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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

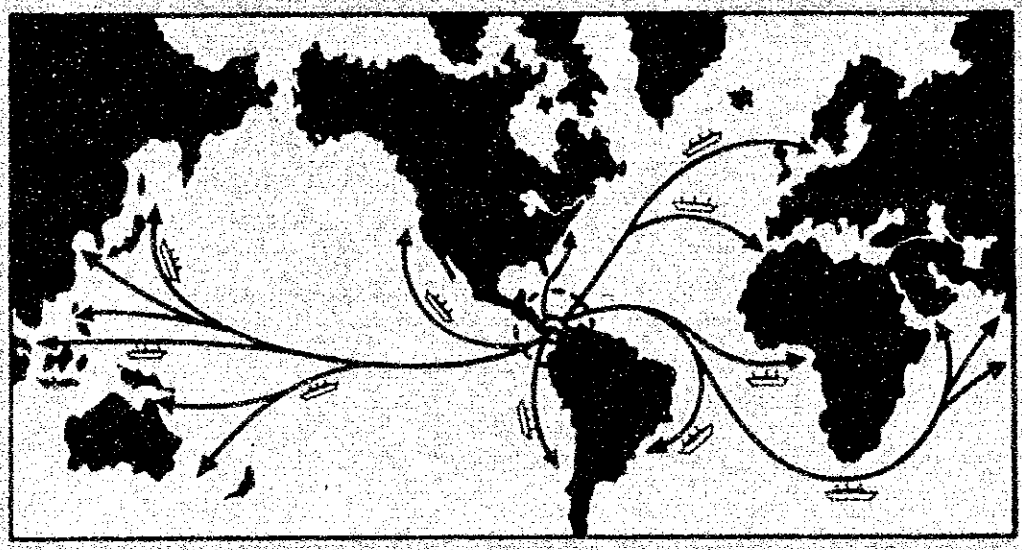
No. 32

NATIONAL PORT AUTHORITY
THE REPUBLIC OF PANAMA

THE STUDY ON THE REHABILITATION PLAN AND THE CONTAINER TERMINAL OPERATION PLAN AT THE PORT OF CRISTOBAL IN PANAMA

FINAL REPORT

SUMMARY



November 1993

THE OVERSEAS COASTAL AREA DEVELOPMENT INSTITUTE OF JAPAN (OCDI)
PACIFIC CONSULTANTS INTERNATIONAL (PCI)

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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PREFACE

In response to a request from the Government of the Republic of Panama, the Government of Japan decided to conduct the Study on the Rehabilitation Plan and the Container Terminal Operation Plan at the Port of Cristobal and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Panama a study team headed by Mr. Yukio Nishida, Executive Director of the Overseas Coastal Area Development Institute of Japan and composed of members from this institute and the company, Pacific Consultants International, three times between October 1992 and September 1993.

The team held discussions with the officials concerned of the Government of Panama, and conducted field surveys at the study area. After the team returned to Japan, further studies were made 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 express my sincere appreciation to the officials concerned of the Government of the Republic of Panama for the close cooperation they extended to the team.

November 1993

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency

LETTER OF TRANSMITTAL

November 1993

Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency

Dear Mr. Yanagiya,

It is my great pleasure to submit herewith the Final Report for the Study on the Rehabilitation Plan and the Container Terminal Operation Plan at the Port of Cristobal.

The report is the result of studies carried out by the Overseas Coastal Area Development Institute of Japan (OCDI) and Pacific Consultants International (PCI) as per the contract with the Japan International Cooperation Agency (JICA). The study team conducted three field surveys between October 1992 and September 1993.

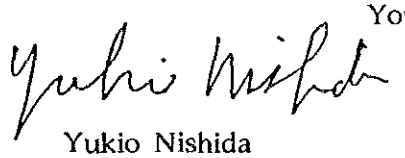
Based on the findings of these surveys and on data and information collected and analyzed in Japan, the master plan for the existing port facilities and new container terminals at the Port of Cristobal area was formulated with a target year of 2010 and the short term plan for the existing port facilities at the Port of Cristobal and a new container terminal at Telfers Island with a target year of 2000 including a feasibility study.

The study shows that the development of new container terminals at Telfers Island is important and essential as a socioeconomic infrastructure. I earnestly hope that measures will be taken to implement this project.

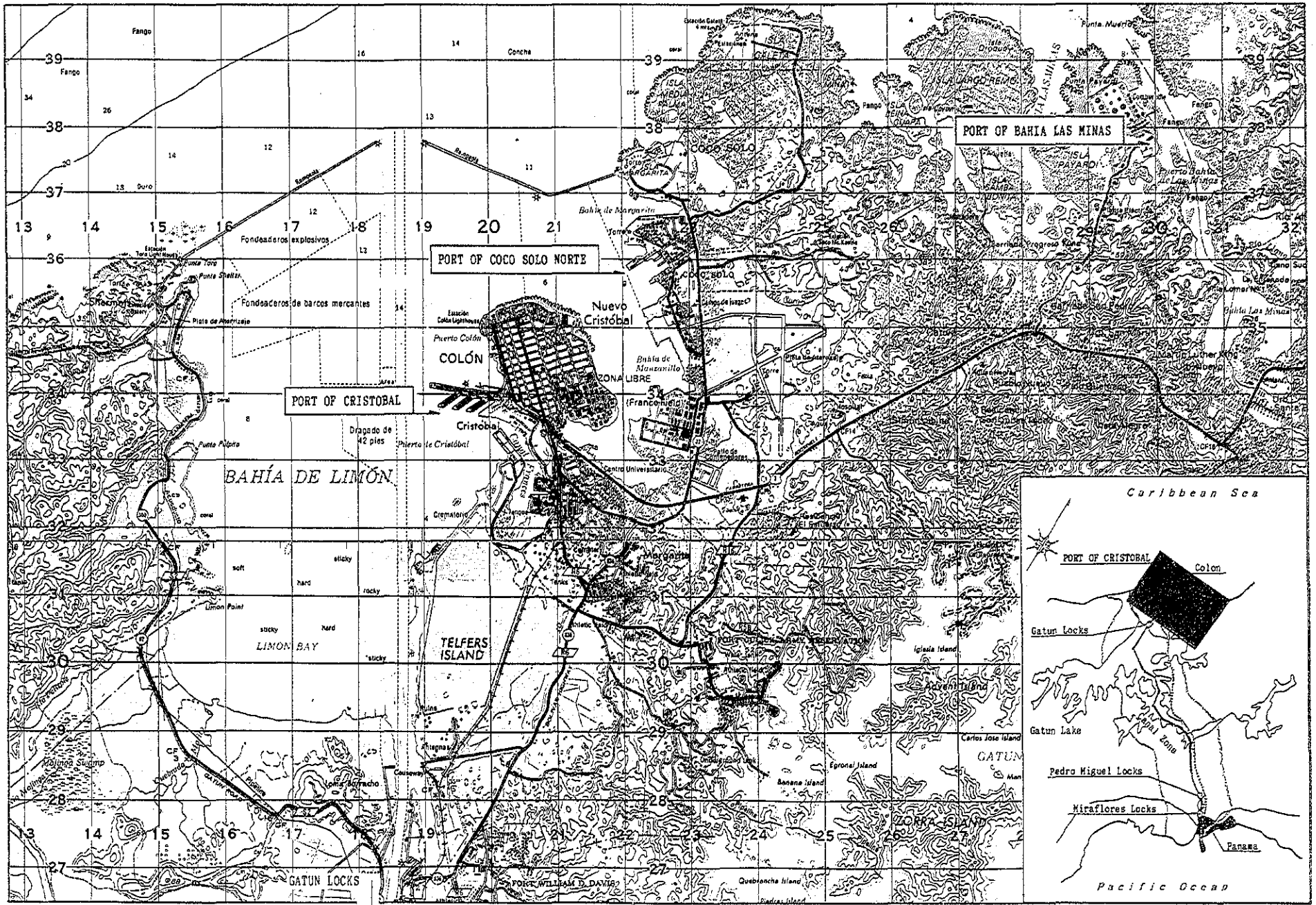
On behalf of the study team, let me express my heartfelt thanks for the generous cooperation, assistance and warm hospitality extended to the study team during their stay in Panama.

Our thanks are also due to the Japan International Cooperation Agency, the Ministry of Foreign Affairs, Ministry of Transport and Japanese Embassy in Panama for their valuable advice and support during the field survey and preparation of this report.

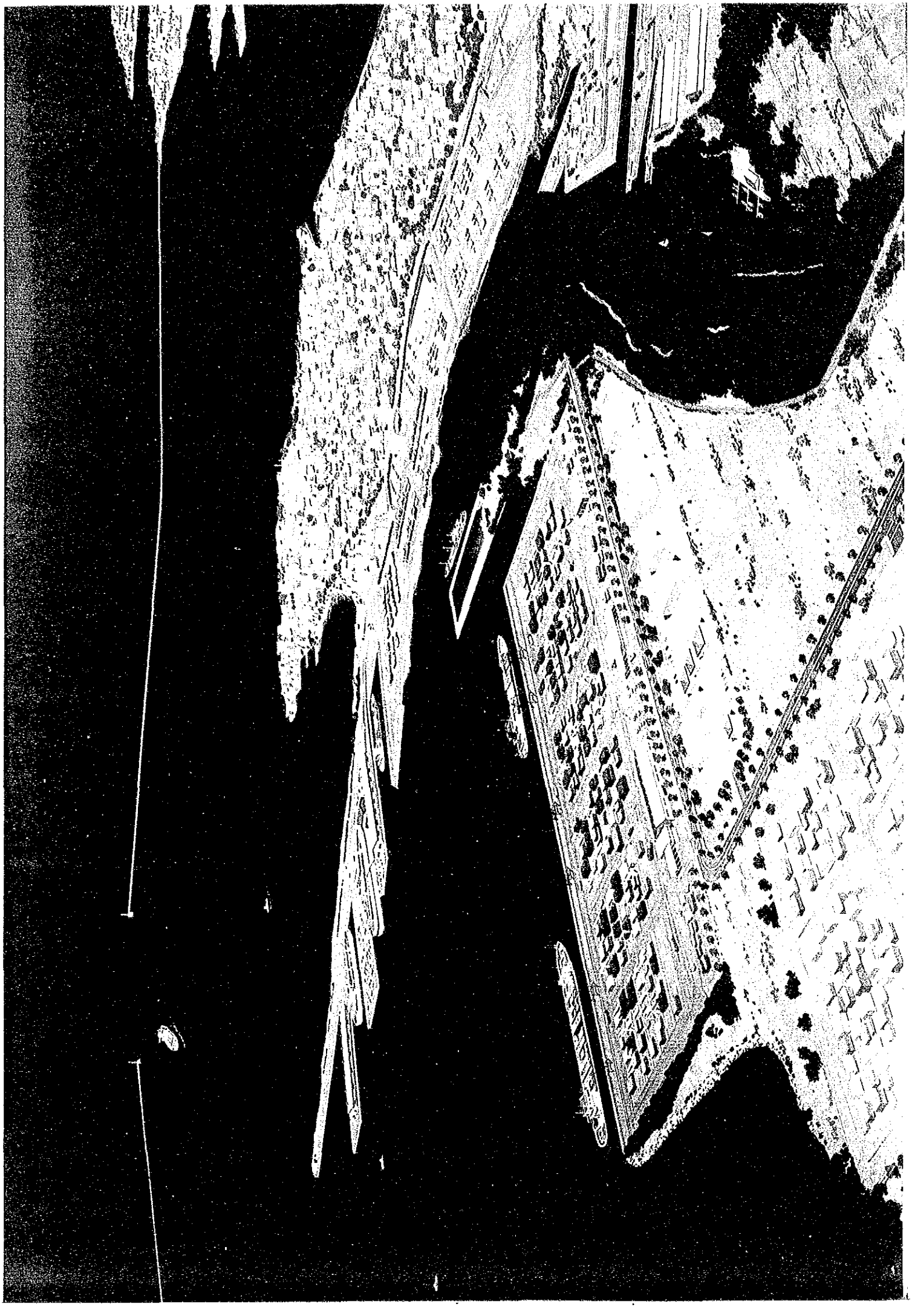
Yours faithfully,



Yukio Nishida
Leader
Japanese Study Team for
the Study on the Rehabilitation Plan
and the Container Terminal Operation
Plan at the Port of Cristobal
(Executive Director, the Overseas Coastal
Area Development Institute of Japan)



LOCATION MAP



ABBREVIATION LIST

A	APN	Notional Port Authority
	APSA	Atlantic-Pacific, S.A.
	ARI	Interoceanic Regional Authority
B	B/L	Bill of Laden
	BOD	Biochemical Oxygen Demand
	BOT	Build, Operate and Transfer
C	CFS	Container Freight Station
	CIF	Cost, Insurance and Freight
	COD	Chemical Oxygen Demand
	COFRISA	Consortium for the Development of Folk River, S.A.
	CPC	Centerport Concept
D	DO	Dissolved Oxygen
	DWT	Dead Weight Tonnage
E	EIA	Environmental Impact Assessment
	EIRR	Economic Internal Rate of Return
	EPZ	Export Processing Zone
F	FCL	Full Container Load
	FEU	Forty-foot Equivalent Unit
	FIRR	Financial Internal Rate of Return
	FOB	Free on Board
G	GDP	Gross Domestic Products
	GT	Gross Tonnage
H	HHW	Highest High Water
I	IEE	Initial Environmental Examination
	IMO	International Maritime Organization
L	LAQ	Lease a Quay
	LCL	Less than Container Load
	LLW	Lowest Low Water
	LUP	License to Use a Port
M	M/O or O/M	Maintenance and Operation, or Operation and Maintenance
	MHW	Mean High Water
	MIPPE	Ministry of Planning and Economic Policy
	MLB	Mini Land Bridge

	MLW	Mean Low Water
	MLWS	Mean Low Water Spring
	MSL	Mean Sea Level
N	NPV	Net Present Value
O	ODA	Official Development Assistance
P	PCC	Panama Canal Commission
	PLD	Precise Level Datum
R	Ro-Ro	Roll-on Roll-off
S	SS	Suspended Solid
T	TEU	Twenty-foot Equivalent Unit
U	UNCTAD	United Nations Conference on Trade and Development

Exchange Rate

1 US Dollar = 1 Balboa = ¥ 107.5
(as of July 1993)

SUMMARY

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INTRODUCTION

INTRODUCTION

The port of Cristobal located at the north entrance of Panama Canal and only three kilometers off the Colon Free Zone has great potential as a sea borne trade center of Caribbean countries. However, this port has not been able to cope with recent increase of container cargo transportation demand due to its obsolete port facilities and difficulties in planning, management and operation.

