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THE REPUBLIC OF INDONESIA

THE STUDY ON THE MASTER PLAN OF CONTAINER CARGO HANDOLING PORTS, DRY PORTS AND CONNECTING RAILWAYS IN THE REPUBLIC OF INDONESIA

FINAL REPORT

VOL.3 FEASIBILITY STUDY OF CONTAINER CARGO HANDLING FACILITIES OF UJUNG PANDANG PORT

JULY 1995

OVERSEAS COOPERATION INSTITUTE OF JAPAN (OCDI)

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE STUDY

ON THE MASTER PLAN OF

CONTAINER CARGO HANDLING PORTS,

DRY PORTS AND CONNECTING RAILWAYS

IN THE REPUBLIC OF INDONESIA

FINAL REPORT

Volume 3

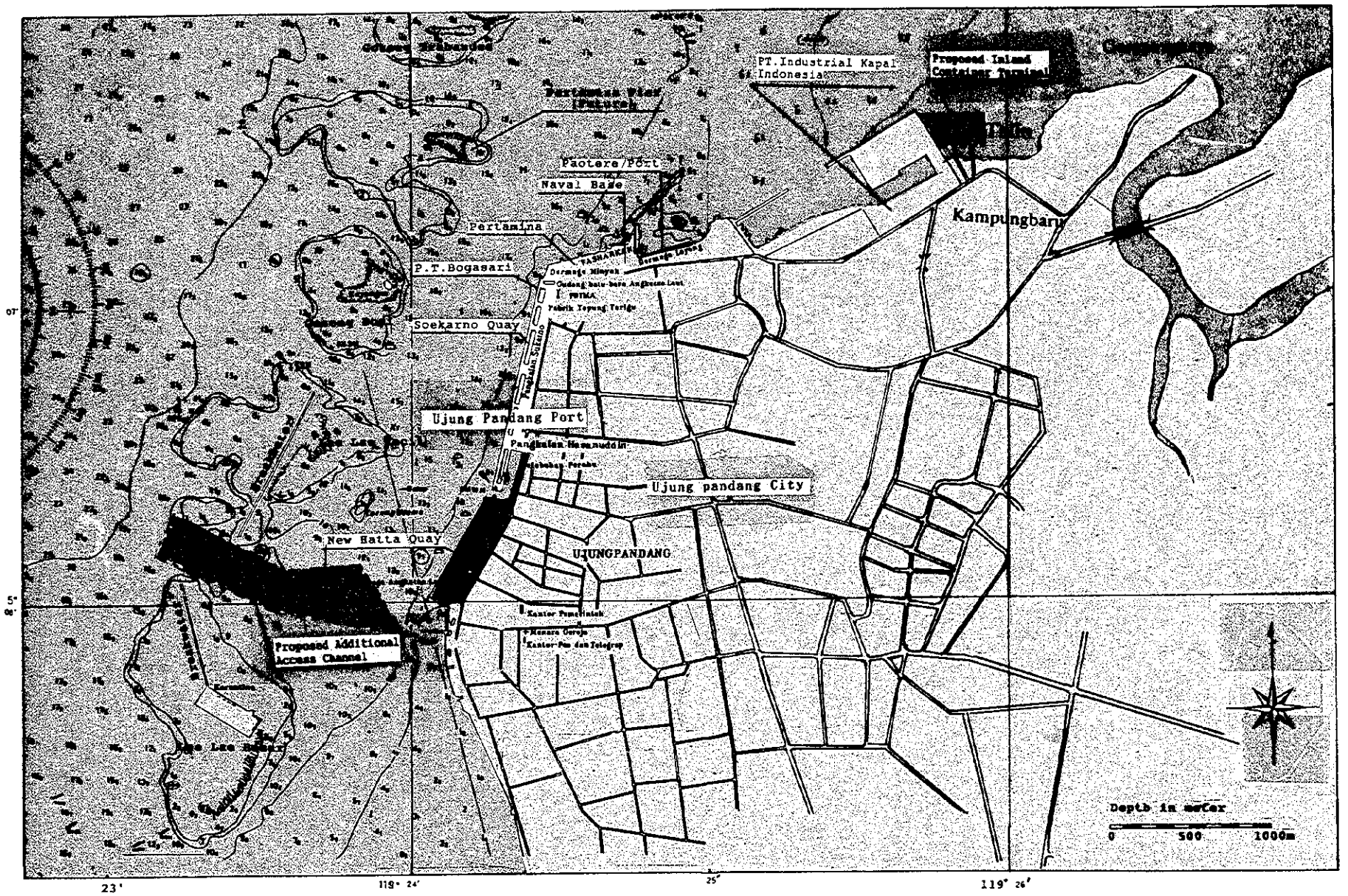
Feasibility Study of Container Cargo Handling Facilities of Ujung Pandang Port

Part 1: Master Plan of Ujung Pandang Port

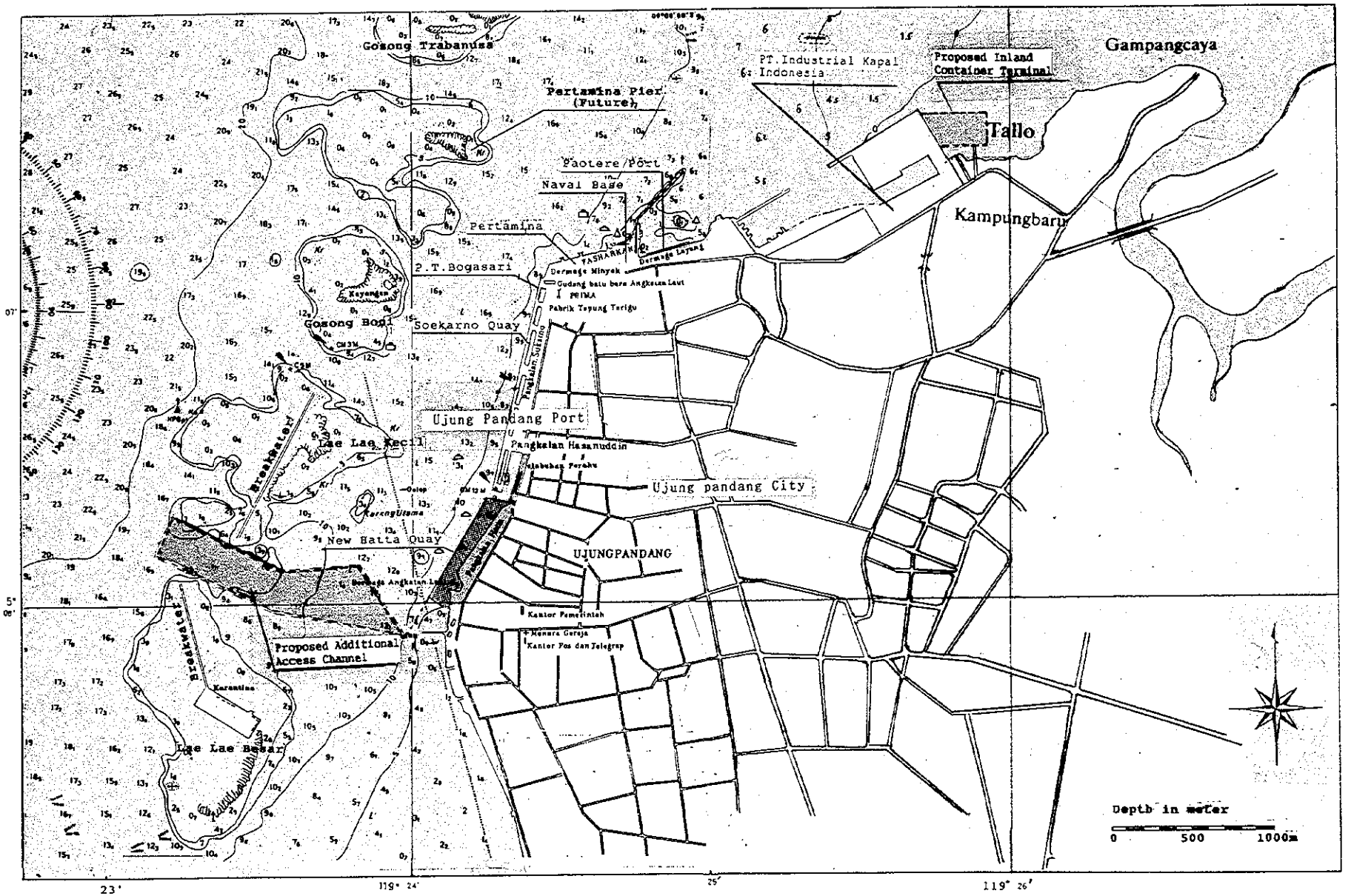
Part 2: Feasibility Study of Container Cargo Handling Facilities of Ujung Pandang Port

JULY, 1995

The Overseas Coastal Area Development Institute of Japan (OCDI)
Japan Railway Technical Service (JARTS)
Pacific Consultants International (PCI)



Map of Ujung Pandang



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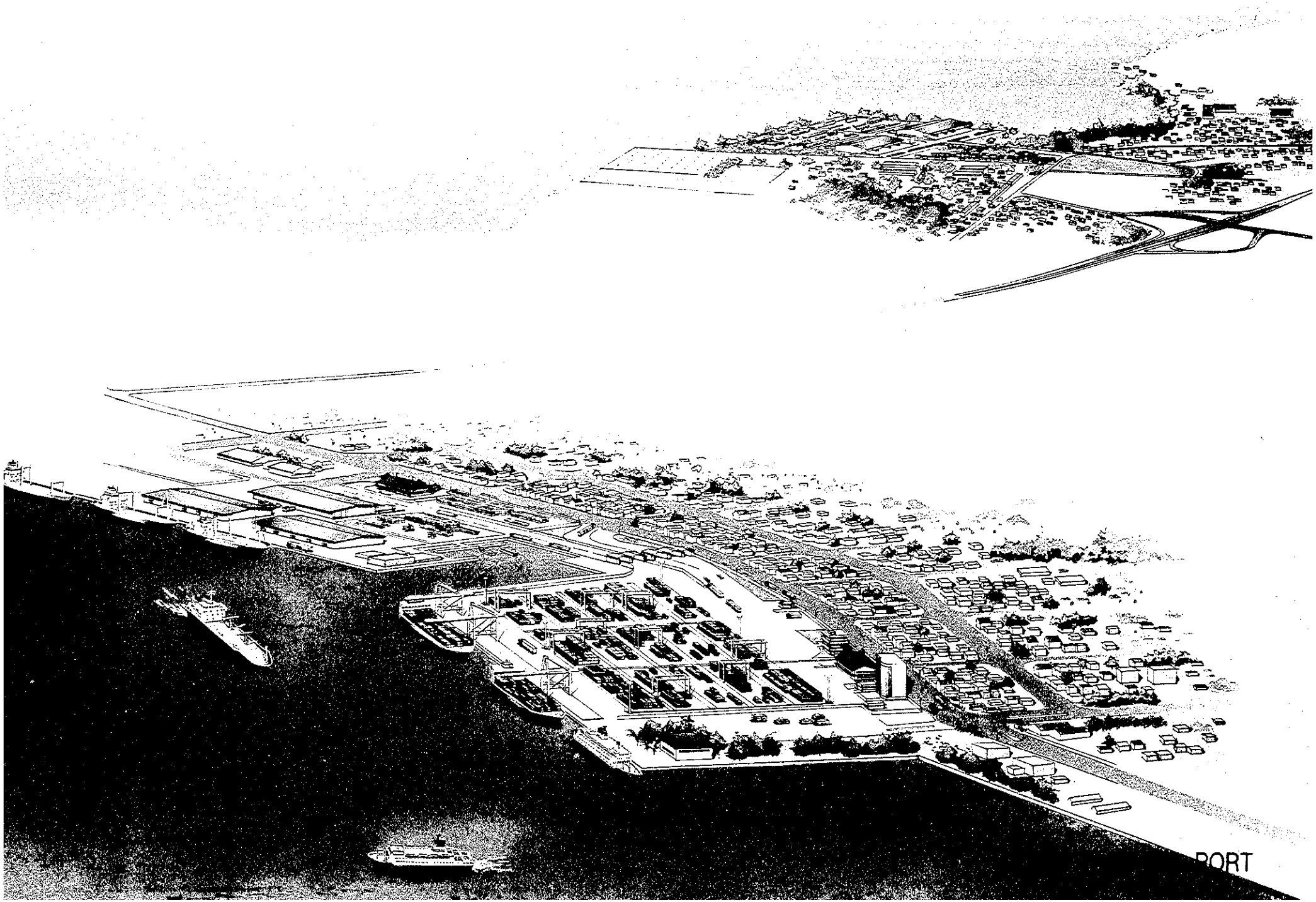
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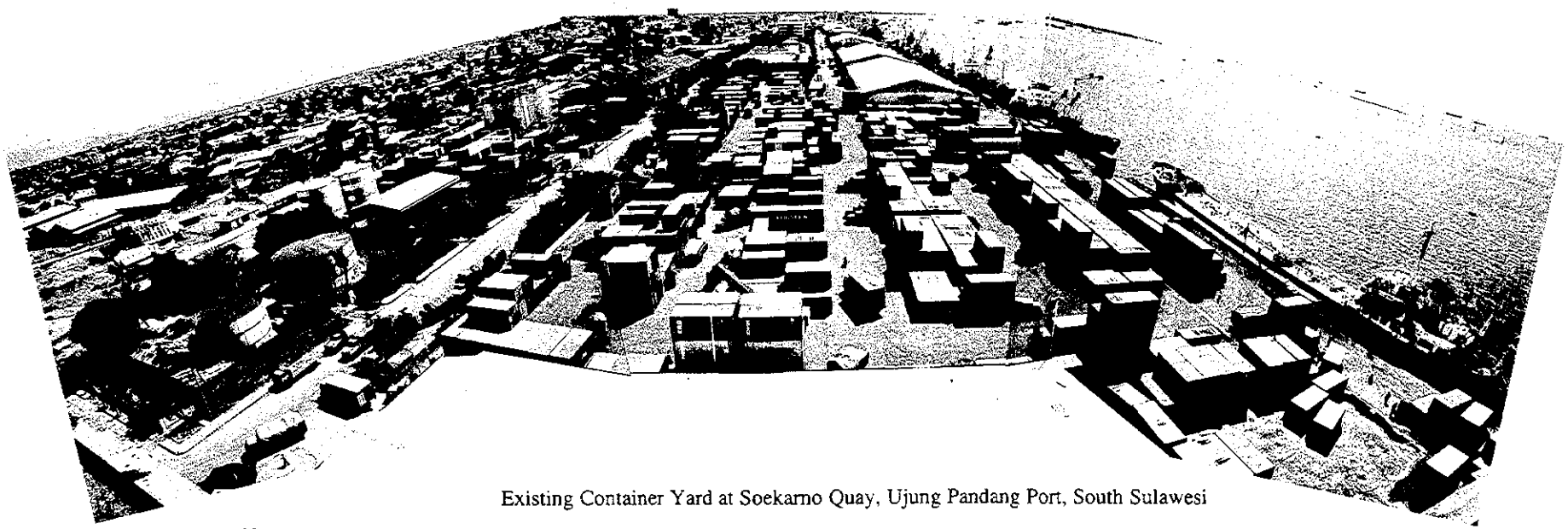
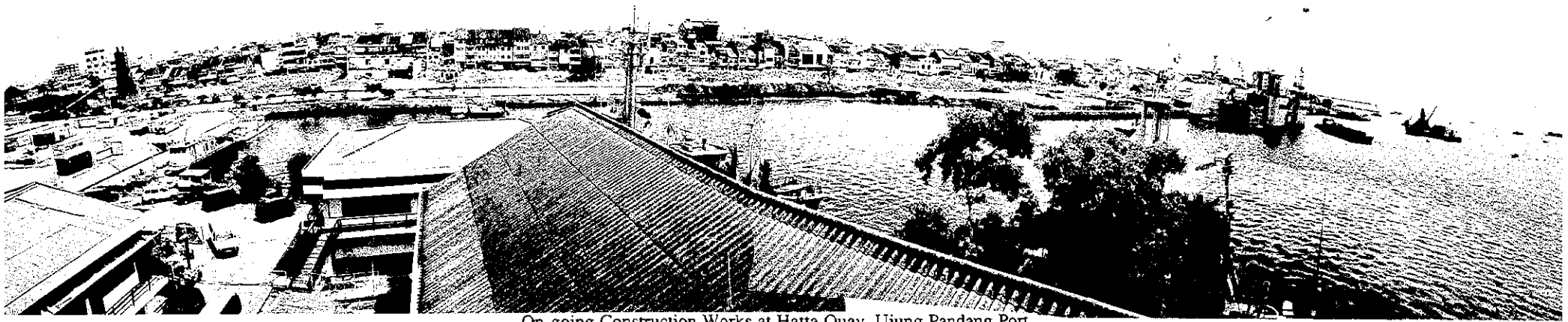


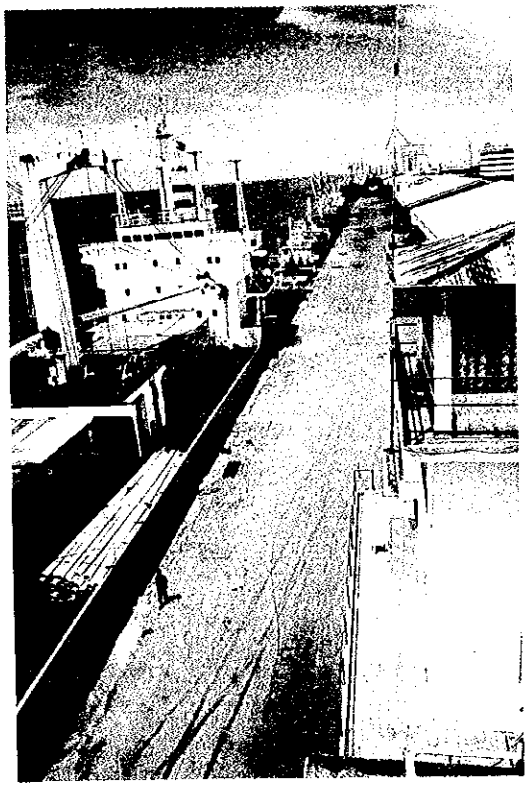
Existing Container Yard at Soekarno Quay, Ujung Pandang Port, South Sulawesi

