

gather and relax should be established mainly in the form of a courtyard which should also prove useful to facilitate natural ventilation and lighting.

(2) Equipment Design Principles

In principle, the equipment to be provided should be sufficient to support the Center's training curriculum with special attention paid to the following points. It has been decided that the equipment possessed by the existing facilities or already installed for OJT will not be provided in order to avoid duplication.

1) Maintenance of Trade Test 2nd Class Level

As the Center's training curriculum aims at maintaining a technical level to meet that of the Trade Test 2nd Class, the equipment to be provided must meet the minimum requirements for this purpose.

2) Equipment Grade

The selection of equipment which is not popularly used in the Philippines should be avoided as much as possible. Easy maintenance without relying on external assistance is also an equipment selection criterion.

3) Quantity

The quantity of each type of equipment to be provided should be the minimum quantity to meet the course requirements, referring to the quantity of similar equipment used for the TESDA's existing training courses.

2.3.2 Basic Design

(1) Site and Facility Layout Plan

The TESDA compound where the Center site is located is situated along the South Super Highway in Metro Manila and stretches 220 m in the east-west direction and 460 m in the north-south direction (approximate land area of 10 ha). The skyway project commenced in March this year (planned completion in 1998) on the East Service Road, located to the

west of the TESDA compound, to utilise the space above this road. Consequently, the East Service Road is expected to be widened by some 13 m into the TESDA compound.

1) Main Building

The site (90 m Y 90 m) for the main building of the Center has been secured on the opposite side of Brick Plaza located to the north of the TESDA Headquarters building. This site gently slopes from west to east with a maximum dip of some 1.5 m on the site. The south side of the site has many mature trees which should be preserved if possible.

- Site Use

The main entrance of the main building should preferably be south-facing to emphasise the special feature of the site, i.e. its facing Brick Plaza which provides the main approach to the TESDA compound. Because of the existence of many mature trees to the south of the site, the building will be located as far to the north of the site as possible so that the main access to the building is from the south. Brick Plaza will be used for parking. As the planned site has no peripheral road, the introduction of a service road which circles the site is necessary. Direct access to the building from this service road will be provided in view of quick and efficient loading and unloading at the main building which will be used for various training purposes. A distance of some 12 m, including the service road, will be secured between the main building and the PEVOTI building to the east of the site in order to ensure a good environment for both buildings. The ground level of the main building will be decided to minimise the banking and cutting requirements and to harmonise with the ground level in the vicinity.

- Layout

The Center will not be simply a vocational training facility but will also be expected to act as a national center for enhancement of the socioeconomic status of women through R & D and advocacy activities as well as vocational training activities. Expression of the national identity of the building by incorporating all the functions of the Center into a single building instead of separate buildings for separate functions appears preferable although the functionality of the building will be taken into careful consideration so that the different functions of the Center are not disrupted. A large courtyard will be introduced at the center in the main building

design which will be encircled by appropriately distributed 5 blocks to provide distinct areas for each function without any unnecessary disruption.

The south block will face Brick Plaza and will house the main entrance, part of the administration zone and also part of the R & D/advocacy zone. The east block will form a continuous block with the south block, housing part of the R & D/advocacy zone, lecture rooms and meeting rooms, etc. The west block will be the nearest to the noisy public road and, therefore, it will house the air-conditioned administration rooms and such unoccupied rooms as the machine room. The north block will house the vocational training workshops. It has the advantage of open space to the north which can easily be used for building extension or other purposes. The southwest block will house the multi-purpose hall.

2) Dormitory Building

The site for the dormitory building is located to the east of the TESDA Headquarters building. The land size is 60 m x 35 m and is almost flat. There are 2 basketball courts to the north of the site.

- Site Use

The approach to the site will be provided by the existing road to the east of the TESDA Headquarters building. As the east side of the road is lined by trees, the dormitory building will be constructed to the east of the site. The ground survey found the soil bearing capacity of the site to be rather weak, suggesting the preferability of a building without many storeys. Consequently, the number of bedrooms on one floor will be maximised in order to reduce the number of stories. The north side of the site requires a special design feature to prevent peeping into the building from the existing basketball courts.

- Layout

The building will, in fact, consist of 6 blocks which will be placed around a courtyard to create open space for natural ventilation. The block near the approach will be used as a communal block and will house the administration zone and a lounge, etc. A skip floor, raised by half of the floor height, will be adopted for the 3 blocks on the north side to ensure the privacy of the trainees residing in these blocks vis-a-vis people using the basketball courts.

(2) Building Plan

1) Planning

It is believed that 3 stories will be appropriate for the planned buildings based on the assumptions that (i) all the rooms should be functionally linked as much as possible without using a staircase, (ii) the construction period should be reasonably enough to qualify the Project as a grant aid project of the Government of Japan and (iii) the planned sites must be used in an efficient manner.

a) Actual Buildings

The planned facilities of the Center consist of a main building and a dormitory building. The functional zoning and required rooms for each building are outlined below. (Refer to Figure 2-3-1)

i) Main Building

- Administration Zone : administration office, director's office and adviser room, etc.
- R & D/Advocacy Zone : R & D / advocacy-related rooms, networking room, adviser room, counselling room, library, exhibition corner and meeting room, etc.
- Vocational Training Zone : workshops, administration office, on-call instructors' rooms and job placement room, etc.
- Multi-Purpose Hall : multi-purpose hall, projection room and storage, etc.
- Canteen : canteen and kitchen, etc.
- Day Care Center : play room, nursery room, first aid etc.
- Others : corridors, machine room and electric room, etc.

ii) Dormitory Building

- Bedroom Zone : 10 bedrooms for 2 people each and 35 bedrooms for 4 people each
- Administration and Communal Zone : administration office, meeting room, lounge, pantry and laundry, etc.
- Others : corridors and storage, etc.

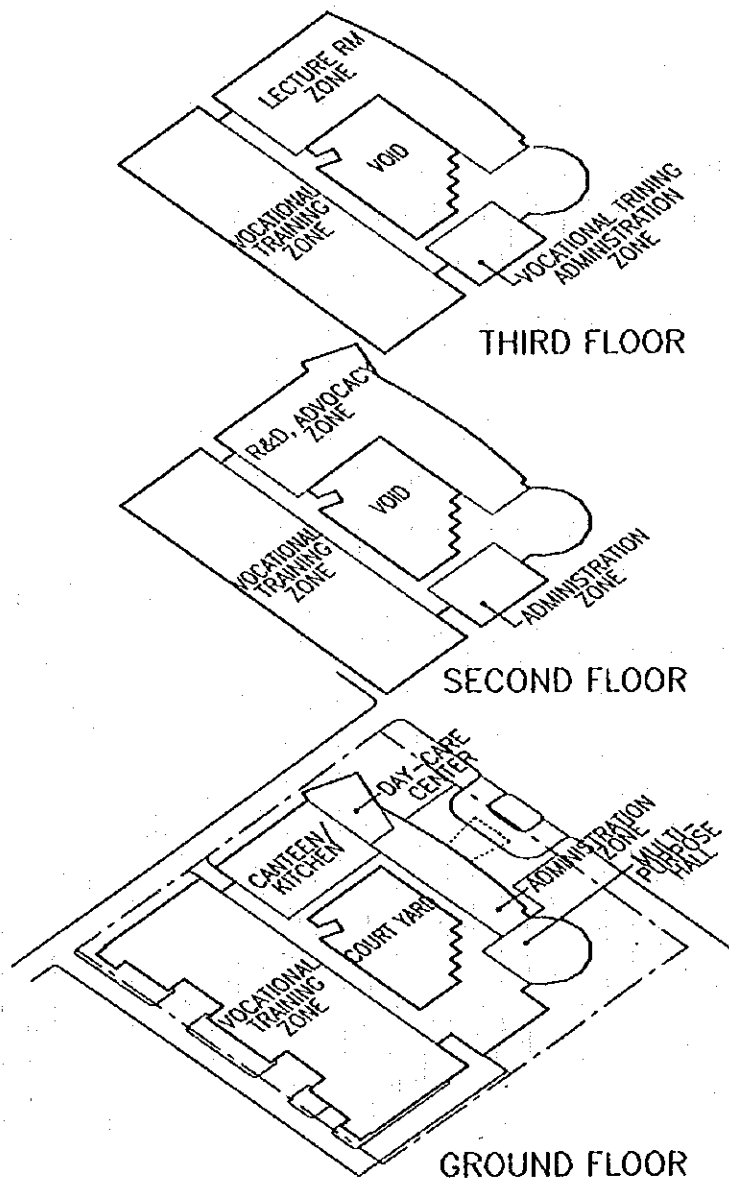


Fig. 2-3-1 Zoning Plan

b) Configuration of Rooms and Offices, etc.

Each of the planned buildings incorporates the rooms and offices, etc. listed in a) above. Their planned distribution should include functional zoning with clear path lines on the floor as well as the vertical distribution of functions to make the buildings easy to use and maintain.

i) **Main Building**

The central courtyard will be surrounded by gallery-style blocks so that every room with occupants can, in principle, enjoy natural lighting and ventilation. The following 5 blocks housing various rooms and offices, etc. will encircle the courtyard.

- **Administration Zone**

In view of convenience for the users of and visitors to the Center, the administration office will be located facing the entrance hall on the ground floor of the south block. The director's office and adviser rooms will be located on the second floor of the west block.

- **R & D/Advocacy Zone**

As this zone is expected to receive many visitors, the main rooms will be located on the second floor of the south block and east block, both of which will have direct access to the entrance hall on the ground floor. These rooms will include the library, networking room, function room, meeting rooms, research offices and counselling room.

- **Vocational Training Zone**

All 3 floors of the north block will vocational workshops. The workshops of the vocational areas for which a trainer course is provided will be distributed on the ground and second floors for convenience. To be more precise, the metal, automotive and agro-processing workshops will be located on the ground floor due to the frequent delivery of materials while the hotel and restaurant, fine jewellery and electronics workshops will be located on the second floor. The third floor of the north block will house the ceramics, crafts-gifts housewares and garments workshops while the third floor of the west block will house the administration office. The third floors of the south and east blocks will house the lecture rooms.

- **Multi-Purpose Hall**

The multi-purpose hall with a seating capacity of 200 will be located in the southwest block as an independent facility to allow its use by a large number of people or for various purposes.

- **Canteen**

The canteen will be located on the ground floor of the east block in view of its use by visitors. Because of this location, the canteen can be open even if the Center itself is closed, providing breakfast and evening meal for the boarding trainees. Consequently, no canteen will be provided in the dormitory building.

- **Day Care Center**

The day care center will also be located on the ground floor of the east block. An area will be fenced off to create an outside playing area with existing trees. A first aid room will also be located nearby for the trainees.

ii) **Dormitory Building**

A gallery style with a central courtyard will be adopted for the dormitory building so that all bedrooms enjoy a pleasant living environment with maximum natural ventilation and lighting. The building will have 2 zones, i.e. a bedroom zone and administration zone, as described below.

- **Bedroom Zone**

A total of 45 bedrooms will be provided, i.e. 13 on the ground floor and 16 each on the second and third floors. Ten bedrooms on the ground floor will accommodate 2 persons each and will be air-conditioned. The other bedrooms will accommodate 4 persons each using bunk beds. All the bedrooms will be provided with a shower and toilet for privacy. Because of the presence of basketball courts on the northern part of the site, a skip floor structure, where the floor height is raised by half of the floor height, will be adopted to ensure privacy.

- Administration Zone

The northwest block along the approach way is designated as the administration zone. The office and meeting room will be located on the ground floor and a lounge will be provided on each of the second and third floors. The meeting room and lounges will be equipped with a pantry and kitchenette so that the boarding trainees can prepare simple meals, and can use for self-teaching also. The communal laundry will be located on the ground floor of the northeast block.

c) Room Sizes and Grades

Following clarification of the planned functions of each room, the room sizes have been decided based on the staff distribution plan proposed by the Philippine side and the annual training curriculum. The underlying ideas regarding the functions and sizes of the main rooms are described next. The standards used to calculate the desirable floor area of each room are given in Table 2-3-1.

- Administration Office

Taking the local customs and present conditions of the TESDA facilities into consideration, each administration office has been planned as a single large room for good communication. The floor area per person will be 7.0 m² or 15.0 m² in the case of a chief programme specialist. The total floor area of each office will depend on the number of assigned staff. As the TESDA provides a personal office (40 - 60 m² with a toilet) for directors, the director of the Center will be provided with an independent office of some 40 m² in size. In general, multiple-occupancy offices in the Philippines tend to be air-conditioned with a PVC tile floor. In the case of single-occupancy offices, a carpeted floor or wooden parquet floor is fairly common. These features will be copied for the offices of the Center.

- Meeting Room, Function Room and Consultation Room

A seating capacity of 20 is planned for the meeting room which will be used for major meetings at the Center, including those of the CAC (presumably consisting of 12 members). The floor size has been calculated on the basis of 4 m²/person using the TESDA's existing meeting rooms as examples. The function room is planned as a multi-purpose room to serve various purposes by rearranging the

tables and desks while the consultation room is planned exclusively for consultations involving a small number of people. The unit floor area is 2.0 m²/person. The seating capacity of the function room is set at approximately 50 as most of the meetings frequently held by NGOs and others are attended by less than 50 people. In the case of the consultation room, the use by staff in each training area for consultations is assumed, the seating capacity is set at 15, including 4 - 5 training-related staff, 4 - 5 trainers and 2 - 3 on-call trainers.

The finishing grades are a carpeted floor for the meeting room and function room and a PVC tile floor for the consultation room based on examples of similar rooms at the TESDA. Movable partitions will be installed in the function room to cater for its use by small groups.

- **Multi-Purpose Hall**

The multi-purpose hall is planned to serve for various events, including seminars, symposiums, larger conferences, international conventions, bazaars, entrance and graduation ceremonies, light indoor exercise for trainees, parties, exhibitions, spot sale of products made by the trainees and a projection room, etc. The multi-purpose hall will have a flat concrete slab floor to allow such diverse use of the hall. The seating capacity is set at 200 as most large conferences organized by NGOs, such as the NCRF, are attended by less than 200 people. While the TESDA Headquarters building has a 600 seat hall on the ground floor, the fixed seating means certain restrictions on its use. Any seminar or symposium of the Center which anticipates attracting more than 200 people can be held using this hall.

- **Networking Room**

This is planned to be a kind of lounge which can be used for the exchange of information or other activities by groups related to the Center. Movable chairs and tables will be provided for flexible use and lockers will also be provided for each group. The room size should allow simultaneous use of the networking room by 6 groups. Working space of 10 m² and meeting space of 8 m² are planned per group.

- **Library (Reference Room)**

The library will provide local and international documents and reference materials on gender/women's issues, employment and vocational training, etc. A video library is also planned. The target number of books in stock is set at approximately 8,000 to start with. All the books will be placed on open racks for free access. The library will be run by one librarian and will have 10 reading seats and 5 video booths. The total floor area is set at 150 m².

- **Counselling Room**

It is planned that the counselling room will be used to provide psychological/mental support for the trainees, graduates and ordinary women to combat stress, anxiety or pressure related to attempts to enhance women's status. The use of a cloth finish for the internal walls and other features will be adopted to achieve a relaxing atmosphere. The room size is set at approximately 10 m² as most counselling sessions will involve person-to-person counselling.

- **Canteen**

The canteen will serve staff members, trainees and other users of the Center. Assuming that 80% of the 68 staff members, 270 trainees (maximum number), 10 part-time instructors and 20 visitors use the canteen, the number of seats is set at 140 to cover all users on 2 shifts. A temporary increase of the number of users due to a seminar or conference will be met by extending the opening hours. The canteen is planned to serve not only lunch but also breakfast and supper (evening meal). Consequently, the dormitory building will not be provided with canteen facilities. A fairly extensive kitchen is planned as this will also be used for training for the hotel and restaurant course. Although the staff canteen of the TESDA Headquarters building has higher grade specifications, including air-conditioning, the canteen at the Center is designed to be a convenient, self-service facility without air-conditioning.

- **Day Care Center**

For the convenience of the trainees and general users of the Center, a day care center for children upto 5 years old is planned to respond to the strong request put forward by NGOs. In accordance with the guidelines set by the DSWD for

nurseries in the Philippines, 2 separate facilities will be introduced to care for children of up to 2 years old and 3 - 5 years old respectively. The floor unit size for the former is 1.3 m²/child while that for the latter is 4 m²/child. The required auxiliary facilities include a feeding room, rest room, kitchen and lockers. An outdoor playing area is also required. While one full-time nursery nurse will be appointed by the Center to run the day care center, the users will, in principle, be requested to make their own arrangements for part-time nursery nurses to care for their children at the day care center.

- **First Aid Room**

The first aid room is planned to provide an area for staff members and trainees who feel unwell. As the TESDA Headquarters building has a clinic, medical care by a doctor or nurse will be available if required. The first aid room will have 2 beds.

- **Job Placement Office**

The job placement office is planned to provide job information for the trainees as well as graduates. One full-time manager will be appointed to run the office and also to provide a consultation service. The total floor area is 17 m², consisting of staff space of 7 m² and a consultation corner of 10 m².

- **Vocational Training Workshops**

An appropriate number of workshops will be provided based on the scope and layout of the equipment and work space required to support the training curriculum. In principle, a workshop will be a large space without pillars. The partitions to be introduced will be dry walls so that space can be flexibly allocated in the future to respond to changes of the curriculum and training areas. The workshop grades are planned to be equivalent to those of the existing facilities of the OMSD, etc. and gender care will be emphasized in all details of the workshops.

- **Lecture Rooms**

The number of required lecture rooms has been decided based on the annual training curriculum. Five lecture rooms seating 20 trainees each will be provided for the non-skill course, which has the largest class size of all the courses, and 4 lecture rooms seating 16 trainees each, which is the standard class size for all the other courses, will be provided. As 2 classes may join together for lectures, moveable partitions will be used for the smaller lecture rooms so that the size can be doubled to seat 32 trainees. The unit floor area is set at 2.5 m²/person as in the case of similar rooms of the TESDA. As the personal computer room and drawing room are planned for common use by all courses, the room site is set to accommodate the largest class of 20 trainees. The personal computer room will require a wide passage for the instructor to move freely and the unit floor size is set at 3.5 m²/person. In contrast, the unit floor size of the drawing room is set at 5.0 m²/person. The grades will be those of existing similar rooms in the Philippines. PVC tiles will be used for the floor and only the personal computer room will be air-conditioned.

- **Bedrooms**

As the Comprehensive Trainers Training course envisages the full boarding of 72 trainees/year, the Trainer Training course trainees will be the main bedroom occupants. A total of 160 beds is planned in order to provide accommodation for some trainees of other courses and visitors (NGO staff and others). Thirty-five bedrooms will have 4 beds (2 bunkbeds) each and 10 bedrooms will have 2 beds each. Based on examples of existing dormitory in the same compound, each bedroom will be provided with wardrobes and desks as well as a shower and toilet to ensure the privacy of the occupants. The planned room size is 28 m². The twin bedrooms will be air-conditioned. As in the case of similar existing facilities, PVC tiles will be used for the floor finish.

Table 2-3-1 Room Size Table show the bases of each room sizes.

Table 2-3-1 Room Size Table

MAIN BLDG.

Room Name	Nos. of Person	General Standard Values, Remarks	Planning Area (m ²)
Administration Zone			
Director Rm	1	Including Reception Area	40
Secretary Space	1	Including Waiting Area	56
Chief Adviser Rm	1	Including Reception Area	40
Admin. Office	5	$1p \times 15m^2/p + 4p \times 7m^2/p = 43m^2$	41
Reception Rm		$10p \times 4.0m^2/p = 40m^2$	41
Sub Total			218
Research & Development / Advocacy Zone			
R&D/Advocacy Rm	10	$1p \times 15m^2/p + 9p \times 7m^2/p = 78m^2$ + Meeting Space $10m^2 = 88m^2$	85
Networking Rm		$6(\text{Groups}) \times (10m^2 + \text{Meeting Space } 8m^2)$ + CPU Area, Locker = $130m^2$	131
Adviser Rm	2	$2p \times 12m^2/p = 24m^2$	24
Counseling Rm		$10m^2/\text{Rm} \times 2 \text{ Rm}$	18
Function Rm		$50p \times 2.0m^2/p = 100m^2$ (To be divided by movable partitions)	99
Conference Rm		$20p \times 4.0m^2/p = 80m^2$	77
A/V Editing Rm		Based on equipment layout	23
Library	1	Storing 8,000 books, Reading Space, A/V Booths	148
Copy Rm		Based on equipment layout	28
Exhibition Corner		Based on exhibition layout	62
Sub Total			695
Canteen			
		$(400p + 100p) \times 0.7/p = 350p$, 2.5 shift $350p \div 2.5 \times 2.0m^2/p = 280m^2$	283
Kitchen		Use for Restaurant Training	152
Sub Total			435
Day Care Center			
	1	Office Space $10m^2$, Kitchen $15m^2$ Shower & Toilet $15m^2$, Nursery $15p \times 1.3m^2/p = 20m^2$ (under 2 years old) Play Rm (3 to 5 years old) $15p \times 4m^2/p = 60m^2$ Common Space $40m^2$ Total $160m^2$	156
First Aid Rm		$2 \text{ beds} \times 10m^2/\text{bed} = 20m^2$	20
Sub Total			176
Multi-Purpose Hall			
		Hall Area $200p \times 2.0m^2/p = 400m^2$ + Parents' & Child Rm, Projection Rm, Storage Total $500m^2$	503
Sub Total			503

Room Name	Nos. of Person	General Standard Values, Remarks	Planning Area (m ²)
Vocational Training Zone			
Vocational Training Office	6	1p×15m ² /p + 5p×7m ² /p = 50m ² + Meeting Space 10m ² = 60m ²	53
On-call Trainers' Rm	10	10p×7m ² /p = 70m ² + Meeting Space 10m ² = 80m ²	80
Meeting Rm		15p×2.0m ² /p = 30m ²	29
Job Placement Rm	1	1p×7m ² + Counseling Space 10m ² = 17m ²	22
(Work shops)		Including Trainer's Rm, Prep. Rm & Storage, etc.	
Automotive	5	Based on Training Curriculum and equipment layout	597
Electronics	5	Based on Training Curriculum and equipment layout	472
Metals	5	Based on Training Curriculum and equipment layout	467
Ceramics	3	Based on Training Curriculum and equipment layout	552
Agro-Processing	5	Based on Training Curriculum and equipment layout	617
Hotel & Restaurant	5	Based on Training Curriculum and equipment layout	549
Garments	3	Based on Training Curriculum and equipment layout	558
Crafts-Gift & Housewares	3	Based on Training Curriculum and equipment layout	349
Fine Jewelry	5	Based on Training Curriculum and equipment layout	481
(Lecture Area)			
Common Drafting Rm		20p×5m ² /p = 100m ²	97
Common Computer Rm		20p×3.2m ² /p = 64m ²	67
Lecture Rm (20p)		20p×2.5m ² /p×5 Rms = 250m ²	255
Lecture Rm (32p)		32p×2.5m ² /p×2 Rms = 160m ²	156
Sub Total			5,401
Others			
Corridor, Toilet, shower, Hall and Common Spaces			3,285
Total			10,713

DORMITORY

Bed Rm Zone			
Bed Rm		4 Beds Rm × 35 Rms, 2 Beds Rm × 10 Rms Total 160 Beds 23m ² /p × 45 Rm = 1,260m ²	1,260
Sub Total			1,260
Common Zone			
Admin. Office	3	3p×7m ² /p = 21m ²	23
Maid Rm	5	5p×3m ² /p = 15m ²	12
Meeting Rm		15p×2m ² /p = 30m ²	32
Lounge		30m ² /p × 2 Rm = 60m ²	64
Pantry		15m ² /p × 3 Rm = 45m ²	49
Sub Total			180
Others			
Corridor, Toilet, Hall, Linen Rm, Laundry and Common Spaces			964
Total			2,404
Grand Total			13,117

d) **Use of NGO-Related Space at the Center**

At present, there are some 3,000 organizations involved in issues related to women in the Philippines. The introduction of a user registration system and/or an advance booking system should be considered so that these organizations can use the available facilities at the Center in a fair manner. Rules for use of the facilities should also be introduced and should be informed to all possible users to ensure the smooth management of the facilities. Those functions and facilities which are currently planned to be provided for NGOs and groups engaged in women's/gender issues are described below.

i) **Functions**

- **Space for Exchanges and Group Activities**

The networking room will have open access as a place for group activities and information exchange. The furniture will include chairs, desks, lockers and an information exchange board and access to personal computers, facsimiles, the Internet and telephones will be available in the administration office.

- **Space for Meetings**

The multi-purpose hall, meeting room and function room will be available for group meetings/conferences and other events. Access to AV equipment will also be provided.

- **Information Service**

The library will store books and other written materials as well as video tapes on women's/gender issues and employment, etc.

- **Provision of Job Information**

The employment service office will provide job (recruitment) information.

- **Counselling**

The counselling room will be available for advice on emotional/mental issues to assist the enhancement of women's status.

ii) Other Center Facilities for Use by Visitors

- **Day Care Center**

The day care center will look after children of upto 5 years of age of mothers visiting/using the Center. However, previous arrangements will be required as the nursery nurses will work on a part-time basis.

- **Overnight Accommodation**

Some beds will be available for people using the Center for more than one day or for people arriving from outside Manila who require overnight accommodation.

- **Canteen**

The canteen with some 140 seats will provide meals.

- **Video Editing Room**

The Center will provide a video editing service.

iii) Methods of Use (Provisional Plan)

- Groups or organizations intending to use the Center must register with the Center in advance.

- Advance booking will be required.

- There will be a charge for the use of the meeting space, accommodation, AV equipment and communication equipment.

- **Business hours : Monday - Friday
: 08:00 - 21:00**

Saturday/Sunday : Prior to request bases

Employment service office, library and use of communication equipment:

Monday - Friday : 08:00 - 178:00

- A drawing will be held if more than one user wishes to use the same facility at the same time.

2) Elevation and Cross-Section

a) Main Building

A flat roof will be employed, partly because the building will form a pair with the TESDA Headquarters building which also has a flat roof and partly because an unnecessarily high roof will constitute an obstacle to air traffic. The floor height is determined by the workshop requirements and will be 4.5 m for the ground floor and 4 m for the first and second floors. Because of this relatively high floor height, a ceiling height of more than 3 m is adopted for those rooms with natural ventilation. In the case of the rooms to be provided with air-conditioning, the planned ceiling height is approximately 3 m to ensure the efficiency of air-conditioning. In principle, the central courtyard will be encircled by an open gallery to maximise natural lighting and ventilation. In order to shut out direct sunlight from the rooms and radiant heat from the external walls and roof surface, a balcony will be introduced around the building and heat insulation blocks will be used for roofing purposes. The external appearance will offer a pleasant diversity of architectural concepts and a fair degree of symbolic features as a cheerful but self-composed national center for women, incorporating a light, rhythmic balcony facade, polygonal external walls and with the multi-purpose hall stressing femininity and a well-proportioned elevated water tank, etc.

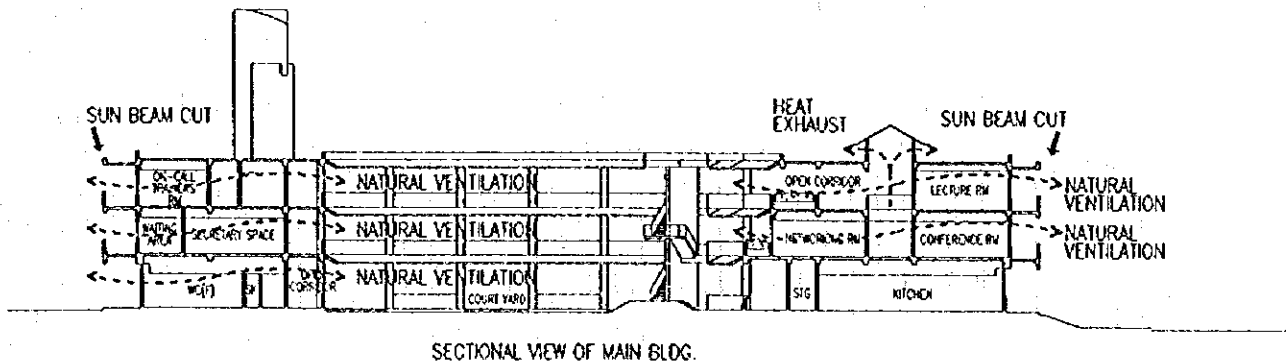


Fig. 2-3-2 Sectional View of Main Bldg.

b) Dormitory Building

A sloping roof will be adopted to harmonise with the existing dormitory building. The north block facing the basketball courts will have a skip floor by half of the floor height in view of security and privacy. The floor height is uniformly set at 3.5 m while the 4-bed bedrooms will have a suspended ceiling with a ceiling height of 3 m for air-conditioning efficiency. As in the case of the main building, the central courtyard will be encircled by an open gallery with an outer balcony around the building in view of good lighting and ventilation. The building will consist of 5 blocks to avoid a simplistic appearance and also to allow the breeze to blow through the space between the blocks. The common use block will have a different facade from the other blocks to present a degree of architectural diversity.

