11. **Fig. 8.4** shows the situation of after signalization.
As the countermeasure, the section between Ckp and Pdl proceeds automatic signalization by another project, the trial result brings 44% increase of track capacity, so it ensures enough capacity on the above section by 1999.
The remained section between Kac and Gdb necessitates the increase of track capacity even now, and so the automatic signalization for this section is needed as soon as possible. **(Fig. 2.60)**

8.1.2 Issues

12. Not only the container train operation will increase from four trains a day on usual time (five trains a day on busy time) to six trains on usual time (seven trains on busy time) but also other train operation will increase as well by 1999.
The above will invite the following issues.

(1) The increase of container trains necessitates the increase of locomotives and wagons.

(2) The transportation route between Cikampek and Padalarang will fall in remarkable shortage of the track capacity owing to other kinds of trains that are growing in number like Parahyangan.

(3) In the container terminal at Gedebage the gantry crane will have to stop the work, because the three strata stacks of containers below the gantry crane are occurring considerably even now.
It is necessary to remove imported containers from marshalling yard below the crane as soon as possible.

(4) Storage sidings at Gedebage are in shortage owing to the increase in number of container trains.

(5) At Pasoso St. in Tanjung Priok Port, additional storage tracks might be necessitated.

(6) It should be more promoted that unloading the imported empty containers at Kiaracondong is conducted for the salvation of marshalling yard at Gdb.

It is easy to handle containers with some forklift without much investment for heavy machine because they are empty.

8.1.2.1 Handling capacity at Gdb dry port

13. The handling capacity is composed of three items that are the loading and unloading capacity for the crane, the area and its turn over rate for container storage depot and wagon storage tracks waiting for departure or shunting.
All of them are desirable to have equivalent capacity to handle smoothly the demanded trains.

(1) Examination of crane handling capacity

14. The handling capacity depends on the combination of one loading and unloading track and one gantry crane.
The necessary time for loading or unloading one TEU by crane is enough two min. The necessary working time for the max 34 TEUs per train composed of 17 wagons is calculated as follows.

a. Factors of handling works
* Loaded containers per train
  25 Box (34 TEUs) : performance in 1993
* Handling time per box : 2 min
* Handling time per train : 100 min
* Shunting time : 15 min
* Occupancy time per train : 115 min
* Utilization factor for a loading and unloading track
  (for meals and duty shifts) : 0.8

b. Each wagon formation in the station yard is composed of 17 wagons and kept as it is for handling work.

c. The capacity of the loading and unloading track within limited time
  Nominal : 840 min (8:00 - 22:00)/115=7.3 trains/single way
  Substantial : 7.3*0.8=6 trains/single way (148,920 TEUs/year)

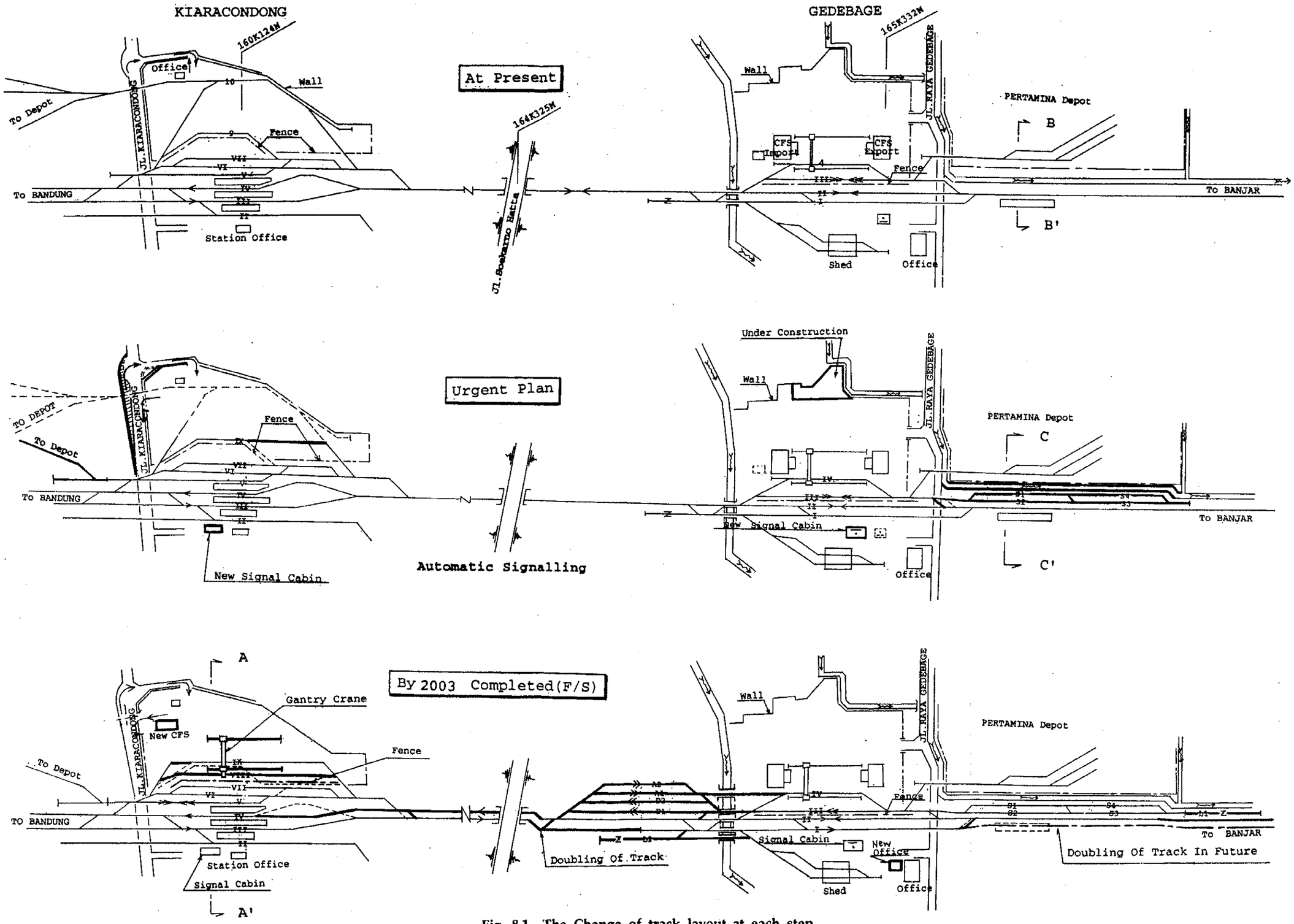


Fig. 8.1 The Change of track layout at each step

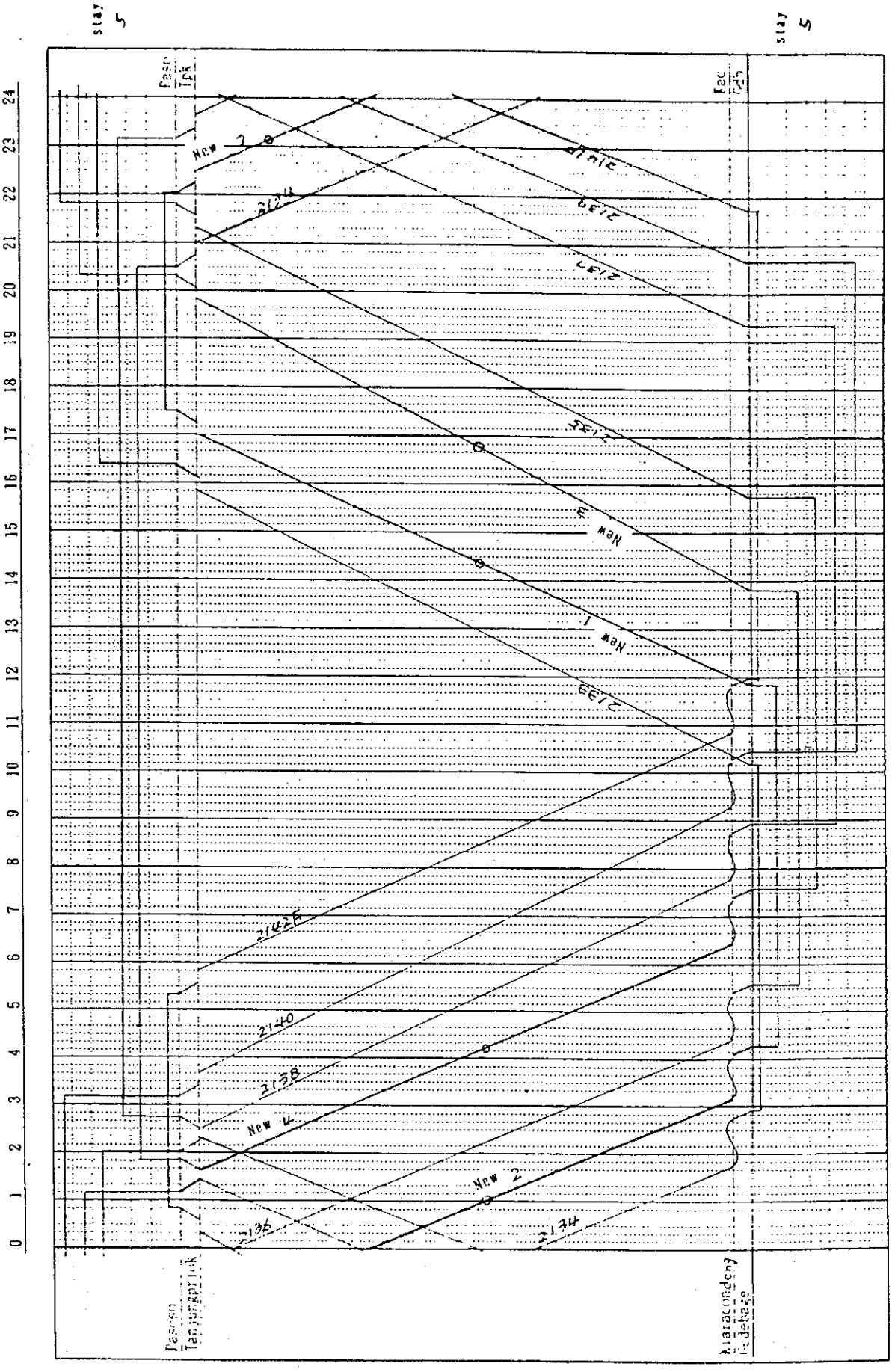


Fig. 8.2 Container Train Diagram seven trains operation single way

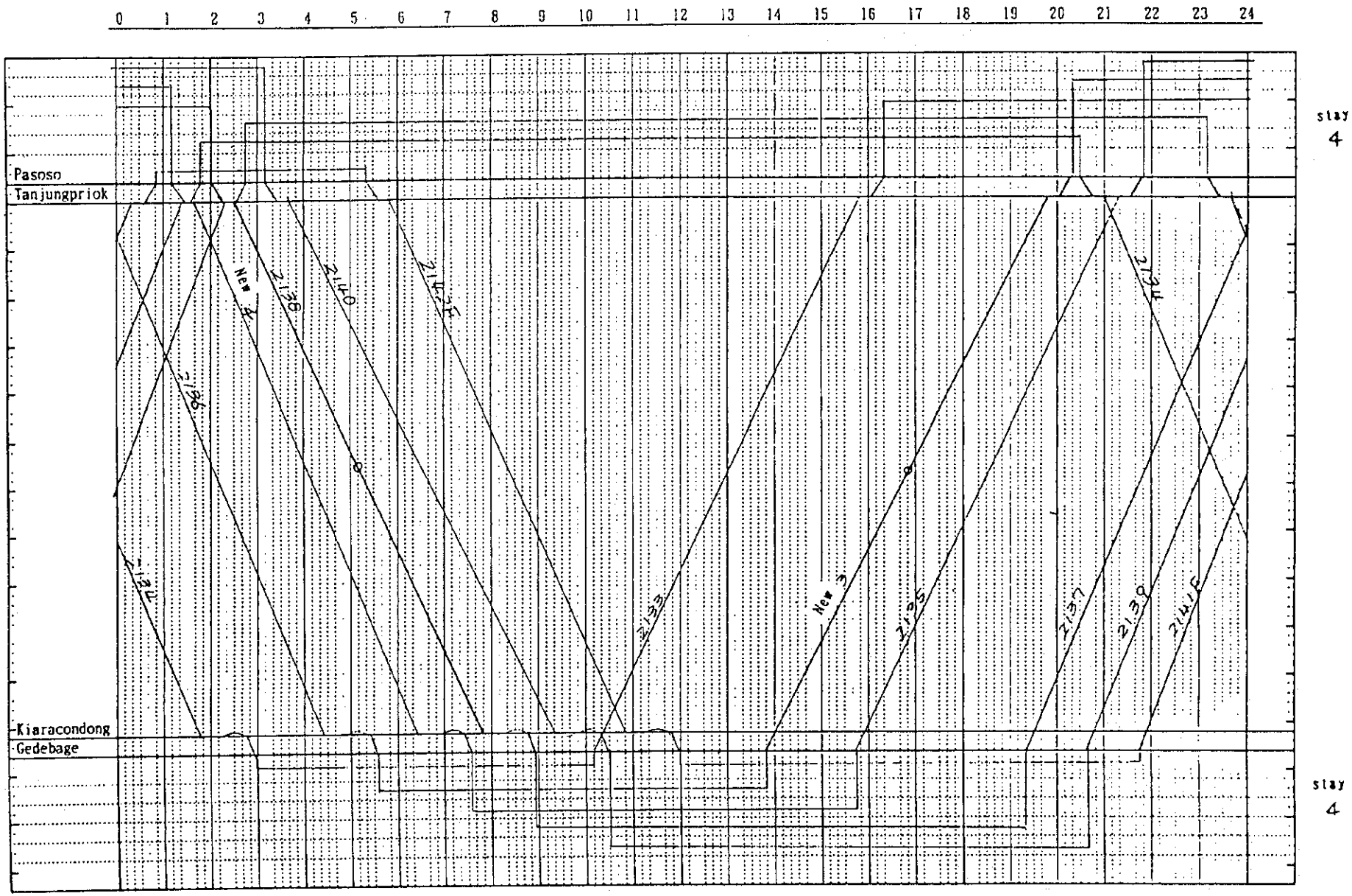


Fig. 8.3 Container Train Diagram six trains operation single way

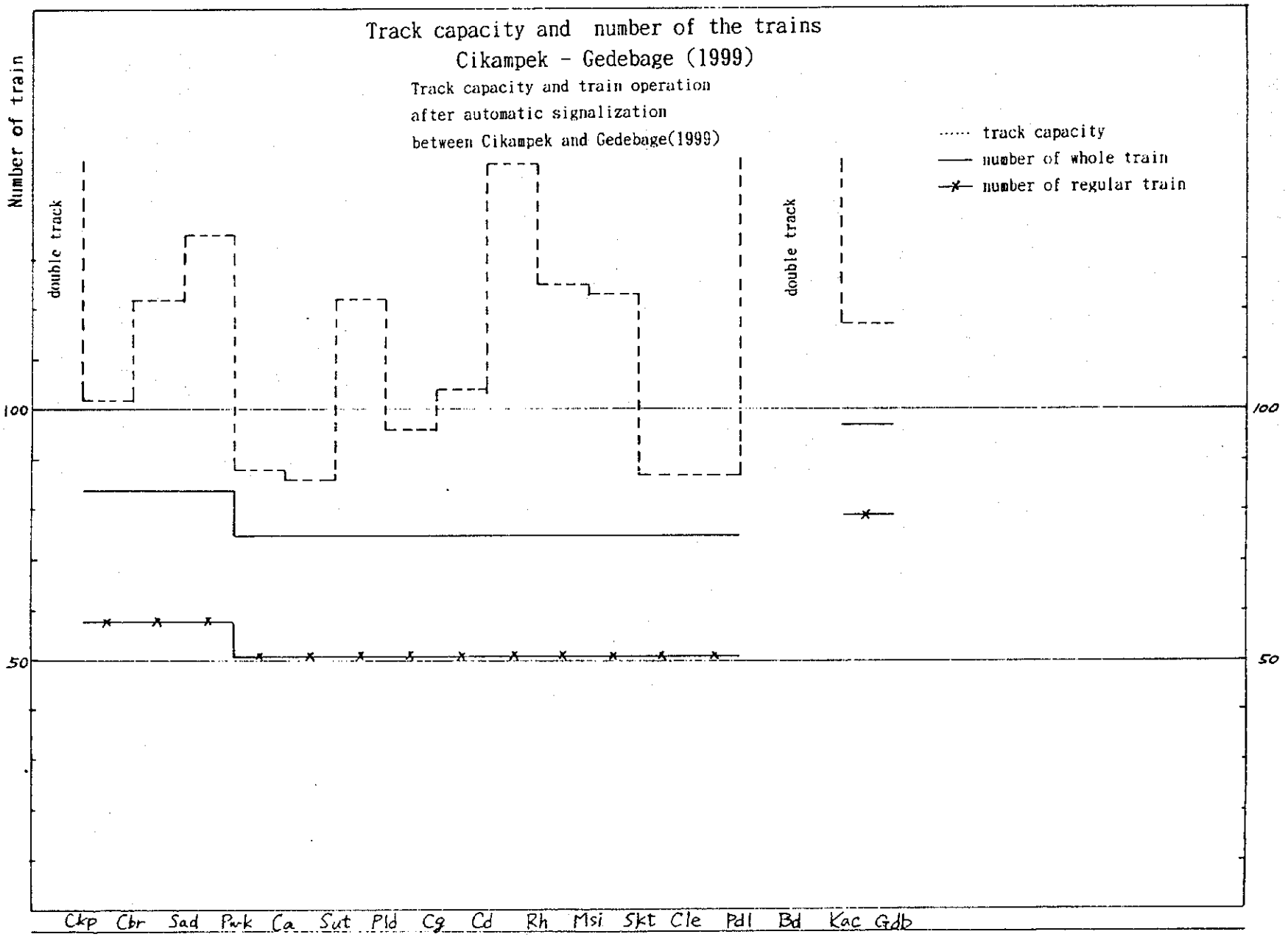


Fig. 8.4 Track capacity and number of the trains Cikampek-Gedebage (1999)

d. The capacity of loading and unloading track for all day long
Nominal : 1440 min / 115 min=12.5 trains/single way
Substantial : 12.5*0.8 =10 trains/single way (248,200 TEUs/year)

15. The substantial handling capacity under the crane at present in Gedebage is estimated as six trains single way a day whenever the present working time is kept unchanged (8-22 o'clock) and ten trains single way a day if the working time changes in all day long.
The above capacity is checked whether smooth working is possible or not at the storage area under the crane.
The clearance under the crane makes possible to work until three strata stacking, but three strata have occurred considerably. If all three strata stacking under the crane should be realized, the crane capacity would have converged on zero before hand.

16. This phenomenon would be caused by the slow removal of imported containers by customers and the narrow depot area.
70% of arrival containers are empty ones possible to carry away at any time, so the operator has to remove them from stacking yard below the crane as soon as possible. Export containers are requested to transport quickly to be in promised shipping time so that they would not make huge stock of containers.
The area of the empty container depot in the C.T. is not only enough at present, but even a trailer with 40 ft chassis cannot turn about easily owing to narrow passage width.

(2) Storage capacity

17. Based on **Tab. 8.4**, the number of the max staying wagon formation at Gdb St. is estimated as five corresponding to seven running trains.
The wagons arrived early in the morning stay on the storage tracks at Gedebage but there is no formal storage siding here at present.

18. Four tracks in total consisted of a wagon inspection track, a lead track, a loading track and a departure-arrival track, are used as storage tracks at the peak staying time, the shunting is conducted by utilizing a passing main track instead of the lead track. (see **Fig. 2.51**)
Therefore, the more increases of the container trains from now will request the more

multiplication of storage sidings.

8.1.2.2 Handling capacity at Pasoso and Tg. Priok St.

19. The elevated platform for loading and unloading at the port station Pasoso is now extending the length from 330 m to 600 m and the width is 49 m enough to operate top-lifters. The handling ability is very big if only top-lifters are multiplied in number. The problem exists in the storage of sidings on **Fig. 2.56.** It seems that two wagon formations can stay on a loading and unloading track and three wagon formations can stay on storage tracks after securing shunting route, but the new extended track for loading and unloading is complicated to shunt, so substantial storage capacity is four wagon formations.

20. Based on **Fig. 8.2**, we can find five staying wagon formations at the peak hour at midnight by giving five hours of staying time corresponding to seven driving trains, so storage capacity is enough by 1999 considering the combination with Pasoso and Tpk St.**(Fig. 2.57)**

8.1.3 Urgent countermeasure

8.1.3.1 Emergency plan

21. Emergency plan consists of minor improvements of existing system.

(1) Actual working efficiency of locomotives and wagons has to be promoted better than present level. Therefore, the maintenance of them is necessary to be kept in good condition.
It is natural that the increased traffic demand requests the additional purchase of rolling stock.

(2) The resolution of three strata stacking of containers below the crane is the most important.

22. For the purpose, the following countermeasure is considered.
a. The team requests that the imported containers should be carried out of C.T. by customers as soon as possible.

For the sake of the above request, the team tries boast of storage charge in case the containers stay for more than three days.
They say that the containers stored more than three days at Gdb occupy 20 - 30% of all imported containers.
b. At Kiaracondong, the team promotes to unload empty containers that occupy 70 % of imported containers.
The unloading side track in use now is dead-end track, so always needs shunting.
It is improved as the sub-main track with through type.
c. The spreading container depot at Gdb St. is completed sooner.

(3) Multiplication of storage sidings at Gedebage

23. The team wants to install three storage sidings and a locomotive run-around track for six wagon formations including spare wagons at a stretch corresponding both at the present and in 1999 year situation. **(Fig. 8.5)**

24. For the planning, the team considers the followings.
a. The plan is made based on future plan to avoid changing to wasteful layout.
b. The loading and unloading operation are not disturbed during the execution of the improvement works.
c. The shunting across the main track is decreased in number on the layout.
The unused industrial railway track at PERTAMINA oil base is desirable for the location of storage sidings like A in **Fig. 8.5.**

25. Because the location can avoid the shunting across the main track, they are directly connected with both the arrival - departure track and the loading - unloading track and basically have no relation with new container terminal plan.
B in **Fig. 8.5** is unfavorable location contrary to aforementioned principles and will be requested removal owing to the doubling of track in near future.
However PERTAMINA land is impossible to use because of buried pipes, so the team can not but install few storage sidings by utilizing the land space owned by PERUMKA between PERTAMINA fence and main track considering doubling track between Gdb and Rancaekek in future against our will. **(Fig. 8.1)**

(4) Additional storage sidings at Pasoso St.
The additional storage sidings needs not at present still more by making use of 1.2.3 # at Tpk St. by 1999.

(5) At Kiaracondong, the dead end side track for unloading containers is improved as a sub-main track with through type connected with main track as shown in **Fig. 8.6.** for the smooth operation and the decrease of the multiplied stopping time.

8.1.3.2 Drastic plan

(1) The track capacity between Cikampek and Kiaracondong is in shortage at a few inter-stations including non-regular trains on the train table.

26. There are two methods to make increase of track capacity. They are automatic signalization and the new installation of passing each other station.
In addition to the above, the team considers that the doubling track plan and automatic signalization are ongoing between Cikampek and Padalarang.
The team has to avoid occurring wasteful layout from our improvement plan, even if the doubling track plan is realized at any time.
On the bases of this point of view, the team would like to adopt automatic signalization at the following among-stations based on **Fig. 2.60.**

a Ckp. - Sut.	**b** Skt. - Pdl.	c Kac. - Gdb.
Ckp. St	Skt. St	Kac. St
Cbr. St	Cle. St	Gdb. St
Sad. St	Pdl. St	
Pwk. St		
Ca. St		
Sut. St		

27. However, **a** and **b** would be executed by another project. (See Item 2.7.3-(2) **c**) Only **c** is aimed by this plan, and necessary to complete at the same time as the improvement of track layout.

(2) Addition of new C.T.

28. It is necessary to start investment for a new container terminal soon after finishing the ongoing spreading works and the multiplication of storage sidings.
It is said that the new container terminal would be located behind the existing C.T.

a. The team wonders the plan might include enough wasteful land acquisition for the location of approaching track to the new C.T. like **Fig. 8.5.**
The proposed land of new C.T. cannot discriminate the own mission to the existing one and is full of houses against the land acquisition.

b. Otherwise, another plan that new C.T. is utilized as storage yard by adding more one gantry crane over the loading - unloading track, is considered.
This plan seems not to invite the remarkable increase of the capacity, because though loading and unloading capacity may increase, the stacking area below the crane keeps unchanged.
It would be better to utilize the land space at Kiaracondong as the separated type for new C.T.

c. The team adopts the improvement of Kac St. as the object of F/S.
The idea is as follows. Kac St. is designated as a specified unloading terminal of all arrival containers, and Gdb St. changes to a specified loading terminal. Still more the increased containers owing to Tpk Port improvement (TCT III) and additional C.T. installation at Bandung district accompany Tpk St. improvement and car depot improvement for the increased rolling stock, if needed.

(3) The purchase of Rolling stock

29. The container transportation is carried out by through container trains. These are composed of a diesel electric locomotive CC-201 (1950 HP) and 17 freight wagons in the normal situation. The former is the main locomotive type used by PERUMKA that has 87 locomotives including those for passenger transport, and the latter are PPCW/PKPKW type 190 wagons.
At present, five trains per day single way already would be prepared at peak period on the train diagram.

30. The required trains per day estimated by the rolling stock operation plan up to 1999 are as follows. (Article 8.1.1.1)

At present (1994) : 5 trains per day single way
From 1996 to 1997 : 6 trains per day single way
From 1998 to 1999 : 7 trains per day single way

31. The numbers of required rolling stock are estimated based on **Fig. 2.50, 8.2** and **8.3** considering that a tractive locomotive starts soon after exchanging wagon formations and assistant locomotive between Gdb and Pwk considering the mean locomotive running distance. Besides, spare rolling stock for inspection, repair and standby is estimated as about 15% of operating rolling stock.
Required locomotives are shown in **Table 8.6**

Table 8.6 Required Locomotive Numbers

	At Present(1994)	1996 - 1997	1998 - 1999
Running Trains per Day at Peak Period (single way)	5	6	7
Using locomotives at peak period	7	8	9
Using assistance loco.	4	4	5
Sub total	11	12	14
Loco. numbers to be increased	-	1	1
For spare	-	1	-
New Loco. Numbers to be Purchased	-	2	1

32. The above table shows that two new locomotives is to be purchased up to 1997 and one additional locomotive is to be purchased up to 1998.
Required wagons are as shown **Table 8.7.**

Table 8.7 Required wagon Numbers

	At Present(1994)	1996 - 1997	1998 - 1999
Running Trains per Day at Peak Period (Single way)	5	6	7
Required Numbers	7 units 119	8 units 136	9 units 153
For Inspection and Maintenance	1 units 17	1 units 17	1 units 17
Total	136	153	170

33. The above table shows that required wagon numbers are 170. According to the item 2.7.3, the freight wagons of 190 are classified as follows.
For 40ft or 2*20ft under 30t in total weight : PPCW 150
For 40ft or 2*20ft over 30t in total weight : PKPKW40
And the rate of the TEUS of 40ft and 20ft is as follows.
40ft 39%, 20ft 61%
The rate of the containers exceeding 30t of total weight in 40ft containers or 2*20ft containers is unknown, but it is understood that the containers over 30t of total weight are scarcely, because the container weight is investigated as follows.

	Export	Import
40ft	18-24t	22-30t
20ft	8-14t	10t

34. Therefore, it is understood that the container over 30t of total weight will not be over the 40/170=24% of 170 wagons on the above. And so, the 40 PKPKW type wagons are enough for the operation, and it is not necessary to purchase the new wagons.

(4) Main facilities items to be executed based on urgent action program.

35. Based on the analysis the following items are executed.
a. At Gedebage
i) Multiplication of storage sidings
ii) Completion of spreading container depot ongoing

iii) Submergence countermeasure for the existing main tracks

b. At Kiaracondong

i) Extension and grade up of dead end unloading track

c. Between Gdb and Kac

i) Automatic signalization

d. The purchase of locomotives

8.1.3.3 The handling capacity at each station after realizing the urgent implementation plan

36. The unloading work of arrival empty containers is moved to Kac. St., and both the unloading work of the arrival full containers and the loading work of departure ones are remained as it is.

The team tries to examine on the simulated work schedule diagram (**Fig 8.7**) whether seven train operations are possible or not on the basis of the improved handling facilities.

The premises are as follows.

(1) Stopping time at Kac. St. (**Fig 8.10**)

The unloading work is conducted by using two forklifts and the trains finishing the work start on definite time.

The staying capacity is no problem, because each train keeps enough arrival intervals each other to avoid overlapping.

(2) The Work at Gdb. St. (**Fig 8.9**)

The work flow is as follows.

a. A train directly arrives at the loading track (4#), and a shunting locomotive moves the wagon formation to the staying sidings after finishing the handling work.

b. The tractive locomotive is sent on the car depot for fueling and daily inspection soon after arriving at the loading track (it moves to the main track, then switches back to 1 or 2# track, and waits for the departure time).

37. The loading track 4# is capable to handle at most nine trains single way as follows.

i) Factors for the handling work.
Unloading containers per train
seven boxes : mean value as the result in 1993
Loading containers per train
25 boxes : mean value as the result in 1993
Handling time per box : two min
Handling time per train : 64 min. (unloading :14 min, loading :50 min)
Shunting time for movement : 15 min
Accessory time per train : 79 min
Utilization factor for the loading track : 80%

ii) Handling capacity of the loading track
gross : 840 min(8:00 - 22:00)/79 min=10.6 train
net : 10.6 * 0.8 = 8.5 = 9 trains single way

c. In case a train can not arrive directly at the loading track (4#) from Kac. St., it arrives at sub-main track (1#) and switches back to the lead track (L2#), then waits for the time when the loading track (4#) get available.

d. The wagon formation waiting for departure at the staying sidings is moved to the departure track (3#) as soon as it get available.

e. A tractive locomotive sent on from the car depot is coupled with the wagon formation at the departure track and then starts for Tpk. St.

f. Two wagon formations can be stored and shunted for the arrangement of coupling order at the staying sidings.
However, three ones are limited on the storage only.
Fig. 8.7 is the simulation flow chart to find the max. possible staying wagon formations on the above assumption.
We can see the staying tracks are still in shortage for the seven train operations which forms five ones staying.
However it is no problem to handle five wagon formations staying at peak hour only by utilizing either sub-main track (1#) or the lead track (L2#), instead of staying track (S3).

(3) Pasoso St. **(Fig. 8.8)**

38. Tpk. St. has enough staying capacity, so we can utilize it to hold no more than four wagon formations staying at Pasoso St.
The formula is that two trains make passing each other at Tpk. St. at peak hour, accordingly one train may be kept waiting at Tpk. St. for that.
Otherwise, the loading and unloading track with a long platform can store two wagon formations, where that on Tpk. side has only to keep the low turnover rate of the usage.
It makes possible to allow five wagon formation staying at Pasoso.

(4) Based on the above the max. wagon formations at each station are arranged as follows.
Kiaracondong : one
Gedebage : five (3#, 4#, S1#, S4#, L2# or 1# temporarily)
Pasoso : four (2#, 3# two, 1#) or five
Tanjung Priok : one or two temporarily
Based on the above argument, it is verified to be possible to handle seven trains a day single way.

8.1.4 Description of the Works

39. The urgent implementation plan executes the improvement to give the following function.
i) At Gedebage Station, arriving full containers are unloaded and departing containers (full and empty) are loaded.
The new track layout aims at the increase of wagon staying capacity.
ii) At Kiaracondong Station, arriving empty containers are unloaded. The track layout will be planned to enable cargo handling on arrival and departure tracks directly.
iii) To increase the track capacity between Gdb and Kac, the improvement of signalling and tell-communication is executed. As a result, through container trains will be able to make 7 round trips during the busiest period in 1999.

8.1.4.1 Improvement at each Station

(1) Gedebage Station (**Fig. 8.1, 8.9**)

a. The expansion of the empty container yard at the container terminal should be promoted.
b. Lengthwise storage tracks should be constructed between the main line and PERTAMINA base. Banking works should be carried out for this purpose.
c. The same flow cross section as precedent should be secured, in case a new side ditch along the boundary with PERTAMINA is constructed by driving PC sheet piles.
d. Since the formation level width is insufficient, a worker passage (1.2 m wide) for shunting work should be supplemented over the side ditch.
e. The signal cabin is built near the existing one.
f. The intermediate part of station tracks is concave and often submerged so recover the rail level as it was with gravel.
g. The effective length of lead track L2 is limited to 35m only for shunting locomotive use.
Because the long lead track such as 275m invites expensive construction, owing to submergence condition on site in spite of low frequent using.

