

already been taken. An 11 KV high tension line is buried along this main road, and a power line will be extended to the site at the expense of the local government from here. The power supply standards are in accordance with the IEE Wiring Regulation. Power will be supplied to the facilities at single phase 230 V and 3-phase 400 V, and at a frequency of 50 HZ.

#### 4) Drainage and Sanitary Equipment

As there are no public sewerage facilities, wastewater is generally directly discharged into rivers or drainage channels, however, wastewater from the Project facilities will be treated in digestion tanks to WHO standards (BOD 25 ppm or less) and then discharged or permeated into the ground.

### 2-3-3 Basic Plan

#### (1) Site Plan

##### 1) Calliaqua

The site forms an L-shape around two sides of a football ground with the beach area being 20 m × 60 m and the south-east side being approximately 15 m × 65 m, giving a combined site area of roughly 2,200 m<sup>2</sup>. The tip of the south-east area is directly linked to the main road. The dilapidated facilities on the site, except for the private restaurant on the road, are scheduled to be demolished and removed by the counterpart government.

There are sewage gullies of 3 m in width on either side of the site beach area and, in order to prevent effluent from these running directly into the front of the site, the gullies shall be given and extended over 20 m or so into the sea with gradients of 1/20. The central 30 m of beach shall be left as it is (1/10 gradient) to use as a slipway for small fishing boats and both sides (approx. 16 m widths) shall be protected by revetment that come as far as water depth CDL ± 0 m. The jetty shall be placed on the eastern side of the site in order to keep it apart from the western coast guard's jetty.

The ground height of the site (beach side) shall be raised from its present CDL + 1.4 - 1.7 m on the beach area to + 2.5 m. By doing this, the threat of inundation, even when the once every 30 years maximum wave (1.6 m) combines with the maximum high tide (HHWL = CDL + 0.64 m), will be removed (HWL + Ho/2 = 0.64 + 1.6/2 = 1.42 m). It is judged that, except for land for the ice making and refrigerator facilities, it will be convenient to leave the south-east side land as it is (+ 1.3 m - + 2.0 m).

## 2) Canouan

The site is located in the middle of a broad flatland that spreads around the foot of the mountain and it covers an area of approximately 3,200 m<sup>2</sup> (40 m × 80 m) facing onto the beaches of Friendship Bay.

The beach area is covered with bushes and vegetation, however, only the tall trees (sea grapes), which provide shade against the sun, shall be left as they are. As there is a reef 10 m wide and 3 m thick at the shore, the 45 m long slipway shall be made of reinforced concrete and the jetty shall be placed at the western edge of this. The length of the jetty shall be 45 m to ensure that a water depth of 2.5 m can be secured, in consideration of the 2.1 m draft of the schooners that will moor against the tip section (L = 25 m).

The ground height of the site shall be raised from its present 0.9 - 1.5 m to 2.5 m. By doing this, the threat of inundation, even when the once every 30 years maximum wave (2.2 m) combines with the maximum high tide (HHWL = CDL + 0.64 m), will be removed. (HWL + Ho/2 + Δh = 0.64 + 2.2/2 + 1.0 = 2.74 m)

## (2) Civil Engineering Facilities Plan

### 1) Calliaqua

#### a) Jetty

A jetty of length L = 15 m has been selected for the landing of fish from the 13 small fishing boats that use this site. As the waters in front of the site are shallow for a long way, a quay wall is not appropriate.

The jetty floor height shall be CDL + 1.5 m (= HWL + 0.9 m) in consideration of the freeboard (- 50 cm) of the fishing boats and a small step shall be provided to as far as CDL + 0.5 m. Even in this case, the crown height of the reclaimed revetment connecting with the jetty will be CDL + 2.0 m, so the connecting section (L = 5 m) shall be provided with a slope of 1/10 to absorb the height difference (0.5 m). As there is a risk of overtopping of wave due to stormy weather once per year for this jetty height, it will be necessary to provide gaps with an area ratio of more than 10% in the floorboards in order to mitigate the impact and up-lift pressure forces of waves.

Moreover, as use of the jetty will be limited to walking people and single wheel vehicles, the floorboards shall be made of wood in consideration of its slip prevention properties, its pleasant feel for walkers and its better appearance. In the case of wooden floorboards, the opening of the aforementioned gaps with an area ratio of at least 10% will be easy. Stainless steel bolts, which are corrosion resistant to sea water, shall be used to connect the wooden floorboards and concrete beams. As for the wood itself, hard and strong wood that is resistant to sea water shall be selected, or it shall be treated for corrosion resistance if necessary. In consideration of the above-mentioned condition of use, a jetty width of  $B = 3$  m is considered to be sufficient.

The vertical and horizontal framework for supporting the floorboards shall be made of reinforced concrete having high durability and strength. With regard to the jetty supports, the supporting ground is hard volcanic rock and relatively shallow (8 - 9 m) and the intermediate layer is weak coral sand (layers with  $N \leq 10$  are common) mixed with gravel. In addition, according to the structure calculation, the required penetration depth is  $L \leq 6$  m and, as there is no need to drive the piles into the hard foundation bed, durable prestressed concrete or reinforced concrete piles shall be selected.

b) Revetment

The current beach shall be left as it is for a stretch of 30 m to use as the small fishing boat slipway (CDL -0.5 to + 1.5 m with a width of 20 m and slope of 1/10) and boat ramp (width of 10 m). For this reason, the revetment having wave breaking capability on either side of the slipway are desirable to ensure that the sand, which forms the slipway, is not washed away by reflected waves.

As the high wave at rough weather would not directly attack to the side wall of revetment, however, the gravity structure shall be selected as same structure as the front wall of revetment. The depth of revetment shall be 1.5 m or deeper from the existing shore level, so that the bottom of revetment would not appear even though the sand is washed out by scouring.

Based on the normal wave of 1-year probable cycle (frequency upto 7% for S-SW direction,  $H/3 = 1.6$  m for S-direction,  $H_o' = 0.74$ ), the crown height of revetment (HWL +  $h_c$ ) is calculated  $h_c = 0.6 H_o' = 0.42$  m in accordance with the Japanese Fishing Port Standards. From the allowable value of wave overtopping ( $q$ :  $m^3/m$  sec.) in case of non-armoring (less than 0.005), however, the crown height of 2.0 m is adopted as follows:

$$h_c = 1.4 \text{ m } (q = 0.002) \rightarrow$$

$$\text{crown height} = \text{HWL} + h_c = 0.64 + 1.4 \approx 2.0 \text{ m}$$

c) Training Levees

The sewage gullies on either side of the beach site shall be extended roughly 20 m into the sea in the form of same section reinforced concrete with a bottom gradient of 1/20. It is hoped that these will act as training levees in preventing the direct discharge of effluent from the gullies on to the site (dispersing after first discharging in the sea cannot be stopped) and in preventing the accumulation of silt, which is carried by rainwater during floods, in front of the site.

d) Scouring Protection

In the case of the impermeable structures (training levees, revetment) placed in the sea part of the beach site, the fact that the bottom sediment is sand means that there is a danger that reflected waves and sea currents will cause scouring of the front seabed. Therefore, it is necessary to protect these structures with covering stones. The same situation also exists on Canouan and the required weight of the covering stones and training levee blocks is calculated 1 ton/p for Calliaqua, according to the Fishing Port Standards (see Table 2-8).

Table 2-8 Required Weight of Covering Stones (KD = 5.1)

Site	Water Depth (m)	Wave Height HD (m)	W (Ton)		
			Cot $\alpha = 1.0$	1.5	2.0
Calliaqua	1.0	1.6	0.601	0.401	0.301
Canouan	3.0	2.0	0.882	0.588	0.441

KD = 5.1: damage rate 1 - 5%

(Hudson formula)

$r = 2.6$  : Specific gravity of stone

## 2) Canouan

### a) Jetty

The length of the jetty on Canouan has been made  $L = 45$  m in order to keep the water depth ( $-2.5$  m) required for the mooring and loading, etc. of the schooners. The width ( $B = 3$  m) of the jetty, as in the case of the one at Calliaqua, should be sufficient in view of the fact that use will be limited to fishermen's walking and single wheel vehicles.

The jetty height shall be CDL  $+1.5$  m in consideration of the freeboard ( $1.4$  m) of the schooners that will use the front part. However, as this would be unsuitable for the small fishing boats with a freeboard of  $0.5$  m, a small step going down to the height of CDL  $+0.5$  m shall be provided in its coastline over the base part ( $L = 25$  m) to be used by the small boats.

The beam framework and floorboards have been made of reinforced concrete and wood, as with the jetty at Calliaqua, however, fenders and mooring posts shall be fixed tightly on the beam framework.

The piles supporting foundation bed will be consolidated sand ( $N = 35 - 70$ ) at a depth of  $14 - 18$  m in the sea, although there are many intermediate layers of sand mixed with gravel of an  $N$  value of  $20$  or less. It is judged that prestressed concrete or reinforced concrete piles provide ample strength and durability in the case of this jetty.

### b) Slipways / Boat ramp

The boat ramp shall be of width  $10$  m and shall stretch from the vegetation left behind on the beach (height  $+2$  m) down to the edge of the slipway at height  $+1.5$  m. Part of the area (width  $2$  m or less) shall be paved with concrete and the rest shall be filled up with sand. The slipway shall be made of reinforced concrete in order to cover the reef on the beach, and its tip shall be on a contour line of CDL  $-1.0$  m so as to keep the water depth of  $-0.5$  m required by the small fishing boats. This will mean that the slipway will stretch over  $16$  m and will have a height difference of  $-0.5 - +1.5$  m with a slope of  $1/8$ . It is considered that this slope is too steep to hinder use. The site is protected by the offshore reef, but the SW-direction having approach channel is opened

to the ocean. Therefore, the front wall of slipway shall be strengthened with piling of short H-shaped steel against turning.

c) Revetment/Access to Jetty

The revetment (front width  $B = 5$  m) at connecting part with jetty is constructed by mass-concrete without steel bar, considering the easier construction than the case of gravity structure of both sides. The crown height (HWL + hc) at front wall of revetment is same as the height of the upper level of deck of jetty (CDL + 1.5 m) taking into account the easy operation. According to the Japanese Fishing Ports Standards, as same as Calliaqua case, the required height is calculated as follows:

offshore wave (S-direction)  $H_o = 1.6$  m

converted offshore wave  $H_o' = 0.4$  m

$\rightarrow hc = 1.0 H_o' = 0.4$  m  $\rightarrow$  HWL + hc = 0.64 + 0.4 = 1.04 m

d) Scouring Protection

As is the case with the site at Calliaqua, the slipway in front wall side and the jetty approach revetment will need to be covered with armor-stones in order to prevent scouring and, as was indicated in Table 2-6, the required weight of the stones at the Canouan site will be 1 ton/p.

(3) Layout and External Plan

Although the Calliaqua site is a limited L-shaped area, the scale of the facilities is not large, and so they shall be laid out in a functional manner with care taken to avoid hindrance of the sports activities on the adjoining sports ground. In the case of Canouan, as the facilities need to fulfill a wide range of purposes and rainwater has to be gathered by means of large roofs, the facilities shall not be integrated but dispersed. The management and multi-purpose sections shall be placed in the center of the site, and the lockers, toilets and showers, temporary rest rooms and cafeteria, etc. shall be placed on the perimeter of the site. Moreover, in view of the fact that fishing groups of differing areas will utilize the facilities, the facilities shall be separated through zoning in order to prevent mutual confusion from arising.

#### **(4) Building Plan**

##### **1) Calliaqua**

###### **a) Refrigeration Complex**

The main functions of this block will be ice making, fish handling, storage and selling, and also management of the various activities. Space for fish handling and treatment shall be provided in the center, and the ice making and fish / ice storage, fish shop, office and storage shall be placed in the surrounding area. The office shall be permanently staffed by a site manager and an office worker.

The main structures of columns and beams shall be made of reinforced concrete. Outer walls shall be hollow concrete blocks, however, the walls facing the ice / fish storage shall be screen blocks in order to make the passage of air good and so allow heat to escape and prevent condensation from forming.

###### **b) Fishermen's Lockers**

Fishing gear and outboard motors shall be stored in the lockers, each of which will measure 2.0 m by 2.0 m. There shall be 16 lockers in all. Their main structure shall be composed of hollow concrete blocks, but the upper wall parts shall be screen blocks in order to improve the ventilation.

###### **c) Toilets and Showers**

The columns and beams shall be reinforced concrete and the walls shall be hollow concrete blocks.

###### **d) Fish Retail Market**

The retailing of fish mainly to the residents of Calliaqua will take place here. The structure shall be one of hollow concrete blocks.

###### **e) Vegetable market/multi-purpose space**

The retailing of agricultural products will take place as well as used as a place for fishermen's training and fishing gear repair. The columns and beams shall be reinforced concrete but with no walls.

f) The areas of each building are as indicated below.

- Refrigeration complex:	Building area	105.0 m <sup>2</sup>
	Floor area	105.0 m <sup>2</sup>
- Fishermen's lockers:	Building area	40.0 m <sup>2</sup>
	Floor area	40.0 m <sup>2</sup>
- Toilets and showers:	Building area	17.4 m <sup>2</sup>
	Floor area	17.4 m <sup>2</sup>
- Fish retail market:	Building area	35.0 m <sup>2</sup>
	Floor area	35.0 m <sup>2</sup>
- Vegetable market / multi-purpose space	Building area	49.0 m <sup>2</sup>
	Floor area	49.0 m <sup>2</sup>

g) The finishing of each facility shall be as described below.

- External Finishing

Roofs:	Wooden framework, wooden backing plus galvanized corrugated panel
Outer walls:	Concrete placing plus acrylic emulsion paint spraying Concrete blocks plus acrylic emulsion paint spraying
Fittings:	Steel doors, wooden jalousies, wooden louvers
Outside floors:	Concrete with metal bracers

- Internal Finishing

① Refrigeration Complex

Fish sorting area and fish shop area

Floors:	Concrete with metal bracing hardeners
Walls:	Mortar with metal bracing and EP coating, tiles (direct selling room)
Columns and beams:	Placing plus EP coating
Ceiling:	Wooden backing open

Office

Floor:	Concrete with metal bracing hardeners
Walls:	Mortar with metal bracing and EP coating,
Columns and beams:	Placing plus EP coating
Ceiling:	Rock wall sound absorbing board



Toilet  
 Floor: Tiles  
 Walls: Tiles  
 Columns and beams: Placing plus EP coating  
 Ceiling: Wooden backing open

② Fishermen's Lockers

Floor: Mortar with metal bracing hardeners  
 Walls: Concrete block rough surface  
 Columns and beams: Placing  
 Ceiling: Wooden backing open

③ Toilets and Showers

Floor: Mortar with metal bracing  
 Walls: Tiles  
 Columns and beams: Placing and EP coating  
 Ceiling: Wooden backing open

④ Fish Retail Market

Floor: Concrete with metal bracing  
 Columns and beams: Placing  
 Ceiling: Wooden backing open  
 Sink and selling stand: Concrete tiles

⑤ Vegetable market / multi-purpose space

Floor: Concrete with metal bracing  
 Columns dan beams: Placing

2) Canouan

a) Refrigeration Complex

The main functions of this block are ice making, fish handling, storage and selling. A space for fish handling and treatment shall be provided in the center, and the ice making and fish / ice storage, shop and storage shall be placed on the perimeter. Pressurized wood shall be used for the main structure, and the walls shall also be wooden. The walls facing the ice / fish storage shall be louvers to improve ventilation and so let heat escape and prevent the formation of condensation.

**b) Office and Multi-purpose space**

The office and multi-purpose space shall contain an office, toilets and a multi-purpose room for meetings, etc. The office shall be permanently staffed by a site manager, one office worker and one instructor dispatched from the Fisheries Division. The roof shall act to collect rainwater.

**c) Mess Room**

Mess Room shall be used as kitchen and dining place for migrant fishermen. Wooden structure shall be applied, and the roof shall collect rainwater for storage in the tank underneath the floor.

Cafeteria block A shall be for the 12 fishermen groups from Bequia and block B shall be for the two fishermen groups from Arnos Vale. It will be possible to use both cafeterias at the same time. Both shall be a wooden structure, and the roof of block A shall collect rainwater for storage in the tank underneath the floor.

**d) Lodges**

As the fishing groups are normally composed of three to five fishermen, each temporary rest room shall be able to accommodate four people with two bunk beds. Private storage space shall be provided. Lockers shall be placed on the outside for the storage of fishing gear and outboard motors. The floors shall be raised to ensure good ventilation.

**e) Fishermen's Lockers**

These shall be used by the local fishermen for storing fishing tackle and outboard motors, and each shall measure 2.0 m by 2.0 m. There shall be 16 lockers and they shall be made of wood. The upper sections of the walls shall be fitted with louvers in order to improve ventilation.

**f) Toilets and Showers**

The fishermen are exposed to strong tides, winds and sunshine for a number of days when they go out on fishing trips. The showers are to be provided in order to enable them to wash away the salt and dirt from their bodies. Louvers shall be used in the toilets to ensure good ventilation and maintain brightness, however, the insides shall be

blocked off from outside view. The structure shall be concrete, and the walls around the showers shall be hollow concrete blocks.

**g) Machine Room**

In this block, three rooms are prepared; each one for desalination plant, air compressor for diving cylinders, and storage of equipment and spare parts.

**h) The areas of each building are indicated below.**

- Refrigeration complex:	Building area	128.0 m <sup>2</sup>
	Floor area	128.0 m <sup>2</sup>
- Office and multi-purpose area:	Building area	90.0 m <sup>2</sup>
	Floor area	90.0 m <sup>2</sup>
- Mess room:	Building area	115.0 m <sup>2</sup>
	Floor area	115.0 m <sup>2</sup>
- Lodges:	Building area	252.0 m <sup>2</sup>
	Floor area	252.0 m <sup>2</sup>
- Fishermen's lockers:	Building area	64.0 m <sup>2</sup>
	Floor area	64.0 m <sup>2</sup>
- Toilets and showers:	Building area	48.0 m <sup>2</sup>
	Floor area	48.0 m <sup>2</sup>
- Machine room:	Building area	25.0 m <sup>2</sup>
	Floor area	25.0 m <sup>2</sup>

**i) The finishing in each facility is as described below.**

**- External Finishing**

Roofs:	Wooden framework and backing plus asphalt shingles finish
Outer walls:	Wooden framework and backing plus wood sidings Concrete blocks plus acrylic emulsion paint spraying
Fixtures:	Wooden doors, wooden jalousies, wooden louvers
Outside floors:	Concrete with metal bracing

**- Interior Finishing**

**① Refrigeration Complex**

Floor:	Concrete with metal bracing hardeners
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- Walls: Wooden framework and backing open  
 Columns and beams: Wooden framework open  
 Ceiling: Roof wooden framework open  
 Sink and work table: Concrete tiles
- ② Office & Multi-purpose Area
- Floor: Concrete with metal bracing hardeners  
 Walls: Wooden framework and backing open  
 Columns and beams: Wooden framework open  
 Ceiling: Roof wooden framework open
- ③ Mess Rooms
- Floors: Concrete with metal bracing hardeners  
 Walls: Wooden framework and backing open  
 Columns and beams: Wooden framework open  
 Ceilings: Roof wooden framework open
- ④ Lodges
- Wooden framework and backing plus boards  
 Walls: Wooden framework and backing open  
 Columns and beams: Wooden framework open  
 Ceilings: Roof wooden framework open
- ⑤ Fishermen's Lockers
- Floor: Concrete with metal bracing hardeners  
 Walls: Wooden framework and backing open  
 Columns and beams: Wooden framework open  
 Ceiling: Roof wooden framework open
- ⑥ Toilets and Showers
- Floors: Tiles  
 Walls: Wooden framework and backing open with part tiling  
 Columns and beams: Wooden framework open  
 Ceiling: Roof wooden framework open with veneer and vinyl paint finish

⑦ Machine Room

Floor:	Concrete with metal bracing hardeners
Walls:	Wooden framework and backing open
Columns and beams:	Wooden framework open
Ceiling:	Roof wooden framework open

(5) Structural Plan

1) Building Method and Structural Form

Facility superstructures shall be mainly concrete in Calliaqua and wooden on Canouan. Substructure shall, as a rule, be direct foundation with a soil bearing capacity of  $3.5 \text{ t/m}^2$ , however, the use of friction piles shall also be considered depending on the load conditions.

2) Structural Materials and Strengths

Crushed stone shall be used as the coarse aggregate and fine aggregate of concrete, and water shall be fresh water. Salt resistant cement shall be used in the substructures (foundations, foundation beams, underfloor rises) in order to prevent corrosion from sea water. Moreover, substructure reinforcing steel shall either be epoxy resin coated or fusion galvanized for the same reason. Pressurized needle-leaf trees shall be used as the wood. Wood shall be coated with insect repellent and anti-corrosive and leg sections shall be protected with galvanized steel plates.

The strengths of each type of material are as follows.

Concrete:	$F_c = 210 \text{ kg/cm}^2$ ( $F_y = 3,000 \text{ psi}$ )
Reinforcing steel:	Thin SD30 ( $f_y = 30 \text{ ksi}$ ) Thick SD30 ( $f_y = 50 \text{ ksi}$ )
Wood:	Compressed strength shall be $90 \text{ kg/cm}^2$ or more

Friction piles shall be minimum diameter 300 mm and length shall be 5 m. Ready-made prestress concrete shall be hammered.

(6) Equipment Plan

1) Water Supply Equipment

A 2-inch public water mains is already laid on the Calliaqua site and, as the water pressure is sufficient, this shall be used. Canouan does not possess

any water supply or sewerage facilities, so rainwater will have to be stored and utilized. The Sewerage Department has recommended that a minimum water supply of two or three months be stored. The rainwater, after being collected from the facility roofs and stored in the water tank, will then be pumped up to the elevated tank and supplied to each facility by gravity. A filter and device for disinfecting by chlorine shall be placed between the water tank and pump. Although there is no meteorological data, Canouan is said to have less rainfall than at the Union Island facilities (already completed through past grant aid), so a desalination machine shall also be provided.

a) Calculation of Water Requirement on Canouan

① Water for Living and Ice Making Purposes (clear water)

The target fishermen are composed of 54 migrant fishermen (14 groups) and 48 local fishermen (16 groups) and, assuming that the operating rate of each is 75% and 50% respectively, the clear water requirement is calculated as follows.

Showers:

$$10 \text{ L/shower/person} \times \text{once/day} \times (41 + 24) \text{ people} = 650 \text{ L}$$

Toilets:

$$3 \text{ L/time/person} \times 2 \text{ times/day} \times (41 + 24) \text{ people} = 390 \text{ L}$$

Mess Rooms:

$$5 \text{ L/meal} \times 3 \text{ meals/day} \times 10 \text{ groups} = 150 \text{ L}$$

Drinking water:

$$2 \text{ L/person/day} \times (41 + 24) \text{ people} = 130 \text{ L}$$

Ice making water:

$$1.5 \text{ tons/day (ice)} = 1,800 \text{ L}$$

$$\text{Total} \quad \quad \quad \underline{\text{Approx. 3,200 L}}$$

② Water for Fish Treating and Cleaning (sea water)

Fish treatment:

$$\text{(locally consumed fish)} 50 \text{ kg/day} \times 10 \text{ L/kg} = 500 \text{ L}$$

Floor cleaning water:

$$20 \text{ L/minute} \times 30 \text{ minutes/day} = 600 \text{ L}$$

$$\text{Total} \quad \quad \quad \underline{\text{Approx. 1,100 L}}$$

The estimated annual rainfall is approximately 1,000 mm and, in order to cover the fresh water requirement by rainwater alone, a roof area of approximately 1,152 m<sup>2</sup> (3.2 m<sup>3</sup> × 360 days ÷ 1,000 mm) will be necessary.

However, as the combined area of the facility roofs capable of collecting water is only around 500 m<sup>2</sup>, the fresh water shortage will be 1.8 m<sup>3</sup>/day ((1,152 - 500) m<sup>2</sup> × 1,000 mm ÷ 360 days). The insufficient water supply will thus have to be supplemented through the introduction of a desalination machine possessing a capacity of approximately 2 tons/day.

**b) Supply Flows of Fresh Water**

Rainy season (June to February):

Rainwater 500 m<sup>3</sup>  
(1,000 mm × 500 m<sup>2</sup>)

Desalination machine 472 m<sup>3</sup>  
(2 m<sup>3</sup>/day × 270 days × 90%)

Dry season (March to May):  
Rain water 0 m<sup>3</sup>

Desalination machine

Consumption 864 m<sup>3</sup>  
(3.2 m<sup>3</sup>/day × 270 days)

Water tank 108 m<sup>3</sup>  
(0.4 m<sup>3</sup>/day × 270 days)

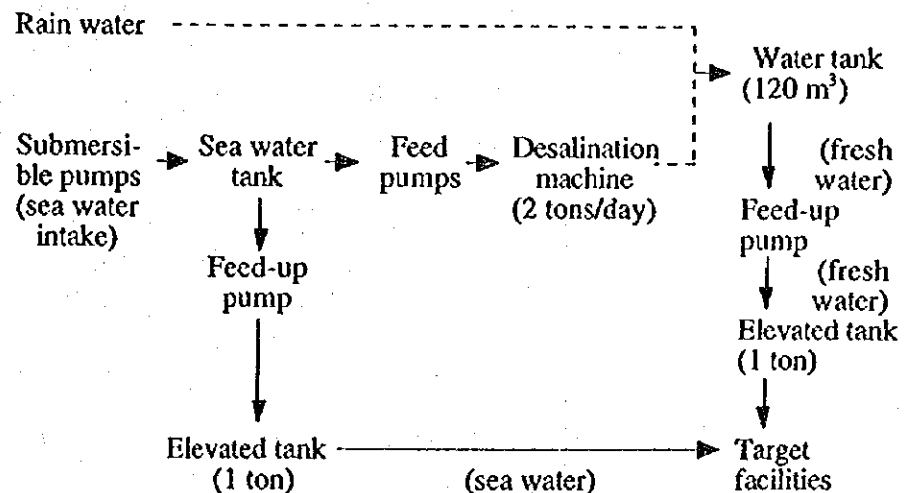
108 m<sup>3</sup>  
(1.95 m<sup>3</sup>/day × 90 days)

Consumption 288 m<sup>3</sup>  
(3.2 m<sup>3</sup>/day × 90 days)

180 m<sup>3</sup>  
(2 m<sup>3</sup>/day × 90 days)

Based on the above, a water tank capacity of approximately 150 m<sup>3</sup> and a desalination machine capacity of 2 tons/day will be required to make up for the lacking fresh water.

**c) Fresh Water and Sea Water Supply System**



**Specifications of Major Equipment and Materials**

Sea water intake submersible pumps:

0.75 kW × 2 pumps (automatic alternate operation), 230 V/1 φ

Sea water tank:

Polyethylene tank with approximately 1,000 L capacity

Feed pumps:

0.25 kW × 2 pumps (automatic alternate operation)

Desalination machine:

Reverse osmosis film system with daily output of approximately 2 tons (required sea water is approximately 20 tons/day)

Water tank (fresh water):

Concrete tank with approximately 150 m<sup>3</sup> capacity

Feed-up pump (sea water):

0.4 kW × 2 pumps (automatic alternate operation)

Feed-up pump (fresh water):

0.4 kW × 2 pumps (automatic alternate operation)

## 2) Drainage and Sanitary Facilities

Effluent and living wastewater will flow separately from indoors to join up in outdoor measures and be guided into a digestion tank. After being treated to within discharge standards (BOD 25 ppm or less according to WHO standards), the water will be discharged into the sewers alongside the site in the case of Calliaqua, and either scattered on the site land or dispersed at sea in the case of Canouan. As for the sea water used in treating the fish at the Canouan site, this will be discharged to the sea after filtering in view of the fact that only small quantities will be used.

Site	Wastewater Source	Treated Water Quantity	Digestion Tank Specifications
Calliaqua	Fishermen's toilets/showers	600 L/day	Treatment capacity 1.2 m <sup>3</sup> /day (contact aeration)
	Miscellaneous wastewater	1,000 L/day	Treatment capacity 1.0 m <sup>3</sup> /day (contact aeration)
Canouan	Overall	1,400 L/day	Treatment capacity 2.8 m <sup>3</sup> /day (contact aeration)

## 3) Ventilation Equipment

Ceiling fans shall be installed in the offices (ϕ 1,200 mm, 60 W). The other facilities shall rely on natural ventilation.



#### 4) Electrical Equipment

As the facilities will include ice making and storage equipment, etc., they will require single phase 230 V and 3-phase 400 V (for power) power lines. The power situation on both St. Vincent and Canouan is stable and, even if power cuts do occur, these are only short-term and will not create any problems in the ice storage of the caught fish. Emergency generators are, therefore, not necessary. The required electric energy on each site is calculated in the following manner.

Site	Target Equipment	Maximum Electric Energy	Mean Load	Normal Electric Energy
Calliaqua Fishery Facilities	Ice making and storage equipment	8.0 kW	85%	6.8 kW
	Water supply and drainage system	2.0 kW	30%	0.6 kW
	Lighting and others	3.0 kW	30%	0.6 kW
	Total	13.0 kW (16.3 KVA)		8.3 kW (10.4 KVA)
Canouan Fishery Facilities	Ice making and storage equipment	12.0 kW	85%	10.2 kW
	Water supply and drainage system	4.5 kW	50%	2.2 kW
	Diving cylinder air charger	3.7 kW	30%	1.1 kW
	Lighting and others	6.0 kW	50%	3.0 kW
	Total	26.2 kW (32.8 KVA)		16.5 kW (20.6 KVA)

Based on the above, it will be necessary to supply the Calliaqua facilities with approximately 20 KVA and the Canouan facilities with approximately 40 KVA (3  $\phi$  4-lines). With regard to the supply lines, in the case of Calliaqua, power will be branched and voltage dropped from the 11 KV distribution line on the road to the north of the site, and brought to the facilities along buried pipe. In the case of Canouan, it is planned for the Government of St. Vincent to draw a high tension power line to the site from the 11 KV distribution line on the main road located some 300 m away, and the branched and voltage dropped power from there will be carried in the same way along a buried pipe.

