CHAPTER 4. BASIC DESIGN

4-1 FUNDAMENTAL POLICY FOR EQUIPMENT SELECTION

The following six principles are established as the criteria for selecting medical equipment on the basis of the investigation and analysis of the current health services and facilities in Pakistan. The decision was made with a primary view to the adequate and effective use of the equipment provided.

Criteria for medical equipment selection

1. Priority to the items essential in medical practice,
2. Technology required in operation to be within the scope of capability of health personnel in Pakistan,
3. Easiness of maintenance and control,
4. Equipment to be free of such troubles as the narrow choice in installation and supply of electricity or water,
5. Availability of the consumables and spare parts to guarantee its sustained functioning in the future,
6. The more than ten local agencies dealing in Japanese as well as other countries' products to be taken into consideration, so as to secure quick maintenance support.

4-2 SELECTION OF EQUIPMENT

PC-1, the list of items requested, is not a result of detailed studies by the experts concerned, as admitted by the hospital authorities. The Study Team, therefore, re-evaluated the content of the request under Pakistan's consent. It was agreed that the list be more specific and elaborate, with missing essential items added, so that effective functioning of the hospital can be achieved from the very beginning.

On the other hand, the selection of the equipment was greatly restricted by the physical condition of the existing buildings. Consideration had to be given, for instance, to the number, size and arrangement of the rooms, the provision of electricity, water or gas, and the extent of alterations. Some of the equipment thus had to be excluded from the project.

There are others excluded from the list as they do not conform to our long-established policy of aid, though their necessity was fully appreciated.

To sum up, the selection of the equipment was made in principle according to the foregoing fundamental policy, with a motto of "Function on inauguration" as the target.

4-3 CONSIDERATIONS CONCERNING EQUIPMENT SELECTION

The equipment to be provided under the Project were selected chiefly on the basis of the following considerations:

Departments	No. of rooms	Equipment requested	Considerations
ICU	2	18 ICU beds	15 considered adequate for space
		Central monitoring system	Unfeasible due to structure
		Central piping (O_2/aspiration)	Unfeasible due to substantial modification needed
		Miscellaneous	Minimum necessities provided including patient monitoring device
Obstetrics	2(O.R.)	Operating table/ Shadowless lamps	Provisions chiefly for Caesarean sections & gynecological operations; 1 shadowless lamp already provided
	4 (Deliv.)	Obstetrical tables/ Shadowless lamps	Equipment for 4 rooms and analgesic or emergency operations provided

Departments	No. of rooms	Equipment requested	Considerations
Obstetrics	1 (Newb.)	Cribs	Provisions necessary for 28 cribs
O.R.	12 (Gen.)	Hatchway system	Unfeasible due to structure
	2 (Orthop.)	Operating tables/	Specific tables (orthopedic,
	1 (Ped.)	Shadowless lamps	pediatric & endoscopic) provided
		TV monitoring system	2 of 14 lamps switched to monitorable type
		X-ray apparatus, ceiling type	Switched to portable type not to necessitate additional work
		Various surgical kits	Reduced in number
	2 (Endos.)	Endoscopes	Requests by wards answered
		Miscellaneous	Minimum necessities provided to serve 14 O.R.'s
Radiology	6	Angiograph Head CT scanner Indirect General X-ray TV	Appropriateness of providing an angiograph and head CT scanner disputable in the light of medical care level here, yet their provision agreed on in view of the hospital's role, expantion under way, and relatively good maintenance system
	2 (Dark-rooms)		Fixtures for dark rooms Consumables

Departments	No. of rooms	Equipment requested	Considerations
Clinical laboratories	6	Spectrophtometer Blood gas analyzer Distillers Miscellaneous	1 distiller in each room Apparatuses for blood and urine analyses provided
Blood bank	1	Blood refrigerator	Consumables for blood storage; simple blood test kit
Emergency	2 (O.R.)	Operating table	Necessities for 2 tables provided
		Patient monitoring system	ICU equipment including monitoring device
		Miscellaneous	Recovery and ordinary beds
	1 (Darkroom)	Portable X-ray	Fixtures for darkroom
Ward	9 (Obst.) 9 (Orthop.) 9 (Ped.) 36 (Others)	Beds	Obst. 54+isol. 4= 58 Orthop. 54+isol. 4= 58 Ped. 72+isol. 6= 78 Others 216+isol.16=232 Total: 426 6 beds/room 9 rms./nurse stat. Total: 7 nurse stations
		Miscellaneous	Minimum necessities to serve 7 nurse stations

Departments	No. of rooms	Equipment requested	Considerations
Ward	Internal medicine, inpatient	Endoscopes	Endoscopy to be performed not in ward but in O.R.
		Blood test kits	Test to be performed in Central clinical labs.
		Miscellaneous	Apparatuses for electro-physiological tests including E.C.G. & ultra-sonic scanner
	Ophthalmol-ogy, inpatient	Surgical kits	Provided to O.R.
		Miscellaneous	General diagnostic & treatment apparatuses
	E.N.T., inpatient	Surgical kits	Provided to O.R.
		Miscellaneous	General diagnostic & treatment apparatuses
Auxiliary services		Laundry	Provision for handling wash load from 1,000 beds
		Dietary	Provision for food service for 1,000 beds
		Incinerator	Capacity for handling load from 1,000 beds
		Independent power plant	1 complete system, to cover needs of blood bank, emergency, ICU, O.R.
		Boilers	1 each for laundry & dietary
		Dumbwaiters	1 for central supply (1F)-O.R.(2F), 1 for dietary (1F)-Ward (4F's)

Departments	No. of rooms	Equipment requested	Considerations
Miscellaneous		2 vans	Canceled
		5 ambulances	At least 3 indispensable due to lack of other transportation, wide servicing areas & high incidence of traumas
		209 air conditioners	Reduced to 126 to be installed in areas in real need of them: i.e., O.R., ICU, delivery, pediatric, etc.

4-4 EQUIPMENT TO BE PROVIDED UNDER BASIC DESIGN

(1) I.C.U. DEPARTMENT

ITEM	QUANTITY
1. Bedside Monitor	7
2. Portable Defibrilator	2
3. Respirator	2
4. Portable x-ray Unit	2
5. Operating Light	2
6. 3-ch ECG Apparatus	2
7. I.C.U. Bed	15
8. Suction Apparatus	8
9. Automatic ECG Monitor	1
10. Oxygen Inhaler Apparatus	8
11. Stainless Steel Instrument	1 set
12. Diagnostic and Treatment Set	1
13. Oxygen Tent	5
14. Refrigerator	2

ITEM	QUANTITY
(2) GYNECOLOGY & OBSTETRIC DEPARTMENT	
1. Colposcope	1
2. Infant CPAP System	2
3. Infant Incubator	2
4. Kymographic Inflation Apparatus	2
5. Endoscope Set	1
6. Ultrasonotomograph	1
7. Fetal Monitor	1
8. Gynec. & Obst. Surgical Set	1
9. Cryosurgery Unit	1
10. Coagulator	1
11. Obstetric Operating Table	4
12. Operating Light (O.R.)	3
13. Diagnostic & Treatment Set	1
14. Resuscitator	2
15. Anesthesia Apparatus	4
16. Obstetric Bed	4
17. Operating Light (Deliv.)	4
18. Film Illuminator	8
19. Suction Apparatus	5
20. Vacuum Extractor	2
21. Stainless Steel Instrument	1 set
22. Oxygen Inhaler Apparatus	4
23. Water Sterilizer	2
24. Electro-Surgical Unit	1
25. High Pressure Sterilizer	2
26. Working Table	1 set
27. Unit Sink	1 set
28. Labor Bed	6
29. Infant Dressing Table	2
30. Refrigerator	1
31. Phototherapy Unit	2
32. Ultrasonic Nebulizer	3
33. Infusion Pump	3

ITEM	QUANTITY
34. Oxygen Analyzer	1
35. Infant Bassinet	28
36. Medicine Cabinet	1
37. Rubber Goods	1 set
38. Disposable	1 set
39. Catheter	1 set
40. Syringe & Needle	1 set
41. Medical Supplies	1 set
42. Suture Instrument	1 set
43. Consumable	1 set
44. Gynecological Examining Table & Unit	1

(3) OPERATING THEATER

1. Universal Operating Table	12
2. Orthopedic Operating Table	2
3. Child Operating Table	1
4. Endoscopic Examining Table	2
5. Operating Light, for monitoring	2
6. Operating Light	9
7. Operating Light, mobile	16
8. Operating Light	3
9. Electro-Surgical Unit (Major)	4
10. Electro-Surgical Unit (Minor)	8
11. Bedside Monitor	5
12. Portable X-ray Unit	2
13. Cryosurgery Unit	4
14. Suction Unit	16
15. Dermatome	3
16. Plaster Saw	2
17. Mobile X-ray TV Unit	2
18. Stretcher	16
19. High Pressure Sterilizer	6
20. Anesthesia Apparatus	16
21. Respirator	5

ITEM	QUANTITY
22. Operating Instrument Set	1
23. Plaster Table	2
24. Water Sterilizer	12
25. Stainless Steel Instrument	1 set
26. Film Illuminator	16
27. Operating Microscope	2
28. TV Monitoring System	1
29. Endoscope Set	1
30. Catheter	1 set
31. Suture Instrument	1 set
32. Syringe & Needle	1 set
33. Medical Supplies	1 set
34. Rubber Goods	1 set
35. Disposable	1 set
37. Portable Defibrilator	4
38. Polygraph	2
39. Continuous Blood Gas Monitor	2
40. Pacemaker	3
41. Working Table	1 set
42. Unit Sink	1 set
43. Blood Bank Refrigerator	2
(4) EMERGENCY DEPARTMENT	
1. Operating Table	2
2. Operating Light	2
3. Portable X-ray Unit	1
4. Mobile X-ray TV Unit	1
5. 3-ch ECG Apparatus	2
6. Suction Unit	4
7. I.C.U. Bed	8
8. Bedside Monitor	2
9. Respirator	2
10. Anesthesia Apparatus	2
11. High Pressure Sterilizer	1

ITEM	QUANTITY
12. Oxygen Inhaler Apparatus	10
13. Patient Bed	36
14. Stretcher	2
15. Stainless Steel Instrument	1 set
16. Electro Surgical Unit	2
17. Emergency Instrument Set	1
18. Water Sterilizer	2
19. Darkroom Instrument Set	1
20. Diagnostic and Treatment Set	1
21. Film Illuminator	2
22. Portable Defibrilator	1
23. Catheter	1 set
24. Suture Instrument	1 set
25. Syringe & Needle	1 set
26. Medical Supplies	1 set
27. Rubber Goods	1 set
28. Disposable	1 set
29. Consumable	1 set
30. Film Illuminator	1
31. Examining Table	1
32. Refrigerator	1
33. Working Table	1 set
34. Unit Sink	1 set
35. Mobile Operating Table	2
36. Portable Electroencephalograph	1

(5) OPHTHALMIC DEPARTMENT

1. Slit Lamp	1
2. Diagnostic & Treatment Set	1
3. Examinign Light	1
4. Ophthalmic Treatment Unit	1
5. Refracting Unit	1
6. Trial Lens Set	1
7. Treatment Table	1

ITEM	QUANTITY
(6) E.N.T. Department	
1. Examing Light	1
2. Diagnostic & Treatment Set	1
3. ENT Treatment Unit	1
4. ENT Treatment Chair	1
5. Nebulizer	1
(7) MEDICAL DEPARTMENT	
1. 3-ch ECG Apparatus	3
2. Respirator	2
3. Ultrasonotomograph	2
4. Portable Defibrilator	2
5. Bedside Monitor	3
6. Spirometer	1
7. Stress Test System	1
8. Treadmill	1
9. Operating Light	1
(8) RADIOGRAPHY DEPARTMENT	
1. Cardiac/Angiography X-ray Unit	1
2. Cranio-Cervical Computed Tomography System	1
3. Diagnostic X-ray TV System	1
4. Tomographic X-ray Unit	1
5. Diagnostic X-ray Unit	2
6. Mass Miniature Radiographic Unit	1
7. Mobile X-ray TV Unit	2
8. Portable X-ray Unit	3
9. Darkroom Instrument Set	1
10. Diagnostic Set	1
11. Working Table	1 set
12. Unit Sink	1 set

