BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR REHABILITATION AND DEVELOPMENT OF ATAQA FISHING PORT
IN
THE ARAB REPUBLIC OF EGYPT

APRIL, 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In response to the request of the Government of the Arab Republic of Egypt, the Government of Japan decided to conduct a Basic Design Study on the Project for Rehabilitation and Development of Ataqa Fishing Port and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Egypt a survey team headed by Mr. Akira Nagano, Deputy Director, Construction Division, Fishing Port Department, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries from November 23 to December 22, 1989.

The team exchanged views with the officials concerned of the Government of Egypt and conducted a field survey in the Ataqa Fishing Port. After the team returned to Japan, further studies were made. Then, a mission was sent to Egypt in order to discuss the draft report and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Arab Republic of Egypt for the close cooperation which they extended to the team.

April, 1990

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency

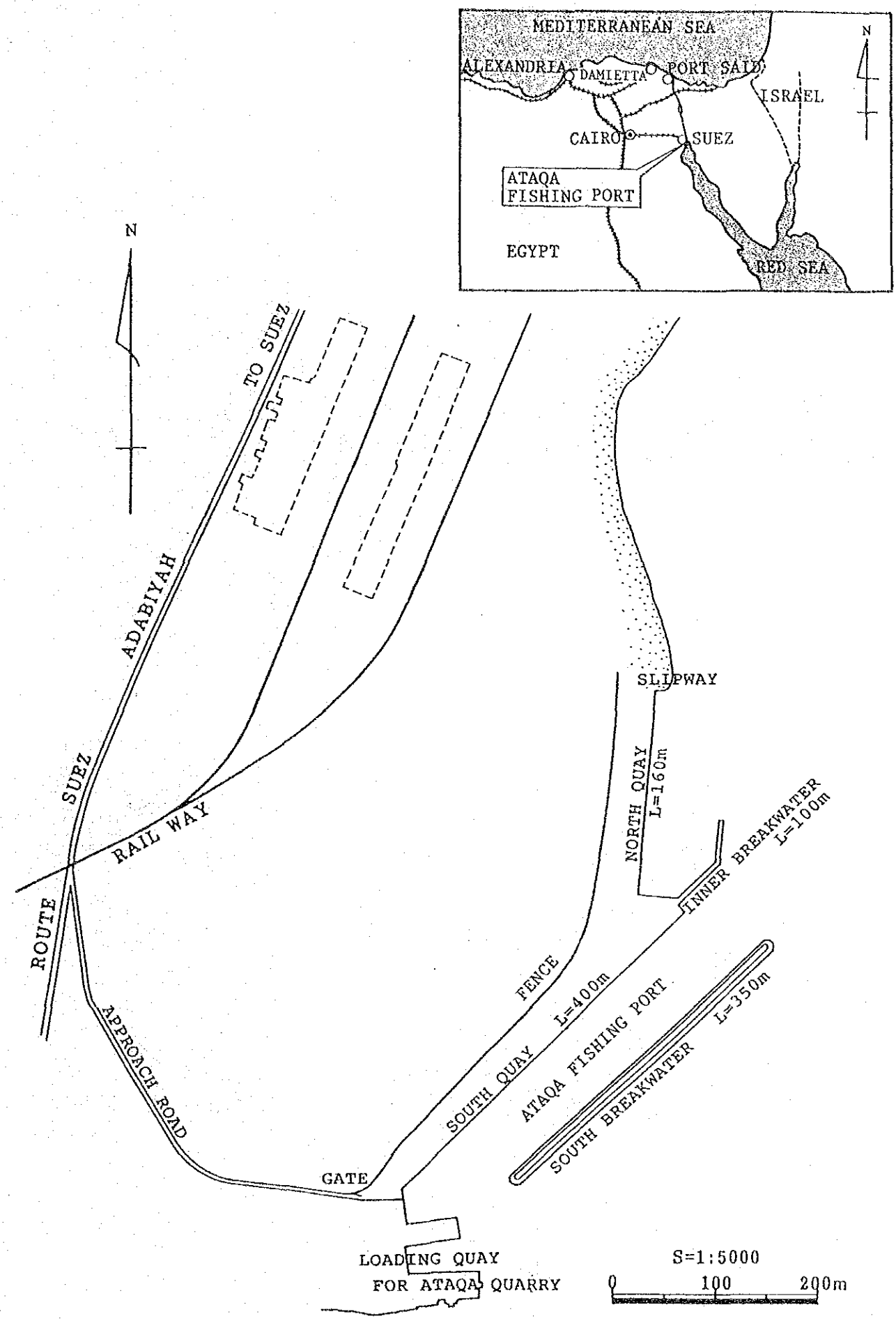
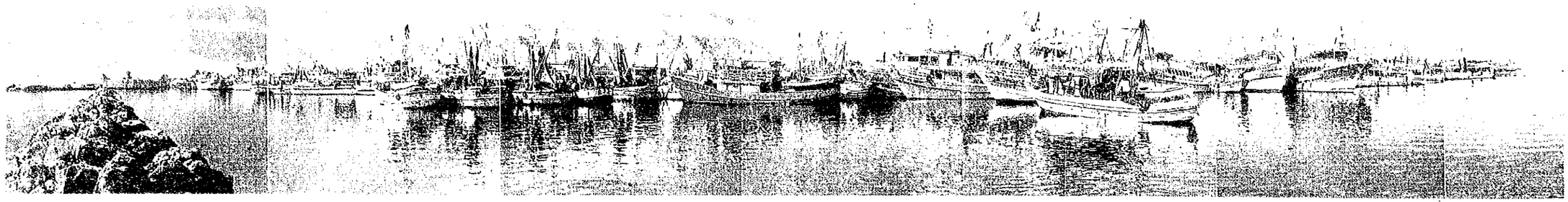


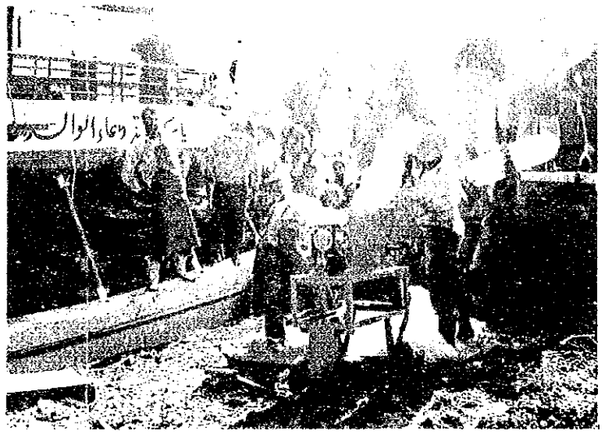
Fig. Location Map

PHOTOGRAPHS

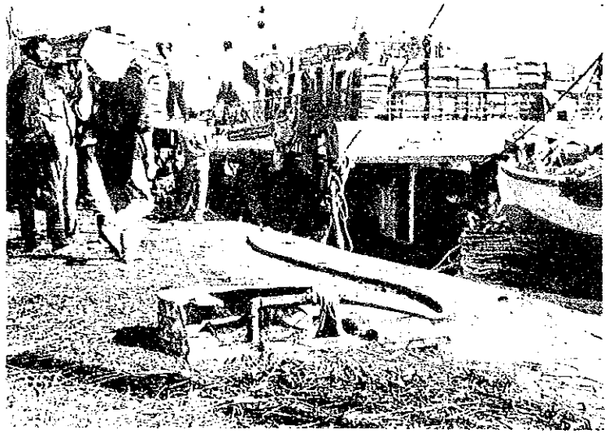


Site View from South Breakwater

Landing



Ice Supply



Water Supply

SUMMARY

SUMMARY

The Arab Republic of Egypt (hereinafter referred to as Egypt) is located on the northeastern side of the African continent. It has a coastline of approximately 2,940km. The climate is dry and hot. The country consists mainly of deserts and rocky land; only 4% of the total land area is arable.

In 1986, Egypt had a total population of 48.2 million. The average annual rate of population increase was 2.4% during the 1976-86 period.

Until the early 1980's Egypt's economy prospered through revenue from oil and the Suez Canal, remittances from laborers working abroad and from an increase in the tourist trade. Since that time, however, there has been an economic slowdown. The Government of Egypt launched its Second Socio-Economic Development Plan and has been making every effort to develop the country's economy.

The total fish consumption in 1988 was 330,000 tons of which 100,000 tons were imported. In the same year, per capita fish consumption was 6.5kg which represented 10% of the total annual animal protein consumption.

The fishing grounds for the Egyptian fishery are in the Mediterranean Sea and the Red Sea. However, inadequate fishery-related infrastructures and a shortage of modern fishing equipment and skills hinder the country's fishery development.

The Government of Egypt has been making efforts to develop fishery so as to secure animal protein sources for the people, increase the fish catch, reduce the amount of fish imports, and increase employment opportunities.

The Ataqa Fishing Port is located on the west coast of the Suez Gulf. It handles 85% of the Red Sea's total fish catch. The port was constructed 80 years ago as a stone-shipping port for the Ataqa quarry.

The quay at the port is too high and is not suitable for fishing boats, fish landing and preparation work. Furthermore, since the quay length is insufficient, fishing boats are obliged to berth in six rows or more.

The harbor basin is heavily congested; safe boat maneuvering conditions are not maintained.

There is no transit shed nor ice making plant at the port. This is definitely an obstacle for fish handing work and for maintaining fish freshness.

The Government of Egypt drew up "The Development Plan of Suez Bay Coastal Area" with the objective of building Suez into a city capable of accommodating one million inhabitants by the year 2000. Based on the plan, a study was conducted with technical cooperation from Japan and a master plan was prepared. Rehabilitation and development of the Ataqa Fishing Port was included in the master plan as a part of the development of the Suez coastal area.

In view of the above background, the Government of Egypt launched the "Project for Rehabilitation and Development of Ataqa Fishing Port (hereinafter referred to as "the Project")" to construct a landing quay, transit shed, ice making plant, etc., in order to develop the port as a central fishery base for promoting the country's fishery and requested grant aid from the Government of Japan.

In response to the request of the Government of Egypt, the Government of Japan decided to conduct the Basic Design Study for the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent the Basic Design Study Team headed by Mr. Akira Nagano, Deputy Director, Construction Division, Fishing Port Development, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries to Egypt from November 23 to December 22, 1989. The Team confirmed the contents of the Government of Egypt's request, conducted field surveys, and collected the data necessary to prepare the Basic Design and to evaluate the Project's social and economic effects and determine the appropriateness of the Project for receiving grant aid from the Japanese government.

The Team also had a series of discussion on the Project with officials concerned of the Government of Egypt.

As a result of the field surveys, it was found that the Ataqa Fishing Port's existing quay is used for fish landing, boat preparation, and idle berthing, but is too congested. Fishing boats must wait outside the harbour prior to offloading their fish catch; this results in the loss of fish freshness. Further, not only is the quay deteriorated and damaged, its crown is too high for fish landing. It was also found that because the crown of the existing breakwater is low it cannot maintain calm water conditions in the harbour basin during stormy weather. In addition, the fuel, water, and ice supply facilities and the fish handling area are inadequate. These conditions are hindering fishing boat operations.

To achieve the objectives of the Project and to solve the aforementioned problems, and also to accomplish effective fish landing operations, improve the safety of fishing boat maneuvering and mooring, and contribute to the promotion of the country's fishery activities, the following optimum scaled facilities are required:

Fishing Port Facilities:

- Landing quay and its connecting section:

Type	:	Concrete block type	
Depth	:	-4.0m	
Length	:	DL +2.6m Crown height portion	180m
		DL +2.2m Crown height portion	60m
		Connecting section:	56m
		TOTAL LENGTH	296m

- Preparation and idle berthing quays:

Type:	:	Concrete block type	
Crown height:		DL +2.6m	
Depth	:	-4.0m for preparation quay	
		-4.0 to -3.0m for idle berthing quay including the connection section	
Length	:	Preparation quay:	120m
		Idle berthing quay:	40m
		TOTAL LENGTH	160m

- Existing quay rehabilitation:

  Repair of apron and roads

  Installation of fenders (V-250 H type at 5m intervals)

  Installation of mooring posts (10 ton type, at 7.5m intervals)

- New breakwater construction:

  Type : Rubble mound sloped type

  Crown height : DL +3.5m

  Length : North side breakwater: 355m

  South side breakwater 45m (extension to the existing breakwater)

- Existing breakwater repair:

  Type : Strengthening and heightening of existing rubble mound sloped type breakwater

  Crown height : DL +3.5m

  Length : 350m

- Navigation Aid installation:

  Light markers : 3 places

  Buoy markers : 2 places

- Slipway relocation:

  Ramp width : 21m

  Depth at toe : DL -2.7m

  Winch : one unit

  Repair yard space : 1.3ha

Civil Works:

- Dredging work:

  Area : Approximately 9ha

  Depth : To DL -4.0m

- Revetment work:

  Type : Rubble mound sloped type

  Crown height : DL +3.0 to +3.5

  Length : 585m

- Reclamation work:

  Area : Approximately 3.4ha

  Crown height : DL +2.6 to +3.3m

- Other works:

  Road in the port : Approximately 1,900m long

  Parking lot : Approximately 6,700m^2

Utility Work:

- Ice making plant
  - Ice making capacity : 50 tons/day
  - Ice storage capacity: 50 tons
- Water supply facility:
  - Reservoir capacity : 400 tons, 4-tank type, made of reinforced concrete made
  - Elevated water tank: 30 tons, one unit, made of reinforced concrete made
- Oil supply facility
  - Oil supplying piping installation only, approximately 350m long
- Saltwater supply facility:
  - Supply capacity : 0.3 ton/min
- Other utility facilities:
  - Power and lighting systems installation

Building Construction:

- Administration Office : Reinforced concrete, two-storied building, 540 m^2
- Transit shed : Reinforced concrete, flat, 701 m^2
- Ice making plant : Reinforced concrete, flat, 468 m^2
- Guard house : Concrete block, flat, 15 m^2
- Public toilet : Reinforced concrete, flat, 32m^2 x 4 places
- Others : Pump house, winch house, garbage collecting area

Project construction is to be conducted in two phases. After both countries sign the Exchange of Notes for the Project, it will take seventeen months (five months for preparing the detailed design and tender documents and twelve months for the actual construction work) to complete the first phase, and sixteen months (four months for tender document preparation and twelve months for the actual construction work) to complete the second phase.

