

3-2 Fish Collection Vessel

3-2-1 Outline and basic policy

The fish collection vessel is to collect fish caught in rural areas and carry them to Gizo. Since there are many islands of various size and reefs and taking into account the pier sizes, it will be small FRP (Fibre-Reinforced Plastic) boat with a shallow draft.

The fish collection vessel has a capacity of loading 10 ice-boxes.

3-2-2 Specifications

Length overall	:	11.82 m
Breath overall	:	3.25 m
Depth	:	1.58 m
Designed gross tonnage:		4.94 ton
Displacement tonnage	:	5.45 ton
Capacity		
Fish hold	:	4.0 m ³
Fuel oil tank	:	1,000 litres
Complement	:	5 persons
Engine	:	90 PS
Max. speed	:	12.0 knots
Cruising range	:	570 N/miles
Equipment		
Bow:		
Stem band		1 set
Mooring bitt wood		1
Fore:		
Hatch cover, bow store		1 set
Hatch cover, fish hold		2
Bottom board, bow store		1
Wheel house:		
Sliding/Fixed window		1 set
Door		2
Mast, W/H top		1
Top hand rail		1
Steering wheel		1

Engine room:

Storm rail	1 set
Door	1
Funnel cover	1
Top hand rail	1
Engine bed	1
Fuel oil tank, 250 ℓ	2
General service water pump	1
Electric supply fan	1

Stern:

Mooring bitt, wood	2 sets
Prop. inspection hole	1
Hatch cover, stern store	3
Floor board, plywood, stern store	1

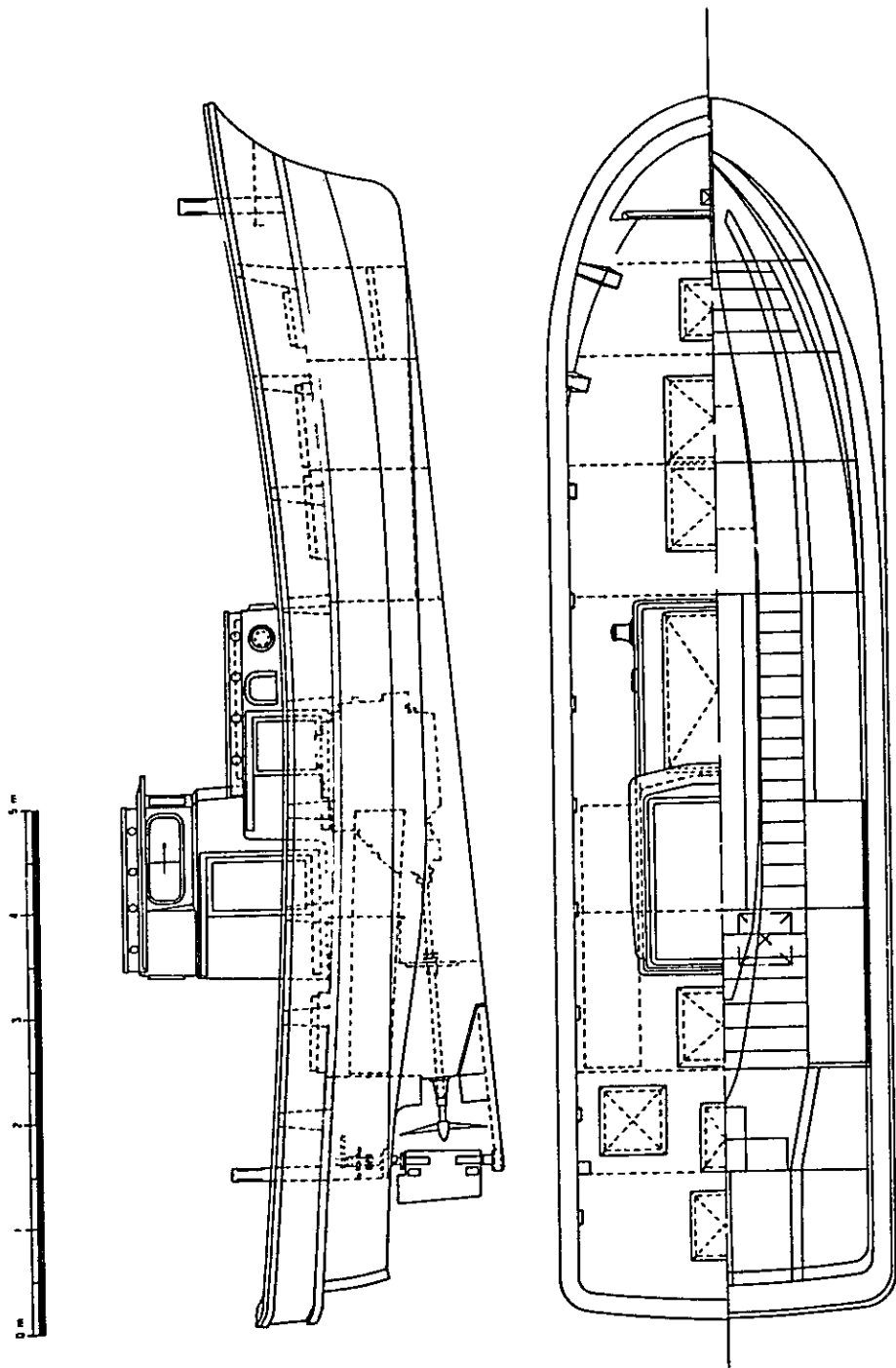
Others:

Primary/secondary wooden fender	1 set
Fender ring	4
Zinc anode	6
Hand hydraulic steering	1
Navigation lights	1
Lightings, E/R, C/S, S/S, W/H	4

Supplies:

Anchor	1 set
Anchor rope	1
Mooring rope	2
Magnetic compass	1
Fire extinguisher, E/R	1
Hose for general service water pump	1
Life jacket	5
Life ring buoy with holder	2
Red hand flare	4

3-2-3 Preliminary drawing



3-3 Ice-Box

3-3-1 Outline and basic policy

The ice-boxes are to be used to keep fish caught by rural fishermen in cold storage with ice and are to carry to fisheries centre on boat or vehicle.

There is an ice-box manufacturing plant in Honiara and it manufactures ice-boxes that are suitable to local use after the study and improvement for the past 4 years. Accordingly, this type will be used.

It can hold 50 kg of ice and 200 kg of fish and keep fish in cold for 3 or 4 days.

3-3-2 Allotment plan

The allotment plan to each province is shown in the following.

Province	Number of Ice-Box
Malaita Province	45
Western Province	45
Santa Isabel Province	25
Central Islands Province	25
Guadalcanal Province	23
Makira/Ulawa Province	32
Eastern Outer Islands Province	55
Total	250

3-3-3 Specifications

- Box size : 2 ft x 2 ft x 4 ft (exterior dimensions)
- Wall thickness : 4 inches
- Material : Closed cell polyurethane foam
- Covering : 2 layers of chopped strand fibreglass and additional layer of fibreglass at all exterior corners
- Lid : 3 inch closed cell polyurethane foam with 2 inch foam insert
- Covering of lid: 2 layers of chopped strand fibreglass
- Seal : Neoprene joint of 1/2 inch thickness moulded to lid

3-4 Inter-Island Replacement Vessel

3-4-1 Basic plan

On the basis of the outline specification of inter-island vessels submitted in advance by the government of the Solomon Islands, we made a preliminary basic plan before our departure and had discussions about it on this visit.

As the specification mentioned only outlines, we are discussed the details of the vessels and finally agreed to make a plan for the vessels on a policy of "easy operation, no stoppage (of a ship due to mechanical troubles), and easy maintenance," taking into account the geographical and technical conditions of the Solomon Islands.

3-4-2 Matters discussed

The specifications of the vessels were determined as follows:

(1) Principal Particulars

Length (overall)	23.00 m
Breadth (moulded)	6.50 m
Depth (moulded)	2.80 m
Draft (moulded)	2.30 m
Main engine, diesel	1 unit
200 H.P 750 RPM	
Speed	about 6.5 knots
Navigation range	about 800 K/miles
Capacity	Officers 2 P.
	Crew 6 P.
	Room passengers 4 ~ 8 P.
	Deck passenger 50 P.
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	Total 62 ~ 66 P.
Fuel oil tank	5.5 m ³
Fresh water tank	3.0 m ³
Cargo weight	60 T.
Hold capacity	110 m ³

The gross tonnage shall be determined in accordance with the new international regulations (International Agreement of 1969).

(2) Other Matters

In order to facilitate the use of inter-island replacement vessels, the following were decided upon taken various conditions into account.

(i) Geographical conditions

- (a) The accommodation arrangements shall be simplified for inner-island use, which is the scheduled assignment of the vessel (the vessel provided in the previous grant was for an outer island service).
- (b) In order to facilitate the cargo handling work outreach of the boom shall be extended as much as possible and the cargo gear capacity will be increased from 0.5 tons to 1.0 tons and an engine-driven winch shall be provided. The hatch way also shall be wider as much as possible.
- (c) Electric power shall be obtained from batteries while mooring.

(ii) Mechanical troubles and repair abilities

- (a) A complete set of auxiliary engines shall be provided as a stand-by unit.
- (b) The cooling system of the main and aux. engines shall be the fresh water system.
- (c) All electrical wiring, switches, etc., shall be surface mounted and exposed.

(iii) Safety

- (a) 1 surf boat shall be provided, and also the number of persons for life rafts shall be increased for extra deck passengers.
- (b) The communication range shall be increased for emergency.
- (c) Solomon Island Regulations shall be applied, along with the classification rules stipulated.

3-4-3 Final plan of the basic design

The final plan of the basic design was prepared by incorporating the discussed items in the preliminary basic design presented at the time of the investigation. The final plan is attached hereinafter as the outline specification and the general arrangement plan.

OUTLINE SPECIFICATION
OF
23 M. TYPE CARGO-PASSENGER VESSEL

1. General

The vessel shall be designed as a steel constructed single screw diesel engine propelled cargo-passenger vessel.

The vessel shall be used for carrying cargo and passengers in coastal area.

The vessel will have ample stability and seaworthiness.

2. Principal Particulars

Length over all		23.00 M
Breadth, moulded		6.50 M
Depth, moulded		2.80 M
Draft, moulded at designed max. abt.		2.00 M
Gross tonnage	"	105 T
Main engine output		200 PS × 1
Speed at cruising	abt.	6.5 Kts
Cargo hold	"	110 M ³ (60 T)
Fuel oil tank capacity	"	5.5 M ³
Fuel oil daily tank capacity	"	0.4 M ³
Lub. oil tank capacity	"	0.1 M ³
Fresh water tank capacity	"	3.0 M ³
Complement	Officer	2 P
	Crew	6 P
	Cabin passenger	6 P
	Deck passenger	50 P
	Total	64 P

3. Survey and Test

The vessel to be built and classed under special survey of Nippon Kaiji Kyokai (N.K.).

Upon completion trial run and equipment tests to be carried out at the sea nearby the Builder's area.

4. Material and Workmanship

Steel and other material used for the construction to be in accordance with Classification Society Requirements, and other aid material to be of ship building standard in Japan.

5. Hull Construction

The vessel shall be constructed of steel, and electric welding throughout.

The scantling shall be in accordance with the Classification Requirements.

6. Painting

Metal surface to be well cleaned before painting and wash primer to be applied.

Painting scheme to be as follows:

Outside hull:

Below water line	A/C	2 coats
	A/F	2 coats
Above water line	A/C	2 coats
	Finish paint	3 coats

Inboard:	A/C	2 coats
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Deckhouse:	A/C	2 coats
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Upper and bridge deck	Non slip paint	2 coats
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7. Cathodic Protection

Suitable number of zinc anodes to be fitted.

8. Hull Equipment

8-1 Navigation equipment

Steering apparatus:	Hand hydraulic capable of manual emergency handling 0.2 T-M	1 set
Magnetic compass:	150 mm, reflector type	1 "
Radar:	7", 36 N.M.	1 "
Ship bell:	300 mm dia.	1 "

Hand lead		2
Echo sounder:	Recording type 0-480M	1 set
Search light:	250W controlled from wheelhouse	1 "
Signal lamp:	Aldis type, portable	1 "
Navigation light:		1 "
N.U.C. light:		2
Black ball:		3
Projector:	150W	2
Clear view screen:	300 mm dia.	1
Air horn:		1
Barometer:		1
Binocular:	7 x 50	1
Thermometer:		1

8-2 Communication

Wireless telephone:	SSB 100W, 11 ch. 2 ~ 9 MHz	1 set
Voice tube:	W/H E/R W/H W/H top	1 set
International signal flag:		1 "
Loud hailer (Portable type):		1 "

8-3 Ventilation

Mushroom, goose neck ventilators for natural draft to be provided in necessary compartments.

Skylight:	Crew's room	2 sets
	Engine room	2 "
	Cabin passenger room	2 "
Oscillating fan:		6 "

8-4 Window, hatch and door

All windows to be of Al. alloy frame with reinforced glass, fixed and drop type.

Engine room and crew's cabin entrance doors to be of steel watertight doors.

Wheelhouse entrance doors and other compartments to be Al. alloy weather-tight door.

All hatches to be of steel, and under the hatch vertical or step to be fitted.

8-5 Deck equipment

Mast:	Steel	1
Hand rail:	"	1 set
Bollard:	"	6
Cross bitt:	"	1
Fair leader:	"	3
Mooring hole:	"	1
Anchor windlass:	0.35 T, hand operated	1 set
Derrick boom:	1.0 S.W.L.	1 "
Cargo winch:	2.0T-12M/min. by diesel engine driven	1 "

8-6 Life saving appliance

Inflatable life raft:	19P type	4
Life buoy:	I.M.C.O. standard	4
Life jacket:		80
Self igniting light:		2
Self smoke signal:		2
Rocket signal:		2
Parachute signal:		4
Surf boat:		1

8-7 Fire fighting apparatus

Hose connection:		2 sets
Hose and nozzle:		2 "
Fire extinguisher:	Foam, 9L portable type	6
	Foam, 45L portable type	1
Fire axe:		1
Fire buckets:		3
Sand buckets with scoop:		1 set

8-8 Ground tackle

Bower anchor:	Stockless, 1.5 Kg	2 sets
Spare anchor:	Stockless, 1.5 Kg	1 set
Anchor chain cable:	14 mm ϕ \times 190 M	1 "
Tow line:	Nylon, 27 mm ϕ \times 180 M	1
Mooring line:	Nylon, 7 mm ϕ \times 120 M	3

9. Accommodation and Passenger Space, etc.

As per attached plan.