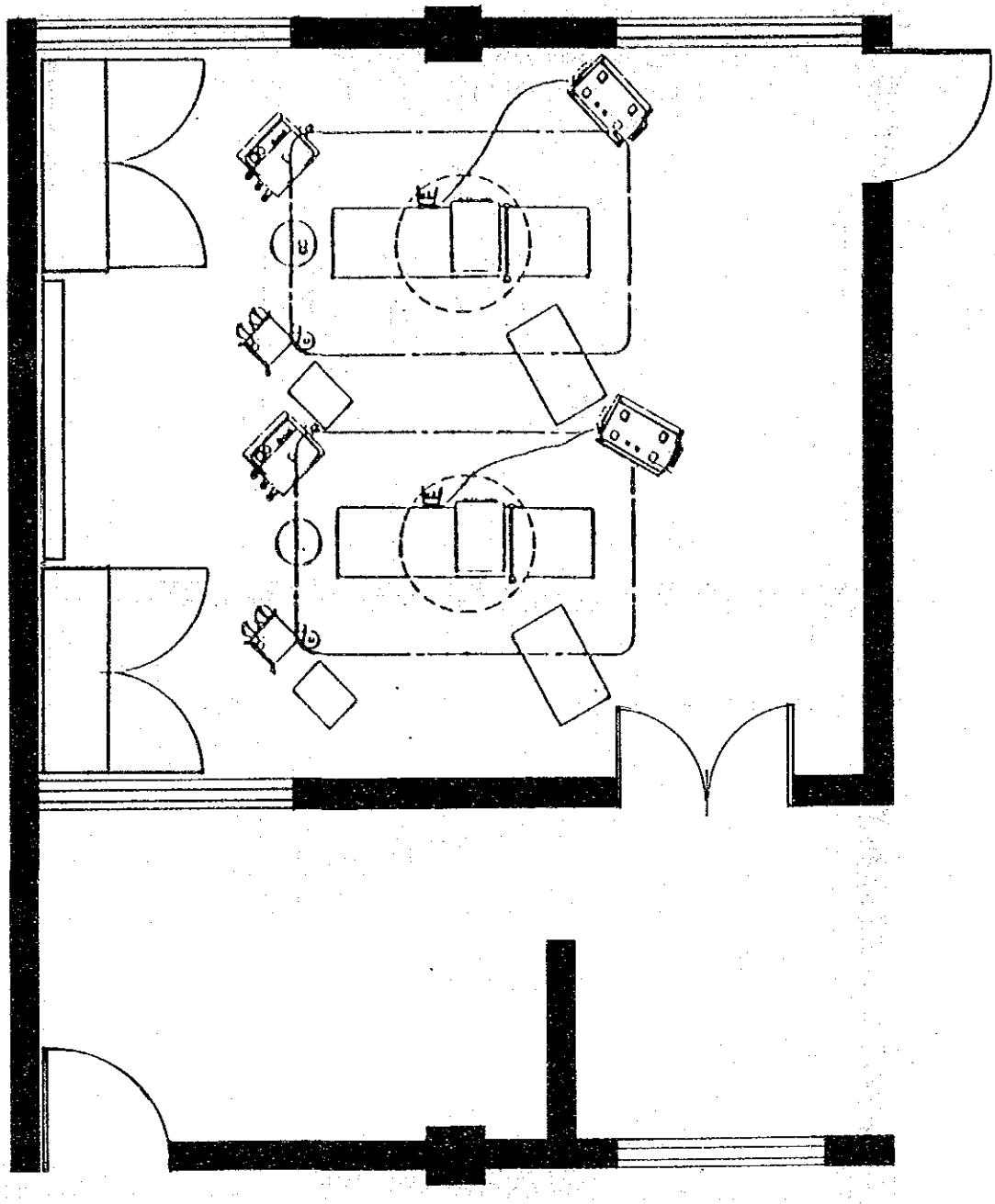
ITEM	QUANTITY
(9) CLINICAL LABORATORY DEPARTMENT	
1. Research Microscope	4
2. Research Microscope	1
3. High Pressure Sterilizer	1
4. Direct Reading Balance	2
5. Centrifuge	2
6. Electrophoresis Apparatus	2
7. Chromatagraphy Tank	1
8. Photoelectric Colorimeter	2
9. Spectrophotometer	1
10. Colony Counter	1
11. Water Still	6
12. PH Meter	2
13. Flame Photometer	2
14. Low Temperature Incubator	3
15. Hematocrit Centrifuge	2
16. Laboratory Implement & Glassware Set	1
17. Blood Gas Analyzer	1
18. Incubator	2
19. Water Bath	2
20. Hemoglobinometer	1
21. Refrigerator	3
22. Bilirubinometer	1
23. Mixer	2
24. Pipette Washer	3
25. Shaking Bath	1
26. Shaker	1
27. Reagent	1 set
28. Blood Bank Refrigerator	2
29. Medicinal Refrigerator	3
30. Deep Freezer	2

ITEM	QUANTITY
(10) BLOOD BANK DEPARTMENT	
1. Blood Bank Refrigerator	4
2. Blood Freezing Chest	2
3. Refrigerated Centrifuge	1
4. Hemoglobinometer	1
5. High Pressure Sterilizer	1
6. Blood Collecting Table	1
7. Stainless Steel Instrument	1 set
8. Research Microscope	1
9. Water Bath	1
10. Examining Instrument Set	1
11. Working Table/Unit Sink	1 set
12. Consumable	1 set
13. Centrifuge	1
14. Implement & Glassware	1 set
(11) WARD	
1. Patient Bed, obstetric	58
2. Patient Bed, orthopedic	58
3. Patient Bed, pediatric	78
4. Patient Bed, general	232
5. Ice Maker	7
6. Medicine Cabinet	14
7. Refrigerator	14
8. Oxygen Inhaler Apparatus	42
9. Suction Unit	28
10. Stretcher	14
11. Diagnostic & Treatment Set	1
12. Stainless Steel Instrument	1 set
13. Catheter	1 set
14. Syringe & Needle	1 set
15. Medical Supplies	1 set
16. Rubber Goods	1 set

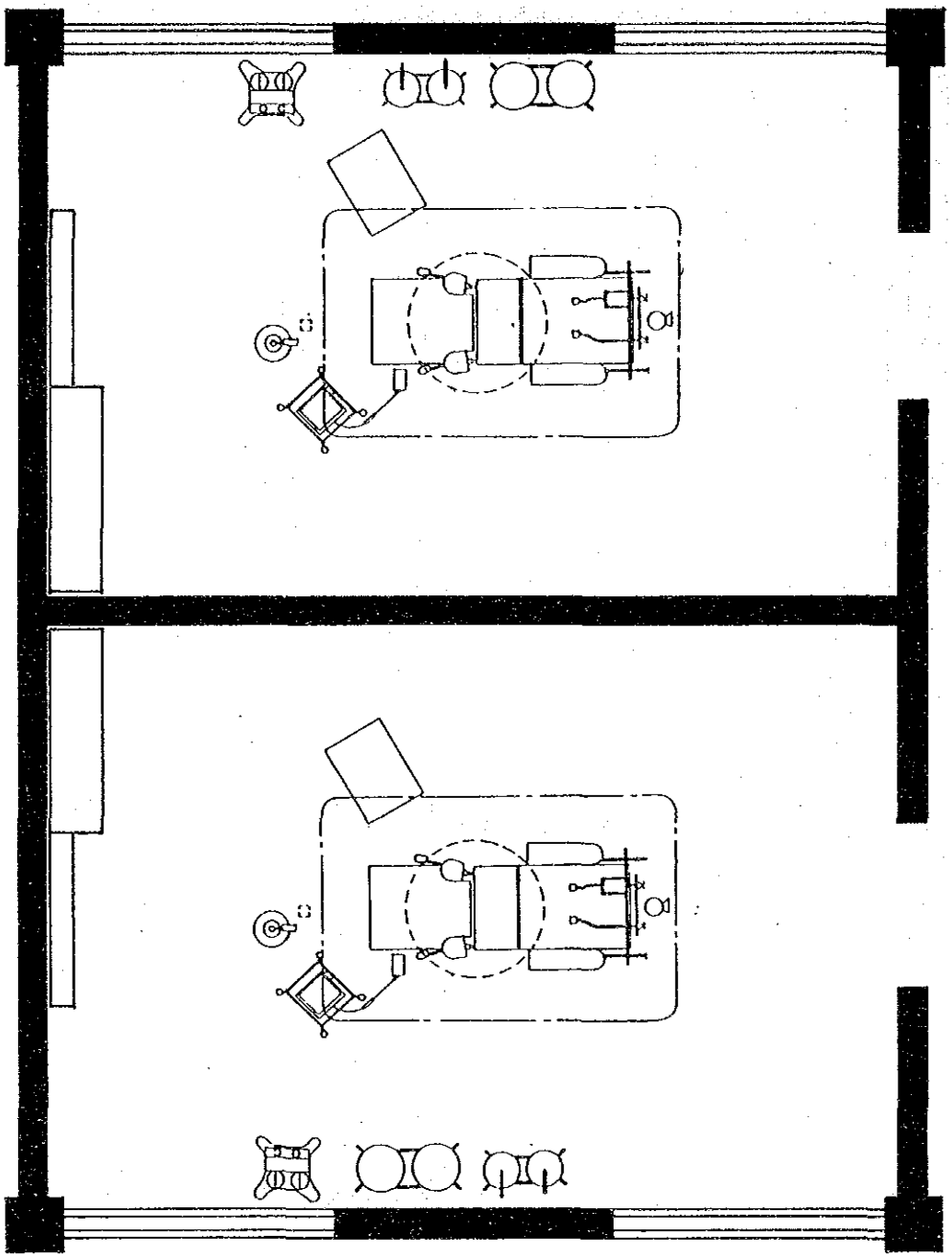
ITEM	QUANTITY
17. Disposable	1 set
18. Consumable	1 set
19. Film Illuminator	14
20. Ultrasonic Nebulizer	20
21. Working Table	1 set
22. Unit Sink	1 set
23. Traction Apparatus	1 set
24. Bedpan Washer	7
(12) OTHERS	
1. Laundry Equipment	1 set
2. Kitchen Equipment	1 set
3. Generator	1
4. Incinerator	1
5. Air Conditioner	1 set
6. Ambulance	3
7. Stabilizer	1 set
8. Linen, Medicine, Chart Shelves	1 set
9. Patient Lifter	1 set
10. Dumbwaiter	1 set
11. Boiler	1

