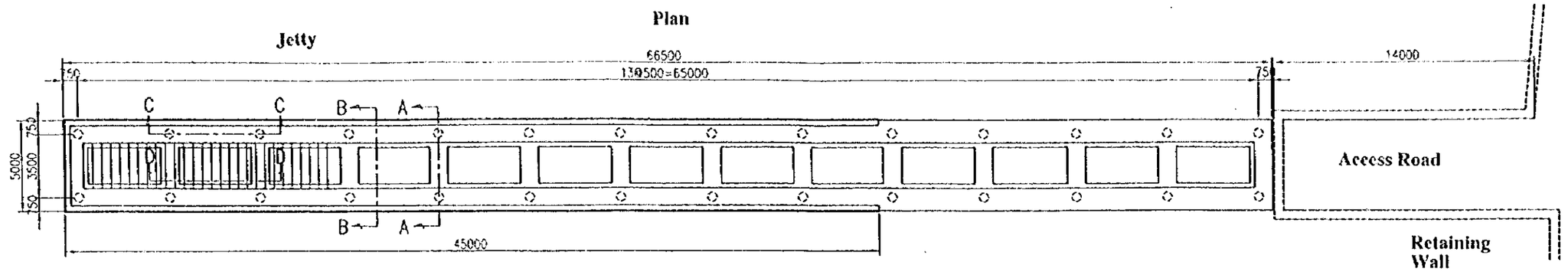
CHAPTER 3

IMPLEMENTATION PLAN

Plan



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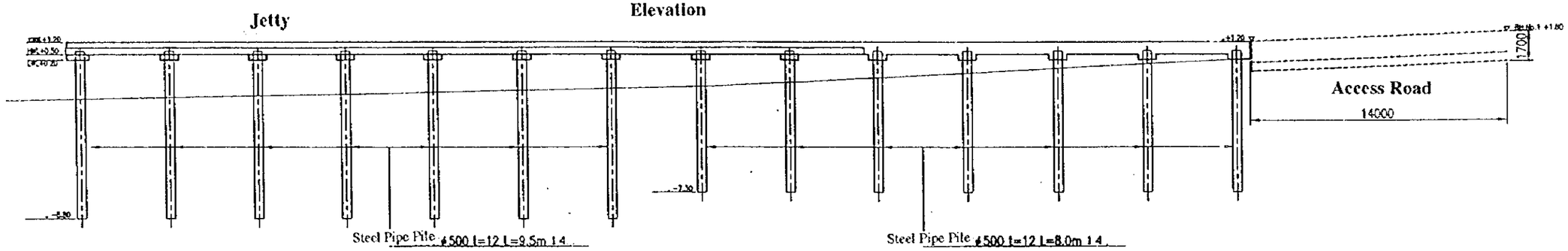
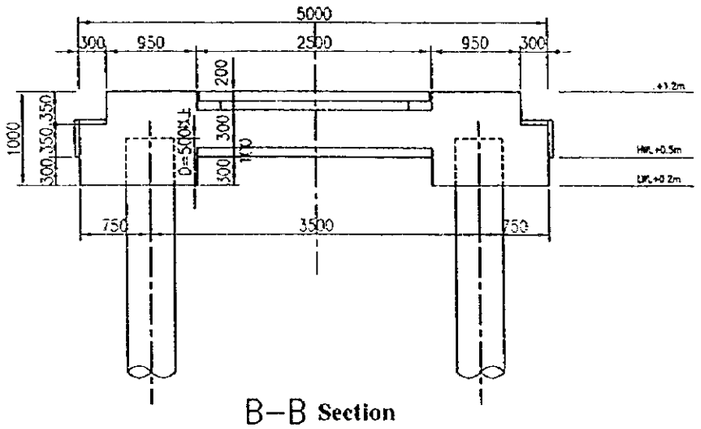


A–A Section



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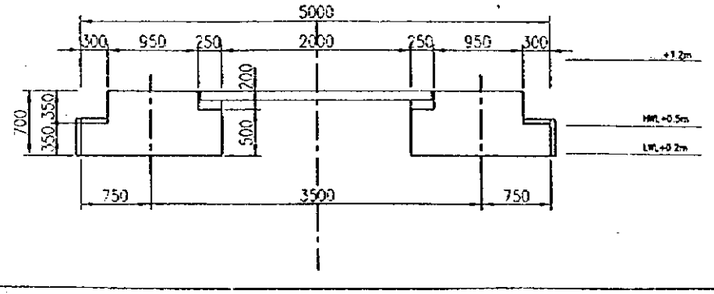

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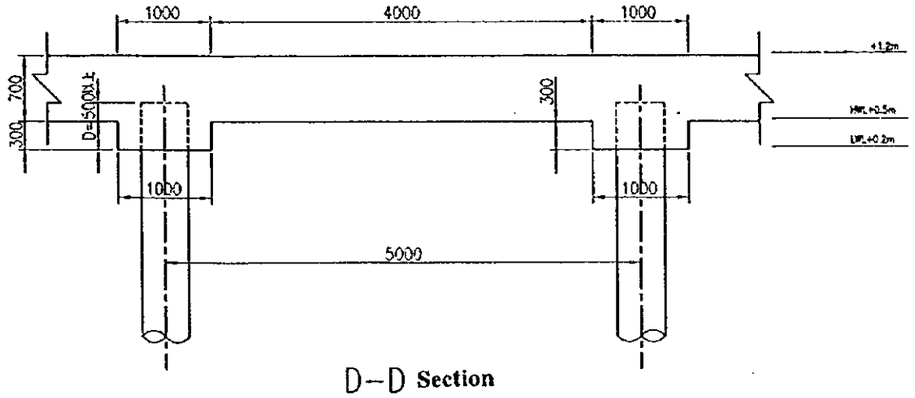

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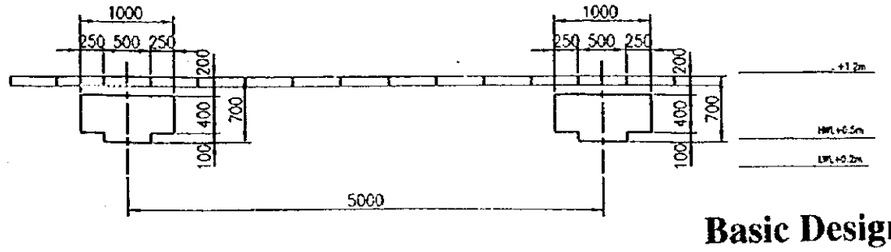
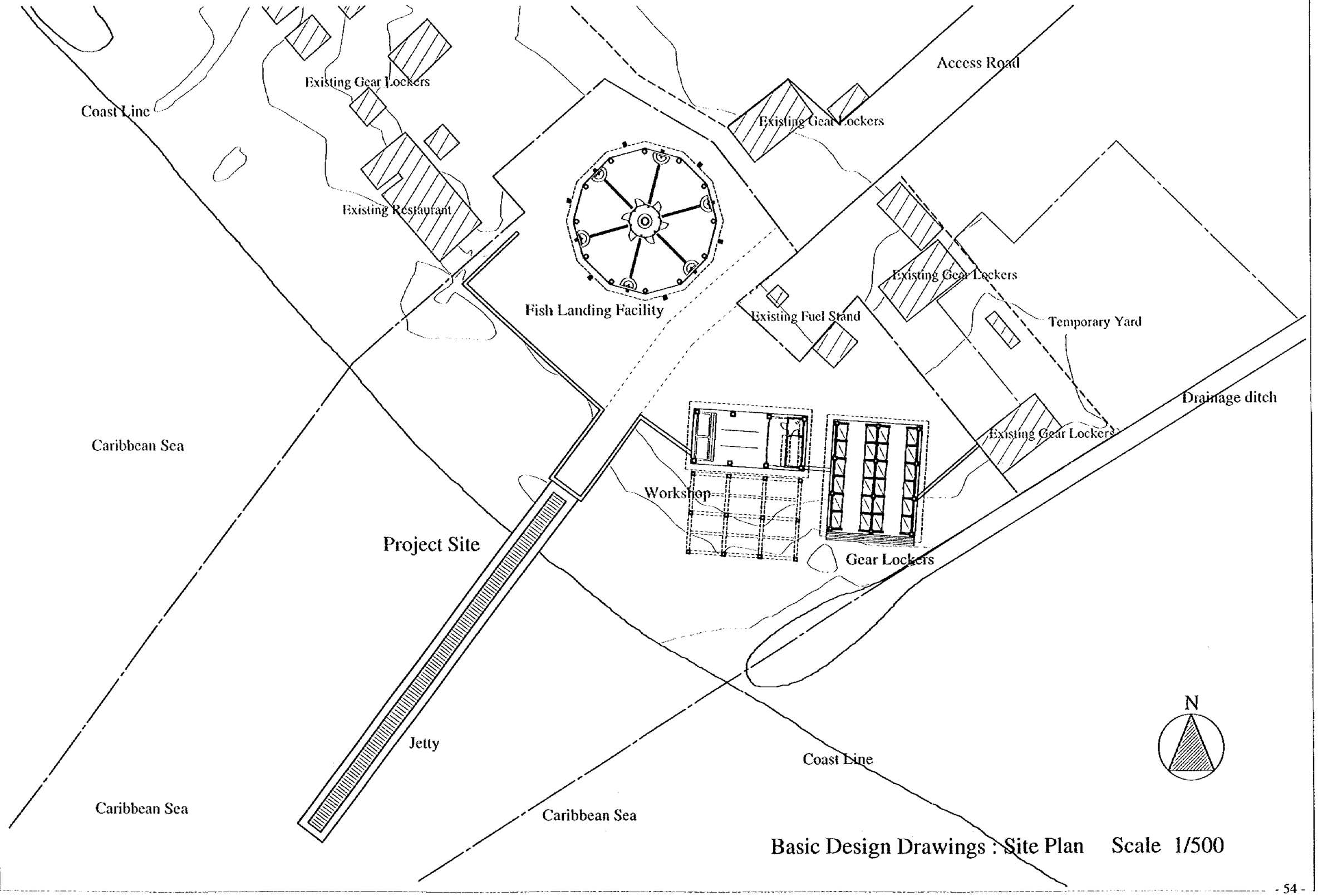
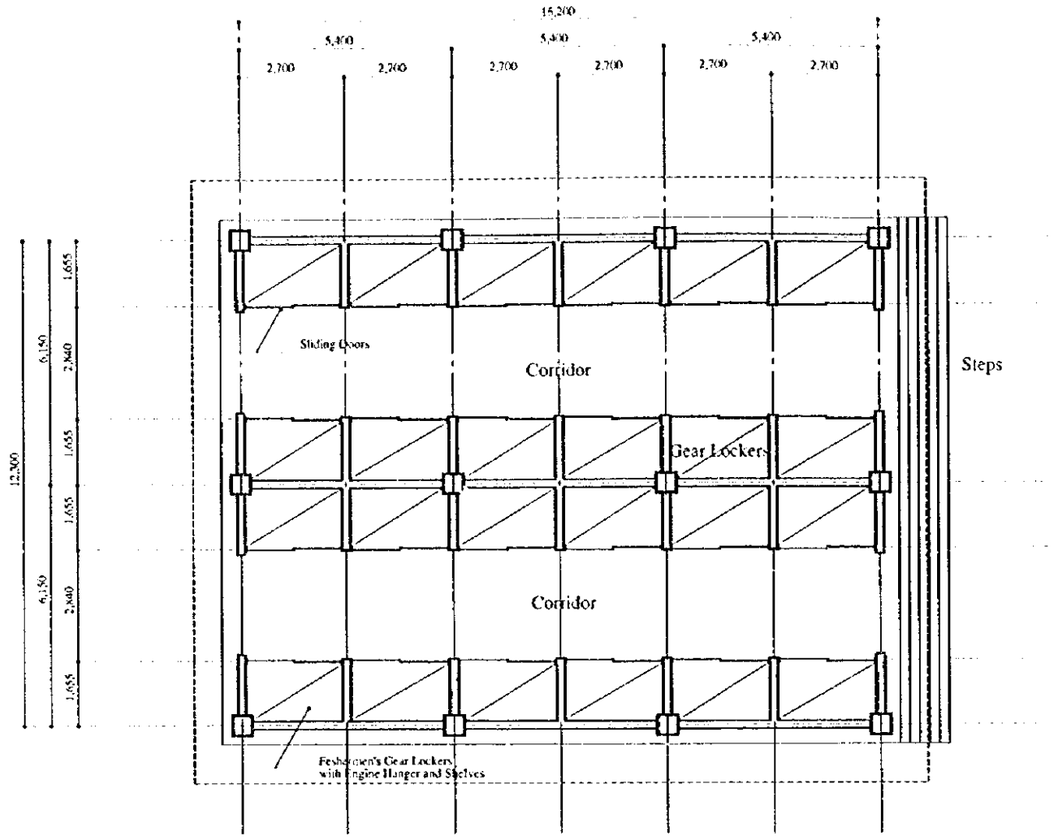


Basic Design Drawings : Jetty



Basic Design Drawings : Site Plan Scale 1/500



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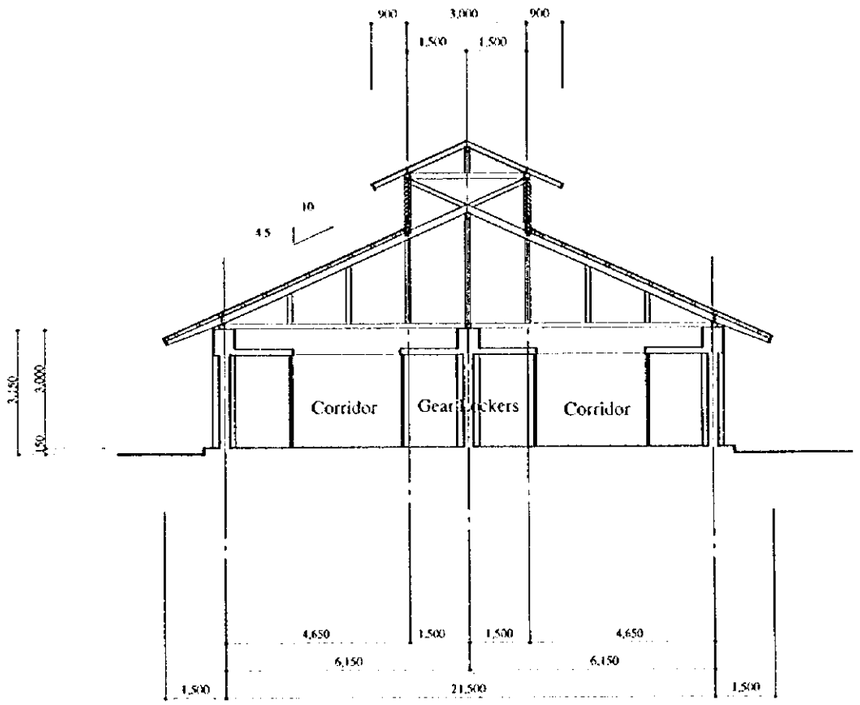
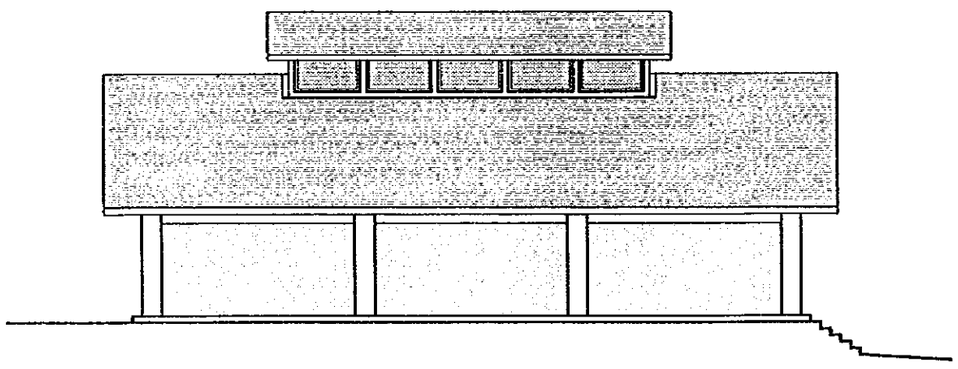


Sectional Plan



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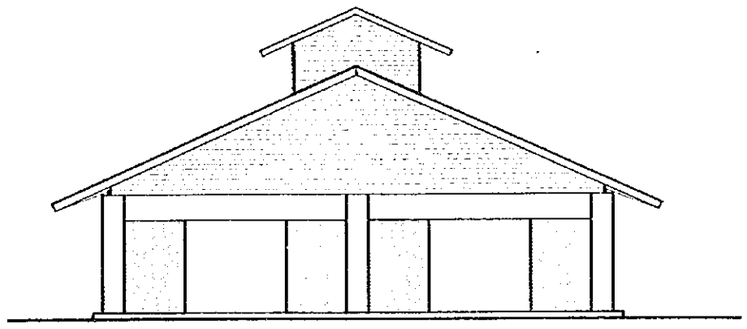
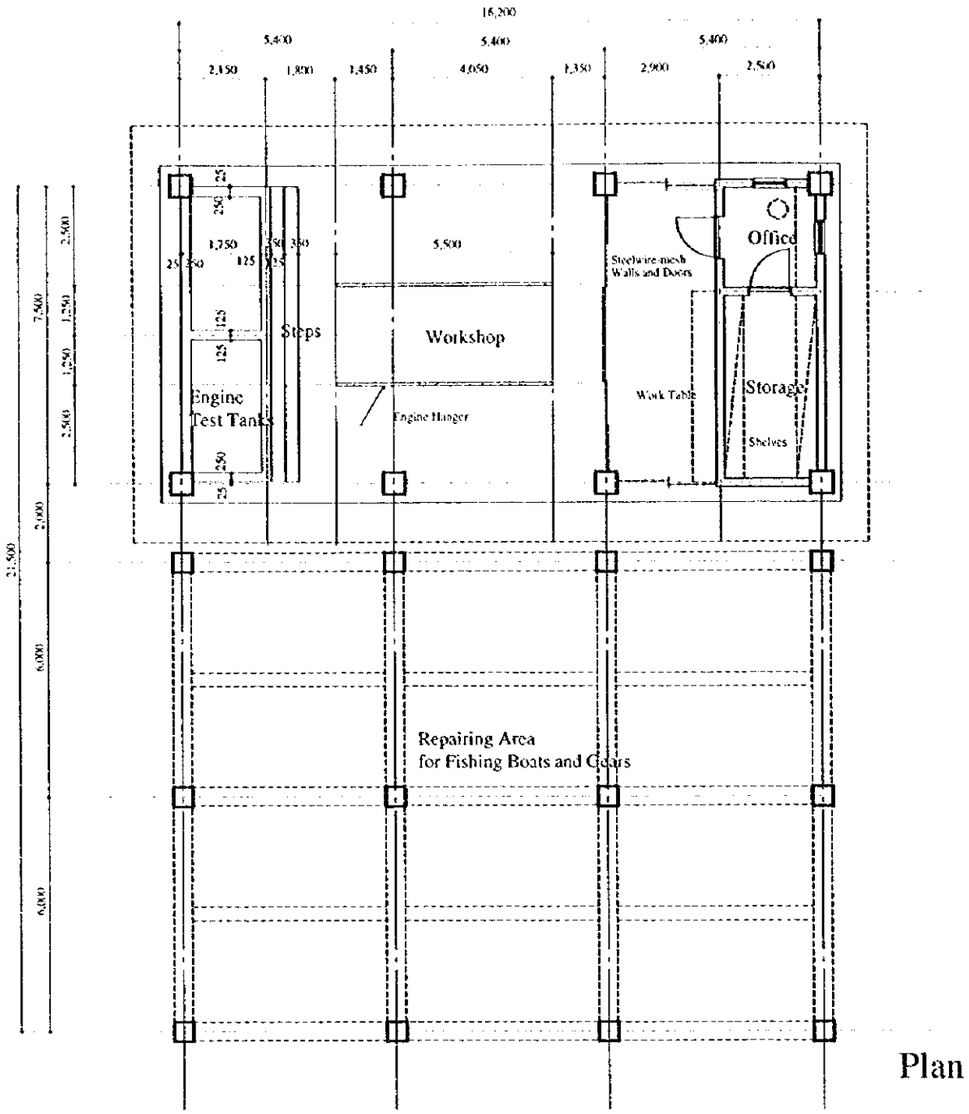


