga's Area			Bina Marga's Area			
KM16+22.8	1,443.3	22.8							
KM16+36.8	1,457.3	14.0							
KM16+51.6	1,472.1	14.8							
KM-17	1,482.5	10.4							
KM-18	1,589.2	106.7							
KM-20	1,702.5	113.3							
KM-21	1,733.2	30.7							
KM-22	1,821.2	88.0							
KM-23	1,916.7	95.5							
KM-24	1,988.7	72.0							
KM-25	2,084.6	95.9							
KM-26	2,166.9	82.3							
KM-27	2,286.8	119.9							
KM-28	2,395.4	108.6							
KM-29	2,473.2	77.8							
KM-31	2,540.7	67.5							
KM-32	2,614.2	73.5							
KM-33	2,713.9	99.7							
KM-34	2,769.5	55.6							
KM-35	2,822.7	53.2							
KM-38	3,001.1	178.4	1.67	0.84	149				149
KM-40	3,126.7	125.6	1.26	1.47	185				185
KM-42	3,281.6	154.9	1.38	1.32	205				205
KM-43	3,393.3	111.7	1.26	1.32	148				148
KM-45	3,454.0	60.7		0.63	39				39
KM-46	3,527.4	73.4							
KM-47	3,618.9	91.5							
KM-48	3,700.4	81.5							
KM-50	3,831.3	130.9							
KM-51	3,926.0	94.7							
KM-52	4,022.9	96.9							
KM-54	4,110.0	87.1							
KM-55	4,247.9	137.9							
KM-56	4,370.6	122.7	No works						
KM-57	4,462.9	92.3	No works						
Total					726				726



Name of work: Backfilling for parapet wall

No. 2.3/03

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM02+1.5	21.7	1.5							
CM03	154.6	132.9							
CM04	292.3	137.7							
CM05	392.4	100.1							
CM5+20.0	412.4	20.0							
CM06	466.4	54.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1056.9	94.0							
CM14	1173.6	116.7							
CM15	1237.0	63.4				1.92	0.96	61	61
CM16	1312.8	75.8				1.92	1.92	146	146
CM17	1446.0	133.2				1.38	1.65	220	220
CM18	1544.5	98.5					0.69	68	68
CM19	1613.6	69.1							
CM20	1740.7	127.1							
CM21	1832.5	91.8							
CM22	1901.7	69.2							
CM23	2001.5	99.8							
CM24	2102.9	101.4				2.83	1.42	144	144
CM25	2194.3	91.4				2.29	2.56	234	234
CM26	2304.8	110.5				2.12	2.21	244	244
CM27	2448.0	143.2	2.08	1.04	149	1.47	1.80	258	407
CM29	2599.3	151.3	2.08	2.08	315		0.74	112	427
CM30	2698.3	99.0		1.04	103				103
CM31	2803.5	105.2	0.31	0.16	17				17
CM32	2933.5	130.0	1.79	1.05	137				137
CM34	3047.4	113.9		0.90	102				102
CM36	3095.6	48.2							
CM37	3219.0	123.4							
CM38	3339.1	120.1							
CM39	3425.5	86.4							
CM40	3467.5	42.0							
CM41	3556.9	89.4							
CM42	3653.4	96.5							
CM43	3777.2	123.8							
CM45	3916.3	139.1							
CM47	4022.2	105.9							
CM48	4110.3	88.1							
CM49	4230.2	119.9							
E.P	4231.2	1.0							
Total					823			1,487	2,310

Parapet wall

Work division: Package 1, Stage 2

Name of channel: Kamal Drainage Channel (main) (Left 1/2) KM35+140.6 - KM38+108.1

- L= 145.9 m : Length of concrete parapet wall
- H= 1.00 m : Design crest EL. - Design channel bed EL
- Ac= 1.241 m2: Section area of parapet wall
- n1= 25 : nos. of contraction joints (= L / 6.0m)
- n2= 148 : nos. of RC piles : (L/1.5+1) x 2 (1.0<H), (L/2.0+1) x 2 (H<1.0)
- n3= 3 : nos. of locations of traps : (L/50.0+1) x 2

Item No.	Description	Left Bank		Total	
		Quantity	unit	Quantity	unit
2.3					
/03	Gabion (PVC)	83.9	cu.m	83.9	cu.m
/04	Furnishing steel sheet pile	510.7	sq.m	510.7	sq.m
/05	Driving steel sheet pile	510.7	sq.m	510.7	sq.m
/06	Furnishing RC pile	888.0	lin.m	888.0	lin.m
/07	Driving RC pile	888.0	lin.m	888.0	lin.m
/08	Concrete Type 4	181.1	cu.m	181.1	cu.m
/09	Concrete Type 5	29.2	cu.m	29.2	cu.m
/10	Form, Type F1	102.1	sq.m	102.1	sq.m
/11	Form, Type F2 (for joint)	376.9	sq.m	376.9	sq.m
/12	Reinforcing bars	31.0	sq.m	31.0	sq.m
/13	PVC water stop	14,485.0	kg	14,485.0	kg
/14	Rubber joint filler	548.1	lin.m	548.1	lin.m
/15	Bitumea coating	1.2	sq.m	1.2	sq.m
/16	Trap	31.0	sq.m	31.0	sq.m
		54.0	kg	54.0	kg

Work division:

Package 1, Stage 2

Name of channel:

Parapet wall

No. 2.3

Kamal Drainage Channel (main) (Left 2/2) KM38+108.1 - KM45+2.2

- L= 347 m : Length of concrete parapet wall
- H= 1.05 m : Design crest EL. - Design channel bed EL
- Ac= 1.512 m2: Section area of parapet wall
- n1= 58 : nos. of contraction joints (= L / 6.0m)
- n2= 466 : nos. of RC piles :  $(L/1.5+1) \times 2 (1.0 < H)$ ,  $(L/2.0+1) \times 2 (H < 1.0)$
- n3= 7 : nos. of locations of traps :  $(L/50.0+1) \times 2$

Item No.	Discription	Left Bank		Total		
		Quantity	unit	Quantity	unit	
2.3						
/03	Gabion (PVC)	- $(0.325+0.25 \times H) \times L$	203.9	cu.m	203.9	cu.m
/04	Furnishing steel sheet pile	- $3.5 \times L$	1,214.5	sq.m	1,214.5	sq.m
/05	Driving steel sheet pile	- $3.5 \times L$	1,214.5	sq.m	1,214.5	sq.m
/06	Furnishing RC pile	- $n2 \times 6.0$	2,796.0	lin.m	2,796.0	lin.m
/07	Driving RC pile	- $n2 \times 6.0$	2,796.0	lin.m	2,796.0	lin.m
/08	Concrete Type 4	-Ac x L	524.6	cu.m	524.6	cu.m
/09	Concrete Type 5	- $2.0(\text{or } 2.4) \times 0.1 \times L$	83.3	cu.m	83.3	cu.m
/10	Form, Type F1	- $0.35(\text{or } 0.4) \times 2 \times L$	277.6	sq.m	277.6	sq.m
/11	Form, Type F2 (for joint)	- $(2 \times H + 0.583) \times L$	931.0	sq.m		
/12	Reinforcing bars	- Ac x n1	87.7	sq.m	1,018.7	sq.m
/13	PVC water stop	- $V(\text{No.15}) \times 80$	41,964.4	kg	41,964.4	kg
/14	Rubber joint filler	- $3.757 \times L(\text{or } (H+3.0) \times L)$	1,405.4	lin.m	1,405.4	lin.m
/15	Bitumen coating	- Ac x n1		sq.m		sq.m
/16	Trap	- $H/0.3 \times 1.2 \times n3 \times 2 \times 2.25$	87.7	sq.m	87.7	sq.m
			132.3	kg	132.3	kg

Parapet wall

Work division:

Package 3

Name of channel:

Saluran Cengkareng Drainage Channel (Left 1/2)

CM26+82.8 - CM29+23.5

- L= 235.2 m : Length of concrete parapet wall
- H= 1.00 m : Design crest EL. - Design channel bed EL
- Ac= 1.241 m<sup>2</sup>: Section area of parapet wall
- n1= 40 : nos. of contraction joints (= L / 6.0m)
- n2= 238 : nos. of RC piles : (L/1.5+1)x 2 (1.0<H), (L/2.0+1)x 2 (H<1.0)
- n3= 5 : nos. of locations of traps : (L/50.0+1)x 2

Item No.	Discription	Left Bank		Total	
		Quantity	unit	Quantity	unit
2.3					
/04	Gabion (PVC)	135.2	cu.m	135.2	cu.m
/05	Furnishing steel sheet pile	823.2	sq.m	823.2	sq.m
/06	Driving steel sheet pile	823.2	sq.m	823.2	sq.m
/07	Furnishing RC pile	1,428.0	lin.m	1,428.0	lin.m
/08	Driving RC pile	1,428.0	lin.m	1,428.0	lin.m
/09	Concrete Type 4	291.9	cu.m	291.9	cu.m
/10	Concrete Type 5	47.0	cu.m	47.0	cu.m
/11	Form, Type F1	164.6	sq.m	164.6	sq.m
/12	Form, Type F2 (for joint)	607.5	sq.m	607.5	sq.m
/13	Reinforcing bars	49.6	sq.m	49.6	sq.m
/14	PVC water stop	23,350.7	kg	23,350.7	kg
/15	Rubber joint filler	883.6	lin.m	883.6	lin.m
/16	Bitumen coating	49.6	sq.m	49.6	sq.m
/17	Trap	90.0	kg	90.0	kg

Work division:

Package 3

Name of channel:

Parapet wall

Saluran Cengkareng Drainage Channel (Left 2/2)

No. 2.3

CM30+31.5 - CM34+16.0

L= 333.6 m : Length of concrete parapet wall  
 H= 1.30 m : Design crest EL. - Design channel bed EL  
 Ac= 1.605 m<sup>2</sup>: Section area of parapet wall  
 n1= 56 : nos. of contraction joints (= L / 6.0m)  
 n2= 448 : nos. of RC piles : (L/1.5+1)x 2 (1.0<H), (L/2.0+1)x 2 (H<1.0)  
 n3= 7 : nos. of locations of traps : (L/50.0+1)x 2

