

FIGURES

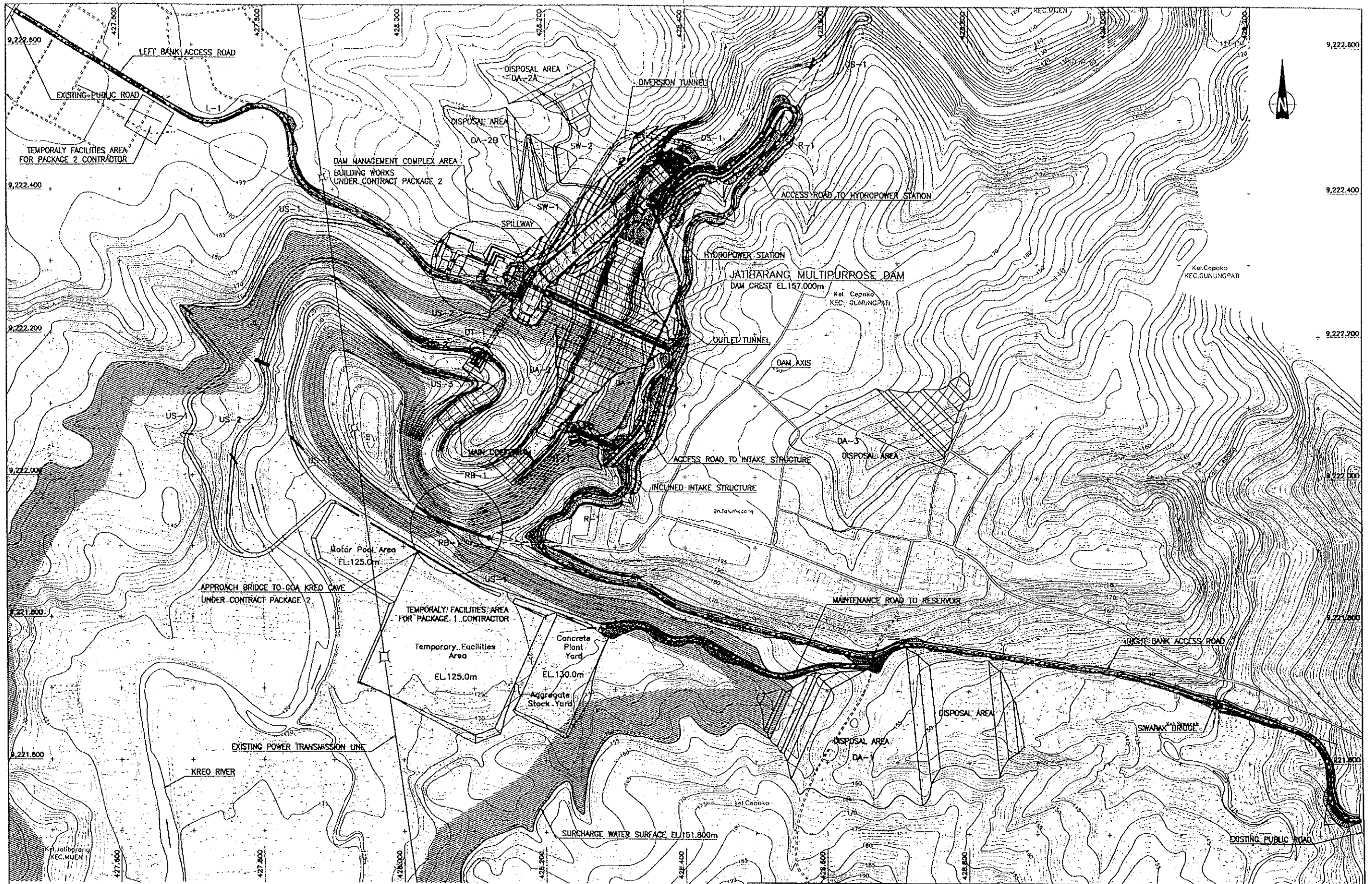
CHAPTER 8

CONSTRUCTION PLANNING

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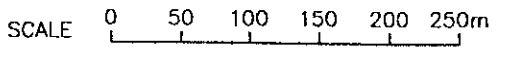
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THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 8.2.1
 GENERAL ARRANGEMENT OF CONSTRUCTION FACILITIES



