

REPUBLIC OF INDONESIA
MINISTRY OF COMMUNICATIONS
DIRECTORATE GENERAL OF LAND TRANSPORT
AND INLAND WATERWAYS

TENDER DOCUMENTS
FOR
NEW RAILWAY LINE FOR CENGKARENG AIRPORT
CONSTRUCTION PROJECT

COST ESTIMATION & PRINCIPLES

AUGUST 1984

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



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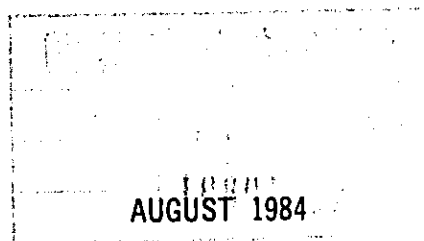


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JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

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1. TOTAL INVESTMENT COSTS

Total Investment Cost

Work Item	Construction Cost					
	Temporary Connection at Grade			Elevated Track		
	L.C. Million Rp	F.C. 1,000 US\$	Total Million Rp	L.C. Million Rp	F.C. 1,000 US\$	Total Million Rp
1. Survey						
Installation of Right-of way Stake	6	2	8	0	0	0
2. Geological Survey						
Boring	33	9	42	0	0	0
3. Civil Work						
Earthworks	3,137	3,180	6,254	0	0	0
Bridge & Viaduct	15,173	13,824	28,720	3,952	3,301	7,187
Road Construction Work	551	321	866	0	0	0
Subtotal	18,861	17,325	35,840	3,952	3,301	7,187
4. Track Work						
Track Laying Work	2,716	6,571	9,156	216	591	795
Track Shifting	84	22	105	0	0	0
Subtotal	2,800	6,593	9,261	216	591	795
5. Architectural Work						
Airport Terminal Station	1,515	1,010	2,505	0	0	0
Kota Intan Station	918	379	1,290	0	0	0
Jayakarta Station	0	0	0	135	42	175
Signal Cabin	234	86	318	0	0	0
Crossing Watchman's Box	63	16	79	0	0	0
Subtotal	2,730	1,491	4,192	135	42	175
6. Electrical Work						
Substations	479	4,192	4,587	0	0	0
Overhead Contact System	898	1,180	2,054	18	60	76
Power Distribution Lines	74	659	720	9	15	25
Signalling System	206	1,858	2,027	32	207	235
Telecommunication System	467	694	1,147	16	43	58
Subtotal	2,124	8,583	10,535	75	325	394
7. Land Acquisition & In- demnity of Obstacles	18,375	0	18,375	565	0	565
8. Relocation of High Voltage Power Trans- mission Steel Towers	671	209	876	0	0	0
9. Relocation of Airport Access Road	1,817	1,128	2,922	0	0	0
10. Trial Run	318	0	318	19	0	19
11. An Indemnity & a Burden for Power Supply	332	1,262	1,569	0	0	0
12. Administration Facilities	529	27	555	0	0	0
13. Construction Supervision	204	3,693	3,823	29	528	547
14. Contingencies	18,242	10,553	28,584			
Total	67,042	50,875	116,900	4,991	4,787	9,682

Total Investment Costs (Approximate Estimates)

Alternative

Work Item	Construction Cost					
	Temporary Connection at Grade			Elevated Track		
	L.C. Million Rp	F.C. 1,000 US\$	Total Million Rp	L.C. Million Rp	F.C. 1,000 US\$	Total Million Rp
1. Survey Installation of Right-of-way Stake	6	2	8	0	0	0
2. Geological Survey Boring	33	9	42	0	0	0
3. Civil Work						
Earthworks	3,148	3,217	6,301	0	0	0
Bridge & Viaduct	15,738	17,745	33,128	3,952	3,301	7,187
Road Construction Work	551	321	866	0	0	0
Subtotal	19,437	21,283	40,295	3,952	3,301	7,187
4. Track Work						
Track Laying Work	2,752	6,718	9,336	216	591	795
Track Shifting	84	22	105	0	0	0
Subtotal	2,836	6,740	9,441	216	591	795
5. Architectural Work						
Airport Terminal Station	1,515	1,010	2,505	0	0	0
Kota Intan Station	918	379	1,290	0	0	0
Jayakarta Station	0	0	0	135	42	175
Signal Cabin	234	86	318	0	0	0
Crossing Watchman's Box	63	16	79	0	0	0
Subtotal	2,730	1,491	4,192	135	42	175
6. Electrical Work						
Substations	479	4,192	4,587	0	0	0
Overhead Contact System	898	1,180	2,054	18	60	76
Power Distribution Lines	74	659	720	9	15	25
Signalling System	206	1,858	2,027	32	207	235
Telecommunication System	467	694	1,147	16	43	58
Subtotal	2,124	8,583	10,535	75	325	394
7. Land Acquisition & Indemnity of Obsta- cles	18,375	0	18,375	565	0	565
8. Relocation of High Voltage Power Trans- mission Steel Towers	671	209	876	0	0	0
9. Relocation of Airport Access Road	1,817	1,128	2,922	0	0	0
10. Trial Run	318	0	318	19	0	19
11. An Indemnity & a Burden for Power Supply	332	1,262	1,569	0	0	0
12. Administration Facilities	529	27	555	0	0	0
13. Construction Supervision	190	3,930	4,041	29	528	547
14. Contingencies	18,410	11,756	29,930			
Total	67,808	56,420	123,099	4,991	4,787	9,682

2. COST ESTIMATION AND PRINCIPLES

PACKAGE I . CIVIL AND ARCHITECTURAL WORK

- 1. CONSTRUCTION COSTS**
- 2. BASIC PRINCIPLES FOR
CONSTRUCTION COST ESTIMATION**
- 3. CONSTRUCTION SCHEDULE**

1. Construction Costs

(1) Summary of Construction Costs

Construction costs estimated as per the basic principles assumed for cost estimation are summed up as shown in Table-(1).

(2) Amounts by Work Items

Unit prices and amounts broken down by work items are as shown in Table-(2).

2. Basic Principles for Construction Cost Estimation

Construction costs are believed to fluctuate considerably with the economic condition of Indonesia, the timing of the contract order and other factors. In this report, the construction costs were estimated according to the following principles:

(1) Base Date for Construction Cost Estimation

The construction costs were estimated on the basis of laws, regulations, labor wages, and prices of materials and equipment, as of October 1, 1983, the day on which site survey was conducted to estimate construction cost.

(2) Construction Period

Construction period shall be 35 months counting from the date of work commencement, including time needed for preparatory works. The maintenance period shall cover 12 months starting from the date of completion of the construction.

(3) Escalation Clause

The escalation clause shall apply to possible rise in prices.

(4) Currency Exchange Rate

The exchange rate of foreign currency is set at Rp980 = US\$1.00.

(5) Taxes and Duties

Taxes and duties shall be estimated on the following basis.

1) Exempted Items

- a) Any duties or import taxes to be imposed upon necessary equipment and materials to be imported for execution of this construction work.
- b) Taxes to be imposed upon incomes of alien corporations and expatriate workers to be engaged in this construction work.

2) Non-exemption Item

Tax to be imposed upon total proceeds.

(6) Land Acquisition and Grant

Necessary land for construction of railway track under the proposed project shall be granted at no cost to the contractor after acquisition thereof by the employer, regardless of whether it is governmental or private land.

(7) Compensatory Procedures and Expense for Removal of Obstacles

The employer shall be fully responsible for the procedure to be taken and the expense for removal and compensation of any obstacles built up on the ground or buried under the ground inevitably to obstruct the execution of the construction work.

(8) Wage Rates by Class of Labor

The daily rate of wage payable to the workers in the Republic of Indonesia shall be as per Table-(3). Those wage levels are determined on a basis of 7 working hours per day.

(9) Main Material Prices and Quantities

With regard to required construction materials, domestic products shall be utilized to the possible maximum. Only those materials not locally available by any means shall be off-shore purchased and their standard price levels and quantities shall be as specified in Table-(4).

(10) Main Construction Equipment and Rates

Main construction equipment to be used for this construction work and their rates shall be as listed up in Table-(5).

(11) Overhead Charges Rate

Overhead charges may be divided into costs on and off the site.

Overhead on the site shall take a share of 12 percent in the total construction cost, as shown in Table-(6), as the result of summing up to a total of necessary expenses. Overhead off the site shall include expenses to be incurred to both head and local offices of the contractor and the profit margin, thus corresponding to 10 percent of the net construction cost.

(12) Temporary Construction Facilities

Main items of temporary construction facilities shall be as listed up in Table-(7).

(13) Basic Conditions for Execution of Construction Work

1) The work shall be executed for single track construction for the time being. However, since land acquisition is planned to ensure future addition to double track, the spare right-of-way for such future addition may be used as the temporary construction road at no charge to the contractor.

2) The contractor's base shall be established near the post of 8k500m, together with six (6) other sub-bases.

3. Construction Schedule

The construction work schedule is as shown in Table-(8).

Consideration was given to the following matters in setting up the construction work schedule.

(1) Prior arrangements should be made on the side of the employer, in advance of scheduled commencement of the work, to acquire necessary land and remove obstacles for site clearance, so that the construction work schedule would not be delayed in the past.

(2) No works can be executed in any way for earthwork construction and river bridge construction for nearly 2 months during the wet season from December to March in the next year.

