

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF COMMUNICATIONS, TRANSPORTS AND POSTS AND
TELECOMMUNICATIONS
CAMBODIA

BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
REHABILITATION OF THE PORT OF PHNOM PENH
IN
CAMBODIA

MAY 1993

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PREFACE

In response to a request from the Supreme National Council (SNC) of Cambodia, the Government of Japan decided to conduct a basic design study on the rehabilitation of the Port of Phnom Penh (the Project), and entrusted the study to the Japan International Cooperation Agency (JICA).

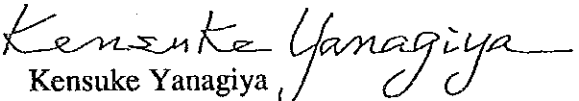
JICA sent to Cambodia a study team headed by Mr. Tatsuhiko Ikeda, Director of International Affairs Office, Ports and Harbours Bureau, the Ministry of Transport and constituted by members of the Ministry of Foreign Affairs, the Ministry of Transport and Pacific Consultants International, from 22 November 1992 to 30 December 1992.

The team held discussions with the officials concerned of the SNC, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Cambodia in order to discuss a draft report and the present report was prepared.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to extend my sincere appreciation to the officials concerned of the SNC for their close cooperation extended to the teams.

May 1993


Kensuke Yanagiya

President

Japan International Cooperation Agency

Mr. Kensuke Yanagiya,
President
Japan International Cooperation Agency
Tokyo, Japan

May 14, 1993

Letter of Transmittal

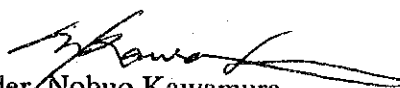
We are pleased to submit to you the basic design study report on the Project for Rehabilitation of the Port of Phnom Penh in Cambodia.

This study has been made by Pacific Consultants International, based on a contract with JICA, from November 16, 1992 to May 14, 1993. Throughout the study, we have taken into full consideration of the present situation in Cambodia, and have planned the most appropriate project in the scheme of Japan's grant aid.

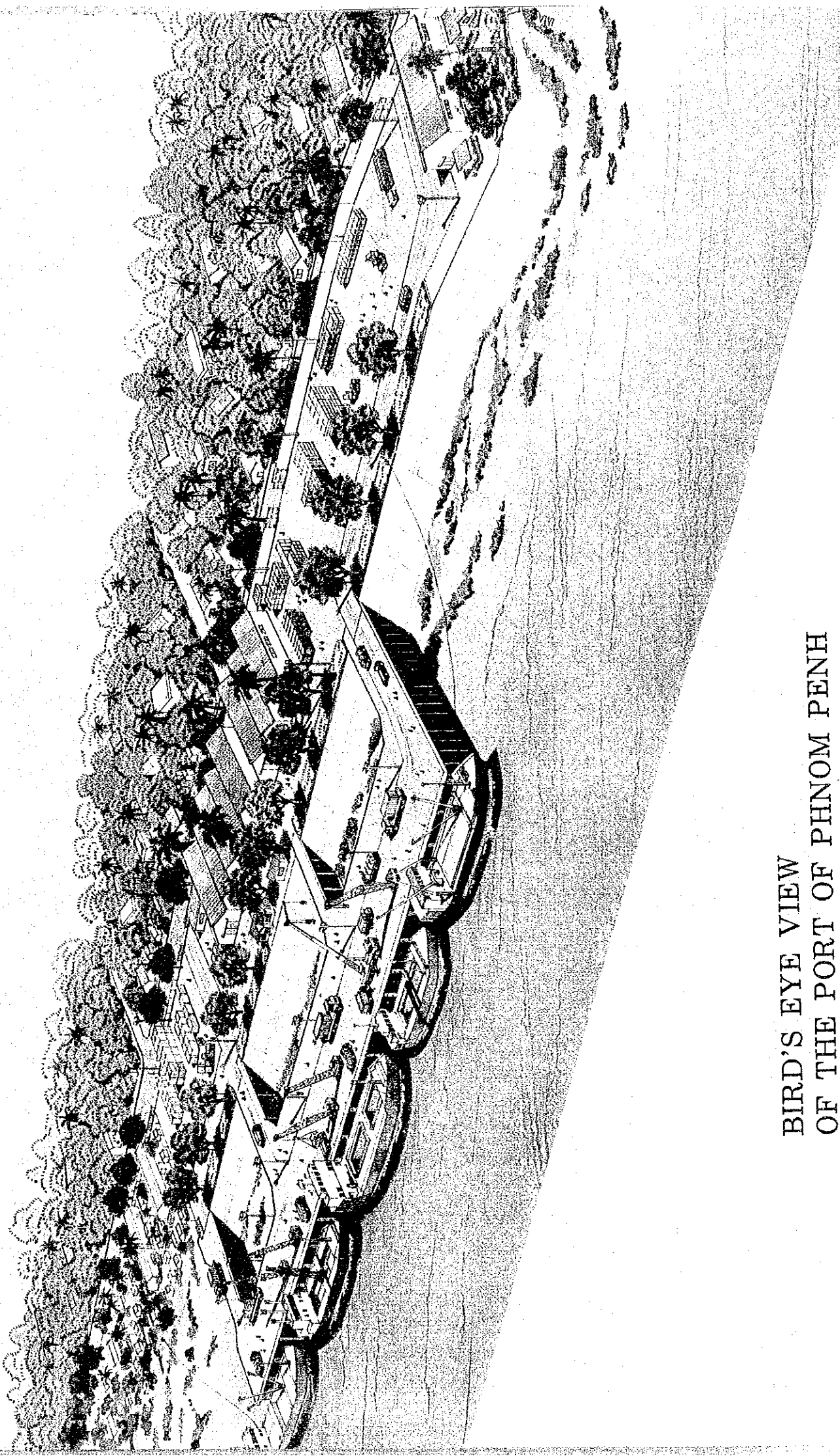
We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs and the Ministry of Transport. We also wish to express our deep gratitude to the officials concerned of the Ministry of Foreign Affairs, the Ministry of Communication, Transports and Posts, and Telecommunications, the United Nations Transitional Authority in Cambodia (UNTAC), and the Embassy of Japan in Cambodia for their close cooperation and assistance during our study.

At last, we hope that this report will be effectively used for the promotion of the project.

