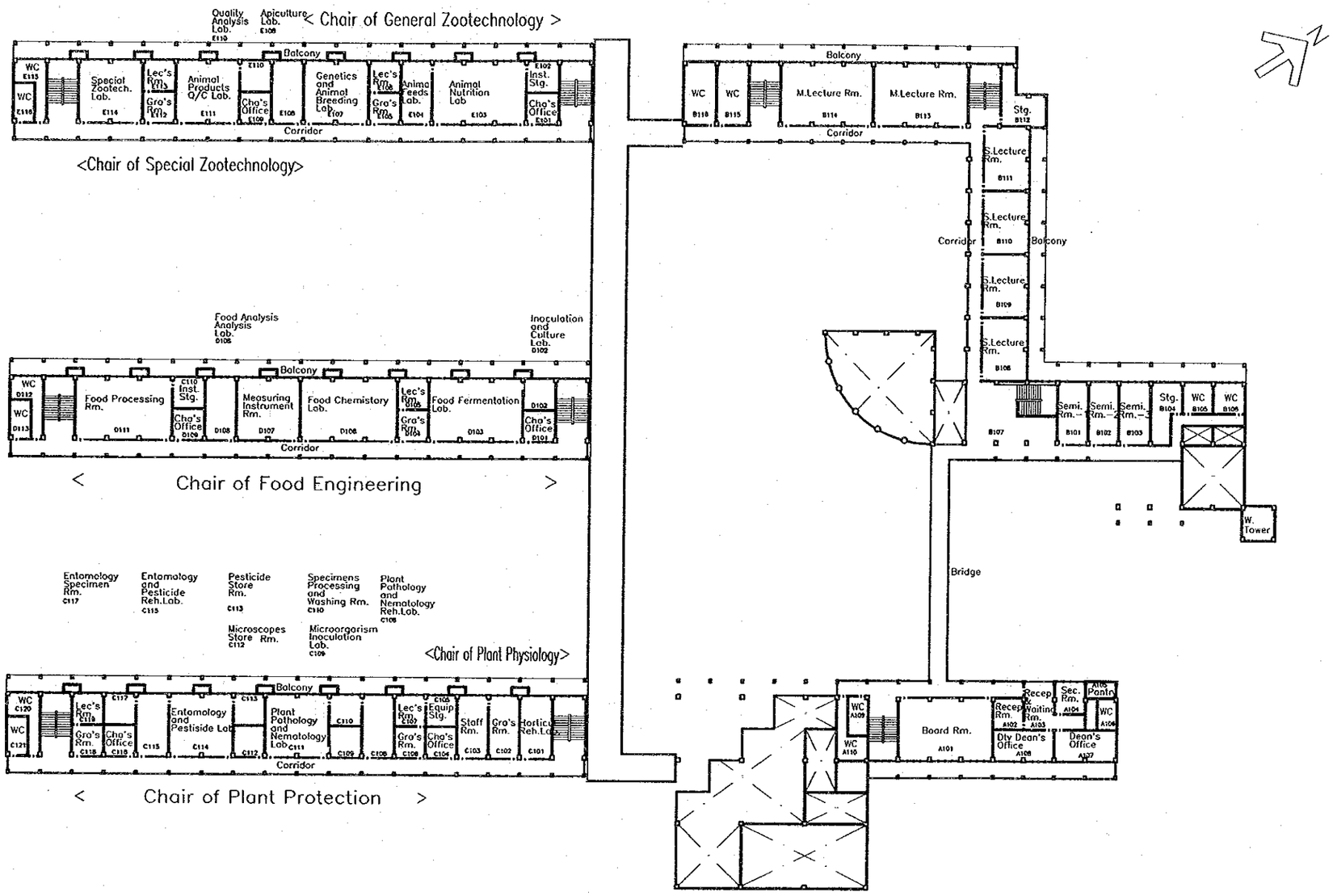

04

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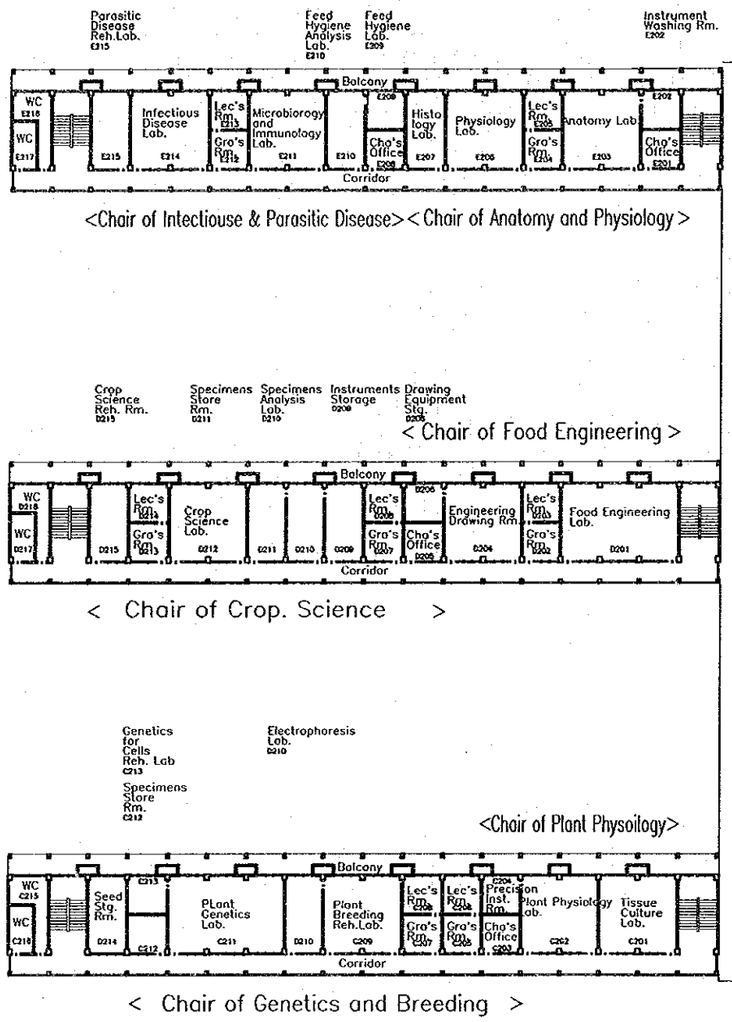
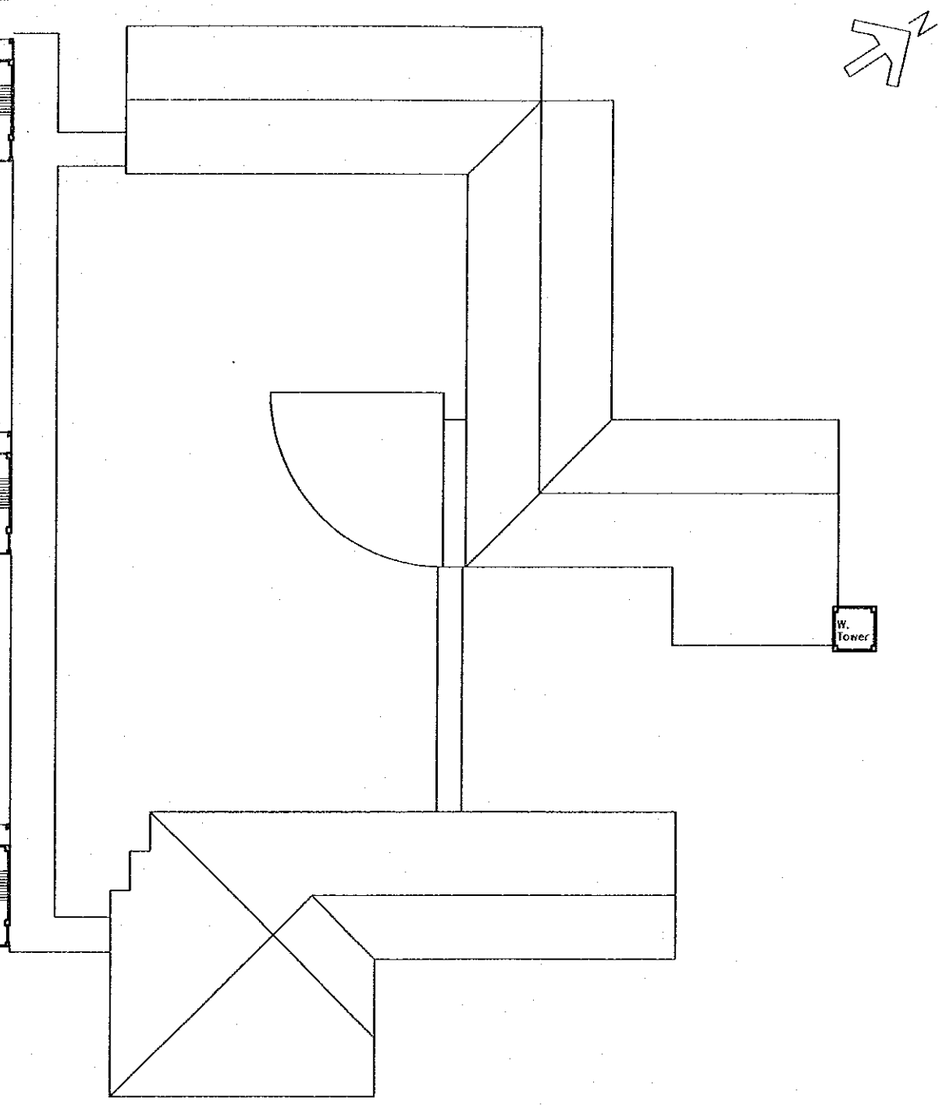
FIRST FLOOR PLAN 1:600





05

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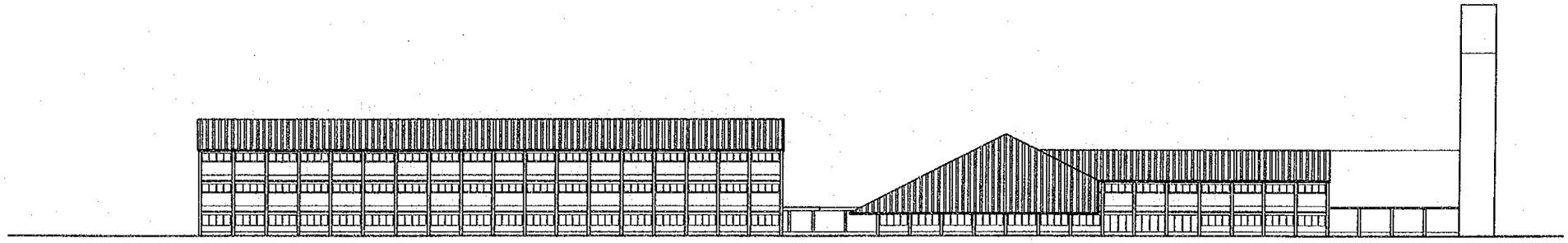
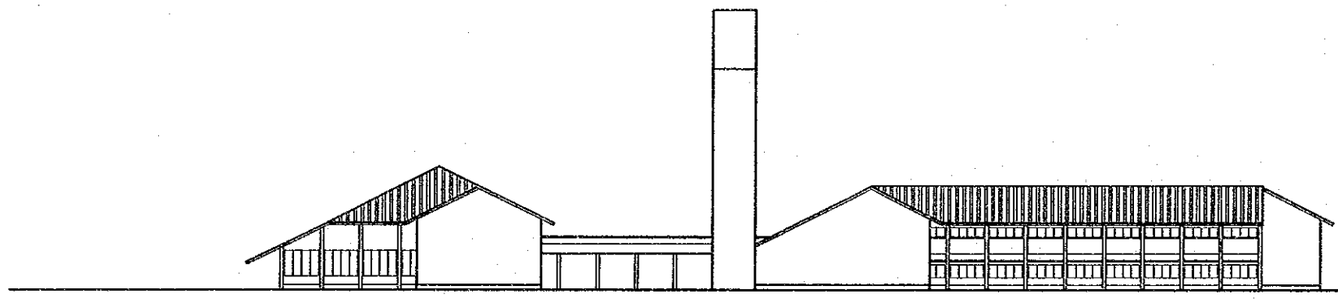
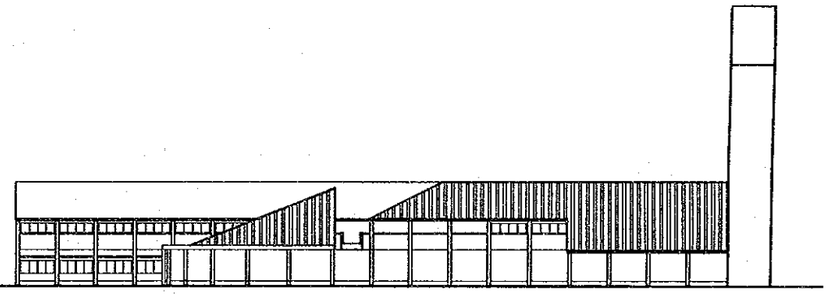
SECOND FLOOR PLAN 1:600



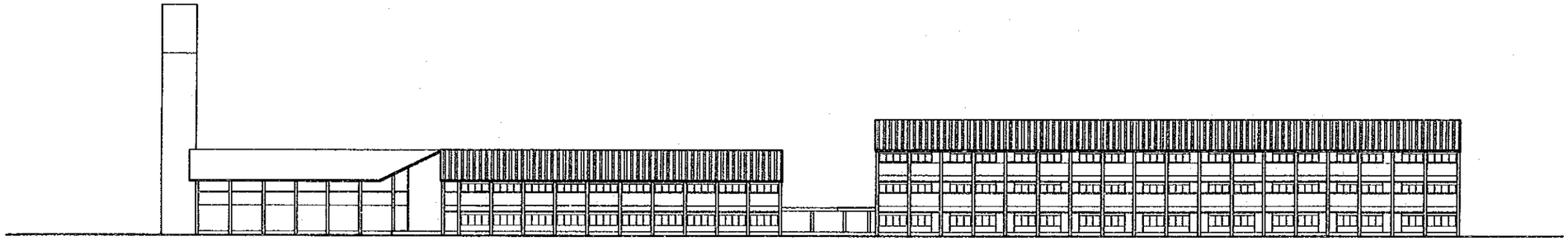
SOUTH ELEVATION



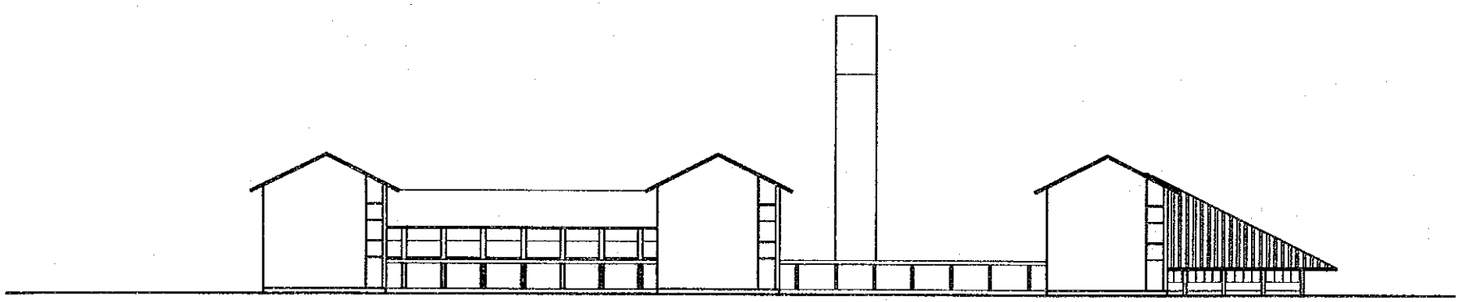
EAST ELEVATION



COURT SIDE ELEVATION



NORTH ELEVATION



WEST ELEVATION

06

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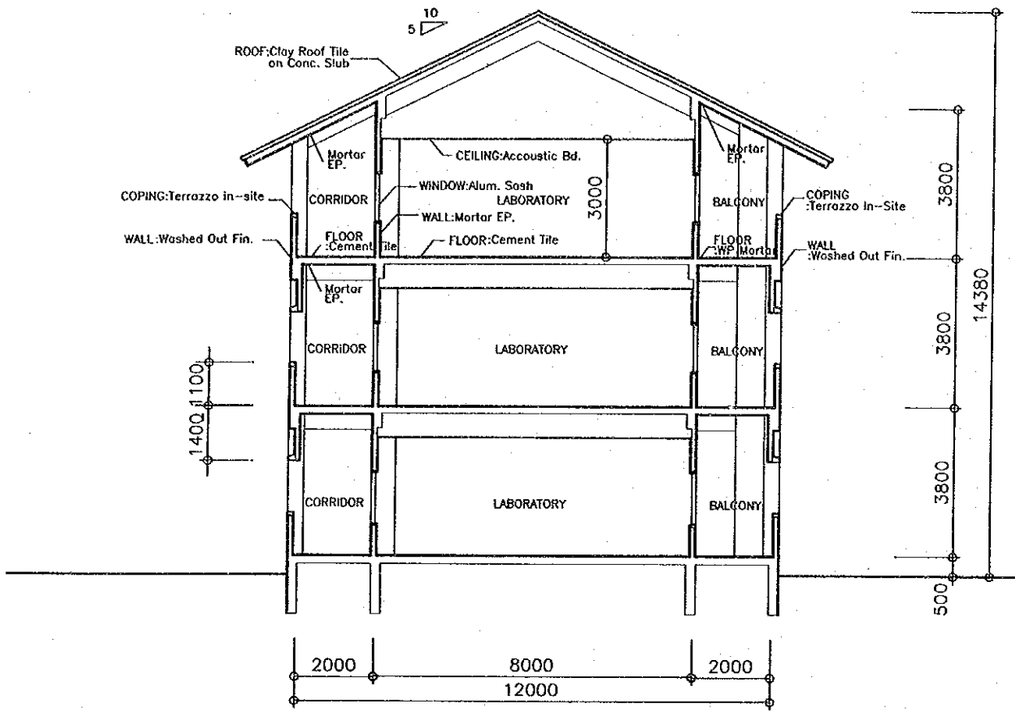
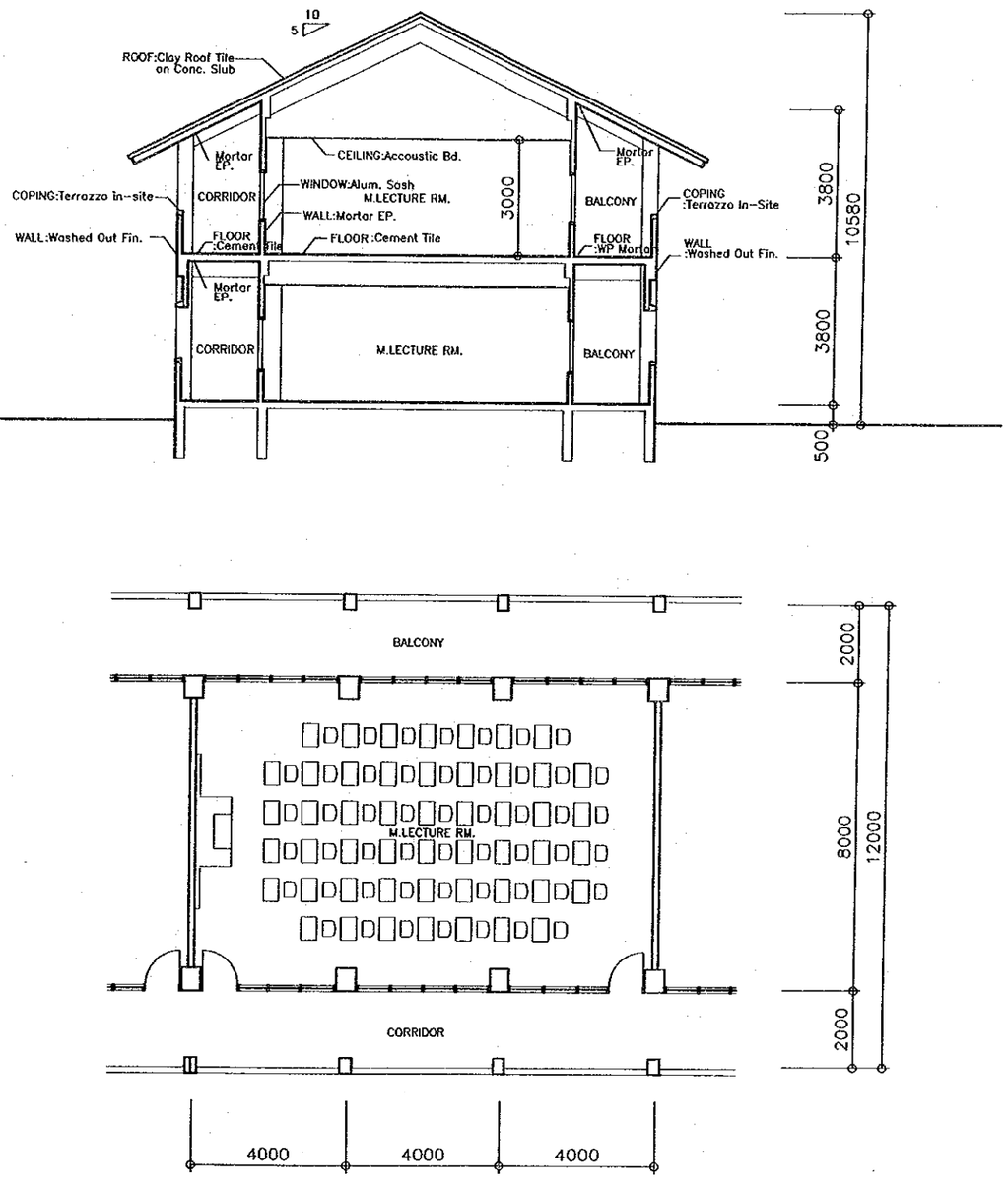
ELEVATIONS 1:600



