

BASIC DESIGN REPORT
for
THE ESTABLISHMENT OF HIGH DAM LAKE
FISHERY MANAGEMENT CENTER
in
THE ARAB REPUBLIC OF EGYPT

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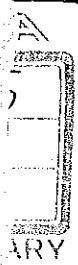
MARCH 1980

JAPAN INTERNATIONAL COOPERATION AGENCY

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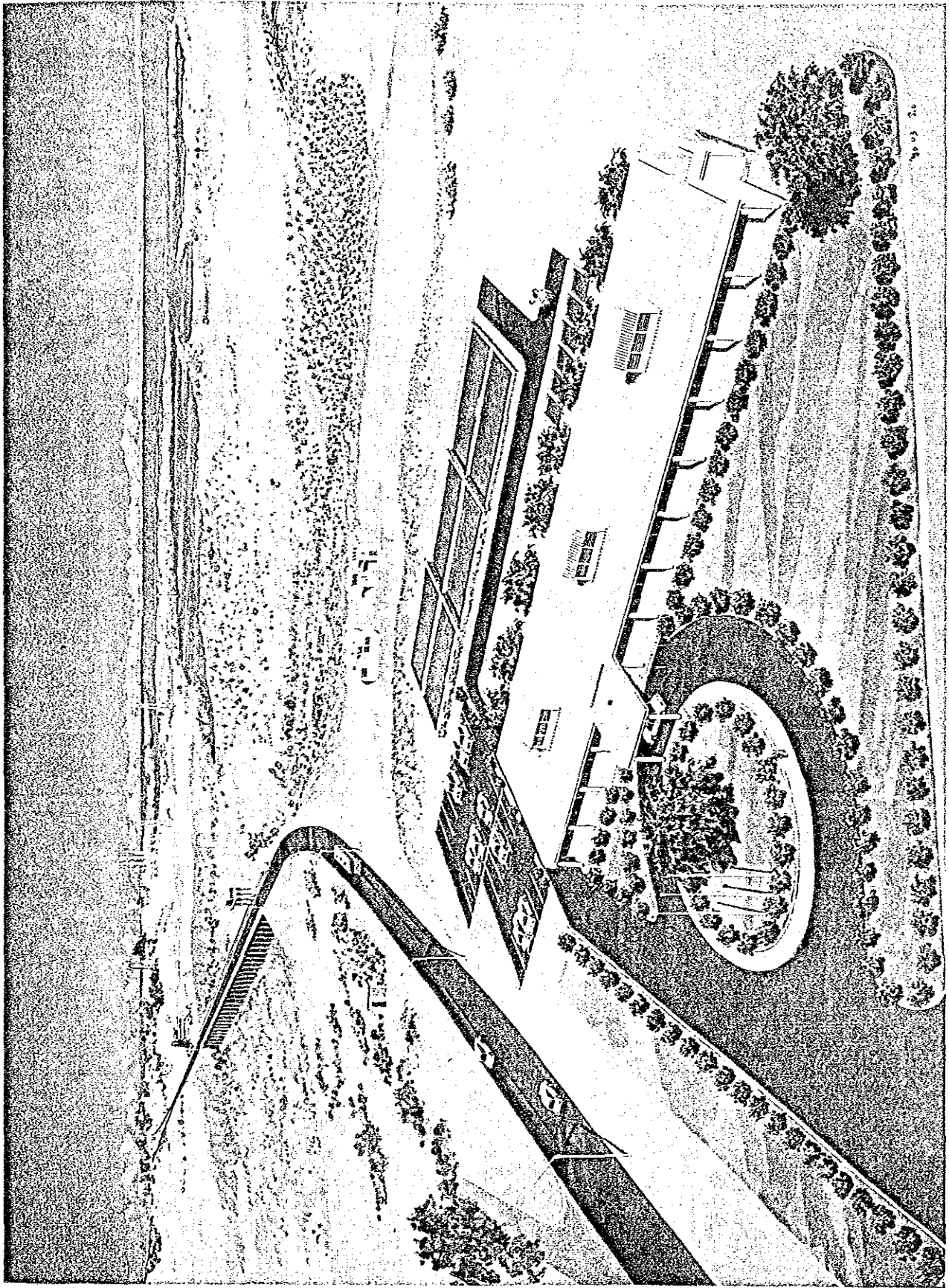
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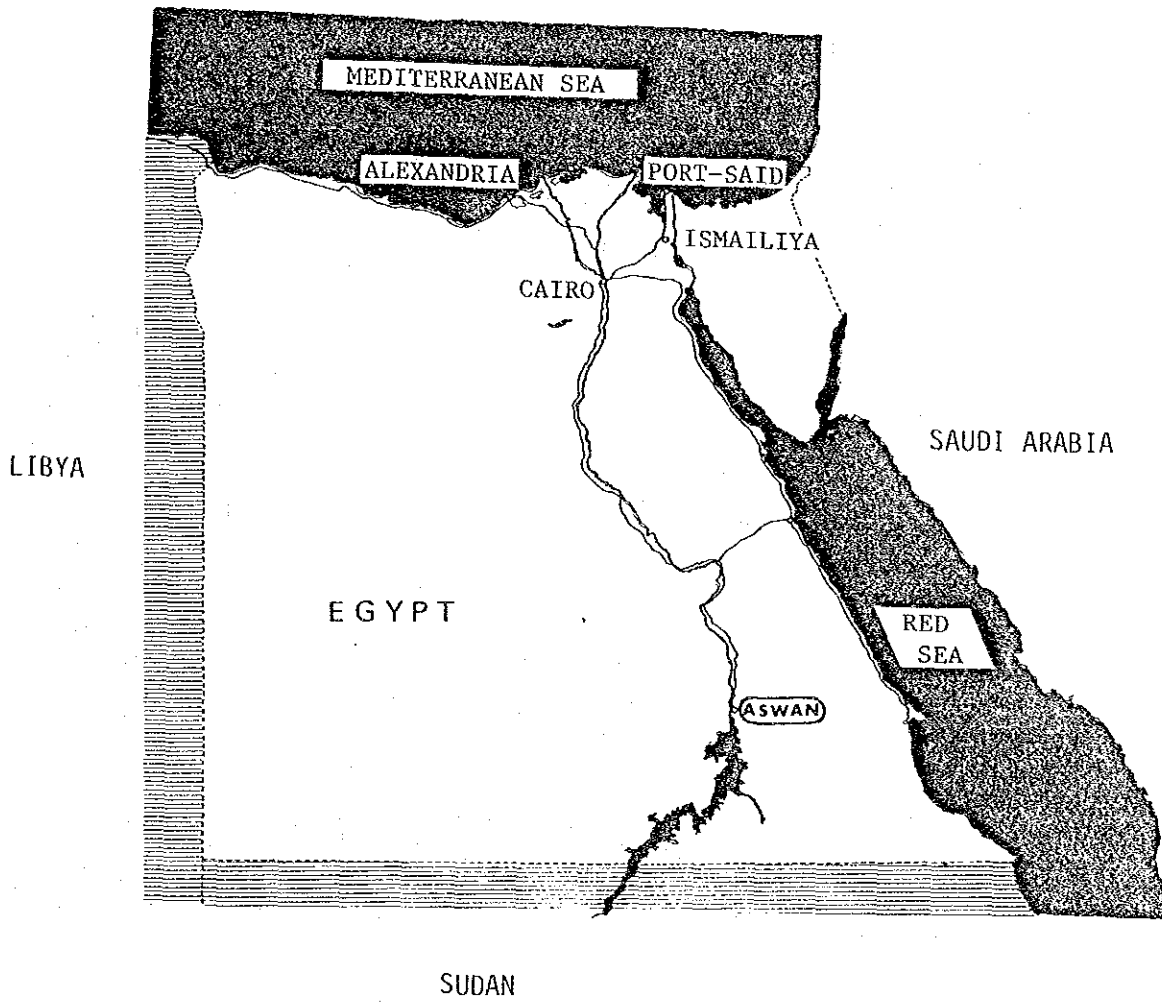
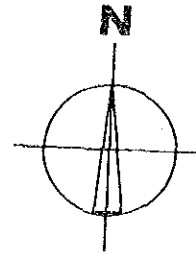


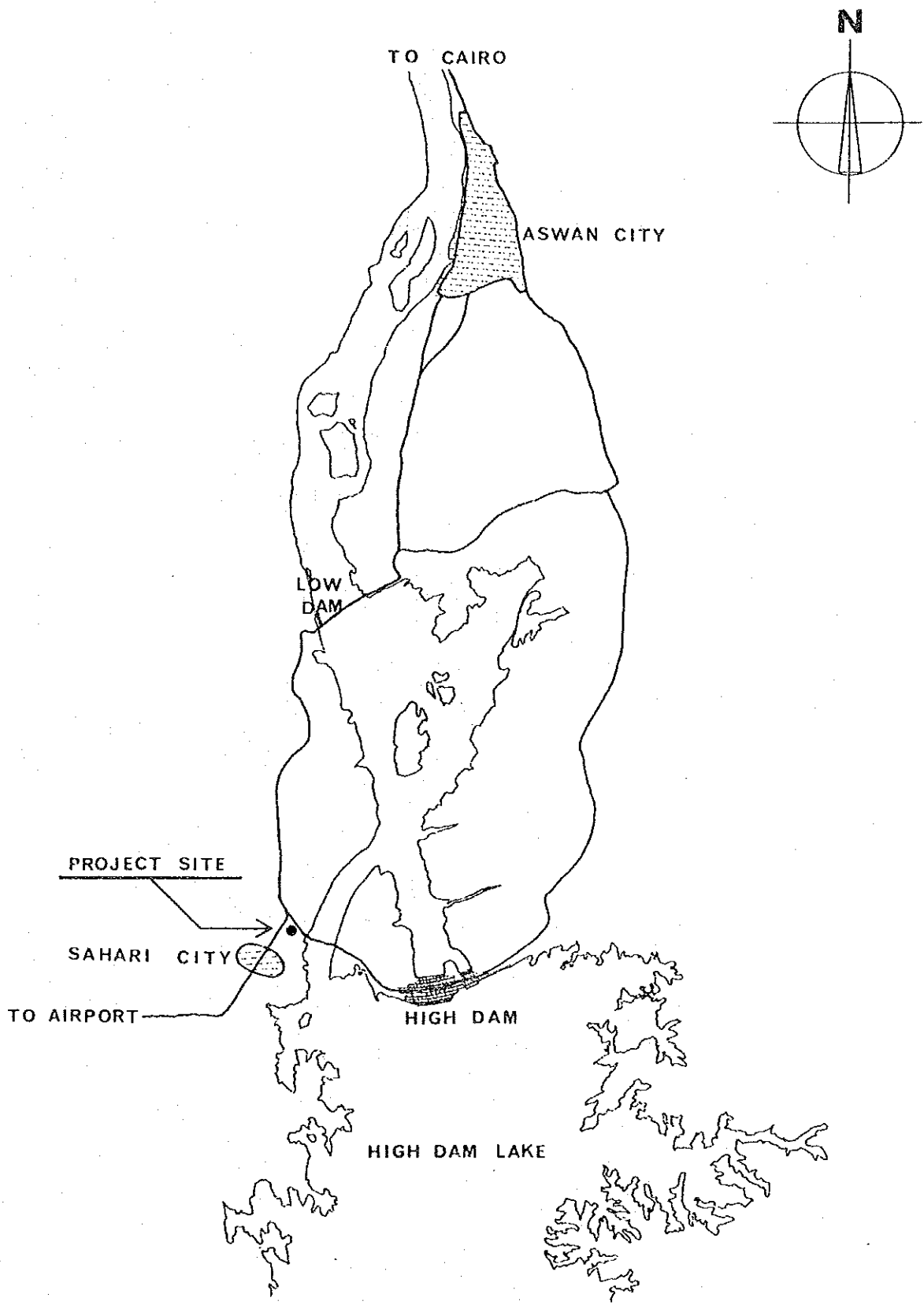
国際協力事業団

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HIGH DAM LAKE FISHERY MANAGEMENT CENTER





INFORMATION MAP

PREFACE

In response to the request of the Government of the Arab Republic of Egypt, the Government of Japan has decided to conduct, through the Japan International Cooperation Agency (JICA), a basic design survey on the establishment of High Dam Lake Fishery Management Centre designed to develop techniques and practice of fishery management, and to increase fishery resources as a central institution for fishery development in the High Dam Lake.

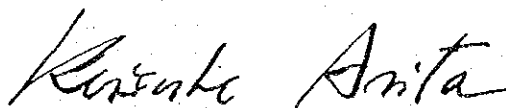
The JICA dispatched to Egypt a basic design survey team headed by Dr. Minoru Nomura, professor of Tokyo University of Fisheries, from January 31 to February 19, 1980.

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

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

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

April, 1980



Keisuke Arita
President
Japan International Cooperation Agency

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SUMMARY

S U M M A R Y

Due to the rapid increase and urbanization of the population in the past few decades, Egypt has become increasingly dependent on imported food stuffs in recent years. In order to alleviate the problem of extreme population concentration in a few large cities in the north and to raise the level of self-sufficiency in food, the Government of Egypt considers it one of the major long-term national objectives to open new lands and therein redistribute population and productive activities. The utilization of High Dam Lake and its surrounding area in Southern Egypt is one of the possibilities suggested for such regional development in the current Five-Year Plan (1978-82). In pursuance of this objective, a number of government agencies, notably the High Dam Lake Development Authority (HDLDA), have been conducting various preparatory works in the largely undeveloped area around High Dam Lake, with special emphasis on the development of fisheries, agriculture and mining.

In late 1977, the Government of Egypt requested the Government of Japan for technical cooperation in order to formulate an integrated development plan for the High Dam Lake area. In response to this request, the Japan International Cooperation Agency (JICA) dispatched the contact mission in May/June, 1978, and the full-staffed study team twice during the earlier half of 1979, and the report of the study team has been finalized in February, 1980.

The said report contains various recommendations for the development of the area, including agriculture, fisheries, mining/manufacturing, tourism and other sectors. Specifically in relation to the fishery sector, the recommendations cover fishing gears and methods, the storage method of hauled fish, the landing facilities aquaculture and the resource management. Among the proposed projects and programs, the establishment of a Fishery Management Center, which undertakes fishery control and various studies necessary to institute an effective fishery management system, is considered most important and accorded with the highest priority for implementation.

The Government of Egypt has been aware of the need to maintain and increase the exploitable fishery resources in High Dam Lake as part of the national policy to develop marine and in-land fisheries and thereby improve the level of self-sufficiency in animal proteins. The Government considers it essential in this respect to expedite the establishment of the proposed Center and envisages to develop it as the primary core of the fresh-water fishery management and related applied research (including aquaculture) covering High Dam Lake and the rest of the Nile.

In response to the request from the Government of Egypt for a grant on the establishment of the Center, the JICA sent this basic design survey team in February, 1980. Based on the discussions held with the Egyptian officials in charge and the site survey in Aswan, the survey team proposed the necessary facilities and equipment for the Center and incorporated them in the minutes co-signed and exchanged between the representatives of the two Governments.

The Government of Egypt has already earmarked a suitable site for the Center, decided on the government agency to which the Center will belong, i.e., HDLDA, and begun to prepare a list of candidates for the personnel of the Center.

The present report has been prepared on the basis of the exchanged minutes and the findings during the field survey in Egypt on the one hand and of the more detailed works undertaken after the return to Japan on the other. The report constitutes a proposal for the establishment of the Fishery Management Center to be approved by the Governments of Egypt and Japan for the furtherance of technical cooperation between the two nations.

The physical facilities and equipment alone naturally do not suffice to realize the ultimate objective of the proposed Center. It is essential to utilize them efficiently by way of applied researches on the maintenance and increase of the fishery resources, and identification and effective execution of appropriate fishery management measures in High Dam Lake. In this respect, it is desirable to follow up this project with further technical cooperation, especially with provisions of training

opportunities for the staff of the Center at some appropriate institutions in Japan and through short-term Japanese experts who will give on-the-job training at the Center.

Chapter 1

GENERAL DESCRIPTION OF THE PROJECT

CHAPTER 1: GENERAL DESCRIPTION OF THE PROJECT

1-1 BACKGROUND

The population of Egypt in 1979 was estimated to be approximately 40.9 million, having grown at an average annual rate of 2.3% in the past decade or so. If the population continues to increase at this rate, it will reach the order of 66 million by the year 2000. Most of the population is concentrated in the narrow strips of land along the Nile Valley and its delta, which together comprise only 4% of the country's total land area. The pressure of high population density on land is evident in both urban and rural areas, but the problem has been even more exacerbated by the continuing migration from rural areas to the large cities in the north such as Cairo and Alexandria.

The problems of overcrowding and congestion in the inhabited areas, especially in the northern part of the country, will worsen in the future if left unabated, and the opening up of new lands to redistribute population is at present considered as one of the major policy objectives by the Egyptian Government. The proposed development of fisheries, agriculture, mining and other sectoral activities in the yet largely uninhabited area around High Dam Lake constitutes one important step toward the realization of this policy objective. A number of government agencies, notably the newly instituted High Dam Lake Development Authority, have been engaged in various preparatory works essential for the formulation and implementation of development programs in order to resettle population in this area.

In recent years, the country's imports of foodstuffs, especially wheat and meat, have increased rapidly due to the population increase numbering nearly 1 million per annum and the stagnant agricultural production. For the purpose of improving the self-sufficiency in food, especially animal proteins, the Government is currently stressing the need to develop fisheries in the Mediterranean and the Red Sea, on the one hand, and in the in-land

waters such as High Dam Lake, on the other.

With regard to the High Dam Lake area, the Egyptian Government requested the Government of Japan in late 1977 for technical co-operation in order to formulate a comprehensive development plan in Southern Egypt with specific reference to fisheries, agriculture and mining. In response to the request, the Government of Japan had the Japan International Cooperation Agency (JICA) send a contact mission to Egypt from May to June of 1978. On the basis of the preliminary findings of this mission, the full-staffed study team visited the High Dam Lake area during January-April and July-August in 1979 to evaluate resource endowments and development possibilities and thereby to formulate a regional development plan.

The fishery experts of the study team conducted, during their two visits, the echo-sounder probe and experimental fishing to assess the off-shore resources in the lake and a number of experiments on the storage method to improve the retention of freshness of hauled fish, and examined possibilities of improving fishing gears and methods and introducing aquaculture in High Dam Lake.

Among the findings and recommendations presented in detail in the recently finalized report*, the following pertain to the question of fishery resources in the lake.

- (i) The annual fish hauls rapidly increased in the past and reached 23,000 tons in 1978, or 8.5-fold increase in ten years. Most of this increase was brought about by the fresh fish production which grew 15 times during the period.
- (ii) The rapid increase of fresh fish was largely due to tilapia, which accounted for 90% of the total fresh fish production in recent years compared with 60% a decade ago.
- (iii) Approximately 40% of the annual fresh fish production is landed during the period of March to May, when Tilapia nilotica spawn

* Japan International Cooperation Agency, The High Dam Lake Area Integrated Regional Development Plan: Final Report, February 1980.

near the shore. This practice has serious implications for the future.