10. Machinery

10-1 Main engine and gear box

a) Main engine

Type:	Vertical 4 stroke cycle, single acting, fresh water cooling
No. of set:	1 set
Output, continuous:	200 PS \times 750 RPM
Starting:	Compressed air
Fuel oil:	A heavy oil
Output direction of rotation (portable shaft):	Counter clockwise (View from aft.)

10-2 Aux. engine

a) Generator engine

Output, cont.:	27 PS \times 1,500 RPM fresh water cooling
No. of set:	2 sets
Starting:	Hand and electric motor

10-3 Shafting and propeller

The shaft shall be made by suitable material in accordance with the Classification Society Requirements.

Screw shaft:	Stainless steel	1 set
Stern tube:	Welded steel construction with sea water lubricated rubber bearing	
Propeller:	Fixed pitch propeller	

10-4 Pumps

Spare pumps of main and aux. engines shall be supplied according to the Classification Requirements.

Bilge/ballast and fire pump:	Bronze casing 14 M ³ /h × 20 M, driven by aux. engine	2 sets
Fuel oil transfer pump:	Bronze casing 1.0 M ³ /h × 20 M, 0.4 KW	1 set
Fresh water pump:	Centrifugal, bronze casing 2.5 M ³ /h × 8 M, 0.4 KW	1 "
Sanitary pump:	Bronze casing 2.5 M ³ /h × 8 M, 0.4 KW	1 "
Hand pump:	Bronze casing	4

10-5 Air compressor and tanks

For main engine

Air compressor:	15 M ³ /h × 30 Kg/cm ² driven by aux. engine	2 sets
Air reservoir:	45 L × 30 Kg/cm ²	2 "

10-6 Service tank in engine room

Fuel oil daily tank:	abt. 400 L	1
Lub. oil tank:	abt. 100 L	1
Fresh water expansion tank:	100 L	1
Fresh water gravity tank:	500 L	1
Sea water gravity tank:	500 L	1

11. Electricity

11-1 General

Power source:	AC 220 V, 1 ϕ , 50 Hz
Lighting and small power:	AC 220 V, 1 ϕ , 50 Hz
Emergency lighting:	DC 24 V
Navigation light:	DC 24 V

11-2 Electric source

Main generator:	AC 225 V, 1 ϕ , 50 Hz, 7.5 KVA, driven by aux. engine	2 sets
Rectifier:	AC 220 V - DC 35 V/40 A	1 set
Switchboard:	AC 220 V, DC 24 V	1 "
Battery:	DC 24 V, 200 AH	2 sets
	DC 24 V, 150 AH (for wireless)	1 set

11-3 Lighting

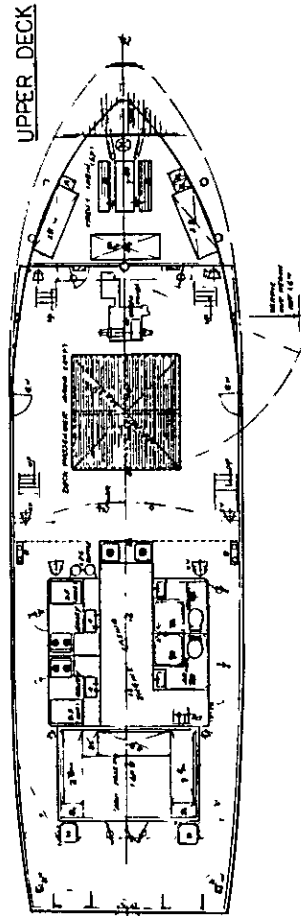
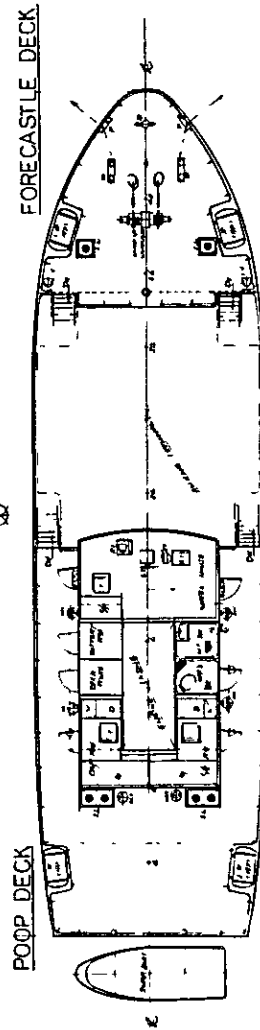
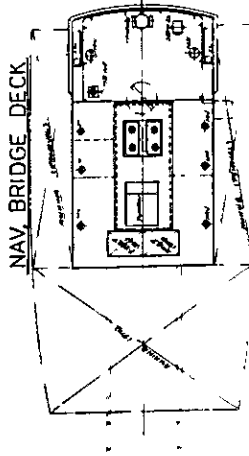
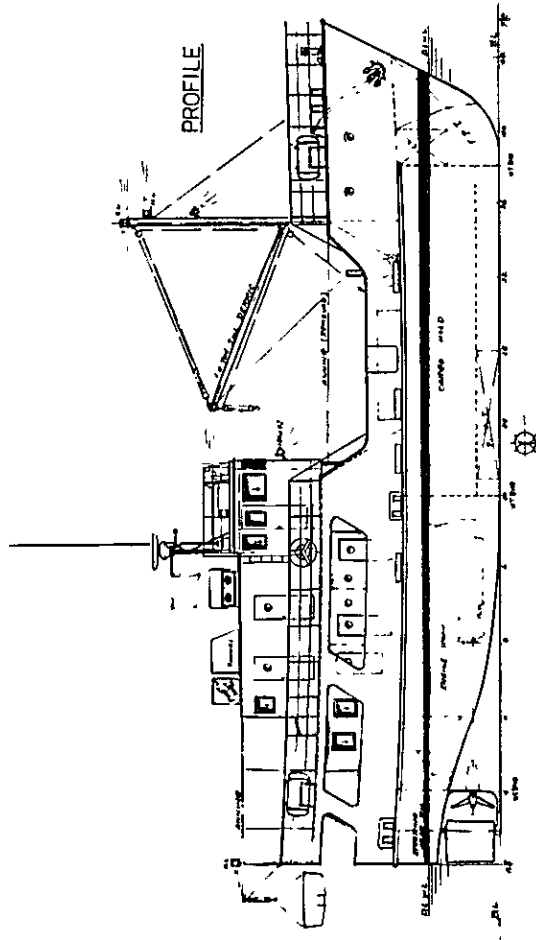
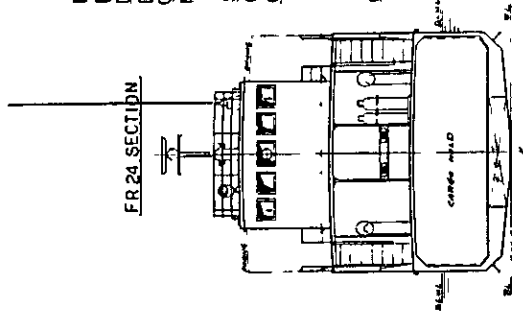
Fluorescent light:	AC 220 V with DC 24 V reserve
Inboard	20 W with 5 W
Incandescent light:	AC 220 V and reserve light
Engine room	60 W with guard
Steering gear room	40 W with guard
Store	40 W with guard
Chart lamp	40 W with dimmer
Portable lamp	40 W with guard and 6 M cord

12. Spare Parts and Tools

A set of spare parts and tools to be supplied in accordance with manufacture standard and Classification Requirements.

PRINCIPAL PARTICULARS

LENGTH O.A. 23.00 M
 BREADTH MLD. 6.50 M
 DEPTH MLD. 2.80 M
 DRAFT DESIGNED MLD. ABT. 2.00 M
 GROSS TONNAGE ABT. 105 TONS
 MAIN ENGINE DIESEL 1 SET
 SPEED CRUISING ABT. 20.0 KTS 750 RPM
 CRUISING RANGE ABT. 800 NM AT 65 KT
 COMPLEMENT OFFICER 2P
 CREW 5P
 CABIN PASSENGER 5P
 DECK PASSENGER 50P
 TOTAL 64P
 CARGO HOLD ABT. 110 M³ (60 LT)



23M TYPE CARGO-PASSENGER VESSEL
GENERAL ARRANGEMENT

3-4-4 Profitability

In an effort to make a financial evaluation of the proposed vessels operations, we have tried to study the case from a point of view of the annual costs of operations as against the possible income from cargo and passenger transportation since, at this time, no particular assignment of the vessels has been made to anyone particular shipping route.

The annual costs of operations are divided into the costs for the expenditure for shipping operation and the direct sailing costs:

Expenditure total (annual) 60,997 S.D. (Solomon dollars)

- 1 Crew expenses : 17,000.- S.D.
(3,400 S.D. x 2 + 1,700 S.D. x 6)
- 2 Repair costs : 7,150.- S.D.
(5,000 S.D. x 1.1 x 1.3)

Note: Based on ship repair costs in Japan, the costs incurred every 4 years (at the time of special periodical surveys) are distributed equally as plus 10% per year. In addition, a 30% increase is made as an additional cost for imported materials.

- 3 Ship's stores costs: 3,600.- S.D.
Based on the costs of Japanese small vessels.
- 4 Lubricating oil : 908.- S.D.
(363 S.D./t x 2.5)

Lubricating oil consumption is assumed to be 3% of the fuel oil consumption.

- 5 Ship insurance : 25,272.- S.D.
(350,000 S.D./1662 GT) x 120 GT
Based on the Solomon's government estimate of 350,000 S.D. The gross tonnage is assumed to be 120 G.T. (in terms of conventional tonnage).
- 6 Indirect overhead : 4,167.- S.D.
(100,000 S.D./24 vessels)
Based on the Solomons government estimate of indirect overheads, 100,000 S.D.
- 7 Depreciation : 0
No depreciation is considered.

8 Other costs : 2,900.- S.D.
(Total of 1 to 7) x 0.05)

In this case, a little larger factor than normal is used, since no allowance is given for depreciation.

Direct sailing costs 26,662.- S.D. (Solomon dollars)

1 Fuel costs : 23,184.- S.D.
(276 S.D./t x 84)

The following assumptions are applied in the calculation of fuel costs:

1) The rate of operation of the vessel is 50%, with an operating time of 10 hrs/day.

Therefore, annual operating hours is
 $365 \times 0.5 \times 10 = 1,825$ hrs.

2) Fuel consumption of the main engine is,
 $190 \text{ g/h} \times 200 \text{ ps} \times 1.825 \text{ h} \doteq 70 \text{ t}$

3) Other fuel consumption = $70 \text{ t} \times 0.2 = 14 \text{ t}$.

2 Other costs : 3,478.- S.D.
(Fuel costs x 0.15)

Therefore, the total operating costs is 87,659.- S.D.

On the other hand, the annual incomes from cargo and passenger transportation are estimated on the basis of the following assumptions which are though reasonable judging from the conditions observed at the time of investigation (in the absence of statistics):

1) The rate of cargo carriage is 80% of the full capacity throughout the operating hours, and the rate of passenger carriage is 30% of the full capacity.

2) The total operating hours of 1,825 (hrs) represents 23 round-trips between Honiara and Gizo, since the distance between the two cities is about 250 K/miles. Under this assumption, the one-way rate of 45 S.D./T for cargo, and that of 18 S.D./for passenger are used in the calculations for revenue purposes.

1 Income from cargos:

$(60 \text{ t} \times 0.8) \times 45 \text{ S.D./t} \times 2 \times 23 = 99,360.- \text{ S.D.}$

2 Income from passengers:

$$(50 P \times 0.3) \times 18 \text{ S.D./P} \times 2 \times 23 = 12,420.- \text{ S.D.}$$

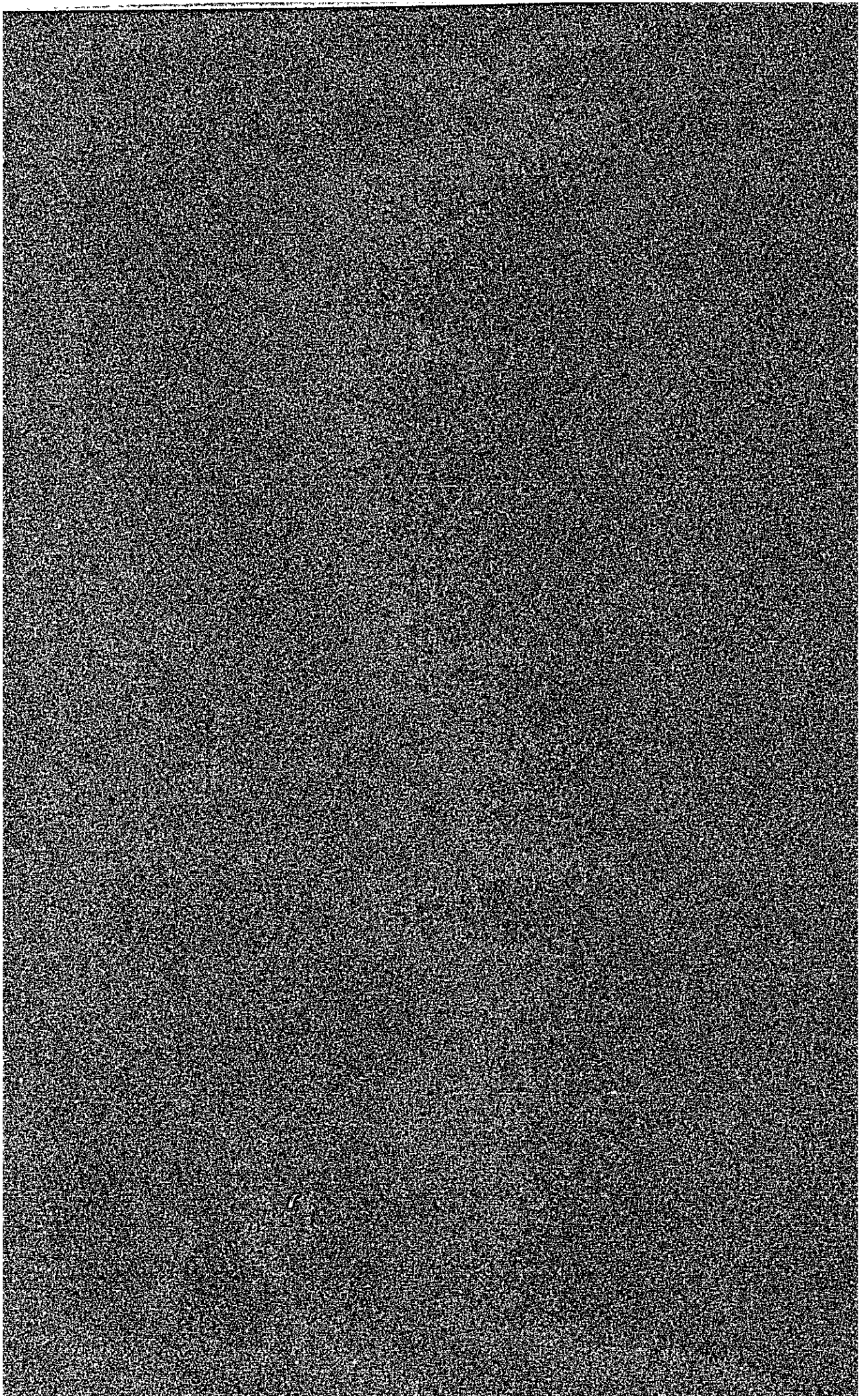
Total annual incomes = 111,780.- S.D.