4-5 EQUIPMENT INSTALLATION PLAN

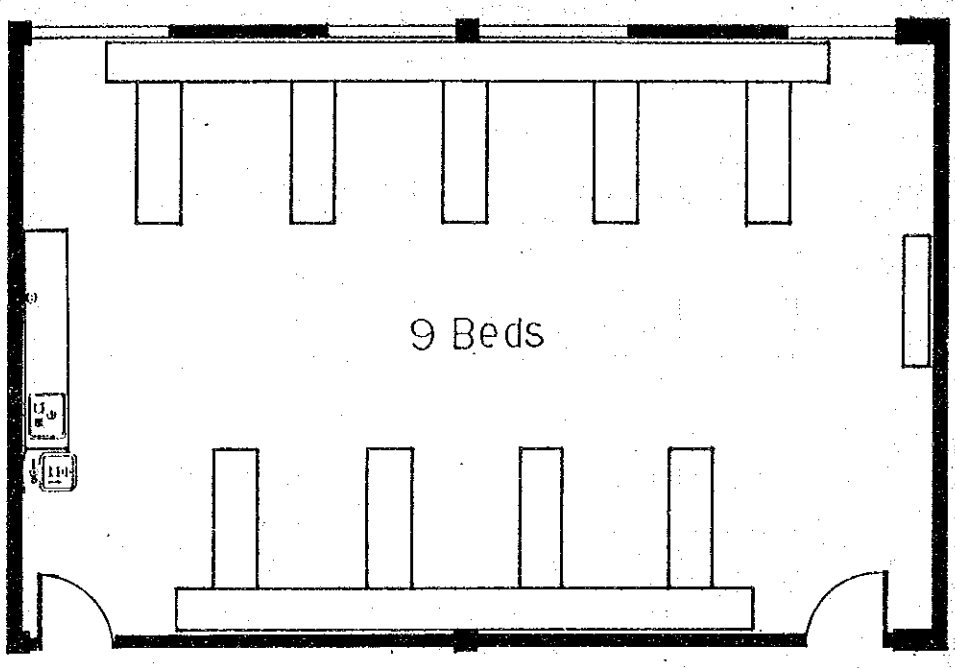
Detailed layout is illustrated as follows:

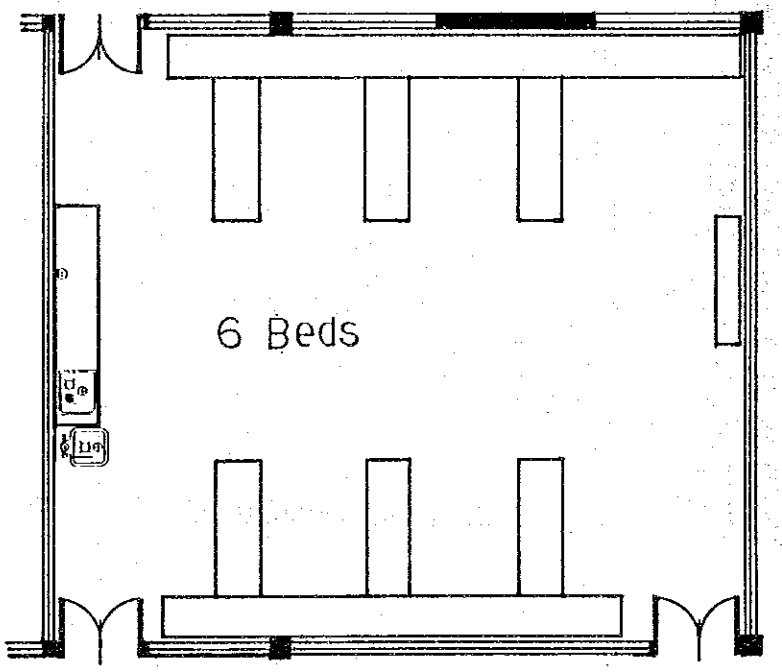


SCALE	1/50	O.R. LAYOUT PLAN, EXAMPLE

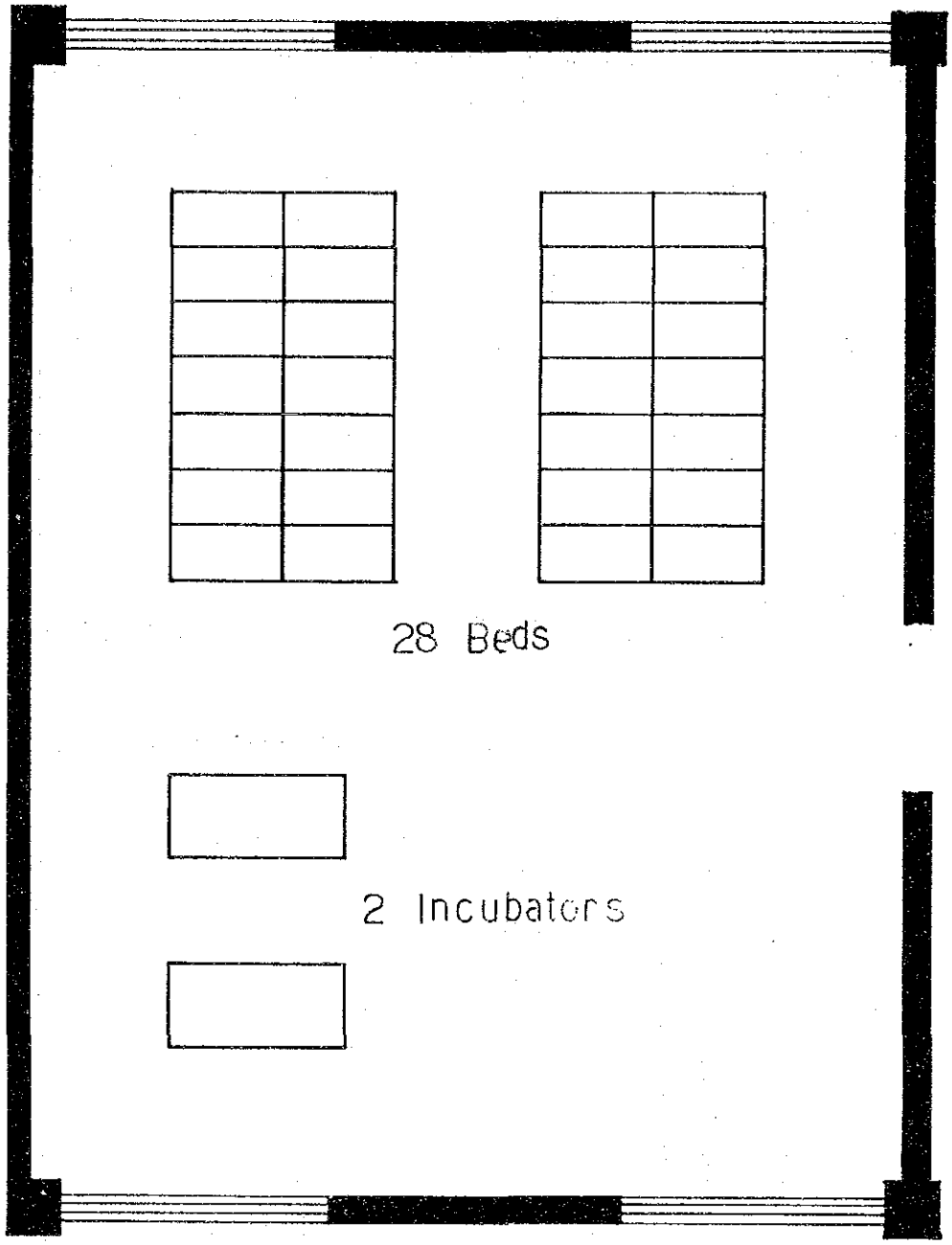


SCALE	1 / 5 0	DELIVERY ROOM LAYOUT PLAN, EXAMPLE

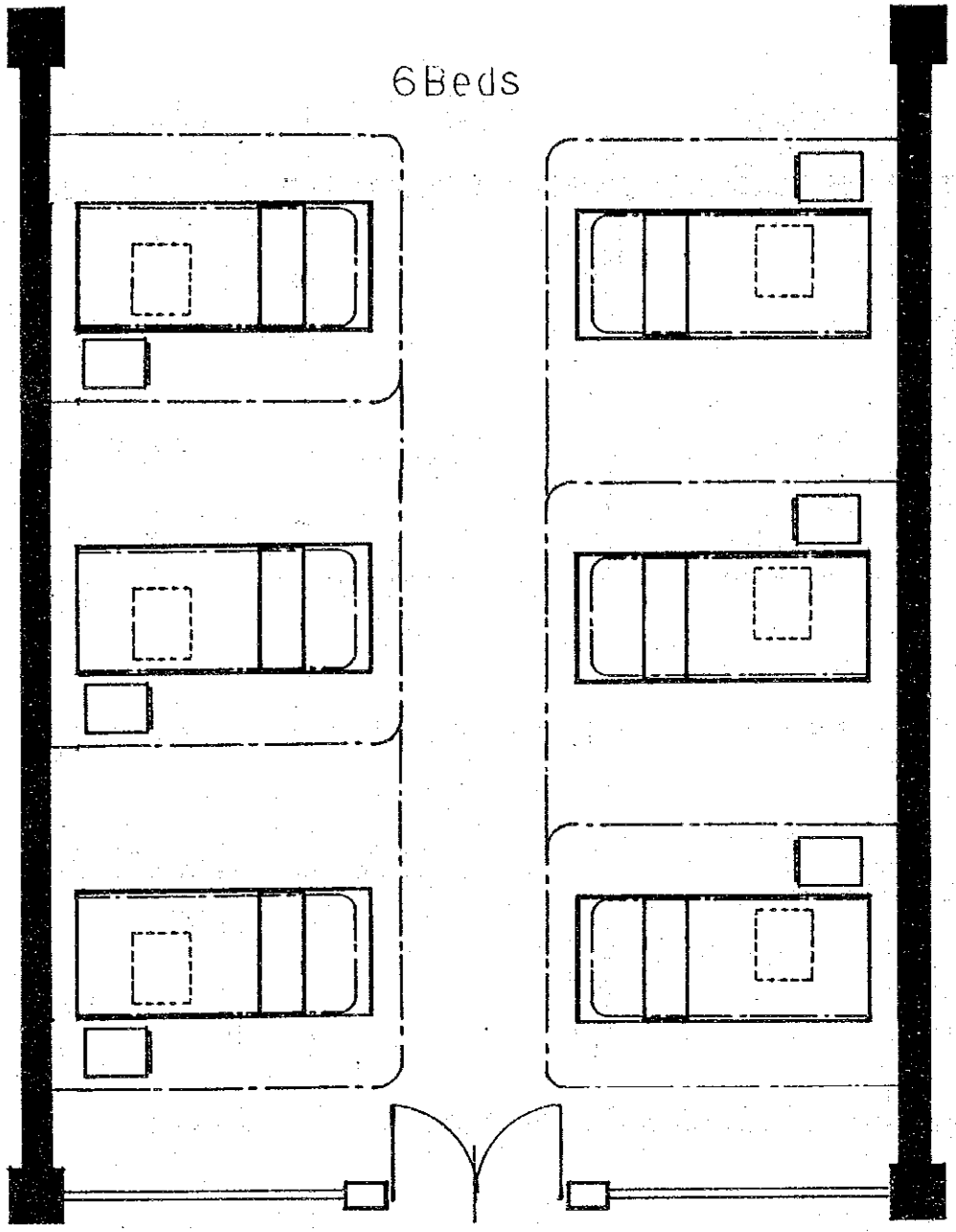




SCALE	1/100	RECOVERY ROOM LAYOUT PLAN, EXAMPLE

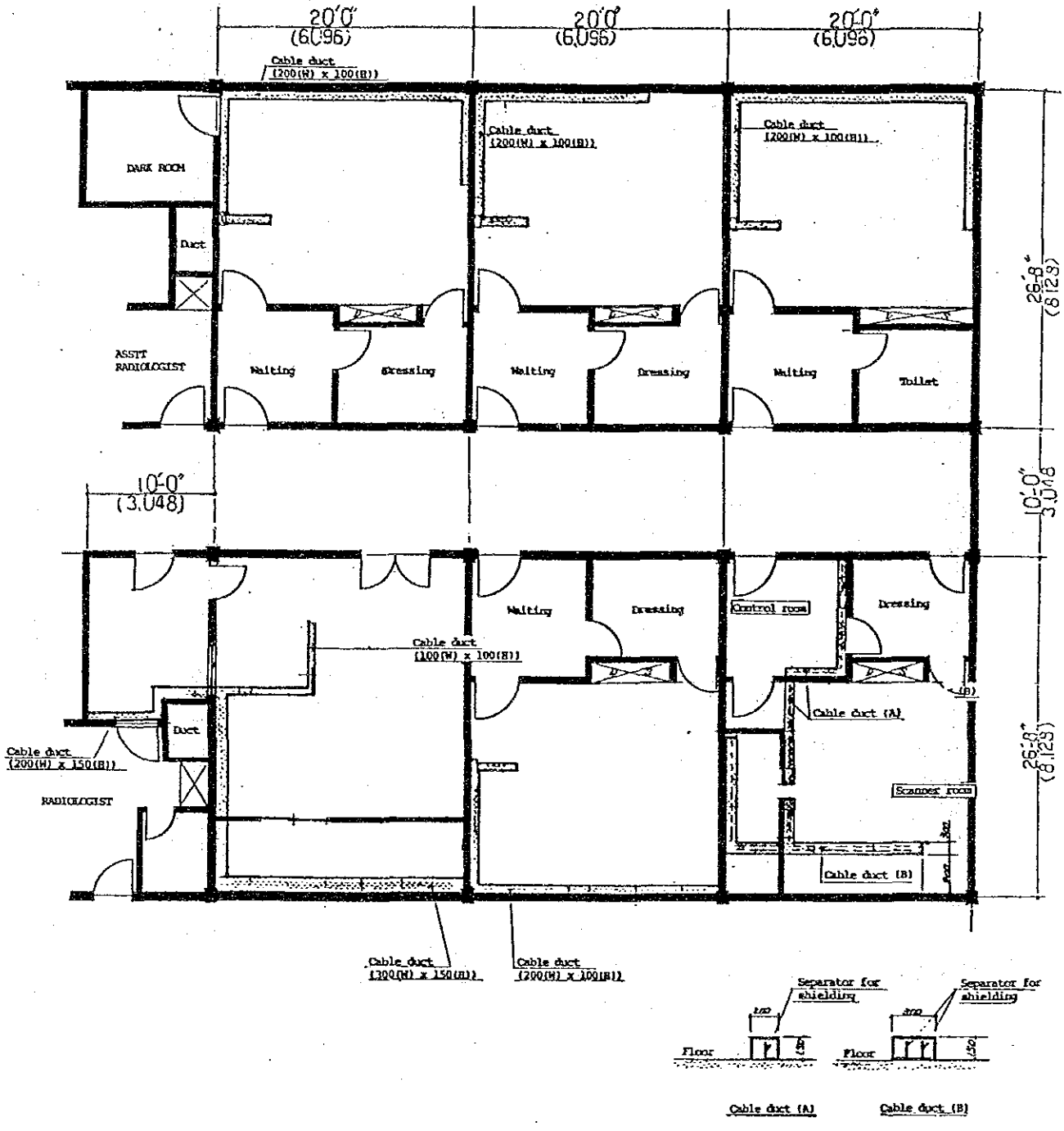


SCALE	1/50	NURSERY ROOM LAYOUT PLAN, EXAMPLE



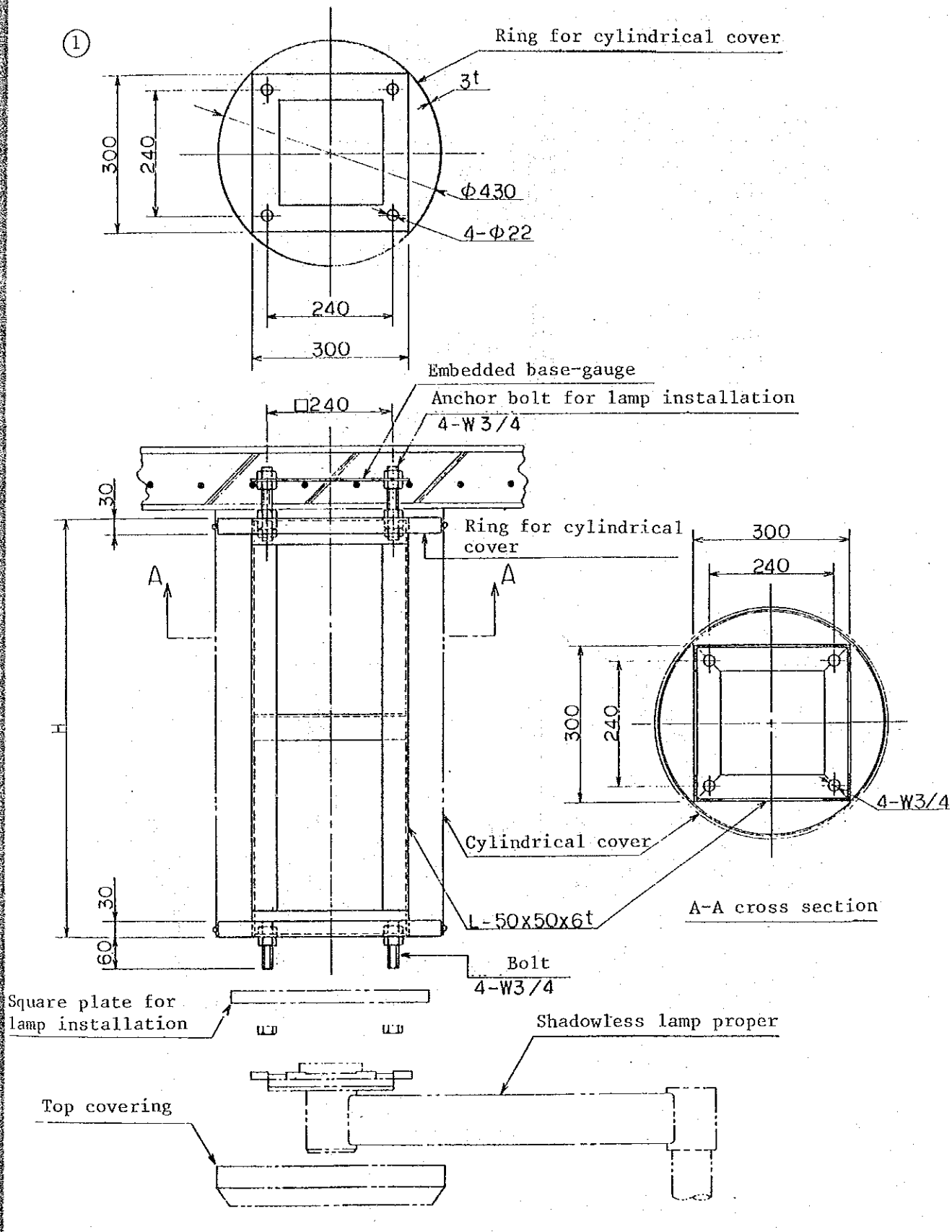
SCALE	1/50	6 BEDS ROOM LAYOUT PALN, EXAMPLE

The cable duct distribution to each room is planned as follows:

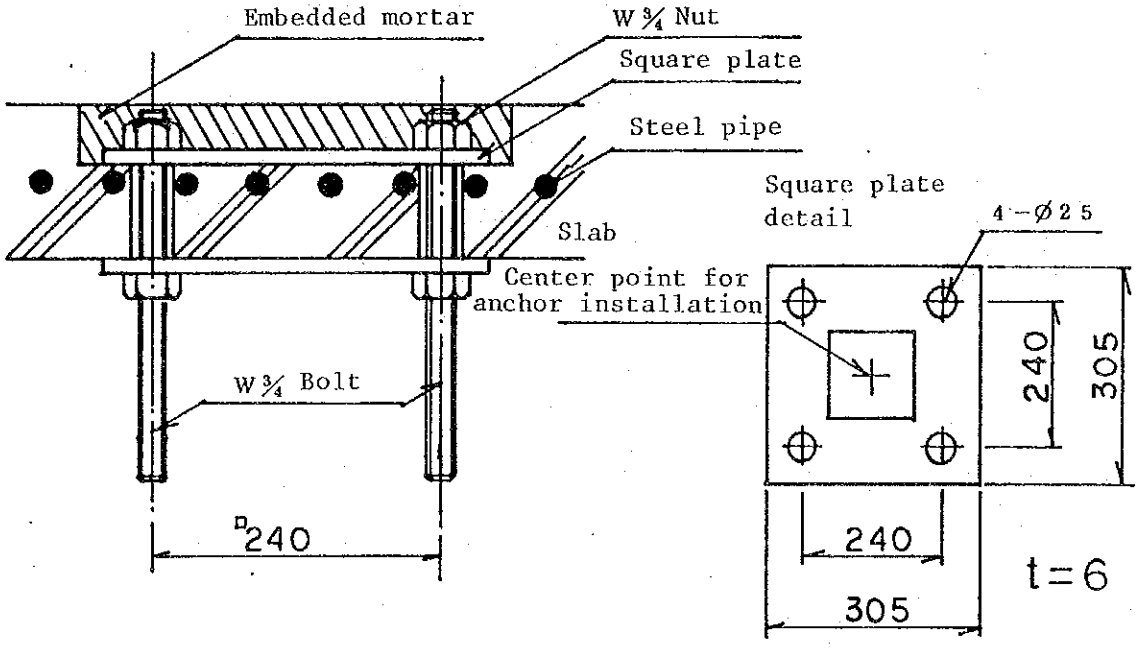


Cable Duct Distribution Plan, Example, Radiography Room

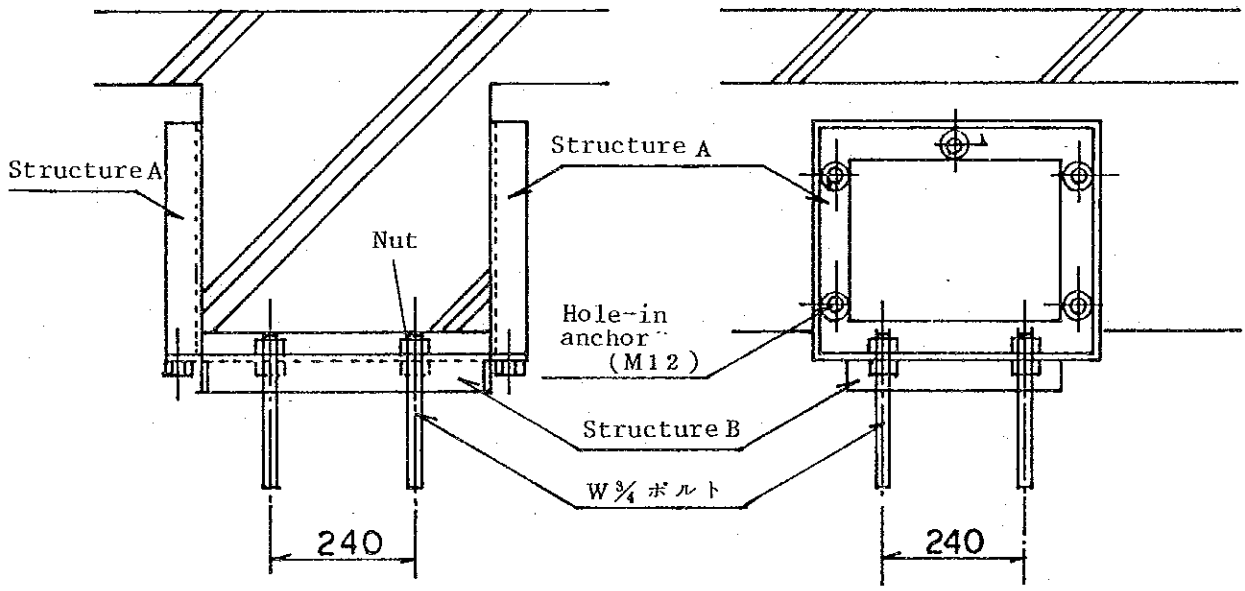
Three different methods of installation are offered for the shadowless lamp:



②


Embedded mortar
W ¾ Nut
Square plate
Steel pipe
Slab
W ¾ Bolt
240
Square plate detail
4-Ø25
Center point for anchor installation
240
305
240
305
t=6

