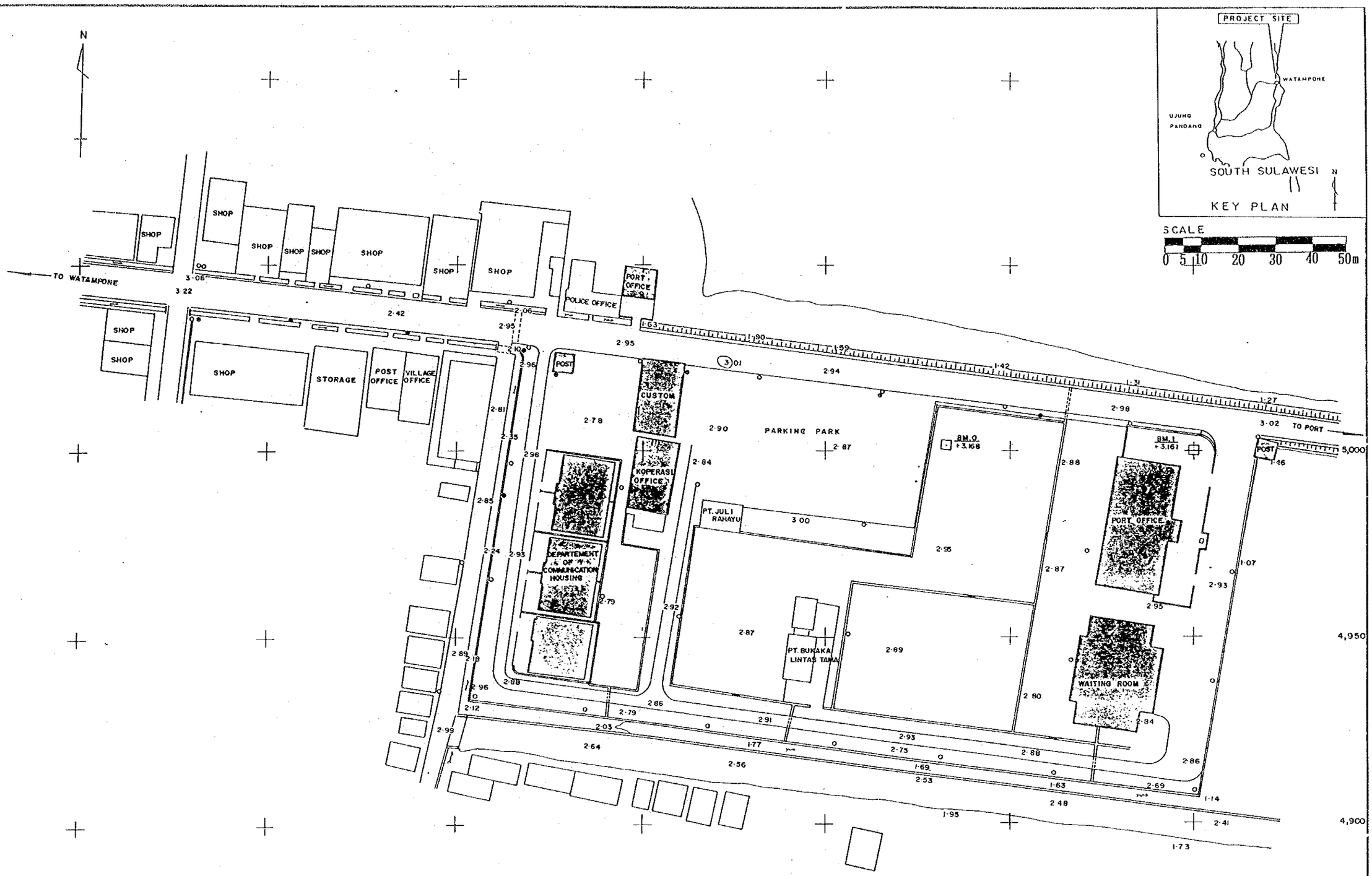


GENERAL PLAN

BAJOE

Fig. 2-1-6A Topographic and Hydrographic Survey Map of Bajoe

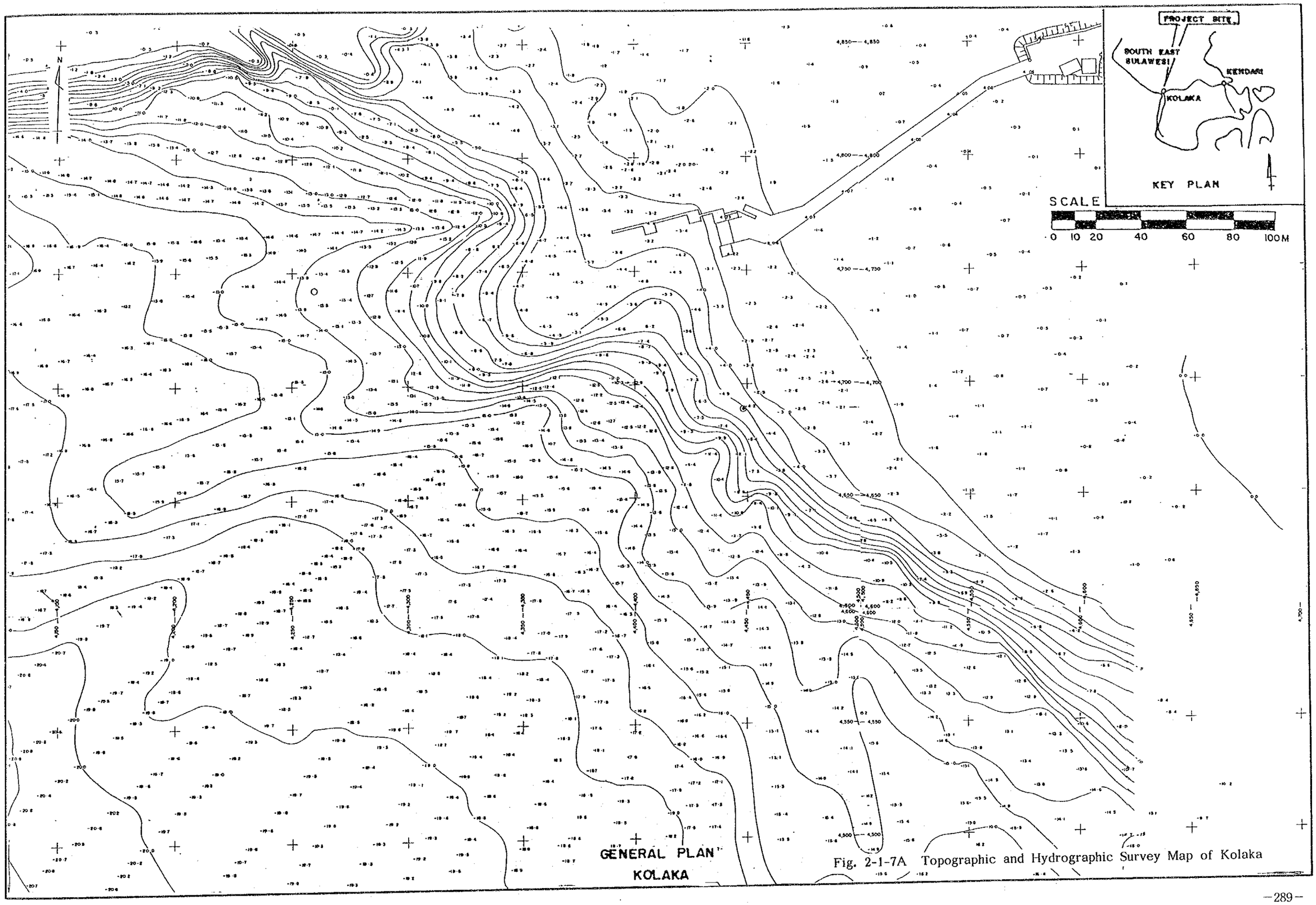


Fig. 2-1-7A Topographic and Hydrographic Survey Map of Kolaka

Fig. 2-1-8A Topographic and Hydrographic Survey Map of Kolaka

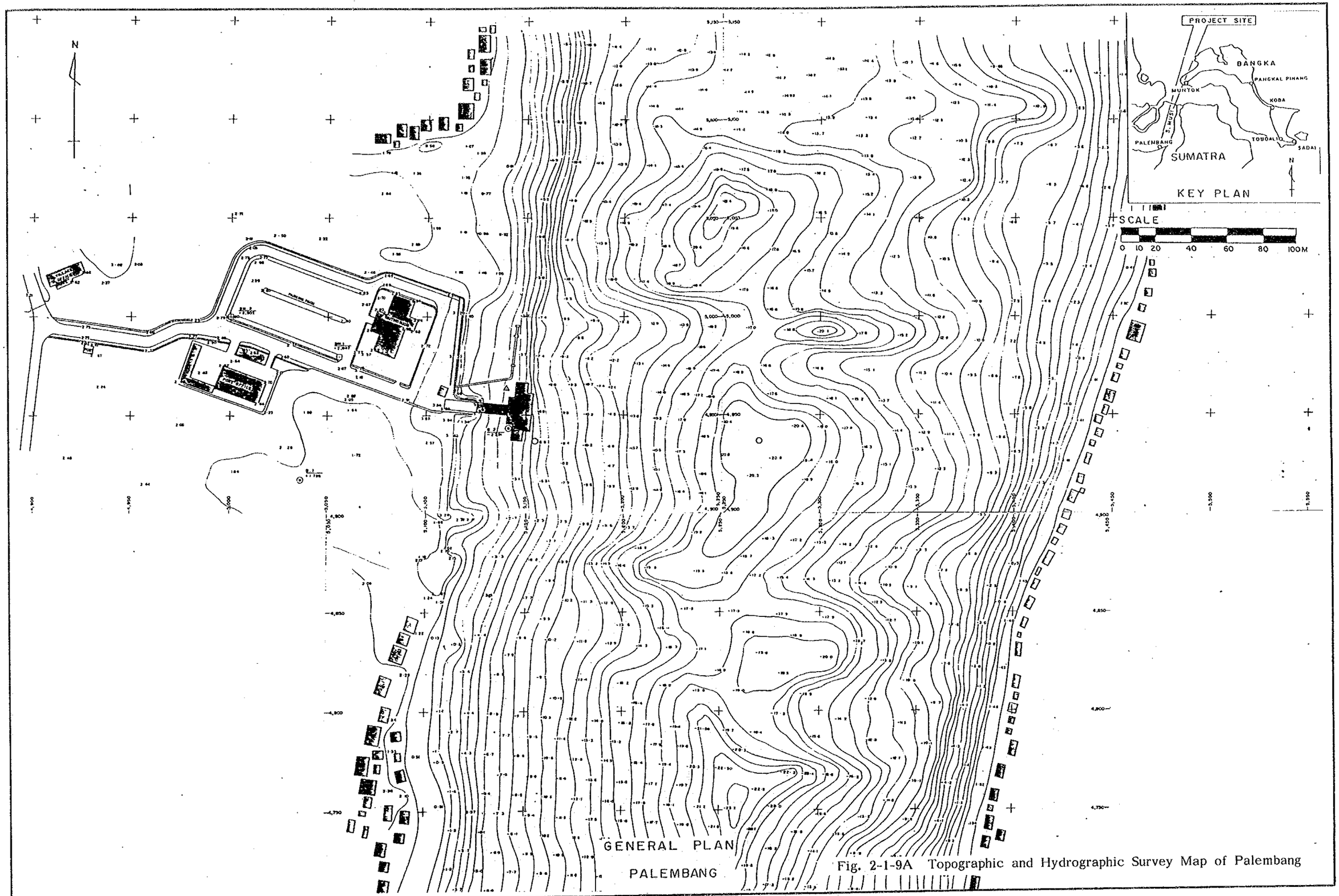


Fig. 2-1-9A Topographic and Hydrographic Survey Map of Palembang

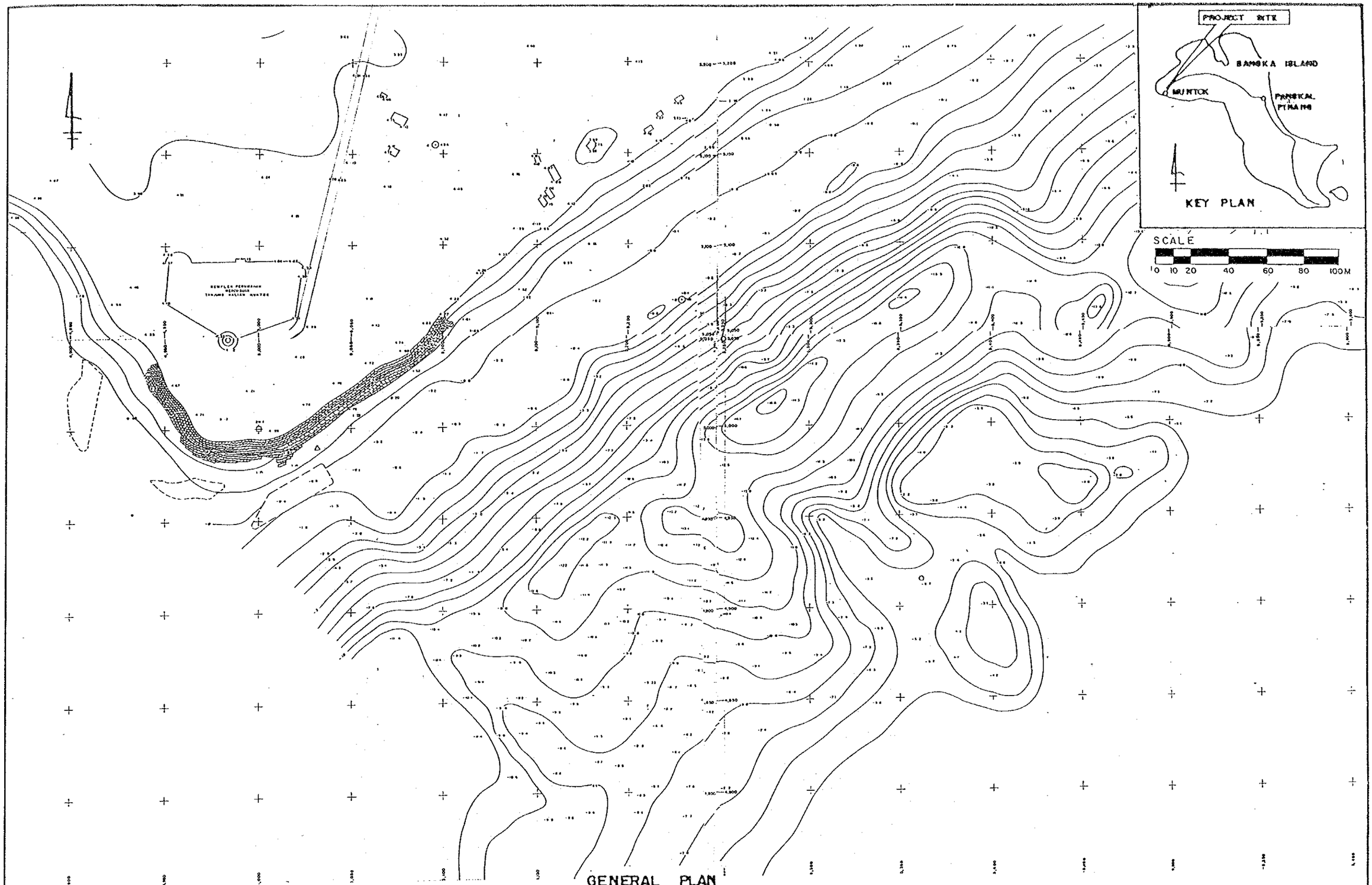
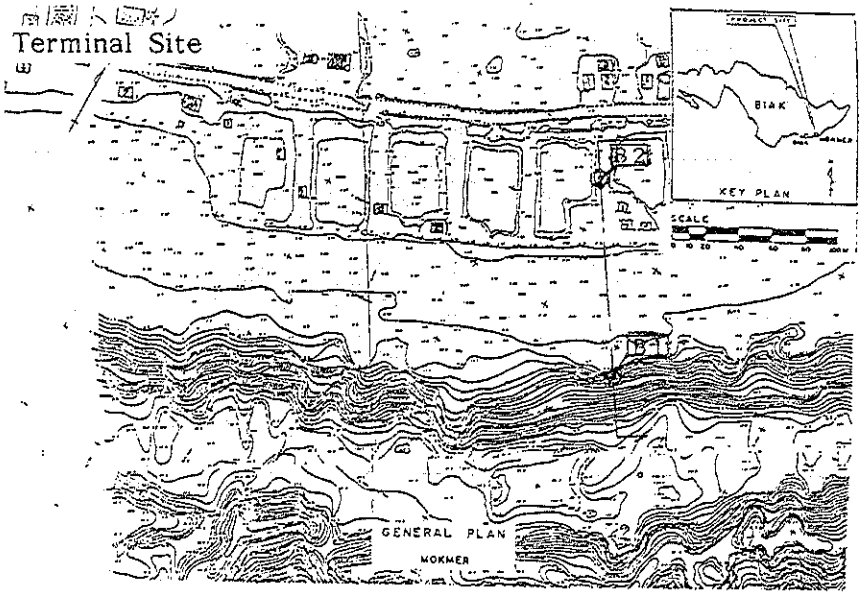


