4.1.6 Privatization of Port Services

SBMA has two procedures to contract with private sector. One is for unsolicited proposals and the other is competitive public bidding. For an unsolicited proposal, SBMA receives an application from a prospective investor, and then evaluates the proposal.
In the case of competitive public bidding, SBMA advertises through newspapers for private investors based on a set schedule. SBMA selects the successful bidder after determining which proposal is the most profitable and attractive.

Construction work contracts are generally decided by competitive public bidding. It is also possible for the private sector to lease lands if approved by SBMA.

(1) Concession

Some seaport services have already been privatized in the Subic seaport. Namely, some services are provided by the private sector in the seaport.

Table 4.1.6-1 List of the Seaport Services provided by the Private Sector

Provider	Kind of Services
International Container Terminal Services Inc.	Cargo Handling
Amerasia International Terminal Services Inc.	Cargo Handling, Lighter Operation
Royal Port Services Incorporated	Cargo Handling
Subic Bay Freeport Services Inc.	Cargo Handling, Lighter Operation
Magellan Maritime Inc.	Cargo Handling
Malayan Towage & Salvage Corp.	Towage
R.S. Rivero Enterprise	Waste Disposal Service

Source: SBMA

SBMA permits the concession for providing vessel or cargo handling services. In return SBMA receives 10% of the provider's gross income. This type of agreement is known as a " Concession Contract " in house of SBMA. However, no formal documents of concession contracts have been found to date.

All above private companies have been providing seaport services since before the conversion from the US Navy. As there have been no new providers, Concession Contract procedures have not been established by SBMA. Table 4.1.6 shows the list of the Seaport Services Provider.

(2) Lease

SBMA leases lands and buildings to the private sector which conducts various activities. The seaport services were already described in 4.1.3.

1) Lease Procedures

An investor which wishes to lease lands or facilities must first submit an application to SBMA. The approval procedure is as follows:

a) The investor presents the official application form for the locating proposal to SBMA.
b) The Investment Center of SBMA evaluates the proposal.
c) The Investment Center makes a check list for examination of contents and delivers the proposal to the SBMA Chairman and the concerned department for approval.
d) If the proposal gains the approval of the chairman and all concerned departments, an account officer present the proposal to SBMA Board of Directors for approval.
e) If the proposal gains the approval of SBMA Board of Directors, the investor is able to contract with SBMA

Seaport Department also examines the proposal if it is in the area along the shore within the SBF including Ship Repair Facility (SRF) area, Naval Supply Depot (NSD) area and Boton area.

2) Number of Lessees

There are a total of 31 lessees in SRF area, 18 in NSD area and 46 in Boton area as of March 1998. 10 lessees out of 18 NSD lessees and 33 out of 46 Boton area (including Naval Magazine) are in the field of port and water-front business.

3) Present Condition

When the Seaport Department receives a lease proposal related to the SRF area, NSD Area and Boton area, they examine it from the viewpoints of safety, occupation of the area and expansion of earnings. Therefore, property leased in the responsible area of the Seaport Department is not only utilized for seaport related services (for example, warehouse, storage yard etc) but also for other unrelated industries.

As SBMA plans to convert the NSD area to Container Terminal and the SRF area to the city function area according to the Kenzo Tange MasterPlan, the factories in these areas will be moved to the Industrial Park. SBMA permits temporary location in these areas for any interested investor.

(3) Typical Privatization Cases

In the Subic Seaport, two examples of privatization can be found, namely the Marina and the Container Terminal.

1) Marina

The contract with the Marina includes not only the lease and operation but also the planning, designing and development. This was the first privatization contract related to the seaport for SBMA. An outline is given below:

a) Contract

This contract was entered using the solicitation procedures. The main items of the contract are as follows.

i) Date: 11, April 1995
ii) Tenant: Subic Bay Waterfront Development Corporation
iii) Property: Land area 10.7ha, Water area 18.3ha
iv) Term: 1995.4.11-2045.4.10 (50 years)
v) Rent(main): US DLRS 0.50 per annum for each square meter of Gross Land Area in the public area (excluding Yacht Club Area)
2-5% of Gross Revenue from Yacht Club Area
vi) Development: (Phase I) 11 April 1995-11 April 1997; US DLRS 20 million
- Yacht Club with a club house, parking places and floating berth
- Boat sales and showroom with parking places
- Boat repair facility etc

(Phase II) 11 April 1997- 11 April 2000; US DLRS 60 million

b) Present Condition

The construction of the facilities in the Yacht Club Area including 180 berths has been almost completed and operations have already began. An additional 120 berths will be completed in this area by the end of June, 1998.

The Subic Bay Waterfront Development Corporation will begin to construct a shopping mall within the Public Area in this year (1998). Required investment in the Yacht Club and the shopping mall is estimated at 80 million dollars. A villa is now under construction and will be finished after completion of the shopping mall.

The SBWD plans to construct four condominiums and a hotel as the next stage. Construction of the hotel is scheduled to begin in 2000.

2) Container Terminal

The container terminal project is also an example of " privatization " This was the first case in which competitive public bidding was adopted.

Despite the fact that it was a public bidding, a lawsuit has ensued. Therefore, the study team has been unable to see the contract of this project. Instead, the contract bidding terms and conditions are shown from "Tender Document for the Operation and Development of Container Terminal".

a) Purpose: "It is the expectation of the SBMA that the Subic Bay Container Terminal will:
   i) provide suitable port facilities for export cargo from the Freeport Zone and the region
   ii) stimulate industrial development in the region
   iii) facilitate the direct import of cargo to Freeport Zone and the region and;
   iv) develop an international transshipment facility for container cargo

b) Property: NSD area 38ha

c) Term: 25 years

d) Cargo Type: Container and Ro-Ro

e) Rent(main): (Fixed rental fee) US DLRS 75,000.00 per annum for every ha. of land leased from SBMA (the minimum allocation of land is 10 ha)
(Option fee) US DLRS 7,500.00 per year for every ha. Of reserved land for future use

f) Development:" It is a priority requirement that the Operator commence with the construction of a new quay with a minimum length of 350-400m and installation on the new quay of new ship-to-shore quay-side container cranes at the Container Terminal.
This requirement is to be commenced no later than 24 months from the signing of the Concession Agreement and completed within the first five years."

g) Exclusivity: " The Operator will be granted the exclusive right to operate a container terminal in the Subic Bay Freeport Zone for a period of five years."

4.1.7 Tariff System

The port tariff is regulated by SBMA based on the SBMA Seaport Memorandum Circular 94-002 dated 1st of April 1994.(See Appendix)

Legally, the authority of the tariff is from:

I Republic Act (RA) 7227
II Subic Bay Metropolitan Authority (SBMA) Board of Directors meeting of 5th July 1993

The port tariff is divided into two parts. One is " SBMA Seaport Charges ", which is paid to SBMA directly by user. The other is " Schedule of Cargo Tariff ", which is paid to the cargo handler by user and 10 % of the gross total income is paid by cargo handlers to SBMA. The main items of " SBMA Seaport Charges " are the pilotage fees, tug services, charges on vessels such as harbor fee, berthing fee, anchorage fee and line-handling fee and charges on cargoes such as wharfage fee, storage fee etc. The " Schedule of Cargo Tariff "include the vessel charges (Stevedoring) paid to the stevedoring companies, and the cargo charges (Arrastre/Longshoring) paid to the trucking companies for draying containers/cargoes.(Arrastre is Spanish for dray)

The composition of this port tariff is the same with that of the Port of Manila, namely the nationwide tariff established by the Philippine Ports Authority(PPA).

Basic features of the tariff are as follows

:

1) The tariff of " SBMA Seaport Charges "distinguishes between foreign vessels or cargo and domestic. Charge applied to foreign vessels or cargo is much higher than that applied to domestic.
2) Generally, " Wharfage " is charged against vessels and other floating hardware such as motored barge or lighter, floating crane, and tug boat.
   In the Port Tariff, Wharfage is chargeable to both import and export cargoes.
   Further, wharfage for import cargo is almost doubled the level of export cargo, which is rather unique.
   " Storage fee "follows the same pattern.
   It is observed that by setting these Wharfage and Storage fees, the SBMA is intending to expedite the cargo flow through the port.
   As the port tariff follows the prototype of PPA Tariff, the above intention seems to be the policy of the PPA.
3) Pilotage fee is included in the tariff which is exceptional in some advanced

countries.

For example, in Japanese ports, a piloting service is conducted in accordance with the Piloting Law and the fee is paid to the union of pilot of respecting port/area by user. Therefore, pilotage fee is not included in a port tariff of any Japanese port.

4) Tug services fee is another peculiarity of the tariff.
Again, tug-boat service is for private companies in general cases in most of the developed countries.
In Subic, SBMA directly receives an application for tug services from user and sublet it to Malayan Towage & Salvage Corp. a private company.

5) In case of transshipment, only vessel charges are applied, except when there is a need for rework where stripping and stuffing charge shall apply in addition to vessel charges.

SBMA's tariff is slightly less expensive than Manila's port tariff. The " Schedule of Cargo Tariff " is also slightly less expensive than the tariff of Manila International Container Terminal (MICT). SBMA is able to decide the port tariff from an independent standpoint, namely, without the interference of the National Government, PPA or others. The current " SBMA Seaport Charges " is the second version with the effective date of 1st April 1994. Before establishing this tariff, the tariff in use (the first tariff) was identical to PPA's.

As is declared in the Memorandum Circular 94-002, the purpose of the tariff is:
" to provide guidelines to ship-owners, agents and masters or any interested party on computing and assessing miscellaneous fees and charges on port-calls at Subic Bay Freeport Zone. "

Nowadays, however, it is not sufficient just to provide guidelines, and it is getting more necessary to prepare a port tariff from the view points of customer's side and competition with other ports. The competition among the ports in the world is severe and every port is trying hard to survive the rough sea.

Port of Kobe Authority (Kobe Port and Harbor Bureau) has decided not to charge the port dues and wharfage for the foreign first comers (vessels calling Kobe for the first time from abroad) with effect from 1st July this year.
It is the first trial by a port authority in the field of port sales promotion in Japan.
By introducing this scheme, Kobe is expecting some increases in the number of visiting foreign vessels with more cargoes which dropped drastically because of the Hanshin earthquake disaster. As the number of the first comers last year was about 300, the earnings of Kobe Port will decrease by about Yen 40m.

As is clear by this example, a port tariff is a main tool of port sales promotion as well as a revenue originating machinery to a port management body. The existing Port Tariff of

SBMA is a copy of PPA Tariff which has a different objective from that of SBMA. While PPA is responsible for the management and administration of almost all the ports in this country, SBMA is responsible for its own business activity and thus has a responsibility to be a self sustaining body with its own charter.

Looking back at the history of the world's big ports, each port has its own background to set up its port tariff and there is no uniform tariff which is equally applied to all ports in one country. SBMA which aims at becoming a world class hub port, should have its own port tariff to compete with many foregoing ports such as Singapore, Hong Kong and Kaohsiung.

Table 4.1.7-1 Comparison of main Port Tariff for Foreign Vessels and Cargo between SBMA and PPA

Items			Unit	SBMA	PPA
Harbor fee			GRT	$0.040	$0.081
Berthing fee			GRT/Day	$0.030	$0.039
Anchorage			GRT/Day	$0.015	$0.020
Wharfage	Non-Cont.	Import	Ton	$0.902	$1.131 *2
		Export	Ton	$0.451	$0.564 *2
		Transsipment	Ton	$0.523	$0.694
	40' Cont. (FCL)	Import	Box	$22.810	$28.850 *2
		Export	Box	$11.450	$14.483 *2
		Transsipment	Box	$13.260	$17.770
Storage Fee	Non-Cont.	Import	Ton	$0.284	$0.278 *2
		Export	Ton	$0.147	$0.139 *2
		Transsipment	Ton	$0.168	$0.171
	40' Cont. (FCL)	Import	Box	$18.310	$17.826 *2
		Export	Box	$4.580	$4.456 *2
		Transsipment	Box	$10.610	$10.940
Stevedoring Charge	40' Cont. (FCL)*1	CY Loaded	Box	P1,227.00	P1,328.00
		CY Empty	Box	P824.00	P888.00
Arrastre/Long-shoring Charge	40' Cont. (FCL)*1	CY Import	Box	P2,478.00	P2,726.00
		CY Export	Box	P2,025.00	P2,228.00

*1: This applies to self-sustaining vessels

*2: The charge is converted from pesos into Dollars. The conversion rate is $1=P27 which is the conversion rate in 1994 when the exisitig SBMA tariff was established

Source: JICA Study Team

(This table was made by referring to SBMA; (1994) "SBMA Seaport Memorandum Circular 94-002", PPA; "PPA Memorandum Circular No. 07-94" and PPA; "Cargo Handling Rates in the Port of Manila")

4.2 Port Facilities

4.2.1 General Information

In 1992, the US Navy turned the Central Naval Base over to the GOP, including its Command Facility and Ship Repair Facility (SRF), Navy Supply Depot (NSD) and the Petroleum, Oil and Lubricant (POL) facilities, while most of the movable equipment and machinery, such as floating dry docks, cargo handling cranes, equipment/tools in the shops were excluded in the turn-over program and were separately sold or brought back to the USA. After the evacuation of the US Navy, the remaining facilities have been utilised by the GOP under the jurisdiction of SBMA, specifically by its Seaport Operation Department.

The existing port facilities are currently handling containers, break-bulk (general cargo) and liquid-bulk (petroleum, oil and lubricant), and are functionally divided into the following three components:

i) Ship Repair, mainly in SRF zone;
ii) Cargo Handling, mainly NSD zone;
iii) Berthing/Bunkering of Vessels, mainly Cubi Point and other south-east zone.

Within SBFZ, scattered are fourteen wharves and piers, previously utilised by the US Navy. Their general information and relevant particulars are summarised in Table 4.2.1-1 and their locations are indicated in Figure 4.2.1-1.

4.2.2 Wharves

In this section, outline and historical development of each wharf/pier are briefly explained together with its current status.

(1) SRF Zone

There are five wharves and piers in this area. Most of these piers and wharves are still utilized by commercial activities, other than a tiny jetty, Juliet pier, attached to the south Rivera Wharf, which is no longer functional because of its severe deterioration/damages due to a long period of abandonment without any maintenance.

1) Alava Wharf

The Alava Wharf is an "open pier" or "deck on piles" type pier constructed parallel to the shoreline at about 100 m offshore and is connected by three approaches to the on-land "Waterfront Rd." as can be seen in the general plan of Figure 4.2.2-1 and the typical section of Figure 4.2.2-2.

Table 4.2.1-1 Wharves and Piers in Subic Bay Freeport Zone

No.	Wharves or Piers	Year Completed	Berthing Vessels or Usage	Current Status	Dimensions (m)				Handling Equipment	Structural Type			Design Surcharge (tf/sq. m)
					Length	Apron Width	Berth Length	Water Depth		Foundation	Top Deck	Fender	
1	Alava Wharf	Ext. 1956 Orig. 1970	Foreign Naval Vessels, Ferry Boats and General Cargo Vessels	Operational	701.2	18.0	980.7	12.0 (Seaside) 7.5 (Land-side)	Portal Cranes: 50 ton×1 unit 20 ton×1 unit	Ext.: PC Piles 40cm□ Orig: Combined Piles of RC/timber 45.7 cm□	RC Deck Slab	Rubber Buckling Fender w/ H-Shaped Steel Pile/ Timber Protectors	3.0
2	Juliet Pier	1958	(It was used as a berthing place of landing craft.)	Not Operational	22.5	4.5	30.0	7.5	-	Combined Piles (Upper: RC 508 mm□, Lower: Timber)	-do-	Wooden Fender Piles	-
3	Rivera Wharf	1956 to 1958	Foreign/Domestic General Cargo Vessels	Operational	540.0	18.0	768.0	9.3 (north) 10.5~11.5 (east) 13.5 (south) 6.0 (west)	Portal Crane: 25 ton×1 unit	Combined Piles of RC/timber upper: RC 40.6 cm□ lower: timber 40.6 to 25.4 cm dia.	-do-	-Rubber Buckling Fender w/ H-Shaped Steel Pile/ Timber Protectors	2.0
4	Bravo Wharf	1969	-do-	-do-	404.4	15.0	370.8	9.3	2 units	Steel Pipe Piles	-do-	Wooden Fender Piles	3.0
5	Access Pier	1956/1969	Small Craft Boats	-do-	35.0 135.0	4.0 22.5	70.0 217.5	5.8 5.0 to 12.0	-	Combined Piles of RC/timber Steel Pipe Piles (dia. 356 mm, t. 12.7 mm)	-do-	Wooden Fender Piles	3.0
6	OSRR Basin (Marina)	1997	Pleasure boats (Yacht Club)	-do-	540.0	360.0	-	6.0	-	Floating Pier on RC Piles	-do-	-	-
7	Sattler Pier	1983	Break-Bulk/Container Vessels	-do-	180.0	22.5	450.0	12.0	rail & anchor only	Spuds	Steel Barges × 2 units	Used Tire Fender	3.0
8	Marine Terminal	1959	Foreign/Domestic General Cargo and Container Vessels	-do-	225.0	70.0	450.0	12.2	-	Combined Piles of RC/timber 45.7 cm□	RC Deck Slab	H-Shaped Steel Pile w/Timber Protectors	3.0
9	POL Pier	1956	Oil Tanker	-do-	253.2	23.1	450.0	12.8	Loading Arm×4 units	Combined Piles of RC/timber 500 mm□	-do-	-do-	-
10	Boton Wharf	1956	Temporary Berthing for Transshipment Vessels	-do-	648.3	18.9	648.3	10.2	-	Z-Type Steel Sheet Pile Coupled Vertical/Batter Anchor Pile	Concrete Coping	Air Bag Fender	2.0
11	Fisherman's Wharf	1956	Cruising Ferry and Pleasure Boats	-do-	81.5	32.1	150.0	3.0	-	Steel Sheet Pile Bulkhead	Asphalt Concrete Pave't	No Fender	-
12	Leyte Pier	1955	-	Not Operational	300.0	32.5	300.0	14.2	-	H-Shaped Steel Piles w/concrete jackets	RC Deck Slab	Rubber Buckling Fender w/ H-Shaped Steel Pile/Timber Protectors	3.0
13	Nabasan Wharf	1969	Maritime Training Facility	No Operation	180.0	25.5	180.0	14.0	-	PC Piles connected w/Steel Sheet Piles Bulkhead	-do-	-do-	3.0
14	Camayan Wharf	1965	Tourism	No Operation	135.0	22.5	135.0	10.0	-	RC Sheet Pile Bulkhead	-do-	Wooden Fender Piles	3.0

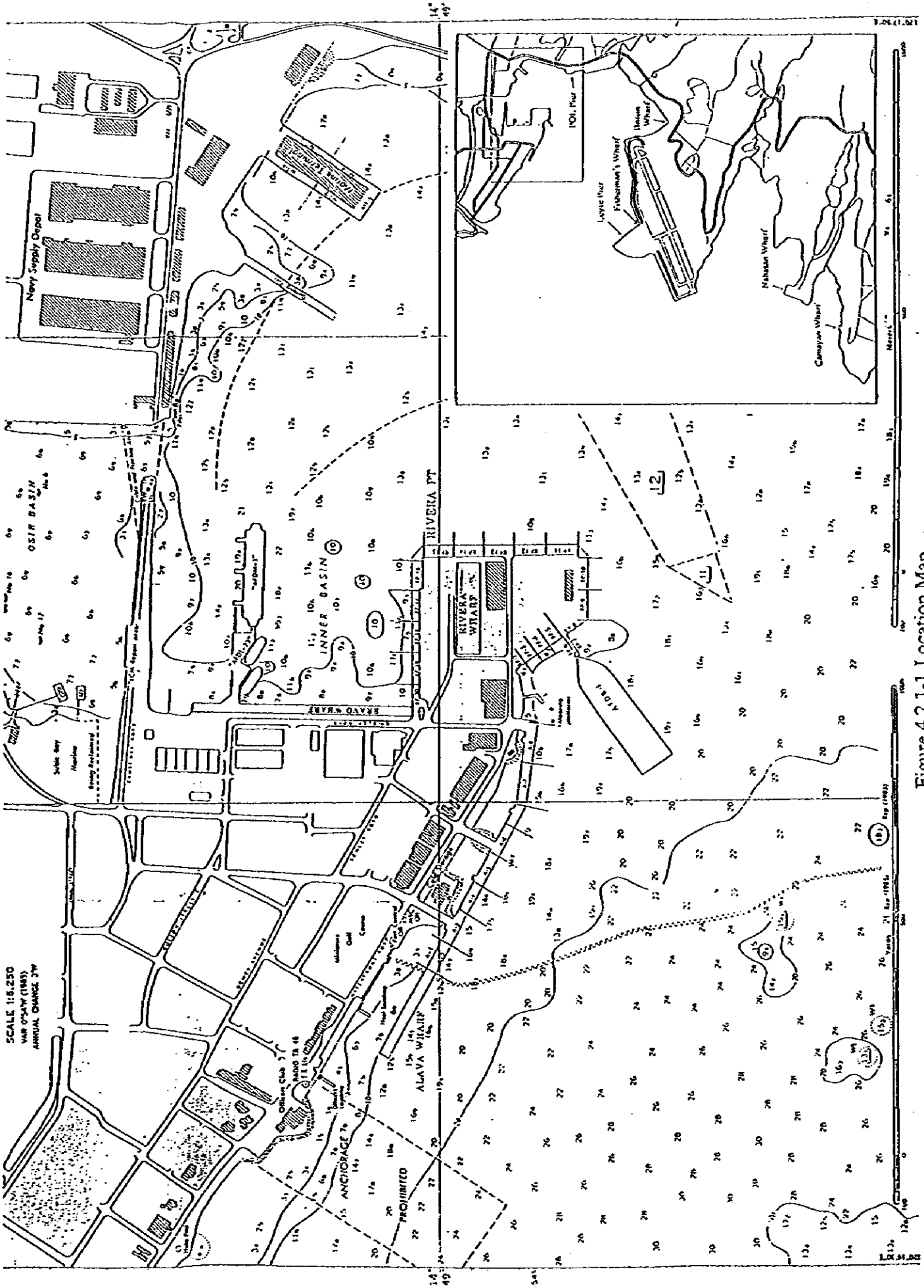


Figure 4.2.1-1 Location Map

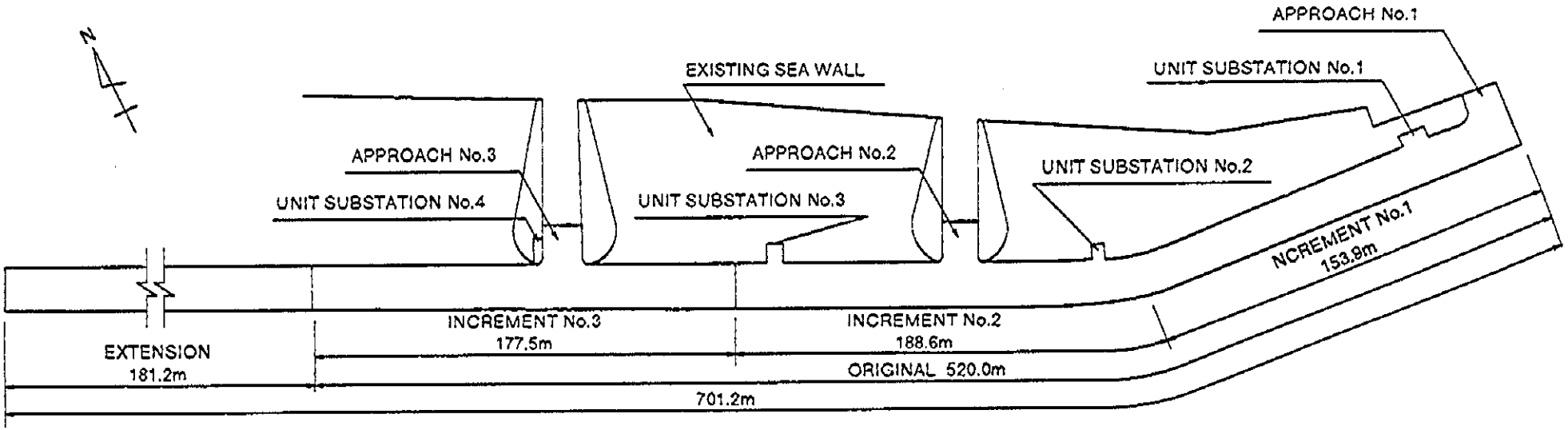


Figure 4.2.2-1 Alava Wharf (General Plan)