In the year of 1990, the Government of Panama requested the Government of Japan to conduct the Study which was commenced by the Study Team in October 1992 under the technical cooperation of JICA. The scope of the Study was agreed to include the long term plan (Master Plan for year 2010) and short term plan (Feasibility Study for year 2000) for the improvement of general function of the Ports of Cristobal with special emphasis on rehabilitation, modernization of existing port facilities and operation as well as development of new container terminals.

The target of this project is to enforce and activate the function of the port of Cristobal as a container terminal port and improve its international competitiveness.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

1. Development and Improvement Plan of the Port of Cristobal

In order to meet increasing demand of container cargo transportation, an existing container terminal will be modernized and new container terminals will be constructed at Telfers Island which is not developed yet. Existing piers will also be modernized by demolishing a useless quay shed and introducing a function of passenger terminal at another quay shed.

Major projects are shown below;

Project	Short Term (2000)	Long Term (2010)
New Container Terminals (Telfers Island)	Container Berth (d=-13.0m,l=300m) Area 10.5ha Container Crane 2 Transfer Crane 7	Container Berth (d=-13.0m,l=600m) Area 21.0 ha Container Crane 4 Transfer Crane 14
Modernization of Existing Container Terminal	Expansion 1.8 ha Transfer Crane 1 (additional)	Expansion 3.3 ha Transfer Crane 4 (additional)
Modernization of Existing Piers and Mole Area	Pier No.7: Demolition of Quay Shed 7,900 m^2 Mole: Pavement for Open Storage Area 5,000 m^2	Pier No.8: Re-form to Passenger Terminal Mole: Pavement for Open Storage Area etc. 20,660 m^2
Access Road	Access to Boliver Highway(2 lanes) 2.3km	Bypass Route to R16 (4 lanes) 3.0km

2. Project Cost

Initial investment of the project at each stage is shown below;

(thousand US$)

	Short Term (1994 - 2000)		Master Plan (1994 - 2010)	
	Construction	Equipment	Construction	Equipment
New Container Terminal	72,209	29,554	203,986	88,661
Existing Container Terminal	4,136	2,188	16,064	15,462
Piers and Mole Area	1,940	800	5,952	800
Total	78,285	32,542	226,002	104,923
Access Road	-	-	11,434	-

3. Evaluation of Feasibility of the Short Term Plan

(1) Economic Feasibility

The Short Term Plan has a great bearing on the successful expansion of Colon Free Zone which is expected to be completed by 2000. Three kinds of benefit shown below are evaluated.

a) Salary paid to new personnel in the expanded Free Zone
b) Additional earnings from enterprises working in the Free Zone
c) Decrease in container dwelling time in the container yard

The economic internal rate of return (EIRR) of the project is calculated as 18.8%. It is sufficiently higher than the discount rate of capital in Panama which is estimated as 10% to 12%. Accordingly, the Short Term Plan is considered economically feasible.

(2) Financial Viability

Provided that port service sections such as cargo handling, warehousing and mechanical service are privatized and the port authority receives the lease charges from private companies, the financial internal rate of return (FIRR) of the project is calculated as 16.3%. It is satisfactorily higher than the weighted average interest rate of funds which is estimated at around 9%. Accordingly, the Short Term Plan is considered financially viable.

4. Recommendation

(1) The plan should be vested with a certain legal power or be authorized by the government to promote its development scheme.

(2) Basic policy of port development and management and provision of basic facilities should be controlled by the government.

(3) Ownership of the land and water area necessary for APN port administration and the basic port facilities should belong to APN.

(4) Under the basic understanding on the nature of public port, it is recommended that the guidelines shown in the report be taken into account in order to smoothly apply the government's commercialization policy to APN.

(5) APN should propose its own development concept for Telfers Island with due regard to possible utilization of this area for port related function.

(6) It is recommended that APN have a more aggressive tariff policy to support the terminal operation in attracting further transhipment cargoes.

(7) It may be recommendable that APN, if situation allows, should take the initiative in utilizing some ODA funds with low interest rates in order to secure better financial soundness as the official executing agency of the project.

(8) Development of port function itself does not have any negative impact on surrounding environment, however, the possible increase of economic activities as a result of port development may cause general increase of basic load on the environment system. APN should establish environmental conservation policy in respect to port development and take necessary measures continuously.

SUMMARY

1 General

1.1 General Understanding on Current Situation of the Ports of Cristobal

The Republic of Panama is a country which is blessed with excellent marine transport capability, facing both the Atlantic and Pacific Ocean which are connected by the Panama Canal.

Under the circumstances, the Ports of Cristobal and Balboa are playing the most important roles, among 13 APN ports, in contributing to the national economy thanks to their advantageous location at the Atlantic and Pacific entrance of the Canal.

The Ports of Cristobal, which consist of three major port areas including Cristobal, Coco Solo and Bahia Las Minas, is considered as a so-called port complex functioning as one port in handling cargoes for the hinterland covering the entire country and Free Zone in particular. While the Ports may have the potential to become the predominant cargo distribution center in Central/South America and Caribbean Sea, its current facilities and operation are not really efficient in handling the increasing cargo traffic, mainly due to the relatively short experience of APN in this field compounded by severe budget constraints. Regardless of the continuous efforts by APN, severe congestion and constant delay of container handling have had for many years a very negative impact on the economic activities of the country; for example, the lack of valuable incentives has discouraged business entities from investing in the hinterland of the Ports.

Those in industrial and marine transport business circles both in and out of Panama who know the situation very well, are now strongly expecting the Ports to realize its potential capability in serving a substantial amount of cargo flow which is no doubt vital in stimulating economic development of the country.

Considering the various factors surrounding the Ports, such as the possible expansion of the Canal capacity, active development of competing Caribbean ports, prevailing wave of commercialization policy under the severe financial position of the country, substantial amount of potential cargo traffic, and so on, we believe it is exactly the right time for the Government to take confident action for the effective improvement of the Panamanian port function under carefully examined port plans with proper financial arrangement.

1.2 Present Situation of the Port of Cristobal

(1) Port Facilities

The port of Cristobal has six piers divided into 23 berths with a total length of 3,200 meters. Pier Nos. 6, 7, 8 and 16 are finger type piers. Piers No. 9 and 10 are marginal. These piers have an approximate 12 m depth and 300 m length, so Panamax type vessels can generally berth at all these piers.

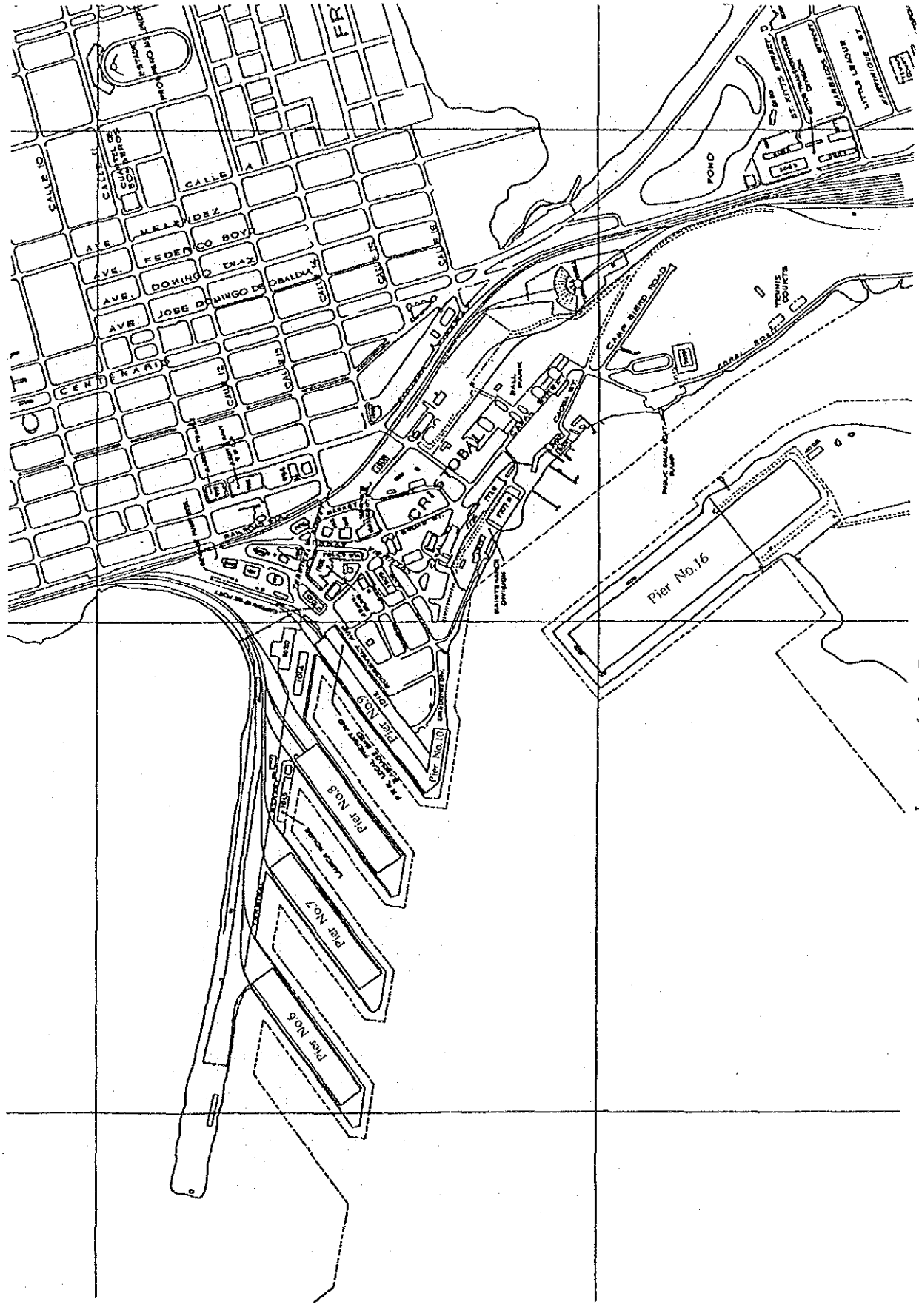
Piers No. 9 and 10 share the same container yard with 7.5 hectares just behind the piers. Pier No. 9 is used exclusively for containers equipped with two 40-ton container cranes. Pier No. 10 has no wharf crane.

Bunkering service is one of the major functions of the port of Cristobal due to its location near the Panama Canal. Pier No. 16 was originally constructed for the purpose of supplying coal and fuel oil to the Canal transit vessels.

The following figure illustrates the facilities layout of the port of Cristobal. The major dimensions of the berths at the port are shown below.

Major Dimensions of Berths at the Port of Cristobal

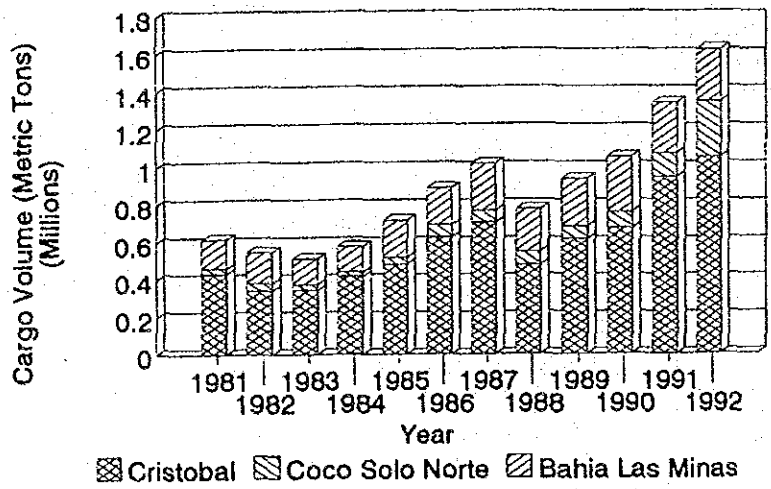
Pier No.	Berth No.	Length (m)	Draft (m)	Major Cargo
6	A-B	291.0	11.4	General Cargo
	C-D	309.0	12.0	Container
	E	72.0	12.0	Vehicle
7	A-B	276.0	10.8	General Cargo
	C-D	300.0	12.0	Container
	E	72.0	12.0	
8	A-B	283.0	11.4	General Cargo
	C-D	303.0	12.0	Container
	E	75.0	12.0	
9	A-B	311.0	11.1	Container
10		127.0	12.0	Container
16	A-B	321.0	12.6	Fuel Oil
	C-D	321.0	12.0	Vehicle
	E	137.0	8.7	



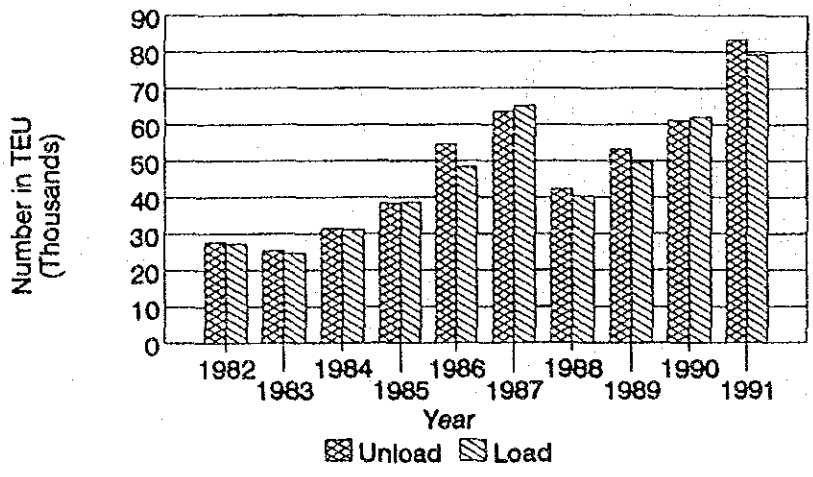
Layout of the Port of Cristobal

(2) Port Activity

The following figure shows the past records of the cargo handled at the three major ports (Cristobal, Coco Solo Norte and Bahia Las Minas). Total cargo volume handled at these 3 ports occupied nearly 50% of the total cargo volume (about 3.3 million metric tons) in Panama in 1992. Cargo of approximately 1 million metric tons was handled at the port of Cristobal in 1992.