The Ministry of Development of the Government of Egypt is responsible for the implementation of the Project. After completing construction of

the Project's facilities, the management, operation and maintenance of the facilities will be undertaken by a new governmental organization formed from the General Egyptian Authority for Fish Resources, Suez Governorate and Red Sea Port Aurthority.

The port's present management, operation and maintenance are conducted by the Ministry of Agriculture and the Suez Governorate. The Red Sea Port Authority will join the present member group to form the new organization.

It is planned to assign sixteen management and operation staff personnel. Thus, it is considered that once construction of the Project's facilities is completed, proper management, operation and maintenance will be carried out.

In addition to the grant aid cooperation for construction of the Project's facilities, the Egyptian side has requested technical cooperation from Japan for the operation, management and maintenance of the modern fishing port. Greater benefits will be achieved if such cooperation is approved.

The costs for port management, operation and maintenance are estimated to be LE 610,000 a year (in December 1989, one U.S. dollar equalled LE 2.55). The costs will be paid for with the port operating revenue of LE 700,000/year.

After completion of the Project's construction work, port congestion problems will be eliminated and, as a result, a boat's waiting time for fish landing operations will be shortened and fish freshness will be maintained. Furthermore, fish landing operations and fishing boat preparation work will be conducted efficiently which will enable fishing boats to return to sea for fishing more often. As a consequence, the income of fishermen will increase. Thus, the implementation of the Project will contribute to the promotion of the Egyptian fishery as well as to the development of the Suez Bay coastal area.

In view of the points outlined above, it is deemed to be appropriate and extremely worthwhile to carry out the Project with grant aid from the Government of Japan.

TABLE OF CONTENTS

Page

Page

CHAPTER 1 INTRODUCTION

CHAPTER 1 INTRODUCTION

1.1 Objectives of the Study

The total fish consumption in the Arab Republic of Egypt (hereinafter referred to as "Egypt") amounts to 330,000 tons per year of which 230,000 tons are domestic catch and 100,000 tons are imported. Fish provides the Egyptian people with 10% of their protein intake.

Aiming at increasing its domestic fish catch, the Government of Egypt has stressed fish development in the "Five-year Plan for Social and Economic Development" and has been promoting fishery activities to secure the country's protein sources, cut down on fish imports, and enhance employment opportunities.

The Ataqa fishing Port, the Project site, is located close to Cairo, the country's capital. Since ancient times, Ataqa has been a fishing base -- most of the fish caught in the Red Sea is handled at this port. However, due to the inadequate length of the quay, the deteriorated state of the infrastructures of the fishery port, and the lack of fishery-related facilities, fishery progress is hindered.

The 1967 war destroyed most structures of the cities in the Suez Governorate. In order to effect reconstruction of Suez City to its condition before the war and further develop the Governorate to accommodate the anticipated population of one million by the year 2000, the Government of Egypt established the Development Plan of Suez Bay Coastal Area. The master plan was prepared with the technical cooperation of the Government of Japan.

In view of the above background, the Government of Egypt established the Project for the Rehabilitation and Development of Ataqa Fishing Port as a part of its fishery promotion policy and requested grant aid from the Government of Japan.

The Government of Japan decided to conduct the Basic Design Study for the Project based on the request of the Government of Egypt,

and entrusted the Japan International cooperation Agency (JICA) with the Study. JICA sent the Basic Design Study Team headed by Mr. Akira Nagano, Deputy Director, Construction Division, fishing Port Department, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries to Egypt from November 23 to December 22, 1989.

The Basic Design Study Team examined the contents and background of the Egyptian government's request concerning the Project for the Rehabilitation and Development of Ataqa Fishing Port, evaluated the Project's socio-economic effects and the appropriateness of the Project for grant aid program assistance, conducted data collection and field surveys for the preparation of the optimum facilities and equipment necessary for the Project, and held a series of discussions related to the Project with Egyptian officials.

During the field survey period, the basic agreements related to the Basic Design Study implementation that were reached by the Government of Egypt and the Study Team were written up as the Minutes of Discussions and signed by both parties.

CHAPTER 2 BACKGROUND OF THE PROJECT

CHAPTER 2 BACKGROUND OF THE PROJECT

2.1 Outline of Egypt

(1) Country

Egypt is located on the northeastern side of the African continent. It is bounded on the west by Libya, on the south by Sudan, on the north by the Mediterranean Sea and on the east by the Red Sea.

Its total area is 2.7 times that of Japan. Most of its 1,002,000km^2 is desert or rocky land, and 3.4% (34,000km^2) of the total land area is arable.

Although there are regional differences in climate, the weather is generally extremely dry and hot. In Suez, where the Project Area of the Ataqa Fishing Port is located, the temperature ranges from a high of 37.1°C to a low of 9.4°C. Total annual rainfall in the area is only 27mm.

Sunlight is very strong. During Cairo winters, the direct solar intensity ranges from 260 to 400 cal/cm^2; in the summertime it is approximately 700 cal/cm^2. Suez experiences about 2,900 hours of sunshine a year.

(2) Population

In 1986, Egypt's total population was 48.2 million with 2.3 million residing abroad. During the 1976-1986 period, the average yearly population increase was 2.4%.

The population density is approximately 48 people/km^2; however, as a large part of the country is desert, the population is concentrated in urban areas. The population density in Cairo (28,250/km^2) is extremely high.

(3) Economy

From 1974 through 1983, Egypt's economy prospered through revenues from oil and the Suez Canal, remittances from laborers working abroad and from an increase in the tourist trade. The

GDP recorded in 1982 and 1983 showed an annual increase of 10.9%. Since that time, however, there has been an economic slowdown.

According to a report by the World Bank, the GDP for 1984 was estimated to be 37.5 billion U.S. dollars with a per capita GDP of $736 and an average yearly increase of 3.3%.

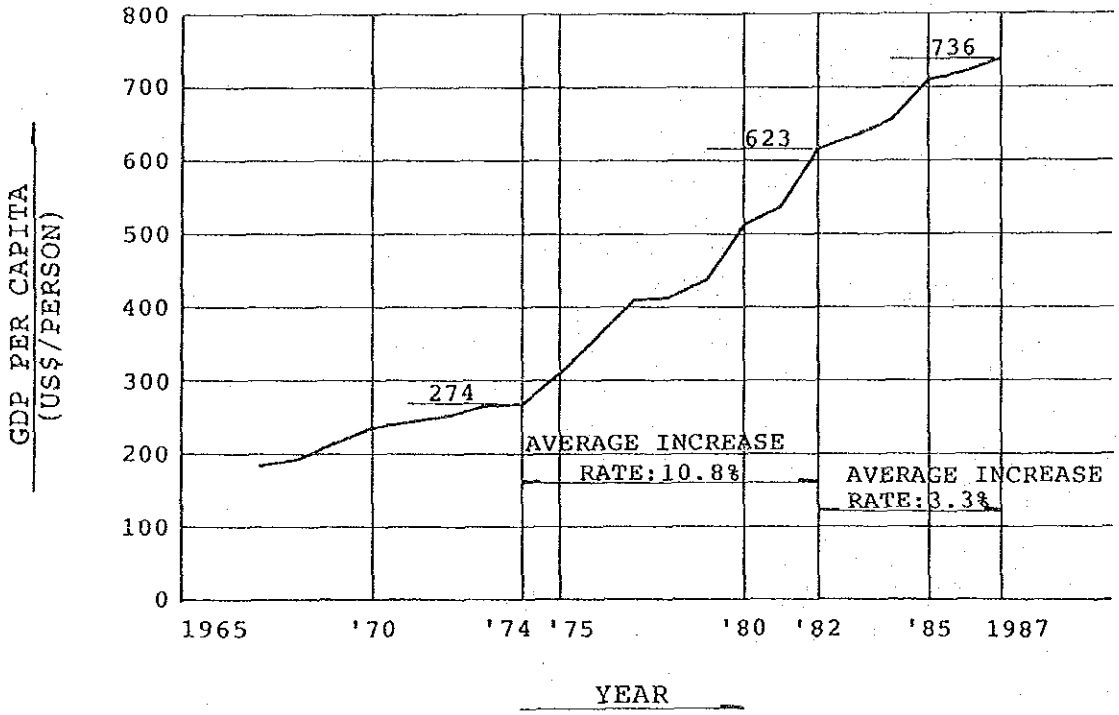


Fig. 2-1-1 GDP Per Capita (Current Price)

Remittances from laborers working abroad, revenues from the Suez Canal, tourism and loan capital more than made up for the deficit in foreign trade (estimated to be 975 million U.S. dollars for 1985/86), thereby keeping the country's international monetary balance in the black.

In 1975, the agriculture and fishery industries that employ 43% of the working population provided 29% of the GDP. In 1985/86 their share of the GDP declined to 17% and their percentage of the working population fell to 37%. Nevertheless, agriculture and fisheries are still the major industries of

Egypt. Even though the fishing industry occupies only 0.1% of the GDP, it is an important industry as it provides 10% of the country's total animal protein supply.

2.2 Fishery Industry

(1) Fisheries in Egypt

Fisheries in Egypt can be separated into two types, namely fresh-water and marine. The freshwater fishery is conducted on Lake Nasser upstream of the Aswan High Dam lake, and on the Nile and its lakes and canals. Marine fishery is mostly coastal fishery on the Mediterranean Sea, the Gulf of Suez and the Red Sea.

The total yield of fish in 1988 was 229,423 tons, with 169,815 being freshwater fish and 59,608 tons being marine fish. This 3:1 ratio has not changed for some years. The fish catch by fishing ground and year are shown in Table 2-2-1.

Table 2-2-1 Fish Catch by Fishing Ground

(Unit: ton)

Classification \ Year	1980	1981	1985	1988
Marine Fishery				
In the Mediterranean Sea	17,466	17,790	19,444	32,500
In the Red Sea	14,783	15,774	23,981	27,108
Subtotal	32,249	33,564	43,425	59,608
Fresh Water Fishery				
Lakes	79,004	80,099	99,445	134,982
Rivers	31,771	25,304	19,444	34,833
Subtotal	110,775	105,403	118,889	169,815
Total	143,024	138,967	162,314	229,423

Per capita fish consumption in 1981 was 4.5kg. In 1988, the population was 51.0 million, and, with a fish yield of 229,000 tons along with fresh fish imports (including frozen fish) totalling 100,000 tons, fish consumption increased to 6.5kg per capita. Compared to the world consumption average of 13kg per capita, Egypt's consumption level is less than half of that amount.

Egypt had a total of 43,900 fishing boats in 1988: 2,121 were powerboats while 41,807 were not. This can be attributed to the fact that most freshwater fishing is conducted using hand-powered boats.

Table 2-2-2 Number of Permitted Fishing Boats by Fishing Method (1988)

(Unit: Number of boats)

Fishing Method / Fishing Ground	Non-Powered Boats	Powered Boats			
		Trawling	Purse seining	Long lining	Others
Mediterranean Sea	6,536	641	70	421	152
Red Sea	760	87	84	235	303
Manzalah Lake	5,651	-	-	-	-
Burullus Lake	6,588	-	-	-	24
El Burg	1,327	-	-	-	-
Maryut Lake	2,264	-	-	-	-
Bardawil Lake	696	-	-	-	27
Qarun	686	-	-	77	-
High Dam	2,262	-	-	-	-
Murrat, Timsha	675	-	-	-	-
Nile River	14,362	-	-	-	-
		728	154	733	506
Total	41,807	2,121			

(Source: Fish Resources Development Authority)

There were 102,000 people engaged in fisheries in 1988 (see Table 2-2-3); 31,000 less than in 1981. However, in 1988, 46,000 people engaged in the marine fishery; 6,000 more than in 1981.

There were 5,433 fewer fishermen working in the Red Sea in 1988 than in 1981. This change was thought to have been brought about because of the decrease in the number of small fishing boats (hand-powered and sail boats), manpower savings as a result of fishery mechanization, and the increase of employment opportunities in the industrial sector due to the industrial development in the Suez coastal area. Some degree of the decrease can be attributed to the statistical methods used during those years.

