

KINGDOM OF THAILAND
CHIANG MAI
WATER WORKS EXPANSION PROJECT

VOLUME III
BILL OF QUANTITIES

- MARCH 1973 -

PREPARED FOR
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

BY
TOKYO ENGINEERING CONSULTANT CO., LTD.
TOKYO JAPAN

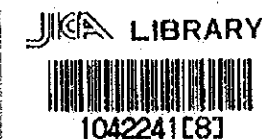
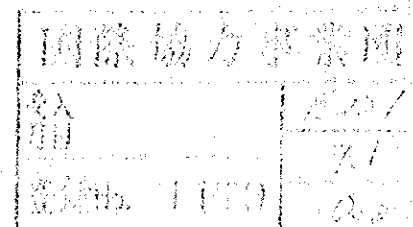
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Volume III-B Bill of Quantities (Forms for Detailed Estimation of Construction Costs)

Instructions Regarding Entries in the Bill of Quantities:

1. All estimates are expressed in terms of Bahts.
2. Insofar as possible, preference shall be given to domestic materials, and imported materials shall be used only when unavoidable.
3. Prices for materials shall include delivery to the site, as well as all duties, taxes, charges, and handling commissions.
4. Prices of imported materials shall include the CIF price at Bangkok, plus all duties, taxes, handling charges, and costs of transportation and delivery to the site.
5. As a general rule, labor shall be domestic, and costs of foreign labor, required for installation or adjustment of imported machines or equipment, shall be included in the prices of such machines or equipment.
6. Costs of labor and materials for miscellaneous works, the necessity for which arise in connection with this construction work shall be included in the categories, "Miscellaneous" and "Expenses." Included, also, shall be all expenses at the site.
7. The exchange rates between the Baht and the various foreign currencies, used in estimations, shall be plainly indicated.



Forms for Detailed Estimation of Construction Cost

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Part-1 Breakdown of The Construction Cost

Unit: Baht

Description of Item	Materials		Labor	Total Cost	Remarks
	Foreign Currency	Domestic Currency	Domestic Currency		
(II)					
1 Intake Facilities					
2 Raw Water Main					
3 Existing Plant					
4 Proposed Plant					
5 Distribution Main					
6 Temporary Construction					
7 Transportation for Construction Machine					
Sub Total					

1. Quantity of Materials

Structure	Sand	Concrete			Mortar Finishing(1:2)		Mortar	Forms			Reinforcing		Wood		Steel		Rubble Stone		
		Filling	1:4:8	1:3:6	1:2:4	t=20 mm		t=15 mm	A	B	C	Round	Deformed	A	B	Step		Hand Rail	Cover Plate
	m ³	m ³	m ³	m ³	m ²	m ²	m ³	m ²	m ²	m ²	kg	kg	m ³	m ³	pc.	m	kg	m ³	
1. Intake	1,800																		
Revetment			12.45	5.6							224								
Gift Chamber & Pump Well			72	1,230	193		2		3,158			146,000			510	119			128
Metal Fabrication																			
Pump Room	-	12.0	-	12.0	-	354	0.3	-	-	127	470	1,200	6.144	0.653	-	-	-	-	
Concrete Pit			0.4	5.5						42	550								0.8
Flow Meter Chamber			25.2	14.6	61					136	146				10				6.4
& Anchor Block				76.7		646				457	3,270	5,900	19.6	2.13					3.5
Generator Room		-	4.7	48.0						79	-	1,193							0.94
Generator Base		-	0.94	45.0		532				300	5,000		14	7		24			2.0
Lodging House		-	2.0	16.0		119.7				89	611	1,384	2.19	0.33					
Ware House			1.0																
2. Raw Water Main																			
Intake Site - Proposed Plant	915																		
" - Existing Plant	1,248																		
3. Existing Plant																			
Receiving Well			5	87	127			361				8,700				12			10
4. Proposed Plant	1,470																		
Receiving Well	75		19	91	439			506				11,600			20	34			0.2
Sedimentation Basin & Mechanical Works	1,725		173	1,164	3,337				3,496			152,000			57	223.2			
Clear Water Basin			45	196	686				739			213,000			22				85
Rapid Sand Filter		8	3	530	1,604				2,264			583,000			14	13			3
Operating Room Of Filter				106		1,768				1,164	11,600	6,860		1.83					
Reservoir	1,298	71	249	1,738	2,679				4,768			185,000			120			248	
Pump Room		46.7		25.78		440				248	1,010	3,260	16.14	1.19					
Chemical Desing Room			5.0	207.3		1,858				1,440.68		14,320	20.23	8.45		100			5.34
Piping For Facilities			87.5							124.4									8.6
Drawage Equipment			2.7	9					69	12		1,094			11				16
Lagoon			16	10			1			181		1,015			7	7			21
Generator Room Base			2.6	86.6		742				514	3,700	5,060	23.43	1.01					2
Office			15	351		1,599				3,345	21,040	25,580	20.9	4.4					77
Ware House			1	16		119.7				89	611	1,384	2.19	0.33					
Lodging House			27.0	130		2,100				1,650	15,000		53	12		94.0			18.0
Elevated Tank			10	230		860			1,800			33,000							10.0
5. Distribution Main	2,898																		
Booster Pump Equip	6		1	8						46	937				5				2
Aqueduct				64						113		1,250							5.8
Sub Total	11,435	137.7	780.49	6,503.08	9,126	11,138.4	3.3	867	10,234.48	16,294	64,169	1,401,800	177.82	39.32	776	626.2	248	485.58	

2. Quantity List of Materials

Piping Dia. mm	Asbestos Cement Pipe												Ductile Cast Iron Pipe										
	C-20		C-15																				
	300	150	600	500	400	300	250	200	150	100	100	75	800	700	600	500	450	400	350	300	250		
Unit	m	"	m	"	"	"	"	"	"	m	"	m	"	"	"	"	"	"	"	"	"		
1 Intake										155													
2 Raw-Water Main	4053	70									48									2998			
3 Existing Plant	24					25	67	23															
4 Proposed Plant			84	17	8	71	187	704	30	781		13	1	113	211				123	4	26		
5 Distribution Main				4		2617	5325	7785	50	4	83			73	1757	286	1683	3659	25		149		
Sub Total	4077	70	84	21	8	2713	5325	8039	777	189	781	131	13	1	186	1968	286	4805	3663	51	149		
Piping Dia. mm	Ductile Cast Iron Pipe C - 3				Steel Pipe Tar - EXPOXY Coating				Galvanized Steel Pipe 80														
	200	150	125	100	800	600	500	450	350	300	250	200	150	125	100	75	50	30	25	20	12		
	m	"	"	"	m	"	"	"	m	"	"	"	"	"	"	"	"	"	"	"	"		
1 Intake																	66					5	
2 Raw-Water Main					20	20																	
3 Existing Plant																							
4 Proposed Plant	49	41	10	5			7						86										
5 Distribution Main		14		109		40		139	10	42	154			7		17							
Sub Total	49	55	10	114	20	60	7	139	10	42	154		86	7		17	315					5	
Piping Dia. mm	Specials				Gate				Sluice Valve														
	ACP		GSP		DGP	CIP	Cast Iron																
	For ^x	Dom ^x	For ^x	Dom ^x	kg	kg	1000 x 1000	400 x 400	500	450	400	350	300	250	200	150	125	100	75	50	12		
1 Intake				1642	2825	897	4							3	2							3	4
2 Raw-Water Main	3002	1674			10446					1				2									
3 Existing Plant	495				1577									2									
4 Proposed Plant	4008	1474	928		47475		4	6					1	8	17	6	18	2	8	1			
5 Distribution Main	6623	2845	5282	2205	37478				4	1	4		4	6	8	22	10	4	22	12			
Sub Total	14128	5993	6761	3847	99801	897	4	4	6	4	2	5	21	27	29	31	6	30	15	3		4	
Piping Dia. mm	Butterfly Valve				Angle Valve							Air Valve		Diaphrame	Fire Hyd-	Flat							
	800	600	500	400	300	100	50	35	25	16	15	Box	Exposed	Valve	rant	Valve							
	set	"	"	"	"	set	"	"	"	"	"	set	"	set	set	set							
1 Intake					1								4										
2 Raw-Water Main												2											
3 Existing Plant																							
4 Proposed Plant	2	2	5	5		1	26	1	8	1	2		13	24	6	2				6			
5 Distribution Main		2	2									14	4			16							
Sub Total	2	4	7	5	1	1	26	1	8	1	2	16	21	24	6	18				6			

Description	Item	Materials		Labor	Sub-Total Cost	Total Cost
		Foreign Currency	Domestic Currency	Domestic Currency		
(II) - 1 Intake Facilities		()	()	()		()
1 Revetment	Revetment	-				
2 -a Grit Chamber & Pump Well	Structure					
-b	Metal Fabrication					
3 -a Raw Water Pump Room	Structure	-				
-b	Piping Works					
-c	Lighting Works & Plumbing Works	-				
4 -a Raw Water Pump	Pump Equipment		-			
-b	Power Center					
5 -a Drain Pit	Drain Pit	-				
-b	Flow Meter Chamber & Anchor Block	-				
6 -a Site Preparation	Earth Works & Fence	-				
-b	Lighting & Water Service	-				
7 -a Electrical Equipment	Sub Station					
-b	Generator	-				
8 -a Generator Room	Structure	-				
-b	Piping Works	-				
-c	Lighting Works	-				
-d	Generator Base	-				
9 -a Lodging House	Structure	-				
-b	Lighting Works	-				
-c	Plumbing Works	-				
10 -a Warehouse	Structure	-				
-b	Lighting Works	-				
11 -a Site Preparation	Earth Works & Fence	-				
-b	Lighting Works	-				
-c	Water Service Works	-				

Description	Item	Materials		Labor	Sub-Total	Total
		Foreign Currency	Domestic Currency	Domestic Currency	Cost	Cost
(II) - 2 Raw Water Main		()	()	()		()
1 ϕ 400mm L = 2,998m	Intake Site - Proposed Plant					
2 ϕ 300mm L = 4,053m	" - Existing Plant					
(II) - 3 Existing Water Treatment Plant		()	()	()		()
1 -a Receiving Well	Structure	-				
-b	Pipe Valve & Fitting					
(II) - 4 Proposed Water Treatment Plant		()	()	()		()
1 Site Preparation	Earth Works & Fence	-				
2 Receiving Well	Structure	-				
3 -a Sedimentation Basin	Structure	-				
-b	Mechanical Works					
-c	Electrical Works					
-d	Lighting Works	-				
-e	Pipe Valve & Fitting					
4 Clear Water Basin	Structure	-				
5 -a Rapid Sand Filter	Structure	-				
-b	Mechanical Works					
-c	Pipe Valve & Fitting					
-d	Operating Room of Filter	-				
-e	Lighting Works	-				
6 Reservoir & Pump Well	Structure	-				
7 -a Distribution Pump Room	Structure	-				
-b	Lighting Works	-				
-c	Piping Works	-				
8 -a Pump Equipment	Distribution Pump					
-b	Local Power Center					

Description	Item	Materials		Labor	Sub-Total Cost	Total Cost
		Foreign Currency	Domestic Currency	Domestic Currency		
9 -a Chemical Dosing Room	Structure					
-b	Lighting Works	-				
-c	Plumbing Works	-				
10 -a Chemical Dosing	Alumn. Feeder					
-b	Line Feeder					
-c	Chlorinator					
-d	Neutralization Equip;					
-e	Electrical Works					
11 Instrumentation Works	Semigraphic Panel & Instrument					
12 Piping for Facilities	Piping for Facilities					
13 Drainage Equipment	Drainage Equipment					
14 -a Lagoon	Structure	-				
-b	Drain Pump Equipment					
-c	Piping for Drainage Main					
15 -a Generator Room	Structure	-				
-b	Piping Works					
-c	Lighting Works	-				
-d	Generator Base	-				
16 -a Electrical Equipment	Sub Station					
-b	Generator					
-c	Power Center					
17 -a Office	Structure	-				
-b	Plumbing Works	-				
-c	Lighting Works	-				
18 -a Warehouse	Structure	-				
-b	Lighting Works	-				

Description	Item	Materials		Labor	Sub-Total Cost	Total Cost
		Foreign Currency	Domestic Currency	Domestic Currency		
19 -a Lodging House	Structure	-				
-b	Plumbing Works	-				
-c	Lighting Works	-				
20 Elevated Tank	Structure	-				
21 Outdoor Lighting Works		-				
(II) - 5 Distribution Main		()				
1 No. 26 - No. 29	ϕ250mm L = 1,018m ϕ200mm L = 1,438m Boosting Pump					
2 No. 5 - Bridge Paton. WTP - No. 1 Aqueduct	ϕ600mm L = 73m ϕ500mm L = 19m ϕ450mm L = 202m ϕ350mm L = 1,776m ϕ200mm L = 97m ϕ150mm L = 21m ϕ100mm L = 55m SP ϕ450mm L = 139m					
3 No. 5 - No. 8 - No. 9 Highway Crossing	ϕ450mm L = 84m ϕ400mm L = 1,683m ϕ350mm L = 582m ϕ300mm L = 48 m ϕ150mm L = 35m ϕ100mm L = 54 m SP ϕ600mm L = 40m					
4 No. 9 - No. 53 - No. 51	ϕ300mm L = 1,802m ϕ250mm L = 151m GSP ϕ300mm L = 12m ϕ250mm L = 26m					
5 No. 51 - No. 58	ϕ250mm L = 2,208m ϕ200mm L = 1,383m GSP ϕ250mm L = 41m ϕ200mm L = 181m					
6 No. 73 - No. 58	ϕ250mm L = 1,924m ϕ250mm L = 26m GSP					
7 No. 1 Existing Plant - No. 73	ϕ300mm L = 823m ϕ250mm L = 57m ϕ200mm L = 1,387m					
8 No. 1 - No. 23	ϕ500mm L = 1,738m ϕ350mm L = 531m ϕ200mm L = 13m ϕ150mm L = 8m					
9 No. 23 - No. 70	ϕ200mm L = 2,524m ϕ100mm L = 4m ϕ75mm L = 14m					
10 No. 34 - No. 69	ϕ200mm L = 1,170m					

(II) - 1 Intake Facilities

1 - Revetment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Pump Drainage	10 ps - set		day	-	-					11-a	
Coffering	H1.2 x B2.0m	47	m	-	-					20-a	
Concrete Piling	T-type H = 11m	19.5	"	-	-					13	
Concrete Sheet Piling	H = 4m	15.4	"	-	-						
"	H = 12.5m	15.2	"	-	-						
"	H = 11m	6	"	-	-						
"	H = 9m	4.8	"	-	-						
"	H = 6m	18.4	"	-	-						
Stair Cobble Stone		3.6	m ³	-	-					4	
" Concrete	1 : 2 : 4	5.6	"	-	-					9-c	
" Forms	(c)	31.4	m ²	-	-					5-c	
" Reinforcing	φ12 mm	224	kg	-	-					8-b	
" Staging		7.4	m ³	-	-					7	
" Wooden Pile	φ120 x 2,500mm	4	pc	-	-						
Stone Masonry	t = 53cm	79	m ²	-	-					21	
Wooden Pile	φ120 x 2,500mm	16	pc	-	-						
Rubble Stone		2.5	m ³	-	-					4	
Forms	(c)	46	m ²	-	-					5-c	
Concrete	1 : 3 : 6	8.15	m ³	-	-					9-b	
Staging		134	m ³	-	-					7	
Intermediate Step Cobble Stone		4.4	m ³	-	-					4	
Concrete	1 : 3 : 6	4.3	m ³	-	-					9-b	
Miscellaneous		1	set	-	-						
Expenses		1	set	-	-						
Sub-Total											

II-1 Intake 2. Grit Chamber & Pump Well

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
Steel Sheet Piling		106	m			-	-				20 - b
" Removing		106	m			-	-				20 - C
Excavation		5,205	m ³	-	-						1 - d
Back Fill		1,198	m ³	-	-						1 - c
Pump Drainage	10 pc - Set		day	-	-						11 - a
Rubble Stone		128	m ³	-	-						4
Concrete	1 : 3 : 6	72	m ³	-	-						9 - b
"	1 : 2 : 4	1,230	m ³	-	-						9 - c
Reinforcing Bar	Deformed Bar	146	ton	-	-						8 - c
Forms	(B)	3,158	m ²	-	-						5 - b
Staging		2,416	m ³	-	-						7
Timbering		1,406	m ³	-	-						6
Mortar	1 : 2	2	m ³	-	-						10 - a
Mortar Finishing	1 : 2 t = 20 mm	193	m ²	-	-						10 - b
Expansion Joint	300 x 6 mm	53	m			-	-				10 - d
Concrete Block	190 x 190 x 390 mm	22	m ²	-	-						
Grating Plate	51.7 kg/sheet	17	sheet	-	-						
Steel Step	1.4 ^{kg} /pc	510	pc.	-	-						
Miscellaneous Expenses		1	set								
		1	set								
Sub Total											
b Metal Fabrication											
Anti Float Pipe	ACP ϕ 300 x 4,000 mm	5	pc.	-	-						
Asbestos Pipe	ACP ϕ 150 x 4,000 mm - A	19	"	-	-						
Manhole Cover	t = 4.5 600 x 600 mm	2	set	-	-						
Screen		4	"	-	-						22
Sluice Gate	1,000 mm with Head Stock	4	"			-	-				
Spindle Casing	CIP ϕ 200 x 1,800 mm	2	pc.			-	-				
Hand Rail	ϕ 1 ¹ / ₄ "	119	m	-	-						44

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set								
		1	"								
Sub Total											

II - 1 Intake 3-a Raw Water Pump Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		76	m ²	-	-						
Inking Line		36	"	-	-						
Exterior Staging		339	"	-	-						
Scaffolding Incline		13.6	m	-	-						
Interior Staging		76	m ²	-	-						
Σ = (i)											
(ii) Concrete Works											
Poor Concrete	1 : 4 : 8	12	m ³	-	-					9 - a	
Concrete	1 : 2 : 4	12	m ³	-	-					9 - c	
Forms	(c)	127	m ²	-	-					5 - c	
Σ = (ii)											
(iii) Reinforcing Works											
Round Bar		10.47	ton	-	-					8 - a	
Deformed Bar		1.2	"	-	-					8 - c	
Σ = (iii)											
(iv) Masonry Works											
Brick		129	m ²	-	-					50	
Σ = (iv)											
(v) Carpentry											
Structural Wood			m ³	-	-			-	-		
Fixture Wood		6.144	"	-	-			-	-		
Supplementary Wood		0.653	set	-	-			-	-		
Nails, Hardware		1	set	-	-			-	-		
Carpenter			person	-	-			-	-		
Assistant			"	-	-			-	-		
Σ = (v)											
(vi) Metal Fabrication											
Wire Net		72.	m ²	-	-						
Manhole	φ600	2	set	-	-						
Hoist Rail	I -300 x 150 x 11 x 18.5	14	m	m	-					66	

II - 1 Intake 3-a Raw Water Pump Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Σ = (vi)				-	-						
(vii) Plastering											
Concrete Finish		123	m ²	-	-	-	-				
Integral Water Proof	Drain Channel	6	"	-	-						
Mortar Finishing	Exterior Wall	170	"	-	-						
Mortar Finishing	Beam	43	"	-	-						
"	Column	15	"	-	-						
"	Wall	126	"	-	-						
"	Plinth H=100	23	"	-	-						55
Window Frame Mortar		90	m	-	-						
Σ = (vii)											
(viii) Wooden Fixtures											
Double Swinging Door	2,400 x 4,800	1	set	-	-						
Single Swinging Door	1,600 x 2,600	9	"	-	-						
Σ = (viii)											
(ix) Painting											
Oil Stain			m ²	-	-						
Vinyl Painting		225	"	-	-						
Σ = (ix)											
(x) Other Works											
Corrugated Slate Roof	Roof	137	m ²	-	-						
Roof Ridge		17	m	-	-						
Flat Sheet	T6	173	m ²	-	-						
Σ = (x)											
Miscellaneous Works		1	set	-	-						
Miscellaneous Expenses		1	"	-	-						
Sub Total											

II-1 Intake 3. a,b Raw Water Pump Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
b Piping Works											
Excavation		160	m ³	-	-						1 - b
Surplus Soil		136	"	-	-						2 - a
DCP Specials	Foreign	2,825	kg			-	-	-	-		
CIP "	"	897	"			-	-	-	-		
S P "	"	551	"			-	-	-	-		
GSP "	Domestic	1,619	"	-	-			-	-		
Flange Jointing	∅400 mm	6	set	-	-						
"	∅300 mm	23	"	-	-						
"	∅250 mm	12	"	-	-						
Mechanical Jointing	∅400 "	3	"			-	-				M + 32
"	∅300 "	6	"			-	-				M + 31
"	∅250 "	4	"			-	-				"
Valve Setting	∅300 mm	1	"			-	-				33
P.V.C Laying	∅50 mm	28	m	-	-						
"	∅12 mm	5	"	-	-						
GSP Specials	Domestic	23	kg	-	-			-	-		
Valve Setting	∅50 mm	3	set	-	-						
"	∅12 mm	4	"	-	-						
Miscellaneous		1	set								
Expenses		1	"								
Sub Total											
c Lighting Works											
Electrical Wire	#15	65	m	-	-						
"	#14	110	"	-	-						
"	#12	5	"	-	-						
Conduit Tube	19 mm	50	"	-	-						
	31 mm	5	"	-	-						
Accessory		1	set	-	-						
Concrete Box	102 x 102 x 54	8	"	-	-						
Tumbler Switch	300V 1P 10A	2	"	-	-						
"	300V x 2	1	"	-	-						

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Socket Outlet	250V 3P 20A	6	"	-	-						
Distribution Board	"L ₁₁	1	"	-	-						
Lighting Fixture	C FL 40W x 2	8	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Other Material		1	"	-	-						
Ventilating Fan	∅350 x 135W	2	"	-	-						
Miscellaneous Works		1	"	-	-						
Miscellaneous Expenses		1	"	-	-						
Sub Total											
Plumbing Works											
PVC Pipe	∅100 mm	6	m	-	-						
" Specials	Y 100 x 50 mm	1	pc.	-	-						
"	bend ∅100 mm	2	"	-	-						
Drain Metal Fitting	50 T - 5A	1	set	-	-						
Slop Sink	COA - 100 mm	1	"	-	-						
Cess Pool	450 x 450 mm	1	"	-	-						
Wash Basin	L - 220P	1	"	-	-						
Miscellaneous Works		1	"	-	-						
Miscellaneous Expenses		1	"	-	-						
Sub Total											

II - 1 Intake 4 Raw Water Pump Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Raw Water Pump Equipment											
For Existing Plant	Q = 5.35 m ³ /min H = 47 ^m										
Raw Water Pump	75KW D = 250 mm	2	set			-	-				
Accessory	Suction Delivery										
	Check Valve										
For Proposed Plant	Q = 12.22m ³ /min H = 42 ^m										
Raw Water Pump	150KW D = 300 mm	2	"			-	-				
Accessory	Suction Delivery										
	Check Valve										
Submarine Type Pump	Q = 1.4m ³ /min H = 15 ^m	1	"			-	-				
	5.5KW D = 100 mm										
Feed Pump	Q = 0.065m ³ /min H = 23 ^m	2	"			-	-				
	1.5KW D = 40 mm										
Valve Setting	ϕ300 mm SV	2	"			-	-				33
"	ϕ250 mm SV	2	"			-	-				"
Butterfly Valve	ϕ300 mm	1	"			-	-				"
Air Valve Setting	Exposed ϕ13 mm	4	"			-	-				45
Orifice Plate	ϕ300 Ring Tap	1	"			-	-				
"	ϕ400 Ring Tap	1	"			-	-				
Miscellaneous		1	"								
Expenses		1	"								
Sub Total											
b Power Center											
Incoming Panel		1	set			-	-	-	-		
Feeder Panel		1	"			-	-	-	-		
Bus Tie Panel		1	"			-	-	-	-		
Control Center		1	"			-	-	-	-		
Battery Panel		1	"			-	-	-	-		
Raw Water Flow Indicator Recorder & Integrator		2	"			-	-	-	-		
Raw Water Pump Well Level Meter		1	"			-	-	-	-		
Instrument Panel		1	"			-	-	-	-		
Electric Cable	600 ^v EV 250 -3 C	22	m			-	-	-	-		

II - 1 Intake 4-b Power Center

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Electric Cable	600 ^v EV 250 ^H -1 ^C	260	m	-	-	-	-	-	-		
" "	" 100 ^H -3 ^C	22	"	-	-	-	-	-	-		
" "	" 8 ^H -4 ^C	90	"	-	-	-	-	-	-		
" "	" 3.5 ^H -4 ^C	80	"	-	-	-	-	-	-		
" "	" 3.5 ^H -3 ^C	20	"	-	-	-	-	-	-		
" "	cvv 2 ^H -10 ^C	65	"	-	-	-	-	-	-		
" "	cvvs 2 ^H - 3 ^C	65	"	-	-	-	-	-	-		
" "	" 2 ^H - 2 ^C	130	"	-	-	-	-	-	-		
Electric Wire	IV 38 ^H	40	"	-	-	-	-	-	-		
" "	" 1.6 mm	20	"	-	-	-	-	-	-		
Cable Head	600 ^v EV 250 ^H -3 ^C	4	set	-	-	-	-	-	-		
" "	" 250 ^H -1 ^C	8	"	-	-	-	-	-	-		
" "	" 100 ^H -3 ^C	4	"	-	-	-	-	-	-		
Conduit Tube	ϕ 104 mm	30	m	-	-	-	-	-	-		
"	ϕ 82 mm	40	"	-	-	-	-	-	-		
"	ϕ 54 mm	48	"	-	-	-	-	-	-		
"	ϕ 28 mm	57	"	-	-	-	-	-	-		
"	ϕ 22 mm	13	"	-	-	-	-	-	-		
Normal Bend	ϕ 104 mm	5	set	-	-	-	-	-	-		
"	ϕ 82 mm	6	"	-	-	-	-	-	-		
"	ϕ 54 mm	4	"	-	-	-	-	-	-		
Normal Bend	ϕ 28 mm	11	"	-	-	-	-	-	-		
Flexible Conduit	ϕ 100 mm	4	m	-	-	-	-	-	-		
" "	ϕ 76 mm	4	"	-	-	-	-	-	-		
" "	ϕ 25 mm	4	"	-	-	-	-	-	-		
Conduit Tube	Accessories	1	set	-	-	-	-	-	-		
Concrete Trough	150 mm wide	5	m	-	-	-	-	-	-		
" "	70 "	70	"	-	-	-	-	-	-		
Consent	3P + E	1	set	-	-	-	-	-	-		
Drain Pipe	ϕ 150 Class "A"	10	m	-	-	-	-	-	-	for wiring	
" "	ϕ 100 "	30	"	-	-	-	-	-	-	"	
Manhole	1.2 ^m x 1.2 ^m x 1.5 ^m	7	set	-	-	-	-	-	-		

II - 1 Intake 4-b Power Center

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Handhole	0.6 ^m x 0.6 ^m x 1.0 ^m	4	set	-	-						
Concrete pole	12 ^m	2	"	-	-			-	-		
" "	Accessories	1	"	-	-			-	-		
Messenger wire	ϕ4/7	100	m	-	-			-	-		
Earth plate	600 x 600 x 1.6 ^t	1	set	-	-			-	-		
Fender pipe	ϕ300 ACP class "15"	10	m	-	-			-	-		
Electrician			person	-	-	-	-				
Earth Worker			"	-	-	-	-				
Miscellaneous		1	set	-	-						
Expenses		1	"								
Sub Total											

II - 1 Intake 5- Concrete Pit (For Drainage)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Concrete Pit											
Excavation		199	m ³	-	-	-	-				1 - a
Back filling		183	"	-	-	-	-				2 - a
Surplus - Soil		16	"	-	-	-	-				4
Rubble Stone		0.8	"	-	-	-	-				9 - b
Concrete	1 : 3 : 6	0.4	"	-	-	-	-				9 - c
"	1 : 2 : 4	5.5	"	-	-	-	-				8 - b
Reinforcing	φ12 mm	550	kg	-	-	-	-				5 - c
Forms	(c)	42	m ³	-	-	-	-				7
Staging		47	m ³	-	-	-	-				10 - a
Mortar	1 : 2	0.3	"	-	-	-	-				
Manhole Cover	87.5 kg	1	set	-	-	-	-				
Concrete Pipe	φ500 mm	13.2	m	-	-	-	-				
Miscellaneous		1	set	-	-	-	-				
Expenses		1	"	-	-	-	-				
Sub Total				-	-	-	-				
b Flow Meter Chamber & Anchor Block											
Flow Meter Chamber											
Excavation		193	m ³	-	-	-	-				1 - a
Back filling		150	"	-	-	-	-				2 - a
Surplus Soil		43	"	-	-	-	-				4
Rubble Stone		2.4	"	-	-	-	-				9 - b
Concrete	1 : 3 : 6	1.2	"	-	-	-	-				9 - c
"	1 : 2 : 4	14.6	"	-	-	-	-				8 - b
Reinforcing	Round Bar	146	kg	-	-	-	-				5 - c
Forms	(c)	84	m ²	-	-	-	-				7
Staging		64	m ³	-	-	-	-				10 - b
Mortar Finishing	Water Proof	61	m ²	-	-	-	-				
Manhole Cover	30.3 kg	1	set	-	-	-	-				
Steel Step	14 kg/pc	10	pc.	-	-	-	-				
Anchor Block											
Concrete	1 : 3 : 6	24	m ³	-	-	-	-				9 - b

II - 1 Intake 5-b Flow Meter Chamber & Anchor Block

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Forms	(c)	52	m ²	-	-						5 - c
Rubble Stone		4	m ³	-	-						4
Wooden Pile	∅120 L = 3,000 mm	20	pc.	-	-						
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total				-	-						

II - 1 Intake 6-Site Preparation

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Earth Works & Fence											
Clearing & Gruffing	λ ϕ 40 cm	1,160	m ²	-	-	-	-	-	-	-	1 - b
Soil Filling	Sand	400	m ³	-	-	-	-	-	-	-	2 - a
Soil "	Soil H = 0.3 ^m	255	"	-	-	-	-	-	-	-	2 - a
Brick Gutter		35	m	-	-	-	-	-	-	-	19 - c
Asphalt Paving		330	m ²	-	-	-	-	-	-	-	16 - b
Sodding		200	m ²	-	-	-	-	-	-	-	15
Planting	λ H = 2 ^m	10	tree	-	-	-	-	-	-	-	17
Vinyl Wire Net Fence		27	m	-	-	-	-	-	-	-	18 - d
Barbed Wire Fence		84	m	-	-	-	-	-	-	-	18 - b
Installing Gate	B - TYPE	2	set	-	-	-	-	-	-	-	47 - b
Flag Pole	B - TYPE	1	"	-	-	-	-	-	-	-	49 - b
Asbestos Pipe	ϕ100 Class-15	52	m	-	-	-	-	-	-	-	29
Drain Pit	300 x 500 mm	5	set	-	-	-	-	-	-	-	19 - g
Miscellaneous Expenses		1	"	-	-	-	-	-	-	-	
		1	"	-	-	-	-	-	-	-	
Sub Total				-	-	-	-	-	-	-	
b Lighting & Water Service Works											
Lighting											
Concrete Pole	20W	4	pc.	-	-	-	-	-	-	-	including Foundation
Light & Arm	20W	4	set	-	-	-	-	-	-	-	
Gate Lamp	20W	4	"	-	-	-	-	-	-	-	
Electric Cable	600 ^V EV 8 - 20	228	m	-	-	-	-	-	-	-	
Concrete Trough	70 mm wide	77	set	-	-	-	-	-	-	-	
Concrete Pipe	ϕ100mm	8	pc.	-	-	-	-	-	-	-	
Joint Box	300	1	set	-	-	-	-	-	-	-	
Conduit Tube	ϕ28mm	8	m	-	-	-	-	-	-	-	
Normal Bend	ϕ28 x 90°	8	set	-	-	-	-	-	-	-	
Choking coil		8	"	-	-	-	-	-	-	-	
Accessories		1	"	-	-	-	-	-	-	-	
Hand Hole		1	"	-	-	-	-	-	-	-	
Distribution Board		1	"	-	-	-	-	-	-	-	

II - 1 Intake 6-b Lighting & Water Service Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Electrician			person	-	-	-	-				
Construction laborer			"	-	-	-	-				
Water Service											
Asbestos Pipe	ø100mm Class - 15	10	m	-	-						29
Polyvinyl Chloride Pipe	ø40mm	50	m	-	-						42
Tap	ø40mm	1	set	-	-						
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub-Total											

II - 1 Intake Facilities 7- Sub Station

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Sub Station											
Service Insulator		3	set			-	-	-	-		
Single Pole Disconnecting Switch (12 kv 600A)		6	"			-	-	-	-		
Lighting Arrester (14 kv)		3	"			-	-	-	-		
Oil Circuit Breaker (12 kv 600A 1000MVA)		1	"			-	-	-	-		
Power Fuse (12 kv ϕ 1)		3	"			-	-	-	-		
Instrument Transformer (ϕ 3 11000: 110v)		1	"			-	-	-	-		
Current Transformer (11.5 kv 30: 5A)		3	"			-	-	-	-		
Power Transformer ϕ 3 500KVA 11 ^{kv} /380 ^v		1	"			-	-	-	-		
Iron Pole (40 x 40)		1	"	-	-	-	-	-	-		
Concrete Foundation		1	"	-	-	-	-	-	-	67	
Overhead Grand Wire		1	"	-	-	-	-	-	-		
Electric Cable	600 ^v EV 600 ^m - 1 ^c	40	m	-	-	-	-	-	-		
" "	" 14 ^m - 2 ^c	15	"	-	-	-	-	-	-		
" "	" 3.5 ^m - 3 ^c	10	"	-	-	-	-	-	-		
" "	600 ^v CVV 2 ^m - 2 ^c	15	"	-	-	-	-	-	-		
" "	" CVVS 5.5 ^m - 3 ^c	15	"	-	-	-	-	-	-		
" "	" " 3.5 ^m - 4 ^c	13	"	-	-	-	-	-	-		
Electric Wire	IV 100	31	"	-	-	-	-	-	-		
Cable Head	600 ^v EV 600 ^m - 1 ^c	8	set	-	-	-	-	-	-		
" "	" 14 ^m - 2 ^c	2	"	-	-	-	-	-	-		
Conduit Tube	ϕ 54	5	m	-	-	-	-	-	-		
" "	ϕ 36	10	"	-	-	-	-	-	-		
" "	ϕ 28	10	"	-	-	-	-	-	-		
" "	Accessories	1	set	-	-	-	-	-	-		
Concrete Trough	150 mm wide	5	m	-	-	-	-	-	-		
" "	70 "	5	"	-	-	-	-	-	-		
Manhole	1.2 ^m x 1.2 ^m x 1.5 ^m	1	set	-	-	-	-	-	-		
Earth Plate	600 x 600 x 1.6 ^t	1	"	-	-	-	-	-	-		
Electrician			person	-	-	-	-	-	-		
Earth Worker			"	-	-	-	-	-	-		
Miscellaneous		1	set	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Sub-Total											

