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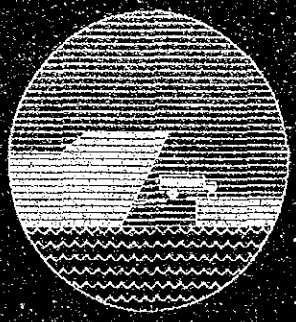

NATIONWIDE ROLL-ON ROLL-OFF TRANSPORT SYSTEM DEVELOPMENT STUDY IN THE REPUBLIC OF THE PHILIPPINES

VOLUME 2

FEASIBILITY STUDY

AUGUST 1992

FINAL REPORT

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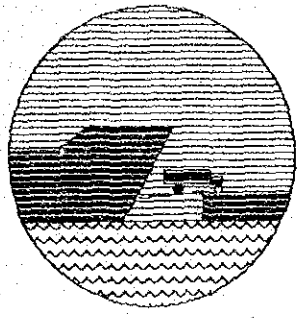

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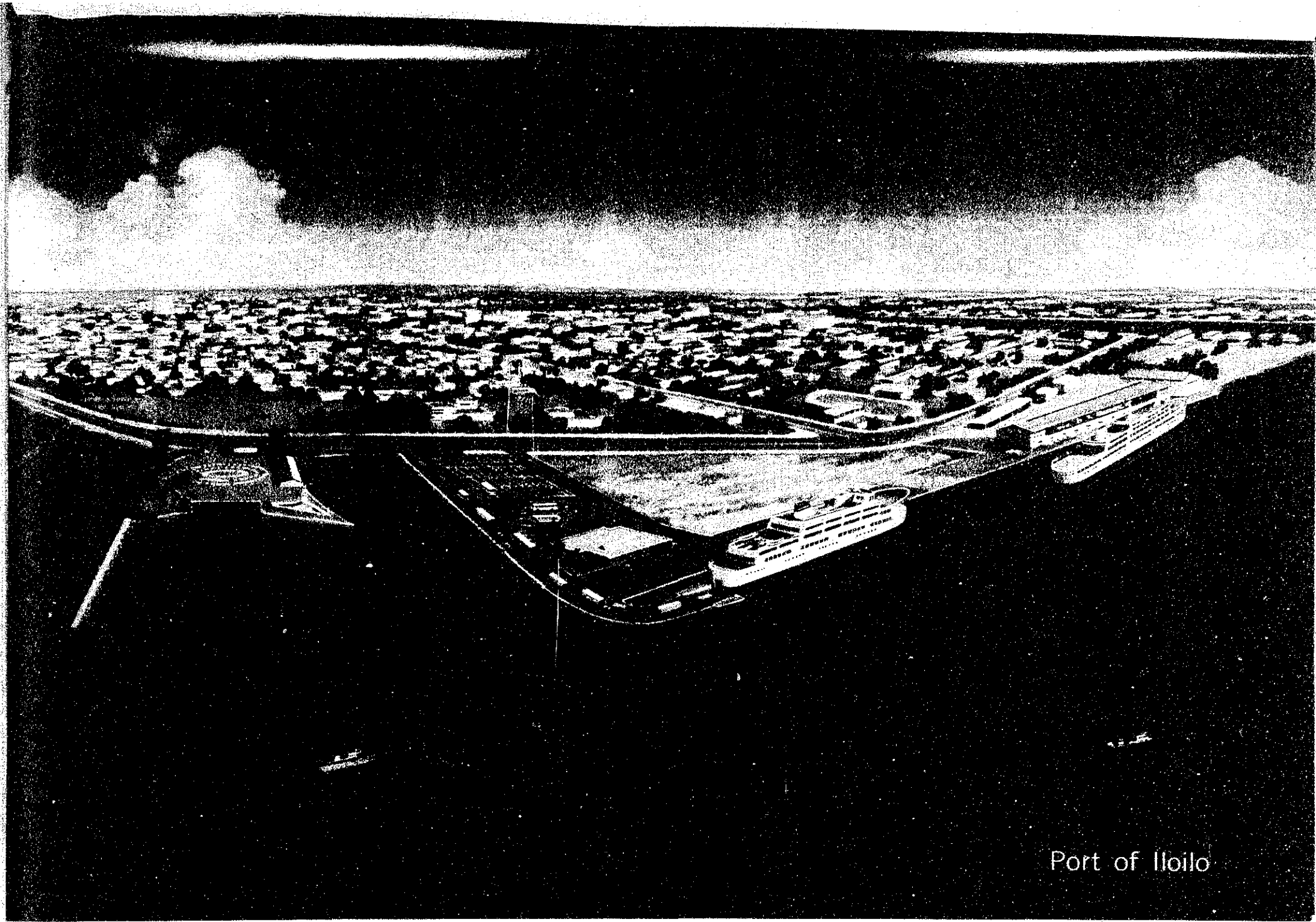
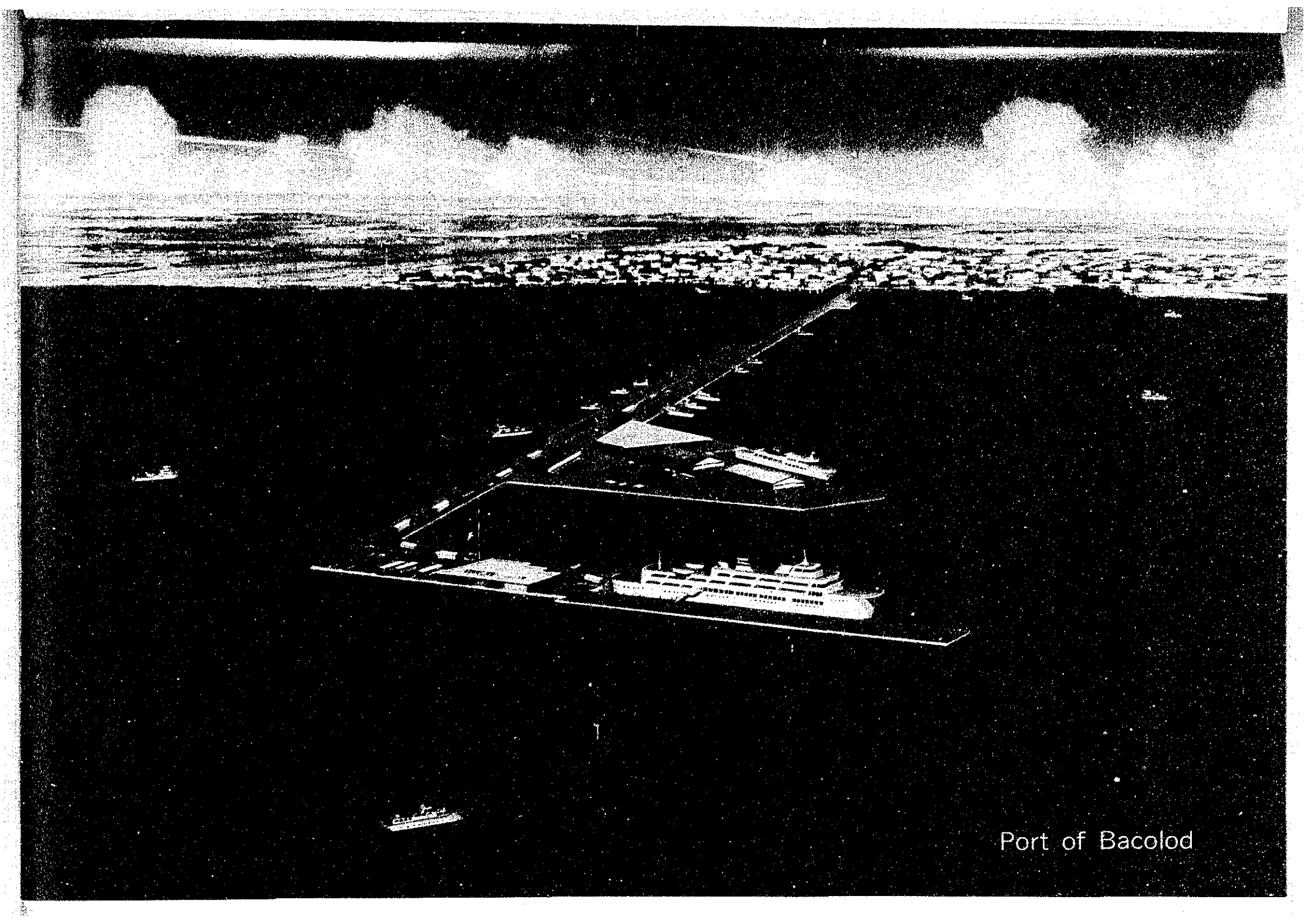

