

Ambulances are needed for the emergency clinic. In addition, vehicles should also be provided which will allow intern students to attend health posts dispersed in local areas.

The required type and quantity of medical equipment is described by each clinic department.

3-7-2 Outline of the Preliminary Study

In compliance with the Philippine requests, the Japanese Government dispatched to the site a Preliminary Study Team from Dec. 14 through Dec. 23, 1986 headed by Dr. Toru Ise, International Medical Cooperation Department, National Medical Center, Ministry of Health and Welfare.

The Study Team discussed this project with the persons concerned in the Philippine Government, investigated the project site, and collected various data. As a result of these studies and analyses, the Study Team judges that improvement of the OPD is greatly needed by the Philippine people, and it is considered urgent. Thus its completion will contribute significantly to the promotion of health and sanitation in the Philippines.

CHAPTER 4
DESCRIPTION OF THE PROJECT

CHAPTER 4 DESCRIPTION OF THE PROJECT

4-1 Objective of the Project

The objective of this Project is to construct the OPD and install the medical equipment with the Japanese Grant Aid Assistance. Especially, it is to provide integrated medical treatment services for the out-patient clinic for the low income group, as well as give medical education to the medical workers.

The improvement of the Out-patient Department will contribute substantially to better all of the PGH. Thus Grant Aid Assistance from the Japanese Government for this Project will be of great significance to this project.

4-2 Project Definitions

4-2-1 Size of the Clinic

According to the survey carried out in 1984, it is clear that the out-patients of PGH have come from every corner of the Philippines (Fig.4-1).

The survey shows 65.6 % of the patients coming from Metro Manila, 27.1 % from Luzon, 5.4 % from Visayas, 1.9 % from Mindanao; and in Metro Manila where PGH is situated 14.5 % are from Manila City; Pasay, 8.8 %; Makati, 7.5 %; Quezon City, 4.3 %; Mandaluyong and Muntinlupa, 3.5 %; Taguig, 3.4 %; and Las Pinas, 3.0 %.

In other wards, the out-patients come from various corners of Metro Manila within a 10km to 15 km radius (Fig. 4-2).

In 1980, the potential medical care demand in Metro Manila was 23 million to 30 million out-patients. assuming that a person annually consults doctors 4 or 5 times, or rather 90,000 to 120,000 out-patients per day.

In Metro Manila, there are approximately 29,000 beds in both public and private hospitals. From this it is estimated that the capacity of out-patients possible to be consulted would be 45,000 persons per day,

assuming that the capacity for out-patient is approximately 1.5 times the number of beds. Consequently, the number of potential out-patients is estimated at approximately 2.5 times the existing capacity. There are clinics, such as a primary health unit, which act as out-patient clinic facilities, however, these consultation and treatment facilities are poorly equipped. Thus it is clear that the facilities for out-patients in Metro Manila is absolutely insufficient. In reality, Furthermore, the demand to the OPD is much higher, when one takes into account the fact that 1/3 of the out-patients of PGH have come from all parts of the country and that one of the objects of this hospital is to consult and treat low-income people who make up more than 80 % of the population. Nevertheless, the number of patients attending at OPD decreased in 1977 by 885 persons per day, compared with 1,238 persons per day in 1975. Later averaging, approximately 1,000 persons per day. This indicates the number of people attending is considerably smaller than the number estimated by the potential demand (Fig. 4-3). The reasons are as follows:

- 1) The medical care network for PGH was established in 1976 to distribute the increasing number of outpatients to other hospitals and to decrease their number of out-patients, while OPD intended to devote itself to the tertiary medical care. The number however, did not decrease. Despite the shortage of reception time, more than 1,000 patients have daily visited. The number has decreased after February, 1985, due to the construction of the New Central Block. The number of patients decreased to 882 persons in 1985, but increased again to 1,007 persons in 1986.
- 2) In addition, the fact that a lot of out-patients do not actually visit this hospital, can be explained by:
 - a) The reception for consultation is closed at 10 AM.
 - b) Consultation hours are held only 2 hours in the morning and 2 hours in the evening.
 - c) The facilities are aged and medical equipment is out-dated, making out-patients wait a long time for consultation.

PGH explains that goals of a new OPD are as follows:

- a) Increase by 50% the number of staff in charge of out-patient department.
- b) Increase medical supplies, consumables and medicine.
- c) Improve the reception hours and the transportation of medical records.
- d) Increase consultation hours by 1 hour in the morning and evening, respectively.
- e) Addition of facilities for the diagnosis of functional disturbance, and a pain clinic.

If the services to out-patients are improved by the improvement of the administration, construction of new facilities and the provision of optimal medical equipment, it is expected that the number of patients will considerably increase, besides the natural increase (in addition to the natural increase in population).

According to the request from the Philippines, the number of out-patients is estimated at 2,000 persons per day. This number seems to be insufficient when noting the future forecast.

Nevertheless evaluation of size of the clinic should be carried out to sufficiently perform its function, by forecasting the maintenance and operation cost possible to be allocated to OPD under the severe conditions of the PGH budget. In this regard, as mentioned in Chapter 7, the feasible maximum number will be considered to be 2,000 persons for the actual operation. Therefore, it is judged that size of the clinic with 2,000 persons mentioned in the request from the Philippine side, is reasonable.

PGH will have 1,400 beds for the new central block. As the number of out-patients in a general hospital is approximately lower than twice its number of beds, the figure of 2,000 persons per day seems well balanced for the medical care function in the master plan of the entire hospital.

Fig. 4-1 Distribution of the PGH Out-Patients (the Philippines)

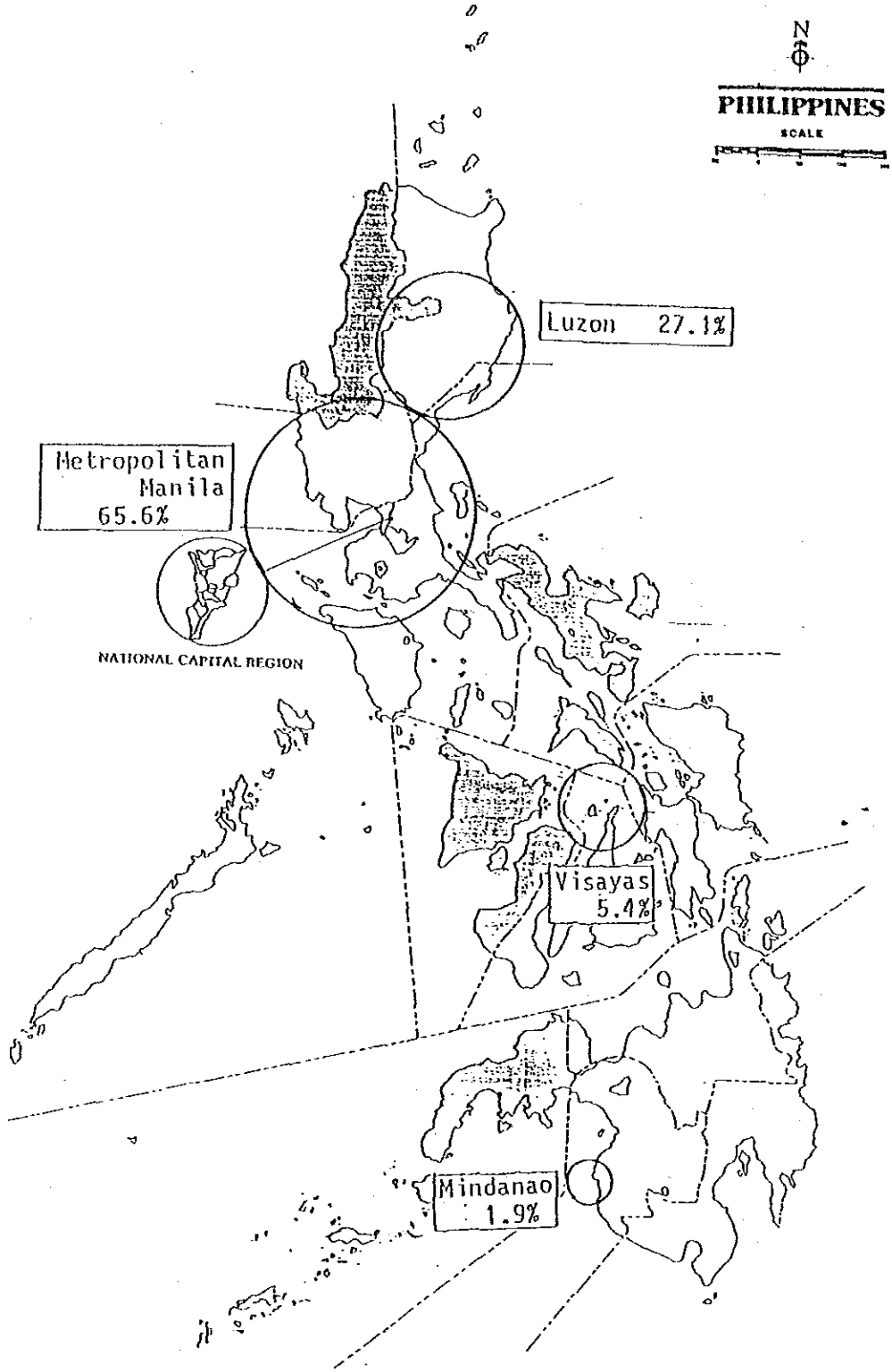


Fig. 4-2 Distribution of the PGH Out-Patients (Metro Manila)

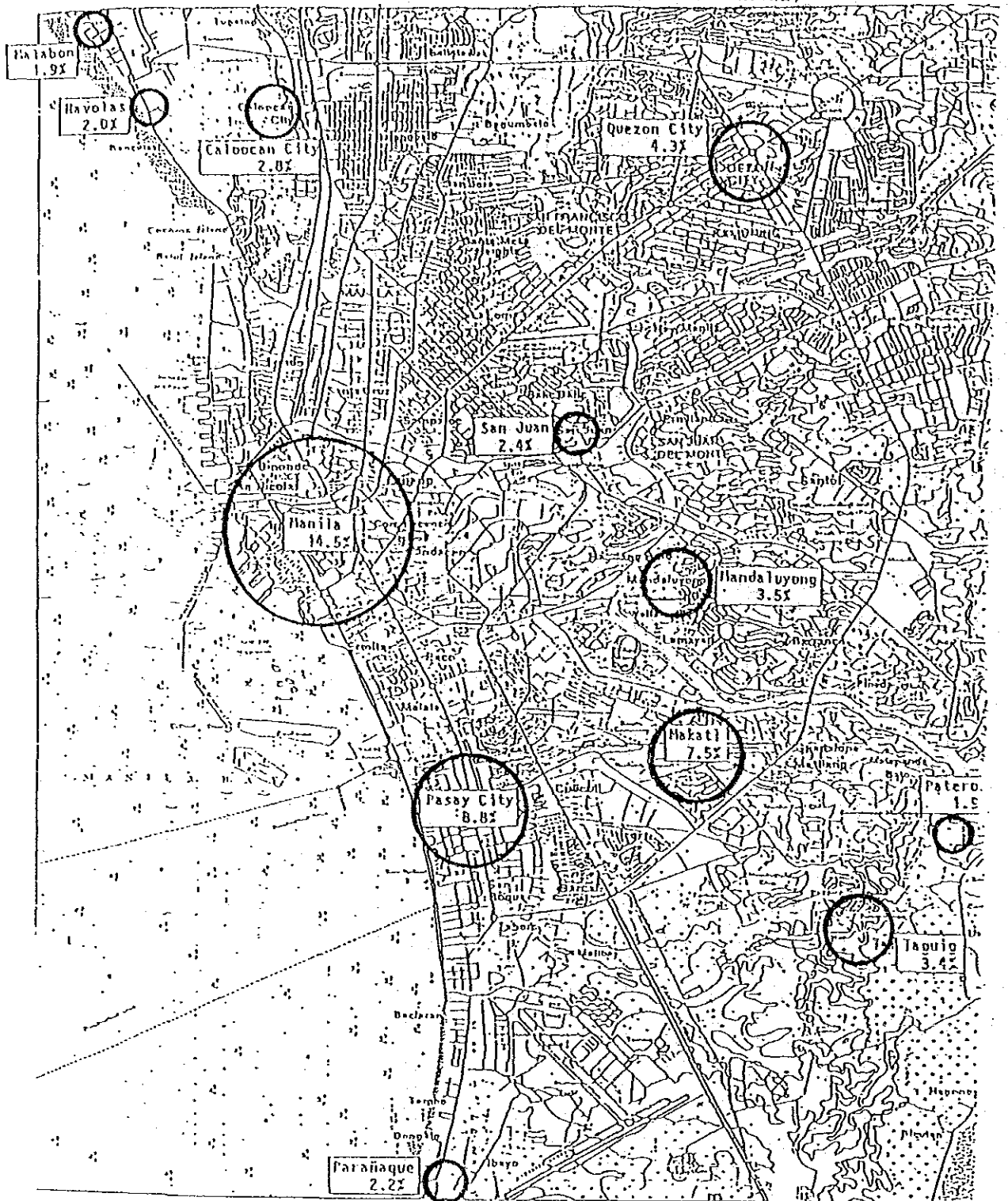
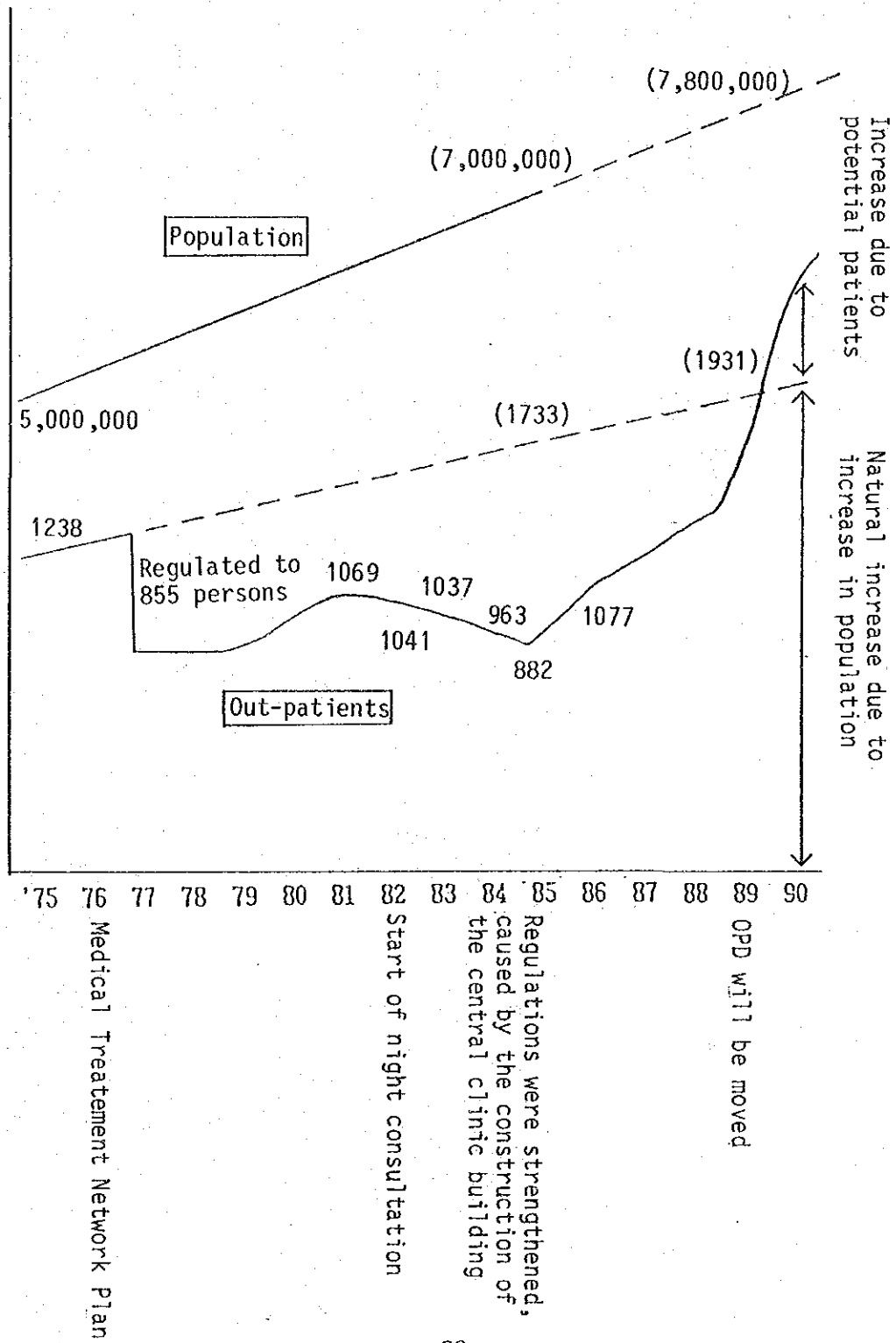


Fig. 4-3 Variation of the Number of OPD Out-Patients



4-2-2 Function and facilities

In order to allow for the future clinical practice of 2,000 out-patients per day, the following provision will be made:

- (1) The Out-patient Department will be independent.
- (2) Clinical space will be enlarged to meet the demand of clinical practice. However, for the existing system and organization as well as management, the existing functions will remain basically the same. Thus clinic departments will not be changed, and the present clinic departments will be utilized.
- (3) Clinical departments will be necessary for the out-patient clinic, centralized, whereas partial allotment should be made among the existing facilities and presently constructing New Central Block for clinical functions. For this purpose, clinical functions which closely relate to close to the OPD functions will be established. Long time will be necessary to complete the goals of the New Central block, and so it is unreasonable to rely on the New Central block to house these functionally, the OPD has a history of acting as an independent and will continue to do so in the future as stated in the expanding plan.

4-2-3 Medical equipment

Review is made for the requested medical equipment under the following conditions:

1. Medical equipment necessary for the independent out-patients department will be selected.
2. Facilities for education, training and research will be given as an affiliated hospital of the university.
3. Facilities for out-reached health services will be provided.
4. Centralization will be advanced to be operated effectively and accurately.

Results of the study of the medical equipment requested by the Philippines is as follows:

o Radiology department

The following items were requested:

- Vascular radiographic DAS system
- X-ray C.T. unit (for whole body)
- Cobalt 60 cure unit
- Simulator for radiology cure planning
- Supersonic diagnostic unit
- Auto X-ray film developer
- Accessories one set for radiology department

There are a vascular radiographic DSA system, cobalt 60 cure-unit, and a simulator for radio-cure plan. These are the equipment for the in-patient medical care. Whereas, the C.T. unit has a problem in finance of maintenance and operation, but is essential both for diagnostic functions and for the medical education, training and research in the out-patients. Presently PGH is relied on by the Makati Medical Center and the Chinese General Hospital for the 4 to 5 examinations per day using this equipment.

o Medicine department:

The following items were requested:

- Ultrasonic (wave) cardiography diagnostic unit and with Doppler unit
- Fiberscope, etc. for stomach, bronchus, bowel
- Cardiosonic, cardiographic unit
- Other diagnostic instruments, one set.

This equipment is used for patients in each department. Thus, it is designed to centralize the equipment for physiological function into the diagnostic department.

o Surgery department :

The following items were requested:

- Operation table for general surgery
- Machine sets for surgical treatments
- Shadowless lamp for surgery
- Endoscopy set for stomach, esophagus
- Endoscopy set for bowel, bronchus, rectum
- Equipment/material for surgery

These are used mainly for minor operations.

By centralizing the endoscopy department, endoscopes are concentrated for the whole of the Out-patient Department. Equipment for minor operations is designed for common use in the operation complex.

o Pediatrics department:

- Respiratory function/clinic equipment/materials
 - Respiratory function measuring body-pressure thymograph
 - Blood gas analyser
 - Pediatric broncho-fiberscopes, etc.
- Peptic digestive system clinic equipment
 - Endoscopes (soft, hard various types)
 - Units for R.I.A. EIA
 - Electrolyte-measuring unit
 - Liquid chromatograph unit
- Equipment for newborns clinic
 - Doppler blood pressuremeter
 - Weigher for measuring the milking amount
 - Audio-visual test equipment
 - Ophthalmoscope sets
- Hematic disease clinic equipment
- Bone-marrow collectors
- Adolescent clinic equipment
 - Psychological testing equipment
 - V.T.R. and monitor
 - Magic mirror unit

Psychiatric testing equipment

Heart disease clinic equipment

Ultrasonic heart tomograph with color Doppler unit

Cardiosonic, cardiographic meter unit

VTR set

Tumor clinic equipment

Ultrasonic diagnostic unit (for abdomen)

Clinic equipment for nervi craniales department

EEG

Ophthalmoscopic sets

Spectro-photometer

Centrifuges

Equipment for pediatric patients is considered entirely different from those for adults, thus they are treated with equipment specific for children. Most equipment is to be centralized. Equipment for R.I.A. excluded.

E.I.A. analysis, Doppler blood pressure test, or milking measurement, should be used for in-patients, the equipment is excluded.

o Obstetrics/gynecology department

The following items were requested:

Ultrasonic diagnostic unit

Fetus monitor

Doppler phonocardiograph for fetus

Microscope

Colposcope

Cryosurgery unit

Hard endoscopes

Anesthesia apparatus

Equipment for operation room

Necessary equipment only for OPD is selected.

o Orthopedic surgery:

The following items were requested:

- Arthroscope set
- X-ray TV unit
- Drills for bone
- Surgical units for reduction and fracture
(operation instruments)
- Computer set
- Lumbus traction unit
- Treating stand for bone-reduction
- Instruments for plaster bandage

Instruments for plaster bandage and lumbus-traction unit would be applicable for OPD, however, the rest of them would be applied for in-patient uses, thus these are excluded.

o Otorhinolaryngology:

The following items were requested:

- Fiberscope, bronchus, esophagus uses
- Timpanometer
- Audiometers
- Evoked response measuring system
- Nystagmometer
- Surgical microscope
- Operation instruments for otorhinolaryngology
- Instruments for operation room

There are many instruments used for minor operations, and instruments for diagnosis of ears.

Equipment only for minor operations is included.

o Ophthalmology department:

The following items were requested:

- Microscope for operation
- Instruments for OPD operation room
(specific to ophthalmology)
- Funduscope unit

Ophthalmoscope unit
Instruments for visual function
VTR set
Other instruments for OPD

Equipment requested is various in types, being extended in whole fields of ophthalmology. Only the minor operation field would be applicable, thus those for treatment necessary for post-operative control should be excluded. The VTR set which will be commonly used for audiovisual training and education in this department is excluded.

Dentistry department

The following items were requested:

Instruments for oral surgery
Mayley unit for dental clinic
Instrument for diagnostic treatment

Many dental units were requested because of their oral surgical treatment. However, it is necessary to reduce the number of items from the present clinical activities. The dental x-ray units are essential for diagnostic accuracy.

The instruments related to prosthesis and impressions are not included, and surgical diagnostic instruments are mainly included.

o Rehabilitation medicine department

The following were requested

Month load ECG system
Muscle power measuring analyser
Training instruments for motion therapy
Instruments for electric therapy
Occupation therapy instruments
Physical therapy instruments
Exercise instrument for walkers
Other instruments for physical therapy

The request covered the whole rehabilitation therapy.

The existing rehabilitation department is working actively, thus instruments should be limited to those needed only for diagnosis of out-patients. Commonly used instruments such as motion-load ECG and stenometric analyzer will be centralized.

o Psychiatry department

The following items were requested:

Instruments for observing the patients

Instruments for psychological tests

Electroshock therapy instruments

Audiovisual aids

For therapy-furniture, psychological test units, electroshock therapy instrument, and those related to the treatment, the equipment used for the diagnosis is provided. The audiovisual instruments for recording and therapy of patients, will be centralized.

o Family medicine department:

The following items were requested:

Diagnostic instrument set for OPD

Instruments for internal diagnosis

Equipment requested was reasonable.

o Clinical Laboratory department

The following items were requested:

Instruments for bacterial tests

(microscope, safety cabinet, autoclave, etc.)

Instruments for biochemical tests

(auto-analyzer, measuring unit for electrolyte, spectrophotometer, etc.)

Instruments for immunological tests

(fluorescence microscope, EIA, centrifuge, etc.)

Instruments for blood bank (deep freezer centrifuge, etc.)

Instruments for general tests

(microscope, blood cell counter, etc.)

Instruments for blood test

(blood analyzer of various types, electrophoresis, blood preparation)

Instruments for pathological tests

(auto-packer, microtome unit, slide stainer, etc.)

