

## Chapter 4 Basic design



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### 1. Guidelines for Construction

The construction of buildings and facilities as well as the selection of equipment for this proposal adhere to the following guidelines. These guidelines include factors such as the climate and native environment of Bangladesh, details about the planned construction site, and objectives for the Institute of Postgraduate Studies in Agriculture (IPSA).

- \* Located in the subtropical zone, Bangladesh has very little rainfall during the dry season, while it is hot and humid during the wet season.  
The arrangement of the facilities and materials used is to be suitable for this climate.
- \* The condition of the soil, consisting mainly of silty soil, is relatively stable. However, it has low resistance to water and the basic design will be made after a full confirmation of its durability.
- \* The architectural style of Bangladesh makes allowance for air flow in the arrangement of buildings, thus creating a pleasant ambience. In its design, this project has considered the harmony between the new construction and those buildings already existing.
- \* Regarding the building equipment that can be procured by Bangladesh, efforts shall be made to utilize as many local building materials and construction methods as possible.
- \* The arrangement of the new construction site will be planned with consideration given to land utilization and layout plans.
- \* The layout of the site will be planned to enhance the existing facilities.
- \* The maintenance of the facilities and equipment should be within the ability and management of IPSA and should not create any additional maintenance problems.

## 2. Requirements for Construction

The basic design will be made with full consideration given to the following factors:

### (1) Natural environment

#### 1) Climate

Bangladesh is in the subtropical zone. From April to October, the average temperature is approximately 29°C. From December to February, it is relatively cool. The rainy season is from mid-April to mid-October, and the dry season is from November to March.

During the dry season, there is little rainfall and during the rainy season, the humidity increases as the temperature rises, reaching 95% at its peak.

#### 2) Topography

As shown in the attached table, the campus is positioned on a very mild slope (1/200 on average) from northwest to southeast. The difference between the highest and lowest point is 5 meters. In between, there are some slopes 3 to 4 meters high. The region at the higher elevation is covered with some shrubs while at the lower elevation, the land is used as paddy fields.

#### 3) Soil

Results of the drilling investigation conducted at a location on the library site show that the topsoil is silt. It contains a large quantity of clay which results in low water permeability, thereby consolidating the soil when it is dry. Drilling confirmed that the underground water table is approximately 1.4 meters below the surface. Soil resistance is 10 to 12 tons/m<sup>2</sup> on average.

(2) Design standards

The following laws, regulations, and standards shall be referenced or used with regard to construction.

1) Bangladesh Regulations and Standards

Building Act, Architect Rule, BDS (Bangladesh Standard)

2) Japanese Regulations and Standards

Internationally applicable Japanese standards and Bangladesh standards will be used for planning the buildings and facilities.

JASS (Japan Architectural Standard Specification)

JIS (Japan Industrial Standard)

JSWAS (The Sewage Works Association Standard)

JEM (The Standard of Japan Electrical Manufacturers Association)

JEAC (Japan Electric Association Code)

HASS (Heating, Air-Conditioning and Sanitary Standard)

As the standard for reference, the B.S. (British Standard) will be used.

(3) Design conditions

1) Library

Users : Graduate school of Agriculture, Master's, Doctor's course, 9 departments, 40 faculty members, 120 students

NO	Item	Content	Size	Surface in m <sup>2</sup>	Criteria
1.	Library	Storage of books, periodicals. 2 stack rooms, 2 storage rooms	65,000 books and journals	544	65,000 books and journals ÷ 150 books and journals/m <sup>2</sup> = 433m <sup>2</sup> ; Reading space 70m <sup>2</sup> Storage 20.5 x 2 = 41m <sup>2</sup>
2.	Display room Reading room	Display of journals Reading room	36 seats 48 seats	242	2.0m <sup>2</sup> /seat x 36 seats = 72m <sup>2</sup> Surface area necessary for display furniture: 74m <sup>2</sup> 2.0m <sup>2</sup> /seat x 48 seats = 96m <sup>2</sup>
3.	Group study room	Group research	15 seats	50	3.0m <sup>2</sup> /seat x 15 seats = 45m <sup>2</sup> Board = 5m <sup>2</sup>
5.	Study room	Lectures	60 seats	104	1.5m <sup>2</sup> /seat x 60 seats = 90m <sup>2</sup> Platform = 14m <sup>2</sup>
6.	Spare room	For meetings and other uses		29	29m <sup>2</sup>
7.	Lobby, lounge			130	Lounge 1.5m <sup>2</sup> /person x 20 people + 100m <sup>2</sup> (lobby) = 130m <sup>2</sup>
8.	Maintenance area	Library chief's office Librarian's room Maintenance room	1 person 2 people 2 people	60	17m <sup>2</sup> /person x 1 person (library chief) + 10m <sup>2</sup> /person x 4 people = 47m <sup>2</sup> + storage (13m <sup>2</sup> ) = 60m <sup>2</sup>
9.	Preparation and sorting room	Sorting of books and documents	2 people	60	10m <sup>2</sup> /person x 2 people + 40m <sup>2</sup> (storage) = 60m <sup>2</sup>
10.	Other facilities	Hallway, lavatories, entrance, engine room		111	Lavatories, hallway, hall, etc.
		Total		1330	

The criteria for calculation of the surface area: Japan Architectural Society norms

Important points with regard to the design:

- a) In order to be able to cope with the future expansion of the collection of books in the library, it was considered to partially locate the area intended for bookshelves on the second floor.
- b) The working area is concentrated in one place for the library staff.
- c) On the south, shutters are to be installed.
- d) Lounge and lobby have been located near the entrance.

## 2) Laboratory building

Users : Graduate school of Agriculture, Master's, Doctor's course, 4 departments, 11 faculty members, 36 - 56 students

NO	Item	Content	Size	Surface in m <sup>2</sup>	Criteria
1.	Crop Botany Department	WET LAB, 4 experiment tables (lab: 96 m <sup>2</sup> )	For 8 to 16 people	144	14m <sup>2</sup> /table x 4 worktables + 26m <sup>2</sup> (faculty) + 2.25m <sup>2</sup> x 8 people (student study room) + storage 32m <sup>2</sup> + hallway 12m <sup>2</sup> = 144m <sup>2</sup>
2.	Plant Pathology Department	WET LAB, 4 experiment tables (lab: 96 m <sup>2</sup> )	For 8 to 16 people	144	14m <sup>2</sup> /table x 4 worktables + 32m <sup>2</sup> (faculty) + 2.25m <sup>2</sup> x 8 people (student study room) + storage 24m <sup>2</sup> + hallway 14m <sup>2</sup> = 144m <sup>2</sup>
3.	Horticulture Department	WET LAB, 4 experiment tables (lab: 96 m <sup>2</sup> )	For 8 to 16 people	144	14m <sup>2</sup> /table x 4 worktable + 32m <sup>2</sup> (faculty) + 2.25m <sup>2</sup> x 8 people (student study room) + storage 18m <sup>2</sup> + hallway 20m <sup>2</sup> = 144m <sup>2</sup>
4.	Agricultural Extension Department	DRY LAB to be used as classroom.	Lectures will also be held	144	2.5m <sup>2</sup> /person x 40 people (students) + 20m <sup>2</sup> (faculty) + 2.25m <sup>2</sup> x 8 people (student study room) + storage 18m <sup>2</sup> + hallway 20m <sup>2</sup> = 164m <sup>2</sup>
5.		Hallway, lavatories, entrance		78	Lavatories, hall, stairs.
		Total		654	

The criteria for calculation of the surface area: The existing facilities

Important points with regard to the design:

- a) In order to assure the functional connection between the laboratory building and existing buildings, the laboratory building will be two-storied.
- b) In the laboratory, pipe space will be arranged in the vertically and a pit horizontally. This will enable multi-purpose use of laboratory desks.
- c) Stairs and toilets are designed to be in the center of the laboratories, This will provide better overall access.
- d) The agricultural extension course will use a dry lab. The other three laboratories will be wet labs.



### 3) Field laboratory

Users : Graduate school of Agriculture Master's, Doctor's course, 7 departments (excepted agricultural extension and data and statistics), 2 faculty members, 18 students

No	Item	Content	Size	Surface in m <sup>2</sup>	Criteria
1.	Processing Area	Basic categorization of soil and plant samples	For 6 to 10 people	136	The surface area necessary for the processing of (by hearing) and for the entry of transportation vehicles is taken into consideration.
2.	Working Room	Detailed categorization of soil and plant samples	For 8 people	69	6 m <sup>2</sup> /8 people + space for equipment 21 m <sup>2</sup> = 69 m <sup>2</sup>
3.	Toilet/ Shower Room		1 unit	27	1 span (9m x 6m) x 1/2 = 27m <sup>2</sup>
4.	Storage (1)	Storage of soil and plant samples		27	1 span (9m x 6m) x 1/2 = 27m <sup>2</sup>
5.	Storage (2)	Storage of soil and plant samples		12	Enough space provided for entrance of transportation vehicles and for unloading
		Total		270	

The criteria for calculation of the surface area: Research and work content

Important points with regard to the design:

- a) The form and method will be similar to those of the existing building.
- b) Case was taken to improve the efficiency of the operations.

### 3. Evaluation of Existing Facilities

#### (1) Existing library

##### Storage space:

Books and journals (approx. 5,100) are kept in the reading room. The stacks are the open-stack type. The number of books is expected to increase substantially in the future, in view of IPSA's acquisition program, for which there is not adequate space available.

##### Reading space:

The reading space is also used as the space for stacking books. The present reading room, which has enough seats for 16 persons, is inadequate to serve 120 future graduate students.

##### Reference room:

There is no reference room; instead, the reading room serves as the reference room as well. As the number of periodicals is expected to increase, it is necessary to have an independent reference room, separate from the reading room.

##### Noise and sunlight:

The reading room is located next to a parking lot and the noise of the cars outside is loud. The windows of the reading room face south and are not equipped with blinds.

##### Air conditioners:

The stacks are air-conditioned.

The reading room is equipped with ceiling fans, but they are not efficient enough and the books in the reading room are in danger of being damaged by sunlight, heat, and humidity.

##### Storage capacity:

The storage capacity of the library has not been designed to adequately hold future increases in the number of books and journals.

Auxiliary facilities:

There is a lack of facilities to display the indexes, catalogs and journals.

(2) Existing student laboratories

Lack of lab space:

Since this is a college which was turned into a postgraduate school, labs are needed to correspond to the increase in demand.

Independent labs:

At the present time, four laboratories are in common use. New exclusive labs for the new curriculum are needed. The department of Agricultural Extension is in operation, but there are no lab facilities for it.

Shortage of desks and tables:

Tables and desks which the students need to record their findings are lacking.

(3) Need for a field laboratory

Lack of an independent field lab:

The main characteristic of this field lab lies in its ability to handle large quantities of plants and soil. The sorting and classification of samples is carried out here, but this work generates large amounts of dust. Specimens should be processed on the spot, and not near the lab, where precision instruments such as analyzers are kept. Now, however, the necessary facilities not being available in the field lab, samples are sorted through in the hallways or nearby, and for this reason the dust is soiling the labs.

#### 4. Basic Plan

##### (1) Layout

In planning the layout of the new facilities, consideration was paid to their relation to the existing facilities, as well as to functionality, convenience and esthetics.

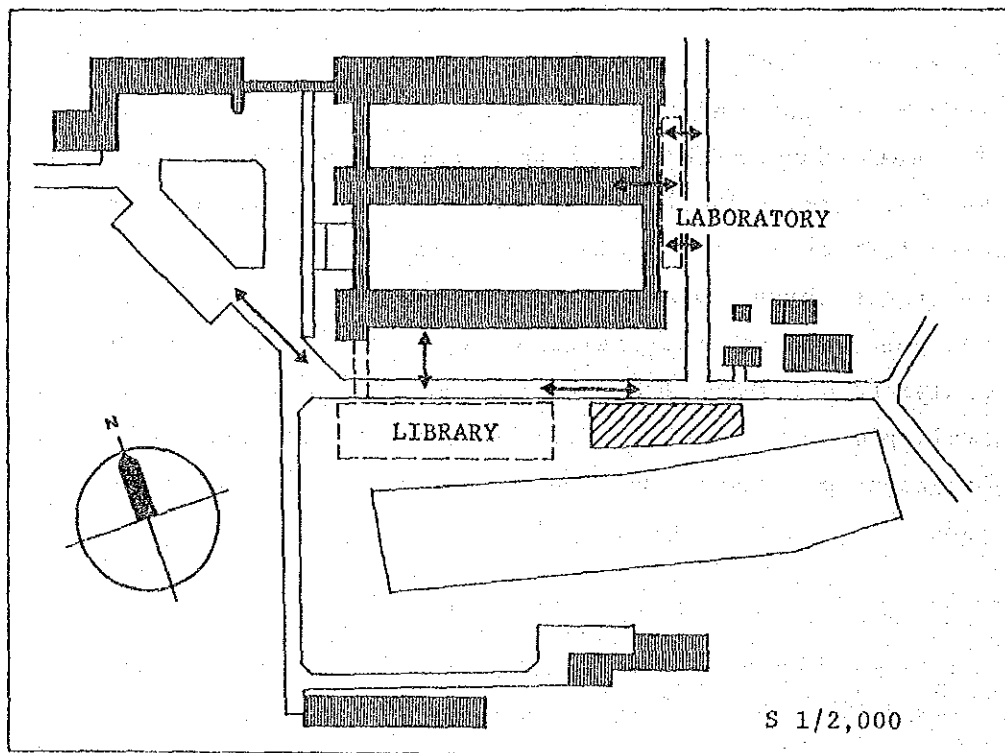
##### 1) Library

As shown in the diagram below, the library is located on the opposite side of the road from the education block on the south-west side to facilitate access from the other parts of the school.