Port of Iloilo


Port of Bacolod

Abbreviations and Glossary

I. Abbreviations of the Institutions

ADB	Asian Development Bank
APPOOP	Association of Private Port Owners and Operators of the Philippines
BOI	Board of Investments
CB	Central Bank
CISO	Conference of Inter-island Shipowners and Operators
DA	Department of Agriculture
DBM	Department of Budget and Management
DBP	Development Bank of philippines
DND	Department of National Defense
DOLE	Department of Labor and Employment
DOTC	Department of Transportation and Communications
DPWH	Department of Public Works and Highways
DTI	Department of Trade and Industry
FPP PMO	Feeder Port Project Project Management Office
IATCTP	Inter-Agency Technical Committee on Transport Planning
IBRD	International Bank for Reconstruction and Development
LTFRB	Land Transportation Franchising and Regulatory Board
KfW	Kreditanstalt fuer Wiederauflau (Germany)
MARINA	Maritime Industry Authority
MROs	MARINA Regional Offices
NAMRIA	National Mapping and Resources Information Authority
NSO	National Statistics Office
NEDA	National Economic and Development Authority
NHA	National Housing Authority
OECF	Overseas Economic Cooperation Fund
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PCCI	Philippine Chamber of Commerce and Industry
PCG	Philippine Coast Guard
PDOs	Port District Offices
PFDA	Philippine Fishery Development Authority

PISA	Philippine Inter-island Shipping Association
PMOs	Port Management Offices or Project Management Offices
PPA	Philippine Ports Authority
PRC	Professional Regulatory Commission
SEC	Security Exchange Commission
SMSA	Southwestern Mindanao Shipowners Association
USAID	United States Agency for International Development
VAFCSO	Visaya Association of Ferryboat and Coastwise Service Operators

II. Abbreviations, others

CI	Certificate of Inspection
CPC	Certificate of Public Convenience
dwt.	Deadweight Tonnage
EIRR	Economic Internal Rate of Return
EO	Executive Order
FIRR	Financial Internal Rate of Return
GDP	Gross Domestic Product
grt.	Gross Registered Tonnage
ICPC	International Commercial Port Complex (Iloilo)
IPP	Investment Priority Plan
LO/LO	Lift-on, Lift-off
MC	Memorandum Circular
MP	Municipal Port
MT	Metric Tons
MTPDP	Medium Term Philippine Development Plan
NFPDP	Nationwide Feeder Ports Development Project
NM	Nautical Mile
NRTSDS	Nationwide Roll-on Roll-off Transport System Development Study
OIC	Omnibus Investments Code
P	Philippine Peso
PA	Provisional Authority (vessel operation)
PCPR	Permit Certlificate of Philippine Registry
PD	Presidential Decree

