

- (6) Locally produced materials and familiar working methods shall be adopted for the construction of each facility to the maximum extent possible to reduce construction costs and shorten the construction period. Also, local labor shall be employed and a certain level of finishing work shall be secured.
- (7) The quality of finishing work of each facility shall be comparable to the similar facilities under Phase I and Phase II.
- (8) Each facility shall be planned to be as simple, bright, and comfortable as possible by taking advantage of the natural conditions of each proposed construction site.
- (9) On the basis of the foregoing paragraphs, the design (shape, color) of each of the facilities shall be determined according to the following:
 - * Pitches of roofs shall be steep (1/1 slope for FCPC and FL).
 - * Roof materials shall be of locally produced wooden sirap.
 - * Eaves shall be extended to a depth of 2.0 m to 2.5 m.
 - * Exterior walls of buildings shall be whitish color.

4-1-2 Review of Design Conditions

(1) Natural Conditions

1) Countermeasures against heavy rainfalls

- (a) The roof pitch of each building shall be 45° (1/1) to allow rain to quickly drain from the roof.
- (b) The height of the ground floor shall be raised by 600 mm. above ground level to prevent the floor from flooding.
- (c) Capacities of eave gutters and drain pipes shall be large enough to cope with heavy rainfall.

The seismic factor according to the structural design standard of Indonesia is approximately one-tenth that of Japan, but under the Project, the seismic factor of $1/4K = 0.05$ as in Japan shall be adopted.

(2) Environment of Construction Sites

- 1) Construction sites are presently paddy fields or grassy plains. In view of this, the following considerations shall be made.
 - (a) For soft and weak ground, pile driving or ground improvement shall be carried out.
 - (b) Differences in height between the access roads and the ground level of sites shall be uniformly adjusted, filled in according to conditions at the respective sites, at the expense of the Indonesian side.
- 2) Since construction sites are scattered in rural areas, provisions shall be incorporated in the building design (for FCPC, PL, and FL) so that the buildings harmonize with the environment.

(3) Building Methods and Building Materials

1) The building design shall enable the adoption of general construction methods prevalent in Indonesia.

(a) Buildings shall be of reinforced concrete and of rigid frame structure.

(b) The bases of roofs shall be wood roof trusses.

(c) Countermeasures shall be taken to exterminate termites underneath slab floors of the ground floor and around the grounds of buildings.

(d) The foundation of buildings not planned to be of pile foundation shall be of rubble concrete independent footing down to the bearing stratum.

2) Building materials produced in Indonesia shall be used as much as possible.

(a) Particularly, the design of FL buildings shall be stereotyped to permit placement of large orders for building materials or to reduce construction costs and shorten the construction period.

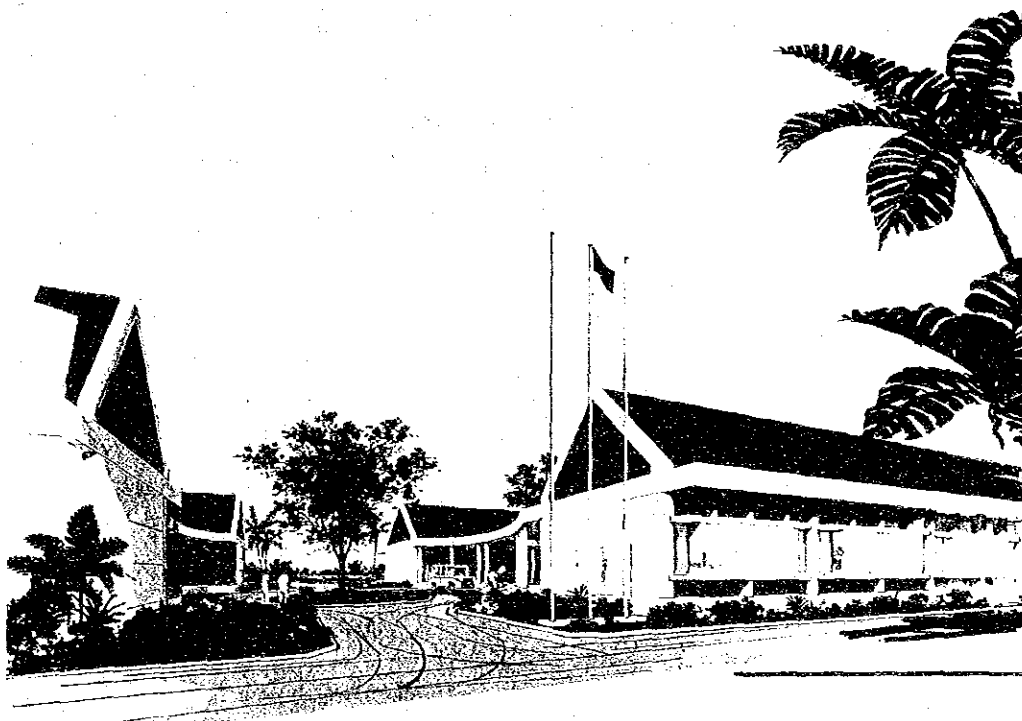
(b) Building materials to be used shall be examined in view of performance and durability, and shall be determined upon close review of Indonesia's import restriction clauses.

(c) Materials shall be adopted that can be easily maintained with readily procurable spare parts.

4-1-3 Basic Design of Facilities

(1) Site Planning

1) Food Crop Protection Center (FCPC), Pesticide Laboratory (PL)

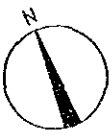


(a) MAROS FCPC, FL

This facility shall be planned for construction on the south side next to the existing FCPC building.

Present plans call for construction of two facilities--FCPC and PL. A rotary area will be located in the center, providing access on the north side of FCPC and on the south of PL.

Auxiliary facilities such as the net house, working space, and storage for FCPC and the pesticide storages for PL will be constructed to the rear of the FCPC-PL main buildings.



- ☒ WATER RESERVOIR
- WELL
- GENERATOR
- ▨ SEPTIC TANK
- ▤ FLAG POLE
- ⊙ LIGHTING POLE

VEHICULAR TRAFFIC →

EXISTING SAPP WARE HOUSE

EXISTING FCPC

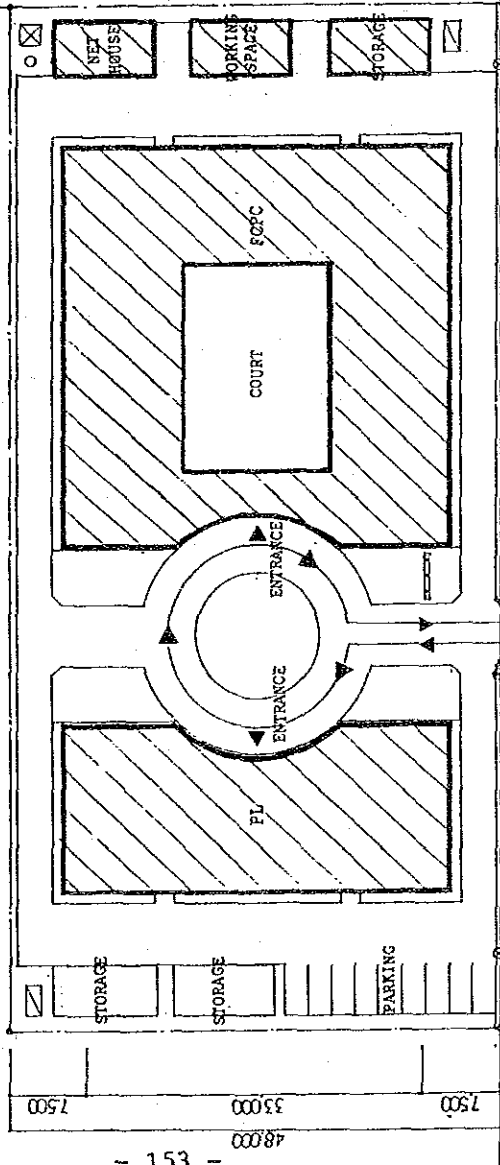
17000

9000

ROAD

RICE FIELD

15,500 14,000 18,000 37,000 15,500 100,000



CANAL

ROAD

(b) MEDAN FCPC

This facility shall be planned as a new wing to the present FCPC building.

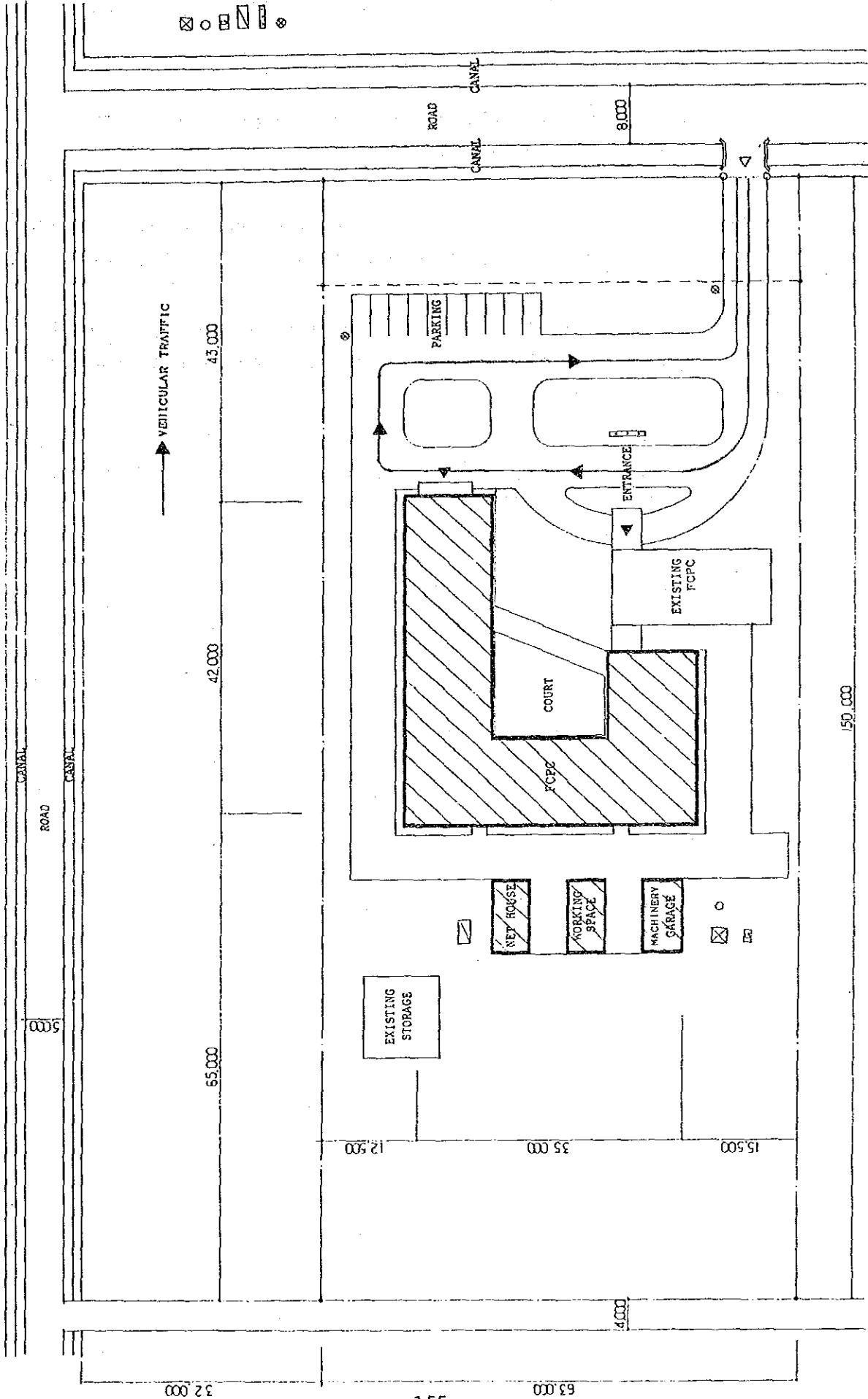
A joint rotary area for the existing and newly planned facilities shall be prepared on the west side of the site facing the access road, to be used as the entrance.

An open corridor leading to the existing facilities shall be constructed around the court.

The net house, working space, and machinery garage shall be located on the east side next to the existing storage.



- ☒ WATER RESERVOIR
- WELL
- ⊞ GENERATOR
- ▨ SEPTIC TANK
- ⊞ FLAG POLE
- ⊞ LIGHTING POLE



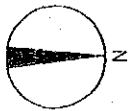
FOOD CROP PROTECTION CENTER
 MEDAK
 SITE PLAN

(c) BANJAR BARU FCPC

This facility shall be built as a new wing to the existing FCPC facility on its south side.

Access to the facility shall be made from the road on the east side. The building entrance shall face north toward the parking area.

The net house, machinery garage, and working space shall be located on the south side of the facility, leaving as much usable space as possible within the site.

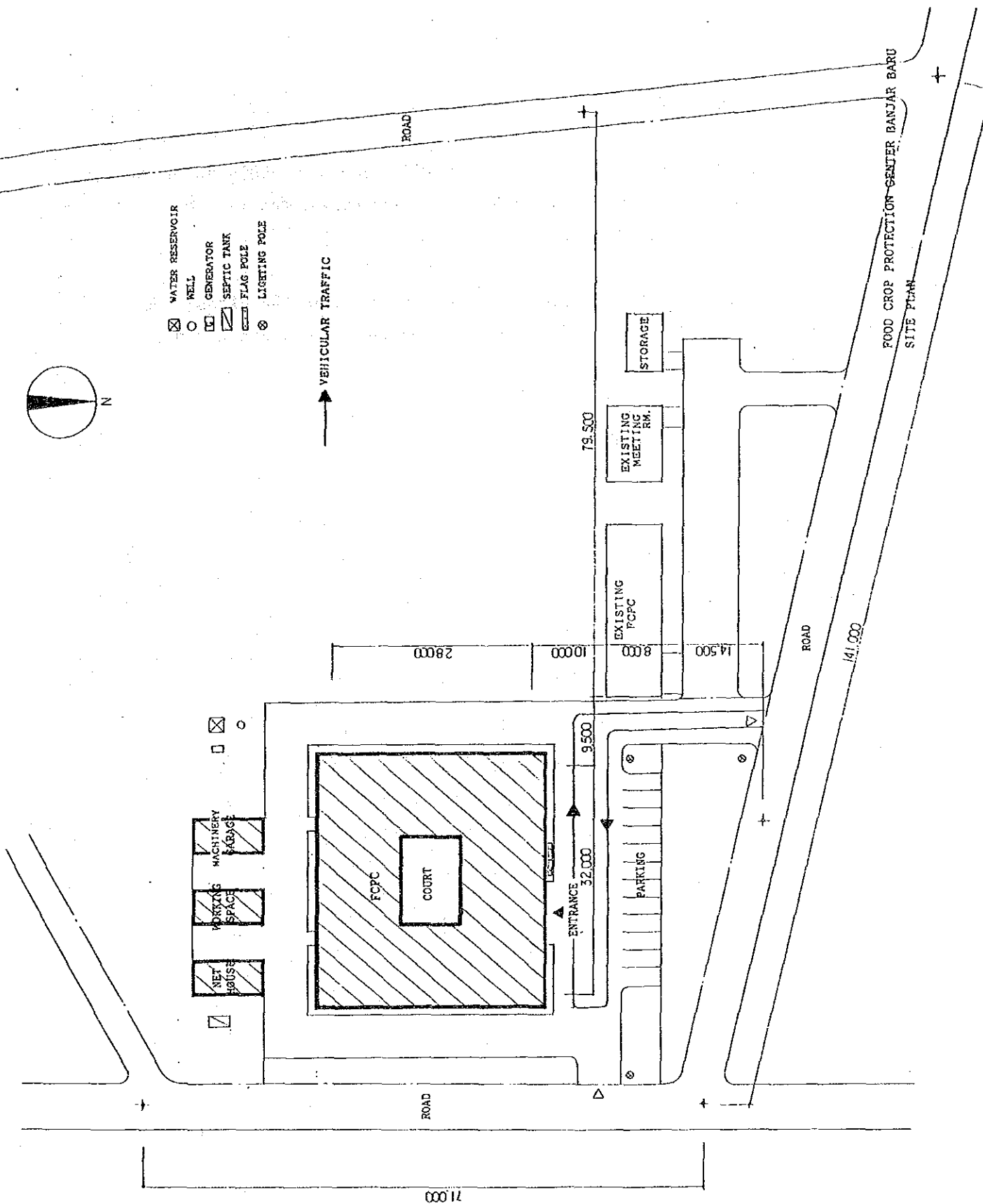


- ☒ WATER RESERVOIR
- WELL
- GENERATOR
- ▤ SEPTIC TANK
- ▨ FLAG POLE
- ⊗ LIGHTING POLE

VEHICULAR TRAFFIC →

ROAD

FOOD CROP PROTECTION CENTER BANJAR BARU
SITE PLAN



(d) PALEMBANG FCPC

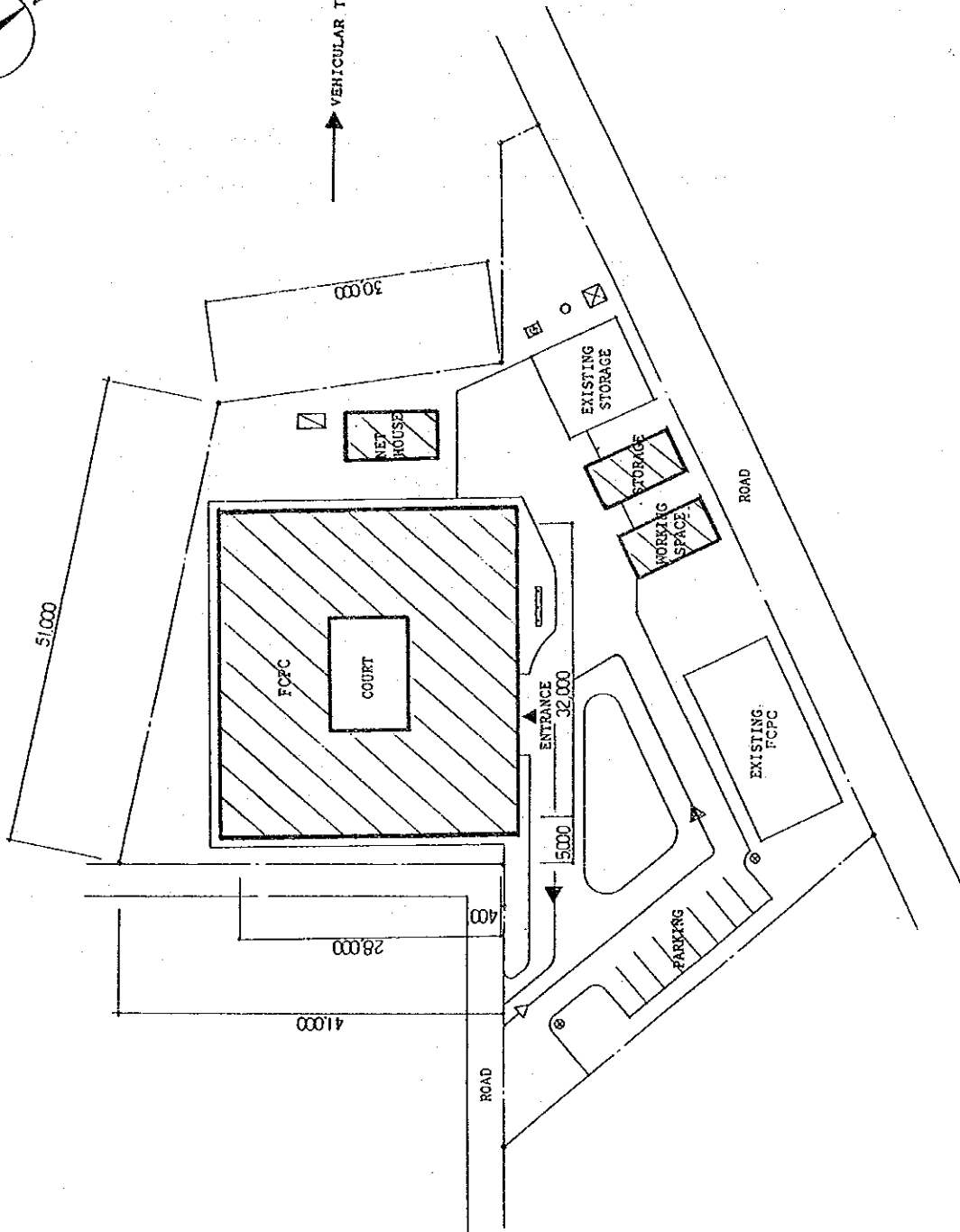
This facility shall be built as a new wing on the south side of the existing FCPC building. Access shall be through a rotary area between the two buildings.

The net house shall be located on the west side of the sites; the storeroom, and working space shall be located on the north side.



- ☒ WATER RESERVOIR
- WELL
- ⊞ GENERATOR
- ▨ SEPTIC TANK
- ⊞ FLAG POLE
- ⊞ LIGHTING POLE

↑ VEHICULAR TRAFFIC



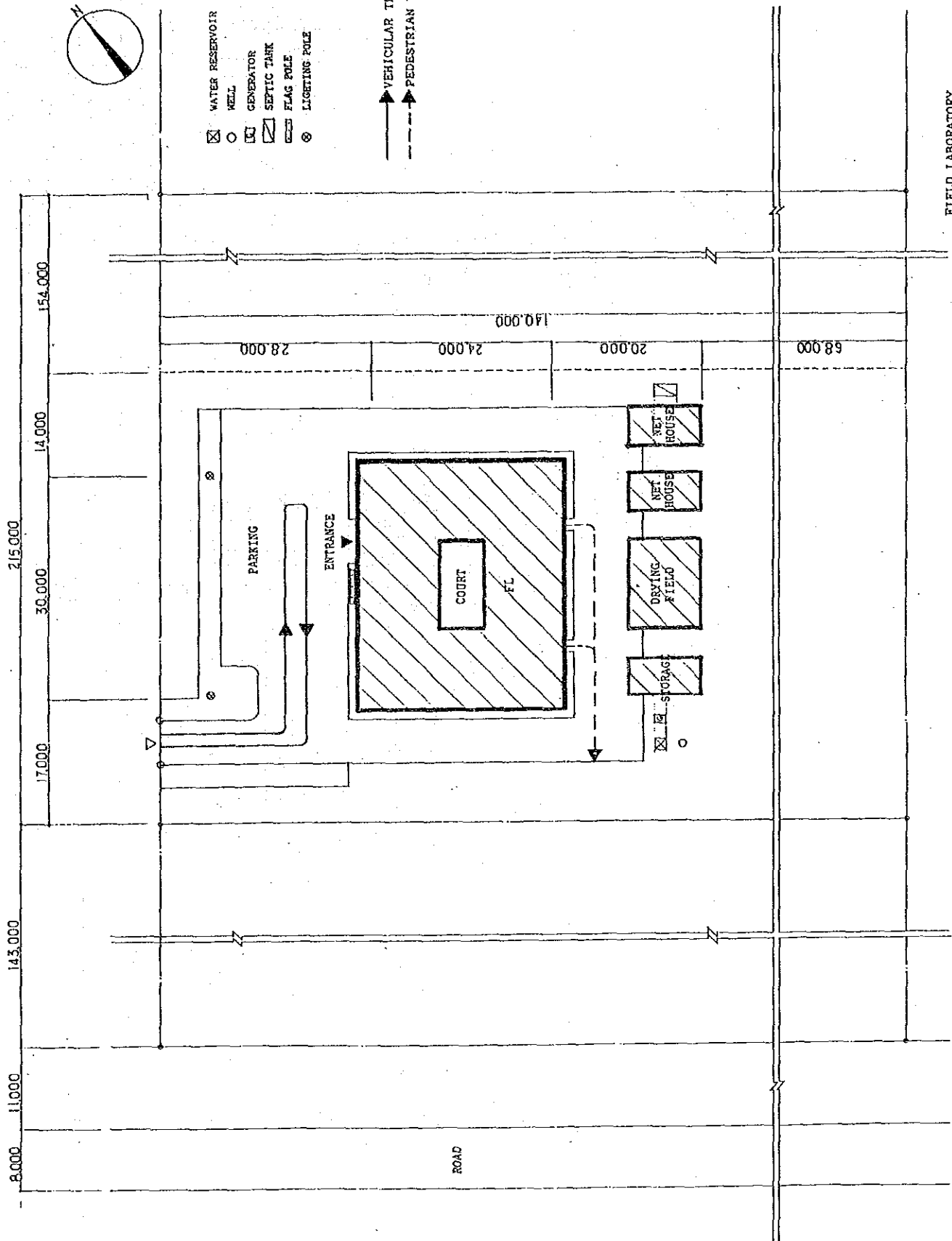
FOOD CROP PROTECTION CENTER PALEMBANG
 SITE PLAN S=1:500

2) Field Laboratory (FL)

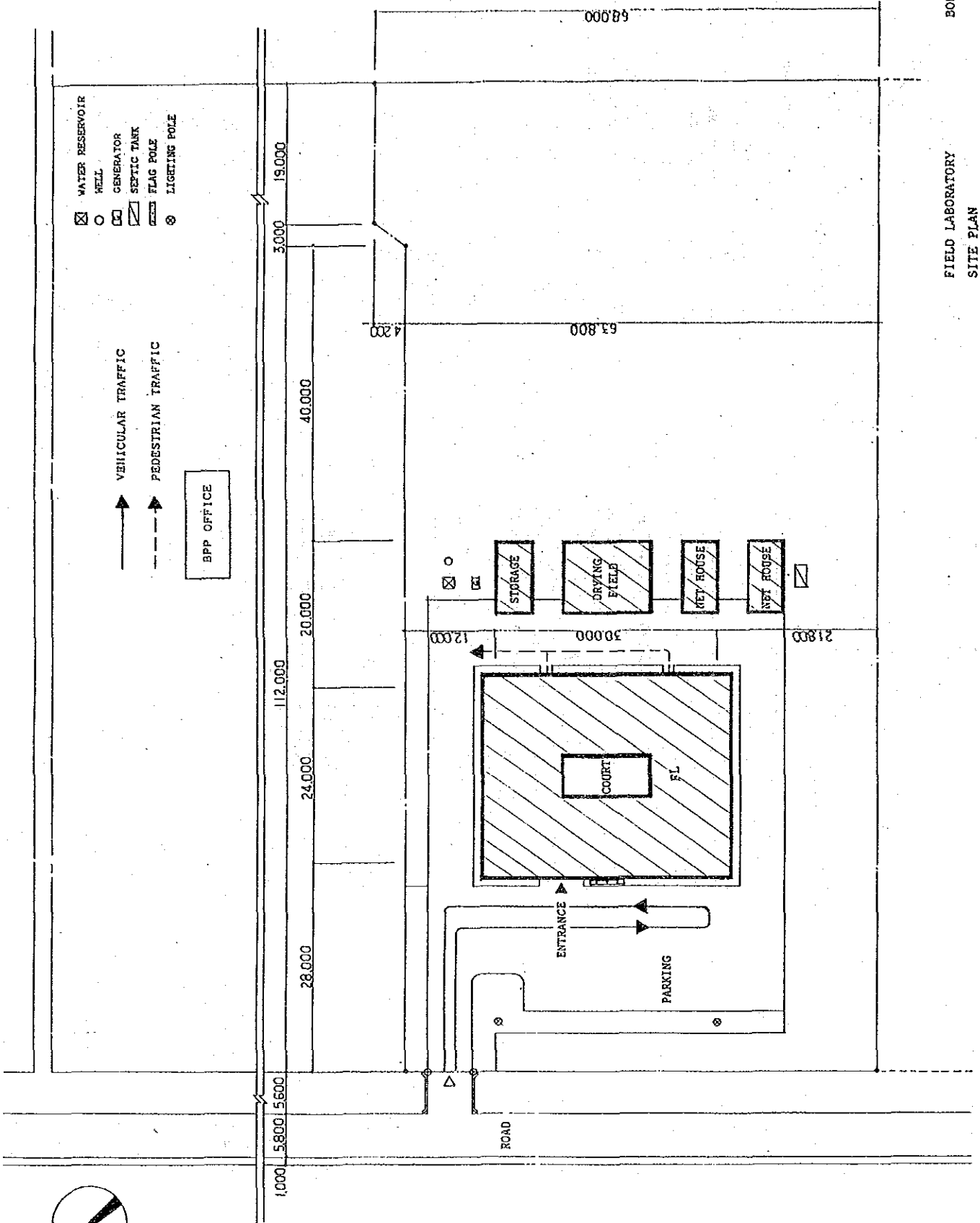
The eleven (11) FL planned under the Project for the six provinces outside of Jawa and Bali shall be constructed according to two prototypes.

Many of the projected sites are paddy fields, and adequate land areas have been secured. Building arrangement will not be a problem.

Arrangements of the planned FL are as follows:



FIELD LABORATORY
SITE PLAN
LUMU



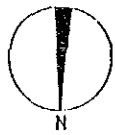
- ☒ WATER RESERVOIR
- WELL
- GENERATOR
- ▨ SEPTIC TANK
- ⊠ FLAG POLE
- ⊙ LIGHTING POLE