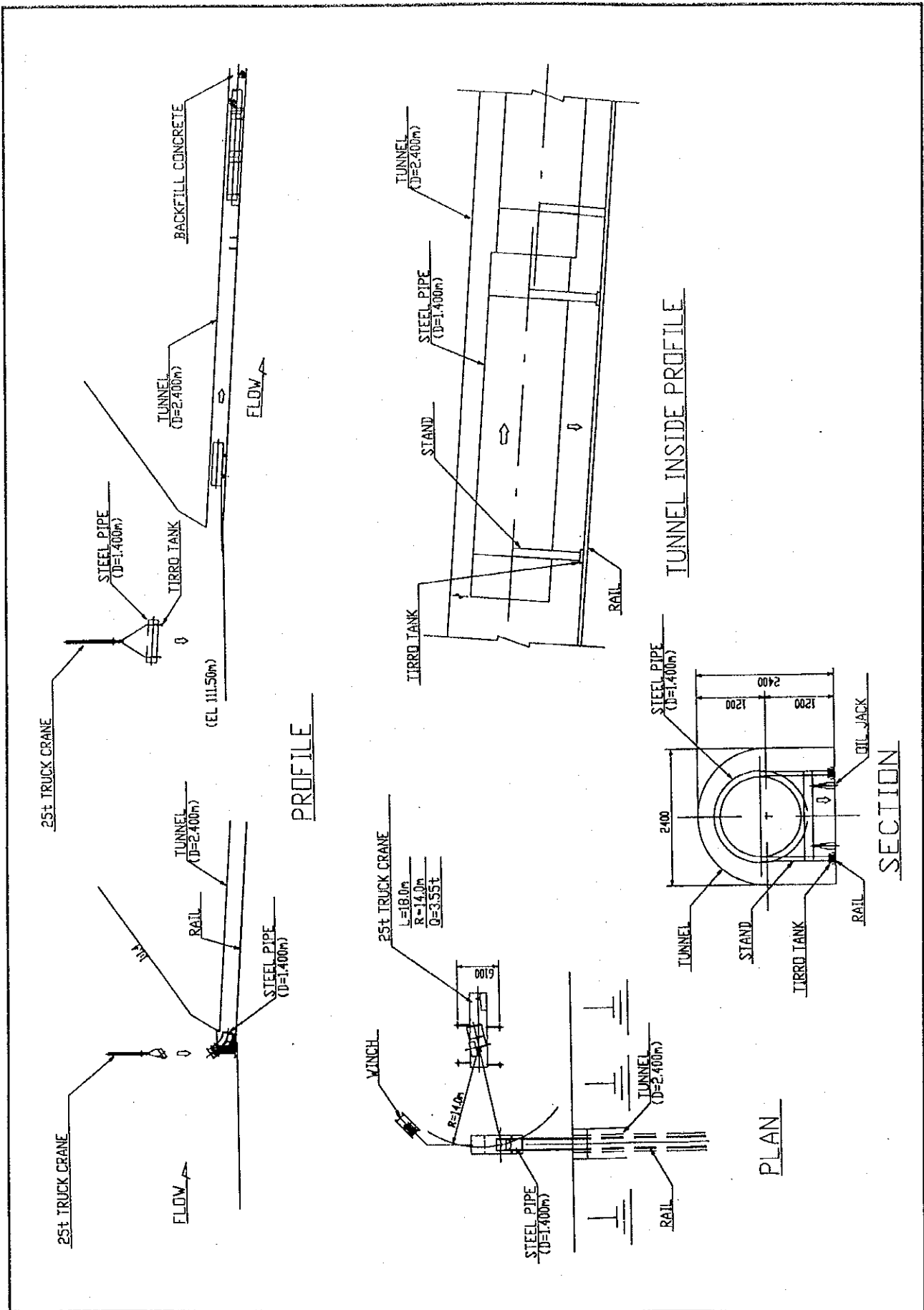


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Fig. 8.2.2

ROUTE CONNECTING ROCK QUARRY AND DAM SITE



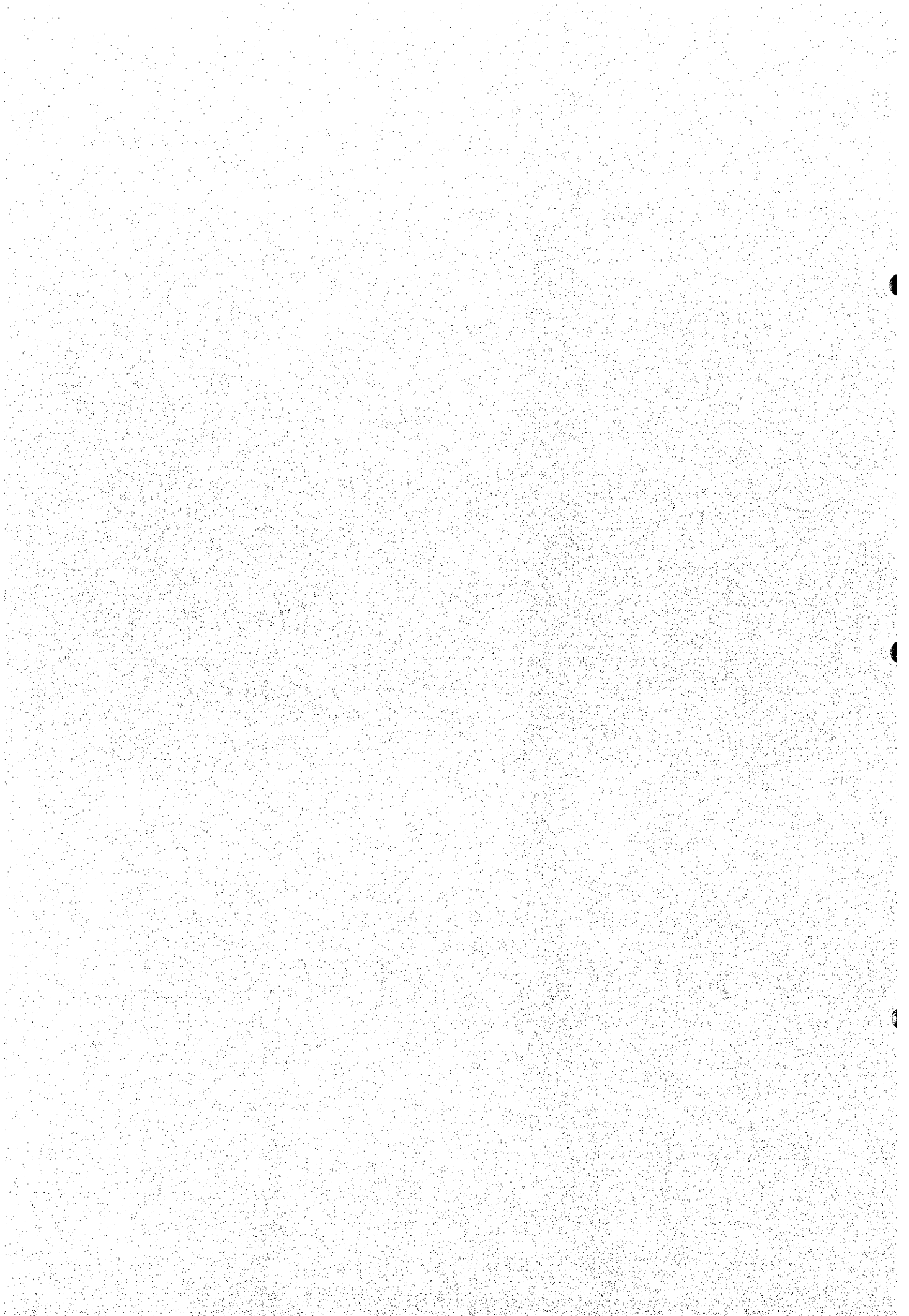
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

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Fig. 8.6.1

STEEL CONDUIT PIPE SET OUTLINE

CHAPTER 9
COST ESTIMATE



CHAPTER 9 COST ESTIMATE

9.1 Introduction

This chapter is prepared for the estimate of the project cost for the component of Construction of Jatibarang Multipurpose Dam on Kreo River, which consist of Jatibarang Multipurpose Dam including Appurtenant Structures (hereinafter referred to as the Package-1) and Operation and Maintenance of Buildings and Goa Kreo Bridge (the Package-2).

9.2 Constitution of Project Cost and Conditions of Cost Estimate

9.2.1 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 value added tax. In addition, construction base cost is divided into many cost items as illustrated in Fig. 9.2.1.

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 9.2.1):

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 9.2.2 Composition of Construction Base Cost).

Engineering Service Cost : Engineering service cost is entirely 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 :Ten (10) % 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, engineering 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 9.2.2 and 9.2.3)

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

9.2.2 Composition of Construction Base Cost

The construction base cost is calculated in the following manner.

$$\text{Construction Base Cost} = \Sigma (\text{Unit Cost for a Payment Item} \times \text{Work Quantity for a Payment Item}).$$

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 drawings and described in the 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, unit prices of materials and operation costs of equipment. Details of each basic cost are explained in Section 9.3.

