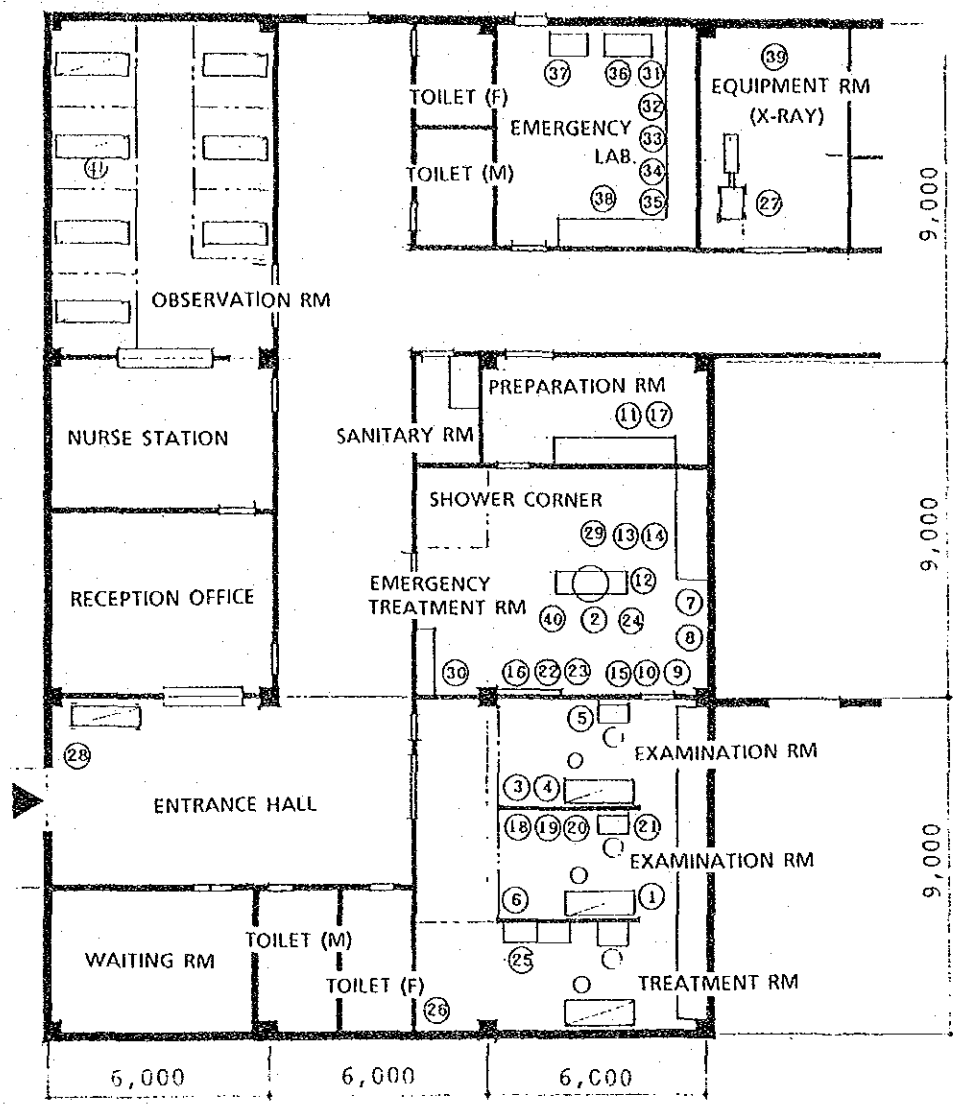
Outpatient Department

LAYOUT PLAN 3

Outpatient Division	Entrance Hall (50m²)/ Waiting RM(24m²) Reception Office(27m²)/ Nurse Station(27m²) Observation RM(54m²)/ Examination RM(48m²) Treatment RM(24m²)/ Emergency Treatment RM(48m²)/ Preparation RM(18m²)/ Emergency Lab. (36m²)/ Equipment RM(24m²)



B-1 Treatment Bed

B-2 Operating Light (combination type)

B-3 Sphygmomanometer (0 - 200mmHg)

B-4 Stethoscope (for adult, for infant, dual type)

B-5 X-ray Film Viewer (for 2 films)

B-6 3-ch Electrocardiograph (portable type, monitoring type)

B-7 Suction Apparatus

B-8 Resuscitator

B-9 Foreign Body Forceps

B-10 Air Tourniquet

B-11 High Pressure Sterilizer with Drying System, Table-top Type, Electric

B-12 Universal Operating Table, Oil-Hydraulic (for X-ray fluoroscopy)

B-13 Anesthesia Apparatus

B-14 Ultrasonic Nebulizer

B-15 Defibrillator

B-16 Film Viewer (for 4 films)

B-17 Boiling Sterilizer, Table-top type, Electric

B-18 Doppler Fetus Detector (AC and DC)

B-19 Infant Incubator

B-20 Neonatal Monitor

B-21 Diagnostic Instrument Set

B-22 Surgical Operating Instrument Set

B-23 Operating Material Set

B-24 Instrument Tray Table

B-25 Instrument Cabinet

B-26 Instrument Carriage

B-27 Surgical X-ray Apparatus (C arm type, 20mAs)

B-28 Stretcher

B-29 Electro-Surgical Unit

B-30 Water Sterilizer, Ultra-violet (scrub Unit for 2 persons)

B-31 Blood Gas Analyzer

B-32 Blood Chemistry Analyzer (for 34 items)

B-33 Sodium-Potassium-Chlor Analyzer

B-34 Centrifuge for general purpose

B-35 Bilirubin Analyzer

B-36 Medical Refrigerator

B-37 Ice Maker

B-38 Laboratory Instrument Set

B-39 X-ray Film Auto Developing Processor

B-40 Ventilator

B-41 Gatch Bed

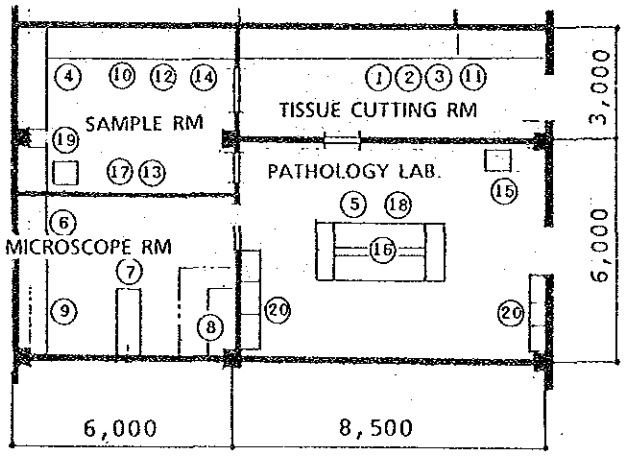
B-42 Irrigator Stand

B-43 Linen (bed Sheet, bed pad, blanket, pillow, bundle cover, etc.)

Function: Performing treatment and light operations for emergency patients and outpatients coming at night

Central Diagnosis & Treatment Department — LAYOUT PLAN 4

Medical Lab. Division — Pathology Lab.(51m^2)/ Tissue Cutting RM(25.5m^2)/ Sample RM(27m^2)/ Microscope RM(27m^2)



I-1 Shaker for Tissue Fixation, Horizontal Rotation

I-2 Automatic Tissue Processor

I-3 Paraffin Oven

I-4 Freezing Microtome

I-5 Automatic Slide Stainer (with hood)

I-6 Binocular Microscope with Teaching Head (×1000)

I-7 Research Microscope (×1000) (trinocular +35mm camera, binocular)

I-8 Fluorescence Microscope

I-9 Polarization Microscope

I-10 Sledge Microtome, Large

I-11 Parafin Block Humidifier

I-12 Slide Warmer

I-13 Rotary Microtome, Large

I-14 Automatic Microtome Knife Sharpener

I-15 Drying Oven

I-16 Laboratory Bench/Sink/Table for Teaching Microscope

I-17 Centrifuge

I-18 Water Bath (room temperature~65°C)

I-19 Water Still with Stand (1.8ℓ/h)

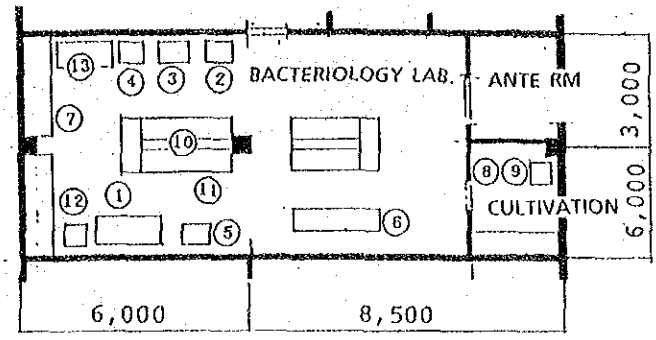
I-20 Specimen Storage Cabinet (large type)

I-21 Laboratory Room Equipment (glassware, etc.)

Function: Preparing of tissue specimens and performing microscopic examinations

Central Diagnosis & Treatment Department LAYOUT PLAN 5

Medical Lab. Division Bacteriology Lab. (87m2)

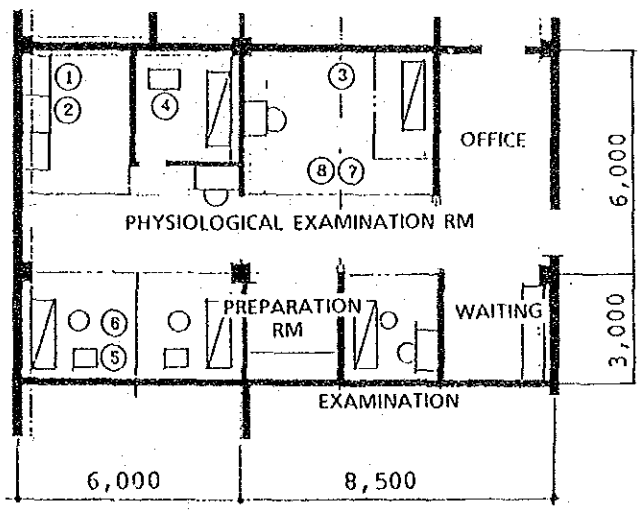


H-1 Medical Freezer
H-2 Low Temperature Incubator
H-3 Anaerobic Jar
H-4 Electric Incubator (Room Temperature +5°C~45°C)
H-5 Refrigerator (500ℓ)
H-6 Binocular Microscope with Teaching Head (×1000)
H-7 Research Microscope (×1000)
(trinocular +35mm camera, binocular)
H-8 Hot Air Sterilizer
H-9 High Pressure Steam Sterilizer, Medium Type
H-10 Laboratory Bench/Sink/Table for Teaching Microscope
H-11 Centrifuge
H-12 Water Still with Stand(1.8ℓ/h)
H-13 Clean Bench

Function: Performing examinations on presence of bacteria in samples, type of bacteria, sensitivity of it to medicines, etc.

Central Diagnosis & Treatment Department LAYOUT PLAN 6

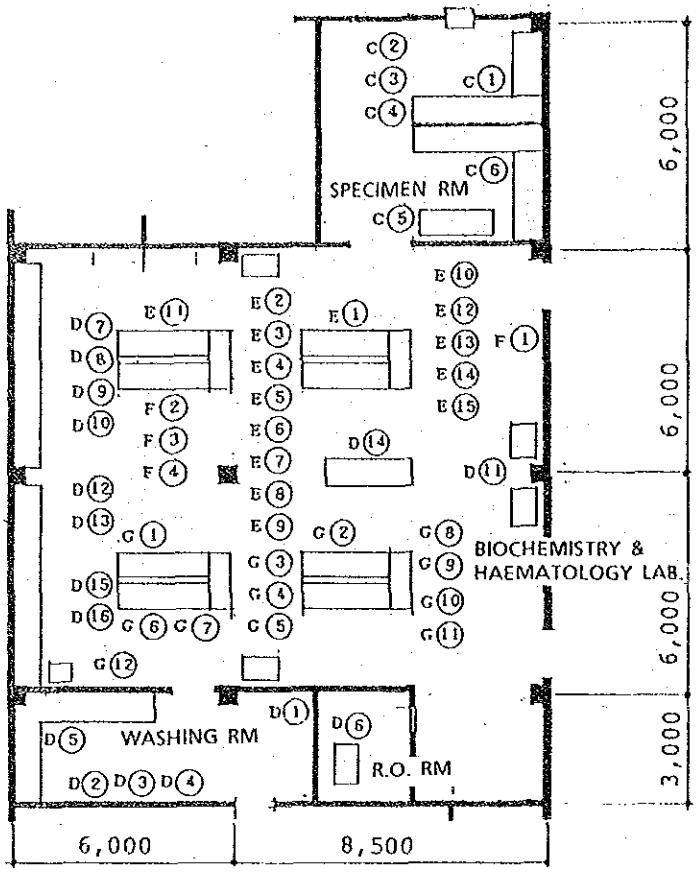
Diagnostic Division Physiological Examinaiton RM (130m2)



J-1 Autospirometer
J-2 Rotary Wet Spriometer
J-3 6-ch Electrocardiograph (portable type)
J-4 13-ch Electroencephalograph
J-5 Ultrasound Diagnostic Equipment with Printer (for Cardiac, and abdominal use)
J-6 Ultrasound Diagnostic Equipment (portable type)
J-7 Irrigator Stand
J-8 Ergometer, Treadmill, Master Padder

Function: Performing physiological examinations using electrocardiograph, electroencephalograph, autospirometer, ergometer etc.

Medical Lab. Division — Specimen RM(36m²)/ Biochemistry & Haematology Lab.(184.5m²)/ Washing RM(25.5m²)/ R.O.RM(7.5m²)



C-1 Laboratory Bench

C-2 Refrigerated Full Auto Centrifuge

C-3 Table-top General Purpose Centrifuge

C-4 Table-top Ultrasonic Cleaner

C-5 Medical Refrigerator (1300ℓ)

C-6 High Pressure Steam Sterilizer Table-top Type

D-1 High Pressure Steam Sterilizer, Medicine Type, Electric

D-2 Ultrasonic Cleaner

D-3 Drying Oven

D-4 Electric Hot Air Sterilizer

D-5 Work Table/Sink/Table for Teaching Microscope/Bench for Balance

D-6 Water Purification System (RO/Ion Exchanger)

D-7 Electric Balance

D-8 Direct Reading Balance

D-9 pH Meter

D-10 Magnatic Stirrer

D-11 Refrigerator (600ℓ)

D-12 Table-top Clinical Centrifuge (General purpose & Hemato)

D-13 Reserch Microscope (×1000) (trimocular +35mm camera, binocular)

D-14 Binocular Microscope with Teaching Head (×1000)

D-15 Pippet Washer

D-16 Auto Dilutor

E-1 Laboratory Bench/Sink/Bench for Balance/Table for Teaching Microscope

E-2 Blood Cell Counter

E-3 Hemacytometers Thomas

E-4 Blood Smearing Instrument

E-5 Automatic Hemato Stainer (with hood)

E-6 Water Bath

E-7 Slide Warmer

E-8 Dryer

E-9 Coagulo Meter

E-10 Colorimeter

E-11 Blood Cell Counter

E-12 Memory Myelogram totalizer

E-13 Fibrin Clotlysis Timerecorder

E-14 Blood Sedimentation Unit

E-15 Platelet Counter

F-1 Electric Incubator

F-2 Centrifuge

F-3 Water Bath (room Temperature ~65°C)

F-4 Slide Test Rotator

G-1 Blood Chemistry Analyzer (for 34 item)

G-2 Na-K-Cℓ Analyzer

G-3 Glucose Analyzer

G-4 Hemoglobin Analyzer

G-5 Water Bath

G-6 Blood Gas Analyzer

G-7 Refractometer

G-8 Dispenser

G-9 Electrophoresis Apparatus

G-10 Densitometer

G-11 Colorimeter

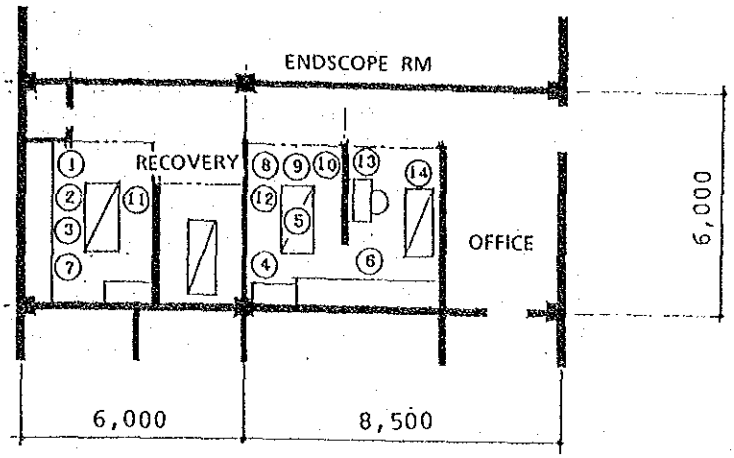
G-12 Water Still with Stand(1.8ℓ/h)

G-13 Laboratory Room Equipment (glassware, etc.)