Fig. 2-1-10A Topographic and Hydrographoc Survey Map of Muntok

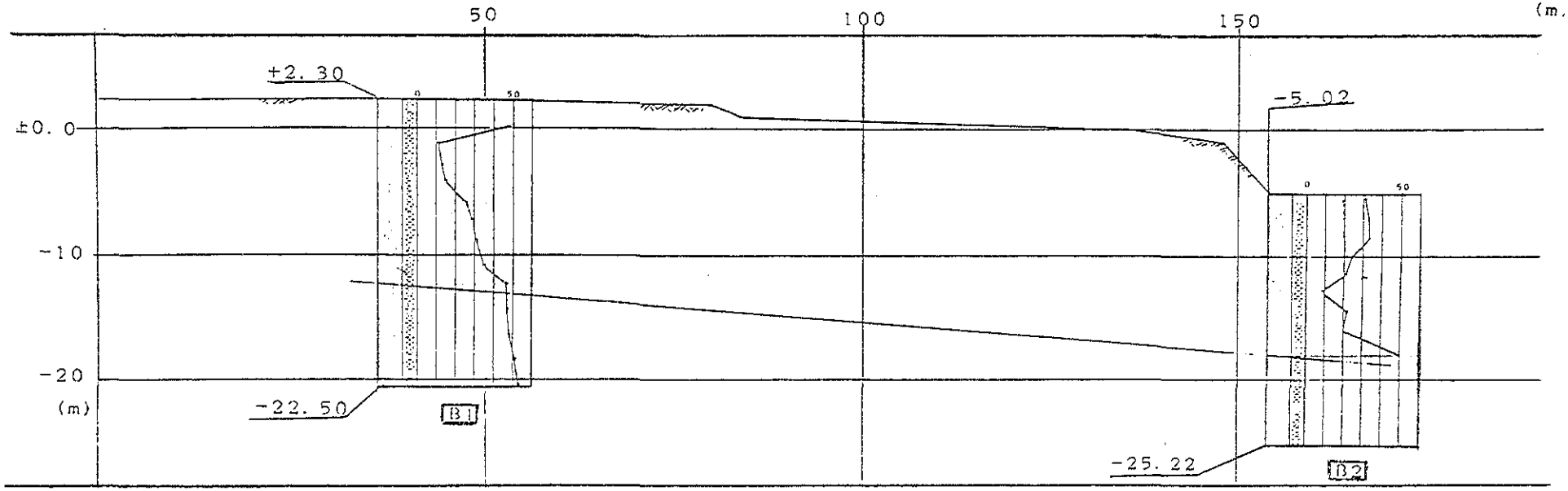
MOKMER

Fig. 2-7-1A Soil Profile of Mokmer Terminal Site



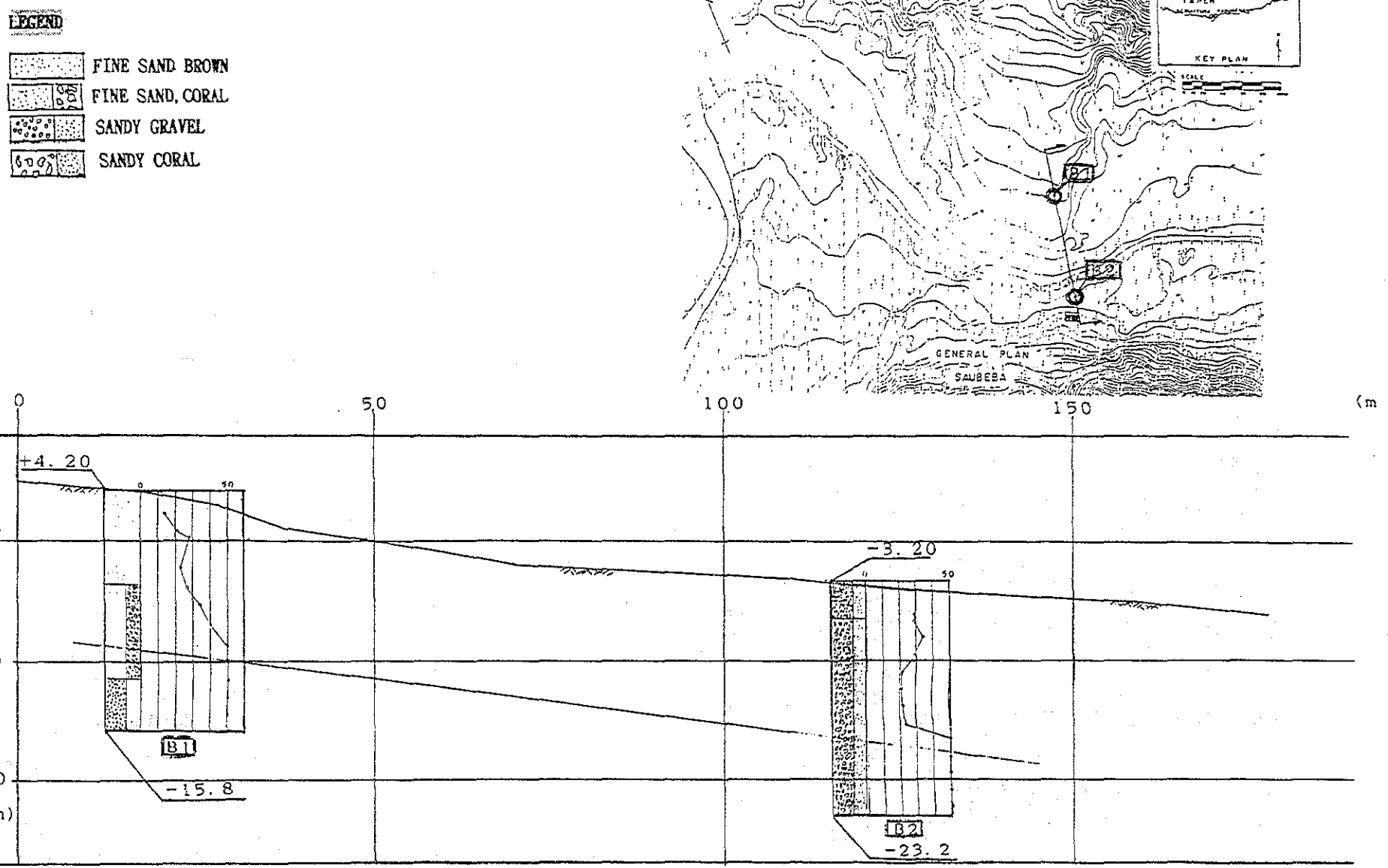
LEGEND

SAND FEW CORAL



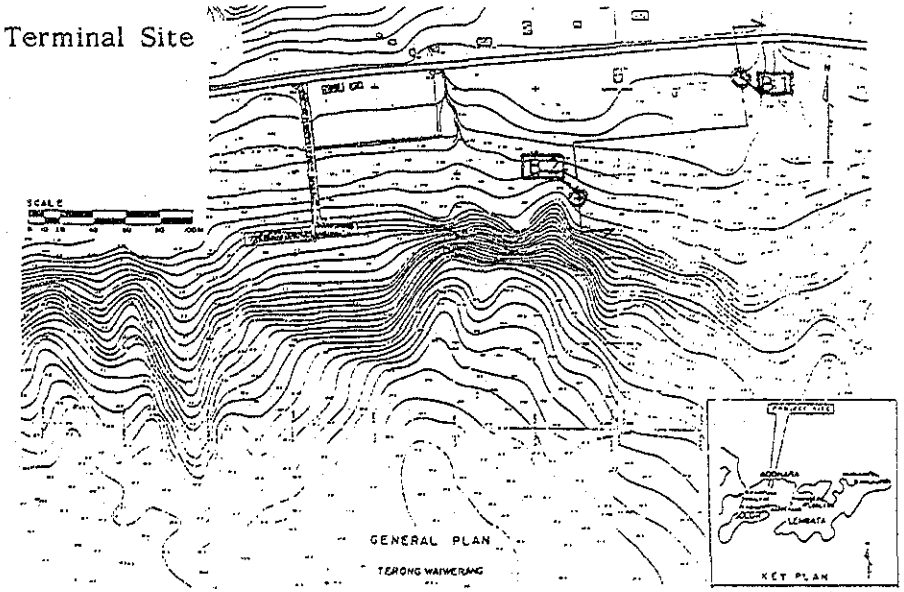
SAUBERA

Fig. 2-7-2A Soil Profile of Sanbeba Terminal Site



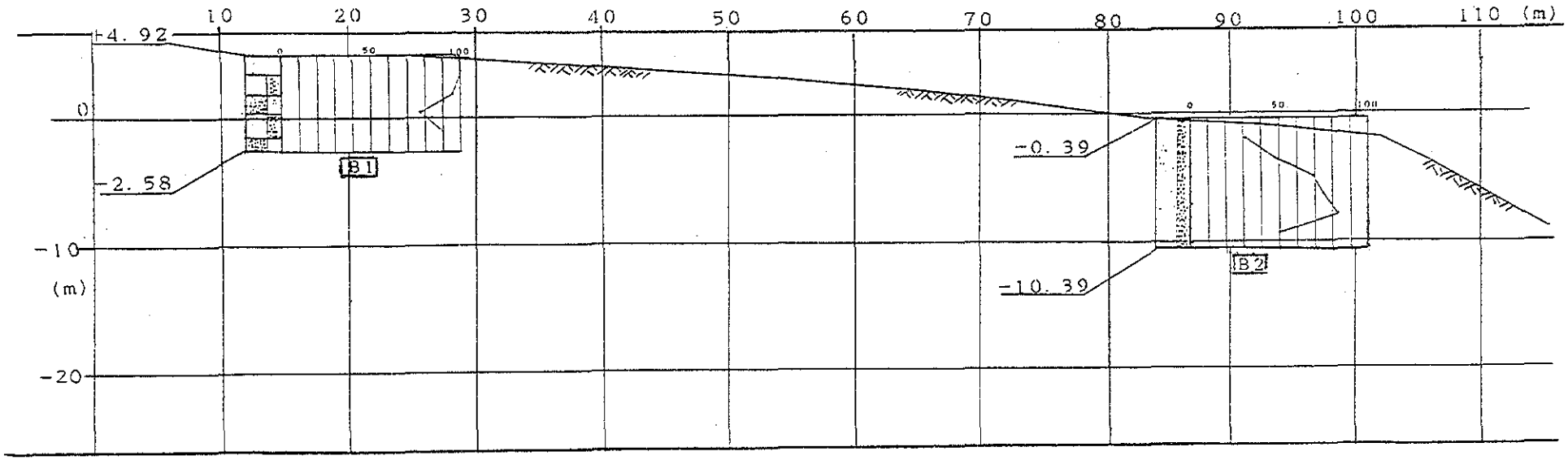
TERONG

Fig. 2-7-3A Soli Profile of Terong Terminal Site



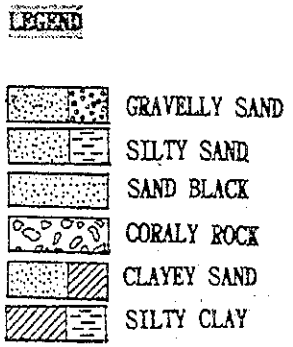
LEGEND

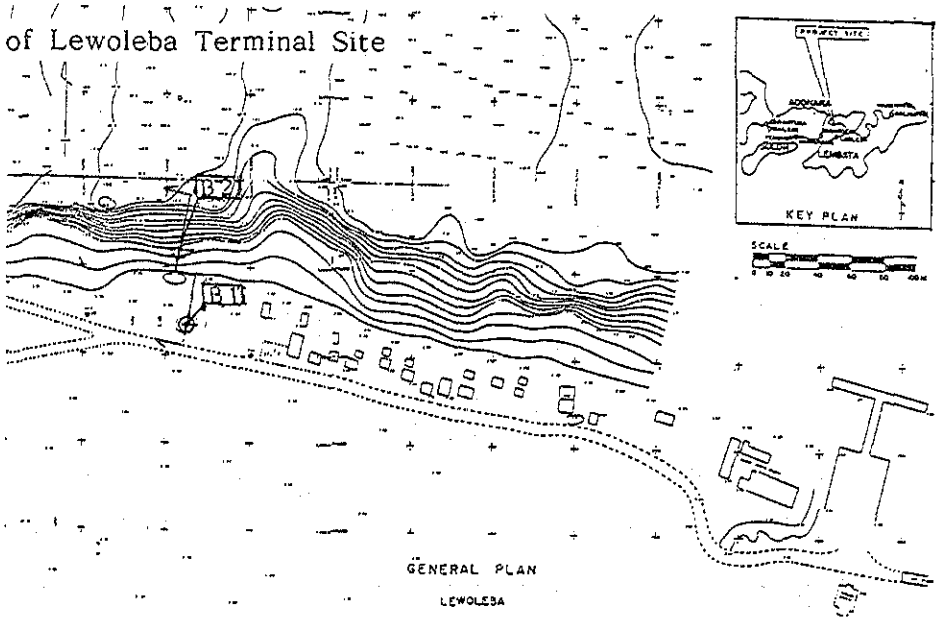
- FINE SAND,
- SILTY SAND
- SANDY GRAVEL
- GRAVELLY SAND

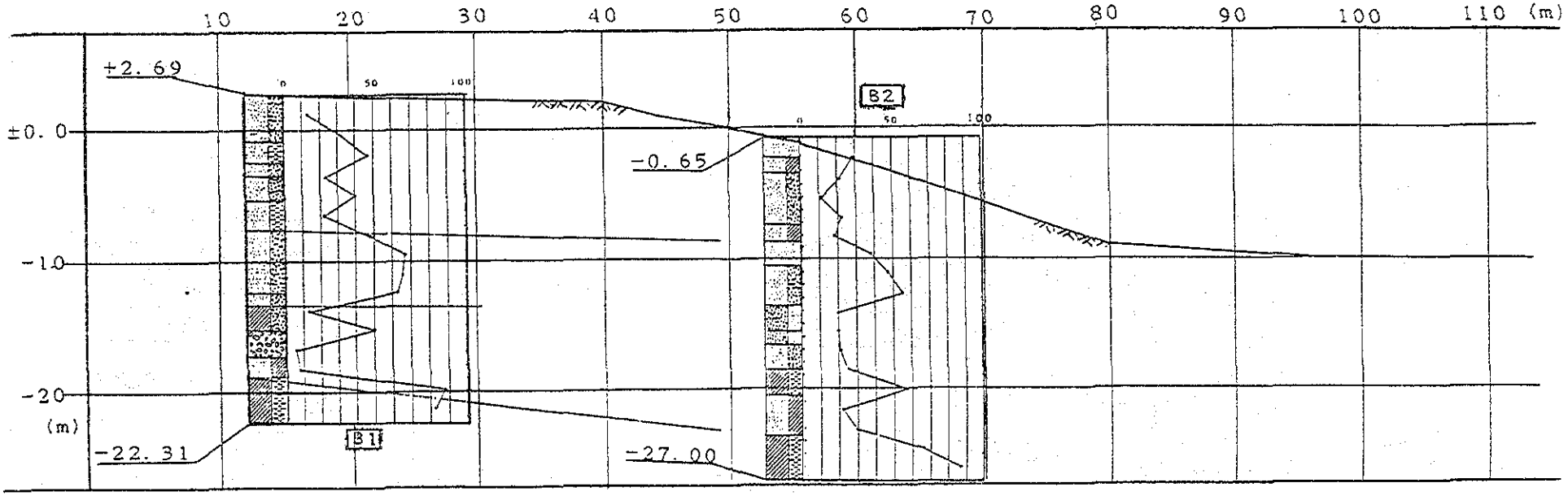


LEWOLEBA

Fig. 2-7-4A Soil Profile of Lewoleba Terminal Site

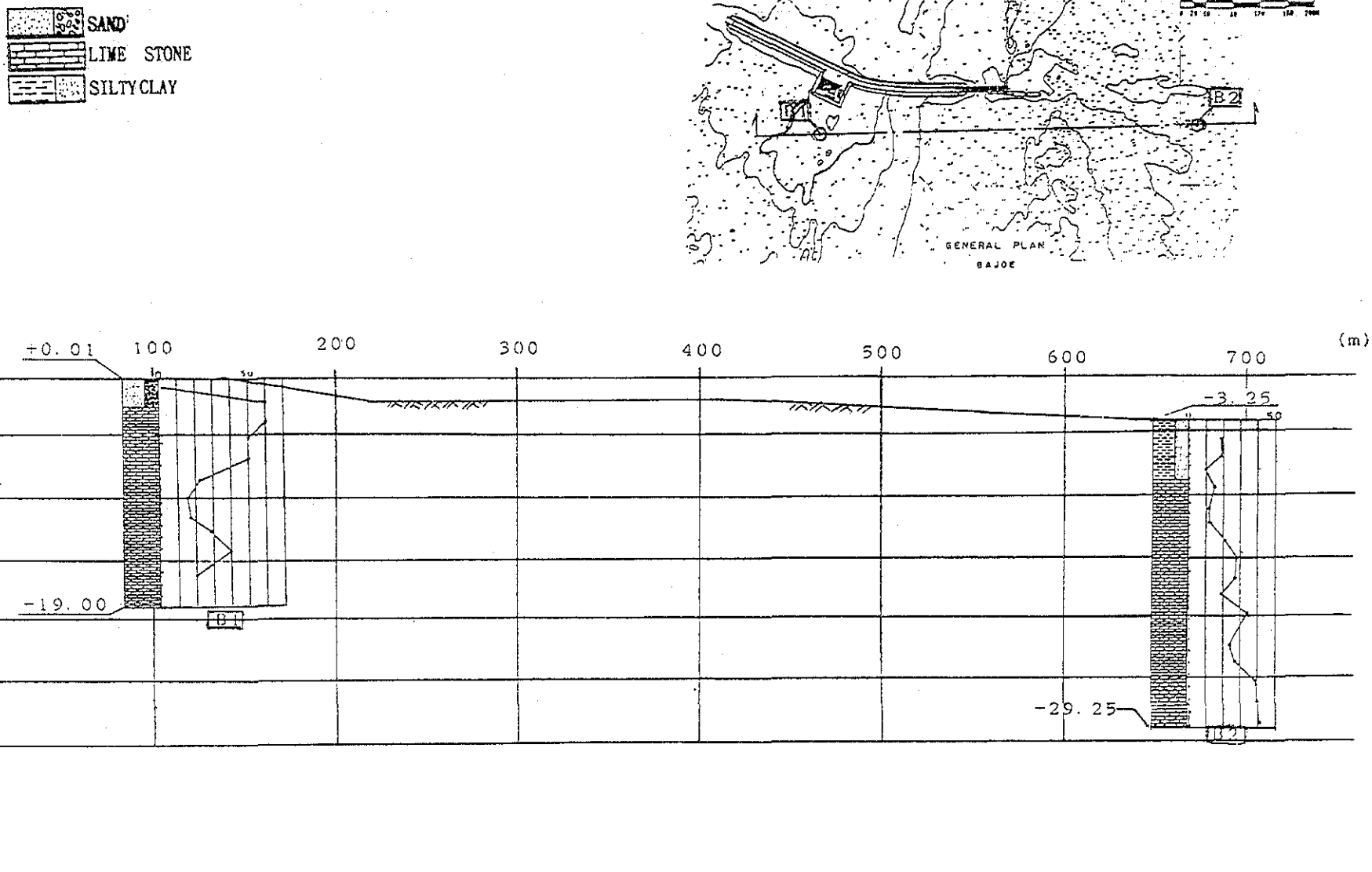






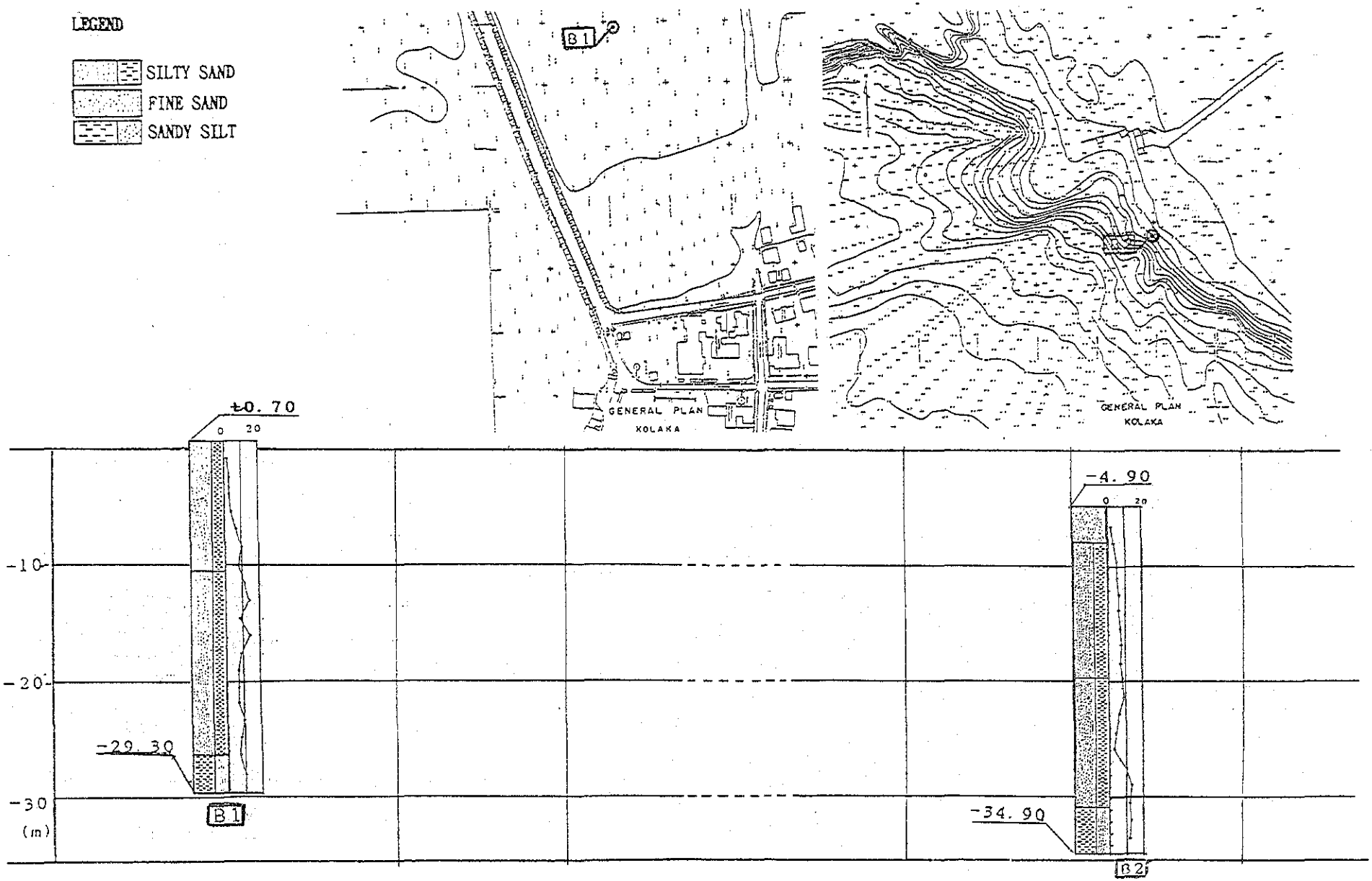
BAJOE

Fig. 2-7-5A Soil Profile of Bajoe terminal Site



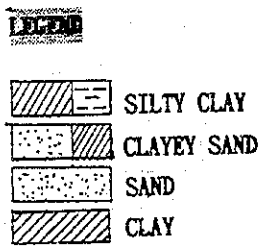
KOLAKA

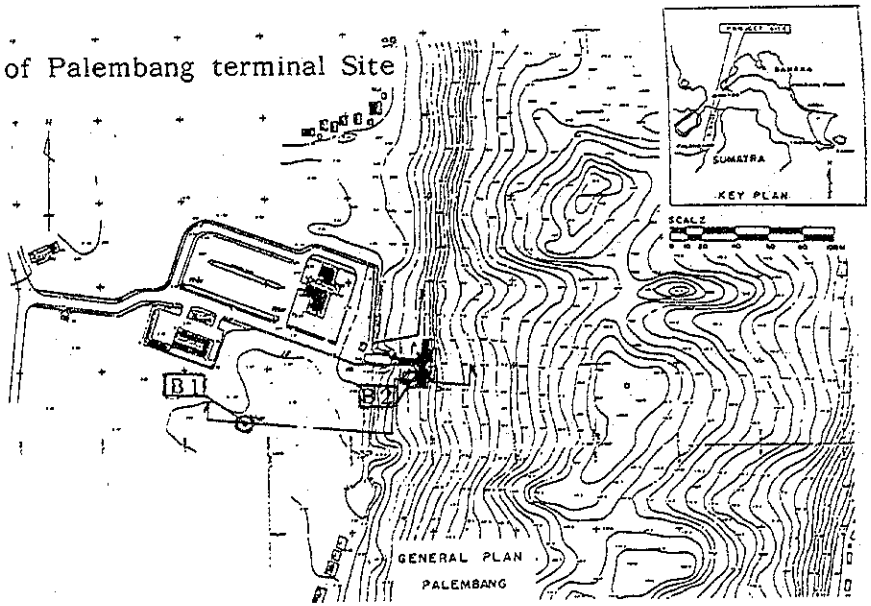
Fig. 2-7-6A Soil Profile of Lolaka Terminal Site

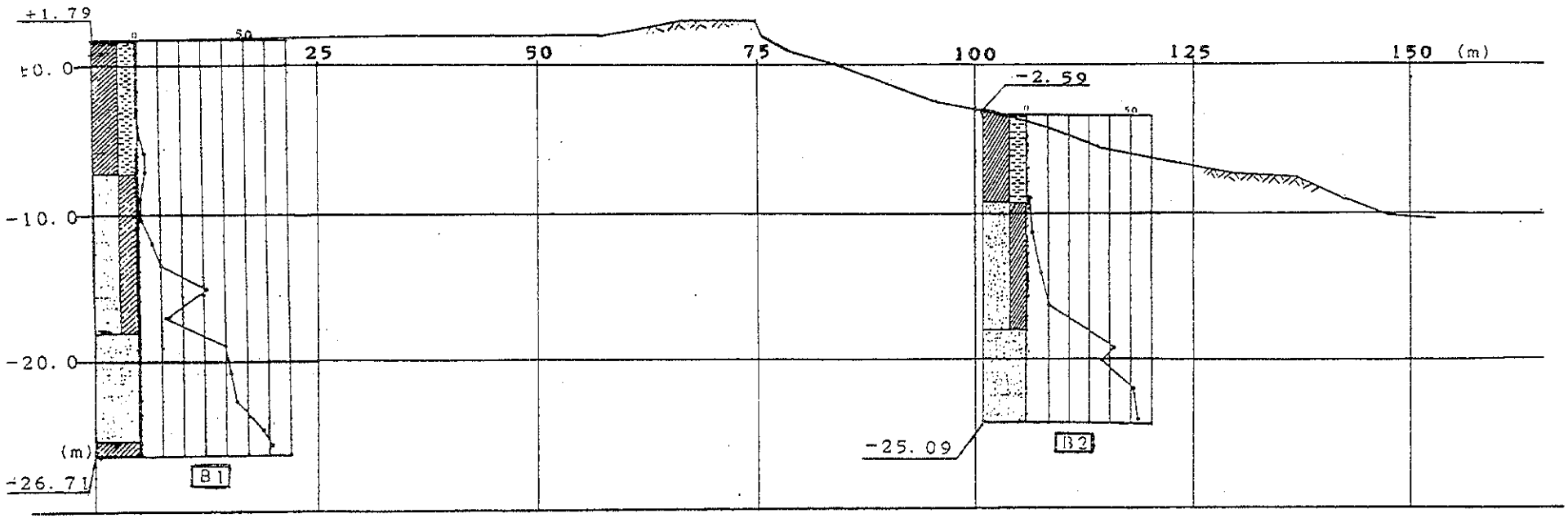


PALEMBANG

Fig. 2-7-7A Soil Profile of Palembang terminal Site

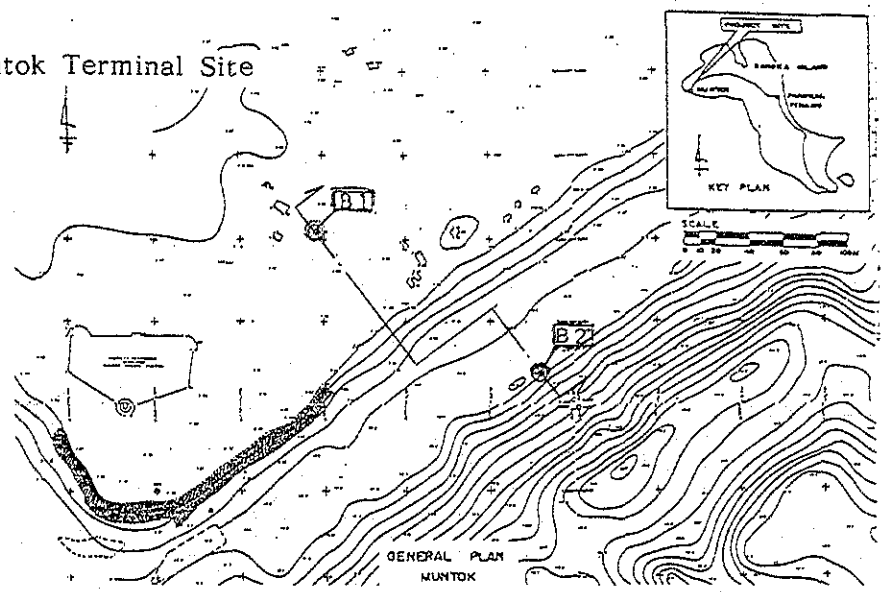






MUNTOK

Fig. 2-7-8A Soil Profile of Muntok Terminal Site



LEGEND

- (B1) QUARTZ SAND
- (B2) SAND BROWN , COARSE
- SANDY CLAY
- SAND AND GRAVEL
- CLAY, GREY, VERY SOFT, SILTY

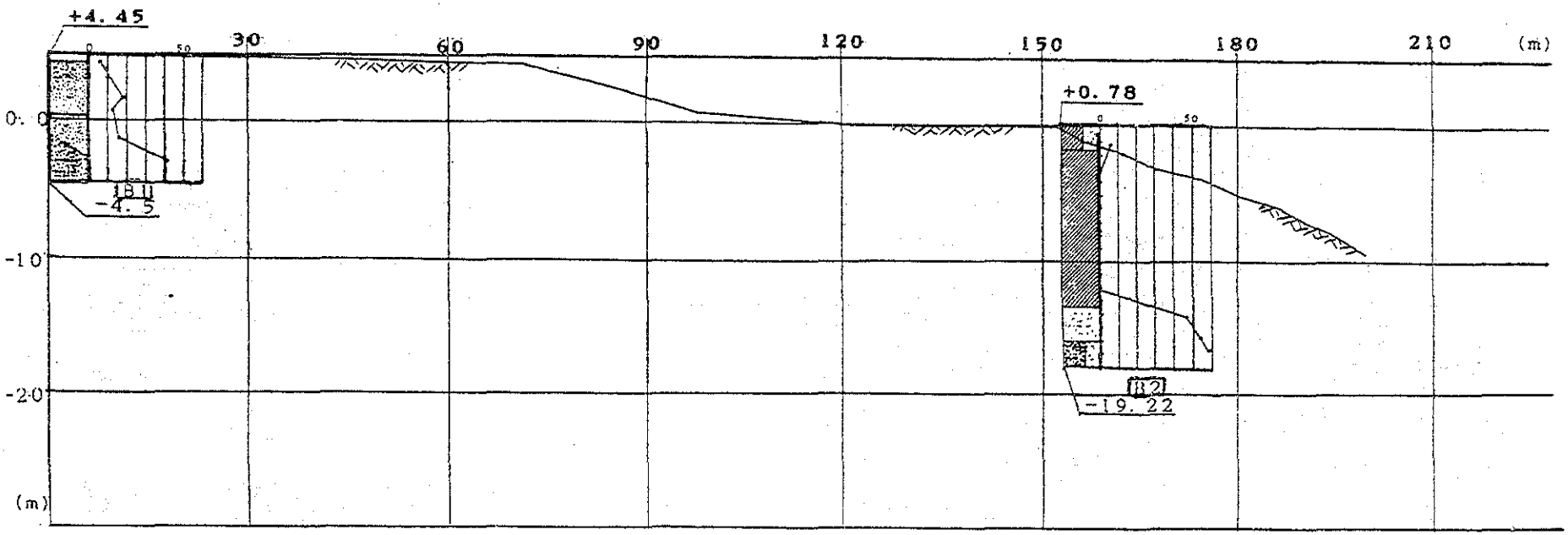


Table 4-2-1A Meterological Data at Biak

The mean value in 1980 through 1989

(from Head of First Class Weather Station, Biak)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	07.7	07.9	08.3	07.9	07.9	08.4	08.4	08.6	08.6	08.2	07.6	07.6
2	09.0	09.3	09.7	09.4	09.3	09.8	09.9	09.9	10.0	09.7	09.1	09.1
3	26.7	26.4	26.5	26.7	26.9	26.6	26.5	26.6	26.6	26.8	26.9	26.8
4	87	86	87	87	87	87	85	85	85	85	86	86
5	30.0	29.7	29.9	30.3	30.6	30.1	29.4	29.4	29.5	29.9	30.3	30.2
6	31.9	31.9	32.1	32.0	32.0	31.8	31.3	31.9	31.9	32.2	32.1	32.1
7	32.4	32.8	32.8	32.5	32.5	32.6	32.0	32.8	32.4	32.8	32.6	32.8
8	22.1	21.7	21.8	22.4	22.5	22.1	21.7	21.8	21.4	22.1	22.0	21.9
9	20.8	19.0	21.0	21.0	22.0	21.0	20.7	20.6	19.5	21.0	20.1	20.4
10	55	53	51	54	61	53	60	61	61	58	55	57
11	298	199	278	249	259	194	233	254	210	212	189	247
12	21	19	23	21	21	18	19	20	19	20	19	21
13	98	55	128	99	100	59	116	86	120	90	66	116
14	270	270	270	270	090	090	090	270	090	270	270	270
15	05	05	05	05	05	05	05	05	05	05	05	05
16	270	260	260	200	250	260	090	100	090	250	270	300
17	35	35	30	25	25	22	20	24	25	25	27	30