Item No.	Discription	Left Bank		Total	
		Quantity	unit	Quantity	unit
2.3					
/04	Gabion (PVC)	216.8	cu.m	216.8	cu.m
/05	Furnishing steel sheet pile	1,167.6	sq.m	1,167.6	sq.m
/06	Driving steel sheet pile	1,167.6	sq.m	1,167.6	sq.m
/07	Furnishing RC pile	2,688.0	lin.m	2,688.0	lin.m
/08	Driving RC pile	2,688.0	lin.m	2,688.0	lin.m
/09	Concrete Type 4	535.3	cu.m	535.3	cu.m
/10	Concrete Type 5	80.1	cu.m	80.1	cu.m
/11	Form, Type F1	266.9	sq.m	266.9	sq.m
/12	Form, Type F2 (for joint)	1,061.8	sq.m	1,151.7	sq.m
/13	Reinforcing bars	89.9	sq.m	42,820.9	kg
/14	PVC water stop	42,820.9	kg	1,434.5	lin.m
/15	Rubber joint filler	1,434.5	lin.m		sq.m
/16	Bitumen coating		sq.m	89.9	sq.m
/17	Trap	89.9	sq.m	163.8	kg

Work division: Parapet wall No. 2.3  
 Package 3  
 Name of channel: Saluran Cengkareng Drainage Channel (Right 1/3) CM15+6 - CM16+

L= 144.8 m: Length of concrete parapet wall  
 H= 1.40 m: Design crest EL. - Design channel bed EL  
 Ac= 1.643 m<sup>2</sup>: Section area of parapet wall  
 n1= 25 : nos. of contraction joints (= L / 6.0m)  
 n2= 196 : nos. of RC piles : (L/1.5+1) x 2 (1.0<H), (L/2.0+1) x 2 (H<1.0)  
 n3= 3 : nos. of locations of traps : (L/50.0+1) x 2

Item No.	Description	Right Bank		Total	
		Quantity	unit	Quantity	unit
2.3					
/04	Gabion (PVC)	97.7	cu.m	97.7	cu.m
/05	Furnishing steel sheet pile	506.8	sq.m	506.8	sq.m
/06	Driving steel sheet pile	506.8	sq.m	506.8	sq.m
/07	Furnishing RC pile	1,176.0	lin.m	1,176.0	lin.m
/08	Driving RC pile	1,176.0	lin.m	1,176.0	lin.m
/09	Concrete Type 4	237.8	cu.m	237.8	cu.m
/10	Concrete Type 5	34.8	cu.m	34.8	cu.m
/11	Form, Type F1	115.8	sq.m	115.8	sq.m
/12	Form, Type F2 (for joint)	489.9	sq.m	489.9	sq.m
/13	Reinforcing bars	41.1	sq.m	41.1	sq.m
/14	PVC water stop	19,026.7	kg	19,026.7	kg
/15	Rubber joint filler	637.1	lin.m	637.1	lin.m
/16	Bitumen coating	1.2	sq.m	1.2	sq.m
/17	Trap	41.1	sq.m	41.1	sq.m
		75.6	kg	75.6	kg

No. 2.3

Parapet wall

Work division:

Package 3

Name of channel:

Saluran Cengkareng Drainage Channel (Right 2/3)

CM16+ - CM17+84.5

L= 142.7 m : Length of concrete parapet wall  
 H= 1.00 m : Design crest EL. - Design channel bed EL  
 Ac= 1.241 m<sup>2</sup>: Section area of parapet wall  
 n1= 24 : nos. of contraction joints (= L / 6.0m)  
 n2= 146 : nos. of RC piles : (L/1.5+1)x 2 (1.0<H), (L/2.0+1)x 2 (H<1.0)  
 n3= 3 : nos. of locations of traps : (L/50.0+1)x 2

Item No.	Discription	Right Bank		Total		
		Quantity	unit	Quantity	unit	
2.3						
/04	Gabion (PVC)	= $(0.325+0.25 \times H) \times L$	82.1	cu.m	82.1	cu.m
/05	Furnishing steel sheet pile	= $3.5 \times L$	499.5	sq.m	499.5	sq.m
/06	Driving steel sheet pile	= $3.5 \times L$	499.5	sq.m	499.5	sq.m
/07	Furnishing RC pile	= $n2 \times 6.0$	876.0	lin.m	876.0	lin.m
/08	Driving RC pile	= $n2 \times 6.0$	876.0	lin.m	876.0	lin.m
/09	Concrete Type 4	= $Ac \times L$	177.1	cu.m	177.1	cu.m
/10	Concrete Type 5	= $2.0$ (or $2.4$ ) $\times 0.1 \times L$	28.5	cu.m	28.5	cu.m
/11	Form, Type F1	= $0.35$ (or $0.4$ ) $\times 2 \times L$	99.9	sq.m	99.9	sq.m
/12	Form, Type F2 (for joint)	= $(2 \times H + 0.583) \times L$	368.6	sq.m	368.6	sq.m
/13	Reinforcing bars	= $Ac \times n1$	29.8	sq.m	29.8	sq.m
/14	PVC water stop	= $V$ (No.15) $\times 80$	14,167.3	kg	14,167.3	kg
/15	Rubber joint filler	= $3.757 \times L$ (or $(H + 3.0) \times L$ )	536.1	lin.m	536.1	lin.m
/16	Bitumen coating	= $Ac \times n1$	29.8	sq.m	29.8	sq.m
/17	Trap	= $H/0.3 \times 1.2 \times n3 \times 2 \times 2.25$	54.0	kg	54.0	kg

Work division:

Parapet wall

No. 2.3

Package 3

Name of channel:

Saluran Cengkareng Drainage Channel (Right 3/3)

CM23+53 - CM29+18.8

L= 536.3 m : Length of concrete parapet wall  
 H= 1.10 m : Design crest EL. - Design channel bed EL  
 AC= 1.530 m<sup>2</sup>: Section area of parapet wall  
 n1= 90 : nos. of contraction joints (= L / 6.0m)  
 n2= 718 : nos. of RC piles : (L/1.5+1) x 2 (1.0<H), (L/2.0+1) x 2 (H<1.0)  
 n3= 11 : nos. of locations of traps : (L/50.0+1) x 2

Item No.	Description	Right Bank		Total	
		Quantity	unit	Quantity	unit
2.3					
/04	Gabion (PVC)	321.8	cu.m	321.8	cu.m
/05	Furnishing steel sheet pile	1,877.1	sq.m	1,877.1	sq.m
/06	Driving steel sheet pile	1,877.1	sq.m	1,877.1	sq.m
/07	Furnishing RC pile	4,308.0	lin.m	4,308.0	lin.m
/08	Driving RC pile	4,308.0	lin.m	4,308.0	lin.m
/09	Concrete Type 4	820.5	cu.m	820.5	cu.m
/10	Concrete Type 5	128.7	cu.m	128.7	cu.m
/11	Form, Type F1	429.0	sq.m	429.0	sq.m
/12	Form, Type F2 (for joint)	1,492.5	sq.m	1,492.5	sq.m
/13	Reinforcing bars	137.7	sq.m	1,630.2	sq.m
/14	PVC water stop	65,643.1	kg	65,643.1	kg
/15	Rubber joint filler	2,198.8	lin.m	2,198.8	lin.m
/16	Bitumen coating		sq.m		sq.m
/17	Trap	137.7	sq.m	137.7	sq.m
		217.8	kg	217.8	kg



#### ***1.2.4 Concrete wall***

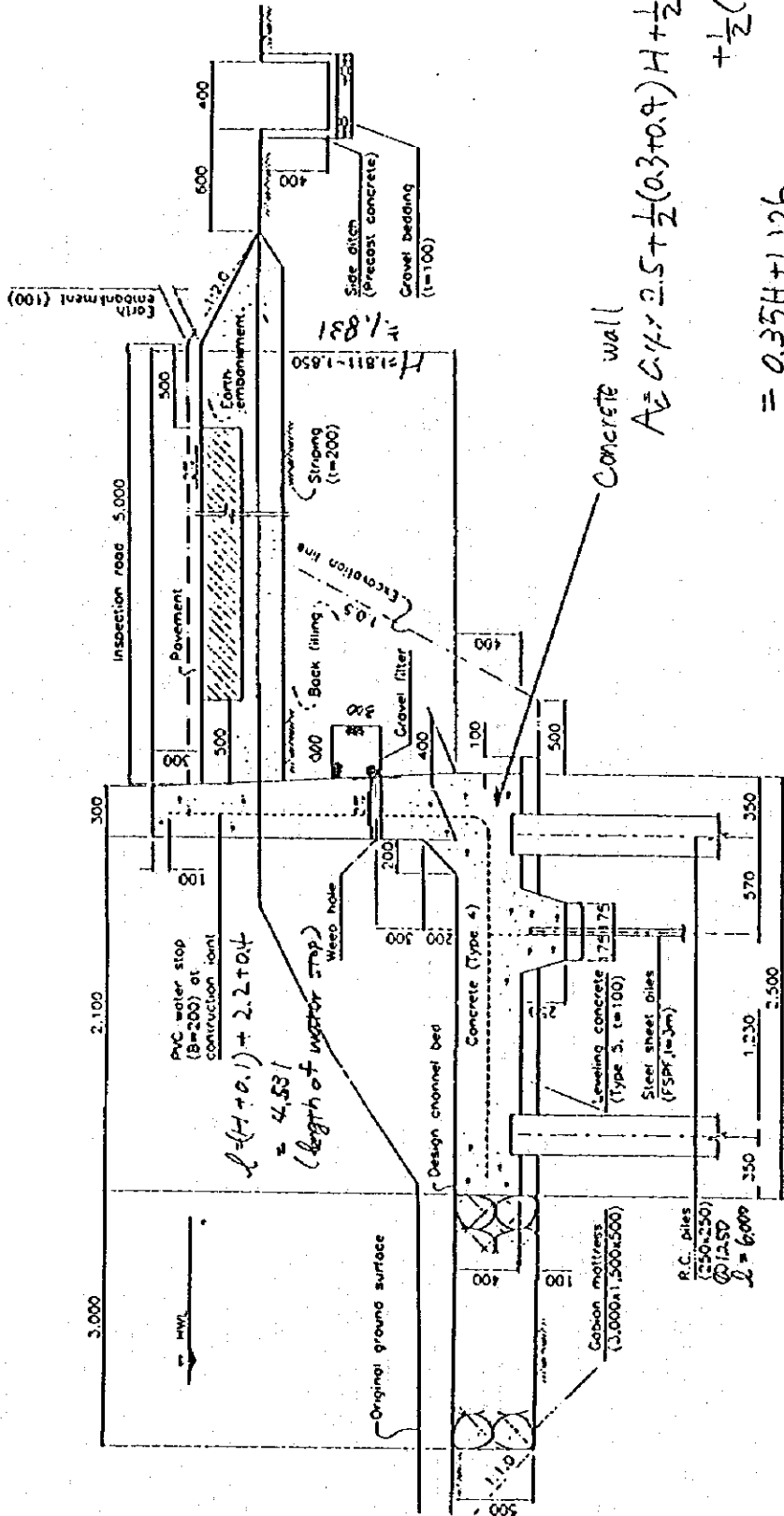
Summary of Work Quantities, Concrete Wall

