PART III
SHORT TERM DEVELOPMENT PLAN AND FEASIBILITY STUDY

Chapter 1 Concept of the Short-Term Development Plan

1.1 Outline of the New Master Plan

Projects covered by the New Master Plan (proposed in Part II of the Draft Final Report) can be classified into three (3) major categories. The first category is represented by those projects dealing with the capacity constraints of the Port of Constantza and increasing cargo traffic in the future. The container terminal development project and the grain terminal development project are included in this category. The second category is represented by those projects for improving the present harbor operation. Cargoes that are currently handled by each operator in small scale on distributed moles are integrated in one or two places in a specialized and aggregated manner, thereby raising the cargo handling efficiency and, at the same time, adapting it to the future marine transport trends (increase in ship size). The consolidation of steel product export terminals, consolidation of timber export terminals and a plan to shift general cargo from Old North Port to North Port fall under this category. The third category is represented by those projects in the port which aim to improve the accessibility of the terminal to the inland transportation network in Romania. In order to achieve smooth and effective operation of the port, some of the transportation channels in the port need to be improved. 1)Barge basin improvement for setting up and breaking down convoys and barge mooring, 2)improvement of the roads in the port, and 3)improvement of connectivity with the railway transport operation are important elements for the development of the Port of Constantza. These projects or recommendations are included in the third category.

1.1.1 Projects to Meet Cargo Demand in the Future

(1) Container terminal

Regarding the container terminal development project, the construction of two berths (600 m long west side of the pier), three gantry cranes, related yard facilities and railway facilities is being started on the west side of South Port Pier-2 as the Phase-I project based on JBIC's yen-denominated credit. When this project is completed, the Port of Constantza will have an annual handling capacity of 357,000 TEU. By adding one gantry crane to the above facilities, this terminal will be able to meet the demand in 2010 in the New Master Plan (384,000 TEU per annum in Case-1). To deal with the traffic demand in 2020 of the New Master Plan (790,000 TEU), it is necessary to add another berth on the east side of Pier-2, this resulting in a total of three berths, eight gantry cranes and the necessary yard space for these facilities. The increase of the container terminal capacity is carried out mainly in South Port Pier S-2 by the consolidation of its facilities. Therefore, the container terminal development project is not included in the projects to be covered by Short-term Plans, although this container terminal development project belongs to the projects to be covered by the Master Plan.

(2) Grain terminal

Regarding the grain terminal, the handling capacity of the grain terminal currently in operation is of about 2,700,000 tons per annum. When the grain terminals (handling capacity: 1,000,000 tons per annum) which are currently being planned by each operator are all developed, the Port of Constantza will have an annual handling capacity of 3,700,000 tons per annum. However, to deal with the traffic demand in 2010 in the New Master Plan (4,400,000 tons per annum in Case-1), further grain terminal expansion is necessary, and in consideration of annual fluctuation in grain production and shipment, it is necessary to construct grain terminals with a handling capacity of 2,000,000 tons per annum.

In consideration of the possibility that the blockage of the Danube by the Yugoslavian conflicts will be removed in the near future, it is appropriate to include this expansion project in the projects to be covered by Short-term Plans as well as the projects to be covered by the Feasibility Study.

1.1.2 Projects to Improve Port Operation

From the viewpoint of effective use of port facilities, the greatest problem in the Port of Constantza and, in particular, in the North Port, lies in the fact that operators stick to each berth and struggle for small lots of cargoes. As a result, little investment for modernization has been made over the past decade and thus the North Port facilities have continued to deteriorate. For the modernization of these facilities, it is necessary to make investments in maintenance, renewal of cargo handling equipment, etc. With an aim at easing the recovery of the funds invested for these purposes, it is necessary to aggregate cargoes of the same kind in one place to a maximum extent, thereby raising the utilization ratio of the facilities.

The question is what are the appropriate cargoes to be aggregated? Regarding bulk cargoes such as ferrous and nonferrous ores, crude oil and petroleum products, cement and fertilizers, each of these items is handled with the existing specialized cargo handling equipment, storage facilities and connections with the railways. It is therefore proposed that use of the berths currently handling each item should be continued. General cargo will be gradually containerized and shifted to South Port Pier S-2, as the containerization ratio will rise in the future (2010: 80%, 2020: 90%). Out of the remaining break bulk cargoes, large-lot cargoes which do not become bulk cargoes or container cargoes, i.e., steel products and timber, are the appropriate cargoes to be aggregated.

(1) Consolidation of steel product export terminals

Regarding the steel products, considering that 1) most steel products are hauled by barge from inland to the Port of Constantza (60%-70% of the export products), that 2) a sufficient yard space is necessary, also that 3) the possibility is high that in the future 50,000 DWT-class

handy max type ships will be used, and that 4) a substantial quantity of products has already been exported through the terminal at South Port Pier S-1, it is desirable to locate the steel product export terminal at South Port Pier S-1 where a draft of 12 m can be accommodated.

For the improvement of the port operation by the consolidation of the steel product export terminals, there is no condition for schedules in terms of implementation of facility development. However, considering concession contract for land usage of Pier S-1 extends over the year 2010, implementation of this project is difficult by 2010. It is also necessary that a legal basis for the role of CMPA as a landlord is established by the enforcement of the concession law, and that institutional grounds for promoting the consolidation of terminals are improved, for example, by changing the tariff policy related to land lending. For these reasons, the improvement of port operation by the consolidation of the steel product export terminals will be implemented after 2010. Therefore, it is included in the Master Plan, not in the Short-term Plans.

(2) Consolidation of timber export terminals

Regarding timber, it is desirable to locate the terminal at North Port Mol 3 (Berth Nos. 46-50) where 1) a sufficient yard space will be available after the shifting of the container cargo to the South Port Pier S-2, and 2) a substantial quantity of timber has already been exported through the berths Nos. 47 to 50 of this terminal.

The container operation at the Port of Constantza will be gradually shifted to the South Port Pier-S2. In the New Master Plan, the North Port Mole 3 (Berths Nos. 46-52) is used as a timber export terminal by using the former premises of the container terminal as the core site for the timber export terminal. At this point in time, the operation of the South Port Pier-S2 is planned to start in 2004. The shift of the container operation to South Port is to be gradually carried out after 2004, and this core site will not be available earlier than 2010. Both for the timber export terminal, as well as for the steel product export terminal, it is necessary that institutional grounds for promoting the consolidation of terminals be improved. For these reasons, the improvement of port operation by the consolidation of the timber product export terminals will be implemented after 2010. This Project is included in the Master Plan, not in the Short-term Plans.