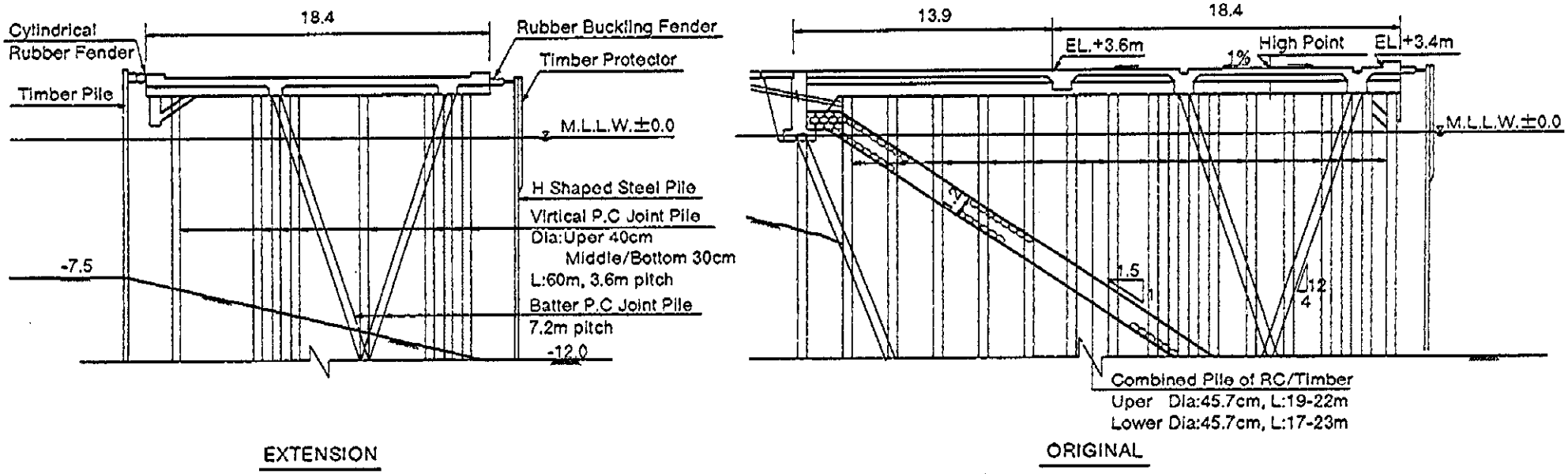


Figure 4.2.2-2 Alava Wharf (Typical Section)

It was originally constructed in 1956 and the extension was carried out in 1970, where two rail-mounted cranes were installed. The present fender system was introduced in 1983 as a repair after typhoon damages.

2) Rivera and Bravo Wharves, and Access Pier

These two wharves constituted the previous Ship Repair Facility berths of 2,150 m long as a whole. The general plan and typical section of the wharves are shown in Figures 4.2.2-3, 4.2.2-4 and 4.2.2-5.

Along the eastern apron of Rivera Wharf, crane rails are installed, while a portal crane unit thereon can no longer be operational. On the other hand, two portal crane units on Bravo Wharf are still utilised by an ironwork occupying almost all the apron of Bravo Wharf as their assembling yard.

(2) NSD Zone

This area is mainly covered by the previous Naval Supply Depot and its adjacent OSIR, Out of Service In Reserve, Basin. The latter basin has been already re-developed as a marina of the private yacht club since 1997, while the former NSD area has been intensively used for container handling without any major alterations from the previous status in the US Naval period. The area is scheduled to be a container terminal development zone by BOT schemes under the concession, which has been suspended for its implementation.

There are two piers in NSD area, namely Marine Terminal or Supply Pier and Sattler Pier.

1) Marine Terminal (Supply Pier)

Erected on the deck apron is a transit shed of steel framed structure about 45 by 180 meters. Typical section of the pier is shown in Figure 4.2.2-6.

The terminal is currently handling both general cargo and containers solely by ships' gears without any special handling equipment at quay side.

2) Sattler Pier

This pier consists of two (2) barges supported by twenty large diameter spuds well high above the high water elevation. It enforces a fairly steep and narrow approach to the apron, whereon rail fittings of quay cranes are installed. For this specific nature, at present, it is intensively used for container operation.

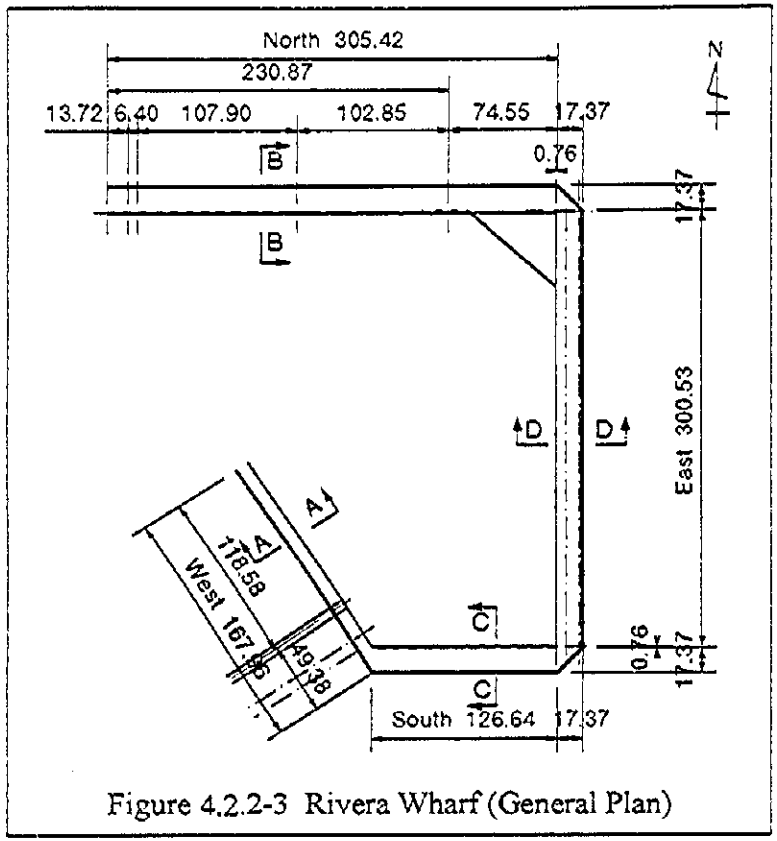
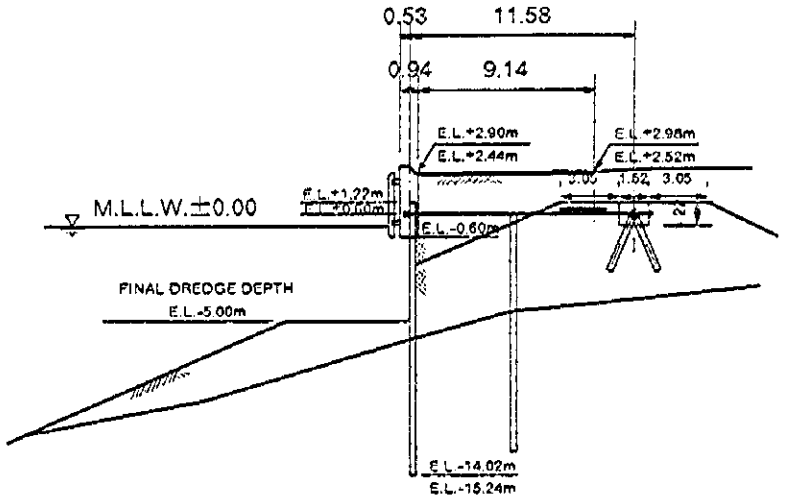
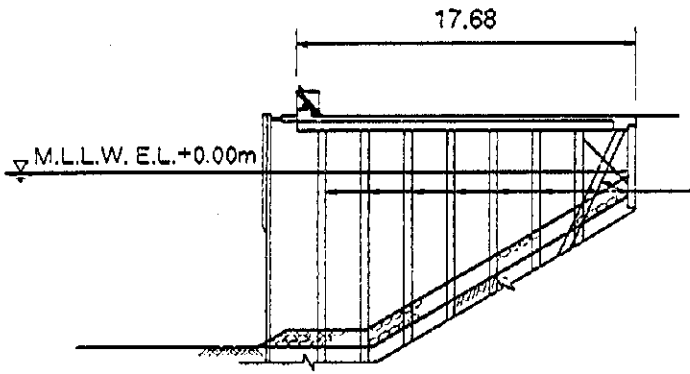


Figure 4.2.2-3 Rivera Wharf (General Plan)

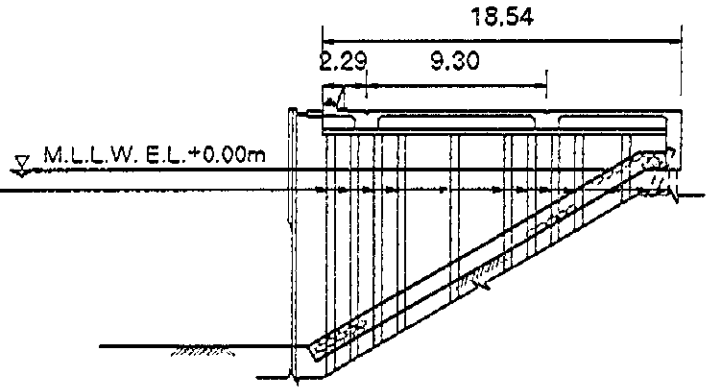


SECTION A-A, West
(SECTION B-B, North)



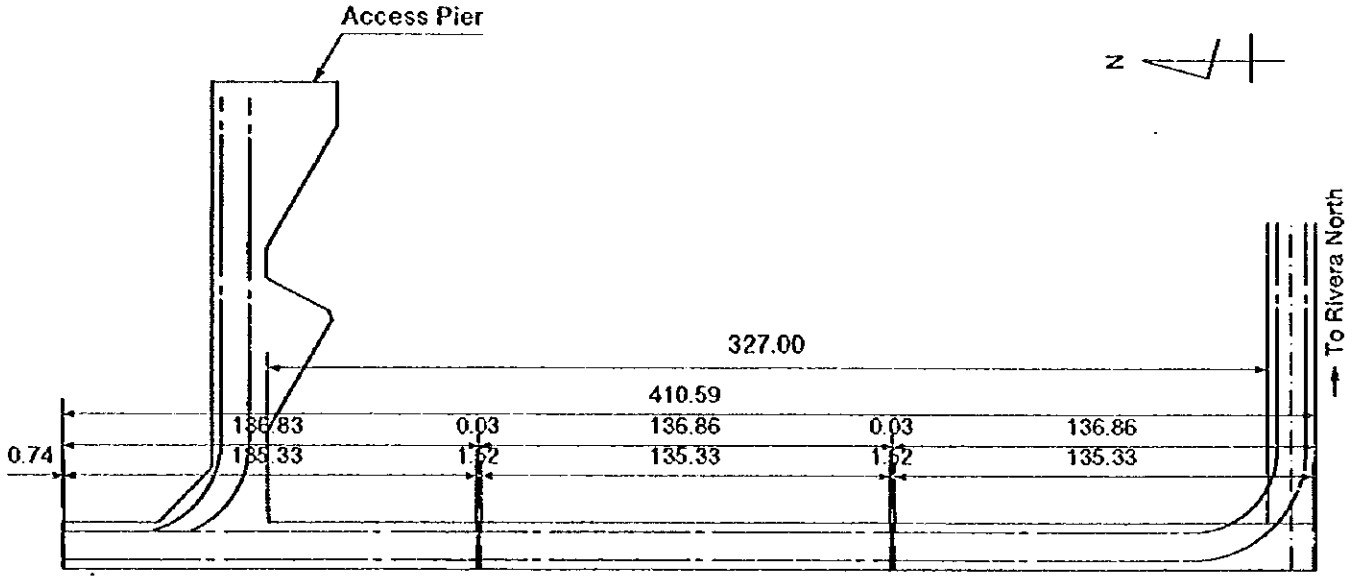
SECTION C-C, South

Combined Pile of RC/Timber
Uper :RC □40.6cmx11.0~14.3m
Lower :Timber □40.6 to 25.4cmx18.3m

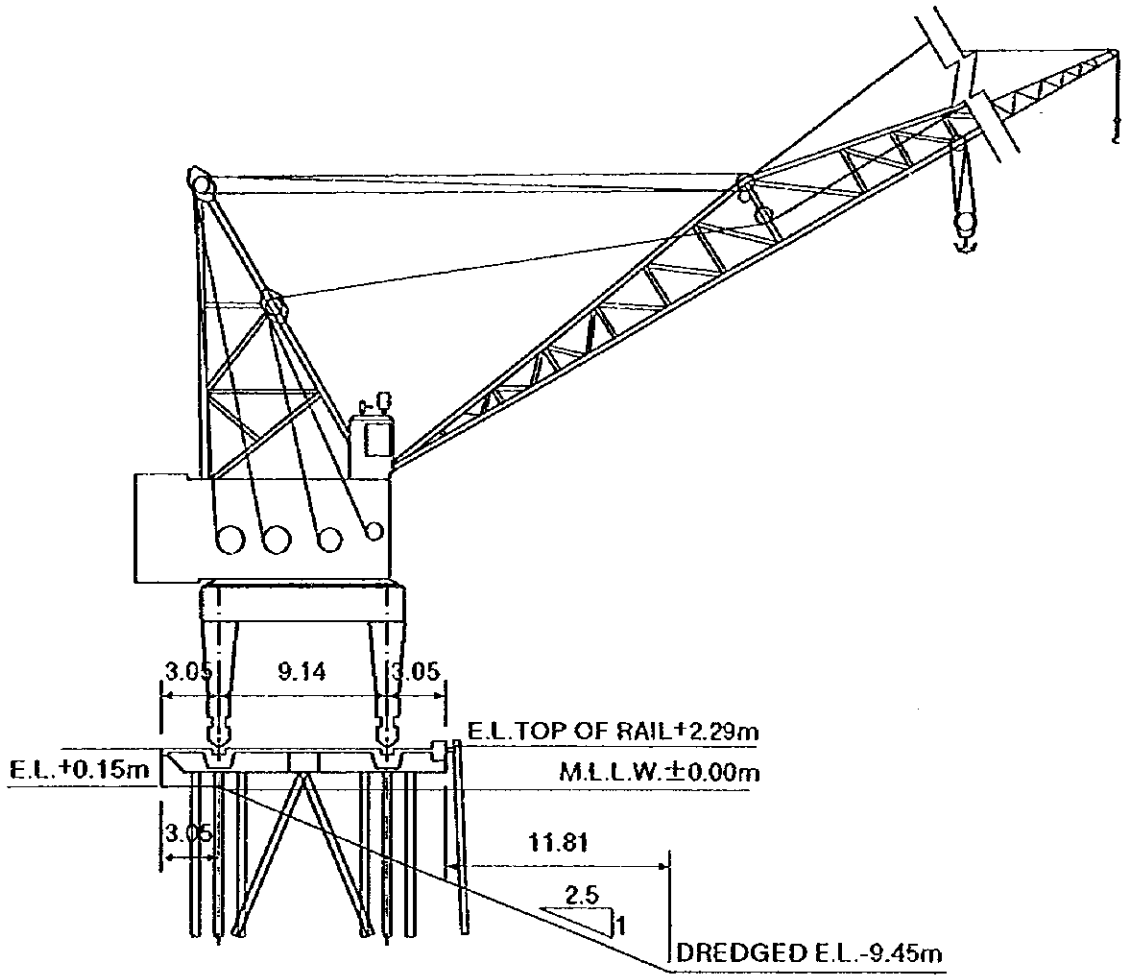


SECTION D-D, East

Figure 4.2.2-4 Rivera Wharf (Typical Sections)



General Plan



Section

Figure 4.2.2-5 Bravo Wharf (Plan and Section)

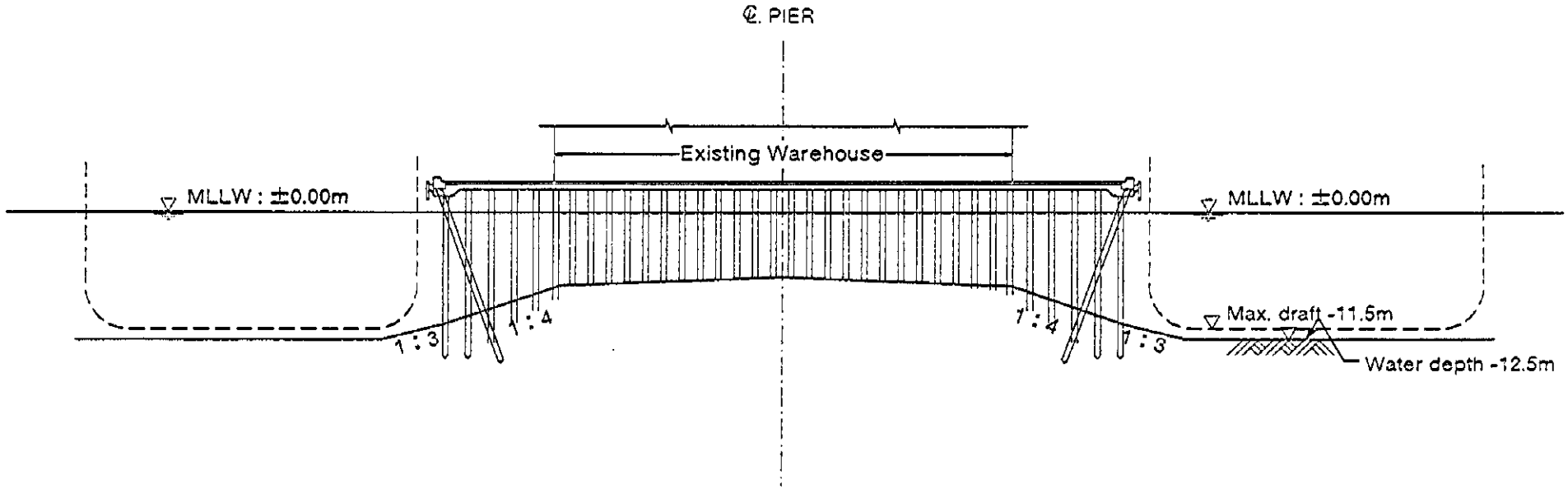


Figure 4.2.2-6 Marine Terminal (Typical Section)

3) OSIR Basin

As implied in its name of "Out of Service In Reserve", this basin was a preserved water surface during the US Naval Base period. It has turned to be a mooring/anchoring space for yachts, pleasure boats and small cruisers as a marina being operated by private leisure businesses.

(3) Cubi Zone

This area corresponds to the water-front between SBIA and NSD, consisting of four piers and wharves.

1) POL Pier

POL Pier is an oil unloading/loading jetty equipped with six oil loading arms. It has been extensively used as a fuel supply point to the US Naval and Air Force facilities.

The pier serves not only to the tank yard behind, but further to the Clark Airport through a pipeline. Typical section of the pier is shown in Figure 4.2.2-7.

2) Boton Wharf

It was originally a wharf for aircraft carriers. Currently, only smaller vessels from neighbouring Asian countries utilise the wharf for their temporary berthing and bunkering in their transhipment operation. The general layout plan and typical section of the wharf are shown in Figures 4.2.2-8 and 4.2.2-9.

3) Fisherman's Wharf

It is a recreational pier currently used by regular ferry services between Alava Wharf and Cubi Pt. At the back of the berth, commercially opened is a seafood restaurant managed by a hotel in SBFZ.

4) Leyte Pier

It was originally a berth for aircraft careers constructed along the north-east shoreline of Cubi Pt. General plan and typical section are shown in Figure 4.2.2-10.

No specific cargo operation has been carried out since its turn-over.

