

**BASIC DESIGN STUDY REPORT**  
**ON**  
**THE CONSTRUCTION PROJECT**  
**OF REGIONAL COMMERCIAL CENTRES**  
**IN**  
**VANUATU**

**MARCH 1985**

**JAPAN INTERNATIONAL COOPERATION AGENCY**



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## PREFACE

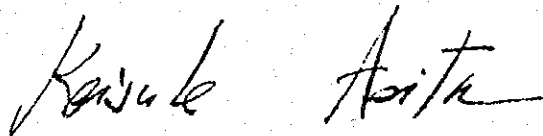
In response to the request of the Government of the Republic of Vanuatu, the Government of Japan decided to conduct a Basic Design Study on the Construction Project of Regional Commercial Centres and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Vanuatu a study team headed by Mr. Yutaka Hosono, Deputy Director of Grant Aid Department of JICA, from October 26th to November 24th, 1984.

The team held discussions with the officials concerned of the Government of the Republic of Vanuatu and conducted a field survey. After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of Vanuatu for their close cooperation extended to the team.

March 1985



Keisuke Arita

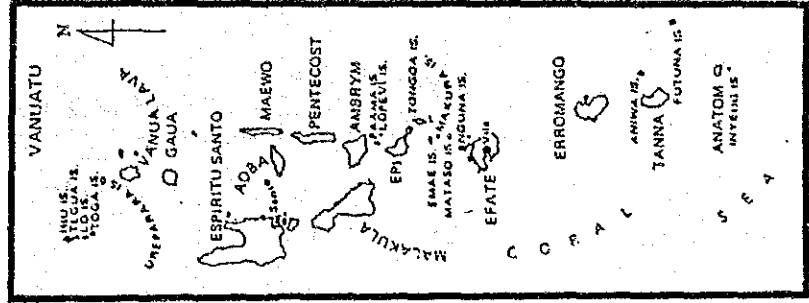
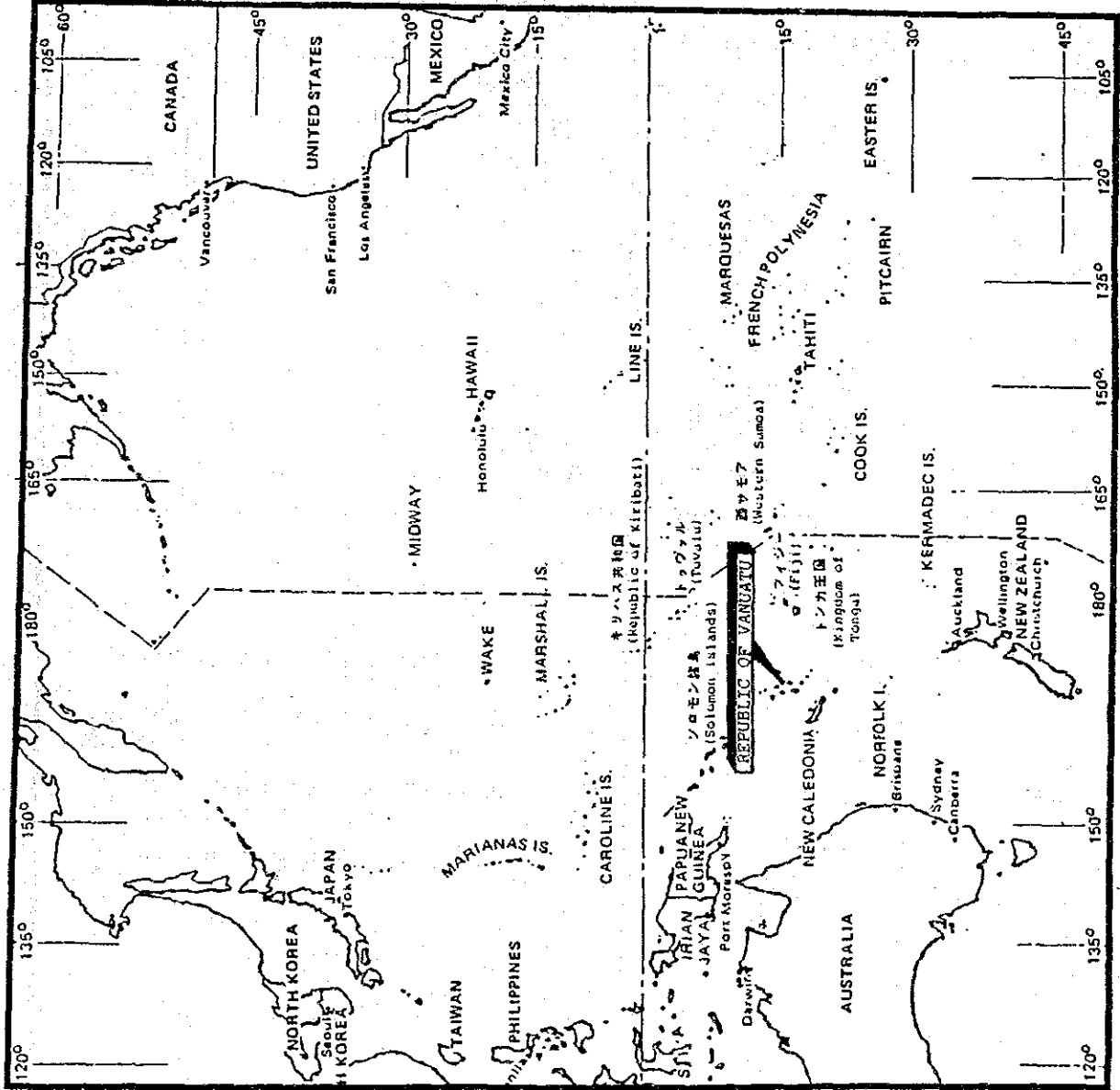
President

Japan International Cooperation Agency

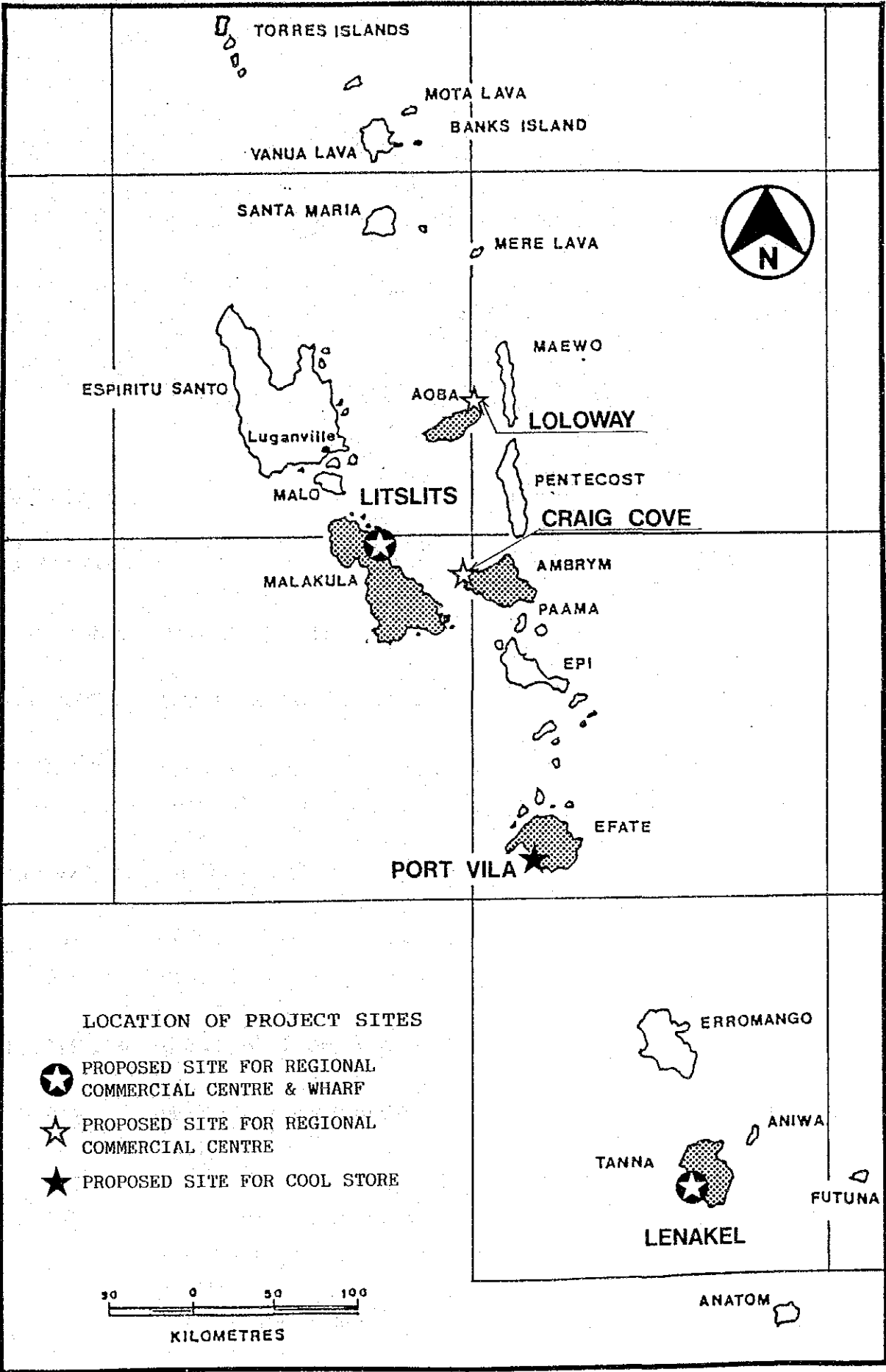







**GEOGRAPHICAL LOCATION OF VANUATU**







**LOCATION OF PROJECT SITES**

- 
 PROPOSED SITE FOR REGIONAL COMMERCIAL CENTRE & WHARF
- 
 PROPOSED SITE FOR REGIONAL COMMERCIAL CENTRE
- 
 PROPOSED SITE FOR COOL STORE





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IN  
VANUATU

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## **SUMMARY**





## SUMMARY

The Republic of Vanuatu which achieved independence in 1980, consists of a scattered group of some 80 islands located in the South Pacific Region. Since the independence of the country, the prime aim of national policy has been to construct basic infrastructure for the development of the country.

Agriculture in Vanuatu has been the main occupation of the majority of the population. However, a single agricultural cash crop, coconuts for the production of copra, provides approximately 70 percent of the country's domestic export earnings. Only 17 percent of the country's land area is currently productive, although it is estimated that 45 percent of the total is suitable for cultivation.

At present, the Republic of Vanuatu is in the middle of the first five-year National Development Plan (1982 - 1986) to achieve economic self-reliance based on the agricultural progress. In the Plan, the Government of Vanuatu places a high priority on activating regional industrial development along with the utilization of natural resources and the diversification of agricultural export products. However, the infrastructure for the distribution and transportation on and among the islands is not well developed due to the scattered nature of the island country. This is the major factor to restrain national development in the Republic of Vanuatu.

Transportation in Vanuatu for agricultural products mainly consists of land and sea transport. As for the land transportation in outer-islands, the problem for scattered producers is to efficiently transport produce to loading points due to lack of vehicles and the lack of storage facilities. Another significant problem is that there are no adequate infrastructures for sea transportation such as island wharves and port storage facility which are prerequisite facilities for sea transportation.

Due to the lack of the abovementioned facilities of those islands, ships must visit a number of anchorages to load cargo.

This involves anchoring off-shore and sending lighters in for unloading and loading. This means that lengthy periods are often spent at anchorages and the incidence of cargo loss and damage is to be expected.

Current cargo handling methods inhibit not only regional agricultural activity but also achieving the targets of the First National Development Plan.

Faced with the above background, the Government of Vanuatu planned to construct the Regional Commercial Centres, Wharves and Cool Stores in the region and requested the Government of Japan to extend grant aid for construction of those facilities. The Government of Japan agreed to perform the basic design survey for the project in response to the request of the Government of Vanuatu.

Japan International Cooperation Agency (JICA) sent a study team to Vanuatu, headed by Mr. Yutaka Hosono, Deputy Director of Grant Aid Development JICA, from October 26th to November 24th, 1984. The team held discussions with the Government of Vanuatu and made excursions to the site survey to perform data collection.

As a result of the discussions and survey, it is conformed that the implementation of the project for construction of the Regional Commercial Centres, wharves and Cool Stores is justifiable for the regional industrial development in Vanuatu.

The implementation order for each facility has been determined, as follows, in accordance with the priority order in the request of the Government of Vanuatu, and based on an efficient construction schedule.

Project Site

- 1) -Construction of Regional  
Commercial Centre : Tanna, Ambae, Ambrym
- Construction of Cool Stores: Efate
- Provision of Trucks : Tanna, Ambae, Ambrym, Malakula

- 2) -Construction of Wharves : Tanna, Malakula
- Construction of Regional  
Commercial Centre : Malakula

With the implementation of the project, the distribution and transportation efficiency for the agricultural products will be improved and this will contribute to the regional industrial development in Vanuatu.



**CHAPTER 1**  
**INTRODUCTION**



## CHAPTER I INTRODUCTION

During the First National Development Plan (1982 - 1986), the Government of Vanuatu targeted 7 projects to achieve for economic self-reliance.

The Project consisting of construction of 4 Regional Commercial Centres, 2 Wharves and 2 Cool Stores has been planned as a major objective of the Plan and programmed by the Government of Vanuatu to promote balanced regional and rural economic growth by the development of expanded regional industry.

The Government of Vanuatu requested the Government of Japan to extend grant aid for the Project.

In response to the request, the Government of Japan decided to perform the Basic Design Study for the Project and sent a study team to Vanuatu, headed by Mr. Yutaka Hosono, Deputy Director of Grant Aid Department JICA, from October 26th to November 24th, 1984.

The study team held discussions with the concerned persons of the Government of Vanuatu and covered the belowmentioned topics and investigations at the respective project sites.

- 1) Background of the request
- 2) Objectives of the request
- 3) Scope and contents of the request
- 4) Management and operation system for/after project implementation
- 5) Japanese grant aid system
- 6) Collection and distribution system for copra and other agricultural products
- 7) Status and priority of the project in related national programme by Vanuatu
- 8) Items related to construction works
- 9) Scope of works to be undertaken by Vanuatu

After the investigation and study in and for each site, Minutes of Discussions were prepared in respect to the items to be confirmed between both Governments.

This report, Basic Study Report on the Construction Project of the Regional Commercial Centres, constitutes the study results prescribing the background, objectives and contents of the Project, basic design for each facility, implementation programme, project appraisal and project cost.



**CHAPTER 2**  
**BACKGROUND OF THE PROJECT**



## CHAPTER 2 BACKGROUND OF THE PROJECT

### 2-1 Socio-economic Background

#### 2-1-1 Population

The population of Vanuatu totalled about 111,251 in 1979 and is expected to exceed 200,000 by the year 2000 under the high rate of population growth increasing at around 3.2 percent per annual upto 1991.

At the national level, the density of population is low at around 10 percents per square kilometer. Although the population density varies widely throughout the group, two third of the population live on the 4 largest islands, Espirito Santo, Malakula and Tanna each with populations of about 16,000, and Efate with about 20,000.

#### 2-1-2 Economic Background

From the viewpoint of natural resources, the Republic of Vanuatu has a resource potential for future development. Areas including territorial waters have potential for agriculture, forestry plantations and fisheries. However, land has not been utilized for production because of the lack of finance and scarcity of labour.

A major problem in the development of the economy had been the lack of infrastructure such as appropriate transportation facilities.

The provision of the transportation infrastructure is a pre-requisite for achieving the objectives of the First Five Year Development Plan. Costs of developing this infrastructure will consume a large percentage of the government's development budget during the Plan Period.

Agriculture has been the main economic activity of the majority of the population. The main crop has been coconut cultivation of for the production of copra which provides approximately 70 percent of the country's export earnings.

The major components of GDP in 1982 were Government services which made up 51.6 percent of the total, agriculture which made up over 19.0 percent and distribution, hotels and restaurants which accounted for about 19.4 percent. The estimated level of GDP at market prices in 1982 was approximately VT 8,367 million.

#### 2-1-3 Trade and Balance of Payment

Exports of Vanuatu consisted primarily of agricultural products of which 5 principal items (copra, beef products, cocoa, manganese and timber) represented 97 percent of the total value of exports in the 1976 - 1981 period.

Output of manganese ore ceased in 1980, leaving external trade entirely dependent on the other four primary commodities, of which copra accounted for 76 percent of visible export revenue 1981.

Principal imports are food, drink, building materials, fuel oil, vehicles and transport equipment and consumer goods.

The balance of visible trade has exhibited a widening deficit with an export/import ratio of 0.55 in 1981.

Hence, the current economy may be characterized as predominantly rural-based with urban enclaves in Port Vila and Luganville, potential export revenue limited to a few major items, and heavy reliance on foreign aid.

## 2-2 National Development Plan

The Government of Vanuatu established the First National Development Plan in 1981 for the period 1982 - 1986 to achieve 7 main objectives such as balanced regional and rural resource development, increased private sector contribution, preservation of cultural and environmental heritage and economic self-reliance.

The comprehensive programme in the Plan is geared to the rural sector with the aim of achieving within the next ten to fifteen years a certain level of economic independence. The First National Development Plan covers the first of 3 phases in government's fifteen year programme to achieve the goal of economic self-reliance.

Over the Plan period, the total expenditure of economic development projects is forecast at just over VT 6.3 billion, of which 53 percent is allocated to agriculture.

Total capital expenditure is, however, projected at approximately VT 11 billion.

Identified sources of grant aid amount to just under VT 6.2 billion, which is 56 percent of total estimated capital requirement. The plan assumes that the balance will be met largely by concessionary loans from multi-lateral agencies and direct foreign investment.

The main economic objectives of the Plan are as follows:

- 1) Consolidation of current agricultural production
- 2) Increase in export earnings through product diversification
- 3) Import substitution
- 4) Regional specialization and balanced regional growth



**CHAPTER 3**  
**DESCRIPTION OF THE SITES**





## CHAPTER 3 DESCRIPTION OF THE SITES

### 3-1 Project Site Selection

The previous program prepared by the Government of Vanuatu, contained a plan to construct a commercial centre in each of Vanuatu's 11 local government centres. However, the original program has been modified to construct integrated infrastructure facilities for the distribution and transportation system in a limited number of priority islands.

The project sites for the construction of the relevant and related distribution and transportation facilities such as a Regional Commercial Centre, Wharf and Cool Store have been selected based on the discussions between the study team and the concerned persons of the Government of Vanuatu.

Table 3.1 Selected Project Sites

<u>ISLAND</u>	<u>REGIONAL COMMERCIAL CENTERS</u>	<u>WHARF</u>	<u>COOL STORE</u>
Tanna	Lenakel	Lenakel	-
Ambae	Lolowai	-	-
Ambrym	Craig Cove	-	-
Malakula	Litslits	Litslite	-
Efate	-	-	Port Villa

## 3-2 Project Sites

### 3-2-1 Tanna, Lenakel

Tanna is located some 130 km south east of Efate. The area of the island is about 561 km<sup>2</sup> with a population of 15,593 (1979).

Most of the area except the middle west of the island is covered with mountains extending to the coast which is ringed with coral growth. The south east corner is dominated by the active volcano Yasur .

Agricultural production of coffee, coconut and other fresh fruit and vegetable is mainly concentrated at the western area of the island. Its output is the second highest level next to Malakula.