(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 m³, etc. Basic costs and unit rates were used directly to compute unit costs of payment items, which correspond to items of Bill of Quantities. 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. Unit rates are explained in Section 9.4.

(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.

Basically, "Preparatory and Temporary works" are direct costs. However, they include 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. The countable items in these costs are added up in their payment items as a direct cost. On the other hand, indirect uncountable costs are included in some other payment items.

9.2.3 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** formally issued by the Bank of Indonesia 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.) :
- (1) Cost of wage for foreign engineer and foreman,
 - (2) Base cost of all components for construction plants and heavy equipment except local mechanic, maintenance, repairing, fuel and laborer costs,
 - (3) Cost of imported materials and
 - (4) Cost of materials that are produced in Indonesia by Foreign-Indonesian joint enterprise with the capital of the foreign firm which occupy more than 10% of the share.
- Indirect Foreign Currency (Rp.) :
- (1) Cost of foreign portion of local materials and
 - (2) Cost of foreign portion of equipment produced in Indonesia.

- Local Currency (Rp.) : (1) Cost of per diem portion for foreign personnel,
 (2) Cost of local laborers,
 (3) Cost of local portion of local materials,
 (4) Cost of local portion of equipment produced in Indonesia, and
 (5) Inland transportation cost exclusive of foreign portions

Refer to Section 9.3 for further details.

9.3 Basic Cost

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

9.3.1 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 Wage

The local laborer wage 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 9.3.1.

(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.

9.3.2 Wage of Laborer

The Lists 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 Semarang City, are referred for the wages of laborer. The laborer wages are shown in Table 9.3.2 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.

9.3.3 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.

Table 9.3.3 shows basic costs of materials divided into each currency portion.

9.3.4 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 9.3.4.

9.3.5 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 & Interior	
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

9.4 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.

9.4.1 Unit Rate

It is important for estimate of unit rates, such as excavation by an excavator, or concreting works per m³, etc. to decide production rates. 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 drilling, main concrete structure, 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 9.4.1.

9.4.2 Unit Cost for Payment Item

(1) General

As described in Fig. 9.2.1, 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 quoted by manufactures 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 9.4.2 and 9.4.3.

(2) Amount of Unit Costs for Payment Items

The unit costs for payment items, which are tabulated in the Volume V, Work Quantity Calculation, in two (2) packages are broken down into basic costs and unit rates with construction base costs in Tables 9.5.1 to 9.5.2.

9.4.3 Reference Book

In addition to the reference book enumerated in Sub-section 9.3.5, 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)

9.5 Project Cost

9.5.1 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 two (2) packages, which were established in Chapter 8 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 2004. The schedules of main items are assumed as follows (refer to Chapter 8 Construction Planning);

Package-1 (Jatibarang Multipurpose Dam including Appurtenant Structures)

1. Preparatory Works : Jan. 2001 – Jun. 2002
2. River Diversion Works : Apr. 2001 – Jun. 2002
3. Zoned Rockfill Dam : May 2002 – Jul. 2004
4. Gallery : Jun. 2002 – Nov. 2003
5. Spillway : Aug. 2001 – Sep. 2004
6. Outlet Facilities : May 2002 – Sep. 2004
7. Plug Work (grouting of outlet) : Sep. 2002 – Oct. 2002
8. Plug Work (impounding of diversion) : Oct. 2004 – Nov. 2004
9. Power House : Oct. 2002 – Dec. 2004
10. Quarry Development & Operation : Jun. 2001 – Jul. 2004

Package-2 (Operation and Maintenance Buildings and Goa Kreo Bridge)

1. Preparatory Works : Apr. 2002 – Jun. 2002
2. Pedestrian Bridge : Jun. 2002 – May 2003

9.5.2 Project Cost

(1) Construction Base Cost

Based on the unit costs for each payment item, construction base costs of two (2) packages are computed respectively and summarized as follows:

(a) Package-1: Jatibarang Multipurpose Dam including Appurtenant Structures

The payment items, the work quantities, the unit costs and the construction base cost for Package-1 are indicated in Table 9.5.1. Excavation, embankment and concrete works account for main items in this package. Embankment and

concrete works include production and hauling of aggregate from the quarry area to the dam construction site. This package accounts for more than 99% of the sum of construction base costs of the two packages.