LABORATORY BUILDING



COMMON LECTURE BUILDING

07

0 1 2 3 4 5 10

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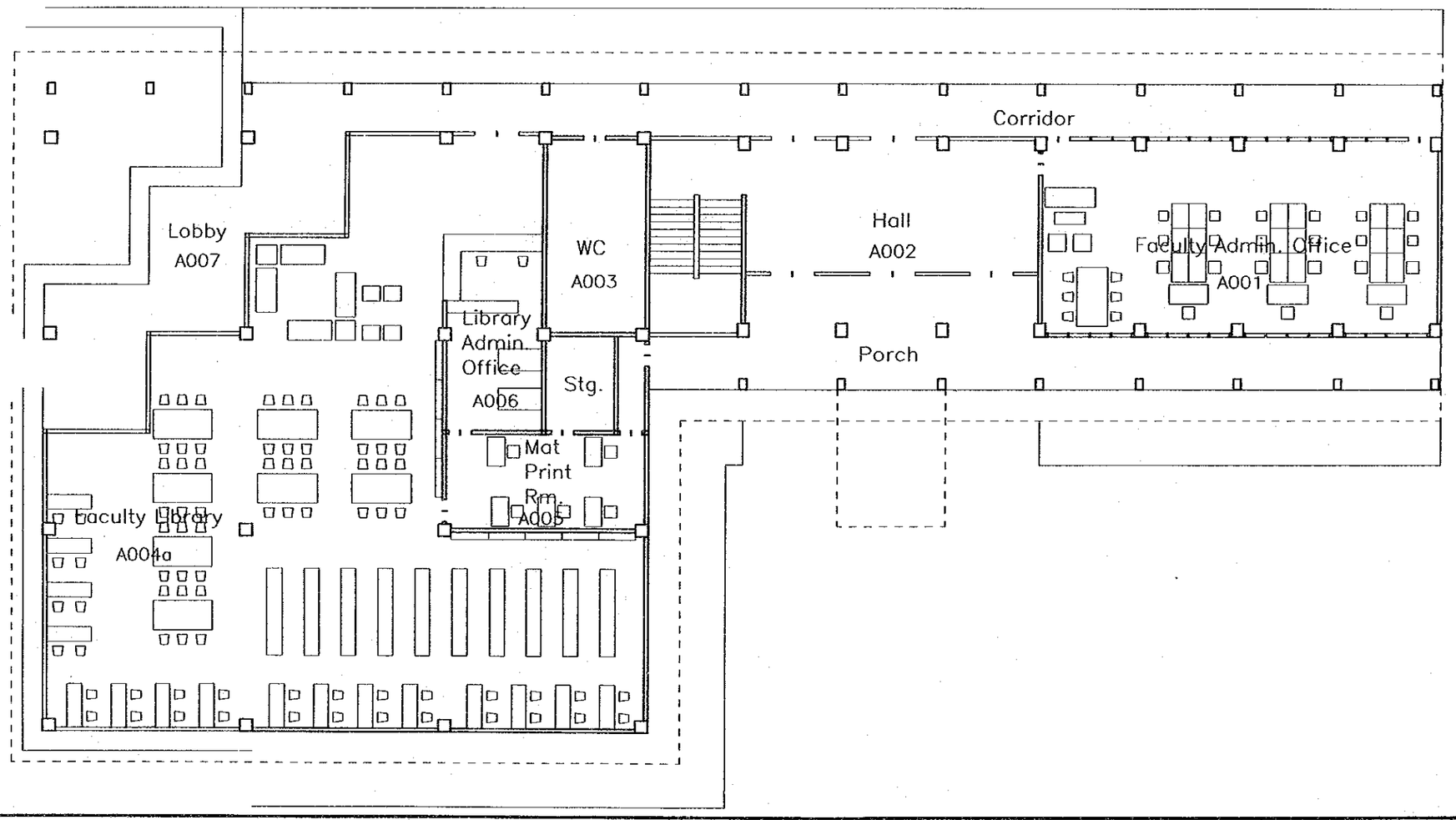
SECTIONS · PLAN DETAILS 1:150



08

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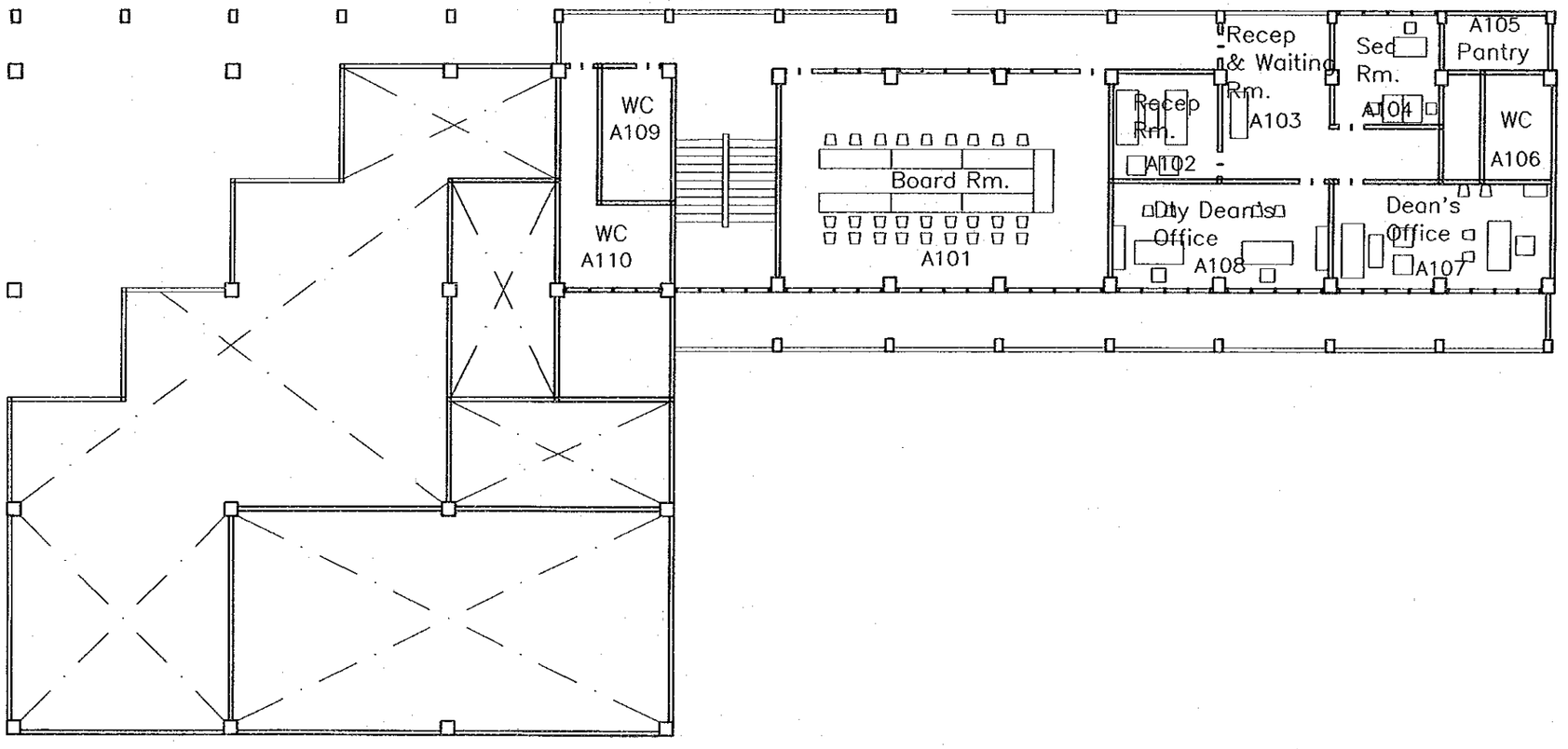
A-GROUND FLOOR PLAN 1:200



Admin Bldg.

09

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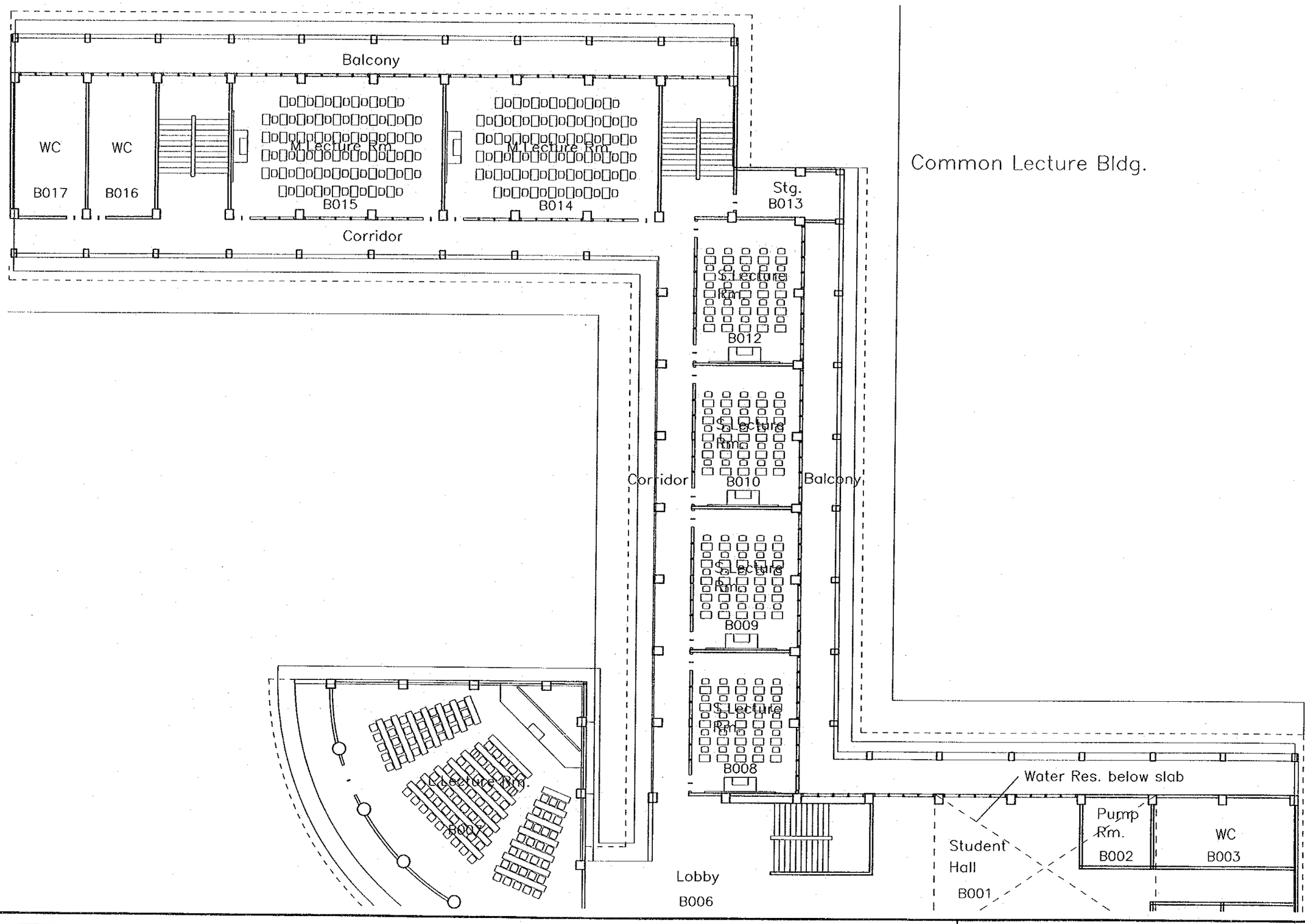
A--FIRST FLOOR PLAN 1:200



Common Lecture Bldg.

10

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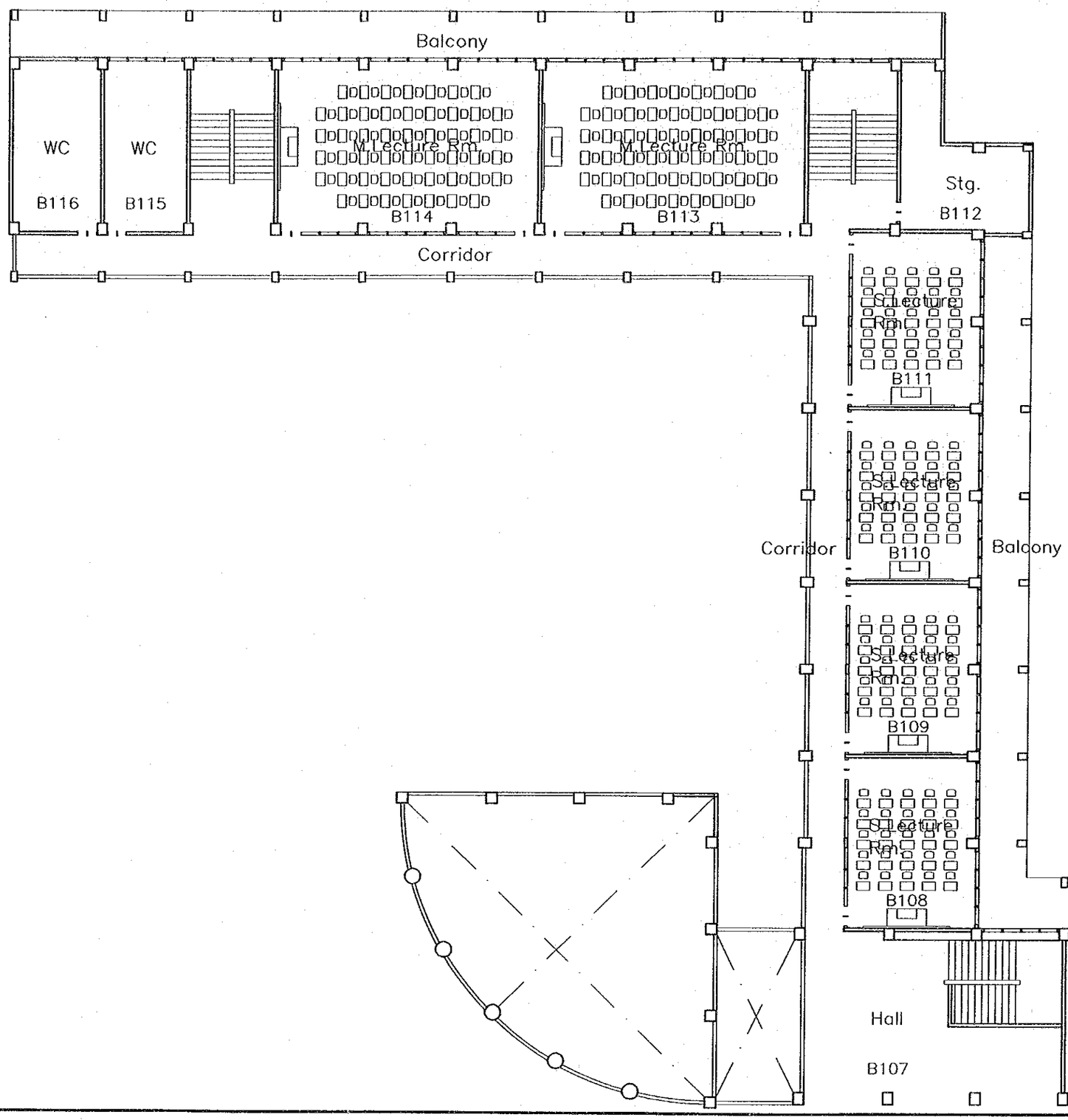
B-GROUND FLOOR PLAN 1:200



Common Lecture Bldg.