Table 2-3-2 Floor Height & Ceiling Height

(Unit: m)

	Main Building		Dormitory Building	
	Ground Floor	First and Second Floors	Ground Floor	First and Second Floors
Floor Height	4.5	4.0	3.5	3.5
Ceiling Height	3.0	3.0	3.0	direct ceiling

3) Structural Plan

The structural plan basically emphasises the adoption of a rigid frame system for a safe and economical structure while seeking compatibility with the building plan and building service plan. The standard local method is used where possible when deciding the structural design standards, external forces, materials and construction method.

a) Structural Design

The Philippines' National Structural Code for Philippines (NSCP) will basically be used for the structural design while referring to the relevant Japanese design standards where necessary and taking the following external forces affecting the buildings into consideration.

- **Dead Load**

The weights of all structural materials, finishing materials and building service equipment will be calculated.

- **Live Load**

The following figures will be adopted in accordance with the National Structural Code for Buildings for the live load of the respective rooms.

Table 2-3-3 Live Load

		Pa	kg/m ²
Office		2,390	244
Researcher's Room		2,870	293
Lecture Room		2,870	293
Meeting Room		4,790	489
Multi-Purpose Training Room		4,790	489
Bedroom		1,920	196
Library	Reading Room	2,870	293
	Stack Room	5,980	610
Workshop		3,590	366

- **Wind Pressure**

According to the National Structural Code for Philippines, Metro Manila is located in the Wind Pressure Zone II and, therefore, the following figures are given for the wind speed and wind pressure depending on the building height.

Table 2-3-4 Wind Load

Building Height (ft)	Wind Velocity (km/hr)	Wind Pressure	
		(kg/m ²)	(Pa)
0 - 30 (0~9.14 m)	175	146	1,440
30 - 100 (9.14~30.47 m)	175	196	1,920

- **Seismic Force**

As the Philippines belongs to the Circum-Pacific Seismic Belt and is reported to experience several earthquakes a year, a seismic resistant design will accordingly be required for the building structure. Pursuant to the National Structural Code for Buildings, the design seismic force is calculated using the following formula.

$$V = \frac{Z \times I \times C}{R_w} \times W \quad C = \frac{1.25S}{T^{2/3}} \quad T = C_t(hn)^{3/4}$$

- Where V : design seismic force
 Z : coefficient of seismic force (0.3 for the Philippines)
 I : intended use factor (1.0)
 T : primary proper period
 C_t : 0.03, RC structure - 0.486
 hn : height above ground
 S : coefficient of subgrade reaction (1.5)
 R_w : structural system factor (12)

b) Structure

Main Building	3 storeys	RC pillars and beams; pre-stressed concrete for some of the large span beams
Dormitory Building	3 storeys	RC pillars and beams

c) Foundations

According to the ground survey report, the planned site for the main building is covered by a 2 m thick weathered rock stratum with the intercalation of medium-weathered sandstone and silty rock below. The main building will have spread foundations using the medium-weathered sandstone stratum as the bearing layer. In contrast, the ground of the dormitory building site is characterised by soft clay with a relatively solid silty stratum found at around 3.5 m below the surface which will be used to support the building foundations.

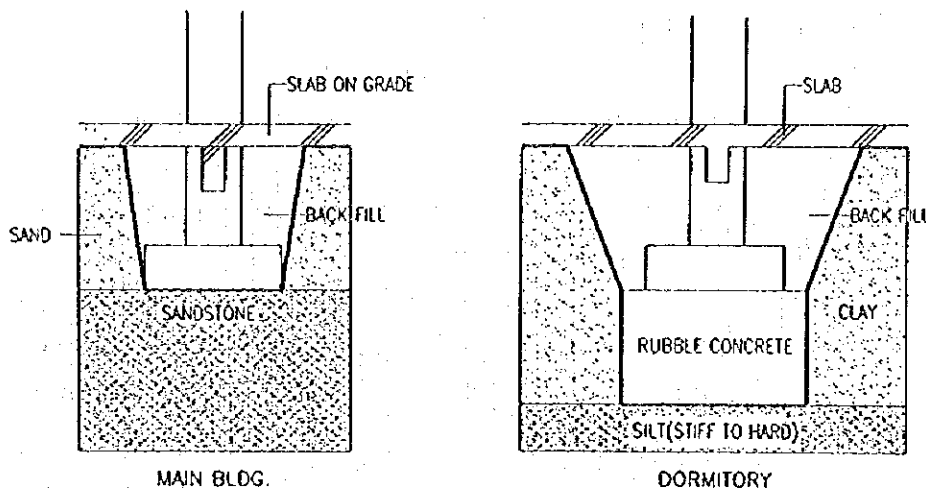


Fig. 2-3-3 Section of Foundations

d) **Structural Materials**

Reinforced concrete will be used for the main structure of the buildings which is the most popular structure in Manila. Normal concrete with a strength of $F_c = 25 \text{ MPa}$ (255 kg/cm^2) will be used. And the strength of $F_c = 35 \text{ MPa}$ (357 kg/cm^2) will be adopted for the prestressed concrete. The reinforcing bars to be used are SD 30 and SD 35 or Philippine Grade 40 and 60.

4) **Mechanical and Electrical Facilities Plan**

(A) **Air-Conditioning and Ventilation Systems**

Easy to maintain systems are planned, taking the hot and humid climate of the Philippines and the required air-conditioning grade into consideration.

a) **Design Conditions for Air-Conditioning System for Main Building and Dormitory Building**

- Outdoor Conditions : temperature : 34°C
relative humidity : 63%

[1993 Ashrae Handbook (Weather Data - Philippines, Manila)]

- Indoor Conditions : temperature : 26°C
relative humidity : 50 - 60%

b) **Air-Conditioning System**

i) **Main Building**

A separate-type air-conditioning system will be provided for each room requiring air-conditioning to ensure easy operation and a low maintenance cost. Emphasis will be placed on a small system so that any system breakdown has a minimum adverse impact on the running of the Center. The indoor unit will be selected from among the concealed ceiling type, exposed ceiling type, wall type and floor type depending on the purpose of use, size and intended interior design of the room/office. The following rooms/offices will be provided with an air-conditioning system.

- Rooms/offices of senior staff, etc.: director's office; reception room; secretary's office; adviser room; networking room; meeting room; advocacy office; instructors' office, on-call instructor's room in each vocational training zone; administration office for vocational training section
- Rooms requiring air-conditioning due to their functions: AV editing room; personal computer room; agro-processing workshop; electronics workshop; hotel and restaurant workshop (teaching area)
- Rooms requiring air-conditioning due to their purposes: multi-purpose hall; parents' room; projection room; job placement office; day care center (office, feeding room and resting space); function room; drawing room

ii) **Dormitory Building**

Of the 13 bedrooms on the ground floor, 10 bedrooms will be provided with a wall-type, separate air-conditioning system.

c) **Ventilation System**

i) **Main Building**

In principle, natural ventilation will be used for all rooms except for the following rooms/facilities where satisfactory natural ventilation is difficult or impossible to achieve due to the room functions or building plan.

Grade 3 mechanical ventilation system*: toilets; shower rooms; locker rooms; copying room; kitchen; pantory; laundry; food preparation room (for hotel and restaurant workshop); boiler room (for agro-processing workshop); electric furnace room (for ceramics workshop); power room; generator room; machine room, water reservoir space.

* natural intake air and mechanical exhaust fan system

ii) **Dormitory Building**

In principle, natural ventilation will be used for all rooms. However, a mechanical ventilation system will be provided for those rooms of which the function does not allow adequate natural ventilation.

Grade 3 mechanical ventilation system: toilets; shower rooms; laundry

(B) Plumbing Work

a) Water Supply System

i) Main Building

The water supply source will be a well located on the premises.

- **Rough Calculation of Required Water Supply Volume:**

70 staff members and 270 trainees = 340×100 litres/person/day =
 $34 \text{ m}^3/\text{day}$

Kitchen requirement to serve 300 lunches and 70 suppers = 370
 $\times 30$ litres/meal/day = $11.1 \text{ m}^3/\text{day}$

Vocational training zones = $87.5 \text{ m}^3/\text{day}$

Total = $132.6 \text{ m}^3/\text{day}$

- **Water Tank**

A water tank to store 65 m^3 of water, half a day's water requirement, will be constructed and will be insulated from external contamination.

- **Water Supply System**

Water will be pumped from a deep well (to be constructed by the Philippine side) and stored in the water tank after passing through a sedimentation tank and aeration tank. The water will then be pumped to the elevated water tank for distribution via the gravity system. Chlorine will be added to the water for sterilisation purposes, linked to the pumping operation.

ii) Dormitory Building

- **Rough Calculation of Required Water Supply Volume:**

Approximate 150 persons usage = 150×250 litres/person/day =
 $37.5 \text{ m}^3/\text{day}$

- **Water Tank**

A water tank to store 18 m^3 of water, half a day's water requirement, will be constructed and will be insulated from external contamination.

- **Water Supply System**

Water will be pumped from a deep well (to be constructed by the Philippine side) and stored in the water tank after passing through a sedimentation tank and aeration tank. The water will then be pumped to the elevated water tank for distribution via the gravity system. Chlorine will be added to the water for sterilisation purposes, linked to the pumping operation.

b) Hot Water Supply System

i) Main Building

A local hot water supply unit will be installed in the agro-processing workshop, kitchen, day care center and other places requiring hot water. Each shower room will be provided with a simple electric water heating unit.

ii) Dormitory Building

A local hot water supply unit will be installed in the pantry and other places requiring hot water. Each shower room will be provided with a simple electric water heating unit.

c) Sanitary Fixtures

The following sanitary fixtures will be provided for both the main building and dormitory building.

- Closet bowls : western type
- Urinals : wall-mounted stall type
- Washbasins : single tap type without hot water; soap dishes will not be provided

d) Drainage Facilities

i) Main Building

The drainage system will consist of 3 subsystems to deal with different types of waste water from the main building, i.e. sewage water, miscellaneous water and rainwater.

- **Sewage Water**

Sewage water will be dealt at the septic tank for the discharge of treated water to a culvert outside the site.

- **Miscellaneous Waste Water**

Miscellaneous waste water will simply be discharged to an open ditch outside the site.

- **Rainwater**

Rainwater from the roof and site will be channelled through a rainwater drain for discharge to an open ditch outside the site.

ii) **Dormitory Building**

The drainage system will consist of 3 subsystems to deal with different types of waste water from the dormitory building, i.e. sewage water, miscellaneous waste water and rainwater.

- **Sewage Water**

Sewage water will be dealt at the septic tank for the discharge of treated water to a culvert outside the site.

- **Miscellaneous Waste Water**

Miscellaneous waste water will simply be discharged to an open ditch outside the site.

- **Rainwater**

Rainwater from the roof and site will be channelled through a rainwater drain for discharge to an open ditch outside the site.

e) **Septic Tank, etc.**

i) **Main Building**

A septic tank will be provided and the BOD level of the waste water for final discharge will be 90 ppm or less.

ii) **Dormitory Building**

A septic tank will be provided to treat the waste water and the BOD level of the waste water for final discharge will be 90 ppm or less.

f) Fire-Fighting Equipment

Indoor fire plugs and fire extinguishers will be located in strategic places in both the main building and dormitory building. A fire-fighting pump will also be provided to achieve efficient fire-fighting at the time of a fire in main building and dormitory building.

g) Gas Supply

LPG will be used as the heating source for the kitchen, the hot water supply for both the main building and dormitory building, and ceramic furnace in the ceramic work shop. The gas cylinders will be placed in key positions to supply LPG.

(C) Electrical Installations

a) Main Building

• Power Reception Facilities and Substation

Power supply for the main building will be made from the MERALCO's existing 3 phase, 3 wire, 34.5 KV power line to the west of the site via an overhead line to a pedestal. From there, power will be supplied to a substation inside the building via an underground line. The installation of the transformer will be conducted by the MERALCO. The secondary voltage from the substation will be as follows.

- Lighting and socket outlets : single phase, 2 wire, 220 V
- Motor and power equipment : 3 phase, 3 wire, 380 V/220 V
- Main feeder : 3 phase, 3 wire, 380 V/220 V

The estimated full load of the main power consumption units is as follows.

- Lighting and socket outlets : 300 KW
- Power for air-conditioning : 500 KW
- Power for training equipment : 200 KW
- Total : 1,000 KW

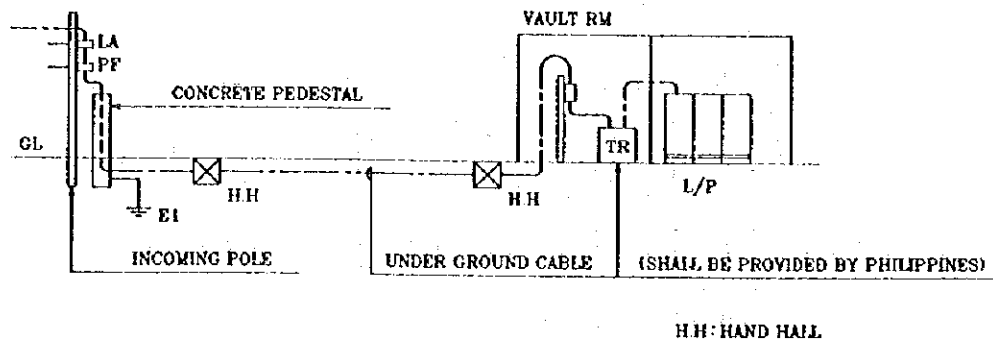


Fig. 2-3-4 Power Supply System

- **Emergency Power Generation System**

As Manila suffers from power failures at a rate of 2 - 3 times/month, a standby power generator will be installed to supply power for important equipment and security lighting, etc. at the time of a power failure. The generator specifications are as follows.

- Capacity : 200 KVA (3 phase, 3 wire)
- Fuel : kerosene or heavy oil
- Operation duration : continuous 6 hours

- **Main Power Circuit**

Mains power will be supplied from an I/V panel to each distribution board in the form of 3 phase, 3 wire, 380 V/220 V.

- **Lighting Circuit**

Distribution lines will be installed for the lighting fixtures, switches and socket outlets, etc. on the secondary side of the distribution boards. The lighting fixtures will be operated either individually or in small blocks for energy-saving purposes. The lighting fixtures for the corridors, etc. will be capable of thinned operation.

- **Lamps and Luminous Intensity**

In principle, cost-effective fluorescent lamps will be used although incandescent lamps will also be used for special purposes, including design purposes. The planned luminous intensity of the main rooms is given below.

- Administration office and meeting rooms : 350 lux - 400 lux
- Workshops : 300 lux - 350 lux
- Corridors and lobby : 100 lux - 150 lux
- Canteen : 200 lux

- **Main Telephone Line**

Extension of the PLDT telephone line to the building is planned by overhead cable which will be replaced by underground cable on the site to the MDF. The extension upto the MDF will be conducted by the PLDT while all plumbing and wiring on the secondary side of the MDF will be conducted as part of the construction work under the Project.

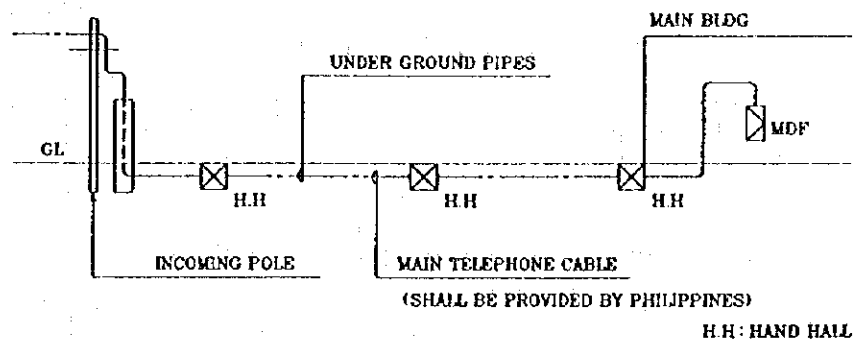


Fig. 2-3-5 Telephone Wiring Diagram

- **Telephone Switchboard**

Push-button telephones will be provided. The switchboard will have 10 outside lines and approximately 50 extensions.

- **Public Address System**

A main amplifier will be installed in the administration office. Paging and internal communication will be made from this office and the secretary's office. An independent broadcasting system is planned for the multi-purpose hall.

- **TV Reception**

A VHF/BS antenna will be installed on the roof and plumbing and wiring will be made to the planned TV outlets.

- **Fire Alarm System**

A fire alarm system will be installed whereby an alarm is automatically triggered by heat sensors or manual operation.

- **Outdoor Lighting**

The minimum number of automatic dusk-to-dawn outdoor lights will be installed for security purposes. Power will be supplied by underground cable.

- **Lightning Rod**

A lightning rod will be installed on the roof in view of the frequent lightning in the area.

- **Lift**

The main building will have one lift for both passenger, including wheelchair passengers, and cargo transportation purposes.

b) **Dormitory Building**

- **Power Supply**

The main power extension to the building will be made from the MERALCO's pole-mounted transformer in the form of 3 phase, 3 wire, 380 V/220 V.

- **Lighting Circuit**

Distribution lines will be installed for the lighting fixtures, switches and socket outlets, etc. on the secondary side of the distribution boards. The lighting fixtures will be operated either individually or in small blocks for energy-saving purposes. The lighting figures for the corridors, etc. will be capable of thinned operation.

- **Lamps and Luminous Intensity**

In principle, cost-effective fluorescent lamps will be used although incandescent lamps will also be used for special purposes, including design purposes. The planned luminous intensity of the main rooms is given below.

- Administration office : 350 lux - 400 lux
- Corridors and Lobby : 100 lux - 150 lux
- Bedrooms : 250 lux - 300 lux

- **Telephone Conduit and wire**
Telephone line for the dormitory building will extended from TESDA building.
- **Public Address System**
A main amplifier will be installed in the administration office for paging and internal communication purposes.
- **TV Reception**
A VHF antenna will be installed on the roof and plumbing and wiring will be made to the planned TV outlets.
- **Fire Alarm System**
A fire alarm system will be installed whereby an alarm is automatically triggered by heat sensors or manual operation.
- **Outdoor Lighting**
The minimum number of automatic dusk-to-dawn outdoor lights will be installed for security purposes. Power will be supplied by underground cable.

5) Construction Materials

The basic selection policy for the construction materials is the use of materials and construction methods of which the use is firmly established due to their suitability vis-a-vis the local climate. The use of the following materials is planned, taking their suitability vis-a-vis the function(s) and/or purpose(s) of the room, economy, durability and ease of maintenance into consideration.

a) External Finishing Materials

The external finish of the existing buildings on the TESDA premises is mainly either a painted finish or brick facing except for the Headquarters Building of which the external finish is adobe. The planned external finish of the main building and dormitory building of the Center is described below. Consideration is given to harmony and uniformity of grade with the existing buildings on the TESDA premises.

- **Main Building**

The adobe finish used for the TESDA Headquarters building is durable but its dark colour does not appear compatible with the image of the Center. Spray tiles with excellent durability are, therefore, planned as the basic exterior finish for the Center with brighter adobeston used as an accent. Aluminium window frames will be used for good sound insulation vis-a-vis airplane noise for and easy maintenance. The windows facing the outside will have grills in view of security. Insect nets will be provided for the agro-processing workshop and kitchen.

- **Dormitory Building**

As in the case of the main building, spray tiles are planned as the basic exterior finish for the dormitory building. The roofing material will be coloured iron sheets. Although iron sheets are locally considered to have the best durability, cut or bent sections can be vulnerable to rusting, etc., necessitating extra care in regard to sheet thickness and other details. Aluminium window frames will be used with security and insect proof features as in the case of the window frames for the main building.

- b) **Interior Finishing Materials**

The best internal finishing materials have been selected as shown in Table 2-3-5, taking the planned functions and purposes of each room into consideration.

Table 2-3-5 Planned Finishing Materials for Main Rooms/Offices

[Main Building]

Room	Floor	Walls	Ceiling	Key Points for Selection
Administration Office	PVC tiles	paint	rock wool acoustic board	durability; easy maintenance
Director's Office; Reception Room	wood parquet	vinyl cloth	"	durability; comfort for senior staff and visitors
Meeting Room; Function Room	carpet	"	"	comfort for such rental users as NGOs
Multi-Purpose Hall	wood parquet	acoustic board	wire mesh	sound absorption; easy maintenance
Networking Room	"	vinyl cloth	rock wool acoustic board	comfort; durability
Library	carpet	"	"	sound absorption; comfort
Counselling Room	"	"	"	comfort
Canteen	ceramic tiles	paint	wood panels	durability; easy maintenance; hygienic appearance
Day Care Center	wood parquet	vinyl cloth	rock wool acoustic board	durability; comfort
Rest Room	PVC tiles	paint	"	"
Workshop A	coloured mortar	"	concrete with paint finish	workshop with hard usage requiring durability and easy maintenance
Workshop B	PVC sheets	"	concrete with paint finish or rock wool acoustic board	workshop with quiet use, still requiring durability and easy maintenance
Lecture Room	ceramic tiles	"	"	durability, easy maintenance
Corridors, etc.	exposed finish by washing	spray tiles	concrete with paint finish	"

[Dormitory Building]

Room	Floor	Walls	Ceiling	Key Points for Selection
Bedroom	PVC tiles	paint	concrete with paint finish or plaster board	durability; comfort
Toilet/Shower	asphalt water-proofing with ceramic tile finish	ceramic tiles	calcium silicate board with paint finish	durability; hygienic appearance; easy cleaning
Office	PVC tiles	paint	rock wool acoustic board	durability; easy maintenance
Meeting Room/Lounge	ceramic tiles	"	"	"
Pantry	"	ceramic tiles and paint	calcium silicate board with paint finish	durability; hygienic appearance; easy cleaning
Laundry	"	"	"	"
Corridors, etc.	exposed finish by washing	spray tiles	concrete with paint finish	durability; easy maintenance

(3) Equipment Plan

1) Equipment Selection

- In selecting the range of equipment required by the Center to achieve its functions, i.e. vocational training, R & D and advocacy activities, to enhance the status of women in response to the request made by the Philippine side, the appropriate equipment range and grade have been decided taking the proposed functions, scope of activities, staff capability and maintenance requirements, etc. into consideration.
- Large and heavy equipment is avoided and equipment which can easily be used by women has been selected. Special attention has also been paid to such aspects as exhaust gas and dirty work.
- In regard to the equipment quantity, one piece of equipment per trainee will be provided for that equipment where this proportion is deemed necessary to ensure efficient training in view of the lengthy training time required. In the case of other equipment, the quantity has been decided based on the frequency of use.
- The selection priority has been given to those manufacturers with local agents or service networks in view of the daily maintenance requirements and compatibility of software, etc. The equipment to be procured locally includes such office equipment as personal computers and copiers, etc.
- The provision of peripheral equipment is also planned (for example, uninterruptive power supply units for personal computers) to ensure the smooth operation of the provided equipment.

2) Equipment Grade

- The vocational training equipment has been selected in view of providing the target level training for the trainees of the trainer training, pre-employment training and skill upgrading training courses. The level of the training equipment has been appropriately selected in view of the technological levels of the relevant industries and equipment used at similar facilities. In the case of pre-employment training, as the trainees will comprise those who have completed training courses of the DSWD, etc., the level of the training equipment at the Center will be higher than

that of such courses. In regard to skill upgrading training, the trainees will be required to improve their skills to the level required by the relevant industries. Wide-ranging knowledge and skills will be required of the trainees of the trainer training course as these will become trainers who supervise ordinary workers.

- Durability is essential in view of the frequent use of the equipment. Equipment with high reliability meeting JIS standards, etc. has been selected to avoid any unwanted disruption of the training due to breakdowns.
- Highly complicated, advanced equipment is avoided to ensure easy maintenance.

3) Equipment Selection Process

A working group consisting of the BD II team members and local experts on vocational training firstly discussed the possible training subjects and training contents. Based on the findings of this working group and taking the original request into consideration, the necessary equipment was finalised. The main specifications and quantities of the equipment to be provided under the Project for the Center were decided based on the planned training contents, teaching staff capability and maintenance requirements.

a) Automotive Workshop

In regard to engine tuning, emphasis is given to cut models, simulators and independent engine units for practical training on both petrol and diesel engines. As the compulsory automobile inspection system in the Philippines includes emission control (of black smoke) using an emission tester for diesel engines, a smoke meter is selected together with an emission tester for petrol engines. Furthermore, a tester for injection pumps (the main culprit of black smoke) is selected.

b) Electronics Workshop

As the training will involve electronic engineering and control, oscilloscopes capable of handling both low and high frequencies, frequency generators and other equipment are selected to allow basic experiments. Various simulators will also be provided for practical training on electronic control. Step motors, servo motor units, small FA systems and other load devices are selected for practical

training on PLC (programmable logic control) and training using microcomputers.

c) Metals Workshop

Each welding machine will be set in a booth for personal safety and a collective fume and dust arrester will be used to filter the fumes prior to discharge to prevent air pollution. As the welding work will include the use of stainless steel which is difficult to cut, power shearing machines (for cutting), grinding machines and bevelling machines (for edge preparation) are selected. In the case of gas welding, the units will be set on platform cars instead of a central supply system in view of the efficient use of limited space.

d) Ceramics Workshop

A gas furnace is selected in view of the local power and gas supply conditions. However, a small laboratory-use electric furnace is selected for trial firing. The clay kneading machines, presses and other equipment selected are generally small because of their use for training purposes. Half of the potter's wheels will be electric while the remaining half will be foot-operated as requested by the Philippine side.

e) Agro-Processing Workshop

In principle, the laboratory equipment for canning, bottling, smoking, drying and fermenting have been removed from the list of equipment to be provided under the Project and the actual selection emphasis is placed on equipment associated with building up knowledge and skills relating to processing/manufacturing processes.

f) Hotel and Restaurant Workshop

The computer training of the hotel and restaurant course will basically use the personal computers for common use. However, one computer and peripheral equipment is selected to simulate front work in the workshop. The cooking and food preparation equipment will be those for training on simple cooking on the grounds that more advanced cooking training will be conducted in the kitchen

attached to the canteen. The cleaning equipment used for housekeeping will be used for the dry cleaning training which is part of the garments course.

g) Garments Workshop

A computer CAD is selected for the training, from pattern making to cutting. The number of general-purpose sewing machines will satisfy the actual need while the number of special sewing machines is set at the minimum level for their alternative use by the trainees. The number of embroidery sewing machines is also set at the minimum level for shared use.

h) Crafts-Gift & House Wares Workshop

One soft toy sewing machine will be shared by 2 trainees while one leather sewing machine will be shared by 4 trainees. A minimum number of other sewing machines will also be provided. A hand sewing set will be provided for each trainee.

i) Fine Jewellery Workshop

Through consultations with local experts, the addition of variable transformers, waxed drawing boards and cutters, etc. has been agreed. Following the withdrawal of training on lost wax, a large electric kiln, dewaxing dryer, ring inner face grinder and surface grinder, etc. have been eliminated from the list of equipment. Both sides have a similar opinion on other types of equipment.

[Common Lecture Rooms, Drawing Room and Computer Room]

The minimum quantity of general-purpose training equipment and AV equipment will be provided for these rooms.

[R and D/Advocacy Section]

The equipment for this section are selected by the following reasons.

• Research and Development/Advocacy, Library

Data processing and desk work, edition of video tape for training video graphy photography for training, training by audio visual instructional materials, reproduction of data, addressing data and creation of instructional materials.