All cargo handled at the port of Cristobal is for overseas trade. In 1991, 80% of the volume was imported, and 75% of the total volume was container cargo. Small quantity of general and bulk cargo is handled at the port. The number of containers handled at the port is shown in the figure below. Approximately 162 thousand TEUs were handled, and of those, 100 thousand TEUs (62%) were laden containers in 1991.



The number of ship calls at the port of Cristobal recorded 1,112 in 1992 including those for the purpose of bunkering.

(3) Port Administration

1) National Port Authority (APN)

Panama has a total of 19 ports. Of those, National Port Authority (APN) is responsible for the management and operation of 13 Panamanian ports.

APN has more than 2,300 personnel and its central office has more than 650 personnel. The Port of Cristobal and the Port of Balboa administration offices have a large number of personnel. The former has about 900 persons and the latter about 500. This is because the administration offices employ their own personnel to conduct cargo handling service by themselves.

2) Management of Port Area

The Panama Canal Commission (PCC) controls navigation of vessels in the water area within the Panama Canal Zone including the port areas of Cristobal and Balboa. Berth allotment is handled by APN. Allotment of berths is generally on a first come first serve basis, however, container vessels without crane are given priority at Pier No. 9 of the port of Cristobal.

All land area of the ports which is owned by APN is managed by each Port Administration Office. APN makes concession contracts with private companies to rent a part of the land area. APN has made more than 200 contracts.

3) Port Service

At the port of Cristobal, APN Port Administration Office and a private company named "Delcargo Inc." provide cargo handling service. APN Port Administration Office also provides mooring and water supply services. Bunkering service is carried out by private companies, using APN facilities.

4) Financial Condition

APN gets no subsidy from the National Government. Conversely, the National Government exacts a contribution from APN. Financial position of APN was not good prior to 1990. The revenue structure has been improving thanks to increase of revenues from cargo handling and concession since 1990.

1.3 Findings on Engineering Aspects

On the basis of data and information provided by APN, and the site surveys conducted by the Study Team, major findings on the engineering aspects of the Ports of Cristobal are identified and summarized as follows.

(1) Overall Natural Conditions

Natural conditions of the project site are generally fair and favorable for the development of required scale of port facilities as shown below.

1) Meteorological condition is quite favorable for the project except for heavy rainfall. Wind speed intensity even during stormy conditions is moderate and no hazardous fog or mist is observed in this area.

2) Oceanographic conditions including tidal range and its current, wave height are moderately good.

3) Existing topography is generally flat securing preferable conditions for port structure.

4) While bathymetric conditions for navigation channels and basins for calling ships differ from spot to spot, the water depth in the bay area is deeper than 10 meters below LWL showing enough allowance in accepting large container vessels with minor dredging works at a few critical spots.

5) Basic geotechnical conditions are observed to be generally uniform at the project site. The hard stratum at the site is so called Gatun Rock Formation covered with weathered rock and sediment layer of soft marine clay.

6) The past earthquake records show that the site is located in a most calm area.

(2) Condition of Major Port Facilities

1) Existing port facilities are maintained in fairly good condition in general. The piers which were constructed some 75 years ago are in a healthy condition though some piles are partially damaged but not seriously. Utilities for the piers are well maintained although minor repair works are required.

2) Currently APN is making their best efforts to upgrade these facilities through expansion of cargo handling space both on the piers and in backup areas, rehabilitation of fender system etc..

3) A narrow and deep shape with irregular alignment of the existing container terminal behind Pier No.9 causes complicated cargo traffic and creates an inefficient container operation as a whole. Concrete pavement at the existing

container yard is maintained in fairly good condition except for minor cracks and holes which can be repaired by routine maintenance work. The access ways to the existing terminal are so complicated that the port traffic is forced to pass through congested part of the roads.

4) While the physical conditions of the gantry cranes at Pier No.9 are generally fair, their average rate of handling productivity is substandard mainly due to insufficient quantity of other container handling equipment including 40 ton top-loaders in particular. The procurement of spare parts and execution of major repair works are often delayed due to lack of budget and long complicated procurement procedure.

5) Absence of proper replacement/disposal plans and systematic repair records are other causes of the inefficient utilization of total potential capability of APN owned cargo handling equipment.

(3) Engineering Profile of Alternative Sites for New Terminal Development

Development possibility of three alternative sites for a new container terminal including West Colon Site (Site-C), Coco Solo (Site-CS), and Telfers Island (Site-T) were investigated from the engineering point of view.

Sites-C and CS have disadvantages in that available water depth is relatively shallow and geotechnical conditions are poor as well. Relocation problems concerning the housing areas surrounding these alternate sites may be another disadvantage.

Site-T faces a wide open basin with favorable water depth and geotechnical conditions and is sheltered by the breakwaters and mole providing a good anchorage area and an easy access to the Canal with minimum disturbance to operation. Wide open space behind the coastal area may be another advantage in the development of port related industries.

1.4 Findings on Current Management and Operation

APN (Autoridad Portuaria Nacional) is the state-run port management body which manages and operates 13 public ports in the country with five major Departments in its headquarters and Port Administration Offices at the site of the ports supported by a total of about 2,300 personnel including administrative staff, cargo handling workers and terminal operators.

The basic policies and major decisions on APN affairs are discussed and settled under the Board which consists of representatives from port workers, port users and the various Ministries concerned.

Having administrated, managed and operated the ports for the rather short period of 20

years beginning in 1972, the APN ports have not performed well in responding to the increasing cargo traffic through the ports. The current situation and major problem areas in this field are observed and identified as follows:

(1) Positive Findings

1) Well organized administration structure of APN in general with some able technocrats for port planning and management.
2) Sound financial position as a whole given severe budget constraints and considerable size of contribution to the government.
3) Relatively high level of book-keeping on APN account and statistical record preservation.
4) Satisfactory service in providing utilities and power supply for port users and bunkering for the calling vessels.
5) Well designed system and procedure in keeping good relationship between port laborers and the administration.
6) Positive incentives for APN staff to upgrade their business efficiency and be conscientious in carrying out assignments.

(2) Negative Findings

1) General shortage of basic port facilities including wharves, container yards and backup areas, and cargo handling equipment for both actual and potential demand of cargo flow through the Ports of Cristobal in particular.

2) Substandard level of container handling efficiency mainly caused by lack of well trained operators of container handling equipment (some of which is not well maintained partially due to improper procurement practice of spare parts).

3) Obsolete method of container marshaling/operation (T-Card system) of which capacity and efficiency can no longer meet the actual level of container movement.

4) Inadequate administrative authority of APN for more effective port management/operation. A more independent and self-sustainable way of administration may encourage APN staff to achieve the expected level of port efficiency.

5) Lack of confident policy of the government in commercializing the inefficient parts of public sector, which seems to lead APN to apply the policy to improper fields of port administration.

2 Master Plan (2010)

2.1 Basic Policy for the Development of the Ports of Cristobal

(1) Basic Understanding on Public Ports

The Study is conducted generally on the understanding that a public port should be considered as an economic infrastructure, or social capital and national asset. (for details, see Section 1 of Recommendation)

(2) Background of Relevant Factors Affecting Future Planning of the Ports in Panama

With a view to establishing a common base for practical formation of the Master Plan, following major factors are identified:

1) Global economic growth of about 4% on average can be expected with corresponding increase of world marine transport demand.

2) The number of transit vessels of the Canal will increase with the progress of ongoing Culebra Cut widening.

3) A series of ongoing and under-planning schemes for expanding the capacity of the Free Zone will be realized as scheduled.

4) Transshipment demand of sea-born cargoes will increase at the Ports of Cristobal with the general future trend of marine traffic in and around the Caribbean Sea area.

5) The port related infrastructures including road or railway will be improved according to respective schedules.

6) All relevant lands and properties under control of PCC will be gradually transferred to Panama towards the end of the year 2000.

7) Flexible application of the government's commercialization policy involving APN can be expected according to its validity and necessity.

(3) Functional Allotment among the Panamanian Ports

Ports of Cristobal

1) Main terminal services for Free Zone cargoes
2) Base port for the main and feeder line services for transshipment cargoes
3) Gateway port for domestic cargoes
4) Base port for cruising passenger boats
5) Center of bunkering services
6) CPC (Center Port Concept) port in long term basis

Port of Balboa

1) Base port for main line services for transshipment cargoes
2) Gateway port for domestic cargoes
3) Center of bunkering and ship repair
4) CPC port in long term basis

Other Local Ports

1) Oil importation terminal
2) Banana, sugar and shrimp exports
3) Domestic port for general cargoes
4) Fishery port

(4) General Scenarios of Future Cargo Flow and Corresponding Function of Ports

The development process is divided into 4 stages, namely Urgent, Short Term, Long Term and Post Master Plan. Outline of development scenario of each stage is as follows.

Urgent Stage (-1995)

1) The basic pattern of cargo flow will be more or less the same as present one.

Short Term Plan Stage (-2000)

1) A new container terminal will be completed at the port of Cristobal.
2) Transshipment cargoes will be increasing at the Port of Cristobal.
3) Coco Solo Norte will keep its position in handling Free Zone cargoes.
4) Containers at Bahia Las Minas will be shifted to the new container terminal.
5) At the port of Balboa, commercial and industrial development will progress with the increase of container traffic.

Long Term Plan Stage (-2010)

1) Free Zone cargoes will increase substantially with expansion of Free Zone capacity.
2) Cristobal will be a major base port for transshipment.
3) Additional container terminals will be completed at Cristobal to meet increased container traffic.
4) Piers Nos.6 and 7 will serve general domestic cargoes.
5) Pier No.8 will be used for passenger terminal.
6) Coco Solo Norte will provide the Caribbean lines with public berths mainly for general cargoes.
7) Bahia Las Minas will become a special type of port for dangerous cargoes with

ad hoc handling of containers.

8) Transshipment services at Balboa will be upgraded.

Post Master Plan Stage(2010-)

1) The post Panamax type vessels will be in service.
2) CPC project will be in progress.
3) All container cargoes of main lines will be handled at the new container terminals of Cristobal.
4) Piers Nos.6 and 7 will mainly provide general ship services rather than cargo handling.
5) The major berths of Coco Solo Norte will be used mainly for general cargoes.
6) Balboa will be a base port for transshipment operation.

2.2 Future Demand of Cargo and Passenger Traffic

(1) Methodology

Two different methods, namely macro forecast and micro forecast, are applied in general. The former is to forecast the total cargo volume as a whole by statistical correlation between the cargo volume and socio-economic indices and/or time trend. The latter is a cumulative method forecasting the cargo volume based on the analyses of the patterns of cargo flow, packing type and major commodities individually. The cargo volume forecast was carried out for the total volume of the three ports; Cristobal, Coco Solo Norte and Bahia Las Minas. As for passenger traffic, forecast was carried out based on IPAT's (Instituto Panameno de Turismo) estimate and the past records.

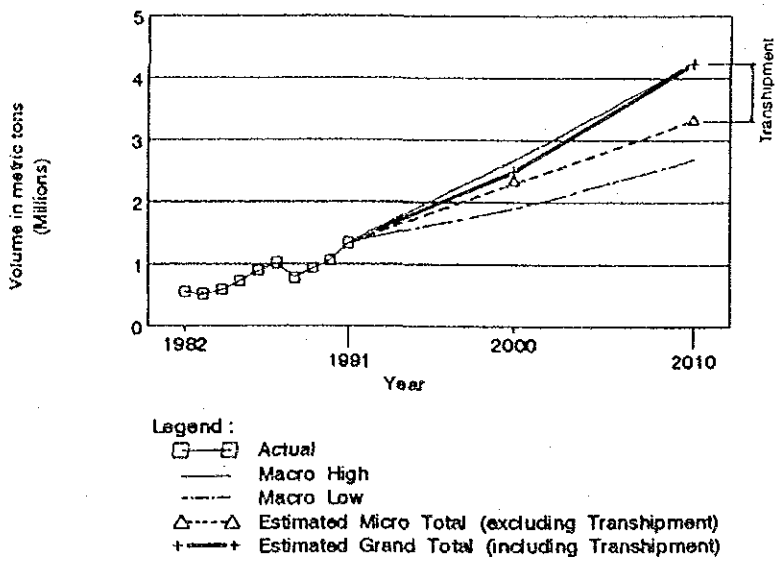
(2) Result of Forecast

Result of the forecast is shown below.