Various experimental stands/units

The equipment is all required for laboratories of OPD. However, the equipment is selected taking into account the number of actual samples for examination and supply of consumables.

o ECG station department

The following items were requested:

Various types of ECG

Filing of records for patients

ECG, endoscope, EEG, EMG as

physiological diagnostic equipment is centralized.

o Pharmacy department

The following items were requested:

Refrigerator for drugs specifically

Filing system

Cash register

Prescription, others

Pharmacy of OPD does not include drug preparation, prescriptions or tests, thus only necessary instruments for drug-dispensary are included.

o C.S.S.D. department:

The following items were requested

Large autoclaves

Ultrasonic cleaning units

Central systems, machines, supplies

Review was made for essential sterilizing materials for OPD, with those

necessary amounts and function of minor-operation department taken into account, and the equipment is planned in accordance with these requirements.

o Medical record department

As for the medical record department, the Philippines has not requested concretely. However, a medical record retrieval system using CPU must be provided, judging from its importance on the viewpoint of efficiency of clinic services and of data control.

o OPD operation department

The following items were requested:

- Surgical operation stand
- Shadeless lamp for operation
- Electric knife
- Forceps set for minor operation
- Instruments for operation room
- Suction unit
- Washing unit for operation
- Units for cardio-pulmonary revival

Equipment necessary for OPD is for minor operation of ophthalmology, pediatric surgery, urology, etc.

o Pain clinic department:

- Anesthesia apparatus
- Meter for aspirating function
- Blood gas analyser
- Patient monitor analyzer
- Ventilator

Equipment for central clinical department is not provided. However, there are many operations of sterilization, artificial termination of pregnancy and of biopsy by means of general anesthesia, so it was judged necessary to provide the equipment for those operations.

o Dermatological and urological department:

Equipment which is not appropriate to be centralized is included in this department, taking into account the fabrication of samples for pathological tissue.

o Out-reached health services

The following items were requested:

Diagnostic units set

Surgical machines set

(combination applicable for each operation)

Electric knife (portable)

Ophthalmology operation units set

Dental oral surgery instruments

Anesthesia units

Vehicle for out-reached health services

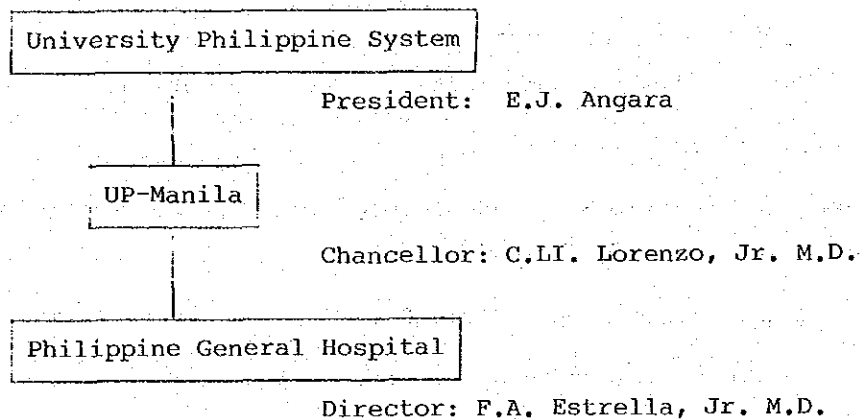
The equipment requested is reasonable.

A vehicle for out-reached health services will be used for out-reached medicare , these include the training function.

4-3 Outline of the Project

4-3-1 Implementing Organization and Management Systems

Implementing body will be PGH affiliated of UP-Manila.
The organization is as follows:



Personnel composition for the management is as follows:

Doctors: 347
Nurses: 810
Auxiliary staff : 194
Office-workers: 867

4-3-2 Outline of Facilities and Medical Equipment

There are 3 major functions of the Project as follows:

- (a) 2,000 out-patients per day services will be given for effective and sufficient OPD services.
- (b) Training and educational functions will be given to those engaging in health-medicare in future.
- (c) Out-reached health services will be supplied.

a) Facilities

Scale: Floor	OPD ward:	3 floors above ground
	Plant ward:	1 floor above ground/ 1 floor underground
Area	Area on site:	8,500 m ²
	Total floor area:	OPD building 10,020 m ² /plant building 180 m ² Corridor, <u>Total 10,200 m²</u>
Structure:	Main structure:	R.C. 2 floors, partial 3 floors
	Basic ground work:	Mat foundation

b) Outline of each section

There are functionally four sections of consultation, diagnosis, administration and common use.

1) Consultation section (2,610 m²)

Includes various rooms for the consultation of out-patients and comprises consultation rooms of internal medicine, pediatrics, orthopedics, dermatology, family medicine, dentistry, ophthalmology, otolaryngology, surgery, obstetrics and gynecology, nutriology, and physiotherapy.

2) Diagnosis section (1,630 m²)

Includes various rooms for examination, diagnosis and treatment, and surgical operation. Rooms for each X-ray examination, physiological examination, surgical operation, minor operation and clinicopathological examination are included.

3) Administration section (960 m²)

Comprises the medical record room, office, meeting room, nurse room and dressing room.

4) Common use section (5,000 m²)

Comprises the electrical room, machine room and a resting room for patients.

c) Medical equipment

- | | |
|---|---------------------------------|
| (1) Radiography department | |
| Radiographic X-ray Unit | Mobile X-ray Unit |
| X-ray Unit with Mirror Camera | Automatic Film Processor |
| CT Scanner | Ultrasonic Diagnostic Apparatus |
| Ultrasonic Diagnostic Apparatus
(portable) | (with color doppler) |
| (2) Endoscopy department | |
| Upper Gastrointestinal Fiberscope | Broncho Fiberscope |
| Choledocho Fiberscope | Electrosurgical Unit for |
| Endoscope Disinfection Apparatus | Endoscopy |
| Colonofiberscope | |
| (3) Physical test department | |
| Electro Encephalogram | Electromyograph |
| ECG Stress Test System | Electrocardiograph |
| Auto Spirometer | |
| (4) Clinical microscope laboratory | |
| Centrifuge | Binocular Microscope |
| (5) Haematology laboratory | |
| Auto Blood Cell Counter | Binocular Microscope |
| Haematologic Centrifuge | |
| (6) Bacteriology laboratory | |
| Binocular Microscope | Anaerobic Incubator |
| Biological Clean Bench | Electrophoresis Apparatus |
| (7) Bio-chemical laboratory | |
| Centrifuge | Glucometer |
| Flame Photometer | Automatic Chemical Analyzer |
| (8) Pathology laboratory | |
| Microtome | Binocular Microscope |
| Automatic Tissue Processor | |

- | | |
|---|-------------------------------|
| (9) Immuno-pathology laboratory | |
| Micro Elisa Machine | Refrigerated Ultra Centrifuge |
| (10) Laboratory washing room | |
| Distillation Apparatus | Washing Water Still App. |
| (11) Physio therapy department | |
| Traction Unit | Ultrasonic Therapy Unit |
| Micro Wave Therapy Unit | Stimulator |
| (12) Pharmacy | |
| Medicine Refrigerator | Water Distill |
| (13) Family medicine department | |
| Examining Table | OB-GYNE Examine Table |
| (14) Internal medicine department | |
| Ophthalmoscope | Examination Table |
| Laryngoscope Set | |
| (15) Pediatric department | |
| Automatic Infant Scale Set | Infant Height Scale |
| Ophthalmoscope | Nebulizer |
| Neonatal Stethoscope | |
| (16) Psichiatriy department | |
| Galvanic Current and Faradic App. | Psychological Test Material |
| Occupational Therapy Unit | |
| (17) Surgery department | |
| Examination and Treatment Table | |
| (18) Delmatological and urological department | |
| Ultra-violet Apparatus | PUVA Lighting App. |
| (19) Orthopedics department | |
| Plaster Bandage Table | Gypsum Cutter |

- (20) Operating complex department
 Universal Operating Table Operating Light
 Electrosurgical Unit Anesthesia Apparatus
 Patient Monitor
- (21) Painclinic department
 Examination Table Ice Cube Machine
- (22) Ophthalmic department
 Refracting Unit Slit Lamp Microscope
 Test Chart Remote Control Type Projection Perimeter
- (23) E.N.T. department
 E.N.T. Treatment Unit E.N.T. Treatment Chair
 Audiometer Impedance Audiometer
- (24) Gynecology and obstetrics department
 Gynecology Examination Table Gynecological Examination Unit
 Doppler Sound Detector
- (25) Dental department
 Dental Unit Dental X-ray Unit
 Dental Film Processors
- (26) C.S.S.D.
 Steam Sterilizer Ultrasonic Cleaner
 Surgical Glove Conditioner
- (27) Patient record room
 Patient Record Reference System
- (28) Audio visual room (Conference room)
 35mm Slide Projector Over Head Projector
 Video System
- (29) Nutrition clinic department
 Weighing Scale/Height Scale Caliper
 Refrigerator

(30) Out-reached health services

Vehicle for out-reached health services

4-3-3 Location and Conditions of the Project Site

The project site is located at the center-Ermita area of Metro Manila, the east side faces Taft Av., north side faces Padre Faura Street, and its area is about 8,500 m² at one corner of the PGH site (total area about 11 ha, refer to plan-site map).

In the surrounding area, there are the buildings of Foreign Affairs Ministry and Justice Ministry, etc.

The site is an area of high traffic congestion in Metro Manila. On Taft Ave., there is an overhead railway called LRT (light rail transit). The site is about a 5 minutes walk from the nearest Pedro Gil Station.

Due to the traffic, there is much noise and sandy dust.

The site is only about 800m from the seashore: the ground is about 2m above sea-level thus the street is inundated by heavy rain or tyhoons. Groundwater level is about 0m in the dry season, and 1m in the rainy season.

Soil condition is not favorable for multi-storied building construction, but as a result of the loading test, it has been determined that of the direct foundation is used to enhance the rigidity of the plate supporting the building and the foundation is structurally rugged, then there will be no ground subsidence.

The first floor level of the New Central Block is 3.54m above sea-level. The first floor level of proposed OPD will be decided almost the same level.

4-3-4 Technical Cooperation

Taking into account the high technical level of the medical treatment field of the Philippines, it was judged that the project type technical cooperation from Japan would not be necessary. The Philippines is hoping to have scientific interchange between the Philippines and Japan, or to dispatch students and researchers to Japan. These problems will be examined as future subjects.

CHAPTER 5
BASIC DESIGN

CHAPTER 5 BASIC DESIGN

5-1 Basic Design

1) Goals of the Basic Design

- a) To be in line with the expansion plan and facility improvement plan as proposed by PGH.
- b) To provide proper floor areas for each department as determined by the balance between the required area as proposed by PGH and the medical equipment plan as worked out in consultation with PGH.
- c) To overcome the functional restraints resulting from the layouts of existing facilities.

2) Design Concept

(Architectural)

- a) To make of Philippine type of consultation unit based as a premise on the manners and customs of the out-patient clinic in the Philippines, with an emphasis placed on the educational side of PGH.
- b) To arrange a functional plan which correlates between the existing facilities and the program of the Out-patient Department.
- c) To make a circulation plan which accomodates the movement of patients, doctors, nurses, medical supplies and waste as well as of medical records.
- d) To make layouts easily understandable for patients, and to accommodate 2,000 out-patients a day.
- e) To allow enough waiting space and rest space to accomodate 2,000 daily out-patients and their attendants.
- f) To raise the first floor level to allow easy ventilation, and

protection from inundation.

- g) To design the optimum and economical foundation and structure system considering the bearing stratum being very deep at GL-50m.

(Mechanical)

- a) To design independent mechanical systems, which are both coordinated with the master plan of PGH and allows the OPD to operate alone.
- b) To reduce energy and running costs, and design mechanical systems which make maintenance easy.
- c) To design mechanical systems which take into consideration the project site's climate, weather and environmental conditions.
- d) To design a plan with high safety standards against fire and other disasters.

(Medical equipment)

- a) To select medical equipment, taking into account the technical level of medical staff in the Philippines and the capacity for maintenance and operation.
- b) Equipment, which each clinical department needs in common, is to be basically centralized.
- c) Equipment should be planned to accommodate future trends in medical care and to provide for medical worker's training.
- d) Treatment, physiopathological examination and minor operation are to be consolidated into the out-patient operation department complex where equipment inherent in the department and equipment for common use are effectively combined, so that the running cost may be reduced.
- e) Systems should be planned to enhance the efficiency of clinic services and to allow effective management.

3) Design planning

- a) The building design should harmonize atmospherically with the peripheral existing buildings. Most of PGH buildings constructed since the foundation in 1911 are of Spanish colonial style; further, the buildings facing Padre Faura St., and buildings of the former Ministry of Foreign Affairs and University of Philippines, for example, are mostly of modern European style. Thus this project building should be designed to harmonize with these surroundings.

5-2 Facility Planning

5-2-1 Layout Planning

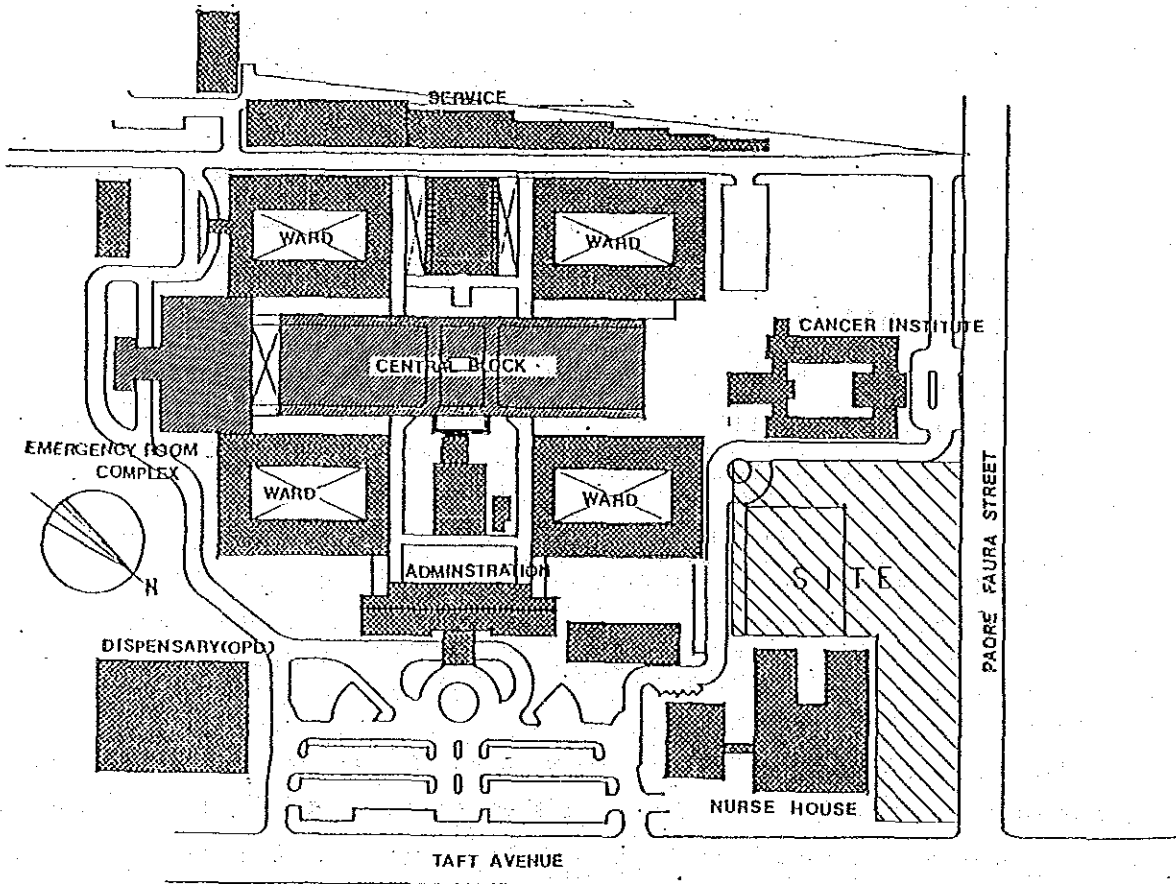
The major points for layout planning are shown as follows:

- a) The north-east corner proposed by the PGH should be this project site.
- b) Since the site is smaller, compared with the facility scale, the building should have 3 stories. However, the facilities directly used by patients should be provided on the 1st and 2nd floors where applicable.
- c) Since the site mainly faces Padre Faura St., and the traffic is not as heavy as in Taft St., Padre Faura St., should be used to facilitate the approach to the OPD.
- d) This plane planning of OPD should be designed to harmonize with PGH existing facilities. Further, the design should be proceeded on the promise that the existing buildings around this project site, such as the nurse house will not be withdrawn.

As requested by the PGH the Project site was chosen at the north-east corner of the intersection of the Taft Ave and Padre Faura St. Attention must be paid to the functional arrangement of OPD and the new central block. The correlation with the first and second floors of the New Central Block is

important. In the New Central Block the first floor has radiotherapy and treatment departments at the south end, and dispensary and physiological examination departments in the north. The second floor has a clinico-pathology examination department in the south end and CCU & ICU on the north. In addition, the emergency room department is now under construction to the south of the New Central Block, the OPD should preferably be linked on the south of the New Central Block. In other words, the front left side (southeast) where the existing emergency room complex is situated is the most suitable functional position.

However PGH has a policy of not demolishing the existing facilities. As the present OPD is playing an independent role as a charity day-hospital, the location proposed by the PGH was decided as the site of the Project in order to make the plan an independent facility.



PHILIPPINE GENERAL HOSPITAL FACILITY LAY OUT

PGH facilities surrounding the Project site are designed as shown in the drawing below, the Cancer Institute on the west, New Central Block on the south-west, ward on the south (112 beds for the internal medicine department ICU on the first floor and 120 beds for surgery department on the second) and nurse house (dormitory for nurses and female doctors, nursing school) on the east. PGH explained that it has no intention of demolishing the nurse house.

Other facilities if linked with OPD, would lead to a rational operation, and OPD arrangement plan was decided to be worked out with their respective arrangement in mind.

The main entrance of OPD faces the Padre Faura St. (The doorway of the whole of the hospital facilities faces Taft St.). As there is the possibility of the nurse house being demolished in future, a Taft St. entrance was also considered, but, due to previously mentioned conditions, the Padre Faura St. entrance was determined.

5-2-2 Plane Planning

OPD is a facility containing functions of medical examination, diagnosis and their management. Zones should be clearly divided to make a facility which is easy to understand.

a) Outline of each floor

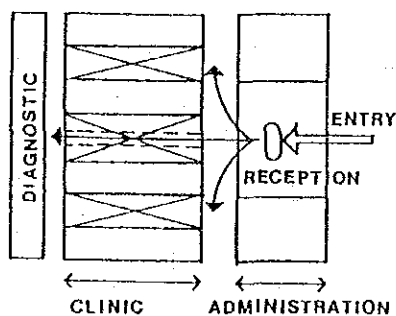
Out-patients are supposed to be able to walk, but are not less handicapped. Thus it is preferable to place the consultation zone on the first floor. However, the smallness of the site, does not allow for this zone to be placed on either the first or second floors. The request from the PGH placed the consultation rooms on the third floor. With this particular proposal taken into consideration, the internal medicine department was determined to be arranged on the first floor and the surgery department on the second. Exceptions are the surgery departments and the orthopedic department which due to its

nature, is placed on the first floor, and the psychiatry department due to its need of privacy, is placed on the third floor.

b) Patient flow and plane planning

Right in front of the doorway, the position easiest for out-patients to see, is placed the Registration (first examination and return visits). For out-patients to find their way to go with ease, each consultation zone is connected by such wide paths that they can see all consultation zones from the doorway hall position. Doorway hall portions of the first and the second floor were made void so that they can also view the second floor portion. As the space for patient attendants, a rest room was set where they can take tea and light meals. Also for the convenience of patients, a pharmacy is placed opposite to the doorway hall.

There are two types of flows to the diagnosis section: from the outside direct to the diagnosis zone, and to the diagnosis zone after consultation. In any case, to facilitate the access to the diagnostic section, as illustrated below, the planning was set up so that the diagnostic zone should be provided at the rear of the consultation zone, and a center path leading direct to the diagnostic zone should be provided, and the corridor in the consultation zone should also be connected directly to the diagnostic zone.



c) Consultation Zone

Important factors of the consultation zone are lighting system which allows the doctor to clearly see the patient, a ventilation system which makes the consultation room a good environment, a flow plan which allows many patients to distribute smoothly, and waiting space allocation.

For the natural lighting direction, the patient should sit toward the window. If the depth is too large the necessary luminous intensity fails to be obtained, so that the depth should be kept around six meters.

There is introduced a court yard to make a building suited for the natural ventilation of the consultation room. Attention should be paid to the distance from other facilities.

As the consultation zone being linked with the main flow makes the plan easy to understand, one side of the consultation zone is connected with the sideway to the doorway hall. In the vicinity of the main entrance the primary patients waiting room and office to control the patients are placed. Space for the secondary patients waiting room is made in the corridor facing the court yard.

One department was grouped together by the consultation rooms, corridor and court yard. If six numbers of consultation rooms are required, the building will stretch towards the Padre Faura St. side. With the conditions of the site being limited, shape of the site and of the consultation department in two stores are considered (see Basic Design Drawings).

d) Diagnosis zone

The diagnosis zone comprises the out-patient picture diagnosis department, physiological examination department, day-surgery department and clinico-pathological examination department. This project, in view of the space of the site and positional relationship with other facilities, considers the diagnosis zone in the form of

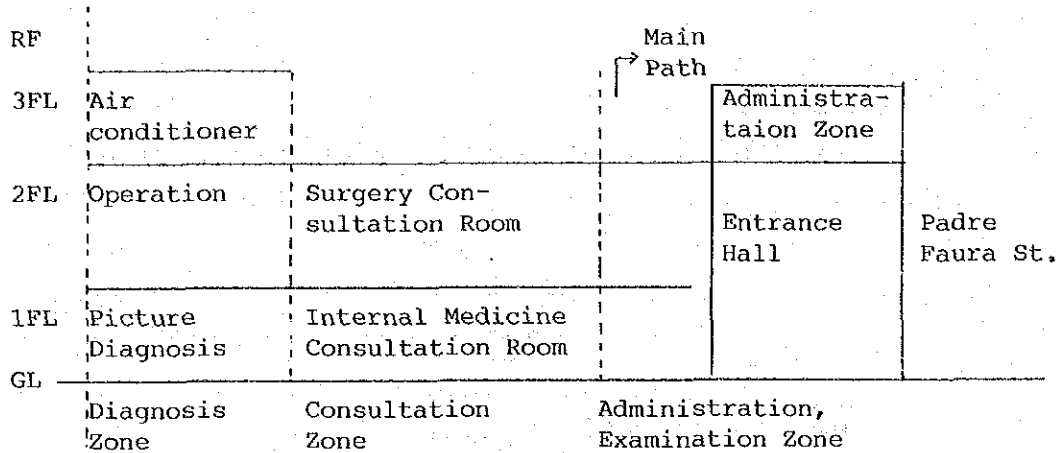
interposing the consultation zone.

The Cancer Institute on the west houses X-ray equipment which is installed. PGH, even when the New Central Block is completed, is considered to make use of the X-ray equipment of the Cancer Institute, as there is no prospect as yet of the X-ray equipment to be procured for the New Central Block. Accordingly, the picture diagnosis department of OPD should better be located at a point nearest to the Cancer Institute on the first floor on the south. The physiological examination department is located adjacent to the picture diagnosis department.

To the south of OPD is the charity ward. The first floor has the internal medicine ward and the second the surgery ward. The day-surgery department will be located to the south of OPD on the second floor, and could be linked with the existing surgery ward by the two-storied connecting corridor. From the above, the south first floor of OPD has picture diagnosis and physiological examination departments and the second floor the Day-surgery department, so that they can also be composed in a position easy to group together from the viewpoint of the air conditioning system.

The clinicopathological examination department is to collect such specimens as urine and blood from out-patients. It is therefore more convenient for patients if located near to the main flow. Accordingly, this department will be positioned adjacent to the entrance hall of the second floor.

e) Administration zone



The administration zone, as shown in the above schematic view, is arranged on the front side (north) of the building. The path will be provided with a vertical line of flow such as an elevator and stairways, being convenient for the vertical communication. The administration zone will be in a position to utilize such a vertical line of flow.

The building will have its front facing the Padre Faura St. and be three-storied on the front side. Its external appearance will be in line with the volume of the existing buildings (the Cancer Institute on the right and Nurse House on the left). This permits one to expect a balanced view and a feeling of being one.

The administration zone will have a medical record department, administration department, meeting room, and dressing room on the third floor, clinicopathological examination department on the second floor and entrance hall, registration and pharmacy on the first.