- **Day care Room**

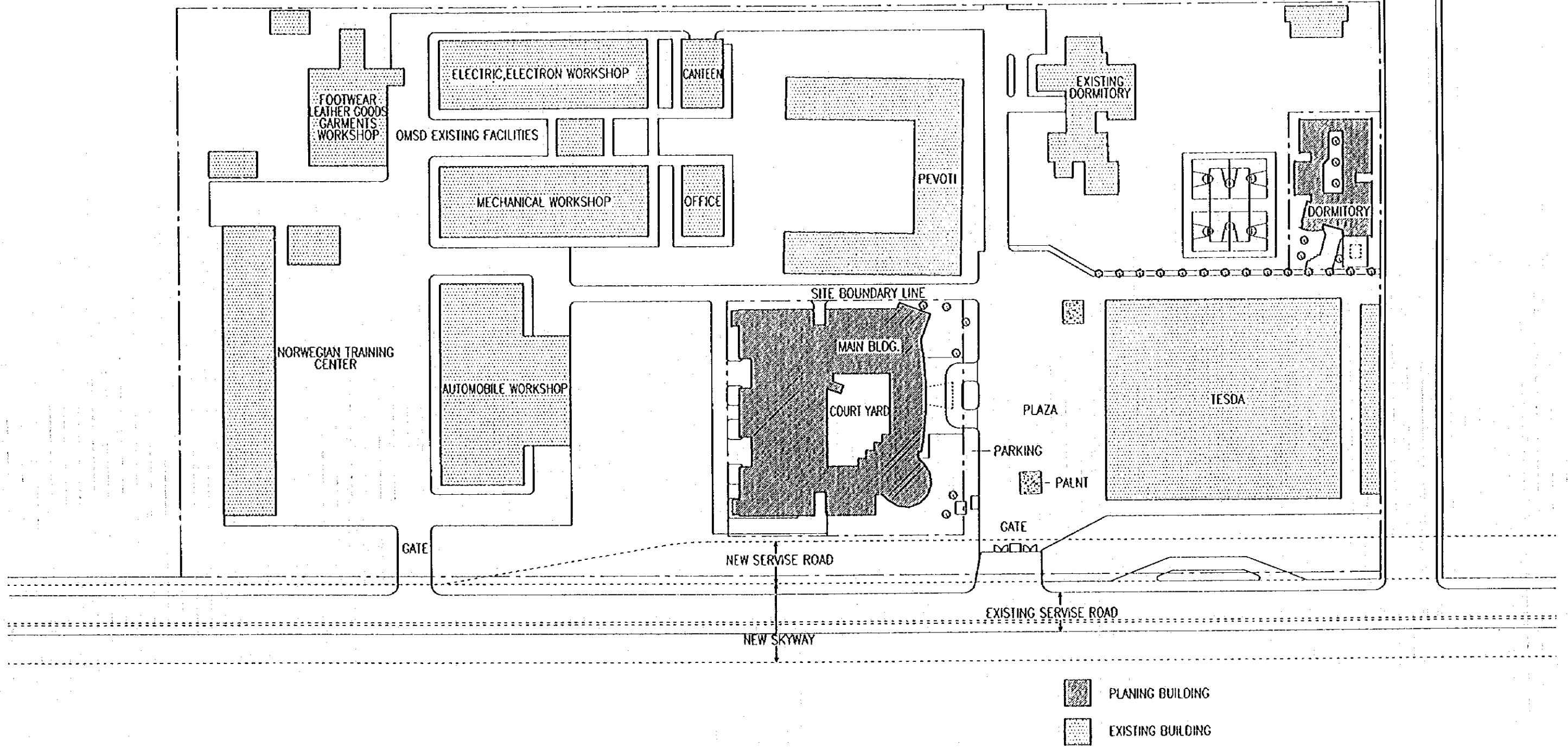
Nursery for babies of trainees, preservation of food for babies, heating and cooking of food for babies and sterilization of milk bottle.

[Administration Section]

- **Reproduction of data, Photography of picture for teaching materials, data processing and desk work, creating teaching materials, magnified projection of instructional materials, addressing data, transportation for trainees and trainers.**

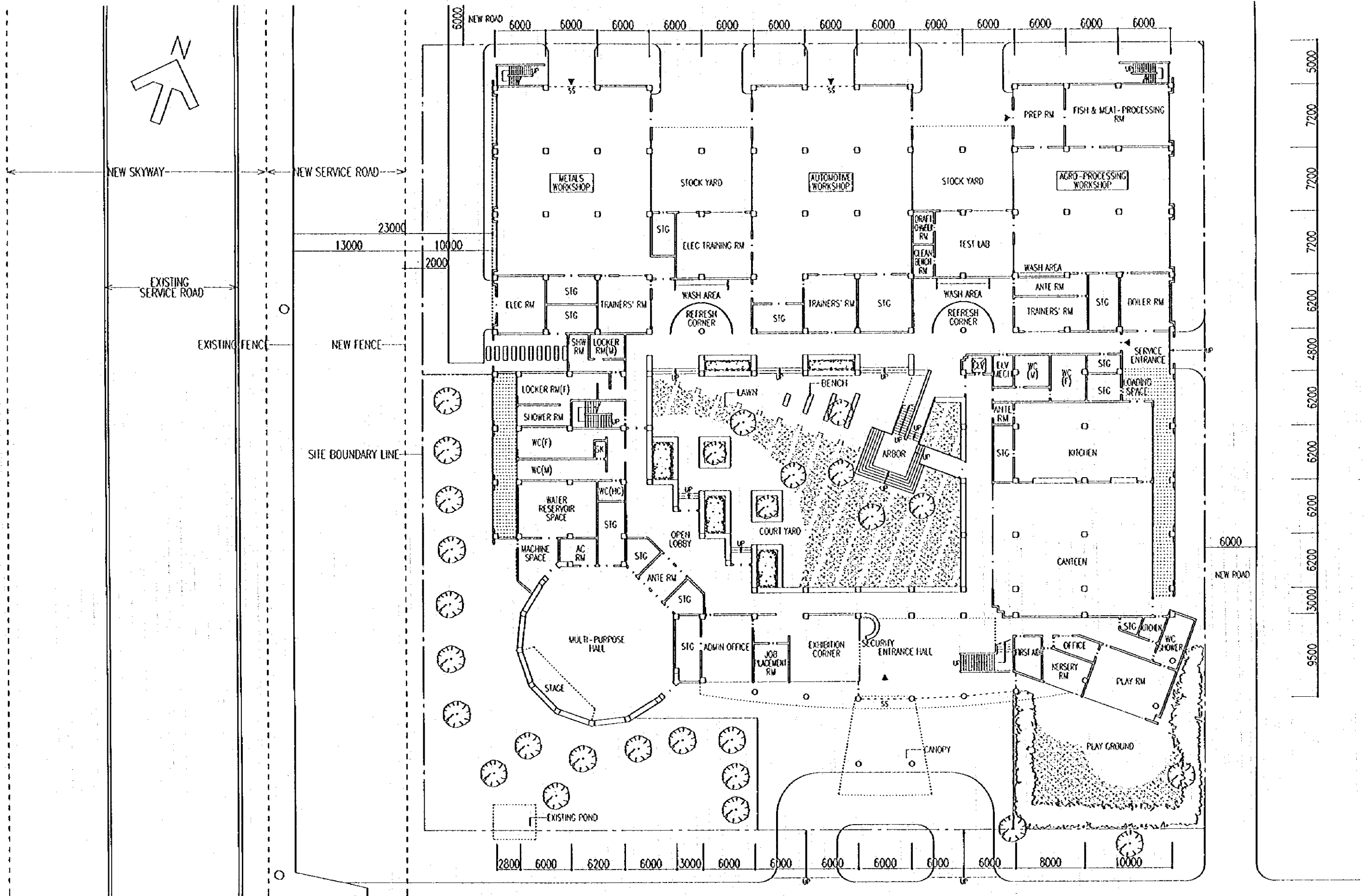
That equipment which is deemed essential is listed for each of the above sections and their main specifications, purpose of use and quantity are compiled in a table.

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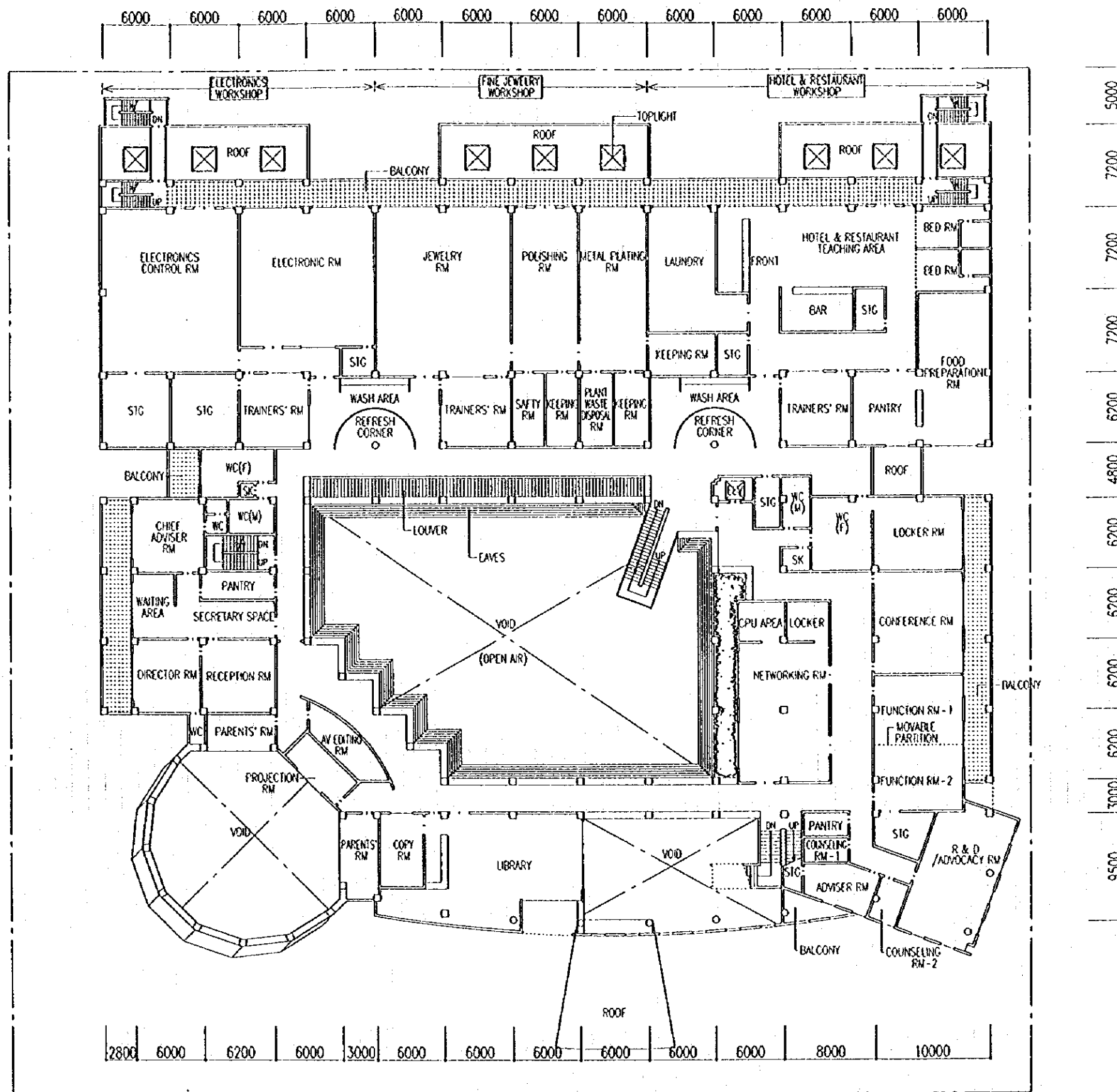
SITE PLAN

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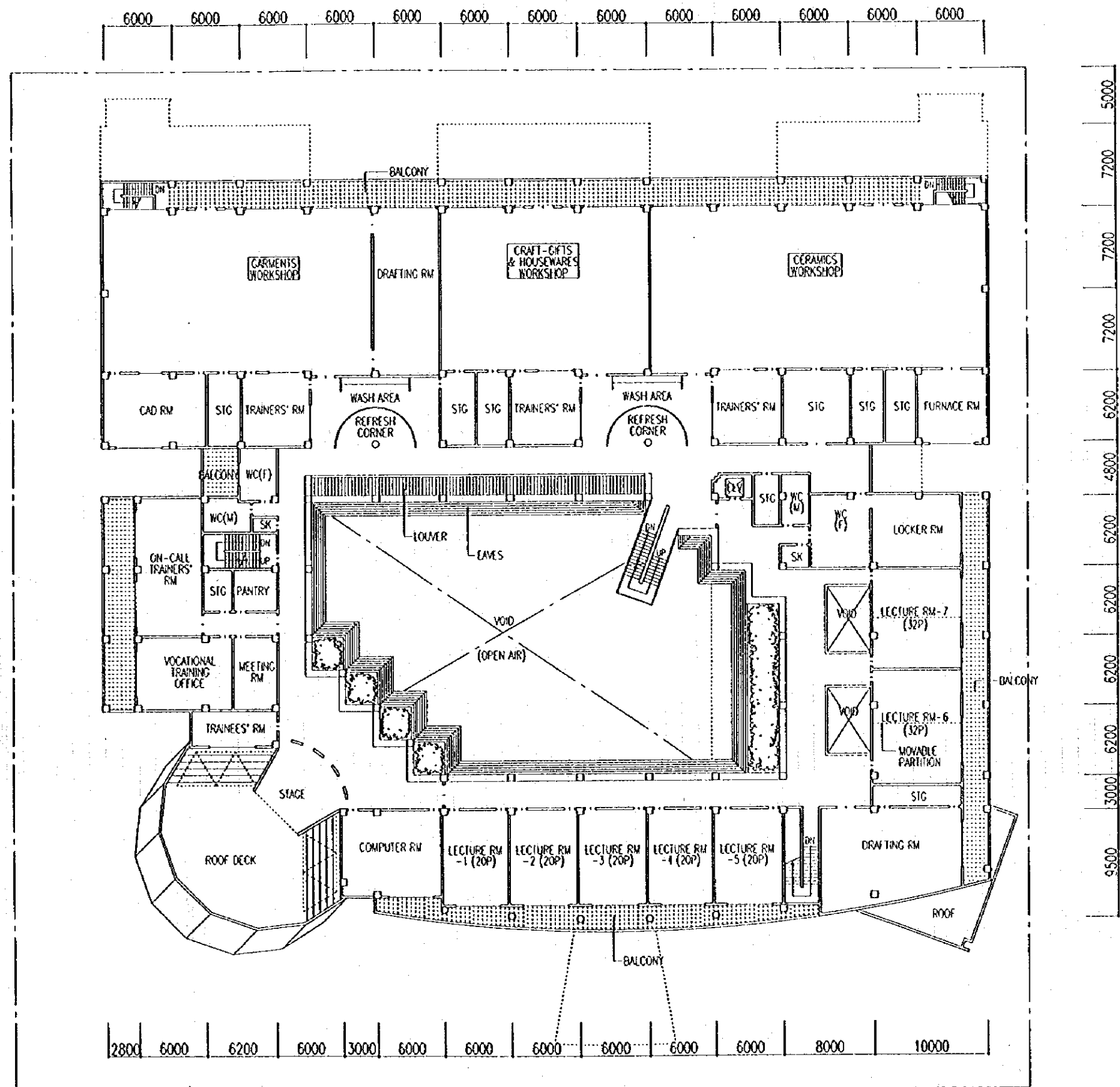
MAIN BUILDING
GROUND FLOOR PLAN

1:400



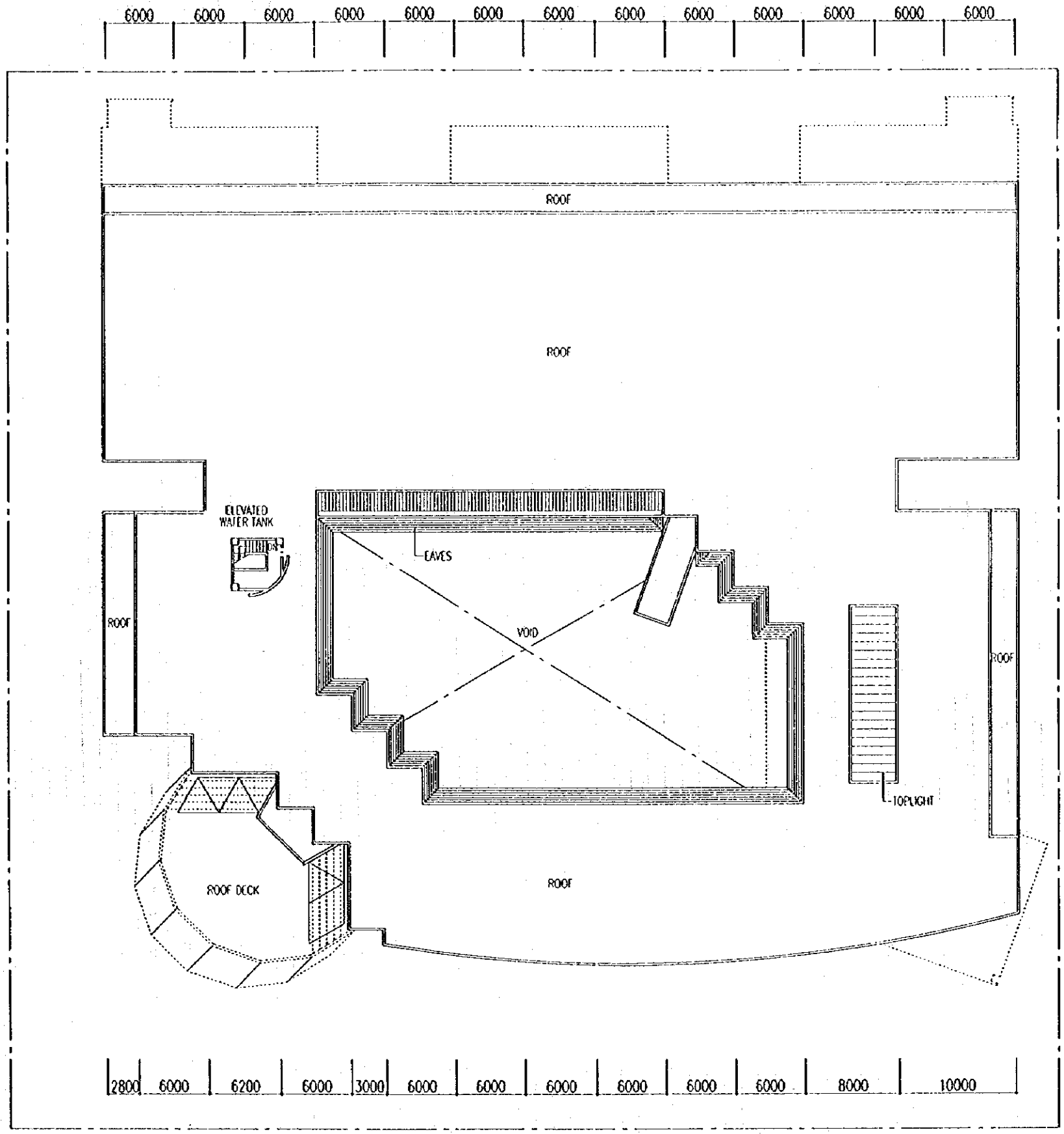
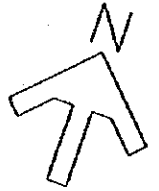
MAIN BUILDING
SECOND FLOOR PLAN

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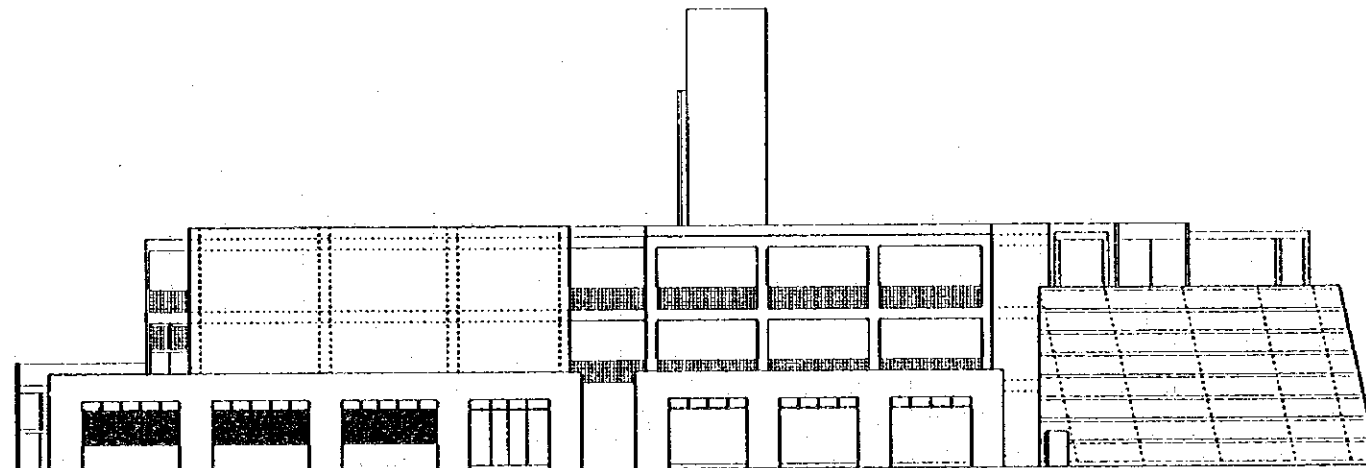
MAIN BUILDING
THIRD FLOOR PLAN

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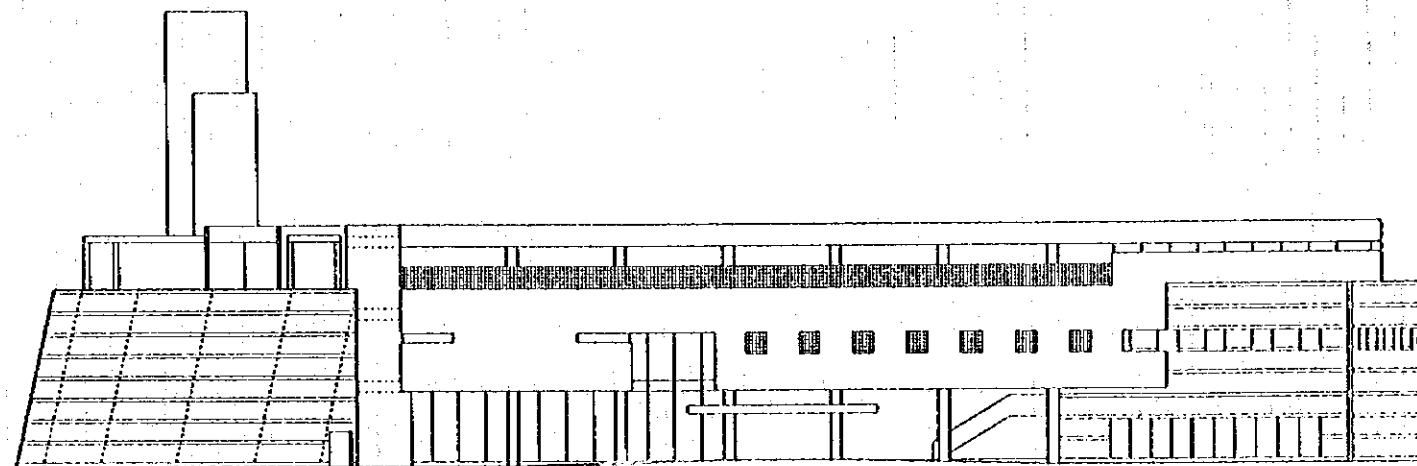


MAIN BUILDING
ROOF PLAN

1:400



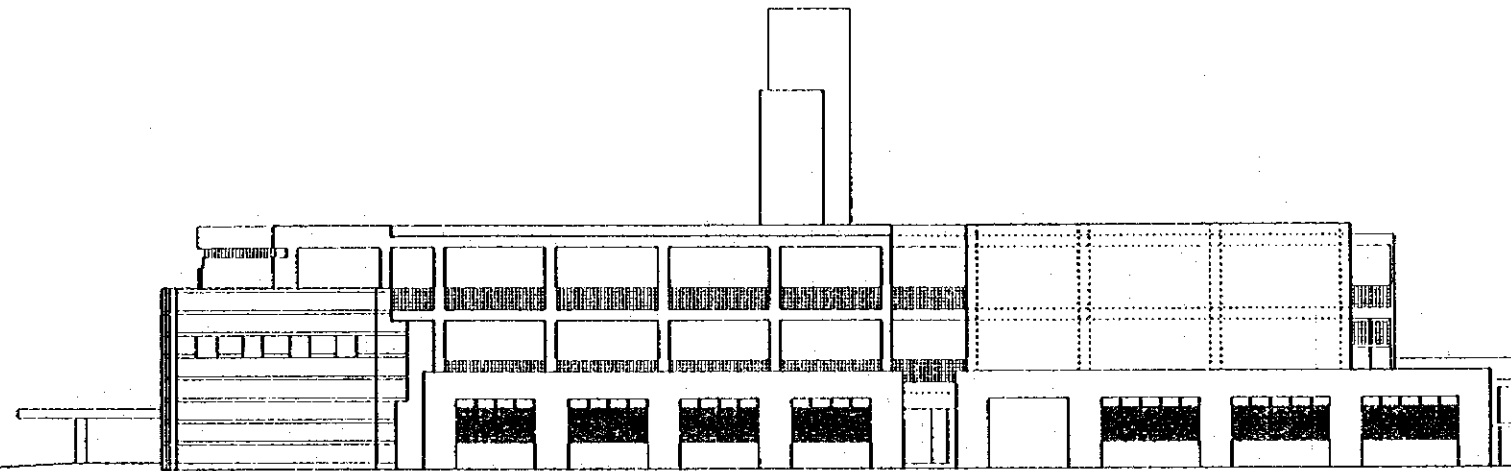
WEST ELEVATION



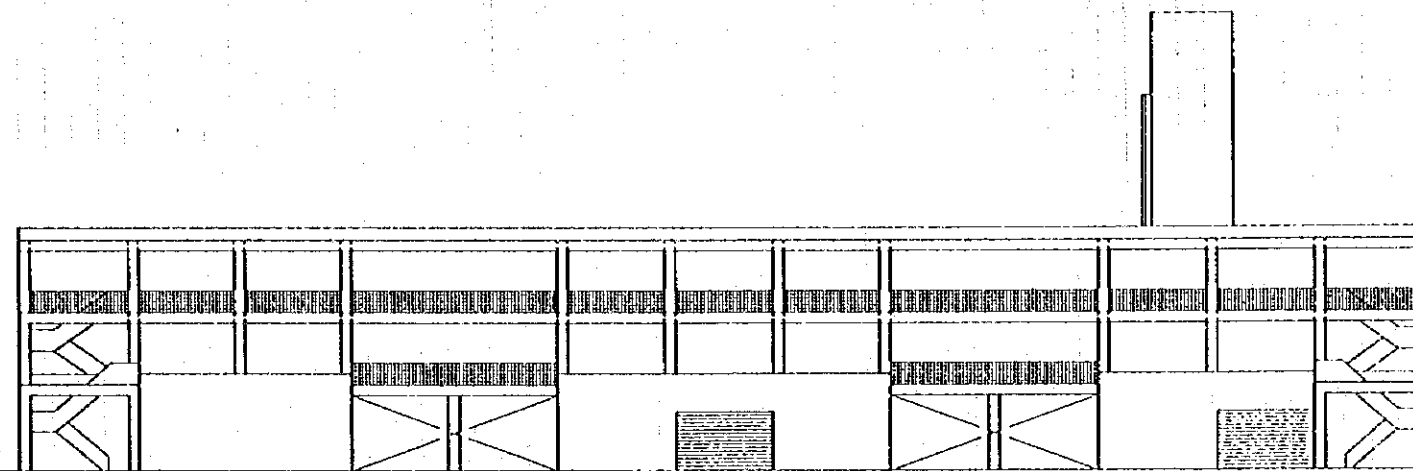
SOUTH ELEVATION

MAIN BUILDING
ELEVATION-1

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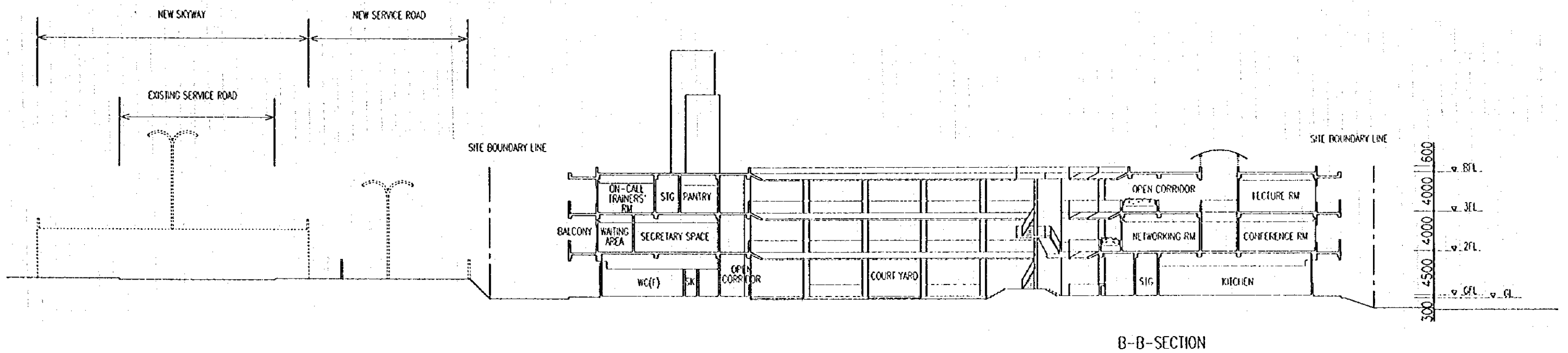
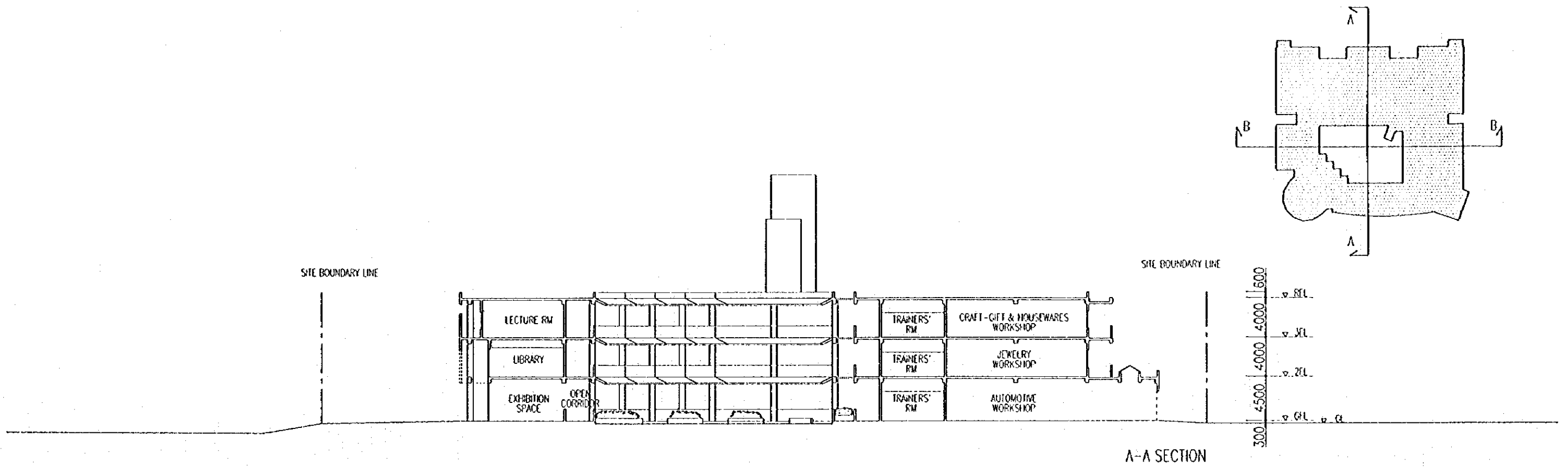
EAST ELEVATION