##### 2) Student laboratory

The student laboratory block is located along the eastern corridor of the education block to facilitate communication with it.

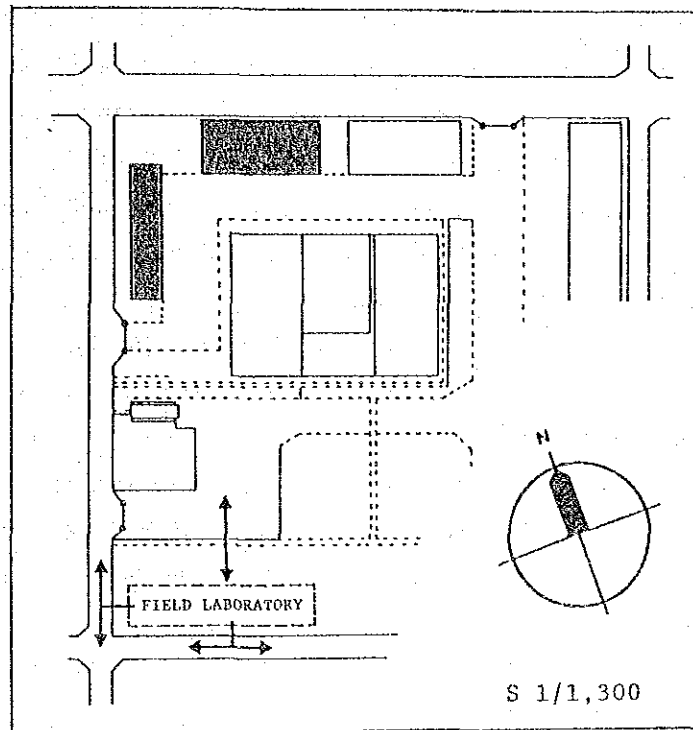
Plan of library and student laboratory



### 3) Field laboratory

The field lab block is located inside the existing field lab area along the approach road as shown in the map below, thus resulting in maximum efficiency.

Plan of field laboratory



### (2) Construction project

The design concepts of this project are as follows:

- \* The buildings and facilities are designed for compatibility with the local climate, weather and life-style, with a raised ground floor to facilitate ventilation.
- \* Concrete and bricks available in Bangladesh will be used for the structure of the buildings. Local materials will be used whenever possible for the finish as well, with the aim of making maintenance and management easier.
- \* The layout of each room will be designed with consideration for the usage of the facilities; they must be easy and practical to

run, the administration of the facilities and equipment must be capable of being carried out safely, and they must be pleasant to work in.

- \* Compatibility with the existing facilities regarding design, building materials and construction method will be considered.

## 1) Library

### (1) Horizontal plan

- \* The upper floor will be used for storage of the newly acquired books. This is why the southern half of the block was designed to be two-storied.
- \* The library and the study room are separated by the lobby, and the study room will have an independent entrance so they can be used freely and independently.
- \* The west side will be equipped with sun-shading devices (such as louver eaves) since it receives direct sunlight in the afternoon.
- \* The administration department and the document classification rooms will be located in the center of this block.
- \* The lobby and lounge will be connected to the existing building by an outside corridor.

### (2) Vertical plan

- \* The weight of the structure will be supported by reinforced concrete, the walls consisting of dressed bricks and aluminum sash openings.
- \* There will be a brick framework, which is a common construction method in Bangladesh.
- \* The roof of the library building will be in gable style, slanted on both sides. This is to provide some variety, the roofs of the other buildings being.

## 2) Student laboratory

### (1) Horizontal plan

- \* Four independent labs are planned.
- \* Two labs will be connected by an open space containing a

stairway and lavatories.

- \* Each lab will have two openings for entrance and exit, and will consist of working space and storage space for samples.
- \* The wet lab will be equipped with a pit for piping.

(2) Vertical plan

- \* The lab block will be composed of two floors.
- \* The structure will be of reinforced concrete. The walls will be basically made of bricks, and the openings of aluminum sash windows, in harmony with the existing school buildings.
- \* The wet lab will be equipped with a pipe shaft.
- \* The roof will be flat.

3) Field laboratory plan

(1) Horizontal plan

- \* The processing area will be in the middle with the samples room, shower and lavatories etc. located around it. Storage rooms, with normal temperature and air conditioner will be built at the end of the block.
- \* The entrance and the floor of the processing area will be designed to allow tractor use.
- \* The processing room will be placed in the center, to allow people to go from one part of the block to another without getting wet on rainy days.

(2) Vertical plan

- \* The roof will be in gable style with reinforced concrete.
- \* The walls will be made of brick; the openings will be sashes with iron grids.
- \* The entrance/exit of the processing area will be a shutter. All the other openings will be fitted with locally-available steel doors.
- \* Rooms requiring ventilation will have ceiling fans.

4) Structural design

- \* The structure, plan and construction method most suitable to

the weather and climate of Bangladesh and to the scale, style and purpose of the buildings will be employed.

- \* The structure and the construction method will be planned in consideration of the supply and quality of the materials available locally. The amount of work involved and the procurement of materials will be made easier by the usage of the RC frame structure generally popular in Bangladesh. Reduction of the building costs and shortening of the construction term will also be aimed for.

(1) Fixed load

a) Reinforced concrete	2.4 t/m <sup>3</sup>
b) Concrete	2.3 t/m <sup>3</sup>
c) Structural steel	7.85 t/m <sup>3</sup>
d) Brick	2.2 t/m <sup>3</sup>

(2) Carrying load (slab)

a) Lab	230 kg/m <sup>2</sup>
b) Research room	360 kg/m <sup>2</sup>
c) Document room	550 kg/m <sup>2</sup>

(3) Wind factor

This project involves two-story buildings and therefore the wind factor is not involved. However, the standards of the Japan Architecture Society have been used for reference as follows:

Height of the building h[m]

Standard velocity pressure  $q^{\circ}$  [kg/m<sup>2</sup>z]

0-10 120 E

10-30 120 E+8(h-10)

$q = q^{\circ} \times Z \times L \times I$

E: Environment coefficient 1.1 here

Z: Regional coefficient=1.2

L: Surface coefficient

I: Service coefficient



Load P for design is

$$P = C \times p \times a$$

C: Wind velocity coefficient

q: Velocity pressure for design

A: Building approach measurements.

#### 5) Utility plan

The planning of the utilities will follow these basic principles:

- \* Ventilation, water supply and sewage plans will meet the local life-style and environmental conditions.
- \* Materials used in the installation of electricity, water and sewage shall be those locally available.
- \* Operation shall be simple and clear, and maintenance easy. Maintenance costs will then be kept low.
- \* With consideration for future maintenance and repairs, the design will be based on the use of standard products, the materials being available locally.

#### (1) Water supply/sewage

##### \* Water supply plan

Water is supplied from the existing water supply facilities already located at IPSA. Pipes for the library and labs branch out from the existing water supply pipe installed under the nearby road; pipes for the field lab branch out from the existing field lab facilities. The water itself is satisfactory both in quantity and quality.

##### \* Sewage plan

Existing sewage systems at the library and labs are not sufficient to accommodate the future increases from the new buildings. A new digester chamber will be installed. Sewage water is absorbed into the soil through the penetration valve and perforated sewage pipes.

##### \* Gas supply

Gas pipes to the library and labs will branch out from the main pipe under the road. The field lab will use the supply method which relies on a natural gas tank. This can

be replenished without any difficulties.

\* Fire extinguishes

Small-sized fire extinguishes will be installed in accordance with regulations. Movable carbon gas cylinders will be available in the document room.

\* Air conditioners and ventilation

The buildings involved in this project were planned to utilize natural ventilation. Therefore no air conditioning will be installed, except in the document room where air conditioning may be needed to avoid damage due to excessive heat and humidity, and in the study rooms where audio-visual equipment will be used, in which case the windows will need to be shut and air conditioning will be necessary.

(2) Electricity

\* Power reception

The existing equipment has enough capacity to feed the new facilities. Power is supplied to the library and the student labs through underground cables from the existing distributor. Power for the field lab is branched from the lead-in line of the existing facilities.

\* Lighting and outlets

Lighting for each room is as shown in the chart below. Fluorescent lights are mainly used with reflective shades.

	Rooms	Light Intensity	Remarks
Library			
1	Stack room/Study room	300	Air conditioning
2	Reading room	400	
3	Director's and Officer's Group study room	300	
4	Lobby, Lounge	200	
Student laboratory			
1	Excluding the Agricultural extension lab	400	
2	Agricultural extension	300	
Field laboratory			
1	Processing area	100	
2	Working room	200	
3	Storage (1)	100	Air conditioning
4	Storage (2)	100	

- \* Broadcasting equipment  
Portable equipment will be installed in the study room. The microphones will be of two types, wireless and desktop. Speakers will also be portable.
- \* Fire alarms  
Only the library will be provided with an automatic fire alarm system, connected to the administration room.
- \* Telephone  
Cabling only will be carried out. The switchboard, telephones, and wire-laying will be the responsibility of the GOB.

6) Construction material plan

(1) Exterior finish of the library

Roof: Roof tiles with lime concrete base

Exterior wall: Brick, some cored brick (machine room)

Openings: Window - Aluminum frame + Glass

Door - Aluminum door + Glass, some steel doors  
(oil paint finish)

Face lattice

Steel net (oil paint)

Pillars: Brick

Porch: Terrazzo Block

(2) Outside corridor finish

Roof: Lime concrete

Ceiling: Exposed concrete

Wall: Dressed brick

Pillars: Exposed concrete

Floor: Concrete Trowel

(3) Interior finish of the library

NO	ROOM	FLOOR	BASEBOARD	WALL	CEILING	REMARKS
1.	Stack/ Reading Area, Reference Area	Terrazzo Block	Terrazzo Block	Mortar Base, Brick/Void F.R.P. finish	1FL: Insulation panel F.R.P. finish	2FL Ceiling: Mortar F.R.P. finish
2.	Lobby, Entrance Hall	^	^	^	^	Partition: Void Brick
3.	Director's/ Librarian Room, Loading and Receiving Area	^	^	Mortar F.R.P. finish	^	2FL Ceiling: Mortar F.R.P. finish
4.	Study room, Group Study Room	^	^	^	^	
5.	Toilet	Ceramic Tile	Ceramic Tile	Ceramic Tile/ Mortar F.R.P. finish	Insulation Panel F.R.P. finish	Top Panel: Terrazzo finish
6.	Air Conditioning Mech. Room	Mortar Trowel	Mortar Trowel	Mortar	^	
7.	Stair(A)	Terrazzo Block	Terrazzo Block	Brick (Mortar, F.R.P. finish)	-	Parapet: Void Brick
8.	Terrace	^	Mortar Trowel	^	-	^

F.R.P.: Fungus Resisting Paint

(4) Exterior finish of the student lab

Roof: Lime concrete

Exterior wall: Brick

Openings: Window - Aluminum Porch - Terrazzo Block

Interior stairs: Terrazzo Block

Floor of First floor corridor: Terrazzo Block

Exterior stairs: Exterior wall - Brick

Inside wall and floor - Mortar

(5) Interior finish of the student lab

NO	ROOM	FLOOR	BASEBOARD	WALL	CEILING	REMARKS
1.	Crop Botany	Concrete Trowel, Chemicrete finish	Plastic	Mortar Base finish	Insulation Panel V.P. finish	WET LAB.
2.	Plant Pathology	^	^	^	^	^
3.	Horti- culture	^	^	^	^	^
4.	Agricultural Extension	Terrazzo Block	^	^	^	^
5.	Toilet	Ceramic Tile	-	Ceramic Tile	^	

V.P.: Vinyl Paint

(6) Exterior finish of the field lab

Roof: Corrugated slate

Exterior wall: Brick

Openings: Window - Aluminum sash + Glass and lattice

Door - Oil painted steel

Catwalk : Mortar Trowel

(7) Interior finish of the field lab

NO	ROOM	FLOOR	BASEBOARD	WALL	CEILING	REMARKS
1.	Processing Area	Concrete Trowel	-	Mortar Trowel	-	Steel Shutter
2.	Working Room	^	Plastic	Mortar Trowel F.R.P. finish	Insulation Panel V.P. finish	
3.	Toilet/ Shower Room	Ceramic Tile	Ceramic Tile	Ceramic Tile	Insulation Panel F.R.P. finish	
4.	Storage(1)	Mortar Trowel	-	Mortar Trowel	Insulation Panel V.P. finish	Air Condi- tioner
5.	Storage(2)	^	-	^	^	

F.R.P.: Fungus Resisting Paint

V.P. : Vinyl Paint

## 7) Equipment plan

The equipment is for the library, the student labs and the field lab. It is classified according to the location where it will be used and stored.

### \* Library

The equipment for the library is composed of the equipment used in the reading room and for management, and the equipment for the study room. The equipment for reading and management includes microfiches and microfilms, of which the contents and quantity were selected according to the 65,000 books (this includes 1,000 types of periodicals) handled in the library in the final library plan. The equipment for the study room will be used for the audio-visual education of a large group of students such as in the orientation of freshmen/women and for research talks by the teaching staff. It will also be used for the extension of agricultural knowledge to non-academics.

### \* Student labs

The equipment in the student labs will be used in the Horticulture, Plant Pathology, Crop Botany and Agricultural Extension departments.

### \* Field lab

The equipment used here will be used for processing preparatory to measuring and research, and for seed storage.

## (1) Library equipment

This data is based on Japanese data on the subject of libraries on a similar scale, and on a report from Bangladesh on the selection of library equipment.

NO.1 Card catalog cabinet

Quantity : 4

Description : each cabinet will contain up to 39,000 cards in its 30 drawers. Two cabinets



are for classification by titles, the other two by author names.