Remark

1. Air pressure on land station more than 1,000 in millibar
2. Air pressure on sea level more than 1,000 in millibar
3. Air temperature in C
4. Air humidity
5. Vapor pressure in millibar
6. High temperature in C
7. Highest high temperature in C
8. Low temperature in C
9. Lowest low temperature in C
10. Percentage of the sunshine
11. The duration of sunshine in hour
12. The days of sunshine
13. Precipitation
14. Direction of wind
15. Velocity of wind in knot
16. Direction of the strongest wind
17. Velocity of the strongest wind in knot

Table 4-2-2A Meterological Data at Kolaka
(from Harbor-master Office, Kolaka)

1. Wave
   The highest wave : 0.70m
   -----do----- month : Feb. to Mar.
   The average height : 0.20m

2. Current : not available

3. Wind
   The max. speed : 15m/s
   Direction : W
   -----do----- month : Jan. to Mar.

4. Temperature
   Average temperature : 25C

5. Air pressure : not available

6. Tide
   HHW : 2.00m
   HW : 1.75m
   MTL : 0.80m
   LLW : 0.00m

Table 4-3-1A List of Navigational Aids

(Biak)

(from Harbor-master Office, Biak)

No.	Name (Place)	Type of Mark	Light Color/Rhythm	Position Lat.(S)	Long.(E)	Remark
Light Beacon						
1.	Biak A	Leading L't	Fl.3s.	01-11-06	136-04-27	-
2.	Biak B	---do---	Fl.3s.	01-11-02	136-04-14	-
3.	Biak Approach A	---do---	F.	01-11-26	136-05-31	-
4.	Biak Approach B	---do---	F.	01-11-20	136-05-36	-
Light Buoy						
1.	Biak Entrance	Safe Water	Fl.3s.	01-11-48	136-05-47	-

(Larantuka - Terong - Lewoleba)

(from Harbor-master Office, Larantuka)

Light Beacon						
1.	Larantuka	L't B'n	Fl.4s.	08-20-30	122-59-20	Solar
2.	Waiwerang	L't B'n	Fl.3s.	08-23-24	123-09-36	Solar
3.	Tg.Serbete	L't B'n	Fl.5s	08-19-12	123-00-48	Solar
4.	Pu.Lewotobi	L't B'n	Qk.Fl.1s.	08-36-09	122-50-50	Solar
5.	Pu.Mas	L't B'n	Fl.5s.	08-09-00	123-01-06	Solar

(Bajoe - Kolaka)

(from Harbor-master Office, Bajoe & Kolaka)

Light Becon						
1.	Kr.Totopela N	Port	Fl.4s.R.	04-30-47	120-28-18	-
2.	Kolaka	L't B'n	Fl.3s	04-03-12	121-35-05	Ra.Ref.
3.	Kr.Kolaka	Port	Fl(2)6s.R.	04-03-18	121-34-24	Ra.Ref.
4.	Kr.Bingkoka	Stard	Fl.5s.G.	04-03-55	121-33-37	Ra.Ref.
5.	Kr.Padamarang	Port	Fl.6s.R.	04-03-20	121-23-48	Missing
6.	Lambasina Besar	L't B'n	Fl.5s	04-04-10	121-21-59	-
7.	Lambasina Kecil	L't B'n	Fl(2)8s.	04-04-45	121-19-30	-
Light Buoy						
1.	Off 750m Kr.	Port	-	750m ESE off Jetty		Damaged
2.	Off 1250m Kr.	Stard	-	1250m ENE off Jetty		Damaged
3.	Off 2000m Kr.	Stard	-	2000m ENE off Jetty		Damaged
4.	Kr.Torea E	Stard	-	6000m NE off Jetty		Damaged

(continued)

(Palembang - Muntok)

(from DGSC Sub District Navigation,Palembang)

No.	Name (Place)	Type of Mark	Light Color/Rhythm	Position Lat.(S)	Position Long.(E)	Remark
Light House						
1.	Tg.Kelian	L.H.	Fl.5s	02-05-00	105-08-00	Generator
Light Beacon						
1.	Sei Lats	Stard	Iso.6s.G.	02-58-30	104-51-00	EB
2.	St.Borong	Port	L.Fl.5s.R.	02-56-48	104-52-00	AGA
3.	St.Banjar	Port	L.Fl.8s.R.	02-57-00	104-53-00	EB
4.	Kumbang	Port	F.R.	02-55-30	104-54-00	AGA
5.	Kumbang	Port	F.R.	02-54-42	104-53-54	AGA
6.	Pu.Burung	Stard	L.Fl.8s.G.	02-51-30	104-53-36	AGA
7.	St.Jaran Depan	Leading L't	Fl.3s.	02-48-42	104-54-30	EB
8.	St.Jaran Depan	Leading L't	Fl.4s.	02-49-00	104-54-18	EB
9.	St.Jaran	Port	F.R.	02-47-36	104-55-54	AGA
10.	Upang	Stard	L.Fl.8s.G.	02-46-06	104-56-24	EB
11.	Upang	Port	F.R.	02-45-48	104-57-06	EB
12.	Tg.Pu.Upang	Port	Fl.R.	02-42-48	104-57-12	EB
13.	Pu.Ayam	Stard	L.Fl.5s.G.	02-40-00	104-56-18	AGA
14.	Pegayahan	Stard	L.Fl.7s.G.	02-37-06	104-56-12	AGA
15.	Sedu Mara	Port	L.Fl.6s.R.	02-36-24	104-57-06	AGA
16.	Singris	Port	L.Fl.10s.R.	02-34-18	104-56-18	AGA
17.	Kramat	Port	F.R.	02-31-18	104-56-00	AGA
18.	Parit 12A	Leading L't	Fl.3s.	02-26-18	104-56-06	EB
19.	Parit 12B	Leading L't	Occ.3s	02-26-36	104-56-12	EB
20.	Sungsang A	Leading L't	Iso.2.5s.	02-22-36	104-54-06	EB
21.	Sungsang B	Leading L't	Fl.2.5s.	02-22-54	104-54-00	EB
22.	Baak 4	Leading L't	Occ.4s.	02-15-18	104-54-00	EB
23.	Baak 3	Leading L't	Fl.2s.	02-14-30	104-54-50	EB
24.	Baak 2	Leading L't	Fl.2s.	02-13-12	104-55-36	EB
25.	Baak 1	Leading L't	Fl.3s.	02-12-36	104-55-36	EB
26.	Tg.Kampeh	L't B'n	Fl.5s.	02-11-34	104-54-06	AGA
27.	Ular	Isolated Danger	Fl(2).5s.	01-58-00	104-57-10	EB

(continued)

No.	Name (Place)	Type of Mark	Light Color/Rhythm	Position Lat.(S)	Position Long.(E)	Remark
Light Buoy						
1.	Payang S	Port	L.Fl.12s.R.	02-24-30	104-55-30	Si.Musi
2.	Payang S	Port	L.Fl.12s.R.	02-25-36	104-55-48	|
3.	Pro Sungsang	Port	L.Fl.12s.R.	02-22-14	104-54-17	|
4.	Tg.Gedeh	Port	L.Fl.12s.R.	02-20-48	104-54-59	|
5.	Tg.Buyut	Stard	F.G.	02-20-30	104-54-30	|
6.	Lst	Port	L.Fl.12s.R.	02-18-20	104-55-05	do
7.	Tg.Carat	Stard	L.Fl.12s.G.	02-15-36	104-55-12	|
8.	Tikungan	Port	Fl.6s.R.	02-13-40	104-55-36	|
9.	Pilot	Safe Water	Iso.10s.	02-11-22	104-57-03	|
10.	Katung	Port	Fl.5s.R.	02-10-50	104-58-10	|

Table 4-3-2A List of New Navigational Aids

No. Name (Place)	Type of Mark	Light Color/Rhythm	Position Lat.(S)	Long.(E)	Remark
		(The Mokmer Saubeba route)			
Light Beacon					
1. Mokmer A	Leading L't	Fl.3s.	01-11-54	136-08-55	rough p'n
2. Mokmer B	Leading L't	Fl.3s.	backward of the above		
3. Saubeba A	Leading L't	Fl.3s.	01-41-00	136-17-30	rough p'n
4. Saubeba B	Leading L't	Fl.3s.	backward of the above		
5. Saubeba W.BW.	Star'd L't	F.(G)	end of the West B.W.		
6. Saubeba E.BW.	Port L't	F.(R)	end of the East B.W.		
Light Buoy					
1. Off Mokmer	Star'd	Fl.(G)	W end of the 1.9m kr.		Chart191
2. Off Mokmer	Port	Fl.(R)	E end of the 0.9m kr.		--do--
		(The Larantuka - Terong - Lewoleba route)			
Light Beacon					
1. Larantuka A	Leading L't	Fl.3s.	08-20-50	122-57-10	rough p'n
2. Larantuka B	Leading L't	Fl.3s.	backward of the above		
3. Terong A	Leading L't	Fl.3s.	08-22-30	123-24-36	rough p'n
4. Terong B	Leading L't	Fl.3s.	backward of the above		
5. Lewoleba A	Leading L't	Fl.3s.	08-23-36	123-06-36	rough p'n
6. Lewoleba B	Leading L't	Fl.3s.	backward of the above		
		(The Bajoe - Kolaka route)			
Light Beacon					
1. Bajoe A	Leading L't	Fl.3s.	04-32-40	120-25-20	rough p'n
2. Bajoe B	Leading L't	Fl.3s.	backward of the above		
3. Kr.Totopala W	Cardinal L't	VQ(9)10s.	West end of Kr.Totopala		
4. Kolaka A	Leading L't	Fl.3s.	on the new jetty		
5. Kolaka B	Leading L't	Fl.3s.	backward of the above		
6. Kr.Padamarang	Lateral L't	Fl.(R)6s.	04-03-20	121-23-48	
7. Kr.Rosa Marie	Isolated danger	Iso.10s	04-05-30	121-08-50	
Light Buoy					
1. Off 750m Kr.	Lateral L't P	Fl.(R)3s.	750m SE off jetty end		Bajoe
2. Off 1250m Kr.	Lateral L't S	Fl.(G)2s.	1250m NE off jetty end		-do-
3. Off 2000m Kr.	Lateral L't S	Fl.(G)4s.	2000m ENE off jetty end		-do-
4. Off 6000m Kr.	Lateral L'T S	Fl.(G)6s.	West end of Kr.Torea		-do-
		(The Palembang - Muntok route)			
Light Beacon					
1. Muntok A	Leading L'T	Fl.3s.	02-04-54	105-08-07	rough p'n
2. Muntok B	Leading L't	Fl.3s.	backward of the above		
Light Buoy					
1. Kr.Haji S	Lateral L't S	Fl.(G)3s.	S passage of Kr.Haji		
2. Kr.Haji P	Lateral L't P	Fl.(R)3s.			

DISTANCE	: 31 MILE
TIME REQUIRED	: 3^{h}-10^{m}
VESSEL	: 300 GRT, 11^{kt}
SERVICE FREQUENCY	: ONE ROUND TRIP/DAY

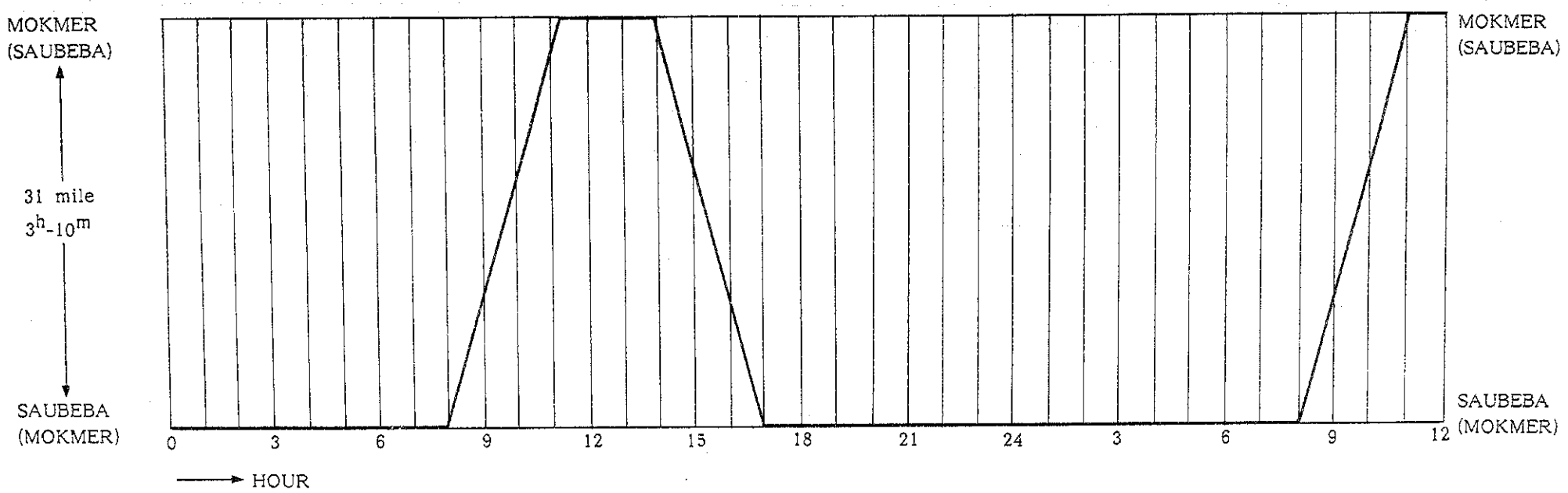


Fig. 4-2-1A TIME TABLE OF ROUTE 2

MOKMER (BIAK) ⟷ SAUBEBA (YAPEN)

- DISTANCE/TIME REQUIRED
  LEWOLEBA - TERONG : 17 MILE/1^{h}-50^{m}
  TERONG - LARANTUKA : 14 MILE/1^{h}-40^{m}
- VESSEL : 300 GRT, 11^{kt}
- SERVICE FREQUENCY : ONE ROUND TRIP/DAY

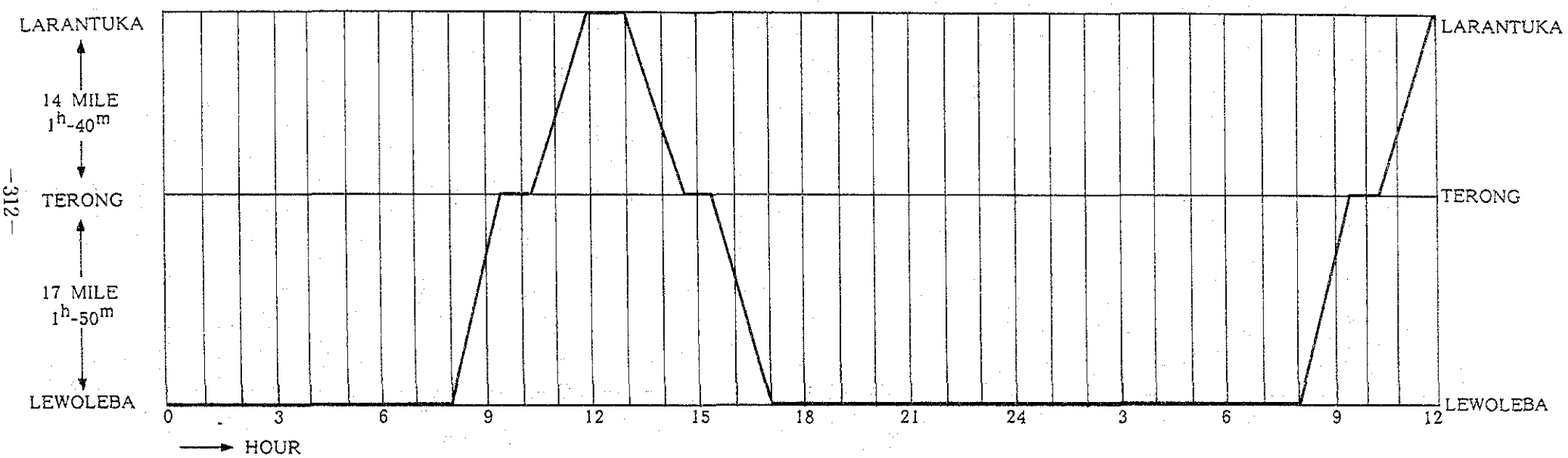


Fig. 4-2-2A TIME TABLE OF ROUTE 3

LARANTUKA (FLORES) ⟷ TERONG (ADONARA) ⟷ LEWOLEBA (LOMBLEN)

DISTANCE	: 80 MILE
TIME REQUIRED	: 8^h by 5 EXISTING VESSELS 5^h - 30^m BY "A" VESSEL
VESSEL	: 5 EXISTING VESSELS AND ONE ADDITIONAL "A" (1,000 GRT, 16 kt)
SERVICE FREQUENCY	: 2.5 ROUND TRIPS/DAY BY 5 V. ONE ROUND TRIP/DAY BY "A"

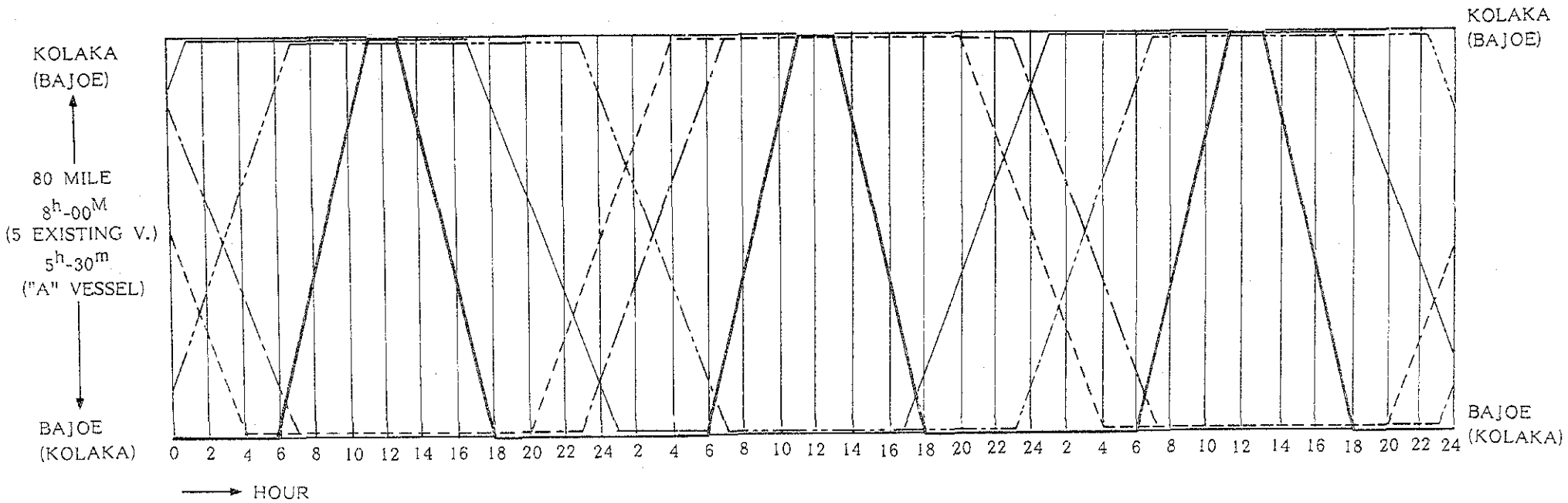


Fig. 4-2-3A TIME TABLE OF ROUTE 8

BAJOE ⟷ KOLAKA

DISTANCE	: 74'
TIME REQUIRED	: 8^h - 00^m (2 EXISTING V.) 6^h - 30^m ("B")
VESSEL	: 2 EXISTING VESSELS AND ONE ADDITIONAL "B" (500 GRT, 14 kt)
SERVICE FREQUENCY	: 2 ROUND TRIPS

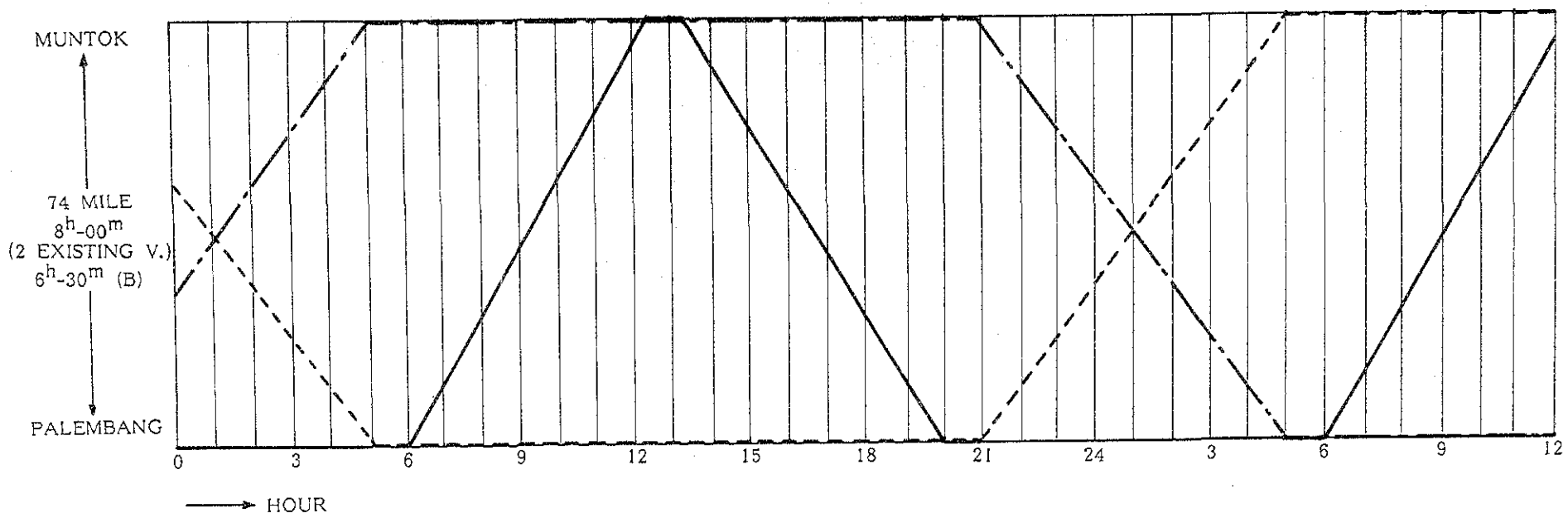
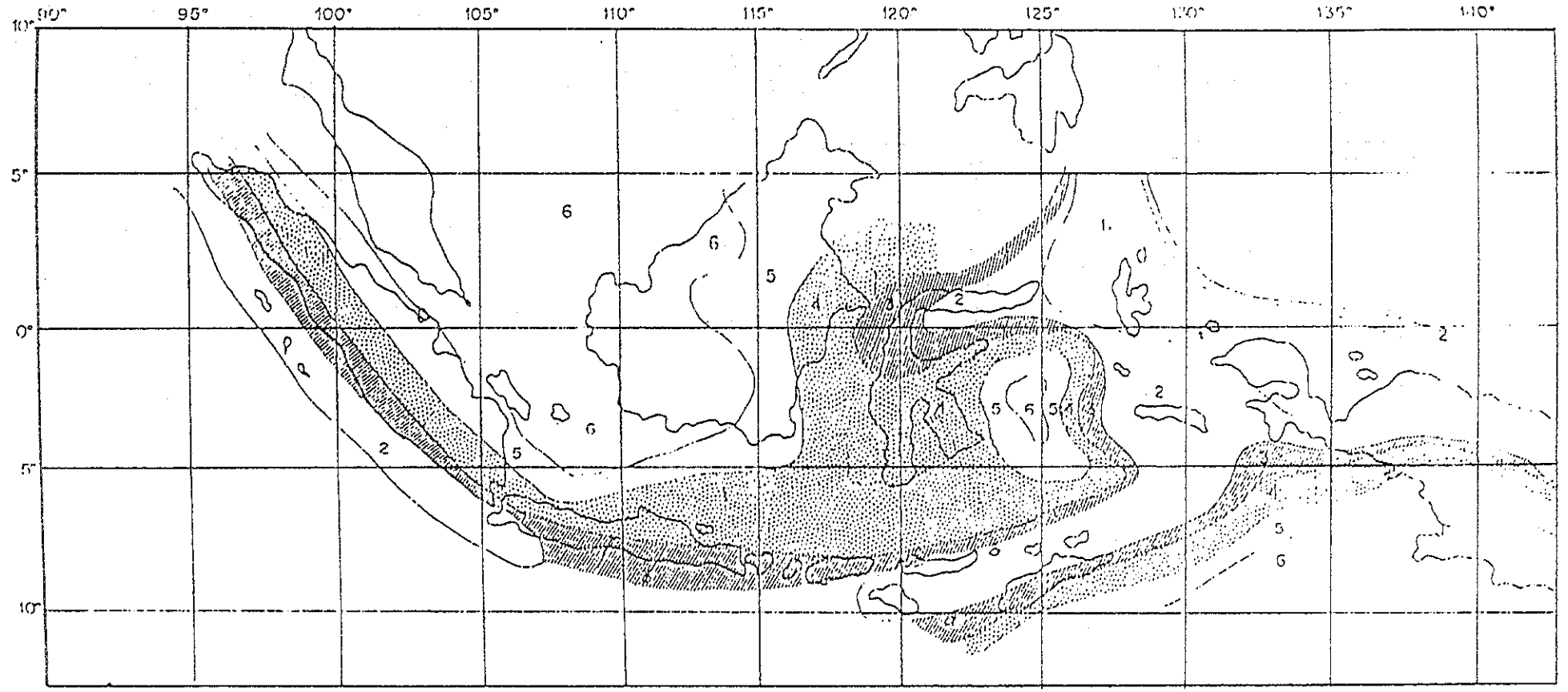


Fig. 4-2-4A TIME TABLE OF ROUTE 9

PALEMBANG ⟷ MUNTOK
(BANGKA)



Source: Standard Design Criteria for Ports in Indonesia, January, 1984.