#### 5) Fire Extinguishing Equipment

Just in case fires should occur, two indoors fire extinguishers (for gasoline, 3.0 L liquid) shall be placed in Calliaqua and four shall be provided on Canouan.

## 6) Waste Disposal Equipment

Government waste collection trucks collect waste in Calliaqua, and a private developer collects waste regularly on Canouan. Thus, designated waste containers shall be provided at the Project facilities. The garbage from fish treatment on Canouan will be given to the birds and disposed of naturally.

## 7) Ice Making and Refrigeration Facilities

### ① Ice Making Facilities

Production capacity: 1.5 tons/day (Canouan), 1 ton/day  
(Calliaqua)

Ice type: Flake ice

Cooling system: R-22 direct expansion dry system, drum  
cooling

Cooling medium condensation system: Air cooling

Base water: Clear water

Water temperature: 32°C

Ice making machine: Drum-type made of aluminum

Condensing unit for above: Loaded with open single layer  
return multiple cylinder

Compressor cooling capacity: Kcal/hr (Canouan), Kcal/hr  
(Calliaqua)

Compressor motor: 7.5 kW (Canouan), 4.5 kW (Calliaqua)

### ② Ice Storage Freezers

Type: Heat insulation prefabricated type

Cooling system: R-22 direct expansion dry system, unit cooler

Cooling medium condensation system:

Air cooling (air cooling condenser)

Defrosting system: Electric heater

Compressor capacity:

1.5 kW × 2 (Canouan), 1.1 kW × 2 (Calliaqua)

Inside temperature: 0 - 5°C

Outside air temperature: 35°C

Dimensions:

(Canouan) Ice storage: 1,800 (W) × 3,600 (D)  
× 2,500 (H), single chamber

Chilled room: 1,800 (W) × 3,600 (D)  
 × 2,500 (H), two chambers  
 (Calliaqua) Ice storage: 1,800 (W) × 2,700 (D)  
 × 2,500 (H), single chamber  
 Chilled room: 1,800 (W) × 2,700 (D)  
 × 2,500 (H), two chambers

Accessories: Inside wooden base, spare parts

## (7) Equipment

### 1) Fish Landing and Marketing Equipment

Equipment	Main Specifications	Quantity	Purpose of Use
Insulated fish boxes	Material: FRP, approximately 150 L capacity Dimensions: Approx. 0.75 m (L) × 0.6 m (W) × 0.5 m (H)	10	For fish storage and transportation. 5 boxes each for Canouan and Calliaqua
	Material: FRP, approximately 500 L capacity Dimensions: Approx. 1.2 m (L) × 1.1 m (W) × 0.7 m (H)	2	For temporary storage of small pelagic fish. 2 boxes for Calliaqua
Plastic fish boxes	Material: Plastic, approximately 70 L capacity Dimensions: Approx. 1.2 m (L) × 1.1 m (W) × 0.7 m (H)	90	For the landing and freezer storage of caught fish. 54 boxes for Canouan and 36 for Calliaqua
Platform balances	Material: Stainless steel, 0 - 300 pounds	4	For the weighing of fish in lots. 2 scales for each site
Spring scales	Material: Stainless steel, 0 - 200 pounds, hanging type	2	For the weighing of large pelagic fish. 1 set of scales for each site
	Material: Stainless steel, 0 - 20 pounds, hanging type	7	For selling purposes. 1 for Canouan and 6 for Calliaqua
Hand carts	Material: Stainless steel Dimensions: 1.2 m (L) × 0.75 m (W)	4	For carrying fish from the jetties to the treating facilities. 2 for each site
Small freezer	Type: Chest type, approximately 500 L capacity	1	For storage of frozen bait fish and some consumable fish (for Canouan)

### 2) Education and Training Equipment

Equipment	Main Specifications	Quantity	Purpose of Use
Video set	Video deck, monitor TV (with antenna)	1 set	For education and public welfare of fishermen on Canouan
Underwater video/camera	Underwater video camera and underwater camera	1 set	For fishing gear tests and biological and environmental surveying on Canouan
Diving gear	Regulators, BCD, air tanks, masks, fins, wet suits and boots	2 sets	Same as above

### 3) Outboard Motor Maintenance and Repair Tools

Equipment	Main Specifications	Quantity	Purpose of Use
General tool sets	Spanners, drivers, and other hand tools	2 sets	For extending outboard motor maintenance and repair technology on Canouan
Power tools	Power beach drill, air compressor, electric welder	1 set	Same as above

### 4) Communication and Data Analysis Equipment

Equipment	Main Specifications	Quantity	Purpose of Use
VHF wireless	25 W output, 16 channels, PLL system, fitted with weather forecast receiver	2 sets	For communicating with fishing vessels and other fishery facilities (for Canouan)
Data processors	Table-top type, Intel 80486, 90 Mhz, 8 MB RAM, color monitor, printer and software	2 sets	For landing and marketing statistics preparation and facilities operation and management (1 set for each site)

### 5) Fishermen's Activity Support Equipment

Equipment	Main Specifications	Quantity	Purpose of Use
Diving air tank compressor	3.7 kW power, 4,500 psi operation pressure, 2 tanks, 4-stage compression	1 set	For supporting diving activities of fishermen on Canouan (electric compression of air cylinders)

### 6) Vehicles

Equipment	Main Specifications	Quantity	Purpose of Use
Pickup trucks	4WD, diesel engine, for three passengers	2	For transportation of caught fish and outboard motors and communications. 1 for each site

## 7) Fishing Boats

### a) Small Multi-purpose Fishing Boat

Purposes: ① Development and extension of offshore fishing (tuna long-line net and bottom long-line)

② Trial and extension of small inboard engine fishing boats (10m)

Operating waters: Mainly the waters around the Southern Grenadines

Users: Selected fishermen (sold on credit)

Quantity: 1

Type: Cabin cruiser small, multi-purpose fishing boat, with awning on deck

Hull material: Glass-fiber reinforced plastic (FRP)

Main dimensions: 10.2 m (L) × 2.9 m (B) × 1.5 m (D)

Main engine: One shipping inboard diesel engine (approximately 90 HP)

Cruising speed: Approximately 10 knots (when lightly loaded)

Crew berths: 3

Fish hold capacity: Approx. 1.0 m<sup>3</sup>

Ice hold capacity: Approx. 0.2 m<sup>3</sup>

Fishing equipment:

#### 1) Tuna long-line fishing

Hydraulic main line reel (winding capacity:

3.3 mm diameter × 8 miles) 1

Branch line spools (manual) 2

#### 2) Bottom long-line fishing

Main line reel (winding capacity:

6 mm diameter × 2,000 m) 1

Three-directional roller (detachable) 1

Navigation equipment:

Color fish finder (6" CRT, 150 W, dual frequency) 1

GPS (plotter, with East Caribbean area map) 1

VHF radio (with PLL system and weather forecast receiver) 1

SSB radio (with PLL system) 1

Fishing gear:

Tuna long-line fishing gear (complete set):

Main net 8 miles (3.3 mm diameter) 2 sets (1 for spare)

Bottom long-line fishing gear (complete set):

Main net 2,000 m (6 mm diameter) 2 sets (1 for spare)

Others: Generator (1.5 kW) 1  
 Bilge pump (1") 1  
 Anchor, mooring tools, fire extinguisher, life-saving equipment, sink and gas table (with gas cylinder), repair parts (1 set)

**b) Small Fishing Boats (Martinique-type)**

Purposes: ① Development of yet to be exploited demersal fish resources on the continental shelf  
 ② Expansion of outboard motor fishing boat operating waters and improvement of fishing boat safety  
 ③ Extension of the use of ice for fish store on boats

Users: Selected fishermen (sold on credit)

Quantity: 4 boats

Locations: 1 boat on Canouan, 1 on Union and 2 in Calliaqua

Boat type: Outboard motor, non-deck boat, with awning

Hull material: Glass-fiber reinforced plastic (FRP)

Main dimensions: 7 m (L) × 1.8 m (B) × 0.8 m (D)

Fishing equipment: One main line reel for bottom long-line (electric driven)

Navigation equipment: 1 magnetic compass, 1 portable VHF radio, 1 GPS and 1 color fish finder per boat

Insulated fish hold: Approx. 700 litre (with a drain cock)

Fuel tank: Aluminum tank with capacity of approximately 100 L

Outboard motor:

Diesel outboard motor (approximately 36 HP) 1 per boat

Remote maneuvering device (speed, gear operation and steering device) 1 per boat

Special repair tools 1 set

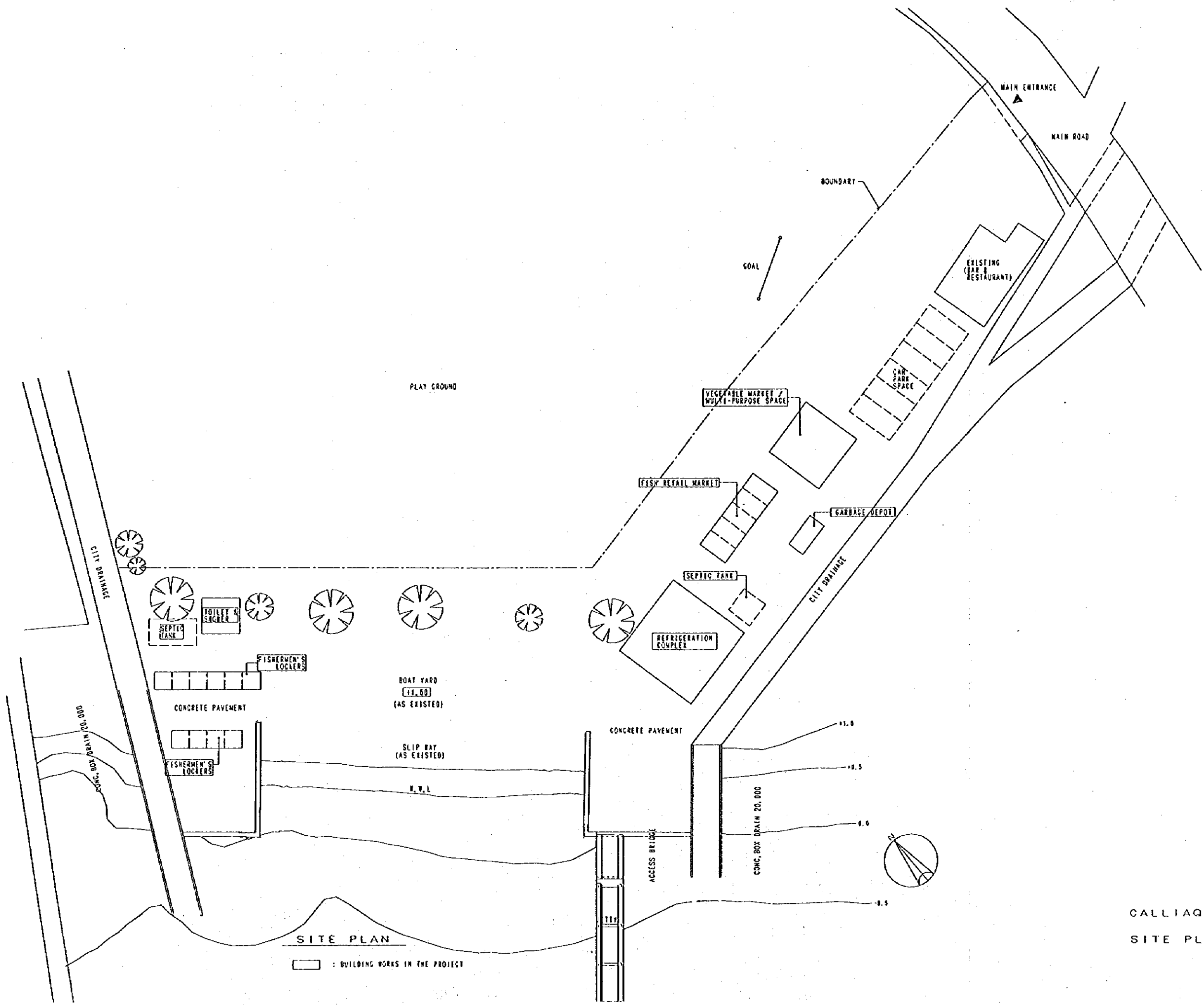
Fishing gear:

Bottom long-line fishing gear (complete set)

Main net 1,000 m (6 mm diameter) 2 sets per boat (1 for spare)

Others: Anchor, mooring tools, life-saving equipment, one repair parts set per boat

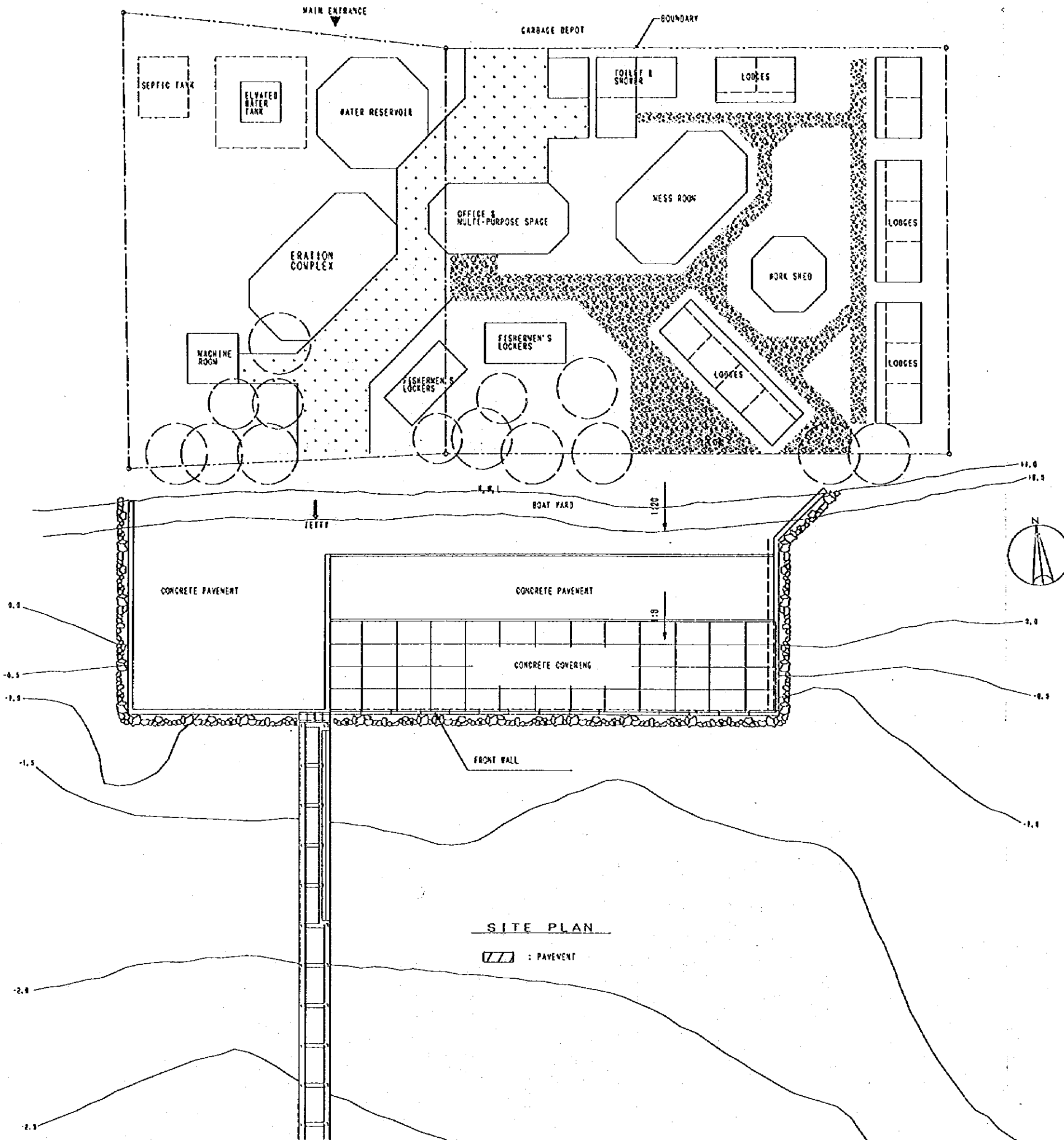




SITE PLAN  
 [ ] : BUILDING WORKS IN THE PROJECT

CALLIAQUA  
 SITE PLAN S-1/400

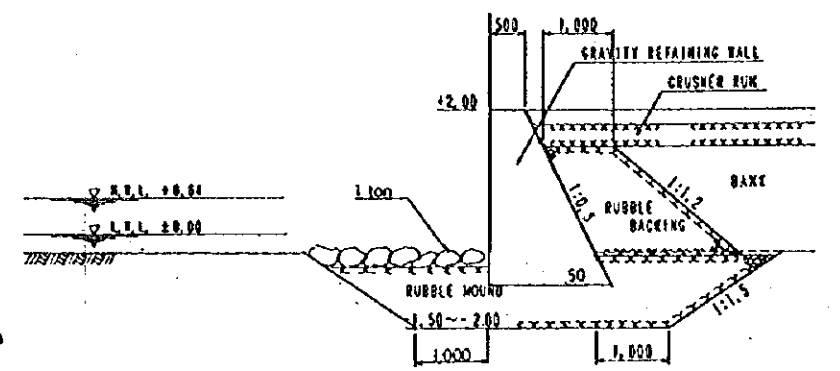
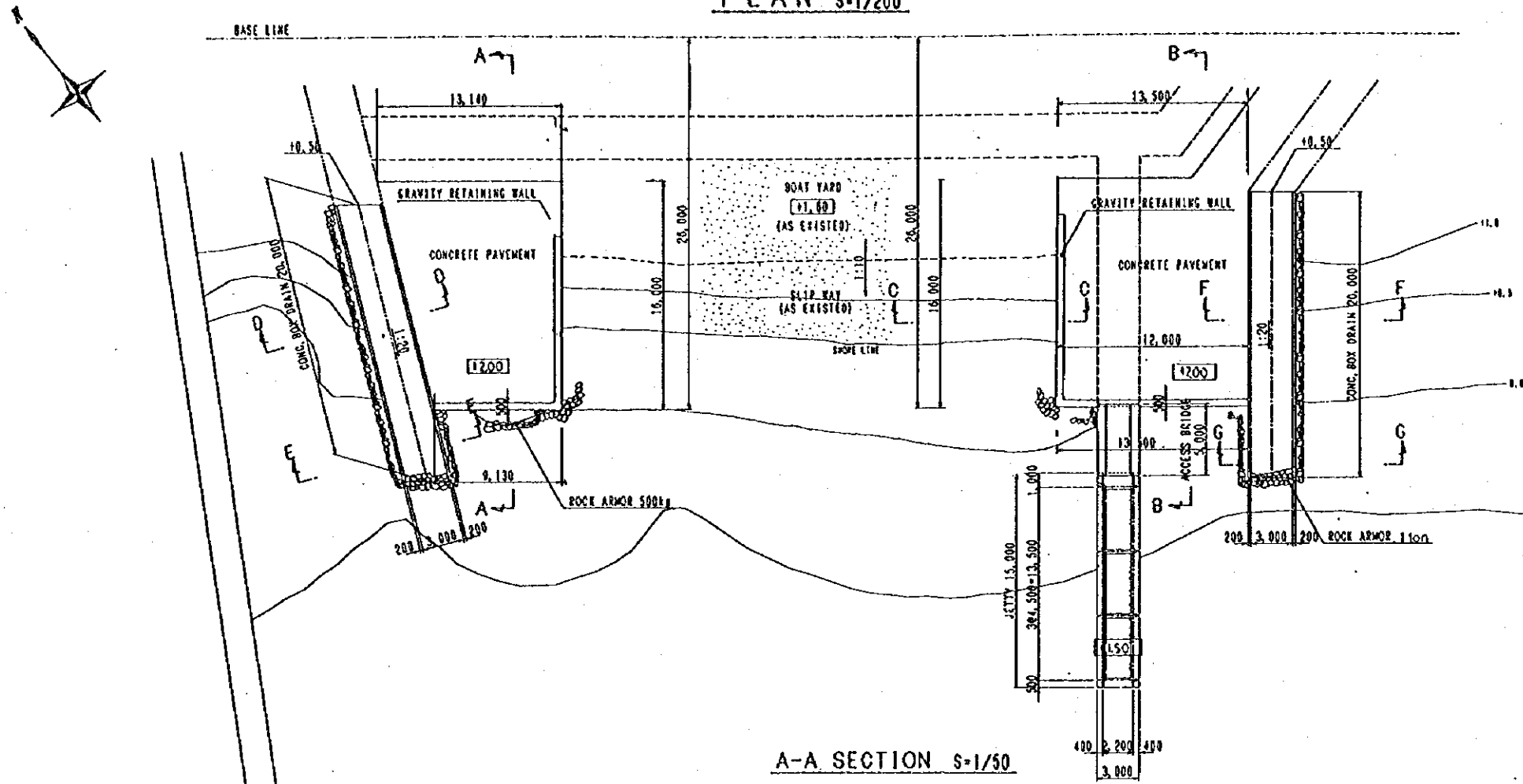




GENERAL PLAN AND SECTION (CALLIAQUA)

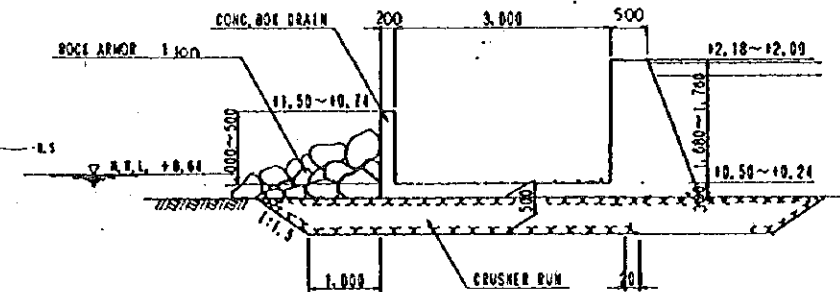
PLAN S=1/200

C-C SECTION S=1/50

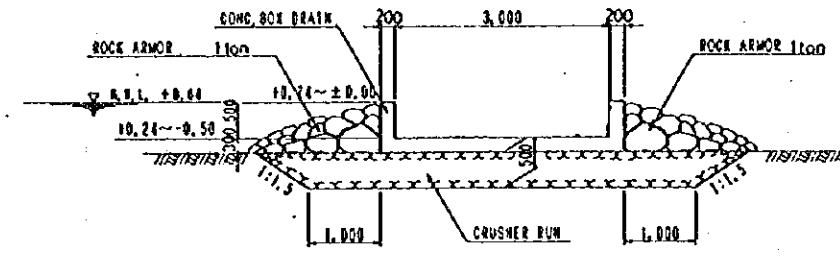


A-A SECTION S=1/50

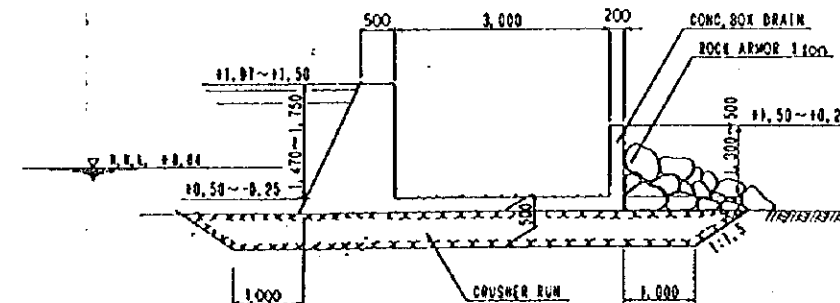
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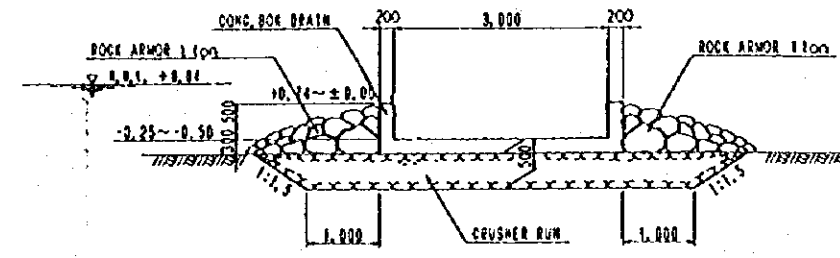
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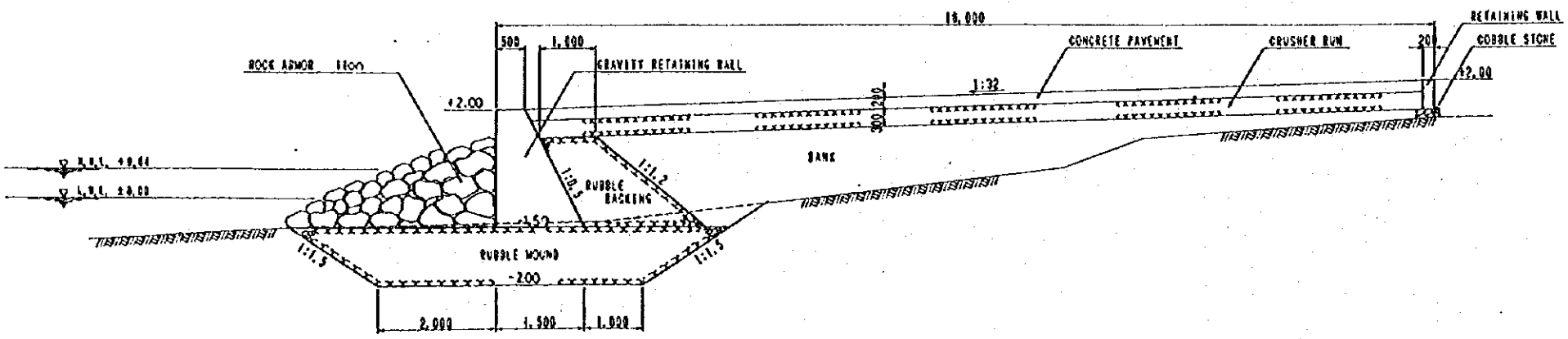
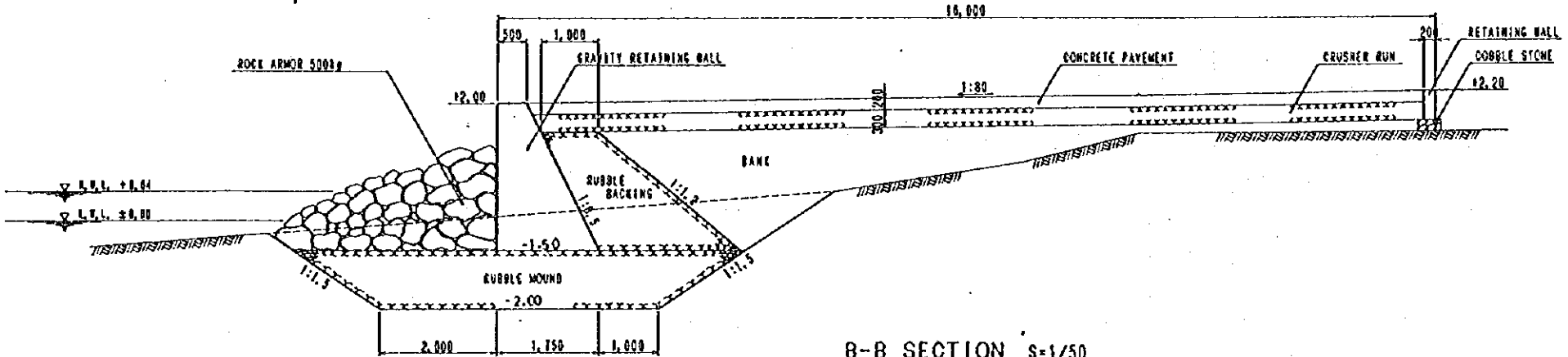
F-F SECTION S=1/50



