CHAPTER 8

COST ESTIMATE

CHAPTER 8 COST ESTIMATE

8.1 Introduction

This chapter is prepared for the estimate of the project cost for the component of Urban Drainage System Improvement, which consist of Semarang River Drainage System Improvement (hereinafter referred to as the Package-1), Asin River Drainage System Improvement (the Package-2) and Bandarharjo Drainage System Improvement (the Package-3).

8.2 Constitution of Project Cost and Conditions of Cost Estimate

8.2.1 Constitution of Project Cost

Project cost is composed of such costs as construction base cost, engineering service cost, compensation cost, administration cost, physical contingency, price contingency and tax. In addition, construction base cost is divided into many cost items as illustrated in Fig. 8.2.1.

The explanation of each project cost item is described below. Administration cost, physical contingency, price contingency and tax are calculated by ratios which are expressed in percentage to other cost items (refer to Table 8.2.1):

Construction Base Cost : Construction base cost is composed of direct cost estimated based on the work quantities and indirect cost which is estimated in percentage (refer to Sub-Section 8.2.2 Composition of Construction Base Cost).

Engineering Service Cost :Engineering service cost is mainly expended for the construction supervision services of consultants. It is estimated based on the number of consultant engineers and other expenses, necessary for the supervision service. The engineering service cost is estimated based on the data collected from the previous and current similar projects.

Compensation Cost :Compensation cost consists of the land acquisition and house evacuation costs.

Administration Cost :This cost is Project Owner's expenditures for the proper project management to execute the project implementation smoothly.

Seven (7) % of the sum of the construction base cost and the compensation cost is adopted.

Physical Contingency :Six (6) % of the sum of the construction base cost, the engineering service cost and the compensation cost is considered for contingent expenses for the incidental construction tasks.

Price Contingency :This contingency is the cost for the price escalation. From the economical point of view, it is assumed and adopted that **three** (3) % of all costs, in which construction base cost, enginnering service cost, compensation service cost, administration service cost and physical contingency are included, in foreign currency portion and **eight (8)** % of all costs in local currency portion is the ratios of price escalation for one (1) year. (Refer to Tables 8.2.2 and 8.2.3)

Value Added Tax :**Ten (10)** % of the construction base cost, the engineering service cost and contingencies shall be considered.

8.2.2 Composition of Construction Base Cost

The construction base cost is calculated in the following manner.

Construction Base Cost = Σ (Unit Cost for a Payment Item x Work Quantity for a Payment Item).

The unit costs for payment items are estimated as the sum of the direct cost and the indirect cost.

(1) Direct cost

The estimate for direct costs is performed based on the quantities of all construction tasks shown on drawing and described in project requirements. The direct cost includes all of countable element due to the type, size, design, construction procedures and quality of the intended structure, which are taken into account when deriving the cost for each work item. Direct costs are broken down into the following costs and rates.

(a) Basic Cost

Basic costs are determined at first for the estimate of the project cost. Basic costs consist of labor wage, prices of materials and operation costs of equipment. Details of each basic cost are explained in Section 8.3.

(b) Unit Rate

Using the basic costs, unit rates are estimated for basic work items such as unit rate of excavation by backhoe, rate of concrete works per 1.0 m^3, etc. Basic costs and unit rates were used directly to compute unit costs of payment items, which correspond to items of bill of quantities. Unit rates are explained in Section 8.4.

(2) Indirect Cost

The indirect cost on the project is an integral part for estimate. "Site expense", "Overhead and profit" and parts of "Preparatory and Temporary works" ("General" in items of bill of quantities and payment) are considered as the indirect cost.

"Site expense" includes the cost items such as staffing, site office expenses, consumables, small tools and insurance for laborers at a site. **Fifteen (15) %** of direct costs of each payment item are adopted.

"Overhead and Profit" includes the cost items such as home office support, profit and insurance at head office. **Ten (10) %** of the sum of the direct costs of each payment item and site expense is adopted.

"Site expense" and "Overhead and Profit" are added in unit costs of payment items.

"Preparatory and Temporary works" includes countable and uncountable items, direct cost and indirect cost, such as temporary buildings, electrical facilities, water supply system, construction and maintenance for access road, investigation and temporary utilities. These costs for each payment item are added up as countable cost or appropriated as percentage. Lump sum for each facilities, system and maintenance is adopted referring to similar and recent projects or quotation by private firms through formal inquiry letters.

8.2.3 Conditions of Project Cost Estimate

(1) Price Level and Foreign Exchange Rate

The cost estimate is made on the price level as of **the end of July 1999**, since the cost data of materials, laborers, equipment and other necessary items for the cost estimate are collected in this period. The foreign exchange rate applied to the cost estimate is **US$ 1.0 = Rp. 6,885** and **¥1.0 = Rp. 60.39** of the International Banking Rate at that time.

(2) Currency Component

The project cost is divided into the foreign currency components representing pure foreign and indirect foreign currencies and local currency component. The local currency for cost estimate is expressed in Rupiah currency. Moreover, the pure foreign and the indirect foreign currencies and total cost are expressed in Rupiah after exchanging from Yen, US$ or Other Currencies to Rupiah. The pure foreign currency, indirect foreign currency and local currency comprise the following items respectively:

Pure Foreign Currency (Rp.)	: Cost of wage for foreign engineer and foreman, (1) Base cost of all components for construction plants and heavy equipment except local mechanic, maintenance, repairing, fuel and laborer costs, (2) Cost of imported materials and Cost of materials that are produced in Indonesia by Foreign-Indonesian joint enterprise with the capital of the foreign firm which occupy more then 10% of the share.
Indirect Foreign Currency (Rp.)	: Cost of foreign portion of local materials and Cost of foreign portion of equipment produced in Indonesia.
Local Currency (Rp.)	: Cost of per diem portion for foreign personnel, Cost of local laborers,

Cost of local portion of local materials,
Cost of local portion of equipment produced in Indonesia, and
Inland transportation cost exclusive of foreign portions

Refer to Section 8.3 for further details.

8.3 Basic Cost

The basic costs are estimated as unit rates for basic laborer, material and equipment costs.

8.3.1 Condition of Currency Component

The basic costs are estimated in terms of pure and indirect foreign currencies and local currency. The constitution of currency component is explained below.

(1) Laborer Cost

The laborer cost is computed as local currency portion in the cost estimate. The foreign laborer wage is computed as pure foreign and local currencies taking into account the annual income, airfare and living allowance, etc.

(2) Material Cost

Materials are counted as local currency portion and indirect or pure foreign currency portion taking account into their usage of imported raw or processed materials, costs of production facilities and amount imported as a pure or indirect foreign currency. The price ratios of some material groups divided into every portion are listed in Table 8.3.1.

(3) Equipment Cost

The currency component of the operation cost of the equipment is taking account into the following currency portion.

Pure Foreign Currency (Rp.) : Hourly depreciation costs,
Spare parts and foreign mechanic costs for repairing, and
Parts of annual management costs

Indirect Foreign Currency (Rp.)	:	Foreign portion of local material such as tire, fuel, etc.
Pure Local Currency (Rp.)	:	Local mechanic cost for repairing, Local laborer for repairing, and Parts of annual management costs.

8.3.2 Basic Cost of Laborer

The List of Construction Material Unit Cost in Semarang by DPU, April-May 1999/2000 (hereinafter referred to as "DPU Cost Table") ("Daftar Harga Satuan Bahan Bangunan), as well as survey in the Semarang City, are referred for the basic costs of laborer. The costs of laborer wages are shown in Table 8.3.2 including the laborer's all fringe benefits, such as vacation and sick leave, charge of insurance, living allowance and others according to the Labor Law in Indonesia.

8.3.3 Basic Cost of Material

Prices of materials required for the construction works are canvassed from DPU Cost Table, some cost reports published periodically and domestic market price survey as well as Japanese market price (refer to Chapter 6 Reference Material).

Table 8.3.3 shows basic costs of materials divided into each currency portion.

8.3.4 Basic Cost of Equipment

The costs of equipment are reached by the calculation measure of Japanese Construction Equipment Society as well as the measure of Technical Guide of Cost Analysis & Unit Price of Work in Semarang, Bina Marga 1995. The equipment cost for the work consists of the hourly depreciation cost, repairing cost, annual management cost and operator wage for operating, which are calculated by using a rate of delivered cost, proper economical life and repairing rate in Indonesia.

Hourly driving equipment cost calculated is shown in Table 8.3.4.

8.3.5 Reference Book

The following reference books are referred for the estimate of the basic costs:

No.	Data in Indonesia		Data in Japan
	Indonesian Word	English Word	
1	Daftar Harga Satuan Bahan Bangunan, DPU	The list of Construction Material Unit Price, DPU	
2	Jurnal Bahan Bangunan, Konstruksi dan Interior	Journal of Building & Iterior	
3	Petunjuk Teknik Analisa Biaya dan Harga Stuan Pekerjaan Kabupaten, Bina Marga 1995	Technical Guide of Cost Analysis & Unit Price of Work in Semarang, Bina Marga 1995	
4			Construction Equipment/Machine Catalogue in Japan
5			Depreciation Calculation Table by Japanese Construction Equipment Society
6			Journal of Cost Estimate, July 1999

8.4 Unit Rates for Work Items and Unit Costs for Payment Items

Based on the basic costs mentioned in the preceding chapter, unit rates for work items and unit costs for payment items will be calculated in the manner mentioned hereinafter.

8.4.1 Unit Rate

It is important for estimate of unit rates, such as excavation by an excavator, or concreting works by m^3, etc. to decide production rates. The most of production rates are quoted from Japanese and Indonesian Standard. Japanese standard rates are utilized in case of

construction works by using equipment for weir, bridge, dredging, earth works and so on. On the other hand, Indonesian Standard rates are utilized in case of construction by manpower mainly, such as building, masonry works and etc. The summary of unit rates is enumerated in Table 8.4.1.

8.4.2 Unit Cost for Payment Item

(1) General

As described in Fig. 8.2.1, an unit cost for a payment item consists of basic costs, unit rates and their production rates.

The other conditions for the estimates of unit costs are as follows:

(a) Quotation

Quotations of electrical and mechanical facilities for pumping facilities and gates are asked to private firms for certainty.

(b) Mobilization and Demobilization

Based on the construction schedule established in "Volume VI Construction Planning", numbers of mobilization and demobilization of equipment for cost estimates are counted. The results, which are adopted to the unit costs for payment items, of the number of trailer, track and vessel for mobilization and demobilization are summarized in Tables 8.4.2 and 8.4.3.

(2) Amount of Unit Costs for Payment Items

The unit costs for payment items, which are tabulated in the Volume IV, Work Quantity Calculation, in three (3) packages are broken dawn into basic costs and unit rates with construction base costs in Tables 8.5.1 to 8.5.3.

8.4.3 Reference Book

In addition to the reference book enumerated in Sub-section 8.3.5, the following books/materials are referred to for computation of unit rates and costs.

No.	Data in Indonesia		Data in Japan
	Indonesian Word	English Word	
1	Dasar Penyusunan Anggaran Biaya Bangunan	Standard of Building Cost Estimate	
2			Standards Outline of Production Rate for Construction (1998)
3			Manual for Cost Estimate Standard for Civil Work by Ministry of Construction (1999)
4			Construction Equipment/Machine Catalogue in Japan
5			Standard of Cost Estimate for Civil Work by Ministry of Construction (1999)

8.5 Project Cost

8.5.1 Construction Schedule

To estimate the project cost, construction schedule is most important factor in terms of price escalation, depreciation cost of equipment and/or temporary facilities, running cost of site office and so on. Therefore the construction schedules of three (3) packages which were established in Volume VI Construction Planning, are confirmed hereafter. The schedule are prepared under the assumption that the project implementation starts at the beginning of 2001 with arrangement such as tendering, contract and etc. in 2000. The project is completed until the end of 2003. The schedules of main items are assumed as follows (refer to Volume VI Construction Planning);

Package-1 (Semarang River Drainage System Improvement)

1. Preparatory Works	:	Jan. 2002 – Mar. 2002
2. Dredging and Excavation	:	Apr. 2002 – Oct. 2003
3. Dike Raising	:	Apr. 2002 – Nov. 2002
4. Closure of Drainage Outlets	:	Apr.2003 – Oct. 2003
5. Inspection Road	:	Apr. 2003 – Sep. 2003

Package-2 (Asin River Drainage System Improvement)

1. Preparatory Works	:	Jan. 2001 – Mar. 2001
2. Asin River Improvement	:	Apr. 2001 – Nov. 2003
3. Semarang River Improvement	:	Apr. 2001 – Nov. 2001
4. Asin Pumping Station	:	May 2002 – Mat 2003
5. Retarding Pond	:	May 2002 – Nov. 2002
6. Inspection Road	:	May 2003 – Nov. 2003

Package-3 (Bandarharjo Drainage System Improvement)

1. Preparatory Works	:	Jan. 2001 – Apr. 2002
2. Baru River Improvement	:	May 2001 – Oct. 2002
3. Baru Pumping Station	:	May 2002 – May 2003
4. Retarding Pond	:	May 2001 – Nov. 2002
5. Secondary Channel Works	:	Apr. 2002 – Nov. 2003

8.5.2 Project Cost

(1) Construction Base Cost

Based on the unit costs for each payment item, construction base costs of three (3) packages are computed respectively and summarized as follows:

(a) Package-1: Semarang River Drainage System Improvement

The payment items, the work quantities, the unit costs and the construction base cost for Package-1 are indicated in Table 8.5.1. Dredging, excavation, pavement and masonry works account for main items in this package. Dredging and excavation works include treatment of soil to prevent leaching of heavy metals from excavated material not to contaminate ground water at a spoil bank.

(b) Package-2: Asin River Drainage System Improvement

The payment items, the work quantities, the unit costs and the construction base cost for Package-2 are indicated in Table 8.5.2. The main structure in this package is Asin Pumping Station. The works for construction of the pumping station includes excavation, pile driving, concrete, furnishing and installation of mechanical and electrical equipment, steel and masonry works and so on. In addition, three (3) bridges are reconstructed due to Asin River Improvement. Moreover, a retarding pond is constructed with secondary channel.

(c) Package-3: Bandarharjo Drainage System Improvement

The payment items, the work quantities, the unit costs and the construction base cost for Package-3 are indicated in Table 8.5.3. There is also construction of a new pumping station called Baru Pumping Station. In addition, a retarding pond is constructed with conveyance and secondary channels as well as Package-2. As another particular works, closing structure is constructed for isolation of Baru River from Asin River at diversion point.

(d) Total Construction Base Cost

The results of calculation of the construction base cost are summarized in the following table.

Name of Package	Currency	Construction Base Cost			
		Pure Foreign Portion	Indirect Foreign Portion	Pure Local Portion	Total
Package-1 (Semarang River Drainage System Improvement)	Rp x 10^6	6,915	1,151	11,243	19,308
Package-2 (Asin River Drainage System Improvement)	Rp x 10^6	46,135	3,286	32,189	81,610
Package-3 (Bandarharjo Drainage System Improvement)	Rp x 10^6	27,001	2,584	20,028	49,613
Total	Rp x 10^6	80,052	7,020	63,459	150,531
	Yen x 10^6	1,326	116	1,051	2,493
	US$ x 10^3	11,627	1,020	9,217	21,864

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

(2) Engineering Service Cost

The total man-month of foreign engineer has been assumed at 53 man-months for 1 year of preliminary term and 3 years for construction works in which package-1, 2 and 3 are undertaken. In addition, local engineer remuneration, international and local transportation fee, salary for office staff and establishment and etc. are summed up. The summary of the engineering service cost are tabulated below (refer to Tables 8.5.4) :

Name of Package	Currency	Engineering Service Cost			
		Pure Foreign Portion	Indirect Foreign Portion	Pure Local Portion	Total
Three (3) packages in Total	Rp x 10^6	8,230	0	3,789	12,019
	Yen x 10^6	136	0	63	199
	US$ x 10^3	1,195	0	550	1,746

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

(3) Compensation Cost

Some hectare of land areas and three (3) houses/buildings should be expropriated for construction. Unit compensation costs were decided as below under the results of consultation between the Jratunseluna and the Study Team;

Land : 100,000 Rp/m^2

Building : 30,000,000 Rp/house

5.0 ha of land acquisition and 3 units of house evacuation are necessary to be compensated in the three (3) packages.

The total compensation cost is shown in the following table (refer to Table 8.5.5);

Name of Package	Currency	Compensation Service Cost (million rupiah/yen)			
		Pure Foreign Portion	Indirect Foreign Portion	Pure Local Portion	Total
Three (3) packages in Total	Rp x 10^6	0	0	4,793	4,793
	Yen x 10^6	0	0	79	79
	US$ x 10^3	0	0	696	696

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

(4) Administration Cost

As described in Sub-Section 8.2.1 Basic Composition of Project Cost, the administration cost for owner's expenditures is estimated as local portion at seven (7) % of the sum of construction base cost and the compensation cost. The amount of administration cost is as follows;

Name of Package	Currency	Administration Cost (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Pure Local Portion	Total
Three (3) packages in Total	Rp x 10^6	0	0	10,873	10,873
	Yen x 10^6	0	0	180	180
	US$ x 10^3	0	0	1,579	1,579

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

(5) Physical Contingency

Physical contingency is considered as local portion at six (6) % of the sum of the construction base cost, engineering service cost and the compensation cost.