Result of Forecast

(Metric Tons)

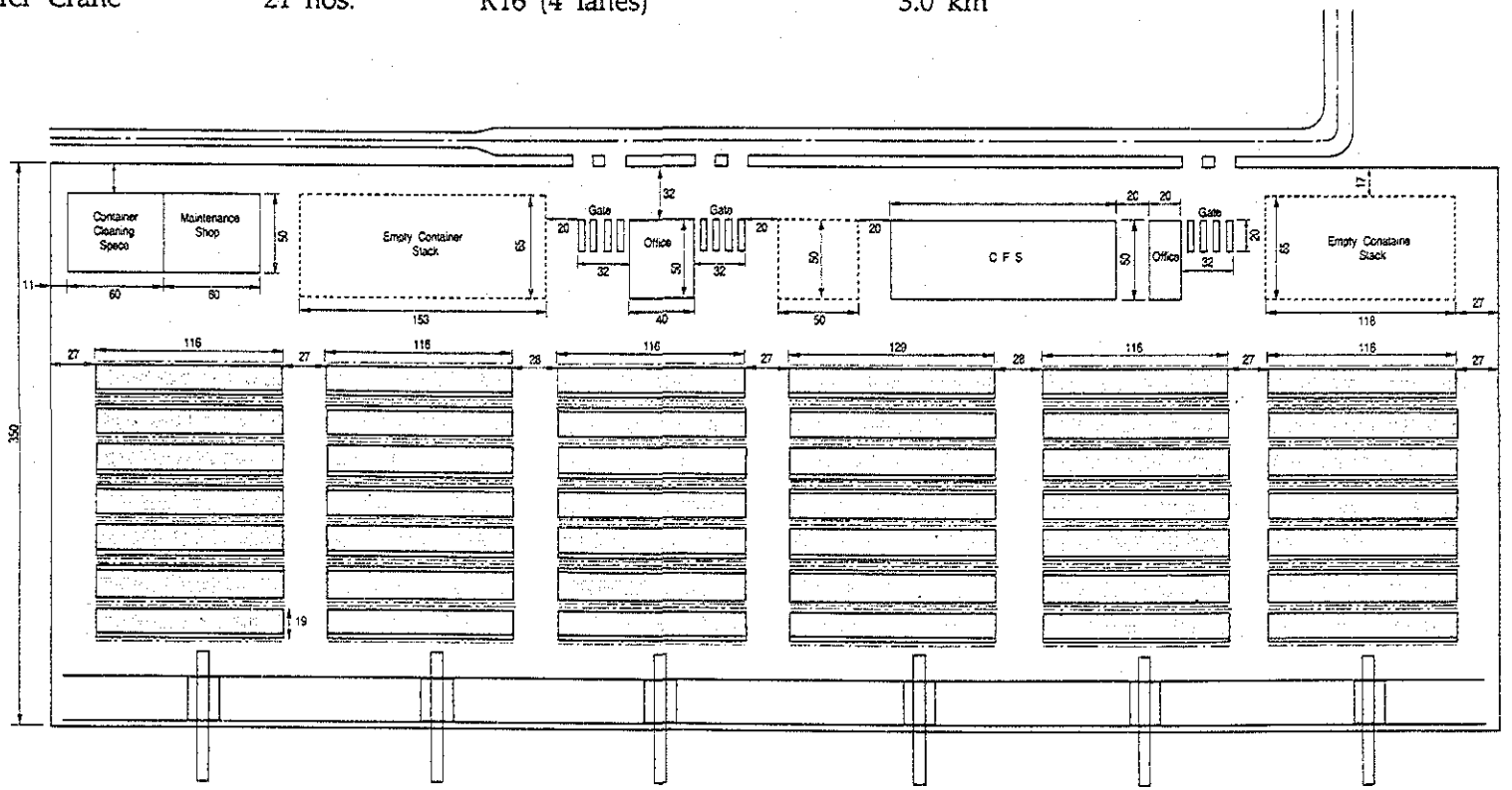
	1991	2000	2010
IMPORT :			
General Cargo	850,827	1,543,000	2,185,000
Break Bulk	148,928	278,000	393,000
Containerized	701,899	1,265,000	1,792,000
Solid Bulk	89,721	120,000	157,000
Sub-Total	940,548	1,663,000	2,342,000
EXPORT :			
General Cargo	311,048	583,000	824,000
Break Bulk	93,635	157,000	222,000
Containerized	217,413	426,000	602,000
Liquid Bulk	3,971	5,000	7,000
Sub-Total	315,019	588,000	831,000
TRANSHIPMENT (Break)	47,512	108,000	163,000
TRANSHIPMENT (Containerized)	37,618	144,000	900,000
THROUGHPUT	1,340,697	2,503,000	4,236,000
PASSENGER TRAFFIC	21,488	20,000	75,000



2.3 Master Plan Physical Layout Plan

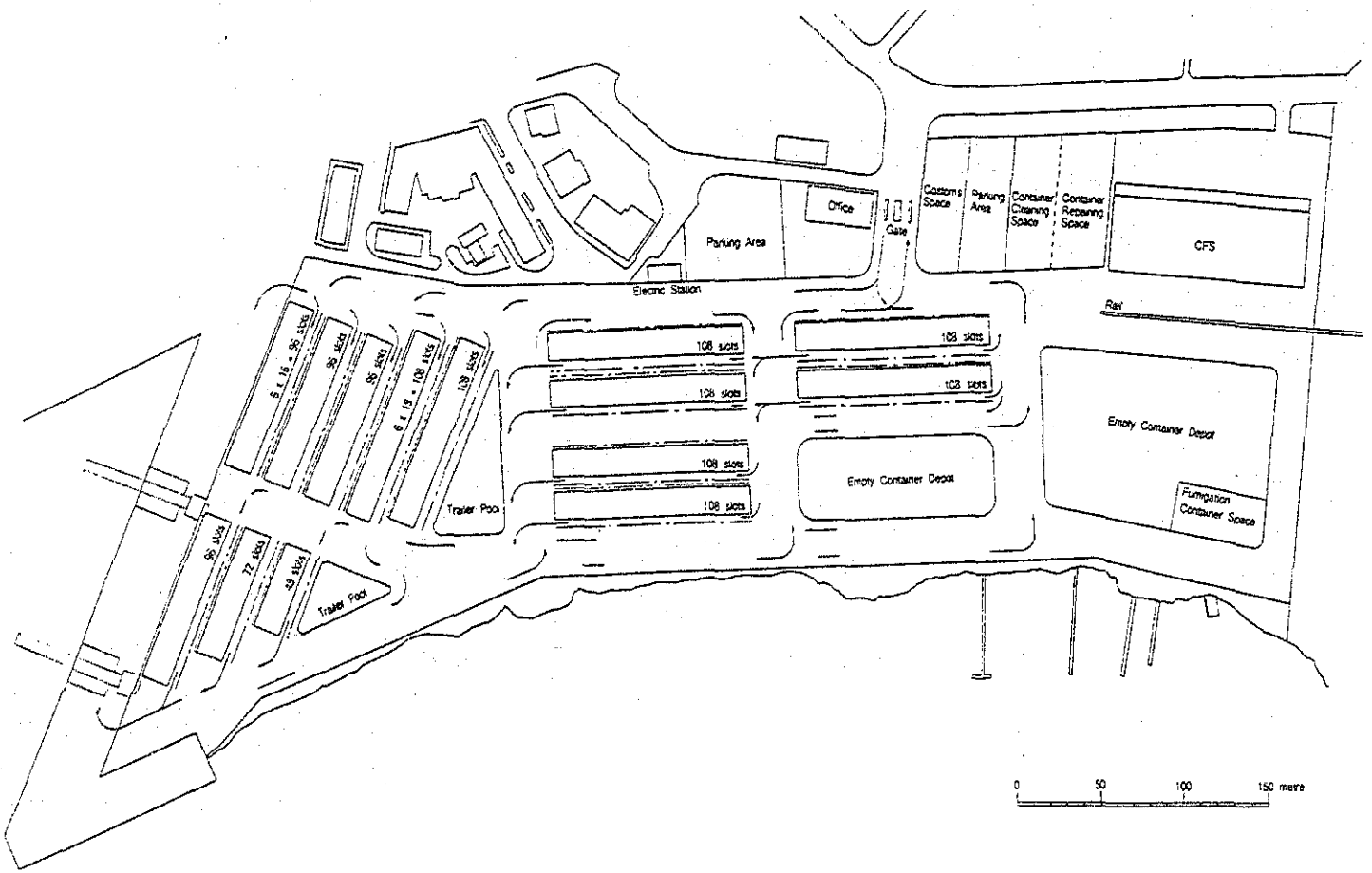
(1) New Container Terminals in Telfers Island

Berth Depth	-13.0 m	Maintenance Shop and Office	6,000 m^2
Berth Length	900 m	Open Storage	20,000 m^2
Terminal Area	31.5 ha	Access Road to	
CFS	7,000 m^2	Boliver Highway	
Ground Slot	4,185 slots	(2 lanes)	1.0 km
Container Crane	6 nos.	Bypass Route to	
Transfer Crane	21 nos.	R16 (4 lanes)	3.0 km



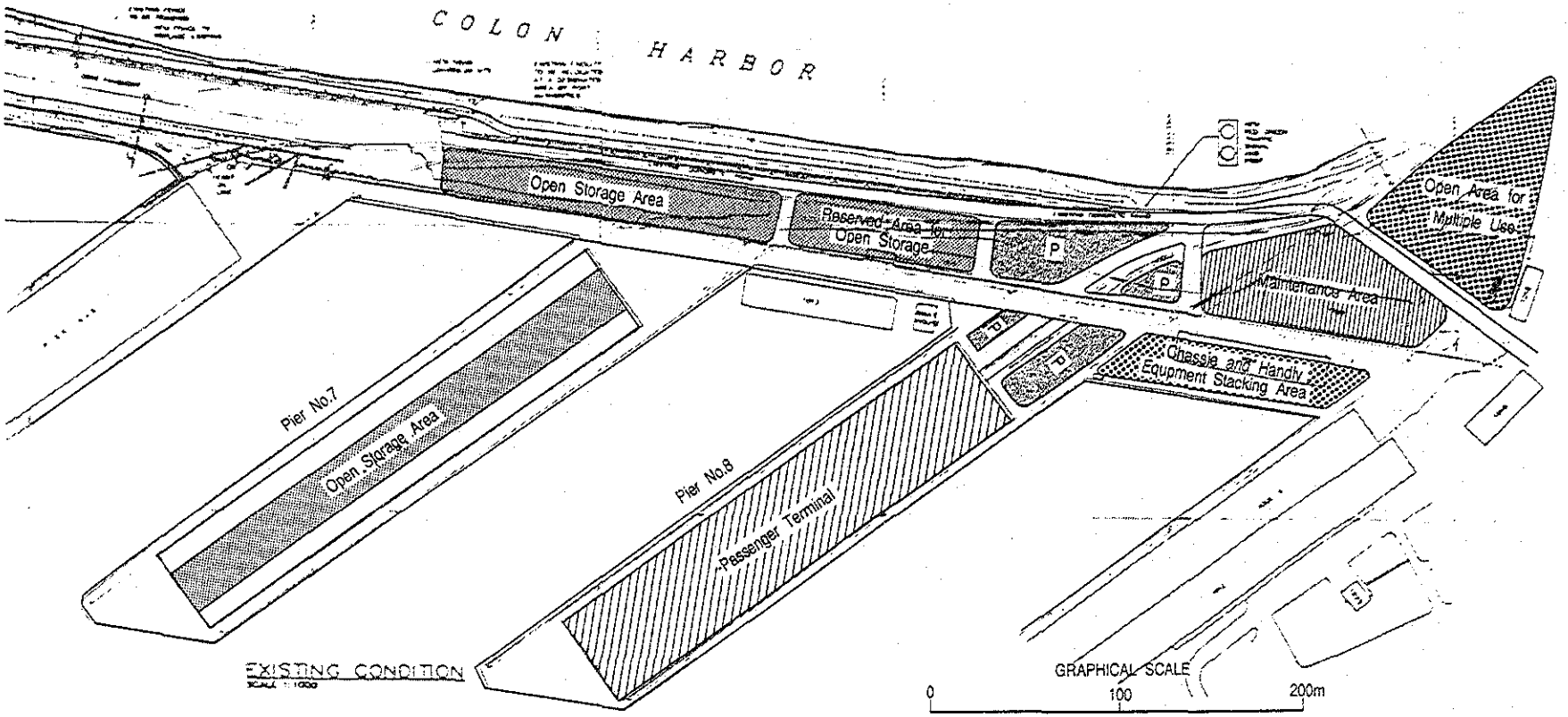
(2) Modernization of Existing Container Terminal

Berth Depth	-12.0 m	Transfer Crane	7 nos.
Berth Length	390 m	Terminal Office	1,000 m^2
Terminal Area	13.6 ha	Open Storage	1.8 ha
CFS	6,325 m^2	Yard Expansion	
Ground Slot	1,457 slots	North Side	1.9 ha
Container Crane	2 nos.	South Side	3.3 ha



(3) Improvement of Existing Piers and Mole Area

Demolition of Quay Shed	7,900 m^2	Maintenance Shop	5,000 m^2
Passenger Terminal	13,700 m^2	Chassis and Handling Equipment Stacking	3,000 m^2
Open Storage (including reserved area)	7,660 m^2	Open Area for Multiple Use	6,000 m^2
Parking	4,000 m^2		



2.4 Approximate Project Cost

As shown in the following table, the total initial investment cost amounts to $331.0 million for the construction works and equipment purchase. This cost will be spread over the period from 1994 to 2009. The required initial cost for the new container terminal at Telfers Island will amount to $292.7 million which represents 88.4% of initial cost. The initial cost for the existing container terminal and piers are $31.5 million and $6.8 million respectively. Other than this cost, an amount of $243.5 million should be spent for periodical equipment renewal and replacement and $738 million should be spent for maintenance and operation by 2029.

Initial Investment Cost and Periodical Equipment Purchase Cost

Unit: million $

Cost Category	Project Site				Access Road
	New Container Terminal	Existing Container Terminal	Piers and Mole	Total	
a. Initial Const. Works	204.0	16.0	6.0	226.0	11.4
b. Initial Equip. Purchase	88.7	15.5	0.8	105.0	0
Sub-total (a+b)	292.7 (88.4%)	31.5 (9.5%)	6.8 (2.1%)	331.0 (100.0%)	11.4
c. Periodical Equipment Purchase	130.9	102.6	10.0	243.5	0
Total (a+b+c)	423.6	134.1	16.8	574.5	11.4
d. Maintenance and Operation	450.0	288.0		738.0	-
Total (a+b+c+d)	873.6	438.9		1,312.5	-

Notes: 1. "Periodical Equipment Purchase" includes the required cost by 2029.
2. Contingency and engineering costs are included.

The annual expenditure schedule of the initial cost elements is shown below.
Since the estimate cargo throughput in 2010 is 4.2 million tons, unit initial investment cost is 78.8 $/ton.

