

## 2) Nursery for Industrial Use

- (1) The soil will be kept as it is as the bed floor.
- (2) The size of one bed will be 1m x 12m.
- (3) 4 beds will be counted as 1 row, and 6 rows ( $4 \times 6 = 24$  beds) as 1 block.
- (4) Footpaths will be constructed between blocks and to the side of the forest road. These footpaths are for works, management and the transportation of seedlings. the footpaths will be paved with concrete blocks, 1m wide and 0.2m high each.
- (5) The distance between beds will be 0.6m, and the distance between a bed and a footpath will be 0.5m.

## 3) Testing Nursery

- (1) Concrete will be placed on the bed floor.
- (2) The size of one bed will be 1m x 12m.
- (3) 5 beds will be counted as 1 block, and there will be 4 blocks. They will be used for nursing experiments.
- (4) Blocks will be divided by side walls, and a water gate will be installed on a wall for the adjustment of water amount. (A wall will be about 0.6m wide and there will be two slots on the wall to gate.)
- (5) The side walls of the two blocks used for submergence depth and salinity experiments will be made higher than the highest high water level.

(6) The side walls of the other two blocks will be 0.2m high. Pillars will be erected on these walls to install victoria lawn, and on one block it will be possible to install victoria lawn high.

### 3-5 Formulation of drawings

The plans required have been drawn for each facility.

#### 4. ESTIMATION OF CONSTRUCTION COSTS

The construction costs were estimated as indicated below based on the survey and design results.

- (1) The costs of this construction work were estimated on the assumption that a lump sum contract is applied.
- (2) For the estimation of the unit price of materials, we referred to the unit price table made by PU (Ministry of Public Works).
- (3) As wages vary depending on the type of work and the degree of mastery, we referred to the wages really paid in the Bali district.

#### 4-1 Summarized Table of Construction Costs

THE DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT, BALI

BILL OF QUANTITIES  
SUMMARY

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
1.	PREPARATION WORK	Ls	1.00		299,000,000.00
2.	ACCESS ROAD	Ls	1.00		821,675,000.00
3.	NURSERY	Ls	1.00		362,630,500.00
4.	CENTER AREA FACILITY	Ls	1.00		290,650,000.00
5.	CENTER OFFICE	Ls	1.00		301,870,390.00
6.	LABORATORY	Ls	1.00		68,324,205.00
7.	MACHINE STORAGE AND GARAGE	Ls	1.00		41,004,405.00
8.	GENERATOR ROOM	Ls	1.00		10,133,600.00
9.	WELL AND WATER TANK	Ls	1.00		10,283,700.00
10.	FENCE OF CENTER AREA	Ls	1.00		43,548,200.00
11.	GUARD HOUSE	Ls	1.00		7,309,275.00
12.	POTTING HOUSE	Ls	1.00		32,494,000.00
13.	MECHANICAL & ELECTRICAL WORK	Ls	1.00		228,282,400.00
SUB TOTAL					2,517,205,675.00
OVERHEAD					251,720,567.50
TOTAL					2,768,926,242.50
VAT 10%					278,892,624.25
GRAND TOTAL					3,045,818,866.75
ROUNDED OFF					3,045,000,000.00

## 4-2 Construction Costs Description

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
1.	PREPARATION WORK				
1.1	Land Clearing, Measuring & Setting	Ls	1.00		15,600,000.00
1.2	Temporary Cross Road and Temporary Bridges	Ls	1.00		62,400,000.00
1.3	Supervisor Site Office	m <sup>2</sup>	36.00	420,000.00	15,120,000.00
1.4	Contractor Site Office	m <sup>2</sup>	60.00	320,000.00	19,200,000.00
1.5	Storage	m <sup>2</sup>	60.00	230,000.00	13,800,000.00
1.6	Electric for Construction	Ls	1.00		49,380,000.00
1.7	Water for Construction	Ls	1.00		32,500,000.00
1.8	Safety Facility & Security	Ls	1.00		46,800,000.00
1.9	Transportation	Ls	1.00		44,200,000.00
Total 1					299,000,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
2.	ACCESS ROAD				
2.1	Road Betterment	Ls	1.00		220,900,000.00
2.2	New Road & Fence	Ls	1.00		65,430,000.00
2.3	Cross Drainage (Culvert)	Ls	1.00		20,200,000.00
2.4	Bridge L=15,000 ; H=4,000	Ls	1.00		225,825,000.00
2.5	Bridge L=10,000 ; H=3,000	Ls	1.00		82,180,000.00
2.6	Demolish of Existing Structure (Water Gate)	Ls	1.00		11,050,000.00
2.7	Walking Road Type A	Ls	1.00		61,050,000.00
2.8	Walking Road Type B	Ls	1.00		57,600,000.00
2.9	Walking Road Type C	Ls	1.00		77,440,000.00
Total 2					821,675,000.00



NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
2.1	ROAD BETTERMENT				
2.1.1	Setting out & Marking	Ls	1.00		3,600,000.00
2.1.2	Protection & Dewatering	Ls	1.00		33,600,000.00
2.1.3	Lime stone compacted	m <sup>3</sup>	2,300.00	35,000.00	80,500,000.00
2.1.4	Stone masonry 1:5	m <sup>3</sup>	860.00	120,000.00	103,200,000.00
Sub Total 2.1					220,900,000.00
2.2	NEW ROAD & FENCE				
2.2.1	Setting out & Marking	Ls	1.00		2,500,000.00
2.2.2	Lime stone compacted	m <sup>3</sup>	710.00	35,000.00	24,850,000.00
2.2.3	Stone masonry 1:5	m <sup>3</sup>	220.00	120,000.00	26,400,000.00
2.2.4	Fence made from angle steel 50,50,5 and barbad wire	m <sup>3</sup>	160.00	73,000.00	11,680,000.00
Sub Total 2.2					65,430,000.00
2.3	CROSS DRAINAGE (CULVERT)				
2.3.1	Setting Out & Marking	Ls	1.00		360,000.00
2.3.2	Protection & Dewatering	Ls	1.00		1,920,000.00
2.3.3	Reinforcement culvert structure dia. 100cm	m <sup>2</sup>	32.00	560,000.00	17,920,000.00
Sub Total 2.3					20,200,000.00
2.4	BRIDGE L=15,000; W=4,000				
2.4.1	Direct Temporary	Ls	1.00		2,700,000.00
2.4.2	Protection & Dewatering	Ls	1.00		8,500,000.00
2.4.3	Excavation	m <sup>3</sup>	181.00	14,000.00	2,534,000.00
2.4.4	Back fill	m <sup>3</sup>	62.00	6,000.00	372,000.00
2.4.5	Lime stone compacted	m <sup>3</sup>	48.00	35,000.00	1,680,000.00
2.4.6	Stone masonry	m <sup>3</sup>	53.00	120,000.00	6,300,000.00
2.4.7	Caisson dia. 2.4 m reinforced	m	10.00	1,100,000.00	11,000,000.00
2.4.8	Caisson sunk	m	10.00	150,000.00	1,500,000.00
2.4.9	Cyclope concrete	m <sup>3</sup>	35.00	115,000.00	4,025,000.00
2.4.10	Concrete K 225	m <sup>3</sup>	136.00	267,500.00	36,380,000.00
2.4.11	Reinforcement	kg	42,200.00	1,700.00	71,740,000.00
2.4.12	Beam steel construction	kg	16,220.00	4,700.00	76,234,000.00
2.4.13	Railing	m	30.00	90,000.00	2,700,000.00
Sub Total 2.4					225,825,000.00
2.5	BRIDGE L=10,000; W=3,000				
2.5.1	Direct temporary work	Ls	1.00		2,400,000.00
2.5.2	Protection & Dewatering	Ls	1.00		5,600,000.00
2.5.3	Excavation	m <sup>3</sup>	114.00	14,000.00	1,596,000.00
2.5.4	Back fill	m <sup>3</sup>	48.00	6,000.00	288,000.00
2.5.5	Lime stone compacted	m <sup>3</sup>	40.00	35,000.00	1,400,000.00
2.5.6	Stone masonry(plaster)	m <sup>3</sup>	54.00	120,000.00	6,480,000.00
2.5.7	Concrete K 225	m <sup>3</sup>	36.00	267,500.00	9,630,000.00
2.5.8	Reinforcement	kg	11,160.00	1,700.00	18,972,000.00
2.5.9	Beam steel construction	kg	7,620.00	4,700.00	35,814,000.00
Sub Total 2.5					82,180,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
2.6	DEMOLISH OF EXISTING STRUCTURE				
2.6.1	Demolish of existing water gate	Ls	1.00		11,050,000.00
Sub Total 2.6					11,050,000.00
2.7	WALKING ROAD TYPE A				
2.7.1	Wood bridge	m	185.00	330,000.00	61,050,000.00
Sub Total 2.7					61,050,000.00
2.8	WALKING ROAD TYPE B				
2.8.1	Wood bridge with railing	m	120.00	480,000.00	57,600,000.00
Sub Total 2.8					57,600,000.00
2.9	WALKING ROAD TYPE C				
2.9.1	Foot path by coconut type	m	440.00	176,000.00	77,440,000.00
Sub Total 2.9					77,440,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
3.	NURSERY				
3.1	Direct temporary work	Ls	1.00		5,200,000.00
3.2	Protection & dewatering	Ls	1.00		12,400,000.00
3.3	Excavation	m <sup>3</sup>	6,207.00	14,000.00	86,898,000.00
3.4	Sand bed	m <sup>3</sup>	160.00	26,000.00	4,160,000.00
3.5	Stone laying	m <sup>3</sup>	185.00	41,000.00	7,585,000.00
3.6	Concreting 1:3:5, 20cm thick	m <sup>3</sup>	325.00	267,500.00	86,937,500.00
3.7	Stone masonry	m <sup>3</sup>	620.00	120,000.00	7,440,000.00
3.8	Net frame steel angle 30,30, 3	ton	24.30	3,500,000.00	85,050,000.00
Total 3					362,630,500.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
4.	CENTER AREA FACILITY				
4.1	Direct temporary work	Ls	1.00		4,600,000.00
4.2	Land filling compacted	m <sup>2</sup>	6,000.00	25,350.00	152,100,000.00
4.3	Paving stone	m <sup>2</sup>	920.00	99,000.00	91,080,000.00
4.4	Drainage surround Base Camp.	m	670.00	61,000.00	40,870,000.00
4.5	Flag poles	unit	1.00		1,200,000.00
4.6	Sign board	unit	2.00	400,000.00	800,000.00
Total 3					290,650,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
5.	CENTER OFFICE				
5.1	Direct temporary work	Ls	1.00		8,300,000.00
5.2	Earth work	Ls	1.00		6,805,500.00
5.3	Foundation & structure work	Ls	1.00		53,754,000.00
5.4	Wall work	Ls	1.00		34,097,200.00
5.5	Floor work	Ls	1.00		29,605,400.00
5.6	Wood, roofing and ceiling work	Ls	1.00		113,191,400.00
5.7	Door & window work	Ls	1.00		11,672,390.00
5.8	Ironmongery	Ls	1.00		10,348,500.00
5.9	Painting work	Ls	1.00		25,306,000.00
5.10	Sanitary work	Ls	1.00		8,790,000.00
Total 5					301,870,390.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
5.1	DIRECT TEMPORARY WORK				
5.1.1	Direct temporary work	Ls	1.00		8,300,000.00
Sub-total 5.1					8,300,000.00
5.2	EARTH WORK				
5.2.1	Excavation	m <sup>3</sup>	208.00	14,000.00	2,912,000.00
5.2.2	Back fill	m <sup>3</sup>	37.70	6,000.00	226,200.00
5.2.3	Earth fill from cut site	m <sup>3</sup>	78.00	25,350.00	1,977,300.00
5.2.4	Sand bed	m <sup>2</sup>	65.00	26,000.00	1,690,000.00
Sub-total 5.2					6,805,500.00
5.3	FOUNDATION AND STRUCTURE WORK				
5.3.1	Stone masonry 1:5	m <sup>3</sup>	124.80	120,000.00	14,976,000.00
5.3.2	Reinforced concrete for structure	m <sup>3</sup>	38.60	937,500.00	36,187,500.00
5.3.3	Reinforced concrete for lintel and stiffener	m <sup>3</sup>	3.30	785,000.00	2,590,500.00
Sub-total 5.3					53,754,000.00
5.4	WALL WORK				
5.4.1	Brick wall 1:2	m <sup>2</sup>	12.60	180,000.00	2,268,000.00
5.4.2	Brick wall 1:5	m <sup>2</sup>	92.30	172,000.00	15,875,600.00
5.4.3	Plaster 1:2	m <sup>2</sup>	208.00	6,500.00	1,352,000.00
5.4.4	Plaster 1:5	m <sup>2</sup>	1,508.00	5,700.00	8,595,600.00
5.4.5	Cement surfacing	m <sup>2</sup>	1,716.00	3,500.00	6,006,000.00
Sub-total 5.4					34,097,200.00
5.5	FLOOR WORK				
5.5.1	Terrazzo tile 30 × 30	m <sup>2</sup>	400.00	45,300.00	18,120,000.00
5.5.2	Ceramic tile 20×20(toilet)	m <sup>2</sup>	43.00	48,800.00	2,098,400.00
5.5.3	Skirting tile 15 × 30(terazzo)	m	206.00	9,000.00	1,854,000.00
5.5.4	Semi porcelain wall 11 × 11	m <sup>2</sup>	162.00	46,500.00	7,533,000.00
Sub-total 5.5					29,605,400.00
5.6	WOOD, FOOTING & CEILING WORK				
5.6.1	Door & window frame	m <sup>3</sup>	7.90	1,570,000.00	12,403,000.00
5.6.2	Roof truss	m <sup>3</sup>	35.00	1,570,000.00	54,950,000.00
5.6.3	Rafter	m <sup>3</sup>	875.00	18,000.00	15,750,000.00
5.6.4	Fascia board	m	100.00	21,200.00	2,120,000.00
5.6.5	Gutter	m	12.00	50,200.00	602,400.00
5.6.6	Roof tile	m <sup>2</sup>	875.00	10,800.00	9,450,000.00
5.6.7	Ridge tile	m	85.00	18,000.00	1,530,000.00
5.6.8	Ceiling asbes cement	m <sup>2</sup>	495.00	27,800.00	13,761,000.00
5.6.9	Ceiling trimming	m	325.00	6,000.00	1,950,000.00
5.6.10	Ridge baliness style	Nos	6.00	112,500.00	675,000.00
Sub-total 5.6					113,191,400.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
5.7	DOOR & WINDOW WORK				
5.7.1	Door teak wood	m <sup>2</sup>	24.60	44,000.00	1,082,400.00
5.7.2	Window lath	m <sup>2</sup>	27.30	40,300.00	1,100,190.00
5.7.3	Glass 5mm	m <sup>2</sup>	91.00	40,800.00	3,712,800.00
5.7.4	Partition plywood	m <sup>2</sup>	65.00	32,900.00	2,138,500.00
5.7.5	Curtain box	m	61.10	35,000.00	2,138,500.00
5.7.6	Door & window entrance	Nos	1.00	1,500,000.00	1,500,000.00
Sub-total 5.7					11,672,390.00
5.8	IRONMONGERY				
5.8.1	Door slot	Nos	21.00	76,000.00	1,596,000.00
5.8.2	Hinge for door & window	Nos	315.00	6,500.00	2,047,500.00
5.8.3	Window slot	Nos	126.00	19,000.00	2,394,000.00
5.8.4	Window hook	Nos	126.00	6,500.00	819,000.00
5.8.5	Maco and glass 5mm	Nos	180.00	19,400.00	3,492,000.00
Sub-total 5.8					10,348,500.00
5.9	PAINTING WORK				
5.9.1	Wall paint	m <sup>2</sup>	1,720.00	8,800.00	15,136,000.00
5.9.2	Ceiling paint	m <sup>2</sup>	495.00	10,000.00	4,950,000.00
5.9.3	Politur	m <sup>2</sup>	35.00	12,000.00	420,000.00
5.9.4	Wood paint	m <sup>2</sup>	400.00	12,000.00	4,800,000.00
Sub-total 5.9					25,306,000.00
5.10	SANITARY WORK				
5.10.1	Monoblock closet	Nos	2.00	1,200,000.00	2,400,000.00
5.10.2	Squatting closet	Nos	5.00	260,000.00	1,300,000.00
5.10.3	Urinoir	Nos	3.00	260,000.00	780,000.00
5.10.4	Wash basin (wastafel)	Nos	3.00	650,000.00	1,950,000.00
5.10.5	Shower	Nos	1.00	260,000.00	260,000.00
5.10.6	Porcelain vessel bath	Nos	5.00	260,000.00	1,300,000.00
5.10.7	Hasa San Ei	Nos	8.00	100,000.00	800,000.00
Sub-total 5.10					8,790,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
6.	LABORATORY				
6.1	Direct temporary work	Ls	1.00		2,000,000.00
6.2	Earth work	Ls	1.00		1,909,115.00
6.3	Foundation & structure work	Ls	1.00		9,858,250.00
6.4	Wall work	Ls	1.00		7,790,440.00
6.5	Floor work	Ls	1.00		5,979,300.00
6.6	Wood, roofing and ceiling work	Ls	1.00		22,386,700.00
6.7	Door & window work	Ls	1.00		3,591,500.00
6.8	Ironmangery	Ls	1.00		2,336,900.00
6.9	Painting work	Ls	1.00		5,072,000.00
6.10	Sanitary work	Ls	1.00		7,400,000.00
Total 6					68,324,205.00



NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
6.1	DIRECT TEMPORARY WORK				
6.1.1	Direct temporary work	Ls	1.00		2,000,000.00
Sub-total 6.1					2,000,000.00
6.2	EARTH WORK				
6.2.1	Excavation	m <sup>3</sup>	62.40	14,000.00	873,600.00
6.2.2	Back fill	m <sup>3</sup>	16.90	6,000.00	101,400.00
6.2.3	Earth fill from outside	m <sup>3</sup>	18.90	25,350.00	479,115.00
6.2.4	Sand bed	m <sup>3</sup>	17.50	26,000.00	455,000.00
Sub-total 6.2					1,909,115.00
6.3	FOUNDATION AND STRUCTURE WORK				
6.3.1	Stone masonry 1:5	m <sup>3</sup>	39.00	120,000.00	4,680,000.00
6.3.2	Reinforced concrete for structure	m <sup>3</sup>	4.10	937,500.00	3,843,750.00
6.3.3	Reinforced concrete lintel and stiffener	m <sup>3</sup>	1.70	785,000.00	1,334,500.00
Sub-total 6.3					9,858,250.00
6.4	WALL WORK				
6.4.1	Brick wall 1:2	m <sup>3</sup>	2.70	180,000.00	486,000.00
6.4.2	Brick wall 1:5	m <sup>3</sup>	19.50	172,000.00	3,354,000.00
6.4.3	Plaster 1:2	m <sup>2</sup>	348.40	6,500.00	2,264,600.00
6.4.4	Plaster 1:5	m <sup>2</sup>	50.70	5,700.00	288,990.00
6.4.5	Cement surfacing	m <sup>2</sup>	399.10	3,500.00	1,396,850.00
Sub-total 6.4					7,790,440.00
6.5	FLOOR WORK				
6.5.1	Concrete bed 1:3:5	m <sup>2</sup>	72.00	7,500.00	540,000.00
6.5.2	Terazzo floor tile 30×30	m <sup>2</sup>	96.00	45,300.00	4,348,800.00
6.6.3	Skirting terasso 15×30	m	54.00	9,000.00	486,000.00
6.6.4	Semi Porcelain 11×11	m <sup>2</sup>	13.00	46,500.00	604,500.00
Sub-total 6.5					5,979,300.00
6.6	WOOD, ROOFING AND CEILING WORK				
6.6.1	Door & window frame	m <sup>3</sup>	0.60	1,570,000.00	942,000.00
6.6.2	Roof frame	m <sup>2</sup>	4.83	1,570,000.00	7,583,100.00
6.6.3	Rafter	m <sup>2</sup>	300.00	18,000.00	5,400,000.00
6.6.4	Fascia boark	m	40.00	21,200.00	848,000.00
6.6.5	Roof tile	m <sup>2</sup>	300.00	10,800.00	3,240,000.00
6.6.6	Ridge tile	m	45.00	18,000.00	810,000.00
6.6.7	Ceiling plywood	m <sup>2</sup>	112.00	27,800.00	3,113,600.00
6.6.8	Ridge baliness style	Nos	4.00	112,500.00	450,000.00
Sub-total 6.6					22,386,700.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
6.7	DOOR & WINDOW				
6.7.1	Door teak wood	m <sup>2</sup>	57.60	44,000.00	2,534,400.00
6.7.2	Window lath	m <sup>2</sup>	9.00	40,300.00	362,700.00
6.7.3	Glass 3mm	m <sup>2</sup>	14.40	26,000.00	374,400.00
6.7.4	Curtain box	m	16.00	20,000.00	320,000.00
Sub-total 6.7					3,591,500.00
6.8	IRONMONGERY				
6.8.1	Door slot	Nos	3.00	76,000.00	228,000.00
6.8.2	Hinge for door & window	Nos	49.00	6,500.00	318,500.00
6.8.3	Window slot	Nos	20.00	19,000.00	380,000.00
6.8.4	Window lock	Nos	20.00	6,500.00	130,000.00
6.8.5	Naco and glass 5mm	Nos	66.00	19,400.00	1,280,400.00
Sub-total 6.8					2,336,900.00
6.9	PAINTING WORK				
6.9.1	Wall paint	m <sup>2</sup>	400.00	8,800.00	3,520,000.00
6.9.2	Ceiling paint	m <sup>2</sup>	112.00	10,000.00	1,120,000.00
6.9.3	Politur (fernish)	m <sup>2</sup>	16.00	12,000.00	192,000.00
6.9.4	Wood paint	m <sup>2</sup>	20.00	12,000.00	240,000.00
Sub-total 6.9					5,072,000.00
6.10	SANITARY WORK				
6.10.1	Exhaus fan complet	Nos	1.00	2,200,000.00	2,200,000.00
6.10.2	Wash basin porcelain tile	Nos	3.00	1,600,000.00	4,800,000.00
6.10.3	Hase San Ei	Nos	4.00	100,000.00	400,000.00
Sub-total 6.10					7,400,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
7.	MACHINE STORAGE & GARAGE				
7.1	Direct temporary work	Ls	1.00		1,100,000.00
7.2	Earth work	Ls	1.00		1,901,835.00
7.3	Foundation & sturcture work	Ls	1.00		10,282,140.00
7.4	Wall work	Ls	1.00		2,701,050.00
7.5	Floor work	Ls	1.00		3,148,500.00
7.6	Wood, roofing and ceiling work	Ls	1.00		17,767,000.00
7.7	Door & window work	Ls	1.00		734,380.00
7.8	Ironmongery	Ls	1.00		1,255,900.00
7.9	Painting work	Ls	1.00		2,113,600.00
Total 7					41,004,405.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
7.1	DIRECT TEMPORARY WORK				
7.1.1	Direct temporary work	Ls	1.00		1,100,000.00
Sub Total 7.1					1,100,000.00
7.2	EARTH WORK				
7.2.1	Excavation	m <sup>3</sup>	65.00	14,000.00	910,000.00
7.2.2	Back fill	m <sup>3</sup>	18.20	6,000.00	109,200.00
7.2.3	Earthe fill from outside	m <sup>3</sup>	22.10	25,350.00	560,235.00
7.2.4	Sand bed	m <sup>3</sup>	12.40	26,000.00	322,400.00
Sub Total 7.2					1,901,835.00
7.3	FOUNDATION AND STRUCTURE WORK				
7.3.1	Stone masonry 1:5	m <sup>3</sup>	39.00	120,000.00	4,680,000.00
7.3.2	Reinforced concrete for structure	m <sup>3</sup>	4.80	937,500.00	4,500,000.00
7.3.3	Reinforced concrete for lintal and stiffener	m <sup>3</sup>	1.404	785,000.00	1,102,140.00
Sub Total 7.3					10,282,140.00
7.4	WALL WORK				
7.4.1	Brick wall 1:2	m <sup>3</sup>	1.30	180,000.00	234,000.00
7.4.2	Brick wall 1:5	m <sup>3</sup>	10.50	172,000.00	1,806,000.00
7.4.3	Plaster 1:2	m <sup>2</sup>	18.90	6,500.00	122,850.00
7.4.4	Plaster 1:5	m <sup>2</sup>	58.50	5,700.00	333,450.00
7.4.5	Cement surfacing	m <sup>2</sup>	58.50	3,500.00	204,750.00
Sub Total 7.4					2,701,050.0
7.5	FLOOR WORK				
7.5.1	Concrete bed 1:3:5	m <sup>2</sup>	114.00	7,500.00	855,000.00
7.5.2	Plaster 1:2	m <sup>2</sup>	114.00	6,500.00	741,000.00
7.5.3	Terrazzo tile 30 × 30	m <sup>2</sup>	30.00	45,300.00	1,359,000.00
7.5.4	Skirting terasso 15×30	m	21.50	9,000.00	193,500.00
Sub Total 7.5					3,148,500.00
7.6	WOOD, ROOFING & CEILING WORK				
7.6.1	Door & window frame	m <sup>3</sup>	1.10	1,570,000.00	1,727,000.00
7.6.2	Roof truss	m <sup>3</sup>	2.80	1,570,000.00	4,396,000.00
7.6.3	Rafter	m <sup>2</sup>	180.00	18,000.00	3,240,000.00
7.6.4	Fascia board	m	56.00	21,200.00	1,187,200.00
7.6.5	Roof tile	m	180.00	10,800.00	1,944,000.00
7.6.6	Ridge tile	m <sup>2</sup>	20.00	18,000.00	360,000.00
7.6.7	Ceiling ashes cement	m	156.00	27,800.00	4,336,800.00
7.6.8	Ceiling trimming	m	96.00	6,000.00	576,000.00
Sub Total 7.6					17,767,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
7.7	DOOR & WINDOW WORK				
7.7.1	Door teak wood	m <sup>2</sup>	1.90	44,000.00	83,600.00
7.7.2	Window lath	m <sup>2</sup>	10.60	40,300.00	427,180.00
7.7.3	Glass 3 mm	m <sup>2</sup>	8.60	26,000.00	223,600.00
Sub Total 7.7					734,380.00
7.8	IRONMONOGERY				
7.8.1	Door slot	Nos	1.00	76,000.00	76,000.00
7.8.2	Wings for door & window	Nos	27.00	6,500.00	175,500.00
7.8.3	Window slot	Nos	12.00	19,000.00	228,000.00
7.8.4	Window hook	Nos	12.00	6,500.00	78,000.00
7.8.5	Naco and glass 5mm	Nos	36.00	19,400.00	698,400.00
Sub Total 7.8					1,255,900.00
7.9	PAINTING WORK				
7.9.1	Wall paint	m <sup>2</sup>	22.00	8,800.00	193,600.00
7.9.2	Ceiling paint	m <sup>2</sup>	30.00	10,000.00	300,000.00
7.9.3	Wood paint	m <sup>2</sup>	135.00	12,000.00	1,620,000.00
Sub Total 7.9					2,113,600.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
8.	GENERATOR ROOM				
8.1	Direct temporary work	Ls	1.00		120,000.00
8.2	Earth work	Ls	1.00		501,750.00
8.3	Foundation and structure work	Ls	1.00		5,179,750.00
8.4	Roofing work	Ls	1.00		3,072,100.00
8.5	Painting work	Ls	1.00		1,260,000.00
Total 8					10,133,600.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
8.1	DIRECT TEMPORARY WORK				
8.1.1	Direct temporary work	Ls	1.00		120,000.00
Sub Total 8.1					120,000.00
8.2	EARTH WORK				
8.2.1	Excavation	m <sup>3</sup>	6.00	14,000.00	84,000.00
8.2.2	Back fill	m <sup>3</sup>	3.00	6,000.00	18,000.00
8.2.3	Earth fill from cutsites	m <sup>3</sup>	9.00	25,350.00	228,150.00
8.2.4	Sand bed	m <sup>3</sup>	6.60	26,000.00	171,600.00
Sub Total 8.2					501,750.00
8.3	FOUNDATION AND STRUCTURE WORK				
8.3.1	Stone masonry	m <sup>3</sup>	5.30	120,000.00	636,000.00
8.3.2	Reinforced concrete for structure	m <sup>3</sup>	1.70	785,000.00	1,334,500.00
8.3.3	Reinforce concrete k-225 generator pondation	m <sup>3</sup>	6.60	450,000.00	2,970,000.00
8.3.4	Concrete bed 1:3:5	m <sup>2</sup>	31.90	7,500.00	239,250.00
Sub Total 8.3					5,179,750.00
8.4	ROOFING WORK				
8.4.1	Roof truss	m <sup>3</sup>	0.95	1,570,000.00	1,491,500.00
8.4.2	Rafter	m <sup>3</sup>	8.50	18,000.00	153,000.00
8.4.3	Fasoia board	m	13.00	21,200.00	275,600.00
8.4.4	Roof tile	m <sup>2</sup>	85.00	10,800.00	918,000.00
8.4.5	Ridge tile	m	13.00	18,000.00	234,000.00
Sub Total 8.4					3,072,100.00
8.5	PAINTING WORK				
8.5.1	Wood painting	m <sup>2</sup>	105.00	12,000.00	1,260,000.00
Sub Total 8.5					1,260,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
9	WELL AND WATER TANK				
9.1	Direct temporary work	Ls	1.00		50,000.00
9.2	Earth work	Ls	1.00		268,200.00
9.3	Foundation and structure work	Ls	1.00		6,180,500.00
9.4	Steel work	Ls	1.00		1,060,000.00
9.5	Piping work	Ls	1.00		525,000.00
9.6	Well and pump work	Ls	1.00		2,200,000.00
Total 9					10,283,700.00



NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
9.1	DIRECT TEMPORARY WORK				
9.1.1	Direct temporary work	Ls	1.00		50,000.00
Sub Total 9.1					50,000.00
9.2	EARTH WORK				
9.2.1	Excavation	m <sup>3</sup>	16.10	14,000.00	225,400.00
9.2.2	Back fill	m <sup>3</sup>	5.40	6,000.00	32,400.00
9.2.3	Sand bed	m <sup>3</sup>	0.40	26,000.00	10,400.00
Sub Total 9.2					268,200.00
9.3	FOUNDATION AND STRUCTURE WORK				
9.3.1	Stone measonry 1:5	m <sup>3</sup>	4.50	120,000.00	540,000.00
9.3.2	Reinforced concrete structure	m <sup>3</sup>	1.10	860,000.00	946,000.00
9.3.3	Reinforced concrete slab	m <sup>3</sup>	3.40	860,000.00	2,924,000.00
9.3.4	Plaster 1:2	m <sup>2</sup>	168.00	6,500.00	1,092,000.00
9.3.5	Cyclope concrete	m <sup>3</sup>	5.90	115,000.00	678,500.00
Sub Total 9.3					6,180,500.00
9.4	STEEL WORK				
9.4.1	Stair	m	7.00	100,000.00	700,000.00
9.4.2	Manhole cover	nos	1.00	120,000.00	120,000.00
9.4.3	Stair in the tank	nos	2.00	120,000.00	240,000.00
Sub Total 9.4					1,060,000.00
9.5	PIPING WORK				
9.5.1	Piping dia.1" inlet (galvanize)	m	10.00	15,000.00	150,000.00
9.5.2	Piping dia.2" outlet(galvanize)	m	10.00	22,500.00	225,000.00
9.5.3	Stop valve dia.2"	nos	2.00	60,000.00	120,000.00
9.5.4	Overflow pipe dia. 2"(galvanize)	nos	1.00	30,000.00	30,000.00
Sub Total 9.5					525,000.00
9.6	WELL AND PUMP WORK				
9.6.1	Well (deep 10m)	unit	1.00	1,000,000.00	1,000,000.00
9.6.2	Pump compleet	unit	1.00	1,200,000.00	1,200,000.00
Sub Total 9.6					2,200,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
10	FENCE OF CENTER AREA				
10.1	Direct temporary work	Ls	1.00		80,000.00
10.2	Earth work	Ls	1.00		551,600.00
10.3	Foundation work	Ls	1.00		4,436,600.00
10.4	Fencing work	Ls	1.00		38,480,000.00
Total 10					43,548,200.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
10.1	DIRECT TEMPORARY WORK				
10.1.1	Direct temporary work	Ls	1.00		80,000.00
Sub Total 10.1					80,000.00
10.2	EARTH WORK				
10.2.1	Excavation	m <sup>3</sup>	36.40	14,000.00	509,600.00
10.2.2	Back fill	m <sup>3</sup>	7.00	6,000.00	42,000.00
Sub Total 10.2					551,600.00
10.3	FOUNDATION WORK				
10.3.1	Stone measonry 1:5	m <sup>3</sup>	35.00	120,000.00	4,200,000.00
10.3.2	Plester 1:2	m <sup>2</sup>	36.40	6,500.00	236,600.00
Sub Total 10.3					4,436,600.00
10.4	FENCING WORK				
10.4.1	Pole galvanize pips dia.2"	m	430.00	21,000.00	9,030,000.00
10.4.2	BRC	m	320.00	90,000.00	28,800,000.00
10.4.3	Gats (at guard house)	unit	1.00	650,000.00	650,000.00
Sub Total 10.4					38,480,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
11	GUARD HOUSE				
11.1	Direct temporary work	Ls	1.00		60,000.00
11.2	Earth work	Ls	1.00		148,700.00
11.3	Foundation & structure work	Ls	1.00		864,750.00
11.4	Wall work	Ls	1.00		1,143,900.00
11.5	Floor work	Ls	1.00		373,125.00
11.6	Wood, roofing and ceiling work	Ls	1.00		2,587,300.00
11.7	Door & window work	Ls	1.00		1,140,000.00
11.8	Ironmangery	Ls	1.00		95,500.00
11.9	Painting work	Ls	1.00		896,000.00
Total 11					7,309,275.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
11.1	DIRECT TEMPORARY WORK				
11.1.1	Direct temporary work	Ls	1.00		60,000.00
Sub Total 11.1					60,000.00
11.2	EARTH WORK				
11.2.1	Excavation	m <sup>3</sup>	5.00	14,000.00	70,000.00
11.2.2	Back fill	m <sup>3</sup>	2.50	6,000.00	15,000.00
11.2.3	Earth fill from outside	m <sup>3</sup>	2.00	25,350.00	50,700.00
11.2.4	Sand bed	m <sup>2</sup>	0.50	26,000.00	13,000.00
Sub Total 11.2					148,700.00
11.3	FOUNDATION AND STRUCTURE WORK				
11.3.1	Stone masonry 1:5	m <sup>3</sup>	2.30	120,000.00	276,000.00
11.3.2	Reinforce concrete for structure	m <sup>3</sup>	0.52	785,000.00	408,200.00
11.3.3	Reinforce concrete for lintel and stiffener	m <sup>3</sup>	0.23	785,000.00	180,550.00
Sub Total 11.3					864,750.00
11.4	WALL WORK				
11.4.1	Brick wall 1:2	m <sup>2</sup>	0.70	180,000.00	126,000.00
11.4.2	Brick wall 1:5	m <sup>2</sup>	2.85	172,000.00	490,200.00
11.4.3	Plaster 1:2	m <sup>2</sup>	2.00	6,500.00	13,000.00
11.4.4	Plaster 1:5	m <sup>2</sup>	51.00	5,700.00	290,700.00
11.4.5	Cement surfacing	m <sup>2</sup>	64.00	3,500.00	224,000.00
Sub Total 11.4					1,143,900.00
11.5	FLOOR WORK				
11.5.1	Terazzo tile 30×30	m <sup>2</sup>	6.25	45,300.00	283,125.00
11.5.2	Skirting terazzo 15×30	m	10.00	9,000.00	90,000.00
Sub Total 11.5					373,125.00
11.6	WOOD, ROOFING AND CEILING WORK				
11.6.1	Doors & window frames	m <sup>3</sup>	0.05	1,570,000.00	78,500.00
11.6.2	Roof truss	m <sup>3</sup>	0.50	1,570,000.00	785,000.00
11.6.3	Rafter	m <sup>2</sup>	25.00	18,000.00	450,000.00
11.6.4	Pascia board	m	18.00	21,200.00	381,600.00
11.6.5	Roof tile	m <sup>2</sup>	25.00	10,800.00	270,000.00
11.6.6	Ridge tile	m	14.00	18,000.00	252,000.00
11.6.7	Ceiling asbest cement	m <sup>2</sup>	9.00	27,800.00	250,200.00
11.6.8	Ceiling trimming	m	20.00	6,000.00	120,000.00
Sub Total 11.6					2,587,300.00
11.7	DOOR & WINDOW WORK				
11.7.1	Door teakwood	m <sup>2</sup>	2.10	44,000.00	92,400.00
11.7.2	Naco and glass 5mm	Nos	54.00	19,400.00	1,047,600.00
Sub Total 11.7					1,140,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
11.8	IRONMONGERY				
11.8.1	Door slot	Nos	1.00	76,000.00	76,000.00
11.8.2	Hinge for door & window	Nos	3.00	6,500.00	19,500.00
Sub Total 11.8					95,500.00
11.9	PAINING WORK				
11.9.1	Wall paint	m <sup>2</sup>	65.00	8,800.00	572,000.00
11.9.2	Ceiling paint	m <sup>2</sup>	9.00	10,000.00	90,000.00
11.9.3	Politur(farnish)	m <sup>2</sup>	5.00	12,000.00	60,000.00
11.9.4	Wood paint	m <sup>2</sup>	14.50	12,000.00	174,000.00
Sub Total 11.9					896,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE(Rp.)	TOTAL PRICE(Rp.)
12	POTTING HOUSE				
12.1	Direct temporary work	Ls	1.00		80,000.00
12.2	Earth work	Ls	1.00		5,236,750.00
12.3	Foundation & structure work	Ls	1.00		11,386,850.00
12.4	Floor work	Ls	1.00		1,504,800.00
12.5	Roofing work	Ls	1.00		13,687,200.00
12.6	Painting work	Ls	1.00		598,400.00
Total 12					32,494,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
12.1	DIRECT TEMPORARY WORK				
12.1	Direct temporary work	Ls	1.00		80,000.00
Sub Total 12.1					80,000.00
12.2	EARTH WORK				
12.2.1	Excavation	m <sup>3</sup>	80.20	14,000.00	1,122,800.00
12.2.2	Back fill	m <sup>3</sup>	23.20	6,000.00	139,200.00
12.2.3	Land filling	m <sup>3</sup>	141.00	25,350.00	3,574,350.00
12.2.4	Sand bed	m <sup>3</sup>	15.40	26,000.00	400,400.00
Sub Total 12.2					5,236,750.00
12.3	FOUNDATION & STRUCTURE WORK				
12.3.1	Stone masonry 1:5	m <sup>3</sup>	38.50	120,000.00	4,620,000.00
12.3.2	Reinforced structure	m <sup>3</sup>	8.00	785,000.00	6,280,000.00
12.3.3	Plaster 1:2 for concrete	m <sup>2</sup>	74.90	6,500.00	486,850.00
Sub Total 12.3					11,386,850.00
12.4	FLOOR WORK				
12.4.1	Concrete 1:3:5 floor	m <sup>2</sup>	114.00	7,500.00	855,000.00
12.4.2	Plaster 1:5	m <sup>2</sup>	114.00	5,700.00	649,800.00
Sub Total 12.4					1,504,800.00
12.5	ROOFING WORK				
12.5.1	Roof truss	m <sup>3</sup>	4.20	1,570,000.00	6,594,000.00
12.5.2	Rafter	m <sup>2</sup>	189.00	18,000.00	3,402,000.00
12.5.3	Fascia board	m	60.00	21,200.00	1,272,000.00
12.5.4	Roof tile	m <sup>2</sup>	189.00	10,800.00	2,041,200.00
12.5.5	Ridge tile	m	21.00	18,000.00	378,000.00
Sub Total 12.5					13,687,200.00
12.6	PAINTING WORK				
12.6.1	Wall	m <sup>2</sup>	68.00	8,800.00	598,400.00
Sub Total 12.6					598,400.00



NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
13	MECHANICAL & ELECTRICAL WORK				
13.1	Electrical work	Ls	1.00		23,542,000.00
13.2	Plumbing work	Ls	1.00		43,474,000.00
13.3	Lightning protection	Ls	1.00		6,565,000.00
13.4	Air conditioning work	Ls	1.00		32,340,000.00
13.5	External installation	Ls	1.00		46,021,400.00
13.6	Septictank	Ls	1.00		4,550,000.00
13.7	Generator	Ls	1.00		71,790,000.00
Total 13					228,282,400.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
13.1	ELECTRICAL WORK				
13.1(1)	Center Office	Ls	1.00		10,273,000.00
13.1(2)	Laboratory	Ls	1.00		3,372,000.00
13.1(3)	Machine Storage & Garage	Ls	1.00		2,336,000.00
13.1(4)	Generator Room	Ls	1.00		2,080,000.00
13.1(5)	Well & Water Tank	Ls	1.00		831,000.00
13.1(6)	Guard House	Ls	1.00		1,083,000.00
13.1(7)	Potting House	Ls	1.00		3,567,000.00
Total 13.1					23,542,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
13.1	ELECTRICAL WORK				
	(1) Center Office				
13.1.1(1)	Electricity post installation	Nos	53.00	41,000.00	2,173,000.00
13.1.2(1)	Socket installation	Nos	34.00	41,000.00	1,394,000.00
13.1.3(1)	Panel	Nos	1.00	1,000,000.00	1,000,000.00
13.1.4(1)	Arde	Nos	1.00	95,000.00	95,000.00
13.1.5(1)	Built in Fl 2×40 watt	Nos	27.00	203,000.00	5,481,000.00
13.1.6(1)	Electric bulb	Nos	26.00	5,000.00	130,000.00
Sub Total 13.1. (1)					10,273,000.00
	(2) Laboratory				
13.1.1(2)	Electricity post installation	Nos	7.00	41,000.00	287,000.00
13.1.2(2)	Built in Fl 2×40 watt	Nos	7.00	203,000.00	1,421,000.00
13.1.3(2)	Socket installation	Nos	9.00	41,000.00	369,000.00
13.1.4(2)	Panel	Nos	1.00	1,200,000.00	1,200,000.00
13.1.5(2)	Arde	Nos	1.00	95,000.00	95,000.00
Sub Total 13.1. (2)					3,372,000.00
	(3) Machine Storage & Garae				
13.1.1(3)	Electricity post installation	Nos	4.00	41,000.00	164,000.00
13.1.2(3)	Built in Fl 2×40 watt	Nos	4.00	203,000.00	812,000.00
13.1.3(3)	Socket installtaion	Nos	5.00	41,000.00	205,000.00
13.1.4(3)	Panel	Nos	1.00	1,060,000.00	1,060,000.00
13.1.4(3)	Arde	Nos	1.00	95,000.00	95,000.00
Sub Total 13.1. (3)					2,336,000.00
	(4) Generator Room				
13.1.1(4)	Electricity post installation	Nos	3.00	41,000.00	123,000.00
13.1.2(4)	Socket installation	Nos	3.00	41,000.00	123,000.00
13.1.3(4)	Arde	Nos	1.00	95,000.00	95,000.00
13.1.4(4)	Panel	Nos	1.00	1,130,000.00	1,130,000.00
13.1.5(4)	Built in Fl 2×40 watt	Nos	3.00	203,000.00	609,000.00
Sub Total 13.1. (4)					2,080,000.00
	(5) Well & Water Tank				
13.1.1(5)	Electricity post installation	Nos	1.00	350,000.00	350,000.00
13.1.2(5)	Panel	Nos	1.00	440,000.00	440,000.00
13.1.3(5)	Socket installation	Nos	1.00	41,000.00	41,000.00
Sub Total 13.1. (5)					831,000.00
	(6) Guard House				
13.1.1(6)	Electricity post installation	Nos	2.00	41,000.00	82,000.00
13.1.2(6)	Panel	Nos	1.00	500,000.00	500,000.00
13.1.3(6)	Arde	Nos	1.00	95,000.00	95,000.00
13.1.4(6)	Built in Fl 2×40 watt	Nos	2.00	203,000.00	406,000.00
Sub Total 13.1. (6)					1,083,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
	(7) Potting House				
13.1.1 (7)	Arde	Unit	1.00	68,000.00	68,000.00
13.1.2 (7)	Panel	Unit	1.00	500,000.00	500,000.00
13.1.3 (7)	Electricity post installation	Nos	5.00	34,000.00	170,000.00
13.1.4 (7)	Socket installation	Nos	6.00	34,000.00	204,000.00
13.1.5 (7)	Built in Fl 2×40 watt	Nos	5.00	135,000.00	675,000.00
13.1.6 (7)	Cable feeder	m	150.00	13,000.00	1,950,000.00
Sub Total 13.1. (7)					3,567,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
13.2	PLUMBING WORK				
13.2(1)	Clean Water	Ls	1.00		24,014,000.00
13.2(2)	Sewerage	Ls	1.00		19,460,000.00
Total 13.2					43,474,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
13.2(1)	Clean Water				
13.2.1(1)	PVC pipe 2 1/2"	m	160.00	35,000.00	5,600,000.00
13.2.2(1)	PVC pipe 1 1/2"	m	320.00	24,500.00	7,840,000.00
13.2.3(1)	PVC pipe 1 "	m	160.00	9,450.00	1,512,000.00
13.2.4(1)	PVC pipe 3/4"	m	160.00	9,450.00	1,512,000.00
13.2.5(1)	PVC pipe 1/2"	m	120.00	8,750.00	1,050,000.00
13.2.6(1)	Tools and test	Ls	1.00	6,500,000.00	6,500,000.00
Sub Total 13.2. (1)					24,014,000.00
13.2(2)	Sewerage				
13.2.1(2)	PVC pipe 4 "	m	80.00	71,750.00	5,740,000.00
13.2.2(2)	PVC pipe 2 1/2"	m	96.00	35,000.00	3,360,000.00
13.2.3(2)	PVC pipe 1 1/2"	m	80.00	24,500.00	1,960,000.00
13.2.4(2)	Assecories	Ls	1.00	8,400,000.00	8,400,000.00
Sub Total 13.2. (2)					19,460,000.00