Function:
- Separation, preservation, haematology test and biochemistry test of samples (blood, cancer cell, urine)
- Washing and sterilizing of testing equipment (Wash RM)
- Production of purified water

Central Diagnosis & Treatment Department LAYOUT PLAN 8

Diagnostic Division Endosope RM(87m²)

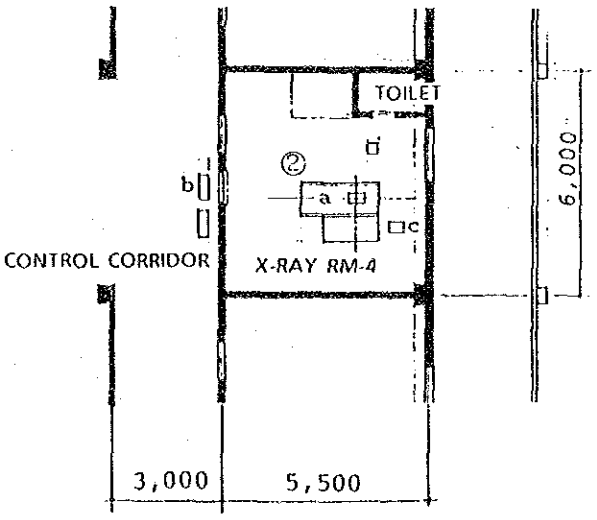


K-1 Fiberscope, Assorted (upper, lower, duodeno)
K-2 Endoscopic Examining Instrument Set
K-3 Cold Light Supply
K-4 Endoscope Locker
K-5 Endoscope Table
K-6 Endoscope Washer
K-7 Lecture Scope
K-8 Electro Surgical Unit
K-9 Suction Unit, Portable
K-10 Laparoscope/Lecture Scope/Light Source
K-11 Endoscope Wagon
K-12 Fiberscope, Child Model
K-13 Film Viewer, Table-top Type (for 2 films)
K-14 Examination Table with Pillow

Function: Performing endoscopic examinations

Central Diagnosis & Treatment Department LAYOUT PLAN 9

X-ray Division X-ray Rms-4(33m²)

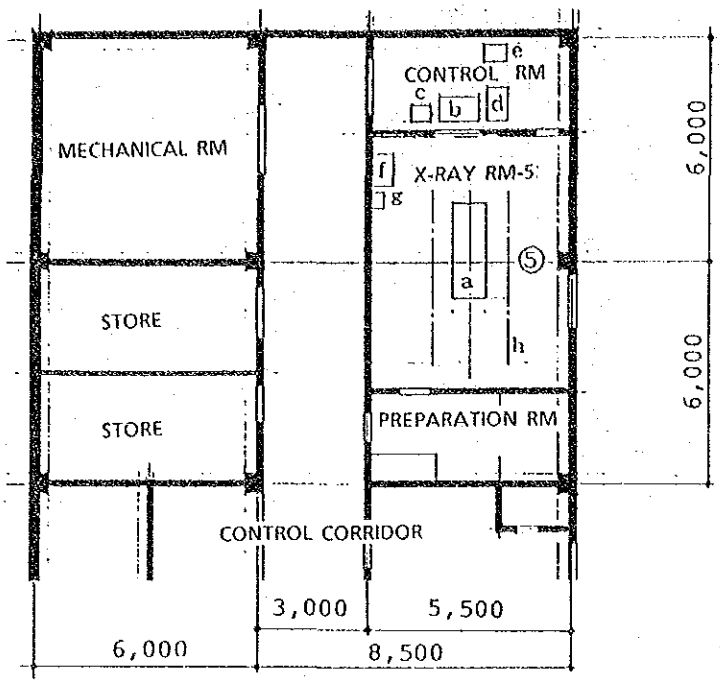


L-2 Remote Control Type X-ray TV System (850mA)
a. X-ray TV table
b. Controller
c. Transformer

Function: Performing remote control type X-ray TV system diagnosis

Central Diagnosis & Treatment Department LAYOUT PLAN 10

X-ray Division X-ray RM-5(38.5m²)/ Preparation RM(13.75m²)
Control RM(13.75m²)



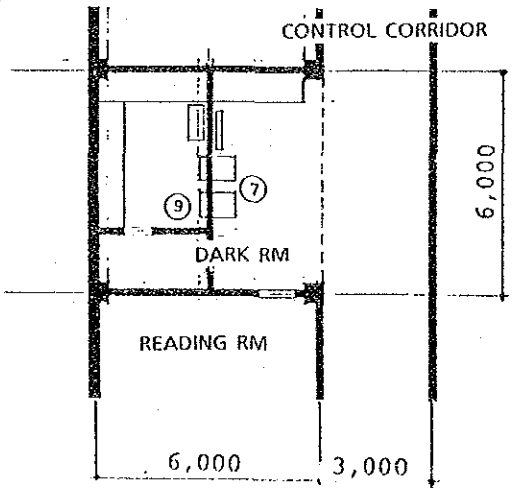
L-5 Angio Cardio Diagnostic X-ray System (single plane 850mA)

a. Examination table
b. Controller
c. Desk
d. Rack
e. Video rack
f. High voltage generator
g. Starter
h. Ceiling rail

Function: Performing angio cardio diagnostic X-ray system diagnosis

Central Diagnosis & Treatment Department LAYOUT PLAN 11

X-ray Division Dark RM(36m²)



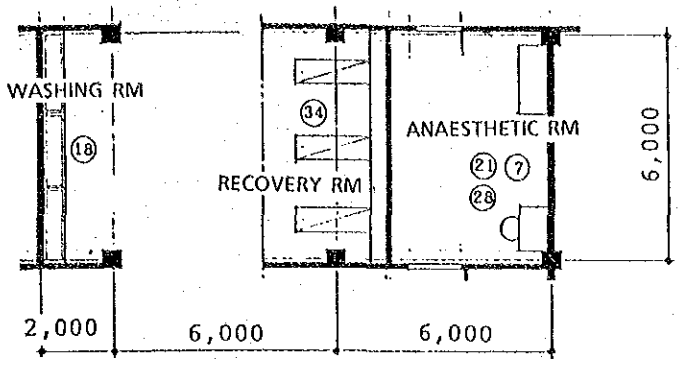
L-7 X-ray Film Auto Developing Processor

L-9 Dark Room Instrument Set

Function: Development of X-ray films

Central Diagnosis & Treatment Department — LAYOUT PLAN 12

Operation Division — Anaesthetic RM(12m²)/ Recovery RM(24m²)
Operation RM(30m²)

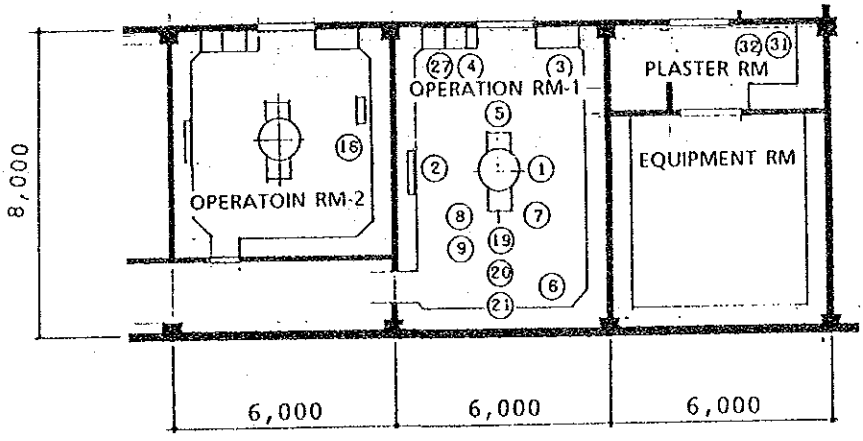


M-7 Anesthesia Apparatus
M-18 Water Sterilizer, Ultra-violet (scrub unit for 2 persons)
M-21 Anesthesia Material Set
M-28 Respirator for Infant
M-34 Recovery Bed

Function: Observation of patients on anesthetic condition before operation and recovering condition after operation

Central Diagnosis & Treatment Department — LAYOUT PLAN 13

Operation Division — Operation RM-1(48m²)/ Operation RM-2(36m²)
Plaster RM(12m²)/ Equipment RM(36m²)

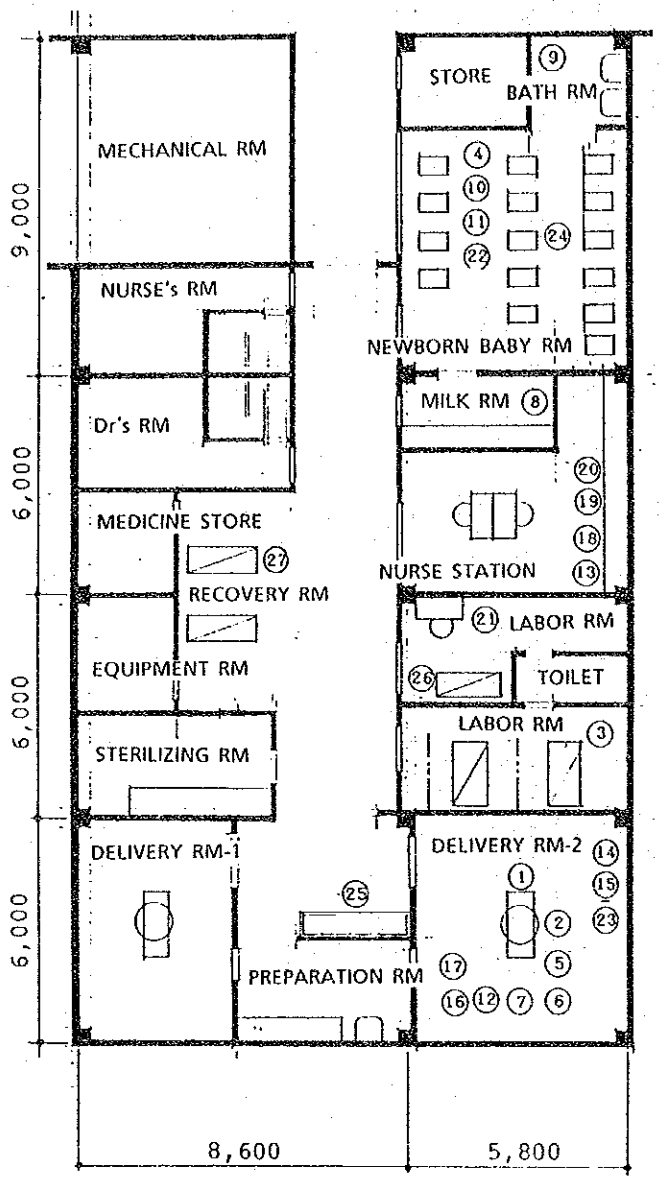


M-1 Operating Light (combination type)
M-2 Film Viewer (recessed type for 4 films)
M-3 Instrument Cabinet (recessed type)
M-4 Medicine Cabinet (recessed type)
M-5 Operating Table (for X-ray fluoroscopy)
M-6 Suction Unit
M-7 Anesthesia Apparatus
M-8 Electro-Surgical Unit
M-9 Patient Monitoring System (3ch)
Patient Monitoring System (8ch)
M-16 Instrument Tray Table
M-19 Surgical Instrument Set
M-20 Operating Material Set
M-21 Anesthesia Material Set
M-27 Warming Cabinet (recessed type)
M-31 Endoscope Washer
M-32 High Pressure Steam Sterilizer

Function: Four rooms for operations on surgery, plastic surgery, obstetrics & gynaecology etc.
Two rooms for operations of patients with infectious diseases and emergency patients.

Delivery Division

Nurse's RM(18m²)/ Dr's RM(18m²)/ Recovery RM (24m²)/ Equipment RM(9m²)/ Medicine Store(9m²) Delivery RM-1(24m²)/ Sterilizing RM(12m²) Delivery RM-2(36m²)/ Preparation RM(20m²)/ Labor RM(36m²)/ Nurse Station(28m²)/ Milk RM(8m²) Newborn Baby RM(42m²)/ Bath RM(6m²)

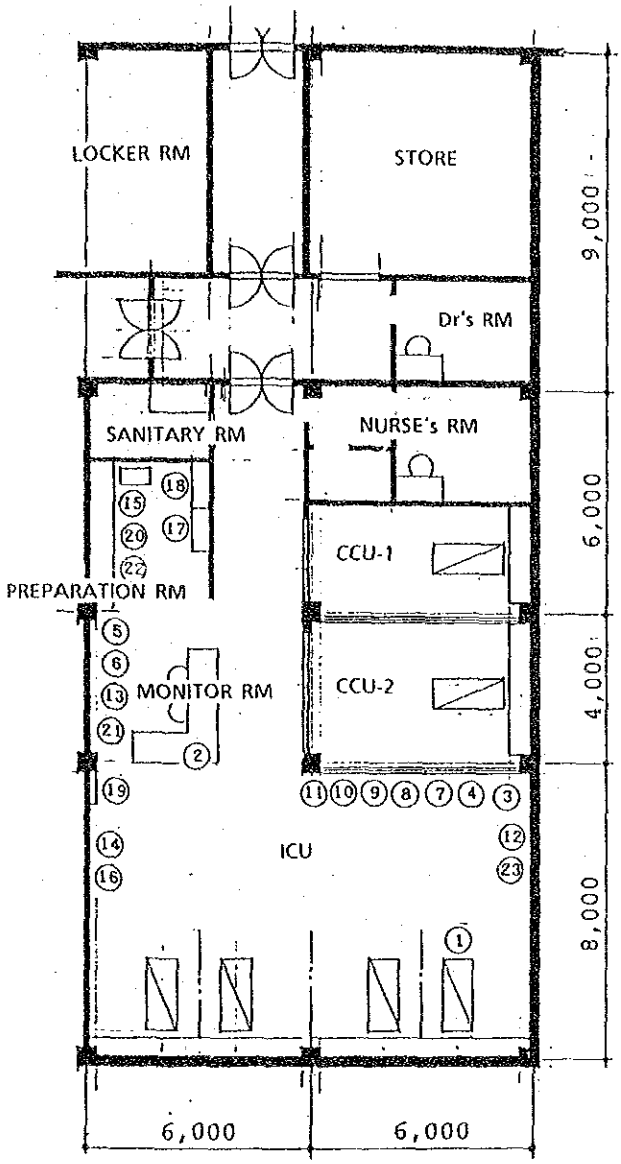


N-1 Obstetric Delivery Table
N-2 Operating Light (single type) (combination type)
N-3 Labor Pain Bed
N-4 Infant Incubator with Phototherapy Unit
N-5 Vacuum Extractor
N-6 Amnoscope
N-7 Infant Resuscitator
N-8 Nursing Bottle Sterilizer
N-9 Infant Scale
N-10 Infant Warmer
N-11 Phototherapy Unit
N-12 Fetal Monitor
N-13 Correction Bilirubin Meter
N-14 Exchange Transfusion Pump
N-15 Infusion Pump
N-16 Doppler Fetus Detector
N-17 Paediatric Examining Table
N-18 Oxygen Monitor
N-19 Emergency Cart
N-20 Breast Pump
N-21 Ultrasound Diagnostic System (for OG use with Doppler)
N-22 Neonatal Monitor
N-23 Obstetric Forceps
N-24 Cot
N-25 Water Sterilizer, Ultra-violet (scrub unit for persons)
N-26 Examination Table
N-27 Recovery Bed
N-28 Delivery Room Equipment

Function: Delivery, bathing newborns, making milk, feeding etc.

ICU·CCU Division

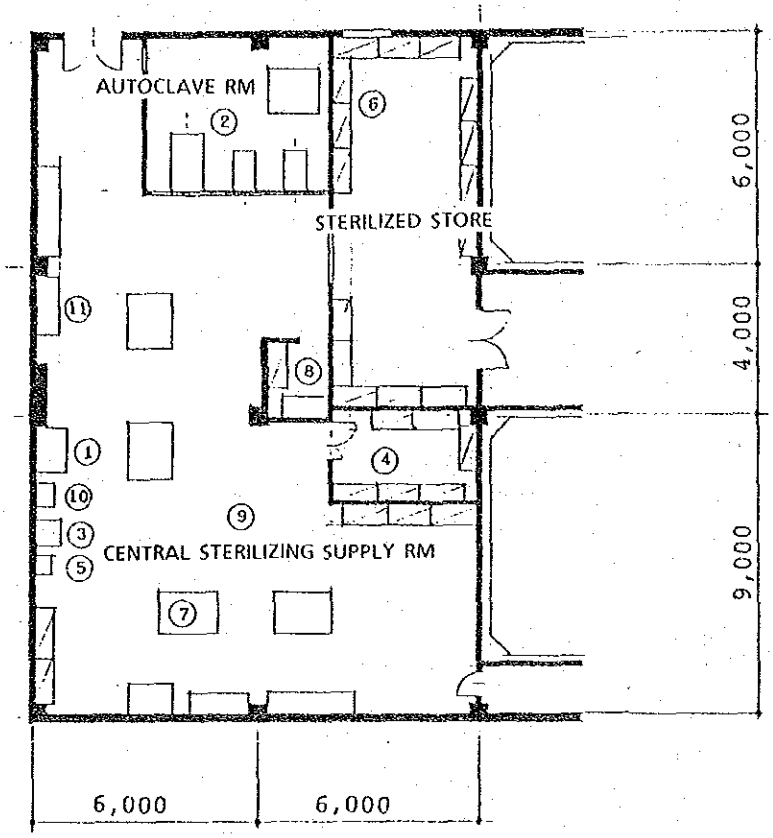
ICU(96m²)/ CCU-1(18m²)/ CCU-2(18m²)/ Nurse's RM (24m²)/ Sanitary RM(6m²)/ Preparation RM(12m²) Monitor RM(24m²)/ Dr's RM(12m²)/ Store(36m²)



O-1 ICU Bed with I.V. pole
O-2 Patient Monitoring System & Bedside Monitor for 6 persons
O-3 Electroencephalograph (13 channels)
O-4 Neonatal Monitor
O-5 Oxygen Monitor
O-6 Thermo Dilution/Cardiac Output Measurement
O-7 Lung Ventilator
O-8 Infant Lung Ventilator
O-9 Oxygen Tent (for adult) (for children)
O-10 Ultrasonic Nebulizer
O-11 Defibrillator
O-12 Infant Incubator
O-13 Infusion Pump
O-14 Sphygmomanometer
O-15 Ice Maker
O-16 Continuous Suction Unit
O-17 Medicine Cabinet
O-18 Instrument Cabinet
O-19 X-ray Film Viewer (for 2 films)
O-20 ICU Material Set
O-21 Surgical Instrument Set (Minor Surgical, Tracheotomy etc.)
O-22 Pace Maker, external type
O-23 Instrument Tray Stand

Function: Intensive care for general patients and patients suffering from cardiovascular diseases.

Central Sterilizing Supply Division	Central Sterilizing Supply RM(143m²)/ Sterilized Store(50m²)/ Linen Store(12.5m²) Autoclave RM(22.5m²)

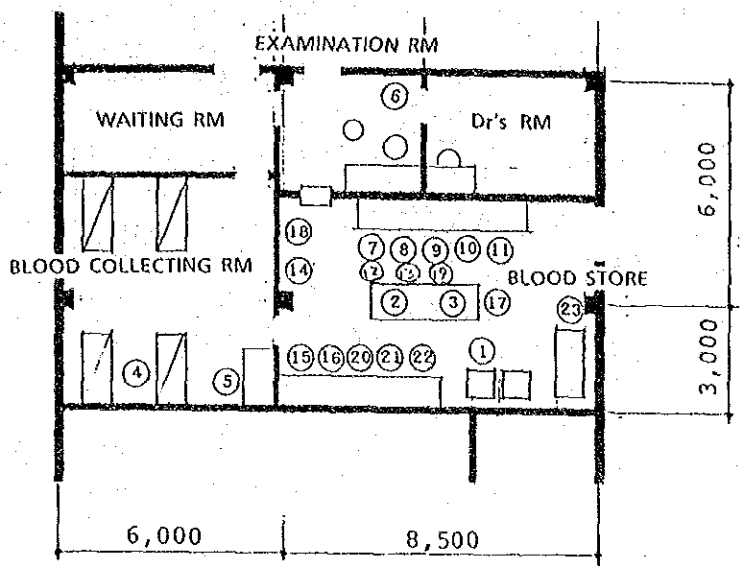


P-1 Ultrasonic Cleaner
P-2 High Pressure Steam Sterilizer, Electric Type
P-3 Washing Machine (for 3.5kg)
P-4 Sewing Machine (manual type)
P-5 Dryer (for 2.5kg)
P-6 Cabinet (linen, disposable, instrument, case, drum, etc.)
P-7 Working Table
P-8 Surgical Glove Conditioner
P-9 System Cart
P-10 Tube Dryer
P-11 Tube Washer
P-12 C.S.S.D. Equipment

Function: Sterilzing and supply of equipment and linen mainly for Operation Division, Emergency Division, Ward Department, Outpatient Department

Blood Bank Division

Waiting RM(19m²)/ Examination RM(15m²)
Blood Collecting RM(36m²)/ Blood Store(42m²)
Dr's RM(21m²)



Q-1 *Refrigerator for Blood Storage, 425 ℓ with Thermo Recorder*

Q-2 Microscope, Binocular (×1000)

Q-3 *Binocular Microscope with Teaching Head (×1000)*

Q-4 Blood Taking Bed

Q-5 Blood Taking Instrument Set

Q-6 Sphygmomanometer (0 - 300mmHg)

Q-7 Centrifuge, 5,000rpm, Multi-tube Type

Q-8 Hemato Counter

Q-9 Refractometer

Q-10 Centrifuge for Agglutinative Reaction, 5,000rpm

Q-11 Refrigerated Centrifuge, 6,000rpm

Q-12 High Pressure Steam Sterilizer, Middle Size, Electric Type

Q-13 *Automatic Scale Balance, graduation: 0.1mg*

Q-14 Water Bath (37°C)

Q-15 Laboratory Work Bench

Q-16 Hot Air Sterilizer, 150 ℓ, with Stand

Q-17 *pH Meter, 0.00 - 14.00pH with Thermometer*

Q-18 Incubator, 150 ℓ, 50 - 200 °C, Stant Type with Caster

Q-19 Blood Examining Equipment Set (cross-matching, etc.)