11

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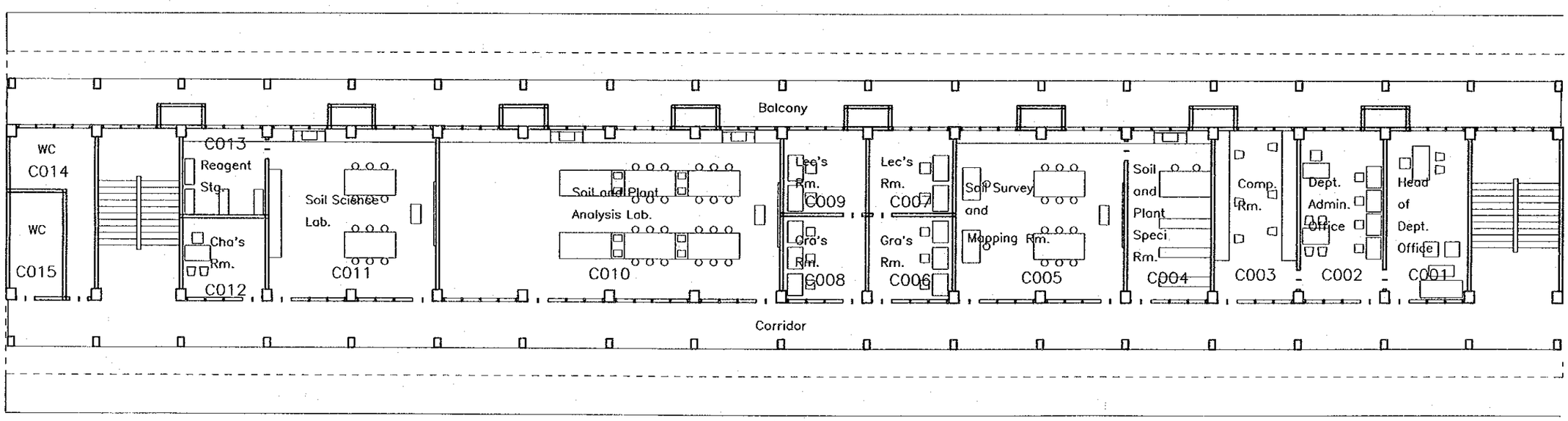
B--FIRST FLOOR PLAN 1:200

Labolatory Bldg.－1

(Agronomy)



< Chair of Soil Science >

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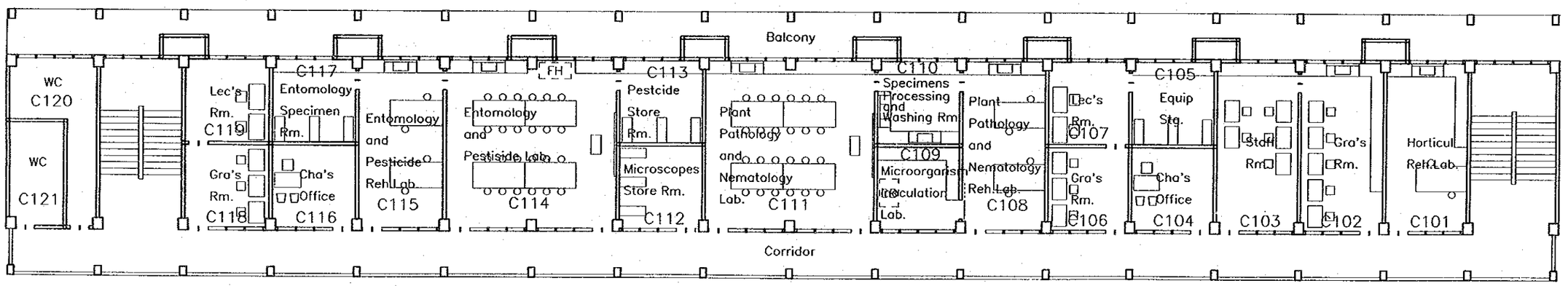
C－GROUND FLOOR PLAN 1:200

Labolatory Bldg.-1
(Agronomy)

< Chair of Plant Physiology



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13

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C-FIRST FLOOR PLAN 1:200

Labolatory Bldg.-1
(Agronomy)

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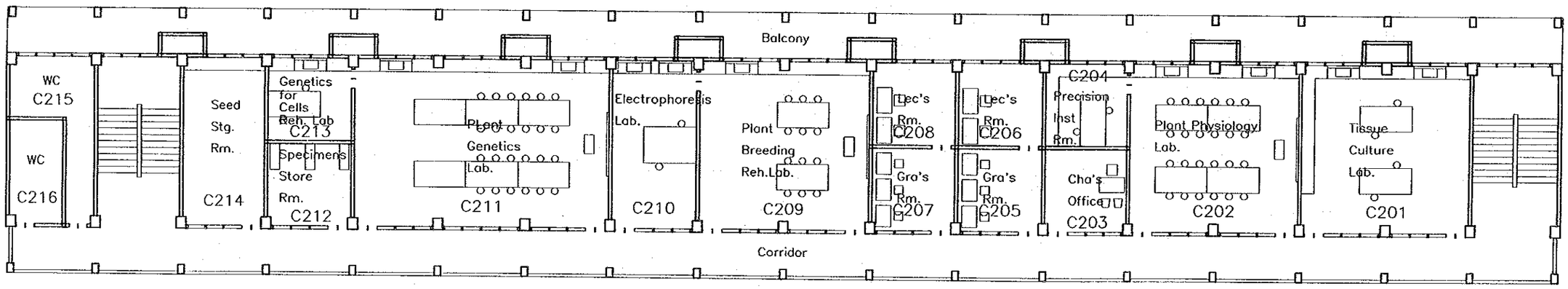

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14

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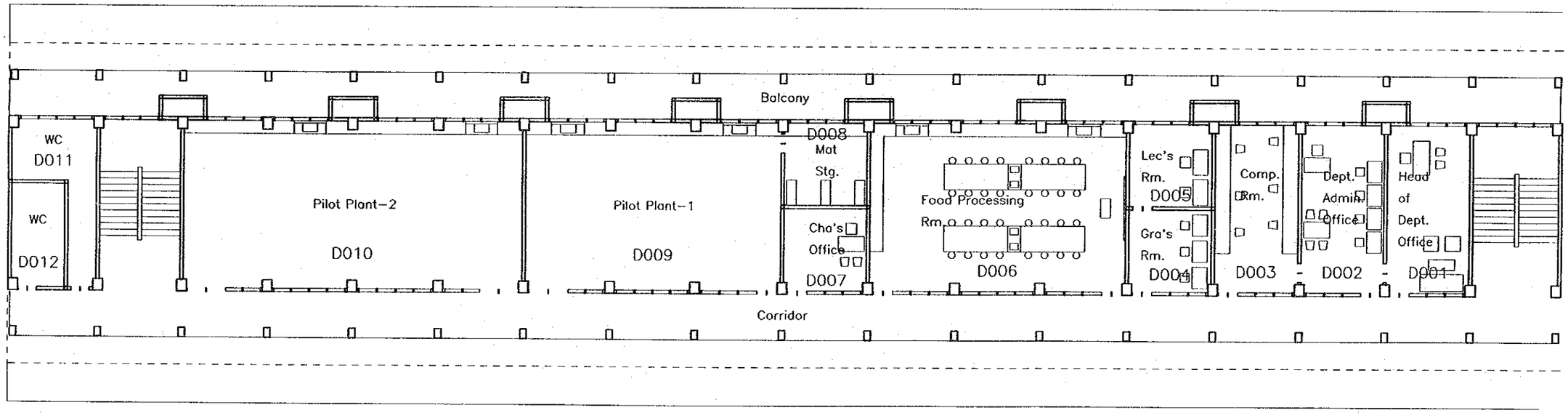
C-SECOND FLOOR PLAN 1:200

Labolatory Bldg.−2

(Food Science & Agronomy)



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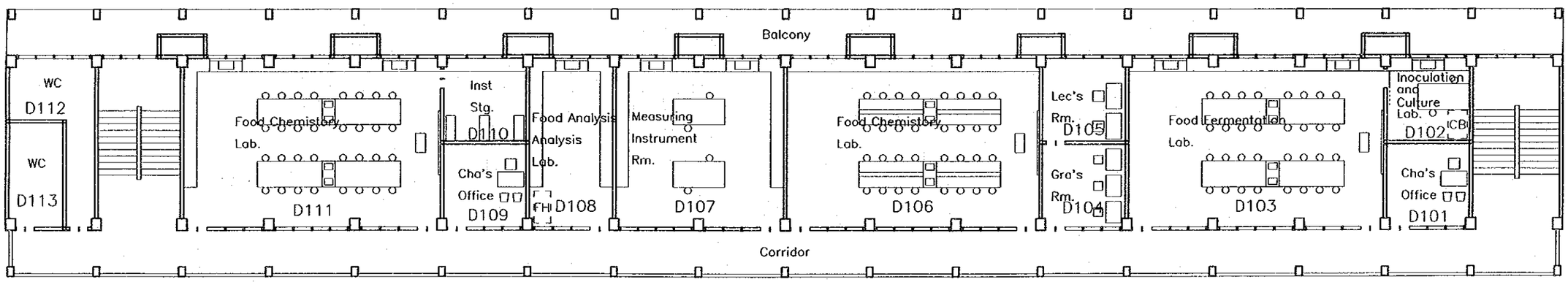
THE IMPROVEMENT OF THE DIVISION OF AGICULTURAL SCIENCES
CAN THO UNIVERSITY

D−GROUND FLOOR PLAN 1:200

Labolatory Bldg.－2

(Food Science & Agronomy)



Chair of Food Engineering

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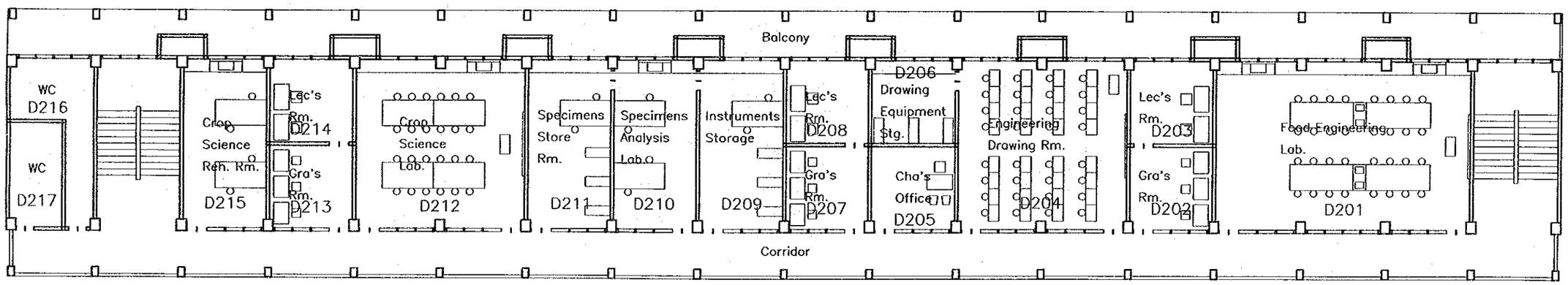
CAN THO UNIVERSITY

D－FIRST FLOOR PLAN 1:200

Labolatory Bldg.-2
(Food Science & Agronomy)

< Chair of Food Engineering >



< Chair of Crop. Science >

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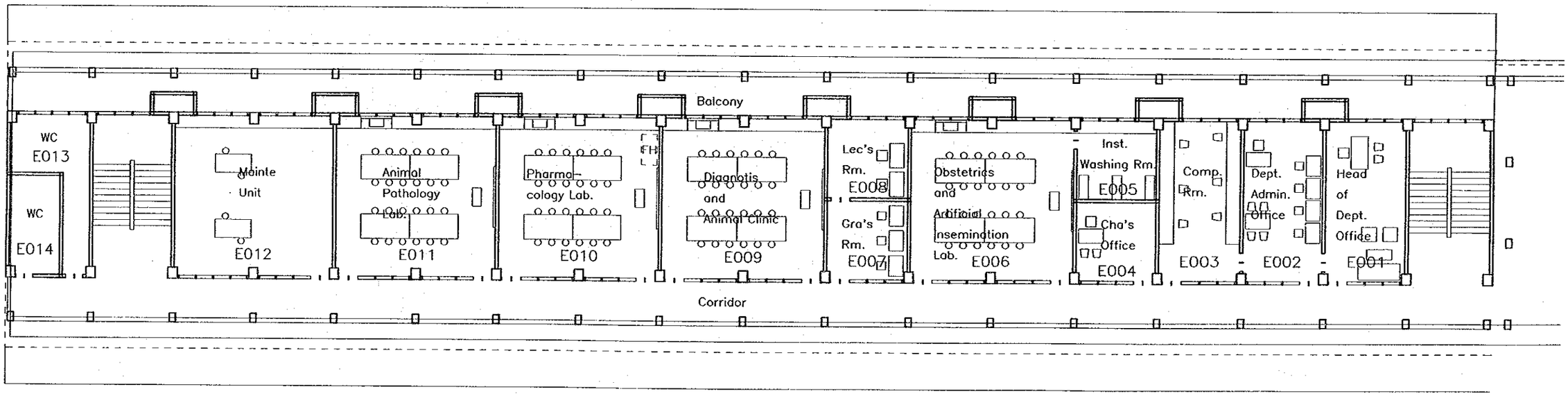
D-SECOND FLOOR PLAN 1:200

Labolatory Bldg.-3

(Animal Husbandary & Vet.Medicine)



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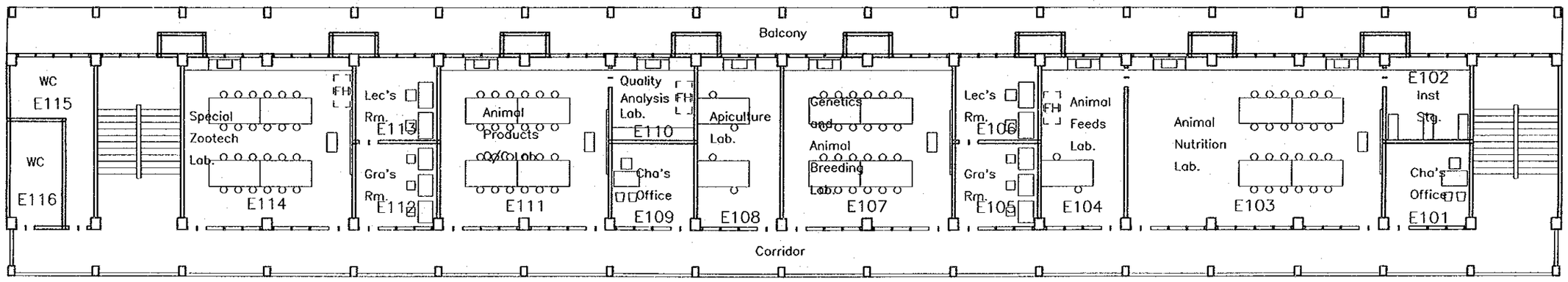
E-GROUND FLOOR PLAN 1:200

Labolatory Bldg.−3
(Animal Husbandary & Vet.Medicine)

< Chair of General Zootechnology >



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THE IMPROVEMENT OF THE DIVISION OF AGICULTURAL SCIENCES
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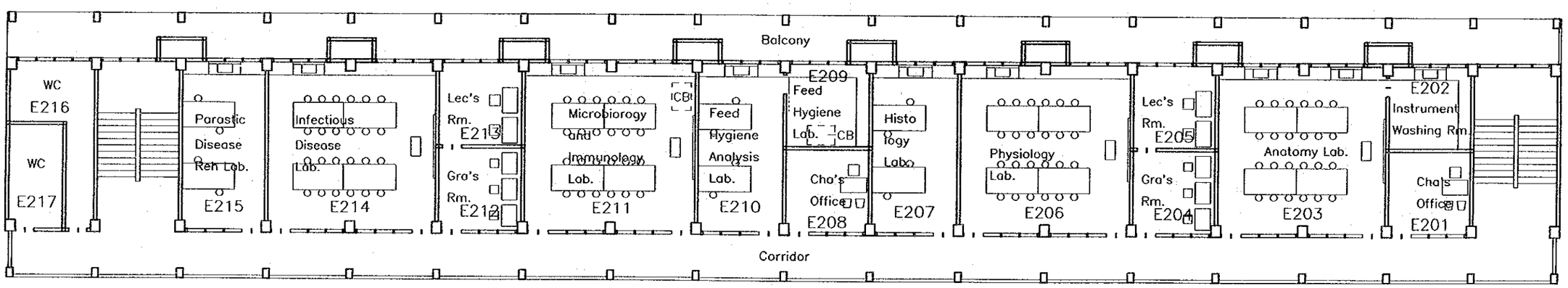
E−FIRST FLOOR PLAN 1:200

Labolatory Bldg.—3
(Animal Husbandary & Vet.Medicine)



< Chair of Intectiouse & Parasitic Disease >< Chair of Anatomy and Physiology >

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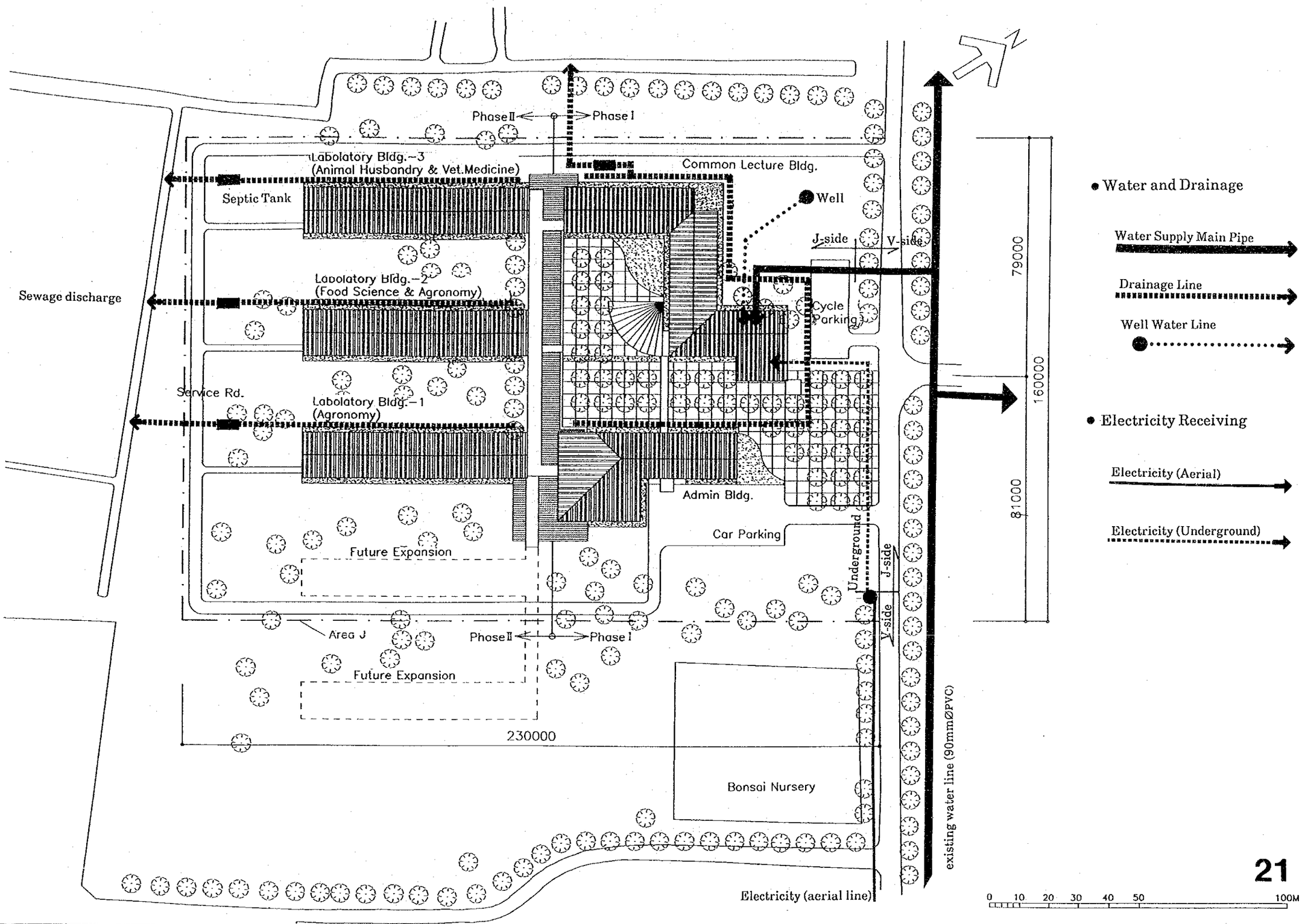
E—SECOND FLOOR PLAN 1:200



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CAN THO UNIVERSITY

Elec. Water and Drainage Route Diagram

5-4. Implementation Plan

5-4-1. General

The construction of the new facility for the Can Tho University, Division of Agricultural Sciences will be carried out under the framework of grant aid of the Government of Japan. The plan has been approved by the governments of both countries and will be officially implemented following the exchange of notes (E/N). Following this, the Government of Viet Nam will select a Japanese corporate consultant and the implementation of detail planning for the facilities and equipment will get under way. With the completion of blueprints for implementation, Japanese construction companies and equipment suppliers selected through competitive bidding will implement construction and supply machinery and materials. The contracts for consultants, construction and equipment will be authorized by the Government of Japan and thereby become effective.

