TABLES

Table 3.1 Unit Cost of Materials

Item	lloilo Unit 93'	94'	Increasing Rate	Ormoc 93'	Ormoc 94' City	Increasing
		City	Raic		City	Rate
Portland Cement	Bag 115	115	0%	105	110	5%
Sand	m3 180	200	10%	120	180	33%
Gravel 0.0 - 5.0 cm	m3 220	260	15%	130	180	28%
Boulders 20.0 - 25.0 cm	m3 250	250	0%	160	250	36%
Concrete Hollow Blocks	pc 7.0	7.5	7%	5.0	6.5	23%
Re-bar 10 mm	kg 15.0	15.0	0%	22.0	22.0	0%
R.C. Pile 24" * 1.0 m	1.m. 1,968	2,400	18%			
Gasoline	lit 10.17	10.17	0%	9.77	10.27	5%
Diesel	lit 7.41	7.41	0%	7.27	7.27	0%
医痛性 医牙毛 医皮肤病				and the state of		

Table 3.2 Unit Cost of Labor

		Iloilo	Iloilo		Ormoc	Ormoc	
ltem	Unit	93'	94'	Increasing	93'	94'	Increasing
	Teach and a			Rate			Rate
		74. 14.					•
Labor				a salah Salah			
Foreman	day	184.56	197.70	7%	125.00	147.81	18%
Capataz	day	170.70	183.84	8%	105.00	135.00	29%
Carpenter	day	145.14	157.99	9%	98.00	120.72	23%
Mason	day	145.14	157.99	9%	98.00	120.72	23%
Skilled Laborer	day	145.14	157.99	9%	98.00	120.72	23%
Heavy Equip. Operato	r day	162,56	175.70	8%	116.00	132.00	14%
Electrician	day	145.14	157.99	9%	105.00	120.72	15%
Driver	day	141.06	153.92	9%	105.00	120.72	15%
Painter	day	145.14	157.99	9%	105.00	120.72	15%
Laborer	day	126.19	139.04	10%	90.90	113.62	25%

Table 3.3 Unit Cost of Equipment

	等于的原则 计自然 网络	sil) i j		
. (M)	Letter the literature of the letter of the l	Unit	Cost	
			94'	
1 27				
	<b>D. 113</b>			
Jahar ali dibe	Bulldozer	day	*0.40*	i kalendra kilometye ya k Kalendra
	a. D-8	day	10,496	
	<b>b. D.6</b>	day	<b>5,739</b>	及於原於 建二烷
	Loader, 1.5 cu.m/2 yd.	day	2,703	
	Grader 5,115 h.p.	day	2,749	
	2/3 Wheels Rd. Roller,9-11t	day	2,567	
100 miles 100 miles	Sheefsfoot Roller,35 h.p.	day	1,543	gantuna.
	Pneumatic Roller, 13 Wheels	a day	2,223	a the service of the
en e	Crane Crawler,21-25t	day	4,591	
	Crane, Trk. Mtd., 21-25t	day	5,415	
	Crane, Trk. Mtd., 2-5t	day	1,850	
	Pile Hammer, m-33	day	3,773	
٠.	Drop Hammer 2t	day	95	
	Asphalt Distributor	day	3.823	
	Asphalt Paver, 88 hp	day	5,423	
	Conc. Mixer, 1.5-2 Bagger	day	637	
	Conc.Trans.Mixer, 4.79-5.73cu.m.	day	5,720	All the second of the second s
1.1	Dump Truck, 4.59-6.12cu.m.	day	4,847	
	Air Compressor, 251-351 cfm	day	2,615	
	Water Pump, 3 1/2-4 in	day	401	
	Welding Machine 300 amp	day	469	
	Water Truck, 500-1000 gals	day	4,530	
	Conc. Batch Plant, 40 tph	a de la compaña de la comp		and the standard with
1.3		day	2,644	
	Asphalt Batch Plant, 60 tph	day	3,590	
	Aggregate Crusher	day	7,933	

Table 3.4 Unit Cost of Compensation

				Unit: Peso/sq.m
Land Classification	Iloilo 94'	Ormoc 94'	Cebu 94' (Estimated)	Tacloban 94' (Estimated)
Commercial Area	16,500	5,000	33,300	3,400
Residential Area				
Grade A	4,500	1,000	11,100	1,400
Grade B	3,050	280	8,000	1,100
Grade C	1,050		5,200	200
	14		ค. เรษาเห็ต้ ก็ส	
Agricultural Area	40	5	200	2 <b>2</b> ·
Fish-pond Area	50	2	in Ala Nama	2
Industrial Area	990	500	22,200	300
Ideal land	5	1	10	1
House	111,900	91,900	101,900	91,900

Grade A: Urban area Grade B: Suburban Area Grade C: Suburb Area

直輪 快乐 七

Table 3.5 Unit Cost of Construction Works

tem No.	Item of Work	Remark	Unit	TOTAL COST ILOILO	TOTAL COST ORMOC
1	excavation		m3	83.18	81.2
2	embankment	excavated materials	m3	79.17	77.5
3	embankment	borrow pit	m3	132.37	130.0
4	backfill		m3	72.93	71.4
5	dredging	spoil in land	m3	70.83	70.5
6	dredging	spoil in sea	m3	54.59	54.2
7	sodding		m2	19.03	15.9
8	concrete	210 kg, (steel 80.0kg/m)	m3	3,162.88	3,062.5
9	concrete	210 kg, (steel 30.0kg/m)	m3	3,055.09	2,914.8
10	concrete	180 kg, mass concrete	m3	2,362.46	2,241.7
11	concrete	180 kg,conc. dike	m3	2,658.43	2,541.0
12	wet mesonry		m2	184.76	161.9
13	backfill gravel		m2	433,31	383.1
14:	steel sheet pile	l=8.0 m	m2	3,999.17	3,996.6
15	steel sheet pile	iloilo bredge protection	m2	5,129.96	5,194.0
16	concrete sheet pile		m2	3,145.26	3,066.6
17	boulder rip-rap		m3	453.55	447.8
18	gabion mattress		m3	554.40	535.5
19	boulder with anchor		no.	190.50	185.:
20	gravel pavement		m2	104.62	65.
21	wooden pile	l = 3.0 m, D=0.15 m	m	154.75	133.
22	concrete pipe	D= 1000 mm	m	3,705.40	3,635.
23	concrete pipe	D= 800 mm	m	2,943.10	2,872.8
24	concrete pipe	D= 600 mm	m	2,356.54	2,292.
25	flap gate	D = 600 mm	set	100,327.76	100,273.4
26	flap gate	D = 800  mm	set	116,057.76	116,003.4
27	flap gate	D = 1000 mm	set	138,535.60	139,476.0
28	slit gate	1.0 * 1.0 m	set	464,417.46	463,438.5
29	slit gate	1.2 * 1.2 m	set	493,445.36	493,864.0
30	slit gate	1.5 * 1.5 m	set	589,035.36	588,244.0
31	bridge		m2	22,989.10	23,403.1
32	RC. pile	0.5 * 0.5 *15 m	m	2,206.90	2,228.3
33	RC. pile	0.3 * 0.3 * 10 m	m	1,486.64	1,439.6

Table 3.6 Unit Cost of River/Drainage Structures

100				į.	Jnit: peso
Item				TOTAL	TOTAL
No.	Item of Work	Remark	Unit	COST	COST
		n dishekaran 1961 kan		Iloilo, Cebu	Ormoc, Tacloban
1	Revetment	H=6.0 m	m	17,500	i de la companya de l
2		H=3.0 m, LWC	m	$\mathcal{L}(\mathcal{M}_{\mathcal{M}_{\mathcal{M}_{\mathcal{M}_{\mathcal{M}_{\mathcal{M}}}}})} = \mathcal{L}(\mathcal{M}_{M}}}}}}}}}}$	7,400
3		H=3.0 m, HWC	m	· · · · · · · · · · · · · · · · · · ·	3,600
4	Retraining Wall	H=3.8 m	m3	7,900	7,200
5	Bridge		m2	22,989	23,403
6	Concrete Dike		m	20,000	· · -
7	Diversion	Conc. Weir H=4 m	m	118,000	e fa de la factoria del la factoria de la factoria del la factoria de la factoria del la factoria de la factoria de la factoria de la factoria de la factori
8	Sluice	Type 1(1*1*1,L=12m)	no.	737,700	
9		Type 2(D=1000,L=10 m)	no.	249,700	
10		D=600,L=5m	no.	îna lu ne ej <b>a</b> r	173,900
11	Jetty		m3	500	
12	Invert Siphon	D=0.8 m	no.	898,100	-
13		D=1.0 m	no.	979,400	<u> </u>
14	Silt Dam	Anilao1	no.	•	7,530,000
15	Box Culvert		no.	24,200	<u>.</u>
16	Drops	H=1.0 m	m	50,700	8,300
17		H=1.5 m	m	53,300	50,700
18		H=1.75 m	m	-	52,000
19	Bridge Protection		m2	5,130	
20	MCF Protection		m2	148	

Table 3.7 River Improvement Project Cost of Master Plan in Iloilo City

Color   Colo		,									
Transmit Material   State			(Peace)	Quantity	Amount (1000 F)	Ouantity	Amount (1000 P)		Amoust (1000 P)	Owantity	Amona (1000 P)
Emery Holisch   Franch Holisch   Franc	I. Main Construction Cost				900,521		268,786		147,888		1,317,196
Emery Marchine   Mar	1. Preparatory Works				74,473		22.214		12,222		108,859
Particle	2. Main Work				744,233		222,138		12,221		1,088,592
Exercised Material   mai	(1) Excavation	٠.		3,069,000	254,727	6	•	73,000	\$22.9	3,144,000	260,952
Section   1,000   1,	(2) Embankment			463,000	36,577	0 00 89	0 %	2 000	° 2	135,000	36.51
Spell in Land Spell in Spell in Spell Spell in Land Spell in Land Spell in Spell in Spell Spell in Spell in Spell Spell Spell in Spell Spell Spell in Spell Spell Spell Spell in Spell Sp	(3) Backfill			0	•	23,00	16.	20,000	1,68	4,000	CT.C
Type filteries  m   1150   1	(4) Dredging	₩.		0 88	0 92	263,000	39,973	250,000	17,750	813,000	27.2
Type (110-team) m 17-300 10-300 197-300 0 0 0 0 10-300 17-500 17-	(5) Revelment			0	80	0	30	1,100	13,090	1,100	13,090
1792-218-5m)   m   279-00   1,000   4,480   90   90   1,800   9,000				10,900	190,750	0	•	0 (	0	10,900	190,750
Type 2014-3-ba   m				9091	24.44 084.44		•	1.800	\$0.040	3,400	25.2
Conc. Weir H=U7m (River m   106,800   41,250				0	0	300	8.820	6	0	300	8,820
Conc. Weir H=ch/ln (Green in 20,000 15,800 25,000 2,700 5,600 5,00 10,900 10,000 10,	(6) MFC Protection			275,000	41,250	0 60	0 0	0	<b>2</b> ک	275,000	¥ ¥
Conc. Weir H=.A/Tan (River m. 106,800		8 8	,	152,000	15.960	26,000	2,730	2,40	26 !	183,400	161
Conc. Weir Head, (Park) m   206,800   44   5774   0   0   0   0   0   0   0   0   0	•	E		6	0	4,780	95,600	0	•	4,780	35,600
Conc. Weir living (Fiver) m 221/1000 44 97724 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(10) Liversida world	Conc. Weit Hall 2m (Biver m	106.800	25	1554	•	•	0	c	52	. <b>S</b>
Conc. Weir Harden (FW) m   27,1000   68   11,002   0   0   0   0   68     Type A1	b. Jaro Floodway	Conc. Weir Ha4m (River) m	221,000	‡	9.77.6		0	0	•	<b>;</b> ‡	2.6
Type A.1 m. 72,200 2 1,516 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Cooc. Weir H=4m (FW) m	221,000	<b>38</b> 8	15,028	0 (	0	0 (	•	88	15,0
Type Add no. 1264-200 0 0 1 1564 1 1564 2	C. Groundalli	Trace A.	27.70	3,	7.108	•	•	0	•	3 14	- v
Type Bild and London Control C	ammo (Tr)	Type A2	1,364,200	10	} O	э <b>н</b>	1,364	. н	1,364	17	12
Type Billott no. 1943/700 6 1,135 1 237 0 0 7 770 770 770 770 770 770 770 770		Type A3	o. 2,085,500	0 (	0	н.	2,086	н (	2,086	М (	171
Type Bilo22 no. 385,000 3 1135 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				o vo	1.155	N H	193	50	•	7 1	8 7
Type Bi.loc3   De. 277500   1				'n	1,155	6	•	N	8	<b>W</b>	2,
D=0.7m no. 829,500 1 899 0 0 0 0 1 1	(12) Justice			4 gm	578	0.0	90	<b>5 6</b>	<b>•</b> •	5.900	n 6
D=1.0m no. 948,900 2 1,888 1,00 25,288 840 19,311 5,940 24,000 1,188 1,100 25,288 840 19,311 5,940 2,400 12,312 0 0 0 0 2,400 12,312 0 0 0 0 2,400 12,312 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(13) Invert Siphon			7	830	0	•	•		-	200
Second Color	Programmes.			7	1,898	001	0 36. 36	O (1)	0 11	24 57	1,89
### Braidential A. m2 1,052 370,000 389,240 38,000 31,976 36,000 37,877 444,000    Readential A. m2 1,052 370,000 389,240 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(15) Bridge Protection		•	90	0	7,400	12,312	} ~	0	7,40	12312
Realcantial A   m.2   1,052   370,000   38,240   38,000   39,976   36,000   37,872   444,000   562,000   4,100   0   0   0   0   0   0   0   0   0	3. Miscellaneous Works				81,866		24,435		13,444		119,745
Registential A.     m2     1,052     377,000     38,240     38,000     37,872     444,000       Farm Land     m2     40     562,000     22,480     0     0     0     0     0       Fath Pond     m2     5     94,000     4,700     0     0     0     17,600       Fath Pond     m2     5     125,000     4,700     0     0     0     17,600       John     m2     111,900     362     40,506     70     70     70     16,035       John     m2     11,500     40,506     16,035     30,235     30,235     20,923     2       John     John     1,783,875     387,240     260,923     2       John     1,783,558     430,045     284,585     2	Compensation Cost				457,553		51,909		68,197		629,772
First Land  First Pond  First	(1) I and Americal			OUT OCT	07C 83E	38,000	40 OT	OUU YE	77.877		27.72
Fink Pood m2 50 94,000 62,000 4,100 0 0 176,000 0 1776,000 0 1776,0	TO THE SHAPE OF THE SHAPE (T)	• · · · · · · · · · · · · · · · · · · ·		562,000	27,480	0	0	0	0	\$62,000	ä
ion Otto		pax	8°	000'56	67. 67.	82,000	4,100 6	0 (	0	176,000	**
67.904 () 16,035 () 10,804	(2) House Compensation			362	95.04 95.04	<b>,</b> 6	7,833	<b>3</b> E	30,325	2 EX	100
213,897 50,510 24,023 24,023 1,639,875 387,240 220,923 22,662 1,44,083 1,785,958 430,245 224,585 22,662 2	Administration Cost				67,904		16,035		10,804		PK,743
1,783,958 430,245 284,585	(5% of 1+II) Physical Contingency				213,897		50,510		34,003		298,440
Engineering Services 43,006 23,662 (16% of 11 to 317) Grand Total 2012	(15% of 1+11+111) Total of 1 to IV				1,639,875		387,240		260,923		2,288,037
856, 187, 187, 187, 187, 187, 187, 187, 187					144,083		43,006		23,662		210,751
	Grand Total				1,783,958		430,245		284,585		2,498,788