Package 1  
Non

Package 2

Item No.	Description	Unit	Total Package 2	Tanjungan	PIK Junction
2.3	Concrete Wall				
/ 01	Coffering and care of water including dewatering	L.S.			
/ 02	Excavation for footing of L-type concrete wall	cu.m	4,124	4,124	
/ 03	Backfilling with selected material	cu.m	1,453	1,453	
/ 04	Geo-textile, t=1.5 mm	sq.m	48	48	
/ 05	Gravel filter	cu.m	14	14	
/ 06	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	1,702	1,702	
/ 07	PVC pipe for weep hole, diam. 50 mm	lin.m	208	208	
/ 08	Furnishing steel sheet pile, YSPF, W= 400mm	sq.m	3,404	3,404	
/ 09	Driving steel sheet pile, for Item No. 2.3/08	sq.m	3,404	3,404	
/ 10	Furnishing RC piles, 250 x 250 mm	lin.m	10,920	10,920	
/ 11	Driving RC piles, for Item No. 2.3/10	lin.m	10,920	10,920	
/ 12	Concrete, type 4, for footing and wall	cu.m	2,016	2,016	
/ 13	Concrete, type 5, for leveling	cu.m	286	286	
/ 14	Form, type F1, for Item No. 2.3/12	sq.m	3,414	3,414	
/ 15	Form, type F2, for Item No. 2.3/12	sq.m	2,104	2,104	
/ 16	Reinforcing bars, for Item No. 2.3/12	kg	161,208	161,208	
/ 17	PVC waterstop, W=200 mm	lin.m	1,034	1,034	
/ 18	Rubber joint filler, t=10 mm	sq.m	4	4	
/ 19	Bitumen coating	sq.m	404	404	

Package 3  
Non



$$A \approx 0.4 * 2.5 + \frac{1}{2} (0.3 + 0.9) H + \frac{1}{2} * 0.2 * 0.2$$

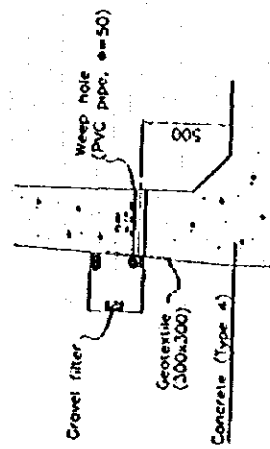
$$+ \frac{1}{2} (0.35 + 0.5) * 0.25$$

$$= 0.35H + 1.126$$

$$= 1.767 \text{ (m}^2\text{)}$$

L = 567.3 (m) : Length of concrete wall

Concrete Wall



Name of work: Concrete wall / Excavation

No. 2.3/02

Package 2

Name of channel: Tanjungan Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total	
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)			
TM00										
TM01	95.3	95.3								
TM02	192.3	97.0								
TM03	281.2	88.9								
TM04	363.7	82.5								
TM05	464.7	101.0								
TM06	581.7	117.0								
TM07	654.3	72.6								
TM08	754.1	99.8								
TM10	858.2	104.1								
TM11	949.5	91.3								
TM12	1039.6	90.1								
TM13	1082.6	43.0								
TM14	1198.3	115.7								
TM15	1281.2	82.9								
TM16	1357.3	76.1								
TM16+47.1	1404.4	47.1								
TM16+58.3	1415.6	11.2								
TM18+17.5	1472.8		Bina Marga's Area			Bina Marga's Area				
TM18+28.2	1483.5	10.7	Bina Marga's Area							
TM19	1552.7	69.2								
TM20	1652.8	100.1								
TM21	1746.1	93.3								
TM22	1840.4	94.3								
TM23	1952.3	111.9								
TM25	1977.7	25.4	5.85	2.92	75	4.79	2.39	61	136	
TM26	2011.9	34.2	5.87	5.86	201	5.01	4.90	168	369	
TM30	2043.8	31.9	4.28	5.07	162	4.04	4.52	145	307	
TM33	2181.2	137.4	4.11	4.19	576	4.33	4.18	575	1,151	
TM34	2306.4	125.2	2.80	3.45	432	3.50	3.91	490	922	
TM35	2415.0	108.6	2.06	2.43	264	1.92	2.71	295	559	
TM36	2508.2	93.2	2.85	2.45	229	3.79	2.86	267	496	
EP	2535.8	27.6	2.85	2.85	79	3.79	3.79	105	184	
Total					2,018			2,106	4,124	

Name of work: Concrete wall / Back filling with selected mterial

No. 2.3/03

Package 2

Name of channel: Tanjungan Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
TM00									
TM01	95.3	95.3							
TM02	192.3	97.0							
TM03	281.2	88.9							
TM04	363.7	82.5							
TM05	464.7	101.0							
TM06	581.7	117.0							
TM07	654.3	72.6							
TM08	754.1	99.8							
TM10	858.2	104.1							
TM11	949.5	91.3							
TM12	1039.6	90.1							
TM13	1082.6	43.0							
TM14	1198.3	115.7							
TM15	1281.2	82.9							
TM16	1357.3	76.1							
TM16+47.1	1404.4	47.1							
TM16+58.3	1415.6	11.2							
			Bina Marga's Area			Bina Marga's Area			
TM18+17.5	1472.8		Bina Marga's Area						
TM18+28.2	1483.5	10.7							
TM19	1552.7	69.2							
TM20	1652.8	100.1							
TM21	1746.1	93.3							
TM22	1840.4	94.3							
TM23	1952.3	111.9							
TM25	1977.7	25.4	3.16	1.58	41	2.36	1.18	30	71
TM26	2011.9	34.2	3.12	3.14	108	2.70	2.53	87	195
TM30	2043.8	31.9	1.70	2.41	77	1.48	2.09	67	144
TM33	2181.2	137.4	1.72	1.71	235	1.60	1.54	212	447
TM34	2306.4	125.2	0.61	1.17	146	1.02	1.31	165	311
TM35	2415.0	108.6	0.33	0.47	52	0.20	0.61	67	119
TM36	2508.2	93.2	0.83	0.58	54	1.07	0.63	59	113
EP	2535.8	27.6	0.83	0.83	23	1.07	1.07	30	53
Total					736			717	1,453

No. 2.3

Concrete wall

Work division:  
 Package 2  
 Name of channel:

Tanjungan Drainage Channel

L= 567.3 m : Length of concrete wall for each side of channel(TM23+16.2 - E.P)  
 H= 1.831 m : Height of concrete channel (Design crest EL. - Design channel bed EL)  
 Ac= 1.767 m2: Section area of concrete wall  
 n1= 260 : nos. of weep holes(= H x L / 4.0m2)  
 n2= 114 : nos. of construction joints (= L / 5.0m)  
 n3= 910 : nos. of RC piles (= (L/1.25+1)x 2)

Item No.	Description	Left Bank		Right Bank		Total		
		Quantity	unit	Quantity	unit	Quantity	unit	
2.3								
/04	Geo-textile	23.4	sq.m	-0.3 x 0.3 x n1	23.4	sq.m	46.8	sq.m
/05	Gravel filter	7.0	cu.m	-0.3 x 0.3 x 0.3 x n1	7.0	cu.m	14.0	cu.m
/06	Gabion (PVC)	851.0	cu.m	-3.0 x 0.5 x L	851.0	cu.m	1,701.9	cu.m
/07	PVC pipe for weep hole	104.0	lin.m	-0.4 x n1	104.0	lin.m	208.0	lin.m
/08	Furnishing steel sheet pile	1,701.9	sq.m	-3.0 x L	1,701.9	sq.m	3,403.8	sq.m
/09	Driving steel sheet pile	1,701.9	sq.m	-3.0 x L	1,701.9	sq.m	3,403.8	sq.m
/10	Furnishing RC pile	5,460.0	lin.m	-n3 x 6.0	5,460.0	lin.m	10,920.0	lin.m
/11	Driving RC pile	5,460.0	lin.m	-n3 x 6.0	5,460.0	lin.m	10,920.0	lin.m
/12	Concrete Type 4 (concrete wall) (wing at TM23+16.2)	1,002.4	cu.m	-Ac x L	1,002.4	cu.m	2,015.1	cu.m
/13	Concrete Type 5 (concrete wall) (for wing)	5.1	cu.m	-H x 7 x 0.4	5.1	cu.m		
/14	Form. Type F1 (for concrete wall) (for joints)	141.8	cu.m	-2.5 x 0.1 x L	141.8	cu.m		
/15	Form. Type F2 (for concrete wall) (for wing)	0.3	cu.m	-7.0 x 0.4 x 0.1	0.3	cu.m		
/16	Reinforcing bars	1,492.6	sq.m	-0.4 x 2 x L + H x L	1,492.6	sq.m		
/17	PVC water stop	201.4	sq.m	-Ac x n2	201.4	sq.m		
/18	Rubber joint filler	12.8	sq.m	-7.0 x H	12.8	sq.m		
/19	Bitumen coating	1,038.7	sq.m	-H x 1 x L	1,038.7	sq.m		
		12.8	sq.m	-7.0 x H	12.8	sq.m		
		80,603.7	kg	-V(No.15)x80	80,603.7	kg		
		516.5	lin.m	-4.131 x n2	516.5	lin.m		
		1.2	sq.m	-1.2 (see No.2.6/09)	1.2	sq.m		
		201.4	sq.m	-Ac x n2	201.4	sq.m		

