

IS : 10905 (Part 2) - 1984

Indian Standard

RECOMMENDATIONS FOR
BASIC REQUIREMENTS OF GENERAL
HOSPITAL BUILDINGS

PART 2 MEDICAL SERVICES DEPARTMENT BUILDINGS

UDC 725.51



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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

RECOMMENDATIONS FOR BASIC REQUIREMENTS OF GENERAL HOSPITAL BUILDINGS

PART 2 MEDICAL SERVICES DEPARTMENT BUILDINGS

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Indian Standard

RECOMMENDATIONS FOR BASIC REQUIREMENTS OF GENERAL HOSPITAL BUILDINGS

PART 2 MEDICAL SERVICES DEPARTMENT BUILDINGS

0. FOREWORD

0.1 This Indian Standard (Part 2) was adopted by the Indian Standards Institution on 31 March 1984, after the draft finalized by the Functional Requirements in Buildings Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Construction of large number of hospitals having different bed strengths is being planned in the country both in public as well as in the private sector. These hospitals must provide certain basic needs to the patients as well as create good working conditions for the doctors, nurses, and technicians. Optimum utilization of the national resources also demands that these hospitals should be planned and constructed in such a manner that wastage towards space and circulation area can be brought down to the minimum but at the same time they function in the intended manner. With this object in view, this standard has been prepared to lay down rational norms and requirements for efficient planning and construction of general hospital buildings in the country.

0.3 The purpose of this standard is not to offer design solutions for a medical care facility, but to lay down optimum requirements for both spatial and environmental needs of the various sections of a hospital building.

0.4 The considerations in planning a hospital building should, no doubt, ensure the design of each section for its individual efficiency. Nevertheless, the hospital building as a whole, would function efficiently and economically only if all the sections are coordinated by arranging them in appropriate places based on their functional relationships. This could be achieved by compact and efficient planning, functionally correct and operationally efficient economical relationship and disposition of various components, functionally logical internal detailing of departments to save on time, money and efforts. This standard, it is hoped, will be of help to

architects, engineers and authorities concerned in fulfilling the dual objectives of economy and optimum utilization of space.

0.5 The aim of any hospital planning is undoubtedly to offer the best medicare to the patients and best working conditions for the staff. While planning a hospital one ought to create, appropriate spaces and environmental conditions for the treatment of patients, efficient working conditions for the doctors and nurses who treat, for the technicians who maintain and operate certain machines and for the staff who handle the various hospital as well as engineering services.

0.6 To facilitate planning and framing of the structural grid, a usable space planning module of 14 m² based on basic space unit of 3.5 m² has been stipulated in order to rationalize the requirements for various facilities in the hospital. This space planning module is derived by assuming planning grid of 1.6 m. Six such grid units that is 3.2 × 4.8 m will lead to a carpet area of about 14 m² after deducting the space taken by walls. All floor space requirements recommended for various facilities in respective table of the various sections of general hospital are based on above basic space unit. Fractional variation in floor spaces in actual planning may be ignored.

0.7 This part of the standard covers basic requirements of medical services department buildings. The other parts of the standard, namely Part 1 and Part 3 cover basic requirements of administrative and hospital services department buildings and engineering service department buildings, respectively.

0.8 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part 2) covers spatial, functional and environmental requirements of medical services department buildings.

1.1.1 This standard does not cover requirements of dispensaries and health centres and also does not cover the requirements for specialised hospitals such as teaching, tuberculosis, and cancer, etc.

2. GROUPING OF GENERAL HOSPITALS

2.1 For the purpose of this standard the hospitals have been divided into

*Rules for rounding off numerical values (*revised*).

the following five categories:

Category A	25 to 50 Beds
Category B	51 to 100 Beds
Category C	101 to 300 Beds
Category D	301 to 500 Beds
Category E	501 to 750 Beds

3. SECTIONS OF A MEDICAL SERVICES BUILDING

3.1 Various departments which a medical services buildings should have for comfort and well being of patients shall be as follows:

3.1.1 *Out-Patients Department:*

- a) General facilities;
- b) Clinics for various medical disciplines;
- c) Supporting facilities like laboratory, injection room, etc;
- d) Pharmacy; and
- e) Blood bank.

3.1.2 *Emergency and Casualty Department*

3.1.3 *Diagnostic and Treatment Departments:*

- a) Pathology,
- b) Radiology,
- c) Physiotherapy, and
- d) Operation theatre.

3.1.4 *In-Patient or Nursing Units:*

- a) General wards,
- b) Ward for particular specialities, and
- c) Intensive care unit.

4. TOTAL AREA

4.1 The total area to be provided for a hospital complex shall depend on the availability of land. However, for guidance an area of 1 hectare for every 25 beds is recommended.