Annual Expenditure Schedule for Initial Investment

Unit: million $

Year	Initial Const. Works	Initial Equipmt. Purchase	Annual Expenditure	Project Area
1994	3.0	0	3.0	B1 and Piers
5	3.1	2.4	5.5	"
6	-	-	0	
7	-	-	0	
8	36.1	0	36.1	B2
9	36.1	30.2	66.3	B2
2000	-	-	0	
1	7.9	0	7.9	B1 and Piers
2	8.0	0	8.0	"
3	32.9	5.4	38.3	B3
4	33.0	29.5	62.5	B3
2005	-	-	0	
6	-	-	0	
7	-	-	0	
8	32.9	0	32.9	B4
9	33.0	37.5	70.5	B4
2010	-	-	0	
Total	226.0	105.0	331.0	

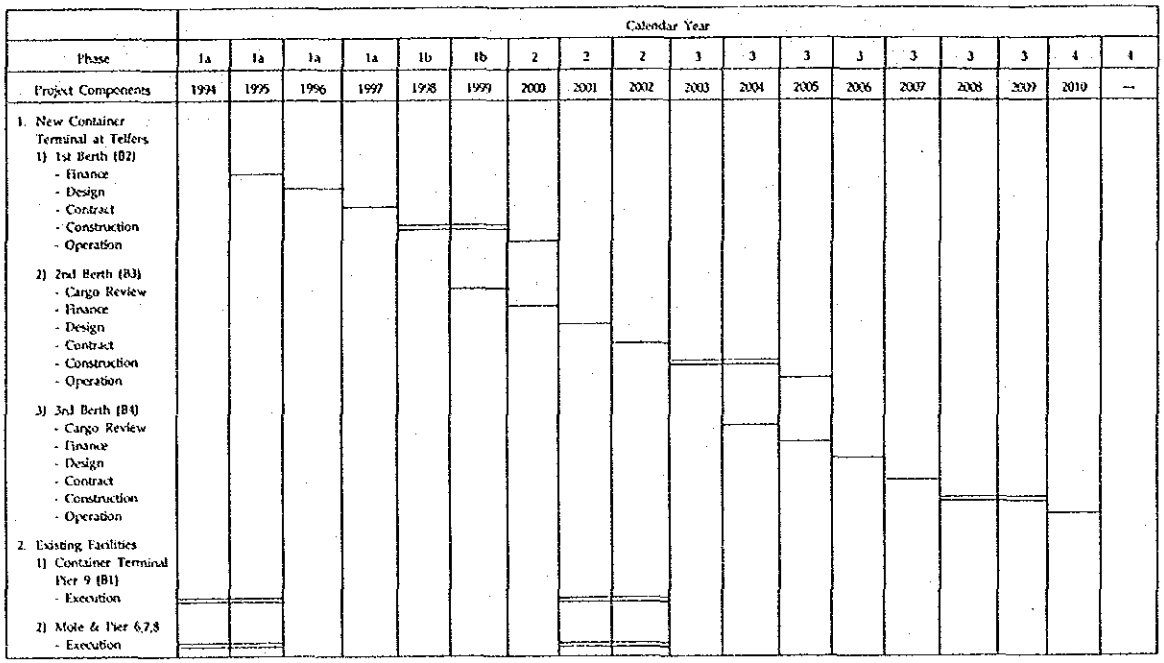
Note: B1, B2, B3 and B4 show the wharf number.
B1: Existing container terminal at Pier No.9.
B2: New container wharf : 1st wharf at Telfers
B3: " : 2nd wharf at Telfers
B4: " : 3rd wharf at Telfers
Piers: Existing piers and mole.

2.5 Master Plan Implementation Program

The short-term improvement for the existing facilities will be conducted in 1994/1995 due to an urgent requirement. However, the master plan development for the existing facilities will start in 2001.

The first container wharf at 2Telfers Island will be constructed in 1998/1999 after various preparation works. At the beginning of 2000, the wharf would commence the scheduled services.

The remaining two wharves will be constructed separately in 2003/2004 and 2008/2009 to meet the cargo demands in 2010.



Notes: 1. Periodical purchase of cargo handling equipment is excluded.
2. "Finance" means the preparation and arrangement of finance.
3. "Design" means both detailed investigation and design.

Basic Investment Schedule

2.6 Management and Operation

(1) *Management and Operation of Terminals of Port of Cristobal*

1) Development of management and operation system of container terminal

(a) The management system shown below is considered the best choice.

	Urgent	Short Term(~2000)		LONG TERM (~2010)			Post M.P.
	Pier 9	Pier 9	Pier X	Pier 9	Pier X	Pier Y....	
Owned by	Public	Public	Public	Public	Public	Public	Same as
Provide service for	Open	Open	Open	Open	Open	Exclusive	Long Term
Cargo Handled by	Public	Private	Private	Private	Private	Private	Stage

Pier X : A new container berth available in 2000
Pier Y.. : Additional container berths available in 2010
Exclusive : The type of operation which allows only a limited number of companies to use berth(s).

(b) An information system for container terminal operation should be introduced.

2) Development of management system for general cargo terminal

(a) General cargo terminals should be open to public use.
(b) Cargo handling service should be privatized.

(2) Control of Port Area, Infrastructure and Facilities

1) APN should formulate basic policy for national ports and prepare plan concerning development and conservation of port area.
2) Construction work, permission for usage of port infrastructure, facility and area should conform to the port policy and plan.

(3) *Organization and Personnel*

1) Each organization should tackle new areas such as development of personnel and tariff system, supervision of new terminal.
2) APN should simplify its organization.
3) A modern personnel evaluation system such as staff evaluation report system should be introduced.
4) Personnel transfer system between APN Central Office and Port Administration Offices should be introduced.
5) *APN needs to develop its own training to change mentality of APN office* workers in an effort to promote efficiency of port.

(4) APN should appeal to ministries concerned to modernize the procurement system and to define criterion for deciding the amount of the contribution.

(5) Port promotion should be aggressively performed taking aim at container cargo including transhipment cargo.

(6) Improvement of statistic system is necessary to support formulation of the port development policy and port promotion strategy.

(7) The port of Cristobal should continue supplying water and bunkering service.

2.7 Recommended Master Plan

After various alternatives of sites and procedures for the development of the port were carefully compared and examined, the following plan was formulated as the best Master Plan.

(1) Socio-Economic Condition

Population	3.37	million persons
GDP	9.61	billion US$ (Estimated 1990's Constant Price)

(2) Cargo Throughput for the Ports of Cristobal

Containerized Cargo	3,294	thousand M.T.
Others	942	thousand M.T.
(Number of Containers	630	thousand TEUs)

(3) Physical Plan

1) Construction of Three New Container Terminals in Telfers Island
2) Modernization of Existing Container Terminal
3) Modernization of Existing Piers and Mole Area
4) Construction and Improvement of Access Road
5) Promotion of Land Use of Telfers Island

Necessary cargo handling equipment including container cranes and transfer cranes will be deployed.

(4) Project Cost (Initial Investment)

(thousand US$)

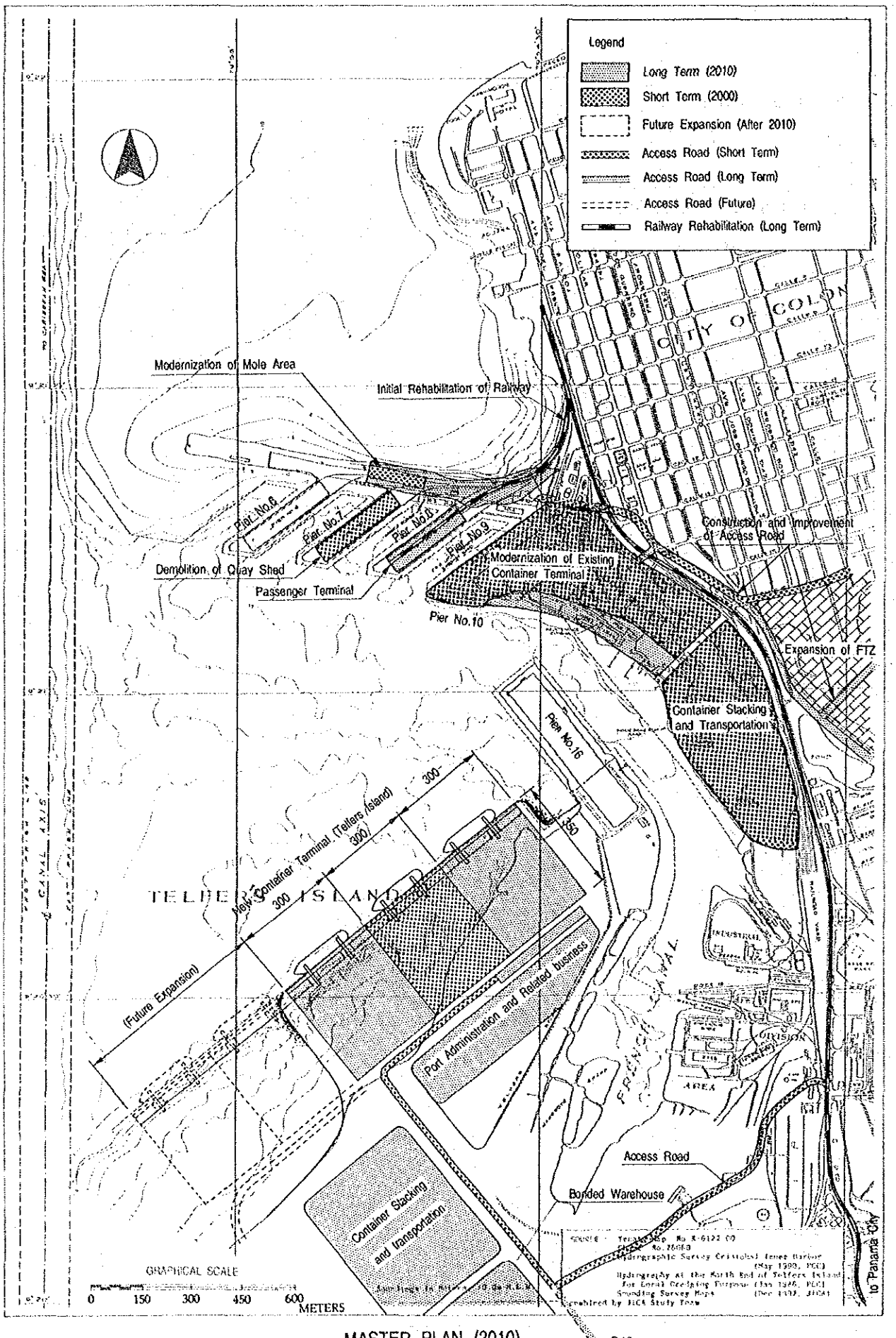
	Construction	Equipment
New Container Terminals	203,986	88,661
Existing Container Terminal	16,064	15,462
Piers and Mole Area	5,952	800
Total	226,002	104,923
Access Road	11,434	--

(5) Implementation Schedule

	Construction	Equipment
New Container Terminals	1998 - 1999 2003 - 2004 2008 - 2009	1999 2004 2009
Existing Container Terminal	1994 - 1995 2001 - 2002	1995, 1999 2002
Piers and Mole Area	1994 - 1995 2001 - 2002	1995 -

(6) Management and Operation

1) Users --- Open to Public
2) Construction and Ownership --- Public Sector
3) Cargo Handling and Operation --- Private Sector



MASTER PLAN (2010)

3 Short Term Plan (2000)

3.1 Future Demand of Cargo Traffic

The future demand of cargo traffic in 2000 is summarized as follows. Further, container cargo distribution to/from domestic origins and destinations is estimated as shown below.

Demand of Cargo Traffic in 2000

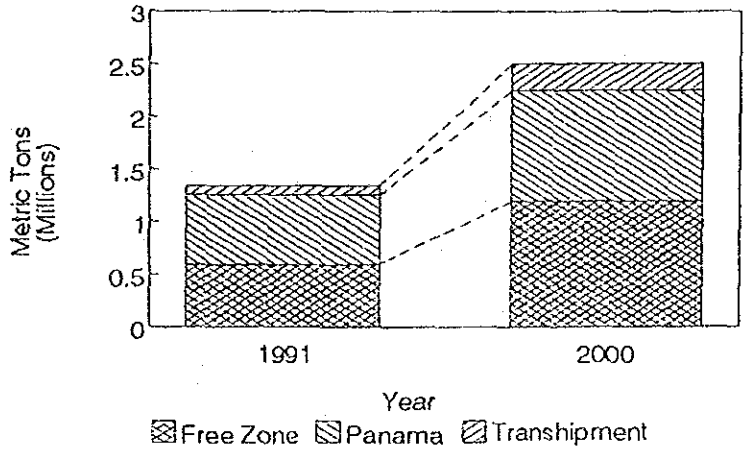
Total Cargo: (Metric Tons)

	IMPORT	EXPORT	TOTAL
Free Zone	780,000	416,000	1,196,000
Panama :			
General	763,000	167,000	930,000
Solid Bulk	120,000	–	120,000
Liquid Bulk	–	5,000	5,000
Transhipment	126,000	126,000	252,000
Total	1,789,000	714,000	2,503,000

Container Cargo:

	Metric Tons	TEUs
Free Zone	1,055,000	263,000
Panama	636,000	113,000
Transhipment	144,000	16,000
Total	1,835,000	392,000