Photo. taken: Dec., 1994



On-going Construction Works at Hatta Quay, Ujung Pandang Port

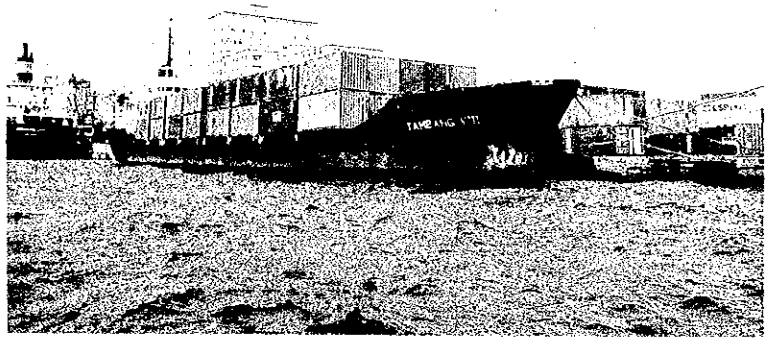
Photo. taken: Dec., 1994



Soekarno Quay of
Ujung Pandang Port,
South Sulawesi

Devanning at Soekarno Quay,
Uj. Pandang Port

Container Ship
along Soekarno Quay,
Uj. Pandang Port



Note: Photos. 29 to 32
were taken in Dec., 1994

Proposed Inland Container
Terminal Site, Kel. Tallo,
Ujung Pandang City

ABBREVIATION

AMDAL	:	Environmental Assessment Committee (Indonesian)
ANDAL	:	Environmental Impact Analysis (Indonesian)
CFC	:	Conversion Factor for Consumption
CFL	:	Conversion Factor for Labor
CIF	:	Cost Insurance and Freight
CFS	:	Container Freight Station
CT	:	Container Terminal
CY	:	Container Yard
DGLT	:	Directorate General of Land Transportation and Inland Waterways
DGSC	:	Directorate General of Sea Communication
DWT	:	Dead Weight Tonnage
EIA	:	Environmental Impact Assessment
EIRR	:	Economic Internal Rate of Return
EL	:	Elevation
FIRR	:	Financial Internal Rate of Return
FOB	:	Free on Board
F/S	:	Feasibility Study
GDP	:	Gross Domestic Products
GRDP	:	Gross Regional Domestic Products
GT	:	Gross Tonnage
HP	:	Horse Power
ICD	:	Inland Container Depot
ICT	:	International Container Terminal
IEE	:	Initial Environmental Examination
IKI	:	Indonesian Ship Industry PT. Industri Kapal Indonesia

ISO	:	International Organization for Standardization
INCT, ITC	:	Inland Container Terminal
JICA	:	Japan International Cooperation Agency
JR	:	Japanese Railways
KIMA	:	Makassar Industrial Estate
LOA	:	Length Overall
L.S	:	Lump Sum
LWS	:	Low Water Spring
MGA	:	Meteorological and Geophysical Agency
MOC	:	Ministry of Communications
MOT	:	Ministry of Trade
MOF	:	Ministry of Finance
M/P	:	Master Plan
MSL	:	Mean Sea Level
O/D	:	Origin destination (Survey)
PERUMKA	:	Indinesia Railway Public Corporation (PERUSSAHAAN UMUM KERETA API)
PELABINDO	:	Indonesia Port Public Corporation (P.T. Pelabuhan Indonesia)
PDAM	:	Water Supply Enterprise
PLN	:	National Electric Company
PLTU	:	Thermal Power Plant
REPELITA	:	Five Year Development Plan
RTG	:	Rubber Tired Gantry Crane
SCF	:	Standard Conversion Factor
St.	:	Station
S/W	:	Scope of Work
TEU	:	Twenty Feet Equivalent Unit

TCT	:	Tanjung Priok Container Terminal
TCT III	:	Tanjung Priok Container Terminal III
TOR	:	Terms of Reference
TPU	:	Public Waste Incineration
TRCT	:	Through Container Train
VAT	:	Value Added Tax

Abbriviation of the names of ports and railway stations

Tg. Emas	Tanjung Emas
Tg. Perak	Tanjung Perak
Tg. Priok	Tanjung Priok Port
Uj. Pandang	Ujung Pandang

Bd	:	Bandung
Bks	:	Bekasi
Ckp	:	Cikampek
Gdb	:	Gedebage
Jak	:	Jakarta Kota
Jng	:	Jatinegara
Kac	:	Kiaracondong
Kpb	:	Kampung bandan
Mri	:	Manggarai
Pdl	:	Padalarang
Pwk	:	Purwakarta
Thb	:	Tanahabang
Tpk	:	Tanjung Priok
Tg. Priok	:	Tanjung Priok
Prp	:	Parugpanjang

Feasibility Study of Container Cargo Handling Facilities of Ujung Pandang Port

Part 1

Master Plan of Ujung Pandang Port

THE STUDY ON THE MASTER PLAN OF CONTAINER CARGO HANDLING PORTS, DRY PORTS AND CONNECTING RAILWAYS IN THE REPUBLIC OF INDONESIA
Vol.3, FEASIBILITY STUDY

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Part 1

1. INTRODUCTION

1.1 The aim

1. The Master Plan of the Container Cargo Handling Ports, Dry Ports and Connecting Railways given in Vol. 2 of this study, focused on a development strategy of the container cargo handling Ports and railway facilities, in pedicular, from the viewpoint of to formulate a national network.

2. In the Master Plan of this study, the national network of the container handling ports and the formulation of development strategy over the countries were focused from the viewpoint of realizing an efficient and well-balanced network for container cargo transportation at the ports and the hinterland through dry port, i.e., inland container terminal and connecting railway.

3. On the basis of the above mentioned nation-wide Master Plan, the three ports, i.e., Tg. Priok Port, Tg. Emas Port and Uj. Pandang Port, and one Dry Port, i.e., Gedebage and connecting railway were identified the priority project sites which would need further study for the formulation of the short-term development plan and its feasibility analysis.

4. As the conclusion of the Master Plan of the current study, Uj. Pandang Port is identified the port which need further expansion after the completion of on-going project of New Hatta Quay in 1997, which is being undertaken under the project title "Urgent Rehabilitation Project of Makassar Port". Thus, of the three ports, Ujung Pandang Ports was chosen to be the first priority project site of which short-term development plan should be conducted in the current study together with Gedebage Dry port and Connecting Railway.

5. In the nation-wide Mater Plan, the harmonious development of container cargo facilities was the principal objective to be achieved. In the same manner, the development of the container handling facilities of Ujung Pandang Ports must conform to the development of whole Ujung Pandang Port and the urban development plan.

6. The Part 1 of Volume 3 is intended to further review and refine the above proposed the Master Plan with an emphasis on the whole activity of Ujung Pandang

Port to identify the orientation of the future development of the whole Port, wherein the Short-term Development Plan of the container cargo handling facilities should be formulated.

1.2 General aspects of the port

7. Ujung Pandang Port is located in the city of Ujung Pandang, west coast of South Sulawesi. It is used as a ship repair yard, a naval base, an oil base and a commercial port which can accommodate ocean-going and inter-island vessels. The port comprises of three sections: Soekarno Quay, Hasanuddin Basin and Hatta Quay.

8. Hatta Quay is presently undergoing changes to give way to a new container wharf. Its construction work will be completed in 1997 to accommodate 30,000 DWT container ships. However, even after its completion, it is still impossible to provide sufficient container yards inside the port area.

1.3 Methodology

9. Basically all the procedures listed hereunder, which have been done for the six major ports during the stage of the Master Plan of Nation-wide Container Cargo Handling Ports, are done once again with carefull consideration of the characteristics of the project site in various aspects: geographic, socioeconomic aspects and, especially, the whole port activities of the Port.

i) Setting up of socioeconomic framework of the region,
ii) Forecast of future traffic demand: various types of cargoes and passengers as well as container vcargoes,
iii) Formulation of long-term development strategy,
iv) Analysis of facility requirements,
v) Formulation of staged implementation plan with emphasis of container terminal,
vi) Initial environmental examination (IEE),
vii) Preliminary cost estimates, and
viii) Management and operation of container terminal.

10. The flow of the work is shown in **Fig. 1.1.**

11. The Master Plan of Uj. Pandang Port discussed hereunder is formulated toward the target year 2010. Items which need to be carefully examined are:

i) Updating the Layout Plan of New Hatta Quay and Soekarno Quay,
ii) Container Handling Equipments at the New Hatta Quay,
iii) Inland Container Terminal,
iv) Additional Access Channel of the Uj. Pandang Port.

12. The major outputs of Master Plan are:

i) zoning plan of the port area for various port facilities; Container cargo, General Cargo, Dry Bulk Cargo and Passengers.
ii) Proposal of the future development plan beyond 2010, and
iii) Layout plan, implementation plan, basic design and cost estimate of the container cargo handling facilities, necessary for the target year.

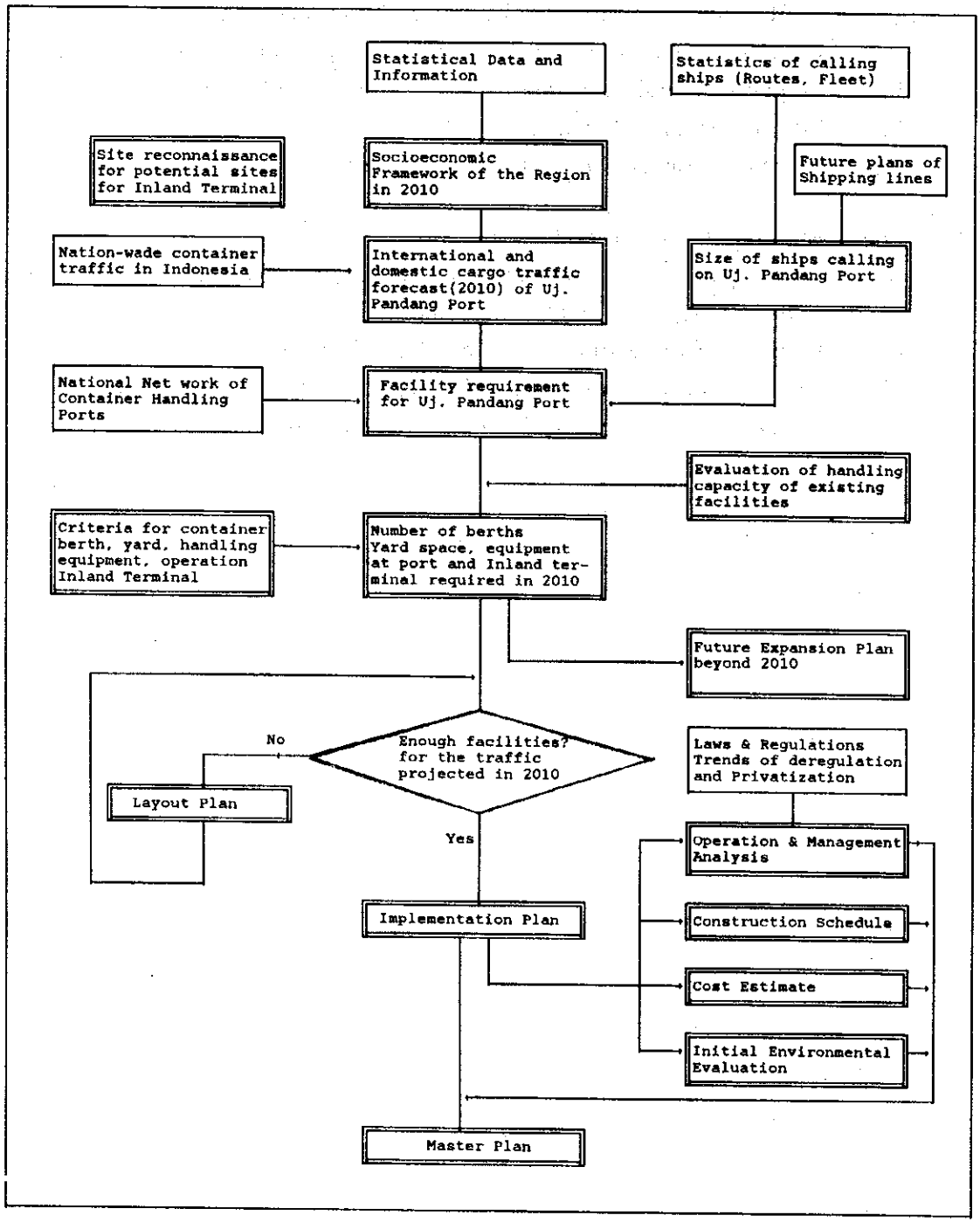

Fig. 1.1 Work Flow of Master Plan of Uj. Pandang Port

2. PRESENT SITUATION OF UJUNG PANDANG PORT AND ITS ENVIRONMENT

2.1 OVERVIEW OF RELATED CONDITIONS

2.1.1 Geographical aspects

(1) Land area

a. Port area

1. The Uj. Pandang Port, which is locally called Makassar Port, is laid on the position of 05 08' 08" South Latitude (S.L.) and 119 24'02' East Longitude (E.L.) within a tropical zone.

2. The port is located in the west coast of South Sulawesi along the coast of Makassar Strait and in the City of Uj. Pandang, Provincial Capital of South Sulawesi, one of the four Provinces in Sulawesi Island. The port has an area of 16,572,690 m^2. is located), and is in the city of Uj. Pandang the capital city in South Sulawesi Province. Uj. Pandang City has population of 912,800, population growth rate 1.62.

3. Uj. Pandang City is the center of the Eastern Indonesia, which comprises three provinces in Kalimantan, four provinces in Sulawesi, three provinces in Nusa Tengaara, Maluku and Irian Jaya, and which accounts for 61 % of whole land area of Indonesia. This area has been, thus, given a priority in the national and various projects have been carried out: some of those infrastructure development projects are deep-sea port, airport, water supply, flood control, highway and human resources.

4. Present situation around the Uj. Pandang port as follows :

i) On Makassar Sea There are scattered small islands. As they make a place of scenic beauty, it is expected to be a tourism resources.
ii) Bentebg Port, Which is historical property ; old fort of Netherlands, is close with Uj. Pandang Port.
iii) As traffic congestion occurs on the access road to the entrance of the port while the passengers getting on/off the passenger boats, primary data

collected in this study is described in chapter 7 "Environmental impact assessment".

b. Potential site for Inland Container Terminal (INCT)

5. Potential sites for INCT are located on the Riparian Land of Tallo River between P.T. Industry Kapal Indonesia(IKI) and Tallo Community. Present environmental situation are as follows :

i) Behind the proposed inland container terminal, dwarf mangrove community occurs along the coast line (*Avicennia officinalis, Rhizophora spp.*), it is dwarf but playing a important role as a wind-breaker for the community.

ii) The sand dune on the proposed inland container terminal has been expanding due to the current change by the existing IKI yard.

iii) Fish ponds occur surrounding the inland container terminal and its access road, waterway leads to the fish ponds from the Tallo river through proposed container terminal.

6. Further detail environmental factors such as ; physical-chemical, biological and socioeconomic are described in **Chapter 7**, Environmental impact assessment.

(2) Climate

a. Rainfall

7. The rainfall data shown hereunder are the secondary data collected from the Meteorological and Geophysical Agency (MGA) of Anakukang Station with the base year 1981-1994. According to these data, the rainfall in this area varies over a ranges between 1 mm to 115 mm/month. The minimum rainfall, 1 mm/month, happened on August 1981, September 1982 and September 1986, and the maximum rainfall 115 mm/month happened on December 1987.

8. Viewing each month data, maximum average rainfall happened on December-January that ranges between 347.0-491.0 mm/month, and minimum rainfall happened on July-August which ranges between 3.0-2.0 mm/month. The each month data also shows that the maximum rainy-day happened on December-January and the minimum on July-

August.

b. Temperature and humidity

9. The data of the Low and the High temperatures and the relative humidity over the period from 1981 to 1991 are shown in **Table 2.1.**

10. The climate of Ujung Pandang is that of the tropical monsoon zones. The mean temperature of the months remain almost the same, 26 to 27 °C, throughout the year: yearly variation of low temperature is between 20 and 24 °C and the range of high temperature is between 30 and 33 °C. The annual precipitation is approximately 3,000 mm. Dry Season appears in June through October and in other months.

Table 2.1 Temperature and Humidity in Uj. Pandang

Month	Low Temp.(C°)	High Temp.(C°)	Humidity(%)	Rainfall(mm)
January	21.8-23.0	31.0-33.6	85-91	491.0
February	21.5-23.0	31.0-34.0	85-90	316.0
March	21.0-23.0	31.6-34.2	83-90	353.0
April	19.6-22.4	32.0-33.9	83-88	165.0
May	19.3-22.1	32.4-35.0	79-87	0
June	17.6-21.6	32.2-35.4	74-84	162.0
July	16.0-21.0	32.4-34.6	67-82	3.0
August	16.5-19.1	34.1-35.2	61-77	2.0
September	17.6-19.7	34.6-36.4	59-82	83.0
October	18.0-21.2	34.2-37.4	62-80	32.0
November	17.8-23.0	33.4-35.8	69-86	155.0
December	19.8-23.0	31.0-33.5	80-90	347.0

Source: MGA of Anakukang Station

c. Wind

11. Average wind speed data in the 1998-1991 period is between 1-5 knots (0.5 to 2.5 m/s). The minimum speed happened on the months of May, June and November, and the maximum on the month August. The South-West wind was most dominated

during that period which blown during the month of January, March, April, June, July, August, September, October, November and December. On the contrary the South East wind was minimum during that which blown during the month of November. The maximum wind speed blown from the South-West direction on January 1986 with the speed of 36 knots. The minimum speed also blown from the South-West direction, with the speed of 6 knots.

d. Physiography

12. The physiography condition of Uj. Pandang municipality consists of plain, rolling, hilly area, where it is also found some permanent and temporary muddy areas particularly during the wet months (rainy season).

13. In some areas like the Uj. Tanah, Tallo, Mariso, Tamalate and Wajo municipalities, the ground level is relatively smooth with a level of 0-5 meters, above the sea water level(SWL). Other ares such as Biringkanaya, Panakkukang consist of plain hilly/rolling(with the level of 5-23 meters above the sea water level).

