

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
THE IMPROVEMENT OF THE WENO HARBOUR
IN
CHUUK STATE,
THE FEDERATED STATES OF MICRONESIA**

July 2006

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In response to a request from the Government of the Federated States of Micronesia(FSM), the Government of Japan decided to conduct a basic design study on the Project for the Improvement of Weno Harbour in Chuuk State and entrusted the study to the Japan International Cooperation Agency(JICA).

JICA sent to FSM study team from February 12 to March 10, 2006.

The team held discussions with the officials concerned of the Government of FSM, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to FSM in order to discuss a draft basic design, and as this result, the present report was finalized.

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

I wish to express my sincere appreciation to the officials concerned of the Government of the Federated States of Micronesia for their close cooperation extend to the teams.

July, 2006

Masafumi Kuroki
Vice-President
Japan International Cooperation Agency

July, 2006

Letter of Transmittal

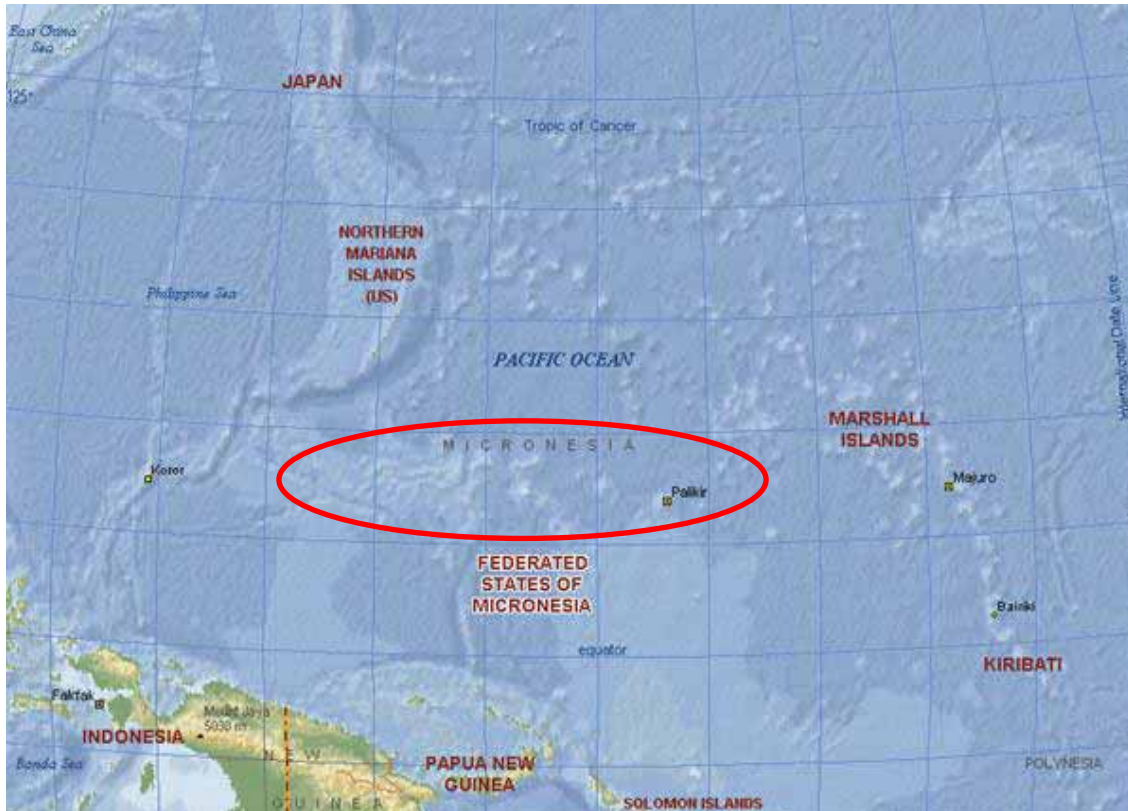
We are pleased to submit to you the basic design study report on the Project for the Improvement of Weno Harbour in Chuuk State in Federated States of Micronesia.

This study was conducted by ECOH CORPORATION, under a contract to JICA, during the period from February 2006 to July 2006. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of FSM and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

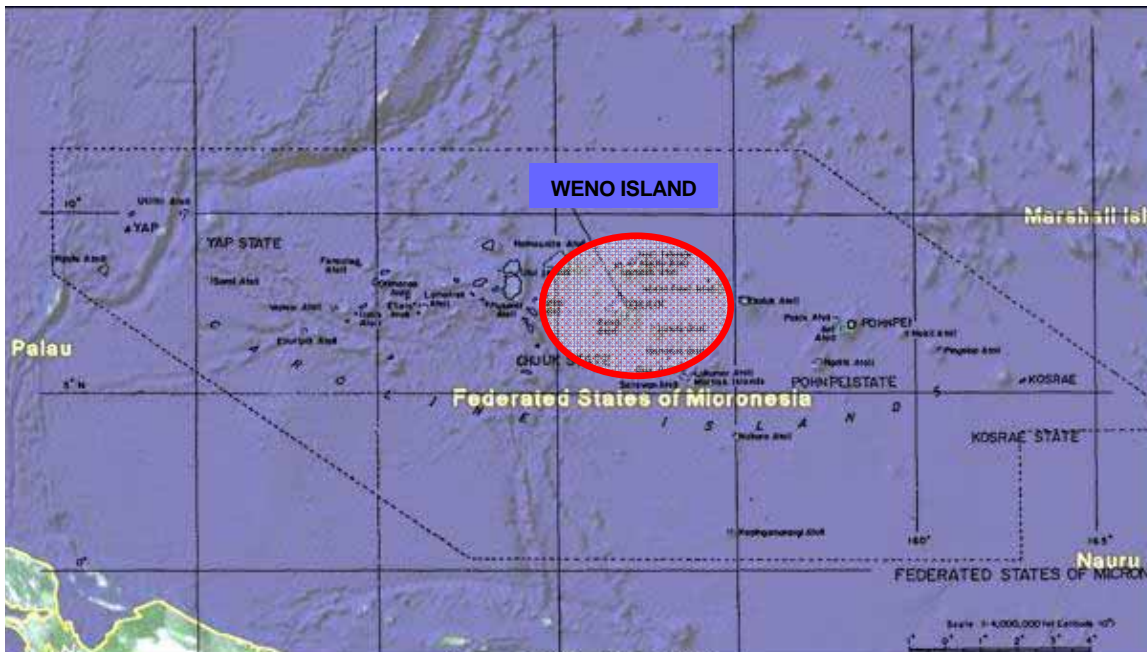
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

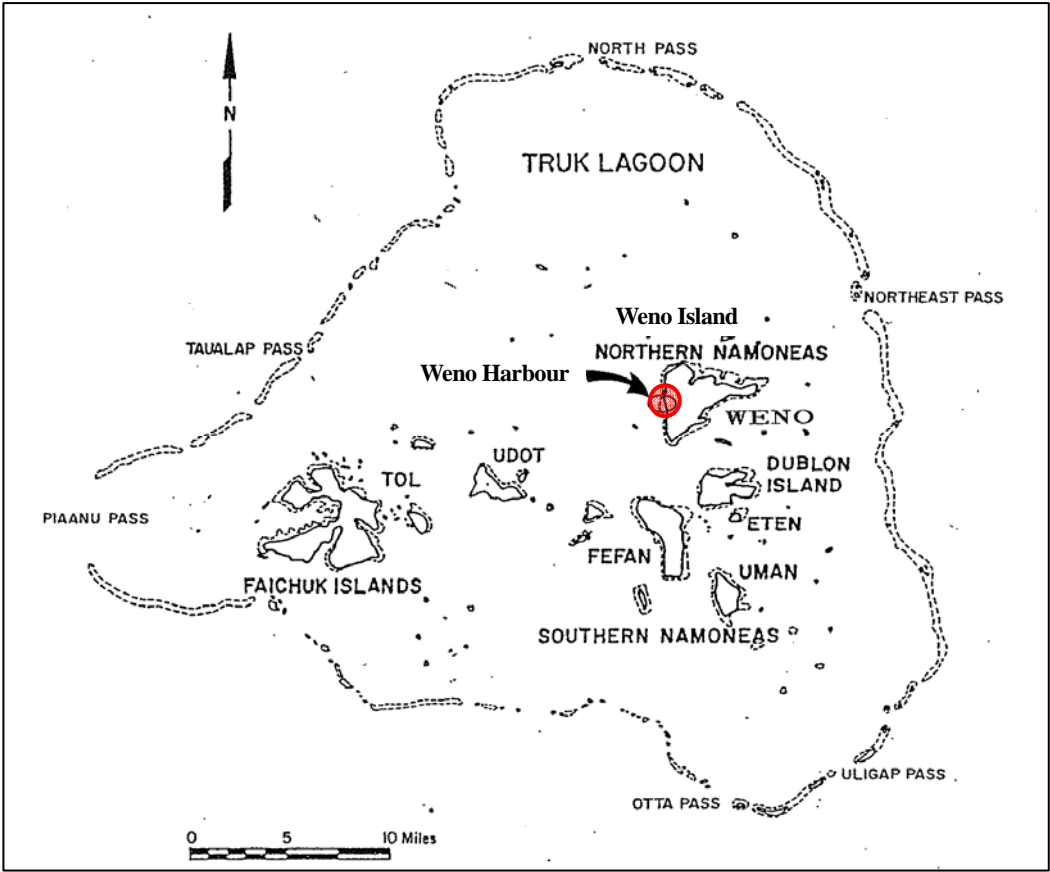
Norio Tanaka
Chief Consultant
Basic design study team on the Project
for the Improvement of Weno Harbour
in Chuuk State in Federated States of FSM
ECOH CORPORATION



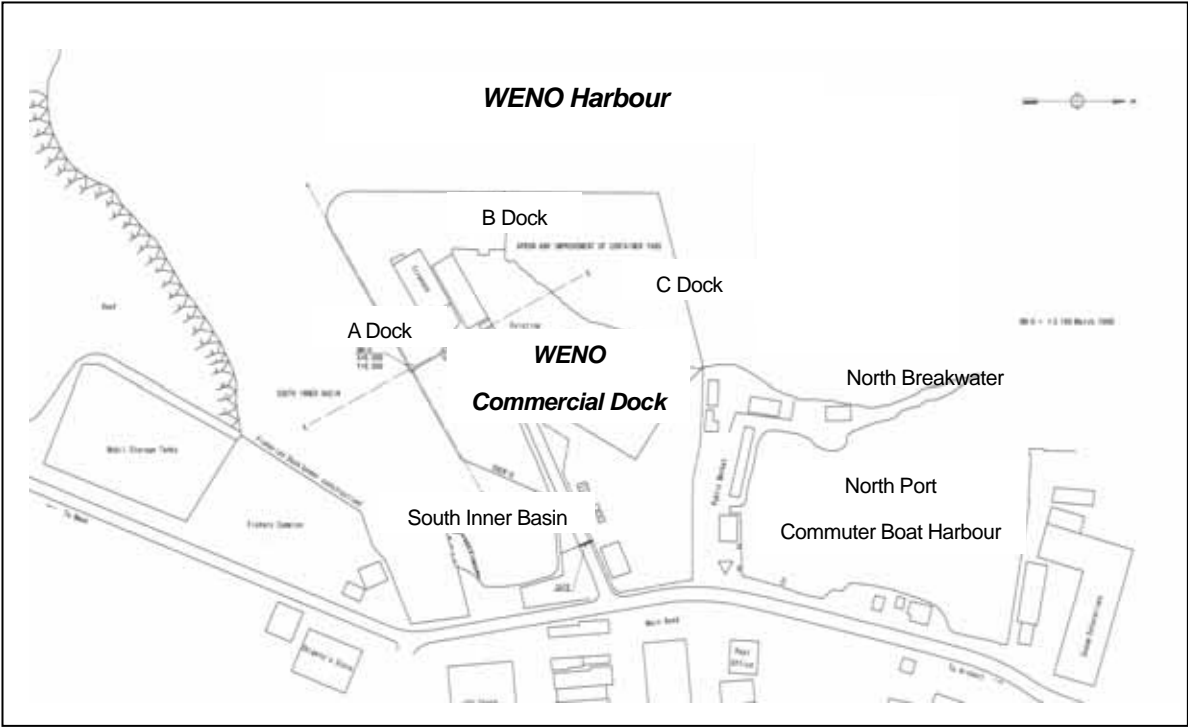
Location of Federated States of Micronesia