↑ VEHICULAR TRAFFIC
- - - PEDESTRIAN TRAFFIC

BPP OFFICE

FIELD LABORATORY
SITE PLAN

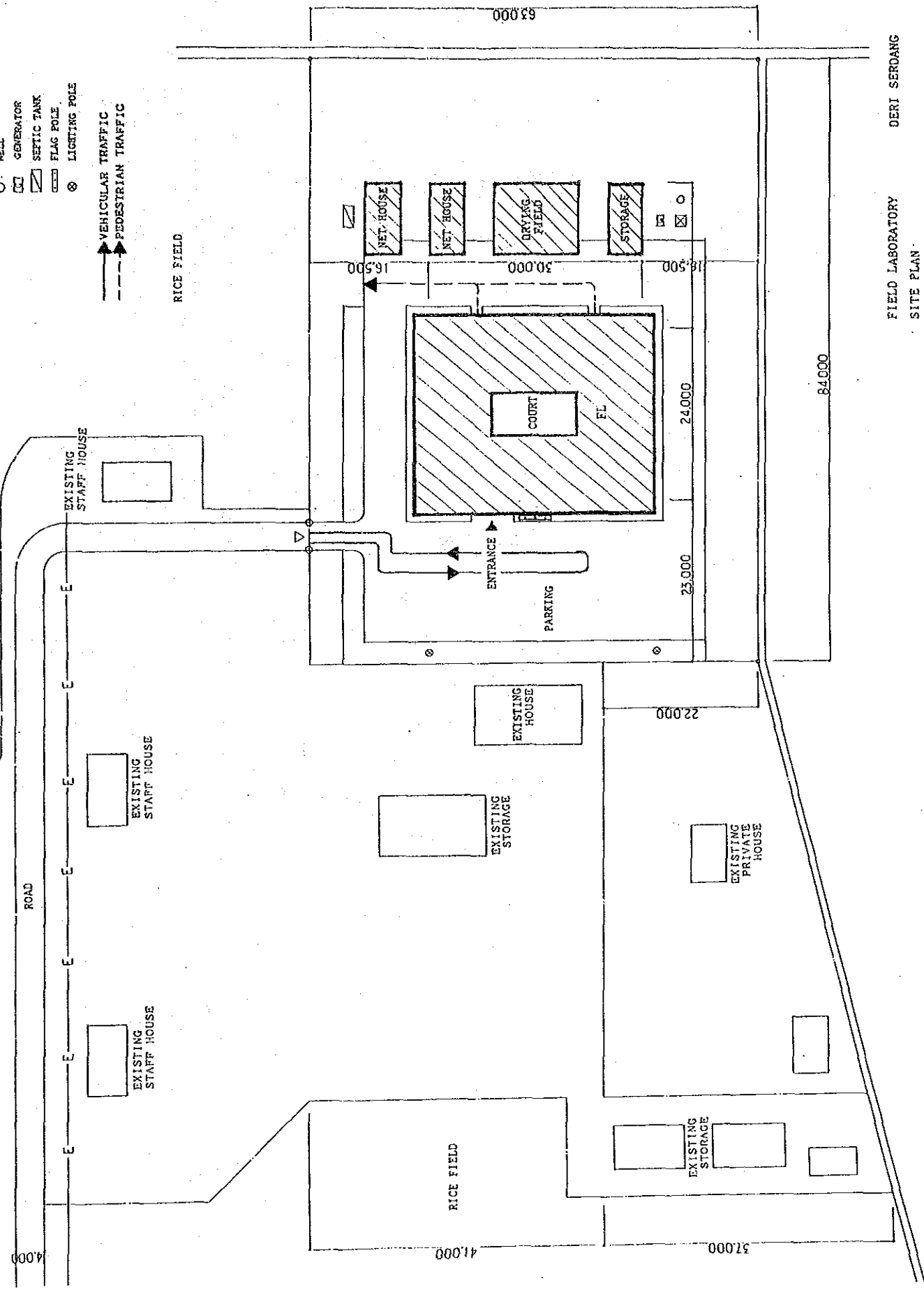
BONE



- ☒ WATER RESERVOIR
- WELL
- ⊞ GENERATOR
- ▨ SEPTIC TANK
- ⊞ FLAG POLE
- ⊙ LIGHTING POLE

→ VEHICULAR TRAFFIC
→ PEDESTRIAN TRAFFIC

RICE FIELD

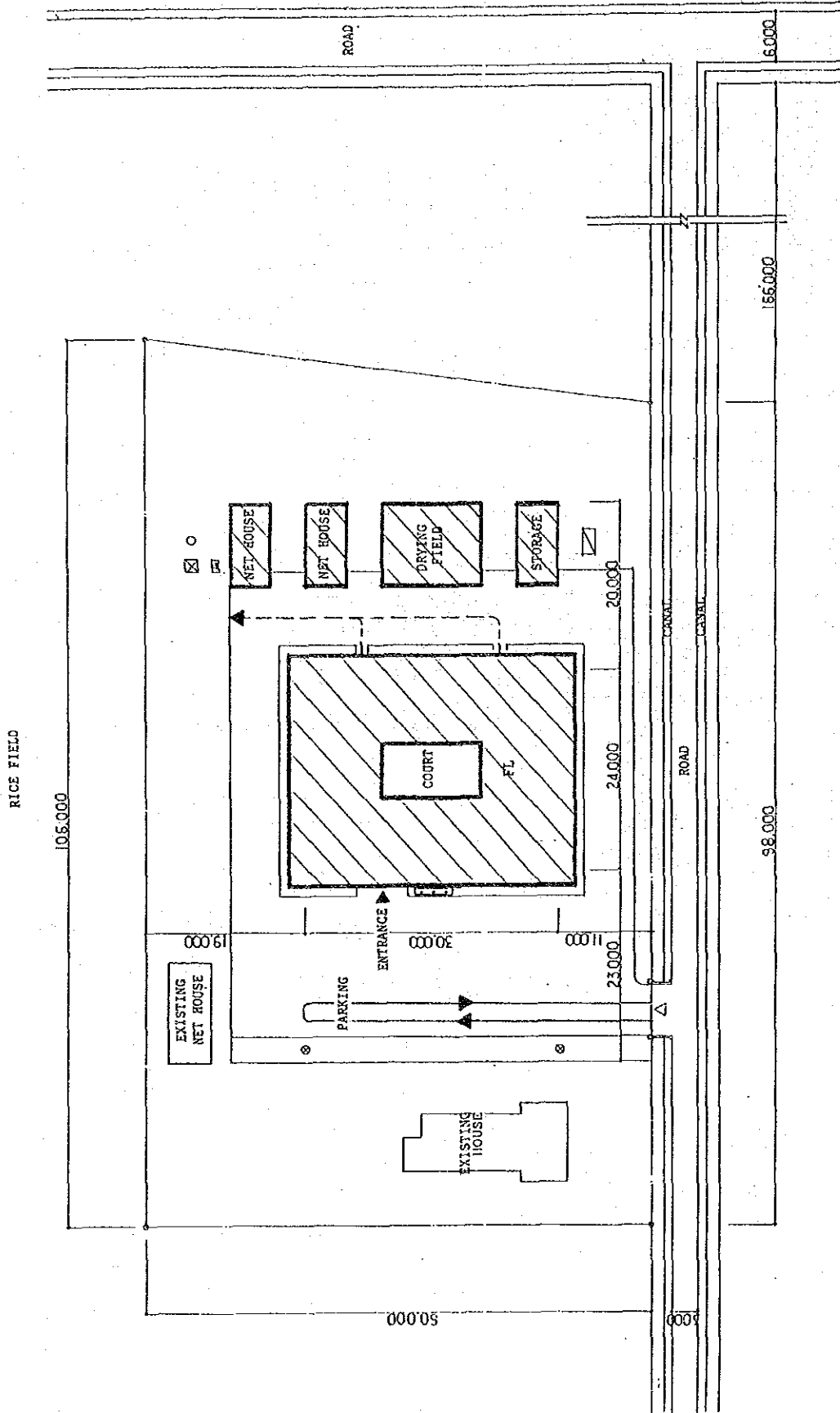


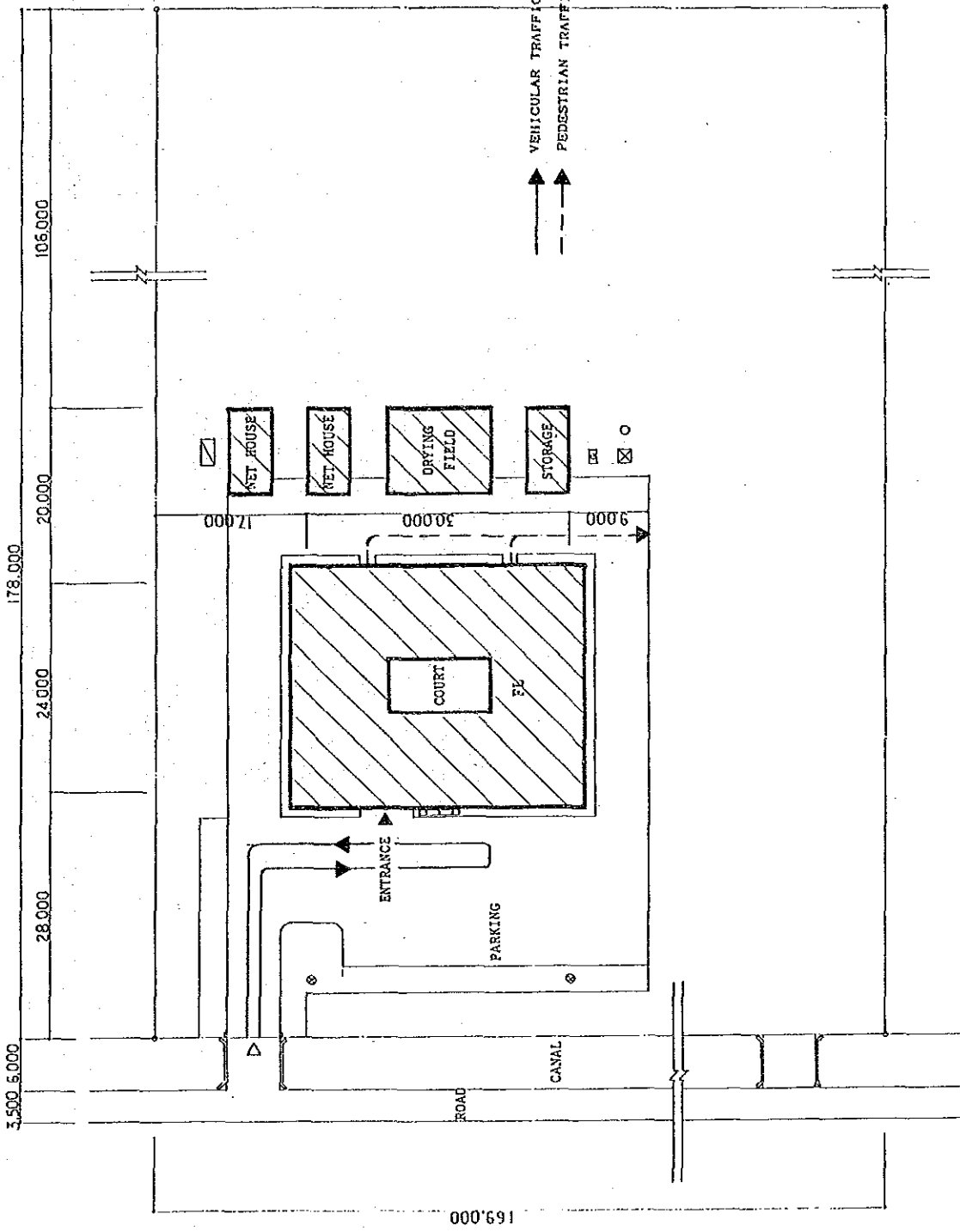
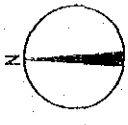
DERI SERDANG
FIELD LABORATORY
SITE PLAN



→ VEHICULAR TRAFFIC
 - - - PEDESTRIAN TRAFFIC

- ☒ WATER RESERVOIR
- WELL
- GENERATOR
- ▨ SEPTIC TANK
- ▧ FLAG POLE
- ⊙ LIGHTING POLE

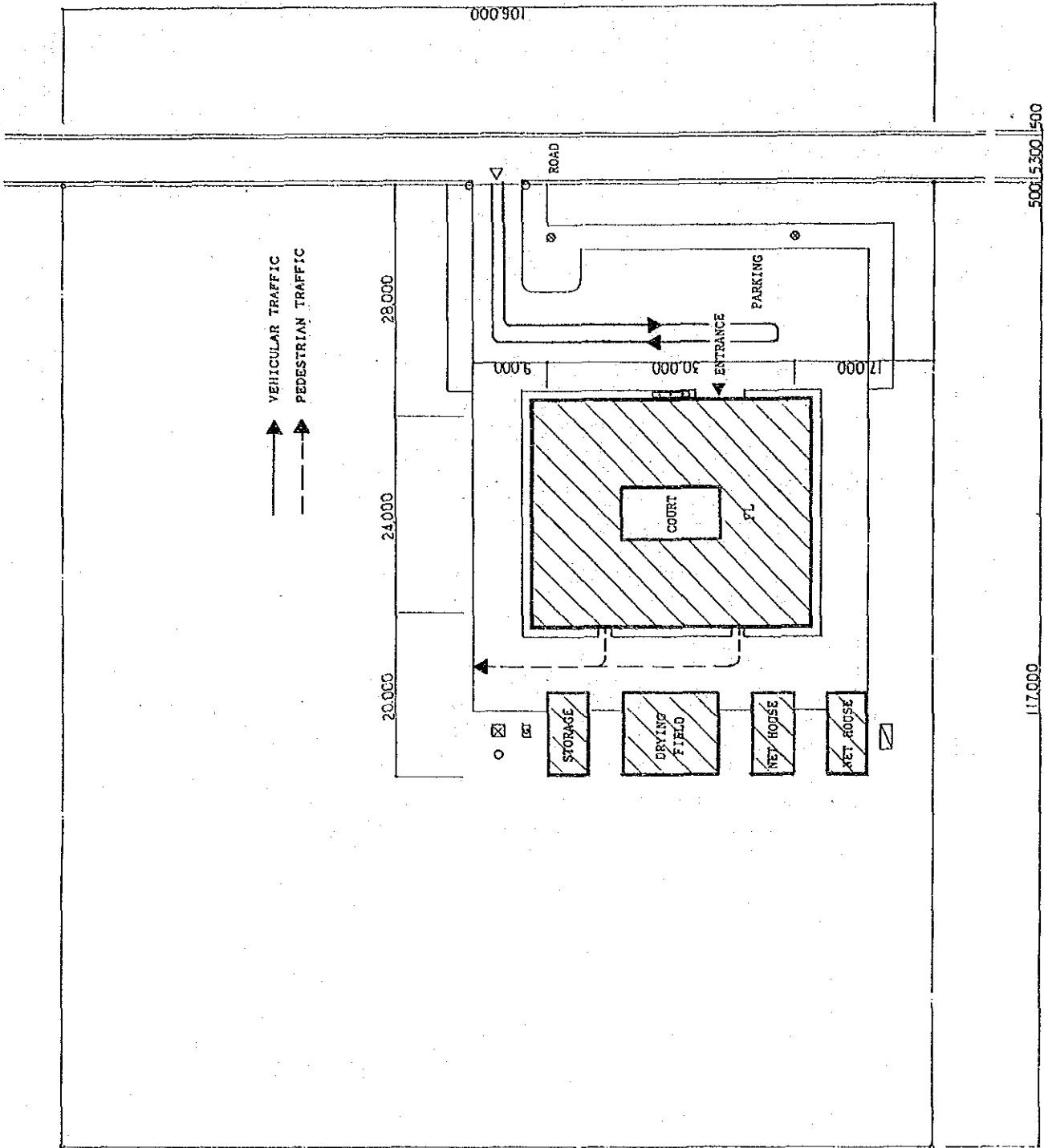




- ☒ WATER RESERVOIR
- WELL
- ☒ GENERATOR
- ☒ SEPTIC TANK
- ☒ FLAG POLE
- ⊙ LIGHTING POLE

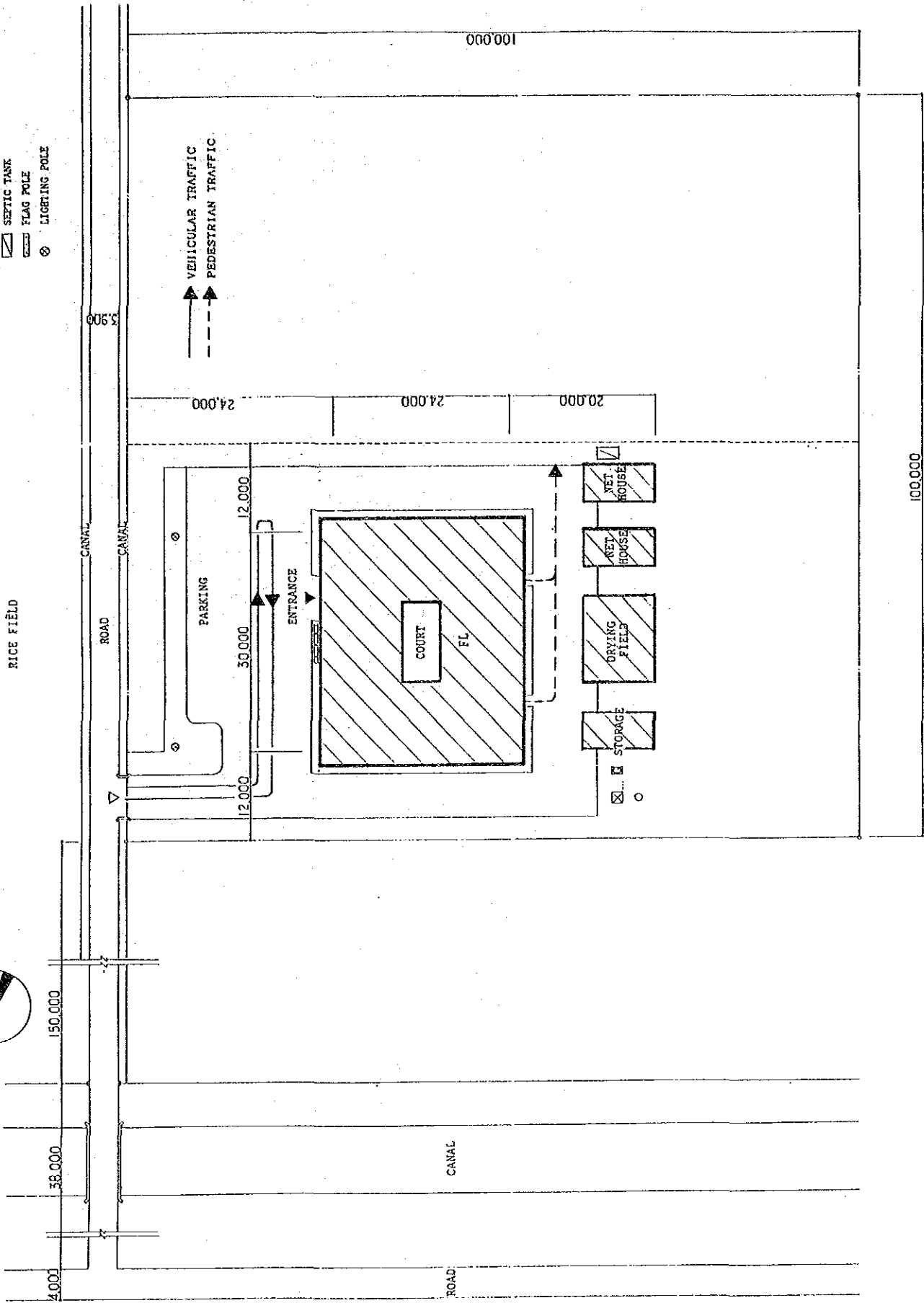
BANJAR
FIELD LABORATORY
SITE PLAN

- ☒ WATER RESERVOIR
- WELL
- GENERATOR
- ▨ SEPTIC TANK
- ▨ FLAG POLE
- ⊙ LIGHTING POLE



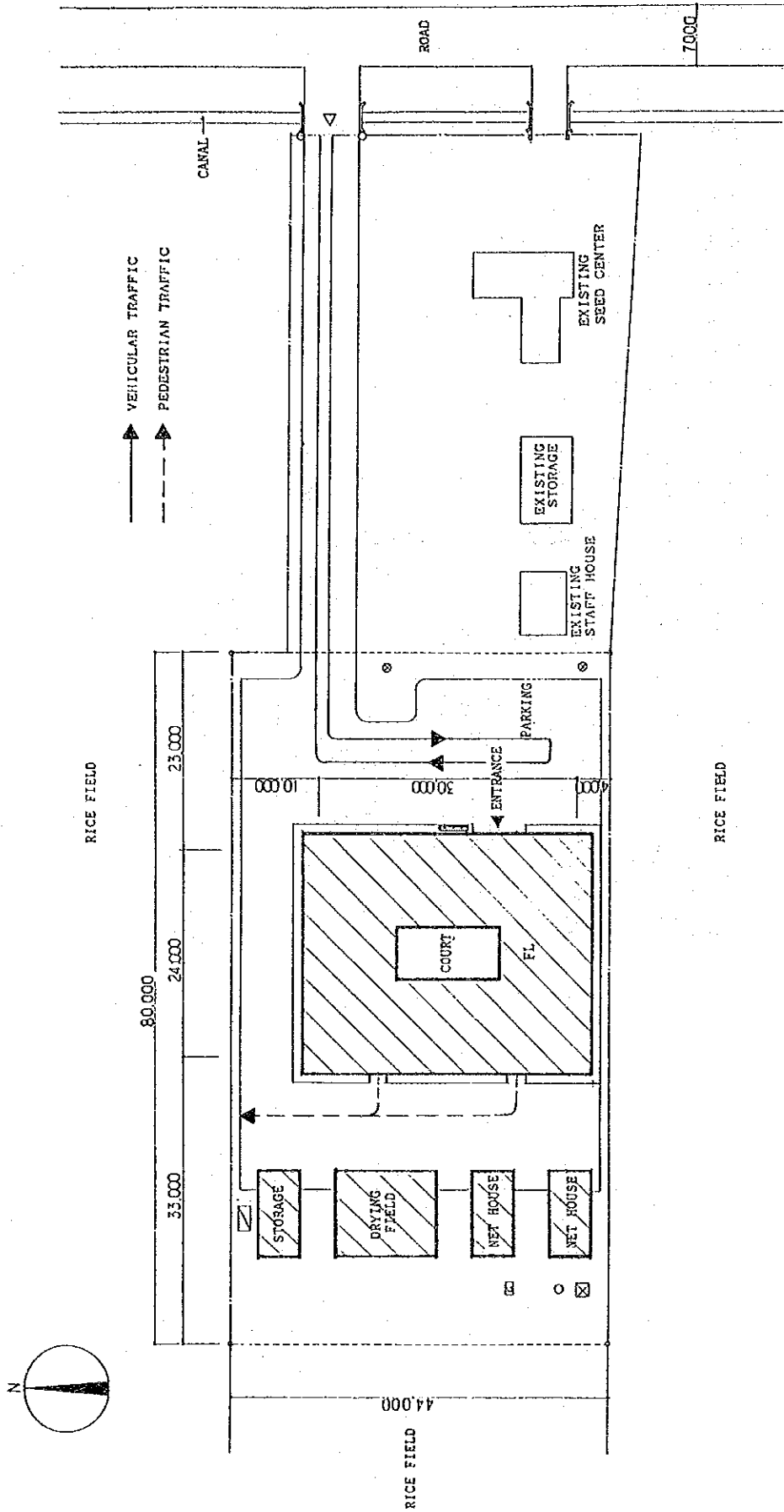
FIELD LABORATORY HULU SUNGAI SELATAN
SITE PLAN

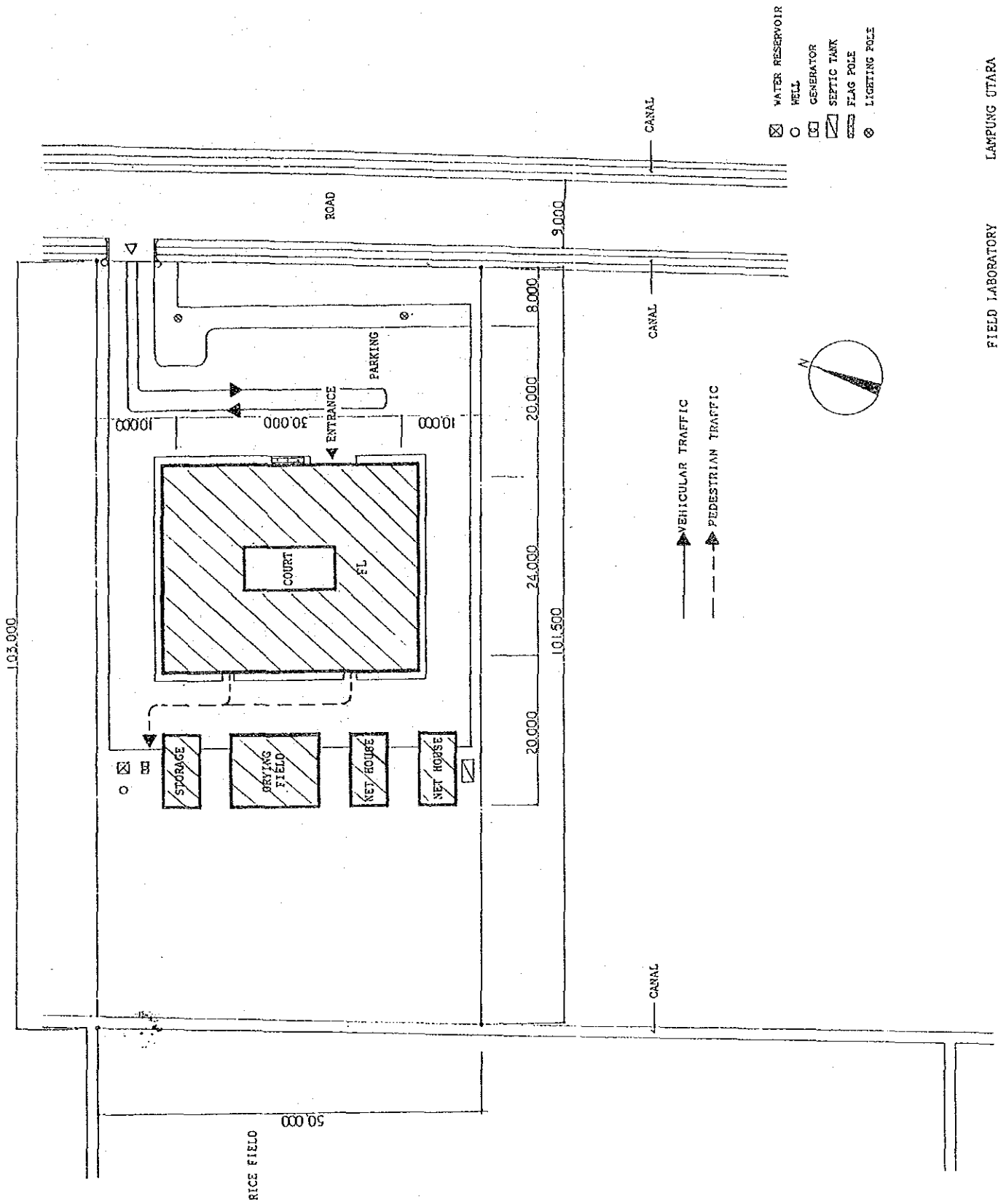
- ☒ WATER RESERVOIR
- WELL
- ☐ GENERATOR
- ▨ SEPTIC TANK
- ▨ FLAG POLE
- ⊙ LIGHTING POLE



FIELD LABORATORY
 SITE PLAN
 PIDIE

- ☒ WATER RESERVOIR
- WELL
- ⊞ GENERATOR
- ▨ SEPTIC TANK
- ⊠ FLAG POLE
- ⊙ LIGHTING POLE

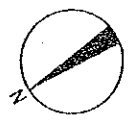




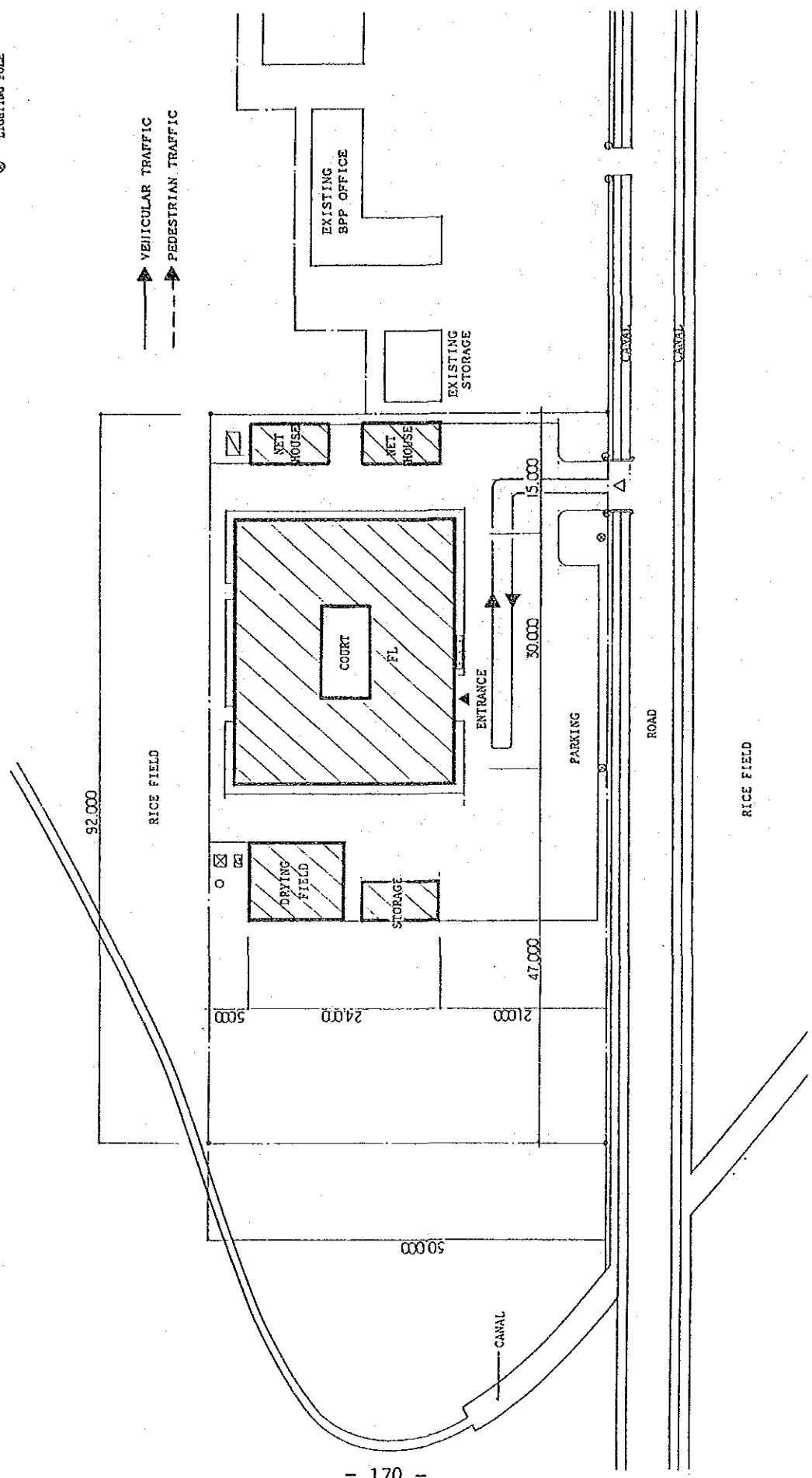
LAMPUNG UTARA

FIELD LABORATORY
SITE PLAN

- ☒ WATER RESERVOIR
- WELL
- ⊞ GENERATOR
- ▨ SEPTIC TANK
- ▤ FLAG POLE
- ⊙ LIGHTING POLE



→ VEHICULAR TRAFFIC
 - - - PEDESTRIAN TRAFFIC



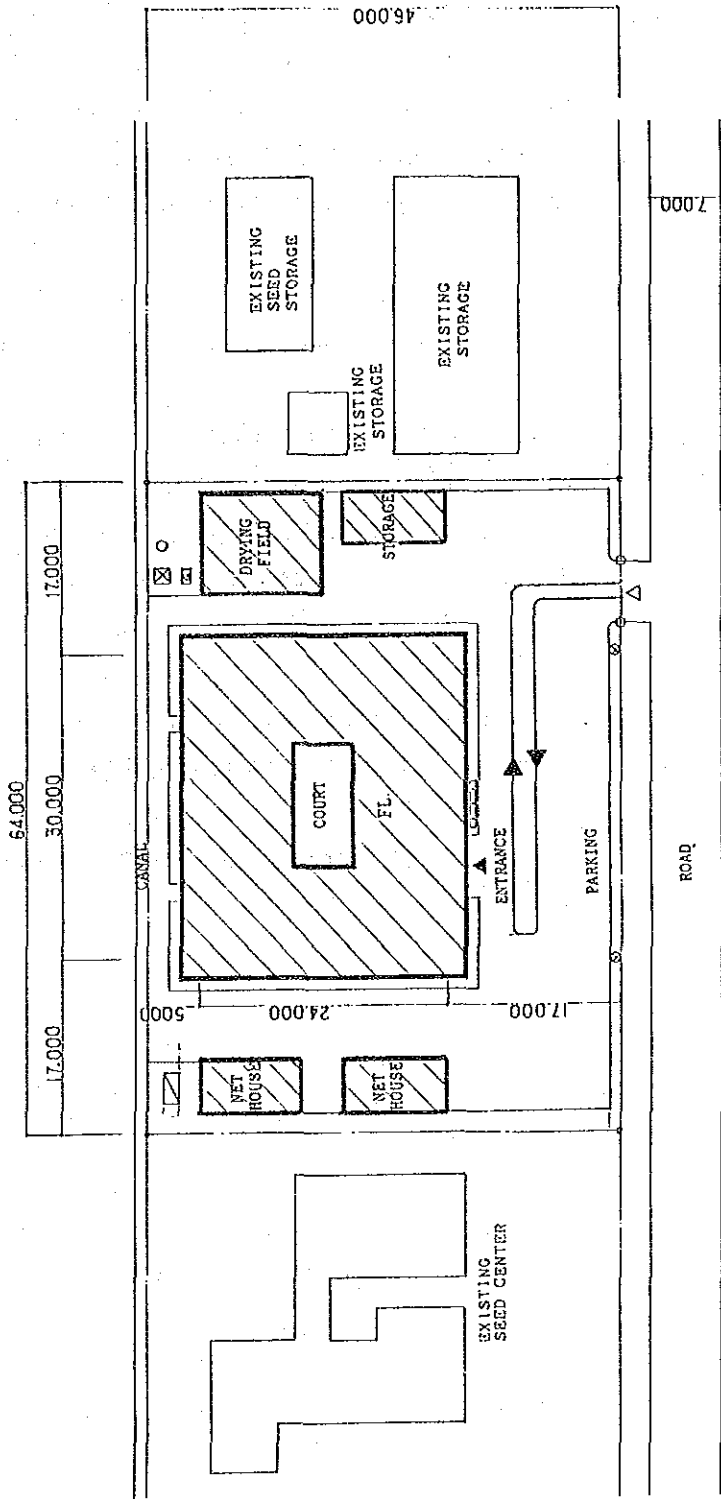
FIELD LABORATORY LUMBUNG SELATAN
 SITE PLAN



- ☒ WATER RESERVOIR
- WELL
- ⊞ GENERATOR
- ▨ SEPTIC TANK
- ⊞ FLAG POLE
- ⊞ LIGHTING POLE

- VEHICULAR TRAFFIC
- - - PEDESTRIAN TRAFFIC

RICE FIELD



OGAN KOMERING ULU
FIELD LABORATORY
SITE PLAN

(2) Construction Planning

1) Food Crop Protection Center (FCPC)

FCPC facilities already existing at the planned sites of Medan, Palembang, and Banjar Baru shall be utilized as administration offices and the office manager's room. To the MAROS FCPC, a PL shall be attached.

(a) Function

The facility will carry out administrative and technical activities, and supervise the FL under its jurisdiction as a sub-organ of DFCP, Ministry of Agriculture, located in Pasar Minggu. FCPC shall be arranged to enable administrative and technical activities under the Project.

The facility shall be composed of administration offices, technical staff room, laboratory, library, computer room, meeting room, etc.

The net house, storage (or machinery garage), and working space shall be built as appurtenances.

(b) Floor Layout

The floor area for each room will be in accordance with the figures given in Table 4-1.

Each FCPC will be single-storied and built around an inner patio with each room connected by open corridors facing the patio.

Inclusion of patios permits easy ventilation and use of natural lighting for energy conservation.

The basic intervals between pillars will be 7 m x 7 m from the viewpoint of both economy and room size.

(c) Cross-Section Layout

Ceiling height for each room will be 3.5 m with the attic space provided by the incline of the roof acting as a buffer against heat.

One meter above windows and doors in each room will be fitted with jalousies for natural lighting and ventilation.

Floor height will be set at 60 cm in consideration of possible flooding during the rainy season.

(d) External Provisions

Concrete supported eaves will project at least 2 m to protect the building against direct sunlight and rain.

External appearance will be designed to harmonize with the surrounding environment. Outer walls will be painted in off-white shades to give a solid and gentle impression.

TABLE 4-1 Basis for Floor Area Calculation - FCPC -

Room	Features/Norms	Floor Area (m ²)	Actual (m ²)
Administration Room	for 15 persons 5 m ² per person 15 x 5 = 75	75	A. 70 B. - C. -
Head Administration	for Head Administration with meeting space	25	A. 28 B. - C. -
Head Office	for office of Head (40 m ²), including meeting space for secretary (10 m ²)	50	A. 49 B. 49 C. 49
Technical Staff Room	for office of 12 Technicians 5 m ² per person 12 x 5 = 60	60	A. 63 B. 63 C. 63
Assistant Room	for office of 6 Assistants 5 m ² per person 6 x 5 = 30	30	A. 35 B. 35 C. 35
Working space	for 2 persons work space	40	A. 36 B. 35 C. 49
Computer Room	for 3 sets of personal com- puters, allowing for future expansion	35	A. 35 B. 35 C. 35
General Office (1)	for 2 Sec. Chiefs 10 m ² per person	20	A. 22 B. 18 C. 22
General Office (2)	for 2 Sec. Chiefs 10 m ² per person	20	A. 22 B. 18 C. 22
Library	Reading area (3.5 m ² /person) 3.5m ² x 5 persons = 17.5 m ² Book area (165 volumes/m ²) for 2,900 volumes: 17.5 m ²	52 (35 x 1.5 = 52)	A. 49 B. 49 C. 49
Meeting Room	for 42 FCPC staff and 5 - 6 FL persons (2 m ² /person) 50 persons x 2 m ² = 100 m ²	100	A. 98 B. 98 C. 98
Laboratory	Technician: 3 x 15m ² = 45m ² Assistant : 2 x 10m ² = 20m ²	65	A. 63 B. 63 C. 63

NOTE: A; MAROS B; MEDAN C; BANJAR BARU and PALEMBANG

2) Pesticide Laboratory (PL)

(a) Function

The facility conducts quality control analyses on pesticides distributed in various regions under the Pest and Disease Forecasting and Control Project.

The facility shall consist of a laboratory, meeting room, storage (or machinery garage), etc.

A pesticide storage shall be attached as an appurtenance.

(b) Floor Layout, Cross-Section Layout and External Provisions

Floor areas for laboratory and meeting room will be in accordance with the figures given in Table 4-2.

The concepts behind the floor layout, cross-section layout and external provisions are the same as for FCPC.