Name of Package	Currency	Physical Contingency (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Pure Local Portion	Total
Three (3) packages in Total	Rp x 10^6	5,297	421	4,322	10,041
	Yen x 10^6	88	7	72	166
	US$ x 10^3	769	61	628	1,458

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

(6) Price Contingency

Based on the construction period and construction schedule descrived in Section 5.1 Construction Schedule, price contingency are computed at three (3) % of the foreign currecy portion and eight (8) % of the local portion respectively. Table 8.5.6 shows summary of price contingency between years 2000 and 2003.

Name of Package	Currency	Price Contingency (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Pure Local Portion	Total
Three (3) packages in Total	Rp x 10^6	8,562	743	21,997	31,302
	Yen x 10^6	142	12	364	518
	US$ x 10^3	1,244	108	3,195	4,546

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

(7) Value Added Tax

Value added tax is considered as local portion at ten (10) % of the sum of the construction base cost and engineering service cost including physical and price contingencies. The amount of value added tax is shown in the following table.

Name of Package	Currency	Value Added Tax (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Pure Local Portion	Total
Three (3) packages in Total	Rp x 10^6	0	0	20,083	20,083
	Yen x 10^6	0	0	333	333
	US$ x 10^3	0	0	2,917	2,917

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

8.5.3 Total Project Cost

Total project cost, which is summed up aforementioned items, is as follows;

Project Cost of Package-1

Name of Package	Currency	Project Cost (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Construction Base Cost	Rp x 10^6	6,915	1,151	11,243	19,308
Engineering Service Cost	Rp x 10^6	1,070	0	493	1,562
Compensation Cost	Rp x 10^6	0	0	0	0
Administration Cost	Rp x 10^6	0	0	1,352	1,352
Physical Contingency	Rp x 10^6	479	69	704	1,252
Price Contingency	Rp x 10^6	845	138	4,193	5,175
Value Added Tax	Rp x 10^6	0	0	2,697	2,697
Total	Rp x 10^6	9,309	1,358	20,680	31,347
	Yen x 10^6	154	22	342	519
	USx10^3$	1,352	197	3,004	4,553

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

Project Cost of Package-2

Name of Package	Currency	Project Cost (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Construction Base Cost	Rp x 10^6	46,135	3,286	32,189	81,610
Engineering Service Cost	Rp x 10^6	4,526	0	2,084	6,610
Compensation Cost	Rp x 10^6	0	0	2,540	2,540
Administration Cost	Rp x 10^6	0	0	5,891	5,891
Physical Contingency	Rp x 10^6	3,040	197	2,209	5,446
Price Contingency	Rp x 10^6	5,020	353	11,208	16,580
Value Added Tax	Rp x 10^6	0	0	10,863	10,863
Total	Rp x 10^6	58,721	3,837	66,982	129,540
	Yen x 10^6	972	64	1,109	2,145
	USx10^3$	8,529	557	9,729	18,815

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

Project Cost of Package-3

Name of Package	Currency	Project Cost (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Construction Base Cost	Rp x 10^6	27,001	2,584	20,028	49,613
Engineering Service Cost	Rp x 10^6	2,634	0	1,212	3,846
Compensation Cost	Rp x 10^6	0	0	2,253	2,253
Administration Cost	Rp x 10^6	0	0	3,631	3,631
Physical Contingency	Rp x 10^6	1,778	155	1,410	3,343
Price Contingency	Rp x 10^6	2,698	252	6,597	9,547
Value Added Tax	Rp x 10^6	0	0	6,524	6,524
Total	Rp x 10^6	34,111	2,911	41,654	78,755
	Yen x 10^6	565	50	690	1,304
	USx10^3$	4,954	434	6,050	11,439

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

Total Project Cost of Three Packages

Name of Package	Currency	Project Cost (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Construction Base Cost	Rp x 10^6	80,052	7,020	63,459	150,531
Engineering Service Cost	Rp x 10^6	8,230	0	3,789	12,019
Compensation Cost	Rp x 10^6	0	0	4,793	4,793
Administration Cost	Rp x 10^6	0	0	10,873	10,873
Physical Contingency	Rp x 10^6	5,297	421	4,322	10,041
Price Contingency	Rp x 10^6	8,562	743	21,997	31,302
Value Added Tax	Rp x 10^6	0	0	20,083	20,083
Total	Rp x 10^6	102,141	8,185	129,316	239,642
	Yen x 10^6	1,691	136	2,141	3,968
	USx10^3$	14,835	1,189	18,782	34,806

Note ; Conversion Rate : US$ 1.0 = Rp. 6,885, ¥ 1.0 = Rp. 60.39

8.5.4 Disbursement Schedule

Based on the Project Cost estimates, disbursement schedule of total project costs is indicated as Table 8.5.7.

TABLES

CHAPTER 8
COST ESTIMATE

Table 8.2.1 THE RATIO OF EACH COST ITEM

Name of Cost	Detail	Rate	Original Costs for Rate	Remarks
Administration Cost		7%	Construction Base Cost Compensation Cost	*1
Physical Contingency		6%	Construction Base Cost Engineering Service Cost Compensation Cost	*1
Price Contingency	Price Escalation	3% 8%	All costs in Foreign Currency All costs in Local Currency	*2 *2
Value Added Tax	PPN	10%	Construction Base Cost Engineering Service Cost Contingencies	
Site Expense	consumables and etc.	15%	Direct Cost by sum of work item	
Overhead & Profit		10%	Direct Cost by sum of work item Site Expense	*2

Note *1 : Refference to smilar and latest projects
*2 : Refference to smilar and latest projects and Statistic Data

Table 8.2.2 PRICE ESCALATION 1990-1996

Material	Unit	Year							Percent
		1,990	1,991	1,992	1,993	1,994	1,995	1,996	Average
I. Brick									(Yearly)
-Quality I	pcs	30	33	38	50	50	50	50	
percent increment			8.9	16.3	31.6	0.0	0.0	0.0	8.9%
-Quality II	pcs	25	35	35	60	60	60	60	
percent increment			40.0	0.0	71.4	0.0	0.0	0.0	15.7%
II. Sand									
- Sand for mortar	m3	8,000	17,000	12,000	12,000	12,000	12,500	12,500	
percent increment			112.5	-29.4	0.0	0.0	4.2	0.0	7.7%
- Sand for concrete	m3	17,000	21,000	14,000	20,000	20,000	23,000	23,000	
percent increment			23.5	-33.3	42.9	0.0	15.0	0.0	5.2%
III. Lime									
- Lime for mortar	m3	23,000	40,000	30,000	35,000	40,000	40,000	40,000	
percent increment			73.9	-25.0	16.7	14.3	0.0	0.0	9.7%
- Red lime	m3	27,000	67,500	60,000	50,000	50,000	50,000	50,000	
percent increment			150.0	-11.1	-16.7	0.0	0.0	0.0	10.8%
IV. Portland cement	m3	5,200	5,600	5,600	6,300	7,500	8,500	9,750	
percent increment			7.7	0.0	12.5	19.0	13.3	14.7	11.0%
V. White cement	m3	20,000	20,000	19,000	20,000	20,000	20,000	20,000	
percent increment			0.0	-5.0	5.3	0.0	0.0	0.0	0.0%
VI. Wood									
- Teak wood									
- Plank wood	m3	1,700,000	1,500,000	1,500,000	3,000,000	3,000,000	3,000,000	3,000,000	
percent increment			-11.8	0.0	100.0	0.0	0.0	0.0	9.9%
- Beam wood	m3	1,400,000	1,800,000	1,800,000	2,250,000	2,250,000	2,250,000	2,250,000	
percent increment			28.6	0.0	25.0	0.0	0.0	0.0	8.2%
- Camphor wood									
- Plank wood	m3	450,000	400,000	400,000	700,000	1,250,000	1,250,000	1,250,000	
percent increment			-11.1	0.0	75.0	78.6	0.0	0.0	18.6%
- Beam wood	m3	425,000	550,000	650,000	550,000	1,150,000	1,150,000	1,150,000	
percent increment			29.4	18.2	-15.4	109.1	0.0	0.0	18.0%
VII. Steel									
- Reinforcing steel Dia. 19 mm, 12 m	bar	18,700	19,700	20,700	21,770	23,000	24,200	24,200	
percent increment			5.3	5.1	5.2	5.6	5.2	0.0	4.4%
- Reinforcing steel Dia. 25 mm, 12 m	bar	32,000	33,500	35,000	35,805	39,000	41,175	41,175	
percent increment			4.7	4.5	2.3	8.9	5.6	0.0	4.3%
- Steel sheet, 4x6, t = 0.8 mm	bar	29,000	30,000	30,000	35,000	35,000	35,000	35,000	
percent increment			3.4	0.0	16.7	0.0	0.0	0.0	3.2%
- Steel sheet, 4x8, t = 1.4 mm	bar	45,000	46,000	47,000	47,500	47,500	47,500	47,500	
percent increment			2.2	2.2	1.1	0.0	0.0	0.0	0.9%
- Profile steel, UNP 15 cm	bar	125,000	130,000	130,000	135,000	135,000	135,000	135,000	
percent increment			4.0	0.0	3.8	0.0	0.0	0.0	1.3%
- Profile steel, UNP 20 cm	bar	185,000	185,000	185,000	185,000	185,000	210,000	210,000	
percent increment			0.0	0.0	0.0	0.0	13.5	0.0	2.1%
VIII. Labour									
- Common worker	day	2,000	3,500	3,500	4,000	5,000	4,500	4,500	
percent increment			75.0	0.0	14.3	25.0	-10.0	0.0	14.5%
- Foreman	day	3,000	4,500	4,500	5,000	5,000	4,500	4,500	
percent increment			50.0	0.0	11.1	0.0	-10.0	0.0	7.0%
- Carpenter	day	4,500	5,500	5,500	5,500	5,500	6,500	6,500	
percent increment			22.2	0.0	0.0	0.0	18.2	0.0	6.3%
- Chief of carpenter	day	5,000	6,000	6,000	6,000	6,000	7,000	7,000	
percent increment			20.0	0.0	0.0	0.0	16.7	0.0	5.8%
- mansor	day	3,000	4,500	4,500	5,500	5,500	6,000	6,000	
percent increment			50.0	0.0	22.2	0.0	9.1	0.0	12.2%
- Chief of mansor	day	3,500	5,000	5,000	6,000	6,000	6,500	6,500	
percent increment			42.9	0.0	20.0	0.0	8.3	0.0	10.9%
- painter	day	3,000	4,500	4,750	5,500	5,500	5,500	5,500	
percent increment			50.0	5.6	15.8	0.0	0.0	0.0	10.6%
- Chief of painter	day	3,500	5,000	5,000	6,000	6,000	6,000	6,000	
percent increment			42.9	0.0	20.0	0.0	0.0	0.0	9.4%
- Black smith	day	3,250	4,500	4,500	5,500	5,500	5,500	5,500	
percent increment			38.5	0.0	22.2	0.0	0.0	0.0	9.2%
- Chief of Black smith	day	3,500	5,000	5,000	6,000	6,000	6,000	6,000	
percent increment			42.9	0.0	20.0	0.0	0.0	0.0	9.4%
- Earth Cutter	day	2,750	4,250	4,250	4,500	4,500	5,500	5,500	
percent increment			54.5	0.0	5.9	0.0	22.2	0.0	12.2%
Average									**8.5%**

Table 8.2.3 PRICE INDEX FOR CONSUMER IN THE DEVELOPED ASIAN AND NORTH AMERICAN COUNTRIES

Country Name	Total Index (1990=100)				Escalation Ratio per year			
	1994	1995	1996	1997	1994	1995	1996	1997
Asia								
Japan	107.1	107	107.2	109	0.7	-0.1	0.1	1.7
Singapole	111.5	113.5	115	117.3	3.1	1.7	1.4	2
North America								
United States	113.4	116.6	120	122.9	2.6	2.8	2.9	2.3
Canada	109.4	111.8	113.5	115.4	0.2	2.2	1.6	1.6

Table 8.3.1 RATIO OF CURRENCY PORTION FOR MAIN MATERIAL GROUPS

Material Group	Factor			Ratio (%)			
	Foreign Currency		Local	Foreign Currency		Local	Total
	Pure	Indirect	Currency	Pure	Indirect	Currency	
Gasoline and Light Oil		Product Machine	Material	0	20	80	100
Sand and Stones		Product Machine	Material	0	5	95	100
Asphalt in General		Product Machine	Material	0	30	70	100
Cement in general		Product Machine	Material	0	20	80	100
Ready Mixed Concrete		Product Machine	Material	0	20	80	100
PC Pile	Product by Foreign Capital Firm		Transportation	95	0	5	100
RC Pile		Product Machine, Material	Material	0	25	70	95
PC Sheet Pile	Product by Foreign Capital Firm		Transportation	95	0	5	100
Woods in General			Material	0	0	100	100
Plywood		Product Machine	Material	0	10	90	100
Reinforcing Bar		Product Machine, Material	Small Tool and Material	0	30	70	100
Structural Steel SS41	Product Machine, Material		Transportation	95	0	5	100
Structural Steel SS41 (Lease)	Product Machine, Material		Small Tool, Material, Maintenance, Management	50	0	50	100
Steel Pile	Product Machine, Material		Transportation	95	0	5	100
Small steel material		Product Machine, Material	Small Tool and Material	0	30	70	100
Gate & Valve	Product Machine, Material		Transportation	95	0	5	100
PVC material		Product Machine	Material	0	30	70	100
Pumps in general	Product Machine, Material		Transportation	95	0	5	100
Plants and Grass			Tool and Material	0	0	100	100
Tile		Product Machine	Tool and Material	0	10	90	100
Equipment	Product Machine, Material			100	0	0	100

Table 8.3.2 BASIC COSTS AND COMPUTATION OF LABORER COST

ID No.	Qualification of Working	Basic Wage *1	Additional Cost *2				Cost per	Rounded
		(1) Daily	(2) Overtime	(3) Leave	(4) Bonus	(5) Others	Day	Cost
L-2-1	Foreman	25,000	10,714	1,250	2,083	9,762	48,809	48,800
L-2-2	Operator	24,000	10,286	1,200	2,000	9,372	46,858	46,900
L-2-3	Assistant Operator	16,000	6,857	800	1,333	6,248	31,238	31,200
L-2-4	Electrician	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-5	Mechanic	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-6	Welder	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-7	Driver	18,000	7,714	900	1,500	7,029	35,143	35,100
L-2-8	Assistant Driver	16,500	7,071	825	1,375	6,443	32,214	32,200
L-2-9	Tunnel Worker	24,000	10,286	1,200	2,000	9,372	46,858	46,900
L-2-10	Drill Worker	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-11	Mason	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-12	Carpenter	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-13	Rigger	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-14	Scaffolding Man	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-15	Plumber	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-16	Steel Worker	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-17	Concrete Worker	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-18	Form Worker	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-19	Grout Worker	24,000	10,286	1,200	2,000	9,372	46,858	46,900
L-2-20	Painter	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-21	Plasterer	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-22	Asphalt Wolker	18,000	7,714	900	1,500	7,029	35,143	35,100
L-2-23	Common Labour	18,000	7,714	900	1,500	7,029	35,143	35,100
L-2-24	Light Labour	15,000	6,429	750	1,250	5,857	29,286	29,300
L-2-25	Watchman	15,000	6,429	750	1,250	5,857	29,286	29,300
L-2-26	Chief of Carpenter	30,000	12,857	1,500	2,500	11,714	58,571	58,600
L-2-27	Chief of Mason	30,000	12,857	1,500	2,500	11,714	58,571	58,600
L-2-28	Chief of Concrete Worker	30,000	12,857	1,500	2,500	11,714	58,571	58,600
L-2-29	Chief of Steel Worker	30,000	12,857	1,500	2,500	11,714	58,571	58,600
L-2-30	Chief of Painter	30,000	12,857	1,500	2,500	11,714	58,571	58,600
L-2-31	Chief of Plasterer	30,000	12,857	1,500	2,500	11,714	58,571	58,600
L-2-32	Chief of Bridge	35,000	15,000	1,750	2,917	13,667	68,334	68,300
L-2-33	Bridge Worker	30,000	12,857	1,500	2,500	11,714	58,571	58,600
L-2-34	Cad Operator	28,000	12,000	1,400	2,333	10,933	54,666	54,700
L-2-35	Draft Man	20,000	8,571	1,000	1,667	7,810	39,048	39,000
L-2-36	Chief of Tunnel Worker	36,000	15,429	1,800	3,000	14,057	70,286	70,300
L-2-37	Tunnel Specialist	31,000	13,286	1,550	2,583	12,105	60,524	60,500

Note *1 : Source; Based on Daftar Harga Satuan Bahan Bangunan April-May 99/00 Semarang dan Sekitarnya including living and walfare facilities

*2 : (2) Overtime ; Basic wage / 7 x 1.5 x 2 hours

(3) Leave ; Basic wage / 20 giving of 1day / 1month

(4) Bonus ; Basic wage / 12 payment of 1month / 1year

(5) Others ; ((1)+(2)+(3)+(4)) x 25% Taxes, Food, Insurances, Transportation and other allowances