(2) Kiaracondong Station (**Fig. 8.1, 8.10**)

a. The existing dead head handling siding (9#) is extended in length and changed to the sub-main track with a through type.
The track layout still considers an additional sub-main track necessary for the execution stage of F/S.
b. The obstacle of side tracks located in the container yard is removed, instead, another side track route by extension from the lead track at Bandung side is newly secured for the factory.
c. The layout of carrying path is considered to keep fluent trailer flow in and around the yard.
d. The location of a gantry crane that will be installed in future, should be designed to keep the width enough to enable a trailer with chassis to turn about.
e. A new signal cabin is built near the main station building.
f. One forklift (for 10 t) should be purchased. (The currently available forklift is to be used as well.)

8.1.4.2 Improvement of Signalling and Communication Facilities

40. Reducing of route setting time is one of the effective means enabling high density train operation by means of increasing the track capacity.
Under the present project, the signalling facilities between Kiaracondong and Gedebage will change to automatic signal system at the same time when both the new construction of storage sidings at Gdb. and the partial change of track layout at Kac is executed as emergency measures.
Figure 8.11 shows the outline of the improvement.

(1) Basic idea of improvement

a. Block system

41. Automatic block system (track circuit sensing type) at the single track section will be used. This system calls into existence, on the basis that continuous track circuits are installed commonly, in station yards and between two adjacent stations, as one block section.
Therefore only the section between Kiaracondong and Gedebage will change to the automatic block system, but both sections between Cikudapateuh and Kiaracondong and between Gedebage and Rancaekek will be left unchanged as it is.

b. Interlocking devices

42. At Gedebage and Kiaracondong Stations, the current mechanical interlocking devices will be replaced by electronic interlocking devices to reduce route setting time. The starting signal on the side of Cikudapateuh Station at Kiaracondong Station and that on the side of Rancaekek Station at Gedebage Station is necessary to turn the handling lever for indicating green every time a train starts.

c. Level crossing protection devices

43. Taking into consideration of high speed and high density operation anticipated in future, alarm equipment that automatically outputs warnings will be installed at all the level crossings that are related with the yard improvement works of this project.

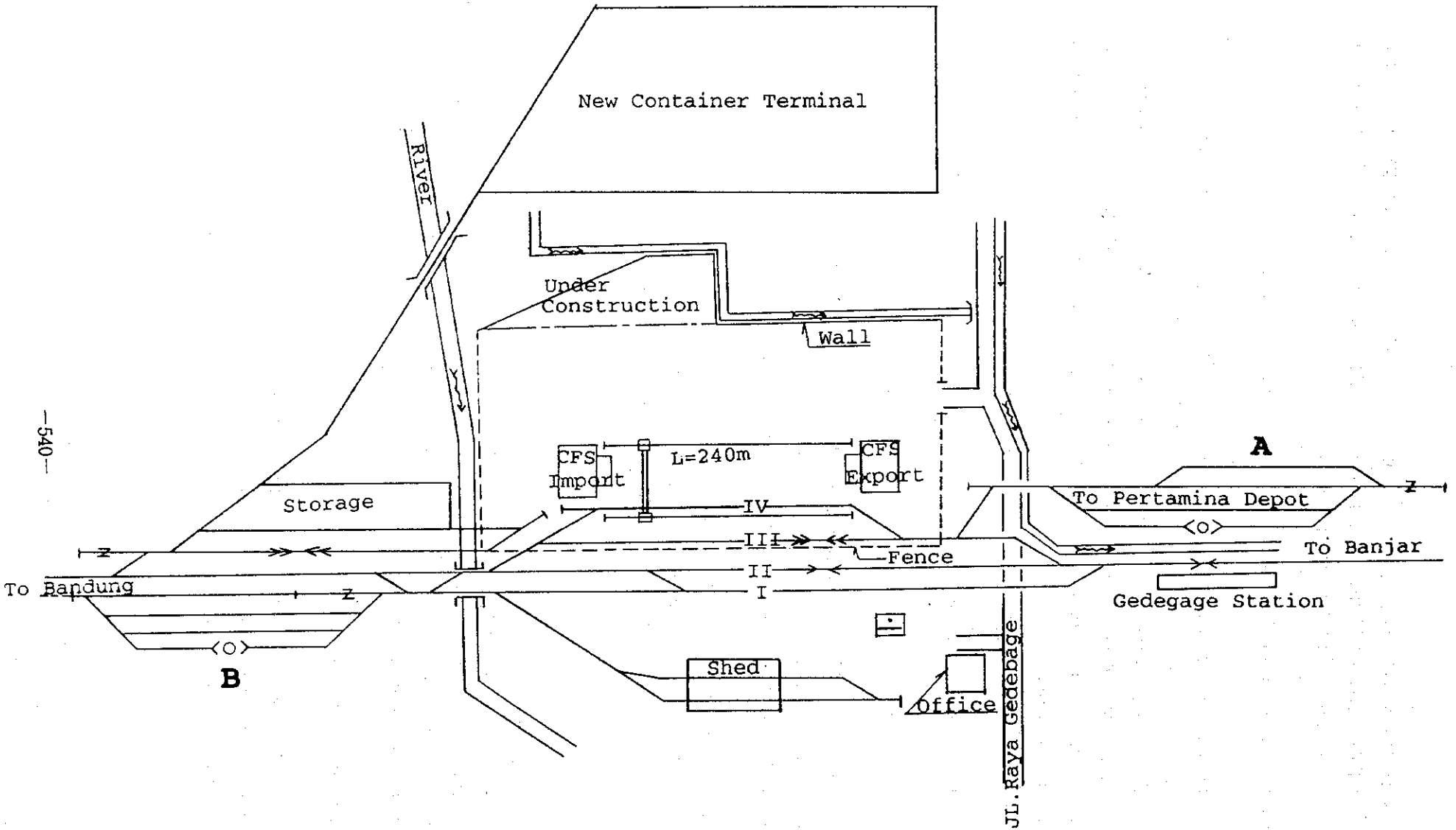


Fig. 8.5 The Comparison of track group locations

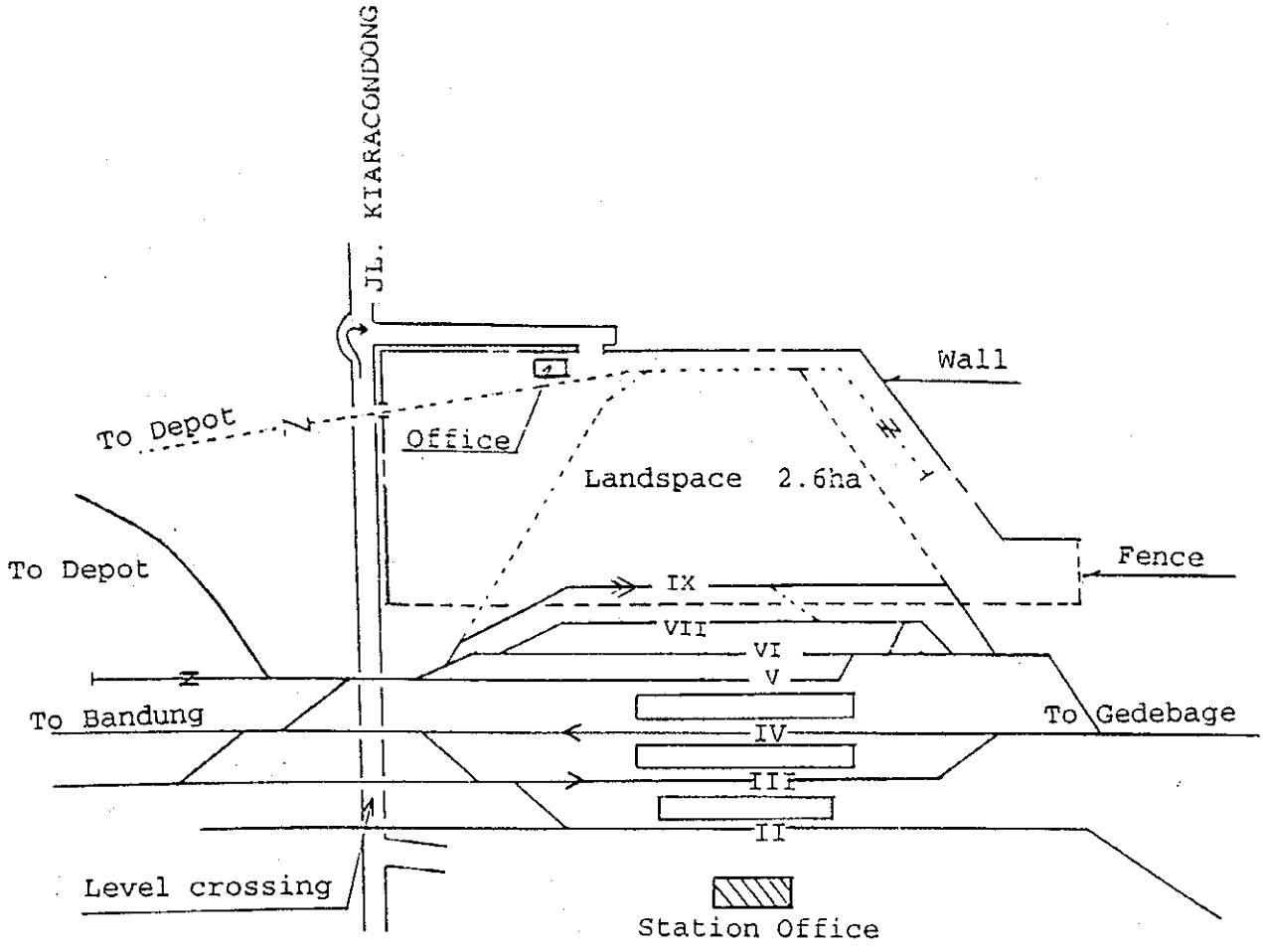


Fig. 8.6 Track Layout of Kiaracondong

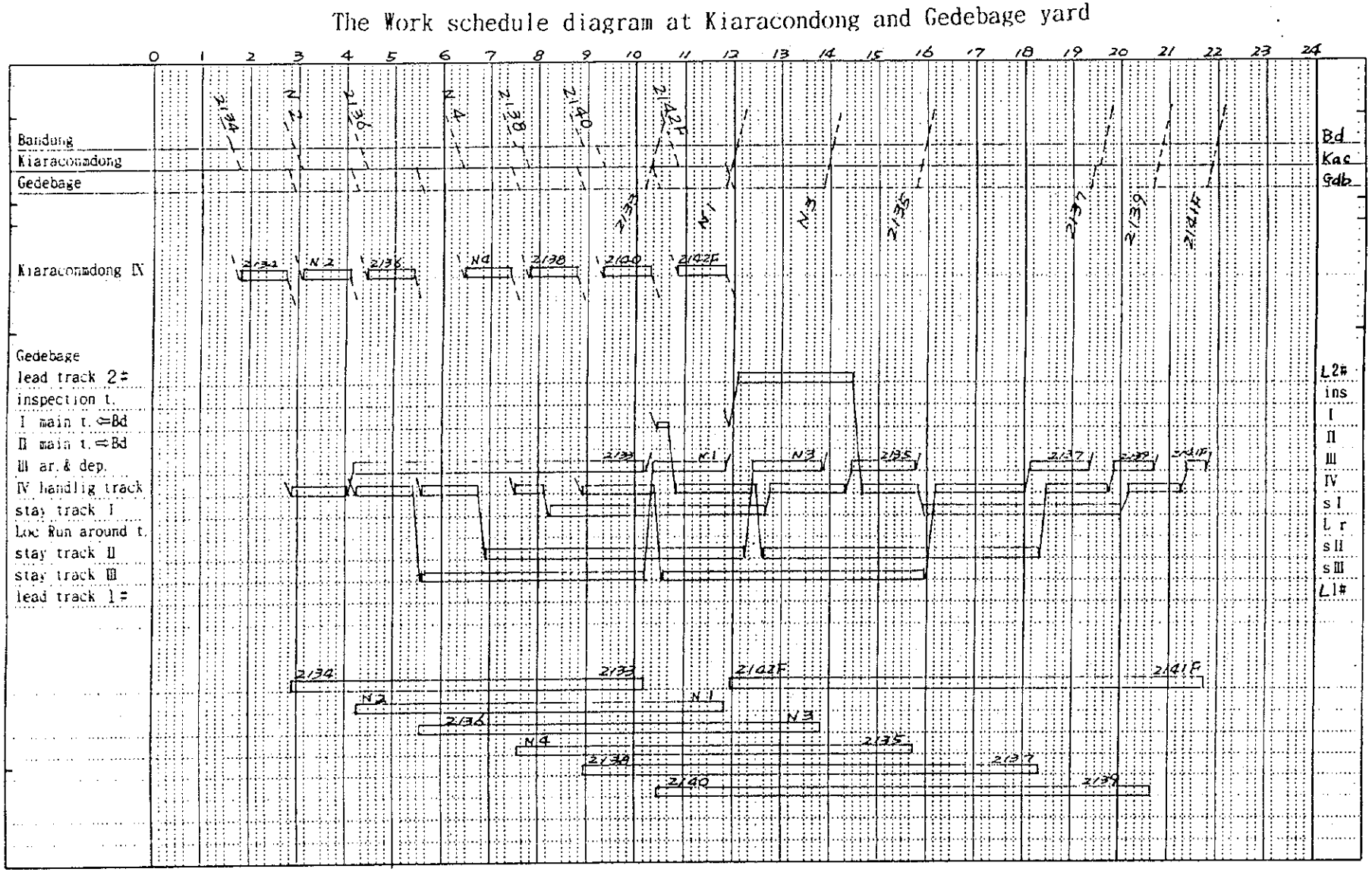


Fig. 8.7 The Work Schedule diagram at Kiaracondong and Gedbage yard

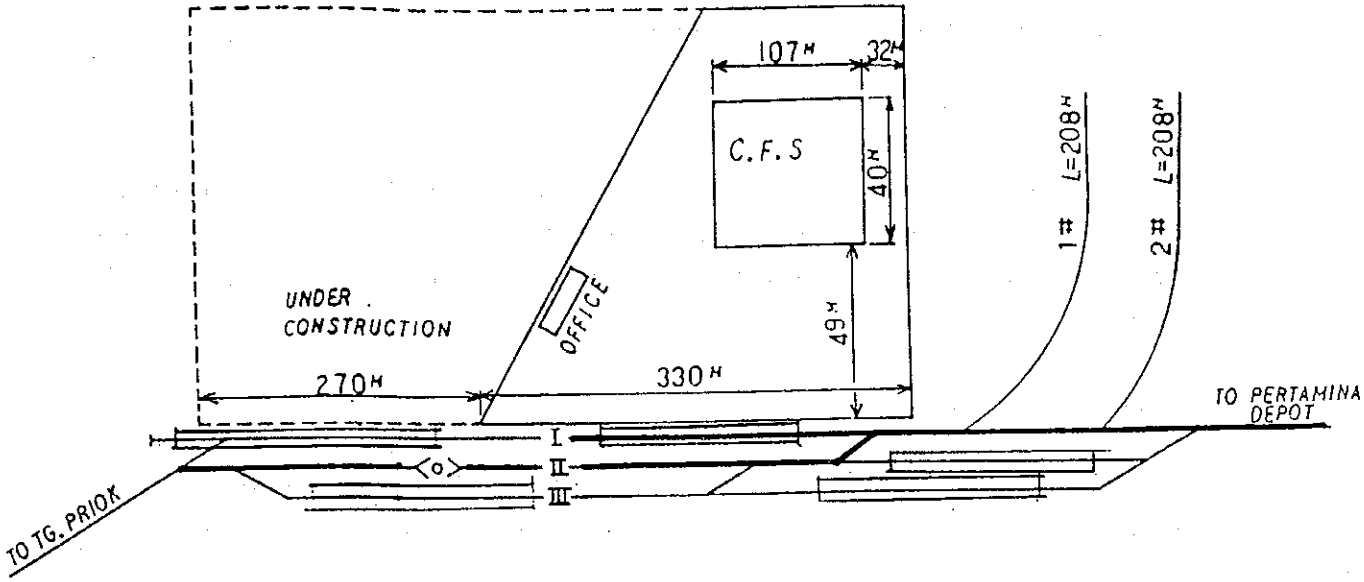


Fig. 8.8 Track Layout of Pasoso

d. Power supply for signals

44. The power supplied from the public power corporation will be used regularly for signals. An engine generator will be equipped at each station as the stand by power source. Whenever the regular power supply falls, the generator will be automatically switched.

e. Communication lines

45. Communication cables (50 P) will be installed between Kiaracondong and Gedebage. They will be used for a block signal line and a block telephone line.

(2) Improvement in Gedebage Station yard

a. The current mechanical interlocking devices will be replaced by electronic interlocking devices corresponding to the installation of automatic signals and storage tracks.
b. The current semaphore signals will be replaced by color light signals.
c. Basically, trains arrive directly at the loading / unloading track. Therefore, the home signals install route indicators.
d. The frequently operated switch machines for the main track will be changed to electric switch machines. However, the switch machines for the inspection and repair track are used in low frequency, so that on-site mechanical switch machines are adopted and connected with interlocking devices.
e. The Gedebage Station yard is frequently flooded during the rainy season. Lifted equipment (lifting 200 mm from sleeper heads) will be used at flooded places.
f. A commercial frequency track circuit will be used in the station yard. A track circuit for one block will be installed between Kiaracondong and Gedebage Station.
g. To raise the efficiency of shunting work in the station yard, the storage tracks will be installed with lighting facilities and communication equipment such as talk-back units so that signal staff, shunting staff, and drivers can communicate one another.
h. The calling on signal will be installed in order that a tractive locomotive sent on from a depot is directly connected with a container wagon formation at an arrival and departure track.

(3) Improvement in Kiaracondong Station yard

a. The current mechanical interlocking devices will be replaced by electronic interlocking devices, caused by both installations of automatic signals and improvement of track layout.
b. The current semaphore signals will be replaced by color light signals.
c. The track layout will be changed to enable direct arrival and departure at the loading/unloading tracks. The home signals attach route indicators.
d. The frequently operated mechanical switch machines on the main track will be changed to electric switch machines. However, less frequent on-site handling mechanical switch machine connected with interlocking devices will be adopted on the Bandung side of the siding track (2#) as it is.
On-site handling switch machines that are not connected with interlocking devices will be remained on the private siding tracks independent from the main track.
e. A commercial frequency track circuit will be used in the station yard. One track circuit will be installed for blocking as well between Gdb. and Kac. Station.
f. Communication equipment such as talk-back units and lighting facilities for night time work will be installed.
g. Communication equipment (telephone, fax machine, etc.) for distributing empty containers will be installed if necessary.

(4) Miscellaneous

a. After electronic interlocking devices are installed, the minor change of interlocking system will arise at the execution time of the feasibility study, because the track layout between urgent plan and F/S is different. This matter should be studied well to prevent from rework at the time of the change when electronic interlocking devices are installed.
b. Doubling track between Kac. and Gdb. doesn't accompany block signals at the execution time of F/S.
They should be installed in future when the increased track capacity will be requested as the countermeasure to make successive train intervals reduced.

8.1.5 Cost estimate and construction schedule

8.1.5.1 Premises of cost estimates

46. The premises and procedure on cost estimate for the project are as follows.

(1) Construction cost is calculated per each item according to the definite category at present prices in May of 1994, and piled up to grand total.

(2) Inflation rate is not considered.

(3) The construction costs calculated per each item are classified by local and foreign currency including indirect foreign cost.

Their ratio is considered on the actual cost breakdowns and past precedents.

(4) The exchange rate for foreign currency is settled as 1¥ = 21.34 Rp.

(5) The foreign currency is estimated by international market prices. The costs of imported equipment that are in the object of foreign currency, are estimated at CIF price.

For the above, each construction unit cost is constituted as follows.

Table. 8.8 The Composition of Each Item for Land Facilities

- a. Land cost
  - Land acquisition
  - Compensation for obstacles
- b. Construction cost (by contractor)
  - Direct cost
    - Material cost
    - Labor cost
    - Operation cost for machines
    - Temporary installation
  - Indirect cost for contractor
    - Field management by contractor
    - Administration by contractor
    - Profit
- c. Physical contingency of 10%
- d. Management cost of 10%
  - Engineering service
  - Overhead
    - Technical supervision
    - Administration
- e. Customs duty is neglected owing to government purchase

8.1.5.2 Cost estimate and construction schedule

(1) The new construction starts in 1996 fiscal year by considering the necessary procedure term after submitting Interim Report.
(2) The suspended works in Gdb starts again in 1995 fiscal year.

47. Based on the above, the investment amount and the schedule table are described in **Tab. 8.9.**
On the detailed break down of construction cost, refer to Vol. 4.

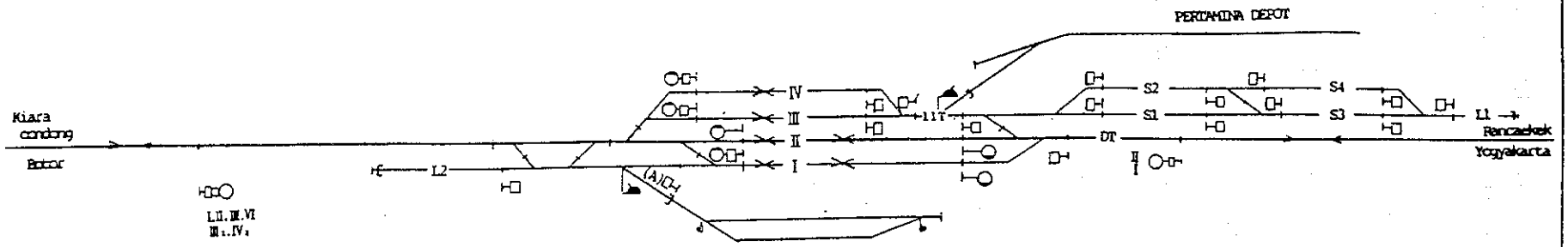
Necessary total construction cost is 33.1 billion Rp.
(23.2 billion Rp as foreign currency)

The contents as follows.

* Facilities (civil work etc.)	7.2 billion Rp (4.7)
* Utilities (signal etc.)	12.8 billion Rp (11.2)
* Rolling stock	9.8 billion Rp (4.9)
* Handling machine	0.3 billion Rp (0.3)
* Management cost	3.0 billion Rp (2.1)
Total	33.1 billion Rp (23.2)

* ( ) shows foreign currency.

G E D E B A G E
(U R G E N T P R O G R A M)



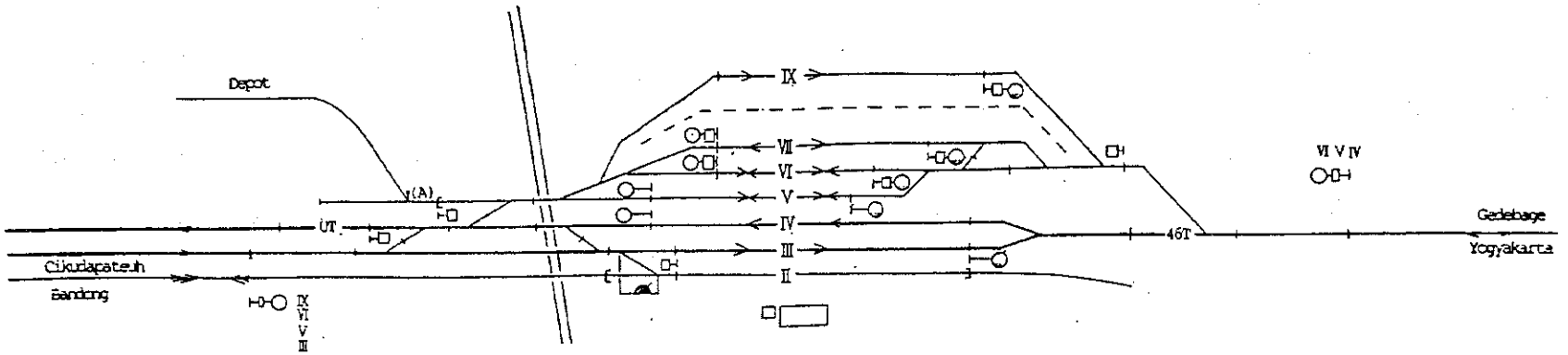
Signal	Route	Remarks
Home Signal	Kiaracondong – I	
	〃 – II	
	〃 – III	
	〃 – IV	
Starting Signal	IV – Kiaracondong	
	III – 〃	
	II – 〃	
	I – 〃	
	I – Rancaekek	
	II – 〃	
Home Signal	Rancaekek – II	
	〃 – I	
Calling on Signal	Kiaracondong – III	
	〃 – IV	

Signal	Route	Remarks
Shunting Signal	L2 – (A)	
	〃 – I	
	〃 – II	
	〃 – IV	
	IV – L2	
	III – 〃	
	I – 〃	
	(A) – 〃	
	L1 – S4	
	〃 – S3	
	S4 – S2	
	S3 – 〃	
	〃 – S1	
	S2 – IV	
	〃 – III	
	〃 – 11T	
	S1 – IV	
	〃 – III	
	〃 – 11T	
	DT – II	
	〃 – I	

Signal	Route	Remarks
Shunting Signal	III – DT	
	〃 – S1	
	〃 – S2	
	IV – DT	
	〃 – S1	
	〃 – S2	
	11T – DT	
	S1 – S3	
	S2 – 〃	
	〃 – S4	
	S3 – L1	
	S4 – 〃	

Fig. 8.9 GEDEBAGE Route Table

KIARACONDONG
(URGENT PROGRAM)



Signal	Route	Remarks
Home Signal	Cikudapateuh - III	
	〃 - V	
	〃 - VI	
	〃 - IX	
Starting Signal	VII - Cikudapateuh	
	VI - 〃	
	V - 〃	
	IV - 〃	
	III - Gedebage	
	V - 〃	
	VI - 〃	
	VII - 〃	
	IX - 〃	

Signal	Route	Remarks
Home Signal	Gedebage - VI	
	〃 - V	
	〃 - IV	
Shunting Signal	UT - II	
	〃 - V	
	〃 - VI	
	〃 - VII	
	(A) - V	
	〃 - VI	
	〃 - VII	
	VII - UT	
	〃 - (A)	
	VI - UT	
	〃 - (A)	

Signal	Route	Remarks
Shunting Signal	II - UT	
	46T - IX	
	〃 - VII	
	〃 - VI	
	IX - 46T	
	VII - 〃	
	VI - 〃	

Fig. 8.10 KIARACONDONG Route Table

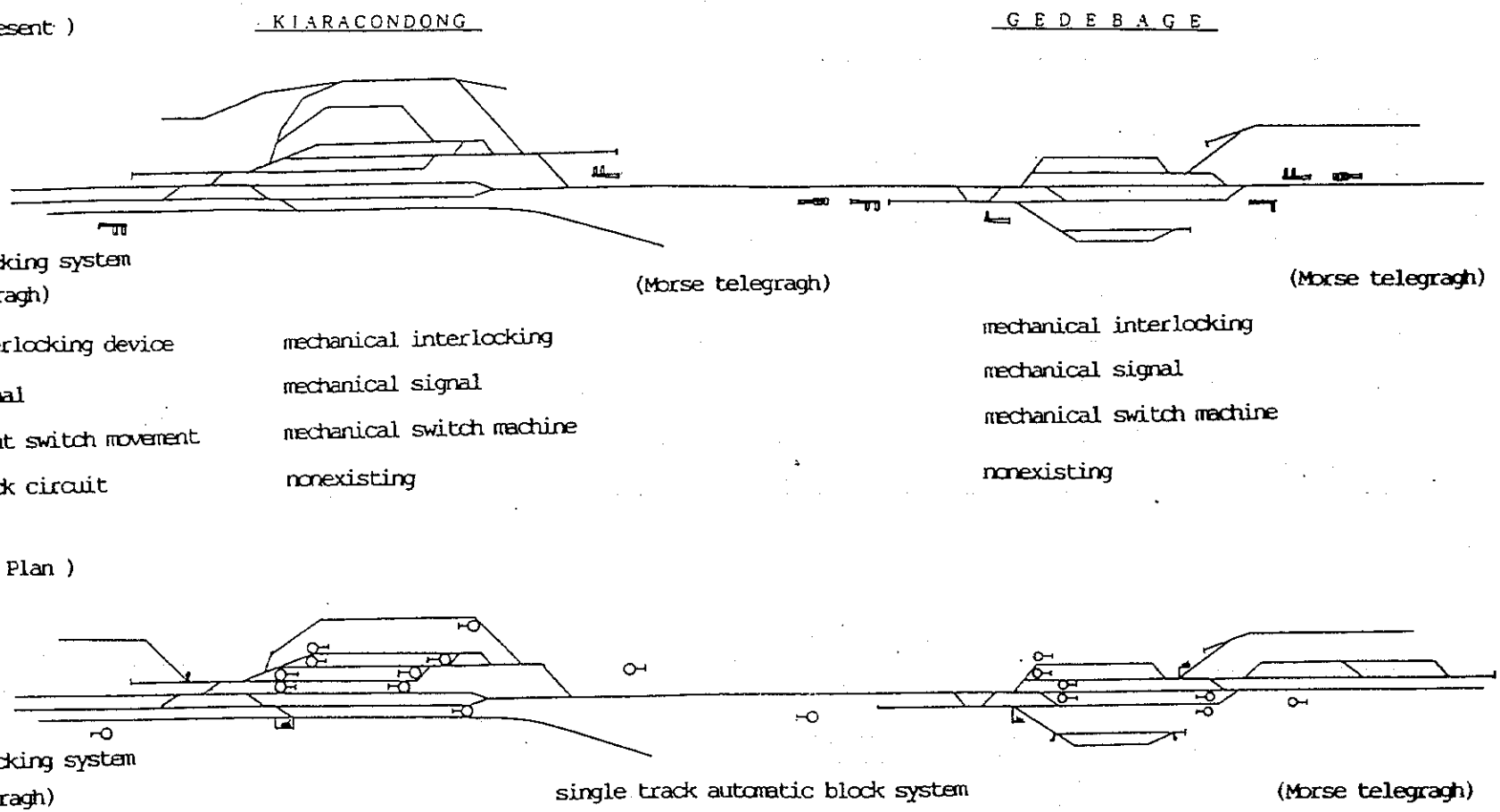


Fig. 8.11 Outline of Signalling Improvement

Table 8.9 The investment amount and the schedule

Unit : Million Rp

Item	Currency	URGENT PLAN								Subtotal	Total Foreign+Domestic
		1995		1996		1997		1998--2001			
		Kac	Gdb	Kac	Gdb	Kac	Gdb	Kac	Gdb		
(1)Land Acquisition	Foreign										0.00
	Domestic										
(2)Civil	Foreign			24.89	969.22					994.11	
<40 years>	Domestic		458.90	16.21	503.60					978.71	1,972.82
(3)Building	Foreign			275.00	440.00					715.00	
<40 years>	Domestic			225.00	560.00					785.00	1,500.00
(4)Track	Foreign					395.20	2,168.26			2,563.46	
<20 years>	Domestic				75.00	100.55	372.14			547.69	3,111.15
(5)Contingency 10%	Foreign		0.00	29.99	140.92	39.52	216.83	0.00	0.00	427.26	
(1)~(4)*10%	Domestic		45.89	24.12	113.86	10.06	37.21	0.00	0.00	231.14	658.40
(6)Sub Total	Foreign		0.00	329.88	1,550.14	434.72	2,385.09	0.00	0.00	4,699.83	
(1)~(5)	Domestic		504.79	265.33	1,252.46	110.61	409.35	0.00	0.00	2,542.54	7,242.37
(7)Signalling	Foreign			2,320.00	3,240.00	1,399.04	1,627.27			8,586.31	
<30 years>	Domestic			0.00	0.00	568.43	675.64			1,244.07	9,830.38
(8)Electric Power	Foreign			0.00	0.00	851.70	853.06			1,704.76	
<20years>	Domestic			0.00	0.00	78.30	76.94			155.24	1,860.00
(9)Telecommunication	Foreign			0.00	0.00	364.60	568.94			933.54	
<20 years>	Domestic			0.00	0.00	69.77	75.43			145.20	1,078.74
(10)Locomotive	Foreign				0.00		3,260.00		1,630.00	4,890.00	
<25 years>	Domestic				0.00		3,260.00		1,630.00	4,890.00	9,780.00
(11)Forklift (10t)	Foreign					300.00				300.00	
<8 years>	Domestic					0.00				0.00	300.00
(12)Sub Total	Foreign		0.00	2,649.88	4,790.14	3,350.06	8,694.36	0.00	1,630.00	21,114.44	
(6)+(7)+(8)+(9)+(10)+(11)	Domestic		504.79	265.33	1,252.46	827.11	4,497.36	0.00	1,630.00	8,977.05	30,091.49
(13)Management Cost	Foreign		0.00	264.99	479.01	335.01	869.44	0.00	163.00	2,111.45	
(12)*10%	Domestic		50.48	26.53	125.25	82.71	449.74	0.00	163.00	897.71	3,009.16
(14)Grand Total	Foreign		0.00	2,914.87	5,269.15	3,685.07	9,563.80	0.00	1,793.00	23,225.89	
(12)+(13)	Domestic		555.27	291.86	1,377.71	909.82	4,947.10	0.00	1,793.00	9,874.76	33,100.65

* < >shows depreciation period.