Elevation B

Basic Design Drawings : Gear Lockers Scale 1/150



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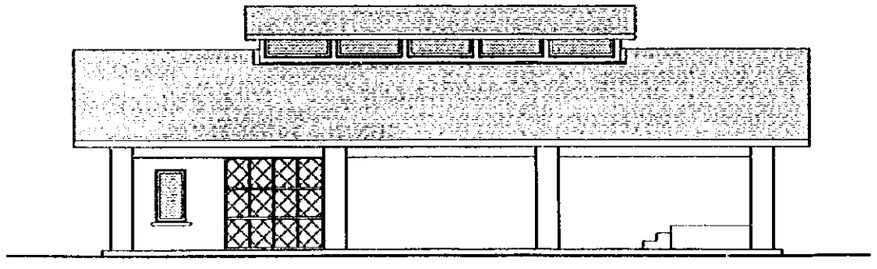

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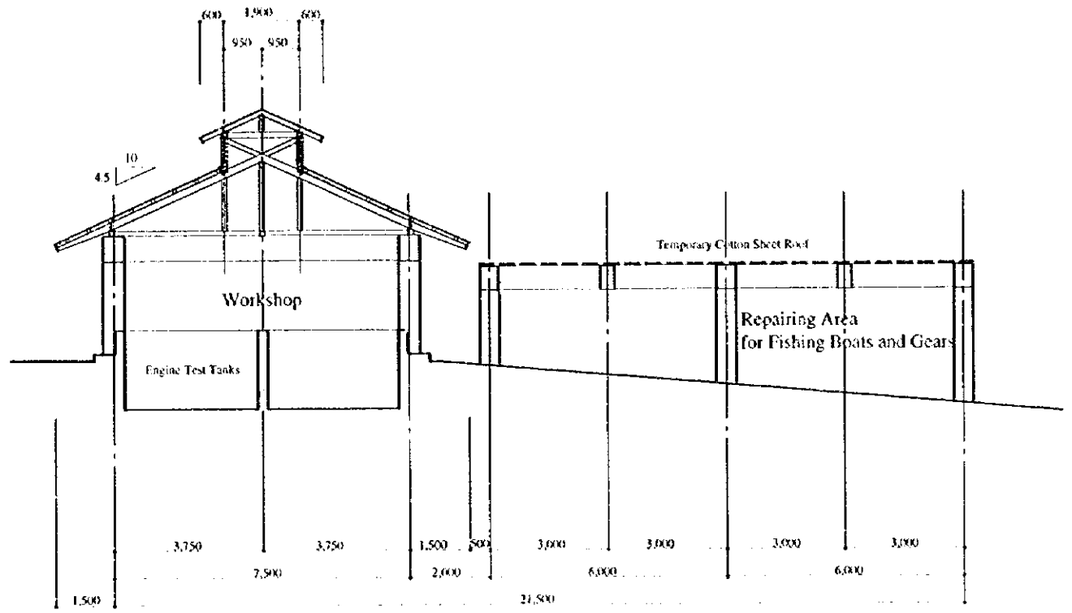
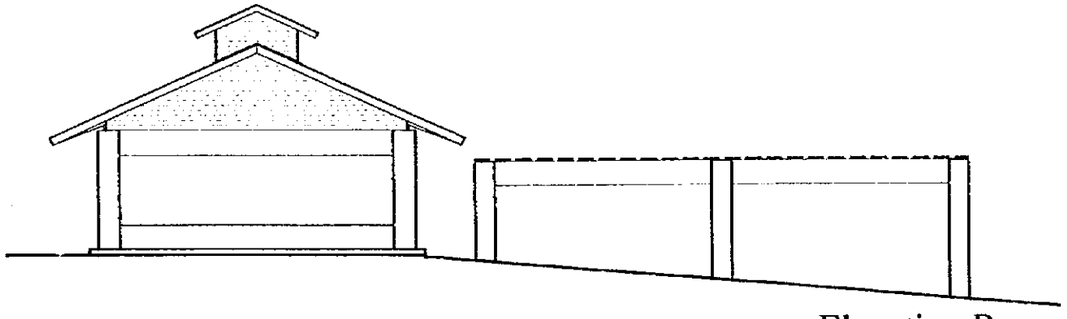
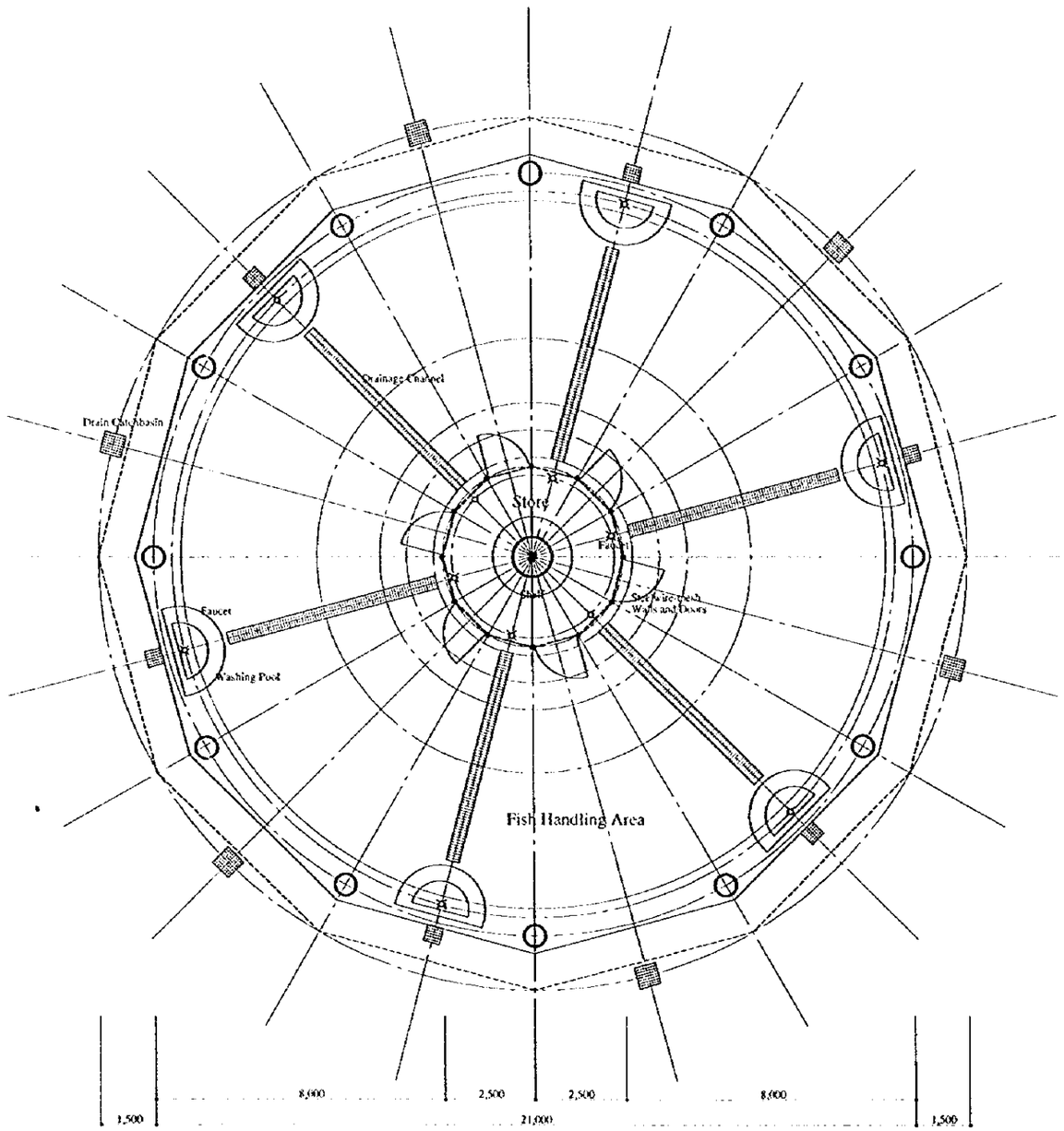


Sectional Plan



Elevation B

Basic Design Drawings : Workshop Scale 1/150



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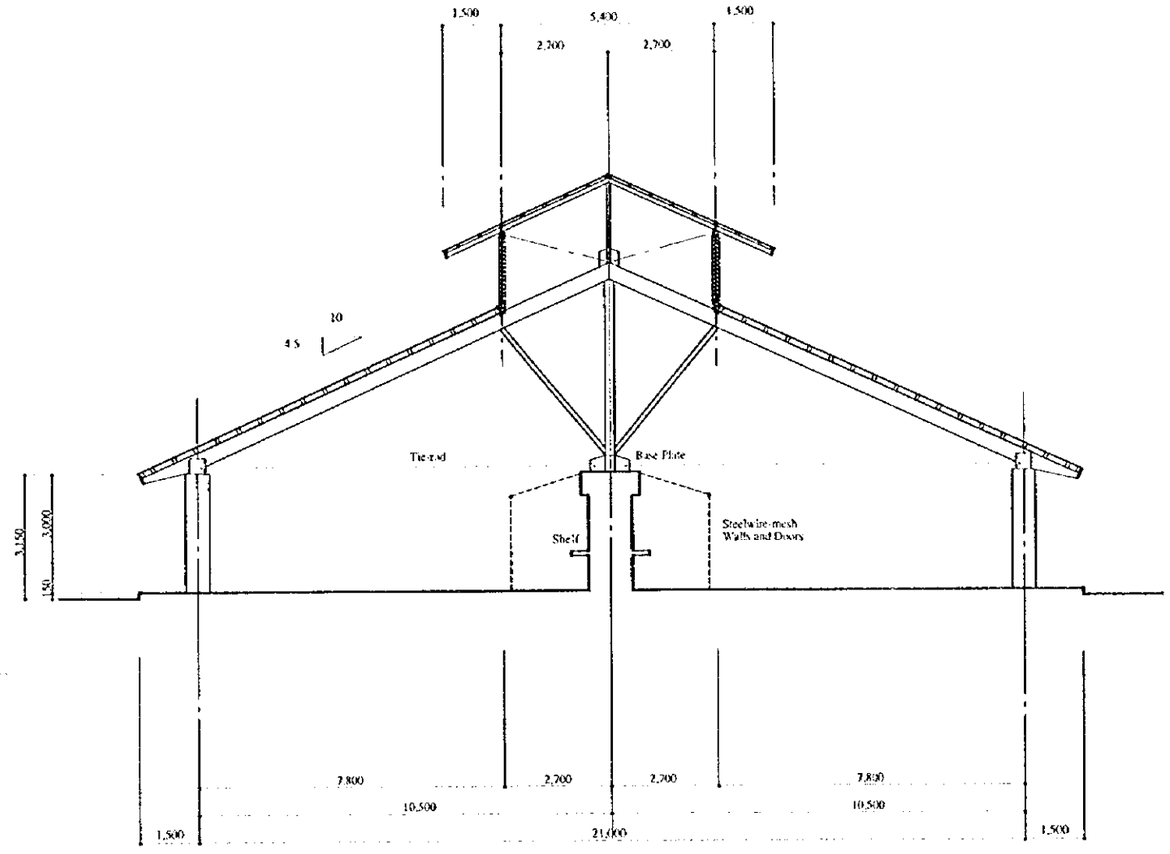
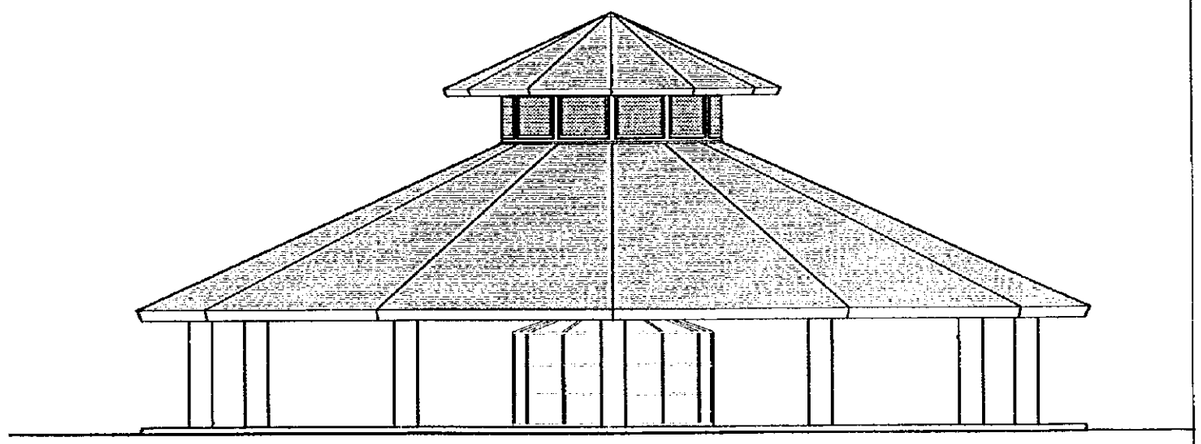


Sectional Plan



Elevation

Basic Design Drawings : Fish Handling Facility Scale 1/150

CHAPTER 3 IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

The Project shall be implemented in accordance with the following procedure. First, following the exchange of note (E/N) between the Government of Japan and the Government of Jamaica, an implementation design contract shall be concluded between a consultant that has been recommended by JICA and the Government of Jamaica. The consultant shall carry out the field surveys, detailed design, cost estimation, comparison of basic design and detailed design and also prepare the tender documents, etc. necessary for binding a works contract. The consultant shall then obtain the approval of the Government of Jamaica, announce the tender, examine the tender qualifications, conduct the tender, screen the presented tender documents and select a contractor which must be a Japanese corporate person.

After the works contract has been concluded between the Government of Jamaica and the contractor, the construction of facilities and procurement and delivery of equipment and materials shall be carried out.

The basic items and points requiring attention in the implementation of the Project are described in the following sections.

(1) Project Implementation Agencies

The direct Project implementation agency on the Jamaica side is the Ministry of Agriculture and Mining, which will act as the party to the contracts with the consultant and contractor, etc. The Ministry of Agriculture and Mining shall bind contracts based on the receipt of authorization from the Planning Institute of Jamaica. Regarding Project implementation, the Fisheries Division shall take responsibility in cooperation with the Urban Development Corporation, and it shall coordinate and provide advice on taking procedures with related ministries and agencies, examining and approving the contents of the implementation plan and smoothly executing the work.

(2) Consultant

Following conclusion of the consultant contract, the consultant, acting as the implementing agency on behalf of the Government of Jamaica, shall fully explain and discuss the implementation contents with the Jamaica side, prepare tender documents and carry out the tender work and execution supervision, based on the contents of the E/N and the Consultant Work Guidelines.

Regarding site supervision, a civil engineer shall be dispatched for the whole period of jetty construction, and an architect shall be dispatched short-term to oversee the start of works. Following completion of the jetty, the architect shall be assigned to the site until the Project works are completed.

The local consultants are scheduled to be active in carrying out surveying, soil investigation, soil testing, materials testing and inspections. Since legislation in Jamaica concerning construction work on the jetty and beach areas is not fully comprehensive, legislation used in the United Kingdom, the United States and CARICOM nations shall be applied at appropriate times. For this reason, the cooperation of a local port and harbor-related design consultant shall be sought at all times.

(3) Subcontractors

The subcontractors shall carry out the construction of facilities, procurement and delivery of equipment and materials, and so forth. Local construction contractors shall be utilized in their respective specialist fields. In particular, subcontractors shall be utilized for the rental of heavy construction machinery (with operators and drivers), the transportation of equipment and materials from Kingston, and the recruiting of construction labor.

(4) Implementation Concept

Implementation of the Project works shall be planned and studied based on the concept described below.

Construction methods that are commonly adopted in Jamaica are to be selected for the Project facilities, however, regarding the jetty, with a view to protecting the natural environment, the steel pile method shall be adopted because it will not greatly affect the shape of the beach. For similar reasons, the pile method shall be adopted for the base of the jetty, meaning that structures for jetty protection shall not be constructed. As a countermeasure against corrosion caused by salt damage, parts of steel piles that are exposed to spray shall be given anti-corrosion treatment. Roofs of wooden structure shall be adopted to lighten the weight of buildings, and truss roofs shall be adopted in necessary areas in order to minimize the sectional area of structures.

1. Conventional construction methods shall be adopted as far as possible so that local labor and materials can be utilized.
2. Care shall be taken regarding protection of the existing natural environment. In particular, when carrying out the jetty works, measures shall be taken to conserve the beach environment.

3. Communications with the Government of Jamaica and local government agencies shall be maintained in order to avoid any procedural difficulties. Care shall also be taken to ensure that no troubles arise between work personnel and the local residents.

4. The materials selection and transportation plan shall give full consideration to the fact that the Project site is more than 100 miles away from the capital, where materials are abundant.

5. The works schedule, materials transportation and materials storage plans shall take the rainy season into account.

(5) Scope of the Works

The scope of the Project works is as follows:

1. Construction of the jetty and access road
2. Construction of the workshop and procurement of tools
3. Construction of Gear Lockers
4. Construction of Fish sorting facility
5. Site paving
6. Provision of services pursuant to implementation and supervision of the above

3-1-2 Implementation Conditions

(1) Building Conditions

Labor policy in Jamaica is very thorough and gives detailed regulations concerning job-separate minimum wages, outwork allowances, housing allowances and sorting of special works (beach works), etc. with respect to construction-related labor. Moreover, because labor disputes are not uncommon, labor conditions in Jamaica shall be fully researched and care taken to make sure that no troubles arise in this area.

In cases of regional works as in the case of the Project, specialist and skilled workers need to be recruited from construction contractors located in and around the capital. Care needs to be taken to ensure that unnecessary friction does not arise between such workers and people of the local fishing village.