5-4-2. Construction Conditions and Considerations Regarding Implementation

(1) Construction Conditions

The construction conditions for Ho Chi Minh, one of the major cities, and the Can Tho area, one of the target areas for this plan, are outlined below.

1) During the 1990s, the Ho Chi Minh area has shown active development in the field of construction due to the influence of the newly introduced market economy.

In order to encourage the policy for introducing foreign capital, a loosening of regulations concerning foreign investment has resulted in the advancement of infrastructure improvement projects and is a cause of the tremendous economic growth that has taken place in recent years.

Although it is still early in Viet Nam for the implementation of city planning projects such as the large scale housing development that has been seen in Southeast Asia's NIES, national highway repair, the laying

of water pipes and other infrastructure projects, private-sector construction of hotels and small or medium sized office buildings are all taking place. It has been judged that the growth ratio in the construction industry will continue to rise.

Most of the investment in construction has come from Japanese, Southeast Asian and overseas Chinese investors and these investment figures are expected to rise. An increase in the opportunities for businesses in the construction industry and the acceleration of employment in the industry are certain. In addition, the improvement of facilities, an increase in the local production of construction materials, an improvement in quality and variety of those materials, and an improvement in the technical skills of the workers are all expected to be realized in the near future.

Six major Japanese construction companies have received orders for projects or prepared procedures for tie-ups with local state-operated enterprises. There have been major results in terms of technology transfers to local areas by the construction companies currently implementing projects in and around the city.

In Can Tho, apart from the major infrastructure projects including the improvement of city waterworks and the expansion of telephone installations, small-scale projects for the construction of office buildings, factories and shops are also under way.

2) Work force is a nationwide surplus of unskilled construction laborers, but because there remains a shortage of experienced laborers in the fields of primary construction, finishing work and mechanical / electrical work, projects are often not completed within the scheduled time period. There are a great number of requests from local state-operated construction companies to foreign construction firms for instruction on technical and operational methods.

In order to ensure that government cooperation projects are completed within the fixed period, there is a need for supervisors in all fields from Japan and neighboring countries throughout the construction period to efficiently and appropriately utilize the local labor force.

It will be possible to employ the unskilled labor force required for this project in the Can Tho area.

3) Construction materials, in consideration of the ease of maintenance and management following the implementation of this plan, it is necessary to use locally produced construction materials as much as possible.

Materials that may be used in construction include building cement, aggregate, frame material, roof tile, wall brick, stone, wood and wood products, but they must first be examined for strength, durability, consistency of quality, supply and variety before being used.

As far as mechanical / electrical equipment is concerned, locally produced equipment is not yet advanced and there are concerns that it is lacking in terms of strength, durability, consistency of quality, supply and variety. Therefore, there are plans to either procure locally-sold imported equipment from Hong Kong, China, Taiwan, Thailand and Singapore and other neighboring countries or use equipment supplied from Japan.

(2) Considerations Regarding Execution of Plan

The planned facility is a three-story (partially two-story) reinforced concrete building, a structure commonly used in the Can Tho area. Local construction companies that will undertake the construction in cooperation with Japanese construction company have been judged to possess the capacity required for this project. In order for the construction to be completed on schedule, it is deemed necessary to dispatch supervisors and technical specialists to provide pertinent guidance to workers in construction methods, the handling of imported materials and installation of equipment and to promote the technical transfer that accompanies the construction.

As far as equipment work is concerned, the basic plan calls for the university and local distributor to be supplied with the materials needed to make maintenance of the equipment possible. Due to the specialized and precise nature of the equipment installation procedure, Japanese equipment manufacturers must provide guidance at the time of installation to those at the university involved in the handling of equipment.

As a tremendous rate of growth is predicted in the Vietnamese construction industry in the next few years, the securing of locally produced construction materials and a skilled labor force is an important concern.

(3) Considerations Regarding the Construction Plan

As the delivery of materials to Can Tho is the most significant factor influencing the duration of construction for this project, an appropriate transportation plan which takes into consideration the promotion of customs clearance and unloading procedures as well as materials locally produced by Japanese companies must be implemented.

Formulation of an appropriate construction process that does not put unreasonable demands on the local capacity to provide supplies and labor.

To avoid complications between Vietnamese-side works (preparation of infrastructure, office furniture, transfer of equipment from present laboratory) and Japanese-side works (facility construction, equipment supply), attention must be paid to the starting and completion times of the construction projects of both countries.

The dispatch of staff, supervisors and technical specialists from Japan and other foreign countries should be kept to a minimum, with consideration given to the number of people, duration of stay and timing with the progress of construction.

Utilization of locally produced materials as much as possible. Keep material supplies from Japan to a minimum and provide easy-to-understand details for their assembly at the local building site.

The six-month period between May and October is rainy season in Can Tho. Almost daily there are intense rainfalls that last for one hour. However, it is believed that these rains will not have a major detrimental effect on construction. Note that although a section of the road leading to the construction site is subject to flooding because of inferior drainage facilities, the proposed construction site has no previous record of flooding.

(4) Execution Plans

In terms of the execution of this project, during the early stages of planning, the responsibilities of both countries related to the starting period and methods of construction for each project must be confirmed between the consultant and Project Steering Committee (construction committee with the vice-minister of the Ministry of Education and Training acting as chairman). Prior consultation must be rigidly adhered to in order to ensure that the execution of each construction project proceeds smoothly.

The construction projects for which Viet Nam is responsible are noted in Chapter 5-4-6. In terms of the infrastructure necessary prior to the commencement of construction, there will be almost no obstructions because the land at the proposed construction site is at about the same level as the road located on the campus and is already level. (An increase in the capacity of electric power and water supply will be necessary at the time of movement into the completed building, but the present levels are considered sufficient for construction purposes). Measures should be taken for the procurement by Viet Nam of the general office furniture needed for the activities up until the completion of the facilities before the completion of construction. Furthermore, there is a need to give consideration to the period up until the equipment from Japan reaches the local site and the period of construction with local equipment and to set up a process that will not cause any setbacks.

(5) Construction Company Technical Supervisor

In order to complete facility construction in accordance with the design plan within the period allocated for construction, the ability to smoothly manage the joint operations of the Japanese construction company and local Vietnamese construction company and to supply the appropriate technical guidance to the local construction company is necessary.
Furthermore, to fully understand the contents of the project and preserve its high quality, it is desirable to have a construction supervisor with experience in education and training facility construction.

1) Judging from the scale and contents of the Project, the number and types of construction engineers who are required to continually stay at the site are as follows.

Project Manager :	1	General management
Construction Engineer :	1	Construction management and schedule control
Construction Engineer : (also responsible for drawings)	1	Work management and guidance on working drawing preparation
Mechanical and Electrical Engineer :	2	Guidance on mechanical and electrical work
Clerk of Works :	1	Control on imported equipment and materials, labour management and administration

2) Engineers specialized in the following equipment should be dispatched to give local technicians instructions on their installation and operation :

Printing System
Video System
Personal Computer Set
Warburg Manometric Apparatus
Spectrophorometer
Law Temperature and Humidity Test Chamber
Electrophoresis Equipment
Atomic Absorption Spectrophotometer
Centrifuge
Clean Bench
Hume Hood
Hematocrit Centrifuge
Liquid Nitrogen Generating Apparatus
Integrated Threshing-Granding Machine
Workshop Tools
Others

An engineer is able to operate the plural equipment and instruments mentioned above, therefore, four engineers should be dispatched to the site.

5-4-3. Construction Supervision Plan

Supervision of and construction under the Project will involve the Project Implementation Agency, the Consultant, the Contractor and the Equipment Supplier under the control of the related authorities of both governments. The work assignments of each body are as follows.

(1) Project Implementing Agency

The Vietnamese agency which is in charge of the implementation of this project is the Ministry of Education and Training (MOET), and MOET will act as the contracting party of the Vietnamese government for the Consultation Agreement, the Construction Contract and Banking Arrangement, etc. of the Project. The agency has already set up the Steering Committee headed by Vice Minister for MOET for implementing the project, and this Committee will implement the project by the completion of the Project.

Member of Steering Committee for the Project

Chairman	: Vice Minister for Education and Training
Secretariat	: Dept. of International Cooperation
Member	: Dept. of Planning and Finance
	: Dept. of Higher Education
	: Institute for Research and Design for Schools
	: Can Tho University

State Planning Committee of the Vietnamese government and the Embassy of Japan will be related to the project implementation as observation agency.

(2) Consultant

From the many Japanese consulting companies capable of handling the Project, MOET of the Vietnamese government will select the Consultant to conduct the detailed design for the buildings and equipment and to prepare the tender documents through consultations with MOET taking the contents of the Basic Design into consideration. The Consultant will dispatch a full-time supervisor to the project site at the construction and equipment installation stage to supervise the Contractors and to report on the work

progress to the implementation agency and other related organizations. The Consultant will also dispatch engineers to inspect the work in accordance with the work progress. The Consultant will have the following work assignments.

- Detailed Design
  preparation of tender documents for construction and equipment work (detailed design drawings, specifications, cost estimate, etc.)
- Assistance for Tender and Contracts
  decisions on contract procedures, preparation of draft contracts, examination of detail breakdowns and selection of Contractor (pre-qualification examination, announcement of tender, evaluation of bids, contract negotiations and witness to contracts)
- Inspection and Confirmation of Working Drawing
  inspection and confirmation of working drawings, construction plans, samples of materials and finishings and building serviced and other equipment offered by the Contractors.
- Construction Supervision
  examination of work plans and schedules and provision of instructions to the Contractor
- Work Progress Report
  report of work progress to implementation agency and other related organizations
- Assistance for Payment Procedure
  examination of requisition notes payable interim and completion offered by the Contractors
- Inspection of Completed Work
  inspection of work at various stages throughout the construction period

(3) Construction Contractor

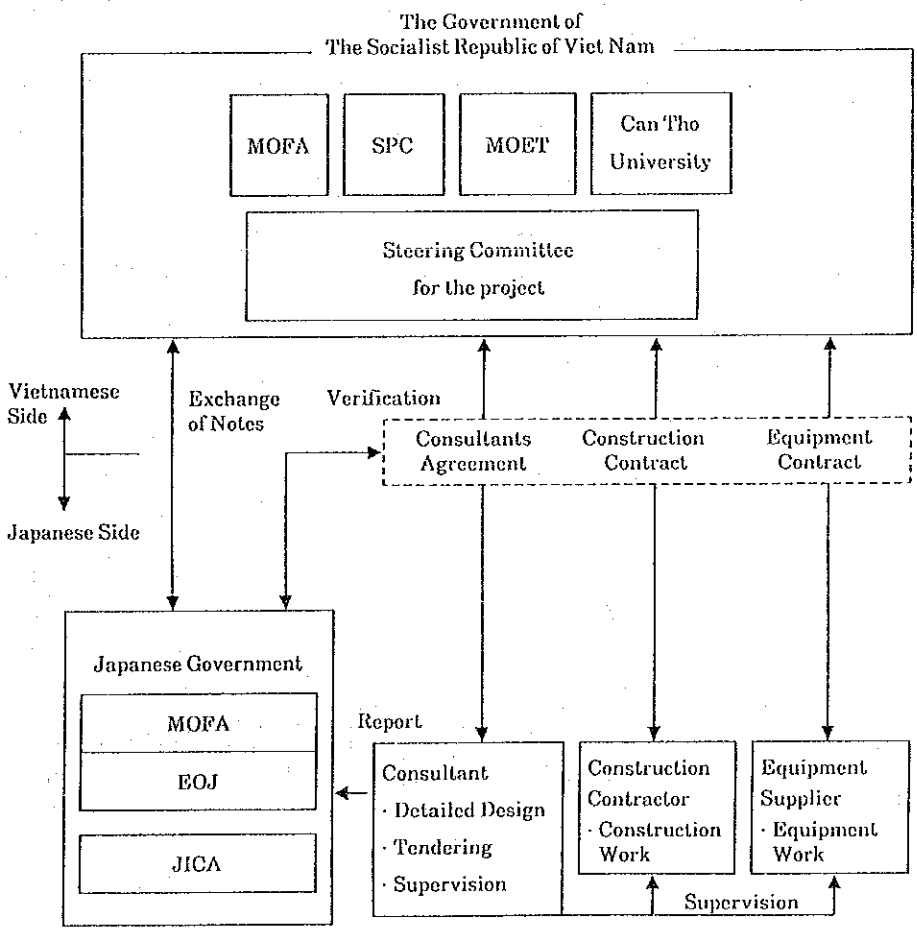
The Contractor will be selected through tender from qualified Japanese construction firm who are passed pre-qualification examination by the Consultant act for MOET. The Contractor will complete the construction of the planned buildings on schedule based on the detailed design drawings prepared by the Consultant and will hand the buildings over to the Vietnamese side.

The construction work for which the Contractor is responsible will mainly consist of buildings, air-conditioning and ventilation, plumbing, electrical and exterior work and the Contractor will sub-contract the work to Vietnamese or Japanese sub-contractors, technicians and workers as required. Six field staffs for full-time on-site construction work will be required in view of the project size and contents.

(4) Equipment Supplier

The Equipment Supplier will be selected through tender from qualified Japanese trading firms. The Equipment Supplier will procure and install the equipment which will satisfy the specifications given by the Consultant on schedule. The Equipment Supplier will also dispatch expert supervisors to the project site to assist in the installation of the equipment and to provide the Can Tho University with explanations on the equipment handling methods.

Supervision Plan



5-4-4. Equipment and Materials Procurement Plan

The following items should be taken into consideration when procuring construction materials and equipment to be used for the Project.

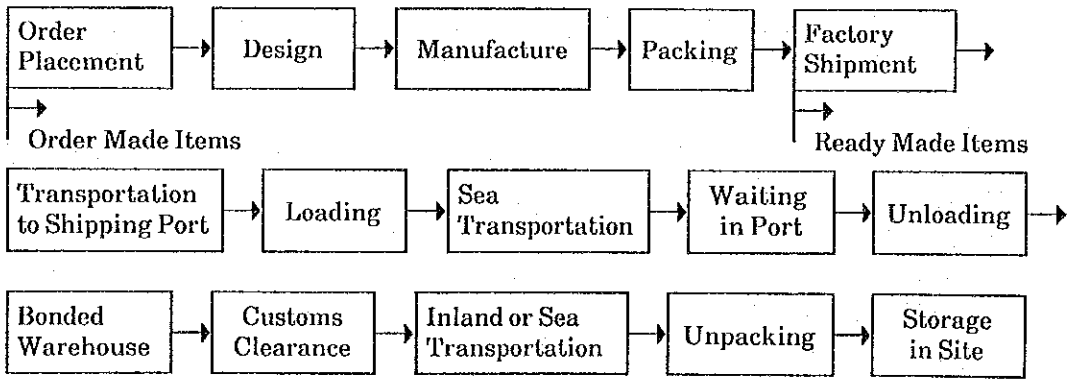
(1) Procurement Policy

Some construction materials can be locally procured. Hence, the procurement policy is to procure materials in a reasonable manner by considering supply capabilities and quality vis-a-vis local manufacturers and suppliers.

The number of materials to be procured from Japan should be kept to a minimum, restricted to those which cannot be locally supplied such as mechanical equipment, special materials and equipment and those which cannot be locally procured because of unfavorable performance or in sufficient local supply capabilities.

(2) Procurement in Japan

Those equipment and materials which are to be procured in Japan are to be manufactured and prepared in accordance with order specifications.The special fittings, telephone exchange, power distribution board, and other materials and equipment are to be manufactured upon order. Unlike those currently available in the market, these items will be prepared only after an order is placed in a process including the steps from ordering to designing, approval, manufacturing, packing, and shipping, and will take longer time in manufacture than mass-produced ones. Hence, it is necessary to place orders for them in accordance with the progress of the construction work.



Unloading, customs clearance at local ports and transportation to the Site may take a long time in some cases. Therefore, early arrangements should be made through close liaison with the Vietnamese implementing agency so that these procedures may be smoothly expedited.

(3) Local Procurement

Local procurement of construction materials should be considered including materials and equipment in local market which be imported from ASEAN countries for maintenance of facilities. However, sufficient consideration should be given to uniform quality and supply volumes of materials so that they do not hinder the functions of the buildings and the construction process.

(4) Costs

By comparing materials that can be procured both locally and in Japan, those with lower costs will be employed. Procurement from Japan requires additional packing, transporting, and insurance expenses beyond their market prices, but there are no import duties.

(5) Procurement Schedule

Based on the above-mentioned factors, materials and equipment to be used in construction of the Building will be procured in the following manner.

1) Construction of Building Frames Work

For building frame work, sand, gravel, cement, reinforcing bars, and bricks are locally available in Viet Nam.

<Local Procurement Condition>

Sand, gravel	:	mainly crushed stone and river sand are available.
Cement	:	Viet Nam and Indonesia made are available in local market. quality of Vietnamese made varies widely.
Reinforcing bar	:	Vietnamese made round bar 6, 8, 10 m/m and Russian made deformed bar are available, however, a large quantity procurement is difficult.

Brick : various type of bricks such as hollow, decoration and etc. are available.

Concrete : concrete is mixed at the site using concrete mixer. no ready-mixed concrete in Viet Nam. concrete is cast with wheelbarrow or crane bucket.

Concrete pile : product at the site. 40cm or 30cm square and 12m long are popular.

Concrete forms : wooden board and bamboo sheeting, timber support are popular. no plywood sheeting and steel pipe support.

2) Interior and Exterior Finishing Work and External Work

For finishes work, some of the materials are locally available in Viet Nam. They include timber, aluminum doors and windows, steel doors and windows, plastering materials, tiles, roof tiles, waterproofing materials, paints and glass (some of these materials are imported).

<Local Procurement Condition>

Aluminum and steel doors and windows
: no ready-made product, doors and windows in local market varies widely and a large quantity procurement is difficult.

Plastering materials : cement mortar and lime mortar are available

Ceramic tiles for wall finishing
: Chinese made is available in local market.

Cement tiles for floor finishing
: various type and a large quantity procurement are locally available and popular as floor finishing in Viet Nam.

Roof tiles : roof tiles which are traditionally used in Viet Nam. a large quantity procurement is available.

Waterproofing materials
: a small quantity imported materials is available.

Glass : a small quantity glass which are thickness 3~5 mm imported from Russia and China are available.

Stone and terrazzo: local made is available

Paint : local made is poor quality. imported paint is available in local market.

Major items which be procured in Japan for the project;

① Temporary work equipment
   a. personal computer for accounting (Japanese version)
   b. test machine for concrete strength
   c. wrecker and forklift
   d. batching plant
② Building frame work
   a. reinforcing bar and vending machine
   b. tools and equipment for form work
③ Doors and Windows work
   a. glass and calking
   b. metal doors and windows with hardwares
④ Exterior finishing
   a. waterproofing materials
   b. slate
⑤ Interior finishing
   a. ceiling : rockwool acoustic board, gypsum board, access door
   b. floor : vinyl tile, carpet, ceramic tile
   c. allied membrane waterproofing
⑥ Miscellaneous work
   a. metal work

3) Air-Conditioning and Plumbing Work

Materials and equipment to be used in this work are to be procured in Japan, because of a small quantity and limited variety on type are available.
Air conditioners, fans, and other instruments are to be procured in Japan.

<Local Procurement Condition>
Equipment : pumps imported from Hong Kong, China and Thai are available in local market.

Pipe : pipes imported from China and Russia are available in local market. a small quantity and limited variety on type are available.

Valve : only small size valves imported from Japan and Hong Kong are available in local market.

Sanitary fixture: sanitary fixture imported from Thai and China are available in local market. Vietnamese made is not able to fix flush valve.

