APPENDIX J: DREDGING WORKS AT TANJUNG PRIOK PORT FOR CHANNEL AND BASIN IMPROVEMENT

J.1 Selection of Dredger Type

The total dredging volume for widening and deepening of the channel and basin of Tanjung Priok Port amounts to over 8 million cubic meters as shown in the following table. In order to complete the required dredging works in a limited work period, a dredging method with high productivity should be selected.

Table J-1 Dredging Volume for Channel and Basin Improvement at Tanjung Priok

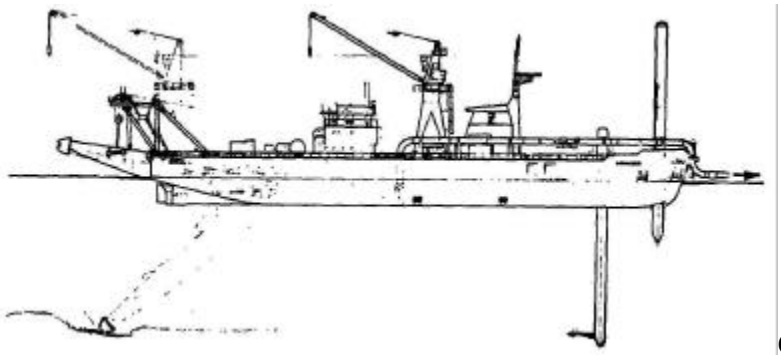
Section	Description	Dredging Volume	Work Period
Access Channel	D: -14 m, W: 300 m, 2.7 km	2,430,000 m^3	2006 - 2008
North Channel	D: -14 m, W: 300 m, 2.1 km	3,875,000 m^3	2006 - 2008
Central Basin	D: -14 m, W: 560 m	1,950,000 m^3	2006 - 2008
Total		**8,255,000 m^3**	

Since the sediment material of the sea area around Tanjung Priok Port is sand or silt, mechanical/hydraulic dredgers (cutter suction dredger and trailing suction hopper dredger are representative) are usually employed on construction and maintenance purposes of channel and basin. They are characterized by high production rates and mobility.

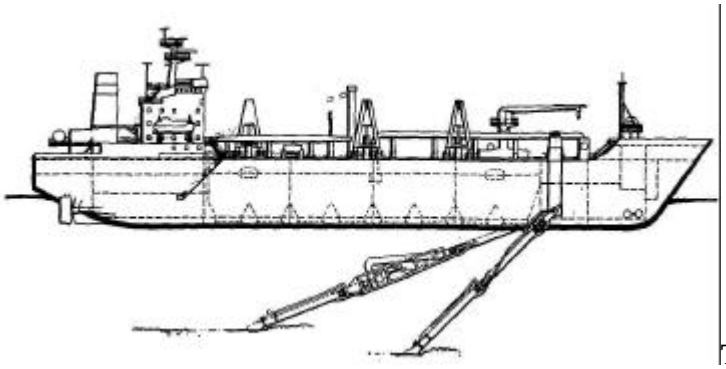
Out of these dredgers, Trailing Suction Hopper Dredger (TSHD) is used mainly for the maintenance purpose of navigation channel and brings out its high productivity in the dredging of 'soft and loose' deposit material.

Meanwhile, in the case of initial dredging of channel and basin to be excavated newly, the deposit material is consolidated after compaction. The use of Cutter Suction Dredger is considered more suitable rather than TSHD.

Hence, the combination of Cutter Suction Dredger and hopper barge is applied in the Tanjung Priok Development as the economical dredging method with high productivity.



Cutter Suction Dredger



Trailing Suction Hopper Dredger

J.2 Disposal of Dredged Material

The water area that is approved by ADPEL as the disposal site for the dredged material from Tanjung Priok Port is located in the area called Muara Gembong and is defined by the following coordinates (refer to **Figure J-1**);

05º56'09"S, 106º59'24"E ～ 06º00'42"S, 106º58'30"E

This disposal site is located in the shallow water area with water depth from several meters to over ten meters in Teluk Jakarta. Considering the influence of advection diffusion of turbidity to the fisheries and/or the problem of returning of the disposed material to the water area of Tanjung Priok, the present location is not judged suitable.

In the construction planning of this study, a new location of the disposal site is assumed at the water area offshore of Karawang with 25 meters in water depth (refer to **Figure J-1**). Distance between the assumed disposal site and Tanjung Priok Port is about 30 km (16.2 nautical miles).

J.3 Proposed Dredger Fleet

Dredger fleet for the dredging works of channel and basin at Tanjung Priok Port is planned as follows. A dredger that is equivalent to the maximum cutter suction dredger owned by PT Rukindo is assumed for the works. Two hopper barges are to be deployed as the distance between the work site and disposal site is rather long.

- Cutter Suction Dredger — equivalent to Batang Anai (built in 1994)
  Moulded depth: 7.0 m, Total installed power: 12,966 kW
  Dredging depth: 24 m, Dredging capacity: 1,200 m^3/hour
  Base Port: Tanjung Priok
- Anchor Boat — 65 GT Class, 150 HP
- Hopper Barge — Capacity: 2,000 m^3 x 2
- Tug Boat — Pusher 200 GT Class (1,600 HP) x 2

J.4 Productivity

Productivity of the proposed dredging system is examined as follows (refer to **Table J-2**).

- Dredging Performance
  The concentration of the dredged material is assumed as 40 % in the hopper. The dredged

soil volume in the hopper barge is calculated as follows.

2,000 m^3 x 40 % = 800 m^3 (Dredging Performance per cycle)

- Time to fill the capacity of 2,000 m^3 hopper barge
  Dredging capacity of the dredger is 1,200 m^3/hour as above-mentioned. The time to fill the capacity of the barge is calculated as **0.7 hour** (= 800/1,200).
- Sailing time (loaded) from the dredging site to the disposal site
  Sailing speed (loaded) is assumed as 7 knots; 16.2 (miles) / 7 (knots) = **2.3 hours**
- Dumping time at the disposal site: **0.2 hours** (12 minutes)
- Sailing time (empty) from the disposal site to the dredging site
  Sailing speed (empty) is assumed as 8 knots; 16.2 (miles) / 8 (knots) = **2.0 hours**
- Working Cycle Time: 0.7 + 2.3 + 0.2 + 2.0 = 5.2 hours
- Dredging and disposal cycles per day
  Effective Working Time is assumed as 21 hours/day
  21 (hours/day) / 5.2 (hours) = 4.0 cycles/day
- Productivity of dredging and disposal by two barges per day (21 hours) is calculated as follows.
  4.0 (cycles/day) x 800 (m^3/barge) x 2 (barges) = 6,400 m^3/day
- Working-day is assumed as 28 days per month.
  6,400 (m^3/day) x 28 (days/month) = 179,200 m^3/month

J.5 Overdredging and Work Period

It is empirically necessary to have an overdredging depth as 0.5 m in order to achieve the design depth of channel and basin. As the total dredging area for the proposed dredging work is about 1,750,000 m^2, the assumed overdredging volume amounts to 875,000 m^3 (0.5 m x 1,750,000 m^2). And this is equivalent to about 10 % of the total design volume of dredging (refer to **Table J-1**).

Work period of dredging at each section of the Tanjung Priok Port considering overdredging volume is calculated as shown in **Table J-2**.

Table J-2 Productivity and Work Period of Dredging

Description	Calculation
Dredging Performance per cycle	800 m^3 per cycle
Working Cycle Time	5.2 hours
Time to fill 1,500 m^3 barge	0.7 hour; (2,000 x 40%)/1,200 m^3/hour
Sailing Time (loaded)	2.3 hours (16.2 miles / speed: 7 knots)
Dumping Time	0.2 hour
Sailing Time (empty)	2.0 hours (16.2 miles / speed: 8 knots)
Effective Working Time per Day	21 hours/day
Dredging Cycle per Day	4.0 cycles/day
Production per Day	6,400 m^3/day (2 x 4.0 (cycles/day) x 800 m^3)
per month	179,200 m^3/month; 28 days/month
Design Dredging Volume	Work Period including Overdredging
Access Channel: 2,430,000 m^3	14.9 months
North Channel : 3,875,000 m^3	23.8 months
Central Basin : 1,950,000 m^3	12.0 months

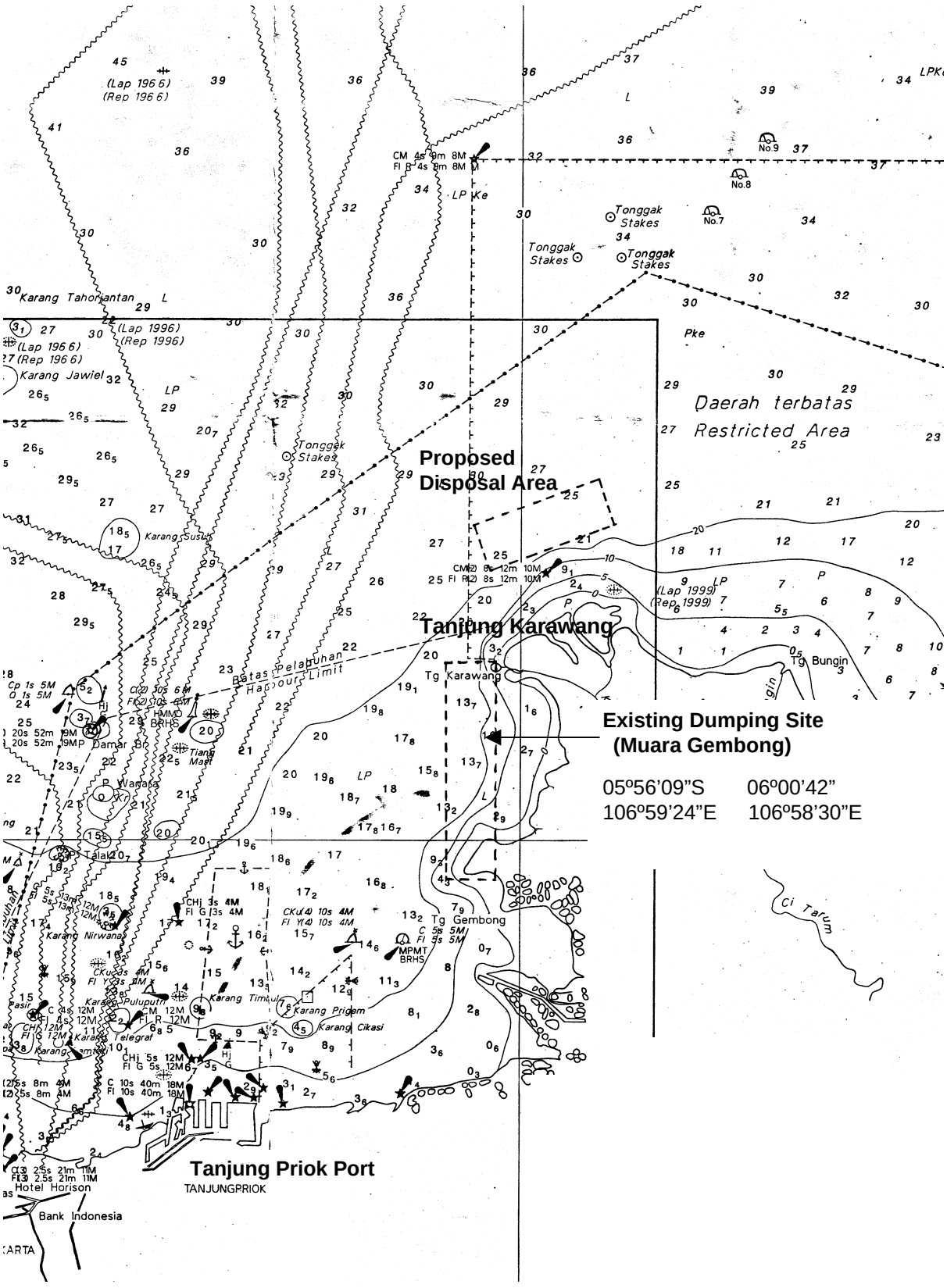


Figure J-1 Location of Disposal Site of Dredged Material from Tanjung Priok Port

APPENDIX K: CANAL DIVERSION AT BOJONEGARA DEVELOPMENT SITE

K.1 Catchment Area and Rainfall

Four mountainous streams flow into the assumed development site of Bojonegara New Port (refer to the figure next page). In order to avoid the flood in rainy seasons on the reclaimed land area, a plan of a series of diversion channels is necessary.

The catchment area of each stream is measured from the topographic map (scale 1:25,000; **Figure K-1**) as follows.

Table K-1 Catchment Area

	Area	
1	2.2 km^2	A_1
2	1.9 km^2	A_2
3	0.8 km^2	A_3
4	3.6 km^2	A_4

In order to design the channel sections, run-off calculations are carried out using rational formula.

$$Q = f R A/3.6$$

where Q (m^3/s): peak rate of discharge from the catchment area, f: run-off factor of the catcment area, R (mm/hour): rainfall intensity during the time flood approach and A (km^2): catchment area.

Rainfall intensity at Jakarta is applied to the calculation using following formulae (refer to **Figure K-2**).

