

## **CHAPTER 4 BASIC DESIGN**



## CHAPTER 4: BASIC DESIGN

### 4-1 Basic Policies

As explained in Chapter 3, the existing Dormitory and annex-Dormitory should function as a single unified accommodation facility after the completion of the expansion plan in line with the purpose of the Project.

The existing Dormitory was not designed with the clear intention of future expansions, so it is impossible either in terms of floor planning or structural planning to directly connect the annex-Dormitory to the existing Dormitory or to build it on top of the existing Dormitory. Therefore the Annex-Dormitory will take the form of a separate building, although the basic policies will aim at achieving harmony with the existing Dormitory in all areas of site utilization, location of facilities, architectural design and finishes, etc. so that the two buildings will be regarded as one united cluster from the viewpoint of utilization, operation and maintenances as well as in appearance.

Specifically, the basic policies drawn up at the time of basic design of the following existing facilities including the existing Dormitory will be adopted as premises for the Project. These basic policies, together with the new factors that need to be taken into account for the expansion plan, will comprise the basic policies for the Project.

- ° To embody the objectives of the Project in the design of buildings and selection of equipment most appropriate for the economic and technical conditions in the Philippines.
- ° To execute a cost-effective design with considerations on how the facilities will be used.
- ° To take fully into account the natural and environmental conditions and the customs of the Philippine people.

- To design buildings that require minimum maintenance costs, adopting wherever possible the domestic construction skills, materials and methods.
- To design facilities that can flexibly cope with future changes, as much as possible, including expansions.

The basic policies on the scale and grade of the facilities for the Project were determined as follows, in line with the above-mentioned basic policies for design.

- In the calculation of the scale of the facilities, the establishment of dimensions of the framework and space and dimensions of individual components should principally be based on those of the existing facilities. However, in case there are factors in the annex-Dormitory that were absent in the existing Dormitory, or when it is impossible to apply similar standards, the scale was established with sufficient consideration on how the facilities will actually be used.
- As to establishment of the grade of the facilities, the premises was that the annex-Dormitory would be situated adjacent to the existing Dormitory and that where upgrading of the contents is required, the grade should be determined in each case in line with the concept of the existing Dormitory.

## 4-2 Basic Design

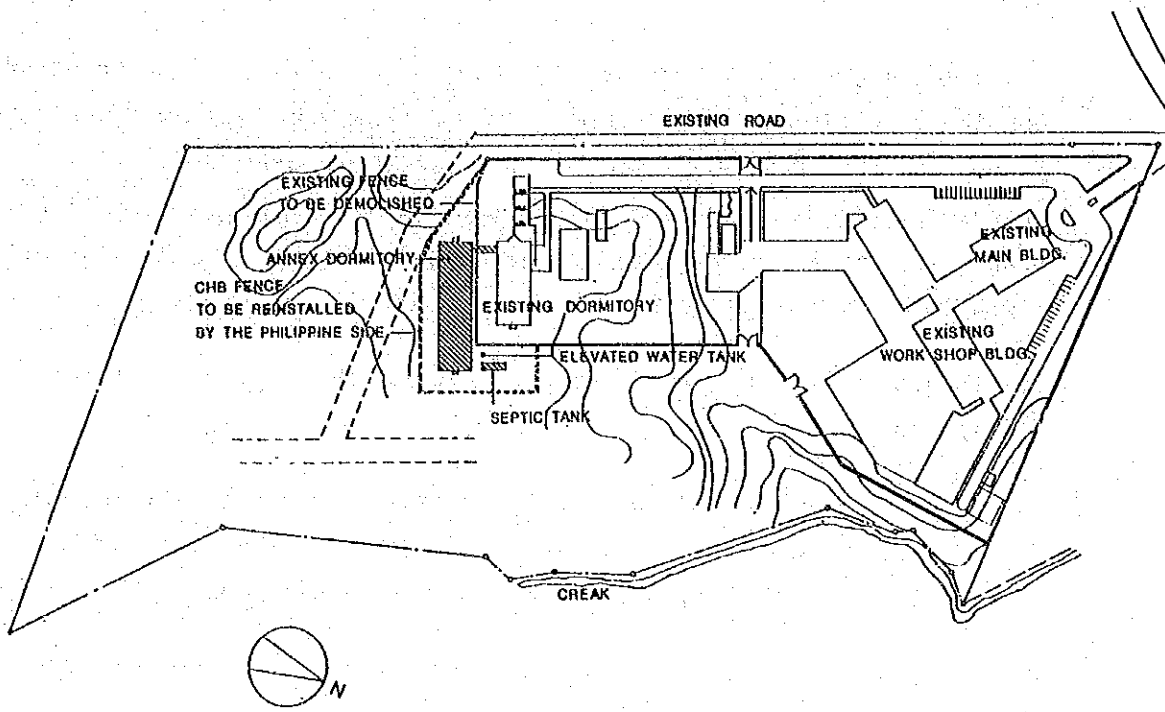
### 4-2-1 Site Utilization Design

The Annex-Dormitory is to be constructed parallel to the existing Dormitory, on the southern side. The existing concrete hollow block fence on the southern end of the existing Dormitory will be transferred to the southern end of the Annex-Dormitory at the final stage of the construction for the implementation of the Project (work to be conducted by the Philippine side).

The following points were taken into account for drawing up the site utilization design.

- 1) The traffic line connecting the Annex-Dormitory to the existing Dormitory shall be as short as possible, so that the entrances of the two facilities will be joined together smoothly.
- 2) The design shall not intrude into the area used for field training.
- 3) The site should have a firm foundation and a ground level that does not require to be back-filled (ponds shall be avoided).
- 4) The design shall require minimum destruction/refurnishing of the existing Dormitory (in particular, it should not affect the elevated tank and shortwave tower foundation prepared by the Philippine side).
- 5) The design shall cause minimum disturbance on the trainings and daily life at the Dormitory during construction works.
- 6) The site shall be utilized so that both the existing Dormitory and the Annex-Dormitory will have ample space around them after their completion.
- 7) The design shall not affect largely the daily lives of neighboring residents.

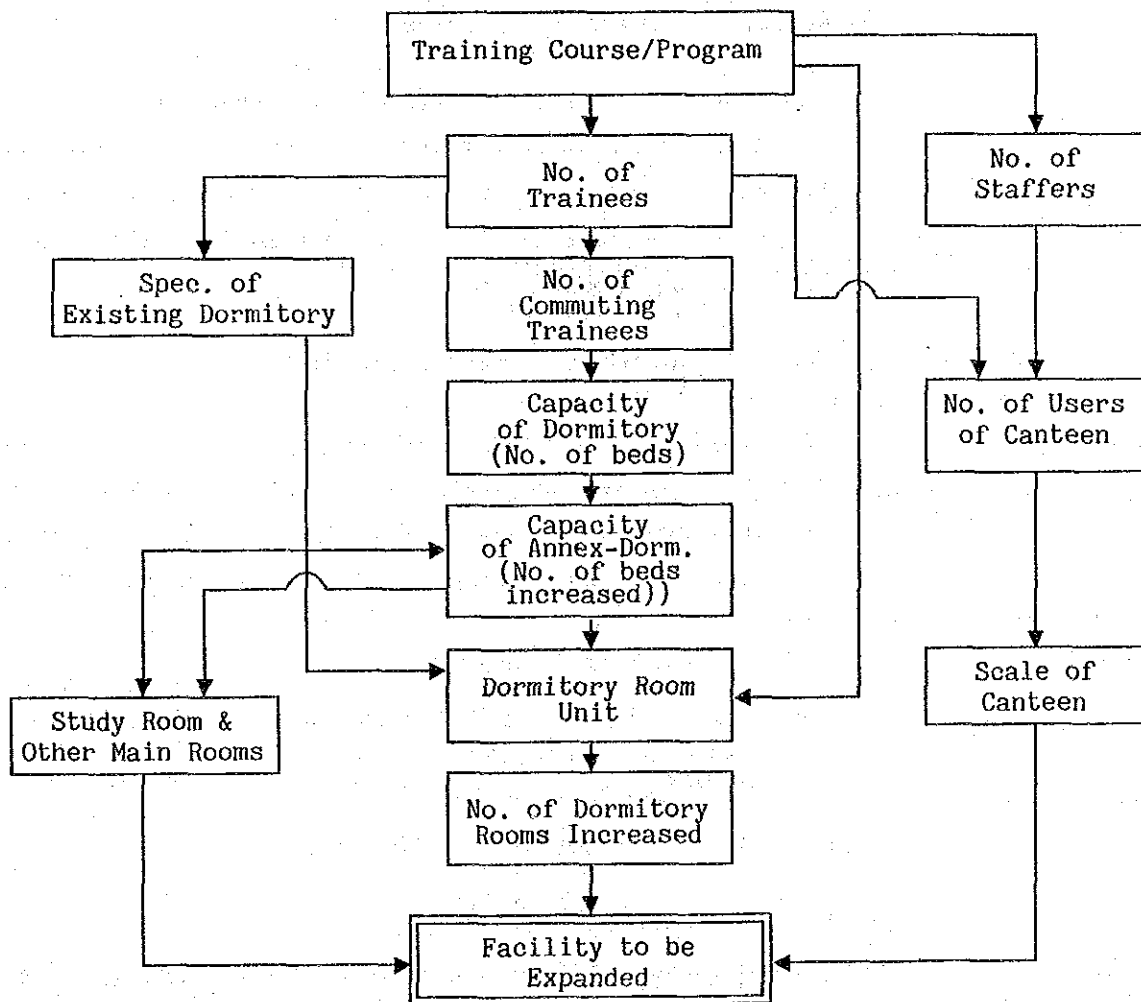
Fig. 4-1 Site Plan



4-2-2 Facilities Design

This Project aims at combining the existing Dormitory and the newly-added annex-Dormitory into a single facility. The adequate scale of the annex-Dormitory should therefore be based on the scale, number of rooms, etc. of the Dormitory Bedroom, Canteen, Study Room etc. of the existing Dormitory. The scale and grade of the annex-Dormitory has been established as shown in the below flow chart, with reference to "3-2 Outline of Training Programs" and "3-5 Personnel Assignment Plan".

Fig. 4-2 Flow Chart for Establishing the Scale and Grade of the Facilities



(1) Dormitory Rooms

1) Rooming Capacity(Annex-Dormitory)

The rooming capacity of the Annex-Dormitory has been reviewed with regard to the number of trainees, number of commuting trainees and rooming capacity of the existing Dormitory outlined in 3-2 Outline of Training Programs.

a) Number of Trainees

According to the training program, the number of trainees reaches a maximum of 160 when the courses of RTTP and SSTP are carried out concurrently.

b) Number of Commuting Trainees

Applying the ratio of commuting trainees to total trainees given in 2-2-4 (5), the number of commuting trainees in case of the above a) is about 16 to 30. Adopting the most conservative estimation, the number of commuting trainees is 16.

c) Rooming Capacity for Existing Dormitory

The planned rooming capacity for the existing Dormitory is 64 (provided they will be used only by men as shown in 2-2-5 2). From the above, the rooming capacity for the Annex-Dormitory is calculated as follows:

|                                      |   |                         |   |                           |   |   |
|--------------------------------------|---|-------------------------|---|---------------------------|---|---|
| Rooming Capacity for annex-Dormitory | = | Maximum No. of Trainees | - | No. of Commuting Trainees | - | No. of Beds Planned in Existing Dormitory |
|                                      | = | 160                     | - | 16                        | - | 64  |
|                                      | = | 80 (beds)               |   |                           |   |   |

Consequently, 80 beds for trainees are required to be increased for the Annex-Dormitory. As a result, the dormitory facilities will have sufficient rooming capacity to accommodate the number of trainees who need boarding for all training periods of the year



except when trainings for RTTP and SSTP are carried out concurrently, three times a year and approximately one month for each training period.

The training period for SSTP is one month and the training is carried out concurrently with RTTP for a total of three months of the year. This means that, for the remaining nine months of the year when training is carried out for RTTP alone, a maximum of 126 beds will fulfill the requirement of the boarding trainees. During this period, it will be possible to secure 18 beds (excluding those of one-bed rooms) as emergency sleeping facilities for trainers and staffers.

2) Dormitory Bedroom Unit

a) 4-bed rooms

An updated study was made on the function of the facilities, particularly of the Dormitory, to meet current demands with special consideration on how the Dormitory has actually been used during the three years since its opening, what achievements have been made in the Program III, and what plans and requests the Philippine side has regarding future utilization of the facilities.

Future training plans for Program III indicate implementation of trainings of higher levels including a further emphasis on STP (Special Training Program) and establishment of SSTP (Special Supervisory Training Program). The importance of lectures in the Program is also expected to increase.

Under these circumstances, a 4-bed room is adopted as a standard unit for the Annex-Dormitory. The small rooming capacity of each room creates a space where students will be able to study with less disturbance. This coincided with the request by the Philippine side. Compared with the standard unit of the existing

Dormitory (8-bed room), the 4-bed unit provides better privacy as well as an improved environment for studying. The rooming capacity of 4 is also a convenient one in terms of allocating boarding rooms by each training course (20 trainees). Trainees attending the same training course will be able to share a room. They will not only be studying together but also spending their daily life together, and this is anticipated to have a synergic effect on the effectiveness of the training. A 4-bed room will hold two double-bunk beds, study desks and lockers. In addition to providing an ideal environment for studying, this unit will also set a physical restriction on for what purpose, and by how many people, the room will be used. This will ensure an appropriate utilization of the room in future, too.

b) Number of Units

The Annex-Dormitory will have 20 4-bed rooms to provide 80 additional beds. Out of the 20 rooms, 16 rooms (64 beds) will be used mainly by RTTP trainees and the remaining 4 rooms (16 beds) will be offered to SSTP trainees as a rule.

$$\begin{aligned}
 \text{RTTP} & \\
 \text{boarding} & \\
 \text{Trainees} & = \text{Total No. of} \left/ \begin{array}{l} \text{Training} \\ \text{RTTP Trainees} \end{array} \right/ \text{Period} \times \left( 1 - \begin{array}{l} \text{Proportion} \\ \text{of} \\ \text{Commuting} \\ \text{Trainees} \end{array} \right) \\
 & = 140 \times (1 - 0.1 \sim 0.19) \\
 & = 126 \sim 113
 \end{aligned}$$

Since the rooming capacity for existing Dormitory (64 beds) and Annex-Dormitory (64 beds) will add up to 128, the boarding demand for RTTP trainees will be fulfilled.

$$\begin{aligned}
\text{SSTP boarding Trainees} &= \text{Total No. of SSTP Trainees} / \text{Training Period} \times \left(1 - \frac{\text{Proportion of Commuting Trainees}}{\text{Proportion of Commuting Trainees}}\right) \\
&= 20 \times (1 - 0.1 \sim 0.19) \\
&= 18 \sim 16
\end{aligned}$$

As a result, the additional 4 rooms (16 beds) will more or less fulfill the demand. As to the remaining two trainees, they will either be able to use one of the one-bed rooms to be explained later, or share a 4-bed room with RTTP trainees.

c) Size of Unit

The floor area of an 8-bed room of the existing Dormitory is 30m<sup>2</sup>/room and, subtracting the space for the bed, the area around the door and the passage space, a floor area of 1.875m per person is secured. The floor area for a 4-bed room shall not be below this level, from the viewpoint of providing more privacy and an improved living environment.

|   |                                 |                     |   |
|---|---------------------------------|---------------------|---|
| Common Require-   | Floor area per double-bunk bed: | 2m <sup>2</sup> =   | Ⓐ |
| ments for Unit  | Space around the door           | : 2m <sup>2</sup> = | Ⓑ |
| Composition   | Passage space                   | : 5m <sup>2</sup> = | Ⓒ |
| (refer to 2-2-5, (4)) Net floor area per person : 1.875m <sup>2</sup> = |                                 |                     |   |
| Ⓓ   |                                 |                     |   |

- ° Ⓐ and Ⓑ are common to 8-bed and 4-bed rooms.
- ° Ⓒ is subject to change by floor area and shape of the room. In this case it is 1/6 or more of the entire floor area, and the ratio usually goes up in line with the decrease in the floor area.
- ° Ⓓ, which is the net floor area per person for the existing Dormitory bedrooms, is also applied to the 4-bed room of the Annex-Dormitory.