G-G SECTION S=1/50

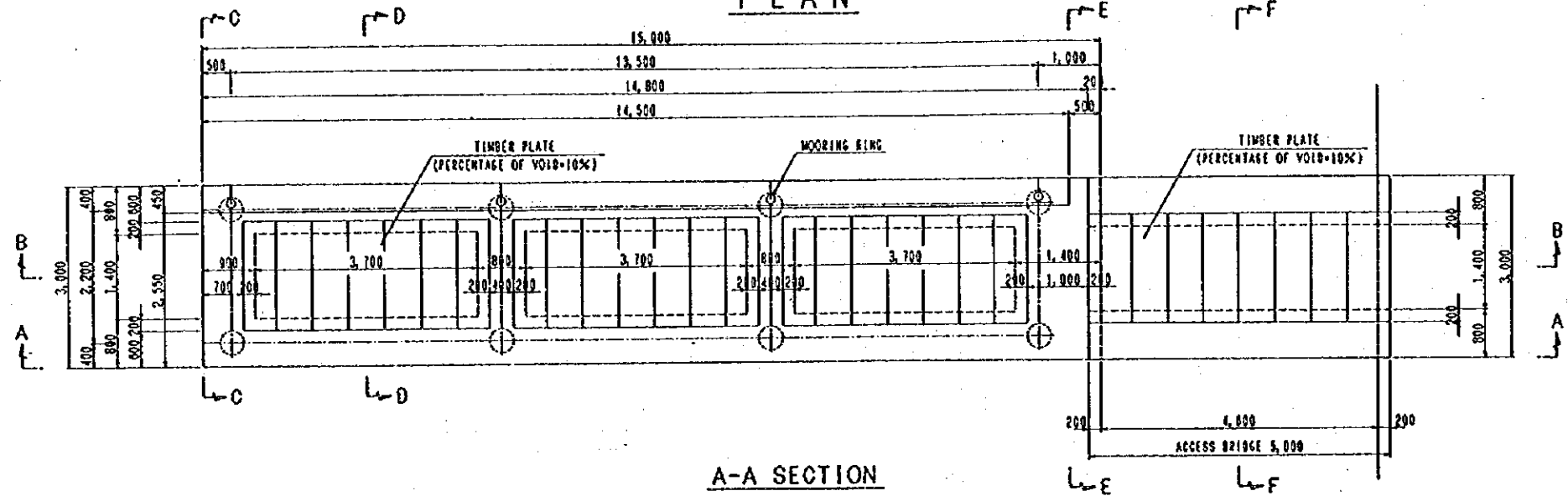


B-B SECTION S=1/50

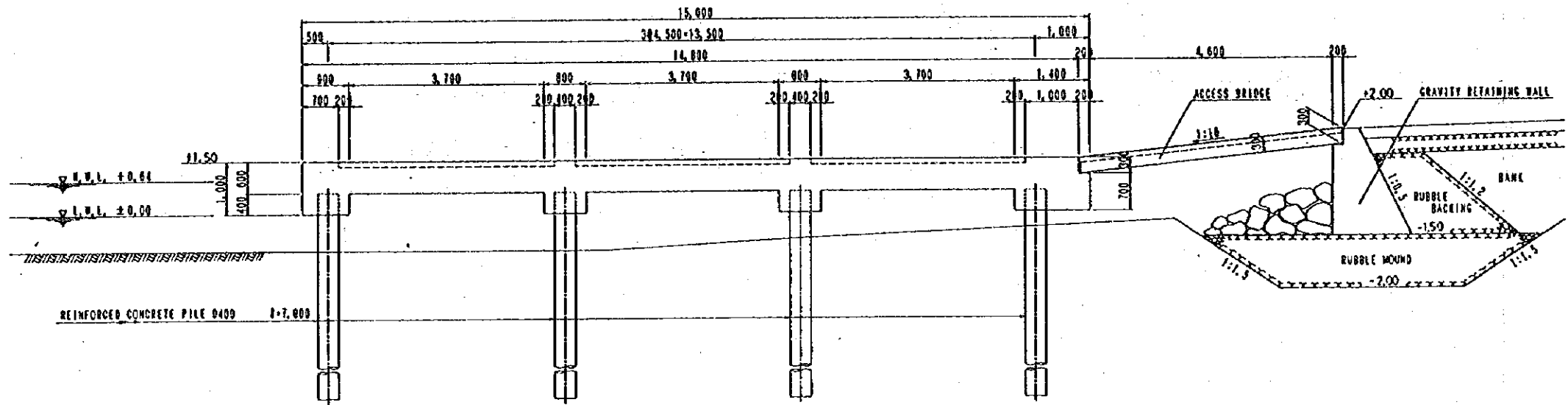


# GENERAL PLAN OF JETTY STRUCTURE S=1/50 (CALLIAQUA)

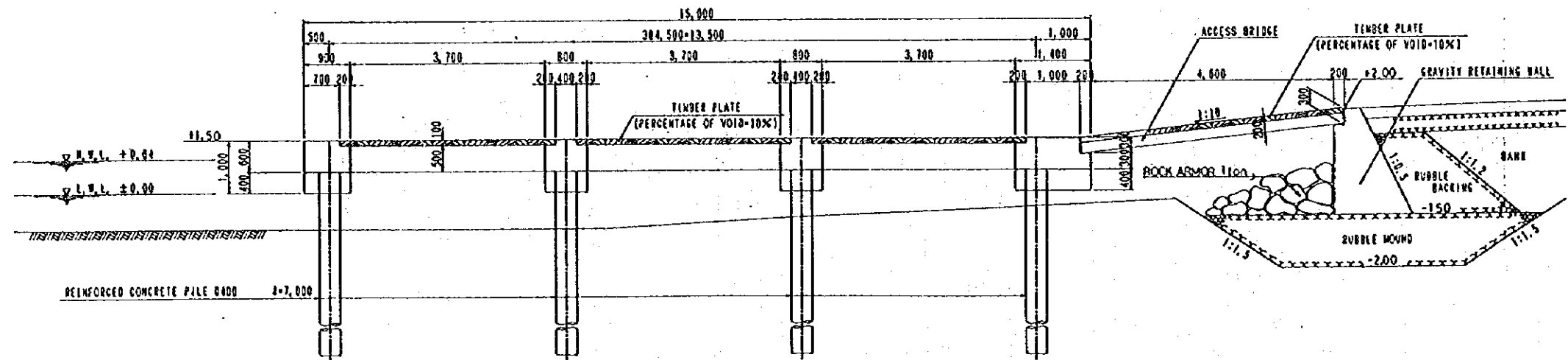
## PLAN



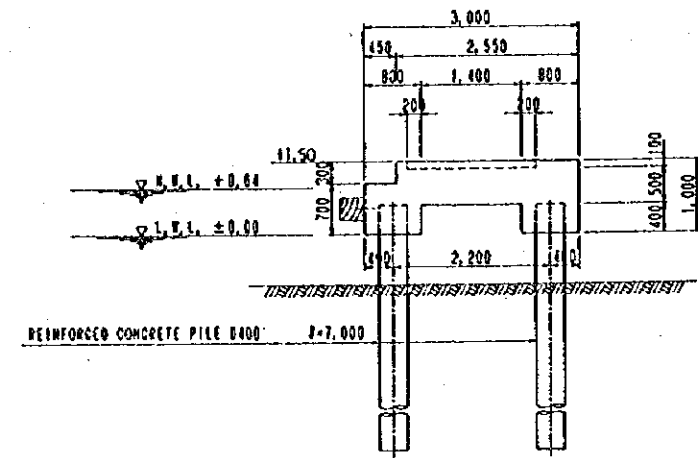
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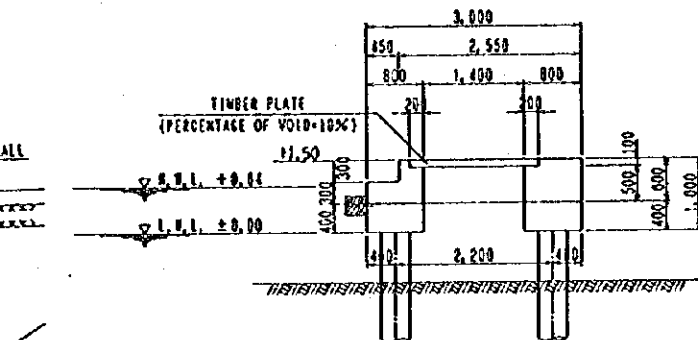
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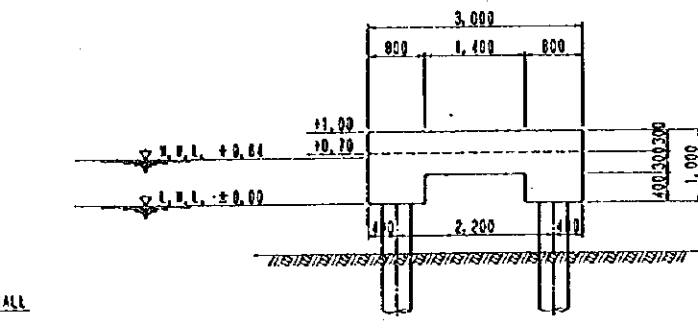
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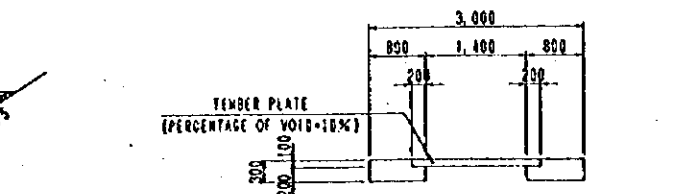
## D-D SECTION



## E-E SECTION

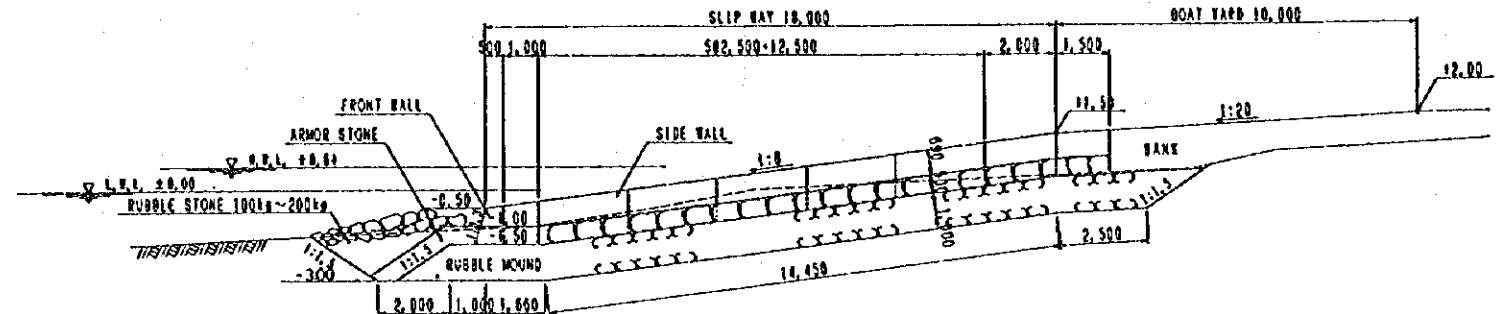


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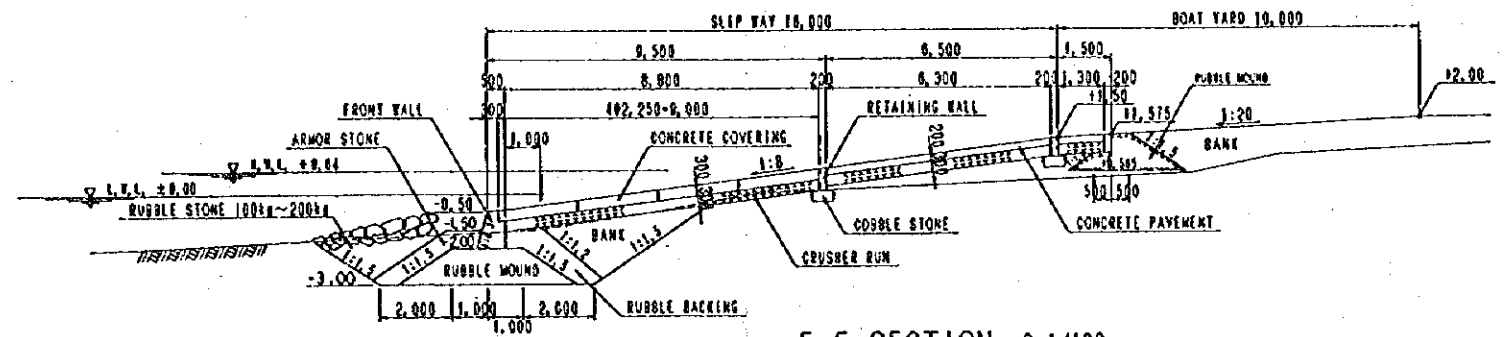


# GENERAL PLAN AND SECTION (CANOUAN)

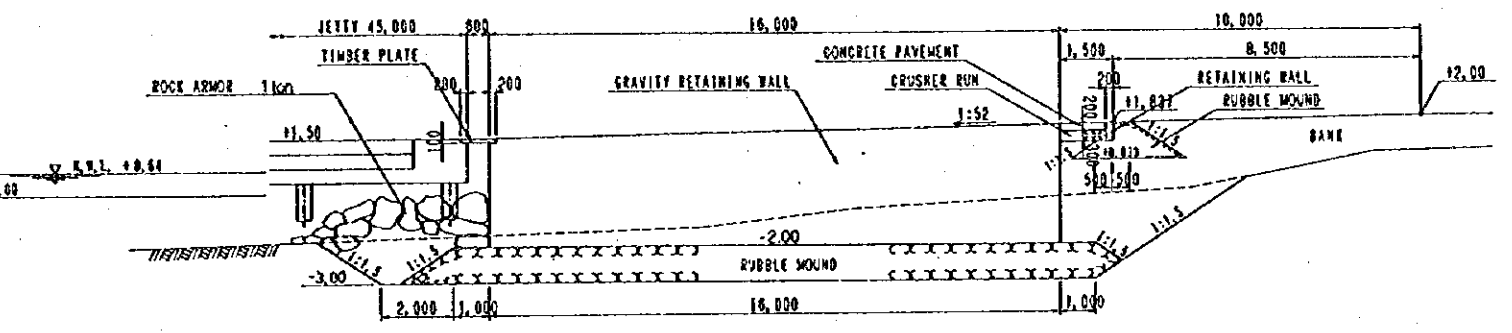
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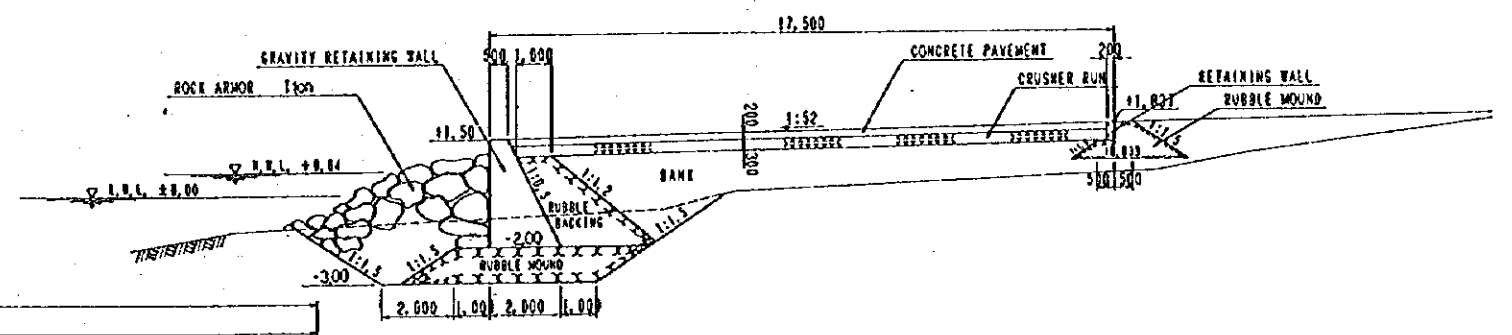
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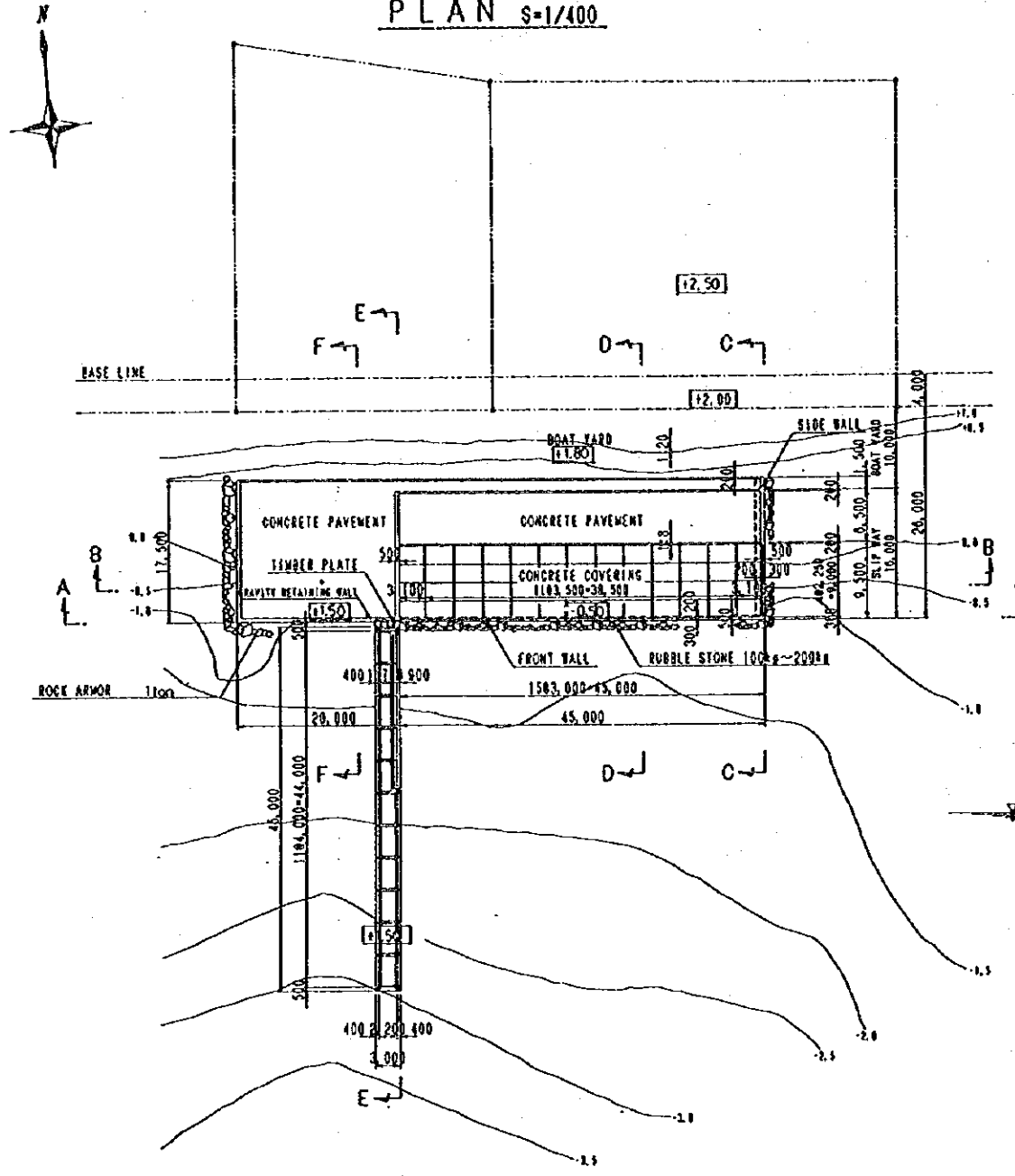
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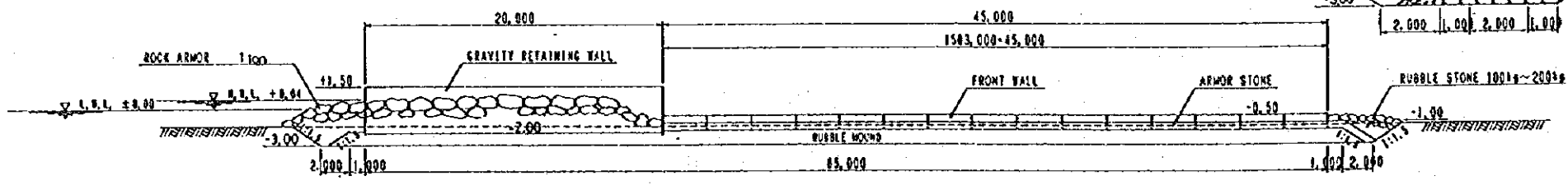
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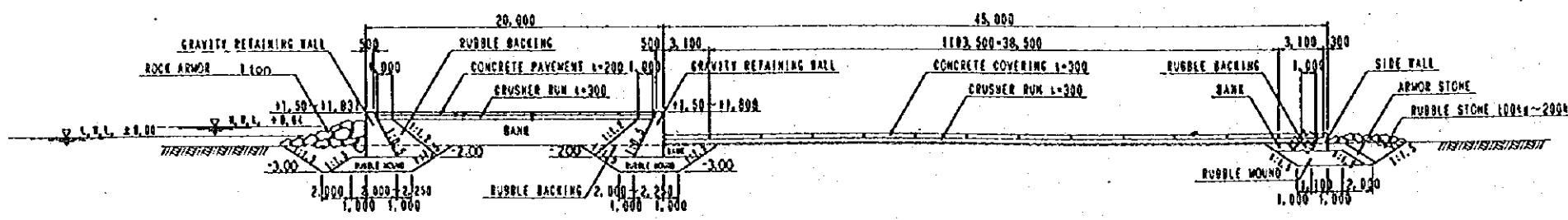
## PLAN S=1/400



## A-A SECTION S=1/200

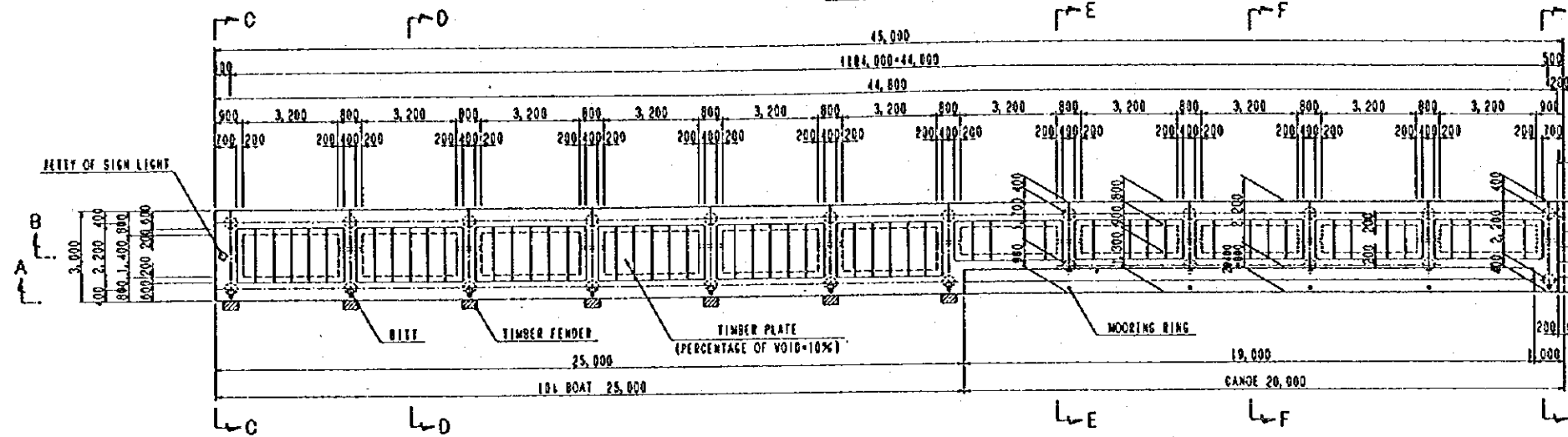


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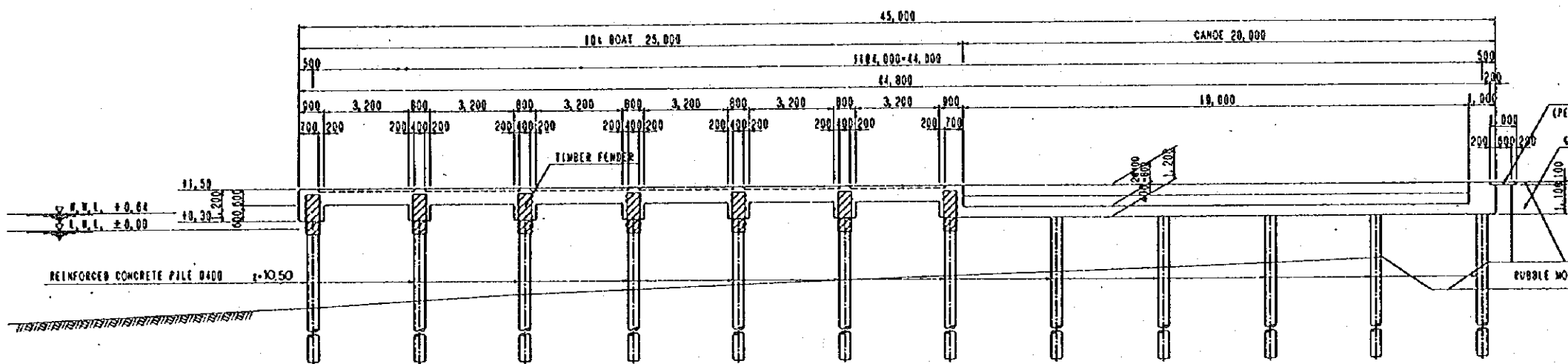


# GENERAL PLAN OF JETTY STRUCTURE S=1/100 (CANOUAN)

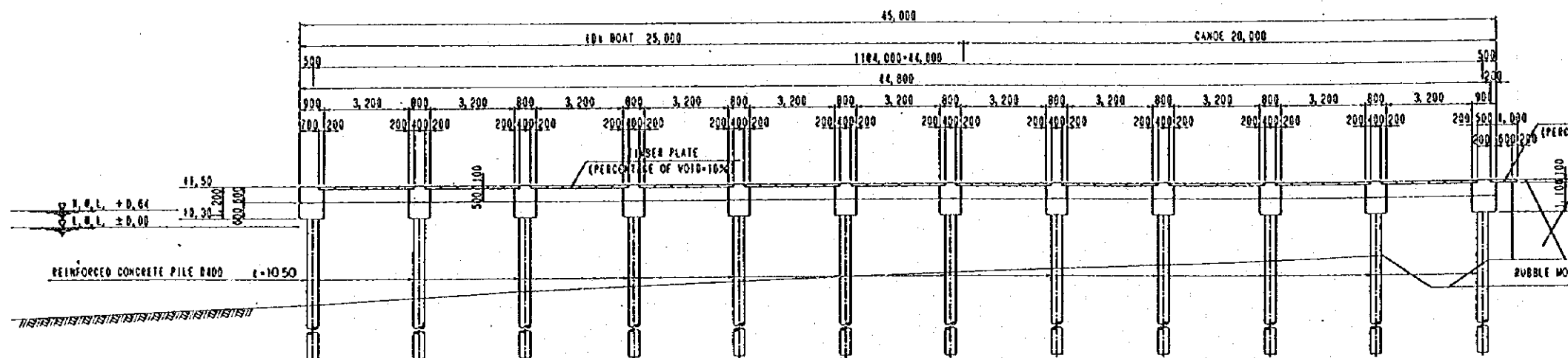
## PLAN



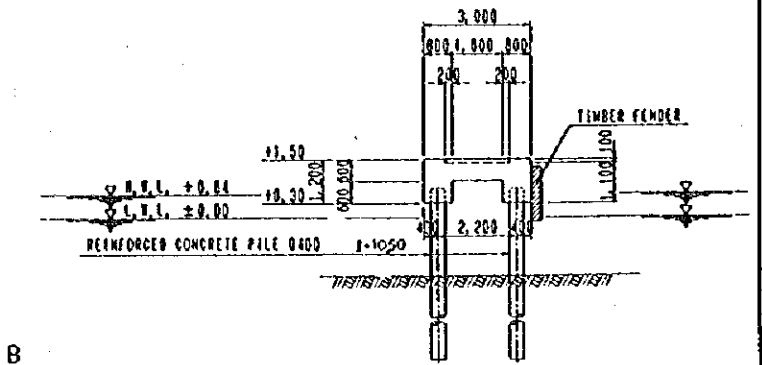
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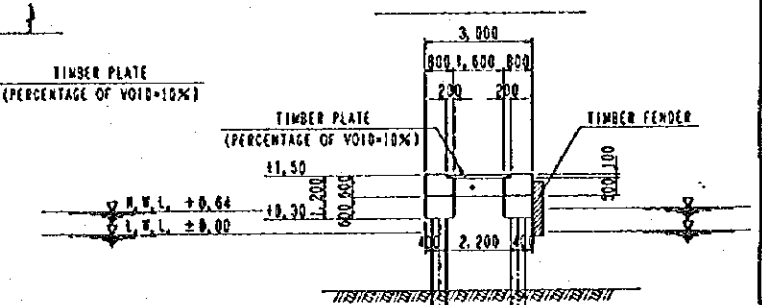
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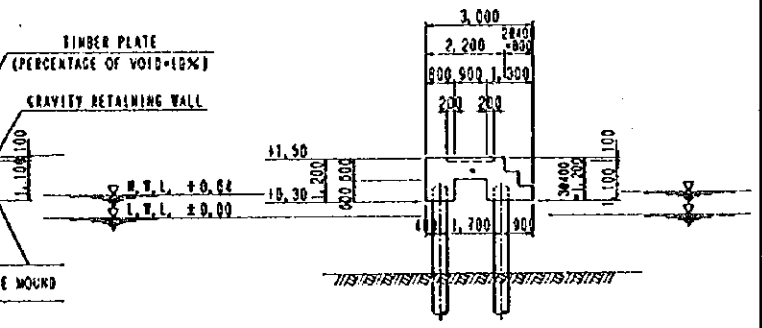
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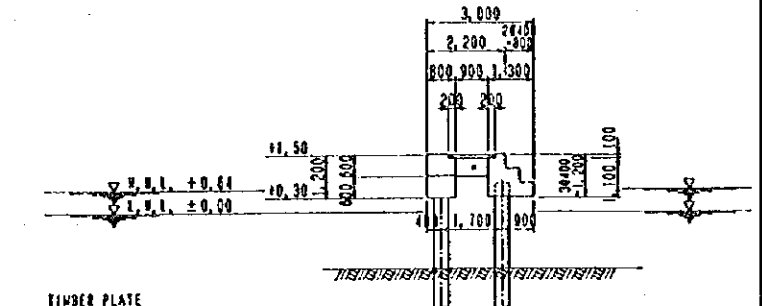
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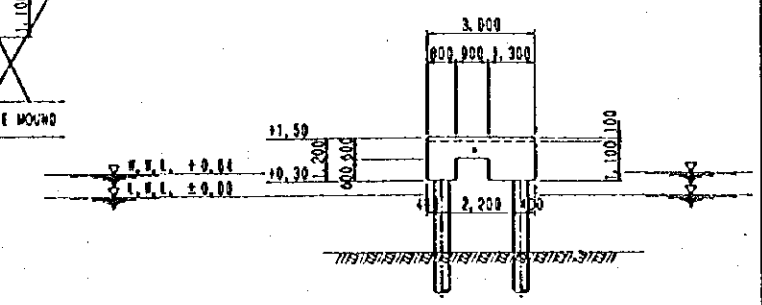
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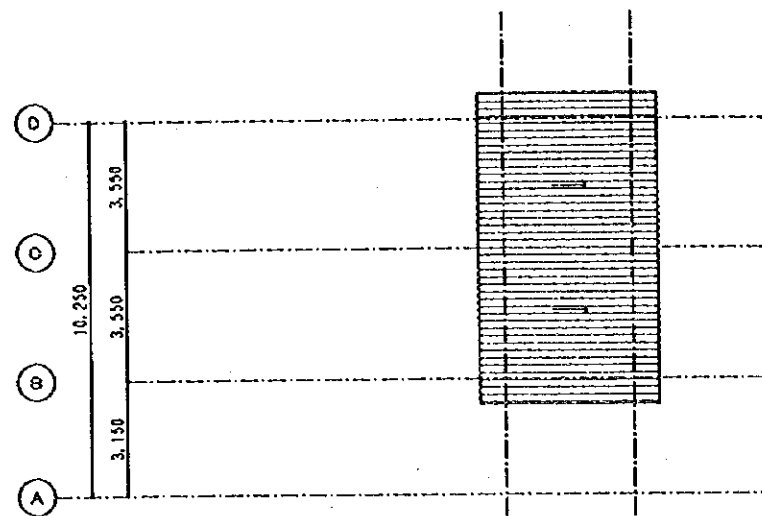