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Rp.)	TOTAL PRICE (Rp.)
13.3	LIGHTNING PROTECTION				
13.3.1	Lightning protection	Unit	1.00	6,565,000.00	6,565,000.00
Total	13.3				6,565,000.00
13.4	AIR CONDITIONING WORK				
13.4.1	Air conditioning	Unit	7.00	4,620,000.00	32,340,000.00
Total	13.4				32,340,000.00
13.5	EXTERNAL INSTALATION				
13.5.1	Arde	Unit	1.00	170,000.00	170,000.00
13.5.2	Panes	Unit	1.00	6,770,000.00	6,770,000.00
13.5.3	Wool saklar	Unit	3.00	255,000.00	765,000.00
13.5.4	Cable				
a.	NYFGY 4 × 25mm	m	210.00	60,000.00	12,600,000.00
b.	NYFGY 4 × 16mm	m	126.00	43,000.00	5,418,000.00
c.	NYFGY 4 × 10mm	m	70.00	34,000.00	2,380,000.00
d.	NYFGY 4 × 4mm	m	280.00	27,000.00	7,560,000.00
e.	NYF 3 × 2.5mm	m	140.00	4,000.00	560,000.00
13.5.5	Galvanize pipe dia. 1 1/2"	m	75.60	14,000.00	1,058,400.00
13.5.6	Lightning garden post	Unit	19.00	460,000.00	8,740,000.00
Total	13.5				46,021,400.00
13.6	SEPTICTANK WORK				
13.6.1	Septic tank	Unit	2.00	2,275,000.00	4,550,000.00
Total	13.6				4,550,000.00
13.7	GENERATTOR				
13.7.1	Generator 32KVA	Unit	1.00	41,690,000.00	41,690,000.00
13.7.2	Generator 15KVA	Unit	1.00	25,600,000.00	25,600,000.00
13.7.3	Oil tank Cap. 1,500Lt	Unit	1.00	2,000,000.00	2,000,000.00
13.7.4	Oil piping & install	Ls	1.00	2,500,000.00	2,500,000.00
Total	13.7				71,790,000.00

### Prices of Construction Materials

The following table on the prices of construction materials was made by the Central Bureau of Statistics. The prices indicated are used by the Ministry of Public Works. These prices are applied to the Islands of Java, Bali and Lombok. The price of cement varies in every province.

# Buletin Ringkas **BRCS**

Desember 1992



**Biro Pusat Statistik**



**HARGA ECERAN BAHAN BANGUNAN DI JAKARTA  
NOPEMBER 1992 DAN DESEMBER 1992  
(RUPIAH)**

JENIS BARANG	SATUAN	NOPEMBER 1992	DESEMBER 1992	* PERU- BAHAN	JENIS BARANG	SATUAN	NOPEMBER 1992	DESEMBER 1992	* PERU- BAHAN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<b>01. BATU</b>					<b>07. BAMBAN</b>	Batang			
Kali	m <sup>3</sup>	22 730.47	22 730.47	0.00	Tiang		1 500	1 500	0.00
Koral	m <sup>3</sup>	23 666.67	23 666.67	0.00	Kaso		1 250	1 250	0.00
Bata besar	100 Buah	6 500	6 500	0.00					
Bata kecil	100 Buah	5 454.60	5 454.60	0.00	08. PAKU	Kg			
Batako semen	100 Buah	31 909.90	31 909.90	0.00					
Batako putih	100 Buah	12 500	12 500	0.00	1"		2 045.45	2 045.45	0.00
					2 3/4"		1 250.71	1 340	5.29
<b>02. PASIR</b>	m <sup>3</sup>				09. KAPUR SIRIH	Bungkus	300	300	0.00
Beton		23 370	23 750	0.00	10. BESI BETON	Batang			
Pasang		23 833.33	23 833.33	0.00					
Urug		22 167.60	22 167.60	0.00					
<b>03. GENTENG</b>	100 Buah				4,5 mm		2 262.50	2 262.50	0.00
					6 mm				
					6,5 mm				
					8 mm		3 425	3 425	0.00
					9 mm		4 625	4 625	0.00
Kodok		33 333.33	33 333.33	0.00	10 mm		5 500	5 562.50	1.14
Nok		35 000	35 000	0.00	12 mm		7 937.50	7 937.50	0.00
<b>04. TEGEL</b>	1 m <sup>2</sup>				13 mm				
					16 mm		14 075.74	14 075.74	0.00
Abu-abu	(20 x 20) CM	3 115.73	3 115.73	0.00	19 mm		19 470.74	19 500	0.15
Bervarna	(20 x 20) CM	5 500	5 500	0.00	22 mm		25 800	25 800	0.00
Teraso	(30 x 30) CM	8 250	8 250	0.00	25 mm		30 000	30 000	0.00
<b>05. KAYU BALOKAN</b>	Batang				11. SENG PLAT	Lembar			
Jati	(6 x 15 x 200) CM	38 475	38 475	0.00	BJLS 0.50		15 333.33	15 333.33	0.00
Meranti	(8 x 12 x 400) CM	8 727.20	8 727.20	0.00	BJLS 0.40		13 250	13 250	0.00
Kamper	(8 x 12 x 400) CM	16 383.33r	16 466.67	0.51	BJLS 0.30		9 031.25	9 031.25	0.00
Borneo	(8 x 12 x 400) CM	9 520	9 520	0.00	BJLS 0.25		8 125	8 125	0.00
					BJLS 0.18		7 010.33	7 010.33	0.00
					BJLS 0.15				
<b>06. PAPAN</b>	m <sup>3</sup>								
Jati	(2 x 20 x 200) CM	2 161 250	2 161 250	0.00					
Kamper	(2 x 20 x 400) CM	461 488.87r	461 488.87	0.00					
Meranti	(2 x 20 x 400) CM	220 000	220 000	0.00					
Borneo	(2 x 20 x 400) CM	250 000	250 000	0.00					
Terentang	(2 x 20 x 400) CM								

**HARGA ECERAN BAHAN BANGUNAN DI JAKARTA**  
**NOPEMBER 1992 DAN DESEMBER 1992**  
**(RUPIAH)**

(Lanjutan)

JENIS BARANG	SATUAN	NOPEMBER 1992	DESEMBER 1992	% PERU- BAHAN	JENIS BARANG	SATUAN	NOPEMBER 1992	DESEMBER 1992	% PERU- BAHAN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<b>23. KAWAT</b>									
<b>12. SENG GELOMBANG</b>									
BJLS 0,50	Lembar	14 000	15 000	7.14	Beton	Kg <sup>2</sup>	2 500	2 500	0.00
BJLS 0,40		13 250	13 250	0.00	Nyamuk hijau	M	2 572	2 572	0.00
BJLS 0,30		9 273.82	9 353.67	0.86	Ayam	M <sup>2</sup>	2 069	2 069	0.00
BJLS 0,25		8 035.86	8 035.86	0.00	Duri (6 kg)	Roll	5 416.67	5 416.67	0.00
BJLS 0,18		6 850	6 850	0.00					
BJLS 0,15					24. KACA POLOS ex lokal	M <sup>2</sup>			
<b>13. SENG PLASTIK BERGELOMBANG</b>									
Lembar		2 925	2 925	0.00	Tebal 2 mm		7 971.78	7 971.78	0.00
					Tebal 3 mm		11 125	11 125	0.00
					Tebal 5 mm		14 875	14 875	0.00
<b>14. HARDBOARD</b>									
Lembar		12 000	12 000	0.00	25. KACA ES ex Lokal	M <sup>2</sup>			
<b>15. ETERNIT KATUN</b>									
Lembar		1 106.29	1 106.29	0.00	Tebal 3 mm		11 375	11 375	0.00
<b>16. ETERNIT ASBES</b>									
Lembar		2 175	2 175	0.00	Tebal 5 mm		15 250	15 250	0.00
<b>17. ASBES BERGELOMBANG</b>									
Lembar		8 135.30	8 135.30	0.00	26. KACA RAYBAND ex lokal				
<b>18. TRIPLEX 122 x 244 cm</b>									
Lembar		6 977.27	6 977.27	0.00	Tebal 5 mm	M <sup>2</sup>	18 166.67	18 166.67	0.00
<b>19. TEAKWOOD uk.122 x 244 cm</b>									
Lembar		11 221.72	11 221.72	0.00	27. ENGSEL H ex DN	Pasang			
<b>20. SOFTBOARD</b>									
Lembar		25 000	24 000	-4.00	80 x 50		830	830	0.00
<b>21. CAT</b>									
Menie Kayu TKS		1 591.55	1 591.65	0.00	110 x 55		800	800	0.00
Plamur Kayu TKS		1 645.34	1 645.34	0.00	140 x 60		1 112.50	1 129.87	1.56
Dempul Kayu TKS		1 430	1 430	0.00	28. KUNCI TANAM YALE	Set			
Dasar TKS		1 585.71	1 585.71	0.00	Enkle 1)		18 500	18 500	0.00
Glutex (1 kg)		4 800	4 800	0.00	Double		26 500	26 500	0.00
Patna		4 625	4 625	0.00	29. KUNCI TANAM UNION	Set			
<b>22. CAT TEMBOK</b>									
Kaleng					Enkle 1)		9 500	9 500	0.00
					Double		18 250r)	18 500	1.37
<b>23. KUNCI TANAM KUDA TERBANG</b>									
Vinilex (5 kg)		11 650.55	11 650.55	0.00	30. KUNCI TANAM KUDA TERBANG	Set			
Matex (5 kg)		9 021.05	9 021.05	0.00	Enkle		7 298	7 298	0.00
Decolith (5 kg)		10 750	10 750	0.00	Double		10 098.07	10 098.07	0.00
ICI uk. 2 1/2 kg	1 Kaleng	18 750	18 750	0.00					

**HARGA ECERAN BAHAN BANGUNAN DI JAKARTA**  
**NOPEMBER 1992 DAN DESEMBER 1992**  
**(RUPIAH)**

JENIS BARANG		SATUAN	NOPEMBER 1992	DESEMBER 1992	% PERUBAHAN	JENIS BARANG	SATUAN	NOPEMBER 1992	DESEMBER 1992	% PERUBAHAN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
31. WASTAFEL PUTIH										
K.I.A RINI	Set	52 667	52 667	0.00		44. POMPA AIR Dragon Tasako	Buah	85 000 35 000	85 000 35 000	0.00 0.00
32. WASTAFEL BERWARNA										
K.I.A RINI	Set	55 667	55 667	0.00		45. SEMEN PUTIH Tiga Roda	Zak	14 925	14 925	0.00
33. URINOIR PUTIH K.I.A	Set	43 602	43 602	0.00		46. PACUL Cap Buaya Lokal	Buah	5 500 3 000	5 500 3 000	0.00 0.00
34. URINOIR BERWARNA K.I.A	Set	49 232	49 232	0.00						
35. CLOSET DUDUK PUTIH K.I.A	Set	200 000	200 000	0.00		47. SEKOP Ex. RRC Lokal	Buah	5 250 3 750	5 250 3 750	0.00 0.00
36. CLOSET DUDUK BERWARNA K.I.A	Set	215 000	215 000	0.00		48. GERGAJI KAYU Besar Sedang Kecil	Buah	4 875 3 500 2 500	4 875 3 500 2 500	0.00 0.00 0.00
37. CLOSET JONGKOK PUTIH K.I.A RAPI E	Set	23 875	23 875	0.00						
38. CLOSET JONGKOK BERWARNA K.I.A RAPI E	Set	26 089	26 089	0.00		49. PIPA BESI 1/2" 3/4" 1" 1 1/4" 1 1/2" 2" 2 1/2" 3" 4"	Batang	8 389 11 167 14 000 16 000 17 500 30 000 39 250 57 500 61 578	8 389 11 167 14 000 16 000 17 500 30 000 39 250 57 500 61 578	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
39. PORSELIN PUTIH (11 x 11) CM (15 x 15) CM	Doos	13 500 23 250	13 500 23 250	0.00 0.00						
40. PORSELIN BERWARNA (11 x 11) CM (15 x 15) CM	Doos	18 900 22 500	18 900 22 500	0.00 0.00						
41. GLASS MOZAIK (30 x 30) CM	Lembar	1 598	1 598	0.00		50. PIPA PRALON 2) 1/2" 3/4" 1" 1 1/4" 1 1/2" 2" 2 1/2" 3" 3"	Batang	2 791.67 3 500 4 625 5 889 6 625 4 167 4 642 5 801	2 791.67 3 500 4 625 5 889 6 625 4 167 4 642 5 801	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
42. MOZAIK BIASA	Lembar	1 332	1 332	0.00						
43. VINYL (30 x 30) CM	Lembar	500	500	0.00						