Table-(1) Summary of Construction Costs

Work Item	Unit	Amount		
		Domestic Currency (Rp)	Foreign Currency (US\$)	Total (Rp)
Surveying	Lump Sum	6,073,088	1,574.4	7,616,000
Geological Survey	"	33,299,856	8,632.8	41,760,000
Earthworks	"	3,136,822,910	3,180,505.5	6,253,718,300
Bridge Work	"	15,172,423,606	13,824,330.3	28,720,267,800
Road Construction Work	"	551,090,802	321,515.1	866,175,600
Track Work	"	84,188,522	21,721.1	105,475,200
Architectural Work	"	2,730,627,600	1,490,730.0	4,191,543,000
Electrical Work	"	71,494,000	72,600.0	142,642,000
Total		21,786,020,384	18,921,609.2	40,329,197,900

Table-(2)

BIDDER: _____

DATE: _____

SIGNATURE: _____

GENERAL SUMMARY

	<u>AMOUNT, RP.</u>
1. SURVEYING	<u>7,616,000</u>
2. GEOLOGICAL SURVEY	<u>41,760,000</u>
3. EARTHWORKS	<u>6,253,718,300</u>
4. BRIDGE WORK .	<u>28,720,267,800</u>
5. ROAD CONSTRUCTION WORK	<u>866,175,600</u>
6. ARCHITECTURAL WORK	<u>4,191,543,000</u>
7. TRACK WORK	<u>105,475,200</u>
8. ELECTRICAL WORK	<u>142,642,000</u>
TOTAL	<u>40,329,197,900</u>

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BILL OF QUANTITIES

1. SURVEYING

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
1.01	004,019 021,022	RIGHT-OF-WAY STAKE	1,280	No.	4,744.6	1.23	6,073,088	1,574.4	7,616,000
		TOTAL OF SURVEYING					6,073,088	1,574.4	7,616,000

BILL OF QUANTITIES

2. GEOLOGICAL SURVEY

BIDDER: _____

DATE: _____

SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
2.01	008	BORING INVESTIGATION	240	L.M.	138,749.4	35,97	33,299,856	8,632.8	41,760,000
		TOTAL OF GEOLOGICAL SURVEY					33,299,856	8,632.8	41,760,000

BIDDER:

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BILL OF QUANTITIES

3. EARTHWORKS

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
3.01	007	SAND MAT	55,170	C.M.	12,062.4	5.12	665,482,608	282,470.4	942,203,600
3.02	007	EMBANKMENT	131,210	C.M.	5,082.8	3.14	669,914,188	411,999.4	1,070,673,600
3.03	017	AGGREGATE SUBBALLAST	15,300	C.M.	10,373.8	4.96	158,719,140	71,757.0	229,041,000
3.04	006	SODDING SLOPE PROTECTION	68,190	S.M.	1,055.4	0.27	71,967,726	18,411.3	90,010,800
3.05	003	EXCAVATION OF EARTH SIDE DITCH	16,530	C.M.	4,428.0	4.40	73,194,840	72,732.0	144,472,200
3.06	004	EXCAVATION -							
a.		CLASS A	6,200	C.M.	1,606.0	5.30	9,957,200	32,860.0	42,160,000
b.		CLASS B	6,640	C.M.	15,866.8	100.84	105,355,552	669,577.6	761,541,600
c.		CLASS C	7,350	C.M.	23,482.8	136.64	172,598,580	1,004,304.0	1,156,816,500
d.		CLASS E	420	C.M.	9,261.4	25.07	3,839,788	10,529.4	14,208,600
3.07	012	AGGREGATE SUBBASE (ASB-3)	1,910	C.M.	10,554.6	2.73	20,159,286	5,214.3	25,269,300
3.08	-	SELECT STRUCTURE BACKFILL	420	C.M.	15,435.8	24.29	6,483,036	10,201.8	16,480,800
3.09	005,016 022	REINFORCED CONCRETE PIPE, 300 MM DIAMETER	1,100	L.M.	26,587.8	14.89	29,246,580	16,379.0	45,298,000
3.10	006	CONCRETE SLOPE PROTECTION	260	S.M.	92,082.0	51.60	23,941,320	13,416.0	37,089,000
3.11	022	LEVELING CONCRETE	520	C.M.	72,082.4	18.62	37,482,848	9,682.4	46,971,600
3.12	022	CONCRETE FOR -							
a.		SEMI-GRAVITY TYPE RETAINING WALL	1,590	C.M.	80,496.8	39.84	127,989,912	63,345.6	190,068,600
b.		WATER CHANNEL	210	C.M.	77,264.8	34.74	16,225,608	7,295.4	23,375,100

BILL OF QUANTITIES

3. EARTHWORKS

BIDDER: _____

DATE: _____

SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
3.13	022	REINFORCED CONCRETE FOR -							
a.		RETAINING WALL	920	C.M.	80,735.6	40.78	74,276,752	37,517.6	111,044,000
b.		SIDE DITCH	4,330	C.M.	87,005.6	46.78	376,734,248	202,557.4	575,240,500
c.		CATCH BASIN	40	C.M.	123,279.6	89.48	4,931,184	3,579.2	8,438,800
d.		BOX CULVERT	1,770	C.M.	85,148.8	50.44	150,713,376	89,278.8	238,206,600
e.		UNDERGROUND PASSAGE	160	C.M.	88,710.8	77.04	14,193,728	12,326.4	26,273,600
3.14	012, 022	CONCRETE PAVEMENT	2,630	S.M.	11,057.2	3.86	29,080,436	10,151.8	39,029,200
3.15	-	DEMOLITION OF EXISTING REINFORCED CONCRETE STRUCTURE	130	C.M.	21,313.0	65.65	2,770,690	8,534.5	11,134,500
3.16	-	PROTECTIVE FENCE	21,890	L.M.	5,386.6	1.43	121,239,954	31,302.7	151,916,600
3.17	019	CONCRETE REINFORCEMENT	370	M.T.	468,309.0	229.95	173,274,330	85,081.5	256,654,200
TOTAL OF EARTHWORKS							3,136,822,910	3,180,505.5	6,253,718,300

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BILL OF QUANTITIES

4. BRIDGE AND VIADUCT

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
4.01	004	EXCAVATION -							
a.		CLASS A	29,340	C.M.	6,180.4	23.02	181,332,936	675,406.8	843,231,600
b.		CLASS B	5,950	C.M.	17,086.6	70.83	101,665,270	421,438.5	514,675,000
c.		CLASS C	5,740	C.M.	29,769.6	124.48	170,877,504	714,515.2	871,102,400
d.		CLASS F	5,520	C.M.	85,009.6	237.48	469,252,992	1,310,889.6	1,753,924,800
4.02	012	AGGREGATE SUBBASE (ASB-3)	3,940	C.M.	10,554.6	2.73	41,585,124	10,756.2	52,126,200
4.03	008	PRESTRESSED CONCRETE PILES -							
a.		350 MM DIAMETER, A	54,530	L.M.	26,547.6	16.38	1,447,640,628	893,201.4	2,322,978,000
b.		350 MM DIAMETER, B	73,510	L.M.	28,658.6	16.93	2,106,693,686	1,244,524.3	3,326,327,500
c.		500 MM DIAMETER, A	12,950	L.M.	47,900.4	23.52	620,310,180	304,584.0	918,802,500
d.		500 MM DIAMETER, B	26,660	L.M.	52,132.2	24.61	1,389,844,452	656,102.6	2,032,825,000
4.04	022	LEVELING CONCRETE	1,970	C.M.	72,082.4	18.61	142,002,328	36,681.4	177,950,100
4.05	018, 022, 106	REINFORCED CONCRETE FOR -							
a.		ABUTMENT FOUNDATION	720	C.M.	70,690.4	25.52	50,897,088	18,374.4	68,904,000
b.		ABUTMENT WALL	710	C.M.	84,922.4	49.12	60,294,904	34,875.4	94,472,600
c.		PIER FOUNDATION	6,930	C.M.	71,719.0	37.45	497,012,670	259,528.5	751,350,600
d.		PIER WALL AND COLUMN	4,480	C.M.	78,954.0	43.20	353,713,920	193,536.0	543,379,200
e.		GIRDER	2,800	C.M.	153,277.8	213.89	429,177,840	598,892.0	1,016,092,000
f.		VIADUCT FOUNDATION	10,670	C.M.	72,716.0	24.80	775,879,720	264,616.0	1,035,203,400

BILL OF QUANTITIES

4. BRIDGE AND VIADUCT

BIDDER: _____

DATE: _____

SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
g.		VIADUCT SLAB, BEAM AND COLUMN	19,330	C.M.	98,086.8	82.34	1,896,017,844	1,591,632.2	3,455,817,400
4.06	019	CONCRETE REINFORCEMENT	6,100	M.T.	468,309.0	229.95	2,856,684,900	1,402,695.0	4,231,326,000
4.07	018,019 023,106	PRESTRESSED CONCRETE GIRDER -							
a.		SPAN 20 M	7	L.S.	20,192,840	36,142.0	141,349,880	252,994.0	389,284,000
b.		SPAN 25 M (A)	6	L.S.	25,016,320	44,916.0	150,097,920	269,496.0	414,204,000
c.		SPAN 25 M (B)	5	L.S.	33,430,100	69,005.0	167,150,500	345,025.0	505,275,000
d.		SPAN 26 M	1	L.S.	45,297,000	82,950.0	45,297,000	82,950.0	126,588,000
e.		SPAN 28 M	1	L.S.	37,553,060	73,203.0	37,553,060	73,203.0	109,292,000
f.		SPAN 30 M (A)	11	L.S.	40,154,480	77,924.0	441,699,280	857,164.0	1,281,720,000
g.		SPAN 30 M (B)	3	L.S.	42,291,800	81,790.0	126,875,400	245,370.0	367,338,000
h.		SPAN 33 M	1	L.S.	44,173,980	86,999.0	44,173,980	86,999.0	129,433,000
i.		SPAN 35 M	4	L.S.	53,115,320	108,516.0	212,461,280	434,064.0	637,844,000
j.		SPAN 40 M	3	L.S.	55,697,500	136,975.0	197,092,500	410,925.0	599,799,000
4.08	106	FABRICATION AND DELIVERY OF THROUGH PALTE GIRDER	1	L.S.	7,026,760	84,938.0	7,026,760	84,938.0	90,266,000
4.09	-	INSTALLATION OF THROUGH PLATE GIRDER	1	L.S.	10,762,060	48,953.0	10,762,060	48,953.0	58,736,000
TOTAL OF BRIDGE AND VIADUCT.							15,172,423,606	13,824,330.3	28,720,267,800