③


Structure A
Structure A
Nut
Hole-in anchor (M12)
Structure B
W ¾ ボルト
240
240

4-6 PREPARATION FOR EQUIPMENT INSTALLATION

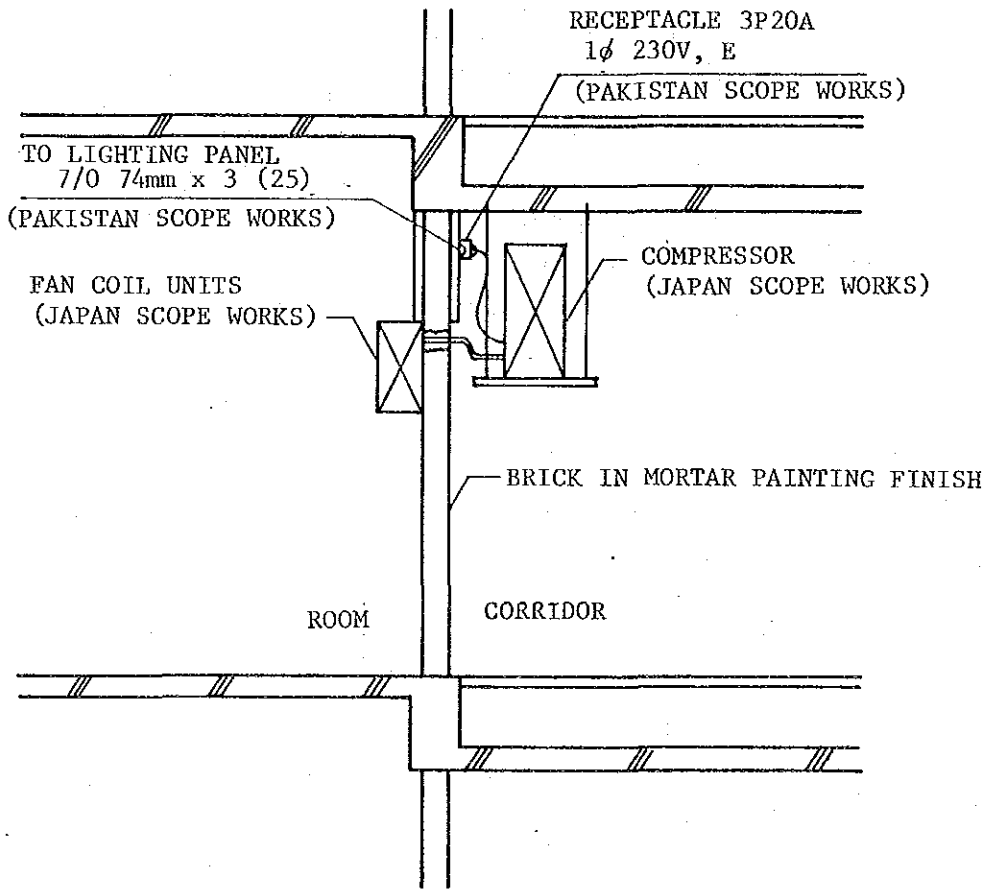
The preparation of the premises to install the equipment supplied is to be carried out on the responsibility of the Pakistani authorities, though Japan is responsible for providing the medical equipment, transport devices, and independent power plant and for part of the installation of air conditioners.

Most of the preliminary work has already been finished and the remaining work to be done is as follows:

1. Provision of electric source outlets
2. Power plant, secondary trunk connection; alterations & foundation work for generator installment
3. Incinerator housing
4. Foundation work for boilers
5. Partition shifting in angiography room
6. Sewer pit and foundation work for kitchen
7. Walls for men and women's bed room

1. Provision of electric source outlets

The following work must be done to supply electricity to air conditioners.

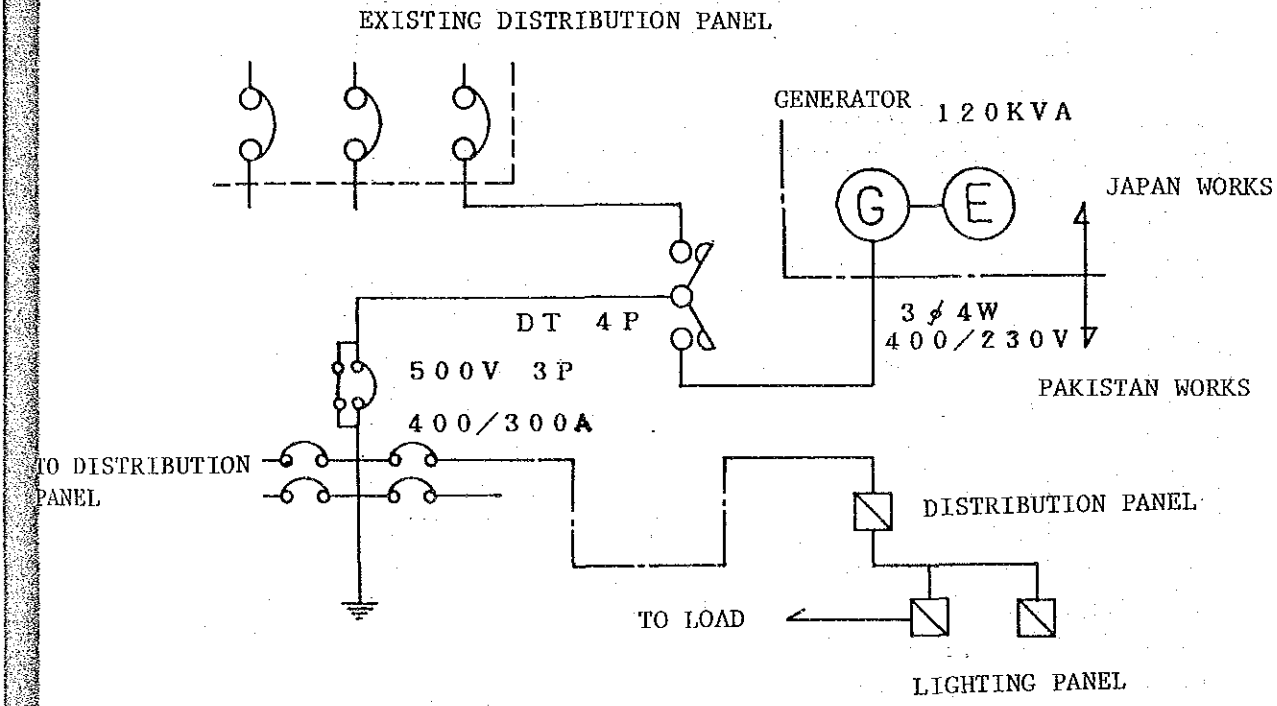


ELECTRIC SUPPLY FOR AIRCONDITIONING

2. Remodeling works for emergency circuit and foundation of the generator

The generator requires additional wiring because the existing wirings are not sufficient for the emergency load. As the generator room is housed in a separate building from the hospital, the connection between the generator and each destribution panel is provided by underground cabling. The wiring within each building is provided through exposed tubes.

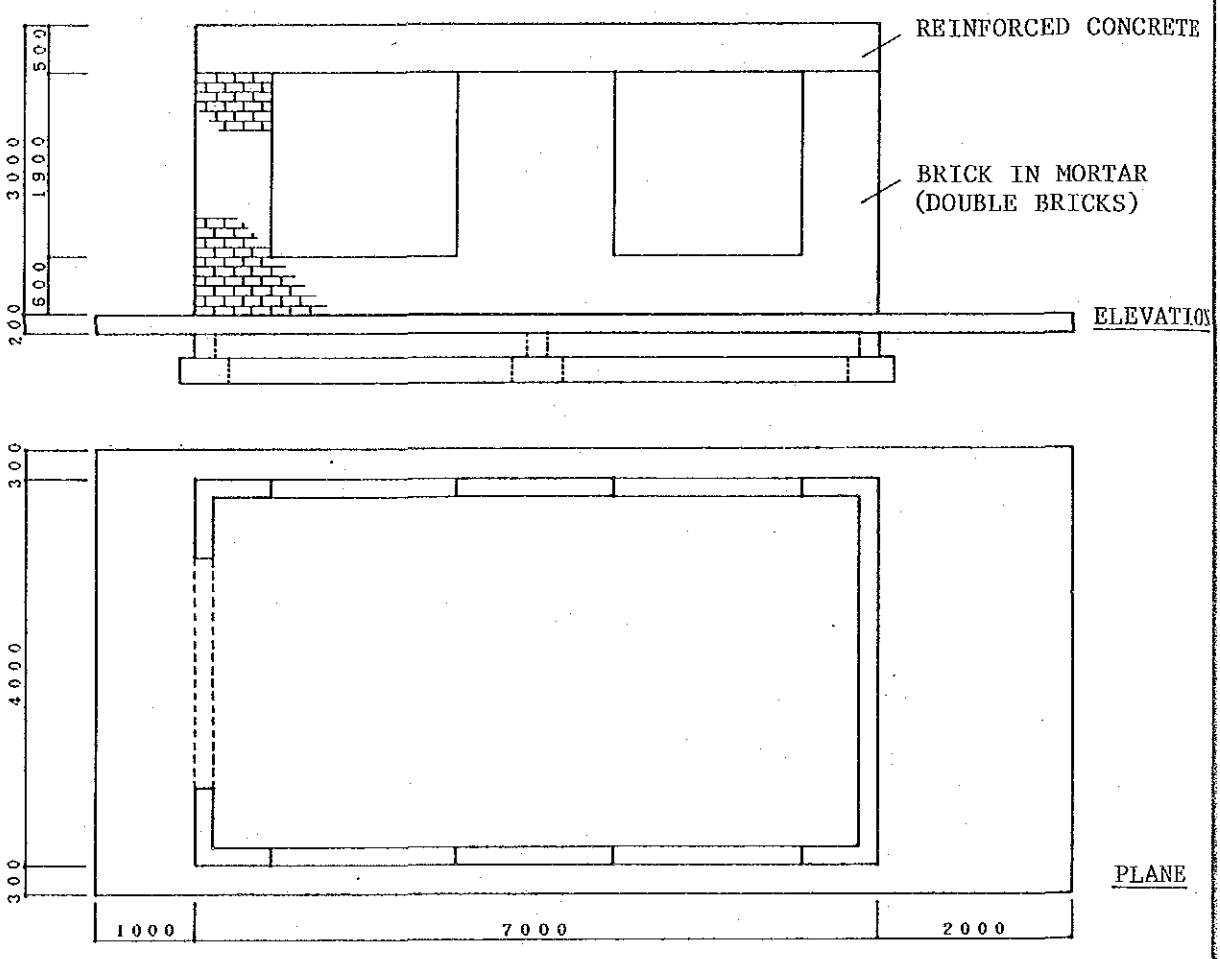
The existing slab is reinforced to serve as the foundation of the generator. The specification of the foundation work must be decided after the type of the generator is agreed on with Pakistani engineers, as the former should vary according to the size and weight of the latter.



REMODELING WORKS FOR EMERGENCY CIRCUIT

3. Incinerator building

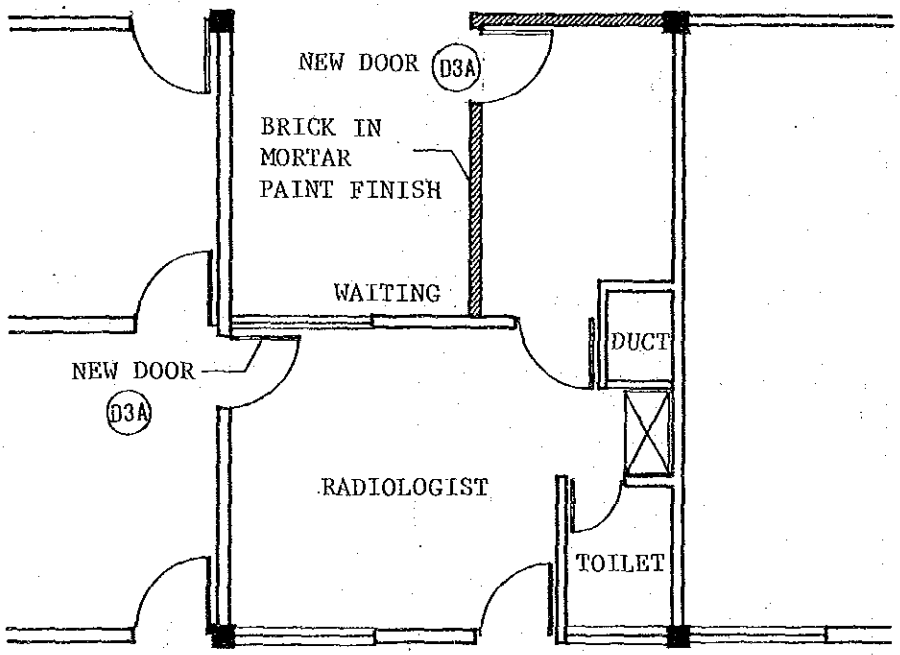
The capacity of the existing incinerator building is too small for a hospital of this size. Therefore a new larger building is required for the incinerator. The frame of the building is constructed with reinforced concrete and the outside walls with reinforced bricks.