II - 1 Intake Facilities 7- Sub Station

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
b Generator											
Generator	420 ^v 50Hz 500 kvaA	1	set			-	-	-	-		
Diesel Engine	600PS over	1	"			-	-	-	-		
Starter & Exciter Panel		1	"			-	-	-	-		
Engine Accessories		1	"			-	-	-	-		
Electric Cable	600 ^v EV 600 ^H - 1 ^c	110	m	-	-	-	-	-	-		
"	" 38 ^H - 4 ^c	25	"	-	-	-	-	-	-		
"	" 38 ^H - 3 ^c	24	"	-	-	-	-	-	-		
"	" 3.5 ^H - 3 ^c	24	"	-	-	-	-	-	-		
"	600 ^v CVV 2 ^H - 10 ^c	27	"	-	-	-	-	-	-		
"	" 2 ^H - 2 ^c	12	"	-	-	-	-	-	-		
Electric Wire	600 ^v IV 1.6 mm	24	"	-	-	-	-	-	-		
Cable Head	600 ^v EV 600 ^H -1 ^c	16	set	-	-	-	-	-	-		
"	" 38 ^H - 4 ^c	2	"	-	-	-	-	-	-		
"	" 38 ^H - 3 ^c	4	"	-	-	-	-	-	-		
Pipe (GS)	ϕ200 mm	4	m	-	-	-	-	-	-		
Conduit Tube	ϕ54 mm	6	"	-	-	-	-	-	-		
" "	ϕ28 mm	25	"	-	-	-	-	-	-		
" "	ϕ22 mm	2	"	-	-	-	-	-	-		
90° Elbow	ϕ200 mm	1	set	-	-	-	-	-	-		
Normal Bend	ϕ54 mm	2	"	-	-	-	-	-	-		
Conduit Tube	ϕ28 mm	3	"	-	-	-	-	-	-		
Conduit Tube Accessories		1	"	-	-	-	-	-	-		
Electrician			person	-	-	-	-	-	-		
Miscellaneous		1	set	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Sub Total											

II - 1 Intake 8-a Generator Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
<u>(i) Temporary Works</u>											
Leveling		318	m ²	-	-						
Inking Line		295	"	-	-						
Exterior Staging		245	"	-	-						
Scaffolding Incline		15	m	-	-						
Interior Staging		245	m ²	-	-						
Σ = (i)											
<u>(ii) Earth Works</u>											
Excavation		372	m ³	-	-					1 - c	
Backfilling		316	"	-	-					2 - a	
Surplus Soil		56	"	-	-					4	
Rubble Stone		35	"	-	-						
Ballast		18	"	-	-						
Σ = (ii)											
<u>(iii) Piling</u>											
Pile	180 ^H mm = 8 ^m	28	pc.	-	-						
Σ = (iii)											
<u>(iv) Concrete Works</u>											
Level Concrete	1 : 3 : 6	4.7	m ³	-	-					9 - b	
Concrete	1 : 2 : 4	76.7	"	-	-					9 - c	
Forms	(c)	457	m ²	-	-					5 - c	
Σ = (iv)											
<u>(v) Reinforcing Works</u>											
Round Bar		3.27	ton	-	-					8	
Deformed Bar		5.9	"	-	-					"	
Σ = (v)											
<u>(vi) Masonry Works</u>											
Brick		229	m ²	-	-					50	
= (vi)											

II - 1 Intake 8-a Structure

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
<u>(vii) Carpentry</u>											
Structural Wood		19.6	m ³					-	-		
Fixture Wood		2.13	"					-	-		
Supplementary Wood		1	set					-	-		
Nails, Hardware		1	"	-	-			-	-		
Bolt	ø9 200 -- 400		"	-	-	-	-				
Carpenter			person	-	-	-	-				
Assistant			"	-	-						
Σ = (vii)											
<u>(viii) Metal Fabrication</u>											
Wire Net		153	m ²	-	-						
Hoist Rail		20	"								
Steel Plate	CPL 4.5 W=500 mm	70	"								
Σ = (viii)											
<u>(ix) Plastering</u>											
Concrete Finish	Floor	316	m ²	-	-						54 - 55
Mortar "	H = 100 Plinth	83	m	-	-						"
" "	Wall	270	m ²								
" "	Column	30	"								
" "	Beam	199	"								
" "	Exterior wall	177	m ²								
Window Frame Mortar		278	m	-	-						53
Σ = (ix)											
<u>(x) Wood Fixtures</u>											
Single Swing Window	0.9 x 3.00 m	29	set	-	-						
Single Swing Window	0.9 x 3.90 m	2	"	-	-						
Double Swing Door	2.5 x 0.4 m	3	"	-	-						
Σ = (x)											
<u>(xi) Painting</u>											
Oil Stain	Wood	541	m ²	-	-						
Vinyl Painting	Mortar	739	"	-	-						
Σ = (xi)											

II - 1 Intake 8-abc Structure

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(xii) Other Works											
Corrugated Slate Roof		441	m ²	-	-						
Roof Ridge		33	m	-	-						
Flat Sheet		85	m ²	-	-						
Σ = (xii)											
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total				-	-						
b Piping Work											
Pipe (PVC)	40 mm	2.8	m	-	-						
" (")	20 "	12	"	-	-						
90° Elbow (")	40 "	2	set	-	-						
" " (")	20 "	5	"	-	-						
Angle Seat Valve (FC)	40 "	1	"	-	-						
" " " (")	20 "	4	"	-	-						
Flange (SP)	40 "	6	"	-	-						
" "	20 "	8	"	-	-						
PVC Pipe	φ20 "	9	m	-	-						
Coupling		1	set	-	-						
Gate Valve	20 G.V.U	1	set	-	-						
Wash Basin	L - 220P	1	set	-	-						
Drain Metal Fitting	50T-5A	1	"	-	-						
PVC Pipe	φ100	10	m	-	-						
" Specials	Yφ100	1	piece	-	-						
" "	bend φ100	2	piece	-	-						
Slop Sink	COA - 100	1	set	-	-						
Less Pool	450 x 450	1	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub Total											

II - 1 Intake 8-c-d Lighting Works. Generator Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
<u>c Lighting Works</u>											
Electric Wire	#15	170	m	-	-	-	-	-	-	-	
" "	#14	530	"	-	-	-	-	-	-	-	
Conduit Tube	19 mm	220	"	-	-	-	-	-	-	-	
"	25 "	35	"	-	-	-	-	-	-	-	
"	51 "	3	"	-	-	-	-	-	-	-	
Accessory		1	set	-	-	-	-	-	-	-	
Concrete Box	102 x 102 x 54	15	"	-	-	-	-	-	-	-	
Tumbler Switch	300V 1P 10A	3	"	-	-	-	-	-	-	-	
Socket Outlet	250V 3P 20A	20	"	-	-	-	-	-	-	-	
Distribution Board	"L"	1	"	-	-	-	-	-	-	-	
Lighting Fixture	CFL 40W x 2	12	"	-	-	-	-	-	-	-	
" "	CFL	3	"	-	-	-	-	-	-	-	
Fitting		1	set	-	-	-	-	-	-	-	
Earth Connection		1	"	-	-	-	-	-	-	-	
Other Materials		1	"	-	-	-	-	-	-	-	
Ventilation Fan	ø400 260 ^W	6	"	-	-	-	-	-	-	-	
Miscellaneous		1	"	-	-	-	-	-	-	-	
Expenses		1	"	-	-	-	-	-	-	-	
Sub Total											
<u>d Generator Base</u>											
Excavation		160	m ³	-	-	-	-	-	-	-	1 - a
Surplus - soil		48	"	-	-	-	-	-	-	-	2 - a
Concrete Piling		24	pc.	-	-	-	-	-	-	-	4
Rubble Stone		0.94	m ³	-	-	-	-	-	-	-	5 - c
Forms	(c)	79	m ²	-	-	-	-	-	-	-	8 - b
Reinforcing		1,193	kg	-	-	-	-	-	-	-	9 - b
Concrete	1 : 3 : 6	0.94	m ³	-	-	-	-	-	-	-	9 - c
	1 : 2 : 4	48	"	-	-	-	-	-	-	-	
Miscellaneous		112	m ²	-	-	-	-	-	-	-	
Expenses		1	set	-	-	-	-	-	-	-	
		1	"	-	-	-	-	-	-	-	
Sub Total											

II - 1 Intake 9. a Lodging House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) <u>Temporary Works</u>											
Leveling		129	m ²	-	-						
Inking Line		258	"	-	-	-	-				
Exterior Staging		408	"	-	-						
Interior Staging		258	"	-	-						
Scaffolding Incline		10	m	-	-						
Σ = (i)											
(ii) <u>Barth Works</u>											
Excavation		200	m ³	-	-	-	-				1 - a
Backfilling		170	"	-	-	-	-				
Suplus-soil		30	"	-	-	-	-				2 - a
Gravel		2	"	-	-						
Rubble Stone		2	"	-	-						
Σ = (ii)											
(iii) <u>Concrete Works</u>											
Level Concrete	1 : 3 : 6	2	m ³	-	-						9 - b
Concrete	1 : 2 : 4	45	"	-	-						9 - c
Forms	(c)	300	m ²	-	-						5 - c
Σ = (iii)											
(iv) <u>Reinforcing</u>											
Round Bar		5	ton	-	-						8 - a
Σ = (iv)											
(v) <u>Masonry Works</u>											
Brick		320	m ²	-	-						50
Σ = (v)											
(vi) <u>Carpentry</u>											
Structural Wood		14	m ³	-	-						
Fixture Wood, Hard		3	"	-	-						

1f - 1 Intake 9-a Lodging House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Fixture wood	Lauan	4	m ³	-	-						
"	Plywood	30	m ²	-	-			-	-		
Supplementary Wood		1	set	-	-			-	-		
Nail Hardwares		1	"	-	-			-	-		
Carpenter			person	-	-	-	-				
Assistant			"	-	-	-	-				
Σ = (vi)											
(vii) Plastering											
Mortar Finishing	Floor	170	m ²	-	-						54 55
"	Wall	240	"	-	-						"
"	Colum	40	"	-	-						"
"	Beam	82	"	-	-						"
Window Frame Mortar		170	m	-	-						"
Σ = vii											
(viii) Wood Fixtures											
Single Swing Door	WD-1	1	set	-	-						
"	WD-2	6	"	-	-						
"	WD-3	3	"	-	-						
"	WD-4	3	"	-	-						
Single Swing Window											
"	W-2	24	"	-	-						
"	W-3	6	"	-	-						
"	W-4	6	"	-	-						
"	W-5	1	"	-	-						
"	W-6	6	"	-	-						
"	W-7	6	"	-	-						
Σ = (viii)											
(ix) Glazing											
Clear Glass	t=5mm	28	m ²	-	-						
Σ = (ix)											
x) Painting											
Oil Stain		980	m ²	-	-						

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Vinyl Paint		620	"	-	-						
Σ = (x)											
(xi) Other Works											
Corrugated Slate	Roof	360	m ²	-	-						
"	Roof Ridge	19	m	-	-						
Lauan Flooring	T = 20 mm	142	"	-	-						
Decorated Plywood	T = 4 mm	90	m ²	-	-						
Flower Box		3	set	-	-						
Hand Rail	H = 1000 mm	24	m	-	-						
Σ = (xi)											
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub-Total				-	-						
b Lighting Works											
Electric Wire	#15	819	m	-	-						
" "	#14	594	"	-	-						
" "	#10	7	"	-	-						
" Cable	600V EV - 3C	57	"	-	-						
Conduit Tube	19 mm	507	"	-	-						
" "	25 mm	55	"	-	-						
" "	31 mm	57	"	-	-						
" "	51 mm	4	"	-	-						
Accessory		1	set	-	-						
Concrete Box	102 x 102 x 54	42	"	-	-						
Tumbler Switch	300V 1P 10A	24	"	-	-						
" "	300V 1P 10A3W	24	"	-	-						
Socket Outlet	250V 3P 20A	30	"	-	-						
Telephone Outlet Box	102 x 102 x 54	3	"	-	-						
Distribution Board	L	3	"	-	-						

II - 1 Intake 9-b Lighting Works & 9-c Plumbing Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Distribution Board	M - L	1	set	-	-						
Integrating Wattmeter	1 ϕ 3W30A	3	"	-	-						
Lighting Fixture	H 1L 60W	6	"	-	-						
"	I 1L 60W	6	"	-	-						
"	J 1L 100W	15	"	-	-						
"	K 1L 60W	3	"	-	-						
"	L 1L 100W	9	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Expendable Items		1	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub Total											
c Plumbing Works											
Wash Basin	L-220D	3	set	-	-						
Closet	C-375 VF	3	"	-	-						
Urinal	U-37	3	"	-	-						
Shower Set	TB110 CGRLY	3	"	-	-						
Swing Cock	T-130 ARY - 13	3	"	-	-						
P.V.C. Pipe	35A	12	m	-	-						
"	25A	34	m	-	-						
"	20A	113	m	-	-						
Coupling & Support		1	set	-	-						
Gate Valve	25 (box)	3	"	-	-						
" "	15	3	"	-	-						
P.V.C. Pipe	80A	16	m	-	-						
"	50A	74	"	-	-						
Coupling		1	set	-	-						
P.V.C. Pipe	ϕ 100 x 100	6	pc.	-	-						
"	ϕ 100 x 300	3	"	-	-						

II - 1 Intake 9-c Plumbing Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
P.V.C. Pipe	ϕ75 x 1,600	3	pc.	-	-						
"	ϕ75 x 100	6	"	-	-						
"	ϕ75 x 600	3	"	-	-						
Specials	TY100	3	"	-	-						
"	TY75	3	"	-	-						
"	Y100 x 75	3	"	-	-						
"	LY100 x 75	3	"	-	-						
"	LY75	3	"	-	-						
"	Bend 100	6	"	-	-						
"	Bend 75	6	"	-	-						
Coupling		1	set	-	-						
Lead Pipe	75 LP	9	m	-	-						
"	50 "	9	"	-	-						
"	40 "	5	"	-	-						
"	30 "	9	"	-	-						
Coupler		1	set	-	-						
Support		1	"	-	-						
Drain Metal Fitting	50T-5B	3	"	-	-						
"	50T-5A	3	"	-	-						
Slop Sink	COA 100	3	"	-	-						
"	COA 50	3	"	-	-						
Coupling		1	"	-	-						
Cess Pool	450 x 450	2	"	-	-						
Permeation Pit	ϕ800 x 1,800	1	"	-	-						
Galvanized Pipe	20A	47	m	-	-						
Coupling & Support		1	set	-	-						
Gas Cock	1/2	3	"	-	-						
Y-Spring Tap	3/8 x 1/2	3	"	-	-						
Pressure Control Equipment		3	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub-Total				-	-						

II - 1 Intake 10-a Ware House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		41	m ²	-	-						
Inking Line		40	"	-	-						
Exterior Staging		209	"	-	-						
Scaffolding Incline		9	"	-	-						
Interior Staging		40	"	-	-						
Σ = (i)											
(ii) Earth Works											
Excavation		159	m ³	-	-	-	-				1 - c
Backfilling		153	"	-	-	-	-				2 - a
Surplus Soil		6	"	-	-	-	-				2 - a
Ballast		1	"	-	-						
Σ = (ii)											
(iii) Concrete Works											
Level Concrete	1 : 3 : 6	1	m ³	-	-						9 - b
Concrete	1 : 2 : 4	16	"	-	-						9 - c
Forms	(c)	89	m ²	-	-						5 - c
Σ = (iii)											
(iv) Reinforcing Works											
Round Bar		0.611	ton	-	-						8
Deformed Bar		1,384	"	-	-						8
Σ = (iv)											
(v) Masonry Works											
Brick		40	m ²	-	-						
Σ = (v)											
(vi) Carpentry											
Structural Wood		2.19	m ³	-	-			-	-		
Fixture Wood		0.33	"	-	-			-	-		
Supplementary Wood		1	set	-	-			-	-		

II - 1 Intake 10-a Structure

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Nails Hardwares	11 kg	1.0	set	-	-						
Carpenter			person	-	-	-					
Assistant			"	-	-	-					
Σ = (vi)											
(vii) Plastering											
Concrete Finishing		72	m ²	-	-						
Mortar Finishing	Wall	90.3	"	-	-						
"	Plinth H = 100 mm	19.6	m	-	-						
"	Column	5.8	m ²	-	-						
"	Beam	23.6	"	-	-						
"	Plinth H = 200 mm	19.2	m	-	-						
Window From Mortar		12	m	-	-						
Σ = (vii)											
(viii) Wood Fixtures											
Single Swing Window		4	set	-	-						
Σ = (viii)											
(ix) Painting											
Oil Stain		105.8	m ²	-	-						
Σ = (ix)											
(x) Other Works											
Corrugated Slate Roof		94.9	m ²	-	-						
Roof Ridge		13	m	-	-						
Steel Shutter	12.m ² 22	2	set	-	-						
Σ = (x)											
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total											

II - 1 Intake 10- b Warehouse

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
b Lighting Works											
Electric Wire	#15	21	m	-	-						
"	#14	21	"	-	-						
Conduit Tube	19 mm	20	"	-	-						
"	31 mm	3	"	-	-						
Accessory		1	set	-	-						
Concrete Box	102 x 102 x 54	4	"	-	-						
Tumbler Switch	300V 1P 10A	2	"	-	-						
Distribution Board		1	"	-	-						
Lighting Fixture	CFL 40 ^W x 2	4	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub-Total											

II - 1 Intake 11 - Site Preparation (Lodging for Management)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Earth Works & Fence											
Clearing & Gruffing	φ40 cm	4,200	m ²	-	-	-	-	-	-	-	1 - b
Sand Filling		1,400	m ³	-	-	-	-	-	-	-	1 - b
Soil Filling		970	"	-	-	-	-	-	-	-	2 - a
Leveling		2,594	m ²	-	-	-	-	-	-	-	
Asbestos Cement Pipe	φ100mm c-15	93	m	-	-	-	-	-	-	-	M + 29
Concrete Gutter		174	m	-	-	-	-	-	-	-	19 - F
Concrete Paving		47	m ²	-	-	-	-	-	-	-	16 - a
Asphalt Paving		453	m ²	-	-	-	-	-	-	-	16 - b
Sodding		1,284	m ²	-	-	-	-	-	-	-	15
Planting	H = 1-2 ^m	30	tree	-	-	-	-	-	-	-	17
Vinyl Wire Net Fence	H = 1.9 ^m	69	m	-	-	-	-	-	-	-	18 - e
Wooden Fence	H = 50 ^{cm}	69	m	-	-	-	-	-	-	-	18 - c
Barbed Wire Fence	H = 1.45 ^m	188	m	-	-	-	-	-	-	-	18 - b
Installing Gata	C-Type	1	set	-	-	-	-	-	-	-	47 - c
Flag Pole	B-Type	1	"	-	-	-	-	-	-	-	49 - b
Drain Pit	300 x 500 mm	10	pc.	-	-	-	-	-	-	-	19 - g
Miscellaneous Expenses		1	set	-	-	-	-	-	-	-	
		1	"	-	-	-	-	-	-	-	
Sub Total				-	-	-	-	-	-	-	
b Lighting Works											
Concrete Pole	B 20W H = 6 ^m	9	pc.	-	-	-	-	-	-	-	including Foundation
Light & Arm	20W	9	set	-	-	-	-	-	-	-	
Gate Lamp	20W	2	"	-	-	-	-	-	-	-	
Chalk Coil		11	"	-	-	-	-	-	-	-	
Electric Cable	600 EV 14 - 3 ^c	180	m	-	-	-	-	-	-	-	
	8 - 2 ^c	180	"	-	-	-	-	-	-	-	
Concrete Trough	70 mm wide	84	set	-	-	-	-	-	-	-	
Asbestos Pipe	φ100mm - C15	18	m	-	-	-	-	-	-	-	
Hand Hole	1000 x 1000 mm	1	set	-	-	-	-	-	-	-	
Joint Box	300	2	"	-	-	-	-	-	-	-	
Conduit Tube	φ28 mm	12	m	-	-	-	-	-	-	-	

II - 1 Intake 11-b Lighting Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Normal Bend	∅28 x 90°	12	set	-	-			-	-		
Branch Board	400 x 500 mm	1	"	-	-						
Electrician			person	-	-	-	-				
Electric Works			"	-	-	-	-				
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total				-	-						
c Water Service											
Boring	∅65 mm	25	m	-	-	-	-				
Galvanized Pipe	∅50 mm	38	"	-	-						
Pump	q=21.5 l/m H = 22 ^m 250 ^w	1	set			-	-				
Chlorinator	4-6cc/m P = 3 kg/cm ²	1	"			-	-				
Steel Tank	Cap. 1 ^{m3} t = 4.5mm	1	"	-	-						
Wooden Tower	H = 8 ^m	1	"	-	-						
Polyvinyl Chloride	∅40 mm	90	m	-	-						
"	∅30 "	30	"	-	-						
"	∅20 "	25	"	-	-						
Tap	∅40 "	1	set	-	-						
"	∅30 "	3	"	-	-						
"	∅20 "	2	"	-	-						
Miscellaneous		1	"								
Expenses		1	"								
Sub Total											

II - 2 Raw Water Main 1. Intake site - Proposed Plant

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Excavation	φ400mm φ150mm	6,522	m ³	-	-	-	-	-	-	1 - c	
Surplus Soil		1,282	"	-	-	-	-	-	-	2 - a	
Sand Mat		908	"	-	-	-	-	-	-	2 - b	
DCIP Laying	φ400mm C-3	2,998	m	-	-	-	-	-	-	M + 29	
DCIP Specials	Foreign	10,325	kg	-	-	-	-	-	-		
ACP Laying	φ150mm C-20	70	m	-	-	-	-	-	-	M + 29 ~	
ACP Specials	Foreign	78	kg	-	-	-	-	-	-		
Mechanical Jointing	φ400mm	87	set	-	-	-	-	-	-	32	
"	φ150mm	3	"	-	-	-	-	-	-	M + 31	
Gibault Jointing	φ150mm C-20	4	"	-	-	-	-	-	-	31	
Valve Setting	φ400mm SV	1	"	-	-	-	-	-	-	33	
"	φ150mm SV	2	"	-	-	-	-	-	-	33	
Anchor Block	φ400 x φ300 T	1	"	-	-	-	-	-	-	36	
"	φ400 x 45° (H)	16	"	-	-	-	-	-	-	38	
"	φ400 x 45° (VU)	4	"	-	-	-	-	-	-		
"	" (VL)	4	"	-	-	-	-	-	-		
Air Valve Setting	φ75 Box	1	"	-	-	-	-	-	-	45	
High Way Crossing											
Shield Steel Pipe	φ800mm	20	m	-	-	-	-	-	-		
Trench Sheet Pile	2.4 x 9 ^m	23	m	-	-	-	-	-	-	12 - c	
"	2.0 x 2 ^m	8	m	-	-	-	-	-	-	"	
Sand Filling		7	m ³	-	-	-	-	-	-		
Miscellaneous		1	set	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Sub Total											

II - 2 Raw Water Main 2. Intake site - Existing Plant

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		1,630	m	-	-					43	
Repair of Pavement		2,281	m ²	-	-					16	
Excavation	∅300mm ∅75mm	7,899	m ³	-	-					1 - c	
Surplus Soil		2,018	"	-	-	-	-			2 - a	
Sand Mat		1,244	"	-	-					2 - b	
ACP Laying	∅300mm C-20	4,053	m	-	-					M + 29	
"	∅75mm A	48	"	-	-					"	
ACP Specials	Foreign	2,924	kg	-	-	-	-	-	-		
"	Domestic	1,674	"	-	-	-	-	-	-		
DCP Specials	Foreign	121	"	-	-	-	-	-	-		
Mechanical Jointing	∅300mm	2	set	-	-	-	-	-	-	M + 31	
Gibault Jointing	∅300mm C-20	133	"	-	-					31	
"	∅75 " "	6	"	-	-					"	
Flange Jointing	∅300 "	1	"	-	-					" Labor	
Valve Setting	∅300mm	2	"	-	-	-	-	-	-	33	
"	∅75 "	2	"	-	-	-	-	-	-	"	
Anchor Block	∅300 x ∅300 T	1	"	-	-					36	
"	∅300 x 90°(H)	1	"	-	-					37	
"	∅300 x 45°(H)	10	"	-	-					38	
"	∅300 x 45°(VU)	6	"	-	-						
"	" (VL)	6	"	-	-						
Air Valve Setting	∅75 Box	1	"	-	-					45	
Highway Crossing											
Shield Steel Pipe	∅600mm	20	m	-	-	-	-	-	-		
Trench Sheet Pile	2.4 x 9 ^m	23	"	-	-	-	-	-	-	12 - c	
"	2.0 x 2 ^m	8	"	-	-	-	-	-	-	"	
Sand Filling		4	m ³	-	-						
Miscellaneous Expenses		1									
Sub Total											

II - 3 Existing Water Treatment Plant 1. Receiving Well

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Excavation		107	m ³	-	-	-	-				1 - c
Surplus Sill		44	"	-	-	-	-				
Back Filling		63	"	-	-	-	-				
Concrete Piling	300 x 300 Type-B L= 10m	13	pc.	-	-	-	-				3
Rubble Stone		10	m ³	-	-	-	-				4
Concrete	1 : 3 : 6	5	"	-	-	-	-				9 - b
"	1 : 2 : 4	87	"	-	-	-	-				9 - c
Reinforcing	Deformed Bar	8.7	ton	-	-	-	-				8
Forms	(A)	361	m ²	-	-	-	-				5 - a
Staging		407	m ³	-	-	-	-				7
Timbering		61	"	-	-	-	-				6
Mortar Finishing	Water Proof	65	m ²	-	-	-	-				10 - c
"	1:2	62	"	-	-	-	-				10 - b
Hand-Rail	Ø1 1/4"	12	m	-	-	-	-				44
Miscellaneous		1	set	-	-	-	-				
Expenses		1	"	-	-	-	-				
Sub-Total				-	-	-	-				

II - 3 Existing Plant 2. Pipe Valve & Fitting

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Ductile Specials	φ300mm - φ150mm	1,577	kg			-	-	-	-		
Asbestos Cement Pipe	φ300 class-20	6	pc.	-	-	-	-	-	-		
"	φ300 class-15	7	"	-	-	-	-	-	-		
"	φ200 class-15	17	"	-	-	-	-	-	-		
"	φ150 class-15	6	"	-	-	-	-	-	-		
Asbestos Specials	φ300 - φ150mm	495	kg			-	-	-	-		
Gibault Jointing	φ300 C-15	7	set	-	-						31
"	φ200 "	6	"	-	-						"
"	φ150 "	10	"	-	-						"
Excavation		144	m ³	-	-	-	-				1 - a
Surplus Soil		7	"	-	-	-	-				2 - a
Pipe Laying	φ300mm	49	m	-	-	-	-				29
"	φ200mm	67	"	-	-	-	-				"
"	φ150mm	23	"	-	-	-	-				"
Valve Setting	φ300mm	2	set			-	-				33
"	φ200mm	1	"			-	-				"
"	φ150mm	1	"			-	-				"
Miscellaneous Expenses		1	set								
		"	"								
Sub Total											

II - 4 Proposed Water Treatment Plant 1. Site Preparation

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Soil-Filling		49,010	m ³	-	-	-	-	-	-		
Surplus - Soil	From Sedimentation	697	"	-	-	-	-	-	-	2 - a	
"	From Lagoon	7,546	"	-	-	-	-	-	-	"	
Ditto	From Reservoir	6,554	"	-	-	-	-	-	-	"	
"	From Filter	335	"	-	-	-	-	-	-	2 - a	
"	From Intake site	1,177	"	-	-	-	-	-	-		
"	From Old Plant	44	"	-	-	-	-	-	-		
"	From 4 km	32,657	"	-	-	-	-	-	-	2 - b	
Soil-Filling	For lawn	1,470	"	-	-	-	-	-	-		
Sodding		14,700	m ²	-	-	-	-	-	-	15	
Concrete Gutter		1,435	m	-	-	-	-	-	-	19	
Asbestos Cement Pipe	∅100mm A	781	"	-	-	-	-	-	-	M + 29	
Asphalt Pavement		6,905	m ²	-	-	-	-	-	-	16 - b	
Conc. Slab Pitching	0.05 x 0.5 x 0.5 ^m	668	"	-	-	-	-	-	-	14	
Asphalt-Concrete-Paving		298	"	-	-	-	-	-	-	16 - a	
Planting		96	tree	-	-	-	-	-	-	17	
Installing-Gate	A-Type	2	set	-	-	-	-	-	-	47 - a	
"	B-Type	2	"	-	-	-	-	-	-	47 - b	
Barbed Wire Fence		475	m	-	-	-	-	-	-	18 - b	
Wooden Fence	H = 80 ^{cm}	280	"	-	-	-	-	-	-	18 - c	
Silaraeng Fence		97	"	-	-	-	-	-	-	18 - a	
Flag Pole		1	set	-	-	-	-	-	-	49 - a	
Lighting	20W	7	"	-	-	-	-	-	-		
Drain Pit	300 x 500mm	65	pc.	-	-	-	-	-	-	19 - g	
Name Plate		1	set	-	-	-	-	-	-		
Brick Pavement		8.4	m ²	-	-	-	-	-	-	16 - c	
Concrete Pipe	∅500mm	24	m	-	-	-	-	-	-	41	
Miscellaneous		1	set	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Sub-Total				-	-	-	-	-	-		

II - 4 Proposed Plant 2. Receiving Well

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Wood Retaining Wall For Sand Mat		57	m ²	-	-						5 - c
Excavation		36	m ³	-	-						1 - c
Back Filling		4	"	-	-	-	-				
Concrete Piling	300 x 300 Type-B L=10m	25	pc.	-	-						3
Wooden Piling	φ100mm L =3 ^m	2	"	-	-						
Sand Mat		75	m ³	-	-						
Rubble Stone		0.2	"	-	-						4
Concrete	1 : 3 : 6	19	"	-	-						9 - b
"	1 : 2 : 4	91	"	-	-						9 - c
Reinforcing	Deformed Bar	11.60	ton	-	-						8 - c
Forms	(A)	506	m ²	-	-						5 - a
Staging		460	m ³	-	-						7
Timbering		116	"	-	-						6
Mortar Finishing	1 : 2	154	m ²	-	-						10 - b
"	Water Proof	285	"	-	-						10 - c
Hand Rail	φ1 1/4"	34	m	-	-						44
Steel Step	1.4 k/pc	20	pc.	-	-						
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total				-	-						

II - 4 Proposed Plant 3- Sedimentation Basin

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Sedimentation Basin											
Wood Retaining Wall for Sand Mat		388	m ²	-	-						5 - c
Sand Mat		1,725	m ³	-	-						
Concrete Pile	300 x 300 Type-B L = 12m	296	pc.	-	-						3 - Labor
Excavation		697	m ³	-	-						1 - b
Concrete	1 : 2 : 4	1,164	"	-	-						9 - c
Level Concrete	1 : 3 : 6	162	"	-	-						9 - b
Reinforcing	Deformed Bar	152	ton	-	-						8 - c
Forms	(B)	3,496	m ²	-	-						5 - b
Timbering		1,604	m ³	-	-						6
Staging		3,947	"	-	-						7
Lean Concrete	1 : 3 : 6	11	"	-	-						9 - b
(For Flocculation Basin Drain Pump Chamber)											
Mortar Finishing	1 : 2 t = 20mm	1,834	m ²	-	-						10 - b
"	Water Proof	1,503	"	-	-						10 - c
ACP used Baffle Wall	φ150mm A	48	m	-	-						
Steel Step	Round Bar φ19	57	pc.	-	-						
Expansion Joint	300 x 7mm	36	m	-	-						10 - d
Hand Rail	φ1 1/4"	134	"	-	-						44
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total											
b Mechanical Works											
Flush Mixer	0.75 ^{kw} B L	2	set			-	-				
Steel Girder	0.9 ^m x 2.3 ^m 432kg/s	2	"			-	-				
Hand Rail	φ1 1/4"	9.2	m	-	-						44
Agitator	0.75 ^{kw} B L	8	set			-	-				
Steel Girder	0.9 ^m x 5.0 ^m 675 ^{kg/s}	8	"			-	-				
Hand-Rail	φ1 1/2"	80	m	-	-						44

II - 4 Proposed Plant 3-b Mechanical Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Flight Conveyer	B 3.4 ^m x H 0.15 ^m x 0.75 ^{kw}	2	group			-	-				
Trough	FRP250 x 400 x 3,400mm	12	set			-	-				
Miscellaneous Expenses		1	set								
		1	"								
Sub-Total											
c Electric Works											
Control Center Panel		1	set			-	-	-	-		
Local Operation Panel											
" "	For Flush Mixer	2	"			-	-	-	-		
" "	Agitator	2	"			-	-	-	-		
" "	Link Belt	1	"			-	-	-	-		
" "	Sludge Pump	1	"			-	-	-	-		
Electric Cable	600 ^v EV 14" - 3 ^o	380	m	-	-	-	-	-	-		
" "	" 8 ^o - 4 ^c	60	"	-	-	-	-	-	-		
" "	" 3.5 ^o - 3 ^c	2,347	"	-	-	-	-	-	-		
" Wire	IV 14	80	"	-	-	-	-	-	-		
" "	" 1.6 mm	360	"	-	-	-	-	-	-		
" Cable	CVV 2 - 24 ^c	390	"	-	-	-	-	-	-		
" "	" 2 - 12 ^c	380	"	-	-	-	-	-	-		
" "	" 2 - 6 ^c	390	"	-	-	-	-	-	-		
" "	CVVS 14 - 2 ^c	2,710	"	-	-	-	-	-	-		
Cable Head	600 ^v EV 14 - 3 ^c	2	set	-	-	-	-	-	-		
Conduit Tube	ø82 mm	115	m	-	-	-	-	-	-		
" "	ø42 mm	90	"	-	-	-	-	-	-		
" "	ø36 mm	410	"	-	-	-	-	-	-		
" "	ø28 mm	440	"	-	-	-	-	-	-		
" "	ø22 mm	90	"	-	-	-	-	-	-		
Normal Bend	ø82 mm	24	set	-	-	-	-	-	-		
" "	ø42 mm	9	"	-	-	-	-	-	-		

II - 4 Proposed Plant 3-c Electric Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cast	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Normal Bend	ϕ36	39	set	-	-			-	-		
" "	ϕ28	42	"	-	-			-	-		
Conduit Tube	Accessories	1	"	-	-			-	-		
Flexible Conduit	ϕ31	2	m	-	-			-	-		
" "	ϕ25	12	"	-	-			-	-		
Concrete Trough	250 ^{mm} Wide	150	set	-	-			-	-		
" "	70 ^{mm} "	50	"	-	-			-	-		
Earth Plate	600 x 600 x 1.6 ^t	1	"	-	-			-	-		
Electrician			person	-	-	-	-				
Earth Worker			"	-	-	-	-				
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub-Total											
d Lighting Works											
Electric Wire	#15	130	m	-	-						
"	#14	351	"	-	-						
"	#12	5	"	-	-						
Conduit Tube	19mm	169	"	-	-						
"	25mm	20	"	-	-						
"	39mm	7	"	-	-						
Accessory		1	"	-	-						
Concrete Box	102 x 102 x 54	26	set	-	-						
Tumbler Switch	300V 1P 1A	2	"	-	-						
"	300V 1P 10A x 3	2	"	-	-						
Socket Outlet	250V 3P 20A	5	"	-	-						
Distribution Board	L - B	1	"	-	-						
Lighting Fixture	C FL 40 ^w x 2	26	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Other Expendable Items		1	"	-	-						
Lighting		1	set	-	-						