**PERKEMBANGAN HARGA RATA-RATA ECERAN SEMEN  
DI PASARAN BEBAS 27 IBUKOTA PROPINSI  
(Rupiah/Zak)**

KOTA	M E R K	1987	1988	1989	1990	1991	RATA-RATA JAN-DES 1992		1992		% PERUBAHAN NOP '92 TERHADAP DES '92	
									NOP -	DES		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		
01. Banda Aceh	1. Padang	3 619	3 690	4 100	4 826 <sup>1)</sup>	5 160.00	5 385.42	5 400	5 400	0.00		
02. Medan	1. Padang	3 581	3 787	4 253	5 128	5 392.60	5 687.59	5 683.33	5 850	2.91		
	2. Andalas	3 581	3 787	4 253	5 097	5 345.63	5 613.58	5 741.67	5 850	1.89		
03. Padang	1. Padang	3 700	3 745	4 130	4 928	5 152.73	5 410	5 400	5 520	0.00		
04. Pekanbaru	1. Kujung	4 000	4 209	4 725	5 585 <sup>2)</sup>	5 884.90	6 101.25	6 100	6 220	1.97		
05. Jambi	1. Padang	3 866	4 145	4 864	5 665	5 951.41	6 150	6 150	6 150	0.00		
	2. Tiga Roda	3 763	4 029	4 885	5 632	5 901.70	6 150	6 150	6 150	0.00		
06. Palembang	1. Baturaja	3 658	3 671	4 202	4 949	5 177.72	5 400	5 400	5 400	0.00		
07. Bengkulu	1. Padang	3 938	4 286	5 090	5 600	6 027.27	6 103.64	6 100	6 100	0.00		
08. Bandar Lampung	1. Tiga Roda	3 940	3 898	4 340	5 479	5 366.81	5 637.50	5 650	5 650	0.00		
	2. Baturaja	3 861	3 776	4 191	5 213	5 068.18	5 458.33	5 350	5 350	0.00		
09. DKI Jakarta	1. Tiga Roda	3 663	3 810	4 339	5 139	5 274.48	5 489.07	5 509.19	5 509.19	0.00		
	2. Kujung	3 650	3 790	4 328	5 126	5 209.58	5 423.16	5 450	5 450	0.00		
10. Bandung	1. Tiga Roda	3 610	3 810	4 287	5 177	5 221.06	5 404.12	5 400	5 400	0.00		
11. Semarang	1. Gresik	3 526	3 550	-	-	-	-	-	-	-		
	2. Nusantara	3 581	3 697	4 376	5 356	5 230.33	5 425.56	5 466.68	5 466.68	0.00		
12. Yogyakarta	1. Gresik	3 537	3 746	4 434	5 081	5 302.77	5 465.55	5 483.32	5 480	-0.06		
	2. Nusantara	3 501	3 701	4 306	5 550	5 460.47	5 513.52	5 791.67	5 690	-1.76		
13. Surabaya	1. Gresik	3 586	3 890	4 446	5 380	5 460.47	5 513.52	5 791.67	5 690	-1.76		
14. Denpasar	1. Gresik	3 600	4 000	5 252	6 575	6 326.91	7 250	7 250.03	7 250.03	0.00		
15. Mataram	1. Tiga Roda	3 658	3 953	5 004	5 987	6 320.53	6 242.76	6 200	6 250	0.96		
	2. Tonasa	3 432	3 799	4 855	5 809	6 054.87	6 081.25	6 100	6 100	0.00		

## 5. TERM OF WORKS

As shown in the rough schedule of works, the term of works is 9 months.

# SCHEDULE OF WORK

No.	Work	1	2	3	4	5	6	7	8	9	10	Remarks
1	Preparation											
2	Bridge (Span: 15m)											Pneumatic caisson, filling, concrete abutment, steel work
3	Bridge (Span: 10m)											Excavation, concrete abutment, steel work
4	Provisional Work											
5	Building/Facilities											Office building, laboratory, workshop
6	Road Improvement											Widening of road
7	Road Construction											Slope stone pavement, banking
8	Nursery											Excavation, concrete sidewalk
												Note:  : Phase I  : Phase II

## 6. LIST OF EQUIPMENTS TO BE DONATED BY THE YEAR

We had discussions with experts of various fields on the machines required to promote this demonstration activity effectively, and made a list of machines by the type of work and by the year (on a separate paper).

Equipment to be Donated by Year (Summary)<sup>1)</sup>

Items used	Fiscal year <sup>2)</sup>	1992/93	1993/94	1994/95	1995/96	Total
Administrative equipment	(Bali)	43,650,000	71,660,800	8,775,000	-	124,085,800
Reforestation equipment	( " )	33,478,200	88,575,700	11,488,120	6,169,400	139,711,420
Nursery equipment	( " )	39,063,100	346,880,560	14,700,600	3,250,000	403,894,260
Test & Reserch equipment	( " )	43,500,000	275,724,620	10,292,020	6,834,000	336,350,640
Reforestation equipment	(Lombok)	-	19,486,020	3,641,400	1,815,600	24,943,020
Nursery equipment	( " )	-	11,320,100	6,198,200	4,000,000	21,518,300
Test & Reserch equipment	( " )	-	136,695,160	9,195,980	1,700,000	147,591,140
Total		159,691,300	950,342,960	64,291,320	23,769,000	1,198,094,580

Notes: 1) All equipments will be purchased in Indonesia.

2) Fiscal year in the Japanese Government



## 7. ESTIMATION OF AFFORESTATION COSTS

### 1) Basis for the Estimation of Afforestation Costs

Based on the implementation design decided upon as a result of conferences with those in charge of the project, we re-inspected the afforestation costs of the original plan taking into account the actual circumstances of the site. Then, referring to the materials and informations obtained from Balai RLKT, we laid down the standards for estimation as shown in the Table below .

Points which must be noted for the estimation of afforestation costs:

- The works of this Project are all affected with the ebb and flue of the tide. The works on site must, especially, be executed in a limited time while the tide is out.
- Although the lay of the land is flat, the footing is bad and work efficiency is not good because the land in Bali used to be Tambak, and the land in Lombok is cut-over and muddy.

Items which constitute afforestation costs:

#### (1) Boundary Survey of the Planting Site

To carry out trial plantation of a variety of tree species, planting densities, and seed provenances, the afforestation areas planted and the trial plantation sites will be appointed every fiscal year.

(2) Information Board of the Project

Information boards of the project, 1m x 2m each, will be put up as follows:

5 in Bali, 1 for each block (I - V), and

1 at Gili Petanyan in Lombok

(3) Work Cabin

Work cabins of 8m<sup>2</sup> area each will be built as follows:

12 in Bali (I - 2, II - 3, III - 3, IV - 2, V - 2), and  
2 at Gili Petanyan in Lombok

(4) Seed Collecting and Purchasing

The seeds for this Project used in Bali must be obtained from every province of Indonesia for the production and demonstration. The seeds for Lombok are to be collected only from the provenance of Bali/Lombok - Java Timor. Taking the above into consideration, the standards for Bali and those for Lombok are laid down separately.

(5) Nursing

Nursing in pots and bare rooted seedlings, and moreover, direct cutting and seeding which do not require nursing, in the land to be forested, are planned in the execution design. The sapling growing costs are estimated for the average number of saplings grown in 4 years, 5 months a year.

(6) Setting up of Marker Posts

Marker posts are to be set up at the planting spots of the planting site in accordance with the planting density as the preparation work for planting.

(7) Planting

The planting site is flat, but the footing is bad. Furthermore, planting works must be executed in a limited time while the tide is out. A system of 8 persons working as a group for the transportation, distribution and planting of saplings will be, therefore, established to promote work efficiency.

(8) Supplementary Planting

In accordance with the item "Nursing" of the "Planting Work Criteria", supplementary planting will be executed in every trial plantation site. The costs of supplementary planting are estimated in the same way as the costs of planting.

(9) Results Appraisal

A research will be made to find out how many plants have taken root, and supplementary planting will be executed based on the research results.

(10) Supervision

A supervisor takes charge of the afforestation activities on site.

(11) Demolishing of Banks

To let sea water flow smoothly in and out of the planting site, the bank will be broken down and openings of 1 - 2m width will be made. When 1ha is set as one division, 7 openings will be made per 1ha.

Item	Unit	Unit Price(Rp)	Remarks
(1) Measuring boundary of planting site	Ha	21670(Bali) 13000(Lombok)	
(2) Setting up sign board (1 <sup>m</sup> x 2 <sup>m</sup> )	pc.	200,000	Bali: 5pcs. (1 pc. each Block) Lombok: 2pcs. all Gili Palangan
(3) Construsting working cabin (8m <sup>2</sup> )	pc.	350,000	Bali: 12pcs. I-2pcs. II-3pcs. III-3pcs. IV-2pcs. V-2pcs. Lombok: 2pcs.
(4) Collecting and purcharing seeds	Ha	1178,000(Bali) 596,000 (Lombok)	
(5) Nursing seeding	tree	170	
(6) Marking for planting	tree	35	Including material
(7) Planting	tree	370	
(8) Supplementary planting	tree	320	
(9) Evaluation	Ha	15,000	Three person per 4Ha
(10) Supervisor	Ha	16,000	One person per 5Ha
(11) Demolisling bank	Ha	100,000	7 places in 1Ha

2) Afforestation costs by the year are estimated according to the Implementation plan.

Year	Bali	Lombok	Total	
1st (1993)	Rp 107, 139, 950	Rp	Rp 107, 139, 950	¥ 6, 696, 000
2nd (1994)	222, 850, 435	33, 717, 800	256, 568, 235	16, 036, 000
3rd (1995)	191, 600, 935	66, 682, 200	258, 283, 135	16, 143, 000
4th (1996)	143, 505, 235	66, 332, 200	209, 837, 435	13, 115, 000
Total	665, 096, 555	166, 732, 200	831, 828, 755	51, 990, 000

(¥ 1,00 = Rp 16 )

Details of the afforestation costs are show in the Table below.

① 1st Year

Site	Item	Unit	Unitprice	Number	Amount
Bali	Boundary measurement of plantation site	Ha	Rp 21,670	30	Rp 650,100
	Seeds	Ha	1,178,000	30	35,340,000
	Nursing	tree	170	127,790	21,724,300
	Erection of marker posts	tree	35	95,830	3,354,050
	Planting	tree	370	95,830	35,457,100
	Supplementary planting	Ha	320	19,170	6,134,400
	Results appraisals	Ha	15,000	30	450,000
	Supervising	Ha	160,00	30	480,000
	Bank demolishing	Ha	100,000	30	3,000,000
	Sign board setting	pc.	200,000	1	200,000
	Working cabins	pc.	350,000	1	350,000
	Total				107,139,950

② 2nd Year

Site	Item	Unit	Unitprice	Number	Amount
Bali	Boundary measurement of plantation site	Ha	Rp 21,670	50	Rp 1,083,500
	Seeds	Ha	1,178,000	50	58,900,000
	Nursing	tree	170	293,940	49,969,800
	Erection of marker posts	tree	35	222,915	7,802,025
	Planting	tree	370	222,915	82,478,550
	Supplementary planting	Ha	320	44,583	14,266,560
	Results appraisals	Ha	15,000	50	750,000
	Supervising	Ha	16,000	50	800,000
	Bank demolishing	Ha	100,000	50	5,000,000
	Sign board setting	pc.	200,000	2	400,000
	Working cabins	pc.	350,000	4	1,400,000
	Sab total				222,850,435
Lombok	Boundary measurement of plantation site	Ha	13,000	10	130,000
	Seeds	Ha	596,000	10	5,960,000
	Nursing	tree	170	38,340	6,517,800
	Erection of marker posts	tree	35	50,000	1,750,000
	Planting	tree	370	50,000	18,500,000
	Results appraisals	Ha	15,000	10	150,000
	Supervising	Ha	16,000	10	160,000
	Sign board setting	pc.	200,000	1	200,000
	Working cabins	pc.	350,000	1	350,000
	Sab total				33,717,800
	Total				256,568,235



③ 3rd Year

Site	Item	Unit	Unitprice	Number	Amount
Bali	Boundary measurement of plantation site	Ha	Rp 21,870	40	Rp 866,800
	Seeds	Ha	1,178,000	40	47,120,000
	Nursing	tree	170	260,600	44,302,000
	Erection of marker posts	tree	35	197,915	6,927,025
	Planting	tree	370	197,915	73,228,550
	Supplementary planting	Ha	320	39,583	12,666,560
	Results appraisals	Ha	15,000	40	600,000
	Supervising	Ha	16,000	40	640,000
	Bank demolishing	Ha	100,000	40	4,000,000
	Sign board setting	pc.	200,000	1	200,000
	Working cabins	pc.	350,000	3	1,050,000
	Sab total				191,600,935
Lombok	Boundary measurement of plantation site	Ha	13,000	20	260,000
	Seeds	Ha	596,000	20	11,920,000
	Nursing	tree	170	76,666	13,032,200
	Erection of marker posts	tree	35	100,000	3,500,000
	Planting	tree	370	100,000	37,000,000
	Results appraisals	Ha	15,000	20	300,000
	Supervising	Ha	16,000	20	320,000
	Sign board setting	pc.	200,000	-	-
	Working cabins	pc.	350,000	1	350,000
	Sab total				66,682,200
	Total				258,283,135

④ 4th Year

Site	Item	Unit	Unitprice	Number	Amount
Bali	Boundary measurement of plantation site	Ha	RP 21,670	30	RP 650,100
	Seeds	Ha	1,178,000	30	35,340,000
	Nursing	tree	170	193,900	32,963,000
	Erection of marker posts	tree	35	147,915	5,177,025
	Planting	tree	370	147,915	54,728,550
	Supplementary planting	Ha	320	29,583	9,466,560
	Results appraisals	Ha	15,000	30	450,000
	Supervising	Ha	16,000	30	480,000
	Bank demolishing	Ha	100,000	30	3,000,000
	Sign board setting	pc.	200,000	1	200,000
	Working cabins	pc.	350,000	3	1,050,000
	Sab total				143,505,235
Lombok	Boundary measurement of plantation site	Ha	13,000	20	260,000
	Seeds	Ha	596,000	20	11,920,000
	Nursing	tree	170	76,660	13,032,200
	Erection of marker posts	tree	35	100,000	3,500,000
	Planting	tree	370	100,000	37,000,000
	Results appraisals	Ha	15,000	20	300,000
	Supervising	Ha	16,000	20	320,000
	Sign board setting	pc.	200,000	-	-
	Working cabins	pc.	350,000	-	-
	Sab total				66,332,200
	Total				209,837,435

#### 8. TOTAL COST

Total project costs are summarized as follows:

Total cost (Summary)

Unit: Thousand yen

Items	Fiscal year <sup>1)</sup>	1992/93	1993/94	1994/95	1995/96	1996/97	Total
Reforestation			6,696	16,036	16,099	13,115	51,946
Equipment to be donated		9,981	59,396	4,018	1,486		74,881
Infrastructure		97,996	92,353				190,349
Administration		3,400	15,000	15,000	15,000	15,000	71,400
Joint-meeting operation		518	858	858	858	858	4,808
Total		111,895	174,303	35,912	33,443	28,973	393,384

Notes: 1) Fiscal year in the Japanese government

## 9. APPENDIXES



## 9-1 Points for the Selection of Constructors

### Specified Bidders

The infrastructure works related to this project are to construct forest roads, nursery and buildings. The points for the execution of this infrastructure works are as follows:

- (i) The works are composed of the civil work of forest roads and of nursery, and the construction work of buildings.
- (ii) Most part of the civil work of paths through forest and all civil work of nursery must be executed in the water.
- (iii) It is necessary to complete the works within the term of works for the smooth operation of the project.
- (iv) As the works of forest roads, the nursery seedlings and buildings are all related, it is necessary to manage the work schedule carefully.