From the above, the floor area for a 4-bed room unit is calculated as follows:

$$A = (\text{a}) \times 2 + (\text{b}) + (\text{c}) + (\text{d}) \times 4 + \begin{array}{l} \text{space} \\ \text{around} \\ \text{study} \\ \text{desks} \end{array} \times 4$$

(double-bunk beds)

(space around study desk: 1m x 0.7m = 0.7m<sup>2</sup>/desk)

$$= 4\text{m}^2 + 2\text{m}^2 + A \times \frac{1}{5} \sim \frac{1}{6} + 1.875\text{m}^2 \times 4 \text{ persons} + 0.7\text{m}^2 \times 4 \text{ desks}$$

$$= 16.3\text{m}^2 + A \times \frac{1}{5} \sim \frac{1}{6}$$

$$= 20.375\text{m}^2 \sim 19.56\text{m}^2$$

As shown above, the floor area per 4-bed unit is approximately 20m<sup>2</sup>/unit

## (2) Canteen

### 1) Mode of Usage

Because of the location of the facilities, a substantial number of trainees take their meals at the existing Canteen, as do the trainers and staffers excluding those who bring their own lunch.

A Canteen for all trainees, some of the trainors and staffers will be provided on the 1st floor of the Annex-Dormitory. This means that the requirement for increasing the staff will only be within the range of the expanded scale of the Canteen, and that there will be no need to assign a different staff group for an additional Canteen kitchen. This also makes it possible to convert a part of the existing Kitchen into a Study Room for the existing Dormitory. The Philippine side will make further studies and reviews on this subject including the treatment of the existing Kitchen.

The Kitchen will serve three meals a day as before, and will not close for holidays. The current self-service

system in which the user pays for the meal on the spot will also be continued.

- 2) The following is the estimated number of users of the Canteen:

(The four guest lectures were disregarded for calculation of the floor area because they only occupy the facilities on a non-regular basis.)

a) Breakfast live-in trainees: 148 (max)  
(including guest lecturers)

Lunch all trainees : 160 (max)  
trainors/staffers: 60 x 1/2\* (max)

Supper live-in trainees: 148 (max)  
some commuting trainees  
some trainors/staffers

148 or more

- b) A self-service system in two shifts will be adopted, and 95 meals will be served per shift for a maximum of 190.

\* one-half of the trainors and staffers are assumed to bring their own lunch.

- 3) Scale of the Canteen

The scale of the Canteen planned in the Project has been calculated as follows, based on the scale of the existing Canteen.

- a) Existing Canteen

The capacity of the existing Canteen is 60m<sup>2</sup> for 40 persons. The scale of the Dormitory itself is small, so the corridor is concurrently used as a passage space for the Canteen to save the floor area around the self-service counter.

passage space = corridor =  $2.5\text{m} \times 12\text{m} = 30\text{m}^2$

space around self-service counter = (min)  $3\text{m} \times 5\text{m} = 15\text{m}^2$

By adding the  $30\text{m}^2$  and  $15\text{m}^2$  to  $60\text{m}^2$ , the total required floor area for the Canteen is obtained:

$$60\text{m}^2 + 30\text{m}^2 + 15\text{m}^2 = 105\text{m}^2$$

In this case, the space requirement per person will be  $2.625\text{m}^2$ .

b) Canteen Planned in the Project

The scale of the Canteen planned in the Project was established within the structural framework of the existing facilities. Because of these structural restrictions and a comparatively large floor area of the Canteen, a floor plan which uses the common space concurrently as a passage within the Canteen and a regular corridor will not be practical.

It is more appropriate to design a compact Canteen by utilizing the available space efficiently by incorporating into the floor area of the Canteen the space required for passages and around the self-service counter.

The following calculation was made, using the required floor area per person of the existing Canteen, in order to obtain the required floor area for a Canteen to serve at a time 95 persons (2 shift=190 persons+2), which is one-half of the total number of persons catered to during the peak-time (lunch time).

$$95 \text{ persons} \times 2.625\text{m}^2/\text{person} = 249.4\text{m}^2$$

Taking into account the passage, the layout around the self-service counter and arrangement of tables,  $250\text{m}^2$  is decided to be applied for the Canteen's optimum projected floor area.

### (3) Study Room

- 1) The Study Room will satisfy the growing demand for group studies including lectures of higher levels which will be provided in future, and will complement the function of the Dormitory bedrooms which are used for private studies. In the Study Room, the trainees can make the most of their private time in the evening and on holidays exchanging views and informations on the training and lectures they had received, or hold discussions to maximize the effect of the training.

There is a plan to expand the curriculum for supplementary lectures, special seminars, symposiums inviting guest lectures, etc. in addition to the regular classes carried out in the daytime. The Study Room can also be used for these additional lectures.

The function of the Study Room as a place for group lectures, the required grade of the facilities, and the structural restrictions in terms of maintaining harmony with the existing Dormitory have been taken into account for deciding the scale of the Study Room. A scale slightly exceeding the Japanese standard for universities (class room  $\cong 1.6 \text{ m}^2/\text{person}$ ) and close to the standard recommended in the U.S. (class room :  $8.0 \times 9.1 \text{ m}/35 \text{ persons} = 2.08 \text{ m}^2/\text{person}$ ) is adopted for the Study Room.

Specifically, the scale is :  $2.0 \text{ m}^2/\text{person}$ ;

$$2.0\text{m}^2 \times 40 \text{ persons} = 80\text{m}^2$$

- 2) As to the part of the existing Canteen which is planned to be converted into a Study Room, one-half of the total residents are assumed to use the Study Room at a time, as in the case of the new Study Room. This means that the space per user will be:

$$60\text{m}^2 + 64 \text{ persons} \times 1/2 = 1.875\text{m}^2/\text{person}$$

Although the figure is a little below the level of the part of the new Study Room in the Annex-Dormitory, it will not cause practical problems.

(4) Washing Room

Trainees have to cope with a lot of laundry in the hot and humid climate, frequently washing their clothes covered with dust and stained with oil from the field trainings. Each trainee is assumed to use the Washing Room at least once every two days and 20 minutes per time. The floor area of the Washing Room is determined by the number of washing sinks and how they are laid out.

$$\begin{aligned}
 \text{No. of washing sinks} &= \frac{\text{No. of Trainees using the Washing Room}}{\text{times}} \times \frac{\text{Time required for washing}}{\text{times/person}} \div \text{Time zone for using the Washing Room} \\
 &= (124 \text{ trainees} \times 50\%) \times 20 \text{ min.} \div 2 \text{ hours} \\
 &= 10.3
 \end{aligned}$$

10 sinks will therefore be provided, together with one washing machine for oil-stained clothes that can hardly be hand-washed.

After planning how the sinks will be arranged, a total floor area of 40m<sup>2</sup> is decided to be applied for adopting the layout.

(5) Lavatory/Washroom/Shower Room

1) First Floor

The number of users will reach its peak (95 persons) during lunch time. Because of differences in the time zone of usage, it is practical to assume that the Canteen will not be used concurrently with the Study Room. This means that the maximum target users is 95.

$$\begin{aligned}
 \text{men: 2 water closets} &: 96 \div 1/50 \text{ persons} = 1.9 \text{ or more} \\
 \text{4 urinals} &: 95 \div 1/25 \text{ persons} = 3.8 \text{ or more}
 \end{aligned}$$

In addition, 2 water closets for women are to be installed. After planning the layout, 25m<sup>2</sup> for men and



15m<sup>2</sup> for women are adopted as optimum projected floor area respectively.

2) 2nd Floor

(a) Target Users

The function of the Lavatory/Washroom/Shower Room on the 2nd floor is to serve both the existing Dormitory and Annex-Dormitory. This means that the facilities will be used by residents of the existing as well as the Annex-Dormitory but will not be used by the four guest-lecturers. The Dormitory bedrooms allocated to the SSTP trainees are so designed that every two rooms share a Lavatory/Washroom/Shower Room, so these trainees are also excluded.

|                                |   |                               |   |                            |
|--------------------------------|---|-------------------------------|---|----------------------------|
| Total capacity<br>of Dormitory | - | Total no. of<br>SSTP Trainees | = | Maximum no. of<br>of users |
| 144 persons                    | - | 16 persons                    | = | 128 persons                |

The breakdown of the users are 4 women and 124 men (64 in the existing Dormitory and 60 in the Annex-Dormitory).

b) Number of Shower Booths

The Philippine side has requested for a sufficient number of shower booths which will enable the maximum users of 124 to finish taking a shower (15 minutes each) within two hours so that they will be in time for the first morning class.

$$124 \text{ persons} \times 15 \text{ minutes} \div 60 \text{ minutes} \div 2 \text{ hours} = 15.5$$

(16 booths or more)

The existing Shower Room has 6 booths, so the Annex-Dormitory should install at least 10 shower booths. The number of shower booths to be newly provided in this Project is 12 for men (including reserve, based on urgent requests from CMDC as well as strong

recommendations from Japanese Experts) and 2 for women (1 for reserve).

c) Calculation of Lavatory Booths

The number of lavatory booths was determined on the basis of minimum requirements designated by the Ministry of Education, Japan, for environmental sanitation for schools.

for men      urinals           : one/25 persons  
              water closets : one/50 persons

for women    water closets : one/20 persons

Consequently, a minimum of 5 urinals and 3 water closet must be provided for men. The existing Dormitory has 4 water closet for a total population of 64 (2 were designated in the original plan; 2 more were additionally installed by the Philippine side). Considering the current status of utilization at the existing Dormitory, it was decided that the same number (4 water closets) will be provided for the Annex-Dormitory which will house 60 trainees. The number of urinals were decided with reference to the number of water closets. A minimum of 1 water closet is required for women, with one reserve in case of concurrent usage of breakdown, so a total of 2 will be provided.

d) Establishment of scale

The above layout has been reviewed with regard to the scale of related facilities of the existing Dormitory. As a result, a floor area of 80m<sup>2</sup> for men and 20m<sup>2</sup> for women was established.

(6) Others

1) Connecting Corridor

The Annex-Dormitory and existing Dormitory will be brought together with a connecting corridor so that they will function as a single accommodation facility. The Connecting Corridor will be so designed that there will be no direct entry from the outside, and the existing and annex dormitories will be brought together at their respective front entrances.

This requires that the entrance to and from the two dormitory parts, which will eventually fused into one facility, is united at the entrance hall for the existing Dormitory, which is an efficient design in terms of crime prevention.

The projected floor area is 51m<sup>2</sup> (3.0m width x 17.0m length).

2) Hall

The Hall of the Annex-Dormitory will play the role of a buffer zone for adjusting the flow of people which tends to concentrate in the morning, evening and at lunch time. It will also serve as a resting place between group study sessions at the Study Room. Above all, it will function to provide and to regulate the traffic lines extending to and from the Dormitory bedrooms on the 2nd floor and Canteen, Study Room, the Washing Room and Lavatory on the 1st floor. The projected floor area is 80m<sup>2</sup>.

3) Bedrooms for Lecturers

In addition to the above, individual bedrooms for guest lecturers will be provided. Efforts have heretofore been made in Program III to provide opportunities for special lectures, symposiums and seminars in the Study Room, in addition to regular classes in the daytime. These efforts will be further enhanced in future and lecturers will be invited not only from domestically but also from other ASEAN countries to add depth and width to the Program.

For this purpose, transportation difficulties of the facilities situated 50km from Manila must be resolved, for booking hotel rooms in Manila is not only expensive but a means of transportation to and from these hotels must also be provided. There are also security problems for traveling after dark. It therefore seems to be the most practical solution to have the lecturers stay in the Dormitory.

The floor area and layout of the rooms are basically the same as those allocated for SSTP trainees.

## 4-2-3 Architectural Design

### (1) Floor Planning

#### 1) Clearly-defined traffic line

The entrances for the existing and annex dormitories are joined together at the Entrance Hall of the existing Dormitory so that all traffic lines would start from that point. This not only clarifies and simplifies the traffic lines but also enhances the impression of unification of the two facilities, because the two are ultimately connected together with a single traffic line.

#### 2) Clear distinction between the individual-use and common-use facilities

In the annex-Dormitory, all individual-use rooms are located on the 2nd floor while the 1st floor holds only common-use rooms. As a result, the two groups of rooms are free to function according to their purposes without disturbance. The design will also allow the trainees living in the existing Dormitory and those living in the Annex-Dormitory to intermingle at common-use facilities in daily life and help create a feeling of camaraderie among them.

#### 3) Harmony with the existing Dormitory

Attempts have been made to minimize the discrepancy in scale of the existing and annex dormitories, by adopting the same standard used for the existing Dormitory for determining the dimensions of the Annex-Dormitory. The depth and width most convenient for setting up a bedroom with a floor area of 20 m<sup>2</sup> is 5 m (depth) × 4 m (width). 5 m is the depth of the bedroom unit of the existing Dormitory, so the same depth was adopted for the Annex-Dormitory. However, the width of the existing Dormitory bedroom is 6 m whereas that for the Annex-Dormitory is 4 m. In order to adjust this discrepancy, the dimension of 8 m, which is the most economical among the multiples of 4

m when adopted as a structural span, was used for the width of the annex Dormitory bedroom.

## (2) Sectional Planning

1) As a rule, the floor height and ceiling height of the Annex-Dormitory will match those of the existing Dormitory. The average ground level and floor level of the first floor will also be the same as those of the existing Dormitory. The ceiling height of the 1st and 2nd floors are determined by adding to the ceiling height of the existing Dormitory the additional beam height required for accommodating the increase of span which resulted from changing the width of the bedroom unit from 6 m to 8 m.

## 2) Utilization of Natural Ventilation

Particularly for the 2nd floor of the Annex-Dormitory which is composed of individual-use rooms, the principle of utilizing natural ventilation practised in the existing Dormitory will be applied. The sectional plan of 2nd floor of the Annex-Dormitory will be of the same form as that of the existing Dormitory.

## 3) Establishment of Ceiling Height of Canteen and Kitchen

Because of the purpose of its usage and a wider floor area, a higher ceiling is desired for the Canteen, especially the Kitchen which requires ample clearance space for ventilation installations. However, it is uneconomical to increase the height of the framework itself for this purpose alone, so the floor level of the Kitchen was lowered as compared with other rooms.

## 4) Provision of Balcony

The Annex-Dormitory will be 2 stories high, so a balcony was provided on the 2nd floor to be used as an escape exit in times of emergency. The balcony will ordinarily serve as a sun shade/rain shelter and a place for hanging the clothes to dry.

### (3) Elevation

#### 1) Harmony with the existing Dormitory

Patterns and forms of the same type as of the existing Dormitory are adopted to create a unified atmosphere for the two buildings.

#### 2) Window Openings

A crime proof grill will be installed on window openings of the Annex-Dormitory, adopting a design that alleviates a closed-up look. The grills will also be furnished in the existing Dormitory for crime proof and a unified appearance.

### (4) Exterior Finishes

The following exterior finishes will be adopted, to match those of the existing Dormitory.