(2) Construction Materials

The construction materials required for the Project facilities are stone, earth, filter sheet, steel piles, concrete, reinforcing steel, timber, concrete blocks, mortar, roofing materials,

tiles, painting materials, lighting equipment materials, water supply and drainage equipment materials, a Septic tank, and so on.

In Jamaica, personnel costs are high and there are many cases where imported building materials are cheaper and of higher quality than locally produced materials. Apart from armor stone, paving materials, concrete aggregate, cement and other materials that require a relatively low degree of processing, other materials tend to be a mixture of local products and imported products. Since imported materials come from all over the world and are often cheap products, ample attention will need to be paid towards countries of origin and conformity with Japanese and British standards, etc. to ensure that quality levels are maintained.

Crushed limestone is used for banking and paving purposes, and so on. Since Japanese standards provide for the use of limestone as concrete aggregate, concrete of such specification shall be used in the Project works, too.

As for steel piles, Japanese piles shall be used because anti-corrosion treatment and other salt damage corrosion measures can be taken on parts that are exposed to spray.

Steel is imported and round bars from Turkey are generally used for reinforcing steel, however, deformed bars shall be used in the Project because concrete sticks better to them.

Generally speaking, imported timber is of poor quality and storage conditions at materials wholesalers are bad. Therefore, care shall be taken to procure good quality timber that contains no faults.

The standard required of the Septic tank is high, so a Japanese Septic tank shall be procured to secure quality.

(3) Local Characteristics

1) Execution Quality Control

Since the Project site is close to the coast, quality control of concrete to protect against salt damage will be particularly important. For this reason, the implementation plan shall give consideration to the following points.

Moreover, because the average daytime temperature often exceeds 30 °C throughout the year, care shall be taken to do the following:

1. Select a concrete mixture that has a small water content.
2. Carry out temperature control of raw materials (cement, sand, gravel, water) to ensure that the temperature of concrete immediately after setting does not rise above a set level (35 °C).
3. Promote the enforcement of temperature control during concrete placement.
4. Carry out spraying during the concrete curing period in order to control temperature and prevent drying.
5. Constantly control the salt content of concrete aggregate (sand, gravel, water).
6. Secure an ample covering thickness of concrete.

3-1-3 Scope of Works

Construction of all the facilities within the Project site shall be carried out by the Japan side. The scope of works of both sides is as follows.

(1) Items and conveniences to be provided by the Government of Jamaica

1. To secure the construction lot, complete the remove of the open-air market (stalls) and remove all obstacles existing in the lot.
2. To provide a temporary works yard, site management office, materials store yard.
3. To carry out tree planting and fence erection within the Project site
4. To extend water and power supply lines to the construction site and install meters.

(2) Items to be undertaken by the Government of Japan

1. To procure all equipment, materials and work force required for the construction works.
2. To secure the sea and land transportation of imported equipment and materials required for the construction works and to bear the cost of export insurance.
3. To provide consulting services relating to the implementation plan, execution of the tender and supervision of the construction works, etc.

3-1-4 Consultant Supervision

In accordance with the procedure of the grant aid scheme, the Japanese consultant, under the recommendation of JICA, shall conclude an implementation design and consultant supervision contract for the Project with the Ministry of Agriculture (the main supervising agency in Jamaica) and obtain approval for this from the Government of Japan.

Following conclusion of the said contract, the consultant shall carry out field surveys and final consultations with the Government of Jamaica and, following return to Japan, prepare the detailed design drawings, structural calculations, quantity calculations, works specifications and other necessary tender documentation. Following completion of the tender documents, Project approval, tender qualifications examination, tender and tender evaluation shall be carried out and a contractor shall be selected in accordance with the proper procedure.

Following conclusion of the works contract, the consultant shall check the implementation drawings submitted by the contractor, supervise fabrication of processed materials, witness quality inspections of the products, equipment and materials for export and carry out the shipping inspections. It shall dispatch a site supervisory engineer when the works start to coordinate the local subcontractors, supervise the works, witness quality control tests and progress inspections and prepare a final report of the work.

As was mentioned in the section on the implementation plan, because the Project site is located far from the capital Kingston and there are no suitable nearby places for barges to land equipment and materials, land transportation will have to be relied on. Since the equipment and materials will be transported a little at a time, a rational transportation plan must be formulated based on frequent communications with the equipment and materials suppliers. Moreover, because the design has been carried out based on the surveys, surveying and samples from the time of the basic design study, it may be necessary to take appropriate steps and make revisions as circumstances dictate following the start of works.

For this reason, during the period of consultant supervision, detailed examination of drawings shall be carried out in Japan and consultations over the schedule shall be carried out with the subcontractors to ensure that there is no going back over already completed work. Moreover, civil engineers shall be dispatched to the construction site from an early stage to maintain close links with local government officials and subcontractors and so ensure that the works advance speedily and efficiently. Furthermore, in line with progress of the building work and, in particular, when wooden trusses are raised and equipment installation works (Septic tank, etc.) are carried out, an architect shall be dispatched to carefully supervise the quality of the work.

(1) Basic Concept

Following the E/N, a design supervision contract shall be concluded between the Government of Jamaica and the selected consultant, and the implementation design work shall commence.

In accordance with the concept given in the design study report, the consultant shall

explain and discuss with the Ministry of Agriculture and the Fisheries Division contract items relating to the implementation design, the subcontractor selection method, the tender method, confirmation of the implementation design contents, confirmation, manufacture and transportation of equipment and materials, the construction work schedule and the handing over of facilities, etc.

The consultant shall fully explain the implementation schedule to the Fisheries Division, local government officials and the G.G.F.S., and it shall confirm in advance all matters concerning the procedures, tariff exemption measures, acceptance preparations and handing over inspections that need to be performed by the recipient agencies. The consultant shall also offer advice to the recipient side concerning the operation plan and maintenance management plan, etc. for the facilities and equipment.

(2) Implementation Design Plan and Equipment and Materials Manufacture and Procurement Supervision Plan

Equipment and materials that are not procured locally shall be manufactured in and procured from Japan and the United States of America. In the manufacturing stage, the consultant shall appoint an engineer, who has a thorough understanding and appropriate skill and experience regarding the equipment and materials, to supervise all manufacturing processes, prepare tender documents, discuss and confirm specifications, approve drawings, conduct plant inspections and carry out delivery inspection and acceptance. Moreover, regarding the site construction works, a permanent site supervisor shall be assigned to make sure the works progress according to schedule.

The areas of construction works supervision and equipment and materials procurement supervision are as follows:

- Performance and supervision of the contracts for construction works and procurement
- Provision of advice to works subcontractors
- Provision of guidance on schedule control to works subcontractors
- Study and approval of working drawings and approval drawings, etc.
- Confirmation, instruction and guidance on used materials, processing and assembly methods and work methods, etc.
- Reporting of progress to implementing agencies on the Jamaica side
- Provision of advice on preparation for acceptance and operation of facilities and equipment

- Witnessing of product inspections, acceptance and test running (in Japan and Jamaica)
- Cooperation and advice concerning payment and approval procedures based on the contracts

(3) Construction Works Supervision

In order to complete the works within the limited implementation period, it is necessary to carry out as many works as possible at the same time. In addition, there are a number of complicated administrative jobs to be done, such as the arrangement of equipment and materials sea transportation, the ordering of local equipment and materials, the binding of contracts with local subcontractors, and the binding of contracts for leasing works machinery. For this reason, the Japanese management setup will need to consist of one site manager (grade 3) to be dispatched for the whole works period (nine months), plus one civil engineer (grade 4) and an architect (grade 4) to be dispatched at appropriate times, and one works and office administration supervisor (grade 4) to be dispatched for two months from the start and the last three months of works.

Moreover, because there are no international telephone services and express postage services in Whitehouse area, the implementation supervision base shall be set up in the capital Kingston. On the Project site in Whitehouse area (Top Beach), a minimum necessary site office shall be established to supervise the actual works alone, and the rented facility to accommodate dispatched Japanese nationals shall be also used as an office in order to cut down on overheads. In addition to the site office temporally construction includes temporally bathroom, temporally shack, and temporally storage for materials and machinery. Since land around the Project site is limited, accommodation for directly employed engineers shall be rented outside of the area. Moreover, because labor law in Jamaica prescribes that living allowances be included in wages, no canteen shall be provided for the subcontracted skilled engineers.

3-1-5 Procurement Plan

(1) Main Materials

1) Civil Engineering Works Materials

Priority shall be given to local procurement when procuring the materials, etc. required for the construction works. The following table shows the scheduled procurement sources for each item. Steel sheet pile, incidental steel materials and works machinery shall be procured from Japan because they are not available locally.

Table 3-1 Procurement Sources of Works Materials

Material Name	Procurement Source		
	Local	Japan	Third Country
Cement	○		
Aggregate	○		
Reinforcing steel	○		
Shape steel		○	
Steel piles		○	
Filter sheet and pollution prevention		○	
Form work and timber	○		
Fuel	○		

2) Equipment and Materials Procurement Plan

Main Building Materials	Procurement Source
Reinforcing steel	Jamaica (USA)
Cement	Jamaica (made in Jamaica)
Rough aggregate	Jamaica
Fine aggregate	Jamaica
Crushed stone	Jamaica
Timber (heavy timber)	Japan or USA
Timber (2 x 4)	Jamaica or USA
Roof finishing materials (asphalt shingles)	Jamaica (third country)
Roof water-proofing base materials	Jamaica or USA
Tiles	Jamaica (Brazil or Italy)
Aluminum sashes	Jamaica (third country)
Wooden fittings	Jamaica (Trinidad)
Coating	Jamaica
Anti-corrosive coating	Jamaica
PVC pipes	Jamaica (made in Jamaica)
Distribution panel	Jamaica (USA or Trinidad)
Septic tank	Japan

(2) Main Construction Machinery

All the construction machinery that is needed for the Project construction works can be procured (leased) locally, and there are no works which require machinery from abroad.

(3) Equipment

The large proportion of outboard engines used in Jamaica are made in Japan and in the United States. Japanese outboard engines adopt millimeter and meter specifications in accordance with the metric system, whereas American outboard engines still use inch, pound and foot specifications. Consequently, tools that can be used with both types of specifications must be selected. General tools with inch, pound, foot specification are hard to find in Japan, and the procurement of specific tools for American outboard engines is easier in Jamaica rather than in Japan. In Kingston only one agent that deals with tools for outboard engine is found.

Under such conditions, tools for Workshop shall be procured locally in order to make new procurement of the constructor and replenishment, etc. of G.G.F.S. easier in the future following handing over of the Project tools.

(4) Transportation Plan

Since there are no direct services between Japan and Jamaica, items procured in Japan shall be transported by a regular (one ship every 4-5 weeks) transport ship (container cum cargo ship) to Miami, where they shall be reloaded onto another transport ship, which tours the Caribbean weekly, and transported to Jamaica.

Transportation via the Panama Canal and Miami usually takes about one month and a half, however, because typhoons or hurricanes can sometimes cause major route changes and delays, the transportation plan will need to be flexible enough to accommodate such a situation.

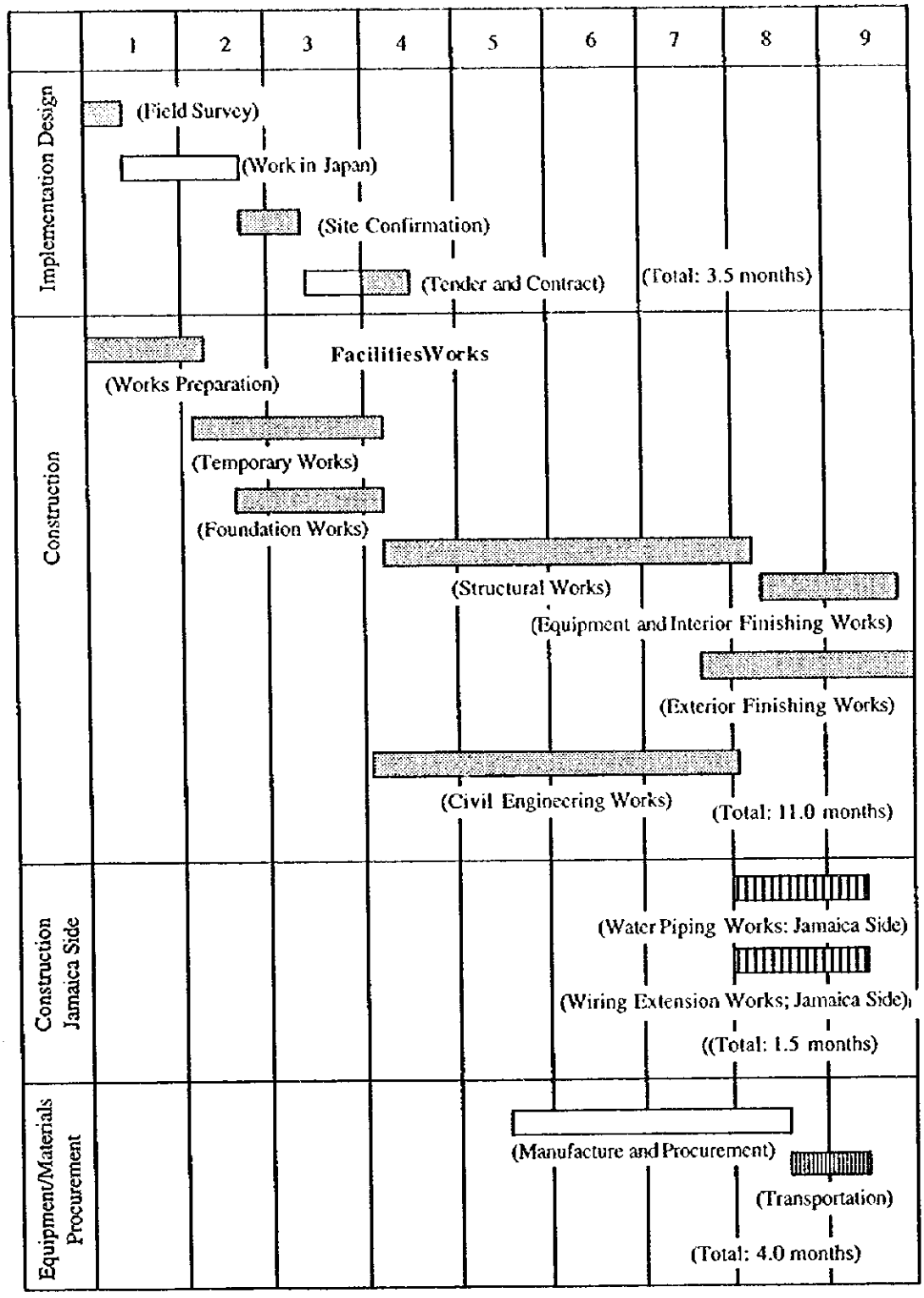
Construction materials procured in third countries shall be transported by sea to Kingston and then transported overland to the Project site. Therefore, the procurement and transportation plan will need to be carefully formulated in detail.

Import and customs agents in Jamaica do not carry out domestic transportation. Customers need to be present at the time of customs clearance and, following that, it is necessary to consign a local agent to transport the goods to the desired destination. It has to be remembered that personnel and time needed for the customs clearance, storage and transportation procedures.

3-1-6 Implementation Schedule

The Project is scheduled to take 3.5 months for the implementation design and 9 months for the works. The work implementation schedule is shown in Table 3-2.

Table 2-2 Work Implementation Schedule



3-1-7 Obligation of recipient country

The items to be undertaken by the Government of Jamaica pursuant to Project implementation are as follows.

(1) To secure the construction lot and elimination of any obstacles existing at the site and surrounding waters.

(2) To ensure proper access roads to the site.

(3) To extend water, power supply and telephone line, and other works such as planting trees and fence erection within the site.

(4) To ensure prompt unloading, customs clearance and inland transportation of the Project equipment and materials.

(5) To exempt the Project equipment and materials from any tariffs or taxes that may otherwise be levied in Jamaica.

(6) To exempt Japanese corporate persons and Japanese nationals concerned with Project implementation from any taxes that may otherwise be levied in Jamaica.

(7) To accord to Japanese nationals concerned with the Project permission for entry into Jamaica and stay therein.

(8) To bear commission for an authorization to pay, commission on payment and any other necessary banking charges to a Japanese foreign exchange bank based upon the Banking Arrangement.

(9) To acquire permits, licenses and other authorization necessary for implementation of the Project.

(10) To ensure that the equipment and materials provided under the grant aid be maintained and operated effectively.

(11) To bear any other necessary expenses that are not covered by the grant aid.

3-2 Operation and Maintenance Plan

Of the project-separate continuing work budget of the Fisheries Division (the main implementing agency of the Project), the budget for surface fisheries survey and development work is largely devoted to survey and development work aimed at drafting and compiling medium and long-term fisheries development projects and has increased largely in recent years. Therefore, it is considered that sufficient budget will be available to carry out guidance and supervision work concerned with operation following implementation and completion of the Project and handing over of the facilities.

The Project facilities and workshop tools will be owned by the Fisheries Division under the Ministry of Agriculture and Mining following completion and handing over, and operation will be carried out by G.G.F.S., however, neither the Fisheries Division nor G.G.F.S. will require additional staff or engineers as a result of Project implementation.

The facilities to be constructed under the Project will not incur operating expenses, however, the following costs will arise in line with use of the facilities: 1) water supply, electricity and septic tank cleaning charges to be paid to third parties and, 2) repair costs entailed through general deterioration and breakage, etc. Regarding the collection of charges, G.G.F.S. shall collect a uniform charge from users of the facilities every month.

In the case where a positive return is obtained from collected charges, these shall be put aside for use in repairing and maintaining facilities and purchasing replacement equipment. Audits relating to the operation of collected charges shall be carried out by the Whitehouse Fisheries Management Committee.

Water supply and electricity charges to be paid to third parties and workshop tool costs that arise out of the need for normal replenishment are estimated in the manner shown below. Assuming that water supply and electricity charges are equally divided among the number of middle-sized wooden fishing boats, the amount to be borne by each middle-sized wooden fishing boat owner will come to J $ 130.83 per month.

Similarly, the amount to be borne by each middle-sized wooden fishing boat owner to cover costs arising from workshop tool wear and tear and breakage, etc. will come to J $ 204 per month. Therefore, it is considered that operation and maintenance of the Project facilities can amply be carried out without too great a financial burden on G.G.F.S. and the local fishermen.