8.2 OPERATIONAL IMPROVEMENT PLAN FOR THE CONTAINER TERMINAL AT TANJUNG PRIOK PORT

49. At Tanjung Priok Port, the handling capacity of the container terminals is said to be about 1,200,000 TEU/year. This container handling capacity, however, is based on the premise that two wharf crane will be installed at the No. 2 terminal and that the Nos. 1 and 2 terminals will be backed by the operation of four berths (205m/berth) and two berths (180m/berth), respectively. (**Table 8.10**)

50. On the other hand, according to the container cargo demand forecast of this analysis, ocean going import and export container ship cargoes are expected to total 1,422,000 TEU/year in 1995, 1,592,000 tons in 1996, and 1,726,000 tons in 1997. Estimates are that the container handling capacity (1,200,000 TEU/year) of the existing terminals will already be exceeded by 1995.

51. Indonesia's Port Corporation II (PT. Pelabuhan Indonesia II) is presently planning to construct the No. 3 container terminal, but even this terminal is completed as scheduled, actual operations will not begin until 1997. The gap between supply and demand must be filled during this pre-completion period. And this is why it is necessary to boost the existing container handling capacity, at the berths of the Nos. 1 and 2 container terminals.

52. Needless to say, from a long-range point of view, construction of new berths is economically the most efficient approach. But from an emergency standpoint, it seems important also to consider other expedients and ideas to improve container handling capacity. Some of these are introduced below.

53. In this regard, it must be said that depending on their necessity and urgency, the ideas presented below may require detailed studies and substantiation in the years ahead.

(1) Berth capacity

54. **Table 8.10** shows the existing berth capacity based on the criteria presented in Section 5.1 and the factors that constitute the basis of this calculation. As is clear from the table, the berth capacity is estimated to total 1,150,000 TEU/year when the Nos. 1

and 2 terminals are put together. Among those factors which may be expected to improve operations at the container terminals are a higher handling efficiency for the container cranes and a shorter non-operation time (NOT), which comprises one of the constituents of berthing time.

55. In order to improve the handling efficiency of the container cranes, the first possibility that may come to mind is to replace the existing container cranes with a far speedier model. However, when consideration is given to the container ships that call at Tanjung Priok Port, it is difficult to believe that the current average handling efficiency of 20 to 22 boxes/hour should be the upper limit, despite the fact that the cranes used are of an ordinary type with a hoisting speed of 36/72m/min and a trolley traveling speed of 120m/min. The interference of cranes with other yard cargo handling equipment, and other possible bottlenecks to terminal operations must be identified and resolved. Then and then will it be in order to consider the introduction of speedier container cranes, as necessary.

56. Concerning the non-operating time (NOT) performance results at the No.1 terminal in 1993 of 4 hours/ship call, will be possible to improve this ratio, for example by implementing a buck-up system for meal break.

57. Assuming that the average handling efficiency of container cranes can be improved from the current level of 20-22 boxes/hour to a 24-26 boxes/hour and that a present NOT of 4 hours/ship call can be shortened to 2 hours/ship call in the years ahead, the loading and unloading capacity of the berth will improve to the estimated levels shown in **Tables 8.12 and 8.13.** With this improved efficiency, it should prove possible to increase the total berth capacity of Nos. 1 and 2 terminals, to the 1,450,000-1,550,000 TEU/year range.

(2) Container yard storage capacity

58. **Table 8.11** shows the existing yard capacity based on the criteria presented in Section 5.1 and the factors that constitute the basis of this calculation. As is clear from the table, when the Nos. 1 and 2 terminals are put together, the yard capacity is estimated to total approximately 1,150,000 TEU/year, and is in balance with the berth capacity.

59. Improving the handling efficiency of container cranes and reducing the non-operating time (NOT), would improve the berth capacity, but it will result in a yard capacity shortfall of about 300,000 to 400,000 TEU/year.

60. As a possible means of improving the yard capacity, consideration may be given to increasing the stacking height and reducing the yard dwelling time. If a most clear-cut approach an outside container storage yard (inland depot) is to be provided, it is necessary to study its necessary area and scale. Efforts at shortening yard dwelling time might be equivalent to the provision of an outside yard.

61. **Table 8.11** shows the study results. The necessary additional yard area is approximately about 30 hectares (ha) assuming that the handling system is Forklift System.

62. The container yard may be built either at the seaport area or inland. Both operations have certain advantages and disadvantages. In any case, in the light of reducing dwelling time of the terminal, it is necessary that the outside yard should be a bonded area and have the function of customs clearance.

63. If the yard is to be built at or near the port area, the construction and management of the yard should be executed by the public port authorities. This will make it possible for the new terminals to be allocated the necessary funds for construction and other relevant expenses from the increasing income of the Tg Priok terminal.

64. As a model of inland depots in port areas, the Yokohama Cargo Center now under construction at Daikoku wharf, Yokohama port may serve valuable reference. It is a large container freight station (CFS), with a site area of 6.54 ha, a floor area of 32.2 ha, and an annual cargo handling capacity of 4,250,000 tons/year. The Cargo Center is scheduled for completion in July 1996.

Table 8.10 Berth Productivity of Tg Priok Container Terminal

Terminal	No1	No2
Berth length (m)	205	180
Number of berths	4	2
Average boxes/ship	500	300
Number of quay cranes installed " working	2 1.6	2 1.6
YOR (%)	70	70
Berthing time (Hr/vessel) NOT (Hr/vessel) ET (Hr/vessel) IT (Hr/vessel)	21.2 4.0 15.6 1.6	14.1 4.0 8.5 1.6
40' container ratio (%)	40	32
Productivity (1000TEU/yr/berth) Productivity total (1000TEU/yr)	202 808	172 344

Table 8.11 Yard Productivity of Tg Priok Container Terminal

		Tg Priok		Storage yard outside	
		No 1 Terminal	No 2 Terminal		
Storage Area	(Ha)	19.5	8.42	20.19	26.92
Ground Slot Capacity	(TEU)	6,547	3,025		
Ground Slot/Ha	(TEU/Ha)	336	359	190	190
Storage Capacity	(TEU)	18,436	(5232)		
Stacking Height	(Box)	2.82	2.40	2.50	2.50
Dwelling Time	(Day)	5.03	4.49	7	7
YOR	(%)	60	60	60	60
Yard Productivity	(TEU/Yr)	802,000	354,000	300,000	400,000
Yard Area Ratio	(%)			(Not including CFS) 70	70
Necessary Terminal Area				28.84	38.45

Table 8.12 Berth Productivity of No 1 Container Terminal in Tg Priok

	Container Crane Hour Productivity (Box/Hr)	Not Operation Time (Hr/vessel) 5	4	3	2
		(1,000TEU/Yr)			
Berth Productivity	20	773	809	849	893
	22	825	867	913	964
	24	875	922	974	1,033
(1,000TEU/Yr)	26	922	974	1,033	1,099
		(TEU/Yr/m)			
Berth Efficiency	20	942	987	1,035	1,089
	22	1,006	1,057	1,113	1,176
	24	1,067	1,124	1,188	1,260
(TEU/Yr/m)	26	1,125	1,188	1,260	1,341

Table 8.13 Berth Productivity of No 2 Container Terminal in Tg Priok

	Container Crane Hour Productivity (Box/Hr)	Not Operation Time (Hr/vessel) 5	4	3	2
		(1,000TEU/Yr)			
Berth	20				
Productivity	22	321	344	370	401
	24	337	362	391	426
(1,000TEU/Yr)	26	352	379	411	449
		(TEU/Yr/m)			
Berth	20				
Efficiency	22	892	955	1,028	1,113
	24	936	1,006	1,087	1,182
(TEU/Yr/m)	26	977	1,053	1,142	1,248

APPENDIX A

Appendix

List of Container Carrier Operators, and Their Fleet, Routes and Frequencies of the Service, Calling Ports, and Port of Transhipment

(1) Summary of service to Indonesia

(2) Summary of shipping lines serving in Indonesian Trade

(3) List of shipping lines serving in Indonesian Trade

(4) Container vessels employed in feeder services

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(1) Summary of services to Indonesia

Ship Route	Num. of Oper.	Num. of Svc./w	Total Svc./W	Average Ship Size TEU
I. Direct Service				
1. Ja.(via KAO, HK, SIN)	8	11	10	720 - 1300
2. Ja.(via HK,SIN)-Indonesia-M. East	2	2	1.5	1000 -1200
3 to Australia				
A. SIN(via Indonesia) - Aus. N.Z.	3	3	2.5	750 -1500
B. Russia-Ja.(via Indonesia)- Aus.	1	1	0.5	500
4. Europe-Far East -North America (E.C)	1	1	1	1500
II. Through feeder service				
1. Taiwan, HK,Straits, Bangkok	6	6	6	200 - 1800
2. West Coast of N.America				
A. W. C. of N.Ame. - Ja.- Kao - HK	4	7	7	1600 - 4500
B. W. C. of N.Ame. - Ja.-KAO-HK-SIN	5	7	7	2300 - 4500
3. Atlantic & US Gulf				
A. Via HK, KAO	2	2	2	3000 - 4000
B. Via Singapore	1	1	1	2000
4. Round the World	1	1	1	2700
5. UK,Continent	10	12	12	2000 - 4000
6. Meditarrenian	2	3	2.5	1200 - 2200
7. Pakistan, Arabian/Iranian Gulf	3	3	2.5	500 - 1800
III. Feeder services				
A - 1 to Singapore direct service			50	250 - 600,1200, 1500
A - 2 to Singapore by main vessel			1	1200 - 1500
B. to Hong Kong by Main vessel			4	1000 - 1500
C. to KAO, Keelung, Taichung			1	600

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(2) Summary of Shipping Lines serving in Indonesian Trade

1. Far East - Indonesia (6 Operaors/8 Services)

	Operator	Port Call	Freq.	TEU	Feeder Svc.	at
(1)	COSCO	JKT,SBY,SMA	2/m	720		
(2)	Djakarta Lloyd(PIL)	JKT,SBY/SIN,KAO	2/m	800	SBY,SMA,BLW	SIN
	(Hokkaido Service)					
(3)	TSK/MOL/NYK/Samudera					
	A.Pegasus	JKT/SIN,HK,Keel	1/w	1300	SBY,SMA,BLW	SIN
	B.Southern Cross	JKT/SIN,HK,KAO,Keel	1/w	1300	SBY,SMA,BLW	SIN
(4)	Uniglory					
	A Service	JKT,SBY/SIN,KAO,Keel	4/m	880		
	B Service	BLW/KAO,HK,SIN,M.E.	3/m	1000	SBY	~~Keelng~~
(5)	Wan Hai	JKT/HK	2/m	742		
(6)	Yang Ming	JKT,SBY/Keel,HK	1/w	600		

2. Taiwan, HK,Straits & Philippines (6 operators/7 services)

	Operator	Port Call	Freq.	TEU	Feeder Svc.	At
(1)	Cheng Lie(Chuwa)					
	A Svc.	HK/KAO,Keel	1/w	1000	JKT,SBY	HK
	B Svc.	JKT,SBY/KAO,HK,SIN	1/w	800		
(2)	Hajin/Dogma	JKT/J,HK,SIN,Busan	1/w	1150		
(3)	Hueng-A	J,HK,Haiphon	1/w	200	JKT,SBY	HK
(4)	Nantai	J,HK,KAO	1/w	430	JKT,SBY	HK
(5)	MAIN G./Wan Hai	J,P.Kelang,SIN,HK	1/w	1200	JKT,SBY	SIN
(6)	MOL(KL/MISC)	J,HK,SIN,P.Kelang	1/w	1800	JKT,SBY & Others	SIN

3. Bangkok Indochina (1 operator/2 service)

	Operator	Port Call	Freq.	TEU	Feeder Svc.	At
(1)	Wan Hai					
	A service	J,Keel,KAO,HK,BKK	1/w	700	JKT,SBY	KAO
	B service	JKT,SBY/KAO,HK,SIN	1/w	400		

4. West Coast of North America (7 operators/11 services)

	Operator	Port Call	Freq.	TEU	Feeder Svc.	At
(1)	APL/OOCL					
	A. PSX	J,KAO,HK,WCNA	1/w	4340	JKT,SMA,SBY,PNJ	SIN
	B. PNX	J,KAO,SEA,VCR	1/w	2400	do	
	C. SJX	J,KAO,HK,SEA	1/w	1600	do	
(2)	Hanjing	J,HK,SIN,Eur,WCNA	1/w	2700	JKT,SBY,BLW	SIN
(3)	Hyundai					
	HK - USWC	HK,KAO,J,WENA,Busan	1/w	4500	JKT via HK	
	SIN - USWC	SIN, USWC	1/w	4500	JKT,SBY,PNJ	SIN
(4)	KL/MOL					
	PSW1	SIN - S.USWC	1/w	2900	JKT,BLW,SBY,SMA	SIN
	PNW1	SIN - N,USWC	1/w	2800	do	
	PNW2	SIN - N. USWC	1/w	2300	do	
(5)	Maersk/Sea-Land(PNW)	SIN,HK,KAO,J,N.USWC	1/w	2500	JKT,SEM,BLW,SBY	SIN
(6)	NYK/NOL					
	A SCX	SIN,HK,USWC,J,KAO,SIN	1/w	2800	All Maj. Ports	SIN
	B JCX	J,US(LA,SF),J,Busan	1/w	1800	do	
	C NWX	Busan,J,SEA,Port land	1/w	2500	do	
(7)	Yang Ming (PSW)	HK,KAO,J,S,USWC	1/w	3300	JKT	HK

5. Atlantic & US Gulf (3 operators/3 services)

	Operator	Port Call	Freq.	TEU	Feeder Svc.	At
(1)	Hanjin/Yang Ming	KAO,HK,J,USEC	1/w	3000	JKT	HK
(2)	Maersk					
	(US W & ECUS & Eur	SIN,HK,J,W &ECUS,EUR	1/w	4000	JKT,SEM,SBY,BLW	SIN
(3)	NOL/NYK (AEX)	Keel,HK,SIN,CLB,EUR	1/w	2000	All Maj.Ports	SIN

6. Round the World (2 operator/2 service)

	Operator	Port Call	Freq.	TEU	Feeder Svc.	At
(1)	Cho Yang West B.	J,KAO,HK,SIN,EUR,US	1/w	2700	JKT,SBY	SIN
(2)	CGM	JKT/EUR,SIN,AUS,US	1/w	1500		

7. UK,Continent (10 Operator12 services)

	Operator	Port Call	Freq.	TEU	Feeder Svc.	At
(1)	ACE G.KL/NOL/OOCL	J,HK,SIN,EUR	1/w	3800	All Maj. Ports	SIN
(2)	CMA	J,HK,SIN,Eur	1/w	3300	JKT,SMA,SBY,BLW	SIN
(3)	CGM/MISC/Nedlloyd	J,KAO,HK,SIN,P.K,EUR	1/w	4000	JKT,SMA,SBY,BLW	SIN
(4)	Hanjing (See 4.(2))					
(5)	Hyundai/SaeLand/Norasia	J,BSN,KAO,HK,SIN,EUR	1/w	3000	JKT,BLW,SMA,SBY	SIN
(6)	Hapag/MOL/NYK					
	A Svc.	J,SIN,EUR,P.K,KAO	1/w	3300	All Maj. Ports	SIN
	B Svc.	J,BSN,KAO,HK,SIN,EUR	1/w	4000	do	
(7)	Yang Ming(Manwa)	J,BSN,Kel,KAO,HK,SIN	1/w	2000	JKT	HK
(8)	Maersk/P&O					
	A Svc.	J,KAO,HK,SIN,Europe	1/w	3500	JKT,SMA,BLW	SIN
	B Svc.	J,HK,SIN,EUR,Kln,KAO	1/w	3500	do	
(9)	Sea-Land/Norasia	J,Keel,HK,SIN,EUR	1/w	2000	JKT,ABY	SIN
(10)	USAC/OOCL/Wilhalmsen	J,BSN,KAO,HK,SIN,EUR	1/w	2100	JKT,SBY,SMA,BLW	SIN

8. Meditarrenian (2 operator, 3 services)

(1)	SETH(GMK),					
	A ZEFAL	J,HK,SIN,COL,MED	4/m	1500	JKT,SMA,SBY,BLW	SIN
	B ZETAL	do	2/m	1200	do	
(2)	Unknown	SIN, MED	1/w	2200	JKT,SMA,SBY,BLW	SIN

9. Pakistan, Arabian/Iranian Gulf (5 operator 5 services)

(1)	COSCO	JKT,SBY/J,HK,SIN,ME	2/m	1200		
(2)	Gesuri(MON Cont.)	J,HK,SIN,P.KLN	1/w	1800	JKT,SMA,SBY,BLW	SIN
(3)	Guangzhou COSCO(Seiwa)	J,HK,SIN,ME,IDA	2/m	1100	JKT	HK
(4)	UASC(Summit)	J,ME	1/m	500	JKT,SMA,SBY,BLW	SIN
(5)	Uniblory(Konoike)	BLW/J,Keel,KAO,HK,ME	3/m	1000	JKT,SBY	Keelung

10 Australia & New Zealand (4 Operator,4services)

(1)	ANRO	JKT/SIN,P.Kln,PEN,Aust.	1/w	1300		
(2)	FESCO	JKT/J,NZ,HK,Rus.	2/m	500		
(3)	COSCO	JKT/SIN/Aust.	2/m	750		
(4)	Nedlloyd	JKT,SBY/SIN/Aust.	1/w	1500		

File: Cont.009

(3) List of Shipping Lines in respective sea routes

1. Far East - Indonesia (1)

A. Full Container service

(1) COSCO *

Jakarta-Semarang-Surabaya-SIN-HK-China-Japan

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
GU CHENG		1985	15.5	724	13058		COSCO
MING CHENG		1985		724	12300		COSCO

(2) Djakarta Lloyd.(PIL)(Hokkaido Service), 2 sailings a month

Tomakomai-Hitachi-Yokkaichi-Busan-HK-SIN(1)-Jakarta-Surabya-SIN-HK-Kaohsiung-Keelung-Tomakomai

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
KOTA CAHANA	Cp	1992	17	750	9870	R	PIL
TRADE FAST	Sg	1992	17	900	9870	R	PIL

At SIN feeder service is available to Semarang & Balawan

(3) TSK and Others [TSK/MOL(MONContainers)/NYK(TSK)/Samudera(TSK)]

a. Pegasus Service, Weekly

Japan-Manila-SIN(1)-Port Kelang- Jakarta-SIN-HK-Keelung-Tokyo

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ACX LILAC	Pa	1992	19.5	1461	24497	R	TSK
ACX LOYUS	Pa.	1973	21	1198	22935	R.	TSX
HIKAWA II	Li.	1974	21	1277	23517	R.	TSK
PACIFIC ARROW	Ja.	1973	21	1445	26783	R	TSK

Feeder Service to Surabaya, Semarang & Belawan by TSK(Sanmudra)

b. Southern Cross Service[TSK/NYK/Samurera(TSK)], Weekly

Japan-Keelung-HK-SIN(1)-Jakarta-Singapore-Manila-Kaosiung-Tokyo

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ACX DAISY	Pa.	1978	19	1176	22536	R	TSK
ACX LILY	Li	1990	19	1334	22735	R	TSK
ACX ROSE	Pa.	1990	19	1334	22734	R	TSK
ACX VIOLET	Pa	1991	19	1467	24502	R	TSX

TSK Feeder Service to SIN

Feeder Vessel	TEU	to	Freq.	Operator
ACX JADE	320	BLW	Weekly	TSK(Samudra)
ACS SWAN	484	BLW	Weekly	TSK(Samdra)
EQUATOR PRIDE	174	SBY	Weekly	TSK(Samdra)

i) Serve as feeder to SIN for the following main routes
   - NYK US. West Coast (SCX), (AEX), (NWX), (FEX), (JCX)
   - Pacific Atrantic Express (PAX)
   - Japan-Hawai-Keelung

ii) Serve as feeder to HK for the following routes
   - a) Hyundai US service
   - b) Hyundai Europe Service

1. Far East - Indonesia(2), A. Full Container Service

(4) Uniglory(Konoike)

a. A Service, 4 sailings a month

Japan-Busan-Keelung(1)-Kaohsiung-Surabaya-Jakarta-SIN-Kaohsiung-Taichung-Keelung-Japan

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
UNI-SHINE	Tw	1976	17	882	15764	R	Uniglory
UNI-SPRING	Tw	1975	17	882	15752	R	Uniglory
UNI-SUMMIT	Tw	1975	17	882	15752	R	Uniglory
UNI-SUPERB	Tw	1976	17	882	16752	R	Unuglory

At Keelung connecting Uniglory's Middle East Service

b. B Service, 3 sailing a month

Japan-Busan-Keelung(1)-Taichung-KAO-HK-SIN-Dubai-Abudabi-Dammam-Bahrain-Penang-Belawan-SIN-Manila-KAO-Taichung-Keelung-Tokyo

(1) Feeder Service to Surabaya

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
UNI-CHART	Tw	1991	17	998	16500	R	Uniglory
UNI-CORONA	Tw	1992	17	998	16500	R	Uniglory
UNI-CROWN	Tw	1991	17	998	16500	R	Uniglory
UNI-CONCORD	Tw	1992	17	998	16500	R	Uniglory
UNI-CONCERT	Tw	1993	17	998	16500	R	Uniglory

(6) Wan Hai, 2 sailing a month

Japan-Taichung-HK-Jakarta

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
PETRA I	Cp	1987	25	742	16432		Wan Hai(Kanto 1)

(7) Yang Ming

JKT-SBY-KAO-Keelung-Taichung-HK

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
GLOBAL BAHAMA				600			Yang Ming
UNIVERSAAL BAHAMA							Yang Ming
WAN HAI							Yang Ming

B. Feedr Service to Singapore

Vessels	TEUs	Call	to	Freq.	Operator
MAJAPAHIT	1152	JKT,	SIN	1/w	Dyakrta Lloyd
ASIA QUINTO	569	JKT,SMA,	SIN	1/w	Maersk
BUNGA TERATAI	596	JKT	SIN	1/W	MISC
BENVALLA	426	SBY	SIN	1/W	OOCL
KOTA INDAH	640	JKT	SIN		PIL
DRAGON KALIMANTAN	453	SMA,SMY	SIN		PUL
MANTA BHUM	920	JKT	SIN		RCL
JARU BHUM	560	JKT	SIN		RCL
PIYA BHUM	1008	JKT	SIN		RCL
MAHABHUM	920	JKT	SIN		RCL
WANA BHUM	680	JKT	SIN		RCL
KITI BHUM	498	JKT,SBY	SIN		RCL
PELOPOR	263	JKT,SBY	SIN		SAMUDRA
KURNIA SAMUDRA	269	JKT,SBY	SIN		SAMUDRA

1. Far East - Indonesia(3)

C. Conventional service

(1) Admiral(Arya International Service) 2 sailings a month

Yokohama, Nagoya, Osaka, Kobe - Jakarta, Surabaya,
Feeder Service is available to Batam and Panjang if necessary

Vessels	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
AMRTA V	Ia	1976	13.5		9085	HD50t	Admiral
AMRTA VII	Ia	1981	12.5		7105		Admiral
Indriani	Ia	1983	12.7		56539		Admiral
Trans Pacific 5	Pa	1992	18.5	10792	Ro/Ro	Admiral	
Toyofuji No.15	Ja	1991	18.5	168	10796	Ro/Ro	Admiral

(2) Djakarta Lloyd/Karena, 3-4 sailings a month

Yokohama-Nagoya-Kobe-Jakarta-Surabaya-Belawan

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Baab Ullah	Ia	1983		226	13645	HD70t	Djakarta
Champion Trader	Pi	1980		11096	HD120t	Karana	
Seki Akeishi	Pa	1977			7058	RoRo,HD	Djakarta
Sonbai	Ia	1983	17	226	13905	C.HD70t	Djakarta

(3) Gesuri(Uniship), 1 sailing a month

Jakarta-other Indonesia ports -Nagoya-Osaka-Mill Ports - Yokohama-Nagoya-Kobe-Jakarta-Cigading-Semarang-Surabaya- Semarang-Panjang

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Ganda Perkasa	Ia	1978	17	436	12960	C	Gerusi
Ganda Satria	Li	1979	14	256	10138	C,R	Gerusi

(4) Maersk , 3-4 sailings a month

Yokohama, Nagoya/Simizu, Kobe - Jakarta, Surabaya, Semarang

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Cosmo Star	Pa	1982	12		6187		Maersk
Green Pine	Pa.	1986	12.5		6831		Maersk
Orient Queen	Pa	1990	12		7018		Maersk

(5) Samudra(TSK) Monthly

Yokohama,Nagoya,Kobe - Jakarta, Surabaya, Japanese Ports

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Syukur	Ia	1985	12		6849		Samudera

(6) TSK, 4-5 sailings a month

Yokohama, Kobe, Shimizu, Nagoya, Kobe - Jakarta *Semarang, Surabaya, *Belawan and other Indonesian Port

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Applause	Pa	1984	12.5		6104	C	TSK
Alpha Ace	Pa	1985	12		6208	C	TSK
Asian Queen	Pa.	1986	12.6		6809		TSK
Engi Ace	Pa	1990			8124	C	TSK
Maju Jaya	Pa	1981	12.5		6486	C	TSK
Mariana	Pa	1983	13		7025	C	TSK
Sanjose Ace	Pa	1985	13	187	7059	C	TSK
Seaground Ace	Pa	1990			6970	C	TSK

2. Taiwan HK, Straits and Philippines

(1) Cheng Lie(Chuwa)

a. A Service, 4-5 sailings a month

Japan-Keelung-Kaohsiung-HK(1)-Bangkok-HK-Kaohsiung-Keelung Yokohama

Vessel	Flag	Blt.	Spd	TEUs	D/W	Acm.	Operator
KUO HSIN	Pa	1990	17	1000	18235	R	Cheng Lie
KUO HSIUNG	Pa	1993	17	1025	18050	R	Cheng Lie
KUO JANE	Pa	1990	17	1000	18235	R	Cheng Lie
KUO YU		1993	17	1025	18050	R	Cheng Lie

(1) Feeder Service to Jakarta, Surabaya by B service

b. B service, 4-5 sailing a month

Japan-Keelung-Kaohsiung-HK-Jakarta-Surabaya-HK-Kaohsiung-Keelung-Iwakuni

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
KUO CHANG	Pa	1988	16	716	14090	R	Cheng Lie
OCEAN CROWN	Pa	1983	15.5	812	14495	R	Cheng Lie
YE LAN	Tw	1979	15.8	926	29213	R	Cheng Lie
KUO CHIA	Pa	1988	16	716	14090	R	Cheng Lie

(2) Hanjin/Dongnam(AMA), Intra-Asia Service, Weekly

Yokohama-Osaka-Busan-HK-Singapore(3)-Jakarta-Singapore-HK-Yokohama

(3) feeder service to Surabaya, Belawan by Dongnama

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
HANJIN KUNSAN	Pa	1977	21	1174	18834	R	Hanjin
HANJIN KWANGYANG	Ko	1978	20	1048	20195	R	Hanjin
HANJIN POHANG	Ko	1979	18.8	1150	18798	R	Hanjin
HANJIN SEOUL	Ko	1979	18.8	1150	18835	R	Hanjin

(3) Heung-A(San Ei)

Moji-HK-Haiphong-HK-Moji, Weekly.(via HK)

Feeder Service to Jakarta, Surabaya

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
CARGO BAY	Pa	1980	13	206	5101	R	Heung-A
GARAXY BAY	Ba	1988	13	256	31701	R	Heung-A
HWAPYUNG NAMJIN Ko		1982	13	184	5865	R	Heung-A

(4) Nantai(Nantai International)

Shibushi-Tomakomai-Sakaiminato-HK(1)-Kaohsiung-Shibushi

(1) Feeder Servive to Jakarata, Surabaya

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ST.GERASIMOSI	Cp	1982	14	428	12720		Nantai

(5) Maersk Full Container Service

(A) Service: Yokohama-Kobe-HK-SIN

(B) Service: Yokohama-Nagoya-Kobe-HK-SIN

(C) Service: Kobe-Shimizu-Yokohama-KAO-HK-SIN

(D) Service: Kobe-Nagoya-Shimizu-Yokohama-Keelung-HK-SIN

Feeder Service to Jakarta, Semarang, Surabaya(via Singapore), Weekly

Feeder Vessel	TEU	Call	Operator
MUSCAT BAY	1742	JKT,SMA	
THORKIL MAERSK	1360	JKT,SMA	
TOBIAS MAERSK	1360	JKT,SMA	
SEA LAUREL	584	BLW	

Connencing services

(A) Atlantic & U.S Gulf

(B) West Coast of North America(PNW)

(C) U.K. Continental Scandinavia (Maersk/P&O A Service)

(D) U.K. Continental Scandinavia (Maersk/P&O C Service)

2. Taiwan HK, Straits and Philippines (2)

(6) MAIN Group [Interasia/MISC]/Wan Hai, Weekly

Tokyo-Yokohama-Osaka-Kobe-Port Kelang-Singapore(1)-HK-Tokyo
(1) Feeder service to Jakarta, Surabaya by Wan Hai

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ASIAN POLLUX	Pa	1991	19.1	1160	22735	R	Interasia
ASIAN PEGASUS	Pa	1991	19.1	1160	22740	R	Interasia
BUNGA TERASEK	My	1991	19.5	1200	20000	R	MISC

Jakarta-Surabaya-Kaohsiung-Keelung-Taichung-HK-Jakarta

Feeder Vessel	TEU	Call	Freq.	Operator	Agent
GLOBAL BAHAMA	600	JKT,SBY	Weekly	Wan Hai	Bahama Utama
UNIVERSAL BAHAMA		JKT,SBY			
WAN HAI 207	1183	JKT,SBY			

(7) MOL(MON Containers), Weekly
A service(Slot charter:KL/MISC)

Tokyo-Yokohama-Nagoya-Kobe-HK-Singapore(1)-Port Kelang-Singapore-HK-Yokyo
(1) Feeder Service to Indonesian Ports by Gesuri

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ALLIGATOR MIRACLE	Sg	1973	23	1803	29581	R	MOL
MONY BLANC MARU	Ja	1974	23	1406	30476	R	MOL
SUCCESS HOPE	Pa	1972	22.25	1903	30465	R	MOL

3. Bangkok, Indochina

(1) Wan Hai

A. Kanto Bangkok Service, Weekly

Tokyo-Yokohama-Nagoya-Keelung-(1)Taichung-(2)Kaoshung-HK-Bangkok-Kaoshung-Tokyo
(2) Feeder sevice to Jakarta, Surabaya by its (B) service

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
AN CHUN	Tw	1986	17	720	15106	R	Wan Hai
HON CHUN	Tw	1989	17	720	14304	R	Wan Hai
MERKUR BAY	Li	1985	16	650	18100	R	Wan Hai
SHIN CHUN	Tw	1987	17	720	14263	R	Wan Hai

B. Keelung-KAO-HK-SIN-Surabaya-Jakarta-Taichung

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
WAN CHUN		1979	13	335	7356		Wan Hai
LUCIE SCHULTE		1981	15.7	443	8497		Wan Hai
KAI SHUN		1978	13	366	7902		Wan Hai

Wan Hai Feeder Service, Weekly
Jakarta-Surabaya-Kaohsiung-Keelung-Taichung-HK-Jakarta