- (iv) As an indication of overfishing of Tilapia nilotica, the proportion of this species in fresh fish landings has substantially declined in recent years compared with Tilapia galilaea which spawn throughout the year and grow more slowly than Tilapia nilotica.
- (v) At present, approximately 7,000 persons are directly engaged in lake fisheries, employing about 2,000 small rowing boats, which are twice as many as ten years ago.
- (vi) In order to develop lake fisheries, it is urgently necessary to estimate the populations and maximum sustainable yields of exploitable species, to institute an effective fishery management system and to increase the fish stock by artificial rearing of seedlings and their release to the lake. However, the available data on fishing efforts and fishery resources in the lake are extremely inadequate and this situation must be quickly rectified in order to put these measures into effect. It is proposed therefore to establish at an earliest opportunity a Fishery Management Center which will undertake various surveys and applied research as well as fishery management.

The lake fisheries are currently under the jurisdiction of the High Dam Lake Development Authority. The Authority has been already keenly aware of the urgent need to remedy the situation and intends to promote, with the establishment of the Center, the applied research on fishing efforts, biological parameters of exploitable fish species and aquatic environments in the lake, and also take measures to improve the welfare and fishing techniques of fishermen. The Egyptian Government plans to develop the Center as the core of the fishery management and related applied research covering High Dam Lake and the rest of the Nile. The staff will be recruited from the HDLDA and other related government agencies and given in-service training to pursue the objectives of the Center.

In response to the request from the Government of Egypt for a grant aid on the establishment of the Center, the Japan International Cooperation Agency sent this mission to Egypt from January 31 to February 19 of 1980 in order to survey the need of the request. The mission members conducted the site survey and discussed with the Egyptian representatives over the siting and basic design of the Center, the respective scopes of responsibilities of the two Governments and the research of construction costs, and exchanged the duly signed minutes of discussion.

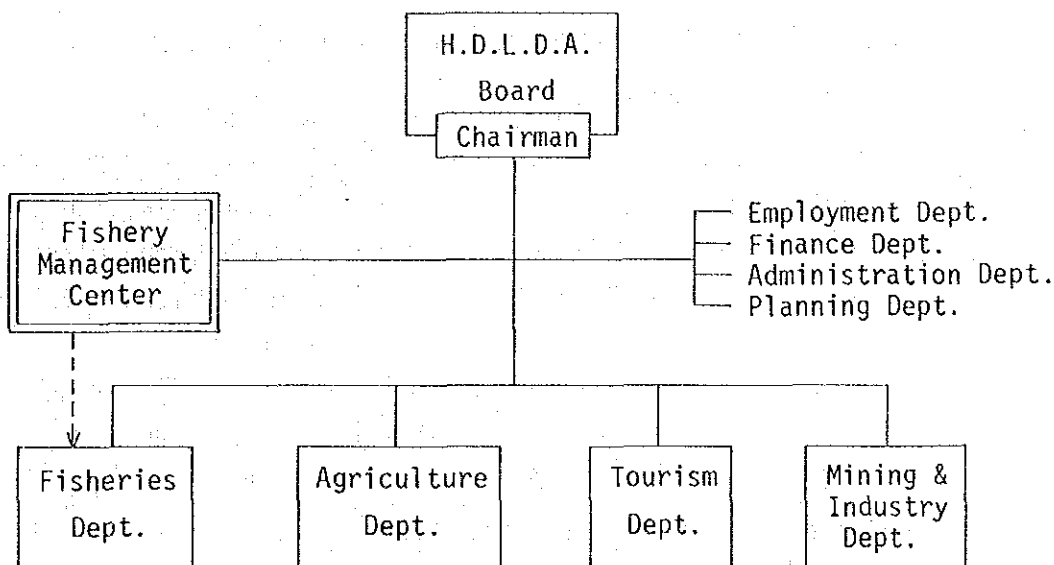
1-2 FISHERY MANAGEMENT CENTER

1-2-1 OBJECTIVE

The primary purpose of the proposed Fishery Management Center is not in basic research, but in the collection of information urgently needed for the maintenance, increase and effective utilization of fishery resources in High Dam Lake. The Center is to record and analyze the kinds of data necessary to identify and implement specific measures of fishery control and management. The activities of the Center, in other words, focus on applied research. This does not imply in any sense that the basic research is unnecessary in High Dam Lake. On the contrary, the basic research which has been carried out in the lake by other government agencies is expected to provide one of the important bases on which the Center orients its activities in the future.

1-2-2 ADMINISTRATION

The Center belongs directly to the HDLDA but its operation is separated from the Fisheries Department of the HDLDA as shown below.



1-2-3 ORGANIZATIONAL STRUCTURE

The Center will comprise in addition to administrative section eight operational sections which perform the following major activities.

(a) Section of Fishing Operation Survey

The section collects information on:

- number and distribution of fishing camps,
- number of fishermen and fishing boats per camp,
- days of annual operation per boat at each camp,
- number of fishing nets and total length and mesh size by type of fishing nets, and
- daily fish hauls and frequency of casting per boat.

(b) Section of Landed Fish Survey

The section conducts a sample survey on landed hauls concerning:

- total hauls by species and by age,
- body length and weight distribution by species and by age, and
- composition by age and maturity.

(c) Section of Fishery Management

The section undertakes:

- identification and implementation of fishery control measures, such as restrictions on the type of fishing gear, the method of fishing, the size and total number of fishing boats, the fishing season and grounds and the size of fish to be caught, and
- supervision and enforcement of the fishery control measures.

(d) Section of Resource Analysis

Major activities of the section are:

- release of tagged fish and stock assessment (mainly tilapia), and
- echo-sounder probe and estimation of off-shore fish distribution (mainly tiger fish).

(e) Section of Seedlings Production and Fish Propagation

Major activities of the section are:

- rearing and release of Tilapia nilotica seedlings (some of the seedlings are tagged before release by the section of Resource Analysis), and
- experimentation and development of suitable aquacultural technologies.

(f) Section of Welfare and Training for Fishermen

The section undertakes:

- seminars and training courses to improve the fishing practices and the living accommodations among lake fishermen.

(g) Section of Ecological Research

The section undertakes studies on:

- spawning seasons and grounds, seasonal changes of maturity, maturing ages, characteristics of spawning, patterns of growth, distribution and mobility, feeding habits, etc., and
- varieties and seasonal distribution and availability of phyto and zoo-planktons, benthos and other organisms, and
- introduction of new species.

(h) Section of Environmental Research

Major activities of the section are:

- measurement of the physical conditions (the contour of the lake bed, fluctuations of water level, movement of the current, turbidity and transparency of water, deposits on the lake bed, etc.),
- measurement of chemical properties of the lake water (water temperature, dissolved oxygen and nutrient salts, pH, etc.), and
- identification of measures for environmental protection.

1-2-4 STAFF REQUIREMENTS

The staff of the Center will be recruited from among the personnel

of the Fisheries Dept. of the HDLDA and other related government agencies as well as graduates of Cairo University. It is estimated that the staff will number 29 in total as shown below.

University-degree Researchers	6 persons
Specialists (Technicians)	6 persons
Assistants (Technical Secondary School Certificates)	12 persons
Administrative/Clerical Staff	5 persons
Laborers	appropriate number

1-2-5 FACILITIES AND EQUIPMENT

The facilities and equipment necessary for the Center are identified as follows.

- 1) Main building: laboratories and offices for the eight operational sections and the administrative section.
- 2) Research boat: one 8.9 ton boat to undertake data collection in the lake for several weeks at a time. The boat will use the West Harbor where repair and maintenance services are available.
- 3) Experimental ponds: two types of ponds are provided; one for the various experimental purposes and the other for the multiplication of seedlings to be released to the lake.
- 4) Equipment: See Section 3-4-2.

Chapter 2

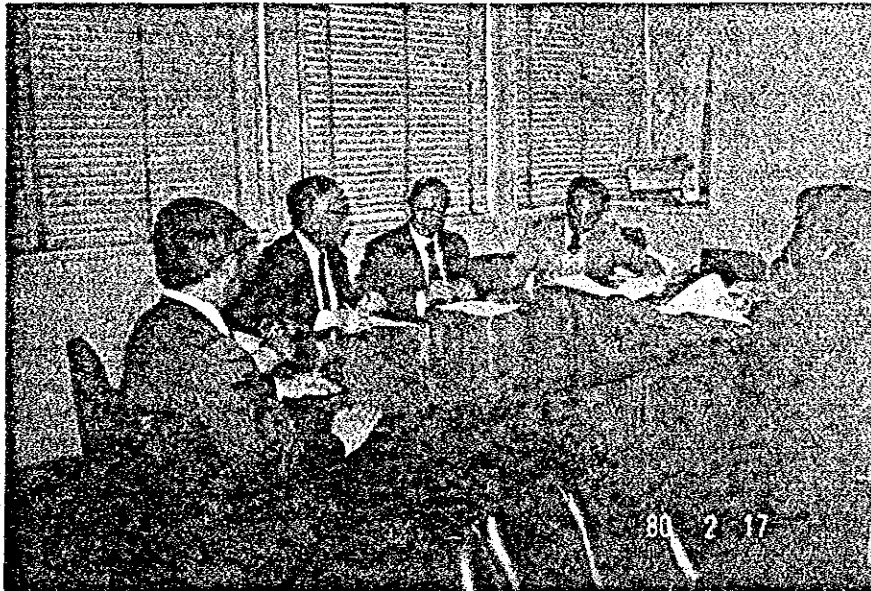
BASIC DESIGN SURVEY

CHAPTER 2: BASIC DESIGN SURVEY

2-1 PURPOSE & OUTLINE OF SURVEY

Upon the request of the Government of the Arab Republic of Egypt, the Japan International Cooperation Agency (JICA) dispatched a basic design survey team to Egypt from January 31st to February 18th, 1980. The survey team was headed by Dr. Minoru Nomura, Professor of Tokyo University of Fisheries, and comprised four specialists of Azusa Sekkei Co., Ltd.

The team held discussion meetings with the representatives of the Egyptian Government, and conducted a field survey in Aswan. In consultation with the Egyptian officials, the team confirmed the draft basic plan for the Center, defined the scope of activities for the respective Governments exchanged minutes including the size of the compound, and estimated, the probable construction costs (see Appendix II for details). Based on these factors, a basic plan for the best possible center will be drawn up.



2-2 TEAM MEMBERS AND EGYPTIAN REPRESENTATIVES

Japanese Team Members:

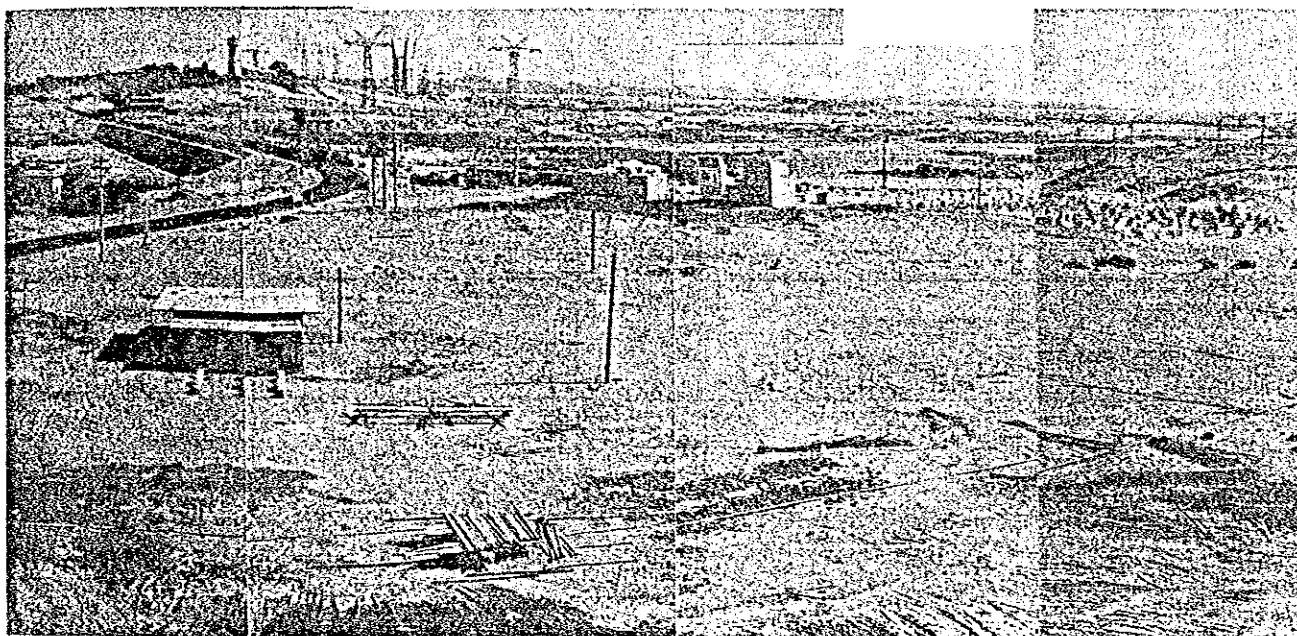
Dr. Minoru NOMURA, Head	Professor, Tokyo University of Fisheries
Mr. Shinichi INOUE, Project Architect	AZUSA SEKKEI CO., LTD.
Mr. Tokio ODA, Quantity Surveyor	AZUSA SEKKEI CO., LTD.
Mr. Susumu SHIMURA, Civil Engineer	AZUSA SEKKEI CO., LTD.
Mr. Naoki MORIMOTO, Fishery Specialist	AZUSA SEKKEI CO., LTD.
Mr. Kiyoshi YOSHIMOTO, Coordinator	Japan International Cooperation Agency

Egyptian Representatives:

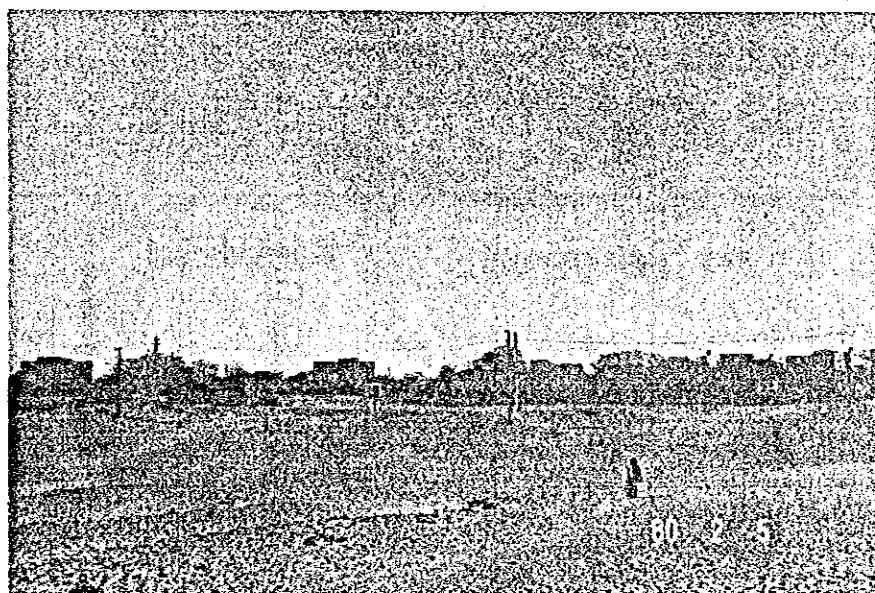
Mr. Soliman Abd El Hay	Chairman of Advisory Committee for Reconstruction Ministry of Development and New Communities (MODANC)
Mr. Mohamed Abd El Gany El Masry	Chairman High Dam Lake Development Authority (HDLDA)
Mr. Mostafa Moamen	Vice Chairman (HDLDA)
Mr. Safwat Ghaffas Abdel Malek	Director of Fisheries (HDLDA)
Mr. Mostafa Kamal Fouad	Consultant (HDLDA)
Mr. Safat Abdel Hamid Shahin	Chairman of Central Authority of Reconstruction
Mr. Abd El Aziz Amin	Sub Minister High Dam Lake Society (HDLS)
Mr. Ahmad Gharib	Chief Engineer of High Dam Utilities
Mrs. Aisha Saied	State Information Service Ministry of Information (MOI)
Mr. Ishak Saadeller George	Chief Chemist Engineer General Aswan Hospital
Mr. Ahmed Taha	Governor Aswan Province
Mr. Zahwy	Permanent Secretary Ministry of Economy and Economic Cooperation
Mr. Emad Heshmat	Director General of Public Relations

2-3 SELECTION OF THE PROJECT SITE

HDLDA identified two candidate sites (A & R) for the Fishery Management Center. The two proposed sites are located approximately 15 km south from Aswan City (see Site Location Map). Taking into account the findings of the site survey and the results of discussions with the Egyptian representatives, the survey team is of the opinion that the Site A is more suitable.



Site A



Site R

SITE COMPARISON TABLE

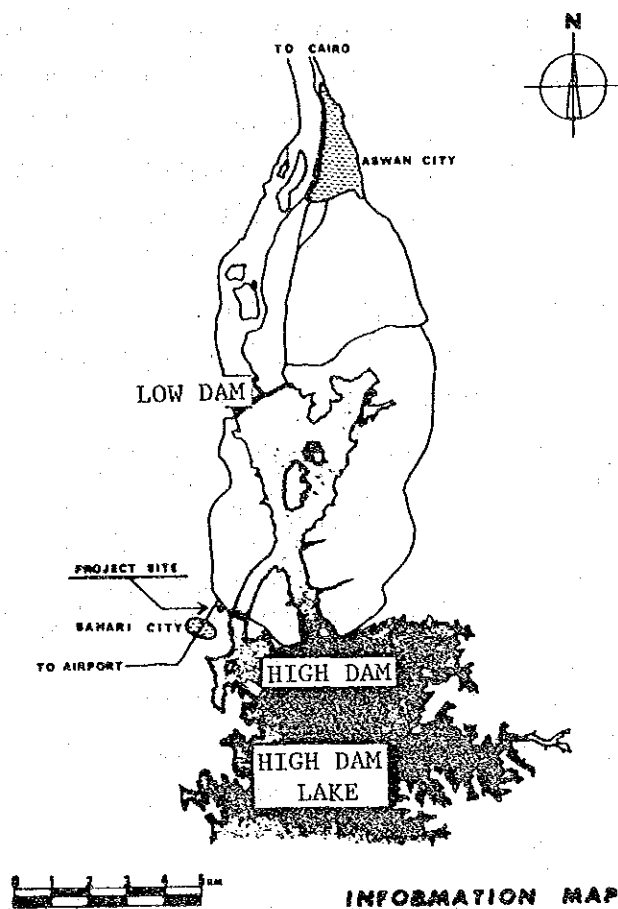
CONDITIONS	A SITE	EVALUA-TION	R SITE	EVALUA-TION
1) Right of Property	<ul style="list-style-type: none"> Owned by HDLDA 	A	<ul style="list-style-type: none"> Owned by HDLDA 	A
2) Location	<ul style="list-style-type: none"> The north east side faces the main road to the High Dam and two harbours. No problems of access. Fine view. 	A	<ul style="list-style-type: none"> 400 m from the main road to the airport. Located to the east of Sahari City. No problem of access. Fine view. 	A
3) Infrastructure	<ul style="list-style-type: none"> Easy to get city and raw water from main pipes, and electricity. 	A	<ul style="list-style-type: none"> Possible to get water and power. But city and Raw water pipes are not main, so dis-charge is smaller. 	B
4) Terrains	<ul style="list-style-type: none"> Almost flat. Only needs grading. Cost is smaller 	A	<ul style="list-style-type: none"> Appreciably more rugged, requiring more grading works and costing more. 	B
5) Geological Formation	<ul style="list-style-type: none"> Consist of Nubian sandstone and compacted clay with silt. Allowable bearing capacity is around 20 t/m². Hard for cutting. 	A	<ul style="list-style-type: none"> Almost the same as A. 	A
6) Obstacle	<ul style="list-style-type: none"> Existence of a butchery (70 m²). HDLDA plans to remove it. 	C	<ul style="list-style-type: none"> Difficult to keep the secure distance of 100 m from the high tension feeder. 	E
7) Relation with other structures	<ul style="list-style-type: none"> Close to the West Harbor, which is to land the survey boat, and to the new HDLDA headquarters now under construction. 	A	<ul style="list-style-type: none"> Close to Sahara City. 	E
Total Judgement	Suitable	A	Inferior than A site	C

A: Excellent B: Good C: Adequate E: Fair F: Poor

2-4 SITE CONDITIONS

2-4-1 LOCATION

The city of Aswan with a population of about 144,000 in 1976 is in Upper Egypt, being located approximately 900 km south from Cairo. The project site is located about 15 km south of Aswan city.