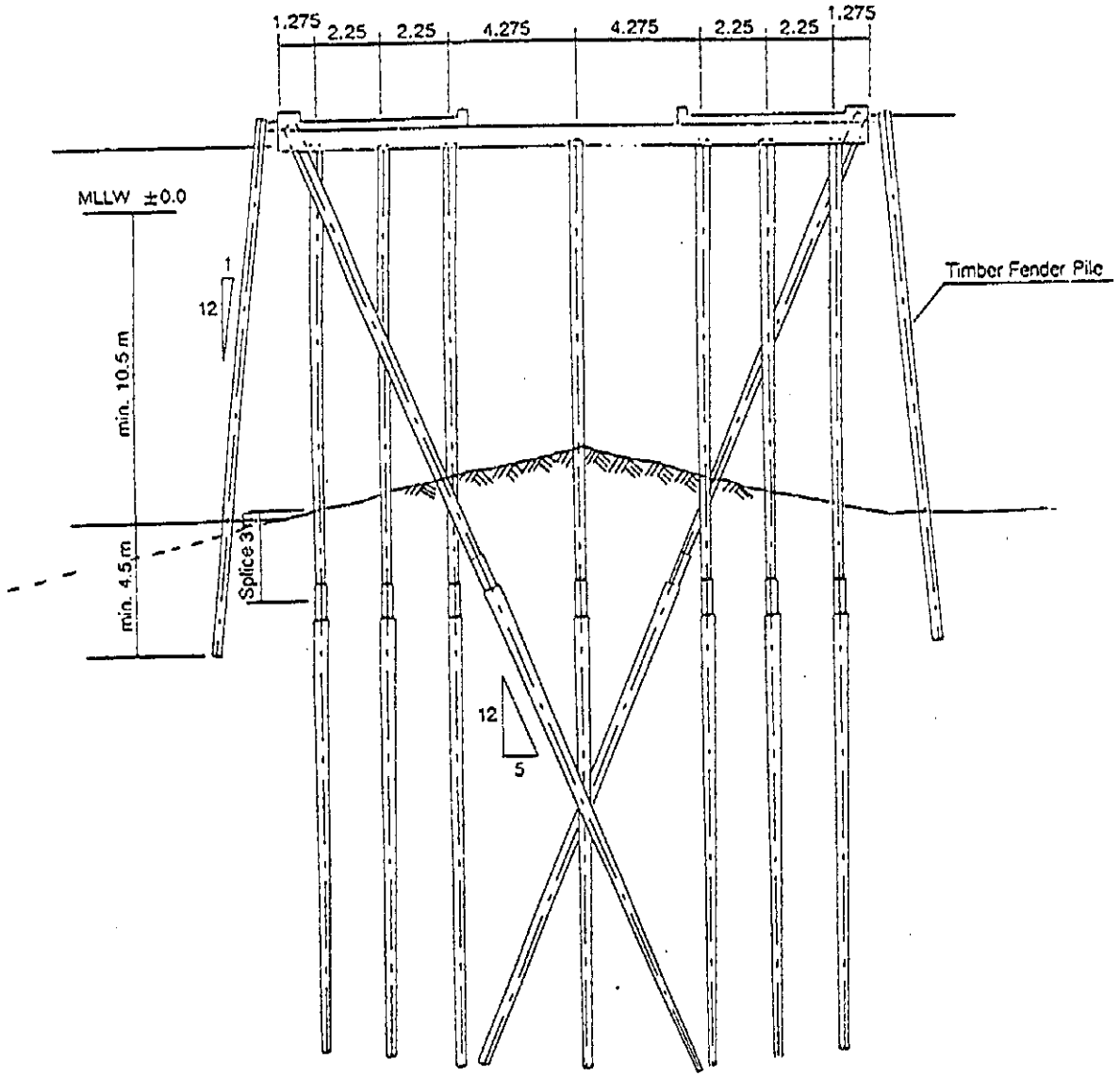


Figure 4.2.2-7 POL Pier (Typical Section)

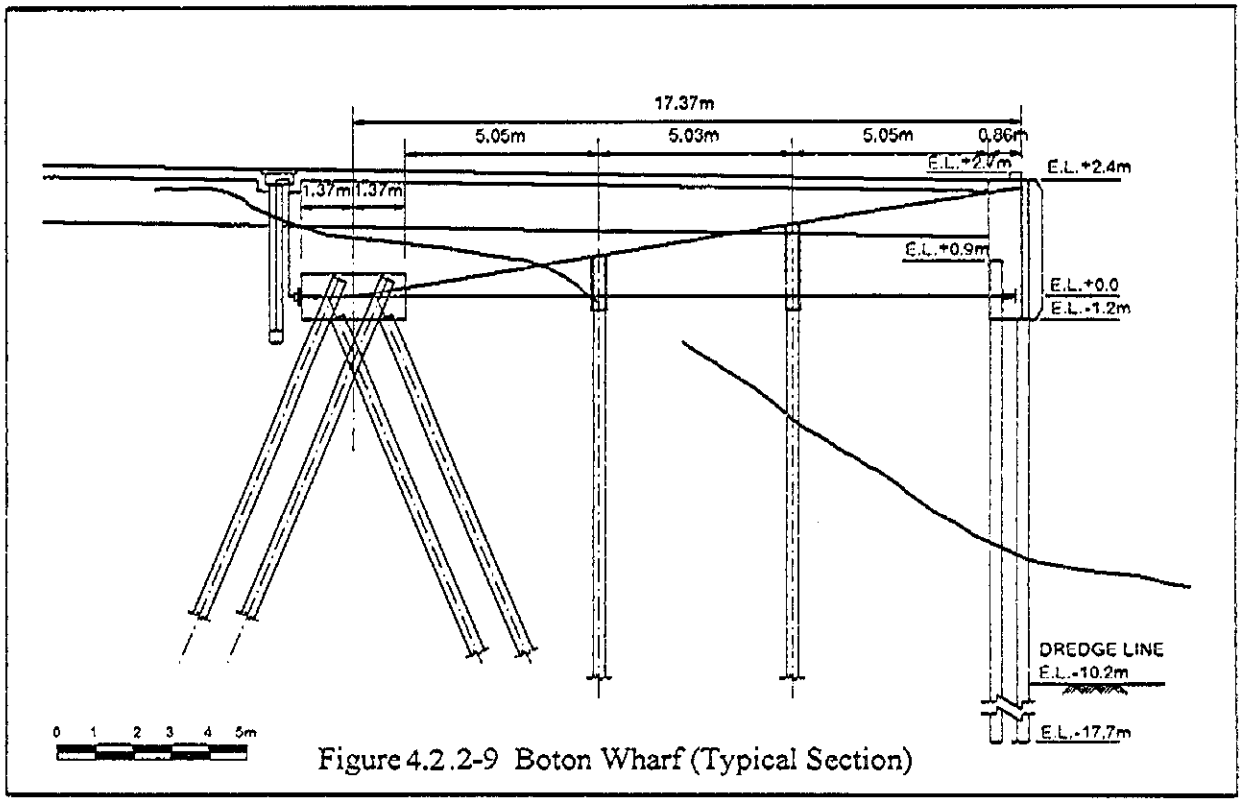


Figure 4.2.2-9 Boton Wharf (Typical Section)

Figure 4.2.2-8 Boton Wharf (General Plan)

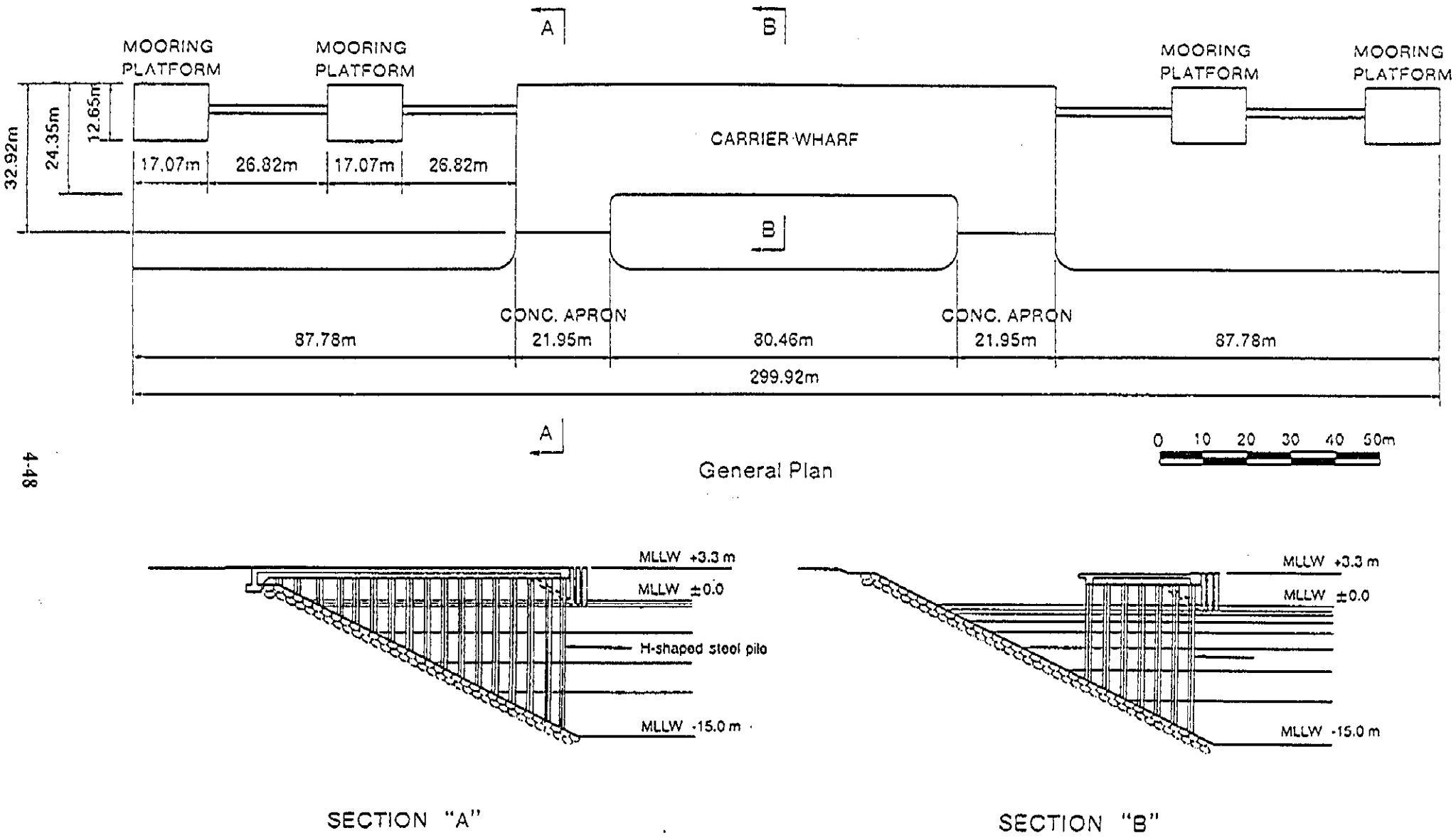
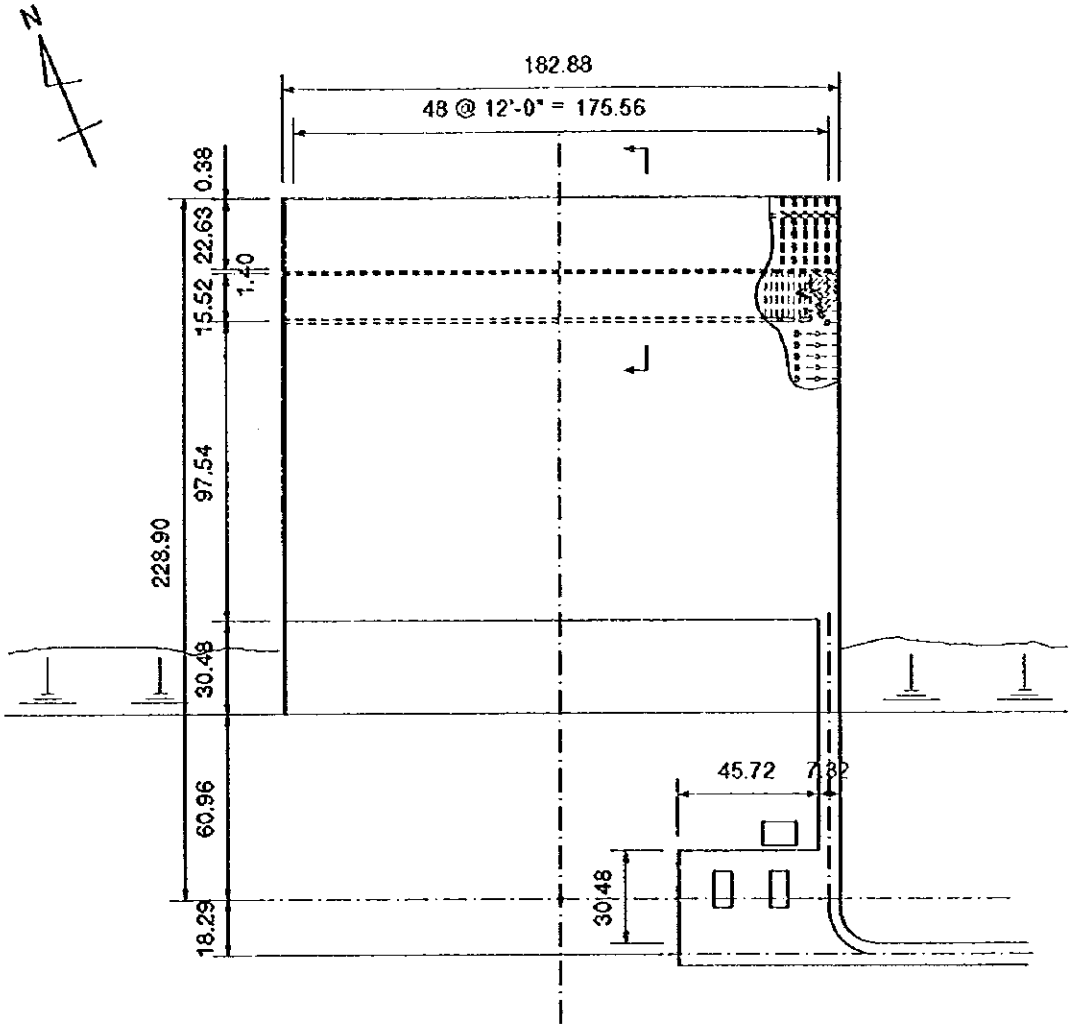
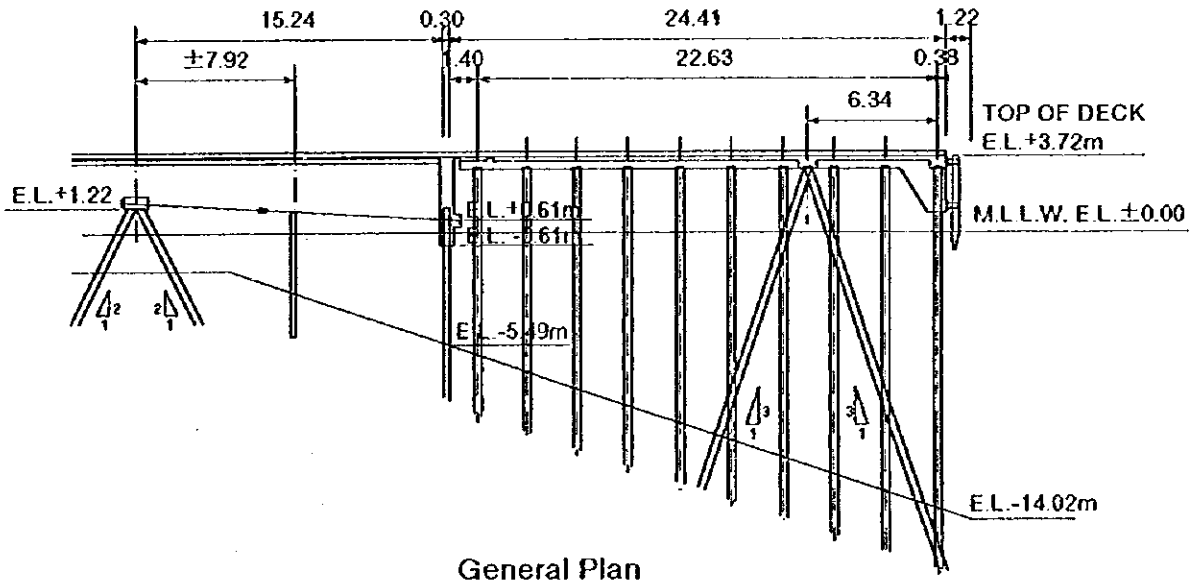


Figure 4.2.2-10 Leyte Pier (Plan and Sections)



Typical Section



General Plan

Figure 4.2.2-11 Nabasan Wharf (Plan and Section)

(4) Triboa/Iranin Bay (Former Ammunition) Zone

In Triboa and Iranin Bay area, two wharves used for ammunition handling in the Naval Base period are left as they were. They have no longer handled cargoes since then.

1) Nabasan Wharf

It was a relatively old facility constructed for ammunition handling in 1969. It is also an open pier or deck on piles type as shown in Figure 4.2.2-11.

2) Camayan Wharf

It was the other older wharf constructed for ammunition handling in 1965. The wharf consists of two parts, east and west wharves separated by a small slip-way in between.

4.2.3 Sheds and Warehouses

In SBMA port area, there are four (4) sheds and ten (10) warehouses, of which surface area is 69,813 sq. m in total as summarised in Table 4.2.3-1. Half of the area is used for general cargo and the remaining is for break/bulk cargoes. Most of them are located in the NSD zone where the cargo handling is intensively carried out as indicated in Figure 4.2.3-1.

(1) NSD Zone

Although most of the sheds/warehouses were constructed before the sixties other than four (4) buildings which were constructed in 1991, they survived the eruption of Mt. Pinatubo and are still in service. During the eruption, the continuous ash/sand with rainfall caused the collapse of the roof of many sheds and warehouses. The above four warehouses were constructed after demolishing the damaged/collapsed structures in 1991 and are so-called "K-span" or "Quonset hut" type buildings.

Most of the sheds/warehouses located in this area have been leased by private companies. Consequently, they are well maintained, even the aged sheds/warehouses give an impression that they have already exceeded their service life or are approaching their end of the service life.

From the technical point of view, however, the original structural design is already out-dated in the light of the modern design standards. For example, recent engineering practices in the seismic design has been well advanced since their construction. In addition, cargo handling equipment/method and storage/transportation system have been drastically changed, especially by the introduction of containers.

Table 4.2.3-1 List of Sheds and Warehouses in the Subic Bay Freeport Secured Area

No.	Building. No.	Location	Year Built	Storage Capacity (sq. m)	No. of Stories	Cargo Type	Structural Type	Actual Structural Status	Operation
1	1010	Marine Terminal	1958	9,531.60	with mezzanine	Break/Bulk Cargoes	Steel	Fair	In service, portion of Building 1010 leased by Goldlink Int'l Inc.
2	1012	NSD Compound	1960	3,178.40	One story	General Cargo	Steel *	Fair, but not use as a cold storage, refrigeration equipement to be demolished	In service, leased by Indigo Dist. Corp.
3	1020	-do-	1966	520.45	-do-	Break Cargo	Steel	Fair, open type	In service (SBMA)
4	1022	-do-	1958	11,597.00	-do-	Break/Bulk Cargoes	Steel *	Structually fair, but minor repair required	In service, leased by Magellan Maritime Agency/Magellan Shipping
5	1027	-do-	1967	12,255.00	-do-	General Cargo	Steel *	Fair	In service, leased by Eagle Bay Maritime Services Inc.
6	1026	-do-	1966	11,135.00	-do-	-do-	Steel *	Fair, good maintenance by the lessee	In service, leased by Inchcape Dist. System
7	1034	-do-	1969	7,397.00	-do-	-do-	R.C./Steel *	Fair, good maintenance by the lessee	In service, leased by Subic Int'l Cargo Center Inc.
8	1035	-do-	1968	2,292.00	-do-	Break/Bulk Cargoes	R.C./Steel *	Structually fair, but minor repair required	In service, leased by Cargill Phils
9	1075	-do-	1991	678.00	-do-	-do-	Steel (K-span)	Fair, open type	In service (SBMA)
10	1076	-do-	1991	678.00	-do-	-do-	Steel (K-span)*	Fair, closed type	In service, leased by Eagle Bay Maritime Services Inc.
11	1077	-do-	1991	678.00	-do-	-do-	Steel (K-span)*	-do-	-do-
12	1079	-do-	1991	945.00	-do-	-do-	Steel (K-span)	Fair, open type	In service (SBMA)
13	15	SRF Compound	1945	6,994.00	with mezzanine	-do-	R.C./Steel *	to be reinforced or demolished	-do-
14	17	-do-	1945	1,934.00	One story	-do-	R.C./Steel *	-do-	-do-

Source: Port Engineering Division, Seaport Department, SBMA

Note: * warehouses, otherwise sheds

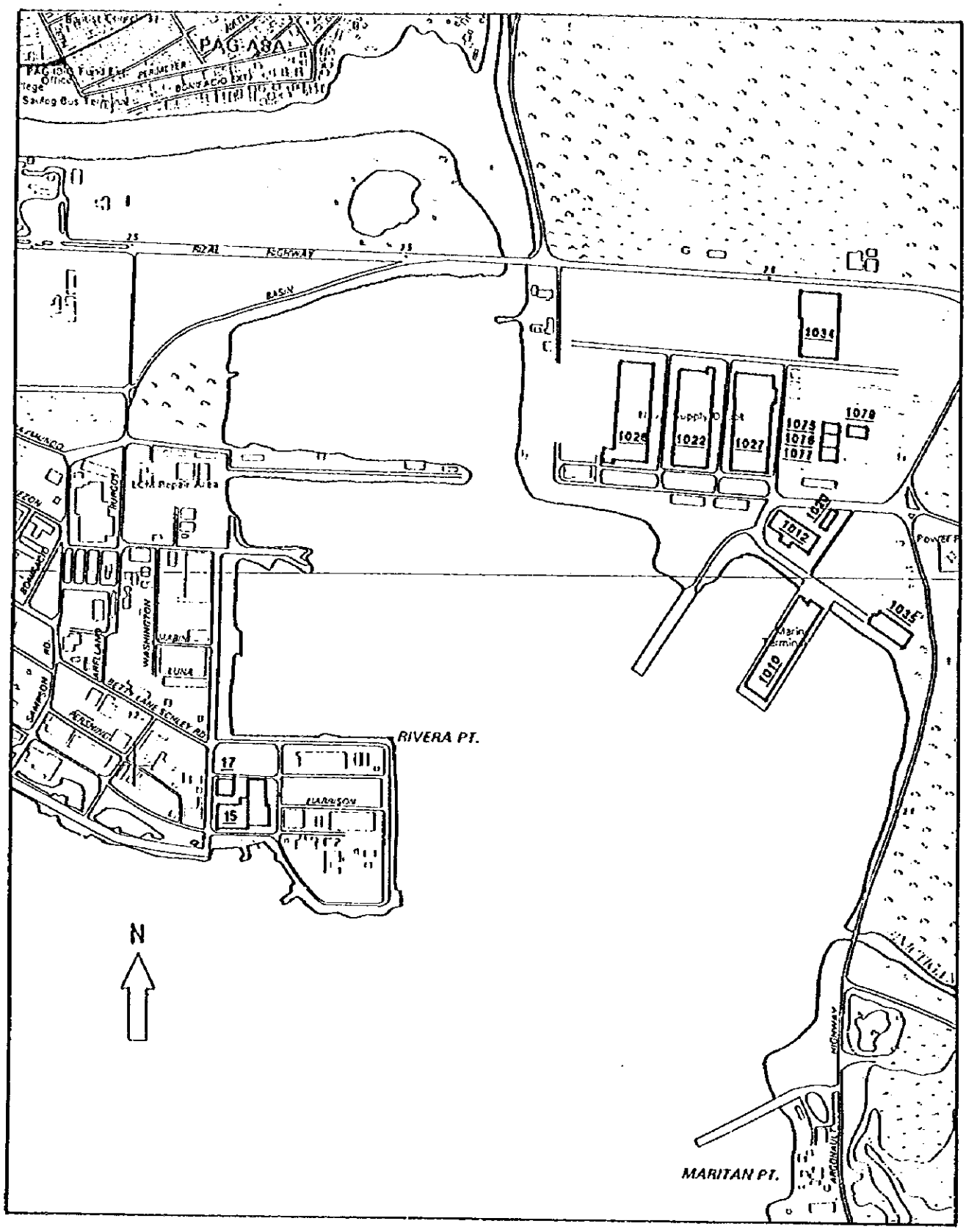


Figure 4.2.3-1 Location Map of Sheds/Warehouses

In case these buildings will be continuously used in the future operation, reinforcement to meet the modern requirements should be implemented.

(2) SRF Zone

The warehouses Nos.15 and 17, constructed in 1945 and located in the SRF compound, i.e. at the corner of Bravo and Rivera Wharves, now seem to be abandoned. Although they have survived the eruption of Mt. Pinatubo, they are considered to be no longer serviceable and should be demolished.

4.2.4 Back-up Yards

In terms of commercial port operation, most of the facilities available in the area are not sufficient for efficient container and other general cargo handling, mainly due to lack of the back-up spaces/yards behind the wharves and piers. Large area for yard storage is only available in NSD zone.

Brief review on the present backup yard is described hereunder.

(1) SRF Zone

Although spaces allocated to the zone are about 45 hectares in total, they are already occupied by many buildings.

1) Alava Wharf

The Alava Wharf has an apron of about 18 m wide, which is almost minimum requirement to accommodate smaller mobile handling equipment, such as trucks, forklift trucks, etc. No definite back-up yards are provided.