(3) Future Plan to shift general cargo from Old North Port to the North Port

In the future, the general cargo terminal will have to be able to accommodate 10,000 DWT (8.5 m draft)- to 15,000 DWT (9.5 m draft)-class ships. Most of the North Port terminals (Mol 2-4) currently handling general cargo meet this condition. In terms of quantity, almost all general cargo will be containerized in the future (the containerization ratio of general cargo is forecasted to be of 80% in 2010 and 90% in 2020 in the New Master Plan study) and timber and steel products will be shifted to the new terminal. Considering these conditions, the New

Master Plan recommends that berths of Basin Nos.1-2 should not be used in the future for cargo handling, due to their insufficient depth and extremely limited space of the backup area.

1.1.3 Projects to Improve Port Transportation System

(1) Improvement of barge basins

The advantage of the Port of Constantza against its neighboring ports is the port's location at the river mouth of the Black Sea-Danube Canal, so that the port can provide economical transportation services by water transport on the Danube to the landlocked Eastern and Central European countries in the hinterland, and making the most of its huge capacity of facilities with a great water depth. It is important to set the development direction of the Port of Constantza with an eye to ensuring that the port can make full use of this advantage.

At present, the barge-mooring berths are located in the South Port (from Berth Nos. 91 to 103) and the water area preceding the barge-mooring berths is used to break down and set up barge convoys. The greatest part of the barge facilities at the Port of Constantza has suffered severe deterioration and the capacity of the part that can be actually available is insufficient for the future traffic demand. New facilities are needed with a view to meet the barge cargo demand in 2010 (17,000,000 tons per annum) in an appropriate manner.

At present, the barge berths at the Port of Constantza are lent to the main barge operators. There is a plan to make use of the hinterland area behind these barge berths as premises for an industrial district, in response to the establishment of a new law for turning the entire Port of Constantza a Free Port in the future. Therefore, it is not appropriate to use the berths No. 91 to No. 108 for the mooring of barges. Accordingly, new alternative barge berths are needed. For the above reasons, it is necessary to construct barge-related facilities for barge mooring and for the breakdown and setup of barge convoys in still water areas inside and outside the Central Island.

Considering that he Danube blockade will be removed in short time and river transportation services will be recovered near future, the project for improving the barge basins is included in the projects to be covered by the Short-Term plans, as well as projects to be covered by the Feasibility Study.

(2) Improvement of roads in the Port

The South Port and North Port have different problems regarding the port traffic roads at the Port of Constantza. At present in the North Port, the means for transporting bulk cargoes to the inland are mainly pipelines, barges and railways, therefore the dependence on road transportation is not necessarily high. Furthermore, due to the progress in containerization, the general cargoes in the North Port will be shifted to the South Port in the future and will not

increase abruptly. In the North Port, therefore, the main problems to be solved are the accessibility of the roads connecting the gates and the wharf and the insufficient specifications of the facilities. The curvatures radii of the roads near Gate 5, facing the heaviest traffic volumes of all gates in the North Port are small, and the gradients of these roads are also steep. It is, therefore, a possibility that traffic of vehicles for large-sized cargoes will jam in the future. In order to solve this problem, it is necessary to improve the alignment of the roads near Gate 5. This project is included in the Short-term Project.

In the South Port, there is a possibility that the capacity of roads will become insufficient, due to an increase in the cargo traffic, including containers, in the future. Particularly, inland transportation of containers has a high proportion of the road traffic compared with other bulk cargoes. Furthermore, the existing roads in the South Port have many crossing points with the railway and there is a possibility that this may represent an obstacle to an increase in traffic volume in the future. Therefore, in order to meet an increase of the cargo demand in the future for the roads in South Port, it is necessary to construct flyovers and increase the number of traffic lanes. Regarding these projects to expand the capacity of the roads in the South Port, CMPA is at present formulating plans, and these are made part of the Existing Projects. The improvement of the road facilities of the North Port is made part of the short-term plans to be accomplished by 2010.

(3) Improvement of connectivity with railway transport operation

Traffic of railway cargo in the Port of Constantza reached a peak in 1989 and leveled off at approximately 10 million tons per annum for the three years between 1998 and 2000.

The railway station capacity for marshalling of wagons in the North Port at Constantza (16 million tons per annum) can sufficiently meet the future cargo demand in the New Master Plan. However, for the railway transportation in the North Port, under the present operation system, in which operators stick to each berth and are engaged in handling small lots of cargoes, the train-recomposing operations in each station (activities of the CFR cargo company) have become complicated and, in case of an increase in cargo in the future, there is a possibility that terminal operations will be hindered by this. Therefore, it is necessary to enhance the connectivity between the operations in each station of the CRF cargo company and the operations in the wharf terminal (for example, by introducing information system), thereby raising the efficiency of the whole North Port.

Considering that the container terminal project and free zone project, which are being formulated in South Port, include railway expansion plans necessary for standby, interchange, cargo handling and access in most facility plans, the capacity of the railway station in South Port can sufficiently meet the future cargo demand in the New Master Plan. Therefore, in the South Port, it is more important to secure expansion space after 2020 than to consider the

railway expansion plan until 2020.

1.2 Short-Term Plans and Projects Covered by Feasibility Study

Master Plan projects and projects planned in the future (after 2020) were briefly described in the preceding section with respect to their necessity, outlines and implementation periods. Furthermore, among these projects, those that can be implemented by 2010 are categorized as projects to be covered by Short-term Plans and, among these projects to be covered by Short-term Plans, those that should be preferentially implemented are categorized as projects to be covered by the feasibility study (Feasibility Study Projects). Projects to be classified into Short-term Plans and Feasibility Study Projects are summarized in Table 1.1.

Table 1.1. Summary of Possible Projects for Short Term Plan and Feasibility Study

Possible Projects		Short Term Plan	Feasibility Study	Remarks (Master Plan & Future Plan)
Traffic Demand Related	Container Terminal Expansion			○
	Grain Terminal Construction	○	○	
Improvement of Port Operation	Steel Product Terminal Consolidation			○
	Timber Terminal Consolidation			○
	Relocation of General Cargo Terminal			○
Inland transportation Accessibility improvement	Barge Terminal Improvement	○	○	
	Road Improvement	○		
	Railway Improvement			○

Chapter 2 Short Term Development Plan (F/S projects)

2.1 Formulation of the Short Term Development Plan

The Short Term Development Plan is formulated as a plan for the target year 2010 in the framework of the Master Plan. The Short Term Development Plan includes 2 aspects of the projects as follows:

1) Traffic demand related ; Grain Terminal
2) Inland Transportation Access Improvement; Barge Terminal
Road Improvement

Among these projects, Grain Terminal and Barge Terminal were selected as the objectives of the Feasibility Study, because these projects had the highest priority.