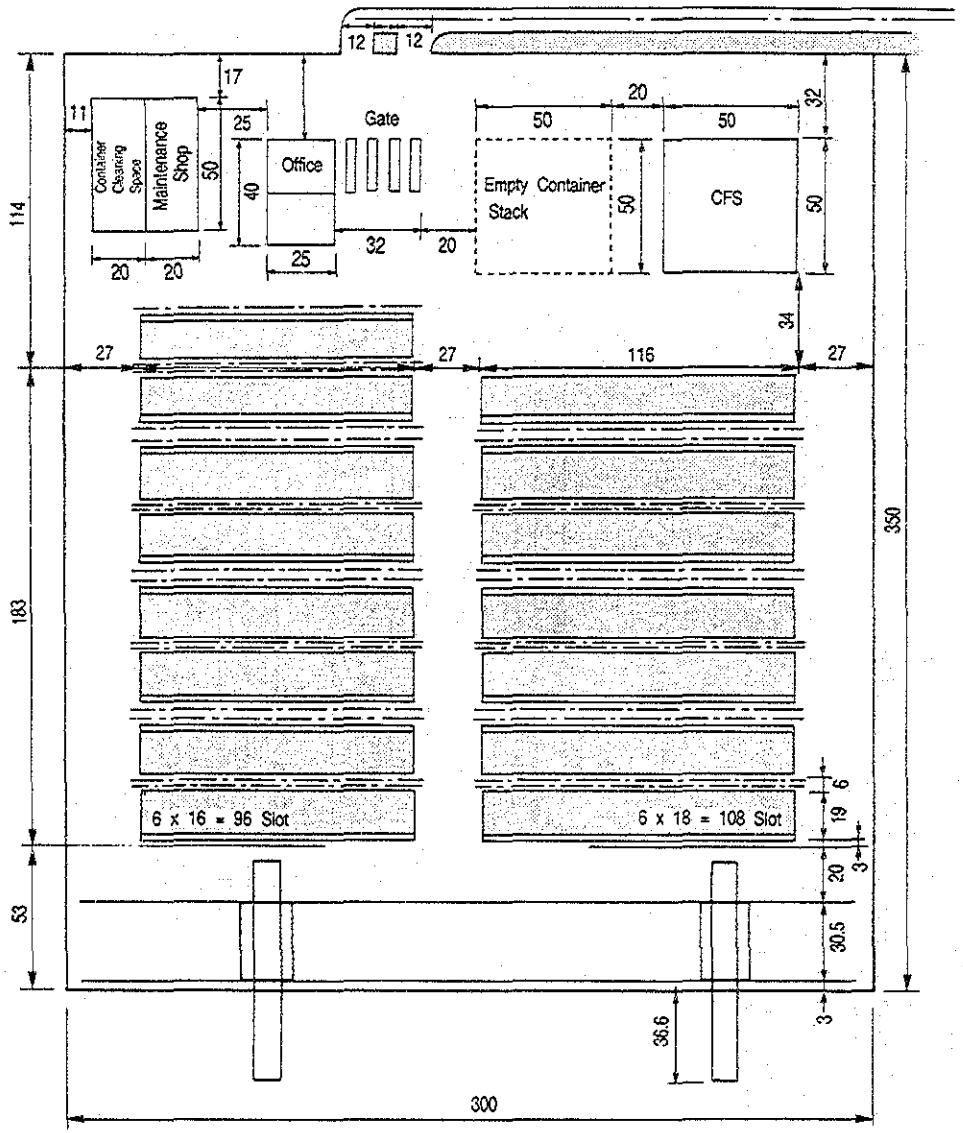
Origins & Destinations



3.2 Short Term Physical Layout Plan

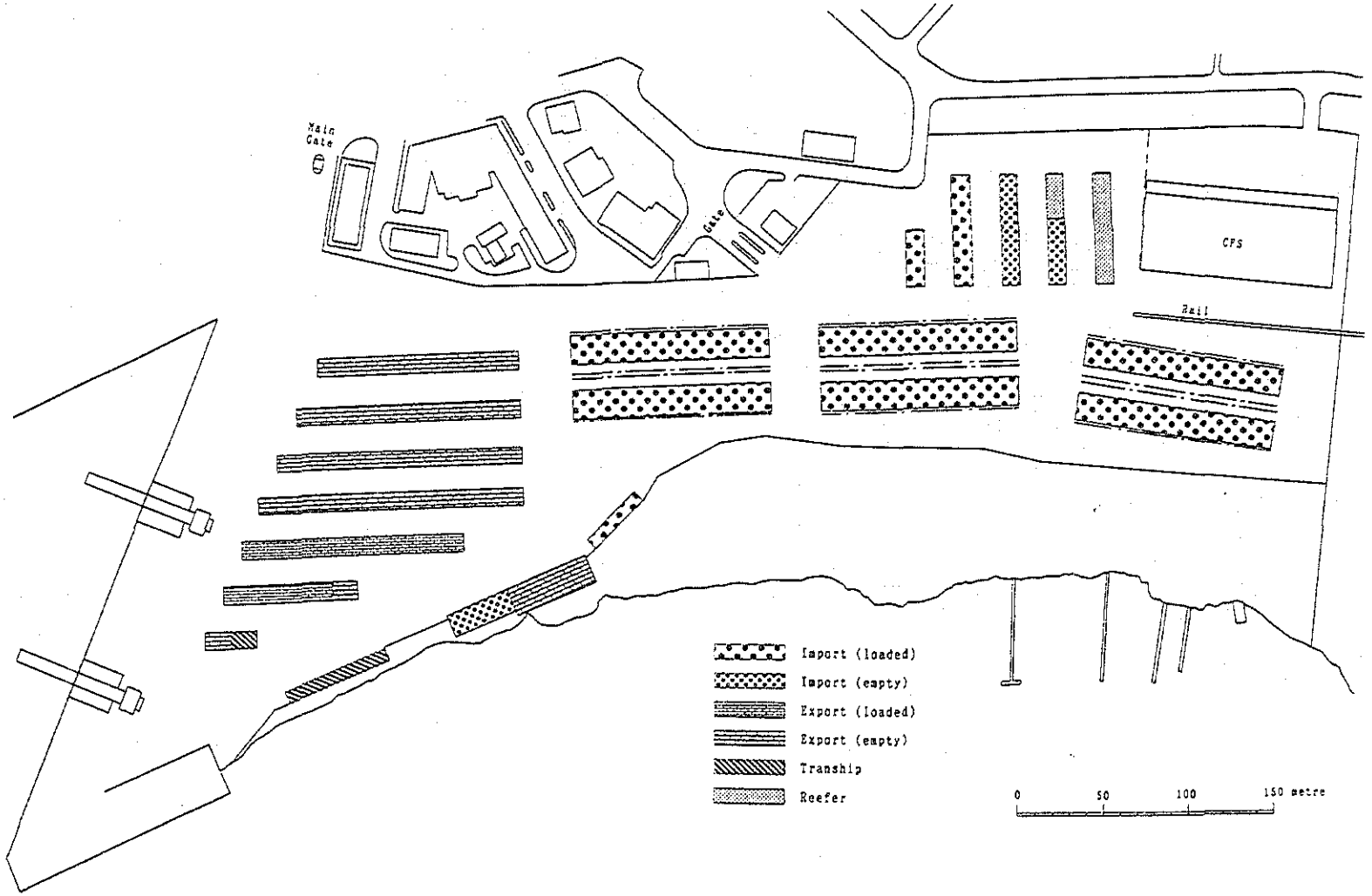
(1) New container Terminal in Telfers Island

Berth Depth	-13.0 m
Berth Length	300 m
Terminal Area	10.5 ha
CFS	2,500 m^2
Ground Slot	1,495 slots
Container Crane	2 nos.
Transfer Crane	7 nos.
Maintenance Shop and Office	2,000 m^2
Open Storage	2,500 m^2
Access Road to Boliver Highway (2 lanes)	2.3 km



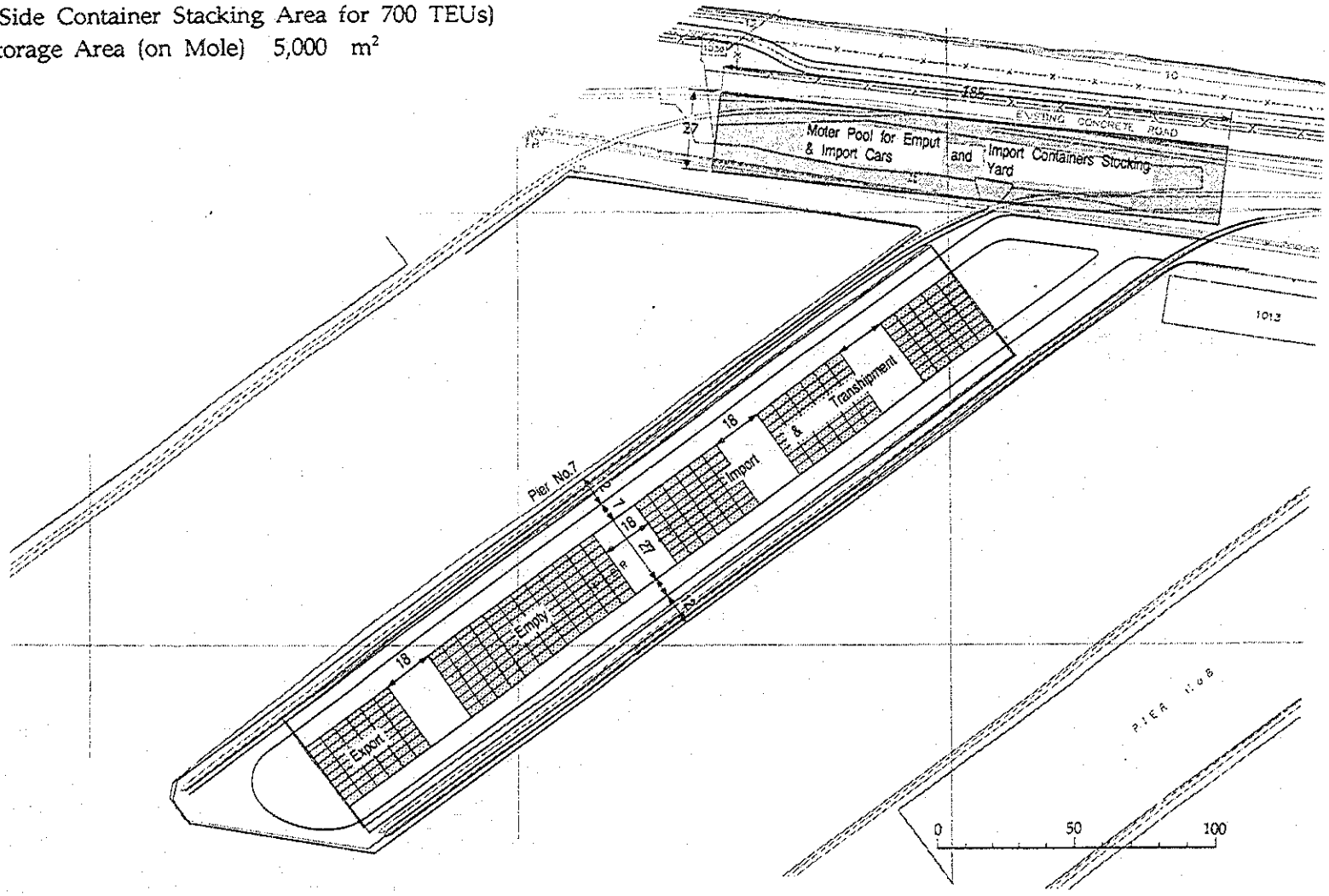
(2) Modernization of Existing Container Terminal

Berth Depth	-12.0 m	Container Crane	2 nos.
Berth Length	390 m	Transfer Crane	3 nos.
Terminal Area	10.2 ha		
CFS	6,325 m^2	Yard Expansion	
Ground Slot	1,457 slots	North Side	1.9 ha



(3) Improvement of Existing Piers and Mole Area

Demolition of Quay Shed 7,900 m^2
(Wharf Side Container Stacking Area for 700 TEUs)
Open Storage Area (on Mole) 5,000 m^2



3.3 Project Cost

The initial investment cost will amount to $110.8 million, of which 81.0% is classified to the foreign portion. The required initial cost for the new container terminal at Telfers Island will amount to $101.8 million which represents 91.8% of initial cost. The required initial costs for the existing container terminal and piers are $6.3 million and $2.7 million respectively. Cargo handling equipment cost for the periodical renewal and replacement by 2029 will amount to $150.6 million, of which $62.7 million will be spent for the new container terminal at Telfers Island. The remaining $79.3 million and $8.6 million are for the existing container terminal and piers respectively.

Initial Investment Cost and Equipment Renewal Cost in Short Term Development

Unit: 1000 $

Cost Category	New Container Terminal	Existing Container Terminal	Piers and Mole	Total
a. Initial	(1998/1999)	(1994/1995)	(1994/1995)	
Construction Work	72,209	4,136	1,940	78,285
b. Initial	(1998/1999)	(1994/1995)	(1994/1995)	
Equipment Purchase	29,554	2,188	800	32,542
Sub-total (a+b)	101,763	6,324	2,740	110,827
(Local Portion)	19,280(18.9%)	1,352(21.4%)	464(16.9%)	21,096(19.0%)
(Foreign Portion)	82,483(81.1%)	4,972(78.6%)	2,276(83.1%)	89,731(81.0%)
c. Periodical Equipment	(2000/2029)	(1996/2029)	(1996/2029)	
Purchase	62,725	79,259	8,572	150,556
(Local Portion)	0	0	0	0
(Foreign Portion)	62,725(100%)	79,259(100%)	8,572(100%)	150,556(100%)
Total (a+b+c)	164,488	85,583	11,312	261,383
(Local Portion)	19,280(11.7%)	1,352(1.6%)	464(4.5%)	21,096(8.8%)
(Foreign Portion)	145,208(88.3%)	84,231(98.4%)	10,848(95.5%)	240,287(91.2%)

3.4 Short Term Plan Implementation Program

The master construction schedule regarding the proposed Short Term Development components is shown below. As shown in the figure, the urgent program in the required upgrading of exaisting port facilities will be conducted at the beginning. Implementation of the first container wharf at Telfers Island will be performed at the end of the century. It is assumed that various preparation works should be carried out before the commencement of construction. One of the most important aspects is the financial arrangement.

Project Category	Calendar Year						Remarks
	1994	1995	1996	1997	1998	1999	
1. New Container Terminal (B2)							at Telfers Island
- Financial Arrangement							
- Detailed Design							
- Contract							incl. PQ
- Construction							
- Operation							in 2000
2. Existing C.T Pier 9/10 (B1)							Container Terminal
- Construciton							Urgent Pr.
- Equipment							
3. Existing Piers							with Mole
- Construciton							Urgent Pr.
- Equipment							

PQ : Pre-qualification of applicants to tender.