Total catch per fisherman in 1988 was 2.2 tons. This is double the 1.0 ton amount in 1981. In 1988, the marine fishery catch per fisherman was 1.3 tons, a 60% increase over the 0.8 ton amount in 1981.

Table 2-2-3 Number of People Engaged in Fisheries

(Unit: person)

Category \ Year	1980	1981	1988
Marine fishery			
In the Mediterranean Sea	24,535	27,345	39,101
In the Red Sea	11,138	12,382	6,949
Subtotal	35,673	39,727	46,050
Freshwater Fishery			
Lakes	38,472	55,014	28,537
Nile River	35,532	38,085	27,680
Subtotal	74,004	93,099	56,217
Total	109,677	132,826	102,267

(Sources: Fishery Statistics in Egypt)

1) Freshwater Fishery

The freshwater fishery is conducted on 8 lakes, in the Nile River and its canals. The 1988 yield is shown in Table 2-2-1.

Fishing implements include gill nets, triple nets and small stationary nets. The fish catch includes gray mullets, eels, carp, Nile perch, etc.

2) Marine Fishery

The marine fishery is conducted on the Mediterranean Sea, the Red Sea, the Gulf of Suez, and off the coasts of Sudan and North Yemen, with operational bases at each port. The major fishing ports are mentioned in the table below.

Table 2-2-4 Major Fishing Ports

Fishing Ground	Name of Fishing Port
Mediterranean Sea	Eastern Fishing Port (Alexandria) Abou Queer Bay Port (Alexandria) Rosetta Port (Rosetta) Burullus Port (Burullus) Damietta Port (Damietta) Matrouh Port (Marsa Matrouh) Port Said Port (Port Said)
Suez Gulf	Ataqa Fishing Port Eltur Fishing Port Sharm El Shaikh Fishing Port
Aqaba Gulf	Nuweiba Fishing Port Dahab Fishing Port
Red Sea	Hurgada Fishing Port Ras Banas Fishing Port

Source: Fishery Statistics in Egypt

(a) Mediterranean Sea

The catch in 1988 of 32,500 tons was mostly pilchards (sardines) followed by shrimp.

Table 2-2-2 shows that the number of fishing boats in 1981 was 1,283 while in 1988 there were 1,284; no significant difference in seven years. Of the powerboats, the ratio of trawlers is the highest with 641.

Fishing is mostly conducted on the continental shelf in front of the Nile Delta along the western portion of the Egyptian Coast.

Two research/training vessels have been provided by Japan for conducting research and development of new fishing grounds, using the major fishing port of Alexandria as their base.

(b) Red Sea, Suez Gulf

The catch on the Red Sea and the Suez Gulf in 1988 totalled 27,108 tons. The major fishing grounds are the Suez Gulf and the Foul Bay. Fish landing ports are Ataqa (21,745 tons), Hurgada (2,544 tons) and others (1,819 tons).

Purse seining and trawling are the major fishing methods, bringing in 70% and 19% of the entire catch respectively. The marine fishery mostly utilizes these two methods.

(2) Fish Resources of the Red Sea

According to the Red Sea Fishery Development Project Report prepared by the UNDP/FAO, the possible Red Sea catch is estimated as shown in Table 2-2-5.

Table 2-2-5 Estimated Fish Catch in the Red Sea and Suez Gulf by Fishing Method

Fishing Method	Fishing Ground (km^2)	Catch (ton)	Estimated Possible Catch (ton)
Trawling	7,100	4,500	5,200
Purse Seining	8,500	16,500	18,700
Long Lining	6,500	2,300	3,300
Total	22,100	23,300	27,200

Source: UNDP/FAO

Sardines account for 27.5% of the entire catch. Fish resources of the Suez Gulf are thought to have reached MSY (Maximum Sustaining Yield). Future development may not be expected if the fishery is limited to existing surface fish; thus research on deep-sea fish resources in the Red Sea is being conducted using the research boats provided by grant aid from Japan.

Table 2-2-6 shows the allowable fish yield of the Red Sea and the Gulf of Aden according to the UNDP report. The table shows that the possible yield increase of Egyptian seas only amounts to a few thousand tons. However, Somalia and South Yemen on the Gulf of Aden have resources of 490,000 tons within their EEZ (Exclusive Economic Zone). As their annual yield totals 60,000 - 70,000 tons, there is still 420,000 tons available. Egypt has a fisheries agreement with Sudan and North Yemen; the fish yield could be greatly increased if entry into the waters of Somalia and South Yemen were also permitted.

Table 2-2-6 Estimated Possible Fish Yield of Various Countries in the Red Sea and the Gulf of Aden by Fishing Method

Countries	Trawling	Purse Seining	Long Lining	Total
Egypt	5,200	18,700	3,300	27,200
Ethiopia	7,400	1,600	50,000	59,000
Jordan	-	-	-	-
Saudi Arabia	14,000	11,000	15,200	40,200
Sudan	500	1,500	4,600	6,600
North Yemen	8,000	17,000	22,000	45,000
Somalia	40,000	100,000	-	140,000
South Yemen	-	300,000	50,000	350,000
Total	73,100	449,800	145,100	668,000

Source: UNDP/FAO 1978-1984

(3) Import and Export of Marine Products

Fresh and frozen fish are the major marine products imported by Egypt -- imports amounted to 100,000 tons in 1988. Only a very small amount of fresh and frozen fish and shrimp were exported. Thus, the aim of the government is to develop the country's fishing industry so as to increase the yield and decrease imports.

Table 2-2-7 Imported Major Fishery Products

(Unit: Ton)

Item \ Year	1985	1986	1987	1988
Fresh and frozen fish	73,310	103,206	93,989	100,062
Smoked sardines	-	-	-	294
Other smoked fish	95	109	5	135
Salted sardines	59	-	-	-
Other salted fish	204	383	259	445
Fresh shrimp	-	-	-	150
Fresh shellfish	26	-	-	-
Canned sardines	1,282	434	-	26
Canned tuna	2,062	4,638	2,156	2,185
Other canned fish	5,486	1,553	-	-

Source: Central Agency for Public Mobilization and Statistics

Table 2-2-8 Imports and Exports of Major Fishery Products

(Unit: 1000 L.E.)

Items \ Year	1985	1986	1987	1988
Imports	39,201	52,575	61,063	101,652
Exports	475	3,211	2,753	6,366

Source: Central Agency for Public Mobilization and Statistics

(4) Distribution Market

The sale of fish comes under the government's price control system for agricultural and marine products. Standard prices have been established with fixed maximum and minimum prices.

Each provincial government may purchase local catches at a fixed rate according to the type of fish and type of fishing boat used, and supply it to local inhabitants. The Ministry of Supply and Internal Trade is responsible for sales in the provinces.

The distribution route of marine products in the fishing port of Ataqa is shown in Table 2-2-9. A production tax of 0.25 LE is imposed on every 25kg of the catch in Ataqa.

Table 2-2-9 Fish Purchase by Governorate

Ataqa	Purse seining boats 10%, Long lining boats 30%	Trawlers 33%,
Hurgada	Purse seining boats 10%, Long lining boats 50%	Trawlers 10%,
Port Said	All fishing boats 100%	
Alexandria	All fishing boats 0%	
Port of Damietta	All fishing boats 0%	
Marsa Matrouh	All fishing boats 5%	
Al Tur	All fishing boats 50%	

(5) Problems of the Egyptian Fishing Industry

The Freshwater fish yield has been decreasing since 1980. Although the marine catch has been increasing, it is not high enough to meet the consumption rate. Also, from 1985 to 1988, there was a 40% annual increase in imports. Thus, the major objectives of the Egyptian fishing industry from now on will be to increase the yield to meet consumption rates, develop fishing grounds, decrease imports and improve fishing port infrastructures.

2.3 Related Projects

(1) National Development Plan

Egypt conducted its First Five-year Plan for Socio-Economic Development 1982/83-1986/87, and is now conducting the Second Five-year Plan (1986/87-1991/92). The objectives of these plans are as follows:

- To strengthen the national economy and increase exports.
- To strengthen the national economy by improving and reorganizing social and economic infrastructures.
- To secure a basic standard of living for the estimated 70 million people who will be living in the country by the year 2000 and increase employment opportunities.

In the field of agriculture and fisheries, the government's aim is to improve the nutritive standards of the people, to reorganize the ratio of the production yield of agricultural crops, secure animal protein, to develop the fishing industry and achieve self-sustenance. Other objectives are:

- To make effective use of existing fish resources.
- To expand the freshwater fishery.
- To strengthen the fishermen's union.

The Second Five-year Plan for Socio-Economic Development aims at achieving a 350,000 ton fish catch for 1991/1992.

Table 2-3-1 Food Production Plan in the Second Five-Year Plan for Socio-Economic Development

(Unit: 1,000 ton)

Product	1986/1987 Forecast	1991/1992 Target	Annual Growth Rate
Wheat	2,188	3,120	7.3
Rice	2,667	3,257	4.1
Sugar	10,358	11,161	1.5
Vegetables	11,936	11,628	0.5
Meat	406	470	2.9
Poultry	223	281	4.7
Eggs	143	175	4.1
Fish	236	350	8.2

(2) Regional Plan

Most of the Suez area where the port of Ataqa is located was destroyed during the war in 1967. The Egyptian government aims at restoring the Suez area to its prewar condition and develop the city so that it can asccommodate a population of one million by the year 2000. With technical cooperation from Japan, the Master Plan for the Development Plan of the Suez Bay Coastal Area has been prepared. The projects proposed are as follows:

- Construction of two multipurpose berths for container ships.
- Construction of four berths, including a grain berth having a 70,000 ton silo.
- Construction of an additional road between Ataqa and Adabiya, and the maintenance of roads between Ataqa industrial housing area and Adabiya, a free zone.
- Repair of the railway between Suez and Ataqa, and the construction of branch lines in the port of Ataqa and a marshalling yard for train formation.
- Construction of industrial housing for Ataqa and Adabiya.
- Expansion of the existing Suez water purification plant, construction of a new water purification plant, and maintenance of the Ataqa-Adabiya water supply system.
- Construction of a power station and substation.

This Project for Rehabilitation and Development of Ataqa Fishing Port has been drawn up as part of the Development Plan of Suez Bay Coastal Area mentioned above.

(3) Fisheries Development Plan

In order to secure the supply of animal protein and to decrease the imports of marine products, Egypt has come up with the following fisheries development plan for the promotion of its fishing industry:

- Improvement in the effective use of existing fish resources.
- Improvement of the marine fishery.
- Improvement of the Red Sea's seaport infrastructures.

As a part of the improvement of the Red Sea's seaport infrastructures, the Hurgada Fishing Port was constructed 395km south of Suez in 1989. Hurgada has a 120m-long main quay, with a fish handling area and water, electric and oil supply facilities.

The Ataqa Fishing Port Project is a part of the infrastructure development plan in the Suez Bay coastal area.

2.4 Course and Contents of the Egyptian Request

The Government of Egypt has drawn up a Fishery Development Plan, the objectives of which are to increase the fish catch, secure the supply of protein, and reduce the expenditure of foreign currency by decreasing marine product imports. Egypt has requested grant aid cooperation from Japan for the rehabilitation and development of the Ataqa Fishing Port, as its Red Sea fishing center, located near the capital of Cairo.

The contents of the request are as follows:

(1) Construction of Port Facilities

- Landing quay
- Preparation quay
- Idle quay

- Breakwater
- Revetment
- Rehabilitation of existing port
- Navigation aids
- Slipway

(2) Civil Works

- Dredging and reclamation
- Embankments
- Road/paving
- Landscaping
- Utilities

(3) Shore Facilities

- Transit sheds (2)
- Administration office
- Emergency facilities
- Fire fighting facilities

(4) Other Related Facilities

The arrangement plan of the above facilities is as shown in Fig. 2-3-1.

