

6) Quarters and dormitories

Following quarters and dormitories should be provided within the lot as a rule:

- (1) Residence for chief of hospital
- (2) Residences for administrative officer, chief of clinics, and chief nurse
- (3) Residences for medical specialists
- (4) Male and female dormitories (nurse dormitory is to be included in girls' quarter)

These quarters should be single-story buildings as much as possible for assuring direct access to rooms from garden.

7) Others

- (1) Training schools

Training school for nurses and para-medical school will be laid out for hospitals requiring such schools but computation of scale and construction cost of such schools will be considered separately and not included in this scheme.

- (2) Church

Layout of church will be examined at preliminary design stage for individual hospital. Since medical functions are mainly analyzed and considered in this scheme, church will not be included in this scheme and be considered separately.

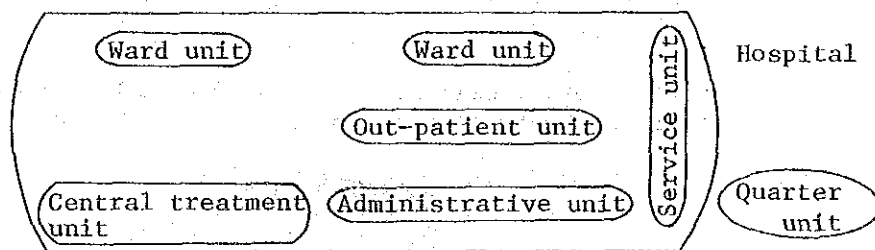
5. Planning by Unit Method

- 1) Considering the hospital with units

It was described in Paragraph 4-1-2 that standardization is an effective means for coping with complicated subjects. As one of standardization methods, the unit method can be considered and, if hospital architecture is planned with this unit method, each department can be handled as an unit. That is, medical ward unit, out-patient unit, central medical treatment unit, administrative unit, service unit and quarter unit. Unit can be handled

as "measuring unit" but it also corresponds to space and must be adequate for use in solving problems of architectural planning, mechanical and electrical equipment planning and exterior and interior design planning. One set of units must be considered for making this method workable.

At first, standard model plan consisting of units is to be prepared, and its capacity should be computed using required bed capacity described before. This procedure should be taken for each of capacities (100, 200 and 300 beds). Areas of units will be computed in conformity with ratio of each department but it must be done in such a way that each of them can be individually taken out.

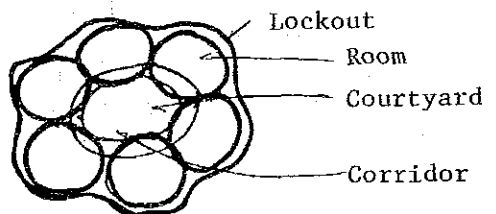


Now, how to actually apply this unit method to upgrading scheme of each hospital will be described below.

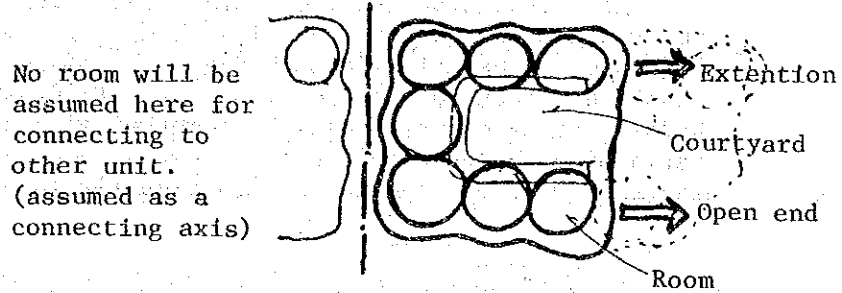
At first, requirements to building submitted from each hospital should be divided into requirements to each department. Then, such requirements will be reexamined as unit in view of contents, purposes, functions, spaces, etc. in order to bring them close to the standard model plan. Then, judgement concerning demolition, new construction and remodeling is made. And by replacing the units of the standard model plan, upgrading of existing hospital will be planned. In addition, for maintaining overall balance, the plan will be readjusted in view of site conditions, natural conditions and special requirements.

2) Configuration of units

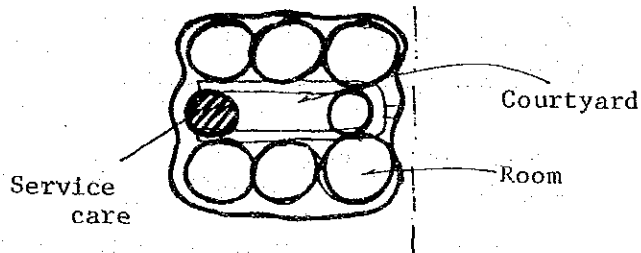
To meet the conditions of tropical building, courtyard for ventilation will be provided, and it will be surrounded by side corridors. Exterior walls will be used as lockout line for administrative purpose.



- o Since this is a hospital building, future extension is to be considered by providing directivity and open ends for the building.



- o Service core 1 will be centrally located (example: stair, mechanical room, warehouse, etc.)

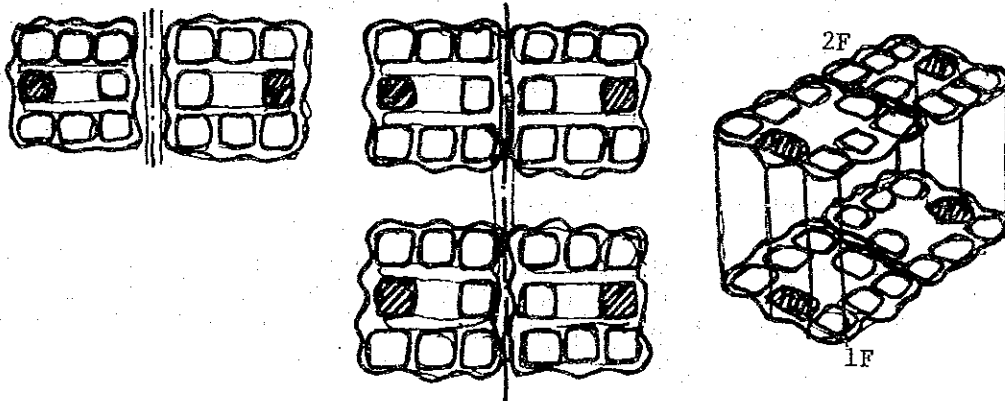


- o Connection with other units

(1) Back to back

(2) Connection around axis

(3) Stacking (2 story max.)



3) Special features of each unit

o Ward unit:

To be located, if possible, as NS location where ward is least depended upon nursing unit. Water is to be located at easily controllable location.

o Central treatment:

Water is to be provided. A clean zone including delivery and surgery departments should be provided.
Space sufficiently large for meeting with medical equipment plan should be provided.

o Administrative unit:

Depending upon the system of the Philippines, practical arrangement will be made.

o Out-patient unit:

For emergency during night, the emergency dept. will be also used as out-patient.

o General services unit:

This will be properly connected to the above departments. If functions are provided, it is not required to have all functions in one building.

4) Constitution of units

Number of units may vary depending upon the scale of each hospital, but following combinations can be considered:

100-bed class: (single story)

(central treatment unit + administrative, out-patient unit) + (ward unit x 2), (service 1 unit + service 2 unit) + (morgue)

200-bed class: (2 story):

(central treatment unit (1F laboratory & X-ray unit + 2F operation, delivery unit) + (1F out-patient unit + 2F administrative unit) + (ward unit x 4) + service 1 unit + service 2 unit) + (morgue)

300-bed class:

(1F out-patient unit + 2F administrative unit)
+ central treatment unit (1F laboratory, X-ray,
physical therapy unit + 2F operation, delivery
unit) + (ward unit x 6) + (service 1 unit +
service 2 unit) + (morgue)

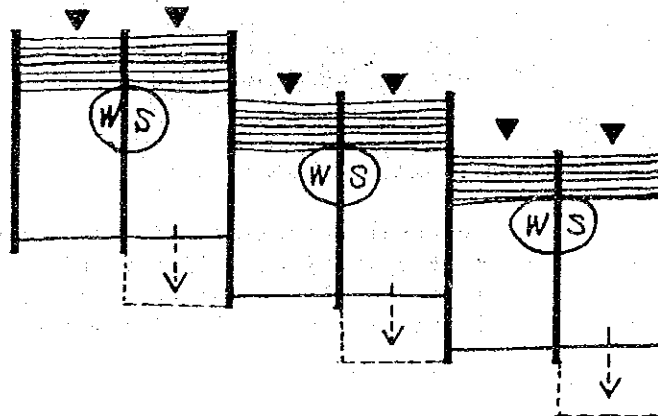
5) Design criteria for quarters and domitories

- o As a rule, residence for chief of hospital should be an independent house. (3DK + carport)
- o Houses for three officers and chiefs should be 2DK type, and married doctors' houses are to be 2K type. Bachelor doctors' houses are to be duplex type, and one manager's house of 2K type should be provided in housing area. These 4 kinds of houses will be designed to form a group of buildings.
- o Nurse domitory and other domitories will be designed as boy's domitories and girl's domitories instead of providing buildings by job type of workers. Boy's and girl's domitories will be closely located to each other but will have separate approaches and water use areas. Room will be used by four persons.
- o For future expansion due to change in family conditions and number of workers, all domitories and houses should be designed for easier additions in future. No entrance should be provided but veranda should be usable as entrance and rest space.

(1) House for chief of hospital

(2) Houses for three officers and chiefs and houses for married doctors

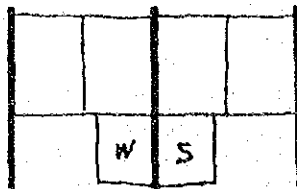
WS: Water Section



One out of two units should be designed for expansion in future. One water section should be provided for each pair of units.

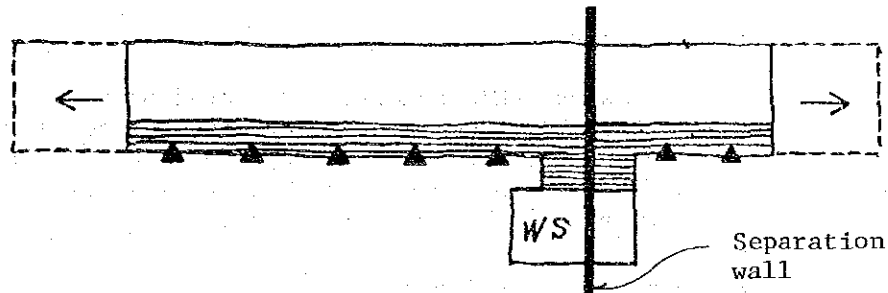
(3) Bachelor doctor house

Basically duplex type plan will be used. As one water section is provided for two rooms, four rooms will form one unit.

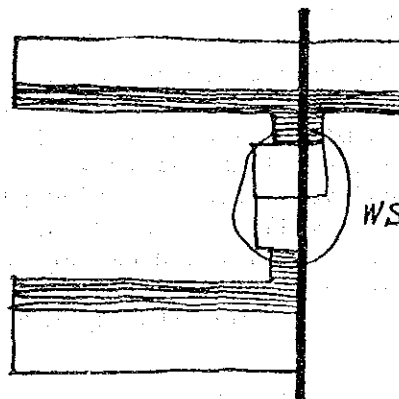


(4) Boy's dormitory and girl's dormitory

Living spaces for male and female will be separated by separation wall located between them.



Then, water section will be concentrated along the separation wall and future minor additions (within the limit allowed by capacity of water station) will be made at each end of wing. Major addition will be made, as a rule, by adding another quarter unit.



6. Site Planning

In addition to zoning of hospital and quarters described in functional planning, Service 1 which is closely related to medical wards is located adjacent to the wards and Service 2 which is not directly related to others is separated from Service 1. Morgue should be separated from other building as far as possible and be located at an end of the lot with screening by using trees or other means. Flat land is assumed for the standard site plan.

7. Exterior Planning

Parking area (10 cars for 100 beds, 15 cars for 200 beds, 20 cars for 300 beds), service road, access road to hospital, access road to quarters, partial fence, entry to lot, planting around entrance and buildings, planting and paving in courtyard, berm, etc. as well as facilities such as exterior lighting and drain channel.

8. Planning for Structural Systems and Materials

1) Structural

Since this country is located on the circum-Pacific Seismic Zone, horizontal force to be used for seismic design should be almost equal to that of Japan. Wind pressure to be used in typhoon area should be slightly higher than that used in Japan.

2) Number of stories

In addition to the above factors, medical service system, fire prevention and construction system in local area were studied, and reinforced concrete structure with 2 stories maximum is considered to be appropriate.

3) Materials

Materials and building method selected must withstand strong sunshine during dry season, and high temperature, high humidity and heavy rain during wet season, and must be easily maintained in view of operation and management. In addition, fire resisting performance must be provided. Exterior walls are to be exposed concrete finished with paint. Exterior windows are to be made of aluminum sashes, and interior finish materials are to be non-combustible type with clean appearance.

4) Elements

Roofing should be made of double construction, with the lower part water-proof reinforced concrete slab and the upper, galvanized corrugated steel sheet, leaving a space for ventilation between the two. The roof overhang should extend sufficiently to prevent direct sunlight and rain from entering the room.

The windows and other openings to the outside should be large with adjustable openings permitting control of the internal environment and, moreover, watertight.

9. Electricity

1) Various problems in formulating the standard plan and the objective.

(1) Improvement plan for the application and operation of the generator.

o With regard to the operation of the generator, the methods described below are proposed for the cases of backpower available and not available.

Backpower available	Rank 1	Rank 2	Rank 3	
	Rank 1	Rank 2	Rank 3	
Aim.	Rank 1	Rank 2	Rank 3	<p>If the backpower is available, the generator may be installed at G₁, G₂ and G₃ in view of the reliability of the power source.</p> <p>If the backpower is not available, the generator of a certain capacity is to be installed, and if the capacity is not sufficient, additional generators are to be installed.</p> <p>For instance, if the total load is 150 KVA, with the standard capacity of 50 KVA, three generators are to be installed.</p> $150 \div 50 = 3$
	<p>To consider the load arising out of the necessity for a constant supply of power for medical purposes.</p> <p>The load is to be the minimum required for constant operation.</p>	<p>Most medical work is completed in a fixed period of time. The object is emergency load.</p> <p>To operate only in emergency.</p>	<p>To operate as required.</p> <p>To back up the backpower and G₄~G_n.</p>	

Proposals concerning application:

- I. In order to ensure interchangeability of parts and the machines themselves between hospitals if there is any trouble with the generator, those of the same capacity and the same manufacturer may be considered for each rank.

This will also contribute to easy maintenance and repairs.

- II. In order to keep the running cost at a minimum, a minimum load is to be given to the generator which is in constant operation.

(2) Receiving Capacity

o Maximum power for 100, 200 and 300 beds

Item Number of beds	Medical equipment (KW)							Sub-total
	Sick wards	Out-patient	Central treatment	Control	Services	Total	Demand ratio	
100	18.4	14.2	79.4	0.6	7.7	119.3	0.5	59.6
200	56.8	16.7	81.3	0.6	10	155.4	0.5	77.7
300	67.2	26.1	107.8	1.2	10	212.3	0.5	106.1

Item Number of beds	Lighting (KW)							Sub-total
	Sick wards	Out-patient	Central treatment	Control	Services	Total	Demand ratio	
100	10.2	4.2	12.6	2.4	2.9	32.3	0.8	25.8
200	20.5	8.5	25.2	4.9	5.8	64.9	0.8	51.9
300	30.8	12.7	37.8	7.3	8.7	97.3	0.8	77.8

Item Number of beds	Power (KW)					Total
	Air-conditioning	Hygiene	Total	Demand ratio	Sub-total	
100	35	31.3	66.3	0.8	53	138.4 kW
200	35	39.3	74.3	0.8	59	188.6 kW
300	45	84.7	129.7	0.8	103.7	287.6 kW

o Receiving capacity and generator capacity and the number required without back power.

Number of beds	Receiving capacity KVA	Capacity of a single generator × n (number of units) without backpower
100	138.4 kW → 150 kVA Cosθ = 0.8	75 kVA × 2
200	188.6 kW → 235 kVA Cosθ = 0.8	75 kVA × 3
300	287.6 kW → 359 kVA Cosθ = 0.8	100 kVA × 4

o Load table of each generator

100 beds				
	Medical equipment	Maintenance lighting	Air-conditioning; hygiene	Total
G ₁	4.9	—	—	4.9
G ₂	4.4	—	—	4.4
G ₃	48.4	8	15.3	71.7

200 beds				
	Medical equipment	Maintenance lighting	Air-conditioning; hygiene	Total
G ₁	6.7	—	—	6.7
G ₂	4.4	—	—	4.4
G ₃	48.4	12	15.3	73.7

300 beds				
	Medical equipment	Maintenance lighting	Air-conditioning; hygiene	Total
G ₁	10.8	—	—	10.8
G ₂	6.3	—	—	6.3
G ₃	65.9	19	21	105.9

	100 beds	200 beds	300 beds
G ₁ (KVA)	15	15	15
G ₂ (KVA)	15	15	15
G ₃ (KVA)	75	75	100

(4) Examination regarding the determination of specifications of the generator.

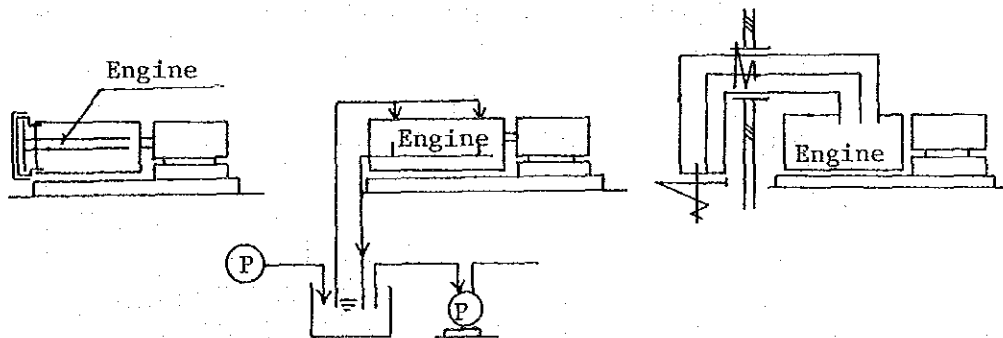
a. Engine

i. Capacity of the engine

The type of the engine is to be limited to 15 KVA, 75 KVA or 100 KVA so that the merits in interchangeability and maintenance may be utilized against mechanical troubles.

ii. Cooling method

Though various cooling methods are available such as radiator, water circulating and air cooling methods, the air cooling method is proposed here in order to avoid troubles regarding the amounts of cooling water and water quality.



1. Radiator method 2. Water circulating method 3. Air cooling method

iii. Operating hours

With engines of the G₁ ranking, continuous operation is to be possible, as they have the thermal and mechanical durability required for continuous operation.

G₂ and G₃ ranking, engines are to endure continuous operation for ten hours.

iv. Starting method

As for the method of starting the engines, air battery and manual methods are available. The air starter is recommended here as the battery

method may create problems in durability and maintenance. For engines of the G₁ Rank, however, the manual method is to be used as it is for continuous operation.

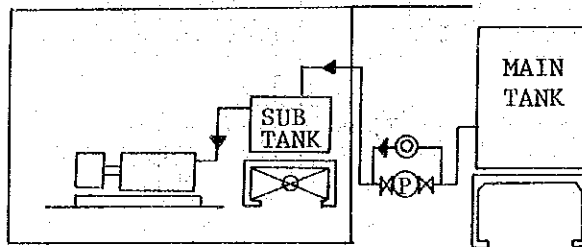
v. Fuel

Either heavy oil or automobile-grade diesel oil may be used as engine fuel. However, in view of the availability, the engine is to be able to run on gas oil (for automobiles).

vi. Fuel feeding method

The main tank is to be installed out of doors with a sub-tank in the generator room. Gravity feeding is to be used from the sub-tank to the engine and a pump to feed the sub-tank from the main tank.

The main tank is to be installed in such a position that tank trucks may have easy access to it.



vii. Fuel tank capacity

Main tank: stock for 30 days judging from the fuel consumption.

Sub-tank: stock for daily consumption.

Further, computation of fuel consumption is to be based on the assumption that Rank 1 (G₁) is for continuous operation, Rank 2 (G₂) for three hours per day and Rank 3 (G₃) for twelve hours per day.

viii. Lubrication

Lubrication oil is to be stored in a sub-tank. Automobile lubrication oil is to be used.

ix. Measures to counteract salt damage

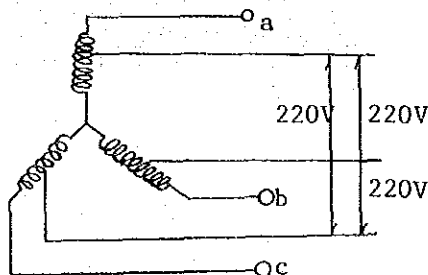
At Pangasinan, Abra and Batanes, the engine is to be given an anti-salt coating to increase its durability.

Also air cleaners and oil baths are to be provided as countermeasures for the interior of the engine.

b. AC generator

i. Rated output of the generator is to be 220 V.

Further, 230 V output terminal is to be considered for the generator of Rank 3 (G₃) for voltage drop.



ii. The capacity of the generator is to be limited to 15 KVA, 75 KVA or 100 KVA to utilize their merits in interchangeability and maintenance so that mechanical troubles may be avoided. (Emphasis placed on interhospital maintenance.)

(5) Per KWH cost comparison between the electric rate charged by the power corporation and the cost of diesel oil consumption when generating one's own power.

Costs have been computed under the conditions given below.

a. Conditions for the computation of diesel oil cost for the generator.

Assuming that the power output of the generator is 15 KVA and continuous operation is carried out at the power factor 0.8, fuel consumption is estimated to be 4.5 ℓ/hr.

Though there is regional difference in diesel oil cost, the average diesel oil cost has been obtained.

b. Conditions for the computation of the electric rate.

Since the tariff varies from area to area, the rate has been computed for each area.

The discount rate system has been taken into consideration for some areas.

Note: [The cost of diesel oil and the electric rate were current ones during the period of survey (March-April, 1979).]

c.

The graph below shows that for five hospitals in Region I -- Don Mariano, Gabriel Silang, Ilocos Norte, Pangasinan, Baguio (Benguet -- the electricity rate was below the cost of diesel oil in respect to the same KWH.

