

(4) Utilities and Building Facilities

1) Basic Design Concepts of the Utilities Planning

The design concepts for the utilities and facilities planning shall be based on the following :

- a) The tropical climatic conditions shall be considered such as high temperature and high humidity.
- b) A hygienic plan shall be made considering the characteristics of the Institute of Nursing.
- c) Equipment and materials shall be used considering the ease of maintenance and high durability. Especially piping material shall meet the water quality at the site.
- d) Locally (in a local market) available materials, equipment and spare parts shall be selected in principle.
- e) The utilities planning shall be made considering environmental pollution.

Based on the above design concepts, an outline of the utilities as facilities planning will be described hereunder.

2) Power Receiving

6.6 KV and 33 KV underground power supply cables of MEPE (Myanmar Electric Power Enterprise) have been installed along the Bogyoke Aung San Road.

The existing Institute of Nursing receives a branch from this 6.6 KV high-tension (HT) line to the sub-station located near the west side gate and is distributed to the electrical room, the New Yangon General Hospital and adjacent dwellings.

The electricity supply for the new facilities will be fed from the switchgear which will be newly provided in the existing sub-station and connected to the new HT receiving panel in the electrical room in the new facilities.

The Japan side will supply the additional switchgear, cable and conduit for the new facility, and the Myanmar side will execute the cable installation including the civil works. All works from the HT receiving panel will be executed by the Japan side.

The receiving power shall be of 3 phase, 3 wire, 6.6 KV, 50 Hz and an expected 300 KVA.

The underground cable works within the site, proper conduits and manholes shall be provided for the protection of cables as well as enhancing ease of installation of the cables.

3) Main Sub-Station

The main substation will be located at the class room building and sufficient space shall be considered for any increase of the electrical demand due to expansion of the facilities in the future.

It is observed that there are stoppages of power supply once in a while and the variation of the voltage fluctuation is a maximum 10 %, even in Yangon City.

However, because there are no critical matters arising from this problem, and as an emergency generator set and a constant voltage regulator have not been provided in the existing facilities, the new facility is also not required to provide such facilities or measures.

A vacuum circuit breaker (VCB) will be provided for the ease of maintenance and a VCB's coupler will be provided for the increasing power demand in the future.

A transformer will be of the dry type instead of the oil filled type considering a safety of the operation and ease of the maintenance.

The capacity of the transformer is calculated as follows :

Lighting and Socket Outlet

Class Rooms	4,100 m ² x 40 W/m ² = 164 Kw
Dormitories	7,200 m ² x 20 W/m ² = 144 Kw
Others	680 m ² x 20 W/m ² = 7 Kw
Sub-total	315 Kw

Power

Water Supply	35 Kw
Air Conditioning	30 Kw
Kitchen Equipment	10 Kw
Sub-total	75 Kw
Total	390 Kw

The demand and the power factor are assumed to be 0.6 and 0.8 respectively for the lighting/socket outlet and power supply system .

The required capacity of the transformer is calculated as follows :

$$(315 \text{ Kw} \times 0.6 + 75 \text{ Kw} \times 0.6) / 0.8 = 293 \text{ KVA}$$

Therefore, the required capacity of the transformer will be 300 KVA.

4) Lighting and Socket Outlet

Fluorescent lights which are mounted directly on the ceiling will mainly be used for the new buildings, taking low energy conservation into consideration and incandescent lights will be used in the entrance hall and other particular rooms.

The illumination level of each room will not comply with the IES (Illuminating Engineering Society) and/or JIS standards, but it will comply with the design standards which are commonly used in Myanmar as the result of discussions with the engineers of the Public Works.

The illumination level of various rooms are as follows :

Room	Illumination level (lux)
Class Room	200 to 300
Demonstration Room	200 to 300
Laboratory	200 to 300
Library	200 to 300
Book Store	150 to 200
Seminar Room	200 to 300
Conference Room	200 to 300
Teaching Staff Room	200 to 300
Office	200 to 300
Dormitory Room	100 to 200
Dining Room	200 to 250
Kitchen	200 to 250
Store	30 to 75
Toilet & Shower Room	100 to 200
Corridor	50 to 75

The street lights will be provided around the entrance hall and each building at an interval of 30 to 50 meters for security purposes. On/off switches for the street lights will be by means of a photocell switch and timer.

The socket outlets shall be of the BS type and two socket outlets will be provided at each entrance door of the class room and four for each dormitory room.

5) Telephone System

There is a CCP (cross connection point No. 202) of the Myanmar Posts & Telecommunication on Morton Road and the telephone line for new facility can be connected to this CCP. The PABX for the new facility will have 8 inter office trunk lines and 32 local trunk lines and will be installed in the office.

The Japan side will supply the cable and conduit between the CCP and the MDF (Main Distribution Frame) and the Myanmar side will execute the cabling work including the civil work. However the manholes and the conduit within the site will be supplied and installed by the Japan side.

The telephone outlets will be planned based on the provisions of public phones in the future. The PABX will be provided with a battery and battery charger to enable for communication without the power supply in the case of emergencies such as an outbreak of fire.

The telephones to be connected to the PABX will be:

Dormitory	:	Warden Room	1
		Kitchen	1
Class RM Bldg.	:	Rector's Room	1
		Reception Room	1
		Office	6
		Teaching Staff RM	5
		Conference Room	1
		Library	1
Sub-total			17

For public telephone outlets for future

Dormitory	:	Ground Floor	3
Dining & Kitchen	:	Dining	2
Class RM Bldg.	:	Entrance Hall, 2F Hall	3
Sub-total			8

6) Public Address System

As most of the students are studying day and night, and living in the dormitories, a public address system will be required for communication and emergencies, as well for the teaching staff.

The main equipment (200 W) will be provided in the office and the BGM (back ground music), chime and programmable controller will be mounted in a self-standing cabinet.

The main equipment in the existing facilities has been interconnected to the fire alarm panel and automatically functions in the case of an emergency. However the provision of this is a low priority and will not be provided in the new facilities.

Loudspeakers will be mounted on a wall in each classroom, office, staff room, dining room, etc. and in the corridors of the dormitory.

A battery and a battery charger will be provided for the amplifier in order to announce the emergency status in the case of a power failure such as during an outbreak of fire.

7) Intercom System

The following rooms do not require telephone sets, but intercoms will be provided for quick communication among internal rooms. This facility is strongly requested by the Myanmar side and is commonly used for communications.

The main equipment will be installed in the office and slaves secondary units will be provided in the following rooms. Communicated can be made between the master unit and a slave or between slaves.

Classroom Building	Teaching Staff Rm.	1
	One on Each Floor	4
Dormitory	Rector's Room	1
	Warden Room	1
	Dining Room	1
	Kitchen	1
Others	Guard House	1
	Electrical Room	1
	Mechanical Room	1
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Total		12

8) Clock System

An electrically operated wall clock will be installed as a symbolic statement of the Institute of Nursing at the top of the external wall of the dormitory, the same as for the existing facilities. The existing facility has been equipped with a master clock in the office and operates with a chime. However, for the new facility this will not be provided due to the low priority of the system.

9) Fire Alarm System

There are no express regulations for a fire alarm system in Myanmar, but, the Fire Services Department will comply with the B.S and/or Singapore Standards. The Fire Services Department suggested that a manual call points system should be provided for the new facility which is the same as the existing facilities.

The manual call point system is an effective measure for escaping during the outbreak of a fire.

Combination cabinets which contain a bell, a red lamp and a push button will be provided for every 500 m² of each floor of the buildings .

The main fire alarm panel will be located in the office and a sub-main fire alarm panel will be provided in the warden's room in the dormitory.

A batteries and a battery charger will be provided for a back-up power supply in the case of a power failure.

10) Lightning Protection System

A lightning arrester will be provided at the highest point of the dormitory buildings and roof conductors will be provided for other buildings.

A down conductor will be installed at an interval of 30 to 40 meters and grounded to the earth. The grounding resistance of the grounding terminals shall be less than 10 ohms (Ω) and indication posts and terminal boxes shall be provided for testing.

11) Water Supply System

City water mains are laid at the north side and south side of the road on the site, having a pipe diameter of 150 mm and 225 mm, respectively. However the city water is not reliable and is only available from 7:00 am to 10:00 am with neither sufficient capacity nor pressure.

Therefore, well water will be used as the water source for the new facility, the same as for the existing facility, after discussions with the Water and Sanitation Department in YCDC were made.

The well water will be fed from a deep well by a submersible pump and filtered by means of a sand separator to be stored in a water reservoir. The stored water will be fed to an elevated water tank after sterilization and supplied to the various utilities by gravity.

The deep well is assumed to have the following specification based on the existing data:

Casing diameter	:	250 mm
Depth	:	60 m
Yield	:	45 m ³ /h
Head	:	70 m

The filter medium for the sand separator is to be a regeneratable type available locally, considering the supply of spare parts in the future.

A poly-vinyl chloride pipe will be used for the water supply system considering the actual site conditions and being corrosion-proof, economical and easy to install.

a) Water Demand

Students (includes demands in dormitory)	:	470 x 200 l/day =	94,000 l/day
Teaching and other Staff	:	80 x 100 l/day =	8,000 l/day
Irrigation and others	:		10,000 l/day
Total			<hr/> 112 m ³ /day

b) Water Reservoir

To store 50% of one day's consumption :
 $112 \text{ m}^3/\text{day} \times 0.5 = 56 \text{ m}^3$ (6 m x 6 m x 2 m H, made of FRP)

c) Elevated Water Tank

To store 25% of one day's consumption :
 $112 \text{ m}^3/\text{day} \times 0.25 = 28 \text{ m}^3$ (5 m x 2 m x 3.5 m H, made of FRP)

d) Water Feed Pumps

Operation hours	:	14 hours
Average hourly demand	:	$112 \text{ m}^3/\text{day} / 14 \text{ hr} = 8.0 \text{ m}^3/\text{hr}$
Maximum hourly demand	:	$8.0 \text{ m}^3/\text{hr} \times 2 = 16.0 \text{ m}^3/\text{hr}$
Peak hourly demand	:	$16.0 \text{ m}^3/\text{hr} \times 2 = 32.0 \text{ m}^3/\text{hr}$
Selected Pump	:	$600 \text{ l}/\text{min.} \times 35 \text{ m} \times 11 \text{ kW} \times 2 \text{ nos.}$

(Automatic alteration operation)

12) Drainage System

A 300 mm diameter sewage pipe was installed on the Bogyoke Aung San Road when the New Yangon General Hospital was built, and the waste water from the new facilities can be connected to this sewage line.

The soil, waste and rain water from the new facilities are to be drained separately. The soil water will be treated by a septic tank and then percolated underground by a soak pit.

An overflow pipe will be provided at the soak pit to avoid overflow from the septic tank due to the rising of the ground water during the rainy season.

The waste water from the showers, lavatories, etc. will be connected directly to the existing sewage line.

A rain water channel has been provided along the east side fence of the existing facility, and rain water from new facilities can be connected to this existing channel.

Minor modifications to the existing channel may be required due it being narrow and shallow.

The soil and waste water piping works within the site will be executed by the Japan side including the construction of the septic tank and soak pit. The connections between the manhole on the site and the existing manhole will be done by the Myanmar side including the civil works.

The rain water drainage system within the site will be installed by the Japan side, and the rain water channel outside the boundary, modification and connection to the existing channel will be done by the Myanmar side including the civil works.

13) Plumbing Fixtures

The plumbing fixtures shall be carefully selected considering the local conditions of Myanmar.

Squatting type water closets have been utilized in the existing toilets in the dormitories. However, this utilization is not hygienic due to the wetting of the surface of the floor, and therefore this has to be considered with a proper drainage system for the floor.

Western style water closets for the teaching staff and squatting type water closets for the students are required by the Institute of Nursing.

The existing shower booths were designed for the purpose of both the cleaning of the body and washing of the clothes. This is one of the reasons for the clogging of the drainage pipes.

As the existing drying area seems to be too small, badly ventilated and shaded, the new facility shall be required to improve on these points.

The space of the area, the number of socket outlets and the water supply may be considered for the future provision of washing machines.

The plumbing fixtures may be procured from a third country considering the quantities and the delivery schedule of the fixtures.

As the manufacturers of TOTO, INAX, Cola and American Standard are available in the local market, spare parts for these makers can be supplied without any difficulties.

14) Fire Fighting System

There are no express regulations for a fire fighting system in Myanmar, but the Fire Services Department will comply with the B.S. and/or Singapore Standards. As per discussions with the Fire Services Department, it was suggested to provide fire hose cabinets with a standpipe system, a fire pump, siamese connections and fire extinguishers (4 kg) at proper locations in the buildings.

The provision of an emergency power generator for the fire pump or a diesel engine driven fire pump is also requested by the Fire Services Department.

However, such provision seems to be difficult to maintain by the Institute of Nursing. A motor driven fire pump will be provided because of the low fire risk of the buildings, the non combustibile structural design and, furthermore, the Fire Services Department are closely located to the new facilities.

Siamese connections and the hose connections for the fire brigade will be provided at easily accessible locations in the buildings.

An underground fire water tank (100 m³) will be located at an easily accessible location as the water source for the fire engines.

15) Kitchen Equipment

The existing kitchen, in so called "Myanmar Style", has stoves fueled by the burning of wooden chips. Smoke fills not only the kitchen area, but also the dining area during cooking. The Institute of Nursing is presently constructing a new kitchen beside the existing canteen building using an LP gas system.

A hygienic kitchen layout for the new facility shall be planned considering separation of supply/return counters, dish washing sinks, food store, toilet for staff, etc.

Kitchen equipment will be able to supply 400 meals at the same time with rice cookers, gas ranges, etc. using the LP gas.

The main equipment for the kitchen to be provided is as follows :

- Gas Fired Rice Cookers : 22 Kg x 4 Nos.
- Gas Ranges : 2 Outlets x 2 Nos.
- Soup Kettle : 30 Kg x 1 No.
- Sinks
- Cooking & Working Tables
- Shelves
- Walk-in Refrigerator
- Freezer

16) Air-conditioning and Ventilation System

When the existing Institute of Nursing was built, no air conditioners were provided in the buildings. However several air conditioners were installed in the rector's room, reception room, conference room and book store at a later stage. Considering the above fact and the climatic conditions in Myanmar, a minimum number air conditioners shall be required for the similar rooms in the new facilities, as in the existing facilities.

Furthermore, as a printing machine, over head projectors, sliding projectors, video tape recorders, personal computers, copy machines will be furnished as the donated equipment and a PABX, an amplifier which contain electronics are also to be provided air conditioners are also required for the office, the copy room and the A/V equipment store in order to maintain good operating conditions for the above donated equipment and facilities.

The air conditioners are originally listed in the donated equipment schedule, but such air conditioning work shall be included in the mechanical works considering the coordination between the building works and the electrical works.

The air conditioners will be selected based on a cooling load of 150 kcal/hm².

The rooms to be air conditioned are as follows :

- Rector's Room
- Reception Room
- Office
- Copy Room
- A/V Equipment Room
- Conference Room
- Book Storage

Natural ventilation is the basic scheme for all the rooms, but mechanical ventilation will be utilized in the kitchen and/or where rooms are next to an outside wall such as for the toilet and pantry.

Ceiling fans will be provided in each room of the dormitories and the classroom buildings, which is common in Myanmar.

(5) Building Material Plan

1) Basic Policy

The building material plan shall be formulated and considered based on the climatic conditions, the location of the site, local construction situations, construction period, construction cost, and maintenance and operation costs. Particularly the following matters shall be included:

a) Structural Materials

In principle, the usual materials shall be reinforced concrete for the main frames, with brick walls, as used generally for buildings of similar projects in Myanmar.

b) Finishing Materials

In principle, the finishing materials shall have a high durability and maintainability. The finishing materials of the external walls and roofs, etc., shall be selected in consideration of their costs and strength.

2) Main Finishing Materials

The main finishing materials for the building shall consider the local construction situations, construction period, as well as a reduction in construction and maintenance costs.

External Finishing

Roof:	Corrugated galvanized metal or aluminum sheets
External walls:	Mortar with paint (epoxy)
Fittings:	Aluminum windows, aluminum flush doors, aluminum louvers, steel fittings and aluminum fittings.

Internal Finishing

Ceilings:	Cement mortar
Internal walls:	Cement mortar with paint
Floors:	Terrazzo, cement mortar steel towel finish, plastic tiles, carpet tiles

(6) Equipment Plan

The medical equipment planning will be conducted in line with the following basic policies.

Policy for Natural and Social Conditions

The highest temperature is 38°C and the lowest 15°C in Yangon city where the institute is placed. The humidity is the most important factor to maintain and manage for equipment with over 60% humidity all the year and sometimes reaches 100%. In addition, the electric situation, with voltage fluctuations and power cuts, and the expenditure for maintenance and management must be considered. As the Institute is playing a leading role in the educational activities of nursing, it distributes teaching materials and draws up curricula. The plan considers the Institute's contribution for the improvement of educational standards, as well as the equipment situation.

Policy for Capability of Maintenance and Management

The equipment will be selected on the basis of the condition of the existing equipment supplied by the project of Japan's Grant Aid in 1986, as well as the situation of the maintenance and management system for the equipment and the back-up system of the related ministries. In addition, the implementation of the project does not force a big change to the system for the Myanmar side. Based on these conditions, the appropriate equipment does not require special maintenance techniques or expensive spare parts.

Policy for Local and Third-Country Procurements

Myanmar has the first priority on procurement, with Thailand or Singapore following because they are neighbors and so distribution is convenient to save maintenance and management costs. If there are difficulties for procurement from these countries or inapplicable quality, the equipment will be supplied from Japan.

Policy for Equipment Grade

The Institute is the only nursing university in Myanmar, and leads educational activities of nursing with a plan to establish a master's course. Under such conditions, the selection of equipment is considered to be improving nursing education and reducing expenditure and labor for maintenance and management. Therefore, the equipment grade will be set at a similar level as the existing equipment supplied by the previous project.

1) Equipment for Lectures

< Medical Books/Off-set Printing System >

Although the necessity of medical books is high, other organizations have already donated some books. Since the Myanmar side requests an off-set printing system more than the books, the books are excluded from the request list. For the maintenance of the off-set printing system, a local agent has the capability to supply spare parts and consumable goods and to repair in the case of trouble.

< Human Body Models >

The basic policy is to have one item for one lecture. All necessary basic items are arranged and selected to be supplied in this project. At least 2 models per item for small items such as arteries of the brain, hearts, eyeballs and ears will be supplied for a large lecture room (for over 100 students) because they must be handed to each student to observe. Existing models and models with electrometers are excluded from the lists.

< Audio-visual Materials >

The frequency of using the OHP, slide projector and video-tape recorder is very high, and especially the OHP's, which are utilized in every lecture and so more are needed. The necessary quantity of OHP is 5 for the lecture rooms and 1 for the conference rooms. Five tape recorders can be used in 5 out of the 10 lecture rooms. The frequency of using slide projectors is slightly lower than for OHP's, and the existing quantity is enough for educational activities. However, a camera to make slides is necessary and it is appropriate that it should be supplied. Since associated consumable goods such as slide sheets, slides, video tapes and various

kinds of video software are supplied by WHO, UNICEF and other donors, this project is not concerned for these. At least one video deck and monitor set is needed for educational activities.

Tape recorders for linguistic training are to improve the learning in lectures. Twenty five tape recorders will be allotted to one class of 25 students, i.e. one per student.

Since the humidity in Myanmar is very high at around 80% all the year round, a storage place to keep these tape recorders at night or in holidays is required. An air conditioner or a dehumidifier is needed in the storage room.

2) Equipment for Experiments

Students have to master simple clinical experiments during their school years in case they are assigned to medical institutes where there are no laboratory technicians. This project includes the most basic equipment such as a spectrophotometer, a hematocrit centrifuge and a water bath that the Institute is currently short. Glass instruments are also desirable for experiments and they too are in short supply. The number to be supplied should consider an extra amount because of their fragility.

3) Equipment for Practical Training

< Human Models >

Basically, one class is composed of 50 students. A model and its number for practical training should be determined on the basis of its purpose and frequency. A model for practical training is used frequently, and a model for 5 students is appropriate. Since 6 existing models are currently usable, additional 4 models will be supplied. Judging from the frequency of use, 2 breast cancer palpation simulators, 2 intubation simulators, 3 child birth phantoms and a simulator are planned for this project.

Since training dolls are for multipurpose use, combinedly usable models are deleted. From a functional view, training dolls will be supplied from Japan. Although not on the request list, models such as a female pelvis, a incubation disease model, and a first aid simulators will be added to the list later by the Myanmar side and it is appropriate that they are supplied.

< Personal Computers >

The content of lectures for the computer system and usage is limited in the Institute to basic principles and operation training because computer operation depends on makers, models and software. The appropriate number of computers for one class of 50 students to be two.

< Equipment for Office Work >

A copy machine as well as an off-set machine is necessary to duplicate materials for classes as well as for administration purposes. The necessary quantity of 4 computers will be allotted as 2 for the faculty rooms, 1 for the administration room and 1 for the library. These rooms require air conditioners to protect the computers from high humidity. Other requested equipment for office work includes typewriters, manual binding machines, paper cutters, heavy duty punches, heavy duty staples, electronic calculators and pencil sharpeners. The

request for typewriters is appropriate for the reasons of the existence of agents and the being commonly used in Myanmar. Manual binding machines will be included in the project to bind duplicated materials. Paper cutters and heavy duty punches are appropriate for the project and will be supplied from a third country because of the difficulty of local procurement. Electronic calculators and pencil sharpeners are inexpensive in Myanmar, so the purchase of this equipment should be allotted to the Myanmar side.

< Vehicles >

The requests to supply 2 buses with a capacity of 30 passengers and a 4t-truck are appropriate for transferring students of the Diploma Course to the training sites. The maintenance system for vehicles in Myanmar is sufficient and effective

< Furniture >

The existing facility is considerably short of furniture, and the number necessary is several thousand. It is impossible for the Myanmar side to supply all the furniture by itself. Main items of furniture such as 600 chairs for classrooms, 400 beds for dormitories, 400 desks, 400 chairs and 400 cupboard are considered to be supplied by the Japanese side.

< Others >

Reagents are included in the request list but as they are consumable goods it is decided that it should be the portion of the Myanmar side. Gardening tools are also excluded because they are not relevant to nursing education. Some of the equipment for linguistic education requires special technique of maintenance and management and therefore they are excluded. The request for a speaker system to be used in the conference room is appropriate because of the high frequency of use. Air conditioners and electronic fans are included in the building construction side because their installation depends on room size, purpose of use and location. The request for a generator is excluded because of the low priority of it's necessity.

The equipment planning will be conducted in line with the following basic policies:

- A. The equipment will be used for educational activities of nursing.
- B. The equipment will be appropriate for the purposes of nursing education, educational activities, size of the facility and number of students.
- C. It will be equipment adaptable to climatic conditions and environment around the site and the facility.
- D. The equipment will not mean a great change to the existing management system.
- E. It will be equipment that the institute can afford by itself at the time of renewal.
- F. The equipment will be appropriate for technical and financial capabilities for the maintenance and management.
- G. They are not consumable goods or reagents.
- H. The function of the equipment is not be duplicated by another.
- I. The equipment will require comparatively simple maintenance.
- J. The makers of the equipment have agencies in Myanmar and neighbouring countries to supply consumable goods and spare parts.
- K. The cost of equipment will be beyond the Myanmar side.

L. The equipment will not be a part of the building construction portion.

Table 2-8 shows the equipment that meets the above criteria. The study result of equipment will be shown in Table 2-9.

Table 2-8 Equipment List (Procurement in Myanmar)

Item No.	Equipment	Q'ty
OF - 13	COPY MACHINE	4
OF - 14	COMPUTER	2
OF - 15	PRINTER	1
OF - 16	ENGLISH TYPEWRITER PICA, MANUAL	6
FN - 1	BED	402
FN - 2	BED FOR DEMONSTRATION ROOM	10
FN - 3	ARMED CHAIR	210
FN - 4	ONE ARMED CHAIR	600
FN - 5	STOOL	57
FN - 6	OFFICER CHAIR	3
FN - 7	DINING CHIR	781
FN - 8	CHAIR FOR RECEPTION ROOM	24
FN - 9	ARMLESS CHAIR	108
FN - 10	PLATFORM	10
FN - 11	OFFICER DESK	1
FN - 12	DOUBLE PEDASTAL DESK	3
FN - 13	SINGLE PEDASTAL DESK	466
FN - 14	TABLE	175
FN - 15	LONG HIGH DESK	10
FN - 16	CENTRE TABLE	4
FN - 17	LECTURERS TABLE	10
FN - 18	DEMONSTRATION TABLE	1
FN - 19	OFFICE ALMIRAH	5
FN - 20	ALMIRAH	5
FN - 21	CUPBOARD	400
FN - 22	SHELF	10
FN - 23	BOOK CASE W/ GLASS	10
FN - 24	DISPLAY CASE	5
FN - 25	COUNTER (ROUND TYPE)	1
FN - 26	COUNTER (SQUARE TYPE)	1

Tabel 2-8 Equipment List (Procurement in Third-Country)

Item No.	Equipment	Pri.	Q'ty
PR - 15	DRESSING CARTS	A	4
PR - 16	STERILIZING DRUMS	A	5
PR - 17	BED PANS	B	5
ED - 11	GREEN BOARD	B	15
ED - 12	GREEN BOARD, MOVABLE	B	5
ED - 13	NOTICE BOARD	B	20
OF - 5	MANUAL PUNCH/BIND MACHINE	B	2
OF - 6	PAPER CUTTERS	B	3
OF - 7	HEAVY DUTY STAPLES	B	3
OF - 8	HEAVY DUTY PUNCHES	B	4
OF - 9	METAL BOOK TRUCK	B	3
OF - 10	CARD CABINET FOR LIBRARY	B	2
OF - 11	BOOK SHELF FOR LIBRARY	B	112
OF - 12	SHELF FOR PREPARATION ROOM	B	4
LB - 21	EXAMINATION TABLE	B	12
LB - 22	SINK	B	2

Table 2-8 Equipment List (Procurement in Japan)

Item No.	Equipment	Pri.	Q'ty
ML - 1	COMBINATION TORSO (A)	A	1
ML - 2	COMBINATION TORSO (B)	A	1
ML - 3	MALE FIGURE	A	1
ML - 4	FEMALE FIGURE	A	1
ML - 5	HUMAN SKELTON, MALE	A	1
ML - 6	HUMAN SKELTON, FEMALE	A	1
ML - 7	ARTERIES OF THE BRAIN	A	1
ML - 8	FORM MODEL OF EACH SEGMENT OF SPINAL CORD	A	1
ML - 9	TRACT AND DEFLECTION OF SPINAL NERVE	A	1
ML - 10	SPINAL CORD AND APINAL CANAL	A	1
ML - 11	HEART	A	2
ML - 12	DYNAMIC HEART, HAND-WORKED	B	1
ML - 13	RESPIRATORY ORGANS	A	1
ML - 14	BRONCUS, PULMONARY ARTERY AND VEIN	A	1
ML - 15	ENLARGED OF THE ALVEOLI	A	1
ML - 16	DIGESTIVE SYSTEM	A	2
ML - 17	URINARY ORGANS	A	1
ML - 18	KIDNEY, NEPHRON AND GLOMERULUS	A	1
ML - 19	LIVER AND GALLBLADDER	A	1
ML - 20	EAR, SPECIAL LARGE	A	2
ML - 21	EYEBALL, LARGEST SIZE	A	2
ML - 22	SKIN, MICROSCOPICAL STRUCTURE	A	1
ML - 23	MALE GENITAL ORGANS	A	1
ML - 24	FEMALE GENITAL ORGANS	A	1
ML - 25	TRANSPARENT FEMALE PELVIS	A	1
ML - 26	TWIN PREGNANCY	B	1
ML - 27	NOMAL PREGNANCY	B	1
ML - 28	FETAL CIRCULATORY SYSTEM	B	1
ML - 29	BIRTH-FIRST STAGE	A	1
ML - 30	BIRTH-SECOND STAGE	A	1
ML - 31	BIRTH-THIRD STAGE	A	1
ML - 32	CONCEPTION THEORY MODEL	A	1
ML - 33	LOCHIA MODEL, 10 KINDS PER SET	A	1
ML - 34	HUMAN PARASITE SPECIMENS	A	1
ML - 35	INTESTINE OF CHOLERA MODEL	A	1
ML - 36	INTESTINE OF DYSENTERY MODEL	A	1
ML - 37	LEGAL INJECTION DISEASE MODEL	B	1
ML - 38	CONJUNCTIVITIES AND TRACHOMA MODEL	A	1
ML - 39	DEVELOPMENTAL STAGES OF BEDSORE MODEL	A	1
ML - 40	TUBERCULIN REACTION	A	1
ML - 41	VENEREAL DISEASE MODEL, MALE, 20 KINDS	A	1
ML - 42	VENEREAL DISEASE MODEL, FEMALE, 20 KINDS	A	1
ML - 43	FEMALA PELVIS	A	2
ML - 44	DEVELOPMENT OF FOETUS	A	1
ML - 45	MUSCULAR SKULL	B	1
ML - 46	TEETH WITH LOWER JAU	B	1
ML - 47	LARYNX	B	1
ML - 48	TOUNGUE AND LARYNX	B	1
ML - 49	NASAL CAVITY, PHARYNX AND LARYNX	B	1
PR - 1	TRAINING DOLL	A	10
PR - 2	RESUSCITATION BABY	A	5
PR - 3	CATHETERIZATION AND RECTAL SIMULATOR	A	10