2.2 Grain Terminal

2.2.1 Requirement for Grain Terminal

To meet the increasing demand for handling grains at the Port of Constantza, a Grain Terminal is required in order to accommodate larger vessels and increase the handling productivity for grains export.
The forecasted demand for grains in 2010 exceeds the handling capacity of the existing facilities. Taking into account the annual fluctuation of cereals products, it is necessary to construct a new Grain Terminal.

2.2.2 Required Dimensions of the Facilities

(1) Target Volume of Grains to be handled at the Port in 2010
Forecasted export demand for the year 2010; 4.41 million tons (Trade export; 1.80 million tons, Transit export; 2.61 million tons)
Taking the annual fluctuation into consideration, forecasted demand as peak case; 6.40 million tons(Trade export; 3.17 million tons, Transit export; 3.23 million tons)

(2) Required capacity of the new grain terminal
Total capacity of existing facilities for grain handling is estimated as 3.25 to 3.75 million tons per year. Forecasted demand in 2010 is of 4.41 million tons, so a shortage of handling capacity of 0.66 million tons will likely occur. Moreover, taking into account the annual fluctuation of grain products, the shortage of the capacity will be of 2.65 million at the peak case of 6.4 million tons. It is therefore necessary to develop a new Grain Terminal with a required handling capacity of 2 million tons per year, to handle cargo as follows:

Trade export; 1 million tons

Transit export; 1 million tons

(3) Requirement for facilities

Requirements for facilities are summarized as follows:

- Berth for grain vessel; 300m long, -14m depth for 50,000 DWT
- Berth for barges; 250m long , -4.5m depth
- Silo; 100000 tons
- Cargo handling Equipment (see detailed in chapter 7)
- Access (Railway, Road)
- Utilities
- Land development

2.2.3 Preparing Alternative Terminal Plans and Evaluation of the Alternatives

Taking the above requirement into consideration, three develop alternatives have been prepared as follows:

1) Alternative 1; Development of a new Pier 3S in South Port
2) Alternative 2; Development of the existing Pier 1S in South Port
3) Alternative 3; Development of the existing Berth 31 to 33 in North Port

As a result of evaluation of three alternatives, Alternative 1 is proposed for the development site of the new Grain Terminal. Alternative 1 implies a new construction of the whole terminal, including infrastructure as landfill and quays, so it is more costly than other alternatives. However, this alternative has enough room for the future extension of grain handling and meets future development strategy of the South Port.

2.2.4 Layout of Grain Terminal

Two options has been set up as a layout in locating on Pier 3S in South Port.

Option A: Construction as the modified configuration of 3S in order to secure the slip width between Pier 3S and 2S

Option B: Construction as the initial configuration of Pier 3S

Taking into account following issues, layout plan of Grain Terminal should be examined.

1) To secure slip width between 3S and 2S
2) Room/Utilization for future expansion
3) Utilization of the existing concrete caisson

As a result of evaluation of development options on 3S, the study team proposes Option A, since it is as important issue to secure future's safe and smooth operation of vessels. Layout of Option A is shown as Fig. 2.2.1.

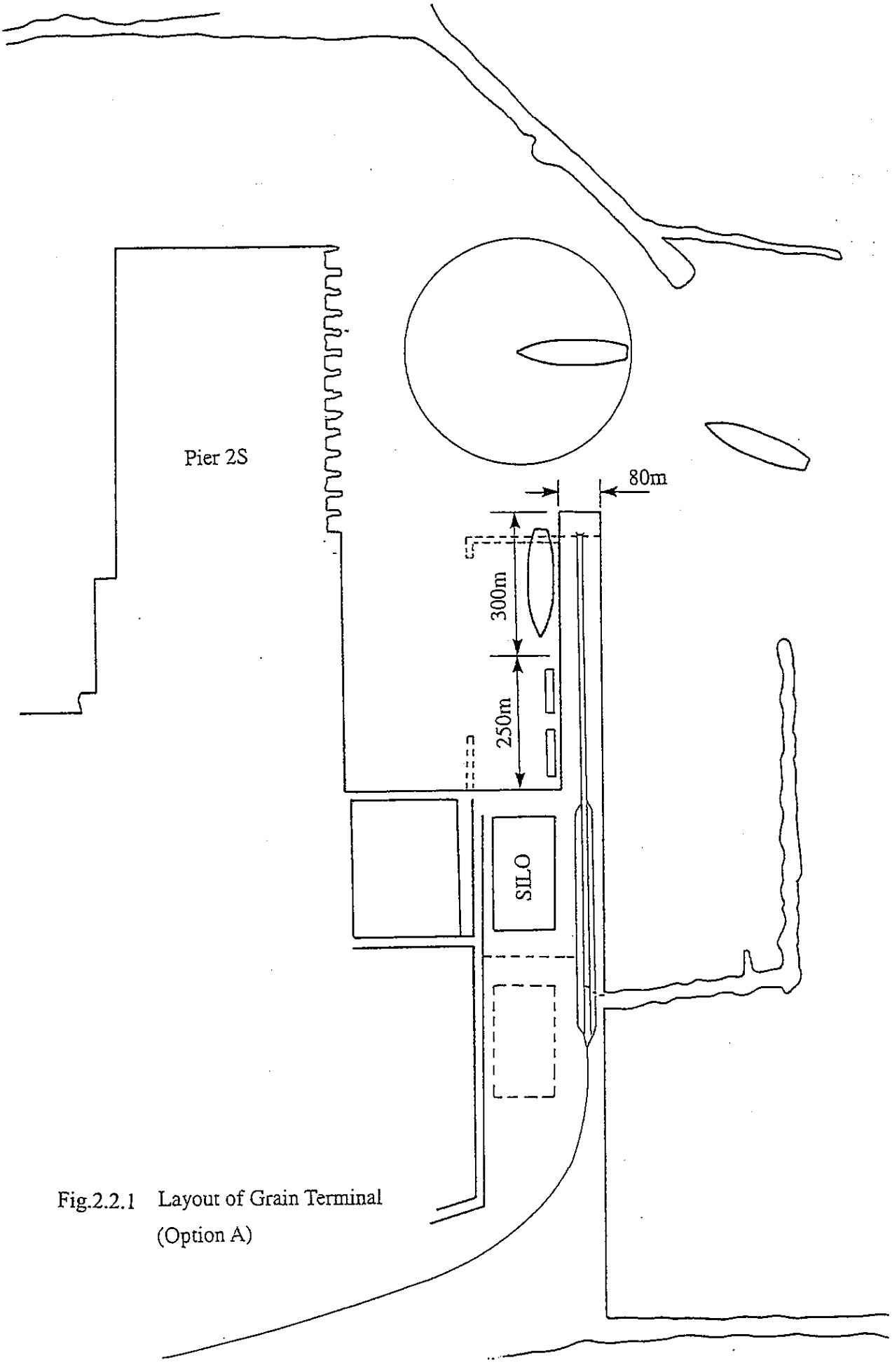


Fig.2.2.1 Layout of Grain Terminal
(Option A)

2.3 Barge Terminal

2.3.1 Review of the Present Barge Operation

(1) Barge traffic

The Inland waterway cargo of the Port of Constantza is transported by barges through The Danube Black Sea Canal. Generally, barges navigate as a convoy through the Canal and Danube River, and when arriving at the Port, the convoy is split in separate barges.