14. The rock characteristic in the Uj. Pandang municipality and its surrounding constitutes volcanic rock, beach and river's alluvial sediment. Part of the volcanic rock settled in the West part, where consist of shallow sea water environment, which composed of :

i) Volcanic rock which formed from Sand-ash and volcanic gravel which compose of tufa, Sandy-tufa, fragment of Sandstone and limestone characterized by fossil, and it spreads over the Bulurokeng, Daya, Tidung, Biringromang and Tamalanrea.

ii) The rock characteristic in the Biringkanaya area is characterized by grain/coarse component and grey-brawny color which consists of igneous, andesit basalt, driftstones and limestones.

15. The general description of the Uj. Pandang municipality geological condition is characterized by base rock layer which is shaped with cavity filled by sediment from Tallo rover and Jeneberang delta. In top of the base rock layer, it is settled sedimentation of clay and fine stone from Tallo river. The sediment formed low-swampy-land at the norther of Uj. Pandang (including the dockyard area, and the area around

the Paotera port Uj. Pandang)

2.1.2 Socioeconomic background

2.1.3 Transport infrastructure

(1) Highways

16. The construction of a six (6) km toll road between Uj. Pandang Airport (Hasanudin Airport) and the Uj. Pandang Port is on-going, and scheduled to complete in 1997, which is the same year as the New Hatta Quay starts operation. The tollway directly leads to the Northern end of Soekarno Quay and will be connected with the existing six (6) lane road running just behind Soekarno Quay. At the souther end of Soekarno Quay, the six lane road leads to the Main Gate of the Quay. New Hatta Quay, which is presently under construction, is located next to Soekarno Quay to the South. The extension road from the Main Gate and New Hatta Quay is being widened to four (4) lanes. When the construction work is completed, the extension road will serve as the access road to New Hatta Quay.

17. As mentioned later, City Government has a plan to develop circumference roads and radial roads as a part of City Plan. The Toll Highway, presently under construction, forms a part of the Inner Ring Road, which is expected to serves as an arterial road to southern area of South Sulawesi.

18. Though the highway network in South Sulawesi is expected to be upgraded in the near future, the present condition is not sufficient or the container transportation by trailers. Especially, none of the existing road in the commercial zone surrounding Uj. Pandang Port is sufficient for the trailer traffic. This results in a heavy congestion in the container yard at Soekarno Quay, because the stuffing of containers is done in the container stock yard at the wharf.

(2) Inland Cargo Terminal

19. Though there is no railway in the province of South Sulawesi, a Inland Cargo Terminal was completed in 1991 by the municipal government 6 km away from the Makassar Port. The Terminal has 6.5 ha and six CFS, each of which has 1,440 m^2, and

9,200 m^2 of open storage and 9,200 m^2 parking space. It also has fumigation facilities. The terminal located near the toll road, which is presently under construction, and can also serve as the container terminal for air cargo. However, the terminal is not functioning well, because the container trailers are restricted to run on the ordinary highways.

2.1.4 Industrial estates

20. Industrial estates are located not only in the City of Uj. Pandang and its suburbs, but also various areas in South Sulawesi Province.

21. The one in the City of Uj. Pandang is called Kawasan Industry Makassar (KIMA), which is a state owned enterprise and was established in 1998. KIMA, when inaugurated, started its operation with 203 ha and its expansion plan up to 703 ha has been conducted since 1992. In 1993, an Export Processing Zone, which is a bonded zone) having 34 ha was established in KIMA.

22. The location is on the highway between the Port and the airport, and about 8 km away from the port (see **Fig. 2.1**). At present, about 30 factories are in operation: rattan furniture, food processing, wood processing, fish processing, plastic and automobile parts.

2.1.5 Urban development

23. Uj. Pandang City has its urban development plan. **Figure 2.1** shows the zoning plan of the Uj. Pandang City published by the City Government. The area behind the Uj. Pandang Port planned to serve as the commercial zone. The Area surrounding the Commercial Zone is the Residential Zone. A tourism zone is located to the south of the residential area. The eastern part of the city, an educational complex and sports complex are planned. As mentioned above, the Industrial zone is located between the educational complex and the ports complex.

24. The city road system proposed in the plan consists of three circumference roads surrounding the commercial zone and the Port: the Inner, the Middle and the Outer Ring Roads. Across these circumference roads, several radial roads are planned: a toll highway bound for the Airport which is located along the northern coast line and three

other roads. At Present, the Inner Ring Road is under construction. The north portion is scheduled to complete in 1997. When this portion is completed, the road will serve as the main access to the Port for the cargos from both the north and the south. At the intersection of the Middle Ring Road and the toll highway to the Airport, at present both of these roads still wait for the development, there exists the Inland Cargo Terminal, which is operated by City Government. Another inland cargo terminal is planned at the other end of the Middle Ring Road.

25. The coastal area in front of the existing Inland Cargo Terminal is reserved for the future development of wood processing industry.

2.2 Present conditions of Ujung Pandang Port

2.2.1 Port activities

(1) Cargo traffic

1) Total cargo volume

26. In 1988, total cargo volume of Ujung Pandang port was 3.446 million tons and in 1993 it reached 4.078 million tons. Increase rate between 5 years was 118% and average annual increase rate was 3.4%. In 1993, 20% of total cargo volume was international cargo and lest 80% was domestic cargo.

2) International cargo volume

27. International cargo statistics are summarized below;

Table 2.2 International cargo traffic

	In 1988 1,000 tons	In 1993 1,000 tons	Increase Rate	Annual Increase Rate
Import	349	351	101%	0.1%
Export	286	441	155%	9.1%
Total	634	792	125%	4.5%

Source : PTPI IV

28. Import cargo volume recorded 348,000 tons in 1988 but in 1990 it fell to 273,000 tons and after that it gradually recovered to 351,000 tons in 1993. From 1990 to 1993, increase rate was 129% and average annual increase rate was 8.7%. Export cargo volume gradually increased up to 1992 and in 1993 it showed big increase.

29. Major import commodities were wheat and fertilizer. Major export commodities were cocoa, pellet (animal food), plywood, molasses, tapioca and shrimp.

30. In 1988 international cargo volume occupied 18.4% of total cargo volume but its growth rate is bigger than growth rate of domestic cargo, therefor in 1993 international cargo volume became to occupy 19.4% of total cargo volume.

3) Domestic cargo volume

31. Domestic cargo statistics are also shown below;

Table 2.3 Domestic cargo traffic

	In 1988 1,000 tons	In 1993 1,000 tons	Increase Rate	Annual Increase Rate
Unloading	1,811	2,250	120%	3.6%
Loading	931	1,036	111%	2.2%
Total	2,812	3,286	117%	3.2%

Source : PTPI IV

32. Major unloading commodities were fuel, fertilizer, vehicle and logs. Major loading commodities were fuel, rice and flour. Major origin and destination ports and provinces are Surabaya, Jakarta, East Kalimantan and neighboring islands.

33. International cargo volume has become to occupy 19.4% of total cargo volume but domestic cargo was still major cargo at the port.

4) Cargo volume by cargo form (by Packing type)

34. Cargo statistics by cargo form are also shown below;

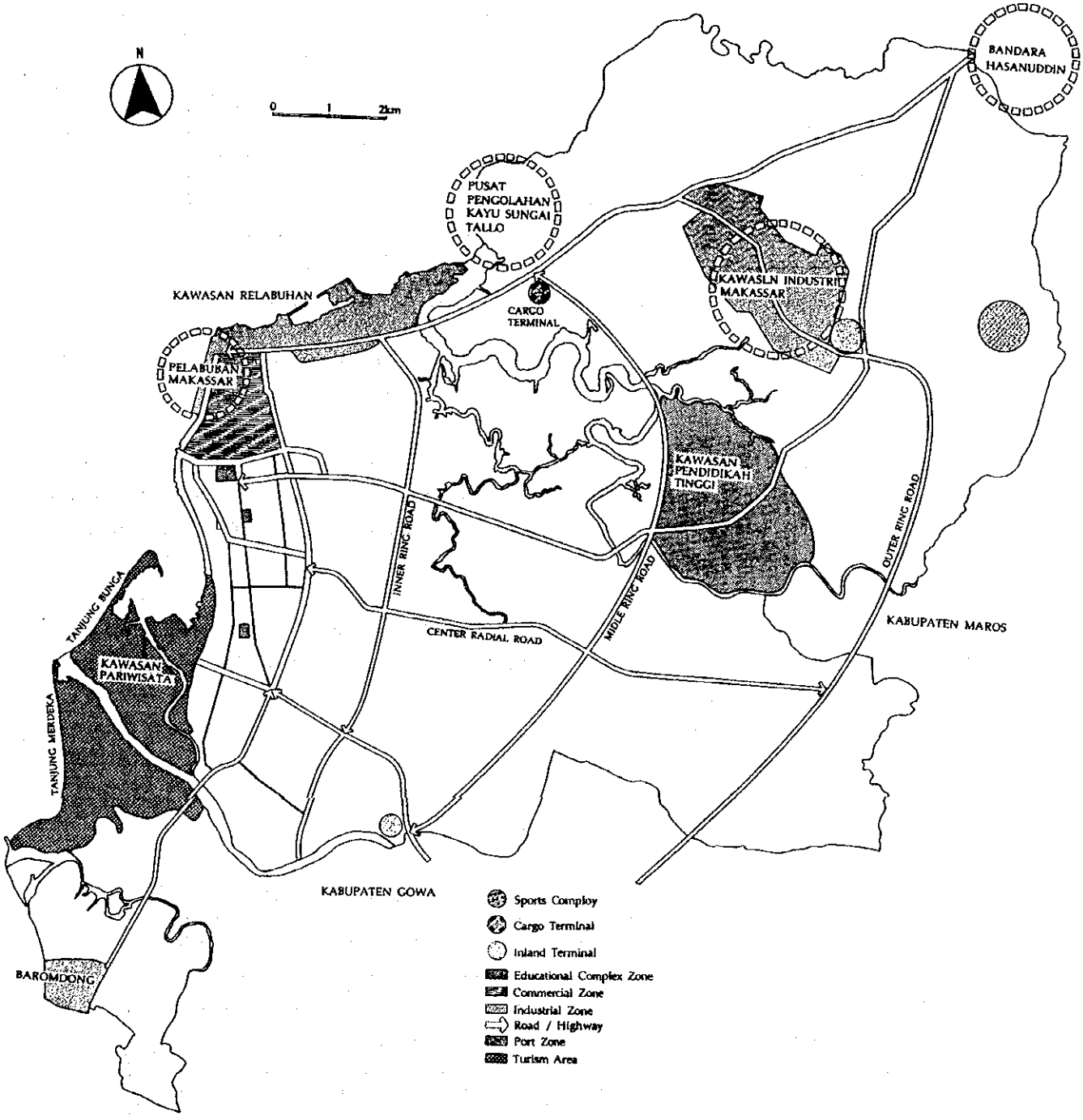

Fig. 2.1 Urban Development Plan in Uj. Pandang City

Table 2.4 Cargo volume by cargo form

	In 1988 1,000 tons	In 1993 1,000 tons	Increase Rate	Annual Increase Rate
Container	18	405	2295%	187.1%
General	1,040	671	65%	-8.4%
Bagged	717	912	127%	4.9%
Liquid Bulk	1,117	1,335	119%	3.6%
Dry Bulk	476	581	122%	4.1%
Others	77	175	224%	17.5%
Total	3,446	4,078	118%	3.4%

35. Based on the above table, it seemed that general cargo was changing to containerized cargo.

36. Major bagged cargo are flour, rice,fertilizer and cement. Major portion of liquid bulk cargo consisted of fuel and molasses and major portion dry bulk cargo consisted of wheat and fertilizer but fertilizer has changed to bagged cargo in 1993 and in future it will be containerized cargo.

37. At Ujung Pandang port, containers were used for not only international cargo but also used for domestic cargo. Growth rate of containerized cargo volume was more than that of total cargo volume.

5) Container volume

38. Container cargo statistics are also shown **Table 2.5.**

Table 2.5 Growth of container volume by TEU

	In 1992 TEU	In 1993 TEU	Increase Rate	Annual Increase Rate
Unload (Full)	12,189	23,1667	190%	90.1%
Empty	849	760	90%	-10.5%
Loading(Full)	7,208	10,297	143%	42.9%
Empty	4,639	13,128	283%	183.0%
Total	24,885	47,352	190%	90.3%

* Remarks: (Full) includes L.C.L containers

39. Empty containers were exported or loaded after using for import and unloading cargo.

40. Statistics of containerized cargo had not recorded individually until 1991 at Ujung Pandang port and containerized cargo volume had been recorded as general cargo.

6) Growth of 20 foot and 40 foot container volume

41. Two types of container is mainly used at Ujung Pandang port, one is 20 foot container and another is 40 foot container. Further from 1993 refrigerated container is used to export shrimps main size of which is 40 foot container. Statistics of container traffic is shown below.

Table 2.6 Container traffic by each size

	In 1992 TEU	In 1993 TEU	Increase Rate	Annual Increase Rate
20 Foot	22,829	45,230	198%	98.1%
Portion	91.8%	95.5%		
40 Foot	2,056	2,122	103%	3.2%
Portion	8.2%	4.5%		
Total	24,855	47,352	191%	90.5%

42. Based on the above table, 20 foot container was major container at the port and it seemed that 20 foot container was used for mainly domestic trade.

(2) Passengers traffic

43. Passengers who travel by passenger ship has been increasing by 13.6 % annual increase rate at Ujung Pandang port, statistics of passenger traffic at Ujung Pandang port is listed below.

Table 2.7 Number of calling passenger ship and passenger at Ujung Pandang port

Year	No. Ships	Departing	Boarding	Total
1988	257	212,348	210,293	422,641
1989	340	298,227	307,326	605,553
1990	344	318,678	335,504	654,182
1991	466	355,718	344,629	700,347
1992	430	346,445	386,107	732,552
1993	440	386,627	413,286	799,913
Increase rate		182.1%	196.5%	189.3%
Annual rate		12.7%	14.5%	13.6%

(3) Number of calling vessels and average ship size

44. At Ujung Pandang port, number of calling vessels and average ship size for international trade and domestic trade are listed in Table 2.8 and 2.9 individually.

45. At international trade, major exclusive ship is a dry bulk carrier for wheat and for domestic trade, major exclusive ship is oil tanker.

Table 2.8 Number of calling vessels at Ujung Pandang port (For International Trade)

		Foreign Ship	Indonesian Ship	Exclusive Ship
1988	Call	152	38	22
	GRT	585,339	204,088	821,103
1989	Call	154	29	31
	GRT	447,625	155,667	625,135
1990	Call	250	43	40
	GRT	472,944	172,604	578,266
1991	Call	246	42	40
	GRT	479,562	173,550	577,411
1992	Call	202	51	27
	GRT	365,140	127,312	512,211
1993	Call	244	48	38
	GRT	1,116,256	111,134	692,608
Total	Call	1,248	251	198
	GRT	3,466,866	944,355	3,806,734
Average GRT		2,778	3,762	19,226

Table 2.9 Number of calling vessels at Ujung Pandang port
(For Domestic Trade)

		Domestic Ship	Rakyat Ship	Exclusive Ship	Other Ship
1988	Call	1,094	2,379	354	41
	GRT	3,908,755	130,246	1,400,168	17,715
1989	Call	1,129	2,834	434	42
	GRT	5,143,236	146,328	1,712,914	28,377
1990	Call	1,200	3,590	361	41
	GRT	5,265,479	145,978	1,855,305	29,057
1991	Call	1,637	3,030	499	60
	GRT	6,559,194	130,783	1,836,796	32,094
1992	Call	1,520	3,207	412	114
	GRT	6,278,532	165,313	1,799,198	202,496
1993	Call	1,745	2,730	430	101
	GRT	7,029,508	172,927	1,634,764	175,682
Total	Call	8,325	17,770	2,490	399
	GRT	34,184,704	891,575	10,239,145	485,421
Average GRT		4,106	50	4,112	1,217

(4) Cargo flow (OD Table)

46. Cargo flow of Ujung Pandang port is shown in **Table 2.10**, but this table does not comprehensive all the data of cargo flow. However, a tendency of cargo flow is made clear as follows; there are so many origins of unloading cargo at Ujung Pandang port, but major origins are Surabaya, Jakarta and Singapore and next is Gresik and Belawan. Also, major destinations are Surabaya, Jakarta, Bitung and Ambon.