Planting and production especially for fresh fruit and vegetable is expected to continue at a high level. Approximately 50 percent of the total current output of those products in Vanuatu is expected to come from Tanna. Although there would seem to be little difficulty in producing increased quantities of the fruits and vegetable, these are marketing constraints to increasing output, the major one of which is irregular shipping.

In the 1981/2 season, over 7 tonnes of potatoes from Tanna spoiled because of shipping delays and inadequate storage facilities.

Lenakel proposed project site for a commercial centre and wharf is located midway down the west coast of the island and is the commercial centre for the whole of Tanna.

Lenakel is in the centre of the developed road network and is a major loading point for agricultural products. Most of the products from the island are collected at Lenakel and loaded to the vessel utilizing the natural sand beach in the long shallow White Sand Bay.

There are some small storage for copra, fresh fruit and vegetables along with the coastline of the bay but the storage capacity is insufficient for current and future needs.

Lenakel has the highest priority for construction of regional commercial centre and the wharf in the request of the Government of Vanuatu.

3-2-2 Ambae, Lolowai

Ambae is a volcanic island located some 150 km north west of the Efate with a population of 7,772 the majority of which is located in the main population centre of Lolowai.

The island is dominated by the central volcanic cone of Manaluku which is at an elevation of 1,486 m and falls steeply from the central cone to coastline.

Agricultural activity mainly for the copra production is located at the flat area north and south west of the island and its output is second next to Malakula.

The site proposed for the regional commercial centre is located east end of the island, along the bay formed by volcanic crater and the coastline. This site is one of the largest copra loading area.

At present, a small jetty for small ships is located in Lolowai Bay where agricultural products collected in Lolowai and the adjoining areas are transported from the jetty to Luganbill in Santo 65 km west of Ambae for exportation. However, the narrow entrance channel into the sunken crater and the shallow depth of water alongside the jetty limit its value.

The only storage facility which has a small capacity for general use is located near the coastline of the bay. Copra and other cargo-losses and damages have been recorded in Lolowai due to vessel delays since the copra collected in and out of the storage for loading was left outside for a long time.

3-2-3 Ambrym. Craig Cove

Ambrym with 2 volcanoes is located 90 km north of Efate and has a population of 6,176 (1979). The area is 666 km<sup>2</sup> 70 percent of which is a large gently falling cinder plain surrounding the craters, the edge of which falls steeply to the coastline.

The land used for agricultural production is divided into Craig Cove and Fona at the coastal plains. The island produces mainly copra and cocoa. The output of copra is next to Ambae.

Craig Cove which is the proposed site for the regional commercial centre is an area of high copra production, 70 percent of which is produced and loaded in this area.

Craig Cove is a commercial centre of whole of the island and has an airfield and the concrete makes landing stage for small ships. Half of the cargo is loaded from the existing landing stage and natural sand beaches are used for others. Copra collected in the area of Craig Cove and adjoining areas is loaded and transported to Espirito Santo and Efate.

3-2-4 Malakula. Litslits

Malakula is the second largest island in Vanuatu with an area of 2,053 km<sup>2</sup> and a population of 15,163, located 90 km north west of Efate.

It is estimated that approximately 50 percent of the agricultural products in Vanuatu are produced in Malakula and output of copra and cocoa are 50 percent and 70 percent of the national total respectively.

The island consists of two larger island masses to the north and south connected by a narrow neck. The mountains at the central area fall away to give a wide coastal plain around the east and north coastline.

Lakatoro located at the middle of the island is the administration and economic center with a local government office, hospital, school and airfield.

Most of the stores and other distribution facilities in Lakatoro such as landing stage and jetty are owned by a private foreign company and also the plantations around the Norsup area are managed by them. The plantation owned by Ni-Vanuatu is located at Litslits area 5 km south east of Norsup.

Litslits is located approximately halfway down the sheltered Port Stanley bay area which is protected by a combination of low lying island, linked by extensive coral fringes.

Litslits is an extensive sheltered deep water site located centrally on the east coast of Malakula near the large copra plantations at Norsup.

It adjoins the best length of road in the outer islands which apparently could readily be extended by a feeder roads to link Litslits.

3-2-5 Efate. Port Vila

Efate is situated in the central part of the archipelago and has a population of 19,819 (1979).

The island covers 7.6 percent of the country's land area, and the regional centre is the nation's capital city, Port Vila. Port Vila has a population of 15,000 and is located along the Port Vila Bay.

Export wharf and the international airport are located in Port Vila and 70 percent of the total products from the outer islands is transported into the Port Vila Wharf which has a berth for 50,000 G.R.T. class vessel. At present, there is no cool store facilities in Port Vila for agricultural product.

**CHAPTER 4**  
**CONTENTS OF THE PROJECT**





## CHAPTER 4 CONTENTS OF THE PROJECT

### 4-1 Project Objectives and Contents

The project comprising the construction of the regional commercial centres, wharves and cool stores has been planned to improve storage, distribution and transportation facilities and to decentralize both commercial and financial activities as a part of regional economic development in Vanuatu.

Major objectives and contents of each facility is as follows;

#### (1) Regional Commercial Centres

Regional commercial centers containing storage facilities for products and banking space will be constructed at the centre of the economic active area of 4 priority islands with the following purposes.

- 1) Improvement of storage and distribution facilities to increase efficient cargo handling of the island and to allow the increase of output quantity and quality of the products by prevention of the cargo loss and damage.
- 2) Promotion of the extension of agricultural credit to increasingly mobilise domestic resources for local investment and to increase of export earnings through product diversification.
- 3) Increasing incomes of small landholders of Ni-Vanuatu and rural areas and extension of cash economy into the rural area.

(2) Wharves

Wharves will be constructed in Tanna, Ambae, Ambrym and Malakula which are the largest islands in terms of agricultural production in Vanuatu.

Through the provision of the wharves, vessels can berth and handle cargo directly so that faster handling rates and shorter voyage time will be ensured and incidence of the cargo loss and damage will be decreased.

(3) Cool Stores

Cool stores will be constructed at the main wharf and the international airport in Port Vila which is an urban market and central distribution base in Vanuatu.

Cool store facilities are required to receive and hold the incoming fresh fruit and vegetable from the outer island of Vanuatu to the Port Vila market and to realize the potential for exporting fresh products from Vanuatu by sea and air to neighboring countries.

(4) Trucks

Trucks will be provided to each island to increase efficient transportation for collecting and distributing the cargoes between plantation, commercial centres and wharves.

## 4-2 Basic Design

### 4-2-1 Basis of Basic Design

Basis of the basic design for each facility has been decided after due consideration of the information and the requirements obtained during the site investigations at project sites, and the discussions with the concerned persons of the Government of Vanuatu.

Each facility such as the regional commercial centers, wharves and cool stores have been planned under the following basic design basis.

#### (1) Regional Commercial Centre

- 1) The regional commercial center will be designed to accommodate the local climate and to facilities easy maintenance.
- 2) The regional commercial center will be centralized in functions for both commercial and financial activities.
- 3) The regional commercial centre will be designed along a single layout for rooms and spaces for economical construction at the limited cost and in a limited period of time.
- 4) The regional commercial centre will be located close to existing or newly constructed wharves to fully utilize the facility for more efficient handling and transportation of the products.

(2) Wharf

- 1) The location of the wharf will be selected in consideration of vessel operation requirements and the geological and meteorological environments of the project sites.
- 2) The wharf will be designed to permit berthing directly with the largest inter-island shipping vessels and the small ships or lighters to handle cargoes.

(3) Cool Store

- 1) The cool store will be designed in capacity and type to cope with the increasing volume of the fresh fruit and vegetables from outer islands of Vanuatu and also to realize the potential of exporting of those fruits and vegetables by sea and air to neighboring countries.
- 2) The cool store will be designed with consideration for the maintainability and the workability.

#### 4-2-2 Applicable Standard

From the interview with the concerned authority of the Government of Vanuatu, most of the buildings and structures in Vanuatu have been designed and constructed under the employment of the standards or codes by the designer since there are no legal standards for buildings or structures design and construction in Vanuatu.

It is, therefore, considered that Japanese Building Standards and Structural Design Codes will be applicable for the project because Vanuatu's environmental conditions are similar to those in Japan.

#### 4-3 Basic Design of Regional Commercial Centre

##### 4-3-1 Project Sites

Project sites for the construction of the regional commercial centres have been selected with consideration of the site location related to the existing facilities, connecting access roads, shape and form of the proposed land area, etc.

The summary of selected project site situations is as follows:

##### (1) Lenakel: Site Location

Project site for Lenakel regional commercial centre has been decided as the area behind the existing main road running along the White Sand Bay, connected to the administration centre area of the island.

Project site location is at the top of the access road connecting the existing main road for the planned wharf.

The location of the beach used for loading and unloading copra is located near the site.

There are some existing commercial facilities around the project site such as a Cooperation Federation Buildings shops, small stores and sports-ground, and the land has already been cleared and graded by the Local Government Council.

During project site selection, the land level difference and distance between coastline and site was also considered and it is unlikely that any damage will occur even during the hurricane wave conditions.

(2) Lolowai: Site Location

Project site for Lolowai regional commercial centre has been decided as the area behind the existing road along Lolowai Bay.

Project site is located midway between the existing jetty and the beach used for copra loading.

There are some onshore facilities such as bank and education office, hospital and stores along the road between project site and the above beach.

Seaside of the road running from the project site is formed from active coral growth which protects against high waves.

In and around the project site, it has been already cleared and grubbed.

(3) Litslits: Site Location

Litslits is located centrally on the east cost of the island halfway down the sheltered Port Stanley Bay.

Project site for Litslits regional commercial centre is located near the access road connection point with existing main road running along Port Stanley Bay, connecting to Lakatoro.

(4) Craig Cove: Site Location

Project site for Craig Cove regional commercial is located at the top of the access road connecting the existing concrete makes landing stage used for small ship berthing.

Inside the site has been graded by the Local Government Council. The cargo loading area on the sand beach is located near the site.

There could be enough distance between project site of the regional commercial centre and coastline raised with coral growth to protect from hurricane waves.

4-3-2 Land Ownership of Site

Regarding the land ownership of the projected site are for the regional commercial centres, the Government of Vanuatu is under planning to acquire it from land owners, before the project is decided to be implemented.

4-3-3 Layout Planning

(1) Layout

Layout of the regional commercial centres is designed to place the storage, banking offices, concession space and toilets in consideration of the purpose and function of each room and space.

Storage capacity for copra, cocoa and coffee, and other fresh fruit and vegetables were estimated based on the data and information supplied by the secretary of Local Government and cooperative federation on the selected islands.

Storage capacity of at the regional commercial centers is decided as follow:

- 1) Storage capacity for copra: 60 ton
- 2) Storage capacity for cocoa and coffee: 30 ton
- 3) Storage capacity for fruit and vegetables: 10 ton

Area and layout of rooms and space of regional commercial centre is each island will be same in accordance with design basis stated in section 4-2, Basic of Basic Design.

(2) Area of Rooms and Spaces

Summary of area for rooms and space in regional commercial centers is shown in Table 4.1.

Table 4.1 Area of Rooms and Spaces

<u>Room Name</u>	<u>Area (m2)</u>
Store for copra	59.40
Store for cocoa and coffee	23.76
Bulk store	27.72
Saving bank office	23.76
Development bank office	12.96
Commodity agency office	23.76
Shop	33.84
Generator room	10.08
Toilet (male)	6.00
Toilet (female)	5.04
Porch	104.40
Corridor	7.68
<u>Total</u>	<u>338.40</u>



#### 4-3-4 Building Materials

##### (1) Roofing

Project sites of the regional commercial centres are located near the coastline and are easy to be affected by meteorological conditions, especially with winds at a time of tropical cyclones.

Roofing materials, therefore, should be shaped iron sheet which is locally available and has durability against the sandy wind.

##### (2) Walls

Wall structure will be made with the concrete block with reinforced bars.

Finishing of the wall will be paint on finishing mortar for economical reasons and easy repairing.

##### (3) Floors

Floors will be constructed with reinforced concrete with non-metarcic hardner for use of office and storage, and from an architectural point of view.

Wooden duck board will be placed on the floor inside the storage to prevent wetting the stored products.

##### (4) Ceilings

Ceiling materials will be hardboard panels with painting and will be installed for offices and shops excluding storages.

(5) Windows

Windows will be jalousie type glazed window and security bars will be fixed outside the windows for the offices and shops.

(6) Doors

Doors will be flush type wooden doors for offices and shops, and lodged type braced doors for storages.

4-3-5 Structure Planning

(1) Soil Bearing Capacity

The fondation of the selected project sites is soil with sand on active coral growth and it is likely that sufficient bearing capacity could be obtained for the structural of the regional commercial centres.

As for the building structure of the regional commercial centre, it will be designed as a reinforced concrete structure for base, columns and beams, with reinforced concrete blocks for walls.

Roofing structure will be wooden truss structure.

4-3-6 Ventilation, Plumbing and Electricity

(1) Ventilation

Ventilation for offices, shops and toilets will depend on natural ventilation through windows.

Gravity damper type ventilators will be installed in the levels of the roof.

(2) Plumbing

Water supply for the toilets will be introduced from the rain water tank which will collect water from the drain gutter installed on the roof.

Waste water drain from the toilets will be treated in underground concrete septic tanks.

(3) Electricity

A generator will be provided for lighting and the main electrical panel for the power supply to the building will be a type for both generated power and city power where city power can be obtained.

#### 4-4 Basic Design of Wharves

##### 4-4-1 Site Selection and Wharf Layout

Possible site and layout of a wharf have been planned in consideration of the following items at each favoured site selected on previous site investigation.

- 1) Access from regional commercial centre and other existing onshore infrastructure and transportation road network.
- 2) Depth, width and form of the channel for ship approach and maneuvering area for berthing and operation of ships.
- 3) Environmental conditions such as winds, waves, tides and other meteorological conditions.

A suitable site location and layout of wharves is shown in DWG. NO. 1 and 2.

However, detailed site investigations will be required at each of the selected sites before the detailed design is prepared.

These will include a hydrographic survey of the wharf location and vessel manoeuvring area, topographic survey of piled structure is contemplated, search to locate aggregate fill and rock armour sources, etc.

Present topographical conditions at each selected site is as follow:

- (1) Lenakel: Tanna

The proposed location of a wharf in Lenakel, shown in Dwg. No. 1., is along the face of the existing coral reef fringing the northern limits of White Sand Bay.

The edge of the reef is well defined in this area but severely undercut at seabed level.

A number of underwater rocks upto around 3 metre diameter are scattered on the seabed. Submerged old coral growth exists in the route of the anticipated channel.

The connection to the existing road network and the area of regional commercial centre for wharf would require an access road with a distance of approximately 170 meters to cross the coral growth area behind the wharf and bushes.

(2) Litslits: Malakula

A suitable site location of a wharf has been proposed as shown in DWG. No. 2.

Selected location for the wharf is well protected by the natural features of the coastline. The reef plateaus within the area surveyed are well sheltered in all directions.

According to the results of the site survey, seabed geology at proposed wharf location inside of the reef is likely to be same as Lenakel.

There is no dramatic increase in water depth off the inner reef, but more of a steep sand and coral face. The proposed location would involve cutting and laying an access road of about 170 meters in length through the mangrove and across the reef to the wharf.

#### 4-4-2 Basic Design of Wharf

Scale and type of wharf will be designed to berth both the largest vessel (414 G.R.T.) used in inter-island shipping and small ships and lighters.

The water depth in front of the wharf will be more than 3.5 meters at low tide sea water level in order to accommodate the largest size of ship.

The size of the wharf will be arranged to give a berth the length of the wharf which will be 50 meters.

The basic design of the wharves assumes that strength and characteristics of the coral reef for providing foundations below the seabed is acceptable for the piling of steel sheet piles or steel pipe piles for staging.

Sufficient numbers of fenders will be provided at suitable intervals along the berthing face and mooring posts on the wharf and navigation markers for the area of vessel maneuvering will be located offshore.

#### 4-4-3 Access Roads

It is necessary to construct access roads to connect with existing road network for wharves as shown on DWG. No. 1 and 2.

Access roads will be included with the wharf construction as a single package construction for the following reasons:

- 1) Design and construction of access roads shall be considered against the wave action since a half of the area of the access road will be in the sea and construction requires the same heavy construction equipment as used in wharf construction.
- 2) Sufficient number and quality of such construction equipment can not be obtained in Vanuatu.
- 3) Access roads construction will be started and completed before the construction of wharf.
- 4) Timely completion of the wharf system is required.

#### 4-5 Basic Design of Cool Stores

##### 4-5-1 Project Sites

Project sites for the construction of cool stores have been decided to locate in the area of Port Vila Wharf and Bauerfield International Airport in Port Vila which is an urban market and central distribution base in Vanuatu. The proposed location of the cool store at each site is shown in Dwg. No. 7 and 9.

The exact locations in the area of the existing wharf and airport, however, will be finalized in coordination with the concerned authority during detailed design.

##### 4-5-2 Current and Projected Products Volume

The cool store is to receive and hold the incoming fresh fruit and vegetables from outer islands of Vanuatu, importing and exporting fresh products from and to neighboring countries by air.

Current imports of fruit and vegetables into Port Vila from the outer inlands by sea totalled 480 tons in 1983 and is summarized in Table 4.1.

Table 4.1 Imports into Port Vila by sea (1983)

<u>Products</u>	<u>Ton/Year</u>	<u>Month</u>	<u>Island</u>
<u>Source</u>			
Taros	60	Jan. - Dec.	Tanna, Pentecost
Potatoes	100	Jan. - Dec.	Tanna
Oranges	300	Jan. - Sept.	Aniwa
Miscellaneous fruit	20	Jan. - Dec.	Various

Source: NPSO



Future output from outer islands based on the data supplied by Ministry of Agriculture and Fisheries, is estimated to increase from the current 480 tons to 1,000 tons in 1989, or 162 tons per month (40 tons per week) in peak period June to September.

Imports of fruit and vegetables to be stored into Port Vila from other countries by air is summarized in Table 4.2

Table 4.2 Imports into Port Vila by air

<u>Products</u>	<u>Ton/Year</u>	<u>Month</u>
Tomatoes	10	Dec. - May
Misc. vegetables	61	Dec. - May
Orange	23	Oct. - May
Apples and Pears	45	Jan. - Dec.
Misc. Fruit	17	

Source: NPSO

Based on Table 4.2, imports by air is estimated to be 13 tons per month in average, or 156 tons per year but would be around 15 - 20 tons a month or 5 tons per week in peak period October to May.

Exports of fruit and vegetable from Vanuatu to other countries by sea is nil, but exports by air amounted to 30 tons in 1983, in the period of June to December.

Imports and exports by air calculated on the basis of the current volume is assumed to increase to 9 tons per week in the peak period, or 350 tons per year, as compared to current imports of 156 tons and exports of 30 tons per year.

It is, therefore, required to provide the cool stores having capacity of 40 tons and 10 tons at wharf and airport area respectively for storage for a period of 1 week which is the maximum for fresh fruit and vegetables under lower temperature conditions.

In addition, separate cool store rooms will be provided to prevent smell transfer and bacterium contamination between products.

#### 4-5-3 Equipment Selection

Structure of cool store panels for wall and ceiling will be prefabricated type insulation panel to satisfy the requirements of storage capacity and recommended storage temperature for the products.

Floor structures inside of the cool stores will be concrete finishing with adequate thickness of insulation materials.