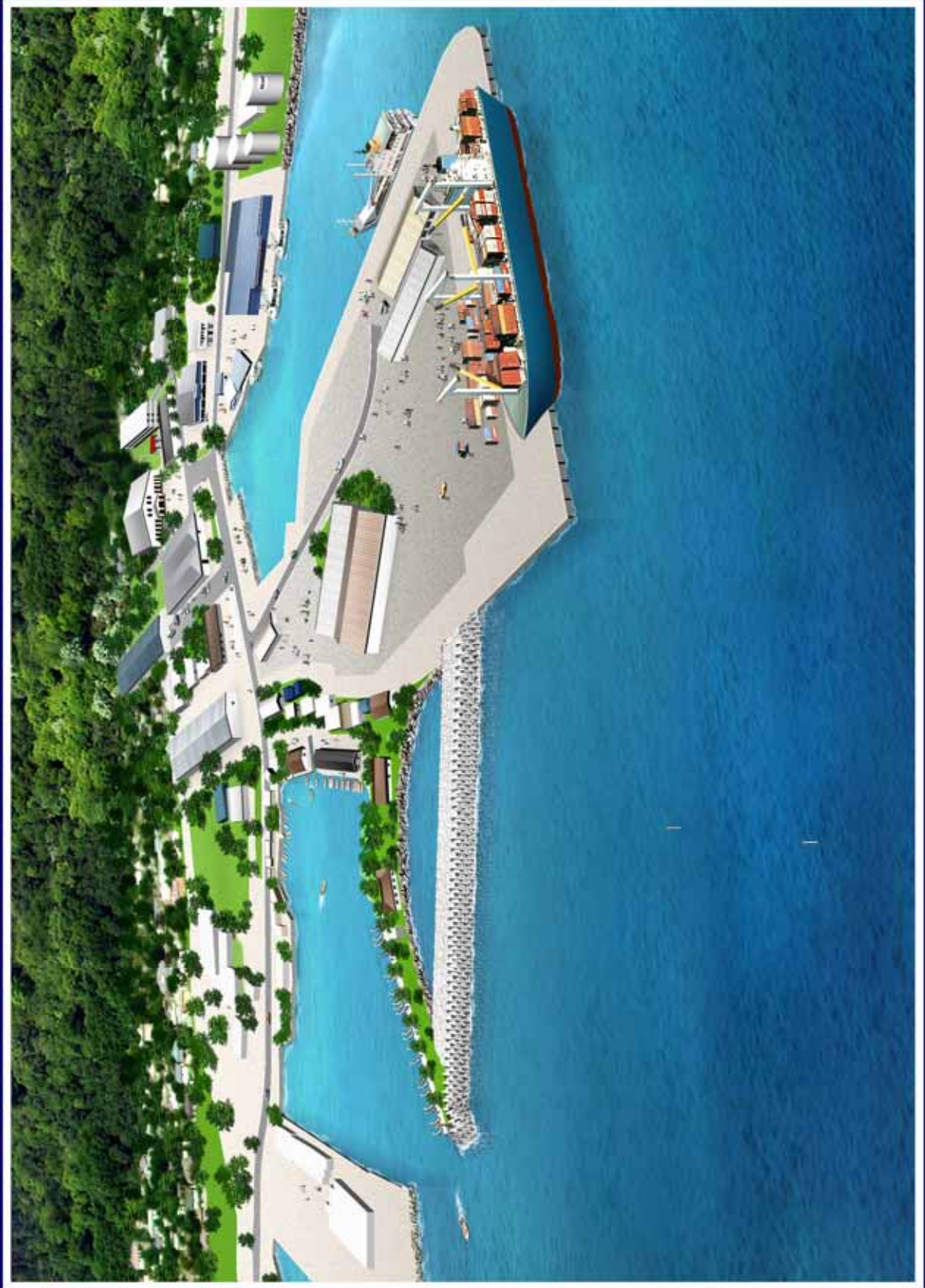
Location of Weno Island



Location of Weno Harbour



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Abbreviations

ADB	Asisan Development Bank
APT	After Peak Tank
BWT	Ballast Tank
CDL	Chart Datum Line
CUPC	Chuuk Public Utility Company
DCD	Department of Conservation and Development
DRD	Department of resources and Development
DTCI	Department of Transportation, Communication and Infrastructure
DW/T	Dead Weight Tonnage
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
E/N	Exchange of Notes
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FOT	Fuel Oil Tank
FPT	Fore Peak Tank
FRP	Fiber Reinforced Plastics
GDP	Gross Domestic Product
G/T	Gross Tonnage
HWL	Mean Monthly-Highest Water Level
JICA	Japan International Cooperation Agency
LWL	Mean Monthly Lowest Water Level
MFA	FSMn Fisheries Authority
MSL	Mean Sea Level
ODA	Official Development Assistance
ps	Metric Horse Power
Ro-Ro	Roll-on Roll-off
SMB	Sverdrup-Munk-Bretschneider's Method
TTC	Truk Transportation Company

Summary

Summary

Federated States of Micronesia (hereinafter referred to as “FSM”) is the typical island country comprised of about 600 islands. The inter islands people’s traffic and the transportation of cargoes including daily commodity very much depend on sea transportation. Therefore, the improvement and enhancement of marine transportation facilities are the key factors to stabilize the price of daily commodities and their supplies. The improvement of the port facilities is highlighted as one of the most important policy in the National Development Plan.

Weno Harbour located in Chuuk State is the base of marine transportation with the functions of international trade to connect among Asia, U.S.A. and Oceania and the function of with domestic feeder transportation among outer islands in the state. In addition, the port plays a very important role of bases for supply of daily commodities and commuters’ boats. The situation shows that the role of the Harbour largely contributes to the economic activities for about 55 thousand people in the State.

However, Weno Harbour has been damaged enormously due to the hit of huge typhoons in 2002. Especially, the typhoon in December at the high tide caused maritime accidents of fishing boats and the cargo vessel at B and C Docks to be sunk in the Harbour. The fishing boat mooring at B Dock, in collision, damaged the upper portion of the dock and most of rubber fenders. She has sunk in front of the dock and has become a big obstacle to the functions of B Dock.

B Dock has been expanded in 1996 as the dock for foreign liners (10,000DWT) but presently it is no use due to the submerged ship as mentioned above. Therefore, A and D Docks are used for handling international and domestic cargoes and passenger traffic, and the port situation has resulted in several constraints of port management. The foreign liners with Roll-on /Roll-off ramps in starboard side, however, are obliged to berth only with her port side to the A Dock because of no tug boat to help maneuvering larger ships. Since the ramp cannot be utilized, all the cargoes are is unloaded with derrick cranes of the vessels. In this regard, the efficiency of cargo handling has been down correlatively with narrow apron width. Such port operation causes the obstacles in port activities such as increase of berthing days and waiting times for berthing.

It is inevitable to improve and recover B Dock promptly in order to resolve these constraints and make good use of the port function.

The basin for small boats located at north side of commercial port (hereinafter referred to as “North Port”) is used by about 80 commuter small boats connecting islands every day. Because of shortage of mooring facilities, not only the port is congested by small boats but also it became impossible to accommodate the inter islands commuter boats. As a result, about 40 small boats in average are illegally moored at so called “south basin” where locates at the inner basin of A Dock. Mixture of boats with different sizes and roles at A Dock causes serious issues in safe port operation. The commuter boats are navigating around large vessels and its operation is faced in danger.

Under such circumstances, the Government of FSM has requested the Government of Japan the assistance under grant aid regarding the improvement of Weno Harbour and others with the following contents.

- 1.Improvement of damaged port facilities
- 2.Recovery of each function of A and B Docks by removing submerged ship in front of B Dock and secure the efficiency of cargo handling at commercial port and the safety at the time of boat moving.
- 3.Construction of mooring facility for small boats in North Port in order to relocate boats illegally berthing at south basin, upgrading port security and secure safety of boats moving.

JICA has dispatched the preliminary study team in order to study utilization status and damaged conditions and analyze the causes of damage and find the proper scopes, policies and so forth as well as related environment and impacts social having the purpose to confirm appropriateness of the request in June and July 2005. As a result, the report was presented that the port improvement is appropriate, identifying the necessity and urgency of prompt recovery of B Dock and provision of mooring facilities for small boats in order to reduce congestion.

Through the results of the preliminary study, the Government of Japan has decided to conduct Basic Design Study and JICA has dispatched the study team with the following schedule.

- (1) Basic Design Study: February 12 through March 10, 2006
- (2) Draft Final Report: June 4 through June 11, 2006

The study team has discussed about the contents of the request with the Government of FSM and the Government of Chuuk State and at the same time, the site survey including present status of commercial port area in Weno Harbour, activities of small boats and visual inspection of submerged ship by a diver. Comprehensive analysis was conducted in Japan after the site survey.

The study clarifies necessity of recovery of comprehensive port functions of Weno Harbour with improvement of the B Dock for improving efficiency of handling cargoes and provision of berthing facilities for small commuter boats for facilitating relocation of these boats from South Inner basin to North Port.

For specifying the contents of the project as above, the study team worked out details such as:

- Location and quantity of rubber fenders at A and B Dock for their replacement, and concrete upper portion of extended B Dock and curbing,
- A size and structure of the new berthing facilities in North Port with the survey result of small boats activities,
- A structure of North breakwater for enhancement, using wave dissipating concrete blocks, and
- A method and its expense for removal of the submerged ship at B Dock without shift of the submerged ship at C Dock, which are decided through examination of urgency, with diving inspection of the appearance and structure of the ship,

As a result, the project components are identified and itemized as follows:

(Commercial Port)

- (1) Replacement of rubber fenders at A and B Docks
- (2) Repair for upper portion of B Dock and curbing
- (3) Removal of the submerged ship at B Dock

(North Port)

- (1) Construction of North Port Seawall(Mooring Facility for small boats) L=85m
- (2) Construction of block mound breakwater L=181m

In case the plan is carried out under grant aid scheme of the Government of Japan, the total construction period will be 18 months. The estimated construction cost will be 718 million Japanese yen being responsible by Japan side and 10,000 US dollars and by recipient country. And the maintenance of port facilities will be repair of port boarder fence and painting of curbing. These are surely carried out by the staff and budget of Department of Transportation and Public Works.

The project will improve B Dock in Weno Harbour and provide the berthing facilities for small boats in North Port. Specifically, the following direct and indirect effects are expected and it is judged appropriate under the grant aid scheme.

Direct Effects

1. The improved B Dock, will accommodate ocean liners of 37 or more.
2. With the construction of mooring facility in North Port, the average number of mooring boats will be increased 40 and become 120 boats.
3. With the recovery of B Dock, the commercial port area will be effectively organized as B Dock for ocean liners and A Dock for domestic cargo boats. Due to the relocation of small boats in the south inner basin to North Port, unsafe operation of boats will dissolve from the south inner basin.
4. With the recovery of B Dock, port time for ocean liners will be minimized from 3 days to 2 days so that cargo handling efficiency will be improved.

Indirect Effects

1. With the function recovery of Weno Harbour, import, export and domestic transportation will be vitalized and contribute to sustainable development of Chuuk State industry.

After completion of the project Department of Transportation and Public Works of Chuuk State will manage and operate the facilities from the view point of efficient use of port facilities with the following recommendation.

- 1) Ships are legally obliged to leave docks and evacuate to offshore at the time of heavy weather or when typhoon hits. The accident happened in 2002 was caused without following the regulations. It is necessary to make a new emergency evacuation system how to promptly evacuate for the anticipating heavy weather as a preventive measure of this kind of accident. And, in order to give alarm with timely manner it is recommended to centralize the authority to director of Department of Transportation and Public Works and it is necessary to have

continual trainings so that the evacuation goes smooth.

- 2) It is necessary to relocate small boats which are now using the south basin to North Port without fail after the completion of improvement of North Port. In order to do so, the ban to go into the commercial port area is definitely necessary and the instruction to the related resident is also necessary.
- 3) Daily maintenance and inspection are to be continued since the port facilities are to be used as to the purpose and function.
- 4) The maintenance and operation is to be done by Department of Transportation and Public Works and the Chuuk State including North Port which will be newly under the control.

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CHAPTER 1

BACKGROUND OF THE PROJECT

1. Background of the Project

Weno Harbour is the only gateway port with Docks for ocean-going ships in Chuuk State and perform a key role of transporting international and domestic cargoes. The facilities in Weno Harbour after the donation of Japanese Grant Aid in 1994 are comprised of the followings:

- A Dock(Old A Dock93m+Extension60m=153m,Water Depth-9m)
:For domestic cargo vessel
- B Dock(Old B Dock91m+Extension92m=Extension about 183m,Water Depth-9m)
: For ocean going vessels
- C Dock(Extension about 50m, Water Depth-5.0m ~ -3.0m)
: For supplementary use and
repair for state owned boats
- D Dock(Extension about 50m, Water Depth-4.5m) : For domestic small boats

However, due to the typhoon casualty in 2002, the apron has damaged and ships in front of Docks have been sunk since then to suspend functions of B and C Docks. As a result, all vessels or boats have been forced to use A and D Docks only.

A Dock was originally planned for domestic cargo boats of about 50m long only when those boats could not be moored at B Dock due to waves from the west. The water area in front of A dock is about 75m only in width. Since no tug boat is available in Weno Harbour, foreign liners without side or bow thrusters have to be maneuvered with care when they use A Dock. The early recovery of B Dock with the turning basin (the diameter is about 400m) is the strong demand of all ship's captains.

Foreign liners with roll-on/roll-off ramps at starboard bow have to berth to portside at A Dock where the ramps cannot be used. The cargoes are unloaded with derrick cranes equipped with the vessel. The handling system increases the port time to require another day in comparison with case of using B Dock. What is worse, port of entry of ocean going vessel and large size of domestic cargo vessel have a priority therefore, small size of domestic cargo boats are happened to wait at offshore. Thus, in order to make port facilities of A and B Docks effectively functioned the B Dock has to be recovered as soon as possible.

North Port, located at north side of Harbour area, is the area for mooring commuter boats without the management by the authority. Regarding the owner ship of the water, north side and about 50% of east side is owned by Mr. Sususmu Aizawa and Mr. Johnny Killion, and the other area is owned by the State Government. And there are private houses even in the state owned land and there remain possible disputes when relocation is required. However, it is confirmed that the Government of Chuuke State will be fully responsible for these issues.

In this water area the residents from outer islands call with small boats(length is about 6m, width is about 1.6-1.8m, the speed is about 40ps) with outboard engine and the maximum about 120 boats are moored on Monday or Friday and very much congested due to lack of mooring place. At this moment, there are many small boats moored in the South Basin of the commercial port area where small boat is legally prohibited to enter and they are at the risk of maritime accidents with larger ships. The state Government has a plan to relocate these small boats to North Port. It is the urgent issue to construct new mooring facilities to secure safe berthing of small boats and people's safety for their getting on and off

there.

Rubble stones (1t/pc) at the west side of North Port breakwater are washed away and the existence of breakwater itself is seemed dangerous. The breakwater of armor stones of about 1 ton, which were installed between C Dock and the breakwater, collapsed due to waves caused by the typhoon in 2002. Therefore, it is inevitable to have a counter measure for corrosion protection together with improvement of inner breakwater in order to maintain the function of North Port.

