2) Alternative study

532. Three alternatives are proposed for the bus terminal improvement plans as follows.

- Alternative-1 (improvement at the existing site): in compliance with the existing bus operations.
- Alternative-2 (partial relocation): relocation of the west routes terminal to avoid passing the railway.
- Alternative-3 (all relocation): relocation of the bus terminal to the container yard. The existing site could re-develop for a park with historical railway station Tanjung Priok.

533. The alternative-2 and -3 include an external factor to use the container yard owned by PT KAI. This means that these implementations would take longer time than the alternative-1. The alternative-2 would be more negotiable than the alternative-3 because smaller land is required for the alternative 2.

534. Another important issue is to avoid passing the railway. For the issue, the buses do not pass the railway in the alternative-2. The buses could pass on the flyover over the railway in the alternative-3. However, it means that the alternative-3 excludes the biggest advantage of flyover: separation of the bus traffic and through traffic on Jl. Stasiun.

535. Moreover, the exit of route west in the alternative-3 would be designed at close to the gate 1 of Tanjung Priok port. This layout could lead to congestion of the bus and transportation vehicles from the port. Meanwhile, the container yard has an elongate shape along Jl. Martadinata. It is difficult to adjust the exit of routes east with the location of flyover edge. The bus circulation of routes east should be designed below the flyover to prevent congestion with the through traffic from the flyover.

536. A comparison of the three alternatives is shown in Table 11-B-5. Giving weight for two factors, the immediacy and the effectiveness of the flyover construction, the alternative-1 and -2 are more considerable for the improvement. Weighting to avoid passing the railway, the alternative-2 is the most suitable idea. However, how significant to avoid passing the railway for possible increase of the cargo trains to Tanjung Priok port. The issue would not be very important but if the cargo trains would be operated in the daytime.

537. A double deck bus terminal is another idea to avoid passing the railway and prepare more space for at the existing site. However, it is very difficult to provide the bus circulation (slopes to approach the deck) in the existing site. Approaches from the flyover are also negative to separate the bus and through traffic. Therefore, the study team studied in detail for the alternative-1 and -2.

Table 11-B-5 Comparison of the Alternatives

Items	Alternative-1	Alternative-2	Alternative-3
a) Space	x Limited space	• More space could be provided	• Most space could be provided x But the linear shape of container yard would not be suitable for the terminal improvement
b) Circulation	• Separation of the bus and through traffic x The buses of western routes pass the railway	• Separation of the bus and through traffic • The buses of western routes do not pass the railway	• The buses of eastern routes do not pass the railway x But the bus traffic is mixed with the through traffic on the flyover x The exit of western route buses would be close to the gate 1 of port
c) Passenger transfer	• Easy to transfer	x Some difficulty in transferring between the west and east routes	• Easy to transfer
d) Terminal building	• One building	x Need the terminal building separation	• One building
e) Management	• Integrated management △ Strict time management is required in the terminal	x Separate management of the west and east terminals is required.	• Integrated management
f) Project implementation	• Insufficient coordination with other agencies x Difficult to find an alternate site of the bus operations while the project is implemented	△ Negotiation with PT KAI is necessary to partially use the container yard △ It is expected to take a long time before the project commences (after expiration of the contract to use container yard) △ Difficult to find an alternate site of the bus operations while the project is implemented	x Negotiation with PT KAI is necessary to use most area of the container yard x Expecting long time to commence the project (after expiration of the contract to use container yard) • Possible bus operations at the existing site with the project implementation
g) Cost	• Lowest	△ Middle (due to rental fee for partial use of the container yard)	x Highest (due to rental fee for use of the container yard)
h) Others		• Possible to prepare the space for street venders	• Possible to re-develop the existing site as a historical railway park with the renovation of the station Tanjung Priok • Consistency with the plan of municipality • Possible to prepare the space for street venders

Source: JICA Study Team

Note: ●advantageous, ➢rather disadvantageous, ✓disadvantageous/issues

3) Layout plan

a) Alternative-1

i) Circulation

538. Simple circulation is required to prevent crossing the routes east and west for the improvement. Figure 11-B-6 shows the policy of improvement. The former east-west street in front of the station could be used for intra terminal way. Some local traffic also could use the street.

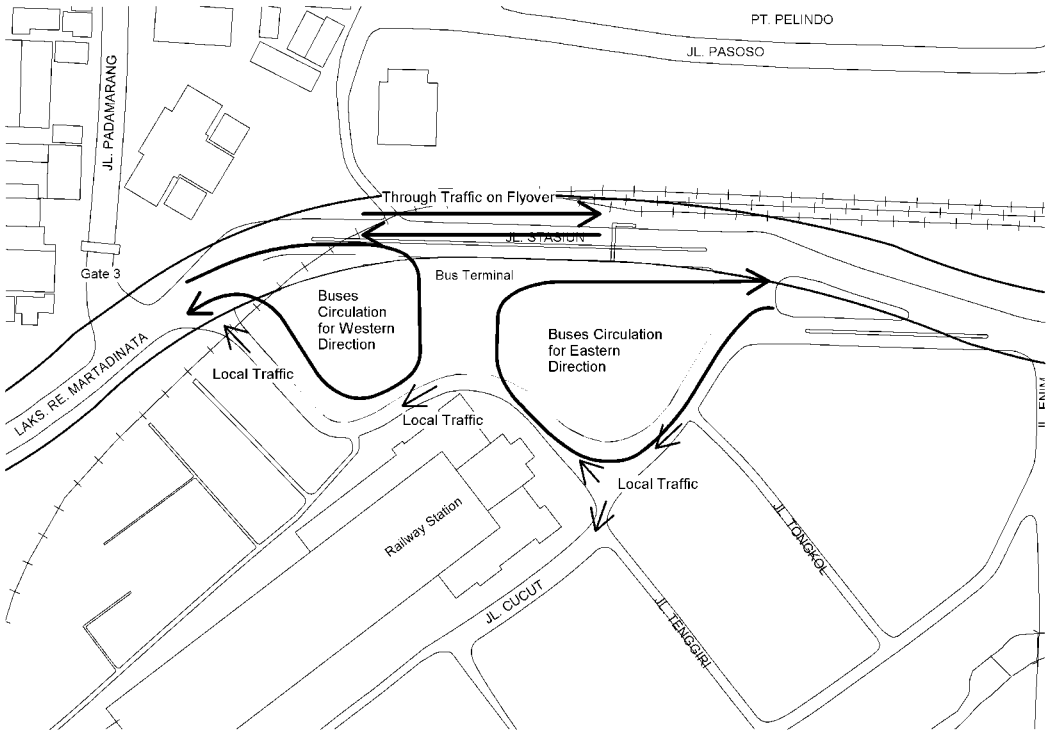


Figure 11-B-6 Proposed Circulation Policy for the Alternative-1

ii) Spatial use

539. The policies of spatial using are:

- The park is used for the terminal,
- Kiosks are included in the terminal building,
- Bus pools are provided with strict time management,
- Boarding/alighting berths are provided, and
- Platforms for passengers are provided.

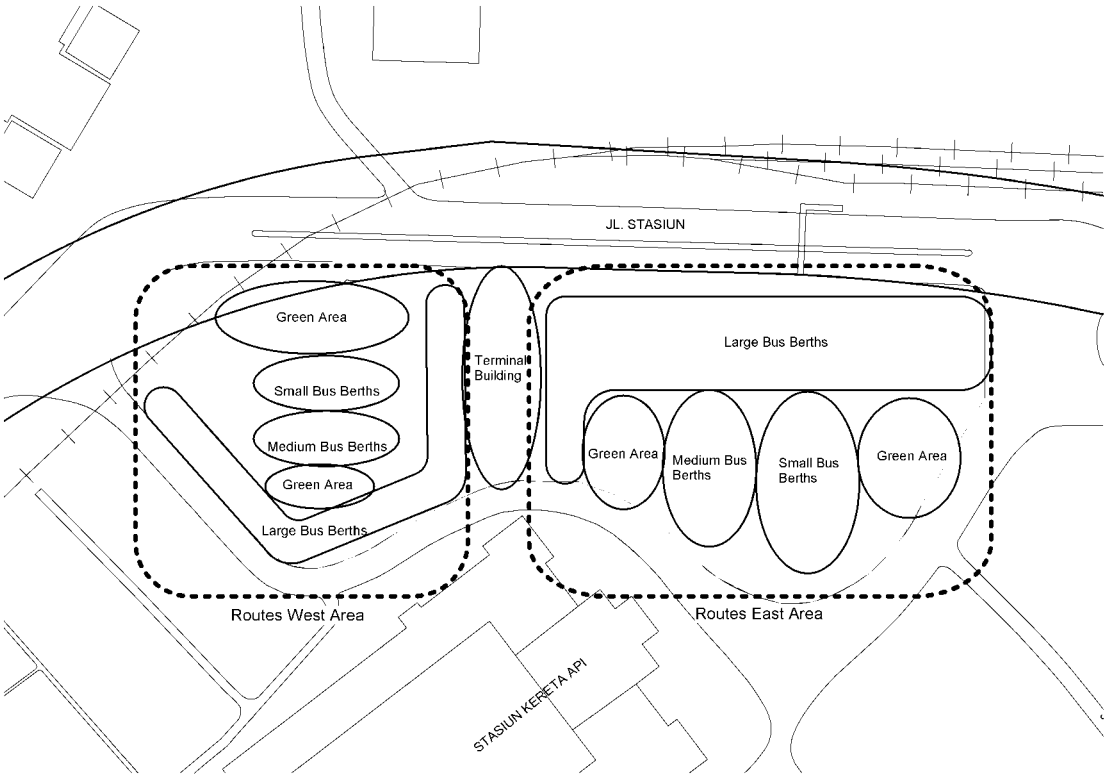


Figure 11-B-7 Proposed Spatial Structure for the Alternative-1

iii) Layout plan

540. Figure 11-B-8 shows a proposed layout plan of the alternative-1. The plan could contribute for the waiting buses with strict management for waiting time. In the layout, the facilities of bus berths for boarding/alighting and bus pools are combined functionally. As the site cannot provide enough space for the peak demand of buses, the facilities cannot be designed separately.

541. The circulation is confused on the layout if the facilities are separately allocated. First, the buses entered the terminal stop at the alighting berths. They should leave the alighting berths immediately after the passengers get off the buses, and come into the bus pools. The buses leave the pools for the boarding berths to take the passengers. The feature and space of existing terminal site oblige the bus circulation confused on this layout.

542. Therefore, the facilities of bus berths for boarding/alighting and bus pools are combined on the layout. The layout could provide simpler circulation and needs smaller space in the site.

543. Table 11-B-6 and Table 11-B-7 summarize the number of bus berths required in the plan. The peak bus demands are based on the traffic count survey in the study. The waiting times of buses are assumed from the time to be required for the boarding/alighting and driving time in the terminal.

544. The information is back upped by the results of bus count survey in August 2002 (another JICA study, the Study on Integrated Transportation Master Plan for JABODETABEK Phase 2). Some figures of the peak demands were adjusted by temporary observation.

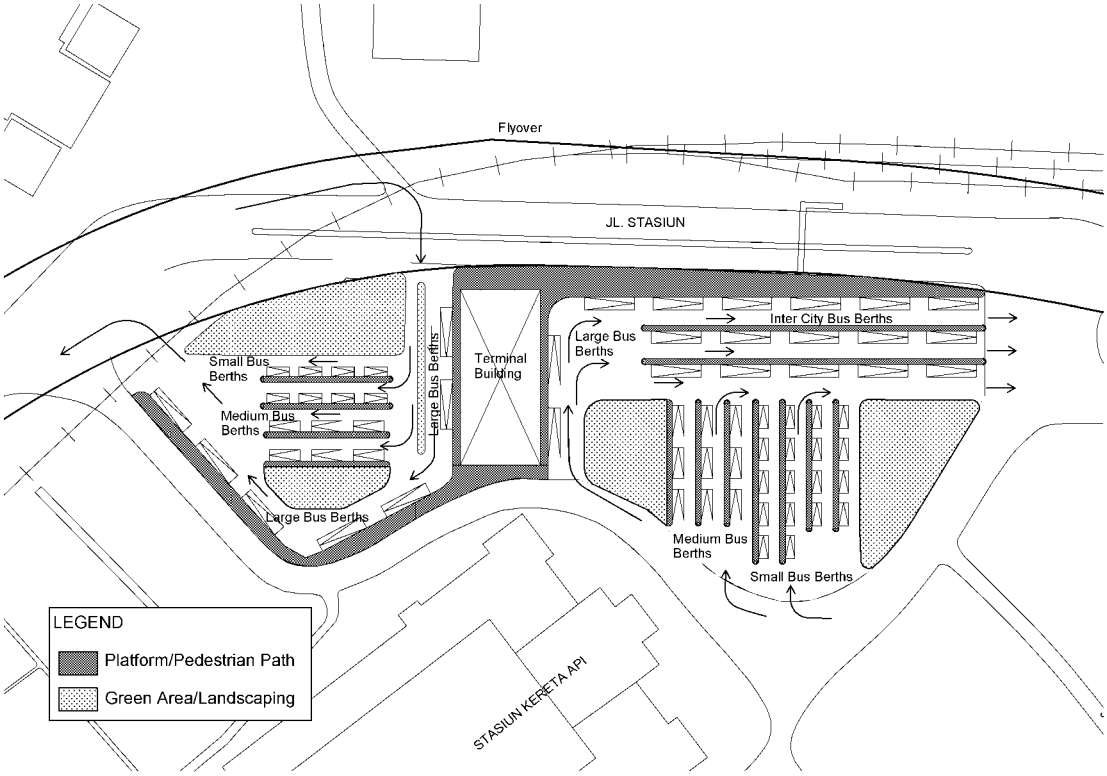


Figure 11-B-8 Proposed Layout Plan for the Alternative-1

Table 11-B-6 Facilities Required for Eastern Area

Area	Bus type	Berths requirement			Note
Area-E Inner city	Bus (L)	Average passengers on vehicle in the peak hour	Boarding	45 (pax/bus)	
			Alighting	45 (pax/bus)	
		Peak demand of buses	Departure	116 (bus/peak hour)	7:00
			Arrival	49	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		22 (bus/berth/hour)	
		Berths required	Boarding	6 (berths)	
			Alighting	3 (berths)	
		Waiting time (boarding/alighting)		420 (second/bus)	
		Waiting lot capacity		9 (bus/lot/hour)	
		Waiting lot required		13 lots	
	Bus (M)	Average passengers on vehicle in the peak hour	Boarding	11 (pax/bus)	
			Alighting	11 (pax/bus)	
		Peak demand of buses	Departure	95 (bus/peak hour)	7:00
			Arrival	117	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		27 (bus/berth/hour)	
		Berths required	Boarding	4 berths	
			Alighting	5 berths	
		Waiting time (boarding/alighting)		284 (second/bus)	
		Waiting lot capacity		13 (bus/lot/hour)	
		Waiting lot required		9 lots	
	Bus (S)	Average passengers on vehicle in the peak hour	Boarding	10 (pax/bus)	
			Alighting	10 (pax/bus)	
		Peak demand of buses	departure	400 (bus/peak hour)	7:00
			arrival	275 (bus/peak hour)	7:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		60 (second/bus)	
		Boarding/Alighting berth capacity		51 (bus/berth/hour)	
		Berths required	Boarding	8 berths	
			Alighting	6 berths	
		Waiting time (boarding/alighting)		160 (second/bus)	
		Waiting lot capacity		23 (bus/lot/hour)	
		Waiting lot required		18 lots	
Inter city	Bus (L)	Average passengers on vehicle in the peak hour	Boarding	15 (pax/bus)	
			Alighting	15 (pax/bus)	
		Peak demand of buses	departure	19 (bus/peak hour)	8:00
			arrival	19	
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		27 (bus/berth/hour)	
		Berths required	Boarding	1 berth	
			Alighting	1 berth	
		Waiting time (boarding/alighting)		900 (second/bus)	15 minutes
		Waiting lot capacity		4 (bus/lot/hour)	
		Waiting lot required		5 lots	

Source: JICA Study Team

Table 11-B-7 Facilities Required for Western Area

Area	Bus type	Berths requirement			Note
Area-W	Bus (L)	Average passengers on vehicle in the peak hour	Boarding	54 (pax/bus)	
			Alighting	54 (pax/bus)	
		Peak demand of buses	departure	51 (bus/peak hour)	10:00
			arrival	23 (bus/peak hour)	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		21 (bus/berth/hour)	
		Berths required	Boarding	3 berths	
			Alighting	2 berths	
		Waiting time (boarding/alighting)		456 (second/bus)	
		Waiting lot capacity		8 (bus/lot/hour)	
		Waiting lot required		7 lots	
	Bus (M)	Average passengers on vehicle in the peak hour	Boarding	15 (pax/bus)	
			Alighting	15 (pax/bus)	
		Peak demand of buses	departure	43 (bus/peak hour)	10:00
			arrival	37 (bus/peak hour)	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		27 (bus/berth/hour)	
		Berths required	Boarding	2 berths	
			Alighting	2 berths	
		Waiting time (boarding/alighting)		300 (second/bus)	
		Waiting lot capacity		12 (bus/lot/hour)	
		Waiting lot required		4 lots	
	Bus (S)	Average passengers on vehicle in the peak hour	Boarding	9 (pax/bus)	
			Alighting	9 (pax/bus)	
		Peak demand of buses	departure	157 (bus/peak hour)	16:00
			arrival	104 (bus/peak hour)	7:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		60 (second/bus)	
		Boarding/Alighting berth capacity		52 (bus/berth/hour)	
		Berths required	Boarding	4 berths	
			Alighting	2 berths	
		Waiting time (boarding/alighting)		156 (second/bus)	
		Waiting lot capacity		23 (bus/lot/hour)	
		Waiting lot required		7 lots	

Source: JICA Study Team

b) Alternative-2

i) Circulation

545. Simple and separated circulation can be planned to prevent crossing the routes east and west in the alternative. For the routes east, the circulation of small buses can be separated partially from the one of medium large buses. Figure 11-B-9 shows the circulation policy of improvement. The former east-west street in front of the station could be used for intra terminal way. Some local traffic also could use the street.