Soil Type \ Zone	1	2	3	4	5	6
Stiff Soil	0.09	0.07	0.05	0.03	0.01	0
Soft Soil	0.13	0.09	0.07	0.05	0.03	0

Fig. 5-4-1A Classification of Seismicity by Regional Areas in INDONASIA

Table 6-3-1A Number of Presonnel at Kolaka and Bajoe at present (Class II)

	Kolaka	Bajoe
Head of Port	1	1
Administration Affairs Sec.	11	10
Port System Sec.	5	11
Service Sec.	5	8
Facilities Sec.	5	6
Security Sec.	5	7
TOTAL	32	43
Trips/Day	5	5

Table 6-3-2A Number of Personnel at Palembang and Larantuka at Present (Class III)

	Palembang	Larantuka
Head of Port	1	1
Administration Affairs Sec.	10	-
Port System Sec.	3	-
Service Sec.	3	-
Facilities & Security Sec.	2	-
TOTAL	19	8
Trips/Day	2	0.57

Table 6-3-3A Number of Presonnel at Kolalka and Baje in 1988

	Kolaka	Bajoe
Head of Port	1	1
Administration Affairs Sec.	11	10
Port System Sec.	6	11
Service Sec.	6	8
Facilities Sec.	6	7
Security Sec.	6	8
TOTAL	36	45
Round-trips/Day	3	3

Source: JICA Study Team

Table 6-3-4A Number of personnel at Palembang, Muntok, Terong, Mokmer,Lewoleba, Saubeba in 1988

	Palembang, Muntok	Terong	Mokmer Lewoleba	Saubeba
Head of Port	1	1	1	1
Administration Affairs Sec.	10	8	8	8
Port System Sec.	4	4	3	2
Service Sec.	4	4	3	2
Facilities & Security Sec.	4	3	2	2
TOTAL	23	20	17	15
Round-trips/Day	2	1	1	1

Source: JICA Study Team

Table 7-1-1(1)A Construction Cost of Each Facility of Saubeba

Construction Cost of Each Facility				(Unit; Rp.x 1,000)		
Location;	Saubeba					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	8,600	2,300		1.25	24,725
Pile Driv	m	36	90,000		1.25	4,050
Concrete	cu.m	28.5	960,000		1.25	34,200
Bitt/Fende	set	1	32,000,000		1.25	40,000
Total	one unit					102,975
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	5,800	2,300		1.25	16,675
Pile Driv	m	24	90,000		1.25	2,700
Concrete	cu.m	9	960,000		1.25	10,800
Bitt/Fende	set					
Total	one unit					30,175
Facility	Wharf					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	24,200	2,300		1.25	69,575
Pile Driv	m	98	90,000		1.25	11,025
Concrete	cu.m	213.2	960,000		1.25	255,840
Bitt/Fende	set					
Total	one unit					336,440
Facility	M/B Foundation					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	5,800	2,300		1.25	16,675
Pile Driv	m	24	90,000		1.25	2,700
Concrete	cu.m	9	960,000		1.25	10,800
Bitt/Fende	set					
Total	one unit					30,175
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	9,200	2,300		1.25	26,450
Pile Driv	m	48	90,000		1.25	5,400
Concrete	cu.m	9	960,000		1.25	10,800
Bitt/Fende	set	1	20,000,000		1.25	25,000
Total	one unit					67,650

		Facility	Catwalk					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	3,000	2,300		1	6,900
		Pile Driv	m	14	90,000		1	1,260
		Concrete	cu.m	2	960,000		1	1,920
		Bitt/Fende	set					
		Steel	ton	40,000	2,300		1	92,000
		Total	one unit					102,080

Table 7-1-1(2)A Construction Cost of Each Facility of Mokmer

Construction Cost of Each Facility				(Unit: Rp.x 1,000)		
Location;	Mokmer					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	7,600	2,300		1	17,480
Pile Driv	m	36	90,000		1	3,240
Concrete	cu.m	28.5	960,000		1	27,360
Bitt/Fende	set	1	32,000,000		1	32,000
Total	one unit					80,080
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	5,100	2,300		1	11,730
Pile Driv	m	24	90,000		1	2,160
Concrete	cu.m	9	960,000		1	8,640
Bitt/Fende	set					
Total	one unit					22,530
Facility	Wharf					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	24,200	2,300		1	55,660
Pile Driv	m	98	90,000		1	8,820
Concrete	cu.m	213.2	960,000		1	204,672
Bitt/Fende	set					
Total	one unit					269,152
Facility	M/B Foundation					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	5,100	2,300		1	11,730
Pile Driv	m	24	90,000		1	2,160
Concrete	cu.m	32	960,000		1	30,720
Bitt/Fende	set					
Total	one unit					44,610
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	9,200	2,300		1	21,160
Pile Driv	m	48	90,000		1	4,320
Concrete	cu.m	9	960,000		1	8,640
Bitt/Fende	set	1	20,000,000		1	20,000
Total	one unit					54,120

		Facility	Approach trestle/ catwalk					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	23,900	2,300		1.25	68,713
		Pile Driv	m	124.8	90,000		1.25	14,040
		Concrete	cu.m	320	960,000		1.25	384,000
		Bitt/Fende	set					
		Steel	ton	0	2,225		1.82	0
		Total	one unit					466,753

Table 7-1-1(3)A Construction Cost of Each Facility of Lewoleba

Construction Cost of Each Facility				(Unit; Rp.x 1,000)		
Location;	Lewoleba					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	17,712	2,250		1	39,852
Pile Driv	m	72	115,000		1	8,280
Concrete	cu.m	60.75	1,200,000		1	72,900
Bitt/Fende	set	1	33,750,000		1	33,750
Total	one unit					154,782
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	10,580	2,250		1	23,805
Pile Driv	m	50	115,000		1	5,750
Concrete	cu.m	24	1,200,000		1	28,800
Bitt/Fende	set					
Total	one unit					58,355
Facility	Wharf					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	59,904	2,250		1	134,784
Pile Driv	m	416	115,000		1	47,840
Concrete	cu.m	376	1,200,000		1	451,200
Bitt/Fende	set					
Total	one unit					633,824
Facility	M/B Foundation					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	39,744	2,250		1	89,424
Pile Driv	m	75	115,000		1	8,625
Concrete	cu.m	120	1,200,000		1	144,000
Bitt/Fende	set					
Total	one unit					242,049
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	15,870	2,250		1	35,708
Pile Driv	m	75	115,000		1	8,625
Concrete	cu.m	43	1,200,000		1	51,600
Bitt/Fende	set	1	33,750,000		1	33,750
Total	one unit					129,683

		Facility	Approach trestle/ catwalk					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	18,576	2,250		1	41,796
		Pile Driv	m	36	115,000		1	4,140
		Concrete	cu.m	92.3	1,200,000		1	110,760
		Bitt/Fende	set					
		Steel	ton	0	2,250		1	0
		Total	one unit					156,696

Table 7-1-1(4) Construction Cost of Each Facility of Terong

Construction Cost of Each Facility				(Unit; Rp.x 1,000)		
Location;	Terong					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	0	2,250		1	0
Pile Driv	m	0	115,000		1	0
Concrete	cu.m	62.9	960,000		2.5	150,960
Bitt/Fende	set	1	33,750,000		1	33,750
Infill sand	cu.m	79.3	15,000		2.5	2,974
Total	one unit					187,684
Adjustment factor for caison yard preparation cost						
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	0	2,250		1	0
Pile Driv	m	0	115,000		1	0
Concrete	cu.m	50.49	960,000		2.5	121,176
Infill sand	cu.m	49.5	15,000		2.5	1,856
Total	one unit					123,032
Adjustment factor for caison yard preparation						
Facility	Wharf	(for Lewoleba)				
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	59,904	2,250		1	134,784
Pile Driv	m	416	115,000		1	47,840
Concrete	cu.m	376	1,200,000		1	451,200
Bitt/Fende	set					
Total	one unit					633,824
Facility	M/B Foundation					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	0	2,250		1	0
Pile Driv	m	0	115,000		1	0
Concrete	cu.m	103.7	960,000		2.5	248,880
infill sand	cu.m	1,840	15,000		2.5	69,000
Backfill	cu.m	2,840	17,500		1	49,700
Total	one unit					367,580
Adjustment factor for caison yard preparation						
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	0	2,250		1	0
Pile Driv	m	0	115,000		1	0
Concrete	cu.m	150	1,200,000		1	180,000
Bitt/Fende	set	1	33,750,000		1	33,750
Total	one unit					213,750

		Facility	Catwalk					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	18,576	2,250		1	41,796
		Pile Driv	m	36	115,000		1	4,140
		Concrete	cu.m	92.3	1,200,000		1	110,760
		Bitt/Fende	set					
		Steel	ton	0	2,250		1	0
		Total	one unit					156,696
		Facility	M/B cylinder foundation					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	0	2,250		1	0
		Pile Driv	m	0	115,000		1	0
		Concrete	cu.m	50.49	960,000		2.5	121,176
		infill sand	cum	49.5	15,000		2.5	1,856
		Total	one unit					123,032
		Adjustment factor for caison yard preparation						

Table 7-1-1(5)A Construction Cost of Each Facility of Kolaka

Construction Cost of Each Facility				(Unit; Rp.x 1,000)		
Location;	Kolaka					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	46,100	2,250		1	103,725
Pile Driv	m	153	100,000		1	15,300
Concrete	cu.m	63	900,000		1	56,700
Bitt/Fende	set	1	40,500,000		1	40,500
Total	one unit					216,225
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	26,400	2,250		1	59,400
Pile Driv	m	118	100,000		1	11,800
Concrete	cu.m	37.5	900,000		1	33,750
Bitt/Fende	set					
Total	one unit					104,950
Facility	Wharf					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	85,500	2,250		1	192,375
Pile Driv	m	486	100,000		1	48,600
Concrete	cu.m	278.8	900,000		1	250,920
Bitt/Fende	set					
Total	one unit					491,895
Facility	Approach Trestle					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	60,350	2,250		1	135,788
Pile Driv	m	315	100,000		1	31,500
Concrete	cu.m	808	900,000		1	727,200
Bitt/Fende	set					
Total	one unit					894,488
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	19,900	2,250		1	44,775
Pile Driv	m	90	100,000		1	9,000
Concrete	cu.m	50.7	900,000		1	45,630
Bitt/Fende	set	1	54,000,000			54,000
Total	one unit					153,405

		Facility	Catwalk					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	3,000	2,250		1	6,750
		Pile Driv	m	14	90,000		1	1,260
		Concrete	cu.m	2	900,000		1	1,800
		Bitt/Fende	set					
		Steel	ton	40,000	2,250		1	90,000
		Total	one unit					99,810
		Facility	Truck Scale					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Scale	Set	1	25,000,000		1	25,000
		Building	m2	110	500,000		1	55,000
		Reclamatic	cu.m	1500	30,000		1	45,000
			set					
			ton					0
		Total	one unit					125,000

Table 7-1-1(6)A Construction Cost of Each Facility of Bajoe

Construction Cost of Each Facility				(Unit: Rp.x 1,000)		
Location;	Bajoe					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	15,700	2,250		1	35,325
Pile Driv	m	51	100,000		1	5,100
Concrete	cu.m	63	900,000		1	56,700
Bitt/Fende	set	1	40,500,000		1	40,500
Total	one unit					137,625
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	8,100	2,250		1	18,225
Pile Driv	m	30	100,000		1	3,000
Concrete	cu.m	37.5	900,000		1	33,750
Bitt/Fende	set					
Total	one unit					54,975
Facility	Wharf					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	36,300	2,250		1	81,675
Pile Driv	m	135	100,000		1	13,500
Concrete	cu.m	278.8	900,000		1	250,920
Bitt/Fende	set					
Total	one unit					346,095
Facility	Approach Trestle					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	169,945	2,250		1	382,376
Pile Driv	m	24.39	100,000		1	2,439
Concrete	cu.m	2,377	900,000		1	2,139,300
Bitt/Fende	set					
Total	one unit					2,524,115
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	19,900	2,250		1	44,775
Pile Driv	m	90	100,000		1	9,000
Concrete	cu.m	50.7	900,000		1	45,630
Bitt/Fende	set	1	54,000,000			54,000
Total	one unit					153,405

		Facility	Catwalk					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	3,000	2,250		1	6,750
		Pile Driv	m	14	100,000		1	1,400
		Concrete	cu.m	2	900,000		1	1,800
		Bitt/Fende	set					
		Steel	ton	40,000	2,250		1	90,000
		Total	one unit					99,950
		Facility	Truck Scale					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Scale	Set	1	25,000,000		1	25,000
		Building	m2	110	500,000		1	55,000
		Reclamatic	cu.m	1500	30,000		1	45,000
			set					
			ton					0
		Total	one unit					125,000

Table 7-1-1(7)A Construction Cost of Each Facility of Palembang

Construction Cost of Each Facility				(Unit; Rp.x 1,000)		
Location;	Palembang					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	20,700	2,250		1	46,575
Pile Driv	m	90	105,000		1	9,450
Concrete	cu.m	67.5	850,000		1	57,375
Bitt/Fende	set	1	33,750,000			33,750
Total	one unit					147,150
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	11,000	2,250		1	24,750
Pile Driv	m	54	105,000		1	5,670
Concrete	cu.m	24	850,000		1	20,400
Bitt/Fende	set					
Total	one unit					50,820
Facility	Wharf					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	48,400	2,250		1	108,900
Pile Driv	m	210	105,000		1	22,050
Concrete	cu.m	376	850,000		1	319,600
Bitt/Fende	set					
Total	one unit					450,550
Facility	M/B Foundation					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	40000	2,250		1	90,000
Pile Driv	m	75	105,000		1	7,875
Concrete	cu.m	120	850,000		1	102,000
Bitt/Fende	set					
Total	one unit					199,875
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	13,800	2,250		1	31,050
Pile Driv	m	87	105,000		1	9,135
Concrete	cu.m	43	850,000		1	36,550
Bitt/Fende	set	1	45,000,000			45,000
Total	one unit					121,735

		Facility	Catwalk					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	0	2,250		1	0
		Pile Driv	m	0	105,000		1	0
		Concrete	cu.m	0	850,000		1	0
		Bitt/Fende	set					
		Steel	ton	33,500	2,250		1	75,375
		Total	one unit					75,375
		Facility	Approach trestle (for Palembang)					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Piles	kg	27,600	2,250		1	62,100
		Pile Driv	m	192	105,000		1	20,160
		Concrete	cu.m	172.2	850,000		1	146,370
		Bitt/Fende	set					
		Steel	ton	0	2,250		1	0
		Total	one unit					228,630
		Facility	Truck Scale					
		Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
		Scale	Set	1	25,000,000		1	25,000
		Building	m2	110	564,000		1	62,040
		Reclamati	cu.m				1	0
			set					
			ton					0
		Total	one unit					87,040

Table 7-1-1(8)A Construction Cost of Each Facility of Muntok

Construction Cost of Each Facility				(Unit; Rp.x 1,000)		
Location;	Muntok					
Facility	B- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	21,400	2,250		1	48,150
Pile Driv	m	48	105,000		1	5,040
Concrete	cu.m	67.5	850,000		1	57,375
Bitt/Fende	set	1	33,750,000			33,750
Total	one unit					144,315
Facility	M- Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	11,800	2,250		1	26,550
Pile Driv	m	56	105,000		1	5,880
Concrete	cu.m	24	850,000		1	20,400
Bitt/Fende	set					
Total	one unit					52,830
Facility	Wharf					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	57,100	2,250		1	128,475
Pile Driv	m	232	105,000		1	24,360
Concrete	cu.m	376	850,000		1	319,600
Bitt/Fende	set					
Total	one unit					472,435
Facility	M/BCylinder Foundation					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	40,000	2,250		1	90,000
Pile Driv	m	75	105,000		1	7,875
Concrete	cu.m	120	850,000		1	102,000
Bitt/Fende	set					
Total	one unit					199,875
Facility	M/B Dolphin					
Materials	Unit	Quantity	Unit Cost	Adjustment Factor		Amount
Piles	kg	13,800	2,250		1	31,050
Pile Driv	m	72	105,000		1	7,560
Concrete	cu.m	43	850,000		1	36,550
Bitt/Fende	set	1	45,000,000			45,000
Total	one unit					120,160

Facility	Catwalk				
Materials	Unit	Quantity	Unit Cost	Adjustment Factor	Amount
Piles	kg	0	2,250	1	0
Pile Driv	m	0	105,000	1	0
Concrete	cu.m	0	850,000	1	0
Bitt/Fende	set				
Steel	ton	33.500	2,250	1	75,375
Total	one unit				75,375

Facility	Breakwater				
Materials	Unit	Quantity	Unit Cost	Adjustment Factor	Amount
H-Piles	kg	162,000	2,250	1	364,500
Pile Driv	m	248	105,000	1	26,040
Concrete	cu.m	255	850,000	1	216,750
Sheetpile	kg	367,900	2,250		
Drive	m	1,944	52,500	1	102,060
Total	one unit				709,350

Facility	Approach trestle (for Palembang)				
Materials	Unit	Quantity	Unit Cost	Adjustment Factor	Amount
Piles	kg	27,600	2,250	1	62,100
Pile Driv	m	192	105,000	1	20,160
Concrete	cu.m	172.2	850,000	1	146,370
Bitt/Fende	set				
Steel	ton	0	2,250	1	0
Total	one unit				228,630

Facility	Truck Scale				
Materials	Unit	Quantity	Unit Cost	Adjustment Factor	Amount
Scale	Set	1	25,000,000	1	25,000
Building	m2	110	564,000	1	62,040
Reclamatic	cu.m			1	0
	set				
	ton				0
Total	one unit				87,040

Table 7-1-2(1)A Detailed Construction Cost of Mokumer Ferry Terminal

	Name of the proposed Ferry Terminal and Route No.				2, Saueba			
	Detailed Construction Cost of Works for Ferry Terminals							
						Unit: Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S	1			150.00	100.00	250.00
Water	Breasting Dolphine	Unit	3	25.19	37.79	75.57	113.37	188.94
Front	(Fender system)	Unit	3	16.00	24.00	48.00	72.00	120.00
Facilities	Mooring Dolphine	Unit	3	12.07	18.11	36.21	54.33	90.54
	M/B dolphine	Unit	1	27.06	40.59	27.06	40.59	67.65
	M/B foundation	Unit	2	12.07	18.11	24.14	36.22	60.36
	Movable Bridge	m2	56	0.70	2.78	39.20	155.68	194.88
	(hydroulic system)	set	1	1.86	7.45	1.86	7.45	9.31
	Approach Trestle	m2	52	3.59	5.39	186.68	280.28	466.96
	Catwalk	m	50	1.41	0.60	70.50	30.20	100.70
	Causeway	m	45	0.10	0.04	4.37	1.85	6.21
	(Armourstone)	m3	1,035	0.15	0.06	151.11	64.17	215.28
	Dredging works	m3	-					
	Breakwater	m	300	0.15	0.06	45.00	18.00	63.00
	Navigation Aids	Set	4	14.85	34.65	59.40	138.60	198.00
	Wharf and stage	m2	240	0.56	0.84	134.40	201.60	336.00
Land	Reclamation works	m3	2,700	0.053	0.023	143.10	62.10	205.20
Facilities	Cut/Fill	m3	1,400	0.053	0.023	74.20	32.20	106.40
	Revetment works	m	150	0.219	0.094	32.85	14.10	46.95
	Road works	m2	1,400	0.037	0.016	51.80	22.40	74.20
	(Overlay pavement)	m2	1,400	0.016	0.007	22.40	9.80	32.20
	Pavement works	m2	1,600	0.038	0.025	60.80	40.00	100.80
	Green Area	m2	1,700	0.025	0.013	42.50	22.10	64.60
	Building works	m2	800	0.300	0.075	240.00	60.00	300.00
	Water supply	set	1	210.000	315.000	210.00	315.00	525.00
	Electric power supply	set	1	72.000	48.000	72.00	48.00	120.00
	(Generators)	set	1	108.000	72.000	108.00	72.00	180.00
	Cathodic Protection	L.S	1	57.60	86.40	57.60	86.40	144.00
Total of Construction Cost						2,168.75	2,098.44	4,267.18

Table 7-1-2(2)A Detailed Construction Cost of Saubeba Ferry Terminal

	Name of the proposed Ferry Terminal and Route No.			2, Mokumer Ferry Terminal				
	Detailed Construction Cost of Works for Ferry Terminals							
						Unit; Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S				120.00	80.00	200.00
Water	Breasting Dolphine	Unit	3	19.23	28.85	57.69	86.55	144.24
Front	(Fender system)	Unit	3	12.80	19.20	38.40	57.60	96.00
Facilities	Mooring Dolphine	Unit	3	9.01	13.52	27.03	40.56	67.59
	M/B dolphine	Unit	1	21.65	32.47	21.65	32.47	54.12
	M/B foundation	Unit	2	17.84	26.77	35.68	53.54	89.22
	Movable Bridge	m2	56	0.42	1.66	23.52	92.96	116.48
	(hydroulic system)	set	1			1.88	7.44	9.32
	Approach Trestle	m2	-	-	-	-	-	
	Catwalk	m	50	0.82	1.22	41.00	61.00	102.00
	Causeway	m	11	0.07	0.04	0.74	0.48	1.22
	(Armourstone)	m3	253	0.10	0.07	25.55	16.70	42.25
	Dredging works	m3	21,600	0.006	0.026	129.60	561.60	691.20
	Breakwater	m	190	0.10	0.07	19.19	12.54	31.73
	Navigaation Aids	set	2	19.80	46.20	39.60	92.40	132.00
	Wharf and stage	m2	240	0.45	0.67	107.66	161.49	269.15
Land	Reclamation works	m3	9,400	0.036	0.024	338.40	225.60	564.00
Facilities	Cut/Fill	m3	-					
	Revetment works	m	120	0.150	0.100	18.00	12.00	30.00
	Road works	m2	1,400	0.025	0.017	35.00	23.80	58.80
	(Overlay pavement)	m2	1,400	0.011	0.007	15.40	9.80	25.20
	Pavement works	m2	1,600	0.030	0.020	48.00	32.00	80.00
	Green Area	m2	1,750	0.020	0.010	35.00	17.50	52.50
	Building works	m2	800	0.180	0.120	144.00	96.00	240.00
	Water supply	set	1	160.000	240.000	160.00	240.00	400.00
	Electric power supply	set	1	72.000	108.000	72.00	108.00	180.00
	(Generators)	set	1	48.000	72.000	48.00	72.00	120.00
	Cathodic Protection	L.S	1			22.00	66.00	88.00
Total of Construction Cost						1,624.99	2,260.03	3,885.02

Table 7-1-2(3)A Detailed Construction Cost of Lewoleba Ferry Terminal

	Name of the propose	Ferry Terminal and Route No		3, Lewoleba				
	Detailed Construction Cost of Works for Ferry Terminals							
						Unit; Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S	1			120.00	80.00	200.00
Water	Breasting Dolphine	Unit	3	48.41	72.62	145.23	217.86	363.09
Front	(Fender system)	Unit	3	13.50	20.25	40.50	60.75	101.25
Facilities	Mooring Dolphine	Unit	3	23.34	35.01	70.02	105.03	175.05
	M/B dolphine	Unit	1	51.87	77.81	51.87	77.81	129.68
	M/B foundation	Unit	1	96.82	145.23	96.82	145.23	242.05
	Movable Bridge	m2	88	0.70	2.78	61.60	244.64	306.24
	(hydroulic system)	set	1	1.86	7.45	1.86	7.45	9.31
	M/B cylinder foundatic	Unit	2	78.31	117.50	156.62	235.00	391.62
	Catwalk	m	60	1.57	1.04	94.20	62.40	156.60
	Causeway	m	10	1.06	0.46	10.60	4.60	15.20
	Rock mound	m3	-					
	Dredging works	m3	-					
	Breakwater	m	-					
	Navigation Aids	Set	3	14.85	34.65	44.55	103.95	148.00
	Approach Trestle	m2	75	1.27	1.90	95.25	142.50	237.75
	Wharf	Unit	1	253.53	380.29	253.53	380.29	633.82
Land	Reclamation works	m3	5,200	0.014	0.006	72.80	31.20	104.00
Facilities	Cut/Fill	m3	-					
	Revetment works	m	150	0.206	0.088	30.90	13.20	44.10
	Road works	m2	900	0.029	0.013	26.10	11.70	37.80
	(Overlay pavement)	m2	900	0.013	0.005	11.34	4.50	15.84
	Pavement works	m2	1,600	0.035	0.015	56.00	24.00	80.00
	Green Area	m2	1,700	0.020	0.010	34.00	17.00	51.00
	Building works	m2	800	0.360	0.090	288.00	72.00	360.00
	Water supply	set	1	160.000	240.000	160.00	240.00	400.00
	Electric power supply	set	1	72.000	108.000	72.00	108.00	180.00
	(Generators)	set	1	48.000	72.000	48.00	72.00	120.00
	Cathodic Protection	L.S	1	25.000	75.000	25.00	75.00	100.00
Total of Construction Cost						2,066.79	2,536.11	4,602.40