- NO.2      Cardex file  
Quantity :      2  
Description :    Used for inspecting and managing up to 1,000 types of periodicals. Each file has 3 drawers. Each drawer has the capacity for 200 hanger holders.
- NO.3      Visible file  
Quantity :      4  
Description :    These cabinets are used to store card-filing book trays. Each cabinet can hold up to 16 trays.
- NO.4      Visible filing periodical record books  
Quantity :      68  
Description :    These files store cards to periodically check the stock of the library. Each file has 50 pockets.
- NO.5      Paperback floor display  
Quantity :      1  
Description :    This is a rotating stand for magazine display.
- NO.6      Island Displayer  
Quantity :      1  
Description :    This book stand, which can be seen from all four angles, displays up to 300 new books.
- NO.7      Electric typewriter  
Quantity :      2  
Description :    Electric typewriters with memory storage; they will be used for administration work.
- NO.8      Microfishe files cabinet  
Quantity :      1  
Description :    This cabinet holds microfishe files.

- NO.9 Microfilm/fishe reader  
Quantity : 1  
Description : For 16mm or 35 mm roll microfilm and 4" x 6" microfishe.
- NO.10 Paper Cutter  
Quantity : 2  
Description : Regular paper cutter
- NO.11 Cassette player/recorder  
Quantity : 1 set  
Description : Cassette player/recorder which can be used with one headset. To be used for conferences and seminars, etc., in the study room.
- NO.12 16 mm Projector and screen  
Quantity : 1 set  
Description : Used for agricultural education
- NO.13 Video camera and monitor  
Quantity : 1 set  
Description : Used for AV education
- NO.14 Cabinet stand for TV monitor  
Quantity : 1  
Description : To hold TV monitor
- NO.15 Microfilm cabinet  
Quantity : 1  
Description : Cabinet with drawers for microfilm
- NO.16 Hand truck  
Quantity : 1  
Description : for transferring large numbers of books
- NO.17 Punch and bind system  
Quantity : 1  
Description : For punching holes and binding documents and periodicals
- NO.18 Laminator  
Quantity : 1  
Description : For laminating a film such as

polyester onto the surface of important documents or maps to render them waterproof and prolong shelf-life.

- NO.19 Copy machine  
Quantity : 1  
Description : For document photocopy
- NO.20 Slide projector  
Quantity : 1  
Description : For the projection of educational slides
- NO.21 Overhead projector  
Quantity : 1  
Description : Color projector for diagrams, characters or colored documents. Used for AV education of a large number of people.
- NO.22 Set of book-repairing tools  
Quantity : 1  
Description : Set of tools for book repair, includes cutter, press, plate, knife, scissors, electric iron, etc.

(2) Details on the equipment of the student lab

- NO.1 Lab bench  
Quantity : 3 for teachers  
12 for students  
Description : Experiment desks set in the wet lab. One desk for instructor, 4 desks for students per classroom. Each lab bench is equipped with a sink, gas and power outlets. The surface of the bench is acid/alkaline resistant.
- NO.2 Drying oven  
Quantity : 3  
Description : Used for drying and sterilizing

equipment. The inside temperature of two of the ovens ranges from 40° to 250°C. The temperature is used for drying the equipment in the horticulture and crop botany labs.

- NO.3 Incubator  
Quantity : 1  
Description : To be used for growing micro-organisms in the plant pathology lab.  
Temperature: 20° to 45°C
- NO.4 Germinator cabinet  
Quantity : 2  
Description : To be used for testing seed germination. Temperature range: 5° to 50°C
- NO.5 Cold storage  
Quantity : 1  
Description : This cold storage is used mainly to stock seeds at room temperature ranging from 10° to 12°C. The volume is about 20 m<sup>3</sup> and the interior is partitioned into 3 parts.
- NO.6 Hot plate with stirrer  
Quantity : 3  
Description : Hot plate with magnetic stirrer, used to heat up liquids.
- NO.7 Magnetic stirrer  
Quantity : 3  
Description : To be used for agitating liquids.
- NO.8 Growth chamber  
Quantity : 3  
Description : Constant temperature and humidity chamber for growing small plants in test tubes. A specified amount of artificial light can be given if

necessary. Temperature range: 5° to 45°C

- NO.9 Analytical digital balance  
Quantity : 3  
Description : To be used for weighing chemicals. Projected scale range: 0.1mg to 180mg with digital indication.
- NO.10 Electronic digital balance  
Quantity : 3  
Description : To be used for weighing soil and fertilizers, etc. Scale range: 0 to 3,000 with digital indication.
- NO.11 Green leaf area meter  
Quantity : 1  
Description : The surface area of a plant leaf is automatically measured by this equipment. For crop botany lab.
- NO.12 Hand refractometer  
Quantity : 1  
Description : For measuring the sugar concentration of fruit and plants.
- NO.13 PH meter  
Quantity : 2  
Description : For measuring the PH of liquids. With digital indication.
- NO.14 Autoclave  
Quantity : 1  
Description : This high pressure steam sterilizer is used to sterilize testing equipment.
- NO.15 Clean bench  
Quantity : 1  
Description : To be used in the plant pathology lab to handle bacteria or fungi in a germ-free environment.
- NO.16 Draft chamber  
Quantity : 1

- Description : To be used for chemical experiments in which a poisonous or malodorous gas is generated. Placed in crop botany lab, but shared by other departments.
- NO.17      Microscope  
Quantity :      5  
Description : For the observation of micro-organisms or a section of a plant. One for the instructor and four for the students per class. Shared among 3 departments.
- NO.18      Stereoscopic microscope  
Quantity :      5  
Description : Samples can be observed while in motion with low magnification by one of these microscopes. Shared among 3 departments.
- NO.19      Microtome  
Quantity :      1  
Description : Rotary type, for cutting a section of a plant to be observed with a microscope. Placed in crop botany lab, but shared among other departments.
- NO.20      Distiller  
Quantity :      1  
Description : For making pure water for chemical experiments. Shared among 3 departments.
- NO.21      Moisture meter  
Quantity :      3  
Description : For measuring the water content of plants and soil, etc.
- NO.22      Glassware  
Quantity :      for 3 labs  
Description : Glass tools necessary for experiments in the wet labs of 3 departments.

Tools for experiments with micro-organisms are new since none are available at the present time.

- NO.23      Transparency maker  
Quantity :      1  
Description :      For making colored manuscripts automatically for the overhead projector. In the agricultural extension lab.
- NO.24      Tape recorder  
Quantity :      2  
Description :      For the recording of activities in agricultural extension and important lectures.
- NO.25      Video camera and monitor  
Quantity :      1  
Description :      A video camera and monitor set mainly to be kept and used by the Agricultural Extension Department for its own activities.

(3) Field lab equipment

- NO.1      Drier  
Quantity :      1  
Description :      Drier for seeds. Has 3 layers of steel net shelves and dries seeds by heat. Rice or wheat is put in sacks and placed on the shelf to be dried.
- NO.2      Blower  
Quantity :      1  
Description :      Air compressor with a hose to blow mud and dust off the crops with pressurized air before drying.
- NO.3      Small thresher and grader  
Quantity :      1  
Description :      Set of small thresher and grader to

measure yield of crops per unit area.

NO.4 Cabinet for seeds

Quantity : 1

Description : Cabinet for storage of seeds

NO.5 Weigher

Quantity : 1

Description : To weigh crops. Scale range: 0 to  
3,000gm.



8) Plan of related equipment

(1) Library equipment

NO.	NAME OF EQUIPMENT	QUANTITY	REMARKS
1.	Card Catalog Cabinet	4	For Inspecting Books
2.	Cardex file	2	For Managing Periodicals
3.	Visible Cabinet	4	For Managing Books
4.	Visible filing Book	68	For Managing Books
5.	Paperback floor Display	1	For Exhibiting Books
6.	Island Display	1	For Exhibiting Books
7.	Electric TypeWriter	2	For Managing Books
8.	Microfishe File Cabinet	1	For Microfishe
9.	Microfilm and Microfishe reader	1	
10.	Paper Cutter	2	For Repairing Books
11.	Cassette Player/Recorder	1	For Audio-Visuals
12.	16mm Projector & Screen	1	For Audio-Visuals
13.	Video camera with Monitor	1	For Audio-Visuals
14.	Cabinet Stand for Monitor TV	1	For Audio-Visuals
15.	Microfilm Cabinet	1	For Microfilm
16.	Hand Truck	1	For Moving Books
17.	Punch and Bind System	1	For Managing Books
18.	Laminator	1	For Managing Books
19.	Copy Machine	1	To make copies
20.	Slide Projector	1	For Audio-Visuals
21.	Overhead Projector	1	For Audio-Visuals
22.	Set of Repair Tools	1	For Audio-Visuals

## (2) Student lab equipment

NO.	NAME OF EQUIPMENT	H	C	P	A	TOTAL	REMARK
1.	Lab Bench	5	5	5		15	
2.	Drying Oven	1	1	1		3	
3.	Incubator			1		1	
4.	Germinator Cabinet	1	1			2	
5.	Cold Storage					1	For Common Use
6.	Hot Plate with Stirrer	1	1	1		3	
7.	Magnetic Stirrer	1	1	1		3	
8.	Growth Chamber	1	1	1		3	
9.	Analytical Balance	1	1	1		3	
10.	Electric Balance	1	1	1		3	
11.	Green Leaf Areameter		1			1	
12.	Hand Refractometer	1				1	
13.	PH Meter	1	1	1		3	
14.	Autoclave			1		1	
15.	Clean Bench			1		1	
16.	Draft Chamber		1			1	
17.	Microscope					5	For Common Use
18.	Stereo Microscope					5	For Common Use
19.	Microtome	1	1	1		3	
20.	Distiller		1			1	
21.	Moisture Meter	1	1	1		3	
22.	Glass Ware						For 3 Labs
23.	Transparency Maker				1	1	
24.	Tape Recorder				2	2	
25.	Video Camera, Monitor				1	1	

H:Horticulture C:Crop Botany P:Plant Pathology

A:Agricultural Extension

(3) Field lab equipment

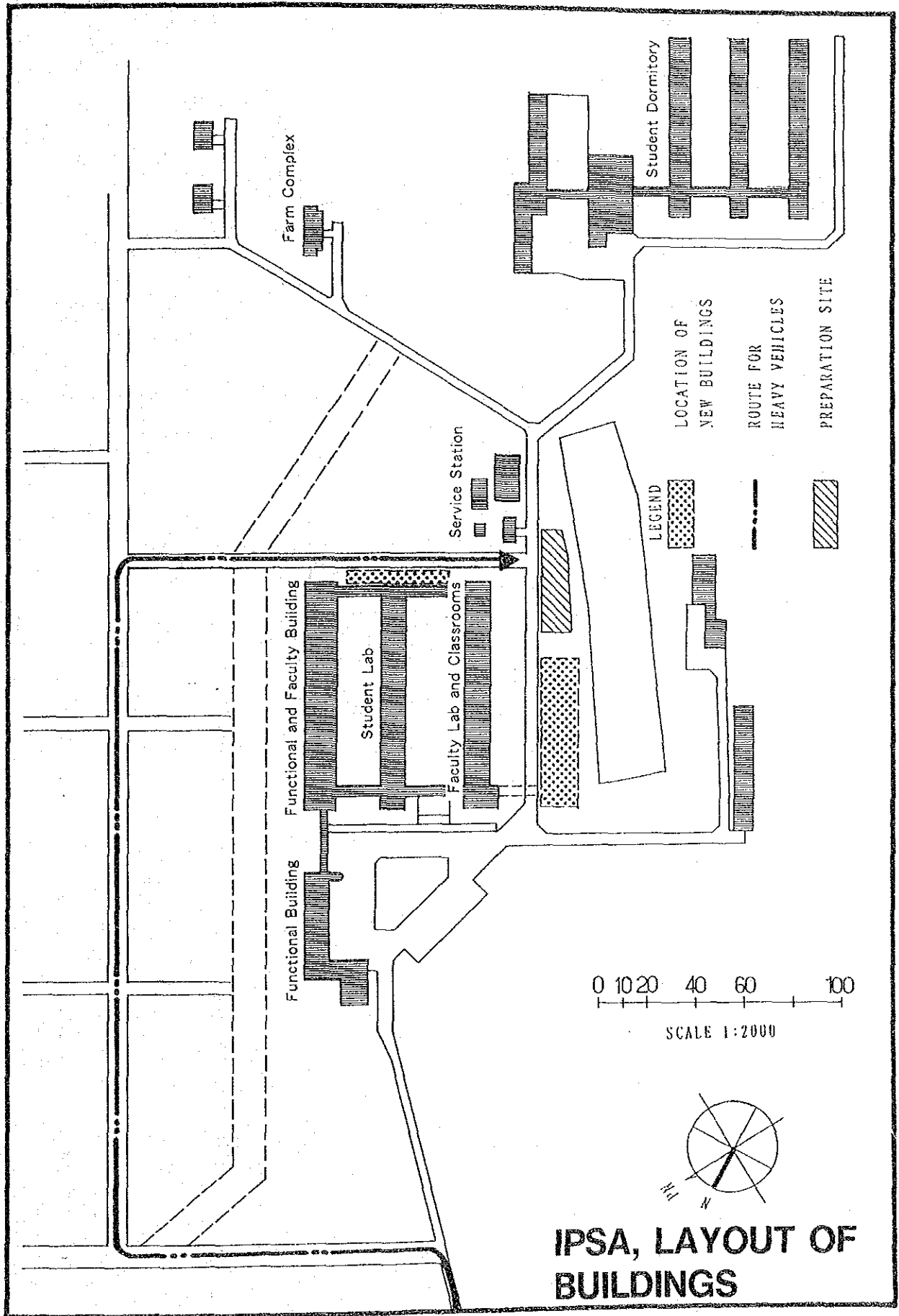
NO.	EQUIPMENT	QUANTITY	DESCRIPTION
1.	Drier	1	for seeds
2.	Blower	1	with hose
3.	Small Thresher and Grader	1	unit of thresher and grader
4.	Cabinet for seeds	1	
5.	Weigher	1	