Profit: about 24,000.- S.D.

This profit is insufficient to cover the depreciation cost (of about 34,000.- S.D.).

However, it is anticipated that the profit will be sufficient by increasing cargo volume and having higher rates of operations in proportion to the economic development in the future.

CHAPTER 4
IMPLEMENTATION PLAN



CHAPTER 4 IMPLEMENTATION PLAN

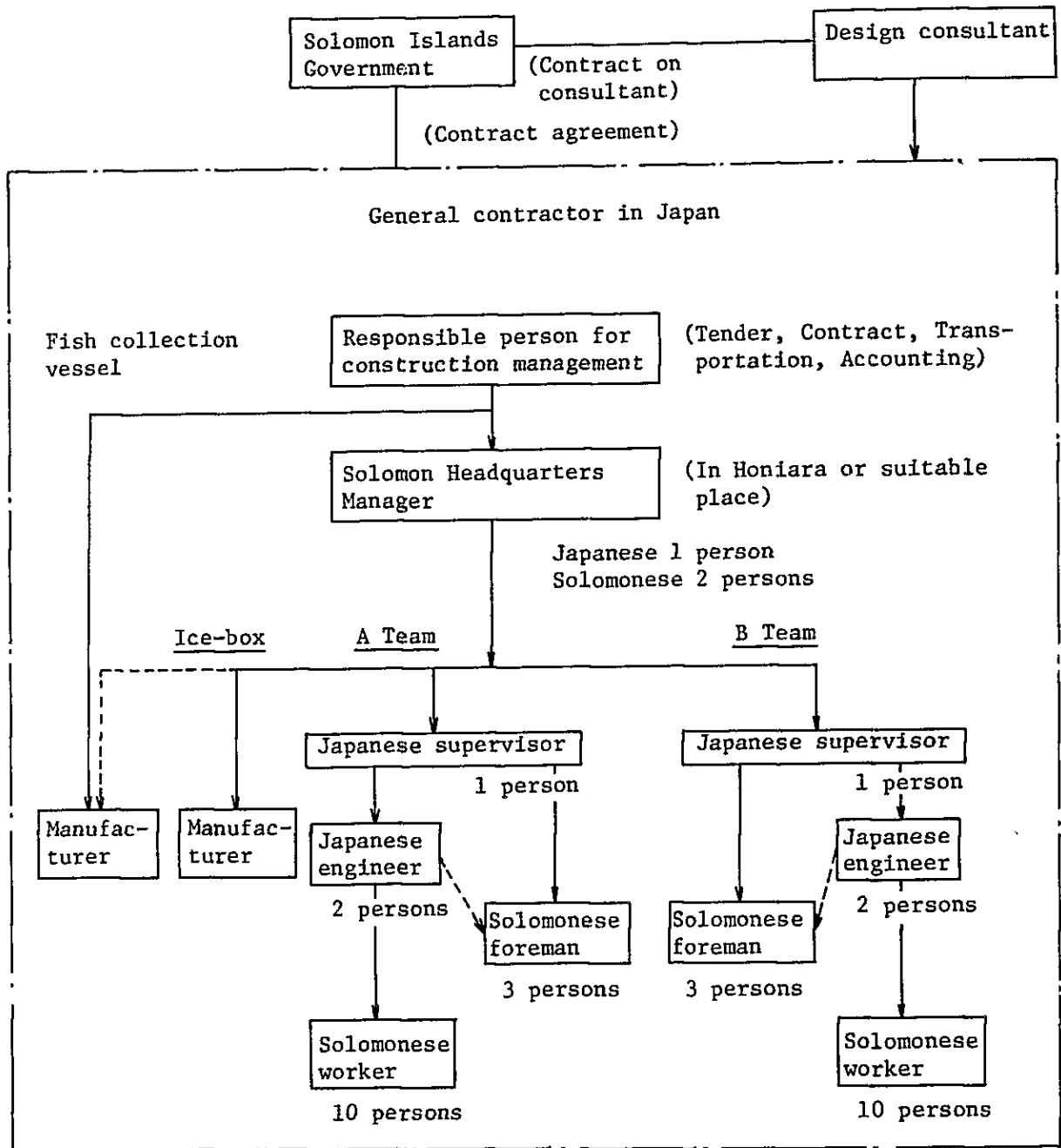
4-1 Fisheries Centre

4-1-1 Construction plan

(1) Organization of Construction

The expected organization and its personnel for the construction is outlined in the following.

Team A and Team B will be responsible for 2 sites each and will complete construction work one by one.



Construction Team

- o Construction: 2 Japanese/2 site engineer
- Electrician*: 1 Japanese/2 site
- Plumber* : 1 Japanese/2 site
- Carpenter : 6 Solomonese/2 site
- Laborer : 20 Solomonese/2 site

Solomon Headquarters

- o Manager : 1 Japanese
- Clerk : 1 Solomonese
- Material supervisor: 1 Solomonese

*: Work for both Team A and B

(2) Construction Material Procurement

Main construction materials available in the Solomon Islands are sand, gravel, cobblestone and timber. Cement is imported from Australia, but it is available in limited quantities. It is best to get other materials in Japan because of fine quality and stability of supply. However, some components like jalousie windows are produced in the third countries like Philippines, and more suitable for local conditions than that of Japanese make.

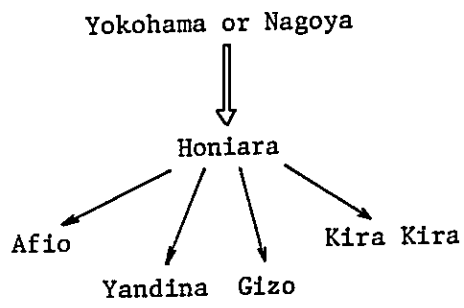
The table below shows from where construction materials will be supplied.

	Solomon Islands	Japan
Sand	o	
Gravel	o	
Cobblestone	o	
Cement	o	o
Timber	o	
Steel frame		o
Exterior materials		o
Interior materials	o	o
Water supply/drainage materials		o
Electrical materials		o

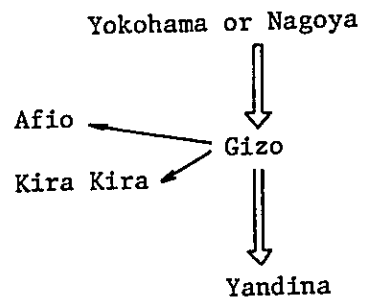
(3) Transportation Plan

The most common route (Route A) for the materials to be carried from Japan is to use regular freight ships from Japan to the Honiara port and regular servicing domestic boats to all construction sites after customs clearance. However, efficiency of this route is not good because scheduled construction sites are far from Honiara. Since it is possible for Japanese freight ships to call at Yandina and Gizo, another route (Route B) of unloading the materials in Yandina or Gizo and carrying to Kira Kira and Afio on barges is recommended. In this case, it will be necessary to arrange customs clearance at each landing port or only by documents.

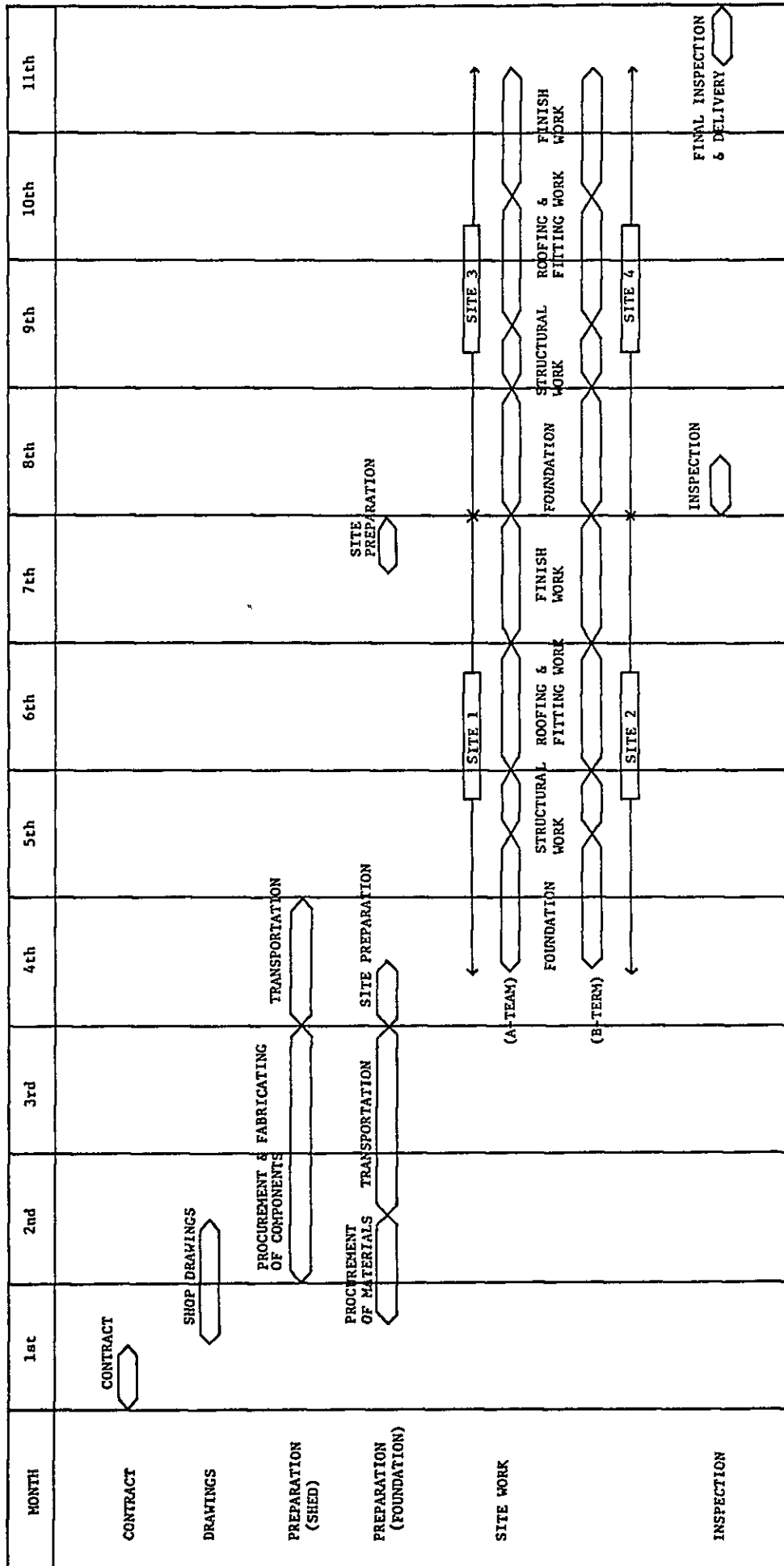
Route A



Route B



4-]-2 Time schedule of construction



4-1-3 Operation and maintenance plan

The fisheries centres are to be operated by the Fisheries Division in each province and the operation costs are to be applied by Government subsidies and profit on fish sales. Because there are no complicated equipment, no special expense for maintenance will be required but the following 2 points.

- (1) Painting on steel and wooden parts (except for coated part) once every 3 years
- (2) Cleaning of septic tank once a year

Maintenance manuals will be prepared and spare parts for one year will be provided.

4-2 Fish Collection Vessel

4-2-1 Construction and transportation plan

The fish collection vessel will be built and inspected in Japan and transported to Noro port near Gizo loaded on deck of a freight ship. Irregular freight ships from Japan call at Noro. The collection vessel will sail by itself from Noro to Gizo.

4-2-2 Operation and maintenance plan

Firstly the fish collection vessel will collect fish around Munda and, if possible, it will also collect fish in the east coast of the New Georgia Island. Secondly, it will collect fish around the Vela Lavella Island from its east coast and then calls at the Chanongga Island. All these fishes are carried to Gizo.