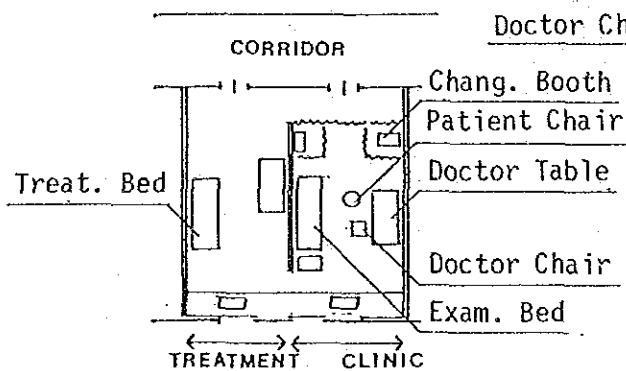
f) Number of interview units

Present condition of consultation room

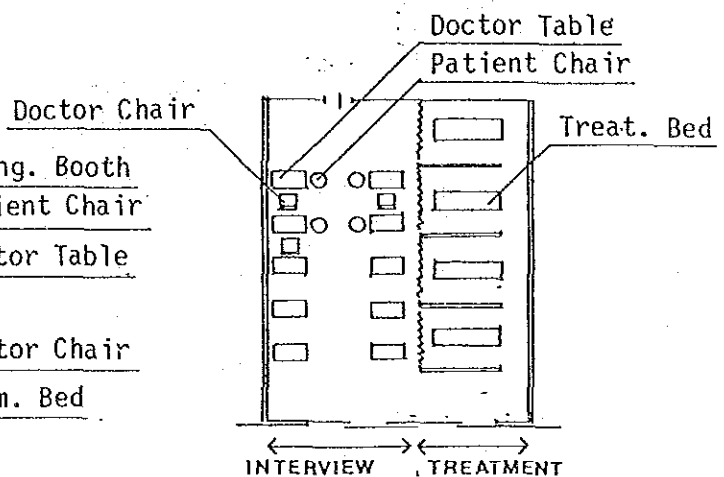
Present conditions of consultation room in existing OPD are as follows:

Generally, one patient is met by one doctor and several auxiliary personnel (nurses and clerks). In one consultation unit the doctor sits opposite the patient with his back towards the window as in Japan, as shown in the drawing below.

An Example of a General Japanese Consultation Unit

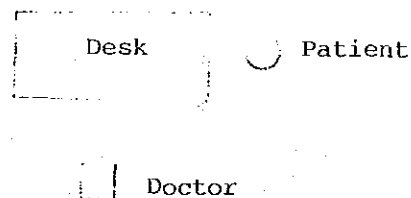


An Example of Typical PGH Consultation Room



The patient removes his clothes (except for underwear) in the dressing booth which is separated by a curtain, sits before the doctor for examination. In Japan, general cases of hospitals are said to need five minutes or so for one patient, meaning that in the morning consultation (about three hours) somewhere between 15 and 20 patients are examined. In PGH, on the other hand, a room 7 meters by 9 meters or so in size has a space for the doctor and his patient to sit opposite to each other across the interviewing table (said space being called "interview unit"). As shown in the right drawing, the patient after the interview, if he so needs, moves on to the treatment (or to the physical examination).

Concept of Interview Unit



At this point, the doctor too, moves his seat and goes into the treatment unit. This style of interview, as seen from the Japanese sensation, appears strange, but seems to be a variation of the consultation unit prevalent in the U.S. and Europe. In Europe and USA, there are one unit each of the interview unit and the treatment unit, which make up one set. From the patient's side, he wants to meet with the doctor fully clothed wherever possible as he is receiving an interview examination. Suffering from the unusual condition called illness, the patient is also mentally handicapped and it is natural for him to consult his or her state of illness with the doctor in his usual dress. On the one hand, in Japan it is a Japanese style that is prevalent with the examination efficiency of the doctor being the dominant factor.

In order to cope with many patients, PGH has many of these interview units ready, but PGH is also playing a role in the field of education and training of allowing consultant doctors and resident doctors to intermingle with intern doctors, giving on-the-job training to intern doctors. For the treatment unit on the one hand, in the internal medicine where 80 percent of the patients finish with the interview with the doctor, the number of treatment units is sufficient with 20 per cent of the number of interview units. This seems to be useful in using the narrow space. At the interview stage, consultation of patients, blood pressure, pulsation and a simple auscultation are conducted to understand the causes of illness. Time for one patient was in the range of 10 to 15 minutes on the average. Survey data of the consultation time for each department is shown below.

In the results, the present condition of the consultation of out-patients is extremely different from that of Japan. This form of consultation that may be called a Philippine style, is also similar to that of Manila City Hospital. The study is made for the case of 2,000 out-patients. Suppose that one patient needs 15 minutes. Given three clinic hours a day, it follows that one interview unit can take care of 12 patients. Accordingly, the consultation of 2,000 patients needs

134 interview units. This way of thinking is formulated by:

$$I = \frac{N}{\frac{60}{C} \times H \times \alpha}$$

(formula of the interview unit)

where in I: Necessary number of interview units

C: Time (min.) required to examine one patient

α : Occupancy ratio of the interview unit

(When $\alpha=1$, there is no idle time at all for the interview unit.)

N: Number of patients to be examined a day

H: Consultation hours for one day

The number of interview units and treatment units for each department of the present OPD.

Department	Average Duration (min/patient)	Interview Unit	Treatment Unit	
OB-Gynecology-1	15 - 30	5	3	
-2	10 - 15	12	5	
-3	10 - 15 (MAX 30)	6	4	
Medical Special Clinic			7	
General Medicine	15 - 20	16	2	
Dental	30	-	9	
EYE	15	12	2	
ENT	5 - 10 (MAX 40)	13*	3	*Special
Pediatrics -1		1	2	type
-2	10 - 15 (MAX 20)	5	6	
-3	15	7		
Surgical Specialty				
Clinic-1	5 - 10	4	2	
Minor OP RM	30 - 60		7	
Surgical Specialty				
Clinic-2		6	2	
General Surgical				
Clinic	10 - 11	8	4	

The numbers of patients consulted annually for the three years of 1986, 1985 and 1984 are shown in the following table for each department. The number of patients per hour for each interview unit can be obtained from this table. Thus, α -value will be evaluated.

Number of Out-patients in PGH 1984-1986

DEPARTMENT	PATIENT NUMBER		
	1986	1985	1984
Rehabilitation Medicine	8.623(3.2%)	4.048(1.8%)	8.030(3.3%)
Oeduatruacs	28.906(10.7%)	17.246(7.8%)	16.239(6.7%)
Radiology	9.037(3.4%)	8.903(4.0%)	4.014(1.7%)
Psychiatrye	7.329(2.7%)	4.634(2.1%)	4.252(1.8%)
Dermatology	-	8.991(4.0%)	9.024(3.7%)
Surgery	37.659(20.0%)	33.471(15.2%)	37.869(15.9%)
Ophthalmology (Eye)	34.324(12.7%)	23.306(10.6%)	24.425(10.1%)
Obstretrics-Gynecology	35.907(13.3%)	30.912(14.0%)	32.570(13.5%)
Orthopedics	11.051(4.2%)	260(0.1%)	9.976(4.1%)
Hospital Dentistry	10.550(3.9%)	10.666(4.8%)	14.746(6.1%)
Otarhinolaryngology	19.268(7.2%)	21.454(9.7%)	19.751(8.2%)
Medicine	44.237(16.4%)	33.452(15.2%)	35.207(14.6%)
Family Medicine	22.473(8.3%)	23.119(10.5%)	24.669(10.2%)
	<hr/>	<hr/>	<hr/>
	269.364	220.462	240.772
	* 1,077 P/day	882 P/day	963 P/day

p = patients

1 year = 250 days (except Saturday, Sunday, Holiday)

Number of patients

The average number of out-patients in 1984 to 1986 is 25,000 a year and 1,000 a day*. N_p is the number of patients for each department where the total number is expected to be 2,000 a day, which is indicated in the table below.

Clinic hours

The present OPD clinic hours are two hours in the morning and afternoon respectively, which will become three hours in the morning and afternoon respectively in the new OPD.

Planned occupancy (alpha-p)

Actual occupancy rate (alpha-a) of the interview unit is about 50 %. The lower occupancy rate of the current interview units means that, although the number of interview units of facilities is sufficient, they are not actually being used yet. The space is so small that it can not be used with ease, or the number of doctors is not large enough.

The planned occupancy rate (alpha-p) is set to be 70% as a goal, assuming that it has greater space than the actual interview units.

Necessary number of interview units from the viewpoint of planned occupancy rate

The number of interview units needed for each department is shown in the table below based on the number of planned patients N_p , planned occupancy alpha-p and planned clinic hours of six hours/day.

(* Saturdays, Sundays and holidays excepted)

The results of calculation are indicated in the following table.

The planned occupancy rate, alpha-p is set at 70%, on the premise that the new interview unit has a little more space than the present interview unit.

Number of final interview units

The quantity of final interview units for the aforementioned interview units was determined upon discussions with PGH departments. For the

above interview units, top priority is given to efficiency, but since the PGH is a hospital affiliated with the University of the Philippines, the final interview units were determined, taking into account the training interview units for interns and students other than the scheduled doctors. The number of final interviews is shown in the following table.

Department:	Annual Patient Number (3 years Average)	Daily Patient Number	Actual Interview Unit Number	Interview Duration (Ave.)	Actual Occupancy Rate of Interview Unit	Planned Patient Number	Planned Occupancy Rate of I.U.	Demand Number of Interview Unit based on Planned Occupancy Rate	Final Number of Interview Unit
Formular	NA	NA $\frac{ND}{250}$	IA	D (minutes)	H=4 (hours) $\frac{ND}{60} \times H \times IA$	Np	$\alpha P = 70$	H=6 (hours) $\frac{Ip}{60} \times H \times \alpha P$	
Rehabilitation Medicine	6,900	27.6				55			8
Pediatrics	20,757	83.2	13	15	40.0 (2)	156	70 (2)	4 *	26
Radiology	7,318	29.3				39		10 (9.8)	
Psychiatry	5,405	21.6				43		3 *	7
Dentology	9,007	36.0				72		5 *	13
Surgery	86,333	145.3	18	15	50.4 (2)	291	70 (2)	12 (11.5)	27
(Minor-Op)			(7)	(45)					
Ophthalmology	27,352	109.4				219	70 (2)	13 (13.0)	13
Ob-gynecology	33,130	132.5	12	15	57.0 (2)	265	70 (2)	13 (13.0)	28
Or-thopedics	10,512	42.0	23	20	48.0 (2)	84	70 (2)	21 (21.0)	6
Hospital Dentistry	11,987	47.9	9	30	66.5 (2)	96	70 (2)	4 **	12
Otolaryngology	20,158	80.6	13	15	38.8 (2)	161	70 (2)	12 (11.0)	21
Medicine	37,632	150.5	23	15	40.9 (2)	301	70 (2)	10 (9.6)	44
Family Medicine	23,420	93.7				187		18 (17.9)	5
	249,551	999.8				1,999			

* Calculated in comparison with the Medicine.
 ** Calculated in comparison with the Surgery.

g) Waiting space

An observation of interview units was made. In some departments doctors sit in the interview units and wait for patients (for example, internal medicine and gynecology departments) and in others interview units are used for patients to wait for their turn.

This indicates that the control method of patients differs, according to the waiting space, number of patients and size of consultation room. OPD will not provide waiting space for the purpose of a consultation room, but sets a large mass of primary waiting space and secondary waiting space. This is because controlling in two phases is more rational than controlling in one phase alone. For instance, in the primary waiting space many patients get tired of waiting and leave their seat or do so to ease nature. It is difficult to control a group of patients in this state. Patients waiting in the primary waiting space can assume the time when they receive consultation, thus serving to dissipate the nervousness resulting from waiting, and further improve the occupancy of the interview units. Waiting in the secondary waiting space is the half-waiting style as in the Japanese clinic booth.

h) Floor area

The existing facilities are consulting about 1,000 out-patients. PGH estimated that covering 2,000 out-patients (emergency patients not included) would require an area twice as much as the present facilities in scale.

On one hand however, it admits the need to enhance the efficiency of examinations and to devise the means to extend the clinic hours. For OPD therefore, the plan should well be of such contents that have considered the improvement from the viewpoint of both administration and operation. The time for consultation being shortened is a problem with PGH, but a proposal can well be made of the number of the interview units needed for examination and treatment, and of the floor

area of the interview units. That is, (1) to assume the number of patients expected to receive examination and treatment of OPD for each department, (2) to calculate the number of interview units needed for it, (3) to seek for each department the area of one interview unit and (4) to seek for each department the interview space that is needed. Space for the treatment unit and the like to be annexed to the interview unit is to be calculated for each department, so that the floor area for each department may be proposed.

The size of the consultation section is calculated according to the number and dimension of consultation units. The diagnosis section is established based upon the medical equipment to be used. Administration section are designed according to the method for use from the request, while the common use section is set by the quantity of energy to be used or the space for the patients.

i) Area requirement of each room

There are functionally four sections of consultation, diagnosis, administration and common use.

1) Consultation section (2,610 m²)

Includes various rooms for the consultation of out-patients and comprises consultation rooms such as internal medicine, pediatrics, orthopedics, rehabilitation internal medicine, dermatology, family medicine, dentistry, ophthalmology, otolaryngology, surgery, obstetrics and gynecology, and psychiatry.

The design concept is as follows:

- . Consultation section can consult with 2,000 out-patients in a day, as a central part of the clinic building.
- . As the PGH is to combine patient consultation with on-the-job training, it happens to be inconsistent with the problem keeping patient's privacy, according to the educational instruction. Thus, the territory should be clearly separated by installing partitions, etc.

- . The lighting systems and size of rooms should be unified in order to make consultations uniform.
- . Ventilation is important. Every consultation room should have a courtyard facing the side corridor for easy natural ventilation.
- . The consultation room will require a separate air conditioning system according to necessity.

2) Diagnosis section (1,630 m²)

Included are various rooms for examination, diagnosis and surgical operation. Rooms each for the X-ray examination, physiological examination, surgical operation, minor operation and clinic-pathological examination are arranged.

The design concept is as follows:

- . Diagnosis section should be positioned at the place which can easily be approached from every section. Because every section will use together.
- . No windows room, clean environment and user limitation will be required, so various rooms will be grouped. The air conditioning of the surgical operation section will be positioned at the same rank as a general operation room.

3) Administration section (960 m²)

Comprises medical record room, office, meeting room, Director room, Chief Nurse room and dressing room.

The design concept is as follows:

- . Administration section should be positioned at the place easy to approach from each section, but, the section should not allow the out-patients to easily enter.
- . Office efficiency gives a direct influence on the medical care efficiency. Therefore, the environment in the office should be sufficiently taken into account.
- . Medical record room should be designed by an open access library

style, so that the medical records of this hospital can be treated, medical records for first visit patients of whom the number amounts to 1,400 in a month can be prepared, and 1.75 million active medical records can be stored for 5 years, as well as legal medical records can be stored for 10 years.

4) Common use section (5,000 m²)

Comprises electrical room, mechanical room, or space for patients such as a rest room.

The design concept is as follows:

- . As present OPD uses the parts of consultation rooms as waiting spaces, and narrow corridors are crowded with patients, the space corresponding to the number of patients and their attendants should be provided.

Areas by Section

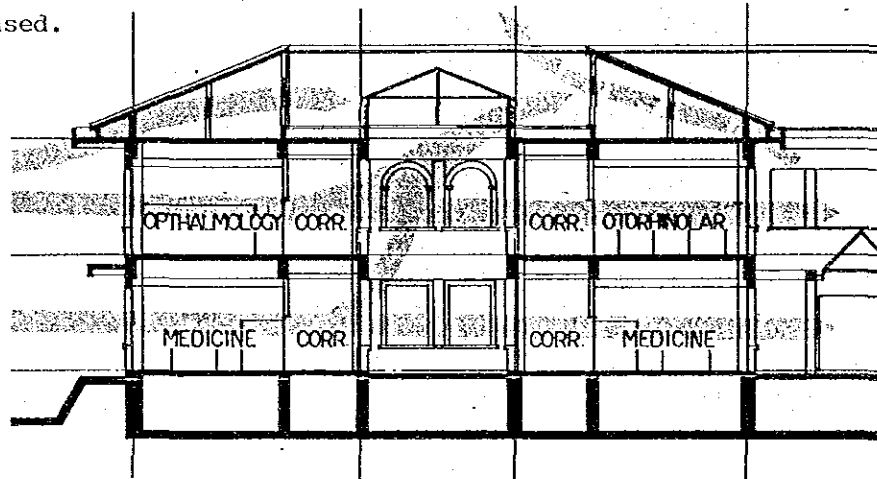
Section	Room	Area (Existing)(m ²)		Remark
Consul- tation	Medicine	509	349	The calculation of the required areas of rooms for each section are based on the number of interview units.
	Surgery	320	365	
	Pediatrics	320	200	
	Obstetrics and gynecology	320	200	There are no considerable changes in area when compared with the existing facility areas, except some rooms of consultation.
	Ophthalmology	328	200	
	Otorhino-laryngology	132	129	The Medicine department area includes the Dermatology department area (114 m ²).
	Dentistry	134	208	
	Family Medicine	169	224	
	Orthopedics	168	109	
	Neutrition	38	18	
Psychiatry	176	-		
Physiotherapy	188	-		
	Sub total	about 2,160	1,931	
Diagnosis	X-ray	254	-	The areas are estimated considering the required equipment. The operations for out-patients are actually made under poor conditions, so new equipment should be required. Also, Pain Clinic department and the annexed Anesthesia department require the additional area. Clinicopathological examination & pharmacy rooms are rationalized, thereby making it possible to reduce the area.
	Physiological equipment	265	-	
	Pain Clinic for operation	713	96	
	Clinic Pathology examination	301	783	
	Pharmacy	94	337	
	Sub total	about 1,630	1,216	

Section	Room	Area	(Exsisting) (m ²)	Remark
Adminis- tration Section	Chief-Nurse room	27	19	. Almost same as the exsisting areas for the room.
	Out-patient Office room	36	-	. For the Social Health room, the additional area are estimated for the improvement.
	Accounts	10	67	. The exsisting meeting rooms have not sufficient capacity for educational use.
	Staff room	31		
	Out-patient Consultation Head room	30		
	Dressing room	28	-	
	Consultation Record room	539	556	
	Meeting room (Large) (Small)	180	79	
	Social Health room	39	11	
	Reception	41	10	
Total about		960	742	
Common Use Section	Storage	137	59	. The waiting space are planned three times the actual space, which cannot provide enough space even for 1,000 patients.
	Lavatory	148	76	
	Elevator	80	(2)*	
	Machine room	389	-	
	Gus storage for medical use	28	-	
	Wating space, galley, etc.	3,631	1,219	
	Connecting corridor	585	-	
Sub total about		5,000	1,354	
Grand Total		10,200	5,243	

* means the number

5-2-3 Section Planning

The section planning should be designed with top priority given natural ventilation. Therefore, all consultaion zones should be provided with a court yard, and each room should be arranged to be a one-side corridor type room. The ventilation through the attic is positively employed since it is effective for improving the environment of the rooms on the uppermost floor. The building is protected from flooding in rainy seasons by increasing the first floor level by approx. 0.9 m. To avoid strong sunlight, the eaves should be increased.



5-2-4 Elevation planning

For a building design harmonized with the surrounding environment, the exterior wall should be applied with a sprayed materials finish, and simplified windows should be provided. Using an arch, for example, is desirable designwise if surrounding environment is taken into account, but such elevatin planning should be set up so that the roof and exterior wall are skilfully designed and the building is of modern European style.

5-2-5 finishing Materials

1) Outline of exterior finish

The roof material should be of Spanish bricks produced in the Philippines. For exterior wall materials, among spraying paint already used in past Grant Aid Assistance Type Projects, thick spraying paint is used so that joints can be constructed and this paint can be seen as if it were stone or brick finish. For external doors and windows, aluminium sash, from which airtightness that makes it easy to maintain the cleanliness of the hospital, should be used.

Part	Material
Roof	Spanish tile + Keystone plate steel backing + Steel strut
External doors & windows	Acrylic emulsion resin sprayed
Exterior sash Curtain wall	Aluminium sash baked fluoroethylene resin, depth 100
Exterior door	Stainless steel door (Main entrance), Aluminium door (General exterior door)
Flat roof	Asphalt waterproofing + External heat insulating material + 80mm, 22kg/m ² covering concrete
Strut coping	PC coping
Coping of eaves gutter	Aluminium coping
Eaves gutter	Sheet waterproofing (synthetic rubber)

2) Outline of interior finish

For floor materials, marble or terrazzo is used. Marble can be procured in the Philippines at a reasonable price. In order to maintain the cleanliness of materials, material should have few joints and a surface suitable for cleaning. Therefore, marble and terrazzo may be advantageous materials from this viewpoint. The wall material is desirable to be wiped off with water from the viewpoint of maintaining cleanliness. Consequently, the wall material should be provided with emulsion paint double layer coating.

Room	Part	Floor/Baseboard	Wall	Ceiling
Entrance hall		Marble	Marble/Curtain wall & rock wool acoustic board with rib	
Medical examination room		Terrazzo	CB+Mortar+EP, Rock wool acoustic board	
Corridor		Marble	"	"
		Terrazzo		
Room A		Parquet block,	"	"
Room B		Carpet	CB+Mortar+Vynil cloth	"
Lavatory		Porcelain tile	Ceramic tile	Flexible board + VP, Lavatory booth
Operation room		"	"	Calcium silicate board + EP
X-ray and examination room		Terrazzo	CB + Mortar + EP CB + Mortar + EP	CB + Mortar + EP Calcium silicate board
Interior partition			CB + Mortar + EP	
Interior door			Wood+Phthalate resin	
Interior window			Wood, Aluminium jalousie	

CB: Concrete Block
EP: Emulsion Paint

5-2-6 Structural Planning

In the PGH site there is being conducted a test boring at a total of four spots including two spots in the new central block site and at two spots in the Project site. The result is that the positions of hard stratum of more than 50 in N value are scattered around five meters as shown below.

Ground surface GL \pm 0

	Sand or silty sand	2 or so in N value
	Very loose	
GL - 7m	Sandy silt	2 or so in N value
	Very soft	
GL - 12 m	Clay	10 or so in N value
	Somewhat tight	
GL - 32 m	Clay	30 - 40 in N value
	Hard	
GL - 42 m	Clay	50 or more in N value
	Very hard	
GL - 70 m		

The seven-storied New Central Block is of pile foundation (bored pile: intermediate between what is called in Japan earth drill pile and reverse circulation drill pile), and all other lower buildings are of spread foundation with the first floor made of concrete slab on grade separate from the foundation to reduce the load supported by the foundation. In the case of the spread foundation, the long-term unit bearing capacity of the ground stratum is estimated at between 1,100 lb/ft² to 1,200 lb/ft² (5.37 t/m² to 5.85 t/m²), but there is no case in which the values are confirmed by means

of a load test.

The proposed OPD is two-storied and partly three-storied. As the medical examination equipment will be installed which requires accuracy of operation, the first floor needs to be of a slab structure, so that the weight of the buildings is estimated at six tons/m² or more. Therefore, it is necessary to judge whether the ground stratum is safe against such a load or not. A load test at the foundation support level was carried out. As a result, the long-term permissible unit bearing capacity was found to be 2,250 /bs/ft² (10.98 t/m²).

By enhancing the rigidity of the mat slab with a spread foundation (mat foundation or continuous foundation) to make the foundation be of a firm structure, settlement is considered to be avoided.

The main structure of the building needs to be of a slab structure with vibration-free solidity. From the need for atmospheric harmony of the elevation design with the existing buildings and also from the fact of being most popular in the Philippines, a reinforced concrete structure is also recommended.

Structural design will proceed according to the following codes and standards.