BIDDER:

DATE:

SIGNATURE:

BILL OF QUANTITIES

5. ROAD CONSTRUCTION WORK

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
5.01	007	EMBANKMENT	31,670	C.M.	4,825.0	2.25	152,807,750	71,257.5	222,640,100
5.02	012,014	ASPHALT CONCRETE CONSTRUCTION -							
		ASPHALT PAVEMENT -							
a.		TYPE A	4,950	S.M.	22,702.4	8.12	112,376,880	40,194.0	151,767,000
b.		TYPE B	4,330	S.M.	20,639.2	7.46	89,367,736	32,301.8	121,023,500
c.		TYPE C	12,730	S.M.	12,545.0	5.25	159,697,850	66,832.5	225,193,700
d.		TYPE D	330	S.M.	29,841.6	9.58	9,847,728	3,161.4	12,945,900
5.03	010	GURD RAILLING	1,050	L.M.	14,245.8	97.29	14,958,090	102,154.5	115,069,500
5.04	123	SAFETY MARKINGS	280	S.M.	5,498.4	1.42	1,539,552	397.6	1,929,200
5.05	-	ROADWAY SIGN	50	No.	122,844.0	31.70	6,142,200	1,585.0	7,695,500
5.06	022	CONCRETE CURBING	290	C.M.	15,010.4	12.52	4,353,016	3,630.8	7,911,200
TOTAL OF ROAD CONSTRUCTION WORK							551,090,802	321,515.1	866,175,600

BILL OF QUANTITIES

6. ARCHITECTURAL WORK

BIDDER: _____

DATE: _____

SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT			
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.	
6.01		AIRPORT TERMINAL STATION								
a.	003,007	EXCAVATING, FILLING AND GRADING	1	L.S.	4,354,500	1,125.0	4,354,500	1,125.0		5,457,000
b.	008,019 022,104	SUBSTRUCTURE AND SUPER-STRUCTURE	1	L.S.	589,382,500	770,776.0	589,382,520	770,776.0		1,344,743,000
c.	021,101 102,103 105,106 110,111 125,126	EXTERNAL FINISH	1	L.S.	239,248,660	61,783.0	239,248,660	61,783.0		299,796,000
d.	021,106 108,109 110,118 119,120 121,122 123,124 127,128	INTERNAL FINISH	1	L.S.	68,212,300	17,615.0	68,212,300	17,615.0		85,475,000
e.	130 112,113 114,115 116,117	DOORS, WINDOWS AND LOUVERS	1	L.S.	23,471,240	6,062.0	23,471,240	6,062.0		29,412,000
f.	133	FURNISHINGS	1	L.S.	144,322,400	37,270.0	144,322,400	37,270.0		180,847,000
g.	101	LANDSCAPING	1	L.S.	67,122,640	17,332.0	67,122,640	17,332.0		84,108,000
h.	131,134 135,138 139,140 143,144 147,148	VENTILATING AND AIR CONDITIONING	1	L.S.	75,530,120	19,506.0	75,530,120	19,506.0		94,646,000

BILL OF QUANTITIES

6. ARCHITECTURAL WORK

BIDDER: _____

DATE: _____

SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
i.	136, 137 141, 142 146	PLUMBING	1	L.S.	159,063,480	41,074.0	159,063,480	41,074.0	199,316,000
j.	145	ELECTRICAL	1	L.S.	124,033,620	32,031.0	124,033,620	32,031.0	155,424,000
		TOTAL OF AIRPORT TERMINAL STATION					1,494,741,480	1,004,574.0	2,479,224,000
6.02		KOTA INTAN STATION -							
a.	003,007	EXCAVATING, FILLING AND GRADING	1	L.S.	3,125,120	806.0	3,125,120	806.0	3,915,000
b.	008,011 014,017 019,022 104	SUBSTRUCTURE AND SUPER-STRUCTURE	1	L.S.	188,734,220	190,261.0	188,734,220	190,261.0	375,190,000
c.	021,101 102,103 105,106 110,111 125,126	EXTERNAL FINISH	1	L.S.	291,788,000	75,350.0	291,788,000	75,350.0	365,631,000

SCHEDULE OF QUANTITIES

6. ARCHITECTURAL WORK

BIDDER: _____
 DATE: _____
 SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
d.	021,106 108,109 110,118 119,120 121,122 123,124 127,128 130	INTERNAL FINISH	1	L.S.	61,291,580	15,829.0	61,291,580	15,829.0	76,804,000
e.	112,113 114,115 116,117	DOORS, WINDOWS AND LOUVERS	1	L.S.	16,504,240	4,262.0	16,504,240	4,262.0	20,681,000
f.	133	FURNISHINGS	1	L.S.	117,691,860	30,393.0	117,691,860	30,393.0	147,477,000
g.	101	LANDSCAPING	1	L.S.	5,902,500	1,525.0	5,902,500	1,525.0	7,397,000
h.	131,134 135,138 139,140 143,144 147,148	VENTILATING AND AIR CONDITIONING	1	L.S.	35,796,840	9,242.0	35,796,840	9,242.0	44,854,000
i.	136,137 141,142 146	PLUMBING	1	L.S.	99,773,320	25,776.0	99,773,320	25,766.0	125,024,000
j.	145	ELECTRICAL	1	L.S.	98,000,140	25,307.0	98,000,140	25,307.0	122,801,000
		TOTAL OF KOTA INTAN STATION					918,607,820	378,741	1,289,774,000

BIDDER:

DATE:

SIGNATURE:

BILL OF QUANTITIES

6. ARCHITECTURAL WORK

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT			
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.	
6.03		SIGNAL CABIN -								
a.	003,007	EXCAVATING, FILLING AND GRADING	1	L.S.	1,036,360	268.0	1,036,360	268.0	1,229,000	
b.	008,019 022,105 106	SUBSTRUCTURE AND SUPER-STRUCTURE	1	L.S.	88,991,380	48,519.0	88,991,380	48,519.0	136,540,000	
c.	021,102 103,108 110,111 126	EXTERNAL FINISH	1	L.S.	45,914,100	11,855.0	45,914,100	11,855.0	57,532,000	
d.	021,118 119,120 121,123 124	INTERNAL FINISH	1	L.S.	28,803,780	7,439.0	28,803,780	7,439.0	36,094,000	
e.	112,113 114,115 116,117	DOORS, WINDOWS AND LOUVERS	1	L.S.	20,509,960	5,298.0	20,509,960	5,298.0	25,702,000	
f.	134	VENTILATING AND AIR CONDITIONING	1	L.S.	18,906,640	4,882.0	18,906,640	4,882.0	23,691,000	
g.	136,137 141,142	PLUMBING	1	L.S.	12,309,580	3,179.0	12,309,580	3,179.0	15,425,000	
h.	145	ELECTRICAL	1	L.S.	17,406,920	4,496.0	17,406,920	4,496.0	21,813,000	
TOTAL OF SIGNAL CABIN							233,878,720	85,936.0	318,096,000	

BILL OF QUANTITIES

6. ARCHITECTURAL WORK

BIDDER: _____

DATE: _____

SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT			TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	F.C. US\$	
6.04		CROSSING WATCHMAN'S BOX -								
a.	003,007	EXCAVATING, FILLING AND GRADING	15	LOT	46,218.6	11.0	693,300	165.0		855,000
b.	019,022	SUBSTRUCTURE AND SUPER-STRUCTURE	15	LOT	2,174,372	561.0	32,613,300	8,415.0		40,860,000
c.	102,103 110,111	EXTERNAL FINISH	15	LOT	974,763.4	251.0	14,625,300	3,765.0		18,315,000
d.	020,118 120,123	INTERNAL FINISH	15	LOT	312,634.6	80.0	4,689,000	1,200.0		5,865,000
e.	112,113 114	DOORS, WINDOWS AND LOUVERS	15	LOT	576,980	149.0	8,654,700	2,235.0		10,845,000
f.	145	ELECTRICAL	15	LOT	135,680	34.0	2,035,200	510.0		2,535,000
		TOTAL OF CROSSING WATCHMAN'S BOX					63,310,800	16,290.0		79,275,000
6.05		DUMP YARD -								
a.	003,007	EXCAVATING, FILLING AND GRADING	1	L.S.	123,680	34.0	123,680	34.0		157,000
b.	019,022	SUBSTRUCTURE AND SUPER-STRUCTURE	1	L.S.	856,400	220.0	856,400	220.0		1,072,000
c.	102,103	EXTERNAL FINISH	1	L.S.	212,700	55.0	212,100	55.0		266,000

BIDDER:

DATE:

SIGNATURE:

BILL OF QUANTITIES

6. ARCHITECTURAL WORK

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
d.	132	FURNISHINGS	1	L.S.	18,896,600	4,880.0	18,896,600	4,880.0	23,679,000
		TOTAL OF DUMP YARD					20,088,780	5,189.0	25,174,000
		TOTAL OF ARCHITECTURAL WORK					2,730,627,600	1,490,730.0	4,191,543,000