CHAPTER 2

CONTENTS OF THE PROJECT

2 Contents of the Project

2-1 Basic Concept of the Project

Weno Harbour, located in west coast of Weno Island, plays a key role of state economy for all the people of about 55,000 in the state. However, two boats which berthed in B Dock and C Dock were sunk in front of the docks failing to escape from a typhoon hit in December 2002. In the accidents, concrete curbs and rubber fenders at B and C Docks were very much damaged by the collision of ships. Therefore, the functions of B Dock deteriorated into unhealthy management of the Harbour. At this moment, A Dock for middle size ships is in service for larger vessels in lieu of B Dock. And, it becomes impossible to turn ship near docks so that it takes much time for in and out and becomes big obstacle to handle container cargoes.

Over two hundred small boats with outboard engines call to Weno Harbour every day from outer islands nearby for commute, shopping and so forth. The North Port is used as berthing facility for these small boats. However, North Port has not been maintained so properly that the passengers and the cargoes are always in trouble.

For recovering the functions of the facilities in the Harbour, The Government of FSM requested the Government of Japan to improve the constraints as above.

For recovering the functions of the facilities in the Harbor, the Government of the FSM requested the Government of Japan the implementation of the project under the grant aid scheme.

Implementation of the components in the request letter will enhance promotion of the targets for the sea transportation sector stated in the “ 2004-2023 Infrastructure Development Plan” prepared by the Ministry of Transport, Communications and Infrastructure.

The project objectives and the components requested by the FSM are described as follows:

1) Objectives

“Safe and efficient port management in Weno Harbor”

2) Effects

- Improvement of the Harbor facilities will shorten the time for handling cargoes, and secure safe and efficient operation of ships.
- The provision of berthing facilities in the North Port will enable to remove many small boats irregularly being moored in the South Basin and to resolve the congestion in the South Basin, which will result in safe operation of ships in the South basin.

3) Contents of facilities requested by the government of the FSM

Commercial Port

- Replacement of rubber fenders in A and B Docks
- Repair of the concrete apron: 4,800m³
- Repair of curbing at B Dock

North Port: Facilities for commuter boats

- Floating pontoon: 500m³
- Quay for the boats: 220m
- Revetment: 100m
- Reclaimed land: 10,000m³

- Dredging: 10,000m³
- Building: 400m³

4) Project components under the Japanese grant aid scheme

As the result of the Preliminary Study and Basic Design Study conducted by JICA, the facilities mentioned below are proposed as the project components under the scheme for recovering the port functions terminated by the cyclone and improving the port facilities for commuter boats, considering priorities of the facilities from the viewpoints of importance, necessity and urgency of the port facilities.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Removal of submerged vessels

The main reason that the function as commercial port has been turned down is the existence of submerged ship in front of B Dock. Because of this, in and out of large size vessel and berthing method is badly restricted. It is meaningless to repair berthing facility of Weno Harbour without removal of submerged ship. The removal of the submerged ship shall be a prerequisite to repair berthing facility.

(2) Social Environment

In Chuuk State of FSM peoples have a high awareness of their rights of traditional water concession. Adding to that, there are busy markets around North Port. Therefore, it is necessary to avoid claiming people's private rights and having an impact to their everyday life as much as possible.

(3) Conservation of natural environment

The water quality of the surrounding area of Weno Harbour including North Port is not regarded in good condition due to the influence of human sewage and bilge oil. However, turbidity due to construction work may possibly provide strong negative impacts to the transparent water. Therefore, it is necessary to take enough countermeasures to protect the water environment grow expansion of turbidity.

(4) Natural condition

Weno Harbour is largely surrounded with Truk atolls and protected from big offshore waves. However, there are no breakwaters to protect port facilities in commercial port and fenders to protect a ship's hull and a dock would have bigger loads in rough seasons. In this sense, new fenders which will be installed in B Dock are necessary to have better specification in order to resist for these natural conditions and the application.

The concrete works is the main work in this project. It is necessary to study well for the specification of hot weather concrete and the counter measures of rain falls in the relation with temperature and concrete working. The construction works are not so much affected by wave and

wind in normal condition.

(5) Procurement of equipments and engineers

It is impossible to procure large size construction machineries or tag boats in the domestic market of FSM. The places to procure them must be Japan, Singapore or other countries. Cement as main construction material is rather difficult to be procure in Weno Island when consider the construction schedule and the required quantity. It is recommended to procure them from Japan. The project requires stone materials in big quantity for back filling material of berthing dock for small boats, temporary road and sloping breakwater. But, the maximum available quantity in Weno Island is about 50--70m³ per day only. Therefore, enough quantity of stones transported from Pohnpei by using sand carrier with grab bucket must be considered in order to meet with the schedule and quantity of construction plan.

No reliable sub-contractor to secure quality of the work exists in FSM and also expert engineers are not available locally. So, contractors from Guam. are usually involved in certain scale of construction business if FSM. However, under the plan shifting US Navy Activities from Okinawa, Guam has a lot of construction projects now, therefore there is no contractor to show interest for this project according to investigation of possible construction firms in Guam by the study team

(6) Capability of executing Agency

There is no civil engineer in Sea Transportation Section of Department of Transportation & Public Works of the Chuuk State Government at this moment. However, it is necessary to recruit a master engineer from other departments or sections within the State for executing the project.

2-2-2 Basic Plan (Construction Plan)

The followings are basic concepts for the Improvement of Commercial Port area of Weno Port (extended B Dock and A Dock), the Improvement of North Port revetmentwall and the Removal of submerged vessels.

(1) Repair work for upper portion and car stop in extended B Dock

The upper portion and concrete curbs of extended B Dock have been heavily damaged by typhoon. Especially in the area where the ship is sunk, concrete curbs has been lost and the concrete has been peeled off by collision with ships. When the repair work is conducted, insofar as not to make surface peeling on repair portion nor give damage to sheet pile structure, the upper concrete portion will be chipped (refer to the figure2.2.3-1) and new concrete will be placed after connecting new and old steel bars by welding. A present condition of the dock and the repair area are shown in Photo-2.2-1.



Photo-2.2-1 Existing Condition of B Dock Superstructure

(2) Replacement of fenders in A and B Docks

The serious deterioration and damage of fenders at A and B Docks are found as shown in Photo-2.2-2. Therefore, as proposed in preliminary study and show the result of this report, the specification of fenders will be changed. As a broad range of ships from large to small come alongside to A Dock the interval of fender installation will be 3m with V-300H type. A design ship alongside to B Dock will be 10,000DW/T same as original plan. But the specification of fenders shall be changed since existing fenders are badly wounded with cracking, lacking and so forth. The installation interval of fenders will be 6m with V-500H type here. Existing damaged fenders will be taken out with removing the fixing brackets.



Photo-2.2-2 Existing Condition of Rubber Fenders A Dock and B Dock

(3) Construction of Revetment Wall in North Port

1) Study for Dock structure in North Port

This Dock will be designed considering loading and unloading cargoes from/to small boats and the berthing facility. As securing the safety of passengers the crown height will be +1.0m.

Judging from the result of soil investigation (mainly by N=value) the structure of the quaywall will be steel sheet-pile quaywall.

The stability of the revetment is examined from the engineering viewpoints to finalize the design structure as shown the following figures.

Even steel sheet pile structure of being upright will not significantly increase the wave heights in the basin and secure tranquilly of the basin for the boats, because of low energy of incident waves.

Special consideration to secure safety, convenience and comfort as berthing facility is necessary such as installation of small step at the crest for passenger's convenience, installation of mooring device for small boat berthing or creating shadows by planting for waiting passengers.

2) Setting scale of North Port Revetment Wall

The average number of berthing boats with time zone at south inner basin in week days is about 50, at maximum about 40 boats in average excluding Monday and Friday. Therefore, the number of berthing boat is assumed the number of berthing boats excluded Monday and Friday and decide as 40. Judging from this number of boat and average conditions of small boat (boat width $b=1.8\text{m}$) the Dock length is set as follows.

Small boats is moored vertically to the quaywall. Boats presently berth almost with out no space among boats, however, this plan for safe berthing considers the margin of 0.3m . Required length of quaywall is

$$L=40 \text{ boats} \times (\text{per one boat } B=2.1\text{m (boat width } b=1.8\text{m} + \text{margin width } b'0.3\text{m)}) 84\text{m}=85\text{m}$$

Construction location of Revetment Wall is commenced near submerged ship (concrete ship) where is mounting place of existing inner breakwater of North Port as original point and extend $L=85\text{m}$ to north along with existing inner breakwater.

(4) Wave Dissipating Block in North Port

The revetment with wave dissipating blocks is constructed to protect the coast between the Harbour area and the inner breakwater at the North Port. For preventing the social impacts arising from construction work in the North Port as much as possible, a top surface of the rubble mound will be used for an access road to the site of Revetment Wall work. Final work along the rubble mound is installation of wave dissipating blocks for completion of the revetment. As shown in Figure 2.2.3-5, the cross sectional structure is of mound breakwater with wave dissipating blocks.

The revetment is allocated as illustrated in Figure 2.2.3-6 so as to keep a necessary distance from the wreck in front of C Dock. In the plan, water area will be remained behind the new revetment area of concrete block. Five drainage pipes of 600mm in diameter are laid passing through the concrete blocks in order to urge water circulation between inner and outer waters. Regarding production and installation of concrete block, the installation of silt fence and the periodical monitoring during construction work will be necessary for prevention of occurrence of turbid water and diffusion of the turbidity.

Weight of wave dissipating blocks is calculated using the Hudson formula to obtain the result of 0.9 tf/pc and the weight of the block to be used is 2 tf/pc for the design structure, considering the

allowable stability of the blocks.

(5) Method for the Wreck Removal Work-

1) In front of B-Dock, The Wreck Fishing Vessel

The Wreck in front of B-Dock, "Nein Feioch" was sunk at capsized condition and completely upside down, however, the damage of the Wreck is not serious and each compartment of the ship is kept in good condition and air-tight condition.

Therefore, it is possible to re-float the Wreck by Air-Blow into Holds and compartment, so that the Wreck is able to be towed to the adequate disposal place and make the Wreck sink again.

2) In front of C-Dock, The Wreck of Cargo & Passenger Vessel

On the other hand, Cargo & Passenger Vessel "Micro Dawn", located in front of the C-Dock, was laying 90 degrees turned-over condition. Therefore, it is not physically possible to make her re-float by Air-Blow, because it is impossible to make the Wreck in air-tight condition. In view of the foregoing reason, the Wreck be re-floated by large floating crane to lift the Wreck one time and/the wreck should be scrapped into small pieces, which will be made after lifting blocks of the hull cut underwater.

C-Dock was constructed in 1994 ,for accommodating smaller boats while the B-Dock Expansion Program was carried out. Therefore, the necessity for the Wreck removal concerned, the superiority is less than the Wreck at the B-Dock. However, we will consider/examine the outcome of the inspection of C-Dock Vessel for the Wreck Removal method as well as the B-Dock Vessel.

3) Treatment & Handling of Hazardous & Noxious Substance

As per agreement at the tome of the Inspection of the Wrecks, the Japanese side will remove fuel/oil remained in the Wreck and will deliver to the shore-tanks arranged by the Japanese side as much as possible. The FSM side will arrange disposal of the fuel/oils.

Through the Report at the time of sinking of the Wrecks, the volume of the oils remain on board of the both Wrecks are almost get in hand. The Japanese side will remove the fuel/oils as much as possible. However, during the removal works and/or after disposal of the Wreck at the planed location, some oil leakage will be inevitable.

It will be necessary to have a agreement between the Japan and the FSM that the any claim, if any, to be settled by The FSM at their time, cost and responsibility.

4) Advice for Wreck Removal Plan

The condition of the Wreck reported herewith are as is where is current situation of the wreck, and there remains a slightly possible change of the situation due to the typhoon season this summer before contemplated wreck removal schedule.

Therefore, it will be essential to carry out re-inspection of the Wreck at the detail design stage.