Type and capacity of cool stores, and cooling equipment selected are as follows:

<u>Cool Storage</u>	<u>Wharf</u>	<u>Airport</u>
Storage capacity:	10 ton (4 sets)	5 ton (2 sets)
Storage temperature:	0° - 7°C	0° - 7°C
Volume:	approx. 58 m3	approx. 29 m3
Type:	air-cooled type split unit	
Compressor:	3.75 KW	2.2 KW
Power source:	3P/380V/50Hz	3P/380V/50Hz
Quantity	4 sets	2 sets

#### 4-6 Trucks

Trucks planned to be provided at each project site will be mainly be used to transport the agricultural products from firms to the newly constructed commercial centre and a wharf or existing landing stages for loading and unloading.

Existing road network connecting to the scattered firms in the island is not well developed and also the access roads to the existing landing stages are poor.

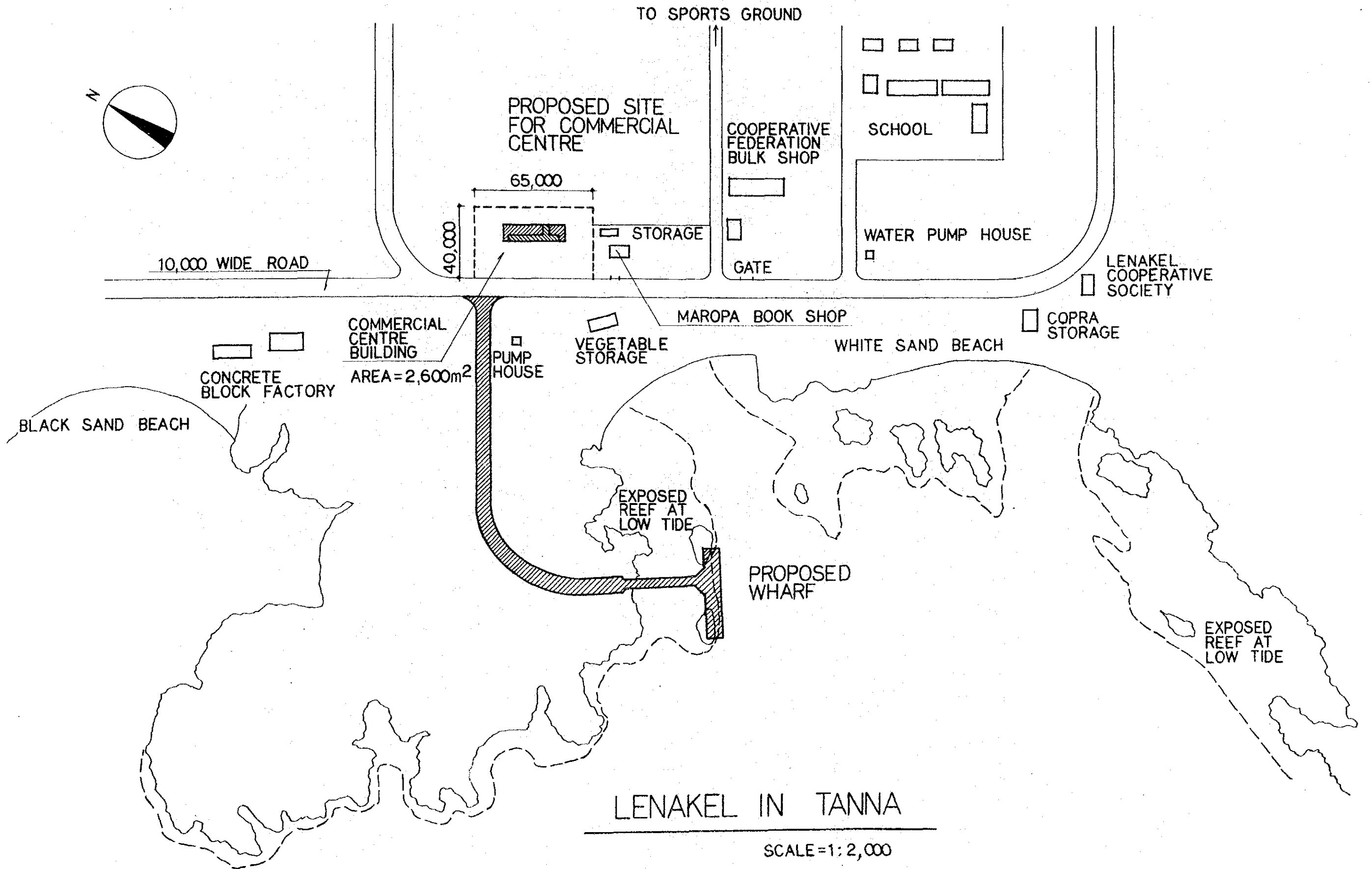
It is, therefore, required to provide truck in each island, with a loading capacity of 3 tons and with a mounted small crane for efficient loading and unloading.

#### 4-7 Basic Design Drawings

Basic design drawings for the regional commercial centre project constructing the regional commercial centres, wharves and cool stores are as follows:

- |             |   |
|-------------|---|
| DWG. NO. 1  | Layout of Lenakel Wharf and Regional Commercial Center in Tanna     |
| DWG. No. 2  | Layout of Litslits Wharf and Regional Commercial Center in Malakula |
| DWG. No. 3  | Layout of Lolowai Regional Commercial Centre in Ambae               |
| DWG. No. 4  | Layout of Craig Cove Regional Commercial Centre in Ambrym           |
| DWG. No. 5  | Plan of Regional Commercial Center                                  |
| DWG. No. 6  | Elevation of Regional Commercial Centre                             |
| DWG. No. 7  | Layout of Cool Store at Port Vila Wharf in Efate                    |
| DWG. No. 8  | Plan and Elevation of Cool Store in Port Vila Wharf                 |
| DWG. No. 9  | Layout of Cool Store at Bauerfiled Airport in Efate                 |
| DWG. No. 10 | Plan and Elevation of Cool Store in Bauerfield Airport              |
| DWG. No. 11 | Layout of Lenakel Wharf in Tanna                                    |
| DWG. No. 12 | Section of Lenakel Wharf and Access Road in Tanna                   |
| DWG. No. 13 | Layout of Litslits Wharf in Malakula                                |

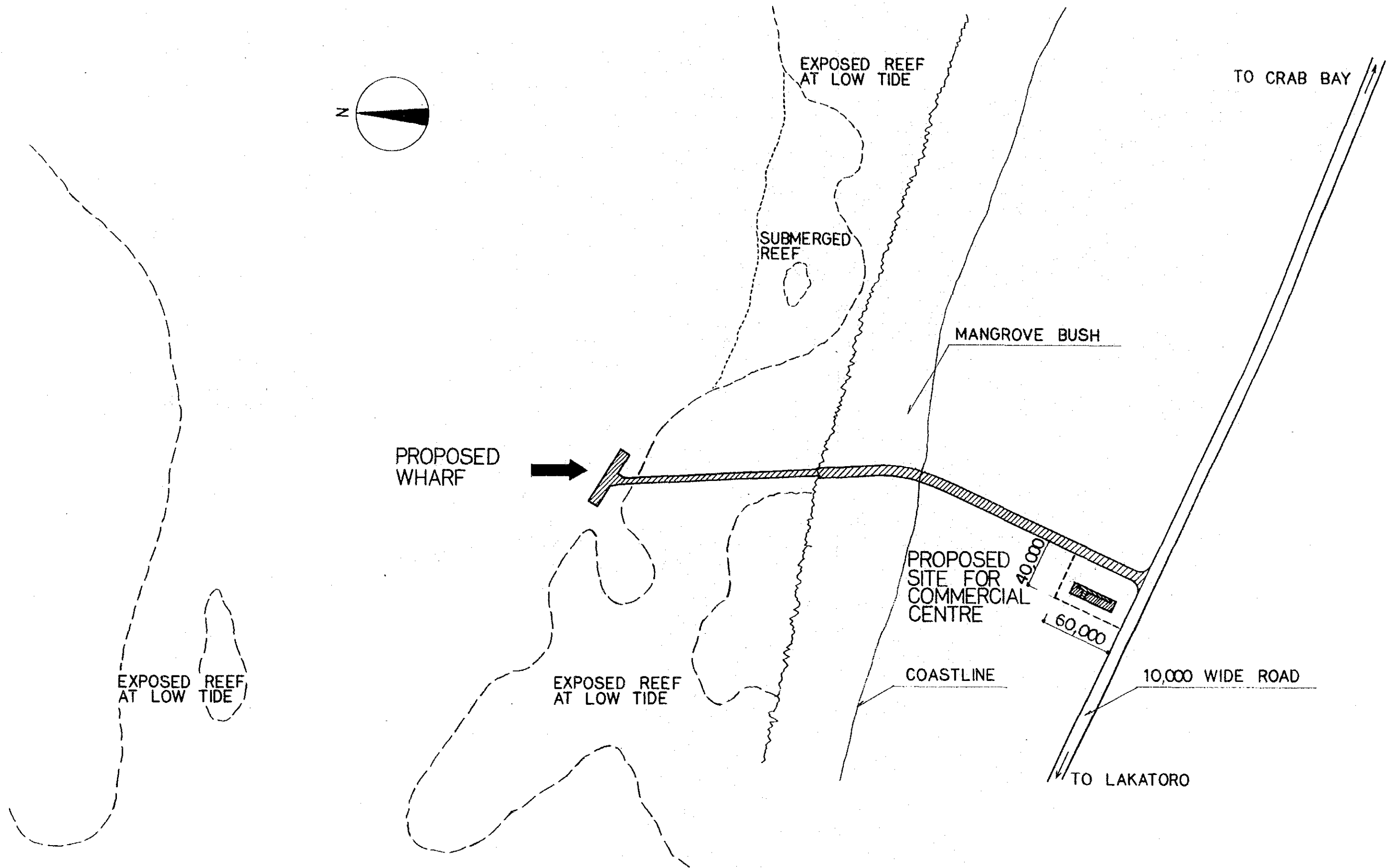
DWG. No. 14      Section of Litslits Wharf and Access Road in  
Malakula