PIP	Public Investment Program
PMMRR	Philippine Merchant Marine Rules and Regulations
PSA	Public Service Act
RA	Republic Act
Ro/Ro	Roll-on, Roll-off
SOLAS	Safety of Life at Sea (Convention)
SP	Special Permit (vessel operation)
sq.m	square meter

III. Glossary

Arrastre	Longshoring
Banca	Small wooden boat with outriggers and no shelter
Barangay	Smallest administrative unit
Barangay Captain	Head of Barangay
Sangguniang Bayan	Town or Municipal Council

-- Currency Exchange Rate --

1 Philippine Peso = 5 Japanese Yen

1 US Dollar = 26 Philippine Pesos

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CONCLUSION AND RECOMMENDATIONS

I. Nationwide Long-Term Ro/Ro Transport Development Plan

Conclusion

1. In pursuit of sustainable economic growth and welfare promotion for the nation, the introduction and development of effective means of transportation is proposed in the Medium Term Development Plan. Ro/Ro operation is one of the transportation systems in this category, reducing cargo handling time at ports, which benefits both shippers and ship operators, and allows passengers and cargoes to reach their final destinations without interruption at sea/land terminal points. The Ro/Ro transportation system is especially effective for archipelagic nations like the Philippines.

2. To formulate a nationwide master plan of a Ro/Ro ferry transport system for the target year of 2010, field investigations of potential and existing Ro/Ro links, a list of which had been prepared by IATCTP, were jointly conducted by the JICA Study Team and IATCTP. The Team collected the latest information on shipping services, terminal facilities and socioeconomic activities in the hinterland regions. On-site traffic surveys were conducted on some of the study links to supplement the existing statistics. Aerial photographs were also taken to gain better understanding of the locational relationship between ports and towns and the land use pattern around the port.

3. Total 42 links shown in Figure 1 were selected as the study links. Based on a point mark system, the potential of each study link as the Ro/Ro transport mode was evaluated and prioritized. The criteria was composed of four major items; (i) mobility in the hinterland (ii) traffic demand (iii) cost for Ro/Ro terminal (iv) formation of transportation network, and each item consists of several variables. The variables, their link values and point total by study link are shown in Table 1.

4. The study links were categorized into three groups based on the point total of each link. The first group, consisting of twelve links, was evaluated as the most suitable links for Ro/Ro operations. Batangas-Calapan link is top ranked among them. The second group, consisting of fourteen links, was evaluated as moderate links for the Ro/Ro transportation. The rest of the study links were classified into the third group, which was evaluated as the least prosperous for Ro/Ro operations.

5. At present, the Pan-Philippine Highway with a total length of 2,100 Km is the single most important trunk line for the nation's unification and integration, containing two Ro/Ro links between the main islands of Luzon-Samar, and Leyte-Mindanao. After development or improvement of the first priority links for the Ro/Ro operations, main islands in the Visaya region are interconnected by Ro/Ro transportation, and a new national trunk line centering in Cebu is realized; Panay-Negros-Cebu-Leyte corridor and Cebu-Bohol link as shown in Figure 2.

6. Upon the completion of the links of the second priority group, social and economic ties between Visaya region and Mindanao region will be strengthened. Negros-Western Mindanao and Bohol-Central Mindanao links will play vital roles in fostering interisland transport. Remote islands with reasonable volumes of seaborne traffic are also linked by the Ro/Ro transport at this stage. Development of Ro/Ro links of the second priority group is also shown in Figure 2.

7. Total project cost for the development and improvement of Ro/Ro terminals of the first and second priority groups was estimated at about 2,700 million pesos. Project cost by link and by port were estimated individually, and a construction schedule was prepared so that the links of the first and second priority groups are in operation by the year 2010.