FIG.-IV-3-1 COMPARISON GRAPH PAY FOR POWER CORPORATION
& DIESEL COST FOR GENERATOR DRIVING

(REGION II)

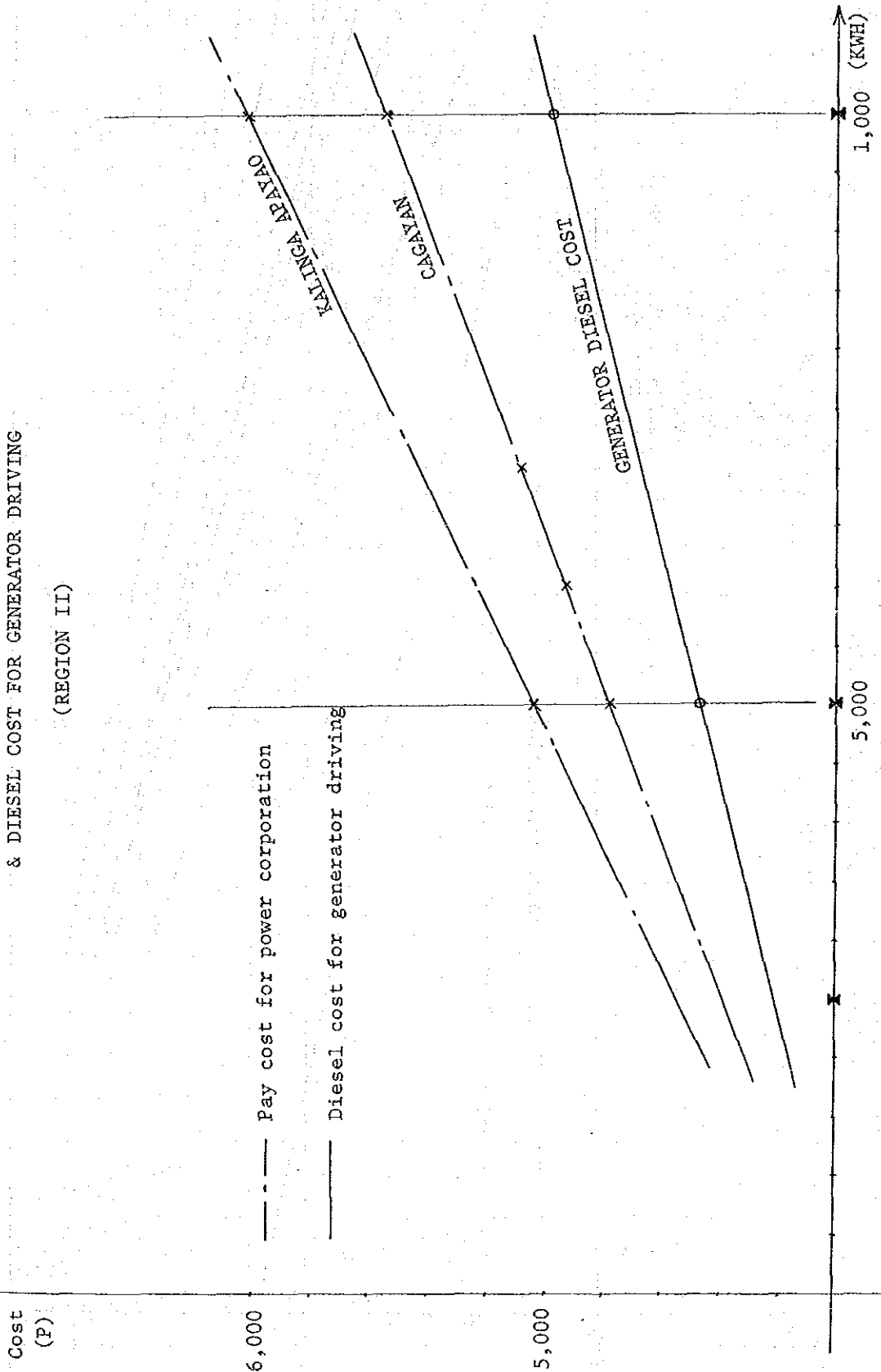
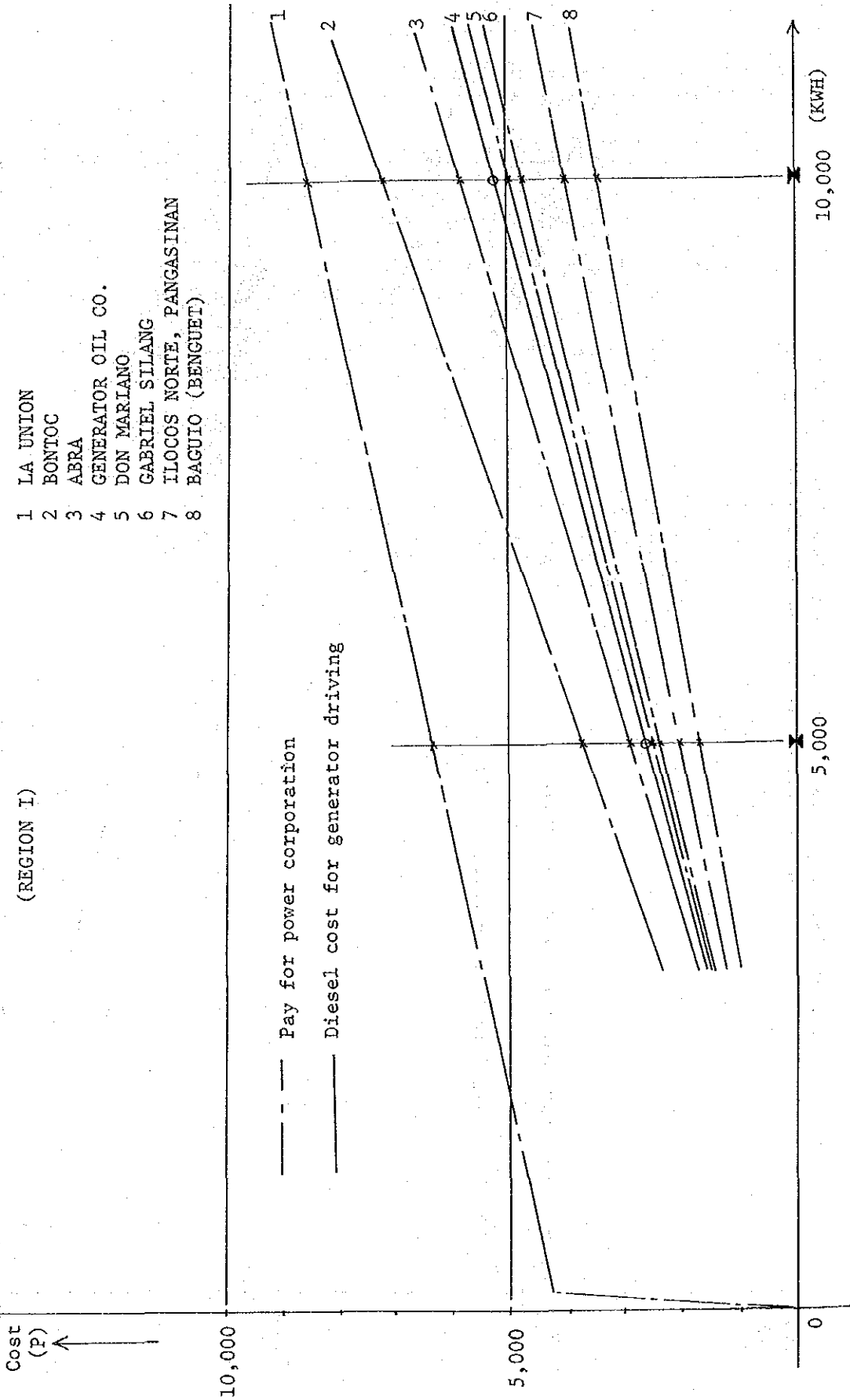


FIG.-IV-3-2 COMPARISON GRAPH PAY FOR POWER CORPORATION
& DIESEL COST FOR GENERATOR DRIVING

(REGION I)

- 1 LA UNION
- 2 BONTOC
- 3 ABRA
- 4 GENERATOR OIL CO.
- 5 DON MARIANO
- 6 GABRIEL SILANG
- 7 ILOCOS NORTE, PANGASINAN
- 8 BAGUIO (BENGUET)



(6) Illumination standard

Illumination stage	Place	
500	Chief's Room. Medical Office. Research Room. Conference Room. Waiting Room. Dining Room. Visiting Room. Dietary. General Laboratory. Physiological Laboratory.	Examination Room. Treatment Room. Emergency Room. Delivery Room. Nurses' Room. Dispensary. Pharmacy. Autopsy Room. Pathological and Bacteriological Laboratory. Clerical Office. Hall.
200	Pharmacy. Technician's Room. Nursery. Record Office. Central Supply Room. Library. High Energy Radiation Room. Culinary. Corridor of Outpatient Department.	Sick Rooms. Radiology Room. Anaesthetic Room. Recovery Room. Disinfection Room. Drug Room. Morgue. Change Room. Bath Room. Wash Room.
100	X-ray Room. Eye Department Dark Room. Ward corridor.	Toilets. Waste Room. Laundry. Record Room. Night Duty Room.
50	Dark Room. Emergency Staircase.	

Source: JIS Z9110-1969.

Philippine standard illumination and per unit price area load by section

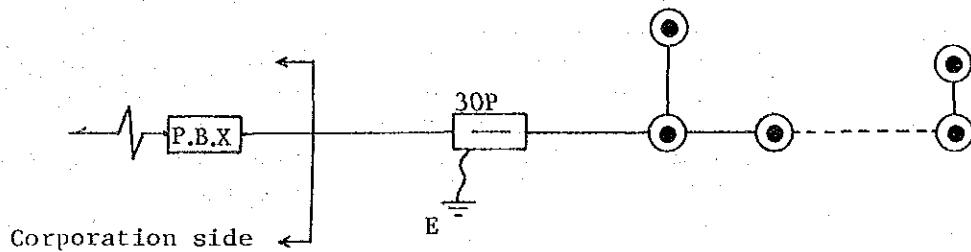
Section	Standard illumination	VA/m ² load per illumination area
Ward	200LX ~ 150LX	9.8 VA/m ²
Outpatient department	300LX ~ 200LX	17 VA/m ²
Central treatment facilities	500LX ~ 450LX	28 VA/m ²
Administration section	200LX ~ 150LX	9.8 VA/m ² ~ 10 VA/m ²
Services	200LX ~ 100LX	5.85 VA/m ²

(7) Communication Facilities




a. Telephone facilities

Since the improvement of intra-city and inter-city telephone service depends upon the national development program, in those areas where the present telephone line is not being extended, planning is to be carried out to extend the line and to provide outlets in future.

Facilities for the telephone service may be outlined as below.



Legend

-  Telephone terminal board
-  Telephone outlet
-  Telephone exchanger

Places for telephone outlets:

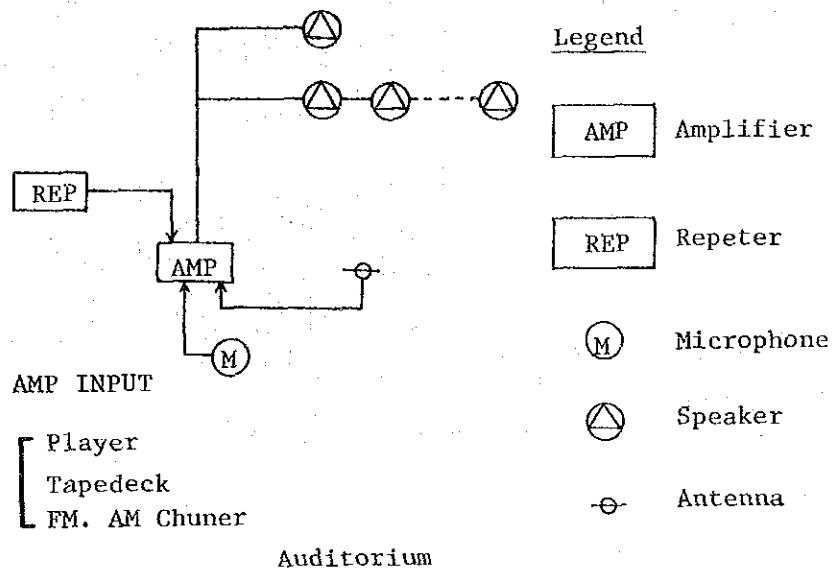
Chief's of hospital's office. Chief of clinic.
Chief nurse. Manager. Night reception.
Reception. ANC Nurse station. Word nurse
station.

b. Speaker system

The office is to have a speaker system and is to be equipped with facilities capable of providing paging and other types of public address services (radio, tape and record player) for the entire facility.

Input for the amplified is to be from the radio (AM, FM), record player, tape deck and the microphone, operated from the office. In addition, a remote control device is to be installed at the ancillary nurse station.

Facilities for the speaker system are outlined below.



c. Nurse call facilities

Nurse call capability is provided to facilitate the carrying out of ward nursing and emergency measures.

Ward nursing:

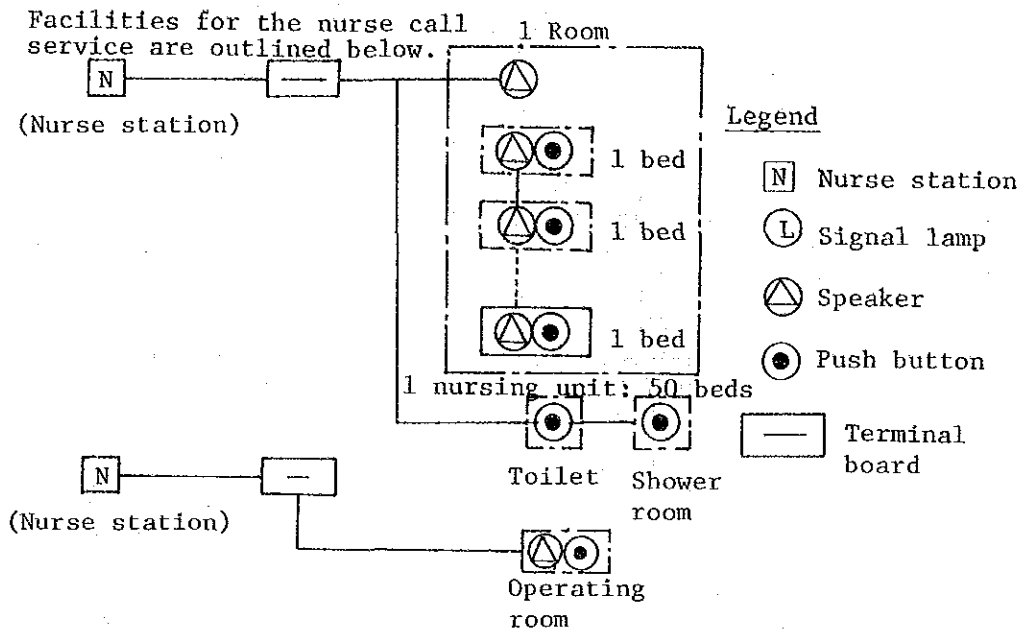
To maintain communication between the patient and the nurse center.

Each bed is to be provided with a push button, for contact with the nurse station.

In case no nurse is available at the nurse station, the call to the station is to be indicated in the corridor with a signal lamp.

Emergency measures:

Emergency call devices are to be installed in the toilet and the shower rooms so that patient in emergency may call the nurse. In the case of the operating room, it is to be provided with the communication function apart from the call device.

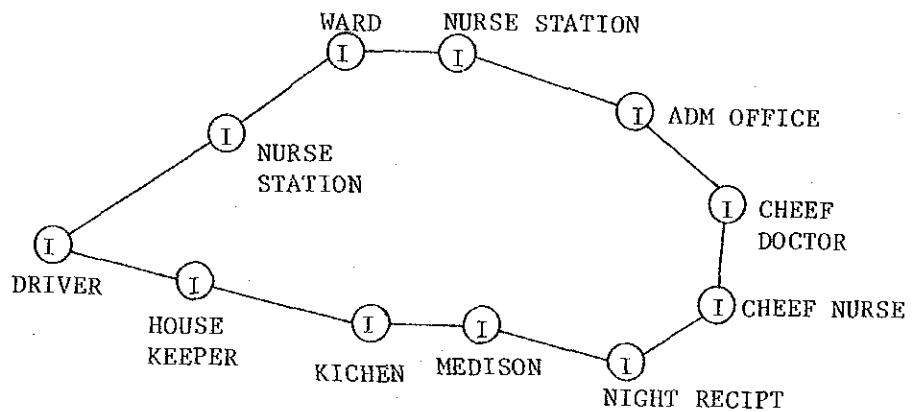
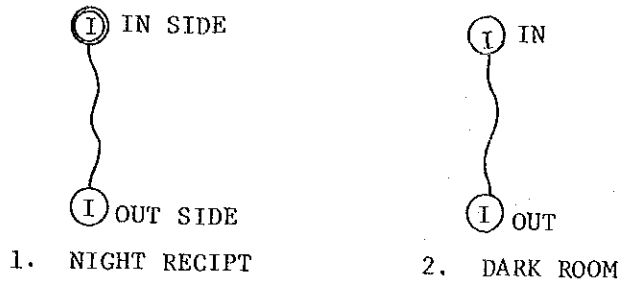


d. Intercom system

Those rooms necessary for the management of the hospital are to be equipped with an intercom system.

- i. Intercom for night reception. To be used for communication with visitors at night.
- ii. Intercom for the dark room. To be used for communication with those outside the room.
- iii. Intercom for internal communications.

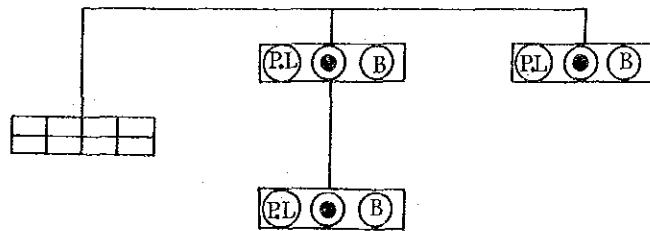
To facilitate satisfactory management of operations involving the medical staff, nurse stations and the office.



3. INTERCOM

(8) Fire alarm system

A fire alarm system is to be installed to carry out initial fire fighting activities satisfactorily. The person who discovers the fire presses the nearest push button to sound the alarm. This is annunciated on the main alarm panel in the office with a buzzer sounding at the same time. Thus the office may be able to provide guidance for evacuation, rescue and fire fighting activities.

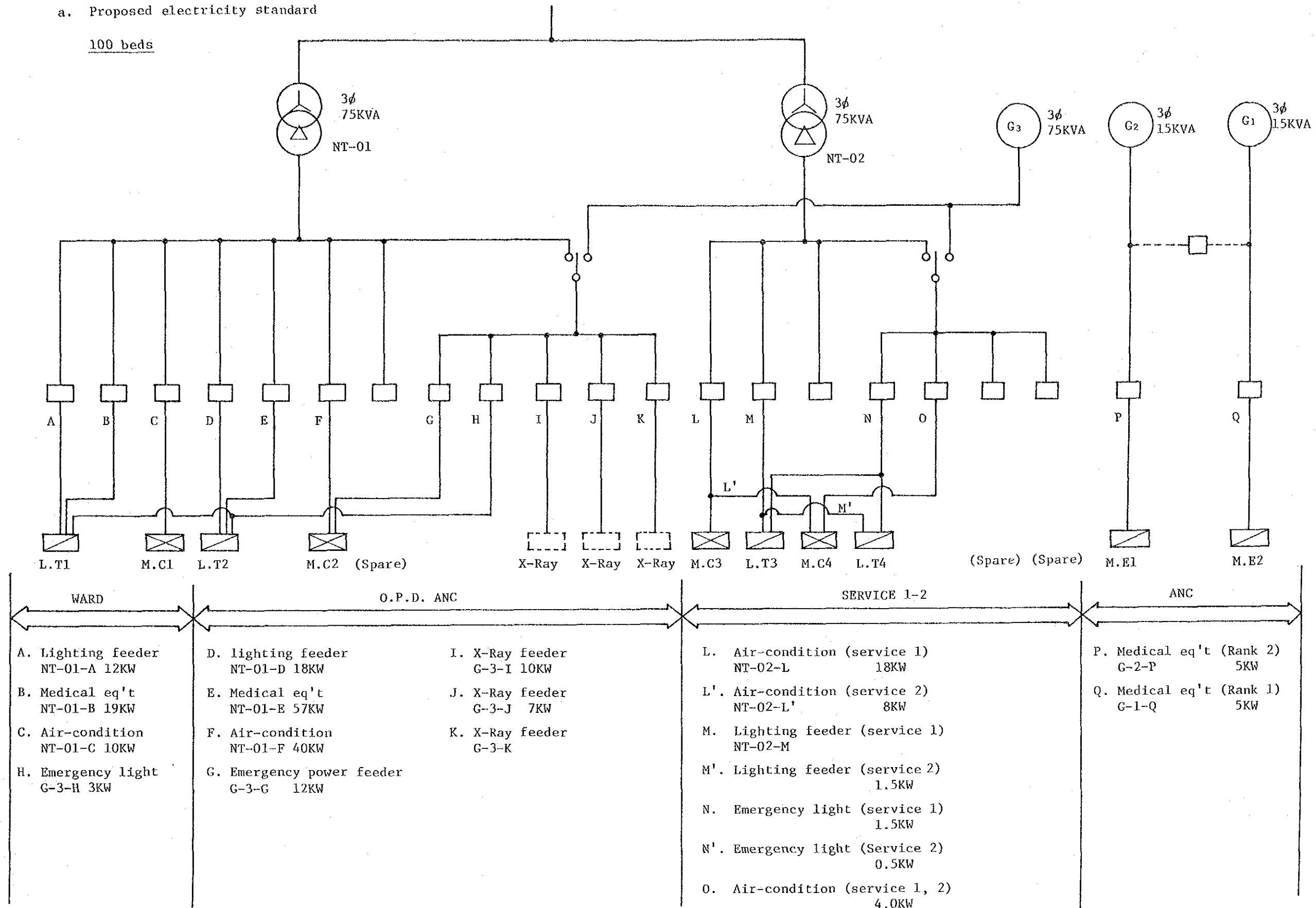


Legend

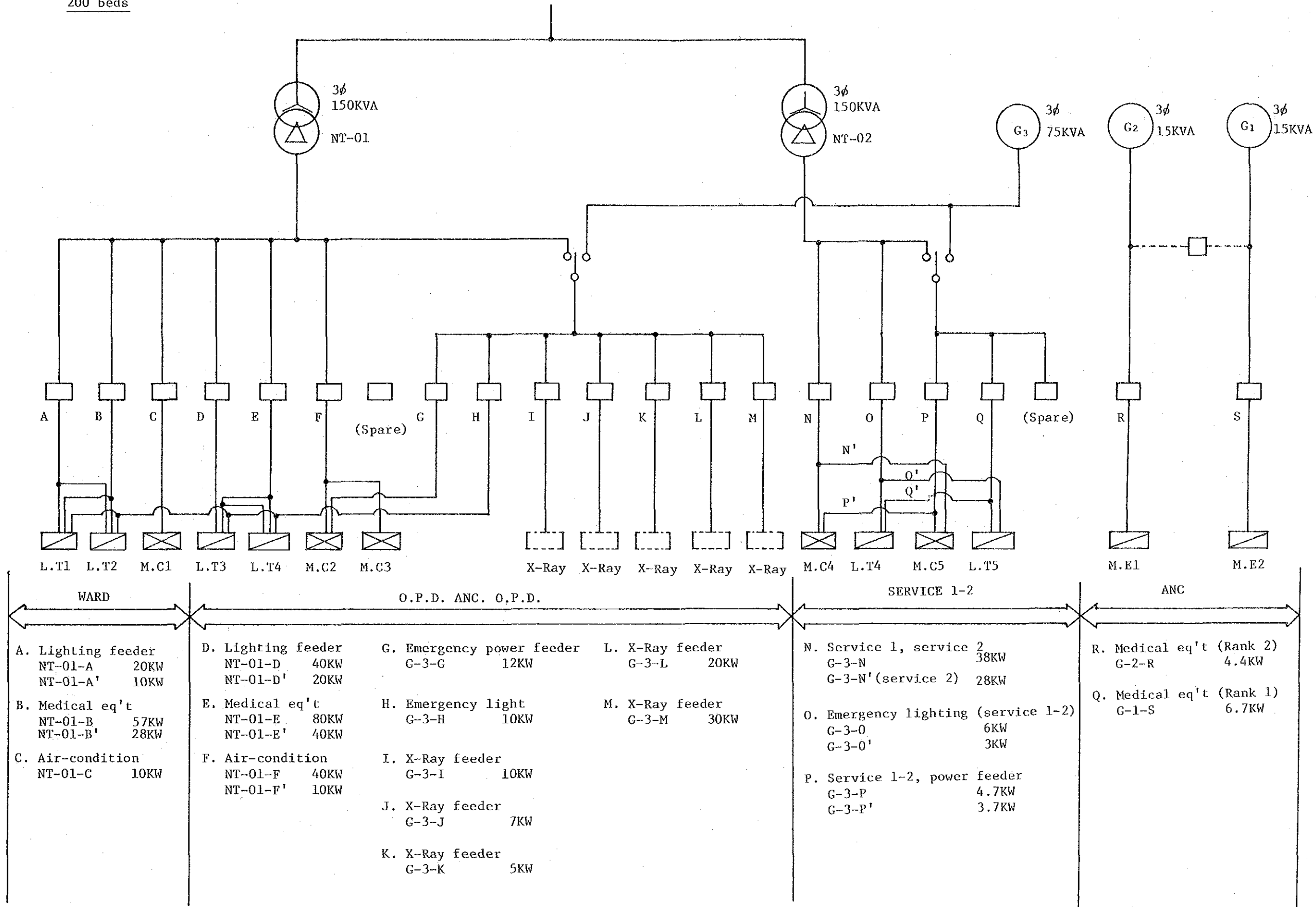
	Main alarm panel		Sign lamp
	Push button switch		Bell