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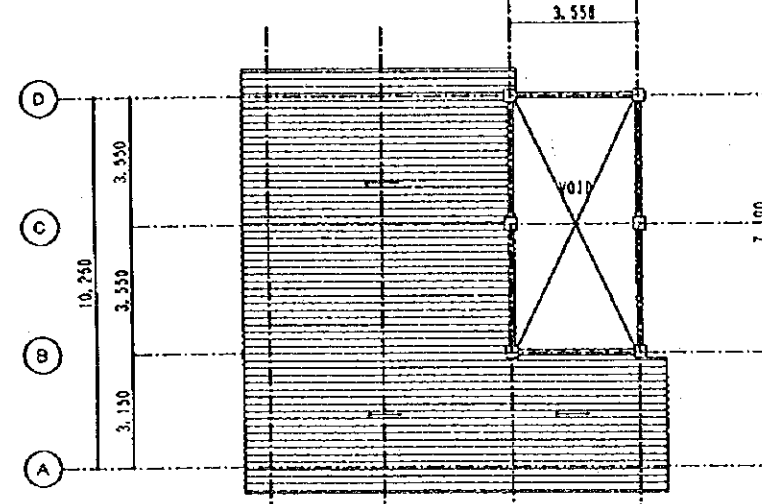


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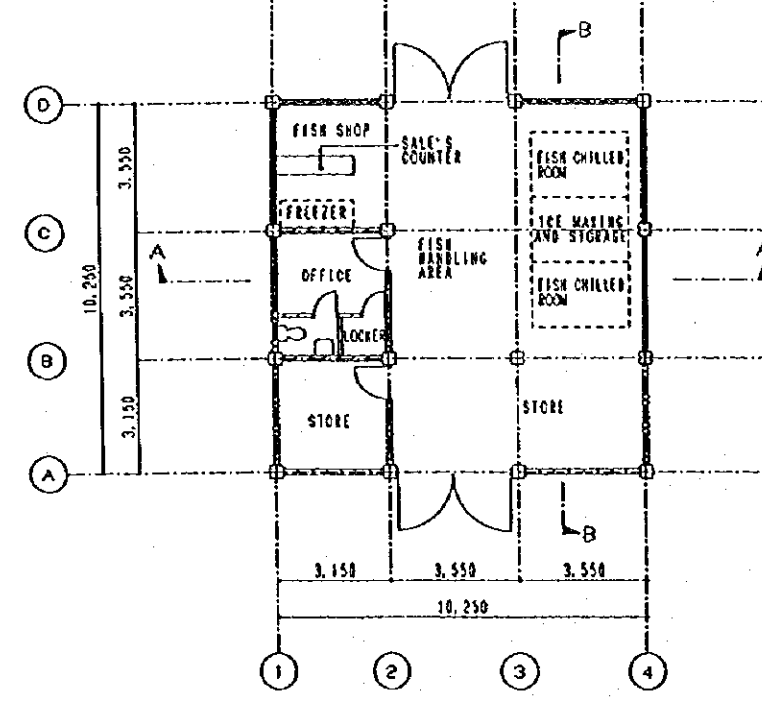




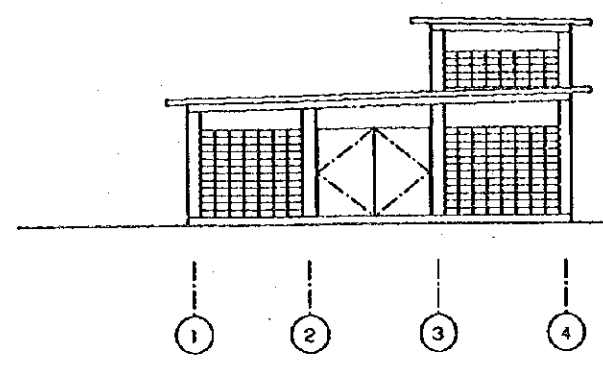
ROOF PLAN - 2



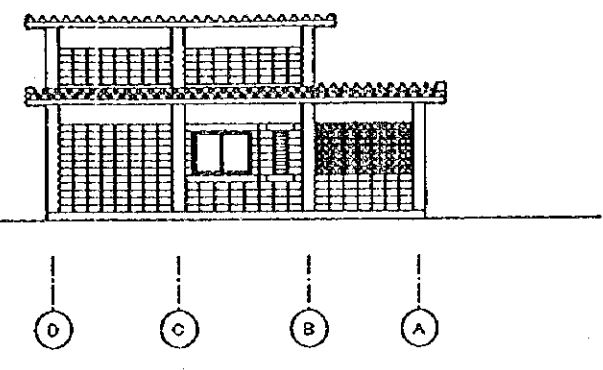
ROOF PLAN - 1



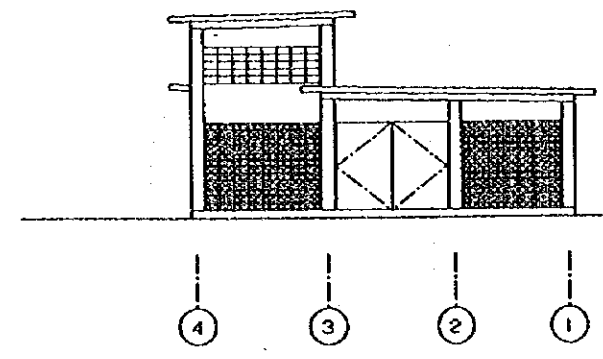
PLAN



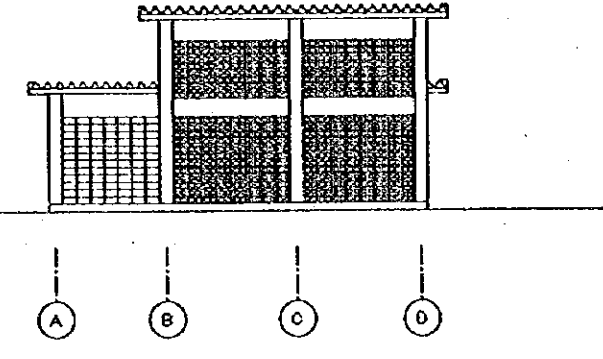
A LINE ELEVATION



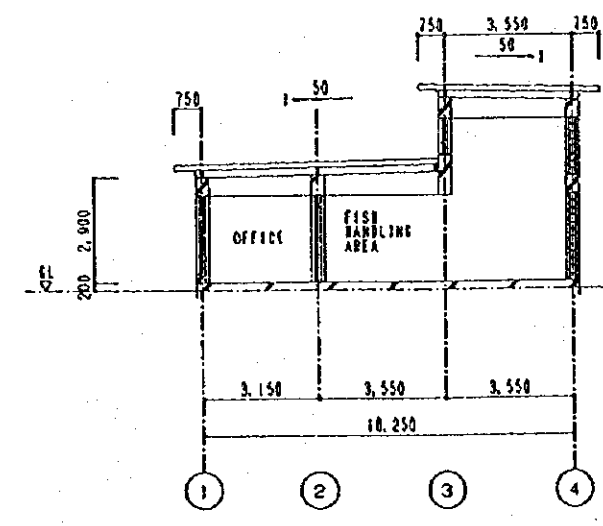
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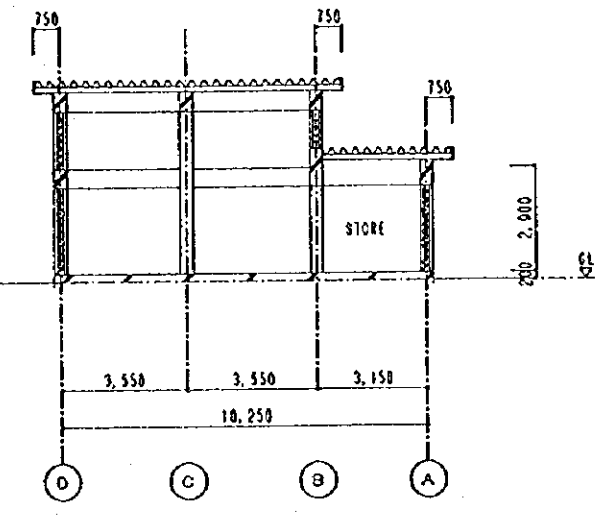
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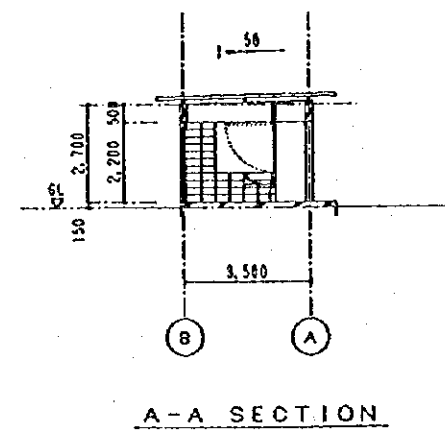
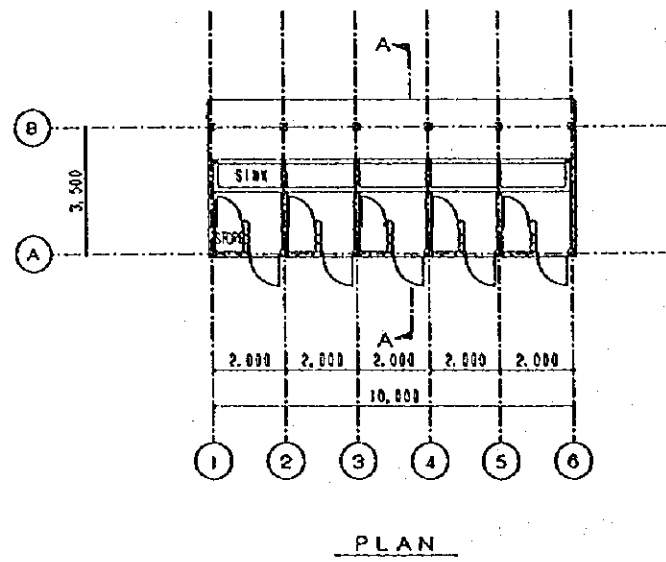
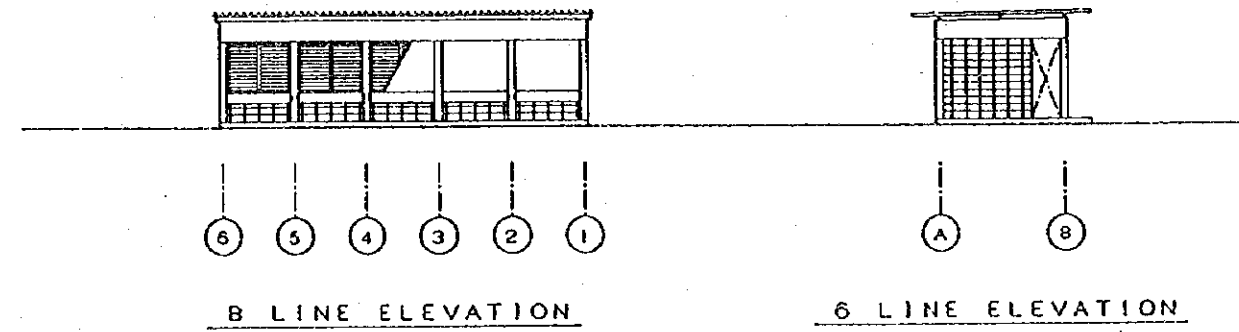
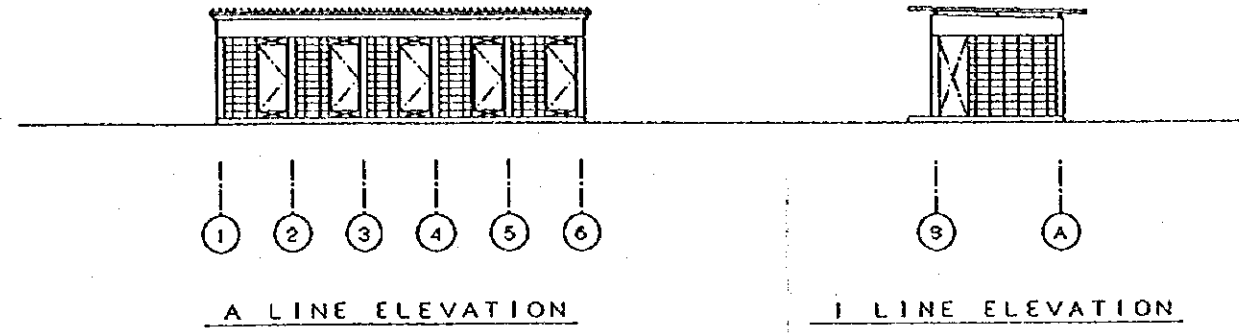
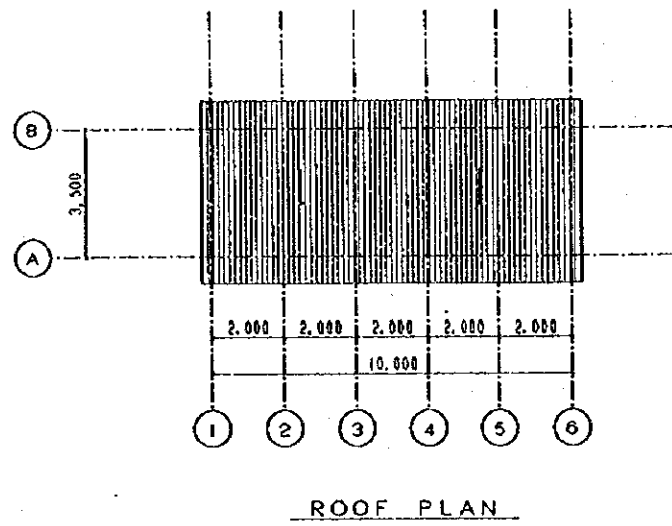
4 LINE ELEVATION

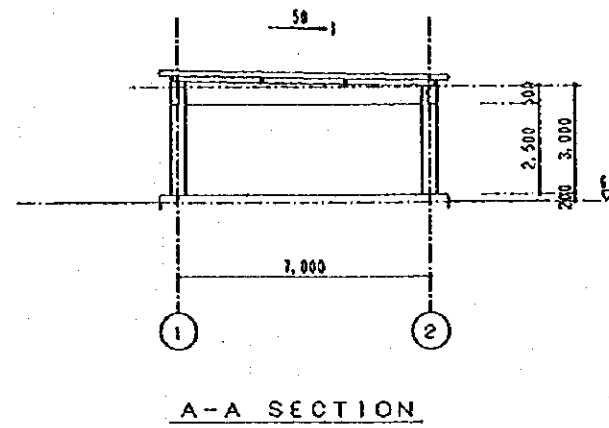
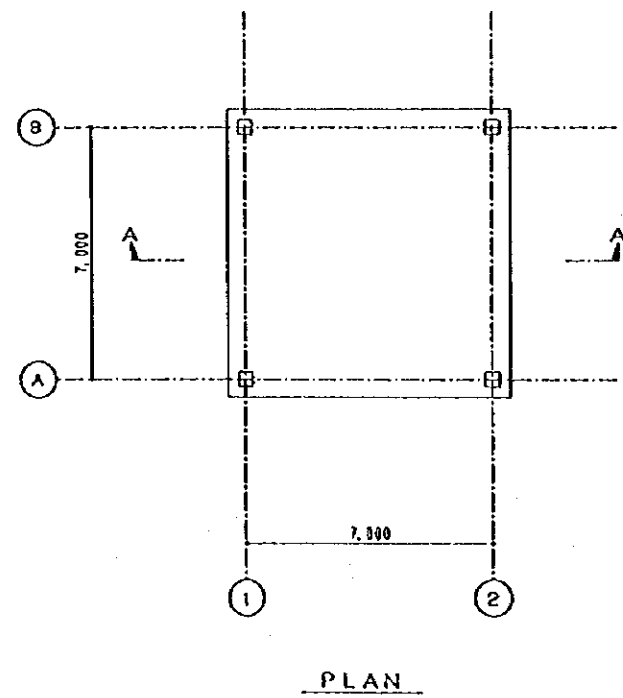
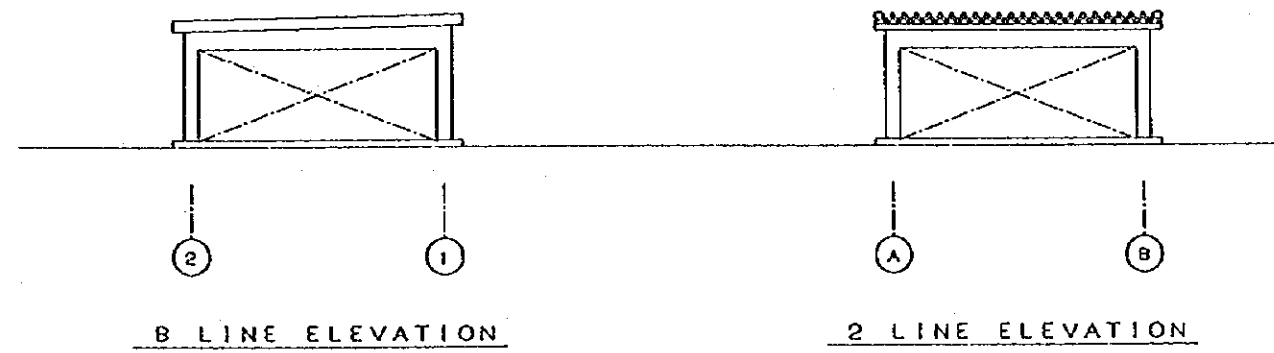
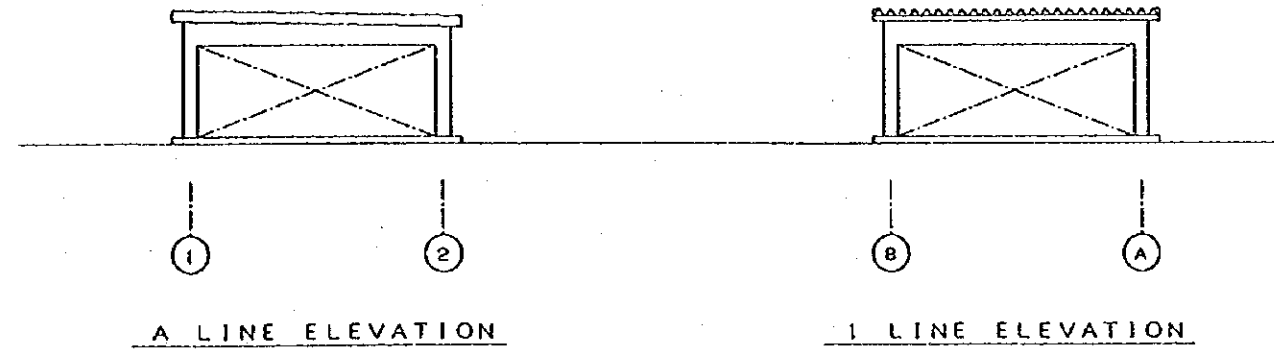
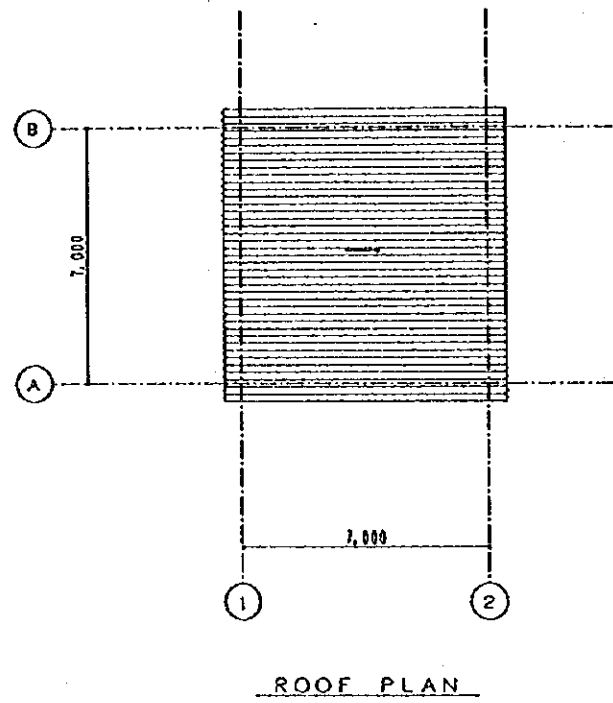


A-A SECTION

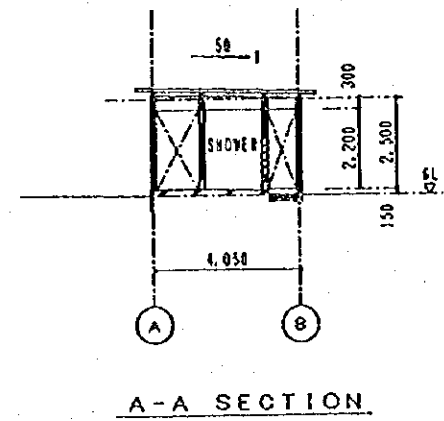
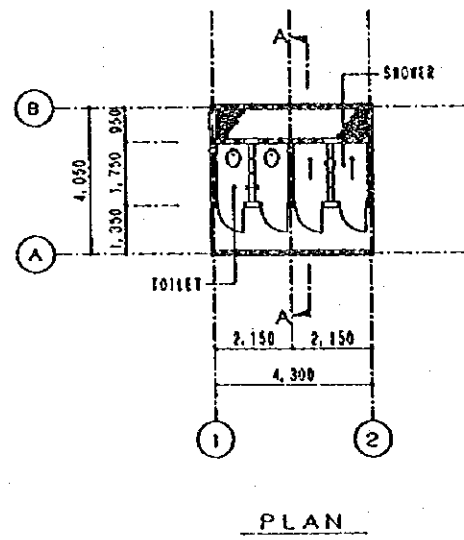
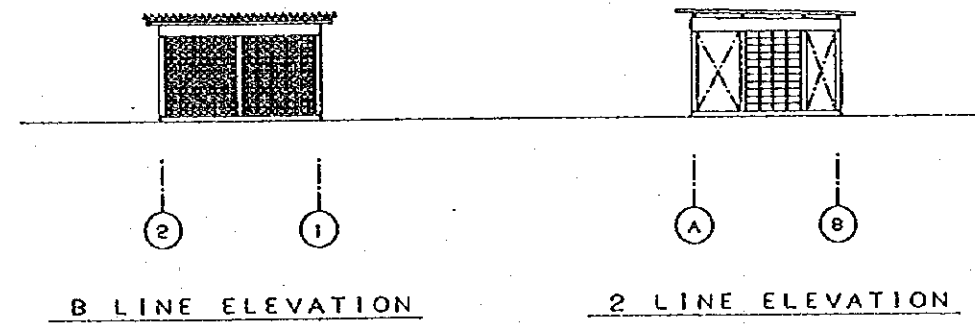
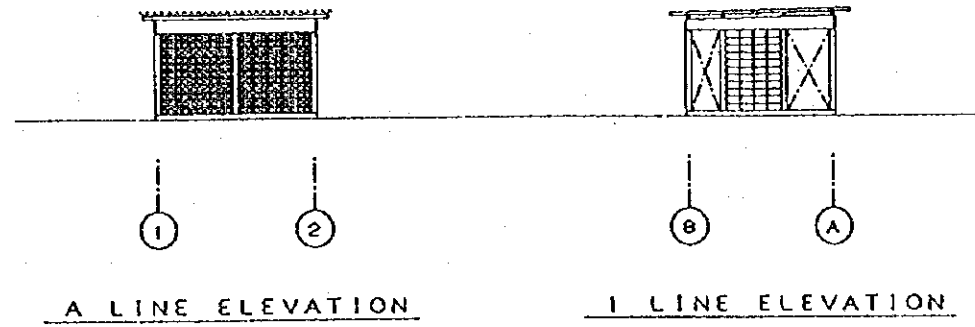
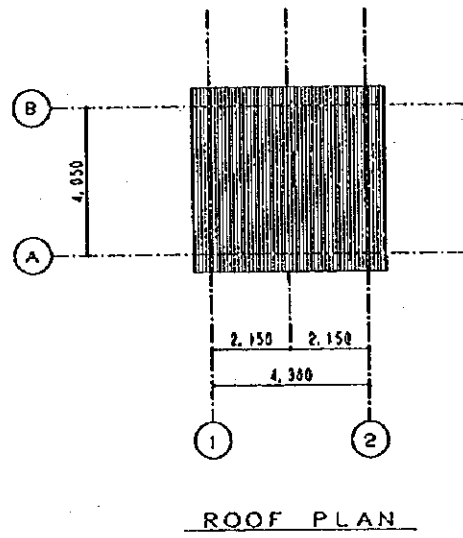


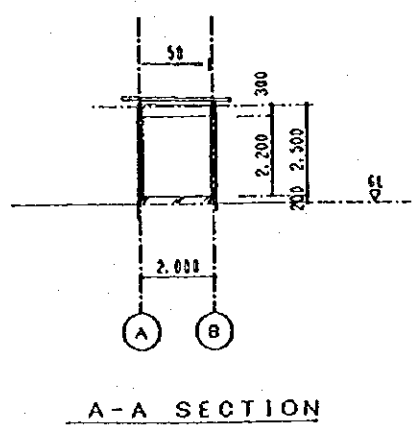
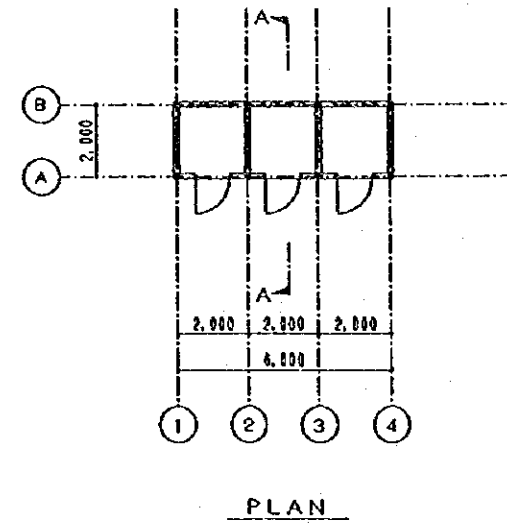
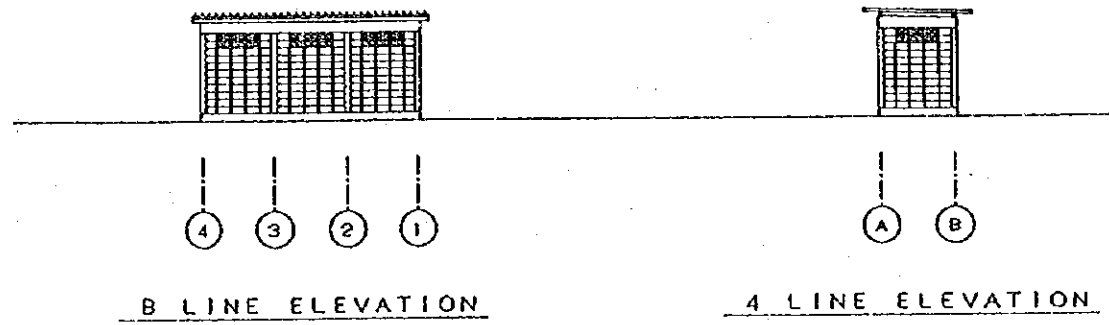
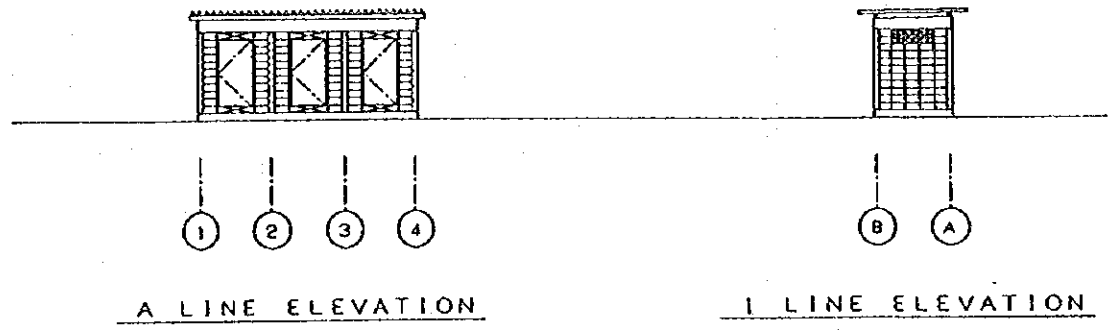
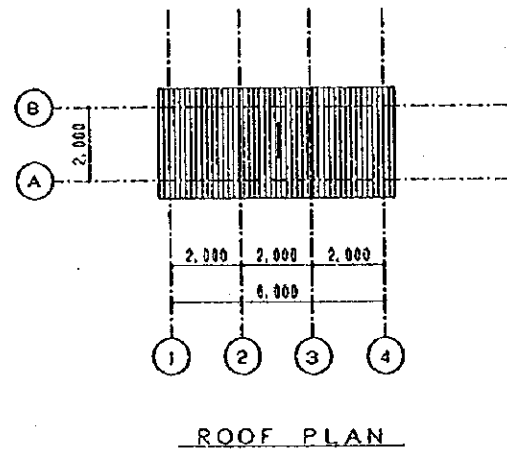
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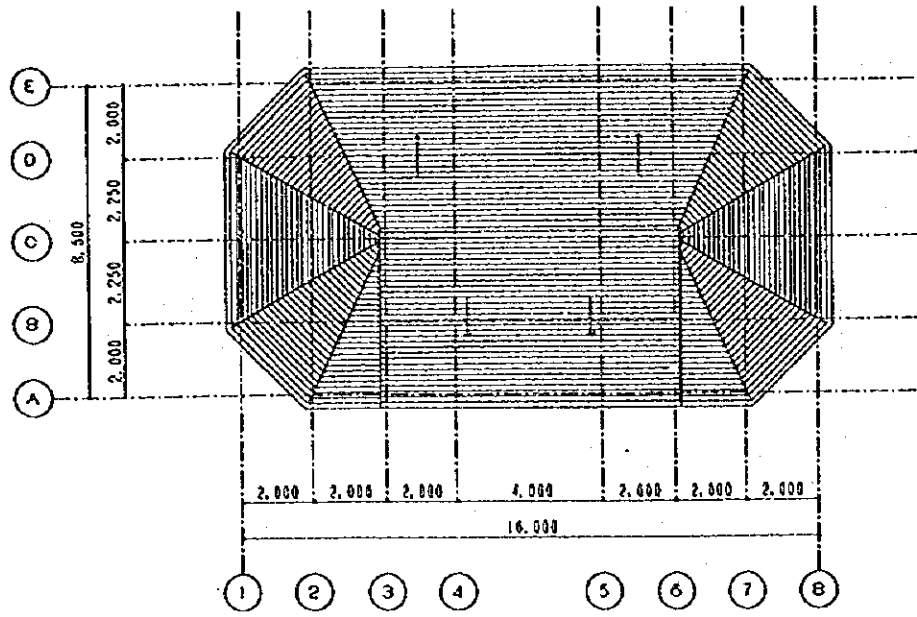