Taking the above points into account, it was judged necessary to order the infrastructure works to the local construction corporations of Japanese companies. Pertinent local corporations of Japanese companies are the following 7 out of 9 constructors that have been contracted with JICA on works under Grant Aid of the Japanese Government from 1988/89 to 1992/93.

1. Taisei Corporation - PT Pembangunan Perumahan-Taisei  
Indonesia Construction
2. Takenaka Komuten Co., Ltd. - P.T. Hutama-Takenaka  
Corporation
3. Sumitomo Construction Co., Ltd. - P.T. Sumicon Utama





4. Ohbayashi Corporation - P.T. Jaya Ohbayashi
5. Kumagai Gumi Co., Ltd. - P.T. Kadi International
6. Shimizu Construction Co., Ltd. - Dexitam Shimizu
7. Kajima Corporation - P.T. Waskita Kajima

The names of the above local corporations are as shown in the attached list of constructors.

List of Constructors

No.	Name of Company	Person in charge	Address	Phone NO.
1	P.T. PEMBANGUNAN PERUMAHAN - TAISEI INDONESIA CONSTRUCTION	K.KATOH Project manager	CENTRAL PLAZA BUILDING 7TH FLOOR 47 Jl Jend. Sudirman. Jakarta 12930	5207520 5207533
2	P.T. HUTAMA - TAKENAKA CORPORATION	E.NAKAJIMA Assistant General manager	SUMMITMAS TOWER 7TH FLOOR Jl Jend. Sudirman. Kav 61 - 62 Jakarta 12190	515280 5201272
3	P.T. SUMICON UTAMA	A.NARUSE General manager	SUMMITMAS TOWER 20TH FLOOR Jl Jend. Sudirman. Kav 61 - 62 Jakarta 12190	512905 5200167
4	P.T. JAYA OBAYASHI	H.ENOKI Vice- president Director	Jl Prof. Dr. Supomo S.H No 174 Jakarta 12870	8294003
5	P.T. KADI INTERNATIONAL	Y.TACHIKAWA Vice- president Director	LANDMARK BUILDING TOWER B 5TH FLOOR Jl Jend. Sudirman. No.1 Jakarta 12910	5209440
6	DEXITAM SHIMIZU	* 1	MIDOPLAZA 4TH FLOOR Jl Jend. Sudirman. Kav 10 - 11 Jakarta 10220	5706252 5706164
7	P.T. WASKITA KAJIMA	* 2	ATD PLAZA BLDG 7TH FLOOR Jl M.H Thamrin Kav. 3 Jakarta	6008181

\*1. Person in charge of business in the Indonesian office of Shimizu Construction Co., Ltd. is Mr. Shimizu.

\*2. Head of the Indonesian office of Kajima Corporation is Mr. Mutoh.

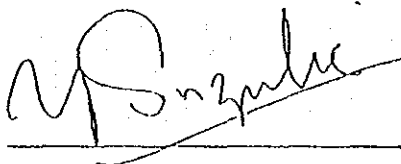
9-2 Copy of R/D

THE RECORD OF DISCUSSIONS  
BETWEEN  
THE JAPANESE IMPLEMENTATION SURVEY TEAM  
AND  
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF INDONESIA  
OR  
THE DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT  
IN THE REPUBLIC OF INDONESIA

The Japanese Implementation Survey Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yasuyuki Suzuki, Deputy Director, Japan Forest Development Corporation, visited the Republic of Indonesia from October 26 to November 6, 1992 for the purpose of working out the details of the Development of Sustainable Mangrove Management Project in the Republic of Indonesia.

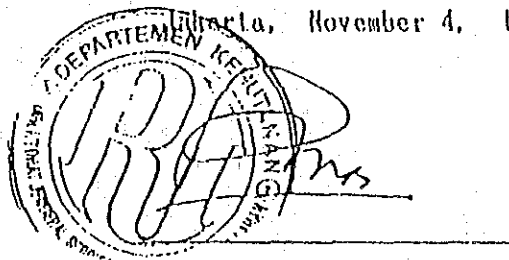
During its stay in the Republic of Indonesia, the Team exchanged views and had a series of discussions with the Indonesian authorities concerned in respect of the appropriate measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions, both parties agreed to recommend to their respective Governments the matters referred to in the document attached hereto.



Yasuyuki Suzuki  
Leader,  
Implementation Survey Team,  
Japan International  
Cooperation Agency, Japan

Jakarta, November 4, 1992



Armana Darsidi  
Director General of Reforestation  
and Land Rehabilitation,  
Ministry of Forestry,  
The Republic of Indonesia

1 1

ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of the Republic of Indonesia will cooperate with each other in implementing the Development of Sustainable Mangrove Management Project in the Republic of Indonesia (hereinafter referred to as "the Project") for the purpose of collecting useful data, establishing technology to recover mangrove forests, and setting up of technical and managerial methods for the Sustainable Mangrove Management System in the recovered areas, which will contribute to the promotion of re-forestation and the sustainable development of the forests in the tropics, by the surrounding communities and the private sector.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II. DISPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take the necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The Japanese experts referred to in paragraph 1 above and their families will be granted in Indonesia, privileges, exemptions and benefits no less favorable than those accorded to experts of third countries working in the Republic of Indonesia under the Colombo Plan Technical Cooperation Scheme. The privileges, exemptions and benefits will include the following:
  - (1) Exemption from income tax and charges of any kind imposed on or in connection with the living allowances remitted from abroad in relation to the implementation of the Project;
  - (2) Exemption from import and export duties and any other charges imposed on personal and household effects which may be brought in from abroad or taken out of the Republic of Indonesia;
  - (3) Exemption from import taxes, import sales taxes, sales taxes and gift taxes.

Taxes and charges of any kind imposed on or in connection with the purchase in Indonesia by the Japanese experts of one motor vehicle per expert;

- (4) Free local medical services and facilities for the Japanese experts and their families.

#### III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take the necessary measures through JICA to provide at its own expense such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The Equipment will become the property of the Government of the Republic of Indonesia upon being delivered C.I.F. to the Indonesian authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively in the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

#### IV. SPECIAL MEASURES

In accordance with the laws and regulations in force in Japan, the Government of Japan, through JICA, will take the necessary measures to provide at its own expense a portion of local costs which are to be mutually agreed upon.

#### V. TRAINING OF INDONESIAN PERSONNEL IN JAPAN

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take the necessary measures through JICA to receive at its own expense the Indonesian personnel related to the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation scheme.
2. The Government of the Republic of Indonesia will take the necessary measures to ensure that the knowledge and experience acquired by the Indonesian personnel who have received technical training in Japan will be utilized effectively in the

## Implementation of the Project.

### VI. SERVICES OF INDONESIAN COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take the necessary measures through the Ministry of Forestry to secure at its own expense the necessary services of Indonesian counterpart and administrative personnel as listed in Annex IV.
2. The Government of the Republic of Indonesia will allocate the necessary number of qualified personnel corresponding to each Japanese expert dispatched by the Government of Japan as specified in Annex II for the effective and successful transfer of technology under the Project.

### VII. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

1. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take the following necessary measures to provide at its own expense:
  - (1) Land, buildings and facilities as listed in Annex V;
  - (2) The supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials which are available locally and necessary for the implementation of the Project other than those provided through JICA under Clause III;
  - (3) Transportation facilities and travel allowances for the official travel of the Japanese experts within the Republic of Indonesia;
  - (4) Appropriately furnished accommodation for the Japanese experts and their families.
2. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take the necessary measures to meet:
  - (1) Expenses necessary for the transportation of the Equipment within Indonesia and for installation, operation and maintenance.

- (2) Customs duties, internal taxes and any other charges imposed on the Equipment in the Republic of Indonesia;
- (3) Running costs necessary for implementation of the Project.

#### VIII. ADMINISTRATION OF THE PROJECT

1. The Director General of Reforestation and Land Rehabilitation of the Ministry of Forestry of the Government of the Republic of Indonesia will take full responsibility for the implementation of the Project.
2. As Project Director, the Director of Reforestation and Regreening will be responsible for administrative and managerial matters of the Project.
3. The Japanese Team Leader shall recommend and advise the Project Director on technical and administrative matters when it is necessary for the effective implementation of the Project.
4. The Japanese experts shall provide the necessary technical guidance and advice to the Indonesian counterpart personnel on matters pertaining to the implementation of the Project.
5. For the effective and successful implementation of the Project, a Joint Committee will be established. The function and composition of which is referred to in Annex VI.

#### IX. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of Indonesia undertakes to bear claims, if any arise, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official duties in the Republic of Indonesia except for those arising from willful misconduct or gross negligence on the part of the Japanese experts.

#### X. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major



issues arising from, or in connection with this Attached Document.

#### XI. TERMS OF COOPERATION

The duration of the Project under this Attached document will be five (5) years from December 1, 1992.

## MASTER PLAN

## 1. Objectives of the Project

The Project will be carried out in Bali and Lombok Islands, Indonesia, for the purpose of collecting useful data, establishing technology to recover mangrove forests, and setting up of technical and managerial methods for the Sustainable Mangrove Management System in the recovered areas, which will contribute to the promotion of re-forestation and the sustainable development of the forests in the tropics, by the surrounding communities and the private sector.

## 2. Activities of the Project

To attain the above-mentioned objectives, the following cooperation activities will be implemented:

- (1) Selection of tree species for mangrove plantation
- (2) Development of silviculture technique
- (3) Cost estimation for mangrove plantation
- (4) Study on effects of mangrove forest on surrounding environment
- (5) Study on conservation management of flora and fauna in the mangrove ecosystem in the Project sites.
- (6) Pests and disease control techniques
- (7) Study on the social and economic benefits for forestry and fisheries in the mangrove forests and surrounding areas
- (8) Preparation of a mangrove forest management model
- (9) Development of utilization techniques for mangrove forest products
- (10) Other activities:
  - (a) construction of roads;
  - (b) establishment of nursery; and
  - (c) construction of office, storehouse and others

## JAPANESE EXPERTS

1. Team Leader
2. Liaison Officer
3. Experts in the fields of:

- (1) nursery;
- (2) silviculture;
- (3) ecosystem; and
- (4) forest management.

Note: 1. The Team Leader may serve concurrently as an expert in one of the fields mentioned above.

2. One expert may cover another field mentioned above.

3. Short-term experts will be dispatched when they are necessary for the smooth implementation of the Project.

## LIST OF EQUIPMENT

## 1. Equipment, machinery and their spare parts for:

- (1) nursery;
- (2) silviculture;
- (3) pests & disease control;
- (4) other experiments & investigation.

## 2. Vehicles, boats, and their spare parts.

## 3. Other necessary equipment, machinery, materials and their spare parts mutually agreed upon.

## LIST OF INDONESIAN COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. Project Director : The Director of Reforestation and Regreening
2. Coordinator : Head of Soil Conservation and Land Rehabilitation Centre in  
Region VII Denpasar
3. Field Managers : 1. Head of Soil Conservation and Land Rehabilitation Sub Centre  
in Bali  
2. Head of Soil Conservation and Land Rehabilitation Sub Centre  
in Dodokan Moyosari West Nusa Tenggara
4. Counterpart personnel in the fields of:
  - (1) nursery;
  - (2) silviculture;
  - (3) ecosystem; and
  - (4) forest management.
5. Administrative personnel:
  - (1) clerical and service employees;
  - (2) drivers and laborers; and
  - (3) other necessary supporting staff.

## LIST OF LAND, BUILDINGS AND FACILITIES

## 1. Land for;

- (1) nursery;
- (2) trial plantation and demonstration forest;
- (3) project office and related facilities; and
- (4) roads

## 2. Building and facilities:

- (1) project office;
- (2) laboratories;
- (3) sheds for machinery and equipment;
- (4) storehouse for forestry materials;
- (5) workshop and garage;
- (6) accommodation for the Japanese experts and Indonesian counterparts; and
- (7) others.

## 3. Natural mangrove forests

## THE JOINT COMMITTEE

## 1. Functions

The Joint Committee will meet at least once a year and whenever it is required, and work:

- (1) to formulate the Annual Work Plan of the Project in line with the Tentative Schedule of Implementation formulated under the framework of this Record of Discussions;
- (2) to review the overall progress of the Project as well as the achievements of the above-mentioned Annual Work Plan; and
- (3) to review and exchange views on major issues arising from or in connection with the Project.

## 2. Composition

- (1) Chairman: Director General of Reforestation and Land Rehabilitation (RLR), Ministry of Forestry, the Government of the Republic of Indonesia.

## (2) Members:

## (a) Indonesian Side:

- 1) Secretary of Directorate General of RLR.
- 2) Director of Reforestation and Regreening.
- 3) Director of Soil Conservation.
- 4) Director of Planning Bureau.
- 5) Director of Foreign Cooperation and Investment Bureau.
- 6) Director of Forestry Research and Development.
- 7) Representative of BAPPENAS.
- 8) Representative of SERKAD
- 9) Head of Regional Forestry Office Bali Province.
- 10) Head of Regional Forestry Office NTB Province.

## (b) Japanese Side:

- 1) Team Leader;
- 2) Liaison Officer;
- 3) Expert(s) appointed by the Team Leader;
- 4) Resident Representative of Indonesia office, JICA; and
- 5) Personnel concerned to be dispatched by JICA, if necessary.