II - 4 Proposed Plant 3-d Lighting Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set	-	-						
Sub-Total				-	-						
e Pipe Valve & Fitting											
Sludge Pump	3.5 ^{m3} /m x 15 ^m x 15 ^{kw}	2	set			-	-				
Valve Setting	φ200 SV	4	"			-	-				33 Excluding Valve Box
"	φ150 "	8	"			-	-				"
Check Valve	φ200 "	2	"			-	-				33-Labor
DCIP	φ200 3.0 m	223	kg			-	-	-	-		
DCIP Specials	φ200 - φ150	1,924	"			-	-	-	-		
Mechanical Jointing	φ200	28	set			-	-				31
"	φ150	18	"			-	-				31
Sluice Gate	400 x 400mm	4	set			-	-				
Head Stock	H = 2.5m	4	"			-	-				
Pipe Support	φ200	12	set	-	-						
Air Valve	Exposed φ13mm	1	set			-	-	-	-		
Miscellaneous Expenses		1	set								
Sub-Total		1	"								

II - 4 Proposed Plant 4. Clear Water Basin

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Excavation		431	m ³	-	-	-	-				1 - c
Back-Filling		96	"	-	-	-	-				
Concrete Pilling	300 x 300 ^{mm} L = 9 ^m	170	pc.	-	-						3 - Labor
Rubble Stone		85	m ³	-	-						4
Concrete	1 : 3 : 6	45	"	-	-						9 - b
"	1 : 2 : 4	196	"	-	-						9 - c
Reinforcing	Deformed Bar	18	ton	-	-						8 - c
Forms	(B)	739	m ²	-	-						5 - b
Staging		744	m ³	-	-						7
Mortar-Finishing	Water Proof	606	m ²	-	-						10 - c
"	1 : 2 t=20 ^{mm}	80	"	-	-						
Manhole Cover	820 x 820t = 4.5 ^{mm}	2	set	-	-						30 kg
Steel Step	Round Bar ϕ 19 ^{mm}	22	pc.	-	-						
Air Vent	GS ϕ 200 ^{mm}	2	set	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub-Total				-	-						

II - 4 Proposed Plant 5-a Rapid Sand Filter & Piping Gallery

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Rapid Sand Filter & Piping Gallery											
Concrete	1:2:4	530	m ³	-	-	-	-	-	-	9 - c	
Reinforcing	Deformed Bar	49	ton	-	-	-	-	-	-	8 - c	
Forms	(B)	2,264	m ²	-	-	-	-	-	-	5 - b	
Staging		1,038	m ³	-	-	-	-	-	-	7	
Timbering		2,154	"	-	-	-	-	-	-	6	
Mortar Finishing	1:2 t = 2 cm	452	m ²	-	-	-	-	-	-	10 - b	
"	Water Proof	1,152	m ²	-	-	-	-	-	-	10 - c	
Grating Plate	44.5 k/sheet	19	sheet	-	-	-	-	-	-		
"	35.7 k/sheet	1	"	-	-	-	-	-	-		
Door Sash	1,900 x 1,900 mm	2	set	-	-	-	-	-	-		
Ladder	c-50x50x4-1,500x2 steel step 11 pc	6	set	-	-	-	-	-	-		
Floor Drain	PVC ϕ 50 mm = 4.7 m	6	set	-	-	-	-	-	-		
" (For Air Vent)	" ϕ 50 mm = 3.5 m	4	"	-	-	-	-	-	-		
Hand-Rail	GP ϕ 1 1/4"	13	m	-	-	-	-	-	-	44	
Steel Step	Round Bar ϕ 19	14	set	-	-	-	-	-	-		
Grating Plate	12 kg/sheet	1	sheet	-	-	-	-	-	-		
Wooden Piling	ϕ 4" = 3.0 m	4	p"e	-	-	-	-	-	-		
Manhole Cover	650 x 700 t = 4.5 mm	2	set	-	-	-	-	-	-	21 kg	
Rubble Stone		3	m ³	-	-	-	-	-	-		
Concrete	1 : 3 : 6	3	"	-	-	-	-	-	-		
Lean Concrete	1 : 4 : 8	8	"	-	-	-	-	-	-		
Miscellaneous		1	"	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Sub Total											
b Mechanical Works											
Filter Media	Gravel 110%	106	m ³	-	-	-	-	-	-		
"	Sand 110%	127	"	-	-	-	-	-	-		
Under Drain Equipment											
Steel Pipe	ϕ 600 x 6,100 mm x 16 ϕ 80 x 100 mm	6	p c	-	-	-	-	-	-	615.1 kg/pc	

II - 4 Proposed Plant 5-b Mechanical Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Polyvinyl Chloride Pipe	ø80 x 3,100 mm	192	p"e	-	-	-	-	-	-		
"	ø80 x 4,500 mm	12	"	-	-	-	-	-	-		
"	ø25 x 55 mm	1,344	"	-	-	-	-	-	-		
" Tee	ø80 x ø80 mm	264	"	-	-	-	-	-	-		
" Bend	ø80 x 90°	24	"	-	-	-	-	-	-		
" Socket	ø80 mm	96	"	-	-	-	-	-	-		
Flange	ø80 mm	96	"	-	-	-	-	-	-		
Flange Adapter	PVC ø80 mm	96	"	-	-	-	-	-	-		
Fix Plate	50 x 4,900 t = 4.5 mm	84	set	-	-	-	-	-	-	8.7 kg/set	
Anchor Bolt	ø3/8" L = 300	1,428	"	-	-	-	-	-	-	0.15 kg/set	
Surface Wash Equipment											
Galvanized Steel Tee	3 Flange 250 x 250	6	p"e	-	-	-	-	-	-	100 kg/pc	
" Reducer	2 " 250 x 150	12	"	-	-	-	-	-	-	43.7 k/p	
" Bend	2 " 150 x 90°	24	"	-	-	-	-	-	-	33 k/p	
Galvanized Steel Pipe	2 Flange ø150 x 3,900 mm	12	"	-	-	-	-	-	-		
"	2 " ø150 x 2,800 mm	6	"	-	-	-	-	-	-		
"	2 " ø150 c 1,800 mm	6	"	-	-	-	-	-	-		
"	ø50 x 950 mm	60	"	-	-	-	-	-	-		
"	ø50 x 3,200 mm	60	"	-	-	-	-	-	-		
" Nipple	ø50 mm	60	"	-	-	-	-	-	-		
" Socket	"	60	"	-	-	-	-	-	-		
" Tee	"	60	"	-	-	-	-	-	-		
" Union	"	30	"	-	-	-	-	-	-		
" Cap	"	60	"	-	-	-	-	-	-		
" Socket	ø25 mm	360	"	-	-	-	-	-	-		
Galvanized Nipple	ø25 mm	360	p"e	-	-	-	-	-	-		
Spray Nozzle	ø25 mm	360	"	-	-	-	-	-	-		
Plumber			person	-	-	-	-	-	-		
Pipe Support	For ø50 mm	60	set	-	-	-	-	-	-		
"	For ø150 mm	12	"	-	-	-	-	-	-		
Flange Jointing	ø250 mm	18	"	-	-	-	-	-	-		
"	ø150 mm	54	"	-	-	-	-	-	-		
Pipe Laying	GP ø150 mm	86	m	-	-	-	-	-	-		
"	" ø50 mm	249	"	-	-	-	-	-	-		

II - 4 Proposed Plant 5-b Mechanical Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Pipe Laying	PVC ϕ 80 mm	650	m	-	-	-	-			42-Labor	
"	PVC ϕ 25 mm	74	"	-	-	-	-			"	
Trough	FRP 380 x 5,100 x 400 mm	24	set			-	-				
Miscellaneous		1	set								
Expenses		1	"								
Sub total											
c Pipe Valve & Fitting											
Ductile Cast Iron Pipe	L 3 m	8,684	kg			-	-	-	-		
"	L 3 m	8,012	"			-	-	-	-		
DCIP Specials	Foreign	14,199	"			-	-	-	-		
Steel Pipe	ϕ 500 mm	7.2	m			-	-	-	-		
Galvanized Specials		928	kg			-	-	-	-		
Valve Setting	ϕ 500 mm SV	6	set			-	-			33	
"	ϕ 300 "	6	"			-	-			"	
"	ϕ 250 "	14	"			-	-			"	
"	ϕ 150 "	6	"			-	-			"	
Reducing Valve	ϕ 250 mm	1	"			-	-			"	
Flat Valve	ϕ 500 mm	6	"			-	-			"	
Head Stock	Spindol H=6.2 - 4.8 m	24	"			-	-				
"	" H=1.0 - 3.0 m	14	"			-	-				
Controller	Counter Weight Type ϕ 200mm	6	"			-	-				
Mechanical Jointing	ϕ 500 mm	20	"			-	-			M 32	
"	ϕ 250 mm	10	"			-	-			M + 31	
Flange Jointing	ϕ 500 mm	44	"	-	-					32 - Labor	
"	ϕ 400 mm	6	"	-	-					"	
"	ϕ 300 mm	24	"	-	-					"	
"	ϕ 250 mm	20	"	-	-					"	
"	ϕ 200 mm	30	"	-	-					"	
"	ϕ 150 mm	12	"	-	-					"	
Welding	ϕ 500 mm	6	"	-	-					35 - Labor	
Pipe Laying	DCP ϕ 500 mm	55	m	-	-	-	-			29 - Labor	
"	" ϕ 400 mm	10	"	-	-	-	-			"	

II - 4 Proposed Plant 5-c Pipe Valve & Fitting 5-d Operating Room of Filter

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Pipe Laying	DCP ϕ 300 mm	23	m	-	-	-	-			29-Labor	
"	" ϕ 250 mm	40	"	-	-	-	-			"	
"	" ϕ 200 mm	40	"	-	-	-	-			"	
"	" ϕ 150 mm	13	"	-	-	-	-			"	
Pipe Support	ϕ 500 mm	50	set	-	-	-	-				
Strainer (FC)	ϕ 250 mm	1	"								
Miscellaneous Expenses		1	"								
Sub-Total											
d Operating Room of Filter a Structure											
(i) Temporary Works											
Leveling		441	m ²	-	-						
Inking Line		400	m ²	-	-						
Exterior Staging		451	"	-	-						
Scaffolding Incline		9	m	-	-						
Interior Staging		400	m ²	-	-						
$\Sigma = (i)$											
(ii) Concrete Works											
Concrete	1:2:4	106	m ³	-	-					9 - C	
Forms	(C)	1,164	m ²	-	-					5 - a	
$\Sigma = (ii)$											
(iii) Reinforcing Works											
Round Bar		11.6	Ton	-	-					8	
Deformed Bar		686	"	-	-					8	
$\Sigma = (iii)$											
(iv) Masonry Works											
Bricks		101	m ²							50	
$\Sigma = (iv)$											
(v) Water Proofing Works											

II - 4 Proposed Plant 5-d Operating Room of Filter

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Mortar Water Proofing Σ = (v)		557	m ²	-	-						10 - c
(vi) Carpentry Fixture Wood Carpenter Assistant Σ = (vi)		183	m ³ person "	-	-	-	-	-	-		
(vii) Plastering Concrete Finishing Mortar Finishing " Wall " Column " Beam " Wall Window Frame Mortar Σ = (vii)	Floor H = 100 Plinth Wall Column Beam Wall	274 87 451 37 630 93 204	m ² m m ² m ² " "	-	-	-	-				54 - 55 "
(viii) Wood Fixtures Panel Box Window Panel Window Non Opening Window Double Swing Door Σ = (viii)	WW-2 6,800 x 2,000 WW-1 600 x 2,000 WW-3 1,750 x 2,000 WD-1 1,600 x 2,000	1 10 2 1	set " " "	-	-	-	-				
(ix) Glazing Clear Glass Σ = (ix)		110	m ²	-	-						
(x) Painting Oil Stain Vinyl Painting Σ = (x)	Wood Mortar	216 1,220	m ²	-	-						

II - 4 Proposed Plant 5-e Lighting Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses			set	-	-						
Sub Total											
e Lighting Works											
Electric Wire	# 15	370	m	-	-						
"	# 14	460	"	-	-						
"	# 12	5	"	-	-						
Conduit Tube	19 mm	510	"	-	-						
"	25 mm	15	"	-	-						
"	39 mm	20	"	-	-						
Accessory			set	-	-			-	-		
Concrete Box	102 x 102 x 54	42	"	-	-			-	-		
Tumbler Switch	300V. 1P 10A	2	"	-	-						
"	300V x 2		"	-	-						
"	300V x 3	2	"	-	-						
Socket Outlet	250V 3P 20A	17	"	-	-						
Distribution Board	L - 1		"	-	-						
"	L - B	1	"	-	-						
Lighting Fixture	C FL 40W x 2	40	"	-	-						
"	G FL 40W x 2		"	-	-						
Fitting			"	-	-			-	-		
Earth Connection			"	-	-						
Other Material			"	-	-			-	-		
Miscellaneous Expenses			set	-	-						
Sub-Total			"	-	-						

II - 4 Proposed Plant 6 Clear Water Reservoir & Distribution Pump Well

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Steel Sheet Pile	L = 9 m	174	m	-	-	-	-	-	-	20 - b	
Removing Sheet Pile	L = 9 m	174	"	-	-	-	-	-	-	20 - c	
Excavation		7,348	m ³	-	-	-	-	-	-	1 - d	
Back Filling		794	"	-	-	-	-	-	-		
Banking		823	"	-	-	-	-	-	-	2 - a	
Sand Mat		1,298	"	-	-	-	-	-	-		
Concrete	1 : 4 : 8	71	"	-	-	-	-	-	-		
"	1 : 3 : 6	249	"	-	-	-	-	-	-	9 - b	
"	1 : 2 : 4	1,738	"	-	-	-	-	-	-	9 - c	
Reinforcing	Deformed Bar	131	ton	-	-	-	-	-	-	8 - c	
Forms	(B)	4,828	m ²	-	-	-	-	-	-	5 - b	
Staging		3,320	m ³	-	-	-	-	-	-	7	
Timbering		6,936	"	-	-	-	-	-	-	6	
Mortar Finishing	1 : 2	299	m ²	-	-	-	-	-	-	10 - b	
"	Water Proof	2,380	"	-	-	-	-	-	-	10 - c	
Expansion Joint	b = 300 mm t = 6 mm	65	m	-	-	-	-	-	-	10 - d	
Steel Cover	t = 4.5 1,720 x 1,720 ^{mm}	1	set	-	-	-	-	-	-		
"	t = 4.5 820 x 820	6	"	-	-	-	-	-	-		
Air Vent	PVC ϕ 50 - 400 mm	4	p"e	-	-	-	-	-	-		
Drip Pipe	" ϕ 50 - 200 mm	17	"	-	-	-	-	-	-		
Wood Louver Ventilator	1400 x 600 mm	1	set	-	-	-	-	-	-		
Steel Step	ϕ 19 mm	120	"	-	-	-	-	-	-		
Protection Pipe	ACP ϕ 400mm L = 5,600mm for Water Level Meter	1	"	-	-	-	-	-	-		
Miscellaneous		1	"	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Sub-Total											

II - 4 Proposed Plant 7-a Distribution Pump Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		225	m ²	-	-						
Inking Line		202	"	-	-						
Exterior Staging		336	"	-	-						
Scaffolding Incline		15.4	m	-	-						
Interior Staging		202	m ²	-	-						
Σ = (i)											
(ii) Concrete Works											
Poor Concrete	1 : 4 : 8	46.7	m ³	-	-					9 - a	
Concrete	1 : 2 : 4	25.78	"	-	-					9 - c	
Forms	(c)	248	m ²	-	-					5 - c	
(iii) Reinforcing Works											
Round Bar		1.01	ton	-	-					8 - a	
Deformed Bar		3.26	"	-	-					8 - c	
Σ = (iii)											
(iv) Masonry Works											
Brick		213	m ²	-	-					50	
Σ = (iv)											
(v) Carpentry											
Structural Wood		16.14	m ³	-	-			-	-		
Fixture Wood		1.19	"	-	-			-	-		
Supplementary Wood		1	set	-	-			-	-		
Nails, Hardware		1	set	-	-			-	-		
Carpenter			person	-	-			-	-		
Assistant			"	-	-			-	-		
(vi) Metal Fabrication											
Manhole	ø600	4	set	-	-						
Wire Net		130	m ²	-	-						

II - 4 Proposed Plant 7-ab Distribution Pump Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Hoist Rail Σ = (vi)		24	m	-	-						
(vii) Plastering											
Mortar Finish	Exterior Wall	276	m ²	-	-						
Concrete Finish	Floor	207	"	-	-						
Mortar Finish	Plinth H = 100	62	m	-	-						
"	Wall	121	m ²	-	-						54
"	Column	43	"	-	-						
Window Frame Mortar Σ = (vii)		146	m	-	-						
(viii) Wood Fixtures											
Double Swing Door	WD-1 3,000 x 4,100	2	set	-	-						
Double Swing Windows Σ = (viii)	W-1 1,800 x 3,100	12	"	-	-						
(ix) Painting											
Oil Painting	Wood	415	m ²	-	-						
Vinyl Painting Σ = (ix)	Mortar	510	"	-	-						
(xi) Other Works											
Corrugated Slate Roof		409	m ²	-	-						
Roof Ridge		48	m	-	-						
Flat Sheet Σ = (xi)		86	m ²	-	-						
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total											
b Lighting Works											
Electric Wire	#15	100	m	-	-						
"	#14	200	"	-	-						

II - 4 7-b Distribution Pump Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Electric Wire	#10	7	m	-	-						
Conduit Tube	19 mm	220	"	-	-						
"	51 mm	4	"	-	-						
Accessory		1	set	-	-						
Concrete Box	102 x 102 x 54	6	each	-	-						
Tumbler Switch	300V 1P 10A	4	set	-	-						
Socket Outlet	250V 3P 20A	8	"	-	-						
Distribution Board	L	1	"	-	-						
Lighting Fixture	CFL 40W x 2	6	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Other Material		1	"	-	-						
Ventilating Fan	φ350 x 135 ^W	4	"	-	-						
Miscellaneous Expenses		1	set	-	-						
		1	"	-	-						
Sub Total											
c. Piping Works											
P.V.C. Laying	φ40mm	13	m	-	-						
"	φ12mm	18	"	-	-						
P.V.C. Specials	Domestic	12	kg	-	-			-	-		
Valve Setting	φ40mm	1	set	-	-						
"	φ12mm	7	"	-	-						
Wash Basin *	L = 220P	1	"	-	-						
Vinyl Pipe	φ100 ^{mm} L = 3. ^m 0	1	pc.	-	-						
"	φ100 ^{mm} L = 6.0	1	pc.	-	-						
Specials	Y100 x 50 mm	1	"	-	-						
"	bend 100 mm	1	"	-	-						
Drain Metal Fitting	50T - 50A	1	set	-	-						
Cess Pool	450 x 450mm	1	"	-	-						
Slop Sink	COA - 100mm	1	"	-	-						
Miscellaneous Expenses		1	"	-	-						
		1	"	-	-						
Sub Total											

II - 4 Proposed Plant 8-a Distribution Pump Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Distribution Pump Equipment											
Distribution Pump & Motor	D=300mm q=8.4 ^{m³/min} H=43m 100kw	2	set			-	-				
Valve Setting(Manual)	φ300mm	2	"			-	-			33	
Distribution Pump & Motor	D=200mm q=4.2 ^{m³/min} H=43m 55kw	2	set			-	-				
Valve Setting(Manual)	φ200mm	2	"			-	-			33	
Washing Pump & Motor	D=125mm q=2 ^{m³/min} H=19m 15kw	2	set			-	-				
Valve Setting(Manual)	φ125mm	2	"			-	-			33	
90° Bend	Double Flanged φ125	2	"			-	-				
Submarine Type Pump	D=100mm q=1.4 ^{m³/min} H=10m 5.5kw	1	set			-	-				
Feed Pump	Q=0.15 ^{m³/min} H=25m 1.5kw D=40mm	2	"			-	-				
Air Valve Setting	Exposed φ13mm	6	set			-	-			45	
Miscellaneous		1	"			-	-				
Expenses		1	"			-	-				
Sub Total											

II - 4 Proposed Plant 8-b Local Power Center

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
b Local Power Center											
Control Center Panel		1	set			-	-	-	-		
Electric Cable	600 ^v EV 150 ^m - 3 ^c	30	m	-	-	-	-	-	-		
"	" 50 ^m - 3 ^c	30	"	-	-	-	-	-	-		
"	" 8 ^m - 3 ^c	28	"	-	-	-	-	-	-		
"	" 3.5 ^m - 4 ^c	13	"	-	-	-	-	-	-		
"	" 3.5 ^m - 3 ^c	30	"	-	-	-	-	-	-		
Electric Wire	IV 38 ^m	69	"	-	-	-	-	-	-		
" "	" 22 ^m	16	"	-	-	-	-	-	-		
" "	" 5.5 ^m	28	"	-	-	-	-	-	-		
" "	" 1.6 ^m mm	43	"	-	-	-	-	-	-		
Cable Head	600 ^v EV150 ^m - 3 ^c	8	set	-	-	-	-	-	-		
"	" 50 ^m - 3 ^c	8	"	-	-	-	-	-	-		
Conduit Tube	φ104 mm	40	m	-	-	-	-	-	-		
"	φ82 mm	40	"	-	-	-	-	-	-		
"	φ36 mm	28	"	-	-	-	-	-	-		
"	φ28 mm	43	"	-	-	-	-	-	-		
Normal Bend	φ104 mm	4	set	-	-	-	-	-	-		
"	φ82 mm	4	"	-	-	-	-	-	-		
"	φ36 mm	4	"	-	-	-	-	-	-		
"	φ28 mm	6	"	-	-	-	-	-	-		
Conduit Tube	Accessories	1	"	-	-	-	-	-	-		
Flexible Conduit	φ100 mm	4	m	-	-	-	-	-	-		
"	φ76 mm	4	"	-	-	-	-	-	-		
"	φ31 mm	2	"	-	-	-	-	-	-		
"	φ25 mm	2	"	-	-	-	-	-	-		
Earth Plate	600 x 600 x 1.6 ^t	1	set	-	-	-	-	-	-		
Outlet	3P + E	1	"	-	-	-	-	-	-		
Electrician			person	-	-	-	-	-	-		
Earth Worker			"	-	-	-	-	-	-		
Miscellaneous Expenses			set	-	-	-	-	-	-		
			"	-	-	-	-	-	-		
Sub Total											

II - 4 Proposed Plant 9-a Chemical Dosing Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		300	m ²	-	-						
Inking Line		600	"	-	-						
Exterior Staging		970	"	-	-						
Scaffolding Incline		22.2	m	-	-						
Interior Staging		600	m ²	-	-						
Σ = (i)											
(ii) Earth Works											
Excavation		316	m ³	-	-	-	-				
Back Filling		289	m ³	-	-	-	-				
Surplus Soil		24	m ³	-	-	-	-				
Rubble Stone		5.34	m ³	-	-						
Ballast		5.34	m ³	-	-						
Σ = (ii)											
(iii) Concrete Piling											
Concrete Pile		84	piece	-	-						
Σ = (iii)											
(iv) Concrete Works											
Level Concrete	1 : 3 : 6	5	m ³	-	-						
Concrete	1 : 2 : 4	207.3	"	-	-						
Forms	(c)	1,440.68	m ²	-	-						
Σ = (iv)											
(v) Reinforcing Works											
Round Bar		9.26	ton	-	-						
Deformed Bar		14.32	"	-	-						
Σ = (v)											
(vi) Masonry Works											
Brick		377	m ²	-	-						
Σ = (vi)											

II - 4 Proposed Plant 9-a Chemical Dosing Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(vii) Waterproof Works											
Integral Waterproof	T 15	252	m ²	-	-						
	H = 100 Plinth	137	m	-	-						
Σ = (vii)											
(viii) Carpentry											
Structural Wood		20.23	m ³	-	-			-	-		
Fixture Wood	Hard Wood	8.45	"	-	-			-	-		
Supplementary Wood		1	set	-	-			-	-		
Nails, Hardware		1	"	-	-			-	-		
Plywood	T 4	5	m ²	-	-	-	-				
Carpenter			person	-	-						
Assistant			"	-	-						
Σ = (viii)											
(ix) Metal Fabrication											
Hoist Rail		17.5	m	-	-						
				-	-						
Cover Plate(checker plate)	4.5 mm	21	m ²	-	-						
Metal Fittings	Screen	1	set	-	-						
Wire Net		157	m ²	-	-						
Hand Rail	H = 1000	100	m	-	-						
Σ = (ix)											
(x) Plastering											
Mortar Finish	Wall T 15	176	m ²	-	-						
"	Column T 15	77	"	-	-						
"	Beam T 15	375	"	-	-						
Window Frame Mortar		439	m	-	-						
Artificial Stone, Ground Finish		5	m ²	-	-						
Concrete Finish		437	"	-	-						
Mortar Finish	Floor T 15	158	m ²	-	-						
"	Plinth H = 100	77	m	-	-						
"	Wall	550	m ²	-	-						
"	Column	94	"	-	-						
"	Ceiling	428	"	-	-						

II - 4 Proposed Plate 9-a Chemical Dosing Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
$\Sigma = (x)$											
(xi) Wood Fixtures											
Double Swing Door	WD-1 1,600 x 2,000	4	set	-	-						
	WD-2 1,600 x 3,000	5	"	-	-						
Single Swing Door	WD-3 800 x 1,950	1	"	-	-						
"	WD-4 800 x 2,000	7	"	-	-						
"	WD-5 600 x 1,950	1	"	-	-						
Double Swing Window	W-1 1,600 x 2,200	2	"	-	-						
Single Swing Window	W-2 800 x 600	1	"	-	-						
"	W-3 4,500 x 2,900	14	"	-	-						
Double Swing Door	W-4 4,500 x 3,000	2	"	-	-						
Double Swing Window	W-5 1,600 x 900	2	"	-	-						
Toilet	2,000 x 1,950	1	"	-	-						
Double Swing Door	WD-2 1,600 x 3,000	3	"	-	-						
Double Swing Window	W-1 1,600 x 2,200	3	"	-	-						
$\Sigma = (xi)$											
(xii) Glazing											
Clear Glass	T 15	233	m ²	-	-						
$\Sigma = (xii)$											
(xiii) Painting											
Oil Stain		1,151	"	-	-						
Vinyl Painting		1,988	"	-	-						
$\Sigma = (xiii)$											
(xiv) Other Works											
Corrugated Slate Roof		527	m ²	-	-						
Roof Ridge		64	m	-	-						
Tile	Color	12	m ²	-	-						
Sound Absorbing Finish		295	"	-	-						
Flat Sheet		58	m ²	-	-						
$\Sigma = (xiv)$											
Miscellaneous Expenses		1	set	-	-						
Sub Total		1	"	-	-						

II - 4 Proposed Plant 9-b-c Lighting Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
b Lighting Works											
Electric Wire	# 15	700	m	-	-						
"	# 14	600	"	-	-						
"	# 10	20	"	-	-						
"	# 2	20	"	-	-						
Conduit Tube	19 mm	530	"	-	-						
"	25 mm	80	"	-	-						
"	31 mm	20	"	-	-						
Accessory		1	"	-	-						
Concrete Box	102 x 102 x 54	66	each	-	-			-	-		
Tumbler Switch	300V 1P 10A	11	set	-	-						
"	300V 1P 10A x 2	5	"	-	-						
"	300V 1P 10A x 6	1	"	-	-						
"	300V 1P 10A x 3W	2	"	-	-						
Socket Outlet	250V 3P 20A	38	"	-	-						
"	∅90 x 80 ^W	11	"	-	-						
Telephone Outlet Box	102 x 102 x 54	2	"	-	-						
Distribution Board	L - 1	1	"	-	-						
"	L - 2	1	"	-	-						
Lighting Fixture	C, FL 40 ^W x 2	58	"	-	-						
"	C, FL 40 ^W x 1	6	"	-	-						
"	H, FL 60 ^W	2	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Other Expendable Items		1	"	-	-			-	-		
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub Total											
c Plumbing Works											
Ventilating Fan	∅250 x 40 ^W	4	set	-	-						
Wash Basin	L - 220 P	2	"	-	-						
Urinal	U - 37	1	"	-	-						

II - 4 Proposed Plant 9-c Chemical Dosing Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Sprinkler Head	T - 27 - 13	1	set	-	-						
P.V.C. Pipe	∅25	4	m	-	-						
"	∅25	18	"	-	-						
Coupling Support		1	set	-	-						
Gate Valve	25 ^{GV}		"	-	-						
P.V.C. Steel	∅50	14	m	-	-						
Coupling		1	set	-	-			-	-		
Vinyl Pipe	100 x 1,000	1	piece	-	-						
"	100 x 300	1	"	-	-						
"	75 x 600	1	"	-	-						
Specials	Y100 x 50	2	"	-	-						
"	TY100 x 75	1	"	-	-						
"	LY100 x 75	1	"	-	-						
"	LX 75 x 50	1	"	-	-						
"	bend 100	1	"	-	-						
Coupler		1	set	-	-			-	-		
"		1	"	-	-			-	-		
Lead Pipe	70 ^{LP}	2	m	-	-						
"	50 ^{LP}	2	"	-	-						
"	30 ^{LP}	4	"	-	-						
Support		1	set	-	-			-	-		
Drain Metal Fitting	50T - 5A	1	"	-	-						
Slop Sink	CoA 100	1	"	-	-						
"	CoA 50	1	"	-	-						
Cess Pool	450 x 450	1	"	-	-						
Permeation Pit	∅800 x ∅1,800	1	set	-	-						
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub-Total											

II - 4 Proposed Plant 10-a Alum Feeder

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Alum Feeder											
Level Meter		2	set			-	-	-	-		
Solution Tank	1.8m ³ Steel t=6mm Epoxide Resins Coat	2	"			-	-	-	-	0.5 ^t /set	
Chemical Feeding Pump	0.75 ^{kw} SUS-32	2	"			-	-	-	-		
Mixer	0.75 ^{kw} SUS-32	2	"			-	-	-	-		
PVC Laying	∅50 mm	218	m	-	-						
PVC Specials	∅100 x ∅50 T	1	sst	-	-			-	-		
"	∅50 x ∅50 T	22	"	-	-			-	-		
"	∅50 x 90° B	61	"	-	-			-	-		
P.V.C Specials	∅50 Flange Adapter	60	"	-	-	14	840	-	-	840	
"	∅50 Steel Flange	58	"	-	-	70	4,060	-	-	4,060	
"	∅50 Flange Plug	4	"	-	-	31	124	-	-	124	
"	∅50 x 90° Elbow	2	"	-	-	24	48	-	-	48	
"	∅50 Socket	76	"	-	-	15	1,140	-	-	1,140	
G.S.P. Specials	∅50 Nipple(GS)	1	"	-	-	5	5	-	-	5	
"	∅50 Socket(GS)	1	"	-	-	13	13	-	-	13	
"	∅50 x 90° B	1	"	-	-	45	45	-	-	45	
Diaphragm Valve	∅50 (PVC)	18	"	-	-	-	-	-	-		
Strainer(Y-type)	∅50 (SUS-32)	2	"	-	-	-	-	-	-		
Relief Valve	∅50 (")	2	"	-	-	-	-	-	-		
Angle Seat Valve	∅50 (PVC)	8	"	-	-	-	-	-	-		
"	∅50 (FC)	1	"	-	-	-	-	-	-		
Excavation		33	m ³	-	-	-	-	-	-		
Backfilling		33	"	-	-	-	-	-	-		
Miscellaneous Expenses		1	set								
		1	"								
Sub-Total											
b Lime Feeder											
Lever Meter		2	set			-	-	-	-		
Solution Tank	2.5m ³ Steel t=6mm Epoxide Resins Coat	2	"			-	-	-	-	W = 0.6 ^t /set	
Chemical Pump	0.75 kw	2	"			-	-	-	-		

II - Proposed Plant 10-b Lime Feeder

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Mixer	0.75 kw	2	"			-	-			0.23 ^t /set Including Weir Gauge	
	Epoxide Resins Coat										
Gauging Well	D = 0.8m 1m Steel T = 6 mm	1	"			-	-				
PVC Laying	ϕ50 mm	46	m	-	-						
"	ϕ25 mm	221	"	-	-						
PVC Specials	ϕ100 x ϕ50 T	1	set	-	-			-	-		
"	ϕ 50 x ϕ50 T	5	"	-	-			-	-		
"	ϕ 50 x ϕ25 T	2	"	-	-			-	-		
"	ϕ 25 x ϕ25 T	9	"	-	-			-	-		
"	ϕ 50 x 90°B	10	"	-	-			-	-		
"	ϕ 25 x 90°B	35	"	-	-			-	-		
"	ϕ 50 x 45°B	2	"	-	-			-	-		
"	ϕ 25 x 45°B	3	"	-	-			-	-		
"	ϕ 50 Flange Adapter	8	"	-	-			-	-		
"	ϕ 25 " "	24	"	-	-			-	-		
"	ϕ 50 Socket	15	"	-	-			-	-		
"	ϕ 25 "	70	"	-	-			-	-		
"	ϕ 25 x 90° Elbow	3	"	-	-			-	-		
Steel Flange	ϕ 50 mm	8	"	-	-			-	-		
"	ϕ 25 "	24	"	-	-			-	-		
FC Flange Plug	ϕ 50 mm	2	"	-	-			-	-		
"	ϕ 25 mm	2	"	-	-			-	-		
Diaphragm Valve	ϕ 50 (PVC)	6	"			-	-				
"	ϕ 25 "	6	"			-	-				
Angle Seat Valve	ϕ 50 "	4	"	-	-						
"	ϕ 25 "	7	"	-	-						
Check Valve	ϕ 25 "	2	set			-	-				
Excavation		45	m ³	-	-	-	-				
Back Filling		45	"	-	-	-	-				
Miscellaneous		1	set								
Expenses		1	"								
Sub Total											