# LENAKEL IN TANNA

SCALE = 1:2,000

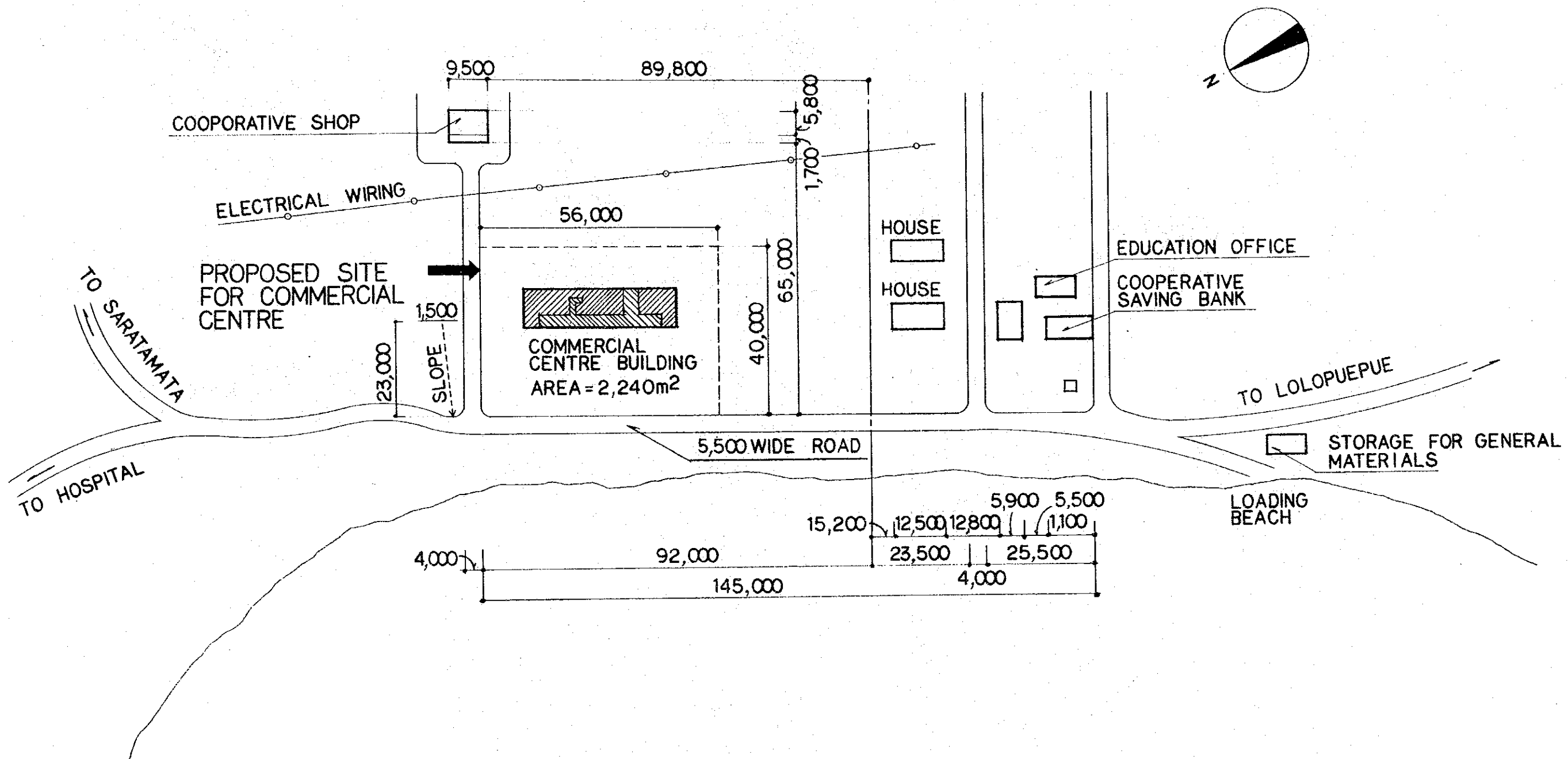
DWG. NO. 1 LAYOUT OF LENA KEL WHARF AND REGIONAL COMMERCIAL CENTRE IN TANNA



LITSLITS IN MALAKULA

SCALE=1:3,000

DWG. NO. 2 LAYOUT OF LITSLITS WHARF AND REGIONAL COMMERCIAL CENTRE IN MALAKULA

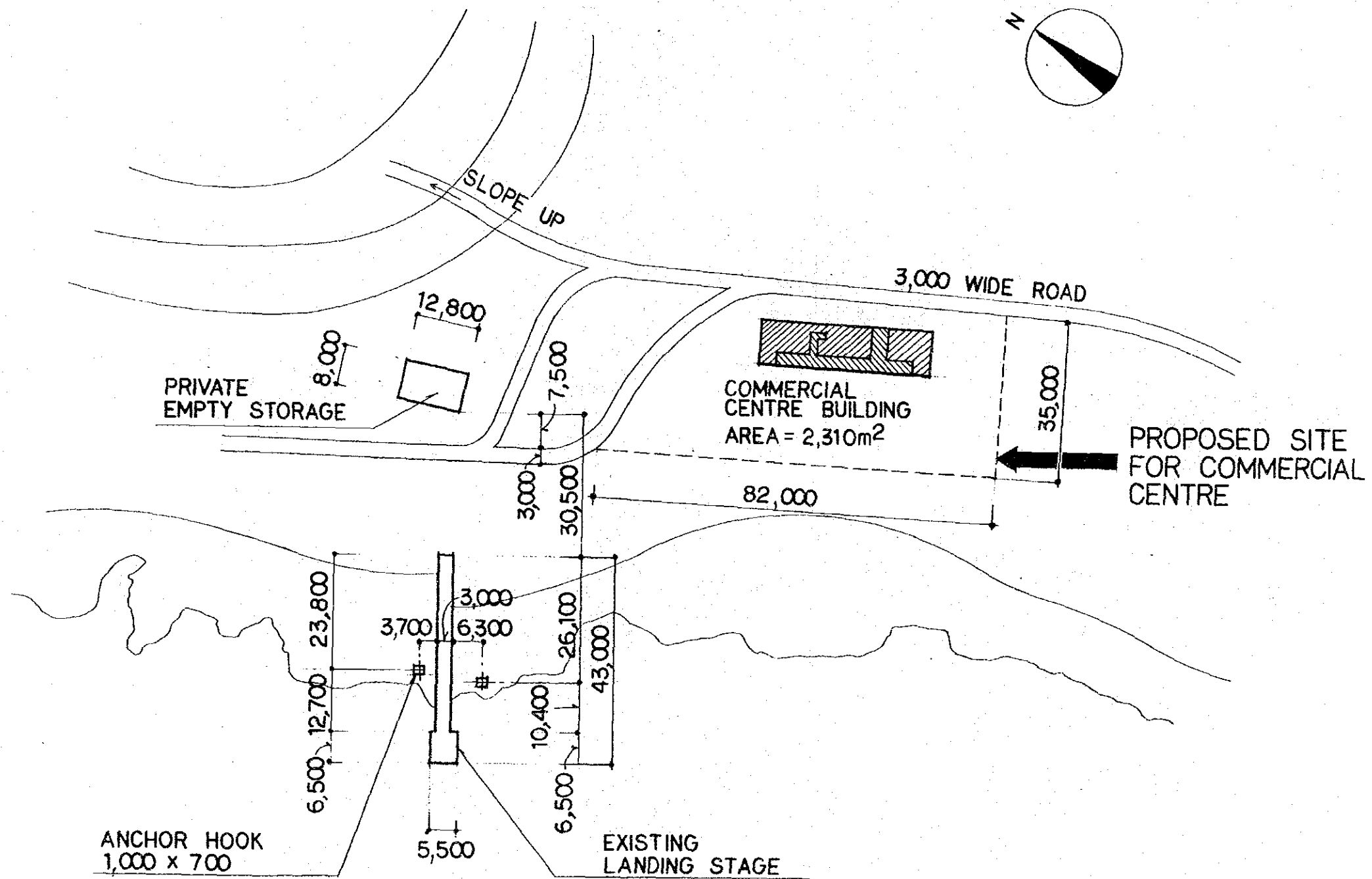


# LOLOWAI IN AMBAE

SCALE=1:1,000

DWG. NO. 3 LAYOUT OF LOLOWAI REGIONAL  
COMMERCIAL CENTRE IN AMBAE

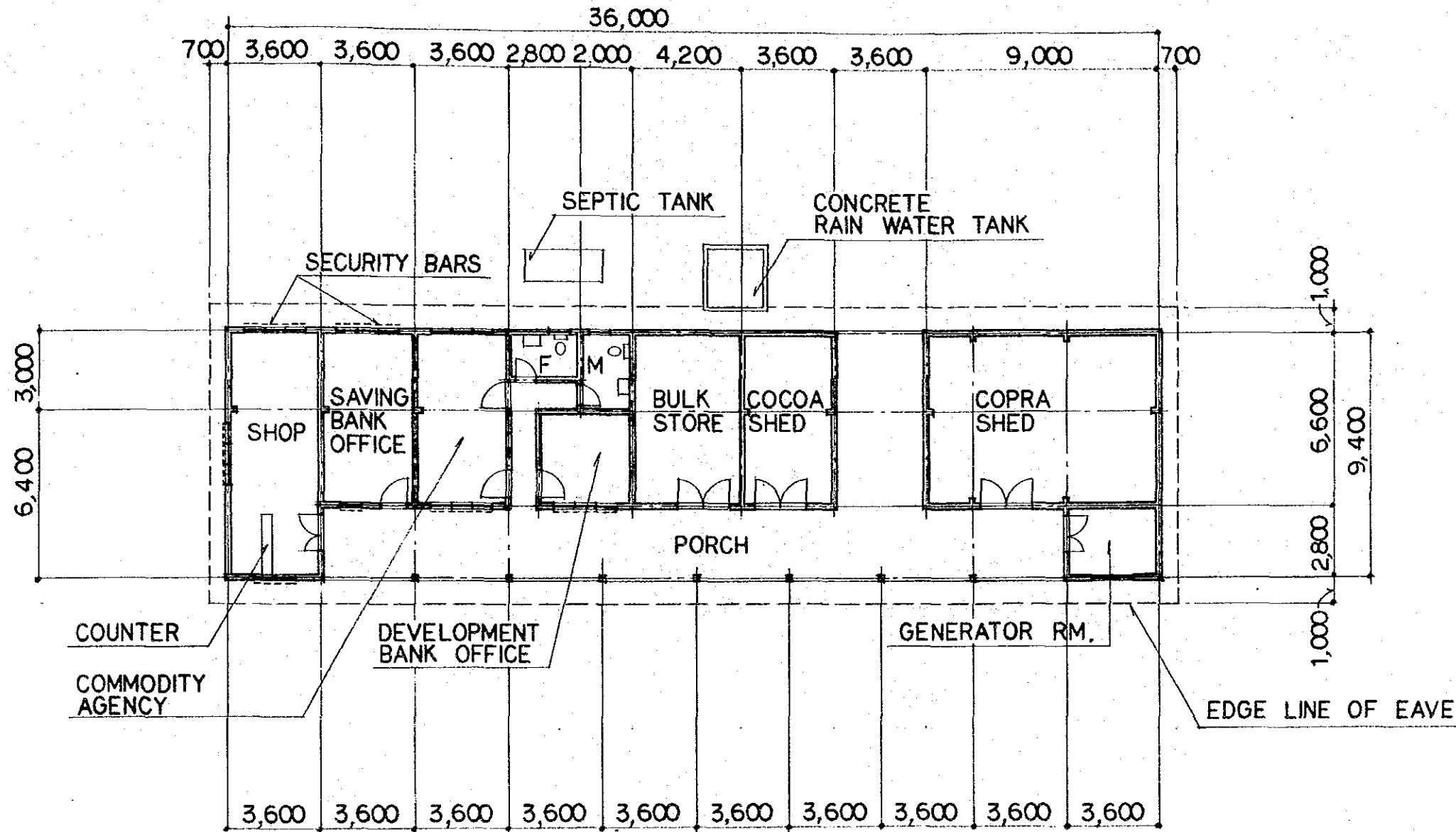




# CRAIG COVE IN AMBRYM

SCALE = 1 : 1,000

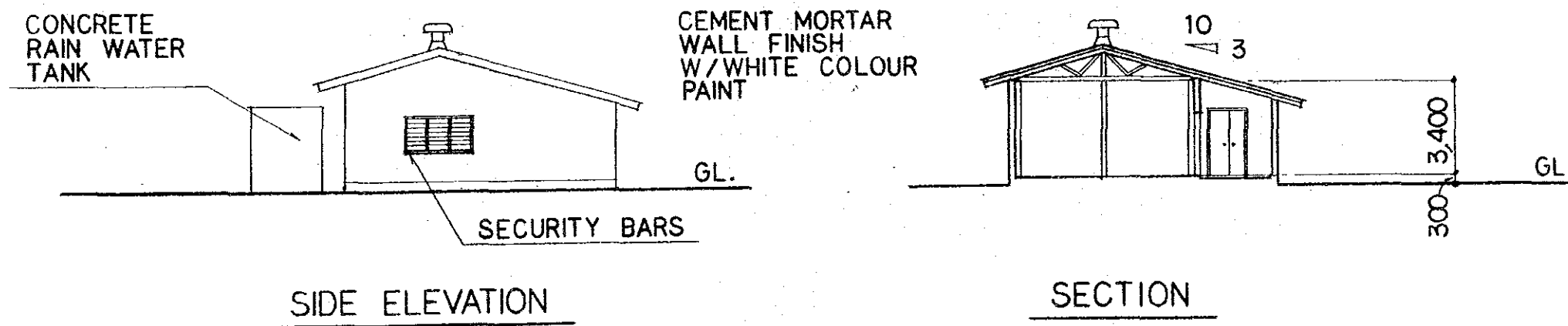
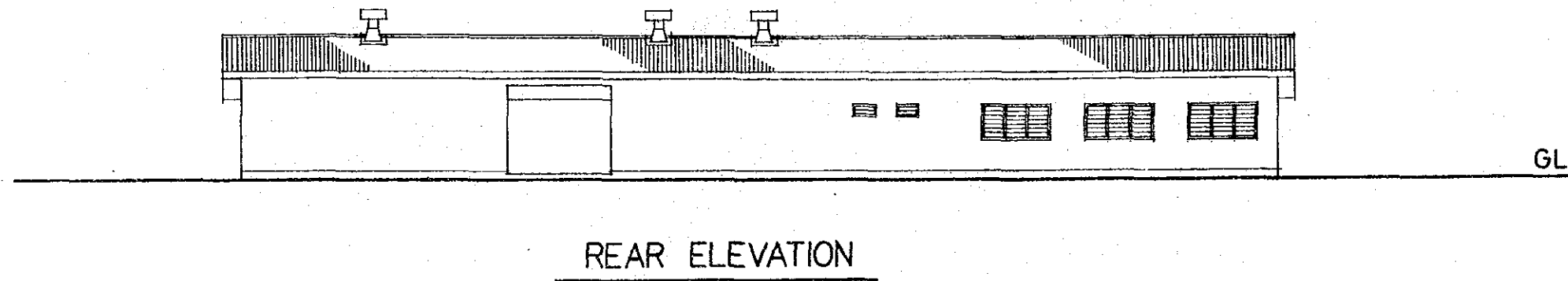
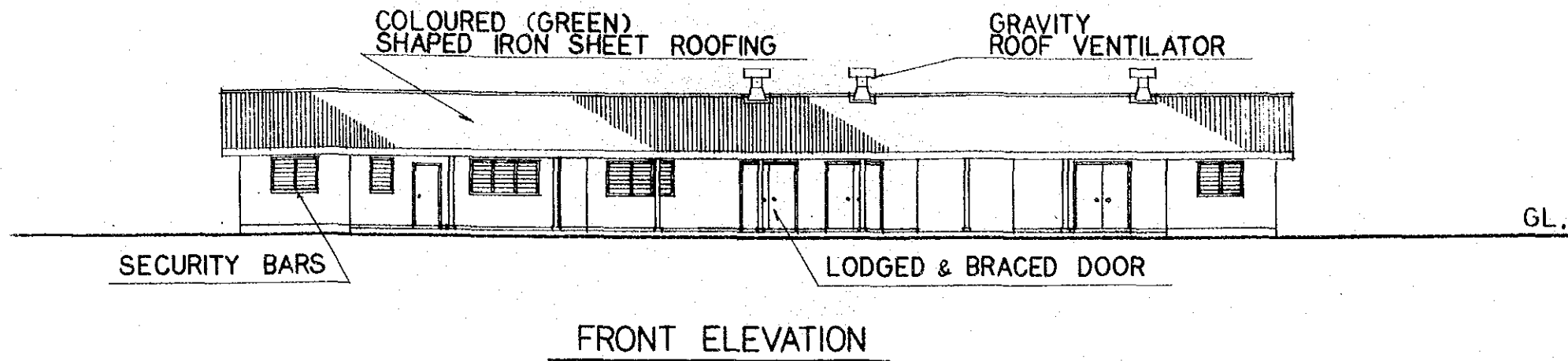
DWG. NO. 4 LAYOUT OF CRAIG COVE REGIONAL  
COMMERCIAL CENTRE IN AMBRYM