Master Construction Schedule for Short-Term Development

3.5 Management and Operation

(1) Outline of Management and Operation System in Short Term Plan Stage

Port service business such as cargo handling service should be transferred to the private sector since improvement of the service level can be expected according to the competition among private companies and it is undesirable that such services are provided by the public sector. It is desirable that it will be transferred to plural private companies and newcomers should be allowed to enter into these businesses. It is thought difficult to introduce commercialization all at once, hence it should be gradually introduced.

(2) Major Role of Port Authority in Short Term Plan

1) Administration of Port Area and Port Facilities
It is not desirable that a limited number of companies use the port area exclusively. APN should construct and own basic port facilities so as to control the port in a fair manner. APN has to define its port area and control the area, infrastructure and facilities properly to let the port function efficiently. This should be based on "the port policy and plan". APN should formulate the port policy and plan as soon as possible.

2) Supervision of Port Related Private Entities
APN should be a leader in establishing private companies as well as introducing a proper competitive environment into port businesses. APN should administrate port related private companies and grant licenses under competence of APN.

3) Organization and Personnel
APN must undertake above mentioned new kinds of jobs in an efficient and orderly manner. Good coordination among the divisions and sections, by holding a periodical meeting for section managers, is needed. APN needs experts. Reduction of personnel should be done carefully so as not to lose valuable human resources.

(3) Terminal Management

1) Systems for Construction and Management of Terminals
LAQ (Lease a Quay Method) or LUP (License to Use a Port Method) is the best system for this terminal.

2) Operation System for New Container Terminal
It is better that control of container handling in the container yard is centralized. Therefore, it is better if an association comprising all companies which will use the terminal be established, be permitted to use the entire terminal, or leases this terminal.

3) Important Items for Lease Contract

(a) Lease charge
Flat rate type or Mini-max rate type is the better selection to attract the private sector, and thereby utilize the private sector's power to increase cargo turnover.

(b) Infrastructure and facilities to be leased
It is thought better that APN procures only gantry crane, and lessee procures other cargo handling equipment.

3.6 Economic Evaluation

(1) Economic Analysis

The purpose of the economic analysis is to appraise the economic feasibility of the Short Term Plan for the new port facilities of the port of Cristobal from the viewpoint of the national economy.

The economic internal rate of return (EIRR) based on cost-benefit analysis is used in order to appraise the feasibility of the project. The EIRR value is obtained from the annual economic benefit-cost value. The economic benefits are obtained from the difference between the "With" case and "Without" case. In estimating the costs and benefits of the project, "economic pricing" is applied. Economic pricing means that costs and benefits are appraised in terms of international prices (border prices).

(2) "Without" and "With" Cases

1) "Without" Case
(a) No investment is made for the new container terminal at Telfers Island.
(b) Rehabilitation plans are executed at the existing piers.
(c) Excess portion of potential cargo flow over handling capacity of the existing facilities will be lost.

2) "With" Case
(a) A container terminal is constructed at Telfers Island.
(b) Modernization plans are carried out at the existing piers and container terminal. (including procurement of additional cargo handling equipment)
(c) Cargo will be handled as the cargo was forecast.

(3) Benefits and Costs

1) Benefits
(a) Salary paid to new personnel in the expanded Free Zone
(b) Additional earnings from enterprises working in the expanded Free Zone

(c) Decrease in container dwelling time in the yard

2) Costs
   (a) Initial investment costs consisting of construction costs and equipment purchasing costs
   (b) Maintenance and operation costs
   (c) Renewal investment costs for equipment

(4) Economic Evaluation

The EIRR of the project is calculated as 18.8%.

The project feasibility is normally evaluated by determining whether the EIRR exceeds the opportunity cost of capital which is represented by local interest rates of the country. Local interest rates for industry purposes in Panama range approximately from 10% to 12%. Accordingly, the EIRR exceeds these rates and this project can be considered economically feasible.
After conducting a sensitivity analysis, the EIRRs are still in a feasible range as shown below.

Result of EIRR Calculation

(%)

	Base Case	Case A	Case B	Case C
EIRR	18.8	16.4	16.2	13.9

Note: Case A - Costs +10%
Case B - Benefits -10%
Case C - Case A and B

3.7 Financial Evaluation

(1) Methodology of the Financial Analysis

The viability of the project is analyzed using the Financial Internal Rate of Return (FIRR) by means of the discount cash flow method.

The financial soundness of the port management entity is appraised based on its projected financial statements (Profit and Loss Statement, Cash Flow Statement and Balance Sheet). The appraisal is made from the viewpoint of profitability, loan repayment capacity and operational efficiency

(2) Evaluation

1) Viability of the project

The FIRR of this project exceeds the weighted average interest rate of funds

(approx. 9%).

According to the sensitivity analysis, even if the project costs increase by 10 % and the revenues decrease by 10 %, all the cases exceed the weighted average interest rate.

(%)

	Base Case	Case I	Case II	Case III
FIRR	16.3	13.1	12.7	9.6

Note: Case I - Costs +10%
Case II - Revenues -10%
Case III - Case I and II

2) Financial Soundness of the Port Management Entity

The rate of return on net fixed assets exceeds the weighted average interest rate of funds except in the beginning phase. Throughout the project life, the debt service coverage ratio and the working ratios maintain positive levels.

3) Conclusion

Judging from the above analysis, the project is regarded as financially feasible. However, attention should be paid to the following issues.

(a) APN has to make efforts to heighten the quality of the service, improve cargo handling efficiency to secure forecast cargo volume and to constantly minimize operating expenses. And, APN should select the most appropriate funding scheme for investment as far as possible.

(b) The Government has to set the Contribution at a level which allows APN to maintain a sound financial condition and to make future investments.

(c) The lease charge for lessees of the terminals is assumed as 50 % of operational income in this analysis. This ratio is possibly close to the upper limit. Actually, APN will lease the port facilities separately. Thus, APN should conduct a more detailed financial analysis, and set proper charges for each facility.

3.8 Environment Impact Assessment

(1) Rules and Regulations

No authorized norm or technical standard is established.

(2) Present Environmental Condition

Project site has already been developed for a long time. There is no specific natural environment to be preserved.

Economic and social condition of Colon City is being improved by the administrative control, but is not yet favorable.

(3) Result of Assessment

The result of Environmental Impact Assessment (EIA) on the items selected through Initial Environmental Examination (IEE) is summarized as follows.

Item	Result of Evaluation
Water Quality	No significant impact by Short Term Plan Further investigation will be needed for future land use of Telfers Island.
Inland Traffic	Can be settled by rerouting port oriented traffic to avoid congested area.
Navigation Safety	No significant impact by Short Term Plan Further investigation will be necessary for Post Master Plan.
Employment	Remarkable effect is expected.
Others	No specific problem is anticipated.

Impact of the project in the Short Term Plan on surrounding natural environment is small and negligible.
Short Term Plan will largely contribute to economic prosperity and social stability of Colon District.

3.9 Overall Evaluation

Item	Result	Remarks
Engineering Soundness	Good	Existing major structures are sound. Project site is in good condition for construction.
Economic Feasibility	Good	Project greatly contributes to expansion of Free Zone.
Financial Viability	Good	Project has high profitability. APN can greatly contribute to National Budget.
Environmental Impact	Good	Project has no significant environmental impact and contributes to local economy and social stability.

3.10 Recommended Short Term Plan

(1) Socio-Economic Condition

Population	2.85 million persons
GDP	7.37 billion US$ (Estimated 1990's Constant Price)

(2) Cargo Throughput for the Ports of Cristobal

Containerized Cargo	1,835	thousand M.T.
Others	668	thousand M.T.
(Number of Containers	392	thousand TEUs)

(3) Physical Plan

1) Construction of One New Container Terminal in Telfers Island
2) Modernization of Existing Container Terminal
3) Modernization of Existing Piers and Mole Area
4) Construction and Improvement of Access Road

Necessary cargo handling equipment including container cranes and transfer cranes will be deployed.

(4) Project Cost (Initial Investment)

(thousand US$)

	Construction	Equipment
New Container Terminal	72,209	29,554
Existing container Terminal	4,136	2,188
Piers and Mole Area	1,940	800
Total	78,285	32,542

(5) Implementation Schedule

	Construction	Equipment
New Container Terminal	1998 - 1999	1999
Existing Container Terminal	1994 - 1995	1995, 1999
Piers and Mole Area	1994 - 1995	1995

(6) Management and Operation

1) Users --- Open to Public
2) Construction and Ownership --- Public Sector
3) Cargo Handling Operation --- Private Sector

(7) Economic Feasibility

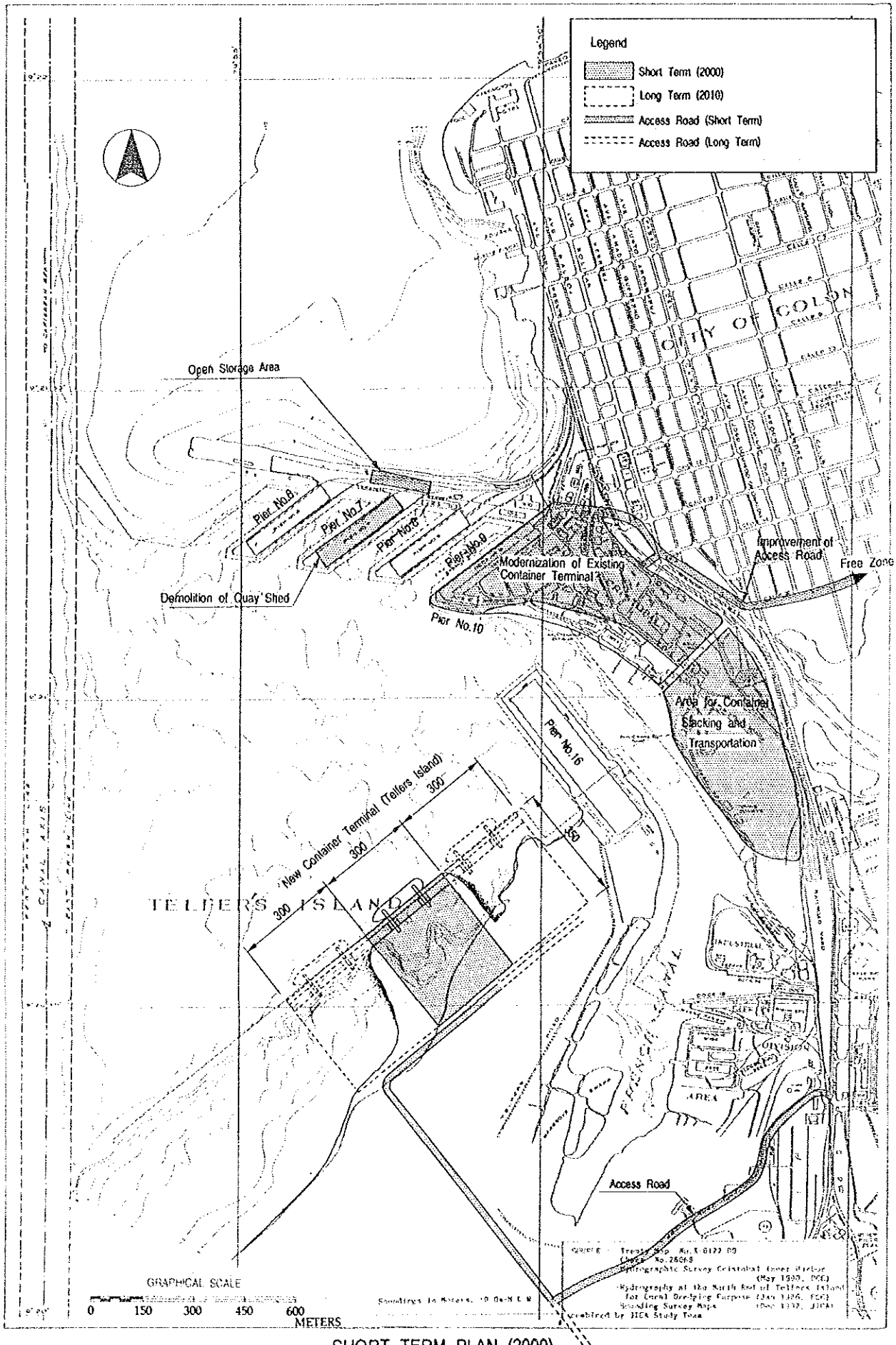
EIRR	18.8 %
Sensitivity	-4.9 % (for 10 % cost increase and benefit decrease)

(8) Financial Viability

FIRR	16.3 %
Sensitivity	-6.7 % (for 10 % cost increase and revenue decrease)

(9) Environmental Impact

No significant Impact



SHORT TERM PLAN (2000)

RECOMMENDATION

RECOMMENDATION

1 Basic Concept of Public Port

Public ports should be considered as economic infrastructure, or social capital, or as a national asset which is vital in promoting the national economy and upgrading total welfare of the citizen. For countries like Panama in particular, where the national economy is greatly dependent on foreign trade with a great amount of cargo flow, sound port activity is very important in providing the framework of national economic security. Under the concept, ports should be owned by the public sector (national or regional government). At the same time, basic policy of port development and management and provision of basic facilities should be controlled by the government.

In other words, such function should not be left to the care of the private sector such as shipping or cargo handling companies. However, this does not always mean that the positive effects of free competition among private entities can be ignored when considering national economic development. Actually, many western countries have fully enjoyed the fruits of the free market system in the course of economic development. It should be noted however, that the very nature of a port, as a basic infrastructure, does neither allow nor accept full commercialization of its core function. It is essential to public ports that the basic port facilities should be planned, constructed, and owned by the government accordingly.

In this sense, it is very important to understand that the port facilities and its services are just for providing private business entities with well cultivated fields in which they can promote their economic activities freely under a liberalized competitive market. The government as an owner of the port should take full responsibility in securing effective provision of such a field ready for open public use.

In addition to the above mentioned points, it is very important from an administrative point of view that a public agency maintains uniform control over the entire area of a public port. This means that existence of privately owned space or facilities in the public port area can often jeopardize normal port administration through possible conflict or trouble between the private owner and port administration agency on the various aspects of port development and operation. From this point of view, it is also fairly justified that the land and water area as well as major port facilities should be owned by the public sector to secure sound and effective port development and its activities.