(b) Package-2: Operation and Maintenance Building and Goa Kreo Bridge

The payment items, the work quantities, the unit costs and the construction base cost for Package-2 are indicated in Table 9.5.2. The main structures in this package are only dam management complex and approach bridge to Goa Kreo. The works for construction of the approach bridge includes relocation work of an entrance gate to Goa Kreo.

(c) 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	Local Portion	Total
Package-1 (Jatibarang Multipurpose Dam including Appurtenant Structures)	Rp x 10 ⁶	190,367	11,592	126,630	328,588
Package-2 (Operation and Maintenance Buildings and Goa Kreo Bridge)	Rp x 10 ⁶	922	279	2,743	3,945
Total	Rp x 10 ⁶	191,289	11,872	129,372	332,533
	Yen x 10 ⁶	3,168	197	2,142	5,506
	US\$ x 10 ³	27,783	1,742	18,790	48,298

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

(2) Engineering Service Cost

The total man-months of foreign engineers have been assumed at 120 man-months for 1 year of preliminary term and 4 years for construction works in which package-1 and

2 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 9.5.3) :

Name of Package	Currency	Engineering Service Cost			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Two (2) packages in Total	Rp x 10 ⁶	27,709	0	5,663	33,372
	Yen x 10 ⁶	459	0	94	553
	US\$ x 10 ³	4,025	0	822	4,847

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

(3) Compensation Cost

land areas for the reservoir and the dam site 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 : 9,000 Rp/m²

Approximate 150 hectares of land acquisition are necessary to be compensated for the two (2) packages.

The total compensation cost is shown in the following table (refer to Table 9.5.4);

Name of Package	Currency	Compensation Service Cost (million rupiah/yen)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Two (2) packages in Total	Rp x 10 ⁶	0	0	13,500	13,500
	Yen x 10 ⁶	0	0	224	224
	US\$ x 10 ³	0	0	1,961	1,961

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

(4) Administration Cost

As described in Sub-Section 9.2.1 Basic Composition of Project Cost, the administration cost for owner's expenditures is estimated as local portion at seven (7) % of the sum of the construction base cost and the compensation cost. The amount of the administration cost is as follows;

Name of Package	Currency	Administration Cost (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Two (2) packages in Total	Rp x 10 ⁶	0	0	24,222	24,222
	Yen x 10 ⁶	0	0	401	401
	US\$ x 10 ³	0	0	3,518	3,518

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 ten (10) % 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	Local Portion	Total
Two (2) packages in Total	Rp x 10 ⁶	21,900	1,187	14,853	37,940
	Yen x 10 ⁶	363	20	246	628
	US\$ x 10 ³	3,181	172	2,157	5,511

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 described in Section 5.1 Construction Schedule, price contingency are computed at three (3) % of the foreign currency portion and eight (8) % of the local portion respectively. Table 9.5.5 shows summary of price contingency for the period between years 2000 and 2003.

Name of Package	Currency	Price Contingency (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Two (2) packages in Total	Rp x 10 ⁶	27,518	1,541	59,450	88,509
	Yen x 10 ⁶	456	26	984	1,466
	US\$ x 10 ³	3,997	224	8,635	12,855

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 the value added tax is shown in the following table.

Name of Package	Currency	Value Added Tax (million rupiah)			
		Pure Foreign Portion	Indirect Foreign Portion	Local Portion	Total
Two (2) packages in Total	Rp x 10 ⁶	0	0	48,218	48,218
	Yen x 10 ⁶	0	0	798	798
	US\$ x 10 ³	0	0	7,003	7,003

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

9.5.3 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	190,367	11,592	126,630	328,588
Engineering Service Cost	Rp x 10 ⁶	27,381	0	5,595	32,976
Compensation Cost	Rp x 10 ⁶	0	0	13,500	13,500
Administration Cost	Rp x 10 ⁶	0	0	23,946	23,946
Physical Contingency	Rp x 10 ⁶	21,775	1,159	14,572	37,506
Price Contingency	Rp x 10 ⁶	27,387	1,503	58,290	87,180
Value Added Tax	Rp x 10 ⁶	0	0	47,616	47,616
Total	Rp x 10 ⁶	266,909	14,255	290,149	571,313
	Yen x 10 ⁶	4,420	236	4,805	9,460
	US\$ x 10 ³	38,767	2,070	42,142	82,979