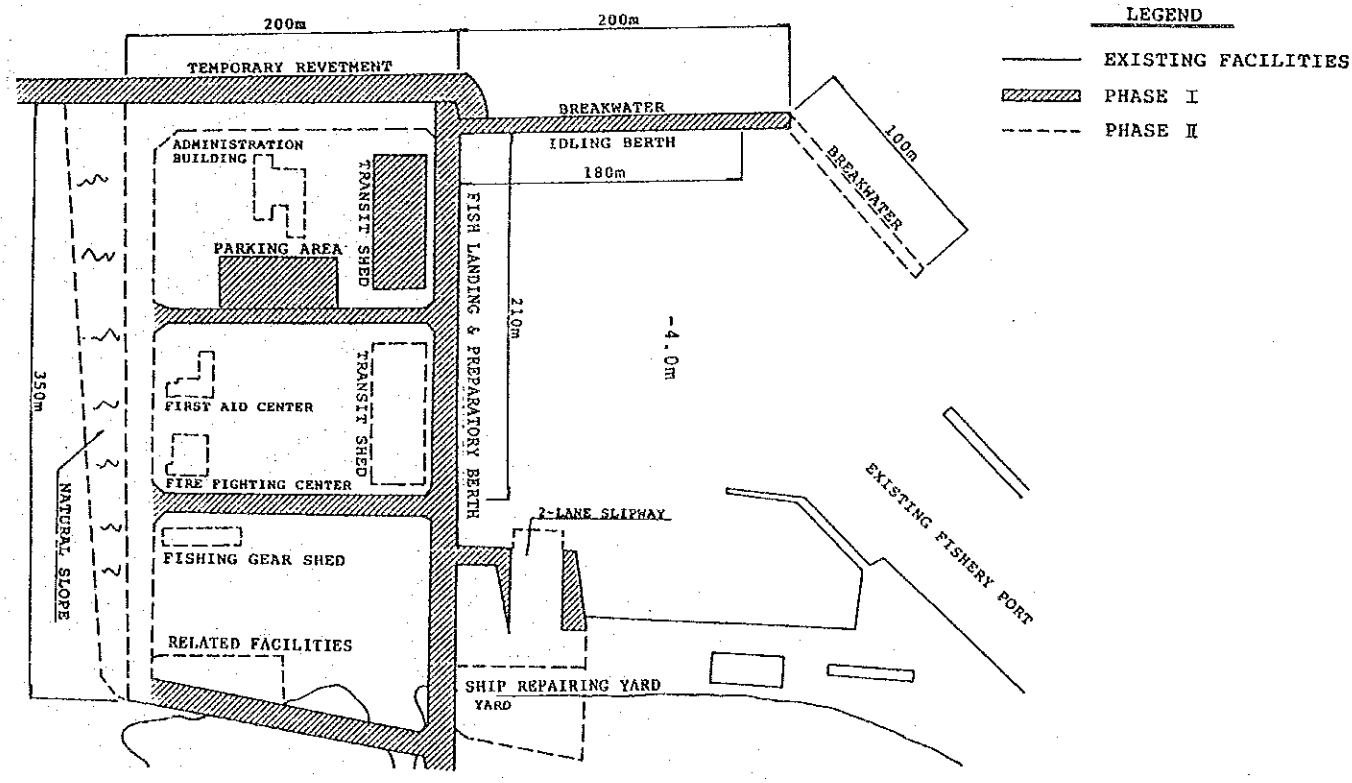


Fig. 2-3-1 Arrangement Plan of Requested Facilities

CHAPTER 3 OUTLINE OF THE PROJECT AREA

CHAPTER 3 OUTLINE OF THE PROJECT AREA

3.1 Location and General Condition of Project Area

The Project area in Ataqa is located within the Suez Bay in the Suez Governorate. The Suez Governorate is located 135 km east of Cairo on the southern edge of the Suez Canal. The Suez Canal links Port Said on the Mediterranean side with the Suez Bay on the Red Sea side; it is 160 km in length.

In 1981, revenue from the Suez Canal was almost 950 million U.S. dollars which represented 10% of the country's total revenue.

During the 1967 war, 85% of the buildings in Suez were destroyed. In an attempt to restore the Suez Governorate, the Government of Egypt is building housing and constructing infrastructures.

In 1976, Suez's population was 194,000. This figure increased to 391,000 in 1989.

The government prepared the Master Plan of development of the Suez coastal area with the objective of building it into a region able to accommodate one million inhabitants by the year 2000.

Based on the Development Plan of Suez Bay Coastal Area, a study was conducted with the technical cooperation of Japan and a master plan was drawn up that included the Ataqa Fishing Port's restoration plan.

Suez's industry was restored rapidly after the 1973 war. Major industries include petroleum, gas, cement, textiles, fertilizers, etc. (see Table 3-1-1, Fig. 3-1-1)

The rehabilitation of the Ataqa Fishing Port is planned as a part of the Suez Coastal Area Development Plan and is a major part of the development of the Suez Governorate. The reconstruction of the central Red Sea fishing port is of great importance for the promotion of Egypt's fishing industry.

Table 3-1-1 Industries in Suez Governorate

Unit: '000L.E.

	1976	1977	1978	1979	1980/81	80/81 (%)
1. Food, Beverages, Tobacco	639	1,068	1,060	1,364	2,797	5.7
2. Spinning, Weaving, Clothes, Leather	-	-	-	-	4,280	8.7
3. Wood, Wood Products	-	128	215	-	195	0.4
4. Paper, Paper Products, Publishing	-	-	-	-	-	-
5. Chemicals, Oil Products, Coal, Rubber	9,956	15,459	22,217	25,442	37,927	77.2
6. Non-metal Mining Ore Products	38	59	170	157	386	0.8
7. Essential Metals	-	-	-	-	-	-
8. Metal Products, Machines, Equipment	1,630	2,082	2,119	2,314	3,581	7.2
9. Other Conversion	-	-	-	-	-	-
Subtotal	12,263	18,796	25,781	29,277	49,115	100.0
Mining Quarry Production	246	480	147	231	143	
Unclassified Required Services	210	189	262	284	305	
Total	12,719	19,465	26,190	29,792	49,563	

Source: CAPMAS

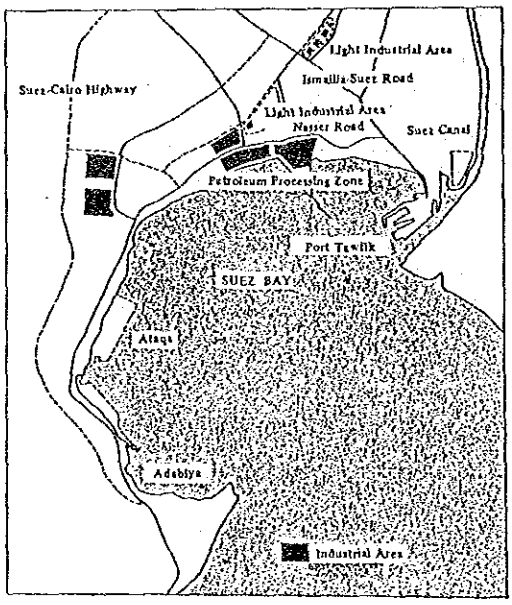


Fig. 3-1-1 Distribution of Industries and Industrial Areas by Suez and Ataqa

Source; Development Plan of Suez Bay Coastal Area

3.2 Social Environment

The Suez Governorate -- where the port of Ataqa is located -- has two principal trunk roads, the Cairo-Suez route (135 km) and the Ismailia-Suez route (85 km), the Red Sea East Coast Road --from Suez to the Sinai Peninsula, and the West Coast Road that extends to Hurgada. These roads are paved with asphalt and are from 6 to 7 m wide.

The Cairo-Suez and Ismailia-Suez railway lines are used for carrying passengers and freight. Sidetracks from Suez-Ataqa and Suez-Adabiya are used for the transportation of petroleum, fertilizers, and freight.

Water for domestic and industrial use is obtained from a supply canal from the Nile. In 1985, 27,400 m^3 of water was used per day. Groundwater is also being pumped, although on a small scale. For the supply of electricity, the Suez (117 MW), Ataqa (300 MW) and Ismailia thermal power stations were completed by 1985, connecting Suez, Ataqa and Adabiya by a national electric power network.

The National Communications Corporation (ARENTO) runs the telephone and telegraph services. A total of 11,000 telephone circuits have been installed in Suez.

There is a 427-bed public general hospital and three private hospitals having 90 beds in Suez. The fire department maintains 7 stations and 32 fire engines.

3.3 Outline of the Ataqa Fishing Port

(1) General

The Ataqa Fishing Port is located on the west coast of the Suez Bay and handles 85% of the Red Sea's total fish catch. It is a base for powerboats operating in the Red Sea. Tawfik Port is a small fishing port at the entrance to the Suez Canal that serves as a base for hand-powered boats operating in the Suez Bay.

The Ataqa Fishing Port was constructed 80 years ago as a stone-shipping port for the Ataqa quarry. It was transformed into a fishing port for sometime after 1963. Thus, the quay crown is too high and there are no fenders or mooring posts making the quay unsuitable for mooring fishing boats or unloading fish. The quay is deteriorating and in some places is damaged. In front of the quay there is much discarded material.

The crown of the existing breakwater is too low. During rough weather waves from the open sea pass over the breakwater and cause damage to boats.

Compared to the number of boats using the port as a base, the quay length is short with inadequate space for unloading, preparation and idling. The port is extremely congested because the quay is not sectioned off according to use. There is only a short distance between the breakwater and the quay; this causes difficulty in the mooring and maneuvering of fishing boats and presents a safety problem.

The port has poor distribution facilities and no fish handling area nor ice making plant. This causes problems in maintaining the freshness of fish. There are no parking areas behind the quay and traffic congestion in the port prevents smooth fish delivery.

(2) Existing Facilities

Ataqa Fishing Port and the surrounding areas come under the jurisdiction of the Suez Governorate. The major facilities at the port are as follows:

Quay:	Length 620 m Concrete block structure Crown height DL +3.8 to 3.9 Water depth -1.10 m to -3.3 m
Breakwater:	Length 350 m
Rubble mound, sloped structure type:	Crown height DL +2.5 m
Water supply:	Simple water supply ϕ 50 mm Hydrant: 4 places
Oil supply:	Simple oil tank: 4 places

Fishery Facility: Fish sorting area (for Suez) 30 m^2

Slipway: Width 28 m, draft -2.7 m
Diesel winch 200 hp
Repair yard: 1.3 ha

(3) Fish Landing Volume at Ataqa Fishing Port

For the past five years, fish landing at Ataqa has been from 15,000 to 22,000 tons as shown in Table 3-3-1. Horse mackerel and sardines make up nearly 40% of the entire catch.

Table 3-3-1 Fish Landing Volume by Fishing Method at Ataqa

Unit: ton

Fishing Method \ Year	1984	1985	1986	1987	1988
Trawling	4,058	3,230	4,678	4,243	3,576
Purse seining	11,618	15,454	10,624	11,222	17,097
Long lining	4,247	1,556	676	1,740	10,721
Total	19,923	20,240	15,302	15,465	21,745

(Source: Fish Resources Development Authority)

Table 3-3-2 Fish Landing Volume by Species at Suez

Unit: ton

Species \ Year	1985	1986	1987	1988
Horse mackerel	8,900	7,193	4,719	3,720
Lizard fish	1,194	2,784	2,325	1,068
Red fin bream	32	32	23	15
Sardines	409	1,557	3,813	6,757
Rabbit fish	8	20	9	5
Cuttle fish	124	171	191	95
Emperor	161	119	86	71
King mackerel	5	21	22	6
Mackerel	40	85	189	205
Striped snapper	353	350	190	180
Snapper	709	650	603	835
Gray mullet	135	183	233	345
Tuna	66	14	30	20
Grouper	331	182	161	85
Shrimp	802	498	623	550
Others	11,945	6,388	7,775	13,152
Total	25,214	20,247	20,992	27,108

(Source: Fish Resources Development Authority)

(4) Fishing Boats Registered at Ataqa and Their Operations

In 1988, there were 79 trawlers, 52 trawlers operating outside the Suez Gulf, 83 purse seining boats, and 66 long lining boats registered at Ataqa -- a total of 280 boats. There has been no significant increase in the number of fishing boats since 1983; however, there is a trend towards bigger boats (refer to Table 3-3-4).

Most of these fishing boats are privately owned. In general, one boat is owned by more than two parties. The boat owners have organized two cooperative associations -- the trawler and purse seiner association and the longliner association -- for the convenience of making cooperative supply purchases and for the payment of public fees, such as the fishing port's water fees.

The trawlers operating in the Suez Gulf are from 20 to 30 m long, have a crew of 12, and operate 8 to 10 days per trip. Trawlers operating outside the Gulf are from 20 to 30 m long, have a crew of 20 to 30, and operate 23 to 30 days per trip.

Purse seining boats are from 18 to 30 m long, have a crew of 30 to 40, and operate 2 to 4 days per trip. Excluding the 10 days before and after the day of the full moon, there are 20 fishing days a month.

Long lining boats are from 7 to 15 m long with a crew of 8; they operate 14 to 18 days per trip.

For the conservation of resources, fishing is prohibited in the Suez Gulf during the summer spawning season and the growth period of fry. In general, the period is four months, from June 1st through September. This period may be altered by a decision of the special committee. During the prohibited season, 50% of all fishing boats, excluding small boats, cease fishing operations and either undergo repairs or remain idle. The remaining boats sail and catch fish in the Mediterranean or Red Sea.

Table 3-3-4 Trend of the Number of Registered Boats at Ataqa and Tawfic by Boat Class

Fishing Method	Horsepower	1983	1984	1985	1986	1987	1988	
Trawling	100 - 200	24	24	22	21	20	19	ATAQA
	200 - 800	42	41	39	37	32	25	
	300 - 400	3	3	5	5	6	6	
	400 - 500	8	10	12	15	20	29	
	Subtotal	77	78	78	78	78	79	
Purse Seining	100 - 200	22	22	19	15	11	15	
	200 - 300	51	51	52	50	48	44	
	300 - 400	10	10	10	11	14	9	
	400 - 500	-	-	1	8	10	15	
	Subtotal	83	83	82	84	83	83	
Trawling (operating outside the Gulf)							52	
Hook with Motors	10 - 115	159	147	119	131	114	164	in ATAQA 66 in TAWFIC 98

Note: 280 registered boats at Ataqa in 1988

(Source: Fish Resources Development Authority)

(5) Fish Distribution System at Ataqa

The fish unloaded at Ataqa are distributed through two systems. One system is the controlled route whereby the fish purchased by the Governorate is sold in Suez at controlled prices. The other system is the independent distribution route whereby the fish are delivered to the central market in Cairo and sold at auction. The ratio is determined based on the fishing method. The distribution price has a fixed maximum for each stage (see Fig. 3-3-1).