2) Rivera and Bravo Wharves, and Access Pier

The apron widths of each berth are 18.0, 15.0 and 22.5 m, respectively. Behind the aprons, there are many buildings, mostly utilised by each private lessee, as warehouses, workshops and other purposes. Unless these buildings are demolished or transferred, it will be difficult to provide appropriate back-up yards in this area.

(2) NSD Zone

The back-up area for both Marine Terminal and Sattler Pier in this zone consists of the open storage and closed storage of 40 hectares altogether. They are four warehouses of 47,100 m^2,

frozen storage of 2,970 m^2, covered storage of 4,645 m^2 and transit shed of 2,420 m^2 in total. The open storage of about 10 hectares is available for containers, currently handled by top-loaders and prime movers. The pavement accommodates two loaded boxes at its maximum. Fifty reefer points are provided in the open storage.

1) Marine Terminal (Supply Pier)

The pier is almost fully covered by a single story warehouse of 9,000 m^2 in its storage area. Accordingly, the remaining provisions for the apron is limited to only about 5 m on both sides. At present, general cargo (break bulk) is handled through the warehouse doors on the side of the pier and out through the other end. Traffic movement on the apron is, thus, to follow a one-way movement.

2) Sattler Pier

The apron of the Pier is covered with asphalt pavement of about 22.5 m wide, which is insufficient for cargo operation on the deck on both sides. Despite the provision of crane rails, containers are handled by ships' gears alone. Accordingly, similar to Marine Terminal, the mobile equipment on the deck has to follow a one-way movement around the perimeter.

(3) Cubi Zone

1) POL Pier

Behind POL Pier is a tank farm complex, consisting of 68 tanks, of which 38 tanks are underground. Total storage capacity is said to be 2.5 million barrels (397,450 kl). The tank farm is divided into several sections depending on their specific use of the storage, which are interconnected with each other by a pipeline circuit.

2) Boton Wharf

At the back of the wharf, there already exist some private factories in operation, which limit available back-up areas for the cargo operation. In addition, the west bulkhead can not be used for cargo handling, for the back of the apron is already allocated to SBIA.

3) Leyte Pier

This pier was equipped with a parking space for aircraft, which is potentially a good provision for the vehicle parking in Ro-Ro or ferry operation. Unfortunately, the available area will fall short in other cargo operations, such as container and general cargo handling. A relatively wider apron will be a privilege for vehicle movement thereon.

(4) Triboa/Iranin Bay (Former Ammunition) Zone

1) Nabasan Wharf

Fairly large area for the back-up yard has been preserved in this wharf. The paved surface is about 2 hectares, excluding the front apron of 4,500 m^2. Behind the paved surface, moreover, the area can be expanded some more by relocating the existing small buildings.

2) Camayan Wharf

Similar to the above Nabasan Wharf, a wide back-up yard will be possible by re-arranging the area behind the apron. An appropriate layout for the back-up yard can be drawn depending on its possible usage of the cargo operation.

4.2.5 Main Access to the Port Area

General layout of the road network inside the study area, especially in the port area, is shown in Figure 4.2.5-1.

(1) SRF Zone

This area is easily accessible from the main gate via Burgos St., Raymond St., Sampson Rd., Schlep Rd., Gridley Rd., Washington St., Wilson St., Waterfront Rd., etc. All the roads are well paved, except for incidental small depressions which need repairs. Most of the main routes are two-lanes at one direction with enough provision of sidewalks.

It is, however, identified that some streets inside the zone are narrow and only one-lane because of the existing arrangement of the buildings. Moreover, efficient flow of traffic shall be planned in line with the possible usage of each berth, so that any congestion at the traffic nodes will be minimised.

(2) NSD Zone

The zone is easily accessible from the main road and Rizal Highway through the Main Gate or from Argonaut Highway through Kalayaan Gate. The pavement and the width of two-lanes by two way traffic are well maintained. Presently any serious problems in accessibility to the zone are hardly expected.

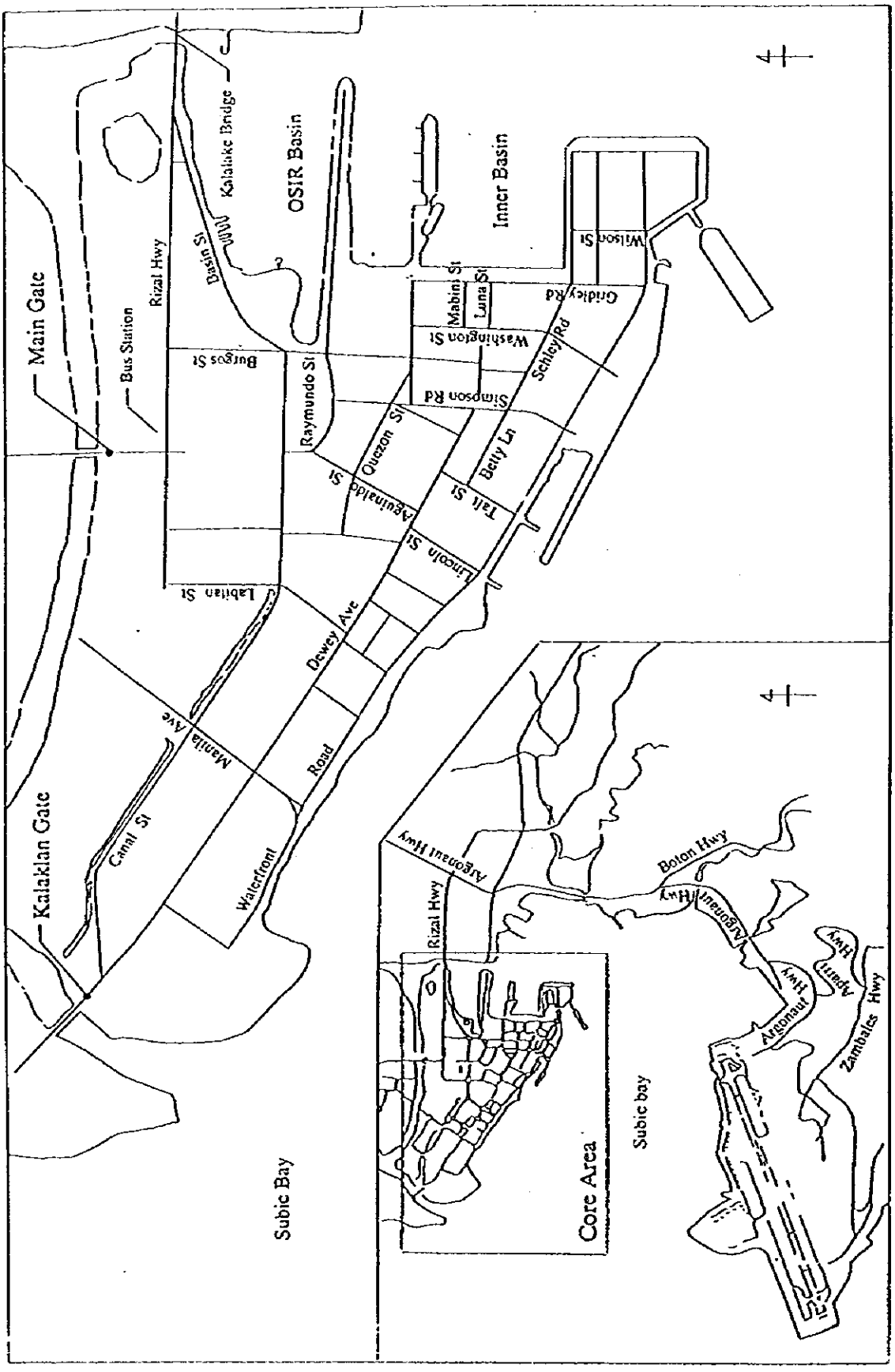


Figure 4.2.5-1 Road Network

(3) Cubi Zone

Except POL Pier situated on the main route of Argonaut Highway, accessibility of the remaining piers and wharves is greatly influenced by the present operation and traffic flow generated by the activity of SBIA and its surrounding.

Among those, Leyte Pier and Fisherman's Wharf can not be directly accessed from Argonaut Highway through the east side of the Airport, since one way traffic in clockwise movement has been enforced in the circumference road around the Airport. If the generation of the cargoes handled in Cubi Point necessitates two lane roadways, it has to be widened or newly constructed.

Boton Wharf has also a relatively easy access from Argonaut Highway, although the entrance to the wharf has to be re-arranged so as not to interfere with accessibility to the adjacent private factories.

(4) Triboa/Iranin Bay (Former Ammunition) Zone

This zone is situated in the deep south in the study area, where on-land access is only possible through a narrow paved path winding in the mountainous forest area, which is one of the stretches of Corregidor Highway.

4.2.6 Utilities

(1) Water Supply

Main resources of potable water for supply to the whole SBFZ are all from rivers, namely, Binictican, Boton, Triboa, Binangga, Malawaan and El Kabayo Rivers. The supply from these six (6) rivers passes all the way to the Binictican water treatment plant, of which capacity is about 43,000 tons per day as shown in Table 4.2.6-1.

Water supply to the port facilities, such as wharves and buildings, is provided through the main pipelines. Although there have been identified deterioration of some pipelines and pumps, they have been maintained and are operational without serious problems.

According to the Subic Water and Sewerage Company Inc. (SWSCI), they will be able to provide sufficient supply for the demand in Year 2005 from the current resources. They are, however, planning development of the new water resources at Pamatawan, Castillejos, and Zambales.

In case of any construction or developments in Cubi Point area, the demand of water consumption will be supplied through a new line connecting to the mains.

Table 4.2.6-1 Water Supply Sources and Supply Capacity

Name of Resources	Location	Supply System	Supply Capacity	Remarks
Binictican River	Binictican	River Pumping	24,000 tons/day	4 new pumps & 2 rehabilitated
Boton River	Lower Cubi	-do-	10,000 tons/day	2 new pumps & 1 old pump
Triboa River	Naval Magazine	-do--	10,000 tons/day	2 pumps
Binangga River	Morong Bataan	do-	10,000 tons/day	3 pumps
Malawaan River	Binictican	River Gravity	negligible	
El Kabayo	-do-	River Pumping	negligible	2 pumps

Sources: Subic Water and Sewerage Company Inc.

(2) Fuel Supply

Coastal Subic Bay Terminal (CSBT) located at POL Pier is a private operator of the facility and is the only fuel supplier in the area that has been operated since SBFZ started in 1992.

CSBT has a total storage capacity of 381,552 kl, equivalent to 2,400,000 barrels and a total supply capacity of 2,385 kl per hour, equivalent to 15,000 barrels per hour.

POL Pier is a unique fuel loading station in the area and is equipped with six (6) loading stations as shown in Table 4.2.6-2. Since no bunkering equipment is serviceable at the existing piers and wharves, it has served for bunkering of the calling vessels in SBMA. In case POL Pier is not available for some reasons, CSBT will provide with tank lorries for bunkering. The company has no bilge treatment plants.

Table 4.2.6-2 Fuel Loading/Bunkering Stations and Fuel Intakes

Station No.	No. of Loading Arms	Loading Pipe Size	Fuel Intake
1	1 1 1	Hose-6" 2-1/2" 1-1/2"	Bunkering only
2	1 1 1	Hose-6" 2-1/2" 1-1/2"	
3	1	Hose-8"	
4	1	-do-	
5	2	Loading arm 8"	15,000 bph max.
6	2	-do-	

(3) Power Supply

In SBFZ, Subic Power Corporation (SPC) offers power supply only to their customers. Other demands in SBFZ have been supplied by National Power Corporation (NPC).

Overhead transmission lines from NPC are connected to a main sub-station in SBFZ, then distributed to the piers and wharves as shown in Table 4.2.6-3.

Although the transformers have been used for more than fifteen years, they seem to be still in good condition. The Public Works Group (PWG) Utilities Department of the SBMA is in charge of the maintenance of these transformers and sub-stations.

Table 4.2.6-3 Power Supply System and its Capacity

Location	Sub-station No.	Capacity (KVA)	Supply System
Alava Wharf	6	1,500	from Main SS
	5	1,000	1 transformer
	2	3750, 5	2 transformers
	4	3,750 each	-do-
	1	-do-	-do-
Rivera South Wharf	10	1,725, 2300, 1500	3 transformers
Rivera North Wharf	11	2,000	1 transformer
	12	1,000	1 transformer
	13	1,000	1 transformer
Bravo Wharf	14	1,150	1 transformer
	15	1,150	1 transformer
	17	2,500	1 transformer
Boton Wharf	32	500	1 transformer
	33	500	1 transformer
Leyte Wharf	30	2,500 each	2 transformers
Nabasan/Camayan Wharves		500	supply for buildings only
		112	
		500	
		500	

4.2.7 Diagnostic Investigations

(1) General

Diagnostic investigations for Wharves and Piers have been conducted based on i) the available information and drawings; ii) visual site inspections; iii) concrete strength measurement by Schmidt Hammer for RC/PC members and iv) ultrasonic thickness measurement for steel pipe piles.

In order to assess integrity/soundness of the pier structures, the overall integrity of each facility is classified into three grades as schematically demonstrated in Table 4.2.7-1.

The grade of the structural integrity/soundness for each facility is summarised below.

Table 4.2.7-2 Grade of Structural Integrity/Soundness for Port Facilities

Grade 1: Fair (sufficiently sound for the future use)	Grade 2: Moderate (need structural reinforcement for the future use)	Grade 3: Poor (need entire replacement for the future use)
- Alava Wharf (Extension) - Rivera Wharf (West, South, East and east side of North) - Bravo Wharf (other than Fenders) - Access Pier (to AFDM-6, other than dolphins) - Sattler Pier - Boton Wharf - Fisherman's Wharf - Nabasan Wharf - Camayan Wharf - Grande Is. Pier	- Rivera Wharf (west side of North) - Marine Terminal - POL Pier (other than dolphins)	- Alava Wharf (Original) - Juliet Pier - Access Pier (to AFDM-5) - Bravo Wharf (Fenders) - Access Pier (to AFDM-6, dolphins) - POL Pier (dolphins) - Leyte Wharf

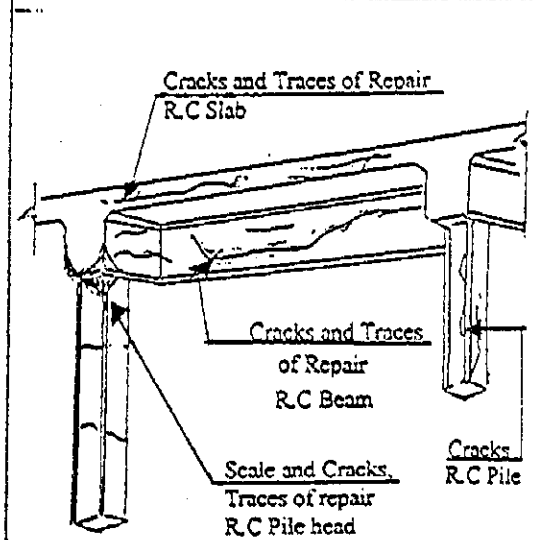
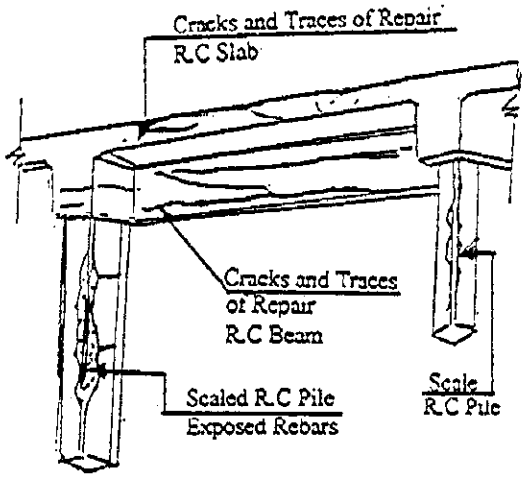
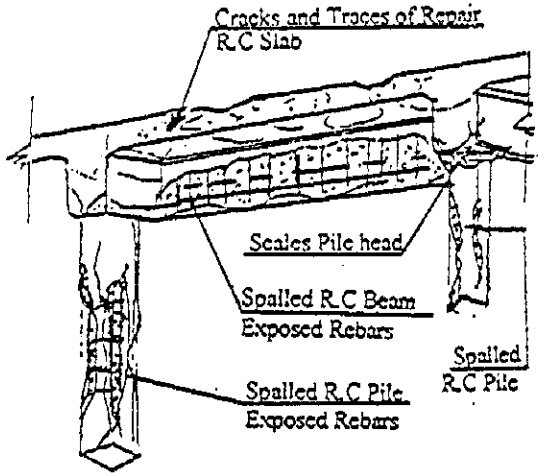
(1) Diagnostics of Particular Wharves

1) Alava Wharf

a) Alava Extension Wharf

Most of the batter piles are collapsed or have been heavily damaged. As shown in Figure 4.2.2-2, in parallel to the faceline, only two (2) batter piles are arranged at a 7.2 m interval and seven (7) vertical piles are arranged at every 3.6 m intervals. With this arrangement, the batter piles may not be sufficient to withstand the horizontal forces during berthing, mooring and/or earthquakes. Under the current status, only the vertical piles are effective against horizontal forces.

Table 4.2.7-1 Grade and Judgement Criteria of Deterioration for Structural Members of Wharf

Grade of Deterioration	G-1 : FAIR	G-2 : MODERATE	G-3 : POOR
Typical Section			
Cracks of concrete	Partial and small cracks along the repaired portion	Largely extend small cracks along the repaired portion	Heavy cracks Scales easily peeled off
Scales/ Spalls of concrete	Partial and small scales/ Largely maintain repaired condition	Partial scales Partial damage at repaired portion	Heavy scales and spalls
Corrosion of rebars / steel piles	Partial rusty stain/ Rusty stain dots	Partial corrosion/ Partial exposure of rebars Large rusty stain	Heavy corrosion Large exposure of rebars Swelling of steel surface

These vertical piles are spliced pre-stressed concrete (PC) piles in three pieces embeded to a bearing stratum at about 60 m deep.

b) Alava Original Wharf

Combined piles of upper part of RC and lower part of timber, which support the deadload and surcharge, have been heavily damaged, as well as the beams. In parallel to the faceline, twelve (12) vertical piles are arranged at an interval of 3.6 m and two (2) batter piles are installed at every 3.6 m interval alternately.

The beams and piles seems to have been heavily damaged by horizontal forces. Considering the water depth of the structures, the RC piles are not sufficiently embedded below the seabed. The actual embedment of RC piles is only 8 m deep in the mud and fine sand layers and could hardly secure larger horizontal capacity.

Although there have been some minor repair works of the structural members, such minor repairs could not improve progress of the deterioration, in particular under the crane foundation. It should be noted that reinforcement of the pile foundation is essential for the future use of larger vessels.

2) Rivera Wharf

a) West Wharf

This is a steel sheet pile bulkhead with marine fenders, supported by H-shaped steel fender as shown in Figure 4.2.2-4. The fender system is equipped with timber protector and has been well maintained.

b) South, East and East side of the North Wharf

Through the frequent repairs, RC deck, composite concrete pile and fender system with timber protector have been well maintained.

c) West side of the North Wharf

The structural type of this section is the same as that of the West Rivera Wharf. Despite the uneven surface on the apron about 50 to 60 cm of the differential elevation, the steel sheet pile bulkhead is structurally in a quite stable condition. Only the apron of approximately 100 m long from the corner of the Bravo Wharf should be reinforced for the future use.

3) Bravo Wharf

As shown in Figure 4.2.2-5, the steel pipe pile foundation is employed for this marginal wharf. From the top of piles to 1.5 m of the embedment, the piles are protected by epoxy-tar resin. Moreover, a portion of 1.8 m from the top of piles is filled with reinforced concrete. Accordingly, the corrosion rate seems to be negligible from the thickness measurements conducted.

Under the designed bearing capacity of 70 tf, its structural strength is strong enough against vertical and horizontal forces.

4) Marine Terminal Pier

Since the construction in 1959, the maintenance record of this pier is uncertain, except for dredging works in 1972 and a repair of fender system in 1979.

RC piles are adopted up to the upper length of 21 m, while combined piles of RC and timber are spliced thereunder for the longer embedment between 22 and 36 m as shown in Figure 4.2.2-6.

5) POL Pier

This Pier is supported by combined piles of RC and timber with a length of 32.3 to 43.9 m as shown in Figure 4.2.2-7.

Repair works of RC deck and piles were executed in 1988 and repairs of fender system were conducted twice in 1978 and 1988.

6) Boton Wharf

As shown in Figure 4.2.2-9, the structure of this wharf is a steel sheet pile bulkhead type, of which tie rods are anchored by wooden coupled piles. Repair works of fender system were conducted twice in 1977 and 1984.

7) Leyte Wharf

This wharf was constructed in 1955, consisting of a carrier wharf at the centre and two (2) mooring dolphins on both sides as shown in Figure 4.2.2-10. The piles were of H-shaped steel covered with RC jacket at the pile head in 2.9 m long.

Repair works has been frequently carried out for the carrier wharf and the dolphins in 1964, 1969, 1975, 1985, 1988 and 1989.

8) Nabasan Wharf

As shown in Figure 4.2.2-11, the structural type of the wharf is an open type pier of RC deck supported by a combination of PC vertical and batter piles with a retaining wall of steel sheet pile bulkhead type.

Repair works for the fender system were carried out frequently in 1980, 1984 and 1989. However, it was found out that the fender system consisting of wooden protectors and H-shaped steel frames is heavily deteriorated.

9) Camayan Wharf

Camayan Wharf was constructed in 1965. The RC sheet pile bulkhead type structure is still in a good condition.

Despite repair works for the fender system carried out in 1965, 1974 and 1984, many timber piles for the fender were disconnected and are in need of rehabilitation.

(2) Concrete Compressive Strength Test (Shmidt Hammer Measurement)

1) Summary of Tests Results

a) As a whole, the test results show that the measured concrete compressive strength is higher than the design strength. According to the as-built drawings of the existing wharves and piers, the designed compressive strength of the concrete for RC slabs, beams and piles was determined as 210 kgf/sq. cm, while that for PC piles was specified higher as 350 kgf/sq. cm;

b) Despite the existence of spalls, scales and cracks which should have been reflected to the structural weakness previously presented, the concrete strength is generally increasing with time as a nature of the material;

c) Strength of the coping concrete of sheet pile bulkheads is lower than that of the RC slabs and beams of open type structure due to its direct exposure to the wave splash zone. In other word, progress of the concrete deterioration for the bulkhead type is considered to be faster than that for the open type structures;

Compressive strength of concrete is one of the indices for the degree of deterioration. It is, however, noted that soundness of the wharves should be carefully assessed considering the overall structural stability and capacity for their specific purposes.

(3) Steel Pipe Pile Thickness Measurement

1) Summary of Measurement Results

a) Corroded thickness of the steel pipe piles of the Bravo Wharf constructed in 1969 ranges between 0.2 and 1.4 mm and is 0.5 mm on average. The original dimension of the pipe is 35.6 cm ϕ in outer diameter and 12.7 mm thick. The corrosion of Access Pier constructed in the same year ranges between 0.1 and 1.1 mm and is 0.7 mm on average.

b) Typical corrosion rates of steel members for the design are enumerated as shown in Table 4.2.7-3 after the PPA Design Manual.