Feeder Vessel	TEU	Call	Operator	Agent
GLOBAL BAHAMA	600	JKT,SBY	Wan Hai	Bahama Utama
UNIVERSAL BAHAMA		JKT,SBY		

4. Round the World

1. Cho Yang

West Bound, Weekly
Yokohama-Osaka-Busan-Kaohsiung(1)-Hongkong-Singapore(2)-Colombo(3)-Rotterdam-Bremerhaven(4)-Felixstowe-Antwerp-LeHavre-New York-Norfolk-Savennah-Cristobal-Long Beach-Oakland-Yokohama
(2) Feeder Service to Jakarta, Surabaya, by Cho Yang

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Breman Senator	Li	1993	21	2668	47120		DSR Senator
CHOYANG Moscow	Li	1992	21	2668	46600R		Cho Yang
CHOYANG Volga	Li	1992	21	2668	46600R		Cho Yang
DSR America	Ge	1993	19.7	2680	45696		DSR Senator
DSR ASIA	Ge			2661			DSR Senator
DSR Atrantic	Ge	1992	19	2661	45696		DSR Senator
DSR Europe	Ge	1992	19	2661	45696		DSR Senator
DSR Pacific	Ge	1992	19	2661	45696		DRS Senator
Hamburg Senator	Li	1993	21	2668	46975		DSR Senator
Sovcomfloat Senator	Li			2668			DSR Senator
Vladivostok Senator	Li	1992	21	2668	46600		DSR Senator

Feedr service JKY - HK

Feeder Vessel	TEU	Operator	Agent
GLORIA I	1177	Hueng-A	Paul Laut
GIANNI D	1177		Paul Laut
CHOYANG SUN	1200	Cho Yang	Amasusa Persada

(2) CGM,

Eur-Med.-Colombo-SIN-Jakarta-Australia-New Carledonia-US-Europe

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
CGM RONSARD		1980	21.5	1461	22138	RoRo	CGM
CGM RENOIR		1979	21.5	1461	22138	RoRo	CGM
CGM RACINE		1978	20.5	1546	28098	RoRo	CGM
CGM RIMBAUD		1979	20.5	1546	28173	RoRo	CGM
CGM REBELAIS		1979	21.5	1768	34199	RoRo	CGM

5. West Coast North Amarica(1)

(1) APL

A. APL/OOCL(PSX), Weekly

Yokohama-Kobe Kaohsiung-Hong Kong-Kaohsiung-Los Angeles-Oakland-Yokohama
Feeder service Jakarta, Semarang, Surabaya, Panjang

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
PRES. ADAMS	Am	1988	24	4340	54655R		APL
PRES. JACKSON	Am	1988	24	4340	54655R		APL
PRES. Kennedy	Am	1988	24	4340	54655R		APL
PRES. POK	Am	1988	24	4340	54700R		APL
PRES. TRUMAN	Am	1988	24	4340	54700R		APL

B. APL/OOCL(PNX), Weekly

Hong Kong-Kaohsiung-Nagoya- Yokohama-Seattle-Vancouver-Kobe-Kaohsiung-HK
Feeder service Jakarta, Semarang, Surabaya, Panjang

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
OOCL EDUCATOR	Li	1977	19.5	2394	38743	R	OOCL
OOCL ENVOY	Li	1979	23	2430	40379	R	OOCL
OOCL EXECUTIVE	Li	1977	19.5	2394	38743	R	OOCL
OOCL EXPLORER	Li	1977	19.5	2394	38984	R	OOCL
OOCL EXPORTER	Li	1976	22.5	2466	42587	R	OOCL

C. APL/OOCL(SJX), Weekly

Kaohsiung-HK-Kobe-Seattle-Dutch Harbour-Yokohama-Hakata-Busan Naha-Kaohsiung
Feeder service Jakarta, Semarang, Surabaya, Panjang

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
PRES. GRANT	Am	1971	22	2128	37346	R	APL
PRES. HARRISON	Am	1971	18	1068	30226	R	APL
PRES. HOOVER	Am	1971	22	2128	38656	R	AOL
PRES. JEFFERSON	Am	1973	23	1570	20718	R	APL
PRES. TYLER	Am	1972	21	2128	38656	R	APL

APL Feeder Service

Jakarta Shuttle

Singapore-Jakarta-Semarang-Singapore Weekly

a vessel 508 TEU

(Guess:from Size of Feeder vessel; Eagle Cloud(508 TEU) by Amerindo Pirant Service.JKT only from Weekly service ; Permai I(522 TEU) by Jayakusuma Perdana Ind., JKT.SEM,SBY from Port call, JKT & SEM : Maersk Asia Quint(550 TEU) by Bumi Laut which seems to be connected to SL/Maersk)

Malaysia Shuttle

Singapore- Belawan-Phuket-Penang-Pasir Gudang-Singapore

-Belawan-Penang-Port Kelang-Pasir Gudang-Singapore

Bi-weekly, a vessel 560 TEU

(2) Hanjin(Pendulum service) Weekly

Pacific North West Coast(PNW)-Japan-Busan-HK-SIN-Colombo-Rotterdam-Hamburg-Felixstowe-Le Havre-Colombo-SIN-HK-Busan-Japan-PNW

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
H. BREMEN	Ko	1991	22.5	2692	43925	R	Hanjing
H. ELIZABETH*	Ko	1991	22.5	2692	22670	R	Hanjing
H. FELIXSTOWE	Ko	1990	22	2670	44044	R	Hanjing
H. HAMBURG	Ko	1990	22	2694	43940	R	Hanjing
H. KAOHSIUNG*	Ko	1990	22.5	2692	43925	R	Hanjing
H. LE HAVRE	Ko	1989	22	2670	43140	R	Hanjing
H. MASAN	Ko	1979	23.8	1528	25411	R	Hanjing
H. OAKLAND*	Ko	1989	22	2668	43078	R	Hanjing
H. ROTTERDAM*	Ko	1987	22.7	2670	43224	R	Hanjing
H. SEATTLE	Ko	1988	22	2668	43184	R	Hanjing/Yangming
H. SINGAPORE	Ko	1991	22.5	2692	43967	R	Hanjing
H. TONGHAE	Ko	1979	23.8	1528	25444	R	Hanjing
H. VANCOUVER	Ko	1990	22	2668	43270	R	Hanjing

Feeder service from SIN by Hanjin/Dognama(ANA)'s Intra-Asia Service, Weekly
Yokohama-Osaka-Busan-HK-Singapore(3)-Jakarta-Singapore-HK-Yokohama

Feeder Vessel	TEUs	Operator	Agent Bumi Laut
HANJIN KUNSAN	1174	Hanjin	
HANJIN KWANGYANG	1048	Hanjin	
HANJIN POHANG	1150	Hanjin	
HANJIN SEOUL	1150	Hanjin	

(3) feeder service is also available to Surabaya, Belawan by Dongnama

5. West Coast North Amarica(2)

(3) Hyundai, Weekly

HK-KAO-Busan-Kobe-Yokohama-Long Beach-Oakland-Seattle-Busan-HK

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
HYUNDAI ADMIRAL Ko		1992	25.1	4469	6000	R	Hyundai
HYUNDAI BARBON	Ko	1992	25.1	4469	6000	R	Hyundai
HYUNDAI COMMODORE	Pa	1992	25.1	4469	6000	R	Hyundai
HYUNDAI DUKE	Pa	1992	25.1	4469	6000	R	Hyundai
HYUNDAI EMPEROR Pa		1992	25.1	4469	6000	R	Hyundai

Feeder Service bet JKT and HK by TSK/MOL or TSK/NYK with Agent Samudra Indonesia

Vessel	TEUs	Operator	Agent
ACX LILAC	1461	TSK	Samdra In.
ACX LOYUS	1198	TSX	
HIKAWA II	1277	TSK	
PACIFIC ARROW	1445	TSK	

SIN - West Coast of North America

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
HYUNDAI SEATTLE							
HYUNDAI EMPEOR* Pa		1992	25.1	4469	60000	R	Hyundai
HYUNDAI VENCOUVER							
HYUNDAI BARBON* Ko		1992	25.1	4469	60000	R	Hyundai
HYUNDAI FEDERAL							
HYUNDAI TAOMA							
HYUNDAI COMMODOR*	Pa	1992	25.1	4469	60000	R	Hyundai
HYUNDAI ADMIRAL*	Ko	1992	25.1	4469	60000	R	Hyundai
HYUNDAI PORTLAND							
HYUNDAI DUKE*	Pa	1992	25.1	4469	60000	R	Hyundai

Feedr Service fronm SIN by Paul Laut

Feeder vessel	TEU	Operator	to	Agent
DRAGON KALIMANTAN	453		JKT	Paul Laut
DRAGON TEKONG			JKT,PJG	
PERKASA			JKT	
DRAGON JAVA	319		SBY	
DRAGON BANGKA			SBY	
KITI BHUM	360		SBY	

(4) KL/MOL

A. (PSW1), Weekly

SIN-HK-Los Angeles/Long Bach-Oakland-Japan-HK-SIN

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ALLIGATOR PRIDE Li		1988	21.6	2862	40192	R	MOL
ALLIGATOR TRIUMPH	Li	1988	21.5	2890	40540	R	MOL
ALLIGATOR VICTORY	Pa	1988	22	2890	40638	R	MOL
GEORGE WASHINGTON BR.	Ja	1986	22.5	2878	40928	R	KL
HENRY HUDSON BRIDGE	Ja	1987	22.5	2878	40934	R	KL
MACKINAC BRIDGE Ja		1986	22.5	2878	40982	R	KL

B. (PNW1), Weekly

HK-KAO-Japan-Seattle,Vanvouver-Japan

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ALLIGATOR AMERICA	Ja	1991	22	2852	40330	R	MOL
ALLIGATOR COLUMBUS	Pa	1991	22	2892	40331	R	MOL
ALLIGATOR DISCOVERY	Ja	1991	22	2890	40499	R	MOL
ALLIGATOR INDEPENDENCE	Pa	1986	22	2571	38624	R	MOL
ALLIGATOR LIBERTY	Ja	1986	22	2522	38512	R	MOL

C. (PNW1), Weekly

KAO- Japan-Tacoma-Portland-Japan-Kaohsiung

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
BAY BRIDGE	Li	1985	20	2257	35396	R	KL
GOLDEN GATE BRIDGE	Ja	1985	20	2257	35304	R	KL
HARBOUR BRIDGE	Li	1985	20	2257	34245	R	KL
TRANSWORLD BRIDGE	Li	1980	21	2257	43000	R	KL

For 2nd feeder to SIN for B,C Service, see MOL's A service (9.(1))

Feeder to JKT,SMA via SIN

Feeder Vessel	Freq.
ISRA BHUM	1/w

Feeder service to JKT,BLW,SMA,SBY

Feeder Vessel	TEU	to	Ferq.	Agent
DRAGON BINTAN	610	JKT,PNJ	4/w	Paul Laut
DRAGON KALIMANTAN	453	JKT	4/w	Paul Laut
OKUNOZE	372	JKT,PNJ	4/w	Paul Laut
DRAGON JAVA		SMA,SBY		
DRAGON BANGKA		SBY		
KITI BHUM		SBY		
A vessel		BLW		

5. West Coast North Amarica(3)

(5) Maersk Sea-land(PNW), Weekly

Singapore-HK-Kaohsiung-Kobe-Nagoya-Yokohama-Tacoma-Yokohama-Nagoya-Kobe-HK-Singapore

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ALVA MAERSK	Sg	1976	23	2000	37000	R	Maersk
MAERSK KOBE	Pa	1973	26.5	2068	35582	R	Maersk
NEDLLOYD TOKYO	Fr	1985	19	2536	53720	R	Maersk
SL DEVELOPER	Am	1980	20.7	2686	32629	R	Maersk
SL EXPRESS	Am	1980	20.7	2686	32629	R	Maersk
SL VOYAGER	Am	1980	20.7	2686	32629	R	Maersk

Maersk Feeder service
(Singapore/Indonesia Service) Singapore-Semarang-Jakarta-Singapore, Weekly
Vessel: Muscat Bay(1.742 TEU),
Thorkil Maersk(1.360 TEU)
Tobias Maersk(1.360 TEU)
(Guess: Maersk Asia Quint(550 TEU)by Bumi Laut
(Singapore/Port Kelang/Belawan Service) SIN-Port Kelang-SIN-Belawan-SIN, Weekly,
Vessel: Sea Laurel 584 TEU

Sea-land Feeder Service
(Indonesia Feeder Service), Weekly
Singapore-Surabaya-Singapore :
(A)PRATITA,(B)MERKUR DELTA(428TEU),(C) TANTO CAPTAINE(322TEU)
Singapore-Semarang-Jakarta-Singapore: MAERSK ASIA (520TEU)
Singapore-Panjang-Jakarta-Singapore : Sea Link (540 TEU)
(Malaysia Feeder Service), Weekly
Singapore- Belawan-Singapore-Port Kelang-Singapore: Sea Laurel (520 TEU)

(6) NYK/NOL(JTM)

A. Singapore-California Service(SCX), Weekly

[Slot charter: Hapag(HLJ)]

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
CALIFORNIA JUPITER	Li	1986	22	2555	38438	R	NYK
CALIFORNIA LUNA Pa	1987	22	2541	39985	R	NYK	
CALIFORNIA MAERCURY	Ja	1987	22	2977	39157	R	NYK
CALIFORNIA PEGASUS	Pa	1988	22	2832	38631	R	NYK
CALIFORNIA SATURN	Li	1987	22	2982	39579	R	NYK
NEPTUNE CYPRINE Pa	1977	26.5	2364	44829	R	NOL	

B. Japan-Carifornia Expres(JCX), Slot Charter:Hapag(HLJ), Weekly

5 vessels with 1700 - 1900 TEU by NYK/NOL

C. North West Express (NWX)Slot Charter:Hapag(HLJ), Weekly

5 vessels with 2200 - 2900 TEU by NYK/NOL

Feeder srvice From SIN by a local Agent, Palayaran Laut
to JKT: 3 siling/W TSK's Far East (Pegasus Service)

Vessel	TEUs	Call	Operator	Agent
ACX LILAC	1461	JKT	TSK	Samudra In.
ACX LOYUS	1198	JKT	TSX	Samudra
HIKAWA II	1277	JKT	TSK	Samudra
PACIFIC ARROW	1445	JKT	TSK	Samudra
to SMA, 2 sailings/w				
DERAJAT		SMA		Samudra
AMELA I		SMA		Samudra
to SBY: 2 Sailings/w				
TANTO-CAPTAINE		SBY		Samudra
to BLW: 2 sailings/w				
PACIFIC LADY		BLW		Samudra
ACX JADE		BLW		Samudra
to Panjang: 1 sailing/w				
LANTAWI		PNJ		Samudra
LAMPUNG BAY		PNJ		Samudra
to Palembang: 1 sailing/w				
TWADIKA		PLB		
SL ORANGE		PLB		

5. West Coast North Amarica(4)

(7) Yang Ming(Manwa) PSW Service, Wekly

Kaohsiung-HK-Kelung-Kobe-Yokohama-Los Angeles-Oakland-Yokohama-Kobe-Keelung-Kaohsiung

Feeder Service to Jakarta

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
MING PEACE	Tw	1986	20.5	3266	40744	R	Yang Ming
MING PLEASURE	Tw	1987	20.5	3266	40870	R	Yang Ming
MING PROMOTION	Tw	1987	20.5	3266	40845	R	Yang Ming
MING PROPITIOUS	Tw	1987	20.5	3266	40856	R	Yang Ming
MING PROSPERITY	Tw	1986	20.5	3266	40845	R	Yang Ming

Feeder Service by Yang Ming's Indonesia-Taiwan service operated Wan Hai to HK(Local Agent is Bahama Utama Lines-Shipping Gazatte BERITA KAPAL May 19, 1994)

Vessel	TEUs	Operator	Agent
GLOBAL BAHAMA	600	Yang Ming	Bahama Utama Lines
UNIVERSAAL BAHAMA		Yang Ming	
WAN HAI 207		Yang Ming	

(Guess: Feeder service from JKT to HK by Hanjing/Dognama Inter-Asia Service see Taiwan, HK, Straits & Philippines, 2. (2))

Feeder Vessel	TEUs	Operator	Agent
HANJIN KUNSAN	1174	Hanjin	Bumi Laut
HANJIN KWANGYANG	1048	Hanjin	Bumi Laut
HANJIN POHANG	1150	Hanjin	Bumi Laut
HANJIN SEOUL	1150	Hanjin	Bumi Laut

Note: Bumi Laut is the agent of Maersk Asia Quint of Maersk Indonesia Feeder Service.

see also U.K. Continent & Scandinavia

6. Atlantic & US Gulf (1) via Panama Canal

(1) Hanjing/Yang Ming(Manwa), Weekly

Kaohsiung-HK-Keelung-Busan-Kobe/Osaka-Yokohama=via Panama)=Savannah(U.S.East Coast)-NY-Busan-Kaohsiung

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Hanjing KEELUNG Pa	1986	21.7	2662	43270	R	Hanjing	
Hanjing KOBE Li	1986	21.7	2662	43270	R		Hanjing
Hanjing LONGBEACH Pa	1986	24	2668	43300	R		Hanjing
Hanjing NEWYORK Pa	1986	24	2668	43270	R	Hanjing	
Hanjing SAVANNAH Ko	1987	21.7	2662	43270	R		Hanjing
MING AMERICA Tw	1992	21	3494	46785	R		Yang Ming
MING ASIA Tw	1991	21	3494	46772	R		Yang Ming
MING EUROPE Tw	1992	21	3494	46772	R		Yang Ming
MING PROGRESS Tw	1988	20.5	3266	40845	R		Yang Ming

Feeder Service by Yang Ming's Indonesia-Taiwan service operated Wan Hai to HK(Local Agent is Bahama Utama Lines-Shipping Gazatte BERITA KAPAL May 19, 1994)

Vessel	TEUs	Operator	Agent
GLOBAL BAHAMA	600	Yang Ming	Bahama Utama Lines
UNIVERSAAL BAHAMA		Yang Ming	
WAN HAI 207		Yang Ming	

(Guess: Feeder service from JKT to HK by Hanjing/Dognama Inter-Asia Service see Taiwan, HK, Straits & Philippines, 2. (2))

Feeder Vessel	TEUs	Operator	Agent
HANJIN KUNSAN	1174	Hanjin	Bumi Laut
HANJIN KWANGYANG	1048	Hanjin	Bumi Laut
HANJIN POHANG	1150	Hanjin	Bumi Laut
HANJIN SEOUL	1150	Hanjin	Bumi Laut

Note: Bumi Laut is the agent of Maersk Asia Quint of Maersk Indonesia Feeder Service.

(2) Maersk, Weekly (US W. & E. Coast and Europe)

SIN(1)-HK-KAO-Japan-Oakland-LongBeach-Miami-Charleston-Baltimore-NY-Europe-Halifax-NY-Norfolk-Charleston-Miami-Oakland-Japan-HK-SIN

(1) Feeder service to Jakarta

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
MADISON MAERSK	Da	1991	24	4000	60600	R	Maersk
MAGLEBY MAERSK	Da	1990	24	4000	60600	R	Maersk
MAJESTIC MAERSK Da	1990	24	4000	60600	R	Maersk	
MARCHEN MAERSK	Da	1988	24	4000	60600	R	Maersk
MAREN MAERSK	Da	1989	24	4000	60600	R	Maersk
MARGARETHE MAERSK	Da	1988	24	4000	60600	R	Maersk
MARIE MAERSK	Da	1990	24	4000	60600	R	Maersk
MARIT MAERSK	Da	1988	24	4000	60600	R	Maersk
MATHILDE MAERSK Da	1989	24	4000	60600	R	Maersk	
MAYVIEW MAERSK	Da	1991	24	4000	60600	R	Maersk
MC-KENNEY MAERSK	Da	1991	24	4000	60600	R	Maersk
METTE MAERSK	Da	1989	24	4000	60600	R	Maersk

Maersk Feeder service

(Singapore/Indonesia Service) Singapore-Semarang-Jakarta-Singapore, Weekly

Vessel: Muscat Bay(1,742 TEU),
Thorkil Maersk(1,360 TEU)
Tobias Maersk(1,360 TEU)
(Guess: Maersk Asia Quint(550 TEU)by Bumi Laut

(Singapore/Port Kelang/Belawan Service) SIN-Port Kelang-SIN-Belawan-SIN, Weekly,

Vessel: Sea Laurel 584 TEU

Sea-land Feeder Service

(Indonesia Feeder Service), Weekly

Singapore-Surabaya-Singapore :
(A)PRATITA,(B)MERKUR DELTA(428TEU),(C) TANTO CAPTAINE(322TEU)
Singapore-Semarang-Jakarta-Singapore: MAERSK ASIA (520TEU)
Singapore-Panjang-Jakarta-Singapore : Sea Link (540 TEU)

(Malaysia Feeder Service), Weekly

Singapore- Belawan-Singapore-Port Kelang-Singapore: Sea Laurel (520 TEU)

6. Atlantic & US Gulf (2)

(3) NOL(JTM)/NYK, Asia East Coast Express(AEX), Weekly (via Suezu)

Keelung-HK-SIN(1)-Colombo-NY-Charleston-Norfolk-NY-Halifax-SIN-Keelung
(1) Feeder service to Jakarta

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
CALIFORNIA ZEUS Li	1986	21.5	2050	37915	R	NYK	
HAKONEMAR	Ja	1983	20.25	1786	29733	R	NYK
NEPTUNE AGATE	Li	1973	19	2069	33106	R	NOL
NEPTUNE AZURITE Li	1972	19	1859	33714	R	NOL	
NEPUTUNE CORAL	Sg	1977	23	1951	30934	R	NOL
NEPTUNE DIAMOND Sg	1979	23	2158	38492	R	NOL	
NEPTUNE LAZULI	Li	1981	20.75	1417	27970	R	NOL
NEPTUNE PEARL	Sg	1976	23	1921	30934	R	NOL
NEPTUNE RHODENITE	Li	1978	23	1606	31277	R	NOL

Feeder srvice From SIN by a local Agent, Palayaran Laut
to JKT: 3 siling/W TSK's Far East Service
to SEM: 2 sailing/w;DERAJAT,AMELA I
to SBY: 2 Sailings/w;TANTO-CAPTAINE
to BLW: 2 sailings/w;PACIFIC LADY,ACX JADE
to Panjang: 1 sailing/w; LANTAWI, LAMPUNG BAY
to Palembang: 1 sailing/w; TWADIKA, SL ORANGE

7. UK, Continent & Scandinavia(1)

(1) ACE Group [KL/NOL(JTM)/OOCL], Weekly

Japan-Kaohsiung-HK-SIN-Europe-SIN-Japan
8 vessels with 3500 - 3900 TEU operated by KL/NOL/OOCL
Feeder srvice From SIN by a local Agent, Palayaran Laut
to JKT: 3 siling/W, to SEM: 2 sailing/w, to SBY: 2 Sailings/w, to BLW: 2 sailings/w
to Panjang: 1 sailing/w, to Palembang: 1 sailing/w

(2) CMA(Interocean)/POL(POLJ),weekly

Japan-Keelung-HK-SIN-Colombo-Europe-SIN-HK-Busan-Japan
10 vessels (TEU unknown) by CMA (one has 3300 TEU capacity)
Feeder service to JKT (SBY,SMA,BLW ?) via SIN operated by Pelayaran Benderamas nusantara

Feeder Vessel	Freq.	UCT
MV.CHAYA BHUM	1/W	II
MV.SERAYA JAYA	1/W	I
MV. MAJAPAHIT	1/W	I
MV. SENTOSA JAYA	1/W	II
BUNGA TERATAI	1/W	I
SENANG JAYA	1/W	II

(3) CGM(Eurobridge)/MISC/Nedlloyd, Weekly

Japan-HK-SIN-Europe-Port Kelang-SIN-HK-Busan-Japan
9 vessels with 3000 - 4500 TEU operated by MISC/CGM/Nedlloyd
Feeder service to JKT by CGM Feeder via SIN

Feeder Vessel	TEU	Call	Freq.	Operator	Agent
CGM RACINE	1546	JKT		CGM	Parayanan Sutra Lines
CGM RIMBAUD	1546	JKT		CGM	Parayanan Sutra Lines
CGM RONSARD	1461	JKT		CGM	Parayanan Sutra Lines
MAJAPAHIT	1152	JKT		PSS	Djakrta Lloyd
EQUATOE RUBY	437	JKT			Treana Muda Sejati
EQUATOR HAUK	236	JKT			Tresna Muda Sejati
OOCL ARROW	422	JKT,SBY			Karena Lines

Feeder Service to Jakarta (by Trikora Lloyd), Semarang, Surabaya, Belawan
AMERIA — Trioka Lloyd
BAHATRA BHUM
NEDL. ROUEN
WANA BHUM
CAPE RAY
Feeder Service to SBY
KOTA MEGAH
SEA GLORY
Japan-JKT Direct Service:
NEDL. OCEANIA
NEDL. AMERICA
CGM.KORRIGAN
CGM NORMANDIE

(4) Hanjing, Pendulum Service

See 4. WEST COAST of U.S.(2) Hanjin Pendulum Service

(5)Hyundai/Sea-Land/Norasia(AMA)

Japan-Busan-Kaohsiung-HK-SIN-Europe-SIN-Kaohsiung-Japan
9 vessels with 3000 TEU operated by Hyundai/Sea-land
Feeder service to JKT,BLW,SMA,SBY

Feeder Vessel	TEU	to	Ferq.	Agent
DRAGON BINTAN	610	JKT,PNJ	4/w	Paul Laut
DRAGON KALIMANTAN	453	JKT	4/w	Paul Laut
OKUNOZE	372	JKT,PNJ	4/w	Paul Laut
DRAGON JAVA		SMA,SBY		
DRAGON BANGKA		SBY		
KITI BHUM		SBY		
A vessel		BLW		

(6) Hapag(HLJ)/MOL/NYK

A Service, Weekly

Japan-SIN-Europe-Jedda-Port Kelang-SIN-KAO-Japan
9 vessels with 3000- 3600 TEU operated by MOL/Hapag/NYK

B Service, Weekly

Japan-Busan-KAO-HK-SIN-Jedda-Europe-SIN-HK-Japan
9 vessels with 3600 - 4450 TEU opratd by Hapag/MOL/NYK

7. UK, Continent & Scandinavia(2)

(7) Yang Ming(Manwa), Weekly

Yokohama-Kobe-Busan-Keelung-KAO-HK-SIN-Colombo-Genoa-Hamburg-Rotterdam-Felixstowe-Antwarp-Lehavre-Genoa-Colombo-Port Kelang-SIN-HK-KAO-Keelung-Yokohama
11 vessels with 2000 TEU(one 3300TEU) operated by Yang Ming
Feeder Service to Jakarta
Feeder Service by Yang Ming's Indonesia-Taiwan service operated Wan Hai to HK(Local Agent is Bahama Utama Lines-Shipping Gazatte BERITA KAPAL May 19, 1994)

Vessel	TEUs	Operator	Agent
GLOBAL BAHAMA	600	Yang Ming	Bahama Utama Lines
UNIVERSAAL BAHAMA		Yang Ming	
WAN HAI 207		Yang Ming	

(Guess: Feeder service from JKT to HK by Hanjing/Dognama Inter-Asia Service see Taiwan, HK, Straits & Philippines, 2. (2))

Feeder Vessel	TEUs	Operator	Agent
HANJIN KUNSAN	1174	Hanjin	Bumi Laut
HANJIN KWANGYANG	1048	Hanjin	Bumi Laut
HANJIN POHANG	1150	Hanjin	Bumi Laut
HANJIN SEOUL	1150	Hanjin	Bumi Laut

Note: Bumi Laut is the agent of Maersk Asia Quint of Maersk Indonesia Feeder Service.
see West Coast of North Amarica

(8) Maersk/P&O

A Service, Weekly

Japan-KAO-HK-SIN-Europe-SIN-HK-KAO-Japan

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
LAERS MAERSK	Da	1984	22.6	3466	53325	R	Maersk
LEDA MAERSK	Da	1982	22.5	3466	53690	R	Maersk
LEXA MAERSK	Da	1981	22.5	3466	53540	R	Maersk
LICA MAERSK	Da	1981	22.5	3466	53498	R	Maersk
LINDOE MAERSK	Da	1985	22.6	3466	53325	R	Maersk
LOUIS MAERSK	Da	1984	22.6	3466	53325	R	Maersk
MARSTAL MAERSK	Da	1990	24.5	4000	55971	R	Maersk
MUNKBO MAERSK	Da	1990	24.5	4000	56049	R	Maersk
REGINA MAERSK	Da	1983	22.6	3466	53310	R	Maersk

B Service

Japan-HK-SIN-Europe-Jedda-Port Kelang-SIN-HK-KAO-Busan-Japan

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
EDINBURGH MAERSK	Da	1973	23	2964	48810	R	Maersk
LADBY MAERSK	Ba	1972	26	2420	34450	R	Maersk
LAUST MAERSK	Da	1984	24.4	3085	48600	R	Maersk
LONDON MAERSK	Da	1972	23	2964	49593	R	Maersk
MAERSK COLOMBO	Ge		22.5	3424	43600	R	Maersk
MAERSK HAMBURG	Li	1978	21	2730	50313	R	Maersk
MAERSK HONGKONG Ge	1978	21	3424	43600	R	Maersk	
MAERSK HANHAI	Ba	1972	26	2666	39949	R	Maersk
PARIS MAERSK	Da	1973	23	2964	49593	R	Maersk

Maersk Feeder service
(Singapore/Indonesia Service) Singapore-Semarang-Jakarta-Singapore, Weekly
Vessel: Muscat Bay(1,742 TEU),
Thorkil Maersk(1,360 TEU)
Tobias Maersk(1,360 TEU)
(Guess: Maersk Asia Quint(550 TEU)by Bumi Laut
(Singapore/Port Kelang/Belawan Service) SIN-Port Kelang-SIN-Belawan-SIN, Weekly,
Vessel: Sea Laurel 584 TEU

(9) Sea-Land/Norasia(AMA), Weekly

Nagoya-Osaka/Kobe/Keelung/HK/Singapore(1)-Colombo-Valleta-Algeciras-Hamburg-Rotterdam-Felixstone-Lehavre-Algeciras-Valeatta-Jeddah-Dubai-Colombo-Singapore-HK-Nagoya
(1) Feeder Service to Jakarta, Surabaya, etc. by Norasia

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ARABIAN SEA	Pa	1985	19.5	1906	33857	R	Sea-land
CHINA SAE	Ba	1991	18	1928	27500	R	Sea-Land
NORASIA AL-MANSOORAH	UAE	1987	17	1915	31205		Norasia
NORASIA AL-MUNTAZAH	UAE	1987	17	2097	34380		Norasia
NORASIA MUBARAK	UAE	1987	17	2097	34380		Norasia
NORASIA PEARL	Ge	1986	17	1915	31205		Norasia
NORASIA PRINCESS	Ge	1986	17	1915	31205		Norasia
NORASIA SAMANTHA	Ge	1985	17	1915	31295		Norasia
NORASIA SHARJAH	UAE	1986	17	1915	30950		Norasia
NORASIA SIGNA	Sg	1989	17.5	2097	34380		Norasia
NORASIA SUN	Sg	1989	17	2097	34380		Norasia

7. UK, Continent & Scandinavia(2)

(10) USAC(Summit)/OOCL/Wilhelmsen Lines, Weekly

Japan-Busan-AO-HK-SIN(1)-Colombo-Dubai-Europe-Dubai-SIN-HK-Japan
13 vessels with 2000-2200 TEU by USAC
(1) Feeder Service to Jakarta, SBY, SMA, Belawan by UASC

Feeder Vessel	TEU	to	Freq.	Operator
LAWANTI	270	JKT	1/w	UASC
MERKUR DELTA	424	SBY	1/w	UASC
JUTHA PHANSIR	224	SMA	1/w	UASC
PELOPOR	209	BLW	1/w	UASC

8. Mediterranean & Black Sea

(1) SETH(GMK), 4 Sailing a month by Zim(GMK)

Feeder Service to Jakarta, Semarang, Surabaya, Belawan(Via Singapore)

A. ZEFAL, 2 sailings a month

Yokohama-Osaka-Busan-Keelung-HK-Singapore-Colombo-Port Said-Ashdod-Alexsandria-Piraeus-Trieste-Venice-Kooper-Piraeus-Haifa-Singapore-HK-Keelung-Yokohama

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ZIM ALEXANDRIA	Is	1972	20	1426	25199	R	Zim
ZIM ELAT	Is	1973	23.5	1504	31846	R	Zim
ZIM HAIFA	Is	1972	20	1714	25199	R	Zim
ZIM TOKYO	Ma	1972	20	1426	25212	R	Zim
Zim VENEZIA	Is	1973	21.5	1504	31846	R	Zim

B. ZETAL, 2 sailings a month

Yokohama-Osaka-Busan-Kelung-HK-Singapore-Colombo-Ashdod-Barcelona-Marseille/Fos-Genoa-Haifa-Colombo-Singapore-HK-Kelung-Sydney-Melbourne-Brisbane-Guam-Yokohama

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ZIM Barcelona	Is	1973	20.4	1208	22311	R	Zim
ZIM GENOA	Gr	1979	18.5	1181	19624	R	Zim
ZIM KAOHSIUNG	Gr	1972	19	1004	22100	R	Zim
ZIM MELUBORNE	Gr	1972	19	1200	21645	R	Zim
ZIM OSAKA	Gr	1978	18.5	1181	19621	R	Zim
ZIM PIRAEUS	Gr	1972	19	1208	22300	R	Zim
ZIM YOKOHAMA	Gr	1978	18.5	1181	19621	R	Zim

(2) Unknown Operator, WEEKLY ?