2-4-2 TOPOGRAPHICAL AND GEOLOGICAL CONDITIONS

(1) TOPOGRAPHY

The project site faces the main road (8 m in width) in the east, and is close to the new building under construction of HDLDA in the north. The site is rectangular in shape, about 130 m by 100 m, having its long axis from north to south. The terrains are almost flat (see site map and site profile).

(2) GEOLOGICAL FORMATION

According to the team's observation at the site and the geological log section (see page 2-12) which was done for the construction of the HDLDA Headquarters building, the geological profile of the site consists of Nubian Sandstone and compacted clay with silt. It means that the allowable bearing capacity could be more than 20 t/m². The supervisors of the on-going construction works informed the team that they could excavate by pick. Therefore, the allowable bearing capacity would probably range from 20 t/m² to 50 t/m².

There is no data on the permeability of the site. Although the permeability is said to be low, it is safer to provide the bottom lining for the experimental ponds. Before the detailed design, HDLDA plans to perform a test boring in the project site.

2-4-3 CLIMATIC CONDITIONS

(1) TEMPERATURE

The annual mean temperature is 27°C, with maximum and minimum being 40°C (April to October) and 5°C (December to February) (see Page 2-13).

(2) HUMIDITY

The mean annual relative humidity is 27%, with little variation throughout the year (see Page 2-13).

(3) PRECIPITATION

The Aswan area has practically no rain throughout the year(see page 2-13)

(4) WIND

The mean monthly wind velocity is 1.2 meters/second(see page 2-13).

(5) EARTHQUAKE

No recorded occurrence.

2-4-4 AVAILABILITY OF UTILITY

(1) CITY WATER & RAW WATER

Aswan City has two water supply systems, one supplying potable Water for domestic use, and the other supplying raw water for irrigation. The both systems pump up water from lake near the High Dam. Raw water is directly supplied to various parts of Aswan from the Low Water Tank by gravity flow. The potable water is pumped up to the High Water Tank after sterilization and supplied to various parts of Aswan by gravity flow. The service lines (potable water 150 A, raw water 200 A) are placed along the road which passes close to the project site.

(2) DRAINAGE

There exists no sewage system in the Aswan area. The law requires that sewage must be treated in septic tanks before being discharged into a public body of water.

(3) ELECTRICITY

The Aswan area, which is in the jurisdiction of Company of Upper Egypt Electricity, receives power from the hydro-electric power plant at the High Dam.

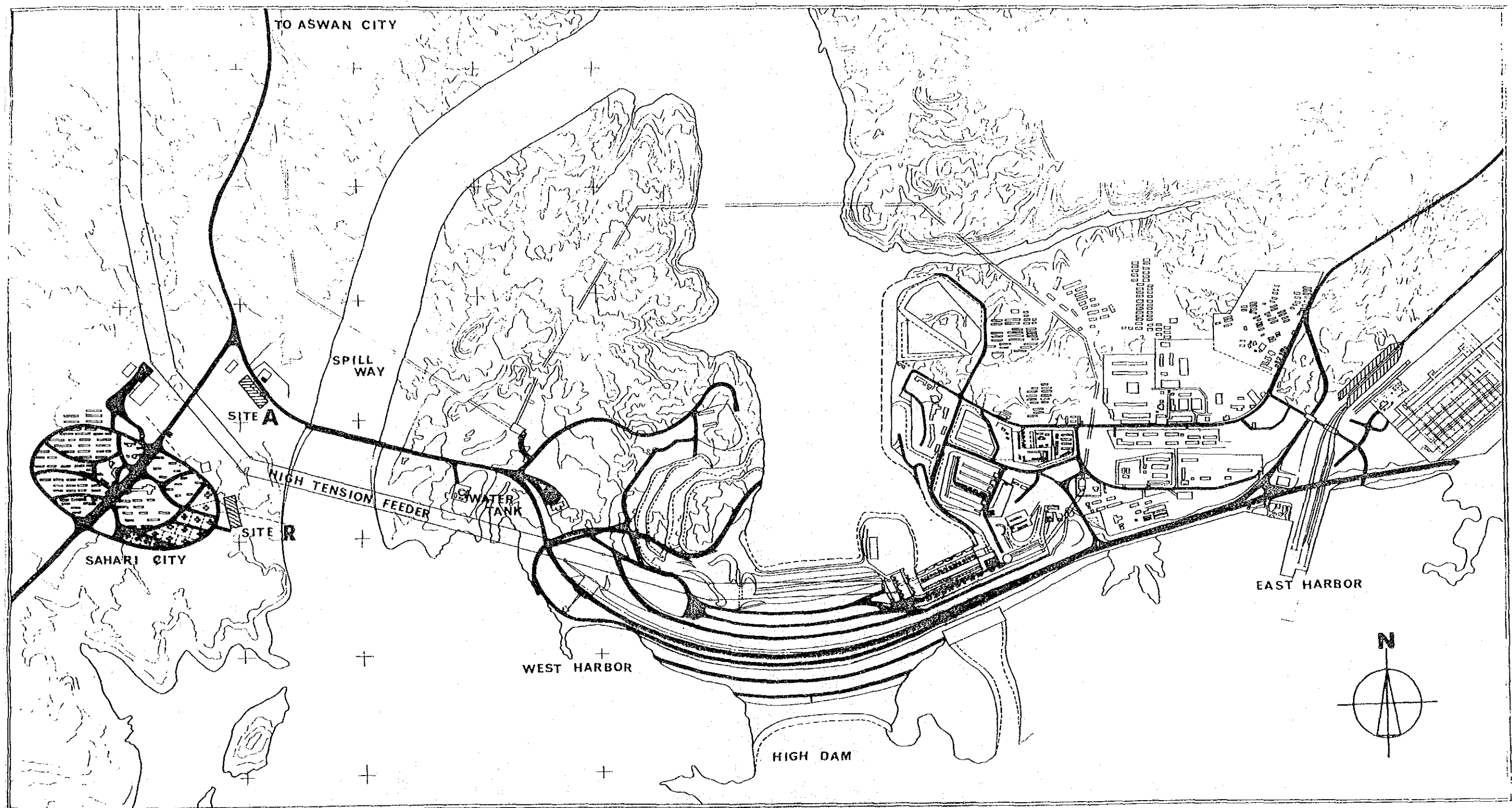
At present, there exists 6000 V of distribution line along the road to Aswan.

(4) TELEPHONE

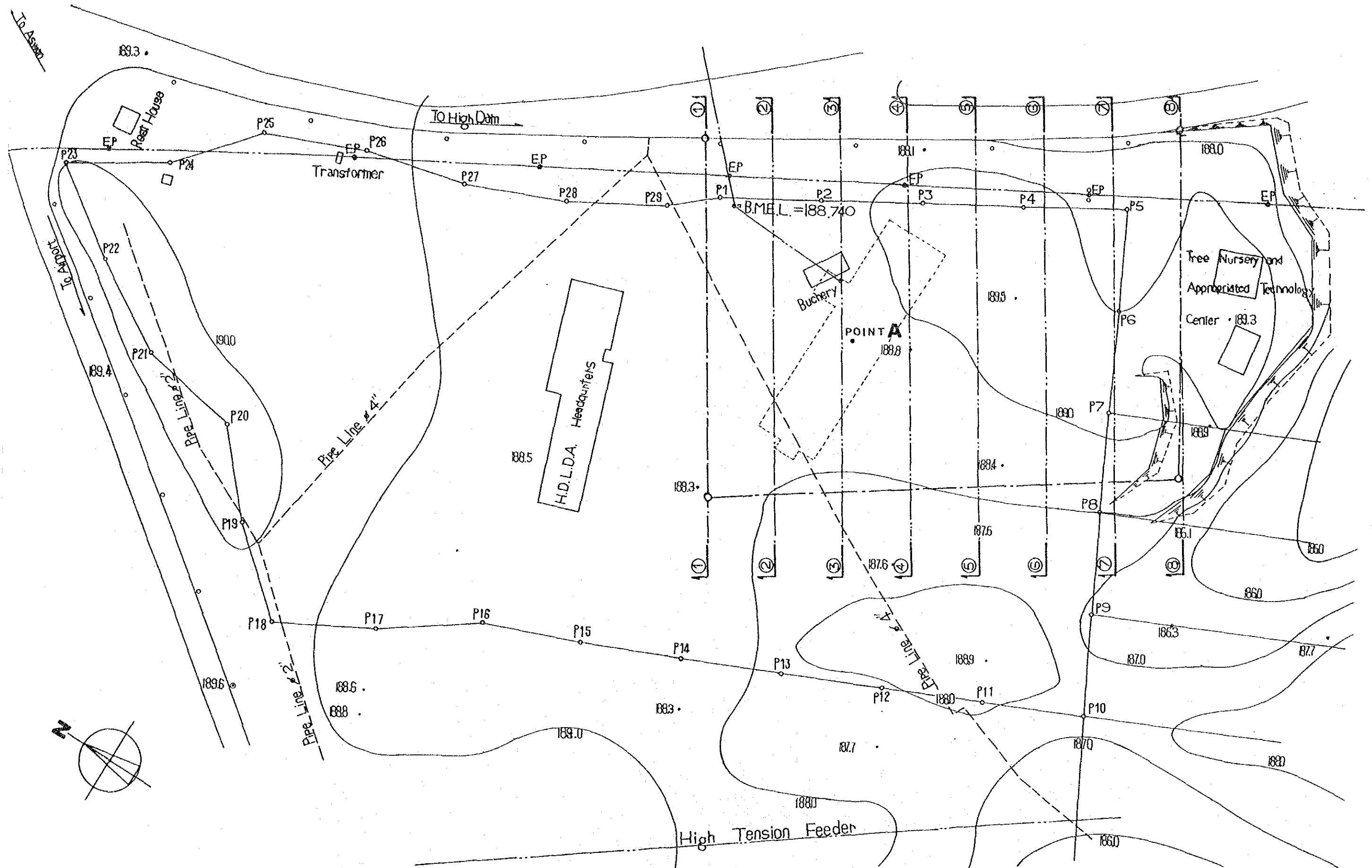
Telephone services in Aswan are managed by Aswan Telephone Company which has 4000 telephone circuits and no spare circuit. And the company has a plan to install a new circuit which will extend to the proposed Fishery Management Center.

(5) GAS

As no city gas is available, fuel is butane gas provided in cylinders by Misr Petroleum Company.

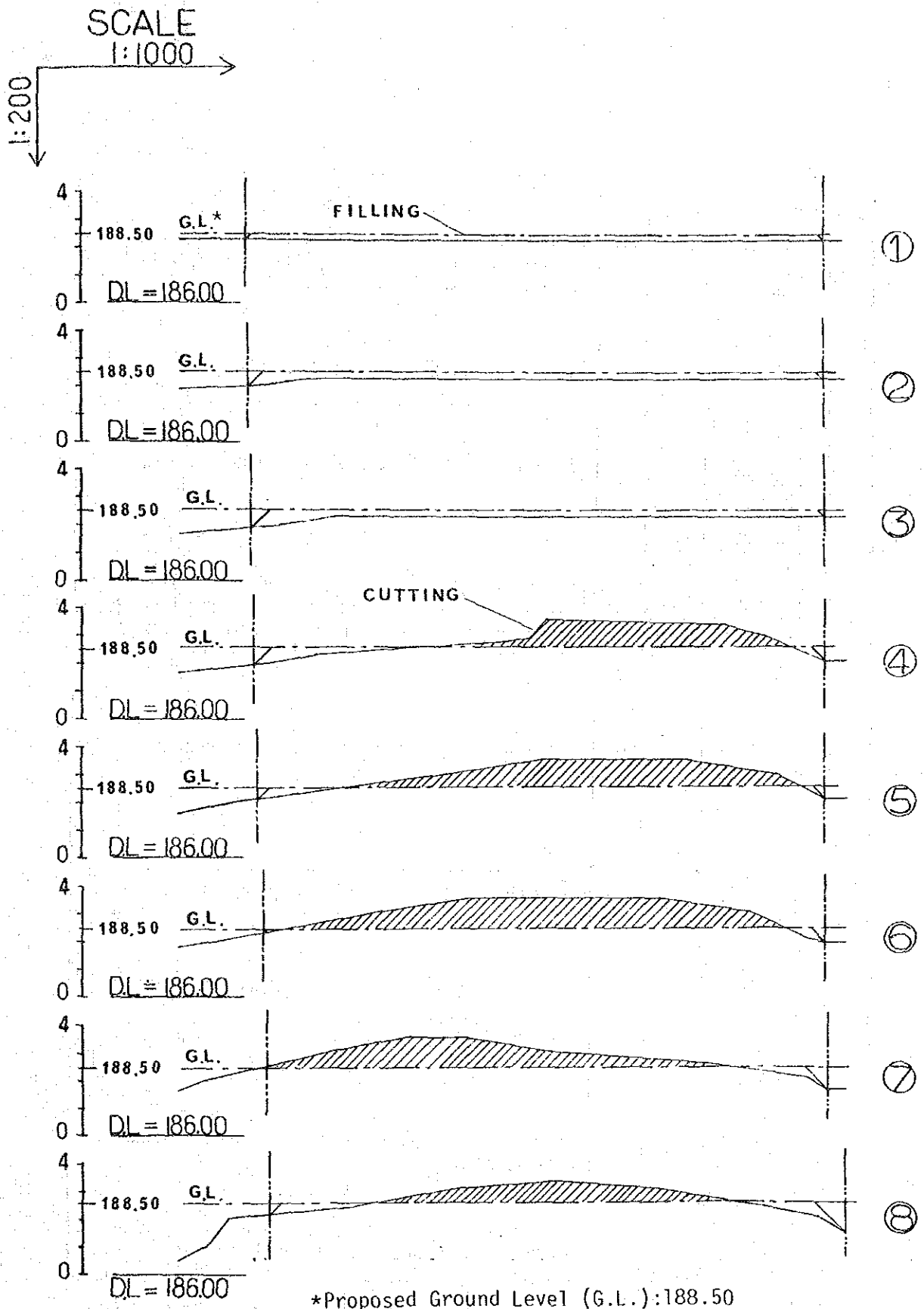


SITE LOCATION MAP SCAL 1:10,000



SITE MAP

SCALE 1:1,000



SITE PROFILE

GEOLOGICAL LOG SECTION

LOG OF B.H No 2

Mouth Elevation
Total depth: 11.25

Scale 1:50

Start on :23.2.78
End on :26.2.78

Depth	Lithology	Thick	C.R	Geological Description
0		0.20		Brown ferrogenous N.S.S, fine grained, massive rock.
1		1.20		Brownish redish compacted clay with silt.
2		1.40		Brown N.S.S fine grained massive rock.
3		0.70		Brownish grey compacted clay with silt.
4		0.50		Whitish brown N.S.S. fine to medium grained massive rock.
5			80	Whitish brown compacted clay with small % of fine sand and silt.
6		2.25		
		0.45		Whitish brown N.S.S fine grained massive.
7				Whitish brown compacted clay with silt and iron oxides.
8		1.30		
9				Brick red ferrogenous N.S.S. fine to medium massive rock.
10		2.00		
		0.50		Deep brown compacted clay with silt.
11				Brick red ferrogenous N.S.S. fine to medium massive rock.

Drawn by

B. A. Elme

23.2.78

Neuman - 24/2/78

CLIMATIC AND AGROCLIMATIC DATA FOR ASWAN

	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Mean monthly Temp. °C	16.8	18.6	22.4	27.2	31.9	33.6	34.0	34.2	32.0	29.6	24.0	19.8
Mean monthly relative humidity in %	36	31	24	20	18	19	21	23	26	29	36	41
Mean monthly cloud cover in octas	1.3	1.1	1.1	1.0	1.1	0.3	0.4	0.5	0.4	0.7	1.0	1.3
Mean monthly evapn. (Piche) mm/day	3.6	10.0	13.9	17.0	17.2	21.8	20.1	20.0	19.0	16.9	11.8	9.0
Mean monthly precipitation mm/month	0.1	0.1*	0.1	0.3	0.6	0.1*	0.0	0.0	0.1*	0.2	0.1	0.1*
Mean monthly wind velocity computed at 2m height metres/second	0.45	1.86	2.18	2.26	2.50	2.02	1.61	1.78	1.78	1.86	1.29	1.61
Mean monthly values of open water evapn. Eo. (Penman) mm/day	2.76	4.00	5.57	6.95	8.14	8.51	7.98	7.87	7.04	5.67	4.00	2.94

* " less than "

Source : Aboukhaleed et alia (1975)

Chapter 3

BASIC DESIGN

CHAPTER 3: BASIC DESIGN

3-1 DESIGN POLICIES

- (1) The Center will be designed to reflect the findings by the basic design survey.
- (2) The Center will be provided with facilities and equipment which are necessary for the execution of its proposed functions.
- (3) Special attention will be paid to the local conditions such as climate, customs and religion.