FLOOR PLAN

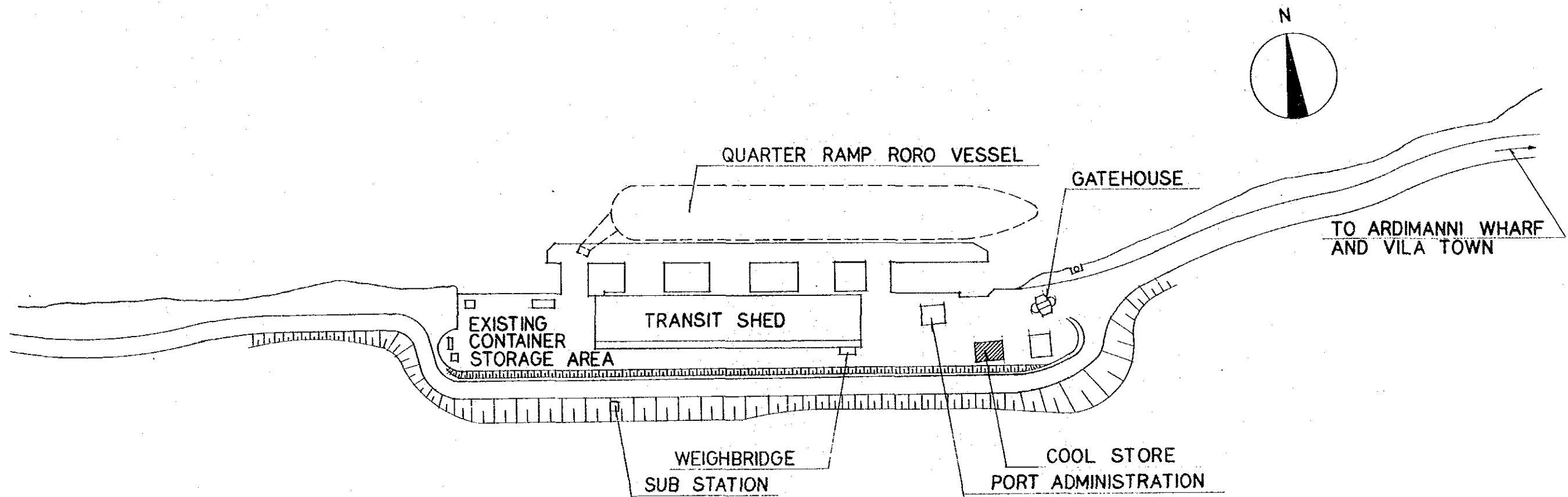
COMMERCIAL CENTRE BUILDING

SCALE=1:200



COMMERCIAL CENTRE BUILDING

SCALE = 1:200



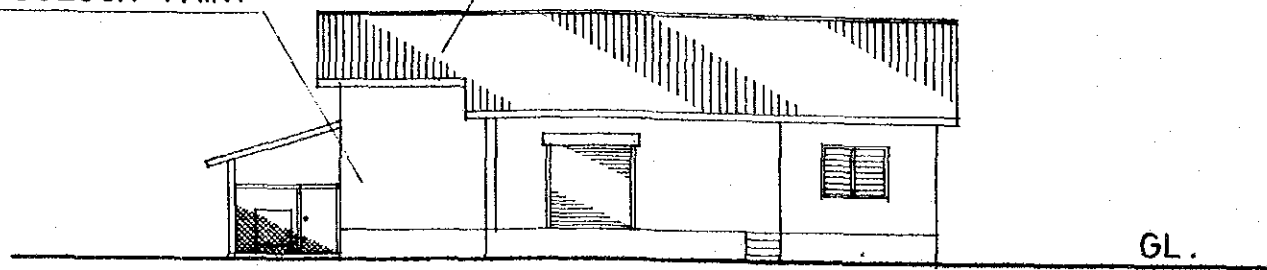
COOL STORE AT PORT VILA WHARF IN EFATE

SCALE = 1 : 2,000

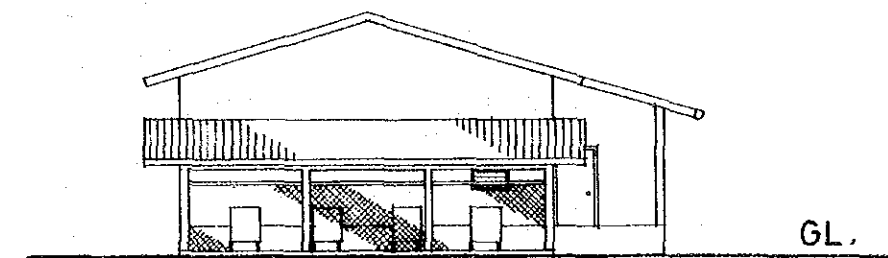
DWG. NO. 7 LAYOUT OF COOL STORE AT PORT VILA WHARF IN EFATE

CEMENT MORTAR WALL FINISH WITH WHITE COLOUR PAINT

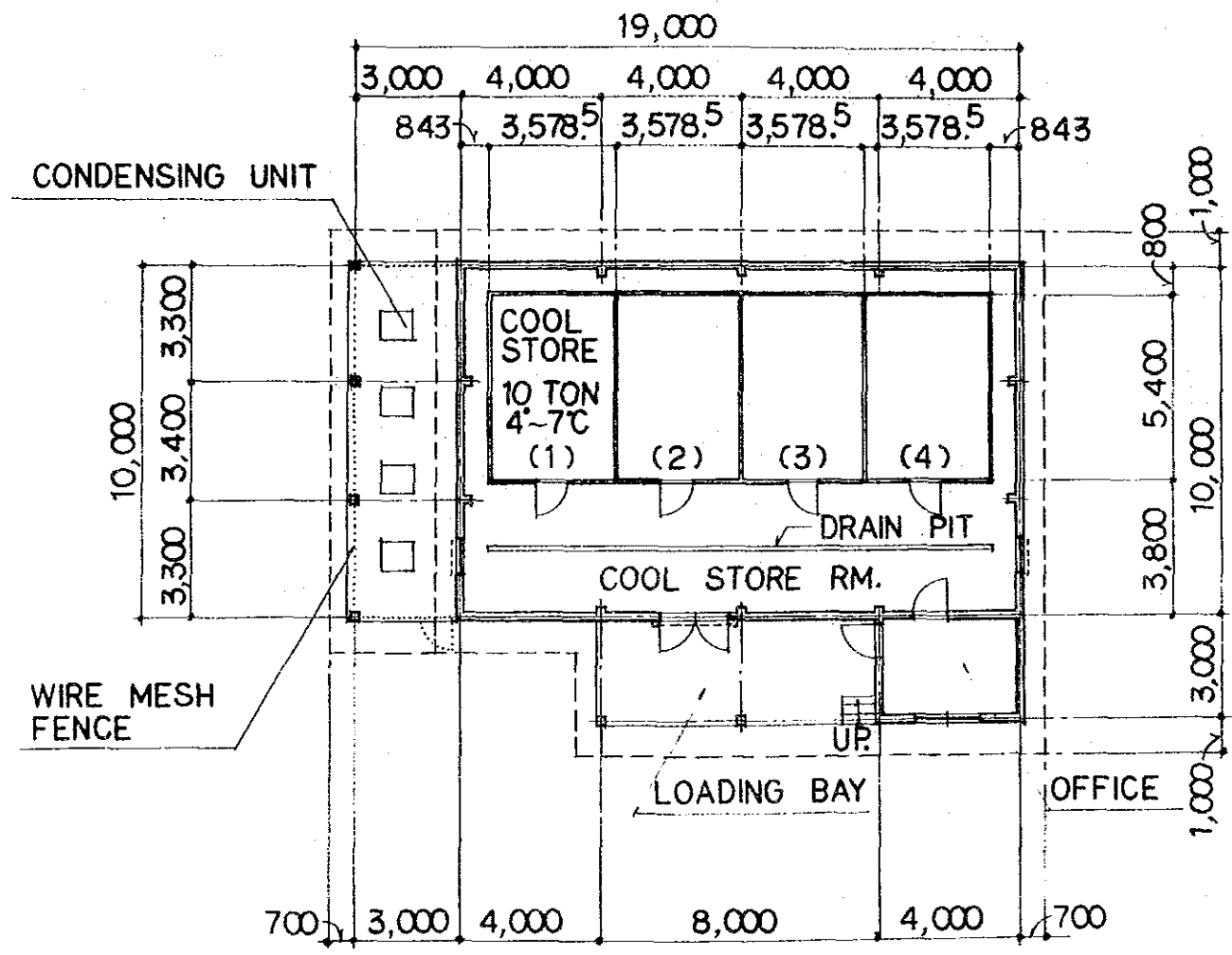
COLOURED SHAPED IRON SHEET ROOFING



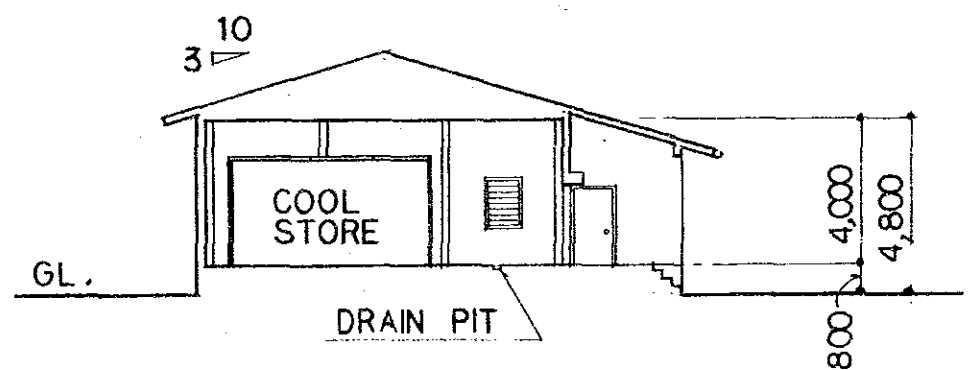
FRONT ELEVATION



SIDE ELEVATION



FLOOR PLAN



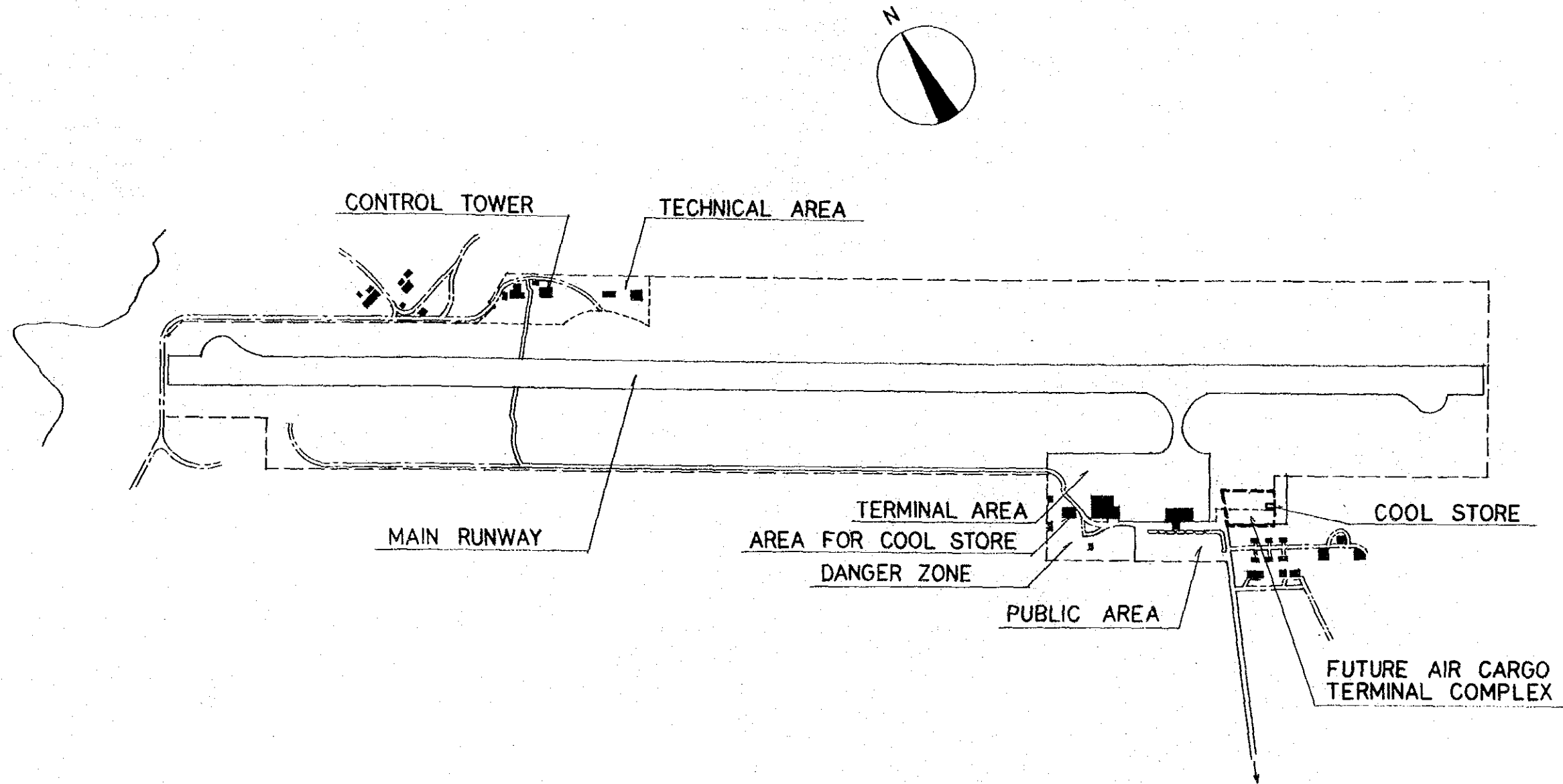
SECTION

COOL STORE

SCALE = 1:200

IN PORT VILA WHARF

DWG. NO. 8 PLAN AND ELEVATION OF COOL STORE  
IN PORT VILA WHARF

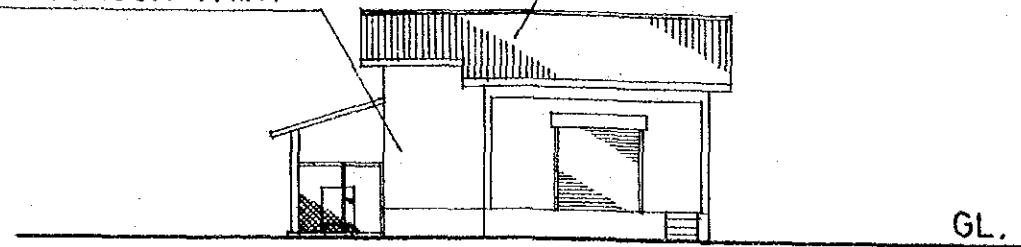


## COOL STORE AT BAUERFIELD AIRPORT IN EFATE

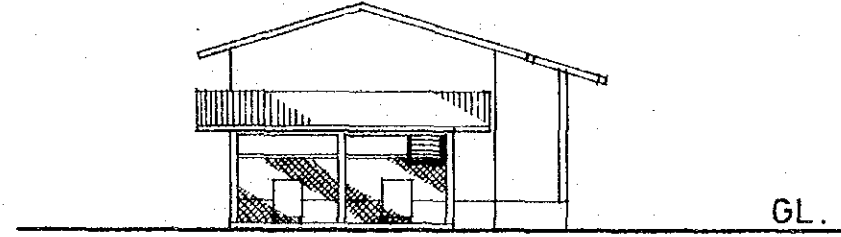
DWG. NO. 9 LAYOUT OF COOL STORE AT BAUERFIELD AIRPORT IN EFATE

CEMENT MORTAR  
WALL FINISH WITH  
WHITE COLOUR PAINT

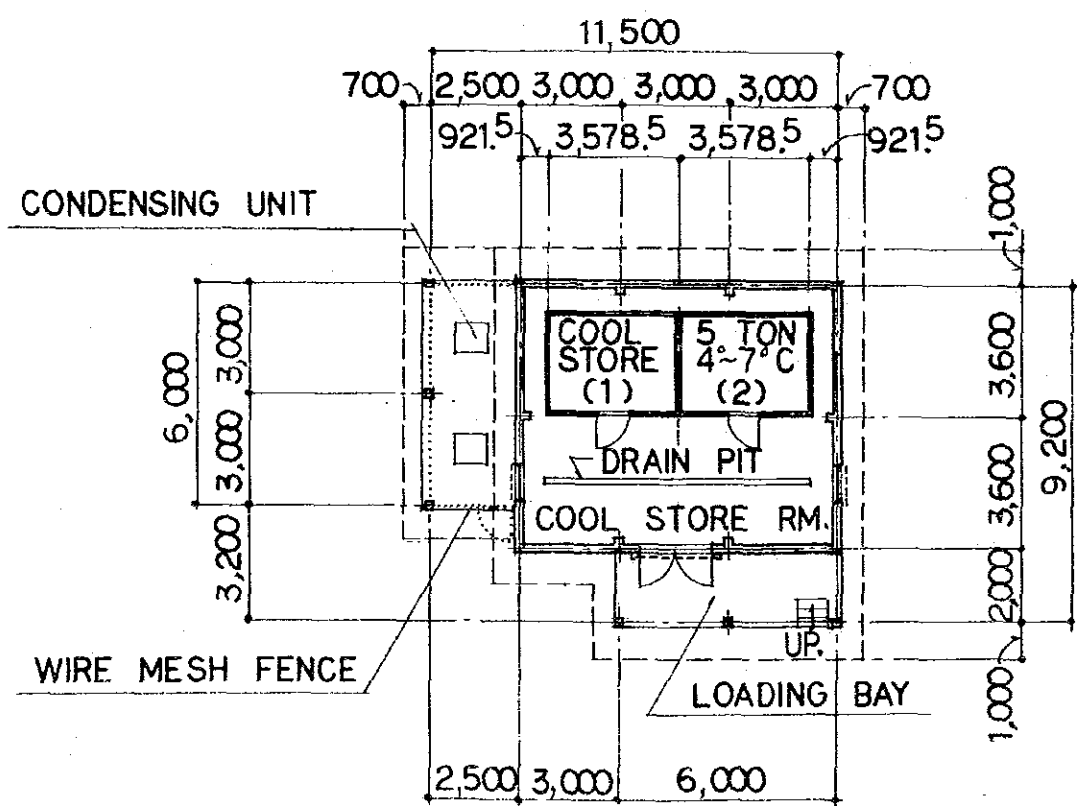
COLOURED SHAPED IRON  
SHEET ROOFING



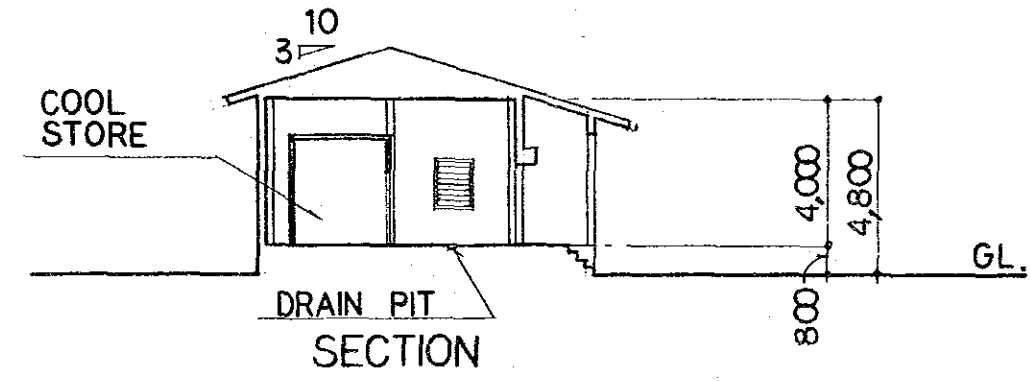
FRONT ELEVATION



SIDE ELEVATION



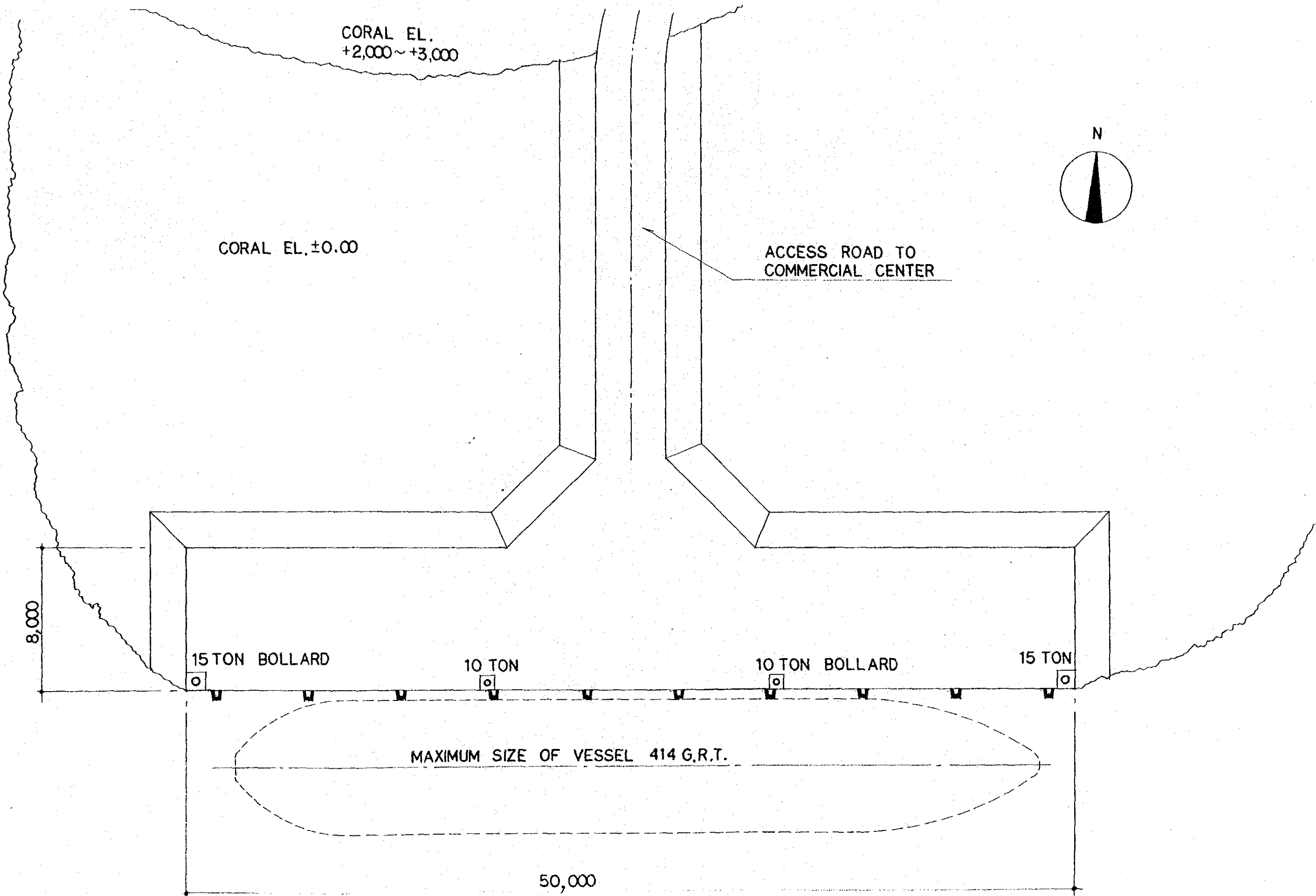
FLOOR PLAN



SECTION

COOL STORE      SCALE = 1:200  
IN BAUERFIELD AIRPORT

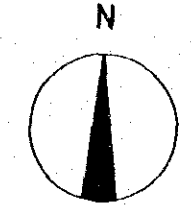
DWG. NO.10      PLAN AND ELEVATION OF COOL STORE  
IN BAUERFIELD AIRPORT



CORAL EL.  
+2,000~+3,000

CORAL EL. ±0.00

ACCESS ROAD TO  
COMMERCIAL CENTER



8,000

15 TON BOLLARD

10 TON

10 TON BOLLARD

15 TON

MAXIMUM SIZE OF VESSEL 414 G.R.T.