SIN-Mediterranean
Feder service to JKT (SMA,SBY,BLW ?)

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
MED NAGOYA							NYK
MED SINGAPORE							Yang Ming
MED BARCELONA	Lu	1984	19.5	2250	38981	R	CMA
MED TOKYO							NYK
MED KEELUNG							Yang Ming
NED HONGKONG							Yang Ming
MED KOBE							NYK
MED MARSEILLES	Cp	1993		2280	34062		CMA

Feeder service to JKT (SBY,SMA,BLW ?) via SIN operated by Pelayaran Benderamas nusantara

Feeder Vessel	Freq.	UCT
MV.CHAYA BHUM	1/W	II
MV.SERAYA JAYA	1/W	I
MV. MAJAPAHIT	1/W	I
MV. SENTOSA JAYA	1/W	II
BUNGA TERATAI	1/W	I
SENANG JAYA	1/W	II

9. Pakistan, Arabian/Iranian Gulf

(1) COSCO, 2 sailing a month

Japan-HK-SIN-GKK-Karachi-dubai- Jakarta-Surabaya-shanghai-Xingang-Japan

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
QING HE		1982	18.7	1152	20829		COSCO
TANG HE		1983	18.7	1152	16100		COSCO
GAO CHENG		1984		724	12739		COSCO
YIN HE		1984	17	1328	25925		COSCO

(2) Gesuri(MON Containers) [Full Container Service]

A service(Slot charter:KL/MISC), Weekly
Tokyo-Yokohama-Nagoya-Kobe-HK-Singapore(1)-Port Kelang-Singapore-
HK-Tokyo
(1)Feeder Service to Jakarta, Belawan, Semerang, Surabaya by Gesuri

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ALLIGATOR MIRACLE	Sg	1973	23	1803	29581R		MOL
MONT BLANC MARU	Ja	1974	23	1406	30476R		MOL
SUCCESS HOPE	Pa	1972	22.3	1903	30465R		MOL

(3) Guangzhou COSCO(Seiwa), 2 sailing a month

Kobe-Yokohama-HK(1)-Sibngapore-Dubai-Dammam-Karachi-Bangkok-HK-Xingang/Quidai/Shanghai-Kobe
(1) Feeder service to Jakarta, Kuwait

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
GU CHENG	PRC	1985	15	724	13003	R	G. COSCO
MING CHENG	PRC	1985	15	724	13003	R	G. COSCO
QING HE	PRC	1982	16	1152	20823	R	G. COSCO
TANG HE	PRC	1983	16	1152	20828	R	G. COSCO

(4) UASC(Summit), Monthly

Yokohama,Kobe - Mina-Qaboos, Dubai, Doha, Dammam, Bahrain, Abu Dabi, Kuwait, Bandar Abbas
Feerder Service to Jakarata, Surabaya, Semarang, Belawan Deli

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Al Mubarakiah	Ku	1974	15	520	23890	C,DH105t	USAC
Al Yamamah	Sd	1977	15	434	23741	C,DH105t	USAC
Futhulkhair	Ku	1978	15	434	23618	C,DH105t	USAC
Ibn Al Atheer	Ku	1976	15	520	23613	C,DH105t	USA
Ibn Al Haitham	Ku	1976	15	503	23890	C,DH105t	USAC
Ibn Al Roomi	Ku	1976	15	434	23618	C,DH105t	USAC
Ibn Battotah	Ku	1974	15	520	23841	C,DH105t	USAC
Ibn Hayyan	Ku	1975	15	520	23841	C,DH105t	USAC
Ibn Tufail	Ku	1975	15	520	23841	C,DH105t	USAC
Tabuk	Ku	1978	15	434	23618	C,DH105t	USAC

UASC(Summit) Feeder Service

Feeder vessel	TEU	Call	Freq.	Operator
LAWANTI	270	JKT	1/w	UASC
MERKUR DELTA	424	SBY	1/w	UASC
JUTHA PHANSIR	224	SMA	1/w	UASC
PELOPOR	209	BLW	1/w	UASC

(5) Uniglory (Konoike)

B Service, 3 sailing a month

Tokyo-Yokohama-Nagoya-Busan-Keelung(1)-Taichung-Kaohsiung-HK-Singapore-Dubai-Abudabi-Dammam-Bahrain-Peneng-Belawan-Singapore-Manila-Kaohsiung-Taichung-Keelung-Tokyo
(1) Feeder Service to Jakarta, Surabaya

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
UNI-CHART	Tw	1991	17	998	16500	R	Uniglory
UNI-CORONA	Tw	1992	17	998	16500	R	Uniglory
UNI-CROWN	Tw	1991	17	998	16500	R	Uniglory
UNI-CONCORD	Tw	1992	17	998	16500	R	Uniglory
UNI-CONCERT	Tw	1993	17	998	16500	R	Uniglory

Feder service see 1. Far East - Indonesia(1) Uniglort A service

10. Africa,

West Africa

(1) Gold Star(GMK), Monthly

Nagoya-Yokohama-Kobe-Busan-Keelung-HK-Singapore-Jakarta-Colombo-Abidjan-Lome-Cotonou-Apapa-Port Harcourt-Douala-Tema-Lome-Abidjan-Singapore-Keelung-Kobe-Nagoya

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
Gold Alisa	HK	1973	16	507	18863	C,R	Gold Star
Gold Hilla	Hk	1973	16	507	18557	C,R	Gold Star
Gold Orli	HK	1973	16	507	18862	C,R	Gold Star
Gold Varda	HK	1973	16	507	18862	C,R	Gold Star

East & South Africa

(2) Uniglory (Konoike)
A Service, 2 sailing a month

Yokohama-Kobe-Busan-Keelung(1)-Kaohsiung-HK-Singapore-Port Louis-Durban-Cape Town- Durban-Singapore-HK-Kaohsiung-Keelung-Yokohama

(1) Feeder Service to Jakarta, Surabaya, etc.

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
TAO YUAN	Tw	1979	15.8	930	29209	R	Uniglory
UNI-FOREVER	Tw	1979	16	964	18828	R	Uniglory
UNI-FRTUNE	Tw	1978	16	956	18828	R	Uniglory
UNI-FORWARD	Tw	1978	16	956	18821	R	Uniglory

11. Australia & New Zealand

(1) ANRO, Direct service to JKT, weekly

SIN-Pt. Kelang-Penang-Jakarta-Australia-Burnei

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
ANRO ASIA		1978	18	1242	22061	RoRo	ASCL/NED/NOL
ANRO AUSTRALIA		1977	16	1217	22195	RoRo	ANL
ANRO GOA							
ANRO JAKARTA		1981	19	1152	20815	F.C.	DL
ANRO TEMASEK		1977	16	1414	22319	RoRo	NOL

(2) FESCO(Tokyo Kyodo)

Japan-HK- Jakarta-NZ-HK-Russia-Japan, 2 sailing a month

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
IVAN KOTLYAREVSKIY	Ru	1970	17.75	704	15023	R	FESCO
KAPTAIN ARTYUKH	Ru	1986	18	400	9141	R	FESCO
KAPTAIN LYASHENKO	Ru	1987	18	490	9141	R	FESCO
KAPTAIN SERGIEVSKIY	Ru	1981	15	320	5720	R	FESCO
KHUDOZHNIK N.RERIKH	Ru	1989	18	490	8717	R	FESCO
KRASNOGVARDEEC	RU	1986	18	490	9141	R	DESCO

(3) COSCO(Chaina Ocean Shipping Co.)

SIN-Jakarta-Australia

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
LONG HAI HE		1971	20	736	11151		COSCO
ROBIN		1980	24.5	742	16432		COSCO

(4) NEDLLOYD

SIN-Pt. Kelang-Jakarta-NZ-SurabayaAustralia-

Vessel	Flag	Built	Speed	TEUs	D/W	Accm.	Operator
NEDLLOYD ROUEN		1978	19	1550	29218	RoRo	Nedlloyd
NEDLLOYD ROCHESTER		1979	20.5	726	22564	RoRo	NedlLoyd
NEDLLOYD ROSARIO		1979	19	1550	29218	RoRo	Nedlloyd
NEDLLOYD ROTTERDAM		1978	20.2	726	22564	RoRo	Nedlloyd

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(4) Container vessels employed in feeder services (Feeder Servicees Indonesia to SIN,HK, KAO, Keelung)

A. Feeder to Singapore

A-1-a. Jakarta - Singapore direct(19 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
BUNGA TERATAI	596	PBN	MISC	JKT	SIN
CAPE RAY		Samudra		JKT	SIN
CHAYA BHUM			PBN	JKT	SIN
EAGLE CLOUD	508	APS		JKT	SIN
EQUATOR RUBY	437	TMS		JKT	SIN
EQUATOR HAUK	236	TMS		JKT	SIN
IBN. SINA	1538	Plau Laut		JKT	SIN
KOTA INDAH	640	PIL		JKT	SIN
PIYA BHUM	1002	RCL		JKT	SIN
SEA GROLY					
SEA LARK			Maersk	JKT	SIN
MAHA BHUM	920	RCL		JKT	SIN
MAJAPAHIT	1152	Djakarta Lloyd		JKT	SIN
MANTA BHUM	920	RCL		JKT	SIN
PERKASA				JKT	SIN
SENTOSA JAYA			PLB	JKT	SIN
SERAYA JAYA			PLB	JKT	SIN
WANA BHUM	493	RCL		JKT	SIN

A-1-b Jakarta & Semaran (2 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
AMELA I		Samudra	TSK	JKT,SEM	SIN
MAE. ASIA QUINTO	520	Bumi Laut	Maersk	JKT,SEM	SIN

A-1-c Jakarta & Surabaya (4 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
KITI BHUM		RCL(Paul Laut)		JKT,SBY	SIN
KOTA MEGAH					
KURINA SAMDRA	269	Samudra		JKT,SBY	SIN
PELOPOR	263	Samudra(UASC)		JKT,SBY,(BLW)	SIN

A-1-d Jakarta, Surabaya, Semarang (2 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
DRA. KALIMANTAN	453	Paul Laut		JKT,(SMA,SBY)	SIN
PERMAI I	522	JPL		JKT,SMA,SBY	SIN

A-1-e. Jakarta, Panjang (3 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
DRAGON TEKONG		Paul Laut		JKT,PNJ	SIN
LAWANTI	270	Samdura(UASC)	TSK	JKT,PNJ	SIN
LAMPUNG BAY		Samudra	TSK	JKT,PNJ	SIN

A-2-a Surabaya direct (7 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
BENVALLA	426		OOCL	SBY	SIN
DRAGON BANGKA		Paul Laut		SBY	SIN
DRAGON JAVA		Paul Laut		SBY	SIN
EQUATOR PRIDE	174	Samudra	TSK	SBY	SIN
MERKUR DELTA	424	UASC		SBY	SIN
OOCL ARROW		Djakarta Lloyd		SBY	SIN
PANKARAN SINAR		Samudra		SBY	SIN
TANTO CAPTAIN		Samudra	TSK	SBY	SIN

A-2-b Surabaya, Semarang (3 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
DERAJAT	227	Samudra	TSK	SBY,SEM	SIN
LUMOSO		Samudra	TSK	SBY,SEM	SIN
TANTO CAPTAINE	322		Sealand	SBY,SEM	SIN

A-3 Semarang (1 vessel)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
JUTHA PHANSIR	224	UASC		SEM	SIN

A-4. Belawan (5 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
ACX JADE	320	Samudra	TSK	BLW	SIN
ACX AWAN	484	Samdra	TSK	BLW	SIN
NORDSTAR		Samudra		BLW	SIN
PACIFIC LADY		Samudra	TSK	BLW	SIN
SEA LAUREL	584		Maersk	BLW	SIN

A-5 Palambang (2 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
SL ORANGE		Samudra	TSK	PLB	SIN
TWADIKA		Samudra	TSK	PLB	SIN

A-6 Jambi (2 vessels)

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
INDO EXPRESS I		Samudra		Jambi	SIN
INDO EXPRESS II		Samudra		Jambi	SIN

B. by Main Vessel via SIN

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
ACX LILAC	1461	Samudra In.	TSK/MOL	JKT	SIN
ACX LOTUS	1198	Samudra In.	TSK/MOL	JKT	SIN
ACX ROSE	1334	Samudra In.	TSK/NYK	JKT	SIN
PACIFIC ARROW	1445	Samudra In.	TSK	JKT	SIN

C. by Main vessel via HK

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
ACX LILAC	1461	Samudra In.	TSK/MOL	JKT	HK
ACX VIOLET	1467	Samudra In.	TSK/NYK	JKT	HK
HIKAWA II	1277	Sanudra In.	TSK/MOL	JKT	HK
PACIFIC ARROW	1445	Samudra In.	TSK/MOL	JKT	HK
GROLIA I	1177	Plau Laut		JKT	HK
GIANNI D	1177	Plau Laut			
CHOYANG SUN	1200	Andal Laut.Niaga			
HANJIN KUNSAN	1174	Dognama	Hanjin	JKT	HK
HANJIN KWANGYAN	1048	Dognama	Hanjin	JKT	HK
HANJIN POHANG	1150	Dognama	Hanjin	JKT	HK
PETRA I	854		Wan Hai	JKT	HK, Taichung

D. via Kaohsiung, Keelung, Taichung

Feeder vessel	TEU	Agent	Oper.	Port Calls	Transhipment
GLOBAL BAHAMA	600	Bahama Utama	Wan Hai	JKY,SBY	KAO
UNIVERSAL BAHAMA					KEEL,HK
WAN HAI 207					TAICHUNG

APPENDIX B

1. Port Facilities of Belawan

a. Port Site and Approach

Port of Belawan is located in between the right bank on Belawan River and left bank of Deli River. The port basin at the mouth of Belawan River is connecting to Malacca Strait through 12 km access channel maintained to be 100m minimum width and -9.5 m (LWS) in depth. The recent maintenance dredging volume is summarized in Table B-1.

Table B-1 Maintenance Dredging at Port of Belawan

(unit: 1,000 Cu m)

Year	Port Basin	Approach Channel	Total
1989	373	1,600	1,930
1990	265	2,500	2,765
1991	249	1,800	2,049
1992	240	1,800	2,040

Note, Source: P.T. Pelabuhan Indonesia

The port area consists of the Old Harbour with an area of 289 ha including "Belawan Lama" "Ujung baru Base" and "Citra Base", and "Gabion Base" with the area of 30 ha. makes 319 ha in total.

(see Fig. B-1 General Plan of Port of Belawan)

As for the access to the Port, two lanes toll way(partially one lane) is connecting the Port of Belawan and Medan City with a distance of 23 km.

b. Berthing Facilities

The berthing facilities are lined up along the right bank of Belawan River namely from up to down stream "Belawan Rama" "Ujung Baru Base" "Citra Base" and "Gabion Base". The opposite side (left bank)of Belawan River is not developed yet, and covered with thick mangrove trees.

The existing berthing facilities are summarized in Table B-2. Among those facilities "Gabion Base" is utilized for container handling activities.

c. Sheds and Yards

The existing storage and handling area of Port of Belawan are shown in Table B-3.

d. Gabion Base

Containers are mainly handled at Gabion Base using two (2) units of 40 ton capacity gantry crane serving 2nd. generation container ships. The structural type of Gabion Base wharf is concrete deck on steel piles with anchored concrete retaining wall along land side edge thereof. In order to strengthen the original sub soil, which consists of 40 to 50m thick soft alluvial clay stratum with high water contents, soil improvement works were applied along the wharf side area down to -19m below MSL.

The slope underneath the wharf structure is protected with cement grouted mattress.

The face line of the wharf is well protected with V-type rubber fenders. Considering a rather high velocity of the river stream which reaches up to 2 knots, this fendering system is well functioning.

The container yard is paved with concrete blocks which is maintained in good order, with minimal influence of the subsoil settlement.

Layout plan of container terminal is shown in Fig. B-1.

e. Pilotage/towing

Compulsory pilotage system is adopted.

Available tender boats of Port of Belawan are as enumerated below;

5 Tug Boats	800~2.400 HP
8 Pilot Boats	140~700 HP
3 Mooring Boats	100~150 HP

f. Railroad

Existing railroad is only up to Ujung Baru Base. Several alternative extension plans to connect to Gabion Base are being studied but final alignment is not decided to date.

Table B-2 Existing Berthing Facilities of Port Belawan

Name of Wharf	Length (m)	Water Depth (LWS) (m)	Structural Type	Built in	Purpose
Belawan Lama	602	-6	Concrete deck on pile	1977-1979	Inter-insular
Ujung Baru Base	370	-7	Concrete deck on pile	1977	Ocean-going (Domestic/ international)
Ujung Baru Base	1,185	-9	Concrete caisson	1923	Ditto but including passenger ships
Citra Base	625	-6-7	Concrete deck on pile	1963	Inter-insular
Citra (IKD) *1	150				
Gabion Base	500	-11	Concrete deck on pile	1986	Container
Gabion Base	350	10	"	1986	General Cargo

NOTES Source: PT. Pelabuhan Indonesia I

*1 IKD: Industri Kimia Dasar

Table B-3 Existing Sheds and Handling Area of Port Belawan

Name of Port Area	Transit Shed (Sq.m/unit)	Open Storage (Sq.m/unit)	Yard (sq.m)
Belawan Lama	5,372 /6	540 /1	23,325
Ujung Baru Base	31,508 /10	510 /1	15,885
Citra Base	16,800 /3	-	28,730
Gabion Base			
Container	10,400 /2 *1	-	35,000 *3
Gen. Cargo	10,400 /2	-	-
	1,400 /1 *2		

NOTES Source: PT. Pelabuhan Indonesia I

*1 : C F S

*2 : for dangerous cargo

*3 : CY: Capacity 4,614 TEU (3 tires)

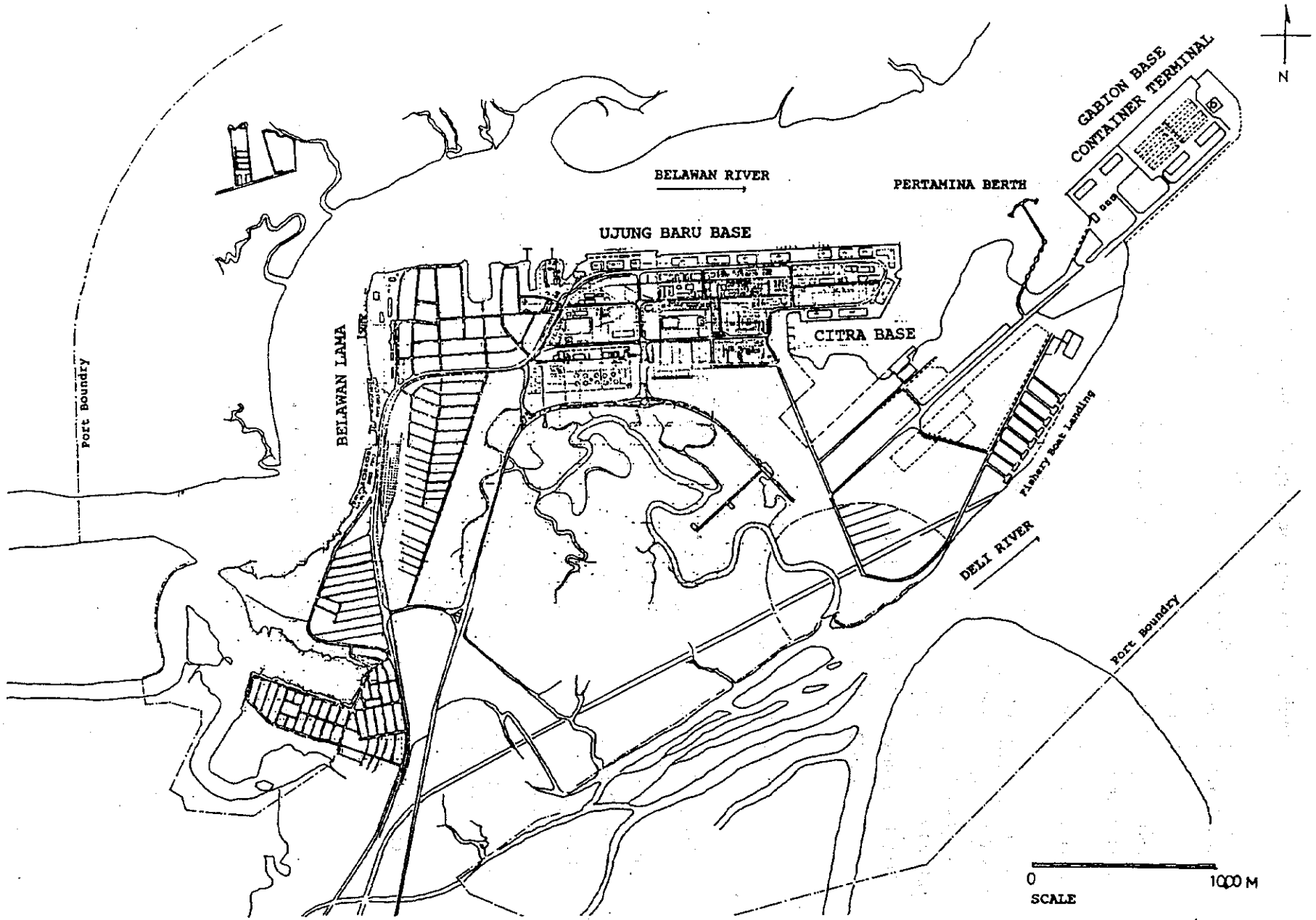

Fig. B-1 General Plan of Port of Belawan

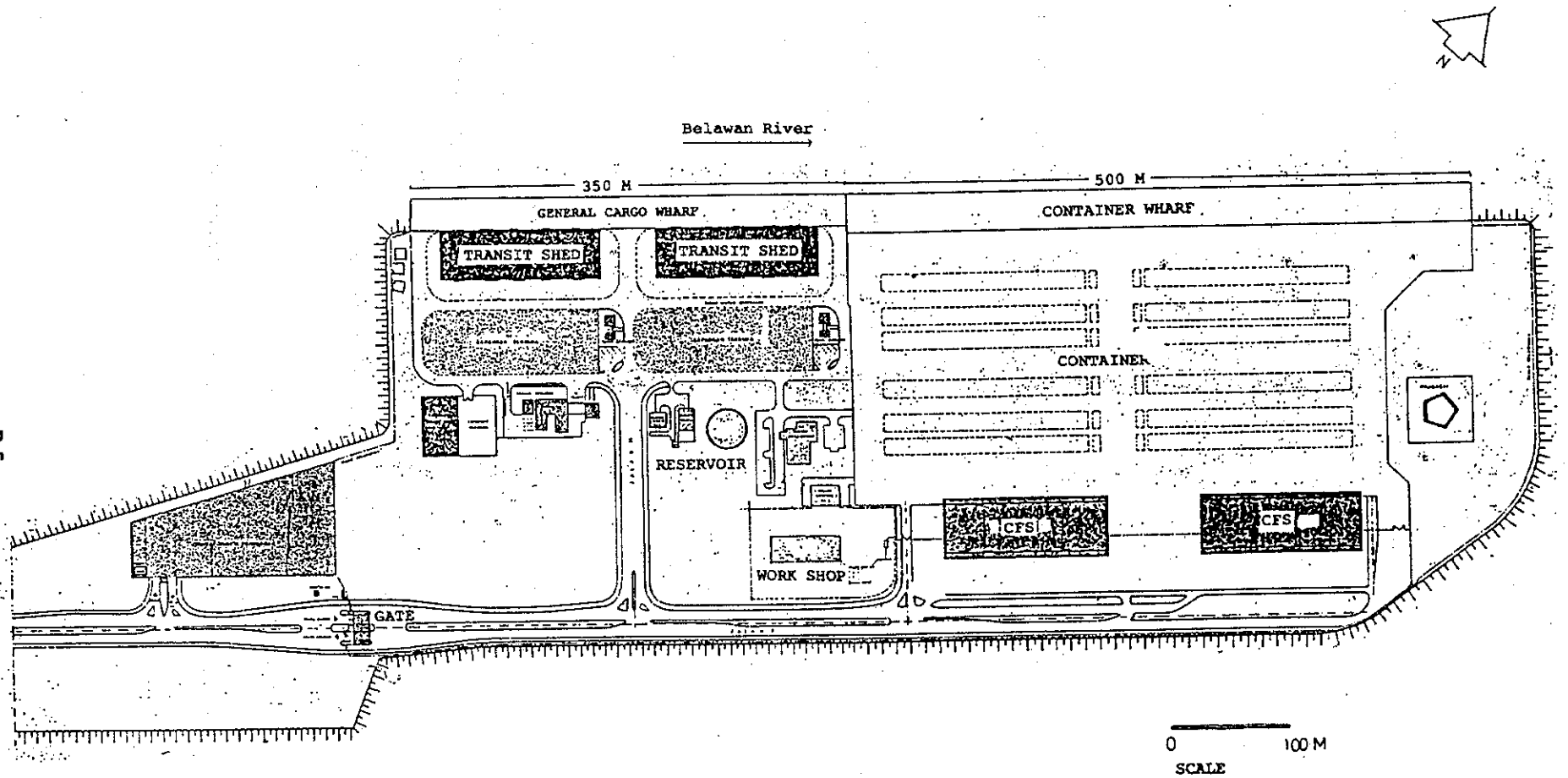

Fig. B-2 Layout Plan of Container Terminal at Gabion Base, Port of Belawan

2. Port Facilities of Panjang

a. Port Site, Approach

Port of Panjang is located on the east coast of Panjang Bay which opens toward Lampung Bay. The Port area is well protected by natural breakwater of coral reef against the waves generated by West Monsoon (Musim Barat).

The coral reef so called Panjang Reef is configuration of natural harbour basin with deep water therein. (See Figs. B-3 and B-4). The total area of port basin is 35 ha with an entrance passage of 150m width. A turning basin with diameter of 420 m is being secured within the port basin.

The port area of Port of Panjang with land area of 105 ha is located on the south easterly part of Bandar Lampung City, where railroads from Palembang and Tarahan Coal Terminal (See Fig. B-3) are directly connected.

b. Berthing Facilities

Brief description of existing berthing facilities of Port of Panjang and other special ports in the vicinity are summarized in Table B-4. Containers are being handled at Wharves DI and DII, by using ships gear. (See Fig. B-5).

c. Shed and Yards

The existing storages and handling area of Port of Panjang are shown in Table B-5.

d. New Container Terminal

In order to meet the future demand of container handling targeted in the year 2002, construction works of a new container terminal is ongoing at the northern end of the existing wharf DII. (See Fig. B-6). The new terminal consists of the following major work items:

1) 300m long concrete deck on piles type wharf with water depth of -12m
2) Container yard with total area of 15 ha
3) Reconstruction works of wharves B and C.

The construction works are scheduled to be completed in September 1995.

e. Port Basin

As described in above section "a" the port basin of Port of Panjang is well protected by Panjang Reef against (1) offshore wave which reaches to 1.0 to 1.5m in maximum height during West Monsoon Season (Musim Barat) in September to December and (2) also drifting sand. As to sand accretion, Panjang port did not experience serious sedimentation due to no existence of sand supply river in the vicinity hence no maintenance dredging was conducted.