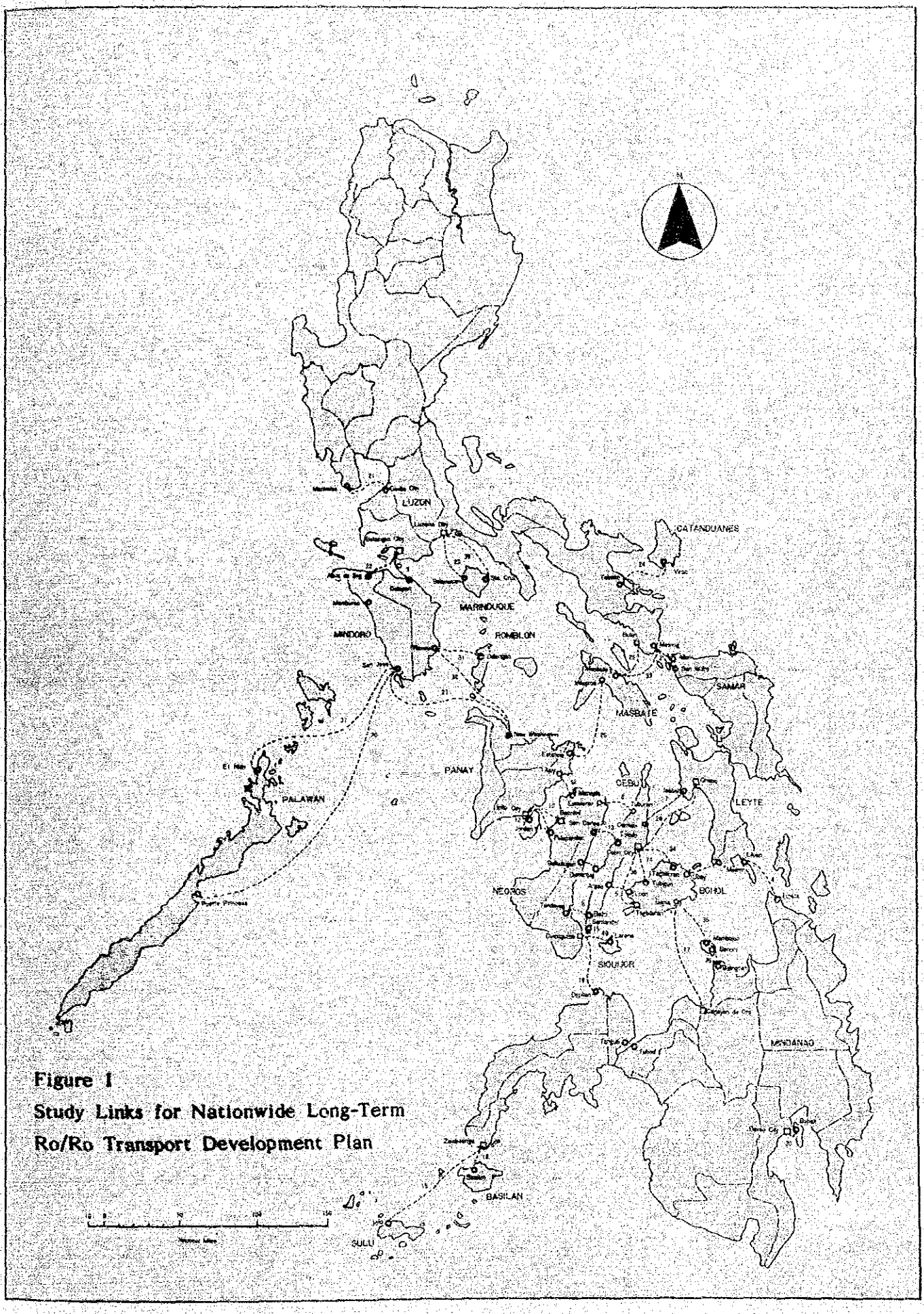

Figure 1
Study Links for Nationwide Long-Term Ro/Ro Transport Development Plan

Table 1 Prioritization of the Study Links

Group	Study Links		Car Ownership	Road Condition	Through Traffic	Shipping	Cargo	Passenger	Passenger's Request	Ro/Ro Ramps	Const. Cost	Sub Total	Dev't. Policy	Regional Center	Total Points
1st Priority Group	3. Batangas City	Calapan	4	4	5	5	25	10	1	5	5	64.0	15	0	79.0
	13. Toledo	San Carlos	10	4	3	3	25	10	3	5	0	63.0	15	0	78.0
	2. Matnog	San Isidro	2	5	5	5	20	10	1	5	10	63.0	15	0	78.0
	1. Matnog	Allen	2	5	5	5	25	10	1	5	5	63.0	15	0	78.0
	38. Cebu City	Tagbilaran	8	4	1	3	25	8	3	2.5	10	64.5	10	2.5	77.0
	10. Iloilo City	Bacolod	6	5	1	3	25	10	1	0	0	51.0	15	5	71.0
	4. Liloan	Lipata	2	5	5	5	15	6	1	5	10	54.0	15	0	69.0
	14. Cebu City	Tubigon	8	3	3	3	20	8	5	0	5	55.0	10	2.5	67.5
	28. Cebu City	Ormoc	8	3	3	3	15	8	5	0	5	50.0	15	2.5	67.5
	6. Escalante	Tuburan	10	3	5	5	10	6	3	3.5	5	50.5	15	0	65.5
	8. Tandayag	Bato	10	3	3	5	10	6	1	2.5	10	50.5	15	0	65.5
	41. Guihulngan	Dumanjug	10	2	5	3	15	4	1	0	10	50.0	15	0	65.0
2nd Priority Group	15. Dumaguete	Santander	10	3	3	0	15	8	3	2.5	5	47.5	15	0	62.5
	12. Iloilo City	Jordan	4	4	1	1	20	10	3	0	10	53.0	5	2.5	60.5
	9. Tubod	Tangub	6	3	3	5	20	4	1	5	10	57.0	3	0	60.0
	16. Dumaguete	Dapitan	4	3	3	3	10	4	5	2.5	10	44.5	15	0	59.5
	11. Iloilo City	Pulupandan	6	5	3	0	15	6	1	0	5	41.0	15	2.5	58.5
	22. Batangas City	Abra de Ilog	6	3	3	0	10	4	5	5	5	41.0	15	0	56.0
	17. Jagna	Cagayan de Oro	6	4	5	3	10	4	3	2.5	5	42.5	10	2.5	55.0
	23. Lucena City	Balanacan	2	3	5	5	20	8	1	0	0	44.0	5	0	49.0
	18. Zamboanga City	Basilan	4	1	3	3	10	10	5	0	5	41.0	5	2.5	48.5
	19. Zamboanga City	Jolo	2	1	1	3	15	4	5	0	10	41.0	5	2.5	48.5
	36. Benoni	Balingoan	6	3	5	3	5	8	3	0	10	43.0	5	0	48.0
	24. Tabaco	Virac	4	3	5	3	15	4	3	0	5	42.0	5	0	47.0
	25. Bulan	Masbate	2	3	3	3	10	4	3	2.5	5	35.5	10	0	45.5
	34. Cebu	Talibon	8	3	1	3	10	4	3	1.0	0	33.0	10	2.5	45.5
3rd Priority Group	42. Ajuy	Manapla	6	3	1	1	10	4	3	0	0	28.0	15	0	43.0
	21. Cavite City	Mariveles	10	5	3	0	15	6	1	0	0	40.0	3	0	43.0
	33. Matnog	Masbate	2	3	3	0	5	2	3	5	10	33.0	10	0	43.0
	30. Davao	Babak	8	3	1	1	10	2	5	0	5	35.0	5	2.5	42.5
	27. San Jose	New Washington	4	2	3	0	5	2	1	2.5	5	24.5	15	0	39.5
	32. Roxas	New Washington	4	2	3	0	5	2	3	0	5	24.0	15	0	39.0
	6. Argao	Loon	8	3	3	0	10	2	3	0	0	29.0	10	0	39.0
	7. Carmen	Isabel	8	2	3	0	5	2	3	0	0	23.0	15	0	38.0
	39. Lucena City	Sta. Cruz	2	3	1	2	10	4	6	0	5	33.0	5	0	38.0
	29. Ubay	Maasin	4	1	3	3	10	4	3	0	0	28.0	10	0	38.0
	[illegible]	Larena	[illegible]	2	1	1	5	2	3	2.5	10	32.5	5	0	37.5
	31. [illegible]	[illegible]	[illegible]	1	1	[illegible]	[illegible]	[illegible]	5	0	10	[illegible]	5	0	32.0
	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	1	3	0	[illegible]	[illegible]	5	0	31.0
	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	21.0	10	0	31.0