5. SITE PLANNING

5.1 Hospital sites with high degree of sensitivity to outside noise should be avoided, but may be compatible with other considerations such as accessibility and availability of services. The buildings should be so planned that

sensitive areas like wards, consulting and treatment rooms and operation theatres are placed away from the outdoor sources of noise. While planning the hospital buildings the importance of landscape elements such as open areas, horticulture to increase the comfort conditions inside the building and also in the surrounding environment, should be kept in view. Orientation of building shall conform to provisions and recommendation contained in IS : 7662 (Part 1)-1974*.

6. OUT-PATIENTS DEPARTMENT

6.1 General — The out-patient department (OPD) is needed to perform following chief functions, namely:

- a) to diagnose and treat patients at an early stage,
- b) follow up treatment after discharge from the hospital, and
- c) to institute health education programme to educate the public in environmental hygiene.

6.1.1 Location — The department should be located close to the main entrance with independent approach and should be segregated from the in-patient department (IPD) so that patients visiting the out-patient department need not pass through the in-patient areas. Further some of the treatment facilities like radiology, pathology, physiotherapy and blood bank should be interposed between OPD and IPD so as to be equally accessible to both. Clinics such as antenatal, gynaecology and sometimes paediatrics also share equipment with their counterparts in respective in-patient wards. The size of the OPD depends upon the volume of attendance, the clinics provided and the extent of other facilities, like laboratory, blood bank, health education programme, operating facilities, emergency wards, etc.

6.1.2 In hospitals of Category A and B, the OPD may be located in ground floor alone. However, in hospitals of Category C, D and E the number of clinics being more, it might need distribution between two or more floors. In such cases besides general and supporting facilities, it is recommended to site surgical, orthopaedic, antenatal and paediatric clinics on the ground floor. Rest of the clinics may be placed on upper floors, if necessary.

6.1.3 The extent of facilities which would be provided for an OPD in any general hospital would depend upon the size of the community served, location of the department, the programme and resources, population and their needs, transport facilities and other factors. A careful assessment of these factors is necessary to assess the future requirements. The OPD, therefore, should be so laid out that it is capable of expansion and alterations.

*Recommendations of orientations of buildings: Part 1 Non-industrial building.

6.2 Physical Facilities and Their Space Requirements — The out-patient department of a general hospital should have five distinct sections:

- a) General facilities,
- b) Clinics of different medical discipline,
- c) Supporting facilities like laboratory and injection,
- d) Pharmacy, and
- e) Blood bank.

Space requirements needed for all these facilities are given in Table I.

6.2.1 Entrance Hall — It serves as waiting area for the patients before getting registered and for the followers who wait for the return of the patients. The size of the hall may be determined on the basis of number of beds available to back up the OPD. Adequate toilet facilities may also be provided close to it.

6.2.1.1 Waiting spaces — Apart from the entrance hall, general waiting per clinic and subsidiary waiting spaces are required adjacent to each consultation and treatment room in all the clinics. In hospitals of Category C, D and E the number of units under various clinics may be more than one depending upon the clinic load. In such cases the waiting spaces shall be planned as common between them. Waiting space for eye clinic should not be subjected to direct-sunlight or glare. Waiting space in the paediatric clinic should provide for minor recreation and play facilities for children in addition to toilet facility.

6.2.2 Medical Records — It is desirable to maintain the medical records of the out-patients in continuation of registration area.

6.2.3 Clinics for Various Medical Discipline — These clinics (see **6.2.3.1** to **6.2.3.11**) include medical, surgical, orthopaedic, eye, ENT, dental, obstetric and gynaecological, family planning, paediatric, skin and psychiatric, etc. Each category of hospital may have all or few of the clinics depending upon the volume of attendance and resources available. The clinics for infections and communicable diseases should be located in isolation preferably in remote corner, provided with independent access and completely cut off from the rest of the hospital. The cubicles for consultation and examination in all types of clinics should provide for a doctor's chair and table, patient's stool, follower's seat, wash basin, examination couch and equipment for examination. The treatment and dressing room should be spacious enough to accommodate a medicine chest, a work counter for preparing dressings, medicines, sinks, dressing tables with screen in between and a pedal operated bins to hold soiled material.

6.2.3.1 Medical clinic — The clinic should have a number of consultation-*cum*-examination room depending upon the load of out-patients. The clinic should also have facilities for cardiographic examination.

6.2.3.2 Surgical clinic — The clinic should have facilities for treatment-*cum*-dressings. For convenience, this should be placed next to consultation-*cum*-examination room with adequate waiting space.

6.2.3.3 Orthopaedic clinic — The clinic should include arrangements for plaster preparation, fracture treatment besides consultation-*cum*-examination. For X-ray facilities the clinic should be in close proximity of radiology department, emergency and accident in order to make the maximum use of equipment and to reduce the circulation. Plaster and splint storage room is necessary for storing plaster materials, splints and other therapeutic aids and for preparing plaster, bandages, etc. Fracture and treatment should be spacious enough to accommodate a dressing couch and a mobile X-ray unit. A recovery room adjacent to the fracture and treatment room is essential.