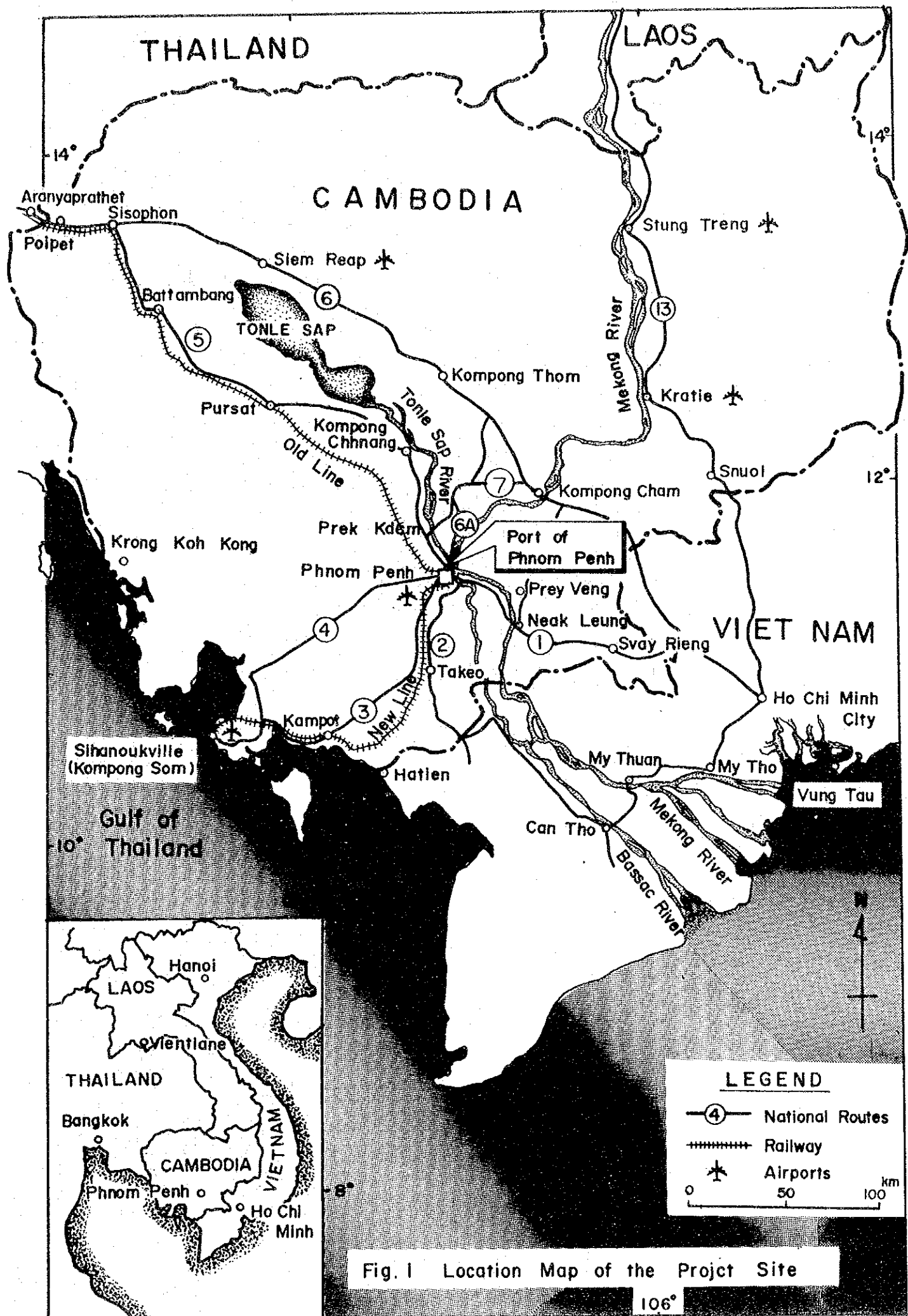
Very truly yours,


Team leader, Nobuo Kawamura

Basic design study team on the project for
Rehabilitation of the Port of Phnom in Cambodia
Pacific Consultants International



BIRD'S EYE VIEW
OF THE PORT OF PHNOM PENH



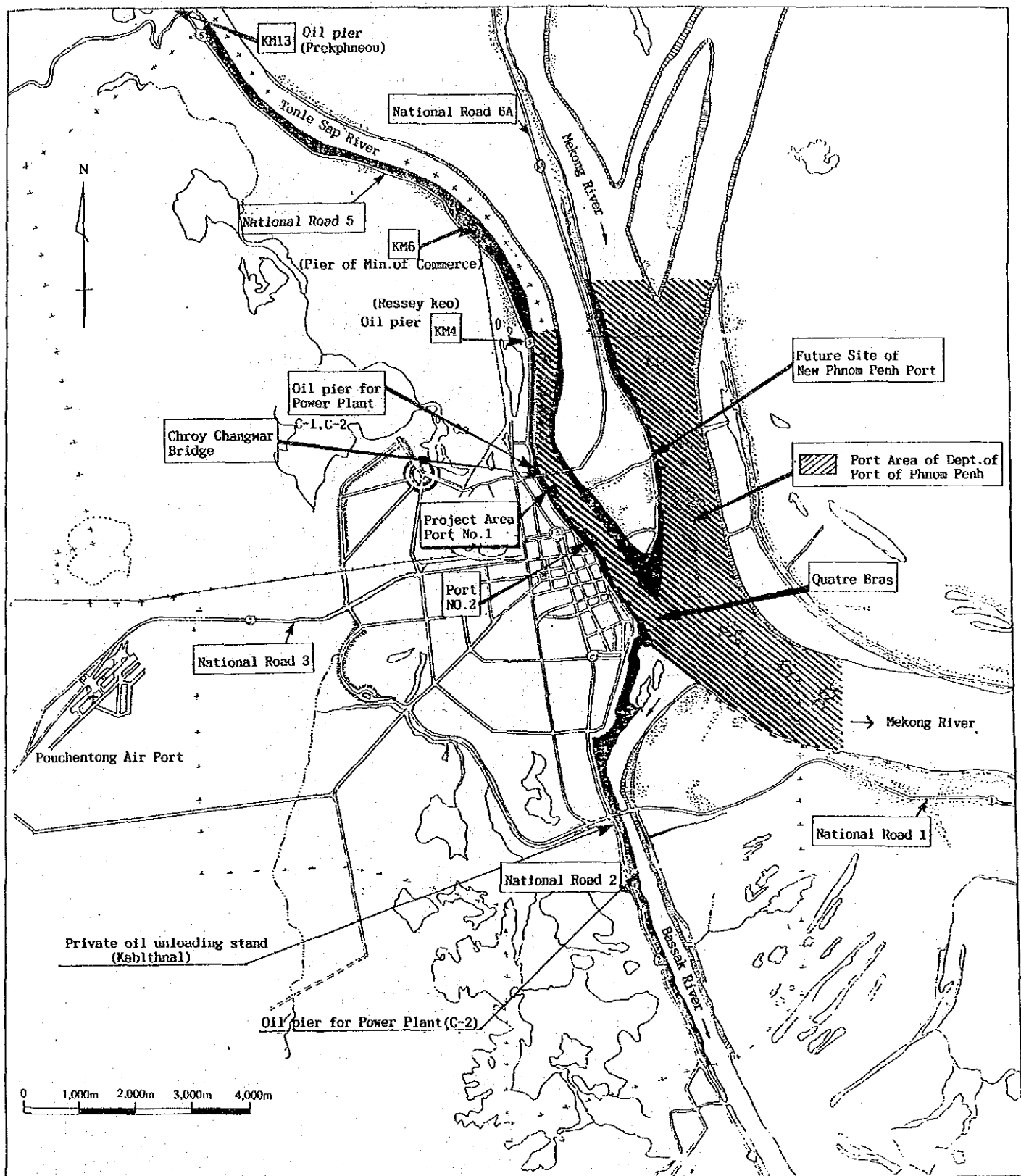
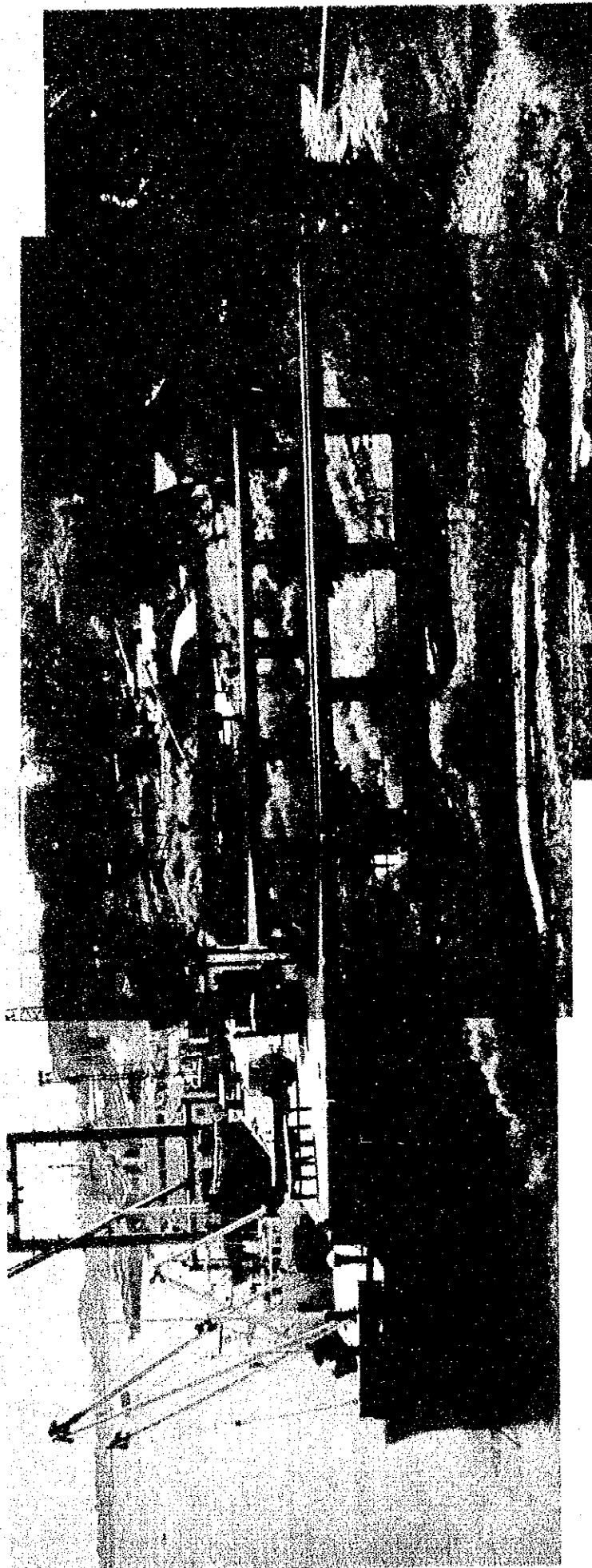