The vessel will belong to the Government and will be lend to the Gizo Fisheries Centre. The operation costs are to be applied by freight charges. The following 5 members will be assinged to the vessel by the Government:

Skipper	1
Engineer	1
Crew	2
Fisheries Assistant Officer	1

It is difficult to find engineers in Gizo. Another problem is the fuel cost, which is as high as 0.37 S.D. as of August, 1981. The fish collection vessel consumes fuel 20.5 litre per hour. Assuming that it operates 10 hours a day and 200 days a year, the annual consumption will be 4,100 litre and the fuel cost will be approximately 15,000 S.D.

In Japan, the general principle on this type of small vessels is to take an intermediate inspection every third year and regular inspection every sixth year. It is recommended to be inspected in accordance with this principle. The main maintenance items are as follows:

- (1) Repair of the hull (soil cleaning) and check of anticorrosive zinc every third month
- (2) Painting on the vessel bottom and check and repair of the iron parts every sixth month
- (3) Constant check of the FRP fuel tank to keep in good condition

4-3 Ice-Box

4-3-1 Manufacturing plan

The Solomon Islands Government requested that ice-boxes are to be made in the islands to promote the domestic industries.

The ice-box manufacturing plant in Honiara imports materials from Australia and produces 2 to 3 ice-boxes a day.

Also, since the products are rather bulky, it is of no advantage to produce them in Japan and transport them to Solomon.

Accordingly, ice-boxes will be ordered to the plant in the Solomon Islands with materials carried from Japan.

4-3-2 Operation and maintenance plan

Each provincial branch of the Fisheries Division will supply ice-boxes to fishermen on 6-month loan principally and in some case they will be rent. When broken, the ice-boxes can be repaired by scrapping off the painting around the broken point, bonding fibreglass boards and repainting.

4-4 Inter-Island Replacement Vessel

The vessels shall be built carefully in a Japanese shipyard according to the specification suitable to the Solomon Islands.

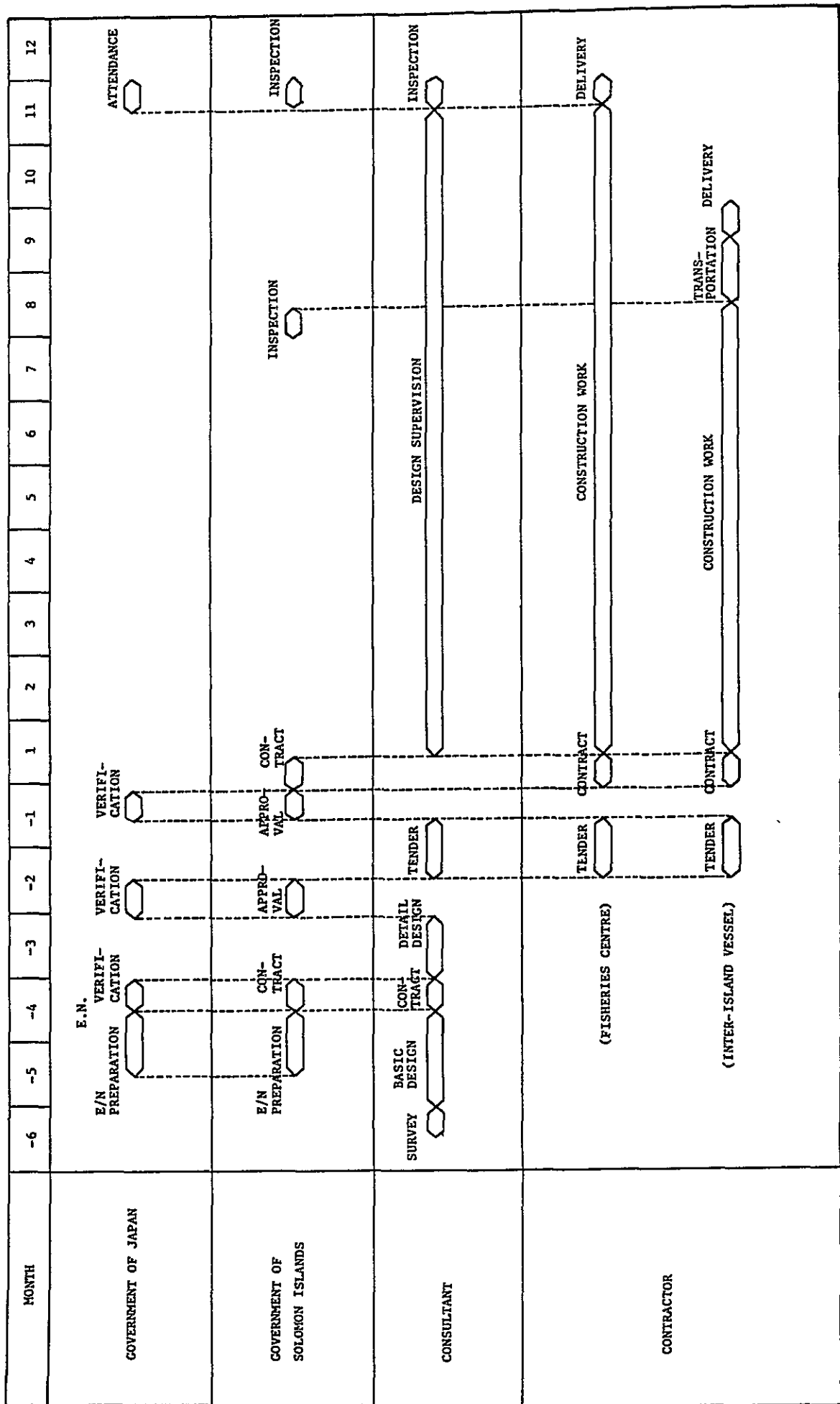
After completion, the vessels shall sail under its own power. However, since the vessels are small and are passenger ships with a large area for wind pressure, the sailing season and route should be carefully chosen. Consequently, in calculating the sailing time of the vessel, we should provide some time allowance considering the vessel's cruising range, its sailing course, as well as the season and the conditions of the sea.

The schedule for construction of the vessels and their navigation for delivery shall be as follows:

Month	Schedule
1	o Contract with the consultant
2	o Contract with the shipbuilder
3	o Keel laying of the vessels
4	o Keel laying of the vessels
5	o Keel laying of the vessels
6	o Keel laying of the vessels
7	o Keel laying of the vessels
8	o Launching of the vessels
9	o Completion of the work
10	o Delivery

↕ Navigation

4-5 Time Schedule of Project

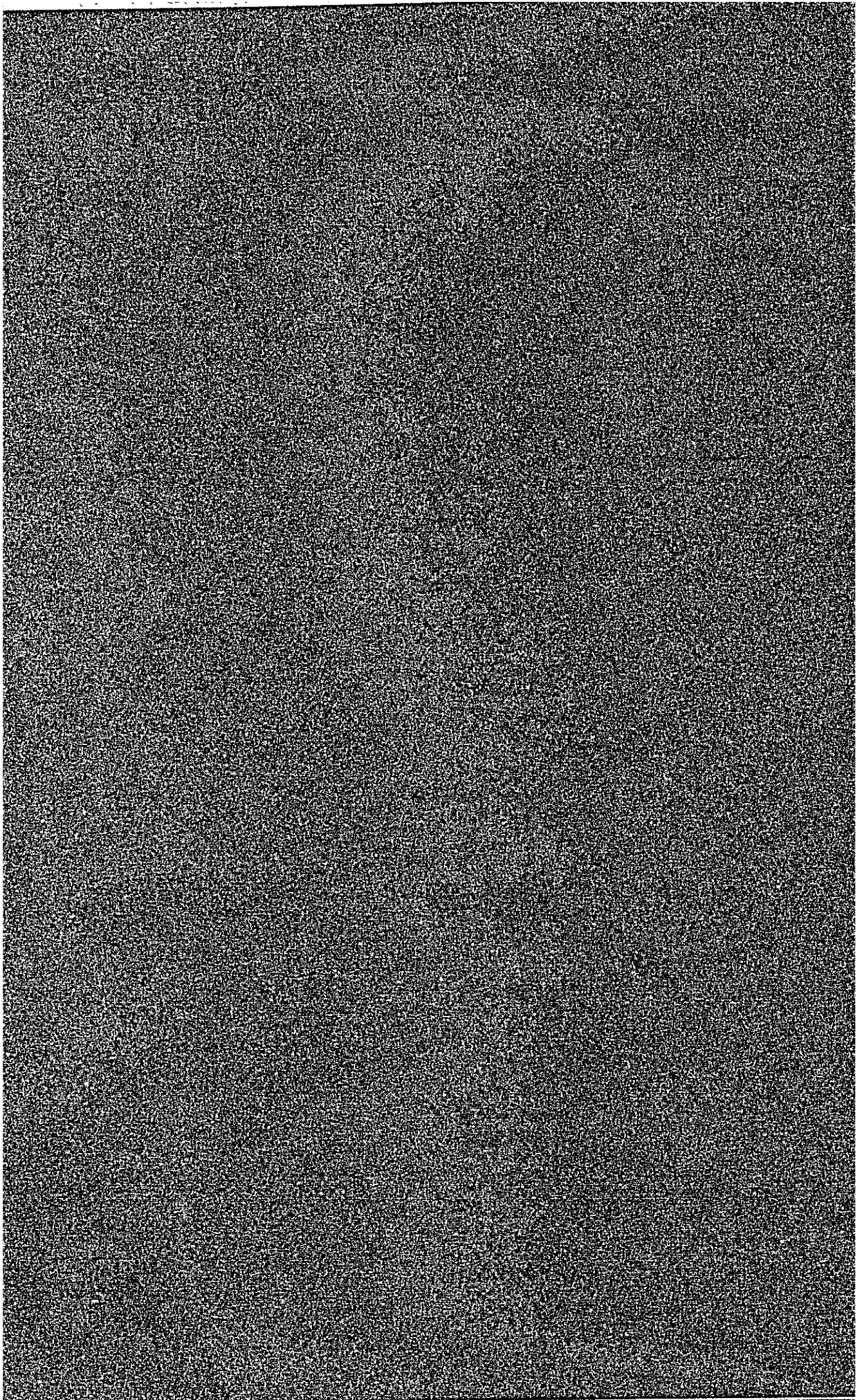


4-6 Estimate

Estimate of the cost to execute the project is shown below.

Fisheries Centres·Fish Collection Vessel·Ice-boxes	<u>¥297,000,000</u>
Breakdown	
Fisheries Centres (4 places)	¥226,000,000
Fish Collection vessel (1 vessel)	¥11,000,000
Ice boxes (250 boxes)	¥15,000,000
Transportation and Packing	¥45,000,000
Inter-island Vessels (2 vessels)	<u>¥350,000,000</u>
Breakdown	
Vessel Cost	¥158,500,000
Spares for 2 years	¥5,500,000
Sailing out of the Vessels from Japan	¥11,000,000
Sub-total (per vessel)	¥175,000,000
Consultant Fee	<u>¥53,000,000</u>
Grand Total	<u>¥700,000,000</u>

CHAPTER 5
NECESSITY AND EFFECTIVENESS



CHAPTER 5 NECESSITY AND EFFECTIVENESS

In the coastal/territorial waters of the Solomon Islands, there exist abundant marine resources and reefs where there found attractive fishing grounds available for local fishermen. This has left her marvellous potentiality to develop the country unlike petroleum producing ones. It is quite incumbent for her to utilize such natural resources effectively to consolidate the economic bases of the nation.

At present the wage earners are about 16,000 out of about 100,000 persons available to work at the age of 15 years and more as of 1976. If the urban inhabitants are deducted from the total, it shows that most of the dwellers are self-sufficient for shifting agriculture and fisheries by the tribe. It is also limited in population who specialize in commodity-oriented agriculture and plantation farming like copra, cocoa, oil palm, rice and others.

Regarding the nourishing state of the people, the protein source is insufficient regardless of her beef production increase policy, only to leave her seek for fish. Besides, provision is largely imported, about 1/10 of the total import as of 1980. To normalize such a situation, it is really urgent to restore the self-sufficiency in provision.

Under such circumstances, the Solomon Islands Government planned a rural fisheries development project in which it pointed out to utilize abundant marine resources effectively and to develop rural fisheries for the purposes of leveling up the standards of people's living.

The existing activities of rural fisheries were of home consumption due to the low-graded fishing technique and fish marketing system, and the poor facilities.

In other words, since the marketing opportunity of surplus fish was quite limited, fishermen were not necessary to catch fish more than what they could consume. Accordingly, it is expected that the quota of fish catch will increase on the condition of providing the insulated transportation facilities, sales channel, and the training of fishermen.

This is the right objectives to be achieved and utilized fisheries centres, fish collection vessels and ice-boxes in the project.

The direct effect that can be expected from the implementation of the rural fisheries development project is to boost fish catches by increasing the

operational frequency of fishing vessels, resulting in increase of income, expansion of working opportunities and improvement of dietary life on the part of fishermen. Increase of self-supporting rate on food will reduce the country's food import, eventually enabling the government to improve the international balance of foreign trade.

Fisheries centres, ice-making machines and ice-boxes that were installed or supplied in the past has increased the quantity of sales transaction handled by the Fisheries Division (estimated to be about half of the actual quantity in the market) from 13 tons of 1977 to 135 tons of 1980. The fish catch is expected to increase 840 tons a year by implementing the current project. Namely, 840 tons of fish are equivalent to about 675 S.D. (0.8 S.D. per kg) at the retail price level, and about 465 S.D. (0.55 S.D. per kg) for the gross income of fishermen.

The Solomon Islands Government estimated the demand/supply state of marketed fish at the time point of the actual implementation of the project as follows:

Supposing that about 44,000 inhabitants in urban areas as of 1982 consume 50 kg of fish per head per year, the fish consumption is about 2,200 tons per year. If it is 25 kg per head per year, the consumption will be 1,100 tons. The supply of fish is estimated to be about 1,350 tons in 1982. When the supply/demand state is analyzed by the province, if 1,350 tons of fish were caught, all provinces except the Guadalcanal Province where Honiara, the capital, is situated, will supply sufficient fish to the island inhabitants and will supply surplus fish to a large consumable city like Honiara.