6.2.3.4 Eye clinic — The clinic should include consultation-*cum*-refraction, minor surgery, treatment and a dark room. For testing the state of refractive power of the eye, room length not less than 6 m is essential. However by use of mirror length of room can be reduced. Dark room should be placed close to consultation preferably with a inter-communicating door.

6.2.3.5 ENT clinic — The clinic should have facilities for treatment and a sound-proof audiometry room.

6.2.3.6 Dental clinic — The clinic should have facilities for dental hygienist, dental workshop and room for patients recovery. Consultation-*cum*-examination room should serve as combined purpose room for consultation, examination, dental surgery, treatment and X-ray facilities.

6.2.3.7 Obstetric and gynaecological clinic — The clinic should include a separate reception and registration, consulting-*cum*-examination, treatment and clinical laboratory. The clinic should be planned close to in-patient ward units to enable them to make use of the clinics at times for ante and postnatal care. The clinic should also be at a convenient distance from other clinics in the OPD. Antenatal patients have to undergo certain formalities prior to examination by the doctors, clinical laboratory for the purpose is essential. A toilet-*cum*-changing close to treatment should also be provided.

6.2.3.8 Family planning clinic — The clinic should provide educative, preventive, diagnostic and curative facilities for obstetric and

gynaecological treatment, paediatric and health education. Importance of health education is being increasingly recognised as an effective tool of preventive treatment. People visiting hospital should be informed of environmental hygiene, clean habits, need for taking preventive measures against epidemics, family planning, etc. Treatment room in this clinic should act as operating room for IUCD insertion and investigation, etc.

6.2.3.9 Paediatric clinic — The clinic should provide medical care for infants (including new born) and children up to the age of 12 years. Owing to risk of infection it is essential to isolate the clinic from other clinics. The clinic shall be provided with a separate dressing, treatment and immunisation room.

6.2.3.10 Skin and STD clinic — The clinic should provide diagnostic and curative facilities for dermatology, STD (sexually transmitted disease) and leprosy. The treatment rooms for dermatology and STD may be combined, but treatment for leprosy should always be segregated. The clinic should also have facilities for superficial therapy and a skin laboratory.

6.2.3.11 Psychiatric clinic — The facilities required for the clinic should include consultation-*cum*-examination room, ECT treatment room, recovery, psychologists and a social worker room. The clinic should preferably be located on ground floor to reduce the risk of suicide and accident. All rooms of the clinic shall have dado one metre high and all electrical fittings shall be protected. In ECT room the patient is subjected to electroconvulsive therapy (shock). A resuscitation (recovery room) is needed close to this room.

6.2.4 Supporting Facilities — Various clinics under OPD requires supporting facilities in common which include clinical laboratory, injection room, social service department, etc. Space requirements for these facilities are given in Table 1.

6.2.4.1 Injection room — For administering injection to patients a central injection room should be provided in conjunction with the dispensary.

6.2.4.2 Clinical laboratory — For quick diagnosis of blood, urine, etc, a small work room facilities should be provided close to injection room with all essential requirements.

6.2.4.3 Social service — A social worker room to render service to the patients should also be provided.

**TABLE 1 PROVISION FOR VARIOUS FLOOR AREAS IN
OUT-PATIENT DEPARTMENT (OPD)**

(Clauses 6.2 and 6.2.4)

Sl. No.	FACILITY	CATEGORY OF HOSPITAL										
		Category A		Category B		Category C		Category D		Category E		
		Room (No.)	Area (m ²)	Room (No.)	Area (m ²)	Room (No.)	Area (m ²)	Room (No.)	Area (m ²)	Room (No.)	Area (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1. General												
a)	Entrance hall with enquiry counter, cash counter and record area	1	28	1	56	1	98	1	126	1	154	
b)	Officer-in-charge with toilet	1	17·5	1	17·5	1	17·5	1	17·5	1	17·5	
c)	Nurse-in - charge with toilet	—	—	—	—	1	17·5	1	17·5	1	17·5	
d)	Sanitary inspector room	—	—	—	—	1	14	1	14	1	14	
e)	Key room (security)	—	—	—	—	—	—	1	14	1	14	
f)	OPD medical record room	—	—	1	28	1	35	1	49	1	70	
g)	Canteen	1	14	1	17·5	1	28	1	35	1	49	
h)	*Lavatories separately for gents and ladies (common for patients and staff)	2	17·5	2	28	2	35	2	42	2	49	
j)	Janitor closet	1	3·5	1	3·5	1	7	1	7	1	10·5	