$I_{100} = 583/(\sqrt{t} + 0.49)$ $\quad$ $I_{10} = 361/(\sqrt{t} + 0.26)$

$I_{75} = 554/(\sqrt{t} + 0.46)$ $\quad$ $I_{7} = 329/(\sqrt{t} + 0.23)$

$I_{50} = 514/(\sqrt{t} + 0.42)$ $\quad$ $I_{5} = 297/(\sqrt{t} + 0.19)$

$I_{30} = 465/(\sqrt{t} + 0.38)$ $\quad$ $I_{3} = 246/(\sqrt{t} + 0.15)$

$I_{20} = 426/(\sqrt{t} + 0.33)$ $\quad$ $I_{2} = 207/(\sqrt{t} + 0.14)$

K.2 Run-off Calculation

(1) Area 1

Time of flood approach (t: min) is calculated by the Kraven formula based on length of stream: L = 3.0 km, inclination of mountainous slope: i = 1/10 and the run-off velocity W = 3.5 m/s.

$$t = L/W = 857 \text{ s} = 14.3 \text{ min.}$$

Considering the importance of the channel at the site, the rainfall intensity formula of 5-year return period (I_5) can be applied to this calculation. The run-off factor (f) is given as f = 0.75 (mountainous forest).

$R = I_5 = 297/(\sqrt{14.3} + 0.19)$

$= 73$ (mm/hour)

$Q_1 = f R A_1/3.6$

$=0.75*73*2.2/3.6 = 33.5 \ m^3/s$

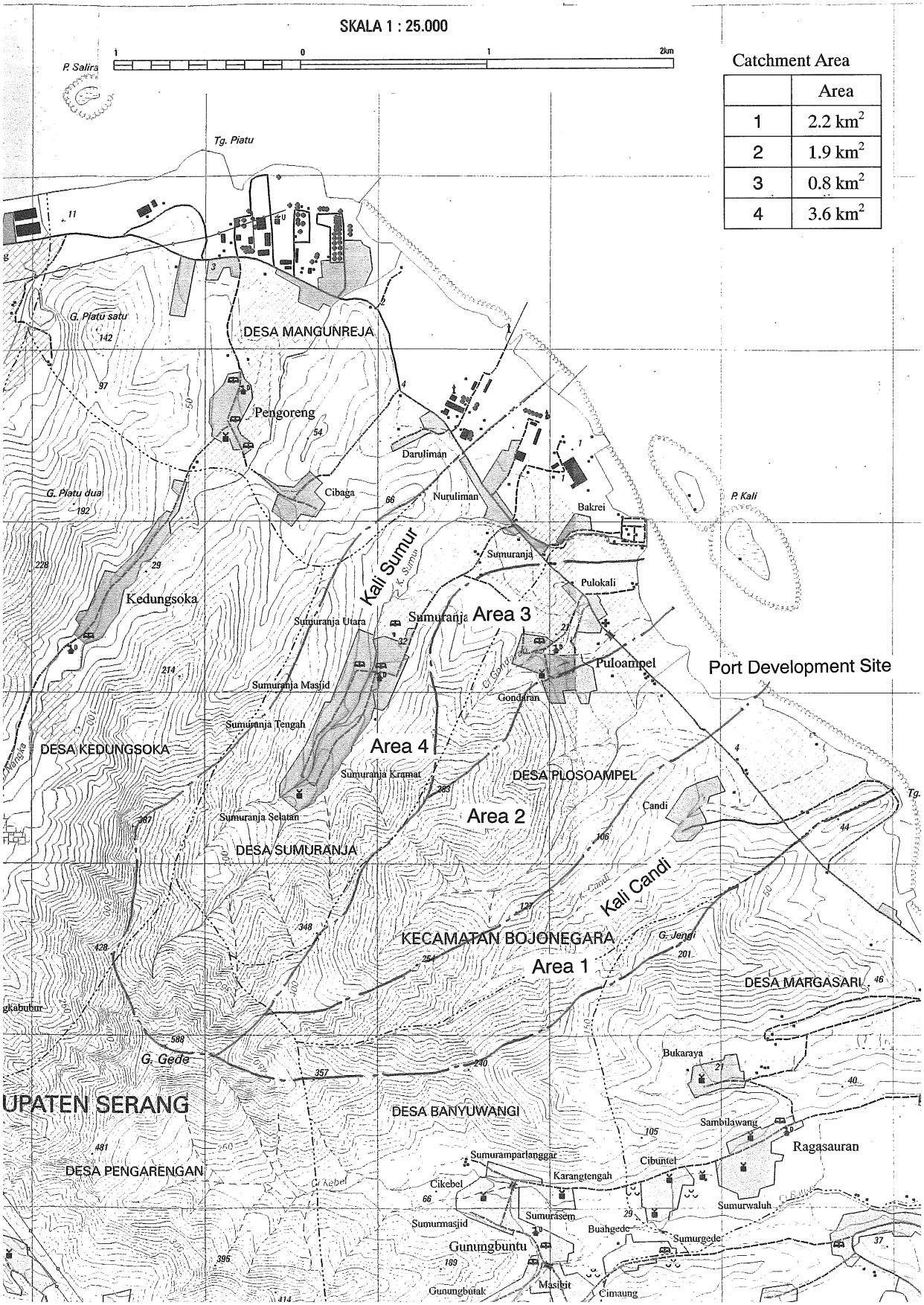


Figure K-1 Catchment Area of Streams at Bojonegara Site

(2) Area 2

L = 2.5 km, t = L/W = 714 s = 11.9 min.,

R = I_5 = 297/(sqrt(11.9) + 0.19) = 81 (mm/hour)

Q_2 = f R A_2/3.6 =0.75*81*1.9/3.6 = 32.0 m^3/s

(3) Area 3

L = 1.0 km, t = L/W = 286 s = 4.8 min.,

R = I_5 = 297/(sqrt(4.8) + 0.19) = 122 (mm/hour)

Q_3 = f R A_3/3.6 =0.75*122*0.8/3.6 = 20.3 m^3/s

(4) Area 4

L = 3.5 km, t = L/W = 1000 s = 16.7 min.,

R = I_5 = 297/(sqrt(16.7) + 0.19) = 69 (mm/hour)

Q_4 = f R A_4/3.6 =0.75*69*3.6/3.6 = 51.8 m^3/s

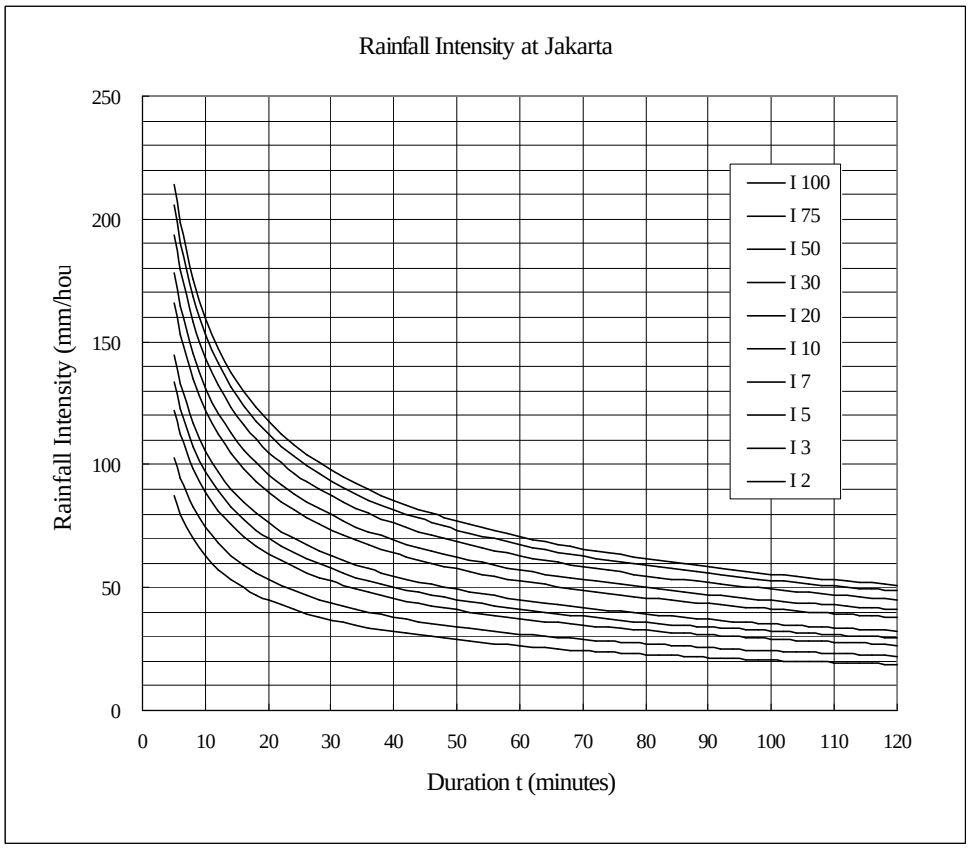


Figure K-2 Rainfall Intensity Diagram at Jakarta

K.3 Distribution of Discharge Flow

The run-off flows from the Areas 1 - 3 are to be diverted to Kali Sumur (Area 4) by a diversion channel along shoreline. Based on the calculations above, the run-off discharge can be distributed to each channel as follows.

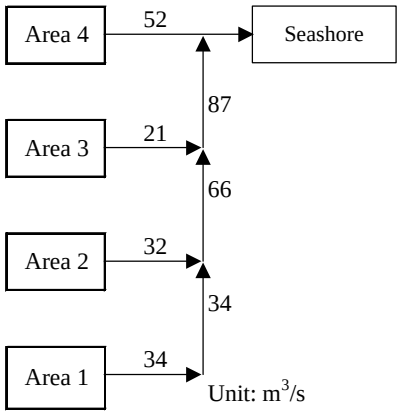


Figure K-3 Distribution of Discharge Flow

K.4 Design Section of Diversion Channel

The necessary sections of the diversion channel to allow the flood flow (return period: 5 years) safely are designed by Manning's formula and assuming uniform flow as follows.

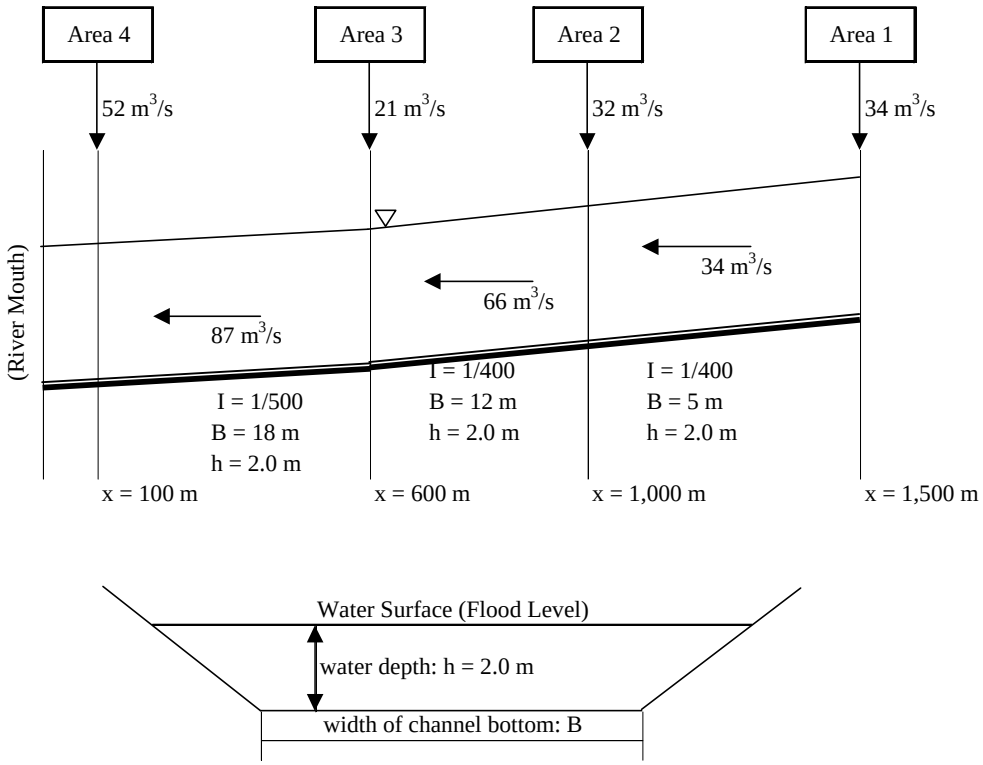


Figure K-4 Design Section of Diversion Channel

Since the diversion channels are located in the low-land, swampy area, the actual river flow is affected by the water level of down stream and, hence, the non-uniform flow theory should be applied for the design of river channel. The actual design section should be studied more precisely in the detail design stage based on the detail topography map.

APPENDIX L: CONSTRUCTION PROCUREMENT AND COST ESTIMATE

L.1 Construction Procurement Conditions

L.1.1 Introduction

In this section, the current conditions of procurement of construction materials and construction equipment in Indonesia are reviewed. The information on the procurement conditions below is based on the market investigations and hearings from the construction companies in Indonesia.

For the purpose of estimation of construction cost, unit price of each element such as labour, major construction material and equipment are to be determined on the basis of the regional unit prices collected in the field survey in the Study Areas.

The basic costs of imported products are to be estimated using the average exchange rate of the currencies (Rupiah, Japanese Yen, US Dollar, etc.) based on the fluctuation of the half-year period prior to the estimation.

The capacity and capability of the local contractors are to be checked with respect to their experiences of marine construction works considering the dimensions of the development and port facilities.