On the other hand, placement opportunities for rural fishermen have kept steadily increasing, employed about 1,200 fishermen up to date. It is expected that about 4,100 would be employed if the rural fisheries development project is implemented.

In the area adjacent to the fisheries centre already constructed before, general fish marketing activities became active, having related to vegetable and other commodities to that extent that the warehouses were newly built. Ice flakes are used for storing food, vaccines, etc. other than fish.

From the long-term of viewpoint, it can be said that activities on rural fisheries will stimulate other industries such as shipbuilding, fishing gear manufacturing, etc.

As a means of maritime transportation system, communication among inhabitants is most essential to help a country to form one in the Solomon Islands, consisting of numerous islands which are extensively scattered in the vast ocean, and to improve the system for public conveyances urgently.

Especially in case of such geographical conditions, inter-island vessels have been generally playing quite a meaningful role in the private and/or Government-owned management.

In the following table is shown the estimated cost of operation by the Government fleet in 1981 which indicated to provide quite a large sum of subsidy, and to operate the old wooden vessels.

Under such circumstances, it shall be of great importance for the Solomon Islands Government to set up the emphasized target for the rural fisheries development project, and to replace nine inter-island vessels for the purpose of securing the smooth flow of transport and the safety of passengers at sea.

In the Solomon Islands it is, no doubt, assumed that the volume of cargoes transported by inter-island vessels tends to increase year after year as shown in 2-3-1 and that this will react to stimulate the economic activities in the future.

At present, to build two inter-island vessels in Japan and replace the existing old, wooden vessels to the new ones in the Solomon Islands would be much anticipated to meet the increasing demand of maritime transport in the territorial waters in proportion to the economic growth, and also to make them profitable by minimizing the running expenses as much as possible.

Estimated Total Cost of Operating the Government Fleet in 1981

Fixed Operating Costs	860,000 (S.D.)
Fuel Costs	430,000
Indirect Overheads	100,000
Depreciation	700,000
Insurance	350,000
Total Costs	2,440,000
Revenue	900,000
Net Subsidy	1,540,000

(source: Marine Division - MTC)

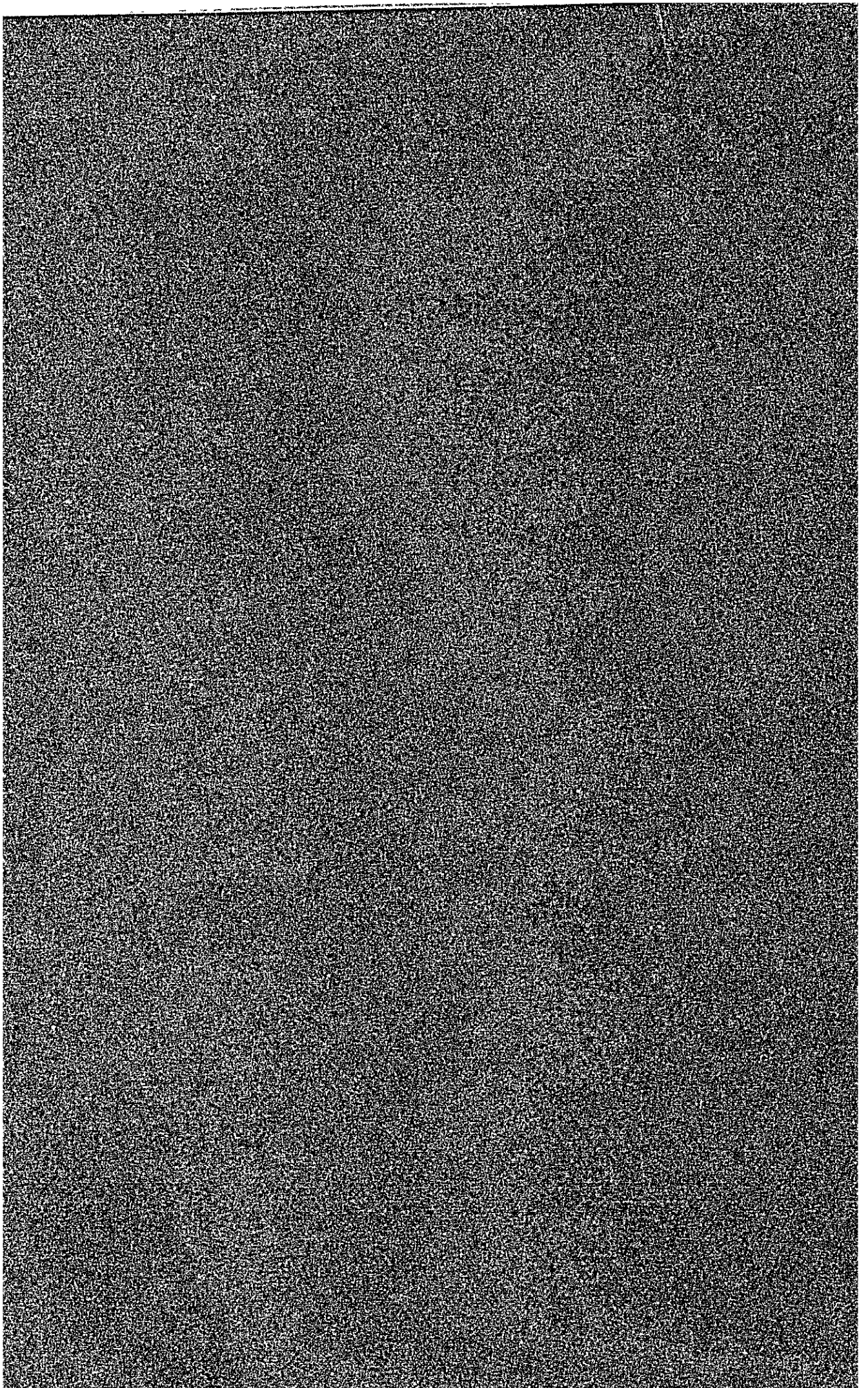
Up to present, Japan has substantially contributed to the economic growth of the Solomon Islands through grant assistance for the development programme on the basis of the two governments and also through the joint venture established by the Solomon Islands Government and a Japanese private enterprise. This has enabled the two countries to improve mutual friendship steadily, and as the results, to magnify the volume of bilateral trade in the recent years.

As already pointed out before, it is unanimously agreed that the project, if it is implemented, will play an important role in developing the country from the socio-economic point of views, and needless to say, will contribute to the development of mutual friendship between the Solomon Islands and Japan.

The Solomon Islands being on the process of development in every aspect, is in a position to rely on foreign assistance of development funds largely and the mark of decreasing the gross domestic product (which had been increasing) firstly in 1980 after the independence due to the international price rise like of petroleum and besides to receive stagnant assistance from the U.K.

In the light of the above, it is finally believed that the Japanese grant assistance will be quite timely and most effective to provide her as she is in a need of Japan's participation for the development project in the Solomon Islands.

DATA SECTION



I. OUTLINE OF SURVEY

(A) Study Team Members

The Jpaan International Cooperation Agency organized a basic design study team to confirm the context of the request from the Solomon Islands Government and to carry out the necessary field survey. The following study team was headed by Mr. Kazuo Takayama, and dispatched to the Solomon Islands for 18 days from August 16 to September 2, 1981:

Kazuo Takayama,	Leader and in charge of Architecture planning and Fishery survey (Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries)
Daisuke Kiuchi,	In charge of Shipbuilding (Ministry of Transportation)
Yoshihisa Kondo,	Project Coordinator (Japan International Cooperation Agency)
Takenobu Mohri,	In charge of Architecture planning (T. Mohri Architect & Associates, Inc.)
Saburo Nakanishi,	In charge of Ship planning (Overseas Shipbuilding Cooperation Centre)
Naoyoshi Kisaka,	In charge of Fishery survey (T. Mohri Architect & Associates, Inc.)

(B) Counterparts of the Solomon Islands Government

Mr. J. F. Martin	Senior Planning Officer Central Planning Office
Mr. N. P. Stone	Senior Fisheries Officer Fisheries Division
Cap. W. R. Irvine	Chief Marine Officer Marine Division

(C) Solomon Islands Government organs to be contacted

The channeling organ of the Solomon Islands Government on this project is the Central Planning Office in the Office of Prime Minister.

Actual work is supervised by the Fisheries Division in the Ministry of Natural Resources on fisheries development and the Marine Division in the Ministry of Transport and Communication on matters related to vessels.

The Marine Division supervises the following items:

- 1) Fleet operation
- 2) Navigation aids
- 3) Dockyard operation

The division engages in operation of vessels belonging to the government as well as private enterprises. The only ship repairing facilities that exists in the Solomon Islands are the dockyard in Tulagi.

The Chief Marine Officer is Capt. W. R. Irvine, a British sent from U.K., and he has already served for about 9 years. All the talks were with Capt. Irvine and another senior officer, Capt. S. G. N. Firth.

(D) Itinerary of Survey

Date	Day	Schedule	Contents
Aug. 16	Sun.	Tokyo → Manila	
17	Mon.	Manila → Port Moresby	Courtesy visit to the Japanese Embassy in Papua New Guinea
18	Tue.	Port Moresby → Honiara	Courtesy visit to the Japanese Embassy in the Solomon Islands Courtesy visit to the Fisheries Division & conference about the survey itinerary
19	Wed.	Honiara	Courtesy visit to the Ministry of Foreign Affairs and the Central Planning Office & conference about the survey itinerary and requested contents
20	Thu.	Honiara ↔ Santa Cruz Honiara	Leader, Mohri: Inspection of the Fisheries Centre in Santa Cruz Others: Conference about the specifications of Vessels in the Marine Division
21	Fri.	Honiara → Auki → Afio → Honiara	Inspection of the Fisheries Centre in Auki and the construction site in Afio
22	Sat.	Honiara	Collection and arrangement of data
23	Sun.	Honiara	Survey of the actual state of architecture and the price of building materials Arrangement of data
24	Mon.	Honiara	Survey of the price of building materials Conference about the existing vessels with the counterparts of the Marine Division

Date	Day	Schedule	Contents
Aug. 25	Tue.	Honiara → Munda → Gizo → Honiara	Inspection of the construction site and the existing Fisheries Centre in Gizo & conference about the Fish Collection Vessel Kiuchi, Nakanishi: Inspection of the fisheries base and the shipment facilities in Munda
26	Wed.	Honiara ↔ Tulagi	Inspection of the N.F.D. shipyard and the packing plant Conference about the Minutes with the counterparts of the Central Planning Office
27	Thu.	Honiara Honiara ↔ Kira Kira	Conference about the Minutes in the Ministry of Foreign Affairs Inspection of the ice-box manufacturing plant Confirmation of the basic design of vessels Mohri: Inspection of the construction site in Kira Kira
28	Fri.	Honiara Honiara ↔ Yandina	Exchange of the Minutes in the Central Planning Office Mohri: Inspection of the construction site in Yandina
29	Sat.	Honiara	Survey of the actual state of architec- ture and market Internal conference Arrangement of data
30	Sun.	Honiara	Do.
31	Mon.	Honiara → Brisbane Sydney	Courtesy visit to the Central Planning Office and the Fisheries Division Report of the survey to the Japanese Embassy

Date	Day	Schedule	Contents
Sep. 1	Tue.	Sydney →	
2	Wed.	→ Tokyo	

Note: N.F.D. = National Fisheries Development Ltd.

(E) Minutes

The basic design study team had conferences with the related officials of the Solomon Islands Government and the both parties reached an agreement on basic points. As the results, the minutes were signed by Mr. K. Takayama, the Japanese study team leader, and Mr. Agar, the Head of Planning, the Central Planning Office.



MINUTES OF THE DISCUSSIONS
ON
THE RURAL FISHERIES DEVELOPMENT PROJECT
AND INTER-ISLAND REPLACEMENT VESSELS

In response to a request of Solomon Islands Government for the Rural Fisheries Development Project and Inter-Islands Replacement Vessels, the Government of Japan sent a study team headed by Mr Kazuo Takayama, Head Fishing Boat Inspector, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, to the Solomon Islands starting from August 16, 1981 to September 2nd, 1981 for 18 days.

The study team has conducted the field surveys and held a series of discussions and exchanged views with officials of Solomon Islands Government for the Rural Fisheries Development Project and Inter-Island Replacement Vessels.

As a result of the survey and the discussions, the Japanese team and the Solomon Islands Government agreed to complete the Basic Design Report, which will be submitted to both the governments concerned in order that agreement may be reached for the successful implementation of the projects.

The main components of the projects submitted by the Solomon Islands Government are identified in Annex I. The main design parameters for the elements of the projects are described in Annex II and Annex III. Annex IV relates to the implementation of the projects.

August 28th, 1981
Honiara, Solomon Islands

高山和夫

Kazuo Takayama
Leader

Peter Agar

Peter Agar
Head of Planning

Basic Design Study Team
for the Rural Fisheries
Development Project and
Inter-Island Replacement
Vessels

Solomon Islands Government

ANNEX I

1. Rural Fisheries Centres 4 centres

The locations are as follows:

- (1) Afio, Small Malaita, Malaita Province
- (2) Kira Kira, Makira and Ulawa Province
- (3) Gizo, Western Province
- (4) Yandina, Central Islands Province

2. Fish Collection Boat 1 boat

Specializations are:

Length overall	11.82M
Breadth Overall	3.25M
Depth	1.58M
Gross tonnage	4.94 tons
Light load	5.45 tons
Main engine	90HP
Cruising range	570 N/miles
Max. speed	12 Knots
Capacity:	
Fish hold	4.0M ³
Fuel oil tank	1,000 litres
Complement	5 pcs

3. Ice box

Exterior dimension: 2ft x 2ft x 4ft

Wall thickness: 4 inches

Material: (Closed cell polyuretane foam

Covering: 2 layers of chopped strand fibreglass
securely bonded over entire foam surface.

4. Inter-Island Replacement Vessels 2 vessels

K.J.
PA.

ANNEX II

1. Floor plan of the Fisheries Centres
2. Elevation plan of the Fisheries Centres
3. Perspectives of the Fisheries Centres

K.J.
A.