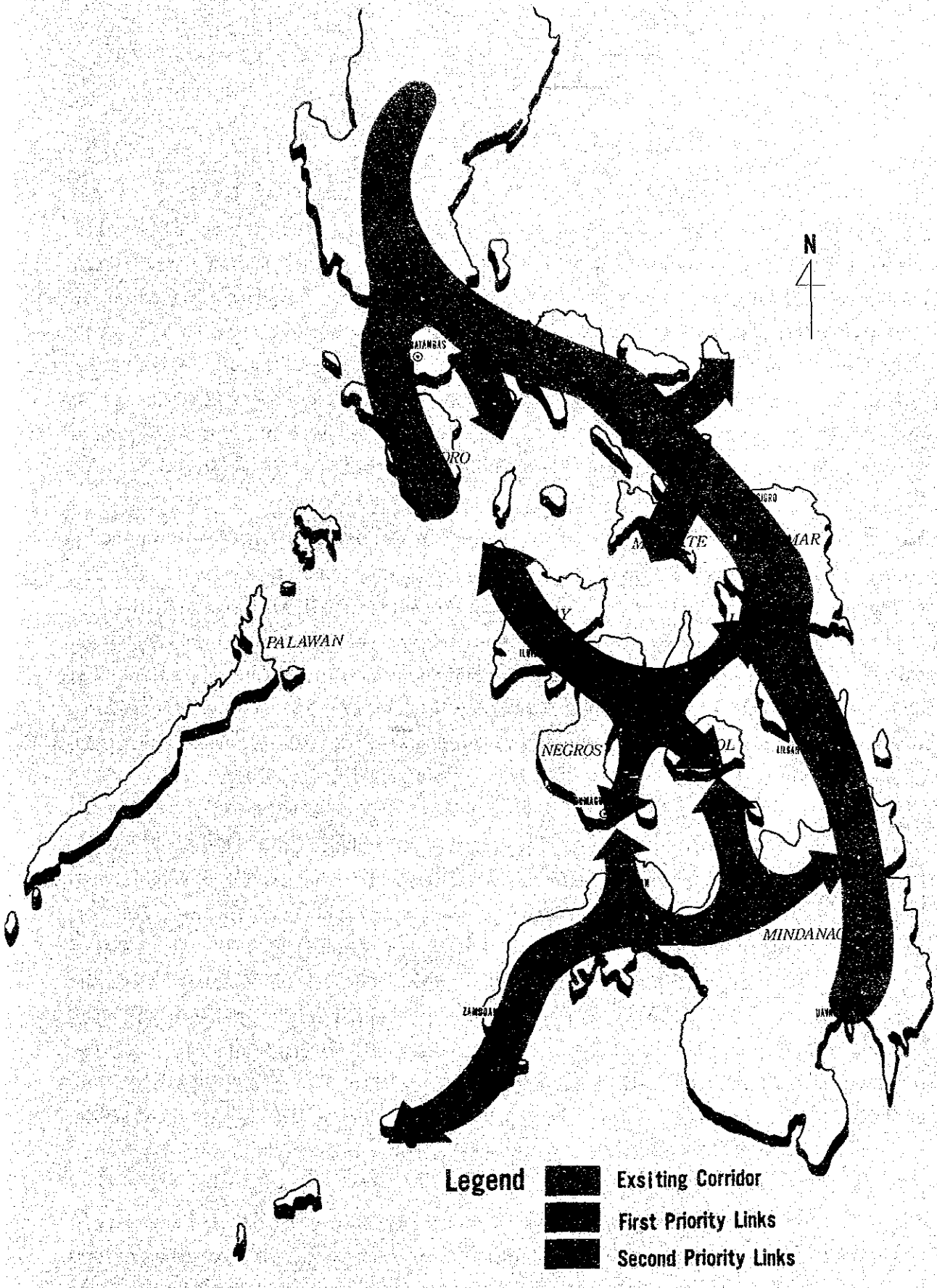

Figure 2 Ro/Ro Transportation Network Development Plan

Recommendations

(Maritime Policy)

It is necessary to adapt policies and rules so that an effective transportation means can be developed nationwide by introducing the Ro/Ro transportation system. The following are recommended as policy guidelines to by urgently required for promoting the Ro/Ro transportation system in the Philippines. It is suggested, however, that the recommendations should be understood in the context of the relevant facts and the analyses which appear in the main text (Vol. Chapter 2). For the reference, the paragraphs' number pertaining to each recommendations are indicated in blackets.