Q-20 Deep Freezer, 300 ℓ, with Thermo-recorder

Q-21 Electric Slides Rotator, 10 - 66rpm

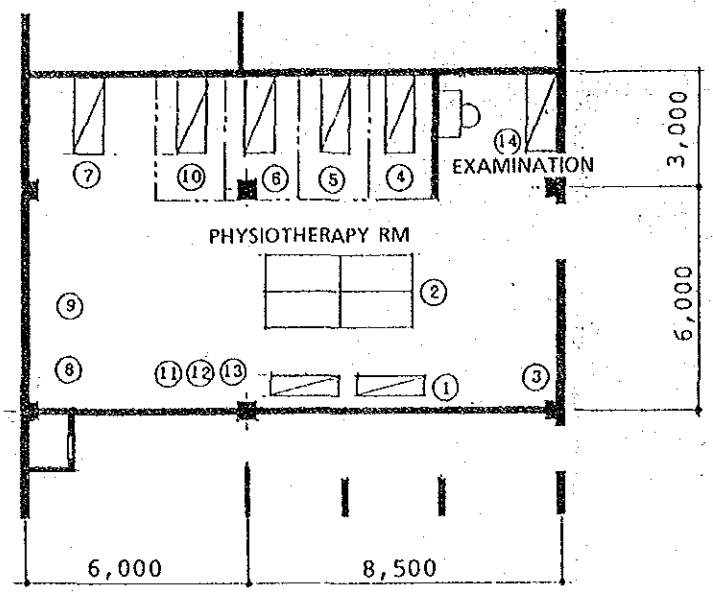
Q-22 Carrying Ice Box

Q-23 Blood Examining Equipment (glassware, etc.)

Function: Collection, examination and preservation of blood for operations and emergency cases

Central Diagnosis & Treatment Department — LAYOUT PLAN 18

Physiotherapy Division — Physiotherapy RM(131m²)

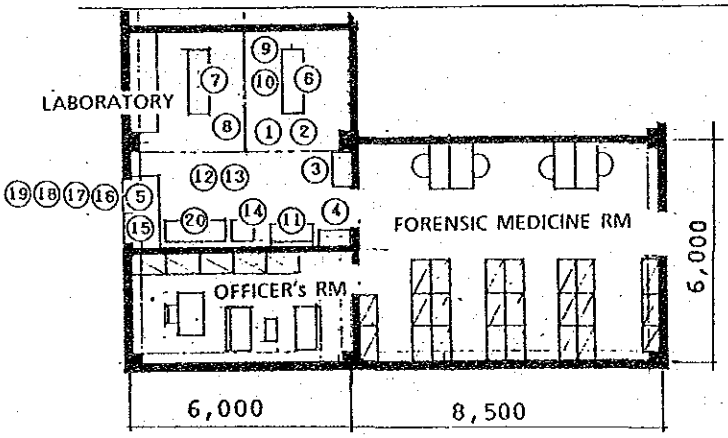


R-1 Massage Bed, polyurethane foam, artificial leather
R-2 Training Mattress
R-3 Wheelchair (for adult, for child)
R-4 Microwave Therapy Apparatus
R-5 Ultra Shortwave Diathermy Unit
R-6 Ultrasonic Therapy Apparatus
R-7 Dragging Exercise Chair
R-8 Bicycle Exercise
R-9 Lower Limbs Extension & Flexion Exercise Chair
R-10 Low Frequency Therapy Apparatus
R-11 Ultra-violet Lamp
R-12 Exercise Equipment Set
R-13 Infrared Lamp
R-14 Examination & Treatment Table

Function: Performing physiotherapy such as training, massage, electric treatment ultra-violet lamp treatment etc.

Central Diagnosis & Treatment Department — LAYOUT PLAN 19

Forensic Medicine Division — Forensic Medicine RM (52m²) Officer's RM(19m²)/Laboratory(36m²)



S-1 Sphygmomanometer, Floor Type
S-2 Stethoscope (adult type)
S-3 Instrument Cabinet
S-4 Instrument Tray Table
S-5 Boiling Sterilizer, Table-top Type, Electric
S-6 Examination Table
S-7 Gynaecological Examining Table (for internal examination)
S-8 Gynaecological Examining Unit (for internal examination)
S-9 Measuring Scale
S-10 Weighing Scale
S-11 X-ray Film Viewer (for 2 films)
S-12 Injector Set
S-13 Diagnostic Instrument Set
S-14 Refrigerator (300ℓ)
S-15 Laboratory Work Bench
S-16 Research Microscope, Binocular (×1000)
S-17 Ultrasonic Cleaner (table-top type)
S-18 Drying Oven
S-19 Hot Air Sterilizer
S-20 Ultra-Low Temperature Freezer (−20°C)

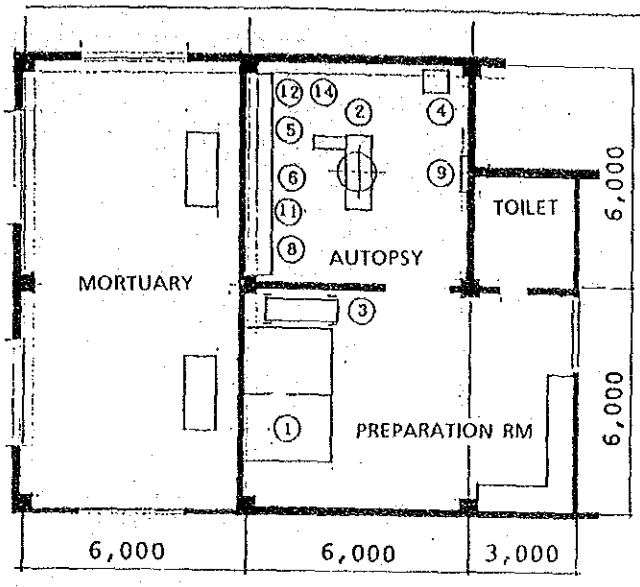
Function: Performing diagnosis of patients suffering from criminal cases and performance of official procedure

Central Diagnosis & Treatment Department

LAYOUT PLAN 20

Mortuary Division

Mortuary(72m²)/ Autopsy(36m²)
Preparation RM(54m²)/ Corridor(27m²)



T-1 Mortuary Refrigerator (8 bodies)
T-2 Autopsy Table (for teaching purpose and L type table)
T-3 Stretcher Scale
T-4 *Formalin Tank*
T-5 Dissecting Instrument Set
T-6 Organ Tank
T-8 Major Shadowless Operating Light
T-9 Film Viewer (recessed type)
T-11 Automatic Scale Balance
T-12 Intestine Photographic Unit
T-14 Spectrophotometer

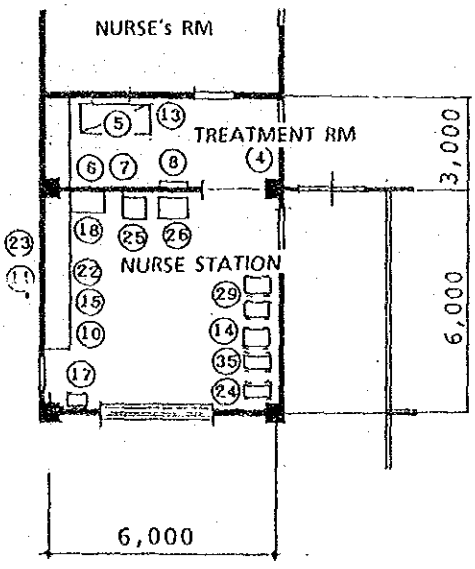
Function: Performance of pathological anatomy

Ward Department

LAYOUT PLAN 21

Ward Division

Nurse Station(36m²)/ Treatment RM(18m²)



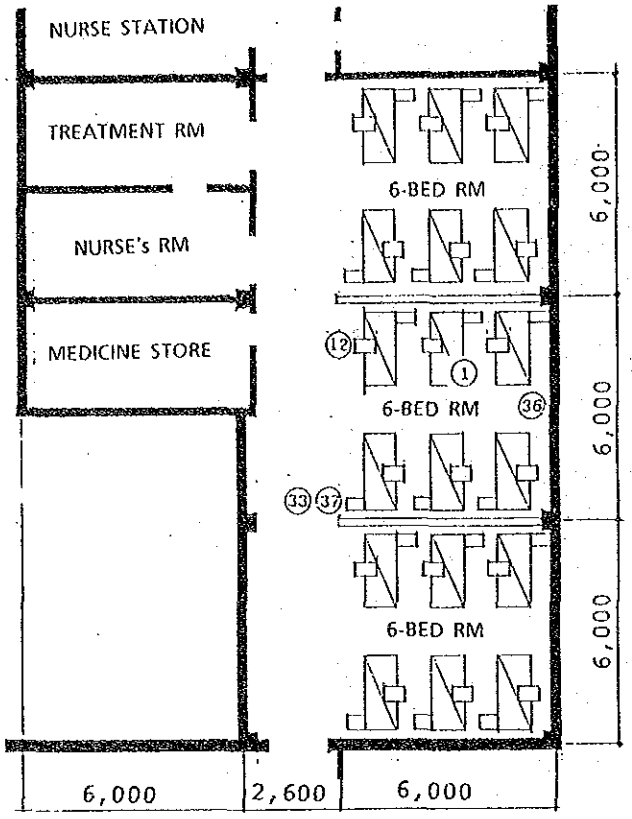
U-4 Diagnostic Instrument Set
U-5 *Examining Table*
U-6 Sphygmomanometer
U-7 3-ch Electrocardiography
U-8 X-ray Film Viewer (for 2 films)
U-10 Difibrillator
U-11 Ultrasonic Nebulizer
U-13 Weighing Scale
U-14 Oxygen Tent
U-15 *Infusion Pump*
U-17 Emergency Cart
U-18 Pharmaceutical Cabinet
U-22 Instrument Set for Ward
U-23 Boiling Sterilizer, Electric
U-24 Nurse Recording Table
U-25 Refrigerator
U-26 Ice Maker

U-29 Cart (supply)
(linen)
(dressing)
U-35 Medication Cart

Function: Observation and medical care for inpatients (Nurse Station)
Examination and treatment of inpatients (Treatment RM)

Ward Department LAYOUT PLAN 22

Internal Medicine Ward 6-Bed Rm(36m²)



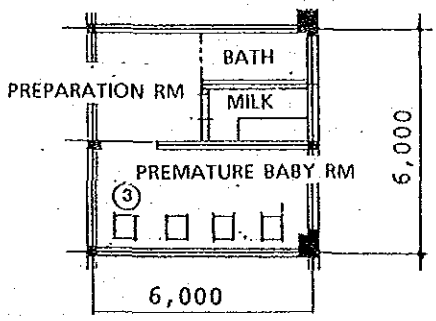
U-1 Gatch Bed for Adult
U-12 Overhead Table (for adult, for child)
U-33 Bedside Cabinet
U-36 Stool-Locker
U-37 Ice Bag & Rack

Note:
Surgery Ward, Obstetric & Gynaecology Ward and Paediatrics Ward are similar to Internal Medicine Ward

Function: Accommodating internal medicine inpatients (women) (Classified in terms of sex)

Ward Department LAYOUT PLAN 23

Paediatrics Ward Premature Baby RM(18m²)/ Preparation RM(18m²)



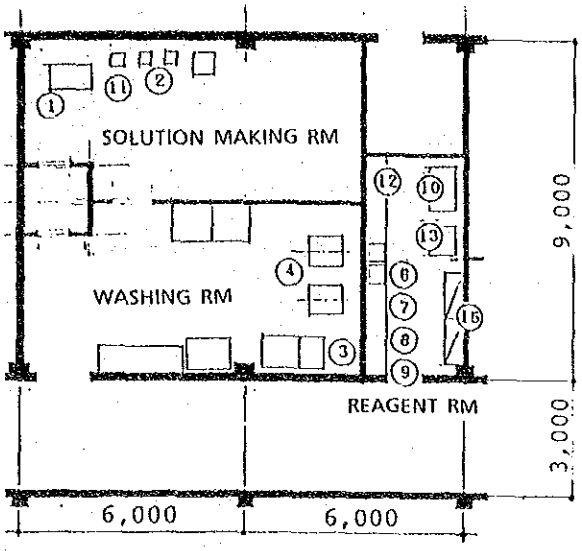
U-3 Infant Incubator

Function: Nursing and treatment of prematured babies

Medical Administration Department

LAYOUT PLAN 24

Solution Making RM(40.5m²)/ Reagent RM(40.5m²)
Washing RM(27m²)



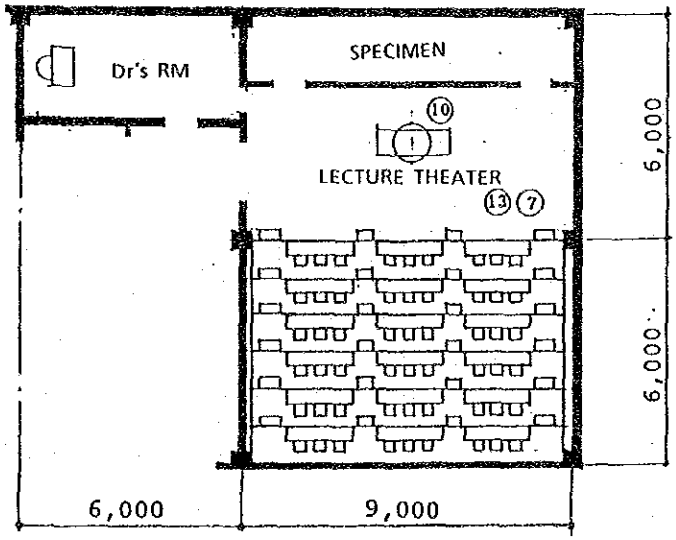
W-1 Water Distiling Aparatus (RO) (200ℓ/h)
W-2 Water Distilling Apparatus
W-3 Bottle Washer
W-4 Autoclave for Bottles, Electric
W-6 Electric Balance (0.1mg)
W-7 Magnetic Stirrer (large size, middle size)
W-8 pH Meter (0.01)
W-9 Refrigerator/Freezer (300ℓ)
W-10 Water Softner
W-11 Pipette Washer
W-12 Drying Oven
W-13 Freeze Dryer
W-15 Dispenser

Function: Production of reagents and infusions

Academic Department

LAYOUT PLAN 25

Lecture Theater(108m²)/ Dr's RM(18m²)



T-7 Overhead Projector
T-10 Glassware
T-13 General Audio Unit (*microphone, speaker*)

Function: Performing lecture on dissection

4-4 Medical Equipment Plan

Following items are considered in selecting equipment and determining quantity of them.

(1) Since this Teaching Hospital will be a place of clinical practice education for medical students, etc., the medical system and equipment contents should be able to satisfy the functions of clinical practice which is necessary to achieve the purpose of medical education in addition to the functions as a general hospital taking the Burmese medical education system and its present situation into account.

(2) When determining the types, specifications and grades of equipment, the medical level in Burma and technical level of doctors and paramedical staff members should be considered in order that the supplied equipment may be used properly and effectively. Moreover, equipment which have been commonly used in existing medical facilities should be selected, in order to lighten the load of maintenance and operation on the Burmese side and the necessary equipment should be chosen to meet a demand of indispensable medical services for Burma refecting its medical condition.

(3) Equipment which are used only for special diagnoses and treatments or only used under special circumstances should not be chosen. Rather, priority should be given to durable equipment with compatibility that is fundamentally required for daily medical services.

(4) Equipment should be durable under severe weather conditions in Burma and with functions that will not generate maintenance problems considering actual conditions of infrastructure.

(5) Equipment with a high safety level that will not generate problems like environmental pollution after installation, with an established reputation and with international standard should be selected.

(6) Equipment easy to operate and require inexpensive maintenance costs which will not become an administrative load should be selected.

(7) Consumables (especially, reagents for chemical analysers and consumables specific to medical equipment) and spare parts to facilitate the maintenance and repairment of equipment will be included in the scope of the Project to reduce the maintenance and operation cost.

(8) Necessary training will be given to the Burmese personnel in charge on how to operate and maintain the equipment when they are handed over to the Burmese side.

(9) In implementing the project, operation manuals and maintenance manuals for the equipment should be provided, and the administration system for them by the Burmese side should be established.
In addition, agencies, manufacturers and prices of the spare parts and consumables should be clarified to enable the Burmese side to facilitate their procurement so that contact with the manufacturers can be assured and budget allocation for the maintenance and operation aspect will not be interfered with.

The equipment list for the major equipment is shown in the following.

1. Outpatient Department

No.	Item	Q'ty	
	(1) Outpatient Division (a)Internal Medicine, (b)Surgery, (c)Obstetrics & Gynaecology, (d)Paediatrics, (e)Central Treatment, (f) Dispensary		
A-1	Sphygmomanometer (0 - 300mmHg)	9	Units
A-2	Examining Table (with a pillow)	11	Units
A-3	3-ch Electrocardiograph (with a stand)	2	Units
A-4	Resuscitator (portable type, oxygen inhalation, revitalization)	2	Units
A-5	Stethoscope (for adults, for infants, dual type)	10	Sets
A-6	Instrument Cabinet	9	Units
A-7	Instrument Carriage	9	Units
A-8	Boiling Sterilizer, Table-top type, Electric	5	Units
A-9	High Pressure Sterilizer with Drying System, Table-top Type, Electric	5	Units
A-10	Stretcher	2	Units
A-11	Gynaecological Examining Table (for internal examination)	1	Unit
A-12	Gynaecological Examining Unit (for internal examination)	1	Unit
A-13	Stereo Colposcope (for internal examination)	1	Unit
A-14	Doppler Fetus Detector (AC and DC)	2	Units
A-15	Instrument Table	9	Units
A-16	Dressing Cart	9	Units
A-17	Injector Set (needle sterilizer)	27	Sets
A-18	Diagnostic Instrument Set	6	Sets
A-19	Treatment Instrument Set	4	Sets
A-20	Measuring Rod	4	Units

No.	Item	Q'ty	
A-21	Weighing Scale (capacity 100kg)	4	Units
A-22	X-ray Film Viewer (for 2 films)	8	Units
A-23	Ultrasound Diagnostic Equipment (abdominal exam. use with recorder)	2	Units
A-24	Audiometer (for adult, for infant)	2	Units
A-25	Dispensary Table for Liquid, Tablet Medicine	4	Units
A-26	Automatic Scale Balance (measuring range 0.1g)	2	Units
A-27	Pharmaceutic Instrument Set	3	Sets
A-28	Medicine Refrigerator (500ℓ)	1	Unit
A-29	Blood Taking Bed	1	Unit
A-30	Litebin	1	Set
A-31	Side Table	1	Unit
	(2) Emergency Division		
B-1	Treatment Bed	3	Units
B-2	Operating Light (combination type)	1	Unit
B-3	Sphygmomanometer (0 - 200mmHg)	2	Units
B-4	Stethoscope (for adult, for infant, dual type)	2	Sets
B-5	X-ray Film Viewer (for 2 films)	2	Units
B-6	3-ch Electrocardiograph (portable type, monitoring type)	2	Units
B-7	Suction Apparatus	2	Units
B-8	Resuscitator	1	Unit
B-9	Foreign Body Forceps	2	Sets
B-10	Air Tourniquet	2	Units
B-11	High Pressure Sterilizer with Drying System, Table-top Type, Electric	1	Unit
B-12	Universal Operating Table, Oil-Hydraulic (for X-ray fluoroscopy)	1	Unit