Table B-4 Existing Berthing Facilities of Port of Panjang, Lampung

Name of Wharf	Length	Water Depth Nominal (LWS)	Water Depth Actual (LWS)	Width	Structural Type	Date Built	Usage	Remarks
	(m)	(m)	(m)	(m)				
1) PT. Pelabuhan Indonesia II, Cabang Panjang								
Wharf A	172	-7	-7.3 to 8.4	25	Conc. caisson	1921	Domestic & ocean vessels	
Wharf B	210	-7	-4.3 to 7.7	20	Deatched pier conc. deck on pile	1983	Ocean & domestic vessels	
Wharf Ro/Ro	20	-9	-9.8					
Wharf C	138	-4	-3.6 to 5.0	25	Conc.deck on pile	1967/1977	Domestic & Ocean Vessel	
Wharf DI	200		-8.6 to 11.0			1974/1977	container & general	
" D II	200		-11.0 to 11.8			1974/1976	cargo,ocean vessels	
" D III	86	-12	-8.1 to 7.8	50	Ditto	1986/1989		
Total	1,026							
Mooring Buoys (3 units)								
2) Pertamina								
Inner Jetty	-	-5.5	-9.9	-	Delpins buoys & platform		Oil tanker max. 4850 DWT	
Outer Jetty	-	-10		-	"		Ditto max.7000 DWT	with submarine pipe 712m long
3) Tarakan Coal Terminal								
Coal Load. Wharf	174	-12			Pile type jetty		Coal bulk carrier for PLTU Surabaya and export	with coal loader

Source: 1. PT. Pelabuhan Indonesia
2. Chabang Panjang
3. Pertamina

Table B-5 Existing Sheds Handling and Storage Area of Port of Panjang/Bandar Lampung

Location	Built in	Dimension (m)	Area (sq.m)
1) Godown			
Godown 001	1983	120 x 30	3,600
002	1952	40 x 24	960
003	1974	40 x 30	1,200
004	1949/84	30 x 24	720
005	1955	55 x 40.5	2,227
006	1949/72	35 x 25	875
007	1976	75 x 40	3,000
Dangerous Cargo	1982	50 x 16	800
TOTAL:			13,382 sq.m
2) CFS	1989	120 x 50	6,000
3) Open Storage			
Open Storage			24,793
Container Yard (1,462 TEUS)			35,000

Source: PT. Pelabuhan Indonesia, Cabang Panjang

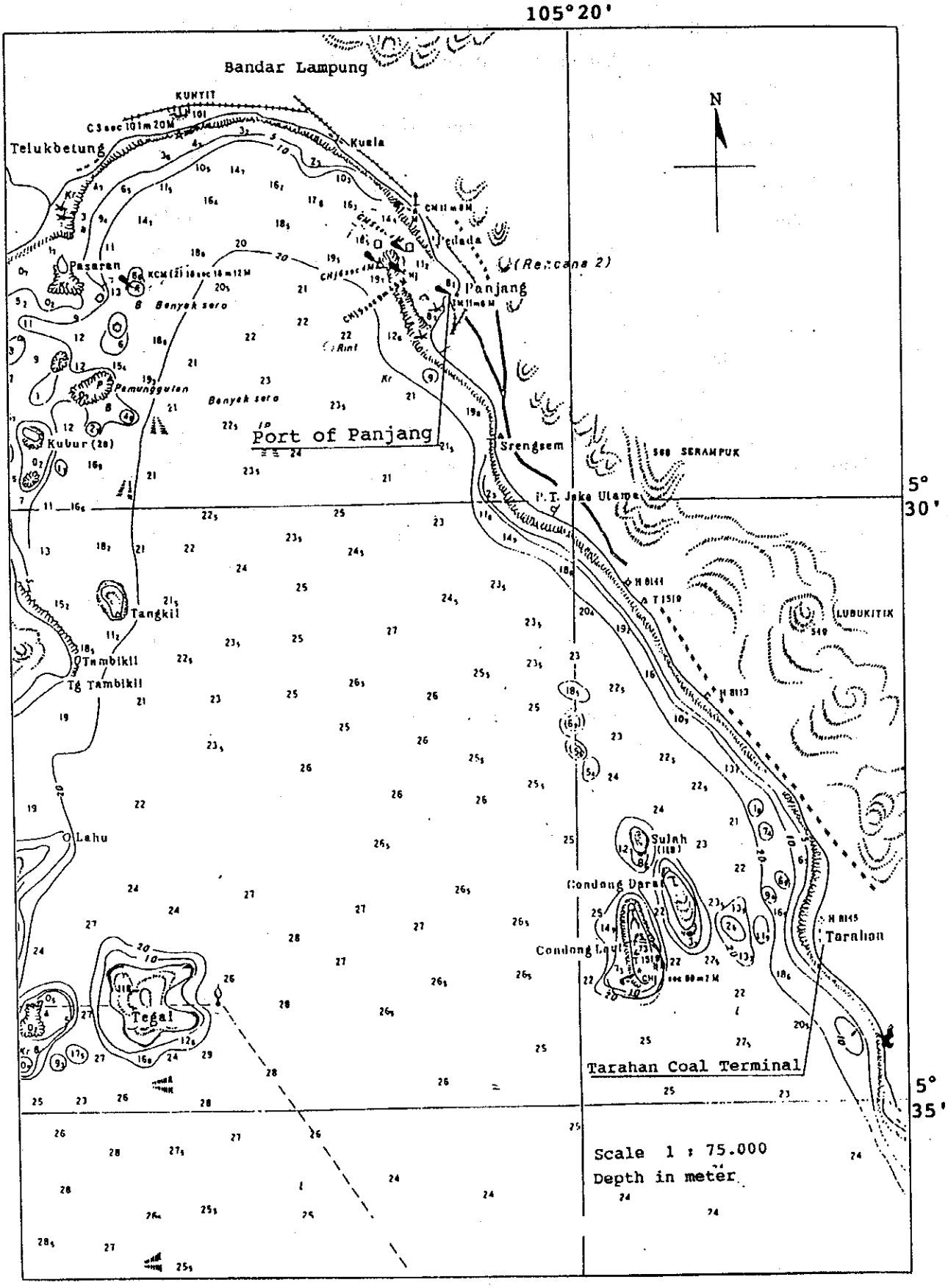

Fig. B-3 Guide Map of Port of Panjang, Bandar Lampung

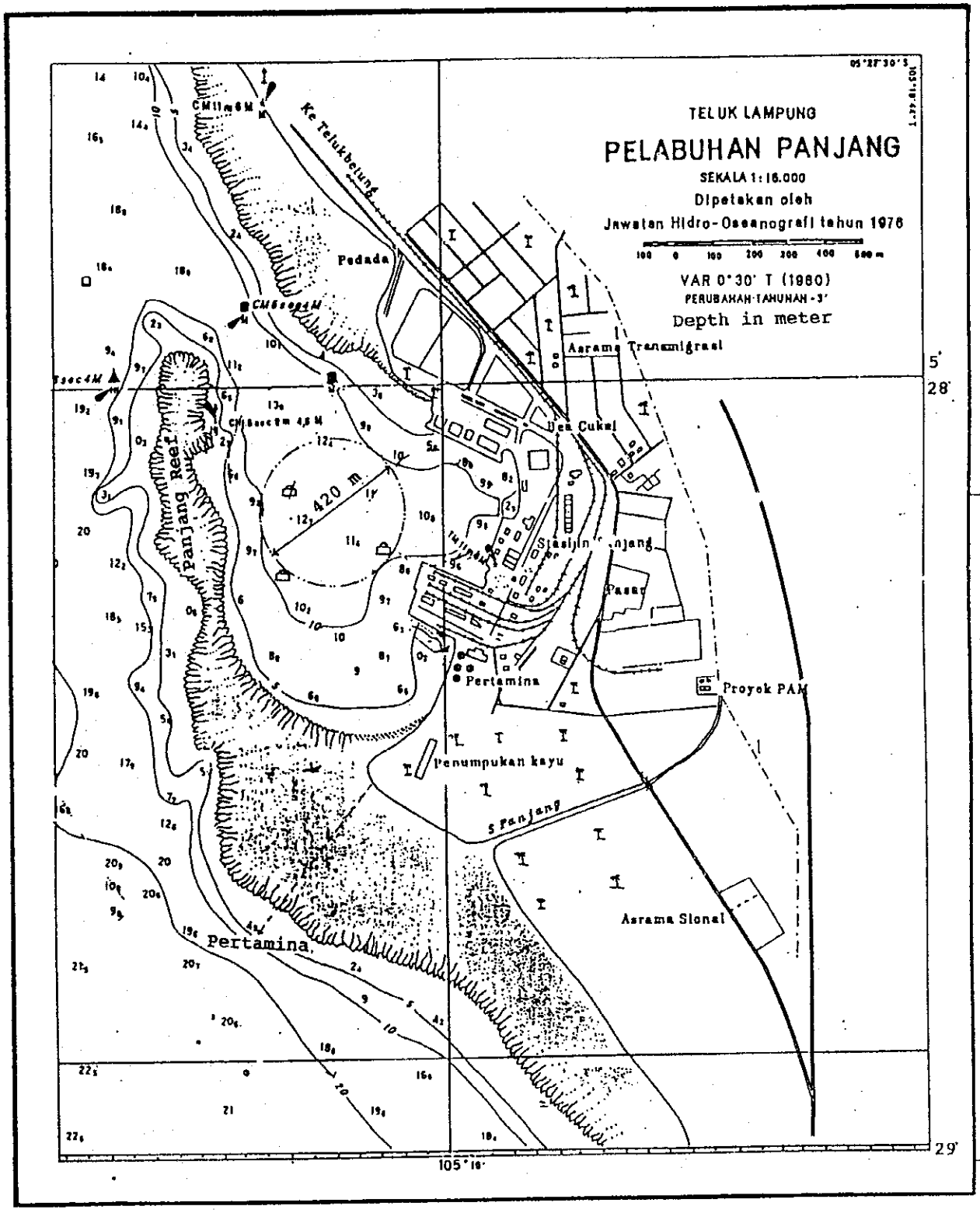

Fig. B-4 Location Plan of Port of Panjang, Bandar Lampung

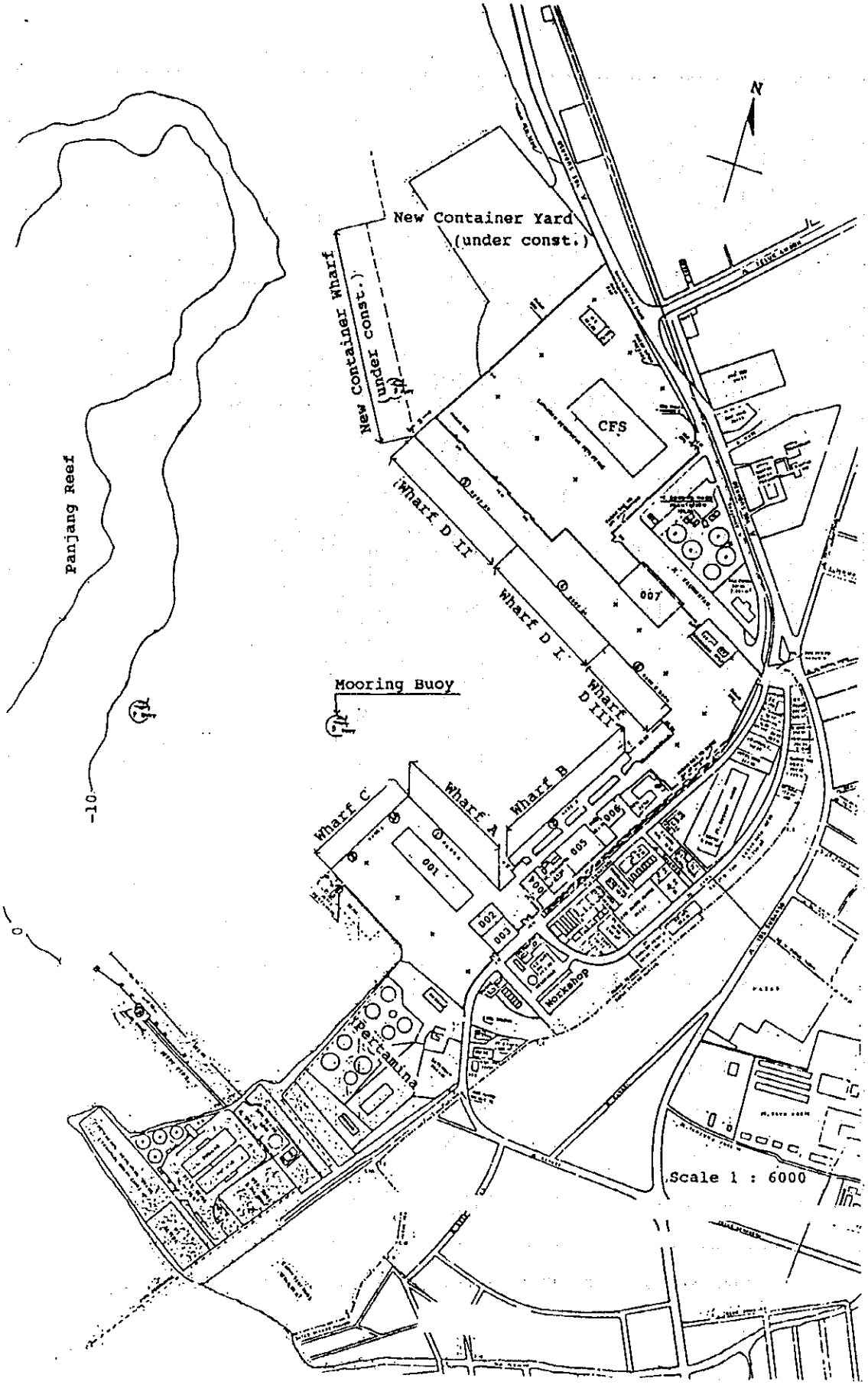

Fig. B-5 General Plan of Port of Panjang, Bandar Lampung

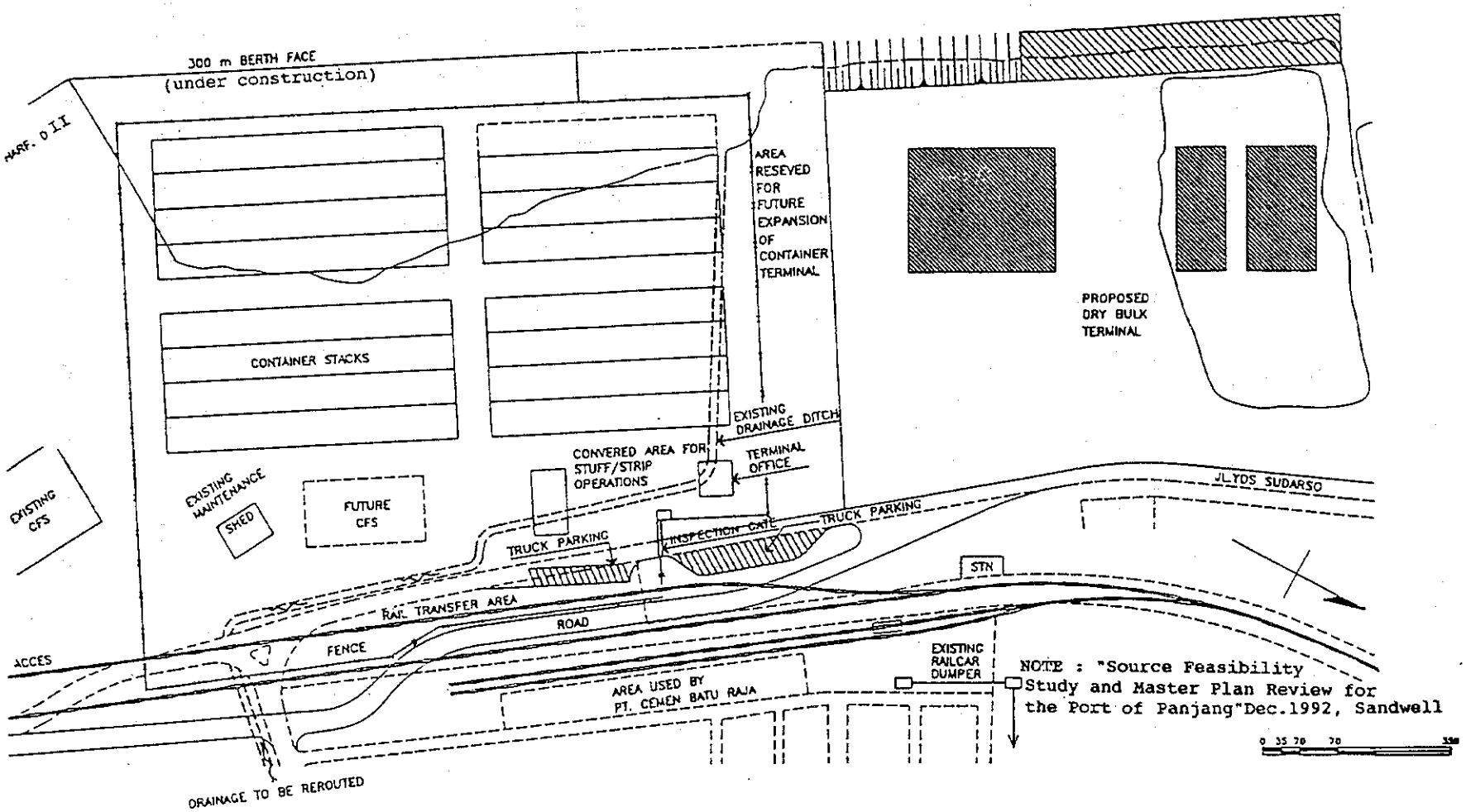

Fig. B-6 Short Term Development Plan (Year 2002) of Container Terminal of Port of Panjang

3. Port Facilities of Tanjung Priok

a. Port Site

Port of Tanjung Priok is located at northern coast of Java Island neighboring on the north-easterly part of DKI Jakarta and composing a part thereof. The port is expanded approximately 6 km from east to west and 2.5 km from north to south. The port consists of 6 major port basins, 6 finger type piers, breakwaters and navigation channels. As described in the following sections most of the port structures were constructed during the "Dutch" time and repeating improvement and/or rehabilitation resulted complicated layout and structural sections.

b. Approaches

Entering ships can target "Edam point" marked with lightbuoy located at 14 km (6.5 miles) north of the port entrance and proceed directly to the port with the bearing of N-180°.

West channel, which is utilized for ocean-going vessels is approximately 3 km long with 200m width and -11 m depth (LWS).

While along the east channel, several undredged portions shallower than -5 m are existing thus not passable to ocean-going vessels.

NOTE: In order to up-grade the east channel, up to similar grade to east channel with -11.0 m water depth, 4.5 km (2.5 m miles) navigation channel should be dredged with estimated volume of 3 to 4 million cu.m.

East and west channels are connected by inner harbour channel running east-west direction with 3 km long, 200 m width and -11m water depth (LWS). Then, Inner harbour channel guides ships to individual harbour basins. At the entrance of harbour basins, turning basins with 300m diameter with -11 m water depth (LWS) are provided.

c. Siltation

According to the "Site Selection Study Report" prepared by Peter Fraenkel International Ltd. in 1990, the average annual siltation of the approach channel is observed to be 0.4 m to 1.2 m.

Recent actual maintenance dredging volume is summarized in Table B-9.

d. Breakwater

The construction of breakwaters of Tanjung Priok Port was originated in the west channel in 19th century and expanded east ward until 1970's.

Outline description of the individual portions of breakwater is summarized in Table B-6.

e. Berthing Facilities

i) Wharf Structure

Brief description of the existing berthing facilities of Port of Tanjung Priok are summarized in Table B-7.

As can be seen in the table, many of those built in the early 1900's are concrete caisson type damaged by settlement, scouring, erosion, and/or material deterioration.

Some caissons are even tilting seaward and some have cavity in the back filling materials. Those damaged portions were rehabilitated by applying many kinds of countermeasures such as (1) grouting, (2) additional tie rods with concrete wall (3) additional sheet pile wall (4) additional concrete deck on pile (5) additional soil improvement, (6) additional stone columns on frontal seabed and etc.

Among the above countermeasure (1) and (2) were applied for "Basin II West"
(3) was applied for Basin I West and South
(4) was applied for Basin II South and West
(5) was applied for Nusantara Basin
(6) was applied for Base II West

ii) Accessories

Due to the small tidal range (MSL + 0.60 m), almost all rubber fenders for ocean going vessels wharf are horizontal installation of V- type or cylindrical type except for some small crafts wharves where slanted (or angled) installation of V-type fenders are observed.

f. Anchorage

There are two anchorage areas in the Tanjung Priok Port. One is at the outer harbour anchorage where 60 to 70 ships can be accommodated and another is inside of the breakwater along the west channel where 29 ships can be moored with mooring buoys and anchoring. Major possible reasons or purposes of anchoring ships are enumerated below;

(1) Small repair
(2) Bunkering
(3) Fresh water supply
(4) Stand-by for berthing
(5) Stand-by for docking
(6) Waiting order
(7) Waiting cargo
(8) Laid-up (waiting for buyer)

g. Sheds and Yards

The existing storage and handling area of Port of Tanjung Priok are summarized in Table B-8.

h. Container Terminal

The first container handling at Port of Tanjung Priok was done in 1973 by discharging small number of boxes at conventional wharf. Since that time the volume of container handling was tremendously increased and the services at Basin III East Container Terminal (Container Terminal I: CTI) was started in December 1978.

The Basin II West Container Terminal (Container Terminal II: CT II) was inaugurated in September 1991 which was converted from conventional cargo berth.

In the same year Pasoso Container Terminal for railroad services was also started the operation. General layout plans of Container Terminal I and II are shown in Figs. B-8 and B-9 respectively. The capacity and number of ground slots for individual terminal are summarized in Table B-8. Koja canal area neighbouring to CTI is now being reclaimed as an expansion area of CTI. Pasoso Container Terminal is also being expanded during this reporting period.

i. Pilotage and Towing

In Port of Tanjung Priok, compulsory pilot system is adopted for vessels larger than 150 G.T.

16 harbour pilots are deployed for the purpose. Those arriving ships passing by Edam Points (see section b. Approach) will proceed to harbour entrance and pilot will be on board at 1.8 km (1 miles) before the harbour entrance.

The attendance of tug boats will be started at 0.9 km (half mile) off the port entrance with required number of tug boats as summarized below.

Vessel size	Number of Tug Boat/Total Power
below 150 G.T.	Not required
LOA: 70m ~ to 100m	1 tug boat/600 to 800 HP
LOA: 100m ~ to 150m	2 tug boats/1500 to 2500 HP
LOA: 150m or above	3 tug boats/5000 HP

The vessels entered the harbour basin through West Channel will be turned around with assistance of tug boats at turning basin before berthing at individual Basins so that the mooring will be head out for safety reasons to secure emergency quick dispatch.

The fleet of harbour support boats are summarized as below:

Type of boat	No. of Unit
Pilot Boat	7
Tug Boat 801 - 1200 HP	6
Tug Boat 1201 - 2300 HP	5
Tug Boat 2301 - 2500 HP	2
Mooring Boat	6

The largest ship ever entered and berthed at Port of Tanjung Priok was a bulk carrier vessel with 274 m long (LOA) and actual draft 10.5m. As for a container ship the largest ship is 225m long (LOA) and actual draft of 9.8 to 9.9 m.

j. Other Facilities in Port of Tanjung Priok

Other facilities in Port of Tanjung Priok which may concern to the Study are described hereunder.

i) Pertamina Oil Berth

Pertamina oil berths are oil products receiving facilities located at west side of Oil Basin (See Fig. B-7), consist of following berthing facilities:

Name of Pier	Water Depth (LWS) (m)	Draft (max) (m)	DWT (max) (m)	LOA (max) (m)	Discharge Commodities
PMB I	9 to ll	7	18,000	165	LPG Lube Oil White Oil
PMB II	12 to 13	8	22,000	180	White Oil
PMB III	12 to 13	11	30,000	185	White Oil
PMB IV	12 to 13	11	30,000	185	White Oil

NOTE: Source: Pertamina
1. DWT: Dead Weight Tonnage
2. LOA: Length Overall
3. All piers are installed with loading arms
4. All piers are deck on pile type and consist of platform and dolphins

Those oil products from Dumai, Singapore, Cilacap, Balikpapan and Teluk Semangka (Offshore transshipment in Lampung) are being discharged at above oil piers for the consumption of Jakarta area since there is no refinery in Jakarta.

According to the information of Pertamina, once Barongan Refinery in Cilacap is fully operated in 1995, the activity of the Oil berths in Tanjung Priok will be reduced since the oil transportation to Jakarta district will be converted from sea to pipe lines.

ii) PT. Bogasari Flour Mill Berth

This berth locates in front of Pertamina oil berth, east side of Oil Basin, consisting of detached pier (See Fig. B-7). The berth is being utilized by grain bulk carrier with maximum size of 28,000 DWT, LOA 225 m and draft 9.9 m.

iii) PT. Dock Kodja Bahari

Kodja Bahari is ship repair and building company which factories are spreaded out at four locations in Port of Tanjung Priok namely: (See Fig. B-7)

- Shipyard unit I: At southern end of Nusantara Basin I
- Shipyard unit II: At northern end of the pier between Nusantara Basin and Basin I
- Shipyard unit III: in front of Pertamina Oil Berth (East side of Oil Basin)
- Shipyard unit IV: Southern end of East Channel (East side of Oil Basin)

Among above shipyards, unit IV is building large size vessels at the slipway with max. capacity of 50,000 DWT. The biggest ship ever built thereby was 18,900 G.T. passenger and trailer ferry with the dimensions of 168 m long (LOA), 6.0m draft and approx. total height 40m above water level.

According to the company's corporate plan, PT. Dock Kodja Bahari intends to build graving dock with 100,000 DWT capacity at shipyard unit IV.

Table B-6 Breakwater of Port of Tanjung Priok

(unit: cu.m)

Location	Length	Structural Type	Crown Height (LWS)	Date Built	Remarks
West Breakwater	1,735	Rock mound with Crown Conc. Seaside slope protected with cube conc. block	+1.40	1877 to 1883s	
East Breakwater	1,470	Ditto but Seaside slope protected with cube and akmon or tetrapod	+1.35	"	
Middle Breakwater	1,150	"	+1.90	1915 to 1920	
Citra Breakwater	1,598	"		1961	
Pertamina Breakwater	2,117	Double steel sheetpile wall with top concrete	+2.00	1972	Construction works was abandoned on the way
TOTAL:	8,070				

NOTES Source: 1. Pelabuhan Indonesia II
2. Site Selection Study "Peter Fraenkel, May 1990"

Table B-7 Berthing Facilities of Port of Tanjung Priok

Name of Wharf		Length	Water Depth Nominal (LWS)	Water Depth Actual (LWS)	Structural Type	Date Built	Usage	Remarks
		(m)	(m)	(m)				
Nusantara I East		1,100	5.5	6.0-7.5 1]	Conc. deck on pile	1964	Interisular	
			5.0	5.5-6.0 1]	"			
Nusantara II		525	6.0	5.5-6.0 1]		1981		
Basin I	West	630	8.0	5.9-7.7 2]	3]	1912	Domestic cargo, passnger boat	
		460	7.5					
	South	175	5.0	4.0-4.7 2]	4]	1975	Domestic cargo	
	East	330+750	7.5	6.0-8.0 2]	5]	1975	Bulk cemment	
				8.0-9.4 2]	Conc. deck on pile		Ocean-going	
	North	185	10.0				Ocean-going	Between Basin I and II
		140	2 and 5					"
Basin II	West	635	10.0	8.4-10.8 2]	3]	1912	Ocean going	
	"	360	8.6	7.5-8.4 2]	3]	1912	Container	C/T II
	South	145	4.0	4.3-4.6 2]	Conc. deck on pile	1912		
	East	310	11.0	8.7-9.0 2]	Conc. caisson	1912	Bulk fertilizer	Gypsum terminal
		690	9.0	8.1-10.1 2]	"		ocean-going	
	North	300	5.0		Conc. deck on pile	1985	ocean-going	Between Basin I and II
Basin III	West	1,030	10.0	9.5-12.0 2]	Conc. caisson	1912	Ocean going scrap iron	
	East	920	11.0	5.8-11.7 2]	Conc. deck on pile	1979	Container	C/T I
TOTAL:		8,685						

NOTES Source: Pelabuhan Indonesia II

1] Hydro. Survey Jan. 1994
2] " Dec. 1993
3] Combination of conc. caisson and additional conc. deck on pile (Rehabilitation)
4] Combination of conc. caisson and additional conc. deck on pile (Rehabilitation)
5] Conc. Caisson with buttres wall

Table B-8 Existing Sheds Handling and Storage Area of Port of Tanjung Priok, Jakarta

Location	No. of Unit	Area (Sq.m)	Remarks
Nusantara I	5	17,961	
Nusantara II	4	22,488	Including dangerous cargo
Basin I West	9	39,452	
Basin I East	7	33,427	
Basin II West	6	23,808	
Basin II East	6	19,164	
Basin III West	5	31,978	
Pasoso Terminal	1	4,500	C F S
TOTAL:	43	192,778	

Open Storage area (Conventional Cargo) 283,793 sq.m

Container Yard		CT I	CT II	Pasoso	Total
Area		19.5 ha	5.8 ha	1.5 ha	26.8 ha
Capacities (TEUS)		17,819	4,931	714	23,464
Ground Slot (TEUS)	Import	3,204	1,868		5,072
	Export	1,728	742		2,470
	Reefer	102	31		133
	Empty	1,513	348		1,879

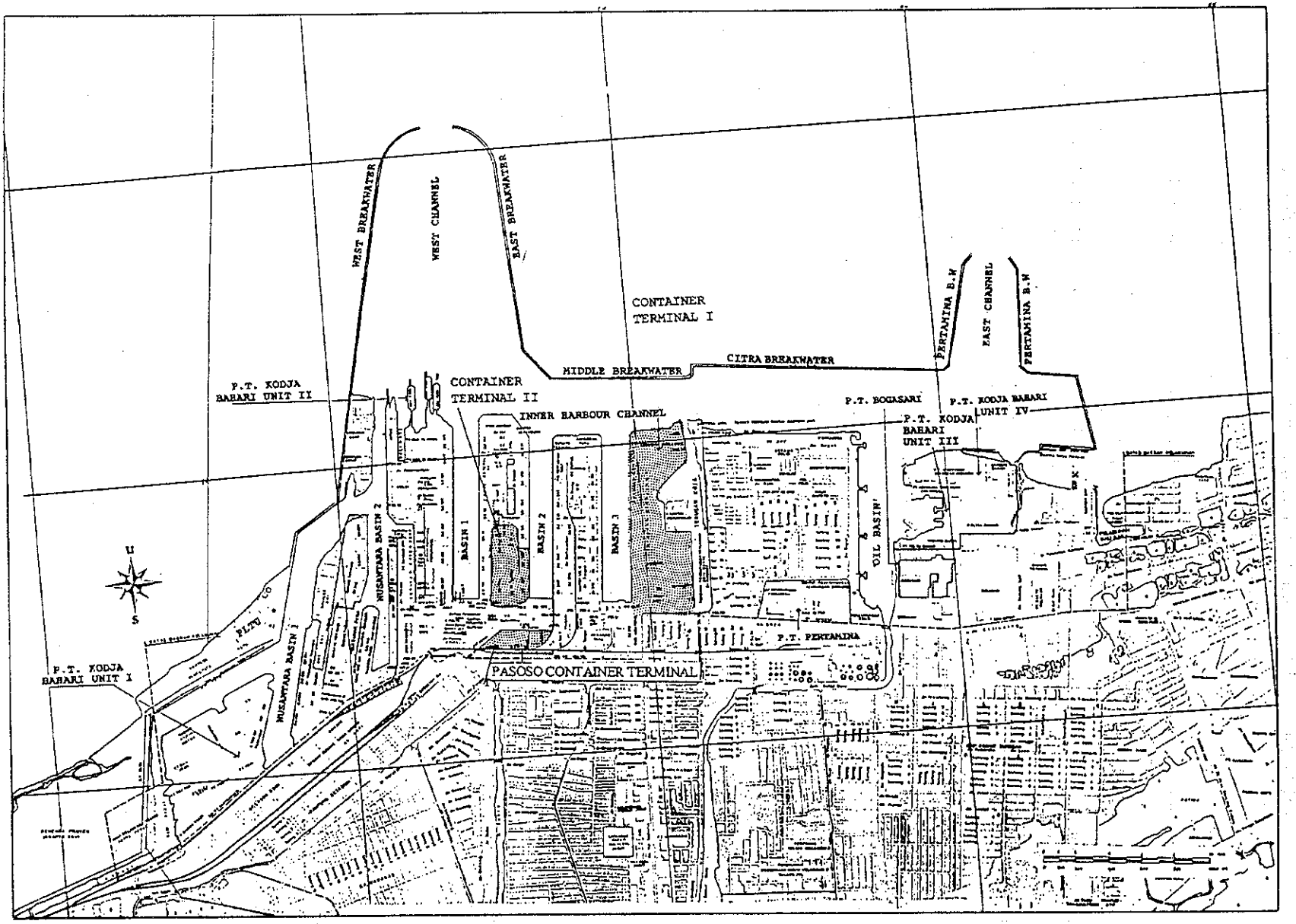

Fig. B-7 General Plan of Port of Tanjung Priok

Table B-9 Record of Maintenance Dredging, Tanjung Priok, Jakarta

(unit: cu.m)

Location	1987	1988	1989	1990	1991	1992	1993	1994
Nusantara I					55,765	34,615		
Nusantara II					-	113,976	1,558	
Basin					-	-		
Basin II					51,135	-		43,000
Basin III					51,135	5,769		
West Channel						113,339	128,000	118,000
East-West Channel					9,883			
Pertamina Channel					63,182	34,040	168,962	91,000
TOTAL:	622,844	319,622	338,817	487,982	231,100	301,766	298,520	252,000

NOTES Source: Pelabuhan Indonesia II
- Detail for 1987 to 1990 is not available
- Dumping sites: Old 06° - 03'-54", 106° - 51' - 52"
  New 06° - 02'-30", 106° - 58' - 38"