II - 4 Proposed Plant 10-c Chlorinator

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
c Chlorinator											
Chlorine Bomb	98 Kg	8	pc.	-	-	-	-				
Chlorinator	q _{max} = 10 K/Hr	2	set								
Boosting Pump	20 ^l /min x 40 ^m x 0.75 ^{KW}	2	"								
Hoist	Cap 250 Kg 0.5 KW	1	"								
Cable Trolley		12	"								
Cable-Cable		25	m								
I-Steel Beam	150 x 75 x t = 5.5 mm	17	m	-	-					w = 0.35 t	
Manifold		1	pc.								
PVC Laying	ø50 mm	17	m	-	-						
"	ø25 mm	71	"	-	-						
PVC Specials	ø100 x ø50 T	1	set	-	-						
"	ø50 x ø50 T	6	"	-	-						
"	ø25 x ø25 T	4	"	-	-						
"	ø50 x 90° B	12	"	-	-						
"	ø25 x 90° B	15	"	-	-						
"	ø25 x 45° B	5	"	-	-						
"	ø50 Flange Adapter	15	"	-	-						
"	ø25 "	10	"	-	-						
"	ø50 Flange	15	"	-	-						
"	ø25 "	10	"	-	-						
"	ø50 Flange Plug	3	"	-	-						
"	ø25 "	2	"	-	-						
"	ø50 Socket	13	"	-	-						
"	ø25 "	4	"	-	-						
Diffuser	ø25 mm	1	"								
Angle Seat Valve	ø50	13	"								
"	ø25	1	"							Valve Box Type A	
Diaphragm Valve	ø25	7	"								
Check Valve	ø50 (PC)	2	set								
Strainer	ø50 (")	1	"								
Chemical Gage	Chlorine Gas Pressure Gauge	1	"								
Excavation		11	m ³	-	-						
Back filling		11	"	-	-						

II - 4 Proposed Plant 10-de Neutralization Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set								
Sub Total		1	"								
d Neutralization Equipment											
Blow Off Tower											
Neutralization Equipment	20 mm - 7.5 kw	1	set			-	-				
Accessories Tank	PVC	1	"			-	-				
Gas Detector		2	"			-	-				
Manual Damper	PVC ϕ 200	2	"			-	-				
Chemical Pump	For Caustic Soda 7.5 ^{kw}	1	"			-	-				
PVC Laying	ϕ 200 mm	40	m	-	-						
Accessories Duct		1	"			-	-				
Miscellaneous Expenses		1	set								
Sub Total		1	"								
e Chemical Dosing Room Electrical Works											
Operating Panel for Alarm		1	set			-	-	-	-		
" for Chlorinator		1	"			-	-	-	-		
Electric Cable	600 ^v EV 3.5 ^m -4 ^c	33	m	-	-						
"	" 2 ^m -4 ^c	340	"	-	-						
Conduit Tube	ϕ 42 mm	44	"	-	-						
"	ϕ 28 mm	15	"	-	-						
"	ϕ 22 mm	213	"	-	-						
Flexible Conduit	ϕ 19 mm	12	"	-	-						
Pull Box	200 x 150 x 100	2	set	-	-						
Junction Box		1	"	-	-						
Conduit Tube Accessories		1	"	-	-						
Electrician			person	-	-						
Miscellaneous Expenses		1	set	-	-						
Sub Total		1	"	-	-						

II-4 Proposed Plant 11. Instrumentation Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Semigraphic Panel		1	set			-	-	-	-		
Raw Water Flow Meter		1	"			-	-	-	-		
Turbidity Meter		1	"			-	-	-	-		
Filter Level Meter		6	"			-	-	-	-		
Filter Loss Meter		6	"			-	-	-	-		
Distribution Pump Well Level Meter		1	"			-	-	-	-		
Distribution Pressure Meter		1	"			-	-	-	-		
Distribution Flow Meter		1	"			-	-	-	-		
Elevated Tank Level Meter		1	"			-	-	-	-		
Wash Water Flow Meter		1	"			-	-	-	-		
Electric Cable	CVV 2 ^H - 2 ^C	60	m	-	-	-	-	-	-		
"	CVVS 2 ^H - 3 ^C	70	"	-	-	-	-	-	-		
"	" 2 ^H - 2 ^C	1,690	"	-	-	-	-	-	-		
Conduit Tube	∅22 mm	383	"	-	-	-	-	-	-		
Flexible Conduit	∅19 mm	17	"	-	-	-	-	-	-		
Steel Gas Pips	30 mm	10	"	-	-	-	-	-	-		
Concrete Trough	70 mm wide	90	"	-	-	-	-	-	-		
Electrician			person	-	-	-	-	-	-		
Miscellaneous Expenses		1	set	-	-	-	-	-	-		
		1	"								
Sub Total											

II-4 Proposed Plant 12. Piping For Facilities

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(i) Entrance Of Plant - Receiving Well											
Ductile CIP	φ500 - φ400 mm	5,279	kg			-	-	-	-		
Ductile Specials	φ500 - φ400 mm	2,277	"			-	-	-	-		
Mechanical Jointing	φ500 mm	2	set			-	-			32	
"	φ400 mm	17	"			-	-			"	
Excavation		133	m ³	-	-					1 - c	
Back Filling		126	"	-	-					2 - a	
Pipe Laying	DCP φ500 mm	8.2	m	-	-					29	
"	" φ400 mm	66.7	"	-	-					"	
Valve Setting	Butterfly φ500 mm	1	set			-	-			34 Valve Box Type A	
"	" φ400 mm	1	"			-	-			" "	
Flange Jointing	φ500 mm	3	"	-	-					32 Labor	
"	φ400 mm	3	"	-	-					"	
Flow Meter Box		1	"	-	-					27	
Miscellaneous Expenses		1	"								
		1	"								
Σ = (i)											
(ii) Receiving Well - Mixing Chamber											
Ductile CIP	φ700 - φ400 mm	1,996	kg			-	-	-	-		
Ductile Specials	φ700 - φ400 mm	4,602	"			-	-	-	-		
Mechanical Jointing	φ500 mm	5	set			-	-			32	
"	φ400 mm	6	"			-	-			"	
Excavation		73	m ³	-	-					1 - c	
Back Filling		70	"	-	-					2 - a	
Pipe Laying	DCP φ500 mm	21.5	m	-	-					29	
"	" φ400 mm	25.0	"	-	-					"	
"	" φ700 mm	1.0	"	-	-					"	
Valve Setting	Butterfly φ500 mm	1	set			-	-			34 Valve Box Type A	
"	" φ400 mm	2	"			-	-			" "	
Flange Jointing	φ700 mm	2	"	-	-					32 - Labor	
"	φ500 mm	2	"	-	-					"	
"	φ400 mm	4	"	-	-					"	

II-4 Proposed Plant 12. Piping For Facilities

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set								
		1	"								
$\Sigma = (ii)$											
(iii) Sedimentation Basin - Rapid Sand Filter											
Ductile Specials	ø500 mm	1,379	kg			-	-	-	-		
Mechanical Jointing	ø500 mm	2	set			-	-	-	-	32	
Pipe Laying	DCP ø500 mm	6.3	m	-	-	-	-	-	-	29	
Flange Jointing	ø500 mm	3	set	-	-	-	-	-	-	32 - Labor	
Miscellaneous Expenses		1	"								
		1	"								
$\Sigma = (iii)$											
(iv) Rapid Sand Filter - Reservoir											
Ductile CIP	ø500 - ø400 mm	3,064	kg			-	-	-	-		
Ductile Specials	"	2,711	"			-	-	-	-		
Mechanical Jointing	ø500 mm	7	set			-	-	-	-	32	
"	ø400 mm	9	"			-	-	-	-	"	
Excavation		108	m ³	-	-					1 - c	
Back Filling		100	"	-	-					2 - a	
Pipe Laying	DCP ø500 mm	29	m	-	-	-	-	-	-	29	
"	" ø400 mm	21	"	-	-	-	-	-	-	"	
Valve Setting	BV ø500 mm	1	set			-	-	-	-	34 B	
"	BV ø400 mm	2	"			-	-	-	-	" B	
Flange Jointing	ø500 mm	3	"	-	-					32-Labor	
"	ø400 mm	2	"	-	-					"	
Miscellaneous Expenses		1	"								
		1	"								
$\Sigma = (iv)$											

II-4 Proposed Plant 12. Piping For Facilities

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(v) Piping For Reservoir											
Ductile Specials	ø800 - 600 mm	970	kg	-	-	-	-	-	-		
Flange Jointing	ø800 mm	1	set	-	-	-	-	-	-	32-Labor	
"	ø600 mm	1	"	-	-	-	-	-	-	"	
Valve Setting	ø800 mm BV	1	"	-	-	-	-	-	-	34 Except Valve Box	
"	ø600 mm BV	1	"	-	-	-	-	-	-	34 "	
Head Stock	Shaft 1 = 5.7 m " 1 = 6.3 m	2	"	-	-	-	-	-	-		
Pipe Laying	DCP ø800 mm	1	m	-	-	-	-	-	-	29	
"	DCP ø600 mm	1	"	-	-	-	-	-	-	29	
Miscellaneous Expenses		1	set								
		1	"								
$\Sigma = (v)$											
(vi) Pump Well - The Beginning Of Distribution Main											
DCIP	ø600 - ø200 mm	13,804	kg	-	-	-	-	-	-		
Ductile Specials	"	9,583	"	-	-	-	-	-	-		
SP Specials		2,659		-	-	-	-	-	-		
Mechanical Jointing	ø800 mm	2	set	-	-	-	-	-	-	32	
"	ø600 mm	24	"	-	-	-	-	-	-	"	
"	ø500 mm	8	"	-	-	-	-	-	-	"	
Excavation		551	m ³	-	-	-	-	-	-	1 - c	
Back Filling		520	"	-	-	-	-	-	-	2 - a	
Pipe Laying	DCP ø800 mm	12	m	-	-	-	-	-	-	29	
"	" ø600 mm	112	"	-	-	-	-	-	-	"	
"	" ø500 mm	29	"	-	-	-	-	-	-	"	
"	" ø300 mm	3	"	-	-	-	-	-	-	"	
"	" ø200 mm	3	"	-	-	-	-	-	-	"	
Valve Setting	B ø800 mm	1	set	-	-	-	-	-	-	34 B	
"	B ø600 mm	1	"	-	-	-	-	-	-	" B	
Flange Jointing	ø800 mm	2	"	-	-	-	-	-	-	32-Labor	
"	ø600 mm	1	"	-	-	-	-	-	-	"	
"	ø500 mm	16	"	-	-	-	-	-	-	"	
"	ø350 mm	4	"	-	-	-	-	-	-	"	

II-4 Proposed Plant 12. Piping For Facilities

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Flange Jointing	∅300 mm	4	set	-	-	-	-	-	-	32-Labor	
"	∅200 mm	4	"	-	-	-	-	-	-	"	
Anchor Blocks	∅600 x 45°	3	pc.	-	-	-	-	-	-	38	
"	A + B	1	set	-	-	-	-	-	-	(vi) - 1	
Air Valve (Screw Type)	∅13 mm	4	"	-	-	-	-	-	-		
Nipple GS	∅13 "	4	"	-	-	-	-	-	-		
Socket GS	∅13 "	4	"	-	-	-	-	-	-		
Flow-Meter Box		1	"	-	-	-	-	-	-	28	
Miscellaneous		1	"	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Σ = (vi)											
(vi) - 1 Detail Of Anchor Blocks (A+B)											
Excavation		68.3	m ³	-	-	-	-	-	-	1 - a	
Back-Filling		37.8	"	-	-	-	-	-	-		
Wooden Pile	∅100 mm l = 3,000 mm	8	pc.	-	-	-	-	-	-	3	
Concrete Pile	300x300 Type-B l=7,000 mm	6	"	-	-	-	-	-	-	4	
Rubble Stone		7.6	m ³	-	-	-	-	-	-	9 - c	
Concrete	1 : 3 : 6	73.7	"	-	-	-	-	-	-	5 - c	
Forms	(C)	88.4	m ²	-	-	-	-	-	-	1.8kg/set	
Air Valve Box Cover	Steel t = 4.5 mm	4	set	-	-	-	-	-	-		
PVC	∅50 x 2,000 mm	4	pc.	-	-	-	-	-	-		
Sub Total											
(vii) Washing Pump - Washing Main											
DCIP	∅250 - ∅125 mm	3,298	kg	-	-	-	-	-	-		
Ductile Specials		1,089	"	-	-	-	-	-	-		
Steel Pipe Specials		189	"	-	-	-	-	-	-		
Mechanical Jointing	∅250 mm	26	set	-	-	-	-	-	-	32	
"	∅100 "	1	"	-	-	-	-	-	-	"	
Excavation		179	m ³	-	-	-	-	-	-	1 - c	
Back Filling		174	"	-	-	-	-	-	-	2 - a	

II-4 Proposed Plant 12. Piping For Facilities

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Pipe Laying	DCP ϕ 250 mm	98	m	-	-	-	-			29	
"	" ϕ 125 mm	10	"	-	-	-	-			"	
Valve Setting	ϕ 250 mm	1	set			-	-			33(A)	
Flange Jointing	ϕ 250 mm	2	"	-	-					32-Labor	
"	ϕ 125 mm	9	"	-	-					"	
Anchor Blocks	ϕ 250 Tee	1	"	-	-					36	
"	ϕ 250 x 90° - H	1	"	-	-					37	
"	ϕ 250 x 45° - H	2	"	-	-					38	
Air Valve (Screw Type)	ϕ 13 mm	2	"			-	-				
Nipple GS	ϕ 13 "	2	"	-	-			-	-		
Socket GS	ϕ 13 "	2	"	-	-			-	-		
Miscellaneous		1	set								
Expenses		1	"								
$\Sigma = (vii)$											
(viii) Surface Washing Pipe(Pump Header - Rapid Sand Filter)											
DCIP	ϕ 250 mm	158	kg			-	-	-	-		
DCIP Specials	Foreign	777	"			-	-	-	-		
Excavation		26	m ³	-	-	-	-				1 - a
Back Filling		26	"	-	-	-	-				
Mechanical Jointing	ϕ 250 mm	12	set			-	-			M + 31	
Flange Jointing	ϕ 250 mm	2	"	-	-					31-Labor	
Pipe Laying	DCP ϕ 250 mm	11	m	-	-	-	-			29	
Valve Setting	ϕ 250 mm	2	set			-	-			33 B	
Anchor Block	ϕ 250 x ϕ 250 T	1	"	-	-					36	
"	ϕ 250 x 90° B	1	"	-	-					37	
Miscellaneous		1	"								
Expenses		1	"								
$\Sigma = (viii)$											

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(ix) Elevated Tank-- Rapid Sand Filter											
Ductile CIP	∅500 mm	5,839	kg			-	-	-	-		
Ductile Specials		4,140	"			-	-	-	-		
Mechanical Jointing	∅500 mm	24	set			-	-				32
"	∅400 mm	1	"			-	-				"
Excavation		119	m ³	-	-						1 - c
Back Filling		111	"	-	-						2 - a
Pipe Laying	DCP ∅500 mm	55	m	-	-						29
Valve Setting	B ∅500 mm	2	set			-	-				34 (A)
Flange Jointing	∅500 mm	4	"	-	-						32-Labor
Flow Meter Box		1	"	-	-						26
Anchor Blocks	∅500 - Tee	2	"	-	-						36
"	∅500 x 45° - H	4	"	-	-						38
Anchor Blocks of "Part A"											
Wooden Pile	∅100 x 3,000 mm	5	pc.	-	-						
Rubble Stone		0.6	m ³	-	-						4
Concrete	1 : 3 : 6	6.3	"	-	-						9 - b
Forms	(c)	16	m ²	-	-						5 - c
Anchor Blocks of "Part B"											
Wooden Pile	∅100 x 3,000 mm	3	pc.	-	-						
Rubble Stone		0.4	m ³	-	-						4
Concrete	1 : 3 : 6	7.5	"	-	-						9 - b
Forms	(c)	20	m ²	-	-						5 - c
Miscellaneous		1	set								
Expenses		1	"								
Σ = (ix)											
Plant											
(x) Water Service Of Proposed											
Ductile CIP L < 3.0 m	∅100 x 1,479 mm	31	kg			-	-	-	-		
Steel Pipe (GS)	∅100 x 1,000 mm	2	pc.	-	-			-	-		
PVC Laying	∅100 mm	301	m	-	-						42
"	∅35 mm	28	"	-	-						"
"	∅25 mm	35	"	-	-						"

II-4 Proposed Plant 12. Piping For Facilities

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
PVC Laying	ø16 mm	4	m	-	-	-	-	-	-	42	
"	ø15 mm	60	"	-	-	-	-	-	-	"	
Ductile Specials	ø100 mm	190	kg	-	-	-	-	-	-		
Mechanical Jointing	ø100 mm	7	set	-	-	-	-	-	-		
PVC Specials		1	"	-	-	-	-	-	-		(x) - 1
Excavation		269	m ³	-	-	-	-	-	-		1 - c
Back Filling		266	"	-	-	-	-	-	-		2 - a
Pipe Laying	DCIP ø100 mm	6	m	-	-	-	-	-	-		29
Flange Jointing	ø100 mm	4	set	-	-	-	-	-	-		31-Labor
Valve Setting	ø100 mm	2	"	-	-	-	-	-	-		33-(A)
"	"	1	"	-	-	-	-	-	-		33-(B)
Angle Valve Setting	ø100 mm	1	"	-	-	-	-	-	-		33-Labor
"	ø35 mm	1	"	-	-	-	-	-	-		"
"	ø16 mm	1	"	-	-	-	-	-	-		"
"	ø15 mm	2	"	-	-	-	-	-	-		"
Angle Valve Box		5	"	-	-	-	-	-	-		30
Fire Hydrant Setting	ø100 Double	2	"	-	-	-	-	-	-		46
Steel Support	ø100 mm	2	"	-	-	-	-	-	-		
"	ø35 mm	7	"	-	-	-	-	-	-		
"	ø16 mm	2	"	-	-	-	-	-	-		
Miscellaneous		1	"	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Σ = (x)											
(x)-1 Detail Of Polyvinyl Chloride Specials											
Reducing Bushes	100 x 80 mm	3	pc.	-	-	-	-	-	-		
"	80 x 55 "	3	"	-	-	-	-	-	-		
"	55 x 40 "	1	"	-	-	-	-	-	-		
"	55 x 35 "	2	"	-	-	-	-	-	-		
"	40 x 25 "	1	"	-	-	-	-	-	-		
"	35 x 20 "	1	"	-	-	-	-	-	-		
"	20 x 15 "	1	"	-	-	-	-	-	-		
Flange Adaptors	100 "	4	"	-	-	-	-	-	-		

II-4 Proposed Plant 12. Piping For Facilities

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Flange	100 mm	6	pc.	-	-			-	-		
Tee-Branch	100 x 100 "	3	"	-	-			-	-		
"	35 x 16 "	1	"	-	-			-	-		
90°-Bend	100 "	3	"	-	-			-	-		
"	35 "	2	"	-	-			-	-		
"	15 "	2	"	-	-			-	-		
45°-Bend	100 "	1	"	-	-			-	-		
CAP	35 "	1	"	-	-			-	-		
"	25 "	1	"	-	-			-	-		
Valve Sockets	100 mm	1	"	-	-			-	-		
"	35 "	2	"	-	-			-	-		
"	16 "	2	"	-	-			-	-		
"	15 "	4	"	-	-			-	-		
90°-Elbow	35 "	1	"	-	-			-	-		
"	16 "	1	"	-	-			-	-		
Socket	100 mm	88	"	-	-			-	-		
"	35 "	8	"	-	-			-	-		
"	25 "	10	"	-	-			-	-		
"	15 "	16	"	-	-			-	-		
Σ = (x)-1											
Sub Total (i) - (x)											

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(i) Receiving Well - No.1 Manhole (Overflow Pipe)											
Ductile CIP	ø500 mm	735	kg			-	-	-	-		
Ductile Specials	ø500 mm	632	"			-	-	-	-		
Asbestos Cement Pipe	ø500 mm x 4,000 mm	2	pc.	-	-			-	-		
ACP Specials	Foreign	285	kg			-	-	-	-		
Excavation		17	m ³	-	-					1 - c	
Pipe Laying	DCIP ø500 mm	7	m	-	-	-	-			29	
"	ACP ø500 mm	8	"	-	-	-	-			"	
Flange Jointing	ø500 mm	4	set	-	-					32-Labor	
Gibault Jointing	ø500 mm	2	"	-	-						
Fitting Parts	ø500 mm	2	"	-	-						
Miscellaneous Expenses		1	"	-	-			-			
		1	"								
$\Sigma = (i)$											
(ii) Receiving Well - No.1 Manhole (Drain Pipe)											
Ductile CIP	ø350 mm	342	kg			-	-	-	-		
Ductile Specials	ø350 mm	187	"			-	-	-	-		
Asbestos Cement Pipe	ø400 mm x 4,000 mm	2	pc.	-	-			-	-		
ACP Specials	Foreign	299	kg			-	-	-	-		
Excavation		22	m ³	-	-					1 - c	
Pipe-Laying	DCIP ø350 mm	4	m	-	-	-	-			29	
"	ACP ø400 mm	8	"	-	-	-	-			"	
Valve Setting	ø350 mm	1	set			-	-			33	
Flange Jointing	ø350 mm	2	"	-	-					32-Labor	
Gibault Jointing	ø400 mm	1	"	-	-						
Miscellaneous Expenses		1	set								
		1	"								
$\Sigma = (ii)$											

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(iii) Receiving Well - Canal											
Ductile CIP	ϕ100 mm	70	kg			-	-	-	-		
Ductile Specials	ϕ100 mm	57	"			-	-	-	-		
Asbestos Cement Pipe	ϕ100 mm x 4,000 mm	4	pc.	-	-			-	-		
ACP Specials	Foreign	10	kg			-	-	-	-		
Excavation		11	m ³	-	-					1 - c	
Pipe-Laying	DCIP ϕ100 mm	5	m	-	-	-	-			29	
"	ACP ϕ100 mm	14	"	-	-	-	-			"	
Valve Setting	ϕ100 mm	1	set			-	-			33 Type-A	
Flange Jointing	ϕ100 mm	3	"	-	-					31-Labor	
Gibault Jointing	ϕ100 mm	1	"	-	-					31	
Miscellaneous Expenses		1	"								
		1	"								
Σ = (iii)											
(iv) Flash Mixing Basin - No.1 Manhole											
Asbestos Cement Pipe	ϕ150 mm x 4,000 mm	9	pc.	-	-			-	-		
DCIP Specials	ϕ150 mm	347	kg			-	-	-	-		
ACP Specials	ϕ150 mm Domestic	23	"	-	-			-	-		
"	ϕ150 mm Foreign	61	"			-	-	-	-		
Excavation		53	m ³	-	-					1 - c	
Pipe Laying	DCIP ϕ150 mm	7.6	m	-	-	-	-			29	
"	ACP ϕ150 mm	35.4	"	-	-	-	-			"	
Valve Setting	ϕ150 mm	2	set			-	-			33 Type-A	
Flange Jointing	ϕ150 mm	10	"	-	-					31-Labor	
Gibault Jointing	ϕ100 mm	6	"	-	-					31	
Miscellaneous Expenses		1	"								
		1	"								
Σ = (iv)											

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(v) No.1 Manhole - Canal											
Asbestos Cement Pipe	φ500 mm x 4,000 mm	3	pc.	-	-	-	-	-	-		
Excavation		21	m ³	-	-	-	-	-	-	1 - c	
Pipe-Laying	ACP φ500 mm	9	m	-	-	-	-	-	-	29	
Miscellaneous		1	set	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Σ = (v)											
(vi) Elevated Tank - (Overflow Pipe)											
DCIP	φ150 mm	386	kg	-	-	-	-	-	-		
DCIP Specials	φ150 mm	41	"	-	-	-	-	-	-		
Asbestos Cement Pipe	φ150 mm x 4,000 mm	2	pc.	-	-	-	-	-	-		
ACP Specials	φ150 mm Domestic	62	kg	-	-	-	-	-	-		
"	" Foreign	17	"	-	-	-	-	-	-		
Excavation		5	m ³	-	-	-	-	-	-	1 - c	
Pipe-Laying	DCIP φ150 mm	12	m	-	-	-	-	-	-	29	
"	ACP φ150 mm	7	"	-	-	-	-	-	-	"	
Flange Jointing	φ150 mm	4	set	-	-	-	-	-	-	31-Labor	
Gibault Jointing	φ150 mm	7	"	-	-	-	-	-	-	31	
Fitting Parts	φ150 mm	2	"	-	-	-	-	-	-		
Concrete Protection											
Rubble Stone		0.1	m ³	-	-	-	-	-	-		
Concrete	1 : 3 : 6	1	"	-	-	-	-	-	-		
Forms	(c)	6	m ²	-	-	-	-	-	-		
Wooden Pile	φ100 1 = 3,000 mm	2	pc.	-	-	-	-	-	-		
Miscellaneous		1	set	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Σ = (vi)											
(vii) Elevated Tank -Canal (Drain Pipe)											
Ductile CIP	φ150 mm	203	kg	-	-	-	-	-	-		

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Ductile Specials	ø150 mm	94	kg	-	-	-	-	-	-		
Asbestos Cement Pipe	ø150 mm x 4,000 mm	13	pc.	-	-	-	-	-	-		
ACP Specials	ø150 mm Domestic	64	kg	-	-	-	-	-	-		
"	ø150 mm Foreign	65	"	-	-	-	-	-	-		
Excavation		50	m ³	-	-	-	-	-	-	1 - c	
Pipe Laying	DCIP ø150 mm	8.2	m	-	-	-	-	-	-	29	
"	ACP ø150 mm	51.7	"	-	-	-	-	-	-	"	
Valve Setting	ø150 mm	1	set	-	-	-	-	-	-	33 Type A	
Flange Jointing	ø150 mm	4	"	-	-	-	-	-	-	31-Labor	
Gibault Jointing	ø150 mm	10	"	-	-	-	-	-	-	31	
Concrete Protection											
Rubble Stone		0.1	m ³	-	-	-	-	-	-		
Concrete	1 : 3 : 6	1	"	-	-	-	-	-	-		
Forms	(c)	6	m ²	-	-	-	-	-	-		
Wooden Pile	ø100 1 = 3,000 mm	2	pc.	-	-	-	-	-	-		
Miscellaneous		1	set	-	-	-	-	-	-		
Expenses		1	"	-	-	-	-	-	-		
Σ = (vii)											
(viii) Rapid Sand Filter - Manhole											
Asbestos Cement Pipe	ø500 mm x 4,000 mm	1	pc.	-	-	-	-	-	-		
"	ø600 mm x 4,000 "	18	"	-	-	-	-	-	-		
DCIP Specials	ø500 mm	319	kg	-	-	-	-	-	-		
"	ø600 mm	2,080	"	-	-	-	-	-	-		
ACP Specials	ø500 mm Foreign	747	"	-	-	-	-	-	-		
"	ø600 mm "	1,450	"	-	-	-	-	-	-		
Excavation		184	m ³	-	-	-	-	-	-	1 - c	
Pipe-Laying	ACP ø600 mm	74.9	m	-	-	-	-	-	-	29	
Mechanical Jointing	ø200 mm	2	set	-	-	-	-	-	-		
Flange Jointing	ø500 mm	5	set	-	-	-	-	-	-	32-Labor	
"	ø600 mm	10	"	-	-	-	-	-	-	"	
Gibault Jointing	ø500 mm	5	"	-	-	-	-	-	-	"	

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Gibault Jointing	∅600 mm	11	set	-	-					32-Labor	
Miscellaneous Expenses		1	"								
Σ = (viii)											
(ix) Clear Water Basin - Pump Well											
Asbestos Cement Pipe	∅200 mm x 4,000 mm	19	pc.	-	-			-	-		
DCIP	∅200 mm	191	kg			-	-	-	-		
DCIP Specials	∅200 mm	463	"			-	-	-	-		
ACP Specials	∅200 mm Domestic	550	"	-	-			-	-		
"	∅200 mm Foreign	264	"			-	-	-	-		
Excavation		679	m ³	-	-					1 - c	
Pipe Laying	DCIP ∅200 mm	6	m	-	-	-	-			29	
"	ACP ∅200 mm	77	"	-	-	-	-			"	
Valve Setting	∅200 mm	2	set			-	-			33 Type-B	
"	∅200 mm	2	"			-	-			" Shaft Length = 2.1m	
Flange Jointing	∅200 mm	10	"	-	-					31-Labor	
Gibault Jointing	∅200 mm	43	"	-	-					31	
Miscellaneous Expenses		1	"								
Σ = (ix)											
(x) Pump Well - Manhole											
Asbestos Cement Pipe	∅100 mm x 4,000 mm	1	pc.	-	-			-	-		
ACP Specials	Domestic	171	kg	-	-			-	-		
"	Foreign	17	"			-	-	-	-		
Excavation		2	m ³	-	-					1 - c	
Pipe Laying	ACP ∅100 mm	4	m	-	-	-	-			29	
Gibault Jointing	∅75 mm	4	set	-	-					31	
"	∅100 mm	3	"	-	-					"	

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set								
		1	"								
$\Sigma = (x)$											
(xi) No.2 Manhole - Manhole											
Asbestos Cement Pipe	$\phi 200$ mm x 4,000 mm	28	pc.	-	-	-	-	-	-		
DCIP Specials	$\phi 200$ mm	31	kg	-	-	-	-	-	-		
ACP Specials	$\phi 200$ mm Domestic	143	"	-	-	-	-	-	-		
"	$\phi 200$ mm Foreign	49	"	-	-	-	-	-	-		
Excavation		142	m ³	-	-	-	-	-	-	1 - c	
Pipe Laying	ACP $\phi 200$ mm	110	m	-	-	-	-	-	-	29	
Flange Jointing	$\phi 200$ mm	2	set	-	-	-	-	-	-	31-Labor	
Gibault Jointing	$\phi 200$ mm	10	"	-	-	-	-	-	-	31	
Miscellaneous Expenses		1	"								
		1	"								
$\Sigma = (xi)$											
(xii) Sedimentation Basin - No.3 Manhole											
Asbestos Cement Pipe	$\phi 200$ mm x 4,000 mm	1	pc.	-	-	-	-	-	-		
"	$\phi 300$ mm x 4,000 "	18	"	-	-	-	-	-	-		
DCIP Specials	$\phi 200$ mm	15	kg	-	-	-	-	-	-		
ACP Specials	Domestic	232	"	-	-	-	-	-	-		
"	Foreign	93	"	-	-	-	-	-	-		
Excavation		70	m ³	-	-	-	-	-	-	1 - c	
Pipe Laying	ACP $\phi 300$ mm	71.1	m	-	-	-	-	-	-	29	
Flange Jointing	$\phi 200$ mm	1	set	-	-	-	-	-	-	31-Labor	
Gibault Jointing	$\phi 200$ mm	4	"	-	-	-	-	-	-	31	
"	$\phi 300$ mm	7	"	-	-	-	-	-	-	"	

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set								
		1	"								
Σ = (xii)											
(xiii) No.4 Manhole - Lagoon											
Asbestos Cement Pipe	φ600 mm x 4,000 mm	2	pc.	-	-	-	-	-	-		
ACP Specials	Foreign	478	kg			-	-	-	-		
Excavation		22	m ³	-	-					1 - c	
Pipe-Laying	ACP φ600 mm	9	m	-	-	-	-			29	
Gibault Jointing	φ600 mm	4	set	-	-					32-Labor	
Miscellaneous Expenses		1	"								
		1	"								
Σ = (xiii)											
(xiv) Construction Pump Well											
Excavation		223	m ³	-	-					1 - c	
Back Fill		200	"	-	-	-	-				
Wooden Pile	φ100 mm l = 3,000 mm	9	pc.	-	-						
Rubble Stone		1.4	m ³	-	-					4	
Concrete	1 : 3 : 6	9.7	"	-	-					9 - 6	
"	1 : 2 : 4	9	"	-	-					9 - c	
Reinforcing	Deformed Bar	1,094	kg	-	-					8	
Forms	(B)	69	m ²	-	-					5 - b	
Staging		90	m ³	-	-					7	
Timbering		13	"	-	-					6	
Manhole Cover	t = 4.5 820 x 820 mm	1	sheet	-	-						
Steel Step	φ19mm	11	pc.	-	-						

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set								
		1	"								
Σ = (xiv)											
(xv) Construction Manhole & Concrete Open Channel											
No.1 Manhole	1.2 m x 1.2 m x H 1.05 m	1	set	-	-					24	
No.2 "	1.2 x 1.2 x 0.50	1	"	-	-					"	
No.3 "	1.2 x 1.2 x 0.55	1	"	-	-					"	
No.4 "	1.2 x 1.2 x 1.20	1	"	-	-					"	
Manhole	1.5 x 2.0 x 1.10	1	"	-	-					25	
Concrete Open Channel	B = 500 mm	82	m	-	-					19 - a	
"	B = 800 mm	147	"	-	-					19 - b	
Miscellaneous Expenses		1	set	-	-						
		1	"	-	-						
Σ = (xv)											
(xvi) Drain Pump Equipment											
Drain Pump	Q = 0.7 m ³ /m H = 6 m 2.2 kw D = 80 mm	1	set			-	-				
Accessory	φ80 mm SV	1	"			-	-				
Electric Cable	600 v EV8 -3 ^c	280	m	-	-						
"	" CVV 2 -10 ^c	280	"	-	-						
"	IV 1.6	5	"	-	-						
Conduit Tube	φ36	3	"	-	-						
"	φ28	3	"	-	-						
"	Accessory	1	set	-	-						
Normal Bend	φ36	1	"	-	-						
"	φ28	1	"	-	-						
Flexible Conduit	φ35	1	m	-	-						
Concrete Trough	70 mm wide	350	"	-	-						
Local Operation Panel	Outdoor	1	set			-	-				
Electric Works			persons	-	-						

II-4 Proposed Plant 13. Drainage Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous Expenses		1	set								
		1	"								
$\Sigma = (xvi)$											
Sub Total (i) - (xvi)											

II-4 Proposed Plant 1/4. a Lagoon

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Lagoon (Including Suction Well)											
Excavation		7,604	m ³	-	-	-	-	-	-	-	1 - c
Back Filling		58	"	-	-	-	-	-	-	-	
Wooden Piling	ϕ120 mm l = 3,000 mm	12	pc.	-	-	-	-	-	-	-	
Rubble Stone		81	m ³	-	-	-	-	-	-	-	4
Concrete	1 : 3 : 6	16	"	-	-	-	-	-	-	-	9 - b
"	1 : 2 : 4	10	"	-	-	-	-	-	-	-	9 - c
Forms	(C)	181	m ²	-	-	-	-	-	-	-	5 - c
Staging		47	m ³	-	-	-	-	-	-	-	7
Timbering		7	"	-	-	-	-	-	-	-	6
Mortar	1 : 2	1	"	-	-	-	-	-	-	-	10
Reinforcing	Deformed Bar	1,015	kg	-	-	-	-	-	-	-	8 - b
Hand Rail	ϕ1 1/4"	7	m	-	-	-	-	-	-	-	44
Manhole Cover	W = 29.5 kg/sheet	1	set	-	-	-	-	-	-	-	
Steel Step	ϕ19 mm W = 1.8 kg/p	7	pc.	-	-	-	-	-	-	-	
Stop Log (Wood)	100 x 150 x 2,100 mm	6	"	-	-	-	-	-	-	-	
Miscellaneous		1	set	-	-	-	-	-	-	-	
Expenses		1	"	-	-	-	-	-	-	-	
Sub Total				-	-	-	-	-	-	-	
b Drainage Pump Equipment											
Drain Pump	Q = 0.87 m ³ /m H=10m 3.7kw	1	set	-	-	-	-	-	-	-	
90° Bend	ϕ100 (DC, 2F)	1	"	-	-	-	-	-	-	-	
Valve Setting	ϕ100 mm sv	1	"	-	-	-	-	-	-	-	
"	ϕ100 mm check type	1	"	-	-	-	-	-	-	-	Excluding Valve Box
Local Operation Panel	Outdoor Type	1	"	-	-	-	-	-	-	-	
Electric Cable	600 v EV 22 - 3 ^c	480	m	-	-	-	-	-	-	-	
"	CVV 2 - 10 ^c	480	"	-	-	-	-	-	-	-	
"	IV 1.6	5	"	-	-	-	-	-	-	-	
Cable Head	600 V EV 22 - 3 ^c	2	set	-	-	-	-	-	-	-	
Conduit Tube	ϕ42 mm	3	m	-	-	-	-	-	-	-	
Normal Bend	"	1	set	-	-	-	-	-	-	-	
Concrete Trough	70 mm Wide	350	m	-	-	-	-	-	-	-	