ANNEX III

Principal particulars are as follows;

Length overall	25.00M
Breadth (MLD)	6.50M
Depth (MLD)	2.80M
Draft (Designed MLD)	2.30M
Gross tonnage	
Main engine (Diesel)	1 set
Output: 200ps x 750 RPM	
Cruising speed	6.5 Kts
Cruising range	800 K/Miles About 5 days
Capacity:	
Cargo hold	60 tons 110M ³
Fuel oil tank	5.50M ³
Fresh water tank	3.00M ³
Complement:	62 - 66pcs
Officer	2pcs
Crew	6pcs
Cabin passenger	4 - 8pcs
Deck passenger	50pcs

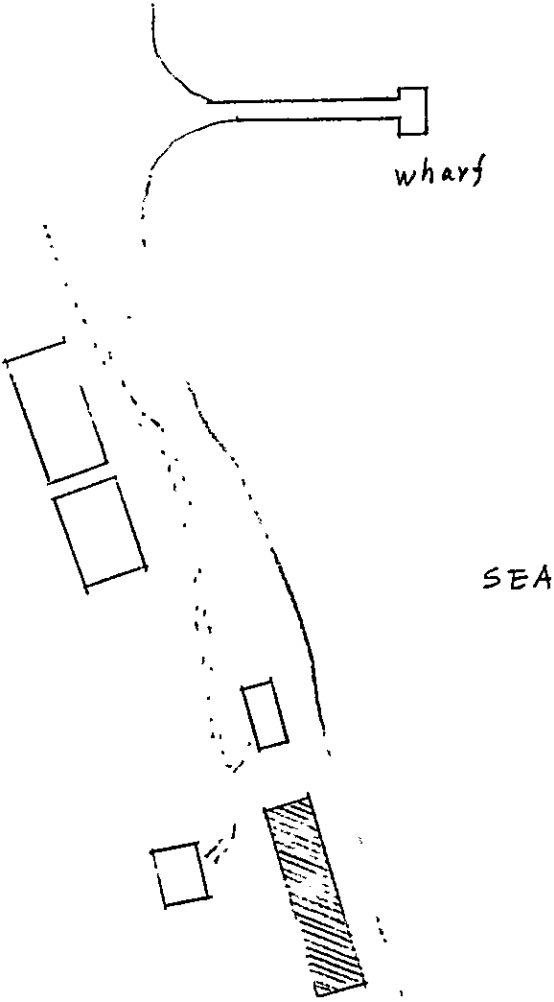
K. J.
MA

ANNEX IV

In considering the implementation of the components of the project identified, the Study Team has noted the desire of Solomon Islands Government to encourage local procurement wherever feasible and will consider this in greater detail in the Basic Design Study Report.

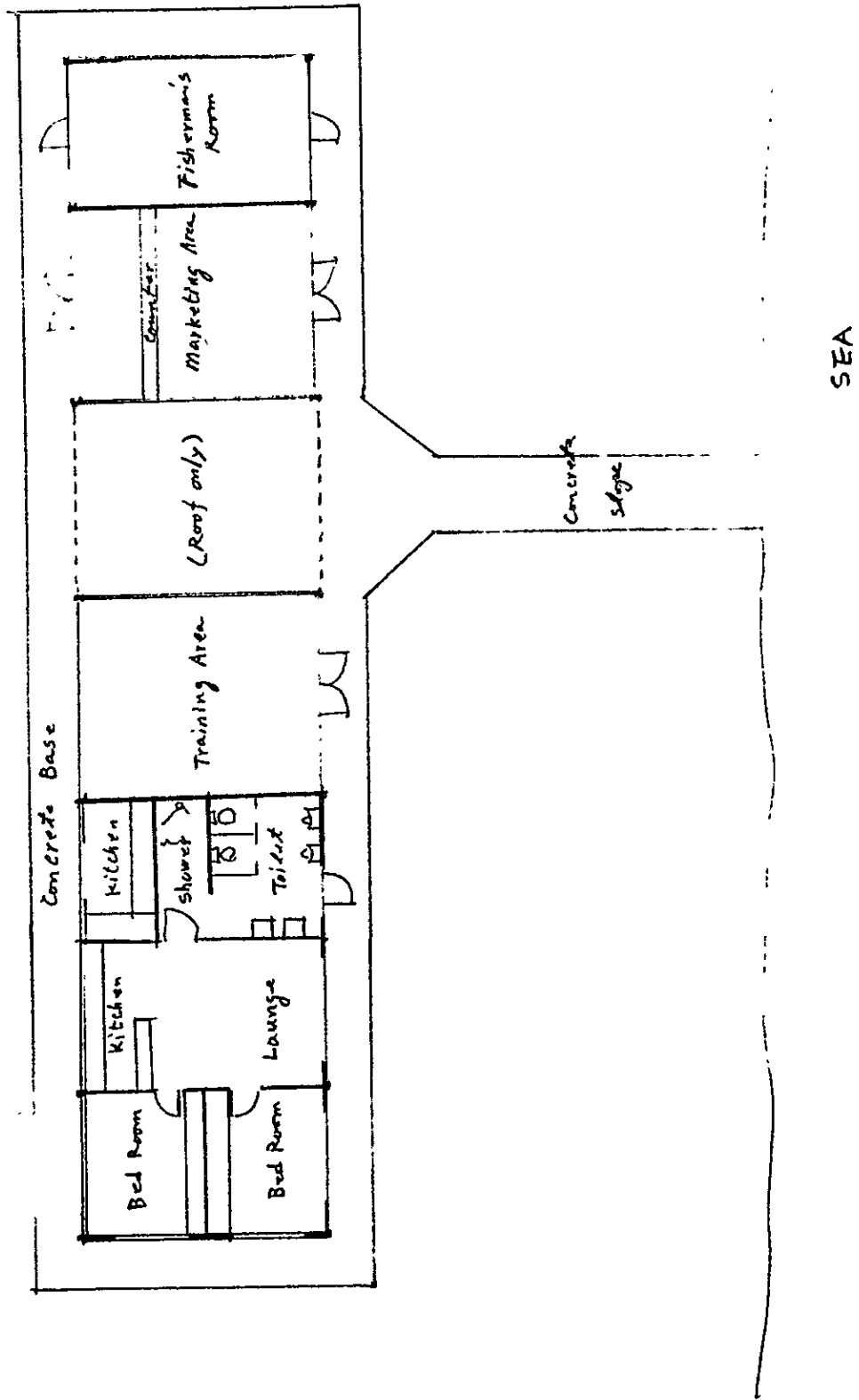
K. T.
RA.

Site plan of The Fisheries Centre
at Afio



Floor Plan of The Fisheries Centre
at Afio

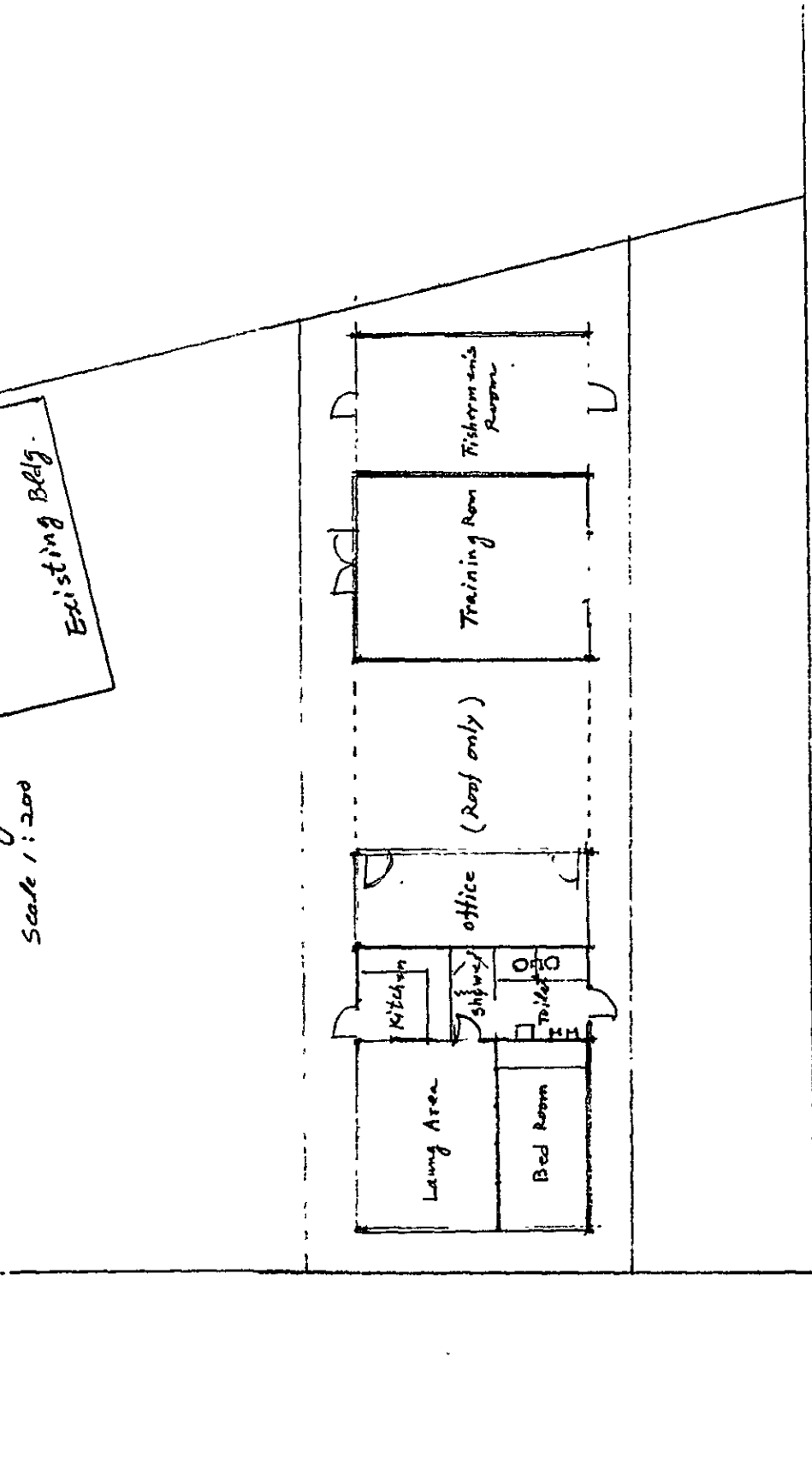
Scale 1:200



Floor Plan of The Fisheries Centre
at Gizo

Scale 1:200

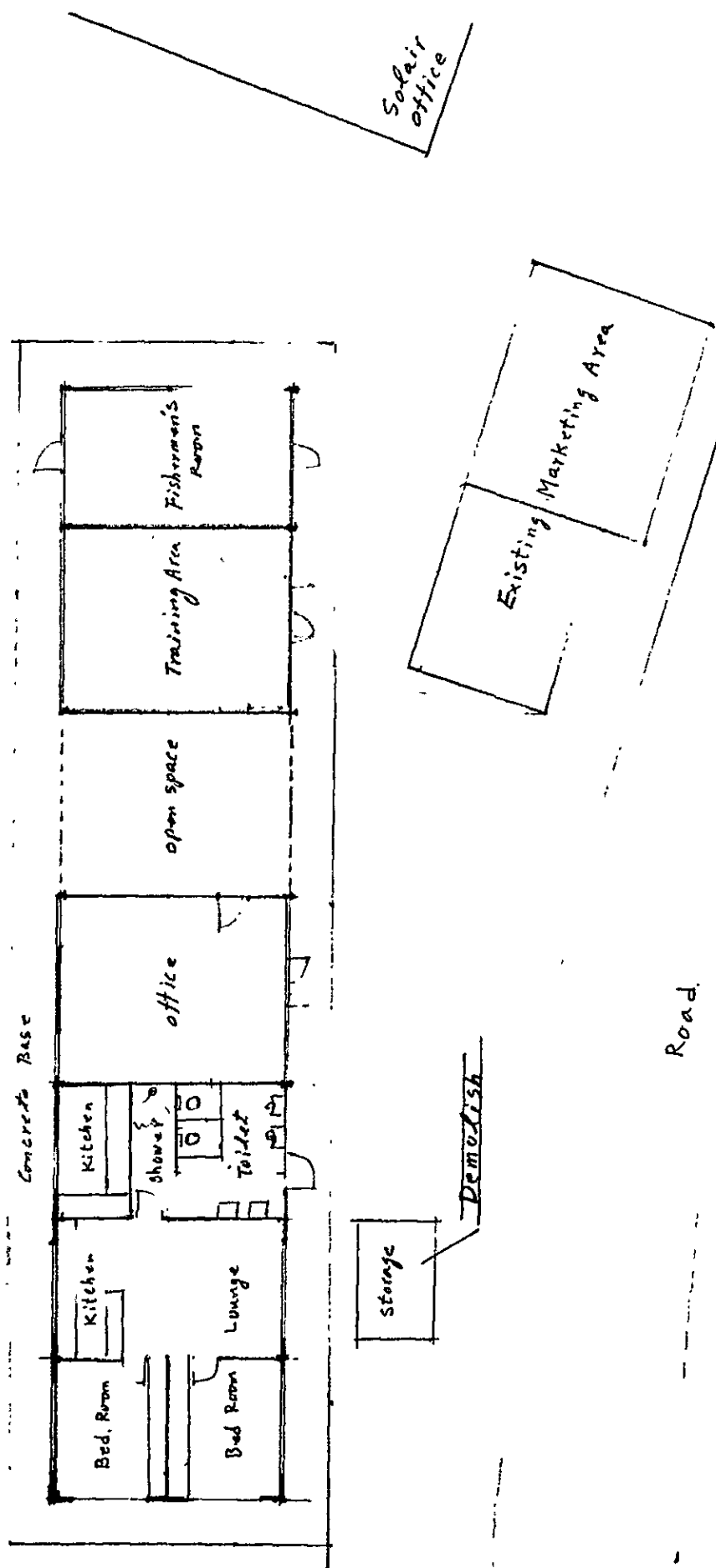
Existing Bldg.