BILL OF QUANTITIES

7. TRACK WORK

BIDDER: _____

DATE: _____

SIGNATURE: _____

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
7.01	027	TRACK LAYING	1,250	L.M.	47,213.8	12.19	59,017,250	75,237.5	73,950,000
7.02	027	TRACK SHIFTING	1,620	L.M.	14,474.6	3.73	23,448,852	6,042.6	29,370,600
7.03	026	REMOVAL OF TRACK	1,260	L.M.	1,367.0	0.35	1,722,420	441.0	2,154,600
		TOTAL OF TRACK WORK					84,188,522	21,721.1	105,475,200

BIDDER: _____
 DATE: _____
 SIGNATURE: _____

BILL OF QUANTITIES

8. ELECTRICAL WORK

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
8.01	305	IMPROVEMENT OF OVERHEAD LINE	1	L.S.	69,664,560	72,128.0	69,664,560	72,128.0	140,350,000
8.02	025	CHANGE OVER OF EXISTING SIGNALING EQUIPMENT	1	L.S.	1,829,440	472.0	1,892,440	472.0	2,292,000
TOTAL OF ELECTRICAL WORK							71,494,000	72,600.0	142,642,000

Table-(3)

Wage Rates by Class of Labor

Class of Labor	Daily Rate Rp
Care Taker	4,800
Special Worker	3,000
Ordinary Worker	2,800
Light-labor Worker	2,500
Mechanical Operator	5,900
Car Driver	4,000
Scaffolding Man	5,000
Chipping Man	3,600
Asphalt Paver	3,000
Carpenter	3,500
Steel Worker	3,500
Welder	3,500
Painter	3,100
Piping Man	5,300
Blacksmith	3,500
Track Worker	3,300
Train Watcher	3,000

Table-(4)

Unit Price of Main Materials

Item	Type	Unit	Unit Price Rp	Required Quantity	Remark
Sand		m ³	9,000	55,200	Home (for site delivery)
Gravel		"	7,700	21,200	" "
Raw Concrete	σ28 140kg/cm ²	"	58,800	2,500	" "
" "	σ28 180kg/cm ²	"	60,000	4,700	" "
" "	σ28 210kg/cm ²	"	61,100	18,000	" "
" "	σ28 240kg/cm ²	"	62,600	35,400	" "
" "	σ28 400kg/cm ²	"	72,000	4,700	" "
Reinforcing Bar		t	361,000	6,900	" "
Pre-stressed Concrete Pile	φ35cm A-class	m	23,520	54,500	" "
"	φ35cm B-class	"	25,480	73,500	" "
"	φ50cm A-class	"	43,120	12,900	" "
"	φ50cm B-class	"	47,040	26,700	" "
Crushed Stone	For track ballast	m ³	12,200	3,100	" "
Close Granular Asphalt Concrete		t	50,000	2,600	" "
Structural Steel Pipe		t	812,500	520	Import (for site delivery)
H-shaped Steel		t	729,300	110	" "

Table-(5)

Rates for Equipment

Item	Standard	Basic Price Rp	Hourly Rate in Operation Rp	Daily Rate on Site Rp
Bulldozer	21t	128,100,000	28,182	80,703
"	11t	69,600,000	15,312	43,848
Dump Truck	6t	21,600,000	4,860	18,360
Back Hoe	0.6m ³	73,300,000	13,560	43,466
Crawler Crane	35t	164,200,000	29,720	95,236
"	50t	227,600,000	40,740	122,221
Tyre Roller	8 - 20t	39,100,000	7,741	22,834
Vibro- roller	15t	97,900,000	27,216	67,551
Vibro- hammer	45kw	62,500,000	22,687	57,062

Table-(6)

Miscellaneous Expenses at Site

Item	Amount			Remark
	Domestic Currency Rp	Foreign Currency US\$	Total Rp	
Payroll Costs for Employees		2,427,234	2,378,689,320	
Fringe Benefits Cost	5,580,000	21,064	26,222,720	
Labor Safety Protection	6,200,000	408,511	406,540,780	
Traveling Expense	77,500,000	149,362	223,874,760	
Communication Expense	43,400,000	52,766	95,110,680	
Office Supplies	46,500,000	5,532	51,921,360	
Social Dues	15,500,000	26,383	41,355,340	
Legal Welfare		65,957	64,637,860	
Sales Tax	573,375,000		573,375,000	
Insurance Premium	9,050,000	312,701	315,496,980	Construction insurance
Guarantee Fee	119,540,000		119,540,000	Bid, performance & advanced payment bonds
Sundry Expenses	83,400,000	131,915	212,676,700	
Sub-Total	980,045,000	3,601,425	4,509,441,500	
Local Employment Cost	300,700,000		300,700,000	
Total	1,280,745,000	3,601,425	4,810,141,500	

Table-(7)

Temporary Facilities

Item	Amount			Remark
	Domestic Currency Rp	Foreign Currency US\$	Total Rp	
Construction Road	270,659,400	106,964	375,484,120	
Construction Base				
Site Preparation	120,000,000		120,000,000	
Building Construction	103,280,000	474,800	568,584,000	Total floor area 1,730 ^{m2} Contractor's field office and labor- atory 720 ^{m2} Workers' domitories 580 ^{m2} Warehouse 430 ^{m2}
Cars for Liaison Purpose	271,800,000		271,800,000	
Office Fixtures and Furnitures	20,000,000		20,000,000	
Power Supply System	259,413,000	778,011	1,021,863,780	
Water Supply System	38,000,000		38,000,000	
Water Purifi- cation & Drainage System	6,000,000		6,000,000	
Test Facilities		43,000	42,140,000	
Weather Observatory	3,920,000		3,920,000	
Total	1,093,072,400	1,402,775	2,467,791,900	

PACKAGE II TRACK WORK

- 1. CONSTRUCTION COSTS**
- 2. BASIC PRINCIPLES FOR
CONSTRUCTION COST ESTIMATION**
- 3. CONSTRUCTION SCHEDULE**

1. Construction Costs

(1) Summary of Construction Costs

Construction costs estimated as per the basic principles assumed for cost estimation are summed up as shown in Table-(1).

(2) Amounts by Work Items

Unit prices and amounts broken down by work items are as shown in Table-(2).

2. Basic Principles for Construction Cost Estimation

Construction costs are believed to fluctuate considerably with the economic condition of Indonesia, the timing of the contract order and other factors. In this report, the construction costs were estimated according to the following principles:

(1) Base Date for Construction Cost Estimation

The construction costs were estimated on the basis of laws, regulations, labor wages, and prices of materials and equipment, as of October 1, 1983, the day on which site survey was conducted to estimate construction cost.

(2) Construction Period

Construction period shall be 29 months counting from the date of work commencement, including time needed for preparatory works. The maintenance period shall cover 12 months starting from the date of completion of the construction.

(3) Escalation Clause

The escalation clause shall apply to possible rise in prices.

(4) Currency Exchange Rate

The exchange rate of foreign currency is set at Rp980 = US\$1.00.

(5) Taxes and Duties

Taxes and duties shall be estimated on the following basis.

1) Exempted Items

- a) Any duties or import taxes to be imposed upon necessary equipment and materials to be imported for execution of this construction work.
- b) Taxes to be imposed upon incomes of alien corporations and expatriate workers to be engaged in this construction work.

2) Non-exemption Item

Tax to be imposed upon total proceeds.

(6) Land Acquisition and Grant

Necessary land for construction of railway track under the proposed project shall be granted at no cost to the contractor after acquisition thereof by the employer, regardless of whether it is governmental or private land.

(7) Compensatory Procedures and Expense for Removal of Obstacles

The employer shall be fully responsible for the procedure to be taken and the expense for removal and compensation of any obstacles built up on the ground or buried under the ground inevitably to obstruct the execution of the construction work.

(8) Wage Rates by Class of Labor

The daily rate of wage payable to the workers in the Republic of Indonesia shall be as per Table-(3). Those wage levels are determined on a basis of 7 working hours per day.

(9) Main Material Prices and Quantities

With regard to required construction materials, domestic products shall be utilized to the possible maximum. Only those materials not locally available by any means shall be off-shore purchased and their standard price levels and quantities shall be as specified in Table-(4).

(10) Main Construction Equipment and Rates

Main construction equipment to be used for this construction work and their rates shall be as listed up in Table-(5).

(11) Overhead Charges Rate

Overhead charges may be divided into costs on and off the site.

Overhead on the site shall take a share of 11 percent in the total construction cost, as shown in Table-(6), as the result of summing up to a total of necessary expenses. Overhead off the site shall include expenses to be incurred to both head and local offices of the contractor and the profit margin, thus corresponding to 10 percent of the net construction cost.

(12) Temporary Construction Facilities

Main items of temporary construction facilities shall be as listed up in Table-(7).

(13) Basic Conditions for Execution of Construction Work

1) The work shall be executed for single track construction for the time being. However, since land acquisition is planned to ensure future addition to double track, the spare right-of-way for such future addition may be used as the temporary construction road at no charge to the contractor.

2) The contractor's base shall be established near the post of 5k700m.

3. Construction Schedule

The construction work schedule is as shown in Table-(8).