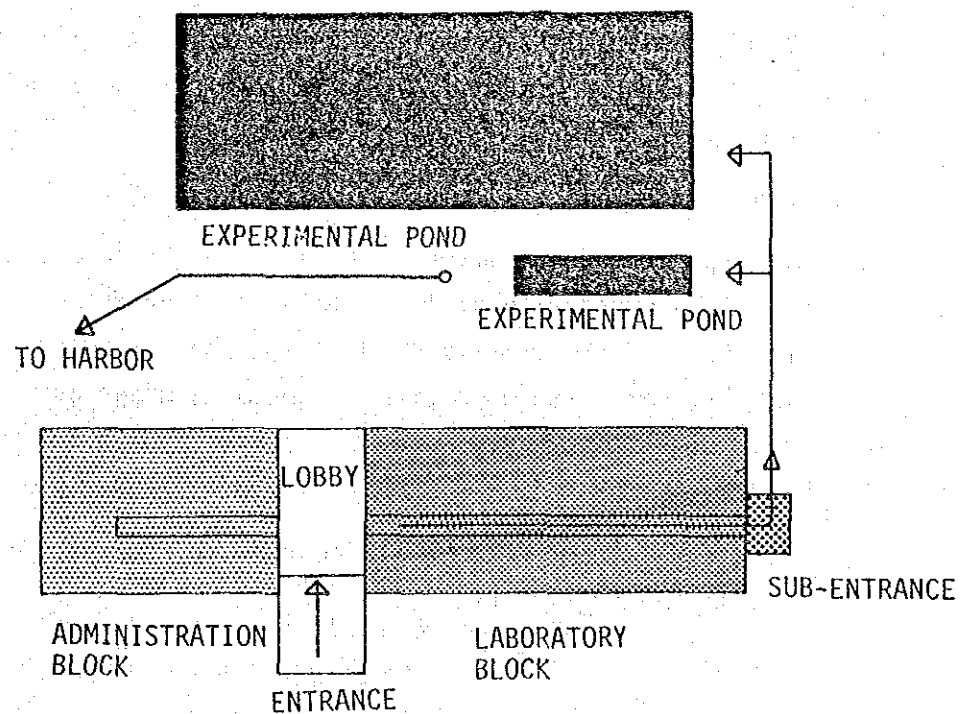
3-2 BUILDING DESIGN

3-2-1 FUNDAMENTAL PRINCIPLES FOR BUILDING DESIGN

- (1) It will be compact.
- (2) It will be harmonized with weather and climate.
- (3) National characteristics will be respected, and sufficient space shall be taken to secure comfortableness.
- (4) Efforts will be made to secure a conservation of calm environment suitable for research and study.
- (5) Full arrangement of environment will be expected for laboratories and staff rooms.
- (6) Cares for interior plan will be taken against dust and sand.
- (7) Cares for interior plan will be taken against hotness.
- (8) All rooms and laboratories will be air-conditioned.

3-2-2 ARCHITECTURAL DESIGN

- Center building will be one storied building. Entrance and lobby will divide the building into two parts of laboratory block and administration block.
- Laboratory block is to be located in vicinity to experimental ponds. Sub-entrance will be provided on the west wing of laboratory block to connect directly laboratories and staff rooms to experimental ponds and work fields, as shown below.
- Eaves on the south and north side of building will be provided in order to protect the rooms from direct sunshine (See page 3-13).



- Building element system will be planned as follows:
 - A) Roof system
Corrugated steel sheet with heat insulation material on it's back will be installed.

B) Exterior wall system

It will be composed from steel sheet panel with insulation material for heat, noise and strong sunshine.

Aluminium window and louver frames are to be set up into the panel in the factory.

Architectural expression and introduction of friendly exterior environment will be considered.

C) Interior wall and door

Light weight steel panel system is to be used. The shop painted panel and door finish will be color coordinated according to the use of the rooms.

D) Ceiling system

Steel sheet panel system as same as exterior wall will be provided. Acoustical material will be used on the face of inside of the room.

E) Floor system

Reinforce concrete slab will receive terrazzo concrete tiles.

For laboratory floors, terrazzo concrete finish.

The floor will be raised 60 centimeters or more off ground level in order to cope with the sandstorm and dust.

3-2-3 STRUCTURAL DESIGN

- ° Structural frame design will conform to Local Building Code and Japanese Structural Code.
- ° Prefabricated building system will be most appropriate to complete the project within the tentative project period.
- ° Foundations for building and experimental ponds will be made of reinforced concrete.

3-2-4 MECHANICAL DESIGN

Designs and material standards and code of practice will refer to the Japanese Industrial Standards (JIS), Heating and Air Conditioning and Sanitary Standards in Japan (HASS) and local conditions.

Plumbing:

(1) Design Conditions

° Occupancy	
Staff	29 persons
Laborers	appropriate number
° Water Consumption(potable water)	
Domestic	200 l/person
Laboratory	300 l/person

(2) Potable water supply

Water from the town main will be led to the project site and joined to the building main and distributed to plumbing fixtures and equipment which requires water by the direct supply system (See Diagram of Potable water supply).

The branch line to the site will be equipped with a water meter encased in a box.

Volume of water consumption	20 m ³ /day
Size of the branch line to the building	50 A
Required supply pressure	2 kg/cm ²

(3) Drainage

Drainage will be divided into two separate systems, one for sewage and waste water and the other for laboratory waste water. The sewage and waste water from the building will be led to the septic tank, and after treatment led into the seepage pit and discharged.

The laboratory waste water will be led into the seepage pit and discharged.

(4) Plumbing fixture

Western-style water closet, washbasin, service sink will be installed as required. Shower set, Hose Bibb, Drains will be installed as required.

(5) Gas supply

To be installed in laboratory rooms and the rest room.

Air Conditioning and Ventilation:

(1) Design Condition

External design conditions for cooling

Dry bulb	42°C
Relative humidity	24%

Indoor design conditions for cooling

Dry bulb	27°C
Relative humidity	40%

(2) Air Conditioning

Following areas will be air-conditioned by wall-through-type package air conditioners (See page 3-15).

- Laboratory rooms
- Staff rooms
- Administration
- Director
- Conference
- Welfare & Training
- Library
- Rest room

(3) Ventilation

- ° Following areas will be ventilated by mechanical devices (See page 3-15).
Toilets, Shower room, Laboratory rooms, Staff rooms, Offices.
- ° The rest of the areas will be naturally ventilated.

3-2-5 ELECTRICAL WORKS DESIGN

Designs and materials standards and code of practice will refer to the Japanese Industrial Standards (JIS), Japanese Electrotechnical Committee (JEC) and The Standard of Japan Electrical Manufacturer's Association (JEM).

(1) Design conditions

Typical room lighting will be as follows:

Administration office	300 lx
Laboratory room	300 lx
Staff room	300 lx
Rest room	200 lx
Toilets, storage and corridors	100 lx

(2) Power supply

The power will be supplied as follows:

Voltage	: 3 Ø 4 W, 380/220 V
HZ	: 50 HZ
Capacity	: 100 KVA

(3) Power distribution

Wiring will be made from the distribution panel in the Electrical room to the power control panels, lighting panels and branch panels (See page 3-16).

(4) Lighting fixture

Fluorescent lamps will be mainly used in each room and corridor, with incandescent lamps in some places.

(5) Power and control system

Motors of blower for experimental ponds will be automatically controlled.

Package air conditioners and ventilation fans will be manually controlled.

(6) Intercom & Telephone system

Intercom instruments will be installed in each room (See page 3-17).

Public telephones will be required two circuits for the main building.

(7) Loudspeaker system

Several loudspeakers will be installed in the main building and one near the experimental ponds (See page 3-17).

(8) TV and Radio antennas

Receptacles for TV and Radio will be installed in the conference room, the rest room, the director room and the administration room (See page 3-17).

3-3 EXPERIMENTAL PONDS

Experimental ponds will be divided into two types.

Experimental Pond I will be for the purpose of comparative experiments such as feeding and hormone injection etc., and consist of six concrete tanks of 5m x 3m x 1m (depth).

Experimental Pond II will be used mainly for seedling production and consist of six 200 m² concrete and/or stone ponds.

50,000 of fingerlings will be produced in the total pond area of 1,200 m² (Approx).

The stagnant water will be employed (See page 3-18).

The water should be replaced completely once every four days.

Therefore, the daily water requirement is calculated as follows:

$$1,200 \times 1,0 \div 4 = 300 \text{ m}^3/\text{day}$$

° REQUIRED VOLUME OF RAW WATER

The Low water tank (volume 1,500 m³) which supplies potable and irrigation water is located 1 km east from the site. Raw water is supplied only by the elevation head. The elevation head from the tank to the site is more than 10m, and the 250 mm raw water pipe runs underground along the main road in front of the project site. Supposing that water is supplied to the Center for 8 hours during the night, the required water is calculated by the Hazen-Williams Formula as follows:

$$V = 0,84935 \text{ CR}^{0,63} \text{ I}^{0,54}$$

This formula will be altered as:

$$\text{I} = \frac{hf}{L} = 10,666 \text{ C}^{-1,85} \text{ D}^{-4,87} \text{ Q}^{1,85} \dots\dots\dots(1)$$

The following notation is used.

- I : Hydraulic gradient
- hf : Friction head loss, in m
- L : Length of pipe line, in m
- C : Hazen-Williams Coefficient(C=100, as steel pipe)
- D : Diameter of circular conduits, in m
- Q : Rate of discharge, calculated.

$$\begin{aligned} Q &= 300 \div (8 \times 60 \times 60) \\ &= 0,01042 (\text{ m}^3/\text{Sec}) \end{aligned}$$

Now h_f , L and D in 250 mm pipe and 100 mm pipe are h_{f1} , h_{f2} , L_1 , L_2 , D_1 , D_2 , and $L_1 = 1,500$ m, $L_2 = 200$ m, $D_1 = 0,25$ m, $D_2 = 0,1$ m.

By Eq. (1)

$$h_{f1} = 0,588 \text{ (m)}$$

$$h_{f2} = 6,793 \text{ (m)}$$

Hence

$$h_f = h_{f1} + h_{f2} = 7,381 < 10 \text{ m}$$

It is possible to take the required water in 8 hours during the night by the elevation head.

3-4 EQUIPMENT

3-4-1 RESEARCH BOAT

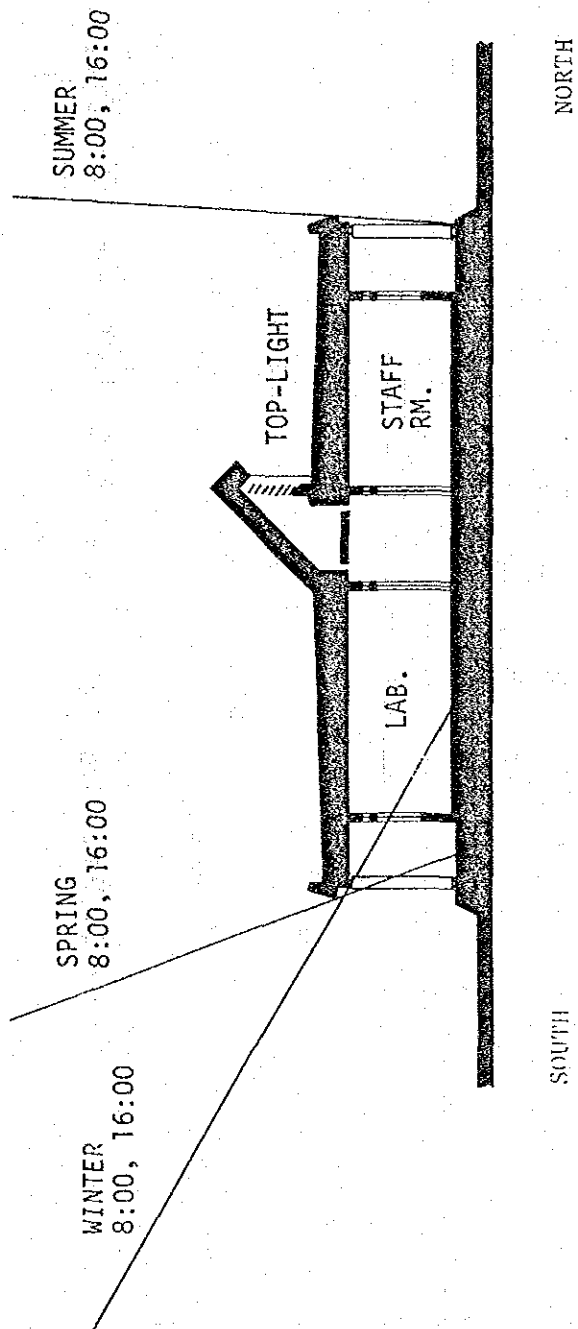
The research boat (approximately 9 DWT) shall be constructed of fiberglass reinforced plastic (F.R.P.) and shall comprise full part, engine part, electrical part, galley compartment, awning facilities, life saving equipment, fishing machinery and tools (See page 3-19).

3-4-2 EQUIPMENT FOR LABORATORY

The following items of equipment shall be required for the laboratory.

No.	Items	Section(See 1-2-3)
1.	Balance	Each section
2.	Scale	Each section
3.	Multi-purpose telescopic projector	(g)
4.	Over-head projector	(c)
5.	Slide projector	(a) & (b)
6.	Screen	(a) & (b)
7.	Regular microscope	(e) & (g)
8.	Standard camera	(a) & (h)
9.	Polaroid camera	(c)
10.	Stevenson screen	(h)
11.	Water analysis kit	(h)
12.	Set of lake deposits testers	(h)
13.	Plankton sampling kit	(g)
14.	Specimen bottle	(d),(e) & (g)
15.	Pocket calculator	Each section
16.	Electronic calculator(larger size)	Each section
17.	Typewriter (English)	(B)
18.	Typewriter (Arabic)	(B)
19.	Black-board	Each section
20.	Battery	(a)

No.	Items	Section
21.	Battery charger	(a)
22.	Tester	(a)
23.	Refrigerator	(h)
24.	Draft chamber	(h)



SUNSHADE STUDY

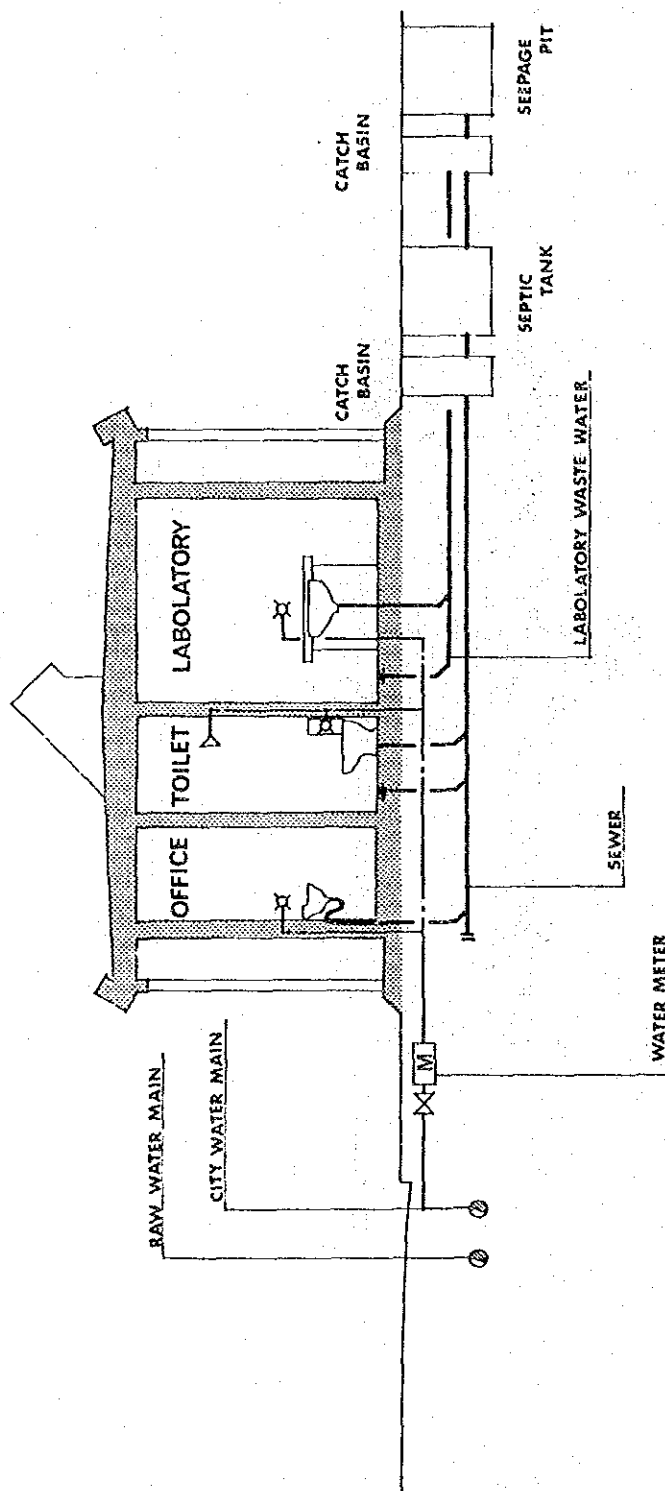
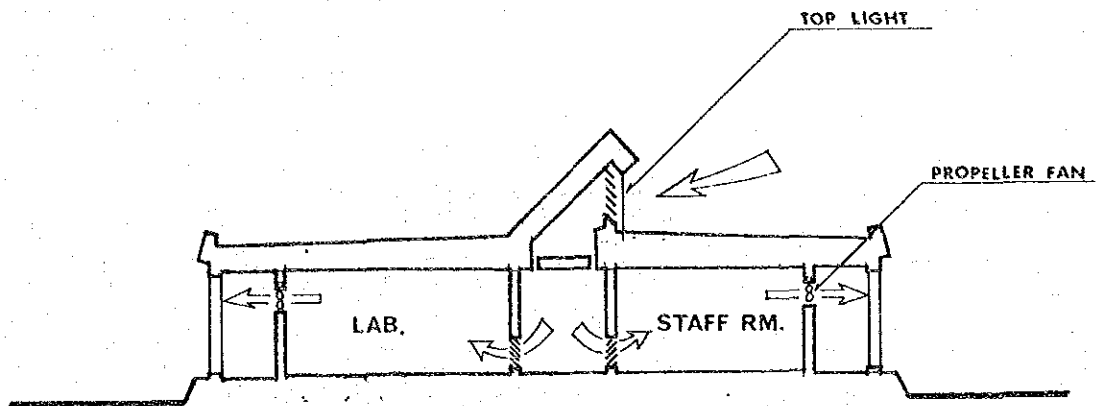
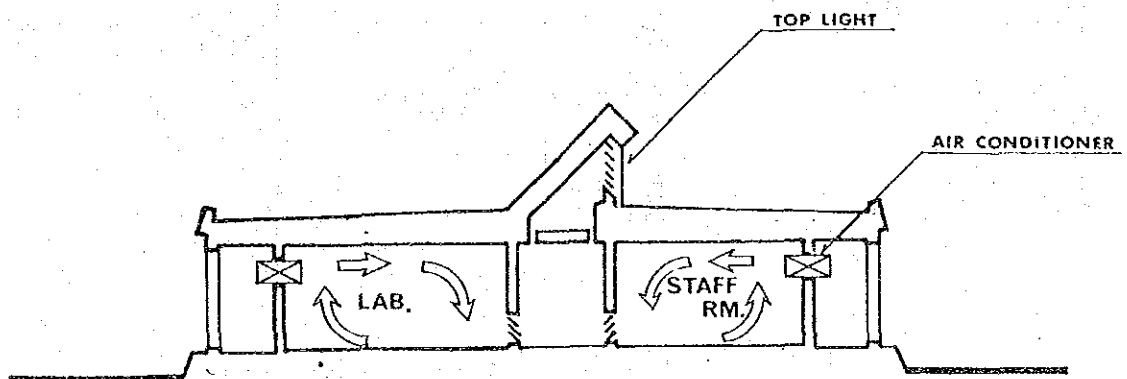