a. Proposed electricity standard

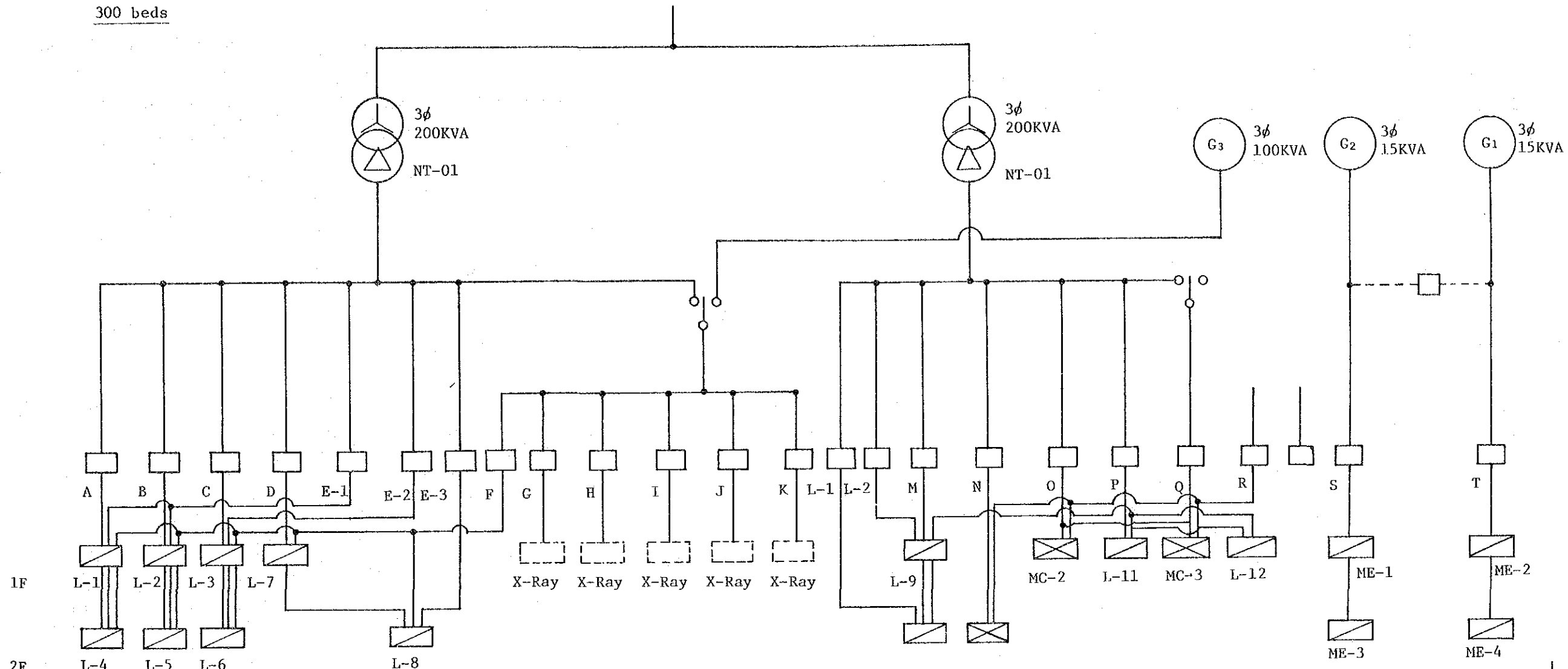
100 beds



200 beds



300 beds



WARD		A.D.M	O.P.D	A.N.C		SERVICE 1-2		A.N.C.	
A. Lighting feeder NT-01-A 10KW		D. Lighting NT-01-D 8KW	E-3 Medical eq't NT-01-E-3 25KW	G. X-Ray feeder	G-3-G 10KW	O. Power NT-02-0 50KW		S. Medical eq't (Rank 2) G-2-S 6KW	
B. Lighting feeder N-01-B 10KW			F. Emergency lighting G-3-F 10KW	H. " G-3-H 7KW		P. Lighting NT-02-P 4KW		T. Medical eq't (Rank 1) G-1-T 10KW	
C. Lighting feeder NT-01-C 10KW				I. " G-3-I 5KW		Q. Emergency lighting G-3-Q 10KW			
E-1 Medical eq't NT-01-E-1 30KW				J. " G-3-J 20KW		R. Emergency power feeder G-3-R 20KW			
E-2 Medical eq't NT-01-E-2 30KW				K. " G-3-K 30KW					
				L-1 Medical eq't NT-02-L-1 40KW					
				L-2 " NT-02-L-2 40KW					
				M. Lighting NT-02-M 37KW					
				N. Air-condition NT-02-N 45KW					

10. Air Conditioning and Plumbing

As for water supply and other facilities, standards for various items are basically to be confined to those in volume and in quality. Thus the items may be outlined as below.

- 1) Water supply: minimum water supply required per day, water quality.
- 2) Hot water supply: minimum hot water supply .
- 3) Drainage: quality of the drainage, standard for processing special drainage.
- 4) Air-conditioning and ventilation: minimum requirement for air-conditioning, air cleaning equipment.
- 5) Kitchen: outline plan.
- 6) Laundry: outline plan.
- 7) Medical gas and LPG: minimum supply of gas required for medical purposes.
- 8) Incineration: outline plan.
- 9) Fire fighting: installation standard.

On the other hand, the system has to be examined and determined individually based on the standard given above, by taking account of the characteristics of each hospital. However, Volume, Quality and System will all be considered here as they have been examined by giving consideration to the characteristics of the project hospital and, as such, can be regarded as forming the standard plan for the project hospital. Accordingly, what follows below is based on the assumption that the standards regarding the volume and quality are of a basic nature and those regarding the system may be devised in various ways according to the individual case.

The standards regarding the volume and quality are to be determined by taking account of the following matters:

- ① Social and regional characteristics and analysis of present condition.
- ② Grade and size of the hospital.
- ③ Forecast.
- ④ Various standard codes.

- ⑤ Various effects on regional environment.
- ⑥ The hospital to set a good example for health and hygiene to the region.

The system is to be determined by taking account of the following matters:

- ① To be flexible in view of possible change or increase.
- ② Low running cost
- ③ Easy and safe operation.
- ④ Specifications are to be standardized as much as possible.
- ⑤ Equipment is to be duplicated in readiness for a breakdown.
- ⑥ Trouble-free and good durability.

1) Water supply facilities

(1) Minimum water supply required per day

This size of the hospital, fields and the scope of treatment, contents of service facilities, the system of air-conditioning, etc. may be regarded as the factors which determine the amount of water supply. Further, social characteristics of the country or the region and the future outlook are also to be taken into consideration.

Though the number of beds, the number and occupations of employees, and the equipment used may all be used as a barometer for determining the amount of water supply, normally the number of beds is used as the indicator.

For the reasons already given, actual data on water consumption of each hospital could not be obtained and the present condition, therefore, could not be ascertained accurately during the present survey. However, as far as we could gather, water consumption was considerably small judging from the insufficient amount of water for flushing the toilet and the amount of water from the tap of the washbasin, and there seemed to be no water supply at all during a certain period of the day. Since the problem of insufficient water supply was pointed out by the staff of most hospitals, it is impossible to ascertain the standard amount of water supply from the present water consumption.

As for the data in other countries, those in Japan show 500~800 ℓ/day per bed in the case of a medium-sized hospital and recent data give 1,000~2,000 ℓ/day per bed. However, it is to be remembered that the Japanese data include the water supply for air-conditioning. The U.S. Department of Health gives the figure 1,200 ℓ/day per bed.

For information, water consumption may be computed as below.

a. Computation of water supply required according to users: (for 100 beds)

Inpatients: 100 beds × 0.8 = 80 persons,
80 persons × 150~200ℓ/day = 12~16m³

Outpatients: 100 beds × 0.8 = 80 persons,
80 persons × 40~60ℓ/day = 3.2~6.4m³

Staff: 100 persons × 0.8 = 80 persons,
80 persons × 150~200ℓ/day = 12~16m³

Total: 27.2~35.2m³/day

b. Computation of water supply required according to the use: (for 100 beds)

1. Living water:

Inpatients: 100 beds × 0.8 = 80 persons,
80 persons × 50~75ℓ/day = 4~6m³

Outpatients: 100 beds × 0.8 = 80 persons,
80 persons × 20~30ℓ/day = 1.6~2.4m³

Staff: 100 persons × 0.8 = 80 persons,
80 persons × 50~75ℓ/day = 4~6m³

Sub-total: 9.6~14.4m³/day

2. Medical and services:

Central treatment:	5~5.5 m ³
Laboratory:	2~2.2 m ³
Out-patient:	1~1.2 m ³
Kitchen:	6~7 m ³
Laundry:	4~5 m ³
<hr/>	
Sub-total:	18~20.9 m ³
Total:	27.6~35.3 m ³

With higher standards of living and improved medical service in future, this total of water supply is to be doubled.

In the Philippines, the following figures are given for information:

General, Medical center 570~870 l/day per bed

Provincial, Emergency hospital 600 l/day per bed

Judging from the present condition, the above figures seem to be reasonable and the standard plan may be formulated as below.

Medical center,
Regional hospital 800 l/day per bed
(300~400)

Provincial hospital 600 l/day per bed
(250~300)

() : Anticipated volume by actual utilization.

However, these figures are valid only under the conditions 1) water saving equipment is to be used as much as possible; 2) no water supply for air-conditioning; 3) medical equipment recommended by the present standard plan is to be used; and 4) each person is to make every effort to economize on water. Though there should be sufficient water supply to meet requirements, unnecessary waste should be avoided by all means.

(2) Water quality

Based on the National Standards for Drinking Water 1978 (MOH).

(3) Water supply system

a. Factors to be considered in planning.

- i) A group of low-rise structures on a large site.
- ii) Minimum pressure required for medical equipment is to be secured with as few fluctuations as possible.
- iii) Being a hospital, special attention is to be paid to hygiene.
- iv) Capable of dealing with power failures.
- v) Attention is also to be paid to economy on electricity.

b. Comparison of systems.

	Elevated water tank system	Pressure tank system	Direct pumping system
Supply to a large site	Δ A platform of a considerable height will be required.	o	o
Fluctuations in pressure	o	Δ	Δ
Hygiene	Δ Periodical cleaning of the elevated water tank will be required.	o	o
Supply during a power failure	o	* x	* x
Costs of facilities	Δ	Δ	o
Maintenance and control	o	Δ Periodical supply of compressed air will be required.	o
Space for installation	o (Outdoor)	Δ	o

* Own power unit will be able to cope with the situation.

c. Basic system

The basic system may be outlined as below.

- i) The source of water supply varies from case to case; it may be a public water system, well, fountain, etc. Here it is assumed that a well, the most common type, will be used.
- ii) The water supply system is to be the direct pumping system coupled with an auxiliary elevated tank. Small capacity elevated tanks are to be installed for each toilet in wards and living quarters for the purpose of flushing late at night so that the pump may be turned off.

Water is supplied to these tanks normally through ball taps; but the water supply is turned off during late hours at night and the tank-load of water is used to flush the closet. Other systems are to be based on the direct pumping system.

- iii) In order to be prepared for changes in the water supply condition in future, three separate water supply systems are to be installed: H. Drinking water supply system; M. General water supply system; and L. Toilet flushing water supply system.

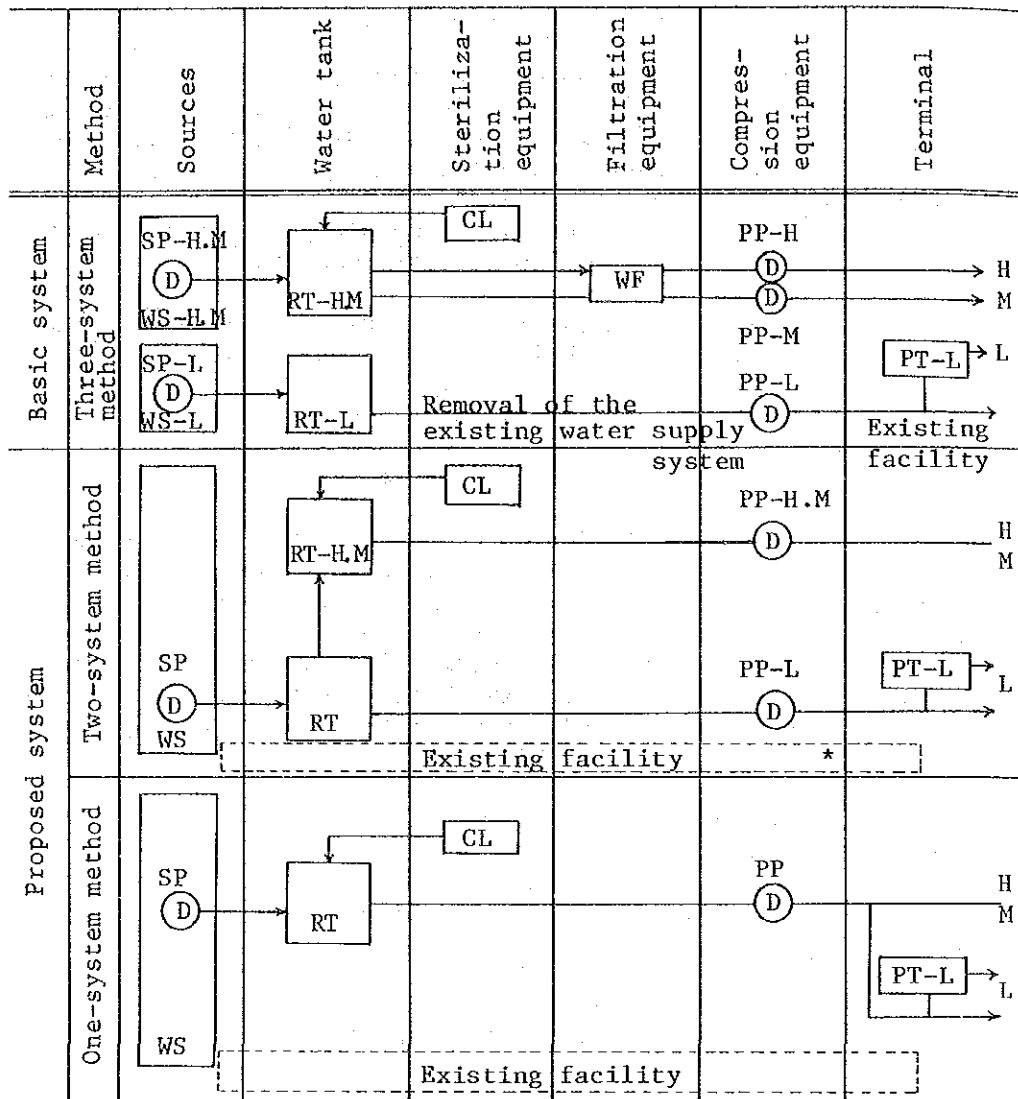
This is because of various reasons such as 1) since the grade of water quality may vary according to the system and, therefore, processing can be carried out according to the grade; 2) especially the L water supply system does not involve the problem of water quality and the increase in demand in future may be met by obtaining the water from a shallow well or a river; and 3) response to water re-cycling planning will be easy if the supply condition deteriorates due to a water shortage in future.

The reader is asked to consult the flow sheet of the basic system.

d. Proposed system

Though the above division of water supply is ideal, in view of the hospital scale, cost and maintenance, the simplified system was adopted as below.

- i) One-system supply method is to be adopted at small scale hospitals.
- ii) Two-system supply method is to be adopted at large scale hospitals.
- iii) Future expansion to two systems in the case of (a) and three systems in the case of (b) is to be taken into consideration.
- iv) Source of water supply is to be sought mainly in deep wells and existing sources are to be used for reserve.
- v) Water supply facilities are to operate on one system for the time being; but the two-system method is to be the rule in future.



Note: Two-system method ... bed capacity over 201.
 One-system method ... bed capacity below 200.

WS: water source. WL: filtration equipment.
 SP: water source pump. PP: pressure pump.
 RT: water tank PT: auxiliary elevated tank
 CL: chlorine sterilization (for flushing the closet).
 equipment.

e. Selection of the capacity of equipment

Hospitals may be classified into four categories according to the bed capacity: 100, 200, 300 and 450 beds. Further, of these hospitals, those with the bed capacity of below 200 are mainly provincial hospitals. Accordingly, the required water supply may be estimated to be 600ℓ/day per bed, and 800ℓ/day per bed for larger hospitals. Thus the amount of water supply required may be determined as below.

Number of beds	Water supply per day A	Average water supply per hour B = A/10	Maximum water supply per unit hour C = 2B	Water supply at peak periods * D = 1.25 ~ 1.5C
450	180~360m ³ /day	300~600ℓ/min.	600~1,200ℓ/min.	750~1,500ℓ/min.
300	120~240	200~400	400~800	600~1,200
200	60~120	100~200	200~400	300~600
100	30~60	50~100	100~200	150~300

* D = 1.25C only for 450; D = 1.5C for others.

Accordingly, the capacity of each equipment may be determined as below.

Number of beds	Well pump SP (ℓ/min.)	Water tank RT (m ²)	Pressure pump * PP (ℓ/min.) x number of pumps
450	400	1) 60 2) (60)	200 x 2 (200 x 2)
300	400	1) 60 2) (60)	200 x 2 (200 x 2)
200	200	60	100 + 200 (+200)
100	200	30	100 + 200

* Pump rotation start and parallel operation is to be employed.

** (): Future plan

The capacity of the auxiliary elevated tank may be determined by assuming the number of persons who use the closet during late hours at night and by estimating the amount of water supply required.

As for the chlorine sterilization equipment, chlorine is to be added to the water in such a quantity that the chlorine content in the water supply will be more than 0.1 ppm.

When a well is dug, care is to be taken so that the top of the casing will be well above the water level during the wet season. Further, the casing is to be protected by bentonite or cement carefully filled to a depth of 20 ~ 30 m from the surface so that surface water such as rain water or drainage will not enter the casing through the re-filled earth.

2) Hot water supply facilities

Project hospital

To be applicable to all hospitals as a standard.

Areas of hot water supply

Showers in wards, living quarters and similar facilities.

Hot water supply system

LPG instant water heater is to be installed in each shower room.

3) Drainage facilities

As has been described already, only Baguio is provided with a public sewerage system; but even there sewage is not processed and is discharged into rivers. Accordingly, the drainage facilities discussed here are based on the assumption that each hospital processes its own drainage.

Drainage system and processing system

(1) Factors to be considered in planning.