At present the barge cargo traffic of the Port of Constantza is about 10 million tons per year. By using statistics related the Port and the Canal, the Study Team has calculated the basic parameters of barge operations and the number of barges and convoys that called the Port at present

Basic parameters of barge operations:

- Average barge capacity; 1500 ton/barge
- Average barge number per convoy; 5 barges/convoy

Estimated traffic of barges in The Port of Constantza at present is as follows:

- Net number of barges per year; 13300 barges
- Net number of convoys per year; 2660 convoys

(2) Dimensions of barges/convoys

The Danube Black Sea Canal has locks, so there is a restriction of dimensions of vessels navigating through the Canal. Maximum size of pushed convoy for the Canal is as follows: Capacity; 6 x 3000t, Length; 296m.

Dimensions of maximum barge, pusher and tug operated in the Port are as follows:

Barge - 3000 T (maximum size); LOA: 88.9m, B:11.0m, d:3.8m(in full)

Pusher - 2 x 1200 HP; LOA: 34.6 m, B: 11m, d: 2m

Tug - 2 x 2400 HP; LOA: 34.4m, B: 10.5m, d: 4.6m

(3) Barge Maneuvering in the Port

Barges dwell in the port for some days to wait for discharging/loading cargoes and dismantling/making a convoy.

The existing facilities for mooring barges are tentatively allocated quays of about 2000 m, which are not used for handling cargoes or are operated for barge transport in the South Port. Moreover, the basin surrounded by breakwaters at the Central Island in the South Port is used for the anchoring of barges. In addition, several concrete block dolphins for barges are located along the dike in the Central Island, however these facilities are not in good conditions because of collision by barges.

2.3.2 Requirements for Barge Terminal

(1) Necessity of the Barge Terminal Development

Barge traffic demand in 2010 is forecasted to increase, and capacity of existing facilities is

not sufficient for the future traffic demand. It is necessary to develop barge-related facilities for barge mooring and convoys preparations. The Barge Terminal will be developed:

To secure a space for barges waiting in the port and making a convoy

To develop a terminal for barges/pushers/tugs for efficient and smooth operation in the port

(2) Target Volume of Barge Traffic at the Port in 2010

Barge cargo demand in 2010 is forecasted at 17 million tons per annum. Net number of loaded barges in 2010 is estimated as 11333 barges.

2.3.3 Required Dimensions of the Facilities

Required capacity of barge operation in the Port is calculated as follows:

- Average convoys per day; 12.4 convoys/day
- Net loaded barges per day; 31.0 barges/day
- Average dwelling days; 8 days = 12 days (in 2001) x 0.7
- Number of barges dwelling in the port a day; 221 barges

Required new facilities for barges: Sand-by basins for making a convoy; 300m x 3 sets and Quays for mooring barges; 2250m for 180 barges

Required Quays for mooring pusher/tugs; 450m for 28 pushers for navigation and 10 pushers/tugs for operation in the port

2.3.4 Layout of Barge Terminal

Barge Terminal is allocated for 2 basins area as follows:

- River-Maritime Basin for North port; iron ore, coal, oil
- River Basin for South port; grain

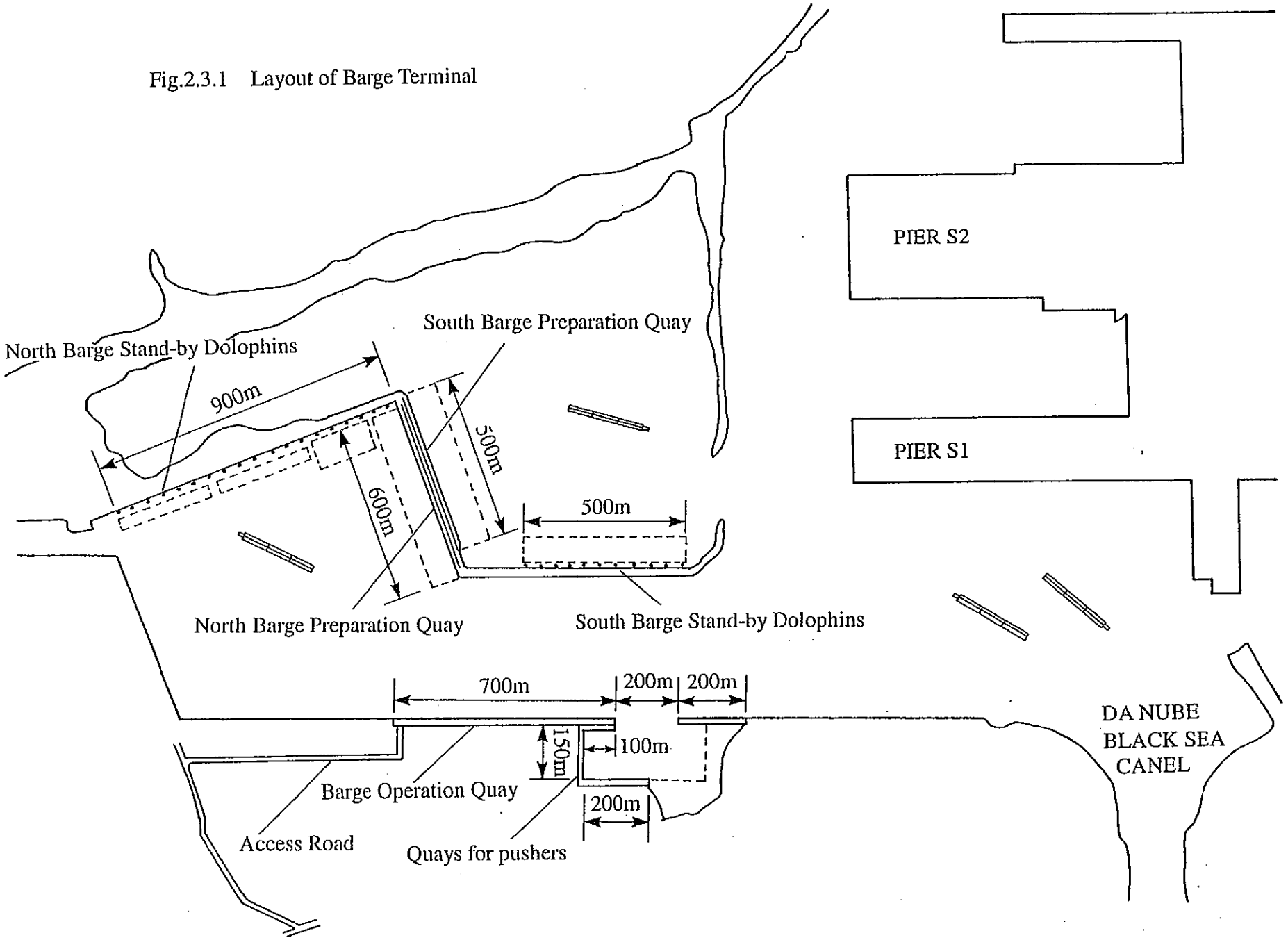
New facilities to be required are allocated as follows:

- Quays:	Barge Operation Quay (berth 97,98,99)	700m x -4.5m
	North Barge Preparation Quay	600m x -4.5m
	South Barge Preparation Quay	500m x –4.5m
- Dolphin:	North Barge Stand-by Dolphins	500m (11units)
	South Barge Stand-by Dolphins	900m(19 units)
		Sub total for barges:3200 m

- Quays for pushers: 450m
- Land development (landside only)
- Utilities (landside only)
- Access road (connecting to existing road to Gate 8)

Layout of Barge Terminal is shown as Fig. 2.3.1

Fig.2.3.1 Layout of Barge Terminal



Chapter 3 Short Term Development Plan (Other Project)

3.1 Access Roads

3.1.1 Access Roads at North Port Area

As mentioned in Chapter 8 of Part I, the most serious issue at North Port Area is the heavy traffic and the acute-angled curve at Gate 5.

For the above problem, the JICA study team has two solutions: The first solution calls for the construct of a new gate between Gate 5 and Gate6. The second solution aims at widening Gate5 including the approach road.

The former is a thorough solution and the latter is a partial solution, which CPA has already studied.

Figures 3.1.1 and 3.1.2 show the basic idea of the former solution and the general plan of the latter solution.

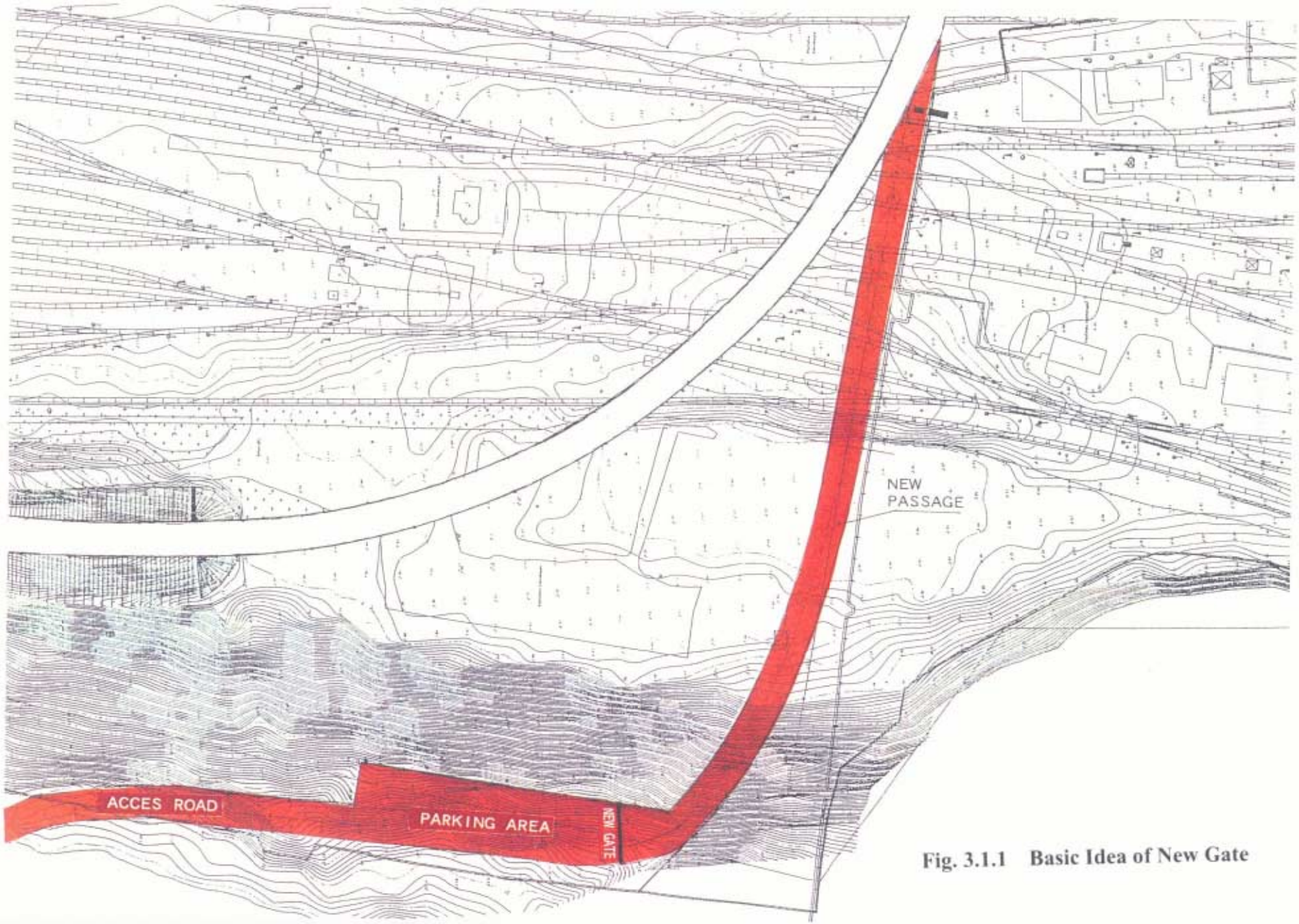


Fig. 3.1.1 Basic Idea of New Gate

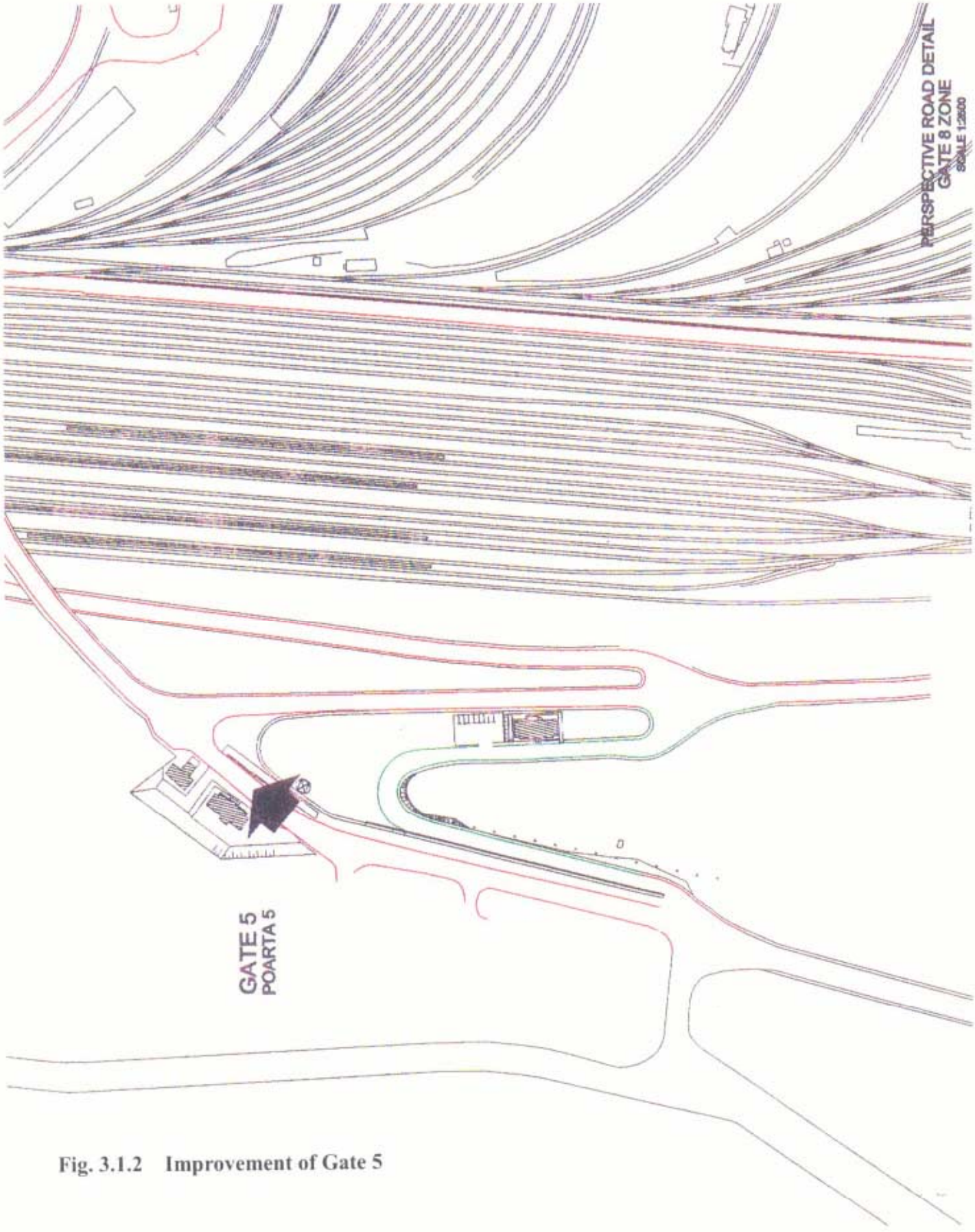


Fig. 3.1.2 Improvement of Gate 5

3.2 Capacity of Road and Railway in 2010

There are three available transportation modes between Port of Constantza and its hinterland; barge, railway and road transportation. The ratio of the cargo volume for each transportation mode in the target year is estimated by considering the statistic data by commodity according to the each mode and the locations of origin/destination in Romania, at Port of Constantza, the characteristics of each commodity, and road improvements and construction plans, etc. The result of the estimation is shown in Tables 3.2.1 and 3.2.2.