Table 3-3 Maintenance and Management Cost

(Unit : J$)

Item	Annual Maintenance and Management Cost
Water Charge	144,681
Electricity Charge	26,466
Replenishment of Tools	2,408

Breakdowns of the cost estimates are indicated below:

Estimate (1) Water Charge (J$)

Amount of water use: 13.2 m^3/day x 30 days x operating rate (80%) = 316.8 m^3/month = 83,700 gallons/month

1. Monthly water charge = 11,878.23 (from the list of charges)
2. Basic charge (tap diameter: 1.5 inch) = 178.56

Monthly water bill Total J $12,056.78

Estimate (2) Electricity Charge

1. Nighttime lighting	1,600 W x 10 hours/day x 30 days	= 480,000 Wh
2. Sorting area lighting	1,820 W x 2 hours/day x 30 days	= 109,200 Wh
3. Workshop power use	500 W x 2 hours/day x 30 days	= 30,000 Wh
Monthly electricity bill		= 619,200 Wh

Electricity Bill Breakdown (JS): [general charge system)

1. Basic charge		6.00/month
2. Energy rate charge	2.282/kWh x 619.2 kWh	= 1,410.01/month
3. Fuel rate charge	1.275/kWh x 619.2 kWh	= 789.48/month
		2,205.49/month (≒ 7,719 yen)

Monthly water and electricity bill = (J $12,056 /month) + (J $2,205 /month = J $14,261 /month

Assuming that the above charge is shared equally among the medium-sized fishing boats, the amount borne by each large fishing boat owner will be as follows:

14,261 J $ ÷ 109 boats = 130.83 J $/month (= 458 yen/month)

Estimate (3) Replenishment of Tools

Similarly, in the case where the community bears the cost of replenishing workshop tools to cover for wear and tear and damage, etc., assuming that 3% of all tools are replenished every year, the amount borne by each large fishing boat owner will be as follows:

J $8,750,000 x 0.03 ÷ 109 = J $2,408 /year (J $204 /month)

CHAPTER 4

PROJECT EVALUATION AND RECOMMENDATION

CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATION

4-1 Project Effect

(1) Validation of Project Appropriateness and Beneficial Effect

The Project will not only improve the level of convenience for users of the Project facilities, it complies with plans for development of the fisheries sector contained in the Five-Year Development Plan of the Ministry of Agriculture and Mining, and it aims to achieve the development of fishing villages and modernization of small-scale fisheries, both of which are development targets of the Fisheries Division with regard to surface fisheries. Furthermore, the Project will provide facilities that are necessary for efficiently and effectively achieving the phased development of so far non-utilized resources such as migratory fish (tuna, bonito, etc.), snapper and bream, etc. In view of this and judging from the points given below, implementation of the Project under the grant aid scheme of the Government of Japan is judged to be appropriate.

1) Targeting approximately 20,000 petty fishermen throughout Jamaica who carry out coastal fishing, the Project aims to modernize traditional petty fishing that is both inefficient and non-productive by constructing fisheries support facilities that are primarily intended to reform the thinking of fishermen towards fishing. By doing this, it is expected that the Project will contribute to the future modernization of small-scale fisheries and the development of regional fishing villages in Jamaica.

2) Through the construction of fisheries support facilities consisting of a jetty, fish sorting area, workshop and gear lockers, etc. in the Whitehouse area, the Project can be expected to improve the working environment of local fishermen, raise operating efficiency levels, cut operating costs and improve the quality of caught fish, etc.

3) Project implementation will lead to diffusion of intensive fishing operations centering around G.G.F.S. and establishment of a local fishermen self-managed fishery (fish landing management, fisheries facilities management and natural environmental management), and this will stabilize the business and livelihood of fishermen.

4) The Project is highly compatible with state-level development plans and is necessary for the country to aim for the phased modernization of small-scale fisheries without placing a great burden on petty fishermen. In particular, the Project will contribute to improving the living environment of approximately 700 fishermen and 2,000 residents in Whitehouse, which relies heavily on fisheries, and the facilities and operation plans of the Project give ample consideration to the impact that will be had on the natural and social environment in and around the Project area.

(2) Beneficial Effect

The specific effects that can be expected as a result of Project implementation are given below.

- Construction of the jetty and access road will reduce the time and effort involved in preparing for and returning from fishing trips.
- Use of the jetty will reduce losses incurred through the melting of ice and thus make it possible to save on operating costs.
- Construction of the gear lockers will ensure the safe storage of fishing equipment and materials.
- Construction of the workshop will enable the maintenance and repair of outboard engines, fishing boats and fishing gear to be carried out properly and efficiently, and cost cuts can also be expected as a result of reduced daily maintenance costs and longer service lives, etc.
- The resulting reduction in outboard engine breakdowns will contribute to improved operating efficiency and the prevention and reduction of maritime accidents.
- Construction of the fish sorting facilities will enable sorting work, which was previously carried out all over the beach, to be centralized into one area. Moreover, because water supply facilities will also be installed, fish washing, sorting and trading will be carried out in an integrated flow, thus leading to an improvement in work efficiency. Also, the level of hygiene control, which has not been taken seriously up till now, will be raised.
- The concentration of fish trading activities will provide greater convenience for traders based in and outside the Whitehouse area. In particular, if more traders visit from outside the area, it is highly likely that fish will come to be treated as merchandise and greater interest will be shown in the preservation of quality.

4-2 Recommendation

4-2-1 Issues

As was mentioned earlier, implementation of the Project can be expected to bring about numerous effects. Having said that, government officials have so far failed to provide sufficient guidance and advice to local residents concerning the objectives, contents and expected effects of the Project, the benefits to be gained by fishermen and local community as a result of the Project, and the ways to carry out organized managed fishing centering around the fishermen's cooperative society.

Consequently, it is thought that the following measures need to be taken in order to ensure the smooth implementation of the Project and creation of a higher Project effect.

(1) Consultations and Exchange of Opinions with G.G.F.S. and Local Fishermen

Rules and regulations concerning operation of the facilities will be decided by the Whitehouse Fisheries Management Committee centering around G.G.F.S.. However, in compiling and executing such rules, it is important to convene hearings with G.G.F.S. members and local fishermen prior to Project implementation in order to fully exchange opinions and obtain mutual agreement with regard to operating regulations, the whereabouts of responsibility and procedures for resolving problems, etc.

(2) Concentrated Sorting of Caught Fish

Because there are no jetty or landing facilities in the Whitehouse area, local fishermen have carried out fish landing, sorting and simple processing, etc. on the part of the beach where they land their respective fishing boats, and they have been unable to obtain sufficient knowledge and information concerning the benefits to be gained from landing in one specific area. Therefore, it is necessary that guidance be provided concerning the concentrated landing of fish based around the jetty, that a landing center be constructed through effective utilization of the fish sorting facilities, that an organized form of fishing be established (improved quality of caught fish and higher selling efficiency, etc.), and that fishermen be educated with regard to rational fishing.

Moreover, it is anticipated that the jetty will be used for a wide number of purposes as a mooring quay, for example preparation for fishing trips, landing of caught fish, tidying up after fishing trips, and so on. In particular, during preparation for fishing trips, the loading of four or five blocks of ice each weighing 136 kg involves hard labor and it is necessary that this work be made easier and safer. However, because the ice store of the Matrix Ice Making Co. which was established this year is separated from the jetty by some 150 m, and it is forecast that ice loading will take place away from the jetty on the sand beach close to the ice store in the same way as done until now.

Therefore, it is necessary for the G.G.F.S. in charge of ice selling to provide means (carts, small trucks, etc.) of carrying ice from the ice store to the jetty in order to contribute to the smoother sale and carriage of ice and improvement of work efficiency and reduction of workload of fishermen, and thus ensure the effective utilization of the jetty.

4-2-2 Recommendation

(1) Improvement in Freshness of Caught Fish

Currently, the level of freshness of fish landed in Whitehouse cannot be described as high. Concerning the amount of ice required in order to maintain the freshness of caught fish, it is normally necessary to have as much ice as fish (ice to fish ratio of 1:1) in the case of fishing trips that last two nights and three days. Fishing boats based in Whitehouse however, load 500-600 kg of ice with respect to average catch sizes of approximately 150 kg, i.e. the said ratio is 4:1, and the freshness of fish is still not good despite this large ice usage. Concerning this point, the following reasons can be considered.

1) Ice melts quickly due to the insufficient thermal insulation of ice boxes.
2) Because block ice is not finely crushed, there is insufficient contact between ice and fish.
3) Fish are not immediately put into cold storage boxes after they are caught.
4) Because the level of freshness is not reflected in the sale price, there is little awareness regarding freshness preservation.

Regarding all of these problems, through providing guidance and implementing improvements suited to the actual situation (trial manufacture of inexpensive fish boxes with good insulation, etc.), costs can be cut, the value added of fish can be raised and sales can be increased. In particular, the cost of ice per fishing boat is J $ 130,000 per year on average, and it is thought that a large cost saving could be achieved through improving this area. Therefore, it is desirable that the Fisheries Division and G.G.F.S. provide appropriate guidance to fishermen with regard to post-harvest sorting.

(2) Proper Operation of Outboard Engines

The average service life of outboard engines used in Whitehouse area is relatively short at one or two years on average. This is the result of insufficient routine maintenance, but a number of other reasons can also be pointed to.

1) Imbalance Between Fishing Boat Size and Engine Output

Most of the large fishing boats (12-14 m) are fitted with two 40 HP outboard engines, however, one of these is normally reserved for backup purposes and boats operate using only one engine. The displacement (weight on board) of such fishing boats is approximately 3.0-3.5 tons and using only one 40 HP outboard engine to sail such boats means that the said engine must always operate in an overloaded state. It is

estimated that the appropriate horsepower required to operate a fishing boat of 12-14 m in length is 60-70 HP.

Reasons for why 40 HP outboard engines are chosen are that they are relatively inexpensive, fuel consumption is relatively good and they are of a weight that can be carried by one person (engines of greater horsepower cannot easily be carried by one person). However, since it is thought that the overloaded operation of such engines is a major factor behind reduced service life and breakdowns, it is desirable that engines of appropriate output be selected and that investigation and guidance be carried out with respect to engine operation.

Furthermore, in the case of boat operation using just one outboard engine, because the engine is not placed in the center of the boat stern, propulsion efficiency is poor and this leads to overload and fuel loss.

As a measure to improve the above-mentioned situation, experiments should be carried out into, for example, installing a boat with one 60 HP engine in the stern center for normal sailing and one 40 HP engine for backup, and conducting boat operation by alternating between the two engines in order to find an economic combination of boat and engine. Upon doing this, it is desirable that results be publicly announced and put to use in reducing the operating expenses and improving the operating safety of fishermen.

2) Use of Genuine Parts and Correct Maintenance Methods

When it comes to replacing broken or no longer usable parts, many fishermen often replace with old parts (previously used parts) that still work, but this often seems to make engine breakdowns more serious than they might otherwise and in the long run leads to major losses.

This situation needs to be improved through making fishermen aware of the fact that conducting correct maintenance is the best way to use engines in most economical manner for longest term. Through utilization of the workshop to be constructed under the Project, it is desirable to provide guidance to each and every fisherman concerning the correct method of outboard engine maintenance.

3) Fuel Management

According to studies conducted by the service engineers who toured the Whitehouse area, it is reported that much foreign matter can be seen in outboard engine fuel filters and this not only leads to filter blockages but also has a negative impact on fuel systems.

Possible reasons for this foreign matter are that the quality of fuel supplied by ESSO is inferior, that foreign matter enters the fuel during transportation, that the underground tank at the fuel station is dirty, or similarly that the fuel tanks used by fishermen are

dirty. In any case, through carrying out a full survey and dealing with the cause, it is thought that outboard engine maintenance inspection work can be reduced and that a contribution can be made to improving engine reliability and extending service lives.

APPENDICES

APPENDIX 1 MEMBER LIST IN THE SURVEY TEAM

(1) Basic Design Study

Offucial members:		
Mr. Hideki TOMOBE	Team Leader	DIRECTOR, Tokyo International Center, Japan International Cooperation Agency (JICA)
Mr. Toshitaka INAO	Coordinator	Information Services Division, Institute for International Cooperation, Japan International Cooperation Agency (JICA)
Mr. Tomoyoshi HASHIZUME	Technical Advisor	Deputy Director, Fisheries Development Division, Fisheries Promotion Dep., Fisheries Agency
Consultants:		
Mr. Nobuo ITOI	Chief Consultant cum Operation and Maintenance Planner	Overseas Agro-Fisheries Consultants Co., Ltd.
Mr. Mamoru NAMIKI	Fisheries Engineering cum Natural Condition Surveyor	- ditto -
Mr. Wataru IWASAKI	Facility Planner cum Cost Estimator	- ditto -

(2) Explanation of the Draft Final Report

Mr. Katsutoshi MIYAKAWA	Team Leader	Grant Aid Division Economic Cooperation Bureau Ministry of Foreign Affairs
Mr. Nobuo ITOI	Chief Consultant cum Operation and Maintenance Planner	Overseas Agro-Fisheries Consultants Co., Ltd.

APPENDIX 2 SURVEY SCHEDULE

(1) Basic Design Study

No.	Date	Day	Itinerary Contents	
			Government members	Consultant members
1	Sep. 7	Sun.	12.00 Depart from Tokyo (JL006) - 11.20 Arrive in New York (overnight)	15.55 Depart from Tokyo (CP002) - 14.50 Arrive in Toronto (overnight)
2	8	Mon.	10.00 Depart from New York (AA645) - 14.59 Arrive in Kingston (overnight)	10.55 Depart from Toronto (AC984) - 13.55 Arrive in Kingston (overnight) Consultations and contract with local contractor consigned to implement the natural conditions survey
3	9	Tu.	Courtesy call to related ministries and agencies, explanation of IC/R and schedule coordination Planning Agency, Ministry of Agriculture and Mining, Ministry of Foreign Affairs and Fisheries Division	
4	10	Wed.	Site survey: (Kingston - Spanish Town - Old Harbour Bay fishing port - Whitehouse) Matrix Ice Making Co. survey (Spanish Town), Old Harbour Bay fishing port observation, site and surrounding area survey, installation of tide survey equipment	
5	11	Th.	Site survey: (Whitehouse - Treasure Beach - Kingston fishing ports) Consultations with GGFS	
6	12	Fri.	Consultations with Fisheries Division, Planning Agency and UDC	
7	13	Sat.	Data arrangement, internal discussions	
8	14	Sun.	Data arrangement, internal discussions	
9	15	Mon.	Final consultations with Ministry of Agriculture and Mining	(National Land) Survey Division consultations and data collection Mining and Geology Division consultations and data collection
10	16	Tu.	Signing of Minutes and reporting to Japanese Embassy	Water Resources Division consultations and data collection Meteorological Division consultations and request for data preparation and collection Survey of building contractors and equipment suppliers (request for estimates)
11	17	Wed.	13.00 depart from Kingston - 17.45 Arrive in New York (overnight)	Site survey: Whitehouse area supplementary survey Installation of tide survey equipment, water quality testing
12	18	Th.	13.30 Depart from New York (JL005)	Site survey: Survey of nearby building materials suppliers Renewed installation of tide survey equipment Observation of Montego Bay fishing village (River Bay, Whitehouse)
13	18	Fri.	Arrive in Tokyo	Site survey: Materials supply survey around Whitehouse area Black River Ice Making Co. observation Recovery of tide survey equipment

No.	Date	Day	Itinerary Contents
14	20	Sat.	Pedro Bank observation (North-East Atoll, Middle Atoll)
15	21	Sun.	Data arrangement
16	22	Mon.	Standards Association consultations and data collection. Ministry of Regional Government and Public Works survey, private building contractors and materials retailers survey
17	23	Tu.	Mining and Geology Division supplementary survey, Port and Harbour Division consultations and data collection, private building contractors and materials retailers survey
18	24	Wed.	Meteorological Division supplementary survey, Standards Association supplementary survey, private outboard engine retailers survey (two companies)
19	25	Th.	Site survey: Supplementary survey, Water Supply Committee survey (Whitehouse Office), Jamaica Public Works Corporation survey (Savannah La Marle), recovery of tide level gauges
20	26	Fri.	Fisheries Division and DDC final consultations and data collection, NRCA data collection, Meteorological Division additional data collection, reporting to Japanese Embassy
21	27	Sat.	Observation of Kingston fishing ports (Causeway, Greenwich Town) and eastern and north-eastern fishing villages
22	28	Sun.	Data arrangement
23	29	Mon.	Consultations with natural conditions survey local contractor, and confirmation of survey findings 15.00 Depart from Kingston (AC985) - 20.00 Arrive in Toronto (overnight)
24	30	Tu.	10.00 Depart from Toronto (CP001)
25	Oct. 1	Wed.	11.55 Arrive in Tokyo

(2) Basic Design Outline Explanation

No.	Date	Day	Itinerary Contents	
			Government members	Consultant members
1	Nov. 1	Sat.	13.30 Depart from Tokyo (JL008) - 11.45 Arrive in New York (overnight)	17.25 Depart from Tokyo (CP002) - 15.15 Arrive in Toronto (overnight)
2	2	Sun.	10.00 Depart from New York (AA645) - 15.46 Arrive in Kingston (overnight)	10.55 Depart from Toronto (AC982) - 16.53 Arrive in Kingston (overnight)
3	3	Mon.	Courtesy call to Planning Agency, explanation of basic design outline report and schedule coordination	
4	4	Tu.	Explanation of basic design outline report to Ministry of Agriculture and Mining, Fisheries Division, Planning Agency and UDC	
5	5	Wed.	Discussion of draft Minutes with Fisheries Division, Planning Agency and UDC, courtesy call and interim reporting to Ministry of Foreign Affairs	
6	6	Th.	Site survey: (Whitehouse) GGFS consultations and data collection	
7	7	Fri.	Signing of minutes, reporting to Japanese Embassy 17.00 Depart from Kingston (AA645) - 20.52 Arrive in New York (overnight)	(Same as left) 17.50 Depart from Kingston (AC982) - 21.45 Arrive in Toronto (overnight)
8	8	Sat.	13.40 Depart from New York (JL007)	10.00 Depart from Toronto (CP015)
9	9	Sun.	17.40 Arrive in Tokyo	15.25 Arrive in Tokyo

APPENDIX 3 LIST OF PARTY CONCERNED IN THE RECIPIENT COUNTRY

(1) Ministry of Agriculture and Mining

Hon. Horace Clarke	Minister of Agriculture
Hon. Terrence D. Gillete	Minister of State
Mr. Aaron Parke	Permanent Secretary
Mr. Hopeton Fraser	Chief Technical Director
Mr. Zuleikha Budham	Director of Economic Planing
Mis. Yvonne Laidean	Director of Publication

(2) Fisheries Division, Ministry of Agriculture

Mr. G. Andre Kong	Director
Mr. Valentine Rodney	Acting Director (Agriculture Branch)
Mr. Stephen Smikle	Acting Director (Marine Branch)
Mis. Avery Galbraith	Fisheries Officer
Mr. Ian Jones	Fisheries Officer

(3) Ministry of Foreign Affairs & Foreign Trade

Hon. Benjamin Clare	Minister of Foreign Affairs & Foreign Trade
Mrs. Sharon Miller	Secretary

(4) Planning Institute of Jamaica (Technical Cooperation & Regional Planning Division)

Mr. Winston W.E. Anderson	Director
Mis. Pauline Morrison	Manager (Bilateral Programme)
Mis. Maxine Gray	Programme Office (Bilateral Unit)

(5) Urban Development Corporation

Mrs. Hyacinth Franklyn	Area Manager
Mr. Harry Eijkelenboon	Planning Architect

(6) Natural Resources Conservation Authority

Mr. Anthony McKensey	Director

(7) G.G. Fishermen's Co-operation Sosiety Ltd.