L.1.2Construction Materials

Almost all the construction materials (except for the special item such as geo-textile filter sheet) are produced domestically in Indonesia and can be procured in the market. The prices are relatively stable in the recent years.

(1) Cement

The following nine companies are Indonesia's major cement producers and providing various types of cement to the Indonesian construction market.

1) PT. Semen Andalas Indonesia
2) PT. Semen Padang
3) PT. Semen Baturaja
4) PT. Indocement Tunggal Prakarsa
5) PT. Semen Cibinong
6) PT. Semen Gresik
7) PT. Semen Tonasa
8) PT. Semen Bosowa Maros
9) PT. Semen Kupang

The Indonesian home-produced cement is said to be sufficiently stable in quality and giving the required strength of the design mixture.

Cement is provided not only in sacks (40 - 50 kg) in ordinary form but in bulk form (provided by 8 - 20-ton trucks, usually) as well for a large demand. In this case, the bulk cement can be provided in less prices per kg than the sacks.

(2) Aggregates

Although there are many numbers of quarries located in the Bojonegara and Banten area, it is said that there are few quarries where concrete aggregate of good quality is available.

The mining from quarry, riverbed and/or seabed is under the regulation of Ministry of Mining of the Government of Indonesia.

(3) Concrete Products

There are a number of providers of ready-mixed concrete and manufacturers of concrete products in Indonesia such as centrifugal reinforced concrete (RC) pipes, pre-stressed concrete (PC) piles and PC beams.

(4) Steel Products

Steel and steel products for construction material are domestically produced in Indonesia. Some special purpose and/or very large scale structure steel products are imported mainly from Japan.

(5) Asphalt

Asphalt is mainly provided from the Pertamina refinery at Cilacap (Central Java) and/or Balongan (West Java).

The production of asphalt decreased remarkably in 1998 after Krismon (Krisis Moneter) due to the drastic cutback of the investment for infrastructures especially for road construction. The market demand is covered mainly by the home-produced asphalt in recent years.

(6) Soil for Reclamation

Several millions m^3 of reclamation is assumed in the future development in Tanjung Priok and also several hundred thousands m^3 of reclamation is assumed in Bojonegara. The quarry location where soil material is available to be used in the large volume of reclamation economically is an important problem in construction planning.

For reference, the soil materials for the reclamation in the Koja Terminal expansion work are mountain sand from Bangka Island (South Sumatra) and sea sand from Belitung Island.

And sea sand for the reclamation of Merak Mas Port construction was quarried at the borrow area off Cigading. This borrow area (Gosong Serdang = Serdang sandbar) has a 40 million m^3 of deposits of fine - medium sand (source: PT. SAC Nusantara).

Under Presidential Decree No.33/2002 (May 2002), sea sand quarrying is to be controlled and supervised by Ministry of Maritime Affairs and Fisheries.

(7) Dynamite

Bedrock dredging by blasting may be unavoidable in the development of Bojonegara port. Dynamite production is monopolized by PT. Dahana (Persero) in Indonesia. Mining Services Division of PT. Dahana also provides consulting services for the planning of drilling and blasting works.

L.1.3Construction Equipment

There exists a well-developed leasing market of construction equipment in Indonesia. According to the hearings from the major construction companies, most of the general-purpose construction equipment (such as bulldozers, backhoes, shovel loaders, concrete mixers, etc.) mobilized in the large-scale construction of public works can be procured from the leasing market.

In the case of long-term construction period over about three years, it is possible to have advantage that contractor purchase and possess its own construction equipment rather than the procurement from the leasing market.

L.1.4Capability of Construction Companies

The following are the major five of state-owned construction companies in Indonesia.

1) PT. Hutama Karya
2) PT. Pembangunan Perumahan (PP)
3) PT. Waskita Karya
4) PT. Wijaya Karya
5) PT. Adhi Karya

Other than the above-mentioned major five companies, several number of medium-scale companies and about a hundred small-scale companies are running their enterprises in the Indonesian construction market.

The fields of construction where the Indonesian local companies have experience are mainly building and housing development, road construction, water supply and sewerage construction, irrigation, etc. They also have relatively sufficient experience in marine construction in Indonesia.

The two companies out of five (1 and 2) and another private company accepted the Study Team’s visit for interview and hearings concerning the situations of the local construction market, procurement of construction materials/equipment/labour, etc.

L.2 Basis of Construction Cost

L.2.1 Unit price of labour / material / equipment

Unit price of each element such as labour, construction material and construction equipment are to be determined on the basis of the information collected in the field study (Jakarta 2002). The unit prices collected from the major construction companies are summarized in **Tables L.1**.

L.2.2 Basic Cost of Construction Work

The breakdown of unit costs of the construction works are to be prepared by accumulating costs of labour, materials, equipment and also the indirect costs such as general temporary works, overheads profit and so on.

While, the cost of the works such as building works, fabrication of cargo handling equipment, supply of utilities and demolition works are to be hindcast on the basis of the empirical prices collected from the major contractors which have experiences in the fields.

The unit cost of cargo handling equipment will include the costs of design, manufacturing, workshop tests, delivery and installation.

Price of imported products such as fender systems, bollard and navigation aids are to be estimated based on the CIF Jakarta price and adjusted considering import tax and some mobilization fee to the construction site.

Table L.1 (1) Unit Prices of Labour of Construction Work in West Java Area

		PT. Pembangunan Perumahan				PT. Hutama Karya					PT. SAC Nusantara				
No.	Item	Time Unit	Basic Wage (Rupiah)	Insur-ances	Total Wage (Rupiah)	Time Unit	Basic Wage (Rupiah)	Additional Insur-ances	Additional Sever-ance	Total Wage (Rupiah)	Time Unit	Basic Wage (Rupiah)	Additional Insur-ances	Additional Sever-ance	Total Wage (Rupiah)
L- 1	Supervisor	day	50,000	2,900	52,900	day	50,000	1,500	8,400	59,900	day	100,000	350	10,000	110,350
L- 2	Foreman	day	50,000	2,900	52,900	day	40,000	1,500	6,800	48,300	day	60,000	210	6,000	66,210
L- 3	Group Leader	day	42,000	2,436	44,436	day	35,000	1,000	6,000	42,000	day	50,000	175	5,000	55,175
L- 4	Skilled Labour	day	42,000	2,436	44,436	day	30,000	1,000	5,000	36,000	day	40,000	140	4,000	44,140
L- 5	Common Labour	day	25,000	1,450	26,450	day	25,000	1,000	4,200	30,200	day	20,000	70	2,000	22,070
L- 6	Scaffolding Man	day	30,000	1,740	31,740	day	25,000	1,000	4,200	30,200	day	35,000	123	3,500	38,623
L- 7	Carpenter	day	45,000	2,610	47,610	day	30,000	1,000	5,000	36,000	day	40,000	140	4,000	44,140
L- 8	Mechanic	day	50,000	2,900	52,900	day	35,000	1,000	6,000	42,000	day	75,000	263	7,500	82,763
L- 9	Electrician	day	50,000	2,900	52,900	day	35,000	1,000	6,000	42,000	day	75,000	263	7,500	82,763
L- 10	Operator (heavy)	day	60,000	3,480	63,480	day	40,000	1,500	6,800	48,300	day	70,000	245	7,000	77,245
L- 11	Operator (light)	day	45,000	2,610	47,610	day	35,000	1,000	6,000	42,000	day	50,000	175	5,000	55,175
L- 12	Truck Driver	day	50,000	2,900	52,900	day	30,000	1,000	5,000	36,000	day	50,000	175	5,000	55,175
L- 13	Welder	day	50,000	2,900	52,900	day	35,000	1,000	5,000	41,000	day	150,000	525	15,000	165,525
L- 14	Steel Fixer	day	30,000	1,740	31,740	day	30,000	1,000	5,000	36,000	day	40,000	140	4,000	44,140
L- 15	Mason	day	40,000	2,320	42,320	day	30,000	1,000	5,000	36,000	day	40,000	140	4,000	44,140
L- 16	Painter	day	30,000	1,740	31,740	day	30,000	1,000	5,000	36,000	day	40,000	140	4,000	44,140
L- 17	Plumber	day	40,000	2,320	42,320	day	30,000	1,000	5,000	36,000	day	75,000	263	7,500	82,763
L- 18	Surveyor	day	40,000	2,320	42,320	day	40,000	1,500	6,800	48,300	day	125,000	438	12,500	137,938
L- 19	Assistant Surveyor	day	30,000	1,740	31,740	day	30,000	1,000	5,000	36,000	day	75,000	263	7,500	82,763
L- 20	Captain (Tug Boat)					day	40,000	1,500	6,800	48,300	day	150,000	525	15,000	165,525
L- 21	Crew					day	30,000	1,000	5,000	36,000	day	75,000	263	7,500	82,763
L- 22	Diver										day	175,000	613	17,500	193,113
L- 23	Engineer (Expatriate)					mon	3,000,000	30,000	510,000	3,540,000					
L- 24	Engineer (Local)	day	90,000	5,220	95,220	mon	2,500,000	60,000	420,000	2,980,000	mon	6,000,000	21,000	600,000	6,621,000
L- 25	Assistant Engineer	day	70,000	4,060	74,060	mon	2,000,000	45,000	330,000	2,375,000	mon	4,500,000	15,750	450,000	4,965,750
L- 26	Secretary	day				mon	1,000,000	45,000	168,000	1,213,000	mon	1,500,000	5,250	150,000	1,655,250
L- 27	Assistant Secretary	day				mon	800,000	30,000	138,000	968,000	mon	1,250,000	4,375	125,000	1,379,375
L- 28	Typist	day				mon	800,000	30,000	138,000	968,000	mon	1,000,000	3,500	100,000	1,103,500
L- 29	Guardsman	day	40,000	2,320	42,320	mon	800,000	30,000	138,000	968,000	mon	750,000	2,625	75,000	827,625
L- 30	Janitor	day	25,000	1,450	26,450	mon	800,000	30,000	138,000	968,000	mon	750,000	2,625	75,000	827,625

Table L.1 (2) Unit Prices of Construction Materials in West Java Area

			PT. P P	PT. Hutama Karya	PT. SAC Nusantara
			Unit Price*	Unit Price*	Unit Price*
No.	Item	Unit	(Rupiah)	(Rupiah)	(Rupiah)
M- 1	Steel Bar (D16)	kg	2,700	2,800	2,750
M- 2	Steel Bar (D22)	kg	2,700	2,800	2,750
M- 3	Steel Bar (D29)	kg	2,700	2,800	2,775
M- 4	Structural Steel	kg	6,000	6,200	6,500
M- 5	Steel Sheet Pile; SP-II	kg		5,400	
	SP-III	kg		5,700	
	SP-IV	kg		5,850	
M- 6	Steel Pipe Pile	kg		3,800	4,500
M- 7	RC Pile; dia 500 - 600 mm	m		175,000	400,000
M- 8	Portland Cement	ton	500,000	500,000	550,000
M- 9	Ready-mixed Concrete				
	Strength: 210 kg/cm^2	m^3	270,000	270,000	325,000
	Strength: 280 kg/cm^2	m^3	300,000	300,000	350,000
M- 10	Form Material; t=12 mm	m^2	43,500	43,500	45,000
	Form Material; t=15 mm	m^2	52,000	52,000	65,000
M- 11	Admixture	litre			15,000
M- 12	Fine Aggregate	m^3			60,000
M- 13	Coarse Aggregate	m^3			115,000
M- 14	Local Sand	m^3			45,000
M- 15	Import Sand	m^3			60,000
M- 16	Cobble Stone	m^3			75,000
M- 17	Crushed Stone	m^3			115,000
M- 18	Rock for Rubble Mound	m^3			75,000
M- 19	Sod	m^2	37,500	37,500	125
M- 20	Gasoline	litre			
M- 21	Diesel Oil	litre			
M- 22	Geotextile Filter Sheet	m^2	7,500	7,500	12,000
M- 23	Aspahlt concrete mix	ton	300,000	300,000	
M- 24					
M- 25					