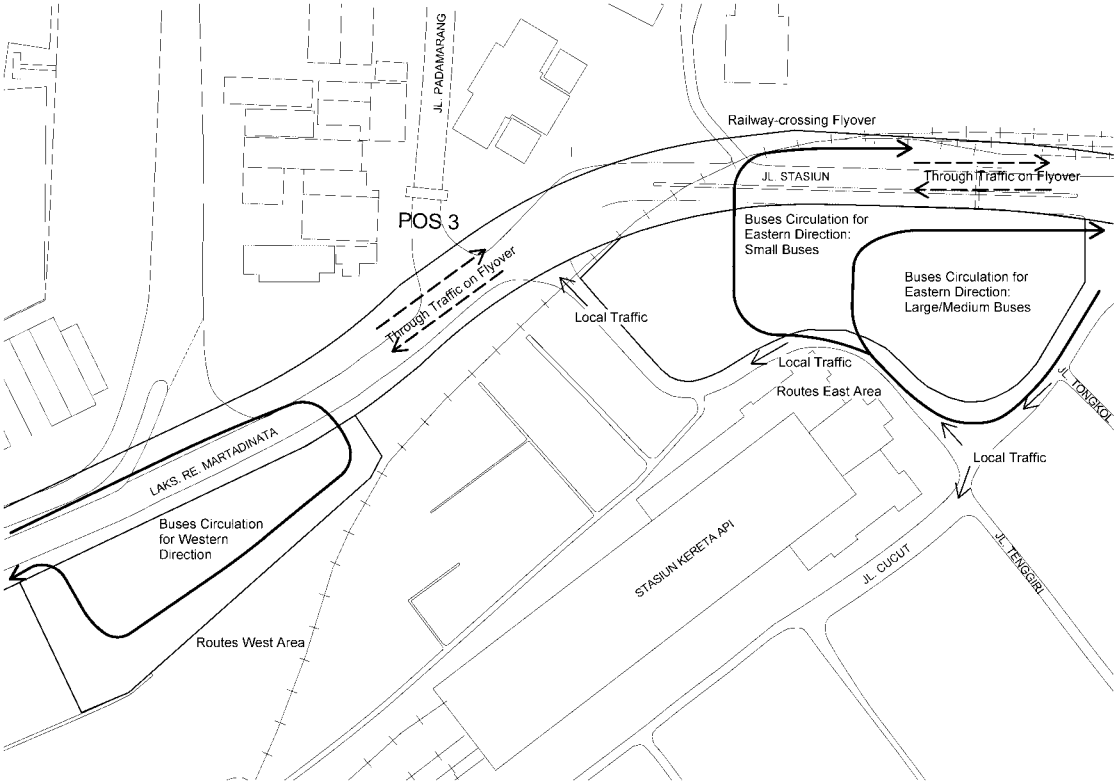


Figure 11-B-9 Proposed Circulation Policy for the Alternative-2

ii) Spatial use

546. The policies of spatial using are:

- The access way over the west and east areas is provided with space for stall venders,
- The park is used for the terminal,
- Kiosks are included in the terminal buildings,
- Bus pools are provided with strict time management,
- Boarding/alighting berths are provided, and
- Platforms for passengers are provided.

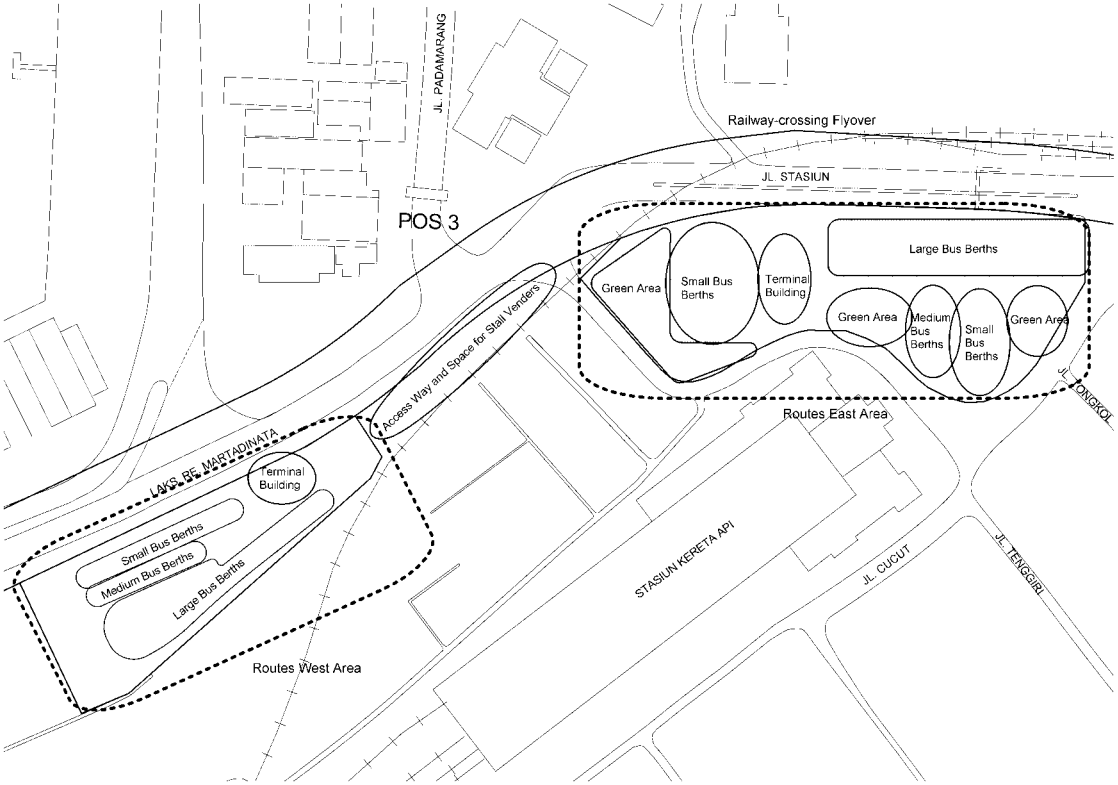


Figure 11-B-10 Proposed Spatial Structure for the Alternative-2

iii) Layout plan

547. Figure 11-B-11shows a proposed layout plan of the alternative-2. The facilities of bus berths for boarding/alighting and bus pools are also combined on the layout as well as the alternative-1. On the alternative-2, the allocation of the western area in the edge of container yard can provide more space and longer waiting time for the buses than the alternative-1. The circulation of buses for the west needs not pass over the railway on the layout plan.

548. Table 11-B-8 and Table 11-B-9 summarize the number of bus berths required for the alternative. The waiting times of buses are also assumed from rather longer time to be required for the boarding/alighting and driving time in the terminal than the alternative-1.

549. The peak bus demands are based on the same surveys and observation as well as the alternative-1.

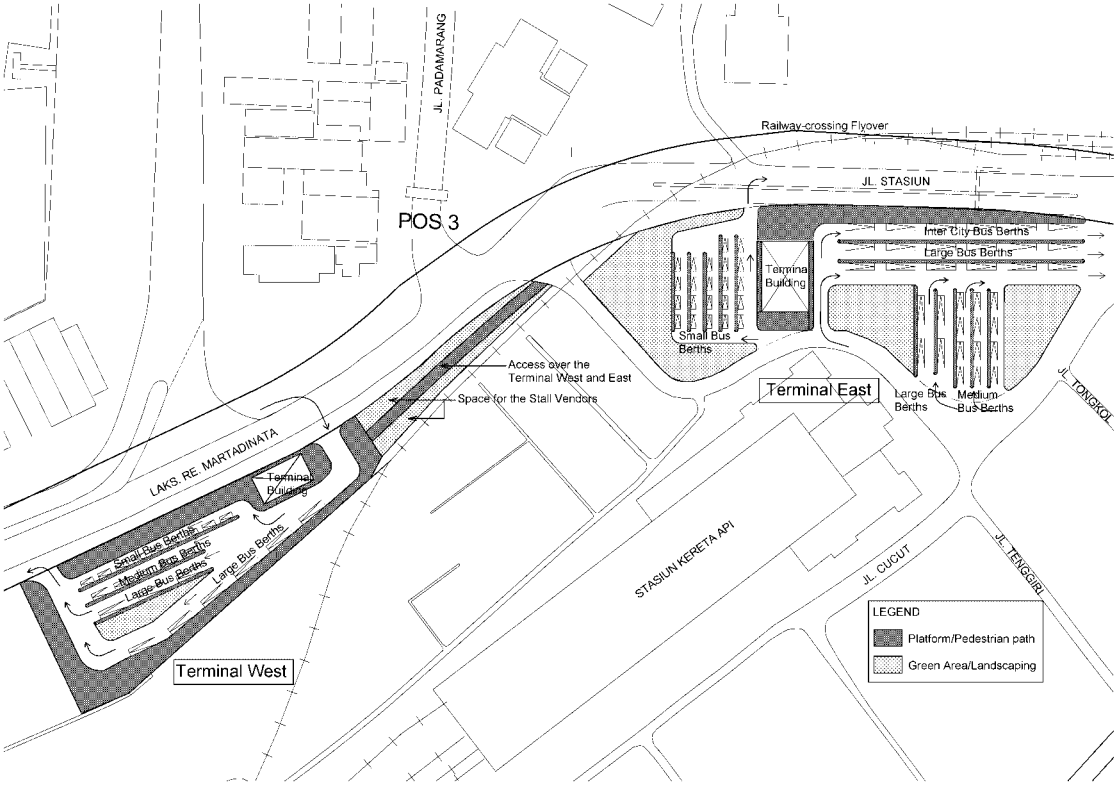


Figure 11-B-11 Proposed Layout Plan for the Alternative-2

Table 11-B-8 Facilities Required for Eastern Area

Area	Bus type	Berths requirement			Note
Area-E Inner city	Bus (L)	Average passengers on vehicle in the peak hour	Boarding	45 (pax/bus)	
			Alighting	45 (pax/bus)	
		Peak demand of buses	Departure	116 (bus/peak hour)	7:00
			Arrival	49	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		22 (bus/berth/hour)	
		Berths required	Boarding	6 (berths)	
			Alighting	3 (berths)	
		Waiting time (boarding/alighting)		525 (second/bus)	
		Waiting lot capacity		7 (bus/lot/hour)	
		Waiting lot required		17 lots	
	Bus (M)	Average passengers on vehicle in the peak hour	Boarding	11 (pax/bus)	
			Alighting	11 (pax/bus)	
		Peak demand of buses	Departure	95 (bus/peak hour)	7:00
			Arrival	117	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		27 (bus/berth/hour)	
		Berths required	Boarding	4 berths	
			Alighting	5 berths	
		Waiting time (boarding/alighting)		355 (second/bus)	
		Waiting lot capacity		10 (bus/lot/hour)	
		Waiting lot required		12 lots	
	Bus (S)	Average passengers on vehicle in the peak hour	Boarding	10 (pax/bus)	
			Alighting	10 (pax/bus)	
		Peak demand of buses	departure	400 (bus/peak hour)	7:00
			arrival	275 (bus/peak hour)	7:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		60 (second/bus)	
		Boarding/Alighting berth capacity		51 (bus/berth/hour)	
		Berths required	Boarding	8 berths	
			Alighting	6 berths	
		Waiting time (boarding/alighting)		200 (second/bus)	
		Waiting lot capacity		18 (bus/lot/hour)	
		Waiting lot required		22 lots	
Inter city	Bus (L)	Average passengers on vehicle in the peak hour	Boarding	15 (pax/bus)	
			Alighting	15 (pax/bus)	
		Peak demand of buses	departure	19 (bus/peak hour)	8:00
			arrival	19	
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		27 (bus/berth/hour)	
		Berths required	Boarding	1 berth	
			Alighting	1 berth	
		Waiting time (boarding/alighting)		900 (second/bus)	15 minutes
		Waiting lot capacity		4 (bus/lot/hour)	
		Waiting lot required		5 lots	

Source: JICA Study Team

Table 11-B-9 Facilities Required for Western Area

Area	Bus type	Berths requirement			Note
Area-W	Bus (L)	Average passengers on vehicle in the peak hour	Boarding	54 (pax/bus)	
			Alighting	54 (pax/bus)	
		Peak demand of buses	departure	51 (bus/peak hour)	10:00
			arrival	23 (bus/peak hour)	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		21 (bus/berth/hour)	
		Berths required	Boarding	3 berths	
			Alighting	2 berths	
		Waiting time (boarding/alighting)		570 (second/bus)	
		Waiting lot capacity		6 (bus/lot/hour)	
		Waiting lot required		9 lots	
	Bus (M)	Average passengers on vehicle in the peak hour	Boarding	15 (pax/bus)	
			Alighting	15 (pax/bus)	
		Peak demand of buses	departure	43 (bus/peak hour)	10:00
			arrival	37 (bus/peak hour)	8:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		120 (second/bus)	
		Boarding/Alighting berth capacity		27 (bus/berth/hour)	
		Berths required	Boarding	2 berths	
			Alighting	2 berths	
		Waiting time (boarding/alighting)		375 (second/bus)	
		Waiting lot capacity		10 (bus/lot/hour)	
		Waiting lot required		5 lots	
	Bus (S)	Average passengers on vehicle in the peak hour	Boarding	9 (pax/bus)	
			Alighting	9 (pax/bus)	
		Peak demand of buses	departure	157 (bus/peak hour)	16:00
			arrival	104 (bus/peak hour)	7:00
		Service time	Boarding	1.0 (second/pax)	
			Alighting	1.0 (second/pax)	
		Driving time in the terminal		60 (second/bus)	
		Boarding/Alighting berth capacity		52 (bus/berth/hour)	
		Berths required	Boarding	4 berths	
			Alighting	2 berths	
		Waiting time (boarding/alighting)		195 (second/bus)	
		Waiting lot capacity		18 (bus/lot/hour)	
		Waiting lot required		9 lots	

Source: JICA Study Team

4) Recommendation

550. In the primary comparison of the alternatives, the alternative-1 and alternative-2 are recommended for the study. After the layout studies mentioned above, the alternative-2 is recommended for the improvement. The major reasons are:

- Avoidance of passing over the rail way (for the buses of routes west),
- Avoidance of congestion with the local traffic (mainly motorcycles) for the buses of routes west,
- Simultaneous project implementation and the bus operation (with the relocation of routes west),
- Preparation of more space (the additional space could be negotiated with PT. KAI after expiration of the contract with the private company in the container yard), and

- Preparation of site for the stall vendors (on the access way of terminal west and east).

5) Cost estimation

551. Table 11-B-10 shows a total project cost for the improvement of bus terminal (the alternative-2). The total cost is estimated at about 35,000 million rupiah excluding VAT. The land compensation cost is not included in the estimation because the cost should be negotiated with PT. KAI.