Mr. H.D. Honeyghan	Chairman
Mr. Amos Reid	Secretary

(8) The Authorities Concerned

The Port Authority of Jamaica	Mr. Albert S. Edward	Senior Vice President (Engineering & Port Development)
Mines & Geology Div.	Mr. Norman Harris	Geologist
Meteological Office	Mr. H. Spooner	Chief of Weather Div.
Ministry of Local Government & Works	Mr. Howard E. Rendergast	Hydrographic Office
Coast Guards	Mr. Sydney Innis	Lieutenant General

(9) Embassy of Japan

Mr. Motoi Okubo	Embassy of Japan
Miss. Ayako Ito	Counsellor
Mr. Fumiyoshi Kashima	First Secretary

(10) Japan Overseas Cooperation Volunteers

Mr. Masanori Kanayama	Resident Representative
Mr. Takafumi Konaka	Senior Coordinator

(11) Private Companies

MATRIX CO., LTD.	Mr. Louis Walliams	Director
Black River Ice Co., Ltd.	Mr. Keith B. Bell	Director
Yamaja Engine Ltd.	Mr. Philip A.S. Samms	Director
H&L Agri and Marine Ltd.	Mr. Cordel Samuels	Director

MINUTES OF DISCUSSIONS

BASIC DESIGN STUDY ON THE PROJECT FOR SMALL-SCALE FISHERIES DEVELOPMENT IN JAMAICA

In response to the request from the Government of Jamaica, the Government of Japan has decided to conduct a basic design study on the project for Small-scale Fisheries Development in Jamaica (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA has sent to Jamaica a basic design study team (hereinafter referred to as "the Team"), which is headed by Mr. Hideki TOMOBE, JICA. The Team is scheduled to stay in the country from 8 September to 29 September, 1997.

The Team held a series of discussions with the officials of the Government of Jamaica and conducted a field survey at the study area.

In the course of the discussions and field survey, both parties have confirmed the main items described on the attached sheets.

Kingston, 16 September, 1997

Horace A. CLARKE
Minister of Agriculture and Mining
Ministry of Agriculture and Mining

Hideki TOMOBE
Leader
Basic Design Study Team,
JICA

Winston ANDERSON
Director
Technical Cooperation and Regional
Planning Division
Planning Institute of Jamaica

ATTACHMENT

1. Objective

The objective of the Project is to construct onshore backup facilities and infrastructure in the area of Whitehouse, thereby facilitating more effective fishing operation and fish marketing.

2. Executing Agency

The Ministry of Agriculture and Mining is responsible for the administration and execution of the Project.

3. Project Sites

The Project site is located in Whitehouse, Westmoreland Parish, Cornwall County, and the area owned by the Government of Jamaica and can be used for the Project is as shown in ANNEX I.

4. Items requested by the Government of Jamaica

The items requested by the Government of Jamaica are listed in ANNEX II in the order of their priority.

5. Japan's Grant Aid System

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

6. Operation & Maintenance

The facilities constructed under the Japan's Grant Aid will be owned by the Fisheries Division of the Ministry of Agriculture and Mining, and be operated and maintained by the Gillings Gully Fishermen's Co-operative Society Ltd. who will be overseen by Whitehouse Fisheries Management Committee which will be composed of the Fisheries Division, the Gillings Gully Fishermen's Co-operative Society Ltd., Natural Resources Conservation Authority (NRCA) and Urban Development Corporation (UDC).

7. Issues to be Noted

1) The Gillings Gully Fishermen's Co-operative Society Ltd. will collect a fee from the users of the facilities constructed under the Japan's Grant Aid and maintain these facilities using the collected fees. Proper accounting procedures will be maintained and audited financial statements will be made available to the public.

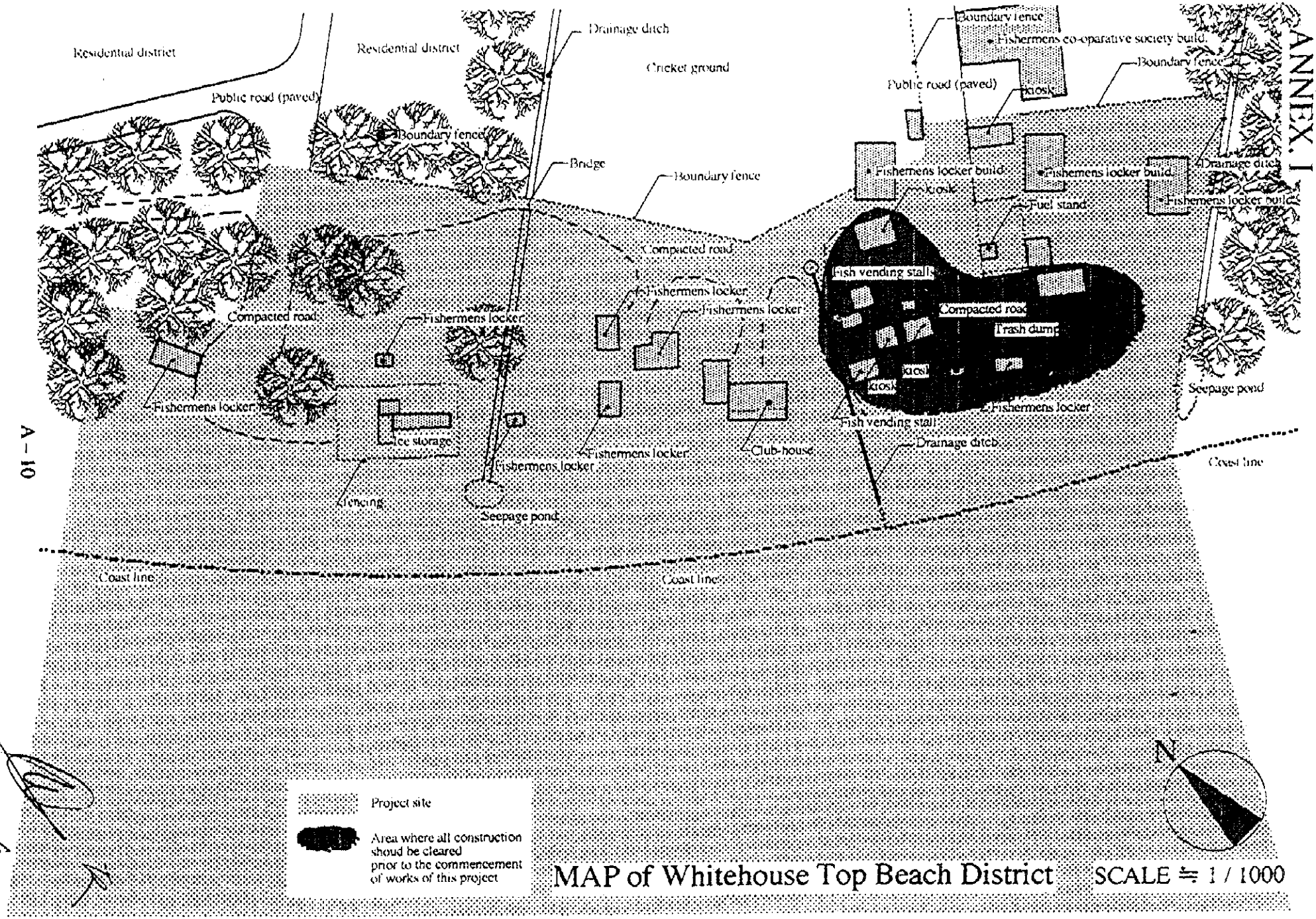
2) If the necessity arises for the implementation of the Project, the Whitehouse Fisheries Management Committee will make every effort to persuade and educate fishers and other users in the process of relocation.

8. Further Schedule of the Study

1) The Team will proceed to further studies in Jamaica until 28 September, 1997.

2) On the basis of the Minutes of Discussions and technical examination of the study results, JICA will prepare the Draft Basic Design and dispatch a team to Jamaica around the end of October 1997 in order to present the outline of the Draft Basic Design.

3) Upon acceptance of the Draft Basic Design by the Government of Jamaica, JICA will complete the Basic Design Study Report and forward it in its final form to the Government of Jamaica by January 1998.



MAP of Whitehouse Top Beach District SCALE ≒ 1 / 1000

ANNEX II : ITEMS REQUESTED BY THE GOVERNMENT OF JAMAICA

1) Jetty (onloading ice, fuel and water)
2) Gear lockers (stocking fishing gear and outboard engine)
3) Workshop (maintenance and repair of outboard engine, boats and fishing gears)
4) Fish handling facility (sorting and washing fish, and treating its effluent)

Advisable component of the Project will be shown in the Draft Basic Design as the result of the analysis made by the Team in Japan.

ANNEX III: JAPAN'S GRANT AID SCHEME

1. Grant Aid Procedure

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

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

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

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

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

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

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

2. Basic Design Study

1) Contents of the Study

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

a) confirmation of the background, objectives and benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for the project's implementation;
b) evaluation of the appropriateness of the project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
c) confirmation of items agreed on by both parties concerning the basic concept of

the project;

d) preparation of a basic design of the project; and
e) estimation of costs of the project.

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

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

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participate the Study and prepare a report based upon the terms of reference set by JICA.

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

3. Japan's Grant Aid Scheme

1) What is Grant Aid?

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

2) Exchange of Notes (E/N)

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

3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes,

concluding contracts with consulting firms and contractors and final payment to them must be completed.
However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"

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

6) Undertakings required of the Government of the recipient country

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

7) "Proper Use"

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

8) "Re-export"

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

9) Banking Arrangement (B/A)

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

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of recipient country or its designated authority.

ANNEX IV: NECESSARY MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAMAICA

The following necessary measures should be taken by the Government of Jamaica on condition that the Grant Aid by the Government of Japan is extended to the Project.

1. to secure a lot of land necessary for the Project;

2. to clear and level the site for the Project prior to the commencement of the construction;

3. to provide a proper access road to the site;

4. to provide facilities for distribution of electricity, water supply, telephone trunk line, drainage and other incidental facilities outside the site;

5. to undertake incidental outdoor works, such as gardening, fencing, exterior lighting, and other incidental facilities in and around the site, if necessary;

6. to ensure prompt unloading and customs clearance of the products purchased under the Japan's Grant Aid at ports of entry in Jamaica;

7. to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Jamaica with respect to the supply of the products and services under the verified contracts;

8. to accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the verified contracts, such facilities as may be necessary for their entry and stay in Jamaica and stay therein for the performance of their work;

9. to bear commissions, namely advising commissions of the Authorization to Pay (A/P) and payment commissions, to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A);

10. to provide necessary permissions, licenses and other authorization for implementing the Project, if necessary;

11. to ensure that the facilities constructed and equipment purchased under the Japan's Grant Aid be maintained and used properly and effectively for the Project; and

12. to bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project.

MINUTES OF DISCUSSIONS

BASIC DESIGN STUDY ON THE PROJECT FOR SMALL-SCALE FISHERIES DEVELOPMENT IN JAMAICA

(Consultation on the Draft Basic Design)

The Japan International Cooperation Agency (JICA) has dispatched a basic design study team for the Project for Small-scale Fisheries Development (hereinafter referred to as "the Project") to Jamaica in September 1997. As a result of the series of discussions in Jamaica, and technical examination of the results in Japan, JICA prepared the Draft Basic Design of the Project.

To inform the Jamaican side about the components of the Draft Basic Design, JICA sent to Jamaica a study team headed by Mr. Katsutoshi MIYAKAWA, Economic Co-operation Bureau, Ministry of Foreign Affairs. The team is scheduled to stay in Jamaica from November 2 to November 7, 1997.

As a result of discussions, both sides have agreed on the main items as described in the attached sheets. The team will undertake the necessary steps in order to finalize the Basic Design Study Report.

Kingston, November 7, 1997

for Hon. Horace A. CLARKE
Minister of Agriculture and Mining
Ministry of Agriculture and Mining

Katsutoshi MIYAKAWA
Leader
Draft Basic Design Team
JICA

Winston ANDERSON
Director
Technical Cooperation and Regional
Planning Division
Planning Institute of Jamaica

ATTACHMENT

1. Participants in the Discussions

During the team's stay in Jamaica, the Japanese and the Jamaican sides had a series of discussions on the Draft Basic Design of the Project. The list of participants is shown in ANNEX I.

2. Components of the Draft Basic Design

The Government of Jamaica has, in principle, accepted the major components of the Draft Basic Design which are shown in ANNEX II.

3. Executing Agency

The Ministry of Agriculture and Mining is responsible for the administration and execution of the Project.

4. Operation & Maintenance

The facilities constructed under the Japan's Grant Aid will be owned by the Fisheries Division of the Ministry of Agriculture and Mining, and operated and maintained by the Gillings Gully Fishermen's Co-operative Society Ltd. which will be overseen by Whitehouse Fisheries Management Committee. The latter will be comprised of the Fisheries Division, the Gillings Gully Fishermen's Co-operative Society Ltd., Natural Resources Conservation Authority (NRCA) and Urban Development Corporation (UDC).

5. Japan's Grant Aid System

a) The Government of Jamaica has understood the system of Japan's Grant Aid as explained by the Team. The main features of the system are described in ANNEX III.

b) The Government of Jamaica will take necessary measures described in ANNEX IV for the smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

6. Issues to be Noted

The Government of Jamaica has recognized the necessity of relocating the informal operators (eg.fish vendors etc,.) to other suitable site, and submitted the document described in Annex V to verify the timely and smooth relocation of the above mentioned informal operators.

ANNEX I: LIST OF PARTICIPANTS

1. GOVERNMENT OF JAMAICA

Ministry of Agriculture and Mining

Hon. Terrence D. Gillete	Minister of State
Mr. Aaron Parke	Permanent Secretary
Mr. Hopeton Fraser	Chief Technical Director

Planning Institute of Jamaica

Mr. Winston W. E. Anderson	Director, Technical Cooperation and Regional Planning Division
Miss. Pauline Morrison	Manager, Bilateral Programme
Miss. Maxine Gray	Programme Officer - Bilateral Unit.

Fisheries Division

Mr. G. Andre Kong	Director
Mr. Stephen Smikle	Acting Director - Marine Branch
Mr. Ian Jones	Fisheries Officer

Gillings Gully Fishermen's Co-operative Society Ltd.

Mr. H. D. Honeyghan	Chairman
Mr. Amos Reid	Secretary

Urban Development Corporation

Mrs. Hyacinth Franklyn	Area Manager
Mr. Harry Eijkelenboon	Planning Architect

2. Embassy of Japan

Mr. Fumiyoshi Kashima	First Secretary

3. GOVERNMENT OF JAPAN

Katsutoshi MIYAKAWA	Team leader
Nobuo ITOI	Chief consultant

ANNEX II: COMPONENTS OF THE DRAFT BASIC DESIGN

1) Jetty and access road (loading ice, fuel, water and etc. and unloading fish)

Jetty: length : approx.65 m (effective length on sea 40 m + 25 m)
+ Access road: length : approx. 15 m = total length : approx. 80 m

Jetty: total width approx. 5.0 m (main body 5 m + steps 0.3 m x 2)
Road: width 5 m (concrete paving)

2) Gear lockers (stocking fishing gear and outboard engine)

24 rooms (approx. 200 m^2)

3) Workshop (maintenance and repair of outboard engines, boats and fishing gear)

Building floor area (approx. 125 m^2): tools and parts store room, small office, outboard engine test tank, repair stand, repair table,
Fishing gear and fishing boat repair area: (approx. 200 m^2; only columns for putting up tent)
One set of special tools, one set of general tools, and tool boxes

4) Fish handling facility (sorting, washing ,and effluent treatment)

Building floor area (approx. 350 m^2)
Site paving (approx. 2,000 m^2: including Gear Lockers, workshop and surrounding area)

ANNEX III: JAPAN'S GRANT AID SCHEME

1. Grant Aid Procedure

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

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

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

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

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

Fourth, the Project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

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

2. Basic Design Study

1) Contents of the Study

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

a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;
b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
c) confirmation of items agreed on by both parties concerning the basic concept of the Project;
d) preparation of a basic design of the Project; and
e) estimation of costs of the Project.

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

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

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participate the Study and prepare a report based upon the terms of reference set by JICA.

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

3. Japan's Grant Aid Scheme

1) What is Grant Aid?

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

2) Exchange of Notes (E/N)

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

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

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"

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

6) Undertakings required to the Government of the recipient country

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

7) "Proper Use"

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

8) "Re-export"

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

9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.
b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of recipient country or its designated authority.

ANNEX IV: NECESSARY MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAMAICA

The following necessary measures should be taken by the Government of Jamaica on condition that the Grant Aid by the Government of Japan is extended to the Project.

1. to secure a lot of land necessary for the Project;

2. to clear and level the site for the Project prior to the commencement of the construction;

3. to provide a proper access road to the site;

4. to provide facilities for distribution of electricity, water supply, telephone trunk line, drainage and other incidental facilities outside the site;

5. to undertake incidental outdoor works, such as gardening, fencing, exterior lightning, and other incidental facilities in and around the site, if necessary;

6. to ensure prompt unloading and customs clearance of the products purchased under the Japan's Grant Aid at ports of disembarkation in Jamaica;

7. to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Jamaica with respect to the supply of the products and services under the verified contracts;

8. to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into Jamaica and stay therein for the performance of their work;

9. to bear commissions, namely advising commissions of the Authorization to Pay (A/P) and payment commissions, to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A);

10. to provide necessary permissions, licenses and other authorization for implementing the Project, if necessary;

11. to ensure that the facilities constructed and equipment purchased under the Japan's Grant Aid be maintained and used properly and effectively for the Project; and

12. to bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project.

ANNEX V

Letter of Agreement

Re: The Project for Small-Scale Fisheries Development in Jamaica
Subject: Securing of the Project Site

Regarding the above matter, the Government of Jamaica confirms and commits itself to the following contents.

1. It is hereby proved that the Project site is government-owned land.
   (See the attached Annex VI Project Site Map)

2. Regarding the securing of the Project site and the relocation of the informal operators (eg. fish vendors etc.) currently on the site, the following steps shall be taken.

a) Relocation of informal operators (eg. fish vendors)
   In order that there will be mutual acceptance regarding the process of relocation, the informal operators will be sensitized through meetings and consultations by the Government of Jamaica and other relevant organizations.