- o NATIONAL BUILDING CODE OF THE PHILIPPINES
- o NATIONAL STRUCTURAL CODE OF THE PHILIPPINES
- o ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
- o AISC SPECIFICATIONS FOR THE DESIGN

Materials to be used will be as follows:

- o Concrete

28-day compression strength $F_c' = 3,000$ PSI (211 kg/cm²)

Slump 12 cm - 18 cm

- o Deformed bar

Yield strength $F_y = 49,000$ PSI (3,500 kg/cm²)

$F_y = 42,000$ PSI (3,000 kg/cm²)

JIS G 3112 standardized product

o Steel

Yield strength $F_y = 34,000$ PSI ($2,400$ kg/cm²)

JIS G 3101 (SS41)

JIS G 3112 (SSC41) standardized product

JIS G (STK41)

Load will be as follows:

o Consultation room		2,390 Pa (245 kg/m ²)
o Hall		2,400 Pa (245 kg/m ²)
o Library		5,980 Pa (610 kg/m ²)
o Roof	0 m ² - 20 m ²	960 Pa (100 kg/m ²)
	21 m ² - 60 m ²	770 Pa (80 kg/m ²)
	over 61 m ²	580 Pa (60 kg/m ²)

Wind load will be as follows:

Metro Manila area

Wind load $Q = CPA$

Wind velocity $V = 175$ km/hr

Wind pressure over 30 m above the ground

$P = 2,400$ Pa (245 kg/m²)

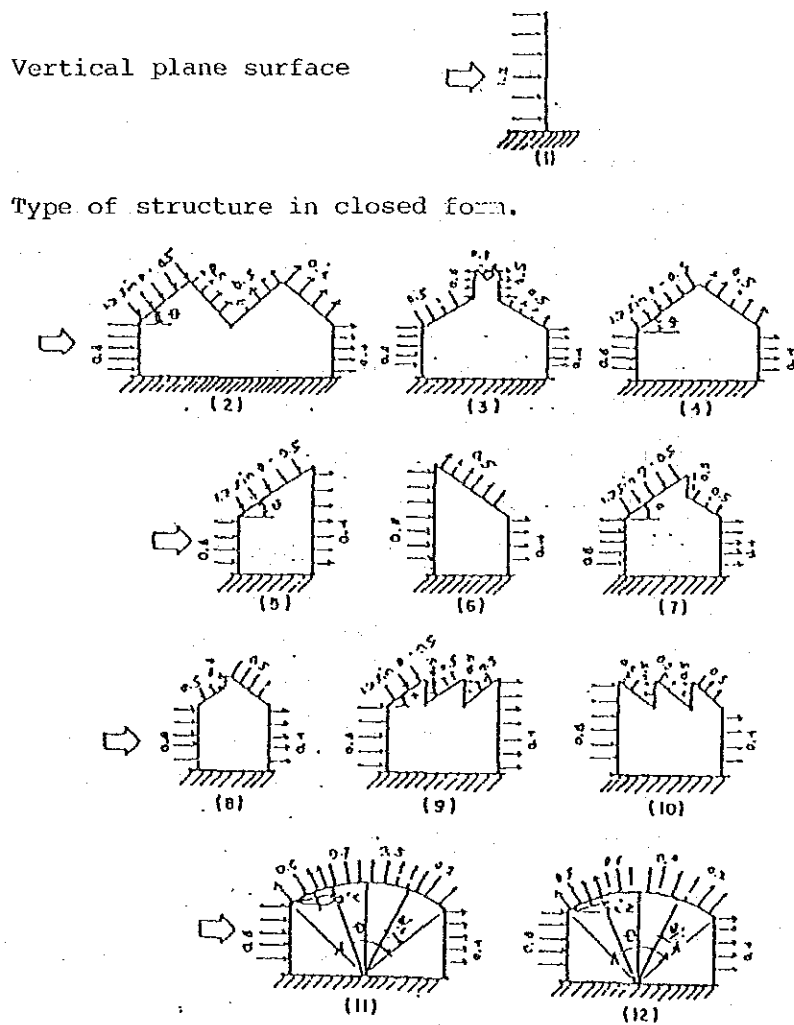
9 - 30 m above the ground

$P = 1,920$ Pa (200 kg/m²)

under 9 m above the ground

$P = 1,440$ Pa (150 kg/m²)

Wind pressure coefficient will be in accordance to the following figure.



Wind pressure area $A \text{ m}^2$

In case the roof surface forms an arc, changes in pressure may be assumed at the quarter points of the arc.

Seismic load will be as follows:

Metro Manila Area

Seismic force $V = ZIKCSW$

Regional coefficient $Z = 1.2$

Occupancy importance factor $I = 1.25$

Horizontal coefficient $K = 0.8$

Coefficient $C = \frac{1}{15\sqrt{T}}$

Resonance coefficient

$$S = 1.0 + \frac{T}{TS} - 0.5 \left(\frac{T}{TS}\right)^2 \quad \frac{T}{TS} < 1.0$$

$$= 1.2 + 0.6 \left(\frac{T}{TS}\right) - 0.3 \left(\frac{T}{TS}\right)^2 \quad \frac{T}{TS} \geq 1.0$$

Weight

$$W = DL + LL/4$$

5-2-7 Mechanical Planning

The new OPD is one of the facilities within PGH and should be planned as part of the facility within the project of PGH as a whole. However, stable supply from the existing facilities is difficult to receive. The project for the New Central Block being contemplated at present does not consider the supply to OPD. Under the circumstances, there is a need to plan a facility for the exclusive use of the new OPD.

The existing main water supply and drainage lines are connected through between the Nurse House and the tennis court with the Padre Faura St. across the Project site, and need to be moved by the PGH side.

a) Water supply system

Source and incoming pipe system

MWSS supply provisions stipulate the principle of one incoming pipe for one site, making it difficult for OPD to have its own independent incoming pipe. The existing water supply system from the Padre Faura St. is of the pump-directly-connected pressure type, raising a problem in branching from this incoming pipe in the

way of securing the proper quantity of water for OPD. On the one hand, PGH calls for the elimination of the present pump-directly-connected system and new installation of a water reservoir of about 1,000 m³ in capacity. Concerning this connection, there was a consultation with PGH with the result that it was firmly promised that the construction of the water reservoir and the work to replace the incoming pipe running through OPD site would precede the start of the new OPD construction work by PGH side. Accordingly, the plan is to branch from the existing incoming pipe from Padre Faura St. to supply to OPD.

The quality of the water to be supplied from MWSS has no problem for general use, and no treatment of water supply will be carried out. There is said to be no problem with the water supply capability except for some days in the dry season. There will be no auxiliary water source to be built. Capacity of the water reservoir will be made large enough instead.

Water supply system

Water will be supplied at each necessary point by means of gravity water supply, by pumping it to elevated water tank after shooting in underground water reservoir.

Daily Water Supply Capacity

30 m³/day

b) Drainage system

Connection with city drainage pipe

To be made a 2-pipe system for the domestic waste water and the rain water. For the domestic waste water, a 250 mm pipe for the New Central Block is connected with the side of the Padre Faura St., which is running through the Project site. It was found by the study that a drainage pipe of Padre Faura St. was only 200 mm in diameter and buried not deep enough and not suitably inclined even today. Thus, it has a problem to solve. MWSS was conferred

with the result of finding that there was a new 200 mm drainage pipe buried sufficiently deep at about 2.5 meters in a corner of the PGH site on Taft Ave. and that the pipe had few connections with the pipes from other sites. A proposal was made to PGH to connect the drainage pipe from the new central block to this drainage pipe, which was understood by PGH. Accordingly PGH will, prior to the start of OPD work, remove the drainage pipe route from the New Central Block and connect with the drainage pipe on the Taft Ave. through outside OPD site. It was however explained to PGH that a pipe not more than 200 mm will be connected and there is a need to reduce the volume by connecting a drainage pipe on the Pedro Gil St. side wherever possible. The drainage pipe from OPD will be connected to the terminal catch basin of the drainage pipe replaced onto the Taft Ave. side.

For the rainwater drainage, the existing drainage pipe leading to the Padre Faura St. runs through the new OPD site, which will be located by PGH to outside the site and the terminal catch basin will be connected with the rain water drainage pipe from the new OPD.

Sewage treatment

Treatment of domestic waste water is not generally provided for every building, the MWSS is not carrying out any final treatment, and the discharge of noxious substances is not allowed by the standards of the National Pollution Commission. Under the circumstances, waste water from the hospital was judged to be treated. There should be planned a facility for treating the waste water from OPD. There is a construction plan to make a waste water treatment facility for the whole PGH facilities, but the time of execution is not yet set.

Waste water from laboratories will be stored, neutralized and then led to the sewage treatment facility. The waste water treatment

method will be an extended aeration type activated sludge method, in which, after being sterilized with chlorine, waste water is discharged into the city drainage pipe.

Drainage per day

Domestic waste water: 30 m³/day

Rain water: 0.5 m³/sec.

c) Town gas system

From Taft Ave. will be the gas pipe led in from the Manila Gas Co. in an independent way. After passing through the shut-off valve and gas meter, the gas will be supplied to OPD. Gas will be used in the laboratory.

Maximum gas consumption: 4 Nm³/h

d) Fire fighting system

In conformity with the Local Fire Code, an independent fire fighting facility meeting the requirements of NFPA be installed in OPD.

Automatic sprinkler

In principle, automatic sprinklers will be installed in the whole building, with the exception of the surgical operation room, X-ray room, examination room and electric room.

Fire pumps: 2 (1 is a stanby pump)

Jopcky pump: 1

Wet standpipe

In principle, wet indoor fire hydrant ewquipment covering the whole building will be installed. Pumps and piping will be jointly used with the sprinkler.

Dry standpipe

A dry standpipe for use by the fire-brigade will be provided

immediately near the emergency stairway.

Portable fire extinguisher

A portable fire extinguisher will be housed in the wet indoor hydrant cabinet.

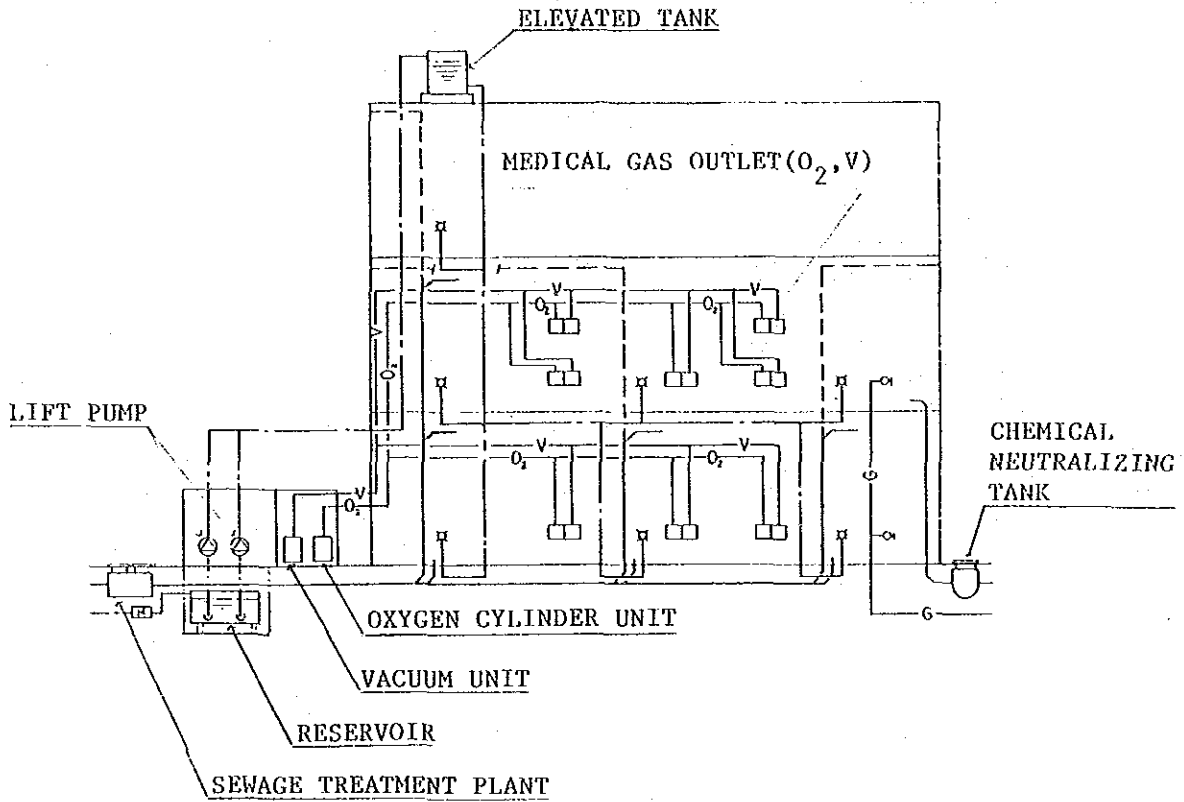
e) Medical gas system

A central medical gas system for oxygen and suction will be installed in OPD. In the medical gas machine room will be provided an oxygen cylinder and manifold and a suction unit, which will be connected with the recipients of supply by means of a pipe.

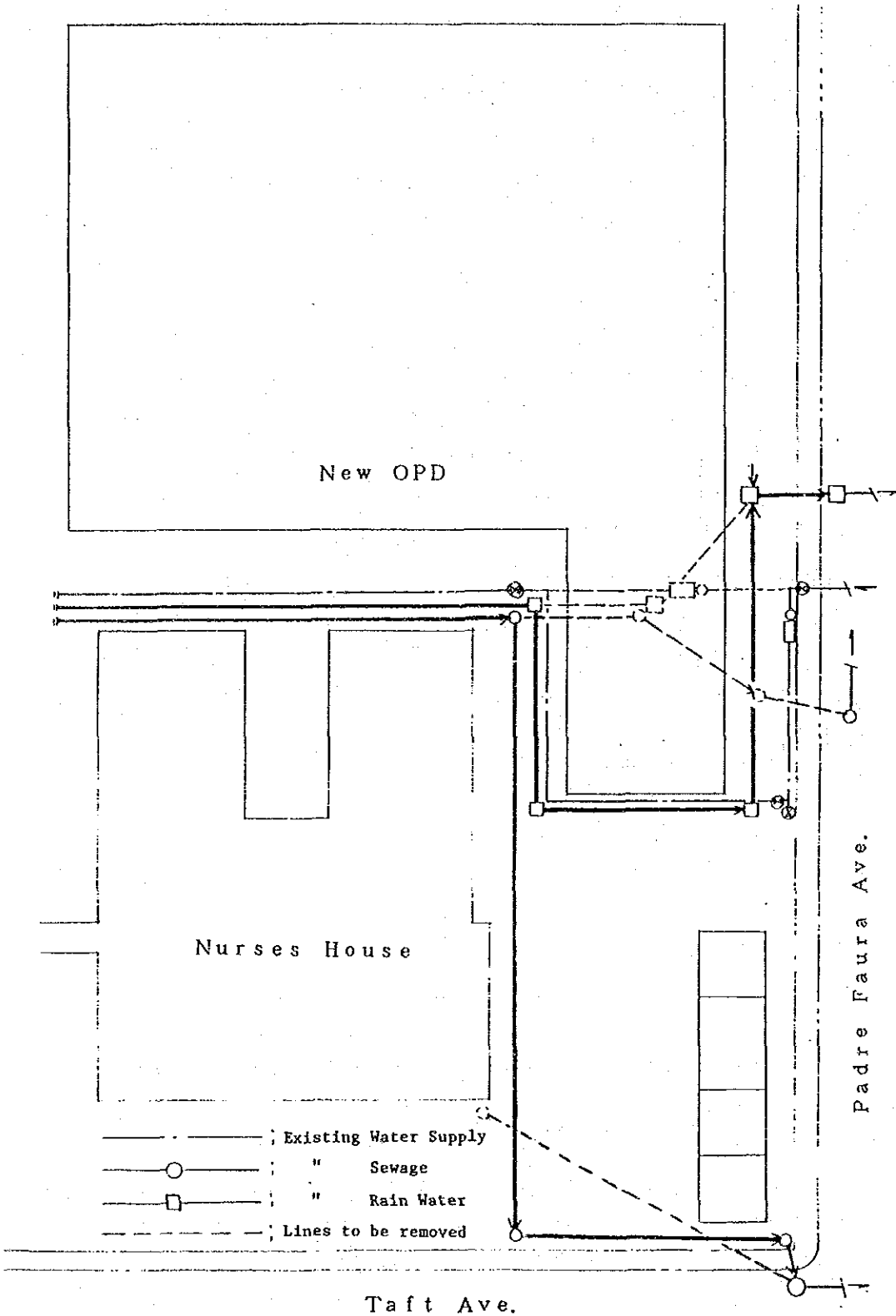
Supply recipients

Surgical operation room, minor operation room, recovery room, physiological examination room, etc.

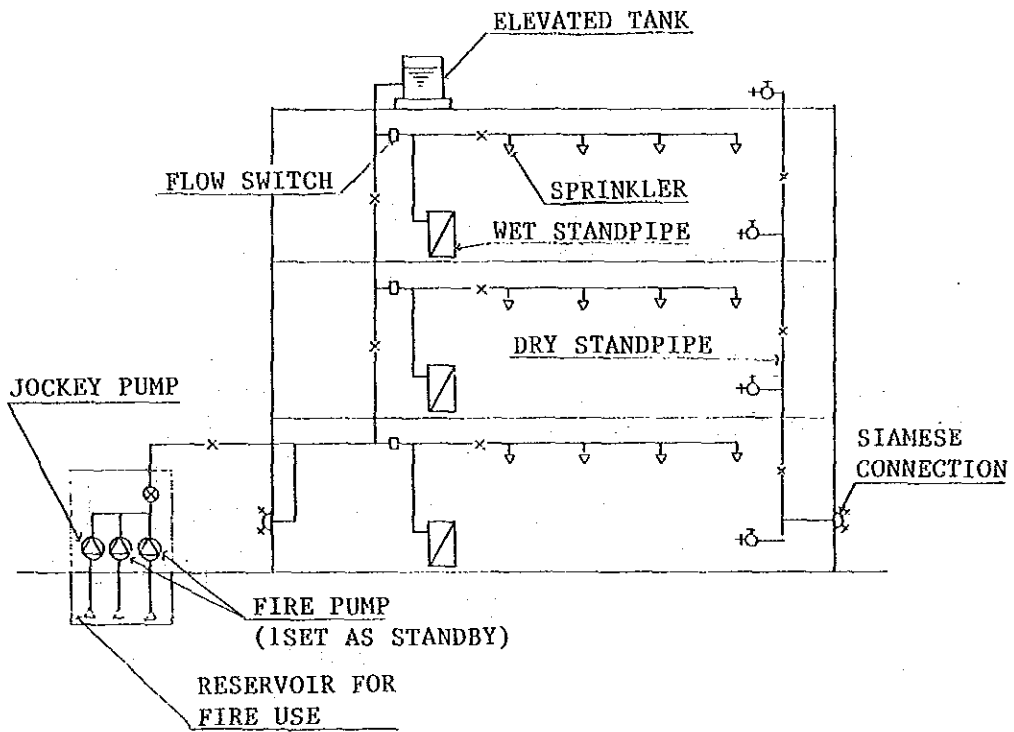
Schematic System Diagram of Plumbing System



Outdoor Piping Drawing for Plumbing System (Removal of the existing facilities and replacing work also shown)



Schematic System Diagram of Fire Fighting System



f) Air conditioning system

Reduction in the operating cost of the air conditioning system is one of the important factors to make smooth the operation of the OPD for which revenue sources are limited.

Considering this, in making a plan for the air conditioning and ventilation system, the system should be made one of the minimum necessary contents for performing the function as an out-patient ward, with due consideration given to the saving of energy and running costs.

However the Project site is in the center of Manila city, facing Taft Ave. which has heavy traffic. There is therefore a high possibility of pollution problems such as noise, noxious discharge and dust occurring. Accordingly, it is not like a facility as seen in the case of other grant aid assistance of suburban locations, which allow the air conditioning to be done solely with natural ventilation. Dependency on mechanical cooling can not be but great. It is also in the region where typhoons occur frequently and rain accompanying strong winds falls in great quantities. All this renders it necessary to give full consideration of the penetration of rain water into the building.

Such being the case, the air conditioning system is to be provided in the rooms considered necessary for the maintenance of medical equipment as well as for diagnosis, examination and acts of medical treatment. All others will in principle employ a cooling system by natural ventilation.

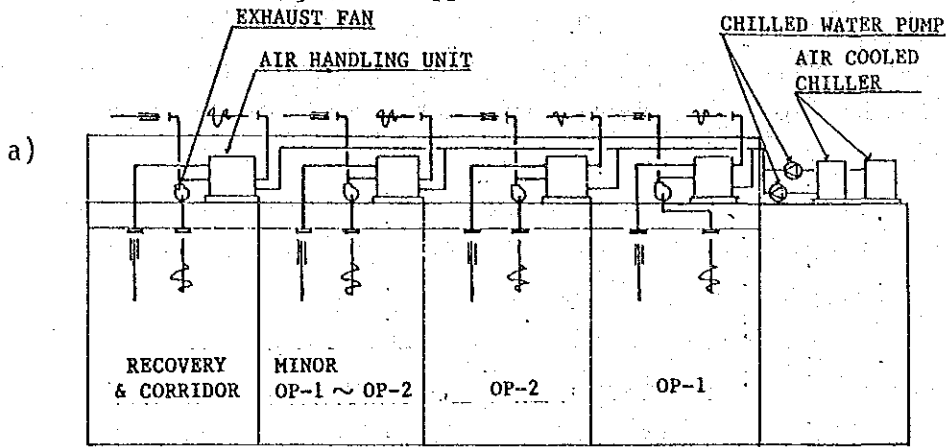
Total mechanical cooling however, of the consultation rooms occupying a great deal of area makes the running cost too much to bear, so that the mechanical cooling system may be chosen and operated only when such operation is required. The cooling system here will therefore be the one of the combined machine and natural ventilation types which, during other periods, permit cooling with natural ventilation.

Air Conditioning System

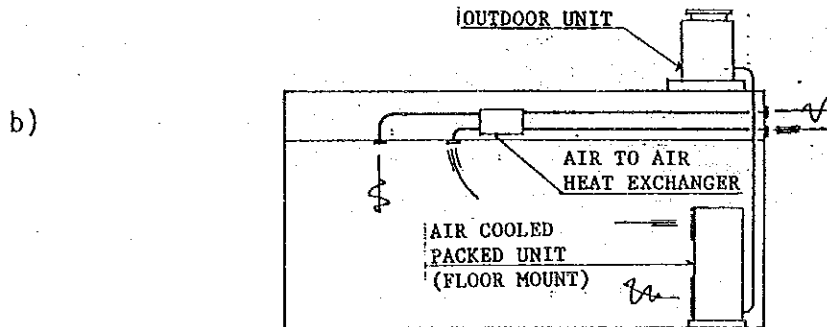
Type	Air Conditioning System	Rooms to be Applied	Reason for Selection
(1) Mechanical Cooling (Duct type)	Air-cooled chiller + Air handling unit + Duct + High performance filter	Surgical operation room, Minor operation room and anteroom, etc.	Places requiring room temperature control and air purity control
(2) Mechanical Cooling (Direct placement type)	Air-cooled split type packaged air conditioner (Direct blow type)	X-ray room, physiological examination room, pharmacy, laboratory, special out-patient consultation room	Places where rooms need to be used with closed windows
(3) Mechanical/ Natural Ventilation	Air-cooled split packaged air conditioner (direct blow type) + ceiling fan	General out-patient consultation room	Places where rooms are occasionally used with closed windows
(4) Natural Ventilation	Ceiling fan	Lobby, corridors, administration offices	Places where damage by noise and dust is not severe

Air Conditioning System Diagram

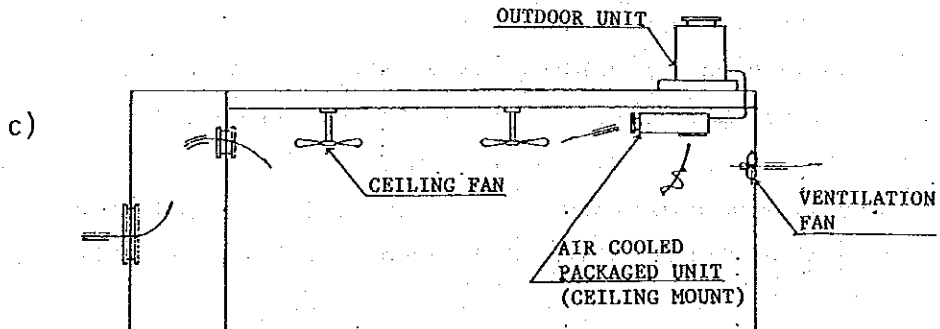
a) Mechanical Cooling (Duct type)



b) Mechanical Cooling (Direct placement type)



c) Mechanical/Natural Ventilation



g) Other equipment

For refuse disposal, there is available a refuse collection service for general refuse in the city of Manila and there is no problem. But the specimens resulting from the acts of medical treatment and other special wastes need to be disposed of by PGH.

Today, PGH has no incinerator facility to dispose of special wastes which generate from the whole PGH. PGH as a whole should provide an incinerator facility.

OPD site has two sides facing the main roads and the other two sides adjoining to the existing buildings. Such being the case, it is not proper to provide an incinerator facility. A demand is to be made to the PGH side to provide an incineration facility for the whole PGH.

As for the location of the incinerator facility, somewhere near the boundary of the site to the south of the new central block now under construction seems be appropriate.

5-2-8 Electrical Planning

a) Electrical substation

Facilities for receiving and transforming ultra high tension voltage power and electric generation facilities for emergency use are grouped together as the electrical substation, being planned to be positioned separately from the OPD ward.