Table 2-8 Equipment List (Procurement in Japan)

Item No.	Equipment	Pri.	Q'ty
PR - 4	BREAST CANCER PALPATION SIMULATOR	A	2
PR - 5	INTUBATION SIMULATOR WITH LARYNX, CHILD	A	5
PR - 6	INTUBATION SIMULATOR WITH LARYNX, ADULT	A	5
PR - 7	CHILD BIRTH PHANTOM	A	5
PR - 8	SIMULATOR (FIRST AID)	A	5
PR - 9	BABY DOLL, MALE	B	5
PR - 10	BABY DOLL, FEMALE	B	5
PR - 11	SCALE FOR INFANTS	A	5
PR - 12	BABY RULE	A	1
PR - 13	HEIGHT AND WEIGHING SCALE FOR ADULTS	A	5
PR - 14	INSTRUMENT SET	A	1
LB - 1	BLOOD TEST SET FOR HB	A	20
LB - 2	TABLE-TOP CENTRIFUGE	A	2
LB - 3	WINTROBE TUBES	A	50
LB - 4	CLINICAL SPECTROPHOTOMETER	A	1
LB - 5	SPECIFIC BLOOD-GRAVITY TEST SET	A	4
LB - 6	CLINICAL REFRACTOMETER	A	2
LB - 7	WATER BATH	A	2
LB - 8	MIXER, FOR SMALL CONTAINERS	A	2
LB - 9	HEMATOCRIT CENTRIFUGE	A	2
LB - 10	HEMATOCRIT CAPILLARY TUBE	A	100
LB - 11	MAGNETIC STIRRER, WITH HOT PLATE	A	2
LB - 12	PIPET WASHER	A	2
LB - 13	pH-METER	A	2
LB - 14	BALANCE	A	2
LB - 15	INCUBATOR	B	1
LB - 16	WATER, STILL, 5 Liter/min	B	2
LB - 17	BINOCULAR MICROSCOPE	B	10
LB - 18	LABORATORY STERILIZER	B	1
LB - 19	OVEN	A	1
LB - 20	REFRIGERATOR	A	2
GL - 1	ASPIRATOR, METAL	A	20
GL - 2	BEAKER, TALL FORM, 100mL	A	20
GL - 3	BEAKER, TALL FORM, 200mL	A	20
GL - 4	BEAKER, 500mL	A	20
GL - 5	BOTTLE, REAGENT, CLEAR 1000mL	A	20
GL - 6	BOTTLE, REAGENT, CLEAR 100mL	A	40
GL - 7	BOTTLE, REAGENT, CLEAR 2000mL	A	20
GL - 8	BOTTLE, REAGENT, CLEAR 250mL	A	40
GL - 9	DOPPING BOLLTE CLEAR, 50mL	A	20
GL - 10	BURET, AUTOMATIC, 50mL, W/TEFLON CONCK	A	20
GL - 11	BURET, STRAIGHT BORE, STOPCOCK, 25mL	A	20
GL - 12	BURET, STRAIGHT BORE, STOPCOCK, 50mL	A	20
GL - 13	CLAMP, STEEL, LARGE SIZE FOR FLASK	A	20
GL - 14	CLAMP, STEEL, MEDIUM SIZE FOR FLASK	A	20
GL - 15	CORK BORER, 12 PCS/SET	A	20
GL - 16	CUP, POLYETHYLENE, 100mL, 100 pcs/box	B	40
GL - 17	CYLINDER, GRADUATED 1000mL	A	20
GL - 18	CYLINDER, GRADUATED 500mL	A	20
GL - 19	CYLINDER, GRADUATED 100mL	A	40
GL - 20	CYLINDER, GRADUATED 50mL	A	40
GL - 21	DESCICCATOR, 300W x 345D x 535H mm	A	20

Table 2-8 Equipment List (Procurement in Japan)

Item No.	Equipment	Pri.	Q'ty
GL - 22	DIGITAL STOP WATCH	A	20
GL - 23	ERLENMEYER FLASK, 300mL	A	20
GL - 24	FILTERING BOTTLE, 1L	A	20
GL - 25	FILTERING BOTTLE, PORCELAIN, ϕ 11cm	A	20
GL - 26	FILTERING PAPER, 9cm, 100 sheets/box	A	20
GL - 27	FLASK, VOLUMETRIC, WITH STOPPER, 1000mL	A	20
GL - 28	FLASK, VOLUMETRIC, WITH STOPPER, 500mL	A	20
GL - 29	HOSE BAND, FOR VACUUM RUBBER TUBING	A	20
GL - 30	LID FOR SCREW TUBE 20cc, 50 pcs/box	A	40
GL - 31	PINCH COCK, MOHR TYPE	A	40
GL - 32	PINCH COCK, HOFFMAN TYPE	A	40
GL - 33	PIPET, MEASURING, 1mL	A	100
GL - 34	PIPET, MEASURING, 2mL	A	40
GL - 35	PIPET, MEASURING, 5mL	A	20
GL - 36	PIPET, VOLUMETRIC, 10mL	A	20
GL - 37	POLYETHYLENE BOTTLE, 100cc	A	20
GL - 38	POLYETHYLENE BOTTLE, 300cc	A	20
GL - 39	RACK FOR BURET, PVC	A	40
GL - 40	ROD, GLASS, 6mm Φ x 1.5M	A	20
GL - 41	RUBBER TUBING FOR VACUUM, 6mm Φ x 18mm Φ	A	20
GL - 42	SCREW TUBE, WITH LID, 20cc, 50 pcs/box	A	20
GL - 43	SILICON TUBING, 6mm Φ x 10mm Φ x 50M	A	20
GL - 44	SPIN BAR, TEFLON COATED, 20mm	A	40
GL - 45	SPOIT, FOR KOMAGOME TYPE, 10mL, 100/b	A	20
GL - 46	STOPPER, CORK, 500 pcs/box, SEVERAL SIZES	A	20
GL - 47	TEST TUBE RACK, STAINLESS STEEL F/16.5	A	20
GL - 48	TEST TUBE, WITH RIM, 21 Φ 200 mL	A	20
GL - 49	TEST TUBE, 16.5mm Φ 165mm	A	40
GL - 50	TEST TUBE, 18mm O.D. Φ 165mm	A	20
GL - 51	THERMOMETER 0 ~ 200 °C, ALCOHOL	A	40
GL - 52	WASHING BOTTLE, POLYETHYLENE, 500mL	A	40
GL - 53	TEST TUBE HOLDER	A	40
GL - 54	ALCOHOL LAMP	A	40
GL - 55	WIRE GAUGE (12cm x 12cm)	A	20
GL - 56	PIPET BULB	A	40
GL - 57	FUNNEL SEMDIA	A	20
ED - 1	TV MONITOR WITH VIDEO PLAYER	A	1
ED - 2	SLIDE PROJECTOR	A	3
ED - 3	OVERHEAD PROJECTOR	A	6
ED - 4	VIDEO CAMERA	B	1
ED - 5	SPEAKER SYSTEM	B	2
ED - 6	PORTABLE SCREENS	B	6
ED - 7	FLIP CHART STAND	B	10
ED - 8	DOUBLE CASSETTE RECORDER	B	1
ED - 9	AUDIO CASSETTE RECORDER AND PLAYER	B	25
ED - 10	CAMERA WITH ACCESSORIES	B	1
OF - 1	COMPLETE OFF-SET PRINTING SYSTEM	A	1
OF - 2	GESTETHNER MACHINE	B	1
OF - 3	SCHOOL BUS (DIESEL)	A	2
OF - 4	TRUCK (DIESEL)	A	1

Table 2-9 The Study Result of Equipment

No.	Equipment	Original Request	Additional Request	Finally Selected	Selection Criteria															
					A	B	C	D	E	F	G	H	I	J	K	L				
1	TRAINING DOLL	○		⊙																
2	TRAINING DOLL FOR BANDAGE PRACTICE	○			X								X							
3	COMBINATION TORSO (A)	○		⊙																
4	COMBINATION TORSO (B)		○	⊙																
5	MALE FIGURE	○		⊙																
6	FEMALE FIGURE	○		⊙																
7	DISSECTIBLE UPPER EXTREMITY	○			X							X								
8	DISSECTIBLE LOWER EXTREMITY	○			X							X								
9	HUMAN SKELTON, MALE	○		⊙																
10	HUMAN SKELTON, FEMALE	○		⊙																
11	ADULT PLASTIC SKULL	○			X							X								
12	HEAD	○			X							X								
13	BRAIN	○			X							X								
14	BRAIN (HALF SECTION)	○			X							X								
15	ARTERIAL OF THE BRAIN	○		⊙																
16	FORM MODEL OF EACH SEGMENT OF SPINAL CORD	○			X							X								
17	THE TRANSVERSE SECTION OF SPINAL CORD	○			X							X								
18	TRACT AND DEFLECTION OF SPINAL NERVE	○			X							X								
19	NERVE FIBERS & NERVE CELLS IN SPINAL CORD	○			X							X								
20	SPINAL CORD AND SPINAL CANAL	○			X							X								
21	SYMPATHETIC NERVOUS SYSTEM	○			X							X								
22	VERTEBRAL COLUMN	○			X							X								
23	NERVE SYSTEM	○			X							X								
24	CIRCULATORY SYSTEM	○			X							X								
25	NERVOUS SYSTEM, CIRCULATORY & CORTAL SYSTEM	○			X							X								
26	HEART	○		⊙																
27	CORONARY ARTERY	○			X							X								
28	IMPULSE CONDUCTING SYSTEM & CORONARY ARTERY	○			X							X								
29	DYNAMIC HEART WITH AN ELECTROCARDIOGRAPH	○			X	X						X								
30	DYNAMIC HEART, HAND-WORKED	○		⊙																
31	DYNAMIC HEART, ELECTRO-MOTIVE	○			X	X						X								
32	TRANSPARENT THREE INTERNAL ORGANS	○			X							X								
33	LIVER, SPLEEN AND KIDNEY	○			X							X								
34	TRANSPARENT SEGMENT	○			X							X								
35	RESPIRATORY ORGANS	○		⊙																
36	LARYNX	○			X							X								
37	NASAL CAVITY, PHARYNX AND LARYNX	○			X							X								
38	BRONCUS AND BLOOD VESSELS	○			X							X								
39	BRONCUS, PULMONARY ARTERY AND VEIN	○			X							X								
40	BRONCHUS	○			X							X								
41	BRONCHUS AND THE REGION OF THE LUNGS	○			X							X								
42	ENLARGED OF THE ALVEOLI	○			X							X								
43	MEDIAN SECTION OF HEAD	○			X							X								
44	TONGUE AND LARYNX	○			X							X								
45	NASAL CAVITY	○			X							X								
46	STOMACH	○			X							X								
47	TEETH, LOWER JAW	○			X							X								
48	TEETH REPRODUCTION	○			X							X								
49	PATHOLOGICAL & ANATOMICAL MODEL OF TEETH	○			X							X								

Table 2-9 The Study Result of Equipment

No.	Equipment	Original Request	Additional Request	Finally Selected	Selection Criteria														
					A	B	C	D	E	F	G	H	I	J	K	L			
50	DEVELOPMENT STAGE OF TEETH	<input type="radio"/>				X						X							
51	DIGESTIVE SYSTEM	<input type="radio"/>		<input checked="" type="radio"/>															
52	INTESTINES	<input type="radio"/>				X						X							
53	KIDNEY WITH SUPRARENAL BODY	<input type="radio"/>				X						X							
54	URINARY ORGANS	<input type="radio"/>		<input checked="" type="radio"/>															
55	KIDNEY, SHOWING MICROSCOPICAL STRUCTURE	<input type="radio"/>				X						X							
56	MALPIGHIAN BODY	<input type="radio"/>				X						X							
57	KIDNEY, NEPHRON AND GLOMERULUS	<input type="radio"/>				X						X							
58	LIVER AND GALLBLADDER	<input type="radio"/>		<input checked="" type="radio"/>															
59	ORGANIZATION OF THE LIVER	<input type="radio"/>				X						X							
60	EAR, SPECIAL LARGE	<input type="radio"/>				X						X							
61	EAR	<input type="radio"/>				X						X							
62	EYEBALL, LARGEST SIZE	<input type="radio"/>				X						X							
63	ERE IN ORBIT	<input type="radio"/>				X						X							
64	SKIN, MICROSCOPICAL STRUCTURE	<input type="radio"/>		<input checked="" type="radio"/>															
65	SKIN	<input type="radio"/>				X						X							
66	EMBRYO'S HEAD ROTATION SIMULARTOR	<input type="radio"/>				X						X							
67	ELECTROMOTIVE CHILDBIRTH PHANTOM	<input type="radio"/>				X	X					X							
68	MALE GENITAL ORGANS	<input type="radio"/>				X						X							
69	FEMALE GENITAL ORGANS	<input type="radio"/>				X						X							
70	FEMALE PELVIS	<input type="radio"/>				X						X							
71	TRANSPARENT FEMALE PELVIS	<input type="radio"/>		<input checked="" type="radio"/>															
72	FEMALE ORGANS	<input type="radio"/>				X						X							
73	FEMALE PELVIS MODEL	<input type="radio"/>				X						X							
74	FEMALE PELVIS WITH FOETAL HEAD	<input type="radio"/>				X						X							
75	DEVELOPMENTAL STAGE OF FOETUS	<input type="radio"/>				X						X							
76	TWIN PREGNANCY	<input type="radio"/>		<input checked="" type="radio"/>															
77	TRANSVERSE PREGNANCY	<input type="radio"/>				X						X							
78	CONTRACTED PELVIS PREGNANCYY	<input type="radio"/>				X						X							
79	PLACENTA PREVIA	<input type="radio"/>				X						X							
80	NOMAL PREGNANCY	<input type="radio"/>		<input checked="" type="radio"/>															
81	FETAL CIRCULATORY SYSTEM	<input type="radio"/>		<input checked="" type="radio"/>															
82	BIRTH-FIRST STAGE	<input type="radio"/>		<input checked="" type="radio"/>															
83	BIRTH-SECOND STAGE	<input type="radio"/>		<input checked="" type="radio"/>															
84	BIRTH-THIRD STAGE	<input type="radio"/>		<input checked="" type="radio"/>															
85	VITAL SIGN DOLL	<input type="radio"/>				X						X							
86	BABY DOLL, A TYPE, MALE	<input type="radio"/>				X						X							
87	BABY DOLL, A TYPE, FEMALE	<input type="radio"/>				X						X							
88	BABY BATH SET	<input type="radio"/>				X						X							
89	CIRCULATORY SYSTEM, INTERIOR & EXTERIOR WOMB	<input type="radio"/>				X						X							
90	RECORDING RESUSCITATION BABY	<input type="radio"/>				X						X							
91	BIRTH CONTROL MODEL	<input type="radio"/>				X						X							
92	BIRTH CONTROL SPECIMEN	<input type="radio"/>				X						X							
93	CONCEPTION THEORY MODEL	<input type="radio"/>		<input checked="" type="radio"/>															
94	BLOOD PRESSURE MEASUREMENT TRAINER	<input type="radio"/>				X						X							
95	BLOOD COLLECT & INTRAVENOUS INJECTION SIMULATOR	<input type="radio"/>				X						X							
96	CATHETERIZATION AND RECTAL SIMULATOR	<input type="radio"/>				X						X							
97	BREAST FOR PRACTICE OF MASSAGE	<input type="radio"/>				X						X							
98	BREAST CANCER PALPATION SIMULATOR	<input type="radio"/>		<input checked="" type="radio"/>															

Table 2-9 The Study Result of Equipment

No.	Equipment	Original Request	Additional Request	Finally Selected	Selection Criteria														
					A	B	C	D	E	F	G	H	I	J	K	L			
99	HUMAN WALL CHARTS WITH A CASE	○				×							×						
100	LOCHIA MODEL, 10 KINDS PER SET	○		⊙															
101	HUMAN PARASITE SPECIMENS	○				×							×						
102	VIRUS MODEL, 12 KINDS PER SET	○				×							×						
103	PARASITIC STAGE OF HUMAN PARASIT MODEL.	○				×							×						
104	INTESTINE OF CHOLERA MODEL	○				×							×						
105	INTESTINE OF DYSENTERY MODEL	○				×							×						
106	INTESTINE OF TYPUS MODEL	○				×							×						
107	LEGAL INJECTION DISEASE MODEL	○				×							×						
108	CONJUNCTIVITIES AND TRACHOMA MODEL	○		⊙															
109	DEVELOPMENTAL STAGES OF BEDSORE MODEL	○		⊙															
110	CHILDREN'S FECES, 20 KINDS PER SET	○				×							×						
111	OMPHALITIS MODEL	○				×							×						
112	TUBERCULIN REACTION	○				×							×						
113	DECAYED TEETH AND HEALTH TEETH MODEL	○				×							×						
114	DEVELOPMENT, STAGES OF DECAYED TEETH MODEL	○				×							×						
115	VENEREAL DISEASE MODEL, MALE, 20 KINDS	○		⊙															
116	VENEREAL DISEASE MODEL, FEMALE, 20 KINDS	○		⊙															
117	INTUBATION SIMULATOR WITH LARYNX, BABY		○	⊙															
118	INTUBATION SIMULATOR WITH LARYNX, ADULT		○	⊙															
119	CHILDBIRTH PHANTOM		○	⊙															
120	SIMULATOR (FIRST AID)		○	⊙															
121	FEMALE PELVIS		○	⊙															
122	DEVELOPMENT OF FOETUS		○	⊙															
123	SKULL		○			×							×						
124	TEETH WITH LOWER JAW		○			×							×						
125	LARYNX		○			×							×						
126	TONGUE AND LARYNX		○			×							×						
127	BABY DOLL, MALE		○			×							×						
128	BABY DOLL, FEMALE		○			×							×						
129	NASAL CAVITY, PHARYNX AND LARYNX		○			×							×						
130	COMPLETE BLOOD TEST KIT FOR Hb, RBC and WBC	○		⊙															
131	WATER PURIFIER	○											×			×	×		
132	BIOLOGICAL MICROSCOPE	○		⊙															
133	BLOOD SEDIMENTATOR	○		⊙															
134	TABLE-TOP CENTRIFUGE	○		⊙															
135	WINTROBE TUBES	○		⊙															
136	INSTRUMENT STEILIZER	○											×			×			
137	CLINICAL SPECTROPHOTOMETER	○		⊙															
138	SPECIFIC BLOOD-GRAVITY TEST SET	○		⊙															
139	CLINICAL REFRACTOMETER	○		⊙															
140	WATER BATH, CONSTANT TEMPERATURE	○		⊙															
141	MIXER, FOR SMALL CONTAINERS	○		⊙															
142	HEMATOCRIT CENTRIFUGE	○		⊙															
143	HEMATOCRIT CAPILLARY TUBE	○		⊙															
144	MAGNETIC STIRRER, WITH HOT PLATE	○		⊙															
145	PIPET WASH AND DRY	○		⊙															
146	pH-METER	○		⊙															
147	BALANCE	○		⊙															

Table 2-9 The Study Result of Equipment

No.	Equipment	Original Request	Additional Request	Finally Selected	Selection Criteria														
					A	B	C	D	E	F	G	H	I	J	K	L			
148	INCUBATOR	○		⊙															
149	LABORATORY STERILIZER	○		⊙															
150	WATER, STILL, 5 Liter/min. (to make distilled water)	○		⊙															
151	BIOLOGICAL MICROSCOPE	○																	×
152	SHELF FOR LABORATORY		○	⊙															
153	ASPIRATOR, METAL	○		⊙															
154	BEAKER, TALL FORM, 100mL, 70 pcs/box	○		⊙															
155	BEAKER, TALL FORM, 200mL	○		⊙															
156	BEAKER, 500mL	○		⊙															
157	BOTTLE, REAGENT, CLEAR 1000mL	○		⊙															
158	BOTTLE, REAGENT, CLEAR 100mL	○		⊙															
159	BOTTLE, REAGENT, CLEAR 2000mL	○		⊙															
160	BOTTLE, REAGENT, CLEAR 250mL	○		⊙															
161	DOPPING BOLLTE CLEAR, 50mL	○		⊙															
162	BURET, AUTOMATIC, 50mL, W/TEFLON CONCK	○		⊙															
163	BURET, STRAIGHT BORE, STOPCOCK, 25mL	○		⊙															
164	BURET, STRAIGHT BORE, STOPCOCK, 50mL	○		⊙															
165	CLAMP, STEEL, LARGE SIZE FOR FLASK	○		⊙															
166	CLAMP, STEEL, MEDIUM SIZE FOR FLASK	○		⊙															
167	CORK BORER, 12 PCS/SET	○		⊙															
168	CUP, POLYETHYLENE, 100mL, 100 pcs/box	○		⊙															
169	CYLINDER, GRADUATED 1000mL	○		⊙															
170	CYLINDER, GRADUATED 500mL	○		⊙															
171	CYLINDER, GRADUATED 100mL	○		⊙															
172	CYLINDER, GRADUATED 50mL	○		⊙															
173	DESCICCATOR, 300W x 345D x 535H mm	○		⊙															
174	DIGITAL STOP WATCH	○		⊙															
175	ERLENMEYER FLASK, 300mL	○		⊙															
176	FILTERING BOTTLE, 1L	○		⊙															
177	FILTERING BOTTLE, PORCELAIN, 11cm Φ	○		⊙															
178	FILTERING PAPER, 9cm, 100 sheets/box	○		⊙															
179	FLASK, VOLUMETRIC, WITH STOPPER, 1000mL	○		⊙															
180	FLASK, VOLUMETRIC, WITH STOPPER, 500mL	○		⊙															
181	HOSE BAND, FOR VACUUM RUBBER TUBING	○		⊙															
182	LID FOR SCREW TUBE 20cc, 50 pcs/box	○		⊙															
183	PINCH COCK, MOHR TYPE	○		⊙															
184	PINCH COCK, HOFFMAN TYPE	○		⊙															
185	PIPET, MEASURING, 1mL	○		⊙															
186	PIPET, MEASURING, 2mL	○		⊙															
187	PIPET, MEASURING, 5mL	○		⊙															
188	PIPET, VOLUMETRIC, 10mL	○		⊙															
189	POLYETHYLENE BOTTLE, 100cc, 1000 pcs/pk	○		⊙															
190	POLYETHYLENE BOTTLE, 300cc, 200 pcs/pk	○		⊙															
191	RACK FOR BURET, PVC	○		⊙															
192	ROD, GLASS, 6mm Φ x 1.5M	○		⊙															
193	RUBBER TUBING FOR VACUUM, 6mm Φ x 18mm Φ	○		⊙															
194	SCREW TUBE, WITH LID, 20cc, 50 pcs/box	○		⊙															
195	SILICON TUBING, 6mm Φ x 10mm Φ x 50M	○		⊙															
196	SPIN BAR, TEFLON COATED, 20mm	○		⊙															

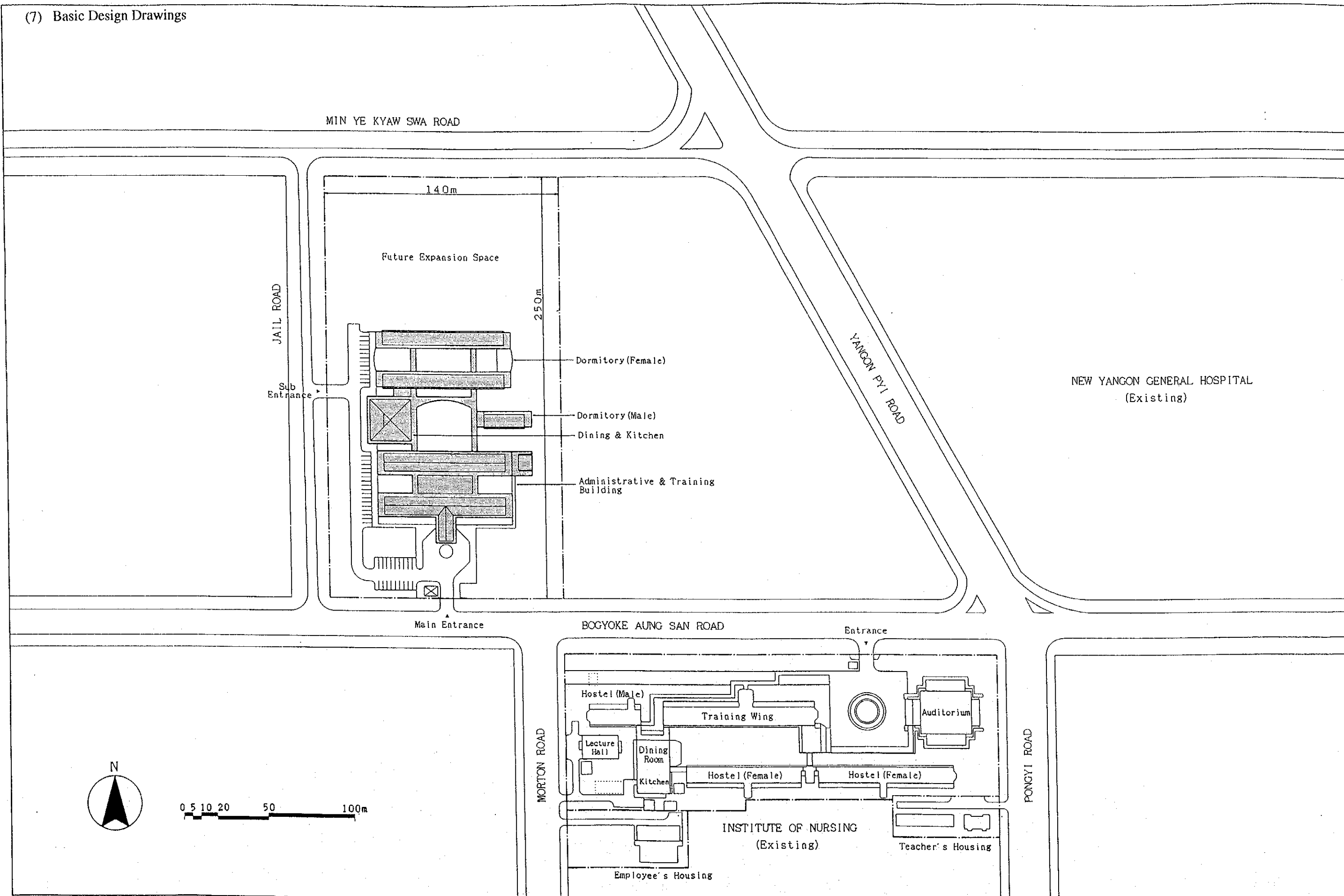
Table 2-9 The Study Result of Equipment

No.	Equipment	Original Request	Additional Request	Finally Selected	Selection Criteria													
					A	B	C	D	E	F	G	H	I	J	K	L		
246	SODIUM CARBONATE, 500G, G. R.	○										×						
247	SODIUM HIDROXIDE, 500g, G. R.	○										×						
248	SODIUM HYPOCHORITE, 500mL, E.	○										×						
249	SULFURIC ACID, CONC., 500mL, G. R.	○										×						
250	THYMOL BLUE, 25g, G. R.	○										×						
251	TOLUENE, 500mL, G. R.	○										×						
252	TRIETHLYAMINE, 500mL, E.	○										×						
253	TRIPHENYL PHOSPHITE, 500g	○										×						
254	XYLENE, 500mL, E.	○										×						
255	EXAMINATION TABLE		○	⊙														
256	SINK		○	⊙														
257	AUDIO-VISUAL EDUCATION ROOM	○					×	×	×	×				×				
258	TRANSPARENT HUMAN MODEL WITH A ROTARY STAND, MALE	○					×	×	×	×				×				
259	TRANSPARENT HUMAN MODEL WITH A ROTARY STAND, FEMALE	○					×	×	×	×				×				
260	REMOTE CONTROL DESK FOR VIDEO SYSTEM	○					×	×	×	×				×				
261	VIDEO TABLE WITH 100 INCH SCREEN	○					×		×	×								
262	AUDIO TABLE WITH A MONITOR TV	○		⊙														
263	EXPLANATORY TAPE (ENGLISH)	○					×		×					×				
264	A VIDEO TAPE FOR MEDICAL EDUCATION	○												×			×	
265	SLIDE PROJECTOR (A)	○		⊙														
266	SLIDE PROJECTOR (B)		○	⊙														
267	OVERHEAD PROJECTOR	○		⊙														
268	COPY MACHINE	○		⊙														
269	FAX MACHINE	○					×	×		×								
270	V. C. R. & PLAYER	○					×							×			×	
271	14" COLOR VIDEO MONITOR	○					×							×			×	
272	COLOR CAMERA	○		⊙														
273	COMPUTER 115MB(HARD DISK), WITH 3MB RAM	○		⊙														
274	LASER JET PRINTER	○		⊙														
275	DESK-TOP PUBLISHING	○					×	×										
276	COMPLETE OFF-SET PRINTING SYSTEM	○		⊙														
277	ELECTRIC POINTER WITH LIGHT	○					×	×										
278	ELECTRIC STENSIL MAKER	○					×	×					×					
279	PA SYSTEM	○		⊙														
280	CONFERENCE ROOM PA SYSTEM	○					×	×		×								
281	PORTABLE SCREENS (A)	○		⊙														
282	PORTABLE SCREENS (B)		○	⊙														
283	FLIP CHART STAND	○		⊙														
284	WALL CHART (A)		○	⊙														
285	WALL CHART (b)		○	⊙														
286	BLACK BOARD 4'x 6'	○		⊙														
287	BLACK BOARD, MOVABLE	○		⊙														
288	NOTICE BOARD		○	⊙														
289	AUDIO CASSETTE RECORDER AND PLAYER	○		⊙														
290	AUDIO CASSETTE PLAYER W/HEADPHONES	○		⊙														
291	DESKTOP LABELLING AND LETTERING SYSTEM	○					×			×	×							
292	CAMERA WITH ACCESSORIES	○		⊙														
293	ENGLISH TYPEWRITER PICA, MANUAL	○		⊙														
294	MANUAL PUNCH/BIND MACHINE	○		⊙														