Roof: corrugated long-span galvanized-steel sheet (color), partly asphalt waterproofing

Exterior

Wall: cement mortar, lithin spray finish

Canopy: cement mortar, lithin spray finish

Fixtures: wooden, finished with oil-base paint for exterior use and clear lacquer

steel, finished with oil-base paint for exterior use

aluminum

screen door, window grill (steel)

### (5) Interior Finishes

Floor: vinyl tile, vinyl sheet (Dormitory bedroom)

mosaic tile (Lavatory, Washroom, Shower Room, Washing Room)

cement mortar with surface hardner, dust-proof coating (Kitchen, Connecting Corridor)

parquet block (Study Room, Kitchen)

Baseboard: wooden, oil-stained, clear lacquer H=75

cement mortar, vinyl paint H=75 (Dormitory bedroom)

Wainscot: cement mortar, vinyl paint (Dormitory bedroom)

ceramic tile (Lavatory, Washroom, Shower Room, Washing Room, Kitchen)

wooden, oil-stained, clear lacquer (Study Room, Kitchen)

Walls: cement mortar, vinyl paint (Dormitory bedroom)

ceramic tile (Lavatory, Washroom, Shower Room, Washing Room, Kitchen)

Ceiling: plywood, emulsion paint (Dormitory bedroom)

water-proof plywood, oil-base paint for exterior use (Lavatory, Washroom, Shower, Washing Room, Kitchen)

acoustic board (Study Room, Canteen)

concrete troweled finish, lithin spray finish (Connecting Corridor)

As shown above, all finishes for bedrooms and Kitchen are equivalent to those of the existing Dormitory. Appropriate finishes were selected for the Canteen and Study Room as public space accommodating a large number of people. Water-resistant finishes were adopted for rooms that use water.



#### 4-2-4 Structural Design

##### (1) Design Principles

###### 1) Basic Policy

The structural design of the Annex-Dormitory should basically conform to the following design principles of the existing Dormitory so that it will have a structural system and structural strength equivalent to those of the existing Dormitory.

- ° The structural system should suit the size, layout and mode of use of the building facilities, all in relation to the physical and social conditions in the Philippines.
- ° The structural system should be adaptable to the locally available materials and the quality and construction techniques, and preference is to be given to local products and methods unless special problems are involved.
- ° This structural system should be economical yet durable.

##### (2) Premises for Establishment of Structural Design

###### 1) Applicable Standards and Codes

The structural design will conform to the following standards and codes for external forces acting on the proposed buildings, loads, allowable stresses of structural materials and calculation method.

- ° National Structural Code for Buildings, the Philippines (NSCB)
- ° Uniform Building Code (UBC)
- ° AIJ Standards (Architectural Institute of Japan)

## 2) Design Loads

The design loads specified in the codes mentioned above are given below.

### a) Dead Loads

- i. Reinforced concrete 2.4 t/m<sup>3</sup>
- ii. Structural steel 7.85 t/m<sup>3</sup>
- iii. Brick and concrete hollow block 1.9 t/m<sup>3</sup>
- iv. Dead loads of other materials and finishing materials will be evaluated in the detail design stage.

### b) Live Loads

- i. Roof (general) 60 kg/m<sup>2</sup>
- ii. Lavatory, Dormitory Bedroom 200 kg/m<sup>2</sup>
- iii. Hall, Corridor, Study Room 500 kg/m<sup>2</sup>
- iv. Canteen, Kitchen 500 kg/m<sup>2</sup>
- v. Storage 500 kg/m<sup>2</sup>

### c) Wind Pressure

The equation for wind pressure provided in the NSCB will be used as the standard.

$$\text{Wind pressure} = P \times (\text{wind force coefficient})$$

The site for Program III is located within Zone II, where the value of P is given as follows in NSCB:

$$\text{Height} = \text{Less than 9 m} \quad P = 150 \text{ kg/m}^2$$

$$= 9 \text{ m} \sim 30 \text{ m} \quad P = 200 \text{ kg/m}^2$$

d) Seismic Force

The seismic force will be determined conforming to the provisions of the NSCB and UBC.

3) Structural Materials

Main structural materials will be designated as follows.

- a) Reinforcing Bars : Deformed bar SD 30 (JIS) or equivalent
- b) Concrete :  $F_c = 210 \text{ kg/cm}^2$  (Cylinder test for 4-week strength)
- c) Cement : Normal Portland Cement (ASTM)
- d) Structural Steel : SS41 (JIS) or equivalent

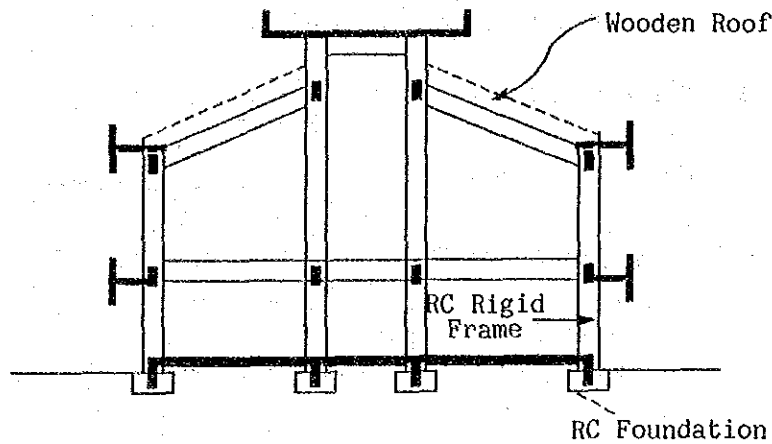
4) Structural System

The main structure will be of reinforced concrete rigid frames. the roof structure will be a wooden roof over a reinforced concrete beam.

5) Foundation System

Reinforced concrete spread footings supported by the adobe layer will be used.

Fig. 4-3 Structural System



#### 4-2-5 Utility Design

##### (1) Design Principles

Efforts were made to draw up a utility design which harmonizes with these of the existing facilities, adopting equivalent specifications as much as possible. The following are the basic policies for drawing up the utility design.

- 1) To encourage a utility design which fulfills the needs of an accommodation facility, considering;
  - a) provision of an environment where trainees can live in safety.
  - b) provision of a simple but comfortable living environment.
- 2) To provide utility services that meet the site conditions and local situations of the Philippines, considering;
  - a) adaptation of a utility design conforming to the laws and regulations of the Philippines, or those of Japan

when there are no relevant regulations in the Philippines.

b) adaptation of a utility design that matches the meteorological conditions and local customs of the Philippines.

3) To provide utility services which will be easy to operate and maintain, considering;

a) adaptation of a utility design which is economical to build and to operate.

b) adaptation of a utility design that is easy to operate, manage and maintain.

4) To encourage a utility design which uses carefully-selected equipment and materials, considering;

a) adaptation of a utility design using standard equipment and materials as much as possible so that replacement of parts and repairs will be easy.

b) utilization of local equipment and materials as much as possible. Equipment and material provided from Japan should conform to JIS standards.

## (2) Electrical Design

1) Receiving Installations and estimated load

Power will be supplied from the 13.8 kV high-voltage line running along the road to the west of the existing Dormitory, up to the transformer mounted on a post to be provided by the Philippine side. From then on, power is transmitted by underground cable, with low-voltage, 3 phase, 220 V to the low-voltage distribution panels within the building.

The total estimated electrical load of the Project facilities is about 200 kVA, the breakdown of which is as follows:

- |                                |        |
|--------------------------------|--------|
| a) Lighting/receptacles        | 80 kVA |
| b) Airconditioning/ventilation | 20 kVA |
| c) Drainage pumps              | 30 kVA |
| d) Water heating equipment     | 70 kVA |

The actual demand for electricity is expected to be around 100 kW.

## 2) Receiving Transformer/Distribution Panel

A receiving transformer with a capacity of about 200 kVA is mounted on a post near the building. A low-voltage power board is installed in the Storage Room to supply power to power control panel board and distribution panel.

The secondary voltage of the transformer will be 220 V for both single and three phases, and will supply 3-phase 220 V current to airconditioning units and single-phase 220 V current to lighting/receptacles.

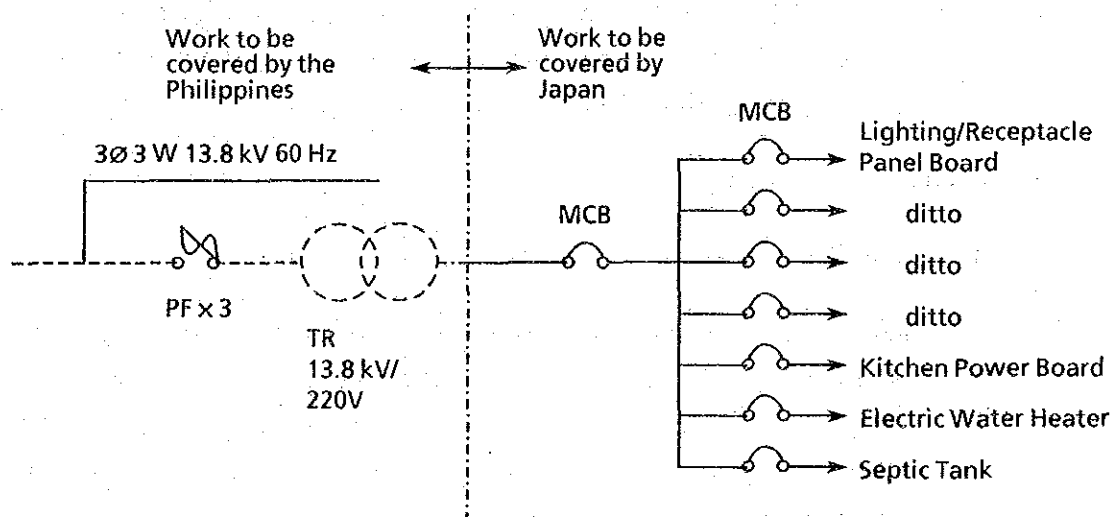


Fig. 4-4 Single Line Diagram

3) Low-voltage Main Line

A main line will be supplied from the low-voltage power board to the distribution panel, power control panel board etc. Electric wire or bridged polyethylene cable will be used as material for the main line.

4) Lighting and Receptacles

As a rule, fluorescent lamps will be used as lighting fixtures for the facilities. The average illuminances required for the main rooms are as follows:

|            |         |
|------------|---------|
| Canteen    | 200 lux |
| Study Room | 300 Lux |
| Dormitory  | 100 Lux |
| Study Desk | 500 Lux |

5) Power Installations

Piping connections will be provided from the power board to the airconditioning units, fans, pumps, etc. An indicator for notifying breakdown of devices will also be installed.

6) Fire Alarm System

The fire alarm system will include a manual alarm bell.

7) Public Address System

Loudspeakers will be placed in the Corridors, etc. for paging. Public address will be made from the Dormitory Manager's Room.

8) TV Antenna

A TV antenna will be installed for to see the TV in the Canteen.

9) Interphone Installations

An interphone line will be extended from the existing Dormitory to draw the extension line up to the Dormitory Manager's Room, Canteen and near by the staircase at 2nd floor.

10) Washing Machine

A washing machine will be installed in the Washing Room.

(3) Plumbing System Design

The plumbing system is drawn up on the assumption that the following number of people will use the Canteen, Hall, Study Room, Lavatory, etc. of the Annex-Dormitory.

|                      |                           |     |
|----------------------|---------------------------|-----|
| Residents of         |                           |     |
| the Annex-Dormitory: | guest lecturers           | 4   |
|                      | trainees (STTP or higher) | 16  |
|                      | Trainees (RTTP)           |     |
|                      | men                       | 60  |
|                      | women                     | 4   |
|                      | sub-total                 | 84  |
| Non-residents of     |                           |     |
| (commuters)          | staffers                  | 30  |
|                      | trainees                  | 16  |
|                      | sub-total                 | 46  |
| Residents of the     |                           |     |
| existing Dormitory   | trainees                  | 64  |
|                      | sub-total                 | 64  |
|                      | Total                     | 194 |



1) Water Supply System

Water will be supplied to the Annex-Dormitory by means of gravity from the existing water reservoir tank within the site. A lifting pump, water supply pipes and elevated water tank will be newly installed for the purpose.

The following is the rough estimation on the amount of water required:

a) Basis of estimation

- Resident of: 84 persons x 0.120 m<sup>3</sup>/person day  
the Annex- = 10.1 m<sup>3</sup>/day  
Dormitory
- Non-residents: 46 persons x 0.030 m<sup>3</sup>/person day  
of the annex- = 1.4 m<sup>3</sup>/day  
Dormitory
- Residents of: 64 persons x 0.4 x 0.100 m<sup>3</sup>/person day  
the existing = 2.6 m<sup>3</sup>/day  
Dormitory

Total = 14.1 m<sup>3</sup>/day

b) Elevated Water Tank

The capacity of the Elevated Water Tank shall be 30% of one day's supply of water, and the height of tank shall be 12 meters from the floor level of the 2nd floor of the Annex-Dormitory.

2) Drainage System

Sewage and waste water are drained separately within the building, but are joined outside and drained into the creek running along the east boundary of the site after undergoing processing treatment in the septic tank to be installed in the Project.

The processing capacity of the septic tanks is 15 m<sup>3</sup>/day and the quality of water after treatment will be around

BOD 20 ppm whereas incoming used water are assumed of BOD 200 ppm. A contact aeration method will be adopted to facilitate maintenance of water quality.

3) Sanitary Fixtures

The following sanitary fixtures will be installed:

Lavatory : western-style water closets with cleaning nozzle (water only), urinals, wash basins, mirrors, cleaning sinks,

Shower Room : shower heads

Washing Room : washing sinks

4) Kitchen Utilities

Kitchen utilities will be provided on the assumption that the following number of people will use the facilities:

Residents of the Annex-Dormitory 80 (80 trainees)

Commuters 46 (16 trainees + 30 staffers)

Residents of the existing Dormitory 64 (64 trainees)

Total 190

5) Gas Supply System

The kitchen is designed on the basis that LPG is the gas to be supplied.

6) Hot Water Supply System

The following system will be drawn up:

a) Shower Room

- Residents of the Annex-Dormitory 60 men 4 women

About 40% of the 64 residents of the existing Dormitory

- Hot Water Supply System

electric water boiler: hot water storage tank of  
1.1 m<sup>3</sup> capacity, 35 kW  
2 cans

temperature of hot: 60°C  
water supplied

b) Kitchen

Hot water will be supplied to the sinks from the instant water heater using gas.

c) Guest Lecturer's Rooms and SSTP's Bedrooms

To provide hot water supply system to each room

7) Fire-fighting System

Fire extinguishers will be installed.

8) Others

Corrosion-proof measures and resistance to the load of heavy vehicles passing over will be taken into account for drawing up the plumbing system, in accordance with the layout.