No.	Item	Q'ty	
B-13	Anesthesia Apparatus	1	Unit
B-14	Ultrasonic Nebulizer	1	Unit
B-15	Defibrillator	1	Unit
B-16	Film Viewer (for 4 films)	1	Unit
B-17	Boiling Sterilizer, Table-top type, Electric	1	Unit
B-18	Doppler Fetus Detector (AC and DC)	1	Unit
B-19	Infant Incubator	1	Unit
B-20	Neonatal Monitor	1	Unit
B-21	Diagnostic Instrument Set	2	Sets
B-22	Surgical Operating Instrument Set	4	Sets
B-23	Operating Material Set	4	Sets
B-24	Instrument Tray Table	2	Units
B-25	Instrument Cabinet	3	Units
B-26	Instrument Carriage	2	Units
B-27	Surgical X-ray Apparatus (C arm type, 20mAs)	1	Unit
B-28	Stretcher	1	Unit
B-29	Electro-Surgical Unit	1	Unit
B-30	Water Sterilizer, Ultra-violet (scrub Unit for 2 persons)	1	Unit
B-31	Blood Gas Analyzer	1	Unit
B-32	Blood Chemistry Analyzer (for 34 items)	1	Unit
B-33	Sodium-Potassium-Chlor Analyzer	1	Unit
B-34	Centrifuge for general purpose	1	Unit
B-35	Bilirubin Analyzer	1	Unit
B-36	Medical Refrigerator	1	Unit
B-37	Ice Maker	1	Unit
B-38	Laboratory Instrument Set	2	Sets
B-39	X-ray Film Auto Developing Processor	1	Unit

No.	Item	Q'ty	
B-40	Ventilator	1	Unit
B-41	Gatch Bed	7	Units
B-42	Irrigator Stand	10	Units
B-43	Linen (bed sheet, bed pad, blanket, pillow, bundle cover, etc.)	1	Lot
B-44	Side Table(1 Unit), Sink(1 Unit)		

2. Central Diagnosis & Treatment Department

No.	Item	Q'ty	
	(1) Medical Laboratory Division		
	(a) Biochemistry & Haematology Lab.		
	(a)-1 Receipt of sample/Classification/ Preservation-C		
C-1	Laboratory Bench	2	Units
C-2	Refrigerated Full Auto Centrifuge	1	Unit
C-3	Table-top General Purpose Centrifuge	2	Units
C-4	Table-top Ultrasonic Cleaner	1	Unit
C-5	Medical Refrigerator (1300ℓ)	1	Unit
C-6	High Pressure Steam Sterilizer Table-top Type	1	Unit
	(a)-2 Shared Equipment and Wash Room -D/Haematology Test-E/Serum Test-F/Biochemistry Test-G		
D-1	High Pressure Steam Sterilizer, Medicine Type, Electric	1	Unit
D-2	Ultrasonic Cleaner	1	Unit
D-3	Drying Oven	1	Unit
D-4	Electric Hot Air Sterilizer	1	Unit
D-5	Work Table(2 Units)/Sink(2 Units)		
D-6	Water Purification System (RO/Ion Exchanger)	1	Unit
D-7	Electric Balance	2	Units
D-8	Direct Reading Balance	2	Units
D-9	pH Meter	2	Units
D-10	Magnetic Stirrer	2	Units
D-11	Refrigerator (500ℓ)	4	Units
D-12	Table-top Clinical Centrifuge (General purpose & Hemato)	2	Units

No.	Item	Q'ty	
D-13	Research Microscope (×1000) (trinocular +35mm camera, binocular)	9	Units
D-14	Binocular Microscope with Teaching Head (×1000)	1	Unit
D-15	Pippet Washer	2	Units
D-16	Auto Dilutor	2	Units
E-1	Laboratory Bench(4 Units)/Sink(2 Units)/Bench for Balance(2 Units)/Table for Teaching Microscope (2 Units)		
E-2	Hemacytometer (Burker-Truck's)	2	Units
E-3	Hemacytometers Thomas	20	Units
E-4	Blood Smearing Instrument	2	Units
E-5	Automatic Hemato Stainer (with hood)	2	Units
E-6	Water Bath	2	Units
E-7	Slide Warmer	2	Units
E-8	Dryer	3	Units
E-9	Coagulo Meter	2	Units
E-10	Colorimeter	2	Units
E-11	Blood Cell Counter(for RBC, WBC, HGB, HCT)	3	Units
E-12	Memory Myelogram Totalizer	2	Units
E-13	Fibrin Clotlysis Timerecorder	1	Unit
E-14	Blood Sedimentation Unit	4	Units
E-15	Platelet Counter	1	Unit
F-1	Electric Incubator	1	Unit
F-2	Centrifuge	1	Unit
F-3	Water Bath (Room Temperature ~65°C)	1	Unit
F-4	Slide Test Rotator	2	Units

No.	Item	Q'ty	
G-1	Blood Chemistry Analyzer (for 34 items)	2	Units
G-2	Na-K-Cℓ Analyzer	2	Units
G-3	Glucose Analyzer	1	Unit
G-4	Hemoglobin Analyzer	1	Unit
G-5	Water Bath	3	Units
G-6	Blood Gas Analyzer	2	Units
G-7	Refractometer	2	Units
G-8	Dispenser	10	Units
G-9	Electrophoresis Apparatus	2	Units
G-10	Densitometer	1	Unit
G-11	Colorimeter	1	Unit
G-12	Water Still with Stand (1.8ℓ/h)	1	Unit
G-13	Laboratory Room Equipment (glassware, etc.)	1	Lot
	(b) Bacteriology Laboratory		
H-1	Medical Freezer	1	Unit
H-2	Low Temperature Incubator	1	Unit
H-3	Anaerobic Jar	1	Unit
H-4	Electric Incubator (Room Temperature +5°C~45°C)	1	Unit
H-5	Refrigerator (500ℓ)	1	Unit
H-6	Binocular Microscope with Teaching Head (×1000)	1	Unit
H-7	Research Microscope (×1000) (trinocular +35mm camera, binocular)	3	Units
H-8	Hot Air Sterilizer	1	Unit
H-9	High Pressure Steam Sterilizer, Medium Type	2	Units
H-10	Laboratory Bench(2 Units)/Sink(1 Unit)/Table for Teaching Microscope(2 Units)		
H-11	Centrifuge	1	Unit

No.	Item	Q'ty	
II－12	Water Still with Stand (1.8ℓ/h)	1	Unit
II－13	Clean Bench	1	Unit
II－14	Laboratory Room Equipment (glassware, etc.)	1	Lot
	(c) Pathology Laboratory		
I－1	Shaker for Tissue Fixation, Horizontal Rotation	2	Units
I－2	Automatic Tissue Processor	2	Units
I－3	Paraffin Oven	1	Unit
I－4	Freezing Microtome	1	Unit
I－5	Automatic Slide Stainer (with hood)	2	Units
I－6	Binocular Microscope with Teaching Head (×1000)	1	Unit
I－7	Research Microscope (×1000) (trinocular +35mm camera, binocular)	3	Units
I－8	Fluorescence Microscope	2	Units
I－9	Polarization Microscope	2	Units
I－10	Sledge Microtome, Large	3	Units
I－11	Paraffin Block Humidifier	3	Units
I－12	Slide Warmer	3	Units
I－13	Rotary Microtome, Large	3	Units
I－14	Automatic Microtome Knife Sharpener	2	Units
I－15	Drying Oven	1	Unit
I－16	Laboratory Bench(1 Unit)/Laboratory Work Bench (3 Units)/ Sink(2 Units)/Table for Teaching Microscope(1 Unit)		
I－17	Centrifuge	1	Unit
I－18	Water Bath (room temperature~65℃)	1	Unit
I－19	Water Still with Stand (1.8ℓ/h)	1	Unit
I－20	Specimen Storage Cabinet (large type)	6	Units
I－21	Laboratory Room Equipment (glassware, etc.)	1	Lot

No.	Item	Q'ty	
1-22	Refreigerator (300ℓ)	1	Unit
	(2) Diagnostic Division		
	Physiological Examination-J/Endoscopic Examination-K		
J-1	Autospirometer	2	Units
J-2	Rotary Wet Spirometer	2	Units
J-3	6-ch Electrocardiograph (portable type)	1	Unit
J-4	13-ch Electroencephalograph	1	Unit
J-5	Ultrasound Diagnostic Equipment with Printer (for Cardiac(1), and Abdominal use(1))	2	Units
J-6	Ultrasound Diagnostic Equipment (portable type)	2	Units
J-7	Irrigator Stand	2	Units
J-8	Ergometer, Treadmill, Master Padder	1	Set
K-1	Fiberscope, Assorted (upper, lower, duodeno)	12	Units
K-2	Endoscopic Examining Instrument Set	2	Sets
K-3	Cold Light Supply	3	Units
K-4	Endoscope Locker	2	Units
K-5	Endoscope Table	2	Units
K-6	Endscope Washer	1	Unit
K-7	Lecture Scope	3	Units
K-8	Electro Surgical Unit	2	Units
K-9	Suction Unit, Portable	4	Units
K-10	Laparoscope/Lecture Scope/Light Source	2	Units
K-11	Endoscope Wagon	2	Units
K-12	Fiberscope, Child Model	2	Units
K-13	Film Viewer, Table-top Type (for 2 films)	1	Unit
K-14	Examination Table with Pillow	7	Units

No.	Item	Q'ty	
	(3) X-ray Division		
L-1	Diagnostic X-ray Equipment	2	Units
L-2	Remote Control Type X-ray TV System (850mA)	1	Unit
L-3	Tomographic X-ray Equipment (850mA)	1	Unit
L-4	Mammographic X-ray System (200mA)	1	Unit
L-5	Angio Cardio Diagnostic X-ray System (single plane 850mA)	1	Unit
L-6	Mobile Type X-ray Equipment (50mAs)	1	Unit
L-7	X-ray Film Auto Developing Processor	2	Units
L-8	X-ray Film Viewer (for 8 films)	5	Units
L-9	Dark Room Instrument Set	1	Set
L-10	Diagnostic & Treatment Instrument for X-ray Diagnosis	1	Lot
L-11	Side Table(1 Unit)/Sink for Darkroom (1 Unit)/ Work Table(1 Unit)		
	(4) Operation Divisoin		
M-1	Operating Light (combination type)	6	Units
M-2	Film Viewer (recessed type for 4 films)	6	Units
M-3	Instrument Cabinet (recessed type)	6	Units
M-4	Medicine Cabinet (recessed type)	6	Units
M-5	Operating Table (for X-ray fluoroscopy)	6	Units
M-6	Suction Unit	6	Units
M-7	Anesthesia Apparatus	4	Units
M-8	Electro-Surgical Unit	6	Units
M-9	Patient Monitoring System (3ch) Patient Monitoring System (8ch)	5 1	Units Unit
M-10	Operating Microscope with Teaching Head	1	Unit
M-11	Vacuum Extractor	1	Unit

No.	Item	Q'ty	
M-12	Dermatome	1	Unit
M-13	Surgical X-ray TV Unit (C arm, 20mA)	1	Unit
M-14	Anesthesia Apparatus with Ventilator	2	Units
M-15	Infant Warmer	1	Unit
M-16	Instrument Tray Table	8	Units
M-17	Defibrillator	2	Units
M-18	Water Sterilizer, Ultra-violet (scrub unit for 2 persons)	4	Units
M-19	Surgical Instrument Set (general-surgical) (gastro-intestinal) (paediatric-surgical) (neuro-surgical) (orthopaedic) (plastic) (dermatological) (urological) (gynaecological) (obstetric) (anesthesia)	18 5 6 2 4 2 2 2 6 3 4	Sets
M-20	Operating Material Set	6	Sets
M-21	Anesthesia Material Set	9	Sets
M-22	Examining Cystoscope, Assorted	1	Set
M-23	Laparoscope (for gynaecological use)	1	Set
M-24	Hysteroscope & Light Source	1	Set
M-25	Erythroplakia Coagulator	1	Unit
M-26	Fiberscope Cabinet (recessed type for 6~10 pcs)	1	Unit
M-27	Warming Cabinet (recessed type)	6	Units
M-28	Respirator for Infant	2	Units
M-29	Fiberscope (upper, lower, duodeno)	6	Units
M-30	Light Source	2	Units
M-31	Endoscope Washer	1	Unit
M-32	High Pressure Steam Sterilizer	1	Unit

No.	Item	Q'ty	
M－33	Pharmaceutical Storage Cabinet	4	Units
M－34	Recovery Bed	3	Units
	(5) Delivery Division		
N－1	Obstetric Delivery Table	2	Units
N－2	Operating Light (single type) (combination type)	1 1	Unit Unit
N－3	Labor Pain Bed	2	Units
N－4	Infant Incubator with Phototherapy Unit	1	Unit
N－5	Vacuum Extractor	2	Units
N－6	Amnoscope	2	Units
N－7	Infant Resuscitator	2	Units
N－8	Nursing Bottle Sterilizer	1	Unit
N－9	Infant Scale	1	Unit
N－10	Infant Warmer	2	Units
N－11	Phototherapy Unit	1	Unit
N－12	Fetal Monitor	3	Units
N－13	Correction Bilirubin Meter	1	Unit
N－14	Exchange Transfusion Pump	2	Units
N－15	Infusion Pump	4	Units
N－16	Doppler Fetus Detector	2	Units
N－17	Paediatric Examining Table	1	Unit
N－18	Oxygen Monitor	1	Unit
N－19	Emergency Cart	1	Unit
N－20	Breast Pump	1	Unit
N－21	Ultrasound Diagnostic System (for OG use with Doppler)	1	Unit
N－22	Neonatal Monitor	1	Unit
N－23	Obstetric Forceps	1	Lot

No.	Item	Q'ty	
N-24	Cot	15	Units
N-25	Water Sterilizer, Ultra-violet (scrub unit for 2 persons)	1	Unit
N-26	Examination Table	1	Unit
N-27	Recovery Bed	2	Units
N-28	Delivery Room Equipment	1	Lot
N-29	Boiling Sterilizer (table top type)	1	Unit
	(6) ICU·CCU Division		
O-1	ICU Bed with I.V. pole	6	Units
O-2	Patient Monitoring System & Bedside Monitor for 6 persons	1	Unit
O-3	Electroencephalograph (13 channels)	1	Unit
O-4	Neonatal Monitor	1	Unit
O-5	Oxygen Monitor	1	Unit
O-6	Thermo Dilution/Cardiac Output Measurement	1	Unit
O-7	Lung Ventilator	3	Units
O-8	Infant Lung Ventilator	1	Unit
O-9	Oxygen Tent (for adult) (for children)	3 1	Units Unit
O-10	Ultrasonic Nebulizer	2	Units
O-11	Defibrillator	1	Unit
O-12	Infant Incubator	1	Unit
O-13	Infusion Pump	8	Units
O-14	Sphygmomanometer	2	Units
O-15	Ice Maker	1	Unit
O-16	Continuous Suction Unit	4	Units
O-17	Medicine Cabinet	1	Unit
O-18	Instrument Cabinet	1	Unit

No.	Item	Q'ty	
O−19	X-ray Film Viewer (for 2 films)	1	Unit
O−20	ICU Material Set	1	Lot
O−21	Surgical Instrument Set (Minor Surgical, Tracheotomy etc.)	3	Sets
O−22	Pace Maker, external type	1	Unit
O−23	Instrument Tray Stand	1	Unit
	(7) Central Sterilizing Supply Division		
P−1	Ultrasonic Cleaner	2	Units
P−2	High Pressure Steam Sterilizer, Electric Type	3	Units
P−3	Washing Machine (for 3.5kg)	2	Units
P−4	Sewing Machine (manual type)	1	Unit
P−5	Dryer (for 2.5kg)	1	Unit
P−6	Cabinet (linen, disposable, instrument, case, drum, etc.)	26	Units
P−7	Working Table	4	Units
P−8	Surgical Glove Conditioner	1	Unit
P−9	System Cart	2	Units
P−10	Tube Dryer	1	Unit
P−11	Tube Washer	1	Unit
P−12	C.S.S.D. Equipment	1	Lot
	(8) Blood Bank Division		
Q−1	Refrigerator for Blood Storaging, 425 ℓ with Thermo Recorder	2	Units
Q−2	Microscope, Binocular (×1000)	2	Units
Q−3	Binocular Microscope with Teaching Head (×1000)	1	Unit
Q−4	Blood Taking Bed	4	Units
Q−5	Blood Taking Instrument Set	1	Set

No.	Item	Q'ty	
Q-6	Sphygmomanometer (0 - 300mmHg)	3	Units
Q-7	Centrifuge, 5,000rpm, Multi-tube Type	1	Unit
Q-8	Hemato Counter	2	Units
Q-9	Refractometer	2	Units
Q-10	Centrifuge for Agglutinative Reaction, 5,000rpm	1	Unit
Q-11	Refrigerated Centrifuge, 6,000rpm	1	Unit
Q-12	High Pressure Steam Sterilizer, Middle Size, Electric Type	1	Unit
Q-13	Automatic Scale Balance, Graduation: 0.1mg	1	Unit
Q-14	Water Bath (37°C)	1	Unit
Q-15	Laboratory Work Bench	3	Units
Q-16	Hot Air Sterilizer, 150 ℓ, with Stand	1	Unit
Q-17	pH Meter, 0.00 - 14.00pH with Thermometer	1	Unit
Q-18	Incubator, 150ℓ, 50 - 200 °C, Stand Type with Caster	1	Unit
Q-19	Blood Examining Equipment Set (cross-matching, etc.)	1	Set
Q-20	Deep Freezer, 300ℓ, with Thermo-recorder	1	Unit
Q-21	Electric Slides Rotator, 10 - 66rpm	2	Units
Q-22	Carrying Ice Box	2	Units
Q-23	Blood Examining Equipment (glassware, etc.)	1	Lot
	(9) Physiotherapy Division		
R-1	Massage Bed(polyurethane foam, artificial leather)	2	Units
R-2	Training Mattress	4	Units
R-3	Wheelchair (for adult, for child)	2	Units
R-4	Microwave Therapy Apparatus	1	Unit
R-5	Ultra Shortwave Diathermy Unit	1	Unit
R-6	Ultrasonic Therapy Apparatus	1	Unit
R-7	Dragging Exercise Chair	1	Unit

No.	Item	Q'ty	
R-8	Bicycle Exercise	1	Unit
R-9	Lower Limbs Extension & Flexion Exercise Chair	1	Unit
R-10	Low Frequency Therapy Apparatus	1	Unit
R-11	Ultra-violet Lamp	2	Units
R-12	Exercise Equipment Set	1	Set
R-13	Infra-red Lamp	2	Units
R-14	Examination & Treatment Table	5	Units
	(10) Forensic Medicine Division		
S-1	Sphygmomanometer, Floor Type	1	Unit
S-2	Stethoscope (adult type)	1	Unit
S-3	Instrument Cabinet	1	Unit
S-4	Instrument Tray Table	1	Unit
S-5	Boiling Sterilizer, Table-top Type, Electric	1	Unit
S-6	Examination Table	1	Unit
S-7	Gynaecological Examining Table (for internal examination)	1	Unit
S-8	Gynaecological Examining Unit (for internal examination)	1	Unit
S-9	Measuring Scale	1	Unit
S-10	Weighing Scale	1	Unit
S-11	X-ray Film Viewer (for 2 films)	1	Unit
S-12	Injector Set	1	Set
S-13	Diagnostic Instrument Set	1	Set
S-14	Refrigerator (300ℓ)	1	Unit
S-15	Laboratory Work Bench	1	Unit
S-16	Research Microscope, Binocular (×1000)	1	Unit
S-17	Ultrasonic Cleaner (table-top type)	1	Unit
S-18	Drying Oven	1	Unit
S-19	Hot Air Sterilizer	1	Unit