Table 2.10 OD Table among the Major Ports and Ports of PELABINDO IV

OD Table 92-2
Year : 1992
DATA BONGKAR Semua Asal Pelabuhan - PT. Pelabuhan Indonesia IV

(Unit: ton)

Destination / Origin	Ambon	Anyer	Balik P.	Batam	Biak	Bitung	Fak-Fak	Gorontalo	Jakarta	Jayapura	Kendari	Manokwari	Merauke	Menado	Pare-Pare	Pantoloan	Palembang	Pomalaa	Pontianak	Port Klang	Samarinda	Sorong	Surabaya	Toli-Toli	Ternate	Taraken	Ujung Pandang	Others Ports	Singapore	Other Foreign Trade	Total
Ambon					0.4	3.0				45.4		57.8										98.5	15.4		14.7		856.7	1,492.6		24.4	2,410.9
Albany																											15.0				15.0
Amperan																											5.5				5.5
Balik P.	1.5	20,691.8		251.1		12.0			4,102.8					30.8		110.1							55,718.7				225.3	4,807.5		328,435.0	414,386.8
Banjarmasin	0.8		305.0							0.7						821.4						0.2					2,922.1				4,050.2
Batam			3,468.9																												3,468.9
Bojonegara			170.0																												170.0
Botang			0.7												10,527.4	400.0											8,548.4				19,476.5
Bau-Bau	61.3											1.3										22.9					237.8				323.3
Biak	2.5					407.4			6,446.0	260.4		65.2										19.2	1,525.8				339.2	45.8	2,176.8	68,124.1	79,412.6
Biringkassi	9,351.4				800.0					6,600.0	18,923.3	2,737.3				30,681.4								700.0	10,113.9		0.6				79,907.9
Bitung	4.3			3,001.7					431.3	73.7		12.6				978.3						486.2			432.0		774.2	2.2	5,480.6	119,345.8	131,022.9
Banabangi											5,000.5																				8,000.5
Bima											2,645.0																3.7				2,648.7
Boton											3,500.0																				3,500.0
Belawan																						1.0					13,024.4				13,031.3
Batu Gong																											190.3				190.3
Belang-Belang																											6.8				6.8
Benoa																											0.5				0.5
Bau Pinang																											0.1				0.1
Buru																											9,950.8				9,950.8
Cilandak			478.1																												478.1
Cirebon			44.8																								1.2				46.0
Cilacap															4.4												24.7				29.1
Dili																											54.7				54.7
Dumai																											3.4				3.4
Ende																											1.0				1.0
Fak-Fak																						8.5					1.0				9.5
Irian Jaya																											11,845.2				11,845.2
Gorontalo									13,455.7														65,504.3							9,971.9	88,931.9
Gresik											1,300.0				5,269.5	2,200.7											23,358.0				32,128.2
Jakarta	33,329.8		51,823.3		11,873.0	85,538.8				38,712.9	719.2	2,394.0	12.0	110.2	618.5	21,041.1					879.1	28,283.6			16,477.1		266,587.9				555,940.5
Jayapura	30.2				93.2						193.9	93.8										711.7	758.3	54.8	10.3		181.0	480.2			2,605.4
Kendari	12.3					0.5		1,149.5		181.6												1,136.2	22,246.3		240.5		10.3	81.2		7,220.1	32,338.7
Kupang											268.8																8.3				277.1
Kijang	0.3																										0.4				0.7
Kaimana																						1.0									1.0
Kapontori											258.0																				258.0
Kolonedale											13.5																143.8				157.3
Kolonodale											255.0																				255.0
Kanada																											45.0				45.0
Kwandang																											960.1				960.1
Kwinana																											57.6				57.6
Lampung																											3,260.3				3,260.3
Larantuka																											0.5				0.5
Luwuk																											49.0				49.0
Lembar										26.5																	26.5				53.0
Lombok Tengah																											1.0				1.0
Merak			478.1																												478.1
Manokwari	14.7				3.6				2,491.1	85.4												41.7	341.6				41.7	5,500.6	790.4		9,310.8
Merauke							0.3															1.6	97.0				0.6				99.5
Menado								36.0																50.9			32.5				119.4
Mamuju																10.0											1,739.1				1,749.1
Maliji																											1,006.2				1,008.2
Maluku																											714.8				714.8
Mouwere																											90.0				90.0
Nabire	0.4									148.3		15.9															32.8				197.4
Namlea	40.0																														40.0
Padang			1,720.7																								17.9				1,738.6
Palembang			434.5																												434.5
Pare-Pare	3,500.0								10,400.0												1,700.0						10.0	7,856.1			23,466.1
Pantoloan						105.0			9,171.3														15,096.8	400.0			46.3	4,119.7		519.2	29,458.3
Pontianak										7.8																	1.3				9.1
Palopo											1,500.0																				1,500.0
Pangkep											1,800.0											900.0									2,700.0
Port Klang												566.7																			566.7
P.Obi																											1.4				1.4
Pogo																											586.0				586.0
Panjang																											1,075.3				1,075.3
Pomalaa																											180.0				180.0
Saliki			40.4																												40.4
Sabang	90.0																														90.0
Sanana	95.0																														95.0
Semarang	6.8									11.5	4.0																1,018.1				1,047.0
Serui	4.8									6.8		6,400.0										6.8					20.7				6,432.1
Samarinda		9,125.5	2,124.1		3,121.0				2,684.8												25,798.2	16,020.6	29,762.0	30,016.0			824.4	79,316.3	365.1	605,875.1	917,088.2
Sorong	56.4		257.2		44.9	0.2	35.2		1,236.5	284.5		64.5											110,054.9				350.8	41.4		4,370.8	8,607.8
Sibolga										1.5													1,865.4								1.5
Surabaya	94,385.2		41,303.9		52,882.5	98,747.4	952.7			26,913.7	32,675.3	15,376.5	5,840.8		800.0	41,959.9					78,405.9	16,928.2		644.2	26,810.3	3,113.9	345,378.8				881,117.2
Sarmi										1.6																					1.6
Seram											12.1																				12.1
Sai Gon															7.4																7.4
Teluk Bayur			1,117.8																												1,117.8
Toli-Toli																							6,667.6								6,667.6
Ternate	10.9								29.7	27.5		4.0										5.8	4,229.8				2,564.7	49.1	790.4		7,811.7
Tual	6.4																										3.0				9.4
Tanah Merah										16.5																					16.5
Tebo										3.1																					3.1
Tarakan																					20.6			19.5			587.9				628.0
Taluna																											0.5				0.5
Tobelo																											150.9				150.9
Ujung Pandang	61,022.7		3,036.5		6,617.9	63,120.6	216.9	2,860.9	136,634.6	16,218.9	15,171.4	13,252.1	4,326.5			3,371.0	3,000.0	145.1	30,350.1		1,379.8	17,418.1	206,165.1	18.0	27,928.2	683.1	4,806.8	45,087.4	115,006.5	180,168.5	956,300.9
Nagapandan																											4,808.8				4,808.8
Wamena																											1.8				1.8
Singapore	1,059.2		12,633.0		6.0						3,719.3				1,001.0	4,058.0											46,821.2				69,297.7
Foreign Trade	12,160.1		1,896.2					2,344.9							3,001.3						4,060.8	418.5					4,723.6				28,605.4
Total	215,246.8	29,817.3	121,133.2	3,252.8	75,442.5	247,934.8	1,205.1	6,391.3	187,259.3	89,776.7	90,496.8	40,981.7	10,179.3	141.0	21,229.5	105,837.8	28,798.2	18,165.9	60.112	30,016.0	84,246.2	84,485.3	492,285.0	1,987.4	82,027.0	4,797.0	766,487.8	148,880.1	124,811.8	1,324,054.9	4,467,280.3

Source : PPPI IV

2.2.2 Marine transport network

(1) Cargo traffic

47. The cargo throughput at Uj. Pandang Port in 1992 is summarized in **Table 2.11.** The following are observed in the table:

i) Domestic trade is overwhelming; the domestic cargoes accounts for 83 % of the total cargo throughput.
Dry bulk, of which foreign trade volume exceeds domestic trade volume, is the only exception. This results from import of flour.

ii) While the total export cargo and the total import cargo volumes are well balanced, there is a large imbalance between loading and unloading; Unloading cargo volume is about twice as much as loading cargo volume.

iii) There also observed imbalance between export and import for each form of cargo. The export is much larger than import for Bagged Cargoes, Liquid Bulk Cargos, and General Cargoes while the import is much larger than export for dry bulk cargoes.

iii) Container cargo traffic is still small; six (6) % of total cargo traffic.

iv) The export of Bagged cargo is quite large and Liquid bulk cargos

v) The sum of general cargoes and the bagged cargoes accounts for 55 % of total cargo volume.

Table 2.11 Cargo traffic at Makassar Port in 1992

Unit: ton

		Total	Container	Conventional Cargoes				
				Total	Bagged	Dry Bulk	Liq. Bulk	Gen Car.
Foreign	Export	323,307	3,995	319,312	108,525	26,988	41,870	141,929
	Import	345,054	3,429	341,625	33,291	291,304	0	17,030
	Sub Total	668,361	7,424	660,937	141,816	318,292	41,870	158,959
Domestic	Loading	1,093,439	67,912	1,093,439	292,094	72,638	346,708	381,999
	Unloading	2,136,790	173,338	2,136,790	513,341	127,657	824,447	671,345
	Sub Total	3,230,229	241,250	3,230,229	805,435	200,295	1,171,155	1,053,344
Total		3,898,590	248,674	3,891,166	947,251	518,587	1,213,025	1,212,303

48. On the basis of above characteristics observed in the cargo throughput, the trade at Uj. Pandang port seems to have the following aspects:

i) At present, the primary role of U. Pandang Port is the gateway to of its hinterland: Uj. Pandang City and South Sulawesi Province. Majority of the domestic cargoes are brought to the port and consumed in the hinterland.

ii) In the foreign trade, the port is characterized as an export port of bagged, liquid bulk and general cargoes. At the same time, the inbound (unloading) volume of these form of cargo is also much larger than that of outbound. These facts may imply that the port also has a function of transhipment service to other ports in the nearby regions.

49. **Table 2.12** shows the domestic cargo traffic in the Eastern Indonesia. The Table shows that the outbound cargo volume is much larger than inbound cargo volume. This indicates the fact that Uj. Pandang Port serves as a distribution center to nearby ports in the region. However, the former does not collect much cargoes from the latter. In Eastern Indonesia, Ambon, Bitung and Ternate are the major destinations of outbound cargoes at Uj. Pandang Port.

50. **Table 2.13** is prepared in the same manner as **Table 2.12** after adding the cargo volumes to and from Jakarta and Surabaya. This table is intended to exhibit the principal trade counterpart of Uj. Pandang. As observed in the table, Jakarta and Surabaya are the principal origin and destination of cargos. The sum of the cargo volumes to and from Jakarta and Surabaya account for 99 % of the unloading cargos and 60 % of loading cargoes, respectively. This fact indicates that Jakarta and Surabaya are the principal trade counterparts of Uj. Pandang in domestic trade.

Table 2.12 Cargo throughput in the trade within Eastern Indonesia (1992)

Unit: ton

Port	From Uj. Pandang		To Uj. Pandang		Total	
	Loading	Share(%)	Unloading	Share(%)	Total cargo	Share(%)
Ambon	61,002.6	25.7	658.2	9.8	61,660.8	25.2
Balikpapan	3,036.3	1.3	235.3	3.5	3,271.9	1.3
Biak	6,617.9	2.8	339.4	5.0	6,957.3	2.8
Bitung	63,122.3	26.6	773.9	11.5	63,896.2	26.1
Fak Fak	216.9	0.1	1.0	0.0	217.9	0.1
Gorontaro	2,860.9	1.2	0.0	0.0	2,860.9	1.2
Jayapura	16,220.1	6.8	181.1	2.7	16,401.2	6.7
Kendari	15,171.5	6.4	10.3	0.2	15,181.8	6.2
Manokwari	13,252.1	5.6	40.9	0.6	13,293.0	5.4
Merauke	4,322.5	1.8	0.6	0.0	4,323.1	1.8
Pantoloan	3,374.3	1.4	45.5	2.0	3,419.8	1.4
Samarinda	1,379.8	0.6	824.4	12.3	2,204.2	0.9
Sorong	17,416.3	7.3	351.0	5.2	17,767.3	7.3
Tarakan	1,702.0	0.7	588.0	8.7	2,290.0	0.9
Ternate	27,908.7	11.7	2,664.7	39.6	30,573.4	12.5
Toli Toli	118.0	0.0		0.0	118.0	0.0
Parepare		0.0	10.0	0.1	10.0	0.0
Sub Total	237,722.5	100.0	6,724.3	100.0	244,446.8	100.0

Table 2.13 Cargo throughput in the trade in Eastern Indonesia, Jakarta and Surabaya (1992)

Unit: ton

Port	from Uj. Pandang		to Uj. Pandang		Sub Total	
	Loading	Share%	Unloading	Share%	Cargo	Share %
Ambon	61,003	10.46	686	0.11	61,688	5.13
Balikpapan	3,037	0.52	244	0.04	3,280	0.27
Biak	6,618	1.14	420	0.07	7,038	0.59
Bitung	63,122	10.83	804	0.13	63,926	5.32
Fak Fak	217	0.04	1	0.00	218	0.02
Gorontaro	2,861	0.49	0	0.00	2,861	0.24
Jakarta	137,273	23.54	266,588	43.06	403,861	33.59
Jayapura	16,220	2.78	181	0.03	16,401	1.36
Kendari	15,172	2.60	10	0.00	15,182	1.26
Manokwari	13,252	2.27	42	0.01	13,294	1.11
Merauke	4,323	0.74	1	0.00	4,323	0.36
Pantoloan	3,374	0.58	48	0.01	3,422	0.28
Parepare	0	0.00	10	0.00	10	0.00
Samarinda	1,380	0.24	876	0.14	2,256	0.19
Sorong	17,416	2.99	351	0.06	17,767	1.48
Surabaya	208,167	35.70	345,379	55.78	553,546	46.04
Tarakan	1,702	0.29	734	0.12	2,436	0.20
Ternate	27,909	4.79	2,665	0.43	30,573	2.54
Toli Toli	0	0.00	118	0.02	118	0.01
Sub Total	583,044	100.00	619,156	100.00	1,202,200	100.00

(Statistic data from PELABINDO IV)

51. Summing up these observations, the cargo flow through Uj. Pandang Port can be summarized as follows:

i) Uj. Pandang Port has a function as transhipment for inbound cargoes. The cargoes are brought from Jakarta and Surabaya to Uj. Pandang. Major portion of these inbound cargoes are consumed in the hinterland of the Port, and few portion are transhipped there and distributed to other ports nearby.

ii) On the other hand, Uj. Pandang does not correct much cargoes from the nearby ports.

iii) These characteristics of the cargo flow in Eastern Indonesia is illustrated in **Fig. 2.2.** (Location code of the ports is listed in **Table 2.14**)

Table 2.14 Location code number of ports

Port	Province	Port	Province	Port	Province
1 Lember 2 Bima	Nusa Tenggara Barat	9 Banjarmasin 10 Katabaru	Kalimanatan Selatan	20 Parepare 21 Palopo 22 Uj. Pandang	Sulawesi Selatan
3 Kupang 4 Maumere 5 Wainpagu	Nusa Tengga Timur	11 Balikpapan 12 Samalinda 13 Tarakan	Kalimanatan Timur	23 Pomalo 24 Kendari	Sulawesi Tenggara
6 Dili	Timor-Timur	14 Golontaro 15 Kuandang 16 Bitung	Sulawesi Utara	25 Ambon 26 Temate 27 Tual	Maluku
7 Sampit 8 Pangkolan Bunn	Kalimantan Tengah	17 Luwuk 18 Talitoli 19 Pnatloan	Sulawesi Tengah	28 Sorong 29 Biak 30 Jayapura 31 Fakfak 32 Merauke	Irian Jaya

(2) Container traffic

52. Since Uj. Pandang Port has no fully equipped container wharf at present, the container cargoes volume is still small. Several shipping lines provide container service to Jakarta and Surabaya from Uj. Pandang. Among these Shipping Lines, PT. Djakarta Lloyd, PT. Lumintusinar Perkasa, PT. Meratus, PT. Samudera Indonesia, PT. Sejati and PT. Temporan Emas are the major companies.

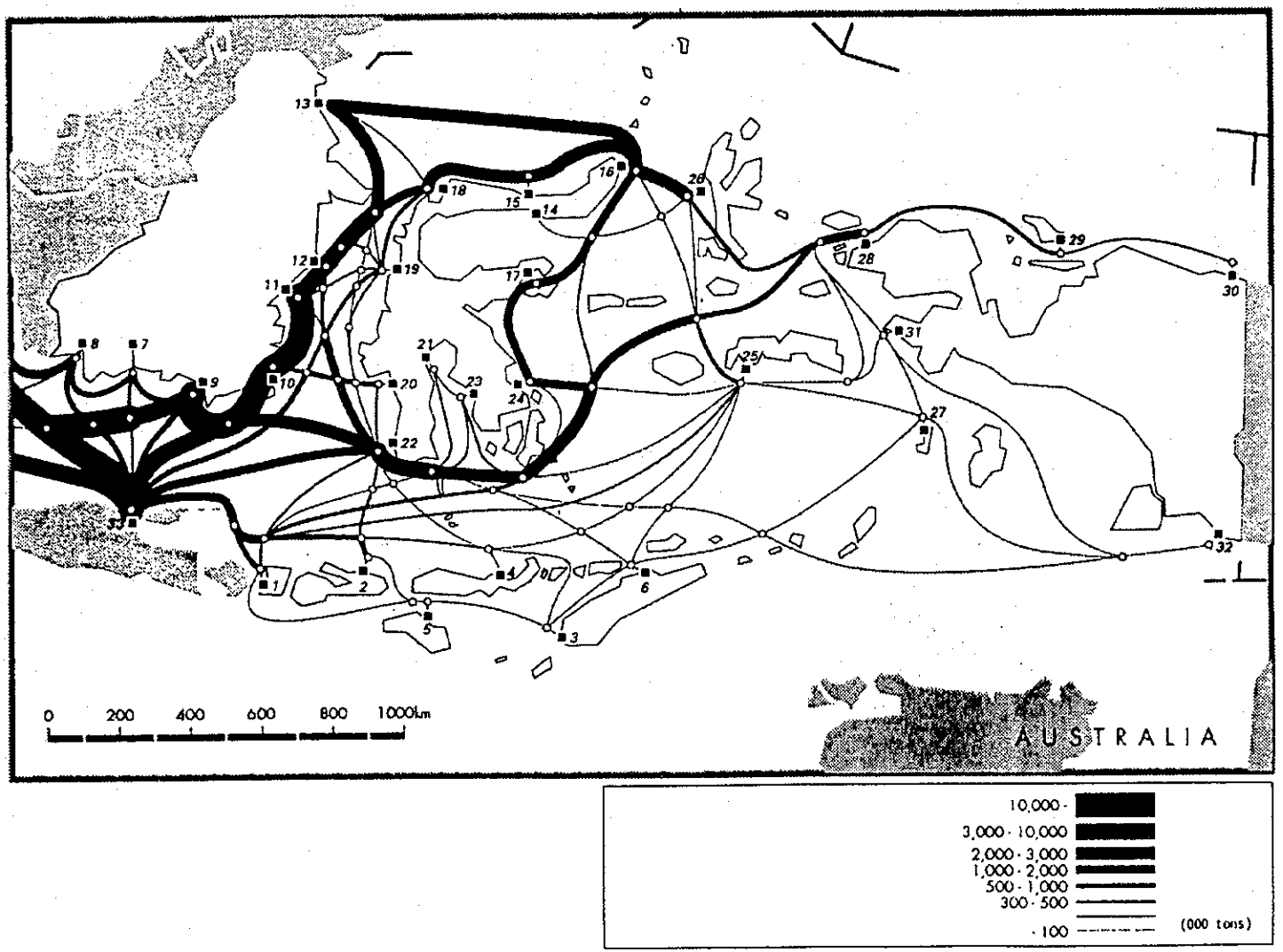

Fig. 2.2 Cargo Traffic Flow in 1990 in the Eastern Indonesia

53. These major shipping lines has been operating full container carriers with cargo gears. The range of sizes of these container carriers is 2,000 to 4,200 DWTs having the carrying capacity of 40 to 200 TEUs. These ships provide non direct service to Jakarta and Surabaya.