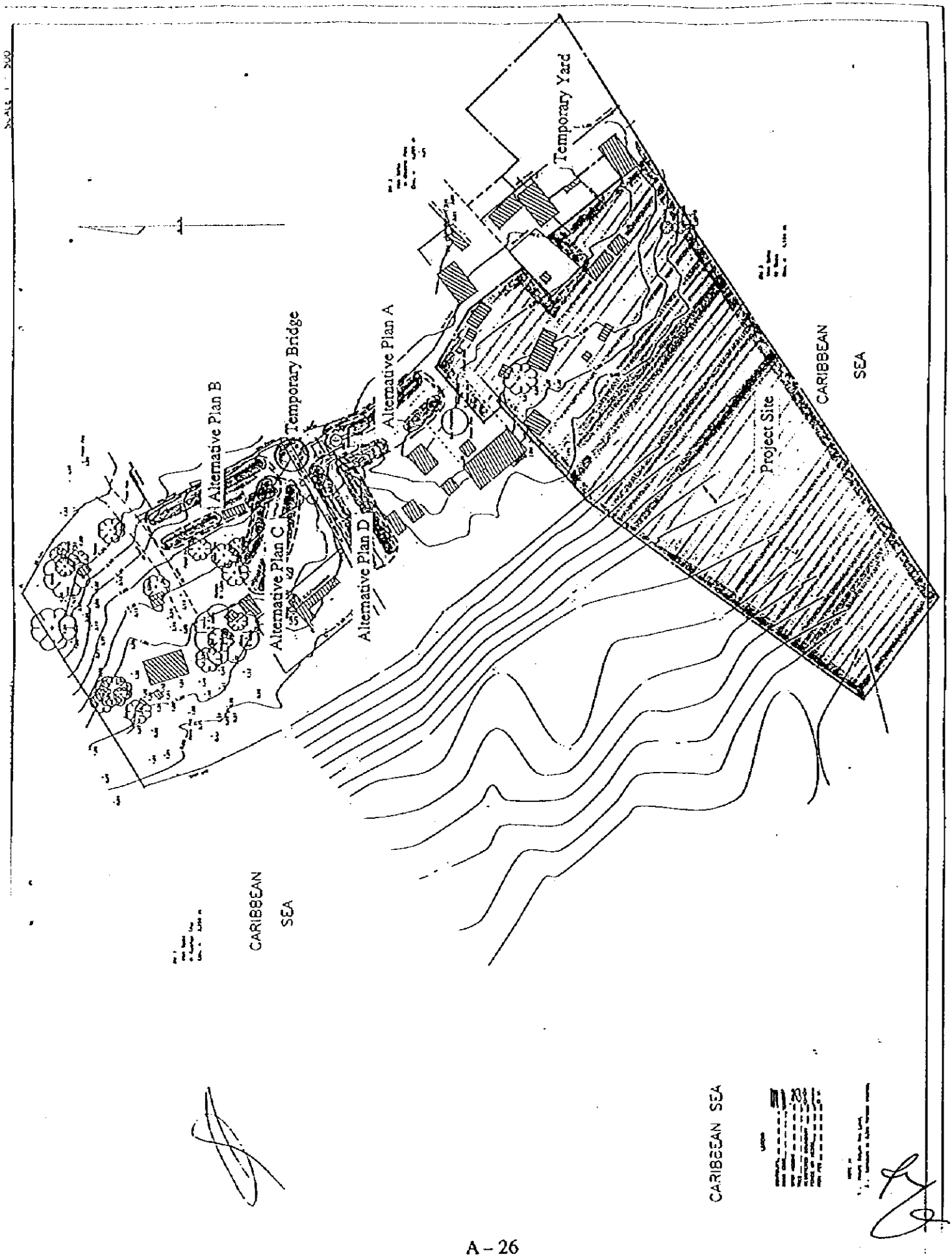
b) Removal of informal infrastructures.
   The removal of informal infrastructure shall be completed by the last day of April 1998 (assuming that the E/N are signed by January 1998).

c) Relocation Site.
   The informal operators currently on the Project site shall be relocated to the area (Alternative Plan A) shown on the attached Annex VI (Project Site Map).

Hon. Horace A. CLARKE
Minister of Agriculture and Mining
Ministry of Agriculture and Mining

Winston ANDERSON
Director
Technical Cooperation and Regional Planning Division
Planning Institute of Jamaica

ANNEX VI Project Site Map



APPENDIX 5 COST ESTIMATION BORNE BY THE RECIPIENT COUNTRY

(1) The cost to be undertake by the Government of Jamaica

1) Pavement Work	283,000J$ (0.98 million yen)
2) Wiring Work	581,000J$ (2.02 million yen)
Total	864,000J$ (3.00 million yen)

(2) Conditions upon estimation

1) Estimation Date: As of November 1997

2) Exchange rate: 1US$ = 119 yen, 1US$ = J$34.29, 1J$ = 3.47 yen

3) Duration of the work implementation

The work shall be implemented in one term and the duration of Detailed Design, Construction Work and procurement of the Project equipment's and materials are as indicated in Work implementation Schedule.

4) Others

The Project shall be implemented under the grant aid scheme provided by the Government of Japan.

APPENDIX 6 OTHER RELEVANT DATA

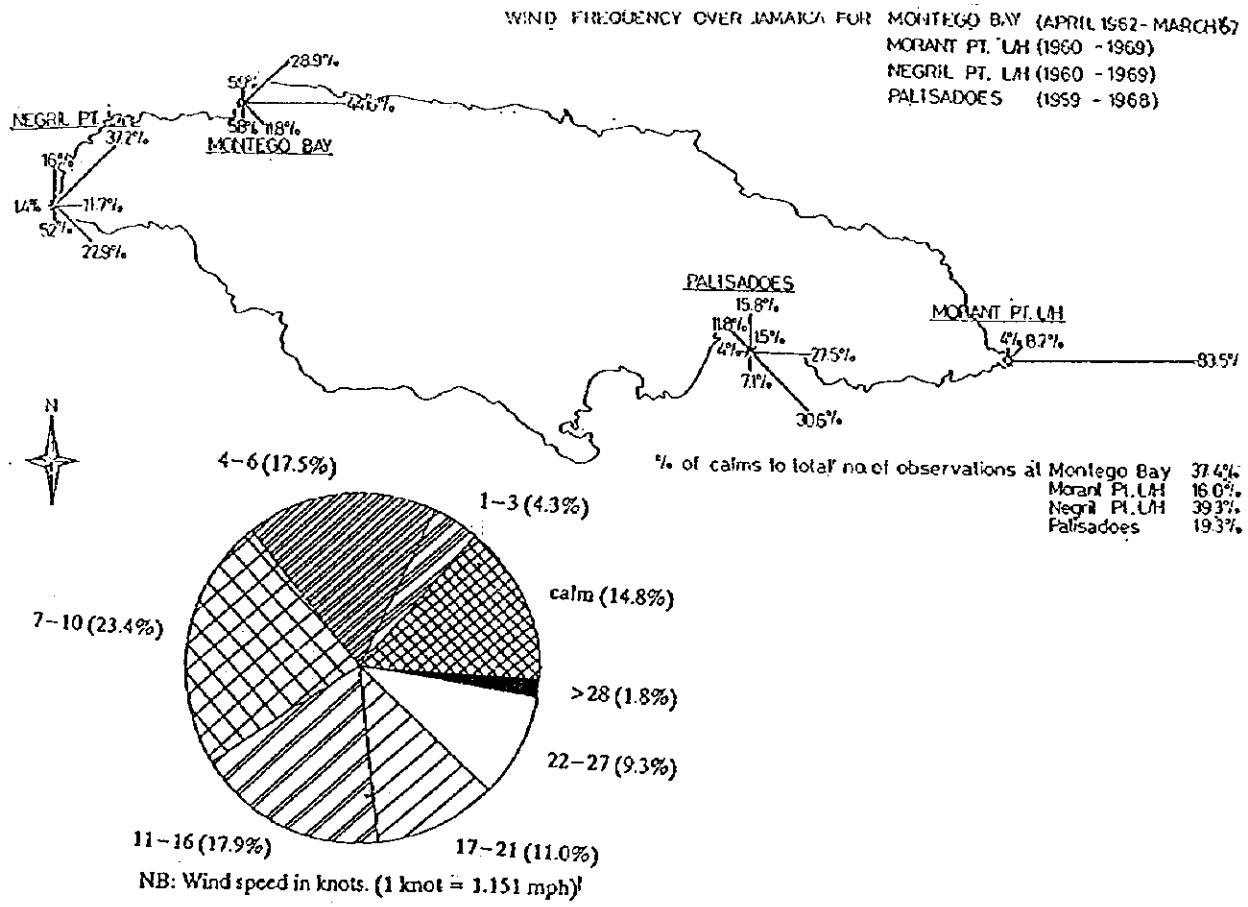
RESULTS OF NATURAL CONDITION AND ENVIRONMENTAL SURVEY

METEOROLOGICAL DATA

Table 5.1 Some climatological normals.

	Period	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Piarco Airport, Trinidad and Tobago													
Max. temp. (°C)	1946–75	30	30.3	31.2	31.8	31.6	30.6	30.7	31	31.4	31.3	30.7	30
Ext. max. (°C)	1946–75	31.1	31.6	32.4	33.3	33.2	32.3	32.4	32.7	33.1	32.9	32.4	31.5
Min. temp. (°C)	1946–75	20.4	20.4	20.9	21.9	22.9	23.1	22.7	22.6	22.6	22.5	22.0	21.2
Ext. min. (°C)	1946–75	17.6	17.6	18.3	19.0	21.0	21.3	20.9	20.8	20.9	20.8	20.0	18.5
Rainfall (mm)	1946–80	75	48	35	49	118	265	262	245	181	163	207	152
Sunshine (hours)	1946–75	7.5	7.9	8.1	7.9	7.7	6.3	7.0	6.9	6.8	6.6	6.6	6.7
RH (7am) (%)	1946–75	82	80	78	77	80	85	85	86	85	85	86	85
10 m wind (ms^{-1})	1946–75	4.9	5.6	6.2	6.3	6.5	5.8	4.6	3.6	3.6	3.7	3.7	4.1
Evap. (mm)	1967–84	5.0	6.0	6.8	7.0	6.7	5.3	5.5	5.4	5.4	5.0	4.6	4.5
Manley Airport, Jamaica													
Max. temp. (°C)	1951–80	29.8	29.6	29.8	30.3	30.8	31.2	31.7	31.9	31.7	31.3	31.1	30.5
Ext. max. (°C)	1947–87	32.8	33.3	33.9	34.4	33.9	36	36.7	35.8	36.1	34.4	33.9	33.8
Min. temp. (°C)	1951–80	22.3	22.3	22.9	22.6	24.7	25.3	25.6	25.3	25.3	24.8	24.1	23.1
Ext. min. (°C)	1947–87	15.6	13.9	15.6	18.9	20.0	21.0	20.0	21.7	20.0	20.6	20.6	19.4
Rainfall (mm)	1951–80	18	16	14	27	100	83	40	81	107	167	61	31
Raindays	1951–80	4	4	3	5	5	6	4	6	8	10	6	4
Sunshine (hours)	1951–80	8.3	8.6	8.5	8.7	8.2	7.7	8.2	8.0	7.2	7.4	7.8	7.8
RH (7 am) (%)	1951–80	80	78	77	77	76	73	76	76	78	80	79	78
RH (1 pm) (%)	1951–80	61	62	64	60	66	65	65	68	68	65	65	64
2 m wind (ms^{-1})	1972–86	1.7	1.9	1.9	2.0	2.5	2.9	2.6	2.3	1.8	1.4	1.3	1.5
10 m wind (ms^{-1})	1957–87	3.9	4.4	4.4	4.1	4.8	6.1	5.6	4.8	4.0	3.4	3.0	3.3
Evap. (mm)	1967–87	5.7	5.9	7.0	7.4	7.5	8.0	8.2	7.5	6.6	6.2	5.3	5.4

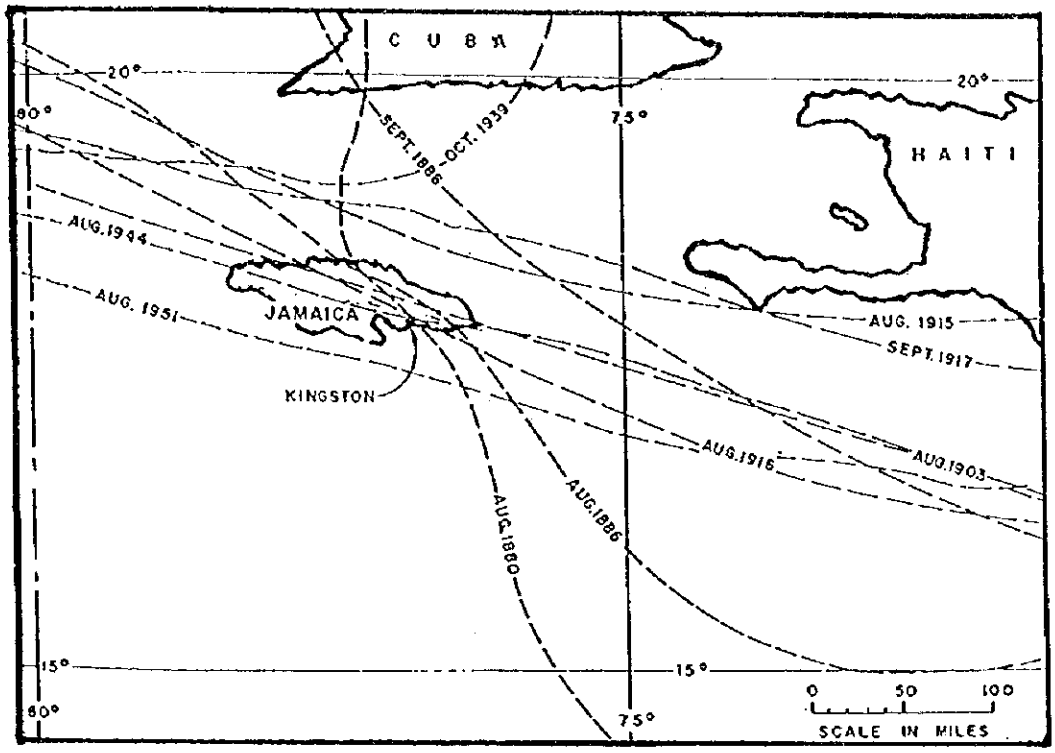
Abbreviations: Max. temp. = maximum temperature; Ext. max. = extreme maximum; Min. temp. = minimum temperature; Ext. min. = extreme minimum; RH = relative humidity; Evap. = evaporation.



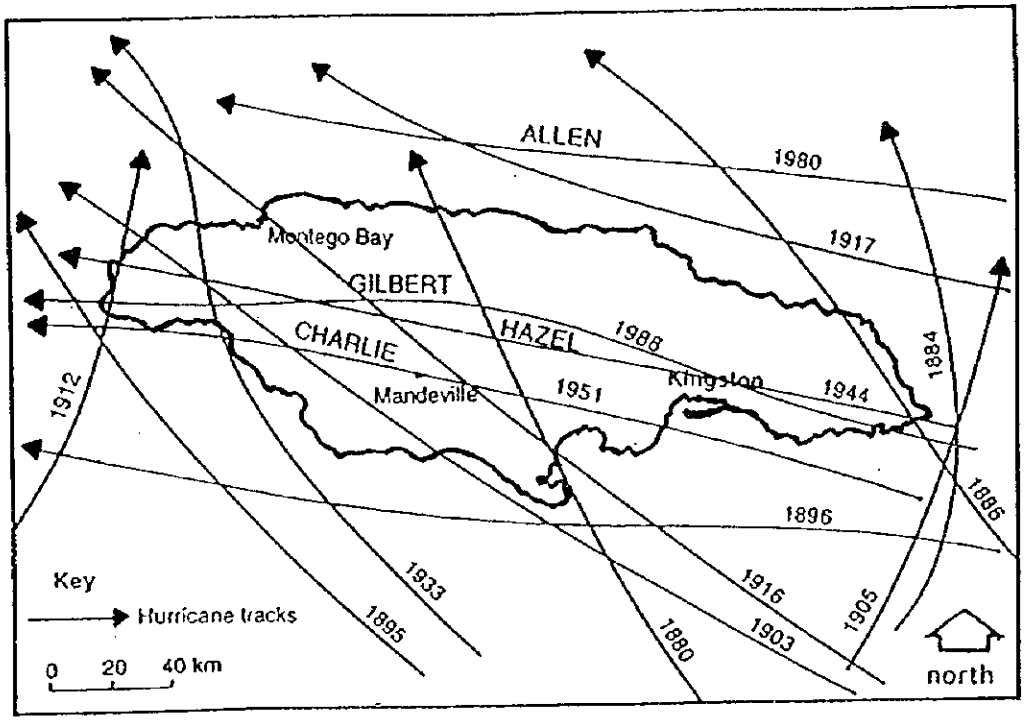
NB: Wind speed in knots. (1 knot = 1.151 mph)

HARRICANE TRACKS

(1) 1880-1965



(2) HURRICANE TRACKS OVER JAMAICA 1880-1988



HARRICANE LIST

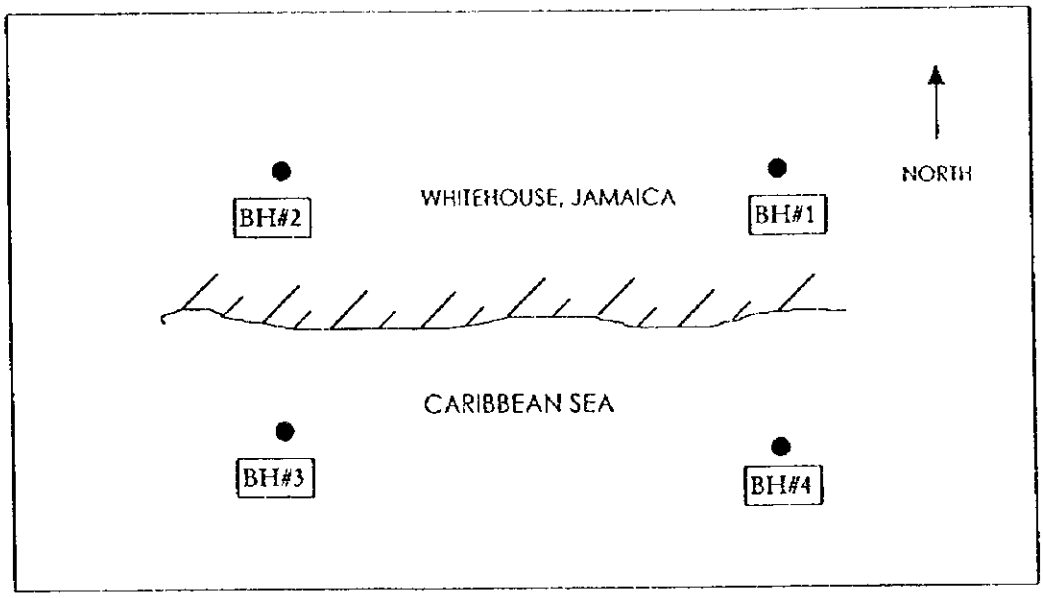
List of hurricane/tropical storm which have passed in the circle of 400km radius from Jamaica from 1963 to 1992