NORTH ELEVATION

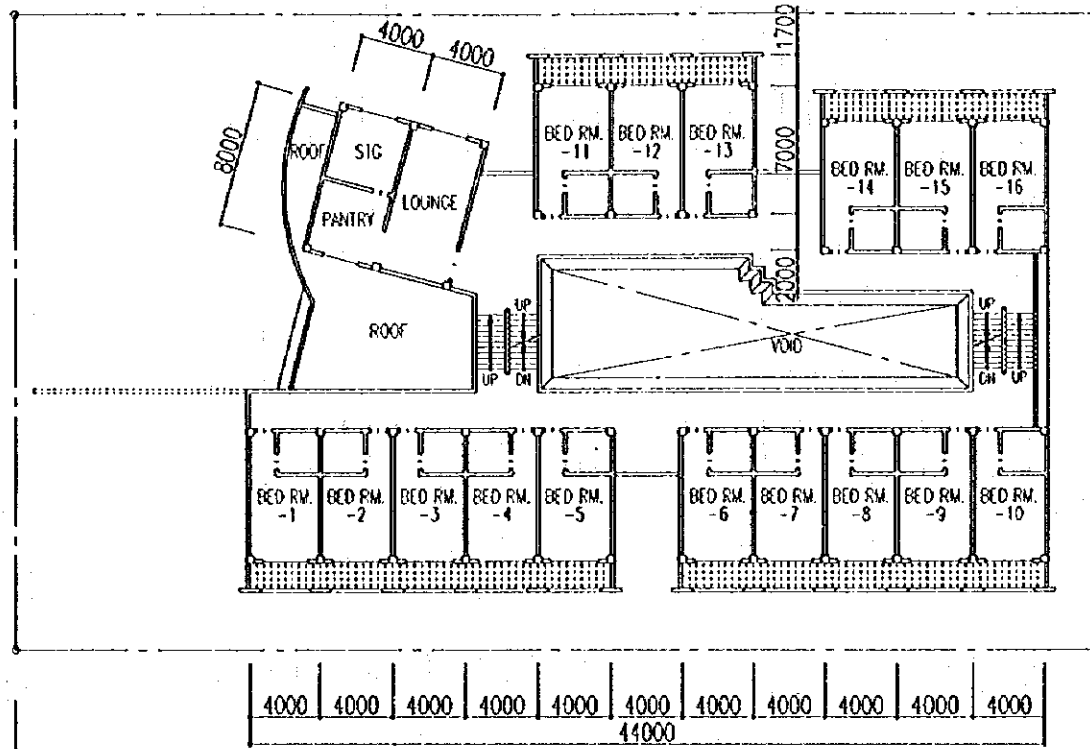
MAIN BUILDING
ELEVATION-2

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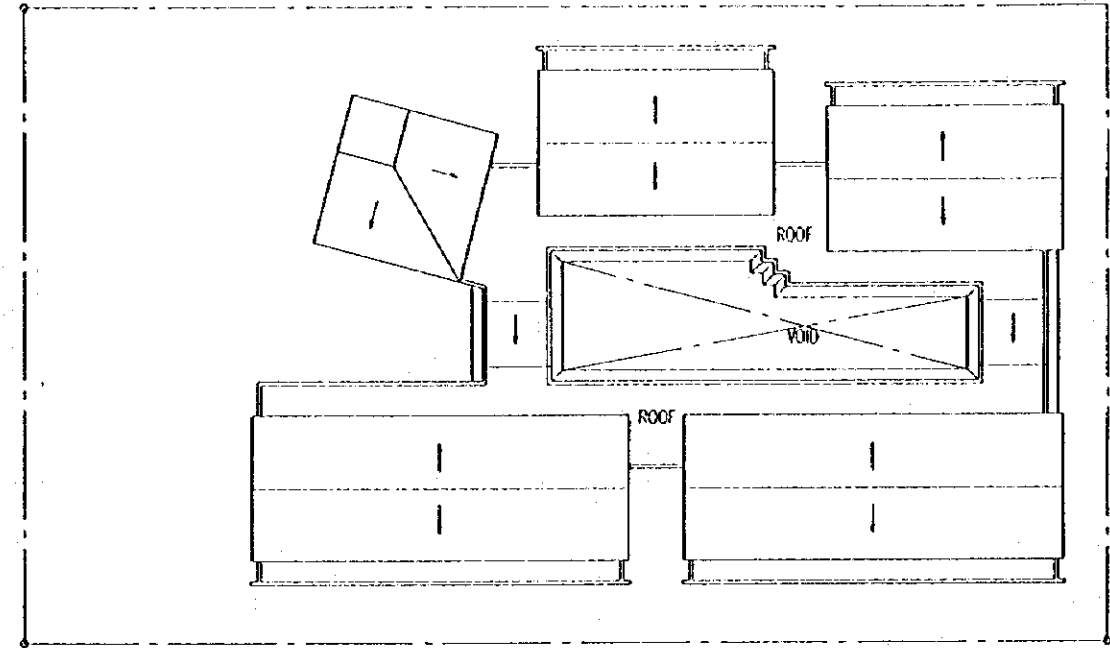


MAIN BUILDING SECTION

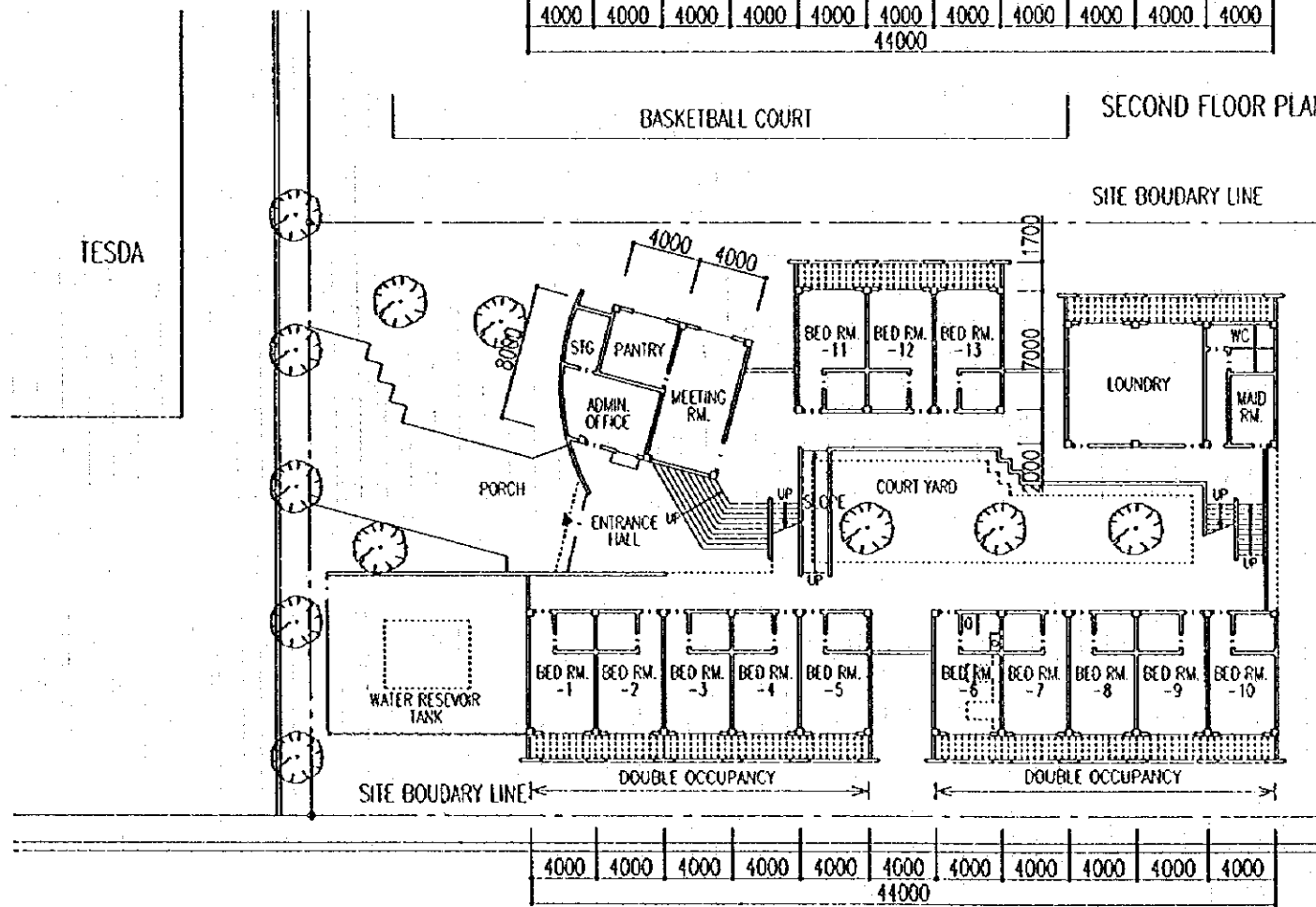
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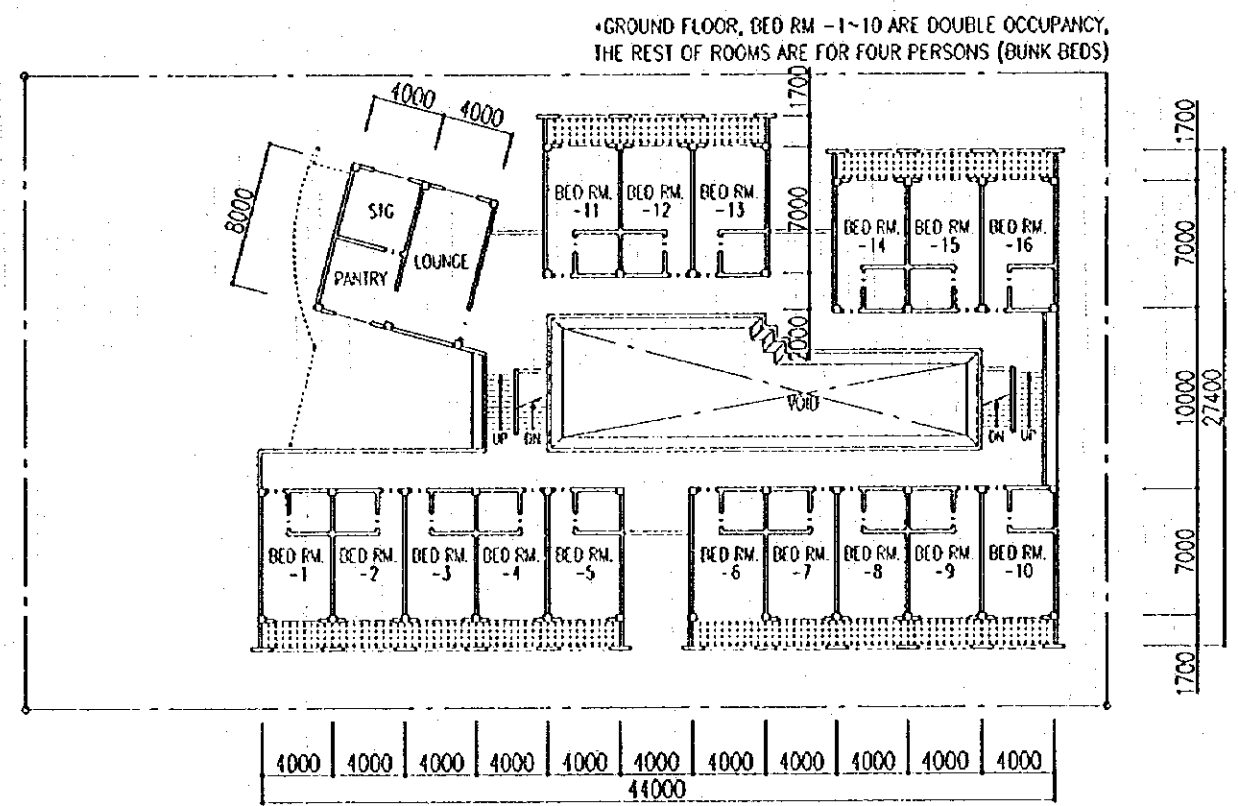
SECOND FLOOR PLAN



ROOF PLAN



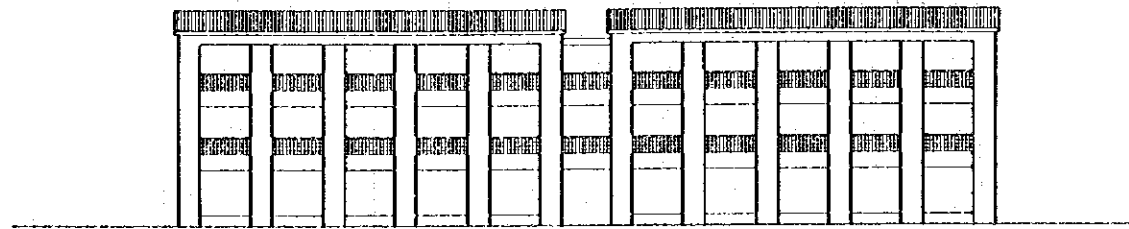
GROUND FLOOR PLAN



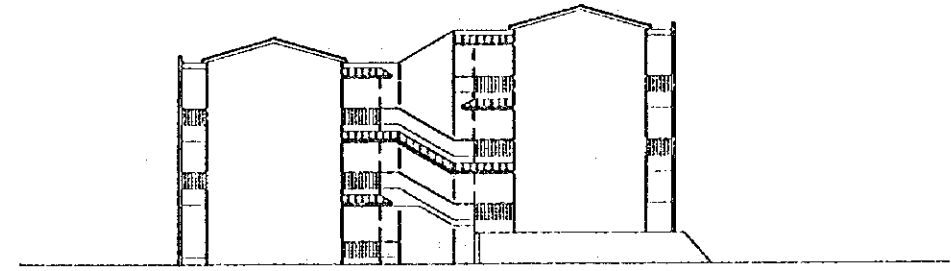
THIRD FLOOR PLAN

DORMITORY FLOOR PLAN

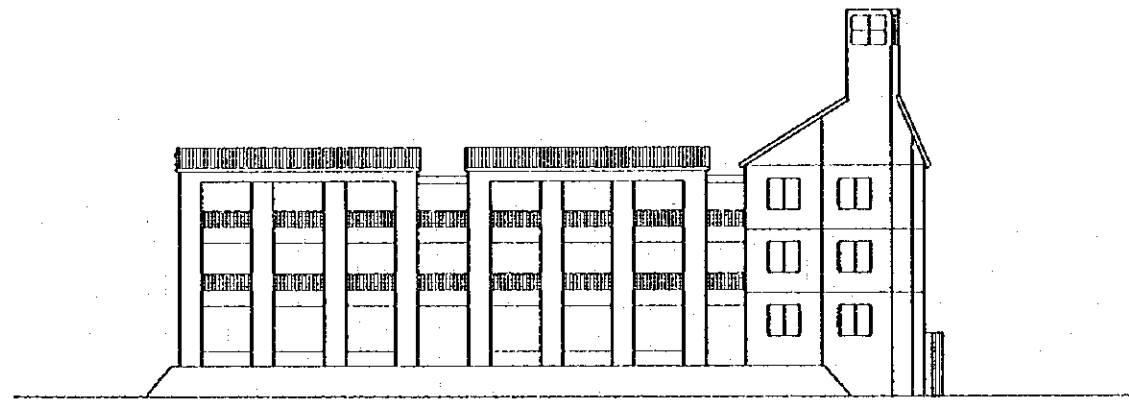
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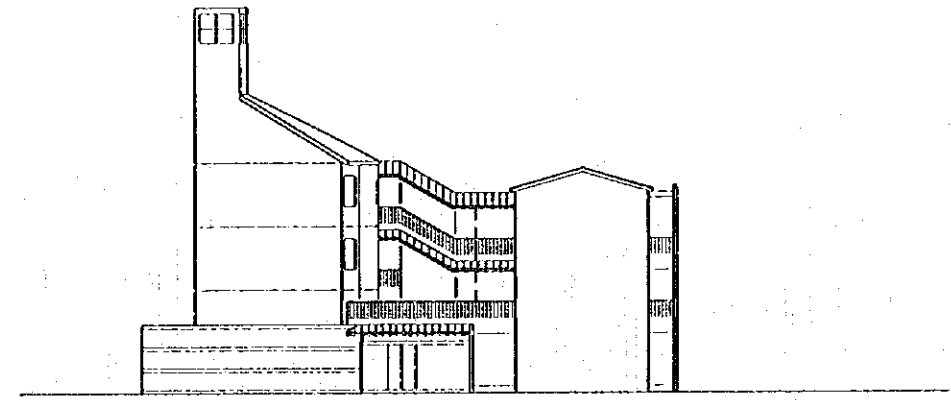
NORTH ELEVATION