Table 7-1-2(4)A Detailed Construction Cost of Terong Ferry Terminal

	Name of the proposed Ferry Terminal and Route No.			3, Terong				
	Detailed Construction Cost of Works for Ferry Terminals							
						Unit: Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S	1			120.00	80.00	200.00
Water	Breasting Dolphine	Unit	3	92.36	61.57	277.08	184.71	461.79
Front	(Fender system)	Unit	3	13.50	20.25	40.50	60.75	101.25
Facilities	Mooring Dolphine	Unit	3	73.82	49.21	221.46	147.63	369.09
	M/B dolphine	Unit	1	128.25	85.50	128.25	85.50	213.75
	M/B foundation	Unit	1	220.55	147.03	220.55	147.03	367.58
	Movable Bridge	m2	128	0.68	2.71	87.04	346.88	433.92
	(hydroulic system)	set	1	1.86	7.45	1.86	7.45	9.31
	M/B cylinder foundatic	Unit	2	73.82	49.21	147.64	98.42	246.06
	Catwalk	m	55	1.71	1.14	94.05	62.70	156.75
	Causeway	m	40	1.06	0.46	42.40	18.40	60.80
	Rock mound	m3	5,000	0.265	0.177	1,325.00	885.00	2,210.00
	Dredging works	m3	-					
	Breakwater	m	-					
	Navigation Aids	Set	3	14.85	34.65	44.55	103.95	148.50
	Wharf and stage	m2	-					
Land	Reclamation works	m3	4,500	0.014	0.006	63.00	27.00	90.00
Facilities	Cut/Fill	m3	-					
	Revetment works	m	160	0.206	0.088	32.96	14.08	47.04
	Road works	m2	900	0.029	0.010	26.10	9.00	35.10
	(Overlay pavement)	m2	900	0.013	0.005	11.70	4.50	16.20
	Pavement works	m2	1,600	0.035	0.015	56.00	24.00	80.00
	Green Area	m2	1,700	0.020	0.010	34.00	17.00	51.00
	Building works	m2	800	0.360	0.090	288.00	72.00	360.00
	Water supply	set	1	160.000	240.000	160.00	240.00	400.00
	Electric power supply	set	1	72.000	108.000	72.00	108.00	180.00
	(Generators)	set	1	48.000	72.000	48.00	72.00	120.00
	Cathodic Protection	L.S						
Total of Construction Cost						3,542.14	2,816.00	6,358.14

Table 7-1-2(5)A Detailed Construction Cost of Kolaka Ferry Terminal

	Name of the proposed Ferry Terminal and Route No				8, Kolaka			
	Detailed Construction Cost of Works for Ferry Terminals							
						Unit; Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S	1			120.00	80.00	200.00
Water	Breasting Dolphine	Unit	3	70.29	105.44	210.87	316.31	527.18
Front	(Fender system)	Unit	3	16.20	24.30	48.60	72.90	121.50
Facilities	Mooring Dolphine	Unit	3	41.98	62.97	125.94	188.91	314.85
	M/B dolphine	Unit	1	61.36	92.04	61.36	92.04	153.40
	M/B foundation	Unit	0	47.31	70.97	0.00	0.00	0.00
	Movable Bridge	m2	153.00	1.22	4.89	186.66	748.17	934.83
	(hydroulic system)	set	1	1.86	7.45	1.86	7.45	9.31
	M/B cylinder foundatic	Unit	2	78.31	117.50	156.62	235.00	391.62
	Catwalk	m	80	0.75	0.50	60.00	40.00	100.00
	Causeway	m	0	1.06	0.46	0.00	0.00	0.00
	Rock mound	m3	-					
	Dredging works	m3	0	0.005	0.018	0.00	0.00	0.00
	Breakwater	m	-					
	Navigation Aids	Set	4	14.85	34.65	59.40	138.60	198.00
	Approach Trestle	m2	105	3.41	5.11	358.05	536.55	894.60
	Wharf	Unit	1	196.76	295.14	196.76	295.14	491.90
Land	Reclamation works	m3	16,000	0.015	0.010	240.00	160.00	400.00
Facilities	Cut/Fill	m3	-					
	Revetment works	m	270	0.510	0.340	137.70	91.80	229.50
	Road works	m2	4,000	0.033	0.022	132.00	88.00	220.00
	(Overlay pavement)	m2	4,000	0.010	0.007	40.00	28.00	68.00
	Pavement works	m2	5,600	0.027	0.018	151.20	100.80	252.00
	Green Area	m2	3,000	0.020	0.010	60.00	30.00	90.00
	Building works	m2	2,500	0.350	0.150	875.00	375.00	1,250.00
	Water supply	set	1	240.000	360.000	240.00	360.00	600.00
	Electric power supply	set	1	72.000	108.000	72.00	108.00	180.00
	(Generators)	set	1	48.000	72.000	48.00	72.00	120.00
	Truckscale	set	1	100.000	25.000	100.00	25.00	125.00
	Cathodic Protection	L.S	1	175.600	263.400	175.60	263.40	439.00
Total of Construction Cost						3,857.62	4,453.07	8,310.69

Table 7-1-2(6)A Detailed Construction Cost of Bajoe Ferry Terminal

	Name of the proposed Ferry Terminal and Route No			8, Bajoe				
	Detailed Construction Cost of Works for Ferry Terminals							
						Unit; Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S	1			120.00	80.00	200.00
Water	Breasting Dolphine	Unit	3	38.85	58.28	116.55	174.84	291.39
Front	(Fender system)	Unit	3	16.20	24.30	48.60	72.90	121.50
Facilities	Mooring Dolphine	Unit	3	21.99	32.99	65.97	98.97	164.94
	M/B dolphine	Unit	1	61.36	92.04	61.36	92.04	153.40
	M/B foundation	Unit	0	47.31	70.97	0.00	0.00	0.00
	Movable Bridge	m2	112.50	1.22	4.89	137.25	550.13	687.38
	(hydroulic system)	set	1	1.86	7.45	1.86	7.45	9.31
	M/B cylinder foundatic	Unit	2	78.31	117.50	156.62	235.00	391.62
	Catwalk	m	80	0.75	0.50	60.00	40.00	100.00
	Causeway	m	0	1.06	0.46	0.00	0.00	0.00
	Rock mound	m3	-					
	Dredging works	m3	65,908	0.006	0.024	395.45	1,581.79	1,977.24
	Breakwater	m	-					
	Navigation Aids	Set	3	21.45	50.05	64.35	150.15	214.50
	Approach Trestle	m2	185	5.46	8.19	1,010.10	1,515.15	2,525.25
	Wharf	Unit	1	138.44	207.66	138.44	207.66	346.10
Land	Reclamation works	m3	43,200	0.015	0.010	648.00	432.00	1,080.00
Facilities	Cut/Fill	m3	-					
	Revetment works	m	370	0.510	0.340	188.70	125.80	314.50
	Road works	m2	2,350	0.033	0.022	77.55	51.70	129.25
	(Overlay pavement)	m2	2,350	0.010	0.007	23.50	16.45	39.95
	Pavement works	m2	5,600	0.027	0.018	151.20	100.80	252.00
	Green Area	m2	2,500	0.020	0.010	50.00	25.00	75.00
	Building works	m2	2,500	0.350	0.150	875.00	375.00	1,250.00
	Water supply	set	1	240.000	360.000	240.00	360.00	600.00
	Electric power supply	set	1	108.000	162.000	108.00	162.00	270.00
	(Generators)	set	1	72.000	108.000	72.00	108.00	180.00
	Truckscale	set	1	100.000	25.000	100.00	25.00	125.00
	Cathodic Protection	L.S	1	58.250	174.750	58.25	174.75	233.00
Total of Construction Cost						4,968.75	6,762.58	11,731.33

Table 7-1-2(7)A Detailed Construction Cost of Palembang Ferry Terminal

Name of the proposed Ferry Terminal and Route No 9, Palembang								
Detailed Construction Cost of Works for Ferry Terminals						Unit; Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S	1			120.00	80.00	200.00
Water	Breasting Dolphine	Unit	3	45.36	68.04	136.08	204.12	340.20
Front	(Fender system)	Unit	3	13.50	20.25	40.50	60.75	101.25
Facilities	Mooring Dolphine	Unit	3	20.33	30.49	60.99	91.47	152.46
	M/B dolphine	Unit	1	48.69	73.04	48.69	73.04	121.73
	M/B foundation	Unit	2	79.95	119.93	159.90	239.86	399.76
	Movable Bridge	m2	152.00	1.22	4.89	185.44	743.28	928.72
	(hydroulic system)	set	1	1.86	7.45	1.86	7.45	9.31
	M/B cylinder foundatic	Unit	2	78.31	117.50	156.62	235.00	391.62
	Catwalk	m	67	0.68	0.45	45.56	30.15	75.71
	Causeway	m	0	1.06	0.46	0.00	0.00	0.00
	Rock mound	m3	-					
	Dredging works	m3	0	0.005	0.018	0.00	0.00	0.00
	Breakwater	m	-					
	Caison	m	-					
	Approach Trestle	m2	224	0.41	0.61	91.84	136.64	228.48
	Wharf	Unit	1	180.22	270.33	180.22	270.33	450.55
Land	Reclamation works	m3	4,700	0.029	0.019	135.36	89.30	224.66
Facilities	Cut/Fill	m3	-					
	Revetment works	m	90	0.348	0.232	31.32	20.88	52.20
	Road works	m2	2,500	0.098	0.065	245.00	162.50	407.50
	(Overlay pavement)	m2	2,500	0.010	0.007	25.00	17.50	42.50
	Pavement works	m2	1,500	0.022	0.014	33.00	21.00	54.00
	Green Area	m2	3,000	0.020	0.010	60.00	30.00	90.00
	Building works	m2	1,400	0.420	0.180	588.00	252.00	840.00
	Water supply	set	1	192.000	288.000	192.00	288.00	480.00
	Electric power supply	set	1	86.400	129.600	86.40	129.60	216.00
	(Generators)	set	1	48.000	72.000	48.00	72.00	120.00
	Truckscale	set	1	49.460	37.600	49.46	37.60	87.06
	Cathodic Protection	L.S	1	92.000	138.350	92.00	138.35	230.35
Total of Construction Cost						2,813.24	3,430.82	6,244.06

Table 7-1-2(8)A Detailed Construction Cost of Muntok Ferry Terminal

Name of the proposed Ferry Terminal and Route No				9. Muntok				
	Detailed Construction Cost of Works for Ferry Terminals							
						Unit; Rp Million		
Facilities				Unit Cost		Total Amount		
	Items of Works	Unit	Quantity	Local	Foreign	Local	Foreign	Total
	Mobilization	L.S	1			120.00	80.00	200.00
Water	Breasting Dolphine	Unit	3	44.23	66.34	132.69	199.02	331.71
Front	(Fender system)	Unit	3	13.50	20.25	40.50	60.75	101.25
Facilities	Mooring Dolphine	Unit	3	21.13	31.70	63.39	95.10	158.49
	M/B dolphine	Unit	1	48.06	72.10	48.06	72.10	120.16
	M/B foundation	Unit	2	79.95	119.93	159.90	239.86	399.76
	Movable Bridge	m2	176.00	1.22	4.89	214.72	860.64	1,075.36
	(hydroulic system)	set	1	1.86	7.45	1.86	7.45	9.31
	M/B cylinder foundatic	Unit	2	78.31	117.50	156.62	235.00	391.62
	Catwalk	m	67	0.86	0.57	57.49	38.19	95.68
	Causeway	m	20	0.05	0.03	0.96	0.64	1.60
	Rock mound	m3	-					
	Dredging works	m3	0	0.005	0.018	0.00	0.00	0.00
	Breakwater	m	97	2.19	5.12	212.43	496.64	709.07
	Navigation Aids	Set	2	19.80	46.20	39.60	92.40	132.00
	Approach Trestle	m2	330	0.74	1.11	244.20	366.30	610.50
	Wharf	Unit	1	188.97	283.46	188.97	283.46	472.43
Land	Reclamation works	m3	4,720	0.029	0.019	135.94	89.68	225.62
Facilities	Cut/Fill	m3	-					
	Revetment works	m	150	0.348	0.232	52.20	34.80	87.00
	Road works	m2	2,800	0.098	0.065	274.40	182.00	456.40
	(Overlay pavement)	m2	2,800	0.010	0.007	28.00	19.60	47.60
	Pavement works	m2	2,450	0.022	0.014	53.90	34.30	88.20
	Green Area	m2	2,200	0.020	0.010	44.00	22.00	66.00
	Building works	m2	1,400	0.420	0.180	588.00	252.00	840.00
	Water supply	set	1	192.000	288.000	192.00	288.00	480.00
	Electric power supply	set	1	86.400	129.600	86.40	129.60	216.00
	(Generators)	set	1	48.000	72.000	48.00	72.00	120.00
	Truckscale	set	1	49.440	37.600	49.44	37.60	87.04
	Cathodic Protection	L.S	1	468.150	702.210	468.15	702.21	1,170.36
Total of Construction Cost						3,701.81	4,991.34	8,693.15

Table 7-1-3(1)A Terminal Construction Cost of Route Mokmer- Saueba

Terminal Construction Cost of Route Mokmer-Saueba									(Unit; Million Rp)				
Year		1 st Year			2 nd Year			3rd Year			Total		
Currency		Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal													
Route													
2	Mokmer				650	904	1,554	975	1,356	2,331	1,625	2,260	3,885
	Saubeba				651	629	1,280	1,518	1,469	2,987	2,169	2,098	4,267
Direct Construction					1,301	1,533	2,834	2,493	2,825	5,318	3,794	4,358	8,152
Cost													
Consulting Cost		233	132	365	217	151	368	244	151	395	693	434	1,127
Physical Contingency					130	77	207	249	141	391	379	218	597
Sub Total of Works		233	132	365	1,648	1,761	3,409	2,987	3,117	6,103	4,866	5,010	9,876
Tax (VAT 10 %)		37	-	37	341	-	341	610	-	610	988	-	988
Total Construction Cost of the Route		270	132	402	1,989	1,761	3,750	3,597	3,117	6,714	5,854	5,010	10,864

Table 7-1-3(2)A Terminal Construction Cost of Route Lewoleba- Terong

Terminal Construction Cost of Route Lewoleba-Terong								(Unit: Million Rp)					
Year			1 st Year			2 nd Year			3rd Year		Total		
Currency		Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal													
Route													
3	Lewoleba	-	-	-	1,240	1,522	2,762	827	1,014	1,841	2,067	2,536	4,603
	Terong	-	-	-	2,125	1,690	3,815	1,417	1,126	2,543	3,542	2,816	6,358
Direct Construction Cost					3,365	3,211	6,577	2,244	2,141	4,384	5,609	5,352	10,961
Consulting Cost		313	177	490	292	203	495	328	203	531	933	584	1,517
Physical Contingency		-	-	-	337	161	497	224	107	331	561	268	829
Sub Total of Works		313	177	490	3,994	3,575	7,569	2,796	2,451	5,247	7,103	6,204	13,307
Tax (VAT 10 %)		49	-	49	757	-	757	525	-	525	1,331	-	1,331
Total Construction Cost of the Route		362	177	539	4,751	3,575	8,326	3,321	2,451	5,771	8,434	6,204	14,637

Table 7-1-3(3)A Terminal Construction Cost of Each Route Bajoe-Kolaka

Terminal Construction Cost of Each Route (Bajoe-Kolaka) (Unite;Million Rp)

Year		1 st Year			2 nd Year			3rd Year			Total		
Currency		Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal													
Route													
8	Bajoe				2,981	4,058	7,039	1,988	2,705	4,693	4,969	6,763	11,732
	Kolaka				1,543	1,781	3,324	2,315	2,672	4,987	3,858	4,453	8,311
Direct Construction Cost					4,525	5,839	10,364	4,302	5,377	9,679	8,827	11,216	20,043
Consulting Cost		573	324	897	533	372	905	599	372	971	1,705	1,068	2,773
Physical Contingency					452	292	744	430	269	699	883	561	1,444
Sub Total of Works		573	324	897	5,510	6,503	12,013	5,332	6,018	11,349	11,415	12,845	24,260
Tax (VAT 10 %)		90	-	90	1,201	-	1,201	1,135	-	1,135	2,426	-	2,426
Total Construction Cost of the Route		663	324	987	6,711	6,503	13,214	6,467	6,018	12,484	13,841	12,845	26,685

Table 7-1-3(4)A Terminal Construction Cost of Route Palembang- Muntok

Terminal Construction Cost of Route Palembang-Muntok									(Unit;Million Rp)				
Year		1 st Year			2 nd Year			3rd Year			Total		
Currency	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal												
Route												
9 Palembang				703	858	1,561	2,110	2,573	4,683	2,813	3,431	6,244
Muntok				2,962	3,993	6,954	740	998	1,739	3,702	4,991	8,693
Direct Construction				3,665	4,851	8,515	2,850	3,571	6,422	6,515	8,422	14,937
Cost												
Consulting Cost	432	244	676	402	280	682	451	280	731	1,285	804	2,089
Physical Contingency				366	243	609	285	179	464	652	421	1,073
Sub Total of Works	432	244	676	4,433	5,373	9,806	3,586	4,030	7,616	8,452	9,647	18,099
Tax (VAT 10 %)	68	-	68	981	-	981	762	-	762	1,810	-	1,810
Total Construction												
Cost of the Route	500	244	744	5,414	5,373	10,787	4,348	4,030	8,378	10,261	9,647	19,908

Table 7-2-1(1)A Engineering and Construciton Schedule of Route 2

Work Item	Location Route 2	1st year				2nd year				3rd year				4th year				5th year			
	Mokmer / Saubeba	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
1. Engineering Services																					
1-1 Survey Design																					
1-2 P/Q + Tender																					
1-3 Construction Supervision																					
2. Construction Works																					
2-1 Mob/Demob	2 Terminals																				
2-2 Dredging	Mokmer																				
2-3 Jetty Construction Piling/Concrete Work	Mokmer																				
	Saubeba																				
2-4 Movable Bridge Civil Works for Foundation	Mokmer																				
	Saubeba																				
Fabrication of Steel and Installation/Test	Mokmer																				
	Saubeba																				
2-5 Reclamation/ Revetment Causeway Breakwater	Mokmer																				
	Saubeba																				
2-6 Road-Parking/ Building Works/ Utility Supply	Mokmer																				
	Saubeba																				

Table 7-2-1(2)A Engineering and Construciton Schedule of Route 3

Work Item	Location Route 3	1st year				2nd year				3rd year				4th year				5th year			
	Lewoleba / Terong	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
1. Engineering Services																					
1-1 Survey Design																					
1-2 P/Q + Tender																					
1-3 Construction Supervision																					
2. Construction Works																					
2-1 Mob/Demob																					
2-2 Carsson yard Preparation																					
	Terong																				
2-3 Jetty Construction Piling/Concrete Work	Lewoleba																				
	Terong																				
2-4 Movable Bridge Civil Works for Foundation	Lewoleba																				
	Terong																				
Fabrication of Steel and Installation/Test	Lewoleba																				
	Terong																				
2-5 Reclamation/ Revetment Causeway Breakwater	Lewoleba																				
	Terong																				
2-6 Road-Parking/ Building Works/ Utility Supply	Lewoleba																				
	Terong																				

Table 7-2-1(3)A Engineering and Construciton Schedule of Route 8

Work Item	Location Route 8	1st year				2nd year				3rd year				4th year				5th year			
	Bajoe / Kolaka	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
1. Engineering Services																					
1-1 Survey Design																					
1-2 P/Q + Tender																					
1-3 Construction Supervision																					
2. Construction Works																					
2-1 Mob/Demob	For Two Terminals																				
2-2 Dredging	Bajoe																				
2-3 Jetty Trestle Construction Piling/Concrete Work	Bajoe																				
	Kolaka																				
2-4 Movable Bridge Civil Works for Foundation	Bajoe																				
	Kolaka																				
Fabrication of Steel and Installation/Test	Bajoe																				
	Kolaka																				
2-5 Reclamation/ Revetment Causeway Breakwater	Bajoe																				
	Kolaka																				
2-6 Road-Parking/ Building Works/ Utility Supply	Bajoe																				
	Kolaka																				

Table 7-2-1(4)A Engineering and Construciton Schedule of Route 9

Work Item	Location Route 9	1st year				2nd year				3rd year				4th year				5th year			
	Palembang / Muntok	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
1. Engineering Services																					
1-1 Survey Design																					
1-2 P/Q + Tender																					
1-3 Construction Supervision																					
2. Construction Works																					
2-1 Mob/Demob	2 Terminals																				
2-2 Breakwater Construction																					
	Muntok																				
2-3 Jetty Construction Piling/Concrete Work	Palembang																				
	Muntok																				
2-4 Movable Bridge Civil Works for Foundation	Palembang																				
	Muntok																				
Fabrication of Steel and Installation/Test	Palembang																				
	Muntok																				
2-5 Reclamation/ Revetment Causeway Breakwater	Palembang																				
	Muntok																				
2-6 Road-Parking/ Building Works/ Utility Supply	Palembang																				
	Muntok																				

Appendix 9-1-1 Estimation of Economic Prices of Costs and Benefits

(1) Application of Conversion Factors

(a) Conversion Factors

All the costs and benefits are classified into the items of 1) trade goods, 2) non-trade goods, 3) skilled labor, 4) unskilled labor and 5) transfer items.

In this economic analysis non-trade goods are assumed to be equivalent to the local currency portion after deduction of labor and transfer items. The economic prices of the non-trade goods are estimated by multiplying the standard conversion factor.

The economic price of skilled labor cost is estimated by multiplying the skilled labor conversion factor by the skilled labor cost. The economic price of unskilled labor cost is estimated by multiplying the unskilled labor conversion factor by the unskilled labor cost.

(b) Standard Conversion Factor (SCF)

The standard conversion factor is an index which converts the domestic prices to the border prices by adjustment of the distortion of domestic prices.

The standard conversion factor is estimated based on the following equation:

$$SCF = \frac{I + E}{(I + Di) + (E - De)}$$

where,

I : Total value of import
E : Total value of export
Di : Total value of import duty
De : Total value of export duty

The standard conversion factor is estimated to be 0.95.

(c) Consumption Conversion Factor(CCF)

The consumption conversion factor is an index which converts domestic prices of consumption goods to border prices, and is applied for converting of the domestic prices of labor to the border prices.

The consumption conversion factor is estimated based on the similar equation to that of the standard conversion factor by limiting the objective items of goods of import/export to the major consumption goods.

The consumption conversion factor is estimated to be 0.94.

(d) Skilled Labor Conversion Factor

For skilled labor, the opportunity cost is judged to be the same as the wages, since the market mechanism functions well. The wages can be evaluated by the purchasing power of consumption goods.

The skilled labor conversion factor is estimated below:

$$\frac{\text{Skilled labor opportunity cost}}{\text{Skilled labor wage}} \times \text{CCF}$$

$= 1.0 \times 0.94 = 0.94$

(e) Unskilled Labor Conversion Factor

For unskilled labor, the potential number of laborers is high, and the market mechanism is generally does not function well. Since most of the unskilled laborers are considered to flow in from the agricultural sector of which the income level is relatively low, the opportunity cost of unskilled labor is considered to be equivalent to the income level of laborers in the agricultural sector.

The unskilled labor conversion factor is estimated as below:

$$\frac{\text{Unskilled labor opportunity cost}}{\text{Unskilled labor wage}} \times \text{CCF}$$

As a result, the unskilled labor conversion factor is estimated for each route as shown below:

1) Mokmer - Saubeba Route : 2,296 / 4,500 x 0.94 = 0.48
2) Larantuka - Terong - Lewoleba Route: 1,218 / 3,000 x 0.94 = 0.38
3) Bajoe - Kolaka Route : 2,968 / 3,500 x 0.94 = 0.80
4) Palembang - Muntok Route : 2,425 / 3,500 x 0.94 = 0.65

(2) Economic Price of Costs and Benefits

(a) Terminal Construction Cost

The portion of foreign currency is directly adapted. For the portion of non-trade goods, the standard conversion factor is applied. The labor cost is divided into the portions of skilled labor and unskilled labor, and the skilled labor conversion factor and the unskilled labor conversion factor are applied to the above portions respectively.

The financial costs, the conversion factors and the economic costs for each route are shown in Appendix Table.

(b) Procurement Cost of Ferry Boats

Since the cost component of the procurement of ferry boats are unclear, the unit procurement cost of ferry boats is estimated by deducting the transfer item portion from the financial price and by applying the standard conversion factor.

(c) Operation Cost of Terminal

The operation cost of the terminal is estimated by deducting the transfer item portion from the financial cost and by applying the skilled labor conversion

factor.

(d) Maintenance Cost of Terminal

Since the maintenance cost of the terminal is estimated to be 1.0% of the construction cost, the results of adjustment are the same as those of the construction cost of the terminal.

(e) Operation Cost of Ferry Boats

Since the cost component of the operation of ferry boats are unclear, the unit operation cost of ferry boats is estimated by deducting the transfer item portion from the financial price and by applying the standard conversion factor.

(f) Maintenance Cost of Ferry Boats

Since the maintenance cost of ferry boats is estimated to be 3.0% of the procurement cost, the results of adjustment are the same as those of the procurement cost of ferry boats.

(g) Benefits

The economic prices of benefits are estimated by deducting the transfer items portion from the financial prices and by applying the consumption conversion factor.

Appendix Table

Esitimation of Economic Terminal Construction Cost (Initial Investment)

(Unit: Million Rp.)