No.	Name	Year	Period	Max.wind(m/s)	Pressure(Hp)	Class	Relative position
1	FLORA	1963	OCT. 4-6	55.5	940	H/4	N
2	CLEO	1964	AUG. 24-25	59.9	950	H/5	N
3	INEZ	1965	SEP.28-OCT.1	57.7	929	H/4	N
4	BEULAH	1967	SEP. 13-15	57.7	947	H/4	S
5	FRANCELIA	1969	AUG. 31	44.4	973	H/3	S
6	ALMA	1970	21-May	31.1	993	H/1	S
7	DOROTHY	1970	AUG.	26.6	998	T/S	S
8	CHLOE	1971	AUG.21-25	24.4	1004	T/S	S
9	GILDA	1972	OCT. 17-19	26.6	994	T/S	N *
10	CARMEN	1974	AUG.31-SEP.2	57.7	928	H/4	S
11	EFI	1974	SEP. 16	42.2	971	H/2	S
12	SUBTROP 4	1974	OCT. 6	17.8	1006	S1 T/S	N
13	CAROLINE	1975	AUG. 26	44.4	973	H/3	NW
14	ELOISE	1975	SEP. 14-18	48.8	955	H/3	NW
15	CLAUDETTE	1979	JULY 17-20	17.7	1010	T/S	N
16	DAVID	1979	AUG.31-SEP.3	66.6	924	H/5	N
17	FREDERIC	1979	SEP. 4-7	51.1	943	H/4	N
18	ALLEN	1980	AUG. 6	68.8	911	H/5	N
19	HERMINE	1980	SEP.20-21	26.6	993	T/S	S
20	ARLENE	1981	MAY 7-8	22.2	999	T/S	N *
21	DENNIS	1981	AUG. 14	31.1	995	H/1	N
22	DANNY	1985	AUG. 12-19	35.5	988	H/1	N *
23	ELENA	1985	AUG. 28	48.8	953	H/3	N
24	DANIELLE	1986	SEP. 10	22.2	1000	T/S	S
25	GILBERT	1988	SEP. 12-14	71	888	H/5	JUST
26	KEITH	1988	NOV. 18-20	26.6	985	T/S	S
27	ARTHUR	1990	JULY 25-27	26.6	995	T/S	S

Unit conversion of wind speed : mph=0.444m/s * : return back after passed site

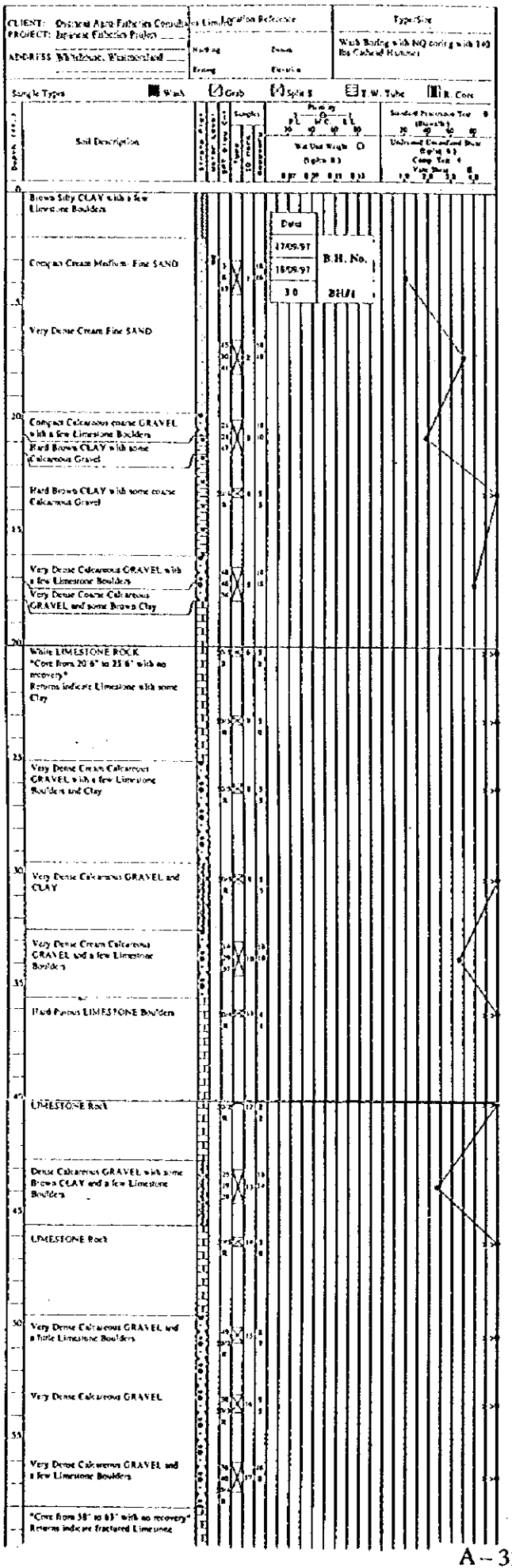
Site location : 18N05'
77W58'

* Not to Scale. Representational Diagram.*

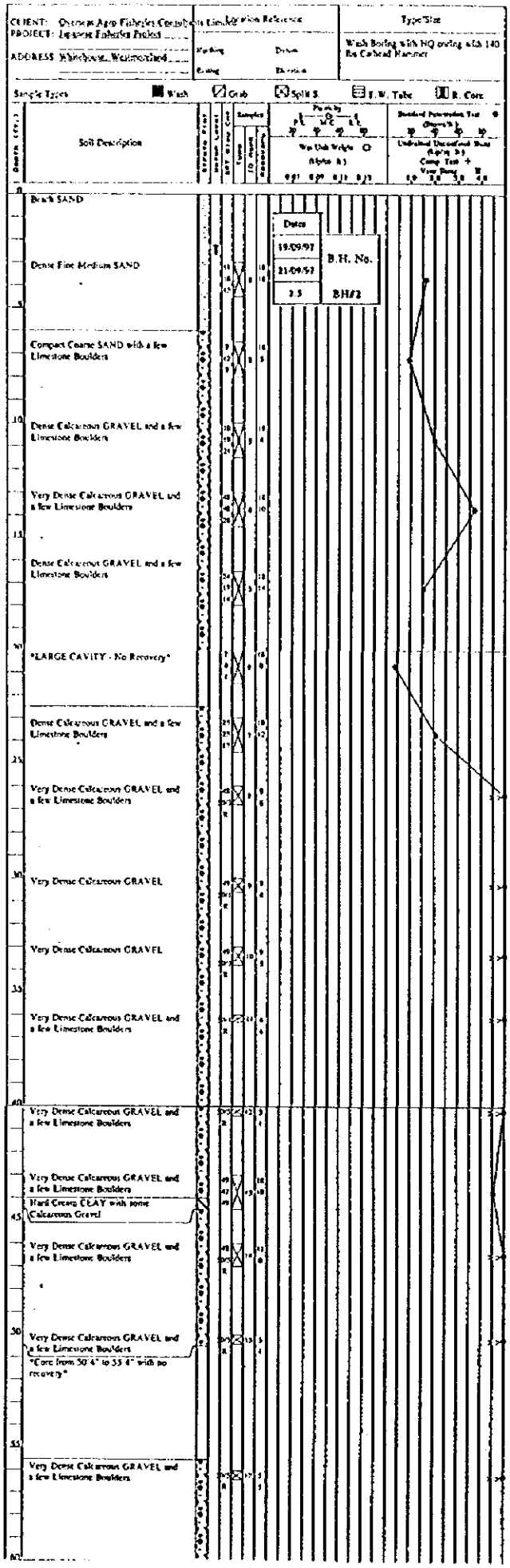


BOREHOLE LOGS ON WHITEHOUSE SITE

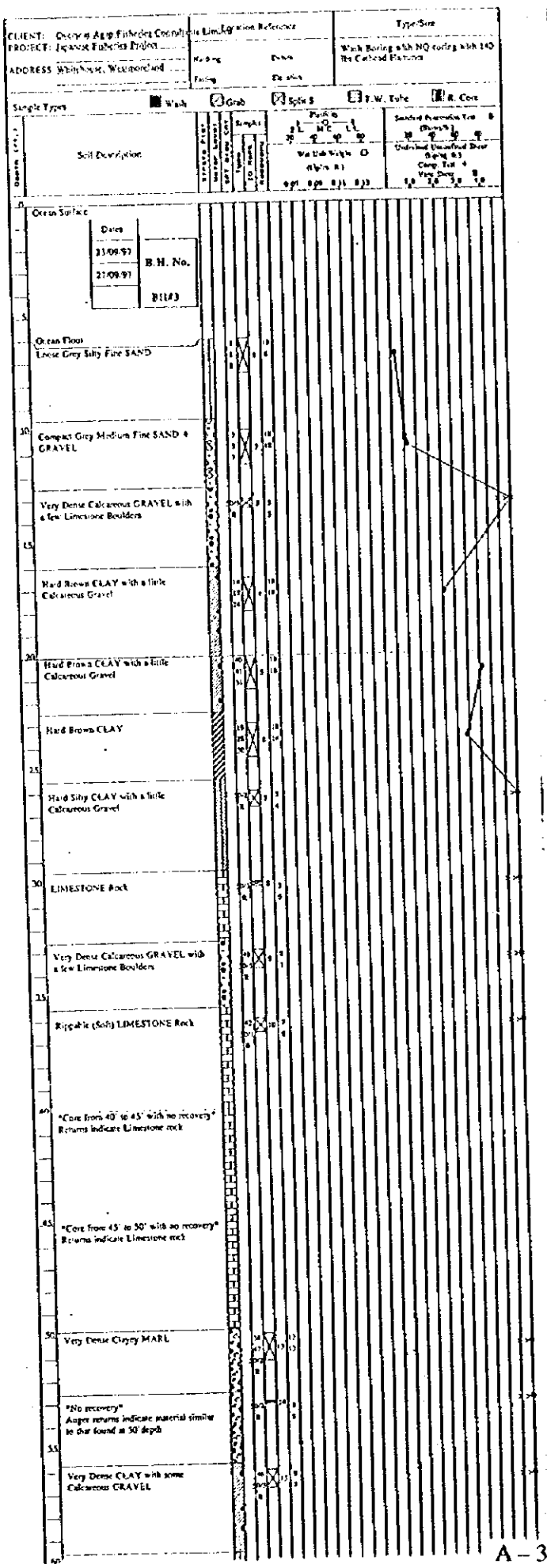
HB/#1



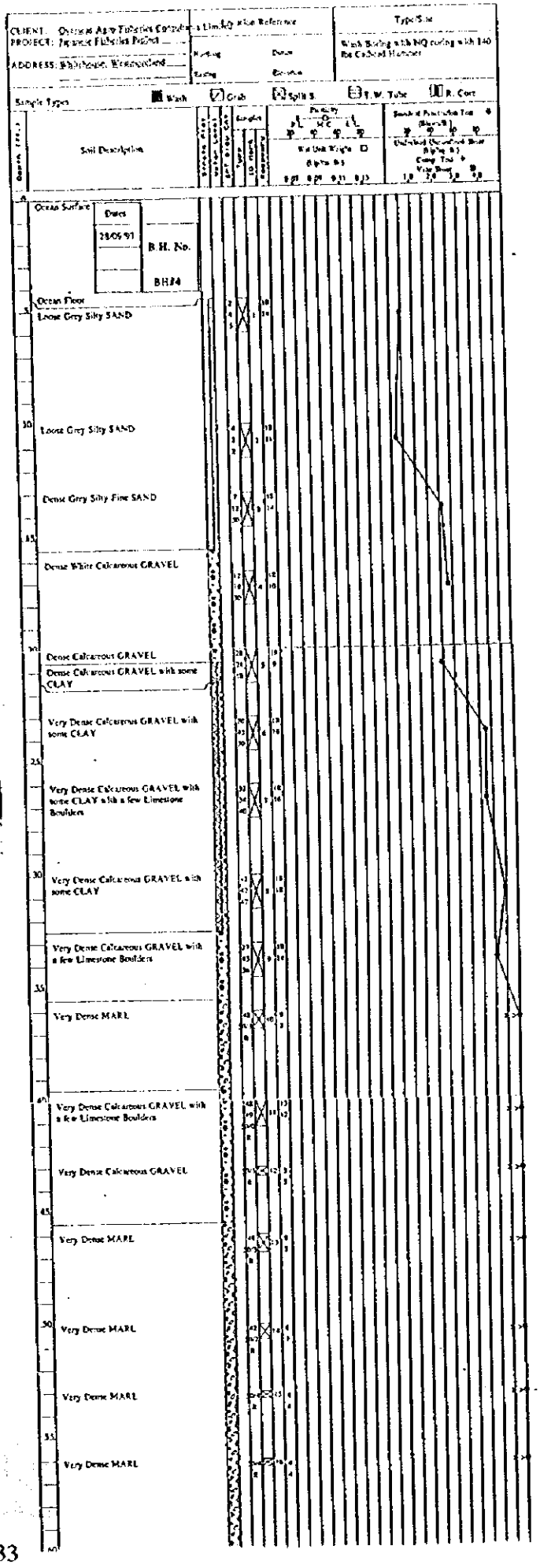
BH/#2



BH/#3


Ocean Surface
Dates
23/09/97
21/09/97
B.H. No.
BH#3
Ocean Floor
Loose Grey Silty Fine SAND
Compact Grey Medium Fine SAND & GRAVEL
Very Dense Calcareous GRAVEL with a few Limestone Boulders
Hard Brown CLAY with a little Calcareous Gravel
Hard Brown CLAY with a little Calcareous Gravel
Hard Brown CLAY
Hard Silty CLAY with a little Calcareous Gravel
LIMESTONE Rock
Very Dense Calcareous GRAVEL with a few Limestone Boulders
Rippable (Soft) LIMESTONE Rock
"Core from 40' to 45' with no recovery" Returns indicate Limestone rock
"Core from 45' to 50' with no recovery" Returns indicate Limestone rock
Very Dense Clayey MARL
"No recovery" Auger returns indicate material similar to that found at 50' depth
Very Dense CLAY with some Calcareous GRAVEL

BH/#4


Ocean Surface
Dates
28/05/97
B.H. No.
BH#4
Ocean Floor
Loose Grey Silty SAND
Loose Grey Silty SAND
Dense Grey Silty Fine SAND
Dense White Calcareous GRAVEL
Dense Calcareous GRAVEL
Dense Calcareous GRAVEL with some CLAY
Very Dense Calcareous GRAVEL with some CLAY
Very Dense Calcareous GRAVEL with some CLAY with a few Limestone Boulders
Very Dense Calcareous GRAVEL with some CLAY
Very Dense Calcareous GRAVEL with a few Limestone Boulders
Very Dense MARL
Very Dense Calcareous GRAVEL with a few Limestone Boulders
Very Dense Calcareous GRAVEL
Very Dense MARL
Very Dense MARL
Very Dense MARL
Very Dense MARL

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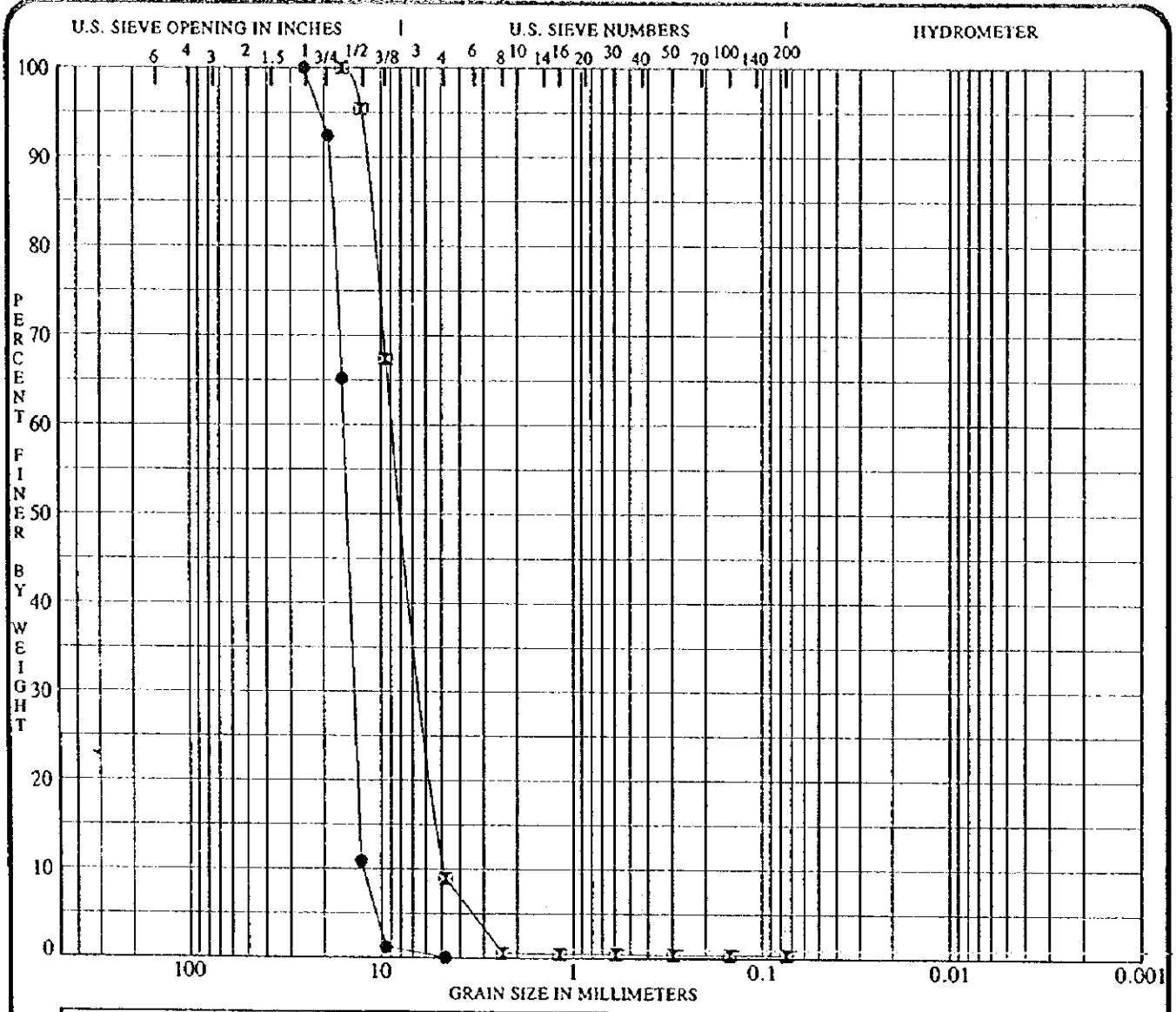

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● 3/4STONE	0.0							
⊠ 5/8STONE	0.0							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 3/4STONE	0.0	25.40	15.65	13.770	12.3600				
⊠ 5/8STONE	0.0	16.00	8.71	6.105	4.8170	91.0	8.6	0.4	