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	922	279	2,743	3,945
Engineering Service Cost	Rp x 10 ⁶	329	0	67	396
Compensation Cost	Rp x 10 ⁶	0	0	0	0
Administration Cost	Rp x 10 ⁶	0	0	276	276
Physical Contingency	Rp x 10 ⁶	125	28	281	434
Price Contingency	Rp x 10 ⁶	131	37	1,160	1,328
Value Added Tax	Rp x 10 ⁶	0	0	602	602
Total	Rp x 10 ⁶	1,507	345	5,129	6,982
	Yen x 10 ⁶	25	6	85	116
	US\$ x 10 ³	219	50	745	1,014

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

Total Project Cost of Two 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	191,289	11,872	129,372	332,533
Engineering Service Cost	Rp x 10 ⁶	27,709	0	5,663	33,372
Compensation Cost	Rp x 10 ⁶	0	0	13,500	13,500
Administration Cost	Rp x 10 ⁶	0	0	24,222	24,222
Physical Contingency	Rp x 10 ⁶	21,900	1,187	14,853	37,940
Price Contingency	Rp x 10 ⁶	27,518	1,541	59,450	88,509
Value Added Tax	Rp x 10 ⁶	0	0	48,218	48,218
Total	Rp x 10 ⁶	268,417	14,599	295,278	578,294
	Yen x 10 ⁶	4,445	242	4,890	9,576
	US\$ x 10 ³	38,986	2,120	42,887	83,993

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

9.5.4 Disbursement Schedule

Table 9.5.6 shows summary of disbursement schedule.

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COST ESTIMATE

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Table 9.2.1 THE RATIO OF EACH COST ITEM

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

Note *1 : Reference to similar and latest projects

*2 : Reference to similar and latest projects and Statistic Data

Table 9.2.2 PRICE ESCALATION 1990-1996

Material	Unit	Year							Percent Average (Yearly)
		1,990	1,991	1,992	1,993	1,994	1,995	1,996	
I. Brick									
-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%
- manson	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 manson	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 9.2.3 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	1998	1994	1995	1996	1997	1998
Asia										
Japan	107.1	107	107.2	109		0.7	-0.1	0.1	1.7	
Singapore	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 9.3.1 RATIO OF CURRENCY PORTION FOR MAIN MATERIAL GROUPS

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

Table 9.3.2 UNIT COSTS AND COMPUTATION OF LABOUR COST

ID No.	Qualification of Working	Basic Wage *1		Additional Cost *2					Cost per Day	Rounded Cost
		(1) Daily	(2) Overtime	(3) Leave	(4) Bonus	(5) Others				
L-2-1	Foreman	23,000	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	6,837	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 Walker	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 welfare facilities

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

(3) Leave : Basic wage / 20

(4) Bonus : Basic wage / 12

(5) Others : ((1)+(2)+(3)+(4)) x 25%

*3 : All cost belong to Local Currency Portion

giving of 1day / 1month

payment of 1month / 1year

Taxes, Food, Insurances, Transportation and other allowances

Table 9.3.3 (1/12) BASIC MATERIAL COST

ID No.	Major	Details	Description	Unit	Price (Rp.)				Total
					PF/C	IF/C	L/C		
	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	2,800	
M-A-9		SAE 20		ltr	0	500	2,000	2,000	
M-A-10		SAE 40		ltr	0	600	2,400	2,400	
M-A-11		SAE 140		ltr	0	800	3,200	3,200	
M-A-12		SAE 90		ltr	0	660	2,640	2,640	
			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	16,625	
			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	

Table 9.3.3 (2/12) BASIC MATERIAL COST

ID No.	Major	Details	Description	Unit	Price (Rp.)				Total
					PF/C	IF/C	L/C		
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/cm ² , - mm (A1)		m ³	0	56,000	224,000	280,000	
M-C-8		Ready Mixed Concrete; 400kg/cm ² , 25mm (A2)		m ³	0	49,000	196,000	245,000	
M-C-9		Ready Mixed Concrete; 350kg/cm ² , 25mm (A3)		m ³	0	46,000	184,000	230,000	
M-C-10		Ready Mixed Concrete; 250kg/cm ² , 25mm (B)		m ³	0	42,000	168,000	210,000	
M-C-11		Ready Mixed Concrete; 225kg/cm ² , 25mm (C1&2)		m ³	0	40,000	160,000	200,000	
M-C-12		Ready Mixed Concrete; 225kg/cm ² , 15mm (C3)		m ³	0	40,000	160,000	200,000	
M-C-13		Ready Mixed Concrete; 175kg/cm ² , 40mm (D)		m ³	0	39,000	156,000	195,000	
M-C-14		Ready Mixed Concrete; 125kg/cm ² , 25mm (E)		m ³	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		Reinforced Concrete Pipe, Dia. 200 mm		m	0	9,000	21,000	30,000	
M-C-34		Reinforced Concrete Pipe, Dia. 300 mm		m	0	9,570	22,330	31,900	