In planning a plant building, there is taken into consideration that vibration, noise and exhaust gas from the operating generator must not exert any ill influence on the OPD ward. Also in order to avoid possible inundation caused by floods in the rainy season, the level at which equipment is laid is to be raised by 1,000 mm or so.

b) Medical earth equipment

An independent earth equipment will be provided as a medical earth to prevent micro-shock from influencing patients.

c) Electric generator

In consideration of maintenance and economy, there are planned a plurality of generators of small capacity. It should be planned so that at the time of maintenance operation electric power may be supplied at least once to the emergency medical facilities. Due to the capacity being divided, it is not necessary to supply extra power to the necessary minimum of load and this proves economical. For the cooling method of generators, the method of circulating chilled water is to be avoided and the air-cooling method is to be employed. The fuel gas tank should be made as large as possible in capacity (2,000 liters), so it should not require a frequent supply of diesel oil.

d) Power receiving and transformation

Three-phase 34.5 kV power receiving to be planned. Two transformers are to be laid in the substation, in case of an emergency, one of the two should be planned to be operable. To cope with the changes in tension of the power supply public corporation (Meralco), the primary tap is to be made variable in five steps. A feeling was obtained through the deliberation with Meralco that two-circuit parallel power reception is possible and that such power reception will enable the improvement of the reliability of the supply of power.

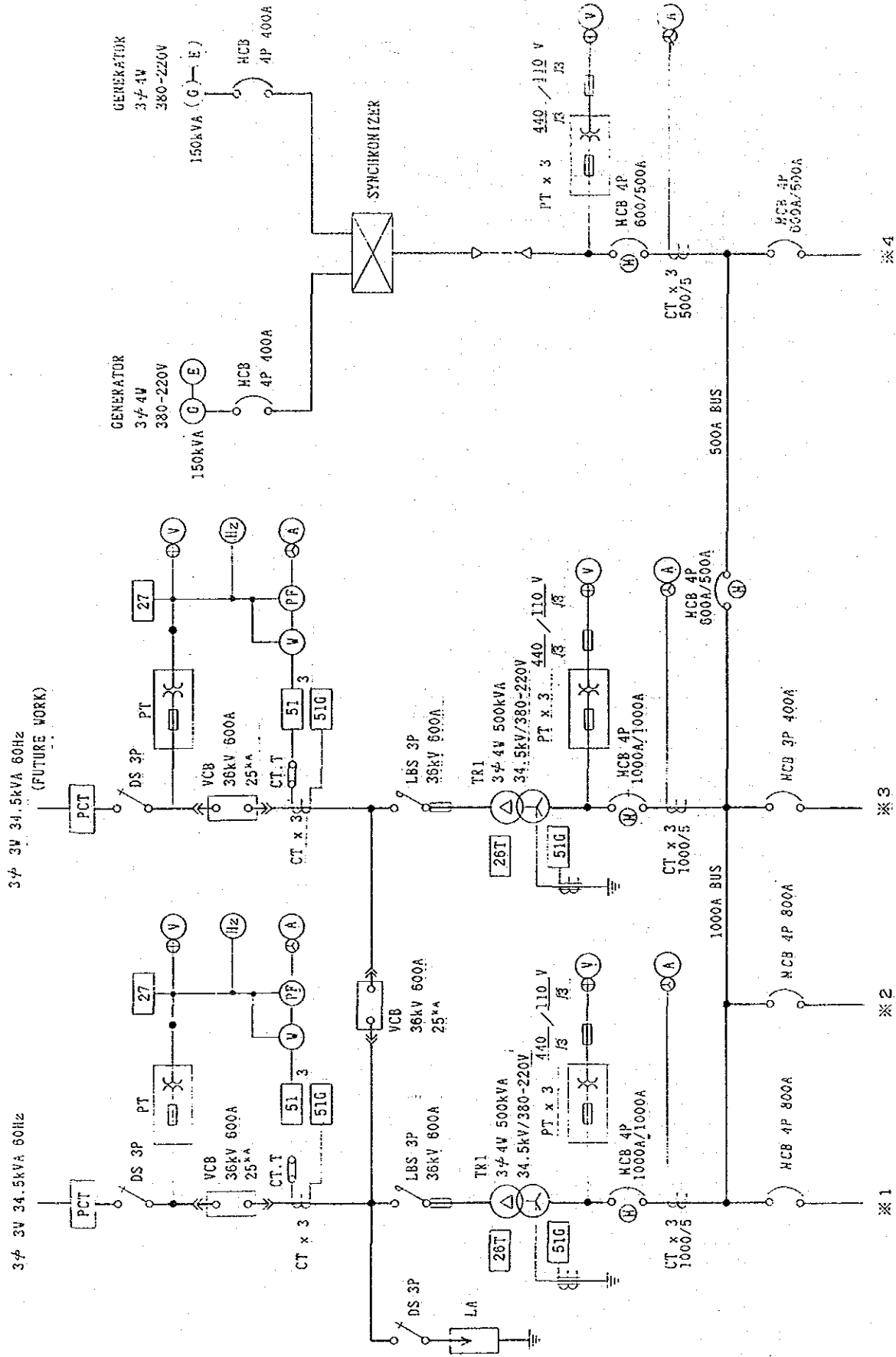
There should also be planned a capacitor to improve the power factor, so that the benefit of a discount by the electric power public corporation may be obtained according to the power factor of the corporation. This reflects consideration of an efficient way of operation of the hospital in terms of administration.

e) Communication facility

PLDT lines (100 circuits) are already laid in the existing OPD

facility for use as telephone and for information. The plan is to lay 30 circuits to the projected OPD through the central ward. Assuming the case in future where the number of necessary circuits is wanted to be increased, conduit lines and manholes are to be laid so that PLDT lines may be drawn in from the compound. A new small capacity ATT (board) will be provided in OPD, the communication by telephone with the existing buildings being conducted through the medium of the existing exchange. The communication between the existing buildings and OPD is possible by taking the extension telephone communication system. However, as interface is necessary to connect both exchanges, a socket bell system is designed to be introduced for the connection with existing buildings, to avoid complexity.

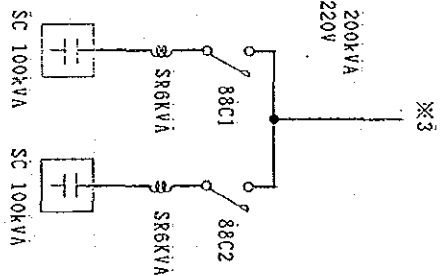
SUBSTATION SCHEMATIC DIAGRAM



NO.	Loading.	Capacity. (KVA)	HCB.	TRUNK LINE SIZE
A-2-1	PL-ST-1 PL-NS ₂ -2	46.8	4P 100/100	
A-2-2	PL-AU-2	66	" 225/150	
A-2-3	P-RF ₁ -3	72	" "	
A-2-4	P-RF ₂ -3	72	" "	
A-2-5	P-RF ₃ -3	96	" 225/175	
A-2-6	P-RF ₄ -3	41	" 100/ 75	
A-2-7	S-ELV-3I	25	3P 100/ 50	

A-1-1	PL-E	20	4P 100/ 50	
A-1-2	PL-PH-1	57	" 100/100	
A-1-3	PL-NS ₁ -1,2, PL-NS ₂ -1,2 PL-NS ₃ -1,2	81	" 225/150	
A-1-4	PL-PH-2	60	" 100/100	
A-1-5	PL-AD-3	43.5	" 100/ 75	
A-1-6	PL-NS ₄ -1,2 PL-AD-1,2	87.8	" 225/150	
A-1-7	INSULATE TRF 3φ 4V	200	3P 600/600	

A-T-1	L-X-1	50	2P 400/250	
A-T-2	L-X-2	50	" "	
A-T-3	L-X-3	75	" 400/350	
A-T-4	SPARE			



G-1	PL-AU-2	33	4P 100/ 75	
G-2	PL-PH-1,2 PL-NS ₁ -1,2, PL-ST-1,2	33.7	" "	
G-3	PL-NS ₂ -1,2,3 PL-NS ₃ -1,2	24.9	" 100/ 50	
G-4	L-OP-T	12	" 50/ 30	
G-5	P-H, PL-E	15.5	" 100/ 50	
G-6	S-ELV1,2	62	3P 225/150	
G-7	P-RF ₄ -3	81	1P 225/150	
G-8	P-H	28	" 100/ 75	

5-3 Medical Equipment

1) DEPARTMENT OF RADIOLOGY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
*Training method				
A: means that training is required by carrying out the performance test.				
B: means that the oral explanation is necessary for the treatment.				
C: Only instruction manual is needed.				
1	Radiographic X-ray Unit	1	1 Controller and 2 Exposure Type Output: 500 mA	A
2	Diagnostic X-ray Unit with TV	1	Output: 1000 mA	A
3	Mobile X-ray Unit	1	Output: 300 mA	A
4	X-ray Unit with Mirror Camera	1	Output: 500 mA	A
5	Processing Tank	1	Developing Tank Cap: 15 lit.	B
6	Automatic Film Processor	1	Processing Cap: 220 pcs./H	B
7	X-ray Film Filing Shelf	10		C
8	Film Illuminator	2	Stand Type, 2-bank for Conference Use	C
9	X-Ray Film Copier	1		B
10	Cassette	10	4 Size; 1 set, W/Pb	C
11	Cassette Pass Box	1	Pass Through Type, Pb 1.5 mm	C
12	Film Loading/ Unloading Table	1		C
13	X-ray Accessories	1	Film Marker etc.	C
14	X-ray Unit Consumables	1	Film, Developing Liquid etc.	C
15	X-ray Roll Film Viewer	1	for Roll Film Use	C
16	Examination Table	2		C
17	Multiviewer for CT	1	for CT, Manification: 2 Screen Size: 470 x 470 mm Aircooled Type	C

1) DEPARTMENT OF RADIOLOGY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
18	Radiographic Stand	1	for Child	C
19	Semi-Automatic Processing Set	1	Dryer, Developing Tank, Heater, Film Hanger, Cutter, etc.	C
20	Protective Apron	10	Pb: 0.5 mm	C
21	Protective Skirt	5	Pb: 0.5 mm, 4-size/set with Hanger	C
22	Protective Gloves	5	Pb: 0.5 mm, Length: 40 cm	C
23	CT Scan Unit	1	for Whole Body Scanning Speed: 1.8 sec.max. Slice Thickness: 1 mm	A
24	Ultrasonic Diagnostic Apparatus	1	with Color Doppler	B
25	Ultrasonic Diagnostic Apparatus	3	Portable Scanning: Linear	A
26	Instrument Cabinet	2		C

2) DEPARTMENT OF ENDOSCOPY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Upper Gastrointestinal Fiberscope	1	Assorted Set	A
2	Film Illuminator	4	Table Top/Wall Hang Type	C
3	Endoscopy Table	4	Height Adjustable	C
4	Suction Unit	4	Suction Bottle Cap: 5, 15 lit. Max. Suction Force: -610 mmHg	C
5	Cold Light Supply	4	with Air/Water Supply Device, Cart and Cooling Device	B
6	Endoscope Light Source	4	with Cooling Device	B
7	Endoscope Closet	4		C
8	Endoscope Camera	1	for 35 mm Film	B
9	Instrument Cabinet	4		C
10	Ambu Bag	4	with Carring Case	C
11	Endoscopy Film Projector	1	for 35 mm Film	C
12	Colonofiberscope	1	Outer Dia. of Distal End: 13.5 mm Field of View: 100 deg.	A
13	Colon Model	1	for Training Use	C
14	Choledocho Fiberscope	1	Outer Dia. of Distal End: 5 mm Field of View: 50 deg.	A
15	Broncho Fiberscope	3	Outer Dia. of Distal End: 3.6 mm Field of View: 50 deg.	A
16	Lecture Scope	2		C
17	Endoscope Disinfection Apparatus	1	Washing Tank Cap: 4 lit.	B
18	Electrosurgical Unit for Endoscopy	2	Output: 80 W, 2.2 MHz	A

2) DEPARTMENT OF ENDOSCOPY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
19	Laparoscope	1	Outer Dia. of Distal End: 10 mm Field of View: 60 deg.	A
20	Automatic Insufflator	1	Flow Rate: 2000 cc/min.	B
21	Arthroscope	2	Outer Dia. of Distal End: 4 mm Field of View: 90 deg.	A
22	Endoscopy Videotape	1	with TV Monitor	B
23	Proctoscope	1		B
24	Proctosigmoidoscope	1	Outer Dia.: 8 mm Field of View: 50 deg.	B
25	Mayo Table	4	Stainless Steel	C
26	IV Stand	4	Stainless Steel	C
27	Cotton Ball Jar Set	4	Stainless, 4 jars/set	C
28	Oxygen Inhaler Set	1	with Oxygen Bottle, Stand, Regulator, Humidifier and Mask	C
29	Kick Bucket	4	Stainless Steel Cap: 15 lit.	C
30	Bougienage Set	1	5 pcs. for 1 set	C
31.	Esophageal Dilator	1		C
32	Washing Sink for Endoscopy	4	Stainless	C
33	Accessory for Endoscopy	1	Biopsy Forceps, Cytology Brush, Grasping Forceps, Injector, Diatheramic Cutter, Washing Pipe, etc.	B
34	Examination Table	4		C

3) DEPARTMENT OF PHYSICAL TEST

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Electrocardiograph	4	1-Channel	B
2	Electrocardiograph	3	3-Channel	B
3	Electrocardiograph	1	3-Channel with Interpretator	B
4	Instrument Cabinet	4		C
5	Examining Bed	7		C
6	Electro Encephalogram	1	14-Channel	A
7	Electromyograph	1	2-Channel	A
8	ECG Stress Test System	1	3-Channel with Tread Mill	A
9	Defibrillator	1	with Battery Charger	B
10	Phonocardiograph	1	3-Channel	B
11	Oxygen Inhaler Set	2	with Regulator, Humidifier and O ₂ Cylinder	C
12	Suction Unit	4	Suction Pressure: Max. -500 mmHg	C
13	Accessory for Physical Test	1	Electrode, Strap, ST Pad, Code etc.	C
14	Auto Spirometer	2	with Built-in Printer	B
15	Weighing Scale	4		C
16	Ambu Bag	5	with Carring Case	C
17	Plethysmograph	1	Pressure Volume Type with Built-in X-Y Recorder	A
18	Blood Gas Analyzer	1	Sample Volume: 85 micro lit.	A
19	Physical Test Consumables	1	with Recording Paper, Electrode Strap etc.	C

4) DEPARTMENT OF ENDScope LABORATORY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Centrifuge	2	rpm: 3000, 15 mlit. x 32 tubes	C
2	Binocular Microscope	5	with Phase Contrast Attachment	C
3	Drying Oven	1	Cap: 90 lit.	C
4	Auto Blood Cell Counter	1	Measuring Items: WBC, RBC	B
5	Educational Microscope	1	with Multi-viewer, Phase Contrast Attachment, Photography Attachment	C
6	Glassware Set	1	Test Tubes, Slide Glasses, Pipettes, etc.	C
7	Laboratory Small Items	1	Foreceps, Tube Stand, Brush, etc.	C

5) HAEMATOLOGY LABORATORY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Microscope	1	with Phase Contrast Attachment	C
2	Haematcrit Centrifuge	2	rpm: 12000	C
3	Centrifuge	2	3,500 rpm, 15 ml x 32 tubes	C
4	Pipette Shaker	2	Speed: 60 - 220 rpm	C
5	Laboratory Balance	1	Electronic, 300 g/3000 g, 10 mg/100 mg	C
6	Incubator	1	Temp Range: 5 - 60 deg. C, 70 lit.	C
7	Autoclave	1	Desk Top Type with Cast	C
8	Differential Leucocyte Counter	2	12 keys	C
9	Glassware Set	1	Slide Glasses, Test Tubes, Pipettes, etc.	C
10	Hemoglobine Meter	1	LED Digital Display	C
11	Laboratory Small Items	1	Foreceps, Tube Stand, Brush, etc.	C
12	Water Bath	1		C
13	Drying Oven	1	Cap: 90 lit.	C
14	Medical Refrigerator	1	for Medicine, Cap: 230 lit., Temp: -10 to +35 deg. C	C
15	Auto Blood Cell Counter	1	Measuring Number: 8 Measuring Time: 16 sec./1 item	A
16	Blood Coagulation Meter	1	Testing Sample: Min. 1 ml	A
17	Rotating Shaker	2	Speed: 20 - 200 rpm	B
18	Micro Pipette Set	2	Consist of; 10,100,1000,5000 mlit.	C
19	Educational Microscope	1	with Multi-viewer, Phase Contrast Attachment	C
20	Automatic Slide Stainer	1	16 slides/hour	A

6) BACTERIOLOGY LABORATORY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Water Bath	2		C
2	Balance	2	300 g/3000 g, 10 mg/100 mg	C
3	Colony Counter	2	3 digits Digital Display	C
4	Binocular Microscope	4	Eyepiece: 10 X, Objective: 100X	C
5	Darkfield Attachment	1	Condenser and Objective Lens	C
6	Inspissator	2		C
7	Inverted Microscope	1	Binocular, Eyepiece: 10 x Objective: 10 x	C
8	Glassware Set	1	Slide Glass, Test Tube, Pipette, etc.	C
9	Laboratory Small Item	1	Foreceps, Tube Stand, Brush, etc. Stainless	C
10	CO ₂ Incubator	1	Cap: 160 lit. Temp: Ambient Temp -50 deg. C	B
11	Voltex Shaker	1	Speed: 130 - 300 rpm	C
12	Deep Freezer	1	Temp: -70 deg. C Cap: 80 lit.	C
13	Multi Flash Mixer	1	for 2 pcs. of Test Tube	C
14	Anaerobic Incubator	1	Manual, with Vacuum Pump & Cylinder	B
15	Centrifuge	1	Speed: 3500 rpm, 15 mlit. x 32 pcs.	C
16	Biological Clean Bench	2	Class 100	B
17	Micro Pipette Set	1	4 kinds/set	C
18	Drying Oven	1	Cap: 90 lit.	C
19	Autoclave	1	Desk Top Type, Cap: 22 lit.	C

6) BACTERIOLOGY LABORATORY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
20	Rotary Shaker	1	Speed: 20 - 200 rpm	C
21	Electrophoresis Apparatus	1	for Cellulose and Agarose with Densitometer and Power Supply	B

7) BIO-CHEMICAL LABORATORY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Centrifuge	2	Speed: 3500 rpm, 15 mlit. x 32 pcs.	C
2	Top-Pan Balance	1	300 g/3000g, 10 mg/100 mg	C
3	Automatic Chemical Analyzer	1	Analyzing Item: 1 - 19	A
4	Glucometer	1	with Reagents	A
5	PH Meter	1	Digital/Analog Display with Printer	B
6	Micro Pipette Set	4	Consist of; 10,100,1000,5000 mlit.	C
7	Auto Dilutor/Dispenser	1	Sample Volume: 10 - 500 mlit.	A
8	Chloride Meter	1		A
9	Calcium Analyzer	1	Sample Volume: 10 - 100 micro lit. Measuring Range: 1 - 99.99 mEg/lit.	A
10	Flame Photometer	1	Analyzing Item: Na,K,Cl,Li	A
11	Medicine Refrigerator	2	Cap: 230 lit.	C
12	Magnetic Stirrer	1	Dia. 150 x 110, 50 - 200 mlit.	C
13	Spectrophotometer	1	Wave Length: 200 - 900 nm	B
14	Electrophoresis Apparatus	1	for Cellulose, with Densitometer	B
15	Glassware Set	1	Slide Glass, Test Tube, Pipettes, etc.	C
16	laboratory Small Item	1	Test Tube Stand, Brush, Tweezers, etc.	C

8) PATHOLOGY LABORATORY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Centrifuge	1	Speed: 4000 rpm	C
2	Microscope	3	Binocular with Phase Contrast Attachment	C
3	Tissue Fixing Shaker	1	400 cc x 2, 12/15 rpm	B
4	Rotary Microtome	3	Section Thickness: 2 - 20 microns	C
5	Sliding Microtome	1	Section Thickness: 2 - 30 microns	C
6	Freezing Microtome	1	Section Thickness: 2.5 - 50 microns	B
7	Tissue Staining Set	1	Sample Number: 50 plates/1 time	A
8	Tissue TEK No. I. System	1	Tissue Ring, Tissue Plate etc.	A
9	Paraffin Oven	1	Desk Top Type	C
10	Drying Oven	1	Cap: 90 lit.	C
11	Educational Microscope	1	Binocular with Multi-viewer	C
12	Laboratory Balance	1	300 g/3000 g, 10 mg/100 mg	C
13	Automatic Tissue Processor	1	Solution Tank Case Paraffin Tank	A
14	Glassware Set	1	Slide Glass, Test Tube, Pipette	C
15	Laboratory Small Item	1	Test Tube Stand, Brush, Tweezers	C
16	Microtome Sword Polishing	1	Artificial Round Grindstone	B

9) IMMUNO PATHOLOGY LABORATORY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Medicine Refrigerator	1	Cold Room Cap: 176 lit. Freezer Cap: 39 lit.	C
2	Deep Freezer	1	Temp: -85 deg. C, Cap: 86 lit.	C
3	Centrifuge		Speed: 4000 rpm	C
4	Glassware Set	1	Slide Glass, Test Tube, Pipette, etc.	C
5	Fluorescent Microscope	1	Binocular	B
6	Laboratory Small Items	1	Forceps, Tube Stand, Brush, etc. with Sink, Faucet, Socket	C
7	Binocular Microscope	1	with Phase Contrast Attachment	C
8	Micro Elisa Machine	1	Measuring Program: 10 kinds Measuring Speed: 50 sec/plate	A
9	Incubator	1	Cap: 153 lit.	C
10	Vortex Shaker	1	Speed: 130 - 300 rpm	C
11	Rotary Shaker	1	Speed: 20 - 200 rpm	C
12	Magnetic Stirrer	1	Speed: 200 - 1500 rpm	C
13	Refrigerated Ultra Centrifuge	1	Speed: 20000 rpm Centrifuge Force: 49000 Xg	B
14	PH Meter	1	Digital/Analog, PH 0 - 14	C
15	Micro Pipette Set	3		C
16	Slide Container	5		C

10) LABORATORY WASHING ROOM

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Washing Water Still App.	1	Distillation about 1900 lit.	B
2	Working Table	2	SUS	C
3	Distillation Apparatus	1	Distillation about 2 lit./H	B
4	Vertical Sterilizer	1	Electric Heater 4 kW	B
5	Trolley	4	SUS	C
6	Instrument Shelf	2	4 racks, SUS	C
7	Pipette Washer/Dryer	2	Cap: 18 pcs.	B

11) DEPARTMENT OF PHYSIO THERAPY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Portable Walking Parallel Bar	1	Length: 1500 mm Dia.: 38 mm (Stainless Steel)	C
2	Steel Dumbbel with Stand	1	14 kinds (1 - 10 kg)	C
3	Training Mat	2		C
4	Wall Stall Bar	1	Bar Dia. 38 mm, 15-row	C
5	Chinning Bar	1		C
6	Shoulder Wheel	1	Rotating Radius: 1300 mm (Max)	C
7	Pack Warmer	1	Output: 60 W x 2, Stand Type	B
8	Traction Unit	1	3 - 100 kg, with Bed	B
9	Ultrasonic Therapy Unit	2	Output: 0 - 5 W/cm ² , 1000 kHz	B
10	Micro Wave Therapy Unit	2	Output: 0 - 200 W x 2, 2450 MHz+/-50 MHz	B
11	Stimulator	2	Frequency: 1 - 5000 Hz Pulse Width: 0.1 - 200 mS	B
12	Examining Table	2		C
13	Hot Pack Set	5	Assortment of Large, Medium and Small Neck Shoulder	B
14	Invalid Walker	2	1 for Adult, 1 for Child	C
15	Wheel Chair	2	Can be Folded	C
16	Training Bed	1	Wood	C
17	Chronaximeter	1	Pulse Strength: 0 - 35 mA with Stand	B
18	Dynamometer	2	Digital	C
19	Pinch Gauge	2	with Hand-roop	C
20	Sphygmomanometer	6	Stand Type	C
21	Goniometer	4	4 types Assorted	C

11) DEPARTMENT OF PHYSIO THERAPY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
22	Film Illuminator	2	2-way/(Stand/Wall Hanging) 15 W x 7	C
23	Ergometer	1		C
24	Esthesiometer	1	Standard Type: 2 - 14 g Sensitive Type: 0.3 - 2 g	C
25	Cane	5	Length Adjustable (680 - 930 mm) Aluminum	C
26	Training Mirror	3	Portable	C