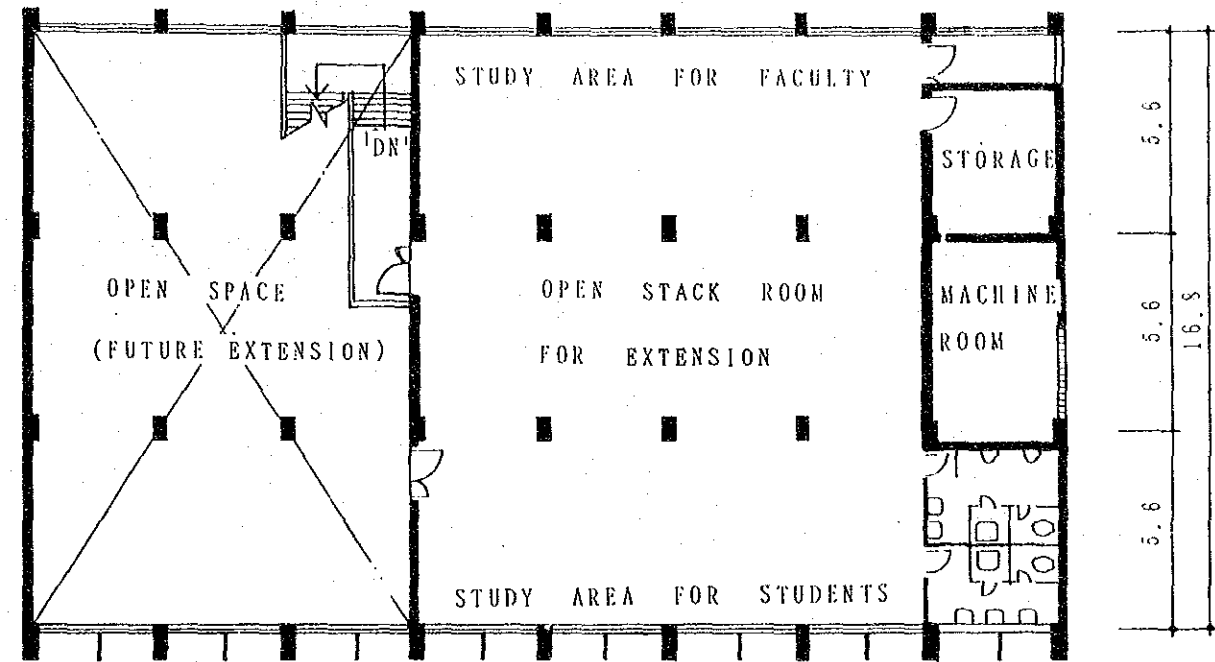
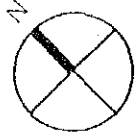
(3) Basic design drawing

- 1) IPSA, Layout of buildings
- 2) Library
- 3) Laboratory building
- 4) Field laboratory building

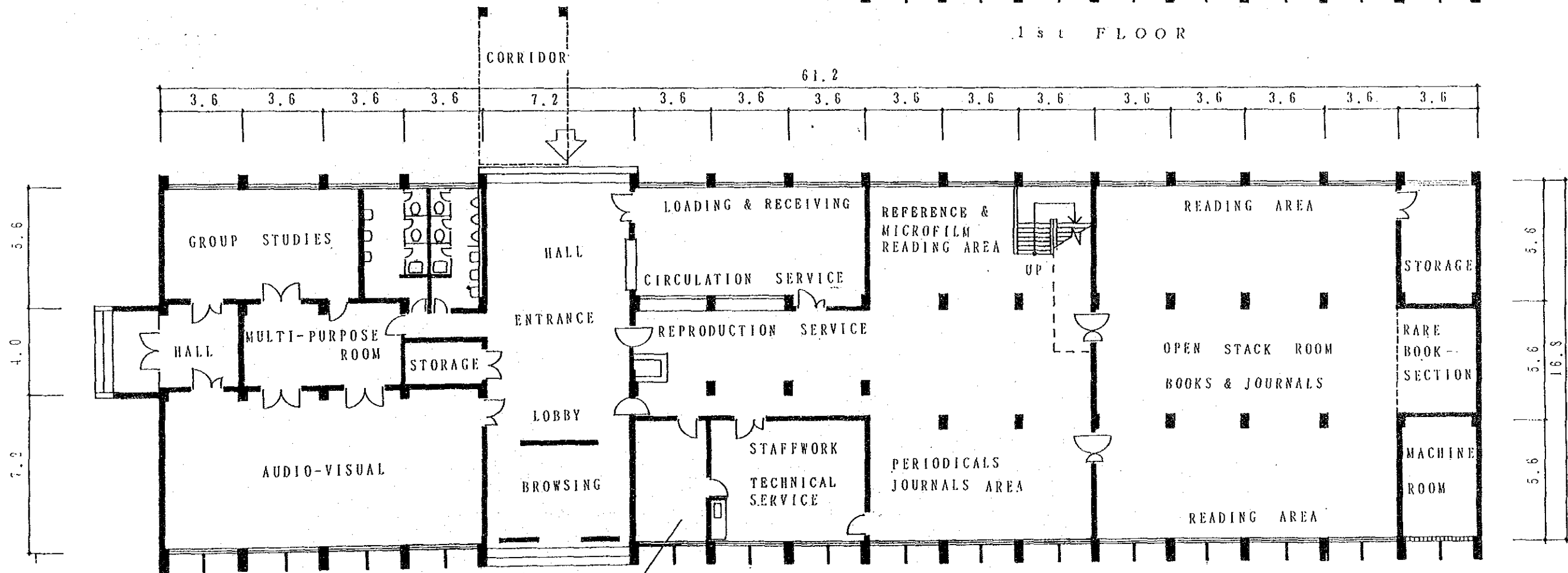




**IPSA, LAYOUT OF BUILDINGS**



1st FLOOR

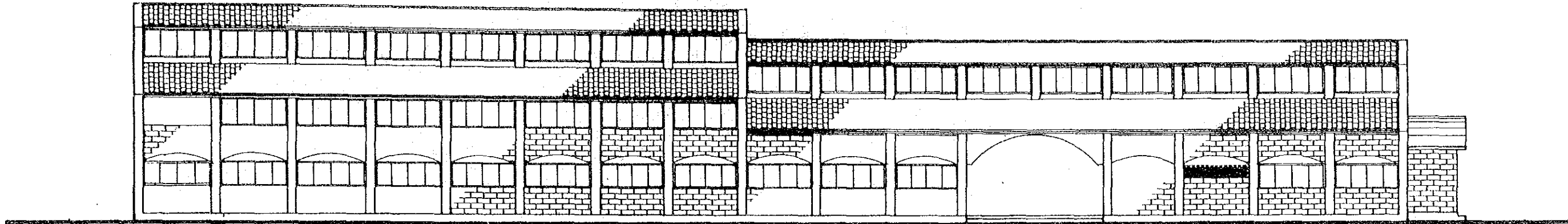


GROUND FLOOR

SCALE 1:200

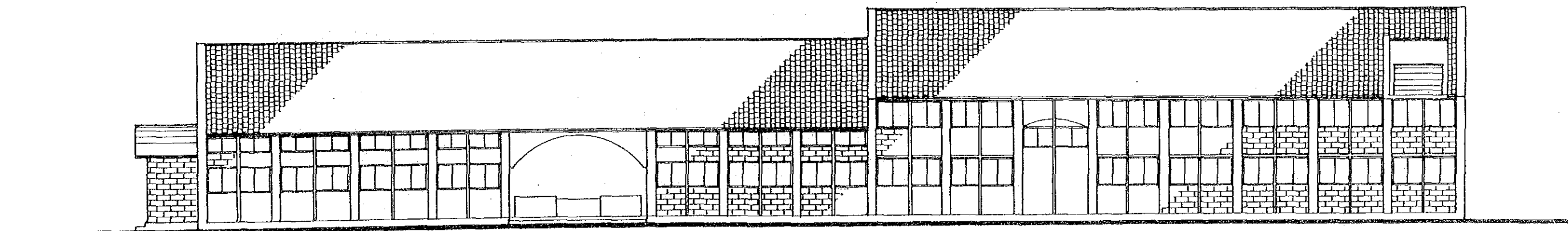
# LIBRARY





NORTH SIDE ELEVATION

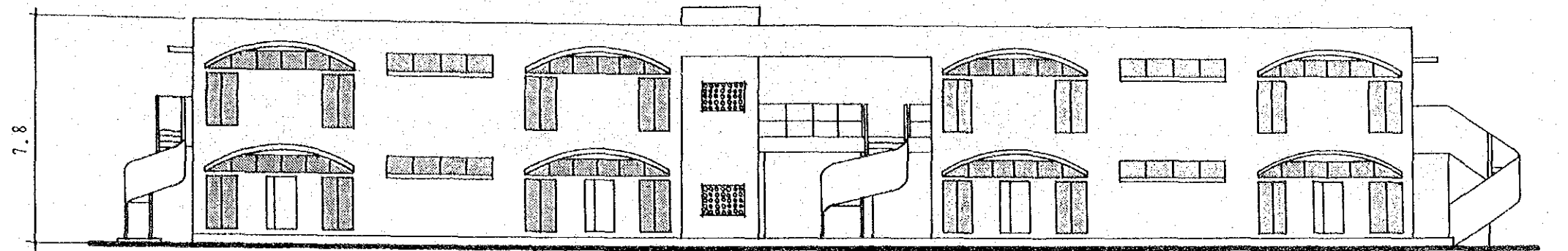
SCALE 1 : 200



SOUTH SIDE ELEVATION

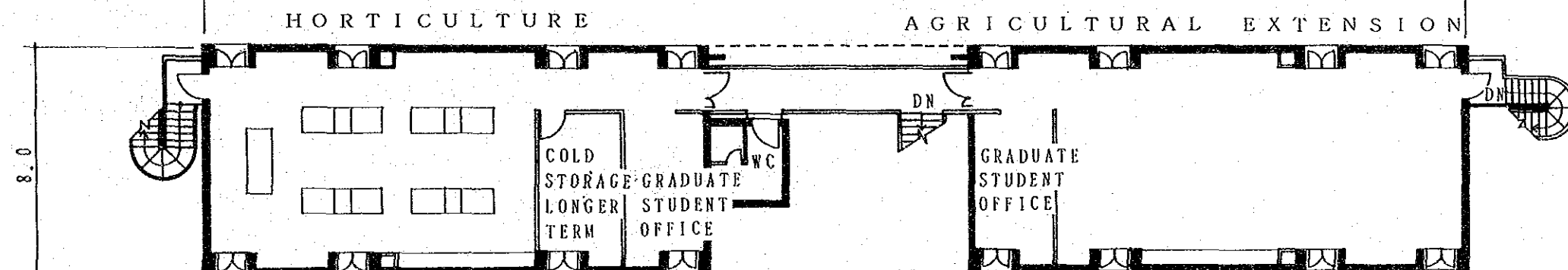
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**LIBRARY**