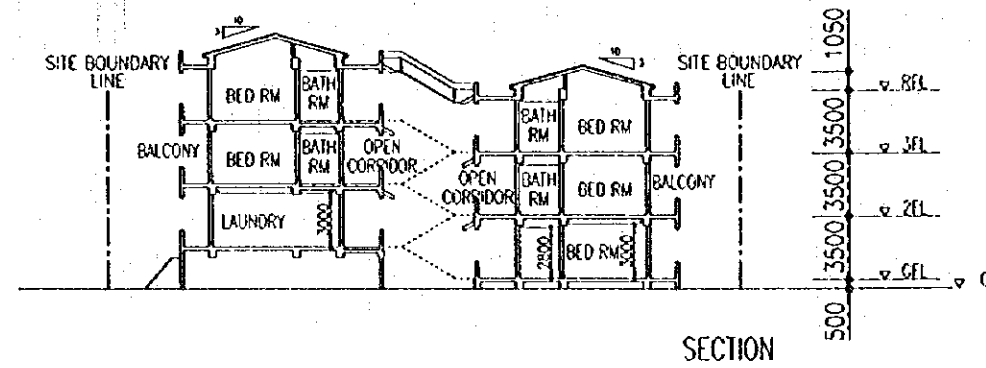
EAST ELEVATION



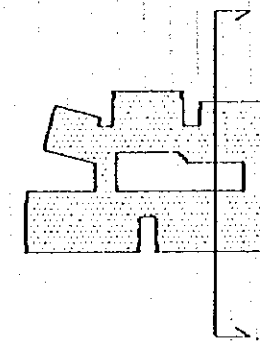
SOUTH ELEVATION



WEST ELEVATION

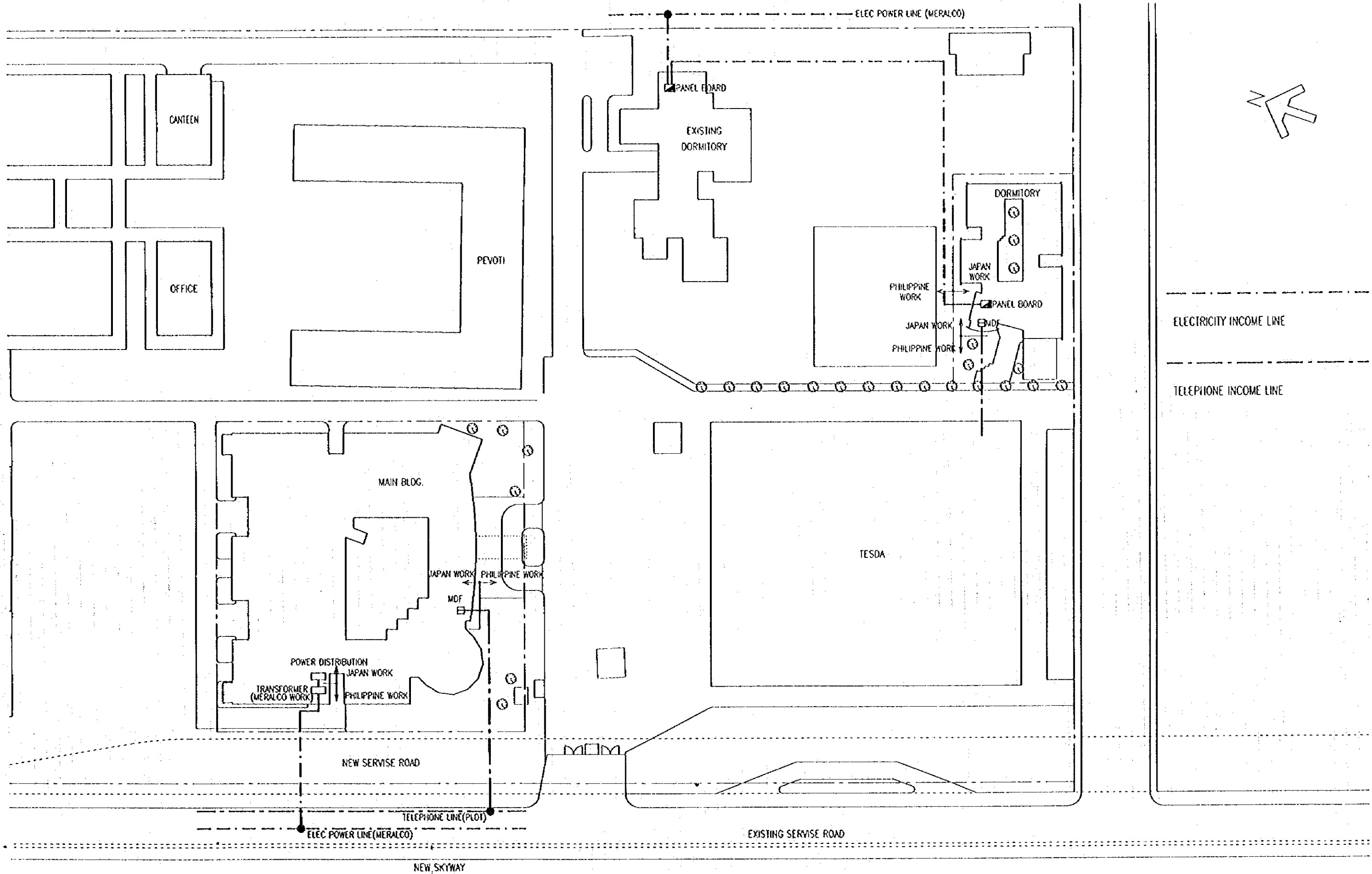


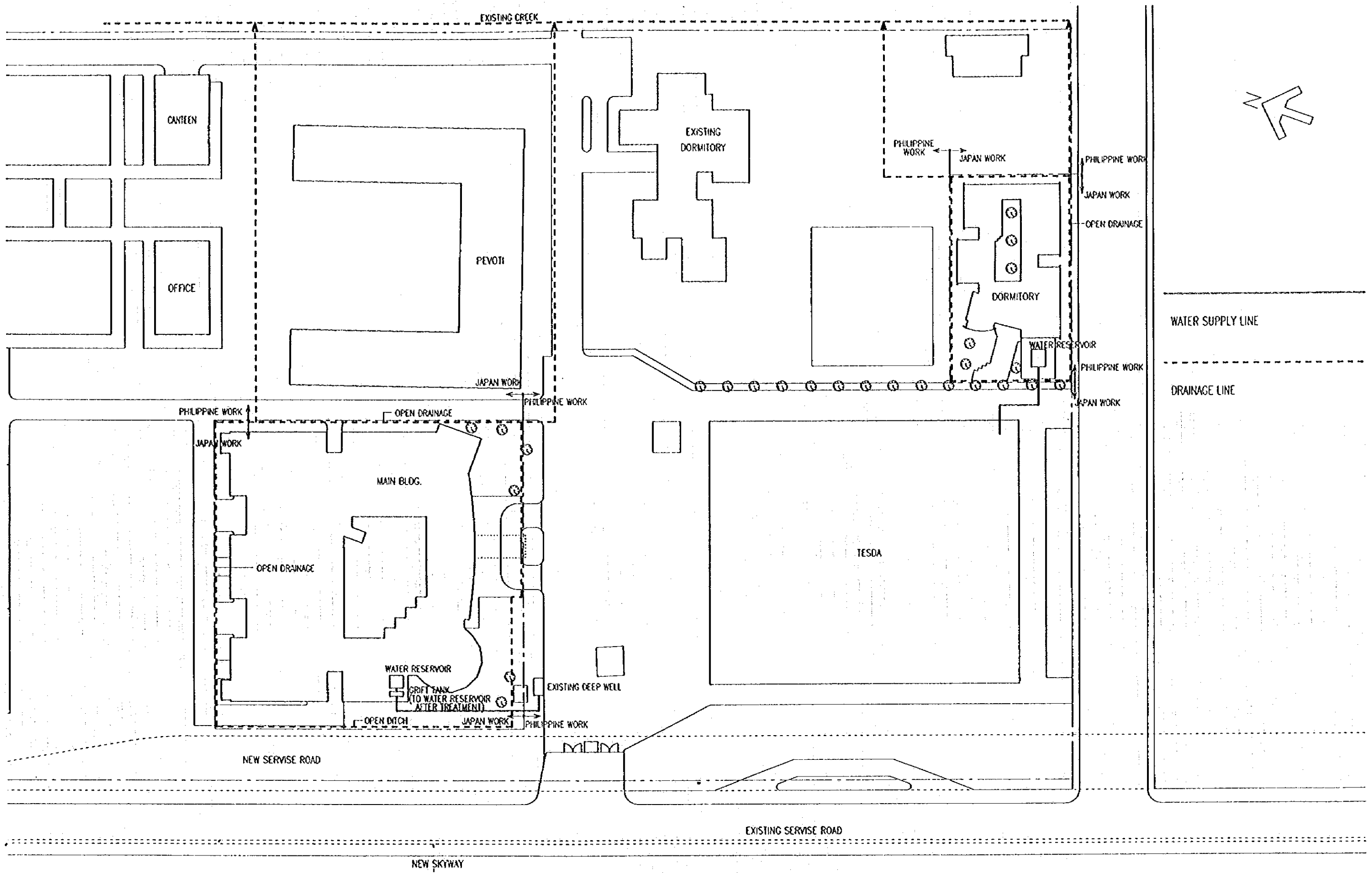
SECTION

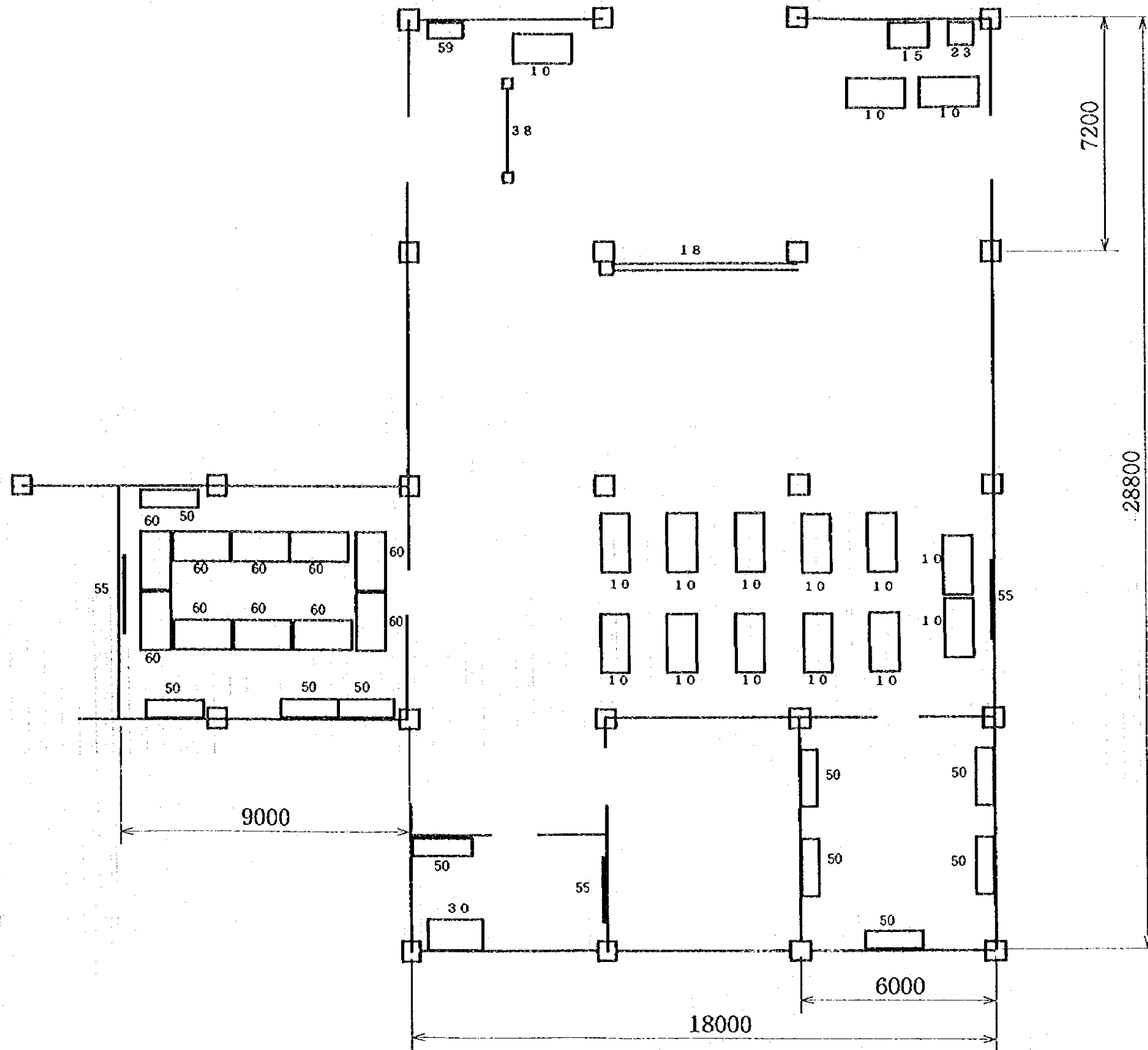


DORMITRY
ELEVATION & SECTION

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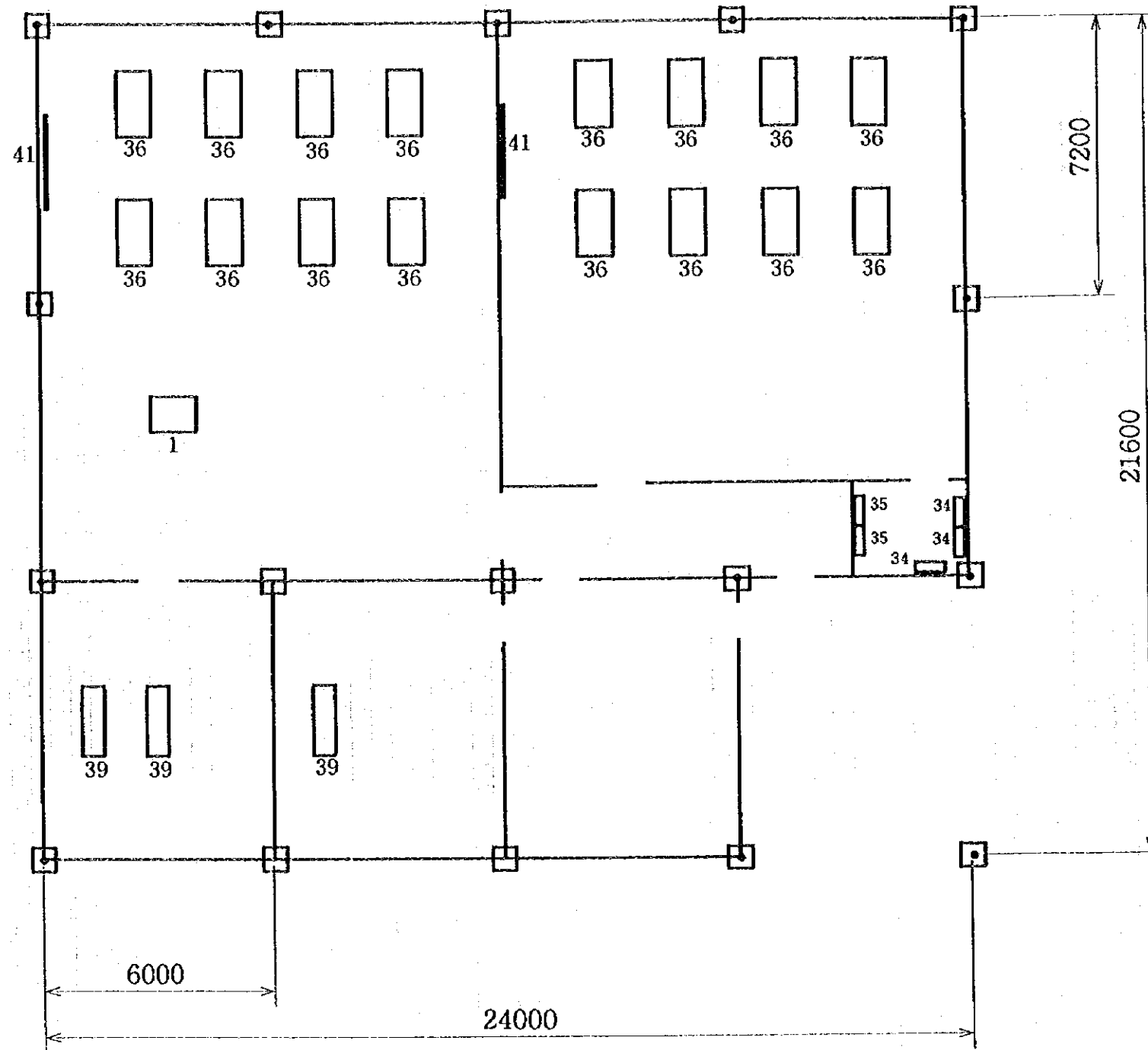






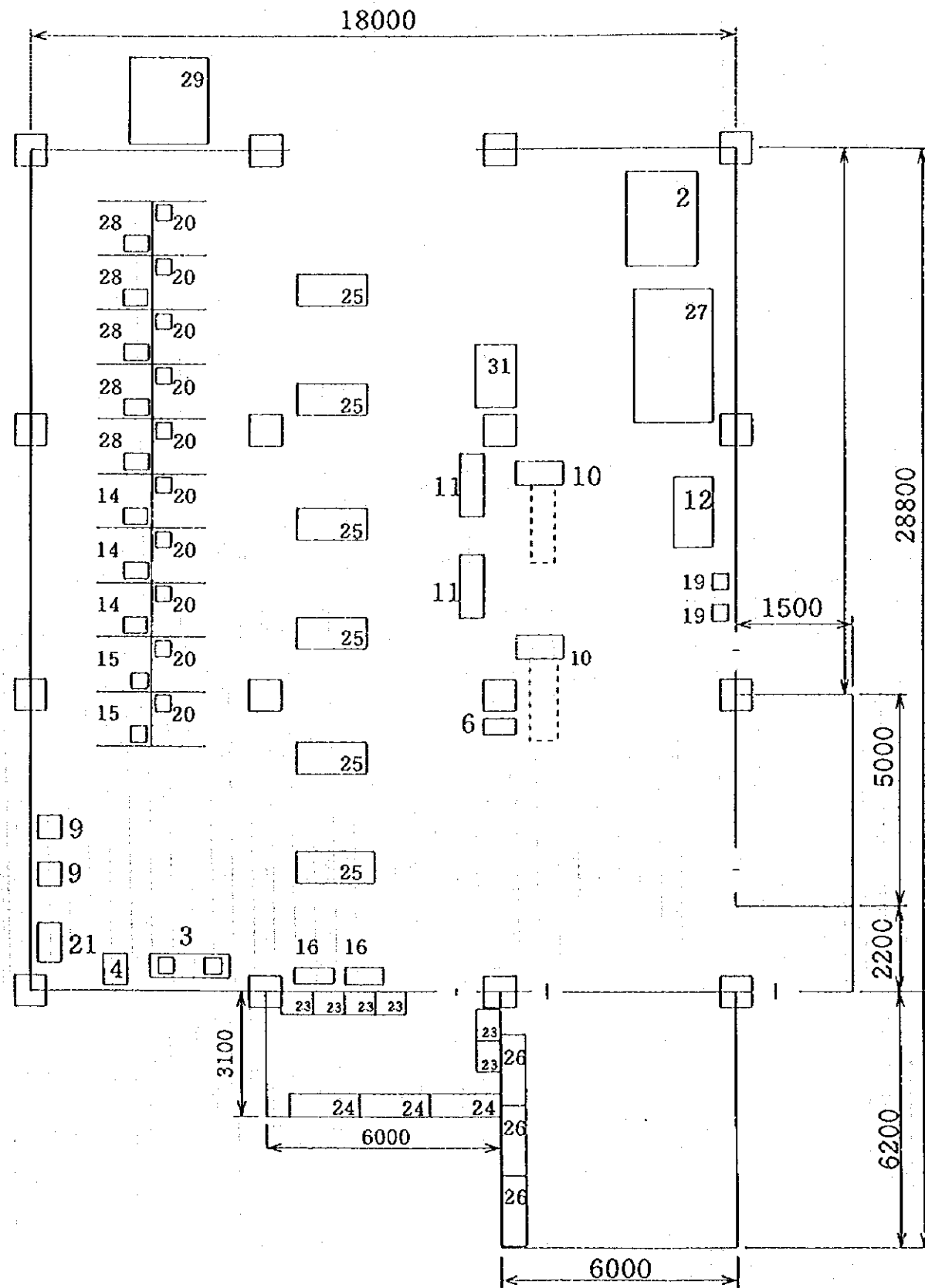
AUTOMOTIVE

Equipment No.	Equipment Items
10	Working Bench
15	Parts Washing Stand
18	Headlight Tester
23	Hydraulic Press
30	Injection pump Tester
38	Twin Pole Car lift
50	Panel Type Shelves
55	White Board for Wall
59	Air Compressor
60	Desk for Trainee



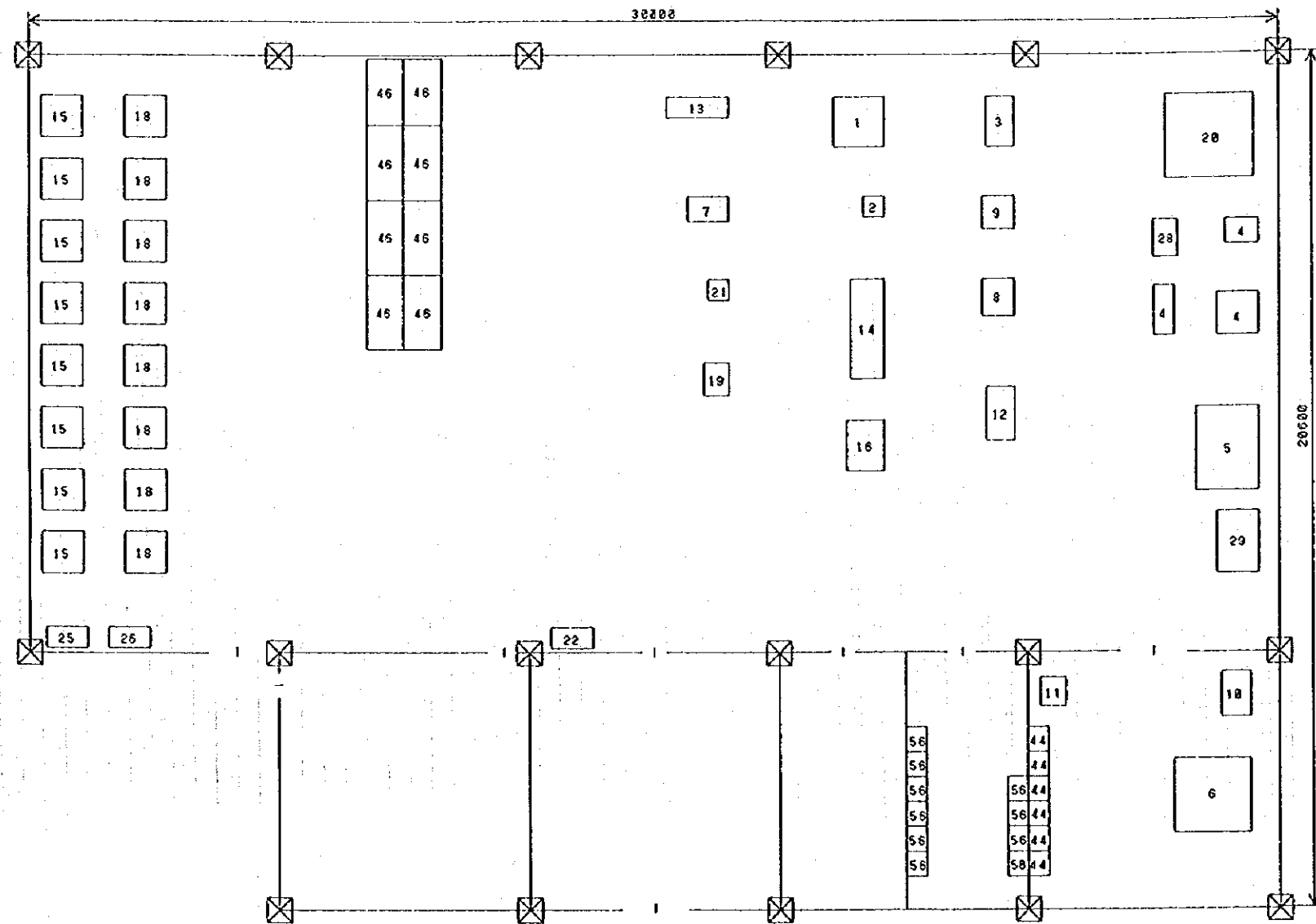
ELECTRONICS

Equipment No.	Equipment Items
1	Industrial Electronics Training System Package
34	Parts Cabinet
35	Tool Cabinet
36	Working Table
39	Rack (for Tools and Apparatus
41	White Board (Wall-mount, Middle)



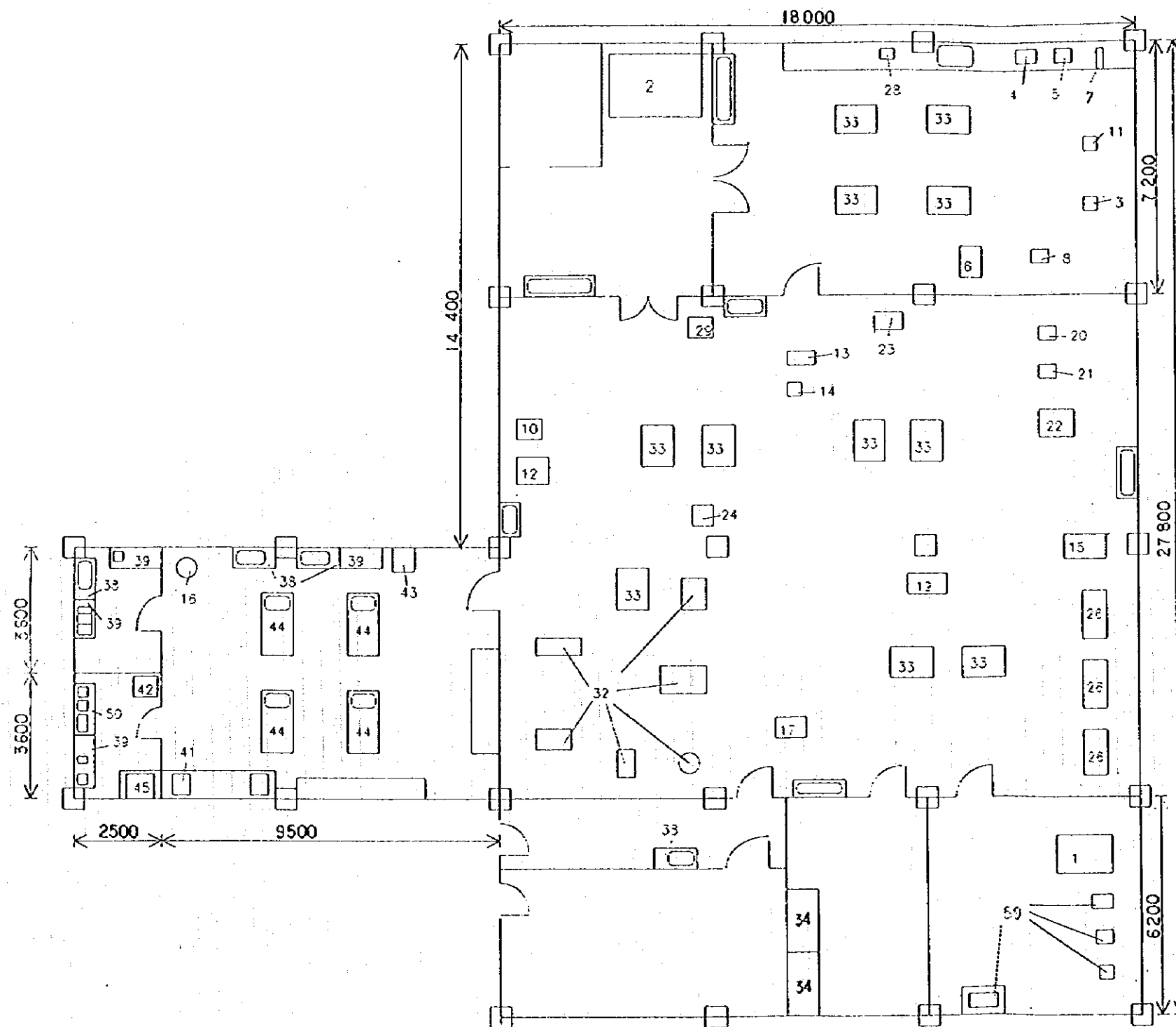
METAL (WELDING)

Equipment No.	Equipment Items
2	Shearing Machine
3	Bench Drilling Machine
4	Upright Drilling Machine
6	Electrode Oven
9	Bench Grinder with Dust Collector
10	Power Hacksaw
11	Automatic Gas Cutting Machine
12	Shaper
14	Tig Welder
15	Mig Welder
16	Bending Tester
19	Air Plasma Cutting Machine
20	Electric Arc Welding Machine
21	Air compressor
23	Middle weight Cabinet
24	Middle Weight Shelf
25	Work Bench
26	Cabinet Set
27	Groove Making Machine
28	CO ₂ Gas Shielded Semi-Automatic Arc Welder
29	Welding Fume Collecting System
30	Surface Plate for Metal Work with Table



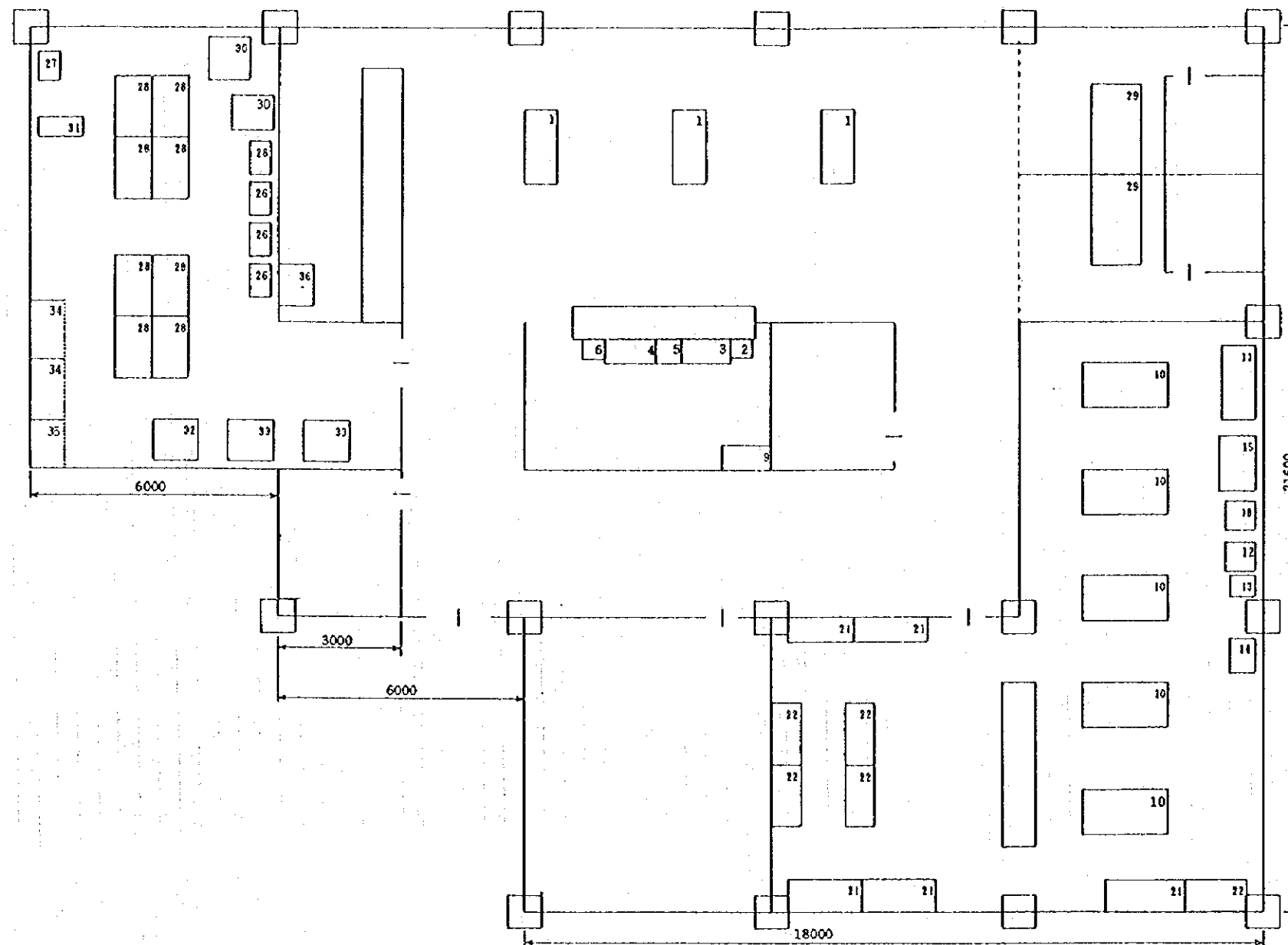
CERAMICS

Equipment No.	Equipment Items
1	Vibration Sieve
2	Magnetic Ferro Filter
3	Ball Mill
4	De-Airing Sold Casting System
5	Proctor System Mangle Type Dryer
6	Gas Type Furnace
7	Vacuum Agitator for Plaster of Paris
8	Stampable Mill
9	Edge Runner Mill
10	Crucible Furnace
11	Laboratory Furnace
12	Rolling Machine
13	De-Airing Machine
14	Filter Press
15	Electric Potter's Wheel
16	Machine Jigger
18	Foot Pedal Type Potter's Wheel
19	Glaze Wiping Machine
20	Glaze Dust Collector Machine
21	Glaze Grinding Blunger
22	Pot Mill
25	Pedestal Type Grinder with Dust Collector
26	Fret Saw
28	Air Compressor
29	Thermal Generator
44	Cabinets for Drying
46	Working Table
56	Tool Cabinets



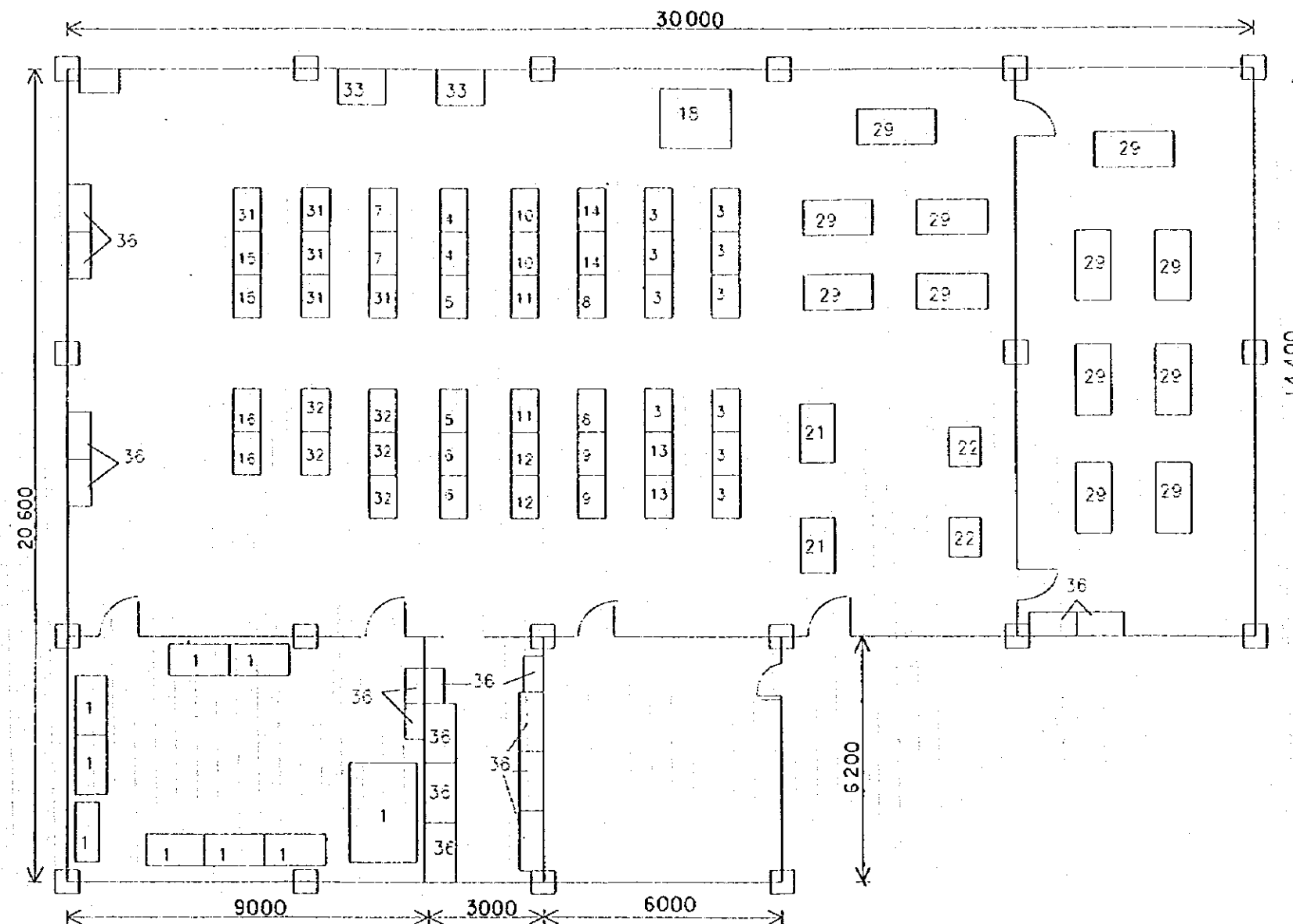
AGRO-PROCESSING

Equipment No.	Equipment Items
1	Boiler
2	Refrigerator / Freezer
3	Silent Cutter
4	Dicer
5	Slicer
6	Homogenizer
7	Meat Chopper
8	Stuffer
10	Dry Oven / Smoke House
11	Meat Mixer
12	Boiler
13	Automatic Filler
14	Filler
15	Pressure Process Retort
16	Pressure Process Vertical Retort
17	Crusher
19	Vacuum Floor Mixer
20	Semi Automatic Home Seamer
21	Semi Automatic Vacuum Seamer
22	Semitro Seamer
23	exhaust Box
24	Semi Automatic Capper
26	Steam Jacketed Kettle
28	Ice Maker
29	Vacuum Packaging Machine
32	Juice Making Equipment
33	Working Table
34	Steel Rack
38	Sink / Table
39	Laboratory Table
41	Electric Drying Oven
42	Electric Low Temperature Incubator
43	Refrigerator
44	Working Table for Trainees
45	Clean Bench
50	Nitrogen Determination System
59	Supporting Equipment for Boiler