No.	Item	Q'ty	
S−20	Ultra-Low Temperature Freezer (−20°C)	1	Unit
	(11) Mortuary Division		
T−1	Mortuary Refrigerator (8 bodies)	1	Unit
T−2	Autopsy Table (for teaching purpose and L type table)	2	Units
T−3	Stretcher Scale	1	Unit
T−4	Formalin Tank	1	Unit
T−5	Dissecting Instrument Set	1	Lot
T−6	Organ Tank	1	Unit
T−7	Overhead Projector	1	Unit
T−8	Major Shadowless Operating Light	2	Units
T−9	Film Viewer (recessed type)	1	Unit
T−10	Glassware	1	Lot
T−11	Automatic Scale Balance	1	Unit
T−12	Intestine Photographic Unit	1	Unit
T−13	General Audio Unit (microphone, speaker)	1	Set
T−14	Spectrophotometer	1	Unit

3. Ward Department

No.	Item	Q'ty	
	1)Internal Medicine Ward, 2)Surgery Ward, 3)Obstetrics & gynaecology Ward, 4)Paediatrics Ward		
U-1	Gatch Bed for Adult	234	Units
U-2	Bed for Paediatrics	71	Units
U-3	Infant Incubator	7	Units
U-4	Diagnostic Instrument Set	8	Sets
U-5	Examining Table	8	Units
U-6	Sphygmomanometer	8	Units
U-7	3-ch Electrocardiography	8	Units
U-8	X-ray Film Viewer (for 2 films)	8	Units
U-9	Solution Bottle Support Stand	100	Units
U-10	Difibrillator	8	Units
U-11	Ultrasonic Nebulizer	16	Units
U-12	Overhead Table (for adult, for child)	305	Units
U-13	Weighing Scale	8	Units
U-14	Oxygen Tent	8	Units
U-15	Infusion Pump	24	Units
U-16	Bedside Monitor	8	Units
U-17	Emergency Cart	8	Units
U-18	Pharmaceutical Cabinet	8	Units
U-19	Hysteroscope/Light Source	1	Unit
U-20	Monitor for Fetal	2	Units
U-21	Breast Pump	4	Units
U-22	Instrument Set for Ward	8	Sets
U-23	Boiling Sterilizer, Electric	8	Units
U-24	Nurse Recording Table	8	Units
U-25	Refrigerator	8	Units

No.	Item		Q'ty	
U-26	Ice Maker		8	Units
U-27	Stretcher		8	Units
U-28	Wheelchair		8	Units
U-29	Cart	(supply) (linen) (dressing)	16 16 16	Units Units Units
U-30	Bedpan Washer Sanitizer		8	Units
U-31	Urinal Shelf		8	Units
U-32	Ward Material Set		8	Sets
U-33	Bedside Cabinet		305	Units
U-34	Infant Bassinet Stand		39	Units
U-35	Medication Cart		8	Units
U-36	Stool-Locker		305	Units
U-37	Ice Bag & Rack		305	Units
U-38	Traction Frame Set		8	Units
U-39	Monkey Bar		8	Sets
U-40	Side Table (8 Units)/ Sink (8 Units)			
U-41	Suction Unit (portable type)		8	Units
U-42	Phototherapy Unit (for premature baby)		1	Unit

4. Medical Administration Department

No.	Item	Q'ty	
	1) Repair Section		
V-1	Osciloscope (large type)	2	Units
V-2	Tester	4	Units
V-3	Instrument Set for Repair	1	Lot
	(2) Procurement and Pharmacy Section		
W-1	Water Distiling Aparatus (RO) (200ℓ/h)	1	Unit
W-2	Water Distilling Apparatus	1	Unit
W-3	Bottle Washer	1	Unit
W-4	Autoclave for Bottles, Electric	1	Unit
W-5	Glassware	1	Lot
W-6	Electric Balance (0.1mg)	1	Unit
W-7	Magnetic Stirrer (large size, middle size)	2	Units
W-8	pH Meter (0.01)	1	Unit
W-9	Refrigerator/Freezer (300ℓ)	1	Unit
W-10	Water Softner	1	Unit
W-11	Pipette Washer	1	Unit
W-12	Drying Oven	1	Unit
W-13	Freeze Dryer	1	Unit
W-14	Ultrasonic Cleaner (9.5ℓ)	1	Unit
W-15	Dispenser	1	Unit
W-16	Alum-capper	1	Unit
W-17	Stirrer	1	Unit
W-18	Filtration System	1	Unit
W-19	Instrument and Material Set for Solution Making & Reagent Making	1	Lot

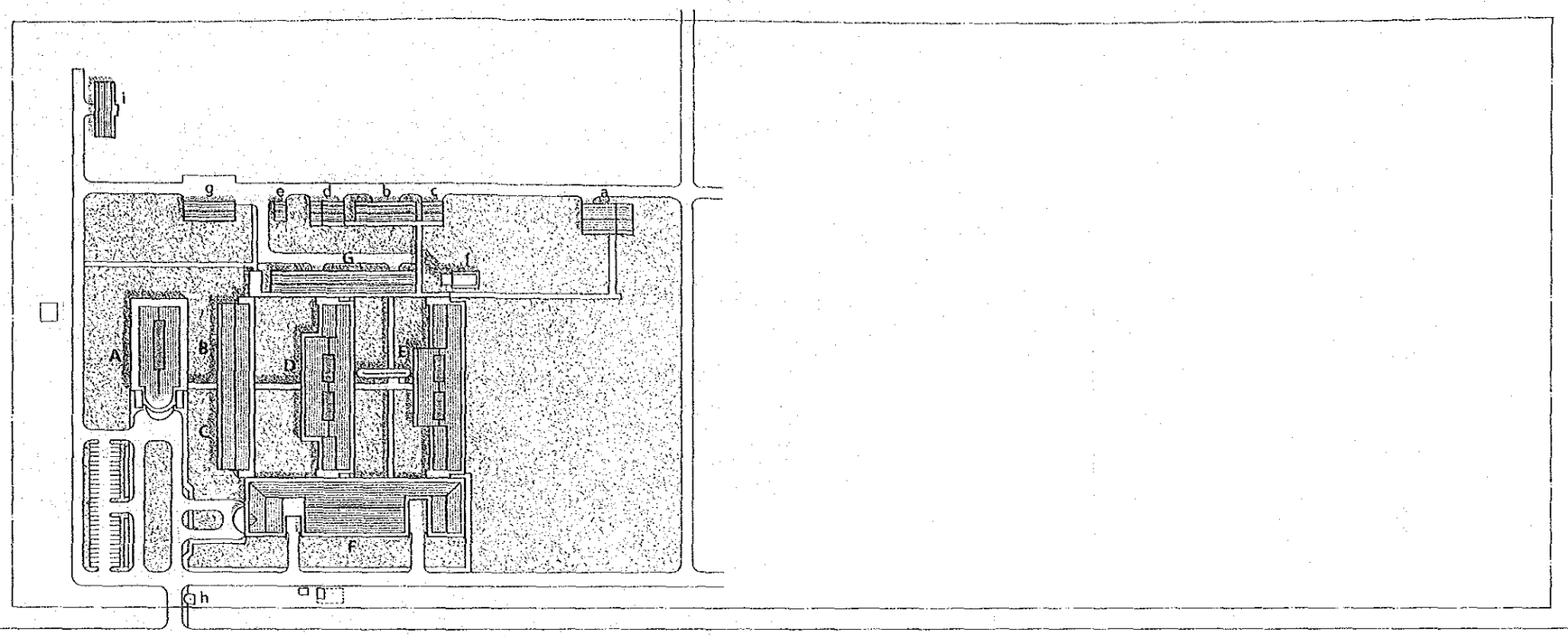
No.	Item	Q'ty	
W-20	Side Table(1 Unit)/Work Table(1 Unit)/Sink(1 Unit)		
W-21	Oxygen Production Plant	1	Unit
W-22	Oxygen Cylinder (Large)	200	Units
W-23	Oxygen Cylinder (Small)	150	Units

5. Academic Department

No	Item	Q'ty	
X-1	Overhead Projector	4	Units
X-2	Slide Projector	2	Units
X-3	Video Apparatus	2	Units
X-4	Projection Microscope	2	Units
X-5	Photography Technique Instrument Set	1	Lot
X-6	Dark Room Instrument Set	1	Lot
X-7	Copy Machine	4	Units
X-8	Typewriter (manual type:5, electric type:1)	6	Units

6. Common

No.	Item	Q'ty	
Y-1	Spare parts for Medical Equipment (3 years)	1	Lot
Y-2	Consumables for Medical Equipment (3 years)	1	Lot
Y-3	Reagent for Medical Equipment (1 year)	1	Lot
Y-4	Furniture for Teaching & Medical use	1	Lot



CENTER OF MANDALAY CITY

ACCESS ROAD

MAIN BUILDING

A. GFL - OUTPATIENT DIVISION
1FL - MEDICAL ADMINISTRATION DEPT.
B. GFL - X-RAY DIVISION
1FL - ACADEMIC DEPT.
C. GFL - DIAGNOSTIC DIVISION
BLOOD BANK DIVISION
PHYSIOTHERAPY DIVISION
FORENSIC MEDICINE DIVISION
1FL - MEDICAL LAB. DIVISION
D. GFL - SURGERY WARD
1FL - INTERNAL MEDICINE WARD
E. GFL - OBSTETRICS AND GYNAECOLOGY WARD
1FL - PAEDIATRICS WARD
F. GFL - EMERGENCY DIVISION
OPERATION DIVISION
ICU·CCU DIVISION
CENTRAL STERILIZING SUPPLY DIVISION
DELIVERY DIVISION
G. GFL - CAFETERIA
PHARMACY
REPAIR SHOP

ANNEX BUILDING

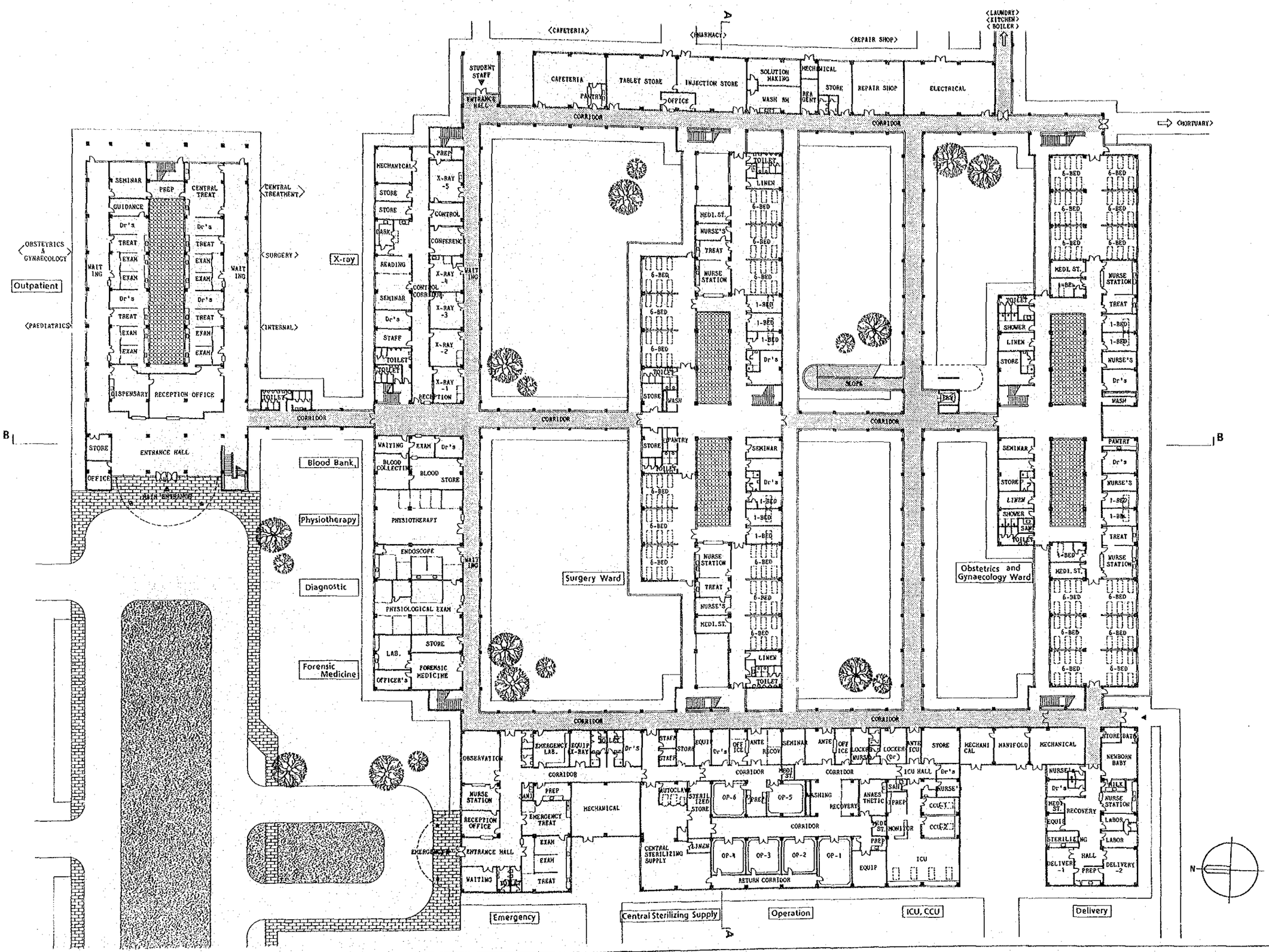
a *MORTUARY BLDG*
b KITCHEN AND LAUNDRY BLDG
c OXYGEN MINI PLANT BLDG
d BOILER BLDG
e INCINERATOR BLDG
f PUMP HOUSE
g MAINTENANCE BLDG
h GUARD HOUSE
i *GUEST HOUSE*

MANDALAY TEACHING HOSPITAL

SITE PLAN

0 25 50 100 150 M

1



MANDALAY TEACHING HOSPITAL MAIN BLDG GFL PLAN

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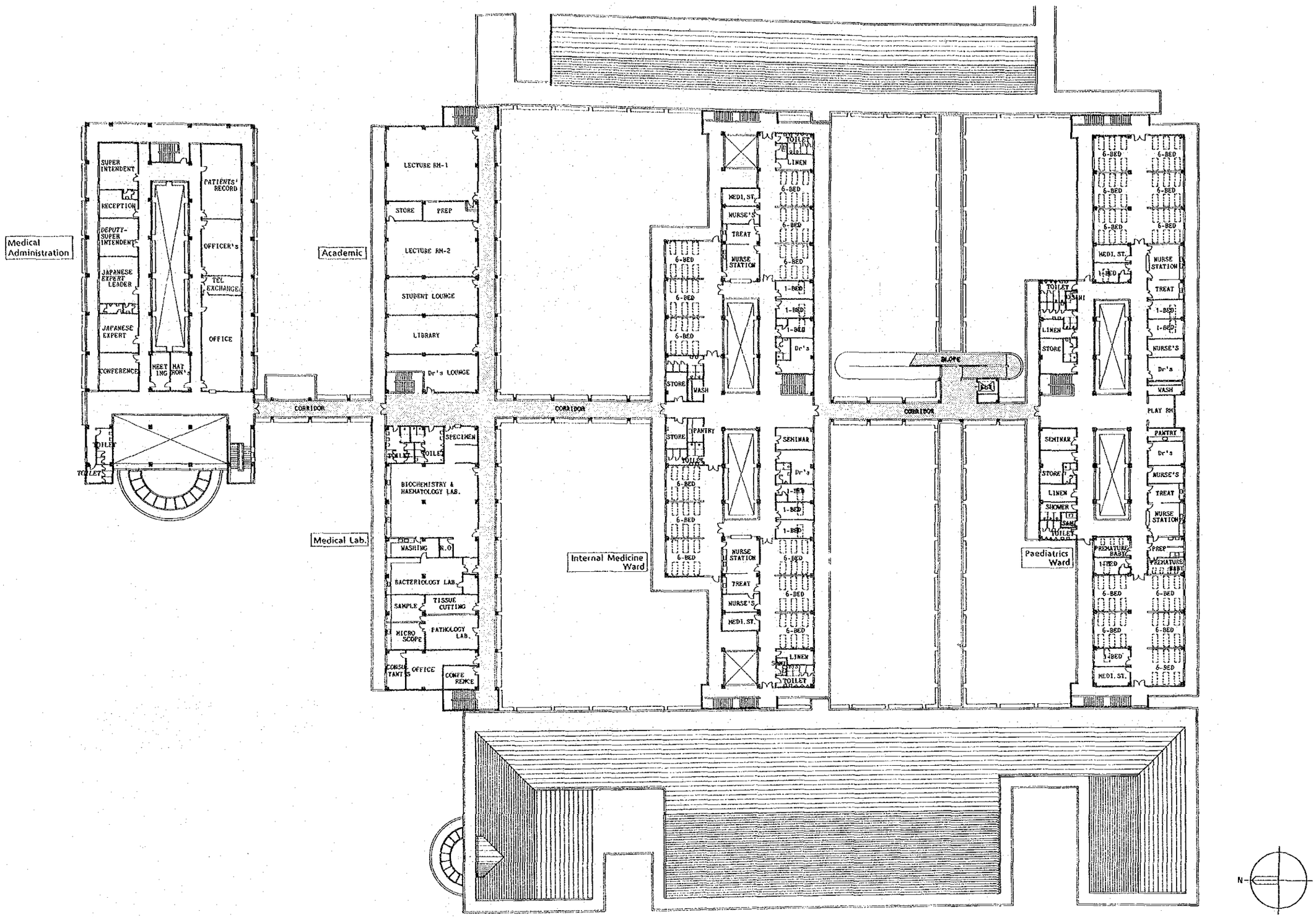

MANDALAY TEACHING HOSPITAL MAIN BLDG 1FL PLAN

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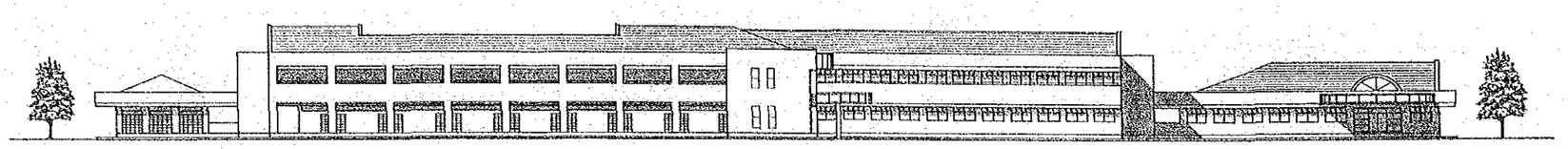

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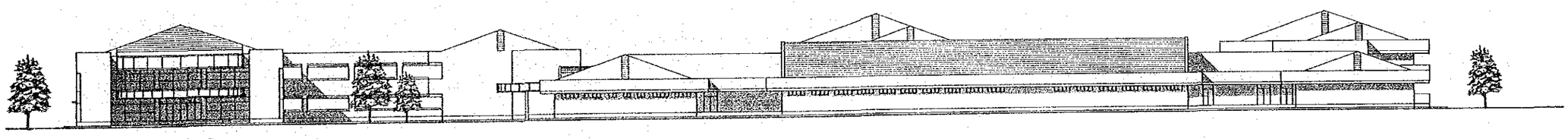