Table 3.8 River Improvement Project Cost of Master Plan in Cebu City

Part	Work Items	Uni	Unit Unit Cost												
March   Marc			(Peace)	Quantity	Amouat (1000 P)	Quantity	Amount (1000 P)	Ocamity	Amount (1000 P)	Outaidty	Amount (1000 F)	Quantity	Amount (1000 P)	Oversitin	Amount (1000 P)
1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,	Main Construction Cost		esección de la composition della composition del		89,617		166,504		169,813		217,487		245,115		965,838
Marches   Marc	1. Preparatory Works				7,406		13,761		14,034		17,974		20,257		73,433
Horizon   Hori	2. Main Work				74,064		137,606		140,342		179,742		202,574		734,328
Harden   H	をおきて APP によった。 では、 のでは、											· ·   ·			
Harden		£ .	83	297,000	24,651	143,000	11,869	330,000	27,390	149,600	12,417	374,000	31,042	1,293,600	107,369
H-3, table   H-3		<b>B</b> E	27.00		4,732	- 0	<b>-</b> ,-	<b>-</b> 0	5 O	<b>&gt;</b> 0	0	<b>5</b>		1,340	12,864
H-3.6m	Retaining Wall		7,100	•	0	3,000	21,300	2,970	780,12	4,180	29,678	2,950	20,945	13,100	93,010
Ha-dam in 7,900 0 0 4,600 535,40 0 0 0 0 0 4,400 70,105 6,520 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			7,300	•	0,	•	0	0	•	8,000	\$8,400	•	0	8,000	58,400
Hardon   H	3.6-12		7,700	0	0	600,	8, 25 8, 25 8, 25		0 0	•	<b>-</b>	5,000	38,500	9,600	73,920
House   Hous	(T)		300	•	<b>.</b>	0	0	8,400	53,120	•	•	, o	0	004,9	53,120
Harden	Backfill Conc.			0	•	2,520	869'9	98	1,595	2,400	6,379	3,040	13,396	10,560	28,068
Housesteen		E .		39,200	745	•	0	0	0	0	•	0	0	39,200	745
Hardon   H	Gravel Pavement			15,900	1,670	<b>-</b> ;	0 8	0 0	0 6	<b>-</b>	•	<b>-</b> :	<b>0</b> 9	15,900	0.001
H=1,4m   m   S2,700   0   0   0   0   0   0   0   11   S80   0   0   0   187     H=1,5m   m   S3,900   0   0   0   0   0   187   0   0   0   0   187     H=1,7m   m   S4,900   0   0   0   0   0   0   0   0   0				7	מבנו	10	ŝ	- <b>-</b>		• •	•	1 EZ	11,762	, %	24,133
He-1.7m   He-1.5m   He-1.7m   He-1	H=1.4		5 - S D	0	0	•	0	0	•	#	88	•	0	=	<b>8</b> 5
Modus         Fundamental Among         25,300         10         0         18         35,54         21,00         0         18         45,90         0	H=1.5		53,300	0	0	<b>3</b> 8	5,117	8	1,919	. 23	2,932	•	0	187	1966
About         Tribit         1,000         34,24         4,140         40,150         4,24         4,140         40,150         40         7,11         8,140         8,141         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         15,137         22,283         22,283         17,176         1           Works         Readential A m2         \$1,500         92,700         \$2,700         25,700         36,239         197,170         1           C m2         11,100         0         0         0         5,000         40,000         38,130         305,440         0         45,130           Perm Land         m2         11,100         0				0	0	0	•	<b>82</b>	16	0	0	0.00	0	18	146
Works         8,147         15,137         15,438         19,772         22,283           Works         110,614         279,213         387,239         424,654         547,718         1           Works         110,614         279,213         387,239         424,654         547,718         1           Rition         Residential A m.2         5,150         18,000         52,000         25,000         40,100         32,300         0         0         0         43,130         1         157,170         1         2         2         2         2         2         2         2         2         2         2         2         2         2         2 <td>(b) Endge</td> <td>1</td> <td>۶</td> <td>04/</td> <td>17,012</td> <td>95. G</td> <td>¥,</td> <td>S</td> <td><b>1</b> - <b>1</b></td> <td>0417</td> <td>20,150</td> <td>36,</td> <td>716.60</td> <td><b>7</b></td> <td>154.PC</td>	(b) Endge	1	۶	04/	17,012	95. G	¥,	S	<b>1</b> - <b>1</b>	0417	20,150	36,	716.60	<b>7</b>	154.PC
Works         110.614         15,137         15,438         19,772         22,283           sition         Residential A m2         5,150         12,0614         279,213         367,239         424,694         547,718         17,770           sition         Residential A m2         5,150         18,000         92,700         26,853         22,200         26,418         26,641         27,170         34,798         39,642         39,542         39,542         39,544         39,544         39,546         39,546         39,546         39,546         39,546	(c) manage for remark vives recomm	<b>i</b> .			•	•	<b>?</b> 		>	•	70,100		•		
ition Residential A m.2 5,159 18,000 52,700 267,800 5,300 277,295 19,870 102,331 102,000 525,300 197,170 1	3. Miscellaneous Works				8,147		15,137		15,438		19,772		22,283		80,776
National Residential A m.2	Compensation Cost		. 15:		110,614		279,213		367,239		454,694	•	\$17,718		1,729,477
B   m2   8,000   0   0   5,000   28,270   38,130   0   0   0   25,700   25,700   28,270   0   0   0   0   0   25,700				18,000	92,700	52,000	267,800	\$300	27,295	19,870	102,331	102,000	525,300	197,170	1,015,426
C m2 11,100 0 0 0 25,700 285,270 0 0 0 0 0 25,700 central con m2 170 82,000 13,940 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					0		•	2,000	40,000	38,130	305,040	0		43,130	345,040
cnastion fair Land High 170 17,323 220 22,418 closes to 10,000 39 3,574 112 11,413 144 14,674 170 17,323 220 22,418 closes to 10,012 22,286 26,853 32,109 39,642 39,642 31,536 775,433 124,871 39,57,345 39,218 14,339 26,641 27,170 34,798 39,218 39,218 39,544 33	i i i	<b>( )</b>			0		<b>.</b> :.	25,700	285.270	•	0	<b>.</b>	0.0	25,700	285,270
31,536 26,853 32,109 39,642 70,200 84,586 101,143 124,871 241,780 538,203 648,490 775,433 957,345 14,339 26,641 27,170 34,798 39,218 19)			:	. :::	3,974	112	11,413	4.	14,674	) <u>R</u>	17,323	22	22,418	685	69,802
31,536 70,200 84,586 101,143 124,871 3 241,780 538,203 648,490 775,433 957,345 3 14,339 26,641 27,170 34,798 39,218 3 256,118 564,843 675,660 810,231 996,564 3	. Administration Cost				10,012		22,286		26,853		32,109	·	39,642		130,901
241,780 538,203 648,490 775,433 957,345 3 26,641 27,170 34,798 39,218 3 256,118 564,843 675,660 810,231 996,564 3	(5% of 1+11) Physical Contingency				31,536		70,200		84,586	٠.	101,143		124,871		412,337
7 7 7 7 7 80,548 7 80,564 810,231 80,564	(15% of I+II+III) Total of 1 to IV	. Por e			241.780		538.203		648.490		775.433	1.5	957.345		3.161.251
26,641 27,170 34,798 39,218 256,118 564,843 675,660 810,231 996,564 3		. Jr		· .	1 de		A ST	risi et Osus Osus		or a.					
256,118 564,843 675,660 810,231 996,564	Engineering Services (16% of 1. to IV)				14,339		26,641	1.7 4.5 4.5	27,170		34,798		39,218	9 <sup>1</sup>	142,166
	Grand Total			: :	256,118		564,843		675,660		810,231		996,564		3,303,417