Table 11-B-10 Cost Estimate

	Items	Unit	Quantity	Amount (1,000 Rp.)	Remark
1.	Project Cost				
(1)	Grading/Site Clearance	m^2	23,150	3,413,259	
(2)	Transportation Facilities (Pavement for berth/waiting pool/drive way, Platform, Pedestrian Path)	m^2	16,700	23,268,401	Including the W-E Access site and Utilities
(3)	Terminal building (Offices, Ticket booths, Equipment, Services: Kiosks, Coffee shops, Equipment)	m^2	2,000	7,372,050	RC/two storied, including utilities, furnishings
(4)	Landscape (Land formation, planting, Rest facilities)	m^2	5,450	843,731	Including the W-E Access site and Utilities
2.	Total Project Cost			34,897,442	Excluding land compensation
	VAT (10%)			3,489,744	

Source: JICA Study Team
Note: The cost includes direct/indirect construction costs, project related expenses and administration cost.

6) Implementation schedule

552. The target year to complete the implementation is the year 2012 in the study. The project should be completed with the construction of railway-passing flyover on Jl. Martadinata and Jl. Stasiun. The implementation schedule of project is shown in the next table.

553. The improvement of west terminal should be implemented at first. After the relocation of the routes west, the improvement can be started at the existing site. Temporal use of the container yard is conceivably suggested for another idea.

Table 11-B-11 Implementation Schedule

Work Item	2010	2011	2012
Coordination/negotiation for the site			
Survey/Detail Design			
Mobilization and Demobilization			
Grading/Site Clearance			
Construction Works			

Source: JICA Study Team

7) Implementation bodies

554. For the implementation of project, relevant administrative organizations have roles and tasks as follows.

- Study and detail design of the bus terminal: Jakarta Utara municipality technically advised by the Ministry of Settlement and Regional Infrastructure (Ministry of Public Works) and UPT Terminal

- Project implementation: Jakarta Utara municipality
- Management/operation of the bus terminal: directly managed by the Suku Dinas Perhubungan Wilayah Kota Jakarta Utara under the Dinas Perhubungan DKI
- Possible land provider: Jakarta Utara municipality and PT. KAI (need a negotiation for lease of the container yard)

8) Issues and recommendations

555. The issues are found out from the study to implement the project, and recommendations in case for the relocation of the bus terminal as follows.

a) For implementation

- Need consensus to use the park area with the Jakarta Utara Municipality
- Need consensus with the borrowers of kiosks and the stall vendors for relocation
- Need an alternate site for temporally work to operate the buses under the re-development or improvement activities.

b) Relocation of the bus terminal

- Need an integrated transportation study and site location study
- Need a bus passenger demand (boarding/alighting) forecast for the bus routes
- Need a re-arrangement of the bus routes and the number of operating buses
- However, a fundamental issue is the existing operation system of buses like taxies without time management. As long as this situation continues, the bus terminal could not provide space enough for the buses even on new plans. The buses could increase according as space provided by the terminal in the plans.

11-C. ACCESS ROAD FOR BOJONEGARA NEW PORT

11-C-1 Existing Access Road Condition

1) Road Facilities

556. Typically the existing road varies in width between 5m and 7m. The first 2.5 km from the Cilegon –Bojonegara arterial road has recently been resurfaced and is in good conditions. (Figure 11-C-1 to Figure 11-C-4)

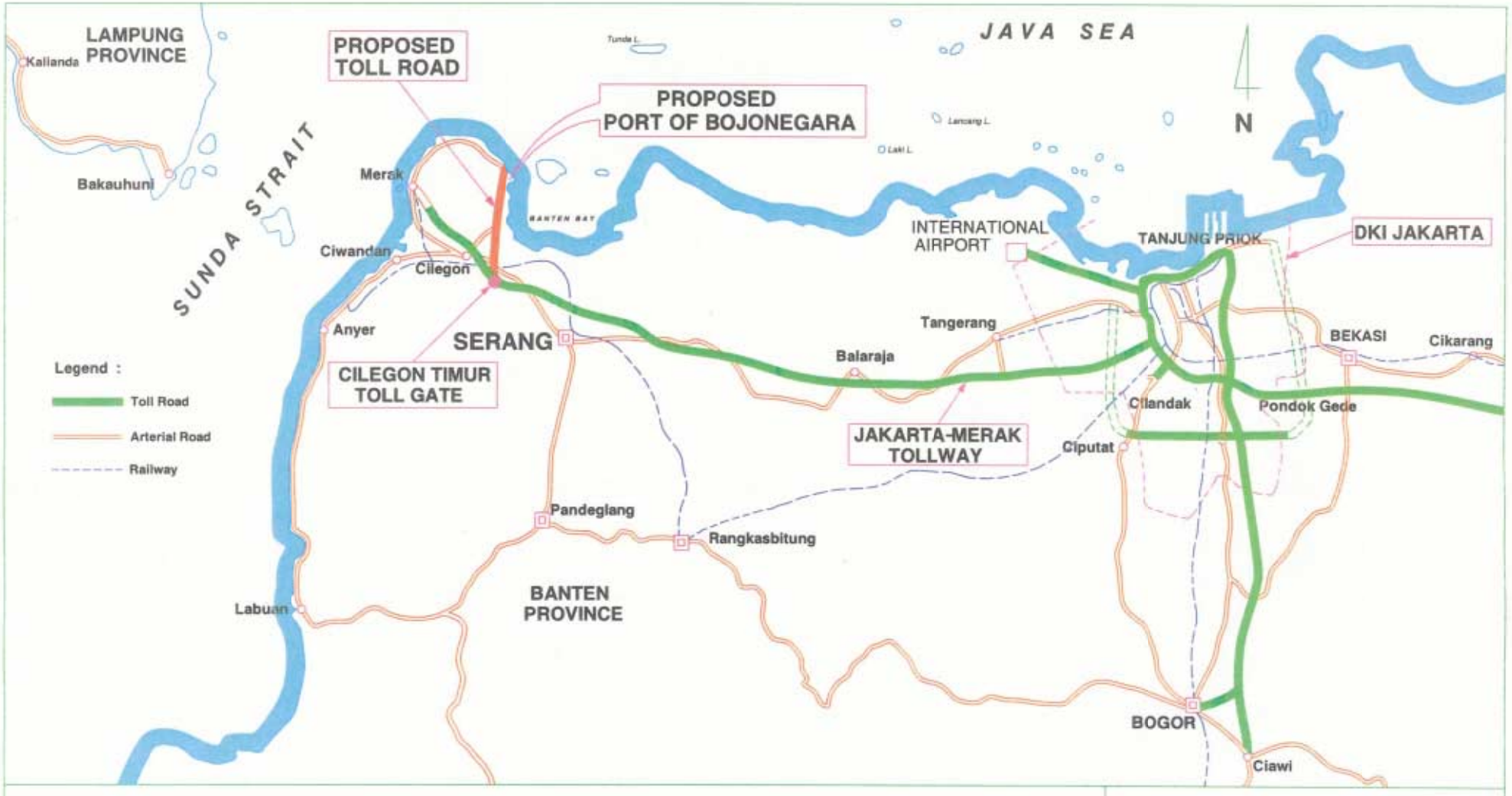
Figure 11-C-1 Location Map

Figure 11-C-2 Development Plan of Bojonegara Port and Area

Figure 11-C-3 Improvement Alignment of Existing Road 1

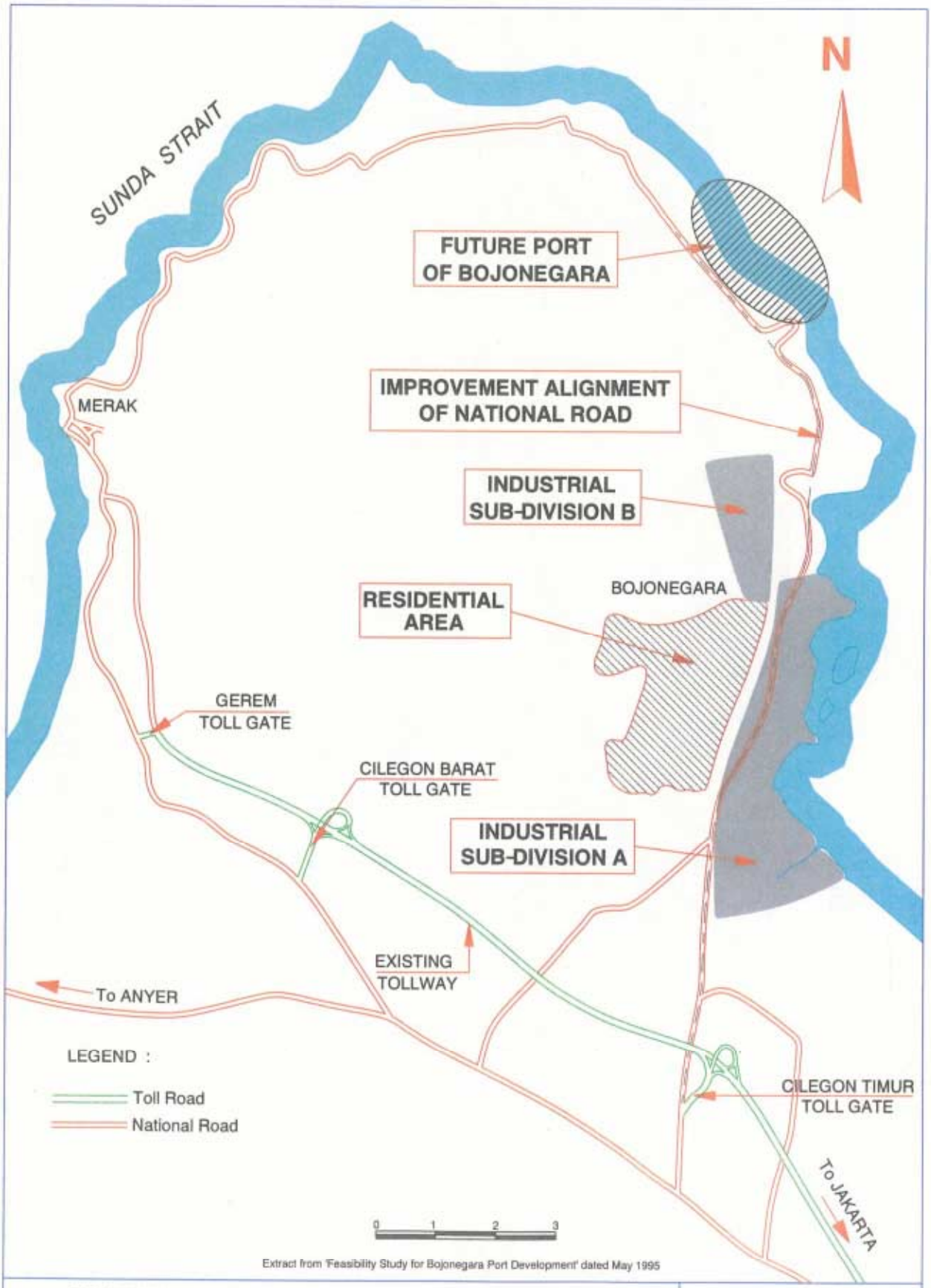
Figure 11-C-4 Improvement Alignment of Existing Road 2

557. The topography is flat and either side of the road is mixture of paddy and industry. The bridge over the Jakarta – Merak Toll way is narrow with poor sight lines and would be dangerous for the heavy container trucks.



PRE - FEASIBILITY STUDY FOR BOJONEGARA TOLLWAY

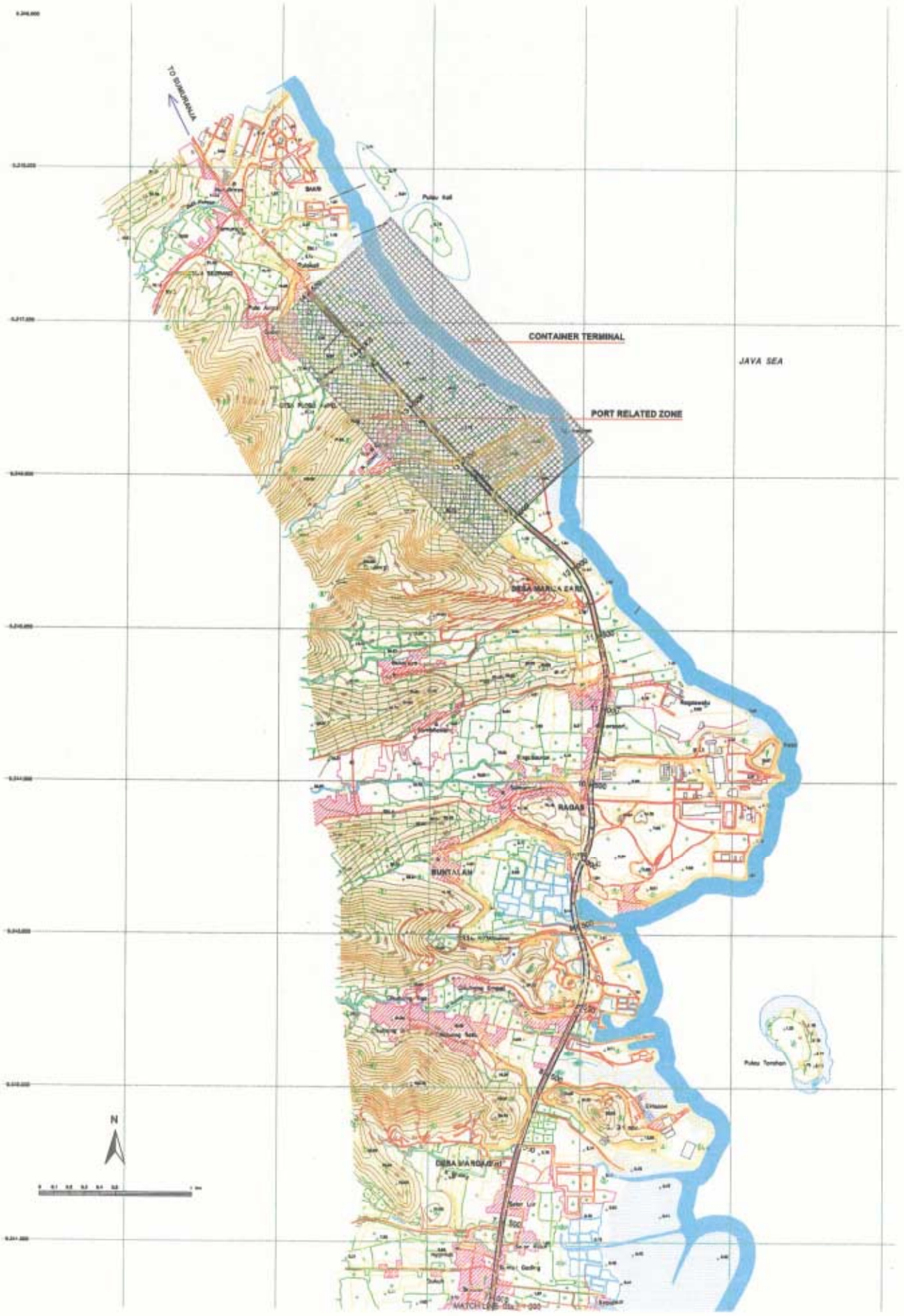
LOCATION PLAN



THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

DEVELOPMENT PLAN OF BOJONEGARA PORT AND AREA


DESA BOJONEGARA
TELUK BANTEN
DESA MANGUNEGARA
DESA TERATE
TO MERAK
CILEGON TIMUR INTERCHANGE
DESA BERDAMU
TOLL ROAD TO JAKARTA
NATIONAL ROAD TO CILEGON
NATIONAL ROAD TO SERANG
N


TO SUMURAYA
CONTAINER TERMINAL
JAVA SEA
PORT RELATED ZONE
RABAB
SUNTALAM
N

558. The steel truss bridge over the Cilegon River is currently closed for repairs and traffic uses a narrow truss bridge located immediately downstream.

559. The next 2.5 km from the bridge pass through generally flat terrain interspersed with factories on the eastside and paddy and occasional concrete walls demarcating future industrial sites on the west side. Further north, the topography becomes hillier on the west of the existing road. By 7.5 km to 9.5 km the surrounding terrain has developed into rugged hills and several quarries along the route.

560. There is a village called Ragus. At this village road makes a "horseshoe" bend through a very congested residential area. Further north, the road follows a narrow coastal belt between the sea and the hills. Immediately south of the planned port site, road skirts around a rocky promontory.