Table 2-9 The Study Result of Equipment

No.	Equipment	Original Request	Additional Request	Finally Selected	Selection Criteria													
					A	B	C	D	E	F	G	H	I	J	K	L		
295	PAPER CUTTERS	○		⊙														
296	HEAVY DUTY STAPLES (STAPLES 3 & 3-10mm)	○		⊙														
297	HEAVY DUTY PUNCHES	○		⊙														
298	PENCIL SHARPENERS (MANUAL TYPE)	○			x	x												x
299	HANDSET TYPE INTERCOM SYSTEM	○																x
300	AIR CONDITIONERS (SPLIT TYPE)	○																x
301	ELECTRIC FANS (STANDING)	○																x
302	STEEL CABINETS	○																x
303	FURNITURE FOR MEETING/CONFERENCE ROOM	○		⊙														
304	GESTETHNER MACHINE	○		⊙														
305	SOLOR-POWERED ELECTRIC CALCULATORS (100DIG.)	○			x	x												x
306	GUN TACKER (STAPLES :#3, T3-10M & T3-14M)	○			x	x												x
307	DIESEL GENERATOR AC220/380V 3 PHASE, 10KVA	○			x	x												x
308	30 SEATER SCHOOL BUSES (DIESEL)	○		⊙														
309	3 TON LIGHT TRUCK (DIESEL)	○		⊙														
310	STEEL CARD CATALOGUE CABINETS, W/20 DRAWER	○		⊙														
311	DISPLAY RACKS	○		⊙														
312	STEEL SHELVING	○		⊙														
313	METAL BOOK TRACK	○		⊙														
314	TITLE TAB CATALOGUE GUIDES	○			x	x												x
315	REVOLVING DICTIONARY STAND	○			x	x												x
316	SORTING FILE (CARD SORTER)	○			x	x												x
317	INDIVIDUAL SELF-STUDY TABLES/COMPART.UNIT	○			x	x												x
318	LANGUAGE LABORATORY AND EQUIPMENT	○			x	x		x	x				x					
319	MIDWIFE KITS (FIRST AID BOX)	○																x
320	COMMUNITY HEALTH NURSE KITS (RESUSCITATOR)	○																x
321	SPHYGMOMANOMETERS	○																x
322	STETHOSCOPES (ADULT)	○																x
323	STETHOSCOPES (FOETAL) PINARD	○																x
324	DRESSING CARTS	○		⊙														
325	STERILIZING DRUMS (CYLINDICAL, STAINLESS)	○		⊙														
326	NASOGASTRIC TUBES	○											x			x		
327	BED PANS	○		⊙														
328	WEIGHING SCALE FOR INFANT	○		⊙														
329	HIGHT SCALE FOR INFANT		○	⊙														
330	WEIGHING SCALE FOR ADULT	○		⊙														
331	HEIGHT SCALE FOR ADULT	○		⊙														
332	OVEN	○		⊙														
333	REFRIGERATOR	○		⊙														
334	AUTOCLAVE	○		⊙														
335	INSTRUMENT SET		○										x			x		
336	CATHETER SET		○	⊙														
337	FURNITURE		○	⊙														

(7) Basic Design Drawings



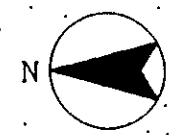
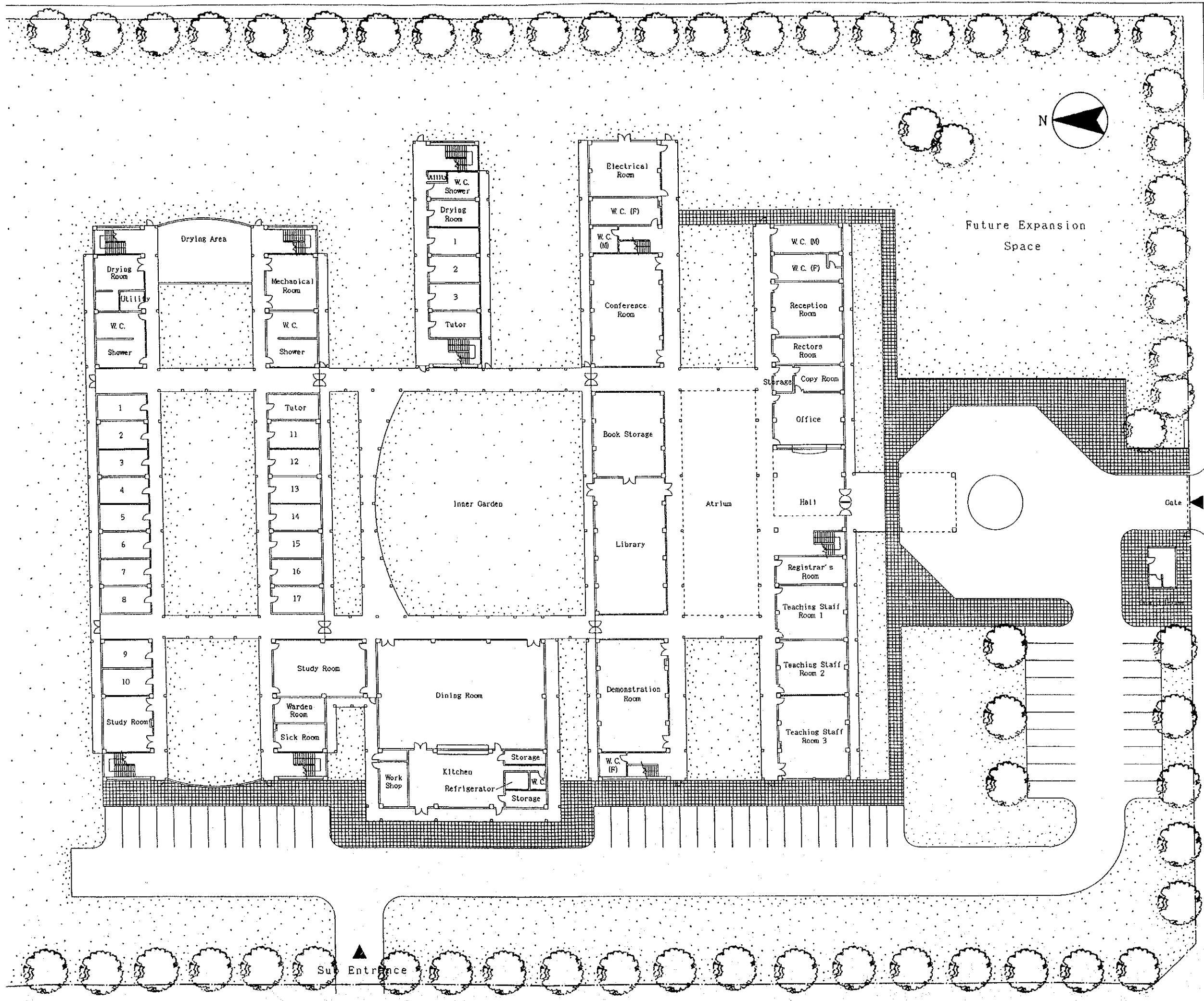
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Scale:
1/2000

Date:
MAY, 1995

Title:
SITE PLAN



BOGYOKE AUNG SAN ROAD

Main Entrance

Sub Entrance

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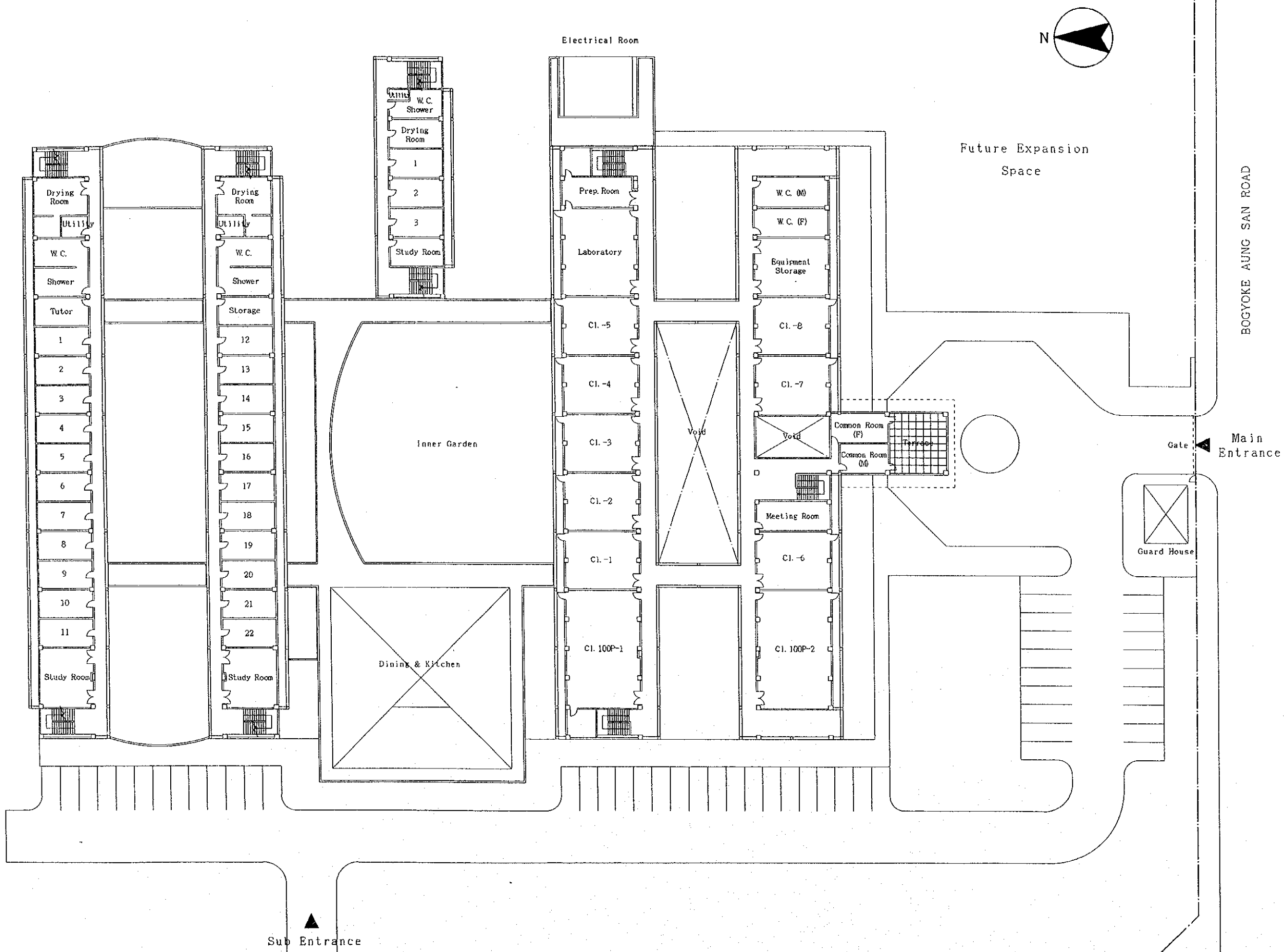
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INTERNATIONAL

Title:
GROUND FLOOR PLAN

Scale: 1/500

Date: MAY, 1995

Dwg. No.: 2-45



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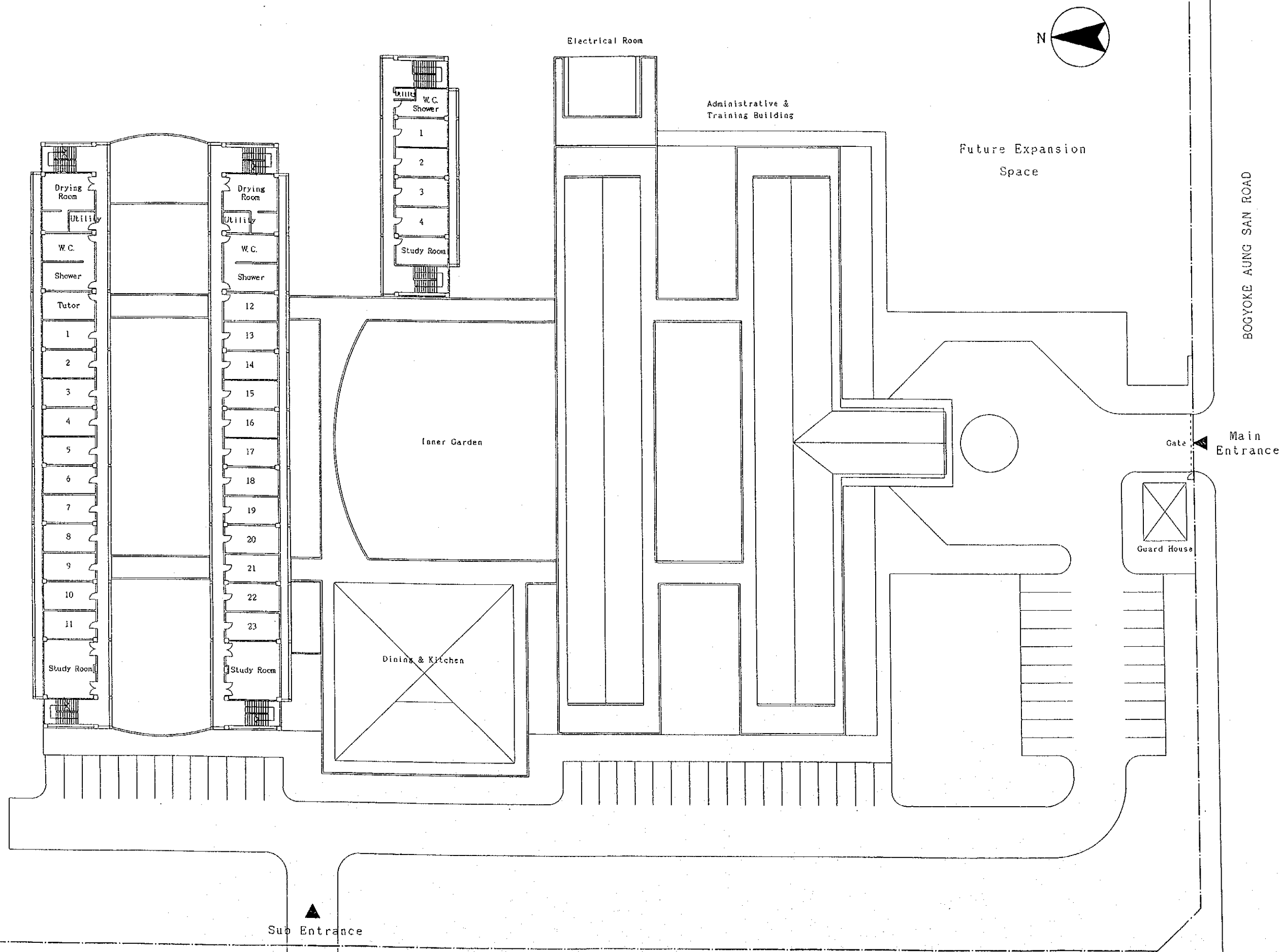

PACIFIC CONSULTANTS
INTERNATIONAL

Title:
FIRST FLOOR PLAN

Scale: 1/500

Date: SEP. 1995

Dwg. No.: 2-46



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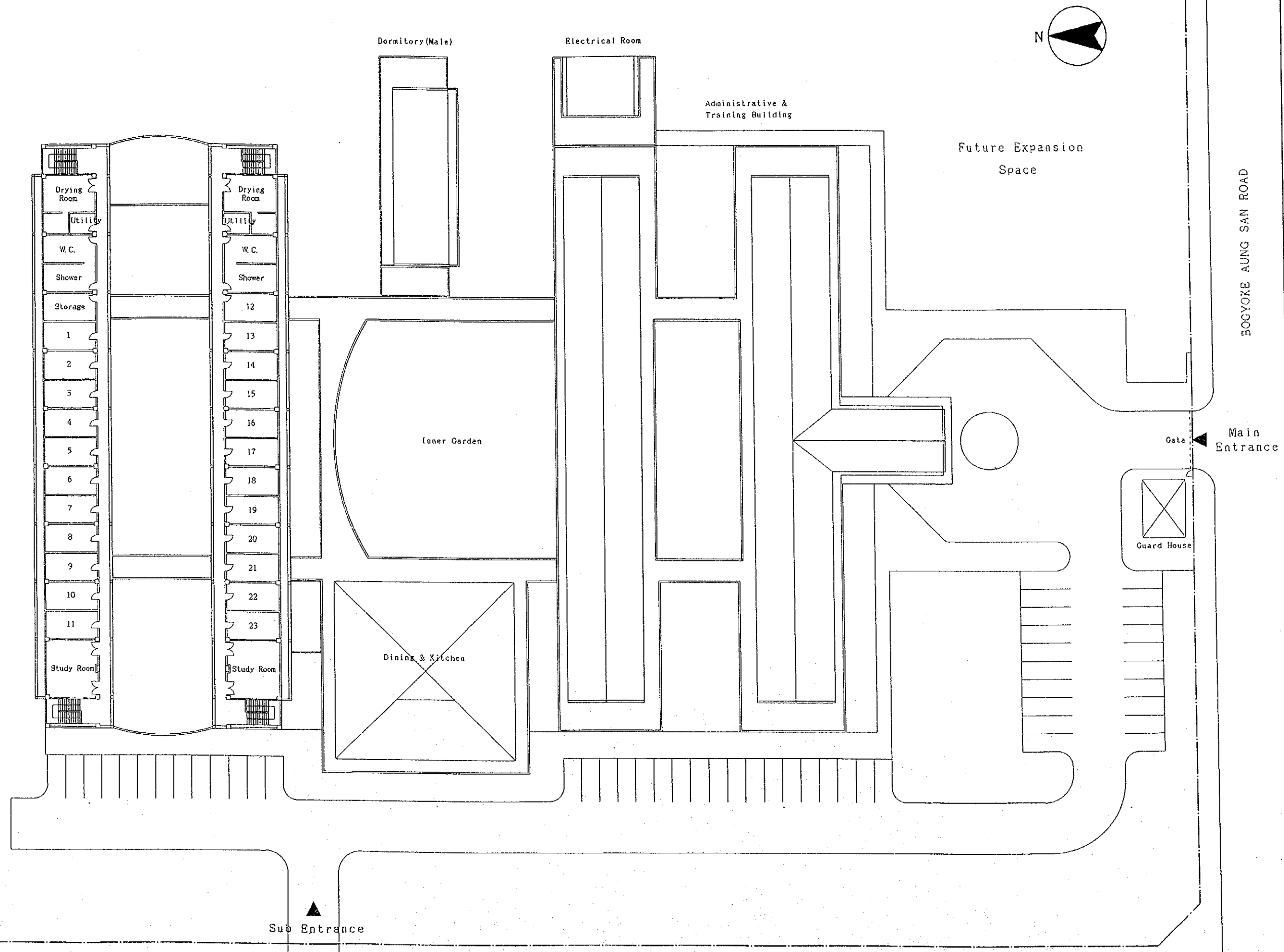

PACIFIC CONSULTANTS
INTERNATIONAL

Title:
SECOND FLOOR PLAN

Scale: 1/500

Date: MAY, 1995

Dwg. No.: 2-47



BOGYOKE AUNG SAN ROAD



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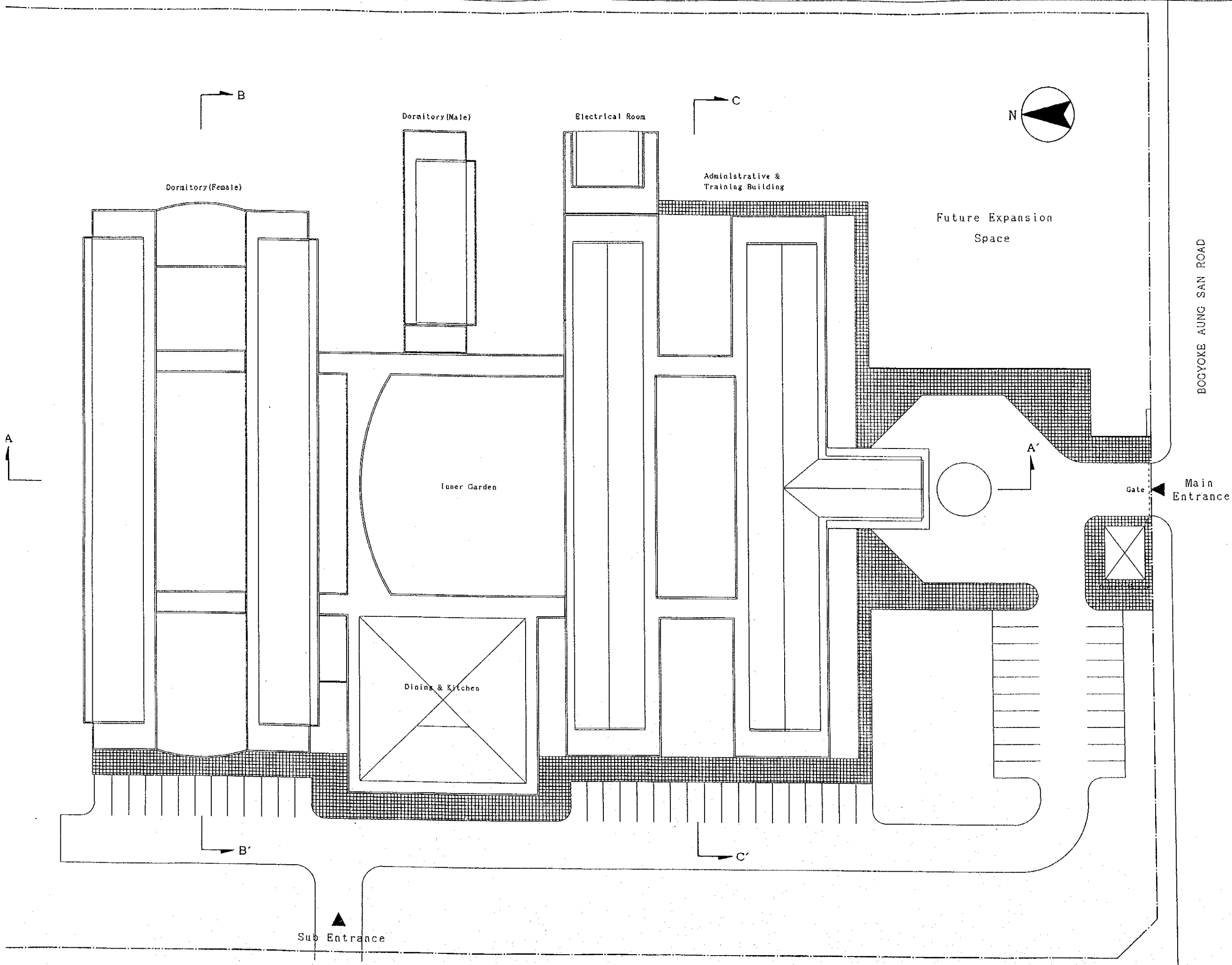

PACIFIC CONSULTANTS
INTERNATIONAL

Title:
THIRD FLOOR PLAN

Scale: 1/500

Date: MAY, 1995

Dwg. No.: 2-48



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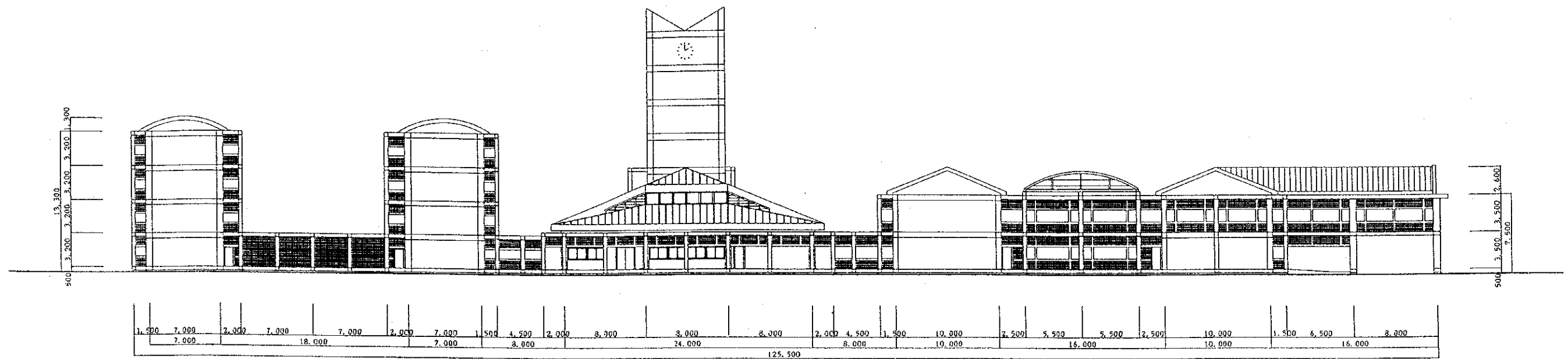