Table 3.9 River Improvement Project Cost of Master Plan in Ormoc City

Work Items		Unit	Unit Cost	Anilas	) गं <b>रच</b>	Malbasa	g River	То	<b>isl</b>
		· · · · · · · · · · · · · · · · · · ·	(Pesos)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)
		<del>- 1/2</del> 1/2							
Main Construction Co	et				154,474		104, <del>22</del> 1	5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	258,69
1. Preparatory Work				rin andr	12,766		8,613		21,38
2. Main Work					127,664		86,133		213,79
	Dr				,		04,30		2,3,1,
(1) Excavation		<b>r=3</b>	81	166,000	13,446	225,000	18,225	391,000	31,67
(2) Embankment		m3	108	38,000	4,104	6,500	702	44,500	4,8(
(3) Backfill		<b>m3</b>	71	60,000	4,260	45,000	3,195	105,000	7,4
(4) Revetuscai	(H=4m, LWC)	m	8,100	3,600	29,160	0	0	3,600	29,16
	(H=4m, HWC)		4,300	3,600	15,480	0	0	3,600	15,48
	(H=3m, LWC)	虺	7,400	0	0	1,410	10,434	1,410	10,4
	(H=3m, HWC)	130	3,600	0	0	1,410	5,076	1,410	5,0
(5) Retaining Wall	H=3.8m	四	7,200	0	0	2,190	15,768	2,190	15,7
(6) MFC Protectio		m2	148	21,000	3,108	10,225	1,513	31,225	4,6
(7) Sodding	en de la comp	<b>2</b>	16	16,000	256	6,300	101	22,300	
(8) Gravel Paveme		m2	66	11,000	726	10,800	713	21,800	1,4
(9) Drops	H=1.0m	. 19	48,300	0	0 000	35	1,691	35	1,6
	H=1.5m		50,700	40	2,028	64	3,245	104	5,2
(10) 81-1	H=1.75m	ж	52,000	80	4,160	0		, 80	4,1
(10) Sluice	Type A2 Type B0.6	no.	1,352,600	2	2,705	0	0	2	2.7
(11) Slit Dem		AO.	130,700	1	131	4	523	5	6
(11) SHIDEM	Anilso 1 Anilso 2	no.	7,530,000	1	7,530	0	0	1	7,5
	Malbasag	, AO.	5,670,000	1	5,670	0	0	1	5,6
(12) Maintenance R		PC).	9,070,000 1,500	800	0 1,200	1 600	9,070	1 400	9,0
(13) Bridge	DAM HOL OU, DAMA	m2	23,403	1,440	33,700	640	900 14,978	1,400	2,1
(15) Diluge		142	25,403	1,440	33,100	040	14,370	2,080	48,6
3. Miscellaneous Wo	ake	••			14,043		9,475		23.5
J. INISCONDICTOR IT					נרטודו		<i>C)</i>		23,5
. Compensation Cost	1.5		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		29,148		25,301		54,4
•			1.0						
(1) Land Acquisiti	on Residential A	m2	0.	· 0	0	0	0	a	海道等
		m2	280	34,800	9,744	39,700	11,116	74,500	20,8
	c	m2	1,000	0	0	0	0	0	
	Farm Land	m2	5	.0	0	O	0	0	
	Forest, Wastelan	d m2	1	13,400	13	32,700	33	46,100	
(2) House Compen	sation	no.	91,900	211	19,391	154	14,153	365	33,5
			1.						
L Administration Cost					9,181		6,476	1.14	15,6
(5% of 1+11)									
V. Physical Contingenc	у.				28,920		20,400	ja angli	49,3
(15% of 1+II+III)									
Total of I to IV			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		221,724		156,398		378,1
								de la procesa.	
. Engineering Services	r i j				24,716		16,675		41,3
(16% of l. to I'	The second secon	er i e							
	<u> </u>				法的复数	ing a si			
									· · · · · · · ·

Table 3.10 Drainage Improvement Project Cost of Master Plan in Iloilo City

												e .							٠.			
	a	Amount (1000 P.)		8,569	14,823	29,820	15,748	25,300	85,691	9,426		103,686	28,094	15,225	12,869	6,589		20,755	159,123	16,590		175,713
	Total	Quantity			178,200	21,300	1,240	1,100						54,500	115							
	¥	Amount (1000 P.)		675	183	086	5,588	<b>O</b> ,	6,751	743		8,169	4,588	0	4,588	638		2,009	15,404	1,307		16,711
	Rizal Creek (620 m)	Ouantity			2.200	700	440	O						0	41			- : : :				
	reek	Amount (1000 P.)		3,631	6.072	14,560	10,160	5,520	36,312	3,994		43,938	13,203	6,825	6,378	2,857		9,000	866'89	7,030		76,028
	Bo.Obrero Creek (4400 m)	Quantity			73.000	10,400	800	240						8,500	57							
		Amount (1000 P.)		4,263	8.568	14,280	0	19,780	42,628	4,689		51,579	10,302	8,400	1,902	3,094		9,746	74,722	8,253		82,975
	Ingore Creek (5000 m)	Quantity Amount (1000 P.)			103,000	10,200	0	860				: .		46,000	17							
. :		Unit Cost			83	1,400	12,700	23,000							111,900							
		Uni <b>t</b>			m3	m2	m3	m2		 91				m2	no.		:1		>			•
ILOILO CITY (1/5,1/3)		Work Items	I Main Construction	1. Preparatory Works	2. Main Works (1) Excavation	(2) Revetment	(3) Concrete	(4) Bridge	Total Amount of Works	3. Miscellaneous Works	(10% of 1+2)	Total of I	II Compensation	(1) Land	(2) House	III Administration	(11+11) %S)	IV Physical Contingency	Total of I,II,III, and IV	V Engineering Services	(16% of I)	Grand Total
			I								. ĵ					<b>,</b>					: I	ା

Table 3.11 Drainage Improvement Project Cost of Master Plan in Cebu City (1/2)

CEBU CITY (1/5.1/3)

			Mabolo Creek		Lahug Inbutary		Imago Creek	ek	Pahina Central	ıtral	Calamba Dramage Area	nage Area
Work Items	Unit	Chit	(1930 m)		(1680 m)		(TZZU III)		M.D. (1100 m)	(m <sub>2</sub>	M.D. (830 m)	
			Quantity A	Amount Q	Quantity A	Amount (	Quantity	Amount	Quantity	Amount	Quantity	Amount
		(Peso)		(1000 P.)		1000 P.)		(1000 P.)		(1000 P.)		(1000 P.)
I Main Construction						. * .						
<ol> <li>Preparatory Works</li> </ol>		:		1,711		1,385		2,813		3,886		2,191
2. Main Works												
(1) Excavation	m3	83	19,968	1,661	4,121	343	10,846	905	3,465	288	2,490	207
(2) Revetment	m2	1,400	10,375	14,525	8,910	12,474	10,699	14,979	0	0	0	0
(3) Concrete	m3	12,700	0	0	0	0	820	10,414	3,037	38,574	1,709	21,706
(4) Bridge	m2	23,000	40	920	45	1,035	8	1,840	0	0	0	0
Total American Allert				701.61		12.057		20.135		670 00		71 013
10tal Amount of Works			· .	1/,100		700'61		CCI,62		700'00		C16,12
3. Miscellaneous Works		•		1.882		1.524		3.095		4.275		2.410
			٠									
Total of I				20,699		16,760		34,043		47,023		26,514
								37 13 13 13 14				
II Compensation	, 		07.170		6.470	47.064	050 >	30 642	<b>S</b>			•
	7E 1	101 000	04,170	<del>1</del> 77	0,440	† 00°,	5,5JU	20,04.5	<b>&gt;</b> C			<b>)</b>
ospou (7)	110.	101,900	٠ ١	3	2	) (1	•	<b>6</b> 77				<b>&gt;</b> .
III Administration				7,307		3,243		3,246		2,351		1,326
(5% of I+II)												
IV Physical Contingency				23,017	The state of the s	10,216		10,225		7,406		4,176
(15% of I+II+III)												
Total of I,II,III, and IV				176,464		78,323		78,395		56,780		32,016
V Engineering Services				3,312		2,682		5,447		7,524		4,242
(16% of I)												
						6		<b>3</b>		200		27.00
Grand Total				1/9,//0		81,004		83,842		94,304		36,238

Work Items U Work Items U  I Main Construction  I Prenaratory Works	Unit Unit										
<b>S</b>		Sta. Teresita (530 m)	sita )	Basak-san Nicolas (860 m)		Sto. Niho Creek (1200 m)		Barangsy Inayawan (1500 m)	ayawan	Total	[e
Main Construction     Prenaratory Works											
Main Construction     Prenaratory Works	Cost (Peso)	Quantity )	Amount (1000 P.)	Quantity (	Amount (1000 P.)	Quantity A	Amount (1000 P.)	Quantity A	Amount (1000 P.)	Quantity	Amount (1000 P.)
1 Prenaratory Works										-	
			3,075		2,184		804		1,254		19,304
2. Main Works											
(1) Excavation	m3	83 2,625	5 218	4,485	373	23,441	1,950	13,221	1,100	84,662	7,042
(2) Revetment	m2 1,400		0 0	0	0	3,691	5,168	6,861	9,605	40,536	56,750
	m3 12,700	700 2,404	4 30,532	1,69	21,468	0	0	0	0	9,661	122,693
(4) Bridge	m2 23,000	0 00(	0 0	0	0	40	920	8	1,840	285	6,555
Total Amount of Works			30.750		21.841		8.037		12.544		193.041
Total Philodak of Trong	.5		600				3				
3. Miscellaneous Works			3,383		2,403		884		1,380		21,234
(10% of 1+2)			27.700		36 430		307.0		15 120		733 570
1 0tal 01 1			017,16		074,07		7,14		()11671		3
II Compensation	· . · · · · · · · · · · · · · · · · · ·										371,542
					0	13,200	67,980	19,000	97,850	68,748	368,012
(2) House	no. 101,900		0		0	<b>S</b>	527	7	759		3,530
III Administration			1,860		1,321		3,912		5,689		30,256
(5% of I+II)							1				į
IV Physical Contingency			5,860		4,162		12,322		17,922		95,307
Total of I,II,III, and IV			44,929		31,912		94,466		137,399		730,683
V Enginecring Services			5,953		4,228		1,556		2,429		37,373
(16% of I)				~	>						

Table 3.12 Drainage Improvement Project Cost of Master Plan in Ormoc City OROMOC CITY (1/5,1/3)

	Total		Amount (1000 P.)		1,254		486	ý		1.		12,542	1,380		15,176	2565	) 121	<b>.</b>	787	8	2,794	21,423	2000	271
	Ħ	1	Quantity (		999		49 6,346	50 4,343	0 150	174		33	72		8		583				3		o,	
	City Proper Creek (630 m)		Quantity Amount (1000 P.)		<b>3</b>		646	43 2,860	0	160 3,744	×	6,653	732		8,050		33 723		47.1		1,483	11,371	1 288	
; ;	City Prope (630 m)	- 1			589		437 64	20 2,043		328 10		86	648		92		4 2 583		416	2		2	S	
	Lotao Creek (1200 m)		Quantity Amount (1000 P.		Ÿ		5,700 4:	2,300 3,220	150 1,905	14 33		5,889	Ó		7,126		<del></del>	13 1,195	4	•	1,311	10,052	1.140	
	Lotao Cree (1200 m)		Quantity				T, 5,T	1,400 2,3									4 000	<b>F</b>						
		Unit Unit	Cost (Peso)			-	m3	m2 1,4	m3 12,700	m2 23,400		-					m2	no. 91,900						
				 F	Vorks					wi		Works	s Works								ency	I, and IV	ces	
		Work Items		Main Construction	1. Preparatory Works	Main Works	(1) Excavation	() Revetment	) Concrete	) Bridge		Total Amount of Works	Miscellaneous Works	(10% of 1+2)	Total of I	ensation	(1) Land	(2) House	III Administration	(5% of I+II)	IV Physical Contingency	(15% of 1+11+111)  Total of I,II,III, and IV	V Engineering Services	(16% of I)
				I Main	1. Pr	2. M	T)	(2)	3	€		Total	Σ	D	ř	II Compensation	Ü	, Z)	III Admir	(5	IV Physic	±₽.	V Engin	

TACLOBAN CITY (1/5,1/3)

Table3.13 Drainage Improvement Project Cost of Master Plan in Tacloban City (1/2)

TACLOBAN CITY (1/5,1/3)

		Abucay River	iver	Naga-naga Creek	Creek	Mangonbangon		Langhas Lirang	rang	Sagkahan Creek	Creek
		(1700 m)		(1000 m)		River (4000 m)		Creek (3750 m)	)	(380 m)	
Work Items	Cost (Peso)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)	Quantity	Amount (1000 P.)
T Main Construction											
1. Preparatory Works			184		118		3,295		4,471		268
2. Main Works				4.					٠.		
(1) Excavation m3	77	5,712	438	3,240	248	40,670	3,116	74,450	5,704		
Revetment	1,368		0		0	20,102	27,495	26,464	36,196	1,2	1,705
Concrete	12,700	· .	0		0	0 (	0	0	0		
(4) Bridge m2	23,403	8	1,404	6	936	100	2,340	120	2,808	40	936
Total Amount of Works			1,842		1,184		32,951		44,709		2,678
3. Miscellaneous Works			203		130		3,625		4,918		295
(10% of 1+2)											
Total of I			2,229		1,433		39,871		54,097		3,240
II Compensation											
(1) Land m2		19,720	1,919	1,800	192	40,570	31,782	52,000	16,201	1,330	1,397
	91,900	4	400		40	99	6,095	35	3,252	ĸ	266
III Administration			7227		. 83		3.887		3,678		245
(II+I Jo %S)					· .						
IV Physical Contingency			716		262		12,245		11,584		772
(15% of [+1]+11]) Total of I, II, III, and IV			5,491		2,010		93,881		88,813		5,919
V Encineering Services			357		229		6.379		8,656	-	518
(16% of I)											
Grand Total			5,848		2,239		100,260		97,468		6,438

Table 3.13 Drainage Improvement Project Cost of Master Plan in Tacloban City (2/2) TACLOBAN CITY (1/5,1/3)