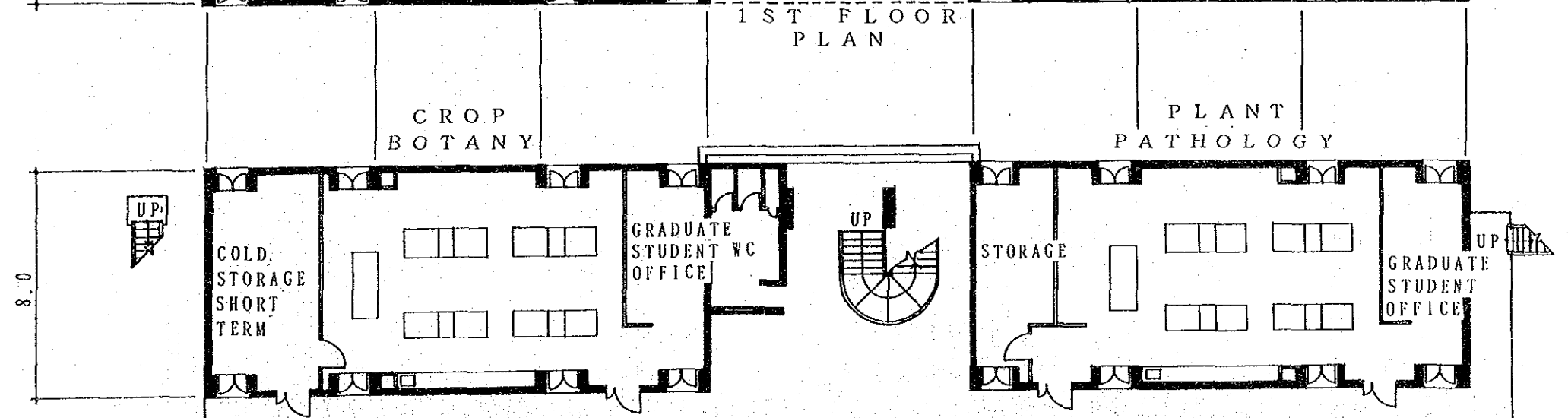


EAST SIDE ELEVATION

S=1:200



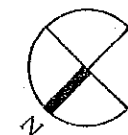
1ST FLOOR PLAN



GROUND FLOOR PLAN

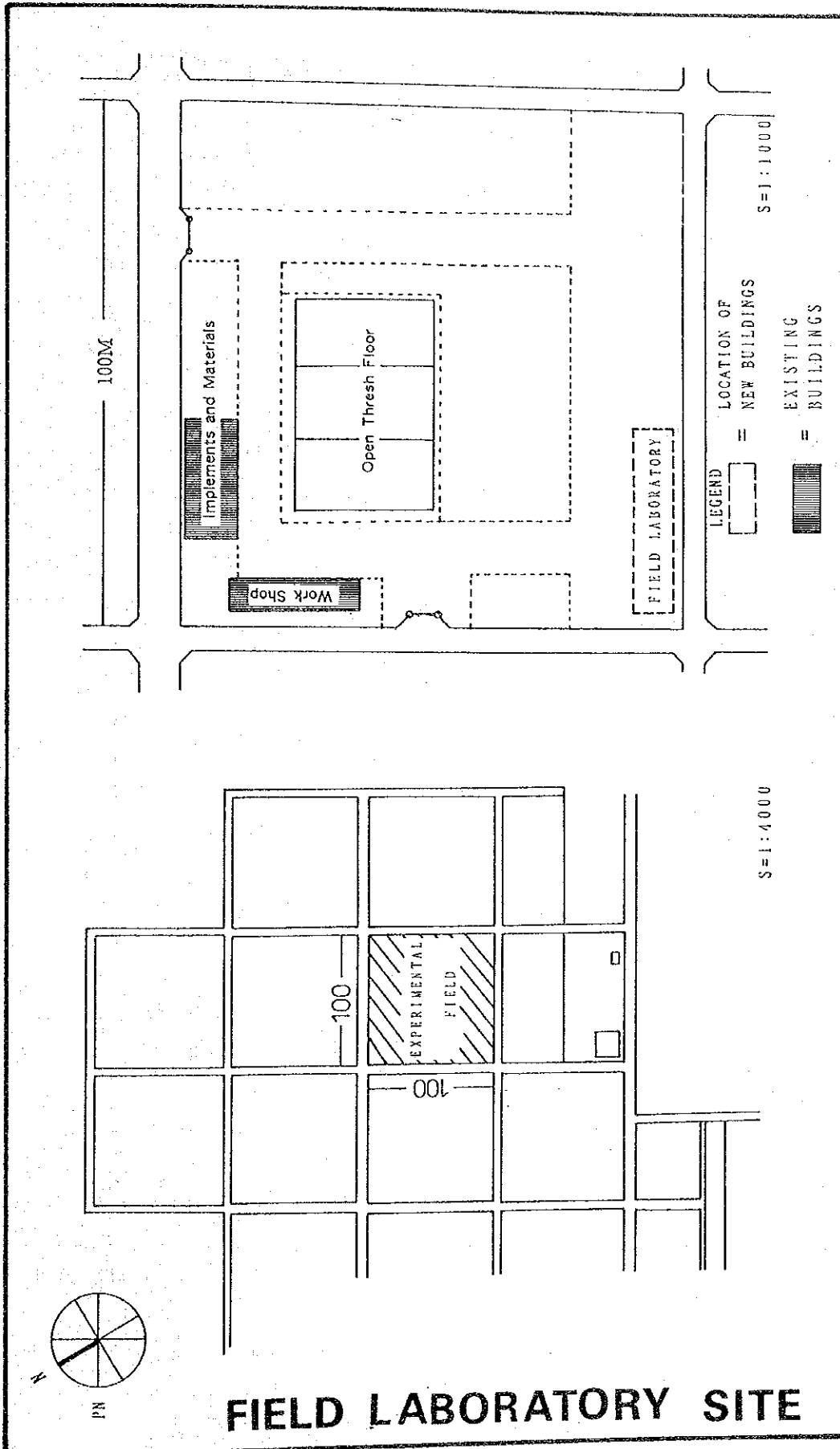
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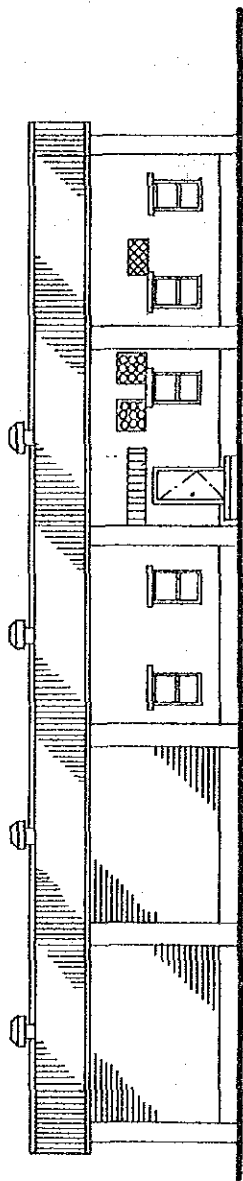
6.0 6.0 6.0 9.7 6.0 6.0 6.0  
45.7



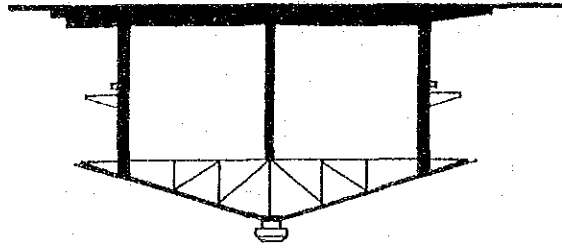
**STUDENT LABORATORY**



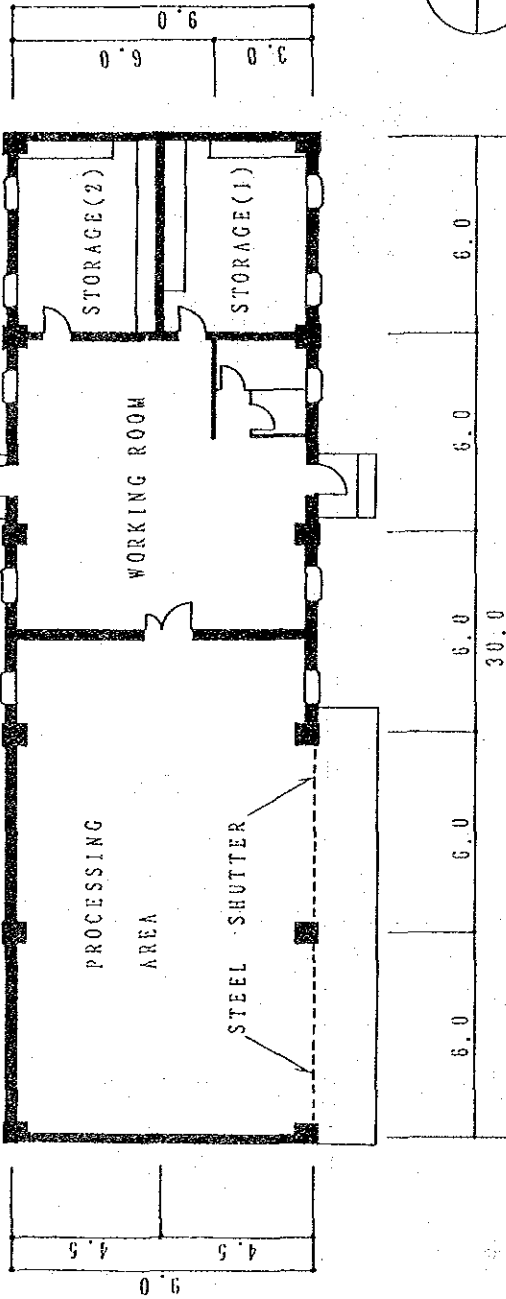




4.0 0.45



SCALE 1:200



# FIELD LABORATORY

## 5. Execution Plan

### (1) Execution policies

#### 1) Implementation of the project

This project is implemented by IPSA (Institute of Postgraduate Studies in Agriculture) in Bangladesh. In order to carry out the construction work smoothly and effectively, it is necessary for IPSA, the consultant and the contractor for this project, to nominate a person who will be in exclusive charge of the liaison work from the start to the completion of the construction work.

#### 2) Consultant

In accordance with the Japanese grant aid system, a consultant from Japan will supervise the design.

The major points of the consultant's work are as follows:

- \* Drawing up the plan of action

Preparation of documents such as working drawings and their specifications, which are required in the bidding procedure.

- \* Drawing charts and cooperating with bidding and project content

- a. To carry out the preliminary study of bidders

- b. To act as an agent for the contractor in the bidding process

- c. To witness the contract on the project.

#### 3) Contractor

In accordance with the Japanese grant aid system, a contractor from Japan will be responsible for the execution of the construction work. Special attention must be directed to meeting the specified construction period.

### (2) Construction situation and remarks.

#### 1) General circumstances

- \* The weather in Bangladesh is divided into the rainy season and the dry season. During the rainy season, the rainfall is heavy, thus rendering outdoor construction work difficult. It is therefore necessary to plan the construction procedures in such

a manner that the major work is completed within the dry season.

- \* Is almost impossible to use asphalt on roofs to make them waterproof. Most roofs are treated with lime concrete to render them waterproof. A characteristic of this system is its usage in combination with a thermal insulator.
- \* Most walls are made of brick and are generally in two layers - inner and outer walls - for the double purpose of waterproofing and heat insulation. Therefore the walls will have to be built along these lines.
- \* Bricks are generally smashed to be used as the aggregate, as solid stones are hard to obtain. Full attention must be paid to this fact during the planning of the structure.

(3) Division of work load

1) Items for which the GOB is responsible:

- a) To secure the land necessary for the construction work thus planned.
- b) To secure an office, a workshop and materials' storage space necessary for construction
- c) To secure the approach roads necessary for the construction
- d) Maintenance and management of facilities and equipment provided for the construction
- e) To exempt the equipment brought from Japan from taxation
- f) To assist with customs clearance, formalities and transportation within Bangladesh
- g) To speed up construction of staff quarters
- h) To provide the infrastructure and build facilities as the necessity arises.

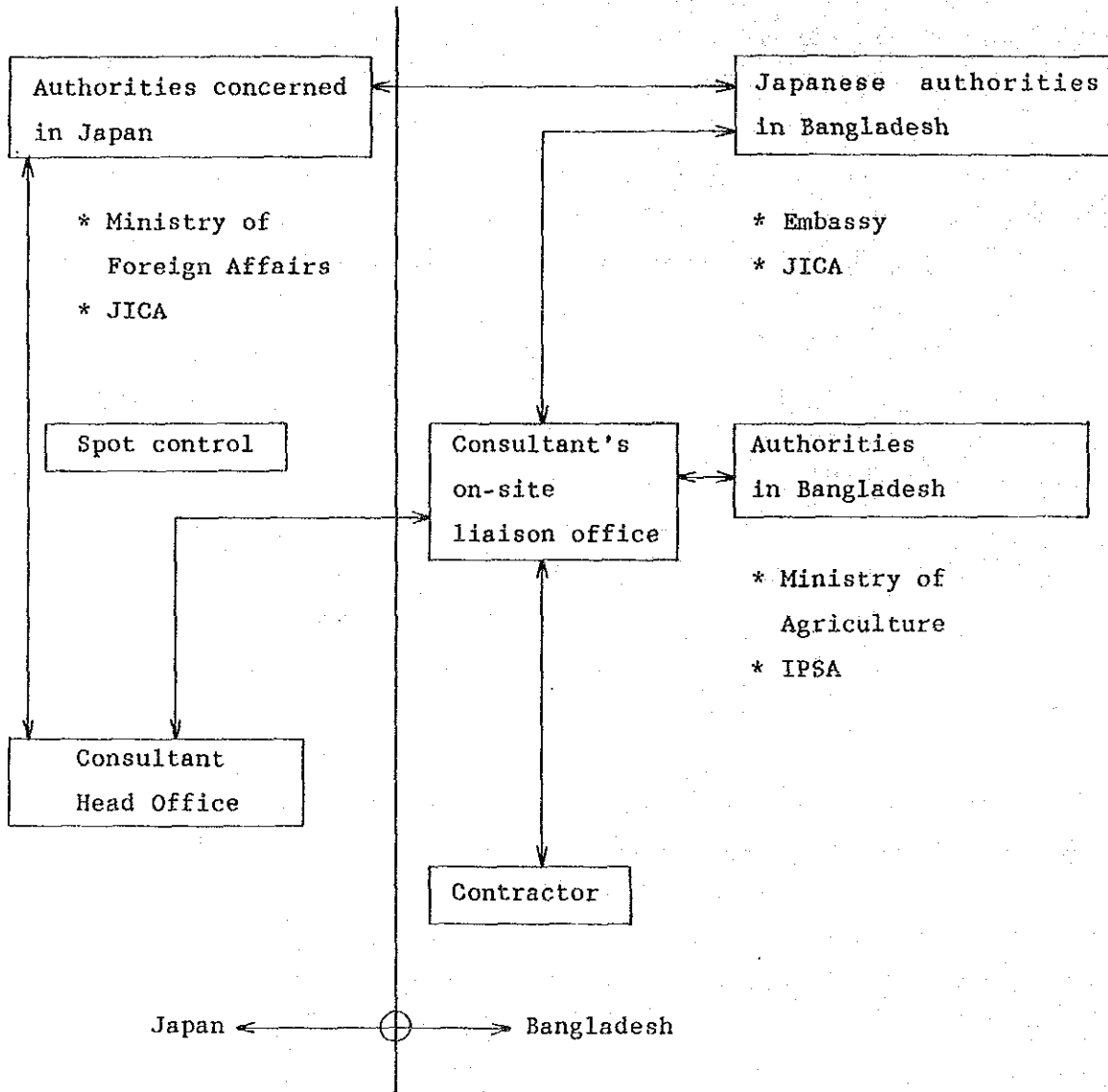
2) Items for which the GOJ is responsible:

- a) Construction of the library
- b) Construction of the student laboratory
- c) To supply equipment for library management, audio-visual equipment, education and research equipment
- d) Construction of field laboratory



(4) Execution and control plan

This plan will be executed according to the Japanese grant aid system. Execution of the construction will be spot-controlled at important periods of the process. The person in charge of control will report on the progress not only to the authorities concerned in Bangladesh but also to those in Japan upon his return.