Fig.2 Location Map of the Port of Phnom Penh



Water level +3.25

Name of ships. from this side M/V Naga Rose M/V Angkor Wath 01

Photo 1. Whole view of port No.1 of Phonom Penh Port

Photo taken on Dec.19 1992

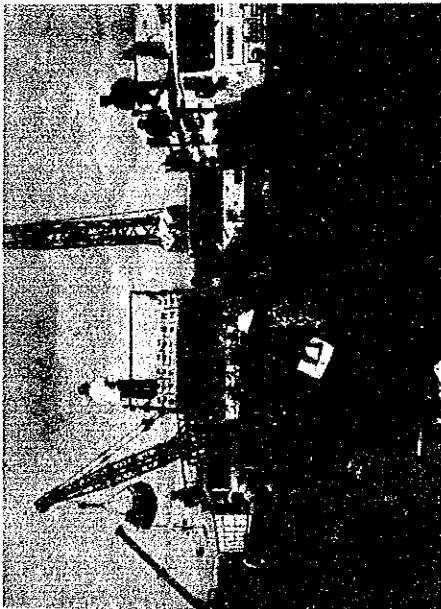


Photo 2-1 Congestion of trucks for M/V Hiap Tong along Berth No.5

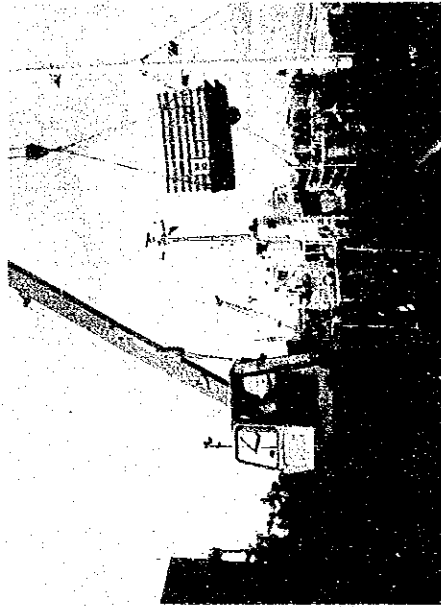


Photo 2-2 Discharging of soft drinks from M/V Hiap Tong



Photo 2-5 Damaged packages of cooking oil donated by Red Cross at Berth No.5
Photo taken on Nov.27 1992