CL-5

### ***1.2.5 Heightening of existing revetment***

Summary of Work Quantities, Heightening of Existing Revetment

Package 1

Item No.	Description	Unit	Total Package 1	Kamal				
				Stage1 main	Stage2 main	Stage3		
						Total	main	branch
2.5	Heightening of Existing Masonry Revetment							
1.01	Wet cobble/rubble masonry, type 2	cu.m	88			88		88

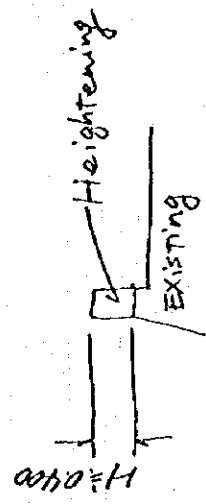
Package 2  
Non

Package 3  
Non

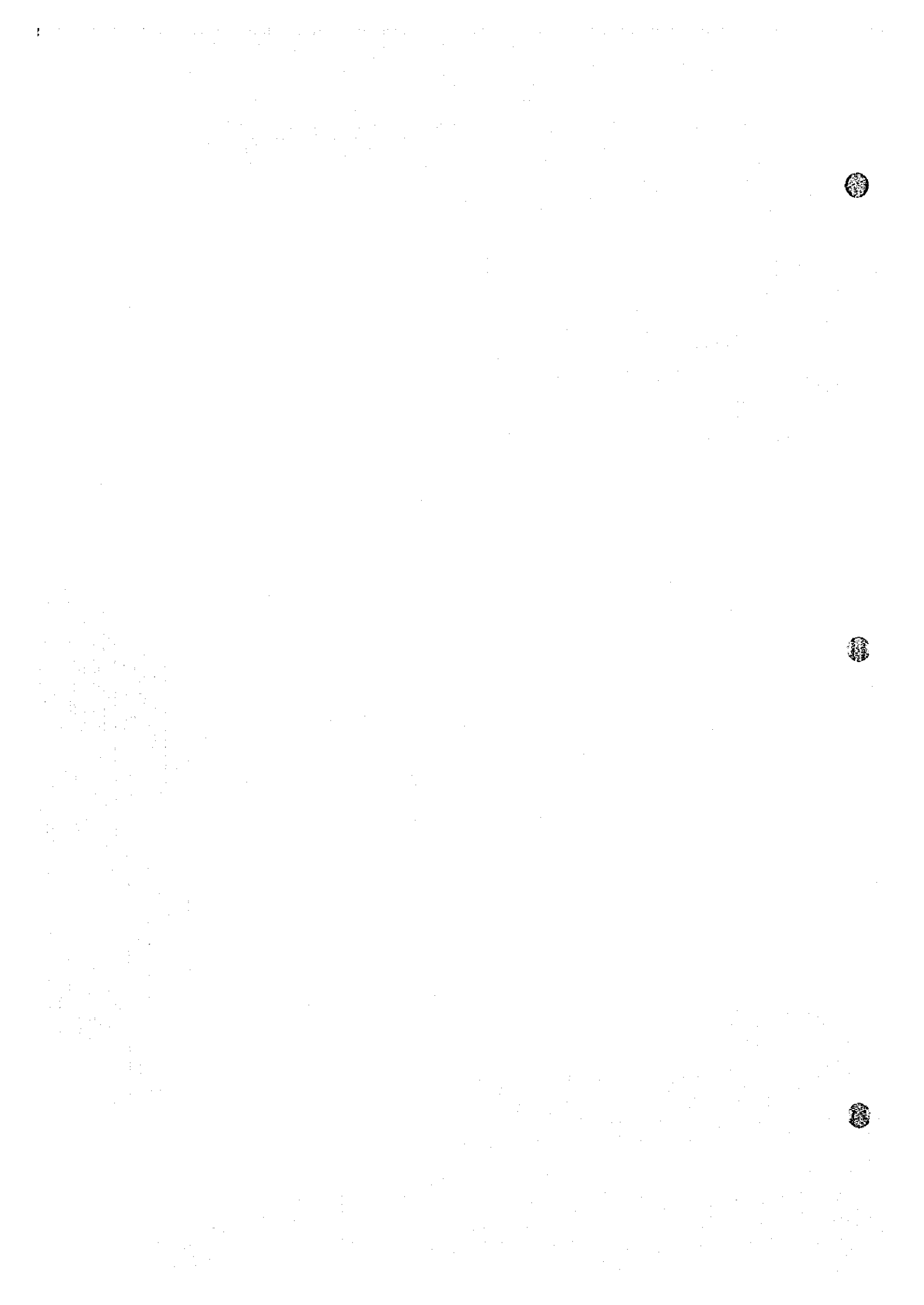


Working Division: Heightening of Existing Masonry Retention

Description	Calculation Details	Unit	Quantity	Remarks
Package 1 / Canal Drainage Channel (branch)	KE 12 + 67.6 - KE 20 + 35.6			
D2 / Net cobble rubble masonry, Type 2	Heightening $\approx 0.4m$			
	Length $l = 624.0m$			
	$V = 0.4 \times 0.35 \times 624.0 = 87.36$	m <sup>3</sup>	87.36	



### ***1.2.6 Masonry revetment, Type I***



Summary of Work Quantities, Masonry Revetment, Type I

Package 1

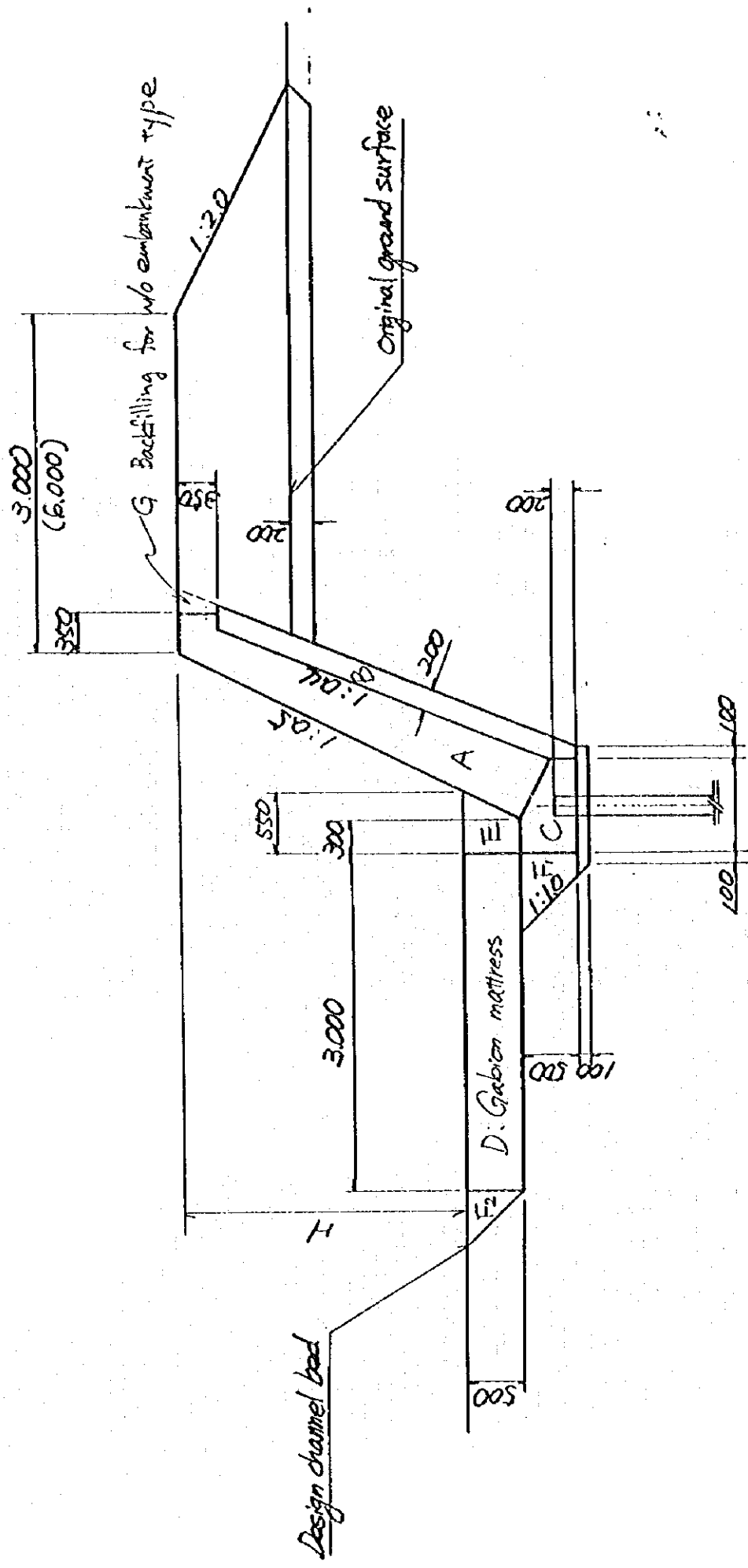
Item No.	Description	Unit	Total Package 1	Kamat				
				Stage1 main	Stage2 main	Total	Stage3 main	branch
2.5	Masonry Revetment, Type I							
/ 01	Coffering and care of water including dewatering	L.S.						
/ 02	Excavation	cu.m	15,552	191	6,477	8,834	1,783	7,101
/ 03	Backfilling	cu.m	1,281	11	540	730	118	612
/ 04	Geo-textile, t=1.5 mm	sq.m	198	2	90	106	19	87
/ 05	Gravel bedding	cu.m	1,983	20	890	1,073	183	890
/ 06	Cobble/rubble filling	cu.m	753	7	318	428	62	366
/ 07	Wet cobble/rubble masonry, type 1	cu.m	4,035	43	1,852	2,140	385	1,755
/ 08	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	5,276	44	2,226	3,006	433	2,573
/ 09	PVC pipe for weep hole, diam. 50 mm	lin.m	1,236	13	561	662	116	546
/ 10	Furnishing and driving wooden piles, diam. 15-18cm	lin.m	5,322	48	2,250	3,024	438	2,586
/ 11	Concrete, type 4, for foundation	cu.m	881	8	371	502	72	430
/ 12	Concrete, type 5, for leveling	cu.m	350	3	150	197	30	167
/ 13	Form, type F1, for Item No. 2.5/11	sq.m	4,458	38	1,893	2,527	371	2,156
/ 14	Reinforcing bars, for Item No. 2.5/11	kg	35,021	285	14,714	20,022	2,862	17,160
/ 15	Rubber joint filler, t=10 mm	sq.m	686	8	316	362	66	296