II-4 Proposed Plant 1/4. b Drain Pump Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Electrician			person	-	-	-	-				
Miscellaneous Expenses		1	set								
Sub Total											
c Piping For Drainage Main											
Excavation		677	m ³	-	-	-	-				1 - c
Surplus Soil		19	"	-	-	-	-				2 - a
Pipe-Laying	ACP ϕ 150 mm C-15	610	m	-	-	-	-				M + 29
"	" ϕ 100 mm "	12	"	-	-	-	-				"
ACP Specials	Foreign	173	kg	-	-	-	-				
"	Domestic	229	"	-	-	-	-				
Gibault Jointing	ϕ 150 mm	39	set	-	-	-	-				31
"	ϕ 100 "	16	"	-	-	-	-				"
Valve Setting	ϕ 150 " SV	1	"	-	-	-	-				33 Type-B
"	ϕ 100 "	2	"	-	-	-	-				" "
Asphalt Cutting		10	m	-	-	-	-				43
Repair Of Pavement		3	m ²	-	-	-	-				16 - b
Miscellaneous Expenses		1	set								
Sub Total											

II-4 Proposed Plant 15. a Generator Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		364	m ²	-	-						
Inking Line		288	"	-	-						
Exterior Staging		448	"	-	-						
Scaffolding Incline		15	m	-	-						
Interior Staging		288	m ²	-	-						
Σ = (i)											
(ii) Earth Works											
Excavation		363	m ³	-	-	-	-				1 - a
Back Filling		284	"	-	-	-	-				2 - a
Surplus Soil		79	"	-	-	-	-				4
Rubble Stone		2	"	-	-						
Ballast		4	"	-	-						
Σ = (ii)											
(iii) Concrete Pile Works											
Pile	φ180 ^{mm} = 8.0 ^m	24	pc.	-	-						
Σ = (iii)											
(iv) Concrete Works											
Level Concrete	1 : 3 : 6	2.6	m ³	-	-						9 - b
Concrete	1 : 2 : 4	86.6	"	-	-						9 - c
Forms	(c)	514	m ²	-	-						5 - a
Σ = (iv)											
(v) Reinforcing Works											
Round Bar		3.17	Ton	-	-						8 - a
Deformed Bar		5.06	"	-	-						8 - c
Σ = (v)											
(vi) Masonry Works											
Brick		227	m ²	-	-						50
Σ = (vi)											

II-4 Proposed Plant 15, a Generator Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(vii) Carpentry											
Structural Wood		23.43	m ³	-	-	-	-	-	-		
Fixture Wood		1.01	"	-	-	-	-	-	-		
Supplementary Wood		1	set	-	-	-	-	-	-		
Nails, Hardware		1	"	-	-	-	-	-	-		
Carpenter			person	-	-	-	-	-	-		
Assistant			"	-	-	-	-	-	-		
Σ = (vii)				-	-	-	-	-	-		
(viii) Metal Fabrication											
Wire Net		144	m ²	-	-	-	-	-	-		
Hoist Rail	I 250x125x7.5x12.5	37	m	-	-	-	-	-	-		
Steel Plate	CH.PL 4.5	91	m ²	-	-	-	-	-	-		
Σ = (viii)				-	-	-	-	-	-		
(ix) Plastering											
Concrete Finish	Floor	354	m ²	-	-	-	-	-	-		
Mortar Finish	H = 100 Plinth	68	m	-	-	-	-	-	-		
"	Wall	523	m ²	-	-	-	-	-	-		
"	Column	29	"	-	-	-	-	-	-		
"	Beam	190	"	-	-	-	-	-	-		
Window Frame Mortar		180	m	-	-	-	-	-	-		
Σ = (ix)				-	-	-	-	-	-		
(x) Wood Fixtures											
Double Swing Door	3,000 x 4,000	3	set	-	-	-	-	-	-		
" Window	1,800 x 3,000	10	"	-	-	-	-	-	-		
Σ = (x)				-	-	-	-	-	-		
(xii) Painting											
Oil Stain		414	m ²	-	-	-	-	-	-		
Vinyl Painting		768	"	-	-	-	-	-	-		
Σ = (xii)				-	-	-	-	-	-		
(xiii) Other Works											

II-4 Proposed Plant 15. ab Generator Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Corrugated Slate Roof		829	m ²	-	-						
Roof Ridge		49	m	-	-						
Flat Sheet		80	m ²	-	-						
Σ = (xiii)											
(xiv) Ventilation Works											
Ventilating Fan	φ400 ^{mm} x 260 W	8	set	-	-						
Σ = (xiv)											
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total											
b Piping Works											
Pipe (PVC)	100 mm	24	m	-	-						
" (")	50 "	3	"	-	-						
" (")	20 "	5	"	-	-						
90° Elbow (")	100 "	2	set	-	-						
" " (")	50 "	1	"	-	-						
" " (")	20 "	5	"	-	-						
Angle Seat Valve (FC)	50 "	1	"	-	-						
" " " "	20 "	3	"	-	-						
Tee (PVC)	100 " x 50 mm	2	"	-	-						
Reducer (GS)	100 " x 50 "	1	"	-	-						
Flange (SP)	100 "	6	"	-	-						
" (")	50 "	2	"	-	-						
" (")	20 "	7	"	-	-						
Flange Plug (GS)	50 "	2	"	-	-						
P. V. C. Pipe	φ15	7	m	-	-						
Coupling		1	set	-	-						
Gate Valve	15 GV	1	"	-	-						
Wash Basin	L - 220P	1	"	-	-						
P. V. C. Pipe	φ 100	9	m	-	-						
" Special	Y 100 x 50	1	piece	-	-						

II-4 Proposed Plant 15. bc Generator Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
P. V. C. Special	bend ϕ 100	2	piece	-	-						
Drain Metal Fitting	50T - 5A	1	set	-	-						
Slop Sink	COA - 100	1	"	-	-						
Cess Pool	450 x 450	1	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub Total											
c Lighting Works											
Electrical Wire	#15	150	m	-	-						
"	#14	500	"	-	-						
"	#12	5	"	-	-						
Conduit Tube	19 mm	210	m	-	-						
"	25 "	90	"	-	-						
"	51 "	6	"	-	-						
Accessories		1	set	-	-						
Concrete Box	102 x 102 x 54	24	"	-	-						
Tumbler Switch	300 V 1P 10 A x 2	4	"	-	-						
"	" x 3	1	"	-	-						
Socket Outlet	250 V 3P 20 A	19	"	-	-						
Distribution Board	L-1	1	"	-	-						
"	L-2	1	"	-	-						
Lighting Fixture	C FL 40 W x 2	21	"	-	-						
"	G FL 40 W x 1	3	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub Total											

II-4 Proposed Plant 15. d Generator Room

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
d Generator Base											
Excavation		130	m ³	-	-	-	-			1 - a	
Surplus Soil		53	"	-	-	-	-			2 - a	
Back Filling		77	"	-	-	-	-				
Concrete Piling		24	pc.	-	-						
Rubble Stone		1.40	m ³	-	-					4	
Level Concrete	1 : 3 : 6	1.40	"	-	-					9 - b	
Concrete	1 : 2 : 4	56.30	"	-	-					9 - c	
Forms	(c)	87	"	-	-					5 - c	
Reinforcing	Deformed Bar	1.376	kg	-	-					8	
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total											

II-4 Proposed Plant 16. a Sub-Station

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Sub-Station											
Service Insulator		3	sets			-	-	-	-		
Single Pole Disconnecting Switch	(12 KV 600 A)	6	"			-	-	-	-		
Lighting Arrester	(14 KV)	3	"			-	-	-	-		
Oil Circuit Breaker	(12 KV 600 A 1,000 MVA)	1	"			-	-	-	-		
Power Fuse	(12 KV 61)	3	"			-	-	-	-		
Instrument Transformer	(63 11000 : 110 V)	1	"			-	-	-	-		
Current Transformer	(11.5 KV 30 : 5 A)	3	"			-	-	-	-		
Power Transformer	63 500 KVA 11 KV/380 V	1	"			-	-	-	-		
Iron Pole	40	1	"	-	-	-	-	-	-		
Concrete Foundation		1	"	-	-	-	-	-	-		67
Overhead Ground Wire		1	"	-	-	-	-	-	-		
Electric Cable	600 ^V EV 600 ^H -1 ^C	72	m	-	-	-	-	-	-		
"	" 14 ^H -2 ^C	15	"	-	-	-	-	-	-		
"	" 3.5 ^H -3 ^C	12	"	-	-	-	-	-	-		
"	" CVV 2 ^H -2 ^C	72	"	-	-	-	-	-	-		
"	" CVVS 5.5 ^H -3 ^C	22	"	-	-	-	-	-	-		
"	" 3.5 ^H -4 ^C	22	"	-	-	-	-	-	-		
Electric Wire	IV 100 ^H	20	"	-	-	-	-	-	-		
Cable Head	600 ^V EV 600 ^H -1 ^C	8	set	-	-	-	-	-	-		
"	" 14 ^H -2 ^C	2	"	-	-	-	-	-	-		
Pipe (GS)	6200 mm	1	m	-	-	-	-	-	-		
Conduit Tube	636 mm	5	"	-	-	-	-	-	-		
"	628 mm	13	"	-	-	-	-	-	-		
"	622 mm	5	"	-	-	-	-	-	-		
90° Elbow	6200 mm	1	set	-	-	-	-	-	-		
Normal Bend	636 mm	1	"	-	-	-	-	-	-		
"	628 mm	4	"	-	-	-	-	-	-		
Conduit Tube	Accessories	1	"	-	-	-	-	-	-		
Earth Plate	600 x 600 x 1.6 ^t	1	"	-	-	-	-	-	-		
Concrete Trough	150 mm wide	5	m	-	-	-	-	-	-		
"	70 "	5	"	-	-	-	-	-	-		
Electrician			person	-	-	-	-	-	-		
Earth Construction Laborer			"	-	-	-	-	-	-		

II-4. Proposed Plant 16. b Generator

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Miscellaneous		1	set	-	-						
Expenses		1	"								
Sub Total											
b Generator											
Generator	420 ^V 50 HZ 500 KVA	1	set			-	-	-	-		
Diesel Engine	600 PS Over	1	"			-	-	-	-		
Starter & Exciter Panel		1	"			-	-	-	-		
Engine Accessories		1	"			-	-	-	-		
Electric Cable	600 ^V EV 600 ^H -1 ^C	110	m	-	-	-	-	-	-		
"	" 38 ^H -4 ^C	25	"	-	-	-	-	-	-		
"	" 38 ^H -3 ^C	24	"	-	-	-	-	-	-		
"	" 3.5 ^H -3 ^C	24	"	-	-	-	-	-	-		
"	600 ^V CVV 2 ^H -10 ^C	27	"	-	-	-	-	-	-		
"	" 2 ^H -2 ^C	12	"	-	-	-	-	-	-		
Electric Wire	600 ^V IV 1.6 mm	24	"	-	-	-	-	-	-		
Cable Head	600 ^V EV 600 ^H -1 ^C	16	set	-	-	-	-	-	-		
"	" 38 ^H -4 ^C	2	"	-	-	-	-	-	-		
"	" 38 ^H -3 ^C	4	"	-	-	-	-	-	-		
Pipe (GS)	∅200 mm	4	m	-	-	-	-	-	-		
Conduit Tube	∅54 mm	6	"	-	-	-	-	-	-		
"	∅28 mm	25	"	-	-	-	-	-	-		
"	∅22 mm	2	"	-	-	-	-	-	-		
90° Elbow	∅200 mm	1	set	-	-	-	-	-	-		
Normal Bend	∅54 mm	2	"	-	-	-	-	-	-		
"	∅28 mm	3	"	-	-	-	-	-	-		
Conduit Tube Accessories		1	"	-	-	-	-	-	-		
Electrician			person	-	-	-	-	-	-		
Miscellaneous		1	set	-	-						
Expenses		1	"								
Sub Total											

II-4 Proposed Plant 16. c Power Center

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
c Power Center											
Incoming Panel		1	set			-	-	-	-		
Feeder Panel		1	"			-	-	-	-		
Bus Tie Panel		1	"			-	-	-	-		
Battery Panel		1	"			-	-	-	-		
Electric Cable	600 ^V EV 250 ^H -1 ^C	200	m	-	-			-	-		
" "	" 80 ^H -4 ^C	180	"	-	-			-	-		
" "	" 60 ^H -4 ^C	260	"	-	-			-	-		
" "	" 14 ^H -4 ^C	230	"	-	-			-	-		
" "	" 8 ^H -4 ^C	465	"	-	-			-	-		
" "	" 35 ^H -4 ^C	135	"	-	-			-	-		
" "	CVV 2 ^H -10 ^C	260	"	-	-			-	-		
" "	IV 14 ^H	10	"	-	-			-	-		
Cable Head	600 ^V EV 250 ^H -1 ^C	8	set	-	-			-	-		
" "	" 80 ^H -4 ^C	2	"	-	-			-	-		
" "	" 60 ^H -4 ^C	2	"	-	-			-	-		
" "	" 14 ^H -4 ^C	8	"	-	-			-	-		
Concrete Trough	70 mm wide	341	m	-	-			-	-		
"	250 " "	385	"	-	-			-	-		
Drain Pipe	∅100 Class "A _{II}	206	"	-	-			-	-		
ACP Pipe	∅400 Class "15 _{II}	84	"	-	-			-	-		
Earth Plate	600 x 600 x 1.6 ^t	1	set	-	-			-	-		
Electrician			person	-	-	-	-				
Earth Construction Laborer			"	-	-	-	-				
Miscellaneous		1	set	-	-						
Expenses		1	"								
Sub Total											

II-4 Proposed Plant 17. a Office

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		694	m ²	-	-						
Inking Line		694	"	-	-						
Exterior Staging		795	"	-	-						
Scaffolding Incline		118	"	-	-						
Interior Staging		694	"	-	-						
Σ = (i)											
(ii) Earth Works											
Excavation		1,434	m ³	-	-						1 - c
Back Filling		1,387	"	-	-						2 - a
Surplus Soil		47	"	-	-						2 - a
Banking		447	"	-	-						2 - a
Rubble Stone		77	"	-	-						4
Ballast		15	"	-	-						
Σ = (ii)											
(iii) Piling											
Concrete Pile	∅180 mm l = 8 m	152	pc.	-	-						
Σ = (iii)											
(iv) Concrete Works											
Level Concrete	1 : 3 : 6	15	m ³	-	-						9 - b
Concrete	1 : 2 : 4	351	"	-	-						9 - c
Forms	C	3,345	m ²	-	-						5 - c
Chiselled Finish		72	"	-	-						
Σ = (iv)											
(v) Reinforcing Works											
Round Bar		18.07	Ton	-	-						8
"		2.97	"	-	-						"
Deformed Bar		25.58	"	-	-						"
Σ = (v)											

II-4 Proposed Plant 17. a Office

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(vi) Masonry Works Brick Σ = (vi)		357	m ²	-	-						50
(vii) Water Proofing Works Mortar Finishing Σ = (vii)	Water Proof	765	m ²	-	-						10 - c
(viii) Tiling Tile Σ = (viii)	Color	31	m ²	-	-						
(ix) Carpentry Structural Wood Fixture Wood Supplementary Wood Hardware Carpenter Assistant Σ = (ix)		20.9	m ³	-	-			-	-		
		4.4	"	-	-			-	-		
		1	set	-	-			-	-		
		1	"	-	-			-	-		
			person	-	-	-					
			"	-	-	-					
(x) Metal Fabrication Rain Drain " " " Flower Bed Drain Decorated Pots Wood Brackets Wire Mesh Σ = (x)	∅100 mm ∅100 mm Chain l = 2,700 mm Vinyl Pipe ∅100 mm " ∅100 mm	13 2 13 26 7	set set " m m	- - - - -	- - - - -						
		4	set	-	-						
	For Ceiling	408	m ²	-	-						
		5	m ²	-	-						
(xi) Plastering Artificial Stone Wet Brush Texturing	Roof Projection	590	m ²	-	-						60

II-4 Proposed Plant 17. a Office

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Wet Brush Coping	Roof Projection	283	m	-	-					52	
"		40	"	-	-					"	
"		11	"	-	-					"	
Artificial Stone Ground Finish		707	m ²	-	-					59	
"	Stair	28	"	-	-					"	
Mortar Finish	Bridge Board	4	"	-	-					51	
"	Plinth	392	m	-	-					"	
"	Wall	86	m ²	-	-					55	
Chiselled Finish	Column	12	"	-	-						
Ground "	"	60	"	-	-						
Silaraeng		233	"	-	-					64	
Window Frame Mortar		353	m	-	-					53	
Artificial Stone Grind Finish	Plinth	121	m	-	-					59	
Mortar Finishing	Wall	264	"	-	-					55	
"	Column	46	"	-	-					51	
"	Ceiling	29	"	-	-					"	
"	Beam	13	"	-	-					"	
Artificial Stone Wet Brush Texturing		3	"	-	-					60	
Level Mortar		31	m ²	-	-					63	
$\Sigma = (xi)$											
(xii) Wood Fixtures											
WD-1 Double Swing Door		2	set	-	-						
WD-2 "		10	"	-	-						
WD-3 "		9	"	-	-						
WD-4 Single Swing Door		2	"	-	-						
WD-5 Screen Door		2	"	-	-						
W -1 Pivoted Window		2	"	-	-						
W -2 "		2	"	-	-						
W -3 "		2	"	-	-						
$\Sigma = (xii)$											
(xiii) Glazing											
Clear Glass		63	m ²	-	-						

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
$\Sigma = (xiii)$											
(xiv) Painting											
Oil Paint	Wood	630	m ²	-	-						
Vinyl Paint	Mortar	835	"	-	-						
$\Sigma = (xiv)$											
(xv) Other Works											
Corrugated Slate	Roof	456	m ²	-	-						
"	Roof Ridge	60	m	-	-						
Sound Absorbing Finish	Ceiling	372	m ²	-	-						
Planking	Wall	99	"	-	-						
Folding Door		1	set	-	-					65	
$\Sigma = (xv)$											
Miscellaneous		1	set	-	-						
Expenses		1	set	-	-						
Sub Total				-	-						
b Plumbing Works											
Wash Basin	L-220D	4	set	-	-						
Urinal	U-.37	4	"	-	-						
Closet	C-375 UF	4	"	-	-						
Sink	SK-73	5	"	-	-						
P. V. C	ø35 mm	16	m	-	-						
"	ø25 "	10	"	-	-						
"	ø20 "	55	"	-	-						
Coupling & Support		1	set	-	-						
Gate Valve	ø32 mm	1	"	-	-						
"	ø25 mm	1	"	-	-						
P. V. C	ø80 mm	12	m	-	-						
"	ø50 "	57	"	-	-						
"	ø35 "	8	"	-	-						

II-4 Proposed Plant 17. b Plumbing Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Coupling		1	set	-	-						
P. V. C	∅100 x 1,600 mm	4	pc.	-	-						
"	∅100 x 1,000 "	4	"	-	-						
"	∅ 75 x 1,000 "	2	"	-	-						
"	∅ 75 x 600 "	1	"	-	-						
"	LY 100 x 75	4	"	-	-						
"	LY 75 x 50	4	"	-	-						
"	TY 100 x 75	2	"	-	-						
"	T 100 x 50	1	"	-	-						
"	T 75 x 50	1	"	-	-						
"	Bend 100	2	"	-	-						
"	" 75	2	"	-	-						
Coupler		1	set	-	-						
Lead Pipe	75 LP	9	m	-	-						
"	50 LP	9	"	-	-						
"	30 LP	18	"	-	-						
Coupler		1	set	-	-						
Support		1	"	-	-						
Drain Metal Fitting	50T - 5A	2	"	-	-						
Slop Sink	CoA-100	1	"	-	-						
"	CoA- 75	3	"	-	-						
"	CoA- 50	4	"	-	-						
Concrete Pipe	∅100	2	pc.	-	-						
Coupler		1	set	-	-						
Cess Pool	450 x 450	2	"	-	-						
Permeation Pit	∅800 x 1,800 P	2	"	-	-						
Galvanized S.P	∅20 mm	39	m	-	-						
Coupling & Support		1	set	-	-						
Y- Spring Tap	3/8 x 1/2	6	"	-	-						
Collector	6 kg/H	1	"	-	-						
Metal Fitting		1	"	-	-						
Miscellaneous Works		1	"	-	-						
Miscellaneous Expenses		1	"	-	-						
Sub Total											

II-4 Proposed Plant 17. c Lighting Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
c Lighting Works											
Electric Wire	#15	970	m	-	-						
"	#14	1,850	"	-	-						
"	#10	15	"	-	-						
Conduit Tube	19 mm	450	"	-	-						
"	25 "	300	"	-	-						
"	31 "	46	"	-	-						
"	75 "	10	"	-	-						
Accessory		1	set	-	-						
Concrete Box	102 x 102 x 54	105	"	-	-						
Tumbler Switch	300 V 1P 10A	16	"	-	-						
"	" 10A x 2	1	"	-	-						
"	" 10A 3W	8	"	-	-						
"	" 10A 4W	2	"	-	-						
Socket Outlet	250 V 3P 20A	28	"	-	-						
Ceiling Fan	ø90 80W	14	"	-	-						
Telephone Outlet Box	Plate	4	"	-	-						
Distribution Board	L-1	1	"	-	-						
Lighting Fixture	CFL 40W x 2	34	"	-	-						
"	GFL 40W x 1	16	"	-	-						
"	HIL 60W	4	"	-	-						
Fitting		1	"	-	-						
Earth Connection		1	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub Total				-	-						

II-4 Proposed Plant 18. a Ware House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		41	m ²	-	-						
Inking Line		40	"	-	-						
Exterior Staging		209	"	-	-						
Scaffolding Incline		9	m	-	-						
Interior Staging		40	m ²	-	-						
Σ = (i)				-	-						
(ii) Earth Works											
Excavation		159	m ³	-	-						1-c
Back Filling		153	"	-	-						2-a
Surplus Soil		6	"	-	-						2-a
Balloon		1	"	-	-						
Σ = (ii)				-	-						
(iii) Concrete Works											
Level Concrete	1 : 3 : 6	1	m ³	-	-						9-b
Concrete	1 : 2 : 4	16	"	-	-						9-c
Forms	(c)	89	m ²	-	-						5-c
Σ = (iii)				-	-						
(iv) Reinforcing Works											
Round Bar		0.611	Ton	-	-						8
Deformed Bar		1.384	"	-	-						8
Σ = (iv)				-	-						
(v) Masonry Works											
Brick		40	m ²	-	-						
Σ = (v)				-	-						
(vi) Carpentry											
Structural Wood		2.19	m ³	-	-			-	-		
Fixture Wood		0.33	"	-	-			-	-		
Supplementary Wood		0.10	"	-	-			-	-		
Nails, Hardware	11 kg	1	"	-	-			-	-		

II-4 Proposed Plant 18. a Warehouse

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Carpenter			person	-	-	-	-				
Assistant			"	-	-	-	-				
Σ = (vi)											
(vii) Plastering											
Concrete Finishing		72	m ²	-	-						
Mortar Finishing	Wall	90.3	"	-	-						
"	Plinth H = 100	19.6	m	-	-						
"	Column	5.8	m ²	-	-						
"	Beam	23.6	"	-	-						
	Plinth H = 200	19.2	"	-	-						
Window Frame Mortar		12	m	-	-						
Σ = (vii)											
(viii) Wood Fixtures											
Single Swing Window	900 x 1.600	4	set	-	-						
Σ = (viii)											
(ix) Painting											
Oil Stain		105.8	m ²	-	-						
Σ = (ix)											
(x) Other Works											
Corrugated Slate Roof		94.9	m ²	-	-						
Roof Ridge		13	m	-	-						
Steel Shutter	12.22 m ²	2	set	-	-						
Σ = (x)											
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total											

II-4 Proposed Plant 18. b Ware

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
b Lighting Works											
Electric Wire	#15	21	m	-	-						
"	#14	21	m	-	-						
Conduit Tube	19 mm	20	"	-	-						
"	31 mm	3	"	-	-						
Accessory		1	set	-	-						
Concrete Box	102 x 102 x 54	4	"	-	-						
Tumbler Switch	300 V 1P 10A	2	"	-	-						
Distribution Board		1	"	-	-						
Lighting Fixture	CFL 40W x 2	4	"	-	-						
Fitting		1	set	-	-						
Earth Connection		1	"	-	-						
Miscellaneous		1	"	-	-						
Expenses		1	"	-	-						
Sub Total				-	-						

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a Structure											
(i) Temporary Works											
Leveling		552	m ²	-	-	-	-				
Inking Line		1,025	"	-	-	-	-				
Exterior Staging		2,123	"	-	-	-	-				
Scaffolding Incline		93	"	-	-	-	-				
Interior Staging		1,025	"	-	-	-	-				
Σ = (i)											
(ii) Earth Works											
Excavation		1,000	m ³	-	-	-	-				1-c
Back Filling		950	"	-	-	-	-				2-a
Surplus Soil		50	"	-	-	-	-				2-a
Gravel		10	"	-	-	-	-				
Rubble Stone		18	"	-	-	-	-				4
Σ = (ii)											
(iii) Concrete Works											
Level Concrete	1 : 3 : 6	27	m ³	-	-	-	-				9-b
Concrete	1 : 2 : 4	130	"	-	-	-	-				9-c
Forms	(c)	1,650	m ²	-	-	-	-				5-c
Σ = (iii)											
(iv) Reinforcing Works											
Round Bar		15	Ton	-	-	-	-				8
Σ = (iv)											
(v) Masonry Works											
Brick		1,117	m ²	-	-	-	-				50
Σ = (v)											
(vi) Carpentry											
Structural Wood		53	m ³	-	-	-	-				
Fixture Wood	Hard	12	"	-	-	-	-				
"	Rowan	15	"	-	-	-	-				

II-4 Proposed Plant 19. a Lodging House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
"	Plywood	1	m ²	-	-	-	-	-	-		
Supplementary Wood			set	-	-	-	-	-	-		
Nails, Hardware		1	"	-	-	-	-	-	-		
Carpenter			person	-	-	-	-	-	-		
Assistant			"	-	-	-	-	-	-		
Σ = (vi)											
(vii) Plastering											
Mortar Finishing	Floor	800	m ²	-	-	-	-	-	-		
"	Wall	950	"	-	-	-	-	-	-		
"	Colum	120	"	-	-	-	-	-	-		
"	Beam	230	"	-	-	-	-	-	-		
Window Frame Mortar		530	m	-	-	-	-	-	-		
Σ = (vii)											
(viii) Wood Fixtures											
WD-1 Single Swing Door		33	set	-	-	-	-	-	-		
WD-2 "		33	"	-	-	-	-	-	-		
WD-4 "		21	"	-	-	-	-	-	-		
WD-5 "		1	"	-	-	-	-	-	-		
W-1 Single Swing Door		9	"	-	-	-	-	-	-		
W-2 "		107	"	-	-	-	-	-	-		
W-3 "		13	"	-	-	-	-	-	-		
W-4 "		13	"	-	-	-	-	-	-		
Σ = (viii)											
(ix) Glazing											
Clear Glass	T = 5 mm	110	m ²	-	-	-	-	-	-		
Σ = (ix)											
(x) Painting											
Oil Stain		3,280	m ²	-	-	-	-	-	-		
Vinyl Paint		2,680	"	-	-	-	-	-	-		
Σ = (x)											
(xi) Other Works											

II-4 Proposed Plant 19.a Lodging House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Corrugated Slate	Roof	741	m ²	-	-						
"	Roof Ridge	68	"	-	-						
Lauan Flooring	T = 20	570	"	-	-						
Decorated Plywood	T = 4	900	"	-	-						
Hand Rail	H = 1,000	94	m	-	-						
Flower Box		11	set	-	-						
Σ = (xi)											
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total				-	-						
b Plumbing Works											
Wash Basin	L-220D	11	set	-	-						
Closet	C-375 VF D Tank	11	"	-	-						
Urinal	U-37	11	"	-	-						
Shower Set	TB-110 C GRLY	11	"	-	-						
Swing Cock	F130 ARY-13	11	"	-	-						
P.V.C. Pipe	∅50 mm	84	m	-	-						
"	∅25 "	169	"	-	-						
"	∅20 "	414	"	-	-						
Coupling & Support		1	set	-	-						
Gate Valve	25 GV (Box)	11	"	-	-						
"	15 GV	11	"	-	-						
P.V.C. Pipe	∅80 mm	55	m	-	-						
"	∅50 "	271	"	-	-						
Coupling		1	set	-	-						
P.V.C. Pipe	100 x 1000 mm	22	pc.	-	-						
"	100 x 300 "	11	"	-	-						
"	75 x 1,600 "	16	"	-	-						
"	75 x 1,000 "	22	"	-	-						
"	75 x 600 "	11	"	-	-						
Specials	TY 100	11	"	-	-						
"	TY 75	11	"	-	-						

II-4 Proposed Plant 19. b,c Lodging House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
"	Y 100 x 75	11	"	-	-						
"	LY 100 x 75	11	"	-	-						
"	LY 75	11	"	-	-						
"	Bend 100	22	"	-	-						
"	Bend 75	22	"	-	-						
Coupler		1	set	-	-						
Support		11	"	-	-						
Drain Metal Fittings	50T-5B	11	"	-	-						
"	50T-5A	11	"	-	-						
Slop Sink	COA 100	11	"	-	-						
"	COA 50	11	"	-	-						
Concrete Pipe	100	41	pc.	-	-						
Coupling		1	set	-	-						
Cess Pool	450 x 450	11	"	-	-						
Permeation Pit	ø800 x 1,800 D	3	"	-	-						
Galvanized S.P	ø20 mm	158	m	-	-						
Coupling & Support		1	set	-	-						
Gas Cock	1/2"	11	"	-	-						
Y Spring Tap	3/8 x 1/2"	11	"	-	-						
Pressure Control Equipment		11	"	-	-						
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub Total											
C Lighting Works											
Electric Wire	#15	3,023	m	-	-						
"	#14	2,070	"	-	-						
"	#10	44	"	-	-						
"	#2	7	"	-	-						
Electric Cable	EV 3C-#10	393	"	-	-						
Conduit Tube	19 mm	1,857	"	-	-						
"	25 "	200	"	-	-						
"	31 "	133	"	-	-						

II-4 Proposed Plant 19. c Lodging House

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
"	63 "	98	"	-	-						
"	75 "	5	"	-	-						
Accessory		1	set	-	-						
Concrete Box	102 x 102 x 54	155	"	-	-						
Tumbler Switch	300 V 1P 10A	87	"	-	-						
"	" 10A x 3W	92	"	-	-						
Socket Outlet	250V 3P 20A	110	"	-	-						
Telephone Outlet Box	102 x 102 x 54	11	"	-	-						
Distribution Board	L	11	"	-	-						
"	M-L	1	"	-	-						
Integrating Watt Meter	Ø1 3W 30A	11	"	-	-						
Lighting Fixture	H IL 60W	22	"	-	-						
"	I IL 60W	22	"	-	-						
"	J IL 100W	55	"	-	-						
"	K IL 60W	11	"	-	-						
Lighting Fixture	L IL 100W	24	set	-	-						
Hand Hole	600 x 600 x 900	3	"	-	-						
Earth Connection		1	"	-	-						
Fitting		1	"	-	-						
Miscellaneous Works		1	"	-	-						
Miscellaneous Expenses		1	"	-	-						
Sub Total											

II-4 Proposed Plant 20. a Elevated Tank

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(i) Temporary Works											
Leveling		104	m ²	-	-						
Inking Line		312	"	-	-						
Exterior Staging		664	"	-	-						
Scaffolding Incline		27	m	-	-						
Interior Staging		312	m ²	-	-						
Σ = (i)											
(ii) Earth Works											
Excavation		450	m ³	-	-						1-c
Back Filling		380	"	-	-						2-a
Surplus Soil		70	"	-	-						2-a
Rubble Stone		10	"	-	-						4
Σ = (ii)											
(iii) Piling											
Concrete Piling	ø180 L = 8.00 ^m	30	pc.	-	-						
"	ø350 L = 8.00 ^m	4	"	-	-						
Σ = (iii)											
(iv) Concrete Works											
Level Concrete	1 : 3 : 6	10	m ³	-	-						9-b
Concrete	1 : 2 : 4	230	"	-	-						9-c
Forms		1,800	m ²	-	-						5-B
Σ = (iv)											
(v) Reinforcing Works											
Round Bar		0	Ton	-	-						8
Deformed Bar		33	"	-	-						8
Σ = (v)											

II - 4 Proposed Plant 20. Elevated Tank

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(vi) Water Proof Works Waterproof Mortar Σ = (vi)		210	m ²	-	-						
(vii) Metal Fabrication Stair Manhole C.I.P. Σ = (vii)	∅100 L = 500	1 1 1	set " "	- - -	- - -						
(viii) Plastering Mortar Finish Σ = (viii)		650	m ²	-	-						
(ix) Painting Vinyl Painting Σ = (ix)		720	m ²	-	-						
Miscellaneous Expenses		1 1	set "	- -	- -						
Sub Total				-	-						