Meter : no water flow meter and pressure gauge are available.

Packing : packings in local market varies widely.

4) Electrical Work

Wire, cable, box, pipe and some of lighting fixtures are available in local market including imported material and equipment. Hence, they have problem in quality and a large quantity procurement.

<Local Procurement Condition>

Wire and cable : 600V vinyl wire and small size VV cable made in Viet Nam are available. other size and type are imported.

Pipe for wire and fitting
: local made vinyl pipe and fitting are available.

Box and pull box
: a small quantity and varied widely quality are available because of no ready-made.

Lighting fixture: assemble fluorescent type using imported lamp, socket and etc.

Wiring fittings : imported fittings are available.

The following equipment will be procured in Japan for maintaining high quality.

a. Power receiving and transforming equipment
b. Generator
c. Power board
d. Lighting panel board
e. Telephone system and public address system
f. Fire alarm system

g. Lightning rod system

(6) Means and numbers of days required to transport principal materials and equipment to the construction site (Can Tho University)

Materials and equipment to be procured in Japan for the implementation of this project will be transported mainly by sea, but if urgent transportation is needed, they may be air freighted. Procedures of and the number of days required for sea transportation are listed as follows.

Japan	Transportation (Factory → Port)	1 day
	Customs Clearance at Warehouse (Yokohama, Kobe)	7 days
	Loading	3 days

① Transportation Type -1

Sea Transportation	35 days
(Japan → Singapore or Hong Kong → Can Tho)	
Customs Clearance (Can Tho Port : Max. 7,000 ton ship)	3 days
Inland Transportation (Can Tho Port → University) 6km	1 day

② Transportation Type -2

Sea Transportation	30 days
(Japan → Singapore or Bangkok → Ho Chi Minh City Port)	
Customs Clearance (Ho Chi Minh City Port)	7 days
Reship (Max. 3,000 ton ship)	7 days
Sea Transportation	2 days
(Ho Chi Minh City Port → Can Tho Port)	
Inland Transportation (Can Tho Port → University)	1 day

③ Transportation Type -3

Sea Transportation (same as Type-2)	30 days
Customs Clearance (Ho Chi Minh City Port)	7 days
Inland Transportation	1 day
(Ho Chi Minh City → University 160km)	

A small volume and weight transportation by truck from Ho Chi Minh City to Can Tho is available.

1) There are 45 bridges from Ho Chi Minh City to Can Tho, and their capability are mainly 10 to 12 tons.
2) Hau Giang and Tien Giang rivers should be crossed by ferryboat (less than 18 tons truck is available).

④ Transportation Type -4

Urgent transportation (small volume)	
Air freight (Japan → Ho Chi Minh City Airport)	1 day
Customs Clearance (Ho Chi Minh City Airport)	7 days
Inland Transportation (same as Type-3)	1 day
or	
Air freight (Ho Chi Minh City Airport → Can Tho Airport)	1 day
Inland Transportation (Can Tho Airport → University)	1 day

Numbers of shipping to Viet Nam is not available so many, therefore transportation plan should be considered carefully.

Sea transportation will take about one month and half, while air transportation takes about ten days. For items of smaller dimensions, DHL and other air parcel forms may be utilized.When the equipment and materials are imported into Viet Nam, the imported item list must be approved by SPC and related agencies. Therefore, preliminary arrangements should be made to obtain its approval through the Steering Committee of the Project.

5-4-5. Implementation Schedule

When the construction of the Building is implemented under Japanese grant-aid, the following procedures are to be taken ;

i) signing of the Exchange of Notes (E/N) between the two countries,
ii) choice of a Japanese design and supervision consulting company by the Government of Viet Nam,
iii) conclusion of a design and supervision agreement between the Vietnamese government and the consulting company,
iv) three preparatory stages including preparation of design documents for implementation, tendering and conclusion of a construction contract with the successful tenderer,
v) construction of the facilities concerned.

After the E/N is signed, MOET will act as the implementing agency of the Vietnamese government.

(1) Detailed Design

Contract documents for construction are prepared based on the basic design study report and are composed of detailed design drawings, specifications, calculation sheets, etc. Close discussions are held with related agencies of the Vietnamese government at the initial, middle, and final stages of preparing the detailed design, respectively. After the final results are approved by the agencies concerned, tendering procedures will be undertaken. Details are arranged in consideration of the contents of the technical cooperation by the Government of Japan and requested by the Government of Viet Nam.

(2) Tendering

After the detailed design is completed, prequalifications (P/Q : preliminary review for qualification of applied tenderer) is announced and is carried out in Japan. In accordance with the review, MOET will invite tenderers for the Project, and the tendering is done in Japan under the supervision of the related parties. The tenderer which underbids the others will become the successful one, if the contents of its tender are judged to be appropriate, and then it will conclude a construction contract with MOET of the Vietnamese government and the contract will be send to Japan for verification by the Government of Japan.

(3) Construction Work

After the construction contract is signed, the construction work will be commenced after the Japanese government verified it. Judging from the scale and contents of the facilities of the Project, the construction periods are expected, at the least, to be about 10 months for Phase I (construction of the common lecture bldg. and administration bldg. and equipment work) and about 12 months for Phase II (construction of the laboratory bldgs., covered way and outdoor facilities, and equipment work), on the conditions that;

i) construction materials and equipment are smoothly procured,
ii) smooth progress is seen in the Vietnamese administrative procedures and reviews and preparation work within the scope of responsibility of the Vietnamese side,
iii) the single budgetary year system of the Japanese government is applied correctly.

The total construction periods are expected about 18 months on the condition that Phase II work contract is concluded during Phase I construction.

(4) Vietnamese Ministries and Agencies concerned and procedures taken by them

1) MOET

MOET as implementation agency of the projet has already set up a Steering Committee headed by Vice Minister for Education and Training for taking necessary procedure.

a. Member of Steering Committee

Chairman	:	Vice Minister for Education and Training
Secretariat	:	Dept. of International Cooperation
Member	:	Dept. of Planning and Finance
		Dept. of Higher Education
		Institute for Research and Design of Schools (IRDS)
		Can Tho University

b. The Steering Committee will take the following procedures.
- procedure for the Consultant Agreement
- procedure for the Banking Arrangement

- issue of the Authorization to Pay
- application for the building construction permit
- procedure for the Construction and Equipment Contract
- issue of certificate for payment to the consultant, construction contractor and equipment supplier
- confirmation of design criteria and etc. (by IRDS)
- discussion of detailed design and specification (by IRDS and University)
- required application during construction and at the completion to the related authorities (by University)

2) Ministry of Foreign Affairs

The Ministry will conclude the Exchange of Notes (E/N) with the Government of Japan for the project.

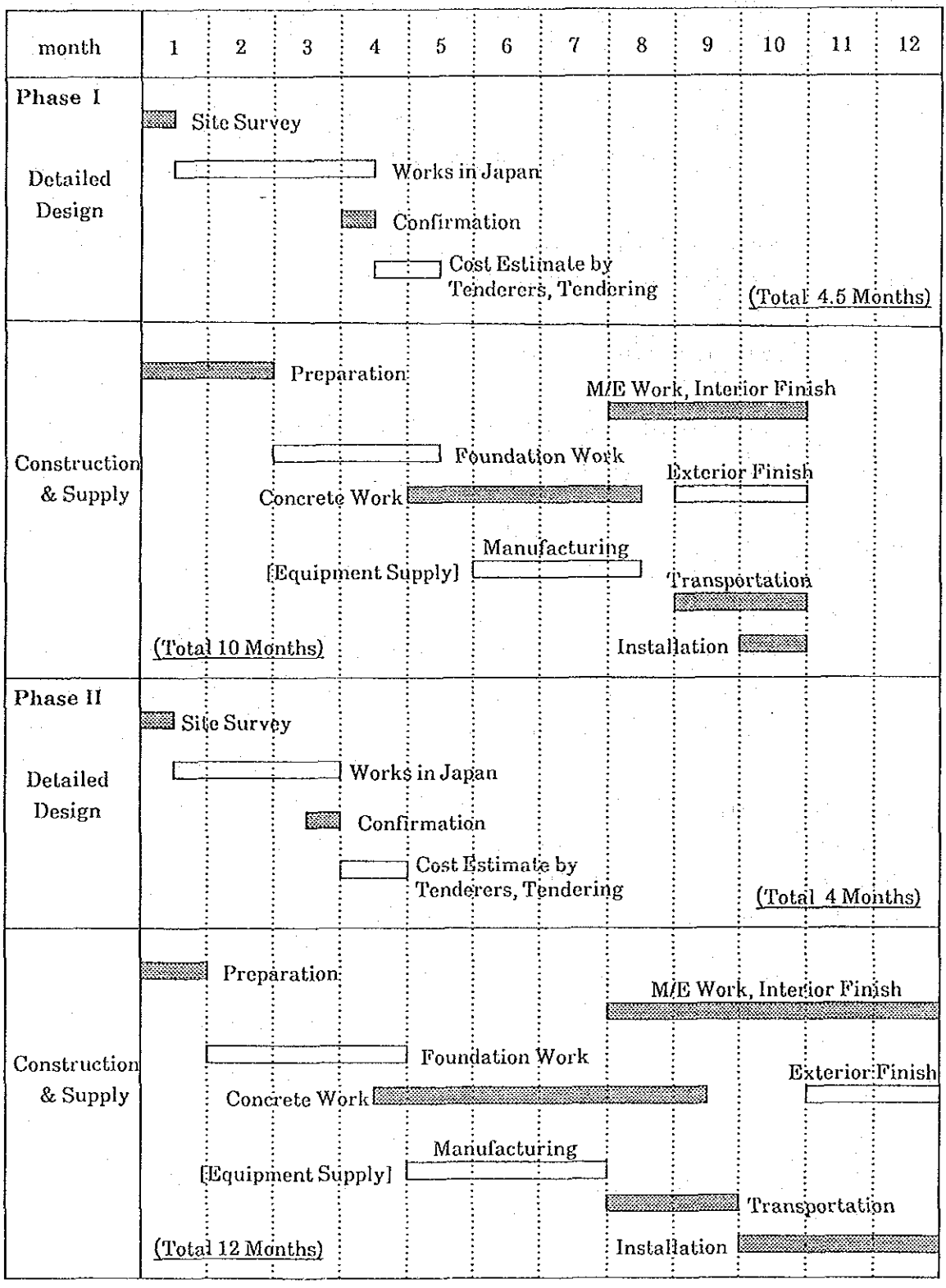
3) SPC

SPC will conduct to arrange for undertakings by the Vietnamese side and instruct necessary procedure to the related authorities as judging agency for the Grant aid by the Government of Japan. Also SPC will examine on imported materials and equipment list for construction of the project.

It is expected that the Steering Committee of MOET, the implementing agency of this project, will maintain smooth coordination with the above mentioned agencies so that all of the construction work may be completed within the scheduled period.

The project implementation schedule is shown on the following page.

Project Implementation Schedule



5-4-6 Estimated Project Cost

(1) Demarkation of Works

It is reasonable to divide the scope of the construction work for the Project between the two governments as follows:

Works to be done by the Japanese Government

1) Buildings
   - Common Use : Administration Bldg., Common Lecture Bldg., Covered Way, Outdoor Facilities
   - Laboratory : Laboratory Bldg. -1, 2, 3 (for Department of Agronomy, Animal Husbandry and Veterinary Medicine, Food Sciences and Technology)

2) Equipment
   - For Common Use
   - For the Department of Agronomy
   - For the Department of Animal Husbandry and Veterinary medicine
   - For the Department of Food Sciences and Technology
   - Others

Items to be done by the Vietnamese government

1) To remove existing buildings and trees in the site and clear, level and reclaim prior the commencement of the construction.
2) To carry out planting in the site.
3) To supply electricity, water and telephones to the site and drainage and sewage line from the site.
4) To supply Butane gas (LPG).
5) To provide general furniture such as carpets, curtains, tables, chairs, etc. and office equipment.
6) To bear commissions to the Japanese foreign exchange bank for the banking services based on the Banking Arrangement.
7) To ensure speedy unloading, tax exemption, customs clearance of the products under the Grant at the port of Ho Chi Minh City or Can Tho.
8) To exempt Japanese nationals involved in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in

Viet Nam with respect to the supply of the equipment/machines and the services under the verified contrats according to the existing Vietnamese regulations.

9) To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts such facilities as may be necessary for their entry into Viet Nam and stay therein for the performance of the their work for the Project.

10) To use and maintain properly and effectively the physical facilities and the equipment provided under the Grant.

11) To bear the necessary expenses, other than those to be covered by the Grant necessary for the execution of the Project.

12) To ensure the necessary budget and personnel for proper and effective operation and maintenance of the facilities and the equipment provided under the Grant.

(2) Estimated project costs for the works and related matters to be done by the Vietnamese government

		(VND)
1)	Clear, level and reclaim the site	50,000,000
2)	Removal of the existing buildings and tree	10,000,000
3)	Electricity supply to the site	70,000,000
4)	Telephone lines supply to the site	30,000,000
5)	Digging deep well	30,000,000
6)	Piping for well-water supply	80,000,000
7)	Supply of general furniture and office equipment	130,000,000
8)	Shift and re-installation of the existing laboratory equipment to the new building	500,000,000
9)	Planting	50,000,000
10)	Commissions for the banking agreement	E/N Amount×0.025%
11)	Customs clearance charge	40,000,000
	Total	990,000,000 +10)

CHAPTER 6 PROJECT EVALUATION AND CONCLUSION

CHAPTER 6. PROJECT EVALUATION AND CONCLUSIONS

6-1. Project Evaluation

These improvement plans are designed to expand the facilities and equipment in order to improve the educational environment of the Can Tho University Faculty of Agricultural Sciences which plays a central role in the development of agriculture sector in the Mekong Delta. The Ministry of Education and Training is making efforts toward the development of practical engineers. With this aim in mind, practical scientific education based on market principles is being implemented. Based on this, the following concrete results can be expected.

(1) Practical Development of Human Resources

In 1986, the Government of Viet Nam introduced a market economy through its *doi moi* policy and has since made steady reform efforts in all other areas as well. These measures first produced results in 1992 when the real GDP growth rate reached 8.3%. As the economy continues to make an upward climb, the Government is aiming to double the income level by the year 2000. Furthermore, the reopening of foreign assistance and private-sector investment has begun to spur economic activity. The conditions in Viet Nam continue to improve at an astonishing rate.

In light of these conditions, there is a need to produce a sufficient number of human resources every year to sustain economic growth. In particular, there is an urgent need to practically develop human resources in order to that they understand market principles and can absorb both theory and modern technology.

This plan will make it possible to achieve higher levels of technical education than in the past by improving the experimental facilities of the three faculties in the Faculty of Agricultural Sciences and introducing educational and research equipment and materials. The scale of the facilities will be set under the assumption that there are 48 new students in each of the three departments and in order to enable education to be provided to 144 regular students a year. In addition to the theoretical education provided until now, there is also expectation for the practical development of human resources

through experimental and practical study in an optimal educational environment.

(2) Promotion of New Agriculture in the Mekong Delta

The Mekong Delta has the largest number of granaries in Asia and great potential for development. The agriculture of this region experienced one temporary period of sluggishness, but due to efforts at agricultural policy reform following the introduction of *doi moi*, rice production has increased rapidly and reached a level at which it now supports the Vietnamese economy. As the agriculture sector becomes increasingly complex and diverse, there is expectation for new growth in the future.

Almost all of the students of the Faculty of Agricultural Sciences at Can Tho University are from this delta region and stay in the region after graduation, striving to promote growth in the agricultural sector. This Faculty maintains close relations with the delta region by actively conducting research on themes particular to the region, positively implementing practical education, spreading knowledge to farming villages and undertaking other projects.

There is great expectation that the students trained at these facilities intend not only to improve the productivity of the region, but also to contribute to the promotion of new agriculture by taking a scientific approach to integrating agriculture, animal husbandry and food technology.

(3) Promotion of Modernized Higher Education

Under the *doi moi* policy, the Ministry of Education and Training has made efforts to modernize education while making a number of reforms in the educational system. However, Viet Nam is in an extremely difficult situation both financially and in terms of human resources, forcing it to make requests for foreign assistance.

This plan is a serious attempt to expand the university, creating strong hopes from all sides for its success. The use of the laboratory facilities and educational equipment and materials provided by this plan and the implementation of the previously mentioned practical education could be seen as a test case for Viet Nam. The expectations for this plan extend beyond

improvement of the physical environment to include soft reforms such as the revision of syllabus, curriculum, textbooks and educational materials as well as the improvement of laboratory teaching methods and research guidance.

(4) Promotion of Agricultural Development in the Mekong River Region

Development plans for the Mekong River are necessary both in terms of assistance to the three Indochinese countries and the development of the greater Indochina region. The comprehensive development plans involving the use of this river are for the wide-spread development of the 120 million people living in the six countries where the river flows. The United Nations Mekong Committee for the lower Mekong basin and its mouth has its secretariat in Bangkok where it is striving to balance the interests of the countries through which the river flows. At the same time, the World Bank and Asian Development Bank (ADB) are implementing surveys for the promotion of their own plans. The Government of Japan is also making visible efforts at development through its Greater Mekong Development Plan.

Can Tho University is located in the fan-shaped region at the mouth of the Mekong River and plays a distinctive role in the development of its agriculture. In light of the Mekong Delta, the Faculty of Agricultural Sciences has conducted academic activities related to lowland and highland agriculture through the cooperation of non-governmental organizations (NGO) and the assistance of foreign countries and international organizations. This Faculty also stores materials and data obtained through a series of activities.

The activities to be carried out at the planned facilities are expected to play an important role in the future implementation of agricultural development in the river region. There is hope that through cooperation between international organizations and organizations in the surrounding countries which aim to develop this region, there will be growth beyond national borders in the areas of education, research and improvement.

While the implementation of this plan is expected to bring the above results, Viet Nam has also made requests for technical cooperation. In this regard, transfers of technology and experience from Japan are being sought. The Government of

Japan has already provided numerous facilities and implemented various types of cooperation in this area, achieving great results. Joint technical cooperation, third country training and assistance through a variety of other forms of technical cooperation involving these organizations are expected to further enhance the above results and produce new, greater results as well.

6-2. Appropriateness of the Project

The plans noted in Chapter 4 were compiled after consulting with Can Tho University on the content of the request from the Government of Viet Nam, implementing a study on the current facilities and conducting an analysis in Japan. In this sense, there are a variety of expectations for this plan.

(1) Financial Aspects

In terms of finance, although Viet Nam has experienced severe economic conditions in its past, it achieved a growth rate of 8.3% in 1992, reflecting an upward trend. The budget of the Ministry of Education and Training is increasing annually. In 1992, it reached an increase coefficient of 380 relative to 1989. The outlook for the future also shows a steady increase. In addition, the operating budget is also increasing with further improvement expected in the future.

Following the completion of these improvement plans, the budget for activities in the first year is estimated to reach 644 million dong/year. This is for improvement plans within the university and does not include expenses for current facilities, equipment, materials and personnel. It is exclusively for the cost of new equipment and materials and the personnel expenses for additional staff. If the current budget increases at the same rate, this amount can be sufficiently covered. It is viewed as valid by the Ministry of Education and Training and Can Tho University as well. Accordingly, it has been determined that there will be no obstacles to securing the budget for activities related to the implementation of this plan.

(2) Maintenance and Supervision

The maintenance and supervision of facilities is currently conducted by the upkeep crew of the university. For matters outside daily inspections and simple repairs, a construction company jointly managed by the university implements the necessary construction with funds provided through the facilities repair budget. The maintenance and supervision of facilities and electrical equipment is covered in the same way, but for major repairs, there is a need to commission specialists from T. P. Ho Chi Minh.