PACIFIC CONSULTANTS
INTERNATIONAL

Title:
ROOF PLAN

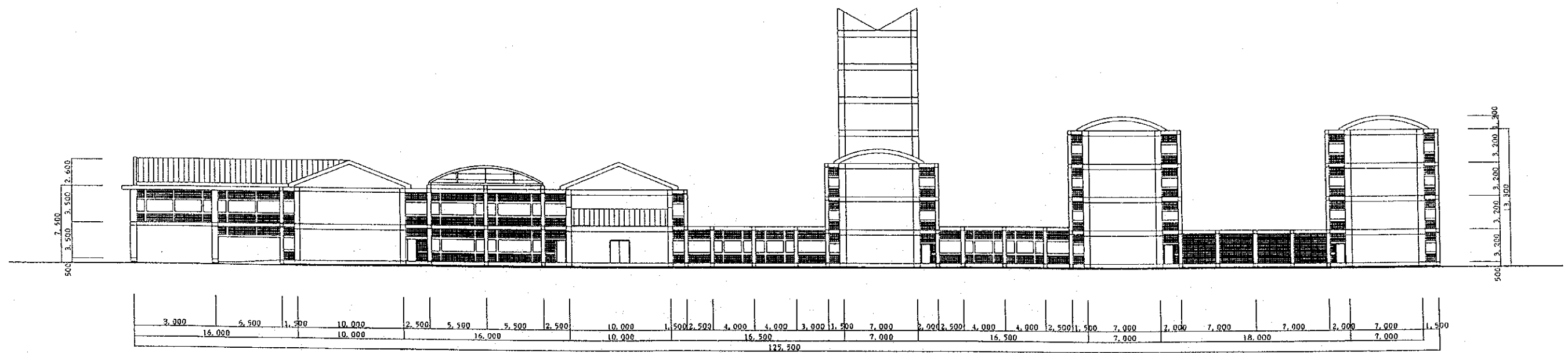
Scale: 1/500

Date: MAY, 1995

Dwg. No. : 2-49



WEST ELEVATION



EAST ELEVATION

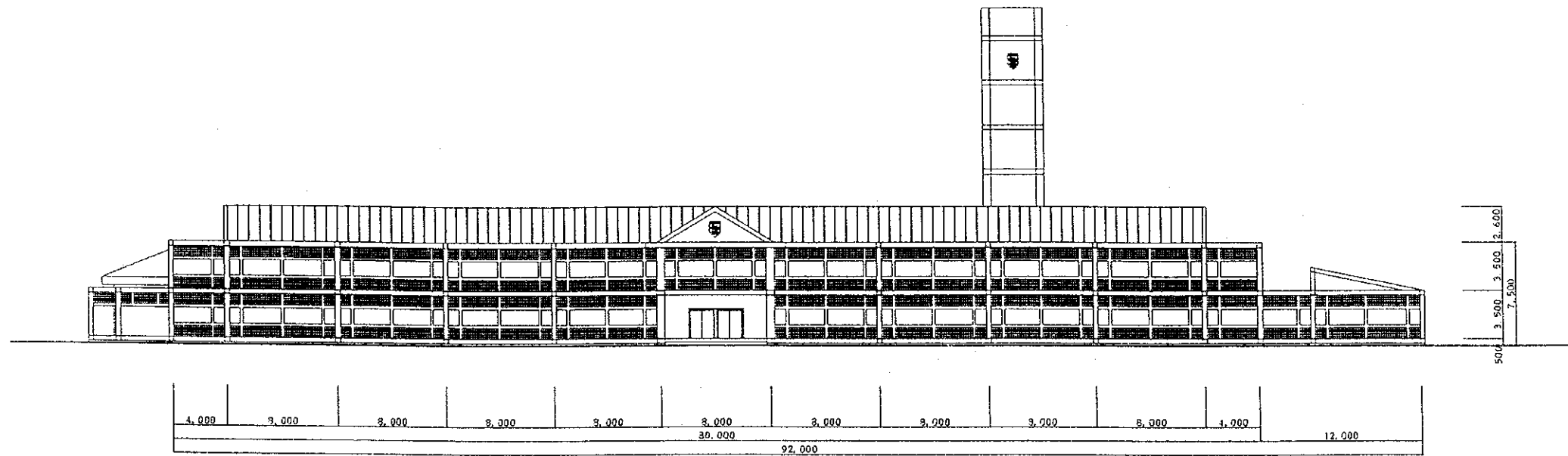
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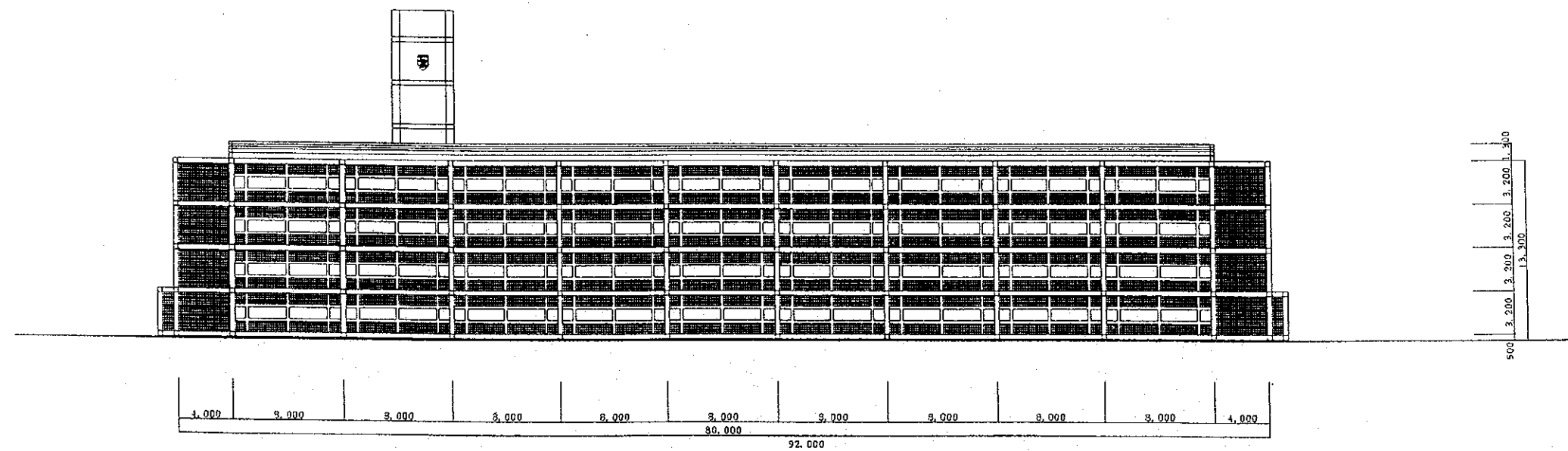
Scale:
1/400

Date:
MAY, 1995

Title:
GENERAL ELEVATION (WEST, EAST)




SOUTH ELEVATION



NORTH ELEVATION

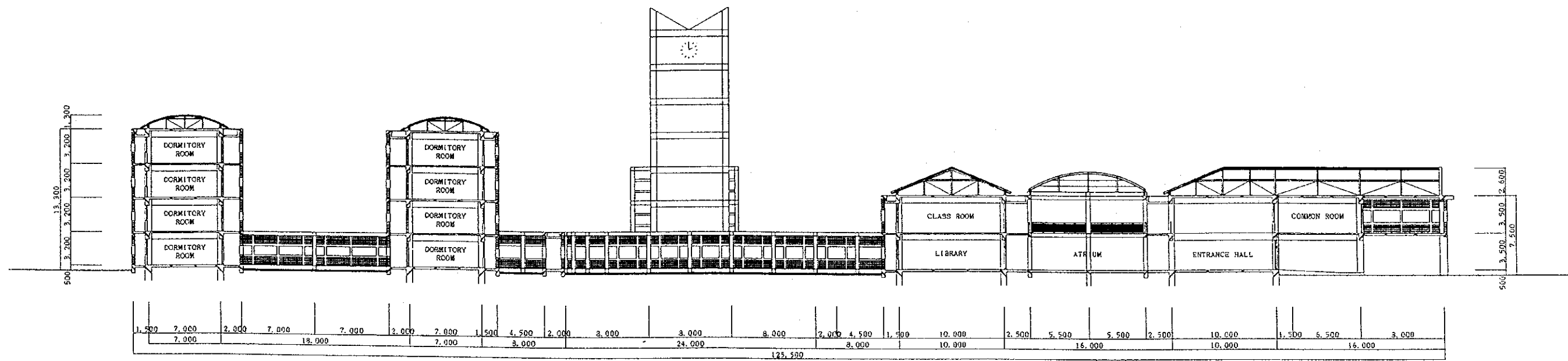
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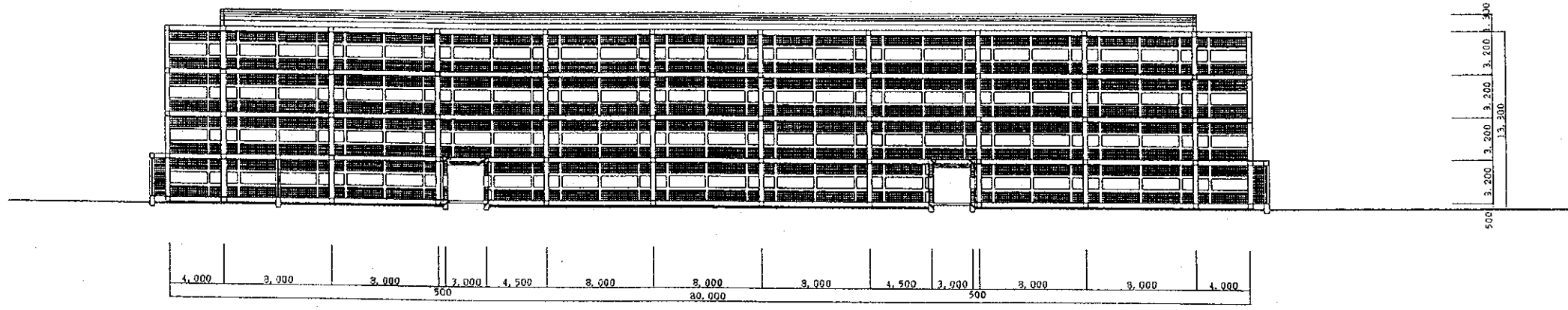
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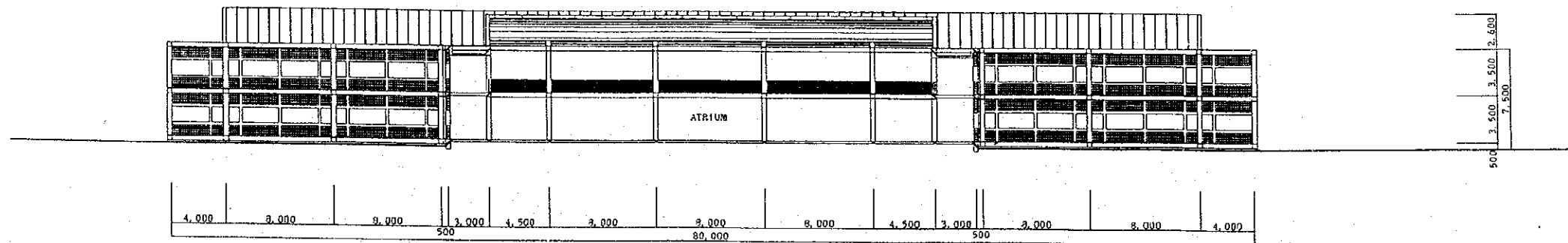
Title:
GENERAL ELEVATION (SOUTH, NORTH)



A-A' SECTION



B-B' SECTION



C-C' SECTION

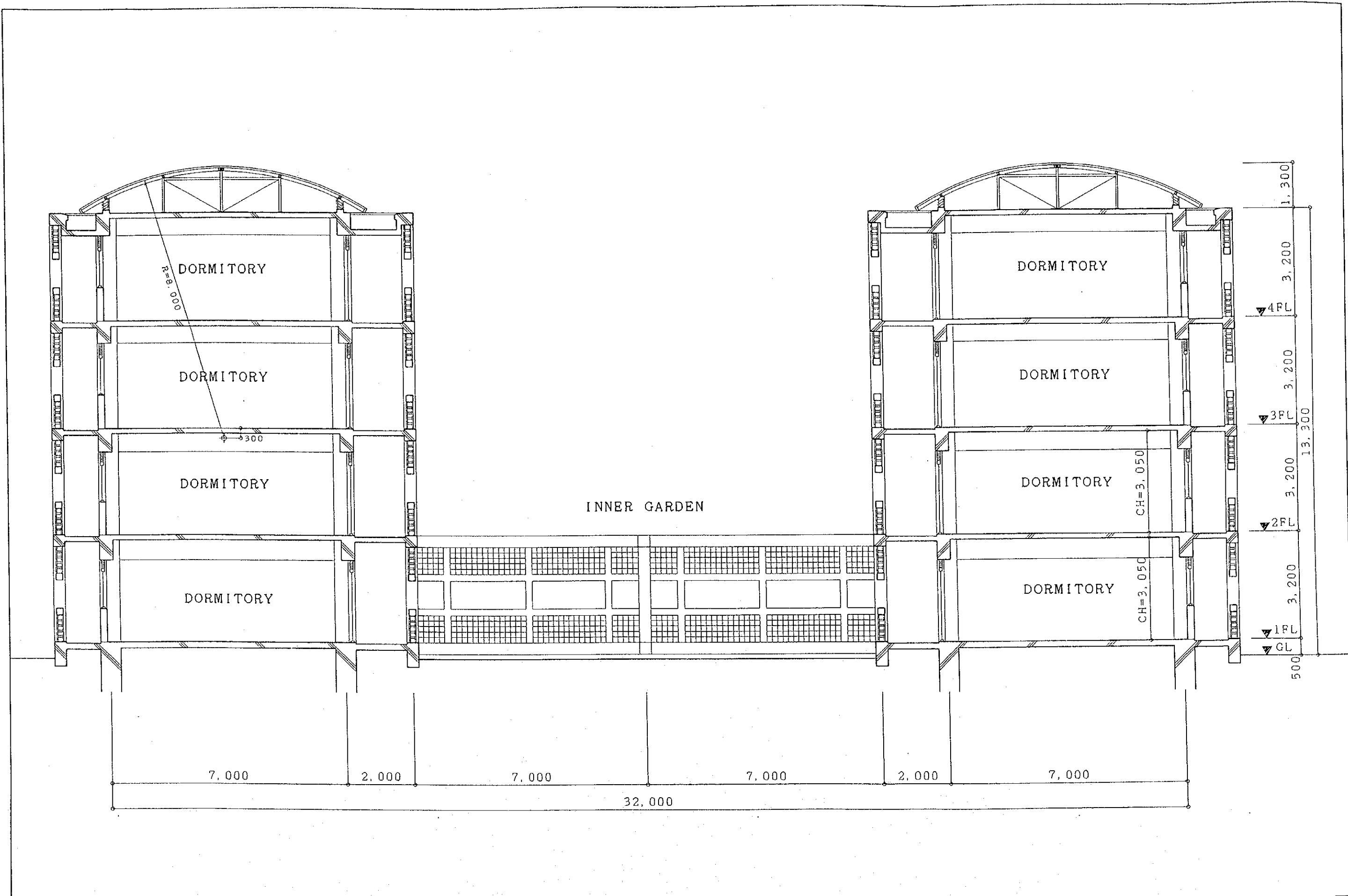
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Scale:
1/400

Date:
MAY, 1995

Title:
GENERAL SECTION



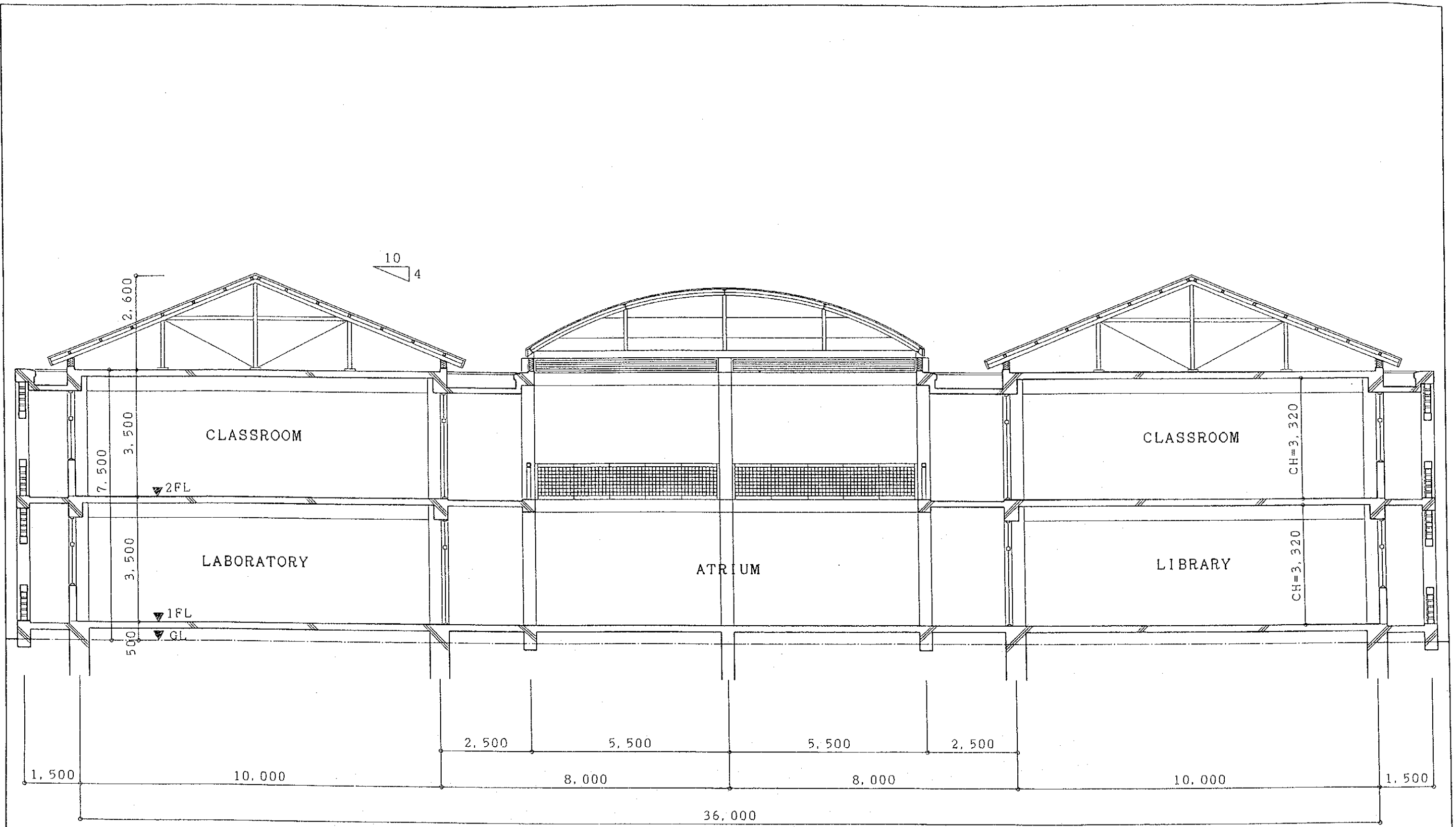
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Scale:
1/100

Date:
MAY, 1995

Title:
TYPICAL SECTION (Dormitory)



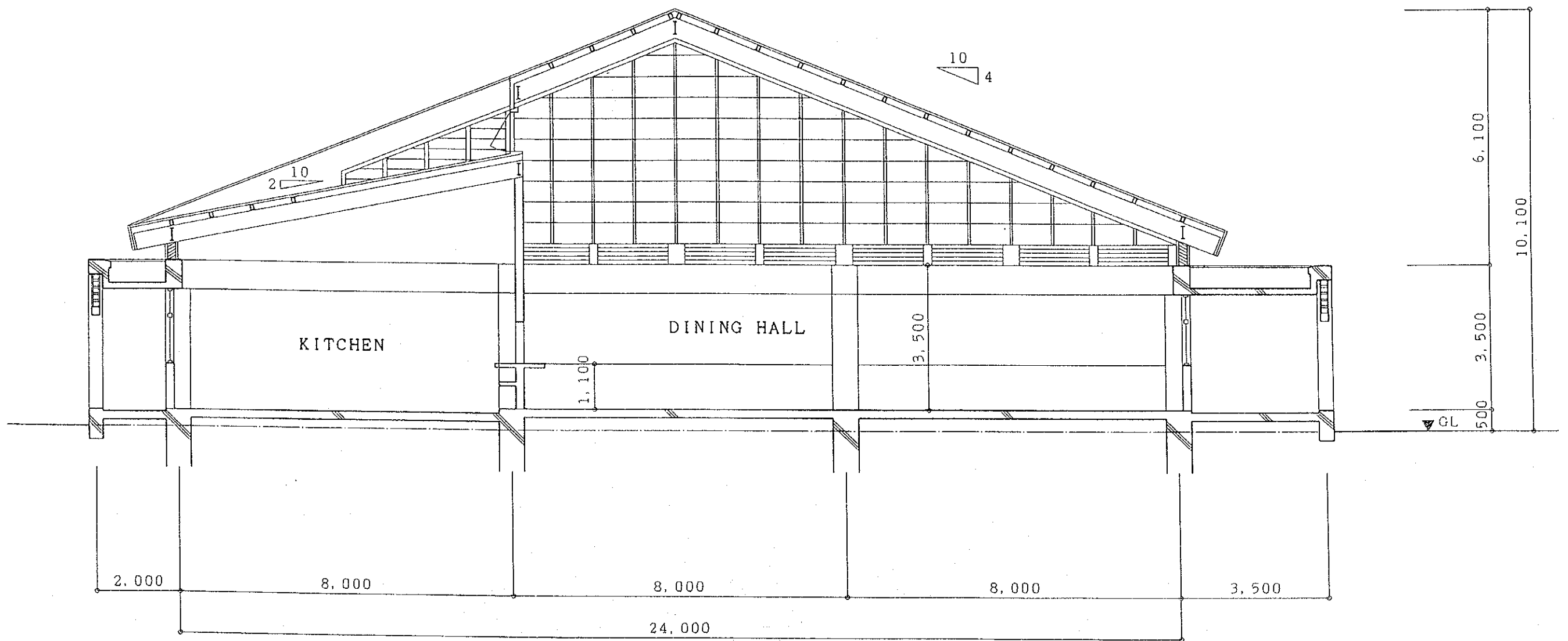
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Scale:
1/100

Date:
MAY, 1995

Title:
TYPICAL SECTION
(Administrative & Training Building)



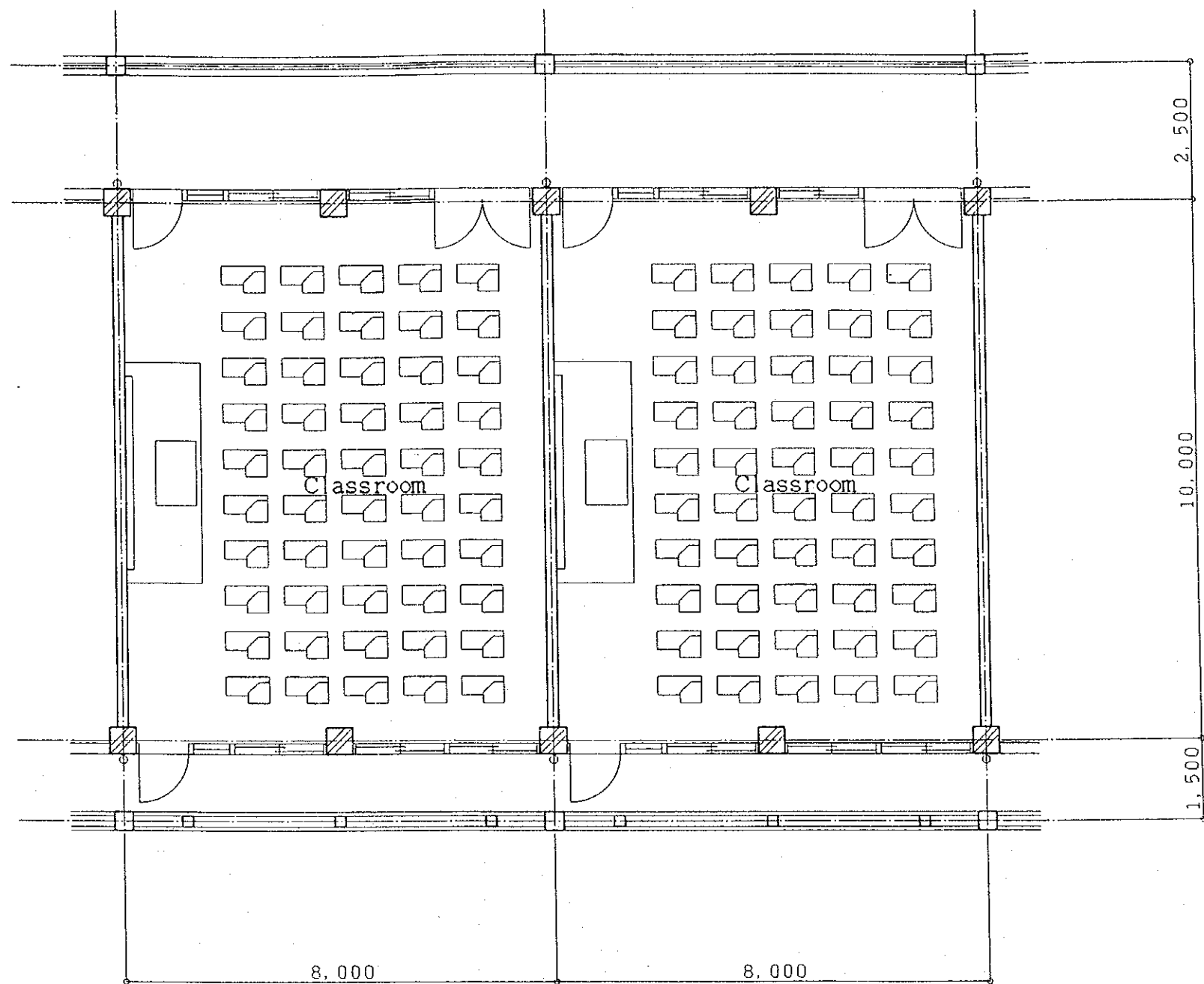
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Scale:
1/100

Date:
MAY, 1995

Title:
TYPICAL SECTION (Dining & Kitchen)



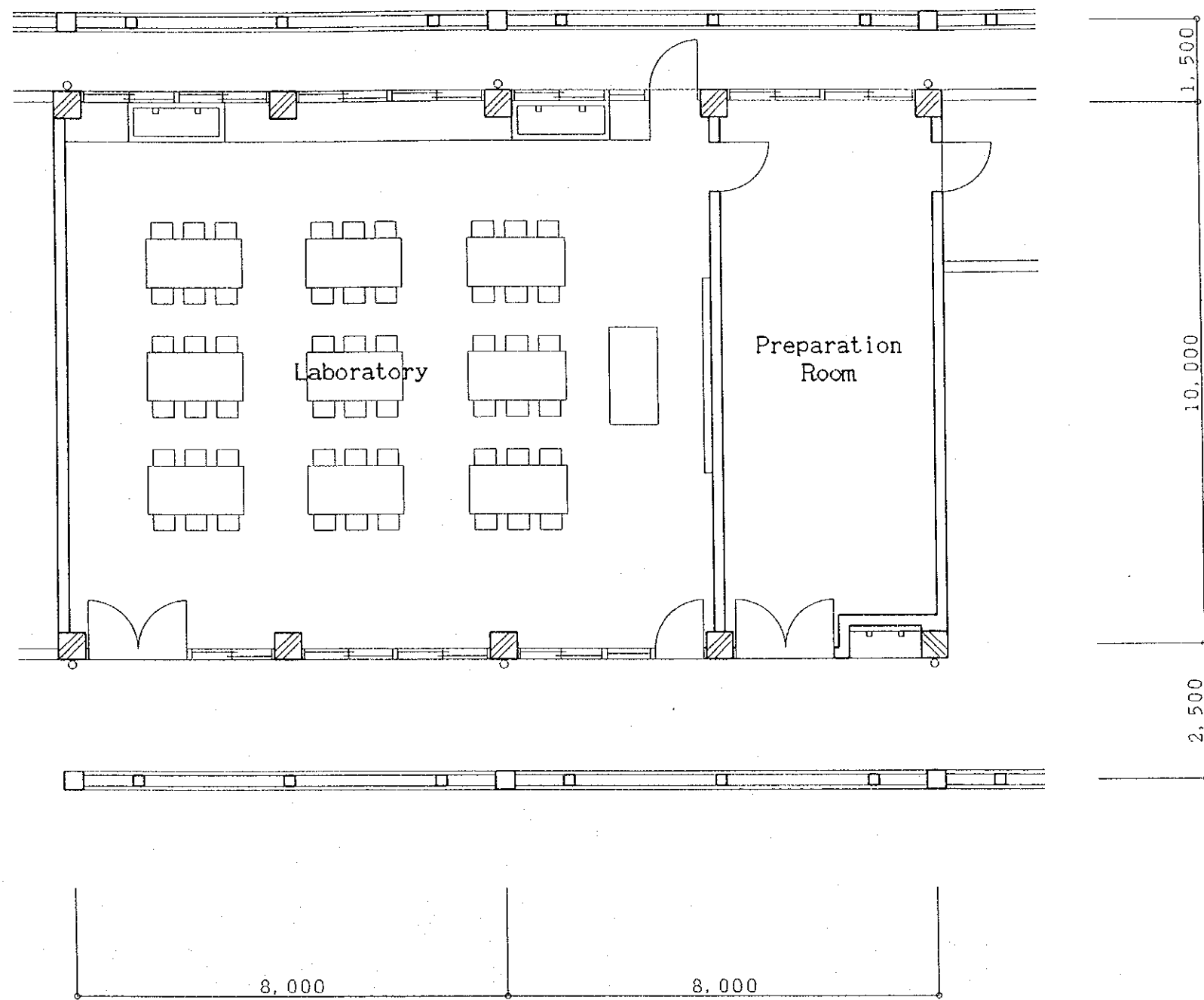
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Scale:
1/100