Table 3-3-3 Sorting of Unloaded Fish at Ataqa in 1988

Fishing Method	Unloaded Fish (t)	For Governorate (%)	For Cairo (%)
Trawling	3,576	1,180 (38)	2,396 (67)
Purse seining	17,097	1,710 (10)	15,387 (90)
Long lining	1,072	322 (30)	750 (70)
Total	21,745	3,212	18,533

(Source: Fish Resources Development Authority)

Fig. 3-3-1 Fish Distribution Route at Ataqa Fishing Port

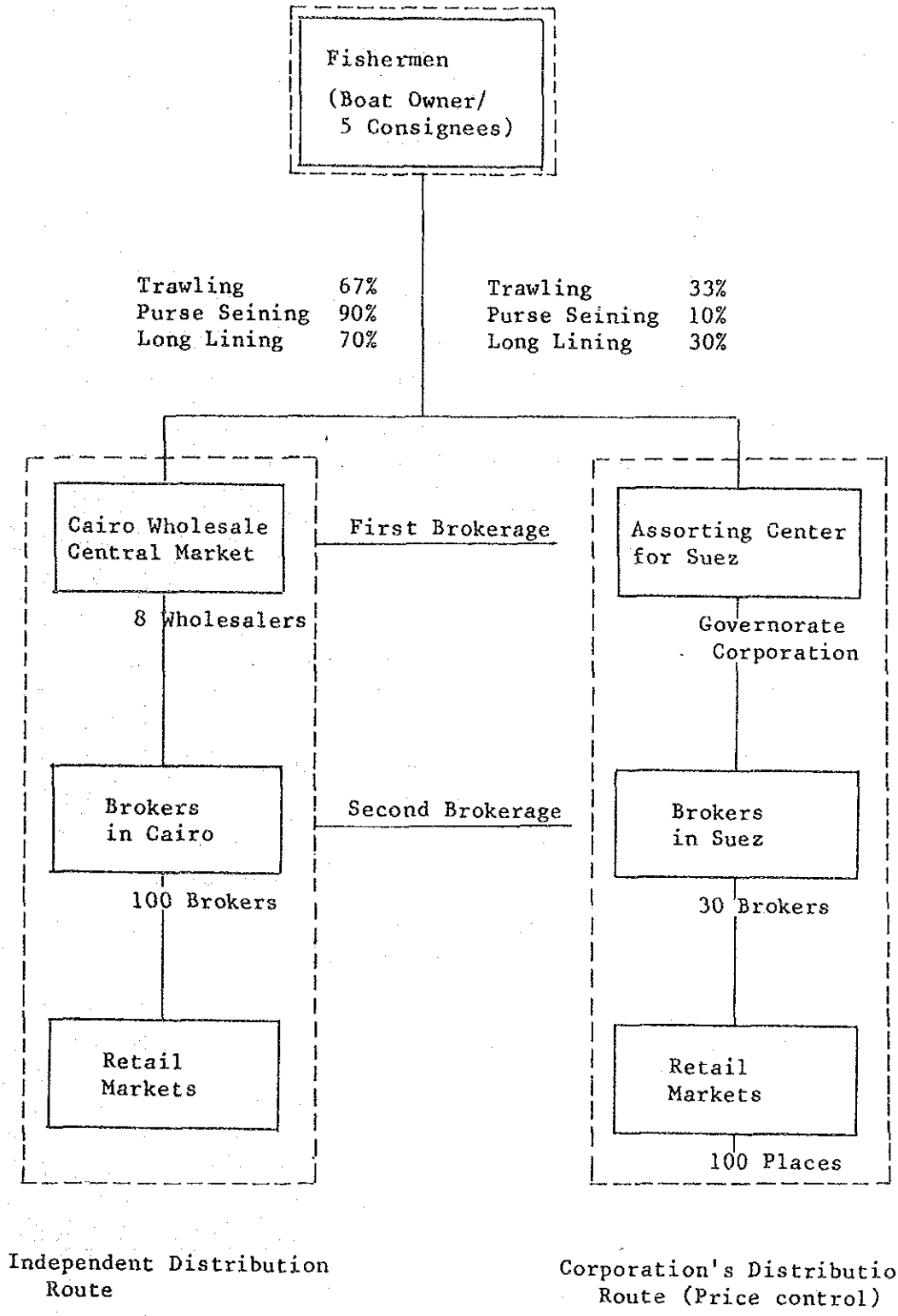


Table 3-3-5 Suez Governorate's Fish Purchase Price (Maximum)

Unit: LE/kg

Species	Consignee's Price	Wholesale Price	Retail Price
I. Trawling			
Lizard fish (Large)	2.30	2.42	2.60
(Medium)	1.20	1.33	1.50
(Small)	0.85	0.95	1.05
Striped snapper	0.70	0.80	0.90
Gray mullet	1.20	1.32	1.50
Cuttlefish (Large)	1.20	1.32	1.50
(Medium)	0.70	0.80	0.90
Snapper (Large)	2.05	2.17	2.35
Snapper	1.20	1.32	1.50
Mullet	1.20	1.32	1.50
Shrimp	1.10	1.20	1.35
Prawn	8.50	-	9.00
II. Purse seining			
Horse mackerel (Large)	0.95	1.05	1.20
(Small)	0.60	0.70	0.85
Sardine (Large)	0.95	1.05	1.50
(Small)	0.60	0.70	0.85
Anchovy (Large)	1.25	1.35	1.50
(Small)	1.00	1.10	1.25
Mackerel (Large)	1.25	1.35	1.50
(Small)	1.00	1.10	1.25
III. Long lining			
Emperor bream	3.15	3.25	3.50
Red bream	3.15	3.25	3.50
King mackerel	3.15	3.25	3.50
Grouper	2.00	2.10	2.25
Emperor fish (Large)	2.15	2.25	2.40
(Small)	1.40	1.50	1.75

(Source: Fish Resources Development Authority)

As for the fish not purchased by the Governorate, the boat owners or wholesalers (consignees) forward them to the local central market or to the great consumer center at Cairo and earn a 5% commission. The price of fish is determined at the auctions held at Cairo's central market and at other markets --the prices are higher than Suez's controlled price. The price of fish is around LE 10 /kg; shrimp goes for about LE 30/kg.

There are nearly twenty ship-owner agencies in the port handling the distribution of fish to Cairo. They are responsible for providing oil, water, ice and provisions, and for arranging the sale of fish. Fish to be forwarded to Cairo are placed in wooden crates, packed with ice and stacked directly onto trucks. At Cairo's central market, these crates of fish are auctioned off in stacks. There are five agents registered at Ataqa as consignees. These consignees entrust the auction at Cairo's central market to eight wholesalers; the fish is sold to about 100 brokers who, in turn, sell them to various markets.

Fish unloaded from trawlers and long lining boats are relatively fresh as they have been kept in ice storage. However, due to an inadequate supply of ice on purse seining boats, fish lose some of their freshness. Unloaded fish are packed with ice and transported to Cairo by truck. The distribution area at the port has no roof and the fish are handled under direct sunlight. There are times when the amount of ice is inadequate and the fish delivered to the market lack freshness.

(6) Management and Operation of Ataqa Fishing Port

Since 1967, Ataqa's port facilities have received no maintenance. There have been no repairs made to the quay or to the breakwater. The Red Sea Port Authority is to be appointed to maintain and repair Ataqa's harbour facilities.

The fishery at Ataqa is presently being managed and operated by the General Egyptian Authority for Fish Resources with a

staff of thirty people. Five personnel are stationed at Ataqa Port who have the following duties:

1) Acting as members of the committee responsible for the distribution of fish
2) Management of fishing nets (regulation of fish net mesh size)
3) Sorting out statistical data
4) Registration and approval of fishing boats
5) Issuing clearance permits for boats entering and leaving port
6) Supervision of violations during closed seasons.

Two personnel from the Authority for Fish Resources are responsible for collecting the 1 PT/kg (yield tax) on the catch at Ataqa.

The Agriculture Minister authorizes the collection of the yield tax. The tax money is mostly spent on port facility maintenance.

There are two fishermen unions at Ataqa Port. One of them is organized by the owners of trawling and purse seining boats; the other is organized by the owners of long lining and gill netting boats. There is no single union representing all fishermen. The union purchases engines, fishing gear, fuel and provisions, and pays for the water supply to the Suez Canal Authority. The water charge for boats operating 10 days is LE 15 per trip and LE 20 for boats operating 20 days. The electricity charge is divided among the boat owners according to the amount consumed.

Oil and ice supplies are arranged either by boat owners or by their agents. Diesel oil is LE 70/ton; ice is LE 1.2/25 kg.

Fishing boat repairs on the slipway are presently being entrusted to a contractor. Boats are repaired by manufacturers or dealers from either Suez or Cairo. From 120 to 150 boats are overhauled or repaired on the slipway each year. Repair work is carried out between January and September but excluding the peak fishing season.

CHAPTER 4 PROJECT CONTENTS

CHAPTER 4 PROJECT CONTENTS

4.1 Objectives of the Project

At present the Ataqa Fishing Port is not functioning as a fishing port and has the following problems that hinder development of the marine fishery.

The main problems at the present Ataqa Fishing Port are as follows:

(1) The existing quay is too short. The quay is used for many purposes, such as for fish unloading operations, the preparation of outgoing ships, and for ships at rest; therefore, the area is very congested. Thus, fishing boats are obliged to wait for fish unloading and fish freshness is not maintained.

(2) The quay is dilapidated and parts of it are damaged. The quay's crown is very high (D.L. +3.9m) and is unsuitable for loading and unloading fishing boats. Fish unloading operations are greatly hindered.

(3) The quay is not equipped with fenders or mooring posts; it is not safe for the berthing and mooring of fishing boats as the quay structures damage fishing boats.

(4) The space between the quay and the existing breakwater is narrow and makes safe fishing boat maneuvering difficult. As the crown of the breakwater is low, calm water cannot be maintained during stormy weather. At such a time, the fishing boats berthed alongside the quay hit the quay wall, and this causes boats to be damaged.

(5) There is no port administration office; therefore it is not possible to carry out adequate port management. Also, it is difficult to maintain the freshness of the unloaded fish and to sort fish as there is no transit shed available.

(6) Since water and fuel supply facilities are not sufficient, the fishing boats are not being provided with adequate port services necessary for effective boat operations.

Furthermore, public toilets and sewage treatment facilities are nonexistent. From an environmental viewpoint, the port facilities must be improved.

In order to solve these problems, the Project intends making the Ataqa Fishing Port functional by rehabilitating and developing the present port, thereby promoting fishing activities and creating employment opportunities by improving fish landing operations, allowing the fishing boats to operate longer, increasing the fish catch, and improving fishing boat safety during berthing and mooring operations. By rehabilitating the Ataqa Fishing Port, there will be fewer boat accidents and less boat damage, sanitary conditions at the port will be improved, and, as a result of improved fish freshness, the incomes of fishermen will increase. As a final goal, the Project's implementation aims at promoting marine fishery activities and developing the Egyptian fishery.

4.2 Review of the Egyptian Government's Request

The contents of the Government of Egypt's request for the Project of Rehabilitation and Development of Ataqa Fishing Port are described in Chapter 2.

As a result of the examination based on field survey data, the Study Team found that well-equipped hospitals and fire stations exist in Suez City. These facilities can be used in cases of emergency or fires in the Project area. For this reason, the construction of a first-aid station and fire fighting facilities in the port were excluded from the fishing port project.

Fishing boats must be supplied with ice in a timely manner. The Study Team concluded that an ice making plant should be built in the port area to reduce the waiting time for the fishing boats to obtain ice. The landing and preparation quays can be used more efficiently and effectively if the fishing boats do not have to wait so long for ice.

The operation and maintenance of the ice making plant will be described in the following section. It was judged that the plant can be sufficiently maintained under the fishing port's operation and maintenance system.

Oil is supplied at the port by a private company. The installation of an oil supply piping system for the Project was considered to be appropriate.

The Study Team considered that the following items should be included in the Project.

(1) Construction of Fishing Port Facilities
- Landing quay
- Preparation quay
- Idle berthing quay (rehabilitation of existing quay)
- New breakwater construction and rehabilitation of existing breakwater
- Revetment
- Navigation Aids
- Slipway

(2) Civil works
- Dredging
- Reclamation
- Road and parking area pavement
- Utilities (water, oil and power supplies, and ice making plant). For the oil supply facility, only piping will be installed.

(3) Shore Facility Construction
- Fish handling sheds (two sheds)
- Administration Office
- Guard house, public toilet, etc.

As a result of the review of the contents of the Egyptian government's request, the effects of the Project, realization of Project implementation, and the operation and management system of Ataqa Fishing Port are thought to be in concert with grant aid cooperation programme and it is therefore considered to be appropriate to implement the Project under the grant aid cooperation programme of the Government of Japan.

Based on the premise that the Project will be implemented under grant aid from the Government of Japan, the Basic Design of the Project will be prepared.