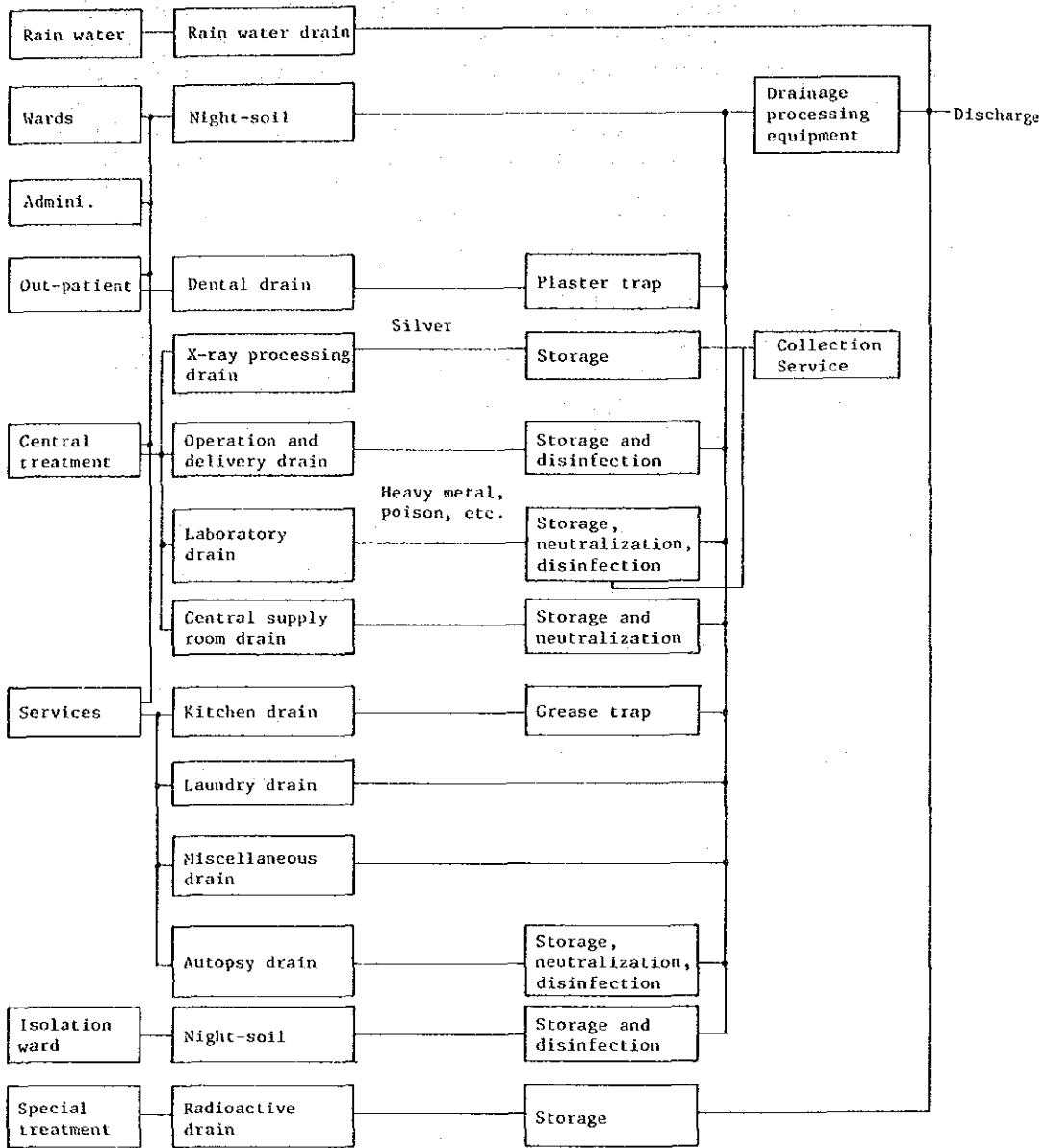
- a. There are various types of drainage available for hospitals.

- b. For sanitary and hygienic reasons special consideration is to be given to contamination and infection through the drainage.
- c. Since the water source is within the same site in most cases, sufficient care is to be taken regarding the discharge of processed drainage.
- d. To be prepared for a power failure. Consideration is also to be given to economy on electricity.
- e. Maintenance and control are to be difficult.

(2) Basic drainage system

The basic drainage system is shown next page.

Basic drainage system



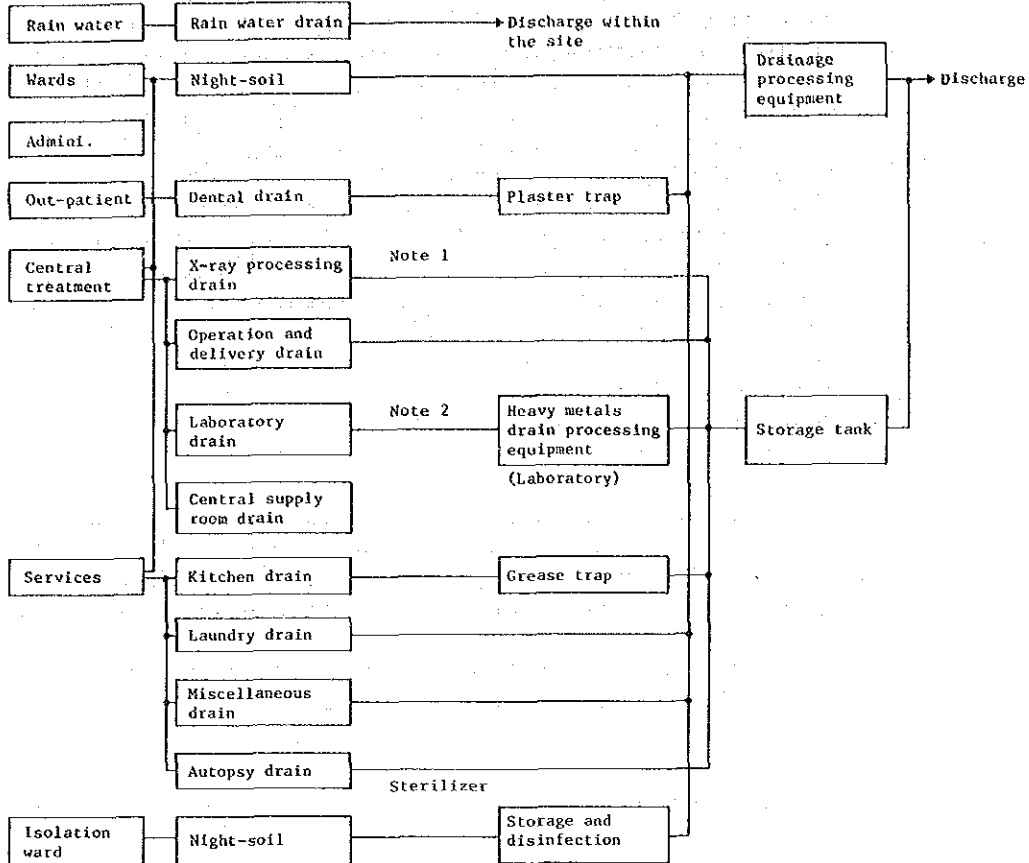
(3) Proposed drainage system

Considering that the existing hospitals do not have many types of special drainage and have no collection service, the proposed drainage system calls for the storage, dilution and direct release of the discharges. Depending on the quality of the initial drainage two plans are suggested. The first (Plan I), involves adopting a combined treatment system from the outset to guarantee minimum standards of water quality; while the second (Plan II) would initially treat only human excrement (night-soil) releasing other types of drainage without treatment leaving open the future possibility of adding on a combined treatment system to guarantee minimum standards of water quality. The minimum standard is ideally less than 20 ppm; the first Phase of the second plan will bring it down below 90 ppm.

However, consideration is to be given to the possibility of altering the system in case the amount of special drainage increases in future or the collection of silver and other heavy metals becomes possible.

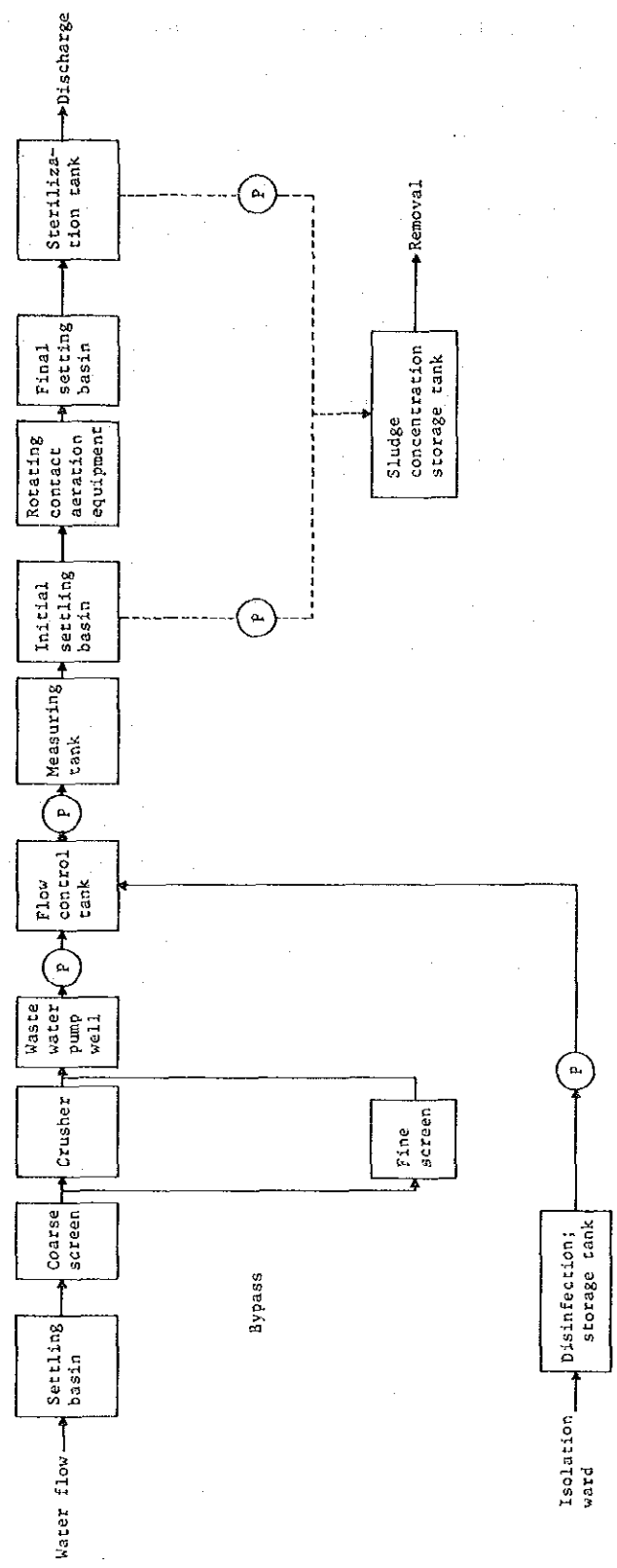
The drainage system and the processing system differ depending on the plan.

Plan I Drainage system: flow sheet

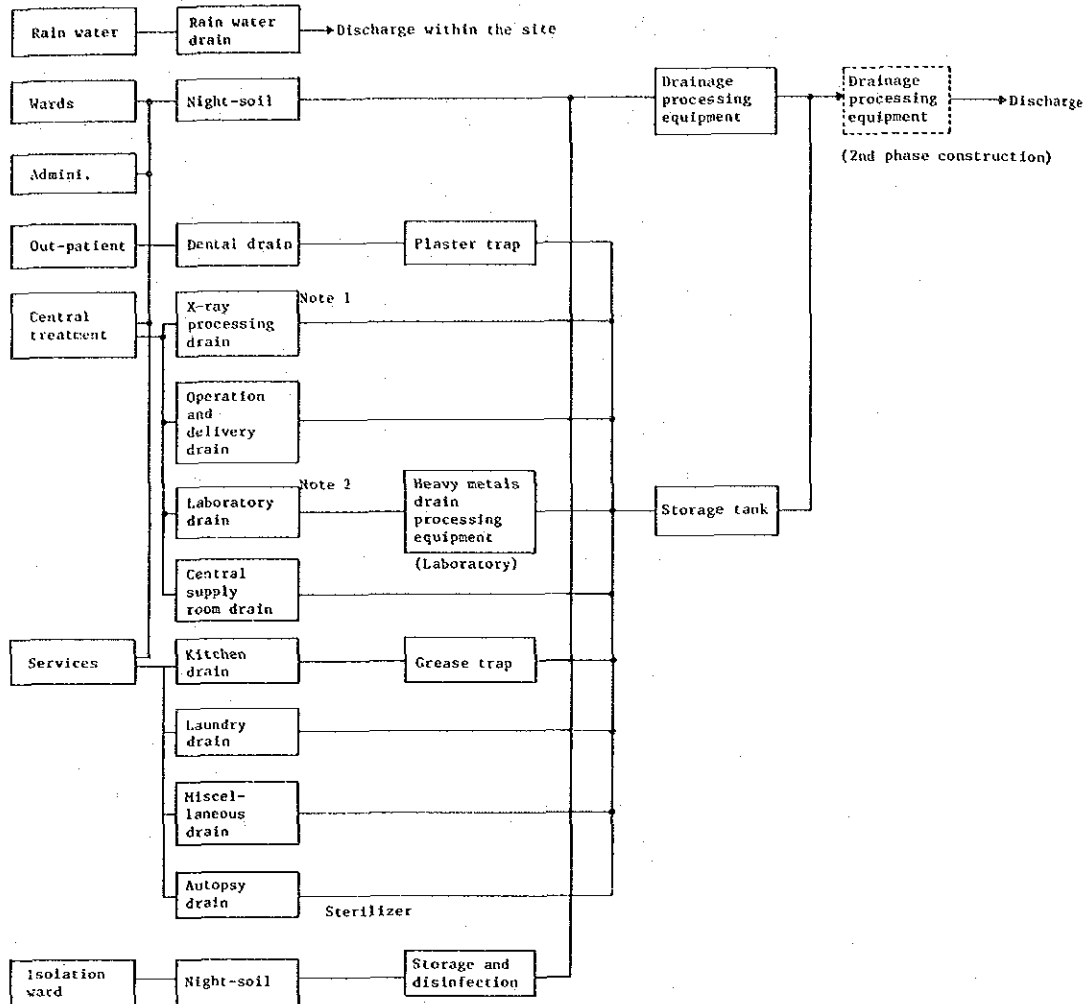


- Notes: 1. X-ray processing drain: No commercial firm to collect. It will be necessary to introduce processing by a commercial firm in future.
2. Laboratory drain: Heavy metals drain processing equipment is to be installed at those hospitals having more than 200 beds (see the List of medical equipment). As for other hospitals, since the amount consumed is small at present, the equipment does not have to be installed, though it may become necessary in future as the consumption increases.

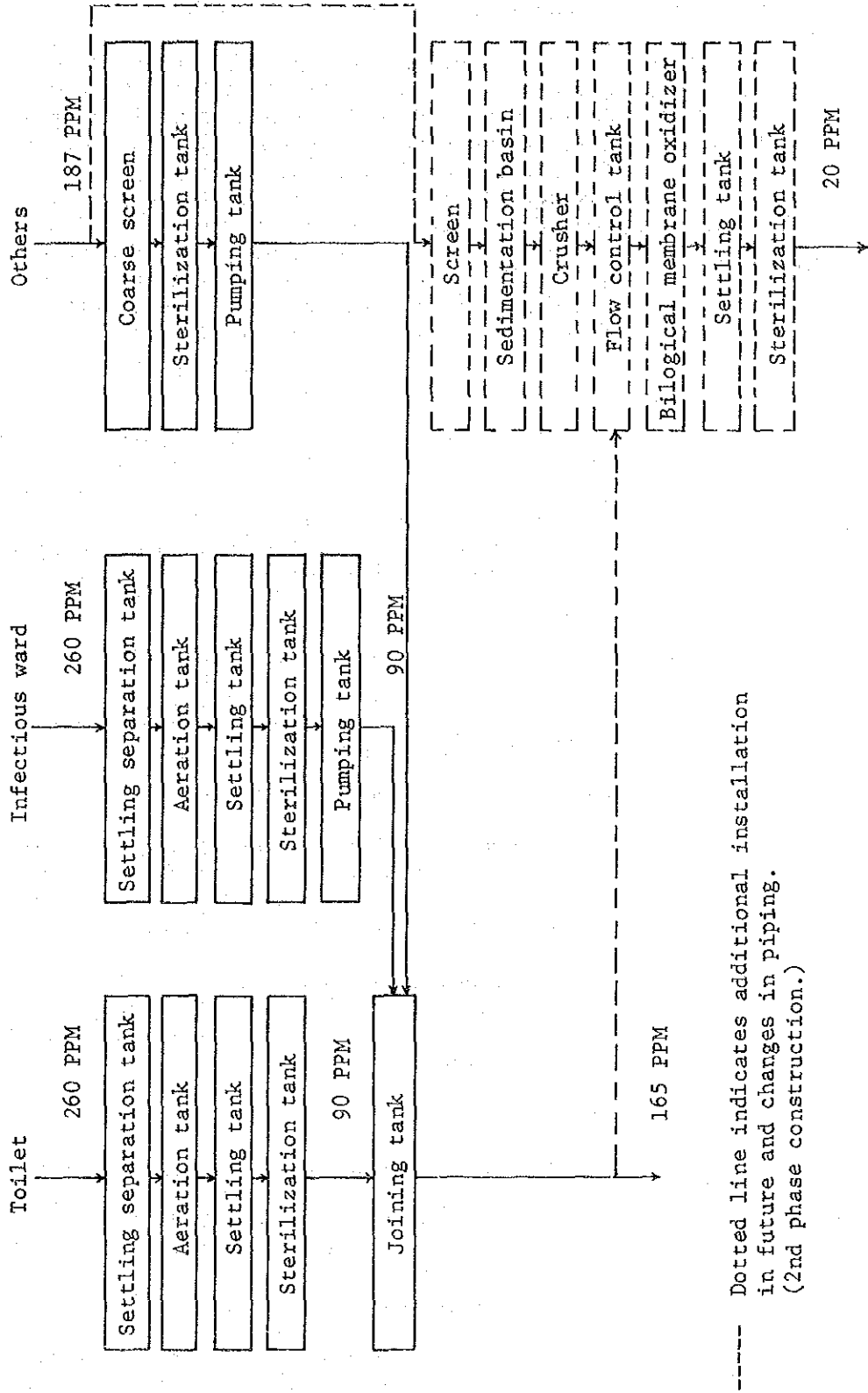
Plan I Drainage processing system: flow sheet



Plan II Drainage system: flow sheet



Plan II Drainage processing system: flow sheet



----- Dotted line indicates additional installation in future and changes in piping. (2nd phase construction.)

(4) Discharge of the processed drainage

The processed drainage has to be discharged where it is least likely to affect the regional environment. Especially when a well is used, adequate measures are to be taken to prevent surface water from going into the water supply. Further, the percolation method is not to be used where inundation occurs during the wet season, and advanced processing will be required if rigid control of water quality is necessary as the drainage is discharged into the waters (sea or river) where culture is being carried out. In any case, it is hoped that a network of public sewerage system will be developed so that advanced processing can be carried out.

Since most of the project hospitals are located within a distance of a few hundred meters from a river or the sea, exclusive drainage pipes are to be installed. However, in designing, the route is to be determined after land forms, roads and private land have been sufficiently studied.

4) Air-conditioning and ventilation facilities

Area for the installation of air-conditioning and air filtration facilities

(1) Factors to be considered in planning

- a. Through the study of the construction plan and the structure, area for air-conditioning at the entrance is to be reduced as much as possible (energy saving, low cost, safety).
- b. Air-conditioning and air filtration facilities are to be installed where they are in real need such as medical work by physicians and treatment of patients.

(2) Installation areas

a. Air-conditioning and filtration facilities:

Operating room (with HEPA filter), delivery room, newborn and premature babies room, ICU.

b. Air-conditioning facilities:

Rooms inside the clean zone of the central treatment block and others (NS, physicians' rooms, labor room, corridor). Cobalt room.

However, air-conditioning facilities are to be excluded from the two hospitals of Baguio and Bontoc as constant air-conditioning is not required.

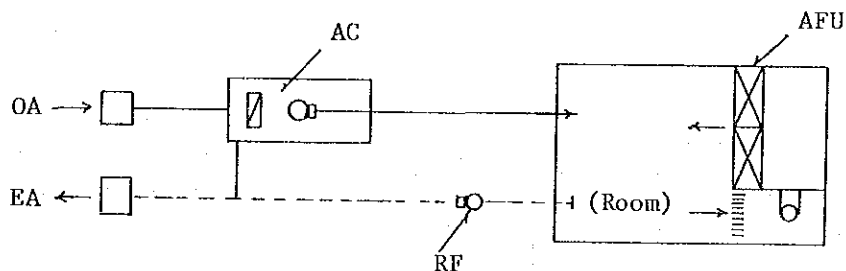
Air-conditioning and filtration facilities

(1) System

At present the air-cooling window-type packaged air-conditioning unit is invariably used at the project hospitals. However, this is merely to lower the room temperature and can hardly be expected to function as an air-filter unit. Further, one unit will not be sufficient for a larger room and will produce a considerable noise. Thus it is not suitable for the central treatment block of a hospital. Those hospitals under construction seem to be provided with a central air-conditioning facilities. In that case, however, unless minute consideration is given to the system as a whole, various problems may arise such as infection through the hospital due to the incorrect balance of airflow and unnecessary increase in running cost, etc.

Accordingly, in order to solve these problems, the air-conditioning unit may be divided up according to the running period and the objective, and the HEPA filter unit is to be added for those rooms where air-filtration is required so that the entire system may be simplified and the running cost may be reduced by individual operation.

The flow sheet and equipment may be outlined as below. However, the two hospitals of Baguio and Bontoc are to be provided with air supply fans instead of air-conditioning units.



AC: Air-cooling remote-controlled packaged air-conditioning unit.

RF: Return blower.

AFU: HEPA filter unit (with circulation fan)
if air-filtration is required.

OA: Outer air.

EA: Exhaust air.

(2) Division of the system

The entire system may be divided according to the running period and the objective as below.
If there is more than one operating room or delivery room, it is to be divided further into several groups.

Room	Running period	Control unit		Degree of air-cleaning	Division of the system			Air-filtration facilities
					100B	200B	300B	
Operating room	As required			High	1 set (2 rooms)	2 sets (3 rooms)	3 sets (6 rooms)	Installed separately in the room
Delivery room					1 set (1 room)	1 set (2 rooms)	1 set (2 rooms)	
Newborn and premature babies room	24 hours			Medium	1 set	1 set	1 set	Not required
ICU								
NS				Low				
Physicians' rooms								
Labor room								
Corridor	As required			1 set if there is the Cobalt room				
Cobalt room								

(3) Circulated air flow volume

Room	Total number of air circulations (N/hr)	Number of outer air circulations (N/hr)
Operating room, delivery room, and nursery and premature babies room.	8~12	2~5
ICU	4~6	1.5~2

o Ceiling height is assumed to be 3 m.

o Depends on the load and the number of persons

(4) Cooling load

According to the meteorological data, specifications of the building and the use of the room, the cooling load has been computed and ascertained per unit floor space as below. This is to compute the capacity of the air-conditioning unit, and the cooling load has to be computed individually.

Room		Cooling load (Kcal/m ² hr)
Operating room. Delivery room. Newborn and premature room.	Facing the outer wall at the side	310
	Other cases	280
ICU, NS Physicians' rooms		170
Labor room		120
Corridor		45
Cobalt room		170

Temperature condition is to be as below.

Room: 25°C 60%

Outer air: 35°C 70%

In those areas where the outer air temperature is above 35°C, it may become necessary to reduce the cooling load by reducing the outer air flow volume.

Areas for the installation of ventilation facilities

- Central supply room, auto clave room
- Laboratory (if there is a draft chamber, an exhaust duct is to be installed individually).
- Dark room
- Sterilization room
- Mortuary, autopsy room
- Kitchen
- Laundry
- Toilet, shower room

Ventilation system

In the case of a low-rise structure, areas which require ventilation are scattered and almost all rooms face the outside. Accordingly, the individual ventilation method has been considered suitable.