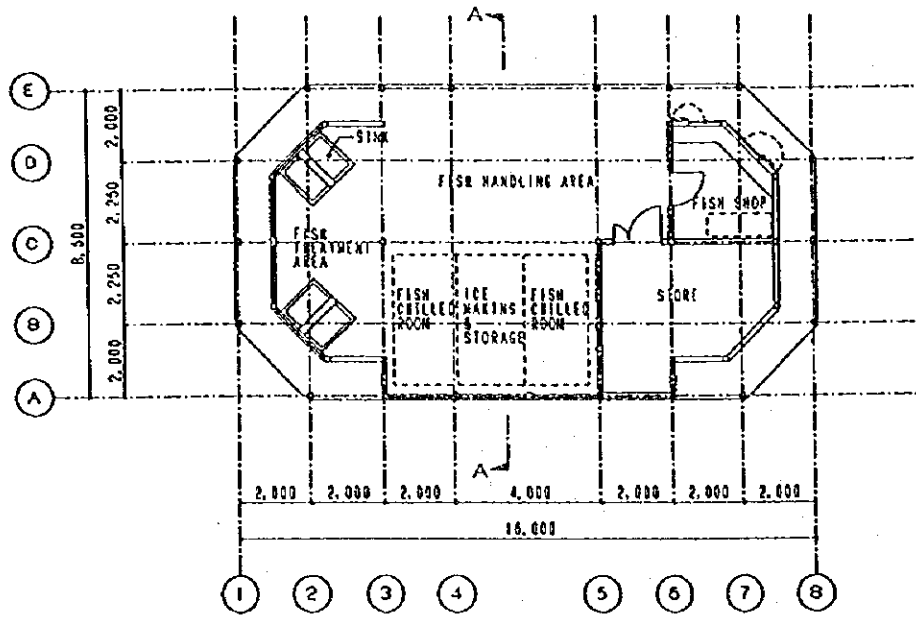




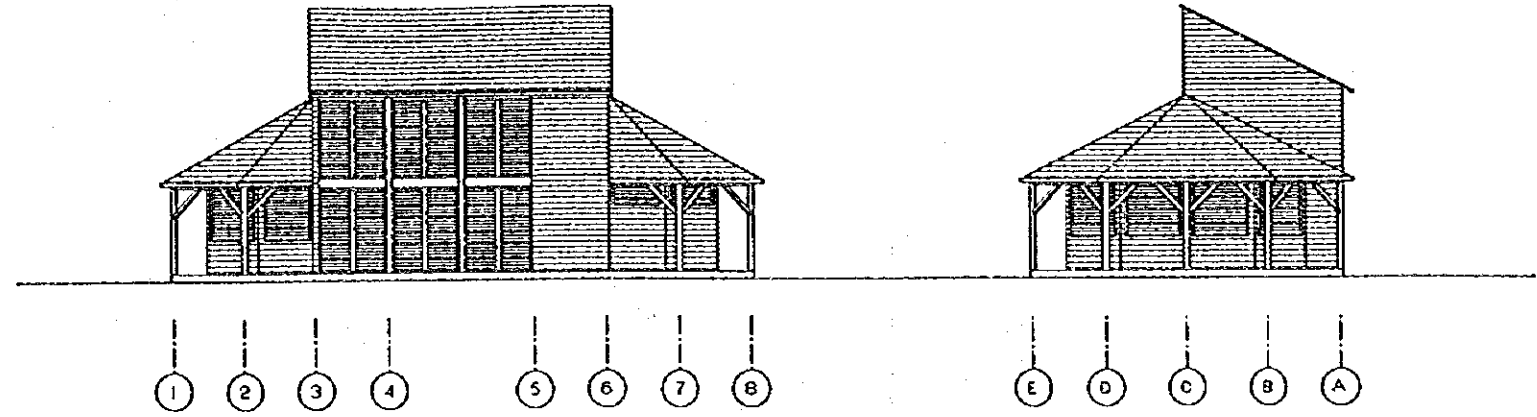




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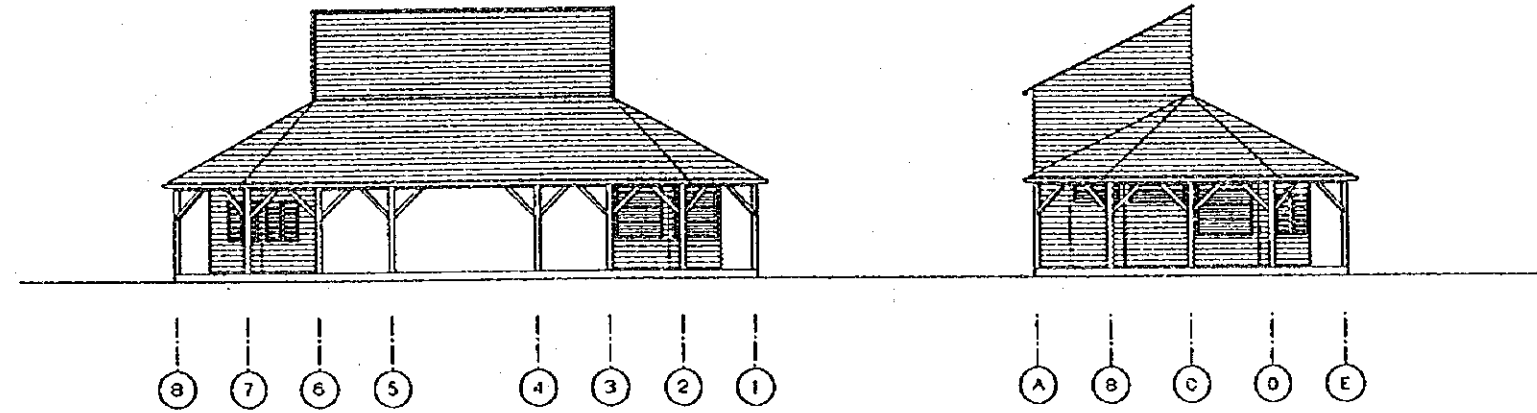


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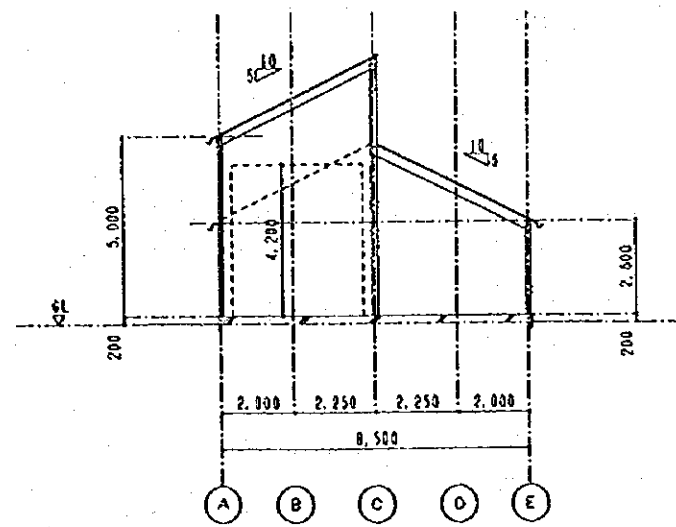
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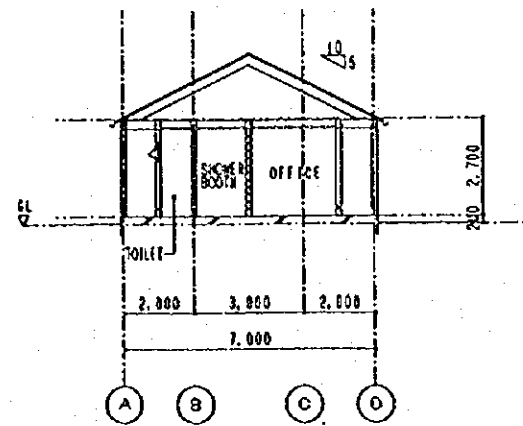
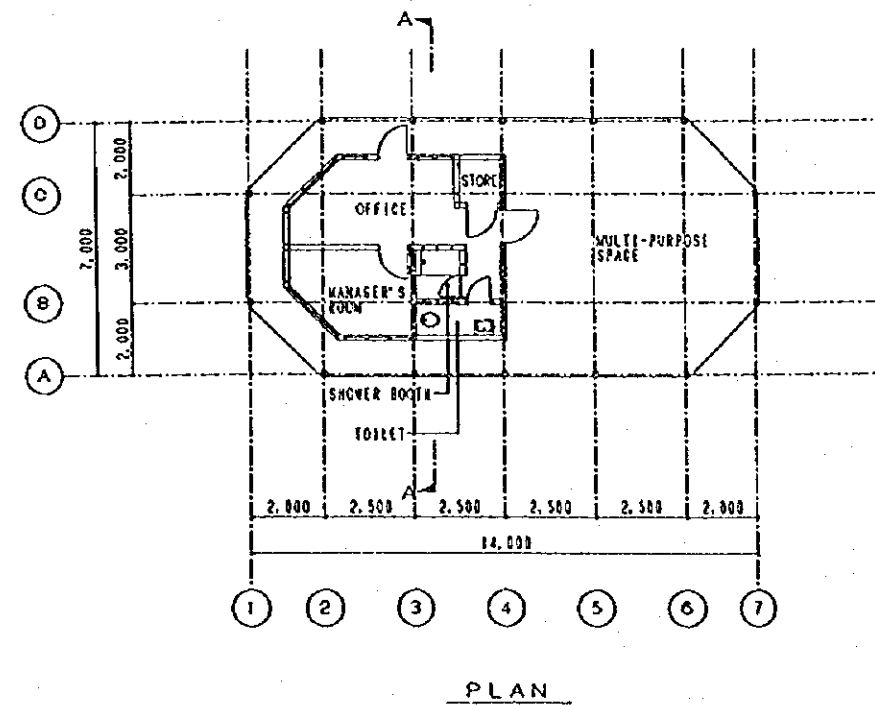
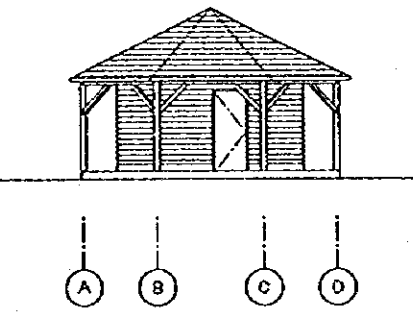
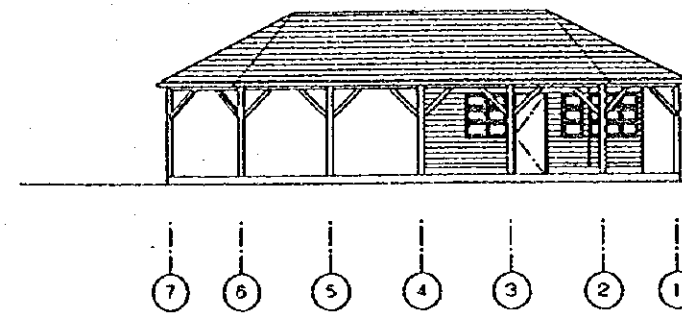
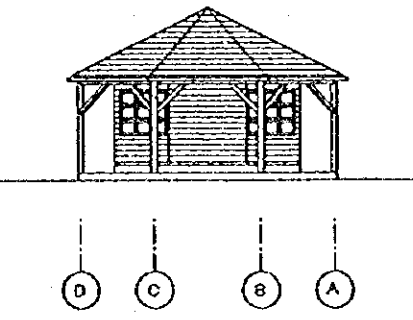
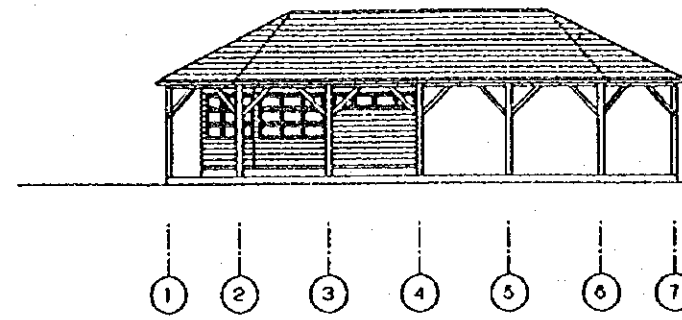
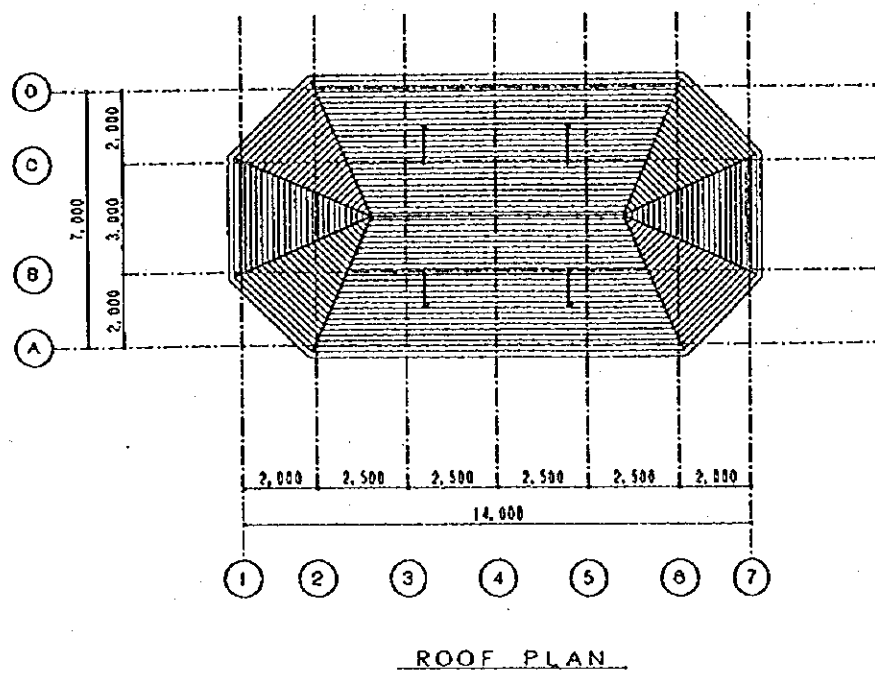


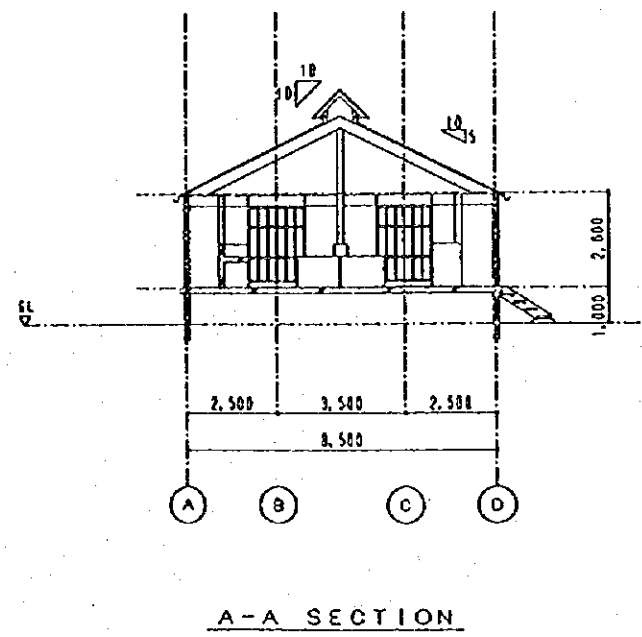
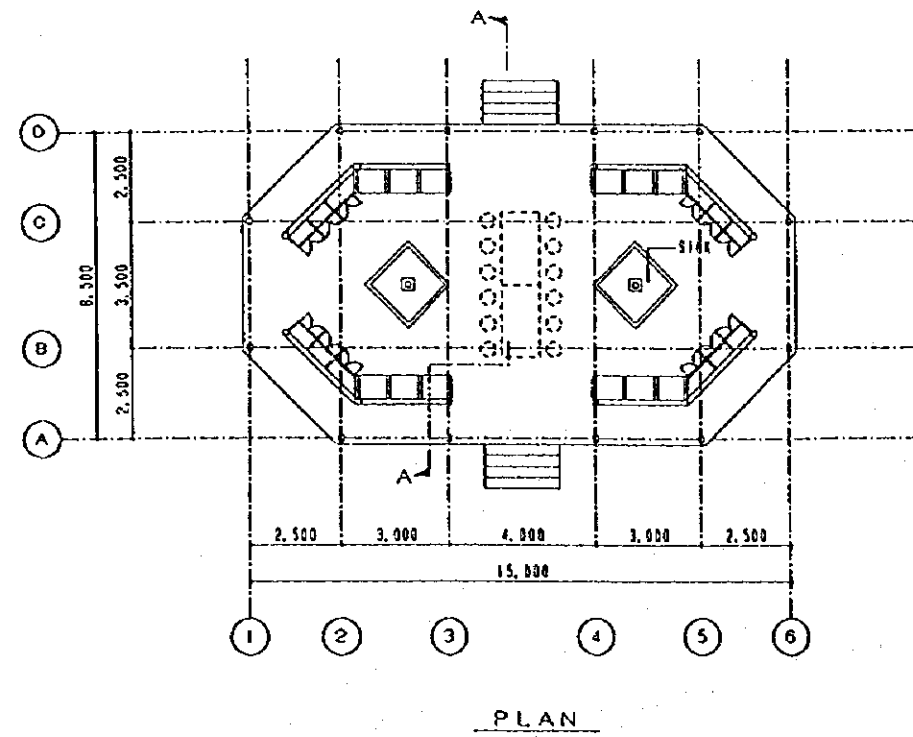
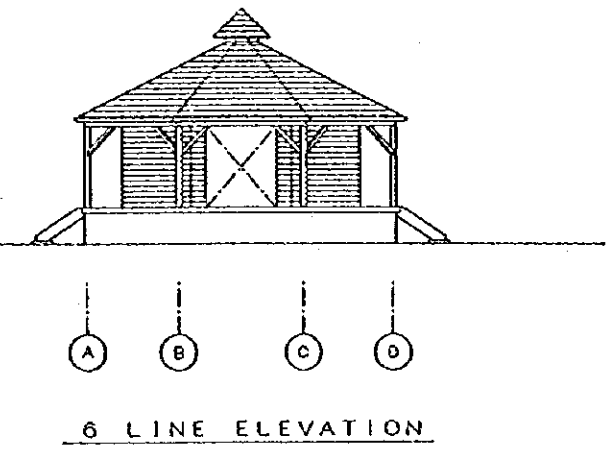
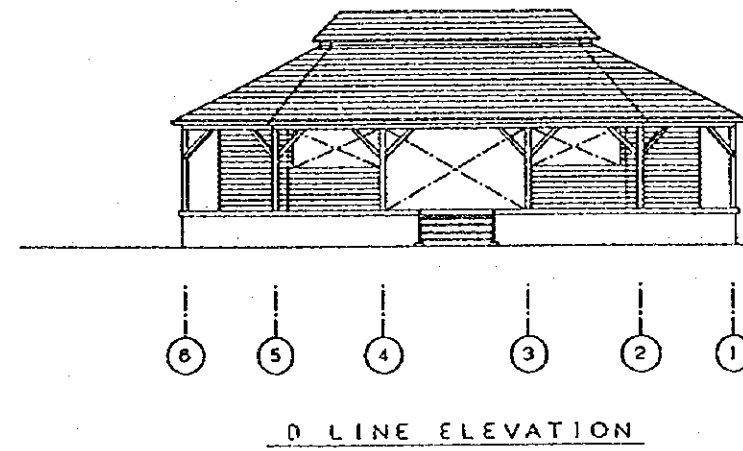
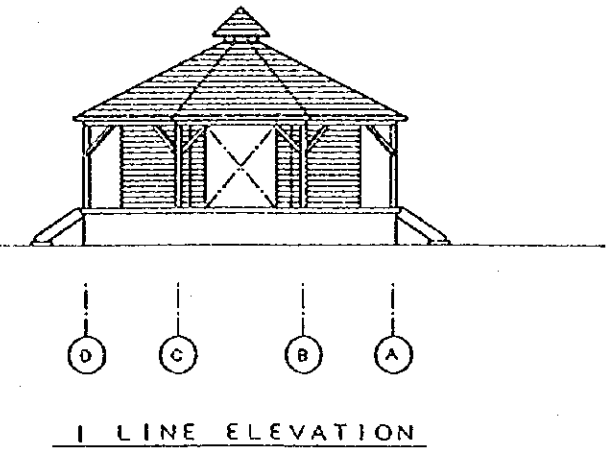
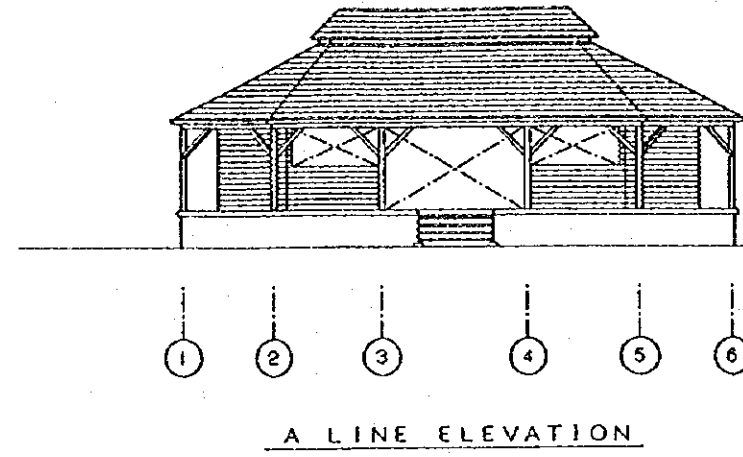
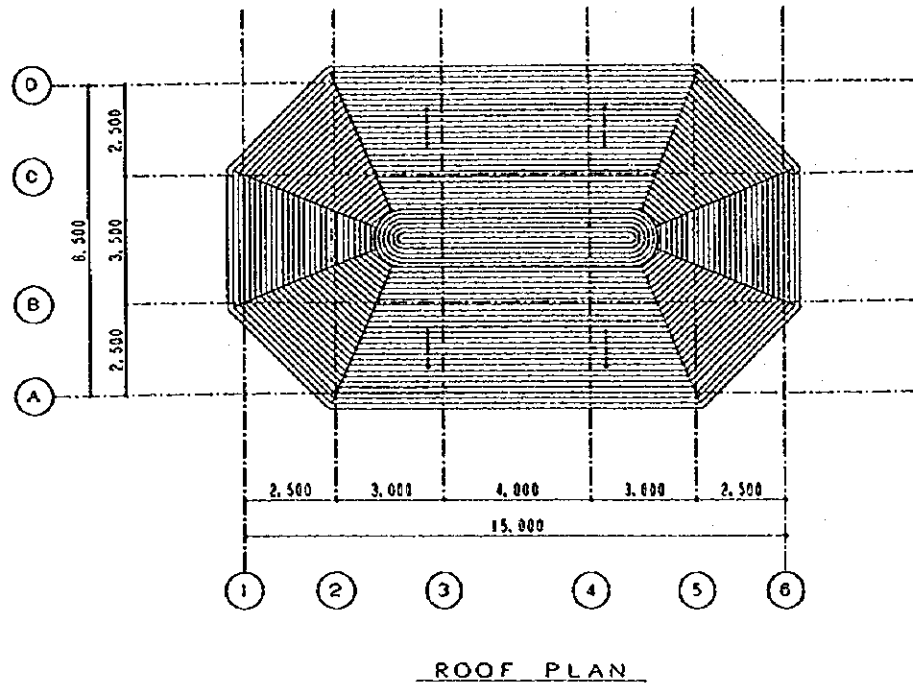
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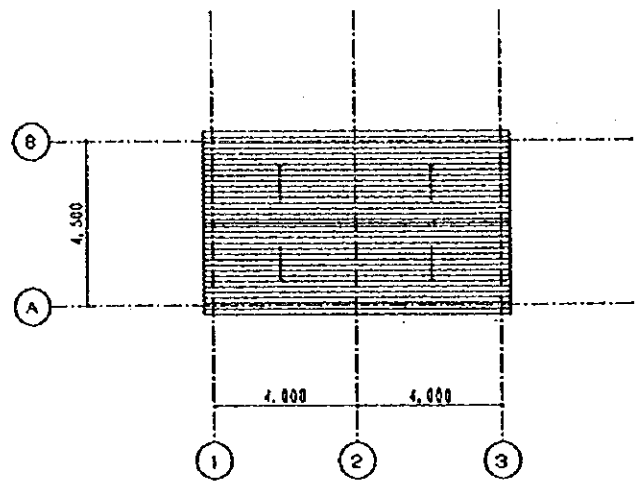


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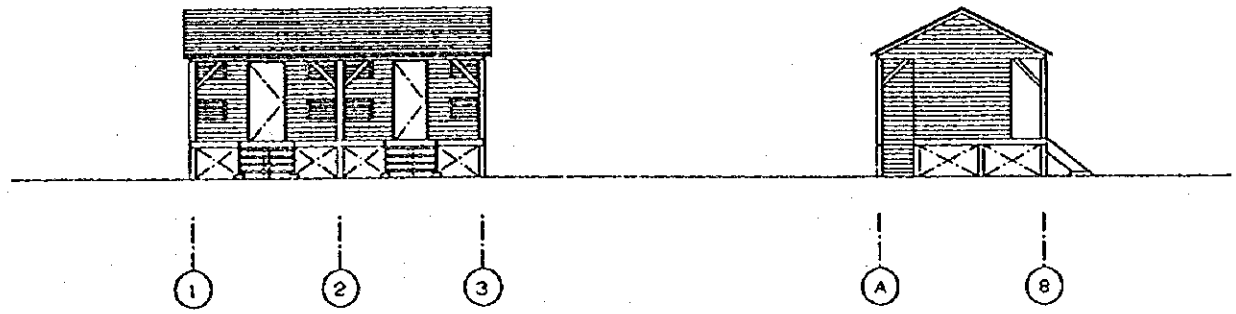




CANOUAN  
MESS ROOM 5-1/100

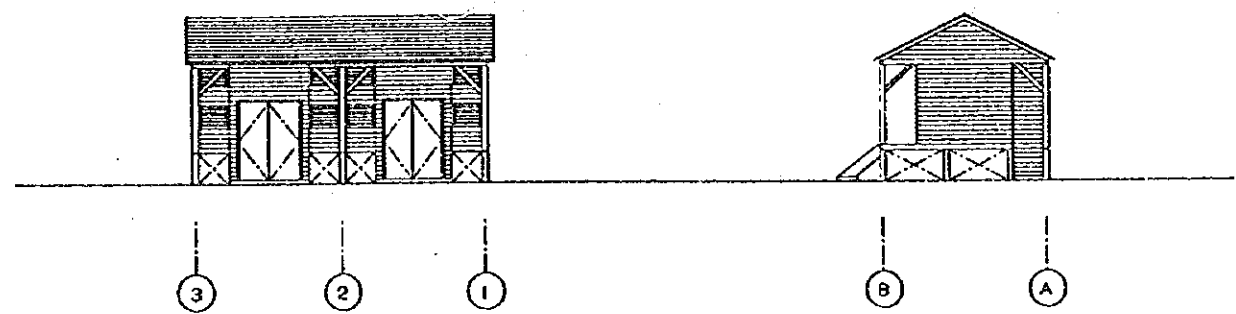


ROOF PLAN



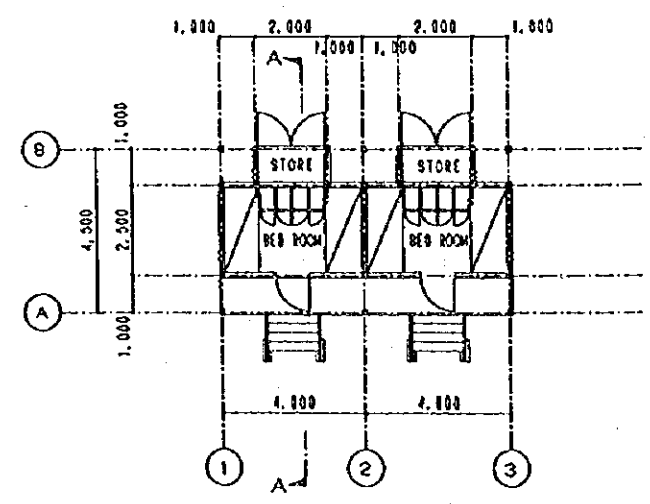
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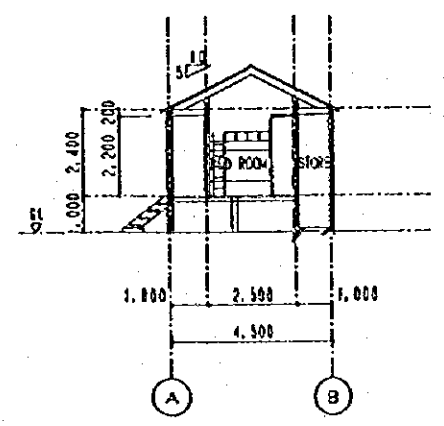