*3 : All cost belong to Local Currency Portion

Table 8.3.3 (1/6) UNIT COSTS OF MATERIALS

ID No.	Description		Unit	Price (Rp.)			
	Major	Details		PF/C	IF/C	L/C	Total
	Combustibles						
M-A-1		Gasoline	ltr	0	200	800	1,000
M-A-2		Light Oil (Diesel Oil)	ltr	0	120	480	600
M-A-3		Kerosene	ltr	0	110	440	550
M-A-4		Propane Gas	kg	0	165	660	825
M-A-5		Acetylene Gas	kg	0	1,768	7,072	8,840
M-A-6		Oxygen (big tube)	m3	0	1,573	6,292	7,865
M-A-7		Grease	kg	0	600	2,400	3,000
M-A-8		Metanole	ltr	0	700	2,800	3,500
M-A-9		SAE 20	ltr	0	500	2,000	2,500
M-A-10		SAE 40	ltr	0	600	2,400	3,000
M-A-11		SAE 140	ltr	0	800	3,200	4,000
M-A-12		SAE 90	ltr	0	660	2,640	3,300
	Sand and Stones						
M-B-1		Fine Aggregate (washed sand)	m3	0	2,100	39,900	42,000
M-B-2		Coarse Aggregate	m3	0	2,600	49,400	52,000
M-B-3		Sand for Mortar (Masonry)	m3	0	2,250	42,750	45,000
M-B-4		Sand for Filling and Base Course	m3	0	1,350	25,650	27,000
M-B-5		Cobble Stone	m3	0	1,850	35,150	37,000
M-B-6		River Gravel(Stone)	m3	0	2,250	42,750	45,000
M-B-7		Boulder	m3	0	2,500	47,500	50,000
M-B-8		Sand for Dam Embankment	m3	0	1,350	25,650	27,000
M-B-9		Soil for Backfilling	m3	0	400	7,600	8,000
M-B-10		Crushed Stone for Riprap	m3	0	2,350	44,650	47,000
M-B-11		Crushed Stone for Masonry	m3	0	1,100	20,900	22,000
M-B-12		Crushed Stone for Pavement and Concrete	m3	0	3,250	61,750	65,000
M-B-13		Solid Soil	m3	0	600	11,400	12,000
M-B-14		Sand for Concrete	m3	0	2,050	38,950	41,000
M-B-15		Pumicestone	kg	0	875	16,625	17,500
	Concrete and Asphalt						
M-C-1		Portland Cement	kg	0	100	400	500
M-C-2		White Portland Cement	kg	0	200	800	1,000
M-C-3		Cut-back Asphalt	kg	0	195	455	650
M-C-4		Asphalt	kg	0	450	1,050	1,500
M-C-5		Asphalt Tack Coat	lit	0	6,330	14,770	21,100
M-C-6		Asphalt Prime Coat	lit	0	6,300	14,700	21,000
M-C-7		Ready Mixed Concrete; 500kg/cm2, - mm (A1)	m3	0	56,000	224,000	280,000
M-C-8		Ready Mixed Concrete; 400kg/cm2, 25mm (A2)	m3	0	49,000	196,000	245,000
M-C-9		Ready Mixed Concrete; 350kg/cm2, 25mm (A3)	m3	0	46,000	184,000	230,000
M-C-10		Ready Mixed Concrete; 250kg/cm2, 25mm (B)	m3	0	42,000	168,000	210,000
M-C-11		Ready Mixed Concrete; 225kg/cm2, 25mm (C1&2)	m3	0	40,000	160,000	200,000
M-C-12		Ready Mixed Concrete; 225kg/cm2, 15mm (C3)	m3	0	40,000	160,000	200,000
M-C-13		Ready Mixed Concrete; 175kg/cm2, 40mm (D)	m3	0	39,000	156,000	195,000
M-C-14		Ready Mixed Concrete; 125kg/cm2, 25mm (E)	m3	0	35,000	140,000	175,000
M-C-15		Prestressed Concrete Pile Dia. 300 mm A	m	95,000	0	5,000	100,000
M-C-16		Prestressed Concrete Pile Dia. 300 mm B	m	99,750	0	5,250	105,000
M-C-17		Prestressed Concrete Pile Dia. 300 mm C	m	104,500	0	5,500	110,000
M-C-18		Prestressed Concrete Pile Dia. 350 mm A	m	114,000	0	6,000	120,000
M-C-19		Prestressed Concrete Pile Dia. 350 mm B	m	121,600	0	6,400	128,000
M-C-20		Prestressed Concrete Pile Dia. 350 mm C	m	123,500	0	6,500	130,000
M-C-21		Prestressed Concrete Pile Dia. 400 mm A	m	142,500	0	7,500	150,000
M-C-22		Prestressed Concrete Pile Dia. 400 mm B	m	147,250	0	7,750	155,000
M-C-23		Prestressed Concrete Pile Dia. 400 mm C	m	152,000	0	8,000	160,000
M-C-24		Prestressed Concrete Pile Dia. 450 mm A	m	147,250	0	7,750	155,000
M-C-25		Prestressed Concrete Pile Dia. 450 mm B	m	156,750	0	8,250	165,000
M-C-26		Prestressed Concrete Pile Dia. 450 mm C	m	161,500	0	8,500	170,000
M-C-27		Prestressed Concrete Pile Dia. 500 mm A	m	171,000	0	9,000	180,000
M-C-28		Prestressed Concrete Pile Dia. 500 mm B	m	175,750	0	9,250	185,000
M-C-29		Prestressed Concrete Pile Dia. 500 mm C	m	180,500	0	9,500	190,000
M-C-30		Prestressed Concrete Pile Dia. 600 mm A	m	209,000	0	11,000	220,000
M-C-31		Prestressed Concrete Pile Dia. 600 mm B	m	213,750	0	11,250	225,000
M-C-32		Prestressed Concrete Pile Dia. 600 mm C	m	228,000	0	12,000	240,000
M-C-33		Reinfored Concrete Pipe, Dia. 200 mm	m	0	9,000	21,000	30,000
M-C-34		Reinfored Concrete Pipe, Dia. 300 mm	m	0	9,570	22,330	31,900
M-C-35		Reinfored Concrete Pipe, Dia. 400 mm	m	0	35,640	83,160	118,800
M-C-36		Reinfored Concrete Pipe, Dia. 500 mm	m	0	42,240	98,560	140,800
M-C-37		Reinfored Concrete Pipe, Dia. 600 mm	m	0	54,285	126,665	180,950

Table 8.3.3 (2/6) UNIT COSTS OF MATERIALS

ID No.	Description		Unit	Price (Rp.)			
	Major	Details		PF/C	IF/C	L/C	Total
M-C-38		Reinfored Concrete Pipe, Dia. 800 mm	m	0	98,835	230,615	329,450
M-C-39		Reinfored Concrete Pipe, Dia. 1,000 mm	m	0	136,422	318,318	454,740
M-C-40		Concrete Pile (without Re-bar) Dia.400mm	m	0	3,960	9,240	13,200
M-C-41		Concrete Pile (without Re-bar) Dia.600mm	m	0	8,580	20,020	28,600
M-C-42		Concrete Block for Pavement : 21 x 10.5 x 8cm	pcs	0	182	424	605
M-C-43		Concrete Hollow Block : 40 x 20 x 10 cm	pcs	0	270	630	900
M-C-44		Form Tie	pcs	285	0	15	300
M-C-45		Non Shrinkage Mortar	m3	0	18,260	73,040	91,300
M-C-46		Sealant	m3	0	17,600	70,400	88,000
M-C-47		Prestressed Concrete Sheet Pile (B=0.5m, t=0.32m)	m	212,800	0	11,200	224,000
M-C-48		Prestressed Concrete Sheet Pile (B=0.5m, t=0.22m)	m	190,000	0	10,000	200,000
M-C-49		Reinforced Concrete Sheet Pile	m	0	51,000	119,000	170,000
M-C-50		Precast Prestressed Concrete Main Beam	m3	0	555,720	1,296,680	1,852,400
M-C-51		Precast Prestressed Concrete Panel	m3	0	184,800	431,200	616,000
M-C-52		Precast Prestressed Concrete Concrete Diaphragm	m3	0	223,872	522,368	746,240
M-C-53		Admixture	ltr	0	1,893	4,416	6,309
M-C-54		Concrete Pavement Border	m3	0	82,500	192,500	275,000
M-C-55		U-20 Shpape Concrete Block	m	0	1,500	3,500	5,000
M-C-56		U-30 Shpape Concrete Block	m	0	2,250	5,250	7,500
M-C-57		Paving Block	piece	0	105	245	350
M-C-58		Lime	m3	0	11,500	103,500	115,000
M-C-59		Fiber Cement for Ceiling, 1200 x 1200 mm x 6 mm	m2	0	1,800	4,200	6,000
M-C-60		Prefabricated Concrete Tube	bar	0	15,000	35,000	50,000
M-C-61		Ready Mix Concrete 100 Kg/cm2	m3	0	31,000	124,000	155,000
M-C-62		Asphalt Jute Cord	kg	0	180	420	600
M-C-63		Asphalt Treated Base	ton	0	30,750	71,750	102,500
	Log and Timber						
M-D-1		Log Pile, Dia. 15cm	m	0	0	10,000	10,000
M-D-2		Log Pile, Dia. 10cm	m	0	0	5,000	5,000
M-D-3		Banboo Pile, Dia. 3cm)	m	0	0	650	650
M-D-4		Timber	m3	0	0	850,000	850,000
M-D-5		Plywood, 90x210 t=3mm	sheet	0	3,400	30,600	34,000
M-D-6		Plywood, 120 x 240 t=6mm	sheet	0	4,500	40,500	45,000
M-D-7		Plywood, 120 x 240 t=9mm	sheet	0	3,750	33,750	37,500
M-D-8		Plywood, t=12mm (water proof)	m2	0	6,000	54,000	60,000
M-D-9		Door incl. Frame Accessories, 2.1x0.9m	nos.	0	0	900,000	900,000
M-D-10		Form Timber	m3	0	0	850,000	850,000
M-D-11		Form Timber	m2	0	0	30,000	30,000
M-D-12		Coconut Pile, Dia. 25cm, 10-12 m	nos.	0	0	55,000	55,000
M-D-13		Door Frame Wood first class(Teak/Ulin)	m3	0	0	6,500,000	6,500,000
M-D-14		Plank Wood first class(Teak/Ulin)	m3	0	0	7,500,000	7,500,000
M-D-15		Door Frame Wood second class(Camphol)	m3	0	0	1,850,000	1,850,000
M-D-16		Plank Wood second class(Camphol)	m3	0	0	1,900,000	1,900,000
M-D-17		Door Frame Wood third class(Borneo)	m3	0	0	1,200,000	1,200,000
M-D-18		Plank Wood third class(Borneo)	m3	0	0	1,250,000	1,250,000
M-D-19		Wood fourth class (Sengon)	m3	0	0	850,000	850,000
M-D-20		Timbering for roof	m3	0	0	1,200,000	1,200,000
M-D-21		Plank wood (Bauwplank)	m3	0	0	850,000	850,000
M-D-22		Plank wood (Sengon)	m3	0	0	300,000	300,000
M-D-23		Dolken Wood	bar	0	0	7,500	7,500
M-D-24		Ceiling Wood	m3	0	0	750,000	750,000
M-D-25		Wood for Fire	m3	0	0	9,000	9,000
M-D-26		Wood Cornice	m	0	0	1,500	1,500
	Iron						
M-E-1		Reinforcing Bar, Round U-30	kg	0	2,500	2,500	5,000
M-E-2		Reinforcing Bar, Deformed U-30	kg	0	3,000	3,000	6,000
M-E-3		Structural Steel(Lease), SS41	kg day	18	0	12	30
M-E-4		Structural Steel(Purchasing), SS41	kg	5,225	0	275	5,500
M-E-5		Structural Steel, SM41	kg	6,175	0	325	6,500
M-E-6		Structural Steel, SMA41	kg				
M-E-7		Steel Plate SS41	kg	5,225	0	275	5,500
M-E-8		H-beam (Lease), SS41	kg day	18	0	12	30
M-E-9		H-beam (Purchasing), SS41	kg	5,225	0	275	5,500
M-E-10		L-beam (Lease), SS41	kg day	15	0	15	30
M-E-11		L-beam (Purchasing), SS41	kg	5,225	0	275	5,500
M-E-12		Tierod (Lease)	kg day	60	0	40	100
M-E-13		Tierod (Purchasing)	kg	47,500	0	2,500	50,000
M-E-14		Steel Pile, Dia.38mm (1.5ch), incl. Coating & Linin	m	11,475	0	604	12,079

Table 8.3.3 (3/6) UNIT COSTS OF MATERIALS

ID No.	Description		Unit	Price (Rp.)			
	Major	Details		PF/C	IF/C	L/C	Total
M-E-15		Steel Pile, Dia.100mm, incl. Coating & Lining	m	45,900	0	2,416	48,316
M-E-16		Steel Pile, Dia.125mm, incl. Coating & Lining	m	68,850	0	3,624	72,474
M-E-17		Steel Pipe, Dia.50mm, incl. Coating & Lining	m	20,540	0	1,081	21,621
M-E-18		Steel Pipe, Dia.75mm, incl. Coating & Lining	m	33,105	0	1,742	34,848
M-E-19		Steel Pipe, Dia.100mm, incl. Coating & Lining	m	45,900	0	2,416	48,316
M-E-20		Steel Pile, Dia.350mm, incl. Coating & Lining	m	457,188	0	24,063	481,250
M-E-21		Steel Pile, Dia.400mm, incl. Coating & Lining	m	485,925	0	25,575	511,500
M-E-22		Steel Pile, Dia.600mm, incl. Coating & Lining	m	728,888	0	38,363	767,250
M-E-23		Steel Pipe for Gas	kg	5,738	0	302	6,039
M-E-24		Steel Pipe, Dia.400mm, (spiral welded)	m	248,710	0	13,090	261,800
M-E-25		Steel Pipe, Dia.600mm, (spiral welded)	m	376,200	0	19,800	396,000
M-E-26		Galvanized Steel Pipe, Dia. 150mm	m	71,250	0	3,750	75,000
M-E-27		Galvanized Steel Pipe, Dia. 50mm	m	14,250	0	750	15,000
M-E-28		Galvanized Steel Pipe, Dia. 75mm	m	19,000	0	1,000	20,000
M-E-29		Galvanized Steel Pipe, Dia. 100mm	m	23,750	0	1,250	25,000
M-E-30		Steel Sheet Pile (Lease)	kg day	16	0	11	27
M-E-31		Steel Sheet Pile (Purchasing)	ton	5,700,000	0	300,000	6,000,000
M-E-32		Expansion Joint, Steel Profile L-75x6mm	m	7,367	0	388	7,755
M-E-33		Anchor, Steel Bar (Dia.32&22) incl. PVC Pipe	nos.	0	23,100	9,900	33,000
M-E-34		Steel Door, 40mm thick, 2.10x 1.70m	pcs	2,978,250	0	156,750	3,135,000
M-E-35		Galvanized Steel Wire	kg	2,850	0	150	3,000
M-E-36		Bolt and Nut	kg	0	12,375	28,875	41,250
M-E-37		Welding Rod	kg	0	7,508	3,218	10,725
M-E-38		Galvanized Steel Fence, H=1.75m	m	0	33,957	79,233	113,190
M-E-39		Steel Fence; Chain Link Type	m	0	29,358	68,501	97,859
M-E-40		Steel Fence; Rectangular Pipe Type	m	0	46,263	107,947	154,210
M-E-41		Guardrail: H=2.1m	m	0	26,111	60,926	87,038
M-E-42		Guardrail: H=1.1m	m	0	27,332	63,774	91,105
M-E-43		Gabion Mattress; 4 mm, 1.5x3.0x0.5m	pcs	0	56,100	130,900	187,000
M-E-44		Gabion Cylinder; 4mm, Dia.=50cm	m	0	8,250	19,250	27,500
M-E-45		Zinc Roof	m2	0	2,970	6,930	9,900
M-E-46		Checkered Steel Plate, 6mm thick	kg	0	1,733	743	2,475
M-E-47		Live and Anchorage	set	0	207,900	485,100	693,000
M-E-48		Nails for Wood	kg	0	2,400	5,600	8,000
M-E-49		Nails for Iron(Steel) Sheet	kg	0	3,000	7,000	10,000
M-E-50		Stopper Nail	pcs	0	3	7	10
M-E-51		Anchor	pcs	0	2,100	4,900	7,000
M-E-52		Plug Nail	pcs	0	90	210	300
M-E-53		Screw Nail	pcs	0	150	350	500
M-E-54		Nail for Lath	kg	0	1,650	3,850	5,500
M-E-55		Steel Baering Plate	kg	0	1,780	4,152	5,932
M-E-56		Copper Plate	m2	0	323,369	754,527	1,077,896
M-E-57		Wire Mesh; Dia. 5mm x 15mm mesh	m2	0	3,000	7,000	10,000
M-E-58		Form (Metal)	m2	3,230	0	170	3,400
M-E-59		Steel Sliding Form for Arc.	LS	364,779,044	0	19,198,897	383,977,941
M-E-60		Steel Sliding Form for Side Wall	LS	364,779,044	0	19,198,897	383,977,941
M-E-61		Jumbo for Reinforcing Bar	LS	127,672,665	0	6,719,614	134,392,279
M-E-62		Prefabricated Scaffold (Lease)	m2	6,600	0	4,400	11,000
M-E-63		Tublar Scaffold (Lease)	m2	5,610	0	3,740	9,350
M-E-64		Steel Wire	kg	0	2,400	5,600	8,000
M-E-65		Steel Net	kg	0	510	1,190	1,700
M-E-66		Iron Sheet BJLS 3.0	sheet	0	20,300	8,700	29,000
M-E-67		Corrugated Iron Sheet	sheet	0	28,700	12,300	41,000
M-E-68		Gabion Mattress; 2.7mm, 3.0x1.0x0.5m, Galvanize	pcs	327,038	0	17,213	344,250
M-E-69		Gabion Mattress; 2.7mm, 3.0x1.0x0.5m, Galvanize	pcs	457,853	0	24,098	481,950
M-E-70		Gabion Mattress; 2.7mm, 2.0x1.0x0.3m, Galvanize	pcs	163,519	0	8,606	172,125
M-E-71		Gabion Mattress; 2.7mm, 2.0x1.0x0.3m, Galvanize	pcs	196,223	0	10,328	206,550
M-E-72		Gabion Cylinder; 2.7mm, Dia.=50cm, Galvanized a	m	65,408	0	3,443	68,850
M-E-73		Aluminium Sheet t=0.5mm	sheet	0	44,100	102,900	147,000
M-E-74		Steel/Reinforcing Bar Dia.12 mm	kg	0	1,050	2,450	3,500
M-E-75		Steel/Reinforcing Bar Deform Dia. 16 mm	kg	0	1,125	2,625	3,750
M-E-76		Galvanized Tube Dia. 3.81 mm	bar	0	10,800	25,200	36,000
M-E-77		C-beam (Lease), SS41	kg day	4	0	2	6
M-E-78		C-beam (Purchasing), SS41	kg	5,225	0	275	5,500
M-E-79		Supporting (Lease)	m3	5,940	0	3,960	9,900
	Valves						
M-F-1		Air Valve, Dia 25mm	set	648,945	0	34,155	683,100
M-F-2		Air Valve, Dia 50mm	set	1,111,880	0	58,520	1,170,400