TABLE 4-2 Basis for Floor Area Calculation - PL -

Room	Features/Norms	Floor Area (m ²)	Actual (m ²)
Laboratory (Common to four rooms)	Technician: 2 x 15m ² = 30m ² Assistant : 1 x 15m ² = 15m ²	45	49
Meeting Room	for 15 persons 15 x 3 m ² = 45 m ²	45	49

3) Field Laboratory (FL)

(a) Function

The FL has technical development functions closely related to local rice-producing fields for carrying out experiments and tests matching the special characteristics of each area.

The eleven (11) FL included in the Project are divided into two categories.

A-type and B-type FL will function as study organs working in cooperation with FCPC and have a laboratory for studying natural enemies and field rats. C-type will be the remaining FL.

C-type FL will have such facilities as a laboratory, meeting room, administration office, etc. In addition to these facilities, A-type FL will be provided with a field rat laboratory and B-type FL with a laboratory for studying natural enemies.

Net houses, warehouses, and drying rooms will be provided as auxiliary facilities.

(b) Floor Layout, Cross-Section Layout, External Provisions

Floor area for each room will be in accordance with the figures given in Table 4-3.

The concepts behind the floor layout, cross-section layout and external provision designs are the same as for FCPC. The intervals between pillars, however, have been set at 6 m x 6 m in consideration of the floor areas in each room.

TABLE 4-3 Basis for Floor Area Calculation - FL -

Room	Features/Norms	Floor Area (m ²)	Actual (m ²)
Office (1)	for clerical staff : 5 persons for technical staff: 3 persons 8 x 5 m ² = 40 m ²	40	42
Office (2)	for Head, incl. meeting space Partitioned from Office (1) by movable screens	30	30
Operation Room	for meetings, discussions, and display purposes for approx. 35 observers 35 x 2 m ² = 70 m ²	70	72
Laboratory (1)	Technician: 2 x 12 m ² = 24 m ² Assistant: 2 x 10 m ² = 20 m ² Sub Assistant: 2 x 5 m ² = 10 m ²	54	54
Laboratory (2)	Technician: 2 x 12 m ² = 24 m ² Assistant: 2 x 10 m ² = 20 m ² Sub Assistant: 2 x 5 m ² = 10 m ²	54	54
Multipurpose Lab. (FL of Types-A, -B)	Vertebrate Lab.: 6 persons Biological Lab.: 6 persons 6 x 12 m ² = 72 m ²	72	72

(3) Structural Planning Design

1) Design Principle

(a) The structure of each building under the Project shall be designed to be of reinforced concrete. The main buildings of each facility listed below shall be single storied.

- i) FCPC Main Building
- ii) PL Main Building in MAROS FCPC
- iii) FL Main Building

(b) The structure of each building shall be strong enough to resist every external force, and be able to transmit such force simply and definitely to the ground.

(c) Since every proposed site in the plan was formerly a paddy field or farm, a request for boring test was made to the Indonesian Government. Upon analyzing and reviewing the data, the type of foundation (PS concrete piles, direct foundation, etc.) to support each building shall be determined. The method of placing concrete directly on the earth as the flooring of the ground floor shall be avoided in consideration of future ground subsidence. Instead, structural reinforced concrete floor slabs supported by the building itself shall be adopted as flooring.

(d) The familiar structural methods generally practiced locally shall be employed, with the objective of maintaining the quality level of the building by smoothly performing the construction work.

2) Structural Design

(a) Design Criteria

The structural design standards currently adopted in Indonesia are the National Architectural Design Standards of Indonesia (PERATURAN

BANGUNAN NASIONAL), the Regulation on Superimposed Load of Architecture (PERATURAN PEMBEBANAN INDONESIA UNTUK GEDUNG), the Regulation on Reinforced Concrete Structure (PERATURAN BUTON BERTULANG INDONESIA), American Standards, British Standards, and the standards of JIS and JAS. Each facility under the Project shall be designed in accordance with the standards of JIS and JAS.

(b) Frame System

Major frames of each FCPC, PL and FL facility shall be of reinforced concrete rigid structure, the generally adopted construction method in Indonesia. Roofs shall be of wood trusses.

(c) Foundation Work Method

If boring tests prove ground conditions to be stable, direct ground-supported construction methods will be applied. In other cases, 15- to 20-meter PS concrete piles (400-mm diameter) shall be driven for frictional supports or tip supports by one-the-spot piling.

Actual application of these two methods are as follows:

a) Direct Foundation

LUWU, BONE (South Sulawesi)

PIDIE (D.I.Aceh)

LAMPUNG UTARA, LAMPUNG SELATAN (Lampung)

b) Pile Foundation

MAROS (South Sulawesi)

MEDAN, DELISERDANG, SIMALUNGUN (North Sumatera)

BANJAR BARU, BANJAR, HULU SUNGAI SELATAN (South Kalimantan)

ACEH TIMUR (D.I. Aceh)

PALEMBANG, OKU (South Sumatera)

(d) Design Load

a) Dead load

The unit weight by volume of major materials shall be as follows:

Reinforced concrete	2.4 t/m ³
Red brick	2.6 t/m ³
Wood roof truss	1.0 t/m ³

b) Live load

Live loads for typical rooms are determined as follows:

Calculation based on floor structure:

* Office room, meeting room, seminar room	300 kg/m ²
* Laboratory, study room	300 kg/m ²
* Library	500 kg/m ²
* Computer room	300 kg/m ²
* Dormitory room, dining room	180 kg/m ²
* Corridor, stairway	350 kg/m ²
* Storage	500 kg/m ²

Calculation based on forces at beam, pole, foundation:

* Office room, meeting room, seminar room	180 kg/m ²
* Laboratory, study room	180 kg/m ²
* Library	350 kg/m ²
* Computer room	180 kg/m ²
* Dormitory room, dining room	130 kg/m ²
* Corridor, stairway	320 kg/m ²
* Storage	350 kg/m ²

Calculation based on seismic load:

* Office room, meeting room, seminar room	80 kg/m ²
* Laboratory, study room	80 kg/m ²
* Library	150 kg/m ²
* Computer room	80 kg/m ²
* Dormitory room, dining room	80 kg/m ²
* Corridor, stairway	60 kg/m ²
* Storage	150 kg/m ²

c) Seismic force

In Indonesia, numerous earthquakes have been recorded caused by the seismic belt that runs along Sumatera Island, Jawa Island, and Bali Island.

The structural design under the Project shall be planned with due regard to Indonesian Seismic Load Standards and in accordance with Japanese Seismic Load Standards.

d) Wind pressure

Based on available data on the maximum wind pressure at various locations in Indonesia, the coefficients of 20 m/sec. for wind velocity and $20\sqrt{n}$ kg/m² for wind pressure shall be adopted.

e) Principal structural materials

Pursuant to Japanese Industrial Standards, the following values shall be adopted as the allowable unit stress for each material.

1) Concrete

Design strength after 28 days: $F_c \div 210$ kg/cm²
Slump : 15 cm

ii) Reinforcing steel bar

<u>Kind</u>	<u>Long term</u>	<u>Short term</u>	JIS material
Ordinary round bar	1,600 kg/cm ²	2,400 kg/cm ²	SR 24
Deformed round bar	2,600 kg/cm ²	3,000 kg/cm ²	SD 30
Deformed round bar	2,200 kg/cm ²	3,500 kg/cm ²	SD 35

iii) Steel frame

<u>Kind</u>	<u>Long term</u>	<u>Short term</u>	JIS material
H-section	1,600 kg/cm ²	2,400 kg/cm ²	SS 41
Plate	1,600 kg/cm ²	2,400 kg/cm ²	SS 41

(4) Utilities Planning

1) Basic Policy

As a basic policy for designing equipment, domestic regulations of Indonesia shall be applied wherever applicable, and on items for which no Indonesian regulations exists, domestic regulations of Japan shall be applied.

In planning, the following points must be particularly considered.

- (a) Equipment shall be designed with due consideration given to energy and resources conservation, and to reduction of running costs. Equipment also shall be easy to maintain and operate.
 - i) Adoption of energy-saving-type lighting fixtures
 - ii) Sectioned lighting switch circuits
 - iii) Utilization of natural ventilation to minimize installation of mechanical cooling units, and adoption of individual air-cooled package systems where necessary.
- (b) Equipment shall be safe and easy to operate and maintain.
 - i) All switchboards and distribution boards shall be installed in steel enclosures.
 - ii) Wiring shall be laid in conduit pipes as a rule.
 - iii) Feeding and draining of water shall be by the gravity method
 - iv) Water receiving tanks shall be made of fiber-reinforced plastic (FRP)
- (c) Equipment and materials manufactured in Indonesia shall be adopted as much as possible.
- (d) Equipment and materials shall be easy to repair locally. In case Japanese products are used, they must be products of Japanese manufacturers who have agents or representatives in Indonesia, and they must be capable of being maintained locally.

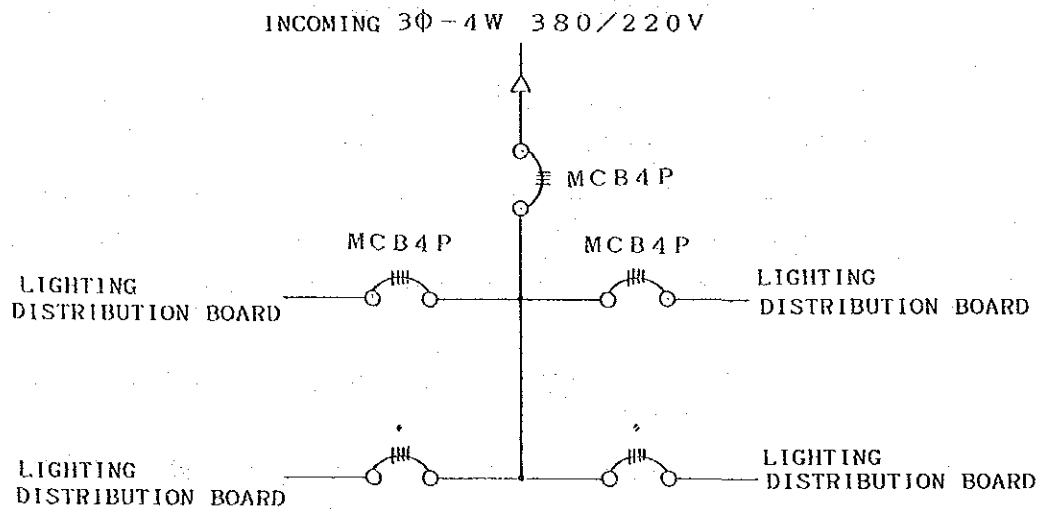
2) Electric Facilities Design,

(a) Receiving Facilities

1) Each FCPC and PL

Power shall be transformed into 3 ϕ - 4W, 380V or 220V, 50Hz, led from the front road of the site into the receiving panel inside the building via aerial wiring, and supplied to each load via distribution boards. The receiving capacity shall be 40 KVA.

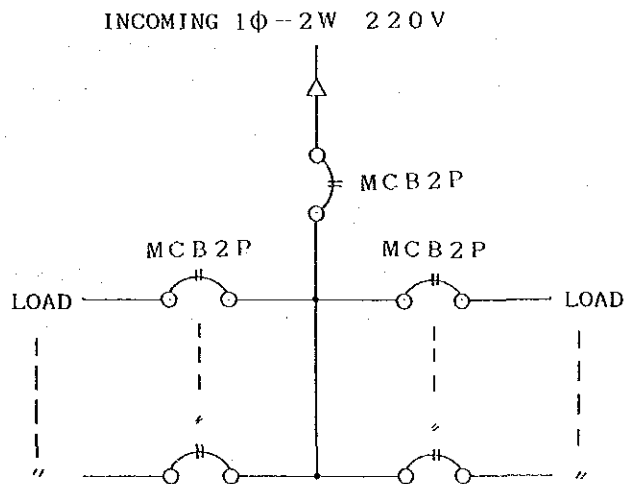
The connection diagram of the receiving facility is shown below.



ii) Each FL

Power of 1 ϕ - 220V, 50Hz shall be directly received from the power transmission line along the front road of the site, into the distribution board inside the building via aerial wiring, and supplied to each load. The capacity for receiving power shall be 15 KVA.

The connection diagram of the receiving facility is shown below.



(b) Electric System

i) Each FCPC and PL

Trunk line	3 ϕ - 4W 380V/220V
Power	3 ϕ - 3W 380V
Lighting & convenience outlets	1 ϕ - 2W 220V

ii) Each FL

Trunk line	1 ϕ - 2W 220V
Power (including well pump)	1 ϕ - 2W 220V
Lighting & convenience outlets	1 ϕ - 2W 220V

(c) Power Feeder System (Each FCPC, FL, and PL)

Power from the adjacent transmission line shall be directly led into the building by aerial wiring, and connected to each load through the distribution board.

(d) Lighting and Convenience Outlets

Lighting and convenience outlets of each FCPC, FL, and PL shall be as follows:

Fluorescent lamps shall be mainly used as lighting facilities, with partial use of incandescent lamps. Flashing blocks of lighting fixtures shall be divided as finely as possible to permit savings on power costs.

The standard lighting intensity shall be 300 lux in office spaces and laboratories, and 200 - 300 lux at the bench tops of working spaces.

Convenience outlets shall be the wall-mounted type, and shall be provided at least at two places where necessary in each room.

(e) Telephone Facilities

i) Each FCPC

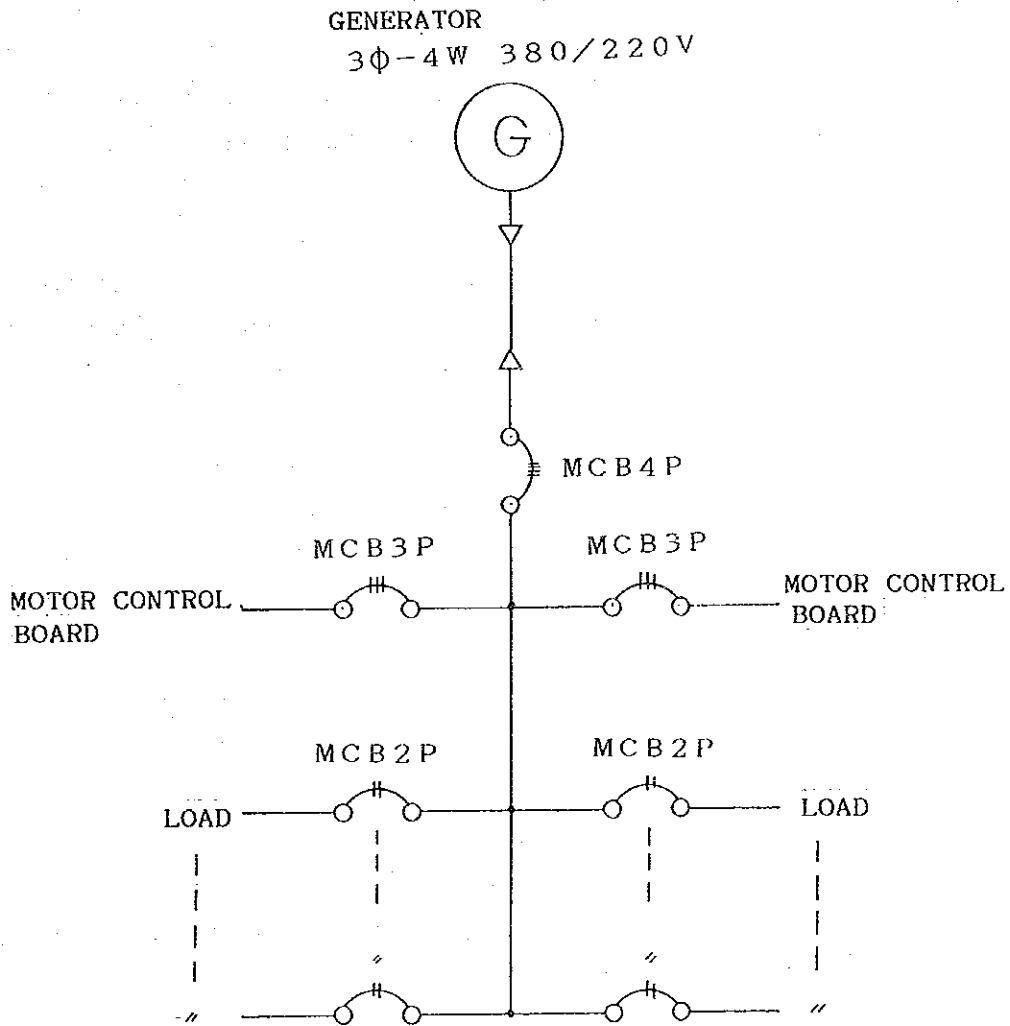
The master telephone of the master-and-extension-type pushbutton telephone system shall be installed in the administration office, and shall be connected to extension sets in rooms where required. About four (4) telephone sets shall be provided.

ii) Each FL and PL

A conduit tube and a terminal board box shall be installed, and the tube shall be extended to the rooms where required, but provided only with an outlet.

(f) Independent Power Generator

FL facilities with available power sources shall be provided with an independent power generator to operate 13.8 kVA well-pump motors. FL facilities that lack possibilities of power supply will be provided with a 20 kVA independent power generator capable of supplying power to both buildings and wells.



3) Water Supply and Drainage

(a) Water Supply System

i) Each FCPC

Since public water service piping has not been laid yet, a well shall be installed on the site from which water shall be pumped up by motor.

An roof-top water receiving tank made of FRP panel shall be installed outside the building, from which water shall be supplied by gravity to each room.

The planned water supply volume shall be $6 \text{ m}^3/\text{day}$ as estimated from the number of piece of equipment installed and the number of people who utilize the facility.

The capacity of the roof-top receiving tank shall be large enough to store one day's supply of estimated water consumption (6 m^3).

ii) Each FL and PL

Since public water service piping has not been laid yet, a well shall be installed on the site, from which water shall be pumped up by motor.

An elevated water receiving tank made of FRP panel shall be installed outside the building, from which water shall be supplied by gravity to whichever rooms need it.

The planned water supply volume shall be $4 \text{ m}^3/\text{day}$ as estimated from equipment capacities and the number of people who utilize the facility.

The capacity of the elevated receiving tank shall be large enough to store one day's supply of estimated water consumption (4 m^3).

(b) Drainage System

The drainage system for each FCPC (except South Kalimantan), FL, and PL shall be as follows.

Sanitary sewage shall be led into a septic tank installed exclusively for sanitary sewage, and after treatment there, shall be allowed to seep into the ground through seepage sumps.

As the commingling of neutral detergent and laboratory liquid chemicals is anticipated in miscellaneous waste water, it shall be discharged separately from sanitary sewage by allowing it to flow into the storm sewage draining system outside the building.

Storm sewage shall be collected in one place by an open drainage ditch around each building and then discharged into existing drainage ditches.

(c) Sanitary Fixtures

As a rule, the sanitary facilities in all the buildings (each FCPC, FL and PL) shall be a locally made, popular type. As for toilet booths, one set each of the local type generally used in Indonesia shall be installed in the toilet (for males and for female respectively), while the rest shall be of western style.

(d) Septic Tanks

Septic tanks in all buildings (each FCPC, FL and PL) shall be used only for treating sanitary sewage, and shall have the structure and functional performance that are generally accepted at the local level.

Septic tanks shall be of cast-in-place concrete, and shall be capable of accommodating 60 persons at each FCPC and 35 persons at each FL.

(e) Fire-fighting Equipment

Since Indonesia, particularly in localities where the proposed sites of the Project exist, has no specific regulations on fire-fighting equipment, no specific equipment is required.

As things stand now, it is useless to expect any sort of public fire-fighting activities. In the Project, therefore, the only consideration that will be given in this respect is to provide proper fire extinguishers at necessary places.

4) Air-conditioning and Ventilation Facilities

- (a) The cooling system shall be an individual air-cooled package-type air conditioner in consideration of maintenance and operating costs.
- (b) Architectural consideration for the sake of natural ventilation will be given to rooms which are to have no cooling system, such as louver windows and high ceilings.
- (c) In view of the possibility that a cooling system may be installed in the future, extra wall-penetrating sleeves and power outlets shall be provided.
- (d) Temperature and humidity conditions for cooling shall be set as follows:

	<u>Indoors</u>	<u>Outdoors</u>
Temperature	27°C	35°C
Humidity	60%	70%

- (e) Rooms for which a cooling system shall be planned are as follows:

Each FCPC: Head Office

- (f) For forced ventilation, ventilating fans shall be installed in toilets. Laboratories and working spaces shall be provided with ventilating fans for forced-air intake and exhaust. The rooms planned for ventilation are as follows:

Each FCPC: Laboratory, Working space, Toilet

Each FL: Laboratory, Toilet

Each PL: Laboratory, Toilet

5) Gas Facilities

FCPP, FL, and PL facilities shall use LPG. Each island table in the laboratories shall be provided with housing space for LPG cylinders for an independent gas supply.

(5) Finishing

1) Exterior Finish

The exterior finish of buildings of all FCPC, FL, and PL shall be as follows:

(a) Roof

Roof frames shall be wood trusses. Roof materials are of wood sirap.

(b) Exterior Walls

Concrete and brick bases shall be coated with cement plaster and finished with sprayed epoxy resin paint.

(c) Floor

Floors of open corridors and balconies shall be finished in terrazzo tile (40 cm x 40 cm). Skirting floors shall be concrete, cement plaster with grooving.

(d) Ceilings

Ceilings of eaves and open corridors shall be concrete and finished with painted cement, or hardwood tongue-and-groove strips, oil stained.

(e) Fenestration

Wooden sash, heat-absorbing glass, and jalousie windows. Doors shall be wooden doors, oil stain finish.

2) Interior Finish

Interior finish in FCPC, FL, and PL shall be as follows:

(a) Floors

Terrazzo block finish (40 cm x 40 cm) for office rooms, meeting rooms, library, laboratory rooms, entrance halls, corridors, stairways, and cafeteria.

Computer rooms shall be provided with double-deck, raised wood floors—with a vinyl top sheet over 12 mm thick plywood.

Toilet and kitchen floors shall be finished with porcelain mosaic tile.

(b) Walls

Cement plaster emulsion paint finish over concrete and brick base.

Toilet and kitchen walls shall be 100 mm x 100 mm tile.

Toilet-booth partitioning shall be terrazzo block.

(c) Ceilings

Ceilings of entrance halls shall be finished with hardwood tongue-and-groove strips.

Ceilings of ordinary rooms such as offices, conference and computer rooms, and quarters shall be finished with waterproof, acoustic mineral board.

Ceilings of toilets and kitchens shall be calcium silicate board finish.

4-1-4 Basic Design Drawings

(1) MAROS FCPC

- 1) Site Plan
- 2) Ground Floor Plan
- 3) Roof Plan
- 4) Section
- 5) Elevation 1
- 6) Elevation 2
- 7) Elevation 3

(2) MEDAN FCPC

- 8) Site Plan
- 9) Ground Floor Plan
- 10) Roof Plan
- 11) Section
- 12) Elevation 1
- 13) Elevation 2

(3) BANJAR BARU FCPC/PALEMBANG FCPC

- 14) Site Plan for BANJAR BARU FCPC
- 15) Site Plan for PALEMBANG FCPC
- 16) Ground Floor Plan
- 17) Roof Plan
- 18) Section
- 19) Elevation 1
- 20) Elevation 2

(4) FL

- 21) Ground Floor Plan for A-type and B-type FL
- 22) Ground Floor Plan for C-type FL
- 23) Roof Plan
- 24) Section
- 25) Elevation 1 for A-type and B-type FL
- 26) Elevation 2 for C-type FL



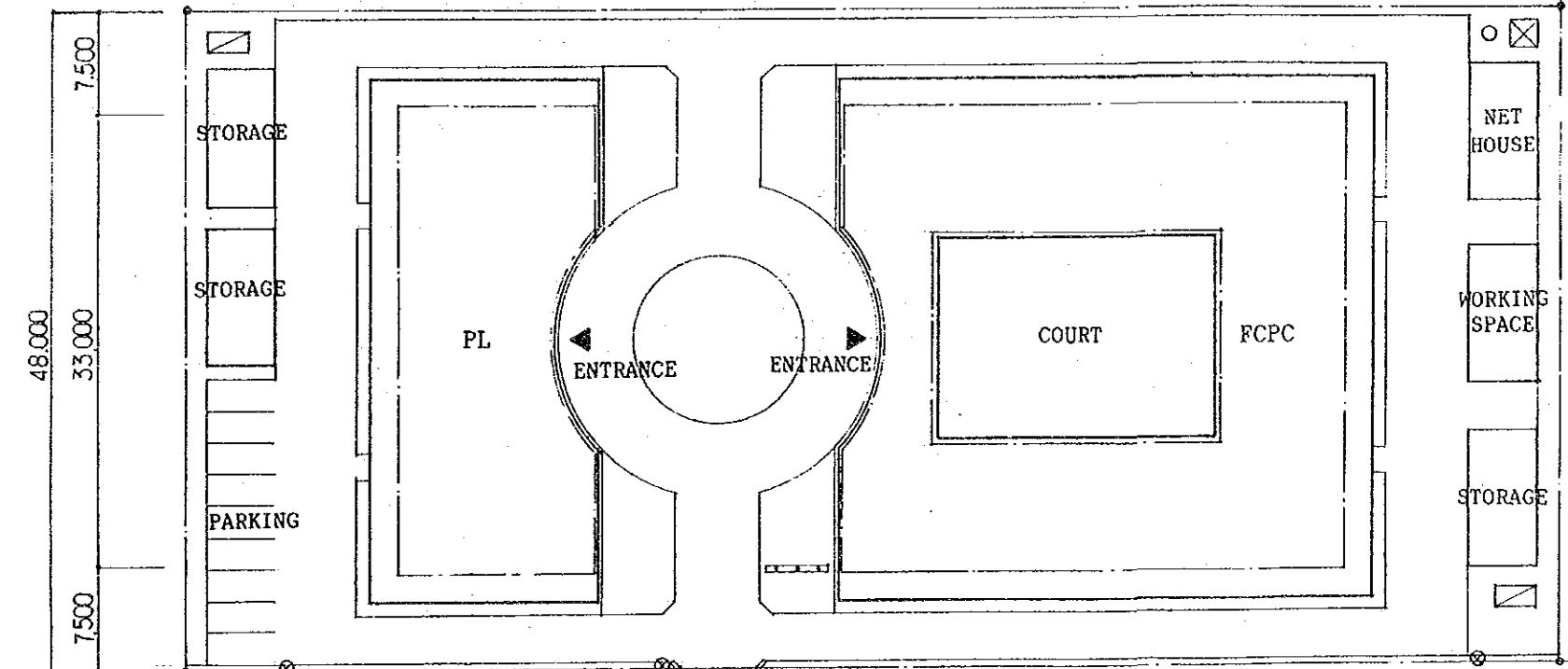
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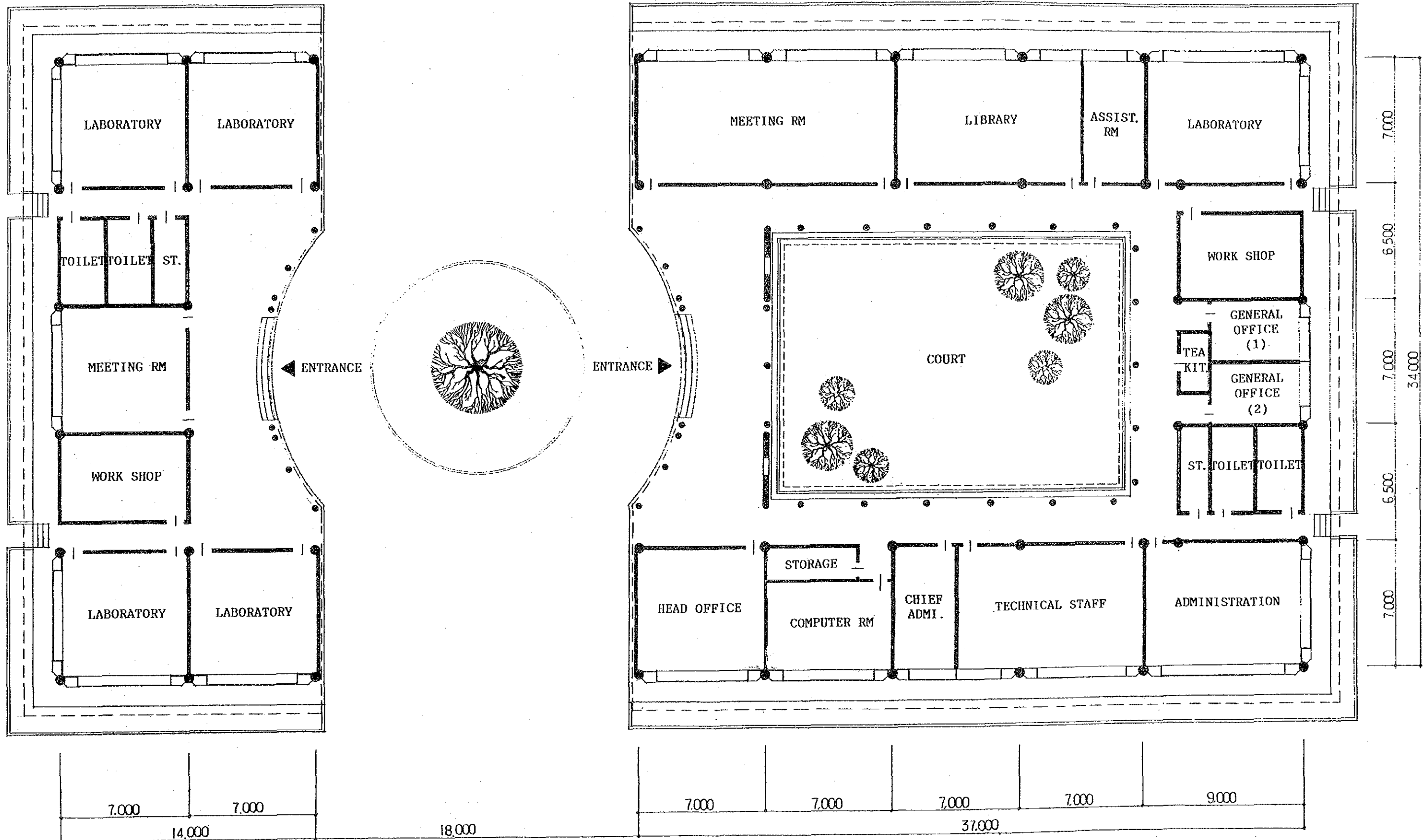
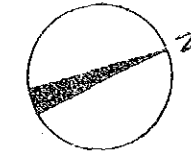
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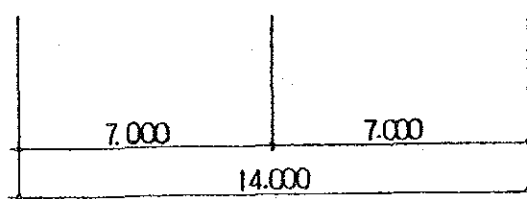
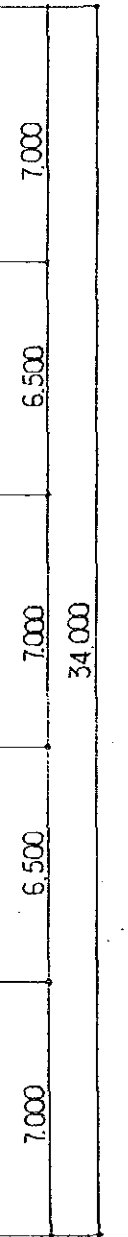
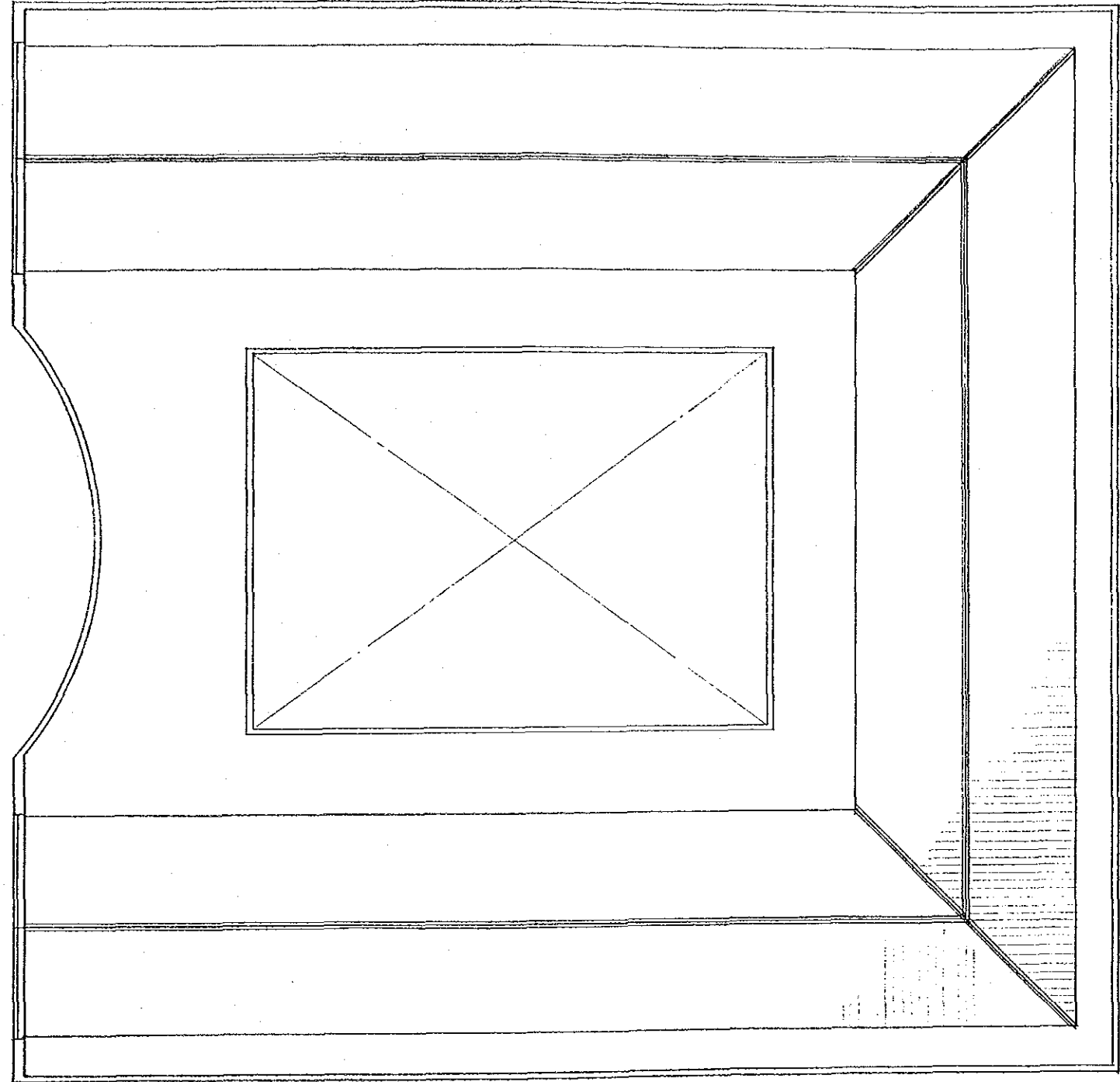
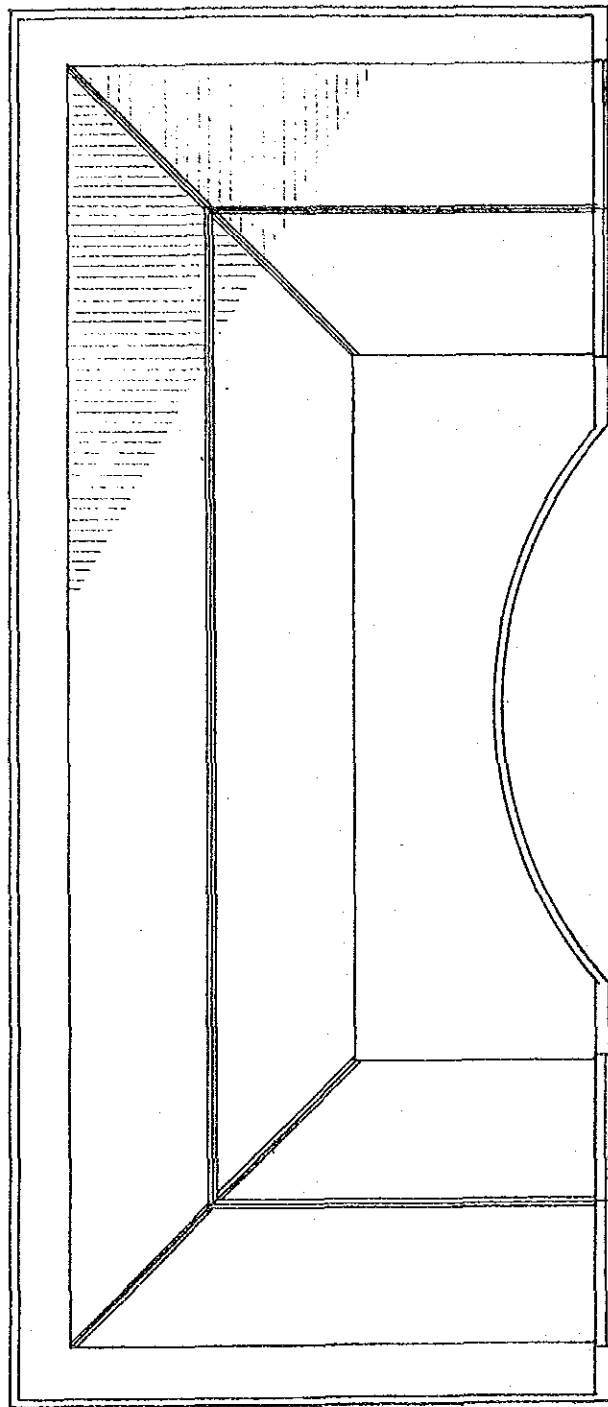
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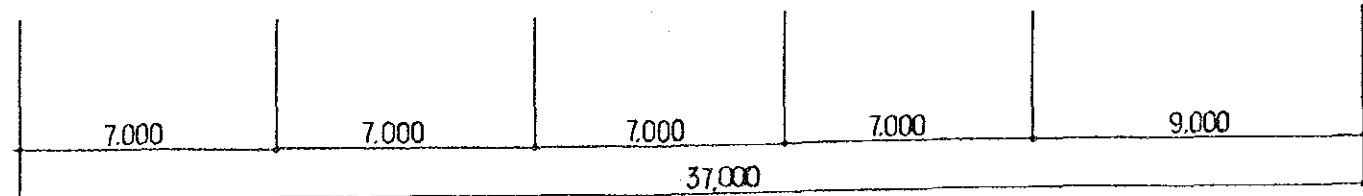
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- WELL
- ☐ GENERATOR
- ▨ SEPTIC TANK
- ⊠ FLAG POLE
- ⊗ LIGHTING POLE