The capacities of main roads/railways at the port in the target year (2010) are sufficient, according to the result of the comparison between the capacities and traffic volumes in the target year of main roads/railways in the port area. These are based on the result of the cargo forecast and the result of the present traffic survey on road and railway in the Port of Constantza in this study.

Table 3.2.3 and 3.2.4 show the traffic volume and capacity of each main road at the port in the target year. From Table 3.2.5 to Table 3.2.7 show the traffic volume of each entrance and the dwelling volume of each station for railway and capacities of their entrances and stations.

The location of their main loads at the port, entrances and stations for railway are shown from Figure 3.2.1 to Figure 3.2.3.

Table 3.2.1 Transportation Mode for Loading to Vessels

(Unit: Million tons)

Commodity	Railway			River			Road		
	Export	Transit	Total	Export	Transit	Total	Export	Transit	Total
Cereals	1.224	0.390	1.614	0.450	2.210	2.660	0.126	-	0.126
Food products	0.032	-	0.032	0.003	0.000	0.003	0.019	-	0.019
Timber, fire wood	1.017	-	1.017	-	-	-	0.113	-	0.113
Chemical products	1.233	-	1.233	0.069	-	0.069	0.069	-	0.069
Iron ore, scrap iron, concentrate	0.864	-	0.864	0.096	-	0.096	-	-	-
Non ferrous ore	0.000	-	0.000	0.000	-	0.000	-	-	-
Gas and Oil Products	2.271	-	2.271	0.120	-	0.120	-	-	-
Cement	0.321	-	0.321	0.589	-	0.589	0.161	-	0.161
Iron / Non Iron Metals and Metal Products	0.800	-	0.800	1.100	-	1.100	0.100	-	0.100
Container	0.471	-	0.471	-	-	-	1.099	0.174	1.273
General cargo	0.290	-	0.290	0.073	-	0.073	0.019	-	0.019
Total	8.523	0.390	8.913	2.498	2.210	4.708	1.705	0.174	1.879

Table 3.2.2 Transportation Mode for Unloading from Vessel in 2010

(Unit: Million tons)