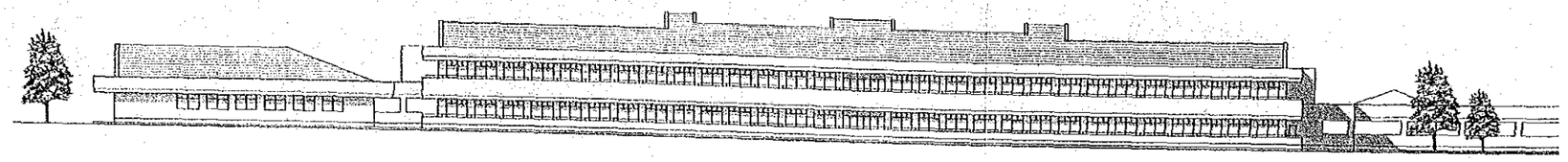
WEST ELEVATION

MANDALAY TEACHING HOSPITAL

MAIN BLDG

0 5 10 20 30 M

4



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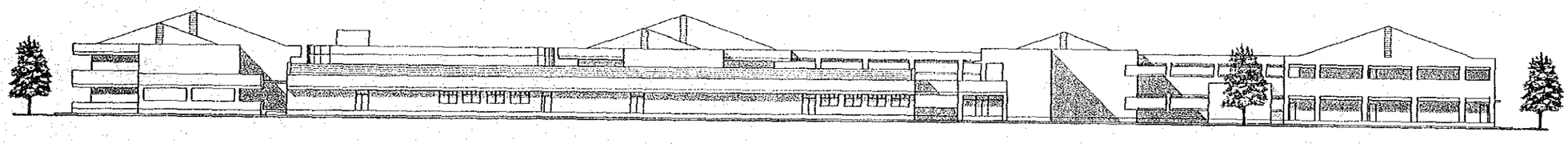


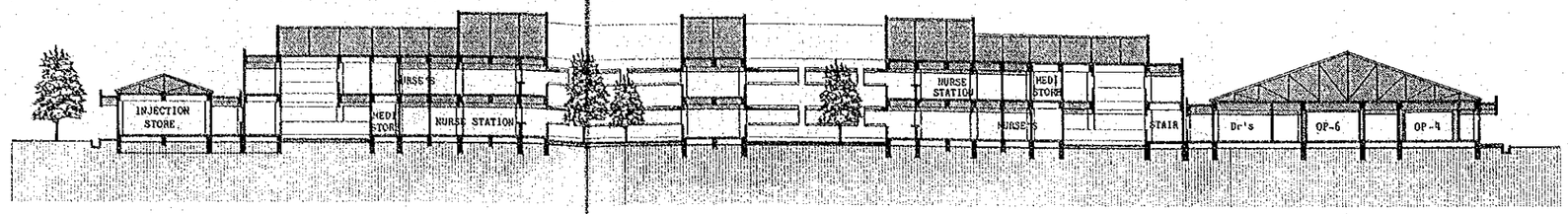
EAST ELEVATION

MANDALAY TEACHING HOSPITAL

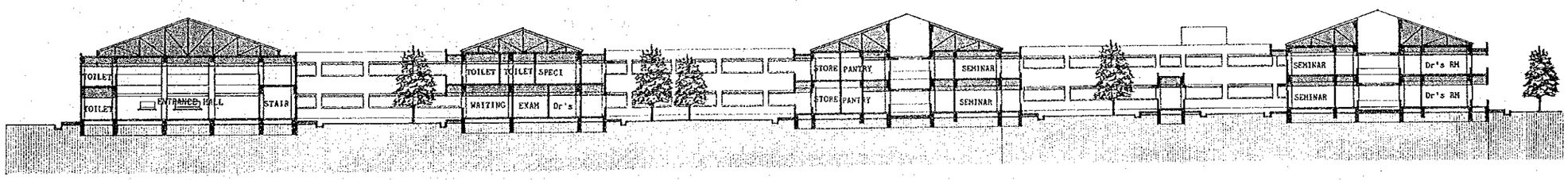
MAIN BLDG

0 5 10 20 30 M

5



SECTION A-A



SECTION B-B

MANDALAY TEACHING HOSPITAL

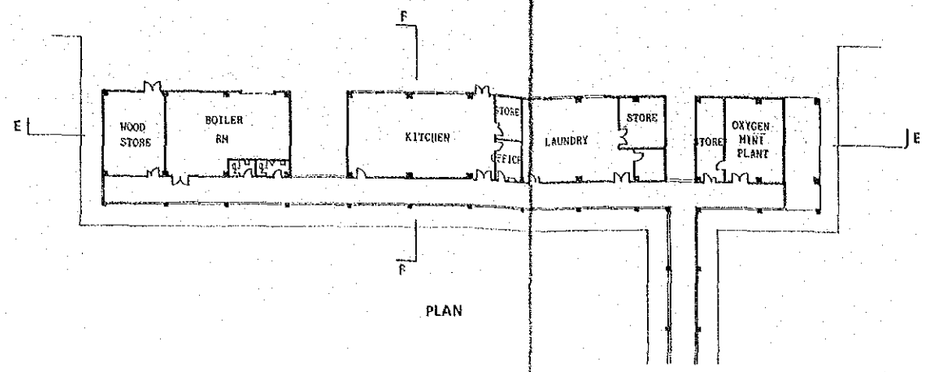
MAIN BLDG

0 5 10 20 30 M

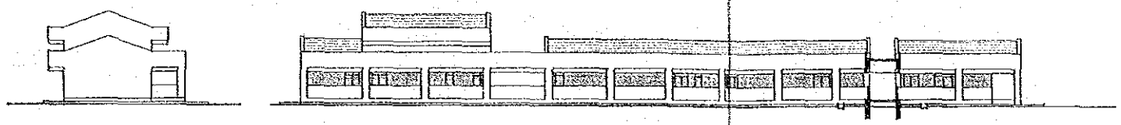
6

BOILER BLDG

KITCHEN AND LAUNDRY BLDG



PLAN



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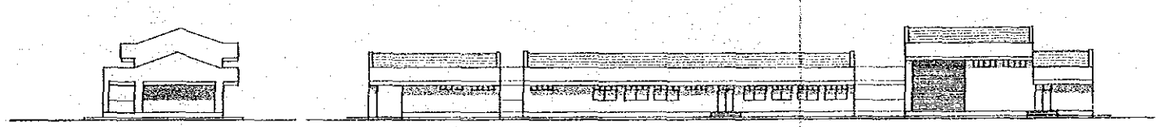
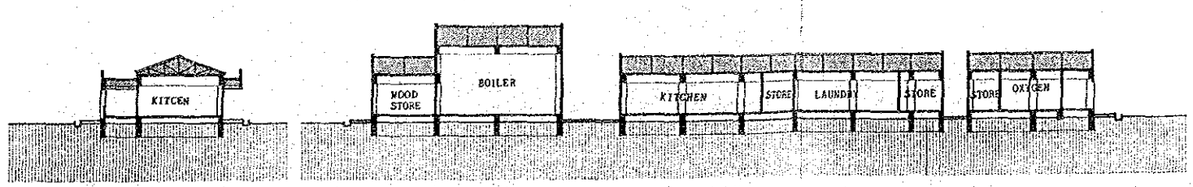


SOUTH ELEVATION

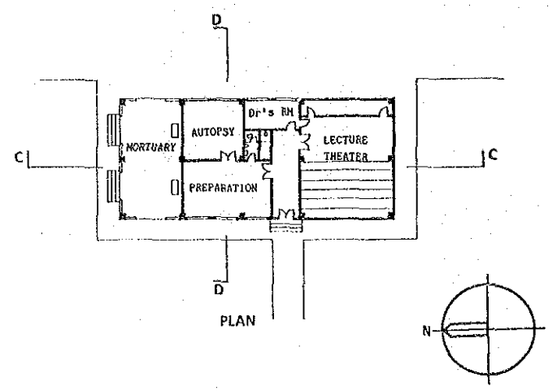
EAST ELEVATION



SECTION F-F

SECTION E-E

MORTUARY BLDG



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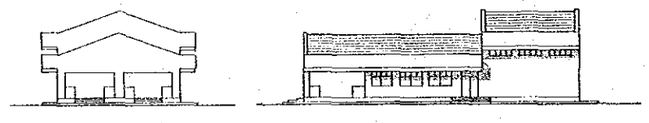

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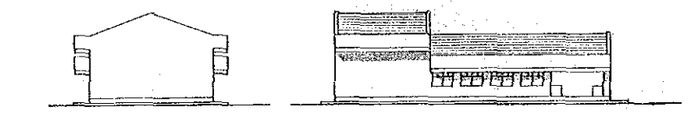

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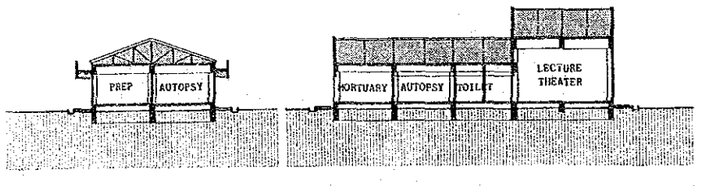


SECTION D-D

SECTION C-C

MANDALAY TEACHING HOSPITAL

ANNEX BLDG

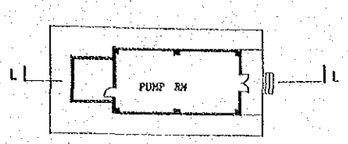
0 5 10 20 30 M

7

GUARD HOUSE

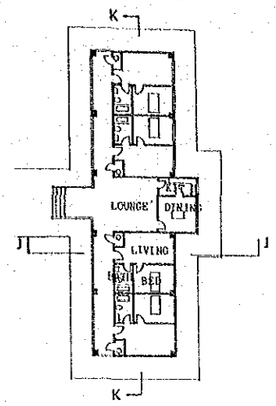
PLAN

PUMP HOUSE



PLAN

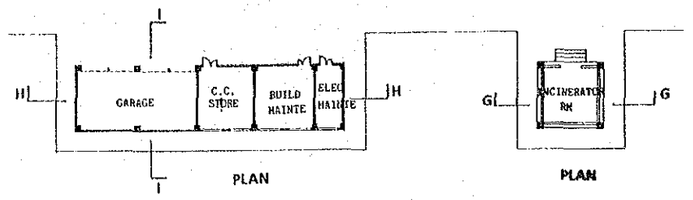
GUEST HOUSE



PLAN

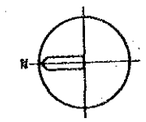
MAINTENANCE BLDG

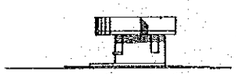
INCINERATOR BLDG



PLAN

PLAN





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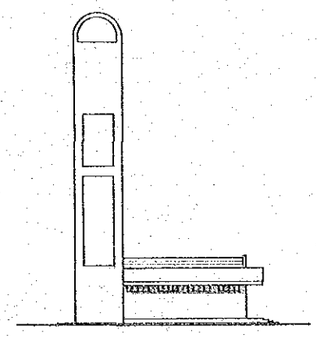


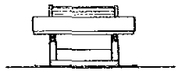
WEST ELEVATION

NORTH ELEVATION

WEST ELEVATION

NORTH ELEVATION

EAST ELEVATION



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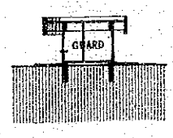
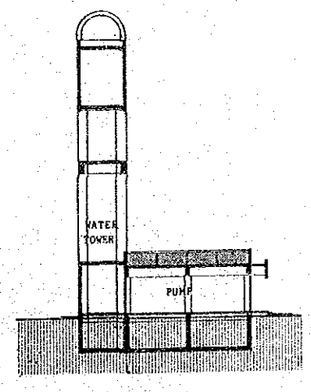


SECTION M-M



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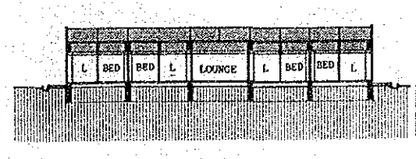
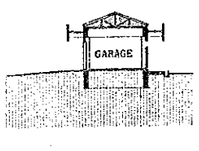
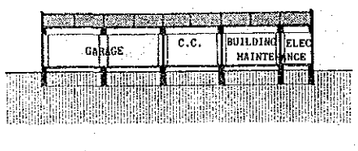


SECTION K-K

SECTION J-J



SECTION I-I



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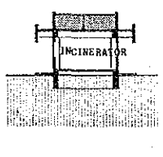

SECTION G-G

MANDALAY TEACHING HOSPITAL

ANNEX BLDG

8

CHAPTER 5
PROJECT IMPLEMENTATION

CHAPTER 5 PROJECT IMPLEMENTATION

5-1 Implementing Organization and System

(1) Implementing organization

The organization that will implement this Project is the Department of Health, Ministry of Health. The Department of Health will have responsibility for the implementation of this Project and will also be in charge of coordination with the Department of Medical Education of the Ministry of Health and adjustments, procedures and negotiations with other Burmese governmental authorities concerning this Project.

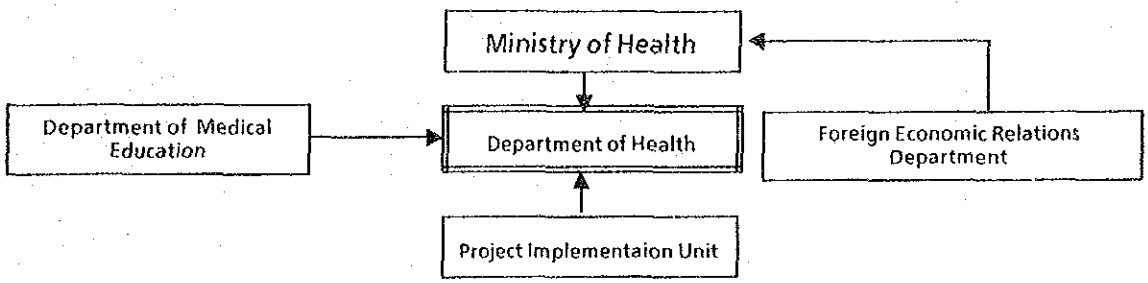

Fig. 5-1 Organization chart of implementation

(2) Implementing system

The project will formally be implemented according to Japanese grant aid cooperation system after the conclusion of the Exchange of Notes (E/N) between both Governments.

A Japanese consultant will be selected by the Burmese Government and the consultant will implement the detail design of facilities and medical equipment. After the completion of the detail design, Japanese contractors for construction and procurement of medical equipment will be appointed by tender respectively and will commence the construction and procurement works.

The Project implementing system preliminarily laid out by the Burmese side is shown in Fig.5-2. While the Department of Health, Ministry of Health, will take responsibility for the implementation of this Project, a Project Coordinating Committee and Project Implementation Unit which will be organized under the Department of Health will undertake the actual transactions including financial, managerial, and customs clearance operations, necessary for the Japanese grant aid project. Discussions regarding the contents of the Project during the detail design, tenders, construction, will be conducted principally by the Project Coordinating Committee in Rangoon (including members in charge from the Ministry of Health and other authorities concerned, and from Mandalay, including the rector of the Institute of Medicine, Mandalay). After commencement of the construction work, all problems arising from the work will be handled through a Project Site Implementation Committee to be organized in Mandalay or will be solved, when necessary, by the Project Coordination Committee.

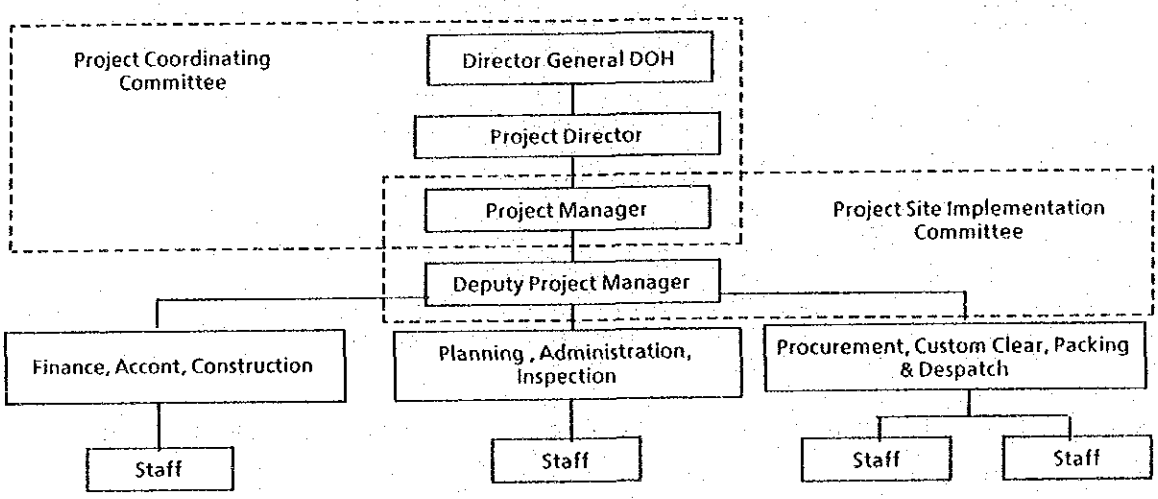

Fig. 5-2 Organization chart of implementation system

5-2 Scope of Work

The Project is to be implemented with the cooperation of both Governments in accordance with the Japanese grant aid cooperation system and the scope of work of each side is as follows:

(1) Items within the scope of work of the Japanese side

1) Infrastructure work

- Power supply: Installation of power supply system for the respective buildings within the scope of work of the Japanese side and substation facilities within the site.
- Water supply: Installation of a water supply system within the site for the respective buildings within the scope of work of the Japanese side.
- Drainage: Construction of drainage system (including rain, waste, and soil water) and sewage treatment facilities within the site.
- Telephone: Installation of telephone system for the respective buildings within the scope of work of the Japanese side.

2) Building work: Construction of buildings and facilities which are indicated in the Basic Design Study Report.

3) External work: Construction of external structures such as roads, footways and courtyards within the site as indicated in the Basic Design Study Report. (excluding planting)

4) Medical equipment work:
Procurement and installation of medical equipment which are listed in the medical equipment list in the Basic Design Study Report.

5) Transportation of materials and equipment:
Packing, loading, marine transportation, unloading, and inland transportation of construction materials and

equipment, and medical equipment, including payment of damage insurance premiums to cover them.

(2) Items within the scope of work of the Burmese side

1) Infrastructure work

- Site preparation: Clearing, filling, leveling, and preparation of the construction site.
- Power supply : Installation of a 33kV circuit to the site for the buildings under the Project.
- Telephone : Installation of telephone lines to the Main Distribution Board installed in a building within the scope of work of the Japanese side.
- Other works : Construction of temporary access roads to the site, provision of area necessary for temporary site offices, workshops, and material yards, and supplying of temporary potable water, power and telephone service for construction use.

2) External work : Construction of permanent access roads, planting work, and construction of gates and external fences.

3) Equipment work : Provision and installation of linens, general furniture and fittings, curtains and shades.

4) Transportation of materials and equipment:
Customs clearance of construction materials and equipment, and medical equipment to be imported to Burma, and bearing of taxes and other fiscal duties to be levied on customs clearance, unloading, inland transportation, etc. thereof.

5) Permits, licenses and application procedures:
To obtain all of the necessary permits and licenses, make all of the necessary applications, and complete all of the necessary bank arrangements required for

the implementation of the Project, and to bear any costs incurred.

6) Tax exemption : To exempt Japanese nationals engaged on the Project from custom duties, internal taxes and other fiscal levies which may be imposed in Burma with respect to the supply of building materials, equipment and services for the Project.