Date:
MAY, 1995

Title:
TYPICAL PLAN (Classroom)



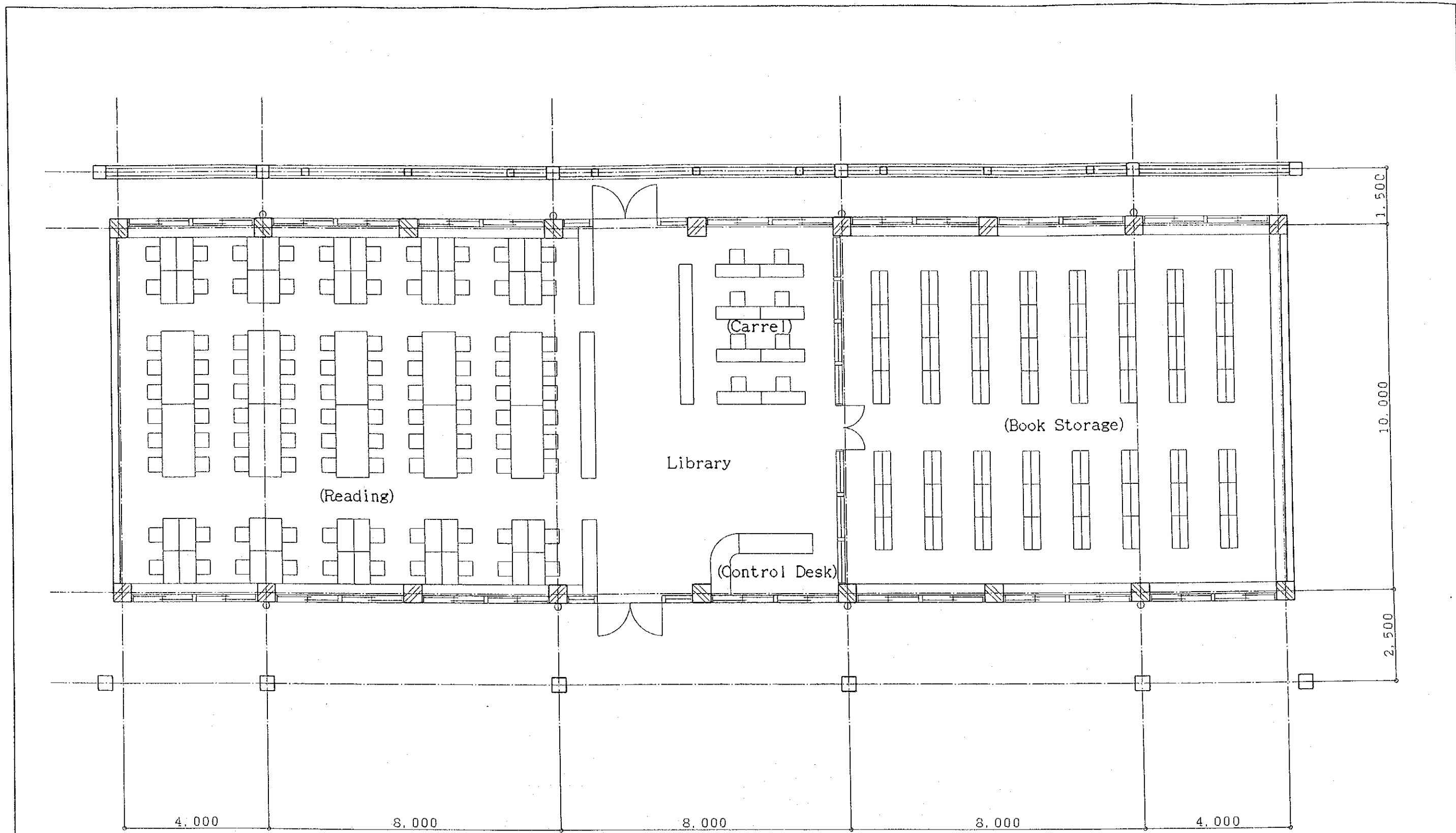
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Scale:
1/100

Date:
MAY, 1995

Title:
TYPICAL PLAN (Laboratory)



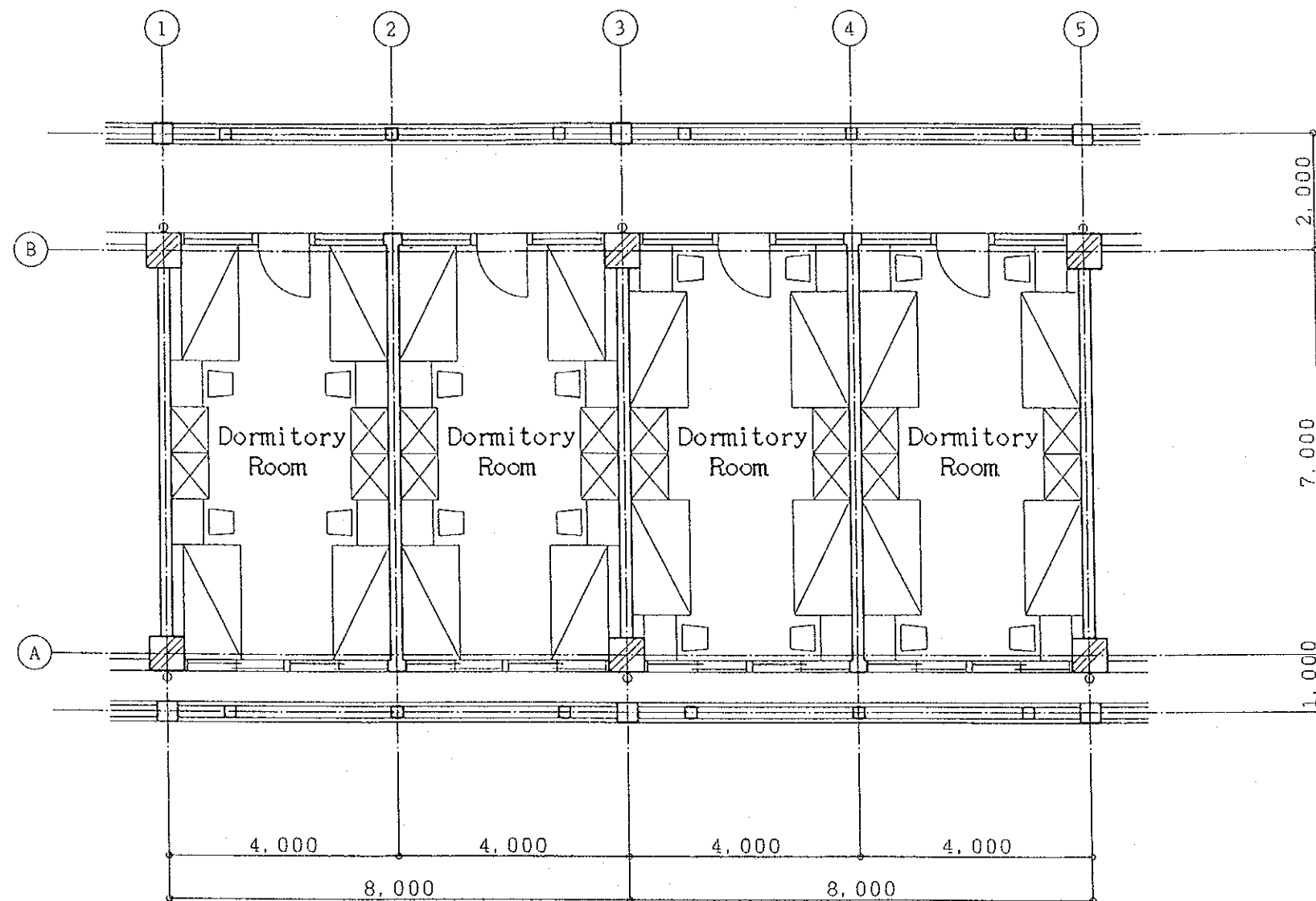
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Scale:
1/100

Date:
MAY, 1995

Title:
TYPICAL PLAN (Library)



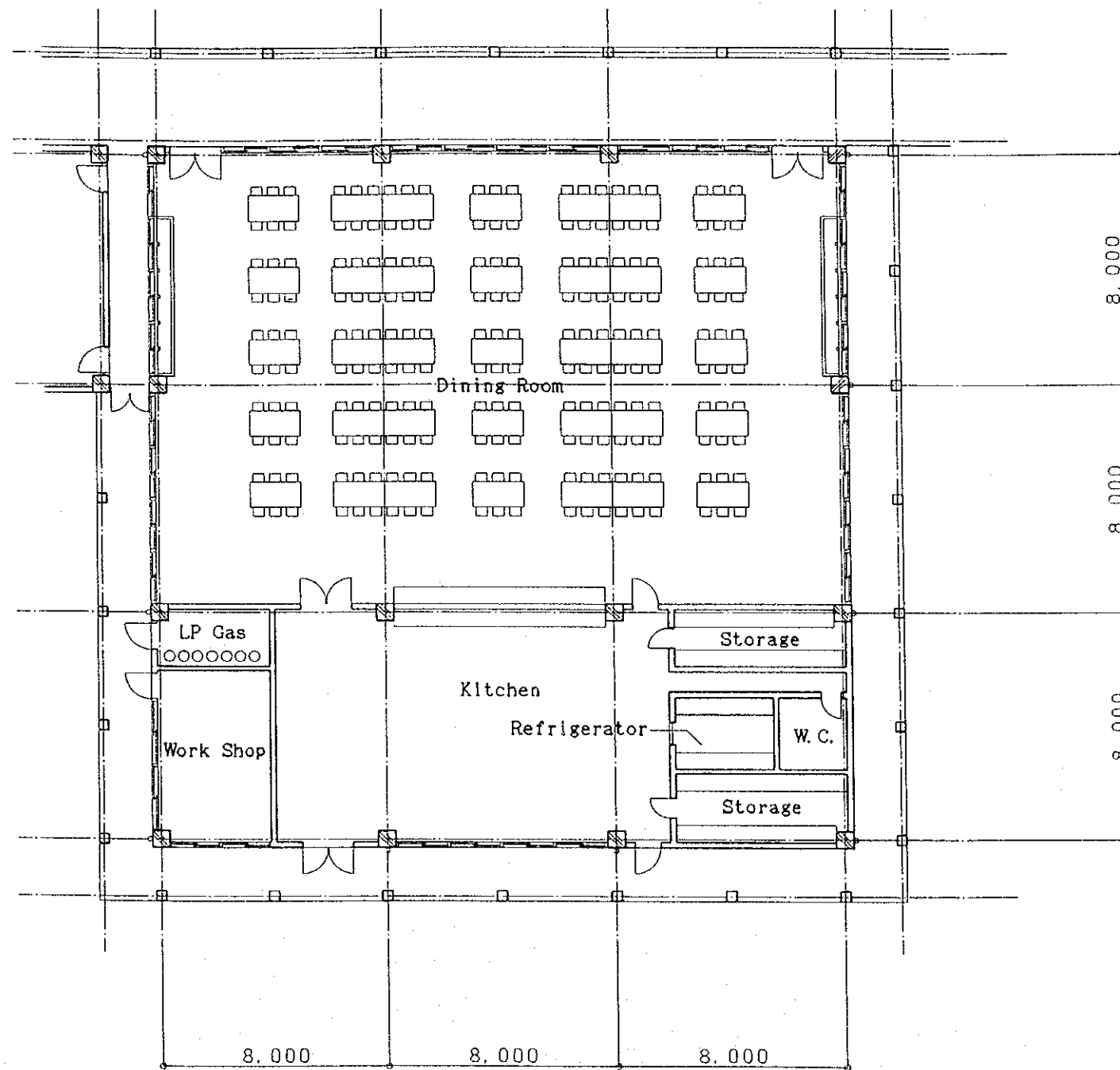
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Scale:
1/100

Date:
MAY, 1995

Title:
TYPICAL PLAN (Dormitory)



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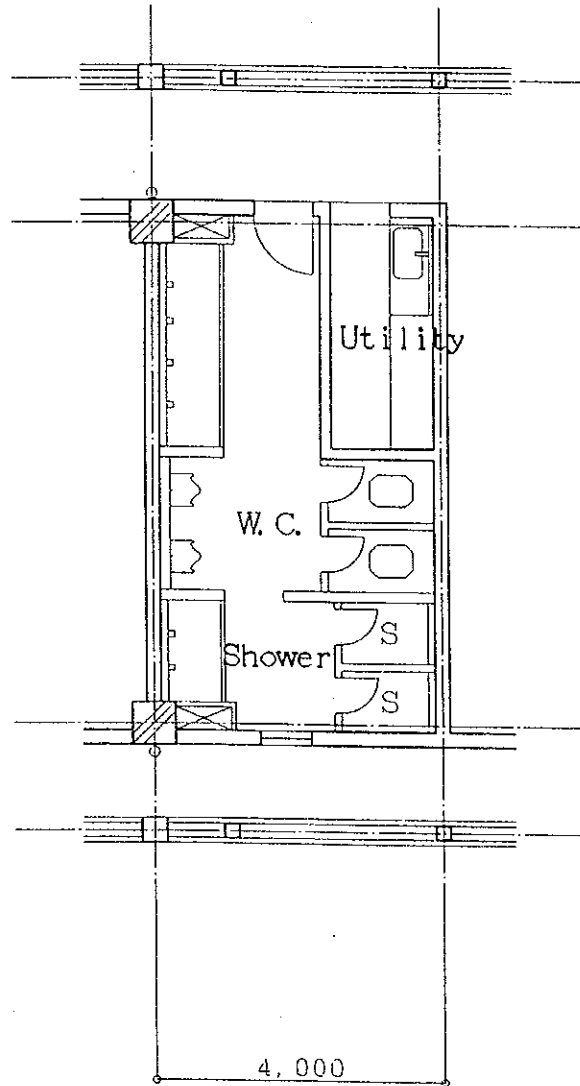
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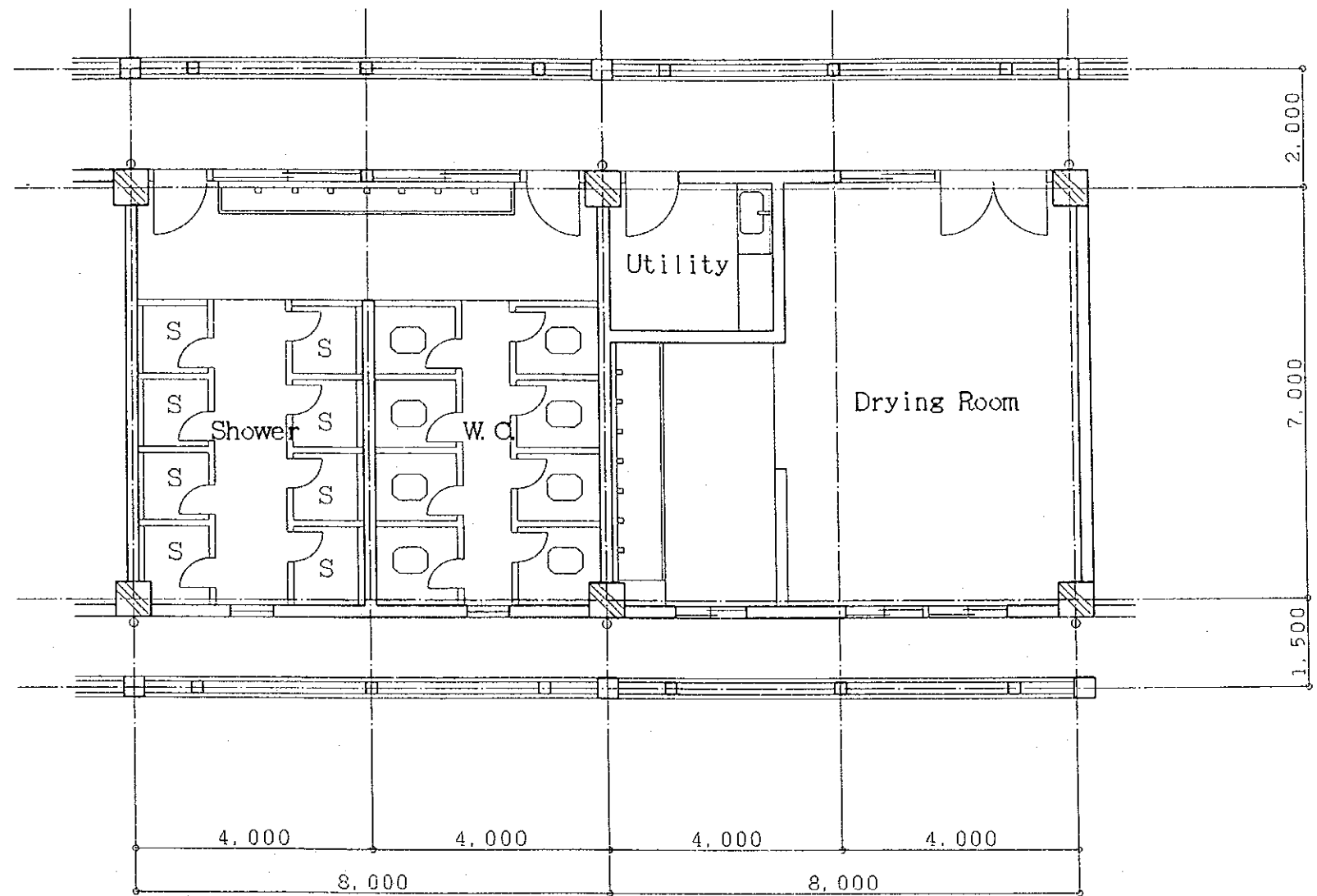
Date:
MAY, 1995

Title:
TYPICAL PLAN (Dining & Kitchen)

Dormitory (Male)



Dormitory (Female)



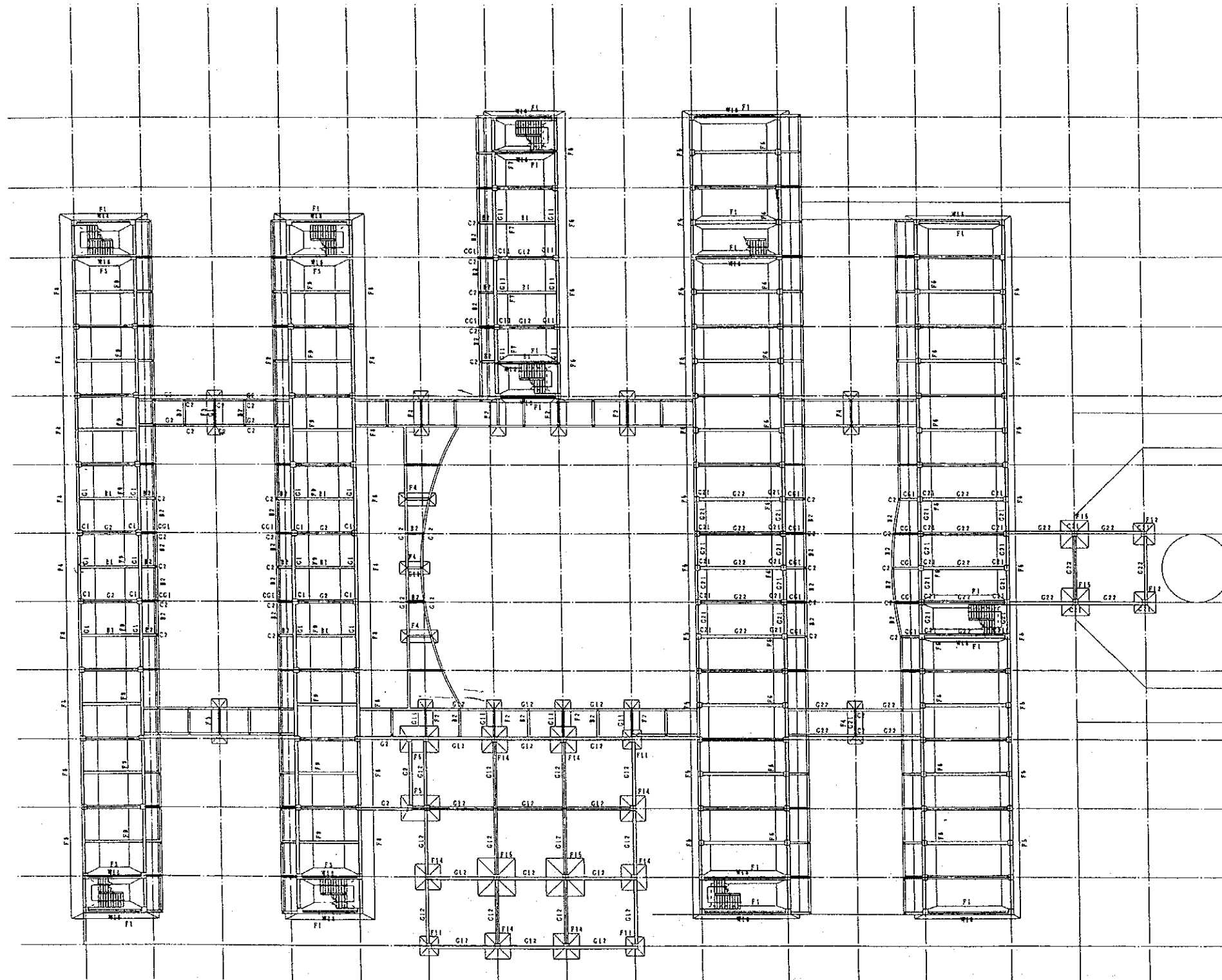
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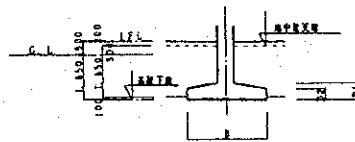
Date:
MAY, 1995

Title:
TYPICAL PLAN (Shower & Toilet)



1階部材リスト

6	S1	400x400	CL1	500x500	C1	500x400
	C2	350x250	C2	250x250	C2	350x250
7	C1	350x41.150	C14	350x41.150	C21	350x41.150
	C7	350x41.100	C12	350x41.200	C22	350x41.100
	CC1	350x41.100	CC1	350x41.200	CC1	350x41.200
8	F1	300x400	F1	300x400	F1	300x400
	F2	320x500	F2	320x500	F2	320x500
	F.R	1.800x2.100	F.R	2.200x2.100	F.R	2.200x2.100
	W	1.100x1.100	W14	1.100x1.100	W11	1.100x1.100



基礎部材リスト

床	床	D1	D2	床	床	D1	D2			
床	F1	3.300	x 50	x 35	床	F11	2.700	x 2.200	x 50	x 35
	F2	3.500	x 50	x 35		F12	3.500	x 3.500	x 50	x 35
	F3	3.400	x 50	x 35		F13	3.500	x 3.000	x 50	x 45
	F4	3.200	x 50	x 35		F14	3.200	x 3.200	x 70	x 55
	F5	3.200	x 50	x 35		F15	3.400	x 3.400	x 70	x 50
	F6	3.500	x 50	x 35						
	F7	3.300	x 50	x 35						
	F8	3.400	x 70	x 50						
	F9	3.500	x 70	x 35						

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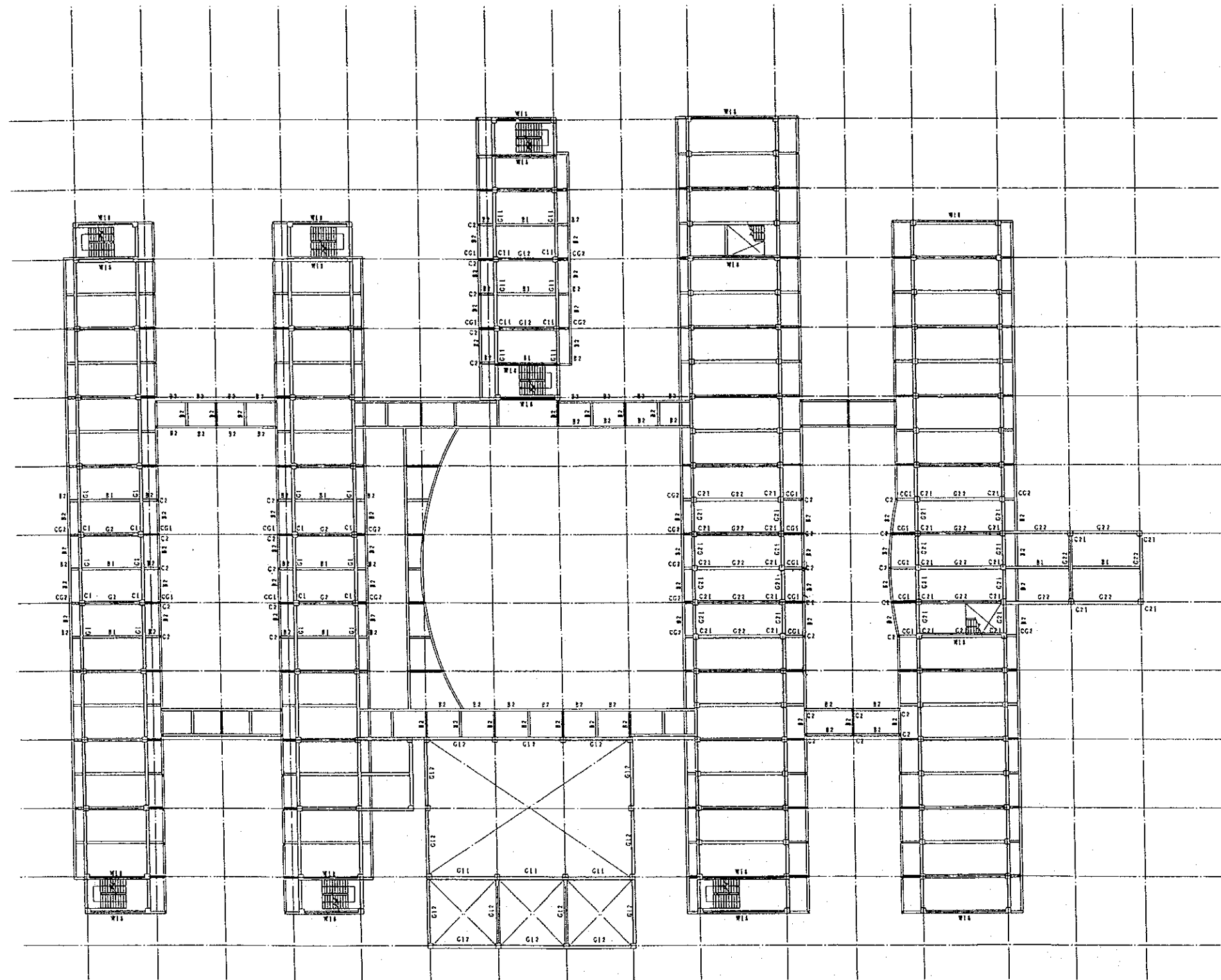
PACIFIC CONSULTANTS
INTERNATIONAL

Title:
GROUND FLOOR PLAN

Scale: 1/500

Date: APRIL, 1995

Dwg. No.:



ス開扉材リスト

.....	C1	350x350	.....	G11	300x300	.....	G21	300x300
.....	C2	350x250	.....	G12	300x250	.....	G22	300x250
.....	A.M.	G1	400x750	G11	300x700	G21	300x700
.....	C2	300x150	.....	G12	300x150	.....	G22	300x150
.....	CC1	350x500-100	.....	CC1	350x500-100	.....	CC1	350x500-100
.....	CC2	300x500	.....	CC2	300x500	.....	CC2	300x500
.....	A.M.	B1	300x100	B1	300x100	B1	300x100
.....	B2	200x100	B2	200x100	B2	200x100	
.....	A.M.	W1	1-150	W1	1-150	W1	1-150
.....	W2	1-180	W2	1-180	W2	1-180	