561. The possible road routes as an access road from the Cilegon Timur I/C on the Jakarta – Merak Toll way to the Bojonegara site were studied. The nature and impacts of existing road condition is summarized in the Table 11-C-1.

Table 11-C-1 Existing Road Condition

Station	Area/Others	Pavement Width	Surface Condition	Road Side Condition	
				Left Side	Right Side
Sta. 0	Desa Serdang	7	Good	Taman Cilegon, storage yard	Paddy
Sta. 1	Tollway Crossing	6	Good	Storage yard for heavy construction equipment	Paddy
Sta. 1 + 500	-	7	Good	-	Galvanized factory
Sta. 2	Kerang Tengah	6	Good	Dense housing area	Dense housing area
Sta. 2 + 500	Cilegon River Bridge	-	Normal	Newly constructed bridge	Wooden slab bridge
Sta. 3	-	6	Bad	Paddy	Paddy
Sta. 4	Kali Cibako Bridge	-	-	Paddy	Fabrication yard
Sta. 4 + 500	Desa Bojonegara	6	Good	School (SDN, SD)	Paddy
Sta. 5	-	6	Good	Dense housing area	Dense housing area
Sta. 6	Kali Ciranggon	6	-	-	-
Sta. 6 + 500	Kali Gedong	6	-	-	-
Sta. 7	Bokelor	-	Good	Housing area	Sugar Factory
Sta. 8	Margagiri	-	Normal	Paddy & Industrial quarries	Paddy & Industrial quarries
Sta. 9	-	5	Normal	Industrial quarries	Paddy
Sta. 9 + 700 ~ Sta. 10+500	Shortcut	-	Bad	(Narrow coastal belt)	
		-	-	Steep hill	Steep hill
Sta. 11	Ragas	6	Normal	Housing area	Paddy
Sta. 12 ~ Sta. 12+600	Shortcut	-	-	Quarry yard	Quarry yard
		-	-	Steep hill	Steep hill
Sta. 13		6	Normal	Paddy	Paddy

2) Traffic Flow and Volume

562. The daily traffic volume of the existing access road from the Cilegon Timur I/C of the Jakarta-Merak Toll way is shown in the following table based on the traffic counting survey in October 2002.

Table 11-C-2 Daily Traffic Volume of Access Road around Bojonegara Area

Vehicle Type	Daily Traffic Volume of Local Traffic			
	Cilegon/Bojonegara		Merak/Bojonegara	
Direction of flow	C-B*)	B-C*)	M-B*)	B-M*)
Motor Cycle	1,674	1,833	402	397
Passenger Car	364	486	132	141
Small Bus	475	488	16	10
Medium/Large Bus	103	77	37	29
Pick Up	140	207	59	56
Medium Truck	235	238	24	43
Large Truck	275	282	45	43
Total	**3,266**	**3,611**	**715**	**719**

*) The directional initial means that C: Cilegon, B: Bojonegara, M: Merak.

11-C-2 Traffic Forecast of Vehicles to the Port

1) Passenger Car Equivalent

563. Each vehicle was assigned a passenger car equivalent. The PCU factor to use for converting the total number of each type of vehicle recorded in the traffic counting survey were taken from the category of the regional Inter urban road of the IHCM 1997 as follows:

Vehicle Type	Equivalent PCU Factor
Passenger Car/Light Vehicle	1.0
Medium Heavy Vehicle	1.3
Large Bus	1.5
Large Truck	2.5
Motor Cycle	0.5

2) Growth Rate of Local Traffic by Vehicle Type

564. Local Traffic Volume is estimated by applying the estimated growth rate of vehicle type obtained from the Heavy Loaded Road IP Master Plan Review Study dated December 2001 as follows:

Table 11-C-3 Growth Rate (%) of Vehicle Type from 2005 to 2025

Vehicle Type	2005	2010	2015	2020-25
Passenger Car	3.71	4.42	5.34	4.21
Small Bus	3.79	4.91	6.02	6.32
Medium/large Bus	4.13	4.95	5.82	5.56
Medium Truck	4.10	5.16	6.28	6.74
Large Truck	3.44	4.37	5.42	5.24

3) Traffic Forecast through the Planned Access Road to the Bojonegara

565. The provincial government of Banten proposed to the central government (Kimpraswil) to the existing provincial arterial road to be a national road.

566. The traffic forecast were estimated based on the assumption that in the long term master plan till 2025, a new sea port consisting of 4-container terminal, 1- bulk cargo terminal, 3-general cargo berths including 1-multipurpose berth and 1- Ro-Ro terminal would be developed gradually. For the short term development plan it is planned that one container terminal and one

Ro-Ro terminal and 1- multipurpose berth would be operational from 2012. The port related traffic would be generated according to the correlated factors of cargo and number of vehicle type.

567. The estimated traffic volume for short and long-term plan would use the planned arterial road as an access road to the Bojonegara new port area.

568. The traffic forecast of port related traffic is estimated based on the following cargo demand forecast through the port at the target years:

Table 11-C-4 Cargo Demands Forecast through Bojonegara

Commodity	Year	
	2012	2025
Container (Ton)	612,000	1,140,000
Container (TEU)	54,000	100,000
General cargo/bag cargo (ton)	753,000	1,601,000
Ro-Ro Terminal, Cargo (ton)	4,801,000	15,442,000
Number of Vehicles (unit)	1,391,000	4,475,000
Bulk cargo (ton)	500,000	700,000

569. The local traffic as estimated for the short and long term development plan from the Cilegon Timur I/C and Bojonegara port development site would use the planned arterial road. The local traffic would increase with the estimated growth rate of target year by the development of the regional industrial estates. 50% of the traffic currently traveling via Merak ferry terminal to destinations west of the proposed port location (i.e. Samuranja) would use the planned arterial road. Assuming that a seaport will be developed and operational from 2012. The traffic forecast generated by a new seaport development will use the proposed arterial road.

570. The traffic volume of 2002 as expressed by PCU for both directions was based on the traffic counting survey which was carried out for 16 hrs, is converted to 24 hrs by multiplying factor of 1.097 to the daily traffic volume.(Table 11-30).

Table 11-C-5 Traffic Forecast by the Bojonegara Port Development

Year	2002	2012		2025	
Vehicle Type	Local Traffic	Local Traffic	Port Related Traffic	Local Traffic	Port Related Traffic
Motor Cycle	2,143	3,217	0	5,397	0
Car	2,597	3,900	773	6,543	1,449
Medium Bus	722	1,129	4	2,132	8
Medium Truck	180	270	215	594	459
Large Bus	143	223	12	422	21
Large Truck	1,648	2,455	1,185	4,483	2,108
Sub Total	7,433	11,194	2,189	19,570	4,045
Total (pcu/day)	7,433	13,383		23,615	
PCU/Hr (Peak hour)	721	1,298		2,291	

11-C-3 Development Plan for Access Road

571. At present the existing road is the provincial road, the provincial government of Banten proposed to the central government to upgrade the existing arterial road to the national road. A new alignment of the access road should be studied by widening the existing access road and by

minimizing the round-about way of the residential and factories areas. The access road will be developed by improving the existing arterial road as follows: A 2-lanes upgraded arterial road would be adequate for the local and port traffic until 2016. After 2016, widening to 4 lanes would be required.

572. It would be considered that a new port and proposed access road constructed simultaneously. An extensive improvement will be required to the existing arterial road for running heavy loaded trucks, including the construction of sections of new road to by-pass congested areas.

573. The design criteria of marine and civil works conform to the following design standards and reference:

- Indonesian Standard PBI (Peraturan Beton Indonesia 90-91) 80, Indonesian Concrete Design;
- Standard National Indonesia 1991-63 Design Standards of Concrete Structure;
- Standards Design Criteria for Ports in Indonesia, 1984;
- Technical Standards and Commentaries for Port and Harbor Facilities in Japan, 2002;
- Indonesia Highway Capacity Manual in 1997 Ministry of Highways and Public Works.

574. The geometric design standards for arterial road way of the access road development to the Bojonegara port area is described in Table 11-C-6.

Table 11-C-6 The Geometric Design Standards for Arterial Road

No.	Criteria	Unit	Type II, Class 1		
			Standard	Minimum	Recom-mended
1	Design speed	kph	60	-	60
2	Lane width	M	-	3.50	3.50
3	Median width	M	2.00	1.00	5.20*
4	Marginal strip of median	M	0.50	-	0.50
5	Right shoulder width	M	-	0.50	0.50
6	Left shoulder width (with or without side walk)	M	0.50	-	0.50
7	Side walk width	M	-	1.50	3.00
8	Stopping sight distance	M	-	75	75
9	Passing sight distance	M	350	250	250
10	Curve radius	M	200 (desirable)	150	200
11	Curve length (where intersection angle 'a' < 7 %)	M	-	700/a or 100	-
12	Cross fall	%	2	-	2
13	Curve not requiring transition	M	-	600	1,200
14	Curve not requiring super elevation	M	-	2,000	2,000
15	Lane widening	M	-	-	Not required
16	Max. gradient	%	5	-	5
17	Vertical curve radius	M			
	(a) Crest		2,000 (desirable)	1,400	2,000
	(b) Sag		1,500 (desirable)	1,000	1,500
18	Vertical curve length	M	50	-	50
19	Length of transition section	M		50	50

575. The typical cross-section for the planned access road as a new road is shown in Figure 11-C-5. It is planned to provide 2 lanes of the access road for the short term development plan. In order to facilitate future widening a 50m ROW is required. Such widening would utilize the median. The outside shoulder would have wide enough to accommodate immobilized vehicles without blocking the traffic lanes.

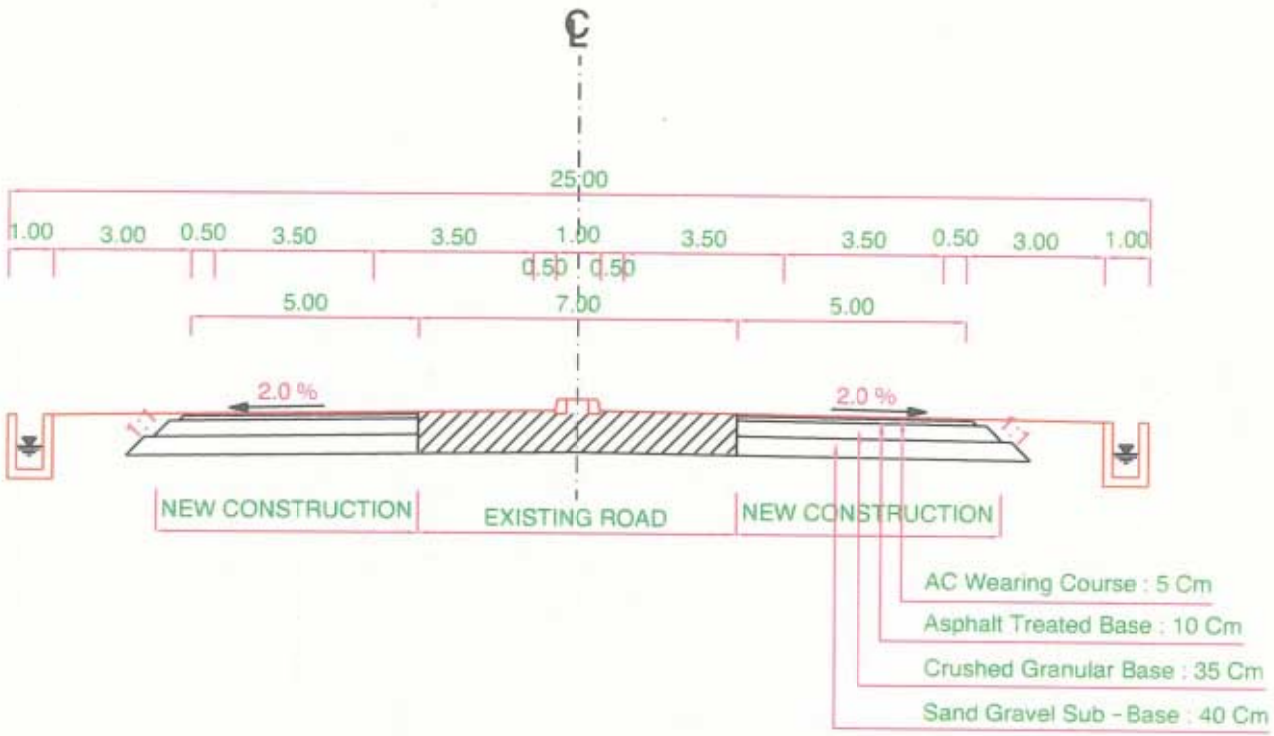
Figure 11-C-5 Typical Cross Section Arterial Road

576. Based on the design criteria, typical cross-section and site reconnaissance survey, proposed alignment was studied (Figure 11-C-5).

577. The pavement will be designed for 10-ton axle loads as recommended by the Heavy Loaded Road Improvement Program (HLRIP). The pavement structure is assumed to be similar to that used for Jakarta Inter Urban Toll way as follows:

- Asphalt Cement wearing course:50 mm
- Asphalt Cement binder course:100 mm
- Asphalt treated base: 350 mm
- Granular sub-base: 400 mm
- Select material for top of sub grade.

578. Grade-separated structures will be ultimately required where the new access road intersects the Jakarta-Merak Toll way and all river and road crossing. However the optimizing



PRE-FEASIBILITY STUDY FOR BOJONEGARA TOLLWAY

TYPICAL CROSS SECTION ARTERIAL ROAD

SCALE 1 : 150

number of grade-separations should be considered specially at the road crossing in the early stages of the development when traffic is not heavy, which could minimize the initial investment cost. The typical overpass structures will be constructed with PC-I Girder Bridge. Alternative steel design should be considered for major river crossings.

Figure 11-C-6 Bojonegara National Road Plan and Profile (1)

Figure 11-C-7 Bojonegara National Road Plan and Profile (2)

Figure 11-C-8 Bojonegara National Road Plan and Profile (3)

Figure 11-C-9 Bojonegara National Road Plan and Profile (4)

Figure 11-C-10 Bojonegara National Road Plan and Profile (5)

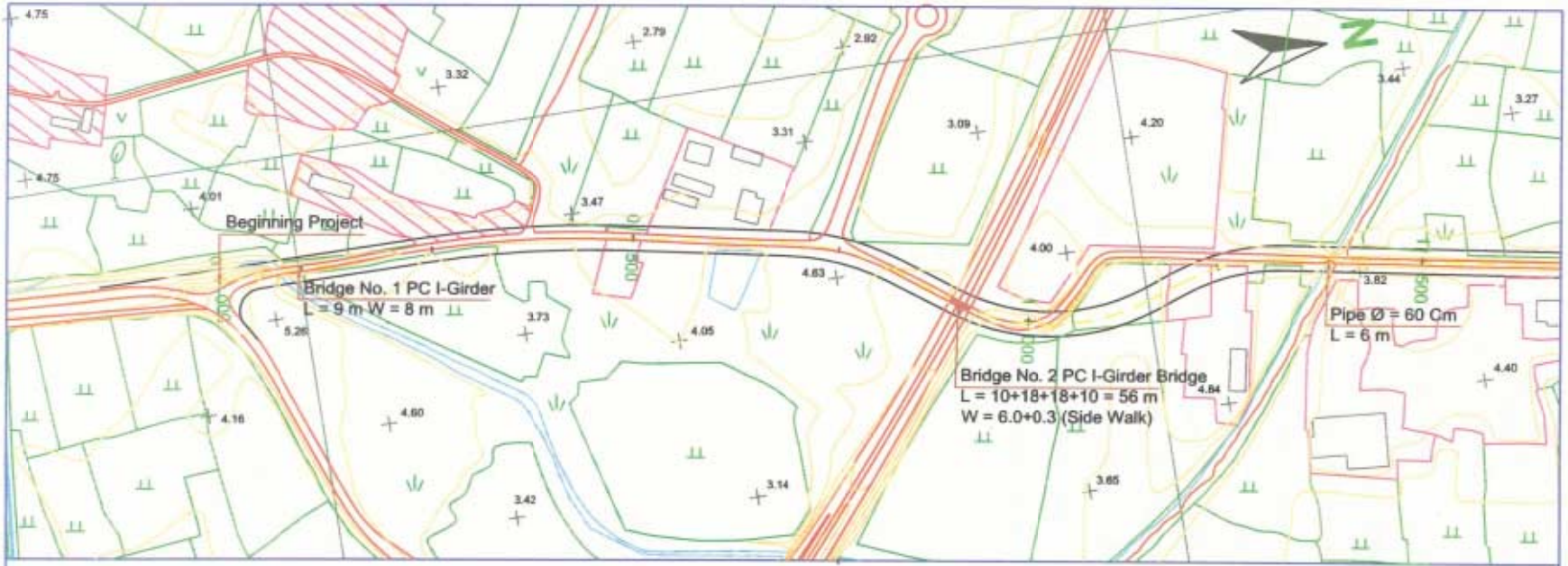
Figure 11-C-11 Bojonegara National Road Plan and Profile (6)