4. Angiography room

A space of 10" x 13" is partitioned out on the corridor side of the angiography room to accommodate the X-ray control equipment.

The partition is built with bricks and finished with mortar.

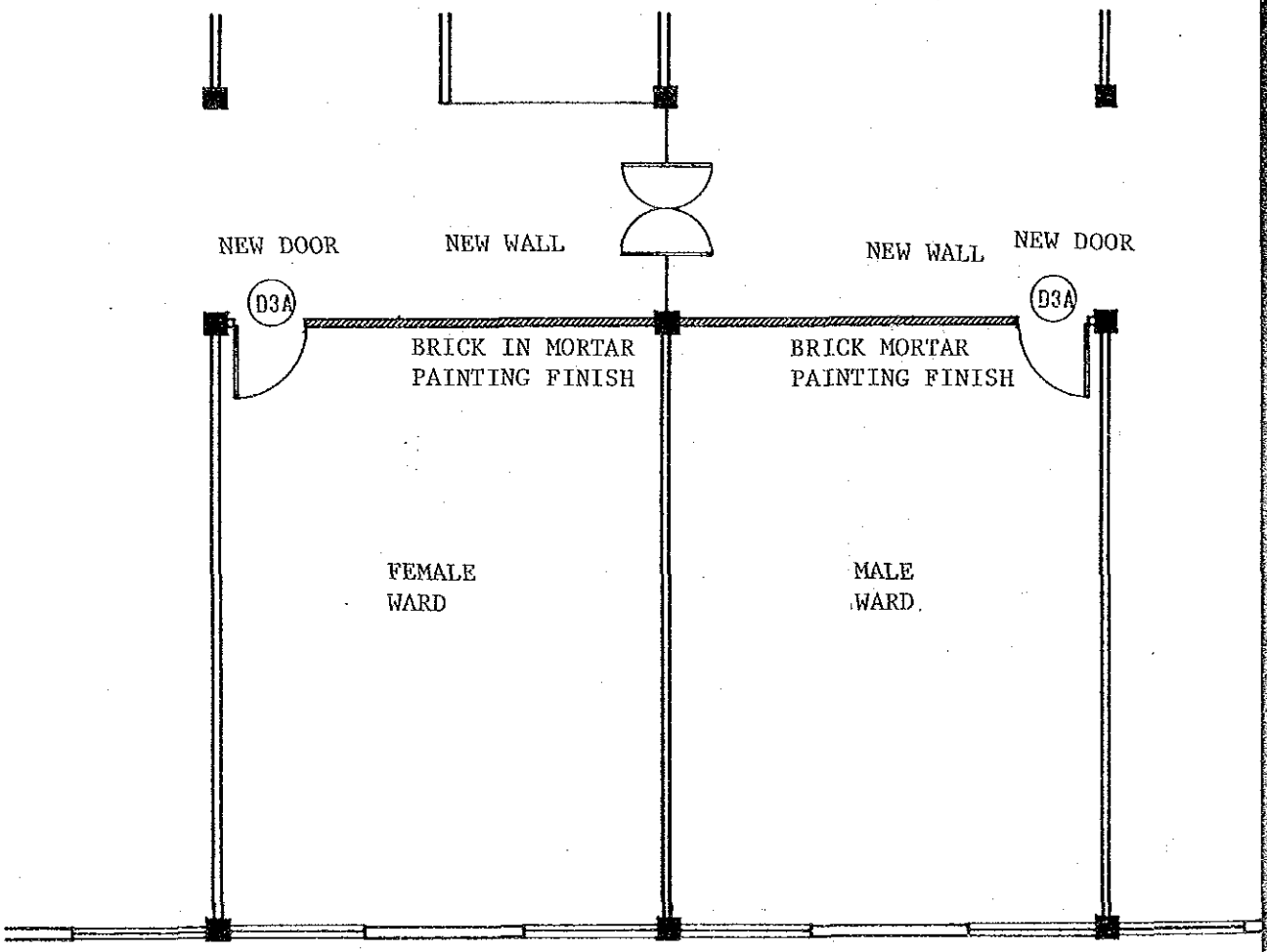


NEW CONTROL ROOM FOR RADIOLOGISTS

5. Partitions for patient rooms

While general patient rooms are open to the corridors now, specific rooms which must be air-conditioned are partitioned in, two as a pair, for the sake of efficiency.

The partitions are built with bricks and finished with mortar.



WALLS FOR MEN AND WOMEN'S BED ROOM

4–7 CAPITAL COST OF PROJECT

4–7–1 Condition for cost estimation

(1) Time of estimation : February, 1985

(2) Exchange rates : U.S.$ = 15.51 Rs.

4–7–2 Capital cost by cost estimation

Capital cost

Financed by Pakistan ---------- 1,270,000 Rs.

Pakistan is to finance the alterations of the premises for installation of the equipment as specified in 4-6.

CHAPTER 5.
IMPLEMENTATION OF THE PROJECT

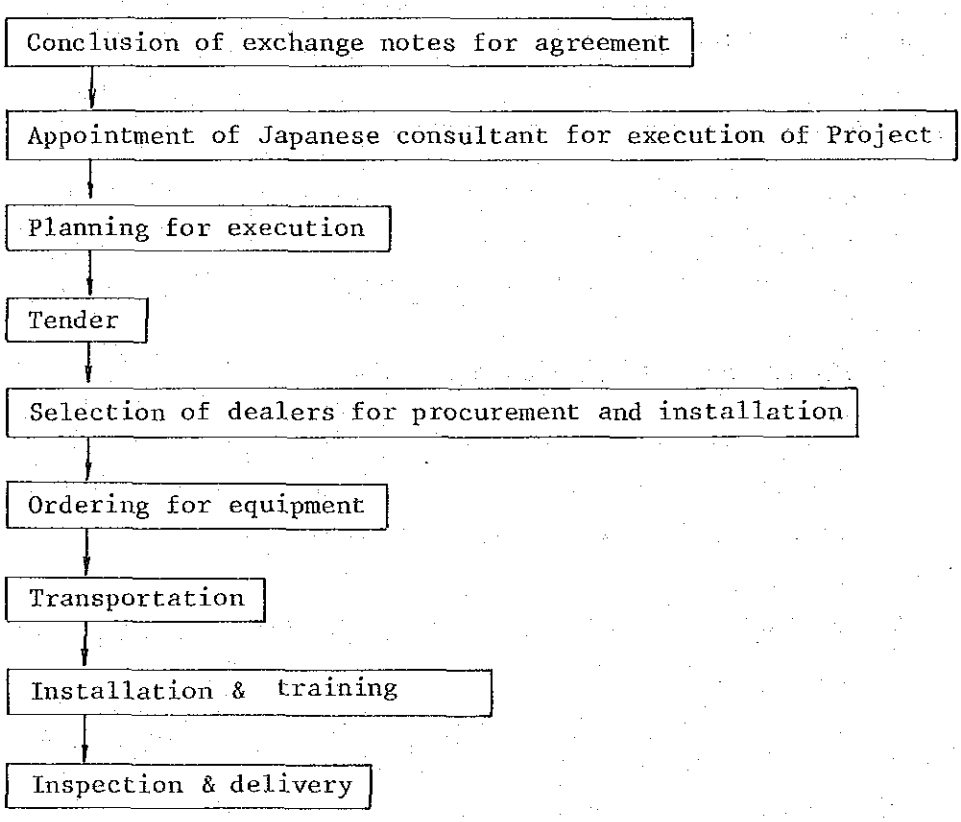
5-1 RESPONSIBLE AUTHORITIES

The present project is executed as part of the Establishment of Punjab Medical College, Faisalabad, Project. The responsible Pakistani authorities are as follows:

Execution:	Health Department, Government of the Punjab
Sponsoring:	Ministry of Health, Special Education and Social Welfare, Government of Pakistan
Project Director:	Principal, Punjab Medical College

5-2 *IMPLEMENTATION OF THE PROJECT*

The equipment provision project is to be executed, in conformity to the grant aid policy of the Japanese government, as follows:



The execution of this project must be supervised by a consultant who is well versed in the health field as well as in medical equipment. The consultant will perform the following functions so as to assure smooth and effective execution of the project:

Selection of dealers
Checking and approving specifications
Reviewing and advising on plans and procedures of installation
Supervision of installation & training of personnel
Inspection of equipment
Reporting to the governments of Japan and Pakistan

5–3 SCOPE OF WORK AND RESPONSIBILITIES

The scopes of work and responsibilities to be borne by Japan and Pakistan are as follows:

5–3–1 Japan's scope of work and responsibilities

Transportation by land and sea, unpacking, conveyance, installation, training of personnel, maintenance of the equipment until its delivery and all the expenditures incurred in the process.

5–3–2 Pakistan's scope of work and responsibilities

1. Preparation of premises for equipment installation
2. Provision of facilities for electricity distribution
3. Water supply and sewerage provision
4. Gas supply
5. Procurement of material and alterations as required to install equipment
6. Secondary trunk connection and foundation work for power plant
7. Incinerator housing
8. Foundation work for boilers
9. Partition shifting in angiography room
10. Provision of sewer pit for kitchen
11. Partition shifting in A.V. control room

12. Exemption of tax and bonded warehouse fee, and facilitation of customs clearance and inland transport
13. Exemption of customs and taxes levied on Japanese nationals serving in Pakistan under the verified contract
14. Granting permissions and licenses and providing other necessary facilities for Japanese nationals to perform their work
15. Provision of tentative shelter for equipment and provision against rain

5-4 PROCUREMENT OF MEDICAL EQUIPMENT

In view of the items requested and the medical situation in Pakistan, it was decided that the equipment be, in principle, of Japan-made and be procured en bloc in Japan.

This does not exclude a possibility of purchases in Pakistan or in any other country when one of the following clauses is satisfied:

(1) The product requested or anything of similar specifications is not available in Japan,
(2) The requested product is available in another country at a lower price and is definitely superior to the Japanese counterpart in terms of performance, specifications and maintenance.

It was concluded on the basis of the market research in Pakistan that the machinery and material for installation of the equipment are procurable in this country, though those needed for the installation of specific equipment are to be provided by Japan.