DIAGRAM OF POTABLE WATER SUPPLY



VENTILATION SYSTEM

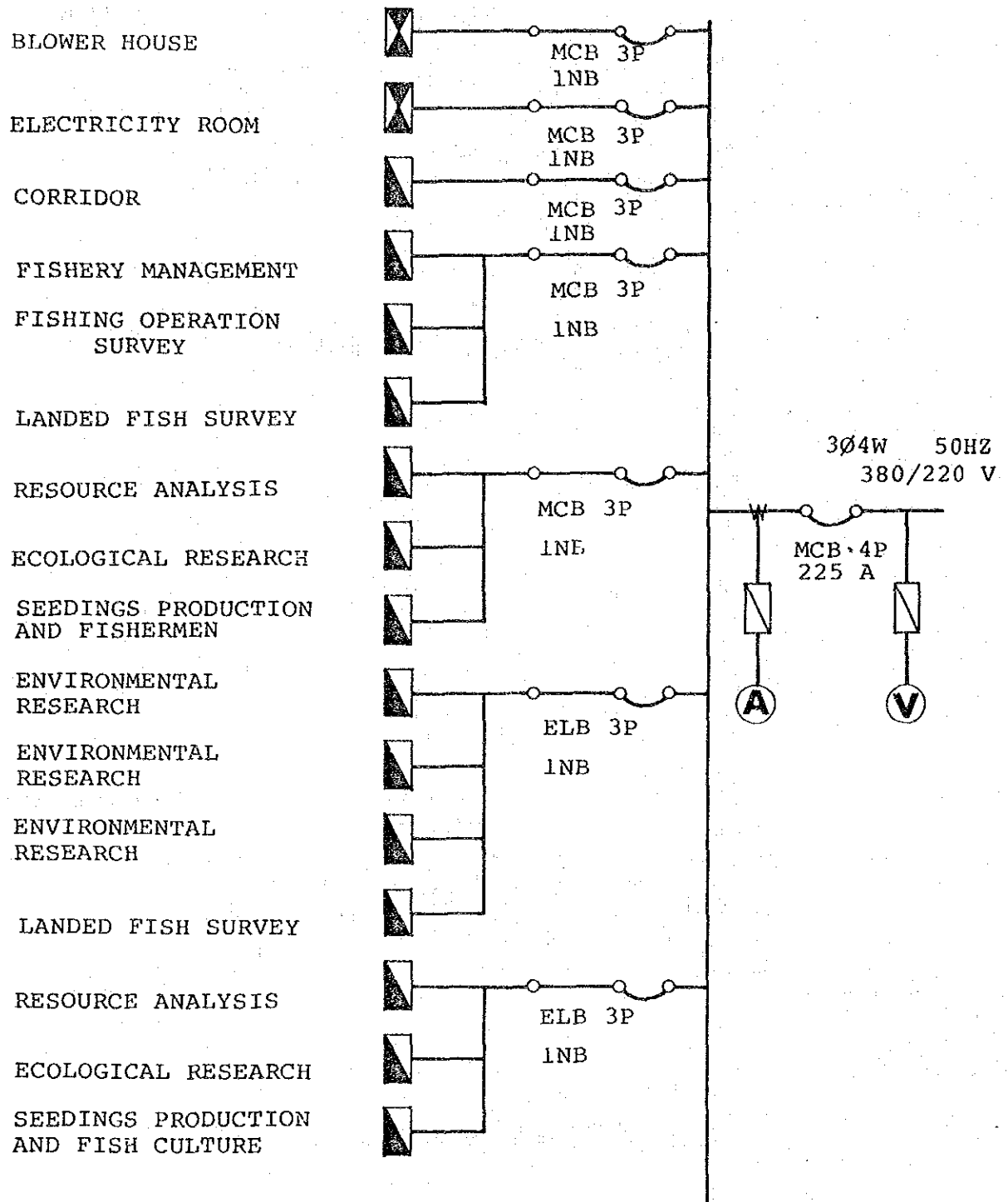


AIR CONDITIONING SYSTEM

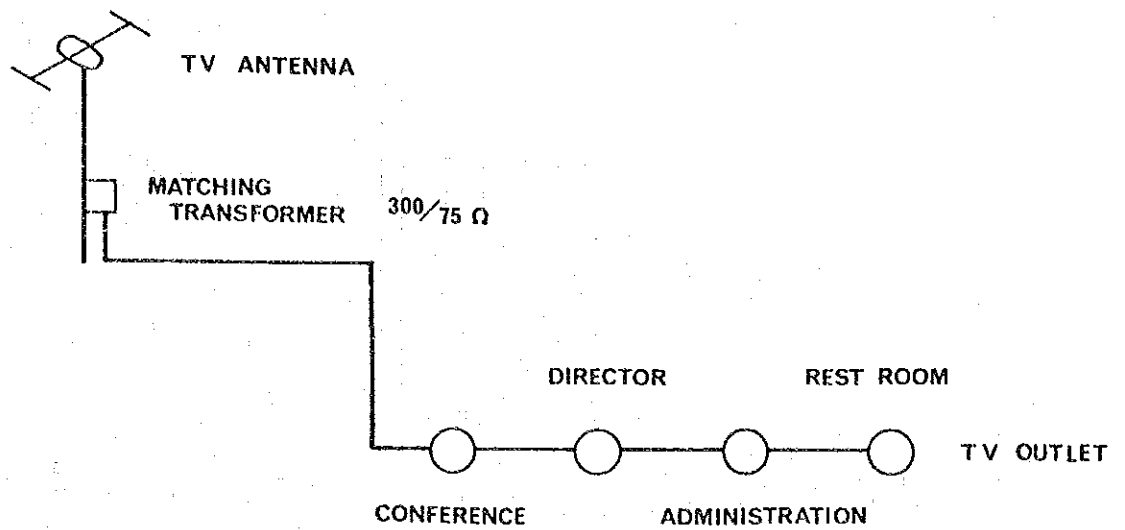
LIGHTING & MOTOR PANEL

LOCATION

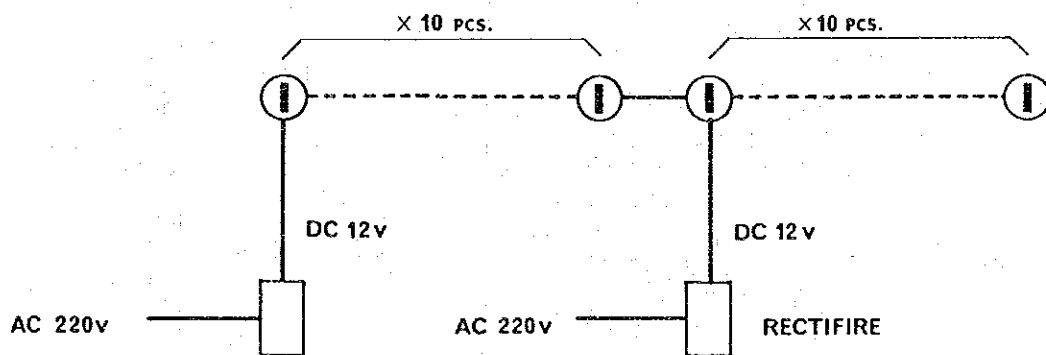
DISTRIBUTION PANEL



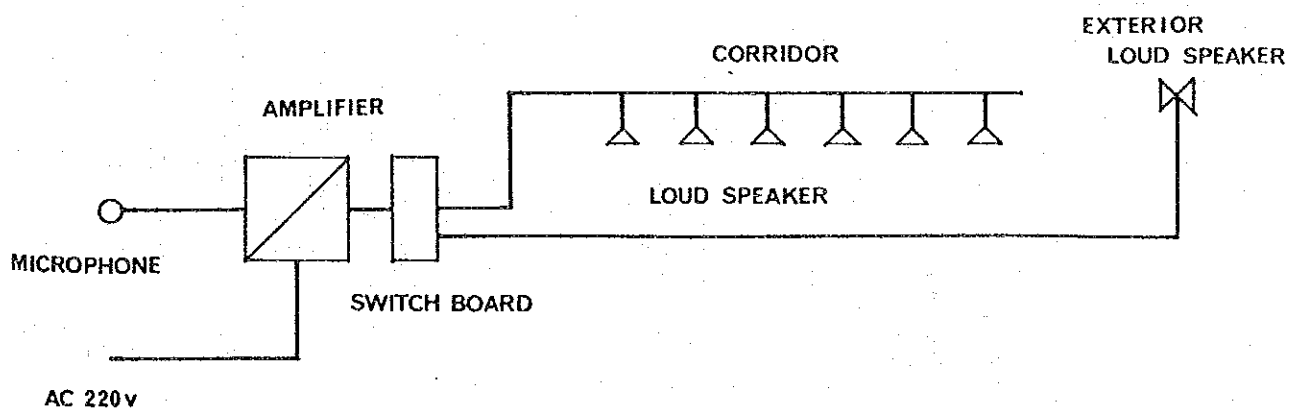
POWER DISTRIBUTION SYSTEM



MASTER ANTENNA SYSTEM



INTERCOM SYSTEM



LOUD SPEAKER SYSTEM

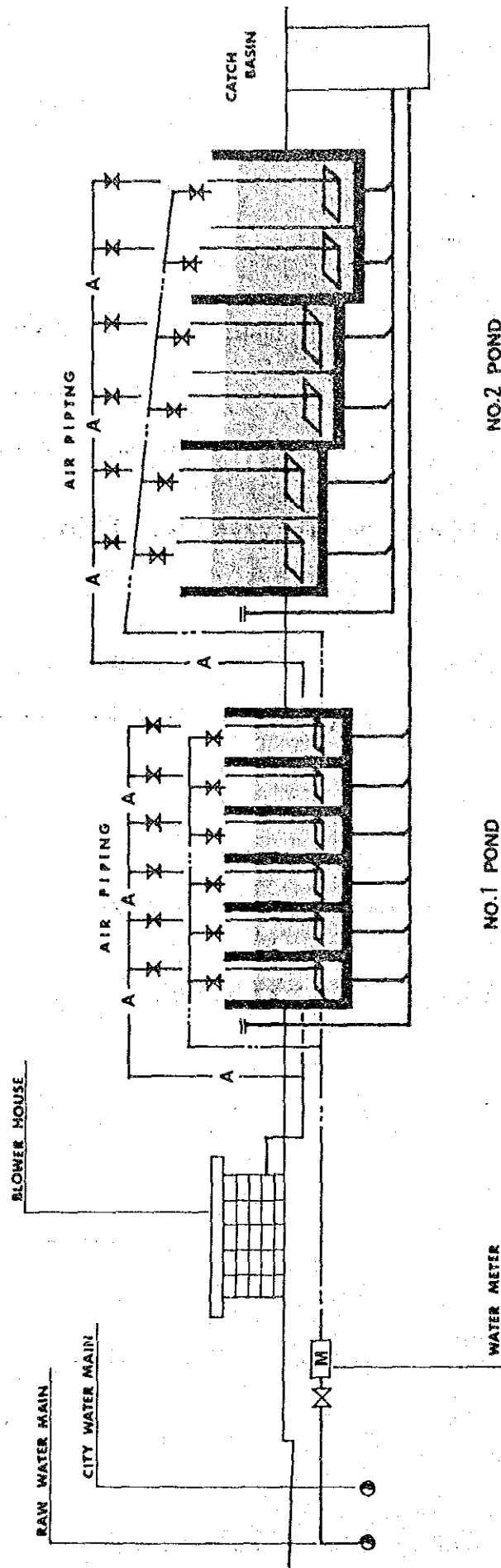
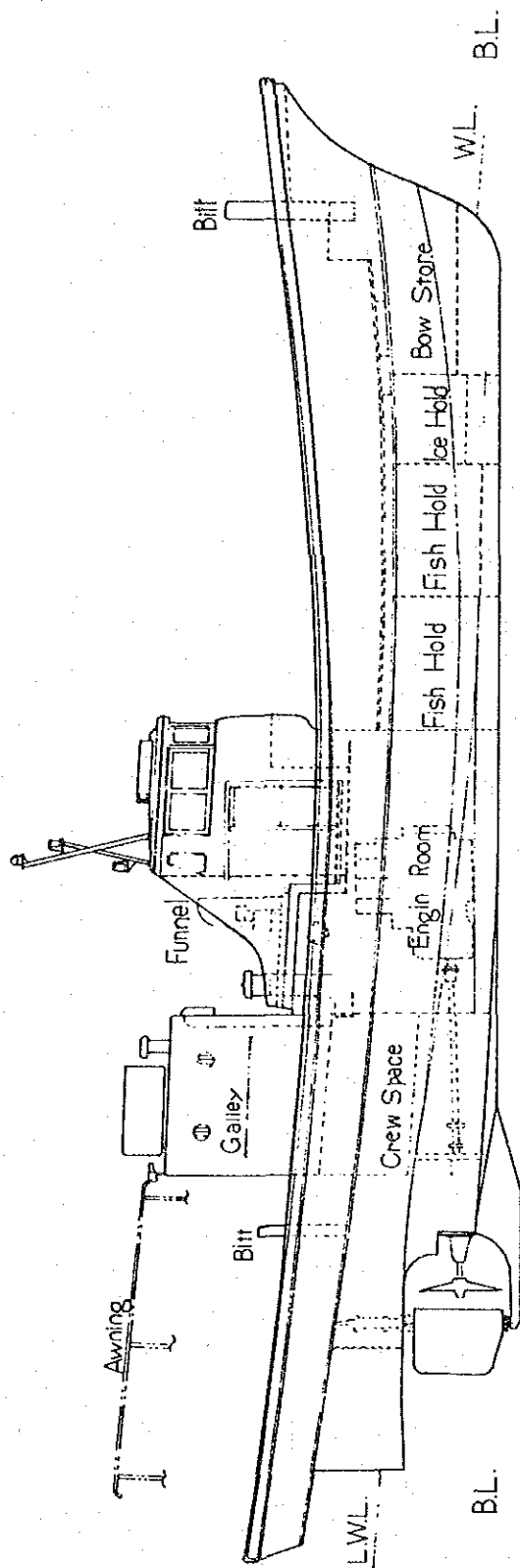
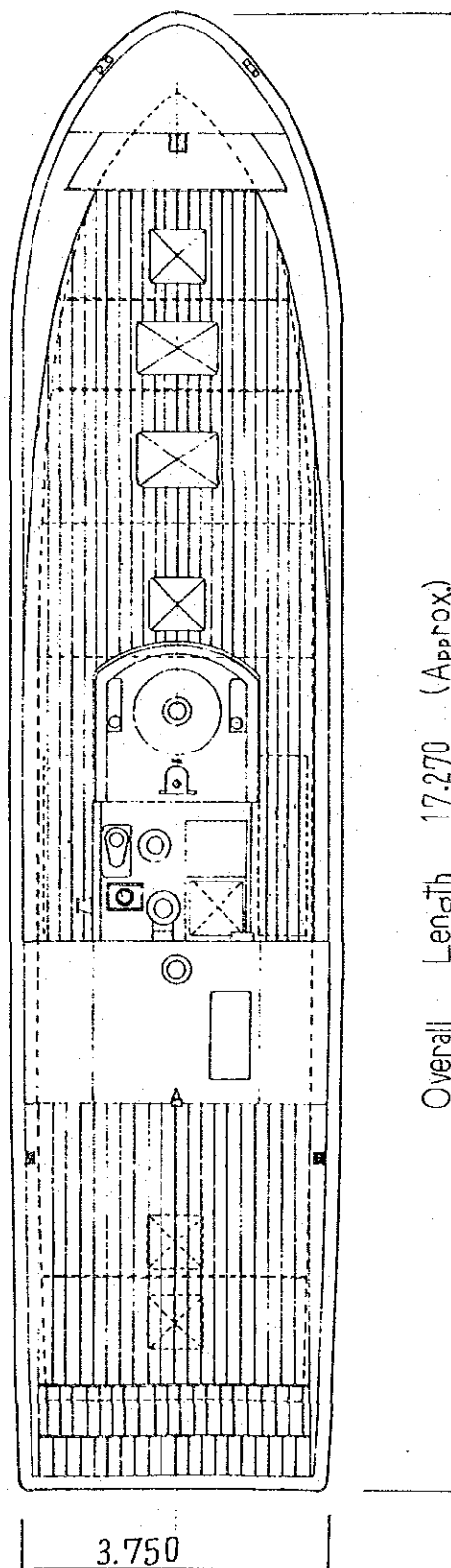


DIAGRAM OF RAW WATER SUPPLY & AIR PIPING

RESEARCH BOAT



ELEVATION



PLAN

Chapter 4

IMPLEMENTATION SCHEDULE AND SCOPE OF THE PROJECT

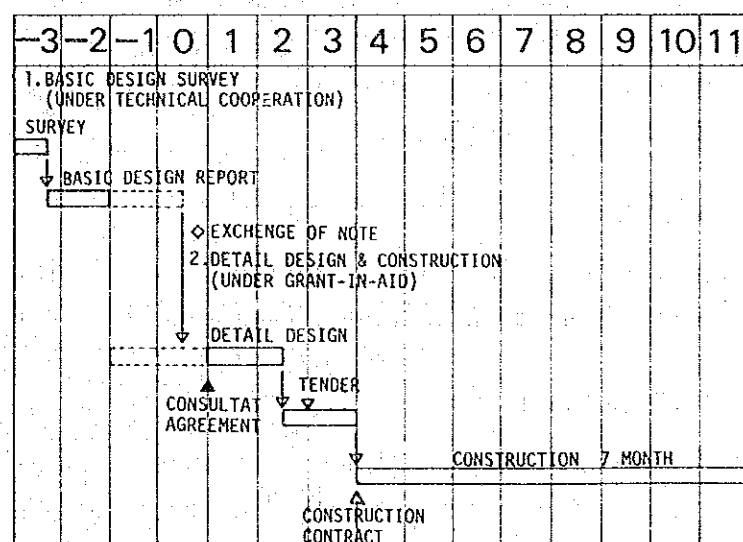
CHAPTER 4: IMPLEMENTATION SCHEDULE AND SCOPE OF THE PROJECT

4-1 TENTATIVE IMPLEMENTATION SCHEDULE OF THE PROJECT

Since this project is to be implemented under the grant-in-aid program for the fiscal year 1980, the schedule is tentatively set as shown below.

The overall schedule is divided into (1) the present basic design survey by technical cooperation, and (2) the detailed design and construction works and supervision. Subsequent to the present basic design survey, the detailed design is to be started, comprising preparation of drawings and specifications necessary for construction and also preparation of tendering and construction contract documents. Considering the scope of this project and the nature of the facilities to be provided, a period of 7 months will be needed for construction.

Among the work to be undertaken by the Arab Republic of Egypt Government, the grading of a part of the site and removal of the existing butchery are to be completed prior to the commencement of the construction works by the Japanese side.



4-2 SCOPE OF THE PROJECT

The scope of the project for the Fishery Management Center was discussed between the Basic Design Survey Team and Egyptian Authorities concerned on several occasions. The scope of the project and responsibilities to be undertaken by the two Governments have been determined basically as described in the Minutes of Discussion (see Appendix II) and as restated below.