12) PHARMACY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Prescription Table	1	Tables for Powder and Tablet	C
2	Working Table	1		C
3	Rotary Medicine-Bottle Rack	1		C
4	Narcotic Safe	1	with Lock	C
5	Medicine Refrigerator	1	Cap: 1000 lit.	C
6	Top-pan Ballance	1	300 g/3000 g, 10 mg/100 mg	C
7	Mortar and Pestle	1	with Spoon Set	C
8	Ointment Plate with Spatula	1	Ceramic	C
9	Counter Balance	1	50 g, 10 mg	C
10	Water Distill	1	Cap: 1.8 lit./h Distillation/Deionization	B
11	Glass-Cylinder Set	1	with Rack	C
12	Pharmacy Small Item	1	Plastic Bottle, Measure Spoon, etc.	C
13	Trolley	2	Steel	C

13) DEPARTMENT OF FAMILY MEDICINE

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Examining Table	2		C
2	OB-GYNE Examine Table	1		C
3	Footstool (Two stop type)	2	SUS, 2 steps	C
4	Examine Light	2	Stand Type, 32,000 LUX	C
5	Head Mirror	1		C
6	E. E.N.T. Transilluminator Set	1	Halogen Lamp with Battery Charger	C
7	Diagnostic Set (Assorted set)	2	Auriphone, Colposcope, Auriscope Nasoscope	C
8	Instrument Table	2	Stainless with Caster, Drawer	C
9	Dressing Cart	1	Stainless with Caster	C
10	Film Illuminator	2	Placed Both on Desk and Wall 15 W x 7	C
11	Basin Stand	1	SUS with Basin	C
12	Instrument Cabinet	1	Double Doors	C
13	1-Channel Electrocardio-graph	1	with AC Adaptor, Stand, Cord Hanger	B
14	Defibrillator	1	with Battery Charger	B
15	Ambu Bag	1		C
16	Suction Unit	1	Diafram Type	C
17	Oxygen Inhaler Set	1	with Oxygen Bottle, Stand, Regulator, Humidifier, Mask	C

14) DEPARTMENT OF MEDICINE

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Film Illuminator	6	Plated Both on Desk and Wall 15 W x 7	C
2	Diagnostic Instrument Set	15	Auriphone, Tongue Depressor etc.	C
3	Ophthalmoscope	8	Desk-top, Chargeable	C
4	Sphygmomanometer	22	Stand Type	C
5	Instrument Table	15	Stainless	C
6	Arm Rest	5	Stainless with Mattress	C
7	Basin Stand	15	Stainless with Basin	C
8	Irrigator Stand	5	Stainless	C
9	Stretcher	2	Stainless with Mattress	C
10	Boiling Sterilizer	7	with Electric Heater	C
11	Weight and Height Scale	8		C
12	Examination Table	22		C
13	Instrument Cabinet	4	Double Doors	C
14	Examination Light	22	Stand Type	C
15	Laryngoscope Set	7	with Various Blades	C
16	Suction Unit	2	Cap: 1 lit. Max. Suction Power: -500 mmHg	C
17	Treatment Cart	3	Stainless	C
18	Wheel Chair	3	Can be Folded	C
19	Medicine Refrigerator	3	110 lit.	C
20	Ambu Bag	3	with Carring Case	C

15) DEPARTMENT OF PEDIATRICS

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Examining Table	8		C
2	Film Illuminator	8	Placed Both on Desk and Wall	C
3	Weight and Height Scale	6	for Adult and Child	C
4	Instrument Cabinet	6	Single Door	C
5	Automatic Infant Scale Set	1	Digital..1, Analog..3	C
6	Infant Height Scale	3	20 - 75 cm	C
7	Diagnostic Instrument Set	6	Auriphone, Tongue Depressor etc.	C
8	Neonatal Audiometer	1		B
9	Ophthalmoscope	6	Desk Top Type, Chargeable	C
10	Educational Microscope	1	Binocular with Multi-viewer	C
11	Sphygmomanometer	12	Both for Adult and Child	C
12	Ambu Bag Set for Child	2	with Carring Case	C
13	Laryngoscope	1	with Various Blade	C
14	Portable Suction Unit	2	Max. Suction Power: -500 mmHg	C
15	Nebulizer	1	Steplessly Variable Control of Humidification	C
16	Wheel Chair	2	Folding Type for Child	C
17	Boiling Sterilizer	3	with 1.5 kW Electric Heater	C
18	Examination Light	8		C
19	Medical Refrigerator	1	110 lit.	C
20	Skin Fold Caliper	1		C
21	Neonatal Stethoscope	5		C

16) DEPARTMENT OF PSYCHIATRY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Galvanic Current and Faradic App.	1	AC and DC Operation	B
2	Laryngoscooper for Patient	1	with Various Blades	C
3	Examination Table	1	Stretcher Type with IV Stand	C
4	Sphygmomanometer	1	Stand Type	C
5	Medicine Refrigerator	1	100 lit.	C
6	Ambu Bag	1		C
7	Boiling Sterilizer	1	with Electric Heater	C
8	Play Material	1	Quoits, Puzzle, Blocks, etc.	C
9	Suction Unit	1		C
10	Psychological Test Material	1	Rorshach Test etc.	C
11	Occupational Therapy Unit	1	Tool Set for Leather Work and Bamboo Work	C
12	Instrument Cabinet	1		C

17) DEPARTMENT OF SURGERY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Examination and Treatment Table	10		C
2	Film Illuminator	11	Wall Hang/Desk Top Type, 15 W x 7	C
3	Weighing Scale	1	for Adalt and Child	C
4	Instrument Cabinet	2	Stainless	C
5	Instrument Table	6	Stainless	C
6	Diagnostic/Treatment Instrument Set	12	Auriphone, Tongue Depressor etc.	C
7	Examination Table for Rectoscopy	1	Hydraulic Type	C
8	Examination Light	11	Stand Type	C
9	Autoclave	1		B
10	Boiling Sterilizer	2	SUS with 1.5 kW Heater	C
11	Sphygmomanometer	11	Stand Type	C
12	Cotton Ball Jar Set	11		C

18) DEPARTMENT OF DERMATOLOGY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Examination Table	3		C
2	Instrument Cabinet	1	Stainless, Double Doors	C
3	Diagnostic/Treatment Instrument Set	3	Punch Biopsy, Extractor, etc.	C
4	puva lighting App.	1	with Controller System, uv Radiometer and uv Irradiator	B
5	Examination Light	3	Stand Type	C
6	Ultra-violet Apparatus	2	with Stand	C
7	Infrared Ray Apparatus	1	with Stand Max. 600 W Output	C
8	Illuminating Loupe	2	Desk-top Type	C
9	Sphygmomanometer	2	Stand Type	C
10	Film Illuminator	2	Placed Both on Desk and Wall 15 W x 7	C
11	Electrocutery	1		B
12	Microscope	1	Trinocular with Multi-viewer, Phase Contrast Attachment and Photograph Attachment	C
13	Dermabration Apparatus	1	with Stand	B
14	Slide Glass Box	5	Wood, 500	C
15	Boiling Sterilizer	2	Electric Heater Type	C

19) DEPARTMENT OF PLASTIC SURGERY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Examination and Treatment Table	6		C
2	Instrument Cabinet	1		C
3	Film Illunimator	6	Wall Hang/Desk Top Type 15 W x 7	C
4	Sphygmomanometer	6	Stand Type	C
5	Plaster Bandage Table	1	Folding Type	C
6	Gypsum Cutter	4		C
7	Autoclave	1	Desk-top Type	B
8	Suction Unit	1	Max. Suction Power: -500 mmHg Cap: 1 lit.	C
9	Gypsum Utensil Set	4		C
10	Goniometer	4	Composed of; Triple, Large and Small Goniometer	C
11	Diagnostic/Treatment Instrument Set	6		C
12	Examination Light	6	Stand Type	C
13	Instrument Table	3	Stainless	C
14	Continious Passive Motion Machine	1		C

20) DEPARTMENT OF OPERATION ROOM

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Universal Operating Table	1	Universal 4 sets Standard 12 sets	B
2	Operating Light	1	Ceiling Light 4 sets Ceiling Spot 12 sets	B
3	Electrosurgical Unit	4	Output: 500 W	A
4	Suction Unit	6	Max. Suction Power: -610 mmHg Cap: 5 lit./1.5 lit.	C
5	Film Illuminator	6		C
6	Instrument Cabinet	8	Stainless	C
7	Scrub Sink	1	for 4 person Use 1 set for 2 person Use 3 sets	B
8	Anesthesia Set	6		C
9	Instrument Table	1	SUS	C
10	Anesthetic Instrument Table	4	Stainless with Caster	C
11	Oxygen Gas Resuscitator	5	with 2 pcs. of O ₂ Gas Cylinder, Controller, Mask and Trolley	C
12	Anesthesia Apparatus with Ventilator	4	with Gas Cylinder, Fluothane/Athylene Vaporizer	B
13	Blood Bank Refrigerator	1	Cap: 79 lit. (56 blood bag)	B
14	Stretcher	3	Steel with Mattress and Caster	C
15	Patient Monitor	1	Measurement Item: ECG, Pulse Wave, Blood Pressure, Temperature	A
16	Defibrillator	1	Chargeable, with Carts	B
17	Foot Step	16	Stainless	C
18	Basin Stand	6	Stainless, with Basin	C
19	Dressing Drum Stand	16	Stainless, 27 cm Cube	C

20) DEPARTMENT OF OPERATION ROOM

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
20	Kick Bucket	16	Stainless with Caster, 14.5 lit.	C
21	IV Stand	8	Stainless	C
22	Sphygmomanometer	6	Stand Type	C
23	Boiling Sterilizer	6	with 1.5 kW Electric Heater	C
24	Ambu Bag	4	with Carring Case	C
25	Minor Operation Instrument Set	1		C
26	Coagulator	16	Small Output Type	B
27	Recovery Bed	9	Stretcher Type	C

21) DEPARTMENT OF PAIN CLINIC

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Suction Unit	1	Max. Suction Power: -610 mmHg Cap: 5 lit./1.5 lit.	C
2	Examination Table	3		C
3	Diagnostic Instrument Set	3	Auriphone etc.	C
4	Sphygmomanometer	3	with Stand	C
5	Oxygen Gas Resuscitator	1	with O ₂ Gas Cylinder, Controller Trolley and Mask	C
6	Instrument Cabinet	1		C
7	IV Stand	2	Stainless with Caster	C
8	Ambu Bag	2	with Carring Case	C
9	Instrument Table	2	Stainless with Caster	C
10	Ice Cube Machine	1	30 kg/day	C
11	Emergency Cart	1	SUS	C

22) DEPARTMENT OF OPHTHALMIC

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Refracting Unit	3	Motorized Chair, Stand and Sight Tester	B
2	Slit Lamp Microscope	3	Binocular, with Manual Table	B
3	Test Chart Remote Control Type	3		B
4	Trial Lens Set	3	with Trial Frame and Lens Set	B
5	Lens Meter	3	Internal Reading	B
6	Projection Perimeter	1	Goldman Type, with Stand	A
7	Rotary Prism	1	BEREN's Type	C
8	Indirect Ophthalmoscope	1		C
9	Streak Rentinoscope	3	with Transformer	C
10	Ophthalmometer	1	Measurement Range: 36.00 to 52.00D 6.4 to 9.4 mm	A
11	Hertel Ex-Ophthalmometer	2	Prismatic	C
12	Hand Keratoscope	2	Plastic	C
13	Hammer Lamp	4	with Transformer	C
14	Bailliart Ophthalmo-Dynamometer	1	Bailliart	B
15	Motorized Patient's Chair	3		B
16	Motorized Rust Ring Remover	1	with 6 pcs. of Cutter	B
17	Surgical Set for Ophthalmic	1		C
18	40 Hue Test	1		C
19	Basin for Eye Washing	6	Stainless	C
20	Instrument Table	3	Stainless	C

22) DEPARTMENT OF OPHTHALMIC

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
21	Basin Stand	3	Stainless, with 2 Basin	C
22	Film Illuminator	3	Desk Top/Wall Mount Type	C
23	Examination Table	2		C
24	Instrument Cabinet	1		C
25	Boiling Sterilizer	3	Electric Heater Type	C
26	Medicine Refrigerator	1	100 lit.	C
27	Synoptoscope	1	Stand Type	B
28	Examination Stool	6	Round Type, Height Adjustable	C

23) DEPARTMENT OF E.N.T.

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	E.N.T. Treatment Unit	3	for 2 persons	B
2	E.N.T. Treatment Chair	6	Electro-hydraulic 360 deg. Rotating	C
3	Operating Microscope	1	Magnification: 6,10,16,15 X	A
4	Diagnostic Instrument Set	6	Auriscope, Nososcope	C
5	Audiometer	1	Class 1	B
6	Treatment Microscope	1	Binocular Type	B
7	Impedance Audiometer	1	Frequency: 750 Hz Sound Pressure: 76 dB	B
8	Auditory Test Box	1	Sound Proof: 35 dB/1000 Hz	C
9	E.N.T. Diagnostic Set	6	Chargeable, Desk-top Type	B
10	Sphygmomanometer	3	Stand Type	C
11	Phino-Larynge Fiberscope Apparatus	1	with Light Source	B

24) DEPARTMENT OF GYNECOLOGY AND OBSTETRICS

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Gynecology Examination Table	8	Manual Drive Type	C
2	Examination Table	8		C
3	Film Illuminator	2	Placed Both on Desk and Wall 15 W x 7	C
4	Instrument Cabinet	2	Stainless, Double Doors	C
5	Gynecological Examination Unit	8		C
6	Doppler Sound Detector	2	Chargeable, Frequency: 2.5 MHz Output: 10 mW/cm ²	B
7	Automatic Weighing Scale	2		C
8	Amnioscope	1	Battery Type	B
9	Examining Light	8	25,000 LUX	C
10	Stereo Colposcope	1	Magnification: 8,11,16,22,32 x Objective Lens: f=225 mm	B
11	Basin Stand	5	SUS with 2 basins	C
12	Diagnostic/Treatment Instrument Set	16		C
13	Instrument Table	8	Stainless	C
14	Sphygmomanometer	8	Stand Type	C
15	Autoclave	1		B
16	Fetal Monitor	1	with Doppler, Labor Pains Transducer	A

25) DEPARTMENT OF DENTAL

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Dental Unit	12	with Hydraulic Motor Chair, Operating Lamp, Air Compressor	A
2	Dental X-ray Unit	1	Stand Type X-ray Head: 60 kVA/10 mA	A
3	Dental Film Processor	1	Processing Time: 3 - 9 min. Film Size: 20 - 25 cm, 27 - 32 cm	B
4	Basin Stand	6	Stainless with Caster and 2 Basin	C
5	Dental Instrument Set	1		C
6	Amalgamator	2	Rotation: 3000 rpm	C
7	Dental Instrument Cabinet	6		B
8	Central Vacuum System	6		B
9	Electrosurgical Unit	1	Output: 40 W/1.4 MHz	B
10	Electric Pulp Tester	1		B
11	Chair for Dental	12	Round Type	C
12	Laryngoscope	1	with Various Blade	C
13	Boiling Sterilizer	4	Stainless, Electric Motor Type	C
14	Ultrasonic Scaling Unit	2		B
15	Sphygmomanometer	4	Stand Type	C
16	Oxygen Gas Resuscitator	1	with O ₂ Cylinder, Controller, Trolley and Mask	C

26) DEPARTMENT OF C.S.S.D.

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Steam Sterilizer	2	Chamber: 500 x 500 x 900 with Boiler and Supply Cart	A
2	Surgical Glove Conditioner	1	Air Flow: 2100 - 2300 lit./min.	B
3	Ultrasonic Cleaner	1	Basket Swing Mechanism	A
4	Instrument Cabinet	3	Stainless	C
5	Nursing Care Instrument Set	1		C
6	Instrument Table	5	Stainless	C
7	Washing Sink	2	2 Sink	C
8	Working Table	4	Stainless	C
9	Instrument Shelf	4	Stainless	C

27) DEPARTMENT OF MEDICAL RECORD

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Data Cabinet	5	Steel	C
2	Patient Record Reference System	1	CPU: 1, Disk: 1, Terminal: 32, Ten Key: 6, Printer: 2 with UPS, AVR	A
3	Typewriter	5	Electric, Daisy: 96 Characters 3 pitches	B
4	Photo Copier	1	Max.A3, Speed: 15 sheets/min.(A4)	B
5	Trolley	10	Cage Type, Shelf Type	C
6	Numbering Machine	2	8-digits, Electric Drive	B

28) AUDIO VISUAL ROOM

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Cassette Tape Recorder	3		B
2	35 mm Slide Projector	3	Halogen Lamp: 24 V, 250 W Auto Focusing, 2 x 2 Mount Roll Film Projection Lens: F2.8 f=140 mm	B
3	Over Head Projector	3	Halogen Lamp: 100 V, 650 W Stage Size: 254 x 254 mm Used Both with Sheet and Roll f=260 mm	B
4	Video System	1	VTR + TV Set	A
5	Portable Video System	3	VTR + TV Set with Cart	A
6	Video Camera	1	for Making Educational Material with Tripod and Storage Case	A
7	Screen	1	Hanging Type with Tripod	C
8	Transparency Maker	1	with Transparency Sheet	B
9	Tape/Film Cabinet	1	Steel	C

29) DEPARTMENT OF REGIONAL MEDICAL CARE ACTIVITY

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Vehicle for Medical Volunteer Outreach Program	1	Diesel, for 15 persons	B

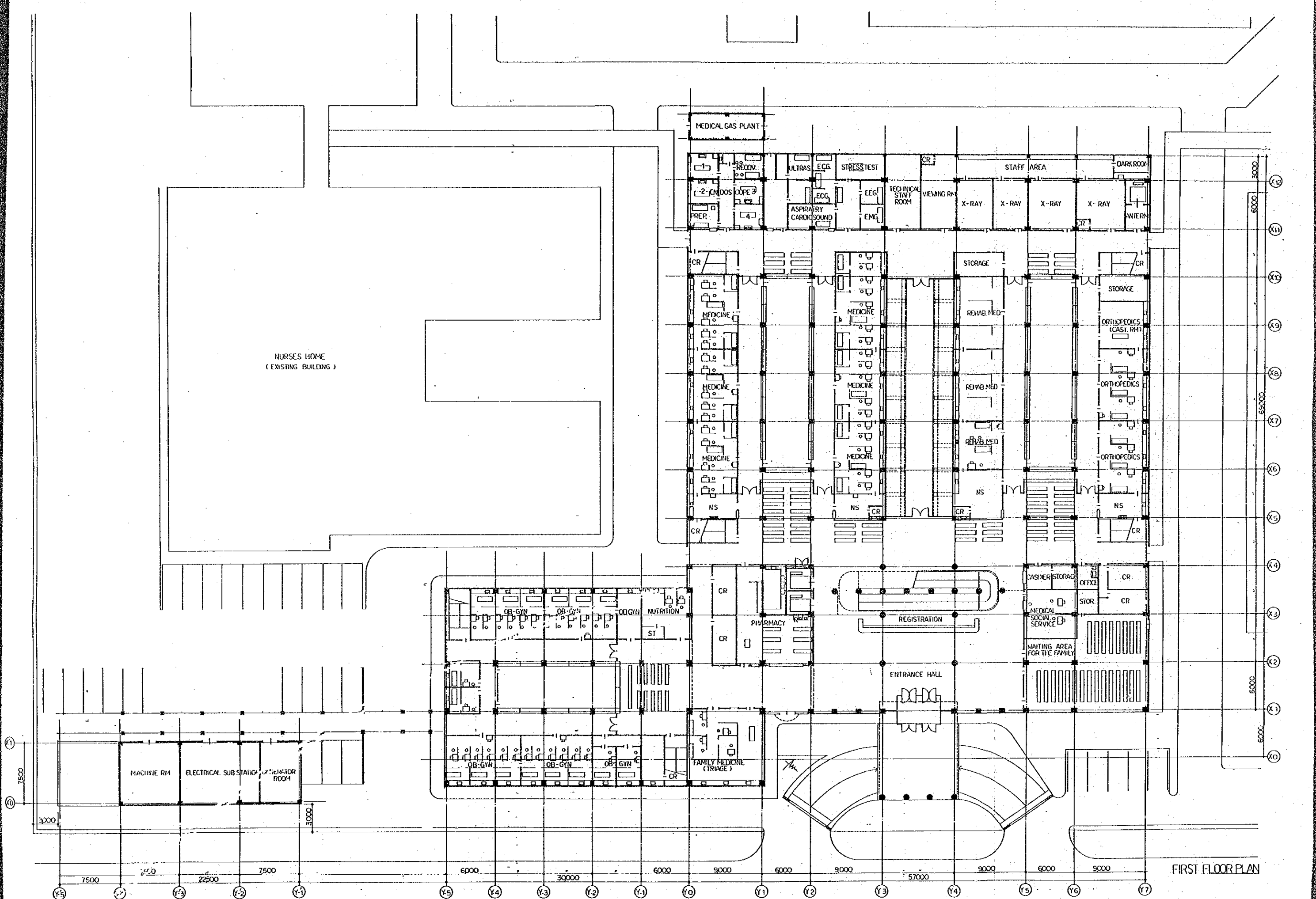
30) DEPARTMENT OF NUTRITION CRINIC

<u>No.</u>	<u>ITEM</u>	<u>Q'TY</u>	<u>SPECIFICATIONS</u>	<u>TRAINING METHOD*</u>
1	Weighing Scale Program	1	Cap: 150 kg	C
2	Height Scale	1		C
3	Caliper	1		C
4	Recording Camera	1	with Tripod	B
5	Refrigerator	1	Cap: 74 lit.	C
6	Top-Pan Balance	1	Cap: 2 kg	C