Package 2

Non

Package 3

Item No.	Description	Unit	Total Package 3	Gede/Bor	Saluran Cengkareng	Meruya
2.4	Masonry Revetment, Type I					
/ 01	Coffering and care of water including dewatering	L.S.				
/ 02	Demolishing, hauling and disposing asphalt/masonry	cu.m	261		261	
/ 03	Excavation	cu.m	10,421	1,029	9,392	
/ 04	Backfilling	cu.m	942	93	843	6
/ 05	Geo-textile, t=1.5 mm	sq.m	149	17	131	1
/ 06	Gravel bedding	cu.m	1,472	166	1,297	9
/ 07	Cobble/rubble filling	cu.m	573	57	513	3
/ 08	Wet cobble/rubble masonry, type 1	cu.m	2,986	348	2,621	17
/ 09	Gabion mattress, 3.0x1.5x0.5 m, PVC coated wire	cu.m	3,599		3,599	
/ 10	Gabion mattress, 3.0x1.5x0.5 m, galvanized wire	cu.m	419	398		21
/ 11	PVC pipe for weep hole, diam. 50 mm	lin.m	885	105	774	6
/ 12	Furnishing and driving wooden piles, diam. 15-18cm	lin.m	4,056	402	3,630	24
/ 13	Concrete, type 4, for foundation	cu.m	669	66	599	4
/ 14	Concrete, type 5, for leveling	cu.m	267	27	238	2
/ 15	Form, type F1, for Item No. 2.4/13	sq.m	3,369	340	3,011	18
/ 16	Reinforcing bars, for Item No. 2.4/13	kg	26,628	2,631	23,857	140
/ 17	Rubber joint filler, t=10 mm	sq.m	509	60	445	4



R 1-2

Area of section

G: Back-filling (for 1/6 embankment type).

$$\left\{ \sqrt{0.14^2 + 0.35^2} \times 0.2 \right\} - \frac{1}{2} \times 0.14 \times 0.35 = 0.07539 - 0.0245 \\ = 0.0509 \quad (\text{m}^2)$$

A: Wet cobble/rubble masonry

$$\frac{1}{2} \times 0.14 \times 0.35 + \left\{ 0.5(H+0.5) + 0.35 - 0.4(H+0.5) + 0.35 \right\} \times (H+0.5) \times \frac{1}{2} \\ + \frac{2.5}{72} (0.35 + 0.1H) \\ = 0.0245 + (0.4 + 0.1H + 0.35) \times (H+0.5) \times \frac{1}{2} + 0.20833(0.35 + 0.1H) \\ = 0.0245 + \frac{1}{2}(0.75 + 0.1H)(H+0.5) + 0.20833(0.35 + 0.1H) \\ = 0.0974 + \frac{1}{2}(0.75 + 0.1H)(H+0.5) + 0.0208H \quad (\text{m}^2)$$

D: leveling concrete

$$\left\{ (0.3 + \frac{1}{3} \times 2.5(0.35 + 0.1H) + 0.2) + (0.3 + \frac{1}{3} \times 2.5(0.35 + 0.1H) + 0.3) \right\} \times 0.1 \times \frac{1}{2} \\ = \left\{ 0.6 + \frac{2}{3} \times 2.5(0.35 + 0.1H) + 0.5 \right\} \times 0.1 \times \frac{1}{2} = 0.055 + 0.08333(0.35 + 0.1H) \\ = 0.0842 + 0.00833H \quad (\text{m}^2)$$

E: Cobble/rubble filling

$$0.5 \times 0.3 + \frac{1}{2} \times 0.5 \times 0.25 = 0.2125 \quad (\text{m}^2)$$

F: Back filling =  $F_1 + F_2 = 0.35 \text{ (m}^2\text{)}$

$$F_1 = (0.2 + 0.7) \times 0.5 \times \frac{1}{2} = 0.225$$

$$F_2 = 0.5 \times 0.5 \times \frac{1}{2} = 0.125$$

D: Gabion mattress

$$3.0 \times 0.5 = 1.5 \quad (\text{m}^2)$$

C: Foundation concrete

$$\left\{ 0.3 + \frac{2.5}{3} (0.35 + 0.1H) \right\} \times 0.5 - (0.0532 + 0.0304H + 0.00434H^2) \\ = 0.15 + 0.146 + 0.0717H - 0.0532 - 0.0304H - 0.00434H^2 \\ = 0.2428 + 0.0113H - 0.00434H^2 \quad (\text{m}^2)$$

B: Gravel bedding.

$$l = \sqrt{(H+1.0)^2 + 0.4^2(H+1.0)^2} = 1.0770(H+1.0)$$

$$A = l \times 0.2 - 4$$

$$= 0.2154(H+1.0) - \frac{1}{2} \left\{ 0.5 - \frac{2.5}{6}(0.35+0.1H) \right\} \left\{ 0.2 - \frac{1}{6}(0.35+0.1H) \right\}$$

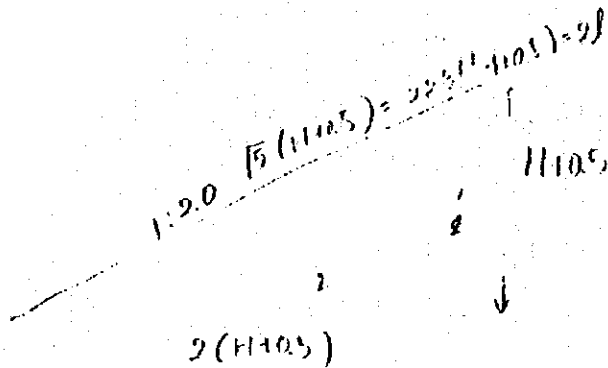
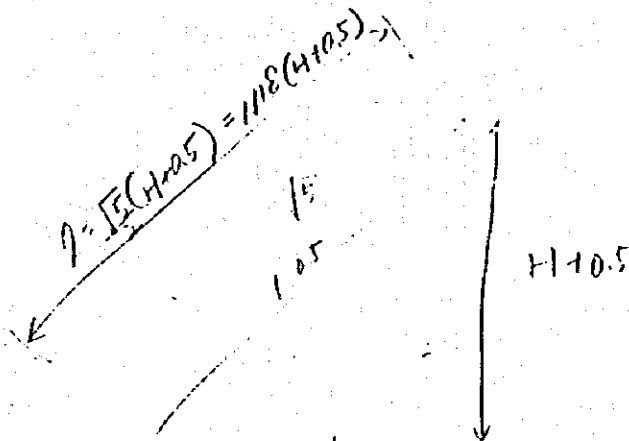
$$= 0.2154(H+1.0) - \frac{1}{2}(0.375 - 0.0417H)(0.142 - 0.0167H)$$

Form (F1)

$$l = 0.5 + \left\{ 0.5 - \frac{2.5}{6}(0.35+0.1H) \right\} + 0.326 + 0.0933H$$

$$= 1.326 - \frac{2.5}{6}(0.35+0.1H) + 0.0933H$$

$$= 1.180 + 0.0516H$$



Name of work: Revetment type I / Excavation

No. 2.5/02

Package 1

Name of channel: Kanal Drainage Channel (Main)

Section No.	Distance		Left Bank			Right Bank			Total	Stage
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)			
B.P(new)										
KM-00	62.0	62.0								
KM-01	182.6	120.6								
KM-02	269.1	86.5								
KM-03	321.8	52.7								
KM-05	441.1	119.3								
KM-06	543.8	102.7								
KM-07	659.5	115.7								
KM-08	805.6	146.1								
KM-09	868.5	62.9								
KM-10	978.1	109.6								
KM-11	1,064.3	86.2								
KM-12	1,179.4	115.1								
KM-13	1,266.9	87.5								
KM-14	1,357.3	90.4				4.22	2.11	191	191	
KM14+23.4	1,380.7	23.4	Bina Marga's Area			Bina Marga's Area				191
			Bina Marga's Area			Bina Marga's Area				
KM16+22.8	1,443.3	22.8				4.76				
KM16+36.8	1,457.3	14.0				4.76	4.76	109	109	
KM-17	1,482.5	25.2	4.54	2.3	58		2.38	34	34	
KM-18	1,589.2	106.7	4.54	4.5	485				485	
KM-20	1,702.5	113.3		2.3	258				258	
KM-21	1,733.2	30.7								
KM-22	1,821.2	88.0								
KM-23	1,916.7	95.5								
KM-24	1,988.7	72.0								
KM-25	2,084.6	95.9								
KM-26	2,166.9	82.3								
KM-27	2,286.8	119.9								
KM-28	2,395.4	108.6								
KM-29	2,473.2	77.8								
KM-31	2,540.7	67.5								
KM-32	2,614.2	73.5								
KM-33	2,713.9	99.7	4.10	2.1	205				205	
KM-34	2,769.5	55.6	4.20	4.2	231				231	
KM-35	2,822.7	53.2	4.00	4.1	219				219	
KM-38	3,001.1	178.4	3.84	3.9	700	4.40	2.20	393	1,093	
KM-40	3,126.7	125.6	3.48	3.7	460	4.07	4.24	532	992	
KM-42	3,281.6	154.9	3.44	3.5	536	4.14	4.11	636	1,172	
KM-43	3,393.3	111.7	3.48	3.5	387	3.65	3.90	436	823	
KM-45	3,454.0	60.7	4.44	4.0	241	4.21	3.93	239	480	
KM-46	3,527.4	73.4		2.2	163		2.11	155	318	
KM-47	3,618.9	91.5								
KM-48	3,700.4	81.5								6,477
KM-50	3,831.3	130.9	4.40	2.2	288				288	
KM-51	3,926.0	94.7	4.22	4.3	409				409	
KM-52	4,022.9	96.9	4.26	4.2	411				411	
KM-54	4,110.0	87.1	4.35	4.3	375				375	
KM-55	4,247.9	137.9		2.2	300				300	
KM-56	4,370.6	122.7								
KM-57	4,462.9	92.3								1,783
Total					5,726			2,725	8,451	8,451