Table 9.3.3 (3/12) BASIC MATERIAL COST

ID No.	Description		Unit	Price (Rp.)				Total
	Major	Details		PF/C	IF/C	L/C		
M-C-35		Reinforced Concrete Pipe, Dia. 400 mm	m	0	35,640	83,160	118,800	
M-C-36		Reinforced Concrete Pipe, Dia. 500 mm	m	0	42,240	98,560	140,800	
M-C-37		Reinforced Concrete Pipe, Dia. 600 mm	m	0	54,285	126,665	180,950	
M-C-38		Reinforced Concrete Pipe, Dia. 800 mm	m	0	98,835	230,615	329,450	
M-C-39		Reinforced 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	

Table 9.3.3 (4/12) BASIC MATERIAL COST

ID No.	Description		Unit	Price (Rp.)				Total
	Major	Details		PF/C	IF/C	L/C		
M-D-3		Bamboo 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	
M-E-1	Iron	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	

Table 9.3.3 (5/12) BASIC MATERIAL COST

ID No.	Major	Details	Description	Unit	Price (Rp.)				Total
					PF/C	IF/C	L/C		
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 & Lining		m	11,475	0	604	12,079	
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. 40mm		m	9,500	0	500	10,000	
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	

Table 9.3.3 (6/12) BASIC MATERIAL COST

ID No.	Major	Details	Description	Unit	Price (Rp.)				Total
					PF/C	IF/C	L/C		
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, Galvanized		pcs	327,038	0	17,213	344,250	
M-E-69		Gabion Mattress; 2.7mm, 3.0x1.0x0.5m, Galvanized and PVC Coated		pcs	457,853	0	24,098	481,950	
M-E-70		Gabion Mattress; 2.7mm, 2.0x1.0x0.3m, Galvanized		pcs	163,519	0	8,606	172,125	
M-E-71		Gabion Mattress; 2.7mm, 2.0x1.0x0.3m, Galvanized and PVC Coated		pcs	196,223	0	10,328	206,550	

Table 9.3.3 (7/12) BASIC MATERIAL COST

ID No.	Major	Description	Unit	Price (Rp.)				Total
				PF/C	IF/C	L/C		
M-E-72		Gabion Cylinder, 2.7mm, Dia.=50cm, Galvanized and PVC Coated	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	
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. Pipe	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-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	

Table 9.3.3 (8/12) BASIC MATERIAL COST

ID No.	Description		Unit	Price (Rp.)			Total
	Major	Details		PF/C	IF/C	L/C	
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
	Plants and Grass						
M-I-11		Sodding Grass	m2	0	0	3,000	3,000
	Material for Dam						
M-J-1		Dynamite	kg	16,352	0	861	17,213
M-J-2		AN-FO	kg	2,747	0	145	2,892
M-J-3		Electrical Detonator	pcs	9,811	0	516	10,328
M-J-4		Bit; Dia.100mm	pcs	1,497,488	0	78,815	1,576,303
M-J-5		Bit; Dia.65mm	pcs	1,015,538	0	53,449	1,068,987
M-J-6		Cutter Bit (RM 8-25)	pcs	631,125	0	33,217	664,342
M-J-7		Rod; Dia.38mm	pcs	860,625	0	45,296	905,921