4.3 Outline of the Project

(1) Executing Agency

The Project's executing agency is a governmental organizatior formed of the Fish Resources Department of the Ministry of Agriculture, the Suez Governorate, and the Red Sea Port Authority of the Ministry of Transport.

The organization charts of the Fish Resources Authority, the Suez Governorate, and the Ministry of Transport are shown in Figs. 7-5-1, 2, 3, 4. .

At present port management and operations are conducted by the Fish Resources Authority of the Ministry of Agriculture and the Suez Governorate. In the new organization for port management, operations and maintenance, they will be joined by the Ministry of Transport, the agency responsible for navigation control and maintenance of fishing port facilities.

(2) Project Plan

1) Basic Planning Conditions

The annual fish landing volume for the Project port shall be 22,000 tons/year. This is equivalent to the volume presently handled at the Ataqa Fishing Port (see Table 4-3-4).

There will be 280 fishing boats operating at the Project port. Facilities shall be designed to handle the fish landing volume and accommodate the fishing boats during fishing seasons.

2) Estimation of the Number of Incoming Boats

The numbers of registered boats and boats presently operating at the Ataqa Fishing Port are shown in Table 4-3-1. The total number of registered boats is 280 (79 trawlers; 83 purse seiners; 52 trawlers operated outside the Suez Bay; 66 long lining boats).

Table 4-3-1 Number of Boats of Each Class and Fishing Method

Boat Class			Number of Boats for Each Fishing Method				
Size	Engine power (PS)	Average length (m)	Trawling	Purse Seining	Trawling outside of Suez Bay	Long lining	Total
Small	< 50	7	0	0	0	*1 (98)	(98) 0
	< 100	12	0	0	0	45	45
	< 150	17	6	4	0	17	27
Medium	< 200	21	13	11	5	1	30
	< 250	23	22	39	20	2	83
	< 300	25	3	5	1	0	9
	< 350	27	0	1	5	0	6
Large	< 400	28	6	8	5	1	20
	< 450	29	26	13	12	0	51
	450 ≦	30	3	2	4	0	9
		Total	79	83	52	(164)66	(378)280
Overall length		*2	24.9m	24.2m	25.6m	14.0m	22.3m
Engine power		*2	297 PS	2679 PS	309 PS	98 PS	214 PS

Notes: 1 98 small boats are moored at Tawfik.
2 Weighted average
Source: Fish Resources Development Authority

Table 4-3-2 Monthly Fish Landing During Different Years at Ataqa Fishing Port

(ton)

Year / Month	1984/1985	1987/1988
Oct.	2,181	1,187
Nov.	4,054	5,345
Dec.	3,432	4,439
Jan.	3,604	3,103
Feb.	2,021	2,112
Mar.	1,827	2,186
Apr.	1,632	1,745
May	1,026	2,381
June - Sept.	-	472
Total	19,745	22,970

(Source: National Institute of Oceanography and Fisheries)

Fishing boat operating conditions are shown in Table 4-3-3. During the November-December fishing season, more than 1,000 fishing boats per month land their fish catch. Generally, the January-March period is the normal fishing period. Trawling and purse seining are prohibited during the June-October period, and November-December is the peak fishing season.

Except for a few boats, all of the 280 registered fishing boats at the Ataqa Fishing Port operate during the peak fishing seasons. The operating cycles of these boats are shown in Table 4-3-3.

Based on the operating cycles, incoming boats at the Ataqa Fishing Port are estimated to number 41.5 a day in total and 37.3 a day excluding purse seining boats. Fig. 4-3-6 almost corresponds to the actual data obtained during the field survey period, i.e., 1,153 boats per month during peak fishing season which translates into 37.2 boats per day excluding purse seining boats (see Table 4-3-3). The estimated figure of 41.5 was used to determine the size of facilities of the fishing port.

Based on the fish landing volume during November 1987 (see Table 4-3-2), a daily fish landing volume of 178 tons was adopted for the facility design. Fish landing volume by type of fishing boat are shown in Table 4-3-4.

3) Numbers of Boats at Repair Slipway

The slipway plan was made using the figure 120 for the number of boats to be repaired per year, which was the average number based on past data.

Table 4-3-3 Number of Incoming Boats at Ataqa Fishing Port, 1988

Fishing method \ Month	1	2	3	4	5	6	7	8	9	10	11	12
Trawling boat	200	200	170	190	200	16				280	260	200
Purse seining boat	400	310	308	215	190						650	900
Trawling, outside of Suez Bay	55	48	34	15	16	27	33	34	42	48	71	53
Total	655	558	512	420	406	43	33	34	42	328	981	1,153

(Source: Fish Resources Development Authority, Ministry of Agriculture)

Table 4-3-4 Fish Landing of Each Fishing Method at Ataqa Fishing Port

Fishing method \ Year	1988
Trawling	3,576 (16%)
Purse seining	17,097 (79%)
Long lining	1,072 (5%)
Total	21,746 (100%)

(Source: Fish Resources Development Authority, Ministry of Agriculture)

Table 4-3-5 Fishing Boat Operating Cycle Time for Each Fishing Method (peak fishing season)

Item / Fishing boat type	Operating days (days/sail)	Days to fishing ground (days/sail)	Resting after fish landing (days/sail)	Total days per sail Σ D (days/sail)	No. of cycles a month
Trawling boat	6	2	2	10	3.0
Purse seining boat	1	1	1	3	10.0
Trawling boat, outside of Suez Bay	16	7	7	30	1.0
Long lining boat	9	5	2	16	1.9

(Source: Fish Resources Development Authority, Ministry of Agriculture)

Table 4-3-6 Number of Incoming Boats and Fish Landing
(peak fishing season)

Item / Fishing boat type	*1 Number of Operating Boats Σn (boats)	*2 Number of days a sail ΣD (days/sail)	Number of incoming boats a day $\frac{\Sigma n}{\Sigma D}$ (boats)	*3 Daily fish landing Q (ton/day)	Daily fish landing per boat $\frac{Q \Sigma D}{\Sigma n}$ (ton/boat)
Trawling boat	79	10	7.9	*4 22.8	*4 2.9
Purse seining boat	83	3	27.7	140.8	5.1
Trawling boat, outside of Suez Bay	52	30	1.7	5.7	3.4
Long lining boat	66	16	4.2	8.9	2.1
Total	280	-	41.5	178.2	-

Note: 1. All registered boats at Ataqa operate during peak fishing seasons.

2. Based on field survey data (see Table 4-3-5).

3. Proportionally alloted figures of the peak fishing season's fish landing of 5,345 tons/month (Fig. 4-3-2) according to the proportion of the fish landing by each fishing method shown in Table 4-3-4.

4. Landing volume by trawling boats includes 20% of fish catch by trawling outside of Suez Galf.

(3) Outline of the Project Site and Location

1) Project Site

As shown in Fig. 5-3-1 the Ataqa Fishing Port faces the Suez Bay. The rear of the port is bounded by the shoreline and the Suez West Coast trunk road. The port is connected to the trunk road by a 4 m wide access road.

The land area of the existing port is approximately 50 m wide and is situated along the shoreline for approximately 900 m in a north-south direction.

The planned expansion area is located to the north of the existing quay. Part of the area's seaside will be dredged to secure the boat maneuvering area. The dredged material will be used for land reclamation.

The crown height of the existing quay is from D.L. +3.2 to +3.9 m. The ground height behind the quay is in the range of D.L. + 2.5 to +3.2 m. The south end of the fishing port is in close proximity to Ataqa's quarry shipping port. The north end is connected to the natural beach. The rear of the port's western side is bounded by a large area of government land under the jurisdiction of the Suez Canal Authority. The government land is presently used as a material stockyard by the Suez Canal Authority -- most of the land, however, is marshy waste. The surface of this land, as is typical in Egypt, is entirely covered by sand.

Because waste material has been dumped in front of the quay over a prolonged period of time, the water depth has become shallow. Water depth at the midpoint of the quay and breakwater is more than -3.0 m; however, at certain points immediately in front of the quay, the water is only about -1.0 m.

The basic features of the topographic and sounding survey conducted are as follows:

- Topographic Survey:

Survey date:	7-15 December 1989
Survey area:	Approximately 30 ha
Survey method:	Offset method, basic points interval = 601.690m
Equipments used:	Light-wave distance measuring instrument and a transit

- Sounding survey

Survey date:	12-18 December 1989
Survey area:	Approximately 60 ha
Survey method:	Echo sounding and lead sounding
Instrument used:	Echo Sounder RS-60

2) Soil Survey

The following boring survey was conducted as a part of the field survey:

Boring on land: 20 m deep x two points

Offshore boring: 30 m deep x two points

The columnar section boring logs and laboratory test results are listed in Appendix 7. The boring test results show that the soil at the Ataqa Fishing Port is mainly formed of a layer of sand and gravel-mixed sand. In this layer there is a 2.5 to 3.0 m thick dense silty clay layer. The some portion of seabed surface has a sand layer with N-values of 4 to 6; however, in general, the sea ground has favourable conditions for a gravity type of structure. A layer having an N-value of more than 50, which is suitable as structure bearing ground, exists at about DL.-15m.

The silty clay layer is under a normally consolidated condition and the cohesion of this layer is C = 8 to 9 tons/m^2.

3) Current Observation

The current observation was made at a point approximately 300 m off the breakwater. The observation was made over a 25 hour period. A current meter was placed 1.2 m above the seabed. Current directions and velocities were automatically recorded and the data was analyzed.

Observation date: 7 through 8 December 1989

Survey method: As shown in Fig. 4-3-1

Instrument used: AANDELAA RCM-7

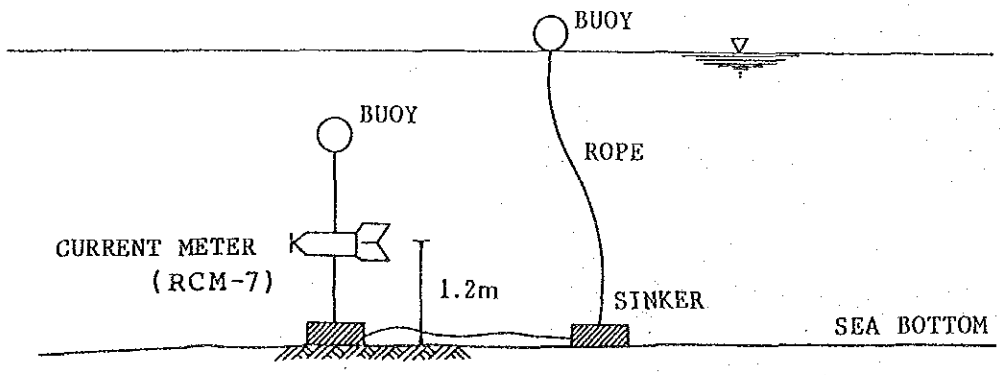


Fig.4-3-1 Current Meter Setting

The results of observation shows that the current during the observation period was southwesterly to south-southwesterly with a maximum velocity of 6 cm/sec.

Judging from the current velocity and sand grain size at the site, the sand drifting phenomena caused by the longshore current is thought to be slight.

The results of the harmonic analysis of the current are listed in the Appendix 7.

4) Tide Observation

The tide harmonic analysis was made based on the 15-day tide observation data. The analysis results are provided in Appendix 7. The results showed that the observed highest and lowest tide levels were higher than the nearly highest high level and lower than the nearly lowest low level. However, the deviations are thought to be within the limits of the average daily tide level changes.

Since each tide level that was analyzed based on the observed data was within the allowable range as compared to the one used in and around the Suez Bay by the Suez Canal Authority, the tide levels shown in Fig. 4-3-2 will be used in the Project's construction plan. The Chart Datum Elevation will be used as a basis of construction for the Project.