Commodity	Railway			River			Road		
	Import	Transit	Total	Import	Transit	Total	Import	Transit	Total
Cereals	0.150	0.000	0.150	0.050	0.000	0.050	-	-	-
Food products	0.137	-	0.137	0.015	-	0.015	0.031	-	0.031
Timber, fire wood	-	-	-	-	-	-	-	-	-
Chemical products	0.125	-	0.125	0.013	-	0.013	0.078	-	0.078
Iron ore, scrap iron, concentrate	-	-	-	7.730	-	7.730	-	-	-
Non ferrous ore	0.365	0.054	0.419	1.459	0.216	1.675	-	-	-
Gas and Oil Products	1.368	-	1.368	0.072	-	0.072	-	-	-
Cement	-	-	-	-	-	-	-	-	-
Iron / Non Iron Metals and Metal Products	-	-	-	-	-	-	-	-	-
Container	0.284	-	0.284	-	-	-	-	0.143	0.143
General cargo	0.091	-	0.091	2.080	-	2.080	0.114	0.000	0.114
Total	2.520	0.054	2.574	11.419	0.216	11.635	0.223	0.143	0.366

Table 3.2.3 Evaluation of Road Capacity at NORTH PORT

Section	Lanes (Number)	Capacity (Vehicles/hour)	Number of vehicles per year in 2010	Number of vehicles per hour in 2010
7	2	1800	679,428	450
8	2	1800	69,401	46
9	2	500	732,110	485
10	2	1900	1,387,368	918
11	2	1800	1,456,769	964
12	2	1800	1,997,395	1,322
13	2	1800	1,700,676	1,126

Table 3.2.4 Evaluation of Road Capacity at South Port

Section	Lanes (Number)	Capacity (Vehicles/hour)	Number of vehicles per year in 2010	Number of vehicles per hour in 2010
1	2	1800	2,904,206	1,923
New road	2	1900		

Table 3.2.5 Evaluation of Railway Capacity at Entrance of the Port

Location	Capacity			Number of train per day in 2010
	Track capacity (Train/day)	Working ratio	Actual capacity (Train/day)	
ConstantaVii-Port Zone B	86	0.75	65	44
Port Zone B-ConstantaVii	86	0.75	65	44
Agigea Ecluza-Ferry Boat (Single track)	45 per. train	0.75	34 per.train	14

Table 3.2.6 Evaluation of Storage Capacity for V
at each Marshaling Yard in North Port (2010)

Marshaling Yard	Storage Capacity (wagons)	Number of Storage Wagons per Day
Zone A	2860	90
Zone B	4416	2962
Mol 5	2396	2190

Table 3.2.7 Evaluation of Storage Capacity for W
at Marshaling Yard in South Port (2010)

Marshaling Yard	Operation Capacity (Million tons/year)	Carg volum (Million tons/year)
South Port Area	3.9	3.6