II - 4 Proposed Plant 21 Outdoor Lighting Works

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Fluorescent Lamp	20 w x 2	3	set	-	-			-	-		
Steel Pole	H = 3.5 m	3	"	-	-			-	-		
Electric Cable	600 ^v EV 3.5 ^o - 3 ^o	224	m	-	-			-	-		
Conduit Tube	∅22	7	"	-	-			-	-		
Pull Box	150 x 100 x 100	1	set	-	-			-	-		
Conduit Tube	Accessories	1	"	-	-			-	-		
Concrete Trough	70 mm wide	80	m	-	-			-	-		
Drain Pipe	∅100 Class "A"	21	"	-	-			-	-		
Man Hole	1.2 ^m x 1.2 ^m x 1.5 ^m	4	set	-	-			-	-		
Earth Bar		3	"	-	-			-	-		
Electrician			person	-	-	-	-				
Earth Worker			"	-	-	-	-				
Miscellaneous		1	set	-	-						
Expenses		1	"	-	-						
Sub-Total											

for wiring

II - 5 Distribution Main 1-a No. 26 ~ No. 29 (Rinome Hotel ~ University)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a No. 26 ~ No. 29 (Rinome Hotel ~ University)											
Asphalt Cutting		2,088	m	-	-						43
Repair of Pavement		3,067	m ²	-	-						16
Excavation		2,522	m ²	-	-						1 - c
Surplus Soil		1,022	"	-	-	-	-				2 - a
Sand Mat		427	"	-	-						
Ductile Specials	Foreign	44	Kg			-	-	-	-		
Galvanized Pipe Laying	φ250 mm	22	m	-	-						M + 29
"	φ200 "	14	"	-	-						"
" Specials	Domestic	825	Kg	-	-			-	-		
ACP Specials	Domestic	599	"	-	-			-	-		
"	Foreign	857	"	-	-	-	-	-	-		
ACP Laying	φ250 mm C - 15	996	m	-	-						M + 29
"	φ200 " C - 15	1,424	"	-	-						"
"	φ75 " A	17	-	-	-						"
Gibault Jointing	φ300 mm	2	set	-	-						31
"	φ250 "	32	"	-	-						"
"	φ200 "	36	"	-	-						"
"	φ75 "	12	"	-	-						"
Flange Jointing	φ250 "	4	"	-	-						31 - Labor
"	φ200 "	2	"	-	-						"
Welding	φ250 "	10	"	-	-						
"	φ200 "	14	"	-	-						
Anchor Block	φ300 x φ 250 T	1	"	-	-						36
"	φ250 x φ250 T	2	"	-	-						"
"	φ200 x 90° B(H)	4	"	-	-						
"	φ200 x 45° B(H)	12	"	-	-						37
"	φ250 x 45° B(H)	6	"	-	-						38
"	φ250 x 45° B(VU)	2	"	-	-						"
"	φ250 x 45° B(VL)	2	"	-	-						"
Valve Setting	φ250 mm SV	2	set			-	-				33

II - 5 Distribution Main 1 No.29 (Rincome Hotel~ University)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Valve Setting	∅200 mm SV	1	set			-	-			33	
"	∅100 "	3	"			-	-			"	
"	∅ 75 "	2	"			-	-			"	
Air Valve Setting	∅ 75 Box	3	"							45	
Fire Hydrant Setting	∅100 mm	3	"	-	-					46	
Walling	Wood 1.6 ^m x 2.2 ^m	20	m	-	-					12	
Pump Drainage	Engine 10 PS		day	-	-					11	
Miscellaneous Expenses		1	set								
		1	"								
Sub-Total											
b Boosting Pump Equipment											
(i) Concrete Box											
Excavation		91	m ³	-	-	-	-				1 - a
Surplus Soil		21	"	-	-	-	-				2 - a
Sodding		91	m ²	-	-						15
Rubble Stone		2	m ³	-	-						4
Concrete	1 : 3 : 6	1	"	-	-						9 - b
"	1 : 2 : 4	8	"	-	-						9 - c
Forms	(c)	46	m ²	-	-						5 - C
Timbering		7	m ³	-	-						6
Reinforcing	Round Bar	937	kg	-	-						8
Steel Step	∅19 mm	5	pc.	-	-						
Barbed Wire Fence		40	m	-	-						18 - b
Manhole Cover	820 x 820 t = 4.5 mm	1	set	-	-						
Cartage Opening Cover	700 x 2,300 t = 4.5 mm	1	"	-	-						
Miscellaneous Expenses		1	set								
		1	"	-	-						
Σ = (i)				-	-						
(ii) Piping											
Asphalt Cutting		8	m	-	-						43

II - 5 Distribution Main 1-b Boosting Pump Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Repair of Pavement		13	m ²	-	-						16
Excavation		38	m ³	-	-						1 - c
Surplus Soil		12	"	-	-	-	-				2 - a
Sand Mat		6	"	-	-						
ACP Laying	φ250 mm, C - 15	28	m	-	-						M + 29
Galvanized Steel Pipe	φ125 mm	7	m	-	-						M + 29
ACP Specials	Foreign	215	kg			-	-	-	-		
Galvanized Specials	Foreign	84	"			-	-	-	-		
Gibault Jointing	φ250 mm	4	set	-	-						31
"	φ125 mm	12	"	-	-						"
Anchor Block	φ250 x φ125 T	2	"	-	-						36
ACP Laying	φ500 mm C - 15	4	m	-	-						M + 29
Miscellaneous Expenses		1	set								
		1	"								
Σ = (ii)											
(iii) Boosting Pump	φ125 mm										
Submerged Motor Pump	q=1.85m ³ /min H=10 ^m 7.5 ^{kw}	2	set			-	-				
Check Valve	φ125 mm	2	"			-	-				
Valve Setting	φ125 mm SV	4	"			-	-				
Flange Type Bend	φ125 x 90°	6	"			-	-				
Miscellaneous Expenses		1	set								
		1	"								
Σ = (iii)											
(iv) Electrical Works											
Distribution Board	Water Proof Type	1	set			-	-	-	-		
Accessory		1	"			-	-	-	-		
EV Cable	8 x 3 C	8	m	-	-						
Conduit Tube	φ28 mm	2	PC	-	-						
Normal Bend	"	2	"	-	-						

II - 5 Distribution Main 1-b Boosting Pump Equipment

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Flexible Tube	∅30 mm	2	m	-	-	-	-	-	-		
Pull Box	200 x 200 x 100 mm	1	set	-	-	-	-	-	-		
CVVS Cable	2 x 2 C	2420	m	-	-	-	-	-	-		
Concrete Trough	70 mm	350	m	-	-	-	-	-	-		
Messenger Wire	6/1.2	2420	m	-	-	-	-	-	-		
Labor			Person	-	-	-	-	-	-		
Level Meters		1	set	-	-	-	-	-	-		
Conduit Tube	∅22 mm	10	m	-	-	-	-	-	-		
Miscellaneous Expenses		1	set								
		1	"								
Σ = (iv)											
Sub-Total											

II - 5 Distribution Main 2-a No.5 ~ Bridge, Paton Water Treatment Plant ~ No.1

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a No.5~Bridge, Paton Water Treatment Plant - No.1											
Asphalt Cutting		29	m	-	-						43
Repair of Pavement		60	m ²	-	-						16
Excavation		3700	m ³	-	-						1 - C
Surplus Soil		295	"	-	-	-	-				2 - a
Sand Mat		18	"	-	-						
Ductile Pipe Laying	φ600 mm C - 3	73	m			-	-				M + 29
"	φ500 " C - 3	19	"			-	-				"
"	φ450 " C - 3	202	"			-	-				"
"	φ350 " C - 3	1776	"			-	-				"
"	φ100 " C - 3	55	"			-	-				"
Ductile Specials	Foreign	10939	kg			-	-	-	-		
ACP Laying	φ200 mm C - 15	97	m	-	-						M + 29
"	φ150 " C - 15	21	"	-	-						"
ACP Specials	Foreign	114	kg			-	-	-	-		
"	Domestic	170	"	-	-			-	-		
Mechanical Jointing	φ600 mm	14	set			-	-				M + 32
"	φ500 "	6	"			-	-				"
"	φ450 "	20	"			-	-				"
"	φ350 "	48	"			-	-				"
"	φ250 "	2	"			-	-				M + 31
"	φ200 "	2	"			-	-				"
"	φ150 "	3	"			-	-				"
"	φ100 "	12	"			-	-				"
Gibault Jointing	φ200 "	11	"	-	-						31
"	φ150 "	10	"	-	-						"
Anchor Block	φ600 x φ600 T	3	set	-	-						36
"	φ500 x φ500 T	1	"	-	-						"
"	φ350 x φ250 T	2	"	-	-						"

II - 5 Distribution Main 2-a No.5 ~ Bridge Paton Water Treatment Plant ~ No.1

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks	
				Foreign Currency		Domestic Currency		Domestic Currency				
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost			
Anchor Block	φ450 x 45° B (H)	4	set	-	-					38		
"	φ350 x 45° B (V.U)	4	"	-	-					39		
"	" " (V.L)	4	"	-	-					40		
"	φ200 x 45° B (H)	4	"	-	-					38		
Valve Installation	φ600 mm BV	2	set			-	-				33	
"	φ500 " BV	1	"			-	-				"	
"	φ450 " SV	2	"			-	-				"	
"	φ350 " SV	1	"			-	-				"	
"	φ200 " SV	1	"			-	-				"	
"	φ150 " SV	2	"			-	-				"	
"	φ100 " SV	3	"			-	-				"	
Air Valve Installation	φ 75 mm Box	2	"								45	
Fire Hydrant Installation	φ100 mm	1	"	-	-						46	
Pump Drainage	Engine 10 PS		day	-	-						11	
Walling	Wood 1.6 ^m x 2.2 ^m	24	m	-	-						12	
Road Repair Liability Payment	Road Cross Only	24	"	-	-							
Miscellaneous Expenses		1	set									
Sub-Total		1	"									
b Aqueduct												
(i) Abutment (A)												
Coffering	Trench Sheet Pile	14	m			-	-					12 - c
Excavation		26	m ³	-	-							1 - d
Surplus Soil		21	m ³	-	-							
Back Filling		5	"	-	-							2 - a
Concrete Pile	300 mm L = 8 ^m	6	pc.	-	-							

II - 5 Distribution Main 2-b Aqueduct

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Rubble Stone		2	m ³	-	-					4	
Concrete	1 : 2 : 4	20	"	-	-						a - c
Forms	(c)	35	m ²	-	-						5 - c
Reinforcing	Deformed Bar	380	kg	-	-						8 - c
Pump Drainage			day	-	-						11
Staging		30	m ³	-	-						7
Expenses		1	set	-	-						
Σ = (i)											
(ii) Pier (P ₁ , P ₂ , P ₃)											
Coffering	Steel Sheet Pile	16	m			-	-				20 - bc
Closing Dyke		36	"	-	-						20 - a
Excavation		32	m ³	-	-						1 - d
Surplus Soil		9	"	-	-	-	-				
Back Filling		23	"	-	-	-	-				2 - a
Concrete Pile	300 mm = 6 m	5	pc.	-	-						4
Rubble Stone		1.5	m ³	-	-						4
Concrete	1 : 2 : 4	14	"	-	-						9 - c
Forms	(c)	30	m ²	-	-						5 - c
Reinforcing	Deformed Bar	360	kg	-	-						8 - c
Pump Drainage			day	-	-						11
Staging		45	m ³	-	-						7
Foundation Reinforcing	Rubble	36	"	-	-						4
Expenses		1	set	-	-						
Σ = P											
Σ = (iii) P x 3											
(iii) Abutment (A ₂)											
Coffering	Trench Sheet Pile	16	m			-	-				12 - c
Excavation		45	m ³	-	-						1 - d
Surplus Soil		32	"	-	-	-	-				
Backfilling		13	"	-	-	-	-				2 - a
Staging		56	"	-	-						7
Concrete Pile	300 mm L = 8 m	6	pc.	-	-						
Rubble Stone		2.3	m ³	-	-						4
Concrete	1 : 2 : 4	30	"	-	-						9 - c

II - 5 Distribution Main 2-b Aqueduct

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency	Currency		
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Forms	(c)	48	m ²	-	-						5 - c
Reinforcing	Deformed Bar	510	kg	-	-						8 - c
Pump Drainage			day	-	-						11
Expenses		1	set								
Σ = (iii)											
(iv) Steel Box Girder											
Steel Angle	Net x 105 %	15	Ton			-	-	-	-		
Plate	" x 110 "	50	"			-	-	-	-		
Bolt & Nut	" x 250 "	0.7	"			-	-	-	-		
Cradle	" x 100 "	0.8	"			-	-	-	-		
Deck Plate	" x 103 "	3.3	"			-	-	-	-		
Processing & Assemblage	Accessories	64.5	"	-	-			-	-		
Labor	Field		person	-	-	-	-				
"	Factory		"	-	-	-	-				
Packaging		64.5	ton	-	-	-	-				
Painting	Field	1700	m ²	-	-						
Miscellaneous		1	set								
Expenses		1	"								
Σ = (iv)											
(v) Laying of Steel Pipes											
Steel Pipe	∅450 mm	139	m			-	-	-	-		
Dresser Jointing	∅450 mm	5	set			-	-	-	-		
Sleeve Jointing	∅450 mm	8	"			-	-	-	-		
Air Valve	Expose ∅75 mm	2	"			-	-	-	-		
Drain Setting	∅75 mm	2	"	-	-						30 - a
Welding Pipe	∅450 mm	139	m	-	-						35
Miscellaneous		1	set								
Expenses		1	"								
Σ = V											

II - 5 Distribution Main 2-b Aqueduct

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(vi) Temporary Works											
Staging	$200m \times 3m \times 6m$	3600	m ³	-	-						
Cable Crane Rental Fee			day	-	-			-	-		
Crane Anchor Concrete		86	m ³	-	-						
Cable Erection			person	-	-	-	-				
Miscellaneous		1	set	-	-	-	-				
Expenses		1	"	-	-						
$\Sigma = vi$											
(vii) Transportation											
10t Trailer	BKK - Chiang Mai		car	-	-			-	-		
$\Sigma = vii$				-	-			-	-		
Sub-Total											

II - 5 Distribution Main 3-a No.5 - No.8 - No.9 (Super Highway, Keo Nawarat Road)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
a No.5 - No.8 - No.9(Super Highway, Keo Nawarat Road)											
Asphalt Cutting		40	m	-	-						43
Repair of Pavement		79	m ²	-	-						16
Excavation		4,447	m ³	-	-						1 - c
Surplus Soil		348	"	-	-						2 - a
Sand Mat		9	"	-	-						
DCIP Laying	ø450mm C - 3	84	m			-	-				M + 29
"	ø400 "	1,683	"			-	-				"
"	ø350 "	582	"			-	-				"
"	ø300 "	25	"			-	-				"
"	ø150 "	14	"			-	-				"
"	ø100 "	54	"			-	-				"
DCIP Specials	Foreign	11,545	kg			-	-				
ACP Laying	ø300mm C-5	23	m			-	-				M + 29
"	ø150 "	21	"			-	-				"
ACP Specials	Domestic	160	kg			-	-				
	Foreign	210	"			-	-				
Galvanized SP Laying	ø350mm	10	m			-	-				
Galvanized Specials	Domestic	50	kg			-	-				
"	Foreign	295	"			-	-				
Mechanical Jointing	ø450mm	13	set			-	-				32
"	ø400mm	64	"			-	-				"
"	ø350mm	9	"			-	-				"
"	ø300mm	8	"			-	-				M + 31
"	ø250mm	2	"			-	-				"
"	ø150mm	9	"			-	-				"
"	ø100mm	16	"			-	-				"
Gibault Jointing	ø300mm	5	"			-	-				31
"	ø200mm	2	"			-	-				"
"	ø150mm	15	"			-	-				"
Flange Jointing	ø350mm	2	"			-	-				32 Labor
Welding	ø350mm	4	"			-	-				35
"	ø200mm	2	"			-	-				"
Valve Setting	ø450mm SV	2	set			-	-				33
"	ø400 "	1	"			-	-				"

II - 5 Distribution Main 3-a No.5 - No.8 - No.9

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Valve Setting	ø350mm SV	1	set			-	-			33	
"	ø300 "	2	"			-	-			"	
"	ø250 "	1	"			-	-			"	
"	ø200 "	2	"			-	-			"	
"	ø150 "	3	"			-	-			"	
"	ø100 "	5	"			-	-			"	
Anchor Block	ø450 x ø450 T	1	set	-	-					36	
"	ø450 x ø300 T	1	"	-	-					"	
"	ø400 x ø400 T	1	"	-	-					"	
"	ø400 x ø300 T	2	"	-	-					"	
"	ø350 x ø250 T	1	"	-	-					"	
"	ø350 x 90° B(H)	1	"	-	-					37	
"	ø450 x 45°B(H)	4	"	-	-					38	
"	ø400 x 45°B(VU)	10	"	-	-					39	
"	" B(VL)	10	"	-	-					40	
"	ø350 x 45° B(H)	1	"	-	-					38	
"	ø300 x 45° B(H)	1	"	-	-					"	
Air Valve Setting	ø75 Box	1	set							45	
Fire Hydrant Installation	ø100 mm	3	"	-	-					46	
Road Repair Liability Payment	Road Cross Only	16	m	-	-						
Miscellaneous Expenses		1	set								
		1	"								
Sub-Total											

II - 5 Distribution Main 3-b Highway Cross

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
b Highway Crossing											
Steel Pipe Shield	∅600mm	40	m			-	-				
Trench Sheet Pile	2.4 ^m x 9 ^m H = 3 ^m	22.8	m			-	-			12 - c	
"	2 ^m x 2 ^m H = 3 ^m	12	"			-	-			"	
Miscellaneous		1	set			-	-				
Expenses		1	"			-	-				
Sub-Total											

II - 5 Distribution Main 4. No.9 - No.53 - No.51 (Thung Hotel Road)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		1,991	m	-	-					43	
Repair of Pavement		3,565	m ²	-	-					16	
Excavation		2,800	"	-	-					1 - c	
Surplus Soil		1,217	"	-	-	-	-			2 - a	
Sand Mat		507	"	-	-						
DCIP Specials	Foreign	36	kg			-	-	-	-		
ACP Laying	φ300mm C-15	1,802	m	-	-					M + 29	
"	φ250mm "	151	"	-	-					"	
"	φ75mm A	4	"	-	-					"	
ACP Specials	Domestic	311	kg	-	-			-	-		
"	Foreign	550	"			-	-	-	-		
Galvanized Pipe Laying	φ300mm	12	m	-	-					M + 29	
"	φ250mm	26	"	-	-					"	
Galvanized Specials	Domestic	144	kg	-	-			-	-		
"	Foreign	762	"			-	-	-	-		
Gibault Jointing	φ300mm	17	set	-	-					31	
"	φ250mm	9	"	-	-					"	
"	φ150mm	4	"	-	-					"	
"	φ75mm	5	"	-	-					"	
Flange Jointing	φ300mm	1	set	-	-					31 - Labor	
"	φ250mm	3	"	-	-					"	
"	φ150mm	3	"	-	-					"	
Welding	φ300mm	7	set	-	-						
"	φ250mm	9	"	-	-						
"	φ200mm	2	"	-	-						
Anchor Block	φ300 x 45° B(V-U)	2	set	-	-					39	
"	" B(VL)	2	"	-	-					40	
"	φ250 x 45° B(H)	2	"	-	-					38	
"	φ300 x φ200 T	1	"	-	-						
"	φ250 x φ250 T	1	"	-	-						
"	φ250 x φ200 T	1	"	-	-						

II - 5 Distribution Main 4. No.9 - No.53 - No.51 (Thung Hotel Road)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Valve Setting	∅250 SV	1	set			-	-			33	
"	∅200 SV	2	"			-	-			"	
"	∅150 SV	1	"			-	-			"	
"	∅100 SV	1	"			-	-			"	
"	∅75 SV	1	"			-	-			"	
Fire Hydrant Installation	∅100 mm	1	"	-	-						46
Road Repair Liability Payment	Road Cross Only	22	m	-	-						
Miscellaneous Expenses		1	set								
		1	"								
Sub Total											

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		3,161	m	-	-					43	
Repair of Pavement		4,717	m ²	-	-					16	
Excavation		3,960	m ³	-	-					1 - c	
Surplus Soil		1,592	"	-	-	-	-			2 - a	
Sand Mat		673	"	-	-						
DCIP Specials	Foreign	52	kg			-	-	-	-		
ACP Laying	∅250mm C-15	2,208	m	-	-					M + 29	
"	∅200mm "	1,383	"	-	-					"	
"	∅75mm A	46	"	-	-					"	
ACP Specials	Domestic	645	kg	-	-			-	-		
"	Foreign	1,801	"			-	-	-	-		
Galvanized Pipe Laying	∅250mm	41	m	-	-					M + 29	
"	∅200mm	18	"	-	-					"	
Galvanized Specials	Domestic	387	kg	-	-			-	-		
Gibault Jointing	∅250mm	59	set	-	-					31	
"	∅200mm	78	"	-	-					"	
"	∅150mm	3	"	-	-					"	
"	∅75mm	16	"	-	-					"	
Flange Jointing	∅250mm	2	set	-	-					31 - Labor	
"	∅200mm	3	"	-	-						
Welding	∅250mm	10	"	-	-						
	∅200mm	7	"	-	-						
Anchor Block	∅250 x ∅250 T	1	set	-	-					36	
"	∅200 x ∅200 T	1	"	-	-					"	
"	∅200 x ∅150 T	1	"	-	-					"	
"	∅250 x 45° B (H)	3	"	-	-					38	
"	∅250 x 45° B (VU)	2	"	-	-					39	
"	∅250 x 45° B (VL)	2	"	-	-					40	
"	∅200 x 45° B (H)	11	"	-	-					38	

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Valve Setting	φ250 SV	2	set			-	-			33	
"	φ200 SV	2	"			-	-			"	
"	φ150 SV	2	"			-	-			"	
"	φ100 SV	6	"			-	-			"	
"	φ75 SV	4	"			-	-			"	
Air Valve Setting	φ75 Box	1	set							45	
Fire Hydrant Installation	φ100 mm	6	"	-	-					46	
Supporting Bridge		1	set	-	-					5 - (i)	
"		1	"	-	-					" (ii)	
Road Repair Liability Payment	Road Crossing Only	30	m	-	-						
Miscellaneous Expenses		1	set								
		1	"								
Sub-Total											
(i) Detail of Pipe Supporting on Bridge "A"											
Galvanized Pipe Laying	φ200mm	28	m	-	-						
" Specials	Domestic	230	kg	-	-			-	-		
ACP	"	49	"	-	-			-	-		
Hoops		10	set	-	-						
Gibault Joining	φ200mm	2	"	-	-					31	
Flange	φ200mm	2	"	-	-					31-Labor	
Welding	φ200mm	11	"	-	-						
Anchor-Block	φ200 x 45° VU	2	"	-	-					39	
"	" VL	2	"	-	-					40	
Air Valve Setting	φ75 Exposed	1	"			-	-			45	
Sub Total											

II - 5 Distribution Main 5. No.51 - No.58

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(ii) Detail of Pipe Supporting on Bridge "B"											
Galvanized Pipe Laying	φ200mm	135	m	-	-						
" Specials	Domestic	230	kg	-	-			-	-		
ACP	"	49	"	-	-			-	-		
Hoops		10	set	-	-						
Gibault Jointing	φ200mm	2	"	-	-					31	
Flange	φ200mm	2	"	-	-					31-Labor	
Welding	φ200mm	24	"	-	-						
Sleeve Joint	φ200mm	5	"			-	-				
Valve Setting	φ75mm SV	1	"	-	-	-	-			33	
Anchor Block	φ200 x 45°VU	2	"	-	-					39	
"	" VL	2	"	-	-					40	
Air Valve Setting	φ75 Exposed	1	"			-	-			45	
Sub Total											

II - 5 Distribution Main 6. No.73 - No.58

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		26	m	-	-					43	
Repair of Pavement		41	m ³	-	-					16	
Excavation		2,280	m ³	-	-					1 - c	
Surplus Soil		542	"	-	-	-	-			2 - a	
Sand Mat		396	"	-	-						
ACP Laying	∅250mm C - 15	1,924	m	-	-						M + 29
ACP Specials	Foreign	356	kg	-	-	-	-	-	-		
"	Domestic	323	"	-	-	-	-	-	-		
Galvanized Pipe Laying	∅250mm	26	m	-	-						
Galvanized Specials	Domestic	314	kg	-	-	-	-	-	-		
Gibault Jointing	∅250mm	30	set	-	-						
Flange Jointing	∅250mm	2	"	-	-						
Welding	∅250mm	10	"	-	-						
Anchor Block	∅250 x 45° B(VU)	4	"	-	-						39
"	" B(VL)	4	"	-	-						40
"	" B(H)	4	"	-	-						
Valve Setting	∅250 SV	1	"			-	-				33
"	∅100 SV	1	"			-	-				"
Fire Hydrant Installation	∅100 mm	1	"	-	-						46
Air Valve Setting	∅75mm Box	1	"								45
Walling	Wooden Plate	5	m	-	-						12
Pump Drainage	Engine 5ps.		day	-	-						11
Road Repair Liability Payment	Road Cross Only	26	m	-	-						
Miscellaneous Expenses		1	set								
		1	"								
Sub Total											

II - 5 Distribution Main 7. No.1 Existing Plant - No.73(Hang Klan Road)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		2,275	m	-	-						43
Repair of Pavement		3,505	m ²	-	-						16
Excavation		2,542	m ³	-	-						1 - c
Surplus Soil		1,092	"	-	-	-	-				2 - a
Sand Mat		422	"	-	-						
ACP Laying	φ300mm C-15	792	m	-	-						M + 29
"	φ250mm C-15	18	"	-	-						"
"	φ200mm C-15	1,349	"	-	-						"
"	φ75mm A	2	"	-	-						"
ACP Specials	Foreign	1,404	kg	-	-	-	-	-	-		
"	Domestic	444	"	-	-	-	-	-	-		
Galvanized Pipe Laying	φ300mm	30	m	-	-						M + 29
"	φ250mm	39	"	-	-						"
"	φ200mm	38	"	-	-						"
"	φ75mm	13	"	-	-						"
Galvanized Specials	Foreign	2,506	kg	-	-	-	-	-	-		
Anchor Block	φ300 x φ300 T	3	set	-	-						36
"	φ300 x 45° B(H)	4	"	-	-						38
"	φ200 x 45° B(H)	10	"	-	-						"
"	φ250 x 90° B(H)	2	"	-	-						37
"	φ250 x 45° B(H)	2	"	-	-						38
Valve Setting	φ300 SV	3	set			-	-				33
"	φ250 SV	1	"			-	-				"
"	φ200 SV	5	"			-	-				"
"	φ75 SV	2	"			-	-				"
Air Valve Setting	φ75 Box	1	set								45
Gibault Jointing	φ300mm	30	set	-	-						31
"	φ250mm	5	"	-	-						"
"	φ200mm	32	"	-	-						"
"	φ100 "	2	"	-	-						"

II - 5 Distribution Main 7. No.1 Existing Plant - No.73(Chang Klan Road)

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Gibault Jointing	ø75mm	9	set	-	-						31
Flange Jointing	ø300mm	6	"	-	-						
"	ø250mm	1	"	-	-						
"	ø200 "	14	"	-	-						
"	ø100 "	2	"	-	-						
Welding	ø300 "	14	"	-	-						
"	ø250 "	13	"	-	-						
"	ø200 "	31	"	-	-						
Road Repair Liability Payment	Road Crossing Only	100	m	-	-						
Miscellaneous Expenses		1	set								
		1	"								
Sub Total											

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		1,415	m	-	-					43	
Repair of Pavement		3,264	m ²	-	-					16	
Excavation		5,323	m ³	-	-					1 - c	
Surplus Soil		1,174	"	-	-	-	-			2 - a	
Sand Mat		1	"	-	-						
DCIP Laying	ø500mm	1,738	m			-	-			M + 29	
"	ø350mm	531	"			-	-				
ACP Laying	ø200mm C - 15	3	m	-	-					M + 29	
"	ø150mm "	8	"	-	-					"	
ACP Specials	Foreign	156	kg			-	-				
"	Domestic	31	"	-	-	-	-				
Galvanized Pipe Laying	ø200mm	10	m	-	-					M + 29	
Galvanized Specials	Foreign	113	kg			-	-				
DCIP Specials	Foreign	13,092	"			-	-				
Mechanical Jointing	ø500mm	62	set			-	-			32	
"	ø400 "	2	"			-	-			"	
"	ø350 "	26	"			-	-			M + 31	
"	ø200 "	4	"			-	-			M + 31	
"	ø150 "	1	"			-	-			"	
Gibault Jointing	ø200mm C - 15	4	"	-	-					31	
"	ø150 " "	7	"	-	-					"	
Flange Jointing	ø200mm	1	"	-	-					31 Labor	
Welding Jointing	ø200 "	4	"	-	-						
Anchor Block	ø500 x ø350 T	1	set	-	-					36	
"	ø350 x 90° B	1	"	-	-					37	
"	ø500 x 45° B(H)	28	"	-	-					38	
"	ø350 x 45° B(H)	10	"	-	-					"	
"	ø200 x 90° B(H)	1	"	-	-					"	
Valve Setting	ø500 BV	1	set			-	-			33	
"	ø350 SV	1	"			-	-			"	
"	ø200 SV	3	"			-	-			"	

II - 5 Distribution Main 8. No.1 - No.23

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Valve Setting	ø150 SV	2	set			-	-			33	
Air Valve Setting	ø75 Box	2	set							45	
Road Repair Liability Payment	Road Crossing Only	19	m	-	-						
Miscellaneous Expenses		1	set								
		1	"								
Sub Total											

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		2,453	m	-	-					43	
Repair of Pavement		4,086	m ²	-	-					16	
Excavation		2,994	m ³	-	-					1 - c	
Surplus Soil		1,333	"	-	-	-	-			2 - a	
Sand Mat		264	"	-	-						
DCIP Laying	φ350mm	770	m			-	-			M + 29	
DCIP Specials	Foreign	1,770	kg			-	-	-	-		
ACP Laying	φ200 C-15	2,359	m	-	-					M + 29	
"	φ100	4	"	-	-					"	
"	φ75 A	14	"	-	-					"	
ACP Specials	Foreign	812	kg			-	-				
Galvanized Pipe Laying	φ200mm	165	m	-	-					M + 29	
"	φ75mm	4	"	-	-					"	
Galvanized Specials	Foreign	1,482	kg			-	-	-	-		
"	Domestic	25	"	-	-			-	-		
Mechanical Jointing	φ350mm	14	set			-	-			M + 32	
"	φ300mm	2	"			-	-			"	
"	φ200 "	5	"			-	-			M + 31	
"	φ100 "	10	"			-	-			"	
Gibault Jointing	φ300 "	2	"	-	-					31	
"	φ200 "	33	"	-	-					"	
"	φ100 "	4	"	-	-					"	
"	φ75 "	10	"	-	-					"	
Flange Jointing	φ200 "	10	"	-	-					31 Labor	
"	φ75 "	1	"	-	-					"	
Welding	φ200 "	63	"	-	-						
Anchor Block	φ200 x φ100 T	1	set	-	-					36	
"	φ200 x φ200 T	4	"	-	-					"	
"	φ200 x 45° B	16	"	-	-					38	
Valve Setting	φ350 SV	1	set			-	-			33	
"	φ300 SV	1	"			-	-			"	
"	φ200 "	6	"			-	-			"	
"	φ100 "	3	"			-	-			"	
"	φ75 "	2	"			-	-			"	

II - 5 Distribution Main 9. No.23 - No.70

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Fire Hydrant Installation	ϕ100mm	1	set	-	-					46	
Radio Repair Liability Payment	Road Crossing Only	115	m	-	-						
Air Valve Installation	ϕ75mm Box	2	set							45	
Miscellaneous Expenses		1	set								
		1	"								
Sub Total											

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Asphalt Cutting		1,170	m	-	-					43	
Repair of Pavement		1,610	m ²	-	-					16	
Excavation		1,090	m ³	-	-					1 - c	
Surplus Soil		474	"	-	-	-	-			2 - a	
Sand Mat		181	"	-	-						
ACP Laying	∅200mm C-15	1,170	m	-	-					M + 29	
ACP Specials	Foreign	148	kg			-	-	-	-		
"	Domestic	64	"	-	-			-	-		
Galvanized Specials	Foreign	40	kg			-	-	-	-		
Gibault Jointing	∅300 mm	1	set	-	-					31	
"	∅200 "	12	"	-	-					31	
Flange Jointing	∅200mm	1	set	-	-					31 Labor	
Welding	∅200 "	1	"	-	-						
Air Valve Setting	∅75mm Box	1	"								
Miscellaneous		1	set								
Expenses		1	"								
Sub Total											

II 6 Temporary Construction

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
(i) Intake Plant											
Temporary Office		60	m ²	-	-						
Warehouse	For Cement	260	"	-	-						
"	For Machine	30	"	-	-						
(ii) Proposed Plant											
Temporary Office		60	m ²	-	-						
Warehouse	For Cement	520	"	-	-						
"	For Machine	60	"	-	-						
Guards Shack	For Watchman	8	"	-	-						
(iii) House Rental Fee											
For Staff of Contractor			Month	-	-	-	-				
" Operator			"	-	-	-	-				
Miscellaneous		1	set	-	-						
Sub Total											

II - 7 Transportation for Construction Machine

Item	Dimension	Quantity	Unit	Materials				Labor		Cost	Remarks
				Foreign Currency		Domestic Currency		Domestic Currency			
				Per Unit	Cost	Per Unit	Cost	Per Unit	Cost		
Bulldozer	1 vehicle	2	Round Trip	-	-					Trailer	
Shovel	2 "	4	"	-	-					"	
Dragline	1 "	2	"	-	-					"	
Drop Hammer	2 "	4	"	-	-					"	
Another Machine	2 "	4	"	-	-					"	
Sub Total				-	-						

III Construction Time Schedule

Unit: Month

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. Intake																								
Temporary Works																								
Earth Works																								
Chamber																								
Housing																								
Pump Equip: To be ordered																								
Generator "																								
Piping "																								
Site Preparation																								
2. Raw Water Main																								
Piping For Old Plant "																								
" For New Plant "																								
3. Existing Plant																								
Earth Works																								
Chamber																								
Piping "																								
4. Proposed Plant																								
Temporary Works																								
Earth Works																								
Chamber																								
Housing																								
Mechanical Equip: "																								
Pump "																								
Generator "																								
Electrical "																								
Chemical "																								
Piping "																								
Site Preparation																								
5. Distribution Main																								
Piping "																								