2-2-3 Basic Design Drawing

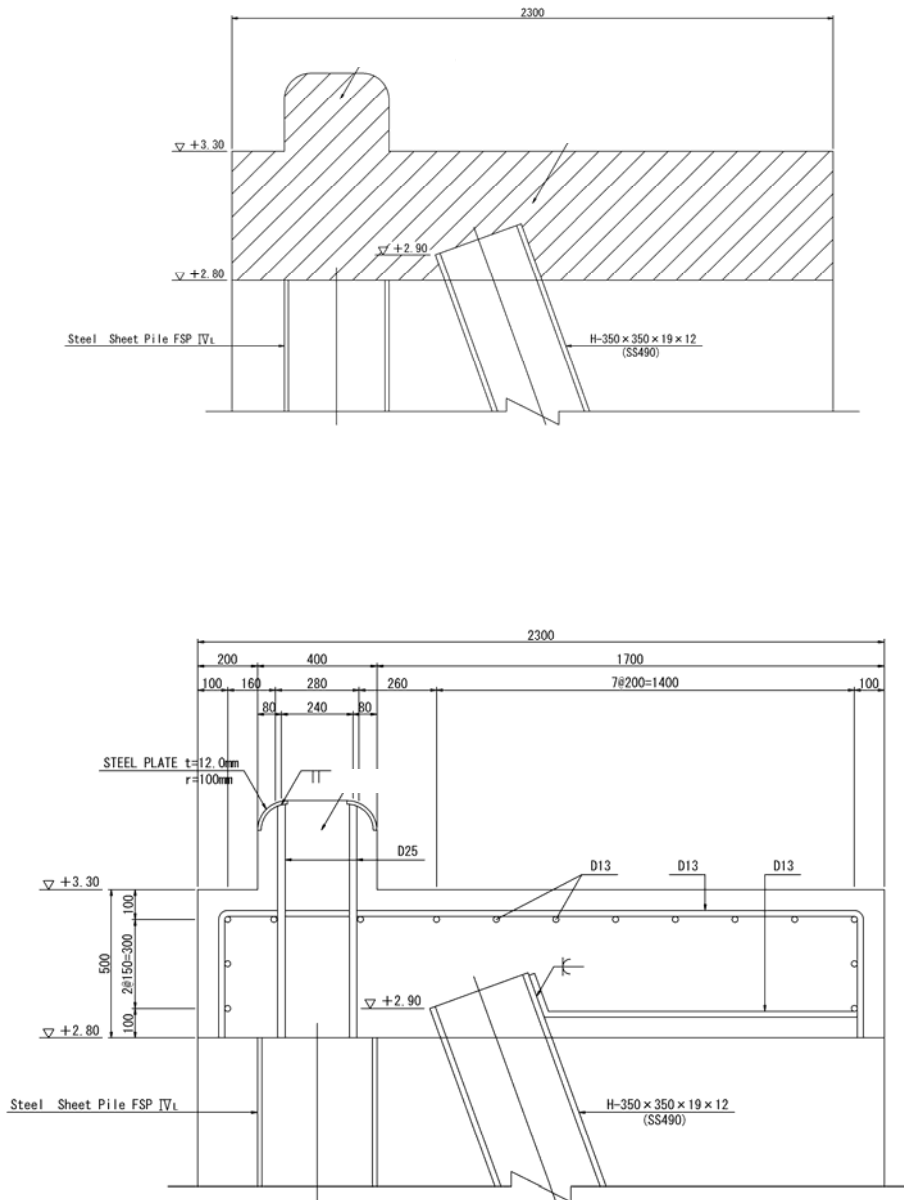


Figure-2.2.3-1 Detail of Coping Concrete of Extended B Dock

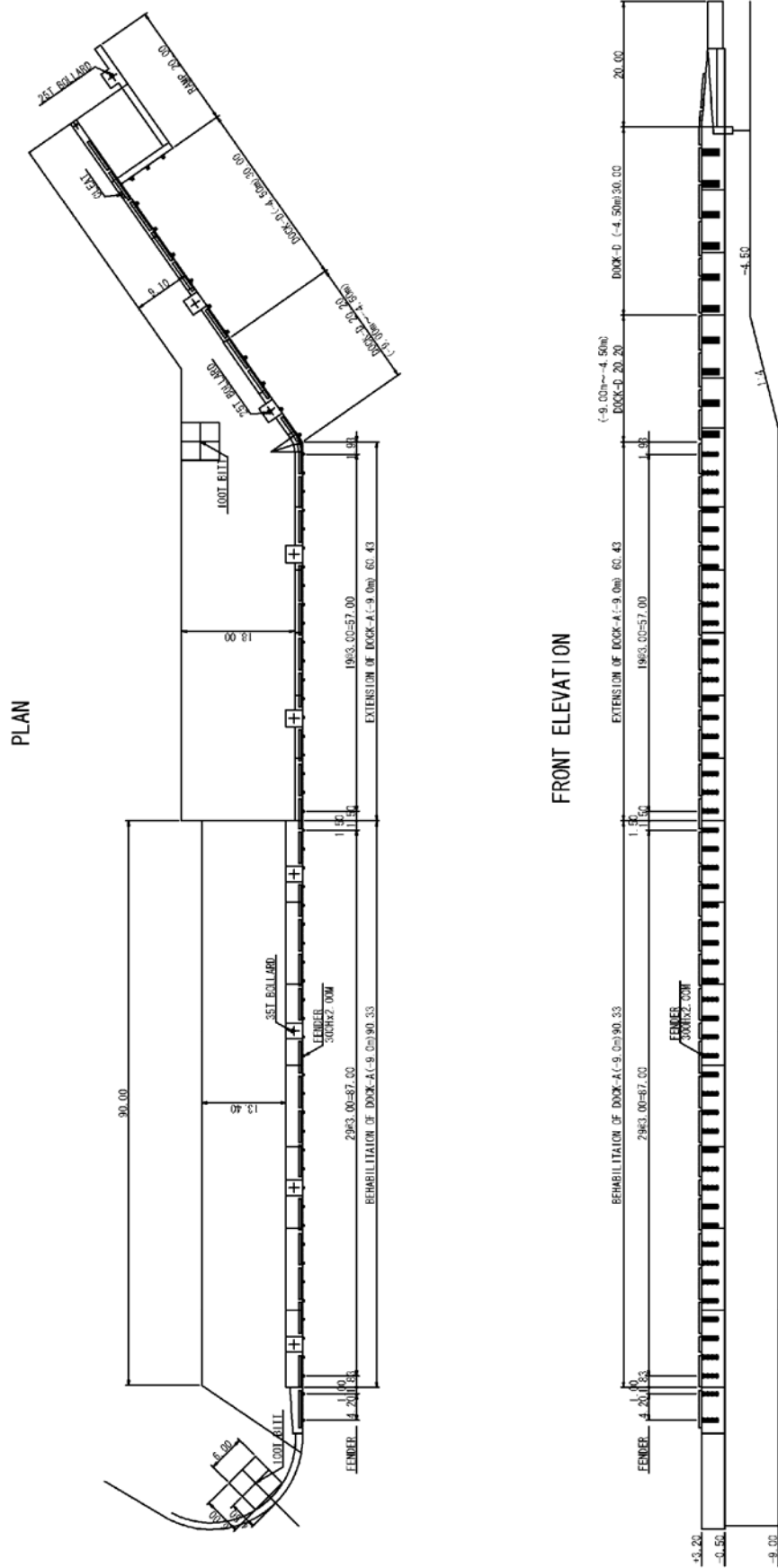


Figure-2.2.3-2 Plan of Improvement of Rubber Fender : Existing A Dock

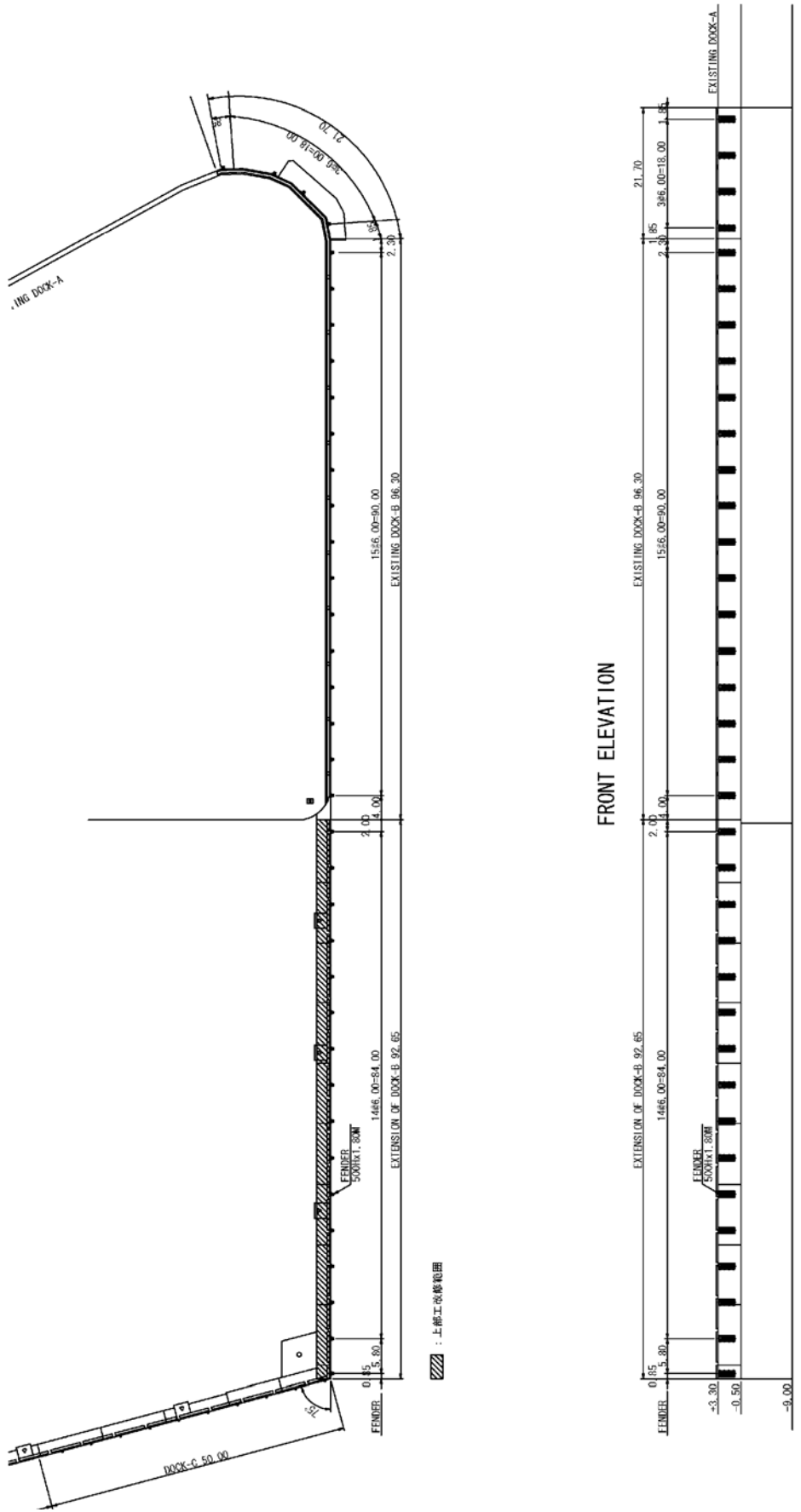


Figure-2.2.3-3 Plan of Improvement Rubber Fender : B Dock

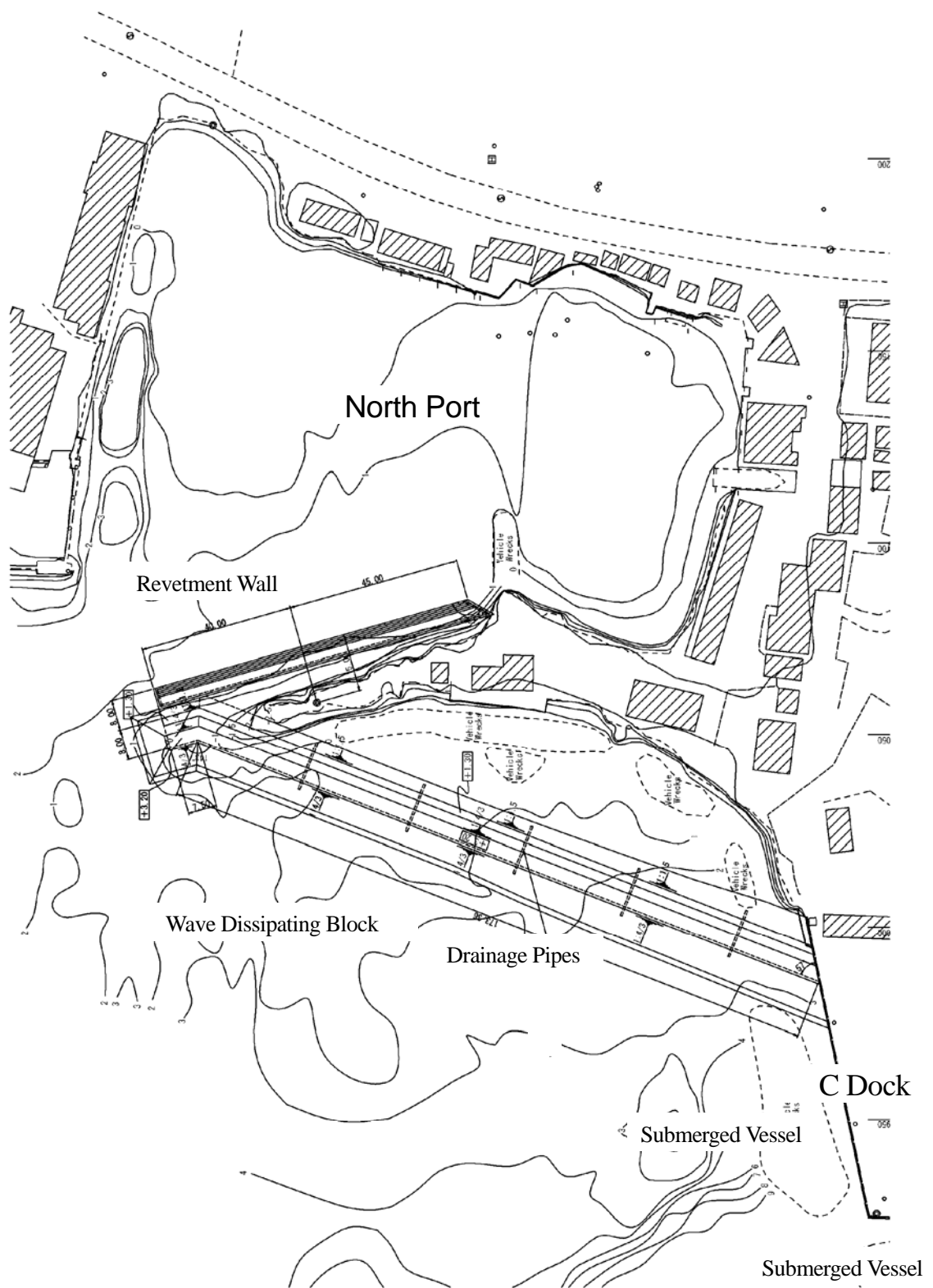


Figure-2.2.3-4 General Layout Plan of North Port

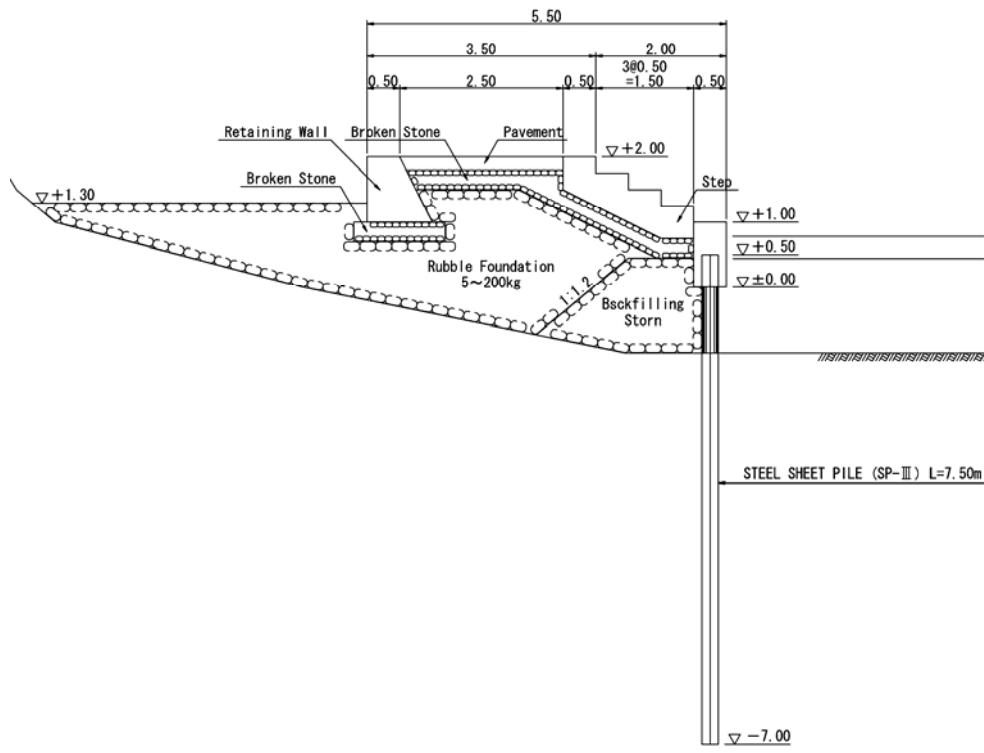


Figure-2.2.3-5 Typical Cross Section of Revetment Wall

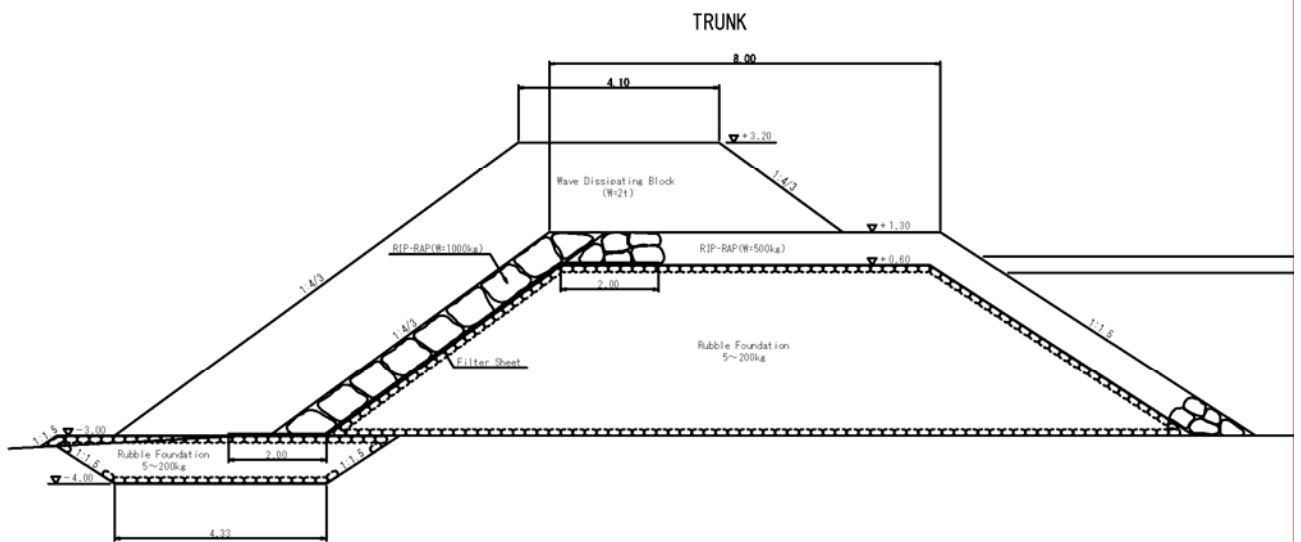
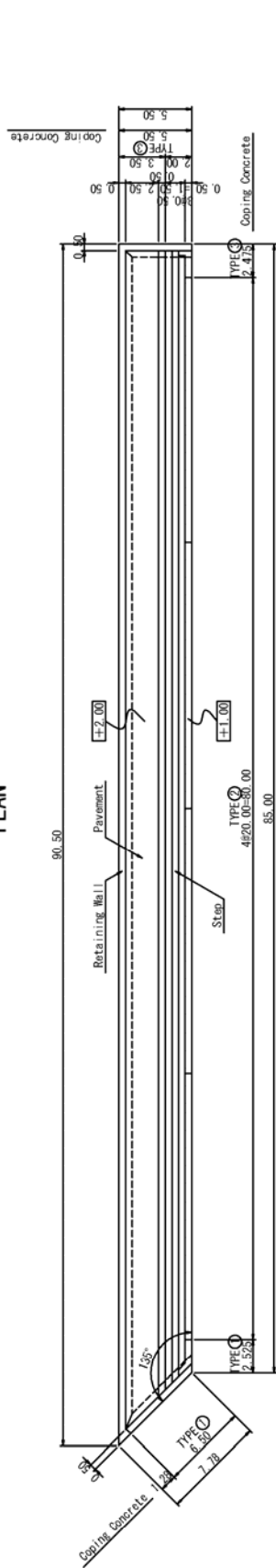


Figure-2.2.3-6 Typical Cross Section of Wave Dissipating Block

PLAN



FRONT ELEVATION

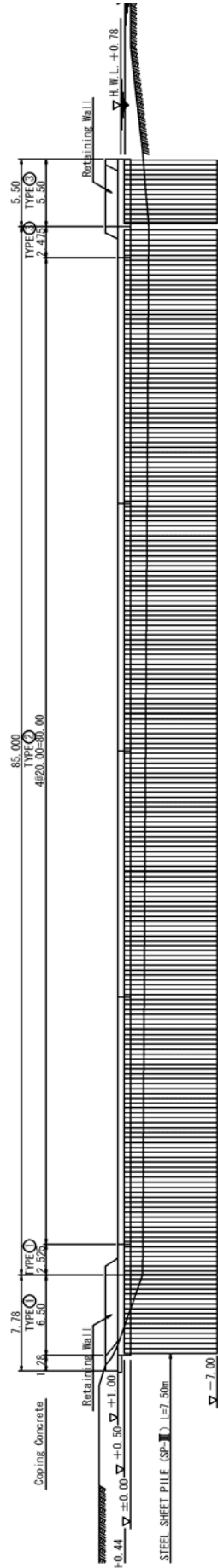


Figure-2.2.3-7 Steel Sheet Pile Arrangement

2-2-4 Method for the Submerged Vessel (hereinafter: Wreck) Removal Work

Based on the outcome of the inspection of the Wrecks, a plan for removing the two Wrecks are discussed below,

2-2-4-1 Fishing Vessel in front of B-Dock / Removal Plan

The captioned Wreck is laid on the seabed in a upside down condition and cabins/compartment of the Wreck are in good condition for the “air-tight”; therefore the vessel will be re-floated it will be also removed with several options for removal of the wreck are proposed such as:

- a) To re-float the wreck by air-blow and toe away for disposal
- b) To lift the whole wreck with a large floating crane.

A prepare removed method is proposed through the following examination of the options.

(1) Removal Lifting the whole Wreck

1) Estimate weight of the Wreck

$$\begin{aligned} \text{Weight of the Wreck} &= \text{Length} \times \text{Breadth} \times \text{Depth} / Wf (6,55) \\ &= 64.48 \times 10.7 \times 8.25 / 6.55 = \text{about } 870 \text{ tons} \end{aligned}$$

2) Floating Crane required capacity

$$\begin{aligned} \text{Weight of the Wreck } 870\text{tons} &< \text{Lifting Capa. More than } 1,000\text{tons} \\ &\text{Revolving Floating Crane} \end{aligned}$$

3) Fleet / Schedule for the Wreck Removal

- i) Work Mother Vessel (Transport personnel/equipment): *from Japan
- ii) 1,000tons Revolving Floating Crane+Anchor-Boat+Barge: from Japan

The center of the gravity of the Wreck will be changed time to time when lifting of the Wreck. due volume of the water in side changed time to time.

Therefore need to use Revolving Floating Crane to follow change of the center of the gravity.

iii) Work Schedule

Mother Vessel to complete preparation	F.Crane to arrive	start work
- Mother Vessel Mob&De-Mob: Japan/Weno/Japan	7-days x 2	= 14days
- Wreck removal work on site		= 20days
		Total 34days
- F>Crane Mob&De-Mob: Japan/Weno/Japan	16-days x 2	= 32days
- Wreck removal work on site		= 10days
		Total 42days

(2) Removing the Wreck by cutting into pieces

1) Numbers of the pieces to be cut (numbers of blocks)

$$\text{Numbers of Blocks} = \text{Hull Weight} / 10\text{tons per Block} = 870 / 10 = 87\text{-pieces}$$

2) Fleet and Work Schedule

- i) Mother Vessel (transport personnel and equipment)

ii) Work Schedule

$$\begin{aligned} \text{- Cutting Blocks} &= 2\text{days per Block} \times 87\text{-pieces} &&= 174 \text{ days} \\ &\text{Including underwater cutting by divers/removal} \end{aligned}$$

- Mother Vessel Mob/De-Mob Japan/Weno/Japan 7days x 2 = 14 days

Total 188 days

(3) Re-floating the Wreck by Air-Blow

1) The method is to make the Wreck re-float by Air-Blow into the each compartment of the Wreck as per following volume of the air, and subsequently tow away to the intended disposal place for the sinking. Through the Inspection, it is found that the following volume of the air are able to be blown into each compartment.