The facilities plan will be designed with an emphasis on the simplicity and durability of facilities and equipment in order to eliminate the need for major repairs over a long period if daily inspections are properly carried out.

In terms of equipment and materials, maintenance units will be organized, necessary tools for upkeep and repairs will be provided and an appropriate amount of consumables and replacement parts will be determined during planning stages. In terms of selecting equipment and materials, plans will be formulated so that advanced analyzers and complex equipment and materials will be cut from the request list and that maintenance and supervision after the transfer can be easily conducted.

The maintenance and supervision of these facilities will be implemented at standards set according to this plan and are therefore not expected to cause any complications.

(3) Management Structure

Currently, the departments are independently organized and not assembled under the Division of Agriculture. The management structure of the entire Can Tho University is being reorganized. Before the beginning of this project, the Faculty of Agriculture Sciences will be created and the dean will be elected. Currently, there is a sufficient staff in each of the three departments, presenting no problems in terms of management.

On the other hand, there are few instructors with masters degrees or better (13 in the Dept. of Agronomy, 7 in the Dept. of Animal Husbandry and Veterinary Medicine and 4 in the Dept. of Food Technology including those

currently studying abroad). Until there are large-scale improvements in this regard, there can be no expectations for improvement in the quality of education. This situation is thought to be improving through efforts by Can Tho University to establish a masters course this year (to enable students to obtain masters degrees on campus) and to establish policies for the dispatch and reception of study abroad students. As a result of investigations of Can Tho University's plans for an increase in students, the scale of facilities will be set to accommodate 48 new students per year for three departments. This is thought to be an appropriate figure in consideration of the increase in instructors.

Accordingly, while there is a need for improvement measures in terms of the level of academic standing among instructors, there is expected to be no problems in terms of the management of facilities.

6-3. Conclusions

The practical development of human resources, which are strong both in terms of theory and technology and which can respond to the changes in social demands for university education in light of the introduction of a market economy, will play an extremely effective role in connection with the efforts of the Government of Viet Nam to resolve pressing issues related to educational policy. The supply of such human resources, provision of specialist technology and theory for regional communities, and contribution to industrial development are stated as aims of Can Tho University in the charter for its establishment and reflect the continued requests of the regional communities.

These improvement plans are designed not merely for an increase in facilities, but also for improvement in the quality of higher education aimed at developing human resources which will provide for Viet Nam in the future. In the long term, these plans are expected to play an extremely large role in the promotion of sustainable economic development and the maintenance of public welfare.

These plans give consideration to the practical development of human resources which meet the social demands of Viet Nam and aim to contribute to the economic development of the Government of Viet Nam. Therefore, the implementation of grant aid from the Government of Japan is determined to be appropriate.

Furthermore, there is expected to be no difficulty in securing the personnel and funds necessary for the operation and supervision systems of this plan. However, if improvements and provisions are made for the following points, these plans can probably be implemented smoothly and effectively.

6-4. Recommendations

(1) Training and Employment of Instructors

There is an urgent need to build a teaching staff capable of meeting the demands for the practical development of human resources. The shortage of regular instructors is an important matter directly influencing the content and quality of education. As mentioned above, a masters degree course will be established at Can Tho University. Through these plans, efforts will be made to enable students to obtain masters degrees within the university. Furthermore, opportunities will open for the exchange of students within the country and overseas. In response, it would be desirable if the Government of Japan, in cooperation with the Government of Viet Nam, took measures to receive students from Viet Nam and provided a system for funding third country research.

There are many instructors holding only bachelors degrees. While the training methods are solid, at least two years is necessary to obtain a higher degree through study abroad. Furthermore, study abroad also requires language proficiency, extending this period further. The completion of these plans will create an enhanced educational atmosphere, making it desirable to increase the number of new instructors who holds higher degree.

(2) Operating Budget

The operating budget allotted to Can Tho University from the central government provides for only about half of the actual needed expenses. For this reason, the university must make ends meet through the income it generates itself. The economy of Viet Nam is showing upward growth. As the national budget expands, the money allotted to each university for its operating budget is also likely to increase. However, if economic activity increases, the activities of each faculty of the university is also likely to

increase, making it desirable for the scale of the operating budget to meet this growth.

The increase in operating expenses accompanying the implementation of these plans is not large with respect to the scale of the entire university. Rather, it is the minimum necessary budget for obtaining sure results from operations. Research expenses are exerting increased pressure on the budget. These expenses, however, are used to promote projects which form an important base for higher education, making it desirable to provide for an operating budget that covers the necessary expenses.

(3) Organization of the University Structure

Can Tho University conducts a wide range of activities and has faculties established for each of these. However, the university has 13 faculties which are each small in scope, making it necessary to organize a system of academic divisions.

These plans provide for the selection of a the dean and organization of new Faculty of Agricultural Sciences to coordinate the five existing faculties. It is desirable that faculty systems be set up for other existing faculties as well, that related laboratories and research centers be linked according to function, and that a rational organizational structure be implemented.

(4) Promotion of Academic and Research Activities

In addition to activities related to education and extension, Can Tho University is also involved in research activities. The use of these facilities is expected to further increase these activities. To promote this, it is desirable that joint research and the exchange of information with other universities are positively implemented, seminars by each instructor are actively conducted, exchanges with universities inside and outside of Viet Nam are deepened and a wide range of know-how and technology are mutually exchanged.

(5) Suggestions for Maintenance and Supervision

In order to effectively manage these facilities, there is a need to select engineers from Viet Nam who can maintain, supervise and repair all of the facilities and equipment. It is desirable that these engineers can participate from the equipment installation stage and that OJT help provide a system for enabling them to grasp the functions and features of the equipment.

Furthermore, for equipment that requires an extensive period of study to understand the operation, maintenance and inspection, there is a need to consider the implementation of training in Japan.

(6) Measures and Work to be Implemented by Vietnamese Side

In order to smoothly implement these plans, it is desirable that bidding, contract, banking arrangement, customs clearance and other procedures be taken care of punctually. It is important that time not be wasted in the handling of requests and procurement procedures related to technical cooperation or procedures necessary for the dispatch of trainees.

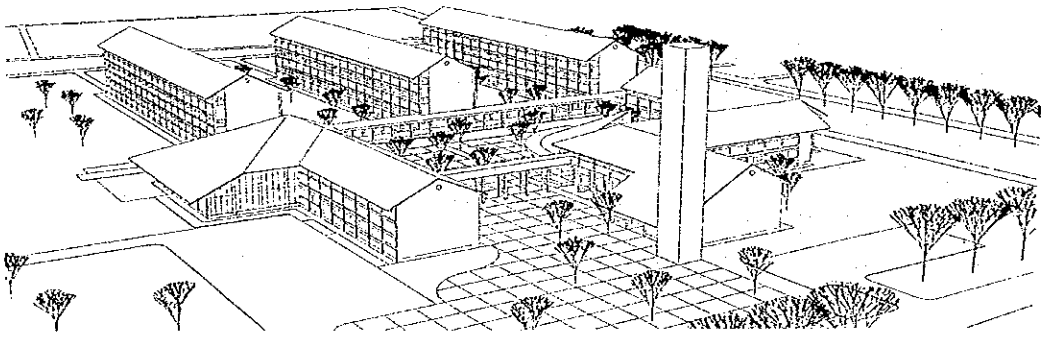
In terms of construction, there is a need to reroute of power line at the construction site before the building up and leveling of the ground. Following the completion of construction, it is desirable that the transfer of current equipment and materials, the purchase of general furniture, the construction of the bonsai nursery and other activities are finished within the scheduled period for the overall plans.

(7) Implementation of Technical Cooperation

The purpose of these improvement plans is to strengthen the functions of the Faculty of Agricultural Sciences of Can Tho University, the core education and research facility in the Mekong Delta. Almost all of the students that enter the university are from the Mekong Delta area and after graduation remain there working for the development of the agricultural sector. In this plan, the physical groundwork for an educational environment is created through the improvement of facilities and equipment, making practical technical education possible.

In addition, a reform of teaching methods is also important in the promotion of modern technical education. There is a need to modernize all forms of educational techniques ranging from the reevaluation of syllabus, curriculum, texts, and other teaching materials to guidance in experimental and training methods and graduate research. Individual efforts by those in all positions of responsibility will be indispensable to this reform and technical transfer from outside will greatly increase the efficiency of this reform.

In an effort to make effective use of the facilities for this plan and maximize the results of assistance, it is desirable that technical cooperation under the individual or project-type also be provided by sending experts from Japan to Viet Nam.



APPENDIX

1. Member of the Study Team
2. Interviewed Persons
3. Minutes of Discussions
4. Equipment Lists
5. Conditions of the Project Site

1. Member of the Study Team

1-1. The Basic Design Study Team
(July 22 ~ August 14, 1993)

1-2. The Draft Final Report Explanation Team
(November 8 ~ November 17 , 1993)

1. Member of the Study Team

1-1. The Basic Design Study Team (July 22~August 14, 1993)

Team Leader	Mr. Yoshikatsu NAKAMURA Director First Basic Design Study Division Grant Aid Study and Design Department Japan International Cooperation Agency
Sub Leader / University Education Planner	Dr. Kazuhiko KURATA Senior Specialist for Textbook Division Official Textbook Division Elementary and Secondary Education Bureau Ministry of Education
Project Coordinator	Mr. Yuto HARA Staff First Basic Design Study Division Grant Aid Study and Design Department Japan International Cooperation Agency
Chief Consultant / Architecture Planner	Mr. Osamu MATSUMURA Kume Sekkei Co., Ltd.
Facilities Planner 1 / Architecture Designer	Mr. Tetsuro NISHIMURA Kume Sekkei Co., Ltd.
Facilities Planner 2 / Mechanical and Electrical Design Planner	Mr. Yoshizo OMAE Kume Sekkei Co., Ltd.
Equipment Planner	Mr. Sakae TAMURA Kume Sekkei Co., Ltd.
Interpreter	Mr. Isamu TATSUHARA Kume Sekkei Co., Ltd.

1-2. The Draft Final Report Explanation Team of the Basic Design Study (November 8~November 17, 1993)

Team Leader	Mr. Akira CHIBA Assistant Director Grant Aid Division Economic Cooperation Bureau Ministry of Foreign Affairs
Sub Leader / University Education Planner	Dr. Kazuhiko KURATA Senior Specialist for Textbook Examination Official Textbook Division Elementary and Secondary Education Bureau Ministry of Education
Chief Consultant / Architecture Planner	Mr. Osamu MATSUMURA Kume Sekkei Co., Ltd.
Equipment Planner	Mr. Sakae TAMURA Kume Sekkei Co., Ltd.
Interpreter	Mr. Kazunori KATO Kume Sekkei Co., Ltd.

2. Interviewed Persons

2. Interviewed Persons

Concerned Persons on the Viet Nam Side

☐ State Planning Committee (SPC)

Dr. Duong Duc Ung	Director General Foreign Economic Relations Dept.
Mr. Bui Liem	Specialist Foreign Economic Relations Dept.
Dr. Phan Quang Trung	General Director Science and Education Dept.
Mr. Pham Kim Cung	Deputy Director Science and Education Dept.

☐ Ministry of Education and Training (MOET)

Dr. Pham Minh Hac	First Vice Minister
Dr. Tran Chi Dao	Vice Minister
Mr.Tran Xuan Nhi	Vice Minister
Dr. Tran Van Nhung	Director International Cooperation Dept.
Dr. Bui Cong Tho	Vice Director International Cooperation Dept.
Ms. Nguyen Thi Ngoc	Expert International Cooperation Dept.
Ms. Nguyen Duc Chinh	Expert International Cooperation Dept.
Mr. Nguyen Quang Kinh	Director Planning and Finance Dept.
Dr. Nguyen Huy Than	Senior Expert Planning and Finance Dept.
Mr. Nguyen Ba Can	Expert Planning and Finance Dept.
Dr.Le Viet Khuyen	Vice Director Higher Education Dept.

☐ Institute for Research and Design of Schools (IRDS)

Dr. Hoang Huy Thang	Director
Dr. Binh Thanh Tran	Vice Director
Dr. Pham Chi Dai	Vice Director
Mr. Le Thai Tuyen	Chairman Research Dept.

☐ Can Tho University (CU)

Dr. Tran Phuoc Dong	Rector, Professor of Microbiology
Mr. Le The Dong	Vice Rector
Dr. Tran Thuong Tuan	Vice Rector (Research and Academic Affairs) Dean, Faculty of Agronomy
Dr. Vo-Tong Xuan	Vice Rector, Professor of Agronomy
Mr. Duong Thanh Long	Director Rectorate Office
Mr. Son Phuoc Hoan	Head Administration Dept.
Mr. Vo Trong Tri	Officer HCM City Liason Office
Mr. Truong Chi Hai	Head Building and Ground Service Dept.
Mr. Le Trung Hieu	Vice Head Building and Ground Service Dept.
Mr. Nguyen Van Hieu	Staff Building and Ground Service Dept.
Mr. Nguyen Anh Minh	Staff Building and Ground Service Dept.
Ms. Bui Dinh Chau	Interpreter

1) Faculty of Agronomy

Dr. Pham Van Kim	Deputy Dean Head, Plant Protection Dept.

Mr. Tran Van Hoa	Head Plant Physiology Dept.
Ms. Vo Thi Guong	Head Soil Science Dept.
Dr. Le Thi Kinh	Head Plant Genetics & Breeding Dept.
Mr. Duong Minh	Head Crop Science Dept.

2) Faculty of Animal Husbandry and Vet. Medicine

Dr. Trinh Huu Phuoc	Deputy Dean
Ms. Huynh Kim Dieu	Head Animal Pathology Dept.
Mr. Tran Thi Phan	Head Infectious and Prastic Disease Dept.
Dr. Luu Huu Manh	Head General Zootechnology Dept.
Dr. Vo Van Son	Lecturer General Zootechnology Dept.
Mr. Bui Hong Van	Lecturer Special Zootechnology Dept.

3) Faculty of Food Science and Technology

Mr. Bui Huu Thuan	Dean
Mr. Vu Truong Son	Head Food Technology Dept.
Mr. Vo Tan Thanh	Vice Head Food Technology Dept.
Mr. Le Phat Tan	Head Food Engineering Dept.

☐ Can Tho Construction Services (C. C. S.)

Mr. Dang Thanh Tung	Vice Director Can Tho Construction Services
Mr. Ha Thanh	Head Engineering Dept.

☐ University of Agriculture and Forestry, Ho Chi Minh City

Prof. Doan Van Dien	Rector
Prof. Trinh Xuan Vu	Vice President
	Head
	Plant Phisiology and Biochemistry Dept.
Ph. D. Bui Cach Tuyen	Deputy Head
	Science and Technology Office
	Vice Chairman
	Plant Protection Dept.

☐ Hanoi Agricultural University

Prof. Cu Xuan Dan	Rector
Dr. Nguyen Viet Tung	Vice Rector
Dr. Ha Quang Hung	Head
	International Cooperation Section
	Head
	Entomology Dept.

Concerned Persons on the Japanese Side

☐ Embassy of Japan

Mr. Kiyoshi KOINUMA	Councellor
Mr. Hiroshi OKUDAIRA	Second Secretary
Mr. Takahiro SASAKI	Second Secretary
Ms. Yuuko OGAWA	Administration Staff

3. Minutes of Discussions

3-1. The Basic Design Study (August 2, 1993 signed)

3-2. The Draft Final Report of the Basic Design Study (November 11, 1993, signed)

MINUTES OF DISCUSSIONS

BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE DIVISION OF AGRICULTURAL SCIENCES, CAN THO UNIVERSITY IN THE SOCIALIST REPUBLIC OF VIET NAM

Based on the results of the Preliminary Study, the Japan International Cooperation Agency (JICA) decided to conduct a Basic Design Study on the Project for Improvement of the Division of Agricultural Sciences, Can Tho University (hereinafter referred to as "the Project").

JICA sent to the Socialist Republic of Viet Nam a study team, which is headed by Mr. Yoshikatsu NAKAMURA, Director, 1st Basic Design and Study Division, Grant Aid Study and Design Department, JICA, and is scheduled to stay in the country from July 22nd to August 14th, 1993.

The team held discussions with the officials concerned of the Government of Viet Nam and conducted a field survey at the study area.

In the course of discussions and the field survey, both parties have confirmed the main items described on the attached sheets and will submit to the national level. The team will proceed to further works and prepare the Basic Design Study Report.

Hanoi, August 2, 1993

Mr. Yoshikatsu NAKAMURA
Leader,
Basic Design Study Team
JICA, Japan

Prof. Dr. Tran Van Nhung
Director,
International Cooperation Department
Ministry of Education and Training
The Socialist Republic of Viet Nam

ATTACHMENT

1. Objectives

The objectives of the Project is to construct the school buildings of the Division of Agricultural Sciences, Can Tho University and to provide educational equipment, thus contributing to enhance the agricultural development and increase foodstuff production with new agricultural leaders and new agricultural technology.

2. Project Site

The project site is located in Can Tho University.
(The Project site map is attached as ANNEX-I)

3. Executing Agency

The Ministry of Education and Training is responsible for execution and administration of the Project, and major items related to the implementation of the Project are consulted and decided in the Steering Committee as attached in ANNEX-II.

4. Items requested by the Vietnamese Side

After discussions between the Basic Design Study Team and the Vietnamese side, the items listed in the ANNEX-III are finally requested by the Vietnamese side. However, the final components of the Project will be decided after further studies in Japan.

5. Japan's Grant Aid System

(1) The Vietnamese side has understood the system of Japan's Grant Aid explained by the Team.

(2) The Vietnamese side will take necessary measures described in ANNEX-IV for smooth implementation of the Project on the condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Other Relevant Issues

The Vietnamese side confirms the following matters for smooth implementation of the Project.

(1) The Vietnamese side will allocate the necessary budget to meet the cost of agreed works and services listed in ANNEX-IV.

(2) The Vietnamese side will allocate the necessary budget for the operation and maintenance of the facilities and equipment provided under the Project.

(3) The Ministry of Education and Training will assign the necessary personnel for the facilities and equipment provided by the Project.

7. Technical Cooperation

(1) The Team recommended the Vietnamese side to have Japan's technical cooperation for the effective utilization of the facilities and equipment provided by the Project.

(2) The Team has also explained Japan's technical cooperation scheme and that the Vietnamese side would need to submit a separate proposal through the diplomatic channel.