Table L.1 (3) Unit Leasing Prices of Construction Equipment in West Java Area

No.	Item	PT. P P			PT. Hutama Karya			PT. SAC Nusantara		
		Engine Power	Unit	Unit Price** (Rupiah)	Engine Power	Unit	Unit Price** (Rupiah)	Engine Power	Unit	Unit Price** (Rupiah)
E- 1	Bulldozer (15-ton class)	170 HP	hour	195,000	220 HP	hour	190,000			
	Bulldozer (21-ton class)	200 HP	hour	240,000	200 HP	hour	200,000	215 HP	hour	280,000
	Bulldozer (32-ton class)	320 HP	hour	400,000	128 HP	hour	235,000			
	Bulldozer (32-ton, ripper)	320 HP	hour	850,000		hour	245,000	320 HP	hour	423,000
E- 2	Backhoe (0.6 m^3)	120 HP	hour	165,000	118 HP	hour	120,000	105 HP	hour	174,000
	Backhoe (1.2 m^3)				128 HP	hour	240,000	133 HP	hour	250,000
	Backhoe (2.0 m^3)				128 HP	hour	245,000	276 HP	hour	389,000
E- 3	Tractor Shovel (3.5 m^3)				200 HP	hour	250,000	210 HP	hour	240,000
	Tractor Shovel (5.4 m^3)				200 HP	hour	250,000		hour	356,000
	Tractor Shovel (10.0 m^3)				200 HP	hour	250,000			
E- 4	Wheel Loader (1.2 m^3)	110 HP	hour	135,000	72 HP	hour	135,000	108 HP	hour	157,000
	Wheel Loader (2.1 m^3)	140 HP	hour	180,000	130 HP	hour	180,000	163 HP	hour	207,000
	Wheel Loader (3.5 m^3)	204 HP	hour	360,000	235 HP	hour	188,000	204 HP	hour	400,000
E- 5	Dump Truck (10-ton)		hour	75,000		hour	75,000		hour	51,000
E- 6	Truck Crane (10 - 11 t)		hour			hour	92,500		hour	86,000
	Truck Crane (25 ton)		hour	300,000		hour	300,000			
	Truck Crane (40 - 45 ton)		hour	375,000		hour	375,000			
E- 7	Crawler Crane (40 t)		hour	345,000	136 HP	hour	345,000		hour	451,000
	Crawler Crane (80-ton)				120 HP	hour	385,000		hour	744,000
	Crawler Crane (100-ton)				404 HP	hour	425,000			
E- 8	Tower Crane (5-ton, fixed)					hour	137,500			
	Erecting Tower					hour	95,000			
E- 9	Concrete Batching Plant				25 m^3/hr	hour	450,000			
E- 10	Crushing Plant									
E- 11	Screening Plant									
E- 12	Engine Generator (35 kVA)					hour	15,000		hour	40,000
	Engine Generator (100 kVA)					hour	40,000		hour	75,000
	Engine Generator (200 kVA)					hour	67,500		hour	125,000
E- 13	Diesel Pile Hammer					day	1,000,000		hour	60,000
E- 14	Electric Vibratory Pile Driver								hour	300,000
E- 15	Hydraulic Pile Hammer								hour	500,000
E- 16	Motor Grader	125 HP	hour	165,000	145 HP	hour	120,000		hour	189,000
E- 17	Road Roller		hour	135,000	180 HP	hour	88,000		hour	136,000
E- 18	Tyre Roller		hour	135,000	105 HP	hour	135,000		hour	151,000
E- 19	Flat Barge (300 ton)					mon	30,000,000		mon	90,000,000
	Flat Barge (500 ton)					mon	40,000,000		mon	120,000,000
	Flat Barge (700 ton)					mon	50,000,000		mon	150,000,000
E- 20	Tug Boat				650 HP	mon	250,000,000		mon*	300,000,000
E- 21	Clamshell Dredger							6.5 m^3	mon*	750,000,000
E- 22	Crane Barge							125 ton	mon*	500,000,000
E- 23	Hopper Barge							1000 m^3	mon	200,000,000
E- 24	Underwater Rock Breaker									
E-										
E-										

** Unit prices do not include mob/demob cost, fuel, food and accommodation allowances for operator/mechanic.

* Including fuel cost and crew.

L.2.3 Foreign and Local Portion in Prices

In order to assume the foreign and local portion of the construction cost in Indonesia, Study Team set up a standard as follows.

(1) Labour

As for wages of construction-related labour, 100 % is assumed as local for the local manpower and 100 % is foreign for the expatriate manpower.

(2) Construction Materials

The standard is given differently item by item as for construction materials.

1) Cement / aggregate: 80 % local, 20 % foreign
Although the construction works in Indonesia are managed with home-produced cement and aggregate, cement manufacturing plant and/or stone crushing plant are usually imported facilities. The local and foreign portion set above reflects the depreciation and maintenance cost of such production facilities.

2) Sand / stone / rock: 100 % local
Local procurement is available in nearly all the regions in Indonesia.

3) Pre-cast concrete product: 90 % local, 10 % Foreign
10 % portion of foreign price reflects the depreciation and maintenance cost of imported production facilities.

4) Steel product
Reinforcement steel bars: 80 % local, 20 % foreign
Structure steel: 75 % local, 25 % foreign
Although steel and steel product for construction material are domestically produced in Indonesia, manufacturing are usually imported facilities. The local and foreign portion set above reflects the depreciation and maintenance cost of such production facilities.

(3) Construction Equipment

1) Truck: 90 % local, 10 % foreign
As for the construction equipment used with high frequency (such as trucks and dump trucks), the depreciation can be assumed completed and the portion is given as shown above. The 10 % portion of foreign price reflects the maintenance cost (imported parts for ordinary and/or special repairs).

2) Excavator / buck-hoe / bulldozer / pile driver etc.: 70 % local, 30% foreign
This portion reflects the relatively lower frequency of the use of equipment than trucks.

3) Dredger / soil improvement equipment / crusher plants, etc.: 20 % local, 80 % foreign
This portion gives the lower frequency use of equipment on the contrary to the case of truck.

(4) Electric Devices

Common electric appliances: 60 % local, 40 % foreign
Special purpose devices: 100 % foreign

(5) Fuel: 100 % local

(6) Tax
Import duties, Income tax of expatriate manpower and Value-added tax (PPN) is dealt with as 100 % local.

L.2.4 Depreciation Periods of Port Facilities

The depreciation periods of port facilities are to be assumed based on the report "Taksiran Umur Ekonomis Tetap" (source: IPC2, 1995) as summarized below.

Table L.2 Depreciation Period of Port Facilities

Port Facilities	Year	Remarks
Revetment and Quay	50	
Cargo Handling Equipment	20	
Building	50	Permanent
Navigation Aids	10	
Fender System	10	

L.3 Basis of Project Cost Estimation

L.3.1 Unit Prices of labour / material / equipment

Unit price of each element such as labour, construction material and construction equipment are to be determined on the basis of the information collected from the major construction companies in the field study (Jakarta 2002). The unit prices are summarized in **Table L.3.**

Table L.3 Construction Unit Prices in West Java Area

Construction Labour			
No.	Item	Time Unit	Basic Wage (Rupiah)
L- 1	Supervisor	day	65,000
L- 2	Foreman	day	65,000
L- 3	Skilled Labour	day	45,000
L- 4	Common Labour	day	30,000
L- 5	Scaffolding Man	day	35,000
L- 6	Carpenter	day	45,000
L- 7	Mechanic	day	55,000
L- 8	Electrician	day	55,000
L- 9	Operator (heavy)	day	70,000
L- 10	Operator (light)	day	50,000
L- 11	Truck Driver	day	50,000
L- 12	Welder	day	55,000
L- 13	Steel Fixer	day	40,000
L- 14	Mason	day	40,000
L- 15	Painter	day	40,000
L- 16	Plumber	day	40,000
L- 17	Surveyor	day	100,000
L- 18	Assistant Surveyor	day	50,000
L- 19	Captain (Tug Boat)		100,000
L- 20	Crew		80,000
L- 21	Diver		200,000
L- 22	Engineer (Expatriate)	mon	3,500,000
L- 23	Engineer (Local)	mon	2,500,000
L- 24	Assistant Engineer	mon	2,000,000
L- 25	Secretary	mon	1,000,000
L- 26	Assistant Secretary	mon	800,000
L- 27	Typist	mon	800,000
L- 28	Guardsman	mon	800,000
L- 29	Janitor	mon	800,000

Construction Material			
No.	Item	Unit	Unit Price* (Rupiah)
M- 1	Steel Bar (D16)	kg	2,700
M- 2	Steel Bar (D22)	kg	2,700
M- 3	Steel Bar (D29)	kg	2,700
M- 4	Structural Steel	kg	6,000
M- 5	Steel Sheet Pile; SP-	kg	5,400
	SP-III	kg	5,700
	SP-IV	kg	5,850
M- 6	Steel Pipe Pile	kg	4,500
M- 7	RC Pile; dia 500 - 600 m	m	200,000
M- 8	Portland Cement	ton	500,000
M- 9	Ready-mixed Concrete		
	Strength: 210 kg/cm^2	m^3	270,000
	Strength: 280 kg/cm^2	m^3	300,000
M- 10	Form Material; t=12 mm	m^2	43,500
	Form Material; t=15 mm	m^2	52,000
M- 11	Admixture	litre	15,000
M- 12	Fine Aggregate	m^3	60,000
M- 13	Coarse Aggregate	m^3	115,000
M- 14	Local Sand	m^3	45,000
M- 15	Import Sand	m^3	60,000
M- 16	Cobble Stone	m^3	75,000
M- 17	Crushed Stone	m^3	115,000
M- 18	Rock for Rubble Mound	m^3	75,000
M- 19	Sod	m^2	37,500
M- 20	Gasoline	litre	1,810
M- 21	Diesel Oil	litre	1,800
M- 22	Geotextile Filter Sheet	m^2	12,000
M- 23	Aspahlt concrete mix	ton	300,000
M- 24			
M- 25			

L.3.2 Assumptions for Cost Estimation

(1) Basic Price and Exchange Rate

The basic prices are as of December 2002 and the foreign exchange rate is given as follows considering the current trend in the market as of June 2003.

1 USD = 8,500 Rupiah = 120 Yen (1 Yen = 70.83 Rupiah)

(2) Currency Component

The each unit price was split into foreign currency and local currency portions, both indicated in Rupiah, estimated in the following classifications;

- The foreign currency component consists of:
  - -Imported construction materials
  - -Foreign components of depreciation and operation/maintenance cost for construction equipment and plant
  - -Foreign component of domestic materials
  - -Salaries and costs of foreign personnel
- The local currency component consists of:
  - -Local construction materials
  - -Local components of depreciation and operation /maintenance cost for construction equipment and plant
  - -Salaries and costs of local personnel
  - -Import duty on imported materials
  - -Indonesian taxes

L.3.3 Basic Cost of Construction Work

The breakdown of unit costs of the construction works are to be prepared by accumulating costs of labour, materials, equipment and also the indirect costs such as general temporary works, overheads profit and so on.

While, the cost of the works such as building works, fabrication of cargo handling equipment, supply of utilities and demolition works are to be hindcast on the basis of the empirical prices collected from the major contractors which have experiences in the fields.

Price of imported products such as cargo handling equipment, fender systems, bollard and navigation aids are to be estimated based on the CIF Jakarta price and adjusted considering import tax and some mobilization fee to the construction site.

The combined cost for major construction works is estimated from the costs of labor, required materials, required construction equipment, and the site expense of labor and equipment. The utilities cost of such as water, electric power and drainage, refers to the other projects in the equivalent scale.

Table L.4 Combined Cost for Major Construction Works

(Direct Construction Cost)

Item	Description	Unit	Unit Cost (1,000 Rupiah)
Tanjung Priok Development			
Breakwater	Rubble Mound Type, -5 m	m	83,557
Quay Wall (-10 m)	RC Deck-on-Pile	m	174,060
Revetment	Wave-breaking with Mangrove	m	70,167
Dredging	Soft Clay	m^3	27.1
Reclamation	Local Sand	m^3	52.1
Bojonegara Development			
Breakwater (-10 m)	Rubble Mound Type, -10 m	m	135,794
Quay Wall (-14 m)	Concrete Caisson	m	214,387
Quay Wall (-8 m)	Concrete Block	m	75,839
Dredging	Weathered Rock	m^3	123.3
Dredging	Soft Clay	m^3	27.1
Reclamation-on-land	including Rock Excavation	m^3	63.0

In addition to the construction cost and procurement cost, the engineering fee for the detail design and supervision, physical contingency and VAT are estimated in this study. The engineering fee for construction is assumed as about 8 % of the construction cost, and 3.5 % for the procurement cost of equipment. The physical contingency is 10 % for the construction cost, VAT is 10% of the whole cost.

L.3.4 Unit Cost of Container Handling Equipment

The unit cost of cargo handling equipment will include the costs of design, manufacturing, workshop tests, delivery and installation. Procurement Cost of the major equipment are given as follows for the preliminary engineering study (as of August 2002).

Table L.5 Unit Prices of Cargo Handling Equipment

Item	Description	Unit Price
Wharf Gantry Crane	Out-reach: 36 m	45 Billion
Rubber Tyred Gantry Crane	6-lane, 1 over 4	10 Billion
Stacker		4 Billion
Tractor/Chassis		1 Billion
Forklift		0.2 Billion

Price of imported products such as cargo handling equipment, fender systems, bollard and navigation aids are to be estimated based on the CIF Jakarta price and adjusted considering import tax and some mobilization fee to the construction site.

L.3.5 Maintenance Cost (Facility, Equipment, Dredging)

The maintenance cost for facilities is set out as 1 % of the facility construction cost based on the annual maintenance fee of the facilities. Also, 5 % of the equipment cost is adopted as the

maintenance cost for the equipment.

Access channels and basins of Tanjung Priok Port are maintained by the periodical maintenance dredging, which is financed by IPC2 and carried out by P.T PENGERUKAN INDONESIA (RUKINDO). The average annual volume of maintenance dredging is summarized as shown in **Section B** and the total volume amounts to about 330,000 m^3/year.

In the case that the east access channel is to be put into service (design depth: -14 m, design width: 150 m), the similar amount of volume as that of the west access channel (about 60,000 m^3/yaer) can be estimated for the maintenance dredging. The volume is assumed as 390,000 m^3/year for the preliminary design stage.

The unit price of maintenance dredging is given as Rp13,000/m^3 based on the latest JICA Study (River Port Development, 2001 - 2002).

L.3.6 Depreciation Periods of Port Facilities

For the economic and financial analysis, the depreciation period of the constructed facilities and the procured equipment are determined based on the report "Taksiran Umur Ekonomis Tetap" (source: IPC2, 1995) as shown in **Table M-4**.