Road

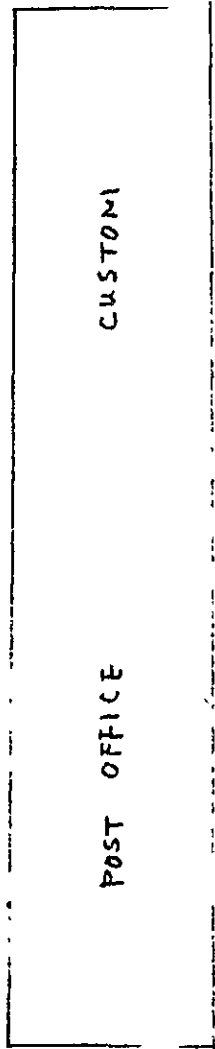
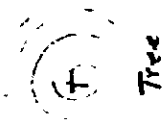
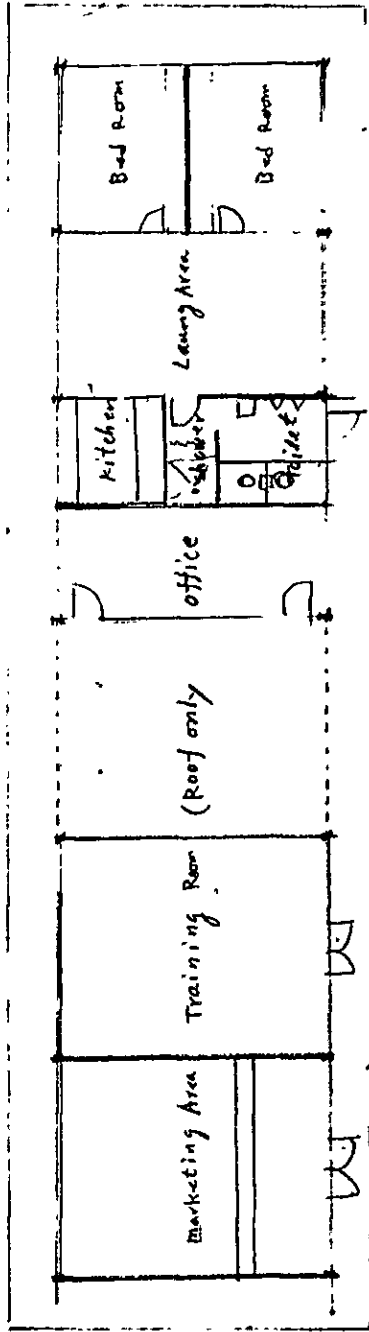
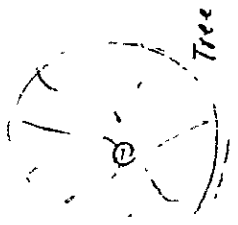
Floor Plan of The Fisheries Centre
at Kirakira

scale 1:200



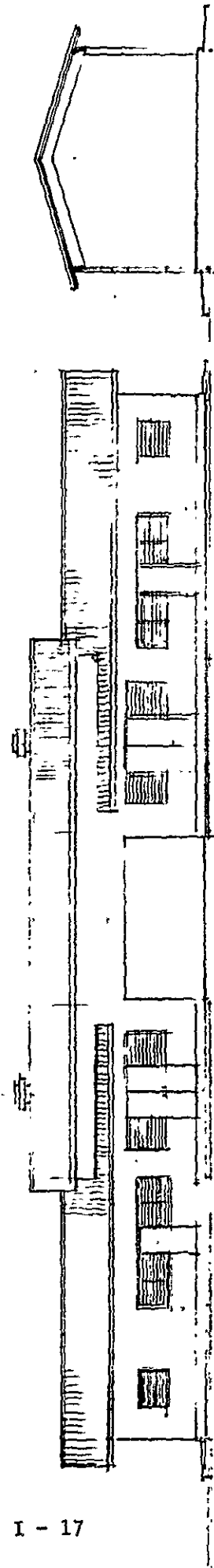
*Floor Plan of The Fisheries Centre
at Yandina
Scale 1:200*

SEA

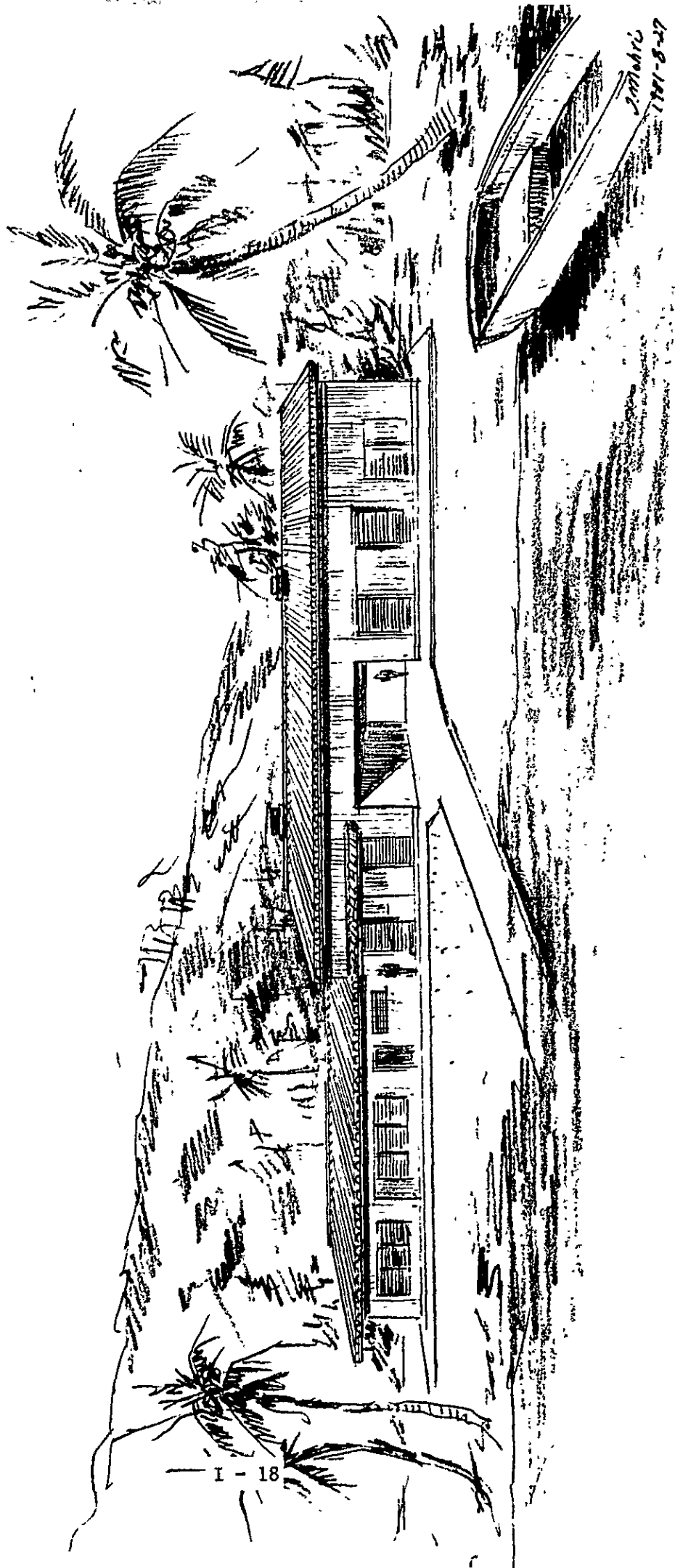


Elevation & Section of Fisheries Centres

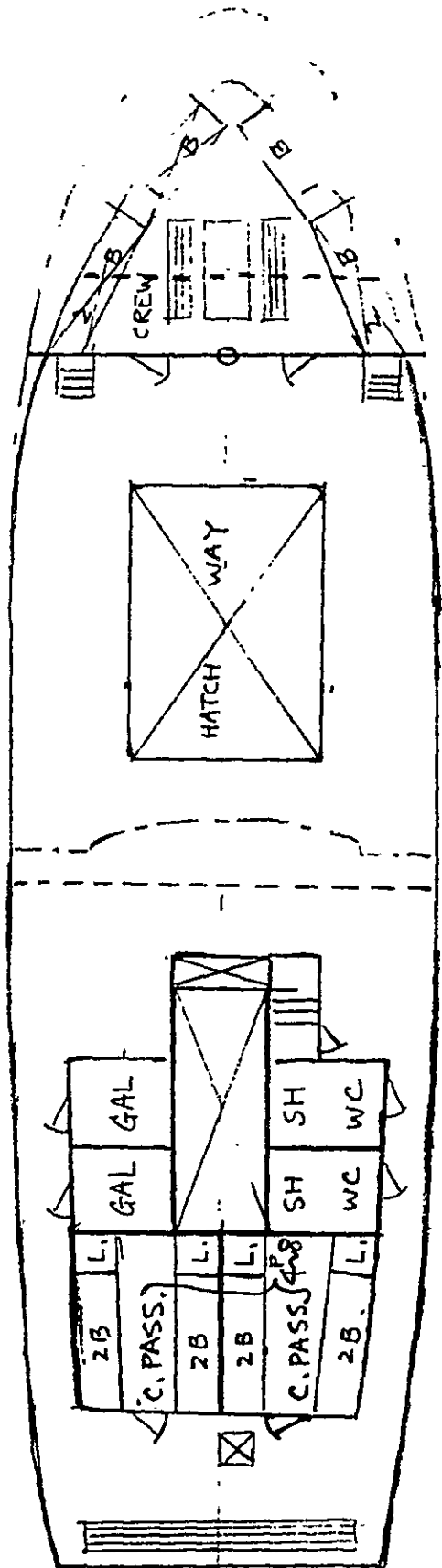
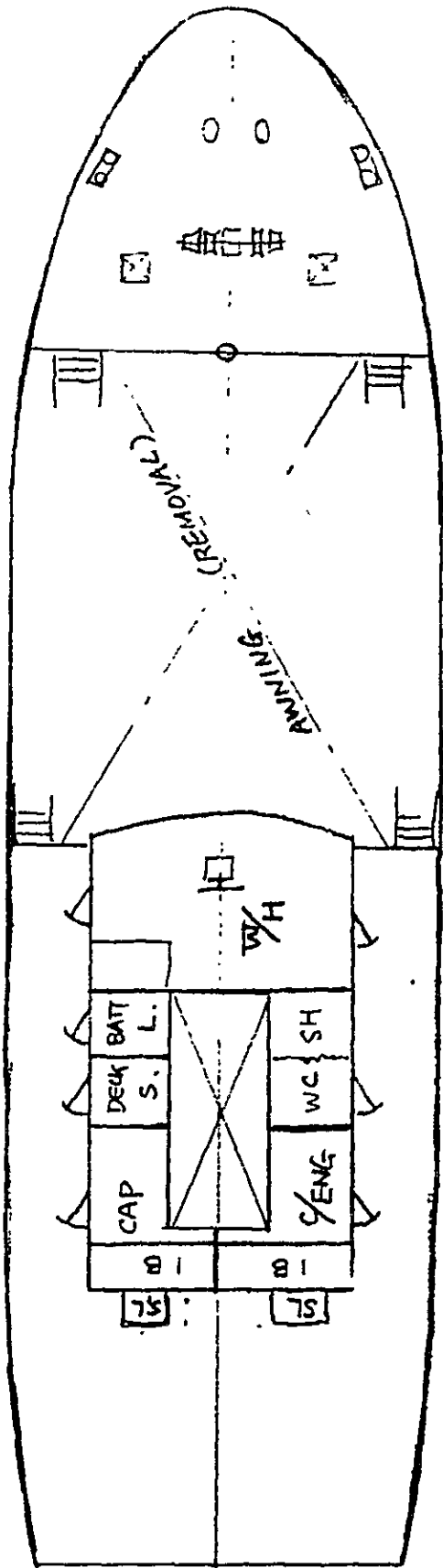
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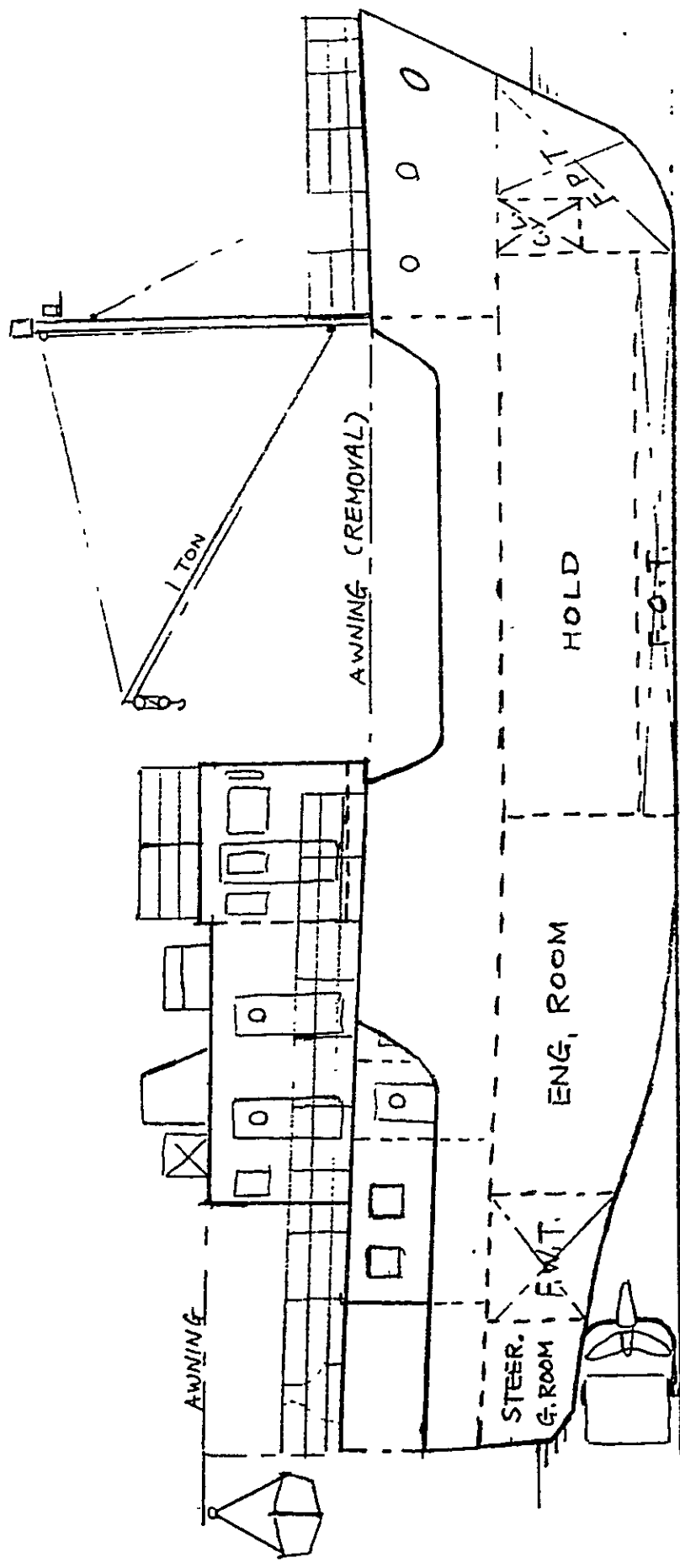
*Perspective of The Fisheries Centre
Solomon Islands*