5-5 SCHEDULE OF PROJECT IMPLEMENTATION

The project will be executed, after the conclusion of exchange notes, roughly in three stages:

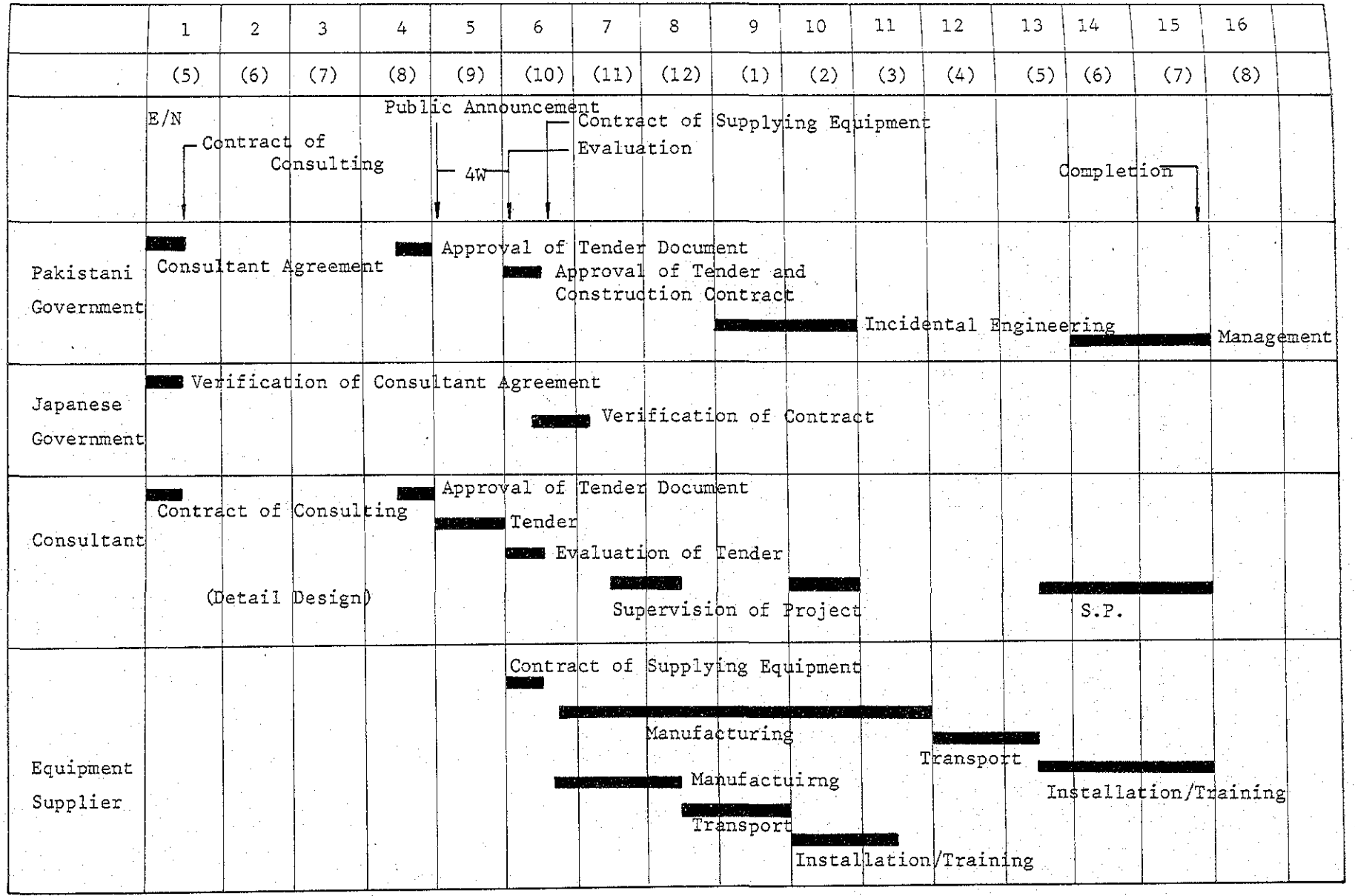
1. Planning of project execution: preparation of literature for tendering (Approx. 3 mos. required)

2. Tender: Public announcement of tender - Selection of dealers
(Approx. 1.5 mos. required)

3. Transport and installation: to be started when authenticated by the Government of Japan (Approx. 5.5 mos.)

The work schedule between the contract with the exchange notes and installation and delivery is as follows:

Schedule for Equipment Installation



5–6 PLAN OF EQUIPMENT DELIVERY

The Government of the Punjab wishes to open the hospital as early as possible. The fact that the Ward completed in the summer of 1984 has been left idle until today has all the more sharpened their need as well as their wish. It is considered desirable, therefore, to have such equipment manufacturable in a relatively short time (approx. 60 days - approx. 1,800 m^3) installed prior to the others that require a longer time (max. 160 days - approx. 900 m^3) to manufacture.

This will result in an advancement of inauguration by about 130 days. In addition, the following advantages will be expected by delivering the equipment in two parts:

1. The project will be implemented more carefully.
2. Space for packing and storage of the equipment is more easily secured in Japan.
3. The problems incidental to the transport of the equipment can be more easily dealt with.
4. Space for storage and unpacking of the equipment is more easily secured in Pakistan.
5. More thorough training can be conducted.
6. Supervion at the site of installation is more easily achieved.

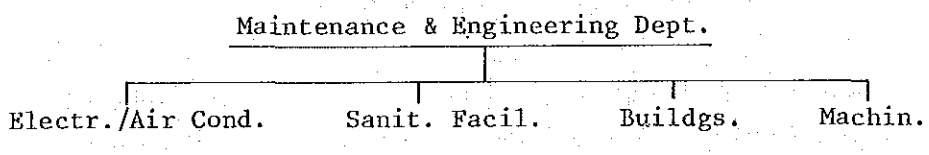
CHAPTER 6. MAINTENANCE AND OPERATION PLAN

The success of a project for medical equipment provision generally depends not on mere installation of machines and apparatuses but on the proper and effective use of them. In other words, a grant aid becomes meaningful only when the provided equipment is utilized most effectively and efficiently. Thus the smooth operation and adequate maintenance of equipment are the key to a successful project.

6-1 PLANNING MAINTENANCE SYSTEM

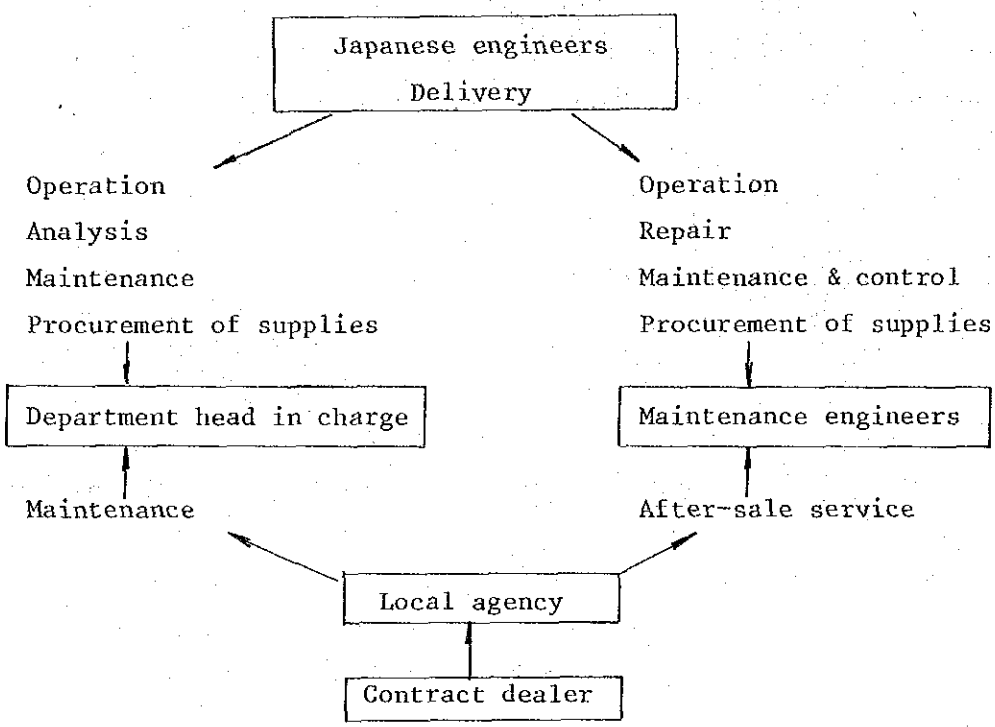
Reference has often been made to the insufficiency of skill and efforts on the part of the recipient country in relation to the operation and maintenance of the medical equipment provided through grant aid. This will continue to be a difficult problem accompanying the provision of equipment of high technology. Yet another problem to be duly appreciated and dealt with is the ability of the Japanese engineers who are to give technical advice and engineering training to the local staff. Fortunately Punjab Medical College already has its own maintenance team. Yet it is desirable that sufficient technical instruction be given by Japanese engineers at the time of installation and training so as to increase and upgrade the trained personnel.

Facilities Maintenance System in Punjab Medical College



There are a few import agencies in Lahore and Karachi dealing in medical equipment. They have service networks covering the whole country and their staff is trained in the maintenance and engineering techniques for Japanese products, too. They can thus be expected to provide sufficient support to the maintenance team of the college.

Maintenance and Engineering System After Installation



6–2 MAINTENANCE COST

The college authorities have assured to allocate sufficient fund to maintenance and engineering. They proposed the following annual expenditures, but they are definitely insufficient, especially to fund the maintenance expenses for equipment.

Budget for building maintenance : 5,655,000 Rs.
Budget for medical equipment maintenance : 300,000 Rs.

Thus it will be necessary to provide spare parts and consumables to cover the needs for a few years free of charge so that the deficiency of fund will not encumber smooth operation.

CHAPTER 7. EVALUATION

Modernization of medical care is one of the most important targets under the five-year plan promoted by the Government of Pakistan in order to achieve economical development and to improve the life standard and public services.

It is urgently needed, in particular, to train health personnel and improve health facilities in areas with a rapid population increase.

Punjab Medical College, the recipient of aid in the present request, is located in the Faisalabad, one of such areas of growing population. It is the only educational institution for doctors in this region. Yet for several years the college had to do without its own hospital to train its medical students in clinical practice. Thus the educational, medical and social contribution to be effected by the implementation of the present project will be far-reaching as well as invaluable. To attain the full effect of the project, however, it is prerequisite to complete the construction of the outpatient block and put it in operation as soon as possible.

When the construction is completed, the operation and maintenance cost of the hospital as a whole will be approximately 24.75 Rs. per year. Most of it is to be borne by the Government of the Punjab and the hospital will be free from financial difficulties as long as the fund is adequately and effectively allocated.

Drugs, spare parts and consumables are to be supplied through the Medical Stores Depot controled by the Government of the Punjab.

Annual Operation Cost for Punjab Medical College

Buildings	5,655,000
Equipment	300,000
Personnel expenses (660 workers)	15,765,000
Fund in reserve	3,030,000
Total	24,750,000 Rs.

CHAPTER 8.
CONCLUSION & RECOMMENDATIONS

8-1 CONCLUSION

The establishment of Punjab Medical College Hospital promises a great contribution to the inhabitants in the district and to Pakistan as a whole. The present project to provide this new hospital with medical equipment, therefore, will also have a great impact on the health situation of the country. The hospital will not only function as an education institution providing training to doctors and other medical and paramedical workers but also improve the health service in the district so far so inadequate due to the rapidly growing population. The Government of Pakistan places great hopes on the implementation of the Project.

8-2 RECOMMENDATIONS

Modernization of health services has been one of the most important and long-standing problems in Pakistan. The present grant aid project for equipment provision will help achieve a significant step forward in the total picture and its execution is keenly waited for. Yet it goes without saying that self-reliance on the part of Pakistan is essential to its fulfillment.

*Success of the Project for equipment provision, as well as that for Punjab Medical College establishment, depends heavily on the attitude and enthusiasm of each person in the college. All the people concerned must be actively involved in and take their responsibilities for their work.

More specifically:

1) Hospital staff's efforts to get skilled in operating the provided equipment,

2) Establishment and execution of a maintenance and engineering system by the maintenance team and attaining the required, technical skill, (It is also desirable that prior to the inauguration a few Pakistani engineers and maintenance technicians be trained in Japan for two months or so.)

3) Effective utilization of the equipment,

4) Sufficient budget for effective maintenance and operation of the equipment,

5) Periodical replenishment of consumables as required by the use of equipment,

6) Simple and efficient departmental organization and smooth operation to provide the best medical service, by means of, e.g., reorganization, integration and abolishment,

7) Obtaining capable workers.