1. While it is the present arrangement in the Philippines for commencing domestic shipping business that any person or company must obtain a Certificate of Public Convenience (CPC), or a Provisional Authority (PA) from MARINA, it is the government policy to take steps toward deregulating liner services. However, most of the study links have a relatively limited volume of traffic, and may be served by operators whose financial positions are not strong. Therefore, the existing franchise scheme should be maintained for the routes where the demand is not sufficinet for the more than two operators. (para.2.29).

2. Since the rate of maritime casualties and death toll thereof in the Philippines is high among other shipping nations, protection of life at sea should be given the highest priority in maritime policy alternatives. In this context, the government should maintain its function of controlling the passenger vessels' operation, until such time as the safety regulations which comply with the current international safety requirement are properly enforced by the administration, and the vessel operators are dedicated to the adherence of the regulations. Furthermore, the amending work of PMMRR should be expedited, and the Philippine Register of shipping should be utilized for certifying compliance of safety regulations with international endorsment (para.2.30 &. 40).

3. Although some mitigating steps have been taken, rates of liner freight and passenger fare are basically still under strict control by the government. It is a consensus of those concerned that the existing scheme of freight pricing should be, in general, maintained. However, to encourage the expansion of

Ro/Ro service, it is recommended to introduce a specific Ro/Ro tariff scheme, in which rates are specified by type of vehicle so that collectors easily identify the charge to be levied. (para. 2.32 &. 34)

4. As for institutional matters, it is suggested that DOTC should assume the role of planning coordinator in terms of Ro/Ro transport system; also local branches should be created to coordinate activities within the local circle for transport planning. Regarding construction of municipal ports, PPA should be more actively involved with its upgraded technological skills because characteristics of marine engineering which are essential for port works differ from those utilized for civil works on land. In order to sustain the policy implementation, reporting and notification systems between headquarters and local branches of the relevant agencies should be improved and a central filing system should be established.

Furthermore, for resolving the complicated problems concerning administrative structures and practices, an experienced consultant be hired to come up with effective and warkable proposal (para. 2.38, 39. 43 & 44)

5. At present, fifteen agencies are requiring clearance formalities. December 31, 1991, EO No.493 was signed to cut red tape in the inter-island shipping business by reducing the number of clearance required to domestic vessels from 8 to 3, assuming PPA and PCG responsibility to coordinate vessel clearance procedures. Nevertheless, the implementing guidline has yet to be drafted. It is recommended that the work of the agencies should be expedited to formulate the adequate implementing guidelines of the EO No.493. (para.2.49)

6. Although MARINA has placed restrictions on the size of importing or bareboat chartering vessels for inter-island use to more than 500 grt, the restriction should be relaxed to under 300 grt for the benefit of operators of small vessels on secondary and/or tertiary Ro/Ro links. To implement the nationwide Ro/Ro ferry service project, specialized financing programs supported by government and other financial institutions are to be designed expeditiously for inter-island shipowners to acquire loans with favorable financing terms in the form of longer repayment periods and reasonable interest rates. (para. 2.60 &. 62)

(Nationwide Long-Term Network Plan)

The demand for the introduction of the Ro/Ro transportation system on shipping links in the Philippines is on the increase, and this tendency will continue in the foreseeable future. The following recommendations are steps to be taken to foster the development of the effective transportation system throughout the Philippines as soon as possible.

1. Feasibility studies should be carried out for the first priority links if they are not yet done. If the feasibility study reveals both its technical soundness and economic/financial viability as a Ro/Ro transport link, construction work should commence. Among the ports of first priority links, ports which are not operating at present will be constructed earlier than those already under Ro/Ro operation.

2. A five-year-package development program is recommended. To the greatest extent possible, construction sequence of the ports should be established to formulate the nationwide Ro/Ro trunk corridors at each stage. After development of the ports of the first priority group, development works for the ports of the second priority group would follow.

3. Sequence of development of the links among the second priority group will be the same as that of the first priority group. It should be noted that some links of the second priority group will play very important roles in formulating the nationwide Ro/Ro trunk corridor such as Dumaguete-Dapitan link.

4. It is not advisable for the links of the third priority to be hastily developed as Ro/Ro transportation links because they are at pre-mature stage. Rather, it is advisable to improve the level of shipping services such as service frequency and to upgrade the level of safety.

5. Road improvement affects Ro/Ro transport; where there is no road traffic, there is no Ro/Ro traffic. It is recommended that planning and implementation work of Ro/Ro terminals and that of roads should be coordinated with each other to fully benefit from the advantages and characteristics of this type of transportation means.

6. It is recommended that a monitoring system on nationwide Ro/Ro traffic should be established to facilitate the preparation works for the ever-increasing demand of Ro/Ro traffic.

II. Feasibility Study on the Iloilo-Bacolod Link

Conclusion

1. Iloilo-Bacolod link is one of the first priority links for the Ro/Ro operation which the nationwide master plan in Volume I of this report has identified. Since the opening of Ro/Ro operation between Escalante Port (Negros Is.) and Tuburan Port (Cebu Is.) in 1983, there has been growing expectations to open a similar Ro/Ro service between Panay Is. and Negros Is., leading to the through traffic from Cebu City to Iloilo City. This link is one of the busiest shipping links connecting neighboring major islands in the Philippines with a one-way passenger traffic of more than 780 thousand passengers and 126 thousand tons of cargo in 1990. Two (2) passenger/cargo ferries and a pure passenger ferry are regularly plying on this link.