					1			
			Pleasan Creek	reek	Burayan Kiver	iver	Iotal	ন
	;	;	(1600 m)	· .	(3500 m)			
Work Items	Cnit							
		Gest (Peso)	Quantity	Amount (1000 P.)	Quantity Amount (1000 P.)		Quantity /	Amount (1000 P.)
Main Construction								
1. Preparatory Works				1,933		4,383		14,652
2. Main Works		٠.						
(1) Excavation	m3	77	11,268	863	47,300	3,624	183,114	14,029
(2) Revetment	m2	1,368	12,132	16,594	28,709	39,267	88,654	121,257
(3) Concrete	m3	12,700	0	0	0	0	0	0
(4) Bridge	m2	23,403	8	1,872	9	936	480	11,233
Total Amount of Worle				10 220		42 627		146 510
TOTAL AMBUMIN OF WOLKS				47C'61		/70°C		140,113
3. Miscellaneous Works				2,126		4,821		16,117
(10% of 1+2)		: 1.:						
Total of I				23,388		53,030		177,288
II Compensation								85 441
(1) Land	П2		16,220	609'6	53,220	10,112	184,860	71,206
(2) House	110.	91,900	Z	2,056	23	2,126	155	14,235
III Administration				1,752		3,263		13,136
(5% of I+II)								
IV Physical Contingency				5,520		10,280		41,380
(15% of I+II+III) Total of I II III and IV				42 320		78.812		317.246
V Engineering Services				3,742		8,485		28,366
(16% of I)								
Grand Total				46.062		87.297		345.612

Table 3.14 River Improvement Project Cost of Urgent Plan in Iloilo City

Work heats	•	Unit	Unit Con			***************************************		***************************************	*		
		4.1114	(Peace)	Ouamity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantiny	Amount (1000 P)	Quantity	Amount (1000 P)
Main Construction Cost					436,142		177.571		147,888		761,600
1. Preparatory Works			- 3	10 13 14 15 11	36,045		14,675	17.00 17.00 17.00 17.00 17.00	12,222		62,942
2. Main Work					360,448	51 51 51	146,753		122,222		629,422
(1) Excavition		a	8	1,865,000	154,795	0	•	75,000	\$22,9	1,940,000	161,020
(2) Embaskment	terial	8	73	230,500	18,210	0	0	0	0	230,500	18,210
Carlo	Barrow Pit	97	132	00	00	2000	8,316	22,000	\$ \$4.	135,000	25.7.1 Sel. c
(4) Dredging		8	7.	0		0	0	250,000	17,750	250,000	17,750
			8 8	22,000	1,210	0 9	0	0 2	Q 600 E.	27,000	1,210
(3) Kevetinen	Type 1(H=5m)	. 8	17 500	2.250	39.375	0	0	0	0	2250	39,37
	ं ं व	E	19,400	1,000	19,400	0 (	0.0	0	0	1,000	19,400
	Type Z(H=Zm)	8 8	27,800	80	44 0	900	8.820	08.1	O O	<u> </u>	X 88
		2	81	0	٥	0	0	0	0	0	
(7) Sodding		22	<b>a</b>	117,600	2234	20,000	380	2,900	ន	140,500	2,670
(8) Gravel Pavement			300	7.200	184,	20,000	\$ 600	0	) O	4.780	10,8
(10) Diversion Works		•	•	,	<b>)</b>	}	2		,	}	
a. Lapaz Floodway	Conc. Weir H=0.7m (River m		106.800	0	0	0	0	•	0	0	
b. Jaro Floodway		a	221,000	ជ	2,652	0	0	0	0	22	2,6
التواسين	Conc. Weir H=4m (FW) n		221000	88	15,028	00		<b>5</b> 5	0 0	<b>8</b> \$	20,61
(11) Stuice	TypeAl	. 9	772,500	3 79	1546	. 0	0	<b>.</b>	•	9 19	1 7
	Type A2	<u>.</u>	1.364.200	0	0	-	1,364		1,364	7	2,728
		8	2,085,500	0 0	0 0	rt (	2,086	- (	2,086	n 17	£, 5
	Type Bl.0x1	9 9	192,500	<b>)</b> (1)	278	* ~	193	•	0	<b>i</b> <del>4</del>	3 6
		9	385,000	. 77	2	0	0	, cu	72.	₹ (	2.1
(12) [467	Type Bl.0x3	e 1	577.500	00	0 0	<b>-</b>	06		•	o ¢	
(13) Javert Siphon	D=0.7m	9 8	829,500	<b>?</b> #	928	0	00		0	· -	` <b>£</b>
		9	948,900	64	1,896	•	0	0	0	7	1,898
(14) Bridge (15) Bridge Protection		2 2	22.989 4.130	2,110	48,507	001.1	25,288	0 0 0	19,311	050,4	23,105 0
TOTAL TOTAL		4	2	<b>&gt;</b> .	•	٠.	>	•	>	,	
3. Miscellaneous Works					39,649		16,143		13,444		92769
II. Compensation Cost					111,910		51,909		68,197		232,016
(1) Land Acculation	Residential A	Ę	1.052	78,000	82.056	38,000	39.976	36.000	37.872	152,000	159,90
		7	\$	460,000	18,400	٥	•	•	0	460,000	18,400
	Fish Pond	1 1	8,4	000,65	3,450	82,000	00 °	00	0	151,000	7.55 2.55 3.65 5.65
(2) House Compensation		1 9	111,900	<b>3 8</b>	7,609	, <b>6</b>	7,833	<i>z</i> 12	30,325	9	45,767
III. Administration Cost					27,403		11.474		10,804	\$ 10	49,681
(5% of I+II)							,	:			•
IV. Physical Contingency					80,318		30,143		34,003		156,495
Total of 1 to 1V					661,773		741,097	: • • • • •	260,923		1,199,792
Engineering Services					69,783		28,411		23,662	4.	121,856
(10% Of L to 1V)											
Grand Total		: +	٠.		731,555		305,508		284,585		1,321,648

Table 3.15 River Improvement Project Cost of Urgent Plan in Ormoc City

eu file Solie	Work Items		l laid	Unit Cost	Anilas	गं <b>श्ट</b> र	Malbasa	g River	Tol	<b>2</b>
	WORK HELES		, oan	(Pesos)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)	Quantity	Amount (1000 P)
I. Main	Construction Cost				7	130,234		93,219		223,453
1. Pr	reparatory Works					10,763	in the second	7,704		18,467
2. M	lain Work					107,632		77,041		184,672
(1)	Excavation		m3	81	123,200	9,979	200,800	16,265	324,000	26,244
(2)	Embankment		m3	108	38,000	4,104	6,500	702	44,500	4,806
(3)	Backfill		т3	71	60,000	4.260	45,000	3,195	105,000	7,455
(4)	Revetment	(H=4m, LWC)	m	8,100	3,600	29,160	0	0	3,600	29,160
	100 paracit	(H=4m, HWC)	. 121	4,300	3,600	15,480	Ŏ	0	3,600	15,480
. with		(H=3m, LWC)	D	7,400	3,300	15,460	具有 前担 美國	Agency Sales	- 1	
			DR.				2,505	18,537	2,505	18,537
		(H=3m, HWC)	m	3,600	0	0	2,505	9,018	2,505	9,018
(5)	Retaining Wall	H=3.8m	m	7,200	0	0	1,095	7,884	1,095	7,884
(6)	MFC Protection		m2	148	21,000	3,108	10,225	1,513	31,225	4,621
(7)	Sodding		m2	16	16,000	256	6,300	101	22,300	357
(8)	Gravel Pavement		m2	66	11,000	726	10,800	713	21,800	1,439
. (9)	Drops	H=1.0m	m	48,300	O	0	27	1,280	27	1,280
1		H=1.5m	m.	50,700	26	1,318	46	2,332	72	3,650
		H≃1.75m	123	52,000	52	2,704	0	0.	52	2,704
(10)	Sluice	Type A2	лo.	1,352,600	2	2,705	0	0	2	2,705
	**	Type B0.6	no.	130,700	1	131	. 4	523	5	654
(11)	Slit Dam	Anilso 1	no.	7,530,000	0	0	0	0	0	0
•		Anilso 2	no.	5,670,000	0	0	0	Ó	0	0
, i		Maibasag	IKO.	9,070,000	0	0	Ö	0	0	0
(12)	Maintenance Road i	·	ms.	1,500	0	0	0	0	0	
111	Bridge	O. (32) 2423	na2	23,403	1,440	=	640	a at the state of	1 44 1 1	A 1, 1
(13)	Direge		, 112	ಬ್ರಕಟ	1,440	33,700	040	14,978	2,080	48,678
3. M	liscellaneous Works		,			11,839		8,474		20,314
II. Com	pensation Cost					29,148		25,301		54,450
com	pendazon com					27,140		الباريد		J-1,-50
in	Land Acquisition	Residential A	m2	0	0	0	0	0		
(1)	rana racquistion	В	m2	280					0.	0
					34,800	9,744	39,700	11,116	74,500	20,860
	•	C	m2	1,000		0	0	0	0.	D
	1 1 1	Farm Land	m2	, <b>S</b>	C	0	0	0	0	0
		Forest, Wasteland	m2	[ <b>1</b> ].	13,400	13	32,700	33	46,100	46
(2)	House Compensatio	n.	no.	91,900	211	19,391	154	14,153	365	33,544
III. Adm	inistration Cost					7,969		5,926		13,895
(5%	of I+II)			٠.					The state of the s	
IV. Phy	sical Contingency	4 - 4	4 1			25,103		18,667		43,770
	of I+II+III)						19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
	of I to IV					192,454	dia de l	143,113	1. 2. 64	335,568
		1								
V Esm	ineering Services					20,837		14,915		35,753
zangi	(16% of I. to IV)					ا دەرىم		14'212		33,133
**********			••••••	**************		213,292		158,028	************	371,320
Gran										

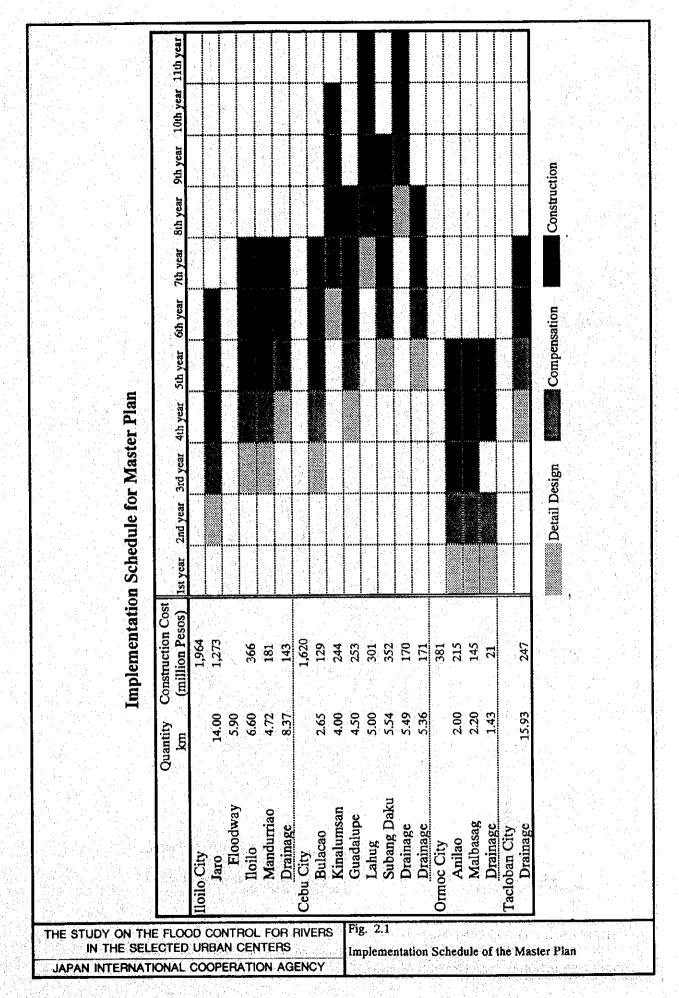
Table 3.16 Drainage Improvement Project Cost of Urgent Plan in Iloilo City