54. At present, no ocean going container carriers call on Uj. Pandang. Both Domestic and Foreign containers are carried by the domestic shipping lines to Jakarta and Surabaya. The foreign cargoes, which are loaded in the domestic containers, carried to Jakarta and Surabaya are restaffed in foreign containers there for export. In the same manner, imported cargoes are restuffed at Jakarta and Surabaya before the delivery to Uj. Pandang.

55. In accordance with the increase of the container cargo traffic, the foreign containers handled at Uj. Pandang have been increasing. These foreign containers are carried by domestic ships together with domestic containers.

56. Containers are sometimes carried by general cargo ships. Those ships which carry both container and conventional cargoes are called Combo Ship. At Uj. Pandang, Combo ships are quite common, and until shipping lines employ sufficient number of container carriers in heir service routes, this form of container service will continue in the coming years.

57. Because the container yard space and container handling equipments are very limited in Uj. Pandang Port. The shipping Lines has plans to construct their own inland depot outside of Uj. Pandang Port. However, since the existing access roads are not sufficient for trailer traffic, these plans seem to be postponed until the completion of the new toll highway.

(3) Passenger traffic

58. The passenger traffic at U. Pandang in 1993 was 892,000. The number of passengers has been increased at quite high rate for the past three years: 523,000 i 1991, and 713,000 in 1992. The major origins and destinations of the passengers visiting and leaving Uj. Pandang are East Kalimantan and Eastern Indonesia.

59. The flow of the passengers is schematically exhibited in **Fig. 2.3**. As the figure

shows, Uj. Pandang (location 22, in the figure) is an hub port of the passenger traffic in Eastern Indonesia.

d. Ship calls and ship sizes

60. Number of ship calls and the average ship sizes observed in 1993 are shown in **Table 2.15.** Of the total 2,383 ship calls, general cargo ships accounts for 1,371 or 58% of total ship calls.

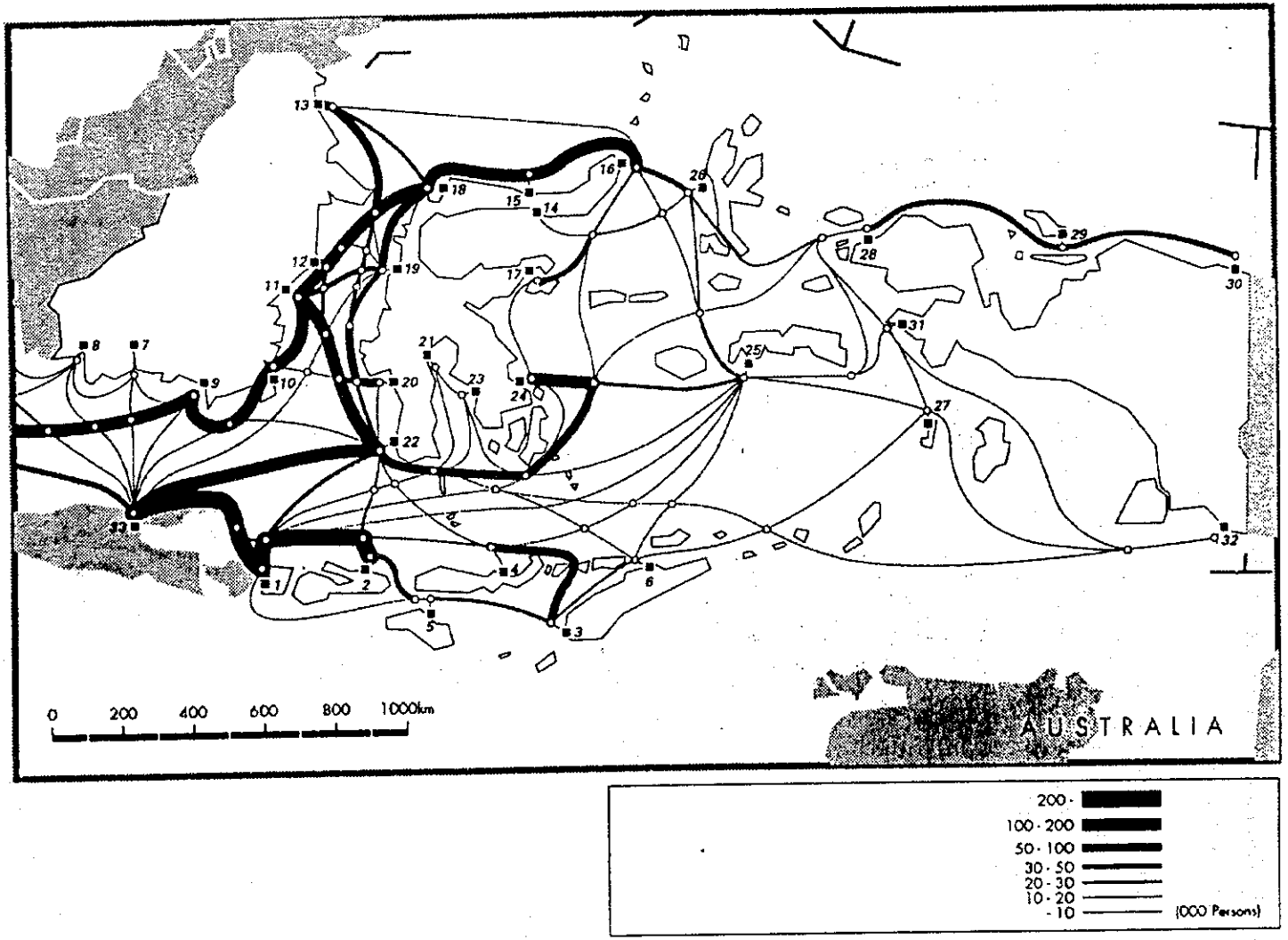

Fig. 2.3 Passenger Traffic Flow in 1990 in Eastern Indonesia

Table 2.15 Ship calls and average ship size at Uj. Pandang Port (1993)

	General Cargo	Oil	Dry Bulk	Passenger	Ro/Ro	Non-Oil	All Ship
Ship calls	1,371	407	402	457	86	22	2,383
(Share)	(57.5%)	(17.1%)	(16.9%)	(19.2%)	(3.6%)	(0.9%)	(100%)
GRT(Average)	1,955	3,786	28,279	11,581	1,972	1,848	4,364
DWT(Average)	3,598	6,485	16,917	3,260	1,681	3,963	4,375
LOA(Average)m	75	93	170	130	81	75	90

Source: PELABINDO IV

61. The average ship size of all the ships was 4,375 DWT. Among various type of ships, Dry Bulk Carriers are the largest: 17,000 DWT. Next largest types were Liquid bulk carriers and Passenger ships. The general cargo ships were 3,500 DWT on the average.

62. The size of the general cargo vessel (including container cargo ships) which were registered at the Port Administration Office are summarized in **Table 2.16**. 80& of the general cargo ships fall on the DWT range between 1,000 and 4,000.

Table 2.16 Size Distribution of the Ships Registered at Uj. Pandang Port Administration (July through September 1994)

Shipping Lines	Ship Size D.W.T.													Total
	100	150	200	300	500	1T	2T	3T	4T	5T	7T	10T	Over	
Bahari									1	1	1			3
Bintang Timur Baru	1					1								1
Bonecom					2	4								7
Dermaga Harapan					1	1								2
Djakarta Lloyd					1				3		1	3	1	9
Lumi Perkasa							1	5		1				7
Indocement Tungal													3	3
Juli Rahayu						2	1	1						4
Japal							1	1	1					3
Kalla Lines				2	1	2	3		1					9
Libukang				1		1								2
Meratus							2	4	3	1			1	11
Panca Surya Perdana	2	1	1											4
Pelni							7	1	1		1			10
Pejaka							3	2	2	5	2			14
Perayaran Surya		1				1	9	1	2		3			17
Samindo									1					1
Samudera Indonesia								4	7		1			12
Siantan Kembabg				1		1	3	2						7
Sejati						1	3		1		1			6
Sukaltim			1			3	8	1						13
Tempran Emas							3	2			1			6
Total	3	2	2	4	5	17	44	24	23	8	11	3	5	151

Unit : Number of Ships, Source : Makassar Port Administration

2.2.3 Port Facilities

(1) Port Site and Approach

63. Ujung Pandang Port (Port of Makassar) is located on the west coast of South Sulawesi Province, comprises the north westerly part of Ujung Pandang city. The major existing facilities along coast line are, from north to south: (See **Figs. 2.4** and **2.6**)

1. Ship repair yard
2. Paotere Port (for traditional sailing boats)
3. Naval base
4. Pertamina oil base
5. Port of Makassar

i) Seokarno Quay
ii) Hasanuddin Basin
iii) Hatta Quay

64. Total length of coastal line of proposed port area reachs 7km with total land and water areas of 57ha and 1415ha respectively. Parallel to the existing Quay face line and keeping a distance of approximately 1 to 1.5 km, several coral reefs are lined up. These coral reefs together with breakwaters thereon comprise a calm natural port basin which is well protected against the waves from westerly direction generated by the West Monsoon (Musim Barat). The coral reefs are named from north to south; (See **Figs. 2.4** and **2.5**.

1. Gosong Trabanusa Bank
2. Gosong Panyoa Bank
3. Gosong Boni Bank (Kayangan)
4. Laelae Kecil Island (with breakwater)
5. Laelae Besar Island (with breakwater)

65. Presently incoming ships are using only the channel between Gosong Boni and Laelae Kecil. The bearing of incoming/outgoing ships are 125°/305°, which is parallel to prevailing wind direction thus it is less difficult for ship maneuvering.

66. The maximum current within the port basin is approximately 2 knots with semi-diurnal tide flowing north-south direction which is also parallel to the quay face lines.

(2) Berthing facilities

67. The outline of the existing berthing facilities of Ujung Pandang Port is summarized in **Table 2.17**. Among other Quays, Soekarno Quay is currently being used for ocean going vessels of which the northern 150m is assigned for the flour mill company and the 160m of the middle portion is used by passenger ships. The remaining 1050m is, therefore, allocated for cargo ships including container vessels. The largest size ship ever entered during 1990 to 1992 is 30,088 GRT and 37,012 GRT for general cargo and passenger boats respectively.

68. On the other hand, the old Hatta Quay is pointed out as the deteriorated concrete deck superstructure which is no longer sustainable against the surcharge load thereon.

69. In order to meet the future demand of year 1997 the rehabilitation of the Old Hatta Quay Area was decided, and implementation was started in 1994 as "Ujung Pandang Port Urgent Rehabilitation Project" under the assistance of OECF Loan.(SEE **Figs.2.7** and **2.8**)

The major scope of the works of the project is enumerated hereunder;

i) Construction of 670m long new Hatta Quay with -12m water depth. Objective ship is 30,000 DWT, with 216m long (LOA), max draft 11.6m.
ii) Construction of 154m small vessel quay.
iii) Dredging/reclamation ; 1.4 million cu.m.
iv) Transit shed. ; 4,000 sq.m
v) C F S ; 4,000 sq.m
vi) Administration Building ; 455 sq.m
vii) Maintenance shop ; 750 sq.m

70. As of this reporting period, a Contractor carried out the construction of caisson type quay wall. 4 units of godown which existed along the old Hatta Quay are already demolished and the demolision of the existing houses including some banks and other office buildings between Jl. Martadinata and Jl. Nusantara are on-going.

(3) Breakwater

71. Rockmound type breakwaters are existing on Laelae Kecil and Besar Islands with approximate total length of 1000m and 650m respectively. The crown height is +2.80m above LWS.

(4) Sheds and Yard

Storages and handling areas of Ujung Pandang Port are summarized below:

Transit sheds	19,152	sq.m
Open Storage	43,945	sq.m
Container yard	22,800	sq.m
CFS	700	sq.m

(5) Sand accretion and dredging

72. The main supply source of sedimentation of the area is considered coming from Jene Berang River which is located 7km southward of Port of Makassar.

73. According to "Final Survey Report of Ujung Pandang Port" (1989 by PCI) the coast line at the mouth of Jene Berang River was developed seaward approximately 1km some 80 years ago.

74. The lowest part of Jene Berang River, however, was recently diverted as shown in **Fig.2.4**. By means of this diversion the distance of the river mouth from the Port became 7km from the original 4km.

75. The sand accretion at the mouth of Jene Berang river is anticipated to be smaller because of not only this diversion but also the following works i.e.:

i) The construction of Bili-bili multi purpose dam is ongoing at 30km upstream from the mouth of Jene Berang River. Upon completion of the dam anticipated in 1999, the run-off of the soil will be drastically reduced.

ii) Excessive river bed excavation at the mid stream of Jene Berang River for construction materials.

76. At present the port basin of Ujung Pandang port is not affected by sedimentation hence no dredging works was carried out for the last ten years. This means the edge of sand bar flushed out by the Gene Berang River does not yet reach the port area. As to the Port basin of Paotere port which was affected by the flow of Jene Telo River located 5km northeast of the port, periodical dredging is being performed. The latest dredging was made in 1993 with a total volume of 50,000 cu.m.

(6) Cargo Handling Equipments, Tug Boats and Pilot Boats

77. The outline of the cargo handling equipment, tug boats and pilot boats are shown in the **Table 2.18.** Loading to and discharging from the ships are done using Ship Cranes and Mobile cranes. Container handling operation in the yard are done using Forklifts and Top loaders. A Reach Stacker in operation in the yard container handling is owned by a shipping company. Head tractors and Trailer Chassis are used for transportation of containers between quay and yard.