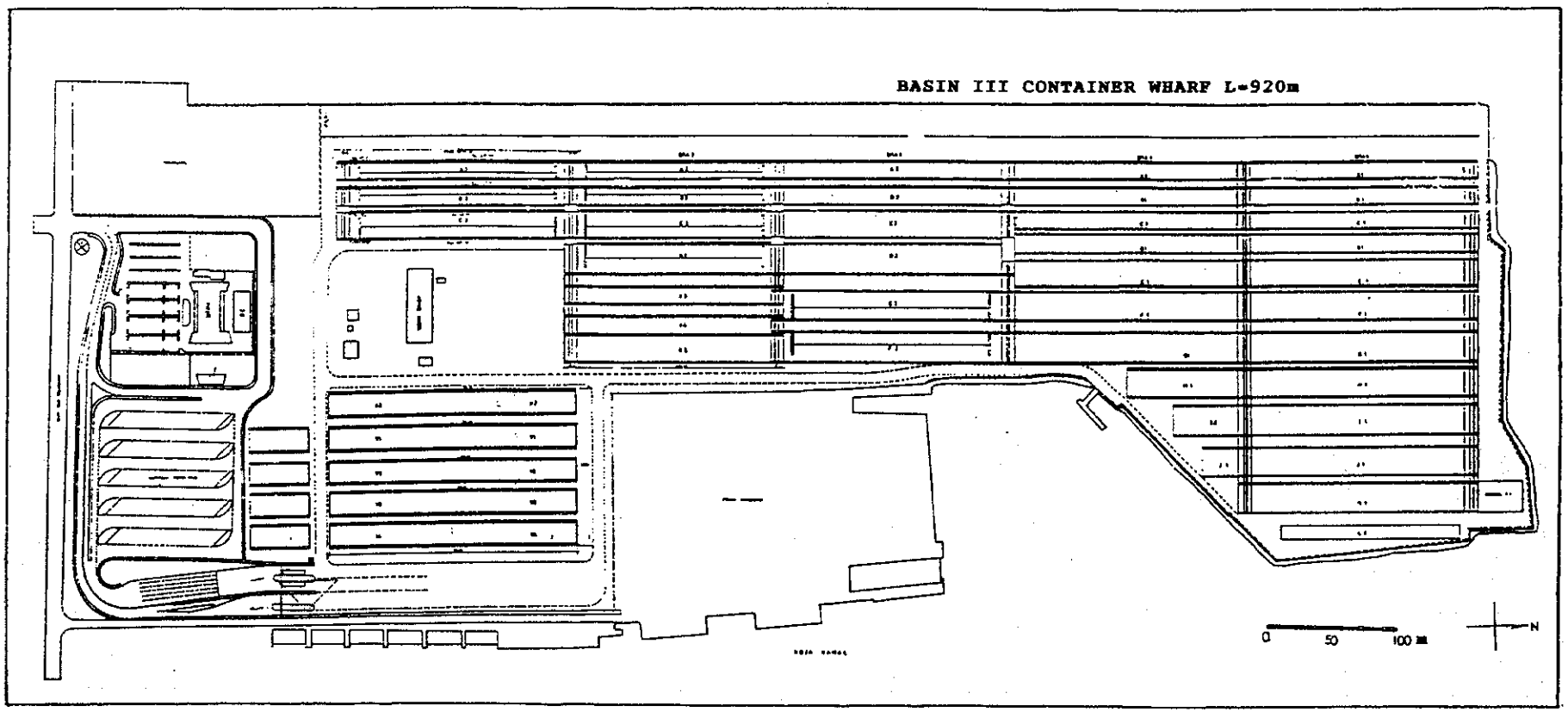

Fig. B-8 General Layout Plan of Container Terminal (C/TI) Port of Tanjung Priok

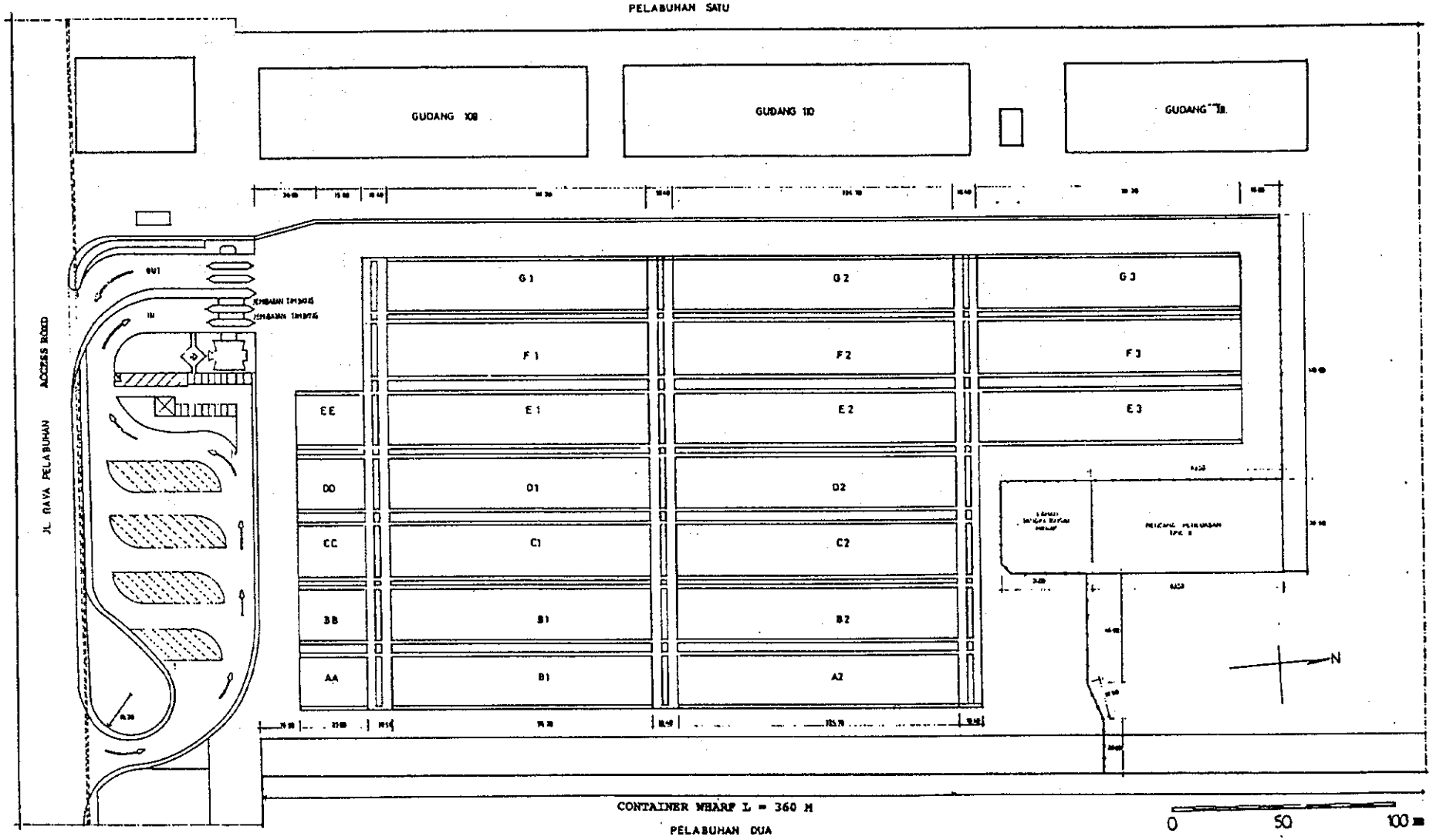

Fig. B-9 General Layout Plan of Container Terminal II port of Tanjung Priok

4. Port Facilities of Tanjung Emas

a. Port Site and Approach

Port site of Tanjung Emas is located at northern coast of Central Java composing a part of Semarang City.

The natural coast of the area stretches with sand and mud seabed with very gentle slope of 0.2% which takes 8 km (4.5 n.miles) to reach -15m water depth (MSL).

The existing working port area is approximately 2.5 km and 2.0 km for east-western and north-southern directions respectively with total working land area of 637 ha and water area of 17,800 ha. The area is between two rivers, i.e. Kali Semarang River on the west and East Banjil canal on east end.

For the port approach an off-shore light buoy is targeted at first, which locates approximately 5.7 km (3 n. miles) north of the port entrance. Afterward ships can be guided by bearing 177° to port entrance.

The port approach channel is 3.5 km long with -9m depth (LWS) and 150 m width. At the entrance of the port, red and green light beacons are installed on the tip of the North and New West breakwaters respectively. Five (5) units of light Beacons, which includes above entrance beacons, sixteen (16) units of light/marker buoys and one (1) set of leading marks with lights, are deployed as aids to navigation in the port.

According to Cabang Tanjung Emas (Branch Office) of Pelabuhan Indonesia III, it is desirable to expand the approach channel to be -12m depth with 200m width to allow 3rd generation vessels. In this regards the total length of the channel should be extended to 5.0 km approximately.

b. Siltation

The functions of soil accretion within the port basin and approach channels are mainly affected by (1) supply sources of soil from the rivers in the vicinity of the port site (2) openings of breakwaters in between, "Old West and New West", "New West and North" (West entrance), and "North and East groin". (3) Current and, (4) Wave. (See Fig. B-10). Environmental Study Report prepared by Japan Port Consultants in 1992, shows the annual siltation as follows:

Location	Volume (q.m/yr)
Outside of port	58,000
Outer channel (Main)	56,000
Central channel (Main)	128,000
Inner channel (Main)	22,000
Sub-total	264,000
East channel	191,000
Total	455,000 q.m/yr

while, Cabang Tg. Emas calculated the maintenance dredging volume within the port area as follows:

Location	Volume (q.m/yr)
Kali Baru	12,600
Inner Harbour 1	3,050
Inner Harbour 2	50,940
Coaster Harbour	16,750
Sub-total	83,340
Siltation Rate	20 %
Total	100,008 m^3

A dumping site of the dredged soil was designated 8 km north of port entrance, where 1.8 km (1 n.mile) square area was prepared with original water depth of 15 to 20 m (LWS).

c. Breakwater

The port basins and navigation channels of Port of Tanjung Emas are protected by breakwaters as summarized below, mainly against soil accretion and waves generated by north westerly monsoon during Musim Barat season (See Fig. B-10)

Name of Breakwater	Length	Struct. Type	Top Elev. (LWS)	Built in
	(m)		(m)	
Old West breakwater	1,192	*1	+1.0~+2.0	1880's
West Breakwater	1,950	*2	+2.40	1986 *6
North Breakwater	1,700	*2	+2.40	1986 *6
East Groin section A	500	*2	+1.80	1986 *6
East Groin section B	403	*3	+1.80	1986 *6
East Groin section C	417	*4	+1.50	1986 *6

NOTES: *1. Rockmound with top concrete
*2. Steel sheet pile supported by combination batter piles
*3. Cantilever P.C. sheet piles with capping concrete
*4. Rockmound
*5. Sections A, B, and C of East Groin are from north to south.
*6. By the assistance of OECF Loan

d. Berthing Facilities

Berthing Facilities of Port of Tanjung Emas can be categorized into three sectors as enumerated below; (See Fig. B-11).

1. Samudera Wharf: For oceangoing container vessels

2. Coaster Wharf: For domestic vessels

3. Old Port: For coastal and Rakyat boat, consist of Inner Harbour and Kali Baru

The outlines of individual berthing facilities are given in Table B-10 for public commercial port, and in Table B-11 for other special ports.

e. Sheds and Yards

The existing storage and handling area of Port of Tanjung Emas are summarized in Tables B-12 and B-13.

f. Container Terminal

The Samudera Wharf (International Wharf) which is now being utilized for container handling, was completed in 1985 as a part of Phase I Development under assistance of OECF Loan.

The Phase I project covered not only the construction of Samudera Wharf but also the Breakwaters described on Section C above, dredging of access channel, some onland facilities such as warehouse, transitsheds, and procurement of harbour supporting vessels. Subsequent to the above, Phase II project is now about to be started, which is based on short term plan. The scope of works of Phase II Development is summarized hereunder;

1. Container Wharf -10m depth 25m width, 345m long
2. Reclamation
3. Yard pavement 82,600 m^2
4. Access road 70,000 m
5. Utilities (water, electric power supply)
6. Dredging of channel and basin
7. Buildings including CFS, Administration Office
8. Cargo handling equipment, including 2 units of 33.5 ton capacity gantry cranes
9. Others

According to Cabang Tanjung Emas a part of bidding will be started during this reporting period and scheduled to complete in 1995.

g. Pilotage and Towing

Compulsory pilotage is required for those vessels of 150GT or above. At Port of Tanjung Emas six (6) harbour pilots are deployed for this purpose.

The required tug boats are as shown below.

Size of Ship (LOA)	Required Power of Tug Boats
<70m	No tugboat required
70 to 100m	600 - 1200 HP
101 to 150m	1700 - 3400 HP
151 to 200	3400 - 5000 HP
201 to 300	5000 - 10,000 HP
301 and above	10.000 HP (min)

The fleet of harbour supporting crafts are summarized here under:

Tug Boat	3 units (800HP, 870HP, 1500HP)
Pilot Boat	1 unit (360HP)
Mooring Boat	2 units (210HP)

Ships are ordinary moored at the wharf by head out position by safety reasons for emergency quick dispatch.

The largest ship ever entered at Port of Tanjung Emas was a general cargo ship of 225m long (LOA) with 7.5m draft.

Table B-10 Existing Berthing Facilities of Port of Tanjung Emas, Semarang

Name of Wharf	Length	Water Depth (LWS)		Width	Struct. Type
		Nominal	Actual		
	(m)	(m)	(m) *1	(m)	
Samudera (Int'l Wharf)	605	9	8.2 to 8.9	25	Concrete dock on pile *2
Coaster Wharf	320	4.5	5.2 to 5.4	14.4	Concrete dock on pile *2
Wharf Gd I	115	3	1.5 to 1.7	9.25	Conc. caisson
Wharf Gd II	171	3	1.4 to 2.8	14	Conc. caisson
Wharf Gd VI	55	3	1.7	10	Conc. gravity
Wharf Gd VII	175	3	1.4 to 1.8	14.8	Conc. caisson
Wharf between Gd VII & VIII	102.5	3.5	2.5	19.8	Conc. gravity
Wharf Gd VIII	182	3.5	1.8 to 2.0	7.8	Conc. caisson
Wharf Gd IX	133	3.5	1.6 to 2.0	7.8	Conc. caisson
Wharf Gd X/XI	64	3.5	1.5	15.0	
Wharf Gd XII	145	3.5	1.3 to 2.0	20.0	Conc. caisson
Wharf Gd XIIA	45	3.5	2.0	14.0	Conc. caisson
Wharf Gd XIV	185	3.5	1.8 to 2.0	14.5	Conc. caisson
Wharf Gd XVI	91.5	4	1.6 to 2.0	15.0	Pile type
Kali Baru	450	2/3	1.6 to 2.0	1.0	Conc. caisson
TOTAL	2,839				

NOTES, Source Cabang Tanjung Emas, Pelabuhan Indonesia III

*1. Hydro Survey Jan. 1994
The water depth of Wharves Gd I to 16 is frontal alongside depth.
The water depth of Inner Harbour Basin is however, maintained to be -4.3 to -4.4 m in front of wharf GD 16 and -3.2 to -3.7m at another Inner harbour Basin area.

*2. Steel pipe piles for open deck (Seaside) and P.C. pile for solid deck (landside)

Table B-11 Other existing Berthing Facilities of Port of Tanjung Emas, Semarang

Name of Wharf	Length (m)	Water Depth (LWS)		Width (m)
		Nominal (m)	Actual (m) *1	
PLTU	90	4	3.0 to 3.5	25
Pertamina	8	3	16 to 2.5	-
Fishery	60	3	-	-
Fertilizer	20	8	5.7	10

NOTES Source: Chabang Tg. Emas

*1: Hydro survey Jan. 1994

Table B-12 Existing Sheds, Godown of Port of Tanjung Emas, Semarang

	Size (m)	Area
Location	L x W	(Sq.m)
Godown I	100 x 24	2,400
Godown II	125 x 24	3,000
Godown VI	55 x 24	1,320
Godown VII	180 x 24	4,320
Godown VIII	155 x 24	3,720
Godown IX	125 x 24	3,000
Godown X/XI	60 x 55	3,300
Godown XII	125 x 24	3,000
Godown XIIA	45 x 28	1,260
Godown XIV	70 x 28	1,960
Godown XVI	80 x 30	2,400
Dangerous cargo	40 x 20	800
Godown Nusantara II (NST II)	100 x 30	3,000
Godown Nusantara III (NST III)	65 x 30	1,950
Godown Samudera I (SOI)	100 x 40	4,000
Godown Samudera II (SOII)	100 x 40	4,000
Godown Samudera III (SOIII)	150 x 40	6,000
TOTAL:		49,430

NOTES, Source; Chabang Tg. Emas

Table B-13 Existing Sheds, Open Storage Area of Tanjung Emas, Semarang

Location of Open Storage	Area (Sq.m)	Type of Pavement
Open Storage Samudera Wharf	31,070 *1	Conc.paving
" Nusantara Wharf	6,591	Asphalt hotmix
" Godown XIV	8,970	Asphalt hotmix
" Godown XII	2,450	Asphalt hotmix
" " II	4,634	Reinforced conc.
" " I	1,200	Reinforced conc.
" " XVI	3,634	Asphalt hotmix
" " VII & VIII	6,200 *2	Conc.paving
Depot Container Samudera	25,170	Conc.
Open Storage PT. Agratama Pasific	20,100	Paving
Open Storage P.L.T.U.	10,027	Asphalt hotmix
TOTAL:	120,046	

NOTES, Source; Chabang Tg. Emas

*1: Container yard

*2: Empty Container Depot

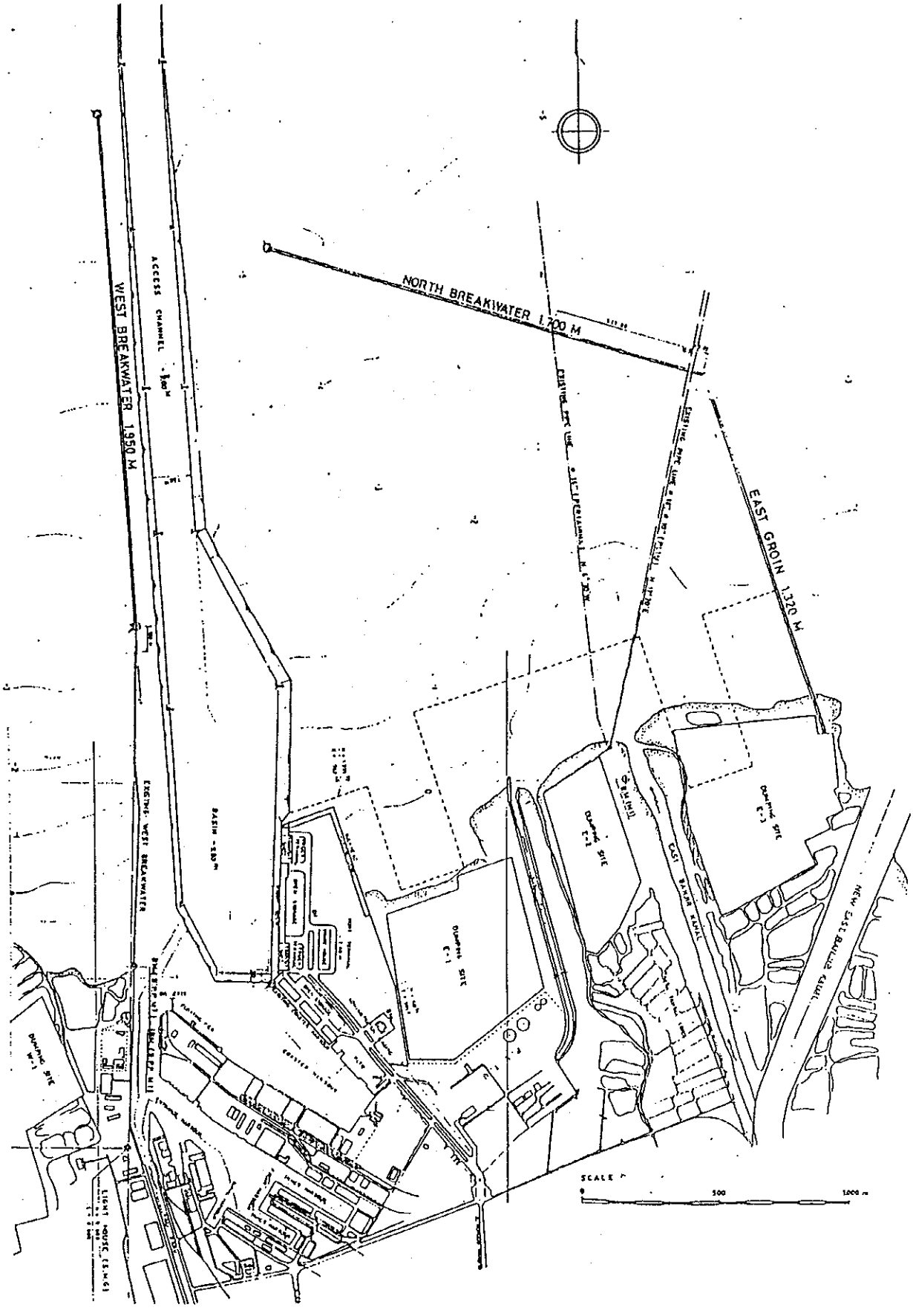

Fig. B-10 General Plan of Port of Tanjung Emas, Semarang

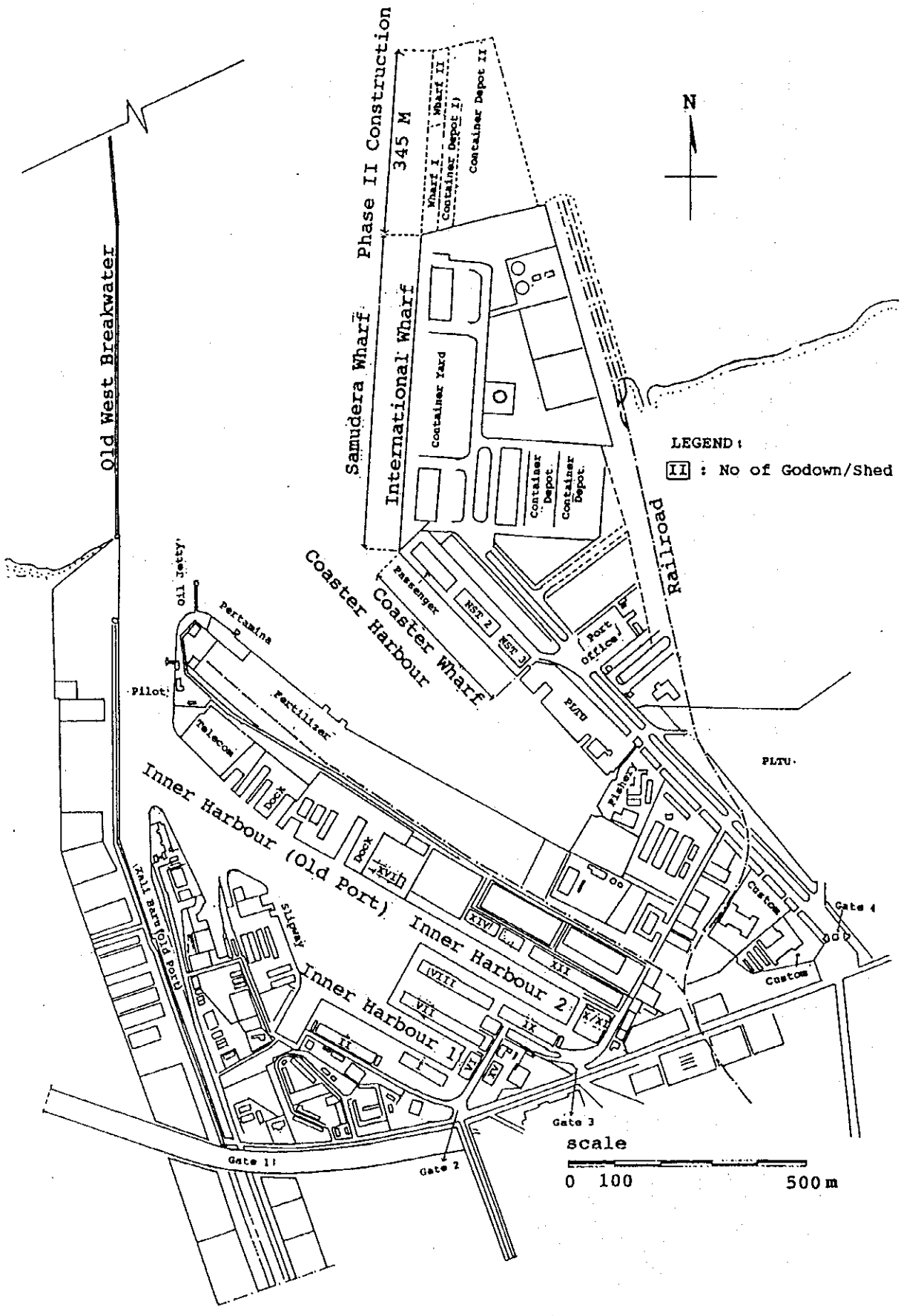

Fig. B-11 General Layout Plan of Port of Tanjung Emas, Semarang

5. Port Facilities of Tanjung Perak

a. Approach

Port of Tanjung Perak stands a part from the Java Sea and connected thereto through the navigation channel along the Strait of Madula.(see Fig. B-12)

Ocean-going vessels utilize 46 km long West Channel of which approximately 16 km from the northern entrance of the channel is being affected by siltation, thus periodical dredging is performed at intervals of once every two years with approximate volume of 750,000 cu.m.

The navigation channel is maintained to be 100 m width with -9 to -9,5 m depth in minimum. Some wrecked vessels are however still remaining along the navigation channel especially in the vicinity of Buoy Nos. 4 and 9 which are approximately 9 km from the entrance of the West Channel.

The dredged soil was dumped in the deep sea at the outer edge of the navigation channel

The channel is planned to be expanded, to allow 3rd generation container vessels, to be 200m width with -11 m depth. A 4.7 million cu.m of dredging will be needed for this purpose.

On the other hand, 42 km long East Channel with the depth of -2.5 m to -5 m is used only by rakyat sailing boats. West and East Channels are marked with 24 and 8 units of navigation buoys respectively.

b. Port Site of Port of Tanjung Perak

Port of Tanjung Perak locates and composes the northern end of Surabaya city, limited by Kali Mas and Kali Anak Rivers on its east and west end respectively.(see Fig. B-13)

East side of the Port site is neighboring the Indonesian Naval Base with 106 ha ship repair facilities including graving dock. West side of the port site is connecting to Gresik Port site through mud flats and Kali Lamong River.

c. Berthing Facilities

Tanjung Perak Port consists of two major parts namely:(1) Old Port including Container Terminal I, locates at east side of port area, and (2) International Container Terminal (ICT or Container Terminal II) which shares the west side(see Fig. B-13). Almost all berthing facilities except for ICT are concrete caisson type structures built in the early 1900's. Outline of individual existing berthing facilities are summarized in Table B-14. Among above mentioned berthing facilities some portions are shared for specialized use i.e.:

wharf	usage
1. Perak	ship repair
2. Intan	oil berth
3. Berlian	Container Terminal I
4. Nilam	-Pertamina oil jetty -P.T. Bogasari grain berth -Molasses berth -P.T. Pupuk Pusri fertilizer berth

NOTE, Source: Pelabuhan Indonesia III

d. Sheds and Yards

The existing storage and handling area of Port of Tanjung Perak are shown in Table B-15.

e. Container Terminal

The container terminal of Port of Tanjung Perak consists of Container Terminal I and II. (see Fig. B-13) Container Terminal I locates at the north end of Berlian Wharf at Old Port area and utilized for domestic container vessels, while Container Terminal II or International Container Terminal (ICT) was newly constructed by the assistance of ADB and Saudi Development Fund finance at the west side of the Old Port named Monokrembangan where an old air field was located.

Since the first container handling service of Port of Tanjung Perak was started in 1979 at the conventional wharf, it has taken more than ten years to commence the full container services of ICT in April 1992.

i) Berthing Facilities of ICT

500m long and 75m width concrete deck on steel pile structure wharf locates parallel to the contour lines of -10,5m. The actual frontal water depth of the wharf is -10,8 to -11.9 m LWS. The structure design of the wharf is, however, made to be -13 m to meet the future demand of 3rd generation vessels. Three sets of 40 ton capacity gantry crane are utilized thereon. The wharf connected to land-side container yard with 1,600m long three traffic lanes trestle which is also concrete deck on steel pile structural type.

ii) Container Yard and CFS

Dimensions of container yards are as summarized below:

Container yard	Total yard area (sq m)	No of blocks	No of row/block	No of slot/row	Total ground slot
CTI (Berlian)	32,000	4	3	28	336
CT II (ICT)	150,000	8	7	66	3,696

NOTE, Source: Pelabuhan Indonesia III

The total area of container flight station of CTI and II are 4,400 sq m and 10,000 sq m respectively.

f. Pilotage/towing

Compulsory pilotage is adopted. The channel pilot station is located at Kalang Jamunang Island east side of West Channel entrance. The harbour pilot station is on the west end corner of Jamrud Wharf. 29 channel pilots and 15 harbour pilots are currently deployed. For incoming ships, a channel pilot is ordinarily on board at 2 km off the entrance of west channel and manipulates ships up to the vicinity of Tanjung Perak. The pilotage will be then turned over to harbour pilot at the harbour limit of Port of Tanjung Perak until the ship is along- side the wharf, and vice versa for out-going ships.

As for towing and berthing, following port support ships are utilized;

support ships	No of unit	power
tug boat	9	800 to 2,400 HP
pilot boat	7	350 to 960 HP
mooring boat	5	125 to 250 HP

NOTE, Source: Pelabuhan Indonesia III

g. Railroad

A Railroad container handling yard is located at eastside of CTI (see Fig. B-13), but no exclusive handling equipment is deployed.

i. Gresik Port

Gresik Port area is approximately 8 km northwest of Port of Tanjung Perak. The west side coast of Madula Strait at Gresik district is shared by several special and public ports, namely, from north to south; (See Fig. B-14)

- Petro chemical port
- Gresik public port
- Pertamina port
- Electric power plant port
- Cement port

Among others, the outline of Gresik Public Port is summarized below;

Berthing facilities	Length (m)	Water depth (m)	Purpose
1. concrete deck on pile	160	-3	for domestic ship
2. gravity type finger pier	300	-3	for Rakyat sailing boat
3. gravity type wharf	490	-3	for Rakyat sailing boat

NOTES: Construction of additional 210m wharf with water depth of -3m is on-going at this reporting period.
Source; Pelabuhan Indonesia III, Cabang Gresik

Other facilities	Quantity
Godown	1,400 sq m
Stock yard	6,880 sq m
Port area	32 ha

NOTE, Source; Pelabuhan Indonesia III, Cabang Gresik

Table B-14 Existing Berthing Facilities of Port of Tanjung Perak, Surbaya

Name of wharf	Length (m)	Water depth (LWS)		Structural type	Purpose
		Nominal(m)	Actual(m) 1/		
1. Jamrud North	1,200	9.2	6.8 to 10.0	concrete caisson	-Ocean going vessels -Passenger ships
2. Jamrud West	160	8.0	5.6 to 7.0	"	Inter insular
3. Jamrud South	800	8.0	5.4 to 6.9	"	"
4. Perak	140	7.0	6.9 to 7.2	"	"
5. Berlian East	785	9.0	5.0 to 8.5	"	-Ocean going -Inter insular semi container vessel
6. Berlian North	140	9.5	2.5 to 7.0	"	-Inter insular -Port support vessels
7. Berlian West	700	9.5	7.8 to 5.2	"	Ocean going ships for continer(C/T I)
8. Nilam East	860	9.0	4.5 to 7.0	"	Ocean going
9. Mirah	640	7.0	4.5 to 5.7	"	Inter insular
10. Intan	100	4.0	-	Concrete caisson with buttress wall	Pertamina oil berth
11. Kalimas	2,270	2.0	-	-Concrete caisson -Concrete gravity wall	-Ro/Ro ferry -Rakyat sailingboat
12. International Container Terminal	500	10.5	10.8 to 11.9	Concrete deck on steel pile	Container Terminal II
Total	8,295				

Notes Source :Pelabuhan Indonesia III
1/ Hydro survey;SEP.1993

Table B-15 Existing Sheds, Handling and Storage Area of Port of Tanjung Perak, Surabaya

Location	No. of unit	Area(sq m)	Storage capacity (ton)
a. Transit shed			
1. Jamrud North	7	22,391	47,021
2. Jamrud South	7	23,495	49,340
3. Perak	2	6,718	14,108
4. Mirah	4	13,700	28,770
5. Berlian East	2	8,870	18,438
6. Berlian West	2	9,166	19,249
7. Nilam	5	29,863	62,712
8. Dangerous Cargo	3	4,500	9,450
9. Kalimas	4	6,174	12,965
10 CFS	2	15,074	15,670
b. Warehouse			
1. Jamrud South East	4	6,050	12,708
2. Perak	1	2,070	4,374
c. Entrepôt			
1. Jamrud North	2	2,896	6,082
Total	45	150,877	300,857

Open storage area

Location	Area(sq m)	Stocking capacity
Inner Harbour	82,252	172,730
Outer Harbour	23,900	50,190
Total	106,152	222,920

Container Yard

Location	Area (sq m)	Stocking capacity (TEU)
CT I (Berlian)	32,000	1,680
CT II (ICT)	150,000	12,396
Total	182,000	14,004