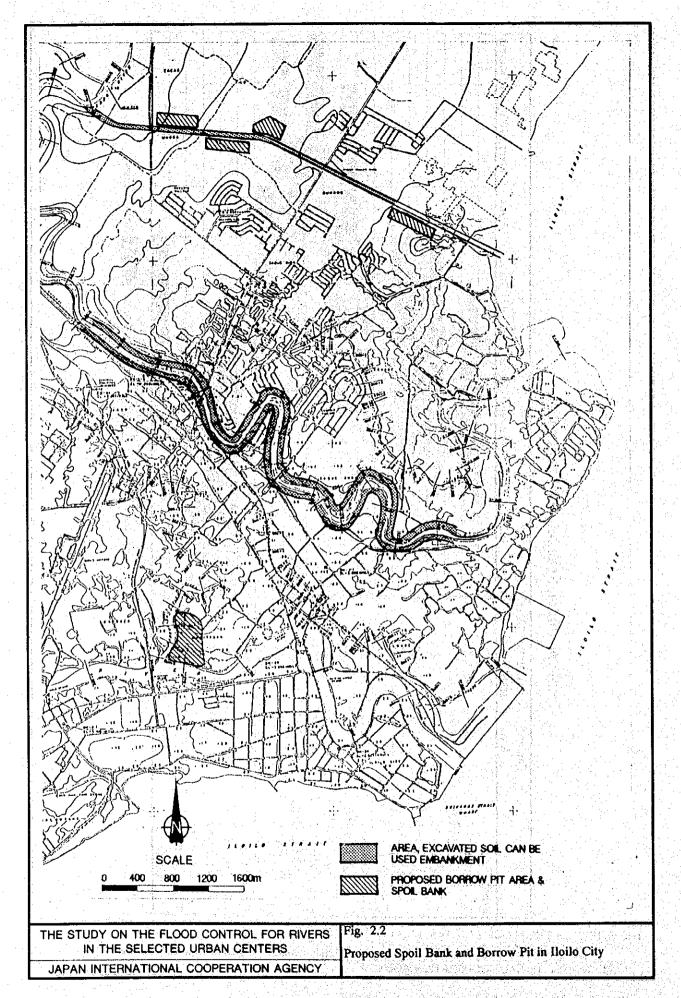
Table 3.16   Drainage Improvement Project Cost of Urgent Plan in Iloito City   Total Novet Items			Amount	(1000 P.)		8,343	15,570	25,104	34,266 938	1,625	5,929	83,432	9,178	100,953		16,035 6,744		6,187	19,488	149,406	16,152	
Table 3.16 Drainage Improvement Project Cost of Urgent Plan in Iloilo City  Table 3.16 Drainage Improvement Project Cost of Urgent Plan in Iloilo City  (5450 m) (560 m) (4420 m)  (650 m) (1000 P) (1000 P) (1000 P)  (7000 P) (1000 P) (1000 P) (1000 P)  (1000 P) (1000 P) (1000 P)  (1000 P) (1000 P) (1000 P)  (1000 P) (1000 P) (1000 P)  (1000 P) (1000 P) (1000 P)  (1000 P) (1000 P) (1000 P)  (1000 P) (1000 P) (1000 P)  (1000 P) (1000 P) (1000 P)  (1000 P		Total		(10			187,186	1,092	24,264 49,282	15,536	245					57,890 60						0
Table 3.16 Drainage Improvement Project Cost of Urgent Plan in Iloi (4420 m) (560 m) (4420 m) (4420 m) (6450 m) (6450 m) (4420 m) (6450 m) (76450 m) (1000 P.) (1000 P	itty	seck		00 P.)		3,196	6,164	5,425	18,768	0	1,331	31,957	3,515	38,668		6,673	*	2,424	7,637	58,549	6,187	
Table 3.16  Table 3.16  Table 3.16  Cost Cost Cost Cost M2 M2 M2 M2 M2 M2 M3 M2 M2 M2 M3 M2 M2 M3 M4 M2 M3 M4 M4 M4 M5 M6 M1 M6 M1 M7 M1	a in Noilo C	Bo. Obrero C. (4420 m)		ЮГ)			74,108	236	13,290	0	55					8,555 28				-		
Table 3.16  Table 3.16  Table 3.16  Cost Cost Cost Cost M2 M2 M2 M2 M2 M2 M3 M2 M2 M2 M3 M2 M2 M3 M4 M2 M3 M4 M4 M4 M5 M6 M1 M6 M1 M7 M1	Urgent Pla			00 P.)	·*.	571	157	0	969 16	; E	4,598	5,712	628			2,048	2,048	448	1,411	10,819	1,106	
Table 3.16  Table 3.16  Table 3.16  Cost Cost Cost Cost M2 M2 M2 M2 M2 M2 M3 M2 M2 M2 M3 M2 M2 M3 M4 M2 M3 M4 M4 M4 M5 M6 M1 M6 M1 M7 M1	ect Cost of	Rizal (560 m)		(10			1,892	0	¥ ¥	296	190					0 18						
Table 3.16  Table 3.16  Table 3.16  Cost Cost Cost M2 M2 M2 M2 M2 M3 M2 M2 M3 M2 M3 M4 M2 M1 M2 M3 M4 M4 M5 M6 M1	ement Proj	<b>X</b>		)0 P.)		4,576	9,248	19,679	14,588	1,594	0	45,763	5,034	55,374		9,362.	10,911	3,314	10,440	80,039	8,860	
Table 3.16  Table 3.16  Table 3.16  Cost Cost Cost Cost Cost Cost Cost Cos	age Improv	lagore Cree (5450 m)		(100			111,186	826	10,330	15,240	0					49,335						
Table 3.  Table 3.  Table 3.  Table 3.  Table 3.	and Arman gard			Cost Peso)			22	22,989	1,412	105	24,200					111,900						
Work Items  Work Items  1. Preparatory Works 2. Main Works 2. Main Works (1) Excavation (2) Bridge (3) Revement (4) Sodding (5) Gravel Pavement (6) Box Culvert (6) Box Culvert (6) Box Culvert (7) Gravel Pavement (8) Gravel Pavement (9) Gravel Pavement (1) Land (1) Land (2) House (1) Land (2) House (2) House (3% of 1 + 11) (15% of 1 + 11)	Table 3.						EB3	m2	ZEI CEI	1 2	a					m2 00						
W W II. Main Con II. Prepar 2. Main V Con II. Prepar 2. Main V Con II. E G G B G G B G G G B G G G G G G G G G			ork Items		struction	atory Works	Works	ridge	evetment	ravel Pavement	ox Culvert	ount of Works	Hancous Works	of 1. +2.) of 1	ation	nd	of 11	ation	1.1 + 11) Contingency	of 1 + 11 + 111) of 1,11,111, and IV	ng Services of 1)	
			<b>&gt;</b>		Main Con			(S)			<b>a</b> (9)	Total Am		(10%) Total			Total	III Administ	(5% o IV Physical (	(15%) Total	V Enginecri	
												<b>T</b> +	17									

Table 3.17 Drainage Improvement Project Cost of UrgentPlan in Ormoc City

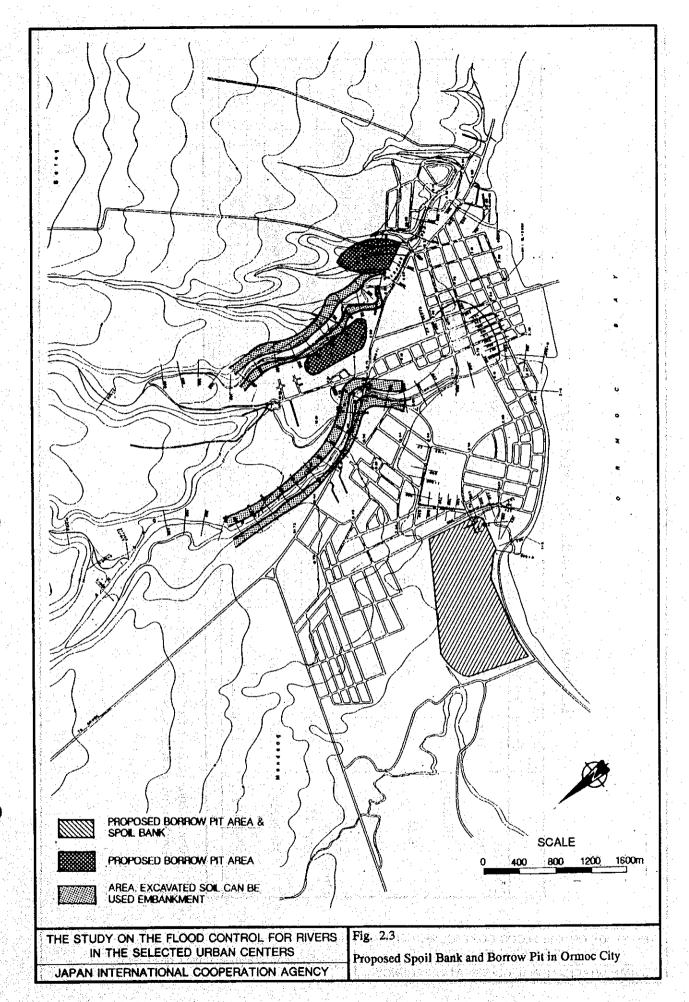
			Lotao (1200 m)	
Work Items	Unit	Unit	Ouantity	Amount
		(Peso)		(1000 P.)
Main Construction				•
1. Preparatory Works		1, -		558
<ol><li>Main Works</li></ol>				
(1) Excavation	m3	81	5,730	466
(2) Bridge	ш2	23,403	0	0
	엽	1,368	2,270	3,105
(4) Sodding	m2	21	3,347	69
	m2	8	1,845	121
(6) Box Culvert	E	24,200	75	1,815
Total Amount of Works				5,576
				617
3. Miscellaneous Works				610
(10% of 1. +2.)				
Total of I				0,/4/
Compression				
(1) Land	m2		4.020	40
(2) House	no.	91,900	7	649
Total of II				689
	٠.			(
III Administration				3/5
(2% of 1 + 11)  IV Physical Contingency				1,171
(15% of 1 + 11 + 111)				
Total of I,II,III, and IV				8,979
Engineering Services (16% of I.II,III and IV)				1,079
George Total				10.058
Grano 10tai		-		

FIGURES





F - 2



Implementation Schedule for Urgent Plan

	Quantity	Quantity Construction Cost									Construction
	(km)	(million Pesos)	1994	1995	1996	1997	1998	1999	2000	2001	Period
Iloilo City		1,175.6				A CALL SERVICE					
Jaro	14.00	:						.:B			2.00
Floodway	4.80		*************		***************************************						2.00
1											
Iloilo	6.50	241.4						· · · · · · · · · · · · · · · · · · ·	· .		2.00
							.,-11			 	
Mandurriao	4.20	180.7	***************************************	******							1.75
								•••••		•	
Drainage	10.51	139.5	***************************************								1.75
Ormoc City		321.3									
Anilao	2.00	182.2	•		••••••					*****	1.75
Malbasag	2.20	129.8			•••••						1.50
				•••				•••••	•••••		
Drainage	1.20	9.3		4 2 2 4 2					*****		0.50
				2.	1		•	****			
			F/S		D/D	Compensation	nsation		Construction	_	

Construction period is including mobilization, demobilization and other preparation works. ÷€

Implementation schedule is based on the loan agreement contracts.

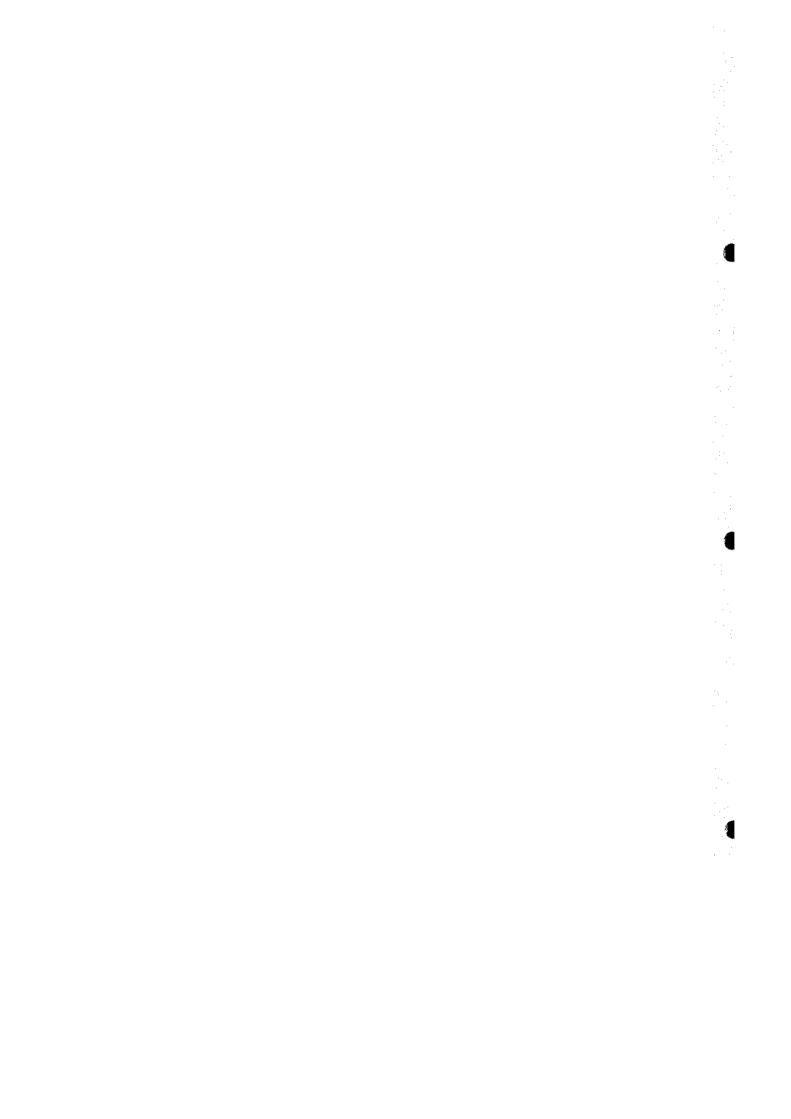
Fig. 2.4 THE STUDY ON THE FLOOD CONTROL FOR RIVERS
IN THE SELECTED URBAN CENTERS Implementation Schedule of the Urgent Plan JAPAN INTERNATIONAL COOPERATION AGENCY