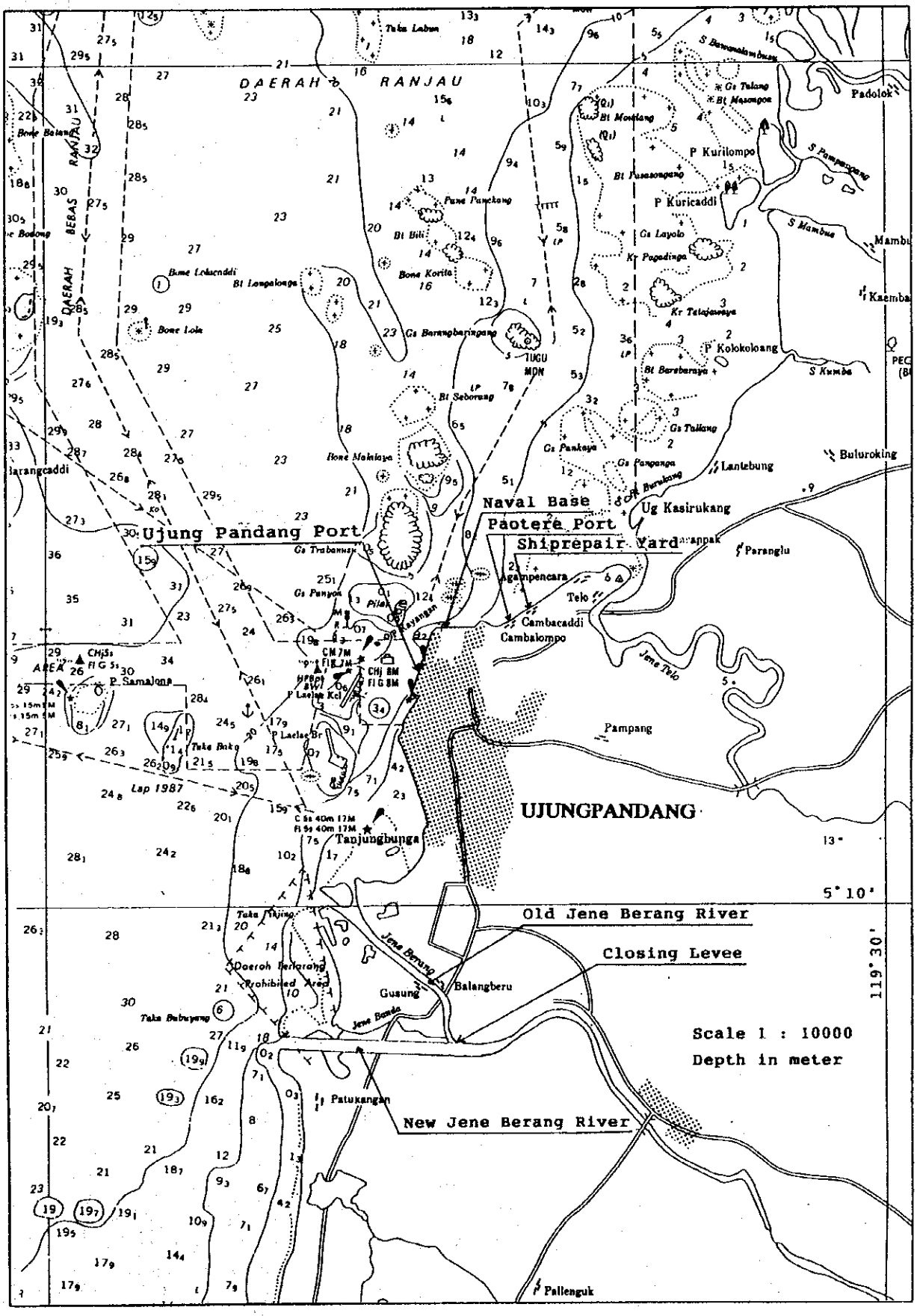

Fig. 2.4 Guide map of Ujung Pandang Port

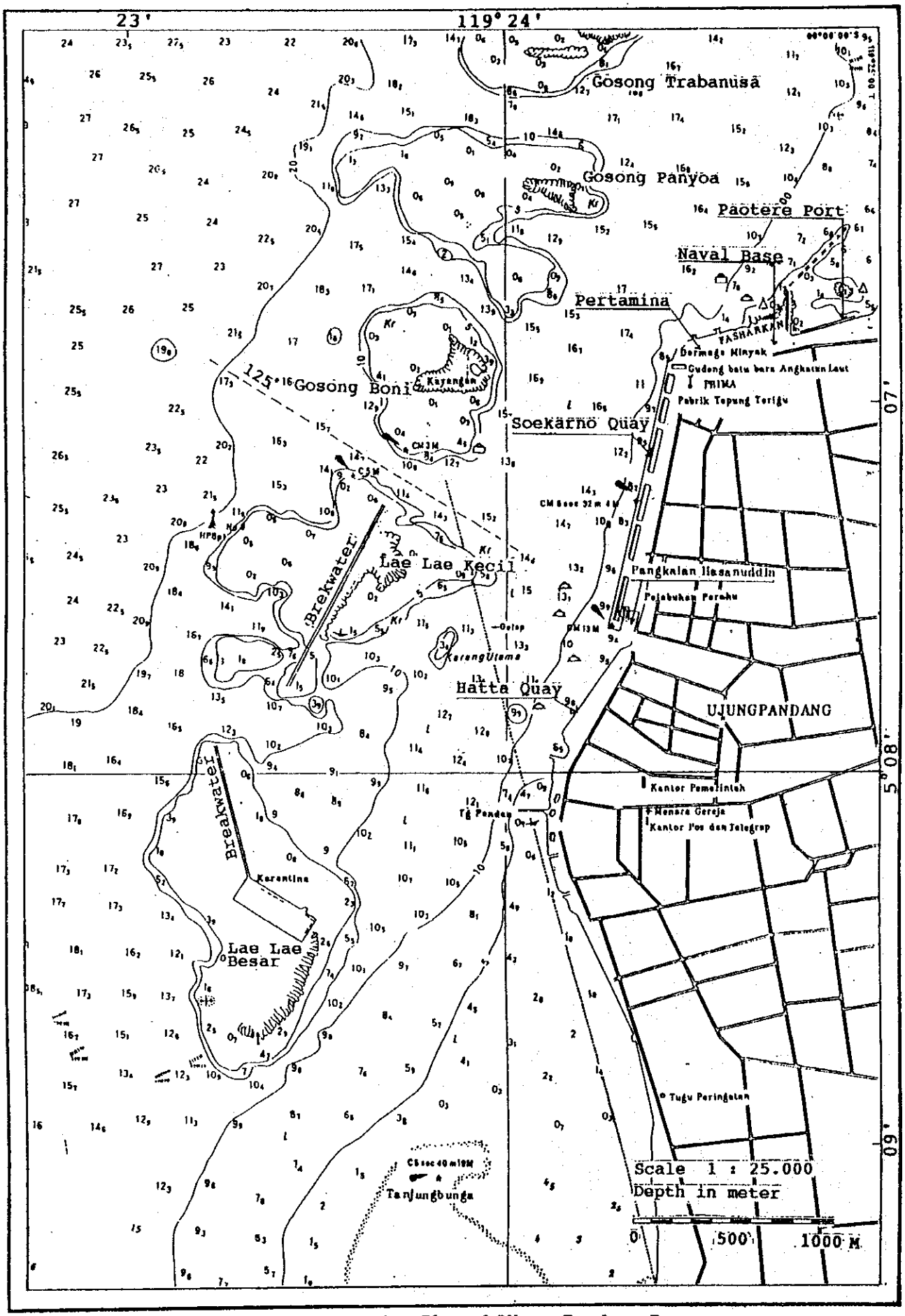

Fig. 2.5 Location Plan of Ujung Pandang Port

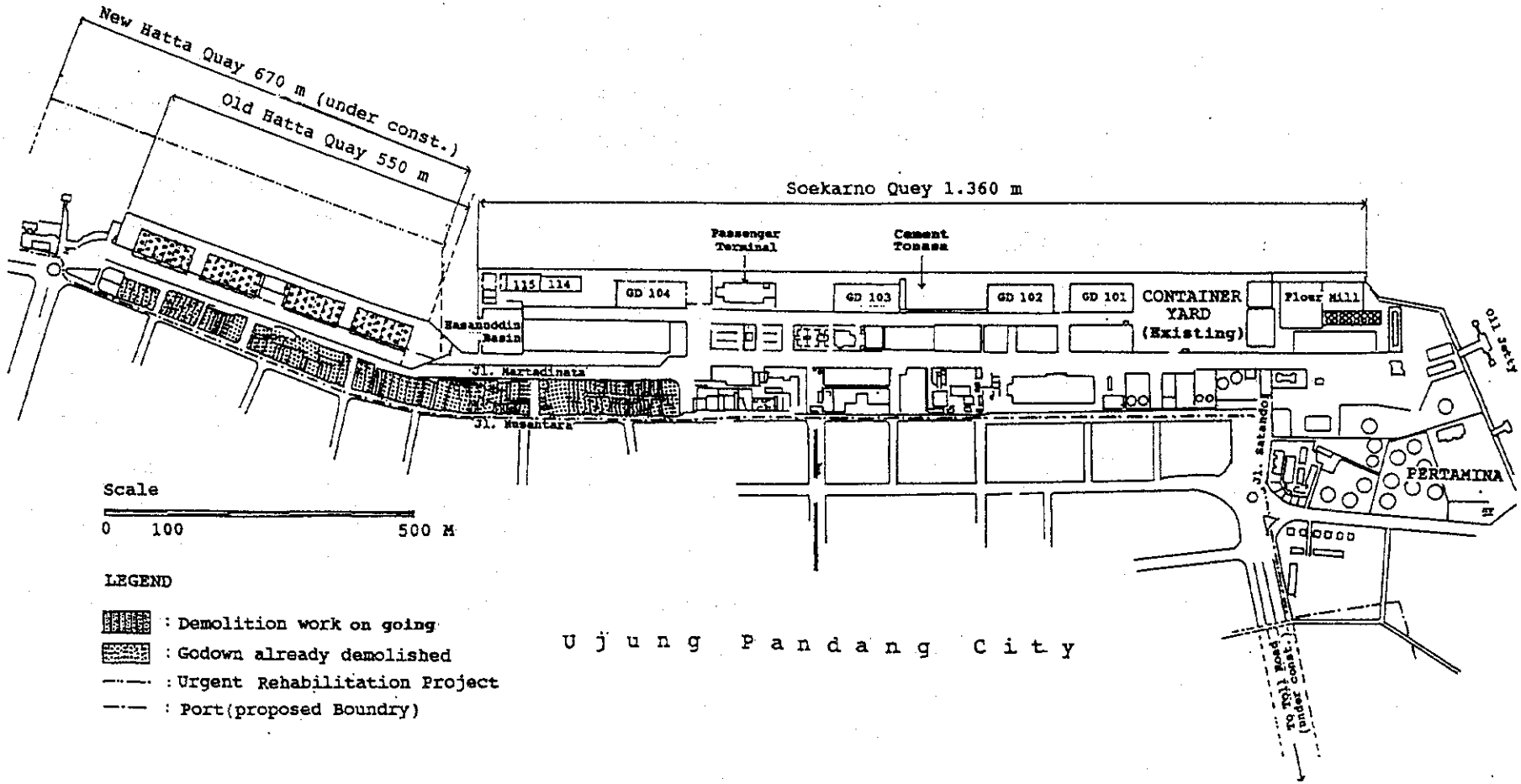

Fig. 2.6 General Layout Plan of Ujung Pandang Port (Existing)

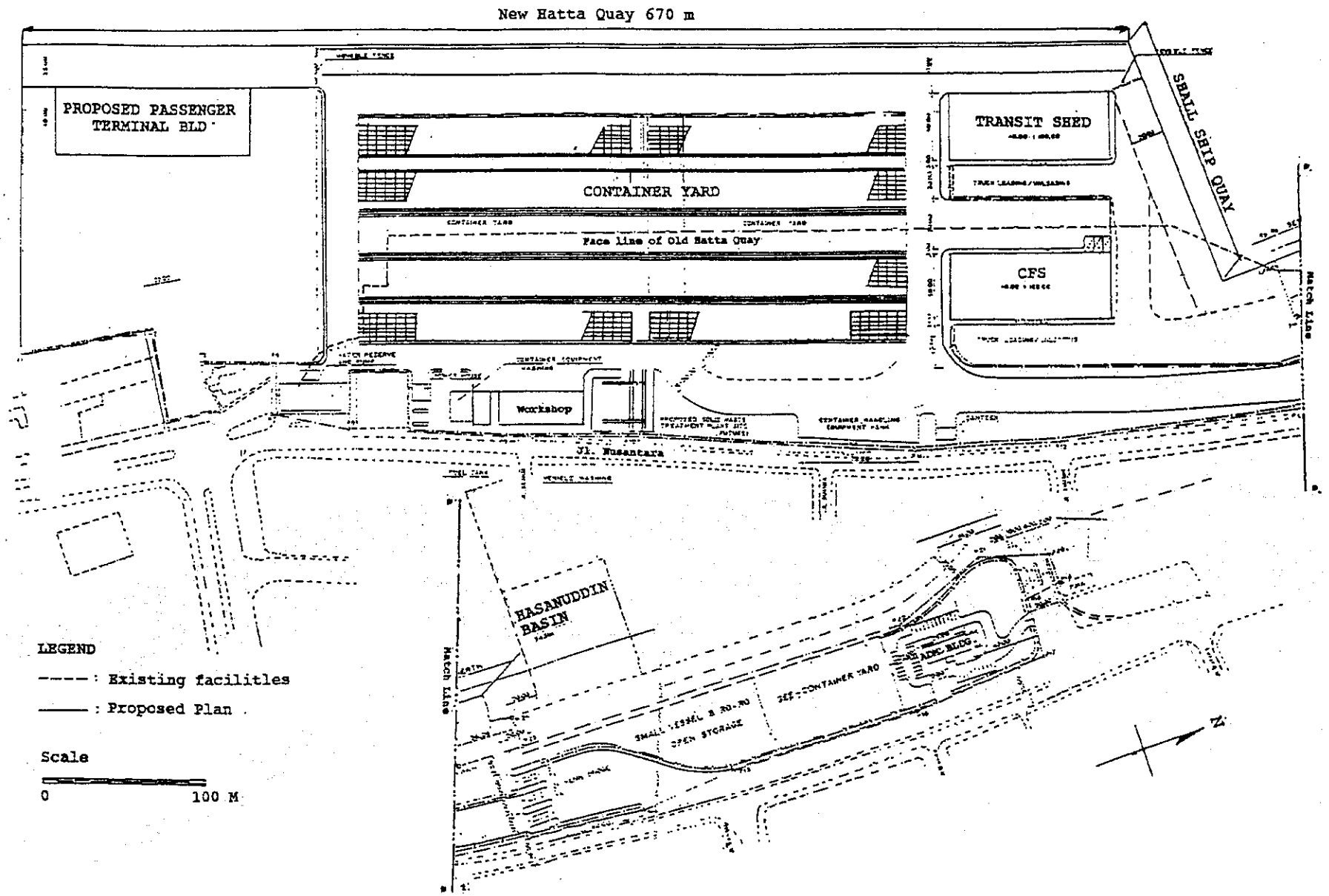

Fig. 2.7 General Layout Plan of Proposed Container Terminal at Hatta Quay (On-going Project)

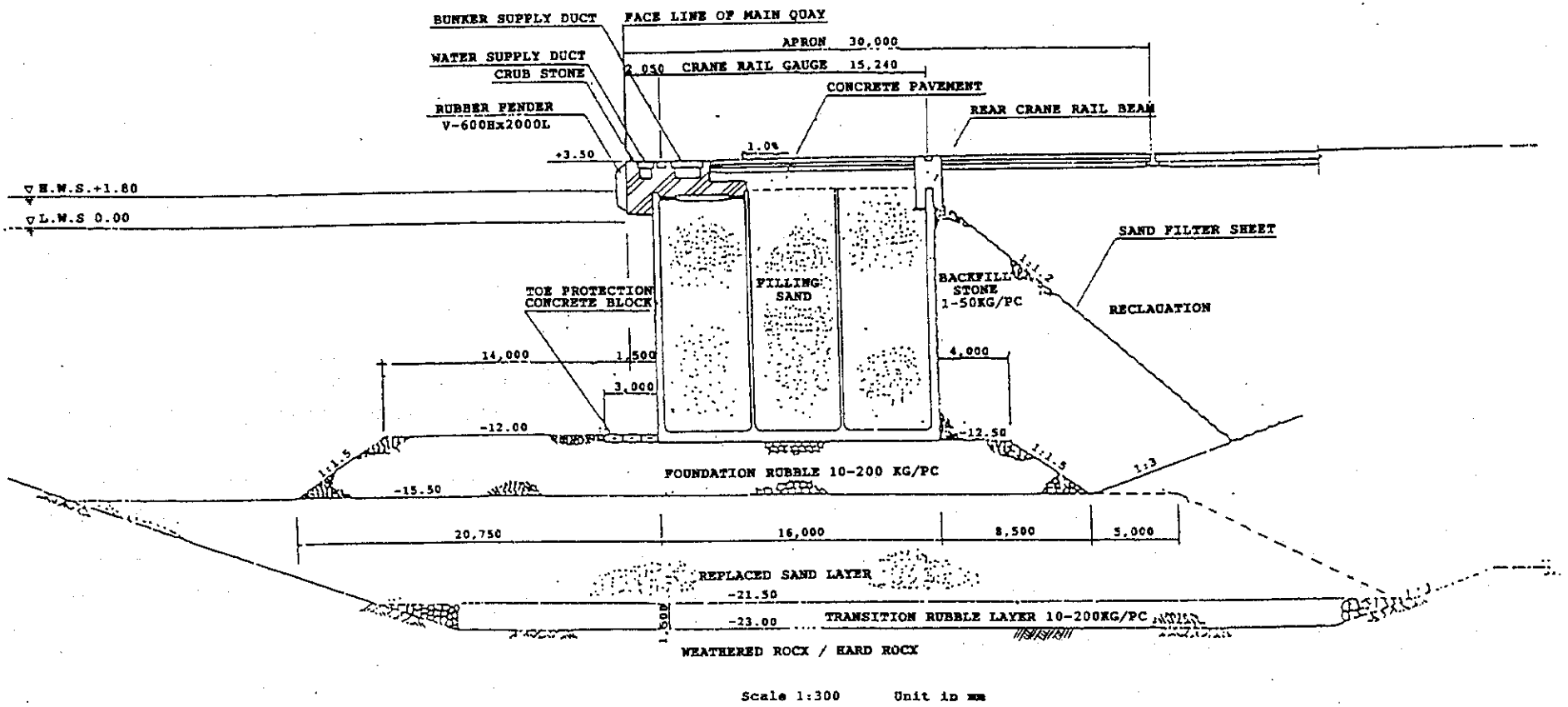

Fig. 2.8 Typical Section of Proposed New Hatta Quay (On-going Project)

Table 2.17 Existing Berthing Facilities of Uj. Pandang Port

Name of Facilities	Length	Water Depth (LWS)		Structural Type	Date Built	Usage
		Nominal	Actual			
	(m)	(m)	(m)			
Soekarno Quay	1,360	-6 to -8	8.1 to 8.9 *1	Concrete caisson	1920	- Ocean vessels - Inter insular vessels - Passenger boats
Hatta Quay	550	-6 to -8	7.9 to 9.0 *1	Concrete open deck on pile	1957	Interinsular
Hasanuddin Basin	70	-3 to 06	-2.0 to 7.0 *2	Concrete caisson		Port supporting vessels
Paotere Quay	820	-3 to 6		Concrete or wooden deck on pile		

NOTES Sources: PT. Pelabuhan Indonesia IV
*1.: Hydro Survey August 1990
*2.: Hydro Survey April 1988

Table 2.18 Cargo Handling Equipments, Tug Boats and Pilot Boats in Uj. Pandang Port

No	Name of equipment		Maker	Type/model	Country	Capacity
1	Mobile crane	No1	Drott	1500	USA	15ton
2		No2	IHI	TH. 350	Japan	35ton
3		No3	IHI	TH. 350L	:	10ton
4		No4	IHI	TH. 350S	:	25ton
5		No5	IHI	TH. 350S	:	25ton
6		No6	Drott	1500	USA	15ton
7	Forklift	No7	Clerk	C500Y100D	USA	5ton
8		No8	Clerk	C500Y100D	:	5ton
9		No9	Nissan	EF02M20U2F300	Japan	2ton
10		No10	Nissan	:	:	2ton
11		No11	Nissan	:	:	2ton
12		No12	Nissan	:	:	2ton
13		No13	Nissan	:	:	2ton
14		No14	Nissan	EGF. 02M30U250	Japan	3ton
15		No15	Toyota	3ED30V	Japan	3ton
16		No16	Toyota	3ED50V	:	5ton
17	Top Loader	No1	Mitsubishi	FD400	Japan	36ton
18		No2	Mitsubishi	FD400	:	36ton
25	Forklift		Mitsubishi	FD150	Japan	35ton
19	Travellift		Dret Case	650C	USA	35ton
20	Telescopic Spreader		Mitsubishi	40'/20'	Japan	-
21	Fixed Spreade	No1	-	40'	Japan	-
22		No2	-	20'	:	-
23	Head Truck	No1	Isuzu	Vsz441	Japan	45ton
24		No2	Isuzu	Vsz441	:	45ton
26	Trailer Chassis	No1	Bukaka	BM. CST20'	Japan	-
27		No2	Bukaka	BM. CST20'	:	-
28		No3	Bukaka	BM. CST20'	:	-
29		No4	Bukaka	BM. CST20'	:	-
30		No5	Bukaka	BM. CST40'	Japan	-
31		No6	Bukaka	BM. CST40'	:	-
32	Fire Fighting Truck		Isuzu	JCR. 420	Japan	5ton
33	Tug Boat	KT. AnggadaVII	Deutz	SBV 8M536	Holland	800HP
34		KT. AnggadaIX	Higata	6MG 16x-A	Indonesia	800HP
35		KT. S. Tamakeke	Deutz	SBV 8M528A	Norwey	1160HP
36		KT. AncamanVIII	Deutz	D234 VG	Holland	1500HP
37	Pilot Boat	IPI-029	Deutz	SBA6M. 816	Indonesia	354HP
38		TB. AKMP II	Yammar		Japan	45HP

2.2.4 Management and Operation

(1) Organization

78. Like the three other port corporations, Port Corporation IV was founded on December 1992 through incorporation of its predecessor, a public corporation called PERSERO.