Table L.6 Depreciation Period of Port Facilities

Port Facilities	Year	Remarks
Revetment and Quay	50	
Cargo Handling Equipment	20	
Building	50	Permanent
Navigation Aids	10	
Fender System	10	

L.4 Project Cost

Project cost is estimated in line with the staged development plan of the Tanjung Priok Port and Bojonegara Port.

Tanjung Priok /	**Urgent Phase 1 (2006)**	**Table L.7.1**
	Urgent Phase 2 (2008)	**Table L.7.2**
	Short-term (2010)	**Table L.7.3**
	Short-term (2012)	**Table L.7.4**
	Long-term (2025)	**Table L.7.5**
Bojonegara /	**Total Project Cost**	**Table L.8**

Table L.7.1 Tanjung Priok / Urgent Phase 1 (2006)

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total (1,000 Rupiah)	Remarks
			Unit Price	Amount	Unit Price	Amount		
1. Direct Construction Cost								
(1) Mobilization and Demobilization	l.s.	1		6,496,201		12,439,738	18,935,938	5 % of the Direct Construction Cost
(2) Breakwater (Dam Tengah)								
New Construction	m	855	39,861	34,081,074	43,696	37,360,308	71,441,383	
Demolition Old Dam Tengah	m	800	7,972	6,377,745	8,739	6,991,403	13,369,148	20 % of New Construction
(3) Breakwater (Dam Barat)								
New Construction	m	200	39,861	7,972,181	43,696	8,739,253	16,711,435	
Demolition Old Dam Barat	m	305	7,972	2,431,515	8,739	2,665,472	5,096,988	20 % of New Construction
(4) Channel Improvement by Dredging								
Access Channel (-14 m, 300 m)	m^3	2,430,000	2.9	7,047,000	24.2	58,714,896	65,761,896	W: 100 m→300 m, 5 m→14 m, 2.7 km
North Channel (-14 m, 300 m)	m^3	3,875,000	2.9	11,237,500	24.2	93,629,721	104,867,221	W: 100 m→300 m, 6 m→14 m, 2.1 km
(5) Basin Improvement by Dredging								
Basin (-10 m)	m^3	502,950	2.9	1,458,555	24.2	12,152,534	13,611,089	In front of Planned Car Carrier Wharf
(6) Car Carrier Terminal								
Demolition of Existing Structures	m	250	20,621	5,155,205	14,191	3,547,792	8,702,997	20 % of New Construction
Quay Wall Construction (-10 m)	m	250	103,104	25,776,026	70,956	17,738,959	43,514,985	RC Deck on Piles
Reclamation (+2.5 m)	m^3	171,314	51.5	8,814,267	0.6	103,280	8,917,546	D: -4 m→+2.5 m
Pavement	m^2	85,760	131.3	11,256,000	43.8	3,752,000	15,008,000	Concrete Paving: 1.0 m
Utility Facilities	l.s.	1		6,876,944		3,239,136	10,116,080	15 % of construction cost
(7) Access to Car Terminal								
Access Road	m^2	7,500	180.0	1,350,000	20.0	150,000	1,500,000	500 m x 4-lane at-grade road
Entrance Work	l.s.	1		90,000		10,000	100,000	
Direct Construction Cost (DC)				136,420,213		261,234,492	397,654,705	**397,654,705**
2. Indirect Construction Cost								
(1) Common Temporary Works	l.s.	1		10,913,617		20,898,759	31,812,376	8 % of DC
(2) Site Expenses	l.s.	1		20,463,032		39,185,174	59,648,206	15 % of DC
(3) Overhead	l.s.	1		10,913,617		20,898,759	31,812,376	8 % of DC
Indirect Construction Cost (IC)				42,290,266		80,982,693	123,272,959	**123,272,959**
Total Construction Cost (TC = DC + IC)				178,710,479		342,217,185	520,927,663	**520,927,663**
3. Project Related Expenses								
(1) Physical Contingency (PC)	l.s.	1		17,871,048		34,221,718	52,092,766	10 % of TC
(2) Engineering Fee (EF)	l.s.	1		14,296,838		27,377,375	41,674,213	8 % of TC
Total Project Related Expenses (PE)				32,167,886		61,599,093	93,766,979	**93,766,979**
Total (1 + 2 + 3)				210,878,365		403,816,278	614,694,643	**614,694,643**
4. Administration Cost and Compensation								
(1) Administration Cost	l.s.	1		5,209,277		0	5,209,277	1 % of TC
(2) Land Acquisition / Compensation	l.s.	1		45,000,000				Car Terminal
Total of Administration Cost and Compensation				50,209,277		0	50,209,277	
5. Total Project Cost (1 + 2 + 3 + 4)				261,087,641		403,816,278	664,903,919	**664,903,919**
VAT (10 %)				21,087,836		40,381,628	61,469,464	**61,469,464**

Table L.7.2 **Tanjung Priok / Urgent Phase 2 (2008)** Appendix 13-C

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total (1,000 Rupiah)	Remarks
			Unit Price	Amount	Unit Price	Amount		
1. Direct Construction Cost								
(1) Mobilization and Demobilization	l.s.	1		1,693,826		3,902,692	5,596,519	5 % of the Direct Construction Cost.
(2) Breakwater (Dam Tengah)								
New Construction	m	590	39,861	23,517,934	43,696	25,780,798	49,298,732	
Demolition Old Dam Tengah	m	590	7,972	4,703,587	8,739	5,156,160	9,859,746	
(3) Improvement of Central Basin								
Basin (-14 m, 560 m)	m^3	1,950,000	2.9	5,655,000	24.2	47,116,892	52,771,892	W: 100 m→560 m, 3 m→14 m, 560 m
Total Direct Construction Cost (DC)				35,570,347		81,956,542	117,526,889	**117,526,889**
2. Indirect Construction Cost								
(1) Common Temporary Works	l.s.	1		2,845,628		6,556,523	9,402,151	8 % of DC
(2) Site Expenses	l.s.	1		5,335,552		12,293,481	17,629,033	15 % of DC
(3) Overhead	l.s.	1		2,845,628		6,556,523	9,402,151	8 % of DC
Total Indirect Construction Cost (IC)				11,026,808		25,406,528	36,433,335	**36,433,335**
Total Construction Cost (TC = DC + IC)				46,597,155		107,363,070	153,960,224	**153,960,224**
3. Project Related Expenses								
(1) Physical Contingency (PC)	l.s.	1		4,659,715		10,736,307	15,396,022	10 % of TC
(2) Engineering Fee (EF)	l.s.	1		3,727,772		8,589,046	12,316,818	8 % of TC
Total Project Related Expenses (PE)				8,387,488		19,325,353	27,712,840	**27,712,840**
Total (1 + 2 + 3)				54,984,642		126,688,422	181,673,064	**181,673,064**
VAT (10 %)				5,498,464		12,668,842	18,167,306	**18,167,306**
4. Administration Cost and Compensation								
(1) Administration Cost	l.s.	1		1,539,602			1,539,602	1 % of TC
(2) Land Acquisition / Compensation	m^2							
Total of Administration Cost and Compensation				1,539,602			1,539,602	
5. Total Project Cost (1 + 2 + 3 + 4)				56,524,245		126,688,422	183,212,667	**183,212,667**

Related Project Cost

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)			Remarks
			Unit Price	Amount	Unit Price	Amount		
1. Port Related Road Improvement								
(1) Improvement of Port Related Road	(Jl. Martadinata - Jl. Pelabuhan Raya including Enggano Flyover)							
Mobilization and Demobilization	l.s.	1		1,912,447		1,369,410	3,281,857	5 % of construction cost
Road Widening	m^2	7,180	677.0	4,860,860	75.0	538,500	5,399,360	
Pavement	m^2	60,000	100.0	6,000,000	100.0	6,000,000	12,000,000	
New Road Construction	m^2	1,600	293.0	468,800	33.0	52,800	521,600	
Viaduct / Flyover								
Substructure	m^2	8,100	779.0	6,309,900	87.0	704,700	7,014,600	
Superstructure	m^2	6,100	3,080.0	18,788,000	3,080.0	18,788,000	37,576,000	
Utility Facilities	l.s.	1		1,821,378		1,304,200	3,125,578	5 % of construction cost
(2) Eastern Access Port Highway								
Mobilization and Demobilization	l.s.	1		13,165,688		4,125,188	17,290,875	5 % of construction cost
Substructure								
Pile	m	224,000	405.0	90,720,000	45.0	10,080,000	100,800,000	
Footing	m^3	18,700	1,350.0	25,245,000	150.0	2,805,000	28,050,000	
Pier/Abutment	m^3	11,700	1,800.0	21,060,000	200.0	2,340,000	23,400,000	
Superstructure								
PC I-Girder	pcs	1,050	51,000.0	53,550,000	51,000.0	53,550,000	107,100,000	
Concrete Slab	m^2	70,000	810.0	56,700,000	90.0	6,300,000	63,000,000	
Pavement	m^2	70,000	50.0	3,500,000	50.0	3,500,000	7,000,000	
Utility Facilities	l.s.	1		12,538,750		3,928,750	16,467,500	5 % of construction cost
(3) Gate Improvement								
Custome Office Relocation	LS	1		17,000,000		0	17,000,000	
Container Terminal Gate Integartion	LS	1		8,500,000		0	8,500,000	
Related Road Connection	m^2	10,000	900	9,000,000		0	9,000,000	
Utility Facility	LS	1		1,725,000		0	1,725,000	5% of construction works
Direct Construction Cost (DC)				352,865,822		115,386,548	468,252,370	**468,252,370**
2. Indirect Construction Cost								
(1) Traffic Management	l.s.	1		10,585,975		3,461,596	14,047,571	3 % of DC
(2) Site Expenses	l.s.	1		17,643,291		5,769,327	23,412,618	5 % of DC
(3) Overhead	l.s.	1		35,286,582		11,538,655	46,825,237	10 % of DC
Indirect Construction Cost (IC)				63,515,848		20,769,579	84,285,427	**84,285,427**
Total Construction Cost (TC = DC + IC)				416,381,670		136,156,126	552,537,796	**552,537,796**
3. Project Related Expenses								
(1) Physical Contingency (PC)	l.s.	1		41,638,167		13,615,613	55,253,780	10 % of TC
(2) Engineering Fee (EF)	l.s.	1		33,310,534		10,892,490	44,203,024	8 % of TC
Total Project Related Expenses (PE)				74,948,701		24,508,103	99,456,803	
Total (1 + 2 + 3)				491,330,371		160,664,229	651,994,600	**651,994,600**
4. Administration Cost and Compensation								
(1) Administration Cost	l.s.	1		5,525,378			5,525,378	1 % of TC

Related Project Cost

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)			Remarks
			Unit Price	Amount	Unit Price	Amount		
(2) Land Acquisition / Compensation								
Total of Administration Cost and Compensation				5,525,378			5,525,378	
5. Total Project Cost (1 + 2 + 3 + 4)				496,855,749		160,664,229	657,519,978	**657,519,978**
VAT (10 %)				49,133,037		16,066,423	65,199,460	

Table L.7.3 Tanjung Priok / Short Term Development (2010)