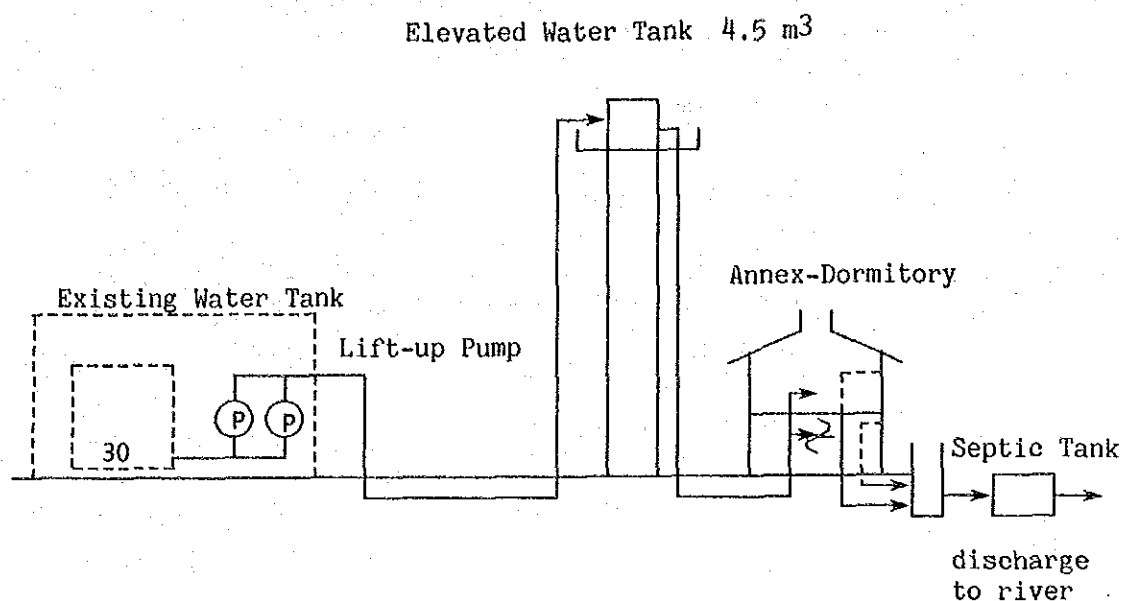


Fig. 4-5 Plumbing & Drainage System

(4) Airconditioning/Ventilation System

1) Airconditioning system

Eight of the Dormitory bedrooms and the Study Room of the Annex-Dormitory will be equipped with split-type airconditioning units. The temperature standard is established as follows:

| outdoor temperature | indoor temperature |
|---------------------|--------------------|
| 33°C DB             | 26°C DB            |

2) Ventilation System

Mainly natural ventilation will be used, but ventilation equipment will be installed in the following rooms:

ventilation fan: Kitchen, Shower Room, Lavatory,  
Washing Room

#### 4-2-6 Rehabilitation of the Existing Dormitory

More than three years have passed since the handing-over of the existing Dormitory, which had been obliged to endure usage far exceeding the capacity conceived in its initial design.

The Basic Design Study Team reached an agreement with the Philippine side that, in the current Project, the Annex-Dormitory will be newly constructed as a part of the expansion program and that, upon completion of the Annex-Dormitory, the existing Dormitory will be used in accordance with its initial design concept.

The Project itself is aimed at a smooth implementation of the training courses for Program III, so using the existing Dormitory and Annex-Dormitory as a single unified facility will be convenient both for the resident trainees and those running and managing the Dormitory.

For this purpose, the Basic Design Study Team made a fact-finding survey on the utilization of the existing Dormitory, as well as a study on the physical status of the facilities and judged that the following measures for rehabilitation and repair should be included with the range of the Project, so that the unification of the existing Dormitory and Annex Dormitory will be conducted smoothly.

- ° To install crime-proof grilles on outward-facing window openings
- ° To repair/refurnish seriously damaged parts of the floor finishing for Lavatory/Washroom/Shower Room, both partitions, booth door, etc.
- ° To furnish necessary repair work for sashes and exterior walls of the around the Connecting Passage extending between the existing Dormitory and Annex-Dormitory

#### 4-2-7 Training Equipment

The following requests were made from the Philippine side on provision of the training equipment. Upon discussions, it was



- c) The same is true for "productive operations", for which a field training time of 2.0 days per trainees is desirable. However, the allocated field training time is 25 days for a total of 20 trainees which means that only 1.2 days are available for all trainees to receive field training or, if sufficient field training time is allocated, 8 of the trainees will miss the chance to undergo field training.
- d) Moreover, the current training schedule indicates that, with the commencement of SSTP in future, there may be cases when the SSTP training schedule and the field training schedule for RTTP overlap. It is physically impossible to cope with such a situation with only one bulldozer.
- d) On the other hand, if 2 bulldozers are available, there will be no problems in carrying out the field training for STP because the schedule will be determined so as not to conflict with the training period for RTTP or SSTP.

It is therefore suggested that if the provision of one bulldozer is included in the Project and the Philippine side further reviews and adjusts the training schedule under the advice of Japanese Experts, it will be possible to execute field trainings for Program III in a more ideal way, with more rewarding results.

2) 1 Micro Bus

The vehicle provided by the previous grant-aid program for Program III is currently being used mainly for educational and market research purposes as well as an official transportation means for trainors and staffers.

The Philippine side and the Japanese Experts expressed their wish to include field trips including tours of factories and construction sites in the future training program. Trainings of wider dimensions incorporating such field trips is desirable

for the education of instructors of higher expertise. It will also enhance the effects of the training for Program III.

(2) Contents of the Equipment Design

Training equipment of the following specifications are to be provided for the Project.

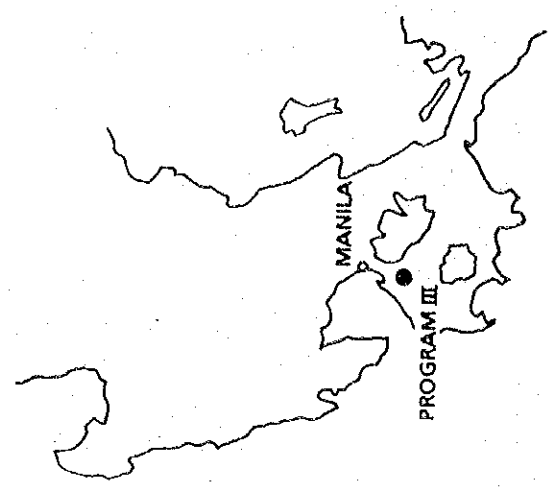
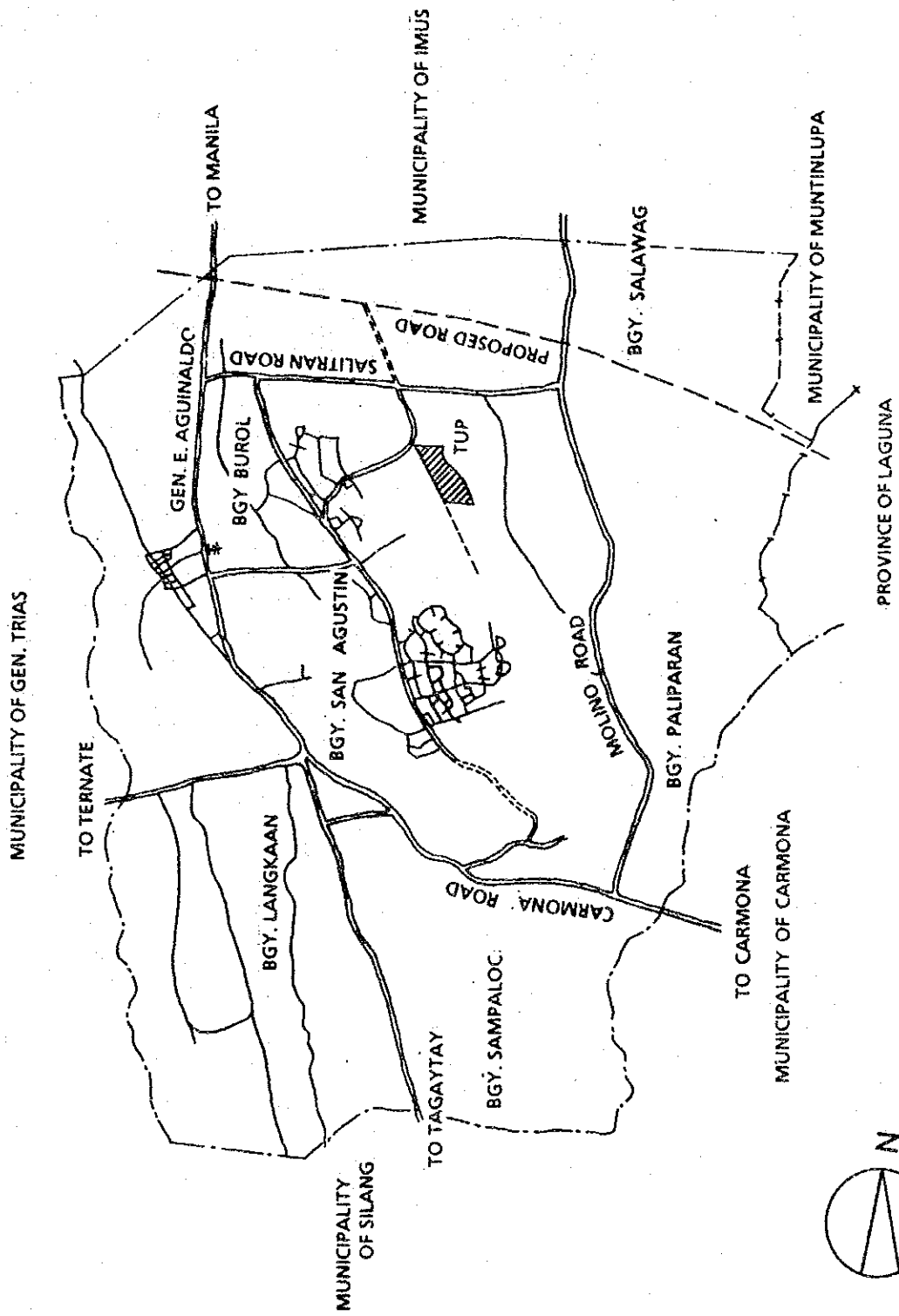
It was planned that equipment with the same specifications as those of existing equipment should be provided. However, since it is more than four years after the existing equipment design was drawn up, equipment of identical specifications may be unavailable, in which case it is acceptable to provide those with equivalent specifications.

Priority is placed on maintaining consistency in the training programs and avoiding confusions on the part of trainers by providing equipment with the same properties as the existing ones.

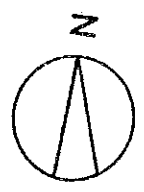


- 1) Bulldozer: dimensions - 2.39 m × 5.14 m × 3.02 m  
(width) (length) (height)
- weight - 17.73 tons
- tractor gauge - 1.8 m
- horsepower - 140 ps
- attachment - 1 multi shank ripper  
(as of existing one)
- accessories - worth up to 10% of the price  
of the main body
- 2) Microbus: dimensions - 1.955 m × 6.17 m × 2.38 m  
(width) (length) (height)
- weight - 2,645 kg (net)
- capacity - 26 persons
- horsepower - 75 ps
- attachment - cooler
- accessories - worth up to 10% of the price  
of the main body