(1) Mokmer - Saubeba Route							
	Foreign Currency Total	Local Currency Total	Non-trade	Skilled Labor	Unskilled Labor	Trasfer Item	Total
Financial Price	5,010	5,854	3,810	760	296	988	10,864
Conversion Factor	1.00	-	0.95	0.94	0.48	0.00	(Aggregated C.F.) 0.873
Economic Price	5,010	4,476	3,620	714	142	0	9,486

(2) Larantuka - Terong - Lewoleba Route							
	Foreign Currency Total	Local Currency Total	Non-trade	Skilled Labor	Unskilled Labor	Trasfer Item	Total
Financial Price	6,204	8,434	5,586	1,051	466	1,331	14,637
Conversion Factor	1.00	-	0.95	0.94	0.38	0.00	(Aggregated C.F.) 0.866
Economic Price	6,204	6,472	5,307	988	177	0	12,676

(3) Bajoe - Kolaka Route							
	Foreign Currency Total	Local Currency Total	Non-trade	Skilled Labor	Unskilled Labor	Trasfer Item	Total
Financial Price	12,845	13,841	8,771	1,892	752	2,426	26,685
Conversion Factor	1.00	-	0.95	0.94	0.80	0.00	(Aggregated C.F.) 0.883
Economic Price	12,845	10,712	8,332	1,778	602	0	23,557

(4) Palembang - Muntok Route							
	Foreign Currency Total	Local Currency Total	Non-trade	Skilled Labor	Unskilled Labor	Trasfer Item	Total
Financial Price	9,647	10,262	6,443	1,412	597	1,810	19,908
Conversion Factor	1.00	-	0.95	0.94	0.65	0.00	(Aggregated C.F.) 0.878
Economic Price	9,647	7,836	6,121	1,327	388	0	17,483

Table 9-3-1A Estimation of Unit Passengers Time Cost

(A) Per Capita GRDP at Current Price excluding Oil & Gas (Rp. 1,000)								
Province	1984	1985	1986	1987	1988	1989	Average Annual Growth Ratio '84 - '89	Estimated 1992
(1) Route 2-1 Biak - Yapen Route								
Irian Jaya	407	445	533	594	632	866	16.30%	1,362
(2) Route 3-1 Flores - Adonara - Lomblen								
East Nusa Tenggara	200	217	237	268	289	314	9.44%	412
(3) Route 8 Bajoe - Kolaka								
South Sulawesi	298	342	382	418	478	538		
South East Sulawesi	338	337	366	408	515	572		
(Average)	318	340	374	413	497	555	11.78%	775
(4) Route 9-1 Palembang - Bangka								
South Sumatra	544	585	634	738	836	927	11.25%	1,276

Source : Statistik Indonesia 1991

Table 9-3-1A Estimation of Unit Passengers Time Cost (Continued)

(B) Assumption of Annual Working Hour		
Monthly Working Hour	170	(hours)
Annual Working Flow	2,040	(hours)

(C) Per Capita GRDP / Working Hour		Estimated 1992 Per Capita GRDP (Rp. 1,000)	Estimated 1992 Per Capita GRDP per Working Hour (Rp.)
(1) Route 2-1 :	Biak - Yapen Route	1,362	668
(2) Route 3-1 :	Flores - Adonara - Lomblen Route	412	202
(3) Route 8 :	Bajoe - Kolaka Route	775	380
(4) Route 9-1 :	Palembang - Bangka Route	1,276	625

(D) Trip Purpose Composition			
Trip Purpose	(%)	Factor	Value Factor
Government Official	6.8%	1.0	6.8%
State Owned Corporation	2.5%	1.0	2.5%
Private / Company / Business	11.5%	1.0	11.5%
Visiting Family/Friend	49.1%	0.5	24.6%
Tour / Recreation	8.0%	0.5	4.0%
School / College	4.7%	0.5	2.4%
Shopping	2.5%	0.5	1.3%
Trading	5.4%	1.0	5.4%
Others	9.5%	0.5	4.8%
Total	100.0%		63.1%

(E) Estimation of Unit Passengers Time Cost		(x0.94)	(Rp./hour)
(1) Route 2-1 :	Biak - Yapen Route		396
(2) Route 3-1 :	Flores - Adonara - Lomblen Route		120
(3) Route 8 :	Bajoe - Kolaka Route		225
(4) Route 9-1 :	Palembang - Bangka Route		371

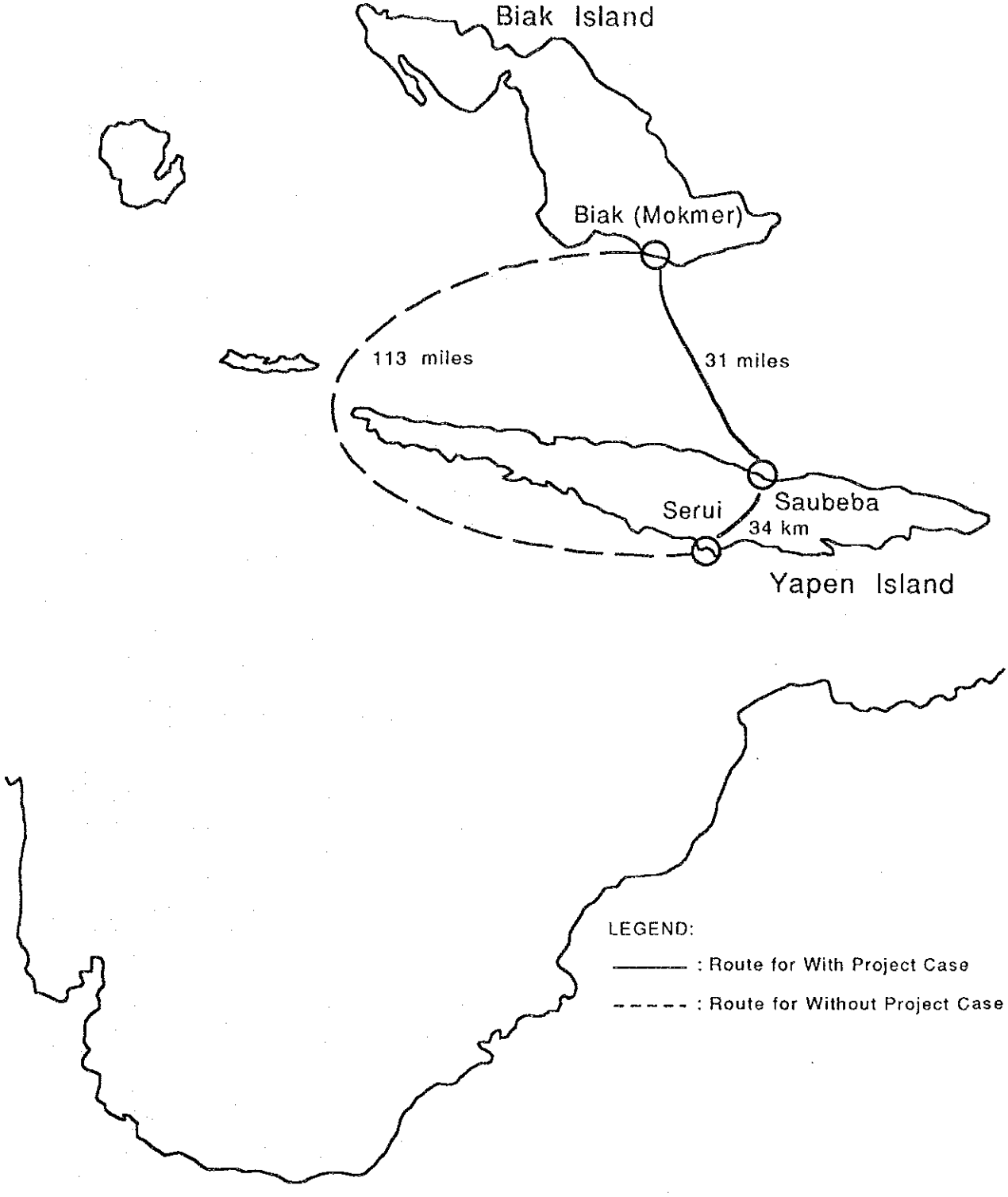


Fig. 9-4-1A Conceptual Route Map of Route 2-1 (Moker-Saubeba) for Economic Analysis

Table 9-4-1(1)A Future Traffic Demand, Traffic Capacity and Introducing of New Boats for With Case (Route 2-1)

(Deck Space: unit: m2)
Sedan : 3.5
3t Truck : 14.3

Assumption: Traffic Capacity of New Ferry Boat (Type C)
Passengers 118,200
Vehicles 8,000 (3 ton truck unit)

	(A) Future Traffic Demand						(B) Annual Traffic Capacity	(B-1) New Boats (Type C)			
	Year	Passengers	Truck (3 ton) (a)	Sedan (b)	Sedan in terms of Truck (3 ton) 0.67 (c) (b)x0.67	Vehicles (3 ton truck unit) (d) (a)+(c)	Year	Year	Number of New Boats	Total Capacity of New Boats (Type C) (Annual Capacity) Passengers	Vehicles (3 ton truck unit)
1	1998	66,976	1,369	1,893	1,268	2,637	1998	1998	1	118,200	8,000
2	1999	72,254	1,482	2,073	1,389	2,871	1999	1999	1	118,200	8,000
3	2000	77,949	1,605	2,271	1,522	3,127	2000	2000	1	118,200	8,000
4	2001	83,669	1,731	2,476	1,659	3,390	2001	2001	1	118,200	8,000
5	2002	89,809	1,867	2,698	1,808	3,675	2002	2002	1	118,200	8,000
6	2003	96,400	2,013	2,941	1,970	3,983	2003	2003	1	118,200	8,000
7	2004	103,474	2,171	3,206	2,148	4,319	2004	2004	1	118,200	8,000
8	2005	111,068	2,342	3,494	2,341	4,683	2005	2005	1	118,200	8,000
9	2006	118,541	2,515	3,787	2,537	5,052	2006	2006	0	0	0
10	2007	126,516	2,701	4,104	2,750	5,451	2007	2007	0	0	0
11	2008	135,029	2,901	4,448	2,980	5,881	2008	2008	0	0	0
12	2009	144,113	3,115	4,820	3,229	6,344	2009	2009	0	0	0
13	2010	153,810	3,345	5,224	3,500	6,845	2010	2010	0	0	0
14	2011	164,158	3,592	5,662	3,794	7,386	2011	2011	0	0	0
15	2012	175,203	3,858	6,136	4,111	7,969	2012	2012	0	0	0
16	2013	186,991	4,143	6,650	4,456	8,599	2013	2013	0	0	0
17	2014	199,572	4,450	7,207	4,829	9,279	2014	2014	0	0	0
18	2015	212,999	4,778	7,811	5,233	10,011	2015	2015	0	0	0
19	2016	227,330	5,132	8,465	5,672	10,804	2016	2016	0	0	0
20	2017	242,625	5,511	9,174	6,147	11,658	2017	2017	1	118,200	8,000
21	2018	258,949	5,918	9,942	6,661	12,579	2018	2018	1	118,200	8,000
22	2019	276,372	6,356	10,775	7,219	13,575	2019	2019	1	118,200	8,000
23	2020	294,966	6,826	11,678	7,824	14,650	2020	2020	1	118,200	8,000
24	2021	314,812	7,330	12,656	8,480	15,810	2021	2021	1	118,200	8,000
25	2022	335,993	7,872	13,716	9,190	17,062	2022	2022	1	118,200	8,000
26	2023	358,599	8,454	14,865	9,960	18,414	2023	2023	0	0	0
27	2024	382,726	9,079	16,110	10,794	19,873	2024	2024	0	0	0
28	2025	408,476	9,750	17,459	11,698	21,448	2025	2025	0	0	0
29	2026	435,959	10,471	18,922	12,678	23,149	2026	2026	0	0	0
30	2027	465,291	11,245	20,507	13,740	24,985	2027	2027	0	0	0

Table 9-4-1(2)A Future Traffic Demand, Traffic Capacity and Introducing of New Boats for With Case (Route 2-1)

Assumption: Traffic Capacity of New Ferry Boat (Type C')
Passengers 236,400
Vehicles 16,000 (3 ton truck unit)

Year	(B-2) New Boats (Type C') Number of New Boats	Total Capacity of New Boats (Type C') (Annual Capacity) Passengers	Vehicles (3 ton truck unit)	(B-3) Total Annual Traffic Capacity (C Type + C' Type) Total Number of Boats	Total Number of Round Trips	(Annual Capacity) Passengers	Vehicles (3 ton truck unit)	(C) Deviation Between Traffic Demand and Total Annual Traffic Capacity Year	Passengers	Vehicles (3 ton truck unit)
1998	0	0	0	1	1	118,200	8,000	1998	51,224	5,363
1999	0	0	0	1	1	118,200	8,000	1999	45,946	5,129
2000	0	0	0	1	1	118,200	8,000	2000	40,251	4,873
2001	0	0	0	1	1	118,200	8,000	2001	34,531	4,610
2002	0	0	0	1	1	118,200	8,000	2002	28,391	4,325
2003	0	0	0	1	1	118,200	8,000	2003	21,800	4,017
2004	0	0	0	1	1	118,200	8,000	2004	14,726	3,681
2005	0	0	0	1	1	118,200	8,000	2005	7,132	3,317
2006	1	236,400	16,000	1	2	236,400	16,000	2006	117,859	10,948
2007	1	236,400	16,000	1	2	236,400	16,000	2007	109,884	10,549
2008	1	236,400	16,000	1	2	236,400	16,000	2008	101,371	10,119
2009	1	236,400	16,000	1	2	236,400	16,000	2009	92,287	9,656
2010	1	236,400	16,000	1	2	236,400	16,000	2010	82,590	9,155
2011	1	236,400	16,000	1	2	236,400	16,000	2011	72,242	8,614
2012	1	236,400	16,000	1	2	236,400	16,000	2012	61,197	8,031
2013	1	236,400	16,000	1	2	236,400	16,000	2013	49,409	7,401
2014	1	236,400	16,000	1	2	236,400	16,000	2014	36,828	6,721
2015	1	236,400	16,000	1	2	236,400	16,000	2015	23,401	5,989
2016	1	236,400	16,000	1	2	236,400	16,000	2016	9,070	5,196
2017	1	236,400	16,000	2	3	354,600	24,000	2017	111,975	12,342
2018	1	236,400	16,000	2	3	354,600	24,000	2018	95,651	11,421
2019	1	236,400	16,000	2	3	354,600	24,000	2019	78,228	10,425
2020	1	236,400	16,000	2	3	354,600	24,000	2020	59,634	9,350
2021	1	236,400	16,000	2	3	354,600	24,000	2021	39,788	8,190
2022	1	236,400	16,000	2	3	354,600	24,000	2022	18,607	6,938
2023	2	472,800	32,000	2	4	472,800	32,000	2023	114,201	13,586
2024	2	472,800	32,000	2	4	472,800	32,000	2024	90,074	12,127
2025	2	472,800	32,000	2	4	472,800	32,000	2025	64,324	10,552
2026	2	472,800	32,000	2	4	472,800	32,000	2026	36,841	8,851
2027	2	472,800	32,000	2	4	472,800	32,000	2027	7,509	7,015

Table 9-4-1(3)A Future Traffic Demand, Traffic Capacity and Introducing of New Boats for With Case (Route 2-1)

Year	(D) Share Ratio of Capacity for Pasengers by C Type Boat and C' Type Boat		(E) Passengers Shared by C Type Boat and C' Type Boat			(F) Breakdown of Vehicles					
	(1) C Type Boat	(2) C' Type Boat	Total Pasengers	(1) C Type Boat	(2) C' Type Boat	Truck (3 ton Truck unit)	Sedan	Passengers	Passengers Related to Sedan (Load Factor = 3.0)	Passengers Related to Bus	Total Number of Bus Trips (Load Factor = 40.0)
1998	100%	0%	66,976	66,976	0	1,369	1,893	66,976	5,679	61,297	1,532
1999	100%	0%	72,254	72,254	0	1,482	2,073	72,254	6,219	66,035	1,651
2000	100%	0%	77,949	77,949	0	1,605	2,271	77,949	6,813	71,136	1,778
2001	100%	0%	83,669	83,669	0	1,731	2,476	83,669	7,428	76,241	1,906
2002	100%	0%	89,809	89,809	0	1,867	2,698	89,809	8,094	81,715	2,043
2003	100%	0%	96,400	96,400	0	2,013	2,941	96,400	8,823	87,577	2,189
2004	100%	0%	103,474	103,474	0	2,171	3,206	103,474	9,618	93,856	2,346
2005	100%	0%	111,068	111,068	0	2,342	3,494	111,068	10,482	100,586	2,515
2006	0%	100%	118,541	0	118,541	2,515	3,787	118,541	11,361	107,180	2,680
2007	0%	100%	126,516	0	126,516	2,701	4,104	126,516	12,312	114,204	2,855
2008	0%	100%	135,029	0	135,029	2,901	4,448	135,029	13,344	121,685	3,042
2009	0%	100%	144,113	0	144,113	3,115	4,820	144,113	14,460	129,653	3,241
2010	0%	100%	153,810	0	153,810	3,345	5,224	153,810	15,672	138,138	3,453
2011	0%	100%	164,158	0	164,158	3,592	5,662	164,158	16,986	147,172	3,679
2012	0%	100%	175,203	0	175,203	3,858	6,136	175,203	18,408	156,795	3,920
2013	0%	100%	186,991	0	186,991	4,143	6,650	186,991	19,950	167,041	4,176
2014	0%	100%	199,572	0	199,572	4,450	7,207	199,572	21,621	177,951	4,449
2015	0%	100%	212,999	0	212,999	4,778	7,811	212,999	23,433	189,566	4,739
2016	0%	100%	227,330	0	227,330	5,132	8,465	227,330	25,395	201,935	5,048
2017	33%	67%	242,625	80,066	162,559	5,511	9,174	242,625	27,522	215,103	5,378
2018	33%	67%	258,949	85,453	173,496	5,918	9,942	258,949	29,826	229,123	5,728
2019	33%	67%	276,372	91,203	185,169	6,356	10,775	276,372	32,325	244,047	6,101
2020	33%	67%	294,966	97,339	197,627	6,826	11,678	294,966	35,034	259,932	6,498
2021	33%	67%	314,812	103,888	210,924	7,330	12,656	314,812	37,968	276,844	6,921
2022	33%	67%	335,993	110,878	225,115	7,872	13,716	335,993	41,148	294,845	7,371
2023	0%	100%	358,599	0	358,599	8,454	14,865	358,599	44,595	314,004	7,850
2024	0%	100%	382,726	0	382,726	9,079	16,110	382,726	48,330	334,396	8,360
2025	0%	100%	408,476	0	408,476	9,750	17,459	408,476	52,377	356,099	8,902
2026	0%	100%	435,959	0	435,959	10,471	18,922	435,959	56,766	379,193	9,480
2027	0%	100%	465,291	0	465,291	11,245	20,507	465,291	61,521	403,770	10,094

Table 9-4-2(1)A Future Traffic Demand, Traffic Capacity and Introducing of Boats for Without Case (Route 2-1)

(Deck Space)
Sedan : 9.5
3t Truck : 14.3

Assumption: Traffic Capacity of LCM Type Boat
Passengers 59,100
Vehicles 4,000 (3 ton truck unit)

	(A) Future Traffic Demand						(B) Annual Traffic Capacity			
							(B-1) Boat of LCM Type			
	Year	Passengers	Truck (3 ton) (a)	Sedan (b)	Sedan in terms of Truck (3 ton) 0.67 (c) (b)x0.67	Vehicles (3 ton truck unit) (d) (a)+(c)	Year	Number of New Boats	Total Capacity of LCM Type Boats (Annual Capacity) Passengers	Vehicles (3 ton truck unit)
1	1998	66,976	1,369	1,893	1,268	2,637	1998	2	118,200	8,000
2	1999	72,254	1,482	2,073	1,389	2,871	1999	2	118,200	8,000
3	2000	77,949	1,605	2,271	1,522	3,127	2000	2	118,200	8,000
4	2001	83,669	1,731	2,476	1,659	3,390	2001	2	118,200	8,000
5	2002	89,809	1,867	2,698	1,808	3,675	2002	2	118,200	8,000
6	2003	96,400	2,013	2,941	1,970	3,983	2003	2	118,200	8,000
7	2004	103,474	2,171	3,206	2,148	4,319	2004	2	118,200	8,000
8	2005	111,068	2,342	3,494	2,341	4,683	2005	2	118,200	8,000
9	2006	118,541	2,515	3,787	2,537	5,052	2006	3	177,300	12,000
10	2007	126,516	2,701	4,104	2,750	5,451	2007	3	177,300	12,000
11	2008	135,029	2,901	4,448	2,980	5,881	2008	3	177,300	12,000
12	2009	144,113	3,115	4,820	3,229	6,344	2009	3	177,300	12,000
13	2010	153,810	3,345	5,224	3,500	6,845	2010	3	177,300	12,000
14	2011	164,158	3,592	5,662	3,794	7,386	2011	3	177,300	12,000
15	2012	175,203	3,858	6,136	4,111	7,969	2012	3	177,300	12,000
16	2013	186,991	4,143	6,650	4,456	8,599	2013	4	236,400	16,000
17	2014	199,572	4,450	7,207	4,829	9,279	2014	4	236,400	16,000
18	2015	212,999	4,778	7,811	5,233	10,011	2015	4	236,400	16,000
19	2016	227,330	5,132	8,465	5,672	10,804	2016	4	236,400	16,000
20	2017	242,625	5,511	9,174	6,147	11,658	2017	5	295,500	20,000
21	2018	258,949	5,918	9,942	6,661	12,579	2018	5	295,500	20,000
22	2019	276,372	6,356	10,775	7,219	13,575	2019	5	295,500	20,000
23	2020	294,966	6,826	11,678	7,824	14,650	2020	5	295,500	20,000
24	2021	314,812	7,330	12,656	8,480	15,810	2021	6	354,600	24,000
25	2022	335,993	7,872	13,716	9,190	17,062	2022	6	354,600	24,000
26	2023	358,599	8,454	14,865	9,960	18,414	2023	7	413,700	28,000
27	2024	382,726	9,079	16,110	10,794	19,873	2024	7	413,700	28,000
28	2025	408,476	9,750	17,459	11,698	21,448	2025	7	413,700	28,000
29	2026	435,959	10,471	18,922	12,678	23,149	2026	8	472,800	32,000
30	2027	465,291	11,245	20,507	13,740	24,985	2027	8	472,800	32,000

Table 9-4-2(2)A Future Traffic Demand, Traffic Capacity and Introducing of Boats for Without Case (Route 2-1)

Year	(C) Deviation Between Traffic Demand and Total Annual Traffic Capacity		Year
	Passengers	Vehicles (3 ton truck unit)	
1998	51,224	5,363	1998
1999	45,946	5,129	1999
2000	40,251	4,873	2000
2001	34,531	4,610	2001
2002	28,391	4,325	2002
2003	21,800	4,017	2003
2004	14,726	3,681	2004
2005	7,132	3,317	2005
2006	58,759	6,948	2006
2007	50,784	6,549	2007
2008	42,271	6,119	2008
2009	33,187	5,656	2009
2010	23,490	5,155	2010
2011	13,142	4,614	2011
2012	2,097	4,031	2012
2013	49,409	7,401	2013
2014	36,828	6,721	2014
2015	23,401	5,989	2015
2016	9,070	5,196	2016
2017	52,875	8,342	2017
2018	36,551	7,421	2018
2019	19,128	6,425	2019
2020	534	5,350	2020
2021	39,788	8,190	2021
2022	18,607	6,938	2022
2023	55,101	9,586	2023
2024	30,974	8,127	2024
2025	5,224	6,552	2025
2026	36,841	8,851	2026
2027	7,509	7,015	2027

Table 9-4-3(1)A Ferry Boats Procurement Costs, Operation Cost and Maintenance Cost (With) (Route 2-1)

Ferry Boats — Assumption: Unit Procurement Cost of Boats per ton = 6.05 Rp. Million /ton

New Boats — 300 Ton per Boat — (A) Procurement Cost of New Boats

	Year	(a) C Type Boat			(b) C' Type Boat			(a) C Type Boat		(b) Additional Cost for C' Type Boat		C + C' Total	C + C' Total	Year
		Procurement	Total Number of Boats	Accumulated Tonnage	Procurement	Total Number of Boats	Accumulated Tonnage	Procurement Cost	Accumulated Cost	Procurement Cost	Accumulated Cost	Procurement Cost	Accumulated Cost	
1	1998	1	1	300		0	0	1,815	1,815	0	0	1,815	1,815	1998
2	1999		1	300		0	0	0	1,815	0	0	0	1,815	1999
3	2000		1	300		0	0	0	1,815	0	0	0	1,815	2000
4	2001		1	300		0	0	0	1,815	0	0	0	1,815	2001
5	2002		1	300		0	0	0	1,815	0	0	0	1,815	2002
6	2003		1	300		0	0	0	1,815	0	0	0	1,815	2003
7	2004		1	300		0	0	0	1,815	0	0	0	1,815	2004
8	2005		1	300		0	0	0	1,815	0	0	0	1,815	2005
9	2006	-1	0	0	1	1	300	0	1,815	908	908	908	2,723	2006
10	2007		0	0		1	300	0	1,815	0	908	0	2,723	2007
11	2008		0	0		1	300	0	1,815	0	908	0	2,723	2008
12	2009		0	0		1	300	0	1,815	0	908	0	2,723	2009
13	2010		0	0		1	300	0	1,815	0	908	0	2,723	2010
14	2011		0	0		1	300	0	1,815	0	908	0	2,723	2011
15	2012		0	0		1	300	0	1,815	0	908	0	2,723	2012
16	2013		0	0		1	300	0	1,815	0	908	0	2,723	2013
17	2014		0	0		1	300	0	1,815	0	908	0	2,723	2014
18	2015		0	0		1	300	0	1,815	0	908	0	2,723	2015
19	2016		0	0		1	300	0	1,815	0	908	0	2,723	2016
20	2017	1	1	300		1	300	1,815	3,630	0	908	1,815	4,538	2017
21	2018		1	300		1	300	0	3,630	0	908	0	4,538	2018
22	2019		1	300		1	300	0	3,630	0	908	0	4,538	2019
23	2020		1	300		1	300	0	3,630	0	908	0	4,538	2020
24	2021		1	300		1	300	0	3,630	0	908	0	4,538	2021
25	2022		1	300		1	300	0	3,630	0	908	0	4,538	2022
26	2023	-1	0	0	1	2	600	0	3,630	908	1,815	908	5,445	2023
27	2024		0	0		2	600	0	3,630	0	1,815	0	5,445	2024
28	2025		0	0		2	600	0	3,630	0	1,815	0	5,445	2025
29	2026		0	0		2	600	0	3,630	0	1,815	0	5,445	2026
30	2027		0	0		2	600	0	3,630	0	1,815	0	5,445	2027

Table 9-4-3(2)A Ferry Boats Procurement Costs, Operation Cost and Maintenance Cost (With) (Route 2-1)

Unit Operation Cost per mile/ton (Rp.) : 12.8 (Rp. mile/ton/year)
Distance : 31 (miles)