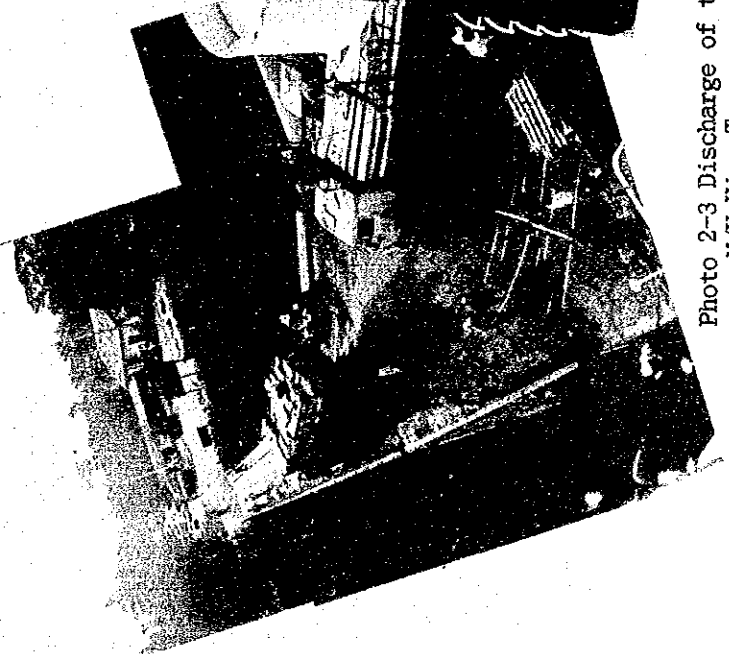


Photo 2-3 Discharge of textile by ships crane of M/V Hiap Tong

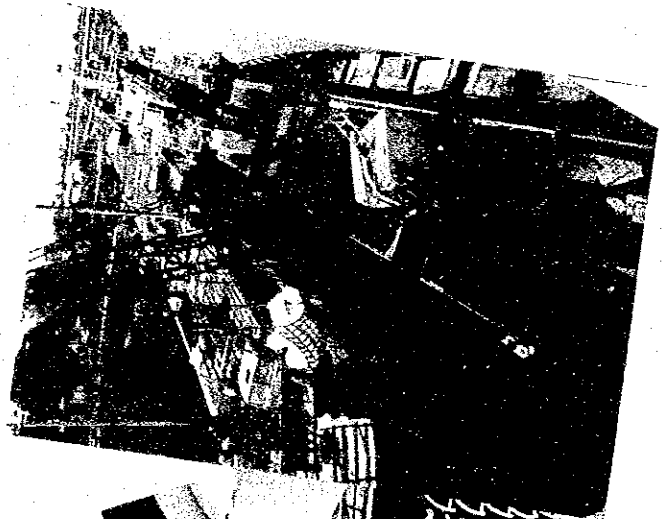


Photo 2-4 Discharging of textile and construction equipment, M/V Hiap Tong

Note: Photos 2-1 to 2-4 were taken at same time on Dec.5 1992 at Berth No.5



Photo 3-2 Cracks on river side column, Bent 13 Row A

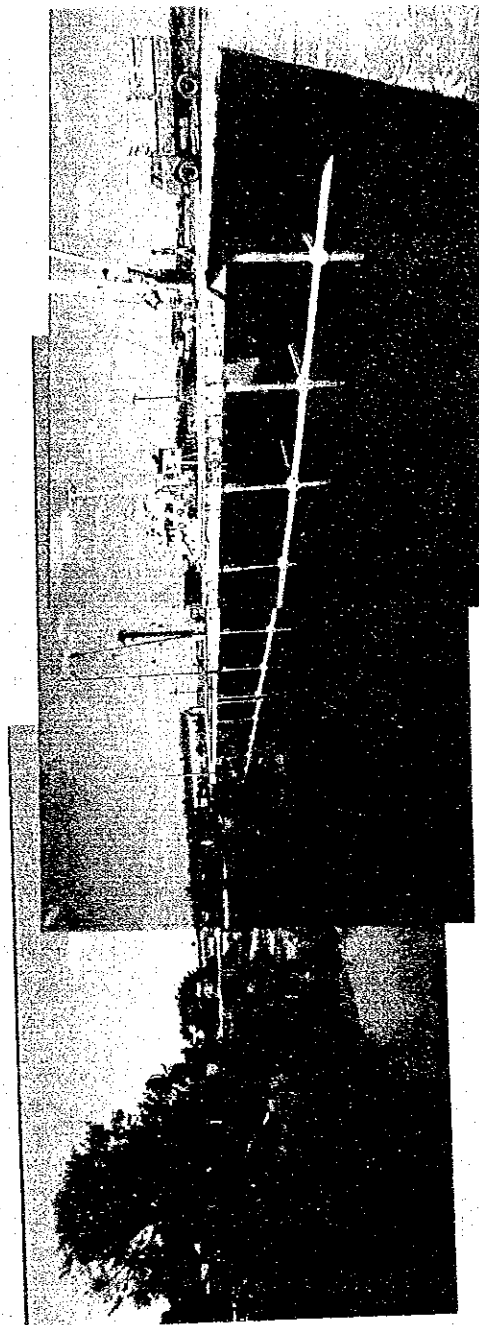


Photo 3-1 Whole view of Berth No. 4

Note: Photos 3-2 to 3-5 were taken on Dec. 11 1992 at Berth No. 4

Photo taken on Nov. 25 1992

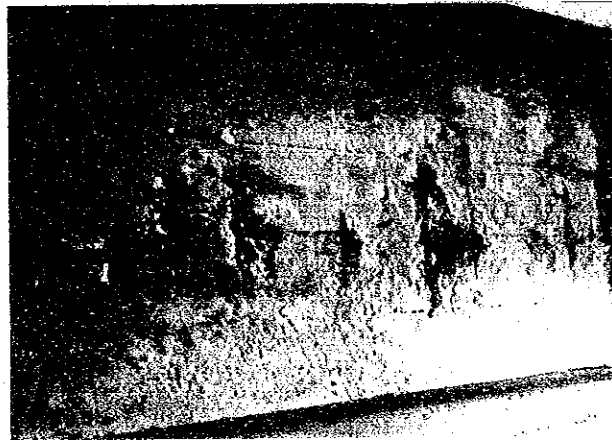


Photo 3-4 Exposed steel re-bars on the bottom surface of the top slab at Bent 13-14 Row A-B, Berth No. 4



Photo 3-3 Broken horizontal beam at Level 2, Bent 2 Row A-B



Photo 3-5 Columns and beams of Berth No. 4

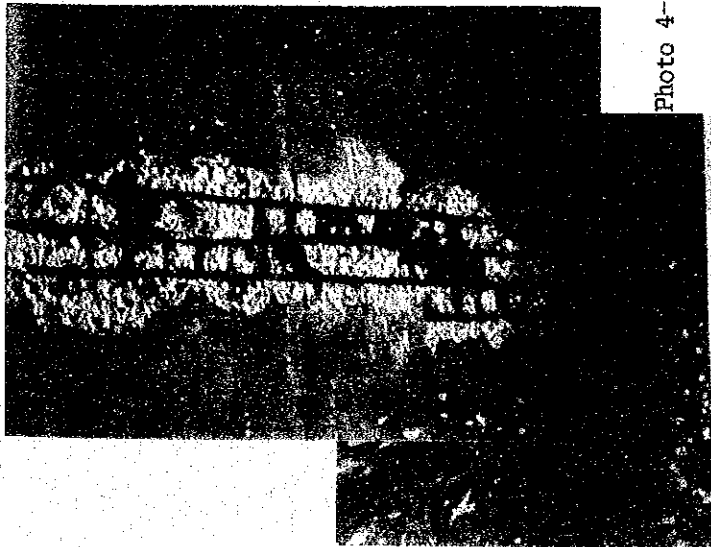


Photo 4-4 Exposed steel re-bars on the bottom surface of the top slab at Bent 8-9, Row A-B
Photo taken on Dec.13 1992



Photo 4-3 Broken horizontal beam at Level 2, Bent 4-5 Row A
Photo taken on Dec.16 1992

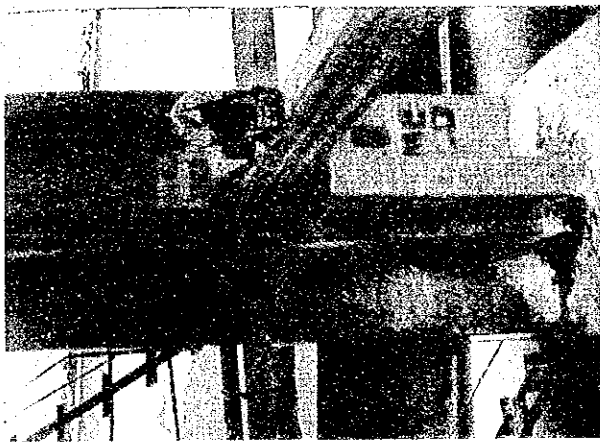
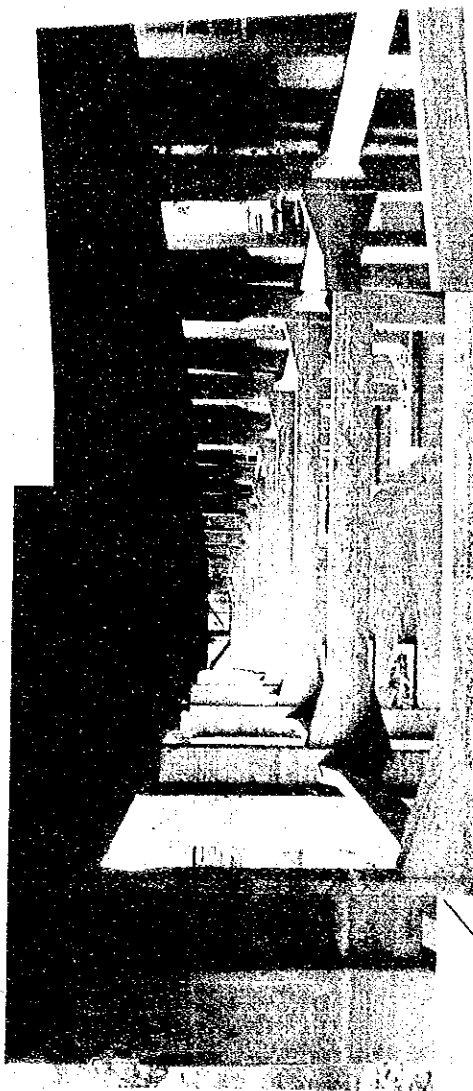


Photo 4-2 Horizontal beam at Level 2, Bent 1 Row A, Sifted 33cm
Photo taken on Dec.13 1992

Photo 4-5 Exposed steel re-bars on the bottom surface of the top slab at Bent 13-14 Row A-B
Photo taken on Dec.13 1992



Shift 127cm (BENT 16)

Photo 4-1 Columns and beams of Berth No.5
Photo taken on Dec.16 1992

Photo 4-6 Broken Column capital at Bent 13, Row A
Photo taken on Dec.13 1992

Note: All photos in this page were taken at Berth No.5



Photo 5-1 Berth No. 4, Level 3, horizontal beams (from this side Bent 4, 5...) foundation piles and sediment.
Concrete slabs (t=10cm; the foreground of above picture covered with soil) are placed at Bent 1 to 4 of Row A to B and Bent 1 to 2 of Row B to C.



Photo 5-3 Incomplete pile splicing (35cm x 35cm square concrete piles, 2 piles/column) Bent 3, Row A, of Berth No. 4.



Photo 5-5 Horizontal beams, columns, footings and sediment at Berth No. 5.



Photo 5-2 Concrete column and broken horizontal beam at Level 3, Bent 11, Row A, of Berth No. 4.



Photo 5-4 Exposed re-bars of concrete footing cracks on the octagonal pile (35cm Dia.) Bent 13, Row A, of Berth No. 4.



Photo 5-6 Octagonal concrete piles, concrete cells slipped down and horizontal beams which were constructed in 1960 as original structure.
Concrete footing and steel batter piles were constructed additionally in 1983. Bent 8, Row A, of Berth No. 5.

NOTE : All pictures in this page were taken on March 8, 1993 at water level EL+1.0m.