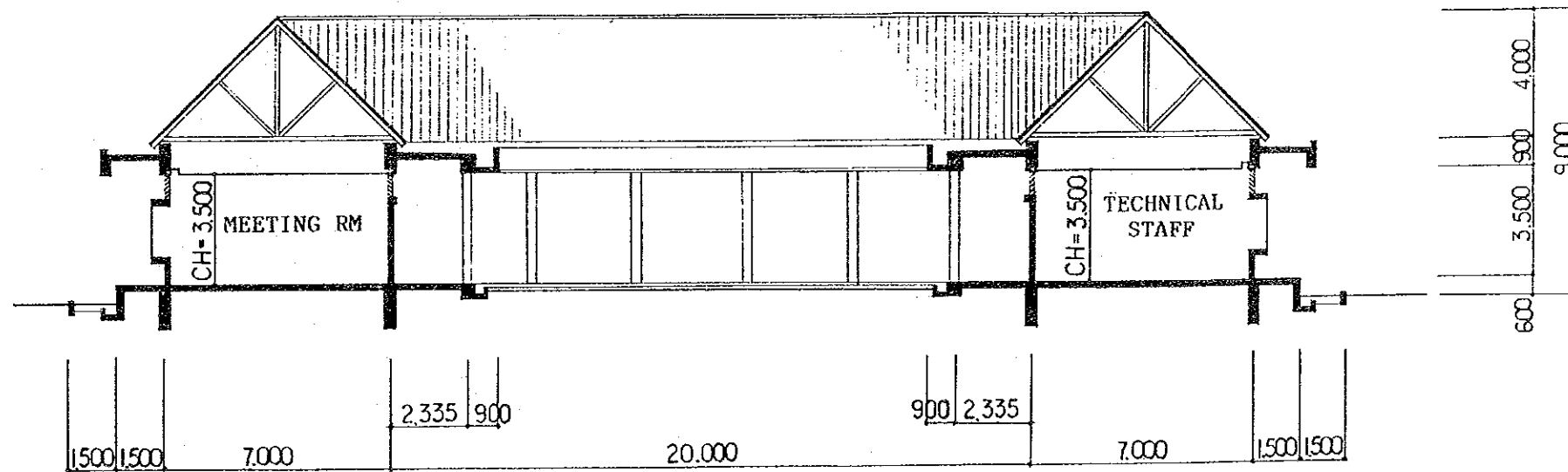
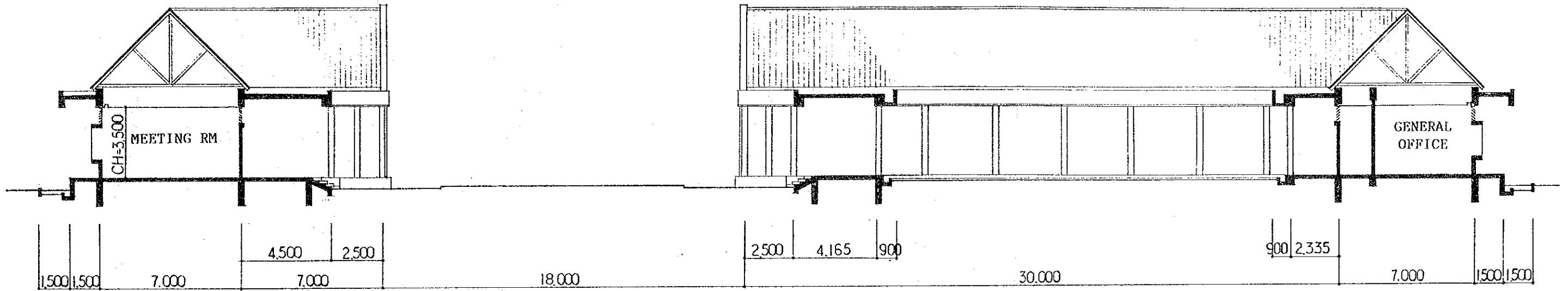


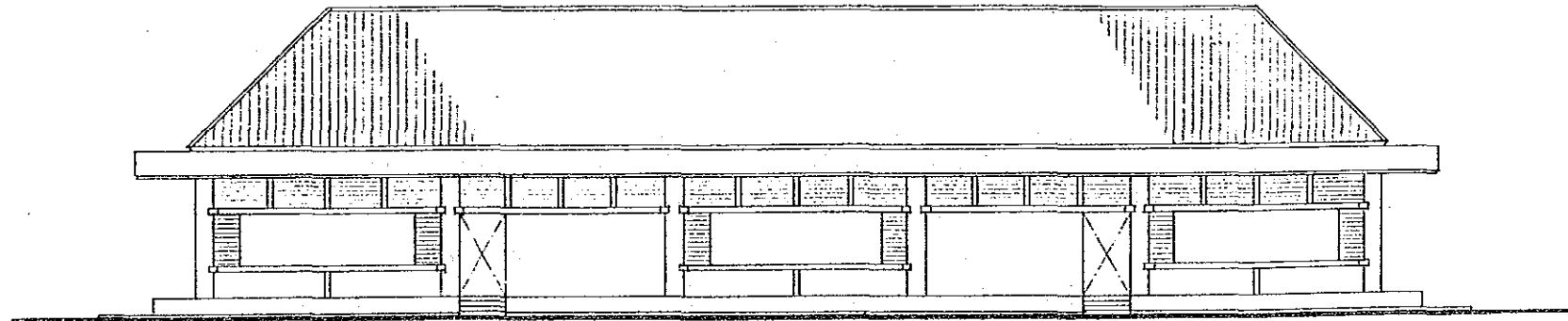
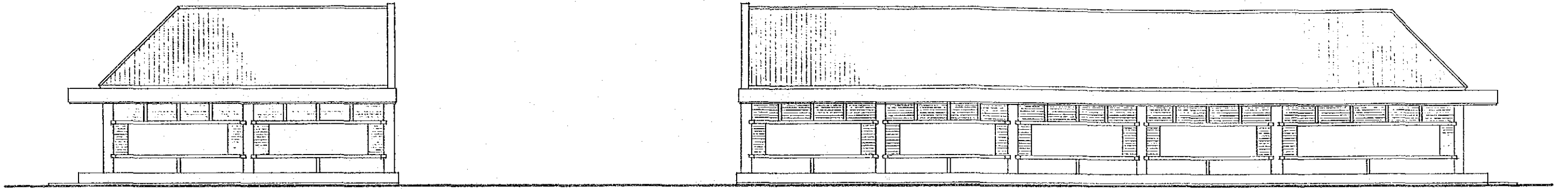


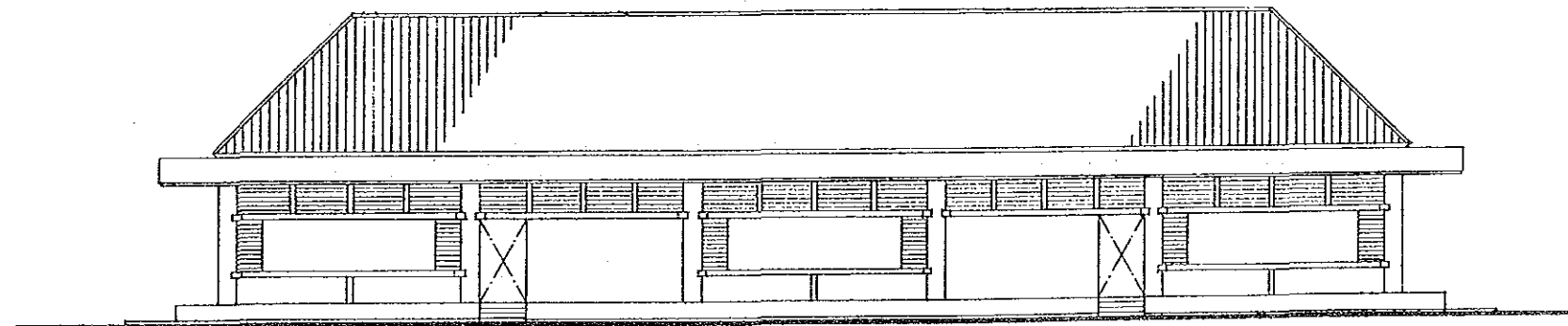
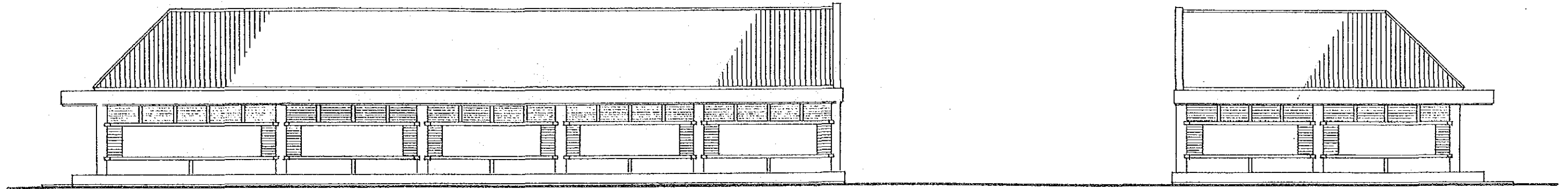


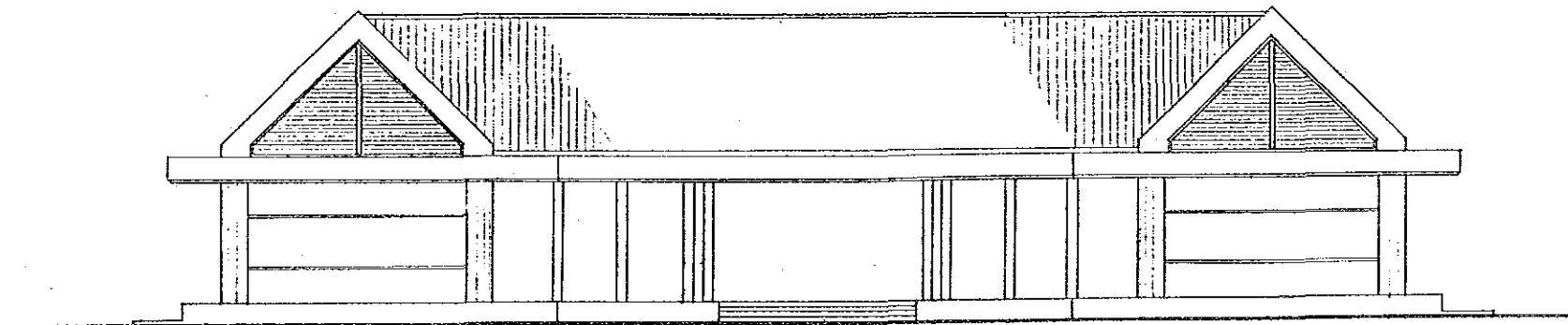
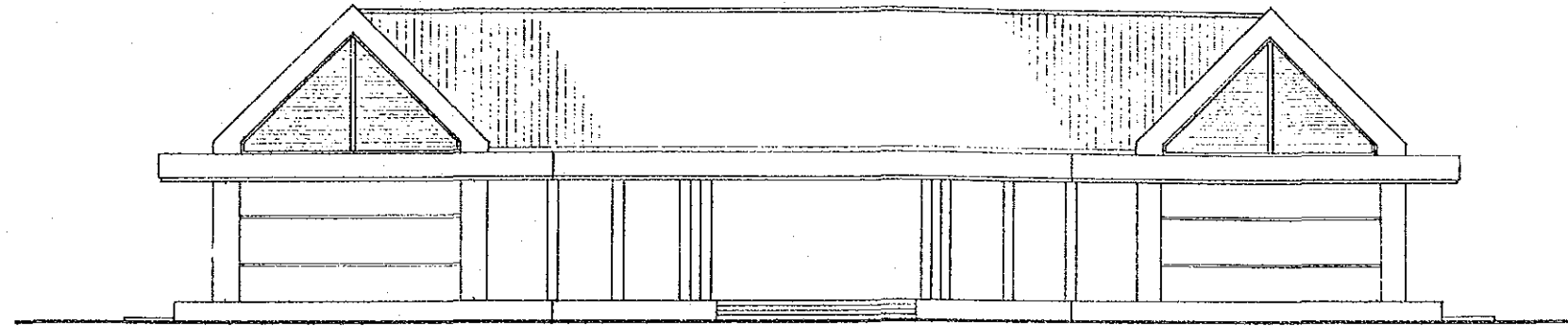
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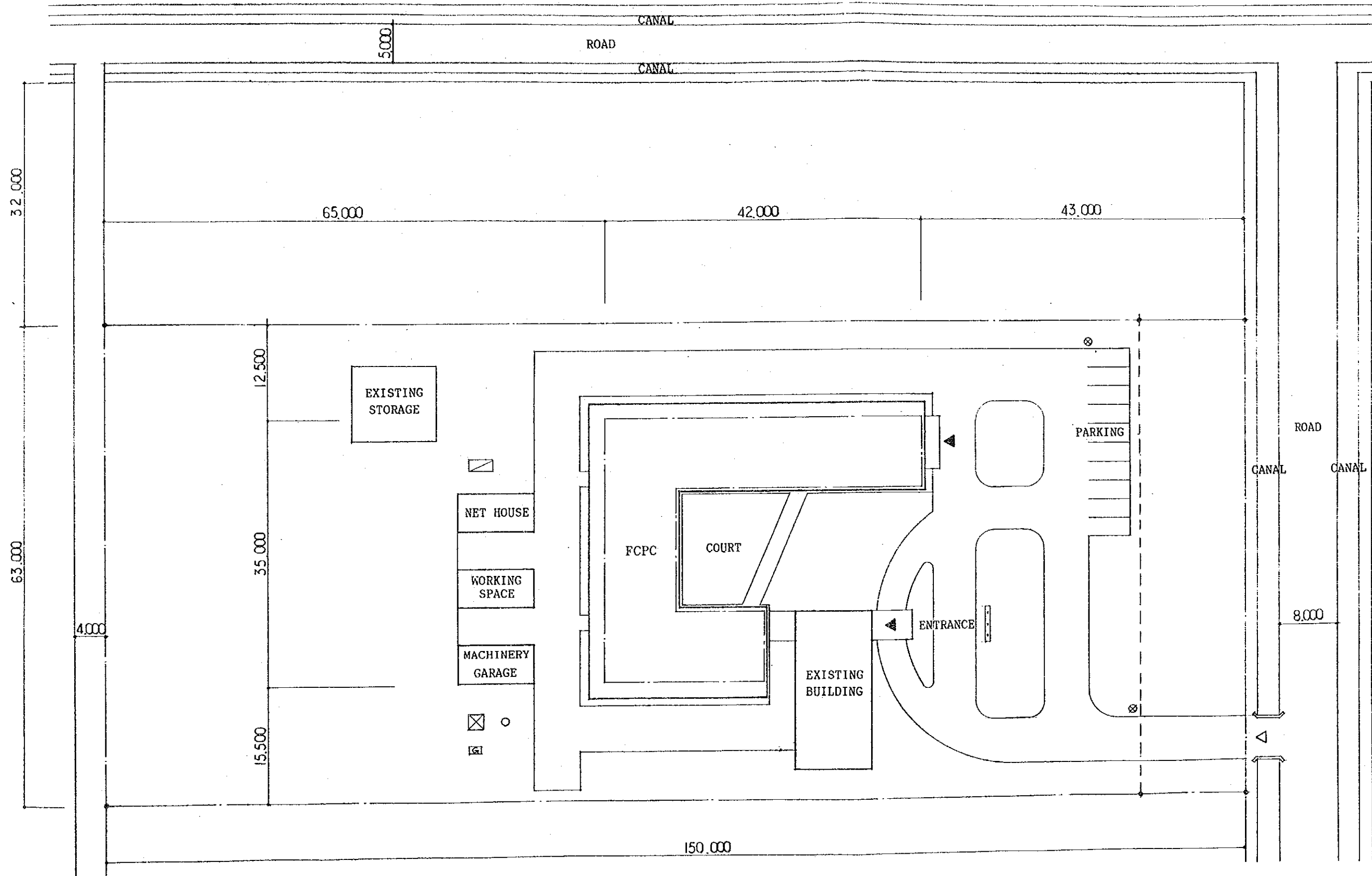
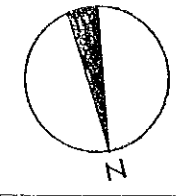




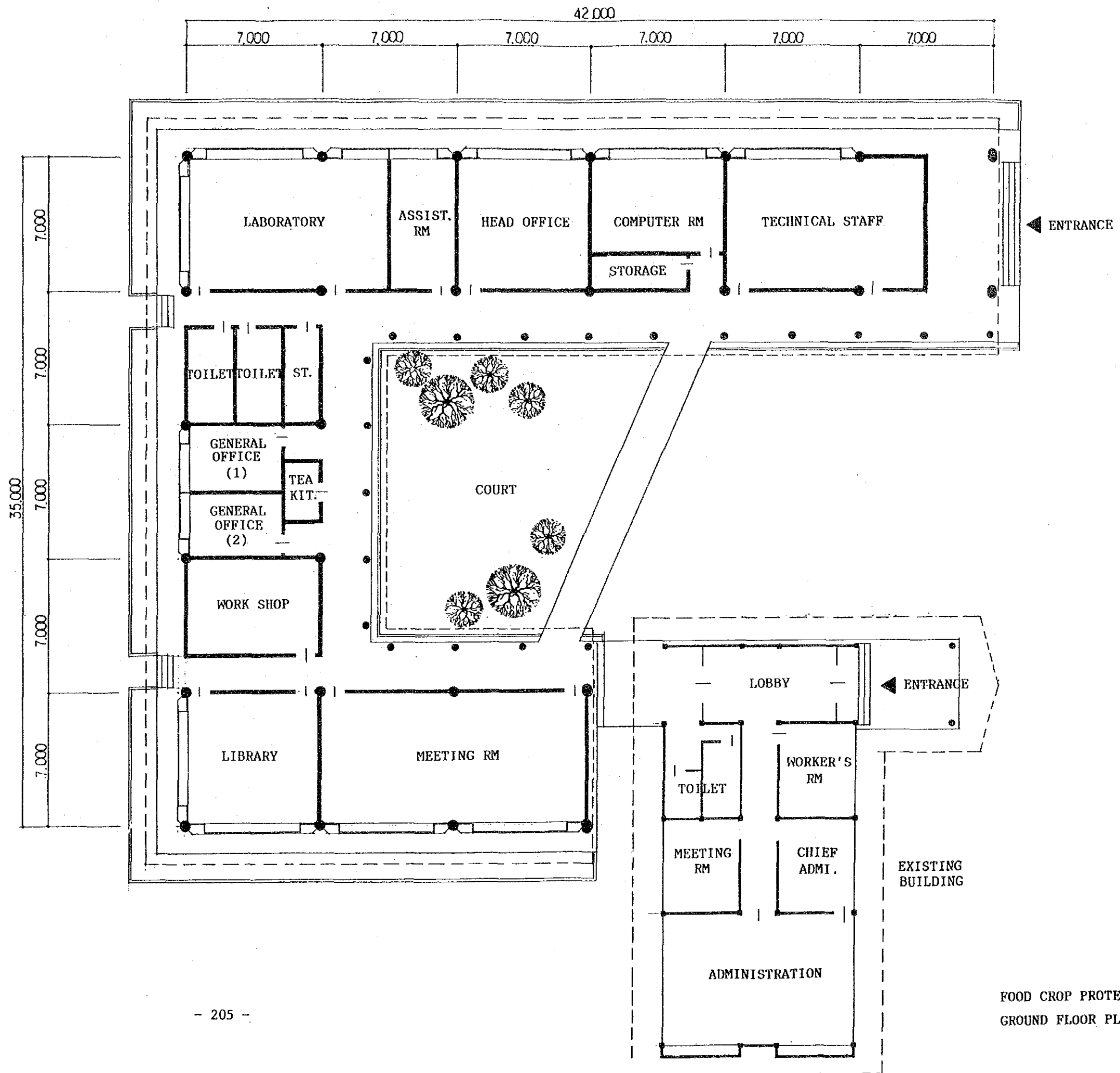


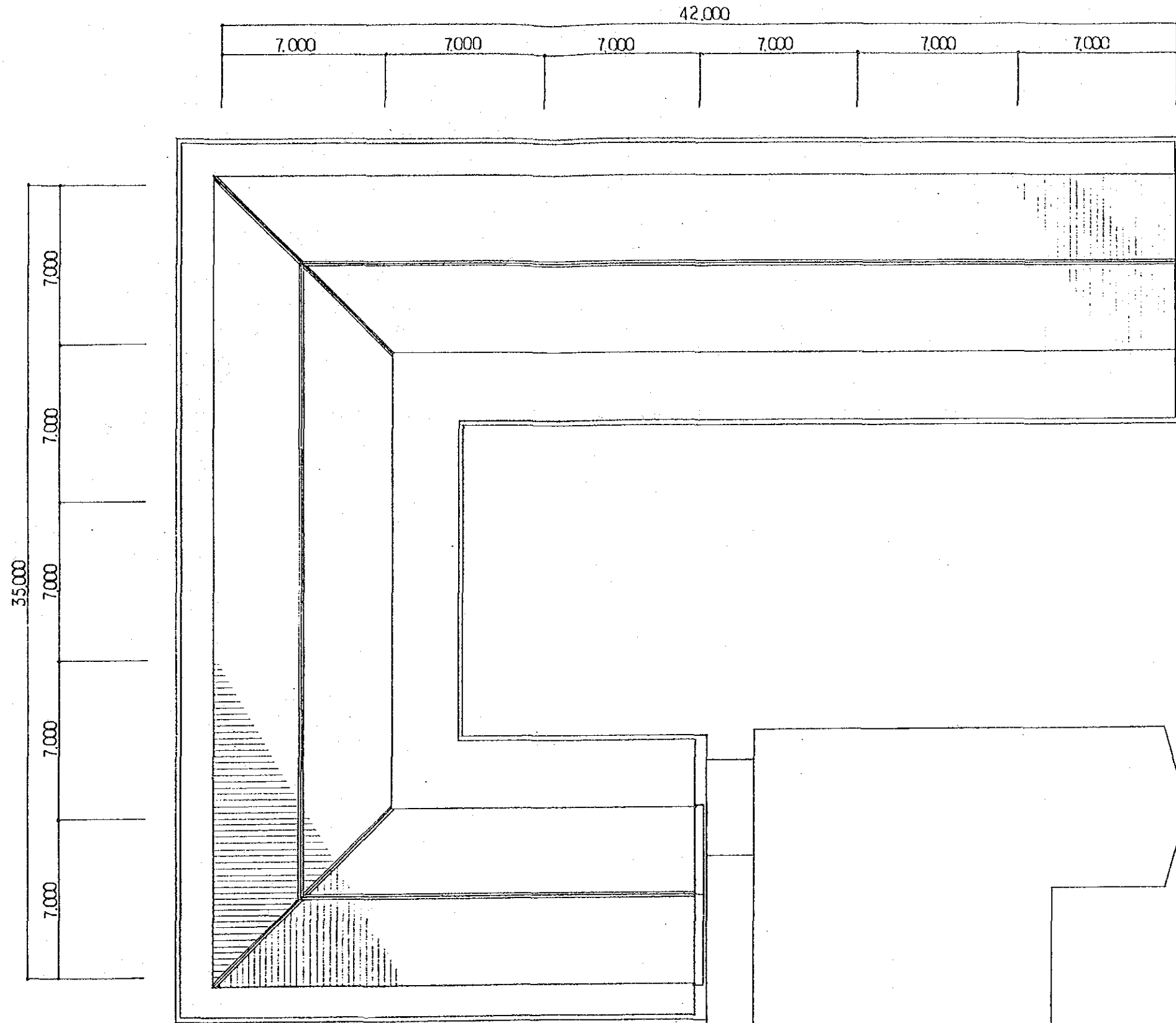


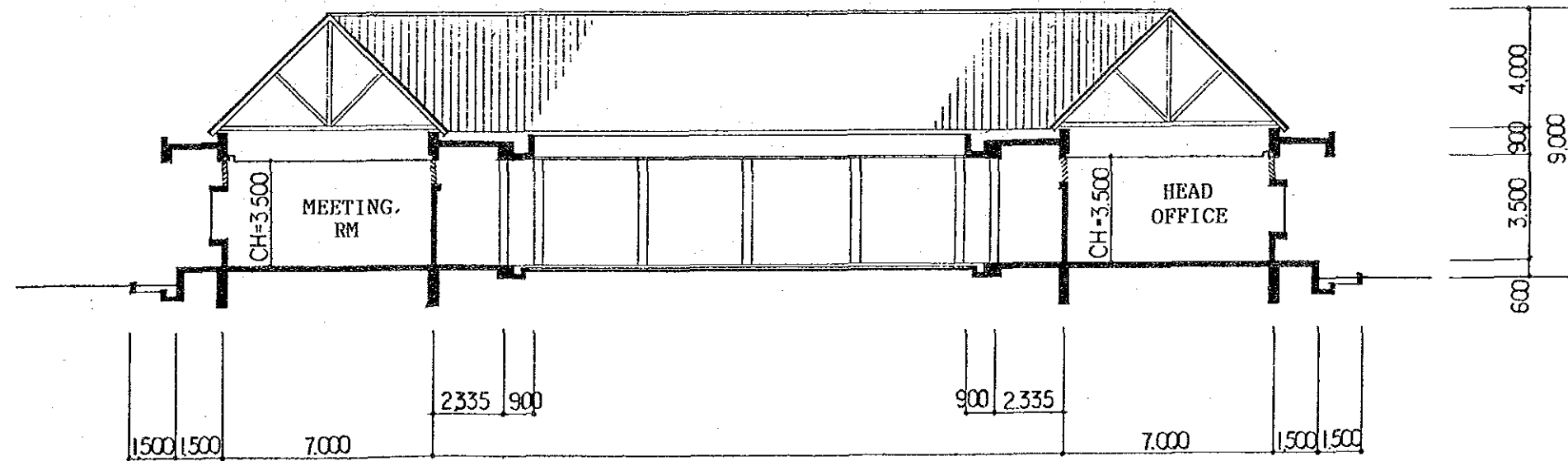
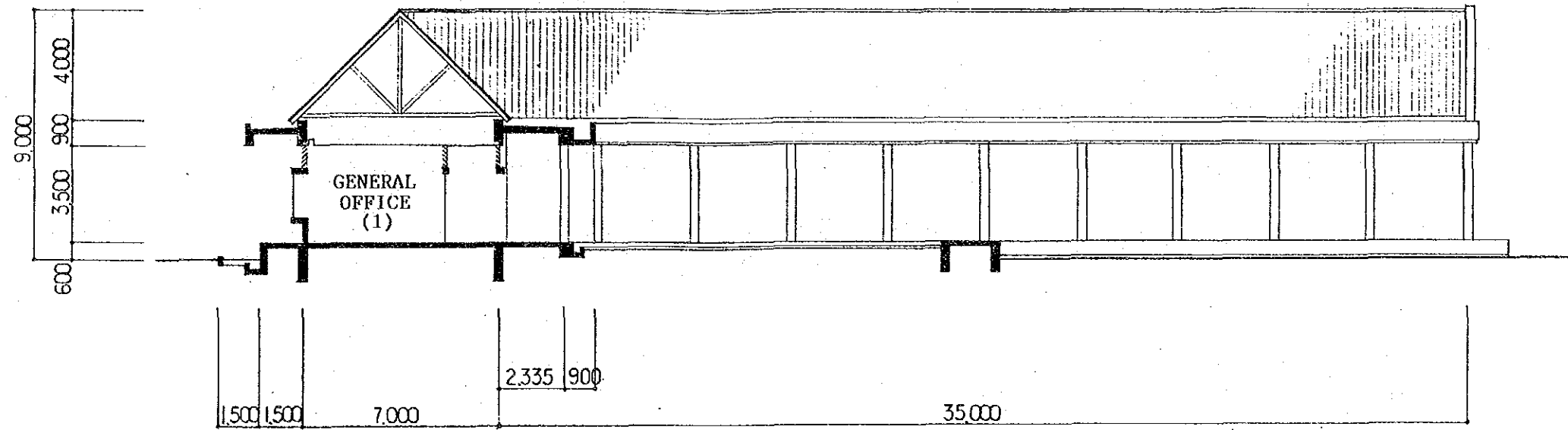


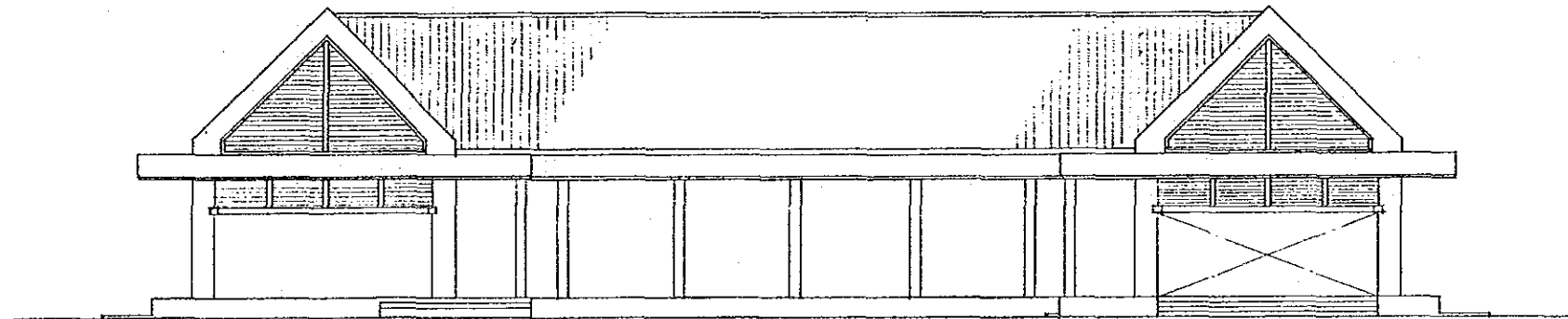
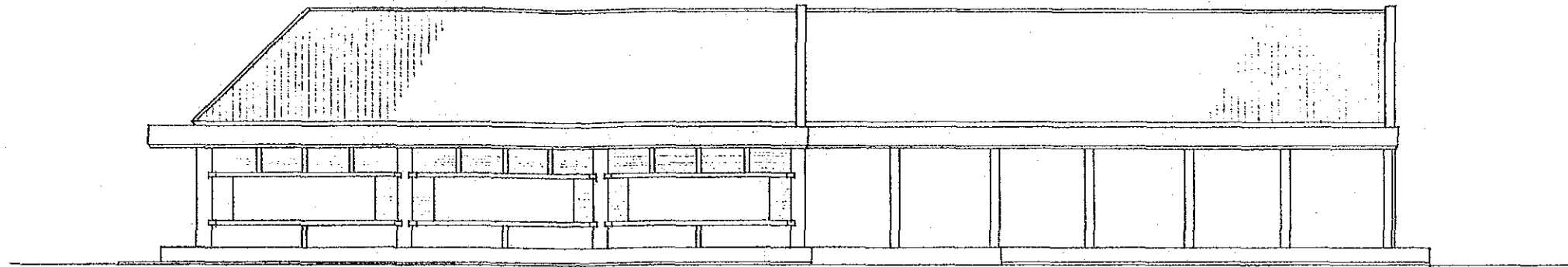