Table 8.3.3 (4/6) UNIT COSTS OF MATERIALS

ID No.	Description Major	Details	Unit	Price (Rp.) PF/C	IF/C	L/C	Total
M-F-3		Air Valve, Dia 75mm	set	1,573,770	0	82,830	1,656,600
M-F-4		Sluice Valve for 400mm Dia. Pipe	set	9,013,125	0	474,375	9,487,500
M-F-5		Counterflow Prevention Valve for 100 mm Dia. Pip	set	47,467	0	2,498	49,965
M-F-6		Butterfly Valve for 400mm Dia. Pipe	set	7,837,500	0	412,500	8,250,000
M-F-7		Butterfly Valve for 600mm Dia. Pipe	set	11,756,250	0	618,750	12,375,000
M-F-8		Flap Gate 600 mm Dia.	set	4,898,960	0	257,840	5,156,800
M-F-9		Flap Gate 800 mm Dia.	set	7,125,000	0	375,000	7,500,000
M-F-10		Flap Gate 1,000 mm Dia.	set	8,159,360	0	429,440	8,588,800
M-F-11		Steel Gate 1.0x1.0m (Slide Gate Type)	set	10,450,000	0	550,000	11,000,000
M-F-12		Steel Gate 1.0x1.25m (Slide Gate Type)	set	35,150,000	0	1,850,000	37,000,000
M-F-13		Steel Gate 1.5x1.5m (Slide Gate Type)	set	47,500,000	0	2,500,000	50,000,000
M-F-14		Steel Gate 2.0x1.5m (Slide Gate Type)	set	12,138,720	0	638,880	12,777,600
M-F-15		Steel Gate 2.0x2.0m (Slide Gate Type)	set	86,450,000	0	4,550,000	91,000,000
M-F-16		Steel Gate 4.00x3.46m incl. Machines	set				
M-F-17		Steel Gate 4.00x3.25m incl. Machines	set				
M-F-18		Steel Gate 5.50x4.35m incl. Machines	set				
M-F-19		Steel Gate 18.5x3.7m incl. Machines	set				
M-F-20		Expansion Joint for Pipe, Dia. 100mm	nos.	2,967,800	0	156,200	3,124,000
M-F-21		Expansion Joint for Pipe, Dia. 125mm	nos.	3,317,875	0	174,625	3,492,500
M-F-22		Expansion Joint for Pipe, Dia. 150mm	nos.	3,650,185	0	192,115	3,842,300
M-F-23		Expansion Joint for Pipe, Dia. 200mm	nos.				
M-F-24		Expansion Joint for Pipe, Dia. 300mm	nos.	3,806,935	0	200,365	4,007,300
M-F-25		Expansion Joint for Pipe, Dia. 350mm	nos.	4,507,085	0	237,215	4,744,300
M-F-26		Expansion Joint for Pipe, Dia. 400mm	nos.	7,382,925	0	388,575	7,771,500
M-F-27		Expansion Joint for Pipe, Dia. 600mm	nos.	8,145,775	0	428,725	8,574,500
M-F-28		Expansion Joint for Pipe, Dia. 800mm	nos.	18,351,245	0	965,855	19,317,100
	Chemicals						
M-G-1		PVC Pipe, Dia. 250mm	m	0	58,500	136,500	195,000
M-G-2		PVC Pipe, Dia. 19.05mm(3/4")	bar	0	4,350	10,150	14,500
M-G-3		PVC Pipe, Dia. 25.4mm(1")	bar	0	6,000	14,000	20,000
M-G-4		PVC Pipe, Dia. 50mm	m	0	2,340	5,460	7,800
M-G-5		PVC Pipe, Dia. 50.8mm(2")	bar	0	14,250	33,250	47,500
M-G-6		PVC Pipe, Dia. 75mm	m	0	2,475	5,775	8,250
M-G-7		PVC Pipe, Dia. 100mm	m	0	3,465	8,085	11,550
M-G-8		PVC Pipe, Dia. 101.6mm (4")	bar	0	33,000	77,000	110,000
M-G-9		PVC Pipe, Dia. 150mm	m	0	14,108	32,918	47,025
M-G-10		PVC Pipe, Dia. 200mm	m	0	23,018	53,708	76,725
M-G-11		PVC Air Vent Pipe, Dia.75mm, 80cm Long	pcs	0	11,550	26,950	38,500
M-G-12		Elastic Joint Filler 10mm thick	m2	0	8,250	19,250	27,500
M-G-13		Geotextile	m2	7,838	0	413	8,250
M-G-14		Waterstop; B=200mm	m	47,500	0	2,500	50,000
M-G-15		Waterstop; B=300mm	m	76,000	0	4,000	80,000
M-G-16		Elastomeric Bearing, 350x280x 73mm	pcs	0	600,000	600,000	1,200,000
M-G-17		Elastomeric Bearing, 312x212x 24mm	pcs	0	150,000	150,000	300,000
M-G-18		Rubber Sheet, 400x100x 30mm	pcs	0	220,000	220,000	440,000
M-G-19		PVC Pipe, Dia. 110mm	bar	0	16,440	38,360	54,800
M-G-20		GIP Pipe 2"	m	0	6,300	2,700	9,000
	Pump Equipments						
M-H-1		Screw Pump Q=3.0m3/s	nos.				
M-H-2		Screw Pump Q=2.3m3/s	nos.				
M-H-3		Submersible Pump Q=0.1m3/s, 18kw	nos.				
M-H-4		Submersible Pump Q=0.1m3/min, 1.8kw	nos.				
M-H-5		Submersible Pump Q=0.1m3/min, 2.2kw	nos.	6,139,375	0	323,125	6,462,500
M-H-6		Diesel Engine; Radiator cooled indoor, 325hp	set	4,441,250	0	233,750	4,675,000
M-H-7		Diesel Engine driven Generator Unit; 30kw	set				
M-H-8		Trash Screen; Rotaly endless outdoor	set				
M-H-9		Belt Conveyor; B=0.9and18m, 2.2kw	set				
M-H-10		Electrical Panel incl. distribution, control, alarm and battery charger Panels, water level indication	set				
	Plants and Grass						
M-I-1		Angsana	tree	0	0	15,000	15,000
M-I-2		Glodogan	tree	0	0	50,000	50,000
M-I-3		Flamboyant	tree	0	0	150,000	150,000
M-I-4		Cemara Kipas	tree	0	0	38,500	38,500
M-I-5		Cemara Lilin	tree	0	0	38,500	38,500
M-I-6		Palem Hijau	tree	0	0	16,500	16,500
M-I-7		Tanjung	tree	0	0	11,550	11,550
M-I-8		Cendrawasih/Taiwan Lila	tree	0	0	116	116

Table 8.3.3 (5/6) UNIT COSTS OF MATERIALS

ID No.	Description		Unit	Price (Rp.)			
	Major	Details		PF/C	IF/C	L/C	Total
M-I-9		Soka	tree	0	0	275	275
M-I-10		Filling of Fertilized Soil	kg	0	0	1,320	1,320
M-I-11		Sodding Grass	m2	0	0	3,000	3,000
	Building						
M-K-1		Wall Tile	m2	0	1,925	17,325	19,250
M-K-2		Mosaic Stone	m2	0	2,700	24,300	27,000
M-K-3		Roof Tile	m2	0	2,035	18,315	20,350
M-K-4		Color Floor Tile 20x20	m2	0	1,300	11,700	13,000
M-K-5		Color Floor Tile 15x20	m2	0	1,250	11,250	12,500
M-K-6		Grey Floor Tile, 20x20	m2	0	813	7,313	8,125
M-K-7		Grey Floor Tile, 15x20	m2	0	1,083	9,750	10,833
M-K-8		Terasco Floor Tile, 30x30	m2	0	1,800	16,200	18,000
M-K-9		Terasco Floor Tile, 10x30	m2	0	5,000	45,000	50,000
M-K-10		Wafel Floor Tile, 20x20	m2	0	875	7,875	8,750
M-K-11		Window Frame (Almi) with Accessory; 0.6 x 1.2m	m2	0	4,000	36,000	40,000
M-K-12		Water Tank, 5.0m3	nos.	0	324,000	756,000	1,080,000
M-K-13		Maintenance Post Marker	nos.	0	28,600	42,900	71,500
M-K-14		Name Plate (marble)	m2	0	44,000	396,000	440,000
M-K-15		Electrical Charge	kWh	0	36	84	120
M-K-16		Marble	m2	118,750	0	6,250	125,000
M-K-17		Porcelain 11x11	m2	0	10,537	24,587	35,124
M-K-18		Porcelain 10x15	m2	0	9,000	21,000	30,000
M-K-19		Porcelain 15x15	m2	0	6,333	14,778	21,111
M-K-20		Porcelain 20x20	m2	0	3,563	8,313	11,875
M-K-21		Septic Tank 1m3	pcs	0	510,000	1,190,000	1,700,000
M-K-22		Septic Tank 2m3	pcs	0	675,000	1,575,000	2,250,000
M-K-23		Septic Tank 6m3	pcs	0	1,290,000	3,010,000	4,300,000
M-K-24		Septic Tank 10m3	pcs	0	1,590,000	3,710,000	5,300,000
M-K-25		Electrical Socket	pcs	0	4,000	36,000	40,000
M-K-26		Electrical Switch	pcs	0	900	8,100	9,000
M-K-27		Fuse for Electric Kit of 1group (Local Made)	pcs	0	15,000	135,000	150,000
M-K-28		Fuse for Electric Kit of 2group (Local Made)	pcs	0	17,500	157,500	175,000
M-K-29		Fuse for Electric Kit of 3group (Local Made)	pcs	0	22,500	202,500	225,000
M-K-30		Wall Paint	kg	0	3,750	8,750	12,500
M-K-31		Paint for Masonry Wall	kg	0	1,500	3,500	5,000
M-K-32		Putty for Masonry Wall	kg	0	2,250	5,250	7,500
M-K-33		Paint for Wood	kg	0	7,650	17,850	25,500
M-K-34		Glaziers Putty for Wood	kg	0	3,300	7,700	11,000
M-K-35		Antirust Primer paint	kg	0	3,150	7,350	10,500
M-K-36		Ridge for Roof	pieces	0	120	280	400
M-K-37		Glue for Wood	kg	0	2,250	5,250	7,500
M-K-38		Glass of 3mm thick	m2	0	8,700	20,300	29,000
M-K-39		Paint Oil	ltr	0	1,200	2,800	4,000
M-K-40		Paint for Iron	kg	0	5,700	13,300	19,000
M-K-41		Polish	kg	0	5,040	11,760	16,800
M-K-42		Sand Paper	sheet	0	750	1,750	2,500
M-K-43		Red Lead	kg	0	2,700	6,300	9,000
M-K-44		Door Hinge (125 mm)	pcs	0	1,200	2,800	4,000
M-K-45		Aluminium Door Key	pcs	0	15,000	35,000	50,000
M-K-46		Ceramic Roof Tile	m2	0	12,150	28,350	40,500
M-K-47		Ceramic Ridge Tile	pcs	0	2,846	6,640	9,485
M-K-48		Ceramic Floor Tile, 200x200 mm	m2	0	9,000	21,000	30,000
M-K-49		Ceramic Floor Tile, 200x200mm, Nonslip Texture	m2	0	9,000	21,000	30,000
M-K-50		Ceramic Floor Tile, 300x300 mm	m2	0	9,000	21,000	30,000
M-K-51		Ceramic Floor Tile, 300x300 mm, Nonslip Texture	m3	0	9,000	21,000	30,000
M-K-52		Window Hinge (75 mm)	pcs	0	1,200	2,800	4,000
M-K-53		Glass of 5 mm thick (Natural Colour)	m2	0	10,500	24,500	35,000
M-K-54		Glass of 10 mm thick (Rayband, for wall base)	m2	0	28,800	67,200	96,000
M-K-55		Espagnolette	pcs	0	10,500	24,500	35,000
M-K-56		Door Stopper	pcs	0	12,000	28,000	40,000
M-K-57		Aluminium Rolling Door	m2	0	26,775	62,475	89,250
	Others						
M-L-1		Palm Fiber, 20mm thick	m2	0	1,100	20,900	22,000
M-L-2		Concrete Brick; 23 x 11.5 x 5.5 cm	pcs	0	150	1,350	1,500
M-L-3		Brick; 10 x 2 x 6 cm	m2	0	5	45	50
M-L-4		Staff Gauge (5.0m)	nos.	380,000	20,000	0	400,000
M-L-5		Bench (Wooden)	nos.	0	0	302,500	302,500
M-L-6		Bench (steel)	nos.	0	88,000	132,000	220,000

Table 8.3.3 (6/6) UNIT COSTS OF MATERIALS

ID No.	Description		Unit	Price (Rp.)			
	Major	Details		PF/C	IF/C	L/C	Total
M-L-7		Aluminium Frame	m2	0	137,500	137,500	275,000
M-L-8		Cast-iron Cover; Dia.60cm	pcs	0	440,000	440,000	880,000
M-L-9		Handy Talky	set	0	400,000	600,000	1,000,000
M-L-10		Garbage Container	nos.	0	100,000	900,000	1,000,000
M-L-11		Truck with Crane, 2.2ton	nos.	344,250,000	0	0	344,250,000
M-L-12		Synthetic Shell (5m2 / kg)	kg	0	3,438	3,438	6,875
M-L-13		Water Proofing Coat	m2	0	13,464	8,976	22,440
M-L-14		Asbestos Cement, 6mm thick	m2	0	800	1,200	2,000
M-L-15		Drawing Paper (A1)	sheet	8,000	0	2,000	10,000
M-L-16		Blue Copy (A1)	sheet	0	2,500	2,500	5,000
M-L-17		Brick; 26 x 12.4 x 5.2 cm	pcs	0	0	200	200
M-L-18		Backhoe, 0.35m3	nos.	469,871,053	0	0	469,871,053
M-L-19		Dump Truck, 8t	nos.	422,763,158	0	0	422,763,158
M-L-20		Bulldozer, 11t	nos.	622,065,789	0	0	622,065,789
M-L-21		Patrol Car, 4WD	nos.	120,789,474	0	0	120,789,474
M-L-22		Outboard Motor Boat	nos.	90,592,105	0	0	90,592,105