Part 2 Unit Cost Estimations for the Various Categories of Work

Categories	Notes	Unit	Cost			Remarks	Categories	Notes	Unit	Cost			Remarks
			Material	Labor	Total					Material	Labor	Total	
(1) Excavation	By Hand	1 m ³				10 t Cap: 0.6 m ³ " " "	(11) Pump Drainage	Engine 10 Ps	1 day				
	By Bulldozer	1 m ³						Engine 5 Ps	1 day				
	By Shovel	1 m ³						By Hand Pump	1 day				
	By Dragline	1 m ³					(12) Walling	(W) (H) Wood 1.6 ^m x2.2 ^m	1 m				
(2) Surplus Soil (Filling Sand)	By Hand	1 m ³				l=40 m From Ping River l=4 km	(W) (H) Wood 1.3 ^m x1.5 ^m	1 m				Both sides	
	By Dump-car	1 m ³					Steel Sheet Pile						
(3) Concrete Pile	300 m/m Driven in 6 m	1 each				Double Half Moon Concrete Pile	(W) 25 cm H=6 m	1 m					
	300 m/m Driven in 8 m	1 each					(13) Revetment	Concrete Pile	1 m				
(4) Rubble Stone	Used Foundation	1 m ³				(14) Concrete Slab Pitching	0.5 ^m x0.5 ^m Concrete t=0.05 ^{mm}	1 m ²					
(5) Forms	Soft Wood (A)	1 m ²				(15) Sodding	Sodding	1 m ²					
	Soft Wood (B)	1 m ²					(16) Paving	Asphalt concrete	1 m ²				
	Soft Wood (C)	1 m ²						Asphalt Pavement	1 m ²				
(6) Timbering	Soft Wood	1 m ³				Brick Pavement	1 m ²						
(7) Staging	Soft Wood	1 m ³				(17) Planting	Shade Tree	1 tree					
(8) Reinforcing	Steel Bar	1 ton				less than ϕ 9 mm ϕ12 mm-ϕ22 mm ϕ12 mm-ϕ25 mm	(18) Fence	Silaraeng	1 m				
	Steel Bar	1 ton					Barbed Wire Fence	1 m					
	Deformed Bar	1 ton					Wooden Fence H=50 ^m H=80 ^m	1 m 1 m					
(9) Concrete	1:4:8	1 m ³				Net Wire Fence H=190 ^m	1 m						
	1:3:6	1 m ³				(19) Gutter & Open Channel	50 x 73.5 ^{cm}	1 m					
	1:2:4	1 m ³				Concrete Channel	80 x 7 ^{cm}	1 m					
(10) Mortar	Mortar 1:2	1 m ³				1:2, t = 20 mm Water proof t = 20 mm	45 x 60 ^{cm} -6 ^{cm}	1 m					
	Finishing Mortar	1 m ²					20 x 60 ^{cm} -3 ^{cm}	1 m					
	Finishing Mortar	1 m ²											
	Rubber Expansion Joint	1 m											

Categories	Notes	Unit	Cost			Remarks	Categories	Notes	Unit	Cost			Remarks
			Material	Labor	Total					Material	Labor	Total	
(20) Coffering	Brick Gutter	1 m					600 mm	1 m					
	Concrete Gutter	1 m					700 mm	1 m					
	Drain Pit	1 set											
	Closing Dyke	1 m					(30) Cost of Setting Angle Valve Box	1 set				Less than 75mm	
	Driving Steel Sheet Pile	1 m					100 mm.	1 set				Less than 100mm	
	Removal Sheet Pile	1 m					150	1 set					
(21) Stone Masonry		1 m ²				(31) Cost of Jointing	1 set					Gibault Joint	
(22) Steel Bar Screen		1 set				100 mm	1 set						
(23) Sluice Gate Setting		1 set				150 mm	1 set						
(24) Drain Pit (A-Type)	1.2 ^m x 1.2 ^m H = 1 ^m	1 set				200 mm	1 set						
(25) Drain Pit (B-Type)	1.5 ^m x 2.0 ^m H = 1.1 ^m	1 set				250 mm	1 set						
(26) Flow Meter Chamber	Back Washing Mains	1 set				300 mm	1 set						
(27) Flow Meter Chamber	Raw Water Mains	1 set				(32) Cost of Jointing	1 set					Mechanical Joint	
(28) Flow Meter Chamber		1 set				350 mm	1 set						
(29) Labor	Cost of Laying Pipes					400 mm	1 set						
	∅ 75 mm	1 m				450 mm	1 set						
	100 mm	1 m				500 mm	1 set						
	150 mm	1 m				600 mm	1 set						
	200 mm	1 m				700 mm	1 set						
	250 mm	1 m				(33) Sluice Valve Setting	1 set						
	300 mm	1 m				∅ 75 mm	1 set						
	350 mm	1 m				100 mm	1 set						
	400 mm	1 m				150 mm	1 set						
	450 mm	1 m				200 mm	1 set						
	500 mm	1 m				250 mm	1 set						
						300 mm	1 set						
						350 mm	1 set						
						400 mm	1 set						
						450 mm	1 set						
						500 mm	1 set						
						600 mm	1 set						
						700 mm	1 set						
						(34) Butterfly Valve Setting	1 set						
						∅350 mm	1 set						

Categories	Notes	Unit	Cost			Remarks	Categories	Notes	Unit	Cost			Remarks
			Material	Labor	Total					Material	Labor	Total	
(35) Cost of Welding Steel Pipe	400 mm	1 set					(38) Cost of Anchor Blocks (Horizontal 45° Bend)	100 mm	1 set				
	450 mm	1 set						150 mm	1 set				
	500 mm	1 set						200 mm	1 set				
	600 mm	1 set						250 mm	1 set				
	700 mm	1 set						300 mm	1 set				
	800 mm	1 set						350 mm	1 set				
								400 mm	1 set				
(36) Cost of Anchor Blocks (Tee-branch)	350 mm	1 set				(39) Cost of Anchor Blocks (Vertical-45°-Upper side)	450 mm	1 set					
	400 mm	1 set					500 mm	1 set					
	450 mm	1 set					600 mm	1 set					
	500 mm	1 set											
	100x100 mm	1 set					200 mm	1 set					
	200x100 mm	1 set					250 mm	1 set					
	200x150 mm	1 set					300 mm	1 set					
200x200 mm	1 set				350 mm	1 set							
250x200 mm	1 set				400 mm	1 set							
300x200 mm	1 set				450 mm	1 set							
300x300 mm	1 set				500 mm	1 set							
350x250 mm	1 set				(40) Cost of Anchor Blocks (Vertical-45°-lower side)	200 mm	1 set						
350x300 mm	1 set					250 mm	1 set						
450x450 mm	1 set					300 mm	1 set						
500x500 mm	1 set					350 mm	1 set						
600x600 mm	1 set					400 mm	1 set						
						450 mm	1 set						
						500 mm	1 set						
(37) Cost of Anchor Blocks (Horizontal 90° Bend)	200 mm	1 set				(41) Cost of Laying Plain Concrete Pipe	300 mm	1 m					
	250 mm	1 set					500 mm	1 m					
	300 mm	1 set					600 mm	1 m					
	350 mm	1 set					800 mm	1 m					
	400 mm	1 set					1,000 mm	1 m					
	450 mm	1 set											
	500 mm	1 set											

Categories	Notes	Unit	Cost			Remarks	Categories	Notes	Unit	Cost			Remarks	
			Material	Labor	Total					Material	Labor	Total		
(42)	Cost of Laying Poly Vinyl Chloride Pipe						(52)	Finishing Mortar	coping	m				
	20 mm	1 m					(53)	Window Frame	Mortar	m				
	25 mm	1 m					(54)	Finishing Mortar	Floor T=25 mm	m ²				
	30 mm	1 m					(55)	Finishing Mortar	Wall T=25 mm	m ²				
	40 mm	1 m					(56)	I-Steel Beam	250x125x7.5mm x12.5m	pc				
	50 mm	1 m					(57)	Checkered Steel Plate	W=500 mm	m				
	75 mm	1 m					(58)	Tile	colour	m ²				
	100 mm	1 m					(59)	Artificial Stone Ground Finish		m ²				
(43)	Cutting of Asphalt Pavement						(60)	Stone Wet Brush Texturing		m ²				
	Cutting both sides	1 m					(61)	Wood Brackets for Ceiling		m ²				
(44)	Hand Rail						(62)	Texture Finishing		m ²				
	Steel Hand rail						(63)	Levelling Mortar		m ²				
	ϕ 1 1/4" H=1 m	1 m					(64)	Silaraeng Masonry		m ²				
(45)	Air Valve Setting	Concrete Box					(65)	Folding Door		set				
	Exposed	1 set					(66)	I-Steel Beam	300x150x11mm x18.5m	pc				
(46)	Fire Hydrant Installation						(67)	Substation Concrete Foundation						
	ϕ100 mm	1 set												
(47)	Gate													
	A-Type	1 set												
	B-Type	1 set												
	C-Type	1 set												
	D-Type	1 set												
(48)	Name Plate of Water Treatment Plant													
	Name plate	1 set												
(49)	Flag pole													
	A Type	ϕ2" H=8 m												
	B Type	ϕ2" H=8 m												
(50)	Brick Masonry													
		m ²												
(51)	Finishing Mortar													
	T = 15 mm	m ²												

Part 3 Table of Wages by Occupation at Chiang-Mai Municipality

Occupation	Unit (per day)	Cost	Remarks
Carpenter	person		
Electrician	person		
Plasterer	person		
Welder	person		
Mason	person		
Steel Bending Worker	person		
Plumber	person		
Machine Operator	person		
Assistant	person		
Worker	person		

b Using Bulldozer (10 t)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Bulldozer Rental Fee	1	day			
Operating Cost	6	hour			
Sub-Total					
1/					Per cu.m

1 hour --- Digging Soil Volume m^3 (L = 50m) carrying distance

1 day ---- Operating time 6 hours

1 day ---- Cutting Soil Volume m^3

Part 4 Unit Cost

(1) Excavation (per m^3)

a By Hand

Item	Quantity	Unit	Unit Price	Cost	Remarks
Worker		person			Clay
Sub-Total					Depth 0-1.5m in case of pipe line including Backfill

c Cost of Operating Machine (per hour)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Oil	6	Litre			
Operator		person			
Assistant		person			
Mis-cellaneous		%			
Sub-Total					

(2) Surplus Soil (per m³)

d By Shovel (cap: 0.6 m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Machine Rental Fee	1	day			
Operating Cost	6	hour			
Sub-Total					
1/					per cu. m.

1 hour --- Digging Soil Volume m³

1 day ---- Operating time 6 hours

1 day ---- Digging Soil Volume x 6 = m³

e By Dragline (cap: 0.6 m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Machine Rental Fee	1	day			
Operating Cost	6	hour			
Sub-Total					
1/					per cu. m.

1 hour --- Digging Soil Volume m³

1 day ---- Digging Soil Volume x 6 = m³

1 day ---- Operating time 6 hours

f Cost of Operating Machine (per hour)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Oil	10	Litre			
Operator		person			
Assistant		"			
Mis-cellaneous		%			
Sub-Total					

a By Hand

Item	Quantity	Unit	Unit Price	Cost	Remarks
Worker		person			Carrying distance less than 5 m
Sub-Total					

b Using Dump Trucks (L = 4 km)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Car Rental Fee	1	day			
Sand	36	m ³			
Operating Cost	6	hour			
Sub-Total					
1/					per cu. m.

1 hour --- Carrying Soil Volume m³

1 day ---- Operating time 6 hours

1 day ---- Carrying Soil Volume m³

c Cost of Operating Truck (per hour)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Oil	10	Litre			
Operator		person			
Assistant		"			
Mis-cellaneous		%			
Sub-Total					

(3) Concrete Pile (per piece)

a 300 mm L = 6 m

Item	Quantity	Unit	Unit Price	Cost	Remarks
Concrete Pile	1	each			Double Half Moon Pile
Transportation	1	unit			BKK-Chiang Mai B/day per piece B pieces
Operating Cost	1	unit			
Machine Rental Fee	1	each			1 day - B/day pieces
Labor		person			
Sub-Total					

b Cost of Operating Machine (per day)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Oil	20	Litre			
Operator		person			
Assistant		Person			
Mis-cellaneous		%			
Sub-Total					
1/					Average Piles/day

c . 300 mm L = 8 m

Item	Quantity	Unit	Unit Price	Cost	Remarks
Concrete Pile	1	each			Double Half Moon Pile
Trans- portation	1	unit			BKK-Chiang Mai 1 Truck - 1 day B - pieces
Operating Cost	1	unit			
Machine Rental Fee	1	each			1 day - pieces
Labor	2	person			
Sub-Total					

d Cost of Operating Machine (per day)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Oil	20	Litre			
Operator		person			
Assistant		person			
Mis-cellaneous		%			
Sub-Total					
1/					= Average piles/day

(4) Rubble Stone (per m³)

a For Foundation

Item	Quantity	Unit	Unit Price	Cost	Remarks
Rubble Stone	1	m ³			∅ 20 cm
Gravel	0.32	m ³			∅ 2 - 3 cm
Workers		person			
Sub-Total					

(5) Forms (per m²)

a Class - A

Item	Quantity	Unit	Unit Price	Cost	Remarks
Wood Plate	0.034	m ³			Soft wood more than 1/2" thick
Timbers	0.012	m ³			more than 1" thick
Bolts & nuts	0.6	kg			
Carpenter		person			
Assistant		person			
Sub-Total					
1/2 (1)					Usage 2 times
Labor		person			
Sub-Total (2)					
Total(1)+(2)					

b Class - B

Item	Quantity	Unit	Unit Price	Cost	Remarks
Wood Plate	0.022	m ³			
Timber	0.037	m ³			
Nails	0.25	kg			
Carpenter		person			
Assistant		person			
Sub-Total					
$\frac{1}{2}$ (1)					Usage 2 times
Labor		%			
Sub-Total(2)					
Total(1)+(2)					

(6) Timbering (per m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Timber	0.12	m ³			Unit 10 m ³ Usage 5 times
Timber (Square)	0.07	m ²			
Sub-Total					Unit 10 m ³
1/5					Usage 5 times
Bolts & Nuts	1.0	kg			Unit 10 m ³
Wire (#8)	0.3	kg			Unit 10 m ³
Labor					% of material cost
Total					
1/10					

c Class - C

Item	Quantity	Unit	Unit Price	Cost	Remarks
Wood Plate	0.016	m ³			
Timber (Square)	0.020	m ³			
Nails	0.2	kg			
Carpenter		person			
Assistant		person			
Sub-Total					
$\frac{1}{2}$ (1)					Usage 2 times
Labor		person			
Sub-Total(2)					
Total(1)+(2)					

(7) Staging (per m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Timber	0.28	m ³			Unit 10 m ³
Timber	0.03	m ³			
Wood Plate	0.0027	m ³			Unit 10 m ³
Sub-Total					Unit 10 m ³
1/5					Usage 5 times
Wire (#8)	0.2	kg			
Labor					% of material cost
Total					
1/10					

(8) Reinforcing (per ton)

a Less than ϕ 9mm Small Round Bar

Item	Quantity	Unit	Unit Price	Cost	Remarks
Reinforcing Bar	1.0	ton			Cutting & Processing Assembling
Wire (#20)	5	kg			
Bending Worker		Person			
Labor		Person			
Sub-Total					

b ϕ 12 mm - ϕ 22 mm Round Bar

Item	Quantity	Unit	Unit Price	Cost	Remarks
Reinforcing Bar	1.0	ton			Cutting & Processing Assembling
Wire (#20)	5	kg			
Bending Worker		person			
Labor		person			
Sub-Total					

c Deformed Bar ϕ 12 mm - ϕ 25

Item	Quantity	Unit	Unit Price	Cost	Remarks
Deformed Bar	1	ton			Cutting & Processing Assembling
Wire (#20)	2.5	kg			
Bending Worker		person			
Labor		person			
Mis-cellaneous	1	set			
Sub-Total					

(9) Concrete

a 1 : 4 : 8 (per m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Cement	170	kg			% of material cost
Sand	0.48	m ³			
Gravel	0.96	m ³			
Labor		%			
Mis-cellaneous	1	set			
Sub-Total					

b 1 : 3 : 6 (per m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Cement	225	kg			% of material cost
Sand	0.47	m ³			
Gravel	0.94	m ³			
Labor		%			
Mis-cellaneous	1	set			
Sub-Total					

c 1 : 2 : 4 (per m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Cement	320	kg			% of material cost
Sand	0.50	m ³			
Gravel	1.00	m ³			
Labor		%			
Mis-cellaneous	1	set			
Sub-Total					

(10) Mortar

a 1 : 2 Mortar (per m³)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Cement		kg			
Sand		m ³			
Worker		person			
Sub-Total					

b 1 : 2 t = 20 mm Finishing Mortar (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Mortar		m ³			
Plasterer		person			
Worker		person			
Sub-Total					

c 1 : 2 t = 20 mm Finishing Waterproof Mortar (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Painting Mortar		m ²			
Waterproof Material		kg			0.7 kg/m ² -1st Layer 0.9 kg/m ² -2nd Layer
Sub-Total					

d Expansion Joint (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Joint Filler	0.6	m ²			T = 60 cm
Joint Sealer	1.0	m			Asphalt: Sand = 1:6
Water-Stop Labor	1.0	m %			300 x 6 m C - C % of material cost
Sub-Total					

(11) Pump Drainage (per day)

a Engine 10 ps

Item	Quantity	Unit	Unit Price _B	Cost _B	Remarks
Oil		Litre			
Mis-cellaneous		set			
Operator		person			
Worker		person			
Sub-Total					

b Engine 5 ps

Item	Quantity	Unit	Unit Price _B	Cost _B	Remarks
Oil		Litre			
Mis-cellaneous		set			
Operator		person			
Sub-Total					

c By Hand Pump

Item	Quantity	Unit	Unit Price	Cost	Remarks
Worker		person			
Sub-Total					

(12) Walling

(W) (H)
a 1.6m x 2.2m Length per m (both sides) For Pipe Line

Item	Quantity	Unit	Unit Price	Cost	Remarks
Wood Plate	0.265	m ³			4.5x180x2,700 mm
Waling	0.045	m ³			150x150x1,000 mm
Temporary Beam	0.0175	m ³			150x1,300 mm
Sub-Total 1/5					Usage 5 times
Clamp	0.4	piece			
Carpenter		person			
Worker		person			
Total					

(W) (H)
b 1.3m x 1.5m Length per m (both sides) For Pipe Line

Item	Quantity	Unit	Unit Price	Cost	Remarks
Wood Plate	0.162	m ³			4.5x180x1,800 mm
Waling	0.045	m ³			150x150x1,000 mm
Temporary Beam	0.0135	m ³			150x1,000 mm
Sub-Total 1/5					Usage 5 times
Clamp	0.4	piece			
Carpenter		person			
Worker		person			
Total					

c Trench Sheet Pile ((W) 25cm x (H) 10cm H=6m Unit 1 m) For

Item	Quantity	Unit	Unit Price	Cost	Remarks
Sheet Pile Rental Fee	4	sheet			12kgx6m = ÷ 10 =
Machine Rental Fee	4	sheet			Times
Cost of Operating	4	sheet			Rental Fee B/day
Mis-cellaneous		%			1 day - sheets
Sub-Total					Driving & Removing

d Cost of Operating Machine (per day)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Oil	20	Litre			
Operator		person			
Worker		person			
Mis-cellaneous		%			
Sub-Total 1/5					Sheet Pile Driving Sheet Pile Driving

(13) Revetment

a Length (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Concrete Pile(T-Type)	10	piece			0.7 / 0.4 0.45/m / 0.15 H=11m
Operating Cost	1	day			
Concrete Plate	81	sheet			{ t=10cm w=40cm L=2.1m 9 sheets x 9 = 81 sheets
Worker		person			
Retaining	10	place			
Mis-cellaneous		%			
Machine Rental Fee	1	day			
Sub-Total 1/22.5					9 span (2.5m long)

(14) Concrete Slab Pitching

a Area (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Precast Concrete Slab	4	sheet			
Poor Concrete	0.05	m ³			
Mason		person			
Worker		person			
Sub-Total					

(15) Sodding

a Area (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Lawn	1	m ²			L = 18 cm
Bamboo	39	piece			
Worker		person			
Sub-Total					

(16) Paving

a Asphalt Concrete Pavement (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Laterite	0.15	m ³			t = 15 cm
Concrete	0.10	m ³			1 : 2 : 4 t=10 cm
Asphalt	1.0	m ²			
Worker		person			
Sub-Total					

b Asphalt Pavement (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Laterite	0.15	m ³			7 kg/m ²
Concrete	0.10	m ³			
Asphalt	1.0	m ²			
Worker		person			
Sub-Total					

c Brick Pavement (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.17	m ³			
Gravel	0.10	m ³			
Mortar	0.04	m ³			
Brick	56	pc			
Sub-Total					

(17) Planting

a

Item	Quantity	Unit	Unit Price	Cost	Remarks
Shade Tree	1	tree			Delonixregia Rafin lagerstroemia Cassiafistula Linn Bauhinia Purpurea Linn
Support	1	set			
Worker		person			
Sub-Total					

(18) Fence

a Silaraeng Fence (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	15	m ³			10 span 21 m
Silaraeng	1.25	m ³			
Rubble Stone	0.7	m ³			1 : 3 : 6 = 2.7 m
Concrete	7	m ³			
Concrete Column	11	pc			
Concrete Column	15	pc			= 2.1 m
Concrete Column	5	pc			= 1.2 m
Wire Net	42	m ²			# 10
Labor	%				% of material cost
Sub-Total					
	1/21				

b Barbed-Wire Fence (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	2	m ³			1 : 3 : 6
Cobble Stone	0.05	m ³			
Concrete	0.15	m ³			
Moulding	3.12	m ³			
Concrete Pole	6	pole			#14 % of material cost
Wire	93	m			
Labor	%				
Sub-Total					
	1/10				

(19) Gutter & Open Channel

c Wooden Fence (H = 50 cm) (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.75	m ³			
Soft Wood	0.09	m ³			
Paint	5	m ²			
Labor		%			
Sub-Total					
1/10					

d Wooden Fence (H = 80 cm) (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.75	m ³			
Soft Wood	0.12	m ³			
Paint	6	m ²			
Labor	1	set			% of material cost
Sub-Total					
1/10					

e Net Wire Fence (H = 1.9 m) (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	1.72	m ³			
Cobble Stone	0.08	m ³			
Concrete	0.19	m ³			
Moulding	2.97	m ²			
Net Wire Fence	10	m			
Mis-cellaneous	1	set			
Sub-Total					
1/10					

a Concrete Open Channel (500 x 735 m/m) per 1 m

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	1.90	m ³			
Cobble Stone	0.10	m ³			
Concrete	0.30	m ³			
Reinforcing	4.3	kg			
Forms	2.5	m ²			
Sub-Total					=

b Concrete Open Channel (800 x 1220 m/m) per 1 m

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	2.20	m ³			
Cobble Stone	0.13	m ³			
Concrete	0.37	m ³			
Reinforcing	5.3	kg			
Forms	3.0	m ²			
Sub-Total					

c Concrete Open Channel (B) (H) (L) (T) (45 x 45 x 60cm - 6cm) (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	3.6	m ³			B=50cm H=60cm L=12m
Sand Mat	0.6	m ³			H=10cm b=50cm
Concrete Block	20	pc.			45 x 45 x 60 cm
Joint Mortar	0.02	m ³			T=1cm 20 pieces
Sub-Total					
1/12					

d Concrete Open Channel (B) (H) (L) (T) (20cm x 20cm x 60cm - 3cm) (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	1.08	m ³			b=30cm H=30cm
Sand Mat	0.252	m ³			H=7cm b=30cm
Concrete Block	20	pc			
Joint Mortar	0.01	m ³			1 : 2
Sub-Total					
1/12					

(20) Coffering

e Brick Gutter (B) (H) (L)
(4cm x 17cm x 9cm) (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Brick	11	pc			4x9x17cm-1 piece 3x5x100 cm
Mortar	0.0015	m ³			
Labor		person			
Sub-Total					

f Concrete Gutter (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.45	m ³			1 : 3 : 6
Cobble Stone	0.08	m ³			
Concrete	0.20	m ³			
Forms	4.00	m ²			
Sub-Total					
1/10					

g Drain Pit Per set

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.5	m ³			
Cobble Stone	0.04	m ³			
Concrete	0.11	m ³			
Forms	2.0	m ²			
Sub-Total					

a Closing Dyke (B) (H) (L)
(2.0 x 1.2m - 6m) (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Wooden Pile	20	pc.			Pitch 0.6m L=6m φ12cm H=3.0m Steel bar φ25 mm L = 2,300 mm
Tie - Rod	10	pc.			
Pagot	15	bundle			
Surplus Soil	14.4	m ³			
Labor		person			
Sub-Total					
1/6					

b Driving Steel Sheet Pile (per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Sheet Pile Rental Fee	2.5	sheet			48kgx10m=480kg x480x1/ = x1/ = (Baht/kg x 480 x 1/usage) x 1/ = (Baht/kg x 1/usage) rental fee B/day Usage _____ times sheets/d drive in
I-beam Rental	1.07	ton			
Welding	1.24	m			
Machine Rental Fee	2.5	sheet			
Operating Cost	2.5	sheet			
Sub-Total					

c Removing Sheet Pile

Item	Quantity	Unit	Unit Price	Cost	Remarks
Operating Cost	2.5	sheet			1 day- sheets
Machine Rental	2.5	sheet			Removing
Sub-Total					

(21) Stone Masonry (per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Stone	160	piece			T = 35 cm
Concrete	1.8	m ³			1 : 4 : 8
Forms	10	m ²			t = 18 cm
Mason		person			
Labor		person			
Bamboo	10	set			φ37 mm L=60cm
Sub-Total					
1/10					

(22) Steel Bar Screen (per set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Steel Plate	786	kg			9tx90x4,750-26 sh
Bar	32	kg			φ22x1,050-10 PC
Steel Pipe	10	m			φ1 1/4" x 127 - 10 PC
Nuts & Bolts	5	set			φ1 1/4" x 68 - 120 PC
Angle Bars	304	kg			φ22-10 φ22x200-5
Processing & Assembling	1.18	ton			90x90x10x2100-2
Painting	122	m ²			100x75x10x2100-2
Setting screen		person			125x90x13x2350-4
Mis-cellaneous		%			
Sub-Total					

(23) Sluice Gate Setting (per set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Sluice Gate & Head Stock	1	set			including Anchor Bolts, Spindle Shaft
Plumber		person			Sus-50 φ55 m/m
Worker		person			
Mis-cellaneous	1	set			% of Labor cost
Sub-Total					

(24) Drain Pit (A - TYPE) (per 1 set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Rubble Stone	0.44	m ³			1.2mx1.2mx0.3m
Reinforcing	112	kg			100kg/m ³ :Concrete
Concrete	0.38	m ³			Slab Concrete
Concrete	1.12	m ³			Wall H = 1 m
Concrete	0.77	m ³			Bottom
Forms	11.20	m ²			Wall H = 1 m
Forms	3.36	m ²			Bottom & Slab
Mis-cellaneous	1	set			%
Sub-Total					

(25) Drain Pit (B - TYPE) (per 1 set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Rubble Stone	0.68	m ³			1.5mx1.5mx0.3m
Reinforcing	136	kg			100kg/m ³ :Concrete
Concrete	1.62	m ³			Slab, Bottom
Concrete	1.36	m ³			Wall H = 1m
Forms	4.53	m ²			Slab, Bottom
Forms	13.60	m ²			Wall H = 1m
Mis-cellaneous	1	set			%
Sub-Total					

(26) Flow-Meter Chamber (Back Washing Main) (per set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	72	m ³			
Surplus Soil	12	m ³			
Rubble Stone	1.5	m ³			
Wooden Pile	4	each			∅10cm L=300cm
Reinforcing	1,149	kg			∅12 1.04x131=136.24 ∅15 1.58x641=1012.78
Concrete	0.73	m ³			1 : 3 : 6
Concrete	6.60	m ³			1 : 2 : 4
Forms	51.0	m ²			
Staging	32.2	m ³			
Timbering	8.8	m ³			
Asphalt Filler	2.3	m ²			
Mortar Finishing	21.2	m ²			
Manhole Cover	1	set			
Mis-cellaneous	1	set			%
Sub-Total					

(27) Flow - Meter Chamber (Raw-water Main) (per set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	90.4	m ³			
Surplus Soil	22.7	m ³			
Rubble Stone	2.3	m ³			
Wooden Pile	4	PC			
Reinforcing	1,585	kg			∅12 1.04x223=232 ∅15 1.58x857=1354
Concrete	1.2	m ³			1 : 3 : 6
Concrete	9.6	m ³			1 : 2 : 4
Forms	69.0	m ²			
Staging	39.0	m ³			
Timbering	15.0	m ³			
Asphalt Filler	3.2	m ²			
Mortar Finishing	30.5	m ²			
Manhole Cover	1	set			
Mis-cellaneous	1	set			%
Total					

(28) Flowmeter Chamber (Distribution Mains) (per set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	135	m ³			
Surplus Soil	30	m ³			
Rubble Stone	2.3	m ³			
Wooden Pile	4	PC			
Reinforcing	1,458	kg			$\phi 12 \quad 1.04 \times 1063 = 1106$ $\phi 15 \quad 1.58 \times 223 = 352$
Concrete	2.3	m ³			1 : 3 : 6
Concrete	11.3	m ³			1 : 2 : 4
Forms	87.0	m ²			
Staging	51	m ³			
Timbering	21	m ³			
Asphalt Filler	3.2	m ²			
Mortar Finishing	38.5	m ²			
Manhole Cover	1	set			
Mis-cellaneous	1	set			%
Total					

(29)

Labor Cost of Laying Pipes (per m) Note: Used ACP less than $\phi 300$ mm

size mm	Plumber			Worker			Total Cost per Piece	Unit Length m	Per m Cost	Remarks
	Quantity	Unit	Cost	Quantity	Unit	Cost				
75		Person			Person			4		Joint: Coupling Type
100		"			"			4		" ; " "
150		"			"			4		" ; " "
200		"			"			4		" ; " "
250		"			"			4		" ; " "
300		"			"			4		" ; " "
350		"			"			6		Joint: Mechanical Type
400		"			"			6		" ; " "
450		"			"			6		" ; " "
500		"			"			6		" ; " "
600		"			"			6		" ; " "
700		"			"			6		" ; " "

(30) Angle Valve Box

(i) Less than $\phi 75$ m(ii) More than $\phi 100$ m

Item	Quantity	Unit	Unit Price	Cost	Remarks	Item	Quantity	Unit	Unit Price	Cost	Remarks
Gravel	0.008	m ³				Gravel	0.008	m ³			
Precast Concrete Plaster Block	1	each			C8-13	Precast Concrete Plaster Block	4	each			C8-13
Concrete	0.013	m ³			1:2:4	Concrete	0.013	m ³			1:2:4
Forms	0.43	m ²				Forms	0.43	m ²			
Steel Bar	3	kg			$\phi 6$ mm	Steel Bar	3	kg			$\phi 6$ mm
Concrete Cover	1	set			33×33 cm t=5 cm	Mortar	0.01	m ³			1:2
Miscellaneous	1	"				Concrete Cover	1	set			33×33 cm t=5 cm
Sub-Total						Miscellaneous	1	"			
						Subtotal					

(31) Cost of Jointing (per set) Note: For ACP less than ϕ 300 mm

Size m/m	Plumber			Worker			Total Cost Per Piece	Joint Price	Cost	Remarks
	Quantity	Unit	Cost	Quantity	Unit	Cost				
75		person			person					Joint: Gibault Joint
100		person			person					" : " "
150		person			person					" : " "
200		person			person					" : " "
250		person			person					" : " "
300		person			person					" : " "

(32) Cost of Jointing (per set) Note: For DCIP

350		person			person					" : " "
400		person			person					" : " "
450		person			person					" : " "
500		person			person					" : " "
600		person			person					" : " "
700		person			person					" : " "

(33) Sluice Valve Setting

Size mm	Materials					Labor							Total
	Valve	Bolts & Packing	Valve Box Screw Type	Accessories	Sub-Total	Plumber			Worker			Sub-Total	
						Quantity	Unit	Cost	Quantity	Unit	Cost		
75		4 included					person			person			
100		"					person			person			
150		"					person			person			
200		"					person			person			
250		"					person			person			
300		"					person			person			
350		10 included	Hat Type				person			person			
400		"					person			person			
450		"					person			person			
500		"					person			person			
600		"					person			person			
700		"					person			person			

(34) Butterfly Valve Setting

Size mm	Material					Labor							Total
	Valve	Bolts & Packing	Valve Box Hat Type	Accessories	Sub-Total	Plumber			Worker			Sub-Total	
						Quantity	Unit	Cost	Quantity	Unit	Cost		
350		10 included					person			person			
400		"					person			person			
450		"					person			person			
500		"					person			person			
600		"					person			person			
700		"					person			person			
800		"					person			person			

(35) Cost of Welding (Steel Pipe) per set L = 6m

Size mm	Welding																
	Labor						Materials										
	Welder			Worker			Welding Electrode			Oxygen			Acetylene Gas			Misc.	Machine Rental
	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost		Cost
350		Person			Person		0.85	kg		0.3	m ³		0.15	kg			
400		Person			Person		1.0	kg		0.35	m ³		0.17	kg			
450		Person			Person		1.1	kg		0.42	m ³		0.21	kg			
500		Person			Person		1.25	kg		0.50	m ³		0.25	kg			

Size mm	Coating (Exterior)														Total		
	Labor						Materials								Maintenance and Depreciation	per Piece	per m
	Painter			Worker			Asphalt			Vinylon			Fuel	Misc.	%		
	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost	Cost				
350		Person			Person		7	kg		7	m						
400		Person			Person		8	kg		8	m						
450		Person			Person		9	kg		9	m						
500		Person			Person		10	kg		10	m						

(36) Cost of Anchor Block (T-Joint) per set

Size mm	Rubble Stone			Forms			Concrete (1:3:6)				Total		
	Quantity m ³	Material	Labor	Quantity m ³	Material	Labor	Quantity m ³	Material	Labor	Misc.	Material (M)	Labor (L)	(M)+(L)
100 x 100	0.08			0.92			0.11						
200 x 100	0.11			1.45			0.18						
200 x 150	0.12			1.53			0.19						
200 x 200	0.13			1.60			0.21						
250 x 200	0.17			2.04			0.30						
300 x 200	0.22			2.52			0.40						
300 x 300	0.27			2.75			0.48						
350 x 250	0.27			2.96			0.54						
350 x 300	0.32			3.22			0.63						
450 x 450	0.49			5.14			1.25						
500 x 500	0.56			5.85			1.48						
600 x 600	0.65			6.21			1.58						

(37) Cost of Anchor Block (Horizontal Bend 90°) per set

Size mm	Rubble Stone			Forms			Concrete (1:3:6)			Total			
	Quantity m ³	Material	Labor	Quantity m ²	Material	Labor	Quantity m ³	Material	Labor	Misc.	Material (M)	Labor (L)	(M)+(L)
200	0.08			2.24			0.31						
250	0.12			3.12			0.52						
300	0.15			3.84			0.70						
350	0.25			4.94			1.25						
400	0.33			5.97			1.77						
450	0.43			7.09			2.40						
500	0.53			8.30			3.18						

(38) Cost of Anchor Block (Horizontal Bend 45°) per set

Size mm	Rubble Stone			Forms			Concrete (1:3:6)			Total			
	Quantity m ³	Material	Labor	Quantity m ²	Material	Labor	Quantity m ³	Material	Labor	Misc.	Material (M)	Labor (L)	(M)+(L)
100	0.04			1.0			0.11						
150	0.07			1.56			0.23						
200	0.12			2.16			0.43						
250	0.17			2.76			0.65						
300	0.24			3.57			1.00						
350	0.28			4.12			1.27						
400	0.38			5.12			1.82						
450	0.47			6.75			2.68						
500	0.57			8.45			3.38						
600	0.57			8.45			3.38						