4-2-1 WORK TO BE UNDERTAKEN BY THE JAPANESE GOVERNMENT (Grant-In-Aid)

(1) Consulting service

Detail Design and Supervision of Construction.

(2) Construction of the Center and supply of Equipment

1. Main Building

2. Experimental ponds

3. Equipment

A) One (1) survey boat

B) Equipment for survey, research and training.

4-2-2 WORK TO BE UNDERTAKEN BY THE EGYPTIAN GOVERNMENT

(1) Geotechnical investigation for the project site

Standard boring test, Subsurface exploration at point A as shown in the site Map (see page 2-10) and preparation of reports on the findings.

(2) Site preparation

Site grading, clearing, excavation, backfilling and also to remove the existing butchery (see page 2-10,11).

(3) Utility service

a. Electric power supply to the Center including temporary supply for the construction works.

b. Water supply to the Center and experimental ponds in-

cluding temporary supply during the construction.

- c. Telephone wiring to the Center.
- d. Drainage and sewage connection to the city main and/or sewage system.
- e. Provision of gas cylinders.

(4) Site work

Landscaping, gateway, fence, exterior lighting, pavement and car park.

(5) Furnishing

Furnitures, rugs, drapes and office supplies.

(6) Others

- a. To transport a survey boat to be granted for the Center from the port either at Alexandria or Port Said to the High Dam Lake.
- b. To ensure prompt unloading and customs clearance in Egypt of imported materials and equipment for the Center and also to facilitate their internal transportation.
- c. To exempt Japanese nationals concerned from customs duties, internal taxes and other fiscal levies which may be imposed in Egypt on the occasion of the supply of goods and services for the construction of the Center.
- d. To provide and accord necessary permissions, licenses and other authorizations required for the construction of the Center.
- e. To provide all expenses necessary for the operation and maintenance of the Center.

Chapter 5

SUGGESTIONS

CHAPTER 5: SUGGESTIONS

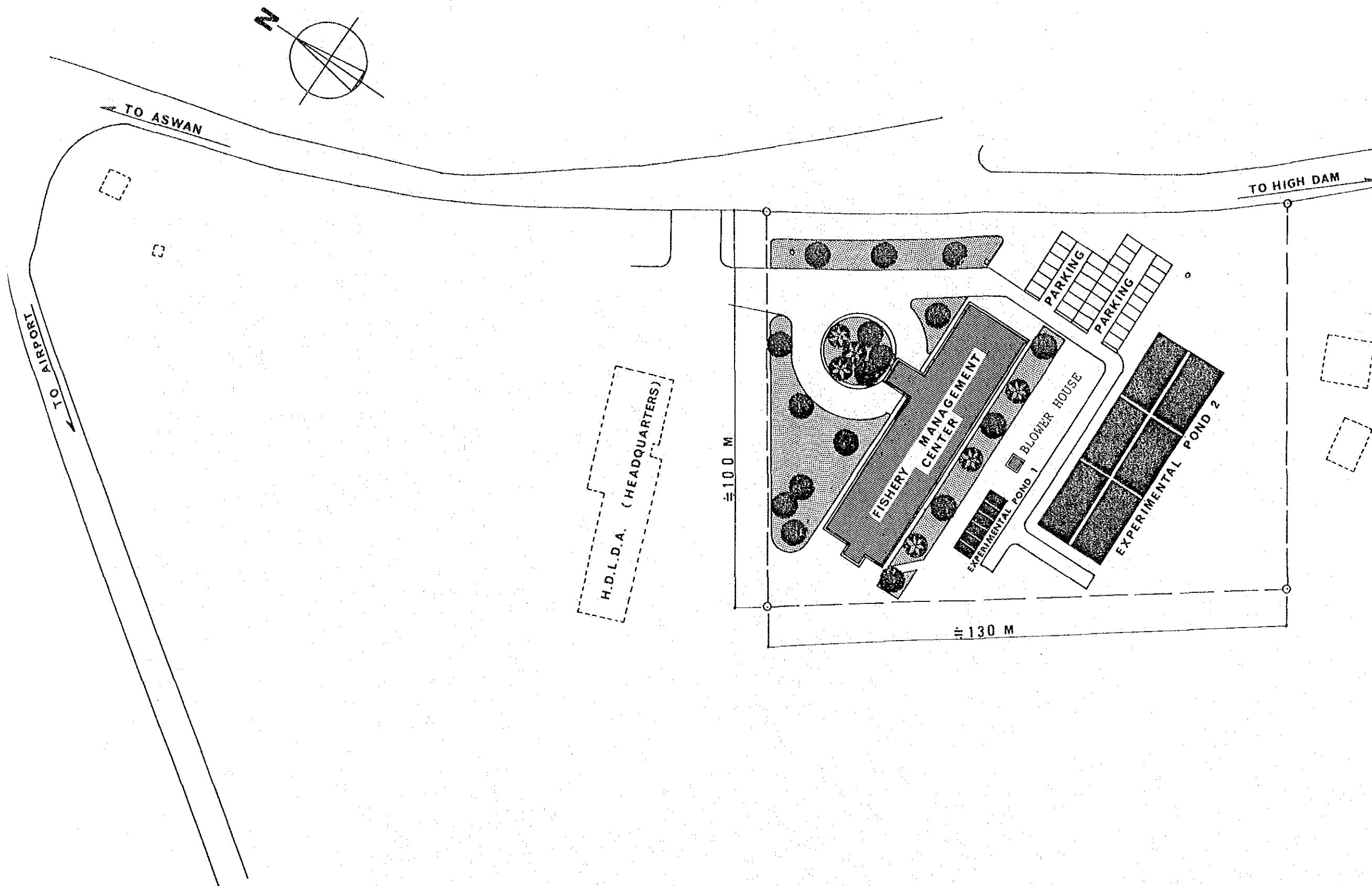
The primary objective of the Fishery Management Center is to realize a sustainable growth of fisheries in High Dam Lake by means of maintaining and increasing the total fishery stock base of the lake. Moreover, the Government of Egypt anticipates that the Center will eventually become the primary core of fishery resource management over the entire Nile. Therefore, the major activities, the Center is expected to perform consist of the collection and analysis of basic data necessary to identify suitable fishery management measures, on the one hand, and surveys and applied researches relevant to the fishery development including the training of lake fishermen.

It is currently being planned to recruit the staff for the Center from the research and technical personnel of the HDLDA and other related government agencies, who are well-trained in fishery-related basic and applied subjects in the institutions of higher learning. In addition, it will be necessary for the Center to invite Japanese experts on the short-term basis and have them give on-the-job training to the Egyptian staff concerning the ways to design and undertake various surveys and analyze and evaluate the collected data as well as how to handle equipment. It will be also necessary to have some of the staff trained in some appropriate institutions in Japan. These measures of technical cooperation will help ensure the effective operation and efficient management of the Center's activities. A joint research program could be started on a long term basis with some research institution of Japan and this would also contribute to expediting the successful implementation of the Center's functions.

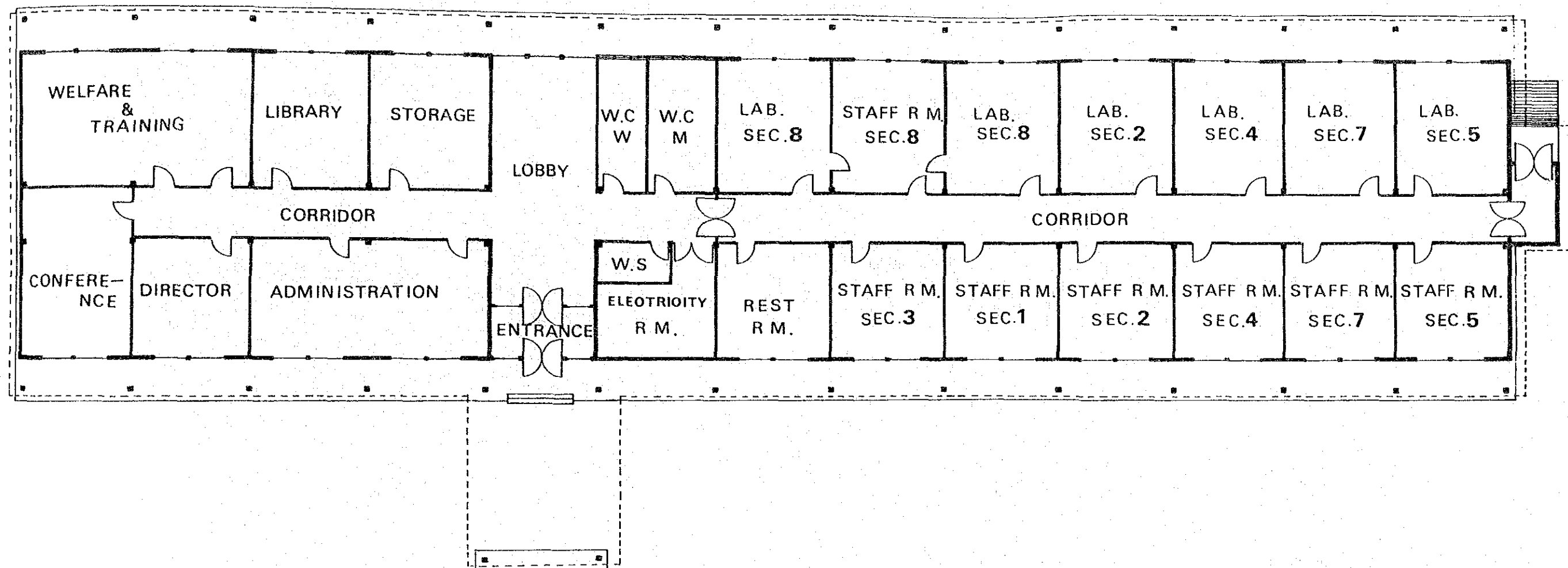
In-land waters of many other Arab and African countries reportedly have the similar problems concerning fishery resource management. The expertise to be accumulated in the Fishery Management Center in Aswan will be of great use to these countries in a long run.