Table 8.3.4 (1/4) HOURLY DRIVING EQUIPMENT COST

New ID No.	Description of Equipment	Unit	Hourly Cost			
			PF/C	IF/C	L/C	Total
A-2-1-1	Backhoe; 2 m3 Long Arm	hourly	512,435	4,440	355,749	872,624
A-2-1-2	Backhoe; 0.3 m3 with Vibrator	hourly	141,121	948	96,872	238,941
A-2-1-3	Backhoe; 0.35 m3	hourly	71,294	1,200	51,824	124,317
A-2-1-4	Backhoe; 0.35 m3 for Rock	hourly	78,423	1,200	56,526	136,149
A-2-1-5	Backhoe; 0.4 m3	hourly	80,824	1,440	59,070	141,334
A-2-1-6	Backhoe; 0.4 m3 with Joint Cutter	hourly	96,989	1,440	69,731	168,160
A-2-1-7	Backhoe; 0.6 m3	hourly	125,543	2,040	90,965	218,548
A-2-1-8	Backhoe; 0.6 m3 for Rock	hourly	138,097	2,040	99,246	239,383
A-2-1-9	Backhoe; 0.7 m3	hourly	153,950	2,160	110,182	266,292
A-2-1-10	Backhoe; 0.7 m3 for Rock	hourly	169,345	2,160	120,336	291,842
A-2-1-11	Backhoe; 0.8 m3	hourly	161,281	2,640	116,937	280,859
A-2-1-12	Backhoe; 0.8 m3 for Rock	hourly	177,410	2,640	127,575	307,625
A-2-1-13	Backhoe; 1 m3	hourly	196,104	3,360	142,785	342,249
A-2-1-14	Backhoe; 1 m3 for Rock	hourly	215,714	3,360	155,720	374,793
A-2-1-15	Backhoe; 1.2 m3	hourly	217,180	3,480	157,167	377,827
A-2-1-16	Backhoe; 1.2 m3 for Rock	hourly	238,898	3,480	171,491	413,869
A-2-1-17	Bulldozer; 11 ton	hourly	133,995	1,680	121,026	256,701
A-2-1-18	Bulldozer; 11 ton for Rock	hourly	147,395	1,680	132,457	281,532
A-2-1-19	Bulldozer; 15 ton	hourly	178,227	2,280	161,158	341,665
A-2-1-20	Bulldozer; 15 ton for Rock	hourly	196,049	2,280	176,362	374,691
A-2-1-21	Bulldozer; 15 ton with Ripper	hourly	95,983	2,280	91,000	189,263
A-2-1-22	Bulldozer; 21 ton	hourly	294,009	3,480	264,728	562,217
A-2-1-23	Bulldozer; 21 ton for Rock	hourly	323,410	3,480	289,808	616,698
A-2-1-24	Bulldozer; 21 ton with Ripper	hourly	158,277	3,720	149,900	311,897
A-2-1-25	Bulldozer; 3 ton	hourly	48,785	660	44,256	93,701
A-2-1-26	Bulldozer; 3 ton for Rock	hourly	53,663	660	48,418	102,741
A-2-1-27	Bulldozer; 32 ton	hourly	429,305	4,680	384,944	818,929
A-2-1-28	Bulldozer; 32 ton for Rock	hourly	472,235	4,680	421,566	898,481
A-2-1-29	Bulldozer; 32 ton with Ripper	hourly	237,733	5,280	223,921	466,934
A-2-1-30	Bulldozer; 44 ton for Rock	hourly	621,061	6,000	553,803	1,180,865
A-2-1-31	Truck with crane; 4 ton, Crane : 2.9 ton	hourly	48,670	780	47,768	97,217
A-2-1-32	Truck with crane; 6 ton	hourly	62,784	912	61,243	124,939
A-2-1-33	Truck with crane; 8 ton	hourly	79,818	1,320	78,502	159,640
A-2-1-34	Clamshell; 0.6 m3	hourly	145,596	1,680	99,479	246,754
A-2-1-35-1	Concrete Pump Truck; 65-85 m3/hr	Time	36,721	280	23,415	60,416
A-2-1-35-2	Concrete Pump Truck; 65-85 m3/hr	hourly	220,327	1,680	140,490	362,497
A-2-1-36-1	Concrete Pump Truck; 90-110 m3/hr	Time	45,418	340	28,935	74,694
A-2-1-36-2	Concrete Pump Truck; 90-110 m3/hr	hourly	272,510	2,040	173,613	448,163
A-2-1-37	Crawler Crane; 100 ton	hourly	850,261	2,160	760,033	1,612,454
A-2-1-38	Crawler Crane; 22.5 ton	hourly	153,115	804	138,527	292,447
A-2-1-39	Crawler Crane; 27 ton	hourly	183,054	972	165,657	349,683
A-2-1-40	Crawler Crane; 37 ton	hourly	255,763	984	229,959	486,705
A-2-1-41	Crawler Crane; 40 ton	hourly	279,714	1,080	251,509	532,302
A-2-1-42	Crawler Diesel Hammer; 2.5 ton	hourly	486,850	1,680	346,521	835,051
A-2-1-43	Crawler Diesel Hammer; 3.5 ton	hourly	584,659	1,800	415,268	1,001,727
A-2-1-44	Crawler Diesel Hammer; 4.5 ton	hourly	637,410	1,800	452,087	1,091,297
A-2-1-45	Crawler Drill; 150 kg	hourly	420,361	1,116	270,407	691,884
A-2-1-46	Crawler Drill; 180 kg	hourly	477,530	1,440	307,871	786,841
A-2-1-47	Crawler Loader; 1.2m3	hourly	101,653	1,440	81,806	184,900
A-2-1-48	Dumptruck; 10 ton	hourly	77,269	3,060	70,744	151,073
A-2-1-49	Dumptruck; 10 ton for Rock	hourly	84,996	3,210	77,195	165,400
A-2-1-50	Dumptruck; 20 ton	hourly	198,902	4,280	136,582	339,764
A-2-1-51	Dumptruck; 20 ton for Rock	hourly	218,792	4,480	149,328	372,600
A-2-1-52	Dumptruck; 32 ton	hourly	321,681	6,100	219,807	547,588
A-2-1-53	Dumptruck; 32 ton for Rock	hourly	353,849	6,350	240,348	600,547
A-2-1-54	Dumptruck; 4 ton	hourly	30,204	1,376	28,632	60,211

Table 8.3.4 (2/4) HOURLY DRIVING EQUIPMENT COST

New ID No.	Description of Equipment	Unit	Hourly Cost			
			PF/C	IF/C	L/C	Total
A-2-1-55	Dumptruck; 8 ton	hourly	58,770	2,200	53,721	114,691
A-2-1-56	Dumptruck; 8 ton for Rock	hourly	64,647	2,276	58,517	125,440
A-2-1-57	Macadam Roller; 10-12 ton	hourly	73,027	912	73,401	147,340
A-2-1-58	Mortor Sprayer; 0.8-1.2m3/h	daily	0	2,448	9,792	12,240
A-2-1-59	Motorgrader; 3.1 m	hourly	122,998	1,116	118,868	242,982
A-2-1-60	Road Roller; Tandem 8-10 ton	hourly	63,475	696	63,413	127,583
A-2-1-61	Submergible pump; D 100 mm; 3.7 kW	daily	21,522	0	10,871	32,394
A-2-1-62	Submergible pump; D 150 mm; 11 kW	daily	39,099	0	19,749	58,848
A-2-1-63	Submergible pump; D 200 mm; 15 kW	daily	65,404	0	33,036	98,440
A-2-1-64	Submergible pump; D 50 mm; 0.75 kW	daily	6,576	0	3,322	9,898
A-2-1-65	Turbine Pump Dia. 200mm 75kW	daily	177,383	0	112,624	290,007
A-2-1-66	Swamp Bulldozer; 13 ton	hourly	161,131	2,160	146,095	309,386
A-2-1-67	Swamp Bulldozer; 16 ton	hourly	180,013	2,280	162,683	344,976
A-2-1-68	Tire Roller; 8-20 ton	hourly	81,684	864	82,451	164,999
A-2-1-69	Trailer; 20 ton	hourly	119,879	2,160	102,572	224,611
A-2-1-70	Trailer; 32 ton	hourly	153,758	2,160	129,118	285,036
A-2-1-71	Truck Crane; 11(10) ton, Oil Pressure	hourly	99,322	1,020	85,929	186,271
A-2-1-72	Truck Crane; 16 ton, Oil Pressure	hourly	135,641	1,020	115,858	252,520
A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	154,913	1,032	131,788	287,732
A-2-1-74	Truck Crane; 35 ton, Oil Pressure	hourly	255,717	1,440	216,490	473,647
A-2-1-75	Truck Crane; 4.9 ton, Oil Pressure	hourly	55,146	720	48,324	104,190
A-2-1-76	Truck Crane; 60 ton, Oil Pressure	hourly	421,006	1,560	353,180	775,747
A-2-1-77	Truck Mixer; 1.6 m3	hourly	35,073	996	28,463	64,532
A-2-1-78	Truck Mixer; 3 m3	hourly	51,377	1,164	40,516	93,057
A-2-1-79	Truck Mixer; 4.5 m3	hourly	77,958	1,560	60,652	140,169
A-2-1-80	Truck; 11 ton	hourly	96,932	1,560	95,161	193,653
A-2-1-81	Truck; 3.5 ton	hourly	27,195	744	27,924	55,863
A-2-1-82	Truck; 4 ton	hourly	37,005	876	37,451	75,332
A-2-1-83	Truck; 8 ton	hourly	60,898	1,200	60,665	122,763
A-2-1-84	Tugboat; 15 ton	hourly	129,433	4,440	140,042	273,915
A-2-1-85	Vibrating Hammer; 30 kW	hourly	86,428	0	52,870	139,298
A-2-1-86	Vibrating Hammer; 40 kW	hourly	105,466	0	64,516	169,982
A-2-1-87	Vibrating Hammer; 60 kW	hourly	150,191	0	91,875	242,066
A-2-1-88	Vibrating Roller; 0.8-1.1 ton (Hand Guide)	hourly	17,057	144	14,791	31,992
A-2-1-89	Vibrating Roller; 11-12 ton	hourly	212,629	2,400	186,791	401,821
A-2-1-90	Vibrating Roller; 15-18 ton	hourly	300,975	2,640	261,373	564,988
A-2-1-91	Vibrating Roller; 3-5 ton	hourly	67,982	528	58,763	127,273
A-2-1-92	Water Jet; 45 kW	hourly	84,280	0	58,824	143,104
A-2-1-93	Water Tank; 3000 litter	daily	8,864	0	4,432	13,295
A-2-1-94	Wheel Loader; 1 m3	hourly	68,964	1,032	55,719	125,715
A-2-1-95	Wheel Loader; 1 m3 for Rock	hourly	62,694	1,032	51,029	114,756
A-2-1-96	Wheel Loader; 1.2 m3	hourly	72,404	1,116	58,629	132,149
A-2-1-97	Wheel Loader; 10 m3	hourly	1,222,719	11,040	958,866	2,192,625
A-2-1-98	Wheel Loader; 10 m3 for Rock	hourly	1,344,991	11,040	1,050,337	2,406,367
A-2-1-99	Wheel Loader; 3.1 m3	hourly	246,941	3,600	199,135	449,676
A-2-1-100	Wheel Loader; 3.1 m3 for Rock	hourly	271,635	3,600	217,608	492,844
A-2-1-101	Wheel Loader; 5.4 m3	hourly	625,744	5,760	491,154	1,122,659
A-2-1-102	Wheel Loader; 5.4 m3 for Rock	hourly	688,319	5,760	537,966	1,232,045
A-2-1-103	Concrete Pump Truck 55m3/hr	hourly	184,434	1,200	116,778	302,412
A-2-1-104	Water Tanker; 4000 litter	hourly	46,828	1,076	35,138	83,041
A-2-1-105	Tandem Roller 8/12 ton	hourly	191,666	1,200	164,522	357,388
A-2-1-108	Motorgrader; 2.8 m	hourly	104,320	0	97,032	201,352
A-2-1-109	Crawler Crane 16t	hourly	143,706	0	126,996	270,702
A-2-1-110	Crawler Crane 50t	hourly	355,844	0	314,467	670,310
A-2-1-111	Chain Saw	daily	42,825	0	17,538	60,363
A-2-1-113	Truck Crane; 80 ton, Oil Pressure	hourly	770,856	888	638,795	1,410,539
A-2-1-114	Truck Crane; 120 ton, Oil Pressure	hourly	1,082,164	888	895,335	1,978,387

Table 8.3.4 (3/4) HOURLY DRIVING EQUIPMENT COST

New ID No.	Description of Equipment	Unit	Hourly Cost			
			PF/C	IF/C	L/C	Total
A-2-1-115	Truck Crane; 160 ton, Oil Pressure	hourly	1,437,944	1,110	1,189,412	2,628,466
A-2-1-116	Truck Crane; 200 ton, Oil Pressure	hourly	1,913,305	1,154	1,581,323	3,495,783
A-2-2-1	Concrete Breaker; 600 kg	daily	232,611	0	93,259	325,870
A-2-2-2	Stabilizer	hourly	743,276	1,092	502,608	1,246,975
A-2-2-3	Truck with crane; 6 ton	hourly	62,784	0	57,595	120,379
A-2-2-4	Truck with crane; 8 ton	hourly	79,818	0	73,222	153,040
A-2-2-5	Cement Silo; 30 ton, 20t/h	daily	7,768	0	3,276	11,044
A-2-2-6	Compressor; 10.5-11 m3/min	daily	319,521	11,520	248,930	579,971
A-2-2-7	Compressor; 3.5-3.7 m3/min	daily	120,290	4,032	92,495	216,817
A-2-2-8	Compressor; 20~21 m3/min	daily	730,012	17,280	532,572	1,279,864
A-2-2-9	Compressor; 7.5 m3/min	daily	226,296	8,640	178,225	413,161
A-2-2-10	Concrete Breaker; 20 kg	daily	9,136	0	3,181	12,317
A-2-2-11	Concrete Breaker; 30 kg	daily	11,420	0	3,977	15,397
A-2-2-12	Concrete Bucket; 1 m3	daily	92,239	0	45,461	137,700
A-2-2-14	Generator; 10 kVA	daily	65,615	1,440	41,622	108,678
A-2-2-15	Generator; 100 kVA	daily	215,064	10,800	160,745	386,609
A-2-2-16	Generator; 125 kVA	daily	271,912	15,120	209,096	496,128
A-2-2-17	Generator; 15 kVA	daily	82,875	1,800	52,496	137,171
A-2-2-18	Generator; 20 kVA	daily	104,107	2,448	66,693	173,248
A-2-2-19	Generator; 200 kVA	daily	415,060	23,760	321,895	760,715
A-2-2-20	Generator; 250 kVA	daily	569,851	29,520	429,537	1,028,908
A-2-2-21	Generator; 300 kVA	daily	658,206	36,720	506,628	1,201,554
A-2-2-22	Generator; 35 kVA	daily	121,915	3,816	81,898	207,629
A-2-2-23	Generator; 75 kVA	daily	211,639	9,360	153,113	374,113
A-2-2-24	Grout Mixer; 2x200 ltr 2.3kw Yoko	daily	45,124	259	35,784	81,167
A-2-2-25	Grout Plant; 150 l/min	daily	1,114,557	12,960	522,644	1,650,162
A-2-2-26	Grout Pressure Meter; 120 l/min	daily	428,848	0	230,918	659,767
A-2-2-27	Grout Pump; 37-100 l/min 7.8kw Yoko	daily	110,621	864	88,638	200,123
A-2-2-30	Oil Pressure Jack	daily	36,093	0	17,857	53,950
A-2-2-31	Leg Hammer; 30 kg	daily	40,345	0	14,239	54,584
A-2-2-32	Leg Hammer; 40 kg	daily	45,409	0	16,027	61,435
A-2-2-33	Motor grader; 4.01 m x 0.62 m	hourly	220,940	0	205,503	426,444
A-2-2-35	Pick Hammer	daily	5,717	0	2,030	7,747
A-2-2-36	Guide Sell Feed 4m 150kg class	daily	248,497	0	85,886	334,383
A-2-2-37	Pontoon Barge; 100 ton	daily	314,821	0	237,791	552,612
A-2-2-38	Grout Center Plant Automatic 150litre/min	daily	1,114,557	0	470,804	1,585,362
A-2-2-39	Rotary Boring Machine; 11 kW	daily	241,735	1,224	191,040	433,999
A-2-2-40	Rotary Boring Machine; 5.5 kW	daily	142,653	648	112,440	255,742
A-2-2-41	Drifter Air Type : 150kg class	daily	257,007	0	88,827	345,834
A-2-2-42	Submergible pump; D 100 mm; 3.7 kW	daily	21,522	0	10,871	32,394
A-2-2-43	Submergible pump; D 150 mm; 7.5 kW	daily	28,458	0	14,374	42,831
A-2-2-44	Submergible pump; D 200 mm; 15 kW	daily	65,404	0	33,036	98,440
A-2-2-45	Submergible pump; D 50 mm; 0.75 kW	daily	6,576	0	3,322	9,898
A-2-2-46	Submergible pump; D 80 mm; 1.5 kW	daily	14,587	0	7,368	21,956
A-2-2-47	Submergible Pump; D100mm 5.5 kW	daily	26,903	0	13,589	40,492
A-2-2-48	Submergible Pump; D150mm 10.6 kW	daily	39,099	0	19,749	58,848
A-2-2-49	Submergible Pump; D200mm 22kW	daily	81,666	0	41,250	122,915
A-2-2-50	Submergible Pump; D50mm 1.5 kW	daily	11,837	0	5,979	17,816
A-2-2-51	Tamper; 60-100 kg	daily	35,109	1,080	16,859	53,047
A-2-2-52	Vibrating Roller; 1 ton	hourly	22,526	144	19,348	42,018
A-2-2-53	Vibrating Roller; 2 ton	hourly	56,452	468	48,915	105,835
A-2-2-54	Vibrating Roller; 4 ton	hourly	67,982	528	58,763	127,273
A-2-2-55	Concrete Vibrator; 60 mm Engine Type	daily	20,241	2,280	16,494	39,015
A-2-2-56	Vibro hammer; 30 kW	hourly	86,428	0	52,870	139,298
A-2-2-57	Vibro hammer; 40 kW	hourly	105,466	0	64,516	169,982
A-2-2-58	Shotcrete Machine Wet Type : 0.8~1.2	hourly	68,498	0	40,476	108,975
A-2-2-59	Concrete Vibrator; High Wave	daily	55,125	0	26,706	81,831