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total (1,000 Rupiah)	Remarks
			Unit Price	Amount	Unit Price	Amount		
1. Direct Construction Cost								
(1) Mobilization and Demobilization	l.s.	1		31,892,146		18,376,830	50,268,975	5 % of the Direct Construction Cost.
(2) Breakwater (Dam Tengah)								
New Construction of Dam Citra	m	907	39,861	36,153,841	43,696	39,632,514	75,786,355	
Demolition Old Dam Citra	m	1,015	7,972	8,091,764	8,739	8,870,342	16,962,106	
(3) Improvement of Central Basin								
Basin (-14 m) Dredging	m^3	300,000	2.9	870,000	24.2	7,248,753	8,118,753	D: -14 m, W: 300 m, L: 940 m
(4) Breakwater for Ancol Development								
New Construction (980 / 1,370 m)	m	980	39,861	39,063,687	43,696	42,822,342	81,886,029	1218.4 + 151.4 m
Demolition Old Dam Barat	m	305	7,972	2,431,515	8,739	2,665,472	5,096,988	
(5) New Access Channel by Dredging								
Access Channel (-10 m, 120 m)	m^3	1,205,380	2.9	3,495,602	24.2	29,125,005	32,620,607	W: 120 m, -4.5 m→-10 m, 219,160 m^2
New Basin (-10 m, 400 m)	m^3	1,270,920	2.9	3,685,668	24.2	30,708,616	34,394,284	W: 400 m, -4.0 m→-10 m, 211,820 m^2
New Basin (-7.5 m, 300 m)	m^3	494,160	2.9	1,433,064	24.2	11,940,145	13,373,209	W: 300 m, -3.5 m→-7.5 m, 123,540 m^2
(6) Multi-purpose Terminal								
Quay Wall Construction (-10 m)	m	440	103,104	45,365,806	70,956	31,220,568	76,586,374	RC Deck on Piles
Revetment for Reclamation	m		19,594	0	15,710	0	0	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	586,729	51.5	30,187,760	0.6	353,720	30,541,480	D: -4.0 m→+2.5 m, 82,060 m^2
Pavement	m^2	82,060	131.3	10,770,375	43.8	3,590,125	14,360,500	Concrete Paving
Utility Facilities	l.s.	1		12,948,591		5,274,662	18,223,253	15 % of construction cost of wharf
(7) Passenger Terminal								
Quay Wall Construction (-7.5 m)	m	350	93,438	32,703,365	66,728	23,354,630	56,057,995	RC Deck on Piles
Revetment for Reclamation	m	200	19,594	3,918,727	15,710	3,142,097	7,060,823	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	436,150	51.5	22,440,328	0.6	262,941	22,703,269	D: -4 m→+2.5 m, 61,000 m^2
Pavement	m^2	61,000	131.3	8,006,250	43.8	2,668,750	10,675,000	Concrete Paving
Utility Facilities	l.s.	1		10,060,300		4,414,263	14,474,563	15 % of construction cost of wharf
(8) Port-related Zone								
Revetment for Reclamation	m	530	32,718	17,340,409	37,449	19,847,810	37,188,219	Mangrove Planting Type
Revetment for Reclamation	m	105	19,594	2,057,331	15,710	1,649,601	3,706,932	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	384,384	51.5	19,776,919	0.6	231,733	20,008,652	D: -3.5 m→+2.5 m, 58,240 m^2
Surface Pavement	m^2	58,240	131.3	7,644,000	43.8	2,548,000	10,192,000	Concrete Paving
(9) Ancol Access Road								
Access Road (Ancol)	m	1,300						Ancol: 1,300 m:, Width: 20 m
Substructure	m^2	26,000	1,955.3	50,837,927	217.3	5,648,659	56,486,585	
Superstructure	m^2	26,000	1,625.0	42,250,000	905.0	23,530,000	65,780,000	
Access Road (Offshore Island)	m	610						Offshore Island: 610 m, Width: 20 m
Substructure	m^2	12,200	2,624.9	32,024,346	291.7	3,558,261	35,582,607	
Superstructure	m^2	12,200	1,782.5	21,746,500	990.5	12,084,100	33,830,600	
Access Road (Bridge over sea)	m	1,400						Extension: 1,400 m, Width: 20 m
Substructure	m^2	28,000	3,412.4	95,548,050	379.2	10,616,450	106,164,500	
Superstructure	m^2	28,000	1,782.5	49,910,000	990.5	27,734,000	77,644,000	
Utility Facilities	l.s.	1		14,615,841		4,158,573	18,774,415	5 % of construction cost
(10) Port Re-development								
Dermaga 101 Utara								
Demolition of Existing Structur	m	440	3,918.7	1,724,240	3,142.1	1,382,523	3,106,762	20 % of New Construction
Revetment	m	400	19,593.6	7,837,453	15,710.5	6,284,194	14,121,647	Sheet Pile
Surface Pavement	m^2	22,120	131.3	2,903,250	43.8	967,750	3,871,000	Concrete Paving
Direct Construction Cost (DC)				669,735,056		385,913,427	1,055,648,483	**1,055,648,483**
2. Indirect Construction Cost								
(1) Common Temporary Works	l.s.	1		53,578,804		30,873,074	84,451,879	8 % of DC
(2) Site Expenses	l.s.	1		100,460,258		57,887,014	158,347,272	15 % of DC
(3) Overhead	l.s.	1		53,578,804		30,873,074	84,451,879	8 % of DC
Indirect Construction Cost (IC)				207,617,867		119,633,162	327,251,030	**327,251,030**
Total Construction Cost (TC = DC + IC)				877,352,923		505,546,589	1,382,899,512	**1,382,899,512**
3. Project Related Expenses								
(1) Physical Contingency (PC)	l.s.	1		87,735,292		50,554,659	138,289,951	10 % of TC
(2) Engineering Fee (EF)	l.s.	1		70,188,234		40,443,727	110,631,961	8 % of TC
Total Project Related Expenses (PE)				157,923,526		90,998,386	248,921,912	**248,921,912**
Total (1 + 2 + 3)				1,035,276,449		596,544,975	1,631,821,424	**1,631,821,424**
4. Administration Cost and Compensation								
(1) Administration Cost	l.s.	1		13,828,995			13,828,995	1 % of TC
(2) Land Acquisition / Compensation	m^2	22,120						1-(10) Port Re-development
Total of Administration Cost and Compensation				13,828,995			13,828,995	
5. Total Project Cost (1 + 2 + 3 + 4)				1,049,105,444		596,544,975	1,645,650,420	**1,645,650,420**
VAT (10 %)				103,527,645		59,654,498	163,182,142	**163,182,142**

Table L.7.4 :-Term Development (2012)

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total (1,000 Rupiah)	Remarks
			Unit Price	Amount	Unit Price	Amount		
1. Direct Construction Cost								
(1) Mobilization and Demobilization	l.s.	1		17,958,064		10,590,595	28,548,659	5 % of the Direct Construction Cost.
(2) Access Channel								
Channel Dredging (-9 m, 200m)	m^3	1,243,290	2.9	3,605,541	24.2	30,041,005	33,646,546	D: -6 m→-9 m, 414,430 m^2
Demolition Old Dam	m	940	7,972	7,493,850	8,739	8,214,898	15,708,748	
Demolition of Navy Facilities	m^2	98,000	266	26,042,458	291	28,548,228	54,590,686	
(3) Expansion of Multi-purpose Terminal								
Quay Wall Construction (-10 m)	m	350	103,104	36,086,437	70,956	24,834,542	60,920,979	RC Deck on Piles; 220 + 130 m
Revetment for Reclamation	m	440	19,594	8,621,199	15,710	6,912,613	15,533,812	Inner-side, sheet-pile type
Revetment for Reclamation	m	200	32,718	6,543,551	37,449	7,489,739	14,033,290	Mangrove Planting Type
Reclamation (+2.5 m)	m^3	974,903	51.5	50,159,652	0.6	587,738	50,747,390	D: -4.0 m→+2.5 m, 136,350 m^2
Pavement	m^2	136,350	131.3	17,895,938	43.8	5,965,313	23,861,250	Concrete Paving
Utility Facilities	l.s.	1		17,896,016		6,868,492	24,764,508	15 % of construction cost of wharf
(4) Port-related Zone								
Revetment for Reclamation	m	440	32,718	14,395,812	37,449	16,477,427	30,873,238	Mangrove Planting Type
Reclamation (+2.5 m)	m^3	363,363	51.5	18,695,369	0.6	219,060	18,914,429	D: -4.0 m→+2.5 m, 50,820 m^2
Surface Pavement	m^2	50,820	131.3	6,670,125	43.8	2,223,375	8,893,500	Concrete Paving
(5) Ancol Access Road Extension								
Access Road (Offshore Island)	m	490						Extension: 490 m, Width: 20 m
Substructure	m^2	9,800	2,624.9	25,724,475	291.7	2,858,275	28,582,750	
Superstructure	m^2	9,800	1,782.5	17,468,500	990.5	9,706,900	27,175,400	
Utility Facilities	l.s.	1		2,159,649		628,259	2,787,908	5 % of construction cost
(6) Port Re-development								
Lapangan Multi Terminal								
Demolition of Existing Structu	m	615	20,621	12,681,805	14,191	8,727,568	21,409,373	20 % of New Construction
Quay Wall (-9 m)	m	615	103,104	63,409,024	70,956	43,637,839	107,046,863	RC Deck on Piles
Surface Pavement	m^2	179,900	131.3	23,611,875	43.8	7,870,625	31,482,500	Concrete Paving
Direct Construction Cost (DC)				377,119,338		222,402,491	599,521,829	**599,521,829**
2. Indirect Construction Cost								
(1) Common Temporary Works	l.s.	1		30,169,547		17,792,199	47,961,746	8 % of DC
(2) Site Expenses	l.s.	1		56,567,901		33,360,374	89,928,274	15 % of DC
(3) Overhead	l.s.	1		30,169,547		17,792,199	47,961,746	8 % of DC
Indirect Construction Cost (IC)				116,906,995		68,944,772	185,851,767	**185,851,767**
Total Construction Cost (TC = DC + IC)				494,026,332		291,347,263	785,373,595	**785,373,595**
3. Project Related Expenses								
(1) Physical Contingency (PC)	l.s.	1		49,402,633		29,134,726	78,537,360	10 % of TC
(2) Engineering Fee (EF)	l.s.	1		39,522,107		23,307,781	62,829,888	8 % of TC
Total Project Related Expenses (PE)				88,924,740		52,442,507	141,367,247	**141,367,247**
Total (1 + 2 + 3)				582,951,072		343,789,771	926,740,843	**926,740,843**
4. Administration Cost and Compensation								
(1) Administration Cost	l.s.	1		7,853,736		0	7,853,736	1 % of TC
(2) Land Acquisition / Compensation	m^2	179,900						1-(6) Port Re-development
Total of Administration Cost and Compensation				7,853,736		0	7,853,736	
5. Total Project Cost of Works(1 + 2 + 3 + 4)				590,804,808		343,789,771	934,594,579	**934,594,579**
VAT (10 %)				59,080,481		34,378,977	93,459,458	**93,459,458**

6. Procurement of Cargo Handling Equipment for Multipurpose Terminal								
Short Term								
6.1 Cargo handling Equipment								
(1) Mobile Cranes	unit	11		4,400,000		39,600,000	44,000,000	
Sub Total				4,400,000		39,600,000	44,000,000	
6.2 Project Related Expenses								
(1) Physical Contingency	l.s			440,000		3,960,000	4,400,000	10% of procurement cost
(2) Engineering Service	l.s			154,000		1,386,000	1,540,000	3.5%of procurement Cost
Sub Total				594,000		5,346,000	5,940,000	
Sub Total Cost (1+2)				4,994,000		44,946,000	49,940,000	
6.3 Administration Cost								
(1) Administration Cost	l.s			440,000		0	440,000	1% of procurement Cost
Sub Total				440,000			440,000	
6.4 Total Cost of Procurement of Cargo Handling Equipment				5,434,000		44,946,000	50,380,000	
VAT (10%)				499,400		4,494,600	4,994,000	
7. Total Project Cost of Works and Equipment (5+6)				596,238,808		388,735,771	984,974,579	
VAT (10%)				59,579,881		38,873,577	98,453,458	

Table L.7.5 Tanjung Priok / Long-term Development Plan (toward 2025)