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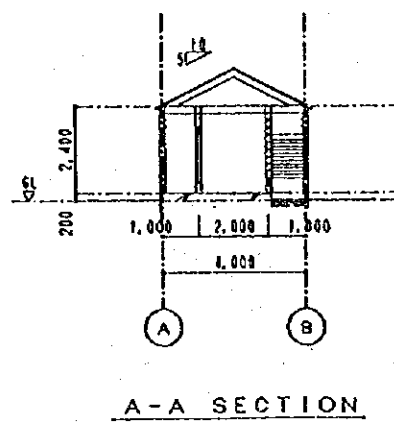
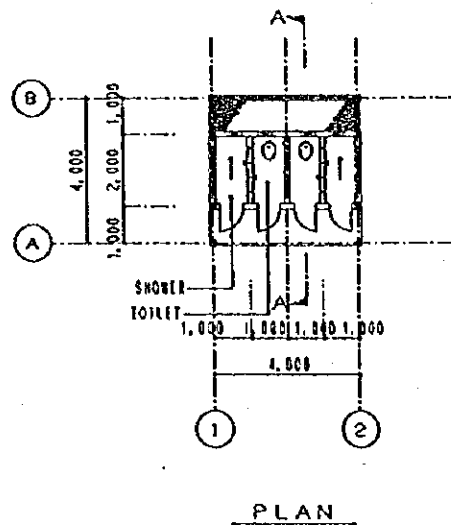
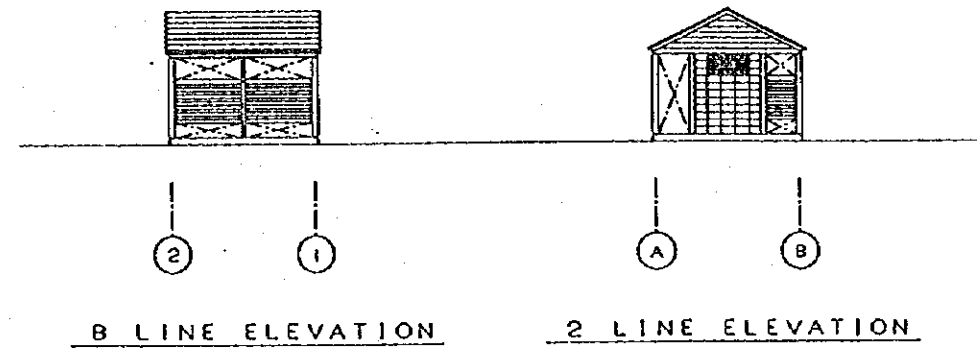
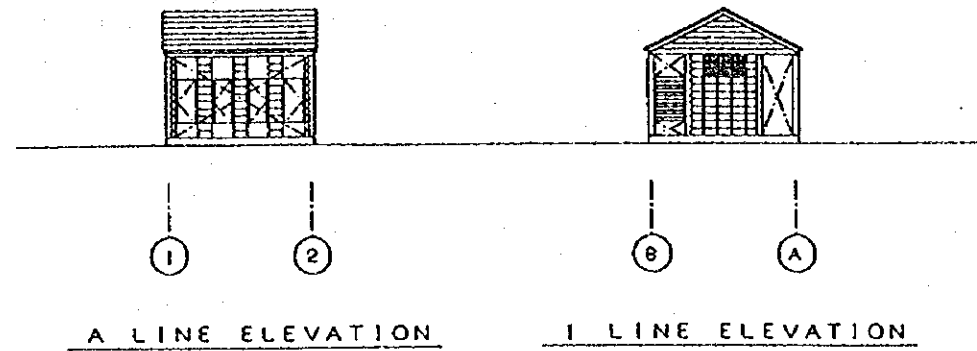
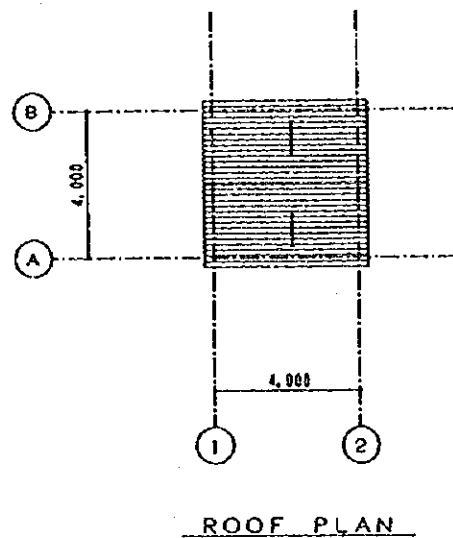


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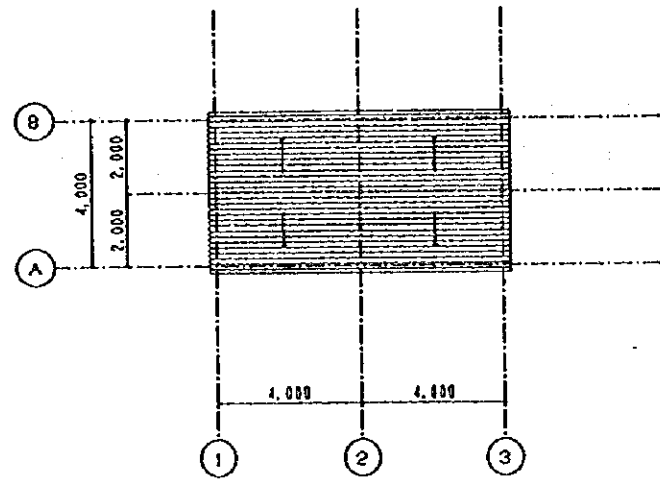


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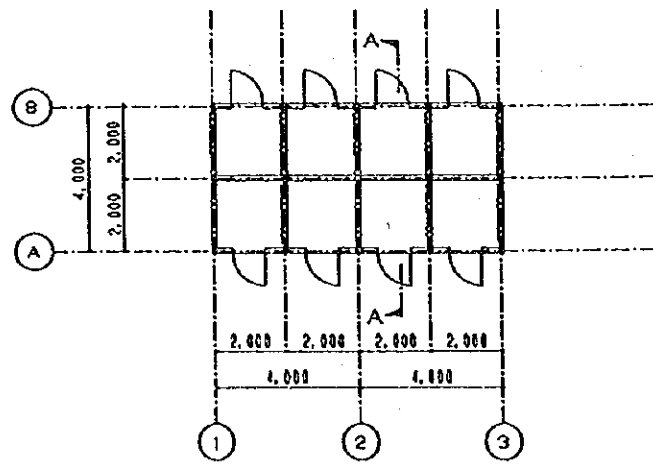
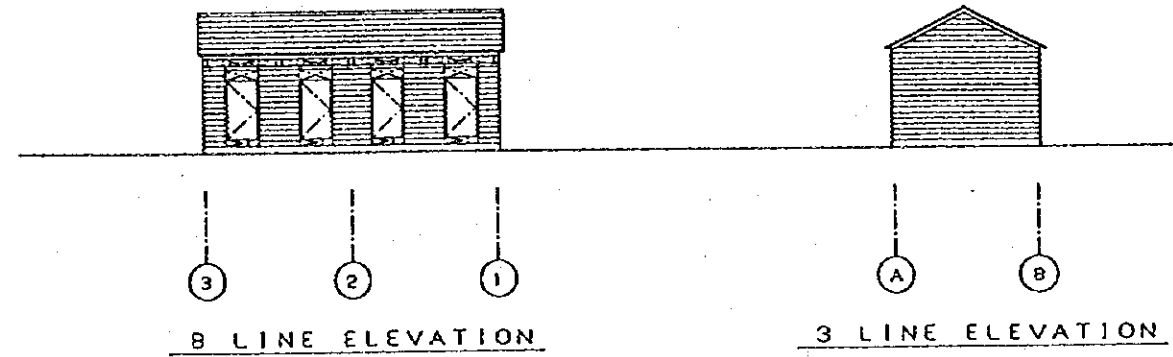
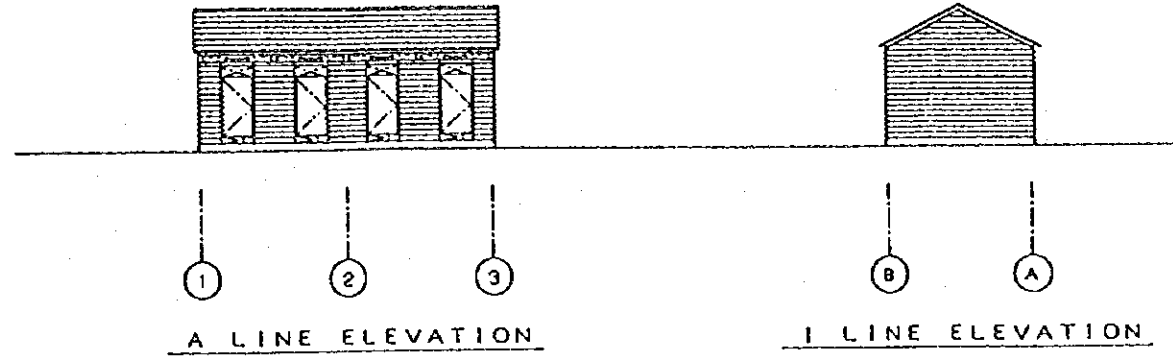
CANOUAN  
 LODGES S=1/100



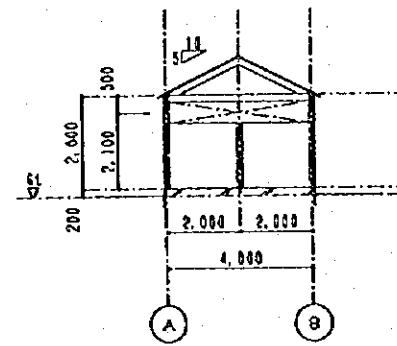
CANOUAN  
TOILET & SHOWER 5-1/100



ROOF PLAN

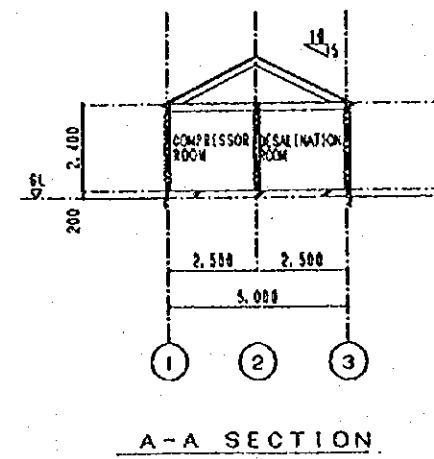
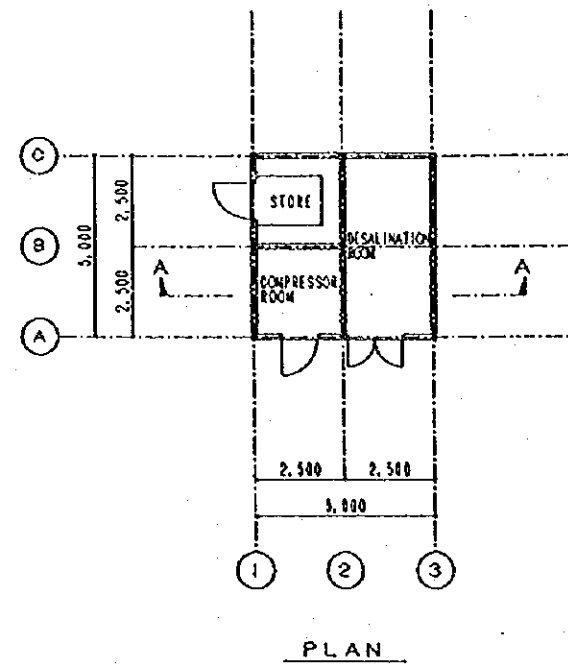
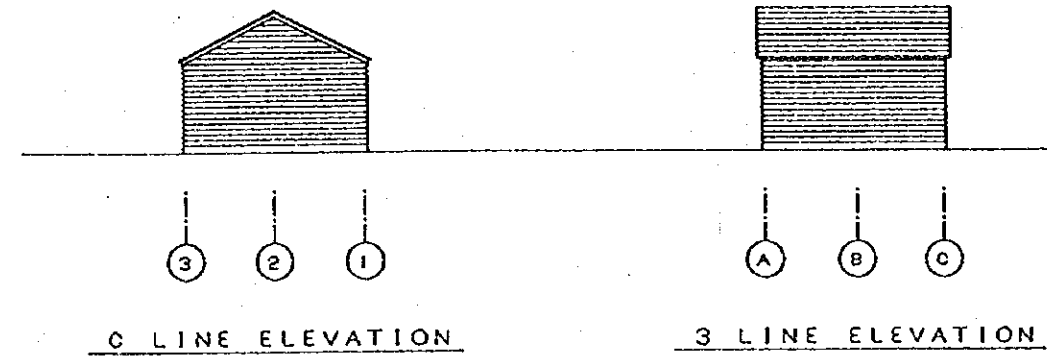
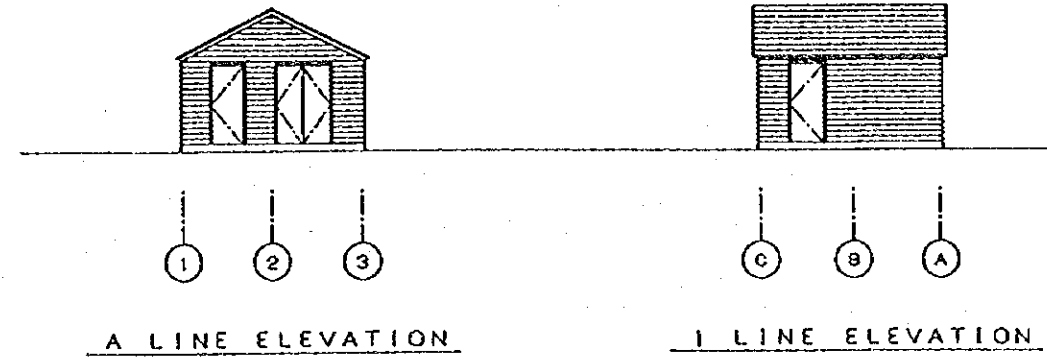
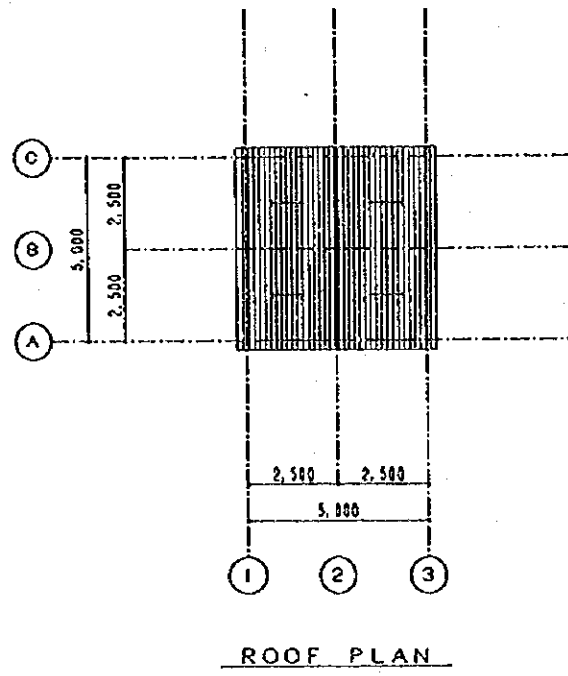


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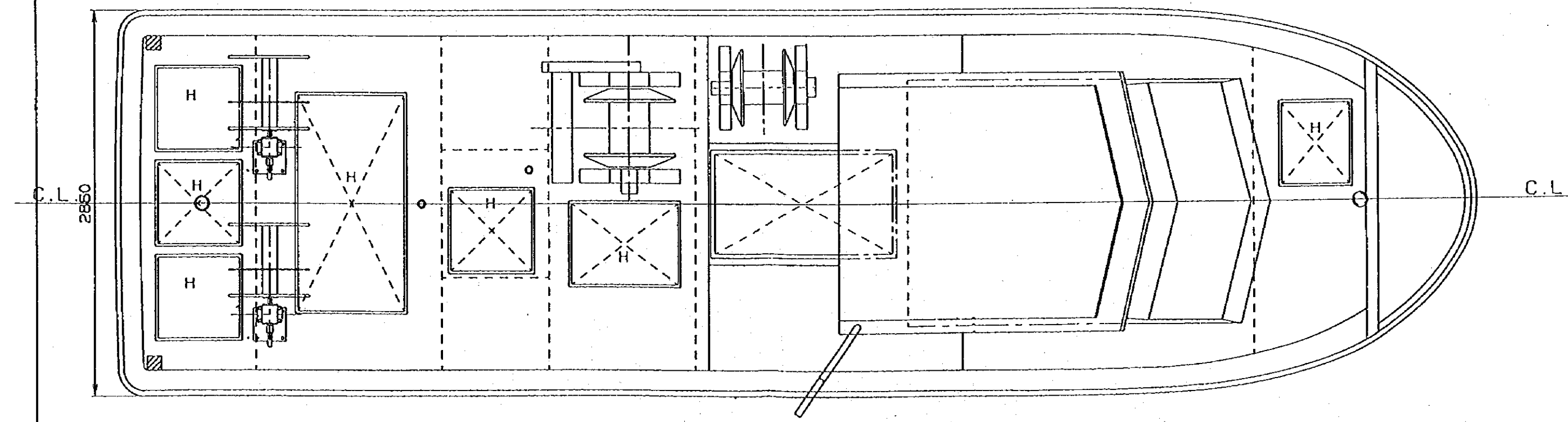
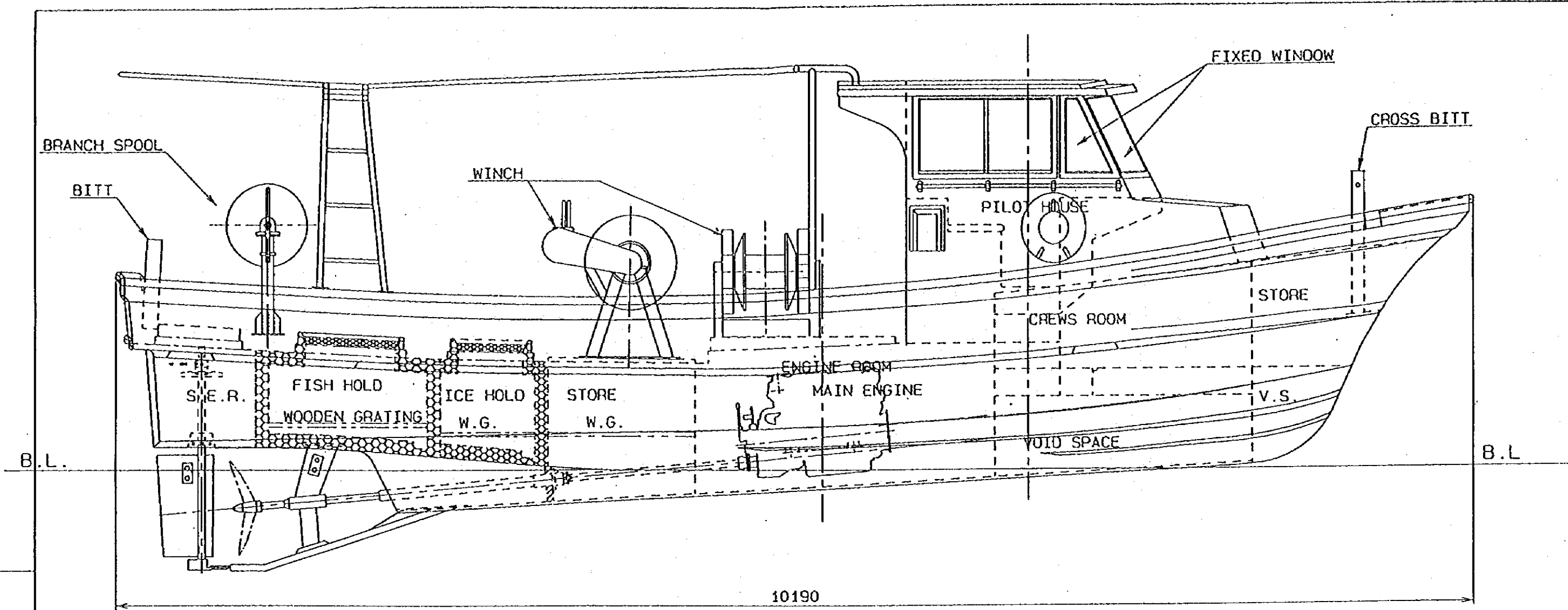
A-A SECTION





CANOUAN

MACHINE ROOM S-1/100



GENERAL ARRANGEMENT PLAN  
 Multi-purpose Fishing Boat



## **CHAPTER 3 IMPLEMENTATION PLAN**

### **3-1 Implementation Plan**

#### **3-1-1 Implementation Concept**

##### **(1) Implementation Policy**

The implementation plan for the Project shall be compiled based on the following basic policies.

- ① Local manpower, equipment and materials shall be utilized to the full.
- ② Care shall be taken to ensure preservation of the surrounding environment (preservation of trees, prevention of sea water pollution)
- ③ Close links shall be maintained with the local side in order to prevent troubles from arising.
- ④ Full respect shall be paid to the culture and traditions of the counterpart country.

##### **(2) Range of Works**

The Project works shall cover the following areas.

- ① Securing of Project site land
- ② Construction of fish landing and storage facilities
- ③ Construction of fishermen's facilities (fishermen's lockers, temporary sleep and rest facilities, etc.)
- ④ Procurement of fishing boats, equipment and materials
- ⑤ Provision of services in the implementation and works supervision of the above
- ⑥ Taking of procedures and obtaining of permission for implementation of the above

#### **3-1-2 Implementation Conditions**

As Canouan is a remote island with little rainfall, attention needs to be paid to the securing of water required for the works in concrete kneading, etc. It is therefore

necessary secure the necessary clear water by either transporting it from St. Vincent or making it with a desalination machine.

With regard to the marine works, there is hardly no chance of this being affected by hurricanes, however, care is required against the effects of waves from outer sea swells that occur between December and January. In the case of Canouan, all construction materials, such as the stone required for prevention of scouring, will have to be transported from St. Vincent.

With regard to the land works, the quality of concrete is greatly affected by temperature and rainfall, so in order to ensure that the temperature of placed concrete does not exceed a set temperature (35°C ), it will be necessary to: ① Manage the temperature of raw materials (cement, sand, gravel, water), ② Manage the temperature of the concrete when placing it, and ③ Manage temperature during concrete curing and prevent drying (sprinkle curing). Moreover, when concrete is placed outdoors, measures must be taken to prevent the intrusion of rain.

As the construction equipment and materials will be brought in from St. Vincent or other surrounding countries, a spacious yard will be necessary to stock the equipment and materials, park the heavy machinery, provide a repair yard and keep the reinforced concrete. If the sports ground adjoining the site in Calliaqua cannot be used, other space will have to be secured. In the case of Canouan, there are wide vacant spaces around the site, so this will not be a problem.

As there are two Project sites, suitable staffing, machinery and schedule plans need to be prepared to ensure that no delays arise.

### **3-1-3 Scope of Works**

The divisions of responsibility of both countries in implementation of the Project are as indicated below.

(Items to be borne and conveniences to be provided by the Government of St. Vincent)

- ① Securing of the scheduled construction sites, and removal of objects and obstacles on the sites, including the sea areas
- ② Implementation of the access road works on Canouan

- ③ Provision of quarries for obtaining stone and filling earth for the works, and provision of temporary construction store yards
- ④ Planting and fencing works, etc. in and around the sites
- ⑤ Procedures for the exemption of import tariffs and customs on the equipment and materials to be imported
- ⑥ Procedures for the exemption of all taxes and surtaxes that may be charged on construction equipment and materials and Japanese representatives carrying their out duties in St. Vincent
- ⑦ Exemption of Project implementation permission that may be required by Japanese representatives and the conferment of other necessary rights
- ⑧ The efficient maintenance and operation of the facilities that have been constructed under Japanese grant aid

(Items to be borne by the Government of Japan)

- ① Provision of all equipment, materials and labor required for construction
- ② Sea and land transportation of imported equipment and materials required for construction, and the bearing of export insurance premiums
- ③ Supplementary and execution supervision consultant services in the event of the implementation plan and tender work

#### **3-1-4 Consulting Services**

After concluding the contract for consulting services with the Government of St. Vincent, the consultant shall conduct site surveys and hold discussions with the counterpart government on the detailed design of the project. Following that, it shall prepare in Japan the detailed design drawings, structural calculation, bill of quantities, specifications and other documents required for the tender. After completion of the tender documents and its approval by the counterpart government, prequalifications, tender and tender evaluation will follow, and the successful tenderer will be selected through the proper procedure.

Following the conclusion of the contract for construction and equipment supply, the consultant shall check the site drawings submitted by the contractor in Japan, supervise the manufacturing at factories, witness the quality inspections of the export products and materials, and conduct the shipping inspections. Supervisory technicians shall be dispatched to the relevant sites to coincide with the start of

works, and they shall coordinate and supervise the works, witness the quality tests and inspections, and compile a report of their supervision findings.

### **3-1-5 Procurement Plan**

The construction materials required in execution of the Project works are sand, aggregate, covering stones, cement, bricks, steel (reinforcing steel, molded steel), timber and other construction materials (roofing material, blocks, bricks, paint, glass, sanitary ceramics and piping). In the case of Calliaqua, sand, gravel and covering stones can be procured locally, however, in the case of Canouan, back filling material and all other construction materials shall be brought in from outside. For this reason, the works on Canouan will be relatively more expensive than those in Calliaqua on St. Vincent.

As the types and quantities of construction heavy machinery that can be procured locally are limited, it will have to be brought from surrounding countries and, if this is also not possible, it will have to be from Japan.

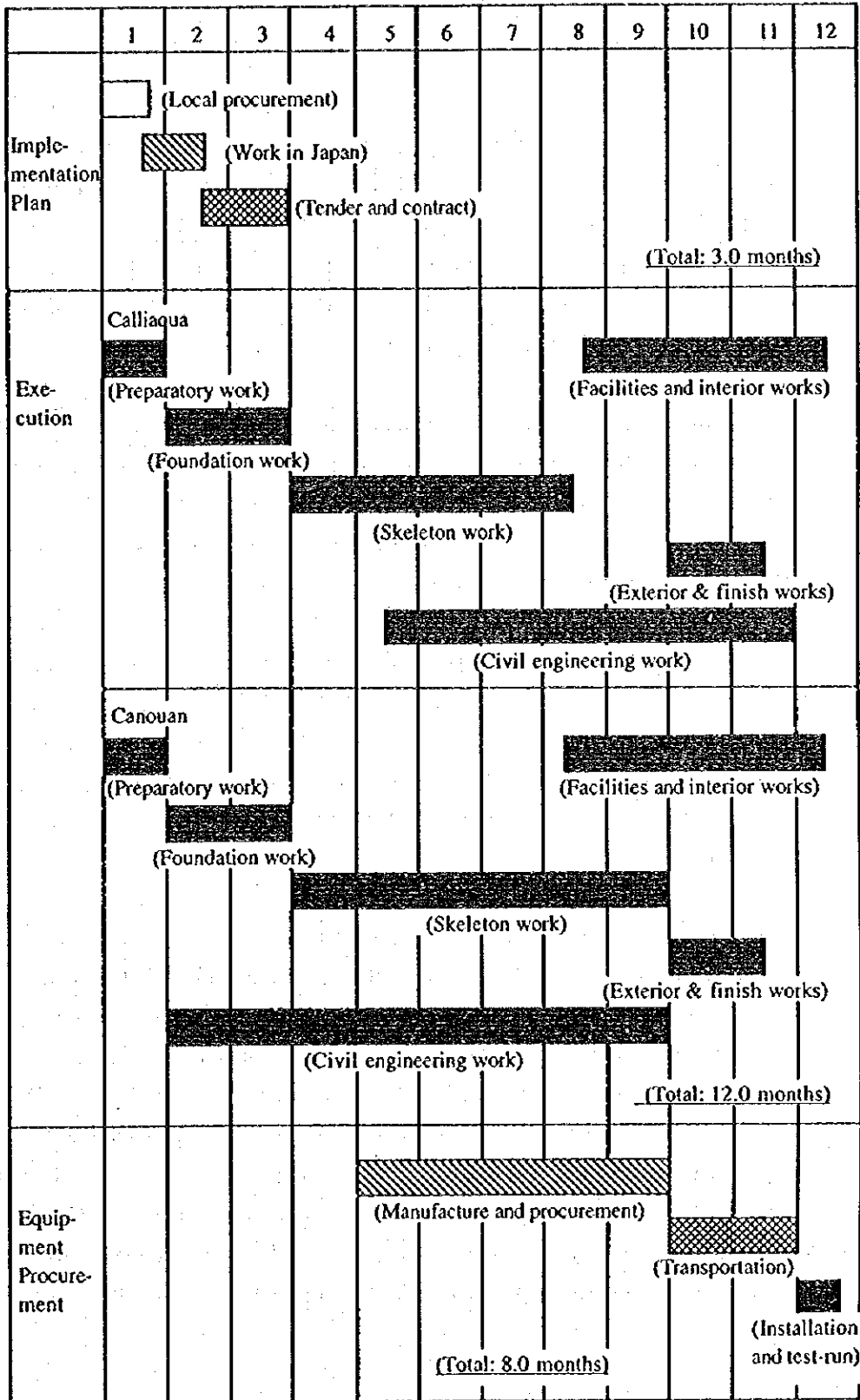
As for the project equipment, considering maintenance aspect, as long as it is conformed with the requirement and cheaper in price than Japan will be procured from the neighboring countries including North America. Major equipment procured from the third countries or locally are as follows:

- Small fishing boats (7-m type): From Martinique (considering the local model that is extended in the East Caribbean area)
- VHF radio / data processors: From local agent (considering the maintenance services)
- Balances / diving equipment: From USA or Canada (considering the price and specifications)
- / small freezen

### **3-1-6 Implementation Schedule**

The Project is scheduled to take 3.0 months for the detailed design and 12.0 months for the works. The works contents and works schedules for both sites are indicated in Table 3-1.