Table 8.3.4 (4/4) HOURLY DRIVING EQUIPMENT COST

New ID No.	Description of Equipment	Unit	Hourly Cost			
			PF/C	IF/C	L/C	Total
A-2-2-60	Portable Concrete Mixer 0.5m3	daily	236,747	360	116,739	353,846
A-2-2-61	Portable Concrete Mixer 0.2m3	daily	198,699	576	99,073	298,348
A-2-2-62	Asphalt Plant 30ton/hr, 110kw	hourly	584,193	0	399,236	983,429
A-2-2-63	Asphalt Finisher 2.4m	hourly	170,054	0	150,540	320,594
A-2-2-64	Asphalt Sprayer 30ton/hr	daily	32,295	0	11,398	43,693
A-2-2-65	Dragline 3.0m3	hourly	774,072	4,200	748,374	1,526,645
A-2-2-66	Dredger	hourly	636,080	0	464,469	1,100,550
A-2-2-67	Concrete Cutter	daily	33,629	0	13,589	47,218

Table 8.4.1 (1/7) UNIT RATES OF WORKING COST

ID No.	Base Working Item	Unit	PF/C	IF/C	L/C	Total	Application
CW-1-1	Backfill (Soil) A	m3	6,076	87	5,043	11,206	Width is equal or more than 4m
CW-1-2	Backfill (Soil) B	m3	7,022	103	6,326	13,451	Width is equal or more than 0~4m
CW-1-3	Backfill (Soil) C	m3	6,392	98	6,338	12,828	Width is less than 4m
CW-1-4	Backfill (Soil) D	m3	6,038	132	7,114	13,284	Width is less than 1m
CW-1-5	Spreading A	m3	2,941	35	2,823	5,799	Bulldozer 21t
CW-1-6	Manpower Excavation	m3	0	0	15,800	15,800	Soil:Clay, Sand, Gravel
CW-1-7	Manpower Embankment/Backfill & Tamper	m3	1,760	60	9,620	11,440	Soil:Clay, Sand, Gravel
CW-1-8	Tamper Loading	m3	1,760	60	2,600	4,420	60~100kg
CW-1-9	Slope Clearing for Embankment 1	m2	2,674	35	2,902	5,611	Bulldozer 15t (S=1:2~3)
CW-1-10	Slope Clearing for Embankment 2	m2	3,265	54	2,660	5,979	Backhoe 0.6m3 by Cutting, Soil:Sand and Clay
CW-1-11	Slope Clearing for Embankment 3	m2	4,018	66	3,325	7,409	Backhoe 0.6m3 by Additional Soil (Sand)
CW-1-12	Slope Clearing of Excavation by Machine	m2	4,018	66	3,760	7,844	Backhoe 0.6m3 by Cutting (Sand)
CW-1-13	Slope Clearing of Excavation by Manpower	m2	0	0	2,202	2,202	Soil: Sand
CW-1-14	Sodding	m2	0	0	5,761	5,761	
CW-1-15	Gravel Bedding	m3	0	1,360	31,260	32,620	Under Flat and Thin Concrete Structure
CW-1-16	Backfilling Gravel A	m3	0	4,060	83,560	87,620	Behind Revetment
CW-1-17	Backfilling Gravel B	m3	0	3,980	84,740	88,720	Behind Concrete Wall
CW-1-18	Backfilling Concrete	m3	0	47,100	203,180	250,280	Behind or Between Concrete Walls
CW-1-19	Foundation River Gravel (Rubble Stone)	m3	0	2,790	62,080	64,870	Under Concrete Structure and so on
CW-1-20	Concrete Work for Reinforced Concrete C1 by Pump	m3	20,270	41,770	183,330	245,370	by Boom, Standard Concreting Volume=75m3
CW-1-21	Concrete Work for Small Structure : Type-D	m3	120	42,570	193,500	236,190	by Manpower
CW-1-22	Concrete Work for Levelling Concrete	m3	120	37,130	158,740	195,990	by Manpower
CW-1-23	Form Work A	m2	60	0	44,798	44,858	Reinforced Concrete less than 4m high
CW-1-24	Form Work B	m2	10,030	75	52,910	63,015	Reinforced Concrete more than 4m high
CW-1-25	Form Work C	m2	59	0	43,844	43,903	Plain Concrete less than 4m high
CW-1-26	Form Work D	m2	0	0	43,547	43,547	Small Concrete Structure
CW-1-27	Form Work E	m2	0	0	46,438	46,438	Small Concrete Structure II
CW-1-28	Form Work F	m2	0	0	36,510	36,510	Levelling Concrete
CW-1-29	Reinforcing Bar Setup 1	t	0	3,120,900	3,325,100	6,446,000	SD295A, Construction scale : less than 10t, less than 5m high
CW-1-30	Reinforcing Bar Setup by using Crane 1	t	137,000	3,122,000	3,442,150	6,701,150	SD295A, Construction Scale : less than 10t, more than 5m high
CW-1-31	Reinforcing Bar Setup 2	t	0	2,808,810	2,992,590	5,801,400	SD295A, Construction scale : more than 10t, less than 5m high
CW-1-32	Reinforcing Bar Setup by using Crane 2	t	123,300	2,809,800	3,097,935	6,031,035	SD295A, Construction Scale : more than 10t, more than 5m high
CW-1-33	Reinforcing Bar Setup A	t	0	3,120,900	3,342,700	6,463,600	SD295A (D10~D13), less than 5m high
CW-1-34	Reinforcing Bar Setup B	t	137,000	3,122,000	3,459,800	6,718,800	SD295A(D10~D13), higher than 5m high
CW-1-35	Reinforcing Bar Setup C	t	0	3,120,900	3,307,500	6,428,400	SD295A (D16~D25), less than 5m high
CW-1-36	Reinforcing Bar Setup D	t	137,000	3,122,000	3,424,500	6,683,500	SD295A(D16~D25), higher than 5m high

Table 8.4.1 (2/7) UNIT RATES OF WORKING COST

ID No.	Base Working Item	Unit	PF/C	IF/C	L/C	Total	Application
CW-1-37	Prefabricated Scaffold for Re-Con I	m2	6,600	0	8,678	15,278	Less than 4m high (Lease)
CW-1-38	Prefabricated Scaffold for Re-Con II	m2	14,739	62	15,629	30,430	equal or higher than 4m high (Lease)
CW-1-39	Tublar Scaffold for Re-Con I	m2	224,200	0	26,570	250,770	Less than 4m high
CW-1-40	Tublar Scaffold for Re-Con II	m2	232,340	70	32,690	265,100	Higher than 4m high
CW-1-41	Tublar Scaffold for Re-Con III	m2	16,830	0	17,490	34,320	Less than 4m high (Scaffold : Lease)
CW-1-42	Tublar Scaffold for Re-Con IV	m2	24,970	70	23,610	48,650	Higher than 4m high (Scaffold : Lease)
CW-1-43	Pipe Support	m3	5,940	0	28,640	34,580	Height is 0~4m
CW-1-44	Frame Support	m3	11,370	50	22,310	33,730	Height is 4~10m <2t/m2
CW-1-45	Curing Work	m3	110	0	350	460	Reinforced Concrete
CW-1-46	Excavation A	m3	2,361	39	1,711	4,111	Original Soil (Condition:good)
CW-1-47	Excavation B	m3	2,951	48	2,138	5,137	Original Soil (Condition:common)
CW-1-48	Excavation C	m3	3,943	65	2,857	6,865	Original Soil (Condition:bad(less than water
CW-1-49	Excavation D	m3	2,361	39	1,711	4,111	Loosed Soil (Condition:good)
CW-1-50	Excavation E	m3	2,725	45	1,974	4,744	Loosed Soil (Condition:common)
CW-1-51	Excavation F	m3	3,541	58	2,566	6,165	Loosed Soil (Condition:bad(less than water level))
CW-1-52	Excavation G	m3	2,725	45	1,974	4,744	Loosed Soil (Condition:good, Material:Rock or Cobble)
CW-1-53	Excavation H	m3	3,541	58	2,566	6,165	Loosed Soil (Condition:common, Material:Rock or Cobble)
CW-1-54	Excavation I	m3	5,072	83	3,675	8,830	Loosed Soil (Condition:bad(less than water level), Material:Rock or Cobble)
CW-1-55	Spreading and Compaction-A	m3	1,900	23	1,939	3,862	Tire Roller 8~20t
CW-1-56	Spreading and Compaction for Gravel Pavement	m3	5,117	43	16,431	21,592	Width is less than 4m
CW-1-57	Reinforced Concrete Work Type D by Pump	m3	20,270	40,730	179,170	240,170	by Boom, Standard Concreting Volume=75m3
CW-1-58	Spreading and Compaction for Earth Filling	m3	2,834	36	2,633	5,503	Tire Roller 8~20t
CW-1-59	Spreading and Compaction-D	m3	1,509	19	1,473	3,001	Tire Roller 8~20t
CW-1-60	Concrete Work for Type-C by Shoot Hopper	m3	120	43,660	197,860	241,640	by Manpower
CW-1-61	Concrete Work for Type-C3 by Shoot Hopper	m3	120	43,660	197,860	241,640	by Manpower
CW-1-62	Reinforced Concrete Work Type B by Pump	m3	20,270	43,850	191,650	255,770	by Boom, Standard Concreting Volume=75m3
CW-1-63	Light Concrete (Concrete 1:3:5)	m3	0	26,756	408,184	434,940	
CW-1-64	Excavation by Backhoe 0.35m3	m3	2,688	45	1,954	4,687	Loosed Soil (Condition:common)
CW-1-65	Spreading by Swamp Bulldozer	m3	4,284	54	4,047	8,386	Swamp Bulldozer 16t (Loosed and Bad
CW-2-1	Temporary Fence of Corrugated Iron Sheet, 2m high	m	0	3,400	70,500	73,900	SK SNI T-01-1991-03
CW-2-2	Making of Wood Temporary Fence	m2	0	20,300	377,300	397,600	SK SNI T-01-1991
CW-2-3	Clearing Area	m2	0	0	6,900	6,900	
CW-2-4	Bowplank Installation	m	0	100	12,000	12,100	
CW-2-5	Cutting Common Earth, 1m depth	m3	0	0	16,000	16,000	
CW-2-6	Cutting Solid Earth, 1m depth	m3	0	0	25,000	25,000	
CW-2-7	Cutting Muddy Earth, 1m depth	m3	0	0	7,400	7,400	
CW-2-8	Removing Earth for 150m distance	m3	0	0	4,300	4,300	

Table 8.4.1 (3/7) UNIT RATES OF WORKING COST

ID No.	Base Working Item	Unit	PF/C	IF/C	L/C	Total	Application
CW-2-9	Backfilling Earth	m3	0	0	7,700	7,700	
CW-2-10	Flatting and Compaction Earth	m3	0	0	20,000	20,000	
CW-2-11	Filling Solid Earth for Road Body/berm	m3	0	800	15,300	16,100	
CW-2-12	Filling Sand	m3	0	1,800	86,700	88,500	
CW-2-13	Masonry/Riprap Protection, 20cm thickness	m3	0	2,900	96,000	98,900	
CW-2-14	Masonry of Crushed Stone/Riverstone with 1cement : 2 sand	m3	0	28,800	188,500	217,300	SK SNI T-02-1991
CW-2-15	Masonry of Crushed Stone, 1cement : 3sand	m3	0	22,400	207,600	230,000	
CW-2-16	Masonry of Crushed Stone, 1cement : 5sand	m3	0	14,100	178,300	192,400	
CW-2-17	Masonry of Crushed Stone, 1cement : 3lime : 10sand	m3	0	9,800	166,600	176,400	
CW-2-18	Masonry of Brick Stone/Brickwork, 1cement : 2sand, 1Brick thickness	m2	0	8,800	152,000	160,800	SK SNI T-03-1991
CW-2-19	Masonry of Brick Stone/Brickwork, 1cement : 4sand, 1Brick thickness	m2	0	4,300	105,500	109,800	
CW-2-20	Masonry of Brick Stone/Brickwork, 1cement : 3lime : 10sand, 1Brick	m2	0	700	92,400	93,100	
CW-2-21	Masonry of Brick Stone/Brickwork, 1cement : 2sand, 1/2Brick thickness	m2	0	3,400	57,200	60,600	
CW-2-22	Masonry of Brick Stone/Brickwork, 1cement : 4sand, 1/2brick thickness	m2	0	2,200	52,600	54,800	
CW-2-23	Masonry of Brick Stone/Brickwork, 1cement : 3lime : 10sand, 1/2brick thickness	m2	0	1,300	50,700	52,000	
CW-2-24	Wall Masonry of Concrete Block, 1cement : 5sand	m2	0	5,800	39,600	45,400	
CW-2-25	Tile Floor Work of 20cm x 20cm, 1lime : 3sand	m2	0	1,400	25,900	27,300	
CW-2-26	Tile Floor Work of 20cm x 20cm, 1cement : 1/2lime : 5sand	m2	0	2,200	29,000	31,200	
CW-2-27	Plint Tile Work, 15cm x 20cm or 10cm x 20cm 1cement : 2sand	m	0	7,300	73,600	80,900	
CW-2-28	PVC pipe Installation with Dia.0.75", 1m length	piece	0	0	36,700	36,700	
CW-2-29	PVC pipe Installation with Dia.1", 1m length	piece	0	0	54,000	54,000	
CW-2-30	Cutting Earth for Installation of PVC, ACP and GIP	m2	0	0	0	0	
CW-2-31	Filling Sand for Installation of PVC, ACP and GIP	m2	0	0	0	0	
CW-2-32	Concrete Work with 1cement : 3/2sand : 5/2lime	m3	0	47,500	507,000	554,500	
CW-2-33	Concrete Work with 1cement : 2sand : 4gravel.	m3	0	36,000	466,600	502,600	
CW-2-34	Concrete Work with 1cement : 2sand : 3gravel	m3	0	37,300	467,700	505,000	
CW-2-35	Concrete Work with 1cement : 3sand : 6gravel	m3	0	26,700	408,800	435,500	
CW-2-36	Reinforcing-Bar Work	kg	0	3,343	10,815	14,158	
CW-2-37	Steel-net with Dia.4-15"	m2	0	800	1,700	2,500	
CW-2-38	Form Work for 1m3 of Concrete	m3	0	9,600	821,800	831,400	
CW-2-39	Form Work for Drainage Channel	m2	0	300	143,800	144,100	
CW-2-40	Breaking-up the Concrete Form	m2	0	0	3,700	3,700	
CW-2-41	Reinforced Concrete with 1cement : 3/2sand : 5/2gravel/aggregate	m3	0	424,900	2,518,500	2,943,400	
CW-2-42	Reinforced Concrete with 1cement : 2sand : 4gravel/aggregate	m3	0	463,500	2,640,300	3,103,800	
CW-2-43	Reinforced Concrete with 1cement : 2sand : 3gravel/aggregate	m3	0	414,700	2,479,200	2,893,900	
CW-2-44	Plastering 15mm thickness with 1cement : 2sand	m2	0	1,200	10,000	11,200	SK-SNI T-03-1991-03
CW-2-45	Plastering 15mm thickness with 1cement : 3sand	m2	0	900	9,100	10,000	SK-SNI T-03-1991-03
CW-2-46	Plastering 15mm thickness with 1cement : 4sand	m2	0	800	8,600	9,400	SK-SNI T-03-1991-03
CW-2-47	Plastering 15mm thickness with 1cement : 6sand	m2	0	600	7,900	8,500	SK-SNI T-03-1991-03