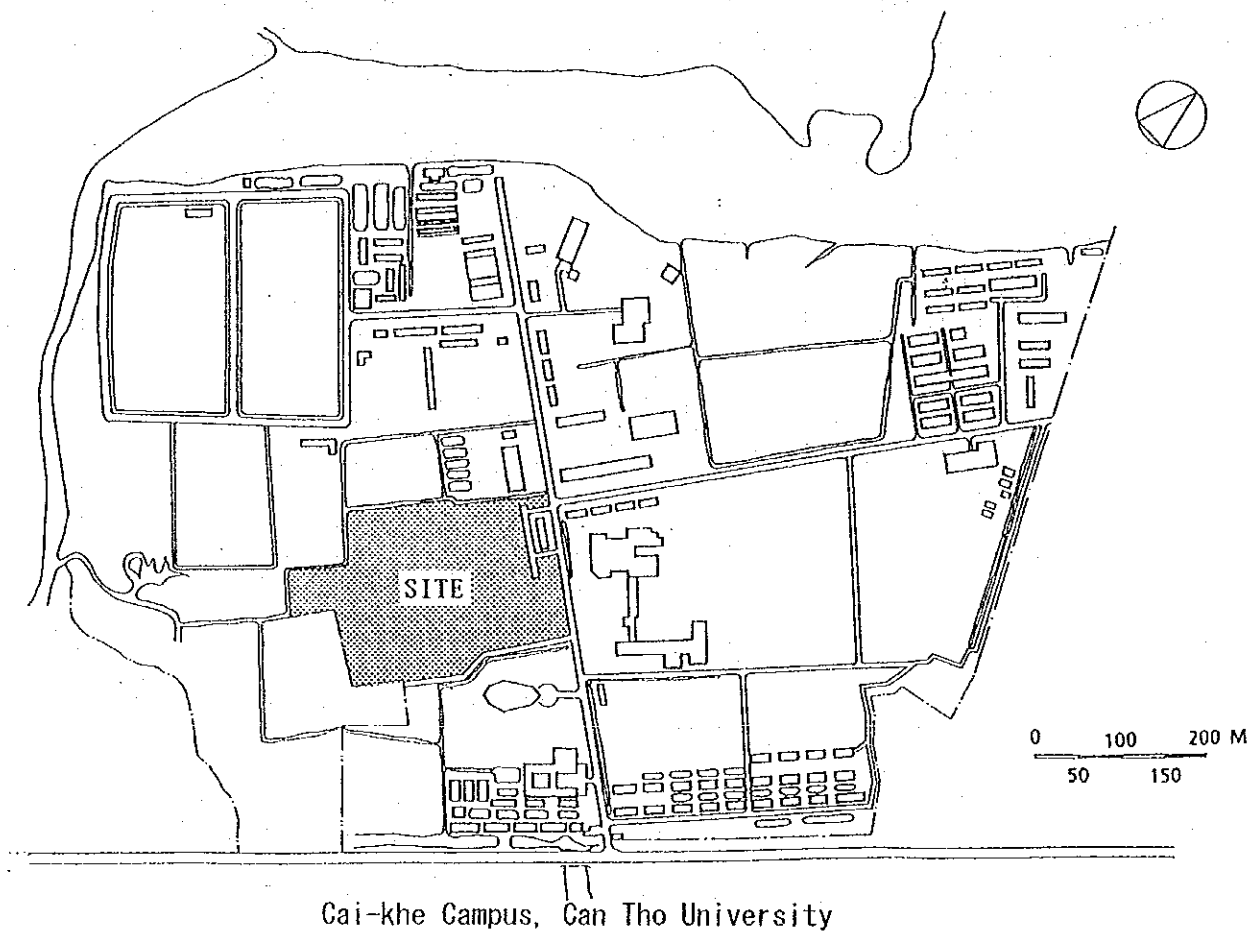
8. Tentative Schedule of the Study

(1) The Basic Design Study Team will proceed to further studies in Viet Nam until August 14, 1993.

(2) JICA will prepare a draft final report of the study and dispatch a mission in order to explain its contents in November, 1993.

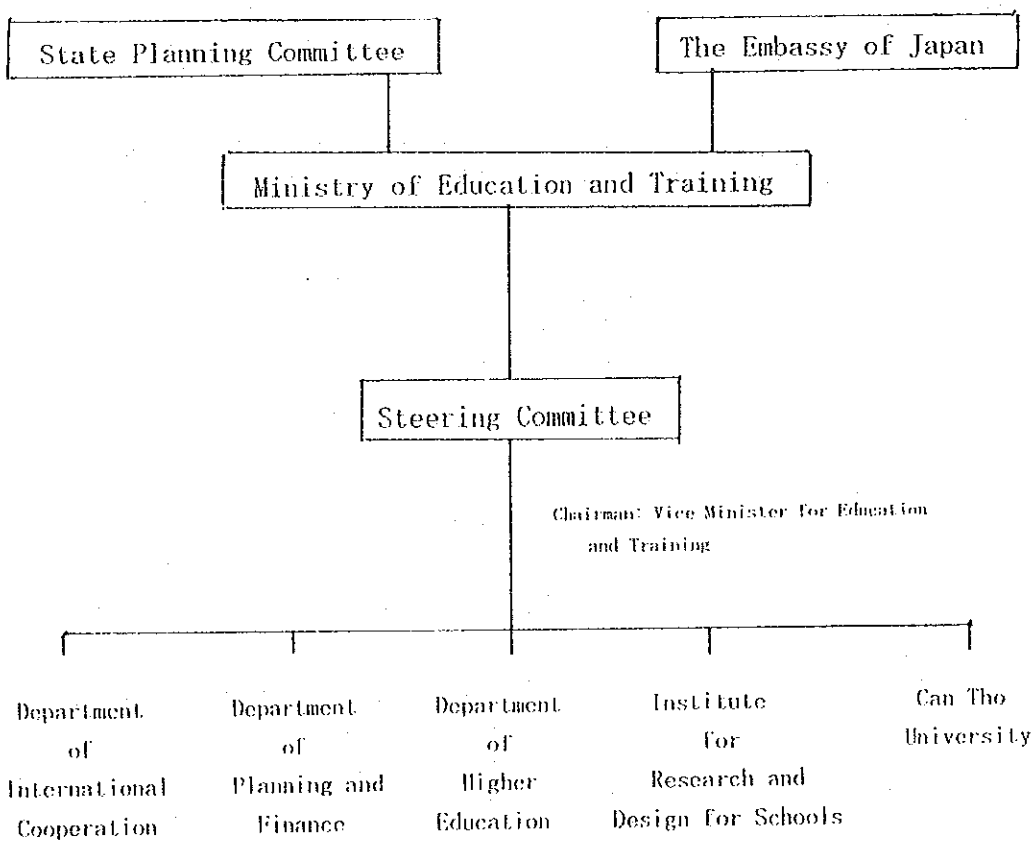
(3) Based on the Minutes of Discussions and technical examination of the study results, JICA will complete a final report and send it to the Vietnamese side by the beginning of January, 1994.

ANNEX-I PROJECT SITE MAP



ANNEX-II ORGANIZATION CHART OF THE PROJECT STEERING COMMITTEE

ORGANIZATION OF STEERING COMMITTEE
FOR
THE PROJECT FOR IMPROVEMENT OF
THE DIVISION OF AGRICULTURAL SCIENCES, CAN THO UNIVERSITY



ANNEX-III ITEMS REQUESTED BY THE VIETNAMESE SIDE

1. COMMON FACILITIES

(1) Facilities

1) Lecture Room Block

2) Library Block

3) Administration Block

(2) Equipment

1) Educational Equipment for Common Facilities

2. FACILITIES FOR AGRICULTURAL FACULTIES

(1) Facilities

1) Faculty of Agronomy

2) Faculty of Animal Husbandry and Veterinary Medicine

3) Faculty of Food Science and Technology

(2) Equipment

1) Educational Equipment

2) Research Equipment

ANNEX-IV UNDERTAKINGS BY THE VIETNAMESE SIDE

1. To provide necessary data and information for the Project.

2. To secure the land necessary for the construction of the Project facilities and clear, level and reclaim the site prior to the commencement of the Project.

3. To provide the following and other incidential facilities to the Project site prior to the commencement of works:

1) Electricity distribution line to the site
2) Water supply line to the site
3) Drainage and sewage line from the site
4) Telephone trunk line to the main distribution panel to be installed in the building
5) General furniture such as carpets, curtains, tables, chairs, etc. and office equipment

4. To ensure speedy unloading, tax exemption, customs clearance of the products under the Grant at the port of Ho Chi Minh city or Can Tho.

5. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts such facilities as may be necessary for their entry into Viet Nam and stay therein for the performance of the their work for the Project.

6. To exempt Janapese nationals involved in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Viet Nam with respect to the supply of the equipment/machines and the services under the verified contracts according to the existing Vietnamese regulations.

7. To bear commissions to the Japanese foreign exchange bank for the banking services based on the Banking Arrangement. The Ministry of Education and Training will report these commissions to the Vietnamese Government to make a decision.

8. To bear the necessary expenses, other than those to be covered by the Grant necessary for the execution of the Project.

9. To use and maintain properly and effectively the physical facilities and the equipment provided under the Grant.

MINUTE OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY ON THE PROJECT
FOR
IMPROVEMENT OF THE DIVISION OF AGRICULTURAL SCIENCES, CAN THO UNIVERSITY
IN
THE SOCIALIST REPUBLIC OF VIET NAM
(CONSULTATION OF DRAFT REPORT)

In July 1993, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the Project for Improvement of the Division of Agricultural Sciences, Can Tho University (hereinafter referred to as "the Project") to Viet Nam. Based on discussions, field survey, and technical examination, JICA has prepared the draft report of the study.

In order to explain and to consult the Government of Viet Nam on the components of the draft report, JICA sent to Viet Nam a study team, headed by Mr. Akira Chiba, Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, from November 9 to 15, 1993.

In the course of discussions, both parties confirmed the items described in the Attachment.

Hanoi, November 11, 1993

Mr. Akira Chiba
Leader,
Draft Report Explanation
Team JICA

Prof. Dr. Tran Van Nhung
Director,
International Cooperation Department
Ministry of Education and Training
The Socialist Republic of Viet Nam

ATTACHMENT

1. Components of the Draft Report

The Vietnamese side has in principle agreed to the components of the Draft Report proposed by the Team.

2. Japan's Grant Aid system

(1) The Vietnamese side has understood the system of Japanese Grant Aid explained by the Team.

(2) The Vietnamese side will take the necessary measures, described in Annex I for smooth implementation of the Project, on the condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

3. Further Schedule

The Team will make the Final Report in accordance with the confirmed items, and submit it to the Government of Viet Nam by the beginning of January, 1994.

A.C.

ANNEX I UNDERTAKINGS BY THE VIETNAMESE SIDE

1. To provide necessary data and information for the Project.

2. To secure the land necessary for the construction of the Project facilities and clear, level and reclaim the site prior to the commencement of the Project.

3. To provide the following and other incidental facilities to the Project site prior to the commencement of works:

1) Electricity distribution line to the site

2) Water supply line to the site

3) Drainage and sewage line from the site

4) Telephone trunk line to the main distribution panel to be installed in the building

5) General furniture such as carpets, curtains, tables, chairs, etc. and office equipment

4. To ensure speedy unloading, tax exemption, customs clearance of the products under the Grant at the port of Ho Chi Minh city or Can Tho.

5. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts such facilities as may be necessary for their entry into Viet Nam and stay therein for the performance of their works for the Project.

6. To exempt Japanese nationals involved in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Viet Nam with respect to the supply of the equipment/machines and the services under the verified contracts according to the existing Vietnamese regulations.

7. To bear commissions to the Japanese foreign exchange bank for the banking services based on the Banking Arrangement. The Ministry of Education and Training will report these commissions to the Vietnamese Government to make a decision.

8. To bear the necessary expenses, other than those to be covered by the Grant necessary for the execution of the Project.

9. To use and maintain properly and effectively the physical facilities and the equipment provided under the Grant.

A. C.

4. Equipment List

4-1. Equipment Utility List

4-2. Existing Equipment List
(to be shifted new buildings)

CAN THO UNIVERSITY
PROJECT FOR IMPROVEMENT OF THE DIVISION OF AGRICULTURAL SCIENCES

EQUIPMENT UTILITY LIST

● means Equipment for Phase-I

ITEM		EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
				1φ 220V	3φ 380V							
		1. COMMON EQUIPMENT FOR EDUCATION AND TRAINING										
1.1		Service Wagon	1								2,960	1,830×4,780×1,910
1.2	●	Minubus	1								5,670	2,025×6,990×2,600
1.3	●	Printing System										
.1		Typewriter	1	0.08								544×500×179.5
.2		Process Camera	1	2.9		●					150	1,770×800×1,330
.3		Plate Maker	1	1.3		●					230	1,823×1,290×1,100
.4		Offset Printing Machine	1	1.1		●					510	1,840×1,030×1,340
.5		Paper Folding Machine	1		1.1	●					375	2,220×670×1,220
.6		Wire Stitching Maching	1	0.2							145	830×650×1,560
.7		Stencil Cutter	1	0.06							29	835×395×190
.8		Stencil Duplicator	1	0.06							37	350×478×390
1.4	●	Camera	1								0.37	136.8×73×61.3
1.5	●	Video Projection and Public Address System										
.1		Video Cassette Player	1	0.02							6.1	430×360×100
.2		Color Video Monitor	1	0.09							16.5	365×420×320
.3		Video Projector	1	0.21							30.0	530×600×290 (700×700×685)
.4		VP Remote Control Unit	1								2.5	430×235×50
.5		Audio Mixer	1	0.02							8.0	425×360×130
.6		Power Amplifier	1	0.3							20.5	480×380×105
.7		Floor Type Microphone	2								0.5	900×1,200~1,600H
.8		Desk-top Type Microphone	2								0.5	150φ×220~390H
.9		Wireless Microphone	2								0.3	48φ×238
.10		Tuner with Antenna	1	0.02							5.1	482×300×44
.11		Speaker	1								12.0	420×230×260
.12		Screen	1								26.0	2,700×1,900
.13		Console	1								55.0	500×610×665
.14		Console	1								40.0	550×460×1,040
1.6	●	Water Distillation Apparatus	1		6.0	●	20	50			25	330×430×770
1.7		Workship Tools										

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W × L × H mm)
			1φ 220V	3φ 380V							
.1	Current Calibrator	1	0.2							14.5	463 × 192 × 495
.2	Electronic Tool Kit (15. Soldering Iron)	1	0.06							1.8	430 × 315 × 80
.3	Refrigeration Tool Kit	1								2.5	505 × 250 × 110
.4	Multi Tester	1								0.2	130 × 80 × 20
.5	Tachometer	1								0.11	53 × 23 × 123
.6	Clamp Meter	1								0.43	85 × 200 × 35
.7	Oscilloscope	1	0.09							7.5	330 × 132 × 365
.8	IC Tester	1	0.01							1.8	230 × 170 × 150
.9	Soldering Desoldering Station	1	0.17								
.10	Hygrothermometer	1								0.2	60 × 170 × 40
.11	Glass Blowing Kit (13. Trim Saw)	1								0.1	350 × 200 × 70
.12	Electrician's Tool Kit (5. Soldering Iron)	1	0.06								535 × 215 × 185
.13	Mechanic Tool Kit	1								75	680 × 340 × 380
.14	Microscope Tool Kit	1									250 × 200 × 150
.15	Carpenter's Tool kit										360 × 150 × 100
.16	Tool Tray	5								1.8	415 × 250 × 90
.17	Tool Stand	1								23	660 × 330 × 923
.18	Tool Cabinet	1									880 × 450 × 1,790
1.8 •	Standby Generator										
	(1) Model A	1								40	490 × 380 × 480
	(2) Model B	1								65	620 × 410 × 540

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER	DRAIN	GAS	EXHAUST	WEIGHT	INSTALLATION
			1φ 220V	3φ 380V		φmm	φmm	φmm	φmm	kgs	Required (W×L×H mm)
	2. EQUIPMENT FOR FACULTY OF AGRONOMY										
	2.1 EQUIPMENT FOR DEPARTMENT OF										
	PLANT PHYSIOLOGY										
2.1.1	Equipment for Practical Teaching Laboratory										
.1	Incubator	1	0.14	0						52	745×665×890
.2	Microscope	20	0.02							7	300×350×400
.3	Illuminated Magnifier	2	0.1							4	2,450×300×350
.4	Autoclave	1	2.0	0		20	50			45	670×420×960
.5	Dissecting Set	5								0.8	200×150×50
.6	pH Meter	1	0.004							3.1	235×240×120
.7	Warburg Manometric Apparatus	1	0.55							68	610×610×1,000
.8	Spectrophotometer	1	0.1							7.7	415×338×210
.9	Low Temperature and Humidity Test Chamber	1		3.31	●					265	1,000×935×1,500
.10	Glassware	1									
2.1.2	Equipment for Tissue Culture Laboratory										
.1	Universal Shaker	1	0.2		●					48	410×535×500
.2	Clean Bend	1	0.3		●			20		145	840×900×1,710
2.1.3	Equipment for Horticultural Research Laboratory										
.1	Chlorophyl Meter	1								1	215×48×32
.2	Horticultural Lux Meter	2								2	155×97×57
.3	Chromatography Chamber	1	0.5							190	1,200×800×1,905
.4	Microscope	1	0.05							5	300×400×450
.5	Metabolic Manometer	1								0.25	275H
.6	Plant Respiration Manometer	1								3.8	365×185×650
.7	Green Leaf Area Meter	1	0.1							25	400×350×460
.8	Rotary Evaporator	1	1.3							12	600×450×600
.9	Photosynthesis Measuring Apparatus	1	0.1							1.5	250×200×230
.10	Water Bath	1	1.4		●					17	490×330×480
.11	Oven	1	1.5		●					54	595×565×790
.12	Paper Electrophoresis Apparatus	1	1.0							13.5	
2.1.4	Equipment for Precision Instrument Laboratory										

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
.1	Overhead Projector	1	0.27							12	270×385×556
.2	Slide Projector	1	0.15							10	330×325×366
.3	Relative Light Intensity Meter	1								5	180×70×20
.4	Balance										
	(1) Model A	1	0.01							11	220×400×320
	(2) Model B	1	0.01							5	208×325×90
	2.2 EQUIPMENT FOR DEPARTMENT OF										
	GENETICS AND BREEDING										
2.2.1	Equipment for Practical Teaching Laboratory										
.1	Microscope	20								4	245×300×350
.2	Substage Lamp	10	0.01							0.3	80×50×35
.3	Glassware	1									
2.2.2	Equipment for Electrophoresis Laboratory										
.1	Balance	1	0.01							11	220×400×320
.2	Freezer	1	0.12							43	660×640×885
.3	UV Lamp	1	0.15							2.69	475×116×85
.4	Magnetic Agitator	1	0.3							2.4	230×272×75
.5	pH Meter	1								0.35	
.6	Ice Making Machine	1	1.5							55	400×446×770
.7	Electrophoresis Apparatus										
	(1) Slab Gel Electrophoresis Apparatus	1	1.2							14.0	260×280×400
	(2) Long Slab Electrophoresis Apparatus	1	1.0							7.0	300×250×500
	(3) Starch Gel Electrophoresis Apparatus	1	1.0							7.5	200×320×300
	(4) Power Supplier for Electrophoresis	1	1.0							13.5	200×320×270
.8	Pharmaceutical Refrigerator	1	0.2							90	800×450×1,800
.9	Glassware	1									
.10	Chemicals	1									
2.2.3	Equipment for Specimen Preparation Room										
.1	Glassware	1									
2.2.4	Equipment for Genetics of Cells Laboratory										
.1	Model										

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W x L x H mm)
			1φ 220V	3φ 380V							
	(1) Mitotic Cell Division Model	1								0.86	450 x 95 x 180
	(2) Reduction Division Model	1								1.2	590 x 90 x 85
	(3) Pollination Model	1								0.7	150 x 100 x 300
	(4) Cleavage Sequence Model	1								2.8	455 x 205 x 265
.2	Balloon Catheter Kit	2								0.5	650 x 50 x 30
.3	Culture Dish	5									150 x 60
2.2.5	Equipment for Seed Analysis Laboratory No. 1										
.1	Drying Oven	1	4.5							200	1,400 x 800 x 1,700
.2	Crossing Instruments Set	5								0.8	200 x 150 x 30
.3	Glassware	1									
2.2.6	Equipment for Seed Storage Room										
.1	Hygro-Thermograph	1								3.6	325 x 145 x 290
.2	Polyethylene Bottle	1									
2.2.7	Equipment for Seed Analysis Laboratory No. 2										
.1	Balance	1								5.5	208 x 325 x 90
.2	Soybean Moisture Tester	1								0.8	110 x 155 x 175
	2.3 EQUIPMENT FOR DEPARTMENT OF										
	SOIL SCIENCE										
2.3.1	Equipment for Practical Teaching Laboratory										
.1	Pocket Altimeter/Barometer	1	0.1							0.09	64 x 68 x 20
.2	Twin Stereoscope	1	0.1							17	150φ
.3	Low Speed Centrifuge	1	1.5							120	580 x 712 x 772
.4	Kjeldahl N Distillation Apparatus	1	0.27					20		14.5	630 x 190 x 600
.5	Hot Plate	1	1.8							4	300 x 345 x 90
.6	Soil Hardness Tester	1								0.5	30φ x 200
2.3.2	Equipment for Preision Instrument Laboratory										
.1	Balance	1									
	(1) Model A	1	0.01							2.7	170 x 230 x 180
	(2) Model B	1	0.01							2.7	220 x 210 x 100
	(3) Model C	1	0.01							11.6	200 x 410 x 270