4-3 Basic Design Drawings

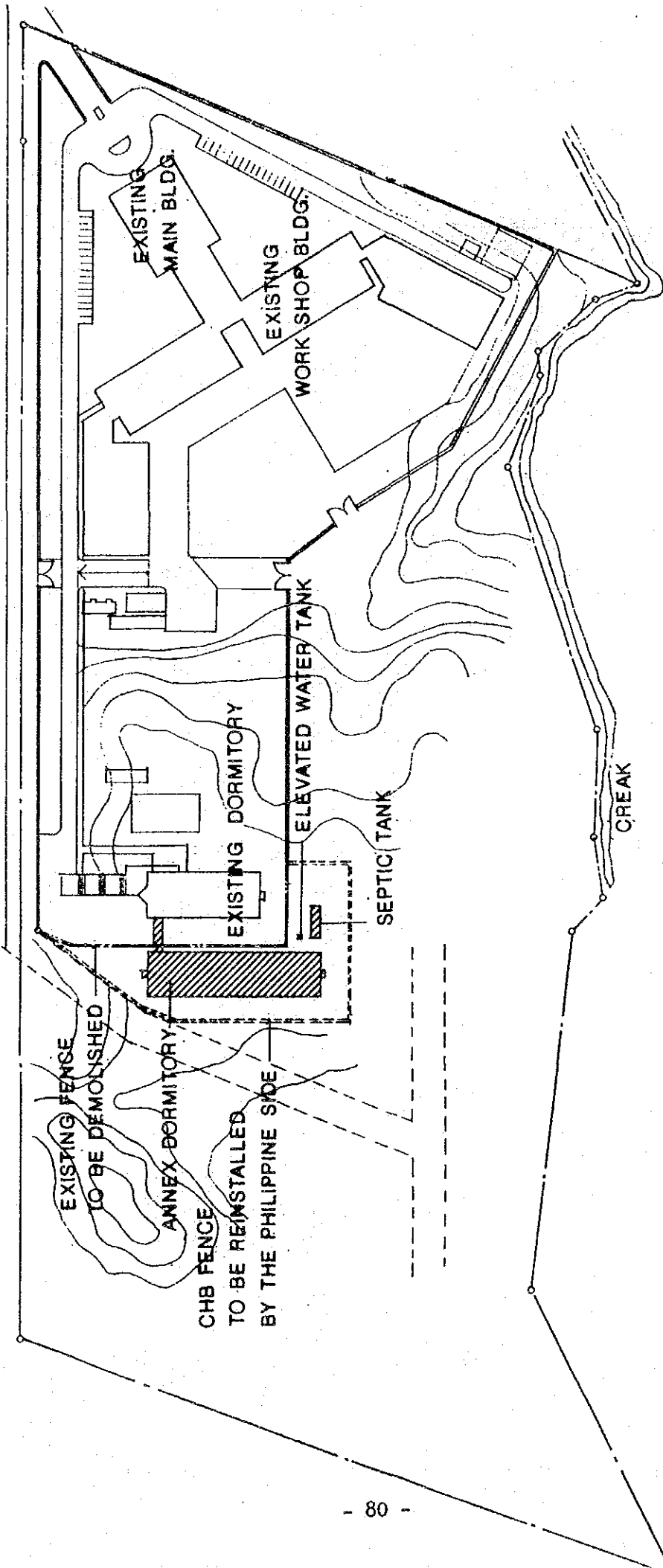


LOCATION MAP

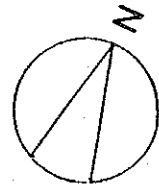




EXISTING ROAD

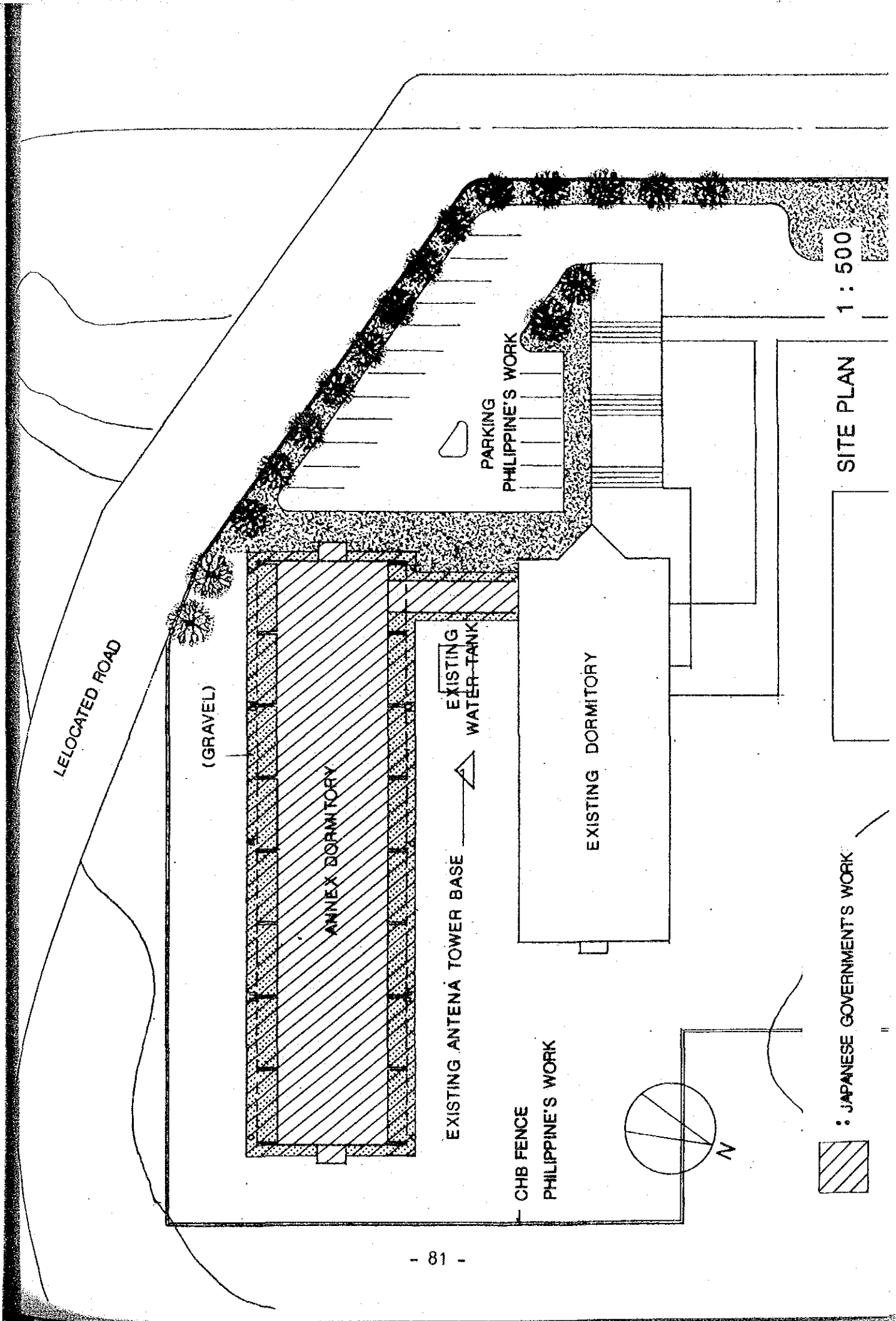


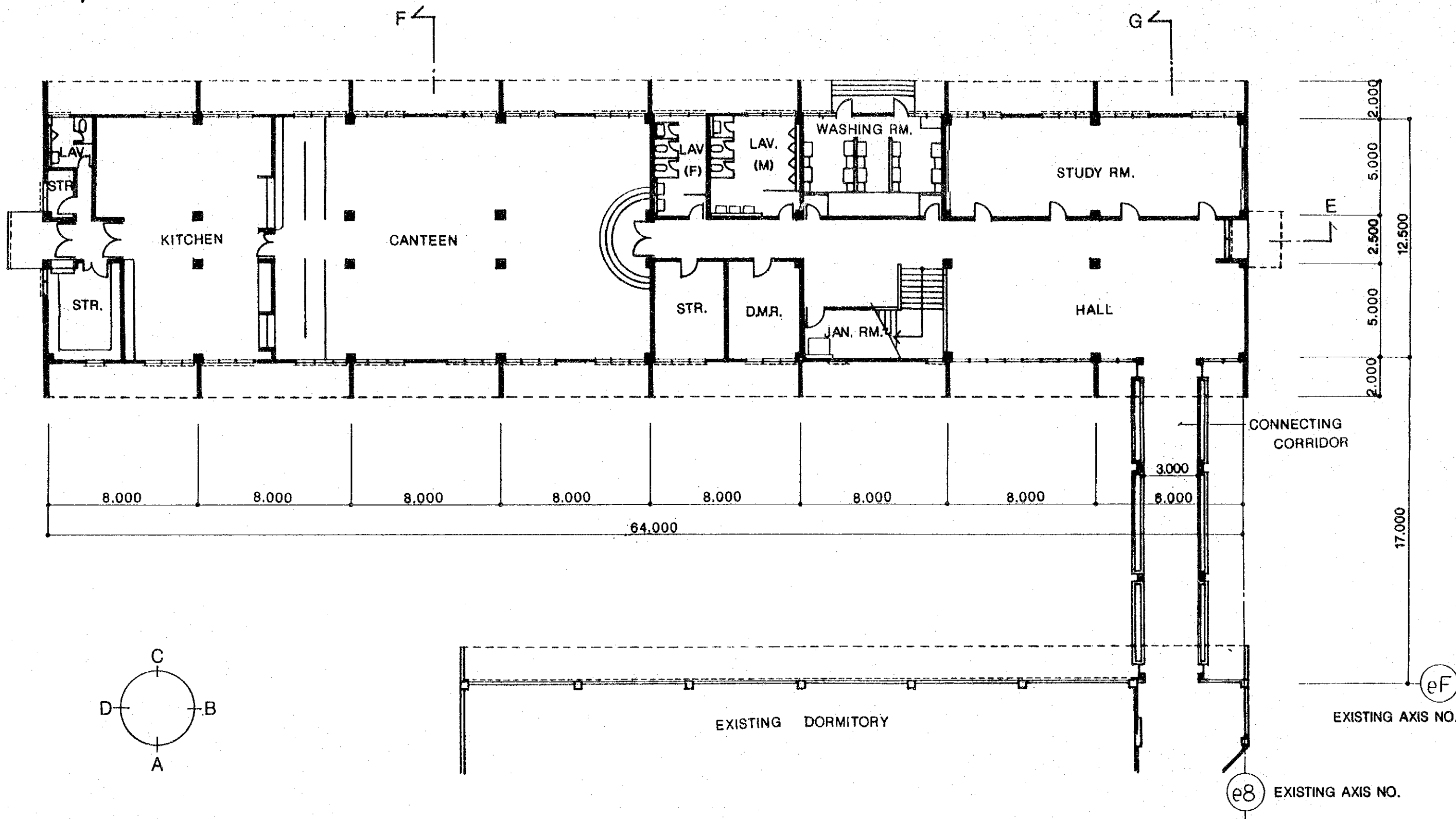
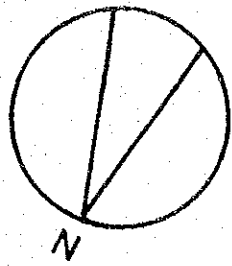
▨ : JAPANESE GOVERNMENT'S WORK



SITE PLAN OF COMPOUND 1 : 2000



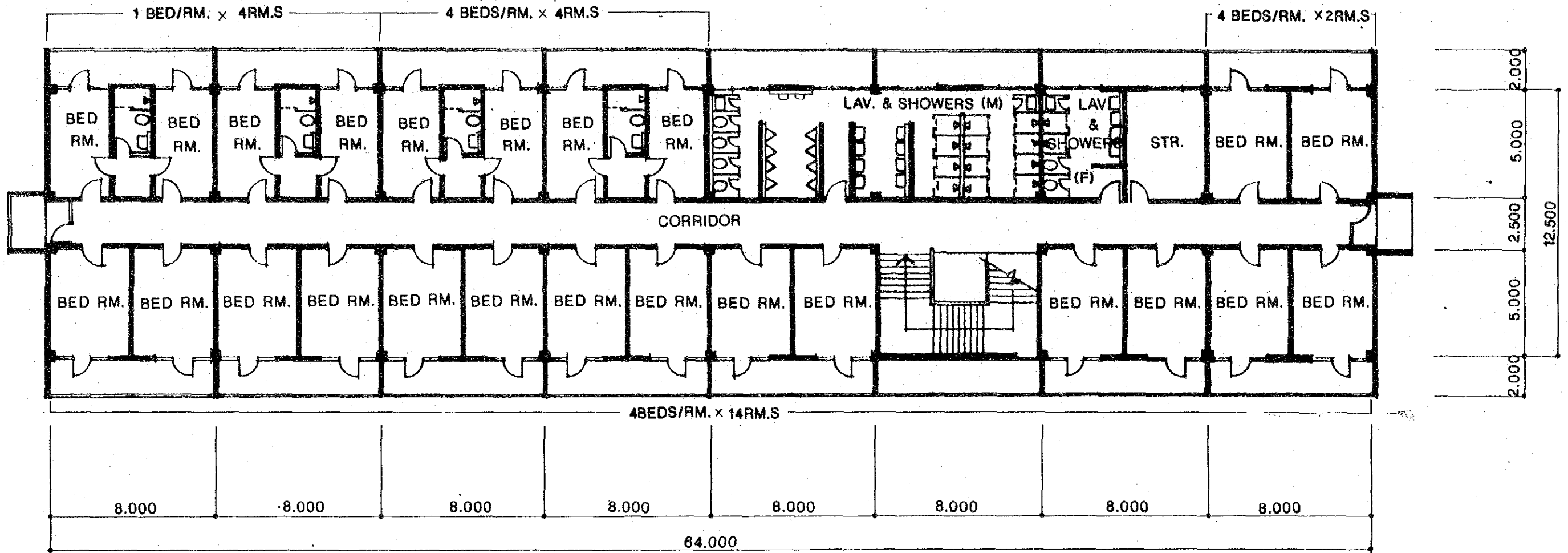
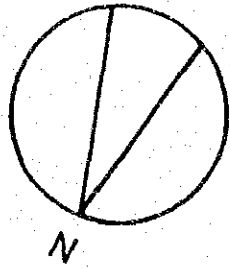




1ST FLOOR PLAN

1 : 200

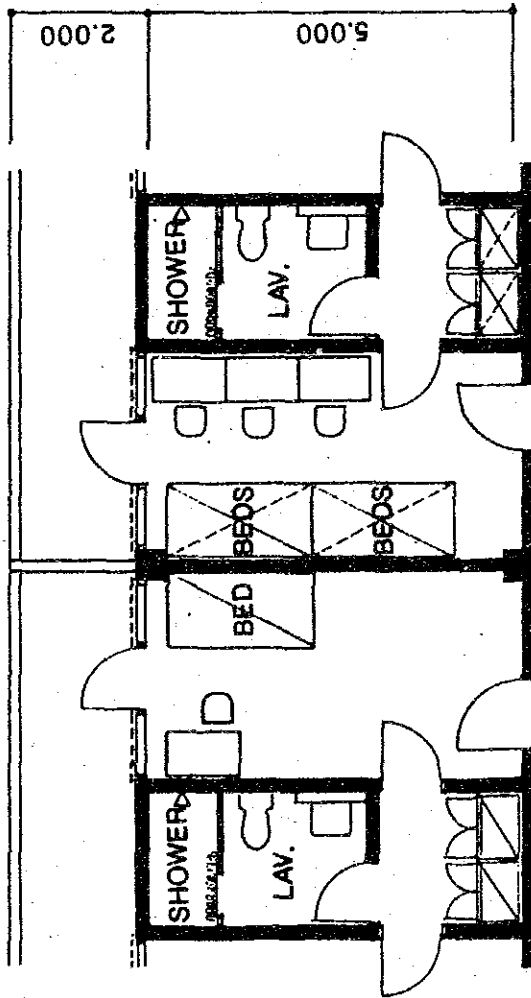




e8

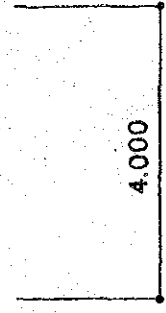
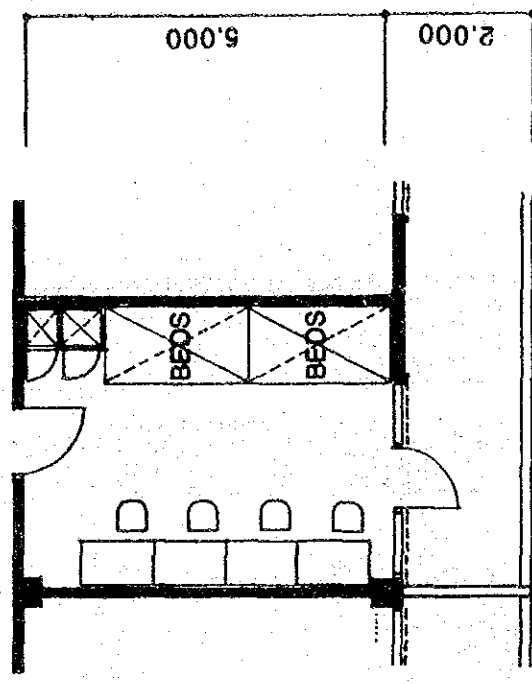
EXISTING AXIS NO.

2ND FLOOR PLAN 1 : 200



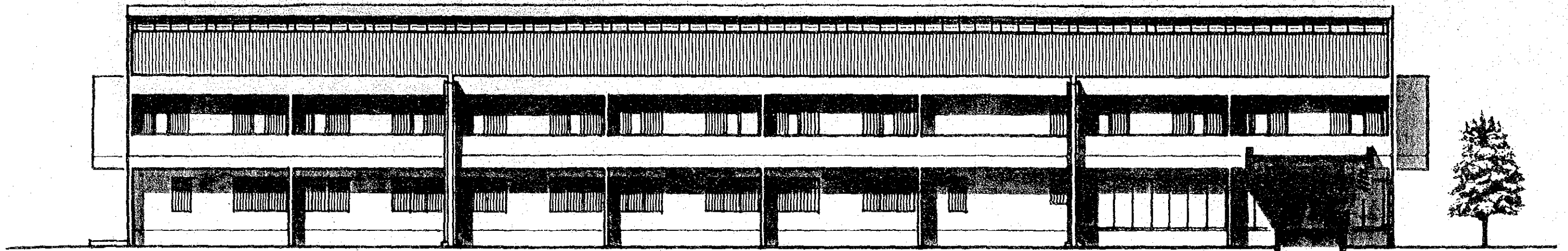
1 BED RM.

4BEDS RM.

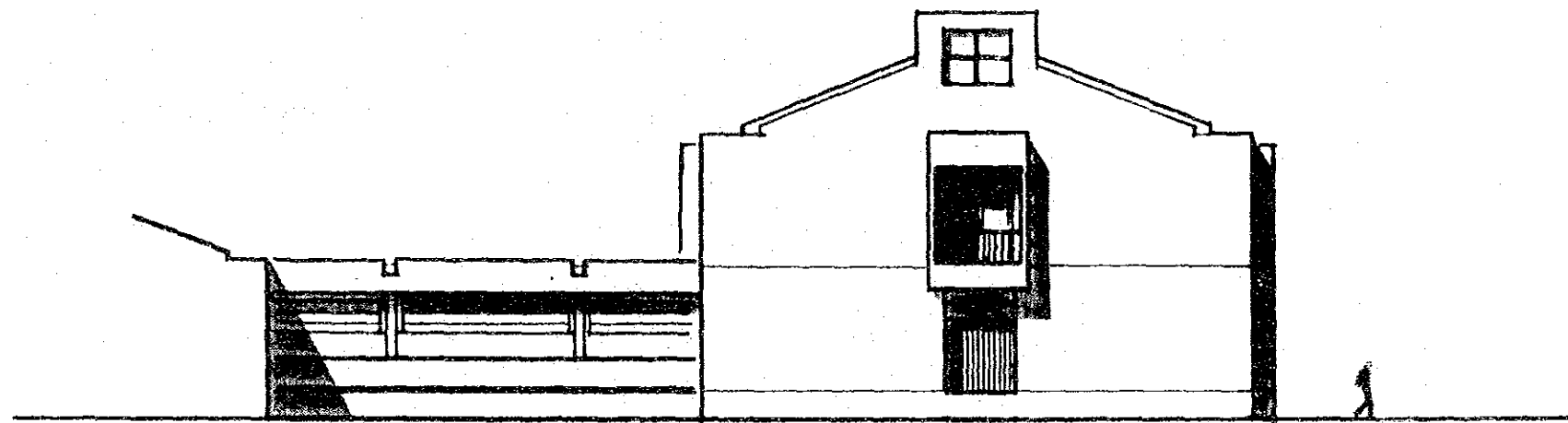


4BEDS RM.