Table-(1)

Summary of Construction Costs

Work Item	Unit	Amount		
		Domestic Currency (Rp)	Foreign Currency (US\$)	Total (Rp)
Materials	Lump Sum	2,229,067,164	5,758,103.2	7,872,008,300
Machines	"	20,921,880	213,444.0	230,097,000
Track Laying Work	"	465,900,056	599,500.3	1,053,410,350
Total		2,715,889,100	6,571,047.5	9,155,515,650

Table-(2)

BIDDER: _____

DATE: _____

SIGNATURE: _____

GENERAL SUMMARY

	<u>AMOUNT, RP.</u>
1. MATERIALS	<u>7,872,008,300</u>
2. MACHINES	<u>230,097,000</u>
3. TRACK LAYING WORK	<u>1,053,410,350</u>
TOTAL	<u>9,155,515,650</u>

BILL OF QUANTITIES

BIDDER: _____

DATE: _____

SIGNATURE: _____

1. MATERIALS

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE			AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.	
1.01		R54 FLAT BOTTOM HEAD RAILS -								
a.	201	STANDARD TYPE, 25 M LENGTH	2,580	M.T.	90,190	858.5	232,690,200	2,214,930	2,403,321,600	
b.	202	R3 COMPROMISE RAIL	9	SET	131,932	1,261.6	1,187,388	11,354.4	12,314,700	
1.02	203,204, 205	FISHPLATES AND ACCESSORY	860	SET	4,846	51.3	4,167,560	44,118	47,403,200	
1.03	210	INSULATED JOINT FOR R54	160	SET	13,832	130.1	2,213,120	20,816	22,612,800	
1.04	207	P.C. SLEEPERS FOR R54	41,000	No.	28,418	25.9	1,165,138,000	1,061,900	2,205,800,000	
1.05	-	WOOD SLEEPERS FOR -								
a.		JOINT	800	No.	11,352	3.1	9,081,600	2,480	11,512,000	
b.		THROUGH PLATE GIRDER	30	No.	57,992	15.6	1,739,760	468	2,198,400	
1.06	206	FASTENING DEVICES FOR -								
a.		P.C. SLEEPER	44,700	SET	2,796	27.3	124,981,200	1,220,310	1,320,885,000	
b.		JOINT	515	SET	3,234	29.7	1,665,510	15,295.5	16,655,100	
c.		THROUGH PLATE GIRDER	30	SET	2,992	27.1	89,760	813	886,500	
1.07	212	TURNOUTS FOR R54 -								
a.		#12 SIMPLE TURNOUTS	16	SET	4,515,306	43,180.3	72,244,896	690,884.8	749,312,000	
b.		*#10 RUN-OVER TYPE	4	SET	1,972,180	18,859	7,888,720	75,436	81,816,000	

BIDDER:

DATE:

SIGNATURE:

BILL OF QUANTITIES

1. MATERIALS

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
1.08	208	BALLAST	45,600	C.M.	12,628	3.4	575,836,800	155,040	727,776,000
1.09	-	FISHPLATE FOR TEMPORARY JOINTING	50	SET	11,190	110.5	559,500	5,525	5,974,000
1.10	214	HYDRAULIC DAMPER TYPE BUFFER STOP	3	SET	8,284,370	79,143.5	24,853,110	237,430.5	257,535,000
1.11	213	RAILROAD SIGNS	420	No.	11,262	3.1	4,730,040	1,302	6,006,000
TOTAL OF MATERIALS							2,229,067,164	5,758,103.2	7,872,008,300

BILL OF QUANTITIES

BIDDER: _____

DATE: _____

SIGNATURE: _____

2. MACHINES

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
2.01	215	HEAVY MOTOR CAR	1	SET	20,921,880	213,444	20,921,880	213,444	230,097,000
		TOTAL OF MACHINES					20,921,880	213,444	230,097,000

BIDDER:

DATE:

SIGNATURE:

BILL OF QUANTITIES

3. TRACK LAYING WORK

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
3.01	209	PLACEMENT OF BALLAST FOR LOWER LAYER	37,000	C.M.	2,063	8.65	76,331,000	320,050	389,980,000
		UPPER LAYER	8,500	C.M.	8,988	2.4	76,398,000	20,400	96,390,000
3.02	209	TRACK PANEL INSTALLATION	22,000	L.M.	5,738	3.4	126,236,000	74,800	199,540,000
3.03	209	COMPACTING OF BALLAST AND INSPECTION OF TRACK TOLERANCE	23,000	L.M.	2,072	0.6	47,656,000	13,800	61,180,000
3.04	209	TRACK PANEL INSTALLATION ON THROUGH PLATE GIRDER	20	L.M.	5,018	1.4	100,360	28.0	127,800
3.05	209	INSTALLATION OF TURNOUTS - #12 SIMPLE TURNOUT	16	SET	438,870	118.5	7,021,920	1,896	8,880,000
		#10 RUN-OVER TYPE	4	SET	362,156	97.8	1,448,624	391.2	1,832,000
3.06	209	INSTALLATION OF BUFFER STOPS - SAND DRAG TYPE	7	SET	162,024	861.2	1,134,168	6,028.4	7,042,000
		HYDRAULIC DAMPER TYPE	3	SET	612,986	20,514.3	1,838,958	61,542.9	62,151,000
3.07	209	INSTALLATION OF RAILROAD SIGNS	420	No.	542	0.11	227,640	42.0	268,800
3.08	-	THERMIT RAIL WELDING	1,425	SET	33,148	8.9	47,235,900	12,682.5	59,664,750

BILL OF QUANTITIES

BIDDER: _____

DATE: _____

SIGNATURE: _____

3. TRACK LAYING WORK

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT			
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.	
3.09		LEVEL CROSSING CONSTRUCTION -								
a.	211	CONCRETE TRACK BLOCK TYPE	11	No.	6,935,456	7,462.8	76,290,016	82,090.8	156,739,000	
b.	-	WOODEN BLOCK TYPE	5	No.	796,294	1,149.7	3,981,470	5,748.5	9,615,000	
		TOTAL OF TRACK LAYING WORK					465,900,056	599,500.3	1,053,410,350	

Table-(3)

Wage Rates by Class of Labor

Class of Labor	Daily Rate Rp
Ordinary Worker	2,800
Light-labor Worker	2,500
Mechanical Operator	5,900
Car Driver	4,000
Carpenter	3,500
Welder	3,500
Track Worker	3,300
Train Watcher	3,000

Table-(4) Unit Price of Main Materials

Item	Type	Unit	Unit Price Rp	Required Quantity	Remarks
Rail	R54 Ordinary	t	711,800	1,290	Import (for site delivery)
	R54 Preholed	t	711,800	1,290	"
Turnout	#12 Simple	set	35,786,000	16	"
	#10 Run-over Type	set	15,630,000	4	"
PC Sleeper		no.	41,112	41,000	Home (for site delivery)
Fastening Device	Elastic Type	set	22,580	44,700	Import (for site delivery)
Ballast	Crushed Stone	m ³	12,200	45,600	Home (for site delivery)
Buffer Stop	Hydraulic Damper Type	set	65,596,000	3	Import (for site delivery)

Table-(5)

Rates for Equipment

Item	Standard	Basic Price Rp	Hourly Rate in Operation Rp	Daily Rate on Site Rp
Bulldozer	11t	69,600,000	15,312	43,848
Dump Truck	6t	21,600,000	4,860	18,360

Table-(6)

Miscellaneous Expenses at Site

Item	Amount			Remark
	Domestic Currency Rp	Foreign Currency US\$	Total Rp	
Payroll Costs for Employees		668,957	655,577,860	
Fringe Benefits Cost	2,580,000	8,463	10,873,740	
Labor Safety Protection	1,550,000	100,160	99,706,800	
Traveling Expense	20,150,000	57,447	76,448,060	
Communication Expense	10,850,000	13,190	23,776,200	
Office Supplies	15,500,000	2,553	18,001,940	
Social Dues	5,100,000	13,191	18,027,180	
Legal Welfare		21,986	21,546,280	
Sales Tax	62,550,000		62,550,000	
Insurance Premium	3,878,000	92,500	94,528,000	Construction insurance
Guarantee Fee	23,907,000		23,907,000	Bid, performance & advanced payment bonds
Sundry Expenses	20,850,000	26,380	46,702,400	
Sub-Total	166,915,000	1,004,827	1,151,645,460	
Local Employment Cost	98,890,000		98,890,000	
Total	265,805,000	1,004,827	1,250,535,460	

Table-(7)

Temporary Facilities

Item	Amount			Remark
	Domestic Currency Rp	Foreign Currency US\$	Total Rp	
Construction Road	26,211,600	37,943	63,395,740	Length 1,500 ^m
Expansion of Road	6,836,400	320	7,150,000	Length 25 ^m
Construction Base				
Site Preparation	48,558,360	8,468	56,857,000	Total area 10,585 ^m 2
Building Construction	4,000,000		4,000,000	Warehouse 100 ^m 2
Track Laying	35,534,880	437	35,963,140	Track Length 460 ^m
Total	121,141,240	47,168	167,365,880	

Table-(8) Construction Schedule

Construction Period Work Item	Commencement												Completion											
	2nd Year						3rd Year						4th Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Construction of Temporary Road																								
Construction of Track Base																								
Placement of Ballast for Lower Layer																								
Transportation of Sleepers																								
Transportation of Rail and Laying																								
Placement of Ballast for Upper Layer																								
Track Maintenance																								
Rail Welding																								
Preparation of Track Materials																								

PACKAGE III ELECTRICAL WORK

- 1. CONSTRUCTION COSTS**
- 2. BASIC PRINCIPLES FOR
CONSTRUCTION COST ESTIMATION**
- 3. CONSTRUCTION SCHEDULE**

1. Construction Costs

(1) Summary of Construction Costs

Construction costs estimated as per the basic principles assumed for cost estimation are summed up as shown in Table-(1).