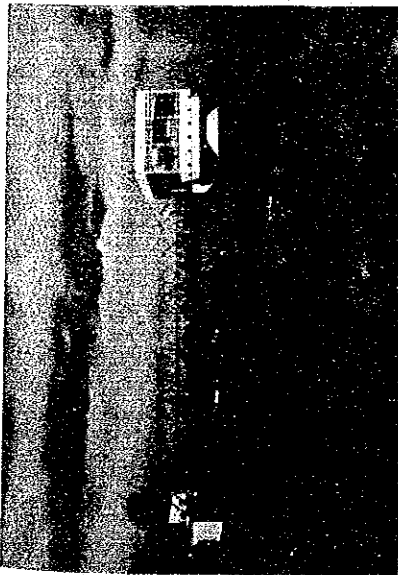


Photo 6-1 Water intake tower for the Phum Prek Water Treatment Plant.
Photo taken on Dec. 6 1992



Photo 6-2 Pontoon Berth Nos. 5b and 5c at Port No. 2
Photo taken on Dec. 12 1992

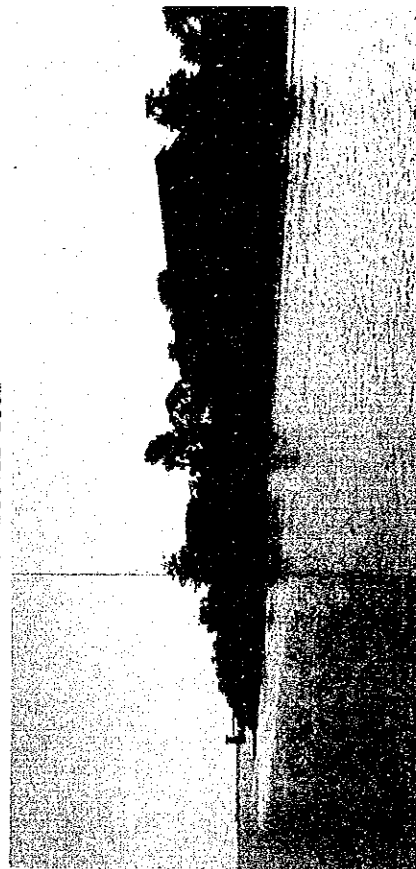


Photo 6-3 Future site of New Port of Phnom Penh at Chroy Changvar along the right bank of Mekong River.
Photo taken on Dec. 12 1992



Photo 6-4 Domestic cargo unloading stand, 0.7km downstream from Port No. 2
Photo taken on Dec. 16 1992



Photo 6-5 Vessels at anchorage waiting for berthing.
Photo taken on Dec. 16 1992



Photo 6-6 Discharging of gravel from barges at the upstream of Port No. 1.
Photo taken on Dec. 16 1992

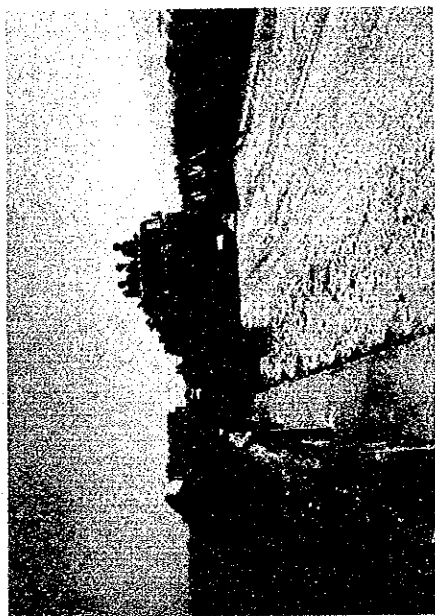


Photo 7-1 Temporary bridge along Route 4 connects Phnom Penh and Sihanoukville.



Photo 7-2 Sheds N4 and N3 and New Quay of Sihanoukville Port.

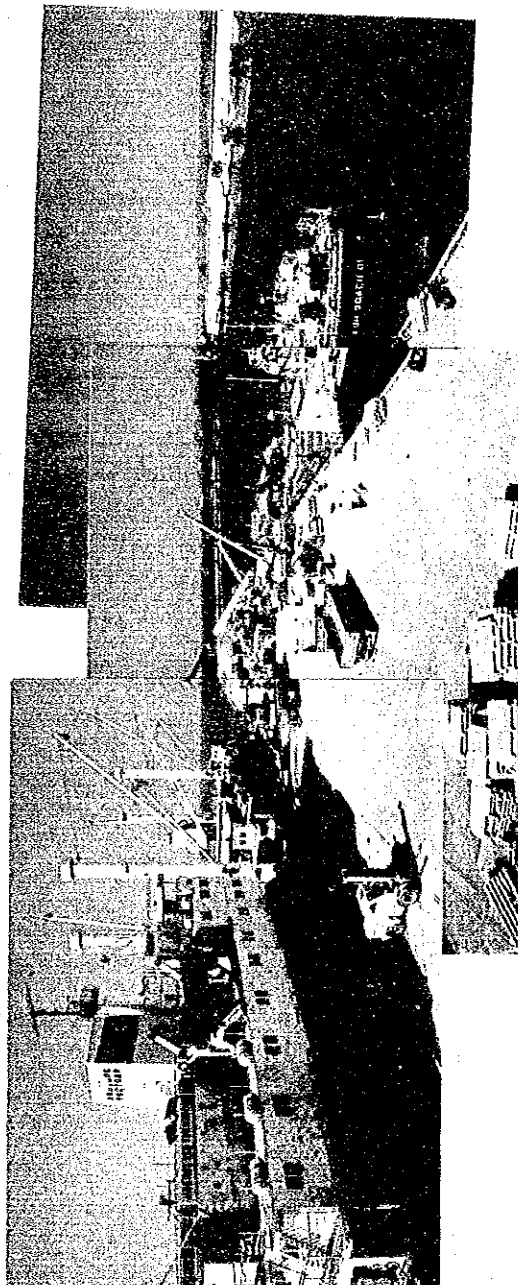


Photo 7-3 Old Quay, Small Boat Basin (right side)

Note: Photos in this page were taken on Nov. 30 1992

SUMMARY

SUMMARY

I. INTRODUCTION

1. The SNC requested the Government of Japan in February 1992 to provide them with a grant aid for the rehabilitation of the port facilities of the Port of Phnom Penh, which is expected to play a vital role in the restoration of Cambodia. The Government of Japan responded and dispatched a Preliminary Study Team to Cambodia in September 1992. Based on the analysis of the Preliminary Study, the Government of Japan decided to carry out a basic design for the Project. In November/December 1992, the Japan International Cooperation Agency (JICA) sent a Basic Design Study Team to Cambodia, which conducted field investigations, held discussions with the related agencies concerned, and collected relevant information. Based on the study made over the results of the investigation, a Draft Final Report was prepared. The Basic Design Confirmation Team (The Confirmation Team) was sent to Cambodia in the period of February 28 to March 13, 1993.

This report has been prepared based on the Draft Final Report taking into the consideration the aspects which were discussed and agreed with the executing agency, the Department of Phnom Penh Port.

II. BACKGROUND

A. PORTS AND INLAND WATERWAYS SUBSECTOR

2. In Cambodia, there are two major ports which handle nearly all the import/export goods, i.e. (i) the Port of Phnom Penh, situated in the capital city on the right bank of the Tonle Sap River; and (ii) the Port of Sihanoukville, a sea port which faces the Gulf of Thailand.

3. The Port of Phnom Penh is situated two kilometers upstream from the junction of the Tonle Sap River and the Mekong River and 330 kilometer from the South China Sea. Because of the monsoon river, the water levels change, depending on the rainy and dry seasons, by up to nine meters. Even the direction of the water flow changes in the basins of the Port of Phnom Penh. During the high water level season, larger vessels in the magnitude of 6,000 DWT can call at the port, while only those up to 1,500 DWT can call during the dry season. The port has a constraint of limited draft of the calling vessels. However, since the port's hinterland covers an area with a relatively large population, i.e. Phnom Penh City, and the north and west part of Cambodia, it plays an important role in the economic recovery and development of Cambodia.