Chapter 6

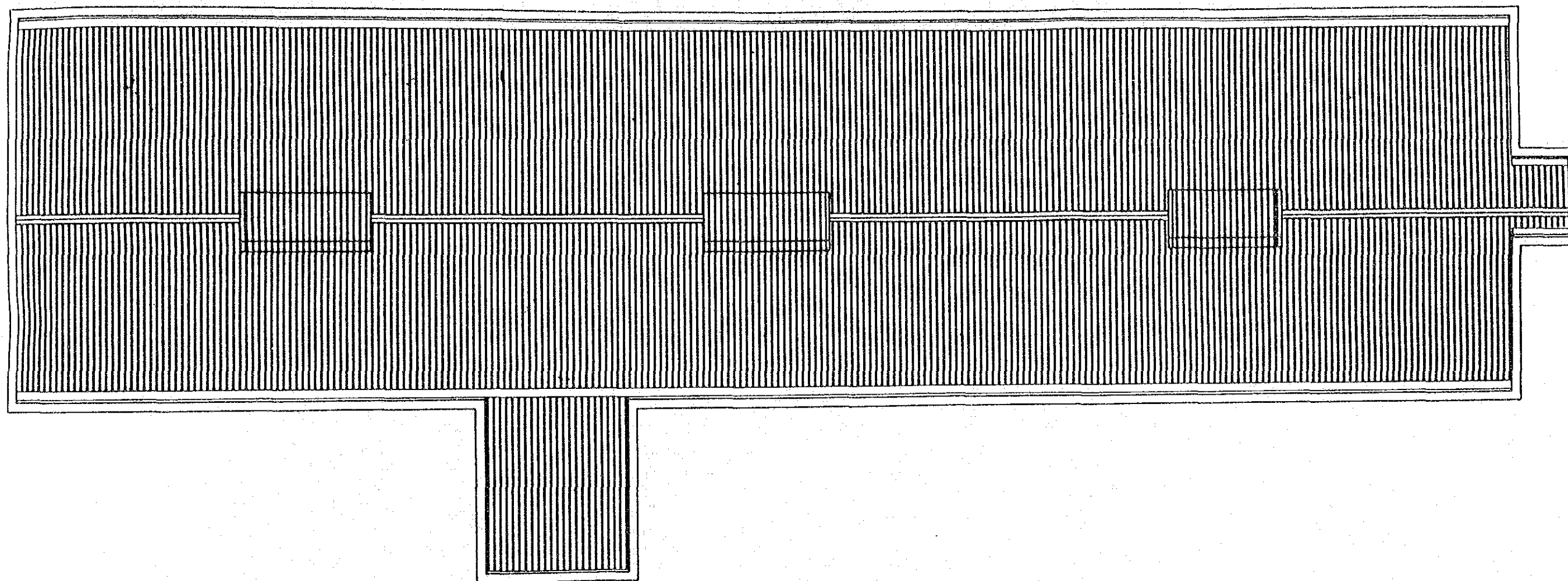
DRAWINGS



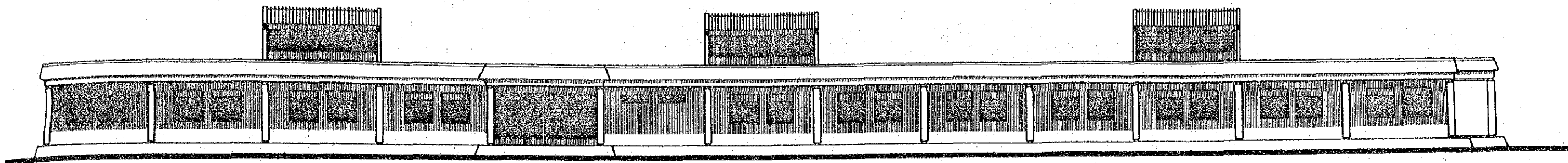
SITE PLAN SCALE 1:1,000



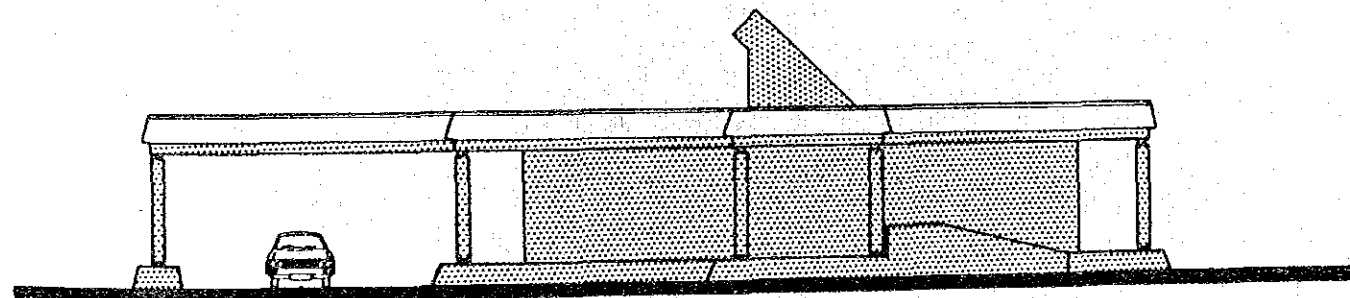
GROUND FLOOR PLAN SCALE 1:200



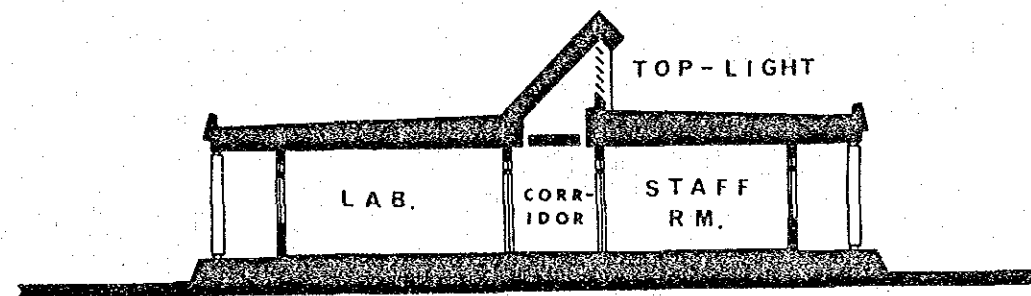
ROOF PLAN SCALE 1:200



NORTH ELEVATION

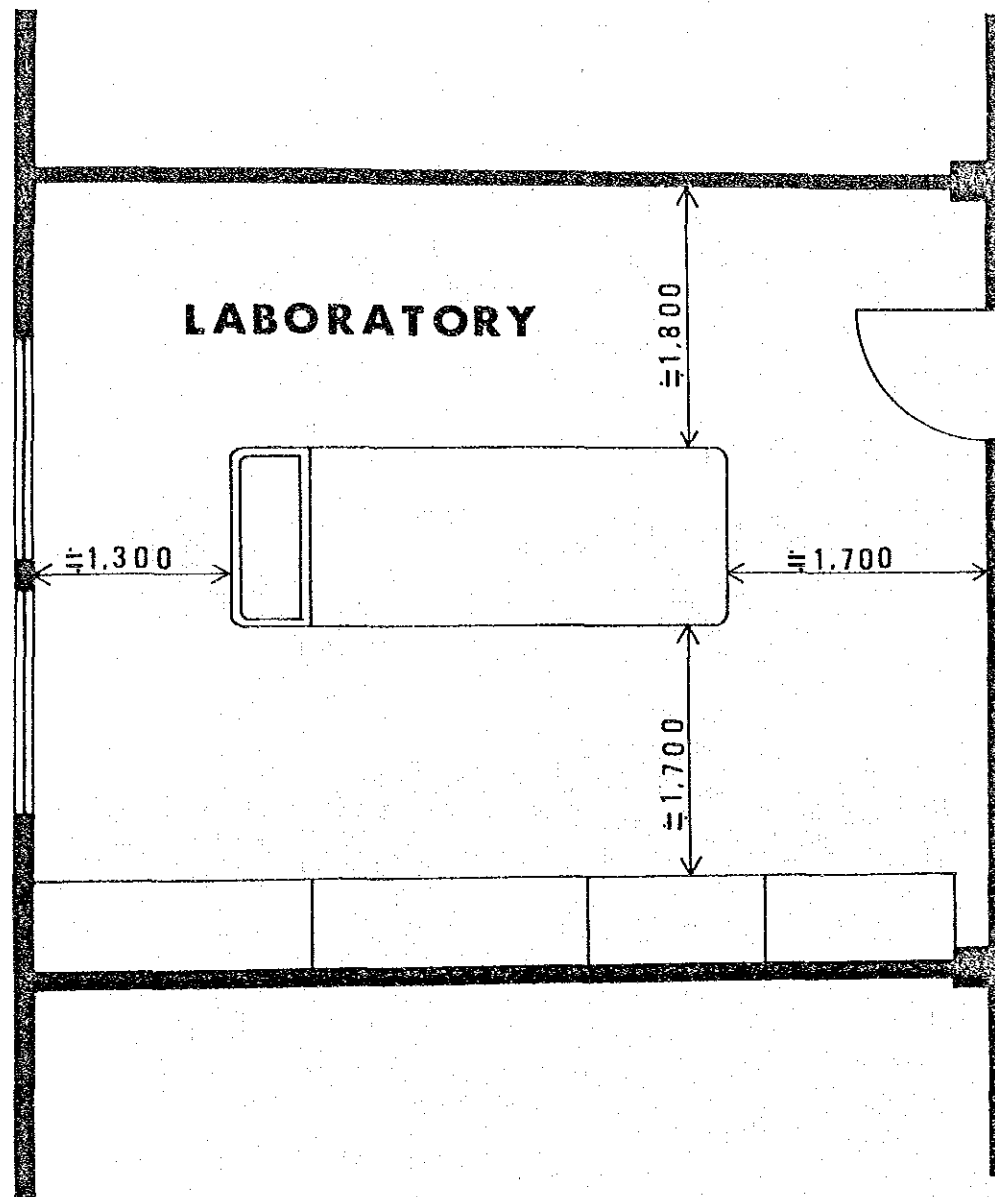


WEST ELEVATION

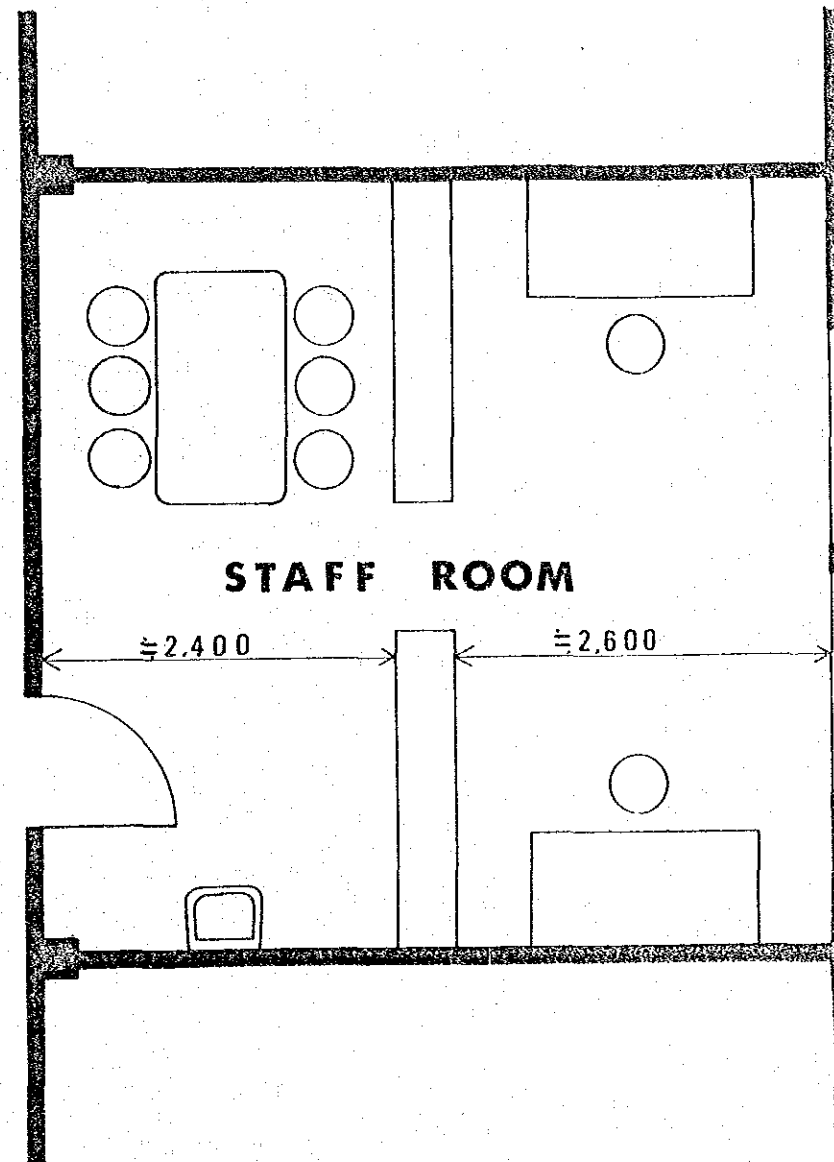


SECTION

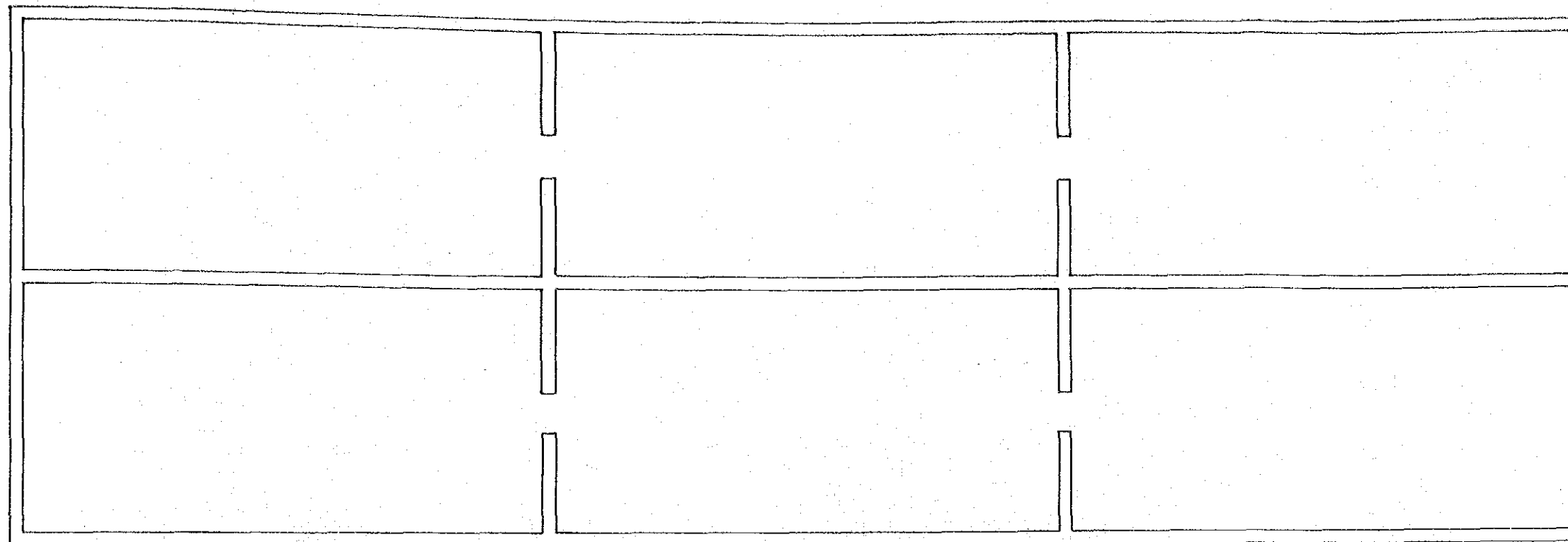
ELEVATION & SECTION SCALE **1:200**



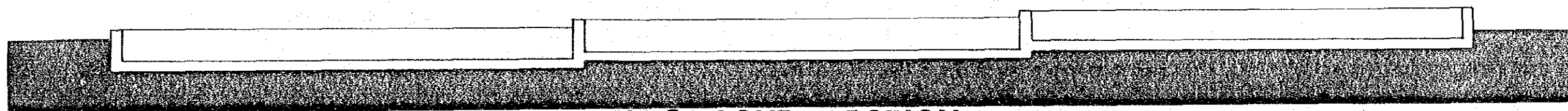
CORRIDOR



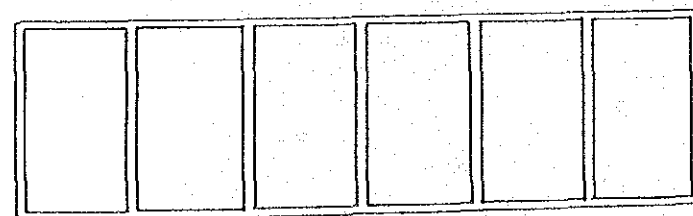
TYPICAL ROOM PLAN SCALE **1:50**



NO.2 POND PLAN S 1:200



NO.2 POND SECTION S 1:200



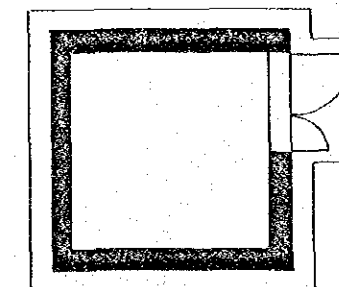
NO.1 POND PLAN

S 1:200



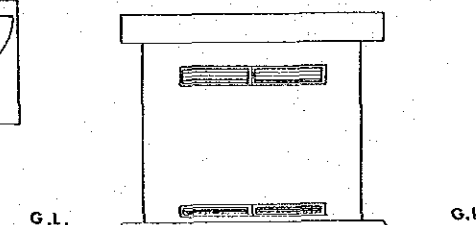
NO.1 POND SECTION

S 1:200



**BLOWER HOUSE
PLAN**

S 1:100



**BLOWER HOUSE
ELEVATION**

S 1:100

BLOWER HOUSE & EXPERIMENTAL POND SCALE 1:100, 1:200

APPENDIX

APPENDIX

- I. DAILY REPORT OF THE BASIC DESIGN SURVEY
- II. MINUTES OF DISCUSSIONS
- III. LIST OF CONSTRUCTION COST
- IV. LIST OF LOCAL CONSTRUCTORS

I. DAILY REPORT OF THE BASIC DESIGN SURVEY

The survey team carried out a survey of the situation at site discussed matters with the relevant organization at the Cairo and Aswan between January 31, 1980 - February 19, 1980.

- Jan. 31 ° Travel (Tokyo-Cairo, JL 473).
- Feb. 1 ° Arrival at Cairo.
- 2 ° Courtesy visiting and briefing to Mr. El Masry (MODANC).
- ° Courtesy visiting and briefing to the Japanese Embassy.
- 3 ° Visit to Mr. Abd El Hay & Mr. El Masry with explanation of Japanese grant aid system.
- ° Meeting in JICA Office.
- 4 ° Survey of ports and transportation.
- 5 ° Visit to JICA office.
- ° Travel (Cairo-Aswan).
- ° Courtesy visiting to HDLDA, Mr. El Masry & Mr. Mostafa Kamal with discussion.
- 6 ° Survey of the West Harbour.
- ° Meeting with Mr. Abd El Aziz Amin (HDLDA) regarding fluctuation of High Dam Lake water level.
- ° Survey of the proposed sites (A) & (R).
- ° Discussion with Mr. El Masry and Mr. Mostafa Kamal, regarding determination of the proposed site (A).
- 7 ° Member Mr. Inoue & Mr. Shimura - Topographic survey of project site (A).
- ° Member Mr. Oda & Mr. Morimoto - Survey of construction materials and methods at Rest House of HDLDA & Constructor.
- 8 ° Member Mr. Oda, Mr. Morimoto - Survey of construction materials and methods at Aswan University, and visiting the stone crushing factory.
- 9 ° Topographic survey of project site (A).
- ° Member Mr. Oda, Mr. Morimoto - Meeting with Mr. Ahmad Gharib, High Dam Utility regarding Electricity, City water, Sewage. Meeting with Mr. Ishak Saadeller George General, Aswan Hospital regarding quality of city water.

- 10
 - Leader Dr. Nomura, Mr. Morimoto - Meeting with Mr. Safwat (HDLDA) regarding the staffs of Fishery Management Center.
 - Member Mr. Inoue and Mr. Oda - Survey of transportation.
 - Meeting with Mr. Mostafa Kamal HDLDA.
- 11
 - Discussion with Mr. El Masry, Mr. Mostafa Kamal, Mr. Safwat(HDLDA) regarding Draft Minutes and project site.
 - Confirming pegs of the project site with Mr. El Masry, Mr. Mostafa Kamal and Mr. Safwat (HDLDA).
- 12
 - Meeting with Mr. El Masry and Mr. Ahmed Taha Governor of Aswan regarding Japanese grant aid system at Oberoi Hotel.
 - Discussion with Mr. El Masry (HDLDA) regarding Draft Minutes.
 - Travel (Aswan - Cairo).
- 13
 - Meeting in Japanese Embassy.
 - Meeting with Mr. Kimura first secretary of Japanese Embassy, informing result of site survey.
- 14
 - Member Mr. Yoshimoto - Meeting with Mr. Abd El Hay (MODANC).
 - Survey of construction cost, material, labour etc. in Cairo.
- 15
 - Meeting with Mr. Arima, Mr. Nasuno, Mr. Misawa experts of JICA, in Alexandria.
- 16
 - Meeting with Mr. Abdel El Hay and Mr. El Masry regarding site survey and Draft Minutes.
 - Meeting in JICA office.
- 17
 - Exchange of the Minutes between Mr. Abdel El Hay & Mr. El Masry and Dr. Nomura, and witnessed by Mr. Kihara, first secretary of Japanese Embassy at MODANC.
 - Visiting and briefing with Mr. Zahwy, Ministry of Economy & Economic Cooperation by attended Mr. Kimura & Mr. Morimoto, Counsellor of Japanese Embassy.
- 18
 - Travel (Cairo - Tokyo JL 462).
- 19
 - Arrival at Tokyo.

II. MINUTES OF DISCUSSION

1. Minutes of Discussion
2. Annex I
3. Annex II
4. Reference Note
 - ° 1. Staff list of the Center
 - ° 2. Proposed Equipment
 - ° 3. Function of the Center
 - ° Concept Plan

MINUTES OF DISCUSSIONS
ON
THE ESTABLISHMENT OF HIGH DAM LAKE FISHERY MANAGEMENT CENTER

At the request of the Government of the Arab Republic of Egypt, the Government of Japan sent, through Japan International Cooperation Agency (JICA), a survey team to Egypt headed by Dr. Minoru Nomura, Professor of Tokyo University of Fisheries, from January 31 to February 18, 1980 in order to work out the basic design for the proposed High Dam Lake Fishery Management Center (hereinafter referred to as the Center).

During the above mentioned period, the team held a series of discussions with the Egyptian Authorities concerned and conducted a field survey on the basic design of the Center.

As a result, both parties have agreed to recommend their respective Governments to take necessary measures as described below on a possible grant aid basis by the Government of Japan:

1. The objectives of the Center are to develop practice and technique of fishery management and to increase fishery resources, and also to train personnel of freshwater fisheries as a centralized institution for the fisheries development in the High Dam Lake.
2. The Center belongs to the High Dam Lake Development Authority (HDLDA).
3. The Center will be established on a site near the new building under construction of HDLDA at Sahari in Aswan Governorate (see the Site Plan attached herein).
4. The description of the Center is as attached to Annex I.
5. The Government of Japan will take necessary measures to provide facilities and equipment for the Center as listed on Annex II.
6. The Government of the Arab Republic of Egypt will take necessary measures as follows:

- A) To secure site necessary for the Center and to clear and grade it according to the formation height, and also to remove the existing house before starting the construction, the cost of which will be borne by the Government of the Arab Republic of Egypt.
 - B) To provide the following items necessary for the Center at the expenses of the Government of the Arab Republic of Egypt:
 - (a) Electric power supply to the transformer sub-station, including for use of the construction.
 - (b) Water supply to the building and experimental ponds, including for use of the construction.
 - (c) Telephone wiring to the Center.
 - (d) Installation of gas cylinder.
 - (e) Drainage and sewage connection to main and/or sewage system.
 - (f) Landscaping, gateway, fence, exterior lighting, pavement and car park.
 - (g) Furnitures, rugs, drapes and office supplies.
 - (h) To transport a survey boat to be granted for the Center from a port (Alexandria or Port Said) to the High Dam Lake.
 - C) To provide data of standard boring test and subsurface exploration at point A shown in the Site Plan.
 - D) To ensure prompt unloading and customs clearance in Egypt of imported materials and equipment for the Center and also to facilitate the internal transportation of them.
 - E) To exempt Japanese nationals concerned from customs duties, internal taxes and other fiscal levies which may be imposed on in Egypt on the occasion of the supply of goods and services for construction of the Center.
 - F) To provide and accord necessary permissions, licences and other authorization required for construction of the Center.
 - G) To provide all the expenses necessary for the operation and maintenance of the Center.
7. The Basic Design Report to be made by JICA shall be presented to the Government of the Arab Republic of Egypt by the end of April, 1980.

February 1⁷, 1980

Cairo - A.R.E.

Mr. Mohamed Abd El Gany El Masry
17.2.1980
Mr. Mohamed Abd El Gany El Masry
Chairman
High Dam Lake Development Authority, the Arab Republic of Egypt

Dr. Mincru Nomura
17.2.1980
Dr. Mincru Nomura
Leader
Japanese Survey Team for High Dam Lake Fishery Management Center

Mr. Soliman Abd El Hay
17.2.1980
Mr. Soliman Abd El Hay
Chairman
Advisory Committee for Reconstruction, the Arab Republic of Egypt

Annex I.

Description of the Center

1. The Center will be composed of eight (8) sections and one (1) administration office as follows:
 - A) Sections
 - (a) Fishing Operation Survey
 - (b) Landed Fish Survey
 - (c) Fishery Management
 - (d) Resources Analysis
 - (e) Seedling Production and Fish Propagation
 - (f) Welfare and Training for Fishermen
 - (g) Ecological Research
 - (h) Environmental Research
 - B) Administration Office
2. The Center will be staffed with approximately six (6) researchers, six (6) technicians, twelve (12) assistants and five (5) administrative personnel.

Annex II.

Facilities and equipment to be provided to the Center by the Government of Japan

1. Facilities

A) Building

- (a) Laboratories and offices for eight (8) sections
- (b) One (1) administrative office and one (1) director's office
- (c) One (1) library, one (1) conference room, one (1) rest room and others.

B) Experimental Ponds

2. Equipment

A) One (1) survey boat

B) Equipment for survey, research and training

1. STAFF LIST OF THE CENTER

A) SECTION

(a) Fishing Operation Survey

Technician	1 person
Assistant	1 person

(b) Landed Fish Survey

Technician	1 person
Assistant	1 person

(c) Fishery Management

Technician	1 person
Assistant	1 person

(d) Resource Analysis

Biologist	1 person	(University degree)
Technician	1 person	
Assistants	2 persons	

(e) Seedling Production and Fish Propagation

Biologist	1 person	(University degree)
Technician	1 person	
Assistants	2 persons	

(f) Welfare and Training for Fishermen

Technician	1 person	(also related with (c) section)
Assistant	1 person	

(g) Ecological Research

Biologist	1 person	(University degree)
Limnologist	1 person	(University degree)
Assistants	2 persons	

(h) Environmental Research

Limnologist	1 person	(University degree)
Chemist	1 person	(University degree)
Assistants	2 persons	

B) Administration Office

Clerical	2 persons
Secretary	1 person
Typists	2 persons

Total Number of Staff Personnel of the Center

University degree Researchers	6 persons
Specialist (Technician)	6 persons
Assistants (Technical school degree)	12 persons
Administrative / Clerical	5 persons
Labourers	proper number

2. PROPOSED EQUIPMENT

LABORATORY EQUIPMENT

No.	Items	Section
1	Balances	Each section
2	Scales	Each section
3	Multi-purpose telescopic projector	(g)
4	Over-head projector	(c)
5	Projector for slide	(a) & (b)
6	Screens	(a) & (b)
7	Regular-type microscopes	(e) & (g)
8	Standard cameras	(a) & (b)
9	Polaroid camera	(c)
10	Stevenson screen	(h)
11	Water analysis kit	(h)
12	Set of lake deposits tester	(h)
13	Plankton sampling kit	(g)
14	Specimen bottles	(d), (e) & (g)
15	Standard electronic calculators	Each section
16	Electronic calculators (large size)	Each section
17	Typewriters (English)	Each section
18	Typewriters (Arabic)	Each section
19	Black-boards	Each section

GENERAL EQUIPMENT

No.	Items	Section
1	Batteries	(a)
2	Battery charger	(a)
3	Tester	(a)
4	Research boat (8.9 t.)	(a)

3. Function of the Center:

The functions which the Center is to perform can be tentatively grouped into eight sectional activities as shown below.