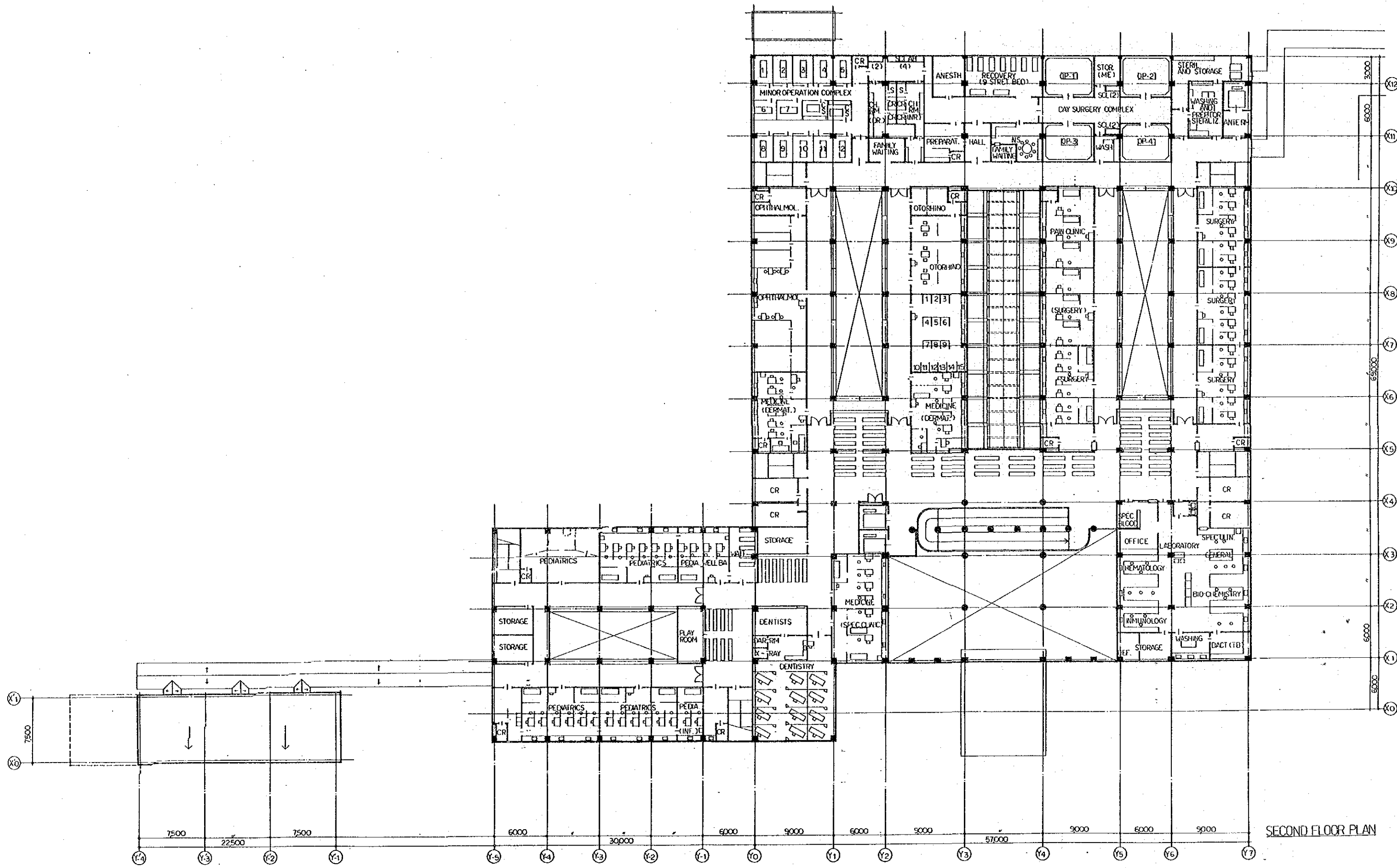
5-4 Basic Design Drawings

1. FIRST FLOOR PLAN
2. SECOND FLOOR PLAN
3. THIRD FLOOR PLAN
4. ELEVATION
5. SECTION
6. DETAIL-1
7. DETAIL-2

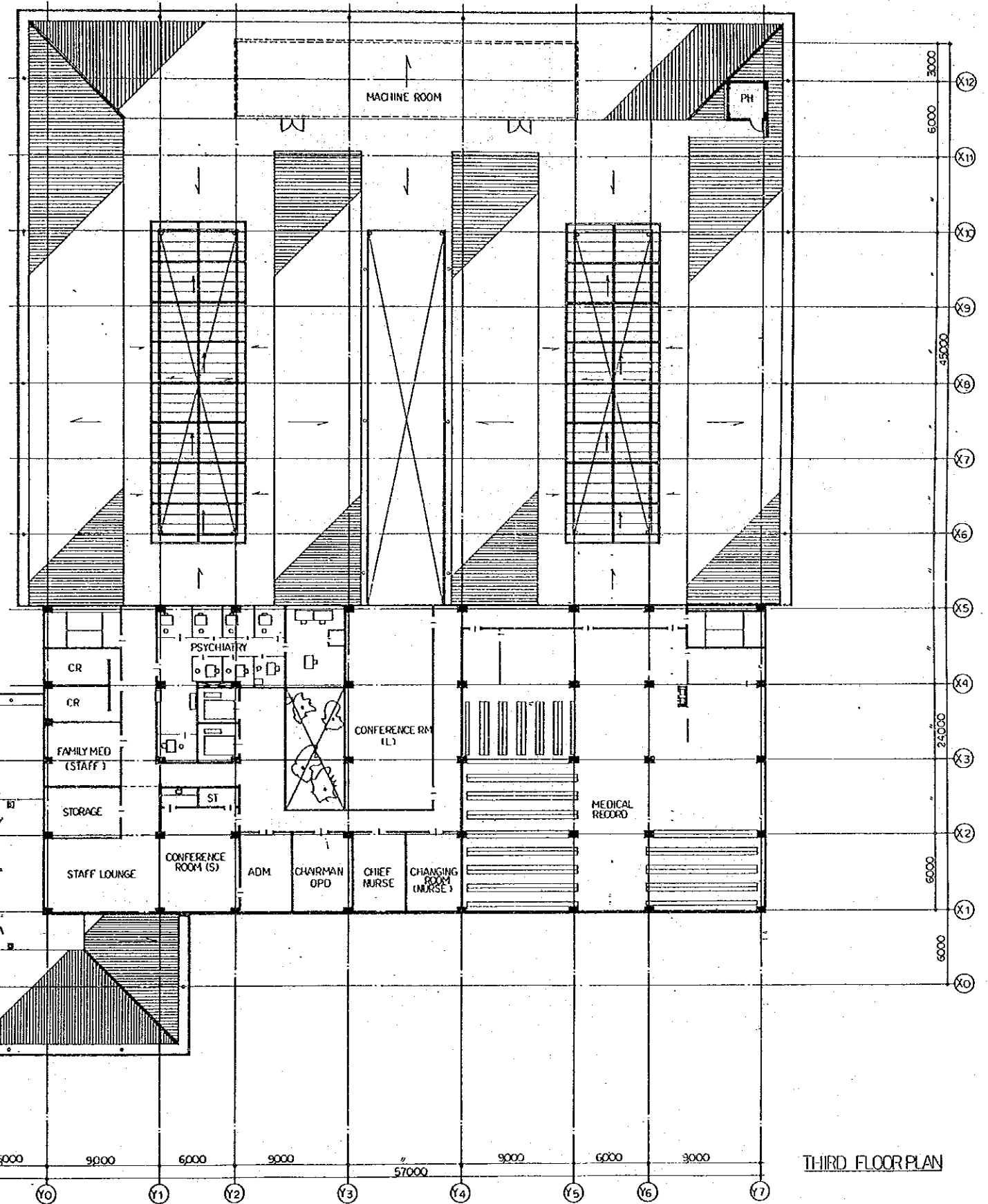
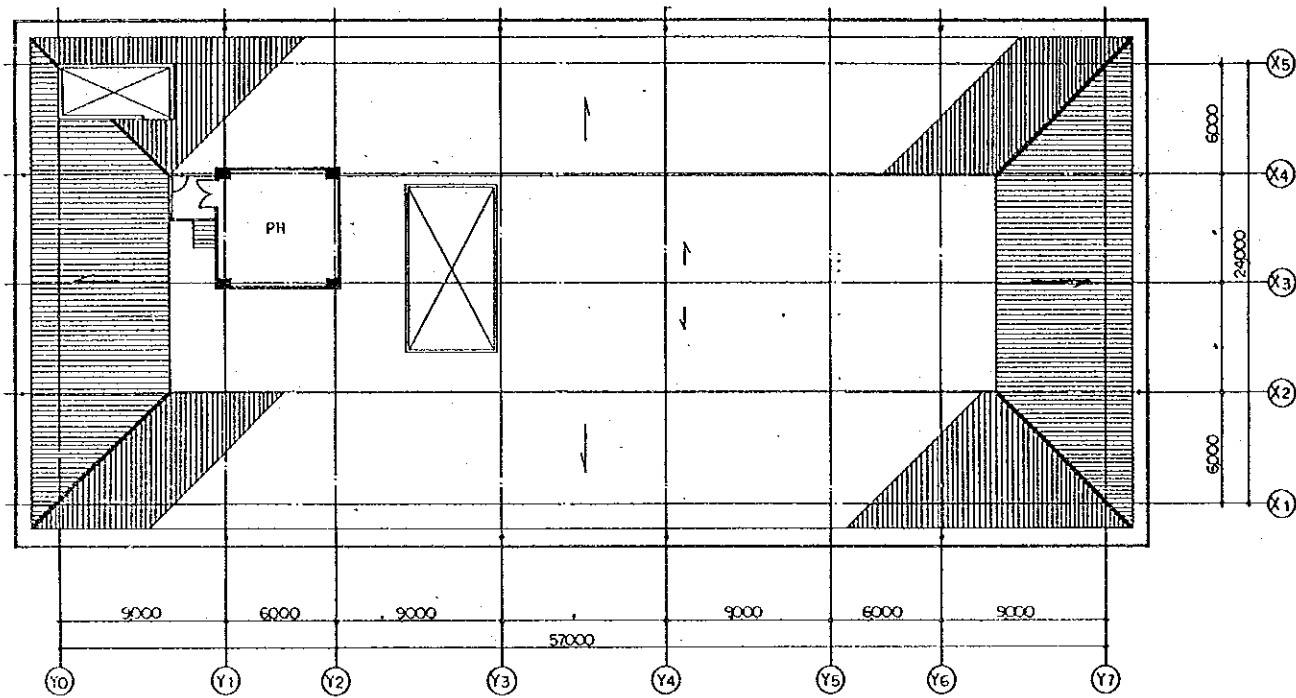
NURSES HOME
(EXISTING BUILDING)



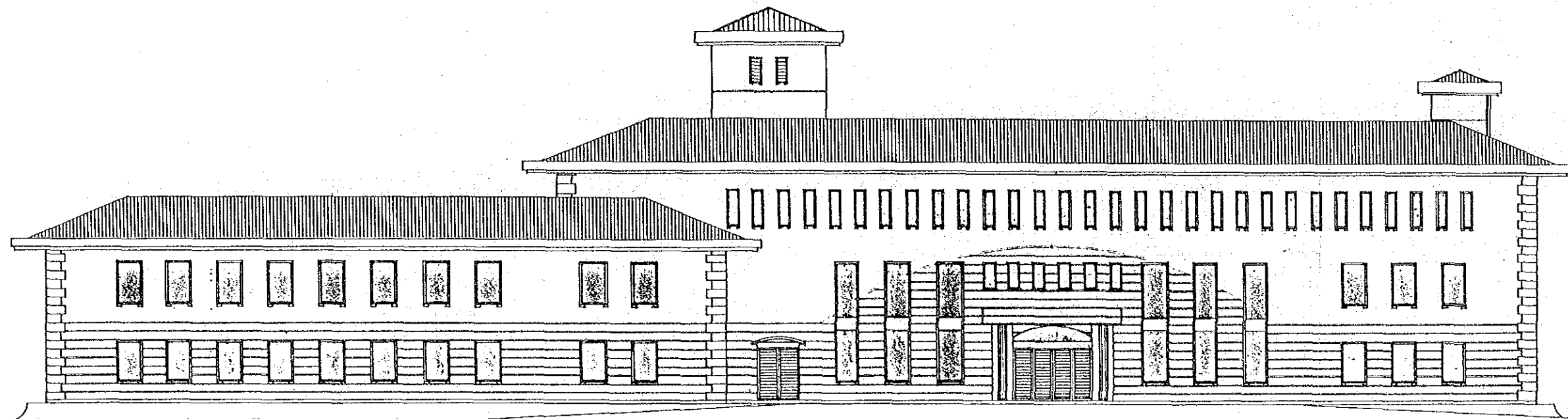
FIRST FLOOR PLAN



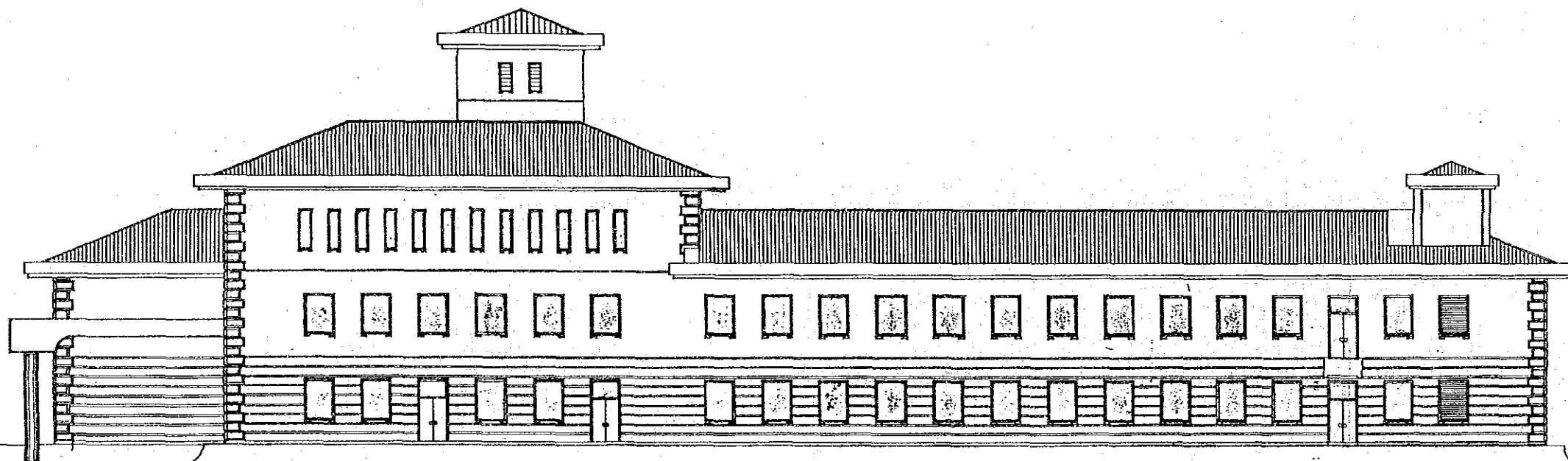
SECOND FLOOR PLAN



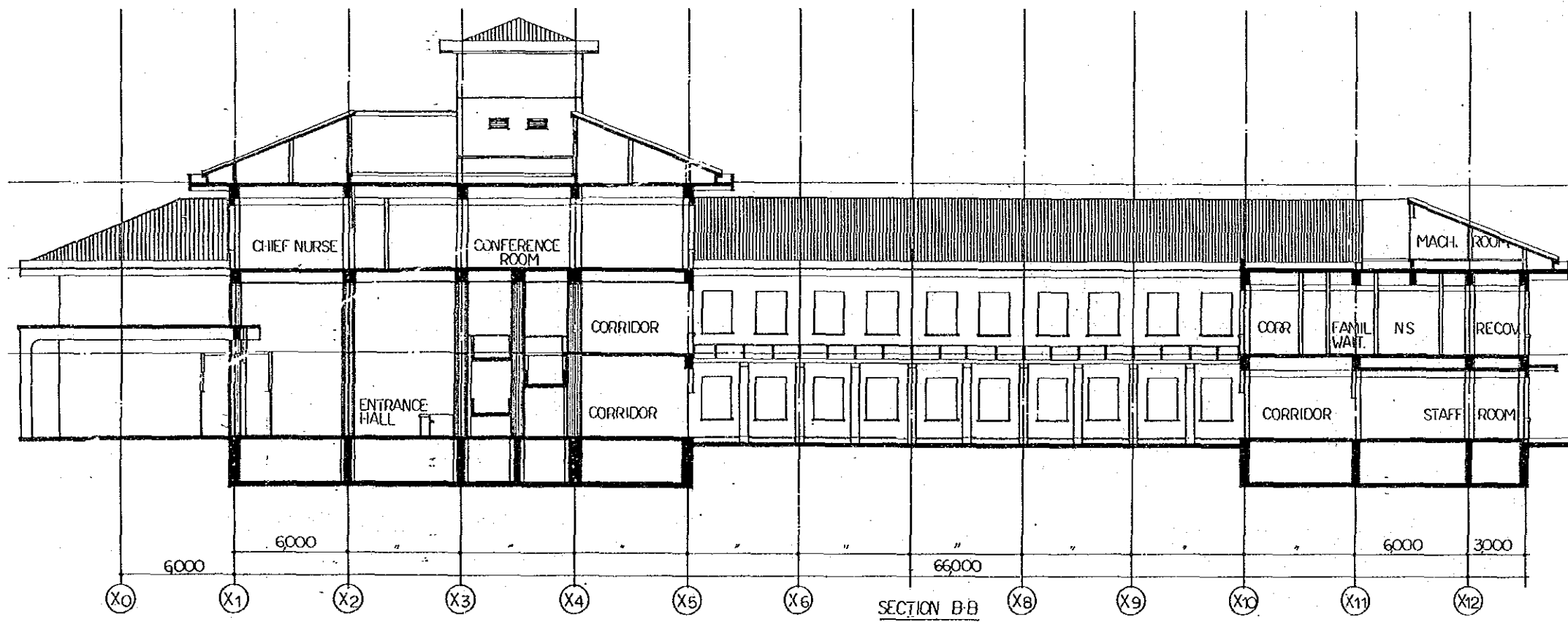
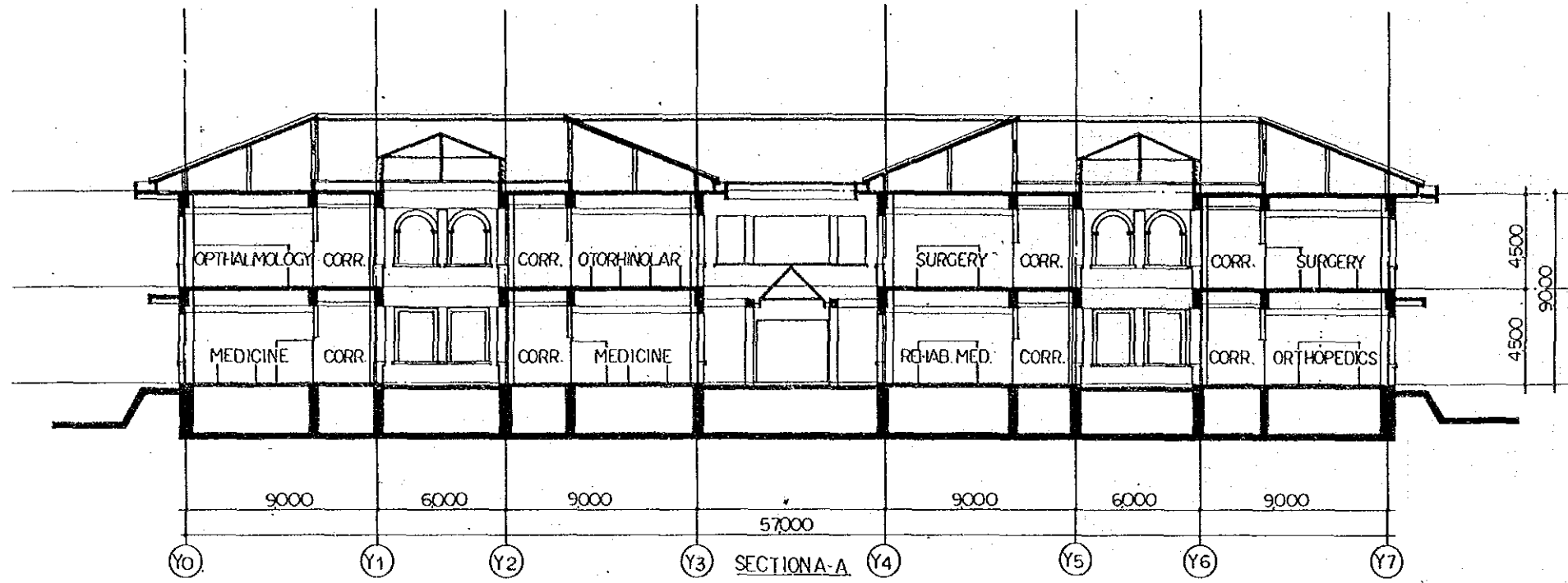
THIRD FLOOR PLAN

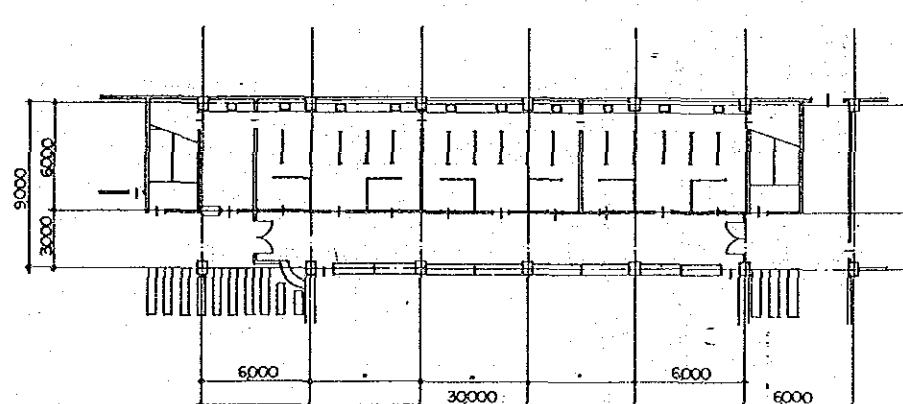
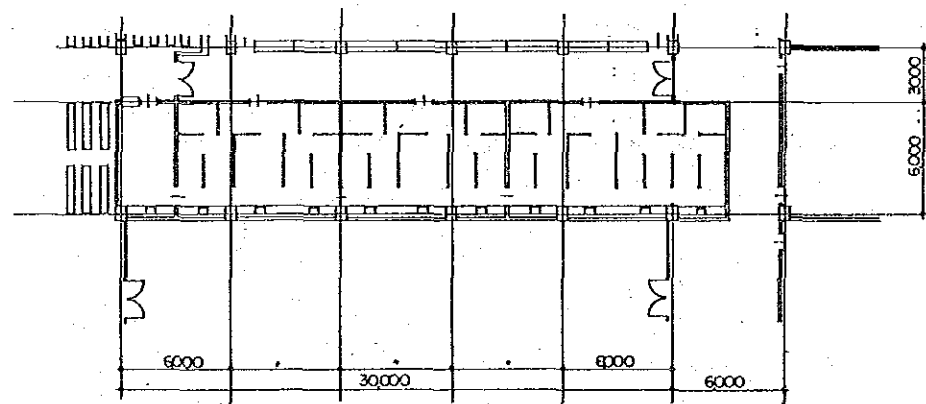
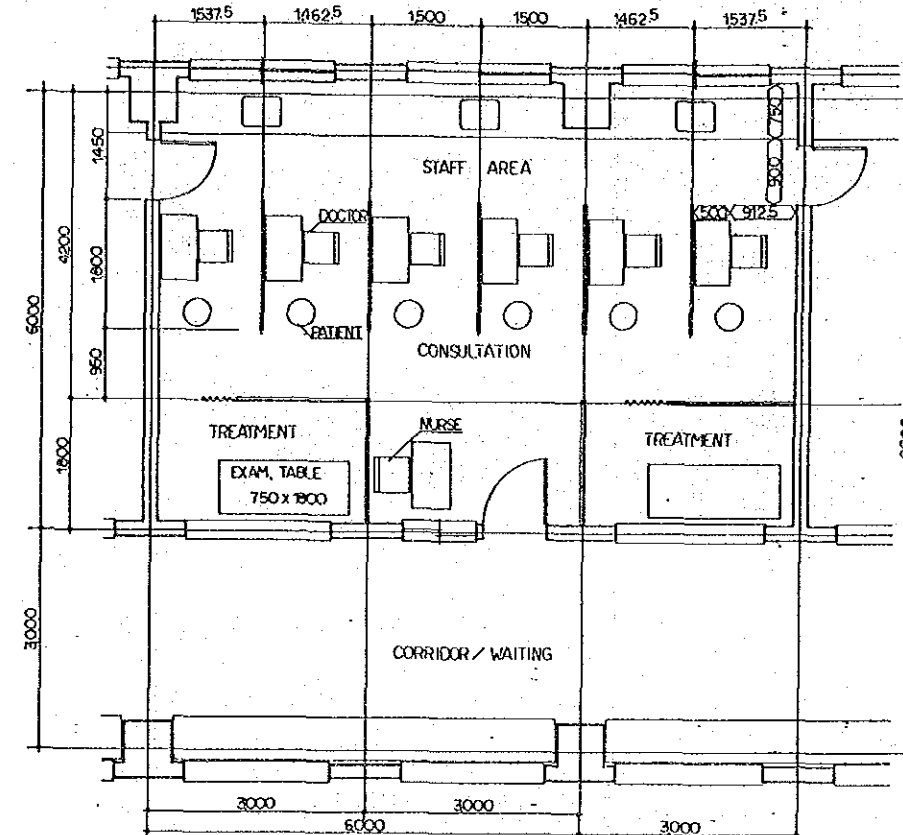
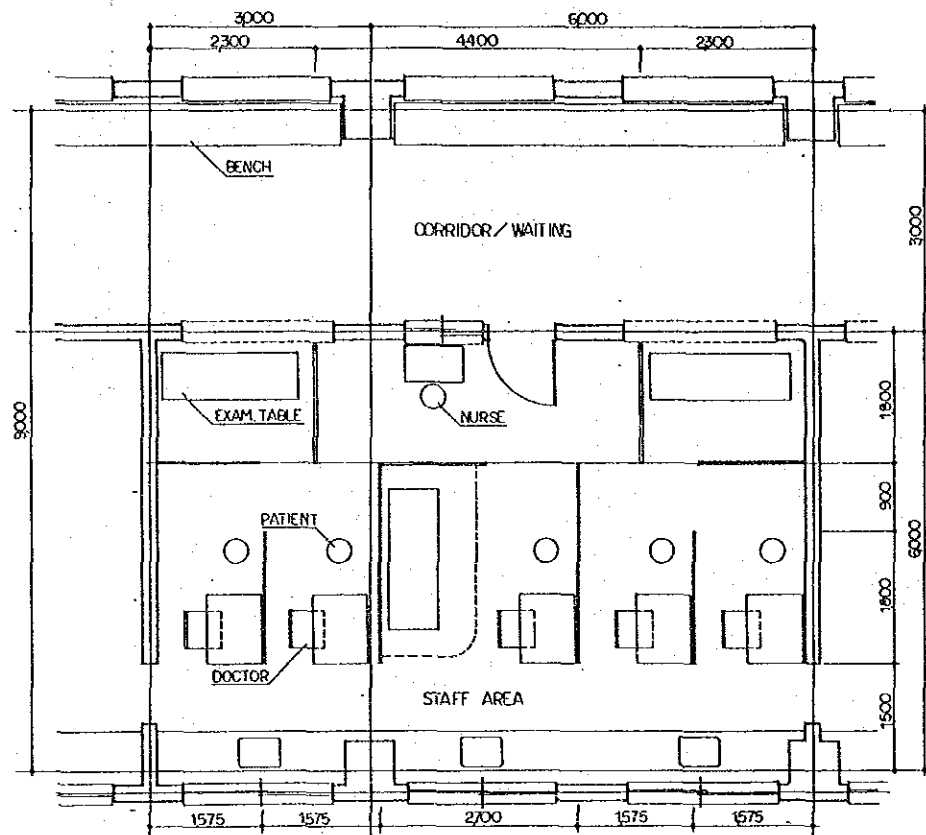