Table 8.4.1 (4/7) UNIT RATES OF WORKING COST

ID No.	Base Working Item	Unit	PF/C	IF/C	L/C	Total	Application
CW-2-48	Plastering 15mm thickness with 1cement : 3lime : 10sand	m2	0	400	7,200	7,600	SK-SNI T-03-1991-03
CW-2-49	Plastering 20mm thickness with 1cement : 2sand	m2	0	1,900	13,900	15,800	SK-SNI T-03-1991-03
CW-2-50	Plastering 20mm thickness with 1cement : 3sand	m2	0	1,500	12,300	13,800	SK-SNI T-03-1991-03
CW-2-51	Plastering 28mm thickness with 1cement : 4sand per	m2	0	1,200	11,300	12,500	SK-SNI T-03-1991-03
CW-2-52	Plastering 28mm thickness with 1cement : 6sand	m2	0	900	10,100	11,000	SK-SNI T-03-1991-03
CW-2-53	Seam Work at Brick Masonry with 1cement : 3sand per 1m	m2	0	600	21,400	22,000	SK-SNI T-03-1991-03
CW-2-54	Roof Trust/Trestle with Max Span of 8m	m3	78,400	7,200	9,348,600	9,434,200	SK-SNI T-11-1993-03
CW-2-55	Roof Trust/Trestle with Max Span of 6m	m3	78,400	7,200	3,188,600	3,274,200	SK-SNI T-11-1993-03
CW-2-56	Roof Trust/Trestle with Max Span of 6-9m	m3	78,400	7,200	9,653,800	9,739,400	SK-SNI T-11-1993-03
CW-2-57	Roof Trust/Trestle with Max Span of 6-9m	m3	78,400	7,200	3,259,900	3,345,500	SK-SNI T-11-1993-03
CW-2-58	Teak Wood Purlin Installation	m3	0	5,300	8,666,500	8,671,800	SK-SNI T-11-1993-03
CW-2-59	Kamper Wood Purlin Installation	m3	0	5,300	2,435,400	2,440,700	SK-SNI T-11-1993-03
CW-2-60	Roof Trust for Iron Roof	m2	0	300	93,200	93,500	
CW-2-61	Roof Frame 5/7 & Roof-lath 2/8	m2	0	400	37,600	38,000	SK-SNI T-11-1993-03
CW-2-62	Roof Frame 5/7 & Roof-lath 3/4	m2	0	600	55,300	55,900	SK-SNI T-11-1993-03
CW-2-63	Roof Frame 5/7 & Roof-lath 3/4, Concrete Tile Roof	m2	0	400	41,400	41,800	SK-SNI T-11-1993-03
CW-2-64	Ridge and Hip Covering with 1cement : 1sand :5lime	m	0	2,200	37,900	40,100	
CW-2-65	Door/Window Work of Teak Wood	m3	0	124,800	10,280,800	10,405,600	SK-SNI T-11-1993-03
CW-2-66	Door/Window Work of Camphol Wood	m3	0	124,800	2,651,500	2,776,300	SK-SNI T-11-1993-03
CW-2-67	Door/Window Work (Covered by Three Plywood and Aluminium)	m2	0	300	3,237,100	3,237,400	SK-SNI T-11-1993-03
CW-2-68	Venitian Blind Door/Window Work of Teak Wood	m2	0	500	546,200	546,700	SK-SNI T-11-1993-03
CW-2-69	Venitian Blind Door/Window Work of Teak Wood	m2	0	500	253,000	253,500	SK-SNI T-11-1993-03
CW-2-70	Door/Window Work of Plywood with Teak Wood as the Frame	m2	0	4,200	444,600	448,800	SK-SNI T-11-1993-03
CW-2-71	Door/Window Work of Plywood with Camphol Wood as the Frame	m2	0	4,200	198,200	202,400	SK-SNI T-11-1993-03
CW-2-72	Glass Door/Window Work of Plywood with Teak Wood as the Frame	m2	0	6,700	2,424,200	2,430,900	SK-SNI T-11-1993-03
CW-2-73	Clamp Door/Window Work, with Camphol Wood Framework	m2	0	300	130,800	131,100	SK-SNI T-11-1993-03
CW-2-74	Panel Door/Window Work, with Teak Wood Framework	m2	0	300	455,700	456,000	
CW-2-75	Panel Door/Window Work, with Camphol Wood Framework	m2	0	300	209,200	209,500	
CW-2-76	Ceiling Frame, Grid of 50cm x 100cm, with Camphol wood	m2	0	500	80,800	81,300	
CW-2-77	Ceiling Frame, Grid of 30cm x 60cm, with Camphol wood	m2	0	600	101,500	102,100	
CW-2-78	Ceiling Frame, Grid of 30cm x 30cm, with Camphol wood per	m2	0	700	116,900	117,600	
CW-2-79	Plank Wood Work of 3cm x 20cm, with Teak wood	m	0	200	65,600	65,800	
CW-2-80	Plank Wood Work of 3cm x 30cm, with Teak wood	m	0	200	93,500	93,700	
CW-2-81	Partition Wall Work of Teak wood, with Frame of Camphol Wood	m2	0	4,400	103,300	107,700	
CW-2-82	Installation of Metal Sheet Ridge Gutter	m	0	72,100	433,500	505,600	
CW-2-83	Installation of Bag Gutter	m	0	113,200	598,000	711,200	
CW-2-84	Corrugated Iron Roof BJLS 0.30	m2	0	22,200	25,200	47,400	
CW-2-85	Eaves Gutter Installation	m2	0	61,800	365,200	427,000	
CW-2-86	Installation of Drainage Gutter	m2	0	5,150	27,590	32,740	
CW-2-87	Puttying, Foundation Paint	m2	0	1,190	8,010	9,200	(1 1/2 k2 + k30 + k28/m2)

Table 8.4.1 (5/7) UNIT RATES OF WORKING COST

ID No.	Base Working Item	Unit	PF/C	IF/C	L/C	Total	Application
CW-2-88	Two Times Shiny Painting	m2	0	1,740	9,060	10,800	
CW-2-89	Polishing and 2times Shiny Painting	m2	0	3,800	21,600	25,400	(k28+k30/m2)
CW-2-90	Simple Polishing Work per 1m2	m2	0	200	20,800	21,000	
CW-2-91	Good Polishing Work2xk15	m2	0	400	41,600	42,000	
CW-2-92	Wall Painting Work	m2	0	1,200	18,800	20,000	
CW-2-93	Wall Painting Work per 10m2	m2	0	1,430	17,930	19,360	
CW-2-94	Wood Painting Work	m2	0	4,100	30,520	34,620	
CW-2-95	Cost of Rolling	m2	1,498	16	2,614	4,128	
CW-2-96	Road Foundation (Base Layer) 15cm thickness	m2	1,500	600	26,600	28,700	
CW-2-97	Subcoarse Layer (Support Layer) 8cm thickness	m2	2,996	506	17,044	20,546	
CW-2-98	Rolling Cost for Month	month	0	130,800	9,184,000	9,314,800	
CW-2-99	Asphalt Covering with Hot Asphalt	m2	6,000	6,900	586,900	599,800	
CW-2-100	Sand Beneath Rond Base Layer	m3	0	1,700	44,500	46,200	
CW-2-101	Crushed Stone Layer, Size of 5/7	m2	1,500	200	19,800	21,500	
CW-2-102	Foundation Layer	m2	15	102	4,161	4,278	
CW-2-103	Surface Layer with 6mm thickness	m2	1,500	2,900	20,500	24,900	
CW-2-104	Asphlt Work	m2	0	362	4,662	5,024	
CW-2-105	Reinforced Concrete with 1:2:3 Duiker Slab Type A/B (with Re-bar-110kg/m3)	m3	0	85,500	805,600	891,100	
CW-2-106	Masonry of Kanstin Casted Concrete	m3	0	31,100	450,800	481,900	
CW-2-107	Masonry of Kanstin Concrete Pavement Border with ratio of 1:2:3	m	0	0	35,900	35,900	
CW-2-108	Masonry of Kanstin Brick with ratio of 1:2	m	0	1,000	104,100	105,100	
CW-2-109	Masonry of Kanstin Brick with ratio of 1:4	m	0	500	40,500	41,000	
CW-2-110	Masonry of U-shapes Casfed Concrete U-20	m	0	1,600	34,700	36,300	
CW-2-111	Masonry of U-shapes Casfed Concrete U-30	m	0	2,400	36,500	38,900	
CW-2-112	Masonry of Paving Block	m2	0	5,700	44,800	50,500	
CW-3-1	Pile Work of Maintenance Bridge of Simongan Bridge-A	m	255,813	553	96,043	352,408	Length is 4m tall
CW-3-2	Pile Work of Maintenance Bridge of Simongan Bridge-B	m	246,376	488	86,168	333,032	Length is 5m tall
CW-3-3	Pile Work of Simongan Weir-A	m	254,677	257	56,438	311,372	Length is 13m tall
CW-3-4	Pile Work of Simongan Weir-B	m	186,831	225	47,461	234,516	Length is 13m tall
CW-3-5	Pile Work of RailwayBridge-A (Abut Semarang Side)	m	46,236	301	48,809	95,346	Length is 17m tall
CW-3-6	Pile Work of RailwayBridge-B (Center Pier Semarang Side)	m	34,485	228	36,082	70,795	Length is 13m tall
CW-3-7	Pile Work of RailwayBridge-C (Center Pier Cirebon Side)	m	51,877	337	54,766	106,980	Length is 14m tall
CW-3-8	Pile Work of RailwayBridge-D (Abut Cirebon Side)	m	46,114	300	48,683	95,097	Length is 17m tall
CW-3-9	Driving In of Steel Sheet Pile (Type-II)	m	9,909	76	8,579	18,564	L=10m long
CW-3-10	Pulling Out of Steel Sheet Pile (Type-II)	m	9,754	67	8,548	18,369	L=10m long
CW-3-11	Driving In of Concrete Sheet Pile (t=22)	m	15,343	136	12,963	28,442	L=10m long
CW-3-12	Driving In of Log Pile	piece	24,436	362	18,530	43,328	L=2m long
CW-3-13	Pile Work of Concrete Pile for Groyn	m	35,839	251	37,593	73,683	Length is 7m long
CW-3-14	Pile Work of Simongan Weir-C	m	177,272	221	42,464	219,957	Length is 13m tall

Table 8.4.1 (6/7) UNIT RATES OF WORKING COST

ID No.	Base Working Item	Unit	PF/C	IF/C	L/C	Total	Application
CW-3-15	Pile Work of Simongan Weir-D	m	146,827	210	39,215	186,252	Length is 13m tall
CW-3-16	Wale Work-A	kg	30,770	1,550	27,006	59,326	Using C-Channel Steel
CW-3-17	Wale Work-B (Temporary)	ton	558,950	3,200	581,050	1,143,200	Using C-Channel Steel
CW-3-18	Installation of Tie Rod-A	kg	68,880	96	25,764	94,740	for Concrete Sheet Pile
CW-3-19	Installation of Tie Rod-B (Temporary)	kg	142,600	960	228,960	372,520	for Temporary Structure
CW-3-20	Pulling Out of Concrete Sheet Pile (t=22)	m	85,119	751	71,916	157,786	L=10m long
CW-3-21	Driving In of H-Beam	piece	59,840	834	47,754	108,427	Driving 6m long
CW-3-22	Pulling out of H-Beam	piece	51,919	723	41,432	94,074	Driving 6m long
CW-3-23	Driving In of Log Pile L=3.0m	piece	29,501	437	22,371	52,309	L=3m long
CW-3-24	Driving In of Log Pile L=4.0m	piece	33,999	504	25,782	60,285	L=4m long
CW-3-25	Driving In of Log Pile L=5.0m	piece	38,497	571	30,088	69,156	L=5m long
CW-3-26	Pile Work of Asin & Baru No.1	m	229,222	298	63,215	292,735	Length is 16m tall
CW-3-27	Pile Work of Asin & Baru No.2	m	218,427	235	51,903	270,565	Length is 26m tall
CW-4-1	Temporary Bridge	m2	917,232	19,318	861,666	1,798,215	Width is 3m. Number of Working Day is 180 days including Installation and Removal
CW-4-1-1	Temporary Bridge	ton	8,878,764	186,999	8,340,887	17,406,649	Width is 3m. Number of Working Day is 180 days including Installation and Removal
CW-4-2	Temporary Sign for Railway Work	unit	0	119,900	266,300	386,200	
CW-4-3	Install and Demolish Temporary Coffer for Rail Work	m3	0	16,913	327,531	344,443	
CW-4-4	Site Clearing for Railwork	m2	0	0	4,935	4,935	
CW-4-5	Removal/Demolish/Carriage of Tool	ton	97,117	1,449	249,735	348,301	10km Distance
CW-4-6	Replacing Ballast with Sleeper Mattress executed between Train Operation	m3	0	0	107,510	107,510	
CW-4-7	Sand Bags	nos	89	759	4,200	5,047	
CW-4-8	Temporary Steel Sheet Pile (Type-C)	nos	1,420,686	86	949,535	2,370,307	L=9.0 long and 6.0m of Driving and Pulling Out (Type-II)
CW-4-9	Installation of Tierod and Wale (Temporary)	ton	520,420	3,640	543,270	1,067,330	Excluding Material
CW-4-10	Removal of Tierod and Wale (Temporary)	ton	295,700	2,230	301,270	599,200	Excluding Material
CW-4-11	Temporary Double Steel Sheet Pile	m	11,624,101	15,806	8,175,660	19,815,566	L=9.0 and 15.0m long and 4.7 and 10.7m of Driving and Pulling Out (Type-II)
CW-4-12	Temporary Dewatering by D100mm	m	291,464	12,974	212,461	516,899	Width is 3m. Number of Working Day is 180 days including Installation and Removal
CW-4-12-1	Temporary Dewatering per 1 place (60days non-stop driving) D=100mm	place	14,573,175	648,720	10,623,031		
CW-4-13	Angsana Species	tree	0	150	93,560	93,710	Total height from the root is 220cm
CW-4-14	Glodogan Species	tree	0	150	128,560	128,710	Total height from the root is 170cm
CW-4-15	Flamboyant Species	tree	0	150	228,560	228,710	Total height from the root is 220cm
CW-4-16	Relocating Trees	tree	0	375	239,925	240,300	Total height from the root is 220cm
CW-4-17	Temporary Double Steel Sheet Pile for Drainage Component	m	936,106	10,719	818,076	1,764,901	L=8m long and 3.3m of Driving and Pulling Out (Type-II)
CW-4-18	Temporary Steel Sheet Pile with Support for Drainage	m	913,737	7,006	855,994	1,776,737	L=7.5m long and 7.5 and 3.0m of Driving and Pulling Out (Type-II)

Table 8.4.1 (7/7) UNIT RATES OF WORKING COST

ID No.	Base Working Item	Unit	PF/C	IF/C	L/C	Total	Application
CW-4-19	Palm Botol Planting	tree	0	150	328,560	328,710	Total height from the root is minimum 200cm
CW-4-20	Bougainvillea Planting	tree	0	150	103,560	103,710	Total height from the root is minimum 100cm
CW-4-21	Temporary Dewatering by D200mm	day	353,884	15,124	251,251	620,260	Assumption : Working Day is 180 days including Installation and Removal
CW-4-22	Temporary Dewatering by D180mm	day	339,696	15,124	244,084	598,904	Assumption : Working Day is 180 days including Installation and Removal
CW-4-23	Temporary Dewatering by D160mm	day	319,831	15,124	234,051	569,006	Assumption : Working Day is 180 days including Installation and Removal
CW-6-1	Furnishing of Main Beam with Reinforcing Bar	Beam	6,101,929	5,128,787	25,816,683	37,047,399	L = 21.8 m long
CW-6-2	Temporary Work for Furnishing of Main Beam with Reinforcing Bar	Beam	28,375,138	3,096	30,035,364	58,413,597	L = 21.8 m long
CW-6-3	Election of Main Beam with Anchoring Work	Beam	3,286,228	596,217	4,530,225	8,412,670	L = 21.8 m long
CW-6-4	Furnishing of Diaphram with Reinforcing Bar	Piece	1,986,742	392,608	1,836,043	4,215,392	
CW-6-5	Depreciation of Equipment for Construction	piece	28,375,138	3,096	28,305,763	56,683,996	
CW-6-6	Setup of PC Cable	kg	6,250	65	21,799	28,114	
CW-6-7	Grout Work	m3	0	19,173	545,192	564,365	
CW-6-8	Concrete Work for Beam	m3	0	50,130	220,668	270,798	Utilization of Derrick Crane
CW-6-9	Hole Work for PC Cable	m	11,590	0	1,714	13,304	Cross Direction
CW-6-10	Stringing Work	cable	652,536	108,756	390,496	1,151,788	Type 195ton
CW-6-11	Temporary Placing for Beam	beam	0	0	282,500	282,500	
CW-6-12	Clean-up of Board for Furnishing Beam	beam	0	0	32,799	32,799	
CW-6-13	Furnishing, Installing and Removing Board for Furnishing Beam	m	0	0	33,161	33,161	
CW-6-14	Installing and Removing Derrick Crane	crane	0	0	443,810	443,810	Type : 3ton
CW-6-15	Installing and Removing Railing System for Derrick Crane	m	0	0	9,848	9,848	
CW-6-16	Erection of Beam	ton	0	0	12,463	12,463	
CW-6-17	Installation and Removal of Equipment for Erection	L.S.	1,534,301	8,640	6,433,439	7,976,379	
CW-6-18	Cost of Equipment and Tools	Bridge	14,870,000	2,978,000	11,892,000	29,740,000	Application : 20 ~ 30 m
CW-6-19	Anchoring for Bridge Work	place	67,545	0	447,245	514,790	
CW-6-20	Concrete Work of Beam at A2 by Crane	m3	120	50,980	223,080	274,180	
CW-6-21	Concrete Work for Diaphram at Type-A2 by Pump	m3	20,270	51,140	238,540	309,950	by Boom, Standard Concreting Volume=75m3
CW-6-22	Concrete Work of Type-B by Pump	m3	20,270	43,850	209,410	273,530	by Boom, Standard Concreting Volume=75m3

Table 8.4.2 NUMBER OF TRUCK IN GENERAL TRANSPORTATION FOR MOBILIZATION AND DEMOBILIZATION

MOBILIZATION AND DEMOBILIZATION OF SEMARANG RIVER DRAINAGE SYSTEM IMPROVEMENT

Construction Equipment	Capacity/ Specification	Number of Equipment						Total	
		2001		2002		2003			
		M	D	M	D	M	D	M	D
Dump Truck A	4 ton			2	2	3	3	5	5
Dump Truck B	10 ton			8	8	8	8	16	16
Truck with Crane A	4 ton			1	1	1	1	2	2