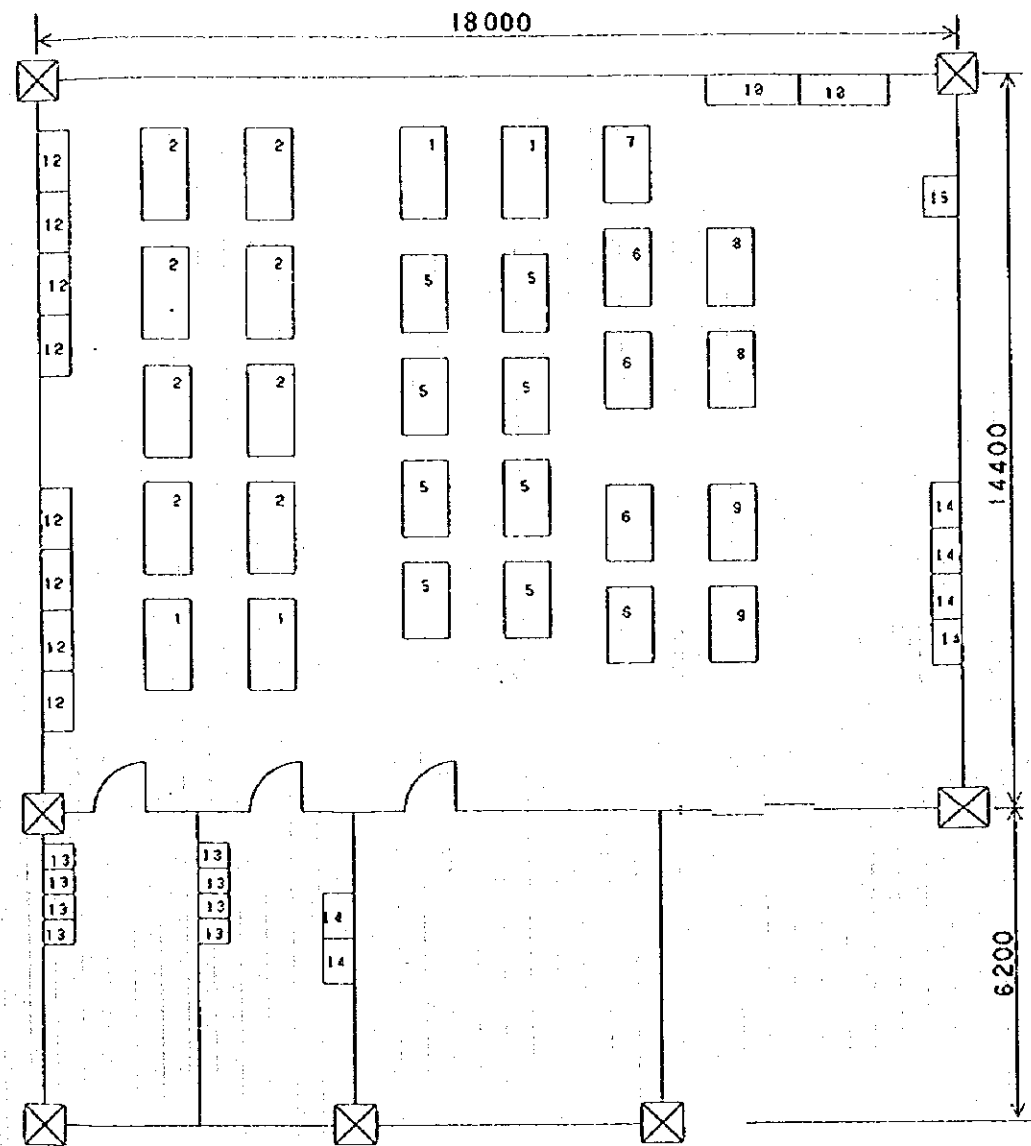
HOTEL & RESTAURANT

Equipment No.	Equipment Items
1	Dining Table with Chair
2	Ice Maker
3	Refrigerator
4	Work Table
5	Sink
6	Freezer
9	Cup Board for Bar Counter
10	Cooking Table
11	Refrigerator with Deep Freezer
12	Pasta Cooker
13	Fryer
14	Gas Griddle
15	Electric Oven
18	Gas Type Rice Cooker
21	Cup Board
22	Pan Rack
26	Electric Washing Machine & Dryer
27	Air Compressor
28	Stainless Working Table
29	Single Bed for Training Use
30	Hot Dry Cleaning Machine
31	Panis Topper
32	Press Topper
33	Universal Pressing Machine
34	Steel Shelf
35	Steel Shelf
36	Personal Computer Set



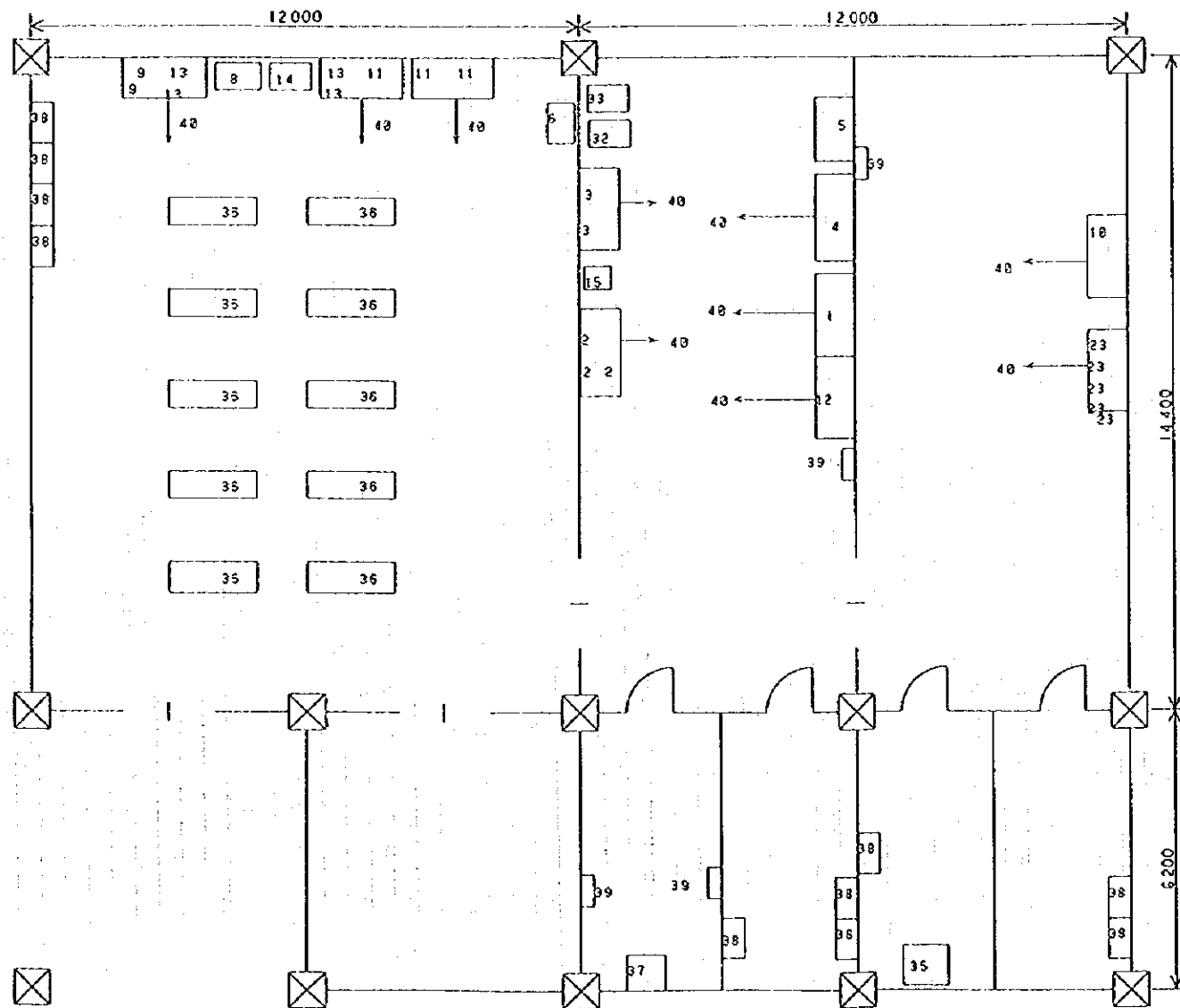
GARMENTS

Equipment No.	Equipment Items
1	Total Apparel Computer System Package
3	Lockstitch Machine
4	Button Sewing Machine
5	Button Holing Machine
6	Single-Thread Chainstitch Blindstitcher
7	Cylinder-Bed Lockstitch Bar Tacking Machine
8	1-Needle Bottom & Variable Top Feed Lockstitch Machine
9	1-Needle Differential Feed Lockstitch Machine
10	1-Needle 3-Thread Overlock Machine
11	2-Needles 4-Thread Overlock Machine
12	2-Needles 5-Thread Safety Stitch Machine
13	2-Needles Double Chainstitch Machine
14	3-Needles Double Chainstitch Machine
15	2-Needles Lockstitch Machine
16	Lockstitch Machine with Edge Trimmer
18	Band Knife
21	Under Press
22	Finish Up Press
29	Work Bench
31	1-Needle, Embroidering Sewing Machine
32	1-Needle, Zigzag and Embroidering Sewing Machine
33	Electronic Embroidering Sewing Machine
36	Tools Storage



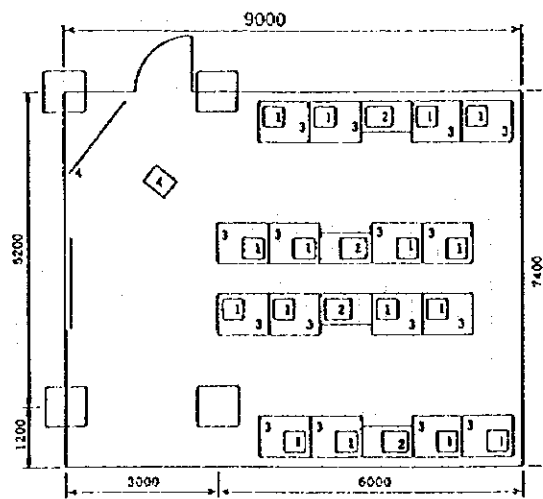
CRAFT - GIFT & HOUSEWARES

Equipment No.	Equipment Items
1	Work Bench
2	Work Bench for Hand Sewing
5	Lockstitch Machine for Stuffed toy Making
6	Lockstitch Machine for Leather
7	Embroidering Sewing Machine
8	Lockstitch Bar Tacking Sewing Machine
9	2-Needles Double Chainstitch Sewing Machine
10	Stainless Sink for Dying
12	Tool Cabinet
13	Light Weight Cabinet
14	Cabinet for Material
15	Air Compressor with Accessories



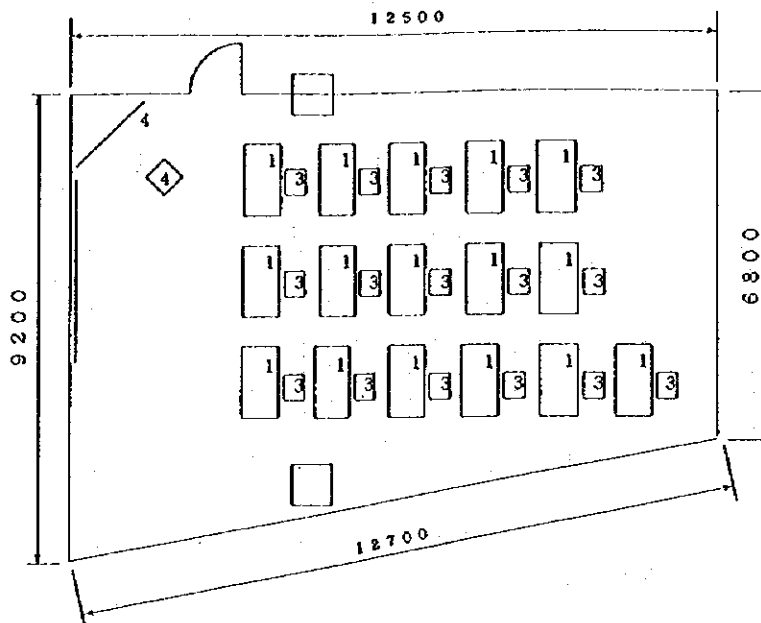
FINE JEWELRY

Equipment No.	Equipment Items
1	Wax Injector
2	Hydraulic Hot Press
3	Centrifugal Casting Machine
4	Small Electric Furnace
5	Casting Machine
6	Buffing Fin by Filter
8	Barrel Polishing Machine
9	Grinder for Cutting Tool
10	Ultrasonic Cleaner
11	Blast Cleaning Machine
12	Electric Polishing Machine
13	Surface Grinder
14	Mixer
15	Rolling Machine
23	Galvanizing Machine
32	Air Compressor
33	Air tank
35	Plant for Waste Disposal
36	Working Bench (Desk)
37	Fire Proof Safe
38	Tool Box
39	Spare Parts Locker
40	Working Bench



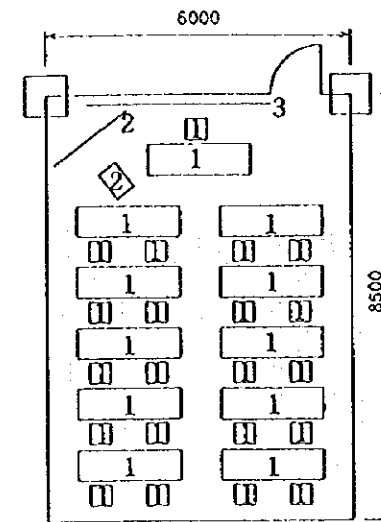
PERSONAL COMPUTER ROOM

Equipment No.	Equipment Items
1	Personal Computer
2	Printer
4	Table & Chair
6	OHP Set



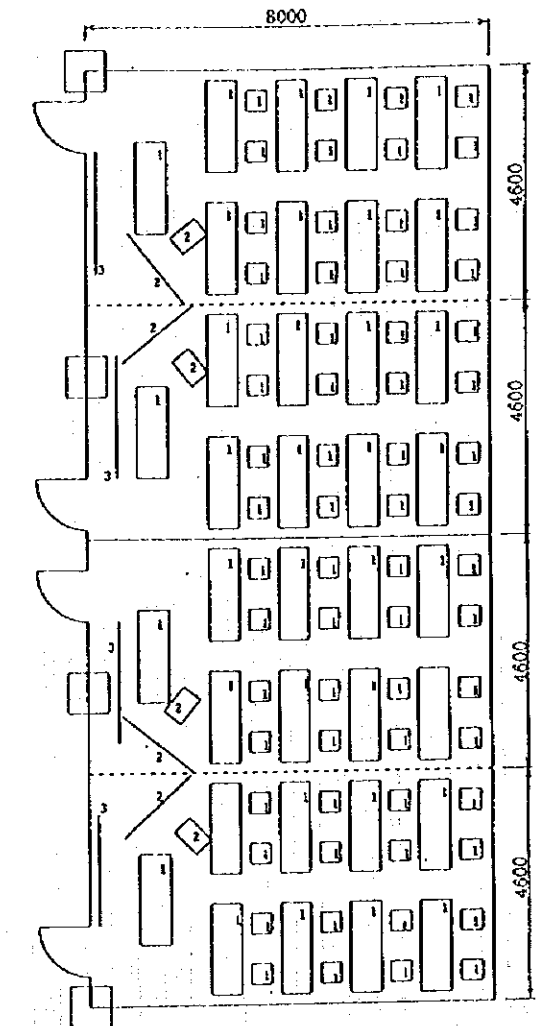
DRAWING ROOM

Equipment No.	Equipment Items
1	Drawing Equipment
3	Chair
4	OHP Set



LECTURE ROOM #1 ~ #5

Equipment No.	Equipment Items
1	Meeting Table & Chair
2	OHP Set
3	White Board



LECTURE ROOM #6 ~ #7

Equipment No.	Equipment Items
1	Table & Chair
2	OHP Set
3	White Board

LIST OF MACHINERY & EQUIPMENT

COURSE : AUTOMOTIVE

No.	ITEM	SPECIFICATION	QTY	APPLICATION
1	Automotive Educational Training Kit	Simulation System	1	Basic autoronics work
2	Injection System	Single & Multi point injection Sys.	1Set	ditto
3	Electronically controlled Diesel Fuel Supply System	Educational Training Module	1	ditto
4	ABS System	Anti lock braking system module	1	ditto
5	Electronically Controlled Suspension System	Training system module	1	ditto
6	Cut-away Model	Engine, Starter, Alternator etc.	1Set	Mechanical fundamentals
7	Engine Distributor Unit	Gasoline and diesel	5Set each	Engine fundamentals
8	Cut-away Model	Transmission etc.	1Set	Equipment fundamentals
9	Lighting System	Assembling system panel	1	Basic automotive electricity work
10	Working Bench	W1800×D800×H740 mm	15	All work
11	Vise	125mm, 26Kg	10	ditto
12	Multi Scope Analyzer	Rotation, Timing, Pressure etc.	2	Adjustment work
13	Engine Analyzer	Waveform measuring etc.	2	ditto
14	Diesel Analyzer	Diesel Timing Tachotester	2	ditto
15	Parts Washing stand	Capacity of pump 14 L/min	1	Disassemble work
16	Gauge manifold, Hose, Vacuum pump	Air conditioner service set	2	Adjustment work
17	Air Gun	For blowing	4	All work
18	Headlight Tester	Converging type	1	Adjustment work
19	Electric, Electronic training Device	Circuit training board	1Set	Basic electric work, control work
20	Automotive Electric Tester	Digital multi-meter etc.	1Set	Measurement work
21	Automotive Electric, Electronic System	Electric module	1Set	Basic automotive electricity work
22	Auto Emission Control	CO: 0~10.00vol% HC: 0~10,000ppm	1	Measurement work
23	Hydraulic Press	Capacity 5 ton	1	All work
24	Valve Seat Grinder	Valve stem $\Phi 6 \sim 10$ mm	1	Basic work
25	Valve Refacer	Chuck $\Phi 6 \sim 15$ mm	1	Basic work
26	Sound Scope	Checking sound	2	Measurement work
27	Decibel Meter	30~130dB	1	ditto
28	Measuring Instruments	Micrometer, Caliper etc.	1Set	ditto
29	Universal Electrical Test Bench	AC220V	1Set	ditto
30	Injection pump tester	6.5m · kg/550rpm	1	Adjustment work
31	Electrical Drill Press	With table	1	Basic work
32	Tool	Wrench set etc.	1Set	All work
33	Mechanical Creeper	With caster	5	ditto
34	Tool for Piston	Piston Ring Compressor etc.	1Set	Basic work
35	Valve Spring Compressor	OHC, DOHC, OHV	5	ditto
36	Straight Drill Set	Various kinds	10	ditto
37	ToolSet for Injection Pump	In-line, Rotary, Stand	5Set each	ditto

No.	ITEM	SPECIFICATION	QTY	APPLICATION
38	Twin Pole Car Lift	2.5ton	1	All work
39	Steam Cleaner	Capacity of flowing 600 L/h	1	Washing work
40	Engine Oil Pressure Gauge	Max pressure 7 kgf/cm	1Set	Basic work
41	Oil Bucket Pump	Capacity 20 L	1	ditto
42	Chassis Lubricator	Capacity of flowing 350 g/min	1	ditto
43	Small Type Engine Lathe Machine	Main shaft 300~1200rpm	1	ditto
44	Air Reel	Length 10m	8	All work
45	Universal Bearing Puller Set	With movable wheel	2	Basic work
46	Mechanic Desk set	With box	5	All work
47	Ignition Wrench set	Spanner, wrench etc.	5	Engine basic work
48	Extension Electric Cord Reel	Length 10m	10	All work
49	Vacuum Pump for A/C	Capacity 35 l/min	2	Basic work
50	Panel type Shelves	Steel sliding door	10	Store room
51	Tool set	Handy set for electric	28	All work
52	Steel Truck	300Kg	4	ditto
53	OHP	Machine and screen	1Set	Classroom
54	VHS Video deck	NTSC, with monitor TV	1Set	Making materials
55	Whiteboard	Big, Medium, with caster	1Set	Classroom
56	Chair for Trainee	W445×D455×H690~	30	ditto
57	Vacuum Tester	Portable Vacuum Pump	5	Measurement & inspection work
58	Fuel Injection System Trainer	L-JEIRO, D-JEIRO	2	Electronic control
59	Air Compressor	220V	1Set	All work
60	Desk for trainee	For 3 persons(W1800×D470×H700)	10	Classroom
61	Others		1Set	

COURSE : ELECTRONICS

NO.	ITEM	SPECIFICATION	QTY	APPLICATION
1	Industrial Electronics Training System Package	One Board Computer, Instrumentation and Control Training System, I/O Interface Board, FA Model, PLC, Personal Computer etc.	1Set	Electronic Control
2	Function Generator	Frequency Range 0.2Hz~2MHz	5	Measurement Work
3	Power Supply DC	Output Voltage Range 0~±18V	10	All Work
4	Variac	Input 220~230V, Output 0~260V	5	Measurement Work
5	Portable DC Ammeter/Volt Meter	Maximum scale 1/3/10/30 A, 3/10/30/100V	10	ditto
6	Portable AC Ammeter/Volt Meter	Maximum scale 5/25 A, 150/300V	10	ditto
7	Oscilloscope	100MHz, 4Trace, 20MHz, 2Ch	6	ditto
8	Digital Multimeter	DCV 100μV ~ 1000V	5	ditto
9	Electronic Tool Kit	Soldering Iron, Plier etc. 20 kinds with Box	10	All Work
10	Metal Work Tool Kit	Driver, Spanner etc. with Box	5	Basic Bench Work

NO.	ITEM	SPECIFICATION	QTY	APPLICATION
11	Hand Cutter	Cutting Dim. 200mm	1	Basic Circuit Asm
12	Bench Type Drilling Machine	Max Drill Diameter 13mm	1	Basic Bench Work
13	Soldering Station	With Automatic Temperature Control	10	Basic Circuit Asm
14	Desoldering Station	AC 220V 60 Hz	2	Basic Circuit Asm
15	Demagnetizer	AC220V, 1ph, 5W	2	Repairing & Adjust
16	AM-FM Signal Generator	Test range 10kHz~1GHzAM-FM	4	ditto
17	Color Pattern Generator	NTSC	5	ditto
18	AM/FM Sweep Generator	Frequency Range 70KHz~300MHz	5	ditto
19	Radio	Portable type	4	ditto
20	Stereo component	Output power 20W	1	ditto
21	High Voltage Tester	0~40KV	2	ditto
22	Color TV Trainer	NTSC	2	ditto
23	Electronic Circuit Trainer	Panel, AC220V	5	Basic Circuit Asm
24	FM Receive Circuit Trainer	Panel, AC220V	3	Repairing & Adjust
25	Test Board	264×243mm 3,260 Points With Power	10	All Work
26	Operational Amplifier Circuit Trainer	W350×D83×H250	3	Basic Circuit Asm
27	Universal Counter	Frequency 5Hz~175MHz	5	Measurement Work
28	Logic Analyzer	TTL17ns	5	ditto
29	Logic Tester	DC ~ 50MHz	5	ditto
30	Voltage Stabilizer	Single Phase 3KVA	2	All Work
31	VTR & TV	NTSC AC 220V 60 Hz, TV 14ch	2	Repairing & Adjust
32	Video Laser Disc Unit	H12.7×W46.0×D41.4 cm	2	ditto
33	Video Camera	Handy type	2	ditto
34	Parts Cabinet	W735×D240×H1025	3	Store room
35	Tool Cabinet	W735×D240×H1025	2	ditto
36	Working Table	H740×W1700×D900	16	Classroom
37	OHP	Projector, screen, table	2Set	Classroom
38	Chair	W400×D380×H410~480	22	Classroom
39	Rack for Tools	H2400×W1800×D570 mm 5&6 shelves	3	Store room
40	Tool Wagon	W700×D400×H890mm	5	For carrying
41	White Board	W2400×H1200, W1800×H900	3	For Classroom
42	Others		1Set	

COURSE : METAL

No.	ITEM	SPECIFICATION	QTY	APPLICATION
1	Anvil	75 kg	2	ARC Welding Work
2	Shearing Machine	Capacity; t=13mm, L=1240mm	1	ARC, CO ₂ , TIG, MIG
3	Bench Drilling Machine	Round table Drilling Capacity; 13mm	2	Basic Machine Operation Work
4	Upright Drilling Machine	Round table Drilling Capacity 23mm	1	ditto
5	Electric Drill	(1)Capacity; 6.5mm 2200 rpm (2)Capacity; 10.0mm 1250 rpm	4	ditto
6	Electrode Oven	Capacity; 50kg, Max Temp. =400°C	1	ARC Welding Work

No.	ITEM	SPECIFICATION	QTY	APPLICATION
7	Welding, Cutting & Heating Outfit Set	Torch, Mixer, Regulator, Tip Set, Twin Hose, Igniter, Wrench, Goggle	10 Sets	Gas Welding Work
8	Electric Disk Grinder	(1) ϕ 100mm, 12000 rpm (2) ϕ 125mm, 9000 rpm	10	Gas, ARC, CO ₂ , TIG
9	Bench Grinder with Dust Collector	Stone Size; ϕ 255 \times 25mm \times ϕ 19.05 with Dust Collector	5	MIG Work
10	Power Hack Saw	Capacity; ϕ =250mm	2	Gas, ARC, CO ₂ , TIG Basic Work
11	Automatic Gas Cutting Machine	LPG Type, Cutting Thickness; 3 ~ 150mm Cutting Speed; 100 ~ 1000mm/min.	2	Gas, ARC, CO ₂ Work
12	Shaper	Max Stroke; 450mm, 4 Speed	1	ARC, CO ₂ , TIG, MIG Work
13	Cutting Device For Pipe	LPG Gas Type,	2	ditto
14	TIG Welder	Rated Output; 300 A	3	TIG Work
15	MIG Welder	Rated Output; 350 A	2	MIG Work
16	Bending Tester	Capacity; Compressing 20 tons Tensile 10 tons Attachment for Testing	2	Gas, ARC, CO ₂ , TIG, MIG Work
17	Water Hydraulic Pressure Tester	Max Pressure; 300kgf/cm ² Stroke; 40mm	2	Gas, ARC, CO ₂ , TIG MIG Work
18	Parallel Table Vise	JIS B 4620, Round-Type, Opening 150mm	10	Gas, ARC, CO ₂ , TIG MIG, Basic Work
19	Air Plasma Cutting Machine	Output; 10~45A Capacity; 0.1mm to 19mm	2	TIG, MIG Work
20	Electric AC Arc Welder	Output; 300 A	10	ARC, TIG Welding Work
21	Air Compressor	Package type 3ph, 2.2Kw with Air Dryer	1	Air Plasma Cutting General Use
22	Pipe Bender	Capacity; SGP Pipe 3/4' ~ 2 1/2' Manual type	1	ARC, CO ₂ , MIG, TIG Work
23	Middle Weight Cabinet	Middle Weight Type; 792 \times 556 \times 1200mm (1) 8-Drawer Type (2) 7-Drawer Type (3) 6-Drawer Type	6 (2) (2) (2)	for Storage
24	Middle Weight Shelf	Capacity; 200kg/each Shelf, 5 Stages	3	for Storage
25	Work Table	1800 \times 900 \times 740mm, with Caster	6	for All Work
26	Cabinet Set	(1) 1760 \times 515 \times 880mm, Glass Door (2) 1760 \times 515 \times 880mm, Steel Door (3) 1760 \times 515 \times 390mm, Steel Door (4) 1754 \times 505 \times 88mm, Base	3 Sets	for Storing Training Materials
27	Groove Making Machine	Max Feed; 1500mm, Speed; 100 ~ 750mm/min	1	ARC, CO ₂ , TIG, MIG Welding Work
28	CO ₂ Gas Shielded Semi-automatic Arc Welder	Rating Output; 300A	5	CO ₂ Welding Work
29	Welding Fume Collecting System	Negative Pressure in Air Duct -110mmH ₂ O	1Set	ARC, CO ₂ , TIG, MIG Work
30	Welding Trainer	Main Body, Complete Accessories Printer, Extension Printer Cable	1Set	ARC, CO ₂ , TIG, MIG Work
31	Surface Plate for Metal Work	Plate; 1000 \times 1500 \times 150mm Bench; 1520 \times 1020 \times 650mm	1	Basic Work

No.	ITEM	SPECIFICATION	QTY	APPLICATION
32	High Speed Cut-off Machine	Stone Dia.; $\phi 405 \times \phi 25.4 \times 2.9$ mm	1	ditto
33	Instrument for Welding	Devices, Hand Tools, Protectors	1Set	All Welding Work
34	Tool Set	Complete Tool Set with Case 43 Items	5Sets	General Works
35	Measuring Instruments & Hand Tools	Square, rule, protractor	1Set	General Work
36	Carrier Equipments	(1) Steel Truck; 900×600 mm Cap.; 500kg (2) Scrap Truck; $600 \times 700 \times 585$ mm Cap.; 500kg, 0.14 m ³ (3) GAS Bottle Barrow; Cap.; 120kg	3Sets	ditto
37	OHP Set	Projector, Screen, Table Wagon	1Set	for Explanation
38	Movable Blackboard	1800 \times 900 Reversible type	2Sets	ditto