50,000

# TANNA LENAHEL WHARF

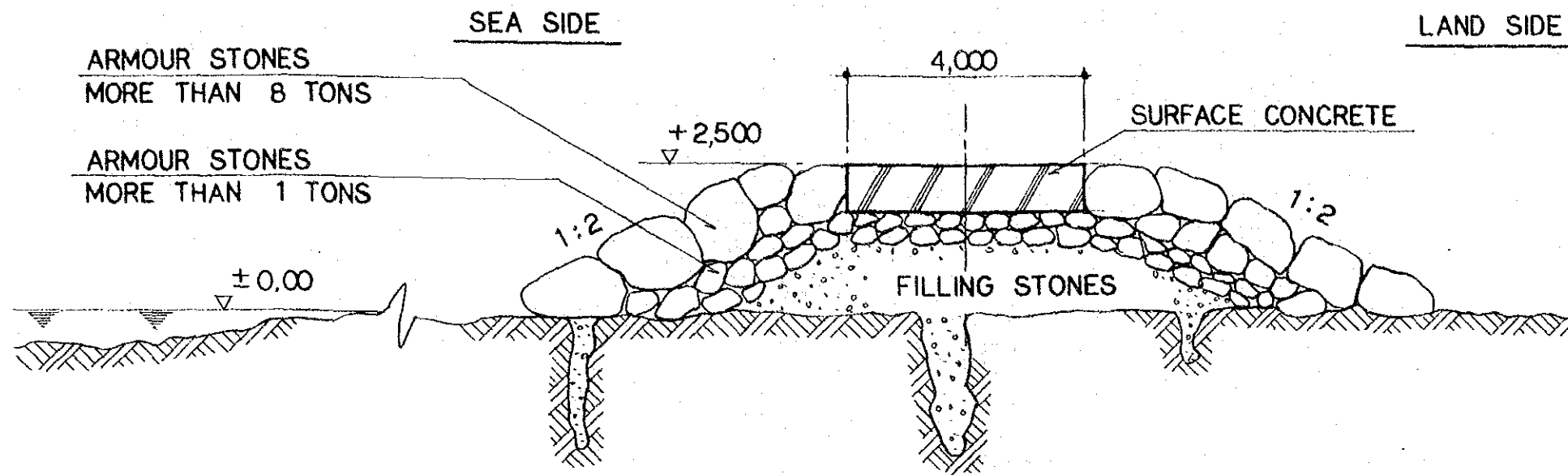
SCALE=1:200

DWG. NO.11 LAYOUT OF LENAHEL WHARF IN TANNA

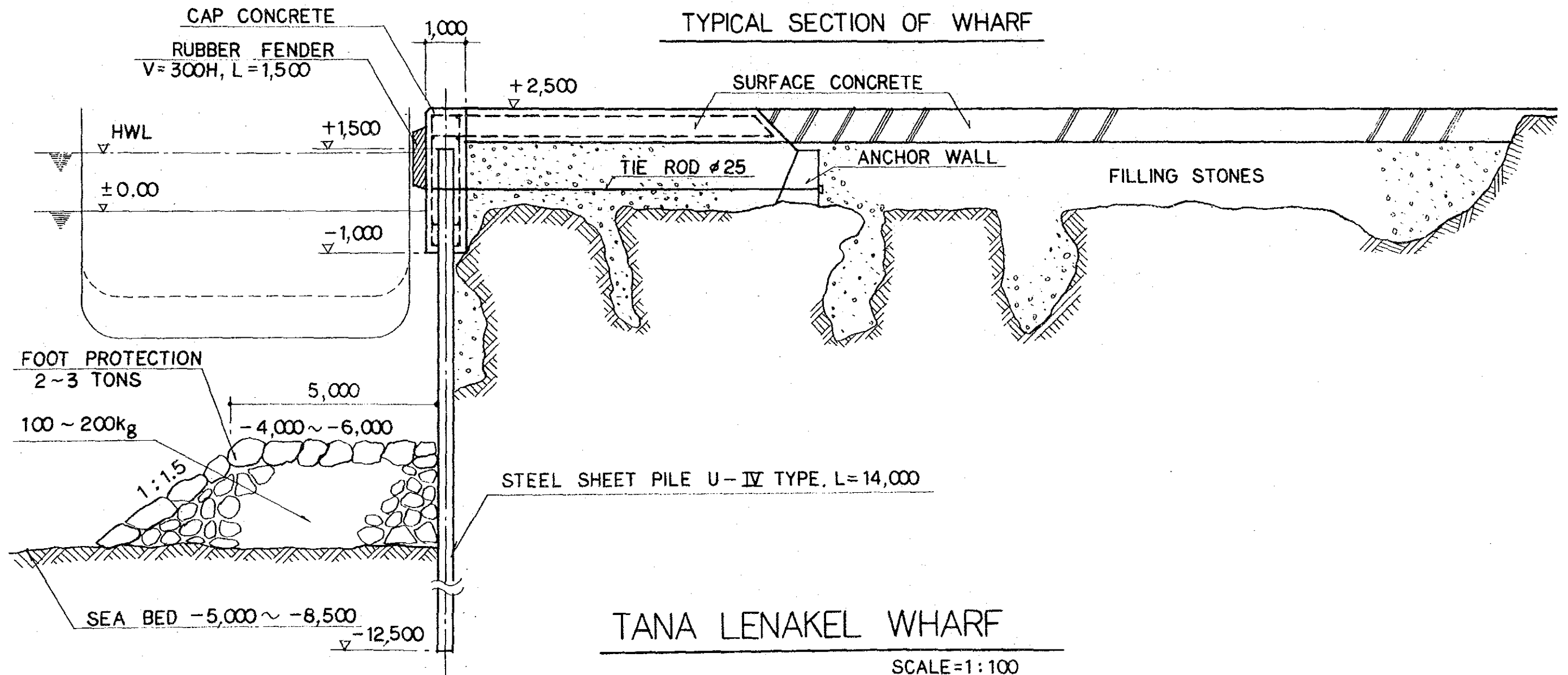


図-12 レナケル埠頭及びアクセス道路断面図

ACCESS ROAD SECTION

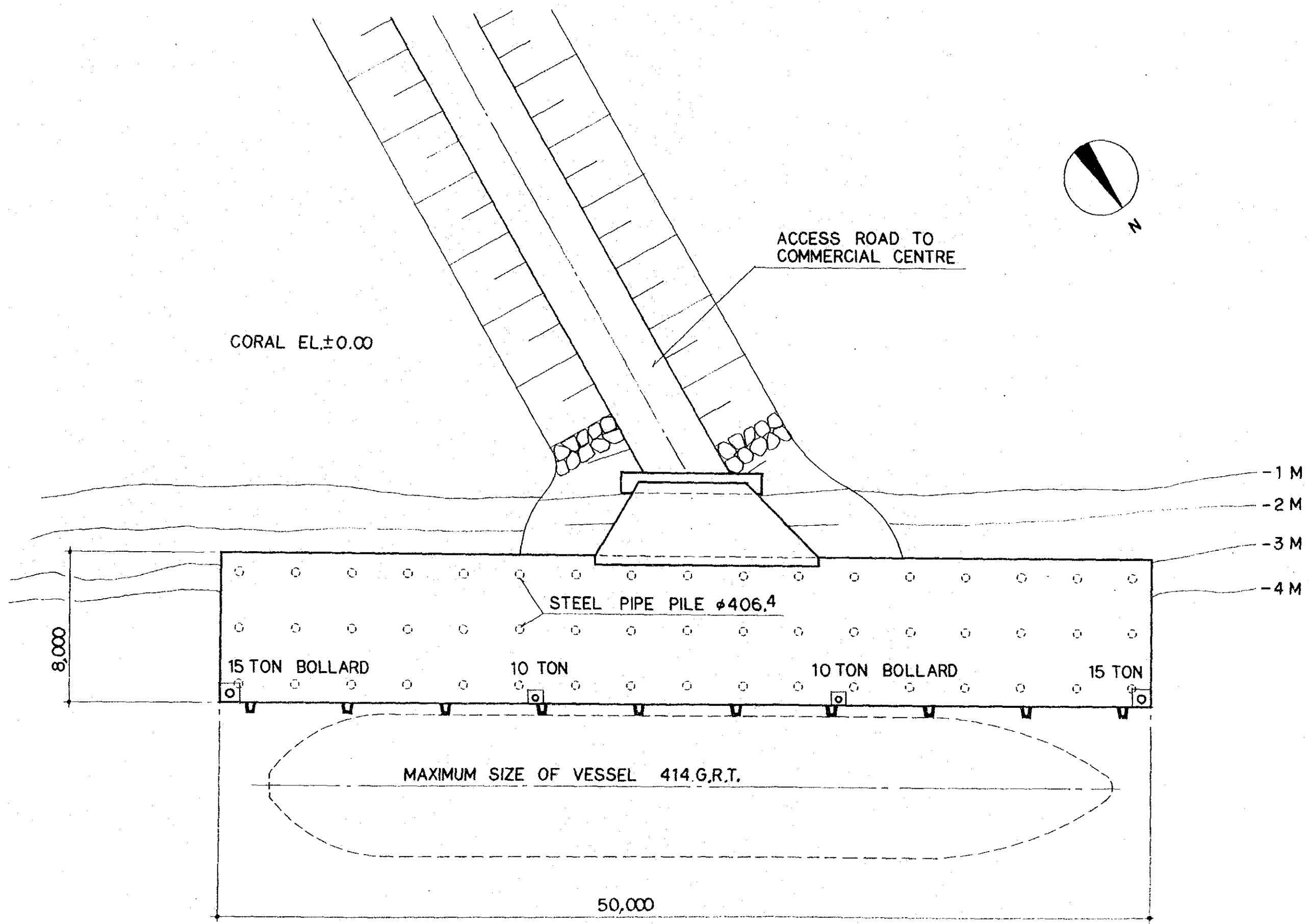


TYPICAL SECTION OF WHARF



TANA LENAKEL WHARF

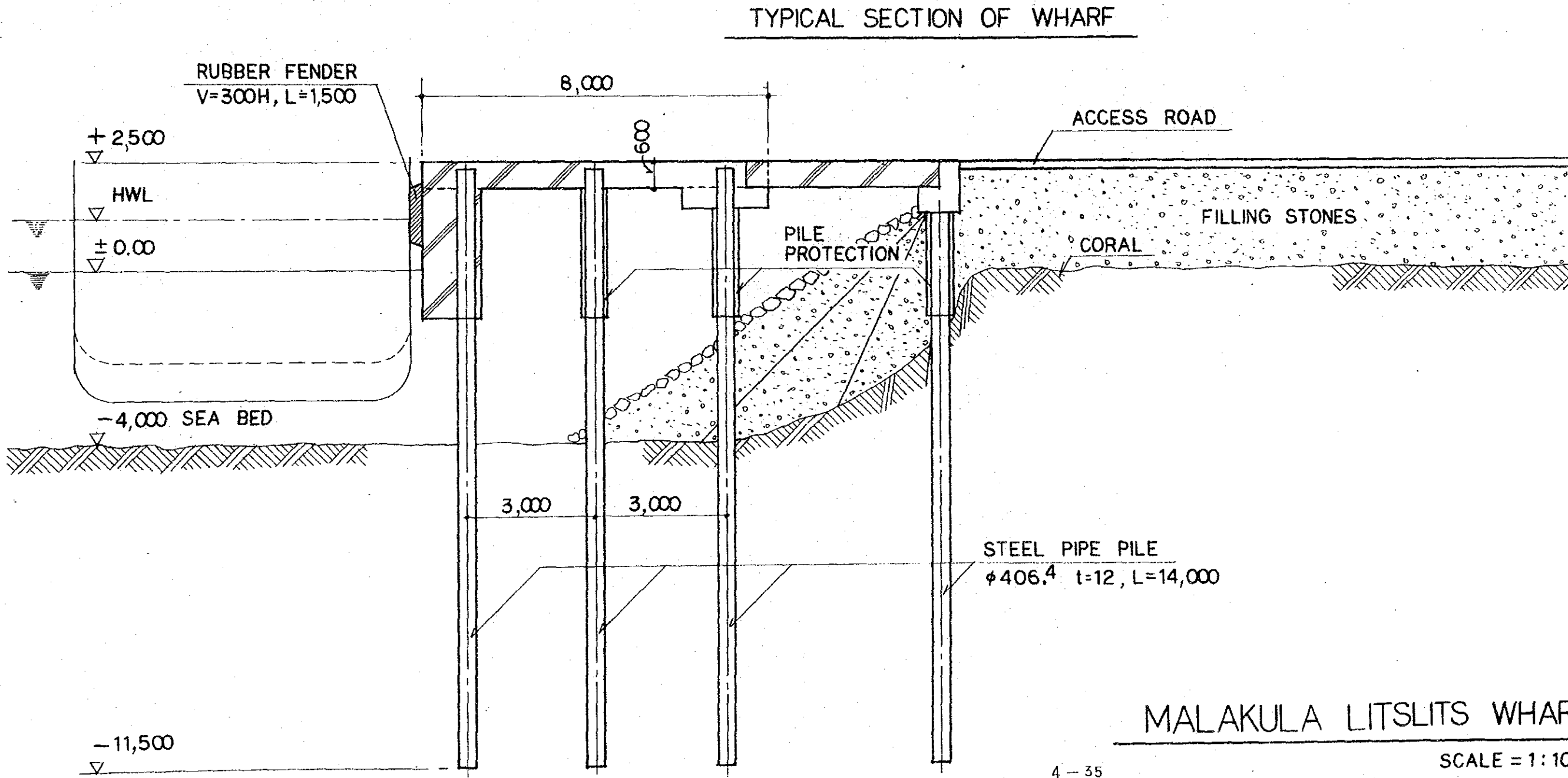
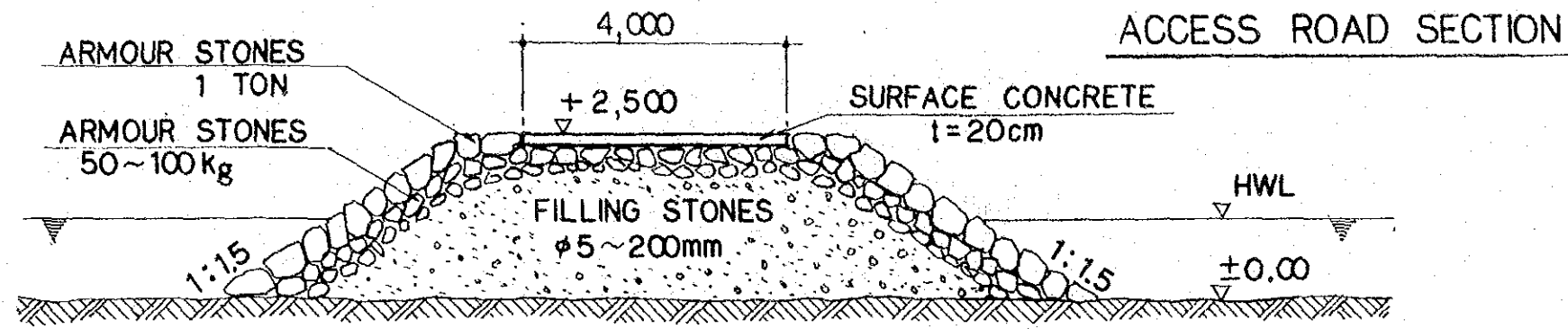
SCALE=1:100



**MALAKULA LITSLITS WHARF**

SCALE = 1:200

DWG. NO.13 LAYOUT OF LITSLITS WHARF IN MALAKULA



**MALAKULA LITSLITS WHARF**

SCALE = 1:100

4 - 35

DWG. NO.14

SECTION OF LITSLITS WHARF AND  
ACCESS ROAD IN MALAKULA

4-8 Project Cost

Cost of the works to be carried out by the Government of Vanuatu is estimated as follows:

1) Cleaning and grading in the area for regional commercial centres and cool stores:	1,131,600 VT
2) Construction of road and paving in the area of regional commercial centres and cool stores:	2,638,800 VT
3) Water and power supply works for cool stores:	762,400 VT
<u>Total</u>	<u>4,532,800 VT</u>



# **CHAPTER 5**

## **IMPLEMENTATION PROGRAMME**



## CHAPTER 5 IMPLEMENTATION PROGRAMME

### 5-1 Executing Agency

The executing agency of the project will be the Ministry of Finance, the Government of Vanuatu.

The contracts to be concluded under the agreement will comprise a consultant contract and a construction contract.

The consultant contract covers detailed design, preparation of tender documents and supervision services.

The consultant contract will be concluded between the Government of Vanuatu and Japanese consultant company who conducted basic design study of the project, and the construction contract between the Government of Vanuatu and a Japanese contractor.

Upon completion of the project, management and maintenance for the facilities will be performed by the Local Government Council under the Ministry of Finance.



## 5-2 Implementing Plan

### 5-2-1 Scope of Consultant Service

A consultant contract will be concluded between the Government of Vanuatu and a Japanese consulting firm. Scope of Consultant services are as follows:

- 1) Detail Site Survey
  - Topographic survey and sounding
  - Geological survey by boring
- 2) Detailed Design
  - Preparation of detailed drawings
  - Preparation of Bills of Quantities
- 3) Estimation of Construction Cost
- 4) Preparation of tender documents including specifications
- 5) Assistance for prequalification of contractors and tender
- 6) Supervision of construction work

### 5-2-2 Tender and Contract for Construction

Bidding for the construction work including the regional commercial centres, wharves, cool stores and provision of trucks will be performed by prequalified tenderers from Japanese contractors.

After the tenders have been evaluated, the construction contract will be concluded between the Government of Vanuatu and the successful tenderer.

### 5-3 Construction Method

#### 5-3-1 Construction for regional commercial centres and cool stores

There will be no need any special and large size construction equipment to construct either commercial centres or cool stores. However, all the facilities must be commenced at the same time by separate work teams to be completed within a limited construction schedule period as shown in Fig. 5.1, Implementing Schedule.

#### 5-3-2 Construction for Wharves

Since the local contractor has no marine construction equipment for the construction of wharves, it will be required to mobilize those equipment such as the barge, large cranes, heavy pile driving hammer, etc. from Japan or other neighboring countries.

Furthermore, the contractor will be required to perform the construction work in the months between December and March at his own risk and with care in view of the seasonal tropical cyclones.

#### 5-4 Scope of Work

##### 5-4-1 Works of Grant Aid

Scope of work involved in the grant aid project are as follows:

- 1) Architectural, mechanical and electrical work for regional commercial centres and cool stores.
- 2) Installation of cool store panel and cooling equipment
- 3) Civil work for wharves
- 4) Civil works for access road between existing road and wharves
- 5) Installation of fenders, mooring posts and channel markers

##### 5-4-2 Works by the Government of Vanuatu

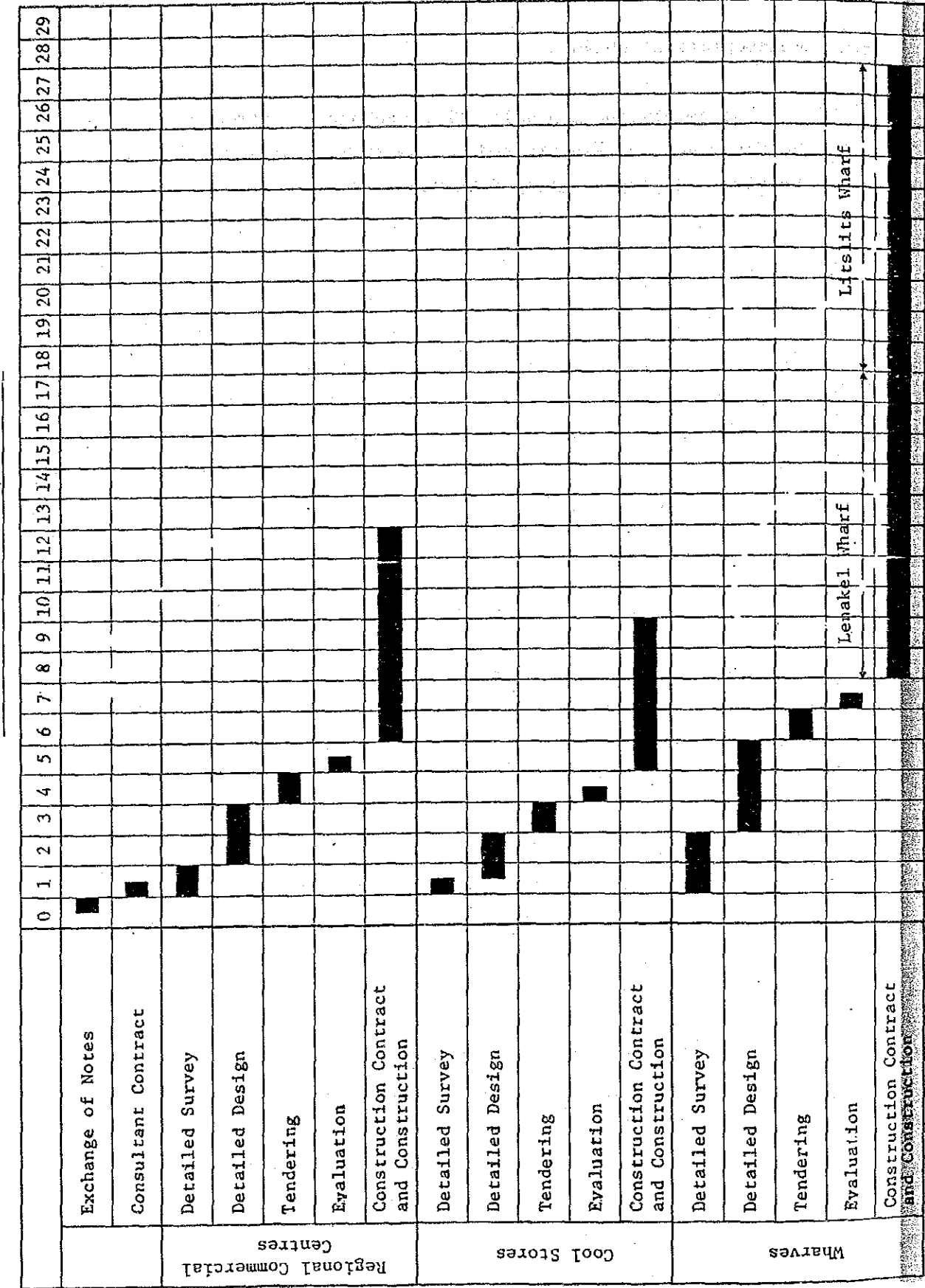
It was agreed in the Minutes of Discussions between the Government of Vanuatu and the JICA Team that the following works items are to be undertaken by the Government of Vanuatu.

- 1) Cleaning and grading of the site
- 2) Pavement for the internal road and parking area in the area of regional commercial centres and cool stores
- 3) Distribution of electricity and water into the facility, if required.
- 4) Drainage from the facilities to existing main drainage line
- 5) Telephone trunk line connection
- 6) Installation of external lighting equipment in the site area
- 7) Agreement on land ownership
- 8) Permission and freedom of access and usage for contractors to collect and transport aggregate, armour rock and fill material for the works

## 5-5 Implementation Schedule

Implementation schedule after exchange of agreements between the Government of Vanuatu and the Government of Japan is shown in the Fig. 5-1, Implementing Schedule.

Fig 5.1 Implementing Schedule



5-6 Management Programme

As mentioned in the Minutes of Discussion, the Ministry of Finance will be responsible for management and maintenance of the facilities.

5-7 Procurement

The facilities planned shall be designed to use locally available materials in Vanuatu. However, the following construction materials and equipment may be mobilized from Japan or other neighboring countries.

Construction Equipment

Barge  
Crane  
Backhoe  
Bulldozer  
Power shovel  
Large dump truck  
Concrete mixer car  
Pile driving hammer  
Welding machine  
Generator

Construction Materials

Steel plate for staging  
Watertight forms  
Underwater concrete  
Steel pipe pile  
Tie rod  
Mooring post  
Fender  
Channel marker  
Dynamite  
Cooling equipment and insulated cool store panel



# **CHAPTER 6**

## **PROJECT APPRAISAL**





## CHAPTER 6 PROJECT APPRAISAL

The objectives of the project are to achieve an efficient cargo handling rate for the collection and transportation for agricultural products and to promote rural entrepreneurship by placing financial and commercial facilities to contribute the regional industrial development and the economic self-reliance of Vanuatu.

Calculation of economic benefits occurring due to the implementation of the project, therefore, are not quantifiable although there are a number of direct and indirect benefits.

However, it should be stressed that the following benefits or effects accruing to the project will benefit regional industrial development in Vanuatu.

- 1) Provision of regional commercial centres and wharves will increase the efficiency of cargo handling and quality of agricultural products, and the output of the products and rural incomes will be promoted.
- 2) Local investment to mobilize domestic resources and diversification of export products will be promoted by the financial services through the banks installed in the regional commercial centres.
- 3) Faster cargo handling rate at wharves and shorter voyage time of the ships will reduce cargo loss and damage, saving in ship's running cost with lower freight rates and higher profit margins of products.
- 4) Cash economy expansion into the rural area will be extended by the commercial activity through regional commercial centre.

In view of the significance of the project to the Republic of Vanuatu, its implementation is highly recommended.



**CHAPTER 7**  
**CONCLUSION AND RECOMMENDATION**



## CHAPTER 7 CONCLUSION AND RECOMMENDATION

### 7-1 Conclusion

The implementation of the project constructing regional commercial centres, wharves and cool stores will increase the efficiency of product handling on land and inter-island shipping, and also will promote rural productive potential and the distribution system by improvement of commercial and transportation facilities. The project will also make a significant contribution to promote the regional industrial development and the achievement of economic self-reliance of Vanuatu.

Therefore, the implementation of the project to be carried out as a grant aid project of the Government of Japan is highly recommended.