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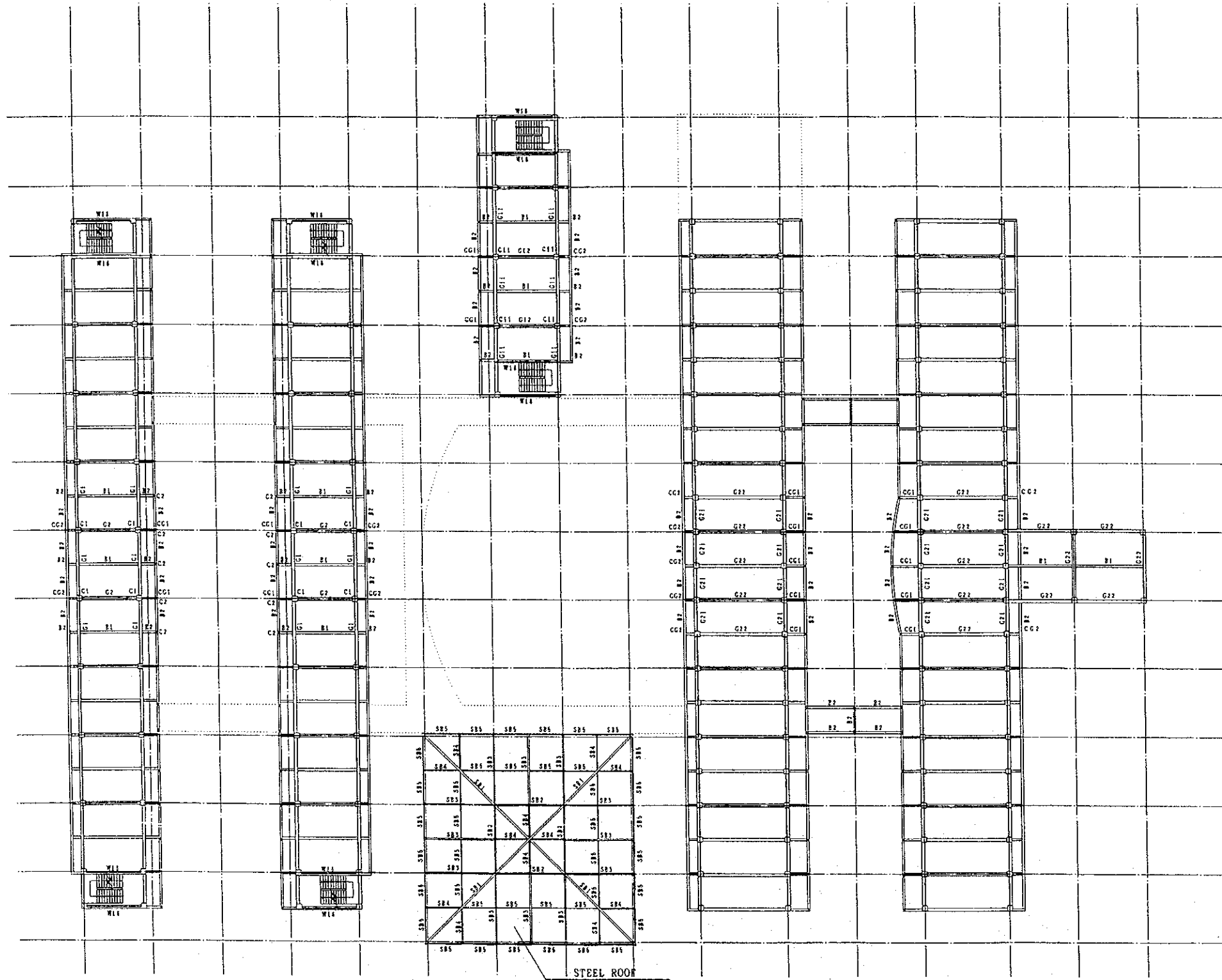

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INTERNATIONAL

Title:
FIRST FLOOR PLAN

Scale: 1/500

Date: APRIL 1995

Dwg. No. :



3 階梁材リスト

W	C1	350x550	C11	500x500
	C2	350x550	C2	250x250
A	C1	350x700	C11	500x700
	C2	350x700	C12	400x400
	CG1	350x400-300	CG1	350x400-500
	CG2	300x300	CG2	300x400
A	B1	300x400	B1	300x400
	B2	300x400	B2	200x400
A	B1	300x400	B1	300x400
	B2	300x400	B2	200x400
	W11	300x400	W11	300x400

SB1	N-400x700x133
SB2	N-350x175x111
SB3	N-300x150x88
SB4	N-250x125x67
SB5	N-200x100x51
B.M	E-125x90x43.2-8400

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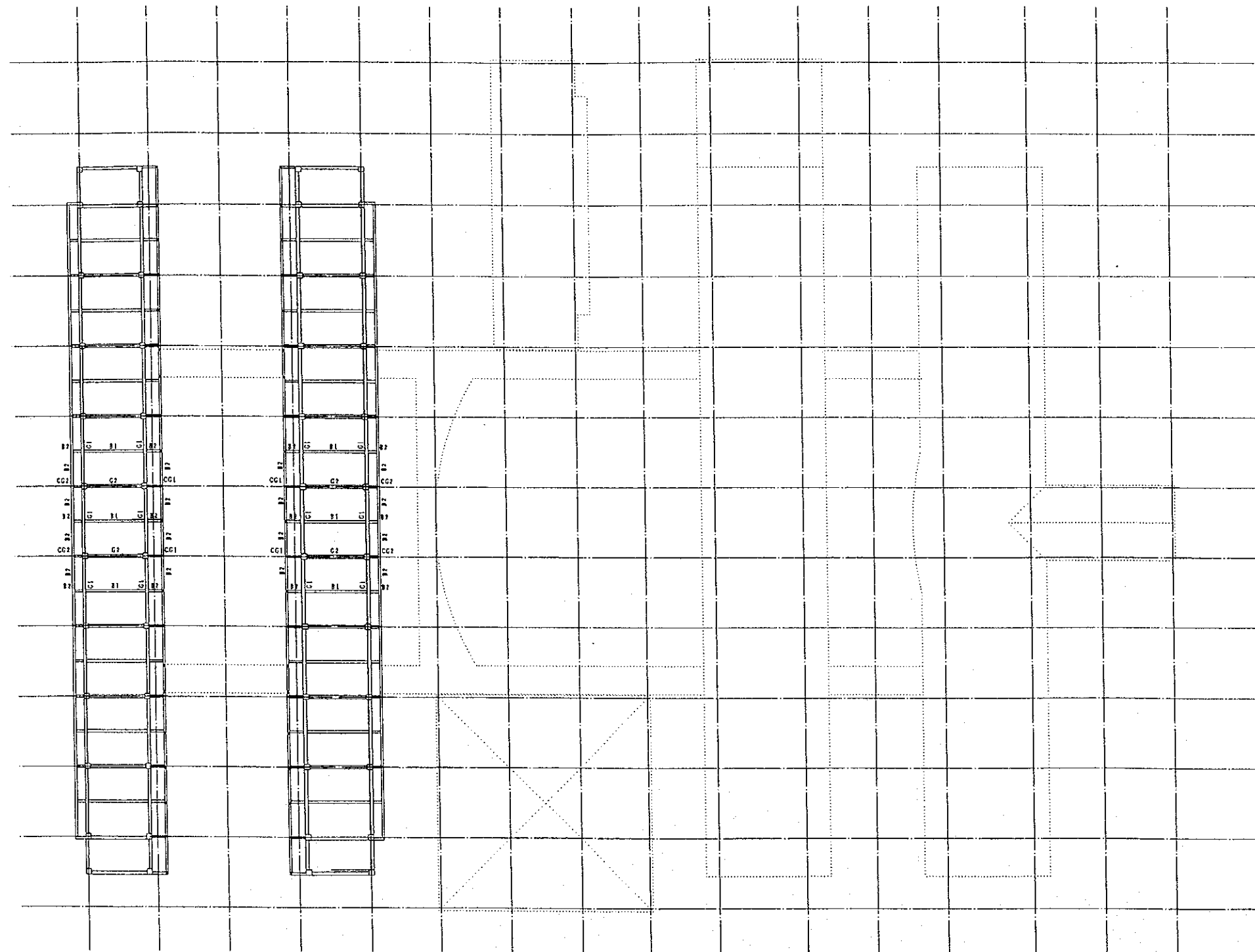

PACIFIC CONSULTANTS
INTERNATIONAL

Title:
SECOND FLOOR PLAN

Scale: 1/500

Date: APRIL, 1995

Dwg. No.:



尺貫表

尺貫	寸	分	厘
1.0	0	0	0
1.1	1	0	0
1.2	2	0	0
1.3	3	0	0
1.4	4	0	0
1.5	5	0	0
1.6	6	0	0
1.7	7	0	0
1.8	8	0	0
1.9	9	0	0
2.0	0	0	0
2.1	1	0	0
2.2	2	0	0
2.3	3	0	0
2.4	4	0	0
2.5	5	0	0
2.6	6	0	0
2.7	7	0	0
2.8	8	0	0
2.9	9	0	0
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3.2	2	0	0
3.3	3	0	0
3.4	4	0	0
3.5	5	0	0
3.6	6	0	0
3.7	7	0	0
3.8	8	0	0
3.9	9	0	0
4.0	0	0	0
4.1	1	0	0
4.2	2	0	0
4.3	3	0	0
4.4	4	0	0
4.5	5	0	0
4.6	6	0	0
4.7	7	0	0
4.8	8	0	0
4.9	9	0	0
5.0	0	0	0
5.1	1	0	0
5.2	2	0	0
5.3	3	0	0
5.4	4	0	0
5.5	5	0	0
5.6	6	0	0
5.7	7	0	0
5.8	8	0	0
5.9	9	0	0
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6.2	2	0	0
6.3	3	0	0
6.4	4	0	0
6.5	5	0	0
6.6	6	0	0
6.7	7	0	0
6.8	8	0	0
6.9	9	0	0
7.0	0	0	0
7.1	1	0	0
7.2	2	0	0
7.3	3	0	0
7.4	4	0	0
7.5	5	0	0
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7.7	7	0	0
7.8	8	0	0
7.9	9	0	0
8.0	0	0	0
8.1	1	0	0
8.2	2	0	0
8.3	3	0	0
8.4	4	0	0
8.5	5	0	0
8.6	6	0	0
8.7	7	0	0
8.8	8	0	0
8.9	9	0	0
9.0	0	0	0
9.1	1	0	0
9.2	2	0	0
9.3	3	0	0
9.4	4	0	0
9.5	5	0	0
9.6	6	0	0
9.7	7	0	0
9.8	8	0	0
9.9	9	0	0
10.0	0	0	0

THE PROJECT FOR
EXPANSION OF
THE INSTITUTE OF
NURSING IN MYANMAR


PACIFIC CONSULTANTS
INTERNATIONAL

Title:
ROOF PLAN

Scale: 1/500

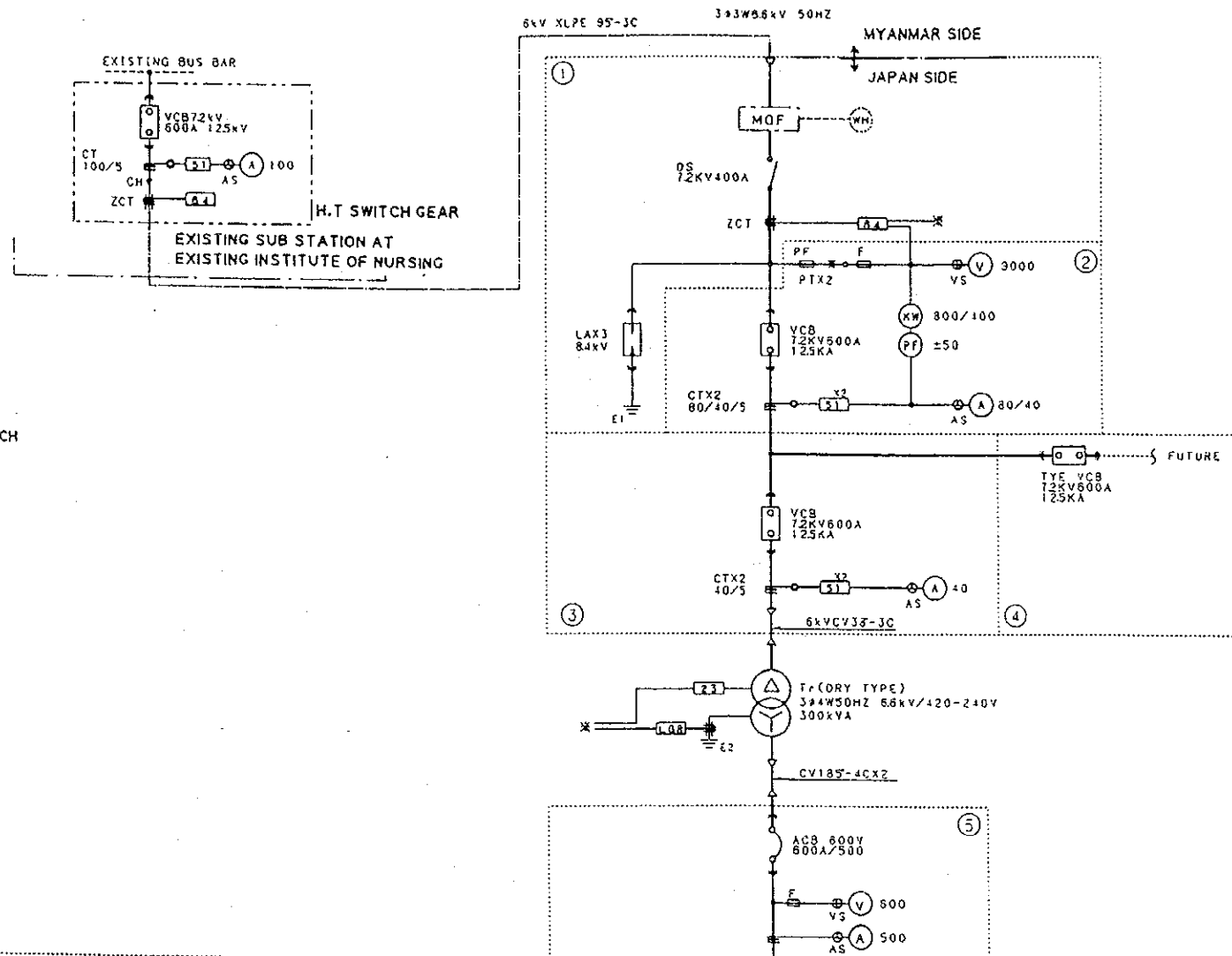
Date: APRIL 1995

Dwg. No.:

METAL ENCLOSED SWITCHGEAR LIST

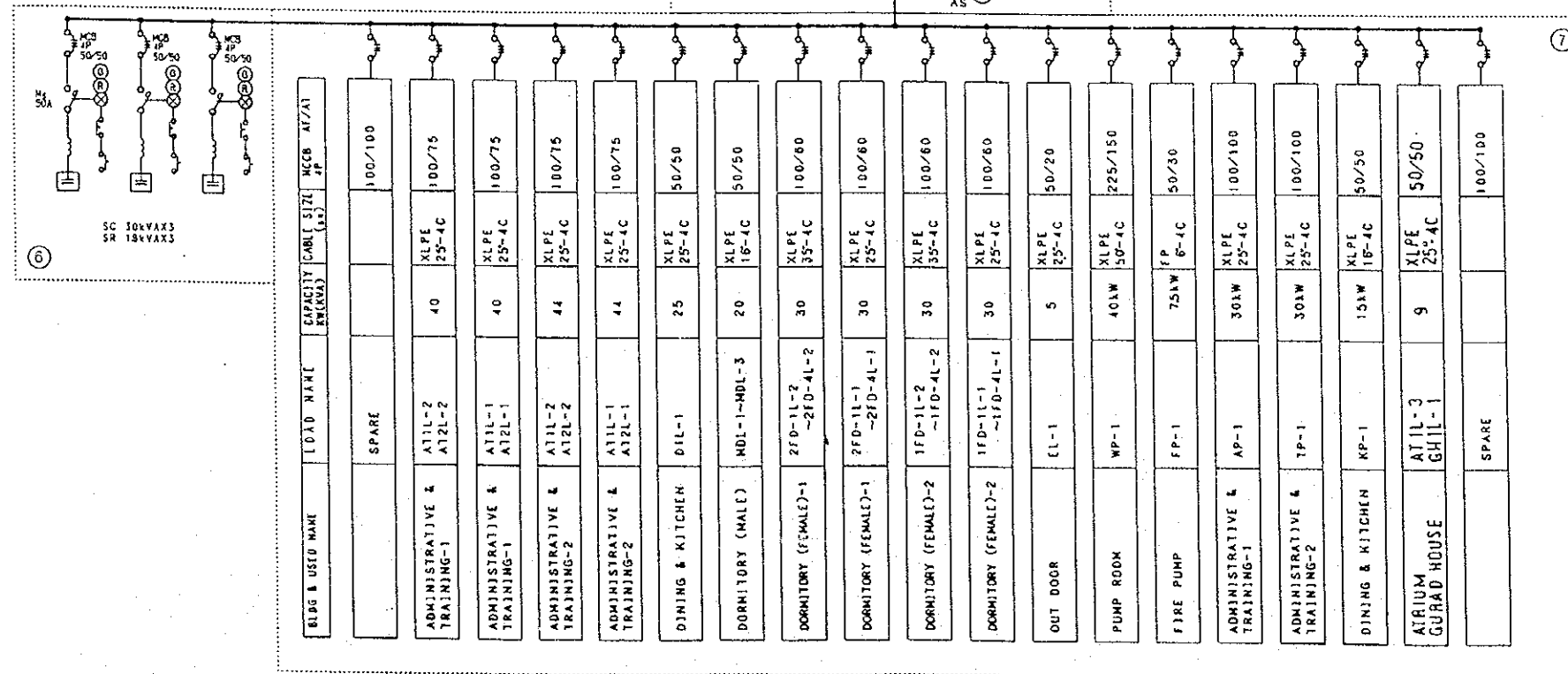
①	H. T INCOMING PANEL
②	H. T RECEIVING PANEL
③	H. T FEEDER PANEL
④	H. T COUPLER PANEL
⑤	L. T RECEIVING PANEL
⑥	L. T STATIC CAPACITOR PANEL
⑦	L. T SWITCH PANEL

NOTE : INCOMING CABLE, CONDUIT PIPE AND H.T SWITCH GEAR SHALL BE INSTALLED BY MYANMAR SIDE.
 JAPAN SIDE SHALL SUPPLY MATERIALS (CABLE, CONDUIT PIPE AND H.T SWITCH GEAR) ONLY.



LEGEND

MCF	METERING OUT FIT
VCB	VACUUM CIRCUIT BREAKER
LA	LIGHTNING ARRESTER
ACB	AIR CIRCUIT BREAKER
MCB	MOLDED CASE CIRCUIT BREAKER
DS	DISCONNECTING SWITCH
EMC	ELECTRO MAGNETIC CONTACTOR
V	VOLTMETER
A	AMMETER
WH	WATT HOUR METER
W	WATTMETER
PF	POWER FACTOR METER
AVR	OVER VOLTAGE GROUND RELAY
OCR	OVER CURRENT RELAY
TR	TEMPERATURE RELAY
LGR	L. T GROUND RELAY
CT	CURRENT TRANSFORMER
ZCT	ZERO PHASE CURRENT TRANSFORMER
CS	CHANGE OVER SWITCH
SL	SIGNAL LAMP (GREEN RED)
BS	BUTTON SWITCH
T	TRANSFORMER
SC	STATIC CAPACITOR
SR	STATIC REACTOR



SUB STATION SKELETON DIAGRAM

THE PROJECT FOR EXPANSION OF THE INSTITUTE OF NURSING IN MYANMAR

PACIFIC CONSULTANTS INTERNATIONAL

Scale:

Date:

MAY, 1995

Title:

SUB STATION SKELETON DIAGRAM

DORMITORY(FEMALE) BUILDING-2

DORMITORY(FEMALE) BUILDING-1

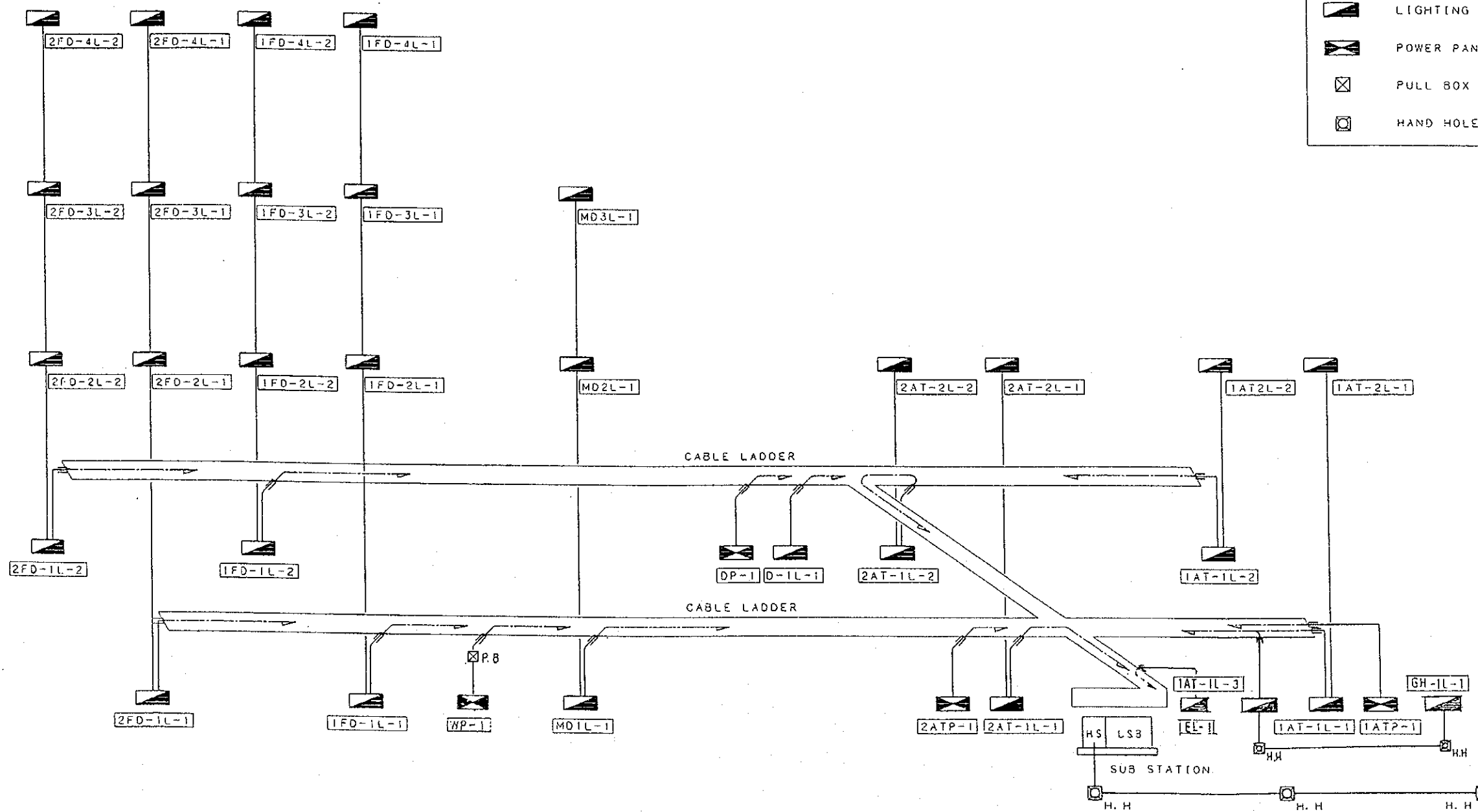
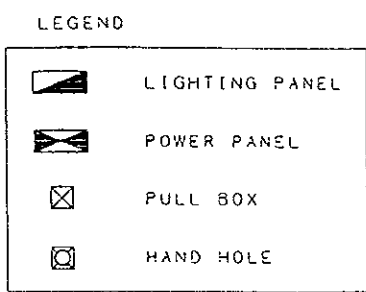
DORMITORY(MALE) BUILDING

DINING & KITCHEN BUILDING

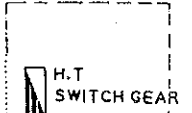
TRAINING & ADMINISTRATIVE BUILDING-2

TRAINING & ADMINISTRATIVE BUILDING-1

R F
3.500
4 F
3.500
3 F
3.500
2 F
3.500
1 F



EXISTING SUB STATION AT EXISTING INSTITUTE OF NURSING



H.T. IN COMMING

JAPAN SIDE — MYANMAR SIDE

BOUNDARY

NOTE: ALL INSTALLATION SHALL BE DONE BY MYANMAR SIDE. JAPAN SIDE SHALL SUPPLY MATERIALS (CABLE, CONDUIT PIPE, AND H.T. SWITCH GEAR) ONLY.