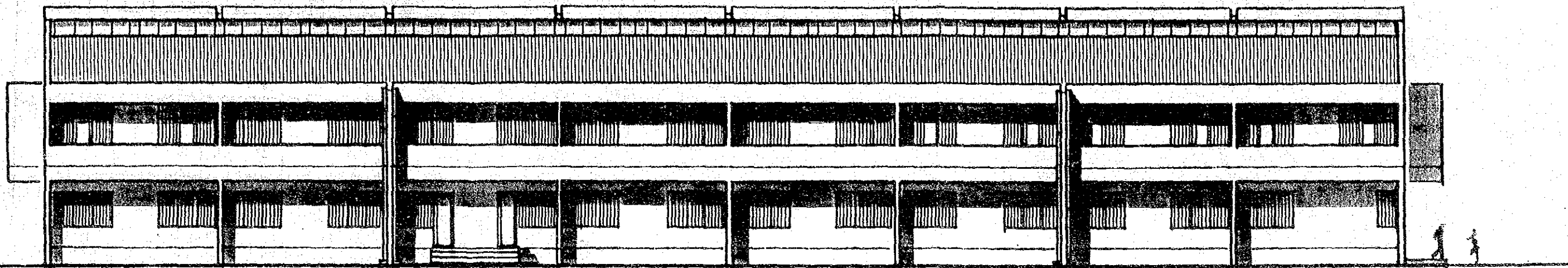
ROOM PLANS 1 : 100



ELEVATION A 1 : 200

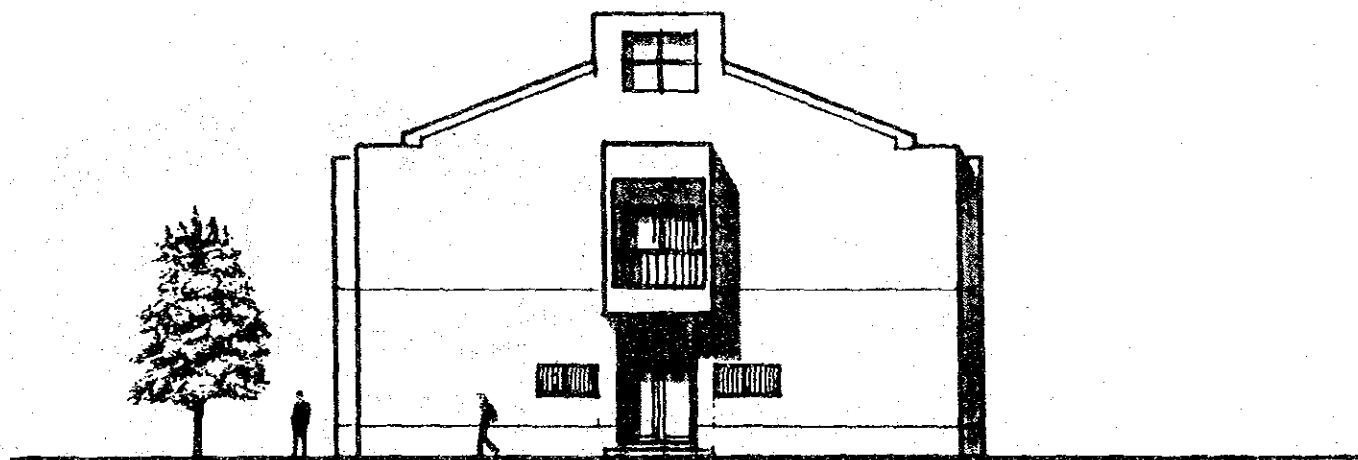


ELEVATION B 1 : 200



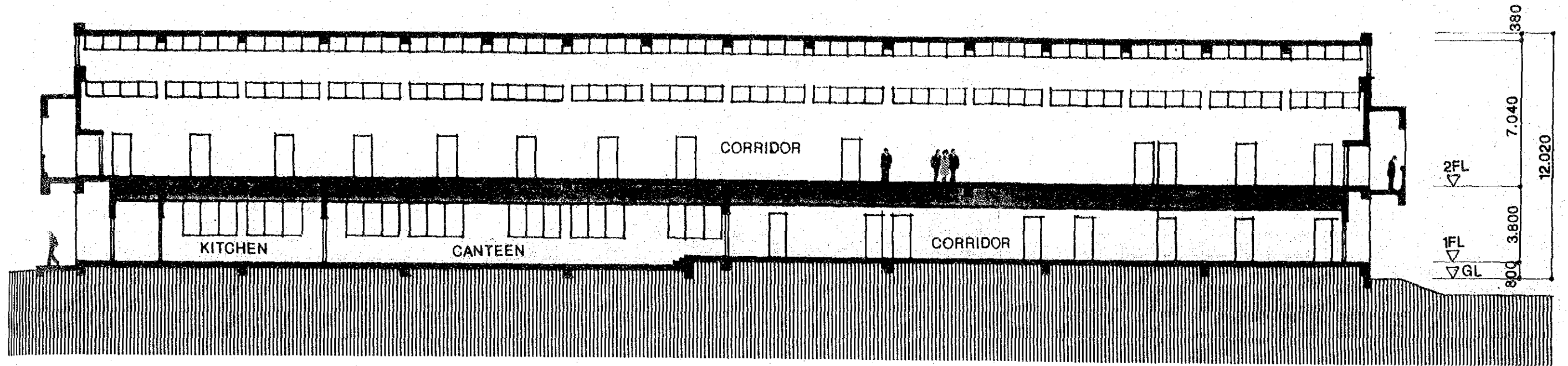
ELEVATION C

1 : 200

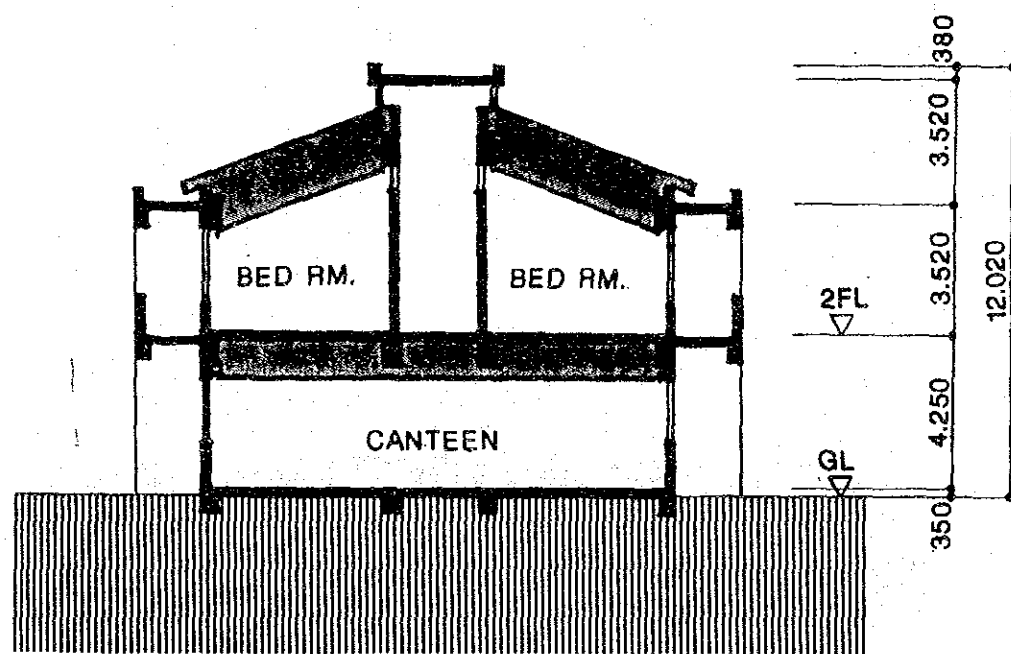


ELEVATION D

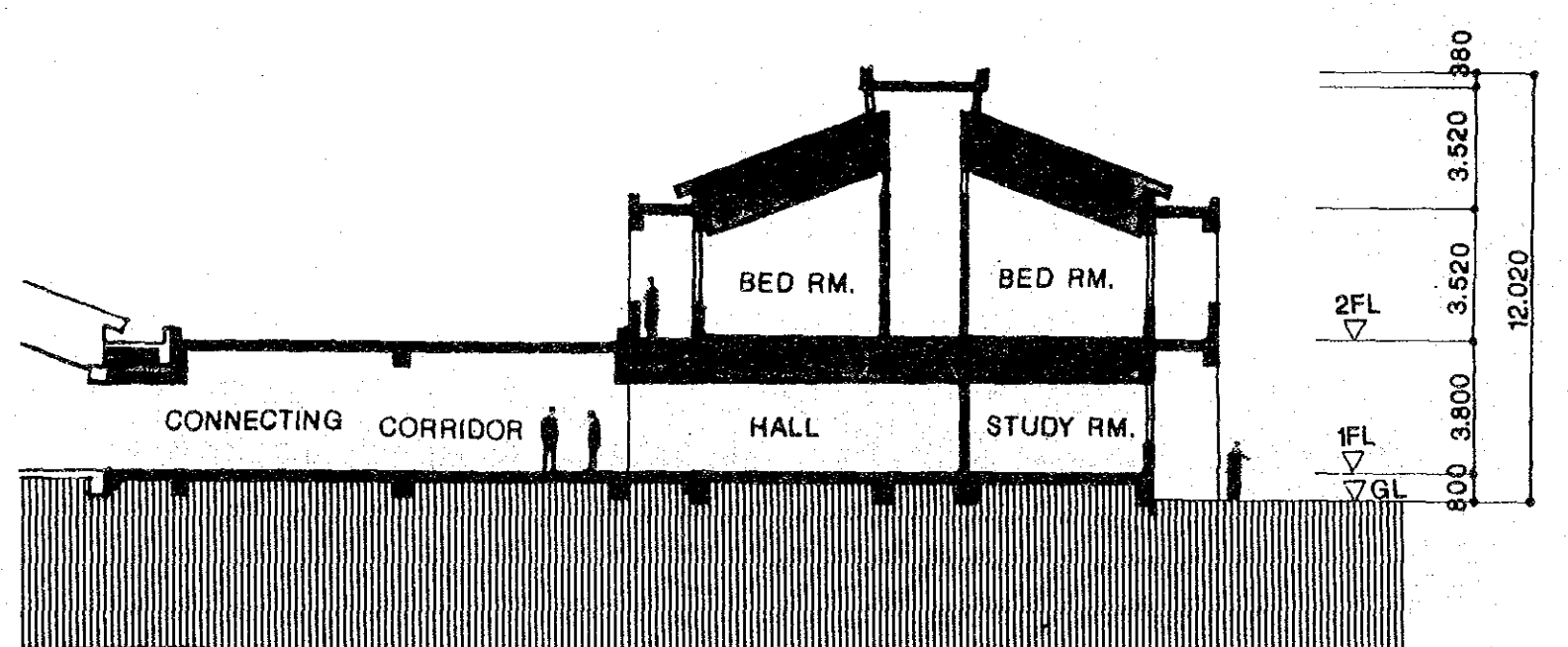
1 : 200



SECTION E 1 : 200



SECTION F 1 : 200



SECTION G 1 : 200

#### 4-4 Maintenance and Operations

##### 4-4-1 Operation Plan

###### (1) System of Operation

After the work related to the facilities and equipment of the Project is completed and they are handed over to the Philippine side, the agency responsible for their operations and maintenance will be CMDF as explained in 3-4. PHRDC will take charge of external contacts, and daily operations of the facilities will be carried out by CMDC.

The facilities will be operated and maintained in line with the objectives of the Project outlined in 3-1.

###### (2) Accommodation Facilities

A dormitory is an important facility where people spend most of their time for a certain period of time. Moreover, Program III is one of the activities of the ASEAN Human Resources Development Project in the Philippines, so sufficient consideration should be given in the operation plan for utilizing the dormitories for Program III in accordance with the objectives and contents of the Program.

In particular, the following rules should be observed to promote further progress of the training programs.

- 1) Trainees are given top priority for boarding in the dormitories, and beds will be provided to staffers and trainers only when it is absolutely necessary.
- 2) The capacity of the dormitory bedrooms shall be strictly observed so as not to disturb the daily life and studies of the trainees.
- 3) To make the above possible, a list of dormitory residents shall be prepared and all entrance to and departure from the dormitories shall be checked at the responsibility of the Dormitory Manager.

#### 4-4-2 Maintenance Plan

##### (1) Maintenance Plan for Facilities

###### 1) Building

Maintenance of buildings consists mainly of daily routine maintenance such as cleaning, reconditioning of wear and tear due to utilization, and of deterioration arising from breakage and aging. For routine maintenance, scrupulous and frequent cleaning prompts careful usage and early discovery of breakage and defects in the buildings and it will ultimately result in the prolonged life of facilities and equipment.

The regular service of 1 to 2 persons will be necessary for the cleaning of facilities. As to repairs, repair works involving the structural components will not be necessary up to 30 years after the completion of the building, and repairs will be mainly concentrated on interior and exterior finishing. It is necessary to appoint persons from the Administration Division to take charge of facility management and to ensure systematic inspections and reconditioning.

In the inspection and repair of building, periodic execution of the following items is recommended.

- (Exterior)
- Repair and repainting of exterior finish and inspection of cracks in crumbling concrete ----- (once every 5 years)
  - Repairs, repainting and inspection of roof. ----- (inspection: once a year; others: once every 2 years)
  - Inspection and partial repair of roof waterproofing ----- (inspection: once a year; others: as occasion calls)

- Periodical cleaning of downspouts, drains, etc. ----- (once a month)
  - Inspection and repair of sealing of exterior doors and windows ----- (once a year)
  - Repainting of exterior doors, windows and grills ----- (once every 3 years)
  - Periodical inspection and cleaning of drainage gutters, manholes, etc. ----- (once every 5 years)
- (Interior)
- Repair and repainting of interior walls ----- (when occasion calls)
  - Refurnishing of interior ceiling materials ----- (when occasion calls)
  - Adjustment of doors and sashes ----- (once a year and when occasion calls)

For crime prevention, it will be necessary to draw up a guarding system mainly aimed at prevention of theft by checking the incoming and outgoing of facility users and of articles carried in and out, as well as by around-the-clock patrols.

## 2) Utility Service Systems

With respect to the various utility service systems such as electric power, airconditioning and plumbing systems, periodic inspections of utility service equipment and repair in case of failure will be necessary in addition to daily operation control. It is important to form a maintenance system to prevent breakdowns and accidents and to ensure smooth operation of facilities by operating the equipment properly and carrying out daily inspections, lubrication, adjustment, painting and repairs as required. The Dormitory Manager will be responsible for this task,



and will promptly give instructions for repairs when necessary. Utility service equipment need to be periodically overhauled so that deteriorated parts are replaced, and each piece of equipment is to be inspected and maintained at predetermined intervals of several months to several years. General equipment are to be replaced at the end of their life span indicated below:

#### Operating Life Span of Equipment

##### (Electrical Equipment)

- Panel Board 20 to 30 years
- Fluorescent Lamps 5,000 to 10,000 hours
- Incandescent Lamps 1,000 to 1,500 hours
- Public Address System  
Equipment 10 to 20 years
- Washing Machine 5 years

##### (Plumbing Equipment)

- Pumps 10 to 15 years
- Tanks 15 to 20 years
- Pipes and Valves 10 to 15 years
- Plumbing Fixtures 25 years
- Fire Extinguisher 20 years
- Sewage Treatment Equipment 7 years

##### (Airconditioning Equipment)

- Pipes 10 to 15 years
- Split Type Cooler approx.5 years

#### 4-4-3 Estimated Costs for Operation and Management

An estimate was made on the annual costs for operation and management to be covered by the Philippine side after the completion of the Annex-Dormitory, and the costs were compared with the operation budget.

##### (1) Operation Budget

According to the data presented by Program III, the personnel costs for Canteen, janitors, and facility operation costs are to be covered by the income from dormitory boarding fee. The boarding fee per person per day is 10 pesos, and the following calculation was made with reference to 3-2-4 Training Program for the projected annual income from dormitory boarding fee for 1988.