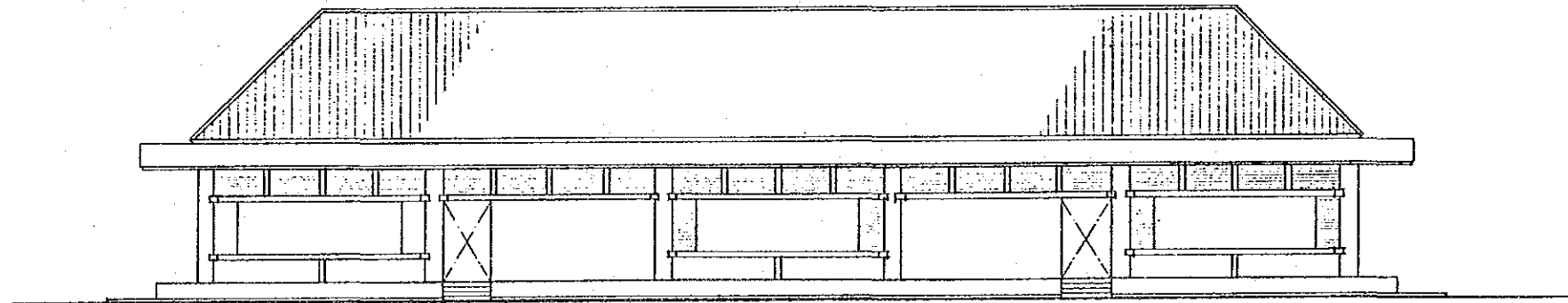
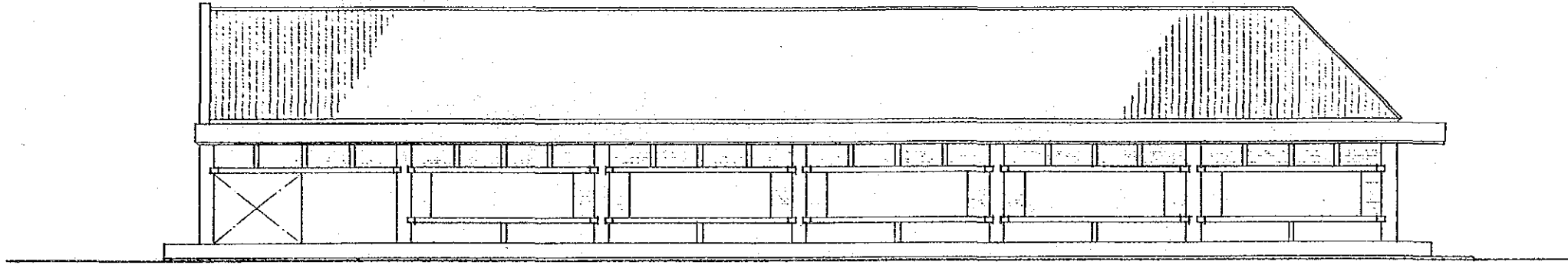
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- WELL
- ⊞ GENERATOR
- ▨ SEPTIC TANK
- ⊞ FLAG POLE
- ⊗ LIGHTING POLE

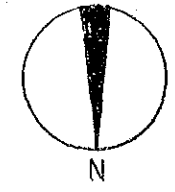




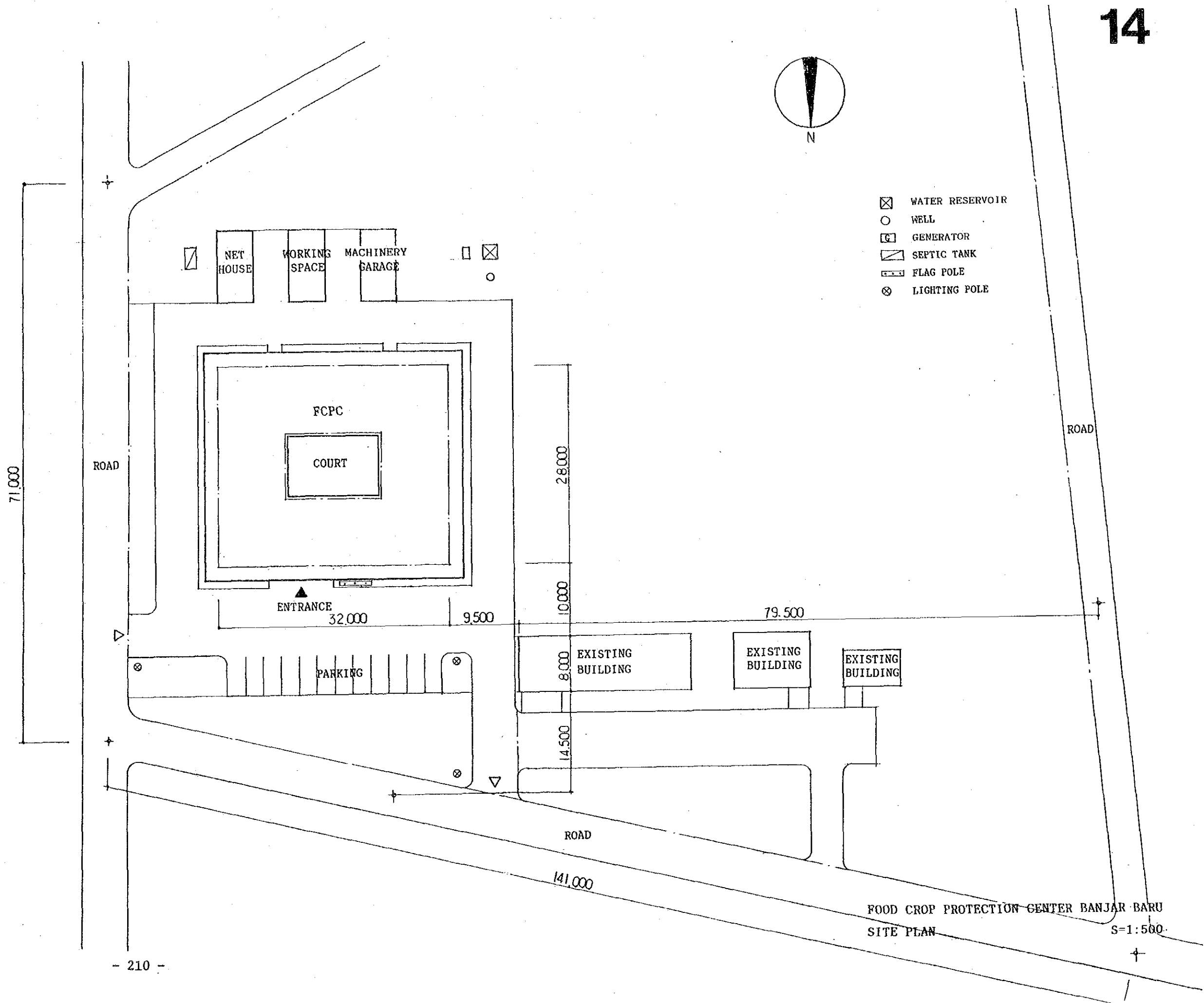




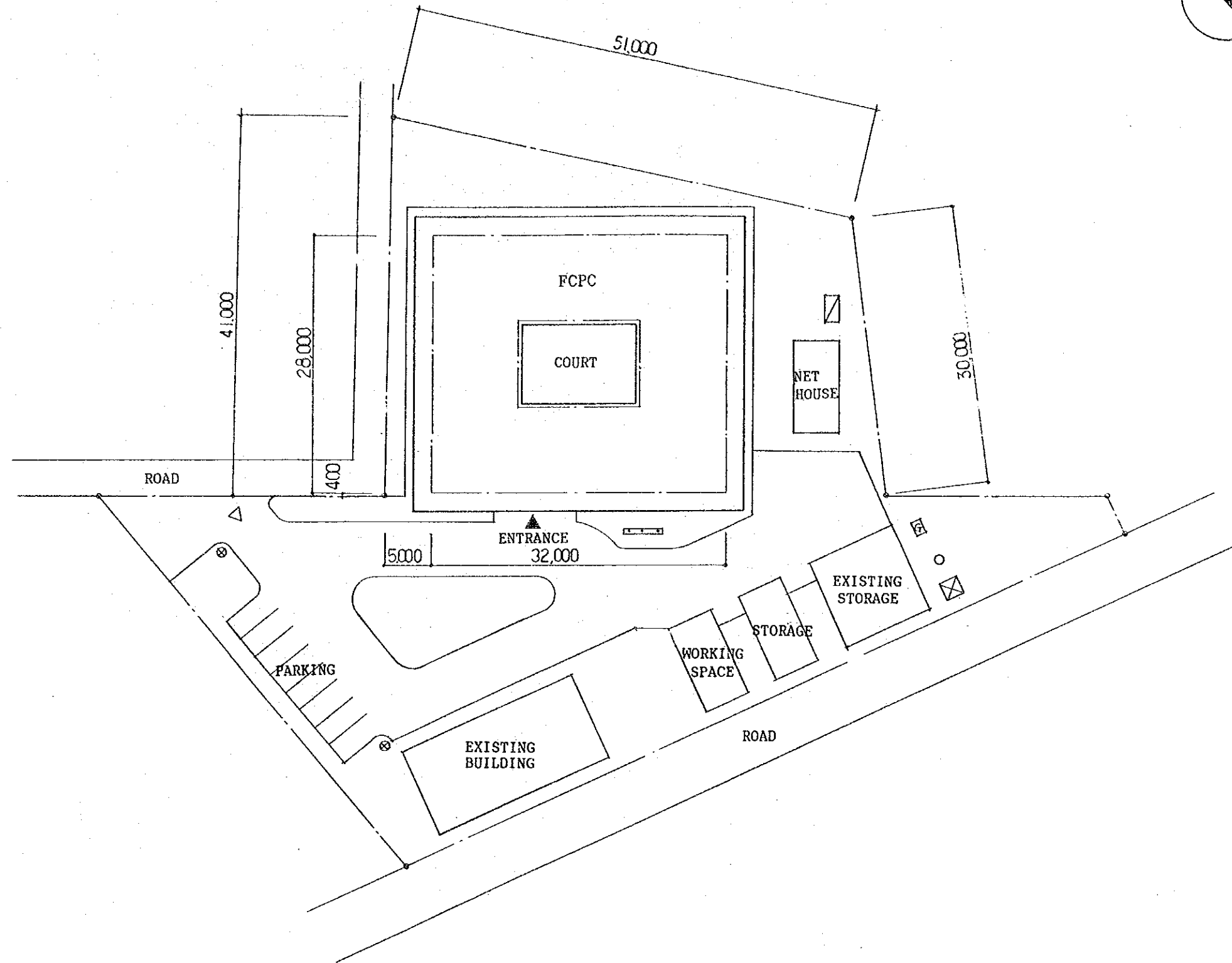




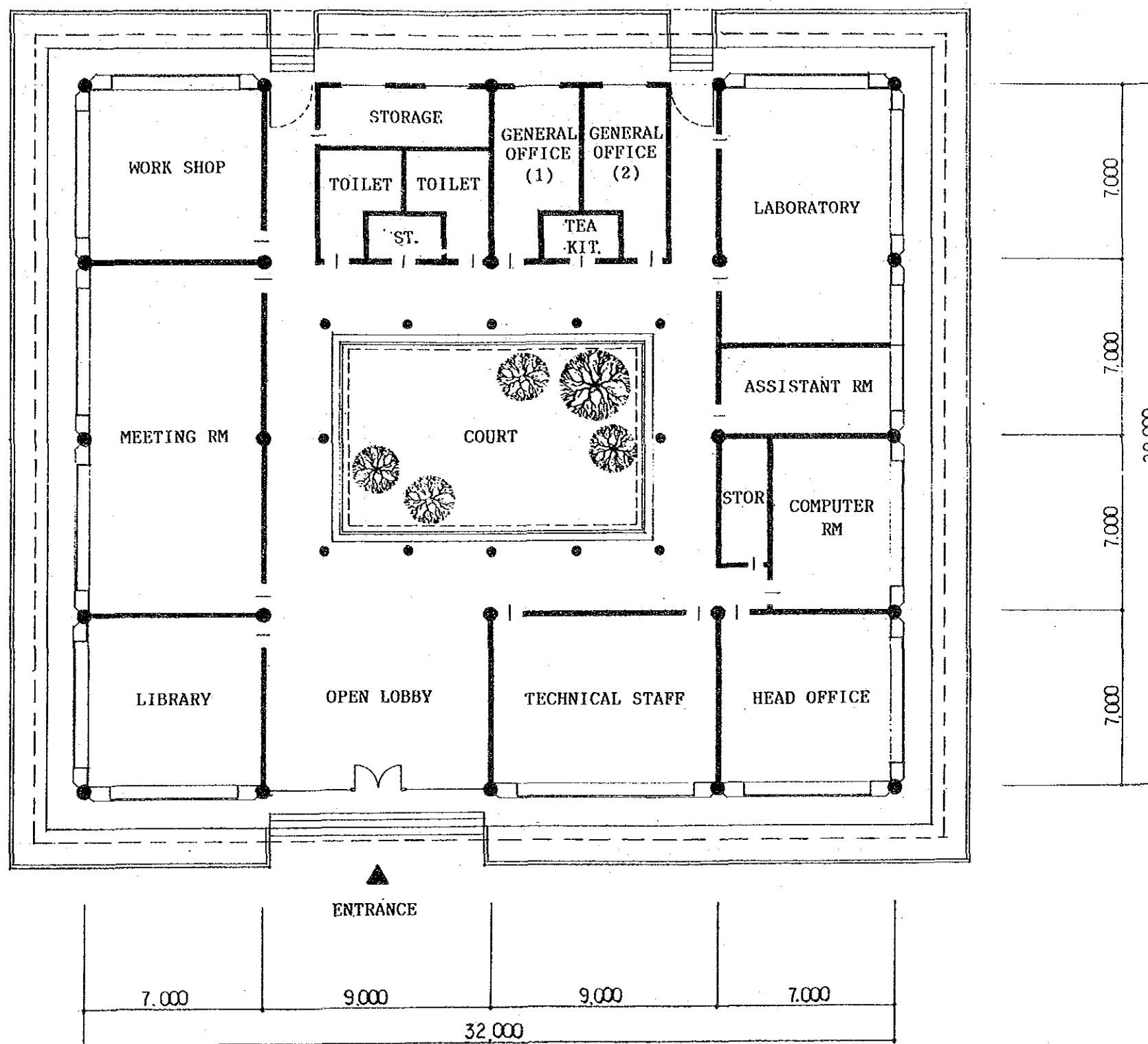
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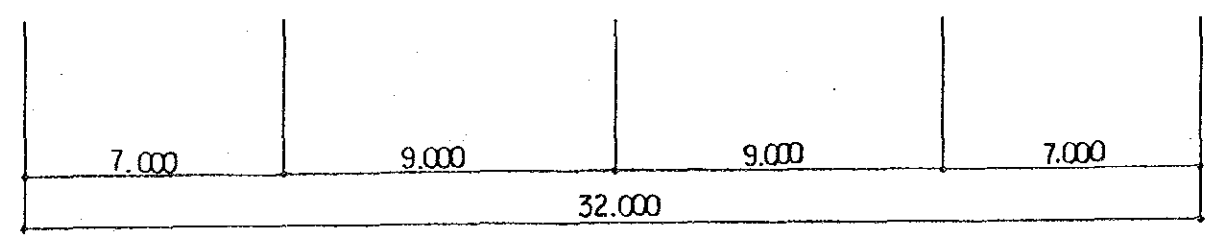
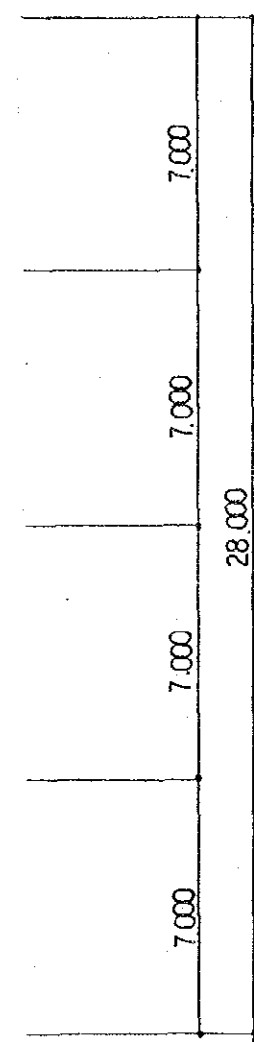
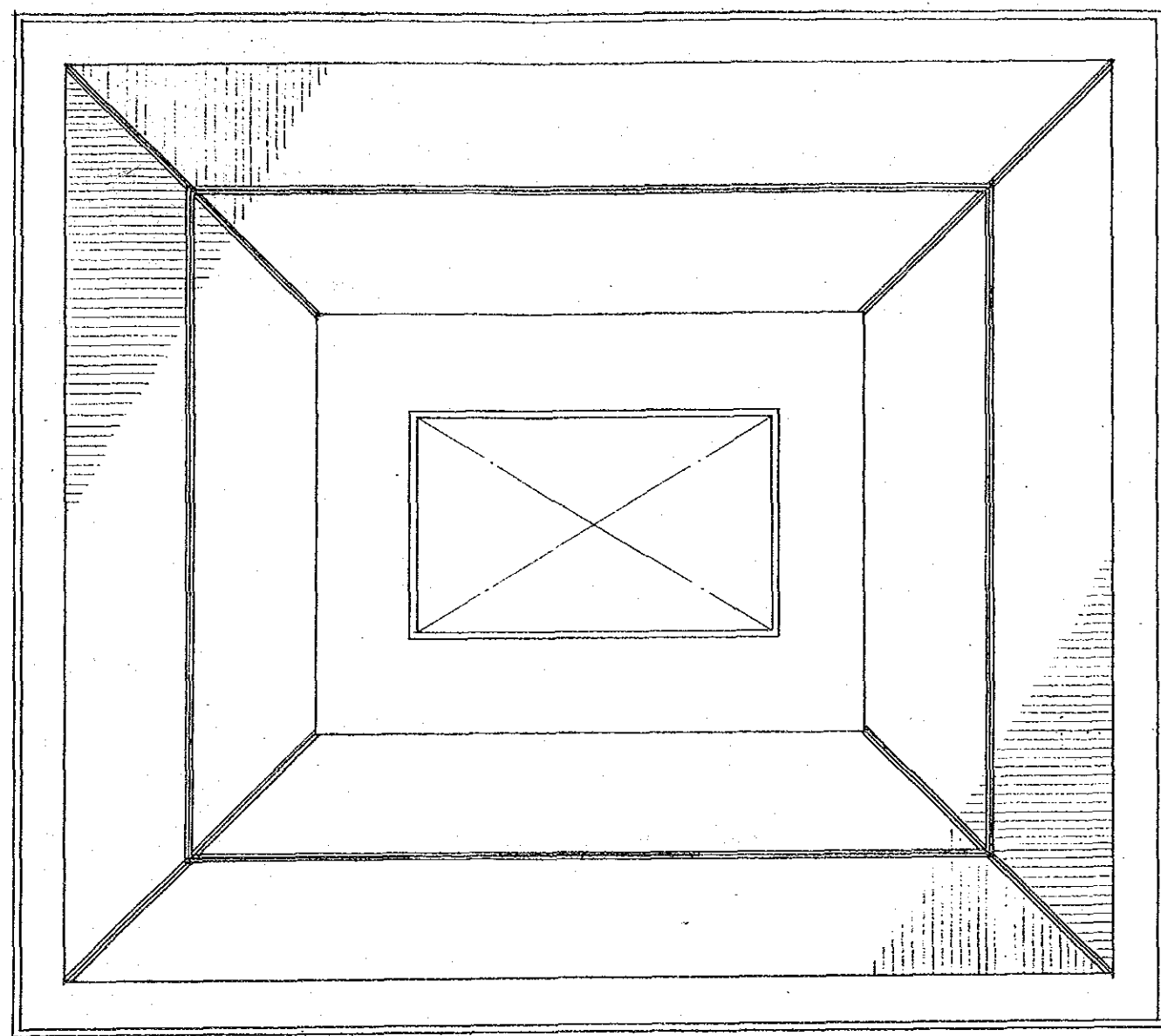


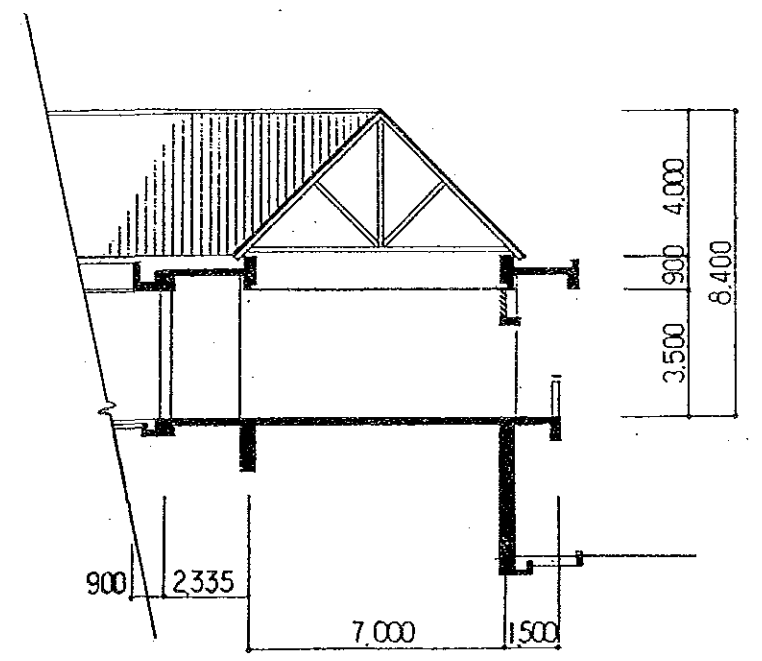
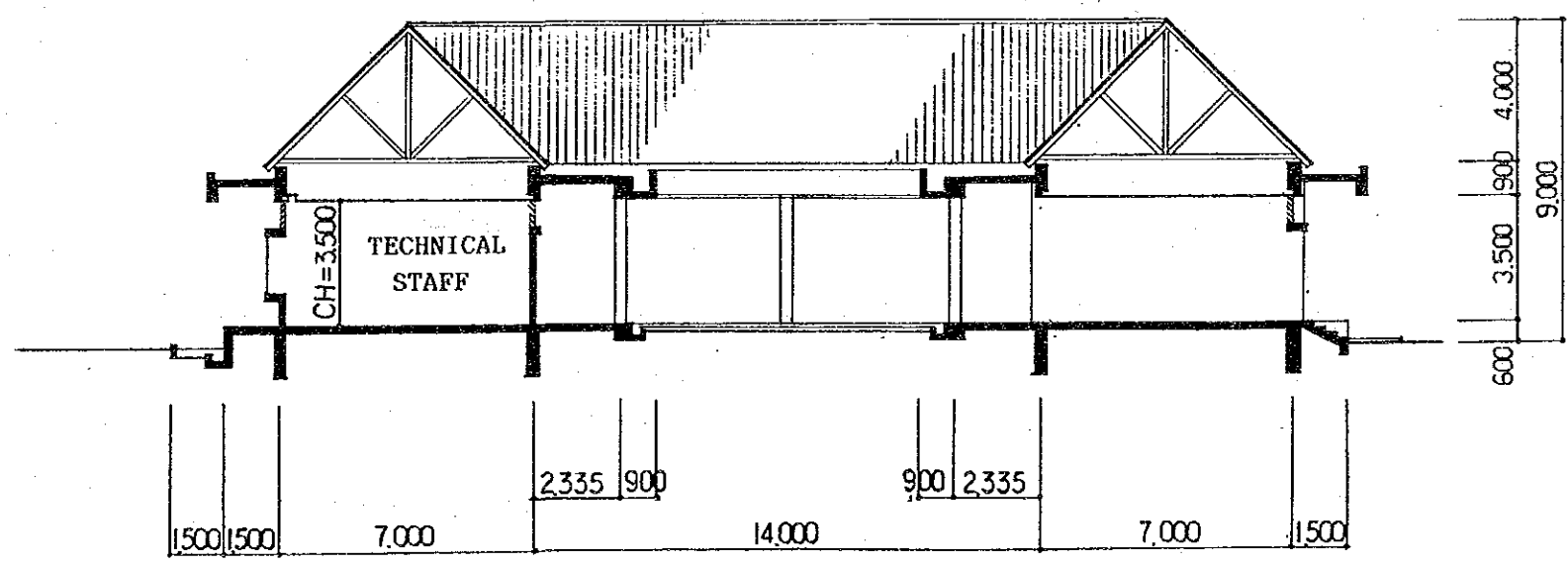
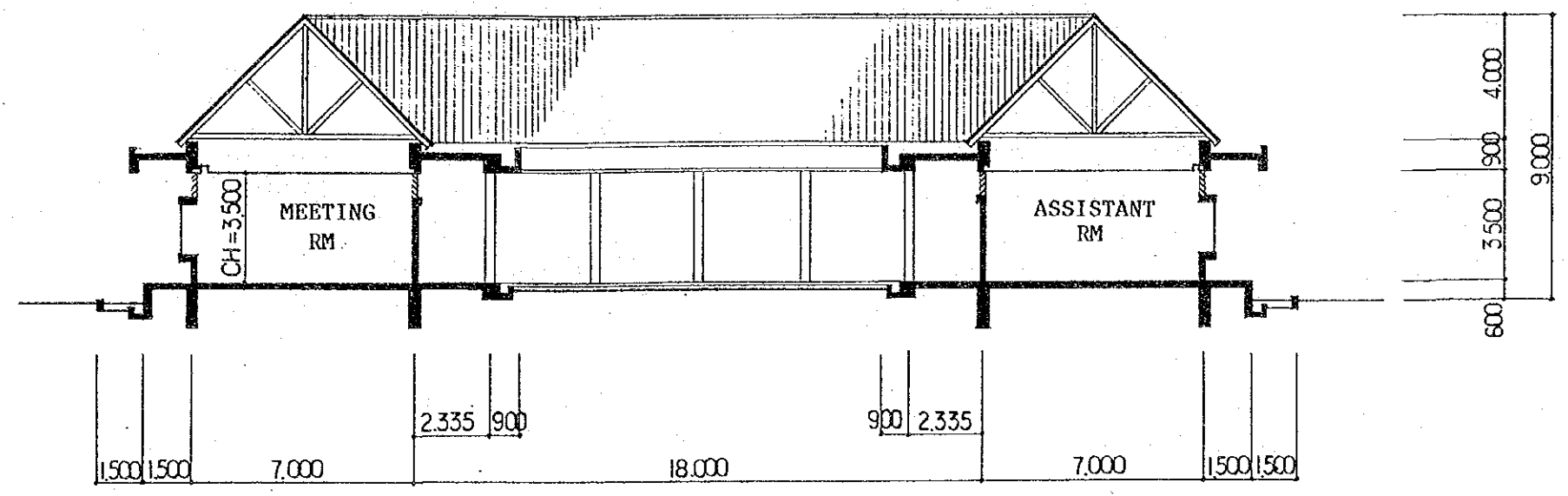
FOOD CROP PROTECTION CENTER BANJAR BARU
SITE PLAN
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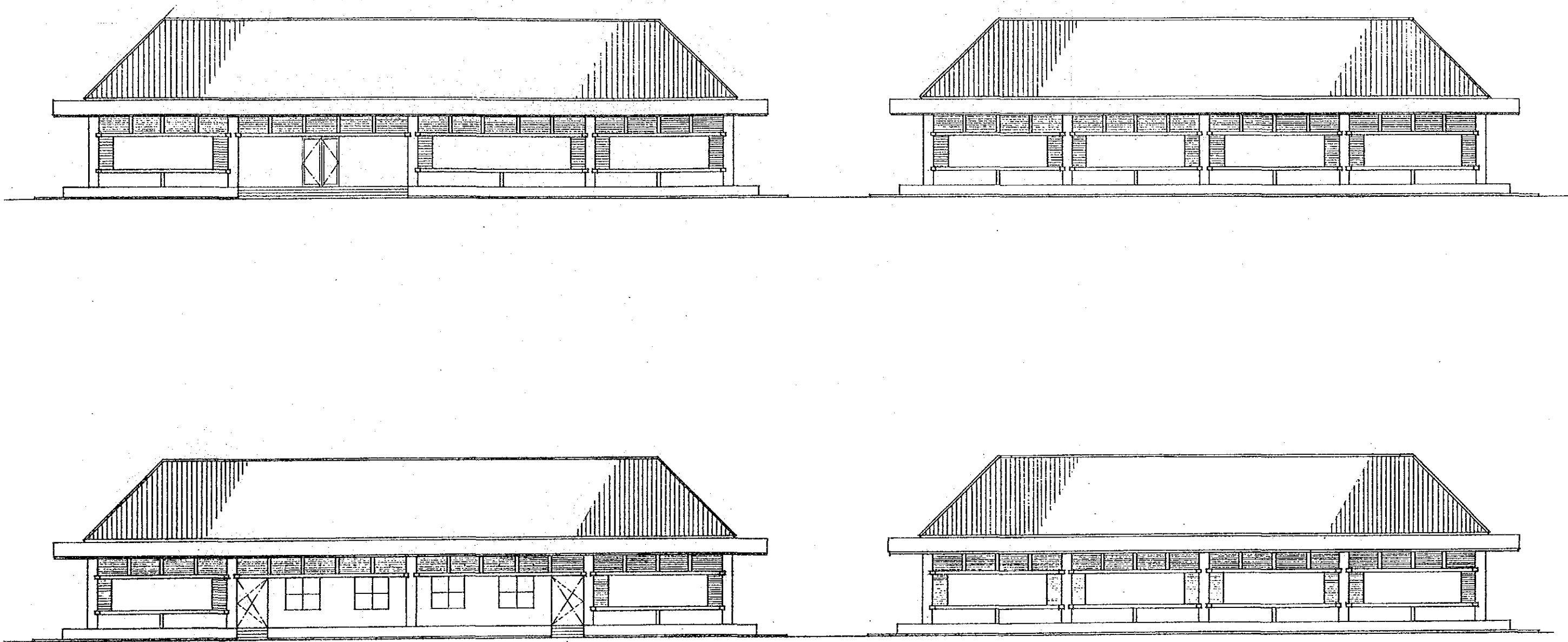