Name of work: Reveitment typel / Excavation

No. 2.5/02

Package 1

Name of channel: Kamal Drainage Channel (Branch)

Section No.	Distance		Left Bank			Right Bank			Total
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	Volume (m3)
			unit (m2)	average (m2)		unit (m2)	average (m2)		
KE00									
KE01	36.6	36.6							
KE02	134.0	97.4							
KE03	272.3	138.3							
KE04	372.7	100.4							
KE07	486.8	114.1				3.96	1.98	226	226
KE08	568.3	81.5				3.80	3.88	317	317
KE10	626.2	57.9				3.90	3.85	223	223
KE11	714.3	88.1					1.95	172	172
KE12	785.9	71.6				4.00	2.00	144	144
KE13	894.7	108.8					2.00	218	218
KE14	944.7	50.0							
KE15	1,020.1	75.4							
KE16	1,107.7	87.6							
KE17	1,174.1	66.4							
KE18	1,265.4	91.3							
KE19	1,376.9	111.5							
KE20	1,421.9	45.0							
KE21	1,497.0	75.1							
KE23	1,536.7	39.7	3.93	1.97	79				79
KE24	1,637.4	100.7	3.33	3.63	366	3.63	1.82	183	549
KE25	1,718.5	81.1	3.39	3.36	273	3.46	3.55	288	561
KE26	1,870.3	151.8	3.12	3.26	495	3.43	3.45	523	1,018
KE27	1,988.1	117.8	3.49	3.31	390	3.32	3.38	398	788
KE28	2,058.7	70.6	3.58	3.54	250	3.56	3.44	243	493
KE29	2,132.0	73.3	3.63	3.61	265	3.38	3.47	255	520
KE30	2,298.5	166.5	3.47	3.55	592	3.58	3.48	580	1,172
KE31	2,474.4	175.9		1.74	306		1.79	315	621
KE32	2,580.3	105.9							
KE33	2,754.7	174.4							
Total					3,016			4,085	7,101

Name of work: Revetment type1 / Excavation

No. 2.4/03

Package 3

Name of channel: Gede/Bor Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
GM-00	2.8	2.8							
GM-02	19.9	17.1							
GM-03	49.5	29.6							
GM-04	169.6	120.1							
GM-05	258.6	89.0							
GM-06	374.1	115.5							
GM-07	423.5	49.4							
GM-08	536.3	112.8							
GM-10	619.8	83.5	4.23	2.12	177				177
GM-11	697.1	77.3	3.97	4.10	317				317
GM-12	785.3	88.2	3.79	3.88	343				343
GM-13	886.6	101.3		1.90	192				192
GM-14	974.7	88.1							
GM-15	1,072.2	97.5							
GM-16	1,150.1	77.9							
B.P	1,203.0	52.9							
Total					1,029				1,029

Name of work: Revetment typel / Excavation

No. 2.4/03

Package 3

Name of channel: Saluran Cengkareng Drainage Channel

Section No.	Distance		Left Bank			Right Bank			Total Volume (m3)
	(m)	unit (m)	Area		Volume (m3)	Area		Volume (m3)	
			unit (m2)	average (m2)		unit (m2)	average (m2)		
B.P									
CM01	17.2	17.2							
CM02	20.2	3.0							
CM03	154.6	134.4							
CM04	292.3	137.7							
CM05	392.4	100.1							
CM06	466.4	74.0							
CM07	569.0	102.6							
CM08	636.6	67.6							
CM09	808.2	171.6							
CM10	884.9	76.7							
CM12	962.9	78.0							
CM13	1,056.9	94.0							
CM14	1,173.6	116.7							
CM15	1,237.0	63.4							
CM16	1,312.8	75.8				2.43	1.22	93	93
CM17	1,446.0	133.2				3.87	3.15	420	420
CM18	1,544.5	98.5					1.94	191	191
CM19	1,613.6	69.1							
CM20	1,740.7	127.1							
CM21	1,832.5	91.8							
CM22	1,901.7	69.2							
CM23	2,001.5	99.8							
CM24	2,102.9	101.4				2.80	1.40	142	142
CM25	2,194.3	91.4				3.33	3.07	281	281
CM26	2,304.8	110.5				3.11	3.22	356	356
CM27	2,448.0	143.2	3.93	1.97	282	3.69	3.40	487	769
CM29	2,599.3	151.3	4.45	4.19	634	4.30	4.00	605	1,239
CM30	2,698.3	99.0		2.23	221		2.15	213	434
CM31	2,803.5	105.2	2.90	1.45	153				153
CM32	2,933.5	130.0	3.60	3.25	423				423
CM34	3,047.4	113.9		1.80	206				206
CM36	3,095.6	48.2							
CM37	3,219.0	123.4							
CM38	3,339.1	120.1							
CM39	3,425.5	86.4				4.40	2.20	191	191
CM40	3,467.5	42.0				5.05	4.73	199	199
CM41	3,556.9	89.4					2.53	226	226
CM42	3,653.4	96.5							
CM43	3,777.2	123.8	3.80	1.90	236	3.20	1.60	199	435
CM45	3,916.3	139.1	3.45	3.63	505	4.45	3.83	533	1,038
CM47	4,022.2	105.9	3.80	3.63	384	4.35	4.40	466	850
CM48	4,110.3	88.1	4.35	4.08	360	3.95	4.15	366	726
CM49	4,230.2	119.9	4.30	4.33	519	4.23	4.09	491	1,010
E.P	4,231.2	1.0	4.30	4.30	5	4.23	4.23	5	10
Total					3,928			5,464	9,392

Working Division: Revetment type I / Back filling  
 Package 1

No. 2.5/03

A1= 0.409 m2 (for w/o embankment type)  
 A2= 0.35 m2  
 V= A x L (m3)

Left bank			Right bank		
Location	Length L(m)	Volume V(m3)	Location	Length L(m)	Volume V(m3)
Kamal Drainage Channel (main)			Kamal Drainage Channel (main)		
* KM16+36.8 - KM18+12.8 Stage2	144.7	59.18	KM13+77.9 - KM14+23.4 (transition) Stage1	28.8	10.08
KM32+60.9 - KM35+140.6 Stage2	288.2	100.87	KM16+22.8 - KM16+51.6 (transition) Stage2	28.8	10.08
KM35+140.6 - KM45+2.2 Stage2	492.9	172.52	* KM35+107.2 - KM38+90.4 Stage2	161.6	66.09
* KM48+121.3 - KM54 Stage3	288.3	117.91	KM38+90.4 - KM45+2.2 Stage2	364.7	127.65
Kamal Drainage Channel (branch)			Kamal Drainage Channel (branch)		
KE23 - KE30+4.6 Stage3	766.4	268.24	* KE04+70.0 - KE10+2.2 Stage3	185.7	75.95
			KE23+4.0 - KE23+4.6 Stage3	762.4	266.84
Total		718.72			556.69

Note : \* w/o embankment type

Working Division: Revetment type I / Back filling  
 Package 3

No. 2.4/04

A1= 0.409 m<sup>2</sup> (for w/o embankment type)

A2= 0.35 m<sup>2</sup>

V= A x L (m<sup>3</sup>)

Left bank			Right bank		
Location	Length L(m)	Volume V(m <sup>3</sup> )	Location	Length L(m)	Volume V(m <sup>3</sup> )
Gede/Bor Drainage Channel GM10 - GM12+99.3	264.8	92.68			
Saluran Cengkareng Drainage Channel					
CM26+82.8 - CM29+23.5	235.2	82.32	CM15+6.0 - CM17+84.5	287.5	100.63
CM30+31.5 - CM34+16.0	333.6	116.76	CM23+53.0 - CM29+18.8	563.6	197.26
CM42+87.6 - CM43+83.4	119.6	41.86	CM38+35.0 - CM40+20.5	113.9	39.87
CM45 - EP	314.9	110.22	CM42+87.6 - CM43+77.0	113.2	39.62
			CM45 - EP	314.9	110.22
Meruya Area Estuary	14	5.73			
Total		449.56			487.59

Working Division: Revetment type I / Wet cobble/rubble masonry and Gravel bedding  
 Package 1

No. 2.S/07 and 05

$$V = A \times L$$

Location	Left bank			Right bank			Wet masonry		Gravel bedding	
	Length L(m)	Height H(m)	Volume V(m <sup>3</sup> )	Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	Area A(m <sup>2</sup> )	Height H(m)	Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	Area A(m <sup>2</sup> )
Kamal Drainage Channel (main) KM16+36.8 - KM18+12.8 Stage2 KM32+60.9 - KM35+140.6 Stage2 KM35+140.6 - KM45+2.2 Stage2 KM48+121.3 - KM54 Stage3	144.7	2.21	211.13	1.46	97.90	0.68	28.8	1.46	42.02	0.68
	288.2	2.16	411.29	1.43	191.82	0.67	28.8	1.46	42.02	0.68
	492.9	1.30	451.71	0.92	234.68	0.48	161.6	1.41	227.54	0.66
	288.3	2.01	384.22	1.33	182.37	0.63	364.7	1.38	504.30	0.65
Kamal Drainage Channel (branch) KE23 - KE30+4.6 Stage3	766.4	1.48	779.59	1.02	395.32	0.52	185.7	1.07	198.48	0.54
							762.4	1.02	775.52	0.52
Total			2237.94		1102.09				1789.87	