The tide observation was conducted as follows:

Observation date: 14-29 December 1989
Instrument used: AANDELAA WLR-7

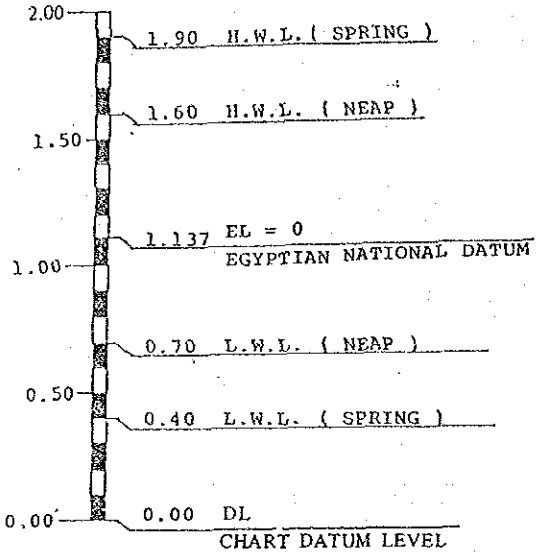


Fig. 4-3-2 Tide Diagram

(4) Facilities required for the Project

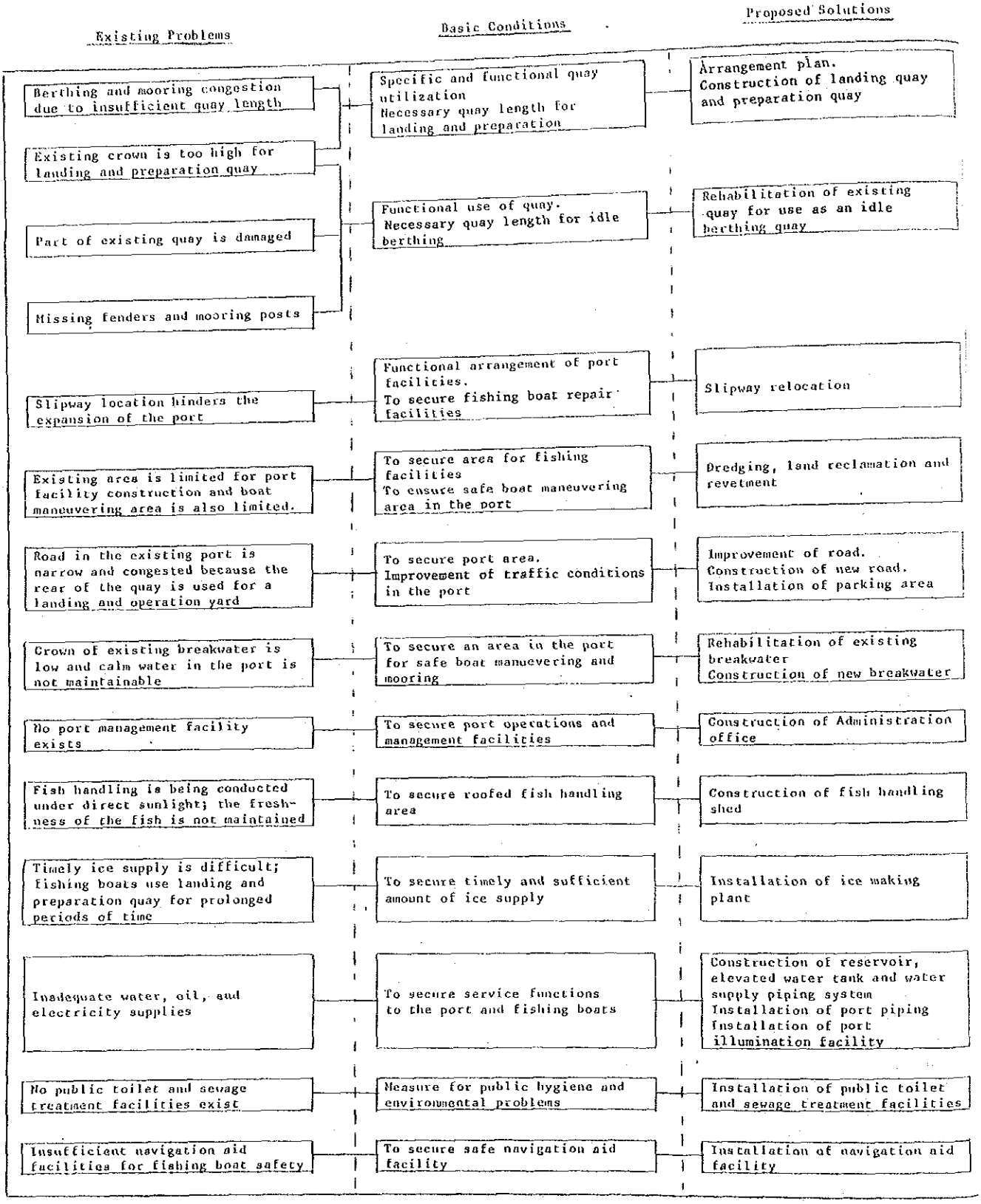
Ataqa Fishing Port's problems and proposed solutions are shown in Fig. 4-3-3.

Based on the proposed solutions, the necessary facilities for port rehabilitation and development are shown in Table 4-3-7.

Table 4-3-7 Facilities for Rehabilitation and Development of the Ataqa Fishing Port

Work and Facilities	
1. Port Facility Work	1 Landing quay construction 2 Preparation quay construction 3 Idle berthing quay (rehabilitation of existing quay) 4 New breakwater construction and rehabilitation of existing one 5 Revetment for slope protection 6 Installation of navigation aids 7 Relocation of slipway
2. Civil Works	1 Dredging to secure channel and maneuvering area in the port 2 Land reclamation using dredged material 3 Construction and rehabilitation of road in port 4 Parking area construction
3. Utility work	1 Construction of reservoir, elevated water tank and water supply piping system 2 Installation of oil supply piping system 3 Installation of electric supply and lighting facilities 4 Construction of ice making plant
4. Building Work	1 Construction of fish handling sheds 2 Construction of administration office 3 Public toilet and guard house

Fig.4-3-3 Ataqa Fishing Port's Problems and Proposed Solutions



(5) Management, Operation and Maintenance

1) Management, Operation and Maintenance Organization

After Construction of the Project's facilities is completed, the management, operation and maintenance of the Ataqa Fishing Port will be undertaken by a governmental organization consisting of the General Egyptian Authority for Fish Resources of the Ministry of Agriculture, the Red Sea Port Authority of the Ministry of Maritime Transport, and the Suez Governorate.

Presently, fishery and fishing boat related matters at the Ataqa Fishing Port are managed by the General Egyptian Authority of Fish Resources of the Ministry of Agriculture. The fish supply to Suez is managed by the Suez Governorate and the Authority for Fish Resources.

The Government of Egypt is preparing the rules and regulations for the management, operation and maintenance of the country's fishing ports and will put them into effect within a year.

The Red Sea Port Authority of the Ministry of Maritime Transport which has long experience in managing fishing port facilities will join in undertaking responsibility for the management and maintenance of the port facilities. It is believed that these two agencies have the overall capabilities to manage and maintain the fishing port facilities.

The concerned agencies that will provide staff personnel for the Project port have the following number of employees:

AGENCY	NUMBER OF EMPLOYEES
The General Egyptian Authority for Fish Resources	1,000 (approx.)
The Red Sea Port Authority	500 (approx.)
The Suez Governorate	4,000 (approx.)

It is considered that the port's management, operation and maintenance will be undertaken by the new government organization without any problems.

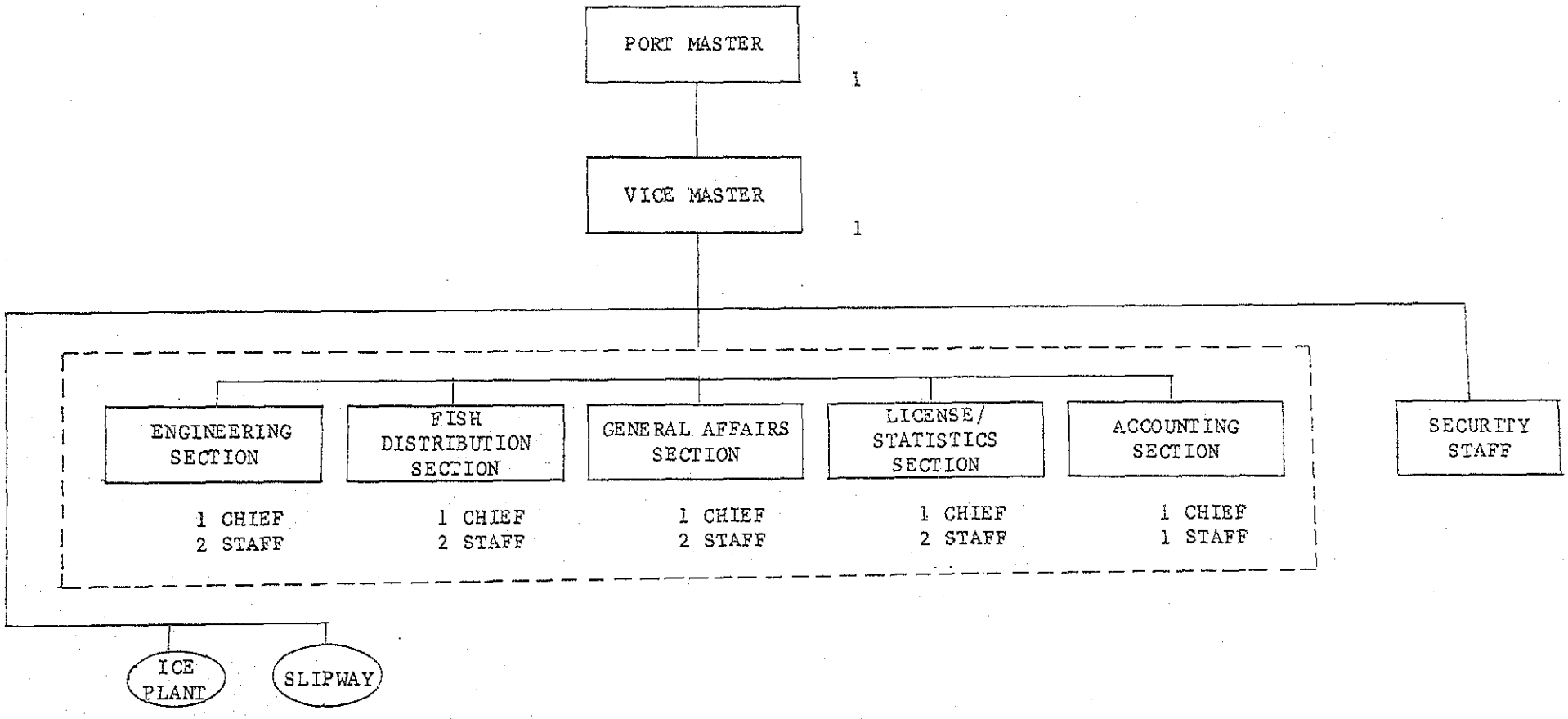


Fig. 4-3-4 Ataqa Fishing Port's Management, Operation and Maintenance Organization

By taking into consideration fishing port management, operation and maintenance work in general and the Ataqa Fishing Port's present management, operation and maintenance system, the new management, operation and maintenance organization, the number of staff members in each section, and the duties of the staff are proposed as shown in Fig. 4-3-4 and Table 4-3-8.

Table 4-3-8 Duty of Each Department of Ataqa Fishing Port's Management Office

SECTION	WORK
General Affairs Section	· Affairs related to public relations · Secretarial work · Administrative work · All affairs not under the jurisdiction of other sections
License/Statistics Section	· fisheries licenses · Ship registration · Affairs related to crews · Traders registration · fish statistics · fish catch surveillance
Fish Distribution	· Fish distribution to Suez · Fish distribution to Cairo and other areas · Transit shed control
Accounting	· Revenue · Income · Payments
Engineering Section	· Operation and maintenance of fishing port (quays, breakwater, turning basin, channel utilities and navigational aid facilities).

2) Management, Operation and Maintenance Costs

The following revenue for port management and maintenance use is expected from the Ataqa Fishing Port operation:

· Fishing tax:	22,000,000 kg x 0.01 LE	= LE 220,000
· Parking lot fee:	75,000 trucks/year x 0.5 LE	= LE 37,000
· Ice making plant:	8,000 tons/year x 48 LE	= LE 384,000
· Slipway:	120 boats/year x 500 LE	= LE 60,000
TOTAL REVENUE		LE 701,500/year

The following expenses are expected for port management, operation and maintenance costs, facilities' maintenance and repair costs, the management office's utility costs, and electricity costs for loading and parking area lighting:

· Management Office:

- Personnel costs:

High class:	2 persons x 400 LE/month x 12 months	= LE 9,600
Middle class:	5 persons x 250 LE/month x 12 months	= LE 15,000
Regular:	9 persons x 150 LE/month x 12 months	= LE 16,200
SUBTOTAL		LE 40,800

- Employee Welfare (same as personnel costs):	LE 40,800
Utility cost (electricity, water, etc.)	LE 820
TOTAL MANAGEMENT OFFICE COST	LE 82,420

· Ice Making Plant:

Personnel costs:	13 regular workers x 150 LE/month x 12 months	= LE 23,400
Employee welfare (same as personnel costs)		= LE 23,400
Operating costs:		
Electricity fee:	560,000 Kw/year x 0.17 LE	= LE 95,200
Water fee:	19,200 tons/year x 0.18 LE	= LE 3,456
Consumable item costs:		= LE 25,000
TOTAL OPERATING COSTS		LE 170,456
Miscellaneous costs:		LE 470
TOTAL ICE MAKING PLANT COSTS		LE 170,926

· Slipway:

Personnel costs: 20 regular workers x 150 LE/month x 12 months	= LE	36,000
Employee welfare (same as personnel costs)	= LE	36,000
Electricity, water and miscellaneous costs	= LE	4,000
TOTAL SLIPWAY COSTS	LE	76,000

· Guard House:

Personnel costs: 3 regular workers x 150 LE/month x 12 months	= LE	5,400
Employee welfare (same as personnel costs)	= LE	5,400
Electricity, water, and miscellaneous costs	= LE	100
TOTAL GUARD HOUSE COSTS	LE	10,900

· Facility Maintenance and Repair Costs:

1.0% of construction costs:	= LE	270,000
TOTAL EXPENSES:	LE	610,246

Summarizing the above calculations, an annual profit of about LE 91,000 is expected from the Ataqa Fishing Port operations. The profit may be reserved as a part of the fund needed to rebuild the ice plant, which will have a service life of 20 years, and to amortize fishing port facilities.