4. The Port of Sihanoukville is the only sea port with deep water berths in Cambodia. The design depth of water of the quays would allow 20,000 DWT vessels to come alongside. However, the present maximum draft of vessels which call is 5,000 DWT because of the lack of maintenance dredging in the approach channel. The port is located 230 kilometers south-east from Phnom Penh. The National Road No. 4, which connects the port and Phnom Penh, is in good condition except for its insufficient width for two lane traffic and several temporary bridges which cannot bear heavy loads. However, the security of this route has not been well maintained nor guaranteed, thus the full potential of the port is yet to be realized.

5. In the long run the Port of Sihanoukville may play a more important role than the Port of Phnom Penh because of the merit of accommodating larger vessels. However, it is expected that the Port of Phnom Penh will play a vital role in the immediate restoration and development of Cambodia. The division of functions of the two ports has to be critically analyzed so as to formulate rehabilitation and expansion plans for these ports.

6. Smaller ports such as Kompong Cham (105 kilometers from Phnom Penh) and Kratie (221 kilometers from Phnom Penh) along the Mekong River, and Kompong Chhnang (100 kilometers from Phnom Penh) along the Tonle Sap River handle goods to/from Phnom Penh with barges and small timber boats with a maximum draft of 3.5 meters. The Inland Water Transport Company owns and operates the fleet.

7. Because these are major river systems in Cambodia, ferries play an important role. Neak Leung (the Mekong, National Road No. 1), Compong Cham (the Mekong, National Road No. 7), Stung Treng (the Mekong, National Road No. 7) and Prek Kdam (the Tonle Sap, National Road No. 6) are the major ferry systems in Cambodia.

B. THE PORT OF PHNOM PENH

8. The Port of Phnom Penh is administered by the Department of Phnom Penh Port, the Ministry of Communications, Transports and Posts, and Telecommunication (MOCTP). The port consists of two sets of public mooring facilities and back-up areas, i.e. Port No. 1 (Berths Nos. 4 and 5) and Port No. 2 (Pontoon Berths Nos. 5b and 5c). Import/export cargoes are handled at these two facilities, except for: (i) cement, bricks, lumber and other general goods (transported by barges from Vietnam) which are handled on the river banks near to Port No. 1; and (ii) petroleum products which are handled at facilities (under the Ministry of Commerce) located 4 and 13 kilometers upstream from the above facilities. There is a concrete structured mooring facility which used to be utilized for exporting rice under the control of the Ministry of Commerce six kilometers upstream from Port No. 1. Because no rice has been exported, this facility has not been utilized fully. Domestic cargoes (inland

waterways cargoes) are handled on the right bank of the Tonle Sap and Bassac Rivers. A general location plan of the Port of Phnom Penh and its related facilities is shown in Fig. 3-1. (P 3-2)

9. Port No. 1 consists of Berth Nos. 4 and 5, three access bridges, 11 transit sheds, stacking yards and related facilities. Berth No. 4 (83.7 meters in length) and Berth No. 5 (100.2 meters in length) are 40 years old. The width of the quays is only 11 to 12 meters and thus quay side operations are extremely inefficient. While Berth No. 5 had some major rehabilitation work done to the foundations in early 1980s, the concrete decks and beams would not be able to bear heavy truck loads. Berth No. 4 is so deteriorated that columns, decks and beams would not be able to bear even medium truck loads. The layout plan of the existing facilities at Port No. 1 is shown in Fig. 3-2. (P 3-12)

10. Port No. 2 consists of Berth Nos. 5b and 5c (two steel pontoons 45 meters in length and 10 meters in width), two bridges and a back-up area. Because of a large difference in the seasonal water levels, the spans of bridges are long and so heavy cargoes cannot be handled.

11. In addition to the problems with the berthing facilities, the existing cargo handling equipment has deteriorated and in need of repair. Spare parts are insufficient and difficult to obtain, thus causing a lower operational efficiency.

12. While there are no available figures on the volume of cargoes handled at each facility, the Team examined cargo data in 1992 and estimated them as follows:

	(1992)
Port No. 1	151,000 tons
Port No. 2	36,000 tons
Lighterage	7,000 tons
River Banks	111,000 tons
Unknown Processing	10,000 tons
Total	315,000 tons

13. The cargo handling hours at the Port of Phnom Penh is a one shift system of eight hours per day as follows:

7:00 to 11:30	4.5 hours
14:00 to 17:30	3.5 hours

Sundays and national holidays are all days off, and thus the total number of operational days in a year is 300. An improvement in the port operational scheme would be crucial to accommodate the rapidly increasing traffic.

C. TRAFFIC PROJECTIONS

14. In the 1960s, the total annual traffic in Cambodia was consistently over one million tons, with maximum figures of 963 thousand tons at the Port of Phnom Penh in 1963 and 954 thousand tons at the Port of Sihanoukville in 1969. The annual freight handled at Phnom Penh decreased to the magnitude of 100 thousand tons during 1970s to 1985. Two major ports have handled the total annual traffic of between 467,000 and 653,000 tons since 1988. The figures are as follows:

	Phnom Penh	Sihanoukville	Total
1955	210	-	210
1960	842	-	842
1961	741	96	837
1962	898	166	1,064
1963	963	369	1,332
1964	708	515	1,223
1965	595	942	1,537
1966	517	549	1,066
1967	535	544	1,079
1968	453	748	1,201
1969	227	954	1,182
1970	na	735	na
1980	165	292	457
1985	119	116	235
1986	234	129	363
1987	240	161	401
1988	259	207	466
1989	271	264	535
1990	369	284	653
1991	429	133	562

(Unit: thousand tons, inclusive petroleum products)

15. In 1992, a total of 550,000 tons was handled by the two major ports. The Port of Phnom Penh handled 310,000 tons and the Port of Sihanoukville handled 240,000 tons. Based on the macro and micro analyses on traffic projections of import/export goods in Cambodia, those for the Port of Phnom Penh on a commodity basis are as follows:

Commodities	1992 (Actual)	1995	2000 (Projections)	2010
<u>Export</u>				
Rice	-	135	185	65
Rubber	27	39	42	59
Lumber	0.9	18	30	50
Marine Goods	-	1	2	2
Farm Products	10.6	58	81	119
Others	7.7	-	-	-
Total	46.2	251	340	295
<u>Import</u>				
Rice	22.6	-	-	-
Flour	-	8	10	13
Fertilizer	9.1	45	63	-
Cement	85.3	115	147	132
General Cargo	151.6	168	195	250
Total	268.6	336	415	395
Grand Total	314.8	587	755	690
(Percentage of Phnom Penh Port in the Total International cargoes in Cambodia)	(58 %)	(60 %)	(56 %)	(51 %)

(Unit: thousand tons, not inclusive petroleum products)

16. While the present ratio of containerization for goods which are containerizable is five per cent, this ratio is expected to increase to 10 per cent in 1995 and 20 per cent in 2000 at the Port of Phnom Penh.

17. For the cargo projected to be handled at the Port of Phnom Penh, the volume at each area is estimated as follows:

	1992	1995	2000	2010
Port No. 1	151	525	566	566
Port No. 2	36	36	36	36
Lighterage	7	7	7	7
River Banks	121	19	146	81
Total	315	587	755	690

D. NEED FOR THE PROJECT

18. Port operations are limited in the Port of Phnom Penh because of the dilapidated and insufficient condition of the port facilities and equipment. Increased cargoes are expected during the course of the restoration of Cambodia and its development thereafter. The Port should not be a constraint or bottleneck during this period. The proposed Project will increase the capacity of the Port of Phnom Penh to accommodate the projected traffic up to 2010.

III. THE PROPOSED PROJECT

A. OBJECTIVES

19. The main objective of the proposed Project is to contribute to the restoration of Cambodia through the rehabilitation and expansion of the port facilities, and an improvement in its operations at the Port of Phnom Penh.

B. PROJECT DESCRIPTION

20. The proposed Project components comprise of the following:

- a. extension and widening of the fixed type quays at Port No. 1;
- b. paving of the stacking yards and roads;
- c. provision of concrete revetment and buildings;
- d. provision of cargo handling equipment;
- e. provision of navigational aids; and
- f. provision of ancillary works.