Table 4.2.7-3 Corrosion Rates of Steel for Design

Corrosive Environment	Corrosion Rate mm/year
Above H.W.L	0.3
H.W.L.~ H.W.L.- 1.0 M	0.1~0.3
H.W.L.-1.0 m~ sea bottom	0.1~0.2
Below the sea bottom	0.03

c) By protection of epoxy-tar resin coating on piles exposed and of concrete jacket covering a portion of wave splash zone at 1.8 m high of the pile heads, the corrosion rates of steel pipe piles in both Bravo Wharf and Access Pier are smaller than those presented in the above table. It is, thus, concluded that the corrosion rate of steel pipe piles is considered negligible so far.

d) Corrosion rates are estimated based on the measured thickness of piles as shown in Table 4.2.7-4.

Table 4.2.7-4 Measured Corrosion Rates of Steel Pipe Piles

Location		Bravo Wharf (12pts.)	Access Pier (4pts.)
Average Thickness of Piles (mm)	Min.	11.3	11.6
	Max.	12.5	12.7
	Mean	12.2	12.0
Range of Corrosion Rrate measured (mm/year)		0.01 to 0.07	0 to 0.06
Average corrosion Rate estimated (mm/year)		0.03	0.04
Standard Rate (mm)		0.1 to 0.3	

Note: All pile thickness is originally 12.7 mm and piles were driven 19 years ago.

4.3 Present Activities

4.3.1 Cargo Traffic

In terms of the cargo handling volume at Subic Bay Freeport in 1997, containerized cargo volume was 29,165 TEU, non-containerized cargo volume was 471,832 tons. However, aforesaid quantities include the cargo volume that was handled at SBF and transported from/to other ports (Manila port and NAIA) for import and export. The actual container and non-container cargo volumes handled at SBF in 1997 were 23,417 TEU and 456,732 tons, respectively.

The containerized and non-containerized cargo volume increased dramatically from 1994 - 95 as port activities were brisk, but there has been no significant change since then (see Table 4.3.1-1 & Figure 4.3.1-1). (In fact, both volumes have been decreasing slightly.)

The volume of petroleum products handled at SBF was 2,008,500 metric tons in 1997. Petroleum products also showed strong growth from 1993 to 1996, however from 1996 to 1997, the volume decreased.

No passenger traffic is reported. This is one of the distinguishing features of Subic Bay Freeport at present.

(1) Foreign Trade

1) Import

The total imported of container cargo handled at the SBF was 10, 190 TEUs in 1997. However, of that total, 1,368 TEUs were transported by road from Manila. The commodity and origin of containerized cargo handled at the SBF is shown in Table 4.3.1-2.

Table 4.3.1-3 shows imported container cargo handled at the SBF from 1993 to 1997. Containerized cargo peaked in 1995. After that, trade of containerized cargo decreased each year; container volume in 1997 had fallen 25% from its peak in 1995.

Table 4.3.1-3 Imported container cargo (1993 - 1997) Unit: TEU

	1993	1994	1995	1996	1997
Imported Container Cargo	277	4,247	13,631	9,589	10,190

Conversely, the imports of non-containerized cargo handled at SBF have been increasing each year since 1993 when operation began.

Table 4.3.1-4 shows non-containerized cargo volume handled at SBF from 1993 to 1997.

Table 4.3.1-4 Imported non-containerized cargo (1993 - 1997) Unit: Tons

	1993	1994	1995	1996	1997
Imported Non-containerized Cargo	29,915	30,358	155,880	368,731	*389,289

* Cargo volume through other ports is excluded.

Table 4.3.1-1 Cargo Volume Handled at SBFZ

Description \ Year	1993	1994	1995	1996	1997
Containerized Cargo (TEU)					
Handled at Subic Port					
Foreign	277	4,707	15,993	11,605	9,435
Import to SBF	277	4,247	13,631	9,589	6,586
to SBFZ Locator	-	-	-	-	2,236
to Outside Locator	-	-	-	-	-
Export from SBF	0	460	2,362	2,016	16
from SBFZ Locator	-	-	-	-	398
from Outside Locator	-	-	-	-	199
Domestic	-	-	-	-	23
Inbound	-	-	-	-	-
Outbound	-	-	-	-	23
Transshipment (Import)	135	4,744	3,472	7,130	2,430
Transshipment (Export)	135	4,744	3,472	7,130	2,430
Empty (IN)	0	0	775	1,293	811
Empty (OUT)	0	0	7,793	6,593	8,311
Sub Total	547	14,195	31,505	33,751	23,417
Handled at Other Port					
Transport by Road					
Domestic					
Inbound	-	-	-	-	-
Outbound	-	-	-	-	2,892
Transport from/to Other Port by Road					
Import via Manila Port	-	-	-	-	1,368
Export via Manila Port	-	-	-	-	1,382
via Manila Port from outside locator	-	-	-	-	14
via NAIA	-	-	-	-	92
Sub Total	-	-	-	-	5,748
TOTAL	547	14,195	31,505	33,751	29,165
Non-Containerized Cargo (MT)					
Handled at Subic Port					
Foreign	29,915	31,030	160,868	372,816	390,470
Import via Subic Port	29,915	30,358	155,880	368,731	389,289
Export via Subic Port	0	672	4,988	4,085	1,181
via Subic Port from outside locator	-	-	-	-	0
Domestic	-	-	224,239	55,154	36,808
Inbound	-	-	-	-	12,281
Outbound	-	-	-	-	24,527
Transshipment (from/to Foreign)	9,911	26,055	116,604	56,765	29,454
Import	-	-	-	-	14,727
Export	-	-	-	-	14,727
Sub Total	39,826	57,085	501,711	484,735	456,732
Handled at Other Port					
Transport by Road					
Domestic					
Inbound	-	-	-	-	0
Outbound	-	-	-	-	8,412
Transport Through SBIA					
Foreign					
Import via SBIA	-	-	-	-	1,257
Export via SBIA	-	-	-	-	1,476
via SBIA from outside locator	-	-	-	-	40
Transshipment (from/to Foreign)					
Import	-	-	-	-	198
Export	-	-	-	-	198
Transport from/to Manila Port by Road					
Foreign					
Import via Manila Port					603
via NAIA	-	-	-	-	143
Export via Manila Port	-	-	-	-	1,198
via NAIA	-	-	-	-	1,543
via NAIA from outside locator	-	-	-	-	32
Sub Total	-	-	-	-	15,100
TOTAL	39,826	57,085	501,711	484,735	471,832

Source: Seaport Department, SBMA

Note : Detailed cargo volume data for 1993-1996 is not available.

Table 4.3.1-2 Import Containerized Cargo to SBFZ in 1997

Description	Commodity	Origin	Cargo Volume		
			TEU	Ton/TEU	Share
Unloaded at SBF					
General Cargo			6,425	7.4	
	Cigarettes	Hongkong, British			
	Mixed Groceries	New Zealand			
	Printed Matter	USA			
	Brand New Tires	Taiwan			
Factory Use	Material for Manufacturing		2,236	7.9	
Heavy Equipment	Ritchie Brothers Auctioneer	Australia, Canada	161	8.7	
	Sub-Total		8,822		86.6%
Unloaded at Manila Port					
General Cargo			945	7.7	
	Mixed Groceries, etc.	New Zealand			
Factory Use	Material for Manufacturing		392	7.7	
Heavy Equipment	Ritchie Brothers Auctioneer		31	7.6	
	Sub-Total		1,368		13.4%
	TOTAL		10,190		

Source; Seaport Department, SBMA

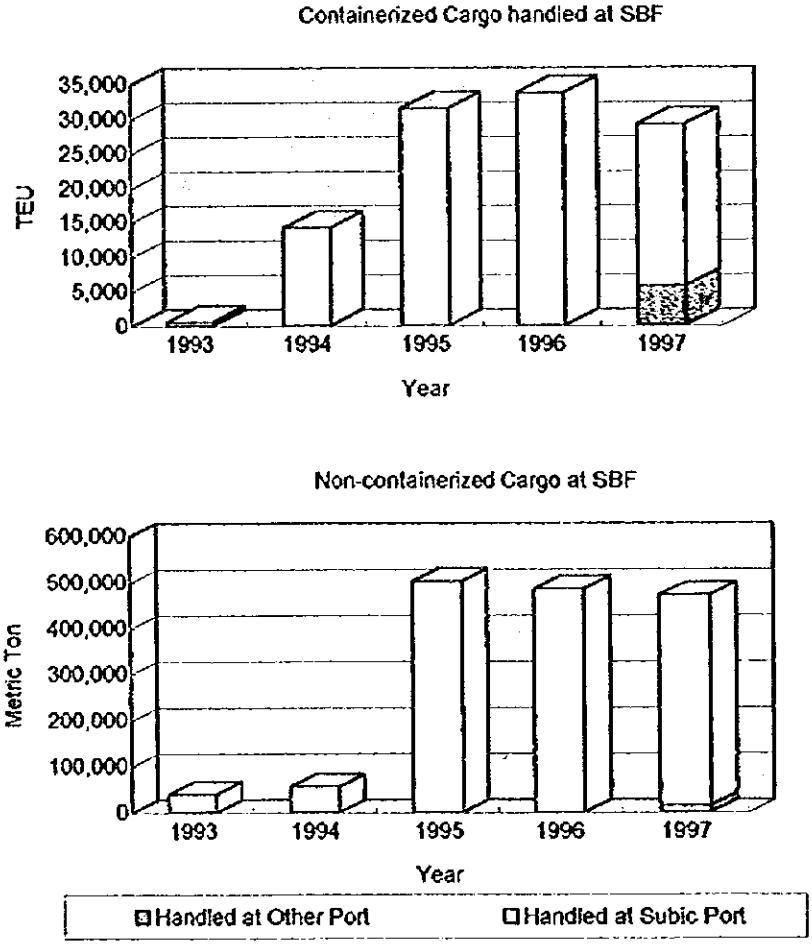


Figure 4.3.1-1 Containerized and Non-containerized Cargo Volume Handled at SBF

The commodity and origin of non-containerized cargo handled at the SBF is shown in Table 4.3.1-5. The main commodity is bulk cargo, of which soya bean and sunflower had a volume of 110,868 metric tons, or 29% of the total imported non-containerized cargo. Other commodities are rice (25%), cement (18%), construction materials (13%) and heavy equipment (7%).

2) Export

The exports of containerized and non-containerized cargo through the SBF were 613 TEU and 1,181 metric tons. In addition, some export cargo generated at the factories located at the SBFZ was exported to foreign countries through Manila (seaport or airport): 1,488 TEU in the case of container cargo and 4,289 metric tons for non-container. This is one of the distinguishing features of the Subic Bay Freeport at present. The breakdown of export cargo volume by loaded port in 1997 is shown in Table 4.3.1-6. And the destination and commodity of exports of containerized and non-containerized cargo volume through the SBF and Manila in 1997 are shown in Table 4.3.1-7 and Table 4.3.1-8.

(2) Transshipment (Re-export)

Transshipment cargo at Subic Bay Freeport Zone (SBFZ) is classified into three categories: One is manufactured goods(mostly integrated circuit) which are produced in neighboring countries and exported to third countries through the Subic Bay International Airport in SBFZ. The second is heavy equipment brought in SBFZ by Auctioneers (Ritchie Bros: consignee using as a hub base in line of their business in east Asia). The third is cigarettes. The SBFZ is functioning as a distribution center of East Asia. Based on SBMA's records of 1997, containerized and non-containerized cargo volume exported from SBF as transshipment cargo amounted to 2,413 TEU and 14,727 metric tons, respectively. The destination and volume of this transshipment cargo are shown in Table 4.3.1-9 & -10. The main commodities are cigarettes and heavy equipment, with respective shares of 43% and 36%(refer to Table 4.3.1-10).

Unfortunately, the records of transshipment cargo before 1996 are incomplete, making it difficult to identify trends. However, as compared with total cargo volume of 1996 and 1997 the transshipment cargo volume can generally be said to have maintained the same level of trade, while non-containerized cargo has slightly decreased.

(3) Domestic Trade

1) Inbound Cargo

Statistical data on inbound containerized cargo in local trade was not kept until recently. The volume of inbound non-containerized cargo was 12,281 metric tons in 1997. The main commodity of inbound cargo is fertilizer from Leyte (PHILPHOS), Eastern Visayas, which accounts for 76% of the total inbound cargo(refer to Table 4.3.1-11).

2) Outbound Cargo

The containerized and non-containerized cargo volume handled through the SBF was 2,915 TEU and 32,939 metric tons in 1997, respectively. The destination of domestic outbound cargo is shown in Table 4.3.1-12 and -13. The main commodity of outbound cargo is soya bean and heavy equipment, with respective shares of 55%and 41% (refer to Table 4.3.1-13) which are mainly distributed to Manila, Cebu and other southern provinces of the Philippines.

(4) Petroleum Product

The volume of petroleum product handled at the Subic Bay Freeport was 2,008,500 metric tons in 1997. The trade of petroleum product showed steady growth from 1993 to 1996 as shown in Table 4.3.1-14, however in 1997, total petroleum volume handled at the SBF dropped by about 22%(see Figure 4.3.1-2). It is suspected that this drop is due to the currency crisis which started in the middle of 1997 in Pacific Asia.

For loading/unloading the petroleum product, POL pier is solely provided through Coastal Subic Bay Terminal, Inc. which operates and maintains the related facilities.

All of the petroleum product is imported, and then 46% of the outbound petroleum product is exported to a foreign country as transshipment, while 54% of outbound petroleum cargo is supplied to the local market in 1997 as shown in Table 4.3.1-15. The local market is mostly Metropolitan Manila (80%) and to a lesser extent the southern district (Mindanao Region).

4.3.2 Calling Vessels

(1) Average Vessel Size and Number of Vessel

The number of vessels for the past five years (1993 - 1997) is shown in Table 4.3.2-1. The number of vessels during this period calling SBF peaked in 1995, then gradually decreased until 1997(see Figure 4.3.2-1). The trend of ship calls coincides with the total cargo volume handled at the SBF.

Ship sizes of domestic and foreign vessels calling SBF in 1997 are shown in Table 4.3.2-2.

Predominant ship sizes of foreign non-container cargo ships, foreign container ships and foreign bulk cargo ships are shown in Figure 4.3.2-2, 4.3.2-3 and 4.3.2-4.

Table 4.3.1-5 Import Non-containerized Cargo Through SBF in 1997

Commodity	Origin	Cargo Volume (M.T)	Total (M.T)	Share
Heavy Equipment			26,718	7%
	Japan	13,837		
	Taiwan	6,088		
	Korea	3,768		
	Tailand	3,025		
Cement			68,300	18%
	China	42,450		
	Taiwan	25,850		
Fertilizer	England		8,015	2%
Rice			95,997	25%
	China	41,867		
	Tailand	12,430		
	Vetnum	41,700		
Soya Bean			76,893	20%
	Brazil	72,393		
	China	4,500		
Sunflower Pellet/Soya	Argentina		28,475	7%
Lupins	Australia		5,500	1%
Steel Structure used	China		2,548	1%
Construction Material			51,295	13%
Cattle	Australia		2,615	1%
Others			22,933	6%
TOTAL			389,289	

Source; Seaport Department, SBMA

Table 4.3.1-6 Export Cargo Volume by Loaded Port in 1997

Loaded Port	Origin	By Sea		By Air		TOTAL	Share
		Subic Port	Manila Port	SBIA	NAIA		
Containerized Cargo (Unit:TEU)							
SBF	SBFZ	414	-	-	-	414	20%
SBF	Outside SBFZ	199	-	-	-	199	9%
Manila	SBFZ	-	1,382	-	92	1,474	70%
Manila	Outside SBFZ	-	14	-	-	14	1%
TOTAL		613	1,396	0	92	2,101	
Non-containerized Cargo (Unit: M.T)							
SBF	SBFZ	1,181	-	1,476	-	2,657	48%
SBF	Outside SBFZ	-	-	40	-	40	1%
Manila	SBFZ	-	1,198	-	1,543	2,741	50%
Manila	Outside SBFZ	-	-	-	32	32	1%
TOTAL		1,181	1,198	1,516	1,575	5,470	

Source: Seaport Department, SBMA

Note: SBF; Subic Bay Freeport, SBFSA
SBFZ; Subic Bay Freeport Zone
SBIA: Subic Bay International Airport
NAIA; Ninoy Aquino International Airport
Outside SBFZ; Bataan EPZ

Table 4.3.1-7 Export of Containerized Cargo in 1997

Origin	Loaded Port	Destination	Description	Cargo (TEU)
Subic	Manila	Australia	Heavy Equipment	13
		Canada	Electronic Telephone	39
		Chile	Parts of Travelling Case	32
		Finland	Diesel Engine Parts	2
		France	Electronic Telephone	47
		Germany	Luggage Cart	5
		Hong Kong	Parts & Components	52
		India	Electronic Telephone	31
		Japan	Car Seat Cover	26
		Korea	Cable	7
		Malaysia		2
		Malta		1
		Newzerland	Heavy Equipment	10
		Panama		1
		Singapore	Electronic Telephone	27
		Switzaland		3
		Taiwan	Cable	15
		Thailand	Access. for Baggage	35
		United Kingdom	Luggage	14
		USA	Electronic Telephone	1,020
			TOTAL	1,382
			Average Weight Ton / TEU	5.8
Subic	Subic	Australia	Heavy Equipment	16
		Canada	Electronic Telephone	6
		Chile	Baby Beds	1
		China	Parts of travelling case	1
		France	Electronic Telephone	40
		Hong Kong	Resin & Cables	19
		Japan	Wire Harness	11
		Malaysia	Grey Fabrics	5
		Pakistan		1
		Singapore	Electronic Telephone	64
		Taiwan	Display Racks & Access.	148
		Thailand	Raw Materials & Access. for Baggage	5
		U.A.E	Display Racks & Access.	3
		United kingdam		2
		USA	Men's Woven Sportswear	92
			TOTAL	414
			Average Weight Ton / TEU	7.1

Source: Seaport Department, SBMA

Table 4.3.1-8 Export of Non-containerized Cargo in 1997

Orign	Loaded Port	Destination	Description	Cargo M.Ton
Subic	Manila	Australia	Microphone	161.1
		Brunei	Faucet & Accss.	2.4
		Canada	Men's WovenShirt, Microphone	24.2
		China	Parts & Components	12.5
		Czechoslovakia		0.6
		Denmark	Microphone	1.1
		France	Trolley	5.4
		Germany	Electronic Telephone	0.9
		Greece	Electronic Telephone	0.9
		Hong Kong	Parts & Components	149.6
		India	IQ-Durable Ink	1.8
		Indonesia	Parts & Components	0.4
		Japan	Super Handy Carry	5.1
		Korea	Parts & Components	17.3
		Malaysia	Parts & Components	5.5
		Mexico		1.9
		Netherland	Fishing Rods	0.3
		Newzerland	Heavy Equipment	41.0
		Norway		0.4
		Seychelles		0.6
		South Africa		0.8
		Singapore	Parts & Components	44.7
		Switzaland		1.2
		Taiwan	Plastic Parts for Camera	44.7
		Thailand	Parts & Components	5.2
		United Kingdom	Fishing Rods, microphone	23.4
		USA	Ladies Knit dress, Men's woven Shirt	643.4
			TOTAL	1,196.4
Subic	Subic	Australia	Heavy Equipment	104.0
		Japan	Machines for Overhauling	1.3
		Malaysia	Used Personnel Effects	1.6
		Taiwan	Heavy Equipment	193.9
		Thailand		15.8
		U.A.E	Heavy Equipment	471.0
		USA	Heavy Equipment	393.0
			TOTAL	1,180.6

Source: Seaport Department, SBMA

Table 4.3.1-9 Destination of Foreign Transshipment Cargo Throughout SBF in 1997

Destination		Containerized Cargo (TEU)		Non-containerized Cargo (Metric Ton)			
Region	Country	By Ship	Main Commodities	By Ship	By Air	Total	Main Commodities
Asia	Australia	2	Children's Book	32.08	0.136	32	Children's education Product., Integrated Circuit
	China	614	Cigarettes	4,464.07	3.040	4,467	Cigarette, Integrated Circuit
	Hong Kong	165	Asstd Liquors	82.10	25.494	108	Cigarette, Integrated Circuit
	India	2	Asstd Liquors	28.92	0.020	29	Asstd Liquors, Diesel, Integrated Circuit
	Indonesia	35	Porous Prilled Ammonium	493.28	0.000	493	Heavy Equipment
	Japan	85	Cigarettes	133.74	29.903	164	Cigarette, Integrated Circuit
	Malaysia	58	Cigarettes	4,505.80	12.442	4,518	Cigarette, Integrated Circuit
	Pakistan	0		50.20	0.000	50	Heavy Equipment
	Palau	0		0.73	0.141	1	Spare Parts for Diesel Engine
	Saipan	0		0.00	0.011	0	Integrated Circuit
	Singapore	700	Cigarettes	103.63	10.775	114	Cigarette, Integrated Circuit
	South Korea	538	Cigarettes	3,738.61	21.188	3,760	Cigarette, Integrated Circuit
	Taiwan	98	Footwear	984.11	13.391	998	Cigarette, Integrated Circuit
	Thailand	2	Cigarettes	0.00	1.054	1	Integrated Circuit
	Vietnam	95	Cigarettes	45.33	0.000	45	Cigarette
Europe	Austria	0		0.00	0.450	0	Integrated Circuit
	Belgium	0		0.00	0.334	0	Integrated Circuit
	Czech Rep.	0		0.00	0.090	0	Integrated Circuit
	Denmark	0		0.00	0.266	0	Integrated Circuit
	Finland	0		0.00	0.293	0	Integrated Circuit
	France	0		0.00	10.055	10	Integrated Circuit
	Germany	0		0.00	16.393	16	Integrated Circuit
	Hungary	0		0.00	0.018	0	Integrated Circuit
	Israel	0		0.00	2.182	2	Integrated Circuit
	Italy	0		0.00	17.618	18	Integrated Circuit
	Netherland	0		0.00	1.845	2	Integrated Circuit
	Norway	0		0.00	0.316	0	Integrated Circuit
	Poland	0		0.00	1.035	1	Integrated Circuit
	Slovenia	0		0.00	0.069	0	Integrated Circuit
	Spain	0		0.00	0.409	0	Integrated Circuit
	Sweden	0		0.00	2.857	3	Integrated Circuit
	Switzerland	0		0.00	0.386	0	Integrated Circuit
	United kingdom	0	Chunk Light Tuna	0.00	5.418	5	Integrated Circuit
orth Americ	Canada	0		37.80	0.187	38	Heavy Equipment, Integrated Circuit
	Mexico	0		0.00	0.844	1	Integrated Circuit
	Panama	1	Cigarettes	0.00	0.000	0	
	USA	0		20.44	17.234	38	Cigarette, Heavy Equipment, Integrated Circuit
outh Americ	Argentina	0		0.00	0.002	0	Integrated Circuit
	Brazil	0		0.00	0.853	1	Integrated Circuit
Africa	South Africa	0		0.00	0.681	1	Integrated Circuit
Foreign Vessells		18	Ship's Spare, Marine Paint	6.46	0.000	6	Marine Paints, Ship's Spare in Transit
	TOTAL	2,413		14,727	198.000	14,925	

Source: Seaport Department, SBMA

Table 4.3.1-10 Transshipment Non-container Cargo Volume through SBF in 1997

Commodity	Destination	Cargo Volume (M.T)	Total (M.T)	Share
Transshipment (to foreign)				
Heavy Equipment			5,416	36%
Cigarettes			6,451	43%
	China	3,137		
	Hong Kong	36		
	Korea	2,469		
	Taiwan	787		
	Vietnam	22		
Other Cargo			3,058	20%
TOTAL			14,925	