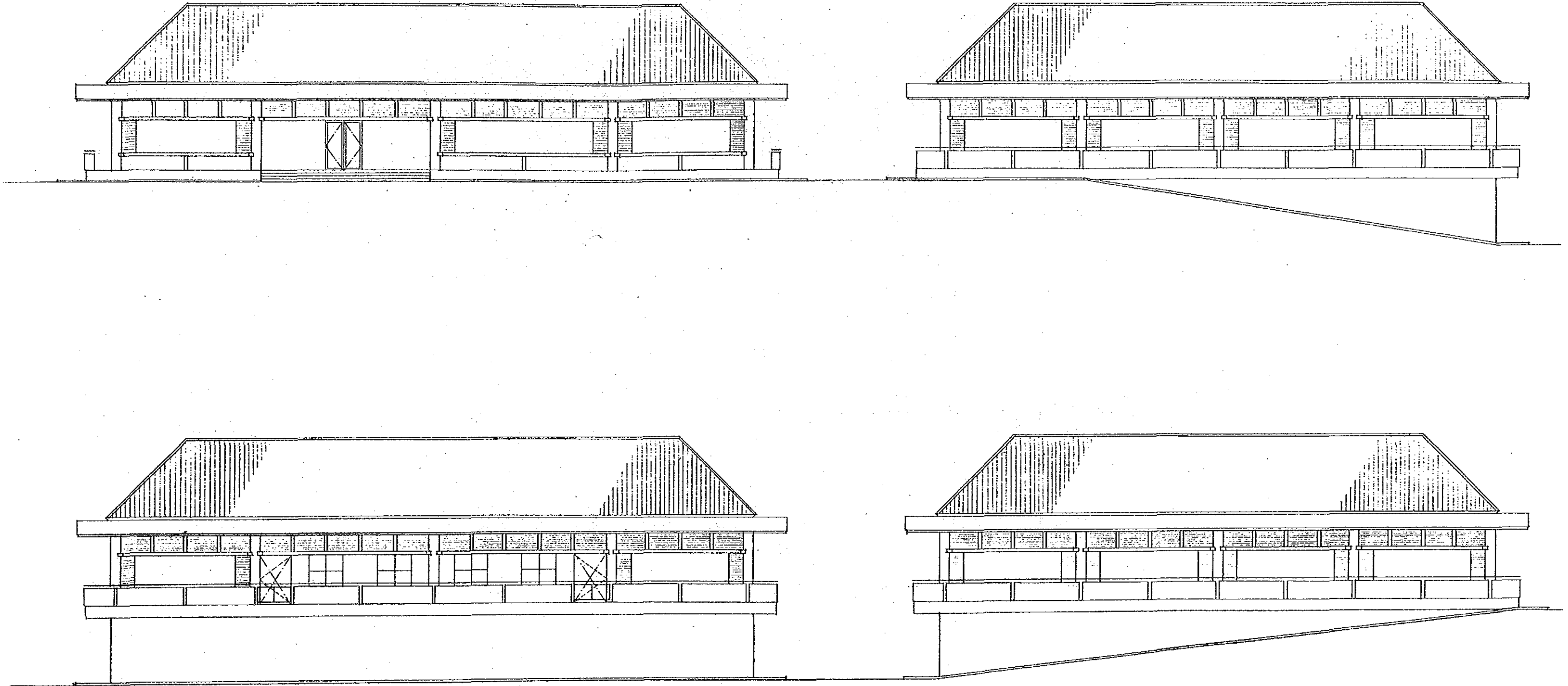


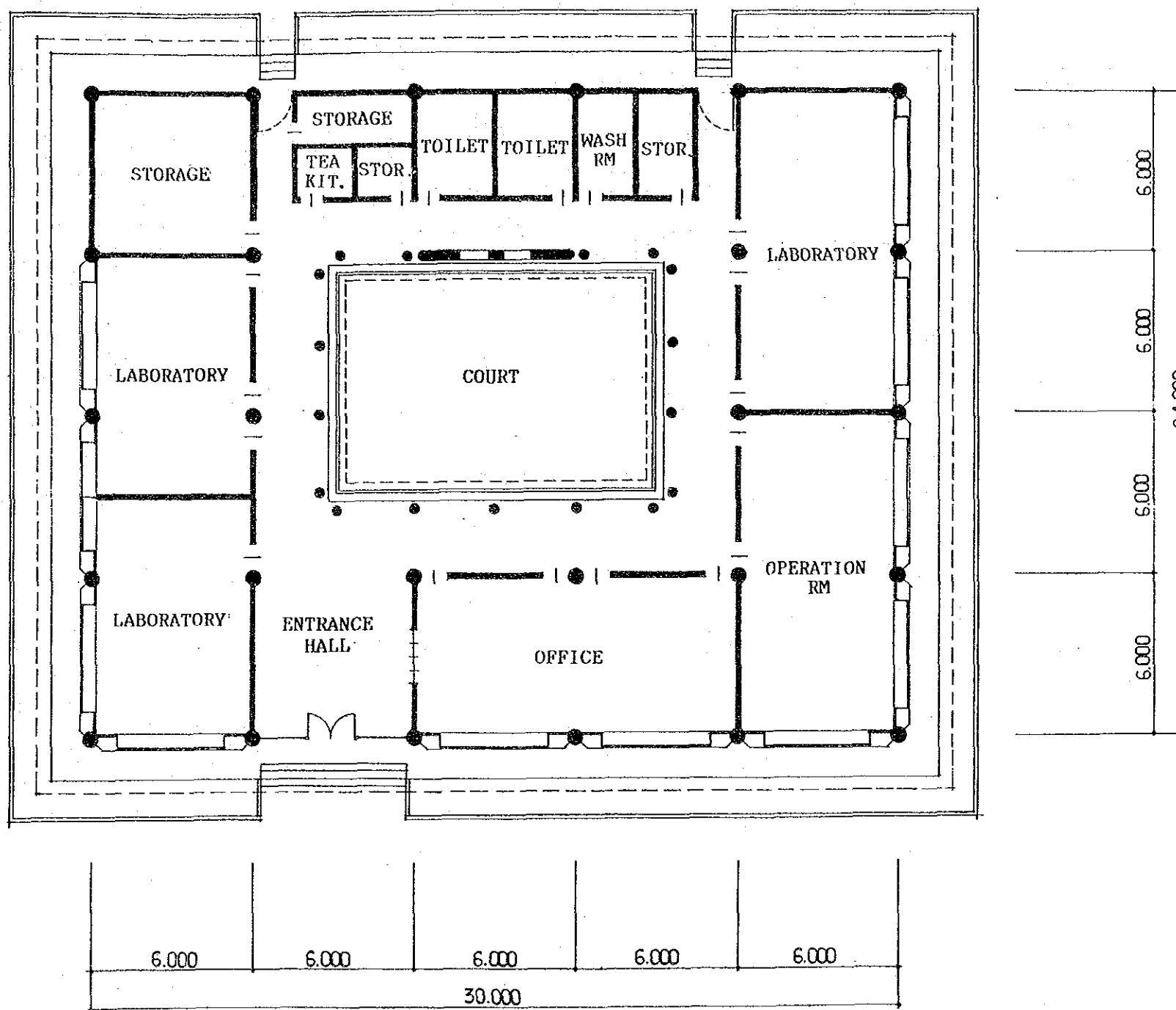


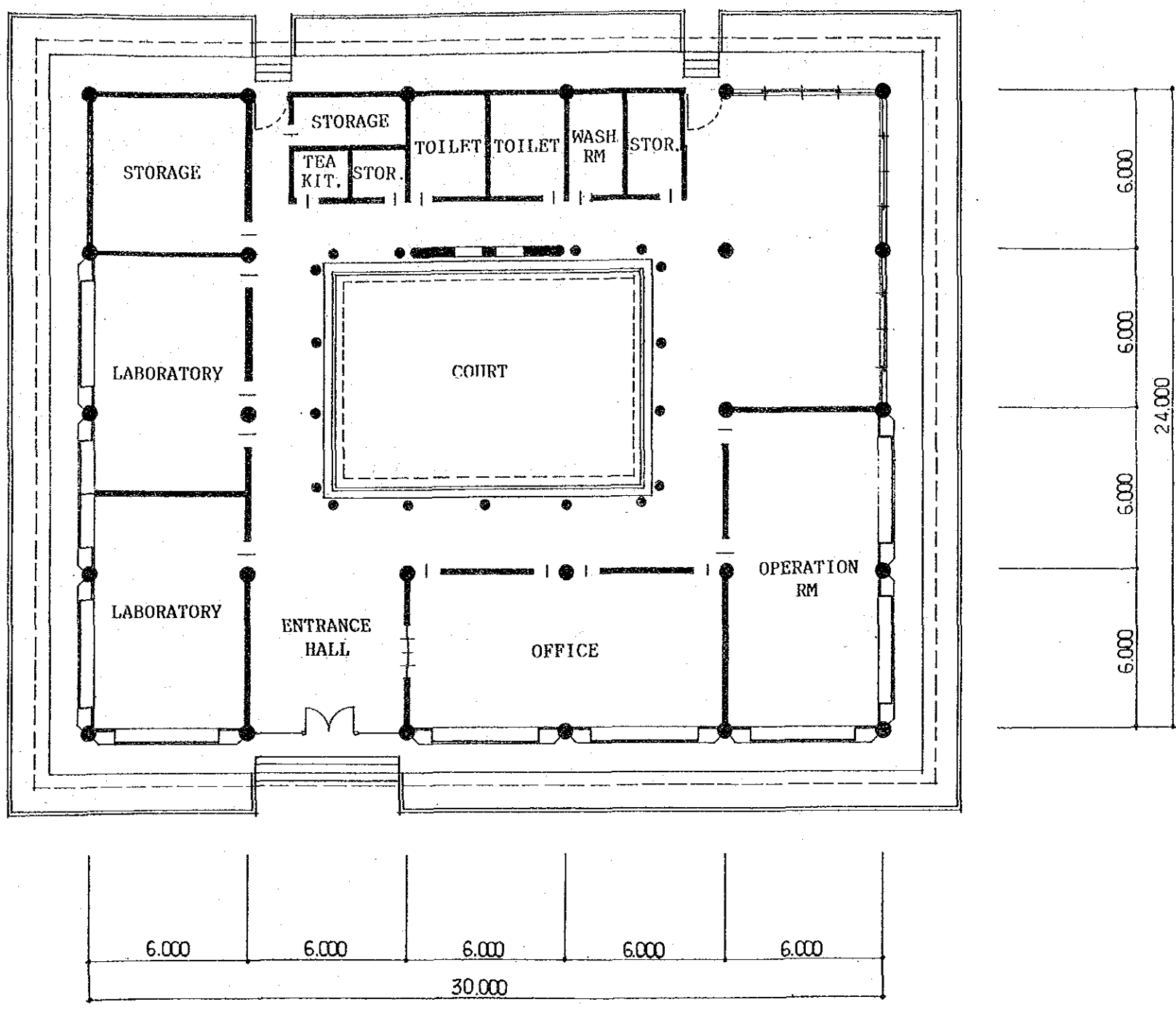
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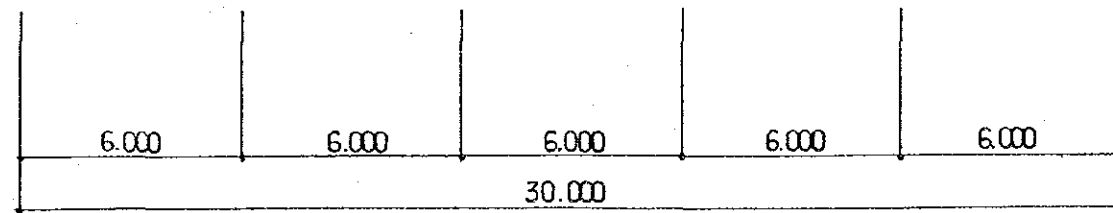
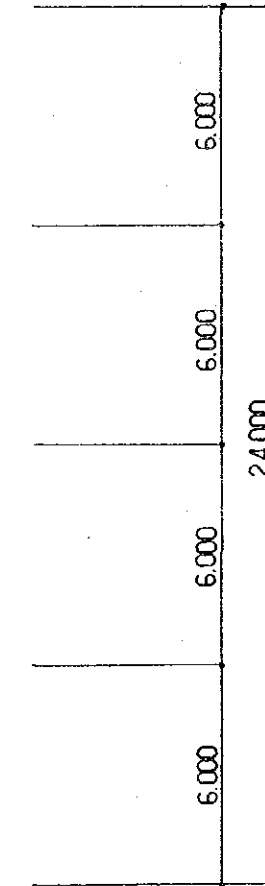
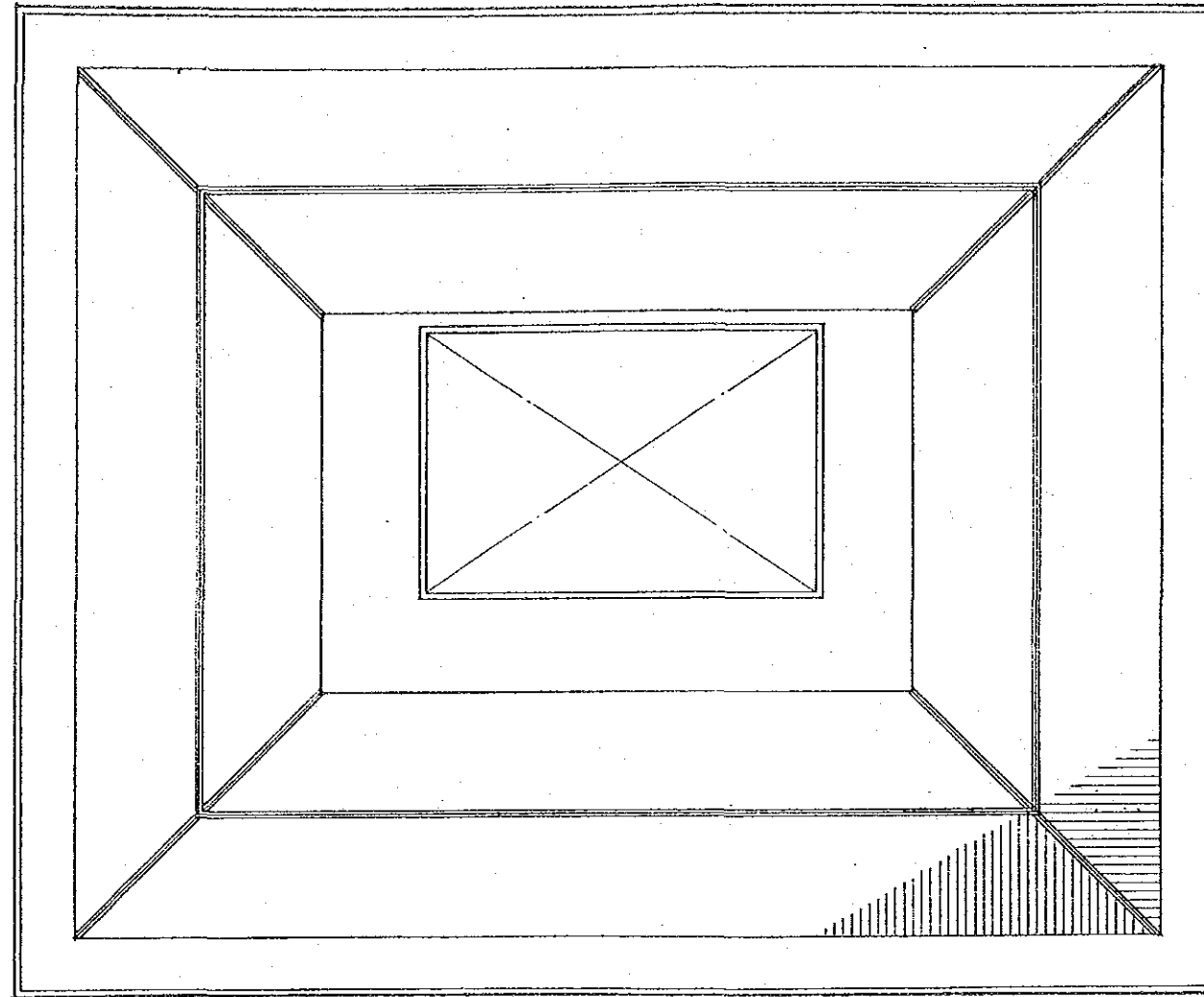
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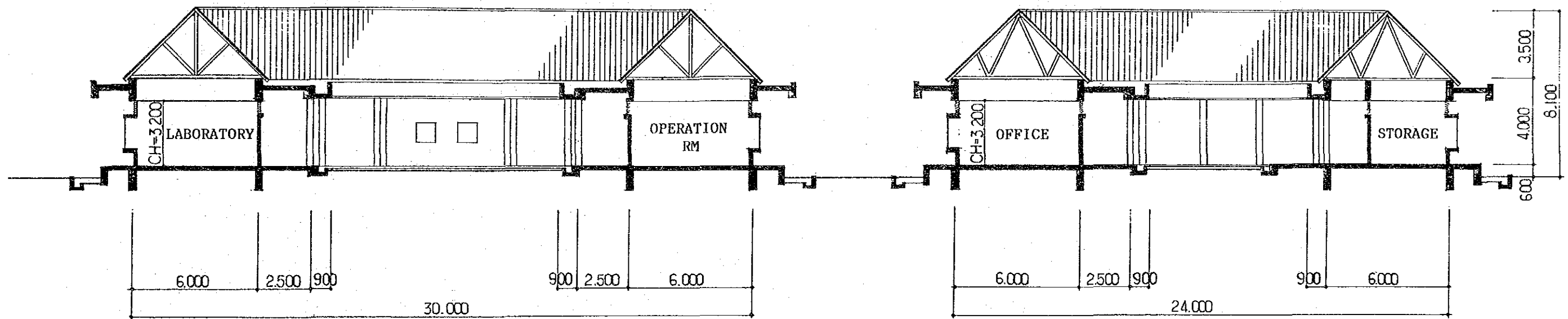


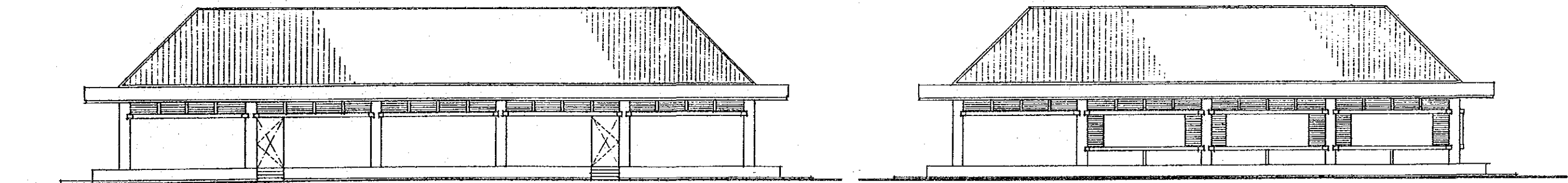
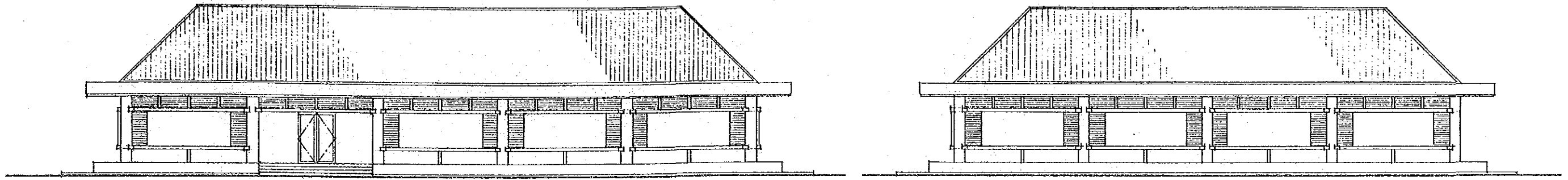


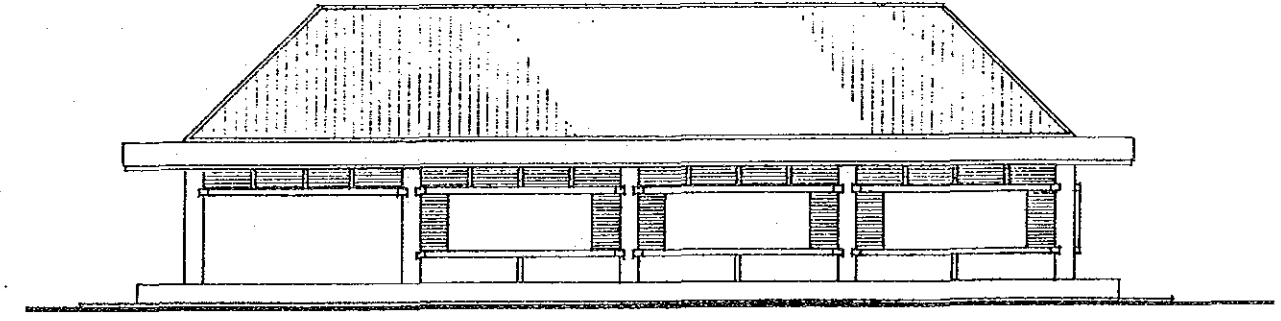
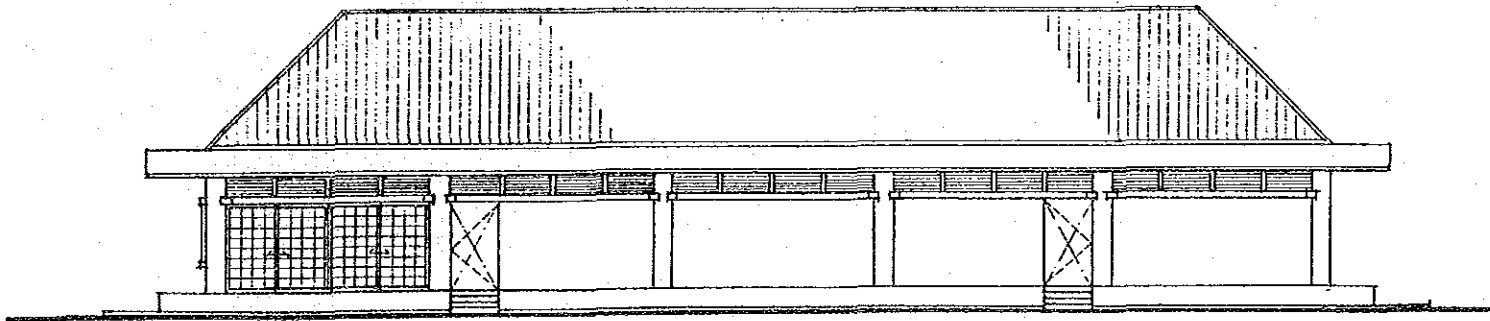
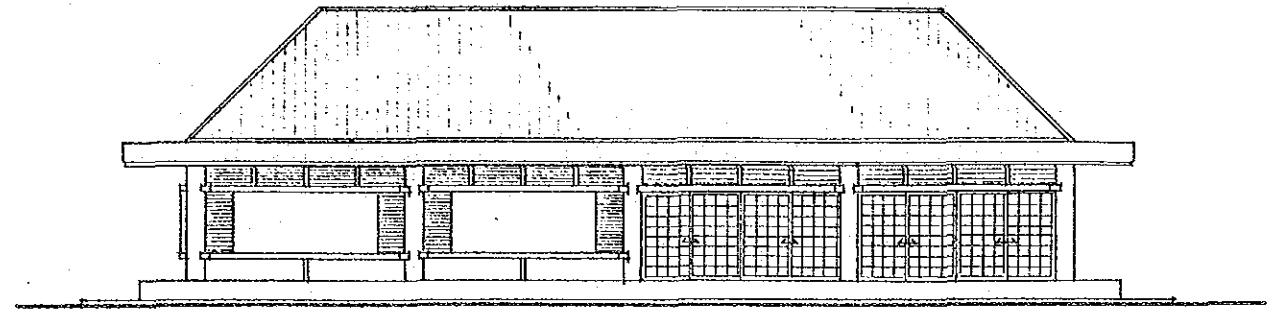
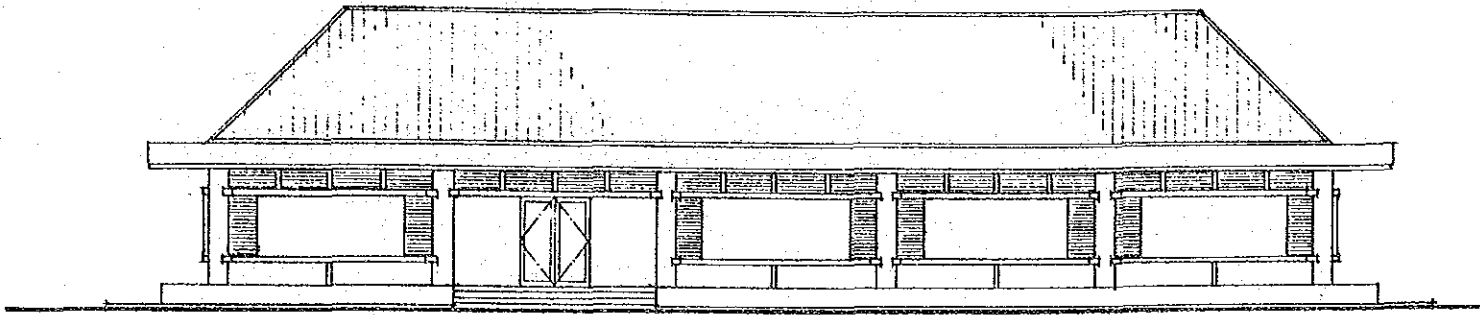












4-2 BASIC DESIGN OF EQUIPMENT

All equipment and materials shall be designed to be completely functional, rational, and economical to play roles in "The Rice Pest and Disease Forecasting and Control Project (RPFPP) (ATA-389)." The basic design concept is outlined as follows.

4-2-1 Basic Design Concept

- (1) The type, performance, and scale of equipment to be supplied to FCPC and FL shall, as a rule, be the same as those arranged under Phase II of the Project. Equipment that is commonly usable within a single location shall not be doubly arranged.
- (2) Equipment for the PL attached to MAROS FCPC shall reflect that supplied to the PL attached to SURABAYA FCPC in 1985 under the Japanese grant aid program, but in view of the functions assigned to MAROS PL and in reference to the equipment to be arranged for MAROS FCPC, the items shall be subject to review.
- (3) The basic design shall be of a minimum scale, avoiding any decrease in effects anticipated from ATA-389.
- (4) In consideration of quality, specifications, and import restrictions, equipment shall be procured locally whenever available.
- (5) Items such as office furnishings, which are to be covered by local procurement, shall be eliminated from the request.

4-2-2 Conditions Concerning Equipment

Arrangement of equipment for FCPC and FL in Phase III of the Project will be in line with those provided in Phase II of the Project except for the following differences between the basic design (B/D) and the decided design (D/D). These differences between B/D and D/D are in compliance with requests from DFPC.

FCPC equipment changed at time of D/D.

- * In the B/D, three (3) electric typewriters were planned for DENPASAR FCPC but this was supplemented by an additional unit so that each of the four FCPC will have one unit.
- * The number of dissecting instrument kits was increased from three (3) to ten (10).
- * Since the contents of field rat experiments were changed, laboratory test cages were increased from five (5) sets to fifty (50) sets.

FL equipment changed at time of D/D.

- * The provision of one (1) compact camera for each FL was considered inadequate for conducting test activities and was changed to one (1) single-lens reflex camera. As accessories, a close-up lens and its accessories were added to the standard lens.
- * Laboratory hygrometer, rice yield analyzer, ripening rate measuring apparatus, miniature thresher, and chaff blower were excluded as not being important for testing activities.

For Phase III of the project, equipment contents of the D/D will take these changes into consideration.

(1) Laboratory Equipment

Laboratory equipment for FCPC and FL shall be arranged generally in accordance with those supplied in Phase II of the Project. An exception will be stereoscopic microscopes, where two units shall be arranged for each FL, because their very frequent use can bring about inconvenience. Having only one can disturb a testing program.

(2) Meteorological Equipment

Standard-type components shall be provided.

(3) Training and Extension Equipment

All typewriters shall be of regular desk types, not of a portable type. Cameras for both FCPC and FL shall be single-lens reflex type with standard lenses and with accessories for taking close-up pictures. Telephoto lenses shall be supplied to those for FCPC. Other equipment shall be of standard type.

(4) Data Consolidation Equipment

Calculators and programmable calculators shall have 12 digits. Personal computers shall be of the same type as those arranged for in Phase II, so that the same software can be used.

Quantities to be supplied shall be as follows:

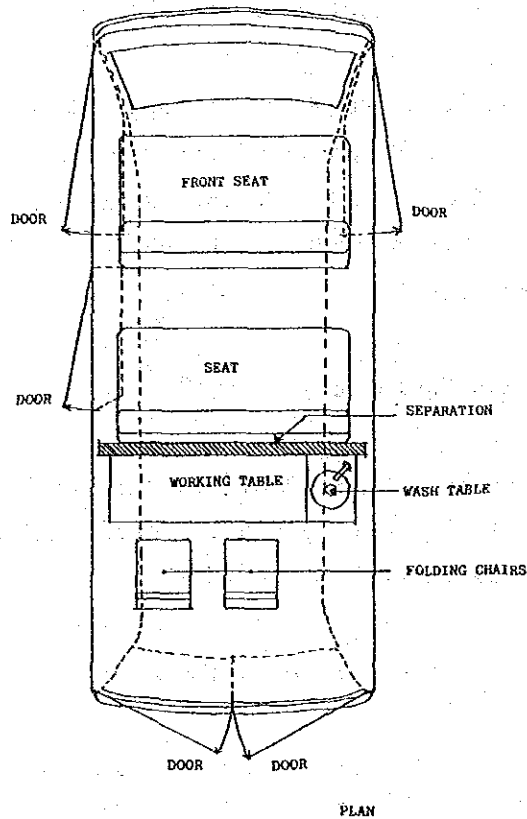
Facilities	Personal Computer	Programmable Calculator	Calculator
FCPC	4 (1 x 4)	16 (4 x 4)	12 (3 x 4)
A-FL	-	12 (3 x 4)	-
B-FL	-	12 (3 x 4)	-
C-FL	-	9 (3 x 3)	-
Total	4	49	12

(5) Vehicles

Vehicles will be mobile laboratory units and pickup trucks with the following equipment:

1) Mobile Laboratory Unit

Mobile laboratory units shall be modified delivery vans seating six persons, with a desk, chair, and air-conditioner as shown below. Equipment from the laboratory shall be utilized.



2) Pickup Truck

A canvas hood shall be provided for the rear bed, with folding benches on both sides, for a standard seating capacity of eight persons.

3) Number of Vehicles to be Provided

Proposed numbers of vehicles should be as follows:

Facilities	Mobile Laboratory	Pickup Truck
FCPC		
MAROS	1	1
MEDAN	1	1
BANJAR BARU	1	1
PALEWBANG	1	1
FL		
11 locations	11 (1 x 11)	-
Total	15	4

(6) Telecommunications Equipment

A total of four facsimiles (telefax) shall be provided to four FCPC. SSB wireless telephones shall be arranged for communications between each FCPC and each FC. SSB wireless telephones shall have a capacity of 50 - 100W, with the master set in FCPC.

The four FCPC have existing facilities. MAROS, MEDAN, and PALEMBANG FCPC already have automatic dial telephones. There is no dial telephone at the BANJAR BARU FCPC at present, although there is a telephone cable passing about 500 meters from the proposed construction site and hook-up is possible. The Indonesian Government is to arrange for telephone lead wires to the site.

The Indonesian Government will take care of permits to use the SSB wireless telephone system. SSB installations are also planned for the two existing PINRANG FL in South Sulawesi and the LAMPUNG TENGAH FL in Lampung to complete the communications system.

(7) Farm Equipment

Farm equipment is important to support the testing and study carried out by the FCPC and FL. They include 6 - 7 HP tillers, 500 kg-loading-capacity trailers, and gasoline engine-driven threshers.

(8) Pesticide Laboratory Equipment

- 1) As mentioned in 3-2-7 (2), "Review of Requested Equipment and materials", residue analysis equipment will not be arranged for MAROS PL that has no residue analysis function.
- 2) The slide projector, overhead projector and screen are excluded from the arrangement program, because those belonging to FCPC can be commonly used. Various types of microscopes and incinerators are also excluded for the same reason.
- 3) Central and side island tables will be arranged.
- 4) Since deionized water apparatus, oven, and hydrogen generator are considered useful for pesticide analysis, those will be provided to MAROS PL.

4-2-3 Equipment List

Equipment proposed for each facility is listed below.

EQUIPMENT FOR FOOD CROP PROTECTION CENTER

Description	Quan. Unit
1. Laboratory Equipment:	
1.1 General Laboratory Equipment	
(1) Light trap (60W, fixed type)	1
(2) Portable battery light trap (20W, portable type by solar cell)	2
(3) Refrigerator (200 liters)	1
(4) Knapsack sprayer (5 liters, manual type)	10
(5) Vacuum pump (Air displacement: 50 liters/min, Ultimate vacuum: 10^{-4} Torr)	1
(6) Oven/sterilizer (90 liters, Operating temperature range: 40 to 260°C, Temperature distribution accuracy: $\pm 1.5^\circ\text{C}$)	1
(7) Rice yield analyzer (Portable type)	2
(8) Laboratory dish (Schale) ($\phi 90 \times 20$ (H)mm, glass)	100 pcs
(9) Portable insect experiment box (6 pcs/set)	5
(10) Analytic balance (Weighing range: 0 to 160g, Readability: 0.1mg)	1
(11) Thermometer (Measuring range: 0 to 100°C, alcohol stick type)	1 pc
(12) Psychrometer (Measuring range: -20 to 50°C, Graduation: 0.5°C)	1
(13) Insect killing bottle ($\phi 90 \times 120$ (H)mm, glass made)	5
(14) Glassware	1 lot
Petri dish (15cm)	
Beakers (250cc)	
Beakers (500cc)	
Test tube	
Pipettes	
Measure, wash bottles, funnels, etc.	