Working Division: Revetment type I / Wet cobble/rubble masonry and Gravel bedding  
 Package 3

No. 2.4/08 and 06

V - A x L

Location	Left bank				Right bank				
	Length L(m)	Height H(m)	Wet masonry		Length L(m)	Height H(m)	Wet masonry		
			Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )			Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	
Gede/Bor Drainage Channel GM10 - GM12+99.3	264.8	1.98	1.31	347.97					
Saluran Cengkareng Drainage Channel									
CM26+82.8 - CM29+23.5	235.2	1.50	1.03	241.93	287.5	1.50	1.03	295.72	149.57
CM30+31.5 - CM34+16.0	333.6	1.00	0.76	252.10	563.6	1.00	0.76	425.91	231.03
CM42+87.6 - CM43+83.4	119.6	2.20	1.45	173.74	113.9	2.27	1.50	170.59	78.56
CM45 - EP	314.9	2.15	1.42	447.39	113.2	2.20	1.45	164.44	76.34
					314.9	2.14	1.41	445.39	208.20
Meruya Area Estuary	14.0	1.78	1.19	16.69					
Total				1463.13				1502.06	743.70
									722.56

Working Division: Revetment type I / Cobble/rubble filling  
 Package 1

No.2.5/06

$$A = 0.2125 \text{ m}^2$$

$$V = A \times L \text{ (m}^3\text{)}$$

Left bank			Right bank		
Location	Length L(m)	Volume V(m <sup>3</sup> )	Location	Length L(m)	Volume V(m <sup>3</sup> )
Karnal Drainage Channel (main)					
KM16+36.8 - KM18+12.8 Stage2	144.7	30.75	KM13+77.9 - KM14+23.4 (transition) Stage1	28.8	6.12
KM32+60.9 - KM35+140.6 Stage2	288.2	61.24	KM16+22.8 - KM16+51.6 (transition) Stage2	28.8	6.12
KM35+140.6 - KM45+2.2 Stage2	492.9	104.74	KM35+107.2 - KM38+90.4 Stage2	161.6	34.34
KM48+121.3 - KM54 Stage3	288.3	61.26	KM38+90.4 - KM45+2.2 Stage2	364.7	77.50
Karnal Drainage Channel (branch)					
KE23 - KE30+4.6 Stage3	766.4	162.86	KE04+70.0 - KE10+2.2 Stage3	185.7	39.46
			KE23+4.0 - KE23+4.6 Stage3	762.4	162.01
Total		420.86			325.55



Working Division: Revetment type I / Cobble/rubble filling  
 Package 3

No.2.4/07

$$A = 0.2125 \text{ m}^2$$

$$V = A \times L \text{ (m}^3\text{)}$$

Left bank			Right bank		
Location	Length L(m)	Volume V(m <sup>3</sup> )	Location	Length L(m)	Volume V(m <sup>3</sup> )
Gede/Bor Drainage Channel GM10 - GM12+99.3	264.8	56.27			
Saluran Cengkareng Drainage Channel					
CM26+82.8 - CM29+23.5	235.2	49.98	CM15+6.0 - CM17+84.5	287.5	61.09
CM30+31.5 - CM34+160	333.6	70.89	CM23+53.0 - CM29+18.8	563.6	119.77
CM42+87.6 - CM43+83.4	119.6	25.42	CM38+35.0 - CM40+20.5	113.9	24.20
CM45 - EP	314.9	66.92	CM42+87.6 - CM43+77.0	113.2	24.06
			CM45 - EP	314.9	66.92
Meruya Area Estuary	14	2.98			
Total		272.45			296.03

Working Division: Revestment type I / Weep hole and Geotextile  
Package 1

No. 2.5/09 and /04

10= 0.57 m : length of one PVC pipe for weep hole  
a= 4.0 m<sup>2</sup> : area of masonry surface per one weep hole  
n= A / a : nos. of weep holes  
l=10 x n (lin.m) : Total length of PVC pipe ag=n x 0.09(m<sup>2</sup>) : Total area of geotextile

Location	Left bank					Right bank							
	Length L(m)	Height H(m)	Surface A(m <sup>2</sup> )	nos. n	PVC l (lin.m)	Geotextile ag(m <sup>2</sup> )	Location	Length L(m)	Height H(m)	Surface A(m <sup>2</sup> )	nos. n	PVC l (lin.m)	Geotextile ag(m <sup>2</sup> )
Kamal Drainage Channel (main) KM16+36.8 - KM18+12.8 Stage2 KM32+60.9 - KM35+140.6 Stage2 KM35+140.6 - KM45+2.2 Stage2 KM48+121.3 - KM54 Stage3	144.7	2.21	438.41	110	62.70	9.90	KM13+77.9 - KM14+23.4 (transition) Stage1 KM16+22.8 - KM16+51.6 (transition) Stage2 KM35+107.2 - KM38+90.4 Stage2 KM38+90.4 - KM45+2.2 Stage2	28.8	2.21	87.26	22	12.54	1.98
	288.2	2.16	857.07	215	122.55	19.35		28.8	2.21	87.26	22	12.54	1.98
	492.9	1.30	991.91	248	141.36	22.32		161.6	2.13	475.16	119	67.83	10.71
	288.3	2.01	809.02	203	115.71	18.27		364.7	2.09	1056.03	265	151.05	23.85
Kamal Drainage Channel (branch) KE23 - KE30+4.6 Stage3	766.4	1.48	1696.53	425	242.25	38.25	KE04+70.0 - KE10+2.2 Stage3 KE23+4.0 - KE23+4.6 Stage3	185.7	1.57	429.76	108	61.56	9.72
								762.4	1.48	1687.68	422	240.54	37.98
Total					684.57	108.09						546.06	86.22

Working Division: Revetment type I / Weep hole and Geotextile  
 Package 3

No. 2.4/11 and /05

l<sub>0</sub>= 0.57 m : length of one PVC pipe for weep hole  
 a= 4.0 m<sup>2</sup> : area of masonry surface per one weep hole  
 n= A / a : nos. of weep holes  
 l=10 x n (lin.m) : Total length of PVC pipe    ag=n x 0.09(m<sup>2</sup>) : Total area of geotextile

Location	Left bank				Right bank				Geotextile ag(m <sup>2</sup> )					
	Length L(m)	Height H(m)	Surface A(m <sup>2</sup> )	nos. n	PVC l(lin.m)	Geotextile ag(m <sup>2</sup> )	Location	Length L(m)		Height H(m)	Surface A(m <sup>2</sup> )	nos. n	PVC l(lin.m)	Geotextile ag(m <sup>2</sup> )
Cede/Bor Drainage Channel GM10 - GM12+99.3	264.8	1.98	734.20	184	104.88	16.56								
Saluran Cengkareng Drainage Channel														
CM26+82.8 - CM29+23.5	235.2	1.50	525.91	132	75.24	11.88	CM15+6.0 - CM17+84.5	287.5	1.50	642.85	161	91.77	14.49	
CM30+31.5 - CM34+16.0	333.6	1.00	559.45	140	79.80	12.60	CM23+53.0 - CM29+18.8	563.6	1.00	945.16	237	135.09	21.33	
CM42+87.6 - CM43+83.4	119.6	2.20	361.02	91	51.87	8.19	CM38+35.0 - CM40+20.5	113.9	2.27	352.73	89	50.73	8.01	
CM45 - EP	314.9	2.15	932.95	234	133.38	21.06	CM42+87.6 - CM43+77.0	113.2	2.20	341.71	86	49.02	7.74	
							CM45 - EP	314.9	2.14	929.43	233	132.81	20.97	
Menyua Area Estuary	14.0	1.78	35.69	9	5.13	0.81								
<b>Total</b>					<b>450.30</b>	<b>71.10</b>						<b>459.42</b>	<b>72.54</b>	

A= 1.5 m<sup>2</sup>(=3.0m x 0.5m)  
 V= A x L.(m<sup>3</sup>)

Left bank				Right bank			
Location		Length L(m)	Volume V(m <sup>3</sup> )	Location		Length L(m)	Volume V(m <sup>3</sup> )
Kamal Drainage Channel (main)							
KM16+36.8 - KM18+12.8	Stage2	144.7	217.05	KM13+77.9 - KM14+23.4 (transition)	Stage1	28.8	43.20
KM32+60.9 - KM35+140.6	Stage2	288.2	432.30	KM16+22.8 - KM16+51.6 (transition)	Stage2	28.8	43.20
KM35+140.6 - KM45+2.2	Stage2	492.9	739.35	KM35+107.2 - KM38+90.4	Stage2	161.6	242.40
KM48+121.3 - KM54	Stage3	288.3	432.45	KM38+90.4 - KM45+2.2	Stage2	364.7	547.05
Kamal Drainage Channel (branch)							
KE23 - KE30+4.6	Stage3	766.4	1149.60	KE04+70.0 - KE10+2.2	Stage3	185.7	278.55
				KE23+4.0 - KE23+4.6	Stage3	762.4	1143.60
Total			2970.75				2298.00

Working Division: Revetment type I / Gabion mattress(PVC coated)  
 Package 3

No.2.4/09

A= 1.5 m<sup>2</sup>(=3.0m x 0.5m)  
 V= A x L (m<sup>3</sup>)

Left bank			Right bank		
Location	Length L(m)	Volume V(m <sup>3</sup> )	Location	Length L(m)	Volume V(m <sup>3</sup> )
Saluran Cengkareng Drainage Channel					
CM26+82.8 - CM29+23.5	235.2	352.80	CM15+6.0 - CM17+84.5	287.5	431.25
CM30+31.5 - CM34+16.0	333.6	500.40	CM23+53.0 - CM29+18.8	563.6	845.40
CM42+87.6 - CM43+83.4	119.6	179.40	CM38+35.0 - CM40+20.5	113.9	170.85
CM45 - EP	314.9	472.35	CM42+87.6 - CM43+77.0	113.2	169.80
			CM45 - EP	314.9	472.35
Total		1504.95			2089.65