Table 3-1 Work Implementation Schedule





## 3-2 Operation and Maintenance Plan

### (1) Operating Organization and Staffing Plan

The Project facilities in both Calliaqua and Canouan shall be placed under the supervision of the Ministry of Agriculture and Labor, and their operation and management shall be performed by the Boards of directors established under the said Ministry. Each Board will be composed of six members: two members from the Fisheries Department, one member from the district council (in the case of Canouan, a representative appointed by the Minister of Local Governments), two fishermen representatives and one site manager from each complex.

Each complex will initially be placed under the guidance of the Fisheries Department and four staff (one site manager, one office clerk, one fish handling officer and one cleaner/guard) shall be stationed to look after the running. With regard to machine, one engineer shall be periodically dispatched by the Fisheries Department to take care of the facilities maintenance. As is the case with the fisheries centers on Union Island and Bequia Island, it is planned to continue this method of operation for five years and, in that time, establish and develop fishermen's cooperatives and eventually hand over the facilities operation and management to them. However, as the fishermen of Calliaqua belong to the Kingstown Fishermen's Cooperatives that is satisfactorily operated at present, the management of Calliaqua Complex may be possible to hand over to cooperatives at earlier time.

The Fisheries Department shall always be ready to dispatch an instructor to the facilities in order to coordinate between the local governments, fishermen groups, local residents and other facility users on issues relating to facilities operation. Moreover, a fisheries extension officer shall be permanently stationed (or ready to be dispatched at any time in the case of Calliaqua) to collect fisheries-related data, control the quality of fish and manage fisheries resources, as well as advancing comprehensive extension activities under the guidance of the Fisheries Department. Furthermore, it is also planned to train and extend fishing technologies (fishing gear and methods, outboard motor repairs, fishing ground management) to the fishermen, by receiving a technical cooperation from foreign experts..

The Boards of directors will conduct the overall running of the facilities and also be responsible for the development of new fish sales channels on St. Vincent, etc.

through the organization of fishermen. Moreover, with regard to the fishermen's lockers, toilets and showers, simple accommodation facilities, fish shop and other facilities that will be lent to the fishermen and merchants, it shall be properly ensured that the users, as a rule, carry out the everyday cleaning and management.

#### Operation and Management of the Project Fishery Complex and Duties

Organization	Staff	Numbers		Responsibilities
		Canouan	Calliaqua	
Fisheries Department	Extension officer	1	(1)	Issue of fish export permits, collection of fisheries-related data, management of fisheries resources, quality control of fish
	Instructors	(1)	(1)	Coordination of facilities operation, development of fishermen's cooperatives, maintenance of refrigeration equipment
Facilities Operation and Management Boards (composed of fishermen, Fisheries Department and local government representatives)	Manager	1	1	Overall operation and management of facilities and development of retail routes
	Clerk	1	1	Accounting and general clerical work
	Fish handling officer	1	1	Selling of ice and oil, and maintenance of refrigeration facilities
	Cleaner/guard	1	1	Site cleaning, waste management and security
Total		5 (1)	4 (2)	
Facility Users	Fishermen groups	30 (7)	13 (16)	Cleaning and management of fishermen's lockers, toilets and showers and simple accommodation facilities, and storage and selling of caught fish
	Fish retailers	-	5	Cleaning and management of each direct fish selling area
	Schooner operators	3	-	
Total		33 (7)	18 (16)	

Figures in parentheses indicate non-permanent staff numbers.

#### (2) Revenue and Expenditure Plan

It appears that the Project facilities will be able to operate or self-sufficient level. However, as several years will initially be required in getting the fishermen and merchants, etc. used to the methods of facilities use, it is expected that not enough fish landing and income will be made in the early stages. For this reason, the central government will have to cover the expense deficit for until the time when the facilities are able to earn their planned incomes. The incomes and expenditures of the Project facilities, estimated based on the existing distribution formats and evaluation of prevailing conditions, are as indicated in the following tables.

### A. Canouan Fishery Facilities

Item	Basis for Calculation	Amount
<b>1. Income</b>		
1) Ice sales	Ice for loading onto fishing boats: 350 kg/day × 300 days × EC\$0.15/kg = EC\$15,750 Ice for storage: 360 kg/day × 300 days × EC\$0.15/kg = EC\$16,200 Ice sold to schooners: 360 kg/day × 300 days × EC\$0.30/kg = EC\$32,400 Ice sold in general 100 kg/day × 300 days × EC\$0.30/kg = EC\$9,000	EC\$73,350
2) Fuel sale commission	Gasoline: 11,100 L/month × 12 months × EC\$0.03/L = EC\$4,000 Diesel oil: 4,900 L/month × 12 months × EC\$0.02/L = EC\$1,200	EC\$5,200
3) Charge for chilled room use	360 kg/day × 300 days × EC\$0.10/kg	EC\$10,800
4) Air cylinder charging fee	2 people/boat × 2 cylinders/people/boat × 10 boats × 180 days/year × EC\$5/cylinder	EC\$36,000
5) Direct fish sales commission	80 kg/day × 300 days × EC\$1/kg	EC\$24,000
6) Accommodation facility rental	EC\$50/month × 12 months × 14 rooms	EC\$8,400
	<b>Total income</b>	<b>EC\$157,750</b>
<b>2. Expenditure</b>		
1) Personnel costs	Site manager: EC\$2,000/month × 1 manager × 12 months = EC\$24,000 Office staff: EC\$1,000/month × 1 member × 12 months = EC\$12,000 Fish handling staff: EC\$1,000/month × 1 staff × 12 months = EC\$12,000 Cleaner/guard: EC\$600/month × 1 member × 12 months = EC\$7,200	EC\$55,200
2) Business trip and travel expenses	Trips to Kingstown and Union: EC\$500/month × 12 months	EC\$6,000
3) Water, electricity and heating costs	Ice making refrigerator: 12 kWh × 0.85 × 24 hours × 300 days × EC\$0.45 = EC\$33,050 Pumps, etc.: 8 kWh × 0.5 × 24 hours × 300 days × EC\$0.45 = EC\$12,960 Lighting, etc.: 6 kWh × 12 hours × 300 days × EC\$0.45 = EC\$9,720 Fuel: 30 gallons/month × 12 months × EC\$7.5/gallon = EC\$2,700	EC\$58,430
4) Expendable costs	Stationery, etc.: EC\$500/month × 12 months	EC\$6,000
5) Machine maintenance costs	EC\$600,000 × 5% (accumulated)	EC\$30,000
	<b>Total expenditure</b>	<b>EC\$155,630</b>
3. Profit	Income EC\$157,750 - Expenditure EC\$155,630	EC\$2,120

## B. Calliaqua Fishery Facilities

Item	Basis for Calculation	Amount
<b>1. Income</b>		
1) Ice sales	Ice for loading onto fishing boats: $300 \text{ kg/day} \times 300 \text{ days} \times \text{EC}\$0.15/\text{kg} = \text{EC}\$13,500$ Ice for storage and distribution: $480 \text{ kg/day} \times 300 \text{ days} \times \text{EC}\$0.15/\text{kg} = \text{EC}\$21,600$	EC\$35,100
2) Fuel sale commission	Gasoline: $8,700 \text{ L/month} \times 12 \text{ months} \times \text{EC}\$0.03/\text{L} = \text{EC}\$3,100$ Diesel oil: $800 \text{ L/month} \times 12 \text{ months} \times \text{EC}\$0.02/\text{L} = \text{EC}\$200$	EC\$3,300
3) Charge for chilled room use	$240 \text{ kg/day} \times 300 \text{ days} \times \text{EC}\$0.10/\text{kg}$	EC\$7,200
4) Retail market use charge	$5 \text{ people/day} \times 300 \text{ days/year} \times \text{EC}\$6/\text{day}$	EC\$9,000
5) Direct fish sales commission	$180 \text{ kg/day} \times 300 \text{ days} \times \text{EC}\$1/\text{kg}$	EC\$54,000
	Total income	EC\$108,600
<b>2. Expenditure</b>		
1) Personnel costs	Site manager: $\text{EC}\$2,000/\text{month} \times 1 \text{ manager} \times 12 \text{ months} = \text{EC}\$24,000$ Office staff: $\text{EC}\$1,000/\text{month} \times 1 \text{ member} \times 12 \text{ months} = \text{EC}\$12,000$ Fish handling staff: $\text{EC}\$1,000/\text{month} \times 1 \text{ member} \times 12 \text{ months} = \text{EC}\$12,000$ Cleaner/guard: $\text{EC}\$600/\text{month} \times 1 \text{ member} \times 12 \text{ months} = \text{EC}\$7,200$	EC\$55,200
2) Business trip and travel expenses	None	-
3) Water, electricity and heating costs	Ice making refrigerator: $8 \text{ kWh} \times 0.85 \times 24 \text{ hours} \times 300 \text{ days} \times \text{EC}\$0.45 = \text{EC}\$22,0030$ Pumps, etc.: $2 \text{ kWh} \times 0.3 \times 24 \text{ hours} \times 300 \text{ days} \times \text{EC}\$0.45 = \text{EC}\$1,940$ Lighting, etc.: $3 \text{ kWh} \times 8 \text{ hours} \times 300 \text{ days} \times \text{EC}\$0.45 = \text{EC}\$3,240$ Fuel: $30 \text{ gallons/month} \times 12 \text{ months} \times \text{EC}\$6.5/\text{gallon} = \text{EC}\$2,340$	EC\$29,550
4) Expendable costs	Stationery, etc.: $\text{EC}\$500/\text{month} \times 12 \text{ months}$	EC\$6,000
5) Machine maintenance costs	$\text{EC}\$300,000 \times 5\%$ (accumulated)	EC\$15,000
	Total expenditure	EC\$105,750
3. Profit	Income EC\$108,600 - Expenditure EC\$105,750	EC\$2,850

### (Remarks)

- The price for selling ice to the schooners was set at EC\$0.30/kg in consideration of the fact that private ice makers on Petit Martinique sell it for EC\$0.15/lb. Moreover, in order to encourage the use of ice among fishermen and merchants, the retail price for fishermen was set at 50% (EC\$0.15/kg) of the normal.
- The air cylinder charging fee was set at EC\$5/cylinder considering the current price of EC\$10/cylinder charged by private diving shops.

3. Fees for using the jetty, slipway, fishermen's lockers and toilets and showers shall not be charged, in order to encourage the landing of fish at the Project facilities.
4. Regarding the accommodation facilities (Canouan), in view of the fact that a fee of EC\$10/month is charged for the use of water to each fisherman using the facilities on Mustique, a charge equivalent to this (EC\$50/month/room) was set.
5. The space rental fee for the retail market (Calliaqua) was set at the same rate (EC\$6/day) New Kingstown Fish Market (just after opened in 1990).

Providing that the facilities at Calliaqua and Canouan are operated according to the above revenue and expenditure plans, they will be profitable. Although the facilities are mostly for the public benefit and shouldn't really need to make profits, they would lose their original functions if they start showing losses that threaten their operation. It is, therefore, desirable that the facilities do not continue to rely solely on the income from the sale of ice and fuel and the rental of facilities under the present price structure, but positively participate in the distribution of fishery products in new areas yet to be exploited by the private sector. It is thus important to immediately develop and guide the fishermen's cooperatives, etc., which are scheduled to be entrusted with the running of the facilities in the future. In addition, the rate and unit price applied in this estimate should be discussed among the persons concerned, and changed with the consensus of facilities users, in accordance with the change of the prevailing conditions.

## CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATIONS

### 4-1 Project Effect

Implementation of the Project can be expected to bring about ① an improved standard of living for the subsistence fishermen, ② a stable supply of caught fish, ③ a boost to regional economies, and ④ the proper utilization of yet to be exploited resources and, combined with the facilities and equipment, etc. provided through grant aid projects in the past, it will result in the construction of an infrastructure for fisheries development throughout the whole of the country. The specific effects expected from Project implementation are compiled in the following tables.

Current Conditions and Problems	Project Countermeasures	Degree of Project Effects and Improvements
<p>(Canouan Island)</p> <p>Of the four main islands of the Grenadines, which possess abundant fisheries resources, Canouan is the only one yet to possess a fisheries base. Canouan is peculiar in that it is the base of operations for both local fishermen (70 fishermen using 23 boats) and migrant fishermen (54 fishermen using 14 boats), and it possesses great potential for fisheries development in connection with tourism development. However, it is currently faced with the following problems.</p> <ol style="list-style-type: none"> <li>1. As there are no fish landing and storage facilities, the fishermen have to delay their operations until the arrival of the schooners, meaning that their level of operating efficiency is low. Moreover, the schooners, too, have to stay in port until they have gathered enough fish.</li> <li>2. The migrant fishermen are living in appalling sanitary conditions and there are fears for their health and safety.</li> <li>3. As Canouan does not possess a proper fisheries base, the fishermen training and extension activities and study and research into fisheries resources by the Fisheries Department are not being carried out enough. Moreover, fisheries statistics for the area have yet to be prepared.</li> </ol>	<p>Project implementation will lead to the construction of fisheries complex on Canouan, thus enabling a landing and distribution setup that covers the whole of the Grenadines to be established.</p> <ol style="list-style-type: none"> <li>1. The landing of catches and the safe mooring of fishing boats (construction of a jetty, slipway and refueling facilities)</li> <li>2. Storage and distribution of caught fish (establishment of refrigeration facilities and provision of equipment for distribution purposes)</li> <li>3. Preparation of a decent fisheries environment (construction of fishermen's lockers, toilets and showers and accommodation facilities and the provision of related equipment)</li> <li>4. Development and extension of fisheries technology <ol style="list-style-type: none"> <li>1) Establishment of outboard motor maintenance and repairs system</li> <li>2) Management of fisheries resources</li> <li>3) Improvement to fish quality</li> <li>4) Strengthening of the training and education of fishermen</li> <li>5) Collection of fisheries data</li> </ol> </li> </ol>	<p>With the Project facilities as a base, fisheries activities will become more efficient, fish distribution channels will be expanded and fisheries technology will be developed and spread, thus leading to the promotion of fisheries development on not only Canouan but also on the neighboring island of Mayreau. This, combined with tourism and regional development, will also make a contribution to environmental preservation.</p> <ol style="list-style-type: none"> <li>1. Improved fishing boat operating efficiency levels will lead to larger landed hauls (from approximately 65 tons/year now to 132 tons/year).</li> <li>2. Increased schooner services will lead to greater exports of fish (from approximately 60 tons/year now to 108 tons/year).</li> <li>3. Greater opportunities for islanders to consume fish will lead to an improved nutritional balance (per capita fish consumption will rise from 12 kg/year now to 18 kg/year).</li> <li>4. It will be possible to respond to the new demand for fish resulting from tourism development.</li> <li>5. An improved living and working environment for fishermen will contribute to their improved health and safety. This, in turn, will lead to a greater will to work.</li> <li>6. The technical support setup for the fishermen will be established, and this will lead to improved technical levels among the fishermen. Moreover, the development of fishermen organizations will be encouraged, thus allowing sound fisheries distribution activities to be carried out.</li> </ol>

Current Conditions and Problems	Project Countermeasures	Degree of Project Effects and Improvement
<p>(Calliaqua)</p> <p>Expansion of the capital sphere has brought with it an increase in the population of Calliaqua, which is a suburb of Kingstown, and this has resulted in a higher demand for fish. However, even though Calliaqua is located closest to the fishing grounds on the furthest eastern edge of St. Vincent, its lack of fisheries facilities means that the operating efficiency of fishermen is low. The absence of such facilities, in spite of the fact that there is a demand for them among both fishermen and consumers, means that the area is totally reliant on the New Kingstown Fish Market. In specific terms, Calliaqua faces the following problems.</p> <ol style="list-style-type: none"> <li>1. Because there are no landing and storage facilities and the existing facilities are deteriorated and in an extremely poor state of hygiene, small fish merchants do not come to the area and distribution is at a standstill.</li> <li>2. Much time and effort is taken up in the preparation for fishing trips because there are no refueling facilities and the fishermen keep their fishing tackle at home. This results in low operating efficiency levels.</li> <li>3. There is little organization of the fishermen.</li> </ol>	<p>Proper fisheries facilities will be constructed in Calliaqua and the landing and distribution base of the capital region will be enlarged.</p> <ol style="list-style-type: none"> <li>1. The landing of catches and the safe mooring of fishing boats (construction of a jetty and refueling facilities)</li> <li>2. Storage and distribution of caught fish (establishment of refrigeration facilities and provision of equipment for distribution purposes)</li> <li>3. Preparation of a decent fisheries environment (construction of fishermen's lockers, toilets and showers and the provision of related equipment)</li> <li>4. Development and extension of fisheries technology <ol style="list-style-type: none"> <li>1) Improvement to fish quality</li> <li>2) Strengthening of the training and education of fishermen</li> <li>3) Collection of fisheries data</li> </ol> </li> </ol>	<p>The fish landing and distribution setup in the capital sphere (in which the demand for marine products is large) will be improved, and this will make it easier for the local consumers to purchase fresher fish. Moreover, the landing of catches is expected from not only the local fishermen but also fishermen of the surrounding areas. The new facilities will also act to mitigate traffic congestion in Kingstown.</p> <ol style="list-style-type: none"> <li>1. Improved fishing boat operating efficiency levels will lead to larger landed hauls (from approximately 16 tons/year now to 126 tons/year).</li> <li>2. Greater opportunities for local residents to consume fish will lead to an improved nutritional balance (per capita fish consumption will rise to the same level as that in Kingstown, which is 13.5 kg/year).</li> <li>3. An improved working environment for fishermen will lead to a greater will to work.</li> <li>4. The technical support setup for the fishermen will be established and the development of fishermen organizations will be encouraged, thus allowing sound fisheries distribution activities to be carried out.</li> </ol>
<p>(Boats)</p> <p>Although the marine resources of the coastal waters are developed, there has almost been no exploitation of the continental shelf demersal fish and offshore tuna resources situated away from the islands.</p>	<p>Through the trial introduction of a multi-purpose fishing boat (10 m) and small fishing boats (7 m), new practices will be shown to and spread among the fishermen.</p>	<p>Operating waters will be expanded, the quality of caught fish will be preserved, fuel consumption efficiency will be improved and the safe sailing of fishing boats will be ensured, thus leading to higher level fisheries technology.</p> <p>The development of resources in the waters around the southern Grenadines, where tourism development is drawing much attention, is expected.</p>



It can thus be seen that the expected beneficial benefits from Project implementation are large and wide ranging and, moreover, Project implementation through grant aid is considered appropriate for the following reasons.

- (1) The people who will feel the beneficial effects are the coastal fishermen, who are at the bottom of the social and economic ladder in St. Vincent. Moreover, the Project effects will not only benefit the fishermen in the Project sites, they will also directly benefit fishermen in surrounding areas and the countless number of migrant fishermen from other islands.
- (2) Efficient running of the Project facilities will enable consumers to receive efficient supplies of fish, which is a cheap form of animal protein, and thus contribute to an improvement in the nutrition of citizens.
- (3) The Fisheries Department, which is actively promoting the training of its staff and plans to bolster its work force to help in Project implementation, has promised to provide technical support in the operation of the facilities.
- (4) The Project fits well with other higher level projects in that it will lead to the diversification of primary industry, which is the most important issue within the National Development Plan, and contribute to the development of the fisheries sector, in which resources are particularly abundant. Moreover, the contents of the Project are in harmony with regional development and tourism development.
- (5) The Project facilities are not intended to be profit making concerns, but will act for the public good in that they will be utilized by many general consumers as well as the fishermen and distributors, who will be the direct beneficiaries.
- (6) The facilities design and operation plans have taken into full consideration the impact on the natural environment in areas surrounding the facilities.

#### **4-2 Recommendation**

As was mentioned previously, the expected effects of Project implementation are great: construction of the fisheries distribution infrastructure is the first step in developing the fisheries sector, which is an important industry in St. Vincent and the Grenadines. For this island country, which has limited arable land and land resources, the construction of an infrastructure for the effective utilization of marine resources (which regenerate themselves) through realization of the Project will make a major contribution to socio-economic development on a national scale. Moreover, the Project is also closely linked

to regional development and tourism development and can be expected to contribute to an improved standard of living of fishermen, who are at the bottom of the social ladder. It is therefore judged that implementation of the Project through grant aid is both appropriate and timely.

With regard to Project operation and management, the phased achievement of targets is intended, the budget preparation for the works to be borne by the local side is underway and the implementation setup is ready in terms of staffing, technical levels and funds, so smooth operation can be expected.

However, in order to ensure smoother Project implementation and realization of effects, the following measures need to be taken.

**(1) Exchange of Opinions with Those Concerned on the Local Side**

The Boards of directors (composed of fishermen, site managers and representatives from local government and the Fisheries Department) will decide on the rules and details concerning operation of the facilities, however, in executing such decisions, it is important that public hearings be held when necessary to enable opinions to be exchanged closely and to ensure mutual understanding between local fishermen, distributors and residents, in order to prevent problems from occurring at a later stage.

**(2) Proper Placement of Staff**

It is desirable that the staff placed in the facilities be selected from the local community as much as possible. In particular, as the fishermen groups are currently weak and unorganized, each site manager will initially have to act as the representative of the fishermen in resolving problems between fishermen groups, negotiating with distributors and providing guidance on the use of the facilities, so it is desirable that site managers who possess local popularity, the ability to act and leadership be selected. As for the other staff, because the facilities are based on providing the maximum effect with the minimum number of people, it is considered necessary to select staff who do not necessarily possess technical skills but have a desire to work diligently and energetically.

Moreover, the Fisheries Department, in order to ensure the transfer of the required basic fisheries technology to the site staff, must devote ample time and money to preliminary training and regularly dispatch patrolling instructors to raise technical levels and coordinate operation activities following the start of activities at the

facilities. In particular, it is important to formulate and strengthen local fishermen's cooperatives so that the complex will be operated thereby in future.

**(3) Advertisement to Distributors**

In the Project, the fish will mainly be directly sold by the fishermen to the schooner operators or distributed to consumers through small merchants. It is therefore necessary to advertise to and educate the distributors (the purchasers of the fish) in advance about the conveniences and beneficial effects to be gained from utilizing the facilities. Moreover, advertising signs should be placed along roads to give general consumers the impression that fresh fish can be bought cheaply at any time at the Project facilities.

**(4) Development of Markets for Fish**

It is considered that it will be basically possible to sell the fish landed at the Project facilities through the existing distribution channels, however, in order to develop new markets for the future, it is desirable that the Boards of directors, under the guidance of the Fisheries Department, start on a trial basis to transport fish from Canouan to St. Vincent or sell fish in the inland areas of St. Vincent, development of fish processing technology, and so on. This is important in that new markets will provide something to fall back on in the event where fishermen become unable to sell all of their catches.

**(5) Increased Staffing of the Fisheries Department**

When the fisheries facilities on Canouan are completed, it is planned to permanently station an extension officer from the Fisheries Department and also send instructors on regular patrols in order to conduct biological studies for fisheries resource management, collect fisheries data, give guidance on fish handling and quality control, aid the development of fishermen organizations and diffuse fisheries technology. In order to ensure that these activities do not hinder the work of the Fisheries Department, it is necessary for it to increase its staff. The Department needs to give ample training to new recruits and should advance the recruitment of the required staff before the Project facilities are completed.

**(6) Sale of Fishing Boats and effective Utilization of Returns**

The fishing boats included in the Project shall be sold to advanced fishermen in the Project areas, and the Fisheries Department shall provide training and conduct regular inspections to ensure that these Project boats are being operated in a safe

and satisfactory manner. Moreover, the Fisheries Department shall conduct ample extension and instruction activities for the fishermen of the surrounding areas to ensure that the extension of technology from the boats is carried out to the fullest extent possible. Furthermore, it is desirable that collection of the sales returns be based on fair repayment schedules that consider the performance of the boats and the size of catches, and that the funds obtained be immediately put to effective use in the repurchase of boats and equipment required for fisheries development and the covering of costs incurred in the training and technology diffusion activities.

## **APPENDICES**

## **APPENDICES**

## 1. Member List of the Survey Team

### (1) For Basic Design Survey

Name	Assignment	Position
Mr. Shinji TSUTSUMI	Leader	Assistant Director of Promotion Div., Promotion Dept., Fisheries Agency
Mr. Kazuo SENGA	Project Coordinator	Forestry & Fisheries Development Cooperation Dept., Japan International Cooperation Agency (JICA)
Mr. Masamitsu NAKAIZUMI	Technical Advisor	Assistant Director of Construction Div., Fishing Port Dept., Fisheries Agency
Mr. Hiroshi FUKAO	Chief Consultant (Fisheries Development)	Overseas Agro-Fisheries Consultants, Co., Ltd. (OAFIC)
Mr. Masato ARAYA	Architect/Facility Planner	OAFIC
Mr. Mamoru NAMIKI	Port Civil Engineer/ Natural Conditions Surveyor	OAFIC
Mr. Akiyoshi TAKAHASHI	Environment Engineer	OAFIC

### (2) For Draft Basic Design Explanation

Name	Assignment	Position
Mr. Yukio TSUBOTA	Leader	Assistant Director of Construction Div., Fishing Port Dept., Fisheries Agency
Mr. Katsumi YOSHIDA	Fisheries Program Coordinator	Basic Design Study Div., Grant Aid Study & Design Dept., Japan International Cooperation Agency (JICA)
Mr. Toshio WATANABE	Project Coordinator	Follow-up Div., Grant Aid Project Management Dept., JICA
Mr. Hiroshi FUKAO	Chief Consultant (Fisheries Development)	Overseas Agro-Fisheries Consultants, Co., Ltd.
Mr. Mamoru NAMIKI	Port Civil Engineer/ Natural Conditions Surveyor	ditto

## 2. Survey Schedule

### 2.1 For Basic Design Survey

#### (1) Government Staff (Mr. Tsutsumi Mr. Senga, and Mr. Nakaizumi)

Date	Movement	Accommodation	Activities
July 2 (Sun)	Tokyo - N.Y.	New York	Departure (NH010)
July 3 (Mon)	N.Y. - POS	Port of Spain	Move to Trinidad (BW425)
July 4 (Tue)	POS - St. Vincent	St. Vincent	Courtesy call to the Embassy of Japan. Arrive at St. Vincent (LI308) Discussion with Fisheries Dept. Courtesy call to Ministry of Agriculture & Labor. Survey of project site (Calliaqua).
July 5 (Wed)		St. Vincent	Courtesy call to Ministry of Foreign Affairs & Tourism. Observation of New Kingstown Fish Market (NKFM). Discussion with the Coastguard.
July 6 (Thu)	St. Vincent - Union	Union	Discussion with Fisheries Dept. Discussion with Central Planning Unit. Observation of Clifton Fisheries Center in Union Is.
July 7 (Fri)	Union - Canouan	Canouan	Survey of project site (Canouan) and fishing villages. Survey of fishermen's center in Mustique Is. and Paget
July 8 (Sat)	Canouan - St. Vincent	St. Vincent	Farm Fisheries Center in Bequia Is.
July 9 (Sun)		St. Vincent	Meeting within the team.
July 10 (Mon)		St. Vincent	Joint meeting among the relevant government agencies.
July 11 (Tue)		St. Vincent	Survey of fishing villages on the St. Vincent west coast.
July 12 (Wed)		St. Vincent	Discussion with Ministry of Communication & Works. Courtesy call to Ministry of Local Governments. Discussion with Finance Dept. Signing of Minutes.
July 13 (Thu)	St. Vincent - POS	Port of Spain	Leave St. Vincent for Port of Spain (LI361). Report of survey results to the Embassy of Japan.
July 14 (Fri)	POS - N.Y.	New York	Leave Port of Spain for New York (BW424).
July 15 (Sat)	N.Y. -	(in airplane)	Leave New York (NH009).
July 16 (Sun)	- Tokyo		Back to Tokyo.



**(2) Consultant team (Mr. Fukao, Mr. Araya, Mr. Namiki and Mr. Takahashi)**

Date	Movement	Accommodation	Activities
July 2 (Sun)	Tokyo - N.Y.	New York	Departure (NH010)
July 3 (Mon)	N.Y. - POS	Port of Spain	Move to Trinidad (BW425)
July 4 (Tue)	POS - St. Vincent	St. Vincent	Courtesy call to the Embassy of Japan. Arrive at St. Vincent (LI308) Discussion with Fisheries Dept. Courtesy call to Ministry of Agriculture & Labor. Survey of project site (Calliaqua).
July 5 (Wed)		St. Vincent	Courtesy call to Ministry of Foreign Affairs & Tourism. Observation of New Kingstown Fish Market (NKFM). Discussion with the Coastguard.
July 6 (Thu)	St. Vincent - Union	Union	Discussion with Fisheries Dept. Discussion with Central Planning Unit. Observation of Clifton Fisheries Center in Union Is.
July 7 (Fri)	Union - Canouan	Canouan	Survey of project site (Canouan) and fishing villages.
July 8 (Sat)	Canouan - St. Vincent	St. Vincent	
July 9 (Sun)		St. Vincent	Survey of fishermen's center in Mustique Is. and Paget Farm Fisheries Center in Bequia Is.
July 10 (Mon)		St. Vincent	Meeting within the team. (Mr. Takahashi arrive at St. Vincent)
July 11 (Tue)		St. Vincent	Joint meeting among the relevant government agencies. Preparation for natural conditions / environment survey.
July 12 (Wed)		St. Vincent	Survey of fishing villages on the St. Vincent west coast. Natural condition & environment survey (Calliaqua-1). Discussion with Ministry of Communication & Works. Courtesy call to Ministry of Local Governments. Discussion with Finance Dept.
July 13 (Thu)		St. Vincent	Signing of Minutes. Natural condition & environment survey (Calliaqua-2).
July 14 (Fri)		St. Vincent	Discussion with Central Planning Unit. Natural condition & environment survey (Calliaqua-3). Data collection at Meteorological station, Ministry of Communication & Works, Ministry of Public Health.
July 15 (Sat)		St. Vincent	
July 16 (Sun)		St. Vincent	Natural condition & environment survey (Calliaqua-4).
July 17 (Mon)	St. Vincent - Canouan	Canouan	Fishing and fish marketing survey around Calliaqua. Survey of Bequia Island. Move to Canouan Island (by ferry). General survey of Canouan Is.