2. To evaluate the technological feasibility, topographical, hydrographical and geological conditions are surveyed at Ports of Iloilo and Bacolod. Maximum current velocity was observed in the range of 1.2 to 1.5 m/sec, and tidal variation is 2.3 to 3.0 m. Subsoil material in Iloilo consists mainly of sand, and that in Bacolod consists of fine sand and soft clay at sea bed. Bearing stratums are found about 15 m to 25 m below existing sea bed. From the natural conditions surveys, it can be said that construction of Ro/Ro terminal facilities at both ports are technologically feasible.

3. Future Ro/Ro vessel size on Iloilo-Bacolod link is forecast at 2000 grt from the estimation of capital and annual operation cost. The required water depth for the vessel operation is 5.5 m. Old Foreign Pier is selected for the Ro/Ro terminal site at Iloilo Port over River Wharf and ICPC based on the comparison of existing berth utilization, convenience for passenger/cargo and availability of berth expansion. Banago Pier, Reclamation Area and a new site were considered for the future Ro/Ro terminal site at Bacolod Port. The chosen site is Banago Pier based on the comparison of construction cost and clients' transportation cost.

4. Ro/Ro terminal plans at Iloilo Port and Bacolod Port are made to meet the passenger/cargo demand in the year 1997, which are shown in Figure-3 and Figure-4. Two (2) Ro/Ro vessels are each required to make

two (2) round trips a day to meet the demand. Environmental impact by the project is considered minimal because the project size is small and the project sites are already developed and utilized for port operations. The total cost for the construction of Ro/Ro terminals at the two ports is estimated at 299 million pesos, including a foreign exchange component equivalent to 110 million pesos.

5. The project will have significant economic benefits. The project will generate benefits in the form of reduced cargo handling costs, reduction in pilferage/damage of cargo, avoided truck operating cost and waiting time, and passenger time saving. The economic internal rate of return for the project is estimated at 18.4 per cent. The financial internal rate of return for the project is estimated at 6.2 per cent for Iloilo Port and 7.3 per cent for Bacolod Port under the condition of government subsidy to the portion of access trestle at Banago Pier. The project is feasible from the view point of the national economy and financially sound for port management bodies.