Table-2.2.4-1 Volume of air for Air-Blow

Location	Frame No.	LxBxH(m)	m ³
Fish Hold P&S	No.30-34	2.4x4.4x4.4 (P&S)	92.928 m ³
Fish Hold P&S	No.34-40	3.6x4.4x4.4 (P&S)	139.392 m ³
Fish Hold P&S	No.40-46	3.6x4.4x4.4 (P&S)	139.392 m ³
Fish Hold P&S	No.46-52	3.6x4.4x4.4 (P&S)	139.392 m ³
Fish Hold P&S	No.52-58	3.6x4.4x4.4 (P&S)	139.392 m ³
Fish Hold P&S	No.58-65	4.2x4.4x4.4 (P&S)	162.624 m ³
Fish Hold P&S	No.65-72	4.2x4.4x4.4 (P&S)	162.624 m ³
Fish Hold P&S	No.72-79	4.2x4.4x4.4 (P&S)	162.624 m ³
Fish Hold C	No.79-85	3.6x10.7x4.4 (C)	169.488 m ³
Sub Total			1,307.856 m ³
B.W.T. (P&S)	No.36-46	9.6x5.35x1.35(P&S)	138.672 m ³
B.W.T. (P&S)	No.46-65	11.4x5.35x1.35(P&S)	164.673 m ³
B.W.T. (P&S)	No.65-85	12.0x5.35x1.35(P&S)	173.340 m ³
A.P.T ©	No.5-1	3.4x6.55x1.67 (C)	37.191 m ³
F.O.T. (P&S)	No.2-12	4.4x6.00x5.73(P&S)	101.200 m ³
F.P.T (P&S)	No.95-FP	4.96x8,14x5.73 (C)	77.384 m ³
Sub Total			692.460 m ³
Total			2,000.316 m ³

* Total about 2,000 m³ air to be air-blown and equivalent to buoyancy of 2,050 tons, which is more than weight of the Wreck.

2) Towing & Disposal of the Wreck

After the Wreck is re-floated, the Wreck will be towed to the place where the Chuuk State Government approved and dispose/sink the Wreck.

3) Fleet and Schedule for the Wreck removal

Mother vessel: Japan / Chuuk /Japan Mob&De-Mob 7days x 2 = 14 days

.....Preparation/re-float/towage/disposal.....30 days

Total 44 days

4) Undertaking to be taken by the Government of Chuuk State

- i) The contractor shall be responsible for handling oil remained on board until removal onto shore tanks, and disposal to be arranged by the Chuuk State Government shall dispose treat oil.
- ii) If any, after the disposal/sinking of the Wreck, The Chuuk State Government shall carry out cleanup oils at their time, cost and responsibility in case of oil from the wreck of the its disposal.

5) Comparison of the costs per methods and selection of the method

Comparison of the cost per method are shown as follows:-

Table-2.2.4-2 Remove the Wreck by one-piece by Floating Crane

FLEET	QTY	COST (Million Yen)	NOTE
- Mother Vessel	34 days	58	
Fuel	625 KL	35	25 days
SubTotal		93	
- 1,000tons F. Crane	42 days	210	excluding Fuel
- 4,000HP tug for F. Crane	42 days	63	excluding Fuel
- Anchor Boat	42 days	24	excluding Fuel
- Barge	42 days	76	excluding Fuel
- Tug	42 days	126	excluding Fuel
- Fuel	1,400KL	77	35 days
- Preparation and restoration	a set	60	
- Cost on site		60	20 days
Sub Total		696	
- Administration		81	
Total		870	

Table-2.2.4-3 Remove the Wreck by cutting the Hull into Blocks

FLEET	QTY	COST (Million Yen)	NOTE
- Mother Vessel	188 days	320	
Fuel	750 KL	41	30 days
Sub Total		361	
- 100tons CrawlerCrane	174 days	35	
- Salvage Master	174 days	17	
- Diver (3)	1,044 days	84	2 teams
- Gas Cutter	174 days	10	including equipment
- Salvage Hand	522 days	26	including equipment
- Salvage Manager	174 days	9	
Sub Total		181	
Total		542	

Table-2.2.4-4 Remove the Wreck by re-floating / Air Blow

FLEET	QTY	COST (Million Yen)	NOTE
- Mother Vessel	44 days	72	
Fuel	375 KL	20	15 days
Sub Total		95	
- Cost on site	30 days	45	
- Administration		10	
Total		147	

2-2-4-2 Cargo & Passenger Vessel in front of C-Dock/ Removal method

The Wreck was turned over 90 degrees and damage to the hull is not serious, however, two Holds are open exposed to air and not possible to make the hull air-tight condition for Air-Blow method, therefore air-blow method is not applicable. The other two methods discussed previously are examined for the above vessel.