5) Food service

Outline plan

The food service system adopted at various hospitals at present is in almost all cases based on the central dietary method. The demerits of this method concern the hygienic aspect of transporting food to the ward and problem of keeping the meal warm during the transportation. On the other hand, it has the merit of reducing the staff.

In the case of the hospital covered by the present survey, since the number of beds is relatively small and the wards are not scattered, the central dietary method is to be adopted by examining the position of the kitchen and the service route to the ward so that the demerits of the method may be reduced even by a small degree and the merit of low running cost may be utilized.

The number of servings is to be determined on the assumptions that inpatients and those members of the staff who use the canteen are to be served and that the capacity is to have enough room to prepare special food for some of the inpatients.

As for fuels, LPG is normally used. As it is easy to obtain and the running cost is low, the use of LPG is to be the rule. However, in those areas such as Batanes where means of transport of supplies are limited, prospects of future supply are to be studied.

Sterilization of utensils is to be carried out especially thoroughly with those used by infectious patients. The method of using a disinfectant is not suitable as it leaves a strong smell on utensils. Accordingly, in the present case the conventional method of boiling is to be adopted.

Kitchen equipment is to be decided by taking account of the above points, the menu, the method of storage, and the method of collection. Freezers and refrigerators are not being used very effectively at present; it will be necessary to use them positively in future.

6) Laundry

Outline plan

About half of the project hospitals are not provided with a laundry. Accordingly, there is a danger of germs of various kinds carried away from hospitals. In fact, it does not seem that adequate attention is given to sterilization. Further, under the present condition, it seems difficult for each area to be provided with a hygienic laundry service. Accordingly, each hospital should be provided with laundry facilities.

With regard to the amount of washing, it may be computed as below on the assumption that the bedding for inpatients are to be washed every other day (sheets, covers, pillow cases) and others as required (white gowns, nursing gowns, operating gowns, etc.).

Washing load per day: 1.2 kg/bed per day.

Washing hours: 5 hr/day.

As for energies, in the case of a large scale establishment, it is effective to use steam for dryers and sheet rolls. However, since steam facilities are not provided under the present plan, LPG is to be used positively.

For sterilization, chemical sterilization by lysol solution is to be carried out.

Dryers are to be installed as natural drying is difficult during the wet season; but drying space is provided outside for natural drying during the dry season.

There were many cases of faulty washing machines left unrepaired. Training should be given so that maintenance and control of equipment can be adequately carried out.

7) Medical gas and LPG facilities

Areas requiring supply of medical gas

Bombs are to be centrally placed and only oxygen (O_2) and nitrous oxide (N_2O) are to be supplied to the rooms. Vacuum equipment is to be the portable type (see the section on medical equipment).

a. Oxygen supply areas:

Operating room, delivery room, ICU, nursery and premature babies room.

b. Nitrous oxide supply areas:

Operating room, delivery room.

Areas requiring supply of LPG

- Laboratory, central supply room
- Kitchen, laundry
- Living quarters
- Water heaters in shower rooms

Outline plan

It seems that the supply cycle of gas bombs is 7-10 days on Luzon at present. Under the present plan, maximum supply for 20 days is to be ensured by an automatic alternative device assuming that the supply cycle is 10 days. Further, spare bombs are to be stored in a warehouse for emergencies.

Medical gas bombs are to be centrally placed in the central treatment block or in its vicinity to be supplied to those areas within the block requiring the supply through piping.

Since those areas requiring LPG are scattered, the bombs are also to be placed accordingly.

8) Incineration facilities

Outline plan

The waste produced in hospital includes, apart from ordinary waste paper, those from the kitchen, drugs, operation and autopsy. Accordingly, an incinerator with an oil burner is to be used so that effective incineration may be carried out. Therefore, the Medical Center and the Regional Hospital are to have the incinerator with an oil burner installed, and other hospitals with the self burning type. As a fuel, gas oil (diesel oil) is to be used as in the case power generation.

For the incinerating room, oil tank (for additional burner), waste stock space and work space are to be taken into consideration.

Processing capacity may be computed as below.

Amount of waste produced per day:	1.5 kg/bed per day
Working hours:	5 hr/day
Capacity per hour:	0.3 kg/bed per hour
Average heating value:	2,000 Kcal/kg (with oil burner)
Required additional fuel:	1,000 ~ 1,500 Kcal/kg (with oil burner)

9) Fire fighting facilities

Outline plan

Fire fighting facilities are basically to satisfy the requirements prescribed under the Fire National Code and other related regulations. However, under the present plan, consideration is to be given to practical application. Thus, those portable fire extinguishers provided at each hospital are to be given special space in each block so that they may be used effectively. However, with the enforcement of the Fire National Code, it may be necessary to provide additional facilities, though they are not included in the present plan.

IV-4 HOSPITAL STANDARDIZATION PLAN PROPOSALS

1. Proposed Floor Area Standard

TABLE-IV-4-1 PROPOSED FLOOR AREA STANDARD

1.		(m ²) 100 Bed	(m ²) 200 Bed	(m ²) 300 Bed
ANC (Ancillary)	Pharmacy	21.6	64.8	64.8
	Viewing	20.52	} 48.6	64.8
	Conference			54
	Film Processing	8.36	11.4	11.4
	Control	22.72	33.6	33.6
	Storage	29.05	82.62	
	Nursery	35.1	41.8	39.9
	Morgue Autopsy	40	48	90
	Machinery	16	58.8	54
	Gas	8	16.8	
	Physical therapy			64.8
	Sterilizing	17.5	32.2	45
	Nurse Station	21.6	39.2	41.2
	Labor	16.2	27	32.4
	Delivery	21.6	64.8	64.8
	Preparation	12.8	} 15.2	} 22.8
	(Ablution) Bath			
	ICU		37.8	54
	Central Sterile Supply	54	64.8	97.2
	Doctor	16.2	} 16.2	16.2
	Staff			32.4
	Shower & Toilet	19.25	70.2	112.86
	Major OP	32.4	64.8	129.6
	Scrub		} 11.34	18.9
	Washing			
	Inner examination			16.2
	X-ray 1	22.8	22.8	22.8
	X-ray 2	22.8	22.8	22.8
	X-ray 3		22.8	22.8
	Laboratory 1	32.4	32.4	32.4
	Laboratory 2		16.2	32.4
	Laboratory 3		64.8	32.4
	Laboratory 4		32.4	48.6
Laboratory 5		32.4	48.6	
Laboratory 6			32.4	
Laboratory 7			54	
EKG EEG	16.2			
Minor OP	21.6	22.8	45.6	
Recovery	16.2			
Bacteriology	4.5			
Corridor	257.25	558	685.8	
Step		30.24	60.48	
Reception			32.4	
Locker			45.36	
Total		806.65	1,707.6	2,379.6

2.		(m ²) 100 Bed	(m ²) 200 Bed	(m ²) 300 Bed
O.P.D. (Out-patient department)	Family Planning	16.2	21.6	21.6
	Waiting	16.2	21.6	21.6
	OB Gynecology	16.2	21.6	21.6
	E	} 16.2	} 21.6	32.4
	ENT			32.4
	Dental	16.2	21.6	24
	Under 6	16.2	} 21.6	21.6
	Malnutrition			21.6
	Pediatrics	16.2	21.6	21.6
	Medicine	32.4	43.2	108
	Treatment	16.2		43.2
	Surgery	16.2	21.6	43.2
	Minor OP		27	30
	Night reception	18	16.2	11.34
	Locker	6	22.68	11.34
	Toilet	24.3		38.88
Corridor	107.7	263.88	336.6	
Step		30.24	30.24	
Total		334.2	576	871.2
ADM (Administra- tion)	Lobby	54	37.8	111.6
	Acct. Information	10.8	16.2	} 64.8
	Office (Acct.)		48.6	
	Toilet			38.88
	Office	54	48.6	64.8
	Adm. Officer	16.2	32.4	32.4
	Drawing R.	16.2	32.4	32.4
	Director's	16.2	32.4	32.4
	Nursing Director's	16.2	32.4	32.4
	Chief of medical staff			32.4
	Library	64.8		64.8
	Staff		48.6	97.2
	Medical Records	36	64.8	97.2
	Corridor	122.55	301.68	291.6
Step		30.24	30.24	
Storage		16.2	86.4	
Locker	12	38.88	22.68	
Conference		64.8	64.8	
Total		418.95	846	1,197

3.		(m ²) 100 Bed	(m ²) 200 Bed	(m ²) 300 Bed
WARD (Patient department)	Ward	712.8	1,425.6	2,138.4
	Nurse Station	81	162	243
	Shower & Toilet	48.6	97.2	145.8
	Linen Storage	15.3	30.6	91.8
	Pantry	9	18	54
	Clinical Toilet	24.3	71.28	22.68
	Corridor	433.8	932.4	1,841.4
	Storage		68.04	113.4
	Step		96.48	90.72
Total		1,324.8	2,901.6	4,741.2
SERVICE	Laundry Linen	97.2	129.6	165.6
	Dietary	129.6	194.4	248.4
	Cafeteria	64.8	64.8	82.8
	Incinerator	24	24	36
	Electrical	24	24	36
	Generator	72	36	36
	Engineering Service	36	36	54
	Garage	36	36	54
	Machinery	24	24	54
	Storage	36	72	72
	Corridor			158.4
Total		543.6	640.8	997.2
ROOFED PASSAGE SLOPE		54	108	432
			108	108
TOTAL		3,482.2	6,924	10,726.2

2. Proposed Medical Service Standard

o Obligatory
 Δ Selective

TABLE-IV-4-2 PROPOSED MEDICAL SERIOUS STANDARD

Standard & Hospital Name Service Diagnostic Treatment	25~50 Beds Standard	100 Beds Standard	200 Beds Standard	300 Beds Standard
* Basic Health Services; Maternal & Child Health Family Planning Health Education Environmental Sanitation Control of Communicable Disease School Health Dental Health Medical Care, Ambulatory Normal Delivery First Aid	o o o o o o o o o o o	o o o o o o o o o o o	o o o o o o o o o o Δ	o o o o o o o o o o Δ
* Diagnostic Services; Laboratory - Urine - ALB - Sugar - Cytology - Stool Examination for Intestinal Parasites - Sputum Microscopy for Tubercule Bacilli - Microscopy of smears from urethra, throat, rectum, exudes from wounds etc. - Blood - Complete Blood Count	o o o o o o o o	o o o o o o o o	o o o o o o o o	o o o o o o o o

Standard & Hospital Name Service Diagnostic Treatment	25-50 Beds Standard	100 Beds Standard	200 Beds Standard	300 Beds Standard
Endocrinology				o
Rheumatology			o	o
Oncology				o
Garontology			o	o
Infectious Diseases		o	o	o
Nephrology				o
Immunology				o
Nuclear Medicine				
Surgery				
General Surgery	o	o	o	o
Chest				o
Orthopedics		o	o	o
Dermatology		o	o	o
Neurosurgery				o
Head & Necks			o	o
Ophthalmology		o	o	o
Oto-laryngology		o	o	o
Phinology		o	o	o
Plastic and Reconstructive Surgery			o	o
Proctology			o	o
Pediatric Surgery			o	o
Cardio-vascular Surgery				o
Obstetrics & Gynecology	o	o	o	o
Pediatrics General	o	o	o	o
Pediatrics Cardiology				o
Pediatric Psychiatry				o

Standard & Hospital Name	25-50 Beds Standard	100 Beds Standard	200 Beds Standard	300 Beds Standard
Service Diagnostic Treatment Rehabilitation Physical Medicine Occupational Therapy Vocational Rehabilitation - Special Patient Care Areas Recovery Room Intensive Care Unit (ICU) Colonary Care Unit (CCU) Hemodialysis Unit		o	o Δ	o o o Δ

3. Proposed Manpower Standard

TABLE-IV-4-3 PROPOSED MANPOWER STANDARD

TT: Teaching & Training

NAME OF STAFF		STANDARD AND NAME OF PROJECT HOSPITALS					
		100 BED T/T	200 BED T/T	300 BED T/T	450 BED T/T		
DOCTOR	Chief of Hospital	1	1	1	1		
	Chief of Clinics	-	1	1	1		
	Medical Specialist	2	5	12	21		
	Dentist	1	1	2	2		
	Resident Physician	7	16	25	38		
	SUB TOTAL	11	24	41	63		
NURSE	Chief Nurse	1	1	1	1		
	Assistant Chief Nurse	-	1	1	1		
	Nurse	23	40	72	106		
	Nursing Attendant	22	34	67	93		
	Midwife	-	-	-	-		
	SUB TOTAL	46	76	141	201		
MEDICAL TECHNICIAN ETC.	Pharmacist	1	2	3	4		
	Pharmacy Aide	2	5	5	6		
	Dental Aide	2	2	4	5		
	Medical Radiation Technologist	-	-	-	-		
	Medical Radiation Technician	2	3	4	5		
	Medical Radiation Aide	2	3	4	5		
	Health Physicist	-	-	-	-		
	Medical Technologist	-	-	-	-		

MEDICAL TECHNICIAN ETC.	Medical Laboratory Technician	2	3	5	6	
	Medical Laboratory Aide	3	6	8	10	
	Physiological Test Technician	1	2	3	4	
	Other Medical Technicians	-	-	1	1	
	Autopsy Attendant	-	-	-	1	
	Guidance Psychologist	-	-	1	1	
	Medical Social Worker	2	2	3	3	
	Physical Therapist	-	-	1	2	
	Physical Therapy Aide	-	-	2	2	
	Occupational Therapist	-	-	-	-	
	SUB TOTAL	17	28	44	55	
DIETARY STAFF	Dietitian	1	1	2	2	
	Food Service Supervisor	1	1	1	1	
	Cook	2	3	5	8	
	Food Service Worker	4	8	12	15	
	SUB TOTAL	8	13	20	26	
SERVICE STAFF	Laundry Worker	3	4	6	8	
	Seamstress	1	2	3	3	
	Institution Worker	12	20	30	41	
	Dormitory Manager	1	1	1	1	
	Housekeeper	-	-	-	-	
	Security Guard	3	3	6	6	
	Janitor	3	3	6	6	
	SUB TOTAL	23	33	53	65	

MAINTENANCE STAFF	Plumber	-	-	1	1
	Carpenter	1	1	2	2
	Painter	-	-	1	1
	Electrician				
	Medical Equipment Maintenance Engineer				
	Hospital Engineer	3	4	5	6
	Building Maintenance Man				
	Groundman Gardener	2	2	3	3
	SUB TOTAL	6	7	12	13
TRANSPORTATION STAFF	Driver	3	3	4	4
	Automotive Mechanic	-	-	1	1
	SUB TOTAL	3	3	5	5
ADMINISTRATIVE STAFF	Administrative Officer	1	1	1	1
	Officer	5	5	9	11
	Clerk	10	13	25	30
	Records Officer	-	-	1	1
	Statistician	-	-	-	1
	Medical Record Librarian	-	-	-	1
	Clerk (Medical Records)	2	3	4	6
	Department Clerk	-	-	4	4
	SUB TOTAL	18	22	44	55
TOTAL		132	206	359	483

4. Proposed Medical Equipment Standard

TABLE-IV-4-4 PROPOSED MEDICAL EQUIPMENT STANDARD

a. General Hospital

		Quantity used by Bed Capacity		
		100	200	300 over
1.	Administrative Service			
1-1	Director's Office			
	Office Table Executive	1	1	1
	Office Chair Swivel	1	1	1
	Office Chair Straight	2	2	4
	Lounge Set	1	1	2
	Filing Cabinet Steel made, 4-drawers	2	2	4
	Typewriter Standard for business	1	1	2
	Typist Table	1	1	2
	Waste Can Feet lever with cover	2	2	4
1-2	Business Office			
	Adding Machine	2	2	3
	Filing Cabinet Steel made 4-drawers	2	2	4
	Calculating Machine	1	1	2
	Office Table	2	2	4
	Office Chair Swivel or straight	2	2	4
	Typewriter Standard for business	2	2	4
	Typist Table	2	2	4
	Duplicating or Mimeographing Machine	1	1	1
	Posting and Billing Machine			
	Safe Fire resistance 2 hour	1	1	1
1-3	Information and Admitting Section			
	Lounge Set	1	1	1
	Ash Tray Stand	2	2	4
	Telephone Switchboard	1	1	1
	Microphone for Paging System	1	1	1
	Patient Chart and Directory	1	1	1
	Doctor's In and Out Register	1	1	1
	Steel 30 High	2	2	3
	Office Chair Straight	4	4	6

		Quantity used by Bed Capacity		
		100	200	300 over
	Office Table	2	2	3
	Filing Cabinet 4-drawers	4	4	6
	Typewriter Standard	2	2	3
	Typist Table	2	2	3
1-4	Conference Room Staff Lounge and Library			
	Lounge Set	2	2	4
	Book Sheleve	2	2	3
	Bulletin Board 26" x 24"	1	1	2
	Doctor's Paging System (30 passenger)	1	1	1
	Conference Table	2	2	4
	Conference Chair	8	8	16
	Table Lamp (Desk Stand)	1	1	2
	Ash Try Stand	2	2	3
	Over Head Projector	1	1	2
	Slide Projector with Screen	1	1	2
	16 m/m Movie Projector			1
2.	Medical Service			
2-1	Surgical Suite			
2-1a	Operating Room			
	Anesthesia Apparatus 3 gas 11" long flowmeter Surgical Type Cabinet type with 3 Vaporizer (J.M.S. 6-11501)	2	2	3
	Infant Circle (J.M.S. 6-11520) with Standard Accessories	1	1	1
	Absorber	2	2	3
	Electro Surgical Unit with Attachment Solide-state circuit type available bipolar and monopolar with safety device	1	1	1
	Operating Table Fully oil-hydraulic system with Standard accessories	1	1	2
	Operating Table Oil-hydraulic type Controlling mechanism with head and control	2	2	3

			Quantity used by Bed Capacity		
			100	200	300 over
	Revolving Chair	Oil hydraulic specialists chair one step	2	2	3
	Foot Steel	Foot lever with cover	2	2	3
	Waste Receptacle		2	2	4
	Kickbucket		2	2	4
	Baumanometer	Stand type	2	2	4
	Stethoscope		2	2	4
	Oxygen Apparatus	Complete with attachment	2	2	4
	Major O.P. Light	(J.M.C. 6-16633)	1	1	2
	Minor O.P. Light	8+5 bulb type	1	1	2
	Spotlight Stand	Dia 24cm, with caster	2	2	3
	Instrument Cabinet		2	2	3
	Instrument Table	Stainless steel made	2	2	3
	Anesthetist Table	Stainless steel made	2	2	3
	Sterilizing Board	Stainless steel made			
	Table	2 tray type	1	1	1
	Suction Presser	(J.M.C. 6-16653)			
	Unit		1	1	2
	Suction Presser	Portable type with stand			
	Unit		1	1	2
	Automatic Respirator	board type	2	2	4
	Automatic Resucitator	(J.M.C. 6-15774)	2	2	2
	Irrigator Stand		2	2	4
	Wall Clock	With Interval Timer	2	2	3
	Air Conditioner	Window type 2 HP	2	2	3
	Emergency Light	Battery flowting type	2	2	3
	Service				
	Laundry Hamper		2	2	3
2-1b	Sub, Sterilizing Room				
	Sink and Drain Board	Stainless steel made	1	2	2
	Autoclave	(J.M.C. 6-16802) B.	1	1	1
	Water Sterilizer		1	2	3
	High Pressure Sterilizer	(J.M.C. 6-16823)	1	1	1
	Instrument Sterilizer	(J.M.C. 6-16825(B))		1	1
2-1c	Scrub-up Area				
	Dispenser	Brush Surgical type	3	6	10
	Dispenser	Liquid Soap	3	6	10
	Water Sterilizer	U.V. Lamp type	3	6	10

		Quantity used by Bed Capacity		
		100	200	300 over
2-1d	Recovery Room			
	Bed Recovery Type 2 handle adjustable (J.M.C. 6-16688)	4	6	8
	Chair, Straight	4	6	8
	Spotlight Dia 24 cm with Caster	2	2	4
	Irrigator Stand	2	2	4
	Baumanometer (J.M.C. 6-10048)	2	2	4
	Bedside Cabinet	4	6	8
	Automatic Respirometer Board type	2	3	4
	Heart Monitor (J.M.C. 6-10170)	2	2	4
	O2 Tent (J.M.C. 6-16360)		1	2
	Oxygen Cylinder Regulator (J.M.C. 6-15870)	2	3	4
2-1e	Intensive Care Unit (Ip any)			
	Patient Monitoring System 4 patient, Telemetry All System			1 set
	Cardiac Defibrating and Monitoring Apparatus (J.M.C. 6-16391)			1
	Automatic Respirator Board type			3
	Instrument Table Stainless steel made			2
	Suction Presser Unit Heavy duty			1
	Oxygen Cylinder Regulator (J.M.C. 6-15870)			4
	Continuous Suction Unit (J.M.C. 6-16665)			2
	I.C.U. Bed 2. Handle Adjustable type with Safety Bedsides			4
	Refrigerator 6 cu. ft.			1
2-2	Obstetrical Suite			
2-2a	Delivery Room			
	Anesthesia Apparatus Obstetrical Type (J.M.C. 6-11515)	1	2	2
	Automatic Resuscitator New Born to Adult Convertible (J.M.C. 6-15774)	1	1	2
	Electric Extractor (J.M.C. 6-15780)	1	1	2
	Obstetrical Table (J.M.C. 6-15795)	2	2	3

		Quantity used by Bed Capacity		
		100	200	300 over
	Operating Light (J.M.C. 6-16637) Dia 56 cm	2	2	3
	Emergency Light Service Battery flowting type	1	1	2
	Kickbucket	2	2	3
	Kick Basin	2	2	3
	Laundry Hamper	1	1	1
	Basin Stand	2	2	3
	Revolving Chair Oil Hydraulic for specialists	2	2	3
	Anesthesia Table	2	2	3
	Instrument Table	1	2	2
	Infant Scale (J.M.C. 6-15907)	1	1	1
	Infant Examing Table	1	1	1
	Sanitary Bathing Tub (J.M.C. 6-15913)	2	3	4
	Deep Freezer -20°C upright type	1	1	1
2-2b	Labor Room			
	Labor Bed	4	6	8
	Bedside Cabinet	4	6	8
	Chair Straight	4	6	8
	Examining Light Dia 24 cm stand type	2	2	3
	Overbed Table	4	6	8
	Stool one Step	4	6	8
	Waste Can Foot lever with cover	2	2	3
2-3	Nursery			
2-3a	Nursery Room			
	Bassinet Stand 3 Infant stand type with mattress	2	2	4
	Bassinet Stand One infant stand type	2	2	4
	Bedside Cabinet	2	2	4
	Laundry Hamper	1	2	2
	Waste Can Feet lever with cover	2	2	4
	Instrument Table Stainless steel made	1	2	3
	Oxygen Hood (J.M.C. 6-16482)	1	1	2
	Oxygen Inhaler Apparatus (J.M.C. 6-16492)	1	1	2