The controller will be a resident officer and his office will be set up within the precincts of IPSA.

(5) Materials/equipment procurement plan

When drafting the materials/equipment procurement and transportation plan, the following items shall be taken into consideration.

1) Construction materials

The construction materials shall, in principle, be procured in Bangladesh. It will be taken into consideration that brick chips will be used for concrete aggregate. Procurement of facilities and equipment both locally and from Japan will be considered with the aim of facilitating maintenance and administration when the facilities are in operation.

2) Sea transportation and customs clearance

The major point for consideration in the sea transportation from Japan is that the unloading at Titagon and customs clearance will take a long time. Therefore, cooperation from the GOB for a speedy process is required.

3) Inland transportation

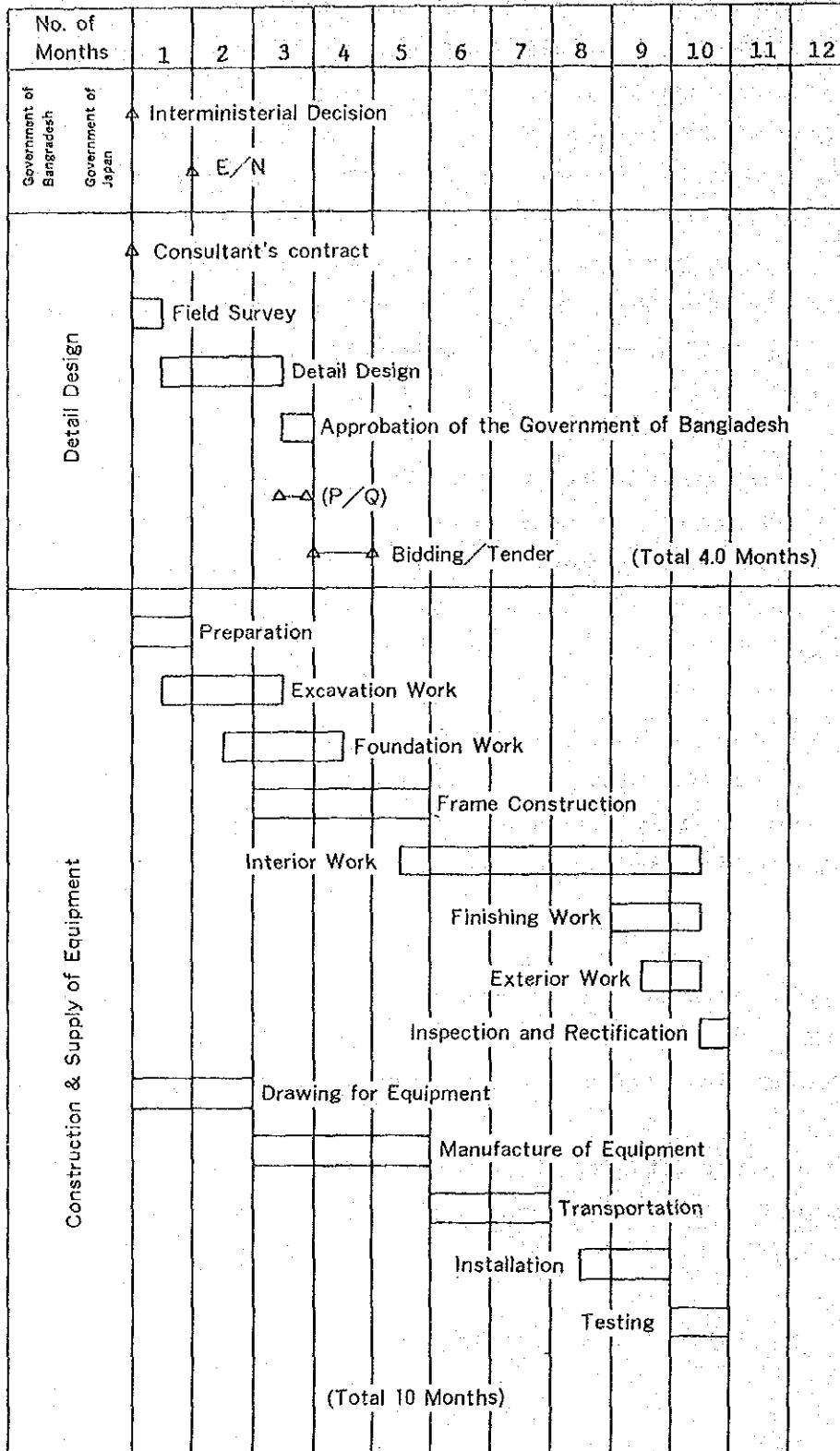
The route from Titagon to the site presents no difficulty for trucks, but there is the danger of flooding during the rainy season. Planning should be made accordingly.

(6) Project implementation schedule

If this project is implemented with grant aid from Japan, the construction time will be 14 months after ratification of the Exchange of Notes.

With 2 weeks for site survey, 2 months for actual drawing of plans, and 1,5 months for assessment and tendering, the construction period will be 10 months.

IMPLEMENTATION SCHEDULE



(7) Cost estimate

If this project is implemented with grant aid from Japan, the following is the breakdown of the costs to be borne by the GOB.

1. Project costs shouldered by the GOB.

(1) Infrastructure:	3.5 million taka
	(approx. 16 million yen)
(2) Furniture, fixtures:	0.39 million taka
	(approx. 1.8 million yen)

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Total 3.89 million taka  
(approx. 17.8 million yen)

2. Conditions of estimate

(1) Period: April 1990

(2) Exchange rate: 01 US\$ = 149.12 yen  
(average between Nov. 1989 and Apr. 1990)  
1 TK = 4.56 yen  
(average between Nov. 1989 and Apr. 1990)

(3) Construction period

This will be a single-phase construction. Detailed design and the period of construction (or procurement of materials) are as shown in the implementation schedule.

(4) Other details

This project will be implemented in due accordance with the Japanese grant aid system.



## Chapter 5 Results and conclusion



## Chapter 5 Results and Conclusion

### (1) Benefits

The implementation of the project can be expected to bring about the following results.

- 1) The accumulation of knowledge through analysis and research is of the utmost importance to the development of agricultural technology. It is expected that the expansion of IPSA will lead to an overall accumulation of such analysis and research, and will make it possible to refer to such and put them into practice.
- 2) The activities at IPSA will give birth to new research data, such as the selection of appropriate varieties, good soil usage, etc., and will make more productive research and development possible.
- 3) The goal is to attain higher technological and educational standards in agricultural research agencies through the expansion of IPSA. The propagation of information from IPSA to all agricultural organizations will result in higher standards of education and technology throughout the country. Instead of being conducted separately, education and research activities will become united around IPSA, and will develop analysis and examination of the situation on the lines best suited to the country. This will bring great benefits in the field of agricultural expansion, through the guidance of experts in the organizations for agricultural expansion.
- 4) Increases in production and stability of agricultural products are greatly influenced by climate and soil conditions, but through the propagation of research results from IPSA, improved varieties, improved soil, and improved planning will lead to progress and stability in that area.



At the same time, results obtained through the new field labs will show better cultivation techniques for different and new varieties and improvement possibilities for soil, and will lead to higher productivity and better usage of soil.

- 5) Thanks to results obtained through such research, agricultural productivity will see a major increase, with an increase in self-sufficiency, and improvement of the lives of the farming community. At the same time the budget deficit will be greatly decreased by cutting down on cereal imports.
- 6) The expansion of IPSA will not only bring improvement in the unemployment situation of university graduates, and that of postgraduate students, by providing higher expert knowledge, but also will contribute to a general upgrading of the agricultural industry, including the public and private sectors.
- 7) The new library in which classification and storage of information in all fields will become possible will greatly contribute to the students' and professors' progress, while also providing journals from the Japanese and American technical cooperation teams.
- 8) A trilateral Japan, U.S. and Bangladesh cooperation framework is already in place at IPSA. All the countries involved are eager to implement this project for further cooperation. This project is in accordance with this cooperation framework and will bring positive results through the exchange of information among all three countries involved.

## (2) Conclusion and recommendation

The GOB, with the promotion of agriculture as one of its major goals, planned the expansion of the Bangladesh Institute of Postgraduate Studies in Agriculture (IPSA) in an effort to develop

agricultural education and research in its Third 5-year Plan. Development and expansion of IPSEA with grant aid from Japan will lead to the improvement of agricultural education, research and production technologies in the agricultural community throughout Bangladesh.

Therefore, if this project is implemented, three major goals will be attained: increase of agricultural production, improvement and stability in the lives of the farming population, and decrease of the budgetary deficit.

In addition to this, the present unemployment problems will be overcome by the increase of trained postgraduates with better skills to offer to the public and private sectors of the agricultural industry.

Taking all the above-mentioned factors into consideration, the study team have come to the conclusion that the implementation of this project is totally justified, within the shortest period possible.



## Documents



1. Member list of Study team

NAME	ACTING AS	POSITION
YOSHIO YAMADA	Leader	Emeritus Professor, Kyushu University
JUN INOUE	Agricultural Education	Professor, Agricultural Department Kyushu University
ICHTA YAMAMOTO	Project Coordination	First Basic Design Study Div., Grant Aid Survey Dep., JICA
SEIICHI YUKUTOMI	Construction Planning	OAC Architects, Planners & Engineers Co., Ltd
YUTAKA HOKARI	Construction Designing	OAC Architects, Planners & Engineers Co., Ltd
MASARU HINO	Equipment Planning of Buildings	OAC Architects, Planners & Engineers Co., Ltd
SHUNKICHI SUZUKI	Equipment Planning	OAC Architects, Planners & Engineers Co., Ltd

2. Schedule of Survey

DATE	DAY OF THE WEEK	PLACES	CONTENTS OF SURVEY
Mar. 28	Wed.	Narita(Tokyo)	Leave Tokyo by TG Flight,
		- Bangkok	Via Bangkok.
29	Thu.	Bangkok	A visit to Embassy of Japan,
		- Dhaka	Meeting with JICA Bangladesh.
30	Fri.	Dhaka	Meeting with members of Technical cooperation team.
31	Sat.	Dhaka	Explanation of Inception Report at the Ministry of Planning and Agriculture, Meeting with IPSA.
Apr. 1	Sun.	Dhaka	Conference on Agricultural Technology, Ministry of Agriculture and Forestry. Meeting with United States Agency for International Development and of BARI (Bangladesh Agricultural Research Institute).
2	Mon.	Dhaka	Confirmation of Proposal with IPSA. Survey of Existing Facilities.
3	Tue.	Dhaka	A visit to BAU. Survey of library and laboratories. Explanation of Grant Aid to IPSA.
4	Wed.	Dhaka	Explanation of Inception Report to Bangladesh External Resources Division. Meeting with a members of Technical cooperation team.
5	Thu.	Dhaka	Meeting with IPSA. Report on Procedure to JICA

			Bangladesh.
6	Fri.	Dhaka	Classification of documents. Preparation of Minutes.
7	Sat.	Dhaka	Meeting with IPSA, Questions and answers.
8	Sun.	Dhaka	General meeting at Ministry of Agriculture and Forestry. Discussion about Minutes. Meeting with IPSA.
9	Mon.	Dhaka	Signing of Minutes. Japanese Government Officers report to Embassy of Japan. Meeting with IPSA.
10	Tue.	Dhaka	Japanese Government Officers report to JICA and leave for Japan. Meeting with IPSA.
11	Wed.	Dhaka	Japanese Government Officers arrive in Tokyo. Observation and meeting with IPSA.
12	Thu.	Dhaka	Meeting with IPSA.
13	Fri.	Dhaka	Classification of documents. Preparation of Basic Plan.
14	Sat.	Dhaka	Meeting with IPSA. Site survey.
15	Sun.	Dhaka	Classification of documents. Corrections of Basic Plan.
16	Mon.	Dhaka	Collection of documents. Meeting with IPSA.
17	Tue.	Dhaka	Collection of documents. Meeting with IPSA. Report Procedure to JICA.
18	Wed.	Dhaka	Site survey.
19	Thu.	Dhaka - Chittagong	Observation of Harbor and Transportation. Meeting with IPSA.



20	Fri.	Chittagong - Dhaka	Observation of Harbor and Transportation.
21	Sat.	Dhaka	Collection of documents. Meeting with IPSA.
22	Sun.	Dhaka	Collection of documents. Meeting with IPSA.
23	Mon.	Dhaka	Collection of documents. Site survey.
24	Tue.	Dhaka	Report to JICA and Embassy of Japan.
25	Wed.	Dhaka - Bangkok	Leave Dhaka by BG Flight.
26	Thu.	Bangkok - Tokyo	Via Bangkok, arrive in Tokyo by JL Flight.

3. List of persons concerned

EMBASSY OF JAPAN

Mr. Takeo Iguchi	Ambassador Extraordinary and Plenipotentiary
Mr. Hideo Fujita	First Secretary

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Mr. Norio Matuzawa	Resident Representative
Mr. Takesi Naruse	JICA
Mr. Yutaka Umezaki	JICA
Mr. Yukiya Saito	JICA

USAID

Dr. Malcolm J. Purvis	Deputy Director USAID Mission to Bangladesh
Dr. Raymond H. Morton	Agricultural Development Officer Office of Food and Agriculture
Mr. Latifur Rahman	Agricultural Project Advisor USAID/DHKA

BARI (Bangladesh Agricultural Research Institute)

Dr. Mohamad H. Mondal	Director General
Mr. A.B.M. Fazlur Rahman	Librarian

BIRRI (Bangladesh Rice Research Institute)

Dr. M.A. Mannan	Director General
Dr. Hiroshi Miyoshi	Soil and Fertilizer Expert

IPSA (Institute of Postgraduate Studies in Agriculture)

Dr. S.H. Khan	Director
Dr. Abdul Hamid	Assoc. Prof.
Dr. A. Bhowmik	Asstt. Prof.
Dr. M. Ismail Hossain Mian	Assoc. Prof.
Dr. A.R. Chowdhury	Assoc. Prof.
Dr. Z. Alam	Asstt. Prof.