Source; Seaport Department, SBMA

Table 4.3.1-11 Domestic Inbound Non-container Cargo Through SBF in 1997

Commodity	Origin	Cargo Volume (M.T)	Total (M.T)	Share
Inbound				
Heavy Equipment	Cebu		716	6%
Fertilizer	Leyte		9,375	76%
Copra	Ginnog City		1,200	10%
Various Equipment	Batangas		90	1%
Fabricated Steel Structure			900	7%
	SSEI	100		
	Leyte	800		
Total			12,281	

Source; Seaport Department, SBMA

Table 4.3.1-12 Domestic Outbound Cargo Throughout SBF in 1997

Destination				Containerized Cargo (TEU)		Non-containerized Cargo (M.T)		Description
	Region	Province	City	By Sea	By Road	By Sea	By Road	(Main Commodities)
NCR			Makati/Manila	0	3	11,506	407	Heavy Equipment, Soya Bean Meal
CAR		Benguet	Baguio	0	95	0	603	Epoxy Molding Compound, Electronic Parts
I	Ilocos Region	Pangasinan						
		Pangasinan	Sual	0	1,174	0	82	Boiler Parts & Accs.
		La Union	Poro Point	23	2	181	0	Cigarette
II	Cagayan Valley	Cagayan		0	24	2	19	Heavy equipment, Fruit Cocktail
III	Central Luzon	Zambales	SBMA					
		Zambales	Olongapo					
		Zambales	Subic Shipyard	0	35	0	181	Marine Paints, Ship's Spare Parts
		Zambales	Masinloc	0	5	64	2,948	Coal ship loader
		Bataan	Mariveles	0	926	0	1,469	Fabric/Accs., Knockdown Parts
		Pampanga	Clark	0	489	0	1,103	Food, Various Liquor
		Pampanga		0	57	0	494	Drilling Mud Additives, Parts for Oil Gas Field Equip.
IV	Southern Tagalog	Cavite		0	2	0	49	Heavy Equipment
		Laguna		0	0	0	952	Malaysian Plywood
		Rizal		0	80	0	0	Woven Grey Fabrics
		Batangas	Batangas	0	0	0	105	Heavy Equipment
		Palawan		0	0	110	0	Heavy Equipment
V	Bicol Region			0	0	0	0	
VI	Western Visayas	Iloilo	Iloilo City	0	0	3,035	0	Soya Bean Meal, Heavy Equipment
		Negros Occidental	Bacolod	0	0	824	0	Heavy Equipment
VII	Central Visayas	Cebu	Cebu	0	0	4,950	0	Soya Bean Meal, Heavy Equipment
		Bohol		0	0	2	0	Truck
		Negros Oriental	Dumaguete	0	0	142	0	Heavy Equipment
VIII	Eastern Visayas	Leyte	Ormoc	0	0	219	0	Heavy Equipment
		Samar		0	0	190	0	Heavy Equipment
IX	Western Mindanao	Zamboanga del Sur	Zamboanga City	0	0	5	0	Ambulance Car
X	Northen Mindanao	Misamis Oriental	Cagayan De Oro	0	0	1,570	0	Soya Bean Meal, Heavy Equipment
XI	Southern Mindanao	Davao	Davao City	0	0	476	0	Heavy Equipment
		South Cotabato	Gen. Santos	0	0	1,221	0	Soya Bean Meal
XII	Central Mindanao			0	0	0	0	
ARMM				0	0	0	0	
CARAGA		Agusan Del Norte	Butuan	0	0	30	0	Heavy Equipment
				23	2,892	24,527	8,412	
	TOTAL			2,915		32,939		

Source: Seaport Department, SBMA

Table 4.3.1-13 Domestic Outbound Non-container Cargo Through SBF in 1997

Commodity	Destination	Cargo Volume (M.T)	Total (M.T)	Share
Outbound				
Heavy Equipment			13,414	41%
Soya Bean			18,009	55%
	Bacolod	800		
	Cagayan	1,500		
	Cebu	4,665		
	Iloilo	1,750		
	Manila	6,844		
	Subic	300		
	Pasig River	950		
	G. Santos	1,200		
Various Cargoes			1,516	4%
	Manila	896		
	Cebu	620		
Total			32,939	

Source; Seaport Department, SBMA

Table 4.3.1-14 Petroleum Product Handling at SBF

Unit: Metric ton

	1993		1994		1995	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Gas Oil	165,828.14	129,918.86	258,476.06	202,504.31	392,990.75	298,595.87
Mogas	90,082.45	51,086.55	68,396.03	38,787.99	96,328.55	13,334.01
Industrial Fuel	174,467.84	149,355.16	88,018.81	75,349.50	371,764.84	318,267.20
Aviation Fuel	13,824.73	2,818.27	258,369.59	52,670.41	193,558.48	58,465.50
Sub Total	444,203.17	333,178.83	673,260.50	369,312.20	1,054,642.62	688,662.58
Total	777,382.00		1,042,572.70		1,743,305.20	

	1996		1997	
	Inbound	Outbound	Inbound	Outbound
Gas Oil	379,116.50	320,005.39	371,780.12	278,630.86
Mogas	195,271.72	127,803.41	45,388.55	59,792.27
Industrial Fuel	788,617.67	650,685.29	602,002.05	534,612.20
Aviation Fuel	105,903.50	11,948.37	95,979.75	20,308.71
Sub Total	1,468,909.39	1,110,442.46	1,115,150.47	893,344.03
Total	2,579,351.85		2,008,494.50	

Source: Seaport Department, SBMA

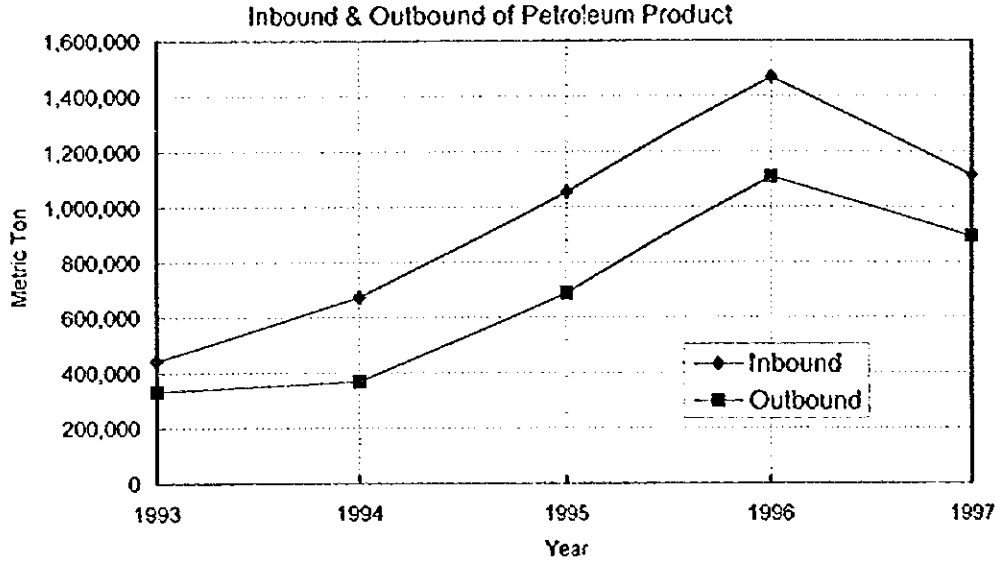
Note: Data for 1993 and 1994 was not always available and was estimated by average ratio from data of 1995 - 1997.

Table 4.3.1-15 Outbound Petroleum Product in 1997

Unit:: Metric Ton

Destination	Outbound						
	Domestic				Foreign		
By Mode	By Truck	By Ship	Total	Share	By Ship	Share	Total
Gas Oil	291.951	127,822.169	128,114.120	46.0%	150,516.738	54.0%	278,630.858
Mogas	6,368.500	26,272.620	32,641.120	54.6%	27,151.145	45.4%	59,792.265
Industrial Fue	3,364.080	296,033.429	299,397.509	56.0%	235,214.689	44.0%	534,612.198
Aviation Fuel	174.836	20,133.875	20,308.711	100%	0.000	0%	20,308.711
Sub Total	10,199.367	470,262.093	480,461.460	53.8%	412,882.572	46.2%	893,344.032
Total	893,344.032						

Source: Seaport Department, SBMA



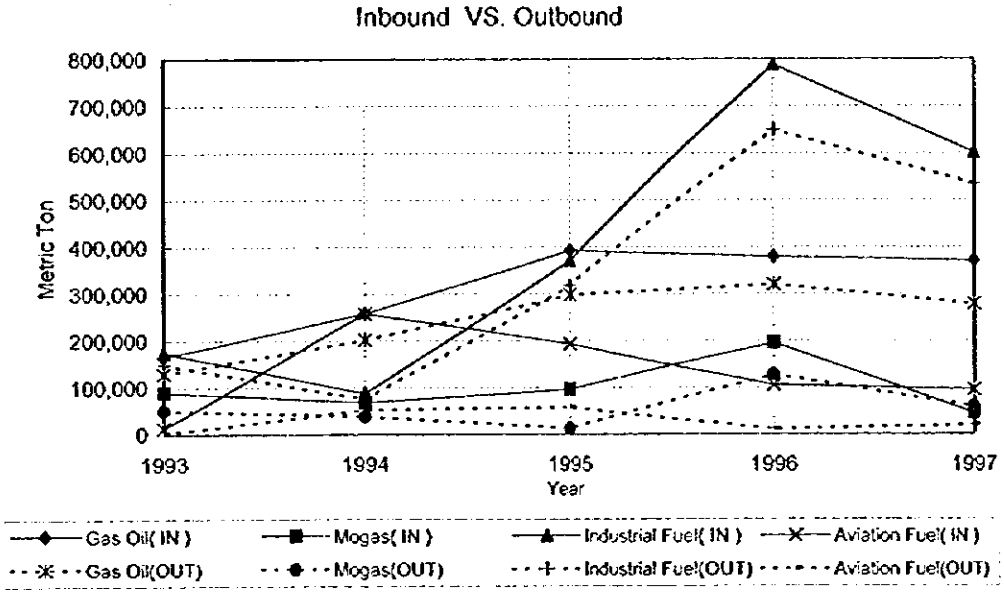


Figure 4.3.1-2 Petroleum Product Handled at SBF

Table 4.3.2-1 Ship Calls at SBF

Unit: No. of Ship

Type of Vessel \ Year		1993	1994	1995	1996	1997
Domestic Vessel						
	Dry Cargo	13	30	51	48	48
	Tanker	113	421	469	442	538
	Barge	29	74	184	94	108
	Cruise/Liner	0	0	4	4	0
	Military	1	0	36	77	29
	Small Craft	46	50	4	0	0
	Tugboat	0	0	141	74	62
	Others	13	5	13	10	40
	Total	215	580	902	749	825
Foreign Vessel						
	Dry Cargo Containerized	64	798	1,014	1,047	191
	Breakbulk/Bulk					491
	Tanker	58	76	71	72	60
	Barge	0	5	0	4	4
	Cruise/Liner	1	0	1	1	0
	Military	1	0	9	24	16
	Small Craft	3	16	0	3	3
	Tugboat	0	0	3	4	9
	Others	0	14	6	26	77
	Total	127	909	1,104	1,181	851
Grand Total		342	1,489	2,006	1,930	1,676

Source: Seaport department, SBMA

Table 4.3.2-2 Ship Size at Subic Bay freeport in 1997

Ship Flag	Main Type of Ship	Discription	Ship Call No.	Ave. GRT	70%. GRT	Max. GRT
Domestic						
	MV	Non-container Cargo	30	1,735	5,535	9,562
	MT	Fuel Supply to Power Sta.	37	1,805	2,154	5,552
	BRP, TB, TUG, MT	Others	119	162	722	1,104
	MT	Petroleum	514	457	520	3,669
	BA	Others	26	657	1,092	1,464
	BA	Container Cargo	1	594	594	594
	LCT	Heavy equipment	41	831	1,084	4,772
	MV, LCT, MT	SSEI (Ship Repair)	22	2,097	4,376	5,387
		Total	790	596	-	-
Foreign						
	MV, BA	Non-container Cargo				
		Heavy equipment/General cargo	117	5,975	8,881	22,009
		Cement/fertilizer	16	5,603	9,196	14,824
		Rice	6	10,795	11,114	16,794
		Soya Bean	6	20,436	26,396	44,960
		Cattle	10	1,684	2,341	3,555
		Copper(P.Dizon)	3	4,397	-	4,887
	RO-RO	Heavy equipment	11	43,127	52,185	56,893
	FB, MV	Cigarette	322	210	675	2,066
	RFA, HMS, CS, MY	Others	66	4,878	18,405	40,870
	MT	Petroleum	69	23,165	46,466	86,699
	MV	Container Cargo	188	8,810	8,944	13,488
	MV, MT	SSEI (Ship Repair)	46	29,039	50,785	99,417
		Total	860	7,512	-	-

Source: Seaport Department, SBMA

Abbreviations

BA	Barge	MT	Marine Tanker
BRP	Military Ship(Philippine)	MV	Marine Vessel
CS	Cable Ship	MY	Motor Yacht
FB	Fishing Boat	PN	Philippine Navy
HMS	Her Majesty Ship(Austraria)	RFA	Royal Fleet Auxiliary(British)
LCT	Landing Craft Transport	TB	Tug Boat
RO-RO	Car Carrier		

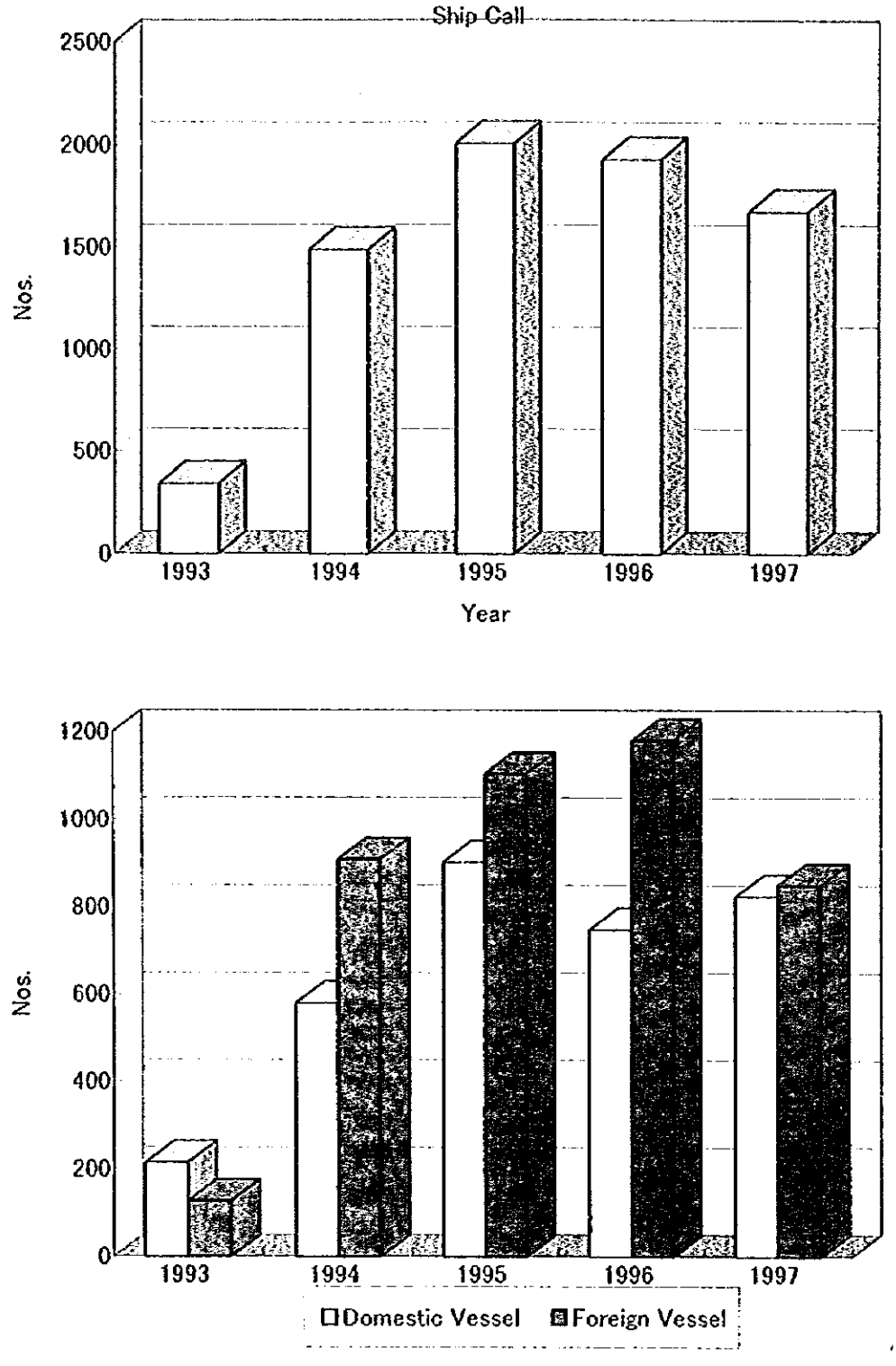


Figure 4.3.2-1 Ship Call at SBF

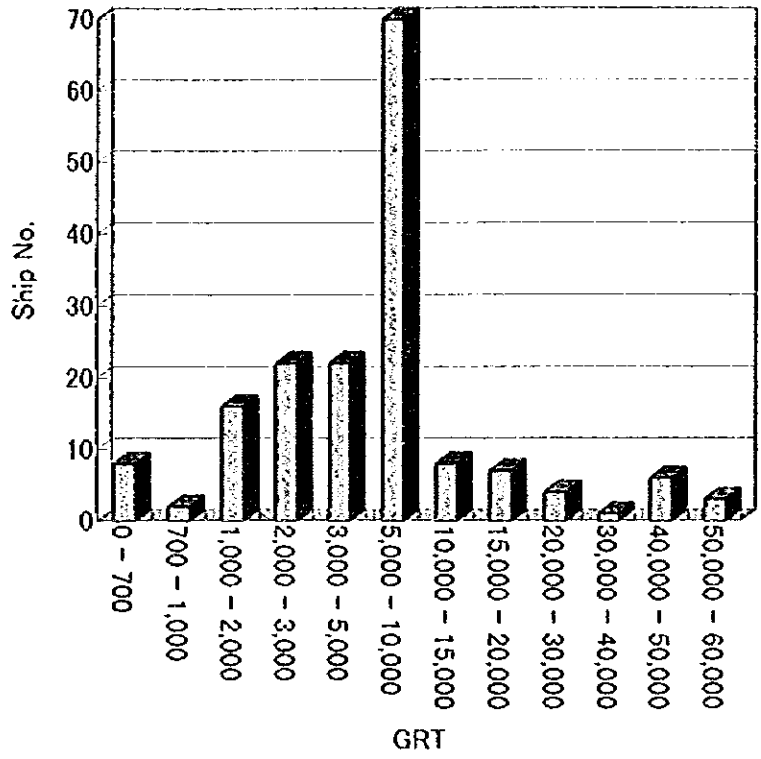


Figure 4.3.2-2 Foreign Non-containerized cargo Ship in 1997

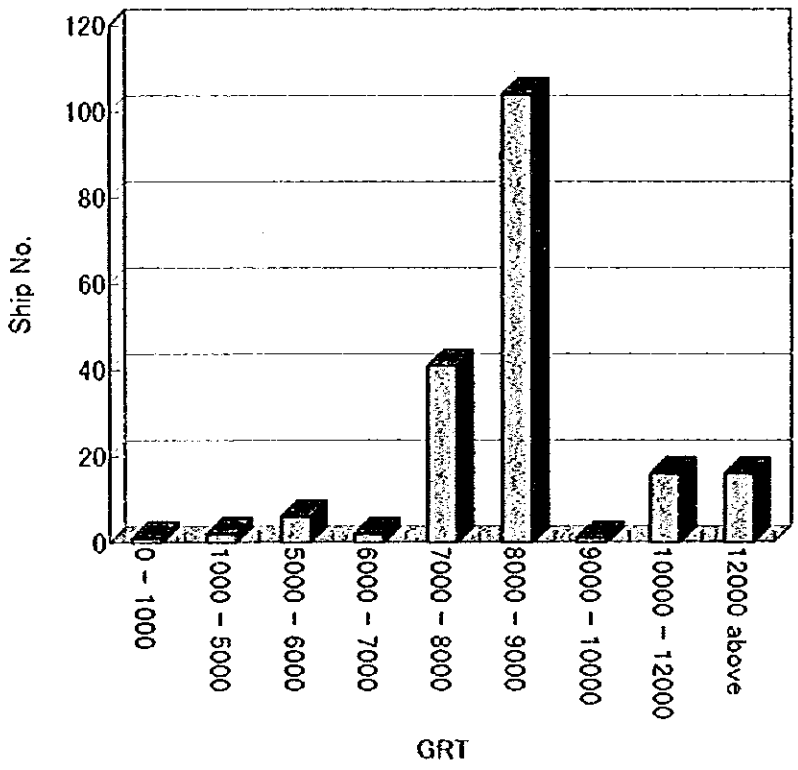


Figure 4.3.2-3 Foreign Containerized cargo Ship in 1997

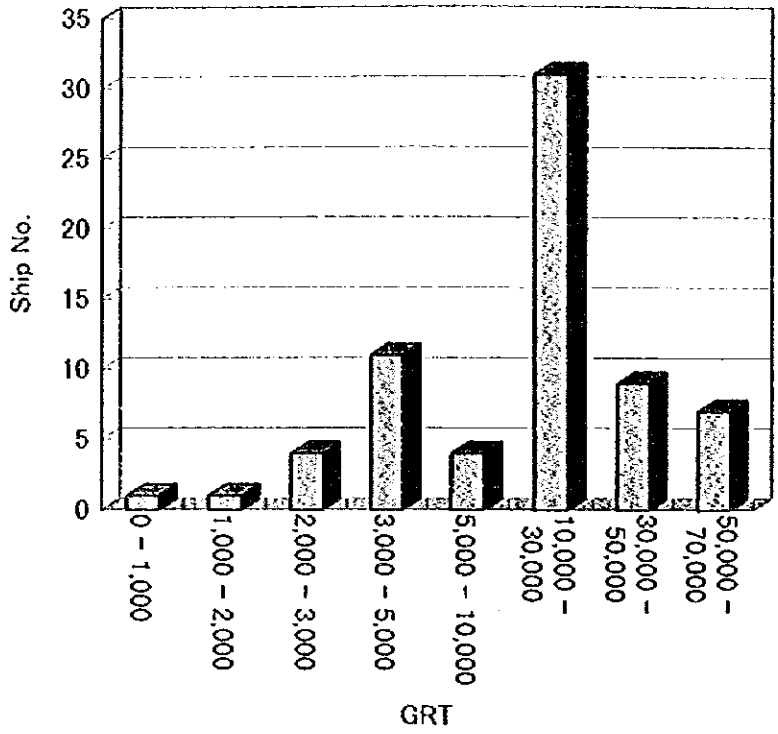


Table 4.3.2-4 Foreign Bulk Cargo (Petroleum Product) Ship in 1997

4.3.3 Cargo Handling System

The following shipping lines(container) regularly call Subic Bay Freeport; there are a total of 16 ship calls each month. In addition, trampers will occasionally call Subic according to cargo demand.