(1) Wreck Removal by one piece

1) Estimation for the light weight of the Wreck

Estimate weight of the hull through examination of the similar type of the Vessel concerning the light Draft and Block-co-efficiency as follows:-

Estimated Light Draft : 1.31 m

Estimated Block co-efficiency : 0.692

Light Weigh = Length x Breadth x Light Draft x Co-efficiency x seawater gravity
= 50.6 x 9.0 x 1.31 x 1.025 = about 500 tons

2) Required capacity of Floating Crane

Light Weight about 500tons < 1,000tons capacity Revolving Floating Crane

3) Fleet and Schedule of work

i) Mother Vessel for transport personnel/equipment : procure from Japan.

ii) 1,000tons Revolving Floating Crane+Anchor Boat+Barge: procure from Japan.

* Center of the Gravity of the Wreck will be change time to time during lifting work due to the change of weight, therefore Revolving Crane to be employed.

4) Work Schedule

Preparation of work by Mother Vessel F.Crane on site commence work

Mother Vessel: Mob/De-Mob Japan/Weno/Japan 7days x 2 = 14 days

Wreck Removal on site 20 days

Total 34 days

F.Crane : Mob/De-Mob Japan/Weno/Japan 16 days x 2 32 days

Wreck Removal on site preparation/lifting/towage 10 days

Total 42 days

(2) Wreck Removal by cutting the Wreck into Blocks

1) Numbers of Blocks to be cut

No. of Block = Weight of Wreck / 10tons per block = 500tons / 10 tons = 50 Blocks

2) Fleet and Schedule

i) Mother Vessel to transport personnel and equipment : procure from Japan

ii) Schedule

Cutting = 1.4day per Block x 50-Blocks = 70-days including cutting/removal by Divers

-Towage of Mother Vessel: Mob/De-Mob Japan/Weno/Japan 7-days x 2 = 14days

- Removal / Preparation/ Cutting / Remove to shore : 70days

Total 84days

(3) Comparison of the costs per methods

Comparison of the cost per method are shown as follows

Table-2.2.4-5 Remove the Wreck by one-piece by Floating Crane

FLEET	QTY	COST (Million Yen)	NOTE
- Mother Vessel	34 days	58	
Fuel	625 KL	35	25 days
	Sub Total	93	
- 1,000tons F. Crane	42 days	210	excluding Fuel
- 4,000HP tug for F.Crane	42 days	63	excluding Fuel
- Anchor Boat	42 days	24	excluding Fuel
- Barge	42 days	76	excluding Fuel
- Tug	42 days	126	excluding Fuel
- Fuel	1,400 KL	77	35 days
- Preparation and Restoration	a set	60	
- Cost on site		60	20 days
	Sub Total	696	
- Administration	81		
	Total	870	

Table-2.2.4-6 Remove the Wreck by cutting the Hull into Blocks

FLEET	QTY	COST (Million Yen)	NOTE
- Mother Vessel	84 days	143	
Fuel	750 KL	41	30 days
	Sub Total	184	
- 100tons Crawler Crane	70 days	140	
- Salvage Master	70 days	6	
- Diver (3)	420 days	34	2 teams
- Gas Cutter	70days	4	including equipment
- Salvage Hand	240 days	12	including equipment
- Salvage Manager	70days	4	
	Sub Total	201	
	Total	384	

2-2-5 Implementation Plan

2-2-5-1 Implementation Policy

(1) Basic concept of the Project Implementation

For implementation of the Project, after signing of the Exchange of Notes (E/N) between the Government of Japan and the government of the Federated States of FSM, a contract for undertaking consulting services will be concluded between the Government of Japan and the Government of Federated States of FSM.

The consulting firm will prepare all documents required for the tender and conclusion of the contract such as the drawings of the project facilities, technical specifications, cost estimates and so forth. After the approval of these documents by the Federated States of FSM, the contractor will be selected from among Japanese construction firms by examining the pre-qualifications and tender procedures.

The construction work will be performed by the selected construction firm, in accordance with the construction contract concluded by the Government of Federated States of FSM and the construction firm.

(2) Concept of Implementation

1) Consideration of Port Traffic in Operation

It is noted that the Project will be executed for improving the facilities at the North Port area for safe anchorage of commuter boats between Weno Commercial Harbour and outer islands in the State. The construction work should be implemented on the basis of the execution plan with utmost care not to impede passenger traffic, navigation of vessels and cargo handling during the construction work for the Project.

2) Preservation of Environment

Since the project site is located near the urban area, the seawater is contaminated by wastewater, etc. from the city. Necessary measures will be taken to prevent additional contamination of the seawater by the turbidity from dumping rocks and soil for the work of revetment wall and reclamation. Oil fence will also be installed for prevention of remaining oil in the sunken boats at the project site.

In addition to the above, noises and dusts will be minimized, using appropriate construction machinery with soundproofing effects, etc.

3) Procurement of Construction Items and Labor Force

The necessary construction machinery will be mainly procured from the Japanese market, because:

- Required quantities and high quality of construction machinery are not available locally, and
- There already remains very rare availability of the machinery in Guam due to expected enlargement of construction markets in shifting US Navy Activities from Japan to the island.

The divers and fleet for the salvage of the wrecks will be procured in Japan.

(3) Executing Agency in the Government of FSM

The executing agency of the Project on the part of the Government of Federated States FSM will be as follows:

1) Responsible agency for tender

Department of Foreign Affairs, the FSM Government

2) Responsible agency for project implementation

Department of Foreign Affairs, FSM Government

3) Responsible agency for supervision of construction work

Department of Transportation and Public Works, the Chuuk State Government

4) Management authority after completion of the project

Department of Transportation and Public Works, the Chuuk State Government

2-2-5-2 Implementation Conditions

(1) Conditions for construction

1) Construction companies

There are small-scale construction companies in Chuuk State, however, they are not capable to execute the major project work on land and marine work as a main contractor. They seem to be subcontractors of the Japanese firm.

2) Construction machinery

The local construction companies in Chuuk State own old machinery for land work with small capacities in bad conditions. Salvage machinery for wrecks as a crawler crane with 50t capacity, etc. will be brought from Japan.

3) Construction materials

The materials for the project will be rocks and cement for improvement of the B Dock, concrete armor blocks and approach roads. Other materials will be steel sheet piles, rubber fenders, etc. for construction of the revetment wall for anchorage of small boats.

Almost of the necessary rocks will be transported from Phonpei since low production of rocks in Chuuk between 50 and 70 cubic meters will not meet the required quantity of about 13,000 cubic meters. Other materials as above will be procured from the Japanese market.

4) Labor

Japanese supervisors for the skilled labor will be required for driving steel sheet piles, manufacturing and installing concrete armor blocks and leveling rubble rocks. Skilled laborers from Philippine, etc. will be required for improving the productivity of the work as welding work.

5) Safety Control Management

In order to maintain the regular ships navigation and port operation during the construction period for the project, the measures for safety management is outlined as follows:

a) Construction yard

Project identification boards, safety bulletin boards and fences will be installed for keeping the third party out of the construct site. Some traffic control men will be at the entrance of the job

site and security guard men will be stationed on a 24-hour basis at the stockyard of construction materials.

b) Marine work

The necessary buoys on the sea for showing the boundary of the construction area for the facilities should be installed for securing safe navigation of commuter boats using the North Inner Port and other vessels moving around the area.

(2) Conditions for implementation

1) Protection of turbidity

The quality of seawater at the project site is contaminated due to flow of domestic wastewater and bilge water from vessels. A set of silt protection curtain, etc. will be installed for preventing further contamination of the water from turbidity caused by dumping rocks and soil for reclamation,

2) Contractor

The contractor from Japan will establish a temporary work plan, an execution plan and a work schedule that will satisfy the natural and marine conditions in the project site.

Assignment of Japanese staff as engineers in the construction period will be determined to meet the schedule.

2-2-5-3 Scope of Work

The scope of work allocated to the Government of Japan and the Government of FSM are as follows.

(1) Scope of Work Undertaken by the Government of Japan

[Commercial Harbour and North Port]

- Replacement of Rubber Fenders in A and B Docks
- Repair of Superstructure and Concrete Curb in the extended area of B Dock
- Removal of the Submerged Vessel in front of B Dock
- Revetment in the North Port for commuter boats
- Installation of Revetment with Wave Dissipating Blocks

(2) Scope of Work Undertaken by the Governmnet of FSM

The Government of Chuuk State is required to provide US\$ 10,000 for the budget for undertakings in the project as the Recipient country. The amount will be prepared in the annual budget by the Government.

- 1) To secure land necessary for the sites of the project and to clear the debris on the container yard,
- 2) To treat oil removed from the submerged ships; oil containers to be provided by the Japanese side,
- 3) To settle the dilapidated houses before commencement of the works for construction of the revetment in the North Port, if necessary,
- 4) To undertake the measures to prevent oil pollution from the submerged vessels after their dumping,
- 5) To open a bank account and to pay requested amounts to the contractor,
- 6) To ensure all the expenses and prompt excursion for unloading, customs duties at the port of disembarkation, etc. of the purchased under the scheme,

- 7) To install fences on the boundary of the Commercial Port area after shift of commuter boats from South Inner Basin,
- 8) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies, and
- 9) To ensure all the necessary expenses which are excluded from the specified scope of the project under the Grant Aid.

2-2-5-4 Consultant Supervision

Policy and works of Construction Supervision by the Consultant reflecting the Grant Aids scheme are as follows.

(1) Consultant's supervision policies

- 1) The consulting firm will render appropriate services for immediate completion of the facilities without delay of the schedule through the close contact and communications with the relevant organs of the both countries and the staff concerned.
- 2) The consulting firm will provide personnel concerned of the contractor with immediate and appropriate advices and instruction to complete the facilities in conformity with the contract documents.
- 3) The priority should be given to the use of locally available material and equipment if the quality and quantities will meet the requirements of the project work.
- 4) Implementation of the project should help to show effects under a grant aid scheme, offering occasions for technical transfer of construction methods and technologies.
- 5) Appropriate advices and instructions should be given to the recipient sector for smooth management and operation of the facilities after delivery.

(2) Supervisory work

1) Assistance on contracting

The consulting firm will provide assistance on selection of contractor, determine the type of contract, draft contract documents, evaluate bill of quantities and witness contract awarding.

2) Evaluation and approval of Shop Drawings

The consulting firm will evaluate and approve proper shop drawings as well as materials and equipment proposed and submitted by the contractor.

3) Management and supervision of construction work

The consulting firm will review the construction plans and schedule, etc., provide instructions to the contractor and report the progress of works to the client and JICA.

4) Assistance in procedure of payment

The consulting firm will evaluate and approve the proper invoice for the payment to the contractor, confirming the progress of the work upon partial completion and final completion.

5) Inspection and Witness

The consulting firm will inspect the work partially completed when requested by the contractor, give instructions if necessary and certify the partial completion. Upon the confirmation of completion of the works and fulfillment requirements of the contract, the consulting firm will witness the delivery

of the all the facilities specified in the contract and complete its duties with the client's acceptance.

The consulting firm will also prepare reports to the Government of Japan in relation to the progress of the works, payment procedures and delivery of completed facilities.

2-2-5-5 Procurement Plan

In the process of procuring materials and equipments required for the Project, special attentions will be paid as to the followings.

(1) Procurement Concepts

Priority should be given, whenever possible, to procurement of local available materials and equipments, which are examined the qualities including the inspection method, supply condition to meet the necessary capacity, delivery date and quantities. Procurement from Japan should be minimized considering cost and disadvantages due to delivery time.

1) Procurement from Japan

In establishing a plan for procurement and transportation of the material and equipment purchased in Japan, detailed examination on the matter must be made well in advance, considering it will take more time for manufacturing, packing and shipping.

2) Local Procurement

Rubble stones and aggregates, which can be locally procured, should be carefully examined as to the quality and transportation capability.

3) Cost

The cost is an important factor to be taken into account in selection of materials from local sources, neighboring countries and Japan. It is necessary to confirm whether the prices of procurement from Japan include the charges for packing, transportation, insurance and the port charges, while import and local taxes are to be exempted in accordance with the Exchange of Notes.

4) Procurement Items

On the basis of the above principles and rules, the following plans will be established preliminary for the procurement of the construction materials and equipment.

i) Materials

From local market: Rubble stones, aggregates, oil, etc.

From Japan and other countries: Steel sheet piles, steel bars, fenders, navigation aides

)Machinery

From local market: non

From Japan and other countries: 50t and 25t crawler cranes, dump trucks, etc.

2-2-5-6 Quality Control Plan

(1) Quality control of Construction Materials

The materials for the project shall be in conformity with the requirements of the Common Specifications for Ports and Harbours Issued by Japan Ports and Harbours Association. All the materials shall be approved by the consulting firm in prior to commencement of the work.

(2) Quality Control of Concrete Mixing

Mix proportion of the concrete used for the work should be determined considering the concrete is under hot weather conditions. Trial mixture should be made for determining the quality aspects as materials and their mix proportion, storage of materials and concrete curing procedures. In addition to the trial, concrete compression tests should be conducted to finalize the quality of concrete to be used and its placing methods. All the quality control methods as test results of concrete mixture and concrete compression with X-R control charts should be applied in compliance with the Specifications.

2-2-5-7 Implementation Schedule

Implementation of the Project under the Japanese Grant Aid Program will proceed in the following manners.

After the Exchange of Notes (E/N) concluded between the two countries, a Japanese consulting firm will be appointed by the Government of FSM and the consulting agreement will be concluded between the said government and the consulting firm. The Project will be implemented in accordance with the conditions stated in the E/N.