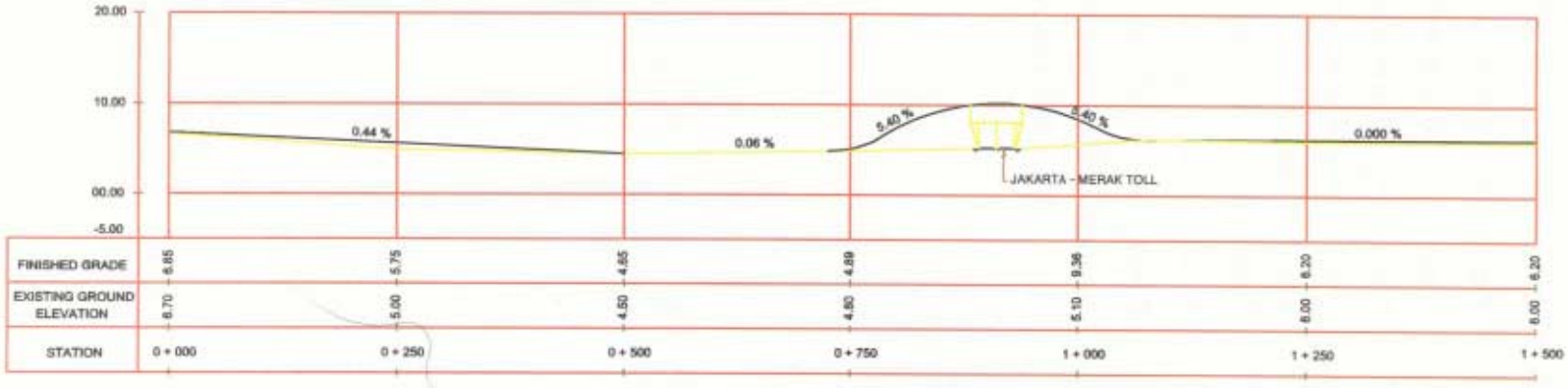
Figure 11-C-12 Bojonegara National Road Plan and Profile (7)

Figure 11-C-13 Bojonegara National Road Plan and Profile (8)

Figure 11-C-14 Bojonegara National Road Plan and Profile (9)

Figure 11-C-15 Bojonegara National Road Plan and Profile (10)

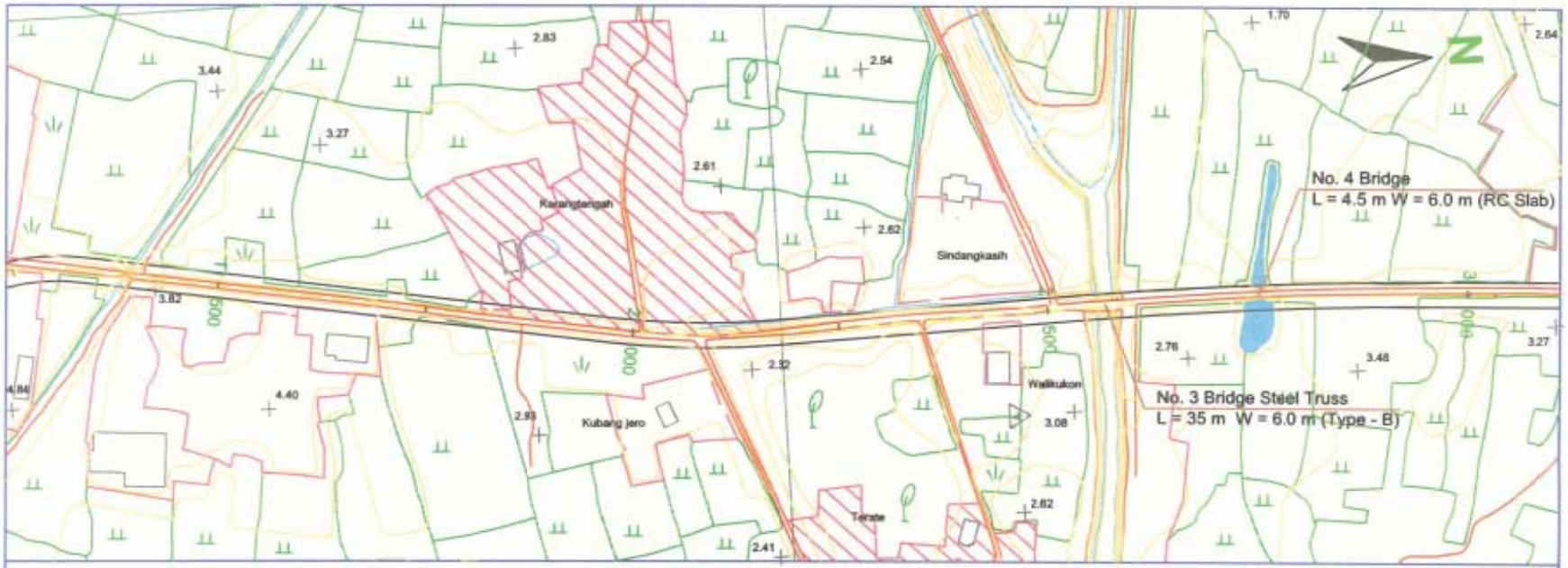


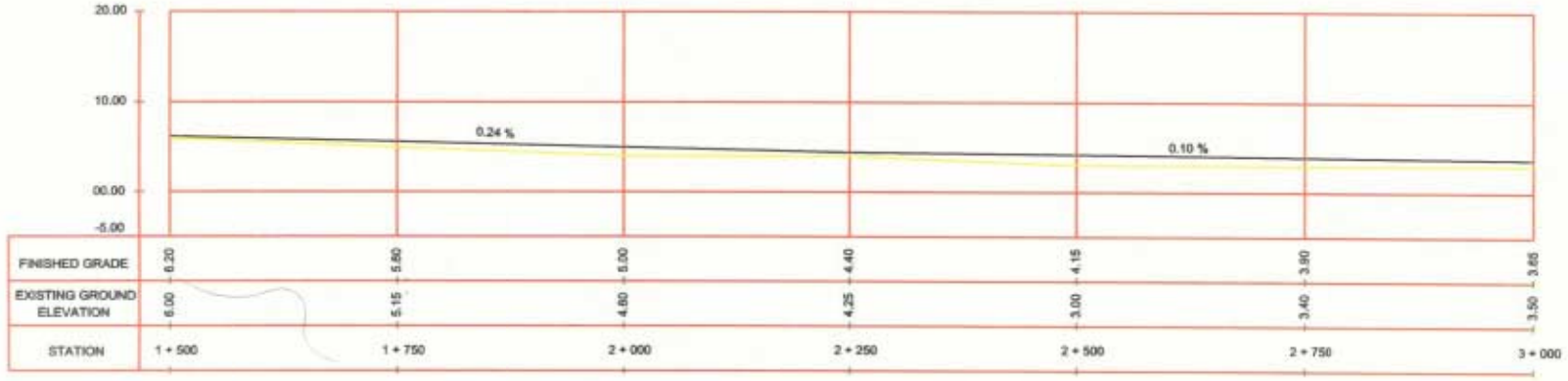


THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 0+000 ~ STA. 1+500



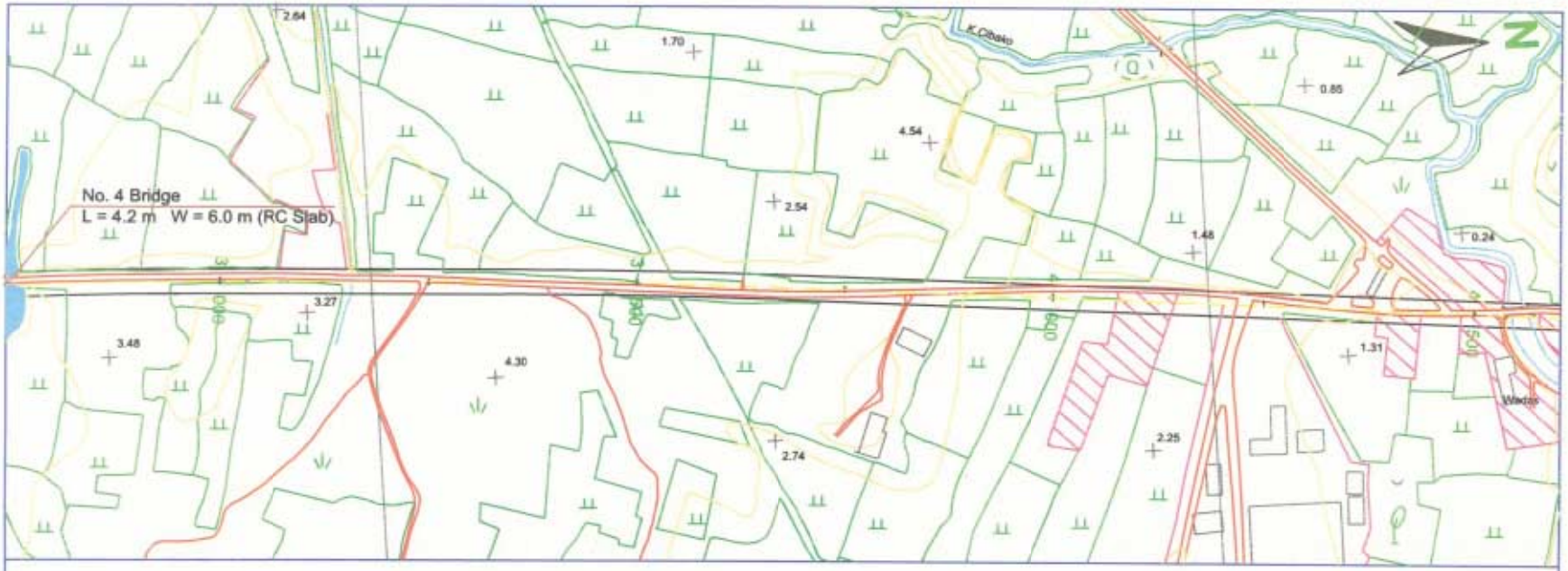


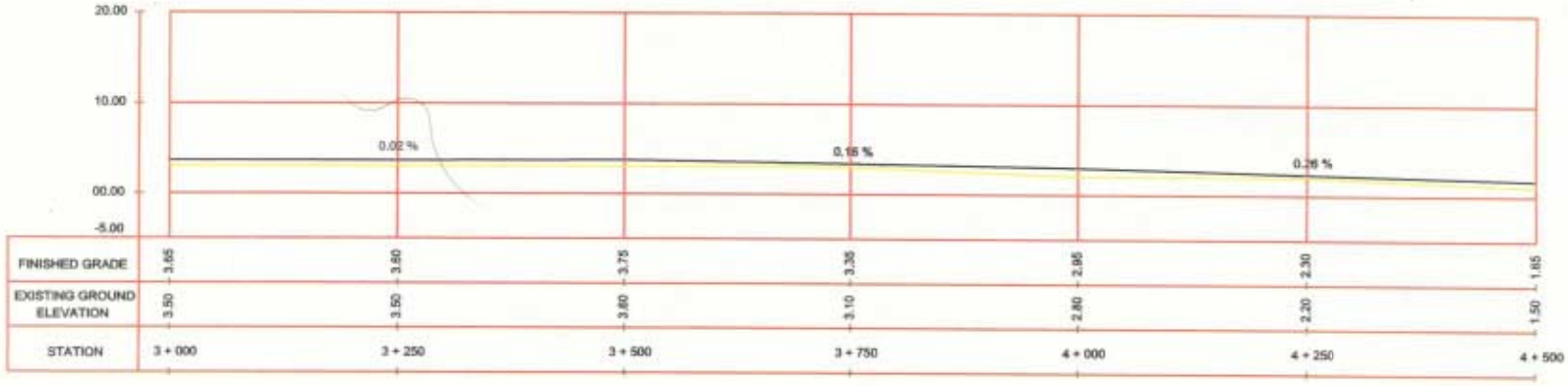
THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 1+500 – STA. 3+000