NOTES, Source: Pelabuhan Indonesia III

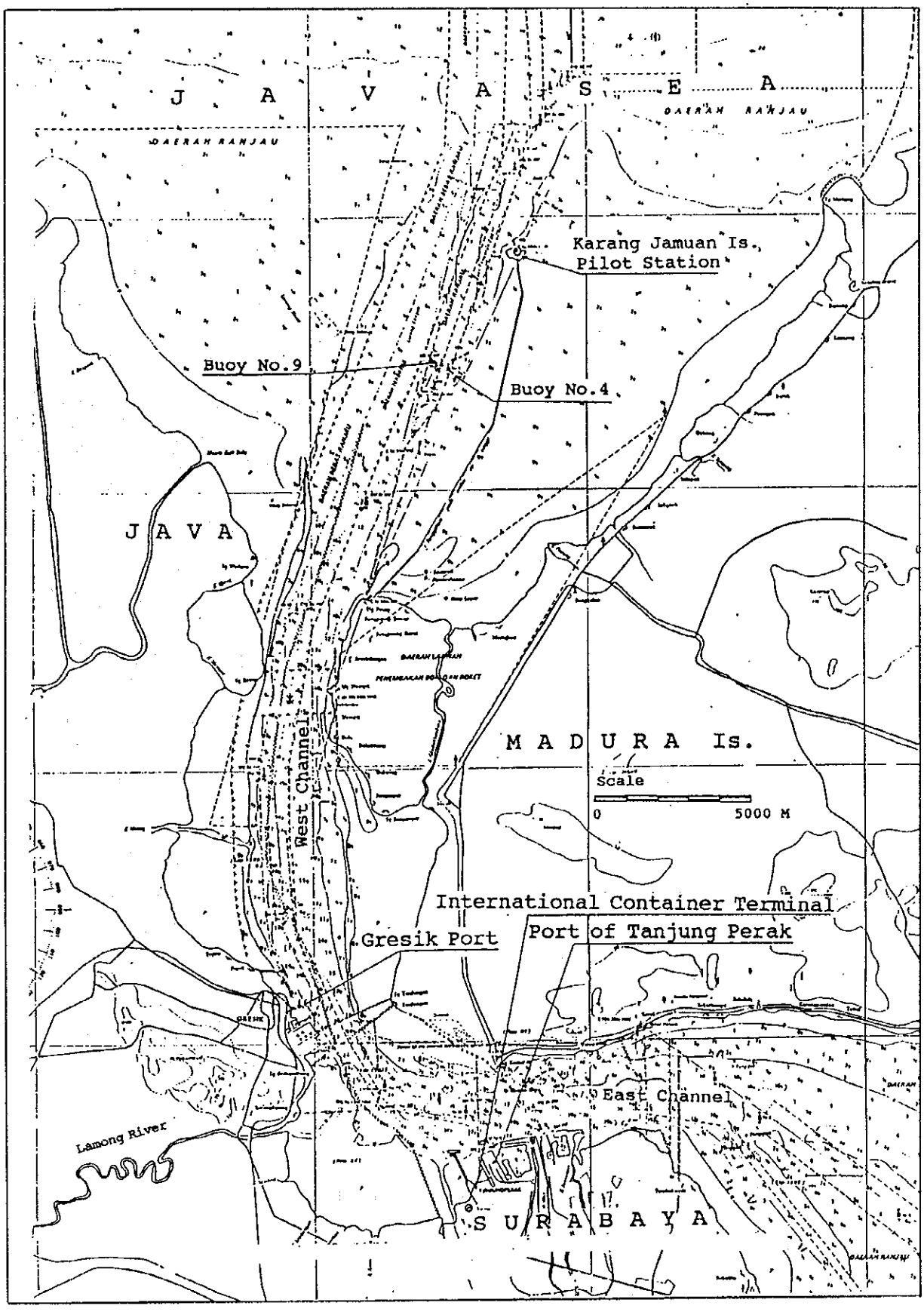

Fig. B-12 Approach Channel to Port of Tanjung Perak

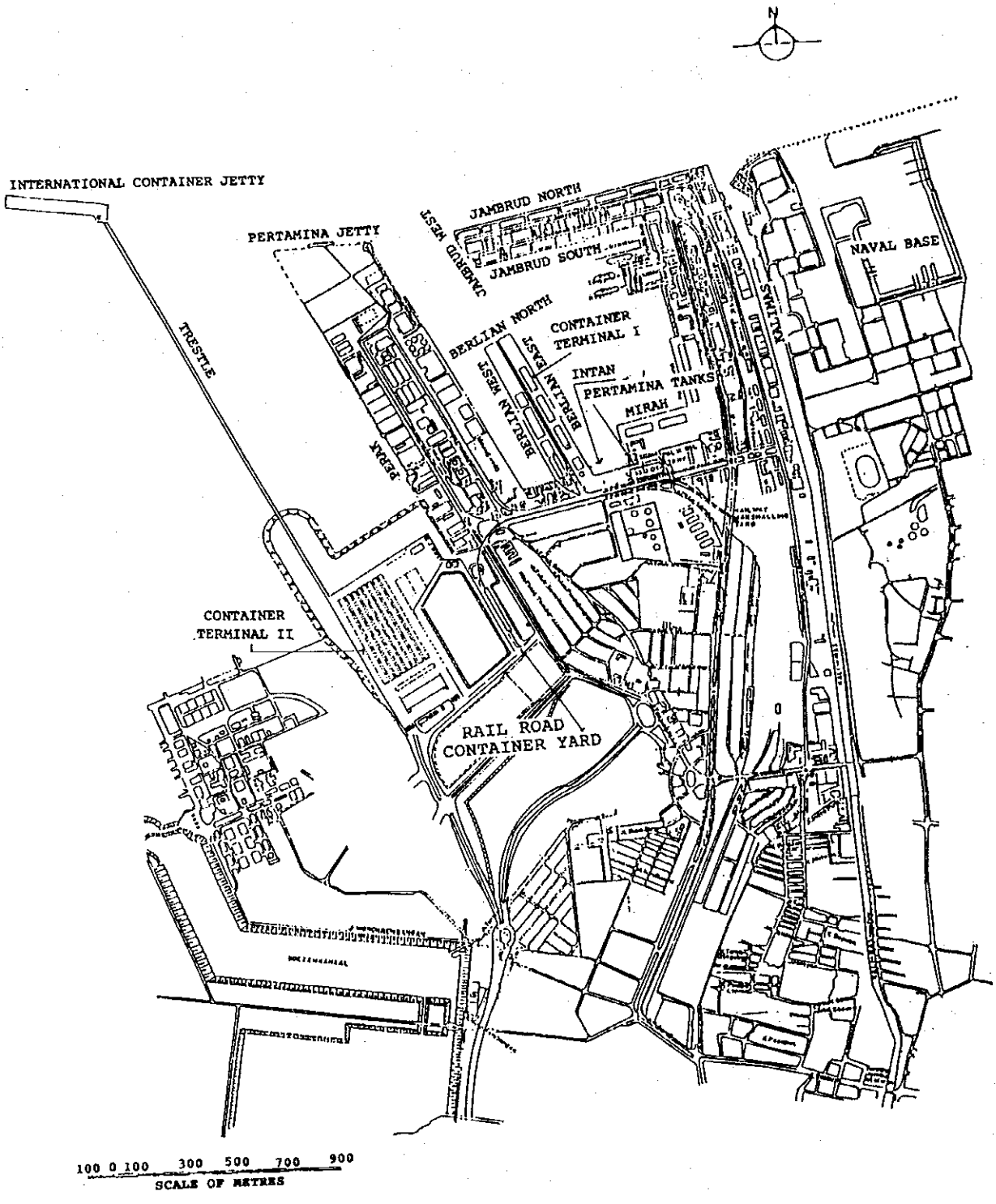

Fig. B-13 General Plan of Port of Tanjung Perak

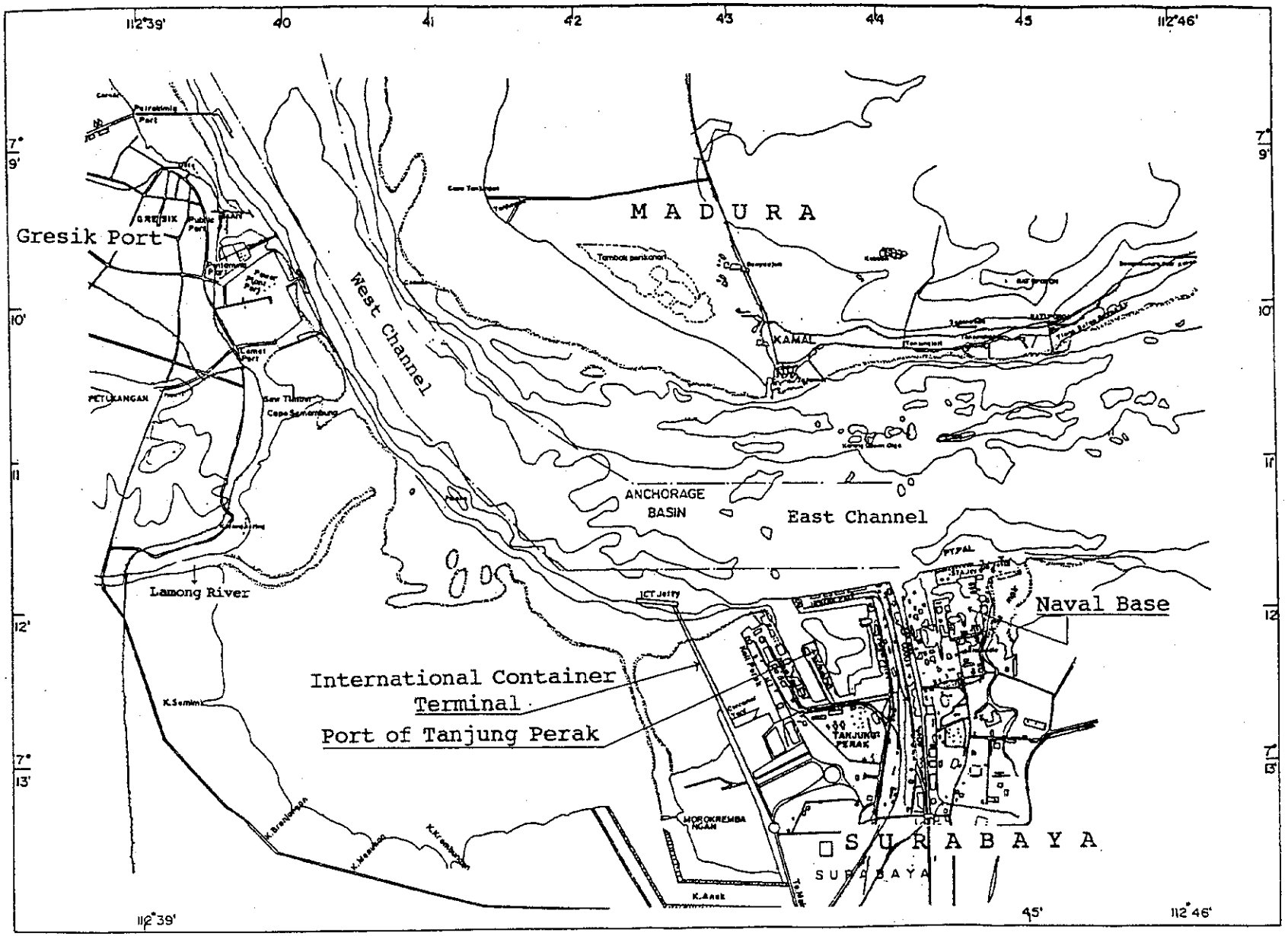

Fig. B-14 Location of Tanjung Peak, Gresik and Madura

6. Port Facilities of Ujung Pandang

a. Port Site and Approach

Ujung Pandang Port of Makassar is located at west coast of South Sulawesi Province, and composes the north westerly part of Ujung Pandang city. The major existing facilities along coast line are, from north to south: (See Figs. B-15 and B-16)

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

Total length of coastal line of proposed port area, consists of 7 km with total land and water areas of 57 ha and 1,415 ha respectively. Parallel to existing Quay face line with keeping distance of approximately 1 to 1.5 km, several coral reefs are lined up. These coral reefs together with breakwaters thereon conform the calm natural port basin which is well protected against the waves from westerly direction generated by West Monsoon (Musim Barat). The coral reefs are named from north to south; (See Figs. B-15 and B-16).

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

Presently incoming ships are using only the channel between Gosong Boni and Laelae Kecil. The bearing of income/outgoing ships are $125^{\circ}/305^{\circ}$, which is parallel to prevailing wind direction which thus makes it less difficult for ship maneuvering.

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

b. Berthing Facilities

The outline of existing berthing facilities of Port of Makassar is summarized in Table B-16. Among other Quays, Soekarno Quay is currently being used for Ocean going vessels of which the northern 150m are assigned for flour mill company and 160m of the middle portion is used by passenger ships. The remaining 1050m is, therefore, allocated for cargo ships including container vessels. During 1990 to 1992 the largest size ship entered is 30,088 GRT and 37,012 GRT for general cargo and ocean cruising passenger boats respectively.

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

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.

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

As of this reporting period, a Japanese Contractor started construction works. At the same time, 4 units of godown which existed along old Hatta Quay were already demolished and the demolition of the existing houses including some banks and other office buildings between Jl. Martadinata and Jl. Nusantara are on-going.

c. Breakwater

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

d. Sheds and Yard

Storages and handling areas of Port of Makassar 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

e. Sand accretion and dredging

The main supply source of sedimentation of the area is considered coming from Jene Berang River which locates 7 km southward of Ujung Pandang Port.

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 1 km by some 80 years.

The lowest part of Jene Berang River, however, was recently diverted as shown in Fig. B-15. By means of this diversion the distance of the river mouth from the Port became 7 km from the original 4 km.

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

i) The construction of Bili-bili multipurpose dam is ongoing at 30 km 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) Too much river bed digging at the mid stream of Jene Berang River for construction materials.

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 Gene Berang River does not reach the port area yet.

As to the Port basin of Paotere port which was affected by the flow of Jene Telo River located 5 km northeast of the port, periodical dredging is being made. The latest dredging was made in 1993 with a total volume of 50,000 cu.m.

f. City Cargo Terminal

A city cargo terminal operated by Ujung Pandang City is located 6 km eastward of Port of Makassar.

The terminal consists of follows facilities:

Total area	:	6.5 ha
Godown	:	6 units 1440 sq.m each
Open storage	:	5,000 sq.m
Handling area	:	9,200 sq.m
Dangerous cargo Shed	:	150 sq.m

Although, the operation was started in 1991, only agricultural products such as cacao beans is being handled to date.

Table B-16 Existing Berthing Facilities of Ujung Pandang

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

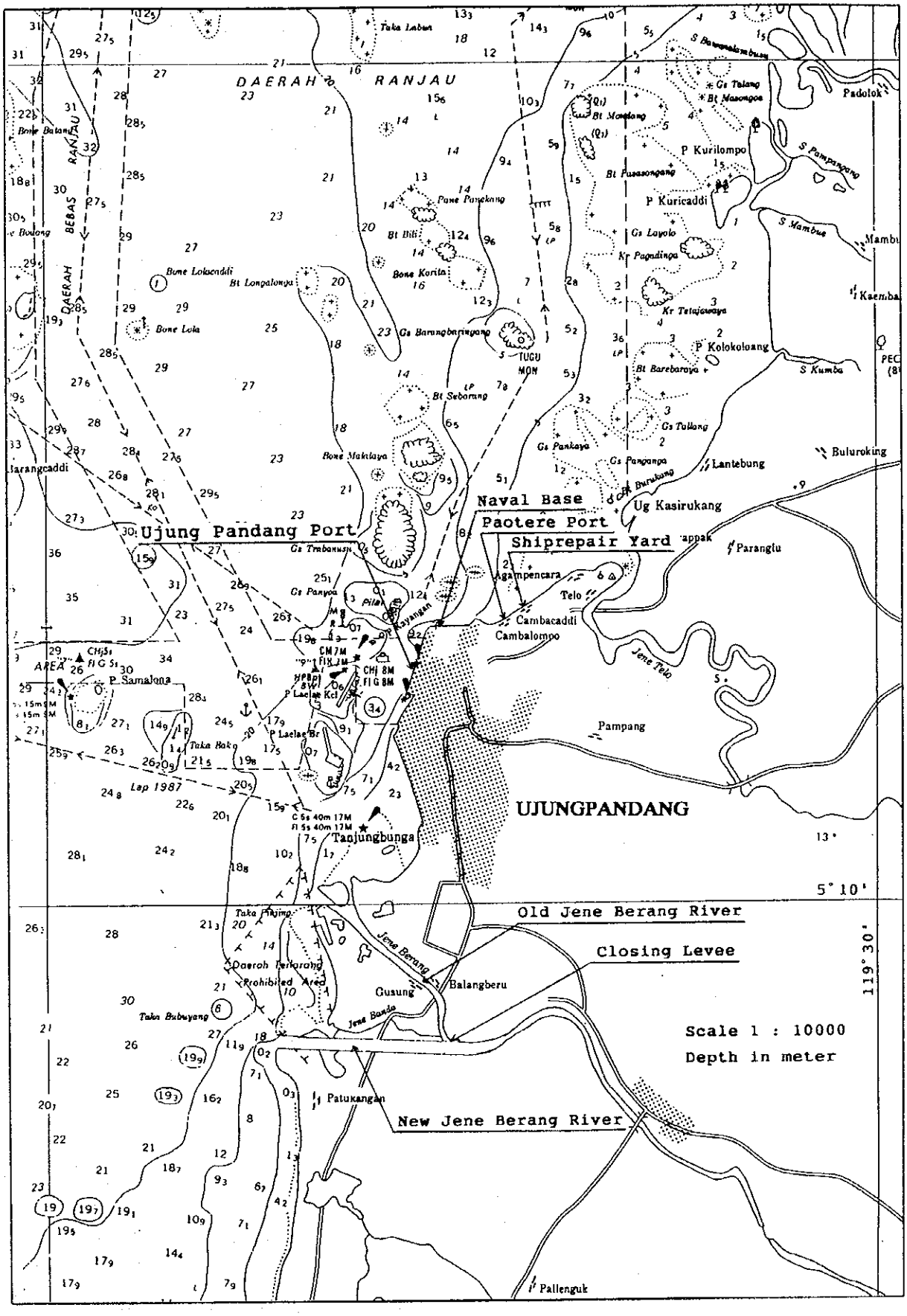

Fig. B-15 Guide Map of Ujung Pandang Port

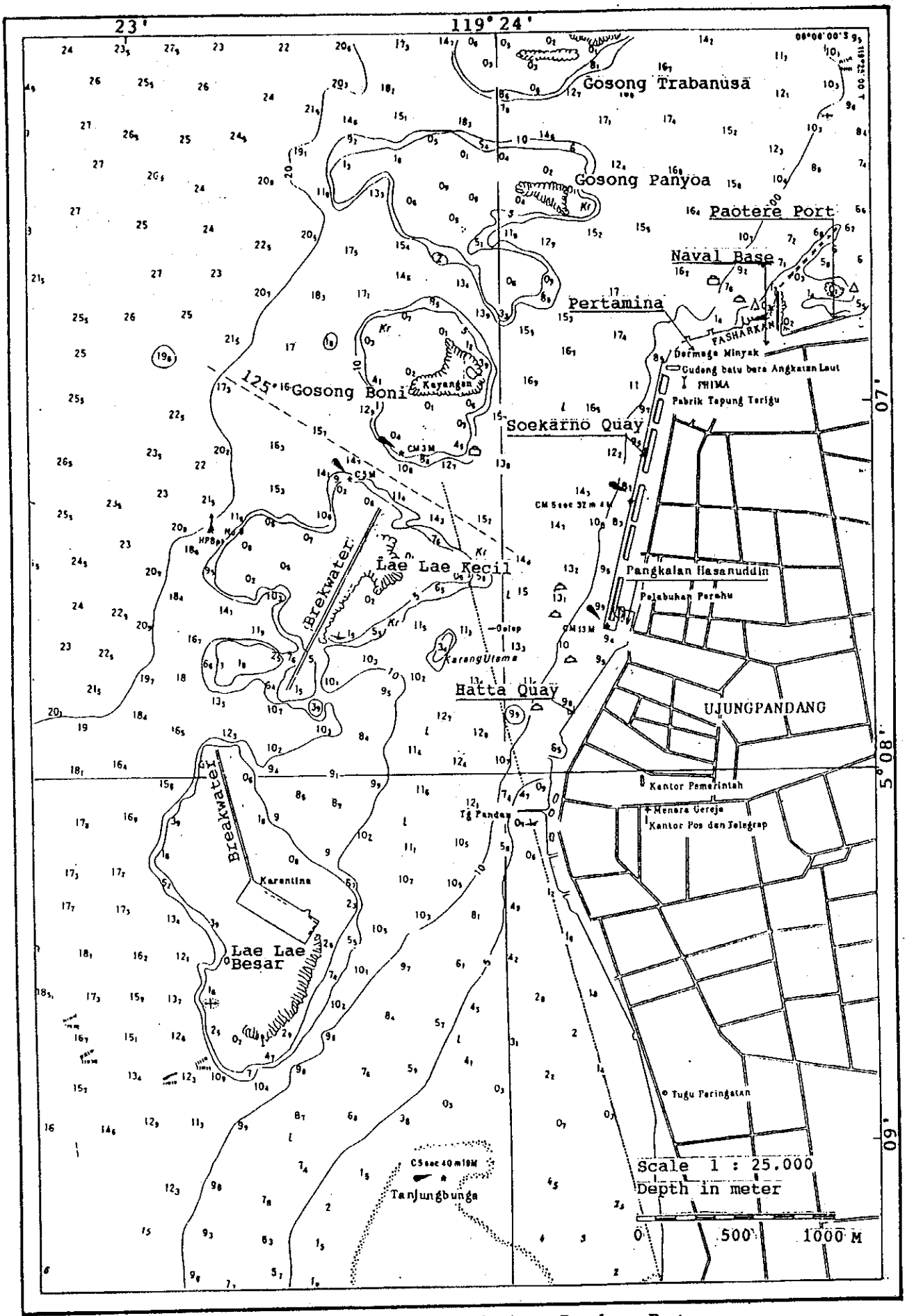

Fig. B-16 Location Plan of Ujung Pandang Port

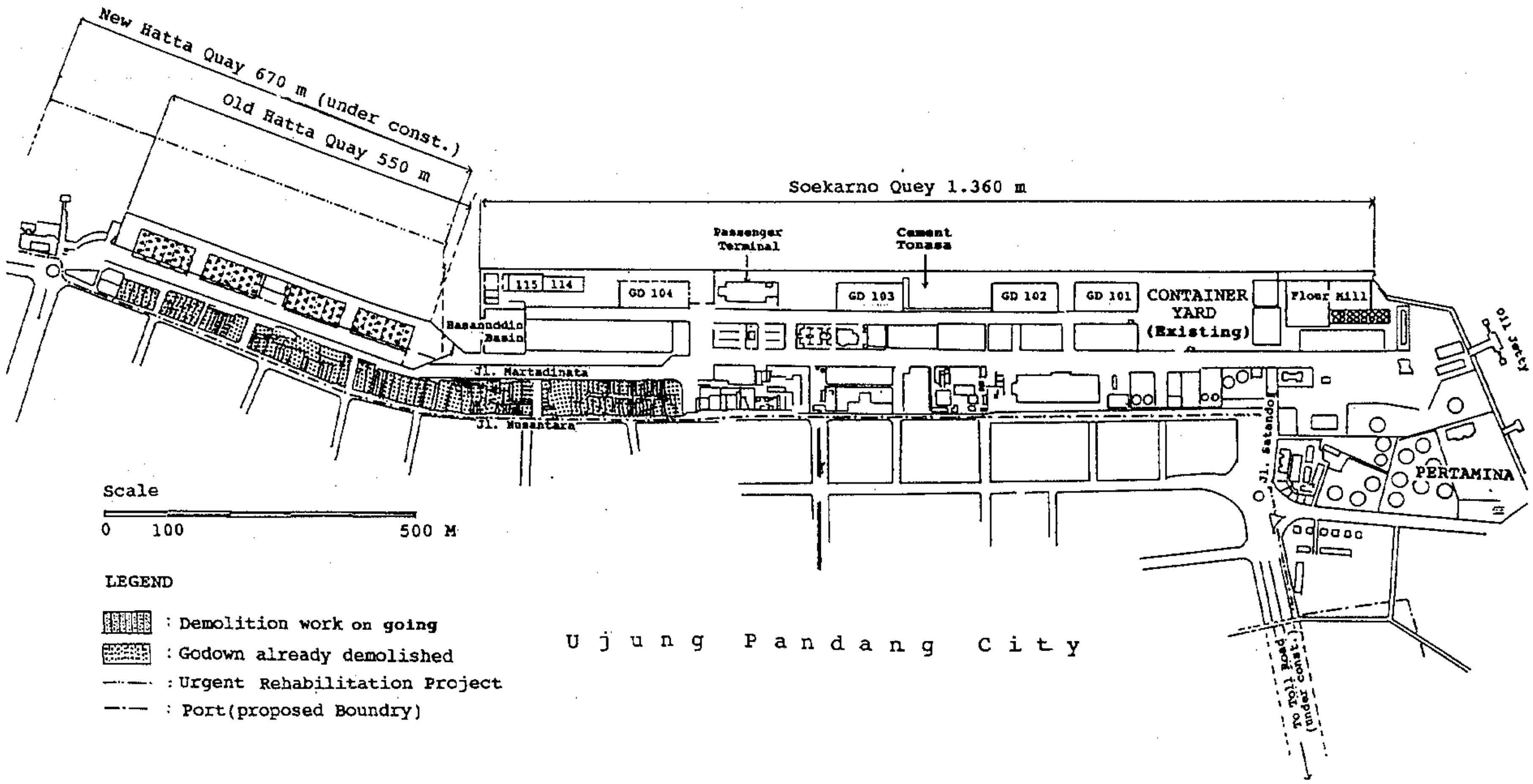

Fig. B-17 General Layout Plan of Ujung Pandang Port

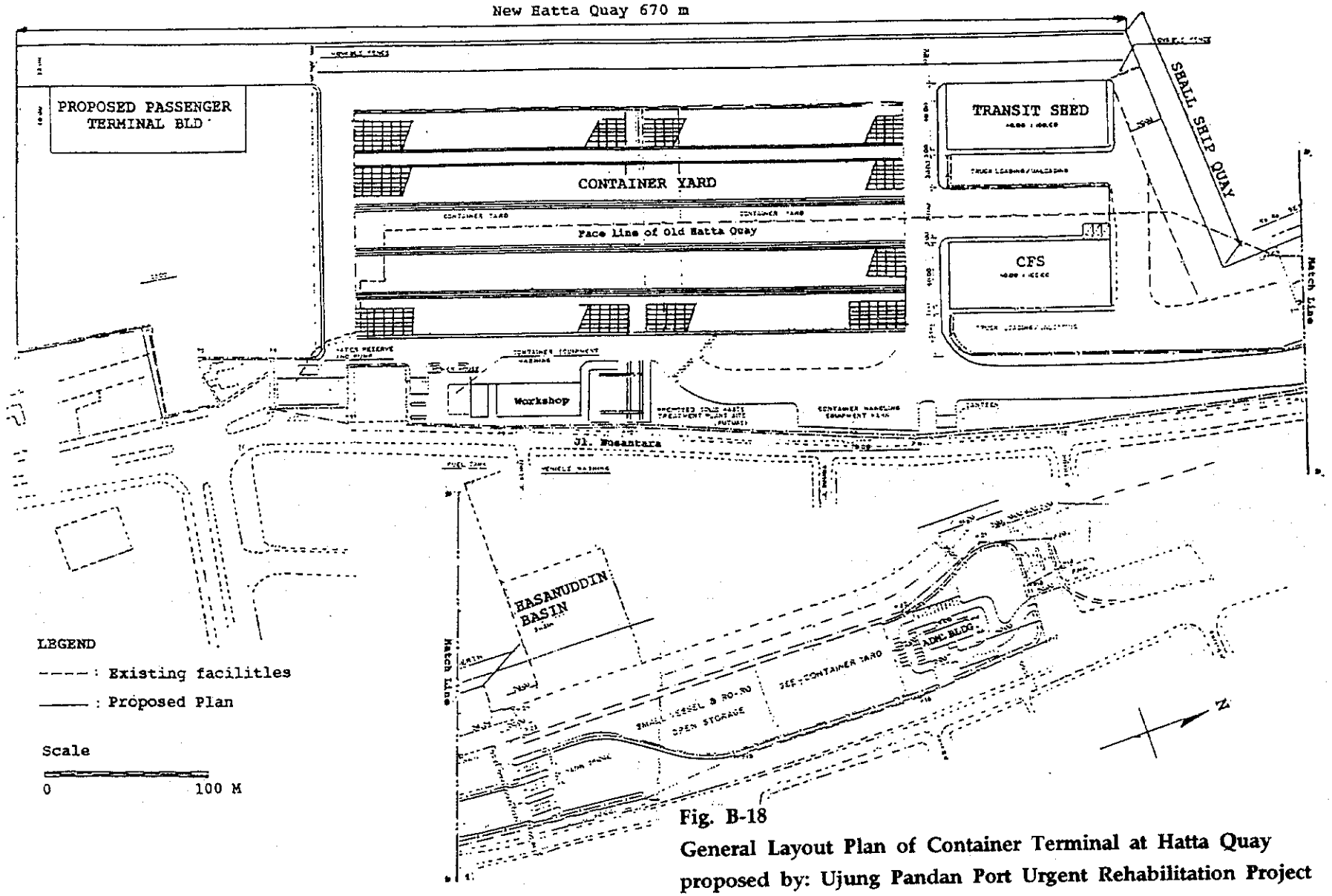

Fig. B-18
General Layout Plan of Container Terminal at Hatta Quay proposed by: Ujung Pandan Port Urgent Rehabilitation Project

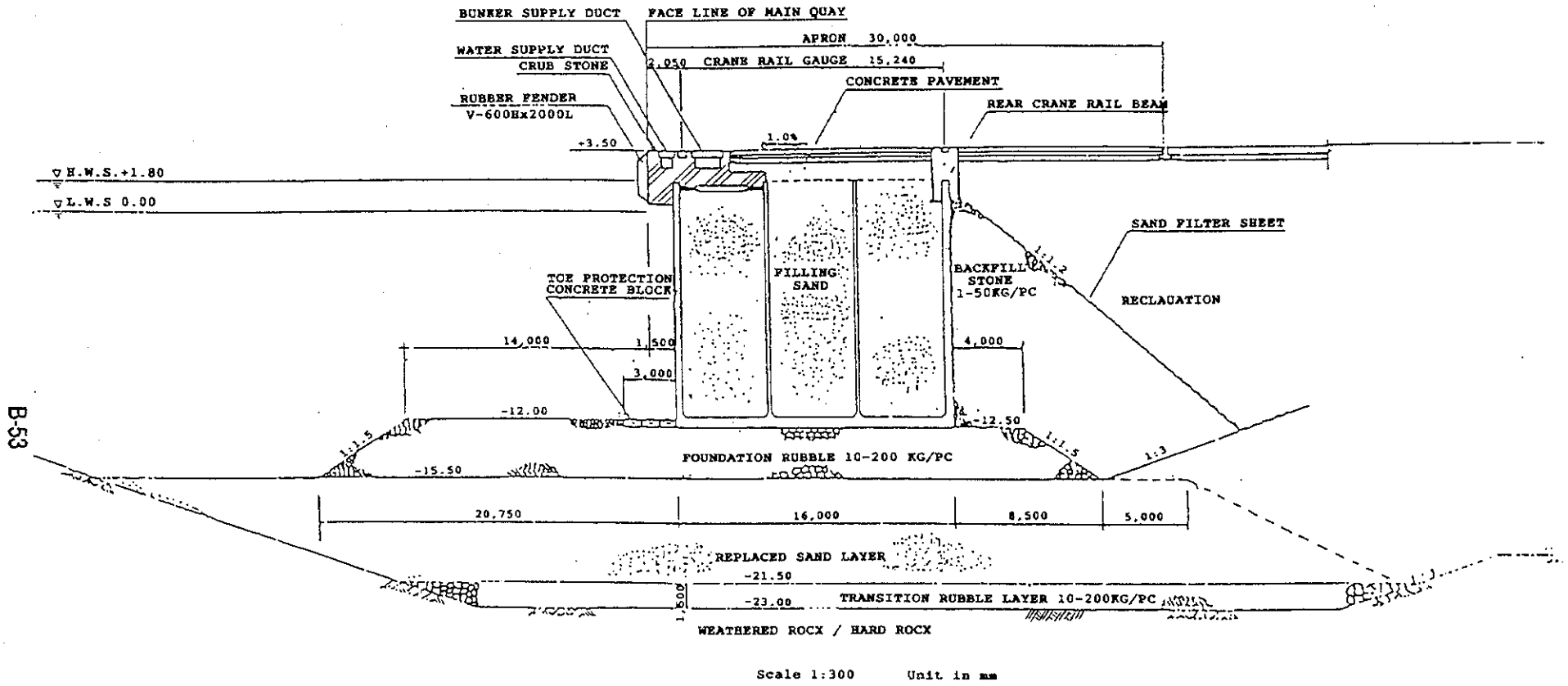

Fig. B-19 Typical Section of Proposed New Hatta Quay (Under construction)