(1) Preparation of Detailed Design Documents

After the consulting agreement will be concluded between the executing agency of FSM and the Japanese consulting firm, the agreement will be verified by the Government of Japan, The consulting firm will start the detailed design for the project. In the detailed design stage, the tender documents, which are composed of drawings, technical specifications and instructions to tenderers, will be prepared on the basis of the Basic Design Study Report. In the meantime, consultations will be held with the Government of FSM regarding the details of the port facilities and the accessories. And eventually the tender documents will be approved by the Government of FSM.

About six (6) months will be required for the detailed design.

(2) Execution of the Tender and Construction Contract

The contractor (the Japanese construction company) who will be involved in the construction of the project facilities will be selected through the tender. The tender procedures will be in the order of: the notification, the invitation to tender, the pre-qualifications, the distribution of tender documents, the tender, the evaluation of the tender, designation of the contractor and award of construction contract.

The whole procedures will take about three (3) months.

(3) Execution of Construction Work

Construction Work will immediately start after the award of the contract and verification by the Government of Japan. The construction period is expected about twelve (12) months considering the scale and size of the Project and local construction conditions. However, unforeseen situations, which might occur in the course of the work, are excluded.

Table 2.2.5.7-1 shows the project implementation schedule from conclusion of Exchange of Notes (E/N) to completion of the construction works.

Table-2.2.5.7-1 The Project Implementation Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Detailed Design Stage	■																		Consultant Agreement, Survey
	▬																		Design/Preparation of Tender Documents
	▬																		Approval of Tender Documents
	■																		Tender Process
Procurement and Construction Stage	▨																		Mobilization
	▨																		Wave Disspating Blocks Works
	▨																		Revetment Wall of North Port
	▨																		Repair Works of A and B Dock
	▨																		Wreck Removal

2-3 Obligation of the Recipient Country

The recipient country should undertake the measures listed below as described in the Minutes of Meeting.

- (1) To secure the necessary land, as shown in Fig.3.3-1, in the Commercial Port area for the construction site and the approach to the site, and to clear empty containers and debris in the container yard,
- (2) To secure fresh water for the construction work,
- (3) To install and repair fences on the boundary of the Commercial Port area, especially to install a rigid fence with bulletin boards showing instruction to keep residents out of South Inner Basin,
- (4) To immediately treat oil removed from the submerged ships into oil containers provided by the Japanese side, and to submit the concrete plan of the treatment to the Japanese side for confirmation,
- (5) To settle the houses in the project site before commencement of the works,
- (6) To undertake the measures to prevent oil pollution from the submerged vessels after their dumping,
- (7) To ensure all the expenses and prompt excursion for unloading, customs duties at the port of disembarkation, etc. of the purchased under the scheme,
- (8) To open a bank account and to pay requested amounts to the contractor,
- (9) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies, and
- (10) To ensure all the necessary expenses which are excluded from the specified scope of the project under the Grant Aid.

2-4 Project Operation Plan

2-4-1 Necessary Measures for Port Operation and Management

(1) Budget and Staffing

Department of Transportation and Public Works of the Chuuk State Government will be in a position of daily operation and maintenance of the Weno Harbour. For systematically and effectively conducting all the duties of the port operation and management for the Harbour with North Port, it is understood that some assistance for staffing in the department such as individual training in Japan, assignment of Japanese experts, etc. will be required.

(2) Measures for prevention of maritime accidents

Port Regulations require ships to move from the wharf to offshore anchorage in the occasion of the rough seas by typhoon. The accident in 2002 was caused because of ignorance of the regulations. The accidents provide lessons of necessity of releasing proper instructions and precaution to the public. The necessary system for rapid release of the instructions based on the Regulations should be established and regular training should be conducted for smooth operation of the system.

(3) Major items for operation and maintenance

The above items are listed below:

- 1) Inspection and maintenance of the facilities of Weno Harbour, as painting steel covers of curbing, bollards, etc. for anticorrosion, and
- 2) Inspection and maintenance of the fence on the border of the commercial port district.

2-4-2 Project Cost Estimation

(1) Project Cost

The project cost is estimated as approximate 718 million Japanese yen, which will be provided under the grant aide scheme by the Government of Japan. The costs provided by the Government of Japan and the Government of Federated States of FSM is broken down and shown in Table2.4-1 and Table 2.4-2 respectively with conditions of cost estimation.

1) Expenses of the Government of Japan

Table2.4-1 Breakdown of Construction Cost

Total Cost: about 718million Japanese Yen

Items		Amount	
Facilities	Commercial Port		(unit: million Japanese yen)
		Repair of Superstructure & Coping	348.0
		Replacement of Rubber Fenders	
		Removal of Submerged Ship	
	North Port		313.0
		Revetment Wall	
	Wave Dissipating Blicks		
Consultant Fees (Design and Supervision)			57.0

The above cost tentatively estimated is subject to change within the amount stated in the E/N.

2) Expenses of the Government of FSM

The expenses of the FSM side for preparation of the project site, treatment of oil from the submerged ships, provision of fences, etc. are about 10,000 US dollars as shown in the following table.

Table 2.4-2 Breakdown of Expenses of the FSM Government

Items	Expenses (US\$)	Remarks
Clear debris of concrete	1,000	
Repair fences	3,000	
Treat oil removed from	6,000	Tentative cost wrecks
TOTAL	10,000	

2-4-2 Maintenance Cost for the Facilities

Table 2.4-3 shows the items of maintenance for the Harbour facilities provided in the project and Maritime Division of Department of Transportation & Public Works will manage the technical items as its regular duties. The maintenance work shown in the table will be carried out with a budget of 2,000 US dollars, which is equivalent to 1.7% of the 2006 budget of the Department.

Table 2.4-3 Major Items of Maintenance and Costs

Items	Frequency	Facilities for repair	Method	Cost (US\$)
Repair of fences	1/year	Fences & pipes	Patch on fences	1,000
Repair of curbing	1/year	Steel plate of curbing	Anti corrosion painting	1,000
		TOTAL		2,000

2-5 Environmental Considerations

(1) Consideration of social environment

The construction work for the project will be conducted without any limitation of traffic of commuter boats, berthing at the wharf and activities in the market close to the project site. Utmost care should be taken of the public safety and preservation of public activities. In case that troubles happen between city residents and personnel concerned for the work, the Department should be responsible for coordination among them.

(2) Consideration of natural environment

Since turbidity of seawater should be minimized in the construction work, the construction area on the sea will be closed with a sheet protection curtain. Regular monitoring of water quality will be carried out at fixed points located outside of the project boundary.

(3) Removal of commuter boats from South Inner Basin

One of the major objectives for the project is to secure safe navigation and mooring in South Inner Basin by accommodating all the commuter boats in North Port from the South Inner Basin. To

achieve the objective, the mooring area for the commuter boats should be specified in Port Regulations, which will be widely known to the public. The boundary fence should be repaired also for identification of the commercial port area.

(4) Prompt process of waste oil from submerged ships

The oil in the submerged ships should be removed and temporarily stocked into the containers provided by the Japanese side. Because of limitation of the durability and quantity of the containers, the Recipient side should promptly treat the oil to meet the schedule. For the mutual understanding and discussion on the matter, the Recipient side should propose the plan and schedule.

(5) Settlement of complaints on possible oil spill

The oil in the submerged ships will be removed as much as possible with using the oil fences. There remains some possibility of dispersion of oil from the salvaged ship during its transportation and after placement at the designated location. The Recipient side should be responsible for the settlement of complaints on the matter, if necessary.

CHAPTER 3

PROJECT EVALUATION AND RECOMMENDATIONS

3. Project Evaluation and Recommendations

3-1 Project Effects

(1) Direct Effects

The effects expected in implementation of the project are tabulated in the Table 4-1.

Table 3.1-1 Project Effects

	Constrains at Present	Measures to be taken in the Project	Project Effects
1	The wrecked ship in front of B Dock impedes berthing of the calling ships, which the dock is prepared for, and maneuvering in the turning basin adjacent to the dock.. Liners berth a port at the A Dock. They move astern for departure and maneuver offshore.	Salvage of the wrecked ship in front of B Dock.	Since the B Dock will services, safe maneuver in frot of the Dock will be excuted and irregular maneuver will not be necessary as sternway in leaving the Dock.
2	A calling ship with the Ro-Ro system cannot provide effective services of its function because of its berthing on the port side. Unloading from a liner requires three days.		Landing efficiency will be improved in services of B Dock.
3	The damaged fenders along the A Dock and B Dock injure berthing ships and dock's facilities.	Replacement of damaged fenders by new ones	Safe berthing and reduction of damages to the dock will be secured by construction of B Dock.
4	No mooring facility is available in North Port.	Construction of the Revetment Wall	Average number of mooring boats will be 120 with increase of 40 from 80 at present.
5	Illegal anchoring of commuter boats at the South Inner Basin impedes safe navigation among bigger ships and the Boats.	Construction of the Revetment Wall in the North Port to accommodate the commuter Boats from the South Inner Basin	Safe navigation at the South Inner Basin will be secured for the bigger ships calling at the Port with shifting commuter boats to North Port.

(2) Indirect Effects

- 1) Provision of the berthing facilities in the North Port will help passengers to get on and off the boats.
- 2) The breakwater armored with concrete blocks in the North Port will prevent erosion of the shore and secure the calm basin for mooring commuter boats.

3-2 Recommendations

(1) Prevention of wrecks

The Port Regulation requires removal of ships from the docks to an anchorage offshore in rough seas. The wrecks in 2002 were caused because of no action stated in the Regulation. For prevention of wrecks in the rough seas, the appropriate instructions should be promptly given to the public on approach of typhoon.

The system for transmission of the instructions to the public is established with the internal process and responsibility of the Chuuk State Government and regular exercises should be performed to follow the system for the prompt and effective transmission.

(2) Removal of small boats illegally moored in the South Basin

One of the main targets of the project is to shift commuter boats from the South Inner Basin to the North inner Basin and to secure safe navigation for commercial ships in the South Inner Basin. All the commuter boats should be relocated in the North Inner Basin after completion of the facilities in the Project. In addition to the above, the restrictions on no entry in the commercial port area should be legally imposed on commuter boats and citizens with releasing and instructing the restrictions to the public.

(3) Conservation of the environment of the North Inner Basin

Seawater quality of the North Inner Basin almost closed by the breakwater and the outside area around the basin is contaminated because of narrow dispersion of the water in the small tidal range. There remain some concerns that additional contamination by bilge water from the commuter boats shifted from the South Inner Basin might be produced in the North Inner Basin after completion of the project facilities.

Adequate facilities for wastewater treatment are recommended to reduce its contamination. The local government is also recommended to promote of publicity about preservation of the seawater quality with legally prohibiting bilge water from the commuter boats.

The project is, as mentioned above, expected to produce very important effects for the safe port operations, which will contribute to fulfillment of BHN of the residents in Chuuk State as mentioned previously.

It is understood that staff from the Department will enable the daily operation and maintenance of the facilities in the project, however, training of local staff or assignment of Japanese experts, etc. for some period is recommended.

APPENDICES

Appendices

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Appendix 1. Member List of the Study Team

(1) In the Survey Mission

Name	Assignment	Organization
Official Member Mr. Yoshimoto KOYANAGI	Deputy Leader	Transportation and Electric Power Team, Project Management Group , Grant Aid Management Department, Japan International Cooperation Agency (JICA)
Consultant Member Dr. Norio TANAKA Capt. Itsuo UEMOTO Mr. Kazunori KOSUGE Mr. Shuji SAKAI	Chief Consultant/ Port Facility Plan/ Environmental and Social Consideration Marine Survey(Ship Wreck Measures)/ Environmental and Social Consideration Natural Condition Survey Construction Plan/ Cost Estimate	ECOH CORPORATION ECOH CORPORATION ECOH CORPORATION ECOH CORPORATION

(2) In the Explain Mission of Draft Final Report

Name	Assignment	Organization
Official Member Mr. Takeho SAKATA	Leader	Resident Representative Japan International Cooperation Agency, FSM Office
Consultant Member Dr. Norio TANAKA Capt. Itsuo UEMOTO Mr. Shuji SAKAI	Chief Consultant/ Port Facility Plan/ Environmental and Social Consideration Marine Survey(Ship Wreck Measures)/ Environmental and Social Consideration Construction Plan/ Cost Estimate	ECOH CORPORATION ECOH CORPORATION ECOH CORPORATION