79. Under a government ordinance, Port Corporation IV is required to oversee the seven eastern provinces of Indonesia, and it now manages 24 commercial ports within this region. Headquartered in Ujung Pandang, the corporation maintains 17 branches within its business area.

80. Each of the corporation's regional branches manages and operates one or more commercial ports. They are classified into five ranks according to such criteria as the volume of cargo handled and regional characteristics. The ranks adopted at the corporation are supreme class, first class, second class, third class, and fourth class as following **Table 2.19.**

81. Port Corporation IV employs a total of 1,471 workers at its headquarters and regional branches. Of the four state-run port authorities, Port Corporation IV is the smallest. There are 148 employees at the headquarters, or about ten percent of the corporation's entire work force. The number of workers assigned to each branch is based on the branch's ranking. Branches belonging to the supreme, first, second, third, and fourth classes have about 300, 100, 50, 30, and 15 employees, respectively.

Table 2.19 Branch of the Port Corporation IV

Rank	Branch	Employee	Province
Special	Ujung Pandang	289	South Slawesi
1	Balikpapan	199	East Kalimantan
	Samarinda	137	East Kalimantan
	Bitung	165	North Slawesi
	Ambon	113	Maluku
	Sorong	55	Irian Jaya
2	Jayapura	37	Irian Jaya
	Tarakan	50	East Kalimantan
	Pantoloan	60	Central Slawesi
	Ternate	50	Maluku
	Kendari	27	Southeast Slawesi
3	Pare-pare	37	South Slawesi
	Biak	33	Irian Jaya
	Merauke	22	Irian Jaya
	Manokwari	19	Irian Jaya
4	Fak-fak	15	Irian Jaya
	Gorontalo	16	North Slawesi
Total	17	1,471	

Source : Port Corporation IV

82. The Corporation's headquarters is divided into four major departments: general affairs, finance, planning, and operation. There are also data development and internal audit sections, which directly report to the president.

83. Ujung Pandang Port is the largest branch within the corporation's jurisdiction. Ranked in the supreme class, this branch employs 288 workers. There are eight sections at the branch including those in charge of general affairs, finance, technology and management, and operation. It also maintains an office for managing old port facilities known as Paotere Port and a medical clinic.

84. Organizational charts of the headquarters and the Ujung Pandang Port branch are provided in Appendix A-1, A-2.

(2) Personnel affairs and finance

a. Personnel evaluation and salaries

85. **Table** 2.20 shows the numbers of employees at Port Corporation IV according to job assignment and educational background.

Table 2.20 Employee of Port Cooperation IV

Class	Employee	Education	Employee	Position	Employee	Age	Employee
I	264	University &	153	Staff	731	- 25	41
	17.9%	Graduate School	10.4%		49.7%		2.8%
II	839	Technical College	115	Branch Staff	120	25-35	196
	57.0%		7.8%		8.2%		13.3%
III	240	Upper Secondary	765	Assistant Staff	472	36-45	747
	16.3%		52.0%		32.1%		50.8%
IV	19	Elementary	240	Management Staff	148	46-55	449
	1.4%		16.3%		10.0%		30.5%
Others	109	Secondary	198	Others	0%	56 -	38
	7.4%		13.5%				2.6%
Total	1,471	Total	1,471	Total	1,471		1,471
	100%		100%		100%		100%

Source : Port Corporation IV

86. Port Corporation IV does not reshuffle personnel in a periodic manner or on a large scale. The corporation reassigns workers only to fill those posts vacated by retired employees or for other legitimate reasons. The corporation also maintains the principle of assigning the same job when it transfers employees between the headquarters and regional branches or between branches.

87. Port Corporation IV maintains several conditions for personnel evaluation

including the minimal number of years spent at work. Since its incorporation, the corporation has been attaching increasing importance to workers' ability, although an appraisal system based on seniority has not been abandoned completely.

88. Prior to incorporation, salaries for the corporation's employees corresponded with those for public workers, with different payrolls for different jobs. However, at the time of incorporation in 1993, the payrolls were unified. Under this unified payroll, salaries were revised to include everything from basic wages to adjusted, family, and housing allowances. However, there remains the need to resolve individual differences as the majority of employees are still doing the same work that they were doing during the period before incorporation. Port Corporation IV plans to adjust salaries over the next several years to ensure that
workers receive more than they did before incorporation.

b. Finance

89. The budget of each branch is secondary to the budget of the headquarters. Those branches that run at a deficit are financially assisted by the headquarters. When the branches achieve profits beyond the targeted levels, the difference is offered up to the headquarters. Part of Income from harbor facilities is used to pay for expenses for operating clinics and other affiliated facilities.

90. Port Corporation IV is now implementing two foreign-capital loan projects, respectively funded by the ADB (Asian Development Bank) and the OECF (Overseas Economic Cooperation Assistance Fund).

91. In the ADB loan project, the corporation was loaned about 35 million dollars in 1987 on the condition that it would be repaid by 2013. The corporation is using this money primarily to fund construction of container quays at the Balikpapan Port, and to introduce a computer system to Ujung Pandang and three other ports. The ADB provided 60 % of this loan while Indonesian banks supplied the remaining 40 %. At present, the corporation is also receiving loans from two domestic banks, the BBD and the BDN. Loan conditions are determined by the government. These loans is to be redeemed in 20 years at an annual interest rate of 10.5 % with a deferment period of five years.

92. Meanwhile, in the OECF loan project, the corporation loaned about 6.6 billion Yen from the Japanese OECF. The corporation is using this fund to renovate and build passenger terminals and multi-purpose berths as part of its program for improving facilities at Ujung Pandang Port. The program is scheduled for completion in 1997, and was launched by the corporation in 1988.

93. The OECF is scheduled to give the last installment of its loan in 1994. Loan repayment will start in 1999. The exact method for repayment including its documentation procedure will be finalized in 1997, the year of work completion.

94. As shown in Appendix C-3, Port Corporation IV had an income of about 45,000 million Rp and a profit of about 13,600 million Rp in fiscal 1993, the lowest figures of the four Port Corporations.

95. Harbor facilities under the management of the Ujung Pandang and Balikpapan branches accounted for over 50 % of the income of Port Corporation IV.
Port corporation IV spends nearly 15 percent of its profits from successful branches to cover the deficits registered by the headquarters and three of its branches. The ratio of operating expenses to deposits at Port Corporation IV was 70 percent in fiscal 1993. The corporation's management is in good shape.

96. In fiscal 1993, the corporation internally reserved 50.3 % of its after-tax profits. The remainder was paid out as follows: 23.6 % as dividends, 19.1 % as end-of-term allowances, 4.4 % as retirement allowances, 1.7 % as financial aid to weak corporations, and 0.9 % as salaries for executives and auditors. The proportion of after-tax profits to be diverted to are decided by discussions between the government (MOF and MOC), which is a major stockholder, and Port Corporation IV.

97. Before incorporation, 55 % of the after-tax profits were offered to the government in the form of dividends. The corporation now provides the government with the same percentage as the national development fund.

98. The corporation provides financial aid to private enterprises recommended by MOI and MOL. The aid recipients are not restricted to companies whose business is related to harbor facilities.

(3) Port services

99. At Ujung Pandang Port, Port Corporation IV directly performs the loading and unloading of container ships. The loading and unloading of ordinary cargos is conducted by Port Corporation IV as well as 28 private companies that specialize in this work. At present, Port Corporation IV does not have any workers dealing exclusively in container cargos. The corporation's employees who are assigned to load and unload ordinary cargos double as container cargo workers. In principle, 18 workers comprise one "gang." Longshoremen work in three shifts. In the case of ordinary cargo loading, 6 people are assigned to the ship (one for overseeing the work, one for inspection, and four for unloading) and 12 handle ground operations (one for overseeing the work, one for confirming numbers, four for operating the lifts -- two to each lift -- and 6 laborers (ten in the absence of lifts)).

100. In the case of container cargo unloading, 12 people are assigned to the ship (one for overseeing the work, four for unloading, and six for assisting the work) and 6 handle ground operations (one for overseeing the work, one for inspection, and four for unloading).

101. In principle, yard operations are conducted by a "gang" of six to 12 longshoremen per ship. Yard operations usually require four lift operators (two to a lift), one top loader, three trucks, and four laborers. Two cranes are employed at each yard operation site. The number of longshoremen at Ujung Pandang Port currently registered with the PAO is about 1,500.

102. Private companies specializing in cargo loading and unloading at ports are licensed for operation by the government (PAO). Port Corporation IV is authorized by the government (DGSC) to perform this task. Private loading companies that use the loading equipment and facilities owned by Port Corporation IV must pay a fee to the company. When private loading companies use their own loading equipment and facilities, the Port Corporation IV collects dividends (MURATOS, a leading shipping company, keeps a container yard for its exclusive use within Ujung Pandang Port.).

103. Another major shipping company, LSP, uses as its exclusive storage site for empty containers an area measuring about 3,000 square meters located outside of Ujung Pandang Port. The company rents this site from Port Corporation IV.

104. MURATOS is a major shipping company that handles 45 percent of the total cargo volume at Ujung Pandang Port. LSP is another major shipping company that handles 30 percent of cargo at the same port.

105. Port Corporation IV also provides pilot and tugboat services. For this purpose, Port Corporation IV owns six ships as shown in **Table 2.21** The corporation assigns 61 people to work on these vessels.

Table 2.21 List of Service Vessels

Boat Name	Capacity	Constructed Year	Crew	Notes
Pilot Boat	350 HP	1980	6	
Mooring Boat	250 HP	1981	4	
Tug Boat	1,500 HP	1985	11	
Tug Boat	1,160 HP	-	11	
Tug Boat	800 HP	1985	11	
Tug Boat	250 HP	-	1	Non Operation

Source : Port Corporation IV

(4) Tariffs

106. Relaxation of regulations last year enabled companies to revise tariffs on their own without violating the relevant laws. However, drafts for tariff revision must be approved by the Transport Minister in advance. Liberalization on this front is not yet 100 percent. Tariffs were partially revised by the Transport Ministry in November 1994. At present, the four state-run port authorities are jointly commissioning the University of Indonesia to study tariff revision. Based on the outcome of this research, the four port authorities plan to jointly apply to the Transport Ministry for a tariff revision by the middle of this year.

107. It appears quite likely that the revised tariffs will be calculated in the following manner: first a standard tariff is prepared, then it is multiplied with coefficients that take into consideration the regional and cargo-handling characteristics of the four state-run port authorities.

(5) Introduction of Computers

108. The Port Corporation IV currently has two computer systems. One is an operational system using small-sized computers introduced in 1990. There are two sub-systems in this operational systems -- one for shipping service and the other for cargo service. The latter has yet to start operation. This operational system connects the headquarters with the five branches classified as supreme or first class, namely those located in Ujung Pandang, Balikpapan, Samarinda, Bitung, and Ambon. Port Corporation IV does not presently have a system that exclusively handles container cargo.

109. The second system is a local area network (LAN) built around personal computers. Installed at the remaining 12 branches, this system affords seven applications: personnel affairs, wages, facility management, warehousing, asset management, and finance (budget and accounting). Each branch supplies the data to the headquarters in the form of floppy disks.

110. Port Corporation IV provides operational training mainly to those who are assigned to work on computers at its headquarters, and to computer suppliers in Jakarta.

2.2.5 Cargo Handling System

111. At Ujung Pandang port, containers are handled at the conventional berths designed for general cargoes. Soekarno berth (length: 1360 m; water depth: 6 to 8 m) and Hatta berth (length: 550 m; water depth: 6 to 8 m) are shared by general-cargo and container ships. As neither berth has container cranes, on-board or mobile cranes are used for loading and unloading containers.

112. The majority of 46,293 boxes or 47,352 TEUs of containers handled in 1993 were cargoes shipped between nearby islands. Sixty percent was destined for Surabaya and forty percent for Tanjung Priok.

113. The 2.28 hectare container yard in an open space at the back of Soekarno berth is divided into plots for renting to shipping companies requiring spaces for yard allocation planning, location monitoring, container handling, cargo loading and unloading, and other container handling operations. As to yard stocking capacity, which can be

estimated by adding up slot plan data, yard utilization rate and yard dwell time, no adequate information or statistics were available.

114. Three top loaders, four super stackers and one travel lift are used for cargo handling in the yard. One CFS with an area of 700 square meters is also provided.

115. A total of 287 container ships called at the port in 1993. The berth occupancy ratio for all berths was 42.7 %, with both general cargo and container ships included.

116. Port areas adjacent to the yard are rented to shipping companies for the stacking and storage of empty containers.

117. Container cargo throughput, cargo flow, outline of calling ships, terminal performance and other details of the Ujung Pandang port container terminal are discussed below.

(1) Container Cargo Throughput and Cargo Flow

118. The container cargo throughput at Makassar port in 1993 was 46,291 boxes/ 47,352 TEUs, with 40-ft. containers accounting for 2 % of this. Empty containers accounted for 49 % on a TEU basis. **Table 2.22** shows the container throughput, including 40-ft containers and empty containers, between 1989 and 1993.

119. The containerized cargoes shipped from Makassar port are agricultural products (rice, coffee, peanut, etc.), fish and furniture etc., mostly for domestic consumption. After being transported to the domestic container terminals at Surabaya and Tanjung Priok, approximately 20 % of these products are moved to their international container terminals via trailers for customs clearance and export via oceangoing container ships. The balance of 80 % is consumed in the domestic markets in Jakarta and Surabaya.

120. On the other hand, most of the container cargoes from Surabaya and Jakarta are local products produced in their neighborhoods. Approximately 20 % are imported cargoes shipped to Makassar port after customs clearance in Surabaya and Jakarta. The local products include textiles and processed foods, while the imported goods are industrial products consumed in the neighborhood of Makassar port.

121. **Fig. 2.9** shows the flow of containerized cargoes around Ujung Pandang port.

122. Most (over 80 %) of transportation between the existing container terminal at Makassar port and its neighborhood is conducted by truck. Since very small quantities of containerized cargoes are shipped from door to door, the current LCL ratio exceeds 80 %. This is due to the lack of wide and sturdy highways that can bear the transportation of heavy containers and adequate transportation means, such as track tractors and trailer chassis, between the port area and its neighboring districts.

123. Thus, most cargoes are transported by truck from neighboring districts to the port area for loading into containers or, otherwise, unloaded from containers in the port area for trucking to neighboring districts. Therefore, the full container terminal under construction will not function completely until the completion of the construction of a highway from Makassar port scheduled for 1997.

(2) Outline of Calling Ships

a. Number of Calling Ships

124. Of the 287 container ships that called at Makassar port in 1993, 130 were full container ships and 157 were mixed container ships carrying partial loads of break-bulk cargoes. Of these, 40 % and 60 % moved between Makassar port and the domestic container terminals at Tanjung Priok and Surabaya, respectively.

125. **Tables 2.23** and **2.24** show the number of containers carried by shipping companies and the numbers of calling ships and calls between 1990 and 1993, respectively.

b. Specifications of Calling Ships and Number of Containers Handled

126. **Table** 2.25 shows the specifications of container ships that called at Makassar port and the number of containers loaded and unloaded at one calling between January and February 1994.

127. The largest container ship among those making regular calls has a gross tonnage

of 3,500 tons, deadweight tonnage of 6,144 tons, overall length of 103 m, and draft of 6.61 m. A container ship having a gross tonnage of 4,125 tons also made a spot call.

128. The calling ships averages 2,100 tons in gross tonnage, 2,800 tons in deadweight, and 84 m in overall length.

129. While as many as 250 to 300 containers are sometimes handled (loaded and unloaded) per call, the average lot size is approximately 160 containers per call.

(3) Container Handling Performance and Capacity

130. **Table 2.26** shows the actual container handling performance at Makassar port in 1993 and the performance planned for 1994. And **Fig.2.10** shows the berthing time data performed at Tg. Emas Container Terminal from January to April, 1994. At Tg. Emas Terminal, loading and unloading of container are performed ship crane and mobile crane. Berthing time criteria using in the Master Plan is based on the operation of the same level as Tg. Emas.

131. Assuming that the handling lot is 197 containers per call and the berth occupancy ratio is 70 %, the current container handling capacity of Makassar port is estimated to be approximately 29,000 containers per year (with 148 ship calls).

132. Based on the actual performance of 160 containers per call in 1993, the container handling capacity drops to 27,000 containers per year (with a berthing time of 36 hours per ship and 170 calls per year).

(4) Cargo Handling Equipment Maintenance System

133. A detailed discussion of the organization and the number of maintenance personnel will be given in 4.3.4.

134. **Table 2.27** shows the condition of maintenance, installed equipment and age of the cargo handling system.

135. As can be seen, the mobile cranes, top lifters and forklifts have been in use for over 10 years. Very few of them are suited for use in the new container terminal.