# SUPPORTING REPORT ON SURVEY

# SUPPORTING REPORT ON SURVEY

# **Table of Contents**

1.	INTRODUCTION	SU-1
2.	SCOPE OF WORK	SU-3
	2.1 River and Topographic Survey	SU-3
	2.2 Riverbed Material Survey	SU-4
3.	PROGRESS OF SURVEY	SU-7
	3.1 Ground Survey	SU-7
	3.2 Additional Ground Survey	SU-9
	3.3 Riverbed Materials Survey	SU-1



#### LIST OF TABLES

Final Result of Ground Survey Works

T-1

Table 3.2	Summary of Laboratory Test Results	T-2
	LIST OF FIGURES	
Fig. 3.1	Schedule and Progress of Ground Survey Works	F-1

Table 3.1

Tari

#### 1. INTRODUCTION

Topographic survey, river/channel survey and riverbed materials survey have been carried out for the Master Plan Study on flood control of rivers in the selected urban centers of, Iloilo, Cebu, Ormoc and Tacloban, and for the Feasibility Study on the Urgent Plan for Iloilo and Ormoc. The surveys carried out are as mentioned below.

#### (1) Master Plan Study

Spot elevation, drainage channel survey and river survey, together with traverse survey, were carried out for related rivers and urban drainage channels in the four (4) urban centers selected. Riverbed materials survey was also conducted.

## (2) Feasibility Study

Additional river and drainage channel surveys were carried out for the rivers and urban drainage channels in Iloilo and Ormoc cities. Topographic survey was also conducted for the proposed structure sites and the riverine area of Anilao and Malbasag in Ormoc City.

Photographic surveying and mapping was undertaken for Iloilo City by the JICA Study Team from January to May 1994.

#### 2. SCOPE OF WORK

## 2.1 River and Topographic Survey

## Master Plan Study Stage

The survey work was conducted for the Master Plan Study in the four (4) urban centers selected; namely, Iloilo, Cebu, Ormoc and Tacloban.

#### (1) River Survey

The river survey was carried out for the twelve (12) rivers selected, and plane surveying was also conducted for the following river stretches:

City/River	Length (km)	Catchment Area (km²)	Remarks
Iloilo			
(1) Jaro	66.0	412.0	Positioning river
(2) Iloilo	25.0	106.0	section is based on
			traverse survey
	rangan Kabupatèn Kabupatèn Kab	iga. Na salah	en e
Cebu			
(1) Bulacao	13.5	10.7	Positioning river
(2) Kinalumsan	8.4	17.8	section is based on
(3) Guadalupe	12.2	16.3	the topomap with a
(4) Lahug	9.5	6.3	scale of 1/10,000
(5) Subang Daku	7.0	12.6	
Ormoc	er er er i Jagogledet Greig		
(1) Anilao	16.5	25.2	Positioning river
(2) Malbasag	11.7	11.1	section is based on
(-/			traverse survey
	n de la grande de la companya de la Na companya de la co		
Tacloban			
(1) Abucay	2.5	2.4	
(2) Mangonbangon	3.6	4.9	
(3) Burayan	3.0	6.5	<u> </u>
Total	178.9	631.8	The second state and the second secon

# (a) Plane Survey

Traverse survey or Global Positioning System (GPS) survey was employed to fix the survey line of cross-sectioning. The total length is 75 km with 250 survey selections which are plotted in the map with a scale of 1/10,000.

# (b) Longitudinal Profile and Cross-Section Survey

Longitudinal profile for a total length of 75 km and cross-section for a total of 250 sections were carried out. The interval of cross-sections is approx. 500 m from the river mouth 200 m long each from the riverside.

## (2) Channel Survey

The channel survey was carried out for drainage channels in the four (4) urban centers selected by positioning the survey points in the map with a scale of 1/10,000.

The longitudinal profile and cross-section survey were carried out at intervals of approx. 200 m and a length of 20 m each from the channel side for a total of 150 lines.

#### (3) Leveling

To delineate the inundation area especially in urban areas, leveling was carried out for urban and surrounding areas. Total leveling distance is approx. 80 km with 360 points located by simple GPS. This leveling and GPS survey were used for the preparation of contourline in the map with a scale of 1/10,000.

# Feasibility Study Stage

Additional surveys were conducted for the Feasibility Study. The survey works were conducted, based on the results of the photogrammetry and topo-mapping for Iloilo City (Scale: 1/5,000 and 1/10,000) undertaken between the Master Plan Study Stage and the Feasibility Study Stage.

#### (1) River Survey

Longitudinal profile 40 km in total length and cross-section survey for a total of 150 sections were carried out for the four (4) rivers selected for the Feasibility Study; namely, Jaro, Iloilo, Anilao and Malbasag. The interval of cross-section is approx. 250 m for rivers in Iloilo City and 100 m for rivers in Ormoc City, with a length of 50 m each from the riverside.

#### (2) Channel Survey

The channel survey was carried out for five (5) urban drainage channels, three in Iloilo City and two in Ormoc City. The positioning of cross-sections was made, based on the aerophotographic map with a scale of 1/5,000.

The longitudinal profile for 13 km and cross-section survey of 210 sections in total was carried out with an interval of approx. 20 m and a length of 20 m each from both sides of the channel.

#### (3) Topographic Survey

Topographic survey map with a scale of 1/500 for the riverine area of Anilao and Malbasag rivers and 1/200 for the sites of major facilities proposed are prepared.

## 2.2 Riverbed Material Survey

Survey was conducted on riverbed materials at three (3) points each for seven (7) rivers as tabulated below: The sampling sites are three each at the down, middle and upper streams of the respective river channels. In total, 21 samples were tested for sieving (JIS A1204) and specific gravity (JIS A1202) tests.

Item No.	Name of River	No. of Sampling Sites
1.	Jaro	3
2.	lloilo	3
3.	Guadalupe	3
4	Kinalumsan	3
5.	Anilao	3
6.	Malbasag	3 3 3 4 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
7.	Mangonbangon	3
Total		21

#### 3. PROGRESS OF SURVEY

#### 3.1 Ground Survey

Immediately after the field investigation and collection of data/information, some quantities of ground survey works were modified to the appropriate total quantity of the survey. The modifications were made to compensate and adjust the work quantities among the survey items without changing the contract period and amount for the works.

# (1) Progress of Work

The contents and covering areas of the ground survey were finally determined upon the completion of the first field investigation. Furthermore, small adjustments of work quantity were made to cope with the requirements of the Study, which were gradually detailed through the progress of the works. The work was subcontracted by the JICA Study Team to PACER (13th Floor, Strata 100 Bldg., Emerald Avenue, Pasig, Metro Manila) on April 2, 1993.

The survey works started with the spot elevation survey, and the river survey and drainage channel survey were consecutively carried out following the traverse survey. The field survey works in Ormoc and Tacloban cities were finished at the end of May 1993. That of Cebu City was finished at the beginning of June, and Iloilo was on June 25, 1993.

In parallel with the field works, the calculations and drafting work were carried out based on the field survey results. Final drawings were prepared after the check and inspection by the Study Tearn and completed on July 25, 1993. The original schedule and actual progress of the Ground Survey is presented in Fig. 3.1.

#### (2) Modification of Work Quantity

## (a) Spot Elevation Survey

The total number of spot elevation surveys was increased from 350 to 432 points after examining the collected data and topographic maps. The detailed number of spot elevation survey is summarized as follows.

City	Original	Actual
Iloilo	100	217
Cebu	150	90
Огтос	50	53
Tacloban	50	72
Total	350	432

#### (b) Drainage Channel Survey

Based on the result of field survey and the information/data collected by the Study Team, the quantity of drainage channel survey was also modified to cope with the requirements of the Study. The object areas of the survey was concentrated in the poor drainage area and newly developed urban area. Furthermore, the survey for closed channels and pipes were not carried out due to the difficulty to open maintenance holes. The actual work quantity is shown below.

City	Pro	file	Cross	Section
	Plan	Actual	Plan	Actual
Iloilo	7.0	14.5	50	97
Cebu	7.0	6.3	50	57
Ormoc	4.0	1.7	30	25
Tacloban	2.0	12.5	20	56
Total	20.0	35,0	150	235

# (c) River Survey

The number of objective river for river survey is increased from 8 to 13 rivers. The increased quantities in the river survey was adjusted by increasing the interval of cross-sections and decreasing the width of cross-sectioning. The changes in river survey are summarized as follows:

City/River	Profil	e (km)	Cross Section		
	Plan	Actual	Plan	Actual	
Iloilo City	43.0	49.5	120	98	
Jaro	23.0	26.5	60	56	
Aganan	10.0	11.0	30	25	
Iloilo	10	12.0	30	<b>18</b>	
Cebu City	17.5	23.6	70	87	
Bulacao		2.6		8	
Kinalumsan	6.0	4.0	35	15	
Guadalupe	6.5	6.0	35	21	
Lahug	5.0	5.5	20	24	
Subang Daku	<b>-,-</b>	5.5		19	
Ormoc City	14.5	14.0	40	36	
Anilao	9.5	9.0	25	23	
Malbasag	5.0	5.0	15	13	
Tacloban City	÷,=	9.2		31	
Mangonbangon	<b></b>	4.0		20	
Abucay		1.7		7	
Burayan	i na <del>tid</del> e e i natid	3.5		4	
Total	75.0	96.3	250	252	

# (d) Traverse Survey

By the collected topographical maps and aerial photos, the quantity of traverse survey was reduced, while the reduced quantity was adjusted by increasing the number of spot elevations. The actual quantity of traverse survey is shown as follows:

City			Plan		Actual
Iloilo		erati ili ili escurte	43.0	 	20.0
Cebu			17.5		0.0
Ormo	<b>C</b>		14.5		14.0
Tacio	ban		-,-		7.2
Total			 75.0		41.2

## (2) Collection of Topographic Maps and Aerial Photos

The JICA Study Team had collected the following additional topographic maps and aerial photos through the field investigation:

## (a) Iloilo City

Semi-rectified photo-mosaics: scale of 1/2,500 on the basis of aerial photos in scale of 1/15,000 taken in 1980. (City Planning and Development Office)

## (b) Cebu City

Topographical maps (colored): scale of 1/5,000 on the basis of aerial photos taken in 1988. (NAMRIA with the German Agency for Technical Cooperation)

Topographic maps: scale of 1/2,500 digitized on the basis of topographic maps of 1/2,000 taken in 1981. (Water Resources Center, University of San Carlos)

### (c) Ormoc City

Aerial photos: scale of 1/12,500 taken in 1972. (NAMRIA)

## (d) Tacloban City

Topographic maps: scale of 1/2,500 and 1/5,000 on the basis of aerial photos taken in 1981. (City Planning and Development Office, Tacloban City)

#### 3.2 Additional Ground Survey

The area of survey works is delineated on the basis of the Master Plan completed in 1993. The work was subcontracted by the JICA Study Team to PACER (13th floor Strata 100 Bldg., Emerald Avene, Pasig, Metro Manila) made on May 19, 1994.

### (1) Progress of Work

The survey work started with the river survey followed by the topographic survey at the diversion points of the two (2) proposed floodways, then proceeded to the drainage channel survey.

Upon the completion of field work in Iloilo City, on June 16, 1994, the survey team proceeded to Ormoc City for river, topographic and drainage channel surveys in sequence. Calculations and drafting work were carried out in parallel with the field work. Final drawings were prepared after the check and inspection by the Study Team and completed on July 31, 1994. All results of the survey, together with the drawings, were submitted to the Study Team on August 2, 1994.