* In execution of the Project, the work for which the Pakistani government is responsible must be completed by due date. Due attention is also expected of the government to the smooth customs clearance and inland transportation of the Japanese products and to the quick local procurement of the material as required.

* The barely started construction of the outpatient department should be accelerated, since the department is the window directly open to the community, to function as one of the most important components of the hospital.

APPENDIX

CONTENTS

1. REFERENCES CONCERNING PRESENT STUDY

1-1 Schedule of Basic Design Study

1-2 Members of Study Team

1-3 List of Conference Attendants

1-4 Minutes of Discussions

1-1 SCHEDULE OF BASIC DESIGN STUDY

Days	Date	D.Wk.	Time	Activities
1	1/14	Mon.	17:40	dep. Narita Airport
			↓	↓ JL 471 (via Bangkok)
2	1/15	Tue.	2:45	ar. Karachi Airport
			11:30	dep. Karachi Airport
			↓	↓ PK 312 (via Lahore)
			15:40	ar. Islamabad Airport
			16:30-18:00	Preliminary consultation with Mr. Konzo, First Secretary, Japanese Embassy, & Mr. Wada, Resident Representative, JICA, Islamabad Office
			18:00-22:00	Discussion among Study Team/filing references
3	1/16	Wed.	9:00- 9:45	Courtesy call on Japanese Embassy
			9:45-12:00	Surveying tour of IHC Children's Hospital·Polyclinic (250 beds)
			14:00-15:00	Courtesy call on Economic Affairs Division/discussion
			15:00-20:00	Discussion among Study Team/filing references
4	1/17	Thur.	9:30-11:00	Courtesy call on Ministry of Health/ discussion
			11:00-12:30	Discussion among Study Team
			14:00-17:00	Market research/filing references

Days	Date	D.Wk.	Time	Activities
5	1/18	Fri.	9:00-10:30	Discussion with Mr. Wada
			13:00	dep. Islamabad Airport
			↓	↓ PK 657
			14:20	Faisalabad Airport
			15:30-17:00	1st discussion, with Prof. Dr. F.M. Chaudhry, Project Director of Establishment of Punjab Medical College, Faisalabad, & Mr. M. Aslam, Construction Director
6	1/18	Sat.	9:00-11:00	2nd discussion, with Pakistani counterpart
			11:00-15:00	Surveying tour of Medical College/ Hospital construction field
			16:00-19:00	3rd discussion, over blueprint
7	1/20	Sun.	9:00-14:00	4th discussion, with professors on medical equipment
			15:30-19:00	Discussion continued
8	1/21	Mon.	9:00-13:00	5th discussion, with Prof. Dr. M. Hussain, Design Director, Lahore Technical College, & two others
			14:30-17:00	2nd surveying tour of construction field, accompanied by designers, Lahore Technical College
				Discussion on draft of Minutes
9	1/22	Tue.	9:00-12:00	Elaboration on draft of Minutes/drawing up of Minutes

Days	Date	D.Wk.	Time	Activities
9	1/22	Tue.	14:00-17:00	Surveying tour of No.8 Rural Health Center/DHQ General Hospital (teaching hosp.)
			17:30	dep. Faisalabad
			↓	↓ by car
			20:00	ar. Lahore
10	1/23	Wed.	9:00-12:00	Market research
			14:00-15:00	Exchange of signatures on Minutes
			15:00-17:00	Discussion among Study Team
11	1/24	Thur.	9:00-13:00	Discussion with 5 local dealers in medical equipment
				Leader & Mr. Ito left for Islamabad
			14:30-17:00	Discussion continued with 3 dealers
12	1/25	Fri.	9:00-13:00	Surveying tour of Shaika Zayed Hospital
			14:00-17:00	Analysis of data
13	1/26	Sat.	9:30-13:00	Dealers' business reports received and explained
			15:00	dep. Lahore
			↓	↓ by car
			17:30	ar. Faisalabad
14	1/27	Sun.	9:00-13:00	Analysis of questionnaire replies
			14:30-17:00	3rd surveying tour of construction field
15	1/28	Mon.	9:00-13:00	Reconfirmation of blueprint/questionnaire replies

Days	Date	D.Wk.	Time	Activities
15	1/28	Mon.	17:15 ↓ 18:35	dep. Faisalabad Airport ↓ PK 658 ar. Islamabad Airport
16	1/29	Tue.	9:00-12:00 14:00-17:00	Report to Embassy & JICA Analysis of data
17	1/30	Wed.	9:00-12:00 13:00-15:00 17:15 ↓ 19:10	Another visit to Children's Hospital to observe equipment installation/ discussion of problems Market research/purchase of references dep. Islamabad Airport ↓ PK 315 ar. Karachi Airport
18	1/31	Thur.	00:55 ↓ 15:30	dep. Karachi Airport ↓ LH 648 ar. Narita Airport

1-2 MEMBERS OF STUDY TEAM

Leader	SATORU NAKAMURA	Professor of Hospital Administration Tokyo Medical College
	ISAO ITO	Deputy Head Second Training Division Training Affairs Department Japan International Cooperation Agency
	KOHZO NAKATANI	Hospital Equipment Layout Center
	AKIRA NAKAMURA	Dept. of Hospital Administration Nihon University School of Medicine
	MASARU HINO	Planner & Engineer OAC Architects, Co., Ltd.

1-3 LIST OF CONFERENCE ATTENDANTS

1. Pakistani members:

1) Ministry of Economic Affairs

F.I. Malik	Joint Secretary, Consortium & World Bank
Muhammad Faheew	Deputy Secretary, Consortium
S.M. Hasan Zaidi	Section Officer, Japan CM III

2) Ministry of Health, Special Education and Social Welfare

Irshad Ahmed	Additional Secretary
Brig (Rerd) Tanwir-ul-Haq	Project Director, Islamabad Hospital Complex
Dr. S.B. Agha	Deputy Director General, Development

3) Government of the Punjab

MD. Abdul Hamid Khan	Secretary Health, Govt. of the Punjab, Lahore

4) Punjab Medical College, Faisalabad

Dr. F.M. Chaudhary	Project Director & Principal
Engineer Muhammad Aslam Sheikh	Executive Engineer, Medical College Construction Division, Faisalabad
Engineer Maraj Din	Sub Divisional Officer, Medical College Construction Division, Faisalabad
Engineer Faqir Muhammad Khan	Sub Divisional Officer, Medical College Construction Division, Faisalabad

Engineer Ajmal Kaleem Ullah	Sub Divisional Officer, Medical College Construction Division, Faisalabad
Engineer Masood Akhtar	Sub Divisional Officer, Medical College Construction Division, Faisalabad
Dr. Mahmood Hussain	Professor of Architecture, University of Engineering and Technology, Lahore

Engineer Maraj Din, Sub Divisional Officer
Medical College Construction Division, Faisalabad

Engineer Faqir Muhammad Khan, Sub Divisional Officer
Medical College Construction Division, Faisalabad

Engineer Ajmal Kaleem Ullah, Sub Divisional Officer
Medical College Construction Division, Faisalabad

Engineer Masood Akhtar, Sub Divisional Officer
Medical College Construction Division, Faisalabad

Dr. Mahmood Hussain, Professor of Architecture
University of Engineering and Technology, Lahore

2. Major Japanese Interviewed

1) Embassy of Japan, Islamabad
KENICHI YANAI, Ambassador
AKIRA SUGINO, Minister
SATORU TAGUCHI, First Secretary
NORIYOSHI KONZO, First Secretary

2) JICA, Islamabad Office
KINJIRO WADA, Resident Representative

1-4 MINUTES OF DISCUSSIONS ON BASIC DESIGN

(Signed : January 23, 1985)

MINUTES OF DISCUSSIONS

In response to the request made by the Government of the Islamic Republic of Pakistan, the Government of Japan has sent through the Japan International Cooperation Agency (JICA) a team headed by Dr. Satoru Nakamura, Professor of Hospital Administration, Tokyo Medical College to Conduct a basic design study on the Improvement of the Project of Medical Equipment for Punjab Medical College (the Project) for 18 days from 14th to 31st January, 1985.

The team has had a series of discussions with the authorities concerned and has carried out field survey.

As a result of the study, both parties have agreed to recommend to their respective Governments to examine the result of the study attached herewith towards the realization of the Project.

23rd January, 1985.

Satoru Nakamura

DR.SATORU NAKAMURA
Leader, Basic Design Study Team,
Japan International Cooperation
Agency.

23.1.1985

.MR.ABDUL HAMID KHAN
Secretary Health,
Govt. of the Punjab,
Lahore.

F. M. Chaudhary

.DR. F. M. CHAUDHARY
Project Director &
Principal,
Punjab Medical College,
Faisalabad.

ATTACHMENT:

1. The objective of the Project is to provide medical equipment needed for Punjab Medical College Hospital.

2. The Equipment to be selected by the Team will be :-

A: For the Ward Department (400 beds) and Service Department whose buildings and facilities (Electricity work, Water Supply, Drainage etc.) are completed.

B: And also Equipment for the Diagnostic Department will be selected on the condition that this block is completed by end of March, 1985.

3. The Project will be administrated, operated and maintained by the Health Department, Government of the Punjab with the cooperation of the Ministry of Health & Social Welfare.

4. The team will convey to the Government of Japan the desire of the Government of Pakistan that the former takes necessary measures to cooperate in implementing the Project and provide the equipment listed in Annex I within the scope of the Grant Aid by the Government of Japan.

5. The Government of the Islamic Republic of Pakistan will take necessary measures as listed in Annex II on condition that the Grant Aid by the Government of Japan is extended to the Project.

ANNEX I

MEDICAL EQUIPMENT REQUIRED FOR PUNJAB MEDICAL COLLEGE HOSPITAL

GROUP A:

: Patient Ward equipment
(about 400 beds).

: ENT equipment.

: ICU equipment.

: Endoscopes.

: Kitchen equipment.

: Laundry equipment.

GROUP B:

: Operating instruments.

: X-ray apparatus.

: Labouratory equipmnet.

: Blood-bank equipment.

: Air-conditioners, and etc.

ANNEX II

NECESSARY MEASURES TO BE TAKEN
BY THE GOVERNMENT OF PAKISTAN.

1. To construct the building(s).
2. To provide the facilities for city water distribution.
3. To provide the drainage and sewerage facilities.
4. To provide the facilities for electricity distribution.
5. To provide general furnitures.
6. Tax exemption and custom clearance of the products at the port of disembarkation.
7. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into Pakistan and stay therein for the performance of their work.
8. To maintain and use properly, effectively, the equipment purchased under the Grant.
9. To bear all the expenses other than those to be borne by the Grant necessary for the implementation of the Project.

PHONE : 339237

UNIVERSITY DESIGN DIRECTORATE
UNIVERSITY OF ENGINEERING & TECHNOLOGY, LAHORE
LIAISON OFFICER (ADVISOR SERVICES)
DR. MAHMOOD HUSSAIN

No. UDD/LO(AS)/9/969
D/23.1.85

CERTIFICATE

This is to certify that the Diagnostic Block of the Punjab Medical College and Hospital, Faisalabad is nearing completion. The construction of the building has already been completed and the work of exterior and interior finishes is in progress. Almost 50% of the finishes have also been completed. It is expected that the remaining work shall be completed by the middle of March, 1985 and the building will be ready for the occupation from that date.

The building comprises of the following facilities:-

1. Casualty Block including 48 observation beds alongwith 2 operation rooms.
2. Pathology Block including clinical laboratories.
3. Radiology Block.
4. Pharmacy Block.
5. Operation Theatres including major and minor operation rooms as well as the Audio-Visual section.
6. Central Sterilization Department.
7. Mechanical Gases and other services.

The entire block is expected to be completed and handed over to the authorities by the 15th of March, 1985.

(PROF.DR.MAHMOOD HUSSAIN)
Liaison Officer(A.S) 23/1/85