Description	Quan. Unit
(15) Rearing boxes/Clear plastic cages (3 sizes)	1 lot
(16) Incinerator (Capacity: 20kg/hr, Combustion chamber: 0.45m ³)	1
(17) Dissecting instrument (kits) (8 pcs/set)	10
(18) Autoclave (Capacity: 27 liters, Operating temperature range: 60 to 123°C)	1
(19) Magnetic stirrer (Stirring capacity: 0.1 to 1 lit., Speed range: 150 to 1,300rpm)	1
(20) Desiccator for lens (Capacity: 40 liters, Humidity control range: 30 to 35%, plastic made)	1
(21) Magnifying glass (ø40mm, 5X)	10 pcs
1.2 Vertebrate Pest Laboratory Equipment	
(1) Laboratory test cages (w/accessories) (750(W)x300(D)x240(H)mm, mostly aluminum made)	50
(2) Auto-top-pan balance (Weighing range: 0 to 160g, 0 to 240g, 0 to 600g, Readability: 100mg, 200mg, 0.5g)	1
(3) Scalpel (Length of blade: 45mm)	2
1.3 Weed Science Laboratory Equipment	
(1) Herbarium storage cabinet (30 shelves, 736(W)x469(D)x1,450(H)mm, wooden made)	1
(2) Plant presses (sets) (300x400mm)	2
(3) Herbarium mounting sheets (sets) (270x395mm)	10 packs
(4) Herbarium drying paper (set) (300x400mm)	10 packs
(5) Herbarium waxed paper (set) (300x400mm)	10 pcs
(6) Herbarium preservative (set) (Capacity: 500g)	10 bottles
(7) Woodworking adhesive (set)	1 box
(8) Glassware & miscellaneous	1 lot
1.4 Laboratory Support Equipment	
(1) Island table (w/cupboard) (3,000(W)x1,500(D)x1,780(H)mm)	2
(2) Sink cabinet (1,200(W)x750(D)x950(H)mm)	2

Description	Quan. Unit
2. Training Equipment	
(1) Screen (Daylight type, 1,800x1,800mm,)	1
(2) Bookshelf (Wooden made)	14
(3) Card case (Wooden made)	1
(4) White board, magnetic (900(H)x1,200(W)mm)	3
(5) Typewriter (Electric, English elite, Paper size: 335mm width)	1
3. Data Consolidation Equipment	
(1) Calculator (Large) (Pocket computer type, 2-way calculation system)	3
(2) Personal computer (CPU: 16 bits, MS-DOS keyboard: 12 programmable function keys, Display: 14" (color))	1
(3) Programmable calculator (Pocket computer type, Standard RAM: 4KB or more)	4
4. Vehicle	
(1) Pick-up truck (Gasoline engine, 1,600cc, 1-ton loading capacity)	1
(2) Mobile laboratory (Gasoline engine, 1,600cc, delivery-van type, installed working table and washing basin)	1
(3) Motorcycle (4-stroke gasoline engine, 105cc or more)	2
5. Communications System	
(1) SSB radio (Main station) (Single-band radio, Frequency: 3.000MHz and/or 48.735MHz, R/F output: at least 100W or 50W)	1
(2) Facsimile machine (Desktop type, Max. document width: 296mm(A3), Transmission speed: 12 sec(G2))	1

EQUIPMENT FOR FIELD LABORATORY

Description	Quan. Unit
A-type FL	
1. Laboratory Equipment	
1.1 General Laboratory Equipment	
(1) Magnifying glass (140mm, 5X)	10 pcs
(2) Dissecting instrument (kits) (8 pcs/set)	5
(3) Labo. moisture tester (Measuring range: 0 to 100%, Accuracy: $\pm 0.1\%$)	2
(4) Autoclave (Capacity: 27 liters, Operating temperature range: 60 to 123°C)	1
(5) Single lens camera (Shutter speed: 1 to 1/1,000 sec, lens: 50mm f=1.8)	1
(6) Light trap (60W, fixed type)	1
(7) Spore trap (Double type with stand)	2
(8) Portable battery light trap (20W, portable type by solar cell)	5
(9) Malaise trap (Cloth: polyester, 30 dinjer, 90 to 100 mesh)	10
(10) Knapsack sprayer (9 liters, manual type)	10
(11) Oven/sterilizer (90 liters, Operating temperature range: 40 to 260°C, Temperature distribution accuracy: $\pm 1.5^\circ\text{C}$)	1
(12) Micro syringe (0.04 to 0.8 micro liter)	1
(13) Refrigerator (100 liters)	1
(14) Biological microscope (Binocular type, 60X to 1,500X)	1
(15) Stereoscopic microscope (Binocular type, 70X to 450X)	2
(16) Hydrometer (7 pcs/set) (Measuring range: 0.75 to 2.00)	1

Description	Quan. Unit
(17) Analytic balance (Weighing range: 0 to 160g, Readability: 0.1mg)	1
(18) Thermometer (Measuring range: 0 to 100°C, alcohol stick type)	2 pcs
(19) Psychrometer (Measuring range: -20 to 50°C, Graduation: 0.5°C)	2
(20) Insect killing bottle (ø90x120(H)mm, glass made)	10
(21) Petri dishes (ø11cm, ø15cm)	1 lot
(22) Beakers (150 ml, 250 ml, 500 ml, 1,000 ml)	1 lot
(23) Measuring cylinders (10 ml, 100 ml, 250 ml, 500 ml, 1 liter)	1 lot
(24) Erlenmeyer flasks (125 ml, 200 ml, 500 ml, 1 liter)	1 lot
(25) Preparatory glass (76x26mm, glass made)	5 boxes
(26) Cover glass (18x24mm, glass made)	10 boxes
(27) Measuring pipettes (1 ml, 5 ml)	1 lot
(28) Miscellaneous	1 lot
(29) Insect collecting equipment set (6 pcs/set)	2
(30) Desiccator for lens (Capacity: 40 liters, Humidity control range: 30 to 35%, plastic made)	2
(31) Clear plastic cages/Rearing box (3 sizes)	1 lot
(32) Scalpel (holder & blades) (Length of blade: 45mm)	2
(33) Hand counter (4 digits)	10 pcs
(34) Insect storage cabinet (Large) (15 shelves, 586(W)x475(D)x1,290(H)mm, wooden made)	1
1.2 Laboratory Support Equipment	
(1) Island table w/cupboard (3,000(W)x21,500(D)x1,780(H)mm)	2
(2) Skin cabinet (1,200(W)x750(D)x950(H)mm)	2
1.3 Equipment for Vertebrate Pest Laboratory	
1.3.1 Laboratory Equipment	
(1) Dissecting instrument (kits) (8 pcs/set)	2
(2) Vernier calipers (Measuring range: 0 to 300mm/ 0 to 450mm, Vernier scale: 0.02mm)	1

Description	Quan. Unit
(3) Micrometer screw square (Measuring range: 0 to 25mm, Graduation: 0.01mm)	1 pc
(4) Reagents	1
(5) Laboratory test cages (w/accessories) (750(W)x300(D)x240(H)mm, mostly aluminum made)	30
(6) Glassware & miscellaneous	1 lot
(7) Stereoscopic microscope (Binocular type, 70X to 450X)	2
(8) Auto-top-pan balance (Weighing range: 0 to 160g, 0 to 240g, Readability: 100mg, 200mg)	1
1.3.2 Laboratory Support Equipment	
(1) Island table w/cupboard (3,000(W)x1,500(D)x1,780(H)mm)	1
(2) Sink cabinet (1,200(W)x750(D)x950(H)mm)	1
2. Meteorological Station	
(1) Sunshine duration recorder (Latitude graduation: 0 to 45°, Recording period: 14 hours)	1
(2) Wet and dry type thermometer (Measuring range: -20 to 50°C, Graduation: 0.5°C)	1
(3) Cup counter anemometer (Measuring range: 2 to 60 m/sec)	1
(4) Recording rain gauge (Measuring range: 0 to 200mm, Graduation: 0.5mm)	1
(5) Piche evaporimeter (Measuring range: 0 to 10mm, Graduation: 0.5mm)	1
(6) Soil thermometer (3 types/set) (Measuring range: -20 to 50°C, Graduation: 0.5°C)	1
(7) Evaporimeter hook gauge (Graduation: 1mm, Vernier: 0.1mm)	1
(8) Still well (Measuring range: 5m/10m, Graduation: 100mm/200mm)	1

Description	Quan. Unit
(9) Recording thermohygrometer (Temperature: -15 to 40°C, Humidity: 0 to 100%)	1
(10) Evaporation pan (With bird protection net, ϕ340x230(H)mm)	1
(11) Max. min. thermometer (Measuring range: -20 to 50°C/-30 to 20°C, Graduation: 1°C)	1 pc
(12) Instrument shelter (750(W)x750(D)x780(H)mm)	1
3. Training Equipment	
(1) Overhead projector (Projection lens: 240mm, Effective stage: 254x254mm)	1
(2) 35mm slide projector (Projection lens: 80mm, f=2.8, Slide size: 35mm and half)	1
(3) Screen (1,800x1,800mm)	1
(4) White board, magnetic (900(H)x1,200(W)mm)	2
(5) Stencil machine and printing machine (Lines: 13/mm, Cutting time: 4 min, Max. printing paper size: 264x381mm, Printing speed: 40 to 130 sheets/min)	1
(6) Typewriter (Manual, English, elite, Paper capacity: 245mm width)	1
(7) Typewriter (Electric, English, elite, Paper capacity: 335mm width)	1
4. Data Consolidation Equipment	
(1) Programmable calculator (Pocket computer type, Standard RAM: 4KB or more)	3
5. Farm Equipment	
(1) Power tiller 7 HP w/rotorvator (Water-cooled, 4-cycle diesel engine, walking tractor with tillage equipment)	1 unit

Description	Quan. Unit
(2) Thresher (Throw-in type with built-in winnower, 6.5 HP gasoline engine)	1 unit
(3) Trailer (500kg loading capacity, with steel-plate or pipe-framed bed)	1 unit
6. Vehicle	
(1) Mobil laboratory (Gasoline engine, 1,600cc, delivery-van type, installed working table and washing basin)	1
(2) Motorcycle (4-stroke gasoline engine, 105cc or more)	2
7. Communications System	
(1) SSB radio (Substation) (Single-band radio, Frequency: 3.000MHz and/or 48.735MHz, R/F output: at least 100W or 50W)	1

Description	Quan. Unit
B-type FL	
1. Laboratory Equipment	
1.1 General Laboratory Equipment	
(1) Magnifying glass (ø40mm, 5X)	10 pcs
(2) Dissecting instrument (kits) (8 pcs/set)	5
(3) Labo. moisture tester (Measuring range: 0 to 100%, Accuracy: ±0.1%)	2
(4) Autoclave (Capacity: 27 liters, Operating temperature range: 60 to 123°C)	1
(5) Single lens camera (Shutter speed: 1 to 1/1,000 sec, lens: 50mm f=1.8)	1
(6) Light trap (60W, fixed type)	1
(7) Spore trap (Double type with stand)	2
(8) Portable battery light trap (20W, portable type by solar cell)	5
(9) Malaise trap (Cloth: polyester, 30 dinjer, 90 to 100 mesh)	10
(10) Knapsack sprayer (9 liters, manual type)	10
(11) Oven/sterilizer (90 liters, Operating temperature range: 40 to 260°C, Temperature distribution accuracy: ±1.5°C)	1
(12) Micro syringe (0.04 to 0.8 micro liter)	1
(13) Refrigerator (100 liters)	1
(14) Biological microscope (Binocular type, 60X to 1,500X)	1
(15) Stereoscopic microscope (Binocular type, 70X to 450X)	2
(16) Hydrometer (7 pcs/set) (Measuring range: 0.75 to 2.00)	1
(17) Analytic balance (Weighing range: 0 to 160g, Readability: 0.1mg)	1

Description	Quan. Unit
(18) Thermometer (Measuring range: 0 to 100°C, alcohol stick type)	2 pcs
(19) Psychrometer (Measuring range: -20 to 50°C, Graduation: 0.5°C)	2
(20) Insect killing bottle (ø90x120(H)mm, glass made)	10
(21) Petri dishes (ø11cm, ø15cm)	1 lot
(22) Beakers (150 ml, 250 ml, 500 ml, 1,000 ml)	1 lot
(23) Measuring cylinders (10 ml, 100 ml, 250 ml, 500 ml, 1 liter)	1 lot
(24) Erlenmeyer flasks (125 ml, 200 ml, 500 ml, 1 liter)	1 lot
(25) Preparatory glass (76x26mm, glass made)	5 boxes
(26) Cover glass (18x24mm, glass made)	10 boxes
(27) Measuring pipettes (1 ml, 5 ml)	1 lot
(28) Miscellaneous	1 lot
(29) Insect collecting equipment set (6 pcs/set)	2
(30) Desiccator for lens (Capacity: 40 liters, Humidity control range: 30 to 35%, plastic made)	2
(31) Clear plastic cages/Rearing box (3 sizes)	1 lot
(32) Scalpel (holder & blades) (Length of blade: 45mm)	2
(33) Hand counter (4 digits)	10 pcs
(34) Insect storage cabinet (Large) (15 shelves, 586(W)x475(D)x1,290(H)mm, wooden made)	1
1.2 Laboratory Support Equipment	
(1) Island table w/cupboard (3,000(W)x21,500(D)x1,780(H)mm)	2
(2) Skin cabinet (1,200(W)x750(D)x950(H)mm)	2
1.3 Equipment for Biological Laboratory	
1.3.1 Laboratory Equipment	
(1) Stereoscopic microscope (Binocular type, 70X to 450X)	2
(2) Bunsen burners	2
(3) Dissecting instrument (kits) (8 pcs/set)	4

Description	Quan. Unit
(4) Hot plate (Heating plate: 300x250mm, Operating temperature range: 50 to 250°C)	4
(5) Magnifying glass (ø40mm, 5X)	4 pcs
(6) Incubator (Capacity: 160 liters, Operating temperature range: ambient 5 to 60°C)	1
(7) Hand counter (4 digits)	10 pcs
(8) Thermometer (Measuring range: 0 to 100°C, alcohol stick type)	1 pc
(9) Recording thermohygrometer (Temperature: -15 to 40°C, Humidity: 0 to 100%)	1
(10) Charts	4 boxes
(11) Parafilm (2 types)	2 rolls
(12) Plastic rearing boxes (4 sizes)	1 lot
(13) Spatulas (Length: 180mm, stainless steel made)	5 pcs
(14) Filter funnels (ø90mm, glass made)	15 pcs
(15) Filter paper (10 kinds)	10 boxes
(16) Clear plastic cages/rearing box (3 sizes)	2 lots
1.3.2 Laboratory Support Equipment	
(1) Island table w/cupboard (3,000(W)x1,500(D)x1,780(H)mm)	1
(2) Sink cabinet (1,200(W)x750(D)x950(H)mm)	1
2. Meteorological Station	
(1) Sunshine duration recorder (Latitude graduation: 0 to 45°, Recording period: 14 hours)	1
(2) Wet and dry type thermometer (Measuring range: -20 to 50°C, Graduation: 0.5°C)	1
(3) Cup counter anemometer (Measuring range: 2 to 60 m/sec)	1
(4) Recording rain gauge (Measuring range: 0 to 200mm, Graduation: 0.5mm)	1
(5) Piche evaporimeter (Measuring range: 0 to 10mm, Graduation: 0.5mm)	1

Description	Quan. Unit
(6) Soil thermometer (3 types/set) (Measuring range: -20 to 50°C, Graduation: 0.5°C)	1
(7) Evaporimeter hook gauge (Graduation: 1mm, Vernier: 0.1mm)	1
(8) Still well (Measuring range: 5m/10m, Graduation: 100mm/200mm)	1
(9) Recording thermohygrometer (Temperature: -15 to 40°C, Humidity: 0 to 100%)	1
(10) Evaporation pan (With bird protection net, ø340x230(H)mm)	1
(11) Max. min. thermometer (Measuring range: -20 to 50°C/-30 to 20°C, Graduation: 1°C)	1 pc
(12) Instrument shelter (750(W)x750(D)x780(H)mm)	1
3. Training Equipment	
(1) Overhead projector (Projection lens: 240mm, Effective stage: 254x254mm)	1
(2) 35mm slide projector (Projection lens: 80mm, f=2.8, Slide size: 35mm and half)	1
(3) Screen (1,800x1,800mm)	1
(4) White board, magnetic (900(H)x1,200(W)mm)	2
(5) Stencil machine and printing machine (Lines: 13/mm, Cutting time: 4 min, Max. printing paper size: 264x381mm, Printing speed: 40 to 130 sheets/min)	1
(6) Typewriter (Manual, English, elite, Paper capacity: 245mm width)	1
(7) Typewriter (Electric, English, elite, Paper capacity: 335mm width)	1
4. Data Consolidation Equipment	
(1) Programmable calculator (Pocket computer type, Standard RAM: 4KB or more)	3

Description	Quan. Unit
5. Farm Equipment	
(1) Power tiller 7 HP w/rotorvator (Water-cooled, 4-cycle diesel engine, walking tractor with tillage equipment)	1 unit
(2) Thresher (Throw-in type with built-in winnower, 6.5 HP gasoline engine)	1 unit
(3) Trailer (500kg loading capacity, with steel-plate or pipe-framed bed)	1 unit
6. Vehicle	
(1) Mobil laboratory (Gasoline engine, 1,600cc, delivery-van type, installed working table and washing basin)	1
(2) Motorcycle (4-stroke gasoline engine, 105cc or more)	2
7. Communications System	
(1) SSB radio (Substation) (Single-band radio, Frequency: 3.000MHz and/or 48.735MHz, R/F output: at least 100W or 50W)	1

Description	Quan. Unit
C-type FL	
1. Laboratory Equipment	
1.1 General Laboratory Equipment	
(1) Magnifying glass (ϕ 40mm, 5X)	10 pcs
(2) Dissecting instrument (kits) (8 pcs/set)	5
(3) Labo. moisture tester (Measuring range: 0 to 100%, Accuracy: \pm 0.1%)	2
(4) Autoclave (Capacity: 27 liters, Operating temperature range: 60 to 123°C)	1
(5) Single lens camera (Shutter speed: 1 to 1/1,000 sec, lens: 50mm f=1.8)	1
(6) Light trap (60W, fixed type)	1
(7) Spore trap (Double type with stand)	2
(8) Portable battery light trap (20W, portable type by solar cell)	5
(9) Malaise trap (Cloth: polyester, 30 dinjer, 90 to 100 mesh)	10
(10) Knapsack sprayer (9 liters, manual type)	10
(11) Oven/sterilizer (90 liters, Operating temperature range: 40 to 260°C, Temperature distribution accuracy: \pm 1.5°C)	1
(12) Micro syringe (0.04 to 0.8 micro liter)	1
(13) Refrigerator (100 liters)	1
(14) Biological microscope (Binocular type, 60X to 1,500X)	1
(15) Stereoscopic microscope (Binocular type, 70X to 450X)	2
(16) Hydrometer (7 pcs/set) (Measuring range: 0.75 to 2.00)	1
(17) Analytic balance (Weighing range: 0 to 160g, Readability: 0.1mg)	1

Description	Quan. Unit
(18) Thermometer (Measuring range: 0 to 100°C, alcohol stick type)	2 pcs
(19) Psychrometer (Measuring range: -20 to 50°C, Graduation: 0.5°C)	2
(20) Insect killing bottle (ø90x120(H)mm, glass made)	10
(21) Petri dishes (ø11cm, ø15cm)	1 lot
(22) Beakers (150 ml, 250 ml, 500 ml, 1,000 ml)	1 lot
(23) Measuring cylinders (10 ml, 100 ml, 250 ml, 500 ml, 1 liter)	1 lot
(24) Erlenmeyer flasks (125 ml, 200 ml, 500 ml, 1 liter)	1 lot
(25) Preparatory glass (76x26mm, glass made)	5 boxes
(26) Cover glass (18x24mm, glass made)	10 boxes
(27) Measuring pipettes (1 ml, 5 ml)	1 lot
(28) Miscellaneous	1 lot
(29) Insect collecting equipment set (6 pcs/set)	2
(30) Desiccator for lens (Capacity: 40 liters, Humidity control range: 30 to 35%, plastic made)	2
(31) Clear plastic cages/Rearing box (3 sizes)	1 lot
(32) Scalpel (holder & blades) (Length of blade: 45mm)	2
(33) Hand counter (4 digits)	10 pcs
(34) Insect storage cabinet (Large) (15 shelves, 586(W)x475(D)x1,290(H)mm, wooden made)	1
1.2 Laboratory Support Equipment	
(1) Island table w/cupboard (3,000(W)x21,500(D)x1,780(H)mm)	2
(2) Skin cabinet (1,200(W)x750(D)x950(H)mm)	2
2. Meteorological Station	
(1) Sunshine duration recorder (Latitude graduation: 0 to 45°, Recording period: 14 hours)	1
(2) Wet and dry type thermometer (Measuring range: -20 to 50°C, Graduation: 0.5°C)	1

Description	Quan. Unit
(3) Cup counter anemometer (Measuring range: 2 to 60 m/sec)	1
(4) Recording rain gauge (Measuring range: 0 to 200mm, Graduation: 0.5mm)	1
(5) Piche evaporimeter (Measuring range: 0 to 10mm, Graduation: 0.5mm)	1
(6) Soil thermometer (3 types/set) (Measuring range: -20 to 50°C, Graduation: 0.5°C)	1
(7) Evaporimeter hook gauge (Graduation: 1mm, Vernier: 0.1mm)	1
(8) Still well (Measuring range: 5m/10m, Graduation: 100mm/200mm)	1
(9) Recording thermohygrometer (Temperature: -15 to 40°C, Humidity: 0 to 100%)	1
(10) Evaporation pan (With bird protection net, ϕ340x230(H)mm)	1
(11) Max. min. thermometer (Measuring range: -20 to 50°C/-30 to 20°C, Graduation: 1°C)	1 pc
(12) Instrument shelter (750(W)x750(D)x780(H)mm)	1
3. Training Equipment	
(1) Overhead projector (Projection lens: 240mm, Effective stage: 254x254mm)	1
(2) 35mm slide projector (Projection lens: 80mm, f=2.8, Slide size: 35mm and half)	1
(3) Screen (1,800x1,800mm)	1
(4) White board, magnetic (900(H)x1,200(W)mm)	2
(5) Stencil machine and printing machine (Lines: 13/mm, Cutting time: 4 min, Max. printing paper size: 264x381mm, Printing speed: 40 to 130 sheets/min)	1
(6) Typewriter (Manual, English, elite, Paper capacity: 245mm width)	1

Description	Quan. Unit
(7) Typewriter (Electric, English, elite, Paper capacity: 335mm width)	1
4. Data Consolidation Equipment	
(1) Programmable calculator (Pocket computer type, Standard RAM: 4KB or more)	3
5. Farm Equipment	
(1) Power tiller 7 HP w/rotorvator (Water-cooled, 4-cycle diesel engine, walking tractor with tillage equipment)	1 unit
(2) Thresher (Throw-in type with built-in winnower, 6.5 HP gasoline engine)	1 unit
(3) Trailer (500kg loading capacity, with steel-plate or pipe-framed bed)	1 unit
6. Vehicle	
(1) Mobil laboratory (Gasoline engine, 1,600cc, delivery-van type, installed working table and washing basin)	1
(2) Motorcycle (4-stroke gasoline engine, 105cc or more)	2
7. Communications System	
(1) SSB radio (Substation) (Single-band radio, Frequency: 3.000MHz and/or 48.735MHz, R/F output: at least 100W or 50W)	1

EQUIPMENT FOR PESTICIDE LABORATORY

Description	Quan. Unit
1. Gas Chromatograph (Temperature range: up to 390°C, Volume of oven: 217(W)x140(D)x360(H)mm, Detector: FID)	2 sets
2. High-Performance Liquid Chromatograph (Range of flow rate: 0.01 to 9.9 ml/min, Flow rate stability: ±0.5%, Wavelength range: 195 to 350nm)	1 set
3. Thin Layer Chromatograph Scanner (Wavelength range: 200 to 700nm, Photometric system: Double-beam monitor)	1
4. Electronic Analytical Balance (Weighing range: 0 to 200g, Readability: 0.1mg)	1
5. Electronic Top Pan Balance (Weighing range: 0 to 620g, Readability: 10mg)	1
6. Electronic Reading Balance (Weighing range: 0 to 6,000g, Readability: 1g)	1
7. Electronic Balance (Weighing range: 50kg, Readability: 1g)	1
8. Ultrasonic Washer (Capacity: 3 liters, Output: 60W, 45kHz)	2
9. Ultrasonic Pipette Washer (Capacity of rack: ø138x570(H)mm, Output: 50W, 28kHz)	1
10. Vacuum Pump (Air displacement: 10 liters/min, Ultimate vacuum: 1×10^{-2} Torr)	1
11. Pressure/Vacuum Pump (Exhaust capacity: 15 liters/min, Ultimate vacuum: 550 mm/Hg)	2
12. Rotary Evaporator (Bath capacity: 4 liters, Evaporation/receiving flask: 1 liter, Revolution range: 0 to 190rpm)	2
13. Aspirator (Air flow: 11 to 13 liters/min x 2, Water bath: 10 liters)	3
14. Cold Water Circulator (Operating temperature range: -5 to 20°C, Cooling capacity: 1,000 kcal, Max. flow rate: 29 liters/min)	2

Description	Quan. Unit
15. Water Still (Production system: Distillation, Distilling capacity: 2 liters/hr)	1
16. Water Bath Incubator (Capacity: 10 liters, Room temperature range: 5 to 80°C, Shaking speed: 20 to 120/min)	1
17. Shaker (Capacity: 2 liters, Rotation speed: 15,200/ 11,800rpm (2 steps switchable))	1
18. Centrifuge (Max. rotation: 4,000rpm, Centrifugal acceleration: 2,220xG)	1
19. pH Meter (Measuring range: pH 0 to 14, Resolution: 0.01pH)	2
20. Magnetic Stirrer (Stirring capacity: 100 to 3,000 ml, Revolution: 200 to 1,200rpm)	2
21. Glassware Dryer (Capacity: 74 liters, Temperature range: 40 to 300°C)	1
22. Dryer (1,000W)	2
23. (1) Mantle Heater, 300 ml (150W)	5
(2) Mantle Heater, 1 liter (300W)	5
24. Refrigerator (300 liters)	1
25. Deep Freezer (150 liters, Temperature range: min. -30°C)	1
26. Spectrophotometer (Wavelength range: 200 to 1,100nm, Accuracy: ± 0.5nm)	1
27. Melting Point Measuring Apparatus (Operating temperature range: max. 300°C, Time to reach 250°C: 15 min)	1
28. Stopwatch (Digital, 1/100 sec divisions, up to 60 min)	2
29. Vibrator (Motor: 10W)	1
30. Hot Plate (Heating plate: 300x250mm, Operating temperature range: 50 to 250°C)	1
31. Desiccator (Inner dimensions: 465(W)x290(D)x265(H)/ 265(W)x290(D)x465(H)mm, with temperature controller)	1 lot
32. (1) Microsyringe (10 micro-liter)	10
(2) Microsyringe (50 micro-liter)	5
33. Glassware & Miscellaneous	1 lot

Description	Quan. Unit
34. Thermometer (Alcohol/mercury type)	1 lot
35. Gas Mask (Direct mounting type)	2
36. Hand Tool Set (21 pcs/set)	1
37. Electric Tool Set (10 kinds/set)	1
38. Bunsen Burner	4
39. Draft Chamber (1,800(W)x750(D)x2,350(H)mm)	1
40. Island Table (3,600(W)x1,500(D)x800(W)mm, with reagent shelf and sink)	2
41. Side Table (3,000(W)x750(D)x800(H)mm)	4
42. Balance Table (1,200(W)x600(D)x750(H)mm)	1
43. Voltage Stabilizer (Capacity: 20kVA, Output: 100V, Input: 220V)	2
44. Gas Chromatograph Packing Materials (13 kinds, Mesh: 80 to 1,000)	1 set
45. Liquid Chromatograph Packed Column Set (5 kinds)	1 set
46. Thin Layer Chromatograph Set (with UV lamp)	1
47. Oven (Capacity: 78 liters, Operating temperature range: 40 to 260°C, Accuracy: $\pm 1^\circ\text{C}$)	1
48. Deionized Water Apparatus (Ion exchange system, Deionizing capacity: 10 liters/hr)	1
49. Hydrogen Generator (Water tank capacity: 2 liters, Generating flow rate: 225 ml/min)	2
50. Physical Properties Measuring Apparatus	
(1) Particle Size Analyzer (Measuring range: 0.04 to 300 μm , gravitational or centrifugal sedimentation and photometric detection)	1
(2) Refractometer (Index range: nD13,000 to 17,000, Accuracy of R.I. & Brix: ± 0.0002 , $\pm 0.1\%$)	1
(3) Flash Point Apparatus (Heater: 750W, electric type)	1
(4) Universal Shaker (Shaking speed: 40 to 280 strokes/min (vertical), 40 to 300 strokes/min (horizontal))	1

Description	Quan. Unit
(5) Karl Fischer Titrator (Measuring range: 10ppm to 100%, Capacity of burette: 20 ml, Reproducibility: ± 0.01 ml)	1
(6) Viscosimeter (Measuring range: 0.3 to 4,000P, rotor revolution type)	1

4-3 PROJECT IMPLEMENTATION

4-3-1 Construction Situation and Implementation Policy

(1) Characteristics Affecting Construction

- 1) The characteristic of the Project is that the proposed construction sites are scattered over fifteen locations covering six provinces outside of Jawa and Bali.
- 2) The construction sites of the eleven (11) FL are 30 to 500 km away from the city areas of Ujung Pandang, Medan, Banjar Baru, and Palembang where the procurement of construction materials is planned. A detailed transportation plan for construction materials must therefore be developed.
- 3) The current ground height of the FL sites, most of which are paddy fields at present, is lower than the front road by 0.5 to 2.0 m.

(2) Execution Policy

The special conditions under which the facilities of the Project must be constructed are as described above. It is considered necessary to cope with these conditions as follows:

- 1) The general contractor shall assign engineers to each construction site for progress control and quality control.
- 2) A construction schedule shall be established so that construction may be executed efficiently within the limited period.
- 3) The above construction schedule shall permit diversion of materials for temporary work and forms for structural frames in order to reduce construction costs.
- 4) The ground level of the construction sites shall be 1 m higher than that of the front road.

4-3-2 Scope of Implementation and Sharing of Responsibilities

(1) Work to be Undertaken by the Japanese Side

1) Facilities

(a) Food Crop Protection Center (FCPC)

* MAROS FCPC

i) Buildings

Main Building	1 bldg.
Storage	1 bldg.
Net House	1 bldg.
Working space	1 bldg.

ii) Contents of work

o Building work

Foundation, structure, finishing, work of connecting with PL buildings

o Electrical equipment work

Work within buildings, work of lead-in wiring into the site, work of connecting with PL and existing buildings

o Water supply, drainage, and sanitary equipment work

Work within buildings, well drilling and completing work, septic tank construction work, piping work up to the drainage ditch, work of connecting with existing buildings

o Air conditioning and ventilation equipment work

Work within buildings

o Outdoor work on premises

Improvement of existing roads on the premises, parking areas, outdoor lighting equipment

* MEDAN FCPC

1) Buildings

Main Building	1 bldg.
Storage	1 bldg.
Net House	1 bldg.
Working space	1 bldg.

ii) Contents of work

- o Building work
Foundation, structure, finishing, work of connecting with existing buildings
- o Electrical equipment work
Work within buildings, work of lead-in wiring into the site, work of connecting with existing buildings
- o Water supply, drainage, and sanitary equipment work
Work within buildings, well drilling and completing work, septic tank construction work, piping work up to the drainage ditch, work of connecting with existing buildings
- o Air conditioning and ventilation equipment work
Work within buildings
- o Outdoor work on premises
Roads on the premises, parking areas, outdoor lighting equipment

* BANJAR BARU FCPC

1) Buildings

Main Building	1 bldg.
Storage	1 bldg.
Net House	1 bldg.
Working space	1 bldg.

ii) Contents of work

- o Building work
Foundation, structure, finishing
- o Electrical equipment work
Work within buildings, work of lead-in wiring into the site,
work of connecting with existing building
- o Water supply, drainage, and sanitary equipment work
Work within buildings, well drilling and completing work,
septic tank construction work, piping work up to the drainage
ditch, work of connecting with existing building
- o Air conditioning and ventilation equipment work
Work within buildings
- o Outdoor work on premises
Roads on the premises, parking areas, outdoor lighting
equipment

* PALEMBANG FGPC

i) Buildings

Main Building	1 bldg.
Storage	1 bldg.
Net House	1 bldg.
Working space	1 bldg.

ii) Contents of work

- o Building work
Foundation, structure, finishing
- o Electrical equipment work
Work within buildings, work of lead-in wiring into the site,
work of connecting with existing building
- o Water supply, drainage, and sanitary equipment work
Work within buildings, well drilling and completing work,
septic tank construction work, piping work up to the drainage
ditch

- o Air conditioning and ventilation equipment work
Work within buildings
- o Outdoor work on premises
Roads on the premises, parking areas, outdoor lighting
equipment

(b) Pesticide Laboratory (PL)

* MAROS FL

i) Buildings

Main Building	1 bldg.
Storage	1 bldg.

ii) Contents of work

- o Building work
Foundation, structure, finishing
- o Electrical equipment work
Work within buildings
- o Water supply, drainage, and sanitary equipment work
Work within buildings, septic tank construction work, piping
work up to the drainage ditch
- o Air conditioning and ventilation equipment work
Work within buildings
- o Outdoor work on premises
Roads on the premises, parking areas, outdoor lighting
equipment

(c) Field Laboratory (FL)

i) Buildings

A-Type FL Main Building (w/Vertebrate Laboratory)	4 bldgs.
B-Type FL Main Building (w/Biological Laboratory)	4 bldgs.
C-Type FL Main Building	3 bldgs.
Net House	11 bldgs.
Storage/Garage	11 bldgs.
Drying Floor	11 bldgs.

ii) Contents of work

o Building work

Foundation, structure, finishing

o Electrical equipment work

Work within buildings, work of lead-in wiring into the site

o Water supply, drainage, and sanitary equipment work

Work within buildings, well drilling and completing work, septic tank construction work, piping work up to the drainage ditch

o Air conditioning and ventilation equipment work

Work within buildings

o Outdoor work on premises

Roads on the premises, parking areas, outdoor lighting equipment

2) Equipment

Provision of laboratory equipment under the Project shall also include its installation, adjustment and delivery.

(2) Work to be Undertaken by the Indonesian Side

1) Work Related to Construction

(a) Improvement of sites for the construction of facilities

i) Removal of trees, stumps, and leveling

Subject locations:

MEDAN FCPC, PALEMBANG FCPC, SIMALUNGUN FL, BANJAR FL,
LAMPUNG UTARA FL

ii) Filling and leveling

Subject locations:

MAROS FCPC, MEDAN FCPC, PALEMBANG FCPC, DELISERDANG FL,
SIMALUNGUN FL, BONE FL, BANJAR FL, HULU SUNGAI SELATAN FL,
PIDIE FL, ACEH TIMUR FL, LAMPUNG SELATAN FL

iii) Bridge Construction

Subject locations:

MEDAN FCPC, SIMALUNGSN FL, BANJAR FL, HULU SUNGAI SELATAN FL,
PIDIE FL, ACHE TIMUR FL, LAMPUNG SELATAN FL

(b) Provision of electric power, telephone circuits, water service piping, and drainage canal, extended as far as specified locations within the site.

Subject locations:

All of the proposed construction sites

(c) Supply of temporary electric power and source of service water for construction

Subject locations:

Construction sites where the supply of such facilities is possible.

(d) Outdoor facilities (entrance gates, fencing, plantings)

Subject locations:

All of the proposed construction sites

(e) Provision of furniture and fixtures

Subject locations:

All of the proposed construction sites

(f) Expenses for application of construction confirmation

(g) Expenses for counter-part bank commission

2) Provision of Conveniences

(a) Tax exemptions and provision of conveniences, in making entry and exit to and from the country and during their sojourn, for organizations and individual persons of Japanese nationality who are engaged in the Project.

(b) Tax exemptions and provision of conveniences in customs clearance formalities on construction equipment and materials, laboratory equipment and others which shall be brought into Indonesia for the implementation of the Project.

(c) Effective maintenance and management of facilities and equipment which shall be constructed and/or provided under the Project.

(d) Acquisition of a building permit prior to commencement of construction.

(e) Securing of sites for temporary offices, working area, equipment and construction materials yard, etc. necessary for the construction work.

(f) Budget for Value Added Tax in accordance with the implementation schedule for the Project.

4-3-3 Execution Management Plan

The proposed construction sites for PFC, FCPC and FL under the Project are scattered over fifteen (15) locations covering six provinces outside of Jawa and Bali. In view of the planned construction period, it is believed that construction work will proceed in parallel at every location. To cope with such a situation, the Consultant will dispatch capable resident engineers to Indonesia from Japan at the time of starting construction.

- (1) Resident engineers shall be selected from among the most experienced and capable in supervising.
- (2) Under close cooperation with a loyal consultant, these engineers shall endeavor to establish a cooperative system among client (Indonesian Government), contractors and other parties involved.
- (3) Duties assigned to the resident engineers are as follows.
 - * Preparation of a Monthly Progress Report (once a month)
(A report to clarify the progress of construction)
 - * Determination of the layout of buildings and leveling
 - * Witnessing of the ground bearing capacity tests
 - * Checking and approval of drawings, inspection of placement of reinforcement, supervision of concrete placement
 - * Checking and approval of detailed finishing drawings, supervision of finishing work.
 - * Holding of regular meetings for preliminary discussion and arrangement, schedule control
 - * Conduct of inspection (including materials and equipment)
 - * Preparation of overall report

(3) The Project Manager and engineers in charge shall back up the activities of the resident engineers from Japan.

They shall also visit the construction sites as necessary and try to secure high-quality buildings through consultations on design and technical guidance. They shall also hold meetings for preliminary discussions and arrangements with the Government of Indonesia, JICA personnel in charge, and contractors for establishing congenial relations among them to ensure smooth progress of the construction work.

4-3-4 Procurement Plan for Construction Materials

In formulating the procurement plan for construction materials, the basic policy is to adopt local construction methods and materials to the maximum extent possible. However, materials which cannot be procured locally, or materials whose accuracy and functional performance do not satisfy the requirements or whose prices are higher than when procured in Japan, shall be planned for procurement in Japan.