		Quantity used by Bed Capacity		
		100	200	300 over
2-3b	Work Pace, Examination and Treatment Room			
	Office Chair Swivel	1	1	1
	Nurse's Desk Chart with rack	1	1	1
	Chart Holder Cart for use 25 pcs without files	1	1	1
	Hotplate Electric	1	1	2
	Waste Can	1	1	2
	Refrigerator 6 c.u. ft.	1	1	1
	High Speed Sterilizer (J.M.C. 6-16824)	1	1	1
	Ultrasonic Nebulizer (J.M.C. 6-16369)	1	1	1
	Working Table Stainless steel made	1	1	2
	Dressing Carriage Stainless steel made	1	1	2
2-3c	Premature Nursery			
	Baby Incubator (J.M.C. 6-15844) With U.V. Sterilizing Device	2	3	4
	Oxygen Analyzer (J.M.C. 6-15875)	1	1	2
	Hotplate Electric 1KW	1	1	1
	Waste Can	1	1	2
	Instrument Table Stainless Steel Made 44 x 34 cm	2	3	4
	Oxygen Cylinder Truck 500ℓ Cylinder only	2	3	4
	Suction Unit Portable type	1	1	1
	Laundry Hamper	1	1	2
	Phototherapy Unit (J.M.C. 6-15864)	1	1	2
	Infant Warmer			
	Infant Warmer (J.M.C. 6-15853)	1	1	1
	Infant CPAP (Continuous Positive Airway Presser) (J.M.C. 6-15855)	1	1	1
2-3d	Suspect Nursery			
	Basinet Stand With Mattress, One Infant only	2	3	4
	Instrument Table Stainless steel made 44 x 34 c/m	2	3	4

		Quantity used by Bed Capacity		
		100	200	300 over
	Waste Can	1	1	2
	Laundry Hamper	1	1	2
	Infant Scale (J.M.C. 6-15907)	1	1	1
	Irrigator Stand	2	3	4
	Suction Presser Unit (J.M.C. 6-15892) Portable	1	1	1
	Oxygen Inhaler Apparatus (J.M.C. 6-16492)	2	2	4
2-3e	Formula and Preparation Room			
	Bottle Washer (J.M.C. 6-16886)	1	1	1
	Bottle Carriage Stainless steel made	1	1	1
	Waste Can	1	1	1
	Bottle Sterilizer Electric 20 pcs use	1	1	2
	Bottle Warmer Electric 15 pcs use	1	1	1
	Hotplate Electric 1KW	1	1	2
	Refrigerator 6 cu. ft.	1	1	1
	Water Sterilizer	1	1	1
	Suction Breast Pump (J.M.C. 6-15704)	1	1	2
2-4	Emergency Room			
2-4a	Emergency Operating Room			
	Stretcher Wheeld	2	2	2
	Wheelchair (J.M.C. 6-12722)	1	2	2
	Anesthesia Apparatus Surgical type (J.M.C. 6-11516)	1	1	2
	Waste Can	2	2	4
	Liquid Soap Dispenser	2	2	4
	Surgical Brush Dispenser	2	2	4
	Kickbucket	2	2	4
	Examining Table Steel made 180 x 75 cm	2	2	4
	Portable O.P. Light Dia 24 cm stand type	1	2	2
	Resuscitator Hand-driven type (J.M.C. 6-11615)	1	1	2
	Automatic Resuscitator (J.M.C. 6-15774)	1	1	2

		Quantity used by Bed Capacity		
		100	200	300 over
2-4a	High Speed Sterilizer (J.M.C. 6-16824)	1	1	2
	Anesthetist Stool (J.M.C. 6-16706)	2	2	3
	Suction Presser Unit Heavy duty	1	1	2
	Suction Presser Unit Portable type	1	1	1
	Oxygen Inhaler Apparatus (J.M.C. 6-16492)	2	2	3
	Instrument Table	2	2	3
	Anesthesia Table	2	2	3
	Electro Surgical Unit		1	1
	Operating Table Position, head end and Strecher control, X-ray casset	1	1	2
	Portable X-ray Unit (J.M.C. 6-16046)		1	1
2-4b	Observation Room			
	Hospital Bed With mattress and safety bedside	2	2	4
	Overbed Table	2	2	4
	Bedside Cabinet	2	2	4
	Irrigator Stand	2	2	4
	Instrument Table	1	1	2
	Chair Straight	2	2	4
2-5	Out-Patient Department			
2-5a	Consulation Office			
	Office Table	2	2	4
	Office Chair Swivel	2	2	4
	Filing Cabinet 4-drawer Steel made	2	2	4
	Examining Light Dia 24 cm	2	2	4
	Foot Steel One Step	2	2	4
	Examining Couch	2	2	4
	Negatoscope Desk type 2 unit	2	2	4
	Baumanometer Stand type	2	2	4
	Wood Bench Passenger type	2	2	4
	Magazine Table	1	2	2
2-5b	Examination and Treatment Room			
	Wast Can Foot level with cover	2	2	4
	Chair Straight	2	2	4
	Physician's Office Scale (J.M.C. 6-10357)	2	2	4

		Quantity used by Bed Capacity		
		100	200	300 over
	Examining Light	1	2	4
	High Speed Sterilizer (J.M.C. 6-16824)	1	1	2
	Stool Adjustable	1	1	2
	Examining Couch	1	1	2
	Treatment Table Hamilton type	1	1	2
	Foot Steel one Step	1	1	2
2-5b	Laundry Hamper	1	1	2
	Hotplate Electric desk type 500W	1	2	4
	Refrigerator 6. cu. ft.	1	2	2
	Kickbucket	1	2	2
	Irrigator Stand	2	2	4
	Instrument Table Stainless Steel Made	2	2	4
	Instrument Cabinet Steel made 90 cm wide	2	2	4
2-5c	E. ENT Clinic			
	Instrument Cabinet Steel made 90 cm wide	1	1	2
	E.N.T. Treatment Unit (J.M.C. 6-13965)	1	1	2
	Ophthalmic Unit (J.M.C. 6-1391)	1	1	2
	Waste Can	1	1	2
	Office Desk	1	1	2
	Office Chair Steel Made Swivel	1	1	2
	E.N.T. Treatment Chair (J.M.C. 6-13961)	1	1	2
	High Speed Sterilizer (J.M.C. 6-16824)	1	1	1
	Revolving Chair (J.M.C. 6-16706)	1	1	2
	Instrument Table Stainless steel made	1	1	3
2-5d	Dental Clinic			
	Dental Chair Oil-matic Electromotive type	1	1	2
	Dental Treatment Unit Electromotive, include lamp engine amalfamator water dispenser and instrument table	1	1	2
	Dental X-Ray Unit Mobile type output 60 kvp 10 mA	1	1	1
	Panoramic X-Ray Unit Cephalograph divide, patient chair oil hydraulic system			1

		Quantity used by		
		Bed Capacity		
		100	200	300 over
	Instrument Cabinet	1	1	2
	Automatic Processor	1	1	1
	Waste Can	1	1	2
	Filing Cabinet	1	1	2
	High Speed Sterilizer	1	1	2
	Instrument Table	1	1	2
	Office Desk	1	1	2
	Office Chair	1	1	2
3.	Ancillary Service			
3-1	Laboratory Room			
	Office Desk	2	2	4
	Office Chair	2	2	4
	Office Chair	2	2	4
	Filing Cabinet	2	2	4
	Typist Table	2	2	3
	Typewriter	2	2	3
	Waste Can	2	2	4
	Stool	2	2	4
	Water Bath	2	2	3
	Blood Bank	1	1	2
	Refrigerator			
	Centrifuge	2	2	3
	Micro Hematocrit	1	1	2
	Centrifuge			
	Electrophoresis	1	1	1
	Apparatus			
	Photoelectric	1	1	1
	Hemoglobinometer			
	Hotplate	2	2	3
	Incubator	2	1	1
	Incubator		1	2
	Microscorp	2	2	2
	Floorescence Microscope	1	1	1
	Microscorp	1	1	2
	Microscorp		1	1

		Quantity used by Bed Capacity			
		100	200	300 over	
	Micro-photograph Apparatus			1	
	Rotary Microtome	Section thickness 1 - 40 micro (J.M.C. 6-17511)	1	1	2
	Electro Freezing Devise	(J.M.C. 6-17517)	1	1	1
	Drying Oven	(J.M.C. 6-17717)B	1	1	2
	P.H. Meter	(J.M.C. 6-17798)	1	1	1
	Photoelectric Colorimeter	(J.M.C. 6-17779)	1	1	1
	Automatic Pipet	Range 20-140 micro & diluter range 1 - 5ml	1	2	2
	Refrigerator	8 c.u. ft.	1	2	2
	Scale	(J.M.C. 6-7001)	1	2	2
	Scale	(J.M.C. 6-17004)	1	2	2
	Shaker	(J.M.C. 6-17752)	2	2	3
	Spector Photometer	Wavelength range 325 - 900 mm diffraction grating dispersion	1	1	3
	Pipet Washer	Ultrasonic system	1	1	1
	Pipet Dryer	(J.M.C. 6-17731)	1	1	1
	Hot Air Sterilizer	(J.M.C. 6-17716)B	1	1	2
	Metabograph	(J.M.C. 6-10134)	1	1	1
	Electrocardiograph	(J.M.C. 6-10164)	1	2	2
	Electrocardiograph	(J.M.C. 6-10167)		1	1
	Phonocardiograph	3 ch			
	Phonocardiograph	2. ch (J.M.C. 6-10168)	1	1	1
	Physician's Office Scale	(J.M.C. 6-10357)	1	1	1
	Autoclave	(J.M.C. 6-17723)B	1	1	1
	Heavy Metal Eliminator	Capacity 5 - 15 1/2 - 5h	1	1	1
3-2	X-Ray Room				
	Office Desk		1	2	2
	Office Chair	Swivel	1	2	2
	Office Chair	Straight	1	2	2
	Filing Cabinet	4-drawer	2	2	4
	Waste Can		2	2	4
	Diagnostic X-ray Apparatus	(J.M.C. 6-16033) Output 150 KVP 300 mA 125 KVP 500 mA 100 KVP 4 mA	1	1	

			Quantity used by Bed Capacity		
			100	200	300 over
3-2	Planigraphic X-Ray Apparatus	Planigraphic angle 20° ~ 60° Layer height: 0 ~ 25 cm from the table top surface.	1	1	
	Diagnostic X-Ray Apparatus	Output 150 KVP 300 mA 125 KVP 500 mA 120 KVP 4 mA Motorized diagnostic table built in Bucky device. With High Voltage leader Sta (J.M.C. 6-16031)			
	Diagnostic X-Ray Planigraphic Device			1	1
	Multi-directional Television System	Variable position: Vertical and Horizontal Minuteness Class			1
	Office Chair	Swivle	2	2	3
	Film Dryers	(J.M.C. 6-16224)	1	1	2
	Film Hanger	Stainless Steel made	20	40	50
	Negato Scope	Desk type 8 unit	1	2	3
	Safety Light		1	2	2
	Developing Tank		2	4	4
	Developing Tank	(J.M.C. 6-16225)		1	1
	Cassettè Changer		2	2	4
	Protective Floor Screen	(W) 90 × (H) 180 cm 1 m/m pb	1	1	2
	Protective Glove	(J.M.C. 6-16205)	6	6	10
	Protective Apron	(J.M.C. 6-16206)	6	6	10
3-3	Pharmacy				
	Analytical Balance	(J.M.C. 6-17836)	1	1	1
	Filing Cabinet	Card size 1-drawer	1	1	1
	Filing Cabinet	4-drawer	1	2	2
	Waste Can		2	2	3
	Office Desk		2	2	3
	Office Chair	Swivel	2	2	3
	Hotplate	Electric 500 W	2	2	3
	Refrigerator	8 c.u. ft.	1	1	2

		Quantity used by Bed Capacity			
		100	200	300 over	
	Safe Druggs	Size 88 × 88 × 50 cm	1	1	1
	Typewriter	Standard	1	2	2
	Typist Table		1	2	2
	Mixer	Electric Portable	1	2	2
	Autoclave	(J.M.C. 6-17723)B	1	1	1
	Hot Air Sterilizer	(J.M.C. 6-17716)B	1	1	1
	Counter Balance	(J.M.C. 6-17001)	1	2	2
	Water Bath	(J.M.C. 6-17010) 24 cm	1	1	1
	Distilling Apparatus	(J.M.C. 6-17076) 5 l	1	1	2
4.	Nursing Service				
4-1	Nurse's Station				
	Office Desk		4	8	15
	Office Chair		8	20	30
	Chart Holder	(J.M.C. 6-16443)	150	300	450
	Chart Carriage	(J.M.C. 6-16441)	4	10	15
	Wheeled Stretcher	(J.M.C. 6-16458)	4	8	15
	Wheel Chair	(J.M.C. 6-12722)	2	4	10
	Waste Can		4	8	15
	Refrigerator	6 c.u. ft.	2	4	8
4-1a	Treatment Room				
	Office Desk		2	4	8
	Office Chair		2	4	8
	Waste Can	foot lever with cover	2	4	8
	Dressing Carriage	RM-119 type	2	4	8
	Hotplate	Electric 1KW	2	4	8
	Kickbucket		2	4	8
	Examining Light	Stand type Dia 24 cm	2	4	8
	Weighing Scale	(J.M.C. 6-10355)	2	4	8
	Measuring Rod	(J.M.C. 6-10350)	2	4	8
	Irrigator Stand		6	15	24
	Baumanometer	Stand type	2	4	8
	Revolving Chair	(J.M.C. 6-16706)	2	4	8
	Examining Couch		2	4	8
	Instrument Table		2	4	8
	High Speed Sterilizer	(J.M.C. 6-16824)	2	4	8

		Quantity used by Bed Capacity		
		100	200	300 over
4-1b	Utility and Linen Room			
	Utility Cart (J.M.C. 6-16475)	2	4	8
	Laundry Hamper	2	4	8
4-2	Central Sterilizing and Supply Room			
	Autoclave (J.M.C. 6-16802) Cabinet type 500 x 500 x 600 m/m	1	1	1
	Autoclave (J.M.C. 6-16803) Cabinet type 500 x 500 x 900 m/m		1	2
	Ethylene Oxide Gas Sterilizer (J.M.C. 6-16807)		1	1
4-3	Needle Cleaner	1	2	2
	Glove Conditioner (J.M.C. 6-16860)			1
	Hot Air Sterilizer (J.M.C. 6-17716)B	1	1	1
	Needle Sharpner Electro desk type	1	1	2
	Instrument Sterilizer (J.M.C. 6-16825)B	1	1	1
	Electric Compressor (J.M.C. 6-16659)	2	3	3
	Ophthalmoscope-Otoscope Set (J.M.C. 6-10029)	2	3	5
	Oxygen Apparatus (J.M.C. 6-16492)	5	8	10
	Respirator (J.M.C. 6-11621)	1	1	2
	Sphygmomanometer (J.M.C. 6-10048)	3	5	5
	Portable Suction Unit Desk type	1	1	2
	Operating Instrument Set (J.M.C. 6-12221)	2	2	3
	Infant Surgical Instrument Set (J.M.C. 6-12211)	1	1	1
	Gastrointestinal Suturing Instrument Set	1	1	2
	Cesarean Incision Set Abdominal (32 item)	1	1	2
	Brain Surgery Instrument Set (J.M.C. 6-12237)	1	1	1
	Kirschner Wire Traction Instrument Set (J.M.C. 6-12304)	1	1	2
	Bone Fracture Set (J.M.C. 6-12395)	1	1	2
	Ultrasonic Cleaner (J.M.C. 6-16836)			1
	Steam Boiler Autoclave only	1	1	2

		Quantity used by Bed Capacity		
		100	200	300 over
4-4	Wards			
	Patient Bed (J.M.C. 6-16428)	60	120	180
	Patient Bed (J.M.C. 6-16426)	10	20	30
	Patient Bed (J.M.C. 6-16424)	5	10	15
	Child Bed (J.M.C. 6-16428)	10	20	30
	Pediatric Crib	15	30	45
	Bedside Cabinet	100	200	300
	Overbed Table	80	160	240
	Overbed Table	20	40	60
	Stool Locker Steel made	100	200	300
	Chair Straight	100	200	300
4-5	Isolation Room			
	Patient Bed (J.M.C. 6-16425)	4	4	8
	Bedside Cabinet	4	4	8
	Overbed Table	4	4	8
	Chair	4	4	8
5.	Dietary Service			
5-1	Dietician's Office			
	Office Desk	1	2	2
	Office Chair Straight	1	2	2
	Filing Cabinet 4-drawers	1	2	2
	Typewriter Standard	1	1	1
	Typist Table	1	1	1
	Waste Can	1	1	1
5-2	Utility and Janitor's Closet			
	Utility Cabinet Steel locker 90 × 45 × 170 cm	1	2	2
	Utility Truck	1	2	2
	Utensil Locker Steel made 50 × 55 × 180 cm	1	1	1
	Lader Step Pantry type	1	2	2
	Trash Can Mounted in caster	2	2	3

		Quantity used by Bed Capacity		
		100	200	300 over
5-3	Dining Room			
	Dining Table	4	6	8
	Dining Chair	32	48	64
6.	Maintenance Services			
6-1	Enginer's Office			
	Office Desk	1	1	1
	Office Chair Swivel	1	1	1
	Office Chair Straight	2	2	2
	Filing Cabinet 4-drawers	1	1	1
	Typewriter Standard	1	1	1
	Typist Table	1	1	1
6-2	Maintenance Section			
	Working Table 180 × 60 × 72 cm	2	2	2
	2-doors Locker 90 × 45 × 170 cm	1	2	2
	Steel Rack 90 × 45 × 190 cm	1	2	2
	Tool Cabinet 5-drawers steel made 60 × 60 × 60 cm	1	1	1
	Welding Equipment Electric	1	1	1
	Battery Charger	1	1	1
	Clean Water Tank 500ℓ cap.	2	2	4
	Buffer and Grinder	1	1	1
	Drill Press	1	1	1
	Vise Machinest (JIS B 4621)	2	2	2
	Carpentry Tool Set	1	2	2
	Electrical Tool Set	1	2	2
	Plumbing Tool Set	1	2	2
	Ladder, Stop Pantry type	1	1	2
	Fire Extinguishers	8	12	16
	Ambulance	1	1	1
	Van type Truck	1	1	1

		Quantity used by Bed Capacity		
		100	200	300 over
6-3	Housekeeping Section			
	Filing Cabinet		4-drawers	1 2 2
	Office Chair		Straight	2 2 4
	Work Table		180 x 60 x 72 cm	1 2 2
	Utility Chart		Heavy duty	1 2 2
	Floor Polisher		Heavy duty	2 2 4
	Vacum Cleaner		Heavy duty	1 1 1
	Sewing Machine		Heavy duty	1 2 2
	Truck Linen		Heavy duty	1 2 2

b. Mental Hospital

		Quantity used by Bed Capacity		
		100	200	300 over
1.	Administrative Service			
1-1	Office of the Chief			
	Executive Desk (Double Ped)	1	1	1
	Swivel Chair (Upholstered)	1	1	1
	Visitors' Chair	2	2	2
	Sale Set	1	1	1
	Refrigerator 6 c.u. ft.	1	1	1
1-2	Reception			
	Office Desk (Single Ped)	1	1	2
	Office Chair (Swivel)	1	1	2
	Typist Table	1	1	1
	Typewriter (Standard)	1	1	1
	Filing Cabinet (4-Drawers)	2	2	3
1-3	Office of the Senior Resident w/Medical Secretary			
	Office Desk (Double Ped)	2	2	4
	Office Chair (Swivel)	3	3	5
	Office Chair (Upholstered)	5	8	10
	Typist Table	1	1	2
	Typewriter (Standard)	1	1	2
	Filing Cabinet (4-Drawers)	1	2	4
1-4	Office of the Chief Nurse			
	Office Desk (Double Ped)	1	2	2
	Office Chair (Swivel)	1	2	2
	Typist Table	1	1	1
	Typewriter (Standard)	1	1	1
	Filing Cabinet 4-Drawers	1	1	2
	Ordinary Chair	4	6	8

		Quantity used by Bed Capacity		
		100	200	300 over
1-5	Office of the Adm. Officer			
	Office Desk (Double Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Office Chair (Upholstered)	3	4	5
	Filing Cabinet 4-Drawers	1	1	1
1-6	Business Office			
	Office Desk (Single Ped)	3	3	5
	Office Chair (Swivel)	1	1	1
	Typist Table	1	2	3
	Office Chair (Upholstered)	6	8	10
	Typewriter (Standard)	1	2	3
	Safe Fire Resistance (JIS 2h)	1	1	1
	Filing Cabinet 4-Drawers	2	2	4
	Filing Cabinet (Card Size)	1	1	2
	Electro Calculator 12 figure	2	3	4
1-7	Security Office			
	Office Desk (Single Ped)	1	1	1
	Office Chair	5	5	8
	Filing Cabinet 4-Drawers	1	1	1
	Fire Alarm	1	1	1
		set	set	set
1-8	Lobby			
	Sala Set	1	1	1
	Chair	4	6	6
1-9	Janitorial Services			
	Floor Polishers Electric Heavy Duty	2	2	3
	Ladder Pantry Type	2	2	3
	Utility Locker 90 x 45 x 170 c/m	2	2	3
	Utility Carf.	1	1	2

		Quantity used by Bed Capacity		
		100	200	300 over
1-10	Medical Records			
	Office Desk (Single Ped)	2	2	3
	Office Chair (Swivel)	2	2	3
	Office Chair (Straight)	2	2	4
	Typist Table	2	2	4
	Typewriter (Standard)	2	2	4
	Filing Cabinet 4-Drawers	2	2	4
	Filing Cabinet Card Size	1	1	2
	Ladder 2m	1	1	1
2.	Kitchen & Food Storage			
2-1	Dietician Office			
	Office Desk (Double Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Office Desk (Single Ped)	1	1	2
	Office Chair (Upholstered)	3	5	7
	Filing Cabinet 4-Drawers	1	1	2
	Typewriter (Standard)	1	1	1
	Typist Table	1	1	1
2-2	Conference-Dining Room			
	Dining Table (Wooden) for 8 persons	1	1	2
	Chair (Upholstered)	8	8	16
3.	Property Office & Bodega			
	Office Desk (Double Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Office Chair (Upholstered)	5	5	8
	Office Desk (Single Ped)	2	3	5
	Typist Table	1	2	3
	Typist Chair (Swivel)	1	2	3
	Typewriter (Standard)	1	1	2
	Electro-Calculator 12 figure	2	3	4