7) Provision of convenience:

To accord convenience without delay to Japanese nationals whose services may be required in connection with the supply of the building materials, equipment and services under the verified contracts such facilities as may be necessary for their entry into Burma and their stay therein for the performance of their work.

8) Others : To bear all the expenses, other than those to be borne by the grant aid, necessary for the Project.

Among the items within the scope of work of the Burmese side, it is necessary to complete the "site preparation" and "other works" in item 1) and bank arrangement and other necessary permits in item 5) prior to the commencement of work of the Japanese side. Moreover, it is also necessary that all the items within the scope of work of the Burmese side shall be completed before the completion of the work of the Japanese side. Especially the installation of power, telephone, should necessarily be completed at least two months before the completion of the facilities and equipment work in order to carry out their completion tests and inspections.

(3) Rough cost estimate of the Burmese work

The costs of works to be borne by the Burmese side in both the preliminary and the permanent works are roughly estimated as follows. It is necessary that the Burmese side should allocate adequate budgets and execute works at appropriate times in order to implement the Project smoothly and the Teaching Hospital be utilized effectively after the inauguration.

Works to be done by the Burmese side

- Prior to the commencement of construction work

  . Leveling and filling work
  . Temporary water supply work for the construction work
  . Temporary power supply for the construction work
  . Installation of telephone line to the site

- Prior to the completion of construction work

  . Installation of permanent power for the project
  . External work
  . Provision of linens, general furniture and fittings

1. Rough cost estimate for works to be completed prior to the commencement of construction work

(1) Leveling and filling work..... 3,100,000Ks

Since the proposed construction site has an area of 29ha and this Project does not require the entire area, the preparatory work will include leveling and filling (50cm height) of those areas on which the buildings are to be constructed (including area for temporary site office, workshops, and material yards).

$$45,900m^3 \times 67.5Ks/m^3 = 3,100,000Ks$$

(2) Temporary water supply for the construction work..... 150,000Ks

Well water is to be used as water supply for the construction work, since no city water is available near the site.

(3) Temporary power supply for the construction work..... 100,000Ks

Temporary power is to be received from the existing 11kV line in the north of the site to an incoming panel of 11kV/400-230V.

(4) Installation of telephone lines 54,000Ks

Installation of telephone lines from the existing point to the temporary site office.

Total (1) + (2) + (3) + (4) 3,404,000Ks

2. Rough cost estimate for work to be completed prior to the completion of the construction work

(1) Installation of permanent power for the project 400,000Ks

Permanent power is to be received from the existing 33kV line in the north of the site into a receiving point within the site.

(2) External work (planting, gates and fences) 1,200,000Ks

(3) Linens, general furniture and fittings, curtains and shades 650,000Ks

Total (1) + (2) + (3) 2,250,000Ks

Therefore, the grand total of the costs of works to be borne by the Burmese side is estimated to be 5,654,000 Ks.

This grand total does not include the expenses for the item 4), 5), 6),7) and 8) of the Burmese work.

5-3 Construction Plan

5-3-1 Construction situation and basic policy

Judging from the scale and contents of the facilities, the local meteorological conditions, etc. construction of the project will take approximately twenty-four (24) months to be completed. In Mandalay, the rainy season continues for about six months from May to October. The average monthly precipitation in the rainy season is about 100mm, unlike Lower Burma where Rangoon is located, not so much rain as to affect the concreting work of the superstructures. Since the soil at the construction site is composed of silty clay, it will become considerably soft by rain and affect the foundation work. It is necessary, therefore, to avoid the foundation work during the rainy season.

Concerning the scope of work of the Burmese side which includes such works as filling, leveling, and preparation of the construction site (including areas for temporary site offices, workshops, and material yards), the construction of access road, the drilling of well for assuring water supply for the construction work, and the provision of power and telephone service, it is necessary to complete all such works prior to the commencement of construction work by the Japanese side.

In addition, it is necessary that, during the period of detail design, both the Burmese and the Japanese counterparts should conduct preliminary discussions in detail to clarify the commencement date for each construction item to be carried out by both sides so that the works be smoothly carried out. The construction materials and equipment for the Project will be procured locally as much as possible. Under the present circumstances, however, most of medical equipment will inevitably be imported from Japan. So, it is necessary to establish a system to ensure that all the works undertaken by the Burmese side, including customs clearance procedures for materials and equipment to be imported, should be steadily carried out in accordance with the schedule without delays.

5-3-2 Work supervision schedule

A Japanese consulting firm shall conclude a supervision service contract with the Burmese side in accordance with the Japanese grant aid cooperation system and shall supervise the works of the Project. The objectives of the supervision are to give instruction and advice and coordinate from an impartial standpoint to ensure the quality of the construction work and the procurement work during the work period so that the entire stipulated works may be carried out in an appropriate manner while confirming whether or not the work is being executed in accordance with the tender documents.

1. Assistance in tender and contract conclusion
   The consultant will prepare tender documents necessary for selection of Japanese incorporations to be engaged in the construction and procurement of medical equipment and will conduct tenders and will give advice on the conclusion of such contracts.

2. Coordination for the contractor
   The consultant will review the project schedule, construction plan and afford necessary instruction and advice to the contractor.

3. Approval of shop and manufacturing drawings
   The consultant will examine and approve shop drawings, manufacturing drawings, and other documents submitted by the contractors.

4. Confirmation and approval of construction materials and medical equipment

5. Reporting of work progress
   The consultant will seize the work progress and the condition at the site and report on them to the Burmese side concerned.

6. Inspection

   The consultant will inspect the facilities and medical equipment, as necessary, during the time from commencement to completion of the works to ensure the quality and functions of the facilities and equipment.

   Judging from the scale of the Project, the consultant will dispatch a resident engineer to the site to supervise the above-mentioned works

throughout the whole period of the work.

In addition, the consultant will send necessary engineers to the site to have them perform inspection, advice, and coordination, according to the progress of the work.

The consultant will report on progress, disbursement procedure, completion, handing over, etc. of the Project to the Japanese Government authorities concerned.

5-3-3 Procurement plan for materials and equipment

Construction materials can hardly be procured locally in Burma, except some materials for structural framework of the facilities. Almost none of the medical equipment required are produced locally. Those construction materials and medical equipment which are not locally available are planned to be imported from Japan.

1) Principal materials to be procured locally

1. Cement

2. Aggregates (sand and gravel)

3. Bricks

4. Timber

5. Wooden window and door

6. Glass(3mm thick)

Such construction materials as cement, aggregates, and bricks which make up the majority of the total volume of the materials to be locally procured are easily obtained for they are produced in the vicinity of Mandalay.

2) Principal materials to be imported from Japan

1 Reinforcing bars and structural steel

2. Ceiling materials

3. Paint

4. Aluminum window

5. Sprayed tiles for outdoor use

6. Tiles

7. PVC tiles

8. Glass (5mm thick or over)

9. Roofing materials (asphalt shingle)

10. Electric wires and cables

11. Electrical panels and boards

12. Lighting fixtures

13. Steel pipes

14. PVC pipes and fittings

15. Valves

16. Pumps

17. Fans

18. Others

5-4 Implementation Schedule

The implementation of the project will be commenced after the conclusion of the Exchange of Notes (E/N) between both governments on the grant aid cooperation of the Government of Japan.

After a Japanese consultant company is selected by the Government of Burma, the detail design contract will be made between the Burmese Government and the Japanese consultant. The implementation schedule after the conclusion of the detail design contract will be roughly divided into three stages, detail design, tender, and construction and equipment works.

(1) Detail design

After the design contract is made and verified by the Japanese Government, the detail design will be started. During the detail design stage, a set of tender document consisting of detail design drawings, technical specifications, and instructions to tenderer, etc. will be prepared based on the Basic Design Study Report. In the course of this stage, the consultant will confer with the Burmese counterparts on the contents of the facilities and equipment, and obtain approval for the tender documents from the Burmese side. This stage will take about 4 months.

(2) Tender

After the completion of the detail design, the supervision contract will be made between the Burmese Government and the consultant. And after the verification by the Japanese Government, the contractors for the Project shall be appointed by tender. The tender will proceed in the order of public announcement, prequalification of participants (Japanese corporations), tender, evaluation of tender result, appointment of the construction company and equipment supplier and conclusion of contracts. It will take about 4.5 months for the above procedure.

(3) Construction and equipment works

After the construction contract is made, the construction will be commenced after the verification of the contract by the Japanese Government. The term of the works including procurement and installation of medical equipment is expected to be about 24 months considering the

scale of the facilities and equipment, meteorological conditions and local construction situation in Burma.

The tentative implementation schedule is shown in Fig.5-3.

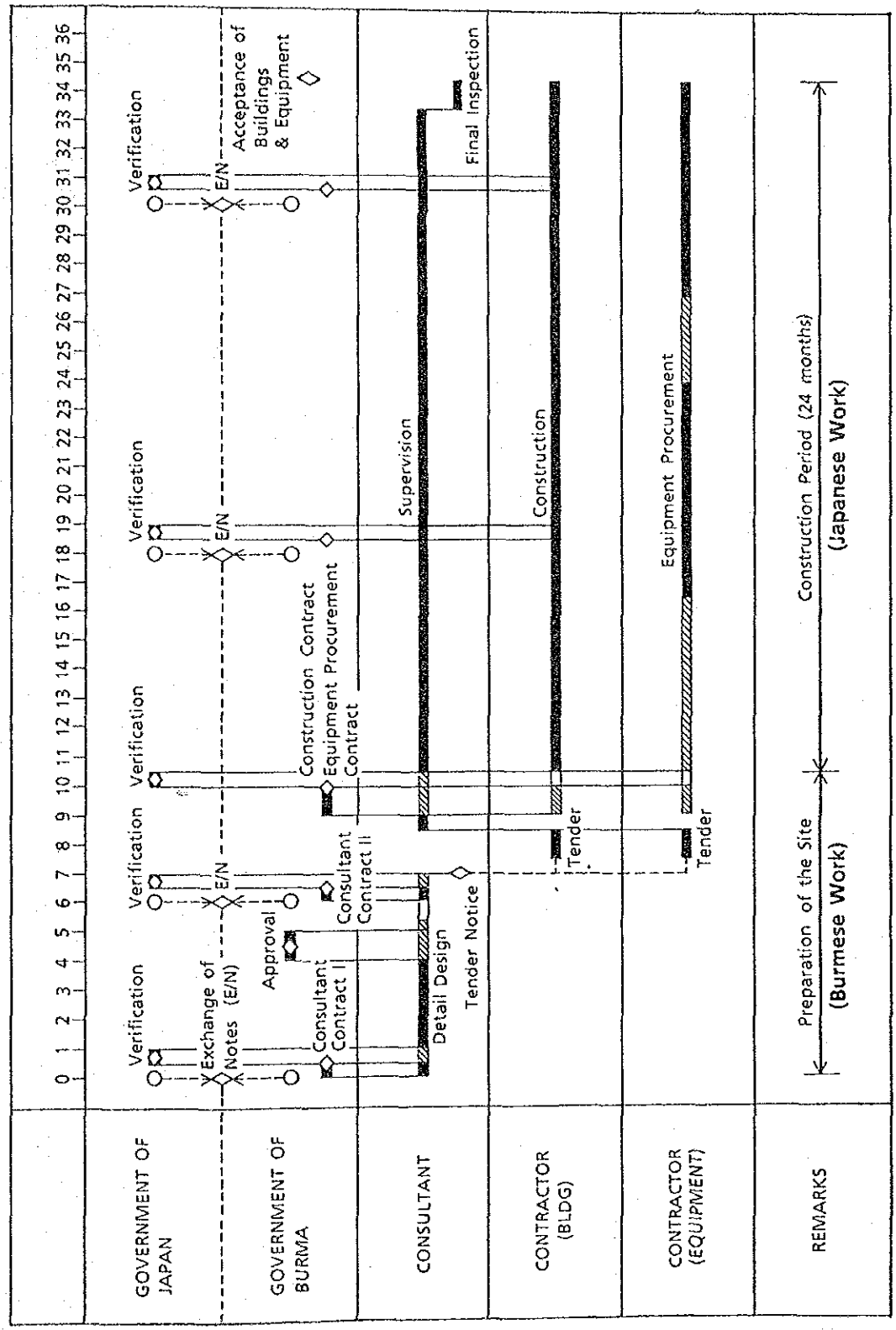

Fig. 5-3 Project Implementation Schedule

CHAPTER 6
MAINTENANCE AND OPERATION PLAN

CHAPTER 6 MAINTENANCE AND OPERATION PLAN

6-1 Maintenance and Operation of Facilities and Medical Equipment

6-1-1 Maintenance and operation of facilities

The facilities will be maintained and operated by full-time engineers of the Teaching Hospital, and a support system for the maintenance and operation of the facilities will be structured by having facility maintenance and operation personnel from the Construction Corporation, Mandalay, stay at this hospital. Furthermore, periodical checkup and assistance on maintaining the equipment, piping, etc. by experienced personnel dispatched (twice/year) from the Department of Industry, in the same way as in the case of the Mandalay General Hospital, are expected as further forms of support.

On the other hand, in order to maintain and operate the facilities, it is important that daily maintenance inspection, equipment inspection in accordance with the operation manuals, etc. be performed by engineers who are familiar with the facilities and the equipment. Therefore, engineers who are familiar with the contents of the buildings and the equipment of this facility need to be secured and trained.

(1) Securing practical experienced engineer for the facility maintenance and operation

Although the facilities, equipment, etc. are planned to enable easy maintenance and operation, a variety of equipment which requires certain maintenance will still be necessary to carry out the functions of the Hospital. Consequently, the degree of facility engineers' understanding of the whole facility system, the methods of maintenance, countermeasures to emergency situations, etc. will greatly influence the life span of the entire facility and affect even the functions of the Hospital.

By having the building and mechanical engineers who will be in charge of facility maintenance and operation of the Teaching Hospital participate in technical meetings at the construction site during the construction period and acquire practical understanding, they will be able to cope promptly

and accurately with troubles of the building and equipment system which may occur in the future after the completion of the Hospital. Also, technology transfer regarding the maintenance and operation of the facilities and the equipment could be carried out by the Japanese side during the construction period.

In order to perform appropriate maintenance and operation of the facility, it is preferable to transfer maintenance and operation technology from the Japanese side to the staff during the construction period, and it is necessary to appoint the building and equipment maintenance and operation staff of the Teaching Hospital by the time of the commencement of construction.

(2) Securing consumables

Chlorine powder (Cl_2) produced in Burma will be the sterilizing agent used for Hospital's potable and drainage water. However, most of the other consumables and spare parts will be procured from Japan. Therefore, it is necessary to inform the Burmese side regarding agencies and manufacturers of equipment and to clarify the communication route at the time of the completion of the Hospital so that the Burmese side can easily identify such materials and spare parts when they are needed.

(3) Maintenance and operation plan of the soil and waste water treatment facility

A combined treatment facility to treat soil and waste water will be installed in the Teaching Hospital which is in a leading position to diffuse the concept of hygiene. The main components of the combined treatment facility are pumps and blowers which are relatively easy to maintain, and there seems to be no special problems with maintenance of the equipment and piping as long as the spare parts are secured. However, the water quality of the treated water to be discharged needs to be controled by experienced engineers since special micro-organisms are used to purifying soil and waste water. Furthermore, since there is no facility that performs water quality control of treated water in Mandalay, it is difficult to secure experienced engineers.

However, combined soil and waste water treatment facilities are installed at New Rangoon General Hospital and the Youth Training Center in Rangoon

which are the grant aid projects by the Japanese Government. Although the departments in charge of each facility are different, they are all under the jurisdiction of the Ministry of Health as so is this Hospital. Especially, since the department in charge of the New Rangoon General Hospital is the Department of Health, which is the implementation agency of this Project, it will be preferable to secure engineers who can maintain the functions of the combined treatment facilities by dispatching maintenance engineers from Rangoon to the Teaching Hospital for at least one year from the beginning of its operation which will be a running-in period of the treatment facility, by operating and maintaining jointly with operators of this Teaching Hospital and by having them learn the practical maintenance and operation skill of the combined treatment facilities. The soil and waste water treatment facilities installed through the Japanese grant aid cooperation are not maintained or operated in an organized manner in Burma, and the maintenance and operation are actually depending on the knowledge and experiences of each person in charge of each facility.

In order to secure proper treatment performance to each facility and to improve maintenance and operation techniques, it is necessary to encourage cooperation and exchange of maintenance and operation information among the engineers who are in charge for treatment facilities under the jurisdiction of the Ministry of Health.

It is desirable for the Burmese side to adopt the following measures to improve the soil and waste water treatment facility maintenance and operation technique of the Teaching Hospital and the existing facilities.

- To have treatment facility operation engineers from Rangoon stay at the Teaching Hospital for at least one year to jointly maintain and operate the treatment facility.

- To hold a periodical technical meeting of soil and waste water treatment facility operation among engineers from Rangoon and Mandalay to improve the maintenance and operation technique.

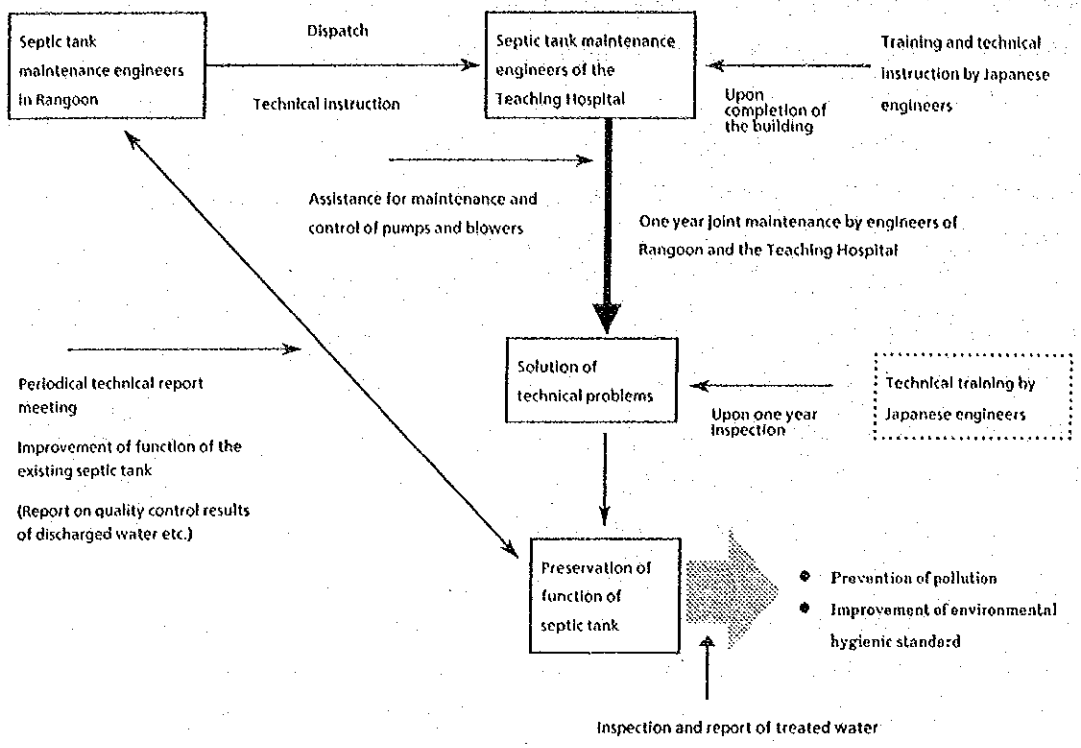

Fig. 6-1 Structure of maintenance and operation of treatment facilities

6-1-2 Maintenance and operation of medical equipment

Almost all the medical equipment to be installed in the Teaching Hospital requires daily maintenance, and it is necessary to establish a system for performing prompt repairs in the event of failures and a system to supply necessary spare parts and consumables continuously.