21. The scope of the above items have been in principle agreed upon between the MOCTP and the Basic Design Study Team during their first visit in November/December 1992. Further analyses were conducted and a detailed scope for the proposed Project was firmed up and is shown in Table 1 (P xviii) and Fig. 5-1 (P 5-4).

22. Out of the originally agreed scope for the Project, the item for the rehabilitation of the existing berthing facilities at Port No. 1 has been deleted because it was noted that they were not only deteriorated but also the original design conditions do not meet the present loading conditions for the handling of containerized cargo nor heavy cargo handling equipment. Further, costs for the repair and strengthening of these structures would be more than those for a new construction. Therefore, it is proposed to construct a new quays in front of the existing structures. The total length of the quay at Port No. 1 will be 300 meters with a width of 20 meters.

23. The quay structures will be of a steel pipe piled foundation type with batter piles. For the safe operation of berthing, mooring and deberthing, a rubber fender system, mooring bits and bollards are to be provided. For the extension of the cargo handling operation time, lighting facilities at quays and yards are to be provided with electric power generator. Land areas at the river side are to be reclaimed to expand the land areas and the river bank slope is to be protected by the concrete revetments. New cargo handling equipment for handling containers will be provided while those to handle conventional cargoes will be either replaced or strengthened.

C. PROJECT IMPLEMENTATION

24. The Project will be implemented in two phases. Coordination of the implementation between the contractors and the port operation office is important to minimize the adverse effects on port operations during this period. In this regard, the expansion of the new quay will be implemented first and become operational in Phase 1 so as to provide a berthing facility when the existing Berths Nos. 4 and 5 are being rehabilitated. The expansion will be completed within 12 months from the beginning of construction. The construction of Phase 2 will be needed another 12 months. The overall Project implementation schedule is shown in Table 5-1 (P 5-15).

25. Cargo handling equipment will be substantially procured in Phase 1. Therefore, the operational efficiency is expected to increase. However, an action plan will be needed to improve port operational productivity so as to accommodate the cargoes being handled at Port No. 1 during construction.

D. IMPROVEMENT OF PORT OPERATIONS

26. The average productivity of cargo handling at Port No. 1 is 68 tons/shift/gang for general cargo and 100 ~ 200 tons/shift/gang for containers. These figures can be improved to the figures below by introducing better work coordination, new and well maintained cargo handling equipment, and staff training.

The average efficiency of cargo handling (t/shift/gang)

<u>Type of cargo</u>	<u>Present</u>	<u>After the project completed</u>
General cargo	68	100
Containerized cargo	100 - 200	300

27. As stated in par 13, cargo handling hours at Port No. 1 are eight hours in a one shift system. While commercial electricity is extremely unstable in Phnom Penh, it is recommended that night operations (at least up to 10:00 pm) be introduced so as to increase the cargo

handling capacity at the port. In this regard, provision of electric generator is included in the Project.

28. While the total operational hours will increase by adopting the new shift system, future increases may be needed to handle increasing cargoes as well as those caused by the implementation of the Project. In this regard, it is recommended to introduce Sunday operations and to reduce the duration of meal and tea breaks.

29. It is recommended that an action plan to improve the port operational efficiency and to increase the cargo handling capacity of the port be formulated so as to make the Project more successful.

Table 1 Components of the Project

Name of Facilities,Equipment	Dimensions, Specifications	Quantities		
		Phase 1	Phase 2	Total
<u>Port Facilities</u>				
Berths	Steel Pipe Pile, 20 m wide	150 m	150 m	300 m
Access Bridges	Length 42 m, Width 12 m	2 Ea.	1 Ea.	3 Ea.
Independent Mooring Bitt	Steel Pipe Pile Foundation	2 Ea.	-	2 Ea.
Revetment	Concrete Type	200 m	250 m	450 m
Roads	Concrete Pavement	2,260 m ²	3,700 m ²	5,960 m ²
Container Yard	Concrete Paved Surface	2,640 m ²	-	2,640 m ²
Empty Container Yard	Concrete Paved Surface	-	3,590 m ²	3,590 m ²
Truck Weigh Scale	Max. 30 ton capacity	-	1 Ea.	1 Ea.
Other Facilities:	Light Fixtures, Generator	LS	LS	LS
	Water Supply Facilities	-	LS	LS
<u>Cargo Handling Equipment</u>				
Truck Cranes	Hoisting Cap. 7 ton	3 Ea.	-	3 Ea.
	Hoisting Cap. 25 ton	2 Ea.	-	2 Ea.
	Hoisting Cap. 40 ton	1 Ea.	-	1 Ea.
	Hoisting Cap. 70 ton	-	1 Ea.	1 Ea.
Forklifts	Handling Cap. 3.5 ton	5 Ea.	-	5 Ea.
	Handling Cap. 6.0 ton	3 Ea.	-	3 Ea.
	Handling Cap. 25.0 ton	1 Ea.	-	1 Ea.
Trailer Trucks	Max. Load 25 ton	-	6 Sets	6 Sets
Spare Parts for existing Cargo Handling Equipment		LS	-	LS
<u>Building Facilities</u>				
Workshop	10 m x 20 m w/repair machinery	-	1 Ea.	1 Ea.
Truck Weigh Scale Bldg.	3.5 m x 4.7 m	-	1 Ea.	1 Ea.
Generator House	6.0 m x 5.1 m	-	1 Ea.	1 Ea.
Toilets	5.1 m x 7.0 m	-	1 Ea.	1 Ea.
<u>Navigational Aids</u>				
Marker Buoy		-	14 Ea.	14 Ea.
Leading Light		-	1 Set	1 Set

Basic Design Study Report

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Location Map of the Port of Phnom Penh

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CHAPTER 1 INTRODUCTION

CHAPTER 1. INTRODUCTION

1.1 Purpose of the Study

The purpose of this project is to fully comprehend the contents of the request made by the SNC, to analyze the back-ground for the Project of the Rehabilitation of the Port of Phnom Penh, to evaluate the effects that this project will offer, and to investigate the suitability of the project as a Grant Aid Project, and to select the scope and contents for the rehabilitation project, and to perform the Basic Design.

1.2 Dispatch of the Basic Design Study Team (the Study Team) and the Schedule of Work

The Government of Japan decided to perform the Basic Design, and the Japan International Cooperation Agency (JICA) has dispatched the Study Team of ten (10) specialists to Cambodia with Mr. Ikeda as the team leader. The Basic Study is based on the preliminary survey results conducted by the preliminary study team with Mr. Tatsuhiro Ikeda as the team leader.

The investigation was performed by the team from November 22 to December 30, 1992, and the Minutes of Discussions was exchanged on November 26, 1992, and Mr. Ikeda, the team leader, and team member Mr. Nakazaki (Ministry of Transport) left Cambodia on November 28, 1992 and paid their respect and findings to the Mekong Secretariat at Bangkok. Team member Mr. Kobayashi (Ministry of Foreign Affairs) completed his assigned work and left Cambodia on December 1, 1992.

The Basic Design Confirmation Team was sent to Cambodia from February 28 to March 13, 1993.

A member list of Basic Design Study Team, a detailed schedule and list of work activities performed by the Study Team, and a member list of the concerned party in Cambodia, together with the minutes of discussions are given in Appendix 1 through 4.

1.3 Description of the Study Performed

The Study Team performed the following items of work, while at the same time checking the justifications for the project to qualify as a Grant Aid.

- (1) Background of the Project and Confirmation of the Request
 - 1) Confirming the purpose and contents of the requested project;
 - 2) Investigating the port facilities and water transport systems of Cambodia, together with the investigation of the present condition of the Phnom Penh Port and the related facilities, including its administration, operations and problems; and
 - 3) Identifying the related projects at the water transport sector in the Restoration Program of Cambodia furnished by other foreign donors.
- (2) Firming up the scope of the Project;
- (3) Confirming the management and operation system of the ports;
- (4) Investigating the present conditions of the ports in Cambodia, identifying the issues and analyzing their division of function;
- (5) Investigating the natural conditions in the project site;
- (6) Investigating the present conditions of the facilities and the degree of their deterioration;
- (7) Confirming the scope of construction work to be borne by the SNC side and the Project implementation arrangement; and
- (8) Investigating various aspects in the local construction activities.