(2) Amounts by Work Items

Unit prices and amounts broken down by work items are as shown in Table-(2).

2. Basic Principles for Construction Cost Estimation

Construction costs are believed to fluctuate considerably with the economic condition of Indonesia, the timing of the contract order and other factors. In this report, the construction costs were estimated according to the following principles:

(1) Base Date for Construction Cost Estimation

The construction costs were estimated on the basis of laws, regulations, labor wages, and prices of materials and equipment, as of October 1, 1983, the day on which site survey was conducted to estimate construction cost.

(2) Construction Period

Construction period shall be 27 months counting from the date of work commencement, including time needed for preparatory works. The maintenance period shall cover 12 months starting from the date of completion of the construction.

(3) Escalation Clause

The escalation clause shall apply to possible rise in prices.

(4) Currency Exchange Rate

The exchange rate of foreign currency is set at Rp980 = US\$1.00.

(5) Taxes and Duties

Taxes and duties shall be estimated on the following basis.

1) Exempted Items

- a) Any duties or import taxes to be imposed upon necessary equipment and materials to be imported for execution of this construction work.
- b) Taxes to be imposed upon incomes of alien corporations and expatriate workers to be engaged in this construction work.

2) Non-exemption Item

Tax to be imposed upon total proceeds.

(6) Land Acquisition and Grant

Necessary land for construction of railway track under the proposed project shall be granted at no cost to the contractor after acquisition thereof by the employer, regardless of whether it is governmental or private land.

(7) Compensatory Procedures and Expense for Removal of Obstacles

The employer shall be fully responsible for the procedure to be taken and the expense for removal and compensation of any obstacles built up on the ground or buried under the ground inevitably to obstruct the execution of the construction work.

(8) Wage Rates by Class of Labor

The daily rate of wage payable to the workers in the Republic of Indonesia shall be as per Table-(3). Those wage levels are determined on a basis of 7 working hours per day.

(9) Main Material Prices and Quantities

With regard to required construction materials, domestic products shall be utilized to the possible maximum. Only those materials not locally available by any means shall be off-shore purchased and their standard price levels and quantities shall be as specified in Table-(4).

(10) Main Construction Equipment and Rates

Main construction equipment to be used for this construction work and their rates shall be as listed up in Table-(5).

(11) Overhead Charges Rate

Overhead charges may be divided into costs on and off the site.

Overhead on the site shall take a share of 16 percent in the total construction cost, as shown in Table-(6), as the result of summing up to a total of necessary expenses. Overhead off the site shall include expenses to be incurred to both head and local offices of the contractor and the profit margin, thus corresponding to 8 percent of the net construction cost.

(12) Temporary Construction Facilities

Main items of temporary construction facilities shall be as listed up in Table-(7).

(13) Basic Conditions for Execution of Construction Work

1) The work shall be executed for single track construction for the time being. However, since land acquisition is planned to ensure future addition to double track, the spare right-of-way for such future addition may be used as the temporary construction road at no charge to the contractor.

2) The contractor's base shall be established near the post of 8k500m, together with three (3) other sub-bases.

3) All laborers will be of Indonesian nationality. However, regarding transformer station, signal and telecommunication facilities, the manufacturers of machines and equipment may send their technicians to test and survey their equipment.

3. Construction Schedule

The construction work schedule is as shown in Table-(8).

Consideration was given to the following matters in setting up the construction work schedule.

- (1) For approximately two months during the rainy season December to March, earthwork and outdoor electrical work will not be conducted.
- (2) Construction of supporting pillars for the overhead contact line for the elevated sector will be performed before track construction work such as placement of ballast.
- (3) Soil preparation for the site of the transformer station shall be completed before commencement of basic construction for installation of machinery and equipment.
- (4) Approximately 80 percent of the roadbed work on the embankment sector and 80 percent of work on cable duct construction in the elevated sector must be finished before work on signal and communications lines are started.
- (5) In track construction, the laying of rails must be completed at least three months before completion of signal construction.
- (6) The transmission of electricity from PLN to the transformers must be made at least six months before completion of electrical construction work.
- (7) Architectural construction, excepting finish work, must be 90% completed before construction starts on signal and telecommunications facilities at the station. Burying of electrical cables will, however, proceed simultaneously with the construction of the station building.

Table-(1)

Summary of Construction Costs

Work Item	Unit	Amount		
		Domestic Currency (Rp)	Foreign Currency (US\$)	Total (Rp)
Substations	Lump Sum	479,156,100	4,191,503	4,586,829,040
Overhead Contact System	"	897,739,000	1,179,941	2,054,081,180
Power Distribution Lines	"	73,697,350	658,880	719,399,750
Signalling System	"	205,791,900	1,858,139	2,026,768,120
Telecommunication System	"	466,736,300	693,748	1,146,609,340
Total		2,123,120,650	8,582,211	10,533,687,430

Table-(2)

BIDDER: _____

DATE: _____

SIGNATURE: _____

GENERAL SUMMARY

	<u>AMOUNT, RP.</u>
1. SUBSTATIONS	<u>4,586,829,040</u>
2. OVERHEAD CONTACT SYSTEM	<u>2,054,081,180</u>
3. POWER DISTRIBUTION LINES	<u>719,399,750</u>
4. SIGNALLING SYSTEM	<u>2,026,768,120</u>
5. TELECOMMUNICATION SYSTEM	<u>1,146,609,340</u>
 TOTAL	 <u>10,533,687,430</u>

BIDDER:

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BILL OF QUANTITIES

1. SUBSTATIONS

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
1.01	008, 303	PRESTRESSED CONCRETE PILE	1, 216	L.M.	30, 800	10.60	37, 452, 800	12, 889	50, 084, 020
1.02	004, 012 019, 021 303	CONCRETE FOUNDATIONS	505	C.M.	162, 200	0	81, 911, 000	0	81, 911, 000
1.03	303	SUBSTATION EQUIPMENT							
a.		20 KV CUBICLE	1	L.S.	4, 828, 500	302, 393	4, 828, 500	302, 393	301, 173, 640
b.		DC TRANSFORMING EQUIPMENT	1	L.S.	4, 901, 600	967, 338	4, 901, 600	967, 338	952, 892, 840
c.		DC FEEDER CUBICLE	1	L.S.	1, 883, 800	269, 232	1, 883, 800	269, 232	265, 731, 160
d.		6 KV DISTRIBUTION EQUIPMENT	1	L.S.	1, 609, 500	67, 580	1, 609, 500	67, 580	67, 837, 900
e.		LOCAL POWER EQUIPMENT	1	L.S.	658, 400	67, 149	658, 400	67, 149	66, 464, 420
f.		REMOTE CONTROL PANEL	1	L.S.	384, 000	23, 155	384, 000	23, 155	23, 075, 900
1.04	005, 302 303	POWER CABLES							
a.		22 KV CV 1 - CORE 150 mm ²	500	L.M.	2, 100	58	1, 050, 000	29, 000	29, 470, 000
b.		3.3 KV CV 1 - CORE 300mm ²	400	L.M.	115, 700	19.70	46, 280, 000	7, 880	54, 002, 400
c.		3.3 KV CV 1 - CORE 25 mm ²	150	L.M.	14, 400	32	2, 160, 000	4, 800	6, 864, 000
d.		6.6 KV CV 1 - CORE 35 mm ²	100	L.M.	8, 500	16.30	850, 000	1, 629	2, 446, 420
1.05	005, 302 303	CONTROL CABLE	4, 400	L.M.	910	1.50	4, 004, 000	6, 600	10, 472, 000
1.06	004, 005 302, 303	GROUNDING DEVICES	1	L.S.	2, 031, 500	1, 371	2, 031, 500	1, 371	3, 375, 080
1.07	303	MISCELLANEOUS DEVICES	1	L.S.	2, 762, 500	4, 140	2, 762, 500	4, 140	6, 819, 700
1.08	008, 303	PRESTRESSED CONCRETE PILE	600	L.M.	31, 000	10.60	18, 600, 000	6, 360	24, 832, 800
1.09	004, 012 019, 021 303	CONCRETE FOUNDATIONS	280	C.M.	40, 500	0	11, 340, 000	0	11, 340, 000

BILL OF QUANTITIES

BIDDER: _____
 DATE: _____
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1. SUBSTATIONS

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
1.10	303	SUBSTATION EQUIPMENT							
a.		20 KV CUBICLE	1	L.S.	1,664,300	110,226	1,664,300	110,226	109,685,780
b.		DC TRANSFORMING EQUIPMENT	1	L.S.	2,450,800	485,252	2,450,800	485,252	477,977,760
c.		DC FEEDER CUBICLE	1	L.S.	1,609,500	231,950	1,609,500	231,950	228,920,500
d.		6 KV DISTRIBUTION EQUIPMENT	1	L.S.	914,500	15,868	914,500	15,868	16,465,140
e.		LOCAL POWER EQUIPMENT	1	L.S.	731,600	66,770	731,600	66,770	66,166,200
f.		REMOTE CONTROL PANEL	1	L.S.	384,000	23,155	384,000	23,155	23,075,900
1.11	005,302	POWER CABLES							
a.	303	22 KV CV 1 - CORE 150 mm ²	200	L.M.	2,100	58	420,000	11,600	11,788,000
b.		3.3 KV CV 1 - CORE 300mm ²	150	L.M.	115,700	19.70	17,355,000	2,955	20,250,900
c.		3.3 KV CV 1 - CORE 25 mm ²	100	L.M.	14,400	32	1,440,000	3,200	4,576,000
1.12	005,302	CONTROL CABLES	2,800	L.M.	910	1.50	2,548,000	4,200	6,664,000
1.13	004,005	GROUNDING DEVICES	1	L.S.	1,243,000	1,070	1,243,000	1,070	2,291,600
1.14	303	MISCELLANEOUS DEVICES	1	L.S.	2,609,000	3,910	2,609,000	3,910	6,440,800
1.15	008,303	PRESTRESSED CONCRETE PILE	390	L.M.	31,000	10.60	12,090,000	4,134	16,141,320
1.16	004,012	CONCRETE FOUNDATIONS	295	C.M.	174,000	0	51,330,000	0	51,330,000
1.17	303	SUBSTATION EQUIPMENT							
a.		20 KV CUBICLE (REPLACEMENT)	1	L.S.	9,309,600	362,134	9,309,600	362,134	364,200,920