Table 9.3.3 (9/12) BASIC MATERIAL COST

ID No.	Major	Details	Description	Unit	Price (Rp.)			Total
					PF/C	IF/C	L/C	
M-J-8		Rod; Dia.44mm x L6m		pcs	3,541,544	0	186,397	3,727,941
M-J-9		Shank Rod		pcs	442,693	0	23,300	465,993
M-J-10		Sleeve		pcs	177,010	0	9,316	186,326
M-J-11		Surface Set Diamond Bit Dia.66mm, 18ct		m	286,875	0	15,099	301,974
M-J-12		Diamond Reaming Shell, 6ct		m	86,063	0	4,530	90,592
M-J-13		Metal Crown & Reamer; Dia.66mm		pcs	265,583	0	13,978	279,561
M-J-14		Metal Crown; Dia.46mm		pcs	152,044	0	8,002	160,046
M-J-15		Rod & Coupling; Dia.40.5mm x L3m		pcs	745,875	0	39,257	785,132
M-J-16		Core Tube; Dia.46mm x L1.5m, Single		pcs	401,625	0	21,138	422,763
M-J-17		Core Tube; Dia.66mm x L1.5m, Double		pcs	918,000	0	48,316	966,316
M-J-18		Core Lifter Dia. 66mm		pcs	269,663	0	14,193	283,855
M-J-19		Core Lifter Dia. 46mm		pcs	200,813	0	10,569	211,382
M-J-20		Outer Grout Pipe Dia. 46mm L=1.5m		pcs	803,250	0	42,276	845,526
M-J-21		Outer Grout Pipe Dia. 66mm L=1.5m		pcs	860,625	0	45,296	905,921
M-J-22		Inner Grout Pipe Dia. 46mm L=1.5m		pcs	688,500	0	36,237	724,737
M-J-23		Inner Grout Pipe Dia. 66mm L=1.5m		pcs	745,875	0	39,257	785,132
M-J-24		Casing Head		pcs	35,415	0	1,864	37,279
M-J-25		Casing Swivel		pcs	106,246	0	5,592	111,838
M-J-26		Packer-connection Pipe; L10m		pcs	1,274,956	0	67,103	1,342,059
M-J-27		Expansion Packer		pcs	1,204,125	0	63,375	1,267,500
M-J-28		Packer Rubber		pcs	23,020	0	1,212	24,232
M-J-29		Pressure Meter		pcs	120,413	0	6,338	126,750
M-J-30		Hose		m	14,167	0	746	14,912
M-J-31		Gauge Protector		pcs	162,911	0	8,574	171,486
M-J-32		Cock & Valve		pcs	610,916	0	32,153	643,070
M-J-33		Accelerator for concrete		kg	0	3,624	8,455	12,079
M-J-34		Rockbolt; D25mm, L=3.0m		piece	86,063	0	4,530	90,592
M-J-35		Rockbolt; D22mm, L=1.5m		piece	40,163	0	2,114	42,276
M-J-36		Cemical Anchor R25		piece	68,850	0	3,624	72,474
M-J-37		Cemical Anchor R22		piece	97,538	0	5,134	102,671
M-J-38		Slide Centre L=9m		piece	1,893,375,000	0	99,651,316	1,993,026,316
M-J-39		Specimen Box for Boring Core, L=5m		piece	0	0	603,947	603,947

Table 9.3.3 (10/12) BASIC MATERIAL COST

ID No.	Description		Unit	Price (Rp.)			Total
	Major	Details		PF/C	IF/C	L/C	
M-J-40		Tizel 1,300kg class	piece	6,885,000	0	362,368	7,247,368
	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	pes	0	510,000	1,190,000	1,700,000
M-K-22		Septic Tank 2m3	pes	0	675,000	1,575,000	2,250,000
M-K-23		Septic Tank 6m3	pes	0	1,290,000	3,010,000	4,300,000
M-K-24		Septic Tank 10m3	pes	0	1,590,000	3,710,000	5,300,000
M-K-25		Electrical Socket	pes	0	4,000	36,000	40,000
M-K-26		Electrical Switch	pes	0	900	8,100	9,000
M-K-27		Fuse for Electric Kit of 1group (Local Made)	pes	0	15,000	135,000	150,000
M-K-28		Fuse for Electric Kit of 2group (Local Made)	pes	0	17,500	157,500	175,000
M-K-29		Fuse for Electric Kit of 3group (Local Made)	pes	0	22,500	202,500	225,000
M-K-30		Wall Paint	kg	0	3,750	8,750	12,500

Table 9.3.3 (11/12) BASIC MATERIAL COST

ID No.	Description		Unit	Price (Rp.)			Total
	Major	Details		PF/C	IF/C	L/C	
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, Non-slip 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, Non-slip 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

Table 9.3.3 (12/12) BASIC MATERIAL COST

ID No.	Description		Unit	Price (Rp.)			Total
	Major	Details		PF/C	IF/C	L/C	
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
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 9.3.4 (1/5) BASIC EQUIPMENT COST

New ID No.	Description of Equipment	Unit	Applicated 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