### 7-2 Recommendation

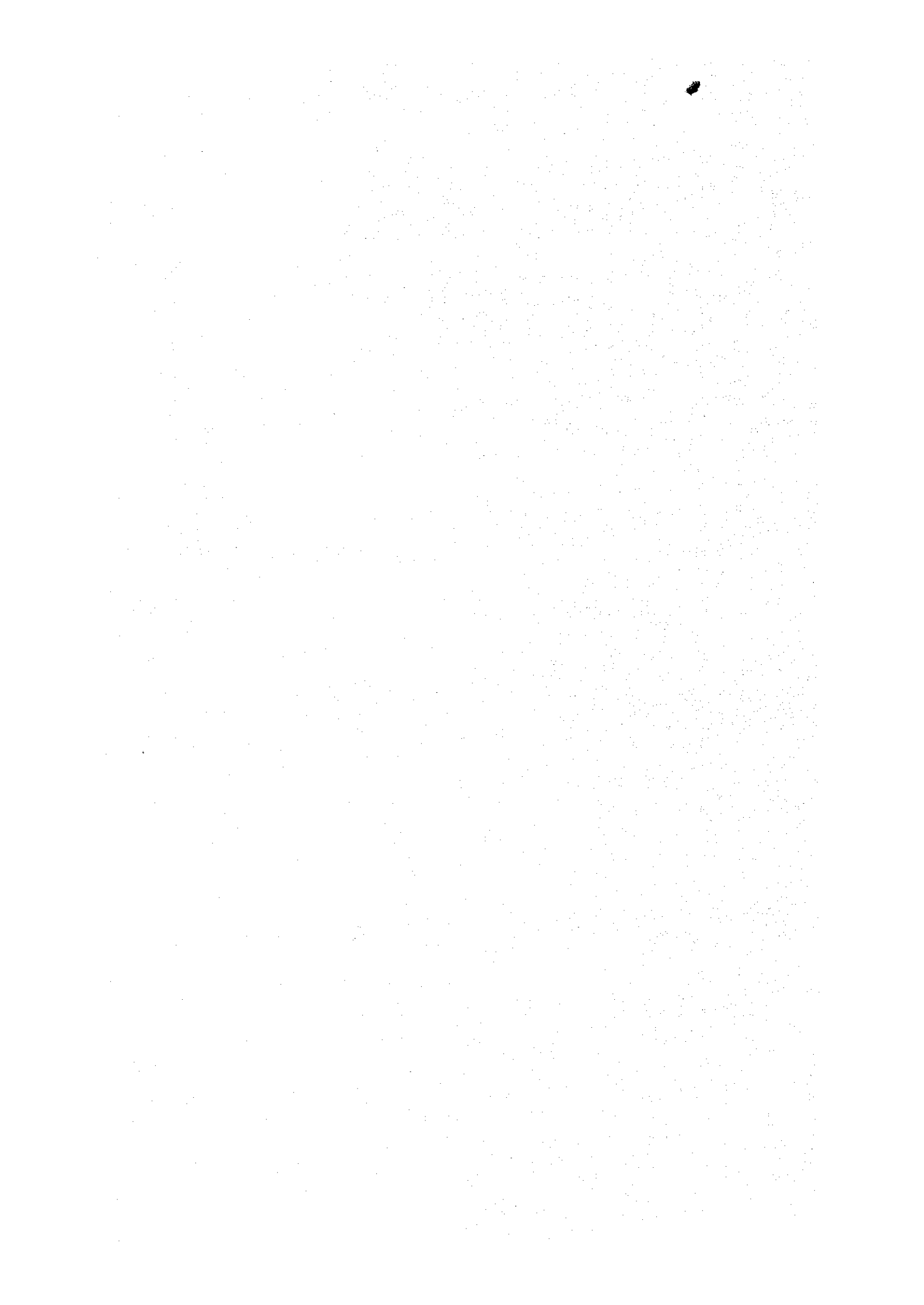
By implementing the project, infrastructure of the distribution and transportation system in region of Vanuatu will be consolidated. However, the following is recommended to perform in order to obtain the maximum effects from the introduction of the project.

- (1) It is necessary to execute regular inspection of the facilities after construction and perform early rectification since the facilities planned are easy to be damaged due to severe weather conditions.
- (2) It is recommended that the cool stores management should prepare programme to cope with the required storage volume and kinds of products and still be economical in consideration of the operating cost of electricity. prepare programme to cope with the required storage volume and kind of products and still be economical in consideration of the operating cost of electricity.



# APPENDIX





## CONTENTS OF APPENDIX

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APPENDIX A. MEMBER OF SURVEY TEAM .....	A - 1
APPENDIX B. MINUTES OF DISCUSSIONS .....	B - 1
APPENDIX C. LIST OF PERSONNEL INTERVIEWED .....	C - 1



**Appendix A**  
**Member of Survey Team**



## APPENDIX A MEMBERS OF SURVEY TEAM

Mr. Yutaka Hosono	Team Leader Deputy Director Grant Aid Department, JICA
Mr. Tadashi Manabe	Grant Aid Grant Aid Division Economic Cooperation Bureau, Ministry of Foreign Affairs
Mr. Toshiro Sato	Chief Engineer Distribution Planner
Mr. Taiji Imayama	Architect Building Planning
Mr. Yoshiaki Hidaka	Civil Engineer Port Facility Planning
Mr. Yuko Obuchi	Mechanical and Electrical Engineer Building Facility Planning



**Appendix B**  
**Minutes of Discussion**





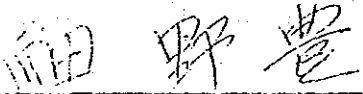
Minutes of Discussions  
on  
the Construction Project of Regional Commercial Centres  
in  
the Republic of Vanuatu

In response to the request made by the Government of the Republic of Vanuatu, the Government of Japan has sent, through the Japan International Cooperation Agency (JICA), a team headed by Mr. Yutaka Hosono, Deputy Director, Grant Aid Department, JICA to conduct a Basic Design Study on the Construction Project of Regional Commercial Centres (hereinafter referred to as "the Project"), from October 26 to November 24, 1984.

The Team has conducted the field survey, held a series of discussions and exchanged views with the central and regional government authorities concerned in the Republic of Vanuatu.

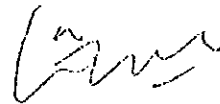
As a result of the survey and discussions, both sides have agreed to recommend to their respective Governments to examine the result of the study attached herewith towards the realization of the Project.

Port-Vila, 22nd November, 1984.



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Yutaka Hosono  
Team Leader  
Japanese Study Team



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Augustine Garae  
Director  
National Planning & Statistics  
Office

## MINUTES

1. The objective of the Project is to construct regional commercial centres, cool stores and wharves in the important regions of the Republic of Vanuatu in order to develop the regional and rural economy and improve the transportation and distribution systems of agricultural produce and commodities.
2. The Department of Co-operatives of the Ministry of Finance is responsible for the implementation of the Project and after the completion of construction work the regional government authorities will take charge of operation and maintenance of the above-mentioned centres and facilities under the supervision of the Ministry of Finance.
3. Items requested and sites proposed for the facilities by the Government of the Republic of Vanuatu are shown on the attached Annex 1 according to priority order.
4. The Japanese Study Team will convey to the Government of Japan the desire of the Government of the Republic of Vanuatu that the Government of Japan takes the necessary measures to co-operate in implementing the Project and construct the regional commercial centres, cool stores and wharves listed in Annex 1 within the scope of Japanese economic co-operation in the form of grant aid.
5. The Government of the Republic of Vanuatu will take the necessary measures listed in Annex II on condition that the grant aid by the Government of Japan is extended to the Project.
6. The Government of the Republic of Vanuatu has understood Japan's grant aid system explained by the Japanese Study Team which includes the principle of using a Japanese Consultant Firm and a Japanese General Contractor for implementation of the Project.
7. The final report in English on the Project will be submitted to the Government of the Republic of Vanuatu by the end of March, 1985.

ANNEX 1

Items requested by the Government of the Republic of Vanuatu whose cost will be borne by the Government of Japan, and the priority order is shown as follows :-

A. FIRST PRIORITY

1. Regional Commercial Centres

- (1) The basic concept of Regional Commercial Centres for each island requested by the Republic of Vanuatu is as shown on the attached drawing 01.
- (2) Proposed site of Centre in each Island.
  - (a) Ambae  
The centre shall be located at Lolowai as shown on the attached location plan 02.
  - (b) Tanna  
The centre shall be located at Lenakel as shown on the attached location plan 03.
  - (c) Ambrym  
The centre shall be located at Craig Cove as shown on the attached plan 04.

2. Cool Stores

- (1) The cool stores shall be located at Port Vila wharf and at Bauerfield International Airport in Efate as shown on the attached location plans 07 and 08.
- (2) The basic concept of cool stores for importing/exporting fresh fruits and vegetables requested by the Republic of Vanuatu is as shown on the attached drawing 06.

- (3) Location of the cool store at the Airport is tentative, because final siting is yet to be determined by the Civil Aviation Authority.

The Government of the Republic of Vanuatu shall inform the Government of Japan of this final location before the end of January, 1985.

3. Vehicles

- (1) The Republic of Vanuatu has requested a 3 ton truck with mounted small crane for each project site of Ambae, Tanna, Ambrym and Malakula.

B. SECOND PRIORITY

1. Wharf in Tanna

The wharf shall be located at Lenakel as shown on the attached location plan 03.

C. THIRD PRIORITY

1. Wharf in Malakula

The wharf shall be located at Litzlitz as shown on the attached location plan 05.

2. Regional Commercial Centre in Malakula

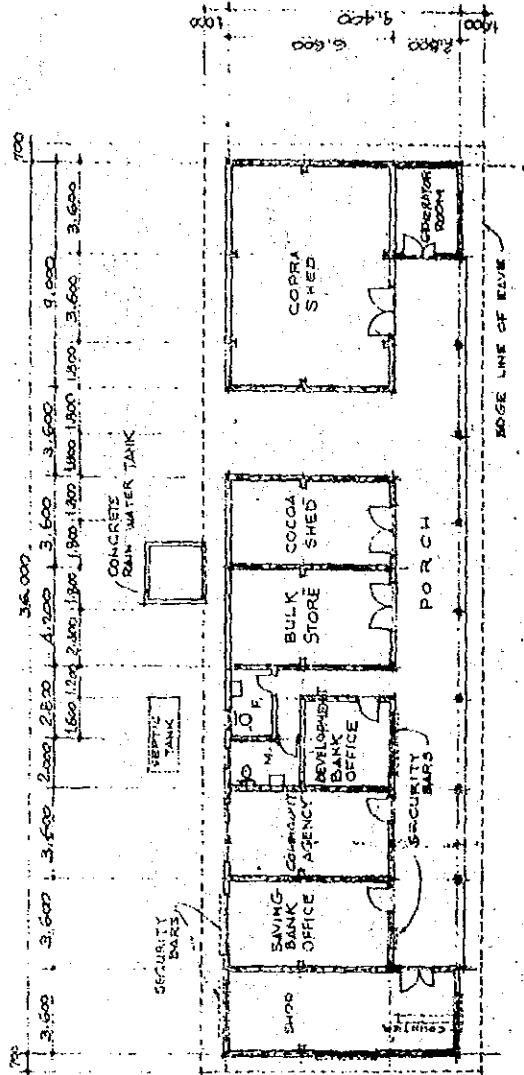
The centre shall be located at Litzlitz as shown on the attached location plan 05.

The Vanuatu Government recognises the practical considerations of time and finance that govern the priorities as listed above, but would like to make clear to the Japanese Government that the Vanuatu Government continues to give high priority to :

1. Wharves in Malakula and Tanna
2. Regional Commercial Centre in Malakula.

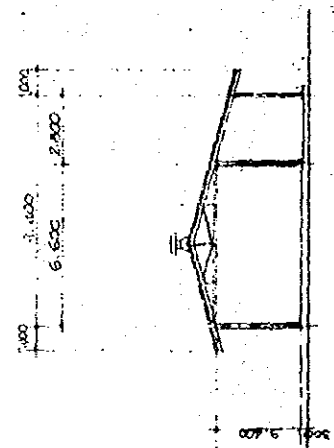
These are regarded as components of high priority in the total project.

310

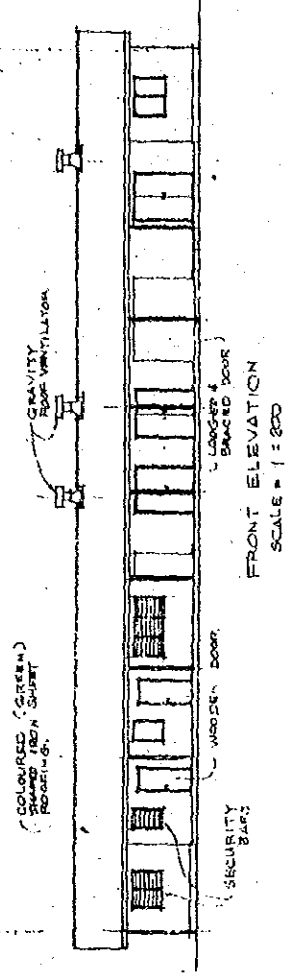


FLOOR PLAN  
SCALE = 1:200

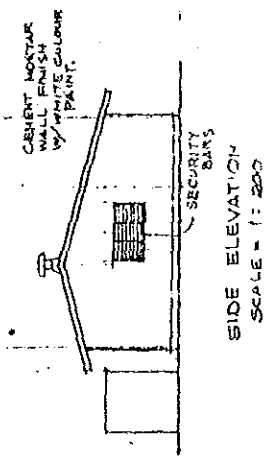
COMMERCIAL CENTRE BUILDING



SECTION  
SCALE = 1:200



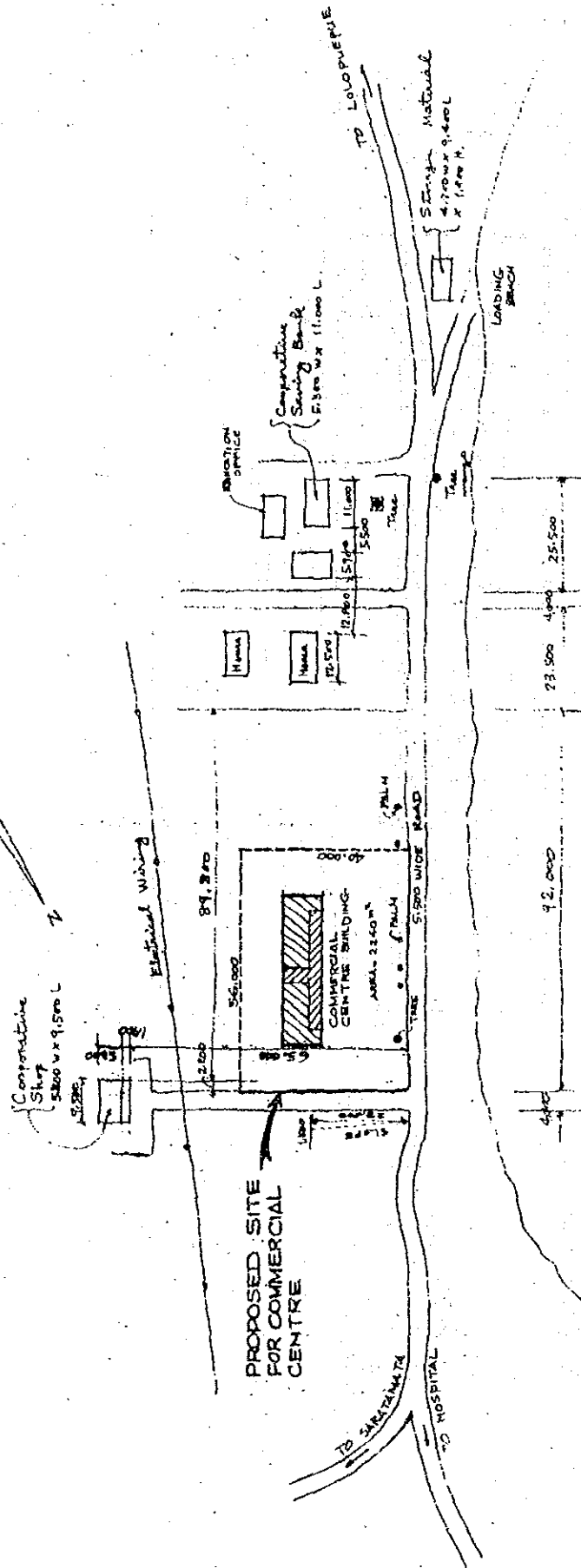
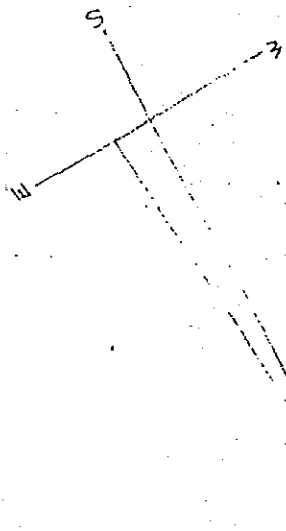
FRONT ELEVATION  
SCALE = 1:200



SIDE ELEVATION  
SCALE = 1:200

1/2

1/2



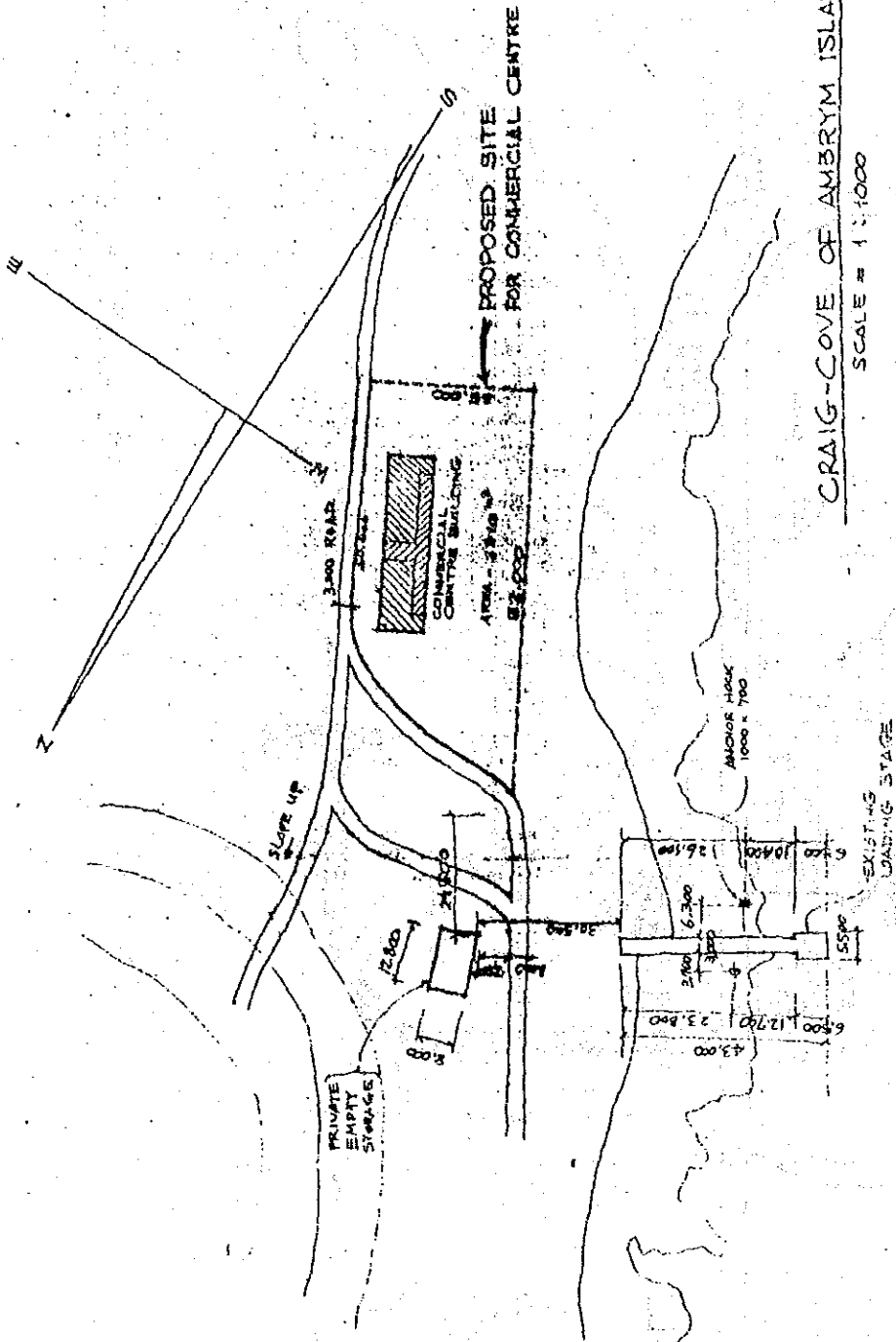
LOLOWAI OF AMBAE ISLAND  
SCALE = 1 : 1000