Date	Movement	Accommodation	Activities
July 18 (Tue)		Canouan	General survey of Canouan Is. Fishing & fish marketing survey in Canouan.
July 19 (Wed)		Canouan	Natural condition & environment survey (Canouan-1). Data collection from police station, Southern Grenadines Representatives, Justice of Peace, power station, fuel supply agent, hotels, etc.
July 20 (Thu)		Canouan	Natural condition & environment survey (Canouan-2). Survey of construction conditions in Canouan.
July 21 (Fri)		Canouan	Natural condition & environment survey (Canouan-3). Overall survey of Southern Grenadines (PSV, Petit Martinique, Union Is., Tobago Cays, and Mayreau)
July 22 (Sat)		Canouan	Survey of fish exporters (schooners), fishermen and fishing boats.
July 23 (Sun)		Canouan	Meeting within the team.
July 24 (Mon)		Canouan	Survey of construction site and constructor in Canouan. Back to St. Vincent (by ferry).
July 25 (Tue)	Canouan - St. Vincent	St. Vincent	
July 26 (Wed)		St. Vincent	Discussion with Fisheries Dept. Data collection at Forestry Dept. and Central Water & Sewage Authority.
July 27 (Thu)		St. Vincent	Discussion with Fisheries Dept. and Marketing Corp. Data collection at VINLEC.
July 28 (Fri)		St. Vincent	Data collection at MET and Coastguard. Biological sample analysis in the laboratory.
July 29 (Sat)		St. Vincent	Meeting within the team.
July 30 (Sun)		St. Vincent	ditto
July 31 (Mon)		St. Vincent	Discussion with Fisheries Dept.
Aug. 1 (Tue)		St. Vincent	(Mr. Fukao & Namiki) Fishing village survey on the west coast of St. Vincent. (Mr. Araya & Takahashi) Leave St. Vincent for Port of Spain (L1361). Meeting with soil investigation and land survey office in Trinidad.

Date	Movement	Accommodation	Activities
Aug. 2 (Wed)	St. Vincent - Canouan	Canouan	(Mr. Fukao & Namiki) Move to Canouan (by charter plane) (Mr. Araya & Takahashi) Move from Port of Spain to New York (BW424).
Aug. 3 (Thu)		Canouan	(Mr. Fukao & Namiki) Supplemental survey of Canouan Is. (Mr. Araya & Takahashi) Leave New York (NH009).
Aug. 4 (Fri)	Canouan - St. Vincent	St. Vincent	(Mr. Fukao & Namiki) Back to St. Vincent (by charter plane) (Mr. Araya & Takahashi) Back to Tokyo.
Aug. 5 (Sat)		St. Vincent	Fishing village survey on the east coast of St. Vincent. Survey of quarry site.
Aug. 6 (Sun)		St. Vincent	Meeting within the team.
Aug. 7 (Mon)	St. Vincent - POS	Port of Spain	Leave St. Vincent for Port of Spain (LI361). Construction materials survey in Trinidad.
Aug. 8 (Tue)	POS - N.Y.	New York	Report of survey results to the Embassy of Japan. Leave Port of Spain for New York (BW424).
Aug. 9 (Wed)	N.Y. -	(in airplane)	Leave New York (NH009).
Aug. 10 (Thu)	- Tokyo		Back to Tokyo.

## 2.2 For Draft Basic Design Explanation

Date	Movement	Accommodation	Activities
Oct. 25 (Wed)	Tokyo - N.Y.	New York	Departure (NH010)
Oct. 26 (Thu)	N.Y. - St. Vincent	St. Vincent	Arrive at St. Vincent via Barbados (AA1385 and L1335)
Oct. 27 (Fri)		St. Vincent	Explanation and discussion with Fisheries Dept. Survey of project site (Calliaqua).
Oct. 28 (Sat)	St. Vincent - Canouan	Canouan	Move to Union Is. (by charter plane). Observation of Clifton Fisheries Center in Union Is. Fishing village survey in Tobago Cays and Mayreau Is. Move to Canouan Is. (by charter boat).
Oct. 29 (Sun)		Canouan	Survey of project site and general survey in Canouan.
Oct. 30 (Mon)	Canouan - St. Vincent	St. Vincent	Survey of fishermen facilities in Mustique Is. Survey on hurricane damage of Paget Farm Fisheries Center in Bequia Is. Back to St. Vincent (by boat of Fisheries Dept.)
Oct. 31 (Tue)		St. Vincent	Discussion with Fisheries Dept. Courtesy call to the Ministry of Agriculture and Labor.
Nov. 1 (Wed)		St. Vincent	Discussion with Central Planning Unit. Discussion with Ministry of Communication and Work. Survey of relevant facilities in St. Vincent.
Nov. 2 (Thu)	St. Vincent - POS	Port of Spain	Signing of Minutes of Discussion. Discussion with Director of Finance. Supplemental survey of Paget Farm Fisheries Center in Bequia Is. Leave St. Vincent for Port of Spain (L1309).
Nov. 3 (Fri)	POS - N.Y.	New York	Report of survey results to the Embassy of Japan. Leave Port of Spain for New York (BW424).
Nov. 4 (Sat)	N.Y. -		Leave New York (NH009).
Nov. 5 (Sun)	- Tokyo		Back to Tokyo.

### **3. Member List of Party Concerned in the Recipient Country**

#### **Ministry of Agriculture and Labors**

Hon. Allan Cruickshank	Minister
Mrs. Claudia White	Permanent Secretary
Mr. Kerwyn Morris	Chief Fisheries Officer
Ms. Jeniffer Cruickshank	Senior Fisheries Extension Officer
Mr. Motoki Fujii	JICA Expert (Coastal Fishery)
Mr. Teruo Mita	JICA Expert (Mechanical Engineer)

#### **Ministry of Foreign Affairs And Tourism**

Mr. Brendon C. Browne	Assistant Secretary / Chief of Protocol
Mr. Andrews Wickham	Director of Tourism

#### **Ministry of Finance and Plan**

Mr. Maurice Edwards	Director General of Finance & Planning
Mrs. Carmen R. Jack	Budget Director
Mr. Bentley Browne	Planning Officer

#### **Ministry of Communication and Works**

Mr. Jeffery Cato	Chief Engineer
Mr. Langren	Engineer
Mr. Williams	Land Surveyor
Mr. B.E. Alastair Alexander	Director of Airports
Mr. Haddaway	Meteological Officer, St. Vincent Airport

#### **Ministry of Housing, Local Government, Youth, Sports and Community Development**

Hon. Louis Jones	Minister
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#### **Ministry of Public Health**

Mr. Chleverton	Chief Engineer
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#### **Coastguard**

Mr. David Robin	Commander, Calliaqua Coastguard Base
Mr. Tyrone A. James	Executive Officer, ditto

#### **St. Vincent Marketing Corporation**

Mr. Kirk Dasilva	Financial Controller
Mr. Runolph Phills	Manager of NKFM

#### **St. Vincent Electricity Services, Ltd. (VINLEC)**

Mr. Lennox Morris	Transmitting Officer
Mr. Charles Samuel	Manager of Canouan Power Station

#### **Central Water and Sewage Authority**

Mr. Commings	Chief Engineer
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**Local Government**

**Mrs. Stephanie Browne**

**Mrs. Annella Deroche**

**Parliament Member, responsible for Southern  
Grenadines Region.  
Justice of Peace, Canouan Island**

**Private Company**

**Mr. Keith M. Trump  
Mr. Piero Moscatelli  
Mr. Martin Andrews**

**Caribbean Construction Associates Ltd.  
Caribbean Charter Yacht Yard Holdings  
Geotech Associates Ltd. (in Trinidad)**

**Embassy of Japan in Port of Spain**

**Mr. Takeshi Tsuruta  
Mr. Takashi Suzuki  
Mr. Fumiaki Sekine  
Mr. Keishiro Mori  
Mr. Hideo Kimura**

**Ambassador  
Councillor  
Second Secretary  
JICA Expert (C.F.R.T.I.)  
JICA Expert (C.F.R.T.I.)**

#### 4. Minutes of Discussion

(1) At the Basic Design Survey

**MINUTES OF DISCUSSIONS**  
**BASIC DESIGN STUDY**  
**ON THE**  
**FISHERY COMPLEX CONSTRUCTION PROJECT**  
**IN ST. VINCENT AND THE GRENADINES**

In response to a request from the Government of St. Vincent and the Grenadines, the Government of Japan has decided to conduct a Basic Design Study on the Fishery Complex Construction Project in St. Vincent and the Grenadines (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA has sent to St. Vincent and the Grenadines a Basic Design Study Team headed by Mr. Shinji TSUTSUMI, Assistant Director of Promotion Division, Promotion Department, Fisheries Agency, and the Team is scheduled to stay in the country from July 4 to August 7, 1995.

The Team held a series of discussions with the officials concerned of the Government of St. Vincent and the Grenadines and conducted a field survey at the study area.

In the course of the discussions and field survey, both parties have confirmed the main items described on the attached sheets. The Team will proceed to further work and prepare the Basic Design Study Report.

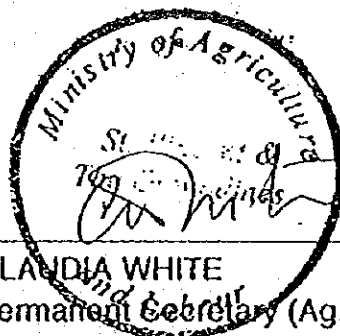
Kingstown, July 12, 1995

*Shinji Tsutsumi*

堤 真 治

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SHINJI TSUTSUMI  
Leader  
Basic Design Study Team  
JICA



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CLAUDIA WHITE  
Permanent Secretary (Ag.)  
Ministry of Agriculture and Labor

## ATTACHMENT

### 1. Objective

The objective of the Project is to secure marketing channel for satisfying local demand, import substitution as well as increase in export and to improve the efficiency of fishery activities by establishing the fishery complexes at Calliaqua in main island "St. Vincent" and at Canouan in the southern Grenadines.

### 2. Project Sites

#### 1) Calliaqua

The site is located at Calliaqua about 6.5 km east of capital Kingstown, as shown in ANNEX I

#### 2) Canouan

The site is located in the Friendship Bay, the south coast of Canouan Island in the southern Grenadines as shown in ANNEX II.

### 3. Executing Agency

The Ministry of Agriculture, Industry and Labor through Fisheries Division is responsible for administration and execution of the Project.

### 4. Items requested by the Government of St. Vincent and the Grenadines

The items requested by the Government of St. Vincent and the Grenadines are listed in ANNEX III.

### 5. Japan's Grant Aid System

- 1) The Government of St. Vincent and the Grenadines has understood the system of the Japan's Grant Aid explained by the Team; the main feature is described in ANNEX IV.
- 2) The Government of St. Vincent and the Grenadines will take the necessary measures, described in ANNEX V for the smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

### 6. Counterpart Fund

If and when the products fishing equipment, purchased under the Japan's Grant Aid, are sold or leased to fishermen, the Government of St. Vincent and the Grenadines shall take necessary measures as follows:

- 1) to inform the plan of sale or lease of such products to the Government of Japan;
- 2) to ensure that such products be used by fishermen properly and effectively for their own fishing operations;
- 3) to deposit, in local currency, the amount generated from such sale or lease in a suitable account of the Government of St. Vincent and the Grenadines as a counterpart fund;



- 4) to utilize the counterpart fund for the purpose of the fisheries development in St. Vincent and the Grenadines or the maintenance of such products; and
- 5) to report to the Government of Japan upon the use and balance of the counterpart fund.

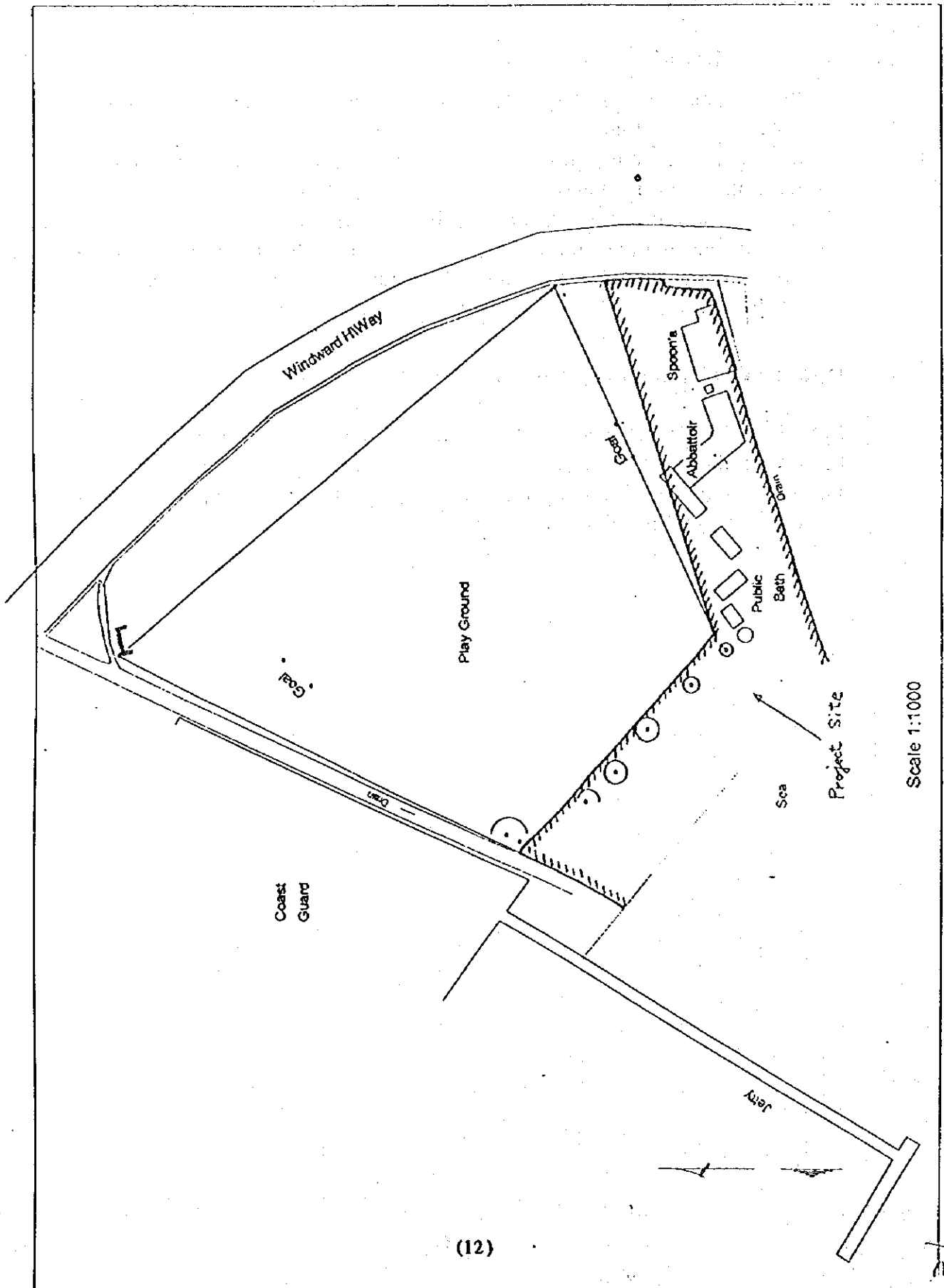
#### **7. Further Schedule of the Study**

- 1) The consultants will proceed to further studies in St. Vincent and the Grenadines until August 7, 1995
- 2) JICA will prepare the draft basic design and dispatch a mission in order to explain its contents around the beginning of October, 1995.
- 3) In case the contents of the design are accepted in principle by the Government of St. Vincent and the Grenadines, JICA will complete the basic design study report and send it to the Government of St. Vincent and the Grenadines by the end of January, 1996.

#### **8. Operation and Management of Project Facilities**

Both Fisheries Complexes in Calliaqua and Canouan will be operated and managed by Boards of Directors established by the Ministry of Agriculture and Labor. These Boards of Directors will be organized from among the Fisheries Division, District Council and the representatives of fishermen.

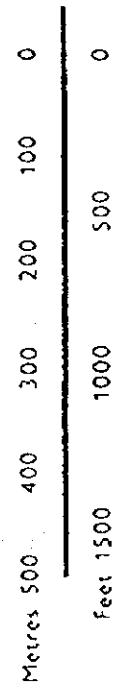
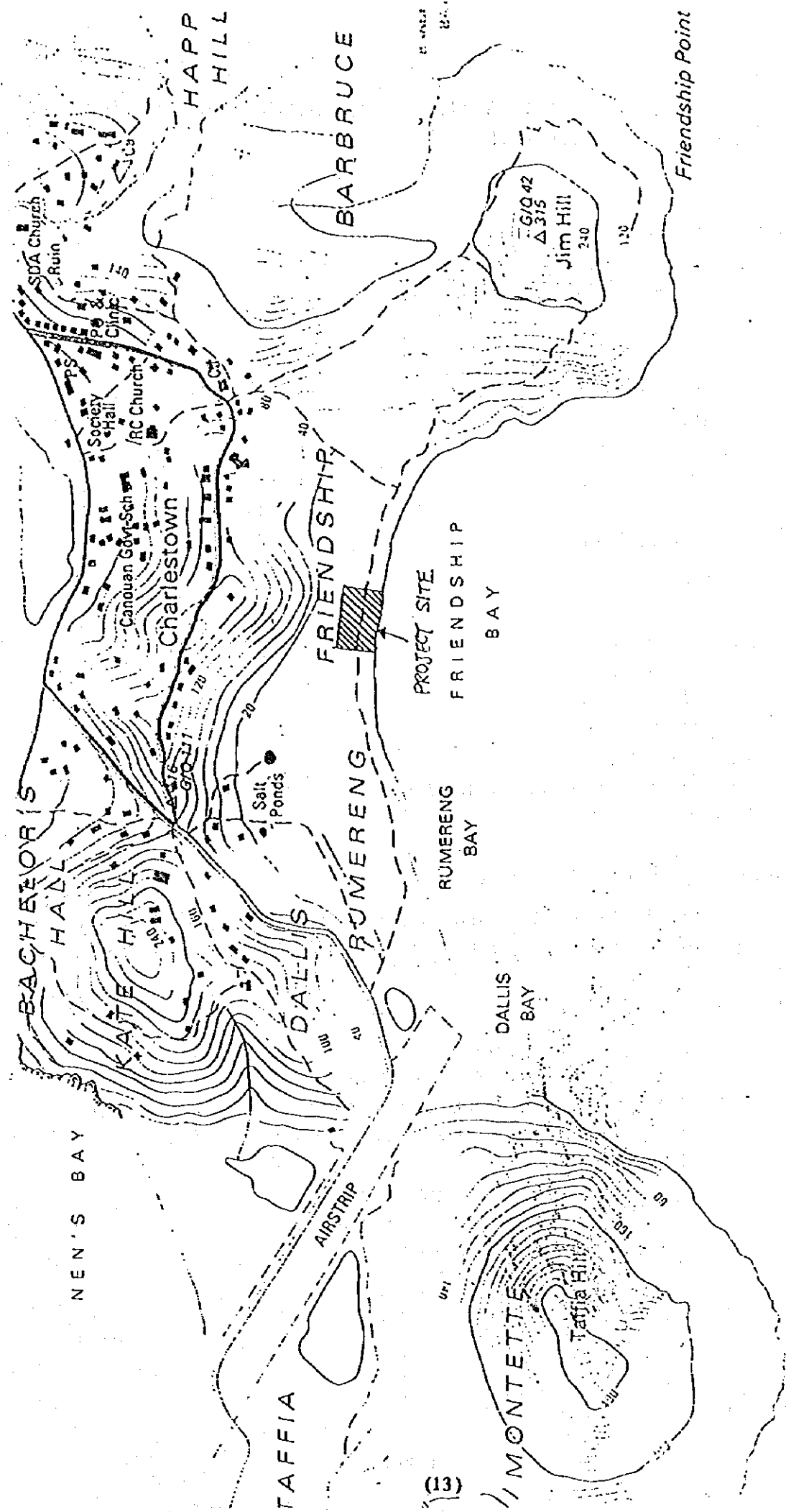
ANNEX I. PROJECT SITE FOR CALLIAQUA FISHERY COMPLEX



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ANNEX II. PROJECT SITE FOR CANOUAN FISHERY COMPLEX



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**ANNEX III: ITEMS REQUESTED BY THE GOVERNMENT OF ST. VINCENT  
AND THE GRENADINES**

**1. Calllaqua Fishery Complex**

- 1) Landing jetty
- 2) Refrigeration complex
  - Ice machine
  - Fish/ice storage
- 3) Fishermen's locker
- 4) Fuel depot
- 5) Toilet/shower rooms
- 6) Fish retail market

**2. Canouan Fishery Complex**

- 1) Landing jetty
- 2) Slipway
- 3) Refrigeration complex
  - Ice machine
  - Fish/ice storage
- 4) Fishermen's locker
- 5) Toilet/shower rooms
- 6) Multipurpose house (accommodation and kitchen for fishermen)
- 7) Fuel supply system

**3. Equipment for above 2 Facilities**

4WD Pick-up trucks (2 units), Insulated fish boxes, Scales, Plastic fish containers, Hand carts, Small freezers, VHF radio (for Canouan), Data analysis equipment, etc.

**4. Fishing Boats and Gears**

- 1) Small multi-purpose fishing boat 1 unit
  - Dimension: Approx. 10 m long
  - Engine: Diesel inboard engine approx. 100 Hp
  - Gears: Tuna longline, bottom longline, etc.
- 2) Small fishing boat 4 units
  - Dimension: Approx. 7 m long
  - Engine: Outboard engine
  - Particulars: Ice hold

## **ANNEX IV: JAPAN'S GRANT AID SCHEME**

### **1. Grant Aid Procedure**

1) Japan's Grant Aid Program is executed through the following procedures.

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

2) 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 to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, 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 signed by the Government 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 (hereinafter referred to as "the Study"), conducted by JICA on the requested project (hereinafter 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:

- a) confirmation of the background, objectives and benefits of the requested project and also institutional capacity of agencies concerned of the recipient country necessary for the project's implementation;
- b) evaluation of the appropriateness of the project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
- c) confirmation of items agreed on by both parties concerning the basic concept of the Project;
- d) preparation of a basic design of the Project; and
- e) 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 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 through 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 the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participate the Study and prepare a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

## 3. Japan's Grant Aid Scheme

### 1) What is Grant Aid?

The Grant Aid Program 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. Grant Aid is not supplied through the donation of materials as such.

### 2) 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.

### 3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, 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.

- 4) Under the Grant, 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, contracting 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.)

5) Necessity of "Verification"

The Government of the 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 of Japanese taxpayers.

6) Undertakings required to the Government of the recipient country

- a) to secure a lot of land necessary for the construction of the Project and to clear the site;
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
- c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid.
- d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.
- e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- f) to ensure that the facilities constructed and products purchased under the Grant be maintained and used properly and effectively for the Project, and
- g) to bear all the expenses other than those covered by the Grant, necessary for the Project.

7) "Proper Use"

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

8) "Re-export"

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

9) Banking Arrangement (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 an authorized foreign exchange 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 issued by the Government of recipient country or its designated authority.



## **ANNEX V: UNDERTAKINGS BY THE GOVERNMENT OF ST. VINCENT AND THE GRENADINES**

1. To secure a lot of land, in the respective site, necessary for the Project;
2. to clear, level and reclaim the site prior to the commencement of the construction;
3. to provide facilities for distribution of electricity, water supply and drainage to the site and other incidental facilities outside the site;
4. to ensure prompt unloading and customs clearance at ports of disembarkation in St. Vincent and the Grenadines and internal transportation therein of the products purchased under the Grant;
5. to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the St. Vincent and the Grenadines with respect to the supply of the products and services under the verified contracts.
6. to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into St. Vincent and the Grenadines and stay therein for the performance of their work.
7. to bear commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement (A/P);
8. to ensure that the facilities and equipment under the Grant be maintained and used properly and effectively for the Project; and
9. to bear all the expenses other than those covered by the Grant, necessary for the project.

(2) At the Draft Basic Design Explanation


MINUTES OF DISCUSSIONS  
BASIC DESIGN STUDY  
ON THE  
FISHERY COMPLEX CONSTRUCTION PROJECT  
IN SAINT VINCENT AND THE GRENADINES  
(Consultation on the Draft Basic Design)

In July 1995, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the Fishery Complex Construction Project (hereinafter referred to as "the Project") to Saint Vincent and the Grenadines, and through discussions, field survey, and technical examination of the results in Japan, has prepared the Draft Basic Design of the Project.

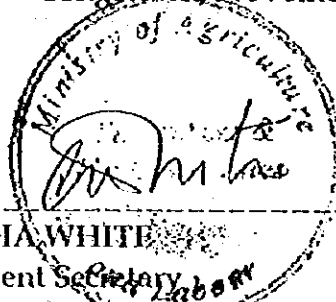
In order to explain and to consult the Saint Vincent side on the components of the Draft Basic Design, JICA has sent to Saint Vincent a Study Team headed by Mr. Yukio TSUBOTA, Assistant Director of Construction Division, Fishing Port Department, Fisheries Agency and the Team is scheduled to stay in the country from October 26 to November 2, 1995.

As a result of discussions, both parties have confirmed the main items described on the attached sheets. The Team proceed to further works and finalize the Basic Design Study Report.

Kingstown, November 2, 1995



YUKIO TSUBOTA  
Leader  
Explanation Team for the  
Draft Basic Design  
JICA



CLAUDIA WHITE  
Permanent Secretary  
Ministry of Agriculture and Labor  
The Government of Saint Vincent

## ATTACHMENT

### 1. Components of the Draft Basic Design

The Government of Saint Vincent has agreed and accepted in principle the components of the Draft Basic Design proposed by the Team.

### 2. Japan's Grant Aid System

- 1) The Government of Saint Vincent has understood the system of the Japan's Grant Aid explained by the Team; the main feature is described in ANNEX I.
- 2) The Government of Saint Vincent will take the necessary measures, described in ANNEX II for smooth implementation of the Project on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

### 3. Proper Use of Equipment and the Counterpart Fund

If and when the products, such as fishing equipment purchased under the Japan's Grant Aid, are sold or leased to fishermen, the Government of Saint Vincent shall take necessary measures as follows:

- 1) to inform the plan of sale or lease of such products to the Government of Japan;
- 2) to ensure that such products be used by fishermen properly and effectively for their own fishing operations;
- 3) to deposit, in local currency, the amount generated from such sale or lease in a suitable account of the Government of Saint Vincent as a counterpart fund;
- 4) to utilize the counterpart fund for the purpose of the fisheries development in Saint Vincent or the maintenance of such products;
- 5) to consult with the Government of Japan about the use of the counterpart fund; and
- 6) to report to the Government of Japan upon the balance of the counterpart fund.

### 4. Further Schedule

JICA will finalize the Basic Design Study Report in accordance with the confirmed items, and send it to the Government of Saint Vincent by January, 1996.

### 5. Matters to be noted

- 1) The Government of Saint Vincent has ensured that enough space which could accommodate the Project facilities in Calliaqua would be secured.
- 2) The Team confirmed that the construction of the road up to the site on Canouan would complete in October 1996.

### 6. Issues regarding the past Project

- 1) The Team observed that fishing vessels procured under the past Japan's Grant Aid project have been well-utilized, but the loan for the sale of fishing vessels have not been collected accordingly. The Government of Saint Vincent shall expedite the collection of such loan while consulting with the fishermen who bought such fishing vessels.

- 2) The Government of Saint Vincent has agreed that the counterpart fund, generated from such sales as mentioned-above, would be utilized for the purpose of the fisheries development or the maintenance of such products as stipulated in article 3 above.
- 3) Although the Fishery Complex in Clifton has just started operating, the facilities have not been fully utilized except ice making facility. The Government of Saint Vincent shall take necessary measures to promote the usage of such facilities in order to pursue the initial objective of the project.

## ANNEX I: JAPAN'S GRANT AID SCHEME

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

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### 2. Basic Design Study

#### 1) Contents of the Study

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- 4) Under the Grant, 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, contracting 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.)

- 5) Necessity of "Verification"

The Government of the 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 of Japanese taxpayers.

- 6) Undertakings required to the Government of the recipient country

- a) to secure a lot of land necessary for the construction of the Project and to clear the site;
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
- c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
- d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
- e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
- f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and
- g) to bear all the expenses other than those covered by the Grant Aid, necessary for the Project.

7) "Proper Use"

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

8) "Re-export"

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

9) Banking Arrangement (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 an authorized foreign exchange 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 recipient country or its designated authority.



## ANNEX II: UNDERTAKINGS BY THE GOVERNMENT OF SAINT VINCENT

1. To secure a lot of land, at the respective site, necessary for the Project;
2. to clear, level and reclaim the site for the Project prior to the commencement of the construction;
3. to secure yard for stocking materials and constructing temporary facilities at the respective Project site;
4. to provide a proper access road to the Project sites;
5. to provide necessary permissions, licenses and other authorization for smooth implementation of the Project;
6. to undertake incidental outdoor works, such as gardening, fencing and other incidental facilities in and around the Project site, if necessary;
7. to provide the following incidental facilities in connection with the site:
  - 1) Electricity distributing line to the site,
  - 2) City water distribution main to the site,
  - 3) Drainage main to the site,
  - 4) Telephone trunk line to the site, and
  - 5) General furniture such as carpet, curtain and others;
8. to ensure prompt unloading, tax exemption and customs clearance at ports of disembarkation in Saint Vincent and internal transportation therein of the products purchased under the Japan's Grant Aid;
9. to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in Saint Vincent with respect to the supply of the products and services under the verified contracts;
10. 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 Saint Vincent Islands and stay therein for the performance of their work;
11. to bear commissions, namely advising commissions of an Authorization to Pay (A/P) and payment commissions, to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement (B/A);
12. to ensure that the facilities constructed and equipment purchased under the Japan's Grant Aid be maintained and used properly and effectively for the Project;
13. to bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project; and
14. to coordinate and solve any matters which may arise with third parties in the Project site during the implementation of the Project.