4.4 Technical Cooperation

In connection with Project implementation with Japanese grant aid, if the Egyptian side's staff training for the operation, management and maintenance of the new Ataqa Fishing Port is provided in Japan, greater Project effectiveness will be achieved.

CHAPTER 5 BASIC DESIGN

CHAPTER 5 BASIC DESIGN

5.1 Design Policy

Based on the Project Background (described in Chapter 2) and the Project Contents (described in Chapter 4), the Basic Design for the Rehabilitation and Development of Ataqa Fishing Port was prepared in accordance with the following basic principles:

(1) by taking into consideration existing and new facilities, the scale of the overall Project must be determined adequately.

(2) Natural conditions at the Project site must be carefully examined.

(3) Structures, materials and construction methods for the Project must suit Project site use, management, maintenance, and Project construction.

(4) Egyptian design codes, rules and regulations will be applied for the design of facilities, buildings and utilities of the Project in principle. If there are no suitable codes, rules and regulations in Egypt, Japan and other countries will be referred to.

5.2 Design Conditions

Based on field survey data, design conditions for Project facilities were established as follows:

(1) Sea Conditions

1) Tide Levels:

M.H.W.L. (Mean High Water Level):	+ 1.90 m
M.L.W.L. (Mean Low Water Level):	+ 0.40 m
C.D.L. (Construction Datum Level):	± 0.00 m

2) Waves

The following wave conditions were used for facility design (see Table 5-2-1 for Design Wave Analysis):

Table 5-2-1 Wave Conditions for the Structure Stability Analysis

Wave Height (m)	Period (sec)	Wave Direction
1.3	5.2	N119°

An examination of the calmness in the harbour was made to the apply the following offshore wave conditions.
(Design wave estimation is given in Appendix 8.)

Table 5-2-2 Required Calmness

Wave Condition / Quay	Storm Weather		Normal Weather	
	Wave	Harbour Calmness	Wave	Harbour Calmness
Landing quay	H = 1.3 m	0.5 m	H = 1.1 m	0.4 m
Preparation quay	T = 5.2 sec	0.5 m	T = 4.8 sec	0.4 m
Idle berthing quay	Wave Direction: N119°	0.5 m	Wave Direction: N119°	0.5 m

3) Tidal Current

According to the results of the tide observation, both flood and ebb tide currents are from 4 to 6 cm/sec. They are extremely small and can be neglected in facility design (See data attached in Appendix 7).

(2) Natural Conditions

1) Temperature: 5°C to 70°C

2) Humidity : Maximum 80%

3) Wind Speed : Maximum 50 m/sec
Predominant wind directions are N and SE to S.

(3) Seismic Forces

Earthquakes in the Suez area have been minor. The following seismic forces were applied to Project structures:

Horizontal seismic force : $k_h = 0.05$
($k_h = 0.1$ was applied to the elevated water tank)

Vertical Seismic force : $k_v = 0.00$

(4) Soil Conditions

As shown in Figure 5-2-1.

(5) Facility Use Conditions

Quay design conditions were as follows:

1) Vessel Conditions

Table 5-2-3 Vessels

Boat Type	Wooden Boat	Steel Boat	Steel Boat
Overall length (m)	28.0	30.0	31.0
Maximum beam (m)	7.0	7.8	7.4
Maximum draft (m)	2.7	2.8	3.7
Tonnage (G.T.)	120	160	200
Engine power (PS)	400	450	850
Fishing Method	Purse seining/ Trawling	Purse seining/ Trawling	Deep sea trawling

(4) SOIL CONDITIONS

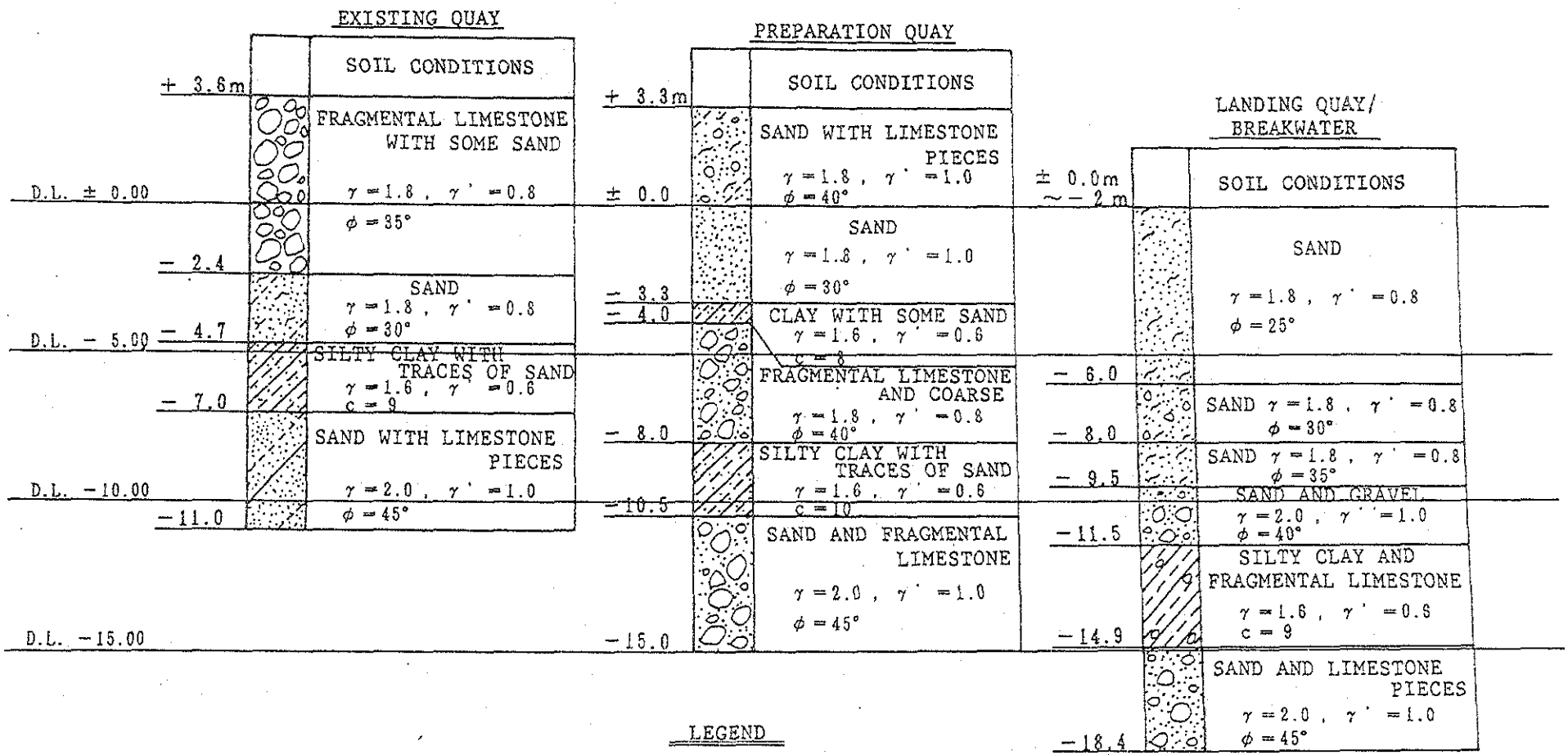


Fig. 5-2-1 Soil Condition

2) Berthing Speed

V = 0.3 m/sec for general fishing boats

V = 0.25 m/sec for trawlers operated outside of Suez Bay

3) Boat's Mooring Force

T = 7.0 tons/each

4) Uniform Load

Under normal conditions : 1.0 ton/m^2

Under earthquake conditions: 0.5 ton/m^2

5) Uniform Load for Building Design

Office floor : 300 kg/m^2

Fish handling area : 300 kg/m^2

(6) Materials

Fill material : Angle of internal friction ϕ = 30°

Angle of wall friction = 15°

Rubble base : Angle of internal friction ϕ = 40°

Unit weight :

Reinforced concrete : 2.45 tons/m^3 (in air),
1.45 tons/m^3 (in water)

Plan concrete : 2.3 ton/m^3 (in air),
1.3 tons/m^3 (in water)

Concrete blocks for building construction: 2.0 tons/m^3 (in air)

Steel material : 7.85 tons/m^3 (in air)

Backfill material : 1.8 tons/m^3 (in air),
1.0 ton/m^3 (in water)

(7) Friction Coefficients

Between concrete block and concrete block : 0.5

Between concrete block and rubble mound : 0.6

(8) Safety Factors:

Sliding	:	1.2 (under normal conditions) 1.0 (during earthquakes)
Overturning	:	1.2 (under normal conditions) 1.1 (during earthquakes)
Bearing force	:	2.5

(9) Allowance Stress

Structural steel	:	1,400 kg/cm^2
Deformed steel bar	:	1,800 kg/cm^2
Reinforced concrete	:	240 kg/cm^2 (standard design strength) 80 kg/cm^2 (compression strength) 9 kg/cm^2 (shearing strength)
Plain concrete	:	180 kg/cm^2 (standard design strength)

(10) Specifications

1) Standard Design Method for Fishing Port Structure, Japan Fishery Association

2) Technical Standards for Port Facilities, Japan Port Association

3) Building Standards, Japan Architect Association

5.3 Basic Design

5.3.1 Site Plan

The planned development area of the Ataqa Fishing Port is located to the north of the existing port facility. The area shall be reclaimed by filling the existing seabed. New port facilities will then be built on the reclaimed land.

The size of the area is as follows:

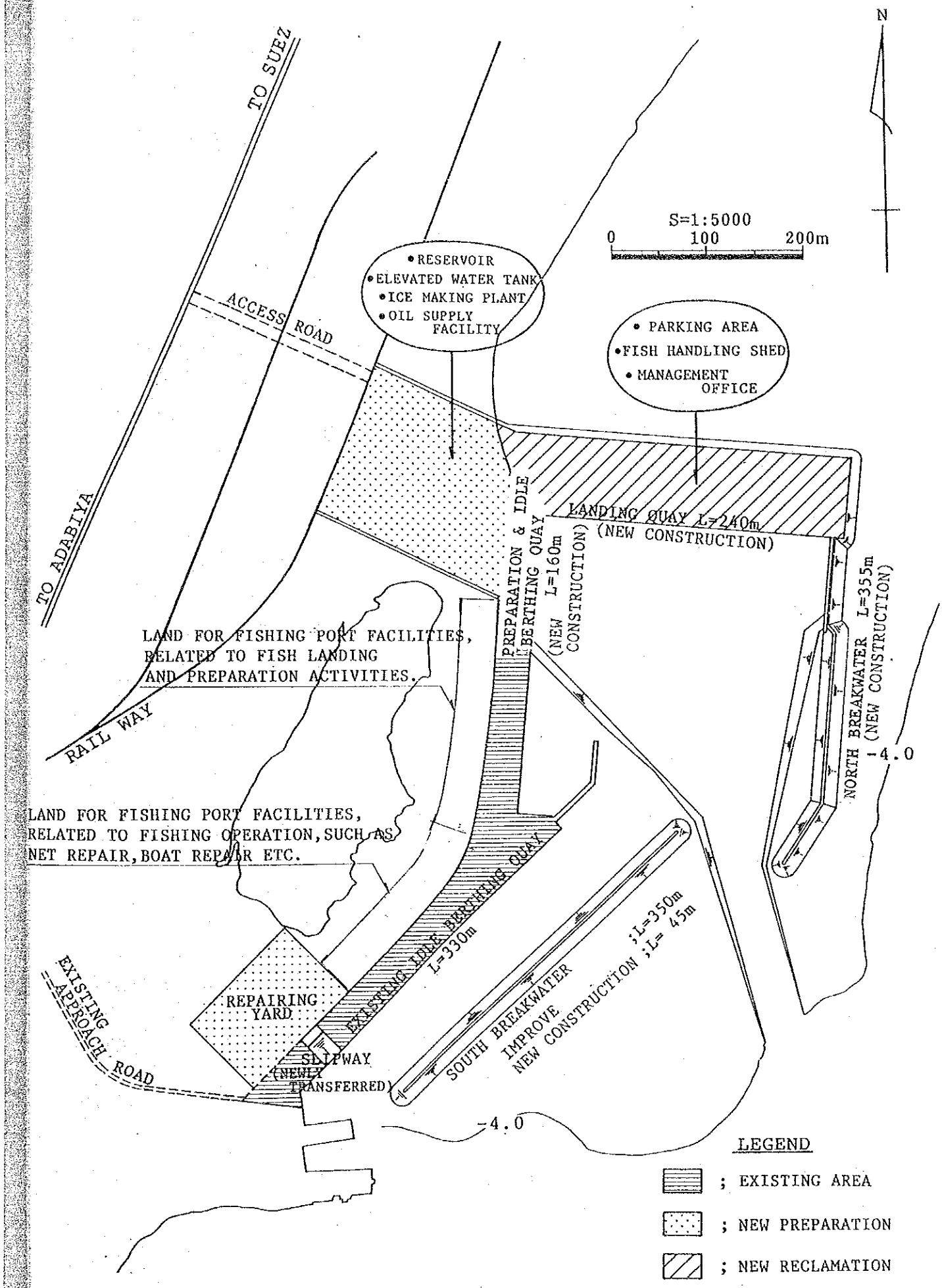


Fig.5-3-1 Land Use Plan