DWG. NO. 02

(Signature)







CRAIG-COVE OF AMERYM ISLAND  
 SCALE = 1:1000

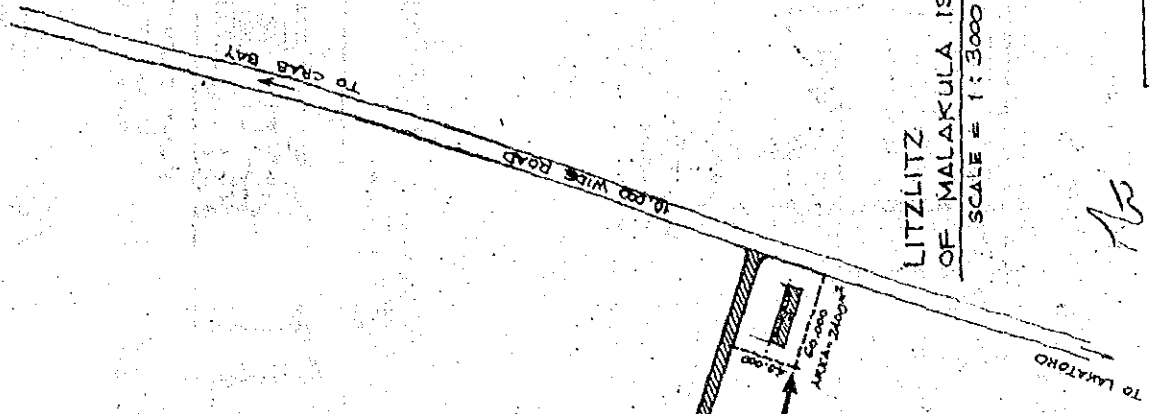
DWG. NO. 04

*EAD*

DWG. NO. 05

LITZLITZ  
OF MALAKULA ISLAND  
SCALE = 1:3000

12



PROPOSED SITE  
FOR COMMERCIAL  
CENTRE

PROPOSED  
WHARF

COASTLINE

MANGROVE TREE

COASTLINE

EXPOSED REEF  
AT LOW TIDE

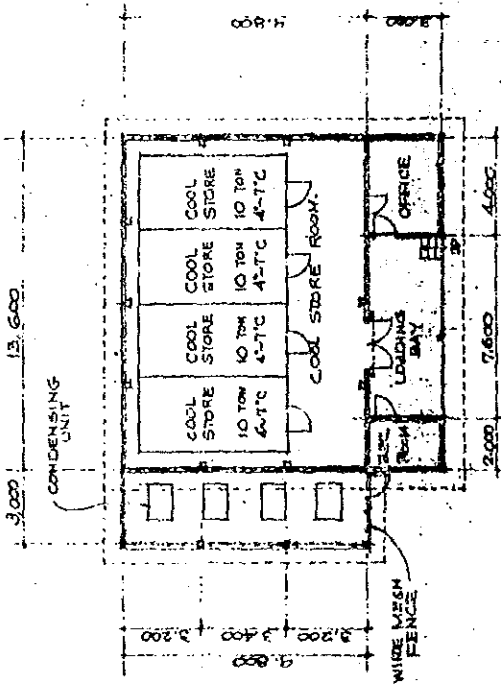
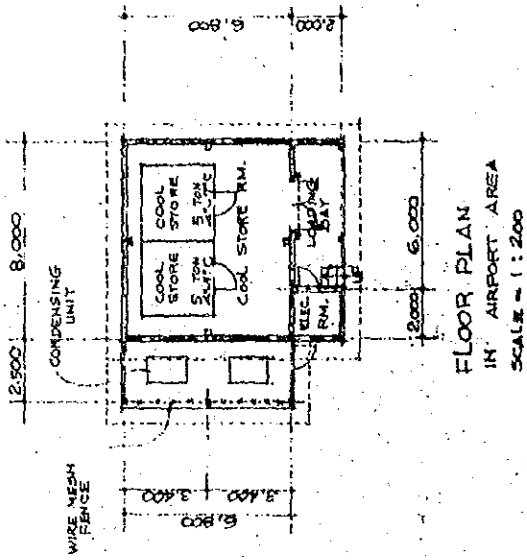
SUBMERGED REEF

EXPOSED REEF  
AT LOW TIDE

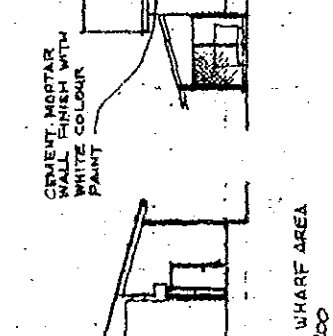
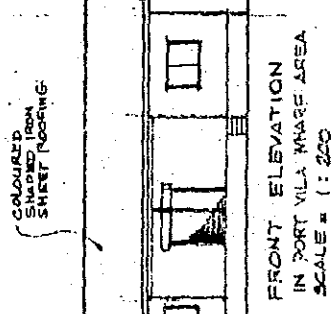
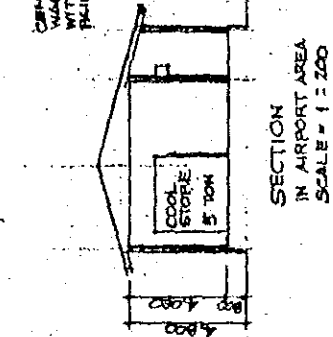
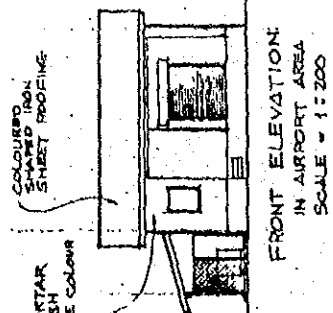
EXPOSED REEF  
AT LOW TIDE



END



COOL STORES



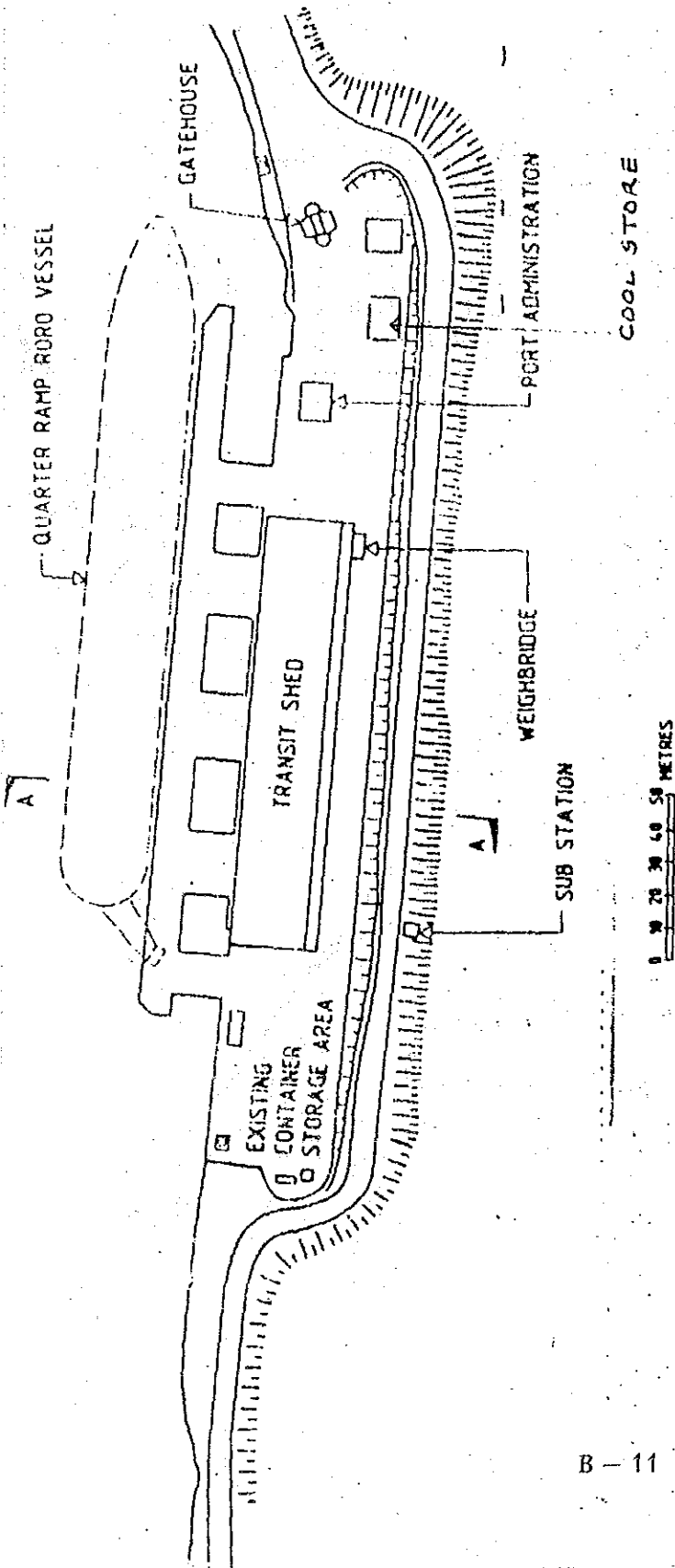
DWG. NO. 06

AK

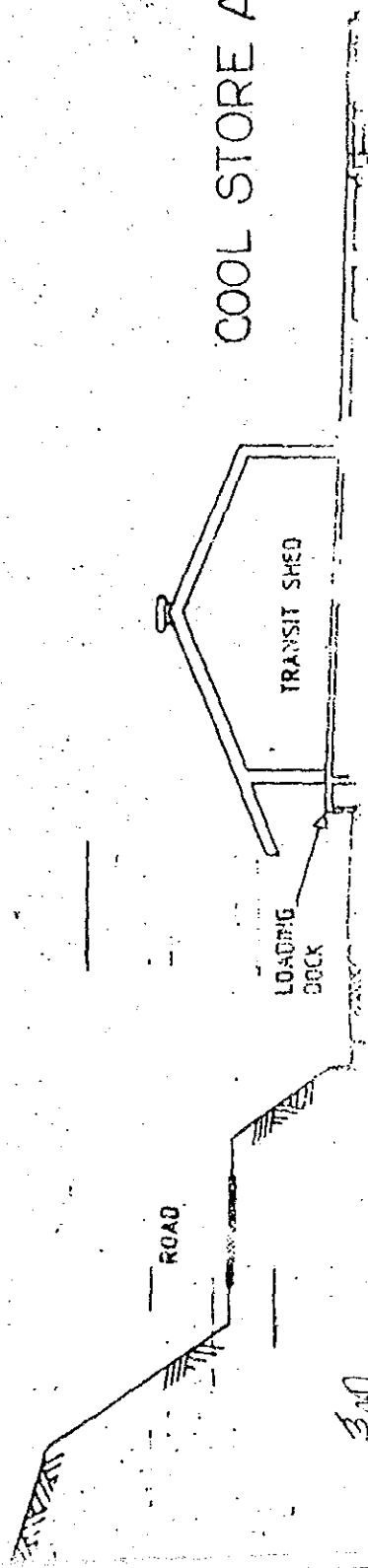
AK



ARDIMANNI WHARF  
& VILA TOWN



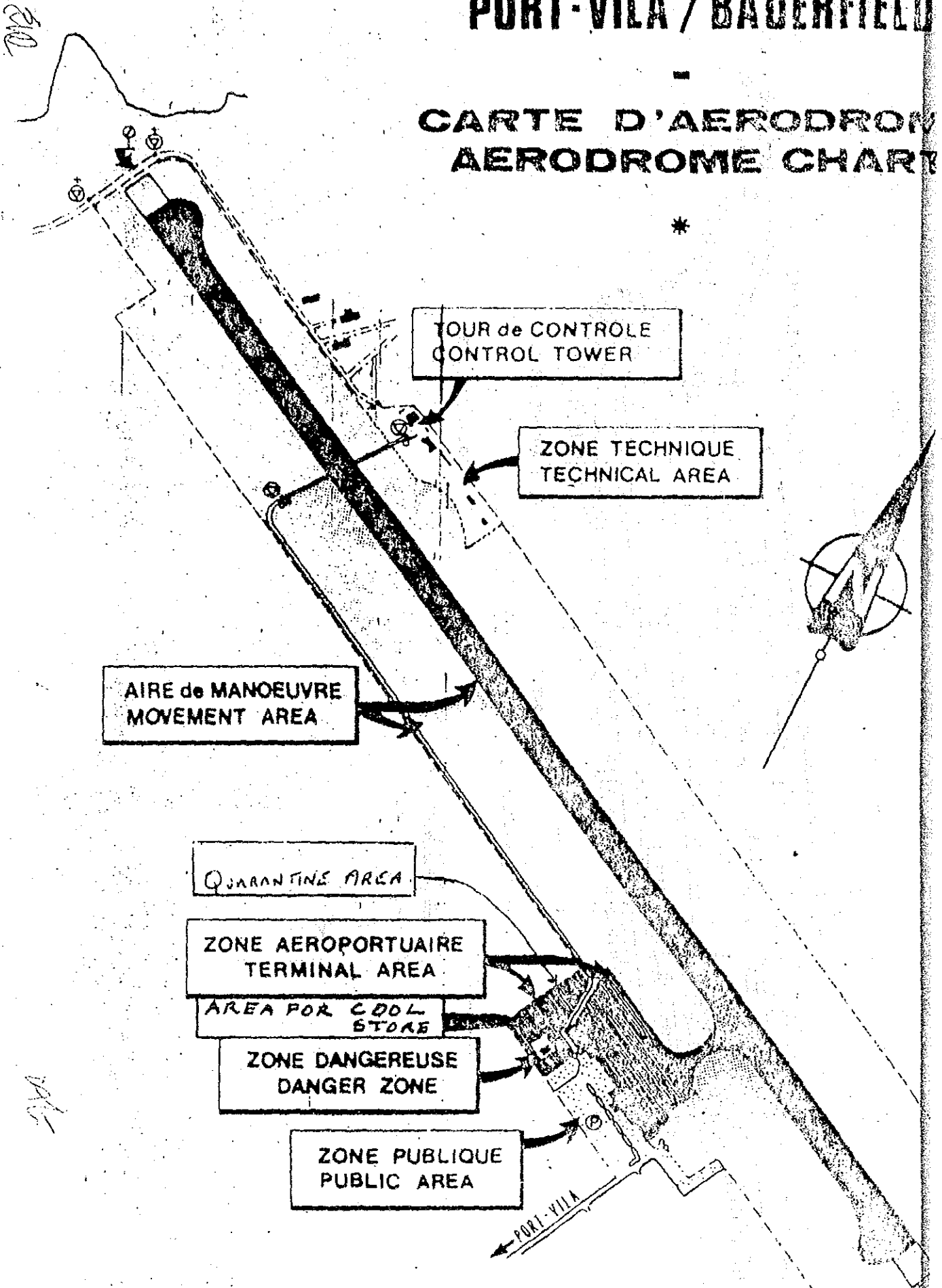
# COOL STORE AT WHARF IN EFATE



DWG. NO. 07

# PORT-VILA / BAUERFIELD

## CARTE D'AERODROM AERODROME CHART



COOL STORE AT AIRPORT IN EFATE

ANNEX II

The following arrangements are requested to be taken by the Government of the Republic of Vanuatu.

1. To secure necessary lands for the Project, and to clear, fill and level the sites as needed before the start of the works.
2. To provide facilities for distribution of electricity and other incidental facilities outside the site if necessary.
3. To construct access roads to the sites where necessary.
4. Provision of relevant data and information to the Japanese consultant and contractor necessary for the detailed engineering services and construction.
5. To ensure prompt unloading, tax exemption, customs clearance and prompt internal transportation of the products purchased under the grant.
6. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Vanuatu with respect to the supply of the products and services under the verified contracts of the Project.
7. To provide and accord necessary permissions, licences and any other authorizations required for execution of the Project.
8. To maintain and ensure proper and effective use of the facilities constructed under the grant, and to budget for maintenance and operation.
9. To bear all the expenses, other than those to be borne by the grant, necessary for the Project.



Appendix C  
List of Personnel Interviewed





## APPENDIX C LIST OF PERSONNEL INTERVIEWED

### The Republic of Vanuatu

- 1) National Planning and Statistics Office (NPSO)  
Mr. Augustine Garae                      Direcot  
Mr. Jules Ellis                              Senior Planning Officer
  
- 2) Ministry of Finance, Industry, Commerce, and Tourism  
Mr. Kalpokor Kalsakau                      Minister  
Mr. Willie Reuben Abel                      Director of Co-Operative Services  
Mr. Byuco Gee                                Commercial Manager  
    Vanuatu Co-Operative Federation
  
- 3) Ministry of Agriculuture, Fisheries and Forestry  
Mr. Barry Weightman                      Argiculture Advisor
  
- 4) Ministry of Home Affairs  
Mr. Sethy John Regenvaniu                      Minister, Depduty Prime Minister
  
- 5) Local Government Department  
Mr. Martin Tamata                              Director  
Mr. Russel Malakai                              Deputy Director  
Mr. Joe Joseph                                Secretary, Tanna  
Mr. Keith Andren Mala                              Secretary, Malakula  
Mr. William Mael                                Secretary, Ambrym  
Mr. Aiden Arugogona                              Secretary, Ambae
  
- 6) Ministry of Foreign Affairs and External Trades  
Mr. Sela Mollsa                                Minister

7) Ministry of Transport, Communication and Public Works

Mr. A. J. Baldwin	Director of Public Works
	Department
Mr. Harold Qualao	Deputy Director of PWD
Mr. Morris Hamish	Harbour Master

8) Ministry of Land Energy and Water Supply

Mr. Charlie Payno	Director of Survey Department
Mr. Arthur I. McCatchan	Director of Mines, Energy and Water Supply Department
Mr. Charley Douglas	Geological Department

Concerned Authority of The Government of Japan in Fiji

1) Japanese Embassy in Fiji

Mr. Kikuo Yoshida	Ambassador
Mr. Suehiro	Chief Secretary
Mr. Hiroshi Miki	Second Secretary
Mr. Koichi Anada	Second secretary

2) JICA in Fiji

Mr. Toru Kasai	Representative
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ERRATA

<u>Chapter No.</u>	<u>Page</u>	<u>Line</u>	<u>Printed as</u>	<u>Read as</u>
Summary	1	28	prerequisite	prerequisite
"	2	17	excutions	executions
"	2	19	conformed	confirmed
"	2	21	wharves	Wharves
1	1 - 2	4	Basic Study	Basic Design Study
1	1 - 2	7	facilitity	facility
2	2 - 1	9	percents	persons
2	2 - 1	25	pre-requiste	prerequisite
2	2 - 2	3	cultivation of for	cultivation for
2	2 - 2	8	andrestaurants	and restaurants
2	2 - 2	21	widening	widening
2	2 - 3	2	to First	the First
3	3 - 4	6	Shallow	shallow
4	4 - 9	9	sandy	salty
4	4 - 10	10	fondation	foundation
4	4 - 13	4	schattered	scattered
4	4 - 19	6	scattered	scattered
7	7 - 1	4	increases	increase

JICA