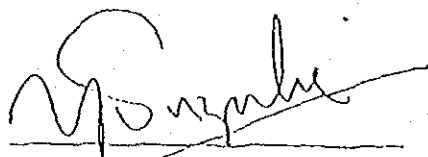
Note: Official(s) of the Embassy of Japan and the individual Japanese Expert(s) assigned to Ministry of Forestry as adviser(s) may attend the Joint Committee as observer(s).

TENTATIVE SCHEDULE OF IMPLEMENTATION  
OF  
THE DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT  
IN  
THE REPUBLIC OF INDONESIA

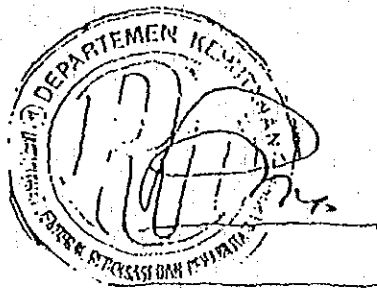
The Japanese Implementation Survey Team and the Indonesian authorities concerned have jointly formulated the Tentative Schedule of Implementation of the Project as attached hereto.

These have been formulated in connection with the Attached Document of the Record of Discussions signed between the Japanese Implementation Survey Team and the Indonesian authorities concerned with the Project on the condition that the necessary budget will be allocated for implementation of the Project by both sides, and that the schedule is subject to change within the framework of the Record of Discussions when the necessity arises in the course of the Project's implementation.

Jakarta, November 4, 1992



Yasuyuki Suzuki  
Leader,  
Implementation Survey Team,  
Japan International  
Cooperation Agency, Japan



Armana Darsidi  
Director General of Reforestation  
and Land Rehabilitation,  
Ministry of Forestry,  
The Republic of Indonesia



TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE  
DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT

ITEMS	1992	1993	1994	1995	1996	1997
1. PROJECT ACTIVITIES						
1. Selection of tree species for mangrove plantation						
2. Development of silvi culture technique						
3. Cost estimation for mangrove plantation						
4. Study on effects of mangrove forest on surrounding environment						
5. Study on conservation management of flora and fauna in the mangrove ecosystem in the Project sites						
6. Pest and disease control techniques						
7. Study on the social and economic benefits for forestry and fisheries in the mangrove forests and surrounding areas						
8. Preparation of a mangrove forest management model						
9. Development of utilization techniques for mangrove forest product						
10. Other activities constructions, etc.						

P

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TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE  
DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT

ITEMS	1992	1993	1994	1995	1996	1997
11. JAPANESE CONTRIBUTION						
1. Dispatch of Japanese Experts:						
(1) Long term experts						
a. Team leader						
b. Liaison Officer						
c. Nursery						
d. Silviculture						
e. Ecosystem						
f. Forest management						
(2) Short term Experts:						
-They will be dispatched when necessary for the smooth implementation of the Project						
2. Training of Counterparts in Japan						
3. Provision of Machinery and Equipment						

*S*

*CD*

TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE  
DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT

ITEMS	1992	1993	1994	1995	1996	1997
III. INDONESIAN CONTRIBUTION						
1. Project director						
2. Coordinator						
3. Field Managers						
4. Counterpart personnel :						
a. Nursery						
b. Silviculture						
c. Ecosystem						
d. Forest management						
5. Administrative personnel						
6. Land , buildings and facilities						

### 9-3 Materials Related with Tenders (Draft)

THE JAPAN INTERNATIONAL COOPERATION AGENCY

TENDER DOCUMENTS

FOR

IN

REPUBLIC OF INDONESIA

- A. Invitation to Tender
- B. Instruction to Tenderers
- C. Tender Form
- D. Construction Contract (Draft)
- E. Specifications
- F. Bill of Quantities
- G. Drawings

May, 1993

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B.	INSTRUCTION TO TENDERERS .....	B-1 - B-7
C.	TENDER FORM .....	C-1 - C-3
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A. INVITATION TO TENDER

## A. INVITATION TO TENDER

Tenderers are invited by the Japan International Cooperation Agency (JICA) for  
IN REPUBLIC OF  
INDONESIA.

The Cihea Center were constructed under the Japanese Grant Aid in 1981 and this follow-up is to renovate the center which are deteriorated by its buildings and facilities due to the natural wear and tear over the part 10 years.

Tender Document can be obtained from the JICA Indonesia Office in Jakarta at the following address. Only one set of documents will be provided for each at : hours WIB (Western Indonesian time) on th of May, 1993.

Japan International Cooperation Agency  
Jl. M.H. Thamrin No.59  
Jakarta  
Tel : 324247

Tender shall be submitted to the aforementioned JICA office just before closing time on the TENDER FORM being enclosed in a sealed envelope, legibly endorsed as stated on the Form.

Closing Time of submission is at : hours WIB on th of May, 1993.  
No Tender will be received after the Closing Time.

The tenders will be opened publicly at the JICA Indonesia Office, immediately after the Closing Time of submission.

This invitation shall be valid subject to the agreement between the JICA and the Government of Republic of Indonesia regarding the rehabilitation works mentioned above.



B. INSTRUCTION TO TENDERERS



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4. Receipt and Opening of Tenders .....	B-4
5. Tender Validity .....	B-5
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## B. INSTRUCTION TO TENDERERS

Tenderers are invited by the Japan International Cooperation Agency (JICA)  
(hereinafter called as "the EMPLOYER") for

in Republic of Indonesia (hereinafter called "the  
Project")

### 1. General Description of the Works

#### (1) General Information of the Work

The Works will be implemented with financing from the  
EMPLOYER. The general information of the Works are as follows

(a) Title of the Project

(b) Construction Site

(c) Scope of Works

The major works to be covered by this Project shall be :

(d) Time of Completion

The Works shall be completed by \_\_th of \_\_\_\_\_, 1993.

(2) The Engineer

is appointed as the Engineer (hereinafter called "the Engineer") to administrative the Project on behalf of the EMPLOYER.

(3) Tender Documents

The complete set of Tender Documents consists of the following :

- 1) INVITATION TO TENDER
- 2) INSTRUCTION TO TENDERERS
- 3) TENDER FORM
- 4) CONSTRUCTION CONTRACT (DRAFT)
- 5) SPECIFICATIONS
- 6) BILL OF QUANTITIES
- 7) DRAWINGS

(4) Tender's Responsibility

- (a) The Tender shall carefully examine the Tender Documents, including all Addenda that may be issued during the tendering period, and shall be deemed to have full information as to all conditions in the Site, and elsewhere affecting the performance of the Works, and to have prepared his Tender considering those that will have to supply.
- (b) The failure or omission of tenderer to receive or examine the documents, or to acquaint himself with site conditions, shall in no way relieve him from any obligation with respect to this Tender.

2. Qualification of Tenderer

(1) Only Tenderers from selected Japanese construction firms who have their local offices or agents in Republic of Indonesia will be invited to the Tender.

(2) Disqualification of Tenderers

Collusion among or between tenderers shall be considered as sufficient to disqualify the tenderers and to reject their tender.

3. Form and Submission of Tenders

(1) The form of the Contract to be awarded is on a fixed lump sum basis in payment to the Contractor.

(2) The Tender and accompanying documents shall be prepared in English and shall be submitted in duplicate in accordance with the Forms attached to this Tender Documents. The blank space provided in the Forms shall be filled in by typewriter or manually in ink with the authorized representative's signature. The proposals shall be shown in both written words and numerical figures. In case of a discrepancy between the price written in words and that written figures, the written words shall govern.

(3) The Tenderer shall offer his price in Rupiahs (Rp).

(4) The Tenderer shall submit hereto the power of attorney stamped by the Tokyo Chamber of Commerce and Industry.

(5) The Tender shall be enclosed in separate envelopes which is sealed, marked in lower left hand corner "Tender for

in Republic  
of Indonesia.

(6) No Tender Documents once submitted will be returned to the tenderer.

- (7) The Tender Documents shall be returned to the Engineer immediately after the close of the Tender.
- (8) Amendments to the Tender once submitted will not be accepted.
- (9) Incomplete, vague or conditional Tenders will not be accepted.

#### 4. Receipt and Opening of Tenders

- (1) The Tender shall be submitted to the JICA Indonesia office by hand not later than \_\_\_\_ : \_\_\_\_ hours WIB on \_\_\_\_ th of May, 1993.
- (2) The Tenders will be opened publicly at the JICA Indonesia Office immediately after the Closing Time of the Submission at the presence of the representative of the Tenderers.
- (3) Any Tender received after the time and date for receipt of Tender will not be accepted.
- (4) The winner of the tender shall be the one whose Tender is the lowest evaluated price within the original cost estimated by the Engineer, in compliance with all the tender conditions, and the contract will be awarded to the winner.
- (5) If the tender prices exceed the original cost estimated by the Engineer, all the tenderers are requested to participate in the second or third tenders. The times of tendering, including the first one, shall be maximum three (3) times.

When no tender succeeds after the tender of three (3) times, and if the lowest tender price is only slightly higher than the original cost estimated by the Engineer, direct negotiation with the lowest tenderer may be commenced. And when the price of the lowest tenderer is set to the level of the original cost of the Engineer as a result of the negotiation, the contract would be awarded to the said tenderer.

In case that the price of the lowest tenderer is largely exceeding the cost estimated by the Engineer throughout the three times of tenders, the re-tender will be provided.

5. Tender Validity

The tender price shall be valid for ninety (90) days after opening of the tender.

6. Award of Contract

- (1) The Contract shall be awarded within 2 days after the opening of the Tender. The successful tender will be notified by registered mail delivered to the address shown on his tender that he shall be awarded the Contract.
- (2) The successful tenderer shall provide the breakdown of the proposed tender price and work schedule. Such breakdown of the estimated cost shall be regarded as a part of the Contract price.

7. Contract Price

Contract to be awarded is on a fixed lump sum basis in payment to the Contractor.

8. Execution of Contract

Within 20 days after the Tender has received the notice of award, he shall sign the Contract.

9. Rejection of Tender

The EMPLOYER is not bound to accept the lowest or any tender nor he is obliged to give any reason for rejection of any tender.

10. Withdrawal of Tender

Tenderers may withdraw their tender by a written request over the signature of the representative of the tenderer and shall submit it to the Engineer prior to the time and date for receipt of Tender.



11. Question and Answer as to Tender Documents

- (1) If the tenderer is in doubt as to the true meaning of any part of the Drawings, the Technical Specifications and/or other Contract Documents, he may submit to the Engineer written request for interpretation thereof which should be typed in his letterhead.
- (2) Questions as to the Tender Documents shall be submitted to the Engineer by \_\_\_\_ : \_\_\_\_ hours WIB, \_\_\_\_ th of May, 1993, while answer to the question submitted shall be provided to the tenderers at \_\_\_\_ : \_\_\_\_ hours WIB on \_\_\_\_ th of May, 1993.

12. Amendments

When amendments in the Tender Documents are made by the Engineer and/or the EMPLOYER, these will be notified to all Tenderers in a form of addenda, and these addenda shall form an integral part of the Tender Documents.

13. Site Investigation

On-site orientation will not be held. So, if necessary, the tenderer shall at his own expense visit the site early in the period allowed for tendering.

14. Cost of Tendering

All cost associated with the preparation and submission of the tender shall be to the account of the tenderer, and the EMPLOYER will neither be responsible for, nor pay for, any expenses or losses which may be incurred by the tenderer in connection with visits to and examination of the site, and in tendering.

15. Taxes and Port Charges

- (1) All materials and equipment imported from Japan under the Contract will be exempted from all customs duties and port charge in Republic of Indonesia.

- (2) The Contractor will be exempted from the payment of customs duties, taxes and other fiscal levies which may be imposed by the Government of Republic of Indonesia with respect to the supply of products and services under the contract.

16. Conditions of Contract

Conditions of the Contract, when awarded, are described in the attached form of contract Agreement.

(DRAFT)

CONSTRUCTION CONTRACT

BETWEEN

INDONESIA OFFICE  
OF  
JAPAN INTERNATIONAL COOPERATION AGENCY

AND

---

FOR

IN  
REPUBLIC OF INDONESIA



### C. TENDER FORM

Tenderes are requested to fill in all the blank spaces in this Tender Form. The successful tenderer is requested to submit the breakdown of tender price to the Engineer.

TENDER FORM

Tender for

IN REPUBLIC OF INDONESIA

To : The Japan International Cooperation Agency

Dear Sirs,

The undersigned Tenderer, having examined the Tender Documents and with knowledge of site and other conditions for

in Republic of Indonesia, and being satisfied as to all conditions under which the above-mentioned work must be performed, hereby proposes to perform all the Works for the Gross Tender Sum of \_\_\_\_\_ (Rp. \_\_\_\_\_).

The undersigned fully understand that the EMPLOYER reserves the right to reject any or all Tenders.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 1993.

Signature : \_\_\_\_\_ in the

Capacity of \_\_\_\_\_

duly authorized to sign Tenders for and on behalf of \_\_\_\_\_

Address : \_\_\_\_\_

## AGREEMENT

This Agreement is made and enter into this \_\_\_\_th of \_\_\_\_, 1993 by and between the Japan International Cooperation Agency having its office at Jakarta (hereinafter referred to as "The EMPLOYER") and \_\_\_\_\_, duly organized and existing under the laws of Japan, having its branch office of business at \_\_\_\_\_, Republic of Indonesia (hereinafter referred to as "the Contractor").

## WITNESS

WHEREAS the EMPLOYER provided funds and management in execution of the Works for the Government of Republic of Indonesia concerning \_\_\_\_\_ in Republic of Indonesia (hereinafter referred to as "the Project")

WHEREAS, the EMPLOYER is desirous of having the construction work for the Project carried out, the Contractor is willing to execute the Works on the terms and conditions as set forth in this Agreement.

NOT THEREFORE, in consideration of the mutual covenants hereinafter contained, the parties agree as follows :

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## ARTICLE 1. DEFINITION

### 1.1 Definition

In interpreting or construing this Contract the following terms shall have the meanings hereby assigned to them except where the context otherwise requires :

"Project" means

in Republic of Indonesia.

"The EMPLOYER" means the Japan International Cooperation Agency (JICA), and shall include any person or persons authorized by the JICA.

"The Engineer" means Nippon Koei Co., Ltd. having its principal office at 4. Kojimachi 5-chome, Chiyoda-ku, Tokyo 102, Japan, and shall include any person or persons authorized by the said firm for the Project.

"The Works" means the construction work of the Project as described in Article 3.

"The Contract" means \_\_\_\_\_  
\_\_\_\_\_ and shall include any person or persons authorized by the said company for the Project.

"The Contractor Documents" means the documents consisting of this Contract, Drawings, Specifications, and all addenda issued prior to the execution of this Contract.

### 1.2 Period

The period stipulated in this contract refers to calender period.

## ARTICLE 2. SCOPE AND EXECUTION OF THE WORKS

The Works shall cover the construction and supply of the following facilities described in the Contract Documents prepared by the Engineer for the Project.