①American President Line (APL)

Weekly services on every Wednesday and Sunday is provided by 2 container ships as part of the Kaoshung-Subic-Manila-Cagayan-Bogo-Manila-Subic-Kaoshung route. Cargo is loaded on Wednesday and discharged on Sunday.

②Maersk Filippinas, Inc.

Weekly service on Wednesday is provided by 2 container ships on the Kaoshung-Subic-Manila route.

③Regional Container Line (RCL)

RCL provides biweekly service using 1 container ship. The route is Singapore-Subic-Manila.

④Neptune Orient Line (NOL)

NOL also provides biweekly service using 1 container ship. The route is Singapore-Subic-Manila.

(1) General condition

Since Subic port was constructed and operated by the U.S.Navy as a naval port, port facilities are not suitable for the handling of commercial cargo, neither container nor general cargo, due to the narrow apron and the lack of an operational crane.

Subic port handles container, heavy cargo (equipment, machine, steel), break bulk cargo (rice, cement, fertilizer) and bulk cargo (soya bean meal). Cargo handling operations are conducted by the following five private companies:

①International Container Terminal Services Incorporated (ICTSI)

②Amerasia International Terminal Services, Inc.(AITSI)

③Royal Port Services Incorporated (RPSI)

④Subic Bay Freeport Services Incorporated (SBFSI)

⑤Magellan Maritime Inc. (MMI)

Among them SBFSI and MMI do not have cargo handling equipment except trucks.

ICTSI handles container cargo exclusively and other cargoes are handled by the other four cargo handling companies. Cargo handling agreements do not require SBMA permission or involvement and are made in one of the following ways:

①A consignee invites tenders who wish to tender for the cargo handling.

②A shipping line makes a contract with a specific handler.

③A consignee makes a contract with a specific handler.

(2) Cargo Handling System by Commodity

1) Container cargo

So called "Container Terminal" facilities are not found at Subic port for the following

reasons:

①Lack of container gantry crane

②Lack of proper container yard behind the apron although there is an unpaved container storage yard (approx. 10 ha, stacking capacity: 20,000 TEU- 3 tier stacking, average stacking container at present: 2,000 TEU) in Naval Supply Depot area.

③Lack of container freight station

Container cargo is handled by ship-gear with 20 feet and 40 feet spreader similar to the general cargo handling. Discharged container is put on a trailer and carried to container yard (the distance from Marine Terminal wharf is about 600m) for stacking. Container to be loaded is also carried into container yard for stay and after that a trailer transfers it to ship side for loading. In the container yard 3 stackers are operated for container handling. Containers are stacked in three tiers.

According to the actual records of container handling volume in 1997, handling productivity of one gang is about 6 boxes / gang / hour.

Reasons for the excessive container handling time are as follows:

①Since operation of a ship's gear is influenced by stability of a ship and the spreader for container sways uncontrollably, operation of ship's gear takes more time than operation of gantry crane.

②Since a discharged container is put on a trailer directly, it takes a lot of time to put a container on a trailer bed using a ship's gear.

③Sometimes ship's gear operation is forced to wait for a truck which wastes time.

Free storage time in container yard is as follows:

export container 7 days

import container 10days

transhipment container 15days

Average dwelling time in container yard is 2 days for export container and 6 days for import container.

2) Breakbulk cargo

Discharging of breakbulk cargo (rice, cement, fertilizer) is handled by ship's gear with net and put on a truck directly. In order to increase handling efficiency, a portion of the bags is transferred into the transit shed located in the Marine Terminal. The remainder is carried by trucks to warehouse or inland destination directly. The average ratio between transit shed, warehouse and direct delivery differs by commodity of breakbulk cargo as follows:

Transit shed : Warehouse : Direct delivery

= 40 % : 0 % : 60 % (Rice)

= 0 % : 30 % : 70 %(Cement)

= 10 % : 0 % : 90 % (Fertilizer)

Free storage time in transit shed is 10 days and dwelling time is 9-10 days.

3) Dry-bulk cargo

Discharging of dry-bulk cargo (soya bean meal) is also handled by ship's gear with a cramshell. Dry-bulk cargo is bagged on an apron using 2 automatic bagging machines.
In case of handling of soya, the average ratio between transit shed, warehouse and direct delivery is as follows.

Transit shed : Warehouse : Direct delivery = 0 % : 80 % : 20 %

Average dwelling time is 10 days in transit shed and 30 days in warehouse.

4) Heavy cargo

In Subic port steel products such as construction material, cable wire of power station and steel bridge component are discharged. All steel cargo is unloaded from a ship to open yard by a ship's gear and trucks, and in open yard fork lift trucks are used for handling of steel. Construction machinery and equipment are discharged by ship's gear and Roll-on / Roll-off (RO/RO) ramp.

The ratio of vessel type for discharging and loading of heavy equipment(construction machinery and equipment) is summarized in Table 4.3.3-1. Almost 60 % of the total volume of construction machinery and equipment are carried by Roll-on Roll-off(RO/RO) type vessels and 40 % are carried by Lift-on Lift-off(LO/LO) type vessels.
Average dwelling time in open shed is 10 days.

Table 4.3.3-1 Ratio of carrying vessel type for heavy equipment

	Discharged Volume (MT)	Loaded Volume(MT)	Total(MT)
LO/LO	10,611(39.0%)	1,390(19.7%)	12,001(35.0%)
RO/RO	16,486(60.6%)	2,261(32.1%)	18,747(54.8%)
LCT	90(0.3%)	3,403(48.2%)	3,493(10.2%)
Total	27,187(100.0%)	7,054(100.0%)	34,241(100.0%)

Note) This table was made by the JICA Study Team based on the Terminal Operation Division's data (1997) in Seaport Department, SBMA.

(3) Cargo Throughput, Cargo Handling Productivity and Berth Occupancy Ratio by Each Wharf

1) Cargo throughput by each wharf

Cargo throughput by each wharf in 1997 is shown in Table 4.3.3-2. The wharves were generally used for a specific commodity of cargo.

Container cargo was mainly handled at Sattler Pier; the share of handling container volume was almost 85% of the total volume. Most of the remaining containers were handled at the Marine Terminal.

Break-bulk cargo was handled at the Marine Terminal and Rivera wharf; together they handled almost 85 % of the total cargo volume.

The Marine Terminal handled 92 % of the total bulk cargo.

Heavy Lift cargo was generally handled at the Marine Terminal and Rivera wharf. The handling volume of these two wharves represented 73 % of the total cargo volume.

The main wharves in Subic Bay Freeport are the Marine Terminal, Sattler Pier, Rivera wharf and Alava wharf, as these four wharves have sufficient length and depth for calling vessels. In addition, Sattler and Marine Terminal are close to the transit sheds and open-storage yard in NSD area.

2) Cargo Handling Productivity

Table 4.3.3-3 shows cargo handling productivity by commodity in 1997.

Judging from the productivity for discharging cargo, the following observations can be made:

①Container handling productivity is 6.09 boxes / hour / gang. This figure is fairly good comparing with other ports using ship's gear handling.

②Break-bulk handling productivity is 680 t / day (Fertilizer), 960 t / day (Rice,Cement). The productivity of fertilizer handling was low because it was counted including domestic transportation. There is room to improve the productivity up to 1,200 - 1,300 t / day.

③Bulk handling productivity is 1,590 t / day. It is possible to increase the productivity to 2,000 t / day.

④The handling of heavy equipment required a lot of time; only two units / hour / gang (RO-RO ship) or three units / hour / gang (LO-LO ship) could be handled. The productivity could be slightly increased to three or four units / hour / gang.

3) Berth Occupancy Ratio by Each Wharf

Berth occupancy ratio caused by cargo handling in 1997 by each wharf is summarized in Table 4.3.3-4.

The busiest wharf was Marine Terminal West (B.O.R.=59 %) followed by Rivera South wharf (B.O.R.=51 %).

Generally speaking, except these two wharves, berth occupancy ratio of each wharf for cargo handling was very low.

Table 4.3.3-2 Cargo Throughput by Each Wharf (1997)

		Non-Container Cargo (Metric Ton)													Container Cargo						
		Break-Bulk					Bulk				Heavy Lift	Feeder	Total	No. of	Inbound		Outbound		Total		No. of
		Rice	Cement	Fertilizer	Others	Total	Soya	Fertilizer	Others	Total	etc.	Cattle		Ships	Box	TEU	Box	TEU	Box	TEU	Ships
Alava	3 to 6										4,186		4,186	4			60	60	60	60	4
	7,8		16,550		2,084	18,634					9,504		28,138	11			2	2	2	2	1
	Ext.		8,023			8,023					411		8,434	2							
	Total		24,573		2,084	26,657					14,101		40,758	17			62	62	62	62	5
Rivera	East 11 to 15	8,326	21,059	2,900		32,285		7,967		7,967	19,680	346	60,278	30			24	24	24	24	1
	South 9,10		25,547	6,475	476	32,498					17,434	2,101	52,033	33			5	5	5	5	1
	Total	8,326	46,606	9,375	476	64,783		7,967		7,967	37,114	2,447	112,311	63			29	29	29	29	2
Bravo											12,256		12,256	14							
Sattlor	East														6,540	11,463	5,701	9,966	12,241	21,428	166
	West																				
	Total														6,540	11,463	5,701	9,966	12,241	21,428	166
Marino	East	29,928				29,928					24,494		54,422	49	235	418	279	432	514	850	5
Terminal	West	58,650			1,650	60,300	78,774		10,695	89,469	19,377		169,146	33	835	1,433	446	780	1,281	2,213	14
	East Bulkhead																				
	West Bulkhead				1,500	1,500					1,568		3,068	9	175	303	117	232	292	535	8
	Total	88,578			3,150	91,728	78,774		10,695	89,469	45,439		226,636	91	1,245	2,154	842	1,444	2,087	3,597	27
Boton												377	377	1							
Lower Mau											4,754		4,754	22							
Total (Along Pier)		96,904	71,179	9,375	5,710	183,168	78,774	7,967	10,695	97,436	113,664	2,824	397,092	208	7,785	13,616	6,634	11,500	14,419	25,116	200
No. of Ships		10	16	3	6	35	4	1	1	6	159	8	208								
Along Vessel							16,898			16,898			16,898	13							
Grand Total		96,904	71,179	9,375	5,710	183,168	95,672	7,967	10,695	114,334	113,664	2,824	413,990	221	7,785	13,616	6,634	11,500	14,419	25,116	200

(Source: Terminal Operation Division, Seaport Department, SBMA)

Table 4.3.3-3 Cargo Handling Productivity by Commodity

Type	Avr. Handling Volume per Ship (t/ship)	Avr. Berth Time (day/ship)	Avr.Handling Time (day/ship)	Handling Productivity (t/day)	Avr. Idle Time (day/ship)	Remarks
Discharging and Loading						
Container	75.9boxes/ship (132.4TEU/ship)	0.340	0.283	268boxes/day (468TEU/day)	0.057	1.74 TEU / Box
Discharging						
Break Bulk						
Rice	10,767	14.000	11.335	950	2.665	
Cement	4,745	6.304	4.921	964	1.383	
Fertilizer	3,125	5.096	4.583	682	0.513	
Bulk						
Fertilizer	7,967	12.156	5.000	1,593	7.156	
Soya	19,998	13.839	12.556	1,593	1.283	only handling of dockside
General Cargo						
Heavy Equipment						
LO/LO	360	0.955	0.505	713	0.450	5.17ton/unit
RO/RO	486	1.137	0.548	887	0.589	9.78ton/unit
Construction Material	1,344	3.866	2.965	453	0.901	
Others	1,903	3.410	2.427	784	0.983	
Petroleum	33,013	1.667	1.500	22,009	0.167	
Loading						
General Cargo						
Heavy Equipment						
LO/LO	210	2.820	0.855	246	1.965	10.26 ton/unit
RO/RO	747	1.918	1.490	501	0.428	17.38 ton/unit
LCT	180	2.516	1.351	133	1.165	8.16 ton/unit
Petroleum						
Foreign	23,545	1.667	1.500	15,697	0.167	
Domestic	582	0.333	0.1667	3,491	0.166	

Note) This table was made by the JICA Study Team based on the data from Terminal Operation Division, Seaport Department, SBMA, and Coastal Subic Bay Terminal Inc. in 1997.

Table 4.3.3-4 Berth Occupancy Ratio by Each Wharf (1997)

		No. of Berth	Berthing Time (day)						Total Berthing Time (day)	Berth Occupancy Ratio (%)
			Non-Container Cargo					Container Cargo		
			Break-Bulk	Bulk	Heavy Lift etc.	Feeder Cattle	Total			
Alava	3 to 6				12.24		12.24	5.6	17.84	
	7,8		26.93		29.85		56.78	0.15	56.93	
	Ext.		10.47		0.29		10.76		10.76	
	Total	5	37.4		42.38		79.78	5.75	85.53	5.7
Rivera	East 11 to 15	2	44.38	12.15	47.32	1.96	105.81	0.9	106.71	17.8
	South 9,10	1	65.92		76.84	11.08	153.84	0.33	154.17	51.4
	Total	3	110.3	12.15	124.16	13.04	259.65	1.23	260.88	29.0
Bravo		2			45.36		45.36		45.36	7.6
Sattler	East	1						55.25	55.25	18.4
	West									
	Total	1						55.25	55.25	18.4
Marine Termin	East	1	41.06		45.08		86.14	2.11	88.25	29.4
	West	1	79.2	60.7	31.53		171.43	5.6	177.03	59.0
	East Bulkhead									
	West Bulkhead	1	4.8		20.81		25.61	13.27	38.88	13.0
	Total	3	125.06	60.7	97.42		283.18	20.98	304.16	33.8
Boton		3				1.31	1.31		1.31	0.1
Lower Mau		1			56.86		56.86		56.86	19.0
Total		18		72.85	366.18	14.35	453.38	906.76	1,360.14	25.2

(Source: Terminal Operation Division, Seaport Department, SBMA)

Note) (1) Berth Occupancy Ratio = Total Berthing Days /(Annual Workable Days * No. of Berth)
(2) No. of berth is calculated on the assumption that one berth length is 130 m in the case of continuous berthing.

(4) Work Condition of Cargo Handling System

1) Shift hours

Container and general cargo handling is carried out in 2 shifts with the following time table:

1st shift	8:00-20:00 (lunch break 12:00-13:00)
2nd shift	20:00-8:00 (meal break 24:00-1:00)

2) Formation of gang and number of workers

a) Container / Breakbulk

One gang (ship-side, dockside) for handling container / breakbulk is composed of the following members:

	Container	Breakbulk	Remark
Foreman	1	1	
Winch man	1	1	
Stevedore	2	11	
Worker(dockside)	4		
Checker	1	1	1 in all gangs
Total	8-9	13-14	
Worker (transit shed)		12	12 persons×8 gangs (normally)
Truck Driver		11 (direct delivery:6 hustling:5)	11 persons × 4-5 gangs
Tractor Driver	4		in all gangs
Stacker Operator	3		in all gangs
Total	7		

(Source : Terminal Operation Division, Seaport Department, SBMA)

Container handling is operated by 1-2 gangs/ship generally.

Break bulk handling is operated by 1 gang for each hatch of a ship and average number of gangs is 4.

Trucks used for cargo handling are composed of 2 types, direct delivery and hustling. Hustling trucks are provided by cargo handlers, while direct delivery trucks are provided by consignee.

b) Dry Bulk

One gang for handling dry bulk is composed of the following members:

Foreman	1
Hopperman	2
Sack Filler Assistant	2

Sack Guide	2
Sack Shaker	2
Sack Feeder	2
Sweeper/Utility Man	2
Spouter	2
Checker	1
Total	16

Dry bulk handling is operated by 2 gangs on the apron and in the warehouse 4 gangs are employed.

(Source : Terminal Operation Division, Seaport Department, SBMA)

c)Heavy cargo

One gang for handling heavy equipment is composed of the following members:

RO/RO vessel

Stevedores workers	4
Drivers	2
Workers(dockside)	4
Total	10

LO/LO vessel

Stevedores	4
Workers(dockside)	6
Total	10

The average gang number is 2 gangs for one ship of RO/RO and LO/LO.

(Source : Terminal Operation Division, Seaport Department, SBMA)

3) Method of Employment of Workers

In Olongapo city there are 17 barangays. Each barangay leader submits a list which includes each group's name and the workers' names to the Seaport Operation Division in SBMA. (Each group contains an excess number of workers to compensate for absences etc.) Seaport Operation Division selects the necessary number of groups based on a request from a cargo handler in an impartial manner.

Consequently approximately 2,000 people who live in 17 barangays can obtain a job in almost 150 days in a year.

Payment scale fluctuates according to productivity as an incentive for workers to do their best.

Break bulk	0-3,000 bag/shift · group	P 0.80/bag
	3,000-5,000 bag/shift · group	P 1.00/bag
	5,000- above/shift · group	P 1.20/bag

Dry bulk	0-1,000 t/day	P 2,000/group
	1,000- t/day	P 7,000/group

(Source : Terminal Operation Division, Seaport Department, SBMA)

(5) Handling equipment

The handling equipment owned by SBMA and 4 cargo handling companies is summarized in Table 4.3.3-5. The only working equipment for heavy cargo handling is the 3 stackers owned by ICTSI, which are operated in the container yard.

The SBMA's three Portal Cranes (2 in Alava Pier, 1 in Rivera Pier) are not working at present and SBMA estimates the rehabilitation cost as P 3,928,000.

One portal crane (jib crane type, 50t) is installed at Bravo Pier and leased to "Electruck Pacific Corporation" (crane manufacturer) which rehabilitated it itself and is now using it.

(6) Defects of cargo handling in Subic port

Some defects are found in handling of cargo in Subic port as follows:

①For the development of SSEFZ, it is essential to attract container shipping lines and to provide a convenient physical distribution route in Subic Bay Freeport. But there are no container handling facilities (container crane, container yard, container freight station etc.) in Subic Bay Freeport.

②Three portal cranes are out of service and cannot be repaired due to budgetary constraints at SBMA. No heavy cargo equipment is used at dockside. Since the handling of cargo is operated by ship's gears and human power, the productivity is not so high and an accurate estimation of handling time is difficult.

③All cargo handling is conducted by ship's gear. Therefore when a ship's gear holds a cargo, the ship lists and handling operation is affected by the ship's rolling. The influence on the operation of handling is greater the heavier cargo and smaller the ship. Instability of cargo handling makes the operation dangerous and it takes a lot of time.

④No forklift is used at apron for handling of cargo; trucks convey the cargo even though the distance from a ship to the shed is very close at the Marine Terminal.

⑤A lack of lighting at dockside in the Marine Terminal makes operation unsafe.

⑥The buildings located in back-yard of berth are almost all leased to private companies and only a portion (5,800m^2) of one transit shed (building number 1010, total area is 8,300m^2) is available for public use. This makes handling of cargo inconvenient.

⑦The boundary of the temporary container yard is not defined. It is also unpaved and lacks lighting.

⑧The shift is too long (12 hours including one hour rest), resulting in lower efficiency.

Table 4.3.3-5 Cargo Handling Equipment

Owner	Handling Cargo	Type	Maker	Year of Built	Capacity	Quantity	Condition
SBMA	General Cargo	Heavy Shore Crane	American Hoist & Derrick		20t	1	Need to repair
			Industrial Brownhoist Corp.		50t	1	Need to repair
			Star Iron & Steel Co.		25t	1	Need to repair
			Industrial Brownhoist Corp.		50t	1	Good Leased to Electruck
ICTSI	Container	Stacker	PPM	1992		1	Good
			PPM	1993		1	Good
			Kalmar	1997		1	Good
		Yard Tractor	Ottawa	1993	50t	2	Good
			Ottawa	1995	50t	2	Good
		Yard Chassis	Soon Wing	1989	40-footer Skeletal	12	Good
			Soon Wing	1989	40-footer Flat bed	2	Good
			Soon Wing	1990	20-footer Flat Bed	1	Good
		Forklift	Toyota	1993	3t	4	Good
	Breakbulk	Forklift	TCM	1990	3t	3	Good
			Toyota	1990	3t	1	Good
AITSI	Breakbulk	Forklift	TCM		3t	1	Normal
			TCM		6t	2	Normal
RPSI	Breakbulk Bulk Container	Crane	Faun	1978	55t	1	Good
			Drott	1978	30t	1	Good
			P&H	1986	25t	1	Good
			Kato		20t	1	Good
			Pettibone	1976	12.5t	1	Good
		Forklift	TCM		6t	1	Good
					4t	1	Good
					2t	1	Good

(Source : Port Engineering Division, Seaport Department, SBMA and Cargo Handling Companies)

5 Background Data and Information - Socioeconomic Situation

5.1 Socioeconomic Situation of the Philippines and Central Luzon

5.1.1 Socioeconomic Situation of the Country

(1) Population

Population in the Philippines has steadily increased (see Table 5.1.1-1).

Table 5.1.1-1 Population of the Philippines

	1948	1960	1970	1975	1980	1990	1995
Population	19,234,182	27,087,686	36,684,486	42,070,660	48,098,460	60,703,206	68,616,536
Growth Rate(%)		2.89	3.08	2.78	2.71	2.35	2.32

Source: 1997 Philippine Statistical Yearbook, NSCB

The growth rate described in the above table is the annual average rate of increase over the previous census. Population of the Philippines in 1995 is 68,616,536 and the average growth rate of population for the period of 1990-1995 was 2.32%.

(2) GDP

The Philippines GDP amounted to around 848,451 million pesos in 1996 at constant prices of the year 1985. Although a reduced GDP growth rate was seen in 1990-1991, the GDP growth rate recovered in 1995-1996 to 5.68 %. Average growth rates of the Philippine GDP at constant 1985 prices are 3.7%(1985-1996) and 5.2%(1994-1996). Historical trend of GDP at constant 1985 prices and at current prices is shown in Table 5.1.1-2 and Table 5.1.1-3

Per capita GDP at constant 1985 prices is 12,789 pesos in 1983 and 11,801 pesos in 1994, and within the range of 10,400 - 11,800 pesos in 1984-1996. The growth rates of Per capita at constant 1985 prices are negative in 1983-1985 and 1990-1993. Historical trend of per capita GDP of the Philippines is shown in Table 5.1.1-4

Table 5.1.1-2 GDP of the Philippines (In million pesos : at constant 1985 prices)

Year	1985	1986	1987	1988	1989	1990
GDP	571,883	591,423	616,923	658,581	699,448	720,690
Growth Rate %		3.42	4.31	6.75	6.21	3.04
Year	1991	1992	1993	1994	1995	1996
GDP	716,522	718,941	734,156	766,368	802,866	848,451
Growth Rate %	-0.58	0.34	2.12	4.39	4.76	5.68

Source: 1997 Philippine Statistical Yearbook, NSCB

Table 5.1.1-3 GDP of the Philippines (In million pesos : at current prices)

Year	1985	1986	1987	1988	1989	1990
GDP	571,883	608,887	682,764	799,182	925,444	1,077,237
Growth Rate %		6.47	12.13	17.05	15.80	16.40
Year	1991	1992	1993	1994	1995	1996
GDP	1,248,011	1,351,559	1,474,457	1,692,932	1,906,328	2,196,595
Growth Rate %	15.85	8.30	9.09	14.82	12.61	15.23

Source: 1997 Philippine Statistical Yearbook, NSCB

Table 5.1.1-4 Per Capita GDP of the Philippines

	At current prices		At constant 1985 prices	
Year	Pesos	Growth Rate	Pesos	Growth Rate
1983	7,090	(%)	12,789	(%)
1984	9,831	38.7	11,564	-9.6
1985	10,461	6.4	10,461	-9.5
1986	10,872	3.9	10,560	0.9
1987	11,904	9.5	10,756	1.9
1988	13,610	14.3	11,215	4.3
1989	15,399	13.1	11,639	3.8
1990	17,522	13.8	11,722	0.7
1991	19,852	13.3	11,397	-2.8
1992	21,032	5.9	11,188	-1.8
1993	22,013	4.7	10,961	-2.0
1994	24,670	12.1	11,168	1.9
1995	27,130	10.0	11,426	2.3
1996	30,551	12.6	11,801	3.3

Source:1997 Philippine Statistical Yearbook, NSCB

(3) Sector Description

As to GDP by sector, the service sector in 1996 is the largest (43.4% of the total GDP), followed by the industrial sector (35.7%) and the agriculture sector (21.0%). In the period from 1985-1996, it can be seen that the share of the service sector is increasing, while that of the agriculture sector is decreasing. Historical trend of GDP by sector at constant 1985 prices is shown in Table 5.1.1-5.