2 Purpose of the Recommended Plans

The purpose of the recommended plans for the ports of Cristobal is summarized as follows:

1) to be a guideline for long-term investment and operational improvement scheme

of the target port.

2) to be a base for short-term development plan of which contents are required to be consistent with total development scheme.

3) to provide port users, investors, and other business entities concerned with future prospect of business environment and thus to guide the business behavior of private sector in proper direction consistent with the port development.

4) to promote harmonized development of other infrastructures necessary to realize the proposed port development scheme.

5) to be a component of national port plan so that the future development of the target port can appropriately be coordinated with the overall concept of national port development.

6) to be a base for consideration of various financing agencies in their investment or financial assistance plan.

In order to secure applicability and practicability of the proposed plan, the following requirements of its functional position are fully considered in the process of the Study.

(1) Proper time span of the plans should be selected carefully to fit the actual situation of the target ports in relation to other long term national or regional economic development plans, if any.

(2) The plan should be flexible enough to adjust to possible future contingencies.

(3) The plan should, if possible, be vested with a certain legal power or be authorized by the government to promote its development scheme.

(4) Easy access to the contents of the plan should be secured for the interested parties concerned.

On the basis of above understanding on the nature and roles of the Master Plan for the ports of Cristobal, we believe that the benefits of the Plan will be reflected duly in creating a better quality of business environment in Panama, and sincerely hope that appropriate authorization of the Plan and its active utilization by the government will be promoted through the utmost efforts of the agencies concerned.

3 Application of Commercialization Policy

Under the basic understanding on the nature of public port illustrated in para.1, it is recommended that the following guidelines be taken into account in applying the government's commercialization policy to APN.

(1) The ultimate objective of commercialization of port operation is to maximize economic return from the target port activity for both the public and private sectors under careful consideration on effective removal of possible inefficiency of public sector as well as adverse effects of monopoly by private sector.

(2) Port functions and activities to be commercialized should be limited within the areas where the commercialized activities can be fully controlled under APN administrative authority, and the areas where the effects of commercialization can be fully expected without any negative impact to sound performance of the port.

(3) The target areas to be commercialized should be planned and arranged appropriately to guarantee the necessary conditions under which the free market system can be fully activated.

(4) In principle, ownership of the land and water area necessary for APN port administration, and the basic port facilities such as water area for navigation channels and turning/berthing basins, public wharves, main access roads, utility mains, power supply, reserved space/land for public use or future expansion, should belong to APN.

(5) Basic port facilities and major cargo handling equipment should be open to public use, in principle, but can be leased out to private firms on a contract basis for their exclusive use under appropriate conditions.

(6) Practice of commercialization should be step wise considering its applicability to the situation of each target stage including practicality, acceptability, and profitability of the intended commercialization schemes so that they could fully contribute in securing the total efficiency of port administration and its performance.

4 Promotion of Regional Development

As commonly understood, a port is dependent on the various activities in its hinterland or supporting area. At the same time, such activities relating to the ports can not run well without the necessary port functions. In this sense, the promotion of regional development with a port as its core is considered vital in maximizing economic and social benefits expected from the port activities.

The Ports of Cristobal is located at the heart of Colon Province which is one of the most important industrial and commercial areas in the country. Within a few kilometers from the ports area, there are three major zones with different functions which are significant from the social, economic and regional development points of view; namely, Colon city area, Free Zone and Telfers Island.

The Colon city area was originally developed as a base for construction of the Panama

Canal and has been expanded as a mother city of the ports and Free Zone. The city provides both the ports and Free Zone with necessary labors, accommodations, foods and restaurants, day and night pleasures for the crews of calling ships, and other various ship supplies. In short, the city is indispensable for basic port activities and therefore the improvement and development of the city function is very important for sound growth of the port. Since provision of a safe and peaceful business environment and high quality labor force are the most essential requirements, in particular in this regard, the efforts of the agencies concerned to promote regional development should be focused on these points.

With regard to the possible development of the entire area of Telfers Island, it is really important for the future development of the port to have a concrete and practical plan as soon as possible so that this island can be utilized fully without any adverse effects to the Canal operation. While the development plan of PCC area including the island is to be formulated under ARI (Autoridad de la Region Interoceanica) scheme, it is recommended that APN should propose its own development concept for the island with due regard to possible utilization of this land for port facilities and port related business complex or reserved area for future expansion of port function.

5 Positive Efforts for Better Quality of Environment

According to the overall assessment conducted under the Study, development of port function itself does not have any adverse impact on the existing environment of the area. However, the possible increase of population with corresponding economic activities as a result of port development may cause general increase of basic load on the environment system.

While the original assignment of APN is to provide adequate port service to the port users for cargo traffic demand, it is considered equally important to conserve or even create a good environment for the residents, workers and visitors of the port so that all people can fully accept and enjoy the existence of the port and its activity.

Under the situation, the following actions are recommended to secure a better quality of environment for the sound future growth of the port.

1) Establishment of environmental conservation policy in respect to port development
2) Institutional and organizational arrangements for effective environmental administration
3) Preparation of action program for environmental conservation activities
4) Provision of appropriate level of budget for execution of the policy
5) Upgrading of morale and technology of APN staff engaged in the environmental conservation activities.

6 Improvement of Statistics and Recording System for Port Planning and Administration

Systematic collection and compilation of data and information on various port affairs is a basic requirement for sound and effective port administration. While the management system for APN port statistics is considered fairly good as a whole, there remains still considerable room for improvement in its arrangement and practice.

Port statistics required for planning, administration, management, operation, budgeting, accounting and auditing should normally cover the essential fields including port activities, facilities, financial status, organization and personnel affairs, engineering management and other related information.

In light of the current situation of APN port statistics system and its practice, the following points can be recommended for further improvement.

(1) Commodity, handling site, and loaded/unloaded-wise cargo traffic statistics should be collected and compiled with adequate information on the origin and destination of the flows.

(2) In respect to commodity-wise statistics, cargoes should be classified in more detailed categories.

(3) APN should keep reliable original register of port assets with appropriate classification on its own port facilities and equipment.

(4) From the engineering point of view, structural or mechanical conditions of each major infrastructure and equipment should be carefully observed and recorded to assess their soundness.

(5) All statistics and records should be well maintained in good condition for easy access of users, and renewed annually or monthly if necessary, to ensure that updated information can be accessed.

7 Port Promotion Strategy

Port promotion or sales is one of the most important fields of activities for attracting port users. APN Marketing Department, which is supposed to be in charge of port promotion, however, does not seem very active in pursuing potential clients. Since competition among the neighboring Caribbean ports in collecting container cargoes will be much tighter in future, sales activities of APN become vital in this particular field. In this respect, the following actions are recommended in securing adequate level of revenues from users at the Ports of Cristobal.

(1) Establishment of port promotion strategy focusing the most effective target groups

of users.

(2) Under the systematic action program, APN staff should call for sales at shipping companies or shippers, which create transhipment cargo flow in particular, through active appeals in getting their understanding on the real merits of utilization of the Panamanian ports.

(3) It is useful for effective sales activities to prepare an attractive brochure in which the sales points including various advantages and merits for the target users are explained plainly.

(4) To hold seminars to introduce the Panamanian ports to shippers of various countries is another effective way to assist the promotion activities.

8 Strategic Tariff Policy for Transshipment Cargoes

The Panamanian ports have only a limited hinterland with limited volume of cargo flow generated therein. Under the situation, APN recognizes that collecting transhipment cargoes is vital for future prosperity of the ports, and applies a concessional tariff policy (exemption of wharfage and in-yard cargo handling charge) to actual transhipment cargo handling, the effect of which, however, seems to be partially canceled out due to its poor cargo handling operation.

While substantial increase of transhipment cargo handling is expected after completion of a new container terminal with improvement of operational productivity, it is still recommendable that APN should have a more aggressive tariff policy to support the terminal operation in attracting further transhipment cargoes.

For instance, APN may set the tariff for transhipment cargoes far below the normal level, even if operational earnings could not be expected at the initial stage under such a highly concessional tariff. This policy implies that APN could recover any initial losses and get more earnings in the long-term range through dramatic increase of transhipment cargoes expected under the policy if it is prepared appropriately and applied successfully.

9 Suggestions on Procurement Policy for Required Funds

The essential factors to be cleared for timely realization of the proposed Short Term Plan for the Ports of Cristobal are:

1) Official confirmation by the government of Panama of technical, economic, and financial viability of the project.
2) Timely release from PCC of the project site in Telfers Island to the government of Panama.
3) Establishment of authorized executing entity and institutional arrangement for the

project
4) Provision of necessary fund for the project

Each of the above four critical issues is apparently correlative and therefore not able to be discussed separately. Considering the current movement of commercialization policy in Panama, item 3) and 4), in particular, should be discussed jointly in accordance with the possible policies for both items. However, it is considered useful to make suggestions on financial arrangement policy for the project under the prerequisite that APN will take full responsibility as the authorized executing agency and owner of the project. This concept is thoroughly in accordance with the guidelines of commercialization for the port sector proposed in Paragraph 3 of this RECOMMENDATION.

Generally speaking, the available financial sources for a public port development project can be categorized as follows:

1) Funds provided by the national budget or government bond issued for the project
2) Funds provided by the local government budget or bond
3) Funds procured through foreign currency loan from the international multi- or bi-lateral financing agencies (Official Development Assistance (ODA) basis)
4) Funds invested by domestic or foreign private sectors
5) Funds procured through co-financing arrangement of various different sources

While category 5) is selected mostly for actual project financing, core funds are normally procured from categories 1) to 4) as the major financing source.In respect to the proposed development project of a new container terminal at Telfers Island, it is recommendable to utilize categories 1) and 3) at least for the basic port facilities under the concept that APN shall be the owner of the project. Private funds can also reasonably be introduced for some superstructures and cargo handling equipment.

Considering the general situation around the government of Panama in introducing foreign funds for any development projects at this moment, it may not be easy for APN to make definite selection of available funds for the proposed scheme under its uncertain status of administrative authority on the major part of the project. However, considering what is the most important action to be taken for the future of the country, it may be recommendable, if situation allows, that APN should take the initiative in utilizing some ODA funds as the official executing agency of the project.

While there are many significant barriers or difficulties to be overcome in realizing the project along the above line, the most critical issue may be how to get understanding of the relevant key parties or persons on the real meaning and benefit of the proposed way and system of the port development under the initiative of the public sector in terms of its positive impacts on economic, social and political status of the country.

10 Improvement of Administrative Power of APN

It is generally recognized that APN shows fairly good performance compared with other government agencies under its organization and administrative system. Considering relative importance of port sector in this country, however, the institutional framework of APN administration is not always satisfactory compared with the systems of other countries in the world where the ports play similarly significant roles.

From the above point of view, the following suggestions may be useful for further improvement of administrative power and competence of APN to take full responsibility in promoting total performance of the Panamanian ports for responding to the vital demands of the country.

1) Establishment of a unified system for national/international transport administration

2) Incorporation of APN administration into the above system

3) Expansion of APN administration to more diversified fields necessary to support and promote the required function of Panamanian ports

4) Legal identification of the geographical and institutional territory of APN administration in accordance with the above concept for realization of comprehensive port/port district development policy

5) Establishment of more independent status of APN in policy making on development and financial/budgetary arrangement

6) Improvement of staff employment system to support upgrading of APN administrative power with high quality of performance through introduction of steady and encouraging promotion system, provision of attractive positions for able technocrats, and built-in incentive mechanism of salary/wage system

11 Upgrading of Capability of Terminal Operation Staff

Sorting out containers after discharging and before loading is crucial for effective terminal operation. APN operation at existing container terminal is not really efficient due to various factors including rapid increase of container traffic demand, limited scale and irregular shape of backup area available, obsolete system for container traffic control, and inadequate capability of terminal operation staff.

Upgrading of capability of terminal staff including container handling workers is one of the areas that can not be achieved by improvement of physical facilities or cargo traffic control system. Since improvement of human ability requires a rather long time under

a well designed systematic education and training program, it is recommended that APN should start the necessary action as soon as possible taking the following points into consideration.

Improvement program for APN operational staff, if successfully conducted, implies that APN could transfer a part of these members to private operation companies for the project container terminals in future to provide them with valuable job opportunities.

1) Strengthening communication between container control department and other relevant sections.
2) Rejuvenation of operation staff by employing youthful workers as a whole.
3) Employing mechanical and electrical engineers for maintenance of heavy handling equipment such as gantry crane and top-loader.
4) Conducting effective training for different types of work including operation, maintenance, and repair of equipment and facilities.

12 Urgent Improvement Measures

Among the proposed improvement and maintenance tasks for existing container terminal in Short Term Plan Stage, the following items are identified as the urgent measures in respect to instant effects and easy execution of the tasks.

1) Carrying out the pavement of expansion area and damaged part of the existing terminal.
2) Introduction of a personal computer aided container inventory system at the existing container terminal.
3) Full maintenance of the lighting system of the existing container terminal.
4) Introduction of personal computer aided supporting system for maintenance and repair works of cargo handling equipment.
5) Upgrading of the machines and tools at the workshop including movable repair shop truck.

It is recommended that the above improvement measures be implemented under the 1994 budget of APN.

13 Further Actions Required for Successful Implementation of the Project

In addition to the above recommendation, more detailed actions required for successful implementation of the proposed project are summarized as follows:

1) Active promotion of successful negotiation with PCC for early return of relevant PCC area

2) Constant dialogue between APN and port users for effective improvement of port operation

3) Early commencement of planning study on the port of Balboa for harmonized development with the port of Cristobal

4) Periodical review of the proposed scheme for proper modification of the project components

5) Consolidation of APN position and its concern in participating in development/expansion scheme of Free Zone

6) Promotion of active approaches to MOP for timely construction of access roads to the project site

7) Appropriate adjustment of administrative authority between APN and PCC for navigation control at the port of Cristobal

8) Early examination/determination of detailed contract conditions for possible leasing of the project facilities

9) Immediate action for securing next year's budget for urgent improvement scheme

10) Appropriate policy-making on reasonable level of APN contribution to the national revenue

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