## ARTICLE 3. PERIOD OF EXECUTION OF THE WORK

- 3.1 The Contractor shall commence the Works within fourteen (14) days from the date of the receipt of the notice to commence issued by the Engineer.
- 3.2 The Contractor shall complete the Works stipulated in Article 3, by the \_\_\_\_th of \_\_\_\_\_, 1993. However, when extension of the period of execution of the Works is necessary due to cause beyond the control and responsibility of the \_\_\_\_\_ the EMPLOYER, the extension of the term of this Contract shall be negotiation between the parties hereto.

## ARTICLE 4. REMUNERATION

The EMPLOYER shall pay a sum of \_\_\_\_\_ US Dollars (Rp. \_\_\_\_\_) (hereinafter referred to as "the Contract price") to the Contractor, as the Contract Price for the Works, in accordance with the payment schedule stated in Article 6.

## ARTICLE 5. PAYMENT

5.1 The payment will be made when payment request are presented by the Contractor to the EMPLOYER in Republic of Indonesia with necessary certificates.

### 5.2 Payment Schedule

#### 5.2.1 Advance Payment

The amount of \_\_\_\_\_  
Rupiahs (Rp. \_\_\_\_\_), which corresponds to forty percent (40%) of the Contract Price, shall be paid within 30 days after the EMPLOYER will have received the request for the advance payment.

#### 5.2.1 Advance Payment

The amount of \_\_\_\_\_  
Rupiahs (Rp. \_\_\_\_\_), which corresponds to sixty percent (60%) of the Contract Price, shall be paid upon the completion of the Works under this Contract. The request for final payment shall be accompanied with the certificate of the completion of the Works issued by the Engineer and approved by the EMPLOYER.

## ARTICLE 6. EMPLOYER'S RESPONSIBILITIES

6.1 The EMPLOYER shall carry out the following works in time for the commencement of the Works or according to the progress of the Works :

- 6.1 The EMPLOYER shall help the Contractor in expediting the granting and issuance of visas of personnel of the Contractor and to carry out the Work arising from this Agreement.
- 6.2 The EMPLOYER shall take necessary measures to exempt the Contractor from customs duties, internal taxes and other fiscal levies which may be imposed in Republic of Indonesia with respect to the supply of the products, services and equipment necessary for the construction of the Project.
- 6.3 The EMPLOYER shall cooperate with the resident representative of the Contractor in the negotiations and procedures with the various authorities and public and private organizations for the execution of the Works.

#### ARTICLE 7. CONTRACTOR'S OBLIGATION

- 7.1 The Contractor shall perform the Works in accordance with the Contract Documents.
- 7.2 The Contractor shall prepare shop drawings, progress schedules and other technical documents required by the Engineer.
- 7.3 The Contractor shall submit to the EMPLOYER the lists of origin of material and equipment which the Contractor propose to purchase for the Works.
- 7.4 The Contractor shall not purchases products or services other than those of Republic of Indonesia or Japan without prior approval of the EMPLOYER.
- 7.5 The Contractor shall be responsible for construction means, methods, techniques, sequences or procedures, and for safety precautions and program in connection with the Works.
- 7.6 The Contractor shall be responsible for the acts or omission of the subcontractors, or any of Contractor's agents or employees, or any other persons performing any of the Works.

## 8.2 Approval of Plans and Drawings

The Contractor shall submit to the Engineer three (3) copies each of plans, drawings and documents required for its approval in accordance with the Specifications. The Engineer shall, within fourteen (14) days after receipt thereof, return to the Contractor one (1) copy of such plans, drawings and documents with the Engineer's approval and/or comments written thereon, if any. A list of plans and drawings to be submitted to the Engineer shall be mutually agreed upon between the Engineer and the Contractor.

## 8.3 Supervision and Inspection

The necessary inspection of the Works shall be carried out by the Engineer and the EMPLOYER, throughout the entire period of construction, in order to ensure that the Works is duly performed in accordance with this Contract and the Specifications.

## 8.4 Report

The Contractor shall make a report to the EMPLOYER the monthly progress of the construction as of the end of every month.

The EMPLOYER shall have the right to request the Contractor at any time to obtain a report on the Works, if necessary.

## 8.5 Inspection

Upon completion of the Works, the Contractor shall request the final inspection of the EMPLOYER.

## 8.6 Delivery

When the Works has passed the final inspection of the Engineer, with the certificate of Completion issued by the Engineer and approved by the EMPLOYER, the Works shall be delivered to the EMPLOYER.

#### ARTICLE 9. WARRANTY AGAINST DEFECTS

The period of guarantee against any defects in the Works shall be six (6) months from the date of the final certificate for payment.

#### ARTICLE 10. BOND

The performance bond is a bond for the proper carrying out of all of the Contractor's obligations during the period from the date of the Signing of the Construction Contract to the completion of the Works in accordance with terms and conditions of this Contract, and the amount of the Performance Bond shall be five percent (5%) of the Contract Price.

The performance bond shall be released immediately after issued of the certificate of completion by the Engineer with approval by the EMPLOYER.

#### ARTICLE 11. ASSIGNMENT AND SUBLETTING

This Agreement and the rights and obligations hereunder shall not be transferred by either party excepts as otherwise Allowed In this Contract. The Contractor shall not sublet the whole of the Works or a major part of the Works to any third party.

#### ARTICLE 12. FORCE MAJEURE

- 12.1 Neither party shall be deemed to be in default or breach of the Contract if he is unable to perform his obligations under the Contract owing to circumstances beyond his reasonable control. Such circumstances (hereinafter referred to as Force Majeure) include, but shall not be limited to the following :

- (a) Acts of God, including storm, earthquake, flood or any other such operation of the forces of nature as his reasonable foresight and ability could not foresee or reasonably provide against.
- (b) War (declared or undeclared), hostilities, invasion, act of any foreign enemy, threat of or preparation for war; riot, insurrection, civil commotion, rebellion, revolution, usurped power, civil war; and labour trouble or other industrial troubles, strikes, embargoes, blockades, sabotage of labour.

#### 12.2 Monetary Obligations

Notwithstanding the foregoing, the occurrence of Force Majeure shall not prejudice nor otherwise affect either party's liability to pay remuneration or reimbursement of expenses to which the other party is entitled on or before the date of the occurrence.

#### 12.3 Notice

The party affected by Force Majeure shall give the other party a written detailed account of the circumstances of the Force majeure as soon as practicable, but not later than 14 days from the occurrence.

#### 12.4 Expatriate Staff

In the event that Force Majeure is likely to endanger the safety of any expatriate staff of the Contractor, they shall be allowed to leave the site and office, giving at least 24 hours advance to one of the EMPLOYER staff responsible for the management of the Project.

#### 12.5 Suspension and Termination

Upon the occurrence, the party affected may be allowed to temporarily suspend the performance of his duties under the Contract for so long a period as Force Majeure continues and as his performance is prevented thereby. In such instance, he shall make all reasonable efforts to mitigate the effect of Force Majeure upon his duties, in spite of such efforts, after a cumulative period of 120 days of the suspension, either party may be entitled to terminate the Contract without prejudice.

### ARTICLE 13. APPLICABLE LAW

This Contract is governed by laws of Japan and Republic of Indonesia.

### ARTICLE 14. DISPUTES AND ARBITRATION

- 14.1 This Contract shall be executed by the parties hereto in good faith, and in case any doubtful point is raised or any dispute occurs concerning the interpretation or performance of this Contract, such matter shall be settled through the consultation of the parties.
- 14.2 In the event that an amicable settlement cannot to be reached through consultation, the matter shall be referred to arbitration. The arbitration shall be appointed by the EMPLOYER, another by the Contractor and the last by the said two arbitrators.
- 14.3 In the event that the said two arbitrators cannot reach agreement on the appointment of the third arbitrator, the dispute shall be settled by arbitration in accordance with the Rules of conciliation and arbitration of the International Chamber of Commerce in Paris.
- 14.4 The place of arbitration shall be Tokyo in Japan.
- 14.5 The arbitral award shall be final and binding upon the parties hereto and the parties shall comply in good faith with the decision. Judgment upon the award or order of enforcement as the case may be.
- 14.6 The losing party shall bear the cost for all proceedings of arbitration throughout.



#### ARTICLE 15. LANGUAGE AND MEASUREMENT SYSTEM

- 15.1 All correspondence between the two parties including notices, request, consents offers or demands shall be in English. All drawings, specifications, reports and other documents shall also be prepared in English.
- 15.2 All documents made under this Contract shall adopt the metric system and days shall be calender days.

#### ARTICLE 16. EARLY TERMINATION

- 16.1 The EMPLOYER may terminate this Contract upon thirty (30) days' written notice to the Contractor, should the Contractor not fulfill his obligations as stipulated in Article 8 for more than sixty (60) consecutive days.
- 16.2 The Contractor may terminate this Contract upon thirty (30) days' written notice to the EMPLOYER, should the EMPLOYER delay the payment stipulated in Article 6 for more than sixty (60) consecutive days.
- 16.3 In the event of Early Termination for reasons stated in paragraphs 18.1 or 18.2 the Contractor shall be paid by the EMPLOYER, a fair and reasonable proportion of the Contract Price calculated on the basis of the Contractor's Works carried out up to the termination date.

#### ARTICLE 17. ENTIRE AGREEMENT

The Contract Documents contain the entire agreement between the parties in respect of the subject matter hereof and supersede and cancel any and all previous agreements, negotiations, commitments and writings in respect of the subject matter thereof.

## ARTICLE 18. NOTICE

All notices pertaining to this Contract between the Owner and the Contractor shall be sent in writing by registered air mail, telegraph or telex, or be handed to the addresses so stated herein. In case either party hereto changes the address, the party concerned shall give such notice to the other party beforehand. Time of any notice shall start on the deposit of such a notice, in the post office of the sender.

### For The EMPLOYER

Name : Mr. Akira TAKAHASHI  
Resident Representative  
Japan International  
Cooperation Agency  
Indonesia Office

Address : Jl. M.H. Thamrin No. 59, Jakarta

Telephone : Jakarta 3907533

Fax : Jakarta 3907536

### For the Contractor

Name : \_\_\_\_\_

Address : \_\_\_\_\_

Telephone : \_\_\_\_\_

Telex : \_\_\_\_\_

Fax : \_\_\_\_\_

### For the Consultant

Name : \_\_\_\_\_

Address : \_\_\_\_\_

Telephone : \_\_\_\_\_

Telex : \_\_\_\_\_

Fax : \_\_\_\_\_

IN WITNESS HEREOF, the parties hereto have caused this contract to be signed in their respective name in duplicate, each party retaining one (1) copy thereof.

th day of May, 1993 as of the day and year first herein before written.

The EMPLOYER

The Contractor

---

Mr. Akira TAKAHASHI  
Resident Representative  
Japan International  
Cooperation Agency  
Indonesia Office

Witness by

Witness by

Indonesia

#### 9-4 Tide Tables of Benoa Bay

## 39. BENOA (BALI)

08° 7' S — 115° 2' T

JANUARI 1993

Waktu: G.M.T. + 08.00

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12	24	21	16	10	5	2	1	3	7	12	17	21	22	21	18	14	9	6	5	7	10	15	19	22	12
13	23	22	18	13	8	4	1	2	5	10	15	19	22	22	20	17	12	8	6	6	8	11	16	19	13
14	22	22	19	15	11	6	3	2	4	8	12	17	21	22	22	19	15	11	8	6	7	9	12	16	14
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PEBRUARI 1993

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## 39. BENOA (BALI)

08° 7' S — 115° 2' T

MARET 1993

Waktu: G.M.T. + 08.00

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11	21	17	11	6	3	2*	4	8	14	20	24	26*	24	20	14	9	4	2*	2	6	11	16	20	23	11
12	22	19	14	9	4	2*	3	6	12	17	22	25*	25	23	18	12	6	3	2*	4	8	13	17	21	12
13	22	20	16	11	7	4	3*	5	9	15	20	24	25*	24	20	15	10	6	3	3	6	10	14	18	13
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APRIL 1993

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3	8	7*	9	10	13	15	17	17	17	15	14	12	10	10	10	12	14	16	18	19*	18	16	13	10	3
4	8	6*	6	8	11	14	17	19	19	18	16	13	10	8	7	8	10	13	17	19	20*	19	16	13	4
5	9	6	5*	6	8	12	16	19*	21*	21	19	16	11	8	5*	5	7	10	14	18	20	21*	19	16	5
6	11	7	5	4	6	9	14	19	22	23*	22	19	14	9	5	3*	4	7	11	16	20	22	21	18	6
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23	17	12	8	5	4	6	10	15	21	26*	26	25	21	15	9	4	1*	1	4	8	13	18	21	21	23
24	19	15	10	6	4	5	8	13	18	23	26*	26	23	18	12	6	2	1*	2	6	10	15	19	21	24
25	20	17	13	8	5	5	6	10	15	21	24	26*	25	21	16	10	5	2	1*	3	7	12	16	19	25
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27	19	18	17	13	10	8	7	8	11	14	19	22	23*	23	20	16	11	7	4	3*	6	7	11	14	27
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## 39. BENOA (BALI)

08° 7' S — 115° 2' T

MEI 1993

Waktu: G.M.T. + 08.00

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## JUNI 1993

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# 39. BENOA (BALI)

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# 39. BENOA (BALI)

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11	8	7*	8	10	12	15	16	17	16	14	12	9	7*	7	8	11	14	17	20	22*	21	19	16	12	11
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13	10	6	4*	4	6	9	13	16	18	19	17	14	10	7	6	6	9	13	17	22	24*	24	22	18	13
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15	16	11	5	2	1*	3	6	11	16	19	20	19	16	11	8	5	5	8	12	17	22	25	26*	24	15
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25	8*	9	10	12	14	15	16	15	14	11	9	8*	8	9	11	14	17	19	21*	21	19	17	13	10	25
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23	11	13	15	16	15	13	10	8	7*	7	9	11	14	17	19	20*	20	19	16	14	11	9	8	10	23
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26	8	6*	6	7	9	12	14	15	15	15	13	11	9	9	11	14	18	21	22	23*	21	18	13	12	26
27	9	6	4*	4	6	9	12	15	16	17	15	13	11	9	8	9	11	15	19	22	24*	23	21	17	27
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(機材購送請求書付屬書)

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## REFFORESTATION EQUIPMENT / 造林資機材(BALI)

(機材購送請求書付屬書)

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139,711,420

REFORESTATION EQUIPMENT / 造林資機材 (LOMBOK)

(機材購送請求書付属書)

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24,943,020

國際協力事業団

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(機材購送請求書付屬書)

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國際協力事業団

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番号

(機材購送請求書付属書)

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國際協力事業団



(機材購送請求書付属書)

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國際協力事業団