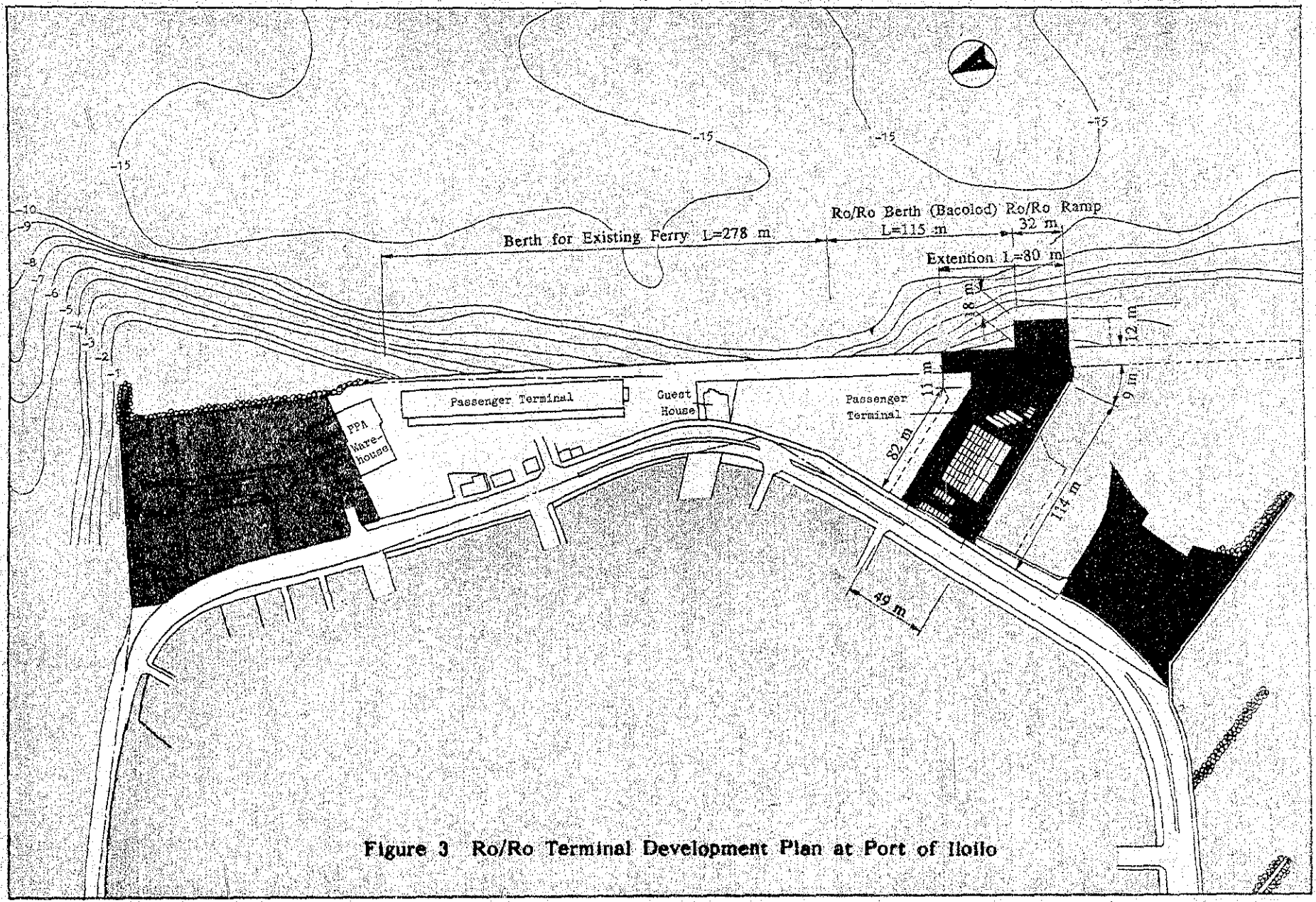

Figure 3 Ro/Ro Terminal Development Plan at Port of Iloilo

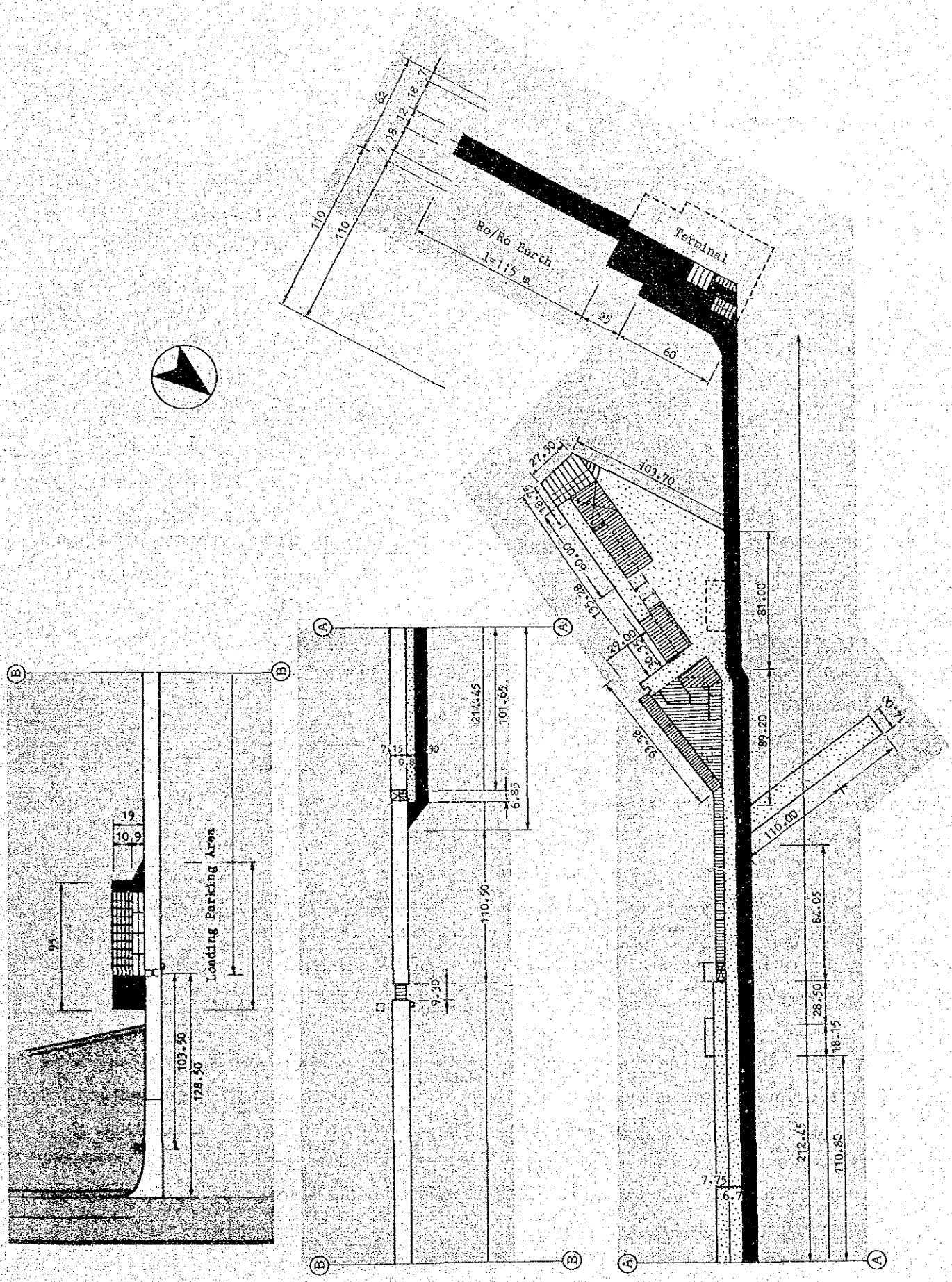

Figure 4 Ro/Ro Terminal Development Plan at Port of Bacolod

Recommendations

The Iloilo - Bacolod link is one of the links with the highest potentiality for introduction of the Ro/Ro transportation system. The following are summary recommendations for the successful implementation of the project.

1. To attain the financial viability of Bacolod Port, financial and/or technological support from the government will be required. As the causeway is mainly utilized as a road rather than a port facility, the public sector such as the government should compensate the port management body for the partial construction cost with a subsidy.

2. There is a possibility that a private firm might implement the development work of the Ro/Ro terminal. In general terms, private firms may not be qualified to obtain direct public loans. In view of the importance and magnitude of the social economic benefits of the Ro/Ro project on this link, the government should make arrangements for private firms to obtain loans from foreign or international public lending agencies like some projects actually conducted by private firms.

3. Prior to the actual development of the Ro/Ro ferry terminal at Bacolod, additional subsoil investigation at the construction site should be conducted to obtain supplementary subsoil data for the detailed design.

4. During development works of the Ro/Ro terminals at Iloilo Port and Bacolod Port, suitable safety measures should be taken to avoid unexpected incidents because construction works have to be carried out in the existing port operation area.

5. It is recommended that a meteorological observatory be set up as a permanent station in Bacolod to provide continual meteorological information for the project. As the Bacolod coastline is characterized by heavy siltation, it is also recommended that an additional function be added to the existing reference tide station at Bacolod to enable the periodical observation of the siltation caused by current.