		Quantity used by Bed Capacity		
		100	200	300 over
	Filing Cabinet 4-Drawers	2	2	3
	Filing Cabinet Card Size	1	1	2
	Typewriter (Special) 18"	1	1	1
4.	Maintenance Shop & Garage			
	Work Table (Wooden) 180 × 60 × 72 c/m	2	2	2
	2-Doors Locker (Steel) 90 × 45 × 170 c/m	2	2	2
	Steel Rack (with Drawers) 90 × 45 × 190 c/m	2	2	3
	Tool Cabinet 5-Drawers Steel Made 60 × 60 × 60 c/m	1	2	2
	Welding Equipment Electric	2	2	3
	Battery Charger	1	1	1
	Clean Water Tank 500l CAP Plastics Made	2	2	4
	Buffer and Grinder	2	2	3
	Drilling Machine	1	2	2
	Vise (Machinest) (JIS B-4621)	2	3	3
5.	Carpentry Tool Set	2	2	3
	Electrician Tool Set	2	2	3
	Plumbing Tool Set	2	2	3
	Pipe Cutting Machine	1	1	1
	Gas Welding Apparatus	1	2	2
	Compressor (Mobile Type)	1	1	1
	Ladder (Aluminum) (8 f.t.)	2	2	4
	Fire Extinguishers	8	10	15
	Truck Cart. Heavy Duty (300Kgc.a.p.)	2	2	3
	Ambulance	1	1	2
	Pick-up Van	1	1	2
6.	Linen Room			
	Sewing Machine w/Motor (Heavy Duty)	3	4	5
	Filing Cabinet 4-Drawers	2	2	2
	Work Table (Wooden) 120 × 75 × 80 c/m	2	2	3
	Chair (Wooden) (Straight)	10	10	15
	Shelve w/doors (Wooden) 150 × 50 × 170 c/m	2	2	4

		Quantity used by Bed Capacity		
		100	200	300 over
7.	Dormitories			
	Bed (Wooden) w/mattress	30	60	90
	Sala Set	3	4	6
	Chair	15	20	35
	Electric Fan (12" w/timer Table Type)	6	12	20

		Quantity used by Bed Capacity		
		100	200	300 over
I.	Medical Service			
1.	Pavillions (4 Unit w/50 Pts./Unit)			
1.a	Nurse's Station			
	Office Desk (Single Ped)	4	8	12
	Office Chair (Upholstered)	8	16	24
	Instrument Sterilizer (Electric) 36 c/m	2	4	6
	Medicine Cabinet 90 cm/m (Steel Made) w/Drawers	2	4	6
	Chart-Rach (Desk Type)	4	8	12
	Blood Pressure Apparatus (Stand Type)	2	4	6
	Wheel Stretchers	2	4	6
	Filing Cabinet 4-Drawers	2	4	6
	Electric Fan 12" Table Type	2	4	6
	Diagnostic Set (J.M.C. 6-10029)	2	4	6
1.a''	Wards			
	Bed (Wooden) w/mattress	100	200	300
	Chair (Wooden) Straight	10	20	30
1.b	Doctor's Office			
	Office Desk (Double Ped)	3	4	6
	Office Chair (Swivel)	3	4	6
	Office Chair	12	16	24
	Filing Cabinet 4-Drawers	3	4	6
	B.P. Apparatus (Stand Type)	3	4	6
	Diagnostic Set (J.M.C. 6-10029)	3	4	6
	Electric Fan 12" Table Type	3	4	6
1.c	O.T. Office			
	Office Desk (Double Ped)	3	4	6
	Office Chair (Swivel)	3	4	6
	Office Chair (Upholstered)	12	16	24
	Filing Cabinet 4-Drawers	3	4	6
	Electric Fan 12" Table Type	3	4	6

		Quantity used by Bed Capacity		
		100	200	300 over
1.d	Dining Room			
	Dining Table (Wooden) (10 persons)	10	20	30
	Chair (Wooden) (Straight)	100	200	300
1.e	Living Room			
	Sala Set	3	4	6
	Chair (Upholstered)	18	24	36
	Flower-pot Table	3	4	6
	Color T.V. Set 20" Size	2	4	6
1.f	Interview Room & O.T. Area			
	Office Desk (Single Ped)	2	4	6
	Office Chair (Swivel)	2	4	6
	Chair (Upholstered)	20	40	60
	Work Table 150 × 75 × 75 c/m	4	8	12
1.g	Janitorial Service			
	Utensil Locker 90 × 75 × 170 c/m	3	4	6
	Floor Polishers (Heavy Duty)	3	4	6
	Utility Cart	3	4	6
1.h	Pantry			
	Water Boiler Storage (20 l Cap)	3	4	6
	Work Table 120 × 50 × 75 c/m	3	4	6
1.i	Treatment Room			
	Office Desk (Single Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Chair (Upholstered)	2	2	2
	Treatment Bed 180 × 75 × 60 c/m	1	1	1
	Instrument Table 60 × 45 × 80 c/m	1	1	1
	Examining Lamp dia. 24 c/m Stand Type	1	1	1
	B.P. Apparatus Stand Type	1	1	1

		Quantity used by Bed Capacity		
		100	200	300 over
	Kickbucket	1	1	1
	Negato Scope (Table Type) 2-Unit	1	1	1
	Instrument Sterilizer (J.M.C. 6-16827.C)	1	1	1
	Wast Can	1	1	1
	Medicine Cabinet	1	1	1
	Oxygen Apparatus (J.M.C. 6-16492)	1	1	1
	Portable Suction Unit (J.M.C. 6-16659)	1	1	1
	Instrument Table (Mayo Type)	1	1	1
	Two Bowl Stand	1	1	1
	Treatment Chair	1	1	1
	Screen Frame (One-Panel)	1	1	1
1.j	Laboratry Room			
	Office Desk (Single Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Filing Cabinet 4-Drawers	1	1	1
	Table (Wooden) 120 x 60 x 85 c/m	1	1	1
	Storage Cabinet (Wooden) Glass Sliding Doors 120 c/m	1	1	1
	Refrigerator 6 c.u. ft.	1	1	1
	Instrument Sterilizer Desk Type Electric 36 c/m	1	1	1
	Centrifuge (J.M.C. 6-17957 B.C.)	1	1	1
	Microscorpe Monocular Built-in Illminator with Transtomer	1	1	1
	Sahil Hemometer (J.M.C. 6-10085)	1	1	1
	Hemacytometer (Thoma) (J.M.C. 6-10072)	1	1	1
	Pipette Shaker (J.M.C. 6-10089)	1	1	1
	Water Bath (J.M.C. 6-17735)	1	1	1
	Incubator Desk Type 30 x 30 x 30 c/m	1	1	1
	Hot Air Sterilizer Desk Type 30 x 30 x 30 c/m	1	1	1
	Electro-Encephalograph 12-Channeles. Multipurpose-1channels. Light-Stimulation-1channele	1	1	1

		Quantity used by Bed Capacity		
		100	200	300 over
1.k	X-Ray Room			
	Office Desk (Single Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Filing Cabinet 4-Drawers	1	1	1
	Diagnostic X-Ray Apparatus With Motor-Driven Examining Couch & Leader Vertical Cassette Stand 125KVP 300mA	1	1	1
	X-Ray Film Storage Chest (J.M.C. 6-16237)	1	1	1
	Protective Apron (J.M.C. 6-16206)	2	2	2
	Protective Gloves (J.M.C. 6-16202)	2	2	2
	Developing Tank Stainless Steel Made	1	1	1
	Photographing Outfit Cassette Caliper Fingrid etc.	1	1	1
	Developing Outfit Safe Light Fimer, etc.	1	1	1
	Negatoscope Desk Type 2-Unit	1	1	1
1-1	Pharmacy			
	Office Desk (Double Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Filing Cabinet 4-Drawers	1	1	1
	Filing Cabinet Card Size Desk Type	1	1	1
	Office Desk (Single Ped)	1	1	1
	Office Chair (Upholstered)	2	2	2
	Refrigerator 10 c.u. ft.	1	1	1
	Safe (Double Lock) 88 x 88 x 50 c/m	1	1	1
	Typewriter (Standard)	1	1	1
	Typist Table	1	1	1
	Analytical Balance (J.M.C. 6-17836)	1	1	1
	Hotplate (Electric 500W)	1	1	1
	Mixer (Electric Portable)	1	1	1
	Counter Balance (J.M.C. 6-17001)	1	1	1
	Water Bath (J.M.C. 6-17010) 24 c/m	1	1	1
	Distilling Apparatus (J.M.C. 6-17076) 5 liter	1	1	1
	Autoclave (J.M.C. 6-17723) B	1	1	1
	Hot Air Sterilizer (J.M.C. 6-17716) B	1	1	1

		Quantity used by Bed Capacity		
		100	200	300 over
2.a	Office of the Physician with Med. Secretary			
	Office Desk (Double Ped)	1	1	1
	Office Desk (Single Ped)	1	1	2
	Office Chair (Swivel)	1	1	1
	Typist Table	1	1	1
	Office Chair (Upholstered)	5	5	8
	Chair (Swivel)	1	1	1
	Typewriter (Standard)	1	1	2
	Filing Cabinet 4-Drawers	1	1	2
	Electric Fan 12" w/Timer Desk Type	1	1	2
2.b	Psychologist w/Clerk			
	Office Desk (Single Ped)	1	1	2
	Office Chair (Swivel)	1	1	2
	Typist Table	1	1	1
	Chair (Swivel)	1	1	1
	Office Chair (Upholstered)	7	7	10
	Typewriter (Standard)	1	1	1
	Filing Cabinet 4-Drawers	1	1	2
	Electric Fan 12" w/Timer Desk Type	1	1	2
2.c	Social Worker			
	Office Desk (Single Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Chair (Upholstered)	4	4	4
	Filing Cabinet 4-Drawers	1	1	1
	Electric Fan 12" w/Timer Desk Type	1	1	1
2.d	Occupational Therapy			
	Office Desk (Single Ped)	1	1	2
	Office Chair (Swivel)	1	1	2
	Chair (Upholstered)	4	4	6
	Filing Cabinet 4-Drawers	1	1	2
	Electric Fan 12" w/Timer	1	1	1

		Quantity used by Bed Capacity		
		100	200	300 over
2.e	Office of the Supervising Nurse			
	Office Desk (Double Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Chair (Upholstered)	4	4	4
	Filing Cabinet 4-Drawers	1	1	1
	Refrigerator 10 c.u. ft.	1	1	1
	Counter Balance (J.M.C. 6-17001)	1	1	1
	Work Table (Wooden) 120 × 60 × 75 c/m	1	1	1
	Electric Fan 16" Stand Type	1	1	1
	Storage Cabinet (Steel) 120 × 45 × 170 c/m Glass Sliding Doors	1	1	1
3.	Occupational Theraphy Room			
	Office Desk (Single Ped)	1	1	1
	Office Chair (Swivel)	1	1	1
	Work Benchs (Wooden) 150 × 45 × 75 c/m	5	8	10
	Carpentry Tools Set (Compets Set)	1	1	2
	Sewing Machines w/Motor Heavy Duty	3	3	5
	Plumbing Tool Set	3	3	5
	Electric Fan 16" Stand Type	2	2	3
	Utility Cabinet (Wooden) 2-Doors 90 × 50 × 170 c/m			
	Chair (Wooden) (Straight)	30	50	70

c. Additional Medical Equipment

(Though these are not included in the standard list, they may be added as required.)

OPERATING INSTRUMENT

Cardio-vascular Operating Instrument

(J,M,C 6- 12253)

Electric Bone Drill Unit

(J,M,C, 6-12301)

Cannulated Flexible Reamer Instrument

(J,M,C, 6-12341)

Spiral Intramedullary Canal Reamer

(J,M,C, 6-12342)

Cloverleaf type Intramedullary Pin set

(J,M,C, 6-12322)

Hand Surgery Operating Set

(J.M.C. 6-12551)

Cruikshank Skull Traction Tang

(J.M.C. 6-12008)

Cervical Operating Set

(J,M,C, 6-12603)

Laminectomy Operating Set

Heemo-Dialyzer, Apparatus

Coil type, (1-person, system)

w/100, disposable dialyzer set

E. E,N,T. INSTRUMENT

Slit Lamp

(J,M,C. 6-13004)

Ophthalmometer

(J,M,C. 6-13003)

Anomaloscorp

(J,M,C. 6-13006)

Lensmeter

(J,M,C. 6-13017)

Trial Lense Set

(J,M,C. 6-13027)

Schiotz Tonometer

(J,M,C. 6-13059)

Bailliart Dynamometer

(J,M,C. 6-13053)

Eye Operating Instrument Set

(collected)

E,N,T. Operating Instrument Set

(collected)

Operating Microscope

(J,M,C. 6-13063)

Audiometer

(J,I,S. I type)

ENDOSCOPIE SECTION

Gastro Fiberscope

(2 pcs, 1 set) OFF-VaF

Gastro Fiberscope, for Biopsy

Fiber-Bronchoscope

Fiber-Coloscope

Lecture-scope

Automatic Exposure Light Supply

Apparatus (GLE)

" "

(CLE-5)

Fiberoptics Photographic Laparoscope

Fiberoptic Cystoscope

Fiberoptic Sigmoidoscope

Cabinet, for endoscope

N, T, Fiberscope

LABORATORY INSTRUMENT

Auto Analysing Device

12, item. 240 test/h
colorimeting & rate assay system
built-in micro-computer (706 D)

Flame Photometer

digital indicate system

Automatic Blood-cell Counter

RBC, WBC, PLATELET,
digital indicate system

Automatic Blood-slide Stainer

20/times

Automatic Tissue Processor

Rotaly System (J,M,C. 6-17461)

Automatic Tissue Processor

Sliding System

Automatic Cells Collector

(Auto-Smear)

Automatic Slide Stainer

80 pcs./h

Freezing Microtome

(J,M,C. 6-17520)

CO² Gas Incubator

(J,M,C. 6-17710)

Automatic Densitometer

Universal Type, measuring density
range: 0.5 ~ 4.0 w/reorder

Homogenizer Universal Type

(J,M,C. 6-17772)

Projection Microscope

(J,M,C. 6-17441)

RADIO-THERAPY SECTION

Cobalt-60, Therapeutic Apparatus

Schemerater Apparatus

(with X-Ray Tomograph Apparatus)

Dosimeter

Radiation Handling Necessaries for Vagina

Gynecological Examining Table

(J,M,C. 6-15723)

Gynecological Examining Unit

(J,M,C. 6-15733)

X-Ray Operating Table

Adjustable to the position of the table are simply effected by head end controlled system, table top side sliding system.

Radioactivity Monitoring System

Air and draining, w/out Sewerage System & Air-control Accommodation.

Lead Sheltered Bed

(50mm Pb)

NUCLEAR MEDICINE

Radioisotope Renogram Apparatus

2-Channel System

Scintillation Scanner Apparatus

Scanning area 35.5×43.2 cm
Scanning speed 5 ~ 500 cm
Recording, photograph, dot, color dot.

Automatic-wellcounter

w/centrifuge, constant temperature
bath, 280 sample, cap.

Radio-immunoassy Necessaries

Include; Liquid Scintillation Counter,
Radio-Thin-Layer Chromatography Assembly,
2 π Gas Flowcounter, Scintillation Counter,
G,M, Counter, Centrifuge, Demineralizers,
Spectrophotometer, P.H.-Meter, Analytical
direct reading balance, Fume Hood, California
type, etc.

PHYSICAL EXAMINATION

Vectrocardiograph

w/direct-writing reorder
(J,M,C. 6-10169)

Electroencephalograph

8-CH, Mobile type
(J,M,C. 6-16399)

Electromyograph

2-CH

Clinical Fetal Monitor

(J,M,C. 6-15711)

Doppler Fetal Pulse Detector

(J.M.C. 6-15650)

Colposcope

w/camera
(J.M.C. 6-15690)

Echo-cardiograph

Handy type, w/camera
8" scope

Multi-ultrasonoscope Apparatus

Electro-scanning system

5. Outline Specifications and Drawings

1) Building

(1) Outline specifications

o Structural framing: Reinforced concrete with columns and beams with 1 or 2 story construction.

o Exterior finish:

<u>COMPONENT</u>	<u>LOCATION</u>	<u>FINISH</u>
Floor:	Entrance area;	Artificial stone
	Courtyard;	Brick laying with concrete curb
	Berm;	Gravel with 100 mm-thick rock curb
Walls:	Exterior end wall;	Exposed concrete with paint finish, and with insulation on interior surface.
	Exterior side walls;	Aluminum sashes (vertical projected windows and louvered windows)
		Wainscot; exposed concrete, with scoring and paint finish.
Roof overhang:		Exposed concrete with paint finish
Roof:	Roof slab;	Waterproofing mortar finish
	Roofing (upper);	Folded steel sheet with resin (Teflon) lining on both surfaces.

o Interior finish:

<u>COMPONENT</u>	<u>LOCATION</u>	<u>FINISH</u>
Floor:	Corridor;	Artificial stone floor and wall base.
	Living area;	Vinyl sheet, with vinyl wall base
Walls:	Interior walls;	Concrete block with mortar and paint finish.
	Corridor side;	Steel door, aluminum sashes (louvered window)
Ceiling:	Living area;	Rock wool acoustic board (over gypsum board backing)
	Corridor;	Asbestos cement board with paint finish

- o Others: Earthwork; Since Philippines officials indicated that soil bearing capacity is good for northern Luzon Island, foundation without piles is assumed. However, for carrying out this project, boring tests should be made in all sites to assure appropriate design for foundation. Wind load (Max. instantaneous wind velocity) is to be 55 m/sec in general areas and 70 m/sec in Batanes.

(2) Standard plans

Standard plans and elevations of 100, 200, 300 and 450-bed hospitals with staff accommodations are given below. For the standard plan of the 450-bed hospital, Pangasinan Medical Center was chosen.

2) Electric Facilities

(1) Generator specifications and the classification of motor-generator combinations

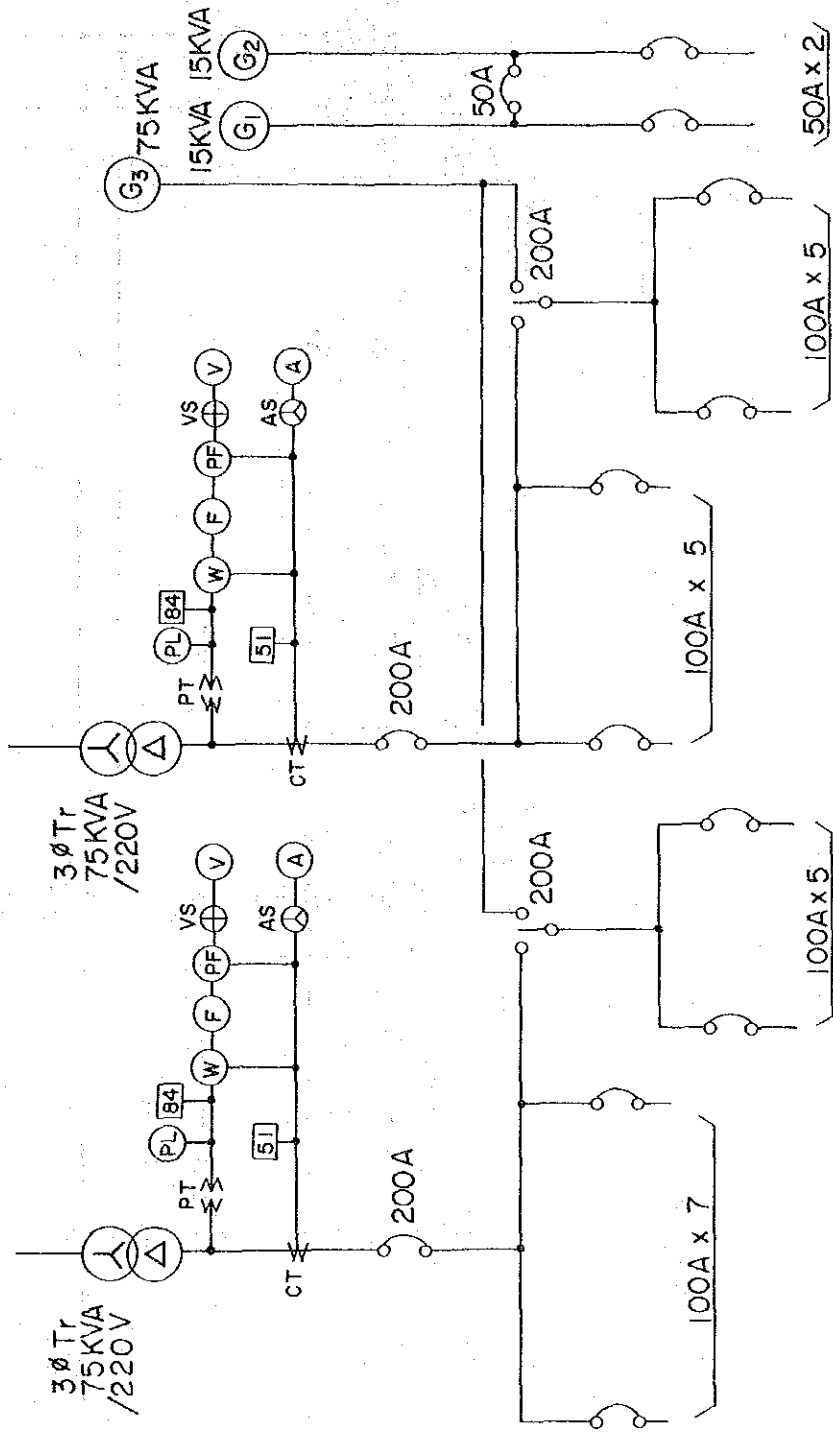
a. Generator specifications

AC generator	Rated output	15 KVA	75 KVA	100 KVA
	Rate voltage and connection	220 V, 240 V, Y (Star)		
	Phase and frequency	3 ϕ 3W 60 Hz		
	Revolution	1,800 rpm		
	Power-factor	0.8		
	Insulation grade	Above Grade F		
	Rated period	Continous rating		
	Excitation method	Brushless type		
Motor	Type	4-cyle diesel engine		
	Rated output	(15 KVA) 22.5 HP	(75 KVA) 87 HP	(100 KVA) 125 HP
	Starting method	Manual	Air type	Air type
	Revolution and cylinder	800 rpm		
		2	5	6
	Rated period	720 hours in continuation		
	Cooling method	Air cooling		
	Fuel	Automobile gas oil		

b. Classification of generator combinations for 100, 200, 300 and 450-bed hospitals.