(39) Cost of Anchor Block (Vertical Bend 45°) per Set
Upper Side

Size (mm)	Rubble Stone			Forms			Concrete (1:3:6)				Total		
	Quantity m ³	Material	Labor	Quantity m ³	Material	Labor	Quantity m ³	Material	Labor	Misc.	Material (M)	Labor (L)	(M)+(L)
200	0.12						0.23						
250	0.17						0.61						
300	0.21						1.08						
350	0.22						1.15						
400	0.28						2.97						
450	0.32						3.49						
500	0.39						4.37						

(40) Cost of Anchor Block (Vertical Bend 45°) per Set
Lower Side

Size (mm)	Rubble Stone			Forms			Concrete (1:3:6)				Total		
	Quantity m ³	Material	Labor	Quantity m ²	Material	Labor	Quantity m ³	Material	Labor	Misc.	Material (M)	Labor (L)	(M)+(L)
200	0.13												
250	0.17												
300	0.22												
350	0.24												
400	0.27												
450	0.31												
500	0.36												

(41) Cost of Laying Plain Concrete Pipe (Socket)(per m)

Size mm	Jointing - Labour						Jointing - Material						Socket Pipe	Total	Remarks
	Plumber			Worker			Cement			Sand					
	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost			
300		Person			Person		5.1	kg		0.0037	m ³				
500		Person			Person		10.7	kg		0.0079	m ³				
600		Person			Person		12.8	kg		0.0094	m ³				
800		Person			Person		17.0	kg		0.0120	m ³				
1000		Person			Person		31.8	kg		0.0230	m ³				

(42) Cost of Laying Polyvinyl Chloride Pipe (per m)

Size mm	Jointing - Labor						Excavation			Adhesive			Material		
	Plumber			Worker			By Hand			Quantity	Unit	Cost	Pipe Price Cost	Access. Cost	Total
	Quantity	Unit	Cost	Quantity	Unit	Cost	Quantity	Unit	Cost						
20		Person			Person		H = 0.6m b = 0.5m 0.3	m ³		1.2	g				
25		Person			Person		0.3	m ³		2.0	g				
30		Person			Person		H = 1.0m b = 0.6m 0.6	m ³		2.4	g				
40		Person			Person		0.6	m ³		3.6	g				
50		Person			Person		0.6	m ³		5.4	g				
75		Person			Person		H = 1.2m b = 0.8m 0.96	m ³		7.2	g				
100		Person			Person		0.96	m ³		10.1	g				

(43) Cutting of Asphalt Pavement

a Cost of Operating Machine (per hour)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Gasoline	2.5	Litre			
Mis- cellaneous		%			
Operator		person			
Assistant		person			
Machine Rental	1	hour			
Sub-Total					24 m/hour
per meter	1/24				
Both Sides x 2					cost/m/2 sides

(44) Hand Rail

a Steel Hand Rail H=1.0m Column to column 50 cm

Item	Quantity	Unit	Unit Price	Cost	Remarks
Galvanized Steel Pipe	4.2	m			ϕ 4
Welding	4	point			
Mortar	0.002	m ³			
Mis- cellaneous	1	set			
Sub-Total					

(45) Air Valve Setting (per set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	3.6	m ³			including Back filling cost
Surplus Soil	0.8	m ³			
Rubble Stone	0.13	m ³			
Concrete	0.3	m ³			
Forms	5.7	m ³			
Reinforcing	11.0	kg			
Sand	0.1	m ³			
Steel Cover	1	set			including
Airvalve	1	set			Flanged Pipe (ϕ75 mm) & Sluice Valve
Mis- cellaneous	1	set			
Sub-Total					

(46) Fire Hydrant Installation (per set)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	-	m ³	-	-	including Pipe Line
Rubble Stone	0.12	m ³			
Forms	1.2	m ²			
Concrete	0.1	m ³			
Fire Hydrant	1	set			ϕ4" Double
Accessory	1	set			Bend ϕ100 mm x 90°
Asbestos Cement Pipe	1	pc.			ϕ100mm x 4,000 mm
Flanged Spigot ²	2	pc.			Flanged Spigot ϕ100 mm
Mis- cellaneous	1	set			
Sub-Total					

(47) Gate

a A - Type (Proposed Plant)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	3.18	m ³			
Cobble Stone	0.23	m ³			
Concrete	0.78	m ³			1 : 3 : 6
Forms	3.5	m ²			
Silaraeng	2.8	m ³			
Steel Gauge	34.75	kg			2.3x100x100mm
Steel Gauge	95.6	kg			2.3x100x 50mm
Steel Gauge	151.9				2.3x50x50mm
Steel Plate	0.85	kg			t = 1.6 mm
Steel Plate	21.3	kg			t = 3.2 mm
Painting	19.34	m ²			t = 4.5 mm
Sign Board	1	each			150x600x20 mm
Mis-cellaneous	1	set			including fence caster
Sub-Total					

b B - Type (Proposed Plant)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.52	m ³			
Cobble Stone	0.06	m ³			
Concrete	0.16	m ³			
Forms	1.60	m ²			
Silaraeng	0.3	m ³			
Steel Gauge	19.5	kg			2.3x100x100 mm
Steel Gauge	76.0	kg			2.3x100x 50mm
Steel Gauge	69.5	kg			2.3x 50x 50mm
Steel Plate	21.3	kg			t = 3.2 mm
Painting	10.14	m ²			t = 4.5 mm
Mis-cellaneous	1	set			including fence caster
Sub-Total					

c C - Type (Intake Site)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.78	m ³			
Cobble Stone	0.03	m ³			
Concrete	0.11	m ³			
Forms	1.44	m ²			
Steel Gauge	33.3	kg			2.3x100x100
Steel Gauge	75.0	kg			2.3x100x 50
Steel Gauge	88.1	kg			2.3x 50x 50
Steel Plate	9.8	kg			t = 1.6 mm
Steel Plate	5.4	kg			t = 3.2 mm
Painting	13.5	m ²			
Mis-cellaneous	1	set			%
Sub-Total					

d D - Type (Intake Site)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	0.78	m ³			
Cobble Stone	0.73	m ³			
Concrete	0.11	m ³			
Forms	1.44	m ²			
Steel Gauge	33.3	kg			2.3x100x100
Steel Gauge	85.3	kg			2.3x100x 50
Steel Gauge	121.2	kg			2.3x 50x 50
Steel Plate	12.4	kg			t = 1.6 mm
Steel Plate	5.4	kg			t = 3.2 mm
Painting	16.5	m ²			
Mis-cellaneous	1	set			%
Sub-Total					

(48) Name Plate of Water Treatment Plant

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	4.68	m ³			
Cobble Stone	0.81	m ³			
Concrete	3.54	m ³			
Forms	30.0	m ²			
Steel Bar	173.0	kg			
Wood	0.25	m ³			
Painting	6.5	m ²			
Mis- cellaneous	1	set			%
Sub-Total					

(49) Flag Pole

a A - Type

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	21.1	m ³			
Cobble Stone	1.46	m ³			
Concrete	11.7	m ³			
Forms	19.5	m ²			
Prestressed Concrete Pole	3	pc.			H = 8 m
Mis- cellaneous	1	set			%
Sub-Total					

b B - Type

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	13.8	m ³			
Cobble Stone	1.92	m ³			
Concrete	13.2	m ³			
Forms	17.2	m ²			
Polyvinyl Chloride Pipe	3.3	m			φ100
Mis- cellaneous	1	set			%
Sub-Total					

(50) Brick Masonry (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Brick	110				40x170x90
Mortar	0.059	m ³			
Worker		person			
Assistant		person			
Sub-Total					

(51) Finishing Mortar (Per m²) (for Architectural Structure)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Mortar	0.015	m ³			
Plasterer		person			
Assistant		person			
Sub-Total					

(52) Coping Finishing Mortar (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Mortar	0.084	m ³			
Plasterer		person			
Assistant		person			
Sub-Total					

(53) Window Frame Mortar (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Mortar	0.005	m ³			
Plasterer		person			
Sub-Total					

(54) Finishing Mortar (Interior Floor) (Per m²)
T = 30 m/m

Item	Quantity	Unit	Unit Price	Cost	Remarks
Mortar	0.03	m ³			
Plasterer		person			
Woker		Person			
Sub-Total					

(55) Finishing Mortar (Interior Wall) (Per m²)
T = 25 mm

Item	Quantity	Unit	Unit Price	Cost	Remarks
Mortar	0.075	m ³			
Plasterer		Person			
Worker		Person			
Sub-Total					

(56) I-Steel Beam 250x125x75x12.5 (Per pc.)

Item	Quantity	Unit	Unit Price	Cost	Remarks
I-Steel	38.3	kg			250x125x7.5 x12.5
Worker		Person			
Sub-Total					

(57) Checkered Steel Plate T = 3 mm W = 500 mm (Per m)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Steel Plate 3mm	13.4	kg			
Steel-Angle 30x30x32	2.72	kg			
Worker		Person			
Sub-Total					

(58) Tile (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Tile	67	sheets			
Sand	0.025	m ³			
Cement	12.5	kg			
White Cement	1.05	kg			
Worker		person			
Plasterer		person			
Trans- portation	1	m ³			
Sub-Total					

(59) Artificial Stone Ground Finish (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Cement	21	kg			
Sand	0.028	m ³			
Crushed Stone	15	kg			
Worker		person			
Plasterer		person			
Sub-Total					

(60) Artificial Stone Wet Brush Texturing (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Cement	16	kg			
White-Cement	4	kg			
Sand	0.026	m ³			
Crushed-Stone	15	kg			
Pigment					
Worker		person			
Plasterer		person			
Sub-Total					

(61) Wood Brackets For Coiling (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Wood	0.0216	m ³			
Nails	0.08	kg			
Carpenter		person			
Worker		person			
Sub-Total					

(62) Textile Finishing (Per m²)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Textile	11.2	m ²			
Nails	0.035	kg			
Worker		person			
Transportation	1	m ²			
Sub-Total					

(63) Levelling Mortar

Item	Quantity	Unit	Unit Price	Cost	Remarks
Cement	12	kg			
Sand	0.028	m ³			
Worker		person			
Plasterer		person			
Sub-Total					

(64) Silaraeng Masonry

Item	Quantity	Unit	Unit Price	Cost	Remarks
Silaraeng	0.04	m ³			
Mortar	0.01	m ³			
Worker		person			
Plasterer		person			
Sub-Total					

(65) Folding Door

Item	Quantity	Unit	Unit Price	Cost	Remarks
Teak	46.5	m ²			
Bed Wood	23.25	m ²			
Metal	23.25	m ²			
Carpenter		person			
Worker		person			
Sub-Total					

(66) I-Steel Beam

Item	Quantity	Unit	Unit Price	Cost	Remarks
I-Steel Beam	300x150x11 x18.5	kg			
	55.5 kg				
Worker		person			
Sub-Total					

(67) Substation Concrete Foundation (Intake Site & Proposed W. T. Plant)

Item	Quantity	Unit	Unit Price	Cost	Remarks
Excavation	99.2	m ³			
Surplus Soil	71.7	m ³			
Rubble Stone	13.6	m ³			
Concrete	64.5	m ³			1:2 = 4
Forms	35.0	m ²			
Wooden Piling	16	pc.			100, = 3m
Sub-Total					

Part 5 Cost of Materials

List of Construction Materials & Machine

Item	Unit	Foreign Currency	Domestic Currency	Remarks	Item	Unit	Foreign Currency	Domestic Currency	Remarks	Item	Unit	Foreign Currency	Domestic Currency	Remarks
Construction Machine Rental Fee					Forms & Timber					Interior Fitting				
Bulldozer	Hr	-		10t	Forms	m ³	-		class-A	Double Swing	set			1,600 x 2,200
Shovel	"	-		0.6m ³	"	"	-		class-B	Window	"			1,600 x 900
Dragline	"	-		"	"	"	-		class-C	"	"			1,600 x 1,800
Dump Trucks	"	-		6t	Board	"	-		For Earth Works	Single Swing Window	"			800 x 600
Pile Driver	"	-		H = 15m	Timber	"	-			5-Panel Box Window	"			4,500 x 2,900
Precast Concrete					Steel & Fixtures					Non Opening Window				
0.2 x 0.2 x 12 ^m	pc	-		Electric	Plate	kg	-		For Checker- ed plate	Pivoted Window	"			W-1
0.13 x 0.13 x 7	"	-		" pole	"	"	-		Grating	"	"			W-2
0.18 x 0.18 x 8	"	-		pile	"	"	-		Common plate normal	"	"			W-3
0.3 x 0.3 x 6	"	-		"	H-Beam	"	-			Double Swing Door	"			3,000 x 2,500
0.3 x 0.3 x 8	"	-		"	L-Beam	"	-			"	"			1,600 x 2,000
0.3 x 0.3 x 10	"	-		"	L-Angle	"	-			"	"			1,700 x 2,000
0.7/0.4 x 0.45/0.45 x 11	"	-		T-type	Bolts, Nuts.	"	-			"	"			WD-3
0.13 x 1.0 x 2.1	"	-		Flatslab	Fence Post Nails	"	-			"	"			
2.1 ^m	"	-		"	Sheet Pile	"	-			Single Swing Door	"			800 x 1,950
0.19 x 0.4 x 11 ^m	"	-		"	"	"	-			"	"			800 x 2,000
0.06 x 0.4 x 2	"	-		"	Reinforcing Bar	"	-			"	"			600 x 1,950
0.35 x 0.35 x 0.2	"	-		Plaster Block	Round Bar	kg	-		Less than ϕ 9 mm	"	"			
Stone, Gravel, Sand, etc.					Deformed Bar					Screen Door				
Silaraeng	m ³	-			"	"	-		ϕ 12 - ϕ 15	Screen Door	"			WD-5
Rubble Stone	"	-			Wire & Wire Net									
Filling Sand	"	-		L = 4km	Wire	kg	-		#20					
Fine Sand	"	-			Barbed Wire	m	-		#14					
" Gravel	"	-			Wire Net	m ²	-		#10					
Cement	kg	-		Portland										
Brick	pc	-												
Rubber Joint				For Expansion Joint										

Item	Unit	Foreign Currency	Comestic Currency	Item	Unit	Foreign Currency	Domestic Currency	Item	Unit	Foreign Currency	Domestic Currency	Item	Unit	Foreign Currency	Domestic Currency
Ductile Case Iron Pipe class-3				Asbestos Cement Pipe				350	set	-	-	Sluice Valve &			
Including Joint				Class - 20 Including Coupling				400	"	-	-	Screw type Valve Box			
∅ 100 mm	m	-	-	∅ 100 mm				450	"	-	-	∅ 75 mm	Set	-	-
150	"	-	-	150				500	"	-	-	100	"	-	-
200	"	-	-	200				600	"	-	-	125	"	-	-
250	"	-	-	250				Galvanized Steel Pipe				150	"	-	-
300	"	-	-	300				∅ 12 mm	m	-	-	200	"	-	-
350	"	-	-	Asbestos Cement Pipe				20 "	"	-	-	250	"	-	-
400	"	-	-	For Drain class-A				25 "	"	-	-	300	"	-	-
450	"	-	-	∅ 80 mm				32 "	"	-	-	350	"	-	-
500	"	-	-	100				35 "	"	-	-	400	"	-	-
600	"	-	-	150				50 "	"	-	-	450	"	-	-
700	"	-	-	Gibault Joint Class-15				60 "	"	-	-	500	"	-	-
Flange Type Steel Pipe				∅ 100 mm	Set	-	-	80 mm	"	-	-	Butterfly Valve &			
Coating: Inside Cut Side				150	"	-	-	100 mm	"	-	-	Hat-type Valve Box			
Tar-Epoxy Coating				200	"	-	-	150	"	-	-	∅ 350 mm	Set	-	-
∅ 350 mm	kg	-	-	250	"	-	-	200	"	-	-	400	"	-	-
400	"	-	-	300	"	-	-	250	"	-	-	450	"	-	-
450	"	-	-	400	"	-	-	300	"	-	-	500	"	-	-
500	"	-	-	500	"	-	-	Steel Pipe Tar-Epoxy Coating				600	"	-	-
600	"	-	-	600	"	-	-	350	m	-	-	700	"	-	-
Asbestos Cement Pipe				Gibault Joint Class-20				400	"	-	-	800	"	-	-
Class-15 Including Coupling				∅ 100 mm	Set	-	-	450	"	-	-	Fire Hydrant			
∅ 100 mm	m	-	-	150	"	-	-	600	"	-	-	∅ 100 mm	Set	-	-
150	"	-	-	200	"	-	-	800	"	-	-	Accessory	"	-	-
200	"	-	-	250	"	-	-	Specials				Air Valve			
250	"	-	-	300	"	-	-	for ACP	kg			∅ 75 mm	Set	-	-
300	"	-	-	Glands Class-3				for GSP	"			Accessory	"	-	-
400	"	-	-	∅ 100 mm	"	-	-	for DCIP	"	-	-				
500	"	-	-	150	"	-	-								
600	"	-	-	200	"	-	-								
				250	"	-	-								
				300	"	-	-								

Item	Unit	Foreign Currency	Domestic Currency	Item	Unit	Foreign Currency	Domestic Currency	Item	Unit	Foreign Currency	Domestic Currency	Item	Unit	Foreign Currency	Domestic Currency
Angle Valve				Electric Cable				Cable Head				Flexible Conduit			
φ 15 mm	Set	-	-	600"EV600 -1 ^c	m	-	-	600 EV600 -1 ^c	set	-	-	φ 100	m	-	-
φ 16 mm	"	-	-	" 250 -1 ^c	"	-	-	" 250 -3 ^c	"	-	-	76	"	-	-
φ 35 mm	"	-	-	" 250 -3 ^c	"	-	-	" 250 -1 ^c	"	-	-	51	"	-	-
φ 100 mm	"	-	-	" 150 -3 ^c	"	-	-	" 150 -3 ^c	"	-	-	39	"	-	-
Polyvinyl Chloride Pipe				" 100 -3 ^c	"	-	-	" 100 -3 ^c	"	-	-	31	"	-	-
Type 5				" 80 -4 ^c	"	-	-	" 80 -4 ^c	"	-	-	25	"	-	-
φ 15 mm	m	-	-	" 60 -4 ^c	"	-	-	" 60 -4 ^c	"	-	-	19	"	-	-
18	"	-	-	" 50 -3 ^c	"	-	-	" 50 -3 ^c	"	-	-	Concrete Trough			
20	"	-	-	" 38 -4 ^c	"	-	-	" 38 -4 ^c	"	-	-	250 mm wide	m	-	-
25	"	-	-	" 38 -3 ^c	"	-	-	" 38 -3 ^c	"	-	-	150 "	"	-	-
35	"	-	-	" 22 -4 ^c	"	-	-	" 14 -4 ^c	"	-	-	70 "	"	-	-
40	"	-	-	" 22 -3 ^c	"	-	-	" 14 -3 ^c	"	-	-	Pull Box			
55	"	-	-	" 14 -4 ^c	"	-	-	" 14 -2 ^c	"	-	-	200x150x100	set	-	-
65	"	-	-	" 14 -3 ^c	"	-	-	Conduit Tube				150x100x100	"	-	-
80	"	-	-	" 8 -4 ^c	"	-	-	φ 104		-	-	Manhole			
100	"	-	-	" 8 -3 ^c	"	-	-	82		-	-	1.2 ^m x1.2 ^m x1.5 ^m	set	-	-
125	"	-	-	" 5.5 -4 ^c	"	-	-	54		-	-	Handhole			
Plain Concrete Pipe (Socket)				" 5.5 -3 ^c	"	-	-	42		-	-	0.6 ^m x0.6 ^m x1.0 ^m	set	-	-
φ 100 mm	m	-	-	" 5.5 -2 ^c	"	-	-	36		-	-	Earth Plate			
150	"	-	-	" 3.5 -4 ^c	"	-	-	28		-	-	600x600x1.6 ^t	set	-	-
200	"	-	-	" 3.5 -3 ^c	"	-	-	22		-	-	Earth Bar			
250	"	-	-	" 2 -3 ^c	"	-	-	Normal Bend					set	-	-
300	"	-	-	" 2 -2 ^c	"	-	-	φ 104		-	-	Concrete Pole			
500	"	-	-	Electric Wire				82		-	-	H=12 ^m	set	-	-
600	"	-	-	IV 100 ^o	m	-	-	54		-	-	Messenger Wire			
Reinforced Concrete Pipe				" 38 ^o	"	-	-	42		-	-	4 ^φ /7	m	-	-
φ 500 mm	m	-	-	" 22 ^o	"	-	-	36		-	-	Junction Box			
				" 14 ^o	"	-	-	28		-	-	Pipe (GS)	set	-	-
				" 5.5 ^o	"	-	-					φ 200	m	-	-
				" 1.6 mm	"	-	-					Elbow (90 ^o)			
					"	-	-					set	-	-	-

Method of Calculation for Import Goods & Pre-Cast Concrete (1) Cost of Ductile Pipe (JIS Class 3, including Glands) (Mortar Lining)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Size (Dia. x Length)	Unit Weight (kg)	Measurement (cu. ft.) (m/t)		CIF Bangkok /pc. (Foreign)	Unit Price (Baht)	Import Duty (Baht)	Business Tax (Baht)	CIF Duty Tax Paid (Baht)	L/C Opening Charge (Baht)	Customs Clearance Charge	No. of Pipes per 10-ton Truck Load	Transport Charge (Baht per pc)	Ex Job Site at Chiang Mai (Baht)	Unit Price (per m.) (Baht)	Unit Price (per kg.) (Baht)
					E x	F x	(F+G) x	F+G+H	F x	D x Baht			I+J+K+M (Baht)		
350mm x 6m	348	47.9	1.198								18				
400mm x 6m	426	59.8	1.495								11				
450mm x 6m	511	73.75	1.844								9				
500mm x 6m	609	86.17	2.654								7				
600mm x 6m	815	113.03	2.826								7				
700mm x 6m	1,050	151.84	3.796								5				
800mm x 6m	1,320	191.83	4.796								5				
900mm x 6m	1,620	242.96	6.074								3				

(2) Cost of Steel Pipe (per piece) Spec: JIS G 3443 Coating Inside & Outside tar-epoxy coating Joint: Flange type

A	B	C	E	F	G	H	I	J	K	L	M	N	O
Size (Dia. x Length)	Weight (kg)	Measurement (cu. ft.) (m/t)	CIF Bangkok /pc. (Foreign)	Unit Price (Baht)	Import Duty (Baht)	Business Tax (Baht)	CIF Duty Tax Paid (Baht)	L/C Opening Charge (Baht)	Customs Clearance Charge	No. of Pipes per 10-ton Truck Load	Transport Charge (Baht/pc.)	Ex Job Site at Chiang Mai (Baht)	Unit Price (per kg) (Baht)
				E x	F x	(F+G) x	F+G+H	F x					
350 x 6,000 t=6 mm	310 + 58.2	59.6	1.49							8			
400 x 6,000 t=6 mm	355 + 69.4	71.9	1.7975							7			
450 x 6,000 t=6 mm	401 + 92.6	90.2	2.255							6			
500 x 6,000 t=6 mm	446 + 116.2	106	2.65							5			
600 x 6,000 t=6 mm	535.8 + 159.4	160	4.00							3			
800 x 6,000 t=7.1 mm	846 + 276	270	6.75							2			

(3) Asbestos - Cement Pipes (Pressure Pipes, Class - 15)

A Pipe Cost			B Couplings		C	D	E	Cost per Meter
Size (Dia. x Length)	Unit Weight (kg.)	List Price (Baht)	Weight (kg.)	List Price (Seal Rings included) (Baht)	Transport Charge (Baht /pc.)	No. of Pipes Per 10-Ton Truck Load	Ex Job Site at Chiang Mai(Baht)	(Baht/m)
φ100 ^{mm} x 4 ^m	30		3.2			28		
φ150 ^{mm} x 4 ^m	47		4.6			26		
φ200 ^{mm} x 4 ^m	80		7.2			24		
φ250 ^{mm} x 4 ^m	114		9.7			22		
φ300 ^{mm} x 4 ^m	154		12.7			22		
φ400 ^{mm} x 4 ^m	263		20.2			20		
φ500 ^{mm} x 4 ^m	448		29.1			18		
φ600 ^{mm} x 4 ^m	624		40.3			16		
						14		

(4) Asbestos - Cement Pipe (Pressure Pipes, Class-20)

A Pipe Cost			B Couplings		C	D	E	Cost per Meter
Size (Dia. x Length)	Unit Weight (kg.)	List Price (Baht)	Weight (kg.)	List Price (Seal Rings included) (Baht)	Transport Charge (Baht pc.)	No. of Pipes Per 10-Ton Truck Load	Ex Job Site at Chiang Mai(Baht)	(Baht/m)
φ100 ^{mm} x 4 ^m	33		3.6			28		
φ150 ^{mm} x 4 ^m	61		6.1			26		
φ200 ^{mm} x 4 ^m	106		9.1			24		
φ250 ^{mm} x 4 ^m	145		12.5			22		
φ300 ^{mm} x 4 ^m	200		16.5			20		

(5) Cost of Headstocks

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Type	Measurement (cu.ft.)	Weight (M/T) A/40	Weight (Net)	Unit Price (Gross)	CIF Bkk /pc. (Foreign)	Unit Price (Baht) F x	Import Duty (x G)	Business Tax (G+H) x	CIF Duty Tax Paid	L/C Opening Charge G x	Customs Clearance C x	No. of Pcs. Per 10-Ton Truck Load	Transport Charge (per pc.) (Baht)	Ex. Job Site at Chiang Mai J+K+L+N
H - 1 (75 - 150mm)	6	0.35	50	60								83		
H - 2 (200 - 300)	14	0.35	80	95								38		
G - 1 (350, 400)	23	0.58	140	170								22		
G - 2 (450, 500)	35	0.88	180	210								14		

Note: The distance from the Concrete Slab to the center of the valve is 3.0 m.

The material for the rod shall be according to SUS 403 and its cost shall be included in the CIF B'kok price.

(6) Cost of Gland Joints (per set)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	
Description	Size (mm)	Weight (kg)	Measurement (c. ft.)	Measurement (M/T)	CIF Bkk /pc. (Foreign)	Unit Price (Baht) F x	Import Duty F x	Business Tax (F+G)x	CIF Duty Tax Paid	L/C Opening Charge F x	Customs Clearance Charge D x	No. of Pcs. per 10-Ton Truck Load	Transport Charge (Baht/track)	Ex Job Site at Chiang Mai
Gland Joint	300	9.8	0.27	0.007								1,851		
Gland Joint	350	13.1	0.3	0.008								1,666		
Gland Joint	400	1.60	0.4	0.01								1,250		
Gland Joint	450	18.9	0.5	0.013								1,000		
Gland Joint	500	22.0	0.6	0.015								833		
Gland Joint	600	27.5	0.8	0.02								625		
Gland Joint	700	39.1	1.1	0.028								455		
Gland Joint	800	48.6	1.4	0.035								357		

(7) Cost Of Valve For Chiang Mai (per pc.)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Type	Measurement (cu.ft.)	(M/T)	Weight (Net) (kg.)	Weight (Gross) (kg.)	CIF Bkk (Foreign)	Unit Cost (Baht)	Import Duty (Baht)	Business Tax (Baht)	CIF Duty Tax paid (Baht)	L/C Opening Charge (Baht)	Customs Clearance (Baht)	No. of Pipes per 10-Ton Truck Load	Transport Charge	Ex Job Site at Chiang Mai
		A/40				E x	G x	(G+H)x	G+H+I	G x	G x	(each)	(Baht/truck)	J+K+L+N
Manual Operated Butterfly Valve				B114										
BSP-350	28	0.700	283	354								17		
400	35	0.875	444	500								14		
450	40	1.000	536	670								12		
500	45	1.125	596	745								11		
600	62	1.550	848	1,060								8		
700	87	2.175	1,184	1,480								5		
800	120	3.000	1,472	1,840								4		
Sluice Valve with Hand Wheel JIS B 2062														
SJF-350	23	0.575	378	473								21		
400	29	0.725	527	659								17		
450	37	0.925	669	836								13		
500	44	1.100	835	1,044								11		
600	73	1.825	1,218	1,523								6		
700	103	2.575	1,650	2,063								4		
800	144	3.600	2,419	3,024								3		

(8) Cost of Steel Pipe (per piece) Using Domestic Materials When Less Than ϕ 300 mm

A	B		C	D	E	F	G	H	I	J	K	L
Size (mm)	Weight (T mm) (kg)		Measurement (cu.ft.) (M/T)	CIF Bkk (Cost/pc.) (Unit)	Unit Price (Baht) E x	Import Duty F x	Business Tax (F+G) x x	CIF Duty Tax paid (F+G+H)	L/C Opening Charge F x	Transport Charge	Ex Job Site At Chiang Mai	1/6
100 x 6,000	Galvanized Steel Pipes											
150 x 6,000												
200 x 6,000												
250 x 6,000												
300 x 6,000												
350 x 6,000	6	310	22.9	0.57								
400 x 6,000	6	355	29.6	0.74								
450 x 6,000	6	401	36.5	0.90								
500 x 6,000	6	446	45.7	1.14								

(9) Cost of Ductile Cast Iron Specials (Tee- Type Joint) (per ton)

A	B		C	D	E	F	G	H	I	J	K	L
Size (mm)	Weight (kg)	of Tee (per ton) No. of Pieces	Measurement (cu.ft.) (Metric Ton) (cu.ft.) (M/T)	CIF Bkk (Cost/pc.) (Unit)	Ton Cost (Baht) E x	Import Duty F x	Business Tax (F+G) x	CIF Duty Tax paid (F+G+H)	L/C Opening Charge F x	Transport Charge	Ex Job Site At Chiang Mai	
350	177	5	67.70	1,692								
400	229	4	71.84	1,795								
450	278	4	93.34	2,332								
500	333	3	110.90	2,773								
600	472	2	111.00	2,775								
700	629	1.5	111.00	2,775								

(10) Pre-Cast Concrete

Description	A		B	C	D	Remarks
	Size	Materials Weight (kg)	List Price (Baht)	Transport Charge (Baht/pc.)	No. of Pcs. per 10- Ton Truck Load	
Prestressed Concrete Electrical Pole	12 m 15 x 18 cm	1190			25	
Prestressed Concrete Telephone Pole	7 m	330			30	
Prestressed Concrete Flat Slab	0.13/1.0/2.0 ^m	576			17	
Reinforced Concrete T-type Pile	0.7/0.4 ^m 0.45/0.15 ^m H = 11 ^m	5,472			2	
Prestressed Concrete Fence Post	2.1 m	26			200	
Prestressed Concrete Solid Square Pile	0.35/0.35/10 ^m	2,950			4	
Prestressed Concrete Sheet Pile	0.19/0.4/11 ^m	2,173			4	
Prestressed Concrete Sheet Pile	0.06/0.4/2 ^m	124			70	
Prestressed Concrete Slab	0.05/0.5/0.5 ^m	30			300	
Precast Concrete Pile	300 ^{mm} x 6 ^m	710			12	Double Half Moon
Precast Concrete Pile	300 ^{mm} x 8 ^m	940			9	"
Precast Concrete Pile	350 ^{mm} x 10 ^m	1,890			4	"

(11) Cost of Lift Pump

A		B	C	D	E	F	G	H	I	J	K	L	M	N
Description	Size	Weight (kg)	Measurement (cu.ft)	(M/T)	CIF Bkk (Cost/set) (Unit:)	Unit Cost (Baht) E x	Import Duty F x	Business Tax (F+G) x	CIF Duty Tax Paid (F+G+H)	L/C Opening Charge	Customs Clearance Charge	No. of Pcs. Per 10-ton Truckload	Transport Charge	Ex Job Site at Chiang-Mai
Distribution Pump	D=300 mm q=8.4m ³ /min H=39m 100 kw - 2 set Motor Power 100kw x 380 ^v x 4 ^p including Accessories													
Distribution	D=200mm q=4.2m ³ /min H=39m 55kw - 2 Set Motor Power 55kw x 380 ^v x 4 ^p including Accessories													
Washing Pump	q=2m ³ /min H=19m 15kw - 3 Set Motor Power 15kw x 380 ^v x 4 ^p including Accessories													
Raw-Water Pump	q=12/22m ³ /min H=42m 150kw - 2 Set Motor Power 150kw x 380 ^v x 4 ^p including Accessories													
	q=5.35m ³ / min H=47m 75kw - 2 Set Motor Power 75kw x 380 ^v x 4 ^p including Acces.													
Sand Pump	D=100mm q=1.4m ³ /min H=10 5.5kw - 1 Set Motor Power 5.5kw x 380 ^v x 2 ^p including Accessories													

(12) Cost of Water Treatment Machine

A		B	C	D	D	F	G	H	I	J	K	L	M	N
Description	Size	Weight (kg)	Measurement (cu.ft.)	(M/T)	CIF Bkk (Foreign)	Per Pc. (Baht) E x	Import Duty F x	Business Tax (F+G)x	CIF Duty Tax Paid (F+G+H)	L/C Opening Charge F x	Customs Clearance Charge	No.of Pcs. Per Truck Load	Transport charge	Ex Job Site at Chiang Mai
Flush Mixer	2 sets										-	-		
Flocculator	8 sets										-	-		
Flight Conveyer	2 Groups										-	-		
Sludge Pump	2 sets										-	-		
Trough	3.5m ³ /min x 15m x 15kw FRP										-	-		
Trough	250x400x3400 ^{mm}	65 ^k x12 ^{set}									-	-		
Trough	FRP 380x400x5100 ^{mm}	48 ^k x24 ^{set}									-	-		

(13) Cost of Steel & Iron Materials

A		B	C	D	E	F	G	H	I	J	K	L	M	N	
Description	Size	Weight (kg)	Measurement (cu.ft.)	(M/T)	CIF Bkk (Cost/ pc.)	Per Pc. E x	Import Duty B x	Business Tax (F+G)x	CIF Duty Tax Paid (F+G+H)	L/C Opening Charge F x	Customs Clearance Charge D x	No.of Pcs. Per 10-Ton Truck Load	Transport Charge (Baht pc.)	Ex Job Site at Chiang Mai	Cost Per kg.
Trench Sheet Pile	4mm-250mmx6m	72	5.8	0.145								86			
Sheet Pile No.3 Type	13mm-400mmx10m	480	16.7	0.4175								30			
H-Beam	300x300x10x15x7m	658	23.3	0.5829								21			
H-Beam	300x300x10x15x10m	940	33.3	0.8323								15			
H-Beam	300x300x10x15x13m	1,222	43.3	1.082								12			
Checkered Plates	4.5x914x1829mm	61.8	0.278	0.007								1,799			
Checkered Plates	6x914x1829mm	81.5	0.371	0.009								1,348			
L-Angles	90x90x10x9mmx9m	119.7	0.566	0.014								383			
L-Angles	90x90x10x12m	159.6	0.755	0.019								662			
Plate	14x914x1829mm	184	0.862	0.021								580			
Plate	9x914x1829mm	118	0.555	0.014								901			
Plate	7x914x1829mm	91.9	0.433	0.01								1,155			
Plate	5x914x1829mm	65.6	0.309	0.008								1,618			
E-Channels	150x75x9mmx9m	216	3.74	0.094								134			