	(B) Operation Cost					(C) Maintenance Cost			3%	
		(1 round trip (x2))		(2 round trip (x4))		C Type Boat	C' Type Boat	Total	**Total**	**Total**
	C Type	Cost	C' Type	Cost	**Total**	Total of	Accumulated	Accumulated	**Maintenance**	**O/M**
	Boats	Amount	Boats	Amount	**Op. Cost**	Proc. Cost	Proc. Cost	Proc. Cost	**Cost**	**Cost**
Year	Total		Total		**Amount**				**Amount**	**Amount**
	Tonnage	(Rp. Million)	Tonnage	(Rp. Million)	**(Rp. Million)**	(Rp. Million)	(Rp. Million)	(Rp. Million)	**(Rp. Million)**	**(Rp. Million)**
1998	300	78	0	0	78	1,815	0	1,815	54	132
1999	300	78	0	0	78	1,815	0	1,815	54	132
2000	300	78	0	0	78	1,815	0	1,815	54	132
2001	300	78	0	0	78	1,815	0	1,815	54	132
2002	300	78	0	0	78	1,815	0	1,815	54	132
2003	300	78	0	0	78	1,815	0	1,815	54	132
2004	300	78	0	0	78	1,815	0	1,815	54	132
2005	300	78	0	0	78	1,815	0	1,815	54	132
2006	0	0	300	156	156	1,815	908	2,723	82	238
2007	0	0	300	156	156	1,815	908	2,723	82	238
2008	0	0	300	156	156	1,815	908	2,723	82	238
2009	0	0	300	156	156	1,815	908	2,723	82	238
2010	0	0	300	156	156	1,815	908	2,723	82	238
2011	0	0	300	156	156	1,815	908	2,723	82	238
2012	0	0	300	156	156	1,815	908	2,723	82	238
2013	0	0	300	156	156	1,815	908	2,723	82	238
2014	0	0	300	156	156	1,815	908	2,723	82	238
2015	0	0	300	156	156	1,815	908	2,723	82	238
2016	0	0	300	156	156	1,815	908	2,723	82	238
2017	300	78	300	156	234	3,630	908	4,538	136	370
2018	300	78	300	156	234	3,630	908	4,538	136	370
2019	300	78	300	156	234	3,630	908	4,538	136	370
2020	300	78	300	156	234	3,630	908	4,538	136	370
2021	300	78	300	156	234	3,630	908	4,538	136	370
2022	300	78	300	156	234	3,630	908	4,538	136	370
2023	0	0	600	313	313	3,630	1,815	5,445	163	476
2024	0	0	600	313	313	3,630	1,815	5,445	163	476
2025	0	0	600	313	313	3,630	1,815	5,445	163	476
2026	0	0	600	313	313	3,630	1,815	5,445	163	476
2027	0	0	600	313	313	3,630	1,815	5,445	163	476

Table 9-4-4A Ferry Boats Procurement Costs, Operation Cost and Maintenance Cost (Without) (Route 2-1)

Ferry Boats — Assumption: Unit Procurement Cost of Boats per ton = 6.05 Rp. Million /ton; Unit Operation Cost per mile/ton (Rp.) : 12.8 (Rp. mile/ton); Distance : 113 (miles); Operation Cost Factor for LCM Type 2.0; 3%

	Year	Substituted Boats: Number	Substituted Boats: Tonnage (LCM Type) (Unit:) 300	Substituted Boats: Accumulated Tonnage (LCM Type)	(A) Substitution Cost of Boats (LCM Type): Substitution Cost	(A) Substitution Cost of Boats (LCM Type): Accumulated Cost	(B) Operation Cost: LCM Type Boat Total Tonnage	(B) Operation Cost: Total Op. Cost Amount (Rp. Million)	(C) Maintenance Cost: Substituted LCM Type Accumulated Proc. Cost	(C) Maintenance Cost: Total Maintenance Cost Amount (Rp. Million)	Total O/M Cost Amount (Rp. Million)	Year
1	1998	2	600	600	3,630	3,630	600	570	3,630	109	679	1998
2	1999		0	600	0	3,630	600	570	3,630	109	679	1999
3	2000		0	600	0	3,630	600	570	3,630	109	679	2000
4	2001		0	600	0	3,630	600	570	3,630	109	679	2001
5	2002		0	600	0	3,630	600	570	3,630	109	679	2002
6	2003		0	600	0	3,630	600	570	3,630	109	679	2003
7	2004		0	600	0	3,630	600	570	3,630	109	679	2004
8	2005		0	600	0	3,630	600	570	3,630	109	679	2005
9	2006	1	300	900	1,815	5,445	900	855	5,445	163	1,018	2006
10	2007		0	900	0	5,445	900	855	5,445	163	1,018	2007
11	2008		0	900	0	5,445	900	855	5,445	163	1,018	2008
12	2009		0	900	0	5,445	900	855	5,445	163	1,018	2009
13	2010		0	900	0	5,445	900	855	5,445	163	1,018	2010
14	2011		0	900	0	5,445	900	855	5,445	163	1,018	2011
15	2012		0	900	0	5,445	900	855	5,445	163	1,018	2012
16	2013	1	300	1,200	1,815	7,260	1,200	1,140	7,260	218	1,358	2013
17	2014		0	1,200	0	7,260	1,200	1,140	7,260	218	1,358	2014
18	2015		0	1,200	0	7,260	1,200	1,140	7,260	218	1,358	2015
19	2016		0	1,200	0	7,260	1,200	1,140	7,260	218	1,358	2016
20	2017	1	300	1,500	1,815	9,075	1,500	1,425	9,075	272	1,697	2017
21	2018		0	1,500	0	9,075	1,500	1,425	9,075	272	1,697	2018
22	2019		0	1,500	0	9,075	1,500	1,425	9,075	272	1,697	2019
23	2020		0	1,500	0	9,075	1,500	1,425	9,075	272	1,697	2020
24	2021	1	300	1,800	1,815	10,890	1,800	1,711	10,890	327	2,038	2021
25	2022		0	1,800	0	10,890	1,800	1,711	10,890	327	2,038	2022
26	2023	1	300	2,100	1,815	12,705	2,100	1,996	12,705	381	2,377	2023
27	2024		0	2,100	0	12,705	2,100	1,996	12,705	381	2,377	2024
28	2025		0	2,100	0	12,705	2,100	1,996	12,705	381	2,377	2025
29	2026	1	300	2,400	1,815	14,520	2,400	2,281	14,520	436	2,717	2026
30	2027		0	2,400	0	14,520	2,400	2,281	14,520	436	2,717	2027

Table 9-4-5(1)A Estimation of Time Cost Saving Benefits (Route 2-1)

Assumption: Unit Time Cost per Passenger (/hour) 396 (Rp./hour)

(1) Time Cost for Without Case

(a) Passenfers Biak (Mokmer) - Serui

		Passengers	Travel Hours Required (hours) 15.0	Estimated Time Cost (Rp. 1,000)	(c) Without Time Cost Total (Rp. 1,000)
1	1998	66,976		397,837	397,837
2	1999	72,254		429,189	429,189
3	2000	77,949		463,017	463,017
4	2001	83,669		496,994	496,994
5	2002	89,809		533,465	533,465
6	2003	96,400		572,616	572,616
7	2004	103,474		614,636	614,636
8	2005	111,068		659,744	659,744
9	2006	118,541		704,134	704,134
10	2007	126,516		751,505	751,505
11	2008	135,029		802,072	802,072
12	2009	144,113		856,031	856,031
13	2010	153,810		913,631	913,631
14	2011	164,158		975,099	975,099
15	2012	175,203		1,040,706	1,040,706
16	2013	186,991		1,110,727	1,110,727
17	2014	199,572		1,185,458	1,185,458
18	2015	212,999		1,265,214	1,265,214
19	2016	227,330		1,350,340	1,350,340
20	2017	242,625		1,441,193	1,441,193
21	2018	258,949		1,538,157	1,538,157
22	2019	276,372		1,641,650	1,641,650
23	2020	294,966		1,752,098	1,752,098
24	2021	314,812		1,869,983	1,869,983
25	2022	335,993		1,995,798	1,995,798
26	2023	358,599		2,130,078	2,130,078
27	2024	382,726		2,273,392	2,273,392
28	2025	408,476		2,426,347	2,426,347
29	2026	435,959		2,589,596	2,589,596
30	2027	465,291		2,763,829	2,763,829

Table 9-4-5(2)A Estimation of Time Cost Saving Benefits (Route 2-1)

(2) Time Cost for With Case											
(a) Related to Passengers Using C Type Bo			(b) Related to Passengers Using C' Type B			(c) Passengers Saubeba - Serui			(d) With Time Cost Total	Time Cost Saving Benefits	Time Cost Saving Benefits	
Passengers Using C Type Boats	Travel Hours Required (hours) 3.2	Estimated Time Cost (Rp. 1,000)	Passengers Using C' Type Boats	Travel Hours Required (hours) 2.5	Estimated Time Cost (Rp. 1,000)	Passengers	Travel Hours Required (hours) 1.0	Estimated Time Cost (Rp. 1,000)	(Rp. 1,000)	(Rp. 1,000)	(Rp. Million)	
66,976		84,872	0	0		66,976		26,522	111,394	286,443	286	1998
72,254		91,560	0	0		72,254		28,613	120,173	309,016	309	1999
77,949		98,777	0	0		77,949		30,868	129,645	333,372	333	2000
83,669		106,025	0	0		83,669		33,133	139,158	357,836	358	2001
89,809		113,806	0	0		89,809		35,564	149,370	384,095	384	2002
96,400		122,158	0	0		96,400		38,174	160,332	412,284	412	2003
103,474		131,122	0	0		103,474		40,976	172,098	442,538	443	2004
111,068		140,745	0	0		111,068		43,983	184,728	475,016	475	2005
0		0	118,541	117,356		118,541		46,942	164,298	539,836	540	2006
0		0	126,516	125,251		126,516		50,100	175,351	576,154	576	2007
0		0	135,029	133,679		135,029		53,471	187,150	614,922	615	2008
0		0	144,113	142,672		144,113		57,069	199,741	656,290	656	2009
0		0	153,810	152,272		153,810		60,909	213,181	700,450	700	2010
0		0	164,158	162,516		164,158		65,007	227,523	747,576	748	2011
0		0	175,203	173,451		175,203		69,380	242,831	797,875	798	2012
0		0	186,991	185,121		186,991		74,048	259,169	851,558	852	2013
0		0	199,572	197,576		199,572		79,031	276,607	908,851	909	2014
0		0	212,999	210,869		212,999		84,348	295,217	969,997	970	2015
0		0	227,330	225,057		227,330		90,023	315,080	1,035,260	1,035	2016
80,066		101,460	162,559	160,933		242,625		96,080	358,473	1,082,720	1,083	2017
85,453		108,286	173,496	171,761		258,949		102,544	382,591	1,155,566	1,156	2018
91,203		115,572	185,169	183,317		276,372		109,443	408,332	1,233,318	1,233	2019
97,339		123,348	197,627	195,651		294,966		116,807	435,806	1,316,292	1,316	2020
103,888		131,647	210,924	208,815		314,812		124,666	465,128	1,404,855	1,405	2021
110,878		140,505	225,115	222,864		335,993		133,053	496,422	1,499,376	1,499	2022
0		0	358,599	355,013		358,599		142,005	497,018	1,633,060	1,633	2023
0		0	382,726	378,899		382,726		151,559	530,458	1,742,934	1,743	2024
0		0	408,476	404,391		408,476		161,756	566,147	1,860,200	1,860	2025
0		0	435,959	431,599		435,959		172,640	604,239	1,985,357	1,985	2026
0		0	465,291	460,638		465,291		184,255	644,893	2,118,936	2,119	2027

Table 9-4-6A Estimation of Vehicle Operating Cost (VOC) Saving Benefits (Route 2-1)

Assumption: (1) Difference of Road Distance of Section Saubeba - Sen 34 (Km)

		(35Km/h)	(50km/h)		
(2) Unit VOC:	3 ton Truck	341	293	(Rp./Km)	(3) Speed = 35 km
	8 ton Truck	425	378		
	Sedan	340	291		
	Bus	433	383		

		Number of Vehicles Trips			Vehicle Operating Cost Saving Benefits (Rp. 1,000)					
	Year	Truck (3 ton Truck)	Sedan	Bus	Truck (3 ton Truck) 341	Sedan 340	Bus 433	Total	(Rp. Million)	
1	1988	1,369	1,893	1,532	-15,872	-21,883	-22,554	-60,309	-60	1988
2	1989	1,482	2,073	1,651	-17,182	-23,964	-24,306	-65,452	-65	1989
3	2000	1,605	2,271	1,778	-18,608	-26,253	-26,176	-71,037	-71	2000
4	2001	1,731	2,476	1,906	-20,069	-28,623	-28,060	-76,752	-77	2001
5	2002	1,867	2,698	2,043	-21,646	-31,189	-30,077	-82,912	-83	2002
6	2003	2,013	2,941	2,189	-23,339	-33,998	-32,226	-89,563	-90	2003
7	2004	2,171	3,206	2,346	-25,171	-37,061	-34,538	-96,770	-97	2004
8	2005	2,342	3,494	2,515	-27,153	-40,391	-37,026	-104,570	-105	2005
9	2006	2,515	3,787	2,680	-29,159	-43,778	-39,455	-112,392	-112	2006
10	2007	2,701	4,104	2,855	-31,315	-47,442	-42,031	-120,788	-121	2007
11	2008	2,901	4,448	3,042	-33,634	-51,419	-44,784	-129,837	-130	2008
12	2009	3,115	4,820	3,241	-36,115	-55,719	-47,714	-139,548	-140	2009
13	2010	3,345	5,224	3,453	-38,782	-60,389	-50,835	-150,006	-150	2010
14	2011	3,592	5,662	3,679	-41,646	-65,453	-54,162	-161,261	-161	2011
15	2012	3,858	6,136	3,920	-44,730	-70,932	-57,710	-173,372	-173	2012
16	2013	4,143	6,650	4,176	-48,034	-76,874	-61,479	-186,387	-186	2013
17	2014	4,450	7,207	4,449	-51,593	-83,313	-65,498	-200,404	-200	2014
18	2015	4,778	7,811	4,739	-55,396	-90,295	-69,768	-215,459	-215	2015
19	2016	5,132	8,465	5,048	-59,500	-97,855	-74,317	-231,672	-232	2016
20	2017	5,511	9,174	5,378	-63,895	-106,051	-79,175	-249,121	-249	2017
21	2018	5,918	9,942	5,728	-68,613	-114,930	-84,328	-267,871	-268	2018
22	2019	6,356	10,775	6,101	-73,691	-124,559	-89,819	-288,069	-288	2019
23	2020	6,826	11,678	6,498	-79,141	-134,998	-95,664	-309,803	-310	2020
24	2021	7,330	12,656	6,921	-84,984	-146,303	-101,891	-333,178	-333	2021
25	2022	7,872	13,716	7,371	-91,268	-158,557	-108,516	-358,341	-358	2022
26	2023	8,454	14,865	7,850	-98,016	-171,839	-115,568	-385,423	-385	2023
27	2024	9,079	16,110	8,360	-105,262	-186,232	-123,076	-414,570	-415	2024
28	2025	9,750	17,459	8,902	-113,042	-201,826	-131,055	-445,923	-446	2025
29	2026	10,471	18,922	9,480	-121,401	-218,738	-139,565	-479,704	-480	2026
30	2027	11,245	20,507	10,094	-130,375	-237,061	-148,604	-516,040	-516	2027

Table 9-4-7A Economic Analysis for Route 2-1, Biak(Mokmer)-Saubeba Route

EIRR = 12.3%
NPV = 2,194 (Million Rp.)
B/C = 1.17 (Discount Rate Used = 10%)

(Unit: Rp. Million)

	Year	Benefits							Costs								Year
		(Users Benefit)		(Invest. & O/M Costs Saving Benefit)				Total Benefits	(With Costs)						With Costs Total	Net Cash Flow	
		Passengers Time Saving	Vehicles VOC Saving	(Without Costs) Terminal O/M Costs	Substituted Boats Procurement	O/M Costs	Total		Terminal Facilities	O/M Costs	Total	Ferry Boats Procurement	O/M Costs	Total			
1	1995						0		351		351			0	351	-351	1995
2	1996						0		3,274		3,274			0	3,274	-3,274	1996
3	1997						0		5,862		5,862			0	5,862	-5,862	1997
4	1998	286	-60	0	3,630	679	4,309	4,535		123	123	1,815	132	1,947	2,070	2,465	1998
5	1999	309	-65	0	0	679	679	923		123	123	0	132	132	255	668	1999
6	2000	333	-71	0	0	679	679	941		123	123	0	132	132	255	686	2000
7	2001	358	-77	0	0	679	679	960		123	123	0	132	132	255	705	2001
8	2002	384	-83	0	0	679	679	980		123	123	0	132	132	255	725	2002
9	2003	412	-90	0	0	679	679	1,001		123	123	0	132	132	255	746	2003
10	2004	443	-97	0	0	679	679	1,025		123	123	0	132	132	255	770	2004
11	2005	475	-105	0	0	679	679	1,049		123	123	0	132	132	255	794	2005
12	2006	540	-112	0	1,815	1,018	2,833	3,261		141	141	908	238	1,146	1,287	1,975	2006
13	2007	576	-121	0	0	1,018	1,018	1,473	1,075	141	1,216	0	238	238	1,454	19	2007
14	2008	615	-130	0	0	1,018	1,018	1,503		141	141	0	238	238	379	1,124	2008
15	2009	656	-140	0	0	1,018	1,018	1,534		141	141	0	238	238	379	1,155	2009
16	2010	700	-150	0	0	1,018	1,018	1,568		141	141	0	238	238	379	1,189	2010
17	2011	748	-161	0	0	1,018	1,018	1,605		141	141	0	238	238	379	1,226	2011
18	2012	798	-173	0	0	1,018	1,018	1,643		141	141	0	238	238	379	1,264	2012
19	2013	852	-186	0	1,815	1,358	3,173	3,839		141	141	0	238	238	379	3,460	2013
20	2014	909	-200	0	0	1,358	1,358	2,067		141	141	0	238	238	379	1,688	2014
21	2015	970	-215	0	0	1,358	1,358	2,113		141	141	0	238	238	379	1,734	2015
22	2016	1,035	-232	0	0	1,358	1,358	2,161		141	141	0	238	238	379	1,782	2016
23	2017	1,083	-249	0	1,815	1,697	3,512	4,346	1,075	154	1,229	1,815	370	2,185	3,414	932	2017
24	2018	1,156	-268	0	0	1,697	1,697	2,585		154	154	0	370	370	524	2,061	2018
25	2019	1,233	-288	0	0	1,697	1,697	2,642		154	154	0	370	370	524	2,118	2019
26	2020	1,316	-310	0	0	1,697	1,697	2,703		154	154	0	370	370	524	2,179	2020
27	2021	1,405	-333	0	1,815	2,038	3,853	4,925		154	154	0	370	370	524	4,401	2021
28	2022	1,499	-358	0	0	2,038	2,038	3,179	995	154	1,149	0	370	370	1,519	1,660	2022
29	2023	1,633	-385	0	1,815	2,377	4,192	5,440		169	169	908	476	1,384	1,553	3,888	2023
30	2024	1,743	-415	0	0	2,377	2,377	3,705		169	169	0	476	476	645	3,060	2024
31	2025	1,860	-446	0	0	2,377	2,377	3,791		169	169	0	476	476	645	3,146	2025
32	2026	1,985	-480	0	1,815	2,717	4,532	6,037		169	169	0	476	476	645	5,392	2026
33	2027	2,119	-516	0	0	2,717	2,717	4,320		169	169	0	476	476	645	3,675	2027

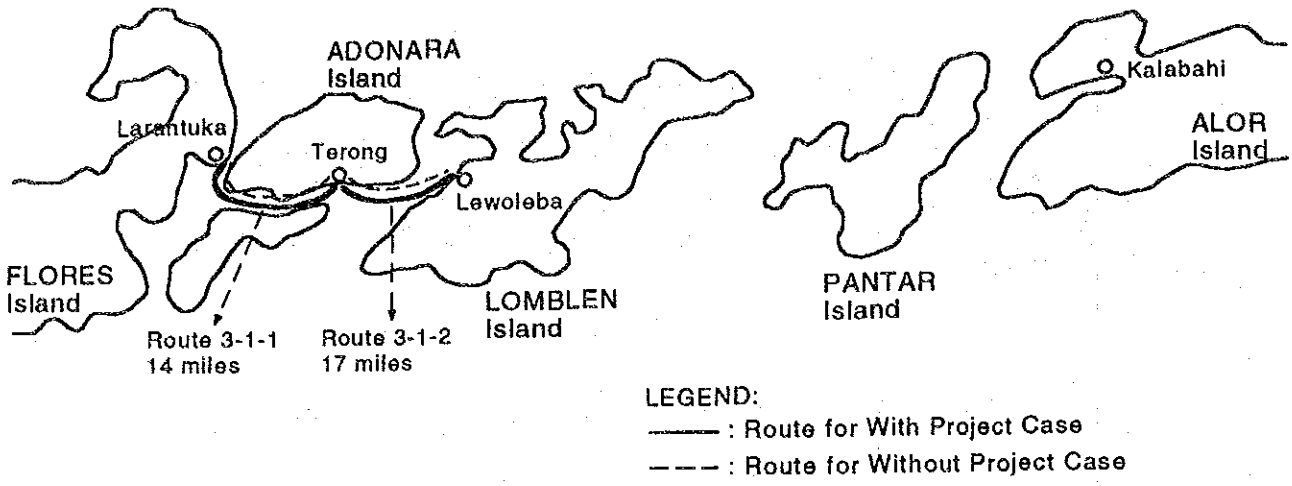


Fig. 9-4-2A Conceptual Route Map of Route 3-1 (Larantula-Terong-Lewoleba) for Economic Analysis

Table 9-4-8(1)A Future Traffic Demand, Traffic Capacity and Introducing of New Boats for With Case (Route 3-1-1)

(Deck Space: unit: m2)
Sedan : 9.5
3t Truck : 14.3

Assumption: Traffic Capacity of C Type Boat -1 R.T.
Passengers 118,200
Vehicles 8,000 (3 ton truck unit)

	(A) Future Traffic Demand						(B) Annual Traffic Capacity	(B-1) C Type Boat - One Round Trip			
	Year	Passengers	Truck (3 ton)	Sedan	Sedan in terms of Truck (3 ton) 0.67	Vehicles (3 ton truck unit)	Year	Year	Number of New Boats	Total Capacity of C Type Boat -1 R.T. (Annual Capacity) Passengers	Vehicles
			(a)	(b)	(c) (b)x0.67	(d) (a)+(c)					(3 ton truck unit)
1	1998	61,699	1,695	1,866	1,250	2,945	1998	1998	1	118,200	8,000
2	1999	66,116	1,838	2,048	1,372	3,210	1999	1999	1	118,200	8,000
3	2000	70,849	1,993	2,247	1,505	3,498	2000	2000	1	118,200	8,000
4	2001	75,631	2,154	2,457	1,646	3,800	2001	2001	1	118,200	8,000
5	2002	80,735	2,328	2,686	1,800	4,128	2002	2002	1	118,200	8,000
6	2003	86,184	2,516	2,936	1,967	4,483	2003	2003	1	118,200	8,000
7	2004	92,001	2,719	3,210	2,151	4,870	2004	2004	1	118,200	8,000
8	2005	98,211	2,939	3,509	2,351	5,290	2005	2005	1	118,200	8,000
9	2006	104,580	3,170	3,827	2,564	5,734	2006	2006	1	118,200	8,000
10	2007	111,362	3,420	4,173	2,796	6,216	2007	2007	1	118,200	8,000
11	2008	118,584	3,689	4,551	3,049	6,738	2008	2008	0	0	0
12	2009	126,275	3,979	4,963	3,325	7,304	2009	2009	0	0	0
13	2010	134,465	4,293	5,412	3,626	7,919	2010	2010	0	0	0
14	2011	143,186	4,630	5,902	3,954	8,584	2011	2011	0	0	0
15	2012	152,472	4,995	6,436	4,312	9,307	2012	2012	0	0	0
16	2013	162,362	5,388	7,018	4,702	10,090	2013	2013	0	0	0
17	2014	172,892	5,812	7,654	5,128	10,940	2014	2014	0	0	0
18	2015	184,107	6,269	8,347	5,592	11,861	2015	2015	0	0	0
19	2016	196,048	6,762	9,102	6,098	12,860	2016	2016	0	0	0
20	2017	208,765	7,259	9,926	6,650	13,909	2017	2017	0	0	0
21	2018	222,307	7,869	10,824	7,252	15,121	2018	2018	0	0	0
22	2019	236,400	8,283	11,518	7,717	16,000	2019	2019	0	0	0
23	2020	236,400	8,283	11,518	7,717	16,000	2020	2020	0	0	0
24	2021	236,400	8,283	11,518	7,717	16,000	2021	2021	0	0	0
25	2022	236,400	8,283	11,518	7,717	16,000	2022	2022	0	0	0
26	2023	236,400	8,283	11,518	7,717	16,000	2023	2023	0	0	0
27	2024	236,400	8,283	11,518	7,717	16,000	2024	2024	0	0	0
28	2025	236,400	8,283	11,518	7,717	16,000	2025	2025	0	0	0
29	2026	236,400	8,283	11,518	7,717	16,000	2026	2026	0	0	0
30	2027	236,400	8,283	11,518	7,717	16,000	2027	2027	0	0	0

Table 9-4-8(2)A Future Traffic Demand, Traffic Capacity and Introducing of New Boats for With Case (Route 3-1-1)

Assumption: Traffic Capacity of C Type Boat - 2 R.T.
Passengers 236,400
Vehicles 16,000 (3 ton truck unit)