SCALE HORIZONTAL 1 : 5,000 VERTICAL 1 : 500

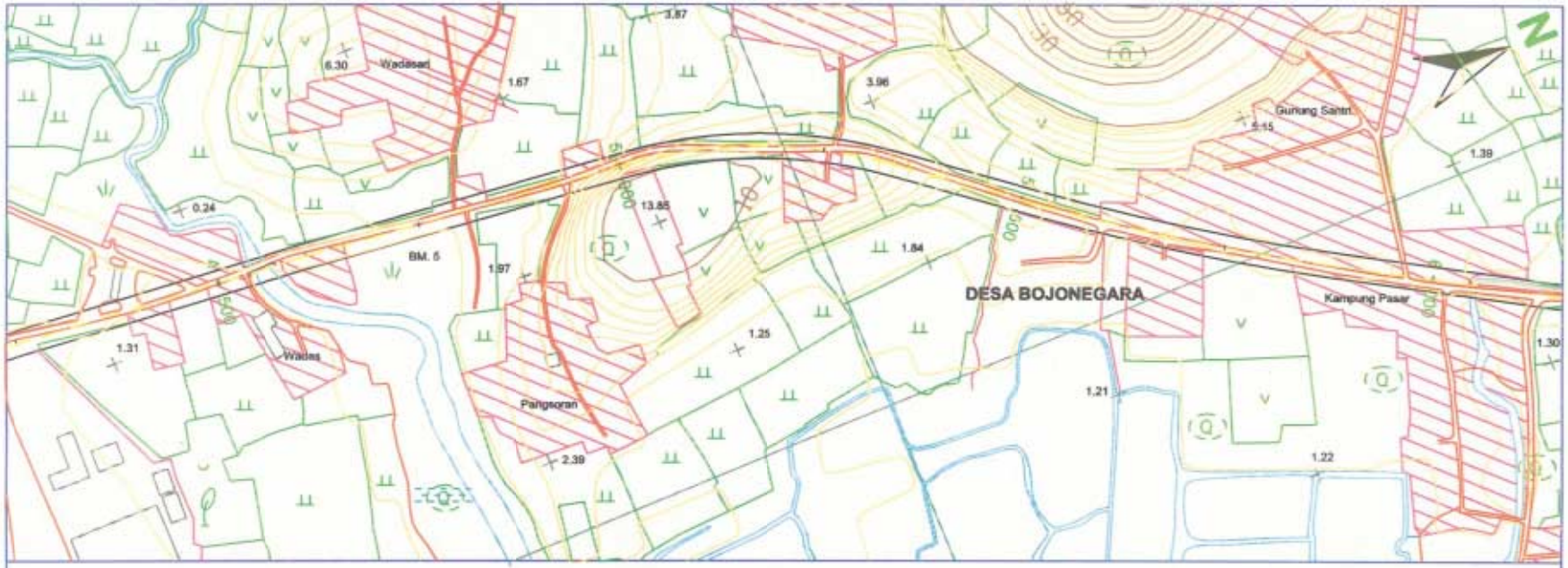


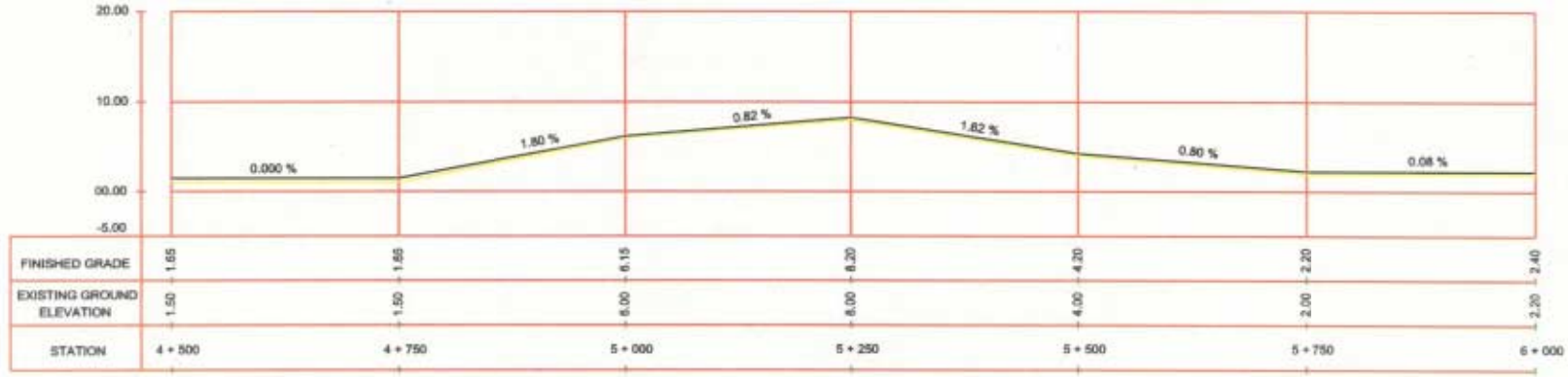


THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 3+000 ~ STA. 4+500

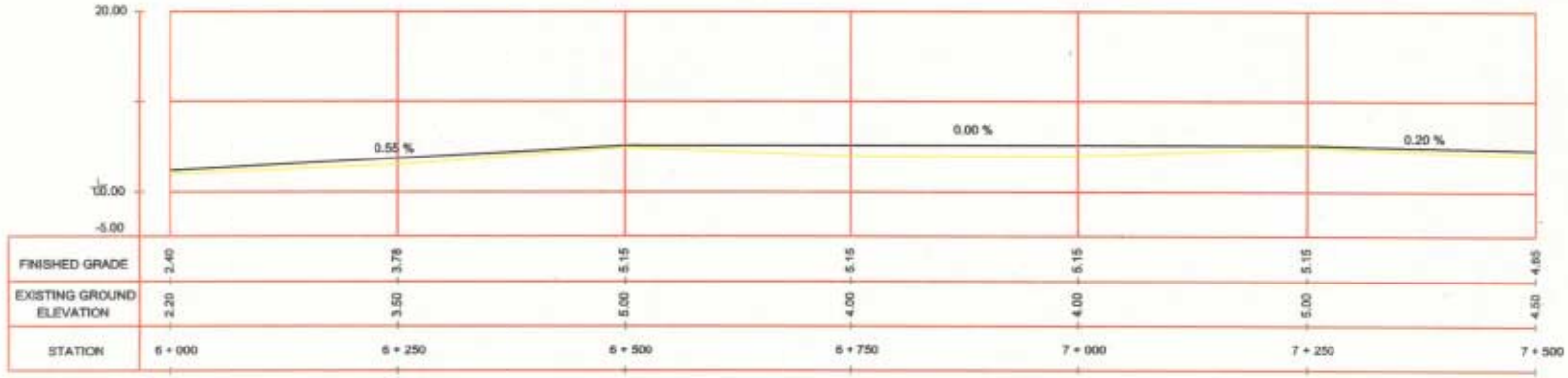




THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

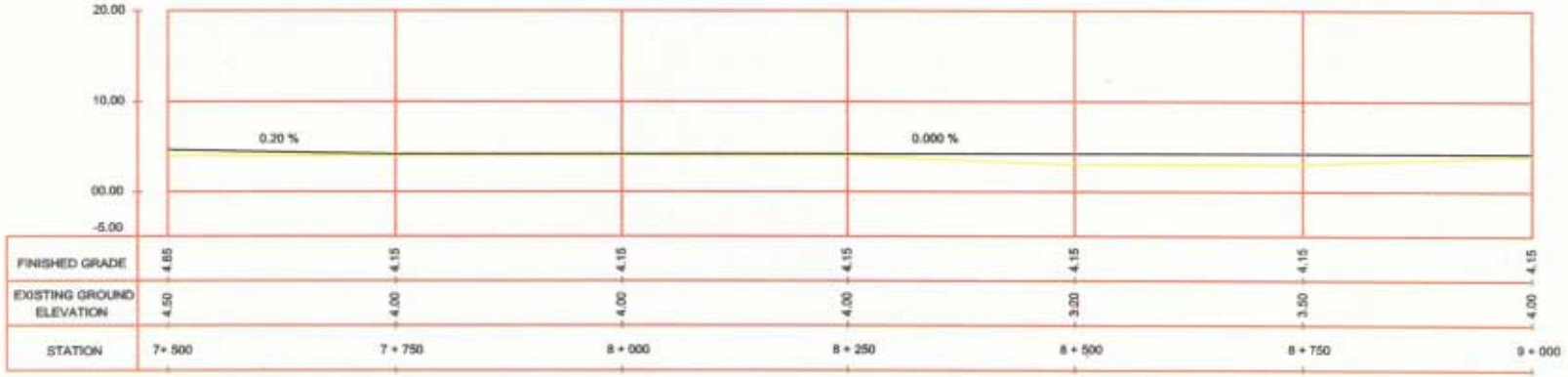
STA. 4+500 – STA. 6+000



THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL TROAD - PLAN AND PROFILE