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BILL OF QUANTITIES

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
1. SUBSTATIONS									
b.		DC TRANSFORMING EQUIPMENT	1	L.S.	3,054,400	502,501	3,054,400	502,501	495,505,380
c.		DC FEEDER CUBICLE	1	L.S.	3,566,500	99,729	3,566,500	99,729	101,300,920
d.		6 KV DISTRIBUTION EQUIPMENT	1	L.S.	1,609,500	75,641	1,609,500	75,641	75,737,680
e.		LOCAL POWER EQUIPMENT (REPLACEMENT)	1	L.S.	877,900	76,248	877,900	76,248	75,600,940
f.		REMOTE CONTROL PANEL (MODIFICATION)	1	L.S.	731,600	29,867	731,600	29,867	30,001,260
1.18	005,302 303	POWER CABLES	700	L.M.	2,100	58	1,470,000	40,600	41,258,000
a.		22 KV CV 1 - CORE 150 mm ²	200	L.M.	115,700	19.70	23,140,000	3,940	27,001,200
b.		3.3 KV CV 1 - CORE 300mm ²	100	L.M.	8,500	16.30	850,000	1,629	2,446,420
c.		6.6 KV CV 1 - CORE 35 mm ²	1	L.S.	105,111,100	3,039	105,111,100	3,039	108,089,320
d.		3.3 KV CV 1 - CORE 300mm ² (FOR TEMPORARY WORK)	5,200	L.M.	910	1.50	4,732,000	7,800	12,376,000
1.19	005,302 303	CONTROL CABLES	1	L.S.	1,178,000	788	1,178,000	788	1,950,240
1.20	004,005 302,303	GROUNDING DEVICES	1	L.S.	1,647,900	2,732	1,647,900	2,732	4,325,260
1.21	303	MISCELLANEOUS DEVICES	1	L.S.	1,796,100	156,347	1,796,100	156,347	155,016,160
1.22	303	REMOTE SUPERVISORY CONTROL PANEL	200	L.M.	910	4.90	182,000	980	1,142,400
1.23	005,302 303	CONTROL CABLES	1	L.S.	201,100	18,166	201,100	18,166	18,003,780
1.24	303	LINKED BREAKING DEVICE							

BILL OF QUANTITIES

BIDDER: _____

DATE: _____

SIGNATURE: _____

1. SUBSTATIONS

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
1.25	303	LINKED BREAKING DEVICE	1	L.S.	201,100	18,166	201,100	18,166	18,003,780
1.26	303	TOOLS AND INSTRUMENTS	1	L.S.	0	55,390	0	55,390	54,282,200
		TOTAL OF SUBSTATIONS					479,156,100	4,191,503	4,586,829,040

BILL OF QUANTITIES

BIDDER: _____
 DATE: _____
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PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
2.01	004,012 019,021 022,304	SUPPORTING STRUCTURES	422	S	638,000	943	269,236,000	397,946	659,223,080
2.02	304	OVERHEAD CATENARIES	26,200	L.M.	1,800	21	47,160,000	550,200	586,356,000
2.03	005,302 304	FEEDER WIRES	37,200	L.M.	14,500	5	539,400,000	186,000	721,680,000
2.04	004,302 304	MISCELLANEOUS DEVICES	1	L.S.	22,878,000	45,795	22,878,000	45,795	67,757,100
2.05	004,302 304	REFORMATION WORK IN JAYAKARTA	1	L.S.	19,065,000	0	19,065,000	0	19,065,000
		TOTAL OF OVERHEAD CONTACT SYSTEM					897,739,000	1,179,941	2,054,081,180

BILL OF QUANTITIES

BIDDER: _____

DATE: _____

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3. POWER DISTRIBUTION LINES

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.
3.01	004, 302 305	OVERHEAD DISTRIBUTION LINES	58,455	L.M.	250	5.90	14,613,750	344,884	352,600,070
3.02	004, 302 305	OVERHEAD GROUND WIRES	22,280	L.M.	770	4.20	17,155,600	93,575	108,859,100
3.03	004, 005 302, 305	POWER CABLES -							
a.		6.6 KV CV CABLES	2,979	L.M.	9,600	9.80	28,598,400	29,194	57,208,520
b.		600 V NYN CABLES	240	L.M.	11,200	5.40	2,688,000	1,296	3,958,080
3.04	302, 305	DISTRIBUTION EQUIPMENT	1	L.S.	9,232,800	112,394.00	9,232,800	112,394	119,378,920
3.05	302, 305	POWER DISTRIBUTION CUBICLES	1	L.S.	1,408,800	77,537.00	1,408,800	77,537	77,395,060
		TOTAL OF POWER DISTRIBUTION LINES					73,697,350	658,880	719,399,750

BILL OF QUANTITIES

BIDDER: _____

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SIGNATURE: _____

4. SIGNALLING SYSTEM AND SAFETY FACILITIES

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
4.01	306	RELAY INTERLOCKING DEVICES -							
a.		4 ROUTE OR LESS	3	S	633,800	89,469	1,901,400	268,407	264,940,260
b.		10 ROUTE OR LESS	2	S	595,400	106,930	1,190,800	213,860	210,773,600
4.02	307	COLOUR LIGHT SIGNALS							
a.		2 ASPECTS	30	S	42,300	762	1,269,000	22,860	23,671,800
b.		3 ASPECTS	4	S	58,100	1,068	232,400	4,272	4,418,960
4.03	308	SHUNTING SIGNALS -							
a.		TYPE A	2	S	28,100	514	56,200	1,028	1,063,640
b.		TYPE B	2	S	28,100	355	56,200	710	752,000
4.04	309	EMERGENCY SIGNAL	20	S	16,300	236	326,000	4,720	4,951,600
4.05	004,022 307	SIGNAL MAST	35	S	124,400	448	4,354,000	15,680	19,720,400
4.06	004,022 310	MARKERS -							
a.		RESTRICTED SPEED RELEASE MARKER	4	No.	4,800	79	19,200	316	328,880
b.		SHUNTING LIMIT MARKER	1	No.	4,800	79	4,800	79	82,220
c.		CAR STOP MARKER	3	No.	1,500	32	4,500	96	98,580
4.07	311	ELECTRIC SWITCH MACHINE	20	S	245,400	8,073	4,908,000	161,460	163,138,800
4.08	312	TRACK CIRCUITS -							
a.		TYPE A SINGLE TRACK	12	S	139,300	1,222	1,671,600	14,664	16,042,320
b.		- DO - DOUBLE TRACK	24	S	307,600	4,088	7,382,400	98,112	103,532,160

BILL OF QUANTITIES

BIDDER: _____

DATE: _____

SIGNATURE: _____

4. SIGNALLING SYSTEM AND SAFETY FACILITIES

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
c.		TYPE B DIVIDED FREQUENCY	4	S	1,144,300	14,557	4,577,200	58,228	61,640,640
d.		- DO - COMMERCIAL FREQUENCY	1	S	912,300	11,327	912,300	11,327	12,012,760
4.09	004,022 313	LEVEL CROSSING EQUIPMENT-							
a.		CROSSING SIGNAL	30	No.	146,700	688	4,401,000	20,640	24,628,200
b.		CROSSING BARRIER, A TYPE	22	No.	249,700	8,283	5,493,400	182,226	184,074,880
c.		- DO - , B TYPE	14	No.	170,000	3,297	2,380,000	46,158	47,614,840
d.		X-MARK INDICATOR	28	No.	141,900	633	3,973,200	17,724	21,342,720
e.		TRAIN DETECTOR	35	No.	89,100	818	3,118,500	28,630	31,175,900
f.		CONTROL DEVICE	15	No.	599,500	9,488	8,992,500	142,320	148,466,100
4.10	314	ATS WAYSIDE DEVICE	47	S	78,500	863	3,689,500	40,561	43,439,280
4.11	315	STAND -BY GENERATOR	2	S	1,022,800	105,268	2,045,600	210,536	208,370,880
4.12	316	APPARATUS CASE	20	S	130,600	2,215	2,612,000	44,300	46,026,000
4.13	005,317	SIGNAL CABLES -							
a.		GENERAL TYPE CABLE	25,500	L.M.	770	4.5	19,635,000	114,750	132,090,000
b.		DIRECT BURIAL TYPE CABLE	17,800	L.M.	1,600	7.3	28,480,000	129,940	155,821,200
c.		TROUGH	8,100	L.M.	11,200	0	90,720,000	0	90,720,000
4.14	318	IMPROVEMENT OF EXISTING LEVEL CROSSING EQUIPMENT	1	L.S.	1,385,200	4,535	1,385,200	4,535	5,829,500
TOTAL OF SIGNALLING SYSTEM AND SAFETY FACILITIES							205,791,900	1,858,139	2,026,768,120

BILL OF QUANTITIES

BIDDER:

DATE:

SIGNATURE:

5. TELECOMMUNICATION SYSTEM

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	
5.01	319	TELEPHONE -							
a.		AUTOMATIC TELEPHONE	17	S	43,500	79	739,500	1,343	2,055,640
b.		DISPATCHING TELEPHONE	10	S	43,700	846	427,000	8,460	8,717,800
c.		DIRECT LINE TELEPHONE	23	S	27,300	481	627,900	11,063	11,469,640
d.		PORTABLE TELEPHONE	20	S	0	1,186	0	23,720	23,245,600
5.02	320	PUBLIC ADDRESS EQUIPMENT -							
a.		MASTER EQUIPMENT	2	No.	243,300	30,551	486,600	61,102	60,366,560
b.		OPERATION PANEL	5	No.	31,800	3,956	159,000	19,780	19,543,400
c.		DYNAMIC TYPE SPEAKER	2	No.	93,300	55	186,600	110	294,400
d.		TRUMPET TYPE SPEAKER	10	No.	234,000	126	2,340,000	1,260	3,574,800
e.		MICROPHONE BOX	8	No.	404,100	404	3,232,800	3,232	6,400,160
5.03	321	ELECTRIC CLOCK -							
a.		MASTER CLOCK	1	No.	152,800	20,024	152,800	20,024	19,776,320
b.		RELAY SLAVE CLOCK	3	No.	59,400	1,979	178,200	5,937	5,996,460
c.		SLAVE CLOCK SINGLE FACE 300 MM DIAMETER	16	No.	78,100	79	1,249,600	1,264	2,488,320
d.		SLAVE CLOCK DOUBLE FACE 600 MM DIAMETER	5	No.	248,300	949	1,241,500	4,745	5,891,600
5.04	322	CABLE CARRIER EQUIPMENT -							
a.		TERMINAL EQUIPMENT	2	No.	404,100	89,991	808,200	179,982	177,190,560
b.		LINE REPEATER EQUIPMENT, INDOOR TYPE	3	No.	202,000	6,490	606,000	19,470	19,686,600

BILL OF QUANTITIES

BIDDER: _____

DATE: _____

SIGNATURE: _____

5. TELECOMMUNICATION SYSTEM

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		L.C. RP.	F.C. US\$	AMOUNT		TOTAL RP.
					L.C. RP.	F.C. US\$			L.C. RP.	F.C. US\$	
c.		LINE REPEATER EQUIPMENT, OUTDOOR TYPE	6	No.	2,924,200	7,676	17,545,200	46,056		62,680,080	
5.05	005,323	DIRECT BURIAL MAIN TELECOM CABLE (30 PAIRS UP TO 40 PAIRS)	12,800	L.M.	17,200	4.0	220,160,000	51,200		270,336,000	
5.06	323	MAIN TELECOM CABLE (30 PAIRS UP TO 40 PAIRS, WITH IN DUCT)	9,000	L.M.	14,300	4.4	128,700,000	39,600		167,508,000	
5.07	323	TELECOM BRANCH CABLE (10 PAIRS)	800	L.M.	8,200	24	6,560,000	19,200		25,376,000	
5.08	323	LOCAL TELECOM CABLE (2 PAIRS UP TO 20 PAIRS)	6,000	L.M.	4,100	4	24,600,000	24,000		48,120,000	
5.09	323	OVERHEAD TELECOM CABLE	3,800	L.M.	6,200	1.8	23,560,000	6,840		30,263,200	
5.10	005,323	TELECOM DUCTS (TROUGH)	210	L.M.	10,500	0	2,205,000	0		2,205,000	
5.11	004,302	HANDHOLE	29	No.	742,300	0	21,526,700	0		21,526,700	
5.12	004,323	DISTRIBUTION BOXES -									
a.		INDOOR TYPE, UP TO 20 P	5	No.	24,000	822	120,000	4,110		4,147,800	
b.		INDOOR TYPE, UP TO 100 P	6	No.	381,200	4,238	2,287,200	25,428		27,206,640	
c.		OUTDOOR TYPE, UP TO 10 P	2	No.	198,200	538	396,400	1,076		1,450,880	
5.13	004,323	TERMINAL BOX AND OUTDOOR TYPE TELEPHONE BOX -									
a.		POLE MOUNTING TYPE	31	No.	128,600	647	3,986,600	20,057		23,642,460	
b.		WALL MOUNTING TYPE	11	No.	47,500	665	522,500	7,315		7,691,200	

BILL OF QUANTITIES

BIDDER:

DATE:

SIGNATURE:

5. TELECOMMUNICATION SYSTEM

PAY ITEM No.	REF. SPEC. NO.	DESCRIPTION OF ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE		AMOUNT			
					L.C. RP.	F.C. US\$	L.C. RP.	F.C. US\$	TOTAL RP.	
5.14	324	TRAIN BOARDING INFORMATION EQUIPMENT -								
a.		OPERATION PANEL	2	No.	40,900	4,115	81,800	8,230	8,147,200	
b.		INDICATION PANEL	4	No.	512,300	19,786	2,049,200	79,144	79,610,320	
		TOTAL OF TELECOMMUNICATION SYSTEM					466,736,300	693,748	1,146,609,340	

Table-(3)

Wage Rates by Class of Labor

Class of Labor	Daily Rate Rp
Care Taker	4,800
Special Worker	3,000
Ordinary Worker	2,800
Light-labor Worker	2,500
Mechanical Operator	5,900
Special Vehicle Driver	4,900
Car Driver	4,000
Chipping Man	3,600
Carpenter	3,500
Steel Worker	3,500
Welder	3,500
Painter	3,100
Electrician	5,900
Piping Man	5,300
Mason	3,500
Train Watcher	3,000

Table-(4) Unit Price of Main Materials (1)

Item	Type	Unit	Unit Price Rp	Required Quantity	Remarks
High Voltage Cubicles			754,290,000	1	Import
Low Voltage Cubicles			122,780,000	1	"
Remote Control Panels			155,200,000	1	"
Transformers			1,290,300,000	1	"
Trolley Wires	Cu 110 mm ²	km	2,300,000	27	"
Hard-drawn Copper Stranded Wires	300 mm ²	"	8,000,000	21	Home
6.6 kV Polyethylene Insulated Wires	38 mm ²	"	1,670,000	60	Import
Structural Steels		t	271,000	90	"
Concrete Poles	for Overhead Contact Line	no.	243,500	420	Home
Concrete Poles	for Level Crossing Protection	"	178,000	50	"
Concrete Poles	for Telecom.	"	39,000	30	"
Power Cables		km	5,030,000	3	"
Signalling Cables		"	2,713,000	40	"
Telecom. Cables		"	8,660,000	30	"

Table-(4) Unit Price of Main Materials (2)

Item	Type	Unit	Unit Price Rp	Required Quantity	Remarks
Relay Inter- locking Devices		set	47,942,000	5	Import
Colour Light Signal Lamp Units		"	117,000	70	"
Electric Turn- our Switch Machines		"	3,753,000	20	"
Track Relays		"	275,000	40	"
Impeadance Bonds	500 A	"	696,000	60	"
Level Crossing Equipment		"	9,640,000	15	"
ATS Wayside Devices		"	288,000	40	"
Standby Generators	10 kVA	"	14,596,000	2	"
Public Address Equipment		"	17,800,000	2	"
Electric Clock Equipment		"	10,600,000	1	"
Cable Carrier Equipment	PCM	"	76,600,000	1	"
Train Boarding Information Equipment		set	18,200,000	2	"

Table-(5)

Rates for Equipment

Item	Standard	Basic Price Rp	Hourly Rate in Operation Rp	Daily Rate on Site Rp
Crawler Crane	50t	227,600,000	40,740	122,221
Truck Crane	15t	84,600,000	12,182	66,326
Pile Hammer	3.5t	37,900,000	13,757	34,603

Table-(6)

Miscellaneous Expenses at Site

Item	Amount			Remarks
	Domestic Currency Rp	Foreign Currency US\$	Total Rp	
Payroll Costs for Employees		576,000	564,480,000	
Fringe Benefits Cost		144,000	141,120,000	
Labor Safety Protection		57,000	55,860,000	
Traveling Expense	46,500,000	13,400	59,632,000	
Communication Expense	1,580,000	1,200	2,756,000	
Office Supplies	4,800,000	10,600	15,188,000	
Social Dues	33,360,000	23,000	55,900,000	
Legal Welfare		115,000	112,700,000	
Insurance Premium		74,000	72,520,000	Construction insurance
Guarantee Fee	27,920,000		27,920,000	Bid, perform- ance & advanced Payment bonds
Sundry Expenses	2,830,000	26,000	28,310,000	
Sub-Total	116,990,000	1,040,200	1,136,386,000	
Local Employ- ment Cost	13,510,000		13,510,000	
Total	130,500,000	1,040,200	1,149,896,000	

Table-(7)

Temporary Facilities

Item	Amount			Remarks
	Domestic Currency Rp	Foreign Currency US\$	Total Rp	
Construction Road				Service road constructed under package I (Civil Work) shall be made available without cost to the Contractor of Package III (Electric- al Work)
Construction Base				
Site Preparation	4,960,000		4,960,000	
Building Construction	113,888,000	75,000	187,388,000	Including appertenant utilities
Office Fix- tures and Furnitures	6,500,000	2,000	8,460,000	
Total	125,348,000	77,000	200,808,000	

Table--(8)

Construction Schedule

Work Item	Construction Period	Commencement												Completion											
		2nd Year						3rd Year						4th Year											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Substation Facility																									
Overhead Catenary																									
Power Distribution																									
Signalling																									
Telecom.																									
Testing																									