MAIN FEEDER DIAGRAM

DORMITORY(FEMALE) BUILDING-2

DORMITORY(FEMALE) BUILDING-1

DORMITORY(MALE) BUILDING

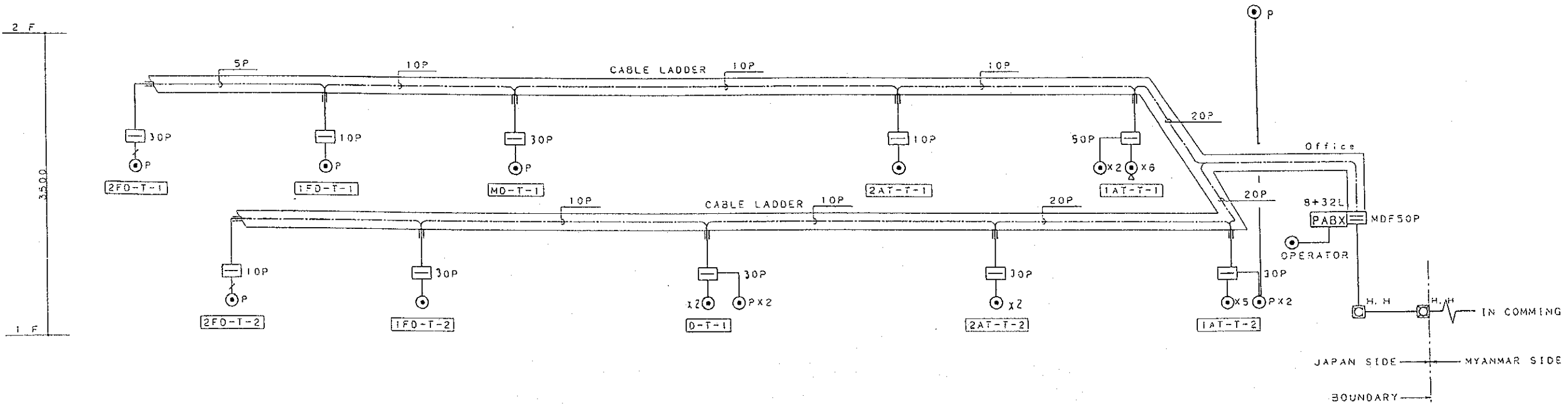
DINING & KITCHEN BUILDING

TRAINING & ADMINISTRATIVE BUILDING-2

TRAINING & ADMINISTRATIVE BUILDING-1

LEGEND

- ⊙ P PUBLIC TELEPHONE
- ⊙ STANDARD TELEPHONE SET 16NOS
- ⊙ OPERATOR TELEPHONE SET 1NO
- ▭ TERMINAL BOARD
- ⊠ HAND HOLE
- ▭ PABX OUTLINE EXTENSION W/BATTERY } 40L(MAX50)



TELEPHONE SYSTEM DIAGRAM

DORMITORY(FEMALE)
BUILDING-2

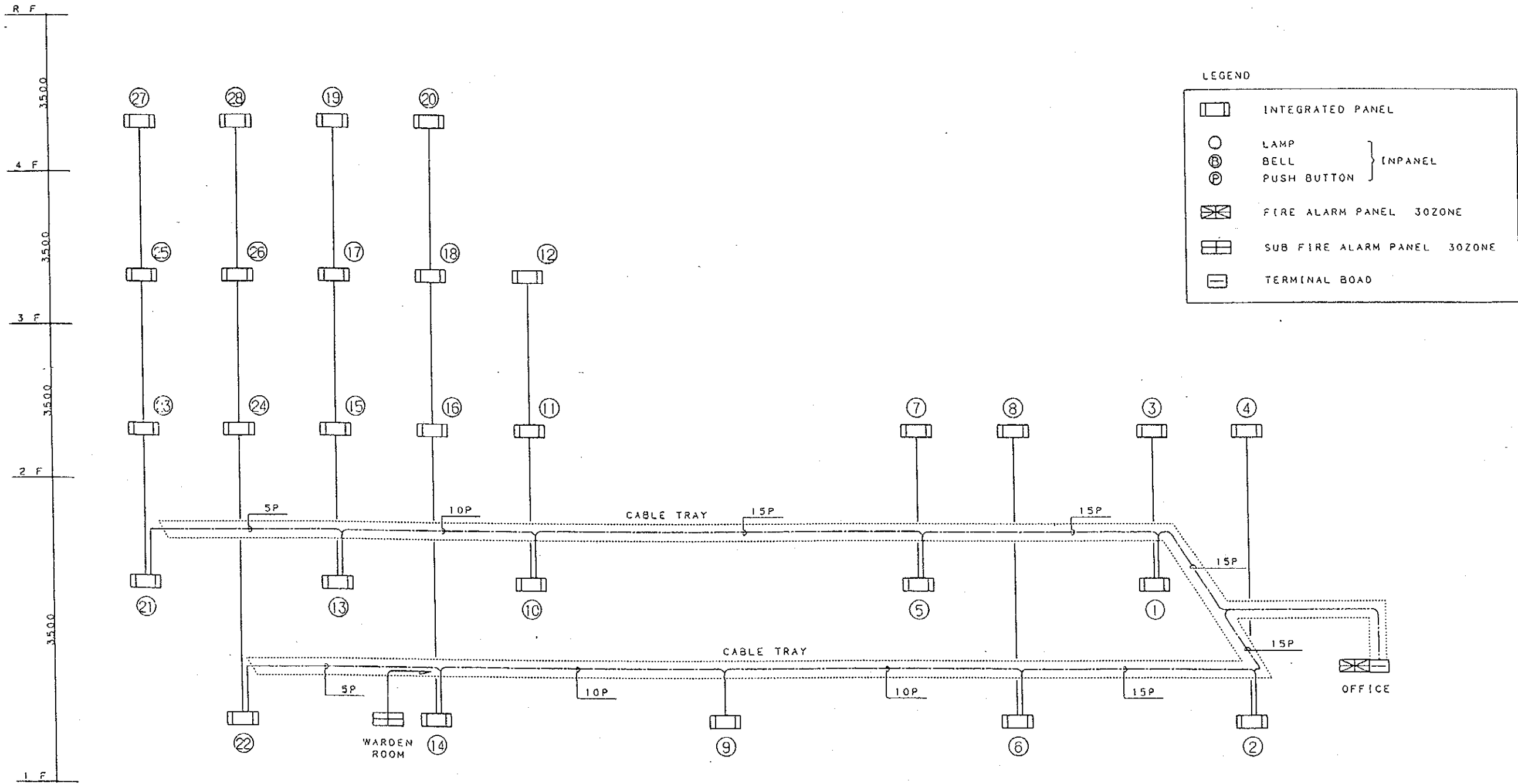
DORMITORY(FEMALE)
BUILDING-1

DORMITORY(MALE)
BUILDING

DINING & KITCHEN
BUILDING

TRAINING & ADMINISTRATIVE
BUILDING-2

TRAINING & ADMINISTRATIVE
BUILDING-1



FIRE ALARM SYSTEM DIAGRAM

THE PROJECT FOR EXPANSION OF
THE INSTITUTE OF NURSING IN MYANMAR

PACIFIC CONSULTANTS INTERNATIONAL

Scale:

Date:

MAY, 1995

Title:

FIRE ALARM DIAGRAM

DORMITORY (FEMALE) BUILDING-2

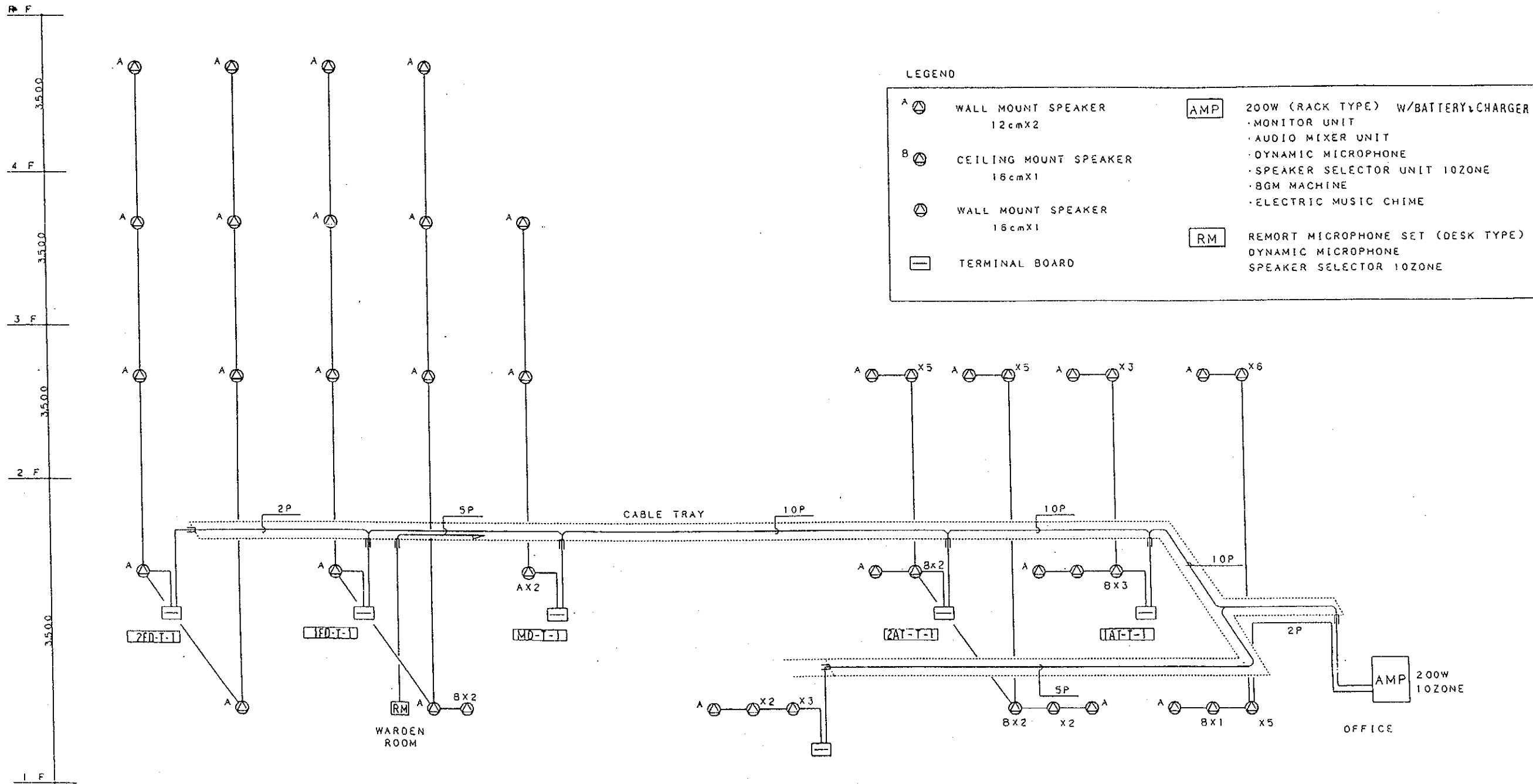
DORMITORY (FEMALE) BUILDING-1

DORMITORY (MALE) BUILDING

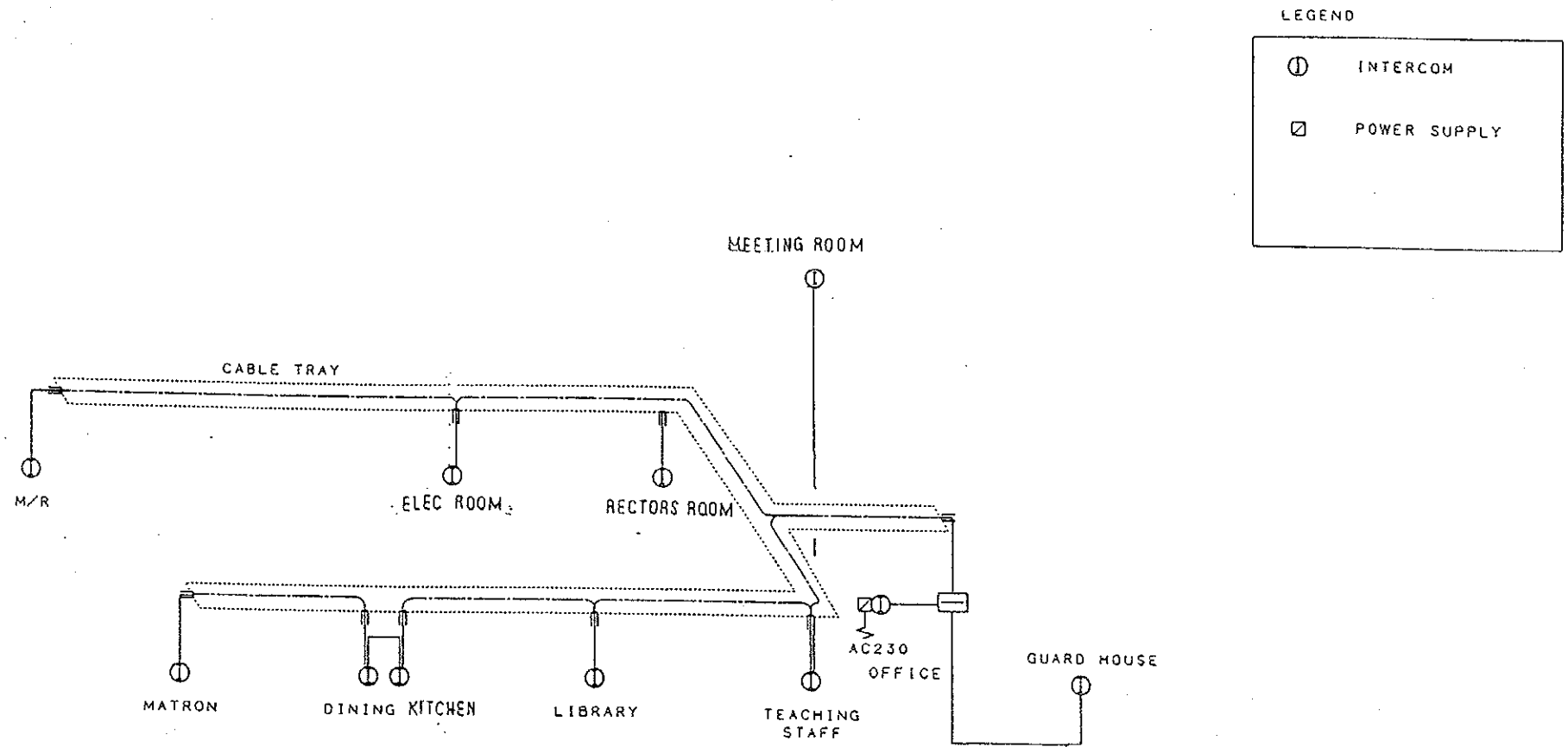
DINING & KITCHEN BUILDING

TRAINING & ADMINISTRATIVE BUILDING-2

TRAINING & ADMINISTRATIVE BUILDING-1



PUBLIC ADDRESS SYSTEM DIAGRAM



INTERCOM SYSTEM DIAGRAM

THE PROJECT FOR EXPANSION OF THE INSTITUTE OF NURSING IN MYANMAR	 PACIFIC CONSULTANTS INTERNATIONAL	Scale:	Date: MAY, 1995	Title: INTERCOM DIAGRAM
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DORMITORY(FEMALE)
BUILDING-2

DORMITORY(FEMALE)
BUILDING-1

DORMITORY(MALE)
BUILDING

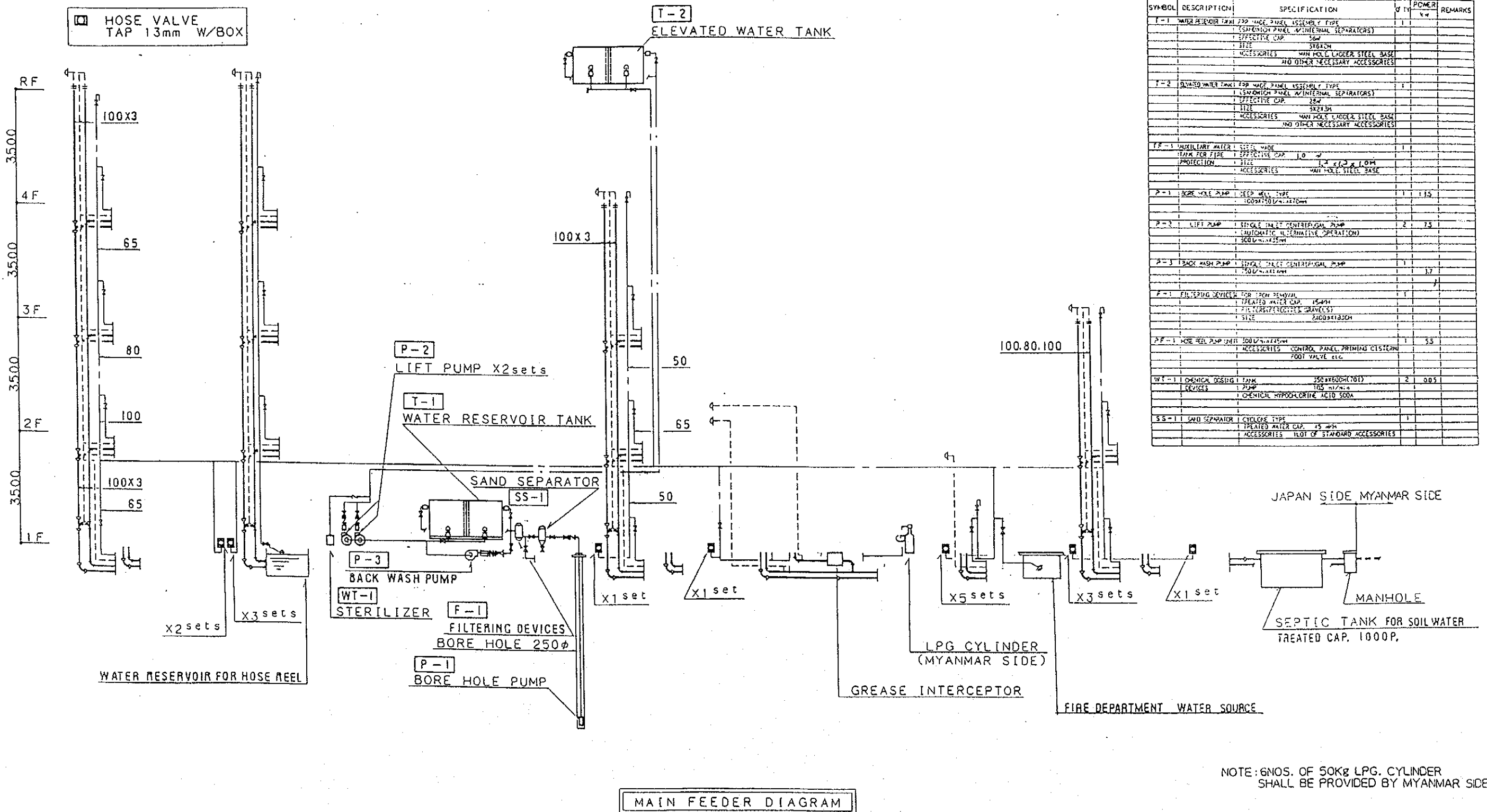
DINING & KITCHEN
BUILDING

TRAINING & ADMINISTRATIVE
BUILDING-2

TRAINING & ADMINISTRATIVE
BUILDING-1

LEGEND

HOSE VALVE
TAP 13mm W/BOX



EQUIPMENT LIST

SYMBOL	DESCRIPTION	SPECIFICATION	QTY	POWER KW	REMARKS
T-1	WATER RESERVOIR TANK	FRP WAGE PANEL ASSEMBLY TYPE CONTROL PANEL W/ INTERNAL SEPARATORS EFFECTIVE CAP. 2500 SIZE 2500MM ACCESSORIES W/IN HOLE LADDER STEEL BASE NO OTHER NECESSARY ACCESSORIES	1		
T-2	ELEVATED WATER TANK	FRP WAGE PANEL ASSEMBLY TYPE CONTROL PANEL W/ INTERNAL SEPARATORS EFFECTIVE CAP. 2500 SIZE 2500MM ACCESSORIES W/IN HOLE LADDER STEEL BASE NO OTHER NECESSARY ACCESSORIES	1		
RF-1	AUXILIARY WATER TANK FOR FIRE PROTECTION	STEEL WAGE EFFECTIVE CAP. 1000 SIZE 1000MM ACCESSORIES W/IN HOLE STEEL BASE	1		
P-1	BORE HOLE PUMP	DEEP WELL TYPE 1000/1500 L/CAPACITY	1	1.15	
P-2	LIFT PUMP	SINGLE PHASE CENTRIFUGAL PUMP AUTOMATIC ALTERNATIVE OPERATION 3000 L/CAPACITY	2	7.5	
P-3	BACK WASH PUMP	SINGLE PHASE CENTRIFUGAL PUMP 7500 L/CAPACITY	1	3.7	
F-1	FILTERING DEVICES FOR TREN REMOVAL	TREATED WATER CAP. 15000 FILTER MEDIA (SPECIAL GRAVELS) SIZE 2000X1500	1		
WT-1	HOSE REEL PUMP	CONTROL PANEL PRIMING CISTERNA FOOT VALVE ETC.	1	5.5	
SS-1	SAND SEPARATOR	CYCLONE TYPE TREATED WATER CAP. 45 M ³ /HR ACCESSORIES T/OT OF STANDARD ACCESSORIES	1		

NOTE: 6NOS. OF 50KG LPG. CYLINDER
SHALL BE PROVIDED BY MYANMAR SIDE.

MAIN FEEDER DIAGRAM

DORMITORY (FEMALE) BUILDING-2

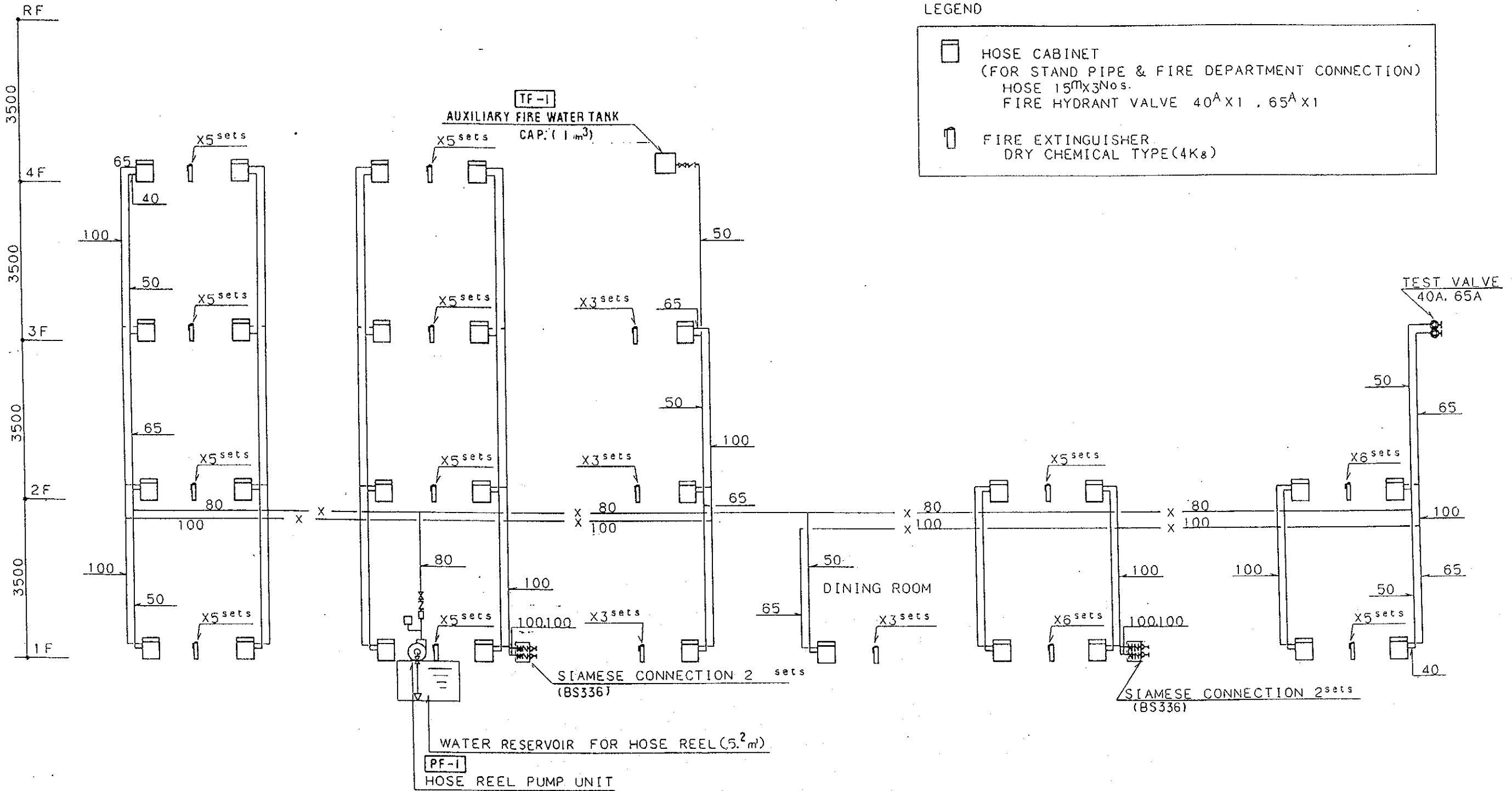
DORMITORY (FEMALE) BUILDING-1

DORMITORY (MALE) BUILDING



DINING & KITCHEN BUILDING

TRAINING & ADMINISTRATIVE BUILDING-2

TRAINING & ADMINISTRATIVE BUILDING-1



LEGEND

-  HOSE CABINET
(FOR STAND PIPE & FIRE DEPARTMENT CONNECTION)
HOSE 15^mx3Nos.
FIRE HYDRANT VALVE 40^Ax1, 65^Ax1
-  FIRE EXTINGUISHER
DRY CHEMICAL TYPE (4K&)

FIRE FIGHTING DIAGRAM

CHAPTER 3 IMPLEMENTATION PLAN

CHAPTER 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Concept

The understanding of the basic procedure of this project as Japan's Grant Aid Programme is important prior to the implementation of the Project. The procedure of the Project and the matters to be considered and confirmed are as follows:

(1) Basic Items

- 1) The exchange of Notes (E/N) shall be concluded between the Japanese Government and the Government of Myanmar after the completion of the basic design study at the end of October 1995.
- 2) With the E/N, Japan shall commit itself officially to assist and initiate specific action.
- 3) After the above-mentioned conclusion, a consultant contract shall be concluded between a consultant of Japanese nationality and the Government of Myanmar and detailed design work shall be started immediately.

(2) Detailed Design Stage

- 1) For the Detailed Design, full details of facilities and equipment in the Basic Design should be carefully confirmed and discussed with the implementation agency.
- 2) The Consultant shall discuss the technical problems through meetings with the relevant authorities in Japan and Myanmar during the Detailed Design stage.
- 3) The detailed drawings will probably require about 4 months after the agreement of the E/N.

(3) Tender

- 1) The tender shall be conducted in accordance with JICA guidelines.
- 2) The Contract shall be conducted either as one package with a Contractor or classified in two packages with a Contractor to carry out the construction work and a supplier for the procurement of the nursing education equipment.
- 3) The Consultant will assist the implementation agency for the contracting of the construction contract in accordance with guidelines of JICA.

(4) Contractor and Supplier

- 1) The Prime Contractor for the Project will be a Japanese contractor to undertake the construction work, with local contractors sub-contracted by the contractor.
- 2) The Construction should be liaised closely with the procurement of the nursing education equipment so that the implementation schedule and technical management can be controlled smoothly.

- 3) It is considered that the transportation plan and schedules for construction equipment and materials are the major factors in formulating an implementation schedule.

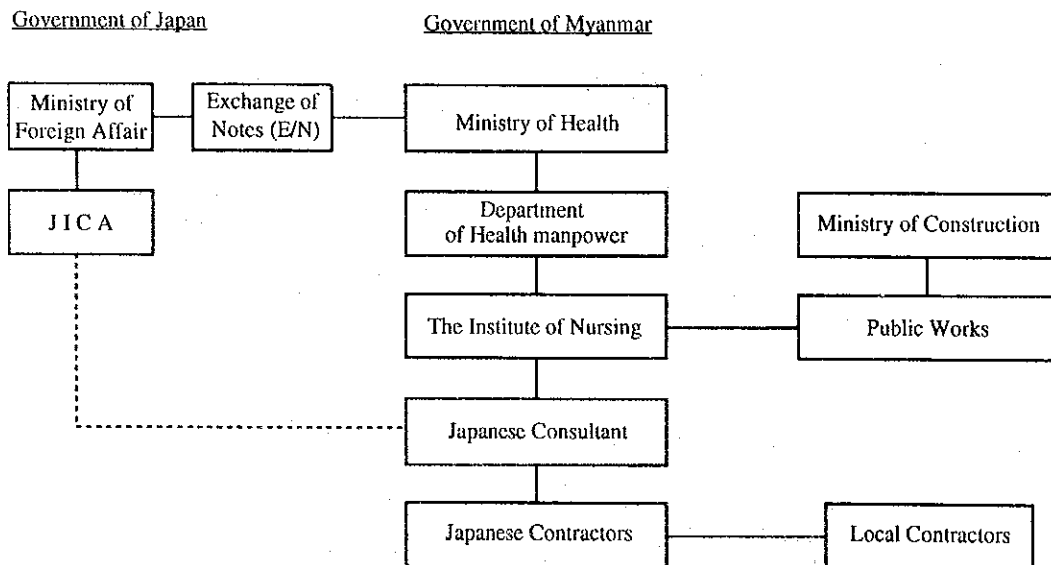
(5) Implementation Organization

The organizations involved in this project are as shown below.

- 1) The Ministry of Health of the Government of Myanmar is the decision-making body dealing with the Grant Aid Programme;
- 2) The Institute of Nursing under the Department of Health Manpower, the Ministry of Health is the implementation agency which will implement the project with the Japanese consultant, and Japanese contractor;
- 3) The Public Works, the Ministry of Construction of the Government of Myanmar has responsibility for supporting the technical aspects of this project during the construction period. The Department of Medical Research, Instrumentation Division, the Ministry of Health of the Government of Myanmar has responsibility for giving advice for the nursing education equipment.

The following diagram shows the relationship between the Government of Myanmar, the Japanese Consultant and the Contractor.

Figure 3-1 Implementation Organization



3-1-2 Implementation Conditions

Although there are many buildings being constructed in Yangon, the availability of experienced work men in the modern construction field is still limited, because of the long national isolation by the previous government. It is also difficult to obtain basic construction equipment such as a truck crane, concrete mixer (large), re-bar cutter and temporary frames. Because a lease system of construction equipment is not fully established, equipment may have to be imported from Thailand and Singapore.

The specific situation of construction in Myanmar and points to be considered are as follows.

- (1) According to the basic procedure of Japanese Grant Aid , a Japanese contractor will be tendered and will undertake the construction of this project. However, because of Myanmar's specific conditions on executing the building construction such as communication and language problems, local customs and religious matters, local regulations and governmental approval, etc., local contractors will be sub-contracted, to give instructions directly to local labourers, assemble a suitable work force and plan the work allocation.
- (2) Because basic construction equipment is not available in Myanmar, equipment will be imported from Thailand, Singapore or Japan. Careful consideration on transporting the equipment by the sea should be taken for the preparation of an implementation schedule;
- (3) The building codes, regulations or laws are not systematically established in Myanmar, but usually BS (British Standard) is applied for building construction. The building design for the project should be carried out in reference with this Standard as well as considering the local situation;
- (4) Imported construction materials from Thailand, China, Singapore are seen in downtown Yangon, but the supply of these materials are limited to an individual level. Despite the fact that aggregates for the structural works such as sands, gravels, cements and bricks can be obtained in Myanmar, they require provisional stocks against infrequent supply. The procurement schedule for the construction materials should be prepared based on the conditions of transporting materials from Thailand, Singapore or Japan and Myanmar's seasonal constraints.

The result of discussions with contractors building hotels and observations from existing buildings during basic design study, shows that most construction materials have been imported either from Thailand or Singapore.

According to these contractors, the following are the common reasons for the procurement of construction materials from Thailand, Singapore or Japan:

- 1) Although the initial investment cost is high, the maintenance cost can be reduced by using better quality materials.
- 2) In order to avoid delays from an infrequent supply of materials, it is safer to be dependent upon imports.