MOBILIZATION AND DEMOBILIZATION OF ASIN RIVER DRAIANAGE SYSTEM IMPROVEMENT

Construction Equipment	Capacity/ Specification	Number of Equipment						Total	
		2001		2002		2003			
		M	D	M	D	M	D	M	D
Pontoon	100 m3	1	1					1	1
Barge	100 m3	2	2					2	2
Tug Boat	15 ton	1	1					1	1
Dump Truck B	10 ton	17	17	20	20	17	17	54	54
Truck with Crane A	4 ton	5	5	5	4	6	7	16	16

MOBILIZATION AND DEMOBILIZATION OF BANDARHARJO DRAINAGE SYSTEM IMPROVEMENT

Construction Equipment	Capacity/ Specification	Number of Equipment						Total	
		2001		2002		2003			
		M	D	M	D	M	D	M	D
Dump Truck A	4 ton	12	12	11	11	13	13	36	36
Truck with Crane A	4 ton	3	3	5	4	1	2	9	9

Table 8.4.3 (1/2) NUMBER OF TRAILER TRANSPORTATION FOR MOBILIZATION AND DEMOBILIZATION

MOBILIZATION AND DEMOBILIZATION OF SEMARANG RIVER DRAINAGE SYSTEM IMPROVEMENT

Construction Equipment	Capacity/ Specification	Number of Transportation			Total
		2001	2002	2003	
Buldozer B	15 ton	0	2	0	2
Backhoe/Excavator A	0.20 m3	0	2	2	4
Backhoe/Excavator B	0.35 m3	0	0	2	2
Backhoe/Excavator C	0.60 m3	0	2	2	4
Backhoe D (Long Arm)	0.60 m3	0	2	2	4
Portable Concrete Mixer A	0.5 m3	0	2	0	2
Tamper	60/100 kg	0	2	0	2
Vibrating Roller B	10 ton	0	2	2	4
Tire Roller	40 ton	0	0	2	2
Motor Grader	50 ton	0	0	2	2
Diesel Engine Generator A	125 KVA	0	0	2	2
Air Compresor A	5.0 m3	0	2	2	4
Total Number of Trailer for Mobilization		0	3	5	8
Total Number of Trailer for Demobilization		0	3	5	8

MOBILIZATION AND DEMOBILIZATION OF ASIN RIVER DRAINAGE SYSTEM IMPROVEMENT

Construction Equipment	Capacity/ Specification	Number of Transportation			Total
		2001	2002	2003	
Buldozer A	15 ton	2	3	0	5
Backhoe/Excavator B	0.35 m3	2	2	0	4
Backhoe/Excavator C	0.60 m3	10	10	7	27
Giant Breaker	600/800 kg	0	0	2	2
Clamshell Grabbing	1.0 m3	2	0	0	2
Truck Crane A	20 ton	0	2	2	4
Truck Crane B	25 ton	0	2	4	6
Crawler Crane A	50 ton	0	0	4	4
Crawler Crane C	100 ton	0	2	0	2
Vibratary Pile Driver A	60 kW	2	2	4	8
Vibratary Pile Driver B	90 kW	2	3	0	5
Diesel Pile Hammer	3.5 ton	0	2	2	4
Portable Concrete Mixer A	0.20 m3	2	2	2	6
Tamper	60/100 kg	2	2	2	6
Vibrating Roller B	10 ton	2	2	4	8
Tire Roller	8/12 ton	2	0	0	2
Tandem Roller	8/12 ton	2	0	0	2
Motor Grader	2.8 m	2	0	4	6
Asphalt Sprayer	30 lit/min	2	0	2	4
Asphalt Finisher	2.4 m	2	0	2	4
Diesel Engine Generator A	35 kVA	2	0	0	2
Air Compressor A	5 m3	2	1	3	6
Total Number of Trailer for Mobilization		10	11	16	37
Total Number of Trailer for Demobilization		12	13	15	40

Table 8.4.3 (2/2) NUMBER OF TRAILER TRANSPORTATION FOR MOBILIZATION AND DEMOBILIZATION

MOBILIZATION AND DEMOBILIZATION OF BANDARHARJO
DRAINAGE SYSTEM IMPROVEMENT

Construction Equipment	Capacity/ Specification	Number of Transportation			Total
		2001	2002	2003	
Buldozer A	15 ton	2	2	0	4
Backhoe/Excavator B	0.35 m3	2	0	0	2
Backhoe/Excavator C	0.60 m3	6	5	8	19
Backhoe D (Long Arm)	0.60 m3	0	2	0	2
Truck Crane A	20 ton	0	4	2	6
Crawler Crane C	100 ton	0	2	0	2
Vibratary Pile Driver A	60 kW	4	4	2	10
Vibratary Pile Driver B	90 kW	0	2	0	2
Diesel Pile Hammer	3.5 ton	0	2	0	2
Portable Concrete Mixer A	0.20 m3	2	2	2	6
Tamper	60/100 kg	2	2	2	6
Vibrating Roller B	10 ton	0	2	4	6
Tire Roller	8/12 ton	0	0	4	4
Tandem Roller	8/12 ton	0	0	4	4
Motor Grader	2.8 m	0	0	4	4
Aphalt Sprayer	30 lit/min	0	0	2	2
Asphalt Finisher	2.4 m	0	0	2	2
Air Compressor B	11 m3	0	2	0	2
Total Number of Trailer for Mobilization		8	11	0	29
Total Number of Trailer for Demobilization		7	10	0	28

Table 8.5.1 (1/2) PAYMENT ITEMS AND THE COSTS FOR PACKAGE-1

FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG

Component: Urban Drainage System Improvement

Package 1: Semarang River Drainage System Improvement

BILL OF QUANTITIES

ID No.	Item No.	Description	Unit	Quantity	Unit Cost				Cost			
					PF/C	IF/C	L/C	Total Unit Cost	PF/C	IF/C	L/C	Total Cost
U-P1-Bq-1	**A**	**GENERAL**										
U-P1-Bq-2	A.1	Mobilization and Demobilization	L.S.	1	31,337,700	604,800	22,470,400	54,412,900	31,337,700	604,800	22,470,400	54,412,900
U-P1-Bq-3	**A.2**	**Establishment**										
U-P1-Bq-4	A.2.1	Temporary Construction Road	L.S.	1	24,107,400	2,933,200	70,105,000	97,145,600	24,107,400	2,933,200	70,105,000	97,145,600
U-P1-Bq-5	A.2.2	Contractor's Site Office and Facilities	L.S.	1	252,730,500	65,665,600	797,816,600	1,116,212,700	252,730,500	65,665,600	797,816,600	1,116,212,700
U-P1-Bq-6	A.2.3	Engineer's Site Office and Facilities	L.S.	1	19,373,100	5,033,600	61,156,700	85,563,400	19,373,100	5,033,600	61,156,700	85,563,400
U-P1-Bq-7	**A.3**	**Drawings**	L.S.	1	6,109,100	300,000	24,315,300	30,724,400	6,109,100	300,000	24,315,300	30,724,400
U-P1-Bq-8	**A.4**	**Surveying**	L.S.	1	1,484,000	0	7,371,000	8,855,000	1,484,000	0	7,371,000	8,855,000
U-P1-Bq-9	**B**	**CHANNEL WORKS**										
U-P1-Bq-10	**B.1**	**Preparatory Works**										
U-P1-Bq-11	B.1.1	Clearing of Garbage	L.S.	1	3,827,900	95,000	3,109,600	7,032,500	3,827,900	95,000	3,109,600	7,032,500
U-P1-Bq-12	**B.2**	**Channel Excavation**										
U-P1-Bq-13	B.2.1	Excavation below water level including hauling and treatment of contaminated soil	m^3	64300	78,357	8,944	85,038	172,339	5,038,355,100	575,099,200	5,467,943,400	11,081,397,700
U-P1-Bq-14	**C**	**DIKE RAISING**										
U-P1-Bq-15	**C.1**	**Dike Raising**										
U-P1-Bq-16	C.1.1	Structural Excavation	m^3	1810	18,170	350	14,250	32,770	32,887,700	633,500	25,792,500	59,313,700
U-P1-Bq-17	C.1.2	Backfill with Selected Soil	m^3	839	12,720	770	20,480	33,970	10,672,080	646,030	17,182,720	28,500,830
U-P1-Bq-18	C.1.3	Chipping on Existing Dike Surface	m^2	5238	3,690	0	18,310	22,000	19,328,220	0	95,907,780	115,236,000
U-P1-Bq-19	C.1.4	Sand Bedding	m^3	209	7,420	1,490	35,340	44,250	1,550,780	311,410	7,386,060	9,248,250
U-P1-Bq-20	C1.5	Wet Stone Masonry	m^3	1760	46,070	28,800	200,020	274,890	81,083,200	50,688,000	352,035,200	483,806,400
U-P1-Bq-21	C1.6	Joint Filler, 10 mm thick (Elastic Material)	m^2	76	6,750	9,260	24,250	40,260	513,000	703,760	1,843,000	3,059,760
U-P1-Bq-23	C1.7	Pointing	m^2	5247	2,000	1,010	8,900	11,910	10,494,000	5,299,470	46,698,300	62,491,770
U-P1-Bq-24	**D**	**INSPECTION ROAD**										
U-P1-Bq-27	**D.1**	**Pavement**										
U-P1-Bq-33.1	D.1.1	Sand Bedding	m^3	3872	7,420	1,490	35,340	44,250	28,730,240	5,769,280	136,836,480	171,336,000
U-P1-Bq-33.2	D.1.2	Concrete Block Pavement	m^2	61598	10,710	5,700	47,480	63,890	659,714,580	351,108,600	2,924,673,040	3,935,496,220
U-P1-Bq-33.3	D.1.3	Cement Mortar	m^3	149	15,900	8,000	70,700	94,600	2,369,100	1,192,000	10,534,300	14,095,400
U-P1-Bq-33.4	D.1.4	Concrete Kerb	m^3	1479	155,430	43,070	578,300	776,800	229,880,970	63,700,530	855,305,700	1,148,887,200
U-P1-Bq-34	**E**	**MISCELLANEOUS WORKS**										
U-P1-Bq-35	**E.1**	**Preparatory Works**										
U-P1-Bq-36	E.1.1	Coffering and Dewatering	L.S.	1	440,807,900	15,351,700	265,548,200	721,707,800	440,807,900	15,351,700	265,548,200	721,707,800
U-P1-Bq-36.1	E.1.2	Demolition of existing Concrete	L.S.	1	974,000	15,000	785,000	1,774,000	974,000	15,000	785,000	1,774,000

Table 8.5.1 (2/2) PAYMENT ITEMS AND THE COSTS FOR PACKAGE-1

ID No.	Item No.	Description	Unit	Quantity	Unit Cost				Cost			
					PF/C	IF/C	L/C	Total Unit Cost	PF/C	IF/C	L/C	Total Cost
U-P1-Bq-37	E.2	**Secondary Channel Outlet Closures**										
U-P1-Bq-37.1	E.2.1	Structural Excavation	m^3	200	18,170	350	14,250	32,770	3,634,000	70,000	2,850,000	6,554,000
U-P1-Bq-38	E.2.2	Chipping of Existing Outlet Surface	m^2	114	3,690	0	18,310	22,000	420,660	0	2,087,340	2,508,000
U-P1-Bq-39	E.2.3	Concrete, Type C1 including Formwork	m^3	119	105,370	44,160	330,330	479,860	12,539,030	5,255,040	39,309,270	57,103,340
U-P1-Bq-40	E.2.4	Backfill with Selected Soil	m^3	169	12,720	770	20,480	33,970	2,149,680	130,130	3,461,120	5,740,930
								Total Cost	6,915,073,940	1,150,605,850	11,242,524,010	19,308,203,800

Table 8.5.2 (1/9) PAYMENT ITEMS AND THE COSTS FOR PACKAGE-2

FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG

Component: Urban Drainage System Improvement

Package 2: Asin Drainage System Improvement

BILL OF QUANTITIES

ID No.	Item No.	Description	Unit	Quantity	Unit Cost				Cost			
					PF/C	IF/C	L/C	Total Unit Cost	PF/C	IF/C	L/C	Total Cost
U-P2-Bq-1	**A**	**GENERAL**										
U-P2-Bq-2	A.1	Mobilization and Demobilization	L.S.	1	131,021,400	2,386,600	91,420,500	224,828,500	131,021,400	2,386,600	91,420,500	224,828,500
U-P2-Bq-3	**A.2**	**Establishment**										
U-P2-Bq-4	A.2.1	Contractor's Site Office and Facilities	L.S.	1	505,461,000	131,331,200	1,595,633,100	2,232,425,300	505,461,000	131,331,200	1,595,633,100	2,232,425,300
U-P2-Bq-5	A.2.2	Engineer's Site Office and Facilities	L.S.	1	38,746,200	10,067,200	122,313,400	171,126,800	38,746,200	10,067,200	122,313,400	171,126,800
U-P2-Bq-6	**A.3**	**Drawings**	L.S.	1	12,218,200	600,000	48,630,600	61,448,800	12,218,200	600,000	48,630,600	61,448,800
U-P2-Bq-7	**A.4**	**Surveying**	L.S.	1	1,484,000	0	7,371,000	8,855,000	1,484,000	0	7,371,000	8,855,000
U-P2-Bq-8	**A.5**	**Relocation/Demolition of Existing Facilities**										
U-P2-Bq-9	A.5.1	Demolition of Existing Pumping Stations	No.	6	17,700,300	253,700	13,557,600	31,511,600	106,201,800	1,522,200	81,345,600	189,069,600
U-P2-Bq-10	A.5.2	Felling and Grubbing of existing trees	L.S.	1	9,087,200	154,000	7,258,500	16,499,700	9,087,200	154,000	7,258,500	16,499,700
U-P2-Bq-11	A.5.3	Relocation of Existing Facilities	L.S.	1	269,600	0	742,400	1,012,000	269,600	0	742,400	1,012,000
U-P2-Bq-12	**B**	**SEMARANG RIVER IMPROVEMENT**										
U-P2-Bq-13	**B.1**	**Preparatory Works**										
U-P2-Bq-14	B.1.1	Coffering and Dewatering	L.S.	1	1,976,096,000	14,279,300	451,835,700	2,442,211,000	1,976,096,000	14,279,300	451,835,700	2,442,211,000
U-P2-Bq-15	B.1.2	Clearing of Garbage	L.S.	1	1,451,800	18,900	1,349,800	2,820,500	1,451,800	18,900	1,349,800	2,820,500
U-P2-Bq-16	**B.2**	**Channel Excavation**										
U-P2-Bq-17	B.2.1	Common channel excavation including hauling and spoiling	m^3	23400	27,644	628	19,543	47,815	646,869,600	14,695,200	457,306,200	1,118,871,000
U-P2-Bq-18	B.2.2	Excavation below water level including hauling and treatment of contaminated soil	m^3	40200	84,876	8,788	91,241	184,905	3,412,015,200	353,277,600	3,667,888,200	7,433,181,000
U-P2-Bq-19	**B.3**	**Revetment Type A-1**										
U-P2-Bq-20	B.3.1	Structural Excavation	m^3	2830	18,170	350	14,250	32,770	51,421,100	990,500	40,327,500	92,739,100
U-P2-Bq-21	B.3.2	Backfill with Cobble	m^3	444	17,827	2,154	48,252	68,233	7,915,188	956,376	21,423,888	30,295,452
U-P2-Bq-22	B.3.3	Backfill with Gravel	m^3	1120	18,580	4,060	88,210	110,850	20,809,600	4,547,200	98,795,200	124,152,000
U-P2-Bq-23	B.3.4	Backfill with Sandy Soil	m^3	207	16,300	1,620	37,430	55,350	3,374,100	335,340	7,748,010	11,457,450
U-P2-Bq-24	B.3.5	Concrete, Type C1 including Formwork	m^3	240	142,070	44,160	511,360	697,590	34,096,800	10,598,400	122,726,400	167,421,600
U-P2-Bq-25	B.3.6	Concrete, Type E including Formwork	m^3	68	99,470	37,610	315,240	452,320	6,763,960	2,557,480	21,436,320	30,757,760
U-P2-Bq-26	B.3.7	Deformed Reinforcing Bars	kg	13390	1,230	2,809	3,300	7,339	16,468,361	37,611,171	44,188,339	98,267,871
U-P2-Bq-27	B.3.8	Wet Stone Masonry	m^3	1630	46,070	28,800	200,020	274,890	75,094,100	46,944,000	326,032,600	448,070,700
U-P2-Bq-28	B.3.9	Pointing	m^2	4650	2,000	1,010	8,900	11,910	9,300,000	4,696,500	41,385,000	55,381,500
U-P2-Bq-29	B.3.10	Weep Hole, Dia.50mm	No.	845	3,147	909	14,500	18,556	2,659,091	768,182	12,252,500	15,679,773
U-P2-Bq-30	B.3.11	Log Pile, Dia.150 mm, L=3.0m	m	866	15,658	150	18,917	34,725	13,560,117	129,900	16,381,833	30,071,850
U-P2-Bq-31	B.3.12	Gabion Mattress t=500mm (Galvanized)	m^3	441	659,260	3,060	142,060	804,380	290,733,660	1,349,460	62,648,460	354,731,580
U-P2-Bq-32	**B.4**	**Revetment Type C (concrete sheet pile)**										
U-P2-Bq-33	B.4.1	Furnishing and Driving PC Sheet Pile (t=220 mm)	m	7947	253,780	140	35,080	289,000	2,016,789,660	1,112,580	278,780,760	2,296,683,000