Working Division: Revetment type I / Gabion mattress (galvanized) No.2.4/10  
 Package 3

A= 1.5 m<sup>2</sup>(=3.0m x 0.5m)  
 V= A x L (m<sup>3</sup>)

Left bank			Right bank		
Location	Length L(m)	Volume V(m <sup>3</sup> )	Location	Length L(m)	Volume V(m <sup>3</sup> )
Gede/Bor Drainage Channel GM10 - GM12+99.3	264.8	397.20			
Meruya Area Estuary	14.0	21.00			
Total		418.20			

Working Division: Revetment type I / Wooden pile  
 Package I

No. 2.5/10

l<sub>0</sub> = 3.0 m : length of one pile  
 d = 2.0 m : interval of piles  
 n = L / d + 1 : nos. of piles  
 l = l<sub>0</sub> x n (lin.m) : Total length of piles

Left bank				Right bank					
Location		Length L(m)	nos. n	l (lin.m)	Location		Length L(m)	nos. n	l (lin.m)
Kamal Drainage Channel (main)									
KM16+36.8 - KM18+12.8	Stage2	144.7	74	222.00	KM13+77.9 - KM14+23.4 (transition)	Stage1	28.8	16	48.00
KM32+60.9 - KM35+140.6	Stage2	288.2	146	438.00	KM16+22.8 - KM16+51.6 (transition)	Stage2	28.8	16	48.00
KM35+140.6 - KM45+2.2	Stage2	492.9	248	744.00	KM35+107.2 - KM38+90.4	Stage2	161.6	82	246.00
KM48+121.3 - KM54	Stage3	288.3	146	438.00	KM38+90.4 - KM45+2.2	Stage2	364.7	184	552.00
Kamal Drainage Channel (branch)									
KE23 - KE30+4.6	Stage3	766.4	385	1155.00	KE04+70.0 - KE10+2.2	Stage3	185.7	94	282.00
					KE23+4.0 - KE23+4.6	Stage3	762.4	383	1149.00
Total									2325.00

Working Division: Revetment type I / Wooden pile  
 Package 3

No. 2.4/12

l0= 3.0 m : length of one pile  
 d= 2.0 m : interval of piles  
 $n = L / d + 1$  : nos. of piles  
 $l = l0 \times n$  (lin.m) : Total length of piles

Left bank				Right bank			
Location	Length L(m)	nos. n	l (lin.m)	Location	Length L(m)	nos. n	l (lin.m)
Gede/Bor Drainage Channel GM10 - GM12+99.3	264.8	134	402.00				
Saluran Cengkareng Drainage Channel							
CM26+82.8 - CM29+23.5	235.2	119	357.00	CM15+6.0 - CM17+84.5	287.5	145	435.00
CM30+31.5 - CM34+16.0	333.6	168	504.00	CM23+53.0 - CM29+18.8	563.6	283	849.00
CM42+87.6 - CM43+83.4	119.6	61	183.00	CM38+35.0 - CM40+20.5	113.9	58	174.00
CM45 - EP	314.9	159	477.00	CM42+87.6 - CM43+77.0	113.2	58	174.00
				CM45 - EP	314.9	159	477.00
Meruya Area Estuary	14.0	8	24.00				
Total			1947.00				2109.00



Working Division: Revetment type 1 /

Foundation concrete (Type 4)  
 Leveling concrete (Type 5)  
 Form  
 Rein forcing bars

No. 2.5/11  
 No. 2.5/12  
 No. 2.5/13  
 No. 2.5/14

Package 1

V = A x L  
 Form: A = d x L  
 Reinforcing bar: W = V(concrete type-4) x 40kg/m

Location	Left bank						Right bank								
	Length L(m)	Height H(m)	Foundation Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	Leveling Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	Length L(m)	Height H(m)	Foundation Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	Leveling Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	Form unit d(m)	Form Area (sq.m)	Reinforcing bars (kg)
Kamal Drainage Channel (main) KM16+36.8 - KM18+12.8 KM32+60.9 - KM35+140.6 KM35+140.6 - KM45+2.2 KM45+171.3 - KM54	Stage2	144.7	2.21	0.247	35.71	0.10	14.84	1.29	187.25	1428.34			1.29	37.27	284.29
	Stage2	284.2	2.16	0.247	71.23	0.10	29.43	1.29	372.20	2849.25			1.29	37.27	284.29
	Stage2	492.9	1.30	0.250	121.40	0.09	46.82	1.25	614.69	4936.01			1.25	208.45	1599.06
	Stage3	286.3	2.01	0.248	71.55	0.10	29.06	1.28	370.10	2862.00			1.28	469.68	3612.46
Kamal Drainage Channel (branch) KE23 - KE30+4.6	Stage3	766.4	1.48	0.250	191.77	0.10	73.95	1.26	902.88	7670.67			1.26	234.17	1857.32
	Stage3													957.85	7630.64
Total				493.66		194.12			2507.11	19746.27				1944.69	15268.44

No. 2.4/13  
 No. 2.4/14  
 No. 2.4/15  
 No. 2.4/16

Working Division: Revetment type 1/  
 Foundation concrete (Type 4)  
 Leveling concrete (Type 5)  
 Form  
 Rein forcing bars

Package 3

$V = A \times L$   
 Form :  $A = d \times L$   
 Reinforcing bar :  $W = V(\text{concrete type}) \times 40\text{kg/m}$

Location	Length L(m)	Height H(m)	Foundation (Type-4)			Leveling (Type-5)			Form unit d.(m)	Form (sq.m)	Reinforcing bars (kg)							
			Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )	Height H(m)	Area A(m <sup>2</sup> )	Volume V(m <sup>3</sup> )											
Code/Box Drainage Channel GM10 - GM12-99.3	264.8	1.98	0.248	65.77	0.10	26.65	1.28	339.52	2630.62									
Saluran Congkaringan Drainage Channel CM26-82.8 - CM29-23.5 CM30-31.5 - CM34-16.0 CM42-87.6 - CM43-83.4 CM45 - EP	235.2 333.6 119.6 314.9	1.50 1.00 2.20 2.15	0.250 0.250 0.247 0.247	58.84 83.39 29.52 77.85	0.10 0.09 0.10 0.10	22.73 30.86 12.25 32.13	1.26 1.21 1.29 1.29	295.74 410.86 154.70 406.52	2353.74 3335.47 1180.95 3114.15	287.5 363.6 113.9 113.2 314.9	1.50 1.00 2.27 2.20 2.14	0.250 0.230 0.246 0.247 0.247	71.93 140.88 28.05 27.94 77.86	0.10 0.09 0.10 0.10 0.10	27.79 52.13 11.74 11.60 32.11	1.26 1.23 1.29 1.29 1.29	361.50 410.86 154.70 406.52 406.52	2877.13 5635.10 1122.09 1117.76 3115.07
Menyua Area Estuary	14.0	1.78	0.249	3.49	0.10	1.39	1.27	17.81	139.64									
Total				318.86		126.01		1625.15	12754.58				346.68		135.56		1740.10	13867.14

R1-23

Working Division: Revetment type I / Rubber joint filler  
 Package 1

No. 2.5/15

$$V = A \times L$$

nos. of joints :  $n = L / 6.0$

Left bank						Right bank						
Location	Length L(m)	Height H(m)	Area of joint Am(m <sup>2</sup> )	nos. of joints	Area A(m <sup>2</sup> )	Location	Length L(m)	Height H(m)	Area of joint Am(m <sup>2</sup> )	nos. of joints	Area A(m <sup>2</sup> )	
Kamal Drainage Channel (main) KM16+36.8 - KM18+12.8 KM32+60.9 - KM35+140.6 KM35+140.6 - KM45+2.2 KM48+121.3 - KM54	Stage2	144.7	2.21	1.46	25	36.48	KM13+77.9 - KM14+23.4 (transition)	28.8	2.21	1.46	5	7.30
	Stage2	288.2	2.16	1.43	49	69.93	KM16+22.8 - KM16+51.6 (transition)	28.8	2.21	1.46	5	7.30
	Stage2	492.9	1.30	0.92	83	76.06	KM35+107.2 - KM38+90.4	161.6	2.13	1.41	27	38.02
	Stage3	288.3	2.01	1.33	49	65.30	KM38+90.4 - KM45+2.2	364.7	2.09	1.38	61	84.35
	Stage3	766.4	1.48	1.02	128	130.20	KE04+70.0 - KE10+2.2	185.7	1.57	1.07	31	33.13
Kamal Drainage Channel (branch) KE23 - KE30+4.6	Stage3						KE23+4.0 - KE23+4.6	762.4	1.48	1.02	128	130.20
	<b>Total</b>					<b>377.97</b>						<b>300.29</b>

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Working Division: Revetment type I / Rubber joint filler  
 Package 3

No. 2.4/17

$$V = A \times L$$

nos. of joints :  $n = L / 6.0$

Location	Left bank				Right bank						
	Length L(m)	Height H(m)	Area of joint Am(m <sup>2</sup> )	nos. of joints	Area A(m <sup>2</sup> )	Location	Length L(m)	Height H(m)	Area of joint Am(m <sup>2</sup> )	nos. of joints	Area A(m <sup>2</sup> )
Gede/Bor Drainage Channel GM10 - GM12+99.3	264.8	1.98	1.31	45	59.13						
Saluran Cengkareng Drainage Channel											
CM26+82.8 - CM29+23.5	235.2	1.50	1.03	40	41.14	CM15+6.0 - CM17+84.5	287.5	1.50	1.03	48	49.37
CM30+31.5 - CM34+16.0	333.6	1.00	0.76	56	42.32	CM23+53.0 - CM29+18.8	563.6	1.00	0.76	94	71.04
CM42+87.6 - CM43+53.4	119.6	2.20	1.45	20	29.05	CM38+35.0 - CM40+20.5	113.9	2.27	1.50	19	28.46
CM45 - EP	314.9	2.15	1.42	53	75.30	CM42+87.6 - CM43+77.0	113.2	2.20	1.45	19	27.60
						CM45 - EP	314.9	2.14	1.41	53	74.96
Meruya Area Estuary	14	1.78	1.19	3	3.58						
Total					250.53						251.43