(1) Maintenance and operation system of medical equipment (personnel)

Since most of the medical equipment to be introduced for this project is not produced in Burma, it will be imported from Japan. On the other hand, activities by foreign corporations are strictly restricted in Burma, resultantly, no manufacturers nor agencies of medical equipment suppliers exist, and after-sales services by manufacturers cannot be expected.

In a situation where personnel and equipment for the maintenance and repair of medical equipment are insufficient in the whole country of Burma, establishment of the maintenance and operation system of one hospital will not solve the problem. Importance is how to proceed the coordination of maintenance and operation system for medical equipment in

the entire country. The following maintenance and operation personnel scheme is expected for this project.

- Training and securing of maintenance and operation personnel

  The Central Medical Store Depot (CMSD) renders medical equipment repair services as well as supplying medical goods for hospitals which are under the jurisdiction of the Ministry of Health.

  Although three hospitals, Rangoon General Hospital, Taunggyi General Hospital and Mandalay General Hospital, have workshops within the hospitals to perform the maintenance and repair of medical equipment, it has not reached a stage where accurate maintenance and repair are performed due to the lack of staff with a sophisticated knowledge of technique and repair tools, etc. For this reason, currently, circuit technical staff members of CMSD are performing repairs even for the three hospitals in the same way as at other hospitals which do not have workshops. Therefore, the coordination of repair and maintenance system of the CMSD has become urgent as the quantity of requirement of repairing medical equipment increases.

  Currently, in Burma, a project to consolidate repair and maintenance system for medical equipment is under way with a loan from the Asian Development Bank. This consolidation project is to establish a central workshop in the CMSD, to establish workshops in six local core cities (Mandalay, Moulmein, Magwe, Myitkyina, Lashio, and Taunggyi) supported by the central workshop and to perform the repair and maintenance of medical equipment for the hospitals in each region.

  Further, it is also planned to set up an engineer training center (currently under construction) in the CMSD to train experts for medical equipment repair and maintenance and six engineers who have already finished a two-year training in the United States are to be assigned as instructors.

  This engineer training center is scheduled to open in one year and to train 15 engineers per year. Therefore, it is supposed to be possible to secure trained engineers by the opening of the Teaching Hospital. And the Department of Health is planning to assign engineers who have

received high-level training in this training center to the Teaching Hospital.

- Countermeasures for initial troubles

Operators and engineers are not used to the operation of sophisticated medical equipment in Burma. Due to mishandlings resulting from this situation, invisible damages by long distance transportation, and severe natural conditions, etc., initial troubles occurring within one year from the start of operation are much more frequent than in Japan. Most of these troubles can be dealt with easily by taking simple measures such as parts change in a initial stage. Therefore, the Repair Section needs to begin its work at the same time as the opening of the hospital to effect countermeasures against initial troubles.

- Mastering equipment operation and implementation of daily maintenance

Daily maintenance needs to be performed by the technicians and operators who use the equipment, and not by the staff from the Repair Section. To prevent mishandlings, which are the most common cause of equipment troubles, and to regularly perform appropriate maintenance and operation in accordance with the operation manual, necessary instructions from the Japanese side to these persons are indispensable.

Therefore, to securely maintain and operate the medical equipment, the following items of cooperation need to be carried out by the Japanese side at the time of handing over the medical equipment.

1. To give instruction regarding the storage and administration methods of supplied spare parts and consumables.

2. To prepare manuals which clearly describe equipment trouble shooting and repair methods and give instruction regarding application and storage methods of them.

3. To give explanations on medical equipment operation and repair methods by experienced Japanese engineers who have a necessary command of the language (English).

(2) Maintenance and operation system of medical equipment (physical supplies)

The many parts constituting medical equipment can be classified into those that have to be changed periodically during usage of the equipment (packing, filters, bulbs, electrodes, ink ribbons, etc.) and others that are changed at the time of failures (IC boards, sensors, motors, etc.). Not all the necessary items to repair any failure are included as spare parts for one or three years at the time of delivery.

Therefore, running out parts will have to be purchased by the budget of the Ministry of Health. Maintenance without spare parts is impossible even with a complete personnel system for maintenance. Therefore, foreign currency budgets to purchase spare parts will have to be secured by the Ministry of Health on the Burmese side.

In order to keep the medical equipment always in normal operating condition, it is necessary to secure supplies of spare parts, consumables and testing reagents as well as constant supplies of power, water, and gas for the facility. However, from the point of view of the current medical situation in Burma, great efforts by the Burmese side for self-help related to this project and special considerations by the Japanese side on the scope of cooperation are required.

- Expected efforts by the Burmese side

The Central Medical Store Depot of the Ministry of Health secures a planned budget, and prepare foreign currencies based on calculations of annual amounts required for supplying general medical consumables, general medicines, spare parts, consumables of the equipment, and testing reagents. The Japanese side will cooperate the Burmese side in giving information on the procurement route, dealer's name, price, etc. of the spare parts, consumables of the equipment, and the testing reagents, so that securing of the budget will not be hindered.

- Expected cooperation by the Japanese side

It is currently impossible to produce and supply domestically spare parts, consumables and testing reagents in Burma. As mentioned previously, it is the responsibility of the Burmese side to try to secure the

necessary budget to import them. However, the expenses related to the maintenance and operation (physical supplies) of the medical equipment for one to three years after the Teaching Hospital is handed over to the Burmese side will be borne by the Japanese side.

1. Spare parts for equipment

   The amount of spare parts adequate for three years' servicing will be supplied, based on calculations of the ordinary use in Japan.

2. Consumables specific to the equipment

   Consumables adequate for three years' servicing will be supplied. However, there will be a one year supply for X-ray films since they have expiration terms.

3. Testing reagents

   Since reagents have specifications regarding storing conditions and expiration terms, it is not possible to supply a large amount at one time. Therefore, the supply amount will be for one year.

- On measures to reduce the load of medical equipment maintenance and operation on the Burmese side

1. Production of medical oxygen

   Although Burma has oxygen plants in Rangoon and in Maymyo, the produced oxygen is not for medical use but for industrial use. Therefore, a small-sized oxygen producing unit will be included in this Project to produce necessary oxygen for medical uses within the hospital.

2. Production of testing reagents

   It is planned to produce minimum amount of testing reagents within the hospital which will be necessary for daily tests with chemical analyzers (biochemistry analyzer, etc.), because they require high frequent use of testing reagents.

6-2 Maintenance and Operation Expenses

Necessary expenses for the maintenance and operation of the Mandalay Teaching Hospital are described as follows;

Maintenance and operation expenses for salaries, utilities, spare parts, testing reagents, etc. are calculated on the basis of the unit prices of 1987.

(1) Personnel expenses

The number of personnel at the Mandalay Teaching Hospital will be 411, and an additional 74 academic staff will be dispatched from the Department of Medical Education of the Ministry of Health. A total of 485 will be engaged in this hospital. The personnel expenses for the dispatched 74 academic staff will be borne by the Department of Medical Education, and the personnel expenses for the 411 which will be borne by the Department of Health are shown in Table 6-1 and Table 6-2.

Table 6-1 Personnel expenses of Mandalay Teaching Hospital (1)

	No. (persons)	Salary (Ks/person·month)	Total (Ks/month)	Remarks
Superintendent	1	1410	1410	
Deputy Superintendent	1	900	900	
Senior Doctor	12	900	10800	
Doctor	55	540	29700	
Administrative Officer	1	540	540	
Matron	1	540	540	
Sister	14	445	6230	
Staff Nurse	29	340	9860	
Trained Nurse	101	290	29290	
Paramedical	17	445	7565	Physiotherapist 2, Medical Technologist 8, Radiographer 7
Pharmacist	6	445	2670	
Technician (Gr: I)	12	290	3480	
Technician (Gr: II)	7	225	1575	
Compounder (Sr)	3	290	870	
Compounder	3	225	675	
Medical Record Keeper (Gr: I)	1	265	265	
Medical Record Keeper (Gr: II)	1	225	225	
Chief, Accounts Section	1	385	385	
Chief,	1	385	385	
U.D.C. (Budget)	1	290	290	
U.D.C.	3	265	795	
L.D.C. (Budget)	2	225	450	
L.D.C.	5	205	1025	
CMSD Technician	1	225	225	
Ass. CMSD Technician	2	205	410	
Medical Social Worker	1	385	385	
Laundry Manager	1	385	385	
Gas Pipeline controller	2	225	450	
Carpenter	2	225	450	
Store Clerk	3	205	615	
Ward Clerk	8	205	1640	
Typist	2	205	410	

Table 6-2 Personnel expenses of Mandalay Teaching Hospital (2)

	No. (persons)	Salary (Ks/person·month)	Total (Ks/month)	Remarks
Dresser	4	205	820	
Sergeant	1	205	205	
Guard	7	180	1260	
Telephone operator	4	205	820	
Tailor	2	180	360	
Head Cook	1	180	180	
Driver	4	180	720	
Dark Room Assistant	2	180	360	
Multi-Workers	43	170	7310	
A.E.	1	540	540	Electric
S.A.E., J.A.E.	7	445	3115	Civil, Elec., Water & Sanitary
Electrician	2	225	450	
Workers	32	170	5440	
Pump driver	1	180	180	
Total	411		136,655	

Note: Allowance is included in salary

Therefore, from the above table, the annual personnel expenses will be 136,655Ks/month × 12 months=1,639,860Ks

(2) Utility expenses

1) Electricity expenses : 430,740 Ks/year

2) Fuel expenses : 14,400 Ks/year

Total 445,140 Ks/year

(3) Telephone charge : 70,000 Ks/year

(4) Building maintenance

1) Labor cost : 135,000 Ks/year

2) Equipment parts and consumables

Although the equipment parts and consumables for the first three years will be included in the scope of the project as spare parts, the Burmese

side will need to supply equipment parts and consumables after three years from the completion of the buildings. Assuming that equipment parts and consumables supplied after the first three years will be procured from Japan, the expenses are calculated as follows.

- Equipment parts

Electrical work	¥1,600,000/year
Sanitary work	¥1,600,000/year
Mechanical work	¥2,000,000/year
Total	¥5,200,000/year

- Consumables

Architectural work			97,000Ks/year
Electrical work	¥ 350,000/year	+	124Ks/year
Sanitary work	¥ 329,000/year	+	22,500Ks/year
Mechanical work	¥ 501,000/year		
Total	¥1,180,000/year	+	119,624Ks/year
	(Approximately		120,000Ks/year)

Therefore, the total of equipment parts and consumables necessary after three years from the completion of the buildings is:
¥ 6,380,000 + 120,000Ks/year

(5) Medical equipment maintenance expenses

1) Labor cost: 140,000Ks/year

2) Testing reagents, equipment spare parts, and consumables:
¥58,246,000/year

Testing reagents for the first year and equipment spare parts and consumables for the first three years will be included in the scope of the Japanese work of the Project.

Therefore, the Burmese side will not have to supply testing reagents for one year nor equipment spare parts and consumables for three years (X-ray films for one year) after the completion of the building, thus the

maintenance expenses will be reduced. However, after the third year, a total of 58,246,000Yen of foreign currency will be necessary as follows.

- Reagents and consumables (after the first year):

¥ 2,010,000 /year
+ ¥ 20,923,000/year(X-ray films)

- Spare parts (after the third years) : + ¥ 27,968,000/year
- Consumables (after the third years) : + ¥ 7,345,000/year

Total ¥ 58,246,000/year

(6) Office expenses: 50,000Ks/year

(7) Expenses for transportation of medicines from the Central Medical Store Depot (Rangoon): 38,000Ks/year

(8) Others: 384,500Ks/year

The other expenses include meal expenses for inpatients, printing and publishing expenses, postage expenses, gasoline expenses for automobiles, expenses of burial, maintenance expenses for ambulances, etc.

(9) Budget for general medicines and medical goods from the Central Medical Store Depot (CMSD)

General medicines and medical goods will be supplied by the Central Medical Store Depot.

- Domestic currency: 1,800,000Ks/year
- Foreign currency: ¥ 100,000/year

From the above, the total maintenance and operation expenses of Mandalay Teaching Hospital by year is shown in Table 6-3.

Table 6-3 Maintenance and administration expenses of Mandalay Teaching Hospital

	First one year		First three years		AFter third year	
	Foreign (Yen)	Domestic (Ks)	Foreign (Yen)	Domestic (Ks)	Foreign (Yen)	Domestic (Ks)
Personnel expenses		1,639,860		1,639,860		1,639,860
Utility expenses		445,140		445,140		445,140
Telephone charge		70,000		70,000		70,000
Building maintenance		135,000		135,000	6,380,000	255,000
Medical equipment maintenance expenses		(140,000)	(22,933,000)	(140,000)	(58,246,000)	(140,000)
Office expenses		50,000		50,000		50,000
Transportation expenses for medicine		38,000		38,000		38,000
Others		384,500		384,500		384,500
General medicine and goods	(100,000)	(1,800,000)	(100,000)	(1,800,000)	(100,000)	(1,800,000)
Total	(100,000)	2,762,500 (1,940,000)	(23,033,000)	2,762,500 (1,940,000)	6,380,000 (58,346,000)	2,882,500 (1,940,000)
Total to be borne by Dept. of Health	100,000	4,702,500	23,033,000	4,702,500	64,726,000	4,822,500

Note: ( ) indicate budgets of CMSD, Ministry of Health.

6-3 Evaluation of Maintenance and Operation Expenses

Since the Teaching Hospital is under the jurisdiction of the Ministry of Health, necessary medical equipment spare parts, consumables and testing reagent expenses will be supplied by the Central Medical Store Depot of the Department of Health in the same way as general medicines and general consumables. Therefore, the Department of Health will bear all the maintenance and operation expenses of the Teaching Hospital. The supply of spare parts and consumables of equipment necessary for maintenance of the buildings for the first three years will be included in the construction work, and further, the supply of testing reagents for one year and medical equipment spare parts and consumables for three years will be included in the medical equipment work.

Therefore, the maintenance and operation expenses, including foreign currency, of the Teaching Hospital which should be secured by the Department of Health are shown in Table 6-4.

Table 6-4 Maintenance and operation expenses by year

	Foreign (Yen)	Domestic (Ks)	Total (Ks)
First one year	100,000	4,702,500	4,706,880→4,707,000
First three years	23,033,000	4,702,500	5,711,392→5,711,000
After three year	64,726,000	4,822,500	7,657,629→7,658,000

Note: Exchange rate, 1Ks = ¥ 22.83

On the other hand, the average annual budgets of the Ministry of Health and of the Department of Health for the four years from 1983 to 1986 are approximately 594 million Ks and approximately 449 million Ks, respectively. The Department of Health has obtained approximately 76% of the entire budget of the Ministry of Health.

Further, based on the budget of 1983, the budget of the Ministry of Health has an annual average increase rate of 6.2%, and the average of annual budget increase rate of the Department of Health is 7.4%, which is higher than the budget increase rate of the Ministry of Health. Out of the budget for the Department of Health for 1986 (506,790,110Ks), the

maintenance and operaton expenses of the Teaching Hospital for each year will be;

First year after completion	:	0.93%
Second and third years	:	1.13%
After the third year	:	1.51%

which can be considered extremely small ratios, and the budget allocation to the maintenance and operation expenses of the Teaching Hospital is estimated to be sufficiently possible.

CHAPTER 7
EVALUATION OF THE PROJECT

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The health and medical level in Burma is at the stage where more efforts should be concentrated on improvement of primary health care and it is necessary to educate medical personnel of a "family doctor" type who have mastered basic modern medicine and have full knowledge of the health conditions in this country. In spite of the past endeavor to implement the People's Health Plans by the Burmese Government, medical services have not reached the level at which local needs for them are fully met. Regional imbalance in medical services between Rangoon and rural areas has been a serious problem. And medical education which forms the basis for the medical services has the same problem. To improve the medical services in Upper Burma by reducing, first of all, the said regional differences in medical education, it is planned to construct a modern teaching hospital in the City of Mandalay. Under the above-mentioned background, this Project is evaluated as described below concerning expected effects of the said Mandalay Teaching Hospital upon improvement in medical services and medical education activities.

1. Implementing organization

The organization necessary to implement the project of the Teaching Hospital will be prepared in a satisfactory manner. The Project Coordinating Committee and the Project Implementation Unit have been established under the control of the Department of Health. The Unit is designed to execute the whole line of operations from setting up of implementing programs to completion of works, including acquisition of the budget, control of planning, and customs clearance. In addition, the Project Site Implementation Committee will be established in Mandalay to communicate with the Ministry of Health in Rangoon, to solve problems that may occur at the construction site, to coordinate with IMM. The above-stated organizaiton is scheduled to be fixed before the commencement of the Project. The organization is considered appropriate in light of the remoteness of the construction site from the Department of Health in Rangoon.

2. Operation and administration system

The Department of Health will take charge of the operation and administration of the Teaching Hospital through the hospital staff when it is established. The hospital staff headed by a Medical Superintendent is planned to be consisted of 411 medical staff and 74 teaching staff or 485 in total. As described in Section 3-3-1, it is understood that this staff requirement will be met in terms of both quality and quantity and that the assignment of the staff is reasonable. The facilities and equipment of this Hospital have been planned so that their maintenance will not largely exceed the level of knowledge and technique of the staff.

According to trial calculations, the annual maintenance and administration expenses will amount to 7,660,000Kyats (equivalent to about 170 million Yen) which is 1.51% of the annual budget of the Department of Health, 507 million Kyats. Such an amount is considered to be within the extent which can be allocated from the budget of the Department though there exist necessity and difficulty to acquire foreign currency budget.

3. Benefits derived from the Project

Expected benefits to be derived from this Project include improvement of medical services and education of medical manpower.

1) Improvement of medical services

Expected direct effect of the construction of the Teaching Hospital is to increase the number of available beds by 318, thereby resulting in an increase of the total number of beds in the whole of Burma by 1 percent. This assures that modern medical services will be done to approximately an additional 14,000 inpatients and 67,000 outpatients per annum. Moreover, the Project will contribute to rectifying the conventional regional imbalance in medical services by increasing the number of available beds per 1,000 population in Mandalay from the present 0.83 to 0.90, which is exceeding the national average of 0.84. The construction of the Teaching Hospital, as a principal referral hospital coexisting with the Mandalay General Hospital, will have the indirect effect of upgrading the community people's health by

strengthening the present referral system in Upper Burma and establishing foundations for economizing the cost of medical services.

2) Education of medical manpower

The Project will provide necessary opportunities for appropriate education to a total of 150 students composed of 50 students each in the third to fifth year of the IMM and students of the nursing and midwife schools as well as interns and postgraduate students of the IMM, thereby contributing to the education of medical manpower.

The project will have the indirect effects of improving the health and medical levels of the country based on diffusion of the concept of hygiene among the Burmese people through the appropriate distribution of medical personnel, including the IMM students educated in the Mandalay Teaching Hospital, in the rural districts throughout the country.

As described above, this Project will form an important foundation for modernizing the medical care system in Upper Burma. If graduates educated in the Hospital are correctly arranged, staff in small-scale hospitals and health centres in rural districts will be reinforced, and the impact will be expected to upgrade health and hygiene levels and to improve the people's living conditions in Burma. Consequently the social benefits to be derived from the Project will be continuous and highly estimated. In addition it is probable that the operation and administration system will be realized in a satisfactory manner. Therefore grant aid cooperation by the Japanese Government for the Project for the construction of the Mandalay Teaching Hospital is considered to have sufficient propriety and the expected results of the cooperation are highly estimated.