On the other hand, the topographic map of Iloilo City (scale: 1/5,000) and the upper stream of Jaro River (scale: 1/10,000), which was prepared based on another contract with JICA, were received by the Study Team in the beginning of July 1994. The Study Team gave instructions to the survey team to incorporate the results of the survey into the topographic maps.

# (2) Modification of Work Quantity

After field investigation and collection of data/information conducted by the Study Team, some quantities in the ground survey works were modified. The modification was made to compensate and adjust the original work quantity among the survey items without changing the contract period and amount of the works.

The modifications are summarized as follows, with details given in Table 3.1.

Survey Item	Location	Original	Actual
River Survey			
Longitudinal	Iloilo	35.0 km	35.2 km
	Ormoc	5.0 km	5.0 km
Cross-section	Iloilo	100 sections	19 sections
Host form by the dig	Ormoc	50 sections	41 sections
Drainage Survey	THE ENGREPH		
Longitudinal	Iloilo	11.0 km	10.0 km
	Ormoc	2.0 km	1.1 km
Cross-section	Iloilo	180 sections	150 sections
	Ormoc	30 sections	14 sections
Topographic Survey	,		
Scale of 1/500	Iloilo	8.0 ha	10.9 ha
	Ormoc	80.0 ha	99.0 ha
Scale of 1/200	Ormoc	6.0 ha	5.2 ha
Total			
Longitudinal		53.0 km	51.5 km
Cross-section		360 sections	401 sections
Topographic		94.0 ha	115.1 ha

# 3.3 Riverbed Materials Survey

The riverbed materials survey was subcontracted by the JICA Study Team to a local consultant; Ground Test & Const. Corporation (26 Denver St., Cubao, Quezon City). The work was completed on June 8, 1993.

# (1) Sampling Sites

Out of the eleven (11) related rivers of the four (4) cities selected, samples were collected for seven (7) rivers. The location of sampling sites are shown in Fig. 3.2 for Iloilo City, Fig. 3.3 for Cebu City, Fig. 3.4 for Tacloban City and Fig. 3.5 for Ormoc City.

Three (3) sampling spots for each river were selected by considering the distribution of riverbed materials and arranged as samples collected at upper stream, midstream and downstream, respectively.

### (2) Laboratory Test

The following two items of laboratory tests were conducted.

## (a) Grain Size Analysis

Method Used: sieve test for 76.2 mm to 0.074 mm hydrometer for less than 0.074 mm

Amount Used : less than 20 mm: 1,000 g
20 to 30 mm: 2,000 g
30 to 40mm: 3,000 g
40 to 50 mm: 4,000 g

more than 50mm: all the amount

taken from site

# (3) Result of Laboratory Test

The results of grain size analysis are shown in Fig. 3.6 to 3.12 as particle size distribution curve, and the results of the specific gravity tests are compiled into the summary of the laboratory test result as shown in the Table 3.2.