The trend of GDP by sector and annual growth rates are shown in Table 5.1.1-6. According to this table, GDP of the Agriculture sector gradually increased during 1985-1996, with growth rates between 0.39% and 3.68%. Its GDP reached about 1.27 times as much as the 1985 level in 1996. GDP growth rate of the Industrial sector suddenly increased from 1988 to 1989, exceeding 7%, and suddenly increased from 1994 to 1996 again. Its GDP decreased from 1991 to 1992, but reached about 1.51 times as much as the 1985 level in1996. GDP of the Service sector greatly increased during 1985-1996. It reached about 1.59 times as much as the 1985 level in1996.

Table5.1.1-5 GDP by Industrial Origin (In million pesos : at constant 1985 prices)

Industry	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1 AGRICULTURE SECTOR	140,554	145,725	150,414	155,292	159,964	160,734	162,937	163,571	167,053	171,390	172,844	178,143
Share %	24.6	24.6	24.4	23.6	22.9	22.3	22.7	22.8	22.8	22.4	21.5	21.0
a Agriculture & fishery	131,557	135,486	138,075	144,028	150,694	153,414	158,205	159,385	163,556	168,419	171,317	177,243
b Forestry	8,997	10,239	12,339	11,264	9,270	7,320	4,732	4,186	3,497	2,971	1,527	900
2 INDUSTRIAL SECTOR	200,548	205,164	213,389	232,052	249,175	255,548	248,718	247,384	251,459	265,972	284,504	302,482
Share %	35.1	34.7	34.6	35.2	35.6	35.5	34.7	34.4	34.3	34.7	35.4	35.7
a Mining & Quarrying	11,893	12,313	11,232	11,704	11,389	11,091	10,770	11,495	11,571	10,763	10,681	10,522
b Manufacturing	143,851	146,453	154,604	169,316	179,152	183,925	183,111	179,947	181,289	190,374	203,271	214,613
c Construction	29,037	28,547	31,742	33,235	39,878	41,858	35,285	36,261	38,344	41,774	44,492	49,339
d Electricity, Gas & Water	15,767	17,851	15,811	17,797	18,756	18,674	19,552	19,681	20,255	23,061	26,060	28,008
3 SERVICE SECTOR	230,781	240,534	253,120	271,237	290,309	304,408	304,867	307,986	315,644	329,006	345,518	367,826
Share %	40.4	40.7	41.0	41.2	41.5	42.2	42.5	42.8	43.0	42.9	43.0	43.4
a Transportation, Communication & Storage	31,666	33,075	35,086	37,898	40,243	41,108	41,291	41,870	42,941	44,764	47,366	50,878
b Trade	82,835	86,917	90,038	95,180	102,729	107,428	108,002	109,780	112,479	116,923	123,430	130,247
c Finance	17,123	18,517	21,465	23,845	27,261	29,968	29,114	29,217	29,909	31,546	33,852	38,513
d Ownership of Dwellings & Real Estate	32,132	33,205	34,759	36,691	39,083	40,146	40,242	40,534	41,269	42,473	43,765	45,576
e Private Services	39,121	40,120	42,060	45,301	47,534	49,353	49,273	49,551	50,984	53,159	55,461	58,231
f Government Services	27,904	28,700	29,712	32,322	33,459	36,405	36,945	37,034	38,062	40,141	41,644	44,381
GDP Total	571,883	591,423	616,923	658,581	699,448	720,690	716,522	718,941	734,156	766,368	802,866	848,451

Source: 1997 Philippine Statistical Yearbook, NSCB

Table 5.1.1-6 GDP and Growth Rate of the Philippines by Sector

Year	1985	1986	1987	1988	1989	1990
Agriculture	140,554	145,725	150,414	155,292	159,964	160,734
Growth rate		3.68%	3.22%	3.24%	3.01%	0.48%
Industry	200,548	205,164	213,389	232,052	249,175	255,548
Growth rate		2.30%	4.01%	8.75%	7.38%	2.56%
Service	230,782	240,534	253,121	271,238	290,310	304,409
Growth rate		4.23%	5.23%	7.16%	7.03%	4.86%
Year	1991	1992	1993	1994	1995	1996
Agriculture	162,937	163,571	167,053	171,390	172,844	178,143
Growth rate	1.37%	0.39%	2.13%	2.60%	0.85%	3.07%
Industry	248,718	247,384	251,459	265,972	284,504	302,482
Growth rate	-2.67%	-0.54%	1.65%	5.77%	6.97%	6.32%
Service	304,866	307,986	315,643	329,006	345,518	367,826
Growth rate	0.15%	1.02%	2.49%	4.23%	5.02%	6.46%

Source:1997 Philippine Statistical Yearbook, NSCB

5.1.2 Socioeconomic Situation of the Region

(1) Population

Table 5.1.2-1 Population by Region in 1990 and 1995

Region	1990 (May1)	1995 (Sep1)	Annual Average Growth Rate(%)
NCR	7,948,392	9,454,040	3.30
CAR	1,146,191	1,254,838	1.71
Region1	3,550,642	3,803,890	1.30
Region2	2,340,545	2,536,035	1.51
Region3	6,199,017	6,932,570	2.12
Region4	8,263,099	9,943,096	3.53
Region5	3,910,001	4,325,307	1.91
Region6	5,393,333	5,776,938	1.30
Region7	4,594,124	5,014,588	1.65
Region8	3,054,490	3,366,917	1.84
Region9	2,459,690	2,794,659	2.42
Region10	2,197,554	2,483,272	2.32
Region11	4,006,731	4,604,158	2.72
Region12	2,032,958	2,359,808	2.66
ARMM	1,836,930	2,020,903	1.80
CARAGA	1,764,297	1,942,687	1.82
Others	5,212	2,830	
Philippines	60,703,206	68,616,536	2.32

Source: 1997 Philippine Statistical Yearbook, NSCB

Table 5.1.2-1 shows the population by Region based on censuses. The Subic Bay Freeport belongs to Region3, the Central Luzon Region. The population of Region3 in 1995 is 6,932,570 which is the third largest Region accounting for 10.1% of the Philippine population. Region3 has experienced roughly the same average growth rate of population as in the whole Philippines, 2.12% annually for the period of 1990-1995.

Region3, Central Luzon, includes the provinces of Bataan, Bulacan, Nueva Ecija, Pampanga, Tarlac and Zambales. Population of Region3 in 1990 and 1995 is shown in Table 5.1.2-2

Table 5.1.2-2 Population of Region3 in 1990 and 1995

	1990 (May1)	1995 (Sep1)	Annual Average Growth Rate(%)
Region3	6,199,017	6,932,570	2.12
Bataan	425,803	491,459	2.72
Bulacan	1,505,219	1,784,441	3.24
Nueva Ecijia	1,312,680	1,505,827	2.61
Pampanga	1,532,615	1,635,767	1.31
Tarlac	859,708	945,810	1.80
Zambales	562,992	569,266	0.22

Source: 1997 Philippine Statistical Yearbook, NSCB

(2) GDP

GDP of Region3 in 1996 at constant 1985 prices represents 9.8% of the whole Philippines. Average growth rates of the Region3 GDP are 4.0%(1985-1996) and 5.0%(1994-1996). Historical trend of GDP by region at constant 1985 prices is shown in Table 5.1.2-3

Among the 15 regions, there is more than 7 times difference between the highest NCR and the lowest ARMM of per capita GDP in 1996. The average per capita GDP in the Philippines is 11,801 pesos in 1996 at constant 1985 prices. Per capita GDP of Region3 is about the same as the average in the Philippines. Historical trend of per capita GDP by region at constant 1985 prices is shown in Table 5.1.2-4

Table 5.1.2-3 GDP by Region (In million pesos : at constant 1985 prices)

	Region	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Share in 1996
														(%)
	Philippines	571,884	591,423	616,926	658,583	699,449	720,691	716,523	718,942	734,156	766,368	802,866	848,451	100.0
NCR	Metro Manila	164,246	169,358	180,609	197,266	214,663	221,753	220,972	215,465	216,149	227,348	240,317	256,816	30.3
CAR	Cordillera Administrative			11,342	12,195	13,252	13,549	14,042	13,591	14,637	15,928	16,773	17,638	2.1
Region1	Ilocos Region	25,033	26,947	18,294	19,238	20,435	21,869	21,579	20,344	20,893	22,295	23,958	25,136	3.0
Region2	Cagayan Valley	15,309	15,668	13,087	13,994	14,725	15,548	14,714	13,974	14,460	15,428	16,474	17,007	2.0
Region3	Central Luzon	53,774	54,853	57,459	61,831	64,158	68,250	66,309	70,736	72,955	75,371	78,272	83,149	9.8
Region4	Southern Tagalog	82,615	86,473	90,978	98,333	104,972	109,509	109,844	113,545	114,787	120,155	126,210	133,173	15.7
Region5	Bicol Region	19,366	19,530	18,913	20,103	21,041	21,687	21,734	21,902	22,422	23,087	23,509	24,489	2.9
Region6	Western Visayas	42,418	43,554	44,858	46,699	50,113	50,747	50,451	53,331	55,487	57,050	58,152	61,286	7.2
Region7	Central Visayas	35,754	37,680	39,662	43,107	45,813	47,193	46,971	47,086	47,757	49,663	52,355	56,108	6.6
Region8	Eastern Visayas	16,218	16,057	16,175	17,297	17,373	17,322	17,396	17,088	17,851	18,387	19,286	20,081	2.4
Region9	Western Mindanao	18,561	19,163	19,191	19,569	20,214	21,132	20,773	21,186	20,862	21,125	21,760	22,325	2.6
Region10	Northern Mindanao	32,412	33,239	34,381	35,603	37,313	37,099	37,104	37,345	37,913	39,726	41,615	43,003	5.1
Region11	Southern Mindanao	43,727	45,317	48,383	48,691	49,970	50,074	50,155	48,953	50,671	52,570	53,953	56,301	6.6
Region12	Central Mindanao	22,452	23,582	23,592	24,657	25,407	24,959	24,477	24,396	20,405	20,815	22,271	23,548	2.8
ARMM	Autonomous Region of Muslim Mindanao									6,908	7,420	7,962	8,392	1.0

Source: 1997 Philippine Statistical Yearbook, NSCB

		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Region3	GDP	53,774	54,853	57,459	61,831	64,158	68,250	66,309	70,736	72,955	75,371	78,272	83,149
	Growth Rate %		2.01	4.75	7.61	3.76	6.38	-2.84	6.68	3.14	3.31	3.85	6.23

Table 5.1.2-4 Per Capita GDP by Region (In pesos: at constant 1985 prices)

	Region	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
	Philippines	10,461	10,560	10,756	11,215	11,639	11,722	11,397	11,188	10,961	11,168	11,426	11,801
NCR	Metro Manila	23,660	23,695	24,559	26,090	27,634	27,810	27,020	25,712	24,793	25,493	26,356	27,609
CAR	Cordillera Administrative			10,522	11,066	11,769	11,772	11,941	11,326	11,561	12,271	12,611	12,950
Region1	Ilocos Region	6,414	6,773	5,497	5,675	5,920	6,222	6,031	5,581	5,388	5,638	5,943	6,120
Region2	Cagayan Valley	6,073	6,064	5,695	5,942	6,103	6,292	5,818	5,399	5,591	5,824	6,072	6,129
Region3	Central Luzon	9,856	9,813	10,035	10,546	10,689	11,112	10,555	11,013	10,668	10,763	10,921	11,350
Region4	Southern Tagalog	11,654	11,866	12,150	12,784	13,293	13,511	13,213	13,324	12,477	12,716	13,014	13,372
Region5	Bicol Region	4,938	4,868	4,607	4,789	4,901	4,942	4,847	4,781	5,224	5,258	5,236	5,342
Region6	Western Visayas	8,330	8,364	8,427	8,586	9,020	8,947	8,715	9,032	9,405	9,464	9,448	9,756
Region7	Central Visayas	8,523	8,808	9,093	9,696	10,111	10,224	9,992	9,838	9,464	9,621	9,919	10,406
Region8	Eastern Visayas	5,278	5,132	5,078	5,334	5,263	5,155	5,087	4,909	5,305	5,336	5,468	5,564
Region9	Western Mindanao	6,483	6,544	6,410	6,393	6,462	6,614	6,368	6,362	7,620	7,507	7,530	7,522
Region10	Northern Mindanao	10,199	10,185	10,263	10,356	10,582	10,262	10,012	9,835	9,721	9,917	10,123	10,190
Region11	Southern Mindanao	11,399	11,520	12,000	11,784	11,808	11,554	11,306	10,787	10,169	10,254	10,234	10,390
Region12	Central Mindanao	8,642	8,849	8,632	8,800	8,847	8,484	8,124	7,908	9,021	8,953	9,326	9,607
ARMM	Autonomous Region of Muslim Mindanao									3,439	3,612	3,793	3,916

Source: 1997 Philippine Statistical Yearbook, NSCB

(3) Sector Description

Historical trend of GDP in the Agriculture sector by high ranking regions at constant 1985 prices is shown in Figure 5.1.2-1. Region3 took fifth position in 1985, but it rose to fourth in 1996.

Historical trend of GDP in the Industrial sector by high ranking regions is shown in Figure 5.1.2-2. During 1985-1996 NCR was constantly in first position in the whole region, while Region3 was third.

Historical trend of GDP in the Service sector by high ranking regions is shown in Figure 5.1.2-3. NCR was decidedly in first position in whole region. Region3 took third position in 1985, but dropped to fourth in 1996.

Among the fifteen regions, Region3 was between third and fifth position during 1985-1996 in all sectors.

The trend of GDP by sector and annual growth rates in Region3 are shown in Table 5.1.2-8. According to this figure and table, GDP of the Service sector gradually increased during 1985-1996 though it decreased in 1991. Its GDP reached about 1.39 times as much as the 1985 level in 1996.

GDP growth rate of the Agriculture sector suddenly increased in 1987, 1989 and 1990, exceeding 8.5%. Its GDP reached about 1.60 times as much as the 1985 level in 1996. GDP growth rate of the Industrial sector suddenly increased in 1988 and 1992, exceeding 13%. Its GDP reached about 1.66 times as much as the 1985 level in 1996 while decreasing in 1989 and 1991.

Table 5.1.2-5 GDP and Growth Rate of the Region3 by sector

	1985	1986	1987	1988	1989	1990
Agriculture	11,530	11,920	12,944	13,242	14,463	15,849
Growth rate		3.38%	8.59%	2.30%	9.22%	9.58%
Industry	22,121	22,649	23,570	26,736	26,490	28,379
Growth rate		2.39%	4.07%	13.43%	-0.92%	7.13%
Service	20,123	20,284	20,945	21,853	23,205	24,022
Growth rate		0.80%	3.26%	4.34%	6.19%	3.52%
	1991	1992	1993	1994	1995	1996
Agriculture	16,230	16,237	16,526	17,441	17,491	18,392
Growth rate	2.40%	0.04%	1.78%	5.54%	0.29%	5.15%
Industry	26,495	30,627	31,838	32,394	34,142	36,787
Growth rate	-6.64%	15.60%	3.95%	1.75%	5.40%	7.75%
Service	23,584	23,872	24,591	25,536	26,639	27,970
Growth rate	-1.82%	1.22%	3.01%	3.84%	4.32%	5.00%

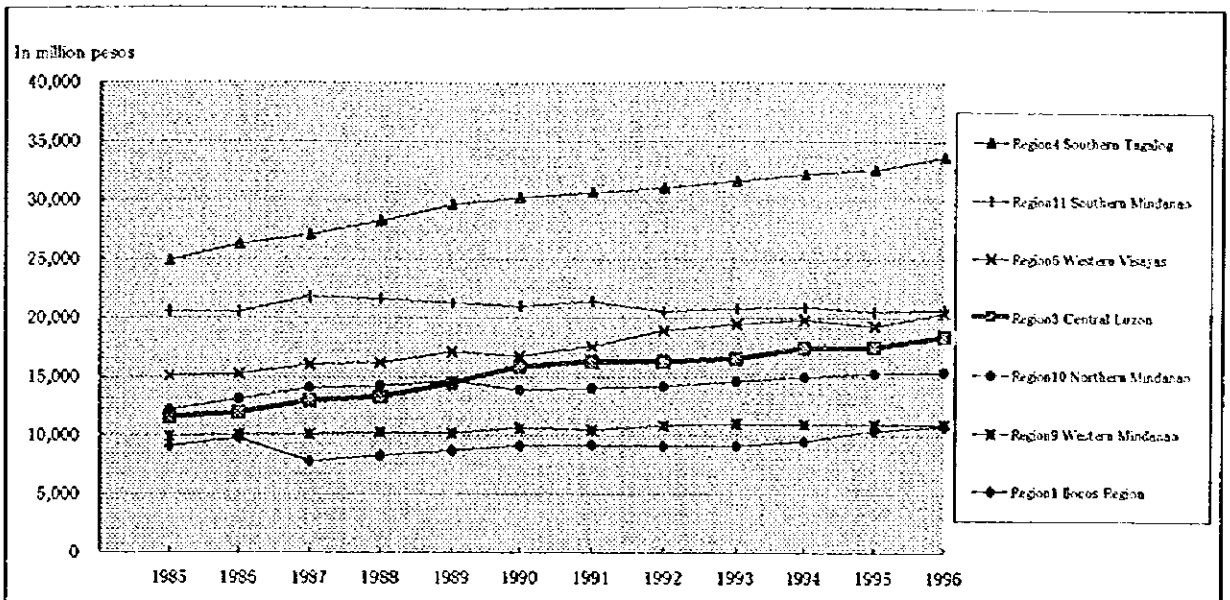


Fig.5.1.2-1GDP of Agriculture Sector by Selected Regions

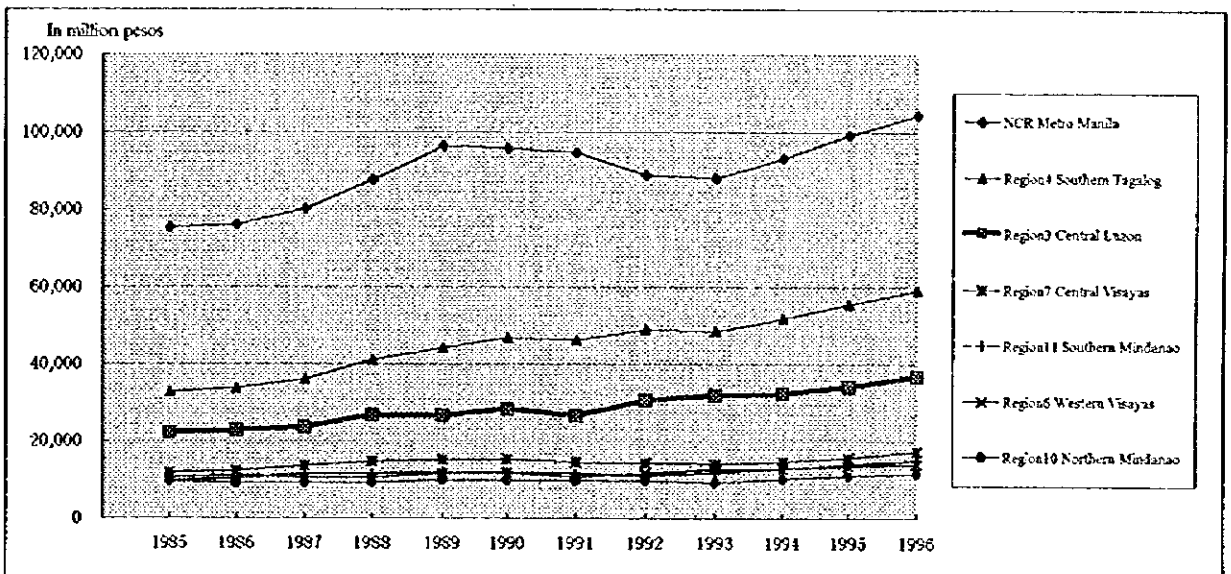


Fig.5.1.2-2 GDP of Industrial Sector by Selected Regions

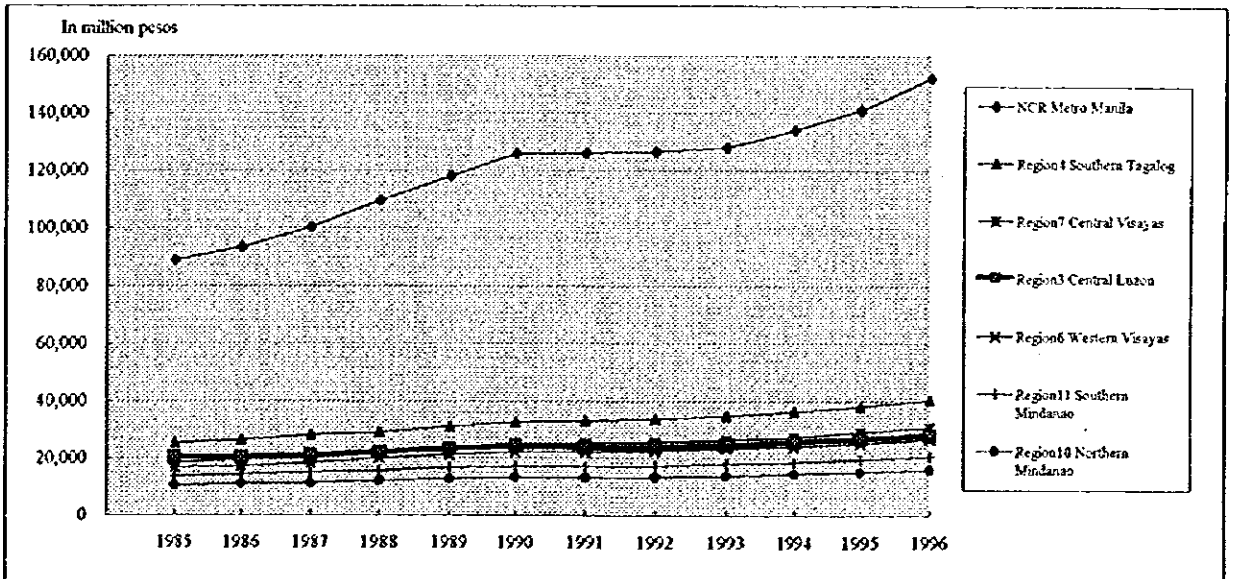


Fig.5.1.2-3 GDP of Service Sector by Selected Regions