Based on the results of the investigation, JICA firmed up the scope of the Project, its magnitude, the implementation schedule, cost estimates, and justification of the Project and prepare a Draft Final Report. The Basic Design Confirmation Team (The Confirmation Team) was dispatched to Cambodia with Mr. Tatsuhiko Ikeda of the Ministry of Transport as the Team Leader between the period February 28 to March 13, 1993. The Confirmation Team discussed the contents of the Draft Final Report with the related agencies of the SNC to confirm its contents.

Through the due discussions with the Ministry of Communications, Transports and Posts, and Telecommunications (MOCTP), and the Department of Phnom Penh Port, the contents of the Draft Final Report including the proposed rehabilitation plan of the existing port facilities were agreed and accepted in principle. However, an objection

was presented by the Ministry of Foreign Affairs which was supposed to have been agreed upon administratively, i.e., the proposed rehabilitation plan mentioned in the draft final report was objected by the Minister of Foreign Affairs of the SNC pointing out that the implementation of the plan would affect the scenery from the Palace, disturb the navigation of vessels in front of the quays and not match the city development plan around the port area, and opining that the rehabilitation arrangement of the berth should not go beyond the face line of the existing berth. Against this comment, the Study team and MOCTP explained to the Minister that;

- 1) Those issues pointed out do not have significant meaning.
- 2) The rehabilitation plan proposed in the Draft Final Report is technically the best and the least cost solution.

but the "Minutes of Discussions" was not concluded by the proposed plan.

This Report was compiled based on the draft final report, taking into the consideration of the aspects which were discussed and agreed in the meetings with the executing agency, the Department of Phnom Penh Port, during their stay in Cambodia.

CHAPTER 2 BACKGROUND OF THE PROJECT

CHAPTER 2. BACKGROUND OF THE PROJECT

2.1 General Description of Cambodia

(1) The Country and Population

Cambodia is located in the southwestern part of the Indochina Peninsula between 10 to 15 degrees north longitude and 102 to 108 degrees east latitude. Cambodia shares its border with Thailand and Laos in the north, Vietnam in the east, and the Gulf of Thailand on the south. It extends approximately 500 km east to west, 450 km north to south, and occupies an area of 181,035 sq km which is equal to one half that of neighbouring Vietnam. The topography consists of the Mekong River which flows north to the south, and the Tonle Sap Rivers both which run in the central valley. The Tonle Sap Lake is the source for the Tonle Sap River. The Tonle Sap Lake increases its basin by some 7 times with the waters from the Mekong River which reverses the flow of the Tonle Sap River. The water basin including the lake boasts one of the largest store of fresh water fish in the world.

The population of Cambodia in 1991 is reported to be 8.8 million by taking into consideration the increase of 2.8 % of the census taken in 1980. (According to the Ministry of Planning: UNTAC gives a population of approximately 9.2 million including the refugees) The provinces most heavily densely populated are Kompong Cham Province with 1.41 million, Kandal Province with 0.89 million, Prey Veng Province with 0.89 million, and they all are adjacent to the Capital City of Phnom Penh. Adding the population of Phnom Penh of 0.49 million to the four provinces gives a total population of 42 % of the total population of the country. Most of the population of nearly 90 % is concentrated on the lands along the central valley. It is estimated that the population by the year 2000 with the yearly growth rate of 2.5 % will result in a population of 10.0 million. The ethnic makeup is 90 ~ 95 % Khmer which has the largest share, while the remainder consisting of Chinese, Vietnamese, Cham Muslims, and a small numbers of highland people.

(2) Socio-Economic Environment

It is already more than one year since the four factions signed the peace agreement in Paris. While there is still political tension prevailing in Phnom Penh, the residents are economically very active, and investments are being made for construction of hotels and restaurants from the neighbouring countries

with expectation of economic development since the recovery of security all over the city. However, electric power, water supply, and transportation infrastructure needs to be restored, together with the 2nd National Recovery Activities of agriculture and industries need to be restructured, and there are still many other problems that still need to be solved. In addition to these problems, the value of the currency has been depreciated further, with the inflationary trend. The cost of living has greatly increased for the general public. The average monthly wages for the public servant which was \$45.00 in April of 1992 has dropped further to \$20.00 in November 1992. The economic index and the Gross National Product (GNP) are given in Tables 2-1 and 2-2. The GNP which was 26,100 million Riel in 1984 real prices had a growth rate of 9 % since 1986. The per capita income was 1,896 Riel (US\$237.00) in 1990, with a growth rate of 5.5 %. The GNP by industry indicates that there was almost no change for agriculture sector for the 3 years from 1986 to 1988, while its share dropped from 46 % in 1986 to 40 % in 1988. On the other hand, the production value of industry sector and its growth rate showed an increase, and increased from 21 % in 1986 to 26 % in 1988. The shares of commerce and construction industries showed an increase of 10 ~ 13 %.

Table 2-1 Principle Economic Indexes

Index	Year	1984	1985	1986	1987	1988	1989	1990
Actual GNP (Mil. Riel)		17,151	17,776	18,437	19,774	21,593	23,752	26,128
Actual Growth (%)			3.6 %	3.7 %	7.1 %	9.4 %	10.0 %	10.0 %
Actual National Income (Mil. Riel)		11,032	11,711	11,870	12,642	13,646	14,964	16,460
Actual Growth (%)			6.2 %	2.4 %	6.6 %	7.9 %	9.6 %	9.9 %
Per Capita Income (R)		1,496	1,548	1,527	1,582	1,661	1,772	1,896

Note: Real Prices in 1984 (US\$1.00 = 8 Riel)

Source: Ministry of Planning

Table 2-2 GNP by Industry

Year	GNP Mil. R	Actual 1984 Prices							
		Agriculture		Industry		Commerce		Construction	
		Mil. R	%	Mil. R	%	Mil. R	%	Mil. R	%
1986	18,437	8,491	45.6	3,958	21.4	2,167	10.7	2,434	13.2
1987	19,744	8,312	42.1	4,869	24.6	2,135	10.9	1,919	9.7
1988	21,593	8,720	40.4	5,616	26.0	2,562	11.8	2,230	10.3

Source: Ministry of Planning

2.2 Description of Traffic and Transportation in the Project Site

2.2.1 The Main Ports:

The administration of port facilities in Cambodia can be divided into: (i) the main ports which are managed directly by the State; and (ii) the local ports which are managed by the local governments. There are two main ports, the river port of Phnom Penh in the capital city along the Tonle Sap River, and the sea port at Sihanoukville facing the Gulf of Thailand.

The name Sihanoukville was changed from Kompong Som which the city renamed in June 1992.

The Phnom Penh Port and the Sihanoukville Port handled annual cargo volumes of 960,000⁽¹⁾ tonnes and 950,000⁽²⁾ tonnes, respectively, in the 1960s. A part of the port facilities were destroyed during the war in the 1970s, and they handled 315,000⁽³⁾ tonnes and 240,000⁽⁴⁾ tonnes in 1992, respectively. There were almost no maintenance or repair work performed for the facilities.

The annual freight handled at Phnom Penh Port prior to 1987 was in the magnitude of 100,000 tonnes. In 1992 this volume has increased to 315,000 tonnes. Due to the deterioration of the port facilities at Phnom Penh, insufficient length of berthing facilities and insufficiency in port operations, the port does not meet the recent sudden increase in cargo. Vessels have to wait in the basins for several days before berthing. Some of the cargo is unloaded through lightering operations. While there are no records of the volume of cargo handled by each port facility, the annual cargo volume processed in 1992 at each port facility was estimated as follows:

-
- (1) Assumed to include petroleum products.
 - (2) Assumed to include petroleum products.
 - (3) Assumed to include no petroleum Products.
 - (4) Assumed to include petroleum products.