Table 2.22 Container Cargo Throughput in Uj. Pandang Port

Year			1989	1990	1991	1992	1993
1	2	3	4	5	6	7	8
Full	L-20'	Boxes	997	3,654	5,214	18,091	32,282
	L-40'	Boxes	842	494	665	653	591
	Sub Total	Boxes	1,839	4,148	5,879	18,744	32,873
		Teus	1,413	3,429	8,015	13,038	23,927
Empty	L-20'	Boxes	248	1,449	2,062	4,738	12,948
	L-40'	Boxes	252	183	273	375	470
	Sub Total	Boxes	500	1,632	2,335	5,113	13,418
		Teus	1,255	3,033	7,454	11,847	23,425
Total		Boxes	2,339	5,780	8,214	23,857	46,291
		Teus	2,668	6,462	15,469	24,885	47,352

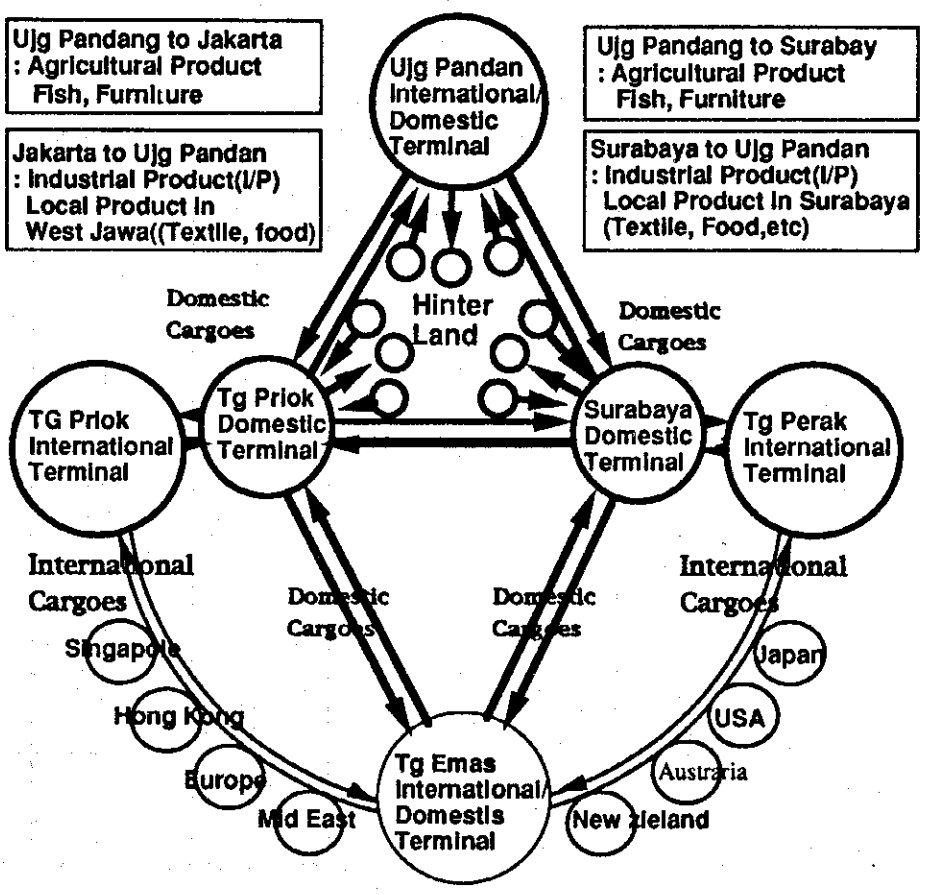

Fig. 2.9 Container Cargo Flow around Uj. Pandang Port

Table 2.23 Growth of Container of Uj. Pandang Port

No.	Shipping Company	1990 (TEUS)	1991 (TEUS)	1992 (TEUS)	1993 (TEUS)
1	MERATUS	3,370	8,904	12,204	24,932 (52.7%)
2	SAMINDO	447	2,809	5,249	8,617 (18.2%)
3	LSP	775	2,009	4,044	5,234 (11.1%)
4	TEMPURAN EMAS	1,817	1,700	3,192	8,278 (17.5%)
5	JAPAL	53	47	196	291 (0.6%)
	Total	6,462	15,469	24,885	47,352 (100%)

Table 2.24 Container Ship Calling according to the Shipping Co. at Uj. Pandang Port

No.	Shipping Company	Amount of the Ship	Origin/Destination		Frequency	Amount of TEUs
			Tg.Priok	Tg.Perak	1993	
1	PT. MERATUS					
	a. Full Container	3	0	3	75	16,113
	b. Mixed Container	4	0	4	80	8,819
2	PT. SAMINDO					
	a. Full Container	1	1	0	12	2,578
	b. Mixed Container	3	3	0	36	6,239
3	PT. LSP					
	a. Full Container	4	2	2	30	3,675
	b. Mixed Container	2	0	2	20	1,559
4	PT. TEMPURAN EMAS					
	a. Full Container	1	1	0	13	5,564
	b. Mixed Container	1	1	0	11	2,514
5	PT. JAPAL					
	a. Full Container	0	0	0	0	0
	b. Mixed Container	0	0	0	10	2,514
	Total				0	
	a. Full Container	9	4	5	130	27,930
	b. Mixed Container	10	4	6	157	19,422

Table 2.25(1) The Specifications of Container Ships and Number of Containers Loaded/Unloaded at Ug. Pandang Port (1)

NO	Name of Company	Name of of Ship	Ship Specification							Voyag	Number of Containers Un Loading (1994 Jan-Feb)								Number of Containers Loading (1994 Jan-Feb)								Total Number of Box Handled per Vessel				Total Number of Box	Total Number of TEUs
			DRFT (m)	GRT (T)	DWT (T)	LNGTH OF SHIP (m)	TEU CPCTY (TEU)	YEAR OF BUIL	FC SC HR		Import Full		Import Empty		Domestic Full		Domestic Empty		Export Full		Export Empty		Domestic Full		Domestic Empty		Full		Empty			
											20'	40'	20'	40'	20'	40'	20'	40'	20'	40'	20'	40'	20'	40'	20'	40'	20'	40'	20'	40'		
1	PT. Meratus/ PT. Mandiri	KM. Caraka Jn. III/24	5.40	3,256	3,650	98	115	93	GC	13													3				3				3	3
		KM. Caraka Jn. III/8	5.40	3,256	3,650	98	115	93	GC	11					92		3	13	18	2			86				196	2	3	13	214	229
										12					105	1		1	11	7			76				192	8		1	201	210
										14					108	4	4		3	2			102		2		219	6	6		231	237
										21	0	0	0	0	104	6	0	2	7	8	0	0	95	0	2	0	206	16	2	2	226	244
										22	0	0	0	0	118	3	0	0	9	5	0	0	87	0	14	0	214	8	14	0	236	244
										23	0	0	0	0	103	8	8	4	21	6	0	0	81	0	6	0	205	14	6	4	229	247
		KM. Donah No. 7	-	-	-	-	-	-	-	11									60								60				60	60
		KM. Helina	-	-	-	-	-	-	-	11															16				16		16	16
		KM. Mamiri	5.75	963	1,582	80	-	70	GC	21	0	0	0	0	7	0	0	0	8	0	0	0	15	0	0	0	15	0	0	0	15	15
										22	0	0	0	0	8	0	0	0	0	0	0	0	13	0	0	0	21	0	0	0	21	21
		KM. Manise	5.11	1,150	2,547	82	-	76	GC	11					74								74				148				148	148
										12					64								58				122				122	122
										21	0	0	0	0	80	0	2	0	1	0	0	0	67	0	0	0	148	0	2	0	150	150
										22	0	0	0	0	80	0	0	0	0	0	0	0	28	0	12	0	108	0	12	0	120	120
										23	0	0	0	0	82	0	0	0	0	0	0	0	62	0	0	0	144	0	0	0	144	144
										24	0	0	0	0	76	2	2	0	0	0	0	0	63	0	8	1	139	2	10	1	152	155
		KM. Marina Mas	6.10	1,213	2,334	94	163	82	GC	11					60	4	3	3	5	3			126				191	7	3	3	204	214
										12					68				7	2			140				215	2			217	219
										13					148	3	5	3	16	8			104				268	11	5	3	287	301
										14					146	2	3		31	11			97				274	13	3		290	303
										21	0	0	0	0	140	8	1	2	15	2	0	0	126	0	0	0	281	10	1	2	294	306
										22	0	0	0	0	132	9	4	3	19	9	0	0	97	0	0	0	248	18	4	3	273	294
										23	0	0	0	0	143	4	1	5	7	9	0	0	41	0	121	0	191	13	122	5	331	349
2	PT. Samdra Indonesia PT. Uppis	KM. Arktis Sea	4.60	1,557	2,298	74	743	84	GC	11							15						15				15	0	15	0	30	30
		KM. Darpo Delapan	3.60	1,096	620	65	-	69	GC	11					19								32				51	0	0	0	51	51
										12					22								36				58	0	0	0	58	58
										13					38								19				57	0	0	0	57	57
										14					36								40				76	0	0	0	76	76
										21					42								44				86	0	0	0	86	86
										22					44								12				56	0	0	0	56	56
		KM. Darpo Tujuh	3.58	1,096	620	65	-	69	GC	21					43				1				41				85	0	0	0	85	85
										22					45								18				63	0	0	0	63	63
		KM. First Carrier	3.75	1,085	662	69	-	76	GC	21					72		11						28		13		100	0	24	0	124	124
										22					55		1		59				17				131	0	1	0	132	132
		KM. Caraka Jn. III/23	5.40	3,256	3,650	98	115	93	GC	11					94		3	2	20	2			16				130	2	3	2	137	141
										12					80		2		10	1			100				190	1	2	0	193	194
										13					114			1	7				12		41		133	0	41	1	175	176
										21					107	3	3		9	1			18		52		134	4	55	0	193	197
										22					99		1		8				18		73	8	125	0	74	8	207	215
		KM. Ocean Hero	4.64	498	1,290	77	52	73	GC	11					15				8	1			15		3		38	1	3	0	42	43
										21					47								27				74	0	0	0	74	74
		KM. Shan Master	6.08	2,236	3,618	93	108	77		11					69	2	5		14	1			68				151	3	5	0	159	162
										21					81	1			6	1			36				123	2	0	0	125	127
										22					64	3			9				1		66		74	3	66	0	143	146

Table 2.25(2) The Specifications of Container Ships and Number of Containers Loaded/Unloaded at The Port of Makassar (2)

NO	Name of Company	Name of of Ship	Ship Specification DRFT (m)	GRT (T)	DWT (T)	LNGTH OF SHIP (m)	TEU CPCTY (TEU)	YEAR OF BUIL	FC SC RR	Voyag	Number of Containers Un Loading (1994 Jan-Feb) Import Full 20'	40'	Import Empty 20'	40'	Domestic Full 20'	40'	Domestic Empty 20'	40'	Number of Containers Loading (1994 Jan-Feb) Export Full 20'	40'	Export Empty 20'	40'	Domestic Full 20'	40'	Domestic Empty 20'	40'	Total Number of Box Handled per Vessel Full 20'	40'	Empty 20'	40'	Total Number of Box	Total Number of TEUs
3	PT. Sarana Tirta Perkasa (LSP)	KM. Berkah	3.85	496	1,168	65	-	67	GC	21					4								5				4	0	5	0	9	9
										22					7								4				7	0	4	0	11	11
		KM. Fredom Star	4.45	1,549	1,941	76	-	74	GC	11													56				0	0	56	0	56	56
										12					54								30				54	0	30	0	84	84
										13					26								24				26	0	24	0	50	50
		KM. Caraka Jn. III/14	-	3,500	3,000	-	-	92	GC	11					60												60	0	0	0	60	60
										21					52										18		70	0	0	0	70	70
										22															0	43	0	0	43	0	43	43
		KM. Caraka Jn. III/25	5.40	3,256	3,650	98	-	92	GC	11					56								85		33		141	0	33	0	174	174
										12					118				1				28		75		147	0	75	0	222	222
										13					88								21		61		109	0	61	0	170	170
										21					118								17		48		135	0	48	0	183	183
										22		7			77								14		102		91	7	102	0	200	207
		KM. Leberti Star	-	-	-	-	-	-	GC	11					3										17		3	0	17	0	20	20
										12					30										49		30	0	49	0	79	79
										21					14										32		14	0	32	0	46	46
										22					48										40		48	0	40	0	88	88
		KM. Loka	-	-	-	-	-	-	GC	11					12										40		12	0	40	0	52	52
										12					11										1		11	0	1	0	12	12
										21					22										40		22	0	40	0	62	62
										22					25										34		25	0	34	0	59	59
		KM. Predon Star	-	-	-	-	-	-	GC	21					16										23		16	0	23	0	39	39
		KM. Rika	5.22	1,058	2,595	80	-	75	GC	11					28												28	0	0	0	28	28
4	PT. Tempuran Mas PT. Tempulan Kencana	KM. Kuala Mas	6.61	3,488	6,144	103	-	74	GC	21					118	5							24		79	1	142	5	79	1	227	233
										22					80	3							34		39		114	3	39	0	156	159
										23					82								15		68	2	97	0	68	2	167	169
		KM. Pantai Mas	5.84	1,588	2,860	79	-	70	GC	11					54										35		54	0	35	0	89	89
										12					49				1				37		23		87	0	23	0	110	110
										21					63										30		63	0	30	0	93	93
										22					36										40	3	36	0	40	3	79	82
		KM. Selat Mas	5.48	1,599	1,206	81	72	73	GC	11					100								43		47		143	0	47	0	190	190
										12					85								48		37		133	0	37	0	170	170
										13					100								30		36		130	0	36	0	166	166
										21					70	2							32		68		102	2	68	0	172	174
										22					80								30		37		110	0	37	0	147	147
		KM. Teluk Mas								11					10								8		9		18	0	9	0	27	27
5	PT. Japal	KM. ERA Pacific	4.00	1,349	497	63	-	76	GC	11					28								5		19		33	0	19	0	52	52
										21					27								9		3		36	0	3	0	39	39
										22					31								6		18		37	0	18	0	55	55
6	PT. Kalla Lines/DUT	MT. Arkits Dream	6.00	4,125	2,815	88	247	93	GC	21									9								9	0	0	0	9	9
		MV. Coringle Bay	5.40	3,962	9,236	100	240	91	GC	21	2	2	9														2	2	9	0	13	15
											2	9	9	0	5008	75	77	39	400	81	0	0	2758	0	1774	15	8157	165	1852	54	10228	10447
															48.9				3.9				26.9		16.9							

Table 2.26 Target of Efficiency for Container Ship Service in 1994

	1993	Target in 1994
1. Turn Round Time (TRT)	42.53 h	30.03 h
2. Berthing Time (BT)	41.41 h	28.51 h
3. Wating Time (WT)	0 h	0 h
4. Postpone Time (PT)	0 h	0 h
5. Approach Time (AP)	1.12 h	1.12 h
6. Effective Time (ET)	24.58 h	17.30 h
7. Idle Time (IT)	9.44 h	6.21 h
8. Non Operation Time (NOT)	6.59 h	5.00 h
9. Productivity of Loading/Unloading effect	8 TEUS/Vessel	12 TEUS/Vessel
10.Productivity of Loading/Unloading at Berth	122 TEUS/Vessel .Day	176 TEUS/Vessel. Day

* Average of Gang 1.5

Fig. 2.10 Comparison of Berthing Time (Ship Crane)

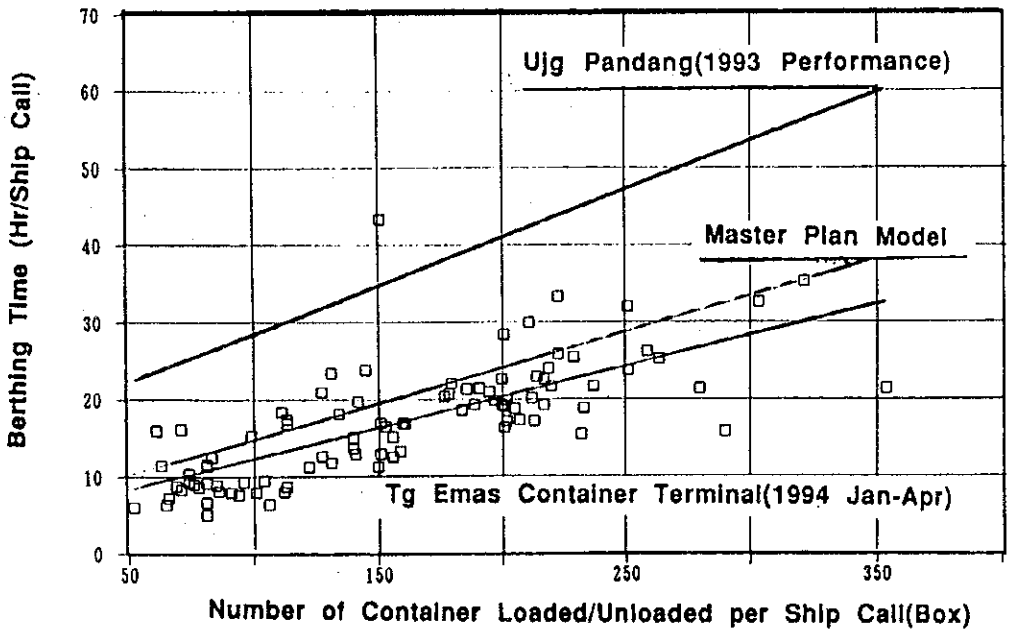

Table 2.27 Maintenance Condition of Container Handling Equipments in Uj. Pandang Port

No	Name of equipment		Maker	year Built	Year Usage	Condition (%)	Handling Cargo
1	Mobile crane	No1	Drott	1975	20	Fair	
2		No2	IHI	1984	11	Fair	
3		No3	IHI	1985	10	Fair	
4		No4	IHI	1985	10	Fair	
5		No5	IHI	1985	10	Fair	
6		No6	Drott	1975	20	Fair	
7	Forklift	No7	Clerk	1975	20	Not Used	
8		No8	Clerk	1975	20	Fair	
9		No9	Nissan	1984	11	Not Used	
10		No10	Nissan	1984	11	Fair	
11		No11	Nissan	1984	11	Fair	
12		No12	Nissan	1984	11	Fair	
13		No13	Nissan	1984	11	Fair	
14		No14	Nissan	1984	11	Fair	
15		No15	Toyota	1984	11	Fair	
16		No16	Toyota	1984	11	Fair	
17	Top Loader	No1	Mitsubishi	1984	11	Fair	Container
18		No2	Mitsubishi	1984	11	Not Used	Container
25	Forklift		Mitsubishi	1984	11	Fair	Container
19	Travellift		Dret Case	1984	11	Not Used	Container
20	Telescopic Spreader		Mitsubishi	1984	11	Fair	Container
21	Fixed Spreade	No1	-	1984	11	Fair	Container
22		No2	-	1984	11	Fair	Container
23	Head Truck	No1	Isuzu	1984	11	Fair	Container
24		No2	Isuzu	1984	11	Fair	Container
26	Trailer Chassis	No1	Bukaka	1984	11	Fair	Container
27		No2	Bukaka	1987	8	Fair	Container
28		No3	Bukaka	1987	8	Fair	Container
29		No4	Bukaka	1987	8	Fair	Container
30		No5	Bukaka	1987	8	Fair	Container
31		No6	Bukaka	1987	8	Fair	Container
32	Fire Fighting Truck		Isuzu	1984	11	Fair	
33	Tug Boat	KT. AnggadaVII	Deutz	1967	28	Fair	
34		KT. AnggadaIX	Higata	1985	10	Fair	
35		KT. S. Tamakeke	Deutz	1977	18	Fair	
36		KT. AncamanVIII	Deutz	1986	9	Fair	
37	Pilot Boat	IPI-029	Deutz	1982	13	Fair	
38		TB. AKMP II	Yammar	1966	29	Fair	