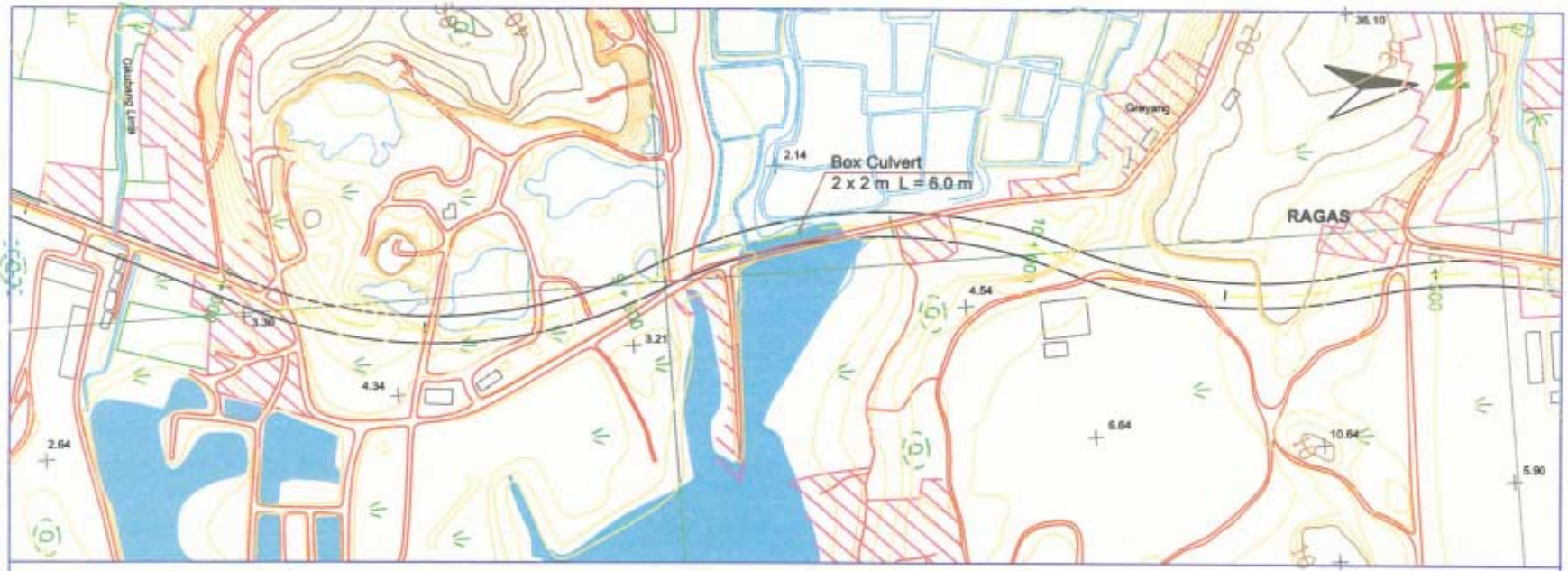
STA. 6+000 ~ STA. 7+500

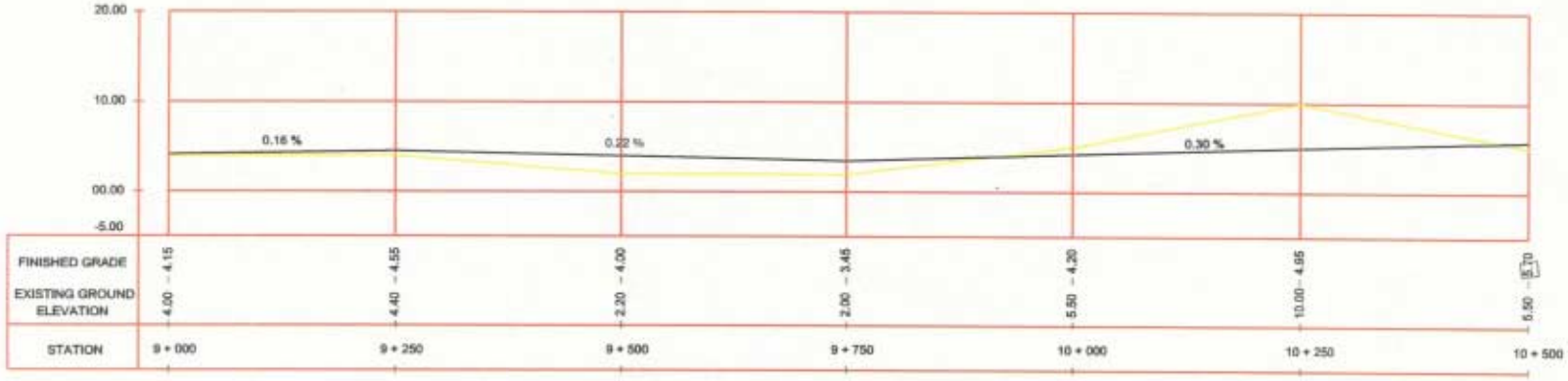


THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 7+500 – STA. 9+000

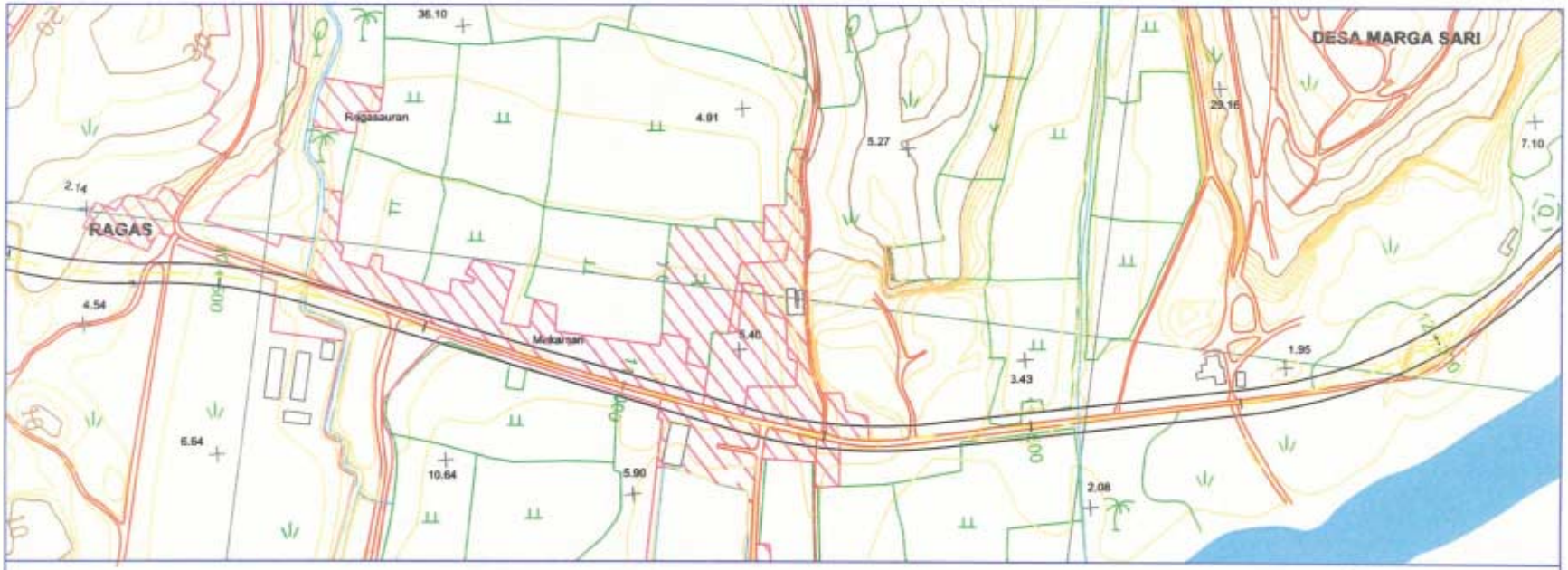


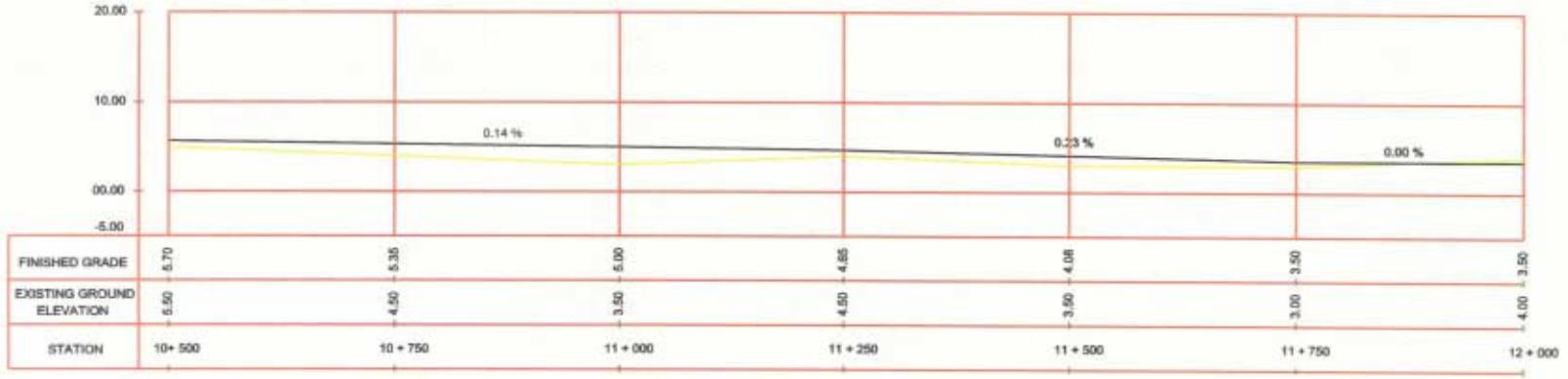


THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 9+000 – STA. 10+500



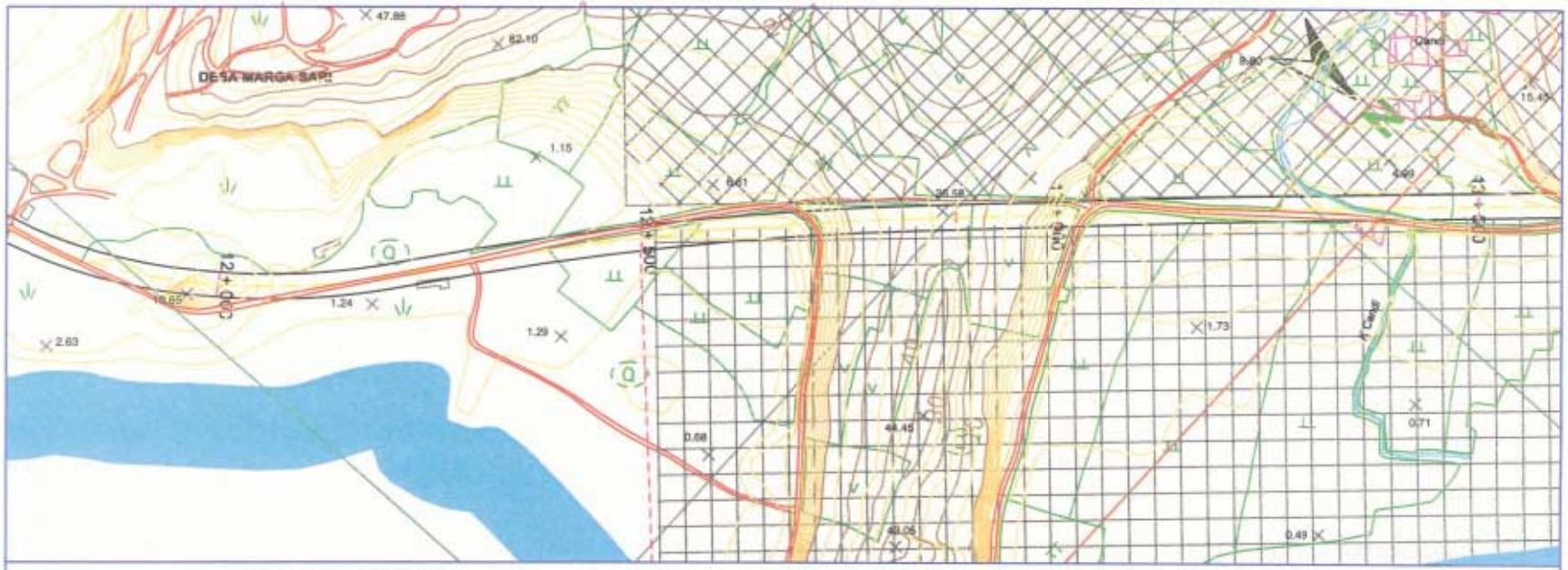


THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

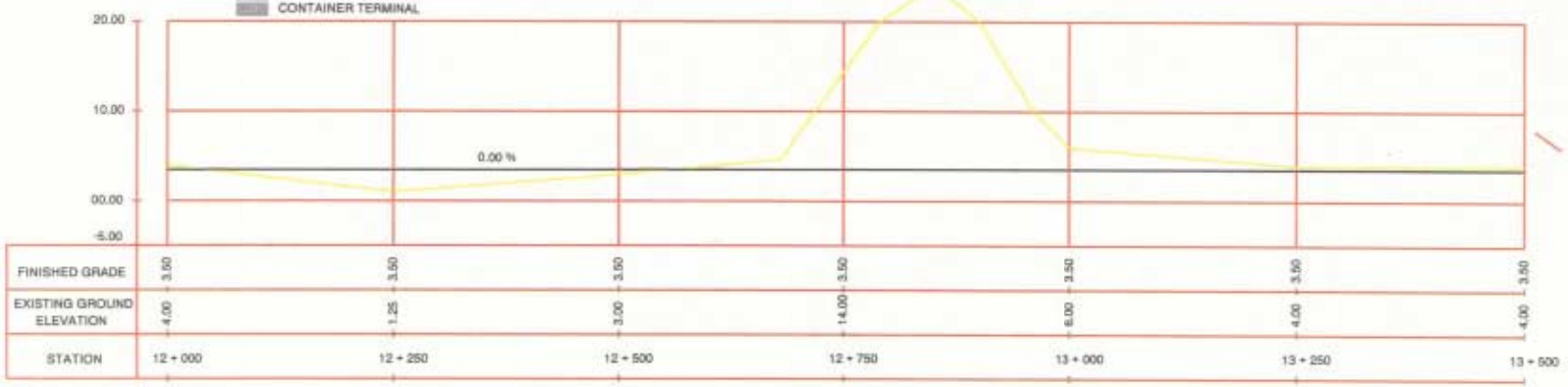
BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 10+500 ~ STA. 12+000

SCALE HORIZONTAL 1 : 5,000 VERTICAL 1 : 500



NOTE : PORT RELATED ZONE
CONTAINER TERMINAL



THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

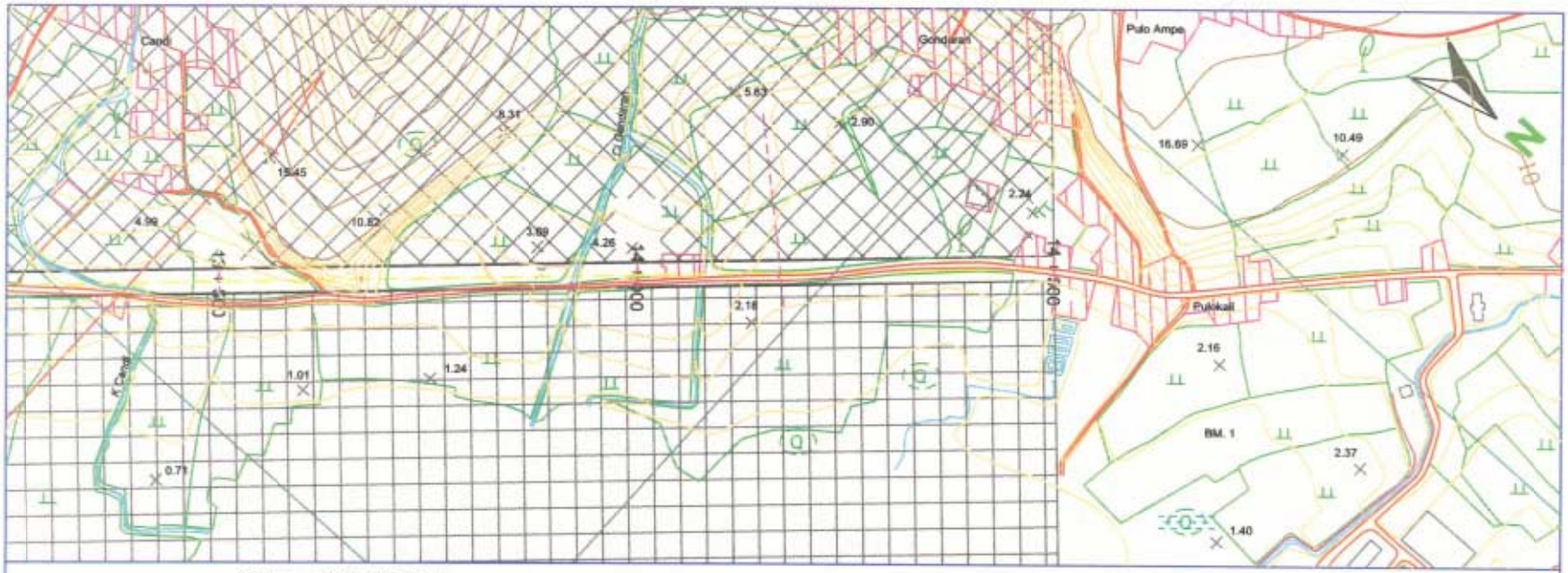
BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 12+000 ~ STA. 13+500

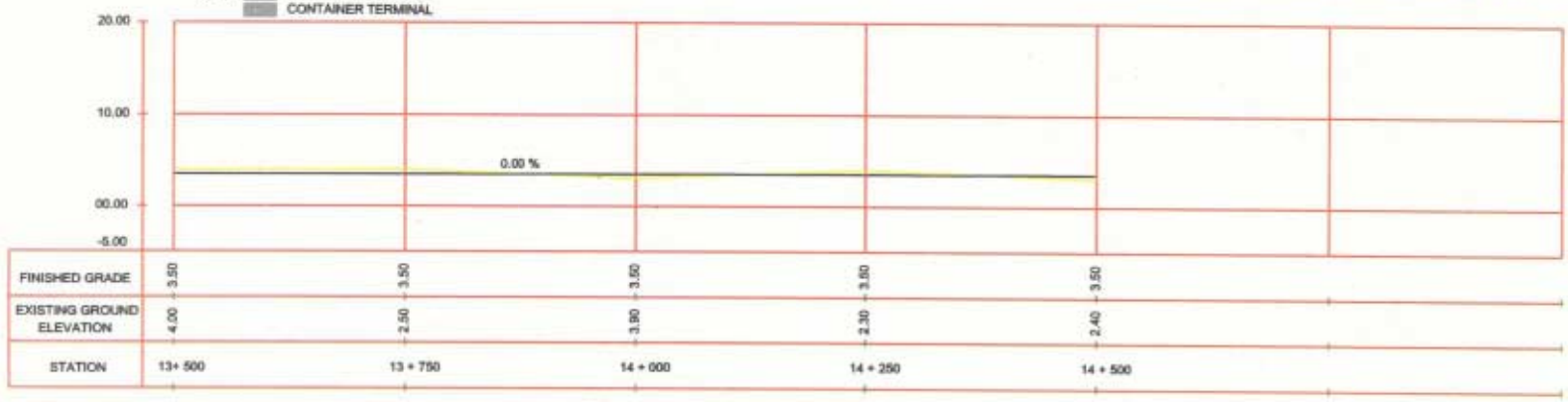
SCALE HORIZONTAL 1 : 5,000 VERTICAL 1 : 500

0 + 500

184-9



NOTE : PORT RELATED ZONE
CONTAINER TERMINAL



THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

BOJONEGARA NATIONAL ROAD - PLAN AND PROFILE

STA. 13+500 – STA. 14+500

CHAPTER-12. SHORT-TERM AND PHASED DEVELOPMENT PLAN

12-A. IDENTIFICATION OF SHORT-TERM DEVELOPMENT PROJECTS TOWARD 2012

579. The proposed major projects in the Master Plan for 2025 are evaluated as shown in Table 12-A-1 and Table 12-A-2 viewing from the following points:

- Urgency viewing from the cargo demand
- Economic impact to the national /regional economy
- Environmental impact
- Profitability
- Expected difficulty in coordinating the related parties
- Flexibility of development (Step by step development)

Table 12-A-1 Project Evaluation and Selected Project for Short-term Plan - Tanjung Priok -

Project	Contents	Urgency viewing from the Cargo Demand	Economic Impact to the national /regional economy	Environmental Impact	Profit from the Project	Easiness of Coordination among the Related Parties	Flexibility of Development (Step by Step Development)
Navigational condition improvement (capacity and safety)	Widening main channel & turning basin Widening the channel & basin to the Nusantara area including MTI	● Urgent to cope with the cargo demand through improving the port capacity	● Great impact on the trading activity	● Good impact on water quality	● Big profit (Port due and handling fee)	● Easy	● Possible
	Opening the east channel	○ Moderate (Rather less impact to improve the port capacity)	○ Some impact	● Good impact on water quality	○ Some profit (Port due and handling fee)	● Easy	-
Automobile terminal development		● Urgent for export /import activity of car products	● Great impact on the car trading activity	○ Negligible	○ Some profit (Port due and handling fee)	● Fairly easy	-
Re-organizing land-use of the existing port							
Streamlined cargo handling	Inter-island container handling (Pier III reorganization, MTI expansion)	● Urgent to cope with rapid increase of inter-island container	● Great impact on the trading activity	○ Negligible	○ Some profit (Port due and handling fee)	● Fairly easy	● Possible
	Bulk cargo handling (CPO, sand, cement etc.)	● Urgent to secure the smooth traffic inside the port	○ Some impact	○ Negligible	-	○ Some difficulty	● Possible
	Passenger terminal relocation (Separated passenger handling from cargo handling)	● Urgent to secure the smooth traffic inside the port and to secure the space of cargo handling	○ Some impact	○ Negligible	○ Some profit (Port due and handling fee)	● Easy	-
	Pertamina berths relocation together with consolidation of international container terminal	○ Moderate (Necessary in the long term)	● Great impact on the trading activity	○ Negligible	○ Some profit (Port due and handling fee)	○ Some difficulty	-
Providing suitable and enough space for the better port management	Inland Yard Development	● Urgent to secure the space of cargo handling	● Great impact on the trading activity	○ Negligible	○ Some profit (Storage fee)	● Fairly easy	● Possible
	Providing new space by reclamation	○ Moderate (Not direct contribution to the cargo demand)	○ Some impact	○ Negligible	○ Some profit (Land lease)	○ Some difficulty	-
	Others (Relocation of military base, Consolidation of ship building yard)	○ Moderate (Necessary in the long term)	● Great impact on the trading activity	○ Negligible	○ Some profit (Port due and handling fee)	○ Not easy	● Possible
Land-use re-development in the urban area adjacent to the port	Re-development around the Tanjung Priok railway station Re-development the residential area on the south of JICT container terminal	○ Urgent but not direct contribution to the cargo demand	● Great impact on regional economy	● Good impact through smoothing traffic flow	-	○ Not easy (A lot of parties concerned)	● Possible
Ancol Development	New Passenger Terminal (Relocation from the existing terminal)	● Urgent to secure the smooth traffic inside the port and to secure the space of cargo handling	○ Some impact	* Some negative impact by reclamation and should be mitigated	○ Some profit (Port due and handling fee)	● Easy	-
	Multi Purpose Terminal	● Urgent to cope with rapid increase of general cargo	● Great impact on the trading activity		○ Some profit (Port due and handling fee)	● Easy	● Possible
	Access road	● Urgent according to the terminal development	○ Some impact	○ Negligible	○ Some profit (Toll fee)	● Easy	-
Kalibaru Off-shore Development	Consolidation of ship building yard, Development of special cargo handling zone, Access road Development of Kalibaru new port	○ Moderate (Necessary in the long term)	● Great impact on the trading activity	* Some negative impact by reclamation and should be mitigated	○ Some profit (Port due and handling fee)	○ Some difficulty	● Possible
Road development/improvement in/around the existing port	Inner Road Improvement	● Urgent to secure the smooth traffic inside the port which lead to improve the productivity	○ Some impact	● Good impact through smoothing traffic flow	○ Some profit (Toll fee)	● Easy	-
	East-West Port Highway (to link with JORR)	● Urgent to secure the smooth traffic to/from the eastern industrial area	● Great impact on the trading activity	○ Good impact through smoothing traffic flow, but some negative impact on air quality	○ Some profit (Toll fee)	● Fairly easy (Alignment will be inside the port area)	● Possible
	Access road to/from JIUT	○ Moderate (Necessary in the long term)	○ Some impact	○ Ditto	○ Some profit (Toll fee)	○ Some difficulty	-
	Improvement of existing road in urban area	○ Urgent but not direct contribution to the cargo demand	● Great impact on regional economy	● Good impact through smoothing traffic flow	-	○ Some difficulty	● possible

● Positive ○ Moderate * Negative

Table 12-A-2 Project Evaluation and Selected Project for Short-term Plan - Bojonegara -

Project	Contents	Urgency viewing from the Cargo Demand	Economic Impact to the national /regional economy	Environmental Impact	Profit from the Project	Easiness of Coordination among the Related Parties	Flexibility of Development (Step by Step Development)
Basic port facilities development	Breakwater, access channel, basin	● Urgent according to the terminal development	-	* Some negative impact	-	● Easy	● Possible
	Port service facilities	● Urgent according to the terminal development	-	○ Negligible	-	● Easy	● Possible
Container terminal development		● Urgent to cope with the container cargo demand	● Great impact on the trading activity	* Some negative impact	● Big profit (Port due and handling fee)	● Easy	● Possible
Unitized and other cargo handling facilities development	Multi purpose terminal	● Urgent to cope with the unitized cargo demand	● Great impact on the trading activity	* Some negative impact	○ Some profit (Port due and handling fee)	● Easy	-
	General cargo berth	○ Moderate (Necessary in the long term)	● Great impact on the trading activity	* Some negative impact	○ Some profit (Port due and handling fee)	● Easy	● Possible
	Ro-Ro terminal	○ Urgent but unknown the possibility to be located Bojonegara (Need a special study)	● Great impact on the trading activity	* Some negative impact	○ Some profit (Port due and handling fee)	● Easy	-
	Special cargo handling	○ Moderate (Unknown the urgency, need a special study)	● Great impact on the trading activity	* Some negative impact	○ Some profit (Port due and handling fee)	● Easy	
Port access development	Good conditioned and high-standard access road connecting the existing Jakarta-Merak toll road	● Urgent according to the terminal development	● Great impact on the trading activity	○ Negligible	○ Some profit (Toll)	○ Some difficulty	-
	Railway service linking with an inland container distribution center/terminal	○ Moderate (Unknown the feasibility, need a special study)	● Great impact on the trading activity	○ Negligible	○ Some profit (Handling feel)	○ Some difficulty	-

● Positive ○ Moderate * Negative

580. Based on the above evaluation and from the point of urgent needs of economic activity in Jakarta Metropolitan area, the Study team selects the following projects toward 2012.