COURSE : CERAMICS

No.	ITEM	SPECIFICATION	QTY	APPLICATION
1	Vibration Sieve	Effective Diameter of Screen: $\phi 630$	1	Preparation of clay body material
2	Magnetic Ferro Filter	Capacity: 1000~2000kgs/h	1	ditto
3	Ball Mill	Capacity: 50 lit.	1	ditto
4	De-Airing Solid Casting System	Blunger; Tank capacity: 160~170 lit. Casting Machine; Tank capacity: 90~100 lit.	1Set	Mold making & Casting
5	Proctor System Mangle type Dryer	Number of basket: 20	1	Drying
6	Gas type Furnace	Maximum Temperature: 1400°C	1	Firing
7	Vacuum Agitater for Plaster of Paris	Capacity: Up to 12 lit./charge	1	Mold making & Casting
8	Stampable Mill	Mortar size: $\phi 300 \times 300$ mm approx.	1	Preparation of clay body material
9	Edge Runner Mill	Capacity: 80~150kg/h	1	ditto
10	Crucible Furnace	Maximum Temperature: 1200~1300°C	1	Firing
11	Laboratory Furnace	Maximum Temperature: 1300°C	1	Firing
12	Rolling Machine	Rolling size: 500×900 (Thickness 3~50)mm approx.	1	Handmade forming
13	De-airing Machine	Capacity: 500kg/h	1	Preparation of clay body material
14	Filter Press	Capacity: 1000 lit./h	1	ditto
15	Electric Potter's Wheel	Wheelhead size: $\phi 300$	8	Use of Potter's Wheel
16	Machine Jigger	Middle size	1	Forming
17	Potter's Wheel	Wheelhead size $\phi 300$	16	Handmade forming
18	Foot Pedal type Potter's Wheel	Wheelhead size $\phi 400$ approx.	8	Use of Potter's Wheel
19	Glaze Wiping Machine	Sponge width: 300mm approx.	1	Glazing
20	Glaze Dust Collector Machine	Capacity: 140~150m ³ /min	1	Glazing
21	Glaze Grinding Blunger	Capacity: 1 lit.	1	Glazing
22	Pot Mill	Number of Pot; 2	1	Glazing

No.	ITEM	SPECIFICATION	QTY	APPLICATION
23	Stirrers Set	Rotation range:50~600rpm	16	Glazing
24	Glaze Blunger	Revolution speed:1000~1100rpm	1	Glazing
25	Pedestal Type Grinder with Dust Collector	Grinding Stone size:255×25×19.05	1	Mending
26	Fret Saw	Table size:300×400mm	1	Mending
27	Vacuum Dust Collector	Capacity:14 lit. For soil	1	Cleaning
28	Air compressor	Maximum outlet Air:160 lit./min	1Set	Glazing
29	Thermal Generator	Capacity:50000kcal/h	1	Drying
30	Glazing set	Spray gun for ceramic etc.	4	Glazing
31	Air Brush set	Suction type	10	Glazing
32	Hardness Tester	Load:11step selection	1	Inspection
33	Infrared Moisture Balance	Measuring range:0.5~99.9%	1	Inspection
34	Digital Temperature Gauge	Measuring range:0~1600°C	1	Firing
35	Viscosimeter Set	0.4~20,000 cSt.	1	Glazing
36	Chair	Vinyl leather	16	Others
37	Electronic Weighing Balance	Measuring range:0.001g~330g	1	Glazing
38	Weighting Balance	Max.150kg	1	Preparation of clay body material
39	Forming Apparatus Set	Knife etc.	16	Forming
40	Glazing Apparatus Set	Brush etc	16	Glazing
41	Firing Apparatus Set	Fire tongs etc.	16	Firing
42	Molding Apparatus Set	Funnel,Belt etc.	16	Molding
43	Mold Model(set)	For flower vase etc.	1	Casting
44	Cabinets for Drying	6 shelves	6	Drying
45	Big size Potter's Wheel for Glazing	Table size:φ540×700	2	Glazing
46	Working Table	For ceramist	8	Others
47	L-type Desk	For ceramist	16	Use of Potter's Wheel
48	Tool set for General use	With box	4	Others
49	Hand Truck	Load:300kg	2	Others
50	Bucket	Galvanized Steel	20	Others
51	Chipping Hammer	6 pounds	10	Preparation of clay body material
52	Pot set	Capacity:1 lit.×2 , 10 lit×1	8Sets	Glazing
53	Clay Stocker	Capacity:75 lit.	16	Preparation of clay body material
54	Extension Cable With Plug	For ceiling electric power	8	Glazing
55	Tool Wagon	With drawer and tray	16	Others
56	Tool Cabinets	With drawer 3 & 8 steps	10	Others
57	Sink	H 800mm	1	Others
58	Whiteboard	With caster, Reversible type	2	Others
59	Portable Billboard	With caster, Reversible type	1	Others
60	Overhead Projector set	Projector,screen,table	1Set	Others
61	Others		1Set	

COURSE : AGRO-PROCESSING

No	ITEM	SPECIFICATION	QTY.	APPLICATION
1	Boiler	Equivalent evaporation 600kg/h Heat output . 323000Kcal /h	1	Multi-purpose
2	Refrigerator/Freezer	Temp. range +5°C~-25°C	1	Materials storage
3	Silent Cutter	Cap. 10 ℓ .	1	Meat processing
4	Dicer/Granulator	Cap. :1200kg. /h Cut size : 20×20,15×15,10×10mm	1	Vegetable processing
5	Slicer/Shredder	Min. cap. : 3000 slices/h Slicing thickness: 0.1~20mm	1	ditto
6	Homogenizer	Cap. : 20 ℓ	1	Fish processing
7	Meat Chopper	Cap.100kg./h.	1	Meat processing
8	Stuffer	Cap. 12 ℓ per operation	1	ditto
9	Manual Stuffer	Cap. 6 ℓ	1	ditto
10	Smoke House	LPG type	1	Smoking/drying
11	Meat Mixer	Cap.15kg.per operation	1	Meat processing
12	Drying Oven	Gas type,Cap. 500 ℓ	1	Drying
13	Automatic filler	Prod. cap.720~900 pcs./h Filling cap 80~500cm	1	Canning
14	Filler	Filling cap. 100~500cm	1	ditto
15	Pressure Process Retort	Dims. 600 φ × 900mm	1	ditto
16	Pressure Process Vertical Retort	Dims. 400 φ × H450 mm	1	ditto
17	Crusher	Prod. cap. 200~300kg/h	1	Multi-purpose
18	Hand Press	Processing cap. 18 ℓ	1	ditto
19	Vacuum Floor Mixer	Processing cap.90 ℓ	1	ditto
20	Semi-Automatic Seamer	Processing cap. Dia.50~103mm H 25~180mm Prod. cap. 3~4 cans	1	Canning
21	Semi-Automatic Vacuum Seamer	Processing cap. dia.50~87mm H 25~180mm Prod. cap. 3~4 cans	1	Canning
22	Semitro Seamer	Processing cap. dia.50~200mm H 75~180mm Prod. cap.20~30 cans	1	ditto
23	Exhaust Box	Cap.96 pcs(can size No.4)	1	ditto
24	Semi-Automatic Capper	Processing cap.2100 and 3100 strokes/h.	1	Bottling
25	Crown Capper	Pedal type Processing cap.20~30bottles/h	1	ditto
26	Steam Jacketed Kettle	Cap. 90 ℓ	3	Multi-purpose
27	Mark Press	270×220×430mm	1	Canning
28	Ice Maker	Ice cubic size 37×30×13mm Prod. cap. 10~12kg/day	1	Meat processing
29	Vacuum Packaging Machine	Sealable length 400mm	1	Packaging
30	Heat Sealer	Sealable lenght 250mm Pedal type	1	ditto
31	Quality Control Tools for Canning	Micrometer,Vacuum can tester etc.	1Set	Quality control
32	Juice Producing Equipment	Juice Extractor,Pulper,Finisher, Balance tank,Pasteurizer etc.	1Set	Juice making
33	Working Table	Stainless steel	11	Multi-purpose
34	Steel Rack	Max.loading cap.300Kg, 4 shelves Dim.900×750×1800mm	2	Material storage
35	Alluminum Cart	Max. loading cap. 300kg. Table size 600×900mm	2	Multi-purpose

No.	ITEM	SPECIFICATION	QTY.	APPLICATION
36	High Pressure Washing Machine	Output pressure 45kgf/cm	1	Cleaning
37	Square Large Tank	Cap. 200 ℓ for liquid and solid	4	ditto
38	Sink/Table	Dims. 1200×750×800mm	4	ditto
39	Laboratory Table	Dims. 1500×600×800mm	4	Food analysis
40	Laboratory Equipment	Electric muffle furnace Water bath, Magnetic stirrer Hot air sterilizer Hot plate, Table top centrifuge	1 Set	Food analysis
41	Electric Drying Oven	Temp. range 40°C~270°C Cap.150 ℓ	1	ditto
42	Electric Low Temperature Incubator	Controllable temp.range +5°C~+50°C	1	ditto
43	Refrigerator	Cap. 170 ℓ	1	ditto
44	Working Table (for trainee)	For 4 persons, with sink	4	ditto
45	Clean Bench	Dims. : 750×650×1000mm	1	ditto
46	Laboratory Measuring Equipment	Infrared moisture meter, Table balance, Analytical balance, Automatic table balance, VIS-Spectrophotometer	1 Set	ditto
47	Microscope	Magnification 20~1500	10	ditto
48	Food Analysing Equipment	Refractometer for Salt,pH meter, Refractor for sugar,Hard Tester for Fruit,Water activity meter, Digital Salt meter	1 Set	ditto
49	Scale	Cap.2-30kg and 40-500g	4 Sets	Multi-purpose
50	Distillating Plant	Distillation unit,Digester, Titrator	1 Set	Food analysis
51	Water distillation Apparatus	Cap. 1.0-1.2ℓ ∅180×290mm	1	ditto
52	Extraction Apparatus	Soxhlet's Fat Extractor Incl.d.one unit of water bath	1	ditto
53	Colony Counter	Display : LED 0000-9999 Max. petri dish size 15cm	4	ditto
54	Work Chair	∅320×440	20	
55	Laboratory Tools	Petri dish, Flask & others	1 Set	Food analysis
56	Kitchen Utensil	Mixer, Steamer, Pan, Gas Range Table meat chopper & others	1 Set	Multi-purpose
57	Working Wear	Working uniform etc.	1 Set	Food analysis
58	Tool Set	For mechanical adjusting, with box	1 Set	Others
59	Supporting Equipment for Boiler	Automatic softening unit,Pressure water supplier, Tank for softened water,Fuel tank, Antiseptics /deoxidizer	1 Set	For boiler
60	Others		1 Set	

COURSE :HOTEL & RESTAURANT

No.	ITEM	SPECIFICATION	QTY	APPLICATION
1	Dining Table with Chair	1818×757×757mm, 6 Chairs	3	Foods & Beverage Servicing
2	Ice Maker	38Kg/Day, Storage Capacity:18Kg	1	ditto
3	Refrigerator	Chest Type, 250 Lit.	1	ditto
4	Work Table	1200×600×850mm, Stainless Steel	1	ditto
5	Sink	600×600×850mm, Stainless Steel	1	ditto
6	Freezer	Chest Type, 180 Lit.	1	ditto
7	Bar Blender	Cup Vol.:1800 cc	1	ditto
8	Coffee Maker	Paper Filter Drip; Tank:3 Lit.	1	ditto
9	Cupboard for Bar Counter	1200×600×1800mm, Wooden	1set	ditto
10	Cooking Table for Training	Stainless Steel, with Drawer Gas Range, Oven, Sink,	5	Cooking & Food Preparation
11	Refrigerator With Deep Freezer	Refrig.:430 Lit. -5~+10°C Freezer:200 Lit. -22~-15°C	1	ditto
12	Pasta Cooker	Gas Consumption:17000Kcal/hour	1	ditto
13	Fryer	Gas Consumption:12000 Kcal/hour	1	ditto
14	Gas Griddle	Gas Consumption:18000 Kcal/hour	1	ditto
15	Electric Oven	3 Phase, 11kW	1	ditto
16	Spiral Mixer	Table Type Universal Mixer Bowl:5 Lit. Wire Whip, Dough Hook, Flat Beater	4	ditto
17	Meat Slicer	Cutting Dia.:280mm Capacity:1000 Slices/hour	1	ditto
18	Gas Type Rice Cooker	Gas Consumption:17000 Kcal/hour Cooking Vol.:2.8~14kg/time	1	ditto
19	Meat Chopper	206×547×289mm, Cap.:100~150kg/h	1	ditto
20	Vegetable Chopper	Belt Drive:400 rpm	1	ditto
21	Cupboard	Stainless Steel, 1800×750×1800mm	5	ditto
22	Pan Rack	Stainless Steel, 1500×750×1800mm	5	ditto
23	Kitchen Knives Set & Chopping Board	12pcs., Alminium Case, Chopping Board:600×300mm	10sets	ditto
24	Bread Slicer	460×450×390mm,	1	ditto
25	Electric Cleaner	1140W, Capacity:30 Lit.	2	House Keeping & Maintenance
26	Electric Washing Machine (Twin-tub)	Washing Machine Capacity:5.0kg Drying Machine Capacity:5.0kg Dryer Stand	4	ditto
27	Air Compressor	Package Baby-Compressor Type 0.75kW with Air Dryer,	1	ditto
28	Stainless Working Table	1500×900×800mm,	8	ditto
29	Single Bed for Training	1080×2020×570mm,	2	House Keeping & Maintenance
30	Hot Dry Cleaning Machine	Capacity:10 kg/time	1	ditto
31	Pants Topper	0.6kW, Steam Type	1	ditto
32	Press Machine	for Shirt Coller & Sleeve Cuffs	1	ditto
33	Universal Press Machine	Iron; 1100×450mm,	2	ditto
34	Steel Shelf	1500×750×1800mm	2	ditto
35	Steel Shelf	900×750×1800mm	1	ditto
36	Personal Computer Set	Desk Top Type, Key Board, Desk, Laser Printer,	1set	Front Desk Operation & Management
37	Telephone Set	170×80×222mm	2sets	ditto

No.	ITEM	SPECIFICATION	QTY	APPLICATION
38	Facsimile Set	220V, Copy Size:A.	1	ditto
39	Mechanical Tool Set	43Kinds, with case	4sets	for General Use
40	Electrician Tool Set	20Kinds, with case	4sets	ditto
41	Dining Goods/Apparatus	General Goods, Server Set, Cups & Glasses for Bar	1set	Foods & Beverage Servicing
42	Kitchen Goods/Apparatus	General Goods, for Cooking, for Pantry, for Kitchen	1set	Cooking & Food Preparation
43	Goods for Housekeeping	for Cleaning	1set	House Keeping & Maintenance
44	Goods for Model Guest Room	Furniture etc.	2sets	ditto
45	OHP Set	Projector, Screen, Table	1	
46	Others		1set	

COURSE : GARMENTS

	ITEM	SPECIFICATION	QTY.	APPLICATION
1	Total Apparel Computer System Package	English version Apparel CAD, Digitizer, Plotter/Cutter, Others	1set	CAD pattern making and cutting
2	Set of Drawing instrument	Straightedge, Curve-ruler, L-Square, Plotting ruler, Others	10sets	Pattern making
3	Lockstitch Machine	1-Needle, Sewing Speed : 5,000s.p.m with Automatic Thread Trimmer	10	Permanent sewing
4	Button Sewing Machine	Sewing Speed : 1,500s.p.m Kinds of buttons : 2-and 4-hole	2	Finishing
5	Button holing Machine	Sewing Speed : Max.3,600s.p.m Work clamp foot lift:Max.12mm	2	ditto
6	Single-Thread Chainstitch Blindstitcher	Sewing Speed : 2,500s.p.m Stitch length : Min.3mm~Max.8mm	2	ditto
7	Bar tacking Machine	Sewing Speed : Max.2,300s.p.m Work clamp foot lift : Max.17mm	2	ditto
8	1-Needle Bottom & Variable Top Feed Lockstitch Machin	Sewing Speed : Max.4,500s.p.m Stitch length : Max.5mm	2	Partial sewing
9	1-Needle Differential Feed Lockstitch Machine	Sewing Speed : Max.4,500s.p.m Stitch length : 5mm	2	ditto
10	1-Needle 3-Thread Overlock Machine	Sewing Speed : Max 7,000s.p.m	2	ditto
11	2-Needles 4-Thread Overlock Machine	Sewing Speed : Max 7,000s.p.m	2	ditto
12	2-Needles 5-Thread Safety Stitch Machine	Sewing Speed : Max 7,000 s.p.m	2	ditto
13	2-Needles Double Chainstitch Machine	Sewing Speed : Max 4,000s.p.m Stitch length : 1.2 ~ 3.2mm	2	Permanent sewing
14	3-Needles Double Chainstitch Machine	Sewing Speed : Max 3,600s.p.m Stitch length : 1.4 ~ 4.2mm	2	ditto
15	2-Needles Lockstitch Machine	Sewing Speed : Max 3,000s.p.m Organized Split Needle Bar	2	ditto
16	Lockstitch Machine with Edge Trimmer	Sewing Speed : Max 4,000s.p.m	2	ditto

	ITEM	SPECIFICATION	QTY.	APPLICATION
17	Electric Cutting Machine	Cutting apacity: 90mm Automatic Knife sharpening	2	Cloth cutting
18	Band Knife	Cutting Capacity:180mm Table size:1500×1800mm	1	ditto
19	Cloth Drill Machine	Drilling : 203mm	1	Marking
20	End Cutter Machine	Cutting : 32mm	1	Cloth cutting
21	Under Press	Vacuum Board, General off-press, flat Board with buck	2	press work
22	Finish up press	Vacuum Board, with 2types of buck and a flat inverter controled bloker	2	ditto
23	Iron	Steam Iron,Electric Iron	15	Ironing
24	Finishing Board Set	① Ironing Mat ② Set of 4 different Finishing Bucks ③ Set of 3 different Tailors Ham	5sets	Press work
25	Body stand	Various types	20	Pattern making
26	Mirror	Size : (W)600mm ×(H)1,200mm	3	Finishing
27	Set of Sewing Tools	22 kinds	10	Sewing
28	Needle Detector	Magnet Guidance	2	Finishing
29	Work Bench	Work Bench for Sewing	12	Pattern making
30	Working Chair	① Stool (For Sewing Machine) ② Working Chair(For Work Bench) ③ Pipe Chair	60	
31	1—Needle,Embroidering Sewing Machine	Sewing Speed : Max 2,000s.p.m	5	Embroidering
32	1—Needle,Zigzag and Embroidering Sewing Machine	Sewing Speed : Max 2,000s.p.m	5	ditto
33	Electronic Embroidering Sewing Machine	9 Needles, 1 Head Sewing Speed : Max 1,200s.p.m	2	ditto
34	Air Gun (For cleaning)	With Air Reel	4sets	Cleaning
35	Electric Vacuum Cleaner		2	ditto
36	Tool Shelves	① Shelf ② Cabinet(A) ③ Cabinet(B)	7 4 6	Tools storage
37	OHP set	Projector,Screen,Table	1set	
38	White Board	Wall Type Movable	2 2	
39	Air Compressor	with Accessories	1set	Cleaning

COURSE : CRAFT-GIFT&HOUSEWARES

No.	ITEM	SPECIFICATION	QTY	APPLICATION
1	Work Bench	W1800XD900XH760mm	4	General Working
2	Work Bench for Sewing	W1800XD900XH760mm	8	Drawing
3	Tools and Instruments for Sewing	Scissors,Pinking Scissors, Prick Punch etc.	16	Sewing
4	Drawing Instrument Kit	Ruler,Pin,Clothes Brush etc.	16	Drawing
5	Lockstitch Machine for Stuffed Toy Making	Sewing Speed Max 5,500s.p.m	8	Sewing
6	Lockstitch Machine for Leather	Sewing Speed Max.2,000s.p.m	4	ditto
7	Embroidering Sewing Machine	Sewing Speed Max.2,000s.p.m	1	ditto
8	Lockstitch Bar Tacking Sewing Machine	Sewing Speed Max.2,300s.p.m	2	ditto
9	2-Needle Double Chainstitch Sewing Machine	Sewing Speed Max.4,000s.p.m	2	ditto
10	Stainless Sink for Dying	1800X600X800mm	2	Dying
11	Tool Sets for Leather Craft	Cutter,Scissors,Needles etc.	5sets	Leather Craft
12	Tool Cabinet	900X450X1800mm	8	Storage
13	Light Weight Cabinet	600X450X900mm	8	ditto
14	Cabinet for Material	900X450X1800mm	6	ditto
15	Air Compressor with Accesaries	3 Phase 220V 1.5Kw	1set	Cleaning
16	Movable Whiteboard	1900X560X1800mm	2	
17	Vacuum Cleaner	1Kw	2	Cleaning
18	OHP set	Projector, Screen, Table	1set	
19	Display Cabinet	1800X500X1800mm	1	
20	Others		1set	

COURSE : JEWELRY

No.	ITEM	SPECIFICATION	QTY	APPLICATION
1	Wax Injector	Injection Pressure 0-2Kgf/cm ²	1	Casting
2	Hydraulic Hot Press	Temperature Control 70-300C	3	ditto
3	Centrifugal Casting Machine	Manual Operation Type	2	ditto
4	Small Electric Furnace	Temperature Control 0-1100C	1	ditto
5	Casting Machine	Casting Capacity(Au,Ag) 500g	1	ditto
6	Buffing Fin by Filter	8.5m ³ /min	1	Polishing
7	Table Fin by Filter	Max Vacuum 90/125mmH ₂ O	10	ditto
8	Barrel Polishing Machine	44 rpm	1	ditto
9	Grinder for Cutting Tool	Diamond Cutter	2	ditto
10	Ultrasonic Cleaner	Frequency 26 KHz	1	ditto
11	Blast Cleaning Machine	Max Air Pressure 6Kgf/cm ²	3	ditto
12	Electric Polishing Machine	Frequency 28 KHz	1	ditto
13	Surface Grinder	Spindle Speed 3600 rpm	4	ditto
14	Mixer	0-320 rpm	1	Casting Molding
15	Rolling Machine	Roll Dimension 850mm	1	Handling Metals
16	Wire Draw Bench	Draw Dimension 620mm	1	ditto
17	Punching Punch Set	Internal Diameter 3-22mm	5	ditto
18	Head Magnifying Glass	2 Lenses	10	Appraisal
19	Pincetter Stand	Height 265mm	10	Handling of Equipments
20	Heat Resistant Pincette	Heat Resistance Temperature 3000C	10	ditto
21	Gas Burner	LPG	4	ditto
22	Welder Burner	LPG	10	ditto
23	Galvanizing Machine	DC 0-10V 590W	5	Metal Plating
24	Diamond Meter	Digital Meter Capacity 0.01-10ct	4	Appraisal
25	Diamond Survey Machine	External Dimension 175X40X21mm	4	ditto
26	Ring Gauge	Ring Gauge No1-30	10	ditto
27	Ring Gauge Bar	Ring Gauge No1-30	10	ditto
28	Diamond Selector	Diameter 108mm	1	ditto
29	Electric Scale Balance Machine	Max 310g Min. 0.001g	1	ditto
30	Fret Saw	Cutting Capacity 60mm	10	Handling Metals
31	Chisel Set	12 pcs. set	10	Stone Setting
32	Air Compressor	Max Air Pressure 6Kgf/cm ²	1	
33	Air Tank	60 Litters	1	
34	Air Router	20,000 (rpm)	10	Polishing
35	Plant for Waste Disposal	Acidification Gold Cyanide Silver Cyanide	1	Plant for Wast Disposal
36	Working Bench	1900mmx590mmx870mm	10	
37	Fire Proof Safe	650mmx640mmx1300mm	1	
38	Tool Box	880mmx450mmx1060mm	10	
39	Spare Parts Locker	745mmx330mmx880mm	4	
40	Working Bench	1800mmx900mmx740mm	10	
41	Hand Tool	Metal Cutting Scissors,Nipper etc.	1set	
42	Others		1set	

COURSE : COMMON

No.	ITEM	SPECIFICATION	QTY	APPLICATION
COMPUTER ROOM				
1	Personal Computer	Desk top type, 32bit, connecting cable	16sets	Computer practice
2	Printer	Laser printer	4sets	ditto
3	Table & Chair	for personal computer	16sets	ditto
4	OHP Set	Projector, Screen, Table	1set	ditto
5	Other	White Board etc.	1set	ditto
DRAWING ROOM				
1	Drawing Equipment	Drafting M/C, Drawing Board: A ₁ size	16sets	Drawing practice
2	Drawing Apparatus Set	Compasses, Divider, etc.	16sets	ditto
3	Chair	for drawing	16sets	ditto
4	OHP Set	Projector, Screen, Table	1set	ditto
5	Others	White Board etc.	1set	ditto
LECTURE ROOM				
1	Table & Chair	(1)for trainee: Table for 2 persons (2)for instructor	82sets 9sets	classroom lesson ditto
2	OHP Set	Projector, Screen, Table	9sets	ditto
3	White Board	Wall Type	9sets	ditto
4	VTR Equipment	with TV	5sets	ditto
TRAINING MATERIAL				
1	Video Tape	Safety, Automotive, Electronics, Welding, Hotel & Restaurant, Garments, etc.	1set	for training
2	Manual Book	Automotive, Electronics, Welding, etc.	1set	ditto
3	Reference Book	Vocational Guidance, Safety, Automotive, Electronics, Welding, Hotel & Restaurant, etc.	1set	ditto

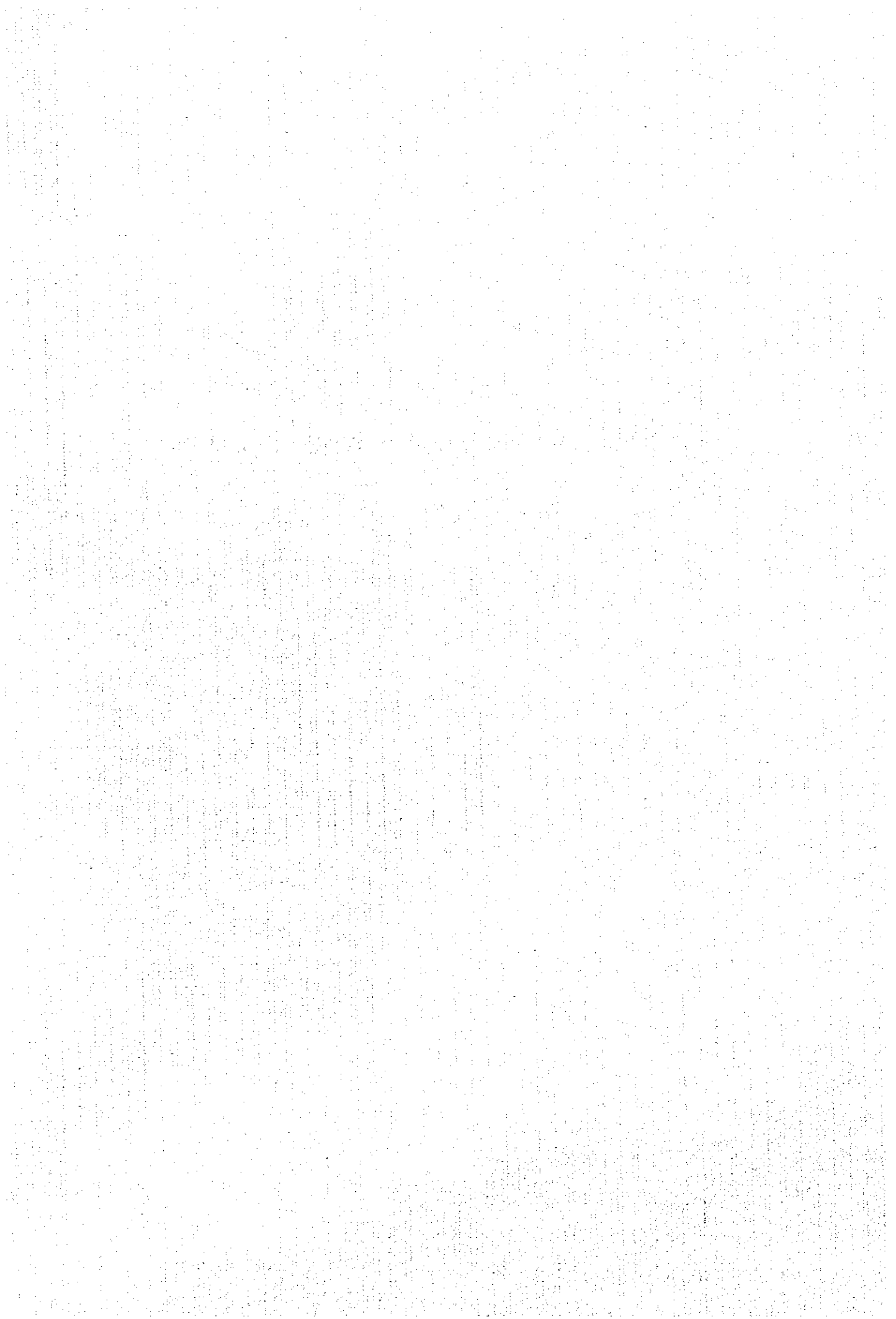
COURSE : COMMON & ADMINISTRATION FACILITY

No.	ITEM	SPECIFICATION	QTY	APPLICATION
<u>ADMINISTRATION EQUIPMENT</u>				
1	OHP Set	Projector, Screen, Table	2sets	Meeting use
2	Slide Projector	Autofocus system, AC220V	1	ditto
3	Copy Machine	Copy size: A _s , AC220V	1	Making handout
4	35mm Camera	3 Lenses, with Accessories	1	ditto
5	Personal Computer	Desk top type, 32bit, connecting cable	3sets	Data processing
6	Printer	Laser printer	1	Making handout
7	Economic Printing Machine	Photoengraving plate size: 260×355mm etc.	1	ditto
8	Blue Copier	Copy size: A _o	1	ditto
9	Facsimile Machine	Paper size: A _o	1	ditto
10	Micro Bus	Carrying 30 persons, 3500cc, 90HP	1	Transpotation
11	Pick-UP Trucks	Loading capacity: 1290Kg, 1800cc, 60Kw	1	Carrying material
12	Station Wagon	Carrying 5 persons, 1500cc, 88HP	1	Transpotation
13	Forklift	Loading capacity: 1.5t, 2600cc, 60HP	1	Carrying equipment
<u>JOB PLACEMENT OFFICE</u>				
1	Personal Computer	Desk top type, 32bit, with printer	1set	Data processing
2	Copy Machine	Copy size: A _s , AC220V	1	Making handout

COURSE : RESEARCH & ADVOCACY

	ITEM	SPECIFICATION	QTY.	APPLICATION
1	Personal Computer	Desk top type, 32bit, connecting cable	6sets	Data processing
2	Printer	Laser Printer	2	Making handout
3	Copy Machine	Copy size: A _s , AC220V	1	ditto
4	Facsimile Machine	Copy size: A _o	1	ditto
5	Video Editing System	S-VHS recorder, AV mixing equipment, etc.	1set	Making Video soft.
6	Video Camera	S-VHS	1	ditto
7	Outdoor Recording Unit	Portable audio equipment, etc.	1set	ditto
<u>LIBRARY</u>				
1	Personal Computer	Desk top type, 32bit, connecting cable	1set	Data processing
2	Individual System	Head set, Monitor TV, etc.	1set	Watching Video
<u>DAY CARE ROOM</u>				
1	VTR Equipment	S-VHS, NTSC, with TV	1	for day care
2	Mobile Rack	for 19 inch	1	ditto
3	Radio Cassette	FM/MW/SW, CD & Tape	2	ditto
4	Refrigerator	170 Lit.	1	ditto
5	Microwave Oven	Inner Dimension: 300×200×290mm	1	ditto
6	Gas Range	LPG	1	ditto
7	Electric Thermostat Jug	220V, 1 Lit.	1	ditto
8	Feeding Bottle Sterilizer	Inner Dimension: 300×300×300mm	2	ditto

CHAPTER 3 IMPLEMENTATION PLAN



Chapter 3 Implementation Plan

3.1 Implementation Plan

3.1.1 Implementation Concept

The Project will be implemented in accordance with the guidelines of the Grant Aid System of the Government of Japan. Its implementation will be officially started when and after it is approved by the Japanese and Philippine governments and the E/N is concluded. Following that, the Government of the Philippines will select a Japanese corporation to act as a consultant for the stage of preparing detailed designs for the facilities and equipment. Following documentation of the detailed designs, a Japanese construction company and an equipment supply company, which will be selected by tender, will carry out the construction of buildings and the supply and installation of facilities and equipment. Contracts on the consultancy service, building construction and equipment supply and installation will only become effective after being verified by the Government of Japan.