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total (1,000 Rupiah)	Remarks
			Unit Price	Amount	Unit Price	Amount		
1. Direct Construction Cost								
(1) Mobilization and Demobilization	l.s.	1		95,793,926		54,388,680	150,182,606	5 % of the Direct Construction Cost.
(2) Breakwater (East Entrance)								
New Construction	m	1,101	39,861	43,886,857	43,696	48,109,590	91,996,447	600 + 501 m
Demolition Old Dam Citra	m	500	7,972	3,986,091	8,739	4,369,627	8,355,717	
Demolition Dam Pertamina	m	715	7,972	5,700,109	8,739	6,248,566	11,948,676	
Demolition Old Dam Timur	m	1,550	7,972	12,356,881	8,739	13,545,843	25,902,723	
Sub Total Cost				65,929,937		72,273,626	138,203,563	
(3) Dredging of East Entrance								
Outer Access Channel (-14 m, 150 m	m^3	2,114,100	2.9	6,130,890	24.2	51,081,960	57,212,850	W: 150 m, -5.0 m→-14 m, 2.7 km
Inner Access Channel (-14 m, 150 m)	m^3	2,133,670	2.9	6,187,643	24.2	51,554,820	57,742,463	-7.0 m→-14 m, 268,200 m^2
Sub Total Cost				12,318,533		102,636,780	114,955,313	
(4) Improvement of Channel and Basin of Central Part								-1.0 m→-14 m, 135,710 m^2
Widening of Channel (-14 m)	m^3	4,493,150	2.9	13,030,135	24.2	108,565,776	121,595,911	-2.0 m→-14 m, 227,410 m^2
Deepening of Basin (-14 m)	m^3	1,157,000	2.9	3,355,300	24.2	27,956,023	31,311,323	-10.0 m→-14 m, 289,250 m^2
Deepening of Basin (-12 m)	m^3	187,500	2.9	543,750	24.2	4,530,470	5,074,220	-10.0 m→-12 m, 93,750 m^2
Sub Total Cost				16,929,185		141,052,269	157,981,454	Total area: 255,600 m^2
(5) Car Carrier Terminal Expansion								
Demolition of Existing Structures	m	250	20,621	5,155,205	14,191	3,547,792	8,702,997	20 % of New Construction
Quay Wall Construction (-12 m)	m	250	103,104	25,776,026	70,956	17,738,959	43,514,985	RC Deck on Piles
Pavement	m^2	169,840	131.3	22,291,500	43.8	7,430,500	29,722,000	Concrete Paving: 1.0 m
Utility Facilities	l.s.	1		7,210,129		3,775,419	10,985,548	15 % of construction cost of wharf
Sub Total Cost				60,432,860		32,492,669	92,925,530	
(6) Dredging of Channel and Basin for Ancol Area								
Demolition of Breakwater	m	540	7,972	4,304,978	8,739	4,719,197	9,024,175	Demolition of BW for Channel Excavation
Deepening of Channel (-12 m)	m^3	1,925,000	2.9	5,582,500	24.2	46,512,829	52,095,329	-5.0 m→-12 m, 275,000 m^2
Deepening of Basin (-12 m)	m^3	2,292,000	2.9	6,646,800	24.2	55,380,470	62,027,270	-6.0 m→-12 m, 382,000 m^2
Sub Total Cost				16,534,278		106,612,496	123,146,774	
(7) Multi-purpose Terminal Expansion at Ancol Area								
Quay Wall Construction (-12 m)	m	1,700	103,567	176,063,161	72,265	122,851,029	298,914,190	Deck on Piles; 1,235 + 465 m
Reclamation (+2.5 m)	m^3	6,008,750	51.5	309,155,847	0.6	3,622,487	312,778,333	D: -7 m→+2.5 m, 575,000 m^2
Pavement	m^2	575,000	131.3	75,468,750	43.8	25,156,250	100,625,000	Concrete Paving
Utility Facilities	l.s.	1		84,103,164		22,744,465	106,847,628	15 % of construction cost of wharf
Sub Total Cost				644,790,922		174,374,230	819,165,152	
(8) Ancol Access Road Extension								
Access Road (Offshore Island)	m	1,500	367	550,800	551	826,200	1,377,000	
Substructure	m^2	30,000	1,955.3	58,659,146	217.3	6,517,683	65,176,829	
Superstructure	m^2	30,000	1,625.0	48,750,000	905.0	27,150,000	75,900,000	
Utility Facilities	l.s.	1		5,370,457		1,683,384	7,053,841	5 % of construction cost
Sub Total Cost				113,330,404		36,177,267	149,507,671	
(9) Passenger Terminal Expansion								
Quay Wall Construction (-7.5 m)	m	175	93,438	16,351,682	66,728	11,677,315	28,028,997	RC Deck on Piles
Revetment for Reclamation	m	200	19,594	3,918,727	15,710	3,142,097	7,060,823	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	264,221	51.5	13,594,424	0.6	159,291	13,753,715	D: -4 m→+2.5 m, 36,954 m^2
Pavement	m^2	36,954	131.3	4,850,213	43.8	1,616,738	6,466,950	Concrete Paving
Utility Facilities	l.s.	1		5,807,257		2,489,316	8,296,573	15 % of construction cost of wharf
Sub Total Cost				44,522,303		19,084,756	63,607,059	
(10) Port-related Zone								
Revetment for Reclamation	m	175	32,718	5,725,607	37,449	6,553,522	12,279,129	Mangrove Planting Type
Revetment for Reclamation	m	105	19,594	2,057,331	15,710	1,649,601	3,706,932	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	131,381	51.5	6,759,689	0.6	79,206	6,838,895	D: -4 m→+2.5 m, 18,375 m^2
Pavement	m^2	18,375	131.3	2,411,719	43.8	803,906	3,215,625	Concrete Paving
Sub Total Cost				16,954,346		9,086,235	26,040,581	
(11) Port Re-development of existing facilities at Dock area								
DKB-II								
Demolition of Existing Structur	m	1,020	20,620.8	21,033,237	14,191.2	14,474,990	35,508,228	20 % of New Construction
Quay Wall (-9 m)	m	720	103,104	74,234,955	70,956	51,088,202	125,323,157	RC Deck on Piles
Reclamation (+2.5 m)	m^3	1,320,000	51.5	67,915,243	0.6	795,787	68,711,030	D: -10 m→+2.5 m, 96,000 m^2
Surface Pavement	m^2	214,500	131.3	28,153,125	43.8	9,384,375	37,537,500	Concrete Paving
DKB-I								
Demolition of Existing Structur	m	1,870	20,620.8	38,560,935	14,191.2	26,537,482	65,098,418	20 % of New Construction
Quay Wall (-9 m)	m	615	103,104	63,409,024	70,956	43,637,839	107,046,863	RC Deck on Piles
Reclamation (+2.5 m)	m^3	569,250	51.5	29,288,449	0.6	343,183	29,631,632	D: -5 m→+2.5 m, 69,000 m^2
Surface Pavement	m^2	131,500	131.3	17,259,375	43.8	5,753,125	23,012,500	Concrete Paving
Sub Total Cost				339,854,344		152,014,983	491,869,327	491,869,327
(12) Future Expansion Space for Special Cargo at Kali Baru Area								
Revetment for Reclamation	m	1,110	32,718	36,316,706	37,449	41,568,054	77,884,760	Mangrove Planting Type
Revetment for Reclamation	m	800	19,594	15,674,906	15,710	12,568,387	28,243,294	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	2,409,550	51.5	123,973,617	0.6	1,452,642	125,426,259	D: -4 m→+2.5 m, 337,000 m^2
Pavement	m^2	337,000	131.3	44,231,250	43.8	14,743,750	58,975,000	Concrete Paving
Utility Facilities	l.s.	1		11,009,824		3,516,642	14,526,466	5 % of construction cost
Sub Total Cost				231,206,304		73,849,475	305,055,779	305,055,779
(13) Reclamation for Dock Yard Area								

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total (1,000 Rupiah)	Remarks
			Unit Price	Amount	Unit Price	Amount		
Revetment for Reclamation	m	690	32,718	22,575,250	37,449	25,839,601	48,414,851	Mangrove Planting Type
Revetment for Reclamation	m	820	19,594	16,066,779	15,710	12,882,597	28,949,376	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	1,615,900	51.5	83,139,577	0.6	974,175	84,113,752	D: -4 m→+2.5 m, 226,000 m^2
Pavement	m^2	226,000	131.3	29,662,500	43.8	9,887,500	39,550,000	Concrete Paving
Utility Facilities	l.s.	1		7,572,205		2,479,194	10,051,399	5 % of construction cost
Sub Total Cost				159,016,311		52,063,067	211,079,378	
(14). Relocation of Oil Jetty								
Dredging	m3	1,000,000	2.9	2,900,000	24.2	24,162,509	27,062,509	500m wide, 2m depth, 1,000 m long
Dophine Construction	unit	4	12,600,000	50,400,000	29,400,000	117,600,000	168,000,000	
Pipe Installation	m	8,000	1,360,000	10,880,000	5,440,000	43,520,000	54,400,000	4 kinds of oil, pipe size 40"each 2,000m long
Unloader Equipment Installation	unit	4	6,300,000	25,200,000	14,700,000	58,800,000	84,000,000	4 units of unloaders
Sub Total Cost				89,380,000		244,082,509	333,462,509	
(15) Kali Baru Reclamation								
Revetment for Reclamation	m	350	32,718	11,451,214	37,449	13,107,044	24,558,258	Mangrove Planting Type
Revetment for Reclamation	m	275	19,594	5,388,249	15,710	4,320,383	9,708,632	Inner-side, sheet-pile type
Reclamation (+2.5 m)	m^3	1,186,900	51.5	61,067,123	0.6	715,545	61,782,668	D: -4 m→+2.5 m, 226,000 m^2
Pavement	m^2	166,000	131.3	21,787,500	43.8	7,262,500	29,050,000	Concrete Paving
Utility Facilities	l.s.	1		4,984,704		1,270,274	6,254,978	5 % of construction cost
Sub Total Cost				104,678,790		26,675,745	131,354,535	
Direct Construction Cost (DC)				2,011,672,442		1,296,864,787	3,308,537,229	**3,308,537,229**
2. Indirect Construction Cost								
(1) Common Temporary Works	l.s.	1		160,933,795		103,749,183	264,682,978	8 % of DC
(2) Site Expenses	l.s.	1		301,750,866		194,529,718	496,280,584	15 % of DC
(3) Overhead	l.s.	1		160,933,795		103,749,183	264,682,978	8 % of DC
Indirect Construction Cost (IC)				623,618,457		402,028,084	1,025,646,541	**1,025,646,541**
Total Construction Cost (TC = DC + IC)				2,635,290,899		1,698,892,871	4,334,183,770	**4,334,183,770**
3. Project Related Expenses								
(1) Physical Contingency (PC)	l.s.	1		263,529,090		169,889,287	433,418,377	10 % of TC
(2) Engineering Fee (EF)	l.s.	1		210,823,272		135,911,430	346,734,702	8 % of TC
Total Project Related Expenses (PE)				474,352,362		305,800,717	780,153,079	**780,153,079**
Total (1 + 2 + 3)				3,109,643,261		2,004,693,587	5,114,336,849	**5,114,336,849**
4. Administration Cost and Compensation								
(1) Administration Cost	l.s.	1		43,341,838		0	43,341,838	1 % of TC
(2) Land Acquisition / Compensation	m^2	346,000						1-(11) Port Re-development
Total of Administration Cost and Compensation				43,341,838		0	43,341,838	
5. Total Project Cost (1 + 2 + 3 + 4)				3,152,985,099		2,004,693,587	5,157,678,686	**5,157,678,686**
VAT (10 %)				310,964,326		200,469,359	511,433,685	**511,433,685**

Related Project Cost

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total	Remarks
			Unit Price	Amount	Unit Price	Amount		
1 Construction Cost								
(1). Western Access Port Highway								
JL. Marta Dinata Widening Betterment								L=1500m, W= 10m
Mobilization and Demobilization	l.s.	1		417,407		266,805	684,212	5 % of construction cost
Pavement etc.	m^2	42,000	189.3	7,950,600	121.0	5,082,000	13,032,600	
Utility Facility	l.s.	1		397,530		254,100	651,630	5 % of construction cost
Sub Total				8,765,537		5,602,905		
Marta Dinata Bridge (Steel -I)								L=30m, W=28m, Area=840 m2
Mobilization and Demobilization	l.s.	1		198,461		154,334	352,795	5 % of construction cost
Structures	m^2	820	4,610.0	3,780,200	3,585.0	2,939,700	6,719,900	
Utility Facility	l.s.	1		189,010		146,985	335,995	5 % of construction cost
Sub Total				4,167,671		3,241,019		
Ancol Bridge (Steel -I)								L=300m, W=20m, Area=4500m2
Mobilization and Demobilization	l.s.	1		1,063,125		826,875	1,890,000	5 % of construction cost
Structures	m^2	4,500	4,500.0	20,250,000	3,500.0	15,750,000	36,000,000	
Utility Facility	l.s.	1		1,012,500		787,500	1,800,000	5 % of construction cost
Sub Total				22,325,625		17,364,375		
Marta Dinata Flyover (PC -I)								L=340, W=10m, Area=3400m2
Mobilization and Demobilization	l.s.	1		642,600		196,350	838,950	5 % of construction cost
Structures	m^2	3,400	3,600.0	12,240,000	1,100.0	3,740,000	15,980,000	
Utility Facility	l.s.	1		612,000		187,000	799,000	5 % of construction cost
Sub Total				13,494,600		4,123,350		
Ancol Access Flyover (Steel Box)								L=360m, W=10m, Area=3600m2
Mobilization and Demobilization	l.s.	1		850,500		661,500	1,512,000	5 % of construction cost
Structures	m^2	3,600	4,500.0	16,200,000	3,500.0	12,600,000	28,800,000	
Utility Facility	l.s.	1		810,000		630,000	1,440,000	5 % of construction cost
Sub Total				17,860,500		13,891,500		
Enggano Flyover (PC I-Girder)								L=320m,W=20m, Area=6400m2
Mobilization and Demobilization	l.s.	1		1,209,600		369,600	1,579,200	5 % of construction cost
Structures	m^2	6,400	3,600.0	23,040,000	1,100.0	7,040,000	30,080,000	
Utility Facility	l.s.	1		1,152,000		352,000	1,504,000	5 % of construction cost
Sub Total				25,401,600		7,761,600		

Description	Unit	Quantity	Local Portion (1,000 Rupiah)		Foreign Portion (1,000 Rupiah)		Total (1,000 Rupiah)	Remarks
			Unit Price	Amount	Unit Price	Amount		
								L=600m, W=20m, Area=12,000m2
Bus Terminal Tg Priok Flyover (Steel Box)								
Mobilization and Demobilization	l.s.	1		2,583,000		2,016,000	4,599,000	5 % of construction cost
Structures	m^2	12,000	4,100.0	49,200,000	3,200.0	38,400,000	87,600,000	
Utility Facility	l.s.	1		2,460,000		1,920,000	4,380,000	5 % of construction cost
Sub Total				54,243,000		42,336,000		
Sub Total Construction Cost (TC)				**146,258,532**		**94,320,749**	**240,579,281**	**240,579,281**
(2) Eastern Kali Baru Access Road Construction Cost								Target year of 2025 to have 4 lines
Mobilization and Demobilization	l.s.	1		12,305,790		1,367,310	13,673,100	5% of construction cost
On Shore parts								**On Land length 780m,**
Sub Structure	m	780	37,800	29,484,000	4,200	3,276,000	32,760,000	
Superstructure	m	780	45,000	35,100,000	5,000	3,900,000	39,000,000	
Off shore parts								**Off shore length 1780m,**
Substructure	m	1,780	45,000	80,100,000	5,000	8,900,000	89,000,000	
Superstructure	m	1,780	50,400	89,712,000	5,600	9,968,000	99,680,000	
Utility Facilities	l.s.	1		11,719,800		1,302,200	13,022,000	5% of construction cost
Sub Total Construction Cost				**258,421,590**		**28,713,510**	287,135,100	287,135,100
(3) Redevelopment of the Railway Station Area								
Mobilization and Demobilization	ls	1		1,183,438		0	1,183,438	5% of construction cost
Grading/Site Clearance	m^2	23,150	100	2,315,000	0	0	2,315,000	
Pavement for berth/waiting pool/driveway	m^2	10,460	900	9,414,000	0	0	9,414,000	
Platform/Pedestrian path	m^2	6,240	900	5,616,000	0	0	5,616,000	
Terminal building	m^2	2,000	2,500	5,000,000	0	0	5,000,000	
Land scape	m^2	5,450	100	545,000	0	0	545,000	
Utility	l.s.	1		778,750	0	0	778,750	5% of construction cost
Sub Total Construction Cost				**24,852,188**		**0**	**24,852,188**	
Total Direct Construction Cost				**429,532,310**		**123,034,259**	**552,566,569**	
2. Indirect Constryuction Cost								
(1) Traffic management	l.s			12,885,969		3,691,028	16,576,997	3% of Direct Construction Cost
(2) Site Expenses	l.s			21,476,615		6,151,713	27,628,328	5% of D.C.C
(3) Overhead	l.s			42,953,231		12,303,426	55,256,657	10% of D.C.C
Sub Total of Indirect Construction Cost				**77,315,816**		**22,146,167**	**99,461,982**	
Total Construction Cost				**506,848,125**		**145,180,426**	**652,028,551**	
3. Project Related Expenses								
(1) Physical Contingency (PC)	l.s.	1		50,684,813		14,518,043	65,202,855	10 % of TC
(2) Engineering Fee (EF)	l.s.	1		40,547,850		11,614,434	52,162,284	8 % of TC
Total Project Related Expenses (PE)				91,232,663		26,132,477	117,365,139	
Total (1 + 2+3)				**598,080,788**		**171,312,903**	**769,393,690**	**769,393,690**
4. Administration Cost and Compensation								
(1) Administration Cost	l.s.	1		6,520,286		0	6,520,286	1 % of TC
(2) Land Acquisition / Compensation						0		
Total of Administration Cost and Compensation				6,520,286		0	6,520,286	
5. Total Project Cost (1 + 2 + 3 + 4)				604,601,073		171,312,903	775,913,976	**775,913,976**
VAT (10 %)				59,808,079		17,131,290	76,939,369	