Tanjung Priok

To improve the navigational capacity and safety

- Widening main channel in order to secure two-way traffic with relocation of the existing breakwater together with securing enough turning basin to accommodate larger vessels

To meet the urgent needs of port users such as export/import industries

- Establishment of a dedicated-use automobile terminal to facilitate trade of automobile products in AFTA era and to promote various product-related industries in Indonesia

To re-organize ineffective land use of the existing port

- Improvement of inter-island container and bulk cargo handling together with development of a new port area in East-Ancol by reclamation to expedite re-organization of ineffective land use of the port

To improve the road traffic situation in/around the port

- Improvement of the main road network in the port with proper traffic management and development of an east-west highway connecting the port with the JORR northern extension toll road

Table 12-A-3 Project Components Toward 2012 (Tanjung Priok)

Port	Project	Remarks
To improve the navigational capacity and safety	Widening the Main Channel (300m) and Turing Basin (Maximum diameter is 560m)	Phasing implementation
	Widening the channel and basin to the Nusantara area including MTI (200m)	
To meet the urgent needs of port users	Automobile Terminal Development (Berth: -10m, 250m, Terminal area: 9ha)	Should be operated in 2006
To re-organize ineffective land use of the existing port	Inter-island Container Handling Improvement	Re-development of Pier III and MTI expansion
	Bulk Cargo Handling Improvement	
	Passenger Terminal Relocation	A new passenger terminal is developed in Ancol development area
	Inland Yard Development	
	(Land-use re-development in the urban area adjacent to the port)	Another study is required.
	Ancol Development (New Passenger Terminal, Multi Purpose Terminal and Access Road)	
To improve the road traffic situation in/around the port	Port Inner Road Improvement	
	Eastern Port Access Highway Development Linking with JORR	

Bojonegara

To meet the future container demand and to release the burden of Tanjung Priok

- Development of a new container terminal with 2 berths (CT1 & CT2) together with a multi purpose terminal with 1 berth (CT1 & CT2 will be deepened up to -14m in the long run.)

Table 12-A-4 Project Components Toward 2012 (Bojonegara)

Port	Project	Remarks
To meet the future container demand and to lessen the burden of Tanjung Priok	Container Terminal Development (-12m, 600m)	Should be operated in 2010
	Multi Purpose Terminal Development (-10m, 220m)	Should be operated in 2008
	(Ro-Ro Terminal Development)	Another study is required.
	Breakwater, Channel and Basin Development	Phasing implementation
	Port Access Road Development	Should be completed by 2008

12-B. SHORT-TERM DEVELOPMENT PLAN TOWARD 2012

12-B-1 Tanjung Priok

1) Port and Related Facilities to be Developed

581. Details of port and related facilities to be developed toward 2012 are as follows:

a) Berthing Facilities (Newly Developed)

Dimension		Number of Berths	Remarks
Depth	Length		
-10~11m	250m	250m x 1B	Automobile terminal Target Ship: 50,000GT class of Pure Car Carrier (L=194m, D=-9.7m, B=33m) Deepening to -11m in the future
-7.5m	175m	175m x 2B	Passenger terminal (Ancol) Target Ship: 15,000GT class of passenger ship (L=150m, D=-6.5m, B=25m)
-10m	220m	Total 780m (220m x 2B) (170m x 2B)	Multi purpose terminal (Ancol) Target Ship: 10,000GT class of general cargo ship (L=145m, D=-8.9m, B=21m), 10,000GT class of container ship (L=144m, D=-8.4m, B=23m), 15,000GT class of Ro-Ro ship (L=187m, D=-8.7m, B=26m)
-9m	200m	200m x 1B	Additional MTI berth. Target Ship: 10,000GT class of container ship (L=144m, D=-8.4m, B=23m) Need to relocate Wali Jaya berth.

b) Re-development of Existing Wharves

Location	Dimension	Remarks
Pier III and behind 207	26.0ha	Handling yard for inter-island container 207X, 208, 209 and 210 warehouse will be demolished.
Behind 106 (passenger berth), 107 and 108 berth	6.3ha	Handling yard for general cargo Passenger terminal should be relocated and 107 and 108 warehouse will be demolished.
Behind 100 and 101U berth	2.2ha	Handling yard for dry bulk cargo Accompanied with some reclamation.
MTI	18.0ha	Handling yard for inter-island container Wali Jaya (WJ) should be relocated and some building facilities should be demolished.
North of Nusanatara Pier	1.7ha	New berth and handling yard for general cargo
Kali Japat	14.4ha	New berth and handling yard for sand, CPO etc. Ship building facilities need to be relocated and/or demolished.
Kolin Lamil	3.1ha	Inland yard development and other function such as road/gate improvement

c) Reclamation for Functional Relocation

Location	Dimension	Remarks
East-Ancol	around 40ha	Development of passenger terminal and multi purpose terminal together with port logistic area
North of PLN plant	around 22ha	Relocation area of industrial and other function existing in the port
Nusantara Basin	around 6ha	Integrated port business area consolidating various kind of port business related companies

d) Breakwater

Dimension	Remarks
around 2,400m	For widening channel and expanding turning basin in existing port area
around 200m	For widening main channel at the port entrance
around 1,000m	For Ancol development

582. Breakwater alignment and length was examined viewing from the calmness of the basin inside the port because the original breakwater was cut and basin will be more open to the sea between the original breakwater and new one. According to the computer simulation, it was confirmed that the proposed alignment of breakwater satisfied the standard at all points inside the port which stimulates that excessive probability beyond 0.5m wave height in front of quay should be under 2.5% throughout the year. The detailed result of simulation is shown in the "Supporting Report of Engineering Study".

e) Channel and Basin

Dimension		Remarks
Depth	Area	
-14m	around 206ha	Widening main channel as well as expanding turning basin in front of container terminal. Channel width is 300m. Diameter of turning basin is 560m.
-10m	around 17ha	For the automobile terminal in DKB area. Diameter of turning basin is 400m.
-10m	around 43ha	For Ancol development. Channel width is 120m and diameter of turning basin is 400m.
-7.5m	around 12ha	For passenger terminal in Ancol. Channel width and diameter of turning basin is 300m.
-9m	around 41ha	For new channel to MTI and Nusantara basin. Channel width is 200m and diameter of turning basin is 400m.

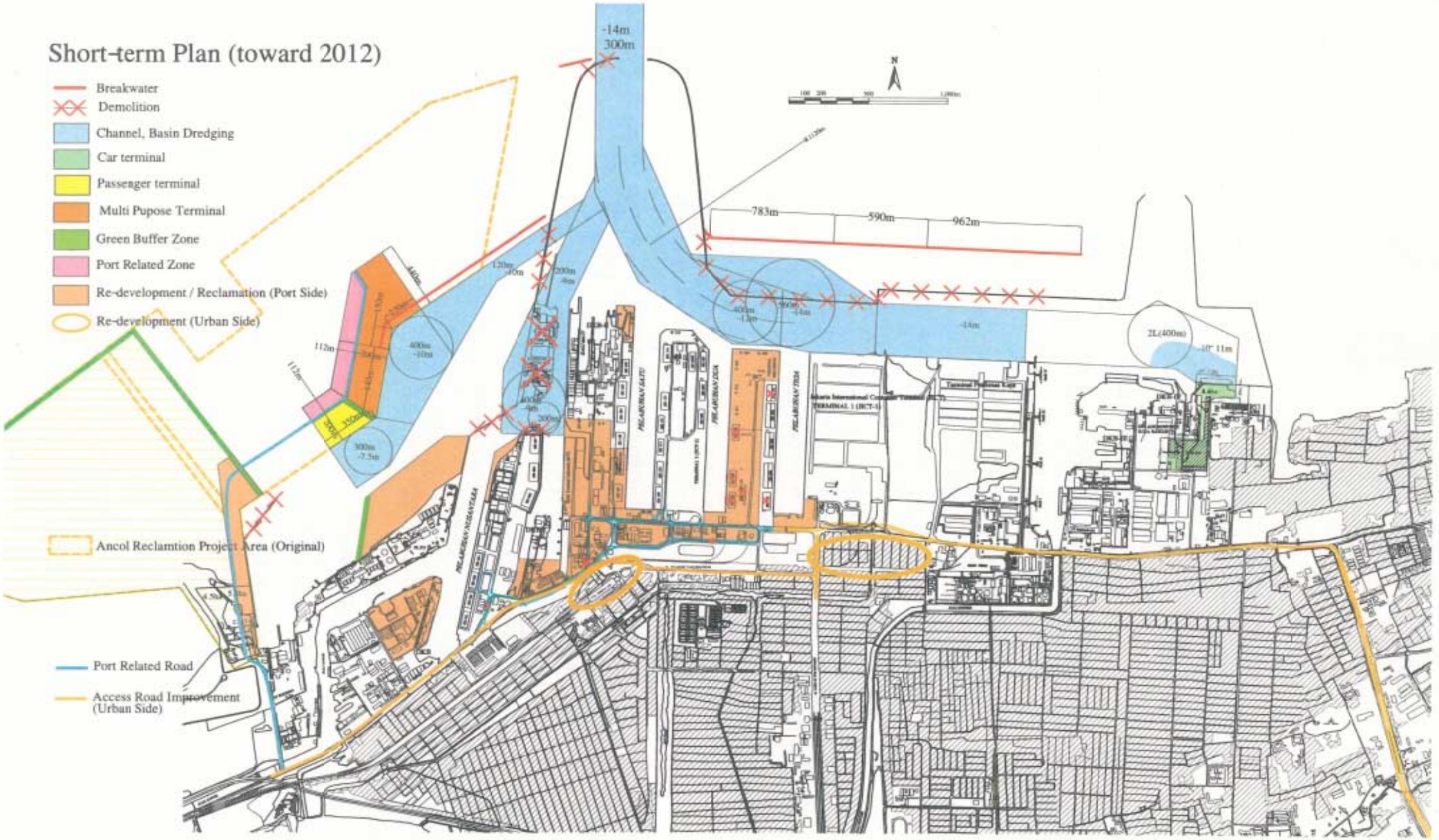
f) Road Improvement/Development

Lane	Length	Remarks
2~3 lane for one-way	4km	Port inner road in the central area (From gate No.1 to gate No.9. Need to demolish some building facilities. Gate No.3. will be closed while Gate No.1 will be improved.
2 lane*2	around 3.5km	East-west port highway linking gate No.9 with JORR north extension toll road. A new dedicated ramp for international container terminal will be developed.

2) Layout of Port Facilities

583. Layout of the port facilities of Tanjung Priok in 2012 are shown in Figure 12-B-1.

Figure 12-B-1 Layout of the Port Facilities in 2012 (Tanjung Priok)


Short-term Plan (toward 2012)
Breakwater
Demolition
Channel, Basin Dredging
Car terminal
Passenger terminal
Multi Pupose Terminal
Green Buffer Zone
Port Related Zone
Re-development / Reclamation (Port Side)
Re-development (Urban Side)
Ancol Reclamtion Project Area (Original)
Port Related Road
Access Road Improvement (Urban Side)
-14m
300m
783m
590m
962m
N

12-B-2 Bojonegara

a) Berthing Facilities

Berth Dimension		Number of Berths	Remarks
Draft	Length		
-12m	300m	300m*2B (CT1 & CT2)	Container terminal Target Ship Size: 50,000GT (LOA=279m, D=-12.7m, B=33m) The initial depth of the berths has been set as -12m considering bed rock existence at the site, however, need to considerate the possibility of deepening to -14m in the future
-10m	220m	1	Multi purpose terminal Target Ship: 10,000GT class of general cargo ship (L=145m, D=-8.9m, B=21m), 10,000GT class of container ship (L=144m, D=-8.4m, B=23m), 15,000GT class of Ro-Ro ship (L=187m, D=-8.7m, B=26m)
-8m	200m	1	Ro-Ro terminal functioning as a complementary port of Merak 10,000GT of Ro-Ro ship (L=145m, D=-7.3m, B=22m)

b) Breakwater

Dimension	Remarks
Length	
1,040m	According to the tranquility analysis. Operational performance of CT2 is 98.0% satisfying operational performance standard (over 97.5%).

584. Breakwater alignment should be examined viewing from the calmness of the basin inside the port. According to the computer simulation, it was confirmed that the proposed alignment of breakwater satisfied the standard which stimulates that excessive probability beyond 0.5m wave height in front of quay should be under 2.5% throughout the year. The detail of simulation result is shown in the "Supporting Report of Engineering Study".

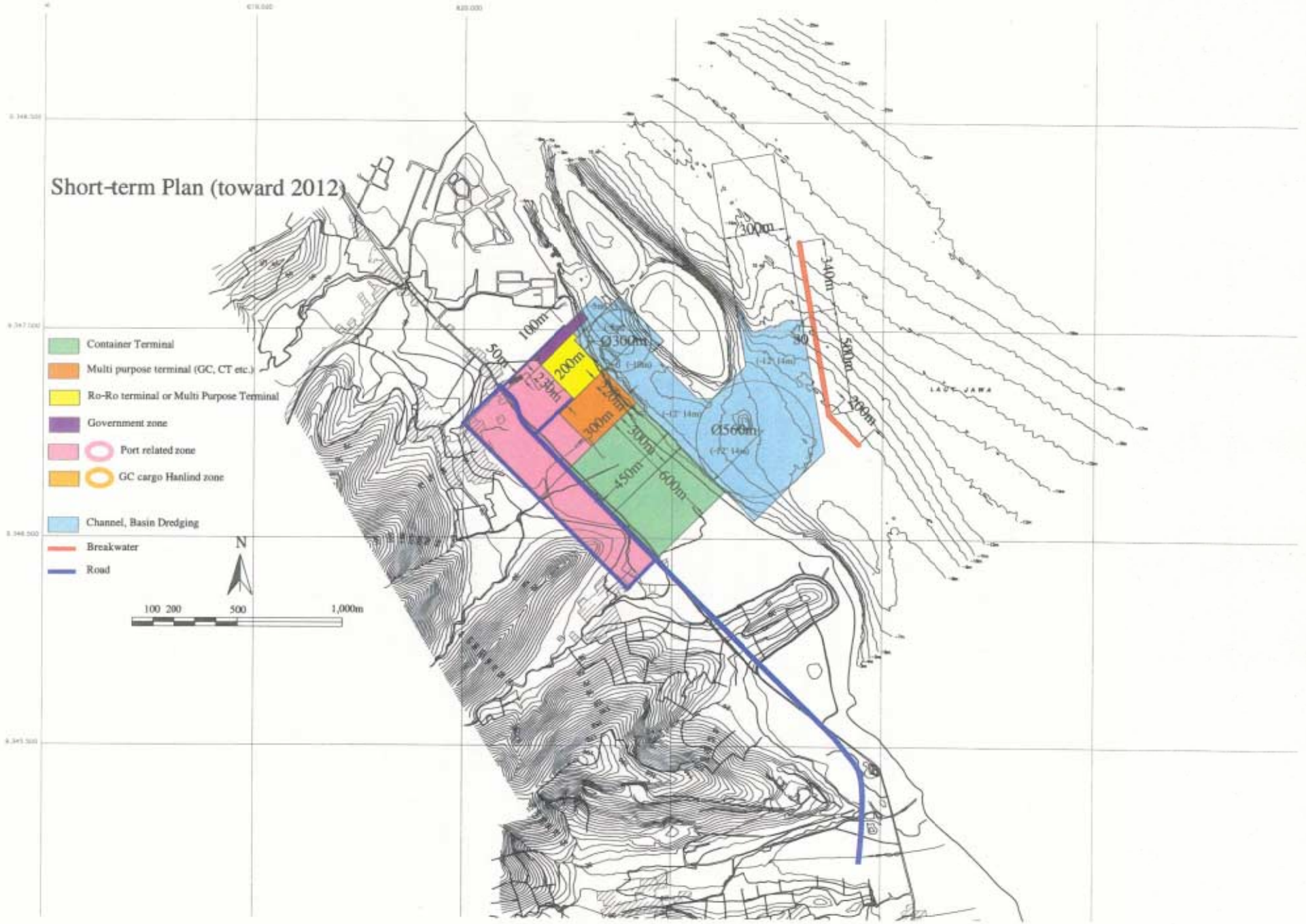
c) Channel and Basin

Dimension		Remarks
Depth	Area	
-12m	around 100ha	Access channel with the width of 300m and turning basin. Some part should be deepen to the depth of -14m according to the expansion of container terminal.
-10m	around 20ha	For multi purpose terminal

2) Layout of Port Facilities

585. Layout of the port facilities of Bojonegara in 2012 are shown in Figure 12-B-2.

Figure 12-B-2 Layout of the Port Facilities in 2012 (Bojonegara)


Short-term Plan (toward 2012)
Container Terminal
Multi purpose terminal (GC, CT etc.)
Ro-Ro terminal or Multi Purpose Terminal
Government zone
Port related zone
GC cargo Hanlind zone
Channel, Basin Dredging
Breakwater
Road
N
100 200 500 1,000m
100m
50m
230m
200m
220m
300m
300m
450m
600m
Ø300m
Ø560m
300m
340m
500m
300m
LAUT JAWA