PROJECT Japanese Fisheries Project - Whitehouse, Westmoreland

JOB NO. 97024

DATE 06/01/98

GRADATION CURVES

Jamaica Engineering & Technical Services Limited

Kingston, JAMAICA

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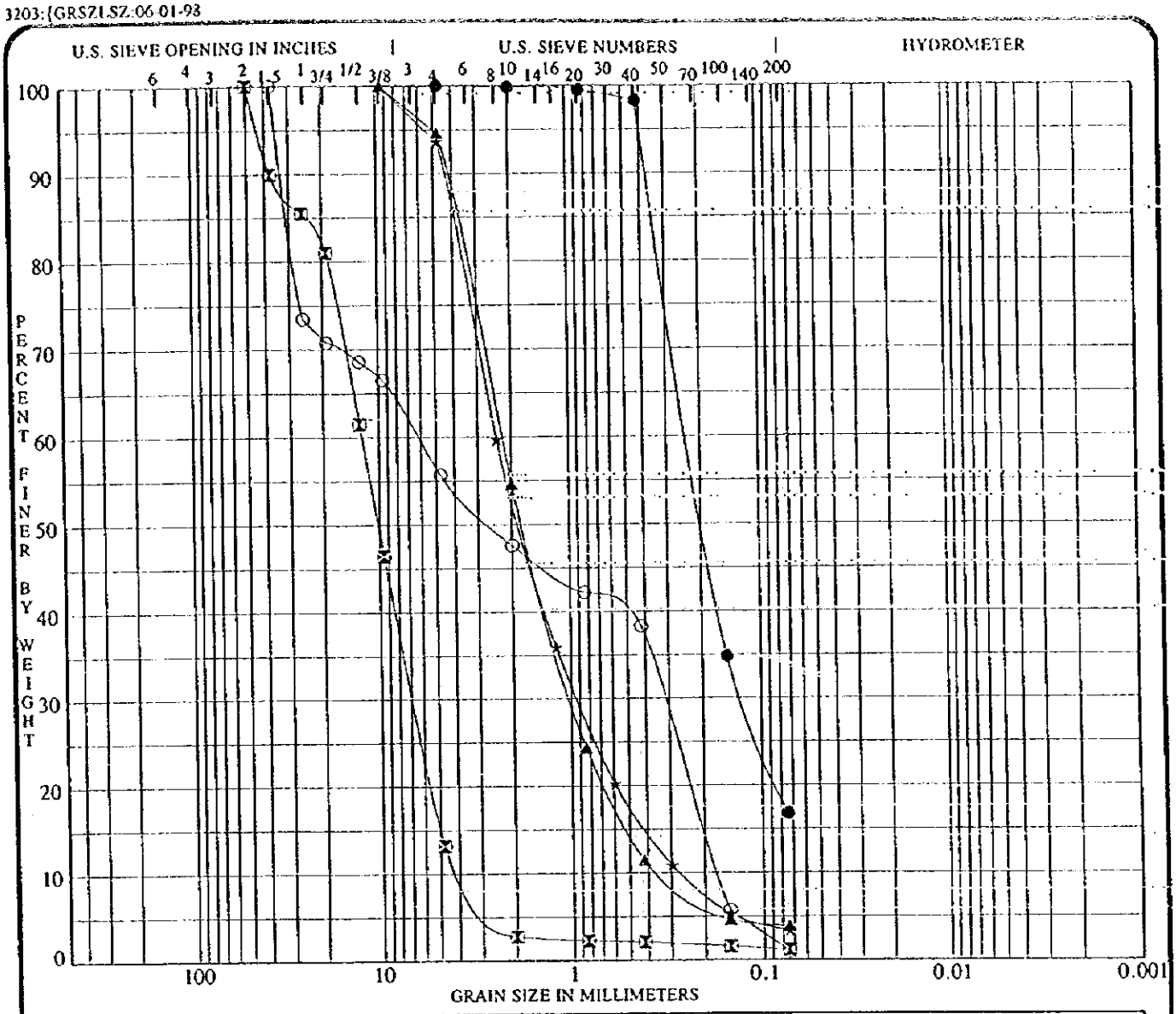

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	MC%	LL	PL	PI	Cc	Cu
●	ISHSBED1	0.0	Inshore Sea Bed Sample						
⊠	LIMESTON	0.0	Limestone Crusher Run						
▲	LIMSTNS	0.0	Limestone Crushed Sand						
★	SAND	0.0							
○	SHBSW1	0.0	Shoreline Beach Sample White House						

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	ISHSBED1	0.0	4.75	0.22	0.124		0.0	82.9	17.1	
⊠	LIMESTON	0.0	50.00	12.34	6.746	3.6400	86.8	12.0	1.2	
▲	LIMSTNS	0.0	9.50	2.25	0.988	0.3353	5.4	90.7	3.9	
★	SAND	0.0	9.51	2.40	0.917	0.2658	6.5	90.1	3.4	
○	SHBSW1	0.0	37.50	6.26	0.323	0.1708	44.3	54.6	1.1	

PROJECT Japanese Fisheries Project - Whitehouse, Westmoreland

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GRADATION CURVES

Jamaica Engineering & Technical Services Limited

Kingston, JAMAICA

JAMAICA ENGINEERING & TECHNICAL SERVICES LIMITED
143 Hope Road, P.O. Box 402, Kingston 10, Jamaica, W.I.
Telephones (876)-926-7756, (876)- 926-2201, (876)-926-2202 FAX: (876)-929-2515 Email JETS@toj.com

TEST REPORT

OUR REF. 97024 Fisheries Project, Whitehouse Westmoreland, Jamaica	CLIENT REF.	CLIENT AUTHORISATION:	REPORT DATE: 05/01/98
CLIENT: Overseas Agro-Fisheries Consultants Company Limited Japan ADDRESS:		REPORTED TO: Client COPIED TO:	

CLIENT REP:	SAMPLES TAKEN BY:			DATE SAMPLES RECEIVED:	TEST SPECIFICATIONS:
	Client	JETS	GEOTECH	27/10/97	Los Angeles Abrasion, Sieve & Specific Gravity & Unit Weight
	X				

1. Specific Gravity: 3/4 Sample:

S.G. (S S D)*	2.54
Absorption	3.65 %

2. Specific Gravity: 5/8 Sample:

S.G. (S S D)*	2.50
Absorption:	5.59 %

3. Specific Gravity: Sand Sample

S.G. (S S D)*	2.43
Absorption.	9.07 %

* S S D -Saturated Surface Dry

4. Los Angeles Abrasion:

Weight of Sample:	5000 g
Weight Loss After 100 revs	265.31 g
% Loss:	5.31
Weight Loss After 500 revs.	1126 g
% Loss:	22.52 g
Coefficient of Uniformity:	0.24

5. Unit Weight (Loose):

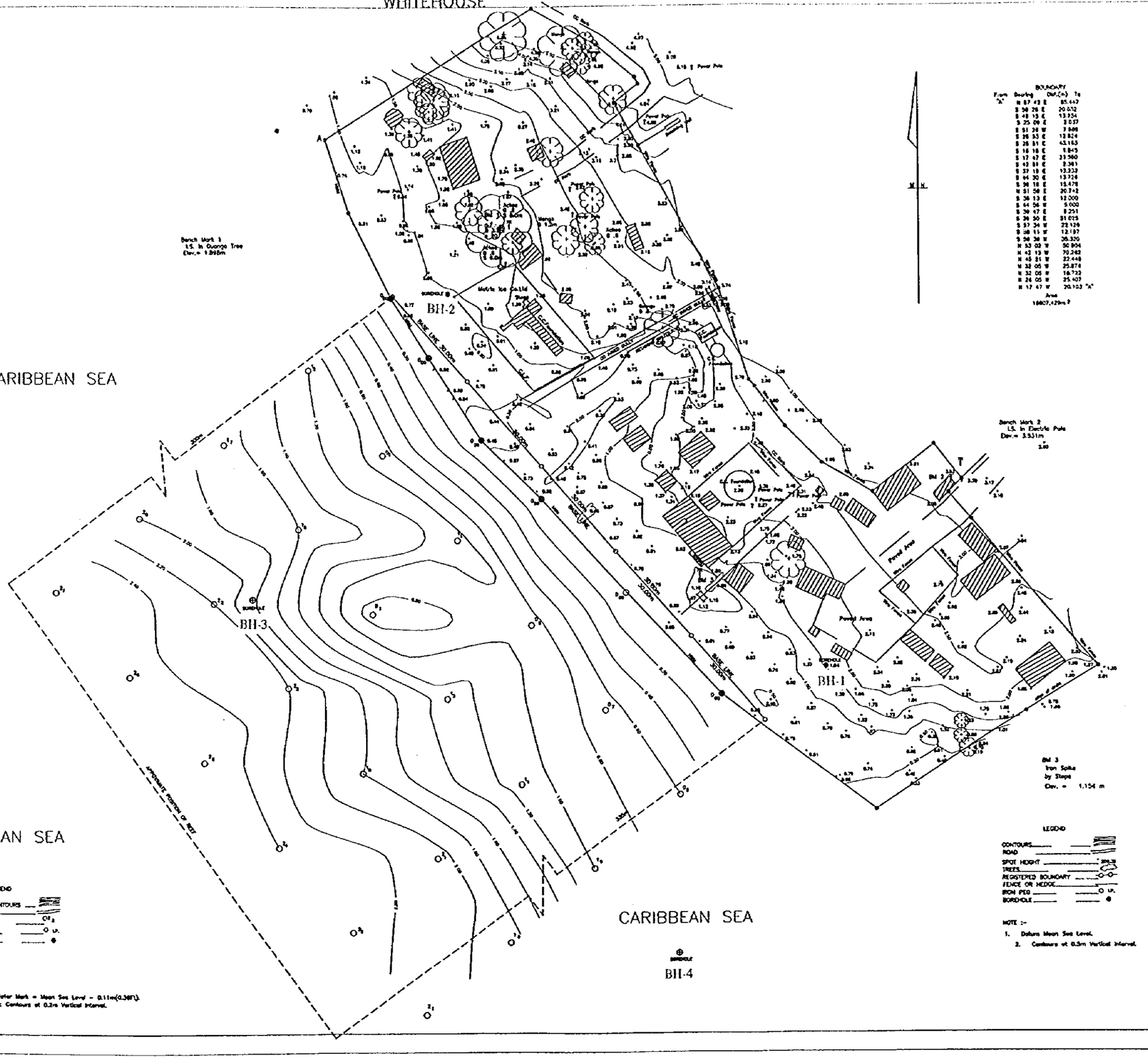
3/4 Stone:	79.86 lbs/Cu. Ft.
3/8 Stone:	81.29 lbs/Cu. Ft.

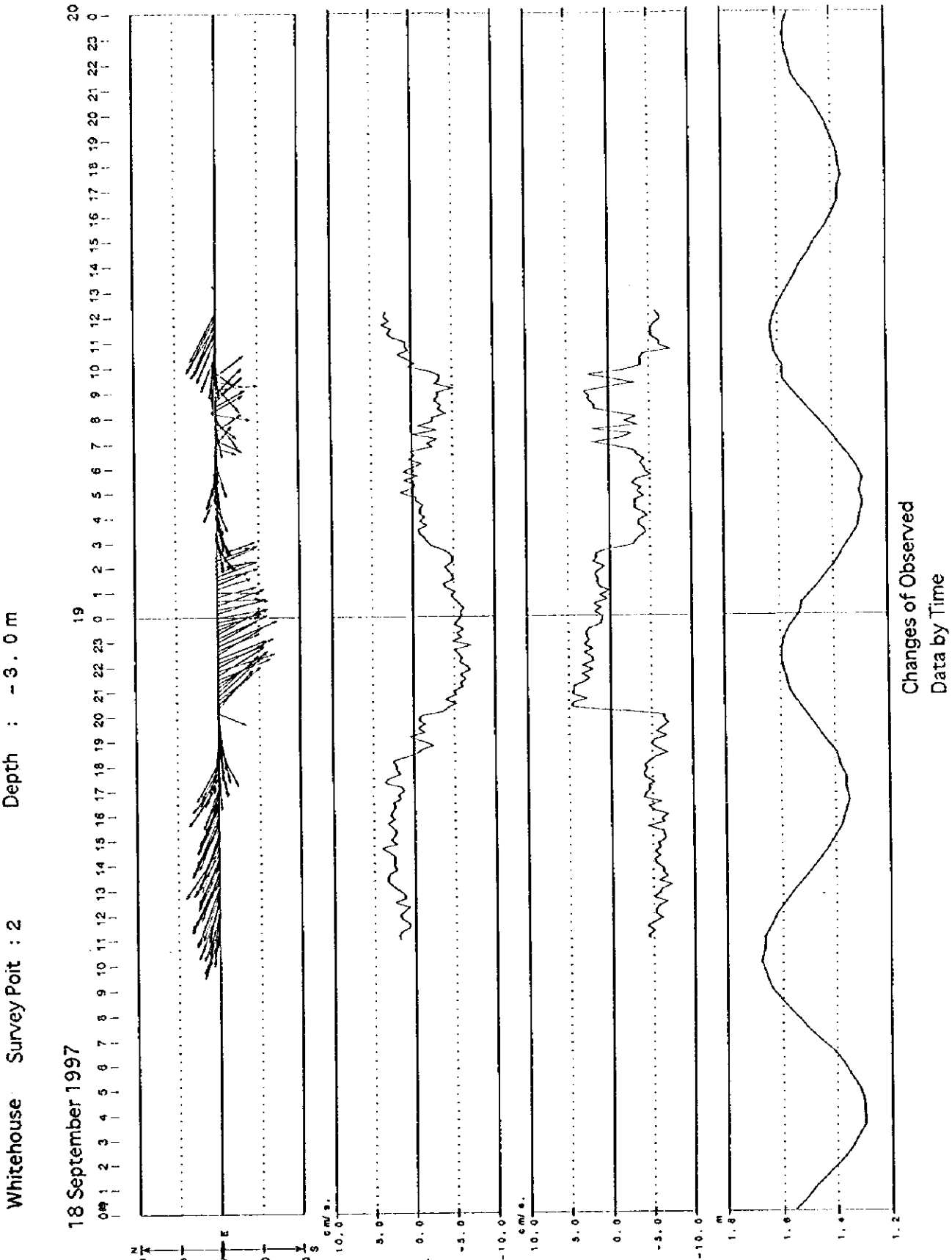
DATE TESTED:	TECHNICIAN:	Certified By:
10/11/97	Omar Spence	

WESTMORELAND, JAMAICA

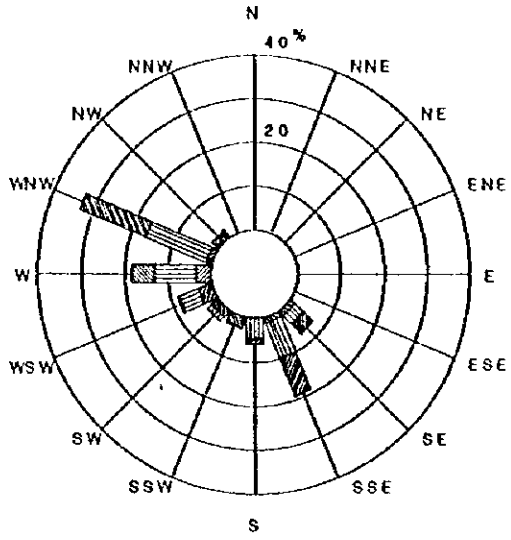
WHITEHOUSE

SCALE 1 : 500

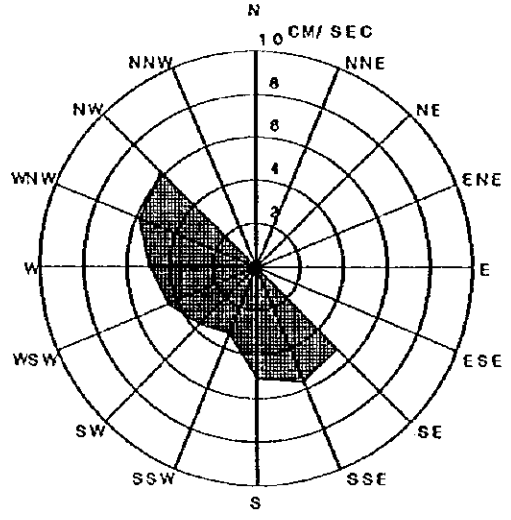



Whitehouse Survey Poit : 2 Depth : -3.0 m
18 September 1997
Vector
Velocity to North-direction
Velocity to East-direction
Tide level
Changes of Observed Data by Time

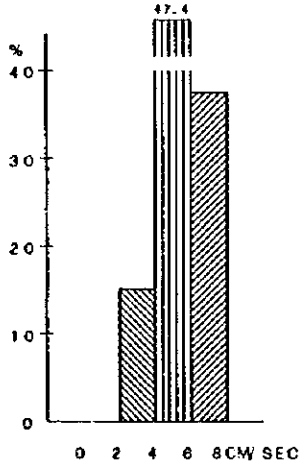
ST. 2 Depth -3.0M
18 September 1997 Whitehouse



Direction of tidal flow



Average velocity of tidal flow



Frequency by velocity of tidal flow

APPENDIX 7 REFERENCES

	Published/Source
1. Economic and Social Survey, Jamaica 1996	PIOJ
2. Jamaica Five Year Development Plan 1990-1995 - Agriculture Plan, - Science & Technology Plan, - Report of The Training Task Force)	PIOJ
3. National Plan of Action on Population & Development (1995 - 2015)	PIOJ
4. Jamaica Survey of Living Conditions	PIOJ
5. The Labour Market Information Newsletter of Jamaica	PIOJ
6. Economic Update & Outlook (V-1 No.1, No.4, V-2 No.1)	PIOJ
7. PIOJ / Outline (Revised Oct. 1995)	PIOJ
8. The Urban Development Corporation Act, 1968	UDC
9. South West Coast Development Plan (April, 1996)	UDC
10. Topographic Map, Whitehouse Fishing Beach (12/9/97 1:2000)	UDC
11. Progress Report of The Fisheries Division 1995-1996	Fisheries Division
12. Fishing Industry, The Fishing Industry Act (1st, Oct. 1976)	Fisheries Division
13. Fish Production, 1996	Fisheries Division
14. Plan for Managing The Marine Fisheries of Jamaica	Fisheries Division
15. 1997-1998 Jamaica Budget (Head 5100) Ministry of Agriculture and Mining	Fisheries Division
16. Jamaica National Environmental Action Plan Status Report 1996	Ministry of Environment and Housing
17. Guidelines for Project Proponents (Permit and License System, Dec. 1996	Natural Resources Conservation Authority
18. A Study of Earthquake Risk in Jamaica and its Influence on Physical Development Planning	Town Planning Dep.
19.	
20. The Statistics on Fisheries related Search & Rescue operations since 1993	JDF Coast Guard
21. Meteorological Data (Kingston : 1976 - 1996), Record of Hurricane	Meteorological Office
22. Tropical Cyclon : Preliminary Hazard Assessment (map)	Geological Survey Div.
23. National Building Code of Jamaica	

24. 1995 Catalogue of Jamaican Standards (JS)

25. Jamaican Standards

JS 32 : Part 1 : 1995	Draft, JS, Specificati on for Portland Cement
JS 86 : 1984	Specification for Prepared stone and gravel ballast
JS124 : 1989	Specification for Aggregate for concrete
JS 33 : 1985	Specification for Ready-mixed concrete
JS112 : Part 1 : 1984	Method for sampling and testing of Mineral aggregates, sands and fillers (Part 1. Sampling, size, shape and classification)
JS112 : Part 2 : 1984	Method for sampling and testing of Mineral aggregates, sands and fillers (Part 2. Physical properties)
JS112 : Part4 : 1984	Method for sampling and testing of Mineral aggregates, sands and fillers (Part4 . Chemical properties)
JS 20 : 1987	Specification for Panelboards and panelboard enclousure
JS 21 : 1992	Specification for Electrical Installations
JS 93 : 1984	Specification for PVC-insulated cables for electricity supply