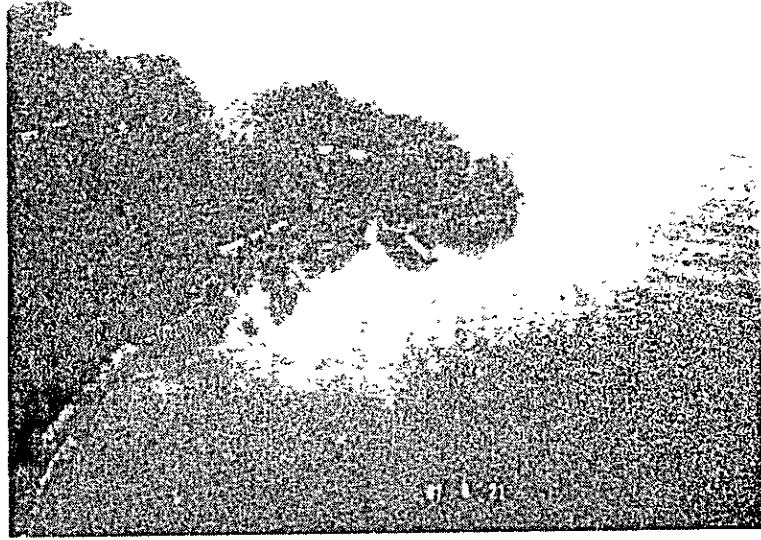
Handwritten symbols: a square with a diagonal line, a square with a horizontal line, and a square with a vertical line.



PKJ



(F) Photographs



(Construction Site: Afio)



(Construction Site: Gizo)



(Existing Facilities: Gizo)



(Construction Site: Kira Kira)



(Existing Facilities: Kira Kira)



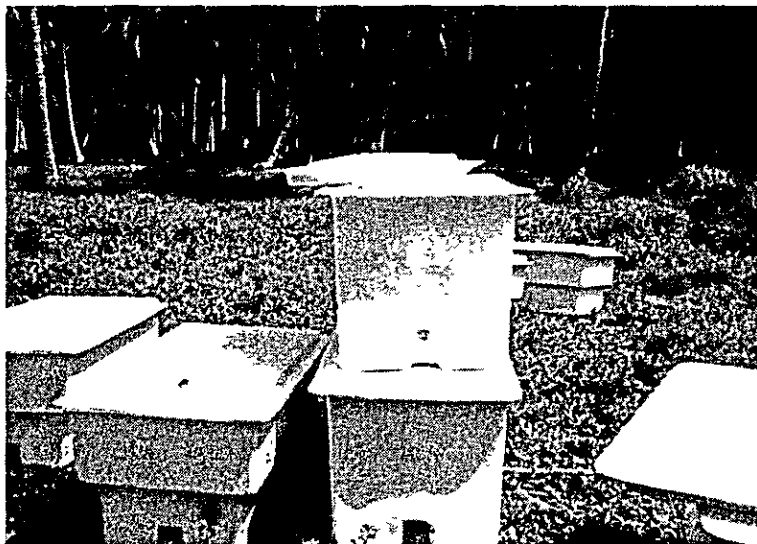
(Construction Site: Yandina)



Marketing Area (Kira Kira)



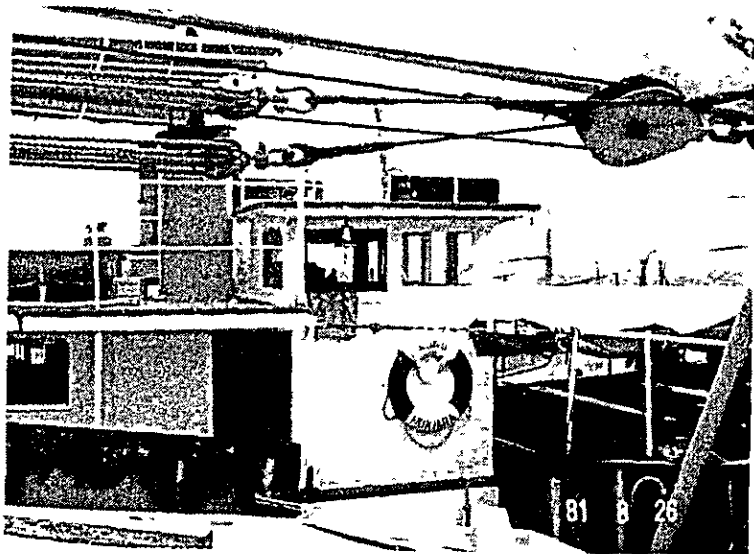
(Iced Fish in Marketing Area)



(Present Ice-Box)



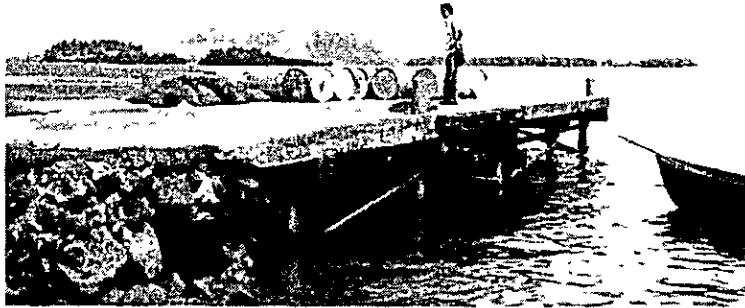
(Fisherman's House)



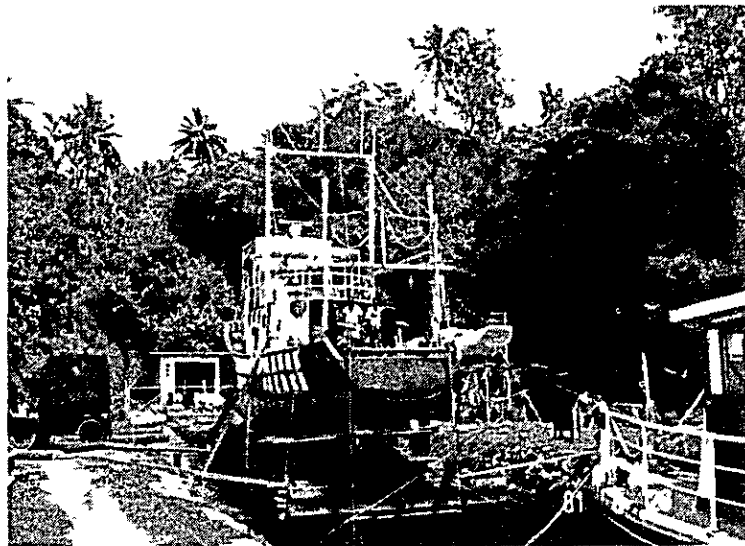
L. class Wooden Vessel



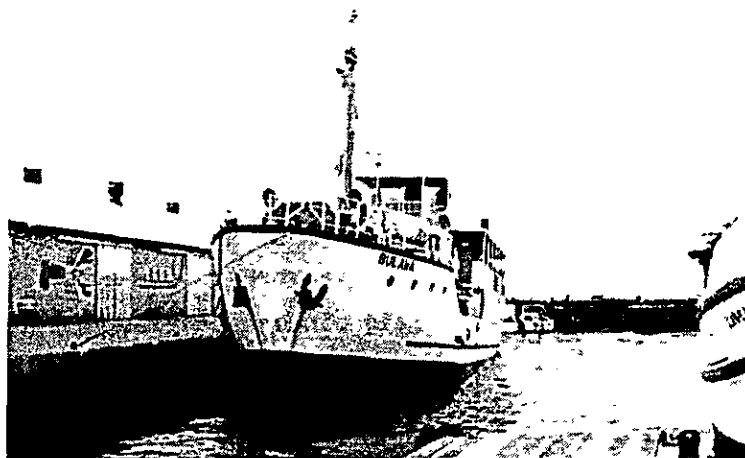
Noro, Copra Loading Port



Munda



Tulagi Dockyard, Slipway



Bulawa, Previously Provided
under Grant aid Programme

II. OUTLINE OF SOLOMON ISLANDS

(1) Area

The Solomon Islands consists of 6 major islands that extend from south-east to northwest in parallel and numerous small islands (including about 50 fairly large islands).

The total territory is about 600,000 km² and the total land area is 28,900 km².

These islands are scattered in a vast sea area between south latitudes 6° and 12°, east longitudes 155° and 170°.

The major islands in the sequence of from north to southeast are Choiseul, Santa Isabel, Malaita, San Cristobal in the outside and New Georgia and Guadalcanal in the inside. The length of these islands is 145 to 200 km and the width 30 to 50 km. The largest island is Guadalcanal, having the area of about 5,650 km², located at about 2,575 km northeast of Sydney and about 1,600 km east of Port Moresby (Papua New Guinea).

(2) Topography

The Solomon Islands and Santa Cruz Islands, which are parts of Melanesia, are islands resulting from the highest parts of ridges extruding above the sea level. These ridges draw an arc having a convex face in the east. Except the Bougainville Island, the Solomon Islands are aligned in two almost parallel islands arcs, with the distance from the Choiseul to San Cristobal islands being about 800 km. The northeast part consists of islands formed by a narrow ridge and these islands stretch long in the ridge direction. The islands in the southwest island arc are broad and the layout of them is more irregular than that of the islands connecting to the east.

As a whole, all islands are rather hilly and steep and there are high mountains in Guadalcanal, like Mt. Makara Kombou (2447 m above sea level). Almost all the mountains were formed by volcanic activities, and weathering has developed many cracks and fissures. Therefore, these islands have a little plain and the only noticeable plain is at the northeast seashore of the Guadalcanal Island.

The same as the Santa Cruz islands, the Solomon Islands have come through epeirogeny several times. The current islands (the volcanic bodies have prominent fracture and dislocation) were formed resulting from elevation of the land which had been under the sea for a long time, and to the contrary, the current sea bottom used to be above the sea level. Most part of the low lands of the volcanic islands are covered with sedimentary rocks of marine organism and seashore terraces are very much developed. In addition, there are many islands which consist of coral reefs only.

It is considered that these coral reefs were formed on volcanos (probably very old volcanos as they consist of schist) and that the volcanos sank very slowly into the sea and coral reefs were developed on it through this slow sinking. There is not much volcanic activity, but in the east end of the Savo islands, about 30 km away from Honiara, secondary volcanic phenomenon is observable.

(3) Climate

The Solomon Islands climate is tropical. It is hot and rains a lot. The heat, however, is mitigated by the wind that switches between daytime and night-time, trade wind and wind of monsoon type. The trade wind that constantly blows from southeast during the period of April through November in various speeds, and sometimes it exceeds 50 kg/hour. The wind of monsoon type mainly blows from the west or northwest during the period of November through April. The climate during the period is very changeable and very often the islands are hit by cyclone.

The rainfall is about 3200 mm as a yearly average, and in great varieties according to districts. The difference of rainfall is attributable to the trade wind that blows on the islands after coming over the ocean. In other words, rainfall at the windward slopes may reach as much as 7500 mm, but in places like leeward slopes, coastal areas or places where the wind is blocked by high mountains, the rainfall becomes less, but still in a high level such as 2200 mm.

(4) Animals and Plants

The latent vegetation of the Solomon Islands is a tropical rainforest, but many parts have been cultivated. Grasslands expand in areas between

forests, and in Guadalcanal and San Cristobal islands, etc. the vegetation gradually develops to savannas as it goes leeward.

The fauna is not too varied, the same as the flora. Wild animals that are observed in the islands are wild pig, opossum of the marsupial, crocodile living in clear water of large rivers, various snakes (mostly not poisonous), lizard, a great variety of birds and insects.

(5) Population

In February, 1970, an official census was carried out and the population at the time was 160,988. Melanesians occupy the absolute majority of 94%, followed by polynesians who have migrated from small Polynesian islands. The Polynesians live mostly in Ontong Java, Sikaiana, Rennel, Bellona and Tikopia Islands. The population trend is shown in the following:

Year	1970	1973	1976	1980
Tribe				
Melanesian	149,667	166,640	183,665	-
Polynesian	6,339	7,120	7,821	-
Micronesian	2,362	2,610	2,753	-
European	1,280	1,280	1,359	-
Chinese	577	580	452	-
Others	713	710	773	-
Total	160,998	178,940	196,823	230,873

The Malaita Island has the biggest population, accounting for close to 30% of the entire population. The estimation made in 1976 was that the people in the Malaita Island are mostly Melanesians, exceeding 60,000. The Gaudalcanal Island has the second largest population, which was 35,187 in 1970, and increased to 46,619 in 1976.

Honiara, the capital, which was newly born toward the end of the Second World War had a population of 11,191 in 1970, but it increased to 14,942 in 1976 and to 18,539 in 1980.

JICA