Dr. A. Khaleque Mian	Assoc. Prof.
Dr. A.K.M. Hannan Bhuiyan	Assoc. Prof.
Mr. Tajul Islam	Asstt. Prof.
Mr. A.J.M.S. Karim	Asstt. Prof.
Dr. M. A. Quadir	Asstt. Prof.
Mr. K. Saifuddin	Asstt. Prof.
Dr. Tofazzal Hossain	Asstt. Prof.
Mr. A.K. Azad	Deputy Director
Mr. Md. Monjurul Haque	Asstt. Engineer
Mr. S.Z. Amin	Librarian
Dr. M.S. Mondal	Medical officer
Mr. Awlad Hossain Khan	Asstt. Director
Mr. A.H. Hawlader	S.A.E.
Mr. Hamidur Rahman	Asstt. Security Supervisor
Dr. Yoshihiro Hirashima	Team Leader, JICA/USAID
Mr. Jitsuo Takasugi	Coordinator, JICA
Mr. H. Goto	Expert, JICA
Dr. Ludwig Eisgruber	Advisor, USAID
Dr. Harold W. Youngberg	Advisor, USAID

**BANGLADESH PLANNING COMMISSION**

Dr. S.M.H. Zaman	Member (Agriculture)
Dr. S. Mozumder	Division Chief

**BANGLADESH EXTERNAL RESOURCES DIVISION**

Mr. M.D. Nasim	Deputy Secretary
----------------	------------------

**BANGLADESH MINISTRY OF AGRICULTURE**

Mr. M.A. Syed	Secretary
Mr. M.A. Hashem	Additional Secretary

**BARC (Bangladesh Agricultural Research Council)**

Dr. M.S. Chowdhury	Executive Vice-Chairman
--------------------	-------------------------

**BAU (Bangladesh Agricultural University)**

Prof. Asadur Rahman	Vice-Chancellor of BAU
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Mr. Abdul Razzaque

Director, Public Relation

Publication of BAU

Mr. Abdul Gafur Dewan

Deputy Librarian of BAU

4. Minutes of Discussions

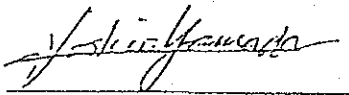
MINUTES OF DISCUSSIONS  
ON  
DEVELOPMENT OF LIBRARY AND OTHER  
PHYSICAL INFRASTRUCTURES  
FOR  
THE INSTITUTE OF POSTGRADUATE STUDIES  
IN AGRICULTURE  
IN  
THE PEOPLE'S REPUBLIC OF BANGLADESH

In response to the request made by the Government of Bangladesh for a grant-aid on the Project for Development of Library and Other Physical Infrastructures for the Institute of Postgraduate Studies in Agriculture (hereinafter referred to as "the Project"), the Government of Japan decided to conduct a basic design study on the Project and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA"). JICA sent to the People's Republic of Bangladesh a study team headed by Dr. Yoshio Yamada, Emeritus-Professor at Kyushu University from March 28 to April 26, 1990.

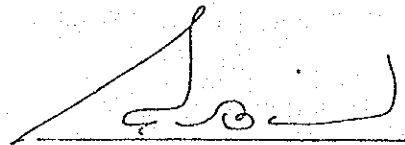
The team had a series of discussions on the project with the officials concerned of the Government of Bangladesh and conducted a field survey.

As a result of the discussions, both parties agreed to recommend to their respective Government that the major points of understanding reached between them, as attached hereto, should be examined towards the realization of the Project.

April 8, 1990



Dr. Yoshio Yamada  
Leader, Basic Design Study Team,  
JICA.



Dr. S. H. Khan  
Director,  
IPSA.

## MAJOR POINTS OF UNDERSTANDING

### 1. Objective of Project

The objective of the project is to expand and improve the facilities of the Institute of Postgraduate Studies in Agriculture in Bangladesh in response to the need for improvement of agricultural technology in Bangladesh, as well as of agricultural research and education.

### 2. Priority of Request from Government of People's Republic of Bangladesh

The priority of the contents of the project as requested by the Government of Bangladesh are as shown in Annex I.

### 3. Project Site

The project site is located on the campus of the Institute of Postgraduate Studies in Agriculture (IPSA) at Salna. The map of site is attached as ANNEX IV.

### 4. Executing Agency

The Institute of Postgraduate Studies in Agriculture (IPSA) is responsible for the implementation, operation and maintenance of the Project

### 5. Responsible Ministry

The Ministry of Agriculture bears overall responsibility for the implementation of the Project.

### 6. Undertakings by Government of People's Republic of Bangladesh

In the event of Grant Aid being implemented with respect to the Project under discussion here, the Government of Bangladesh will take the necessary measures as listed in Annex II.



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7. Utilization of PL480

The Bangladesh side confirmed that it will make every effort to utilize PL480 with regard to the the construction of residential quarters.

8. Approval of Project Paper

The Bangladesh side stated that the project paper for the implementation of the Project, including necessary budget, will be submitted to the Planning Commission before the beginning of next fiscal year.

9. Grant Aid Program

The study team explained the Japanese grant aid program based on the REFERENCE shown in ANNEX III to the Government of Bangladesh and the Government has understood the program including the principle for using Japanes consulting firms and general contractors for the implementation of the Project.

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ANNEX I

Priority of request from Government of People' Republic of Bangladesh

1. Construction of a library
2. Construction of student laboratories
3. Provision of equipment for research and experiments
4. Construction of Field Laboratory
5. Construction of Guest House/Community Center/Training Domitory
6. Construction of Other Farm Complex Facilities

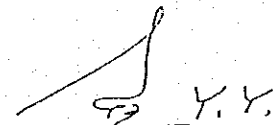
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## ANNEX II

The necessary measures to be undertaken by the Government of Bangladesh for the Project are as follows:

1. To provide information and data required for implementation of the Project to the detailed design.
2. To secure land required for the Project, including land for temporary works for construction.
3. To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities required for the implementation of the Project.
4. To clear and level the site before the commencement of construction, and to construct other facilities such as gates, fences and roads around the site.
5. To promote smooth procedures of unloading of the products at the port of disembarkation under the grant.
6. To ensure payment of taxes and custom clearance of the products at the port of disembarkation under the grant.
7. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Bangladesh 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 the services under the verified contract such as facilities as may be necessary for their entry into Bangladesh and stay therein for the performance of their work.

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9. To bear the commissions to the Japanese foreign exchange bank for the banking services based upon the B/A.

10. To provide permissions, licenses and other authorizations required for the implementation of the Project.

11. To ensure proper and effective use and maintenance of the facilities and equipment provided under the grant.

12. To ensure availability of funds required for operation of the facilities and equipment after the completion of the Project.

13. To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.

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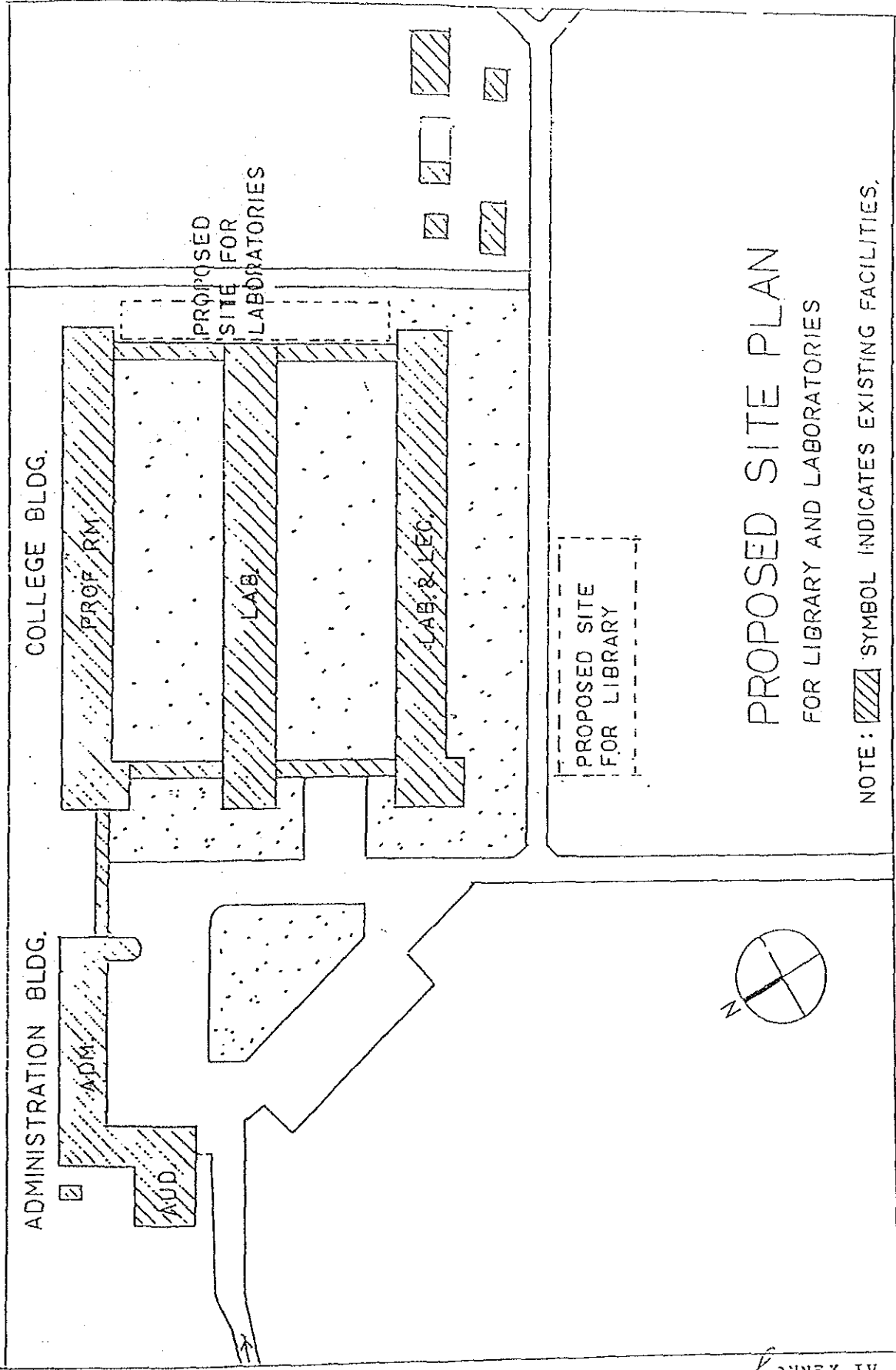
REFERENCE

Major Undertakings to be taken by Each Government

No.	Items		To be covered by Recipient Side
1.	To secure land		●
2.	To clear, level and reclaim the site when needed		●
3.	To construct gates and fences in and around the site		●
4.	To construct the parking lot	●	
5.	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6.	To construct the buildings	●	
7.	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8.	To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9.	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10.	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
11.	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.		●
12.	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant.		●
13.	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		●

ANNEX III

 Y.Y.



*[Signature]*  
ANNEX IV  
Y.Y.

5. Member list of Draft mission

NAME	ACTING AS	POSITION
YOSHIO YAMADA	Leader	Emeritus Professor, Kyushu University
SEIICHI YUKUTOMI	Construction Planning	OAC Architects, Planners & Engineers Co., Ltd
SHUNKICHI SUZUKI	Equipment Planning	OAC Architects, Planners & Engineers Co., Ltd

6. Schedule of Draft mission

DATE	DAY OF THE WEEK	PLACES	CONTENTS OF SURVEY
Jly. 11	Wed.	Narita(Tokyo) - Bangkok	Leave Tokyo by TG Flight, Via Bangkok.
12	Thu.	Bangkok - Dhaka	Arrive Dhaka. Meeting about schedule etc. with JICA Bangladesh.
13	Fri.	Dhaka	Examination of the report. Meeting in Team.
14	Sat.	Dhaka	A visit to ERD and Ministry of Agriculture. Explanation of contents of draft report.
15	Sun.	Dhaka	A visit to USAID and IPSA. Explanation of contents of draft report.
16	Mon.	Dhaka	Meeting with IPSA. (about the plan of designs and equipments) Preparation of Minutes Questions and answers
17	Tue.	Dhaka	A visit to Embassy of Japan. Explanation of contents of draft report. Meeting about Minutes with IPSA.
18	Wed.	Dhaka	Signing of Minutes.
19	Thu.	Dhaka - Bangkok	Report to JICA. Leave Dhaka.
20	Fri.	Narita	Arrive Narita.