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
2.3.3	Equipment for Soil and Plant Analysis Laboratory										
.1	Unsaturated Permeameter	1	0.1							50	500×500×460
.2	Ceramic Plate Extractor	1	0.2							100	
.3	Soil Water Sampler	1								18	600×400×150
	2.4 EQUIPMENT FOR DEPARTMENT OF										
	PLANT PROTECTION										
2.4.1	Equipment for Practical Teaching Laboratory										
	No. 1 & No. 2										
.1	Spider Mite Sweeping Collector	1	0.2							10	150×230×280
.2	Heamacytometer	10								0.7	30φ×200
.3	Insect Net	1									
	(1) Model A	5									360φ×900
	(2) Model B	5									360φ×1,100
	(3) Model C	5									360φ×2,700
	(4) Model D	5									360φ×3,000
.4	Grain Misture Meter	1								2.5	61×164×94
.5	Microscope	20								7	300×350×400
.6	Spore Collecting Apparatus	1	0.2							6	250×250×420
.7	Dry Cabinet	1	1.4							95	730×620×1,485
.8	Nematode Detection Kit	1								21	680×510×410
.9	pH Meter	1	0.004							3.1	92×137×48
.10	Dissecting Set	5								1	200×150×30
.11	Vasculum	1									365×195×95
.12	Glassware										
2.4.2	Equipment for Store Room										
.1	Spray Tester	1								5	800×800×1,050
.2	Fume Food	1		0.27	●	20	50	20	200	295	1,200×750×2,300
.3	Daily Allurement Insect Collector	1	0.015							50	700×800×2,000
.4	Sprayer	1									
	(1) Model A	2								6	200φ×730
	(2) Model B	2								2	210φ×350

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
	(3) Model C	5								1	100φ×270
.5	Paraffin	500g									
2.4.3	Equipment for Entomology and Pesticide										
	Laboratory										
.1	Hot Air Oven	1	1.3		●					54	745×665×890
.2	Balance	1									
	(1) Model A	1	0.01							13	220×315×405
	(2) Model B	1								3	460×155×165
.3	Nematode Eradication Device	1								1	340×250×170
.4	Autoclave	1	2.0		●	20	50			44	585×410×890
.5	Test Tube Mixer	1	0.05							3	120×140×140
.6	Glassware	1									
2.4.4	Equipment for Pathology and Nematology										
	Laboratory										
.1	Glasses against Ultraviolet Rays	1								0.05	150×50×10
.2	Clean Bench	1	0.3		●			20		145	840×900×1,710
2.4.5	Equipment for Microorganism Inoculation										
	Laboratory										
.1	Sieve Shaker	1	0.2							46	1,040×430×920
.2	Sieve Set	1								4.5	200φ×45×9 pcs.
2.4.6	Equipment for Specimen Processing and										
	Glassware Washing Room										
.1	Pipet Washer	1								16	180φ×650
.2	Test Tube Washer	1	0.2			20	50			26	400φ×450
	2.5 EQUIPMENT FOR DEPARTMENT OF										
	CROP SCIENCE										
2.5.1	Equipment for Practical Teaching Laboratory										
.1	Shears	1									
	(1) Model A	5									175L
	(2) Model B	3									300L
	(3) Model C	5									290L

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W × L × H mm)
			1φ 220V	3φ 380V							
	(4) Model D	3									2,400L
.2	Cleaning Set	2								0.8	200 × 170 × 30
.3	Magnetic Drive Pump										
	(1) Model A	1	0.37							1.5	322 × 156 × 175
	(2) Model B	1	3.7		●					88	625 × 298 × 180
.4	Balance										
	(1) Model A	1	0.01							13	231 × 282 × 401
	(2) Model B	1								21	326 × 420 × 1,000
	(3) Model C	1	0.02							15	515 × 310 × 570
.5	Grain Micrometer	1								0.1	90 × 60 × 20
.6	Gardening Tool Set	1								8	2,000 × 1,000 × 1,700
.7	Rear Car	1								12	2,040 × 1,300 × 730
.8	Soil Moisture Meter	1								2	230 × 280 × 100
.9	ST Nitrate Nitrogen Test Kit	1								1	70 × 40 × 110
.10	Cholorophyl Meter	1								2	215 × 48 × 32
.11	Horticultural Lux Meter	1								4	155 × 97 × 57
.12	Mini Tiller	1								25.5	1,080 × 610 × 974
.13	Brush Cutter	1								7.6	1,735 × 620 × 406
.14	Power Sprayer	2								8.5	330 × 520 × 660
.15	Loupe	20								0.01	50φ × 10
.16	Drying Oven	1	1.5		●					77	745 × 665 × 890
.17	Misture Meter										
	(1) Model A	1								2	130 × 185 × 210
	(2) Model B	1	0.1							4	100 × 200 × 285
	(3) Model C	1								2	53 × 110 × 160
	(4) Model D	1	0.2							3	240 × 120 × 330
	2.6 COMMON EQUIPMENT										
2.6.1	Photocopy Machine	1	1.5		●					60.5	660 × 617 × 538
2.6.2	Personal Computer Set	1									
.1	Central Prossing Unit	1	0.15							8.3	404 × 384 × 102
.2	Printer										

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W x L x H mm)
			1φ 220V	3φ 380V							
	(1) Model A	1	0.06							11.5	449 x 365 x 171
	(2) Model B	1	0.66							16.8	416 x 407 x 297
3	Uninterrupted Power Supply	2	1.0							99	400 x 580 x 400

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W × L × H mm)
			1φ 220V	3φ 380V							
	3. EQUIPMENT FOR FACULTY OF ANIMAL										
	HUSBANDRY AND VETERINARY MEDICINE										
	3.1 EQUIPMENT FOR DEPARTMENT OF										
	ANIMAL PATHOLOGY										
3.1.1	Equipment for Animal Pathology Laboratory										
.1	Dissecting Instrument Set	1								5	360 × 250 × 80
.2	Stethoscope	2								0.5	50 × 150 × 400
.3	Portable Cooling Box	1								2	280 × 200 × 240
.4	Blood Cell Calculator	1								3	200 × 80 × 50
.5	Balance	1									
	(1) Model A	1									
	(2) Model B	1	0.004							3.6	217 × 205 × 87
	(3) Model C	1	0.004							13	219 × 317 × 408
.6	Microscope										
	(1) Model A	20								4	245 × 300 × 350
	(2) Model B	1	0.05							7	300 × 350 × 400
.7	Operating Set	1									
.8	Urethral Catheter	5									8φ × 900L
.9	Blood Pressure and Pulse Rate Monitor	2								2	170 × 90 × 25
.10	Hemoglobinometer	1									
	(1) Model A	1	0.1							3	200 × 280 × 150
	(2) Model B	1									
.11	Coagulometer	1	0.1							4	150 × 320 × 230
.12	Reticulo Counter	1								2	118 × 195 × 75
.13	Haemacytometer										
	(1) Model A	1									
	(2) Model B	1									
.14	Blood Specific Gravity Measuring Outfit	1									
.15	Stopwatch	1									
.16	Pocket Thermometer	1									148 × 62 × 23
.17	Alcohol Meter	1									

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
.18	pH Meter	1	0.004							3.1	220×400×158
.19	Hand Tally Counter	1									
.20	Melting Point Thermometer	1									18φ×180L (Test Tube)
.21	Dissecting Set	1									305×200×60
.22	Dissecting Pan	10									324×245×45
.23	Oven	1	2.0		●					90	645×690×1,380
.24	Vacuum Pump	1	0.65							7.5	140×256×215
.25	Colony Counter	1	0.03							4.7	250×340×200
.26	Portable Hydrogen Sulfide Indicator	1								2	175×104×191
.27	Carbon Monoxide/Dioxide Meter	1	0.05							10.5	300×275×225
.28	Chlorine Comparator	1								0.18	67×34×157
.29	Water Analysis Kit	1								1	90×200×90
.30	Water Sampler	1								3	
.31	BOD Tester	1								7.5	290×220×470
.32	Dissolved Oxygen Meter	1								1.2	70×150×43
.33	Transparency Meter	2								1.6	78×100×563
.34	Glassware	1									
3.1.2	Equipment for Animal Pathology Laboratory										
.1	Portable Redox (ORP) Meter	1								0.6	190×37×110
.2	pH Meter	1								0.29	104×176×44
.3	Lensatic Compass	1									
.4	Blood Cell Calculator	1									
.5	Hematocrit Centrifuge	1	0.5							15	245×300×240
.6	Colony Counting Apparatus										
	(1) Model A	1	0.03							2	360×290×100
	(2) Model B	1									
.7	Microscope	1	0.5							8	350×380×400
.8	Operating Set	1									
.9	Ulethral Catheter	2									8φ×900L
.10	Fraction Collector	1	0.04		●					7	355×340×310
.11	Autoclave	1	1.2		●	20	50			27	1,210×600×1,880

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER ϕmm	DRAIN ϕmm	GAS ϕmm	EXHAUST ϕmm	WEIGHT kgs	INSTALLATION Required (W × L × H mm)
			1ϕ 220V	3ϕ 380V							
.12	Vacuum Pump	1	0.07							10	380 × 170 × 200
.13	Blood Pressure and Pulse Rate Monitor	1								0.4	170 × 90 × 25
.14	Coagulometer	1	0.1							4	150 × 320 × 230
.15	Micro Planter	1	0.05							20	310 × 400 × 460
.16	Haemacytometer										
	(1) Model A	1									
	(2) Model B	1									
.17	Hemoglobinometer	2	0.1							5	250 × 200 × 110
.18	Balance	1	0.02							2.3	150 × 200 × 140
.19	Pocket Thermometer	1								0.25	148 × 62 × 23
.20	Hand-held Temperature and Humidity Meter	1								0.28	
.21	Alcohol Meter	1									
.22	pH Meter	1	0.004							3.1	235 × 240 × 120
.23	Sound Level Meter	1								0.85	120 × 70 × 275
.24	Melting Point Thermometer	1									18ϕ × 180L (Test Tube)
.25	Stethoscope	1									
.26	Dissecting Set	1									
.27	Dissecting Pan	10									324 × 245 × 45
.28	Oven	1	2.0		●					90	645 × 690 × 1,580
.29	Magnetic Stirrer	1	0.01							0.6	80 × 110 × 90
.30	Sterilizer	1	1.3		●					35	660 × 540 × 640
.31	Colony Counter	1	0.03							2	360 × 290 × 100
.32	Illumination Meter	1								0.18	68 × 32 × 166
.33	pH/mV Meter	1	0.004							1.45	280 × 200 × 120
.34	Fume Hood	1		0.79	●	20	50	20	300	289	1,800 × 750 × 2,300
.35	Glassware	1									
3.1.3	Equipment for Diagnostic Laboratory and										
	Animal Clinic										
.1	Blood Pressure and Pulse Rate Monitor	1								0.4	330 × 260 × 60
.2	Stopwatch	1									
.3	Dissecting Set	1									

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
.4	Dissecting Pan	1									324×245×45
.5	Glassware	1									
3.1.4	Equipment for Obstetric & Artificial										
	insemination Laboratory										
.1	Liquid Nitorgen Freezer	1								8.5	347φ×653H
.2	Preservative Freezer	1								5	310φ×365H
.3	Container for Liquified Nitrogen	1								5	260φ×515H
.4	Kit Box for Artificial Insemination Instrument	1								4	470×170×225
.5	Artificial Insemination Instrument Set	1									
.6	Mastitis and Abnormal Milk Test Set	1									
.7	Artificial Insemination Instrument Set	2								20	
.8	Operating Set	1									
.9	Obstetrical Instrument Set	1									600×300×50
.10	Artificial Vagina	1									
	(1) Model A	2									
	(2) Model B	2									
.11	Semen Diluter	1	0.15							50	900×250×610
.12	Semen Examination Plate	10								0.05	86×40×16
.13	Sperm Counter	2									
.14	Sperm Counting Plate	2									
.15	Liquid Nitrogen Refrigerator										
	(1) Model A	1								3.5	225φ×402
	(2) Model B	1								8.5	347φ×564
.16	Portable Straw Semen Container	3								1.4	120φ×230H
.17	Ice Pack	5								1.5	340×240
.18	Artificial Vagina	2									
.19	Artificial Respiratory Machine	1	0.06							22	560×310×320
.20	Glassware	1									

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER ϕmm	DRAIN ϕmm	GAS ϕmm	EXHAUST ϕmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1ϕ 220V	3ϕ 380V							
	3.2 EQUIPMENT FOR DEPARTMENT OF										
	INFECTIONS & PARASITIC DISEASE										
3.2.1	Equipment for Infections & Parasitic Disease										
	Laboratory										
.1	Ahthrax Diagnosis Set	1									
.2	Dissecting Instrument Set	1									
.3	Portable Cooling Box	2									280×200×240
.4	Egg Incubator	1	0.75								350×320×330
.5	Balance	1									
.6	Microscope	1	0.01							9.5	400×380×410
.7	Stopwatch	1									
.8	Alcohol Meter	1									
.9	Fluorescent Plate	1									150×200
.10	Dissecting Set	1									360×230×80
.11	Glassware	1									
3.2.2	Equipment for Microbiology and Immunology										
	Laboratory										
.1	pH Meter	1	0.01							0.29	75×170×30
.2	Rapid Agglutination	1	0.3							1	330×400×160
.3	Colony Counting Apparatus	1									
.4	Microscope										
	(1) Model A	20								7	245×300×350
	(2) Model B	1								8	300×350×400
.5	Autoclave	1	1.2		●	20	50			27	470×330×720
.6	Test Tube Washer	1				13	38				400ϕ×450
.7	Pipet Washer	1				0	0				
.8	Drying Board	1								20	150×900
.9	Dry Cabinet	1	0.415							60	600×350×800
.10	Drying Oven	1	1.5		●					77	745×665×890
.11	Culture Bath Shaker	1	1.5		●					20	8308335×370
.12	Coagulometer	1	0.1							4	110×200×170

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
.13	Stopwatch	1									
.14	pH Meter	1	0.01							3.1	235×240×120
.15	Fluorescent Plate	1									150×200
.16	Dissecting Set	1									360×230×80
.17	Slide	1									
	(1) Model A	1									
	(2) Model B	1									
	(3) Model C	1									
	(4) Model D	1									
.18	Hot Plate	1	1.8							4	300×345×90
.19	Stirrer	1	0.1							8.7	115×150×170
.20	Sterilizer	1	1.5		●	20	50			41	585×410×815
.21	Clean Bench	1	0.65		●	–	–	–	–	160	1,300×900×1,520
.22	Glassware	1									
3.2.3	Euipment for Food Hygiene Laboratory										
.1	Postmortem Meat Inspection Tool Set	1									
.2	Refrigerator	1	0.6							150	1,210×800×1,880
.3	Test Tube Washer	1				20	38				400φ×450
.4	Pipet Washer	1									
.5	Drying Board	1								6	600×800
.6	Stopwatch	1									
.7	Balance	1	0.02							2.3	150×200×140
.8	pH Meter	1	0.01							3.1	235×240×120
.9	Hot Plate	1	1.8							4	300×345×90
.10	Incubator	1	0.3							52	745×665×890
.11	Clean Bench	1	0.65		●	–	–	–	–	160	1,300×900×1,520
.12	Glassware	1									
	3.3 EQUIPMENT FOR DEPARTMENT OF										
	GENERAL ZOOTECHNOLOGY										
3.3.1	Equipment for Animal Nutrition Laboratory										
.1	Micro Kjeldahl Distillation Apparatus	1				20	50	20		14.5	300×300×600

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
.2	Kjeldahl Titration Set	1									250×200×600
.3	Kjeldahl Nitrogen Digesting Apparatus	1	0.6							6.5	430×190×320
.4	Stopwatch	1									
.5	Balance										
	(1) Model A	1	0.02							11.6	213×282×401
	(2) Model B	1	0.011							11	195×411×266
	(3) Model C	1	0.04							3.6	217×205×87
.6	Melting Point Thermometer	1									18φ×180 (Test Tube)
.7	Recorder	1	0.04							3.5	310×200×290
.8	Muffle Furnace	1	3.0		●					61	740×810×510
.9	Heating Mantle	1	1.2							10	
.10	Hot Plate	1	1.8							4	300×345×90
.11	Hard Mill	1	0.2							3.6	100×160×230
.12	Vacuum Pump	1	0.1							7.5	140×256×215
.13	Micro Kjeldahl Digesting Rack	1	0.6							6.5	430×190×320
.14	pH/mV Meter	1	0.01							3.1	235×240×120
.15	Melting Point Apparatus	1	0.2							4	190×185×400
.16	Oven	1	1.5							77	745×665×890
.17	Fume Hood	1		0.4	●	20	50	20	250	360	1,500×750×2,500
.18	Glassware	1									
.19	Chemicals	1									
3.3.2	Equipment for Animal Foods Laboratory										
.1	pH Meter	1	0.01							0.3	75×170×30
.2	Grain Moisture Meter	1								0.65	189×100×72
.3	Balance	1									
.4	pH/mV Meter	1	0.01							0.3	75×170×30
.5	Glassware	1									
3.3.3	Equipment for Genetics & Animal Breeding										
	Laboratory										
.1	Luxmeter	1								0.16	23×62×128
.2	Lensatic Compass	1									51φ×165

ITEM	EQUIPMENT	Q'TY	ELECTRIC (KW)		EARTH	WATER φmm	DRAIN φmm	GAS φmm	EXHAUST φmm	WEIGHT kgs	INSTALLATION Required (W×L×H mm)
			1φ 220V	3φ 380V							
.3	Hygrometer	1									
.4	Stable Gauge	2									2,000L
.5	Bull Holder	1									
	(1) Model A	1									
	(2) Model B	1									
.6	Dissecting Instrument Set	1									
.7	Hog Holder	5									
.8	Spring Balance	1									
	(1) Model A	1									
	(2) Model B	1									
	(3) Model C	1									
	(4) Model D	1									
.9	Dog Scale	1								95	310×500×1,180
.10	Portable Livestock Scale	1								150	1,700×900×800
.11	Pig Saver	5									
.12	Fraction Collector	1	0.04							7	355×340×310
.13	Microscope	1	0.02							9.5	400×380×400
.14	Stopwatch	1									
.15	Multi Timer	1	0.4							2.6	220×200×115
.16	Balance	1									200×140×200
	(1) Model A	1									
	(2) Model B	1	0.04							3.6	217×205×87
.17	Maximum and Minimum Thermometer	1									
.18	Pocket Thermometer	1								0.176	148×62×23
.19	Hand-held Temperature and Humidity Meter	1									
.20	Alcohol Meter	1									
.21	Density and Specific Gravity Tester	1								3.2	200×150×300
.22	Thickness Tester	1								1.1	250×120×55
.23	Hand Tally Counter	1									
.24	Pre-amplifier	1								0.9	145×165×70