(B-2) C Type Boat - Two Round Trip				(B-3) Total Annual Traffic Capacity (C type (1 R.T.) + C Type (2 R.T.)				(C) Deviation Between Traffic Demand and Total Annual Traffic Capacity		
Year	Number of New Boats	Total Capacity of C Type Boat - 2R.T. (Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Total Number of Boats	Total Number of Round Trips	(Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Year	Passengers	Vehicles (3 ton truck unit)
1998	0	0	0	1	1	118,200	8,000	1998	56,501	5,055
1999	0	0	0	1	1	118,200	8,000	1999	52,084	4,790
2000	0	0	0	1	1	118,200	8,000	2000	47,351	4,502
2001	0	0	0	1	1	118,200	8,000	2001	42,569	4,200
2002	0	0	0	1	1	118,200	8,000	2002	37,465	3,872
2003	0	0	0	1	1	118,200	8,000	2003	32,016	3,517
2004	0	0	0	1	1	118,200	8,000	2004	26,199	3,130
2005	0	0	0	1	1	118,200	8,000	2005	19,989	2,710
2006	0	0	0	1	1	118,200	8,000	2006	13,620	2,266
2007	0	0	0	1	1	118,200	8,000	2007	6,838	1,784
2008	1	236,400	16,000	1	2	236,400	16,000	2008	117,816	9,262
2009	1	236,400	16,000	1	2	236,400	16,000	2009	110,125	8,696
2010	1	236,400	16,000	1	2	236,400	16,000	2010	101,935	8,081
2011	1	236,400	16,000	1	2	236,400	16,000	2011	93,214	7,416
2012	1	236,400	16,000	1	2	236,400	16,000	2012	83,928	6,693
2013	1	236,400	16,000	1	2	236,400	16,000	2013	74,038	5,910
2014	1	236,400	16,000	1	2	236,400	16,000	2014	63,508	5,060
2015	1	236,400	16,000	1	2	236,400	16,000	2015	52,293	4,139
2016	1	236,400	16,000	1	2	236,400	16,000	2016	40,352	3,140
2017	1	236,400	16,000	1	2	236,400	16,000	2017	27,635	2,091
2018	1	236,400	16,000	1	2	236,400	16,000	2018	14,093	879
2019	1	236,400	16,000	1	2	236,400	16,000	2019	0	0
2020	1	236,400	16,000	1	2	236,400	16,000	2020	0	0
2021	1	236,400	16,000	1	2	236,400	16,000	2021	0	0
2022	1	236,400	16,000	1	2	236,400	16,000	2022	0	0
2023	1	236,400	16,000	1	2	236,400	16,000	2023	0	0
2024	1	236,400	16,000	1	2	236,400	16,000	2024	0	0
2025	1	236,400	16,000	1	2	236,400	16,000	2025	0	0
2026	1	236,400	16,000	1	2	236,400	16,000	2026	0	0
2027	1	236,400	16,000	1	2	236,400	16,000	2027	0	0

Table 9-4-9(1)A Future Traffic Demand, Traffic Capacity and Introducing of Boats for Without Case (Route 3-1-1)

(Deck Space: unit: m2)
Sedan : 9.5
3t Truck : 14.3

	Year	(A) Future Traffic Demand Passengers	Truck (3 ton) (a)	Sedan (b)	Sedan in terms of Truck (3 ton) 0.67 (c) (b)x0.67	Vehicles (3 ton truck unit) (d) (a)+(c)	(B) Annual Traffic Capacity Year
1	1998	61,699	1,695	1,866	1,250	2,945	1998
2	1999	66,116	1,838	2,048	1,372	3,210	1999
3	2000	70,849	1,993	2,247	1,505	3,498	2000
4	2001	75,631	2,154	2,457	1,646	3,800	2001
5	2002	80,735	2,328	2,686	1,800	4,128	2002
6	2003	86,184	2,516	2,936	1,967	4,483	2003
7	2004	92,001	2,719	3,210	2,151	4,870	2004
8	2005	98,211	2,939	3,509	2,351	5,290	2005
9	2006	104,580	3,170	3,827	2,564	5,734	2006
10	2007	111,362	3,420	4,173	2,796	6,216	2007
11	2008	118,584	3,689	4,551	3,049	6,738	2008
12	2009	126,275	3,979	4,963	3,325	7,304	2009
13	2010	134,465	4,293	5,412	3,626	7,919	2010
14	2011	143,186	4,630	5,902	3,954	8,584	2011
15	2012	152,472	4,995	6,436	4,312	9,307	2012
16	2013	162,362	5,388	7,018	4,702	10,090	2013
17	2014	172,892	5,812	7,654	5,128	10,940	2014
18	2015	184,107	6,269	8,347	5,592	11,861	2015
19	2016	196,048	6,762	9,102	6,098	12,860	2016
20	2017	208,765	7,259	9,926	6,650	13,909	2017
21	2018	222,307	7,869	10,824	7,252	15,121	2018
22	2019	236,400	8,283	11,518	7,717	16,000	2019
23	2020	236,400	8,283	11,518	7,717	16,000	2020
24	2021	236,400	8,283	11,518	7,717	16,000	2021
25	2022	236,400	8,283	11,518	7,717	16,000	2022
26	2023	236,400	8,283	11,518	7,717	16,000	2023
27	2024	236,400	8,283	11,518	7,717	16,000	2024
28	2025	236,400	8,283	11,518	7,717	16,000	2025
29	2026	236,400	8,283	11,518	7,717	16,000	2026
30	2027	236,400	8,283	11,518	7,717	16,000	2027

Assumption: Traffic Capacity of LCM TYpe Boat -1 R.T.
Passengers 118,200
Vehicles 8,000 (3 ton truck unit)

(B-1) LCM Boat - One Round Trip

Year	Number of New Boats	Total Capacity of LCM Boat -1 R.T. (Annual Capacity) Passengers	Vehicles (3 ton truck unit)
1998	1	118,200	8,000
1999	1	118,200	8,000
2000	1	118,200	8,000
2001	1	118,200	8,000
2002	1	118,200	8,000
2003	1	118,200	8,000
2004	1	118,200	8,000
2005	1	118,200	8,000
2006	1	118,200	8,000
2007	1	118,200	8,000
2008	0	0	0
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	0	0	0
2017	0	0	0
2018	0	0	0
2019	0	0	0
2020	0	0	0
2021	0	0	0
2022	0	0	0
2023	0	0	0
2024	0	0	0
2025	0	0	0
2026	0	0	0
2027	0	0	0

Table 9-4-9(2)A Future Traffic Demand, Traffic Capacity and Introducing of Boats for Without Case (Route 3-1-1)

Assumption: Traffic Capacity of LCM Boat - 2 R.T.
Passengers 236,400
Vehicles 16,000 (3 ton truck unit)

(B-2) LCM Boat - Two Round Trip				(B-3) Total Annual Traffic Capacity (LCM (1 R.T.) + LCM (2 R.T.))				(C) Deviation Between Traffic Demand and Total Annual Traffic Capacity		
Year	Number of New Boats	Total Capacity of LCM Boat - 2R.T. (Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Total Number of Boats	Total Number of Round Trips	(Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Year	Passengers	Vehicles (3 ton truck unit)
1998	0	0	0	1	1	118,200	8,000	1998	56,501	5,055
1999	0	0	0	1	1	118,200	8,000	1999	52,084	4,790
2000	0	0	0	1	1	118,200	8,000	2000	47,351	4,502
2001	0	0	0	1	1	118,200	8,000	2001	42,569	4,200
2002	0	0	0	1	1	118,200	8,000	2002	37,465	3,872
2003	0	0	0	1	1	118,200	8,000	2003	32,016	3,517
2004	0	0	0	1	1	118,200	8,000	2004	26,199	3,130
2005	0	0	0	1	1	118,200	8,000	2005	19,989	2,710
2006	0	0	0	1	1	118,200	8,000	2006	13,620	2,266
2007	0	0	0	1	1	118,200	8,000	2007	6,838	1,784
2008	1	236,400	16,000	1	2	236,400	16,000	2008	117,816	9,262
2009	1	236,400	16,000	1	2	236,400	16,000	2009	110,125	8,696
2010	1	236,400	16,000	1	2	236,400	16,000	2010	101,935	8,081
2011	1	236,400	16,000	1	2	236,400	16,000	2011	93,214	7,416
2012	1	236,400	16,000	1	2	236,400	16,000	2012	83,928	6,693
2013	1	236,400	16,000	1	2	236,400	16,000	2013	74,038	5,910
2014	1	236,400	16,000	1	2	236,400	16,000	2014	63,508	5,060
2015	1	236,400	16,000	1	2	236,400	16,000	2015	52,293	4,139
2016	1	236,400	16,000	1	2	236,400	16,000	2016	40,352	3,140
2017	1	236,400	16,000	1	2	236,400	16,000	2017	27,635	2,091
2018	1	236,400	16,000	1	2	236,400	16,000	2018	14,093	879
2019	1	236,400	16,000	1	2	236,400	16,000	2019	0	0
2020	1	236,400	16,000	1	2	236,400	16,000	2020	0	0
2021	1	236,400	16,000	1	2	236,400	16,000	2021	0	0
2022	1	236,400	16,000	1	2	236,400	16,000	2022	0	0
2023	1	236,400	16,000	1	2	236,400	16,000	2023	0	0
2024	1	236,400	16,000	1	2	236,400	16,000	2024	0	0
2025	1	236,400	16,000	1	2	236,400	16,000	2025	0	0
2026	1	236,400	16,000	1	2	236,400	16,000	2026	0	0
2027	1	236,400	16,000	1	2	236,400	16,000	2027	0	0

Table 9-4-10(1)A Future Traffic Demand, Traffic Capacity and Introducing of New Boats for With Case (Route 3-1-2)

(Deck Space: unit: m2)
Sedan : 9.5
3t Truck : 14.3

Assumption: Traffic Capacity of New Ferry Boat (Type C) -1 R.T.
Passengers 118,200
Vehicles 8,000 (3 ton truck unit)

	(A) Future Traffic Demand						(B) Annual Traffic Capacity	(B-1) New Boats (Type C) - One Round Trip			
	Year	Passengers	Truck (3 ton)	Sedan	Sedan in terms of Truck (3 ton) 0.67	Vehicles (3 ton truck unit)	Year	Year	Number of New Boats	Total Capacity of New Boats (Type C) -1 R.T. (Annual Capacity) Passengers	Vehicles (3 ton truck unit)
			(a)	(b)	(c) (b)x0.67	(d) (a)+(c)					
1	1998	62,118	1,622	1,879	1,259	2,881	1998	1998	1	118,200	8,000
2	1999	66,564	1,748	2,062	1,382	3,130	1999	1999	1	118,200	8,000
3	2000	71,328	1,883	2,263	1,516	3,399	2000	2000	1	118,200	8,000
4	2001	76,141	2,022	2,473	1,657	3,679	2001	2001	1	118,200	8,000
5	2002	81,279	2,172	2,704	1,812	3,984	2002	2002	1	118,200	8,000
6	2003	86,764	2,334	2,956	1,981	4,315	2003	2003	1	118,200	8,000
7	2004	92,619	2,507	3,231	2,165	4,672	2004	2004	1	118,200	8,000
8	2005	98,870	2,693	3,533	2,367	5,060	2005	2005	1	118,200	8,000
9	2006	105,280	2,887	3,852	2,581	5,468	2006	2006	1	118,200	8,000
10	2007	112,107	3,096	4,201	2,815	5,911	2007	2007	1	118,200	8,000
11	2008	119,376	3,320	4,581	3,069	6,389	2008	2008	0	0	0
12	2009	127,117	3,560	4,996	3,347	6,907	2009	2009	0	0	0
13	2010	135,360	3,817	5,448	3,650	7,467	2010	2010	0	0	0
14	2011	144,138	4,093	5,941	3,980	8,073	2011	2011	0	0	0
15	2012	153,485	4,390	6,479	4,341	8,731	2012	2012	0	0	0
16	2013	163,438	4,708	7,065	4,734	9,442	2013	2013	0	0	0
17	2014	174,037	5,049	7,704	5,162	10,211	2014	2014	0	0	0
18	2015	185,324	5,416	8,402	5,629	11,045	2015	2015	0	0	0
19	2016	197,343	5,809	9,162	6,139	11,948	2016	2016	0	0	0
20	2017	210,141	6,231	9,991	6,694	12,925	2017	2017	0	0	0
21	2018	223,770	6,683	10,896	7,300	13,983	2018	2018	0	0	0
22	2019	236,400	7,581	12,565	8,419	16,000	2019	2019	0	0	0
23	2020	236,400	7,581	12,565	8,419	16,000	2020	2020	0	0	0
24	2021	236,400	7,581	12,565	8,419	16,000	2021	2021	0	0	0
25	2022	236,400	7,581	12,565	8,419	16,000	2022	2022	0	0	0
26	2023	236,400	7,581	12,565	8,419	16,000	2023	2023	0	0	0
27	2024	236,400	7,581	12,565	8,419	16,000	2024	2024	0	0	0
28	2025	236,400	7,581	12,565	8,419	16,000	2025	2025	0	0	0
29	2026	236,400	7,581	12,565	8,419	16,000	2026	2026	0	0	0
30	2027	236,400	7,581	12,565	8,419	16,000	2027	2027	0	0	0

Table 9-4-10(2)A Future Traffic Demand, Traffic Capacity and Introducing of New Boats for With Case (Route 3-1-2)

Assumption: Traffic Capacity of New Ferry Boat (Type C) - 2 R.T.
Passengers 236,400
Vehicles 16,000 (3 ton truck unit)

(B-2) New Boats (Type C) - Two Round Trip				(B-3) Total Annual Traffic Capacity (C Type (1 R.T.) + C Type (2 R.T.))				(C) Deviation Between Traffic Demand and Total Annual Traffic Capacity		
Year	Number of New Boats	Total Capacity of New Boats (Type C) - 2 R.T. (Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Total Number of Boats	Total Number of Round Trips	(Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Year	Passengers	Vehicles (3 ton truck unit)
1998	0	0	0	1	1	118,200	8,000	1998	56,082	5,119
1999	0	0	0	1	1	118,200	8,000	1999	51,636	4,870
2000	0	0	0	1	1	118,200	8,000	2000	46,872	4,601
2001	0	0	0	1	1	118,200	8,000	2001	42,059	4,321
2002	0	0	0	1	1	118,200	8,000	2002	36,921	4,016
2003	0	0	0	1	1	118,200	8,000	2003	31,436	3,685
2004	0	0	0	1	1	118,200	8,000	2004	25,581	3,328
2005	0	0	0	1	1	118,200	8,000	2005	19,330	2,940
2006	0	0	0	1	1	118,200	8,000	2006	12,920	2,532
2007	0	0	0	1	1	118,200	8,000	2007	6,093	2,089
2008	1	236,400	16,000	1	2	236,400	16,000	2008	117,024	9,611
2009	1	236,400	16,000	1	2	236,400	16,000	2009	109,283	9,093
2010	1	236,400	16,000	1	2	236,400	16,000	2010	101,040	8,533
2011	1	236,400	16,000	1	2	236,400	16,000	2011	92,262	7,927
2012	1	236,400	16,000	1	2	236,400	16,000	2012	82,915	7,269
2013	1	236,400	16,000	1	2	236,400	16,000	2013	72,962	6,558
2014	1	236,400	16,000	1	2	236,400	16,000	2014	62,363	5,789
2015	1	236,400	16,000	1	2	236,400	16,000	2015	51,076	4,955
2016	1	236,400	16,000	1	2	236,400	16,000	2016	39,057	4,052
2017	1	236,400	16,000	1	2	236,400	16,000	2017	26,259	3,075
2018	1	236,400	16,000	1	2	236,400	16,000	2018	12,630	2,017
2019	1	236,400	16,000	1	2	236,400	16,000	2019	0	0
2020	1	236,400	16,000	1	2	236,400	16,000	2020	0	0
2021	1	236,400	16,000	1	2	236,400	16,000	2021	0	0
2022	1	236,400	16,000	1	2	236,400	16,000	2022	0	0
2023	1	236,400	16,000	1	2	236,400	16,000	2023	0	0
2024	1	236,400	16,000	1	2	236,400	16,000	2024	0	0
2025	1	236,400	16,000	1	2	236,400	16,000	2025	0	0
2026	1	236,400	16,000	1	2	236,400	16,000	2026	0	0
2027	1	236,400	16,000	1	2	236,400	16,000	2027	0	0

Table 9-4-11(1)A Future Traffic Demand, Traffic Capacity and Introducing of Boats for Without Case (Route 3-1-2)

(Deck Space: unit: m2)
Sedan : 9.5
3t Truck : 14.3

Assumption: Traffic Capacity of LCM Type Boat -1 R.T.
Passengers 118,200
Vehicles 8,000 (3 ton truck unit)

	(A) Future Traffic Demand						(B) Annual Traffic Capacity	(B-1) LCM Boat - One Round Trip			
	Year	Passengers	Truck (3 ton)	Sedan	Sedan in terms of Truck (3 ton) 0.67	Vehicles (3 ton truck unit)	Year	Year	Number of New Boats	Total Capacity of LCM Boat -1 R.T. (Annual Capacity) Passengers	Vehicles (3 ton truck unit)
			(a)	(b)	(c) (b)x0.67	(d) (a)+(c)					
1	1998	62,118	1,622	1,879	1,259	2,881	1998	1998	1	118,200	8,000
2	1999	66,564	1,748	2,062	1,382	3,130	1999	1999	1	118,200	8,000
3	2000	71,328	1,883	2,263	1,516	3,399	2000	2000	1	118,200	8,000
4	2001	76,141	2,022	2,473	1,657	3,679	2001	2001	1	118,200	8,000
5	2002	81,279	2,172	2,704	1,812	3,984	2002	2002	1	118,200	8,000
6	2003	86,764	2,334	2,956	1,981	4,315	2003	2003	1	118,200	8,000
7	2004	92,619	2,507	3,231	2,165	4,672	2004	2004	1	118,200	8,000
8	2005	98,870	2,693	3,533	2,367	5,060	2005	2005	1	118,200	8,000
9	2006	105,280	2,887	3,852	2,581	5,468	2006	2006	1	118,200	8,000
10	2007	112,107	3,096	4,201	2,815	5,911	2007	2007	1	118,200	8,000
11	2008	119,376	3,320	4,581	3,069	6,389	2008	2008	0	0	0
12	2009	127,117	3,560	4,996	3,347	6,907	2009	2009	0	0	0
13	2010	135,360	3,817	5,448	3,650	7,467	2010	2010	0	0	0
14	2011	144,138	4,093	5,941	3,980	8,073	2011	2011	0	0	0
15	2012	153,485	4,390	6,479	4,341	8,731	2012	2012	0	0	0
16	2013	163,438	4,708	7,065	4,734	9,442	2013	2013	0	0	0
17	2014	174,037	5,049	7,704	5,162	10,211	2014	2014	0	0	0
18	2015	185,324	5,416	8,402	5,629	11,045	2015	2015	0	0	0
19	2016	197,343	5,809	9,162	6,139	11,948	2016	2016	0	0	0
20	2017	210,141	6,231	9,991	6,694	12,925	2017	2017	0	0	0
21	2018	223,770	6,683	10,896	7,300	13,983	2018	2018	0	0	0
22	2019	236,400	7,581	12,565	8,419	16,000	2019	2019	0	0	0
23	2020	236,400	7,581	12,565	8,419	16,000	2020	2020	0	0	0
24	2021	236,400	7,581	12,565	8,419	16,000	2021	2021	0	0	0
25	2022	236,400	7,581	12,565	8,419	16,000	2022	2022	0	0	0
26	2023	236,400	7,581	12,565	8,419	16,000	2023	2023	0	0	0
27	2024	236,400	7,581	12,565	8,419	16,000	2024	2024	0	0	0
28	2025	236,400	7,581	12,565	8,419	16,000	2025	2025	0	0	0
29	2026	236,400	7,581	12,565	8,419	16,000	2026	2026	0	0	0
30	2027	236,400	7,581	12,565	8,419	16,000	2027	2027	0	0	0

Table 9-4-11(2)A Future Traffic Demand, Traffic Capacity and Introducing of Boats for Without Case (Route 3-1-2)

Assumption: Traffic Capacity of LCM Type Boat - 2 R.T.
Passengers 236,400
Vehicles 16,000 (3 ton truck unit)

(B-2) LCM Boats - Two Round Trip				(B-3) Total Annual Traffic Capacity (LCM (1 R.T.) + LCM (2 R.T.))				(C) Deviation Between Traffic Demand and Total Annual Traffic Capacity		
Year	Number of New Boats	Total Capacity of LCM Boat - 2 R.T. (Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Total Number of Boats	Total Number of Round Trips	(Annual Capacity) Passengers	Vehicles (3 ton truck unit)	Year	Passengers	Vehicles (3 ton truck unit)
1998	0	0	0	1	1	118,200	8,000	1998	56,082	5,119
1999	0	0	0	1	1	118,200	8,000	1999	51,636	4,870
2000	0	0	0	1	1	118,200	8,000	2000	46,872	4,601
2001	0	0	0	1	1	118,200	8,000	2001	42,059	4,321
2002	0	0	0	1	1	118,200	8,000	2002	36,921	4,016
2003	0	0	0	1	1	118,200	8,000	2003	31,436	3,685
2004	0	0	0	1	1	118,200	8,000	2004	25,581	3,328
2005	0	0	0	1	1	118,200	8,000	2005	19,330	2,940
2006	0	0	0	1	1	118,200	8,000	2006	12,920	2,532
2007	0	0	0	1	1	118,200	8,000	2007	6,093	2,089
2008	1	236,400	16,000	1	2	236,400	16,000	2008	117,024	9,611
2009	1	236,400	16,000	1	2	236,400	16,000	2009	109,283	9,093
2010	1	236,400	16,000	1	2	236,400	16,000	2010	101,040	8,533
2011	1	236,400	16,000	1	2	236,400	16,000	2011	92,262	7,927
2012	1	236,400	16,000	1	2	236,400	16,000	2012	82,915	7,269
2013	1	236,400	16,000	1	2	236,400	16,000	2013	72,962	6,558
2014	1	236,400	16,000	1	2	236,400	16,000	2014	62,363	5,789
2015	1	236,400	16,000	1	2	236,400	16,000	2015	51,076	4,955
2016	1	236,400	16,000	1	2	236,400	16,000	2016	39,057	4,052
2017	1	236,400	16,000	1	2	236,400	16,000	2017	26,259	3,075
2018	1	236,400	16,000	1	2	236,400	16,000	2018	12,630	2,017
2019	1	236,400	16,000	1	2	236,400	16,000	2019	0	0
2020	1	236,400	16,000	1	2	236,400	16,000	2020	0	0
2021	1	236,400	16,000	1	2	236,400	16,000	2021	0	0
2022	1	236,400	16,000	1	2	236,400	16,000	2022	0	0
2023	1	236,400	16,000	1	2	236,400	16,000	2023	0	0
2024	1	236,400	16,000	1	2	236,400	16,000	2024	0	0
2025	1	236,400	16,000	1	2	236,400	16,000	2025	0	0
2026	1	236,400	16,000	1	2	236,400	16,000	2026	0	0
2027	1	236,400	16,000	1	2	236,400	16,000	2027	0	0

Table 9-4-12(1)A Ferry Boats Procurement Costs, Operation Cost and Maintenance Cost (With) (Route 3-1-1)

Ferry Boats — Assumption: Unit Procurement Cost of Boats per ton = 6.05 Rp. Million /ton

New Boats — 300 Ton per Boat — (A) Procurement Cost of New Boats

	Year	(a) C Type Boat (1 R.T.)			(b) C Type Boat (2 R.T.)			(a) C Type Boat				Year
		Procurement	Total Number of Boats	Accumulated Tonnage	Procurement	Total Number of Boats	Accumulated Tonnage	Procurement Cost	Accumulated Cost	Procurement Cost	Accumulated Cost	
1	1998	1	1	300		0	0	1,815	1,815	1,815	1,815	1998
2	1999		1	300		0	0	0	1,815	0	1,815	1999
3	2000		1	300		0	0	0	1,815	0	1,815	2000
4	2001		1	300		0	0	0	1,815	0	1,815	2001
5	2002		1	300		0	0	0	1,815	0	1,815	2002
6	2003		1	300		0	0	0	1,815	0	1,815	2003
7	2004		1	300		0	0	0	1,815	0	1,815	2004
8	2005		1	300		0	0	0	1,815	0	1,815	2005
9	2006		1	300		0	0	0	1,815	0	1,815	2006
10	2007		1	300		0	0	0	1,815	0	1,815	2007
11	2008	-1	0	0	1	1	300	0	1,815	0	1,815	2008
12	2009		0	0		1	300	0	1,815	0	1,815	2009
13	2010		0	0		1	300	0	1,815	0	1,815	2010
14	2011		0	0		1	300	0	1,815	0	1,815	2011
15	2012		0	0		1	300	0	1,815	0	1,815	2012
16	2013		0	0		1	300	0	1,815	0	1,815	2013
17	2014		0	0		1	300	0	1,815	0	1,815	2014
18	2015		0	0		1	300	0	1,815	0	1,815	2015
19	2016		0	0		1	300	0	1,815	0	1,815	2016
20	2017		0	0		1	300	0	1,815	0	1,815	2017
21	2018		0	0		1	300	0	1,815	0	1,815	2018
22	2019		0	0		1	300	0	1,815	0	1,815	2019
23	2020		0	0		1	300	0	1,815	0	1,815	2020
24	2021		0	0		1	300	0	1,815	0	1,815	2021
25	2022		0	0		1	300	0	1,815	0	1,815	2022
26	2023		0	0		1	300	0	1,815	0	1,815	2023
27	2024		0	0		1	300	0	1,815	0	1,815	2024
28	2025		0	0		1	300	0	1,815	0	1,815	2025
29	2026		0	0		1	300	0	1,815	0	1,815	2026
30	2027		0	0		1	300	0	1,815	0	1,815	2027