7. List of persons concerned (Draft mission)

EMBASSY OF JAPAN

Mr. Takeo Iguchi	Ambassador Extraordinary and Plenipotentiary
Mr. Tetsuo Itoh	Minister
Mr. Hideo Fujita	First Secretary

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Mr. Norio Matuzawa	Resident Representative
Mr. Takesi Naruse	JICA
Mr. Yutaka Umezaki	JICA
Mr. Yukiya Saito	JICA

PROJECT TEAM OF IPSA (JICA)

Dr. Yoshihiro Hirashima	Team Leader
Mr. Jitsuo Takasugi	Coordinator

ERD

Mr. Md. Nasim	Deputy Secretary External Resources Division Ministry of Finance
Ms. Ronana Quader	Assistant Secretary

MINISTRY OF AGRICULTURE

Mr. M.A. Hashem	Additional Secretary Ministry of Agriculture
Mr. M.G. Sawar Molla	Joint Chief Ministry of Agriculture
Mr. Abdul Waheed Khan	Agricultural Economist

USAID

Ms. Helen K. Gunther	Deputy Director Office of Food and Agriculture
Mr. Latiful Rohman	Agricultural Project Advisor
Dr. Harold W. Youngberg	Technical cooperation Project

IPSA

BANGLADESH PLANNING COMMISSION

Dr. Zaman Mazumder	Division Chief (Agriculture)
Dr. S.M. Masanuzzaman	Member (Agriculture)
	Planning Commission

IPSA

Dr. S.H. Khan	Director
Dr. Abdul Hamid	Assoc. Prof.
Dr. M. Ismail Hossain Mian	Assoc. Prof.
Dr. A.K.M. Hannan Bhuiyan	Assoc. Prof.
Dr. A.R. Chowdhury	Assoc. Prof.
Mr. Md. Monjurul Haque	Asstt. Engineer
Mr. S.Z. Amin	Librarian
Mr. Md. Tajul Islam	Asstt. Prof.
Dr. A. Bhowmik	Asstt. Prof.
Mr. A.J.M. Serajul Karim	Asstt. Prof.
Dr. Md. Tofazzal Hossain	Asstt. Prof.
Dr. Md. A. Quadir	Asstt. Prof.
Dr. K. Saifuddin	Asstt. Prof.
Dr. M.S. Mondal	Medical officer
Mr. Md. Gholam Hossain	Adm. Finance



8. Minutes of discussions (Draft mission)

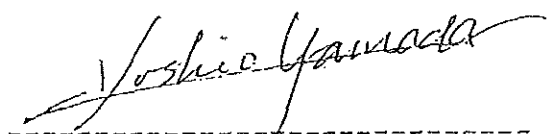
MINUTES OF DISCUSSIONS  
ON  
DEVELOPMENT OF LIBRARY AND OTHER PHYSICAL INFRASTRUCTURES  
FOR  
THE INSTITUTE OF POSTGRADUATE STUDIES IN AGRICULTURE  
IN  
THE PEOPLE'S REPUBLIC OF BANGLADESH

In response to the request by the Government of the People's Republic of Bangladesh, the Government of Japan decided to conduct a basic design study on the Project for Development of Library and Other Physical Infrastructures for the Institute of Postgraduate Studies in Agriculture in Bangladesh (the Project) and entrusted the study to the Japan International Cooperation Agency (JICA). Following the dispatch of the Basic Design Study Team from March 28 to April 26, 1990, JICA sent a team headed by Dr. Yoshio Yamada, Professor Emeritus of Kyushu University (the Team) to Bangladesh from July 11 to July 20, 1990 in order to present and explain the Draft Report for the Project.

The Team had a series of discussions on the Project with the officials concerned in Bangladesh.

As a result of the discussions, both parties agreed to recommend to their respective Government that the major points of understanding reached between them, as attached hereto, should be examined towards the realization of the Project.

July 18, 1990



-----  
Dr. Yoshio Yamada  
Leader,  
Draft Report Explanation Team  
Japan International Cooperation  
Agency



-----  
Dr. S. H. Khan  
Director,  
Institute of Postgraduate  
Studies in Agriculture

MAJOR POINTS OF UNDERSTANDING

1. Both parties have reconfirmed the Minutes of Discussions which was mutually signed on April 8, 1990.
2. The Bangladesh side has agreed in principle to the basic design proposed in the Draft Report. Some minor modifications on basic design agreed by both parties in the course of the discussion will be incorporated in the Final Report.
3. The Bangladesh side ensures that the acquisition plan of books and journals to be housed in the new library be smoothly implemented.
4. The Government of Bangladesh ensures that Project Proforma for implementation of the Project be prepared by IPSA by the end of August, 1990 and submitted to the authorities concerned for their approval on timely basis.
5. The Bangladesh side informed the Team that the necessary procedures to utilize PL-480 fund for construction of residential quarters at IPSA had been in active progress and the best efforts would be continued by the Government of Bangladesh for its realization.
6. Ten (10) copies of the Final Report will be submitted to the Bangladesh side by the end of September, 1990.

 Y.Y.

9. Minutes of discussions (Tripartite meeting)

MINUTES OF THE TRIPARTITE MEETING HELD  
ON APRIL 8, 1990 ON IPSA PROJECT

A tripartite meeting was held on April 8 (Sunday), 1990 at 1430 hours in the Conference Room of MOA on IPSA Project. The meeting was presided over by Mr. M.A. Syed, Secretary and attended by the persons listed in appendix-I. The purpose of this meeting was to discuss results of the Basic Design Study Team (BDST) sent by GOJ through JICA in connection with improving the physical facilities of IPSA.

2. After welcoming the participants Secretary requested Dr. Y. Yamada, Team Leader, BDST to present the results of the survey. Referring to the request of GOB for improving IPSA's physical facilities under Japanese grant aid, Dr. Y. Yamada mentioned that objectives of the BDST was to (a) examine and assess technical and economic viability of GOB's request; (b) make a general layout and design; and (c) estimate the cost and implementation schedule for the construction. He further informed that the survey would be completed during last week of April and a final report submitted in August 1990. A priority of construction items had been set in consultation with IPSA authority. At his request then Mr. Ichita Yamamoto, Team Member, presented the draft Minutes of Discussions to be signed between BDST and IPSA. In the concluding remark Dr. Yamada emphasized the need for tripartite cooperation for IPSA's continued progress. He then mentioned that construction of residential quarters under PL-480 funds had a close relationship to the facilities to be developed under Japanese grant aid and that it would be desirable to complete both the work at the same period.

3. Secretary appreciated the work of the BDST and thanked Dr. Yamada for a comprehensive and lucid presentation. He then invited comments from other participants. Referring to the draft Minutes of Discussion, Mr. Abul Hashem, Additional Secretary, MOA viewed that construction be done by local contractors instead of Japanese ones, and this would be much cheaper. He further opined that clearance of Ministry of Finance would be necessary on certain points

Contd/P-2.

(clause 7 and 9) of the Minutes of Discussion. In reply to a query, Mr. J. Takasugi, Coordinator, JICA/IPSA Project explained the basic procedure for utilization of Japanese grant aid. He, however, mentioned that sub-contract would be given to local contractors and many Bangladeshi engineers, technicians and workers would participate in the construction activities.

4. Director, IPSA explained in detail the need for construction of residential quarters for IPSA under PL-480 funding. In this connection Mr. A. Waheed Khan, Agricultural Economist, MOA informed that ERD had already approached USAID for the purpose. In reply to a query, he further mentioned that upon receipt of USAID's Project Implementation Letter (PIL) on this account, ERD would ask for comments from MOA, Finance Division, Planning Commission, etc and finalize the issue. Mr. Latifur Rahman, Ag. Project Advisor, USAID (F & A) reconfirmed Mission's support for funding IPSA's residential quarters. He mentioned that due to non-completion of IPSA's teaching staff recruitment, USAID would implement the construction programme in two phases and teaching staff in position would be a condition for second phase funding. Mr. Rahman also indicated USAID's future support for IPSA along with JICA.

5. The meeting after threadbare discussion endorsed IPSA's physical facilities improvement programme mentioned above. In the concluding remark, Secretary appreciated the cooperation of JICA and USAID for IPSA. He further hoped that appropriate steps would be taken for successful implementation of the programme.

6. The meeting ended with a vote of thanks from the chair.

Sd/- 21.4.90  
M.A.Syed  
Secretary  
Ministry of Agriculture

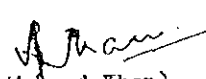
Government of the Peoples Republic of Bangladesh  
Ministry of Agriculture

No. FMW(Ga)-IPSA-I/89/40

Date: 8.01.97 Beng. ---  
22.04.90 Eng.

Copy forwarded for information and necessary action to:

1. Mr. Abul Hashem, Additional Secretary, MOA
2. Dr. Sharafat Hossain Khan, Director, IPSA
3. Mr. Shahab Uddin Ahmed, Deputy Secretary, Ministry of Finance
4. Mr. Md. Naeim, Deputy Secretary, ERD
5. Mr. Shamsuzzaman, Assistant Chief, Planning Commission
6. Mr. Mohammad Shahid Ullah, Assistant Chief, ERD
7. Mr. H. Fujita, First Secretary, Embassy of Japan
8. Mr. H. Umezaki, Deputy Resident Representative, JICA
9. Mr. T. Naruse, Deputy Resident Representative, JICA
10. Mr. Latifur Rahman, Ag. Project Advisor, USAID
11. Dr. Y. Hirashima, Team Leader, IPSA/JICA
12. Dr. Y. Yamada, Leader, BDST for IPSA

  
(A. Waheed Khan)  
Agricultural Economist

LIST OF PERSONS

1. Mr. Abul Hashem, Additional Secretary MOA
2. Mr. M.G. Sarwar Molla, Joint Chief, MOA
3. Dr. Sharafat Hossain Khan, Director, IPSA
4. Mr. Shamsuz Zaman, Asstt. Chief, Planning Commission
5. Mr. A. Waheed Khan, Agricultural Economist, MOA
6. Mr. Mohammad Shahid Ullah, Asstt. Chief; ERD, M/O Finance
7. Mr. Mohammad Abdul Wahab Miaz, Research Officer, MOA
8. Mr. S.M. Golam Ali, Research officer, MOA
9. Mr. H. Fujita, First Secretary, Japanese Embassy
10. Mr. Mr. H. Umezaki, Deputy Resident Representative, JICA
11. Mr. T. Naruse, Deputy Resident Representative, JICA
12. Mr. Latifur Rahman, Ag. Project Advisor, USAID
13. Dr. Y. Hirashima, Team Leader, IPSA/JICA Project
14. Mr. J. Takasugi, Coordinator, IPSA/JICA Project
15. Dr. L.M. Eisgruber, Curriculum Advisor, IPSA/USAID Project
16. Dr. H.W. Youngberg, Extension Advisor, IPSA/USAID Project
17. Dr. Y. Yamada, Leader, BDST Team for IPSA Project, JICA
18. Mr. Jun Inoue, Member, BDST Team for IPSA project, JICA
19. Mr. I. Yamamoto, Member, BDST Team for IPSA Project, JICA
20. Mr. S. Yukutomi, Member, BDST Team for IPSA Project, JICA
21. Mr. Y. Hokari, Member, BDST Team for IPSA Project, JICA
22. Mr. M. Hino, Member, BDST Team for IPSA Project, JICA
23. Mr. S. Suzuki, Member, BDST Team for IPSA Project, JICA

10. List of existing equipment

(1) AGRONOMY

EQUIPMENT	QUANTITY	REMARKS
TABLE BALANCE	2	
PLATFORM BALANCE	1	
AUTOMATIC TABLE BALANCE	2	
PH COMPARATIONE UNIT	1	
WATER ANALYZING APPARATUS	1	
AIR HUMIDIFIER	1	
MIXER	1	
ELECTRIC DRYING OVEN	2	
JUICER BLENDER	1	
DIRECT COMBINED STIRRER	1	
DEIONIZING APPARATUS	1	
ELECTRIC CENTRIFUGE	1	
ROTARY VACUUM PUMP	2	
ELECTRIC WATER BATH	1	
SOIL HARDNESS TESTER	1	
PRECISION GAS DETECTOR	1	
KJELDAHL DIGESTER	1	
SOIL SLEE SET	1	
SOIL BORING STICK	2	
SOIL SAMPLING CYLINDER	19	
SOIL SEDIMENTATION APPARATUS	1	
SOIL CAPACITY CYLINDER	2	
WATER HOLDING CAPACITY DISH	2	
SOIL CAPILLARITY TEST APPARATUS	1	
SOIL PERMEAMETER	2	
SOIL EXCHANGE CAPACITY DETERMINATION APPARATUS	2	
SOIL TENSIOMETER	1	
GRAIN FILLING HOPPER AND MEASURE	1	
GRAIN BALANCE (VOLUME-WEIGHT TESTER)	1	

LEAF PUNCH	1
FRUIT HARDNESS TESTER	2
GRAIN CRUSHER	2
MOISTURE METER	1
BUNSEN GAS BURNER	10
INFRARED MOISTURE DETERMINATION BALANCE	2
THERMOMETER	2
TURBIDIMETER	1
ION METER	1
ION ELECTRODE	1
DISSOLVED OXYGEN METER	1

(2) SOIL SCIENCE

EQUIPMENT	QUANTITY	REMARKS
CHEMICAL BALANCE	2	
TABLE BALANCE	2	
AUTOMATIC TABLE BALANCE	1	
MANOMETER	2	
MAXIMUM AND MINIMUM THERMOMETER	8	
WET AND DRY BULB THERMOMETER	8	
MICROSCOPE	2	
TRILOCULAR MICROSCOPE	2	
WATER-STILL BARNSTEAD	1	
MIXER	1	
STEAM STERILIZER	1	
STERILE CUPBOARD	1	
ELECTRIC WATER BATH	1	
GRAIN FILLING HOPPER AND MEASURE	2	

(3) ENTOMOLOGY

EQUIPMENT	QUANTITY	REMARKS
CHEMICAL BALANCE	1	
TABLE BALANCE	2	
AUTOMATIC TABLE BALANCE	1	
MICROSCOPE	3	
DIRECT COMBINED STIRRER	1	
BUNSEN GAS BURNER	6	

(4) GENETICS AND PLANT BREEDING

EQUIPMENT	QUANTITY	REMARKS
REFRIGERATOR WITH FREEZER	1	
CHEMICAL BALANCE	2	
TABLE BALANCE	1	
PLATFORM BALANCE	1	
AUTOMATIC TABLE BALANCE	1	
SLEDGE MICROTOME	1	
MICROSCOPE	5	
TRILOCULAR MICROSCOPE	5	
JUICER BLENDER	1	
ELECTRIC WATER BATH	1	
BUNSEN GAS BURNER	6	



JICA