TABLES

Table 3.1 Final Result of Ground Survey Works

			11 2001:22	Work Contons		Carry-Out Ougatity	# of Original Shoots	Notes
River         Jano Arter Pincia         Closs-Section         50 sections         66 sections         35 control           River         Jaco         Longitudinal Profile         7.5km         37.6km         38           Holio         Cross-Section         25 sections         66 sections         29           Manduriao         Cross-Section         30 sections         26 sections         29           Floodway         Cross-Section         30 sections         26 sections         2           Anno         Longitudinal Profile         5.5km         4 sections         1           Floodway         Cross-Section         4 sections         1           Lapaz         Longitudinal Profile         6.5km         5.5km         4 sections           Lapaz         Longitudinal Profile         6.0km         5.5km         4           RA         Cross-Section         1.20 sections         55 sections         1           Razal         Longitudinal Profile         6.5km         9.2km         1           Rector         Cross-Section         1.5km         1         1           Rector         Longitudinal Profile         6.5km         2.5km         1           Rector         Cross-Section	City Ivanie			3	1	ממוני מתו לתחוויו	01	6-1-5000
River         Jaro         Cross-Section         75 Sem         75 Ram         65 sections         35           Inoilo         Cross-Section         25 sections         30 sections         18           Hoolo         Cross-Section         25 sections         68 sections         29           Floodway         Cross-Section         50 sections         68 sections         29           Floodway         Cross-Section         65 Skm         4 8km         1           Floodway         Cross-Section         4 0ha         5 8ha         1           Floodway         Cross-Section         4 0ha         5 8ha         1           Lapaz         Longitudinal Profile         6 0km         5 1ha         1           Ploodway         Cross-Section         10 sections         5 1ha         1           Drainage         R.4         Cross-Section         10 sections         5 1ha         1           R.3         Cross-Section         10 sections         5 5 km         4           R.4         Cross-Section         10 sections         5 5 km         4           R.5         Cross-Section         10 sections         5 2 sections         10 sections           Study Area         Anilao	011011	Aero-photo	T	Fian			2	2000-11-000-11
Inoido   Cross-Section   7.5km   17.8km   6		River	Jaro	Cross-Section	50 sections	68 sections	35.	H = 1:500, V = 1:100
Holio   Cross-Section   25 sections   30 sections   18				Longitudinal Profile	17.0km	17.8km	9	H=1:5000,V=1:100
Manduriable   Cross-Section   Consultation   Cons			Iloilo	Cross-Section	25 sections	30 sections	18	H=1:500,V=1:100
Manduriao         Cross-Section         50 sections         68 sections         29           Floodway         Cross-Section         30 sections         4,8km         1           Jaro         Longitudinal Profile         6,5km         4,8km         1           Jaro         Longitudinal Profile         6,5km         4,8km         1           Thoodway         Cross-Section         4 sections         4,8km         1           Lapaz         Topographic         0,6km         0,4km         1           R-3         Cross-Section         120 sections         85 sections         41           R-3         Cross-Section         120 sections         85 sections         28           R-3         Cross-Section         120 sections         85 sections         28           R-3         Cross-Section         120 sections         5,5km         41           R-3         Cross-Section         10 sections         5,5km         41           R-3         Cross-Section         10 sections         5,5km         11           R-4         Cross-Section         12 sections         22 sections           Revised Plan         Cross-Section         25 sections         2 sections           River				Longitudinal Profile	7.5km	7.6km	3	H=1:5000,V=1:100
Floodway   Cross-Section   5.5km   4.8km   2			Manduriao	Cross-Section	50 sections	68 sections	29	H=1:200,V=1:100
Floodway   Cross-Section   30 sections   7	, ,			Longitudinal Profile	5.5km	4.8km	2	H=1:5000,V=1:100
Jaco   Longitudinal Profile   6.5km   4.8km   1     Floodway   Tonggraphic   4.0ha   5.8ha   1     Tonggraphic   4.0ha   5.8ha   1     Lapaz   Longitudinal Profile   0.6km   0.4km   1     Lapaz   Tonggraphic   1.00 esetions   8.5km   1     Lapaz   Tongitudinal Profile   0.6km   0.4km   1     Lapaz   Tonggraphic   1.00 esetions   8.5km   4.1     Lapaz   Cross-Section   8.0 sections   5.5km   4     R-2   Cross-Section   10 sections   5.5km   2.5km   1     Revised Plan   Revised Plan   Tonggraphic   0.5km   0.3km   1     River   Anileo   Cross-Section   2.5 sections   2.5 sections   1.0 sections   1.			Floodway	Cross-Section	30 sections	26 sections	7	H = 1.500, V = 1.100
Topographic			Jaro	Longitudinal Profile	6.5km	4.8km	ı	H=1:2000,V=1:100
Floodway   Cross-Section   4 sections   1				Topographic	4.0ha	5.8ha	1	S=1:500
Lapaz         Longitudinal Profile         0.6km         0.4km         1           Drainage         Topographic         4.0ha         5.1ha         1           Drainage         Cross-Section         120 sections         65 sections         41           R-3         Cross-Section         80 sections         5.5km         4           R-3         Cross-Section         10 sections         5.5km         3           Obrero         Longitudinal Profile         4.5km         4.2km         3           Reval         Longitudinal Profile         0.5km         0.3km         1           River         Revised Plan         2.5 sections         2.5 sections         1           River         Longitudinal Profile         2.0km         2.5km         1           Malbassa         Cross-Section         2.0km         2.5km         1           Drainage         R-1         Cross-Section         2.0km         1.1km         N/A           Drainage         Lotao         Longitudinal Profile         2.0km         N/A         N/A           Brank         A-1         Cross-Section         2.0km         N/A         N/A           Dam Site         A-1         Cross-Section			Floodway	Cross-Section	4 sections	4 sections		H=1:500,V=1:100
Drainage         R-4         Cross-Section         100 sections         85 sections         41           Prainage         R-4         Cross-Section         6.0km         5.5km         4           R-3         Cross-Section         80 sections         5.5km         4           R-3         Cross-Section         10 sections         58 sections         28           R-2         Cross-Section         10 sections         6 sections         2           R-2         Cross-Section         10 sections         2 sections         2           River         Revised Plan         2.5km         2           River         Cross-Section         2.5 sections         2.5km         1           River         Longitudinal Profile         2.0km         2.5km         1           Anilao         Cross-Section         2.5km         1         1           Drainage         R-1         Cross-Section         2.5km         41.8km         6           Drainage         R-1         Cross-Section         1.1km         1.1km         1.1km         1.1km           Dam Site         A-1         Cross-Section         1 sections         1 section         1           A-2         Cross-Section <th></th> <th></th> <th>Lapaz</th> <th>Longitudinal Profile</th> <th>0.6km</th> <th>0.4km</th> <th></th> <th>H=1:2000,V=1:100</th>			Lapaz	Longitudinal Profile	0.6km	0.4km		H=1:2000,V=1:100
Drainage         R-4         Cross-Section         120 sections         85 sections         41           R-3         Cross-Section         80 sections         5.5km         4           Obrero         Cross-Section         4.2km         3           R-2         Cross-Section         10 sections         5 sections         4           R-2al         Longitudinal Profile         0.5km         0.3km         1           Study Area         Revised Plan         2.5km         1           River         Revised Plan         2.5km         1           River         Longitudinal Profile         2.0km         2.5km         1           River         Anilao         Cross-Section         2.5km         9           Malbasag         Cross-Section         2.0km         2.5km         1           Drainage         R-1         Cross-Section         2.0km         1.1km         1           Drainage         R-1         Cross-Section         1.1km         1.1km         N/A         N/A           Dam Site         A-1         Cross-Section         1 sections         1 section         1           A-2         Cross-Section         1 section         1 section         1 section				Topographic	4.0ha	5.1ha	1	S=1:500
Ingore   Longitudinal Profile   6.0km   5.5km   4     R-3   Cross-Section   80 sections   59 sections   28     Obero		Drainage	R-4	Cross-Section	120 sections	85 sections	41	H=1:100, V=1:100
R-3         Cross-Section         80 sections         59 sections         28           Obrero         Longitudinal Profile         4.5km         4.2km         3           Rezal         Cross-Section         10 sections         6 sections         4           Study Area         Revised Plan         0.5km         0.3km         1           River         Anilao         Cross-Section         25 sections         22 sections         10           River         Longitudinal Profile         2.0km         2.5km         1           Malbasag         Cross-Section         25 sections         19 sections         21           Drainage         R-1         Cross-Section         2.0km         2.5km         1           Lotao         Longitudinal Profile         1.1km         1.1km         1         1           R-2         Cross-Section         10 sections         10 sections         1         1           Dam Site         A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 section		· ·	Ingore	Longitudinal Profile	6.0km	5.5km	4	h=1:2000, V=1:50
Obereo         Longitudinal Profile         4.5km         4.2km         3           R-2         Cross-Section         10 sections         6 sections         4           Rezal         Longitudinal Profile         0.5km         0.3km         1           River         Anilao         Cross-Section         2.5 sections         10           River         Anilao         Cross-Section         2.5km         1           Topographic         2.0km         2.5km         9           Drainage         R-1         Cross-Section         2.5km         1           Drainage         R-1         Cross-Section         2.0km         2.5km         1           Drainage         R-1         Cross-Section         2.0km         1.1km         1.1km           Brank         Lotao         Longitudinal Profile         1.1km         1.1km         1.1km           Dam Site         A-1         Cross-Section         10 sections         1.1km         1           Dam Site         A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1.3km         1.3km         1           A-2         Cross-Section			R-3	Cross-Section	80 sections	59 sections	28	H = 1:100, V = 1:100
R-2         Cross-Section         10 sections         6 sections         4           Study Area         Revised Plan         0.5km         0.3km         1           River         Anilao         Cross-Section         25 sections         22           River         Longitudinal Profile         2.0km         2.5km         1           Malbasag         Cross-Section         25 sections         25 sections         21           Drainage         R-1         Cross-Section         20 sections         1           Drainage         R-1         Cross-Section         20 sections         14.8ha         6           Drainage         R-1         Cross-Section         20 sections         11.km         11.km           Dam Site         R-1         Cross-Section         10 sections         N/A         N/A           Dam Site         A-1         Cross-Section         1 section         1 section         1 section           A-2         Cross-Section         1 section         1 section         1 section         1 section           A-2         Cross-Section         1 section         1 section         1 section         1 section           A-2         Cross-Section         1 section         1 section	•		Obrero	Longitudinal Profile	4.5km	4.2km	3	H = 1:2000, V = 1:50
Study Area         Revised Plan         0.5km         0.3km         1           Study Area         Revised Plan         2.5 sections         2.2 sections         10           River         Anilao         Cross-Section         2.0km         2.5km         1           Malbasag         Cross-Section         2.0km         2.5km         9           Malbasag         Cross-Section         2.0km         2.5km         1           Drainage         R-1         Cross-Section         2.0km         2.5km         1           Drainage         R-1         Cross-Section         2.0km         1.1km         1           B-2         Cross-Section         10.9km         N/A         N/A           Dam Site         A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 section         1           M-1         Cross-Section         1 section         1 section         1 section         1           M-1         Cross-Section         1 section         1 section         1 section           M-1         Cross-Section         1 section         1 section           M-1         Cross-Sec	4		R-2	Cross-Section	10 sections	6 sections	4	H=1:100,V=1:100
Study Area         Revised Plan         25 sections         22 sections         10           River         Anilao         Cross-Section         2.0km         2.5km         1           Malbasag         Cross-Section         2.0km         2.5km         9           Malbasag         Cross-Section         2.0km         2.5km         1           Longitudinal Profile         2.0km         2.5km         1           Drainage         R-1         Cross-Section         40.0ha         41.8ha         6           Drainage         R-1         Cross-Section         10.5km         N/A         N/A           Param Site         R-2         Cross-Section         10.5km         N/A         N/A           Dam Site         A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1           A-2         Cross-Section         2.0ha         1.3ha         1           A-2         Cross-Section         1 section         1 section         1           M-1         Cross-Section			Rezal	Longitudinal Profile	0.5km	0.3km	1	H=1:2000, V=1:50
River         Anilao         Cross-Section         25 sections         22 sections         10           Malbasag         Cross-Section         2.0km         57.2ha         9           Malbasag         Cross-Section         25 sections         19 sections         21           Drainage         R-1         Cross-Section         2.0km         1.1km         1           Drainage         R-1         Cross-Section         20 sections         14 sections         7           R-2         Lorgitudinal Profile         1.1km         1.1km         1           R-2         Cross-Section         10 sections         N/A         N/A           Dam Site         A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 section         1           M-1         Cross-Section         2.0ha         1.3ha         1           M-1         Cross-Section         1 section         1 section         1           M-1         Cross-Section         2.0ha         1.3ha         1           M-1         Cross-Section         2.0ha         1.3ha         1           M-1         Cross-Section <th>Огтос</th> <th>Study Area</th> <th></th> <th>Revised Plan</th> <th></th> <th></th> <th>2</th> <th>S=1:5000</th>	Огтос	Study Area		Revised Plan			2	S=1:5000
Malbasag         Cross-Section         2.0km         2.5km         1           Malbasag         Cross-Section         25 sections         19 sections         21           Longitudinal Profile         2.0km         2.5km         1           R-1         Cross-Section         20 sections         14 sections         7           R-1         Cross-Section         1.1km         1.1km         1           R-2         Cross-Section         10 sections         N/A         N/A           A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 section           M-1         Cross-Section         2 section         1 section         1		River	Anilao	Cross-Section	25 sections	22 sections	10	H=1:500,V=1:100
Malbasag         Cross-Section         25 sections         19 sections         21           Longitudinal Profile         2.0km         2.5km         1           R-1         Cross-Section         20 sections         14 sections         7           R-1         Cross-Section         20 sections         14 sections         7           R-2         Cross-Section         10 sections         N/A         N/A           A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 section         1 section           M-1         Cross-Section         1 section         1 section         1 section         1 section           A-2         Cross-Section         1 section         1 section         1 section         1 section           M-1         Cross-Section         1 section         1 section         1 section         1 section           M-1         Cross-Section         1 section         2.0ha         1 section         1 section			:	Longitudinal Profile	2.0km	2.5km	1	H = 1.5000, V = 1.100
Malbasag         Cross-Section         25 sections         19 sections         21           Longitudinal Profile         2.0km         2.5km         1           R-1         Cross-Section         20 sections         14 sections         7           Lotao         Longitudinal Profile         1.1km         1.1km         N/A           R-2         Cross-Section         10 sections         N/A         N/A           A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1 Section         1           A-2         Cross-Section         1 section         1 section         1 Section         1 Section           M-1         Cross-Section         1 section         1 section         1 Section         1 Section           M-1         Cross-Section         1 section         1 section         1 Section         1 Section           M-1         Cross-Section         1 section         1 section         1 Section         1 Section           M-1         Cross-Section         1 section         2.0ha         2.5ha         1 Section				Topographic	40.0ha	57.2ha	6	S=1:500
R-1         Longitudinal Profile         2.0km         2.5km         1           R-1         Topographic         40.0ha         41.8ha         6           R-1         Cross-Section         20 sections         14 sections         7           R-2         Cross-Section         10 sections         N/A         N/A           A-1         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1           A-2         Cross-Section         1 section         1 section         1           M-1         Cross-Section         1 section         1 section         1 section           M-1         Cross-Section         1 section         1 section         1 section           M-1         Cross-Section         2.0ha         1.3ha         1           M-1         Cross-Section         2.0ha         2.5ha         1			Malbasag	Cross-Section	25 sections	19 sections	21	H=1:500,V=1:100
R-1         Topographic         40.0ha         41.8ha         6         \$=1:500           R-1         Cross-Section         20 sections         14 sections         7         H=1:100,V           Lotao         Longitudinal Profile         1.1km         I.1km         H=1:2000,V           R-2         Cross-Section         10 section         N/A         N/A         H=1:2000,V           A-1         Cross-Section         1 section				Longitudinal Profile	2.0km	2.5km		H = 1.5000, V = 1.100
R-1         Cross-Section         20 sections         14 sections         7         H=1:100,V           Lotao         Longitudinal Profile         1.1km         1.1km         1         H=1:2000,V           R-2         Cross-Section         10 sections         N/A         N/A         N/A         H=1:2000,V           A-1         Cross-Section         1 section         1	:			Topographic	40.0ha	41.8ha	9	S=1:500
Lotao         Longitudinal Profile         1.1km         1.1km         1         H=1:2000, NA           R-2         Cross-Section         10 sections         N/A         N/A         N/A         H=1:2000, NA           A-1         Cross-Section         1 section         1 section         1 h=1:200, V         1 h=1:200, V           A-2         Cross-Section         1 section         1 section         1 H=1:200, V         1 H=1:200, V           M-1         Cross-Section         1 section         1 section         1 B=1:200, V         1 B=1:200, V           M-1         Cross-Section         1 section         1 section         1 S=1:200         1 S=1:200           M-1         Cross-Section         1 section         1 section         1 section         1 S=1:200		Drainage	R-1	Cross-Section	20 sections	14 sections	L	H = 1:100, V = 1:100
R-2         Cross-Section         10 sections         N/A         N/A         N/A           Longitudinal Profile         0.9km         N/A         N/A         h=1:200,V-           A-1         Cross-Section         1 section         1 dha         1 S=1:200,V-           A-2         Cross-Section         1 section         1 H=1:200,V-           M-1         Cross-Section         1 section         1 S=1:200,V-           M-1         Cross-Section         1 section         1 H=1:200,V-           Topographic         2.0ha         2.0ha         1 section         1 S=1:200		) · ·	Lotao	Longitudinal Profile	1.1km	1.1km	•	H=1:2000,V=1:50
A-1         Cross-Section         1 section         1 section         1 section         1 h=1:200,V-1           A-2         Cross-Section         1 section         1 sect			R-2	Cross-Section	10 sections	N/A	N/A	
A-1         Cross-Section         1 section         1 section         1 h=1:200,V=1           A-2         Cross-Section         1 section         1 section         1 H=1:200,V=1           M-1         Cross-Section         1 section         1 section         1 S=1:200,V=1           M-1         Cross-Section         1 section         1 H=1:200,V=1           M-1         Cross-Section         1 section         1 H=1:200,V=1           Topographic         2.0ha         2.5ha         1 S=1:200		:		Longitudinal Profile	0.9km	N/A	N/A	
A-2         Cross-Section         1 section         1 section         1 section         1 section         1 H=1:200,V           M-1         Cross-Section         1 section         1 section         1 S=1:200           M-1         Cross-Section         1 section         1 H=1:200,V           Topographic         2.0ha         2.5ha         1 S=1:200		Dam Site	A-1	Cross-Section	1 section	1 section	1	>
Cross-Section         1 section         1 section         1 H=1:200,V           Topographic         2.0ha         1.3ha         1         S=1:200           Cross-Section         1 section         1 section         H=1:200,V           Topographic         2.0ha         2.5ha         1         S=1:200			·.	Topographic	2.0ha	1.4ha		S=1:200
Topographic         2.0ha         1.3ha         1         S=1:200           Cross-Section         1 section         1 section         1 H=1:200,V           Topographic         2.0ha         2.5ha         1 S=1:200			A-2	Cross-Section	1 section	1 section	1	>,
Cross-Section         1 section         1 section         1 H=1:200,V           Topographic         2.0ha         2.5ha         1 S=1:200			٠	Topographic	2.0ha	1.3ha		١
Topographic 2.0ha 2.5ha 1			M-1	Cross-Section	1 section	1 section	1	
			-	Topographic	2.0ha	2.5ha		S=1:200

Table 3.2 Summary of Laboratory Test Results

<u> </u>			<u> </u>			医多种 海绵基层		
		Specific Gravity				Grain Size Distribution		
Name of	Sample No.	specific Gravity			Gravel	Sand Silt/Clay		
River	NO.	>9.52mm	.074 - 9.52mm	<.074mm	>20mm	20 - .074mm	<.074mm	
	1-1	-	2.47	2.68	3	19	78	
Iloilo	I-2	-	2.38	2.63	9	70	21	
	I-3	-	2.50	2.62	5	86	9	
	J-1	-	2.90	2.65	1	98	1	
Jaro	J-2	2.17	2.64	2.50	59	34	7	
	J-3	2.09	2.75	2.65	52	48	0	
	K-1	1.99	2.27	=	56	44	o	
Kinalumsan	K-2	2.04	2.46	-	75	25	0	
	K-3		2.59	-	89	11	0.	
	G-1	2.44	2.32	2.62	50	46	4	
Guadalupe	G-2	1.75	2.40	-	60	40	0	
	G-3	1.97	2.42	2.62	79	17	4	
	AN-1	1.93	2.39	-	52	48	0	
Anilao	AN-2	2.07	2.18	2.67	46	51	3	
	AN-3	1.89	2.42	2.65	60	37	3	
	ML-1	1.78	2.57	_	57	43	o	
Malbasag	ML-2	2.39	2.18	- -	58	42	0	
	ML-3	2.01	2.42		55	45	0	
Mangonbangon	M-1	-	2.29	2.63	8	82	10	
gonwangon	M-2	-	2.19	2.62	4	80	16	
10 to	M-3	-	2.49	<b>-</b>	44	56	0	

FIGURES

July Scheduled Actual Progress June SCHEDULE AND PROGRESS OF GROUND SURVEY WORKS Xay April Figures in parentheses are the actual work quantity. 250 271 ) 75 96-3) 250 271 ) 75 96.3) 150 233 ) 20 29.7) 360 432 ) 75 43.2) 233 ) 20 20 29.7) Q, t7 section section section section sheet point Unit Ĕ 됳 É ž Ĕ Longitudinal Profile (b) Longitudinal Profile (b) Longitudinal Profile (b) Longitudinal Profile 2. Drainage Channel Survey 3. Drainage Channel Survey 1. Spot Elevation Survey OFFICE WORKS - Drafting 1. Spot Elevation Survey (a) Cross-Section (a) Cross-Section (a) Cross-Section (a) Cross-Section 2. Traverse Survey Description 3. River Survey 4. River Survey FIELD WORKS. (Note) THE STUDY ON THE FLOOD CONTROL FOR RIVERS Fig. 3.1 IN THE SELECTED URBAN CENTERS Schedule and Progress of Ground Survey Works JAPAN INTERNATIONAL COOPERATION AGENCY