Annual  
income of = 10 pesos [(140 persons × 3 months × 30 days)  
dormitory × 3 + (65 persons × 1 month × 30 days) × 2]  
boarding  
fee = 417,000 pesos/year

##### (2) Personnel Costs (Canteen Staff)

|   |                  |  |                    |
|---|------------------|--|--------------------|
| 1 | Canteen Manager: | $P3,000 \times 1 \times 12 \text{ months} =$   | 36,000 pesos/year  |
| 2 | Cooks            | $: P3,000 \times 2 \times 12 \text{ months} =$ | 72,000 pesos/year  |
| 6 | Helper Cooks     | $: P1,500 \times 6 \times 12 \text{ months} =$ | 108,000 pesos/year |
| 2 | Counter Servers: | $P1,500 \times 2 \times 12 \text{ months} =$   | 36,000 pesos/year  |
|   |                  | Total  | 252,000 pesos/year |

##### (3) Janitors

|   |          |  |                   |
|---|----------|--|-------------------|
| 2 | Janitors | $: P1,500 \times 2 \times 12 \text{ months} =$ | 36,000 pesos/year |
|---|----------|--|-------------------|

(4) Operation Costs for Facilities

Water will be supplied from a well, and the operation cost for the lifting pump will be included in the electricity costs. No cost is required for the drainage system after the completion of the Annex-Dormitory, judging from the situation of utilization of the existing facilities. Gas will be required only for cooking meals in the Kitchen.

1) Basic rates for electricity

$$100 \text{ KW} \times 0.75 \text{ pesos/KW} \cdot \text{months} \times 12 \text{ months} \\ = 900 \text{ pesos/yr}$$

2) Costs for using electricity

- lighting and servicing outlets (6 hrs/day)

$$50 \text{ KW} \times 180 \text{ hours/mon.} \times 4.0 \text{ pesos/KW} \cdot \text{mon} \times 12 \text{ months} \\ = 423,000 \text{ pesos/yr}$$

- electric power (lifting pump etc.) (6 hrs/day)

$$20 \text{ KW} \times 180 \text{ hours/mon.} \times 4.0 \text{ pesos/KW} \cdot \text{mon.} \times 12 \text{ months} \\ = 172,800 \text{ pesos/yr}$$

- water boiler (3 hrs/day)

$$70 \text{ KW} \times 90 \text{ hours/mon.} \times 4.0 \text{ pesos/KW} \cdot \text{mon.} \times 12 \text{ months} \\ = 302,400 \text{ pesos/yr}$$

3) Cylinder Gas (LPG)

$$56 \text{ Kg/day} \times 30 \text{ days} - 50 \text{ Kg/cyl.} \times 300 \text{ pesos/cyl.} \times 12 \text{ mon.} \\ = 120,960 \text{ peso/yr}$$

The operation costs for facilities required with the completion of the Annex-Dormitory is estimated under above assumption to be 1,020,060 pesos/year.

(5) Costs for maintenance, inspection and repair of facilities

The costs for maintenance, inspection and repair of the accommodation facilities after completion of the Project is

included in the operation and maintenance costs for Program III, and is relatively small in amount and tends to vary from year to year.

The following repair work is assumed to be necessary.

#### Building Facilities

: roof: every 2 years from the 10th year onward

: exterior wall: every 2 years from the 10th year onward

: interior: every year (the demand for repair work will increase significantly from the 5th year)

#### Utility equipment

: coolers·fans: every year (the demand for repair work will increase significantly from the 3rd year)

: water heating device: every year from the 3rd year

: lighting fixtures: every year

#### Kitchen Utilities

: demand for repair work will increase significantly from the 5th year, on an average

As outlined above, the required costs for maintenance, inspection and repair work for the facilities is expected to go up in the 3rd, 5th and 10th years after the completion and handing-over of the facilities.

The following is the estimated annual maintenance/inspection/repair costs adopting 100 pesos/m<sup>2</sup> as the average rate for the first ten years.

$$100 \text{ pesos/m}^2 \cdot \text{year} \times 1,651 \text{m}^2 = 165,100 \text{ pesos/year}$$

(6) Miscellaneous Costs

Other expenses required for operation of the Project are as follows:

- 1) linen: Trainees will bring their own linen as a rule, but a minimum stock must be prepared including those for the guest lecturers.
- 2) Printing cost, : Printing cost and stationary costs including those for notebooks, paper etc. to be used by the Dormitory Manager must be covered.

Soap and towels etc. are also to be furnished by trainees. Meals will be paid for on the spot.

The above costs (1) and (2) were calculated as 1,000 pesos per month on the average.

$$1,000 \text{ pesos/month} \times 12 \text{ months} = 12,000 \text{ pesos/year}$$

(7) Estimated Costs

|  |                       |
|--|-----------------------|
| 1) Personnel Cost  | 252,000 pesos/yr      |
| 2) Cleaning Cost   | 36,000 pesos/yr       |
| 3) Costs for Operation of Facilities   | 1,020,060 pesos/yr    |
| (sub-total: cost to be covered by<br>the income of Dormitory<br>boarding fee | = 1,308,060 pesos/yr) |
| 4) Operation, Inspection and Repair<br>Costs for the Facilities              | 165,100 pesos/yr      |
| 5) Miscellaneous Costs   | 12,000 pesos/yr       |
| Sub-total :  | 177,100 pesos/yr      |

From the above, it is calculated that the total required maintenance costs for the accommodation facilities provided by implementation of the Project is 1,308,060 pesos/year and that

the annual income from the dormitory boarding fee which will cover these costs will amount to P417,000 or more.

According to Program III, the budget shown below is allocated for the Annex-Dormitory.

By subtracting from this allocated budget the cost for transformers and installations and interconnection between the Annex-Dormitory and the existing Dormitory to the stand-by power supply, the amount of approximately 150,000 pesos can be allocated for water, lighting and power.

Allocated budget:

|                            |                                   |
|----------------------------|-----------------------------------|
| water, lighting and power: | 450,000 pesos                     |
|                            | (including                        |
|                            | transformers and : 270,000 pesos  |
|                            | installations                     |
|                            | interconnection to: 300,000 pesos |
|                            | the stand-by power                |
|                            | supply )                          |

Consequently, the income from boarding fees and the budget allocated for water, lighting and power, which adds up to 567,000 pesos, can be allocated to cover the costs for management and maintenance.

The costs for management and maintenance include the cost for gas (120,960 pesos/year) which will be used solely in the Kitchen.

A substantial part of the electricity, which is another item included in the management and maintenance costs, will also be consumed in the Canteen and kitchen. These costs should therefore be covered to some extent by the income from meals served in the Canteen.

$$\begin{aligned} \text{income from} &= [(140 \text{ persons} \times 3 \text{ months} \times 30 \text{ days}) \times 3 + \\ \text{meals} & \quad (65 \text{ persons} \times 1 \text{ month} \times 30 \text{ days}) \times 2] \times 45 \text{ pesos} \end{aligned}$$

= 1,876,500 pesos/year

The income from meals, income from boarding fees and allocated budget for water, lighting and power will add up to 2,443,500 pesos, which is sufficient for covering the total annual costs for management and maintenance (1,308,060 pesos).

The Philippine side is requested to carefully review the fees for boarding and meals, and also give additional considerations in the Governmental budget, so that the above measures will not greatly affect the cost of meals. It is also considered appropriate that a part of the management and maintenance costs be funded by the Governmental budget because these costs tend to fluctuate from year to year.

## 4-5 Implementation of the Project

### 4-5-1 System of Implementation

#### (1) Implementation Organization in the Philippines

As outlined in 4-4-1 Operation Plan, the organization responsible for the implementation of the Project in the Philippines is CMDF (Construction Manpower Development Foundation), the superior organization of Program III (Construction Manpower Development Center - CMDC), with PHRDC functioning as a contact.

#### (2) Consultant

Detailed design and supervision of construction works will be carried out comprehensively by the consulting firm assigned for the basic design, in accordance with the guidelines of the Japanese Grant Aid Program.

The Japanese consultant firm will conclude a contract with PHRDC and CMDF in line with the required procedures for the Japanese Grant Aid Program, promptly after the Exchange of the Notes between the two governments. The services to be rendered by the Consultant shall be as follows:

##### 1) Detailed Design Stage

Preparation of detailed design documents consisting of drawings, specifications and other technical documents

##### 2) Tendering Stage

Assistance in the works related to tendering for the selection of contractors for the execution of the Project and for concluding the contract with the selected contractors

##### 3) Construction Stage

The facilities for the Project neither have unique architectural features nor require construction techniques of a particularly high level. Moreover, the only



equipment required to be provided are one bulldozer and one micro bus, both of which are individual finished products.

Consequently, it is not necessary for the Consultant to be constantly on the site for supervision. It is therefore assumed from the overall technical requirements that the supervision work for the Project can be sufficiently covered by consultation services from Japan on a visiting basis instead of having the representative of the Consultant stationed in the Philippines.

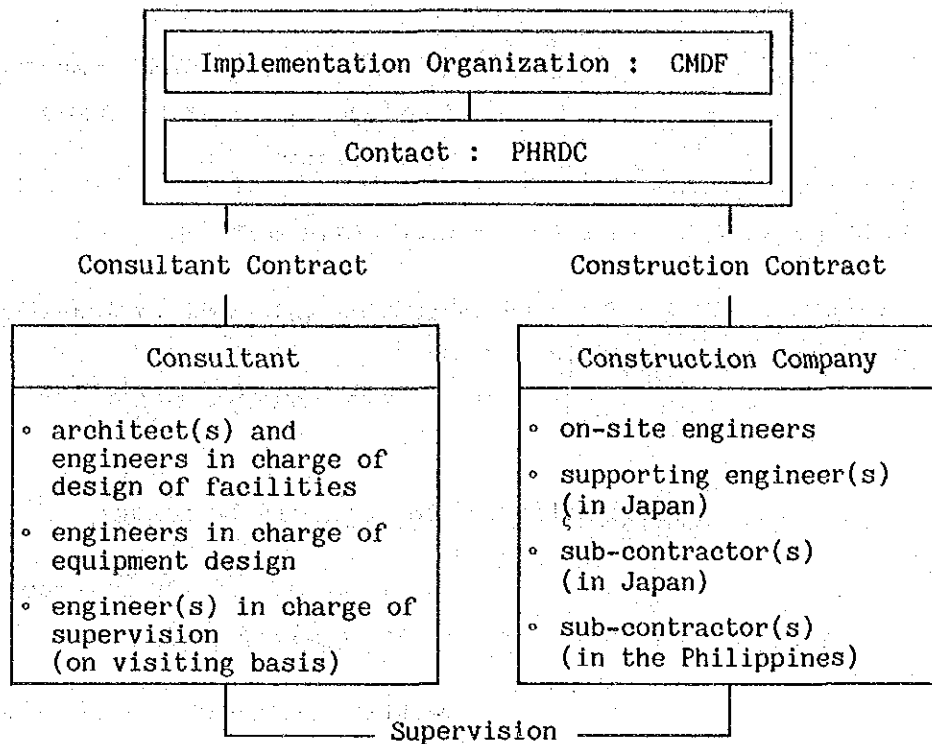
(3) Contractor for the Construction Works

Construction of the building facilities and procurement and local delivery of the required equipment will be carried out by a Japanese contractor. The Contractor is required to conclude the construction works within the designated period and hand over the completed facilities to CMDF, the organization responsible for implementation of the Project, through PHRDC.

(4) System of Implementation of the Project

The Project will be implemented by the following system organized by CMDF, the implementation organization, its contact PHRDC, the consultant in charge of supervision and the contractors appointed for the construction works.

Fig. 4-6 System of Implementation of the Project



#### 4-5-2 Scope of Work

The scope of work to be undertaken for the Project is as follows.

The Japanese side will cover the construction of the Annex-Dormitory, rehabilitating the existing Dormitory and provide the required equipment, and the Philippine side will execute external work including removal and transfer of the existing hollow concrete block fence, preparation of the site, lead-in of the power supply, construction of the parking lot, and operation and maintenance of the facilities and equipment after completion of the Project.

##### (1) Works to be undertaken by the Japanese side

##### 1) Construction of New Facilities

- Building : Annex-Dormitory  
(main body of the expansion work) 1
- : connecting corridor 1

- Type of Work: the following construction works related to the above:

- : architectural work (main frame and finishing, and some furniture installation)

- : electrical work

- : plumbing and sanitary installation work

- : airconditioning/ventilation installation work

2) Rehabilitation of the existing Dormitory

- : installation of crime-proof grills on exterior window openings

- : partial refurnishing of the floors of Lavatory, Shower Room and Corridor

- : repair of Lavatory and Shower Booth, etc.

3) Provision of Training Equipment Required for Expansion of the Training Programs

- : 1 bulldozer

- : 1 micro bus

(2) Works to be undertaken by the Philippine side

1) To secure land necessary for the construction of the facilities and to clear, fill and level the site (so that it will be of the same ground level as that of the existing Dormitory).

2) To carry out negotiations, procedures, infrastructure work etc. for additional procurement of the required power supply (including work related to transformer) and to provide facilities for distribution of electricity,

telephone, water supply and drainage and other incidental facilities outside the building.

- 3) To construct and prepare the access road to the Project site.
- 4) to remove and transfer the existing concrete hollow block fence and refurnish an access road to the training ground.
- 5) To set up necessary measures so as to minimize the nuisance of the construction works to the residents of neighboring villages.
- 6) To bear the following commissions to the Japanese foreign exchange banks for the banking services based upon the Banking Arrangement.
  - Advising commission for Authorization to Pay (A/P)
  - Payment commission
- 7) To give approval on payment of costs for construction works subject to approval of supervisor, to give verification of the completion of construction works prior to handing-over of the facilities, and to issue a certificate for the handing-over.
- 8) To ensure prompt unloading, tax exemption and customs clearance at ports of disembarkation in the Philippines and prompt internal transportation therein of the products and related equipment purchased under the Grant.
- 9) To exempt Japanese nationals (both Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons) engaged or concerned in the Project from custom duties, internal taxes, immigration fee and other fiscal levies which may be imposed in the Philippines with respect to the supply of the products and related equipment and the services under the verified contracts.
- 10) To accord without delay to Japanese nationals whose services may be required in connection with the supply of

the products and related equipment and services under the verified contracts such facilities as may be necessary for their entry into the Philippines and their stay therein for the performance of their work.

- 11) To bear all the expenses, other than those to be borne by the Grant, necessary for the construction of the facilities.
- 12) To undertake incidental civil works such as planting and fencing that are outside the scope of works carried out by the Japanese side.
- 13) To provide the space necessary for such construction as temporary offices, working areas, stock yards and others.
- 14) To ensure that temporary electric power and water supply are made available for the construction and incidental activities related to the Project.
- 15) To ensure the safety of the Japanese nationals (described in item a above) engaged or concerned for the Project throughout the implementation period in terms of burglary, theft and other such physical attacks.
- 16) To ensure efficient maintenance and operation of the provided facilities, including the hiring of personnel necessary for such.

#### 4-5-3 Plan for Construction Work

##### (1) Plan for Construction Works

The site of Program III is situated about 50 km south of the city of Manila and, in spite of inconveniences arising from lack of public transportation systems, has few basic problems regarding transportation of materials and equipment for the construction works. Procurement of materials and manpower is also relatively easy.

However, since the existing facilities will continue to be used while construction works for the new facilities are under way,

careful considerations must be given to the safety of the construction works, protection of the existing facilities and guarding against noises and dust through consultations with Program III.

On the other hand, public safety and security conditions around the site are not necessarily good and it takes ten minutes by car from the site to the nearest main road, a former national highway. The access from the site to this main road is a 4 meter-wide unpaved road without lamp posts running through the woods and remote villages. Consequently, a careful construction work schedule should be drawn up with regard to transportation of materials and manpower to avoid transportation at nighttime as much as possible. Recruitment of security guards for an around-the-clock patrol system is also desirable for protecting man, the buildings and materials from theft, etc.

#### 1) Building facilities

The facilities of the Project consist of relatively simple buildings so there are few technical problems regarding their construction works. Emphasis should be placed on maintaining harmony with the existing facilities and special attention must be paid for establishing the standard ground level and the first floor level of the building. It is also necessary to set up a construction work schedule whereby connection of the Annex-Dormitory to the existing Dormitory is deferred as late as possible so as to alleviate the risk of the construction works disturbing the usage of the existing Dormitory.