(1) Section of Fishing Operation survey

The section collects information on:

- number and distribution of fishing camps,
- number of fishermen and fishing boats per camp,
- days of annual operation per boat at each camp,
- number of fishing nets and total length and mesh size by type of fishing nets, and
- daily fish hauls and frequency of casting per boat.

(2) Section of Landed Fish Survey

The section : conducts a sample survey on landed hauls concerning:

- total hauls by species and by age,
- body length and weight distribution by species and by age, and
- composition by age and maturity.

(3) Section of Fishery Management

The section undertakes:

- identification and implementation of fishery control measures, such as restrictions on the type of fishing gear, the method of fishing, the size and total number of fishing boats, the fishing season and grounds and the size of fish to be caught, and
- supervision and enforcement of the fishery control measures.

(4) Section of Resource Analysis

Major activities of the section : are:

- release of tagged fish and stock assessment (mainly tilapia), and
- echo-sounder probe and estimation of off-shore fish distribution (mainly tiger fish).

(5) Section of Seedlings Production and Fish Propagation

Major activities of the section : are:

- rearing and release of Tilapia nilotica seedlings (some of the seedlings are tagged before released by the section of Resource Analysis), and
- experimentation and development of suitable aquacultural technologies.

(6) Section of Welfare and Training for Fishermen

The section undertakes activities such as:

- seminars and training courses to improve the fishing practices and the living accommodations among lake fishermen, and

(7) Section of Ecological Research

The section undertakes studies on:

- spawning seasons and grounds, seasonal changes of maturity, maturing ages, characteristics of spawning, patterns of growth, distribution and mobility, feeding habits, etc., and
- varieties and seasonal distribution and availability of phyto- and zoo-planktons, benthos and other organisms.
- introduction of new species.

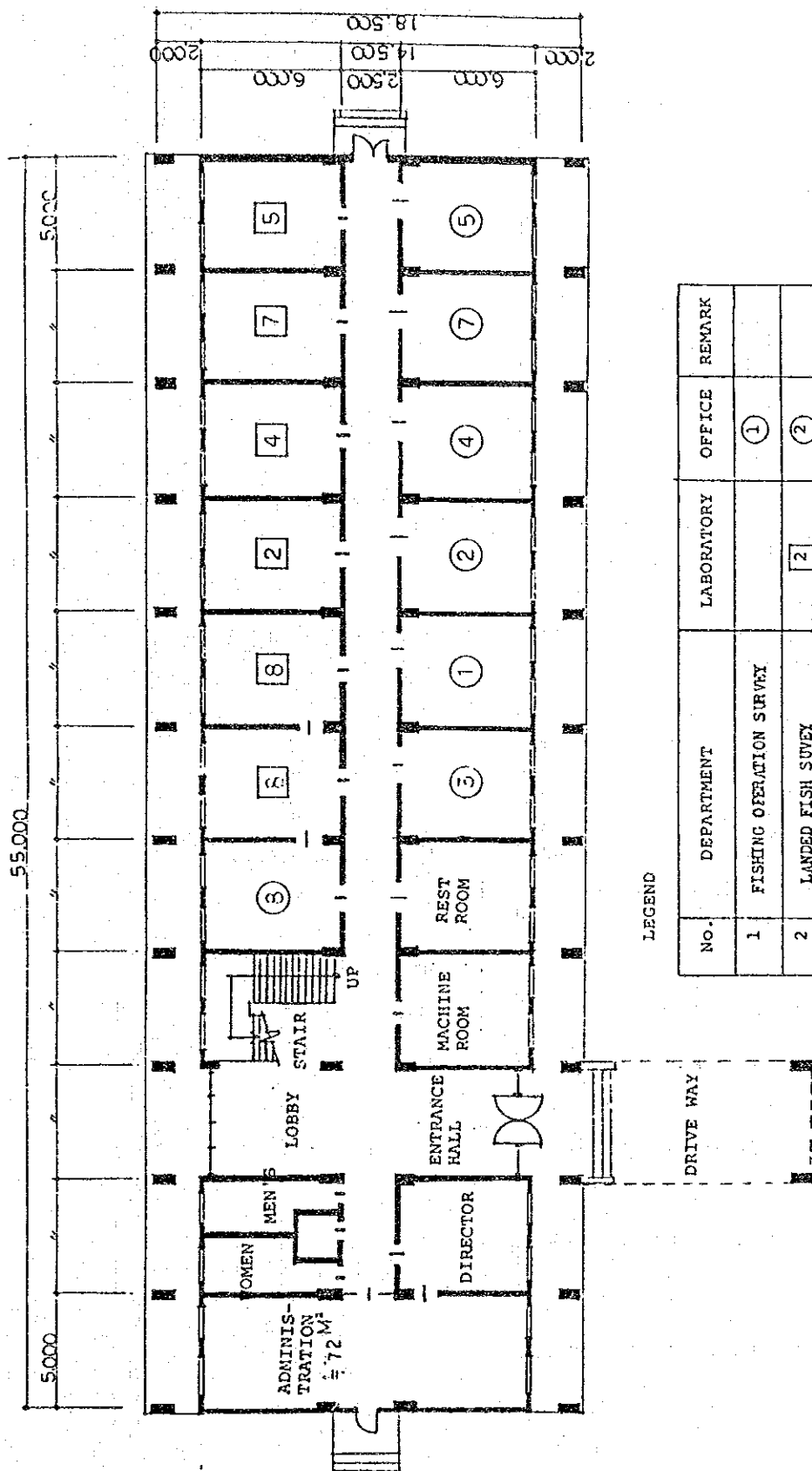
(8) Section of Environmental Research

Major activities of the section are:

- measurement of the physical conditions (the contour of the lake bed, fluctuations of water level, movement of the current, turbidity and transparency of water, deposits on the lake bed, etc.),
- measurement of chemical properties of the lake water (water temperature, dissolved oxygen and nutrient salts, pH, etc.), and
- identification of measures for environmental protection.

HIGH DAM LAKE
FISHERY MANAGEMENT CENTER
THE ARAB REPUBLIC OF EGYPT

Feb. 1980



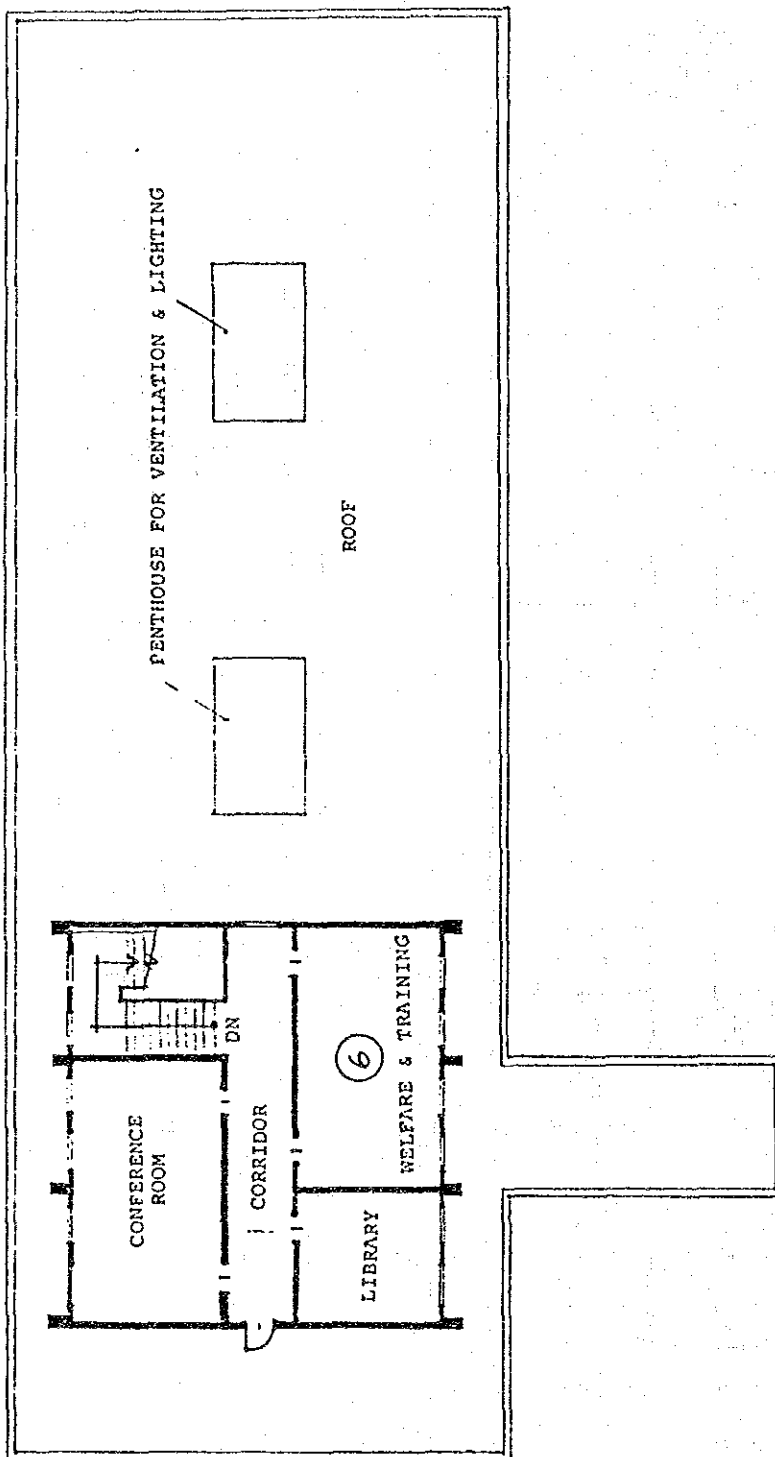
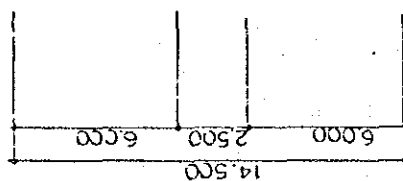
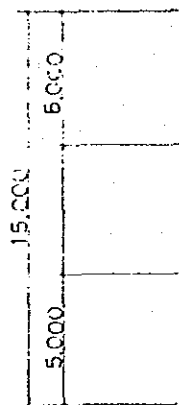
LEGEND

No.	DEPARTMENT	LABORATORY	OFFICE	REMARK
1	FISHING OPERATION SURVEY		①	
2	LANDED FISH SUVEY	②	②	
3	FISHERY MANAGEMENT		③	
4	RESOURCE ANALYSIS	④	④	
5	SEEDINGS PRODUCTION AND FISH CULTURE	⑤	⑤	
6	WELFARE AND TRAINING FOR FISHERMAN		⑥ x 2	2nd FJ
7	ECOLOGICAL RESEARCH	⑦	⑦	
8	ENVIRONMENTAL RESEARCH	⑧	⑧	

1ST FLOOR AREA $M^2 \times 55.00 = 797.5M^2$

HIGH DAM LAKE
FISHERY MANAGEMENT CENTER
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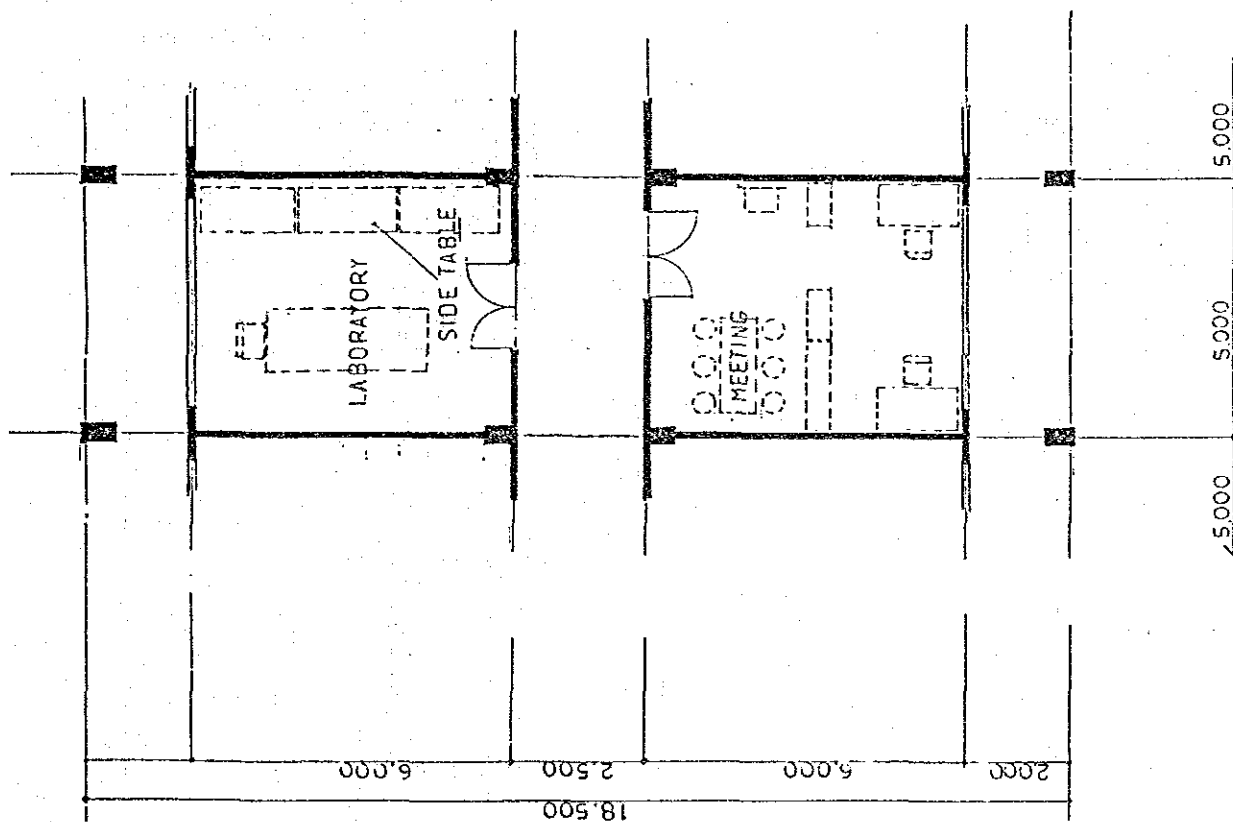
CONCEPT PLAN



HIGH DAM LAKE
FISHERY MANAGEMENT CENTER
THE ARAB REPUBLIC OF EGYPT

2ND FLOOR AREA $M_5 \times M_6 = 217.5M$

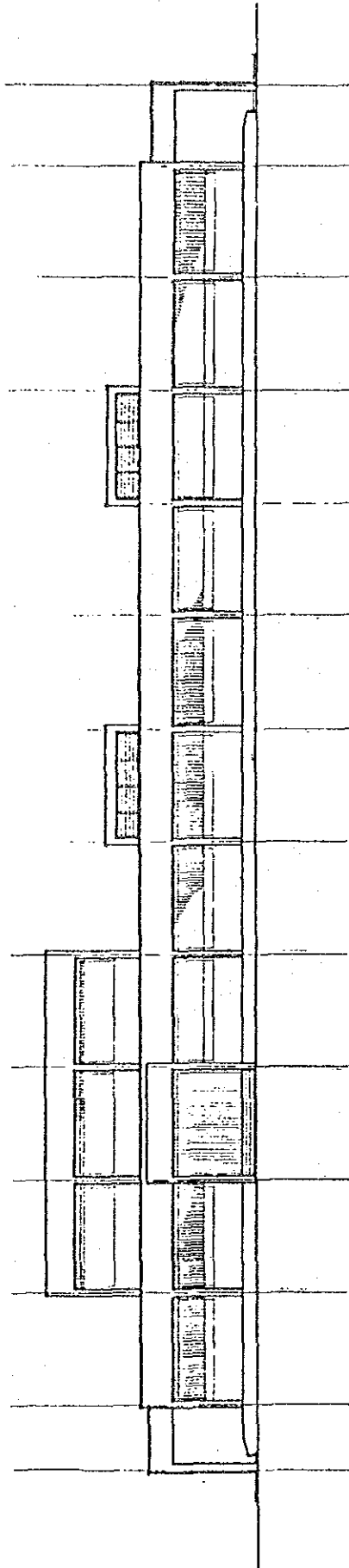
CONCEPT PLAN



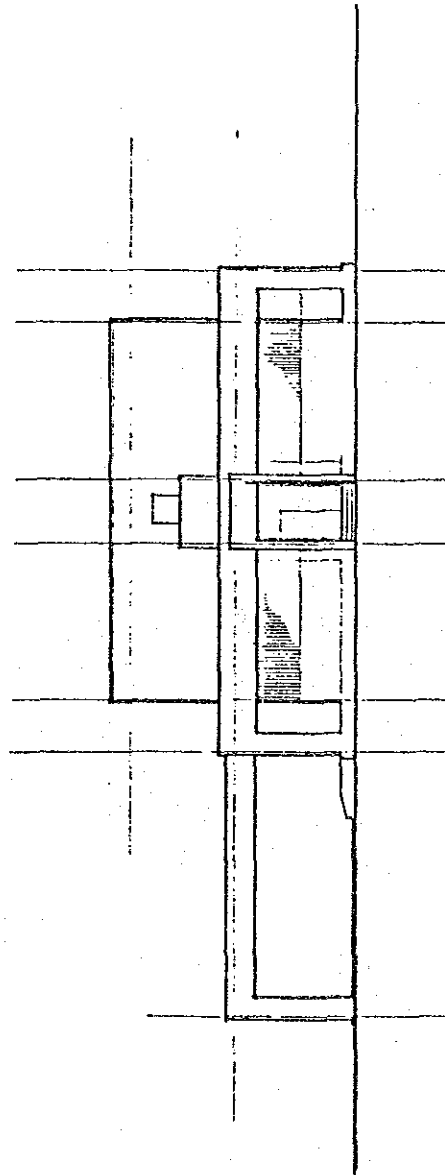
TYPICAL PLAN S 1:100

HIGH DAM LAKE
FISHERY MANAGEMENT CENTER
THE ARAB REPUBLIC OF EGYPT

CONCEPT PLAN



SOUTH



WEST

HIGH DAM LAKE
FISHERY MANAGEMENT CENTER
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CONCEPT PLAN

ELEVATION S 1:200