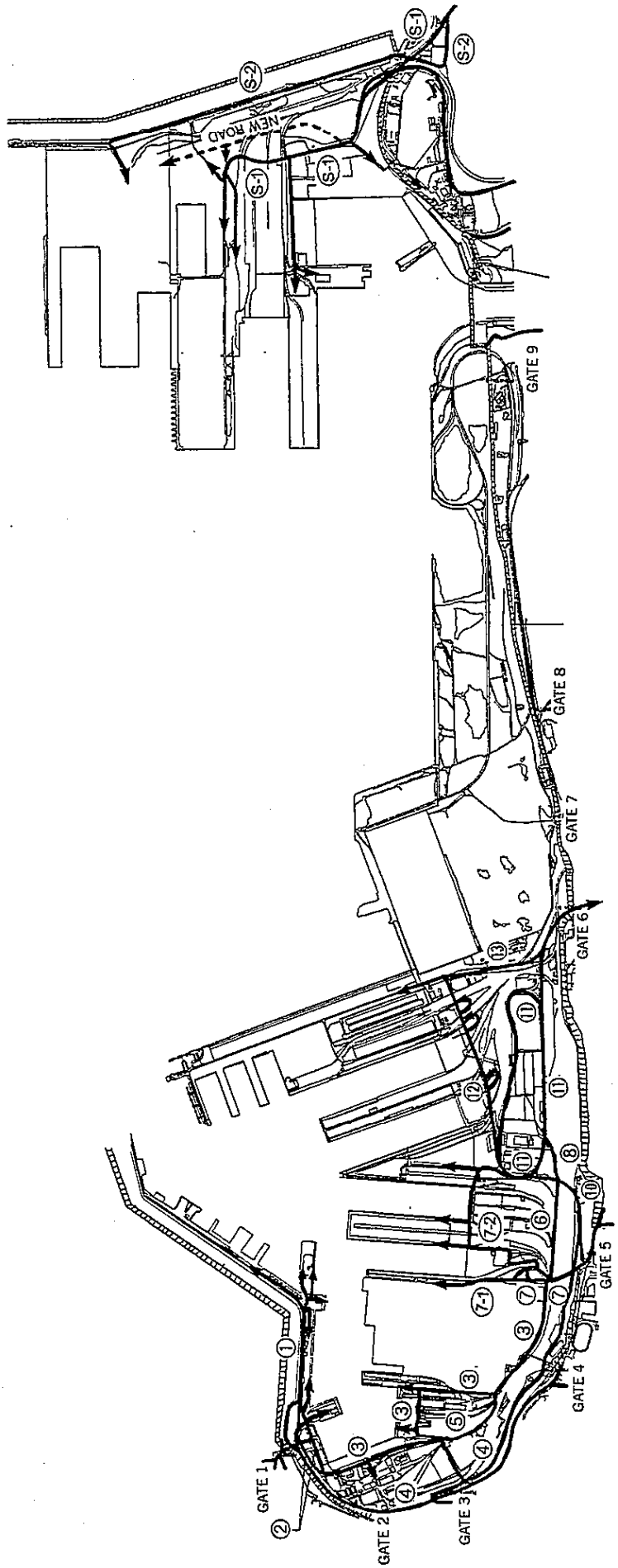


Fig. 3.2.1 Location of Road

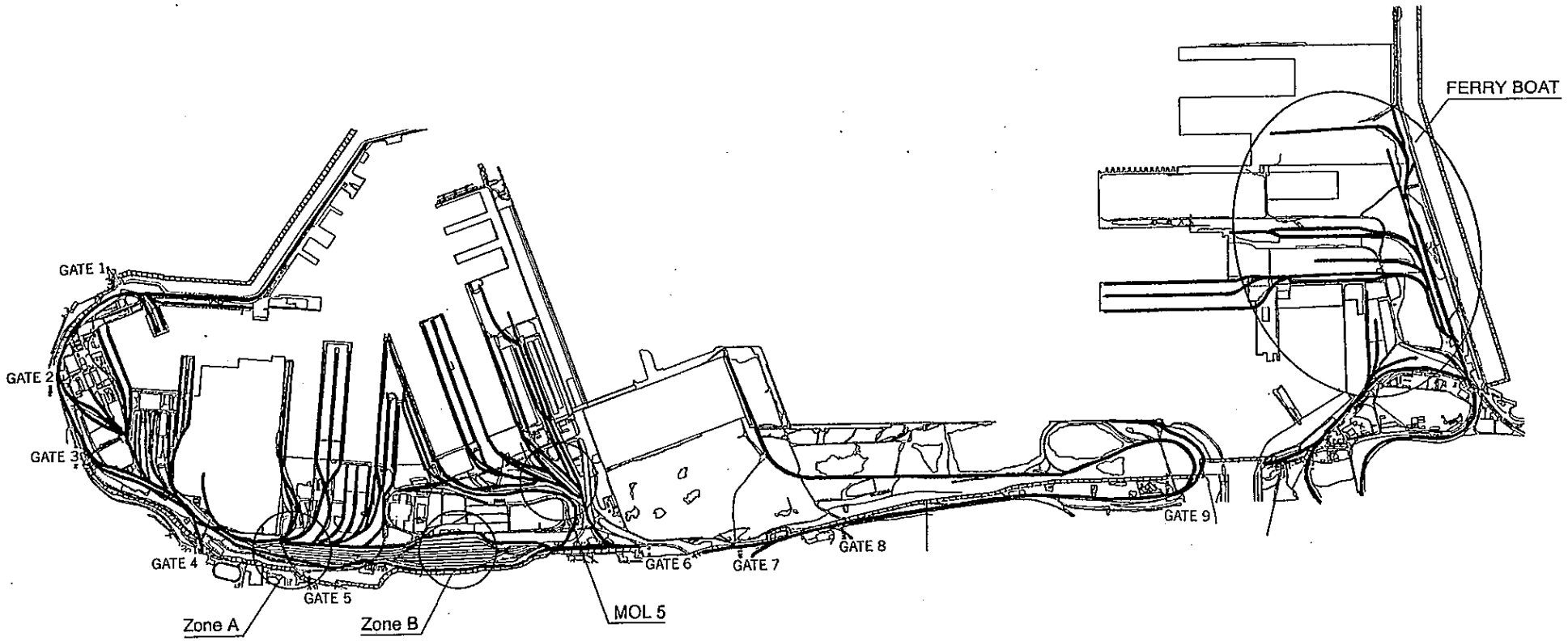


Fig. 3.2.2 Location of Railway Stations at Port of Constantza

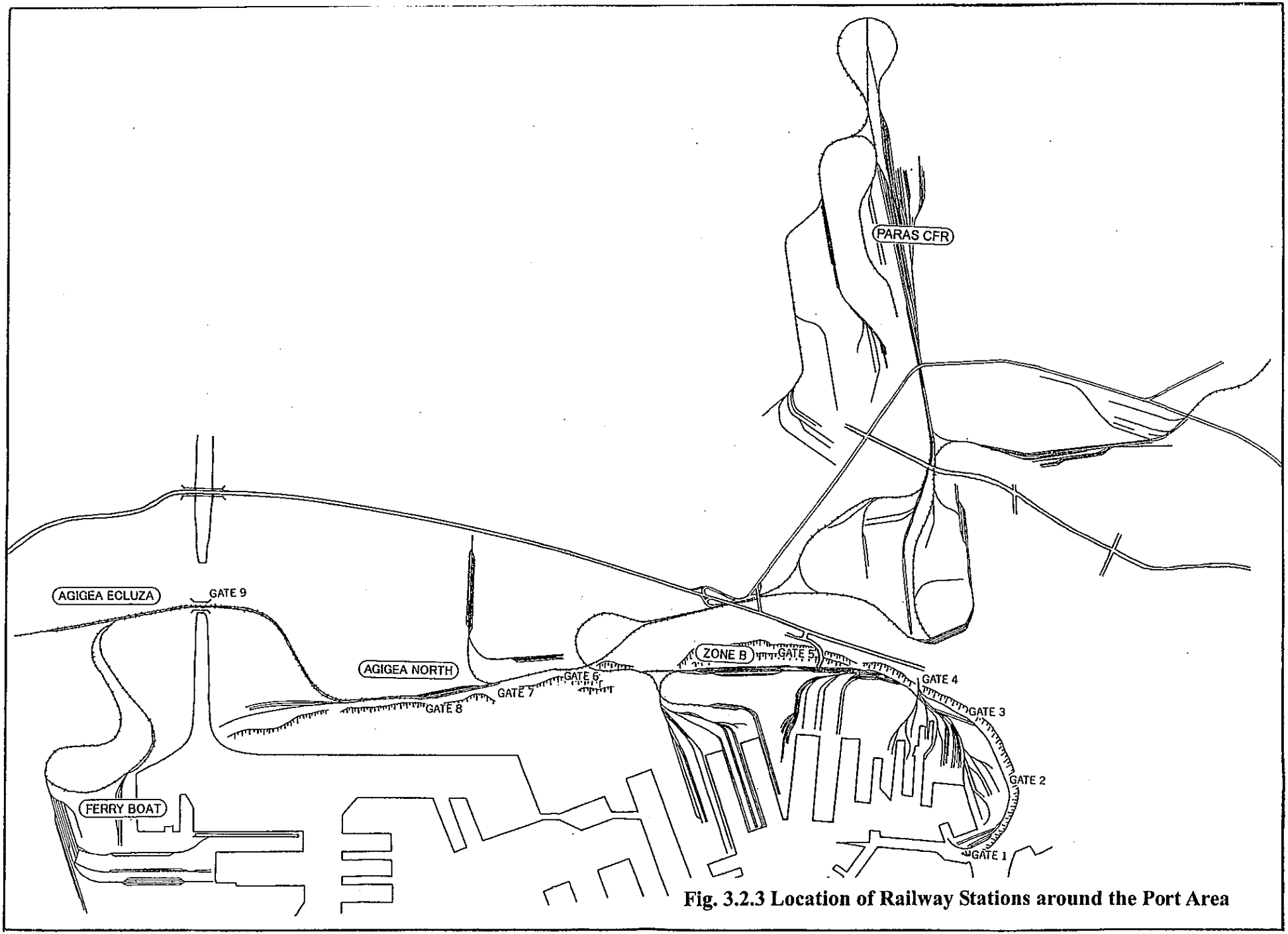


Fig. 3.2.3 Location of Railway Stations around the Port Area