Materials whose import into Indonesia is embargoed shall be procured locally.

With respect to the procurement of local construction materials, they shall be procured in the vicinity of the proposed construction site as much as possible. Finishing materials, however, will have to be hauled by truck from the major cities.

Most of the materials procured in Japan will be landed at the Port of Jakarta, Medan and Ujung Pandang, and then transported overland to each construction site, but in order to reduce transportation costs, landing at major ports in the provinces outside of Jawa and Bali shall also be considered.

4-3-5 Procurement Schedule for Equipment

(1) Local Procurement

Equipment shall be procured in Japan or in Indonesia.

Prior to signing contracts with DGFCFA, equipment suppliers must present a master list to SEKNEG (Sekretaris Negara) and obtain confirmation as an acceptable supply (stating they are not prohibited import items from Japan). The contracts are subject to approval by SEKNEG, but master list acceptance is a prerequisite.

Equipment that could be procured in Indonesia in Phase II of the Project was as follows:

Mobile laboratory unit, pickup truck, motorcycle, SSB radio telephone equipment, various furnishings for laboratory, typewriter, computer, photocopier, calculator, cultivator, trallor, thresher, setting pinning board, adhesive, measuring instrument, monitor TV, white board, screen, folding chairs, bookbinding equipment.

As for a 10% Value Added Tax (VAT) that is imposed on materials and labor procured in Indonesia, the Indonesian Government shall bear it.

Equipment and materials to be procured in Indonesia are as follows:

(a) Materials locally procured

a) Construction

Cement, sand, gravel, concrete blocks, steel frames, iron rods, frame materials, roof tiles, pebbles, tiles, aluminum sashes, aluminum jalousie windows, rock-wool sound absorption boards, glass, base/finishing lumber, paint, terrazo blocks, parquet floor materials, caulking materials, plaster boards, flexible asbertos board, roll vinyl sheets, needle-punch carpets

b) Electricity

Manholes and manhole covers, cables, switches, receptacles,
lighting apparatus

c) Water supply/sewage systems

Manholes, manhole covers, hume pipes, cast steel pipes, toilet
fixtures, plumbing materials, roof-top water tanks, water
receiving tanks

d) Air-conditioning/ventilation

Vinyl chloride pipes

(b) Materials procured in Japan

a) Construction

Fixture hardware

b) Electricity

Power distribution boards, switch panels, power generators

c) Water supply/sewage systems

Valves and pipe fittings, pumps

d) Air-conditioning/ventilation

Air-conditioning equipment, valves and pipe fittings, ventilators

(2) Procurement Schedule

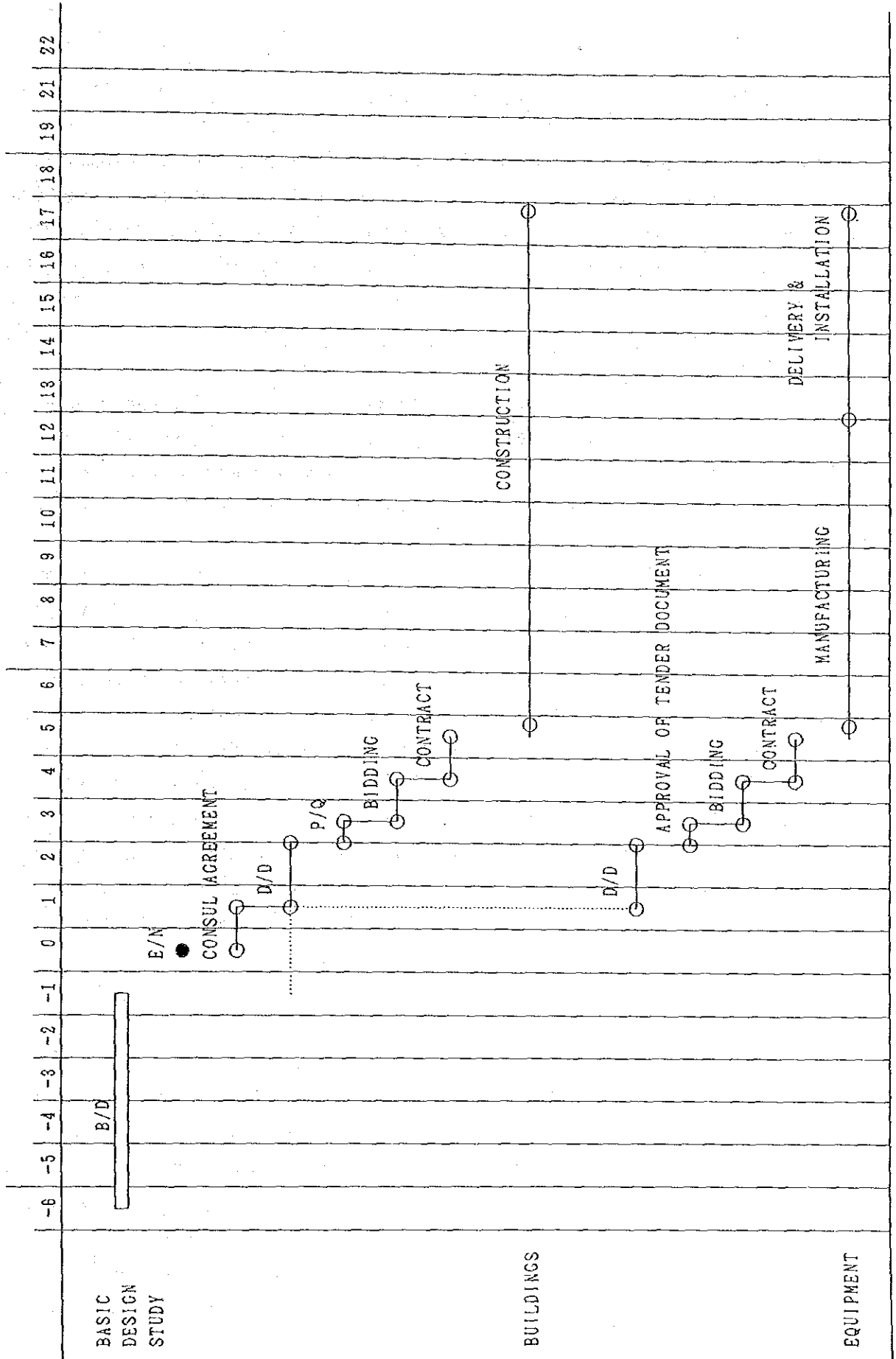
The procurement schedule is as presented in Table 4-4.

4-4 IMPLEMENTATION SCHEDULE

Table 4-4 shows the schedule for the completion of facilities, and the procurement and delivery schedule of the equipment in the Project is implemented.

Approximately twelve (12) months will be required as the construction period. Counting the time requirement for drawing up implementation planning etc., it is estimated that seventeen (17) months will be required for completion from the Exchange of Note date.

TABLE 4-4 Implementation Schedule



4-5 OPERATION AND MAINTENANCE

An operation and management system for the facilities is mentioned in 3-3-1 "Basic Concept of Facility Functions" and 3-3-2 "Organization and Personnel Management" of 3-3 "PROJECT OUTLINE." An operation and maintenance system of the equipment and materials is outlined as follows:

4-5-1 Equipment Operation and Maintenance Measures

The equipment and materials proposed under the Project are great in variety. Since those can be broadly divided into two categories -- experimental equipment and vehicles, the operation and maintenance system for them should be also divided in accordance with the categories.

(1) Experimental and Analytic Equipment

Operation and maintenance are presently carried out for existing experimental and analytic equipment at each facility. To improve the current maintenance method, a check list of each type of experimental and analytic equipment at each laboratory should be prepared respectively, and all laboratory staff should check their equipment twice a month according to this list. The list should then be submitted to a superior for approval. Moreover, one (1) percent of the purchase price is appropriated annually for the maintenance costs of each piece of equipment. The service life of each type is about eight (8) years, and depreciation should be calculated based on the service life.

(2) Vehicles

Vehicles are to be maintained by the individual drivers or users. As drivers are sometimes discharged when maintenance is poor, the condition of each vehicle is quite good. Separate check lists are made for regular daily (before and after use), weekly and monthly checks, inspections are implemented, and the data obtained are filed for a designated period. When repairs are required, the content and cost should also be recorded on the check lists. Completed check lists should be submitted to a superior at the end of each week and filed.

4-5-2 Operation and Maintenance Plans

After the completion of the facilities and equipment under Phase III of the Project, the approximate necessary costs for operating and maintaining the FCPC (including PL) and FL facilities in the six provinces outside of Jawa and Bali are given below. The even costs are for the year 1989 when the Project should be completed and the program in full operation.

Total operation and maintenance expenses (per annum)
812,050,000 Rps. (Approx. ¥79.2 million)

(1) Personnel Expenses

University graduate personnel

125,000 Rps./month x 12 months x 39 persons = 58,500,000 Rps.

Academy graduate personnel

100,000 Rps./month x 12 months x 87 persons = 104,400,000 Rps.

High school graduate personnel

75,000 Rps./month x 12 months x 54 persons = 48,600,000 Rps.

Primary & secondary school graduate personnel

50,000 Rps./month x 12 months x 215 persons = 129,000,000 Rps.

Total 340,500,000 Rps.

(2) Training Expenses

14,000 Rps./person x total of 200 personnel = 2,800,000 Rps.

Total 2,800,000 Rps.

(3) Laboratory Equipment and Supplies Expenses

Maintenance expenses 2,452,855,700 x 1% = 24,528,577 Rps.

Depreciations 2,452,855,700 - 8 years = 306,606,960 Rps.

Total 331,135.517 Rps.

(4) Vehicle Expenses

Maintenance expenses

(including fuel, lubricant oil, spare parts and repairs)

1,500,000 Rps. x 19 automobiles = 28,500,000 Rps.

325,000 Rps. x 30 motorcycles = 9,750,000 Rps.

Total 38,250,000 Rps.

Depreciation charges

335,943,750 Rps. - 10 years = 33,594,375 Rps.

65,651,250 Rps. - 5 years = 13,130,250 Rps.

Total 46,724,625 Rps.

Total 84,974,625 Rps.

(5) Lighting and Heating Expenses of Facilities

1) Electric Rates

For electric capacity of 200 kVA or less, the electric rate schedule for offices shall be applied.

(a) Each FCPC (4 locations)

Electricity consumption

40 kVA x 0.6 x 8 hours/day x 25 days = 4,800 kWh

Basic charge

40 kVA x 3,680 Rps./kVA/month x 12 months = 1,766,400 Rps.

Metered charge

4,800 kWh/month x 97.75 Rps./kWh x 12 months = 5,630,400 Rps.

Sub-total, per FCPC 7,396,800 Rps.

Total for 4 FCPC 29,587,200 Rps.

(b) Each FL (5 locations)

Electricity used

$$15 \text{ kVA} \times 0.6 \times 8 \text{ hours/day} \times 25 \text{ days} = 1,800 \text{ kWh}$$

Basic charge

$$15 \text{ kVA} \times 3,680 \text{ Rps./kVA/month} \times 12 \text{ months} = 662,400 \text{ Rps.}$$

Metered charge

$$1,800 \text{ kWh} \times 97.75 \text{ Rps./kWh} \times 12 \text{ months} = 2,111,400 \text{ Rps.}$$

$$\text{Sub-total, per FL} \quad 2,773,800 \text{ Rps.}$$

$$\text{Total for 5 FL} \quad 30,511,800 \text{ Rps.}$$

2) Gas Rates

Gas consumption

$$13 \text{ kg cylinders: } 19 \text{ pcs./month} \times 12 \text{ months} = 228 \text{ cylinders}$$

Gas charge

$$228 \text{ cylinders} \times 1,800 \text{ Rps./cylinder} = 410,400 \text{ Rps.}$$

$$\text{Total} \quad 410,400 \text{ Rps}$$

3) Fuel for Power Generators

Fuel consumption

$$5 \text{ /hr.} \times 3 \text{ hrs./day} \times 25 \text{ days} \times 12 \text{ months} = 4,500$$

Fuel charge

$$130/ \times 4,500 = 585,000 \text{ Rps.}$$

$$\text{Total} \quad 8,775,000 \text{ Rps.}$$

4-5-3 Rough Estimate of Construction Costs

Rough Estimate of cost to be undertaken by the Indonesian side

	Rps.	(Fiscal year)
- Land preparation (earth filling, access road and bridge)	354,800,000	(1987/1988)
- Provision of fences and gates	66,500,000	(1988/1989)
- Provision of electric power	32,000,000	(1988/1989)
- Local cost furniture and equipment (including handling cost)	320,000,000	(1988/1989)
- Value Added Tax	1,336,300,000	(1988)
- Building permits	22,500,000	(1987/1988)
- Counter parts	36,000,000	(1987/1988)
- Bank Commission	40,000,000	(1988/1989)
Total	2,208,100,000	Rps.

BREAK DOWN OF ESTIMATED PREPARATION EXPENSES TO BE BORNE
BY THE INDONESIAN SIDE

	:	Abbreviation
Provision of electric power	:	EP
Earth filling and leveling	:	EL
Removal of existing building	:	RB
Removal of trees & others	:	RT
Provision of fences & gates	:	FG
Provision of Access Bridge	:	AR
Soil boring test	:	BT

1. North Sumatera

1-a) MEDAN - FCPC

	Rps.
EP	4,000,000
EL	20,000,000
RB	2,000,000
FG	8,000,000
AB	3,000,000
Total	35,000,000

1-b) DELISERDANG - FL

EP	3,200,000
EL	20,000,000
FG	4,000,000
Total	27,200,000

1-c) SIMALUNGUN -- FL	Rps.
EP	3,200,000
EL	1,000,000
RT	1,000,000
FG	4,000,000
AB	3,000,000
	<hr/>
Total	12,200,000

2. South Sulawesi

2-a) MAROS -- FCPC	
EP	4,000,000
EL	20,000,000
FG	6,000,000
AB	2,500,000
	<hr/>
Total	32,500,000

2-b) LUWU -- FL	
FG	4,000,000
AR	5,000,000
	<hr/>
Total	9,000,000

2-c) BONE -- FL	
EP	3,200,000
EL	20,000,000
FG	4,000,000
	<hr/>
Total	27,200,000

3. South Kalimantan

3-a) BANJAR BARU - FCPC

	Rps.
EP	4,000,000
FG	6,000,000
AR	7,000,000
	<hr/>
Total	17,000,000

3-b) BANJAR - FL

EP	3,200,000
EL	60,000,000
RT	300,000
FG	4,000,000
AR	3,500,000
AB	3,000,000
	<hr/>
Total	74,000,000

3-c) HULU SUNGAI SELATAN - FL

EP	3,200,000
EL	60,000,000
FG	4,000,000
AB	3,000,000
	<hr/>
Total	70,200,000

4. D.I. Aceh

4-a) PIDIE - FLPC

	Rps.
EL	20,000,000
FG	4,000,000
AR	2,500,000
AB	3,000,000
	<hr/>
Total	29,500,000

4-b) ACEH TIMUR - FL

EL	20,000,000
FG	3,500,000
AB	2,000,000
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Total	25,500,000

5. Lampung

5-a) LAMPUNG UTARA - FL

RT	4,500,000
FG	4,000,000
AB	2,500,000
	<hr/>
Total	11,000,000

5-b) LAMPUNG SELATAN - FL

EL	20,000,000
FG	4,000,000
AB	2,500,000
	<hr/>
Total	26,500,000

6. South Sumatera

6-a) PALEMBANG - FCPC

	Rps.
EP	4,000,000
EL	40,000,000
RT	1,500,000
FG	6,000,000
AR	3,000,000
Total	54,500,000

6-b) OKU - FL

RT	1,000,000
FG	1,000,000
Total	2,000,000

GRAND TOTAL

453,300,000 Rps.

CHAPTER 5. PROJECT EVALUATION

CHAPTER 5. PROJECT EVALUATION

The Government of the Republic of Indonesia has adopted the policy of attaching the highest importance to increased production and self-sufficiency of the food supply, especially the rice crop. The National Crop Protection Project (NCP) contained within the development plans forms the core for Rice Pest Forecasting and Control Project ATA-389.

The objectives of Project ATA-389 are (1) strengthening of the rice pest and disease forecasting and control system, and (2) transfer of the most appropriate pest control system to the farmers, thereby increasing rice production.

The DFCP, which is under the jurisdiction of the Directorate General of Food Crop Agriculture (DGFA), is the implementing agency for the Project and as such, is in charge of the PFC, FCPC, FL etc. In Phases I and II, the Project proposed construction of PFC in Jatisari, FCPC and FL in three Jawa provinces and Bali, as well as provision of the necessary materials and equipment. In Phase III, the Project aims at expanding the functions and organization of DGFA and DFCP through providing the facilities and equipment of FCPC, FL, and PL in the six provinces outside of Jawa and Bali, strengthening of their activities and improvement of technology. With successful project implementation, significant effects are expected as outlined hereunder.

5-1 IMPROVEMENT OF PEST AND DISEASE FORECAST AND CONTROL TECHNOLOGY

For implementing effective control activities, it is necessary to first develop pest and disease forecasting technology and provide highly accurate forecasting reports based on this technology.

The objectives of Project ATA-389 are in the development of pest and disease forecasting technology and the establishment of control technology, for a systematic and effective implementation of pest and disease forecasting and control programs through the Central PFC and the regional FCPC and FL over the 10 rice-growing provinces.

In the provinces, it is of prime importance to first establish FL facilities in rural areas as bases for pest and disease forecasting and control technology development before the urban facilities. This will produce technical developments and study conforming to local conditions.

Furthermore, the arrangement of facilities and equipment under the Project will provide common grounds for cooperation and technical intercourse with other related organizations for the development and expansion of techniques of agricultural study and a training system for farmers, which will contribute to the creation of a stronger agricultural support organization for Indonesian food crop production.

5-2 DEVELOPMENT AND EXTENSION OF PEST AND DISEASE FORECAST AND CONTROL NETWORK

Pest forecasting and control activities in the field will include: (1) accurate observation and rapid reports at the OU level for forecasting purposes; (2) utilization of data from the said reports for highly accurate pest forecasts and rapid delivery of the information; and, (3) implementation of the most adequate control measures, including arrangement of pesticides and equipment required, based upon the pest and disease forecast information. As these functions will be fulfilled through integrated and effective operation of the OU, FL and, FCPC network, the construction of facilities and provision of materials and equipment for the six provinces outside of Jawa and Bali, in addition to the three Jawa provinces and Bali, under the Project are envisioned to establish a nation-wide Forecast and Control System network, and it is expected these will greatly contribute to improve the forecast and control technologies of Indonesia.

To realize the improvement of pest and disease forecasting and control technology, it is essential (1) to develop and expand new technology at each level of FL, FCPC and PFC, and (2) to improve Pest Observation technology at the OU level. These improvements of the technical staffs in charge are considered achievable by close cooperation between upper

and lower organizations through daily activities such as technical transfer, patrol, guidance, and training, for which the network system has to be improved.

Specifically, the Project comprises construction of 11 FL in the six provinces outside of Jawa and Bali, in addition to 15 FL in Jawa and Bali. This expansion of forecast and control network will greatly stimulate OU activities and emphasize forecasting technology as a function of the FCPC.

5-3 EFFECTS ON THE TRAINING AND EDUCATION PROGRAMS FOR TECHNICAL STAFF

Education programs conducted at the completed JATISARI FPC are for teaching and training technical personnel at FCPC and FL responsible for controlling and guiding OU personnel.

Various techniques acquired through the programs such as (1) outbreak forecasting and monitoring techniques, (2) outbreak forecasting and control techniques, and (3) methods for training technical personnel will be useful for FCPC and FL in various provinces when implementing guidance, supervision, and the technical upgrading of OU personnel. When the network system is completed, it should prove to be very effective in promoting technical transfer among the various regions and in conducting detailed activities.

5-4 EFFECTS ON THE ECONOMY AND FARMERS' INCOME

Indonesia's last rice import was the 1.3 million tons of 1983. Since 1984, there has been no rice import. In 1984, Indonesia produced 38.14 million tons of rice with Jawa, the largest rice growing region, having a unit yield of 4.55 t/ha. In contrast, Kalimantan Island had a low yield of 2.2 t/ha and Sulawesi Island 3.6 t/ha. For Indonesia to achieve her goal of a 4% annual increase in the future, the harvests in provinces outside of Jawa and Bali must be raised. Production increases for

avoiding dependence on rice importation would be realized by the improvement of agricultural technologies, but even more important are improvement and strengthening of the forecasting and control system to reduce the substantial damage caused by rice pests and diseases.

Economic impact on farmers' income will be derived from a reduction in expenditures on pesticides and from direct increases in production, both coming out of the implementation of adequate controls based on the forecast information.

5-5 SOCIAL AND OTHER EFFECTS

With the establishment of FL facilities in every rural area and of a crop protection network, crop protection activities of various agricultural support agencies such as extension organizations, KUD and Seed Centers will be remarkably promoted, where integrated effects from the close cooperation between them are expected. They will set farmers free from the uncertainty of the harvest, caused by pests and diseases, and will stimulate the nation's agricultural production.

5-6 EXPECTATION FROM TECHNICAL COOPERATION PROGRAM

Food Crop Protection Project ATA-162, which the Japanese Government has been supporting through participation in a project of technical cooperation, entered into the stage of Phase II from 1987. It is expected that the staffs concerned in the Republic of Indonesia will efficiently manage and operate the facilities and equipment planned for construction and provision under the Project through maintaining close relations with this technical cooperation project and utilizing the results based on the studies.

CHAPTER 6. CONCLUSION AND RECOMMENDATIONS

CHAPTER 6. CONCLUSION AND RECOMMENDATIONS

The Project (ATA-389) aims at constructing the facilities and providing the equipment required for formulation of an integrated pest control system appropriate for the pests, diseases and conditions in the Project area. Forecasting and control technologies which effectively and economically prevent serious damage caused by rice pests and diseases are expected to be improved and extended, thereby achieving the prime purpose of the increased production of rice, Indonesia's most important agricultural product, for a self-sufficient food supply in the national plan.

Evaluations made on the effects of the implementation of the Project and their continuation in the future has proved the helpfulness of the Project. Early implementation of it under the grant aid program is most desirable.

To achieve the above objectives, administrative and technical support from the Government of Indonesia as to the following items is considered essential.

6-1 STAFF TRAINING FOR EACH FACILITY

Although there are opportunities for education and training available through the BLPP (Agricultural Officials Training Center), university diploma courses, and the various training programs under the Project, the quantity and quality are both insufficient for providing for the staffs required at the facilities in the Project. University graduates are desirable as core specialists for crop protection; however, they are supposed to be in short supply throughout the nation for some time to come. Accordingly, every responsible institution must utilize every opportunity, both at home and abroad, to train personnel at every level to allow for appropriate concepts and methods of crop protection and control.

6-2 ADMINISTRATIVE SUPPORT

Administrative support is essential for smooth project implementation including the planning of forecast and control activities, securing and placement of personnel, budget allocations, etc. In particular, administrative support of the improvement of the relevant regulations becomes necessary for FCPC, FL, OU, etc. when effecting cooperation with the concerned government agencies of the respective districts.

6-3 STRENGTHENING OF THE OPERATION AND MAINTENANCE SYSTEM

A sufficient budget should be allocated annually by the DFCP for operation, maintenance and depreciation for replacement of vehicles, communications equipment, and other equipment provided for the facilities in the Project. To ensure regular budget allocations, expenditures and other data should be recorded by computer, for each piece of equipment with registration numbers, throughout the country. The record should also be periodically reviewed.

For the maintenance of the equipment in the field, a manual clearly specifying persons responsible as well as maintenance methods should be prepared, and monthly reports should be made to the highest level of the system for consolidation and analysis by computers.

The annual survey of operating conditions of equipment through monitoring should also be beneficial, for which upper organs, upon guidance/supervision patrols, should examine the lower organs.

6-4 TRAINING AND EDUCATION OF AGENCY STAFF

Being responsible for the extension of rice growing technology, the distribution of production materials and marketing of rice, the staff of agricultural extension offices and the staff of agricultural cooperatives are closely linked to forecast and control activities. Complete awareness of the crop protection administrative network among the said staff will most effectively promote the implementation of the Project.

Accordingly, it is desirable they plan courses and programs for outbreaks, damage estimation and adequate control of the pests and diseases, as required and at each different activity level.

6-5 STRENGTHENING AND SUPPORT OF EXTENSION ACTIVITIES

Pests and diseases do not always follow regular patterns due to climatic fluctuations and changes in seed variety and cultivation methods. Further, pesticides are to be developed with altered application techniques.

Accordingly, control measures must often be flexible and of emergent use. Staffing and arrangement of equipment for the Pest Brigade and Extension Offices can often be insufficient to cope with the outbreaks. Upon this recognition, the Government of Indonesia should support the extension and strengthening of pest and disease control activities, involving those of farmers' groups, and provide timely technical guidance complying with the level of the control measure.

6-6 INSTITUTIONAL COOPERATION

Strengthening of cooperation between experimental and study institutes is particularly important. Opportunities should be provided at each level (provincial, regional, etc.) for exchanging information and results of basic studies on major pests, and a program of activities should be prepared by the Government of Indonesia to facilitate periodic exchanges among universities (Agricultural Department), laboratories and study institutes.

These opportunities should be scheduled at least once every planting season. Recommendations from among basic study and information of control techniques coping with the local conditions will be exchanged to effectively develop the forecasting and control technology in each locality.

APPENDIX

APPENDIX I

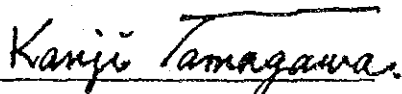
MINUTES OF DISCUSSIONS
ON
THE RICE PEST AND DISEASE FORECASTING AND CONTROL PROJECT, PHASE III
IN
THE REPUBLIC OF INDONESIA

In response to the request made by the Government of the Republic of Indonesia, the Government of Japan decided to conduct a basic design study on the Rice Pest Disease Forecasting and Control Project, Phase III (hereinafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA). JICA has dispatched the study team headed by Mr. Kanji TAMAGAWA, Deputy Director, Plant Protection Division, Agricultural Production Bureau, Ministry of Agriculture, Forestry and Fisheries, from 21st December, 1986 to 27th January, 1987.

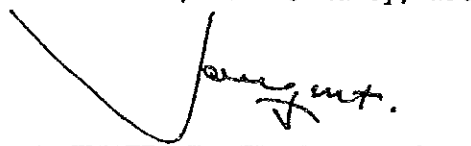
The Team had a series of discussions on the Project with the officials concerned of the Government of the Republic of the Indonesia headed by Dr. Ir. Sadjı Partoatmodjo, Director of Food Crop Protection, Directorate General of Food Crops Agriculture, Ministry of Agriculture, and conducted a field survey in the Project area.

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

Jakarta, 23rd January, 1987



Mr. Kanji TAMAGAWA
Team Leader,
Basic Design Study Team,
JICA



Dr. Ir. Sadjı Partoatmodjo
for Director General of
Food Crops Agriculture,
Ministry of Agriculture

ATTACHMENT

1. The objective of the Project is to provide necessary buildings, facilities and equipment for the establishment of Rice Pest and Disease Forecasting and Control System by the Grant Aid of the Government of Japan in order to improve the pest forecasting and surveillance system and integrated pest management system, and strengthen the existing food crop protection organizations to minimize pre- and/or post harvest yield loss of food crops.
2. The provinces to be covered by the Project are as follows :
 - (1) South Sulawesi
 - (2) North Sumatera
 - (3) South Kalimantan
 - (4) D.I. Aceh
 - (5) Lampung
 - (6) South Sumatera
3. The Project is composed of the following facilities :
 - (1) Food Crop Protection Center (FCPC) including Pesticide Laboratory (PL)
 - (2) Field Laboratory (FL)
4. Main activities of the facilities are as follows:
 - (1) FCPC
 - a. data collection and analysis of pest data at provincial and district levels.
 - b. dissemination of pest information and recommendation of pest control for agricultural support systems.
 - c. establishment of practical forecasting and control methods at the region.

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- d. supervision and instruction of Pest Observers, FL and PL within the region.
- e. information exchange of pest control activities with the Provincial Food Crop Agricultural Service.
- f. technology development of integrated pest management system suitable for the region.

(2) FL

- a. study for pest surveillance and control.
- b. data analysis of the district levels and information exchange with the District Food Crop Agricultural Service.
- c. supervision and instruction of Pest Observers.
- d. surveillance for the implementation of integrated pest management system (including biological control agents and field rat control).

5. Locations of the proposed Project sites are listed in ANNEX I. FCPCs and FLs are listed in order according to the priority among those provinces in ANNEX I.
6. Staffing Plan for each facility is shown in ANNEX II.
7. Directorate General of Food Crops Agriculture, Ministry of Agriculture is responsible for the execution and administration of the Project.
8. The team will convey to the Government of Japan the desire of the Government of the Republic of Indonesia that the former takes necessary measures to cooperate by providing the buildings and other items listed in ANNEX III within the scope of Japanese economic cooperation programme in Grant Form.
9. The Indonesian Side has understood Japan's Grant Aid System which includes principle of the use of a Japanese Consultant Firm and Japanese General Contractor(s) for the implementation of the Project.

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10. The Government of the Republic of Indonesia will take necessary measures listed in ANNEX IV on condition that the Grant Aid would be extended to the Project.
11. The Indonesian Side desired that the execution of the Project would be considered according to the Project site priorities within the amount of counter budget allocation.
12. The Indonesia Side will submit a report concerning the preparation of the counter budget for the Project to the JICA Indonesia Office timely.

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ANNEX I

The proposed Project sites are located as follows:

- (1) South Sulawesi
 - FCPC, Maros Baru/MAROS (including PL)
 - FL , Waleurang /LUWU
 - FL , Lappariaya/BONE

- (2) North Sumatera
 - FCPC, Gedung Johor/MEDAN
 - FL , Tanjung Morawa/DELI SERDANG
 - FL , Bandar/SIMALUNGUN

- (3) South Kalimantan
 - FCPC, Landasan Ulin/BANJARBARU
 - FL , Sungai Tabuk/BANJAR
 - FL , Sungai Raya/HULU SUNGAI SELATAN

- (4) D.I. Aceh
 - FL, Keumala/PIDIE
 - FL, Peureulak/ACEH TIMUR

- (5) Lampung
 - FL, Alung Selatan/LAMPUNG UTARA
 - FL, Gading Rejo/LAMPUNG SELATAN

- (6) South Sumatera
 - FCPC, Palembang
 - FL , Belitung/OGAN KOMERING ULU

Total location : FCPC 4

FL 11

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ANNEX II

Staffing Plan for FCPC and FL is as follows:

(1) FCPC

<u>Position</u>	<u>Number</u>
Chief	1 (university graduate)
Secretary	1
Section Chief (administration)	1 (university graduate)
Section Chief (monitoring)	1 - do -
- do - (technology)	1 - do -
- do - (pesticide)	1 - do -
- do - (equipment & training)	1 - do -
Technician (3 for each of the 4 technical sections)	12 (academy graduates)
Assistant (2 for each of the 4 technical sections)	8 (vocational school graduates)
Office Worker	15
Part-time Worker	16
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Total	58 (including 6 university graduates)

FCPC including PL will have extra 15 staff.

(2) FL

<u>Position</u>	<u>Number</u>
Chief	1 (university graduate)
Sec-Chief (technology)	1 (academy graduate)
Sec-Chief (farm manager)	1 - do -
Sec-Chief (administration)	1 - do -
Technician	4 - do -
Assistant	4 - do -
Sub-Assistant	4
Field Coordinator	1 (academy graduate)
Office Worker	4
Part-time Worker	7
<hr/>	
Total	28

FL with Biological Laboratory or Vertebrate Laboratory will have two extra technicians, assistants and sub-assistants for a total staff of 34.

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ANNEX III

Items requested by the Government of the Republic of Indonesia are as follows :

1. Buildings

(1) Food Crop Protection Center

- a. ADMINISTRATION RM
- b. CHIEF ADMINISTRATION
- c. HEAD OFFICE
- d. TECHNICAL STAFF RM
- e. ASSISTANT RM
- f. WORK SHOP
- g. COMPUTER RM
- h. GENERAL OFFICE (1)
- i. GENERAL OFFICE (2)
- j. LIBRARY
- k. MEETING RM
- l. LABORATORY
- m. NETHOUSE

Pesticide Laboratory is included in Maros Baru/MAROS FCPC.

(2) Field Laboratory

- a. OFFICE (1)
- b. OFFICE (2)
- c. OPERATION RM
- d. LABORATORY (1)
- e. LABORATORY (2)
- f. NETHOUSE
- g. DRYING FLOOR & STORAGE

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Vertebrate Laboratory is included in Waleurang/LUWU FL, Tanjung Morawa/DELISERDANG FL, Sungai Tabuh/BANJAR FL and Alung Selatan/LAMPUNG UTARA FL.

Biological Laboratory is included in Lappariaya/BONE FL, Bandar/SIMALUNGUN FL, Keumala/PIDIE and Belitung/O.K.U.

2. Equipment

(1) Equipment for Food Crop Protection Centers

a. Scientific Equipment

- i General Equipment
- ii Vertebrate Pest Laboratory Equipment
- iii Weed Science Laboratory Equipment
- iv Laboratory Support Equipment
- v Pesticide Laboratory Equipment for Maros Baru FCPC

b. Training Equipment

c. Data Consolidation Equipment

d. Vehicle

e. Communication System Equipment

(2) Equipment for Field Laboratories

a. General Laboratory Equipment

b. Laboratory Support Equipment

c. Meteorological Station Equipment

d. Training Equipment

e. Data Consolidation Equipment

f. Firm Equipment

g. Biological or Vertebrate Laboratory Equipment for eight (8) FLs

h. Vehicle

i. Communication System Equipment

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ANNEX IV

Following arrangements are required to be undertaken by the Government of the Republic of Indonesia.

1. To provide data and information necessary for the construction including boring test.
2. To secure lands necessary for the construction of facilities and to clear, fill and level the site as needed before the start of construction.
3. To prepare the access roads to the sites before the start of construction.
4. To provide facilities for distribution of electricity, telephone, water supply to the sites, and external drainage from the project site.
5. To undertake incidental civil work such as planting and fencing, if needed.
6. To provide general furniture and materials for daily activities.
7. To obtain the building permits before construction.
8. To bear commissions to the Japanese foreign exchange bank for the banking arrangement.
9. To ensure prompt unloading, tax exemption, customs clearance of the products and related equipment under the Grant at the port of disembarkation in Indonesia.

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