Supervision of and construction under the Project will involve the Project implementing agency, the consultant, the contractor and the equipment supplier under the control of the related ministries of both governments. The basic contents and particular points for consideration in the event where the Project is implemented are described in the following sections.

(1) Project Implementing Agency

The Philippine agency in charge of Project implementation is TESDA. With regard to the construction of the facilities, it is desirable that staff members who have taken part in discussion of the basic concepts of the facilities at the basic design study stage will contribute from the detailed design through to the construction of the facilities.

(2) Consultant

To ensure the proper construction of the facilities by means of grant aid provided by the Government of Japan, a Japanese consultancy company will conclude a consultancy agreement with the Government of the Philippines to become consultant for the Project and will be responsible for the detailed design of all facilities and supervision of the

construction work. The consultant will also prepare the tender documents and will conduct the tender on behalf of the Project implementing agency.

(3) Construction Contractor

The contractor will be a qualified Japanese construction firm selected through open tender. The contractor will complete construction of the Project facilities on schedule based on the detailed design documentation prepared by the consultant, and it will then hand the facilities over to the Philippine side.

The construction work for which the contractor is responsible will mainly consist of buildings, air-conditioning and ventilation, plumbing, electrical and exterior work, and the contractor will sub-contract the work to Philippine or Japanese sub-contractors, technicians and workers as required.

(4) Equipment Supplier

The equipment supplier will be a qualified Japanese trading firm selected through open tender. The equipment supplier will procure and install the equipment, which must satisfy the specifications given by the consultant, in line with the contract schedule. The equipment supplier will also dispatch expert engineers to the Project site to assist in the installation of the equipment and to provide the Philippine side with explanations on handling the equipment.

3.1.2 Implementation Conditions

(1) Construction Environment

The construction environment in Manila and surrounding districts can broadly be described as follows.

- 1) Although the Project site is located in an area where local construction companies with high capabilities and skilled workers have commonly been operating, it has become rather difficult in recent years to secure the services of these companies and such workers as a result of the construction boom caused by the considerable commercial investment activities of foreign companies, and so on, resulting from stabilization in the political situation.

- 2) Carpentry, plastering, steel bar reinforcing and finishing are treated as professions, and organizations covering the respective types of such work exist under foremen. However, ordinary workers other than those mentioned above are not specialized and are often employed on a part-time basis. As a result, when averaging the different processes out, it works out that around 2.5 times as many workers as would be required in Japan will be necessary.
- 3) Prefabricated products are scarce and materials often need to be brought onto site for production or assembly.
- 4) Because the recent construction boom has substantially raised prices and wages, the prices of such main materials as concrete and steel bars have been hiked by 6 to 11% in the past year. Wages have increased by 6% to 10% in the past year.

(2) Important Points to Consider in Construction Implementation

The Center building and dormitory are both three-storied and of reinforced concrete construction, and local construction companies are amply capable of constructing such structures. Most of the construction materials can be procured locally, and local skilled engineers can handle any special materials that need to be imported from Japan. Hence, no dispatch of special engineers will be required except for during the equipment installation work. As for the equipment installation work, local agents possess able engineers and can fully cope with maintenance after completion. However, because the installation work is specific and precise and personal explanation of equipment operation is necessary, engineers will need to be dispatched from the manufacturer to give instructions to the local engineers.

As it is expected that the construction boom in the Philippines will continue for a few more years, attention will need to be paid to securing local construction materials and skilled workers in the course of the construction work.

(3) Important Points to Consider in Forming the Construction Schedule

- 1) An appropriate construction schedule that involves no excessive working conditions and processes should be compiled.
- 2) The start and completion of work by the Japan side and Philippine side should be carefully timed to make the construction processes convenient for both countries.

- 3) The dispatch of staff and specialist technicians from Japan should be kept to a minimum, and the numbers of such dispatched personnel and the dispatch timing and periods should be determined carefully in accordance with the progress of the work.
- 4) Local materials are to be utilized as far as possible. The procurement of materials from Japan should be minimized and care should be taken to ensure that the installation of the materials on site is not too difficult.
- 5) The rainy season in the Philippines continues from May to November. During this period, some roads often become submerged as a result of localized torrential downpours. As there is concern that the Skyway construction work on the west side of TESDA may fall within this rainy season, thought will need to be given to the utilization of the Bonifassio Base road on the east side of TESDA.

(4) Construction Schedule

The construction schedule should be fully discussed item by item in advance between the consultant and the working group to ensure smooth implementation of the Project. The starting periods and construction methods for the respective works of both countries will need to be confirmed in these discussions.

In particular, detailed discussions need to be carried out to determine the timing of the work to be conducted by the Philippine side (land clearance of the Project site, power supply, water supply, telephone lines, drainage, etc.). Moreover, it will be necessary to install office furniture and other such items needed for operation of the facilities immediately after the construction work has finished. When determining the construction schedule, consideration should be given to balancing the time required for the delivery of materials procured in Japan with the periods where local materials are used in the construction work, in order to make sure that materials are not stocked for excessively long periods or run short.

(5) Contractor's Field Representative(s)

Smooth completion of the facility construction in accordance with the design documents within the specified period requires the contractor's field representative(s) to be able to assure smooth operation of joint work with local construction companies and to afford appropriate technical instructions to them. In addition, it is desirable to appoint field

representative(s) with sufficient experience in the construction of facilities in the Philippines in order to fully understand the characteristics of the facilities and secure a high level of quality in the construction work.

Judging from the scale and contents of the facilities, the following numbers and kinds of construction engineers will need to be continually stationed at the site.

1) Facilities

Project Manager	: 1	General management
Construction Engineers	: 1	Construction management, schedule control and guidance on working drawing preparation
Mechanical and Electrical Engineers	: 1	Guidance on mechanical and electrical work
Clerk	: 1	Control of imported equipment and materials, labor management and general administration

2) Equipment

Engineers specialized in training equipment should be dispatched to give local technicians instructions on installation and operation.

3.1.3 Scope of Work

The following paragraphs give a broad description of the scope of construction work to be borne by both governments.

<Work to be Borne by the Government of Japan>

1) Facilities

• Center Building

- Administration Department rooms:

Director room, office, reception room, chief adviser room etc.

- Research and Development, Advocacy Department rooms:

Research and Development rooms, adviser room, networking room, function room, conference room, counseling room, library, etc.

- Vocational Training Department rooms:

Workshops for nine areas, office, classroom, computer room, drafting room, on-call trainer room etc.

- Multipurpose Hall:
Multipurpose hall, storage, projector room, family room, etc.
- Other rooms:
Canteen, day-care center, storage, machine room, etc.
- Dormitory
 - Administration common-use rooms:
Office, lounge, meeting room, pantry, etc.
 - Dormitory rooms:
Dormitory rooms, toilets and showers, etc.

2) Equipment

- Vocational training equipment
- Audio-visual equipment
- Equipment for study and research and instruction activities
- Vehicles

<Work to be Borne by the Government of the Philippines>

- 1) To make the site land ready for construction prior to the start of the construction work.
- 2) To carry out construction of the perimeter service road, gardening and other incidental exterior works.
- 3) To supply electric power, water, telephones and drainage facilities, etc. to the construction site.
- 4) To supply gas.
- 5) To provide general office furniture and appliances.
- 6) To provide daily expendables.

3.1.4 Consultant Supervision

In accordance with the policy on Grant Aid laid down by the Government of Japan, an appointed consultant needs to organize a project team to carry out detailed design and supervising services that are in line with the basic design policies. This will ensure appropriate coordination among concerned parties and the smooth construction of the Project facilities.

At the construction stage, the consultant should allocate resident supervisors with ample technical capabilities to issue instructions to contractors and to communicate with them. Also, the consultant should assign technical experts in each design area on a short-term basis in accordance with the progress of the work, in order to carry out inspection, attendance and guidance on execution.

(1) Basic Policies of the Supervision Plan

- To maintain close communication with the responsible agencies in both countries to ensure that the facilities are completed without delay in accordance with the construction schedule.
- To provide quick and pertinent guidance and advice to construction contractors, to ensure that the facilities conform with the design documents.
- To give priority to local equipment, materials and construction methods.
- To carry out technology transfer in relation to construction methods and technologies, in order to enhance the effect of the work as a Grant Aid Project.
- Following the completion and handing over of the facilities, to provide the pertinent advice and guidance for efficient operation and management.

(2) Scope of Supervision

- Assistance in construction contract
Selection of contractors (determination of construction contract method, preparation of contract forms, evaluation of cost estimates, and attendance at the contract signing).
- Inspection and approval of shop drawings
Inspection and approval of shop drawings, materials, finished samples, equipment and machinery submitted by contractors.
- Instruction to contractors
Evaluation of construction plan and schedule, instructions to contractors, and progress reporting to the owner.
- Assistance in payment approval procedures
Evaluation of bills to be payable during and after the construction, and assistance in payment procedures.
- Inspection and approval
According to necessity, to conduct inspections on each work area and provide guidance to the contractors during the construction period.

The consultant shall confirm the completion of the work in accordance with the conditions of the contract, attend the handing over of the completed work, and obtain acceptance from the owner. Also, it shall report to the Government of Japan any important matters related to the progress of the construction work, payment procedures and handing over of the completed work.

The construction supervision system and related agencies described above are depicted in the following diagram (Refer to Fig. 4-1-1).

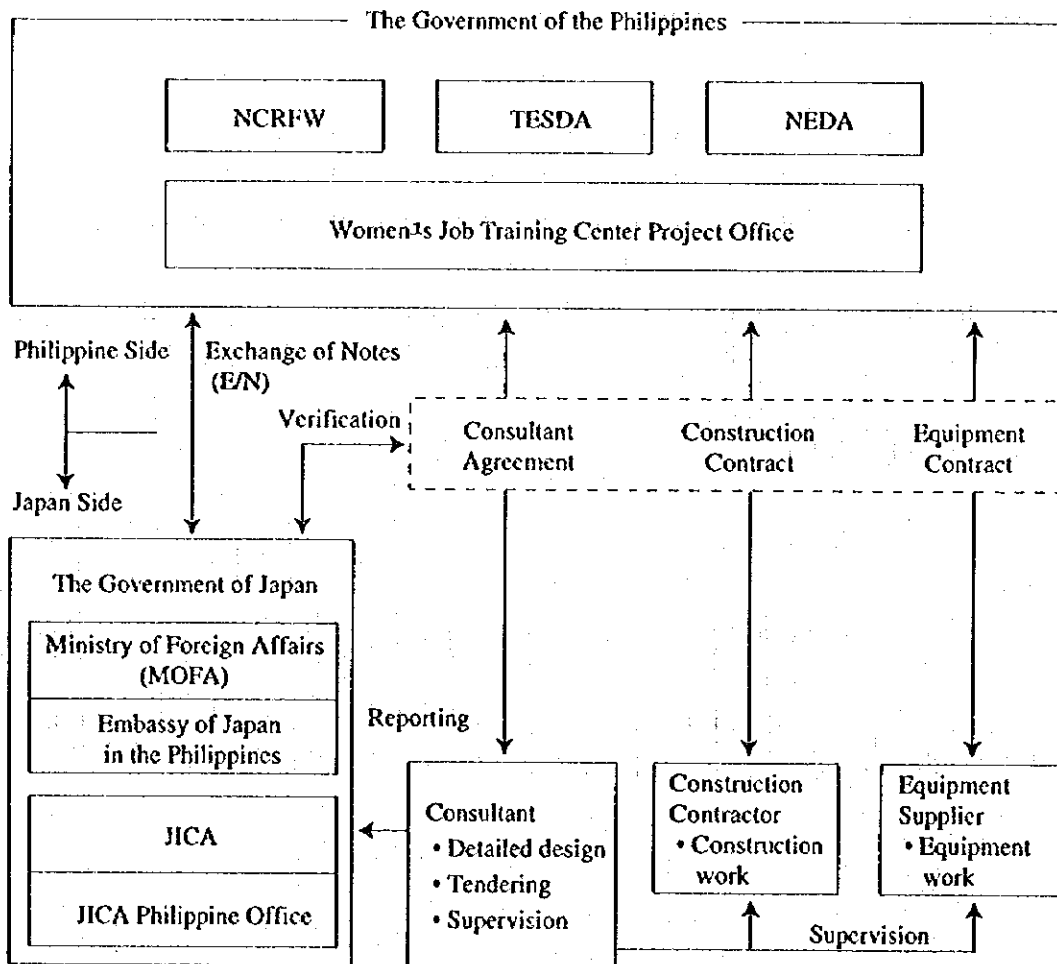


Fig. 3-1-1 Construction Supervision Plan

3.1.5 Procurement Plan

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

(1) Procurement Policy

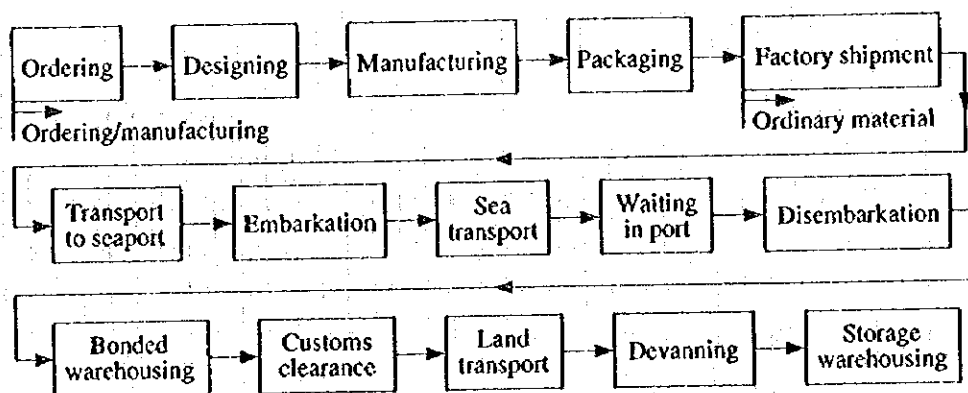
Most of the construction materials can be procured locally. Hence, the procurement policy is to procure materials in a reasonable manner by considering supply capabilities and quality vis-à-vis local manufacturers and suppliers.

Materials to be procured from Japan should be kept to a minimum, and should be restricted to items which cannot be procured locally due to special specifications, poor performance or simply an insufficient local supply capability.

(2) Procurement in Japan

The equipment and materials to be procured in Japan are to be manufactured and prepared in accordance with order specifications. Movable partitions, aluminum coping, elevators, generator and other materials and equipment are to be manufactured on order. Unlike standard items currently available on the market, these equipment and materials are prepared only after an order has been placed in a process that starts with the ordering and includes design, approval, manufacture, packing and shipping, and they thus require more time for manufacture than mass-produced products. Consequently, it will be necessary to place orders for them in accordance with the progress of the construction work.

Moreover, because unloading and customs clearance, etc. at local ports may take a long time, early arrangements should be made through close liaison with the Project implementing agency so that these procedures may be smoothly expedited.



(3) Local Procurement

Since almost all the construction materials can be locally procured, the facilities can be maintained without any particular difficulties and, even if equipment and materials suffer damage, they can be quickly repaired. However, sufficient consideration should be given to ensuring uniform quality and supply volumes of materials so that they do not hinder the functions of the buildings and the construction process.

(4) Costs

Upon comparing materials that can be procured both locally and in Japan, those with lower costs will be employed. Procurement from Japan requires additional packing, transportation and insurance expenses on top of the market prices, but import duties are exempt.

(5) Procurement Schedule

Based on the above-mentioned factors, materials and equipment to be used in construction of the Project facilities will be procured in the manner described below.

1) Construction of Building Frames

Almost all the materials required in the construction of building frames, namely sand, gravel, cement, concrete, reinforcing bars, steel frames, concrete blocks, and bricks, are locally available in the Philippines. However, proper care should be taken with regard to the procurement of reinforcing bars and cement because such items can sometimes be difficult to obtain as a result of the boom in the construction sector.

2) Interior and Exterior Finishing Work and External Work

Almost all the materials required in the buildings, namely timber, aluminum fittings, plastering materials, tiles, roof tiles, metal roofing materials, paints, and glass are locally available in the Philippines (some of these materials are imported). However, aluminum coping, waterproofed materials and other special items, as well as hardware and metal fittings for moving partitions, etc. (due to maintainability) are to be procured in Japan.

3) Air-conditioning and Sanitary Work

Regarding the air-conditioning and sanitary work, as the quality level of local materials (mainly imported items from third countries) has improved in recent years, priority shall be given to local procurement as much as possible.

Apparatus (such as valves and dampers) to be used in this work are to be procured in Japan, but sanitary ware shall be procured in the Philippines. Air conditioners, fans, and other instruments are to be procured in Japan, but they may be procured in the Philippines after close checking of their costs.

4) Electrical Work

Electrical work materials such as illumination lamps, power transformers, electric wires and cables, and PVC pipes are to be procured locally (including imports from third countries). Lighting fixtures, power distribution boards, power control panels, telephone exchanges, and low-voltage electrical apparatus, etc., for which ready-made items are suitable, are to be procured locally as far as possible, after first comparing costs. Specially designed lighting fixtures shall be procured in Japan.

5) Equipment Work

The equipment and instruments to be installed in the Project facilities shall basically be procured in the Philippines to make maintenance easy. However, training equipment may need to be procured in Japan, in which case due care should be taken with regard to marine and inland transportation. Moreover, engineers specialized in the operation of such equipment should be dispatched at the time of installation. For some advanced instruments, it may be necessary to consider training of the Philippine staff members to accustom them to operation methods, to ensure that the instruments are utilized efficiently after installation.

Table 3-1-1 Study of Quality of Main Construction Materials and Countries of Procurement

Work	Equipment/ Materials	Country of Procurement	Quality			Remarks
			Good	Normal	Poor	
Structural work	Reinforcing bars	Philippines		○		Cheaper than Japanese products.
	Cement	Philippines		○		Supply becomes scarce in the dry season, causing the price to rise.
	Forms	Philippines		○		Veneer imports are prohibited.
	Deck forms	Philippines			○	But-end processing means that there is little cost advantage. Imported flat decks are more advantageous.
	Pre-stress concrete	Philippines	○			Commonly used
	Reinforcing bars	Philippines		○		Time is required for manufacture. Asbestos fireproof covering is a problem.
	Concrete blocks	Philippines		○		Commonly used blocks have a thickness of 100 or 150.
Roof work	Color steel sheet	Philippines	○			Widely used. Colors are limited.
	Water proofing	Japan		○		To be asphalt water proofing for easy maintenance.
Exterior finishing work	Spray tiles	Philippines		○		Made by a Japanese affiliate and widely used.
	Adobe stone	Philippines		○		Used in brick form. Relatively cheap.
	Terrazzo washing	Philippines		○		Widely used.
	Glass	Philippines		○		Use glass made by a Japanese affiliate.
Fittings	Aluminum window frames	Philippines	○			Imports from third countries (Singapore, etc.) are usually assembled on site. Natural coloring frames are available.
	Stainless steel	Japan			○	A local company has a technical tie-up with a Japanese corporation, but quality is poor.
	Steel	Japan			○	The processing precision of local steel is poor.
	Sliding walls	Japan			○	Local products lack good precision and sound proofing.
	Wood fittings	Philippines		○		Widely used.
Interior finishing materials						
Floors	Terrazzo block	Philippines	○			There is a wide range to choose from.
	Stone	Philippines		○		There is a wide range to choose from. Mikage granite is imported from Korea, and so on.
	PVC tiles	Philippines		○		There is a relatively wide range available.
	Long PVC sheet	Japan		○		Not produced locally.
	Carpets	Philippines		○		Poor quality means that settling is poor.

Work	Equipment/ Materials	Country of Procurement	Quality			Remarks
			Good	Normal	Poor	
Floors	Tile carpets	Japan		○		Not produced locally.
	Tiles	Philippines		○		There is some irregularity in color and form.
	Parquet	Philippines		○		On the scarce side, but procurable.
Baseboard	Soft baseboard	Philippines	○			Quality is good.
Walls, ceilings	Light steel substrate	Japan		○		There is one local producer, but prices are high and delivery is unstable. There is a high demand for imports.
	Boards	Japan		-		Except for veneer and wooden panels large contractors use imports.
	Paint	Philippines		○		There is a Japanese affiliate.
	Crossing	Philippines		○		Inventories need to be checked before use.
Ceilings	Ceiling substrate	Philippines		○		T-bars or wooden trusses and veneer substrate are generally used.
Furniture	Wooden furniture	Philippines	○			Widely used.
	Steel furniture	Philippines		○		Widely used.
	Plastic furniture	Philippines		○		Widely used.
Others	Elevators	Japan		-		Major makers have agents and maintenance is sufficient.
Air-conditioning	Package-type air conditioners	Philippines		○		Local products are poor in quality, however, factories of America Carrier and York do import from nearby countries. Maintenance is also possible.
Sanitary work	Pumps	Philippines		○		Local products are poor in quality, however, good quality German, American, British and Japanese pumps can be procured.
	Valves	Philippines		○		Local products are poor in quality, however, good quality Australian, American and Japanese valves can be procured.
	Sanitary ware	Philippines		○		Local ware offers no problems and is used in local hotels.
	Water tanks	Japan		-		FRP tanks are not manufactured locally. Imports can be obtained from countries other than Japan.
Electrical work	Transformer	Philippines		○		MERALCO specifications.
	Panels	Philippines		○		Existing products are small and become overheated. Special ordering is necessary.

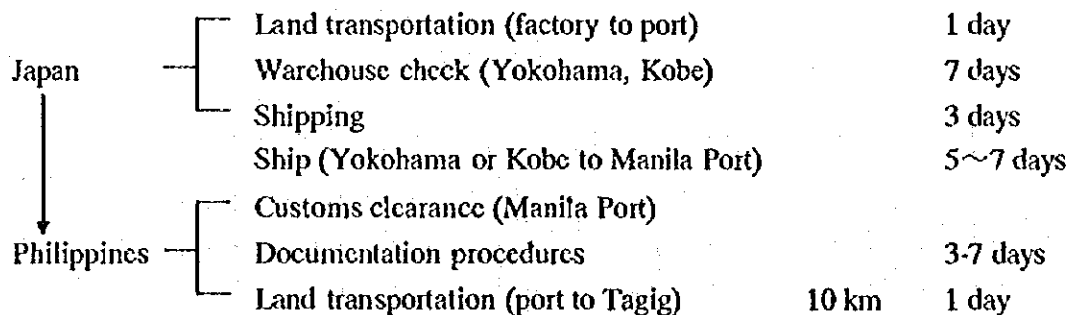
Work	Equipment/ Materials	Country of Procurement	Quality			Remarks
			Good	Normal	Poor	
Electrical work	Lighting fixtures	Philippines		○		Usually, parts are imported and assembled on site. Imports are sometimes cheaper.
	Telephone exchange	Philippines		○		Procurement is possible.
	Electric cable	Philippines		○		Local cable is relatively expensive and limited in variety.
	Wiring conduit pipes	Philippines		○		Procurement is possible, and imports from Korea are also available at a cheap price.

(7) Procurement Plan for Main Construction Machinery

Local sub-contractors and machine lease companies possess all items of general machinery needed for construction work, and, since all the machinery required for the Project can be procured locally, all such items shall be procured in the Philippines. However, care should be taken regarding maintenance because, compared with Japan, breakdowns are apt to occur due to rough handling and poor machine maintenance.

(8) Means of Transportation of Main Equipment and Materials to the Construction Site, and Transportation Periods

Items to be procured in Japan will mainly be transported by sea, however, in cases where urgency is required, air transportation will also be considered. Below are indicated the processes and required periods in the case of marine transportation.



Marine transportation requires approximately one month, whereas air transportation takes only around one week. Also, in cases of small items, air mail (DHL, etc.) may also be considered.

When importing, approval needs to be obtained from the Government of the Philippines for the list of items being imported.

3.1.6 Implementation Schedule

When the construction of the facilities is implemented under the Grant Aid System of the Government of Japan, the following procedures are to be taken:

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

After the E/N is signed, TESDA (Consultant Agreement, Construction Contract, Certificates for Payment, etc.) will act as the implementing agency of the Philippine Government.

(1) Detailed Design Work

Tender documents will be prepared based on the basic design, and these will consist of detailed design drawings, specifications, calculations and budget statements, etc. Close discussions are held with related agencies of the Government of the Philippines in the initial, middle and final stages of the detailed design preparation process. After the final results are approved by the agencies concerned, tendering procedures will be undertaken.

(2) Tendering

After the detailed design work is completed, prequalifications (PQ: preliminary review for qualification of applying contractors) are announced and carried out in Japan. In accordance with the review, TESDA, as the implementing agency, will invite tenderers

Table 3-1-2 Implementation Schedule

	1	2	3	4	5	6	7	8	9	10	11	12
Phase I (Main Building)												
Phase II (Dormitory)												
Construction & Supply Equipment												
Construction												