NORTH ELEVATION



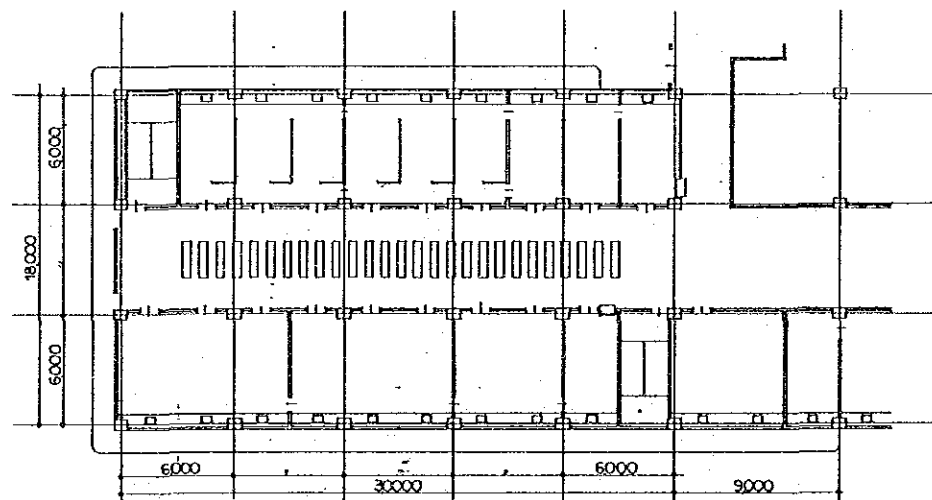
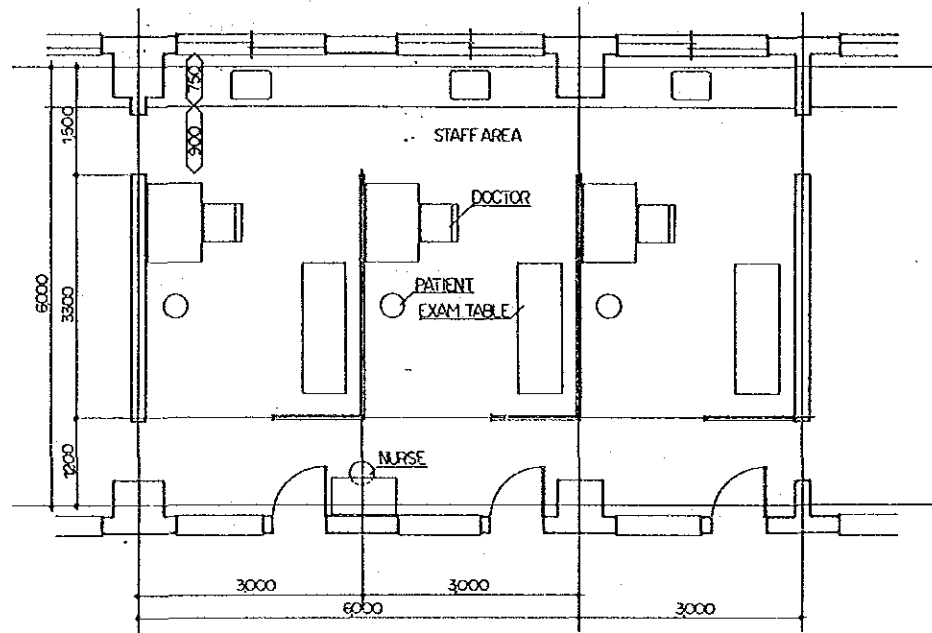
WEST ELEVATION



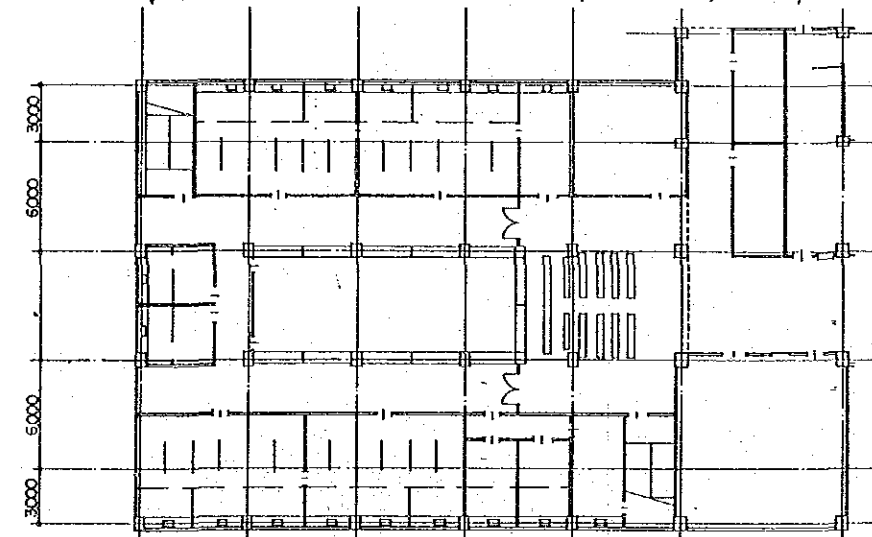
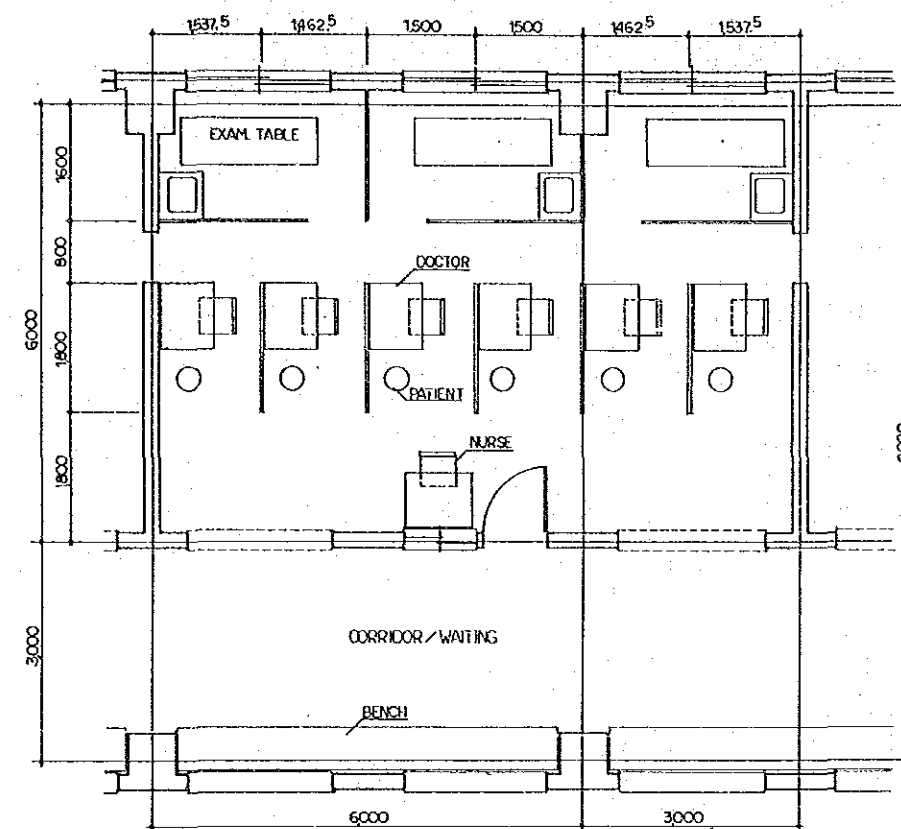


MEDICINE CONSULTATION AND TREAT. ROOM

PEDIATRICS, SURGERY CONSULTATION, TREAT. ROOM



ORTHOPEDICS CONSULTATION AND TREAT ROOM



OB-GYNECOLOGY CONSULTATION AND TREAT ROOM

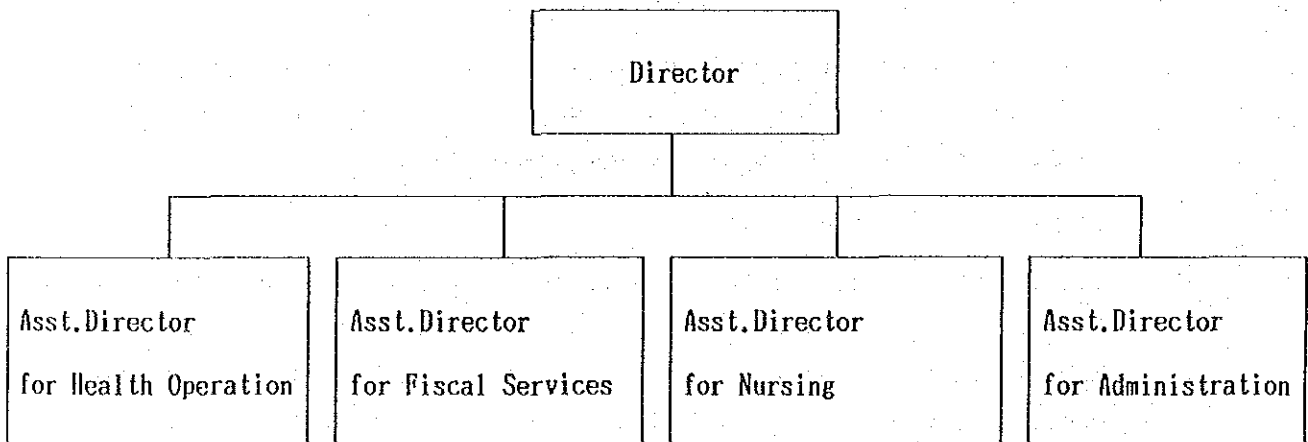
CHAPTER 6
IMPLEMENTATION PLANNING OF THE PROJECT

CHAPTER 6 IMPLEMENTATION PLANNING OF THE PROJECT

6-1 Implementation System for the Project

1) Implementation body for the project

PGH will undertake the management of this facility, as the implementation body of this project, under the control of the University of the Philippines Manila, attached to the UP System. Under the leadership of Mr. Estrella, Director who has played its role for the implementation of the preliminary survey and basic design study, the following organization will be in charge of the Project.



2) Consulting Firm

A Japanese Consulting Firm will carry out the design and supervisory work conforming with the system of The Grant Aid Assistance of Japan. The scope of the consulting services is the items listed below;

- a) Implementation of detail design work
Preparation of documents required for the bid such as detail design drawings and specifications.
- b) Cooperate on bidding and contract for construction
 - 1. Prequalification of tenders
 - 2. Acting on behalf of owner for tendering service
 - 3. Witness signing for construction
- c) Supervision of work

3) Contractor

A Japanese contractor will undertake construction work in conformity with the system of the Grant Aid Assistance of Japan. The contractor shall comply with the terms of work as specified.

4) Supplier of medical equipment

Equivalent to a contractor, a Japanese supplier will be in charge of the delivery and installation of medical equipment. As the work for medical equipment is close in relation to the building work, the coordination between a supplier and the contractor is absolutely necessary. Therefore, the supplier should coordinate the work with the contractor, by arranging for the smooth delivery and installation of medical equipment.

6-2 Responsibilities of Both Governments

The outline of the allocation on the scope of works which will be borne by the Japanese side and the Philippine side in this project are as follows:

The work to be borne by the Japanese Government:

- o Building Works
 - . Out-Patient Building
 - . Plant Building Department
 - . Others (Connecting corridor, etc.)
- o Auxiliary Facility Work
- o Medical equipment
- o Vehicle for out-reached medical care services

The works to be borne by the Philippine Government:

- o Site Preparation
 - . Provision and grading of site for the project
 - . Fencing and gate
 - . Landscaping and planting works
- o Infrastructure
 - . High tension cable lead-in work
 - . Provision of power supply meter
 - . Provision of primary high tension
 - . Allotment for lead-in of power (includes cash deposit)
 - . Deposit for city gas meter
 - . Installation of communication cable and conduit from the New Central Block to MDF in OPD
 - . Relocation of water and drain pipe
 - . Sewage and drainage connection
 - . Lead-in of City gas

- . Removal of existing water supply pump station and installation of new pump station including water reservoir
- o Other necessary works
- o Operational burden and charge of expenses
 - . Charge of various expenses
 - . Cost to be burden incurred for the banking services of foreign exchange bank upon the Banking Arrangement
 - . Any expenses which may be incurred in connection with tax exemption procedures.
 - . Maintenance and operation cost of facilities and equipment.
 - . To take necessary measures on customs clearance whenever necessary.
 - . To take necessary measures for tax exemption of Japanese products and supplies that will be brought in for the project.
 - . To accord Japanese nationals whose services may be required for their entry into the Philippines and stay therein for the performance of work.
 - . Other costs required for the construction of this facility which are out of scope of the Japanese side.
 - . Provision of personnel required for the operation and management for this project

6-3 Implementation Policy for the Project

1) Implementation Policy

It is required that the Philippine Government, Japanese Government, consulting firm, contractor and other necessary organizations will fully discuss the implementation of this project at each stage of the Project from the conclusion of Exchanges of Notes to payment based on B/A after the completion of work for the building and delivery.

2) Policy of construction management

The necessary works, including preparation and grading etc., must be completed by the Philippine side prior to the construction of the project so as not to interfere with the commencement of work. Detailed study of the work schedule is required between the Japanese side and the Philippine side, at the detail design stage, including the work schedule of the Philippine side, connecting work of infrastructure to the site, and testing and commissioning of medical equipment. Prior to the commencement of the construction plan, the following examination should be fully made:

- . Appropriate construction methods to minimize noise, vibration and dust will have to be selected, taking thorough consideration of the effects to the inpatients because the site of this project is located in the site of PGH. Also, there is limited space around the site, therefore effective use of the site will have to be considered, by studying closely the turning space of construction vehicles, etc. As there will be other work (Central Block Building etc.) underway at the same time on the site of PGH, it must be planned to execute works so as not to interfere with each other, by making close discussion with the respective person in charge of works.
- . When the work is to be carried out during the rainy season (from June to October), the construction schedule for this period will

affect the whole work schedule. Therefore, it is necessary to complete pile, earth work and foundation work before the rainy season begins, and at the same time countermeasures must be considered for inundation.

Drying methods for finishing should also be examined when finishing work will be executed during rainy season.

- . For the mechanical equipment and medical equipment procured in Japan, it is necessary to conduct thorough quality control and product inspection so as to minimize trouble which may happen at the site.
- . As much medical equipment will be equipped, it is necessary to have sufficient time for testing and instructing their operation and maintenance to the Philippine side.
- . Security and crime prevention at the site is also part of the construction plan. In particular, it is required to restore safety control of the site from theft and accident by placing a full time guardman.
- . For the execution of works, the out of the key factors for success will be whether cooperation from local professional traders can be secured or not. Therefore attention must be paid to the clarification of scope of work and the proper placement of manpower. This should be organized by a prime contractor and subcontractor, to unite organization with smooth management.

3) Construction Management Planning

The construction management planning should be carried out considering the following points:

- . Most of subconstructors in the Philippines except the leading 30 or more companies are small and medium construction firms with less than 50 million pesos of annual amount of orders in hand and 20 to 30 employees. Therefore, for a large-scale buildings in the project, sufficient study is required in selecting subcontractors, and those subconstructors should be selected from among the

top-ranked companies. As to the labor situation, a carpenter, plasterer and reinforcing-bar placer are well established as a specialist, and urban workers who have a more frequent chance of being engaged in construction works have a certain degree of technical level or skill. However, for general workers, in most cases, local farmers may be temporarily employed, but their technical level is low. Further, in local building works, no particular training is performed since meticulous finishing and accuracy are not required, and no tool required for such works is available.

The working efficiency of workers is rather low, when compared with that of Japan, and approx. 3 times as many workers as those engaged in domestic construction works are considered to be necessary; therefore, it is necessary to secure the quality and number of workmen according to construction schedule. For the above reasons, it is necessary to station Japanese highly experienced engineers for each work. It is also necessary to employ a local supervisor proficient in each work in order to adjust the both sides for smooth operation. For special equipment which requires the dispatch of expert engineers in particular from Japan, and construction supervisor and test run therefor, such engineers should be dispatched for that purpose for a short period of time.

4) Policy of construction management

At the stage of construction management the consulting firm will dispatch a competent resident engineer to carry out quality control, construction schedule control, and safety control. At the same time, it will send a short term experts for one week to one month, to conduct inspection and instruction for construction.

a) Policy for construction management planning:

- . To make efforts for smooth execution to meet the construction schedule with close contact and discussion between the Philippine side and the Japanese side.

- . To instruct and assist the constructor(s) to comply with the contract document.
 - . To understand and make best use of the traditional techniques of the Philippines with the attitude of performing technical interchange on construction, planning and technology.
 - . To give proper assistance and instruction for operation and maintenance after the completion of work.
- b) Contents of construction management:
- i) Cooperation on the contract:

To conduct the prequalification of tenders, examine the contracting system of work, prepare the draft contract, evaluate the bill of materials quantities, and also witness signing of contract for the construction.
 - ii) Check and approval of the construction documents for planning and shop drawings:

To check and approve the construction plans, shop drawings, fabrication drawings and samples of materials submitted by the contractor.
 - iii) Instruction for works:

To study the construction plan, construction schedule and safety plan and give instructions to the contractor, and report on the problems and progress of works to the owner.
 - iv) Cooperation for the procedure on the approval of payments:

To check the bills submitted by the constructor(s) during execution of works and after the completion of works, and give assistance for the payment.
 - v) Inspection witness:

To conduct an inspection of the work progress each month, witness concrete placing and other important works, and conduct a final inspection at the time of completion and delivery.

5) Organization for construction supervision

	In the Philippines	In Japan
Consulting Firm	Resident Engineer Short-term Expert Engineer	Project Manager Engineering charge of each section Architectural, Electrical, Structural, Mechanical Estimation & Medical Equipment
Contractor	Representative of the Site Chief Engineer of each section Structure, Electrical & Mechanical Finishing, Medical Equipment	Project Chief Engineering charge of each section Architectural, Electrical, Structural, Mechanical Estimation & Medical Equipment

6-4 Procurement Planning of Equipment and Materials

1) Policy for procurement planning for equipment and materials:

The required equipment and materials will be procured in accordance with the policies outlined below:

- a) Whenever possible, depending upon local availability, specifications, quantities and cost, equipment produced in the Philippines will be procured. The equipment and materials which can not be acquired in the Philippines will be imported from Japan, ordered from suppliers who can provide good and dependable aftercares through their branches and/or agents.
- b) Except for the equipment where experts from Japan will be required,

local work forces will be employed under the supervision of the Japanese engineers.

c) Equipment and materials imported from Japan require approx. 2 weeks total: one week each for ocean transportation and customs clearance; therefore, this procurement for equipment and materials should be planned with a sufficient time allowance.

2) General circumstances for procurement of equipment and materials:

Quality, specifications, availability and major materials in the Philippines are as follows:

- a) Cement: There is some inconsistency in quality but no problem in strength according to the ASTM standards. To cope with increased demand at the end of the rainy season, shipments will be adjusted and there may be an occasional shortage of cement. There are five to six manufacturers at present.
- b) Aggregate: There is a plenty of gravel and river sand and quality is consistent.
- c) Reinforcing bar: These mainly consist of deformed steel bar and comes in inches sizes under the ASTM standards. Quality is inconsistent and expensive.
- d) Steel frame: Most of them are imported.
- e) Ready mixed concrete: Ready mixed concrete is widely used in Metro Manila. There are relatively many plants and they are located within an about 15 minute distance from the site.
- f) Concrete block: Concrete block is used extensively for exterior walls and partition walls. There are many suppliers but it is necessary to select manufacturers with good and high quality products.
- g) Lumber: There is ample lumber of high quality and it is inexpensive. The skill level of carpentry is considerably high.

- h) Plywood for frame work: This is produced in the Philippines and is adequate for the project.
- i) Door and Window: Steel sash is mainly used but most of them are of simple process. Aluminium sash is available, but the cross section and finish are not sufficient. Therefore, they can not be applied where water-tightness and air-tightness are required. Thus, it is recommended to be imported from Japan.
- j) Tiles: Tiles produced in the Philippines provide a limited selection in color and size. Both accuracy of finish and quality are inferior.
- k) Roofing materials: The most commonly used roofing materials is the roll shaped metal sheets. There are also many Spanish tiles available. There are few examples of asphalt waterproofing sheet.
- l) Stone: Marble and granite are used extensively.
- m) Paint: Paints produced in the Philippines are improved and well matched to the local climates. There is no problem of peeling, in contrast with imported products.
- n) Electrical Cable: Products with quality which meet the requirement of JIS and IEC standards and codes can be provided.
- o) Board: It is possible to assemble the imported members on site. They are not expensive and are sufficiently usable qualitywise.
- p) socket/Outlet: Almost entirely imported.
- q) Lighting fixture: Except for incandescent lighting goods, none of these are produced in the Philippines.
- r) Conduit: Conduits produced in the Philippines have problems in the grade of piping. The supply of parts is also insufficient. Most of them are imported.
- s) Piping: Black steel pipe (SCH 40), galvanized steel pipe (SCH 40), PVC pipe, cast iron pipe, and concrete pipe are produced in the Philippines. Except for concrete pipe

and PVC pipe, the raw materials are imported and are expensive. There are problems in quality which remain to be improved.

- t) Galvanized steel sheet: There are no problems existing in either quality supply.
- u) Thermal Insulator: Glass-wools are abundant and sufficient for use.
- v) Sanitary fixture: In general, products in the Philippines are adequate for use, but faucets are troublesome. Therefore they are recommended to be imported from Japan.
- w) Valves: Most are imported.
- x) FRP water tank: Most are imported.
- y) Elevator: Most of elevators are imported from Japan.

3) Situation for procurement of medical equipment in the Philippines

Most of main medical equipment in Philippines is imported. Therefore, medical equipment required for this project cannot be produced in the Philippines, and it is to be imported from Japan. Further, utmost care should be exercised to protect equipment during transportation by using a container, for example, for packing.

6-5 Implementation schedule

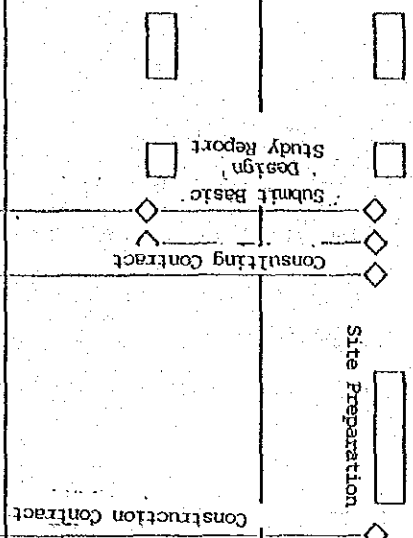
The following implementation schedule is based on the premise, that all works and procedures will be undertaken without delay.

The implementation schedule, which is started following the Exchange of Notes (E/N), it is divided into three stages:

- . The period from the verification of consultant contract til preparation of tender documents; two (2) months.
- . The period from the invitation to tender, prequalification, bid opening, tender evaluation until the conclusion of contract for the construction; one (1) month.
- . The period from the contract for construction verification of the Japanese Government until the completion of work: twelve (12) months.

	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
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Japanese Government	<input type="checkbox"/>		<input type="checkbox"/>	◇	◇			◇																		
Consulting Firm		<input type="checkbox"/>	<input type="checkbox"/>	◇	◇	<input type="checkbox"/>		◇																		
Contractor						<input type="checkbox"/>		◇																		
Supplier						<input type="checkbox"/>		◇																		

E/N



6-6 Estimated cost to be borne by the Philippine Government

. Project cost to be borne by the Philippines

The project cost to be borne by the Philippine Government will be 3,170,000 pesos in total (23,390,000 yen).

Item	Estimate (Peso)	(JYen)
Site preparation	400,000	(2,952,000)
Gate fence	300,000	(2,214,000)
Landscaping, planting	150,000	(1,107,000)
Electricity incoming	300,000	(2,214,000)
City gas incoming	10,000	(73,800)
Replacement of water supply and drainage lines	850,000	(6,273,000)
Sewage connection	10,000	(73,800)
Telephone cable	150,000	(1,107,000)
Others	1,000,000	(7,380,000)
Total	3,170,000	(23,394,600)