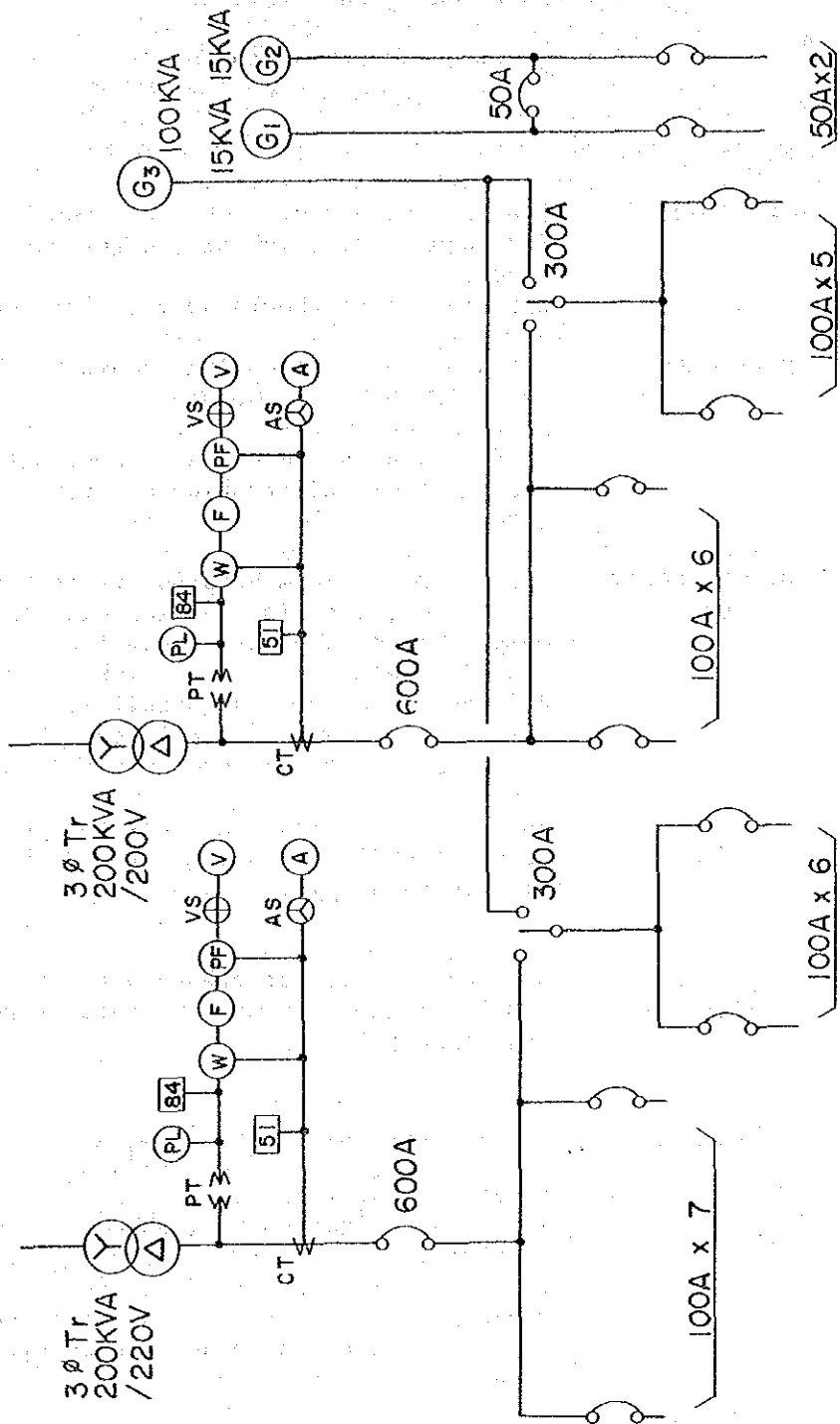
	Approach	Generator capacity and number	Fuel tank
Type I	100~200 bed	75 KVA × 1 unit	Main tank 11,000ℓ
	Power supplied	15 KVA × 2 units	Service tank 400ℓ
Type II	100~200 bed	75 KVA × 3 units	Main tank 23,000ℓ
	Without power supply	15 KVA × 2 units	Service tank 800ℓ
Type III	300~450 bed	100 KVA × 1 unit	Main tank 16,000ℓ
	Power supplied	15 KVA × 2 units	Service tank 600ℓ

(2) Standard single diagram & distribution panel
100 beds
 TYPE 1



TYPE 3

300 beds



3) Air Conditioning and Plumbing

(1) Outline specifications

WATER SUPPLY

WATER SOURCE Construct a new deep well at each hospital except for Baguio, to which city water should be connected directly.

Existing wells should be used for emergency.

DEEP WELL

A top of the well casing should be above the flood level in the rainy season.

At least ten meters under the ground surface should be filled up by concrete or bentonite etc. to prevent from infiltration of rain water or surface water.

DISTRIBUTION SYSTEM

For under 200 beds hospitals, distribution pumps are common, but distribution pipings after the pumps should be separated into two groups toilet flushing water group and drinking water group.

For more than 200 beds hospitals, distribution pumps should be also separated into two groups. Chlorination should be done for drinking water group.

Supplementary elevated tanks on the roof should be used for toilet flushing at midnight when distribution pumps stop.

HOT WATER SUPPLY

Balance type instantaneous water heat (LPG operated) should be used for shower rooms. (Individual installation)

WASTE WATER

Waste water should be discharged to the nearest rivers, sea, etc. after treated by aeration type treatment facilities.

Waste water from communicable departments should be disinfected and stored before treated.

Rain water is discharged on the site.

Medical waste water pipings should be separated from other ones to reduce the density of medical materials in the storage tank.

AIR
CONDITIONING Minimize necessary air conditioned spaces by architectural and structural planning.
There are three groups of air conditioners; Operating rooms, Delivery rooms, and Nursery, ICU, etc.
Air cooled packaged air conditioners (remote control type) should be used.
Air filter units should be installed in operating rooms.

VENTILATION Necessary ventilated rooms are widely spread in the site.
Therefore individual ventilation system should be suitable.

KITCHEN Adopt the central service system.
Install rice washers, rice cookers (LPG), tilting braising pans (LPG), water heaters (LPG), refrigerators, etc.
Disinfection of dishes is necessary.

LAUNDRY Install washing machines, extractors, etc.
Disinfection of linens is necessary.

MEDICAL GAS Oxygen (O₂) and nitrous oxide (N₂O) should be supplied to the following rooms from centralized located gas cylinders.

- a. Oxygen : Operating rooms, Delivery rooms, ICU, Nursery
- b. Nitrous oxide : Operating rooms, Delivery rooms

Use portable type vacuum apparatus.
Recharging cycle is estimated about ten days.
Automatic alternative system should be adopted.
Therefore maximum recharging cycle is about twenty days.

LPG Necessary LPG supplied locations are widely spread on the site.
Cylinders should be located at each location.

LPG supplied : Laboratory, Central supply
location room, Kitchen, Laundry,
Housing, Shower room, Water
heater, etc.

INCINERATOR Install incinerators to burn solid disposals of the hospital.

FIRE PROTECTION Install portable type fire extinguishers at each department.
If the project must meet the Fire Code, necessary facilities should be installed, which are not included in this report.

ALL FACILITIES Necessary spare parts to be provided.

(2) Outline list of equipment

Below is an outline list of equipment. For further details, please refer to the plans. Figures affixed to the code names refer to beds.

a. Water supply

	W-100	W-200	W-300	W-450
Source (well)	200ℓ/min×1	200ℓ/min×1	400ℓ/min×1	400ℓ/min×1
Deep well pump	200ℓ/min×1	200ℓ/min×1	400ℓ/min×1	400ℓ/min×1
Main water tank	30m ³ ×1	30m ³ ×2	60m ³ ×1 (Tap water) 60m ³ ×1 (Service water)	60m ³ ×1 (Tap water) 60m ³ ×1 (Service water)
Auxiliary elevated water tank	1m ³ ×2	1m ³ ×2	1m ³ ×3	1m ³ ×5
Pressure pump	100ℓ/min×1 200ℓ/min×2	100ℓ/min×1 200ℓ/min×2	200ℓ/min×2 (Tap water) 200ℓ/min×2 (Service water)	200ℓ/min×2 (Tap water) 200ℓ/min×2 (Service water)
Supply equipment	1 set	1 set	2 sets	2 sets

Note: Tank capacity refer to the effective capacity.

b. Hot water supply

	H-100	H-200	H-300	H-450
LPG balance type instant water heater	Supplied to: shower rooms in wards and living quarters.			
	Installed: wards and living quarters.			

c. Drainage facilities

		Method	S-10	S-200	S-300	S-450
Plan I		Combined processing	60m ³ /d	120m ³ /d	240m ³ /d	360m ³ /d
Plan II	Phase I	Separate human waste processing	15m ³ /d	30m ³ /d	45m ³ /d	70m ³ /d
	Phase II	Combined processing	60m ³ /d	120m ³ /d	240m ³ /d	360m ³ /d

Note: Capacities in the table refer to processing capacities.

d. Air conditioning and ventilation

	A-100	A-200	A-300	A-450
Air conditioner for operating room	1 system	2 system	3 system	4 system
Air conditioner for delivery room	1 "	1 "	1 "	1 "
Air conditioner for ICU and others	1 "	1 "	1 "	1 "
Air filter unit	Installed: Operating room, delivery room, neonates room, premature babies room, ICU.			
Ventilation system (ventilating fan)	Installed:			
	Central ward	: Labor room, central supply, autoclave room, laboratory, dark room, toilet, shower room, sterilization room.		
	Wards	: toilet, shower room, waste processing room.		
	Service block	: laundry, kitchen, dining room, machine rooms, morgue, autopsy room.		
	Living quarters: toilet, shower room.			
Air conditioner for cobalt room	Cobalt room is to be air conditioned.			

e. Kitchen facilities

	K-100	K-200	K-300	K-450
Water pressure rice washer	-	o	o	o
Gas rice cooker	o	o	o	o
Gas tilting pan	o	o	o	o
Electric refrigerator	o	o	o	o
Gas water heater (storage type)	o	o	o	o
Double sink	o	o	o	o
Cooking table	o	o	o	o
Gas range	o	o	o	o
Cooking table with drawers	o	o	o	o
Shelving	o	o	o	o
Cooking table with sink	o	o	o	o
Mobile table	o	o	o	o
Rack	o	o	o	o
200kg scale	o	o	o	o
Portable 20kg scale	o	o	o	o
Dish receiving sink	o	o	o	o
Gas water heater (instant)	o	o	o	o
Dish washing sink	o	o	o	o
Boil sterilizing sink	o	o	o	o
Drain-board	o	o	o	o
Cupboard	o	o	o	o
Garbage can	o	o	o	o
Pantry wagon	o	o	o	o
L type transporter	o	o	o	o
Sink with drain-board	o	o	o	o

f. Laundry facilities

	L-100	L-200	L-300	L-450
Washing machine	o	o	o	o
Extractor	o	o	o	o
Drying tumbler	o	o	o	o
Sheet roller	-	o	o	o
Ironing board	o	o	o	o
Iron	o	o	o	o
Sprayer	o	o	o	o
Work table	o	o	o	o
Cart	o	o	o	o
Shelving	o	o	o	o
Scale	o	o	o	o
Sawing machine	o	o	o	o
Sterilization tank	o	o	o	o
Sink	o	o	o	o
Container wagon	-	o	o	o

g. Medical gas, LPG facilities

	M-100	M-200	M-300	M-450
Oxygen gas	Supplied to: Operating room, delivery room, ICU, neonates room, premature babies room.			
Nitrous oxide gas	Supplied to: Operating room, delivery room.			
LPG	Supplied to: Laboratory, central supply, water heater in shower room, kitchen, laundry, living quarters.			

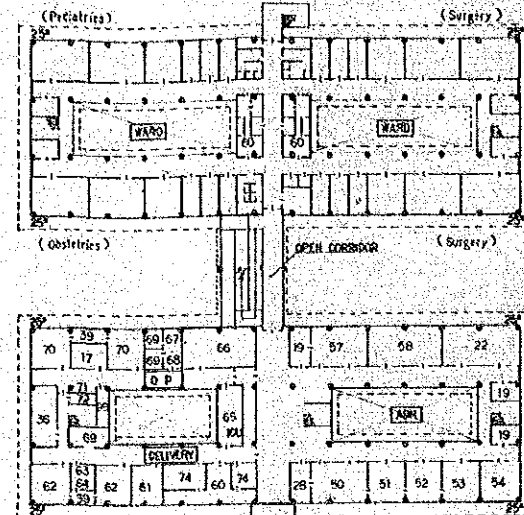
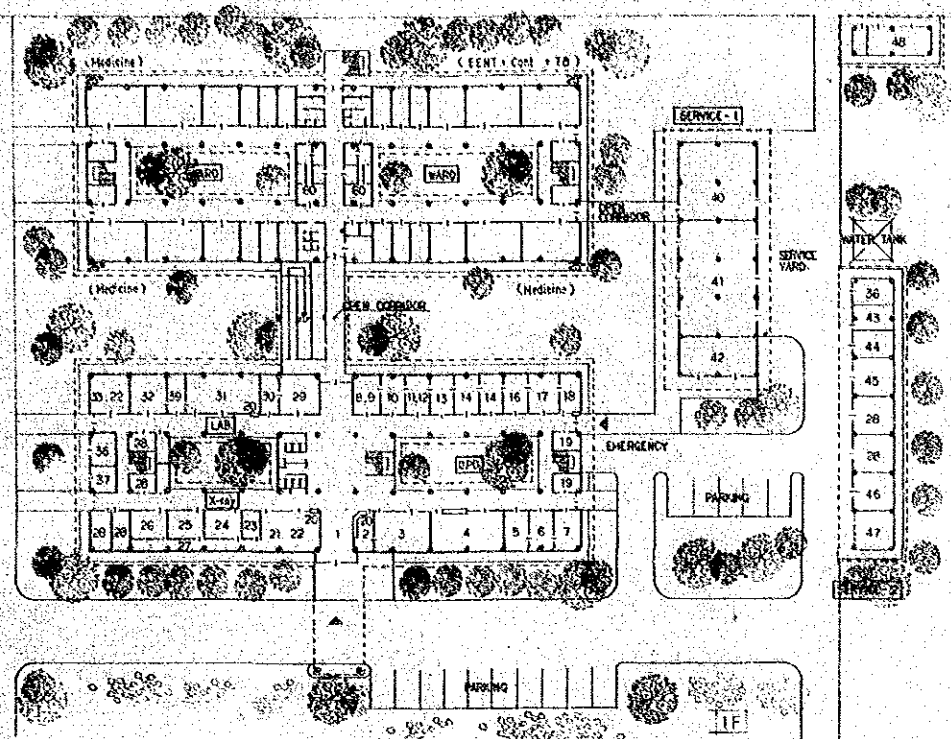
h. Incineration

	I-100	I-200	I-300	I-450
Incinerator	Type: Self burning	Type: Self burning	Type: With oil burner	Type: With oil burner
	Capacity: 150kg/h	Capacity: 300kg/h	Capacity: 450kg/h	Capacity: 675kg/h

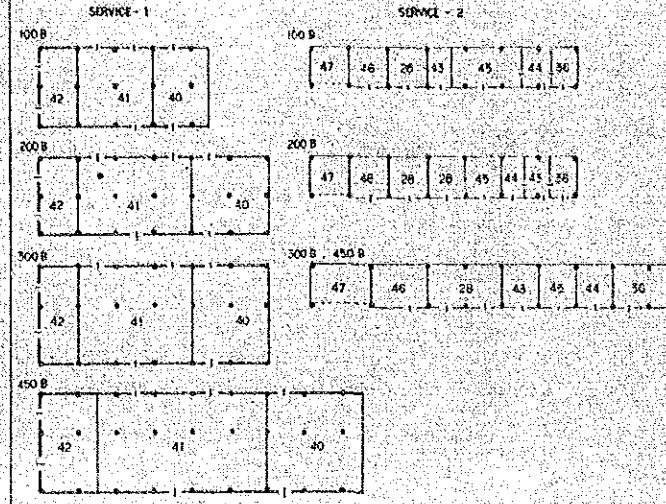
i. Fire fighting facilities

	F-100	F-200	F-300	F-450
Portable fire extinguisher (dry chemical)	31 sets	39 sets	43 sets	48 sets

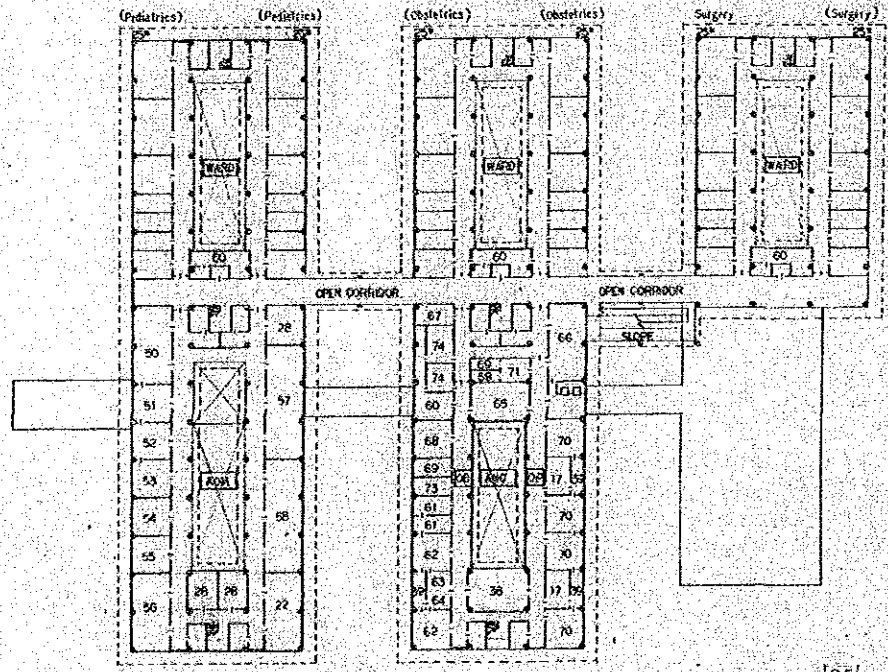
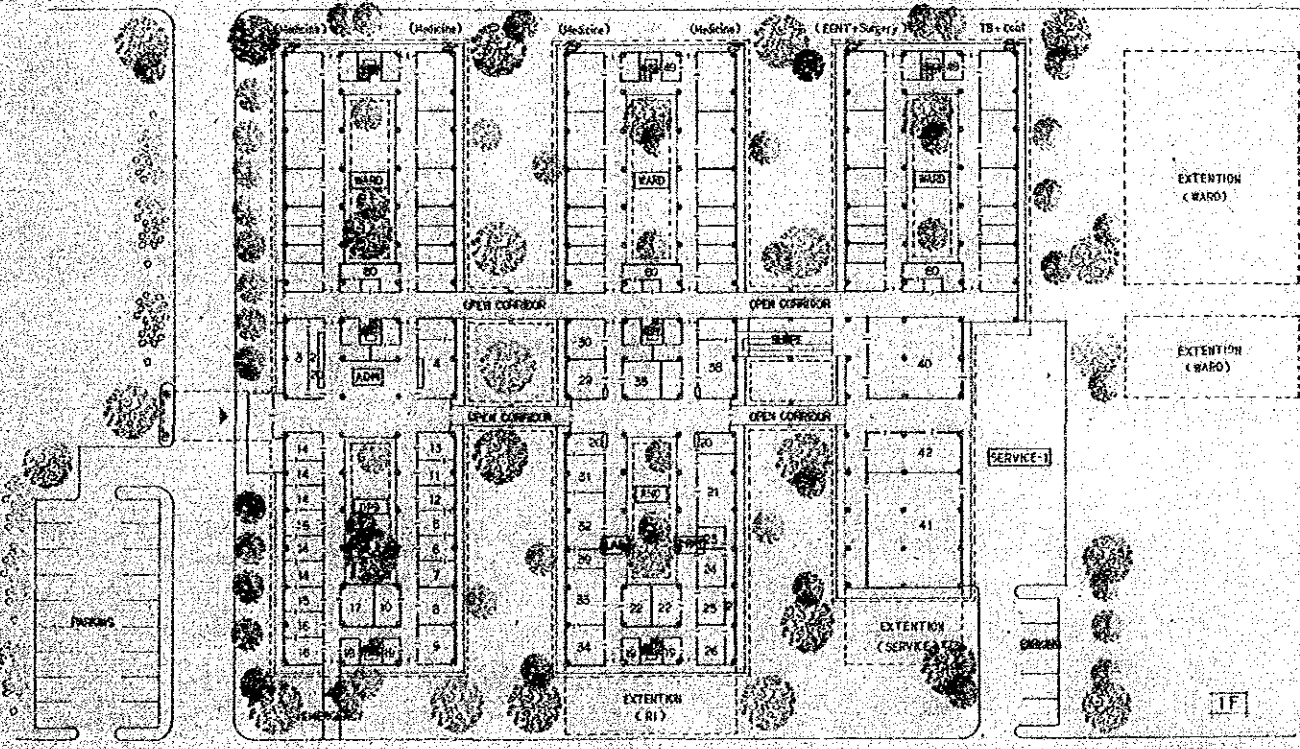
200th STANDARD MODEL PLAN



SAMPLES OF SERVICES



300th STANDARD MODEL PLAN



LEGEND	
1. Lobby	57. Staff
2. Out. Reception	58. Medical Records
3. Office (Adm.)	59. X-ray
4. Planning	60. Nurse Station
5. Busby Reception	61. Lab.
6. Waiting	62. Delivery
7. OB Specialty	63. Ambulance
8. E.	64. (Obstet.) Bed
9. ENT	65. I.C.U.
10. Dental	66. Central Sterile Supply
11. Radiol. C.	67. Office
12. Radiol. D.	68. Staff
13. Pediatrics	69. Storage & Fold.
14. Medicine	70. Regis. CP
15. Treatment	71. Ward
16. Surgery	72. Waiting
17. Minor OP	73. Nurse Examination
18. Night reception	74. Messing
19. Corridor	
20. Reception	
21. Waiting	
22. Ambulance	
23. Bus Reception	
24. X-ray 1	
25. X-ray 2	
26. X-ray 3	
27. Corridor	
28. Storage	
29. Lab. 1	
30. Lab. 2	
31. Lab. 3	
32. Lab. 4	
33. Lab. 5	
34. Lab. 6	
35. Lab. 7	
36. Radiology	
37. Bus	
38. Physical Therapy	
39. Messing	
40. Laundry Room	
41. Waiting	
42. Office	
43. Ambulance	
44. Electrical	
45. Sanitary	
46. Engineering Service	
47. Storage	
48. Major Delivery	
49. Corridor	
50. Office	
51. Admin. Office	
52. Storage R.	
53. Reception	
54. Busby Reception	
55. Chief medical staff	
56. Delivery	