Table L.8 Bojonegara / Total Project Cost

Description	Unit	Quantity	Project Cost		Remarks
			Local Portion (1,000 Rupiah)	Foreign Portion (1,000 Rupiah)	
1. Direct Construction Cost					
Urgent (2006-2008)					
(1) Mobilization and Demobilization	l.s.	1	3,912,345	6,367,141	5% of the Direct Cost.
(2) Dredging of Channel and Basin	m^3	2,320,000	11,343,908	86,623,591	97,967,499
(3) Multi-purpose Terminal	m	220	36,286,438	20,387,010	Quay Wall (-10 m)
(4) Government Zone	m	50	7,339,471	4,417,314	Quay Wall (-10 m)
(5) Port-related Zone	m^2	80,800	2,286,480	26,791	Reclamation, Pavement
(6) Port-related Road	m^2	33,150	11,124,070	5,292,919	Excavation, Pavement
(7) Building Works					
Transit Shed	m^2	4,500	3,375,000	2,250,000	
IPC2 Office	m^2	1,500	1,125,000	750,000	
(8) Utility Supply					
Power Supply	m^2	66,000	923,630	3,694,522	
Lighting System	m^2	66,000	248,501	994,002	
Water Supply, Sewarage, Firefighting	m^2	66,000	268,293	1,073,171	
Environmental Treatment Facilities	l.s.	1	133,280	199,920	
(9) Diversion Canal	m^3	93,060	3,792,828	1,633,577	Open Cut Canal
Direct Construction Cost (Urgent 2008)			82,159,243	133,709,959	**215,869,202**
Short-Term (2010-2012)					
(1) Mobilization and Demobilization	l.s.	1	15,402,082	14,743,310	5 % of the Direct Cost.
(2) Breakwater	m	1,040	62,441,315	103,673,215	
(3) Dredging Channel/Basin (-10 m～-12 r	m^3	1,388,000	14,399,861	53,976,409	
(4) Ro-Ro Terminal	m	230	29,956,375	20,283,613	Quay Wall (-8 m)
(5) Container Terminal; B1, B2	m				Quay Wall (-12 m)
Quaywall Construction (-12m)	m	600	75,397,219	53,235,038	
Revetment for Reclamation	m	450	4,050,000	2,025,000	
Reclamation (+3.5m)	m^3	415,800	24,955,973	1,220,054	
Pavement	m^2	270,000	50,625,000	16,875,000	
Utility Facilities	l.s.	1	23,254,229	11,003,264	
(6) Port-related Zone	m^2	275,000	4,474,624	52,431	
(7) Building Works					
Terminal Office	m^2	4,500	5,400,000	3,600,000	3 floors of 1500 m2
Maintenance Shop	m^2	1,500	1,440,000	960,000	50 m x 30 m
Equipment Yards	m^2	2,400	1,152,000	768,000	120 m x 20 m
Container Freight Station (CFS)	m^2	2,800	2,352,000	1,568,000	
Power Station	m^2	300	180,000	120,000	15 m x 20 m
Fuel Station	m^2	300	180,000	120,000	15 m x 20 m
Container Washing Station	m^2	300	144,000	96,000	15 m x 20 m
Water Supply Facility	m^2	400	240,000	160,000	20 m x 20 m
Marine House (Seamens Club)	m^2	700	840,000	560,000	20 m x 35 m
Gate Building	lane	10	666,400	999,600	6 in -gate and 4 out-gate
(8) Utility Supply					
Power Supply	m^2	270,000	3,778,488	15,113,952	
Lighting System	m^2	270,000	1,016,593	4,066,373	
Water Supply, Sewarage, Firefighting	m^2	270,000	1,097,561	4,390,243	
Environmental Treatment Facility	Unit	1	133,280	199,920	
Sub Total of Direct Construction Cost			323,577,000	309,809,421	**633,386,421**
Long-term (2025)					
(1) Mobilization and Demobilization	l.s.	1	41,509,855	41,186,432	5 % of the Direct Cost.
(2) Breakwater		1,640	76,244,391	146,457,379	
(3) Dredging of Channel and Basin	m^3	6,338,325	69,772,417	272,247,441	
(4) Container Terminal; B3, B4	m	600	193,469,920	103,976,226	Quay Wall (-14 m)
(5) Container Terminal; B5 - B8	m	1,200	356,564,842	168,716,712	Quay Wall (-14 m)
(6) General Cargo Handling Zone	m	630	83,974,660	53,011,012	Quay Wall (-10 m)

Description	Unit	Quantity	Project Cost		Remarks
			Local Portion (1,000 Rupiah)	Foreign Portion (1,000 Rupiah)	
(7) Port-related Zone	m^2	300,000	8,489,405	99,473	
(8) Building Works					
Terminal Office	m^2	13,500	16,200,000	10,800,000	27,000,000
Maintenance Shop	m^2	4,500	4,320,000	2,880,000	7,200,000
Equipment Yards	m^2	7,200	3,456,000	2,304,000	5,760,000
Container Freight Station (CFS)	m^2	8,400	8,064,000	5,376,000	13,440,000
Power Station	m^2	900	540,000	360,000	900,000
Fuel Station	m^2	900	540,000	360,000	900,000
Container Washing Station	m^2	900	432,000	288,000	720,000
Water Supply Facility	m^2	1,200	720,000	480,000	1,200,000
Marine House (Seamens Club)	m^2	2,100	2,520,000	1,680,000	4,200,000
Gate Building	lane	30	1,999,200	2,998,800	4,998,000
(9) Utility Supply					0
Power Supply	m^2	810,000	11,335,464	45,341,856	56,677,320
Lighting System	m^2	810,000	3,049,780	12,199,118	15,248,898
Water Supply, Sewarage, Firefighting	m^2	810,000	3,292,682	13,170,730	16,463,412
Environmental Treatment Facility	Unit	3	399,840	599,760	999,600
Direct Construction Cost (Long-term 2025)			886,894,456	884,532,939	**1,771,427,395**
Total Direct Construction Cost (DC)			1,292,630,700	1,328,052,318	**2,620,683,018**
2. Indirect Construction Cost					
(1) Common Temporary Works	l.s.	1	103,410,456	106,244,185	8 % of DC
(2) Site Expenses	l.s.	1	193,894,605	199,207,848	15 % of DC
(3) Overhead	l.s.	1	103,410,456	106,244,185	8 % of DC
Total Indirect Construction Cost (IC)			400,715,517	411,696,219	**812,411,736**
Total Construction Cost (TC = DC + IC)			1,693,346,216	1,739,748,537	**3,433,094,754**
3. Project Related Expenses					
(1) Physical Contingency (PC)	l.s.	1	169,334,622	173,974,854	10 % of TC
(2) Engineering Fee (EF)	l.s.	1	135,467,697	139,179,883	8 % of TC
Total Project Related Expenses (PE)			304,802,319	313,154,737	**617,957,056**
Total (1 + 2 + 3)			1,998,148,535	2,052,903,274	**4,051,051,809**
4. Administration Cost and Compensation					
(1) Administration Cost	l.s.	1	34,330,948	0	1 % of TC
(2) Land Acquisition	m^2	655,000	27,935,750	0	42,650 Rp/m^2
Total of Administration Cost and Compensation			62,266,698	0	
5. Total Project Cost (1 + 2 + 3 + 4)			2,060,415,233	2,052,903,274	**4,113,318,507**
VAT (10 %)			199,814,854	205,290,327	405,105,181

Related Project Cost

Description	Unit	Quantity	Project Cost		Remarks
			Local Portion (1,000 Rupiah)	Foreign Portion (1,000 Rupiah)	
1. Construction Cost					
Urgent (2008)					
Port Access Road	m	12,480	52,507,996	122,518,658	**175,026,654**
Long-term (2025)					
Rail Way Connection; Bojonegara - Kepuh	m	16,500	14,130,000	127,170,000	**141,300,000**
Total Construction Cost (TC)			66,637,996	249,688,658	**316,326,654**
2. Project Related Expenses					
(1) Physical Contingency (PC)	l.s.	1	6,663,800	24,968,866	10 % of TC
(2) Engineering Fee (EF)	l.s.	1	5,331,040	19,975,093	8 % of TC
Total Project Related Expenses (PE)			11,994,839	44,943,958	**56,938,798**

Description	Unit	Quantity	Project Cost		Remarks
			Local Portion (1,000 Rupiah)	Foreign Portion (1,000 Rupiah)	
Total (1 + 2)			78,632,836	294,632,616	**373,265,452**
3. Administration Cost and Compensation					
(1) Administration Cost	l.s.	1	3,163,267	0	1 % of TC
(2) Land Acquisition	m^2	624,000	26,615,000	0	NJOP Tahun 2002
Total of Administration Cost and Compensation			**29,778,267**	0	
4. Total Project Cost (1 + 2 + 3)			108,411,102	294,632,616	**403,043,718**
VAT (10 %)			7,863,284	29,463,262	**37,326,545**
2. Procurement Cost of Cargo Handling Equipment					
1) Cargo Handling Equipment Cost					
Urgent (2006-2008)					
Cargo Handling Equipment					
(1) Mobile Crane	unit	2	800,000	7,200,000	
(2) Reach Stacker	unit	1	150,000	1,350,000	
(3) Forklift	unit	7	84,000	756,000	
Sub Total			1,034,000	9,306,000	10,340,000
Short Term (2010-2012)					
(1) Gantry Cranes	unit	5	7,554,375	67,989,375	
(2) Transfer Crane	unit	18	19,316,160	173,845,440	
(3) Prime Mover					
Tractors	uni	32	3,748,646	33,737,818	
Chassis	uni	38	5,045,116	45,406,040	
(4) Reach Stacker	uni	1	148,750	1,338,750	
(5) Forklift	uni	15	199,800	1,798,200	
Sub Total			36,012,847	324,115,623	360,128,470
Long-term (2025)					
(1) Gantry Cranes	unit	15	22,663,125	203,968,125	
(2) Transfer Crane	unit	54	57,948,480	521,536,320	
(3) Prime Mover					
Tractors	uni	96	11,245,939	101,213,453	
Chassis	uni	114	15,135,347	136,218,121	
(4) Reach Stacker	uni	3	446,250	4,016,250	
(5) Forklift	uni	45	599,400	5,394,600	
Sub Total			108,038,541	972,346,869	1,080,385,410
Total Cargo Handling Equipment Cost (TC)			145,085,388	1,305,768,492	1,450,853,880
2). Project Related Expenses					
(1) Physical Contingency (PC)	l.s.	1	14,508,539	130,576,849	145,085,388
(2) Engineering Fee (EF)	l.s.	1	5,077,989	45,701,897	50,779,886
Total Project Related Expenses (PE)			19,586,527	176,278,746	195,865,274
Sub Total Cost (1 + 2)			164,671,915	1,482,047,238	1,646,719,154
3). Administration Cost					
(1) Administration Cost	l.s.	1	14,508,539	0	
Total of Administration Cost			14,508,539	0	
4). Total Cost of Procurement of Cargo Handling Equipment			179,180,454	1,482,047,238	1,661,227,693
VAT (10 %)			16,467,192	148,204,724	164,671,915
5). Total Project Related Cost			287,591,556	1,776,679,855	2,064,271,411
VAT (10%)			24,330,475	177,667,985	201,998,461
3. Total Project Cost excluding VAT			2,324,074,003	3,799,257,827	6,123,331,830
VAT (10%)			224,145,329	382,958,313	607,103,641