Efforts should also be made to provide measures such as draining pumps for the foundation works as they may have to be conducted in the middle of the rainy season depending on the timing of the commencement of the works. It has been agreed that the volume of power supply available in the existing facilities cannot meet the demand of the Project and that the Philippines side is to cover the work for increasing the power supply capacity

and provide infrastructural works for this purpose. It is necessary to keep in close contact with Program III so as to avoid overtaxation in the work program and its time schedule.

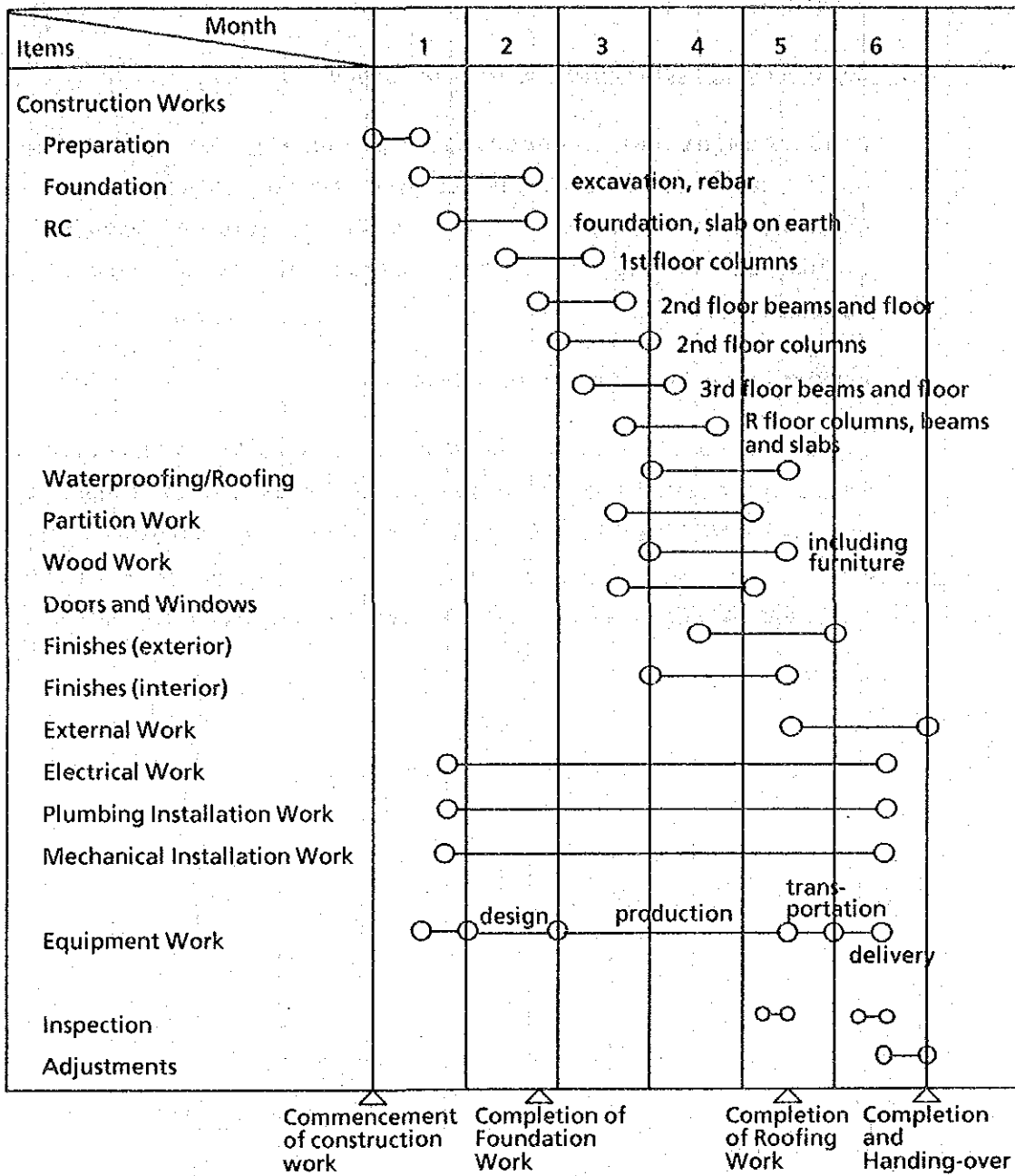
Taking into account the rather short period of time designated for overall construction works, it is essential to draw up a construction work schedule whereby procurement of materials and labor is secured as early as possible.

Furthermore, it is crucial for avoiding confusions in construction works to clarify the scope of works and responsibilities to be covered by the Philippine side and the Japanese side respectively, particularly for the preparation works such as removal of the existing hollow concrete block fence.

## 2) Equipment

The equipment to be provided is one bulldozer and one micro bus, both of which are procured in Japan. In view of the short period allocated for construction works, a construction work program must be drawn up that clearly incorporates the procedures for production, transportation, inspection and delivery of products meeting the design specifications.

(2) Schedule of Construction Works (Table 4-1)



4-5-4 Overall Schedule

The period of construction works is estimated to be approximately 10 months after the Exchange of Notes (E/N).

(1) Detailed Design Stage

After the conclusion of the consultant contract, the detailed design will be drawn up, the cost estimation documents will be



prepared, and the approvals of relevant authorities will be obtained.

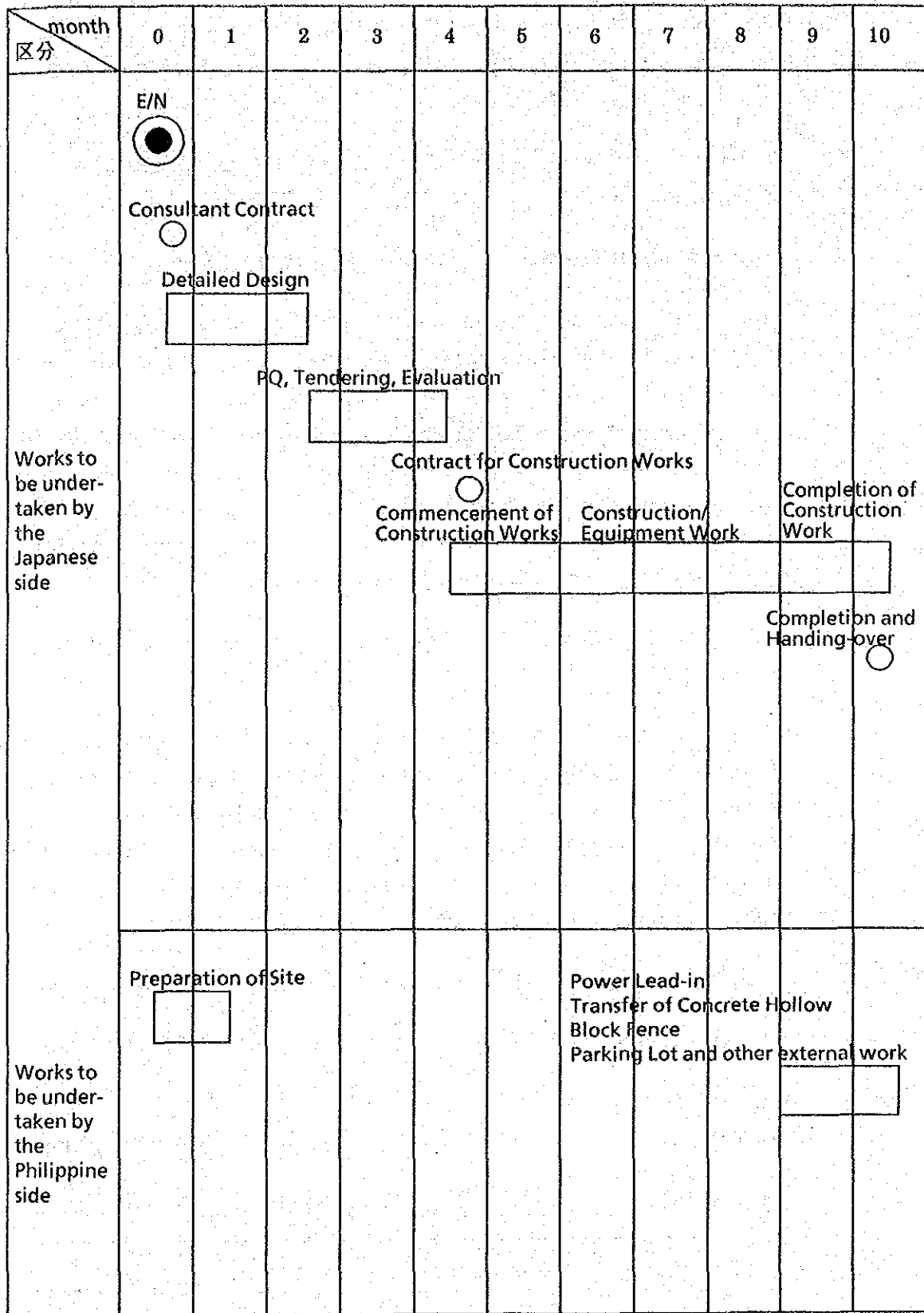
(2) Construction Contractor Selection Stage

Announcement of tendering, screening of tenderer's qualifications, invitations to the tender, presentation and explanation of documents for cost estimation, tendering, evaluation and signing of the contract are to be carried out successively.

(3) Construction Work Execution Stage

After the completion of the construction works, inspection and trial operations are conducted in the presence of consultants and relevant parties to confirm that the completed works conform to the contract documents. The Project is regarded as complete at the time of handing-over to the executing agency.

(2) Schedule for Construction Works (Table 4-2)



#### 4-6 Total Estimated Costs

The total cost to be covered by the Philippine side is estimated to be approximately 557,500 Pesos (approximately 4 Million Japanese Yen).

The following are the required works to be undertaken by the Philippine side.

- Preparation of the site : approximately 1,300 m<sup>2</sup>

Since the site for the annex-Dormitory is already leveled and there is not much difference in height between the ground level of the site for the annex-Dormitory and that for the existing Dormitory, preparation of the land extending from the site for the annex-Dormitory up to the site for the existing Dormitory can be undertaken as a part of the field training for Program III. In this case, the costs will be appropriated as training costs, and will be excluded from the Project cost.

- Removal and transfer of the existing concrete hollow block fence:

This, too, can be executed as a part of the field training for CHB course. In this case, only the cost for materials must be covered. No cost for materials will be required for removal of the fence (approximately 125 m), and the cost for reconstruction of the fence (approximately 215 m, H = 2.5 m) will be calculated as follows:

$$(215 \text{ m} \times 25 \text{ m}) \times \text{P}200/\text{m}^2 = 107,500 \text{ pesos}$$

- furniture, etc. :  $1,651 \text{ m}^2 \times \text{P}100/\text{m}^2 = 165,000 \text{ pesos}$
- lead-in of electricity : 270,000 pesos
- A/P commission : approx. 15,000 pesos

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557,000 pesos

## **CHAPTER 5 PROJECT EVALUATION**



## CHAPTER 5: PROJECT EVALUATION

Program III of PHRDC has been making favorable progress since its establishment in 1984 as a part of the ASEAN Human Resources Development Project in the Philippines.

The favorable progress owes much to the systematic operations based on long-term prospects for Program III, adopting the suggestions in the Report of the Basic Design Study (1983).

The advice and assistance extended from Japan in the form of technical cooperation contributed to these achievements, and, most of all, the active and practical efforts of the Philippine personnel concerned to promote further effective implementation of the training programs should be noted.

After the handing-over of the facilities and equipment to the Philippine side, CMDF under the Department of Trade & Industry has been the agency responsible for their operation and management, with PHRDC acting as a contact. The number of applicants to the training programs has increased steadily in subsequent years, and the achievements of Program III are gradually being recognized by the people of the Philippines.

The facilities and equipment are not only treated and used with care, but are also given minor revisions and touch-ups by the users themselves to better adapt to the mode of usage and site conditions.

For example, a basketball court and a swimming pool for trainees were constructed to compensate for the lack of entertainment facilities nearby. The connection of the Dormitory and Training rooms with a roofed connecting corridor also show the positive attitude for managing the facilities. Moreover, the positive attitude of the Government of the Philippines can be seen in its budgetary support. The budget for Program III in 1987 was more than four times of the budget in 1983, the year of its inauguration.

If the necessary budgetary measures are taken for securing the required number of staffers and the required management/maintenance costs so as to enable operations, management and maintenance that are in line with 4-4 Maintenance and Operations, a steady progress is expected in the future, too, as evidenced by the achievements made so far through the management and operations carried out by CMDF and CMDC.

Should this positive attitude be maintained by the Philippine side in future and further enhanced by the experiences heretofore acquired by the implementation of the Project, an even greater achievement is anticipated from the activities of Program III.

This means that instructors equipped with high level of knowledge and expertise from more effective training programs will produced in greater numbers than before to train construction workers in rural communities, thereby expanding the human resources and upgrading the technical capacities of the construction sector in the Philippines.

As outlined above, the effects of the expansion plan of the Project focusing on the construction of the Annex-Dormitory is anticipated to make a major contribution to the development of the construction sector in the Philippines, and the cooperation extended from Japan to this Project is expected to have a significance in the long run.

## **CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS**





## CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

### 6-1 Conclusions

This Project aims at the expansion and reinforcement of Program III, one of the activities of the ASEAN Human Resources Development Project in the Philippines which has been making steady progress since its establishment.

Studies and discussions have been carried out, with reference to the current activities of Program III, future training programs, current situations of the accommodation facilities, the contents of requirement of new facilities etc. for an optimum design and selection of facilities and equipment required for the trainings.

Based on these discussions, the facilities plan and equipment plan for Japanese Grant Aid Project were drawn up.

Implementation of this Project centering around the construction of an Annex-Dormitory for Program III will lead to training of a greater number of instructors of construction skills on a nation-wide basis in the Philippines.

Through the activities of Program III, instructors who have had trainings of higher levels and wider scope will be appointed to train construction workers in the rural areas.

Since the construction sector is anticipated to play a vital role in the reinforcement of the economic foundation of the Philippines, implementation of this Project will substantially contribute to the development of the country.

Through this basic study, a thorough investigation has been made on the achievements, operation system, budgeting measures of Program III, and the results indicated that this Project possessed sufficient value to be executed as a Japanese Grant Aid Project. It is proposed that the both Governments take actions to realize an early implementation of this Project.

6-2 Recommendations

For implementation of the Project, recommendation is made to the Government of the Philippines for further considerations and continued efforts for achieving the following objectives:

(1) The policy of operating and maintaining the existing Dormitory and Annex-Dormitory as a unified facility should be emphasized, for which the following points should be taken into account.

- 1) To ensure that the Dormitory bedrooms are adequately used, strictly adhering to the capacity and purpose outlined in the objectives of the Project.
- 2) To keep records of the Dormitory residents
- 3) To compile a list of furniture and equipment and to update it on a continual basis

(2) A personnel assignment plan and the required budgeting measures should be adopted for a systematic management and maintenance of the dormitory facilities.

The following measures should be taken.

- 1) To assign a Dormitory Manager with a clear understanding of the purpose of the Project.
- 2) To employ janitors and security guards.
- 3) To establish a system for daily maintenance, and back-up in case of breakdown of the installed plumbings and machines.

(3) A system for management and operation of the Canteen should also be established.

- 1) To appoint the person(s) responsible for management and operation of the Canteen and Kitchen.
- 2) Secure the required number of staff and provide adequate living environment for them.

- (4) The Canteen of the existing Dormitory is to be converted into a Study Room.
- (5) Detailed studies should be made to draw up an optimum system for utilization by Dormitory residents of the Kitchen of the existing Dormitory, with sufficient considerations on prevention of fire and disasters.