Appendix 2. Study Schedule

(1) In the Survey Mission

No.	Date		JICA	Consultants (ECOH CORPORATION)				
			Deputy Leader Mr. Yoshimoto KOYANAGI	Chief Consultant Mr. Norio TANAKA	Construction Plan / Cost Estimate Mr. Shuji SAKAI	Marine Survey Mr. Itsuo UEMOTO	Natural Condition Survey Mr. Kazunori KOSUGE	
1	2006 2/12	Sun		NRT(11:05)---Guam(15:35)CO962 Guam(19:40)---CO958				
2	2/13	Mon		Pohnpei(00:30) Meeting with JICA, EOJ Meeting with MOFA, DOTCI (Explanation on Inception Report)				
3	2/14	Tue		Data Collction Pohnpei(15:05)---Truk(15:16)CO957				
4	2/15	Wed		Discussion with DOT, GOCS (Explanation on Inception Report) Site Survey				
5	2/16	Thu		Discussion with DOT, GOCS Site Survey				
6	2/17	Fri		Discussion with DOT, GOCS Site Survey				
7	2/18	Sat		Discussion with DOT, GOCS Site Survey				
8	2/19	Sun	NRT(10:00)---Guam(14:35)JO941 Guam(19:40)---Truk(21:30)CO958	Discussion with DOT, GOCS Site Survey		NRT(11:05)---Guam(15:35)CO962 Guam(19:40)---Truk(21:30)CO958		
9	2/20	Mon	Courtesy Call to GOCS Site Survey of WENO Harbour, Discussion with DOT, GOCS					
10	2/21	Tue	Discussion with DOT, GOCS on MD Signing on MD with GOCS side					
11	2/22	Wed	Truk(10:25)---Pohnpei(12:38)CO956 Courtesy Call to MOFA, DOTCI			Site Survey	Site Survey	
12	2/23	Thu	Discussion with FSM side on MD			Site Survey	Site Survey	
13	2/24	Fri	Signing on MD with FSM side Report to JICA, EOJ			Site Survey	Site Survey	
14	2/25	Sat	Pohnpei(14:55)--- Guam(17:20)CO957	Pohnpei(14:55)---Truk(15:06) CO957		Site Survey	Site Survey	
15	2/26	Sun	Guam(07:20)---NRT(09:55)CO961	Site Survey	Site Survey	Site Survey	Site Survey	
16	2/27	Mon		Site Survey	Site Survey	Site Survey	Site Survey	
17	2/28	Tue		Site Survey	Site Survey	Site Survey	Site Survey	
18	3/1	Wed		Truk(10:25)--- Pohnpei(12:38)CO956 Report to EOJ, JICA	Site Survey	Truk(10:25)--- Pohnpei(12:38)CO956 Report to EOJ, JICA	Site Survey	
19	3/2	Thu		Pohnpei(14:55)---Guam(17:20) CO957	Truk(15:50)---Guam(17:20) CO957	Pohnpei(14:55)--- Guam(17:20) CO957	Site Survey	
20	3/3	Fri		Guam(07:20)---NRT(09:55) CO961	Site Survey	Guam(07:20)---NRT(09:55) CO961	Site Survey	
21	3/4	Sat			Guam(07:20)---NRT(09:55) CO961		Site Survey	
22	3/5	Sun					Site Survey	
23	3/6	Mon					Site Survey	
24	3/7	Tue					Site Survey	
25	3/8	Wed					Truk(10:25)--- Pohnpei(12:38)CO956 Report to EOJ, JICA	
26	3/9	Thu				Pohnpei(14:55)--- Guam(17:20)CO957		
27	3/10	Fri				Guam(07:20)--- NRT(9:55)CO961		

(2) In the Explain Mission of Draft Final Report

	Date		JICA	Consultants	
			Mr. Sakata	Dr. Tanaka, Capt. Uemoto	Mr. Sakai
1	2006/6/2	Fri.			Arrival at Chuuk (10:00) Discussion with DoT
2	2006/6/3	Sat.	Arrival at Chuuk		Site Survey
3	2006/6/4	Sun.	Site Survey	NRT (10:00) Guam (14:35) JO941 Guam (19:40) Truk (21:30) CO958	Site Survey
4	2006/6/5	Mon.	Courtesy Call to GoCS Discussion with DoT, GOCS (Explanation on D/R)	Accompany with JICA member	
5	2006/6/6	Tue.	Discussion with Dot, GoCS on M/D Signing on M/D with GoCS side	"	
6	2006/6/7	Wed.	Truk (09:30) Pohnpei (11:43) CO956 Discussion with JICA Courtesy Call to MoFA, DoTCI (Explanation on D/R)	"	
7	2006/6/8	Thu.	Discussion with FSM side on M/D	"	Pohnpei (14:55) Guam (17:20) CO957
8	2006/6/9	Fri.	Signing on M/D with FSM side Report to JICA, EOJ	"	Guam (16:00) NRT (18:40) CO006
9	2006/6/10	Sat.		Pohnpei (14:55) Guam (17:20) CO957	
10	2006/6/11	Sun.		Guam (16:00) NRT (18:40) CO006	

Appendix 3. List of Parties Concerned in the Recipient Country

(1) Government of the Federated States of FSM

1) Department of Foreign Affairs

Mr. Lorin Robert	Deputy Secretary
Mr. Kandhi A. Elieisar	Assistant Secretary
Mr. Carlos Apis	Deputy Assistant Secretary
Mr. Perry K. Pedrus	Deputy Assistant Secretary

2) Department of Transportation, Communication & Infrastructure

Mr. Waynord Yamaguti	Acting Secretary
Mr. Paul James	

(2) Government of the Chuuk State

1) Hon. Wesley Simina

Hon. Wesley Simina	Governor
--------------------	----------

2) Office of Governor

Mr. Vohnson S. Elimo	Lieutenant Governor
Mr. Lambert N. Lokopwe	Special Assistant to Governor
Mr. Noah Ruben	Special Assistant to Governor (Acting Chief of Staff)

3) Department of Transportation & Public Works

Capt. Thomas R. Narruhn	Director
Mr. Inoske Fiti	Port Manager
Mr. Toyo Mori	Administrator

4) Department of Marine Resources

Mr. Romio A. Osiena	Acting Director
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5) Department of Administrative Services

Mr. Hiroshi Muludy	Chief of Planning & Statistics
Mr. Santuro Wenireng	Inspector of Planning & Statistics
Mr. Acequstine Takashy	Chief of Personnel
Mr. Isaen Neth	Assistant Chief of Personnel
Mr. Perez Graham	Assistant Chief of Budget
Mr. Michael Kanas	Statistic Specialist of Planning & Statistics

6) Department of Public Affairs

Mr. Tracy Meter	Deputy Chief (JICA In-Charge)
Mr. Jimmy Suka	Supervisor

7) Environmental Protection Agency

Mr. Ismael Mikel	Acting Director
Ms. Julita Albert	Natural Resources Manager
Mr. Joseph Konno	Advisor

8) Weather Service Office
Mr. Johannes Berdon Official in charge weather services

9) Disaster Central Office
Mr. Eric Paul

(3) Embassy of Japan

Mr. Toshio Ohmura Charged Affaires ad interim
Ms. Mieko Oda Assistant

(4) JICA FSM Office

Mr. Takeho Sakata Resident Representative

Appendix 4. Minutes of Discussion

(1) In the Survey Mission

**Minutes of Discussions
on the Basic Design Study
on the Project for the Improvement of the Weno Harbour
in Chuuk State,
the Federated States of Micronesia**

Based on the results of the Preparatory Study which was held on August, 2005, the Government of Japan decided to conduct a Basic Design Study on the Project for the Improvement of the Weno Harbour in Chuuk State (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Federated States of Micronesia (hereinafter referred to as "FSM") the Basic Design Study Team (hereinafter referred to as "the Team"), which is managed by Mr. Kunihiro Yamauchi, Group Director, Project Management Group I, Grant Aid Management Department, JICA, and headed by Mr. Yoshimoto Koyanagi, and is scheduled to stay in the country from February 13 to March 9, 2006.

The Team held discussions with the concerned officials of the Government of FSM and conducted a field survey in the study area.

In the course of the discussions and the field survey, both sides confirmed the main items described in the attached sheets.

Palikir, February 23, 2006

小柳 桂 泉

Yoshimoto Koyanagi
Basic Design Study Team
Japan International Cooperation Agency



Lorin S. Robert
Deputy Secretary
Department of Foreign Affairs
The Federated States of Micronesia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve port facilities and assure its safe operational condition at the Weno Harbour in Chuuk State.

2. Project Sites

The Project site is located in the Weno Harbour, in Weno Island, Chuuk State, FSM.

The Project site is shown in Annex-1.

3. Responsible and Implementing Agency

The Department of Foreign Affairs, FSM is responsible for coordination of the Project.

The implementing agency is the Department of Transportation and Public Works, Chuuk State Government.

4. Items Requested by the Government of FSM

As a result of the discussions, requested components were confirmed as below:

- 1) Rehabilitation of Commercial Dock
 - a) Fender Replacement
 - b) Concrete Curb Reconstruction
 - c) Superstructure Concrete Rehabilitation
 - d) Removal of the Submerged Vessels in front of Dock B and C
- 2) North Port (Commuter Boat Harbour)
 - a) Revetment Wall
 - b) Wave Dissipating Blocks

Removal of the submerged vessels has been submitted in addition to the request on the Note Verbal on January 23, 2006 by the Department of Foreign Affairs of FSM.

The appropriateness of the all above requests will be examined by further study.

5. Japan's Grant Aid Scheme

(1) The FSM side understood the Japan's Grant Aid scheme explained by the Team, as described in Annex-2.

(2) The FSM side will take the necessary measures, as described in Annex-3, for smooth implementation of the Project as a condition for the Japan's Grant Aid to be implemented.

6. Other Relevant Issues

(1) The FSM side confirmed the contents of Memorandum of Understandings as described in Annex-4, signed on February 21, 2006, between the Government of the State of Chuuk and the Team.

(2) The FSM side shall assist the Government of the State of Chuuk in conducting the undertakings written in the Memorandum of Understandings for implementation of the Project.

(3) The FSM side agreed to change the Project title to "the Project for the Improvement of the Weno Harbour", which was "the Project for the Rehabilitation of the Weno Harbour".

(4) The FSM side explained that the FSM side served notice to Christopher Corporation of rescinding the contract between FSM and Christopher Corporation in relation with removal of the submerged vessels, Nien Feioch in front of Dock B, and Micro Dawn in front of Dock C, at the

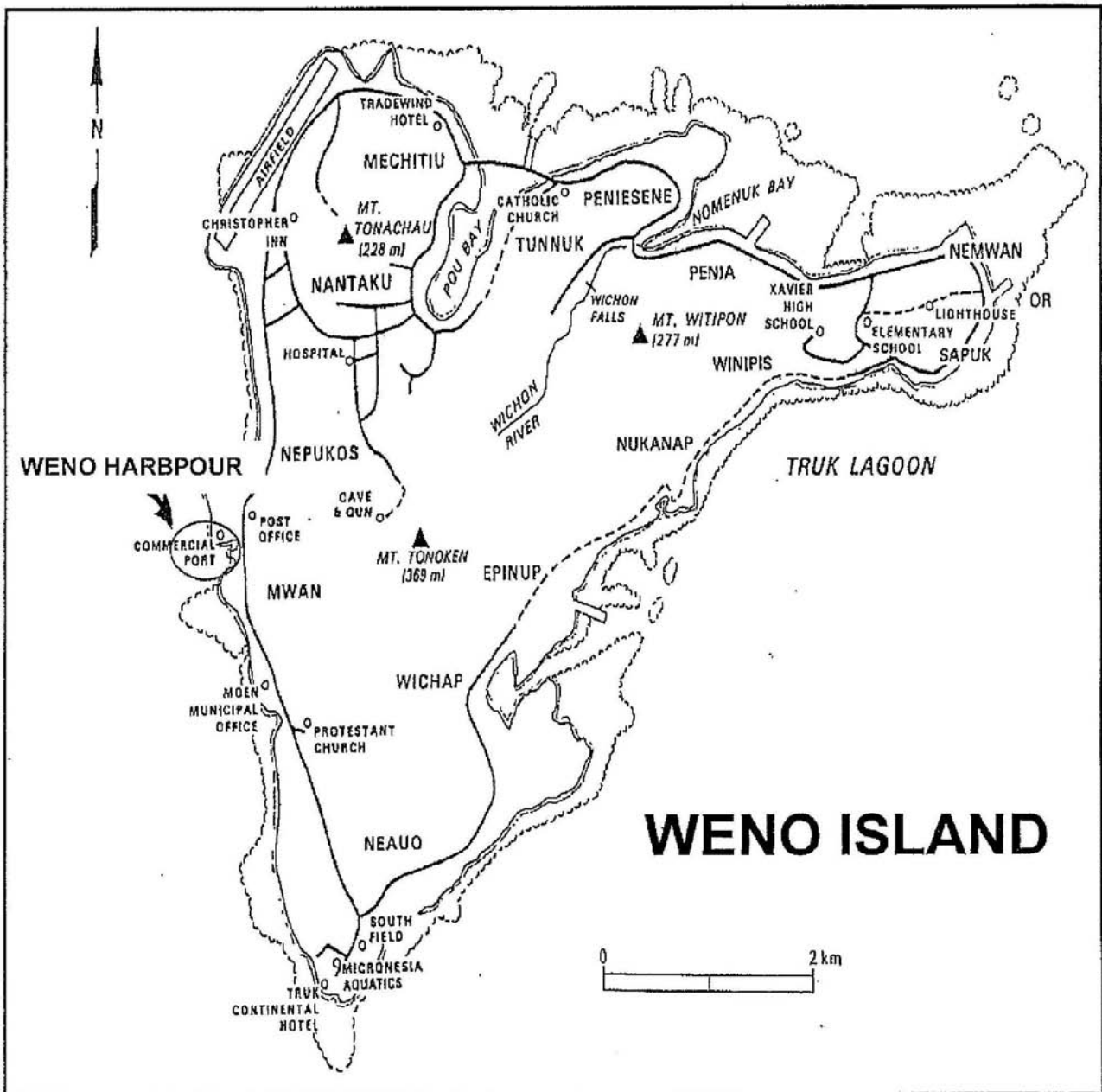
Weno Harbour. The FSM side shall receive the reply from Christopher Corporation and submit it to the Team through JICA Micronesia Office.

(5) The FSM side understood that the possibility of including the removal of the submerged vessels in the Project will be examined deliberately.

(6) All reports and materials, forwarded by the Government of State of Chuuk based on the Memorandum of Understandings as described in Annex-4, will be officially submitted to the JICA Micronesia Office through the Government of FSM.

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Location of Weno Harbour

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JAPAN'S GRANT AID

The Grant Aid Scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japan's Grant Aid Scheme is executed through the following procedures.

Application	(Request made by the recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by the Cabinet)
Determination of recipient	(The Note exchanged between the Governments of Japan and Implementation country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study) using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

(1) Contents of the study

The aim of the Basic Design Study (hereafter referred to as "the Study") conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

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- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of the Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA. The consultant firm(s) used for the Study is (are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

(1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

(2) "The period of the Grant Aid" means the one fiscal year, which the Cabinet approves, the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed. However, in case of delays in delivery, installation or construction due to unforeseen factors such as national disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

(3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, consulting, constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

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(4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(5) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project,

b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

c) To secure buildings prior to the procurement in case the installation of the equipment,

d) To ensure all the expenses and prompt excursion for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,

f) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(6) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

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(End)

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Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
5	To ensure unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
6	To accord Japanese nationals whose service may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
7	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
8	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
9	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

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