For Japan's Grant Aid project, it is important to eliminate any redundant costs or expenses and the building should be designed in a rational way. But at the same time the quality of the building should be expected to be a certain level, in order to reduce the maintenance cost in the long term. Therefore, the selection of construction materials and equipment will be carefully examined prior to the procurement.

3-1-3 Implementation Body of the Project

The Ministry of Health is the main organization responsible for this project. The Institute of Nursing under the Department of Health Manpower will be in charge of the implementation of the Project. As the Supervisory Committee, organized by a director from DOHM, engineers and architect from Public Works and staff from the Instrumentation Division, DOMR, will give technical advice and support. Under the Rector of the Institute of Nursing, the faculties are responsible for implementing the actual project.

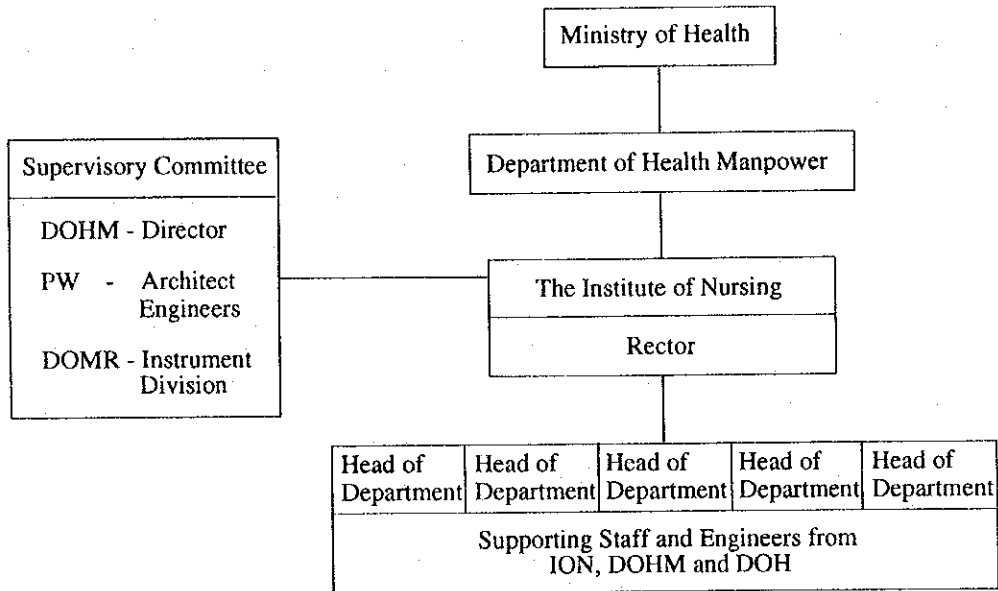


Figure 3-2 Organization of the Project Implementation

3-1-4 Scope of Works

The portions to be dealt with by the Japanese side and by the Government of Myanmar for the implementation of the Japan's Grant Aid Programme are shown in Table 3-1

Table 3-1 Extent of Works

Portions by the Japanese Side	Portions by the Myanmar Side
<p>(1) Building Works Structure works, finishing works</p> <p>(2) Electrical Works Power • trunk facilities, lighting, power outlets, P/A systems</p> <p>(3) Utilities and Facilities</p> <p>a) Water Supply</p> <p>b) Sewerage system including piping works up to the connection manhole</p> <p>c) Sanitary facilities</p> <p>d) Elevated tank and reserve tank</p> <p>e) Kitchen facilities</p> <p>f) Fire-fighting facilities</p> <p>g) Electrical system Including the provision of switch gear for the existing sub-station and conduit cable from the switch gear to the new high voltage</p> <p>h) Telecommunication system Including the provision of cables from MDF (Main Distribution Frame) to cross connection point</p> <p>i) Lightning Protection System</p> <p>j) Lighting system in the site</p> <p>(4) Exterior Work</p> <p>a) Road, path and parking lots within the site</p> <p>b) Centre courts, entrance gardens and fountain</p> <p>(5) Nursing Education Equipment The provision of nursing education equipment and producing equipment for teaching materials</p> <p>(6) Dormitory</p> <p>(7) Gate and Guard House</p>	<p>(1) Site Preparation</p> <p>a) Demolishing and removal of existing structures and underground piles, and ground preparation</p> <p>b) Temporary power and water supply for the construction</p> <p>(2) External Works Landscaping, planting, fence and approach road beyond the site</p> <p>(3) Utilities and Facilities</p> <p>a) Sewerage Piping works from the connection manhole in the site to the existing sewerage line</p> <p>b) Storm Drainage Drainage line from the site to the existing line including the expansion work of the existing drainage line beside the existing school building</p> <p>c) Electrical Work Cabling work from the existing sub-station to the new transformer high tension receiving panel</p> <p>d) Telecommunication Work Cabling work from cross connection point to MDF</p> <p>e) The provision of gas cylinders for the kitchen</p> <p>(4) Others</p> <p>a) Governmental works including the application and obtaining Governmental approvals and permissions</p> <p>b) Smooth custom clearance and tax exemptions for the imported construction materials and equipment</p> <p>(5) Management, operation and maintenance cost for the new building and facilities</p> <p>(6) Tax exemptions and necessary preferential treatment for the construction staff from Japan or a third country</p> <p>(7) Restoration and maintenance works for the existing facilities and equipment</p>

3-1-5 Consultant Supervision

The scope of the supervision works during the construction phase is as follows:

(1) Check and approval of the construction plans and drawings

Checking and approving of the construction plans, construction schedules, working drawings, materials, samples, equipment lists, etc. submitted by the Contractor.

(2) Management of the construction schedule

Giving instructions to the Contractor and reviewing the progress report submitted by the Contractor in order to complete the construction work as scheduled. In the case of the construction work being carried out by the Government of Myanmar is found to be delayed, the Consultant may urge a faster schedule for the construction work.

(3) Quality Control

Checking and giving approval for the quality of materials and construction works in accordance with the specification. However, the materials which are imported from Japan or other third countries will be checked by engineers in the head office or branch offices of the Consultant.

(4) Checking of the finished product

Checking the finished products and confirming the quantity.

(5) Assistance of payment and issuance of certificates

Assisting of the procedures of checking bills, etc., relating to the payment of construction expenditure and issuance of certificates such as the certificate of practical completion, the completion certificate, etc., if necessary.

(6) Check and submission of monthly progress reports

Checking and approving monthly progress, completion documents and photos of works from the contractor and reporting the progress of the construction work to the Government of Myanmar and JICA.

The Consultant shall also prepare and submit the completion report in accordance with the Grant Aid Programme guidelines to the Japanese Government.

(7) Others

Manage and coordinate the schedule and works in order to achieve smooth operation with works executed by the Government of Myanmar, if necessary.

3-1-6 Procurement Plan

(1) Procurement Plan for Building Construction

The procurement plan is prepared by considering the fact that the Myanmar relies on imports for most of the materials except for aggregates for the structure works. When procuring the materials for the project, it is necessary to select those which facilitate

easy maintenance and management. Beside this, the procurement period and procedure of the transportation must be carefully investigated.

Procurement of materials used in this project are defined as shown in Table 3-2.

Table 3-2 Procurement Situation of Construction Materials

Name of material	Locally Produced	From Japan	From Third Country	Remarks
Sand/Gravel	○			
Cement	○		○	
Bricks	○			
Timber	○			
Re-bar	○		○	
Concrete Blocks	○			
Tiles			○	
Wood Fittings	○			
Metal Fittings			○	
Glass			○	
Water proof Agent			○	
Sheeting Plywood	○			
Roof Sheet Metal			○	
Plastic Tiles			○	
Ceiling board			○	
Paint			○	
Miscellaneous Hardware			○	
Distribution Panel Board			○	
Lighting Appliances		○	○	
Electric Cable/Conduit			○	
Wiring Equipment			○	
Control Panel		○	○	
Transformer			○	
Communication Appliance		○	○	
PVC pipes			○	
Sanitary Fixtures			○	
Elevated Reservoir Tank		○	○	
Pumps			○	

Table 3-2 Procurement Situation of Construction Equipment

Name of material	Locally Available	From Japan	From Third Country	Remarks
Back hoe (0.6 m ³)	○			with breaker
Shovel loader	○			
Dump truck (4t)	○			
Truck (4t)			○	with boom
Vibrating roller			○	
Rammer			○	
Compactor			○	
Concrete mixer (0.3 m ³)			○	
Re-bar cutter			○	
Re-bar bender			○	
Mortar mixer (0.3 m ³)			○	
Concrete Block making machine			○	
Water pump			○	
Generator (35 KVA)			○	
Generator (2.2 KVA)			○	
Engine welding machine			○	
Crusher	○			
Tank lorry	○			
Temporary scaffolding			○	
Concrete Dumper			○	
Batcher Plant			○	

(2) Procurement Plan for Equipment

< Equipment Procurement Plan >

For the equipment procurement, the following guidelines will be applied:

- Local procurement

The equipment will be procured as much as possible in Myanmar, if it is capable to meet the quality, maintenance and agency requirements.

- Third country procurement

If local suppliers can not provide the equipment, and if the quality meets requirements, the equipment will be imported from neighbouring countries such as Thailand and Singapore.

- Japanese procurement

If local and third countries' suppliers can not provide the equipment with the necessary quality and function, the equipment will be supplied from Japan.

The classification of countries for the procurement is described as below:

1) Off-set Printing Machine (Japanese procurement)

Equipment will be usually imported from neighbouring countries such as Thailand and Singapore, but off-set printing machines of Japanese make are popular in Myanmar. The local purchase price has already added customs duties and is higher than the cost of purchase in Japan. Its spare parts and consumable goods will be provided by the local maker agencies.

2) Human Body Models (Japanese procurement)

The leading models are Japanese, American and German makes, but American and German models are accompanied with less explanation than Japanese models. If education levels and the status of the Institute are considered, the Japanese made models with a high standard are preferable.

3) Equipment for laboratory (Japanese procurement)

The equipment for the laboratory and glass-ware are imported from neighbouring countries, but most of them are Japanese, European or American makes. The Central Medical Stores Depot often supplies equipment of Japanese makes, and Japanese procurement is also preferable from the aspect of the maintenance. There is little difference in price between the Japanese make and the European and American makes, so Japanese procurement is preferable.

4) Equipment for Office Work (Local or third country procurement)

Local or third country procurement for the office work equipment is preferable because the local agencies for the makers of the copy machine has the function of sales and maintenance, and the price is inexpensive. The local suppliers can not provide paper cutters and heavy duty punches, but third county procurement is possible for the equipment and preferable.

5) Vehicles (Japanese procurement)

Stores and service centres of Japanese car makers are open in Myanmar, and so spare parts and consumable goods are easily obtained through these agents. However, the local purchase price is more expensive than the cost of purchase in Japan because customs duties are added. Therefore Japanese procurement is preferable.

6) Furniture (Local procurement)

The local furniture meets the needed quality. Local procurement is preferable so that the Institute is able to replace the new furniture in the future.

In addition to the above, the Central Medical Store Depot procures, supplies, keeps, distributes as well as maintains and installs the medical equipment and medical reagents for the national medical institutes and research institutes in Myanmar. The depot is a subordinate organization of the Department of Health under the Ministry of Health and has an office and a storehouse in Yangon city. There are also offices in Mandalay, Taunggyi and Lashio.

When the medical equipment and reagents are procured by lot, a tender is opened. The tender winner procures, supplies and installs them. Since the depot

is short of technicians and does not have a proper maintenance system, it requests the Instrumentation Division and private enterprises to maintain and install in many cases. It regularly procures consumable goods and spare parts from neighbouring countries by request of the medical institutes, but most of the products are Japanese, European and American makes.

The human body models have been procured by assistance of international organizations such as WHO, UNICEF, NGOs, etc., but most of them are Japanese makes. Many of the equipment for the laboratory, glass-ware and audio-visual equipment are also Japanese makes.

3-1-7 Implementation Schedule

The tentative implementation schedule for the Project is expected as shown in Table 3-3.

Table 3-3 General Project Schedule

Year		1995				1996												1997				
Month		9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	
The Japanese Side	Detailed Design		☐☐☐ Contract / Local Work E/N	▨▨▨▨▨▨▨▨▨▨	Detailed Design	☑ Approved	▨▨▨▨▨▨▨▨▨▨	Tender Evaluation														
	Construction Execution					▬▬▬▬▬▬▬▬▬▬	Contract/Preparation Work/Transportation for the Materials	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	
	Equipment Procurement					▬▬▬▬▬▬▬▬▬▬	Manufacturing of Prototypes for Local Equipment	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	
The Myanmar Side	Implementation of the Project				▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	▬▬▬▬▬▬▬▬▬▬	
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* E/N : Exchange of Notes

3-2 Project Cost Estimation

Analyzing the capital budget for the Institute of Nursing, the budget for the year 1995-1996 has been increased nearly 548% from the previous year. The budget consists mainly of construction expenses which have been allocated for the implementation of the Project.

The capital budget for the Institute of Nursing is as shown in Table 3-4.

The project cost for the portions to be dealt with by the Myanmar side is estimated as follows:

Item of Works	Estimated Cost
(1) Site Preparation	US\$33,090.-
(2) External Works	US\$23,403.-
(3) Other Expenses (Utilities, etc.)	US\$11,600.-
Total	US\$68,093.-

Comparing to the capital budget appropriated by the Government of Myanmar, the amount of the budget is judged reasonable.

3-3 Operation and Maintenance Plan

3-3-1 Operational Body

(1) Operational Structure

The Institute of Nursing is operated and administered under the Department of Health Manpower, Ministry of Health.

The academic activities are carried out under the supervision of the Senate of the Institute which is composed of five heads of department from the Institute, the heads of departments of supporting subjects from other Institutes, with the Rector as the chairperson.

The administrative activities are carried out under the supervision of the Administrative Board which consists of the Rector as the chairperson, two members of the Universities' Central Council, senior heads of departments, a representative of the State Law and Order Restoration Council, a representative appointed by the Ministry of Health and the registrar.

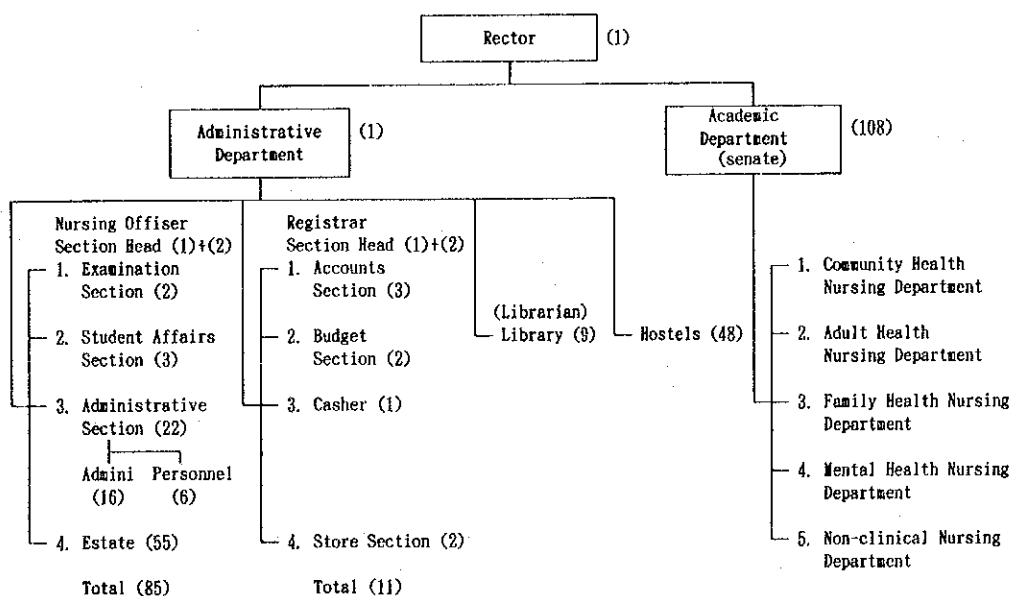


Figure 3-3 Existing Organization Chart of ION

There are 5 departments in the Institute of Nursing to teach the nurses. The supporting subjects are taught by faculties from other Institutes such as the Institute of Medicine, the University of Distance Education, the Institute of Education and Yangon University.

As a result of the draft explanation survey, the survey team found that the academic department of the Institute increased to 14 departments. Accompany with this change, the organization of the Institute has been reorganized as shown in Figure 3-4.

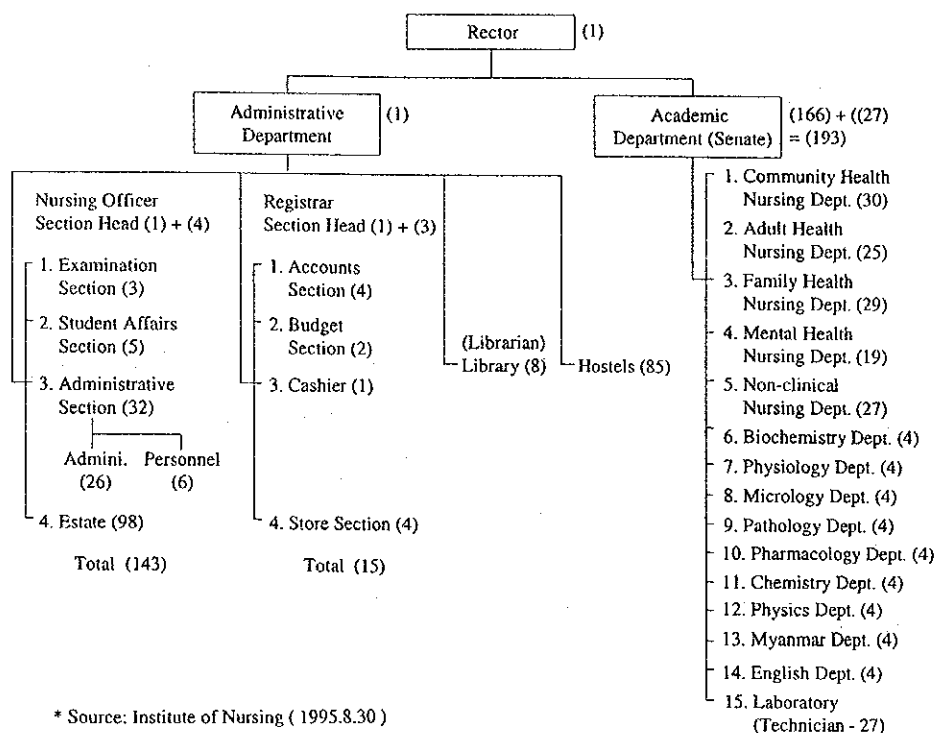


Figure 3-4 Proposed Organization Chart of ION

(2) Manpower:

As shown in Table 3-4 the Institute of Nursing has currently 263 staff members under the supervision of the Rector, including staff for financial affairs, student affairs and the maintenance of the estate.

Table 3-4 The Number of Staff Members in the Institute of Nursing

TIME OF SURVEY		Existing	B/D survey		D/F survey	
YEAR		1995	By 2003/2004		By 2003/2004	
DEMARCATION		Existing	Existing Building	New Building	Existing Building	New Building
(1)	Administration and office staff	107	100	70	90	104
(2)	Dormitory staff	48	48	36	48	37
(3)	Teaching staff	108				
	• Professor	(5)	-	(5)		(5)
	• Lecturer	(5)	(5)	(5)	(6)	(14)
	• Assistant Lecturer	(6)	(6)	(6)	(6)	(16)
	• Demonstrator	-	-	-	-	(10)
	• Tutor	(32)	(25)	(20)	(25)	(25)
	• Instructor	(60)	(30)	(30)	(30)	(30)
Total		263	216	170	205	241
			386		446	

The number of staff will be increased, with the expansion of the facility, from 263 staff to 446 staff (as shown in Table 3-4, the number of staff was planned 386 staff at the time of basic design study).

The structure of the Institute is characterized by a tutorial system with a professor at the top, with to lecturers, assistant lecturers, tutors and instructors in a pyramid shape. Five faculties will be responsible for the major departments of both the existing and new facilities and other staff members will be doubled.

Although these faculties all have more than 20 years of experience in nursing, they are not yet to be regarded as professors by the Department of Health Manpower. However they are expected to undertake the Master's Course with the assistance of the University of Adelaide, Australia with WHO finance from 1996. By the completion of the course they will be officially promoted to the position of professor.

(3) Operational Budget:

The operational budget both for current and capital expenditures in the previous 5 years and the provisions for the financial year 1995/1996 are shown in Table 3-5 and Table 3-6.

Table 3-5 Current Budget for the Institute of Nursing

Budget Title	1990 - 91	1991 - 92	1992 - 93	1993 - 94	1994 - 95	1995 - 96
1. <u>Salary and Allowances</u>	1,008,487	1,368,652	1,799,223	2,322,839	2,138,500	3,346,210
2. <u>Travelling Allowance</u>	4,041	10,895	26,779	8,338	13,000	18,600
3. <u>Labour and other charges</u>	235,427	384,384	446,170	416,153	564,890	862,120
4. <u>Maintenance</u>	64,429	137,183	226,598	297,913	467,100	1,898,050
5. <u>Stipend</u>	466,703	898,459	1,156,560	1,754,547	1,860,230	1,530,000
6. <u>Entertainment allowance</u>	-	-	1,070	1,000	1,000	1,000
Total	1,779,087	2,799,573	3,656,400	4,800,790	5,044,720	7,655,980

Source: Institute of Nursing

Table 3-6 Capital Budget for the Institute of Nursing

Budget Title	1991 - 92	1992 - 93	1993 - 94	1994 - 95	1995 - 96
1 <u>Capital Investment</u>			10,300,000	1,700,000	9,600,000
2 <u>Increased Investment</u>			84,790	119,160	66,670
3 <u>Office equipment, Office furniture, Office cars</u>	50,850	451,225			300,000
Total	50,850	451,225	10,384,790	1,819,160	9,966,670

Source: Institute of Nursing

The budget for the Institute of Nursing is appropriated in the budgets of the Department of Health Manpower. The table indicates considerable increases in the current and capital expenditure in 1995/1996. The major increase in the current expenditure is contributed by the reinforcement of the staff for teaching, administration and maintenance. The increase in the capital expenditure is the provisional budget for this project in accordance with the expansion of facilities, the portion for which the Myanmar side has to allocate and execute by themselves.

The record of revenues for the Institute of Nursing is as shown below.

Table 3-7 Revenue for the Institute of Nursing Unit: kyat

Year	1991/92	1992/93	1993/94	1994/95
Annual Revenue	32,000.-	70,000.-	53,000.-	119,000.-

The revenue of the Institute is limited, compared to the current budget for the Institute Table 3-5, which means that more than 98% of budget is financed by the Government.

The main components of revenue are; 200 kyats/months from students for meals and 30 kyats/month from B.N.Sc. Generic Students for school fees. Other minor revenues are; the transportation fees of 6 ~ 8 kyats/trip for excursions and some penalties from students.

The cash flow analysis has been conducted as shown in Appendix-12. The result of the analysis has indicated that in order to become a financially independent institution, the Institute should be required to charge some dormitory fees, school fees, etc. If this is not possible, it will be difficult to maintain the condition of the facilities and could not function as the Japanese Side intended for the Project initially.

The cash flow has revised in accordance with the increase of staff after the draft explanation survey.

3-3-2 Maintenance for the Equipment

Both existing equipment and equipment supplied in this project will not require special techniques for maintenance. Makers of the audio-visual instruments, Off-set printing system and rotary press have service agencies in Myanmar. Therefore, these equipment can be maintained without any problem.

The Instrumentation Division in the Department of Medical Research under the Ministry of Health is responsible for the maintenance works such as diagnosis, repair and inspection of the equipment by request from the medical colleges and institutes managed by the Ministry of Health. There are electric, electronic, mechanical and optical departments in the division, composed of 9 technicians and 27 engineers. UNDP and WHO donated some necessary tools such as oscilloscopes, lathes, drilling machines and various of the gauges to solve any troubles. Since diagnosis and repair of the medical equipment are free of charge, they impose little burden on the Institute. Thus, consideration of a new workshop subsequent to this project is not needed for the Institute from the above reasons.

Japanese products such as a copy machine, off-set printing system, rotary press, OHP and TV monitors are quite popular in Myanmar, and their agencies have service centers as well as sales departments, and so spare parts and consumable goods can be easily obtained. The price, however, is comparatively high because of the customs duties. Though being inexpensive, the equipment purchased from third-countries does not have any after sales service, because there is no service centers or agencies. As for personal computers, no considerations are needed for the after sales service although the price is high.

Medical equipment, its consumable goods and spare parts and reagents are supplied through the central medical stores in the Department of Health under the Ministry of

Health. A request is made by the Department of Health through the Department of Health Manpower, and an approval by each department is needed in order to proceed. If approved, the costs are borne by the Ministry of Health, but the Institute of Nursing must bear the expense for a request which is not approved.

3-3-3 Present Situation of Operation and Maintenance Costs

Because the Institute of Nursing is a public institution, teaching, administrative and maintenance staff labour costs are appropriated in the budget of the Department of Health Manpower, Ministry of Health. Diploma students receive 300 kyats per month as a stipend from the Government and B.N.Sc. Bridge students get paid their usual salaries, but B.N.Sc. Generic students are required to pay 30 kyats as an annual fee.

The operation costs in the recurrent budget are mainly for labour costs (av. 40%), with others such as fuel, telephone and electricity (av. 11%) and the stipend for the Diploma students (av. 32%). The portion of these expenses is quite consistent, however, the maintenance costs for instruments and equipment, buildings, roads and motorcars were gradually increased year by year.

The current budget for the Institute of Nursing is as shown in Table 3-5 and Table 3-6.

As the above table indicates, for the budget allocation for the year 1995-1996, the increase of the maintenance costs is significant. A total of approximately 25% of the current budget is appropriated for the maintenance costs in consideration of the expansion of the facility by the Project.

3-3-4 Utilities Expenses

The running costs for the utilities for the proposed facilities are estimated as follows. The demand factors and assumptions are computed based on the existing conditions and usages of the Institute.

1) Electricity

The demand assumption of electrical power for the project is estimated:

< Lightings • Electrical Outlets >

(Area)	(Load)	(Duration of Usage)	(Demand Factor)	(Monthly Consumption)
Classroom Wings	164 Kw	x 7 hr/day x 22 days/month	x 0.3 =	7,577 KWH/month
Dormitory Wings	144 Kw	x 6 hr/day x 30 days/month	x 0.5 =	12,960 KWH/month
Other Facility	7 Kw	x 5 hr/day x 30 days/month	x 0.5 =	525 KWH/month

< Power >

Water Pumps, A/C, etc.	75 Kw	x 14 hr/day x 30 days/month	x 0.2 =	6,300 KWH/month
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Total 27,362 KWH/month

The charge for electricity is estimated:

(Monthly Consumption)	(Unit Rate)	(Monthly Charge)
27,362 KWH	x 0.56 Kyats/KWH	= 15,320 Kyats/month

The monthly demand and charge for electricity to the new facility will be more or less the same as the existing facility, which means the Institute will have a double amount of electrical charges every month.

2) Gas

LPG will be used as the energy source for the kitchen stoves in the new facility. The demand assumption of LPG is estimated:

$$45,000 \text{ kcal/hr (3.75 kg/hr)}$$

$$(45,000 \text{ kcal} \div 12,000 \text{ kcal/kg} = 3.75 \text{ kg})$$

The monthly charge for the LPG is estimated:

(Monthly Demand)	(Duration and Time of Usages)	(Unit Rate)	(Monthly Charge)
3.75 kg/hr	x 2 hr x 3 times x 30 days/month	x 2.3 Kyats/kg	= 1,552.5 Kyats/month

Although the existing kitchen is burning wood chips as an energy source for cooking, the Institute is currently constructing a new kitchen and converting the energy source to LPG.

Therefore, LPG use as an energy source is reasonable and the amount of expense is not conspicuous.

3) Water

The water will be supplied from a deep well which will be bored on the project site. Therefore, the water charges from the municipality are not applied to this facility and the electricity charge for pumping up the water from the well to the elevated tank is included in the charge of electricity.

The total amount of utilities expenses is calculated as below:

Electricity	:	15,320 kyats/Month
Gas	:	1,553 kyats/Month
Water	:	N/A
<hr/>		
Total	:	16,873 kyats/Month

$$16,873 \text{ kyats/Month} \times 12 \text{ Months} = \boxed{202,476 \text{ kyats}}$$

Thus, the amount of 202,476 kyats will be further required for the utilities expenses in the recurrent budget of the ION.