(Continued)

**TABLE 1 PROVISION FOR VARIOUS FLOOR AREAS IN
OUT-PATIENT DEPARTMENT (OPD) — Contd**

Sl No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
2. Medical Clinic											
a)	Consultation and examination room	1	17.5	2	17.5	3	17.5	4	17.5	4 to 8	17.5
b)	Cardiographic examination	1	10.5	1	10.5	1	14	1	17.5	1	17.5
c)	Waiting	1	21	1	35†	1	49†	1	63†	1	84†
3. Surgical Clinic											
a)	Consultation and examination	1	17.5	2	17.5	3	17.5	4	17.5	4 to 6	17.5
b)	Treatment and dressing/minor surgery*	1	10.5	1	10.5	1	14	1	28	1	35
c)	Waiting* (Category D and E)	1	21	1	35†	1	49†	1	63†	1	84†
4. Orthopaedic Clinic											
a)	Consultation and examination	To be shared in common with surgical clinic	1	17.5	1	17.5	2	17.5	2 to 3	17.5	
b)	Plaster and splint storage room		--	--	1	14	1	17.5	1	17.5	
c)	Fracture and treatment		1	17.5	1	17.5	1	17.5	1	17.5	
d)	Plaster cutting room		--	--	1	14	1	17.5	1	17.5	
e)	Recovery room		1	14	1	14	1	17.5	1	21	
f)	Waiting		1	28	1	35†	1	49†	1	63†	

(Continued)

**TABLE 1 PROVISION FOR VARIOUS FLOOR AREAS IN
OUT-PATIENT DEPARTMENT (OPD) - Contd**

Sl No.	FACILITY	CATEGORY OF HOSPITAL													
		Category A		Category B		Category C		Category D		Category E					
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)				
5. Eye Clinic															
a)	Consultation examination and refraction	1	17.5	1	28	1	28	1	17.5	1	28	2	17.5		
b)	Minor surgery and treatment room	1	17.5	1	17.5	1	17.5	1	17.5			1	17.5		
c)	Orthoptic - cum - tonography	—	—	—	—	—	—	—	—			1	17.5		
d)	Dark room	—	—	1	10.5	1	14	1	17.5			1	17.5		
e)	Waiting	1	14	1	14	1	21	1	28†			1	42†		
6. ENT Clinic															
a)	Consultation and examination			1	28	1	28	1	28	1	17.5	1	28	2	17.5
b)	Treatment			1	14	1	14	1	17.5			1	17.5		
c)	Audiometric room			—	—	1	14	1	17.5			1	17.5		
d)	Electro-nystagmography			—	—	—	—	—	—			1	17.5		
e)	Waiting			1	14	1	21	1	28†			1	42†		

(Continued)

**TABLE 1 PROVISION FOR VARIOUS FLOOR AREAS IN
OUT-PATIENT DEPARTMENT (OPD) — Contd**

Sl. No.	FACILITY	CATEGORY OF HOSPITAL										
		Category A		Category B		Category C		Category D		Category E		
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
7. Dental Clinic												
a)	Consultation and examination	—	—	1	17·5	1	17·5	2	17·5	3	17·5	
b)	Dental hygienist room	—	—	1	10·5	1	14	2	17·5	3	17·5	
c)	Recovery	—	—	—	—	1	14	1	21	1	28	
d)	Dental workshop	—	—	—	—	1	17·5	1	28	1	35	
e)	Processing room for X-ray	—	—	—	—	—	—	—	—	1	10·5	
f)	Waiting	—	—	1	14	1	21	1	28†	1	35†	
8. Obstetric and Gynaecological Clinic												
a)	Reception and registration	1	14	1	14	1	17·5	1	17·5	1	21	
b)	Consultation and examination	1	17·5	1	17·5	2	17·5	2	17·5	3	17·5	
c)	Treatment	1	17·5	1	17·5	1	17·5	1	17·5	1	21	
d)	Clinical laboratory	—	—	1	10·5	1	14	1	17·5	1	21	
e)	Toilet-cum - changing (attached to treatment)	1	10·5	1	10·5	1	10·5	1	10·5	1	10·5	
f)	Mothers craft demonstration	—	—	—	—	—	—	—	—	1	14	
g)	Waiting	1	21	1	21	1	28†	1	35†	1	42†	

(Continued)

**TABLE 1 PROVISION FOR VARIOUS FLOOR AREAS IN
OUT-PATIENT DEPARTMENT (OPD) — Contd**

Sl No.	FACILITY	CATEGORY OF HOSPITAL										
		Category A		Category B		Category C		Category D		Category E		
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
9. Family Planning Clinic												
a)	Consultation and examination	1	17·5	1	17·5	1	17·5	2	17·5	2	17·5	
b)	Treatment	1	10·5	1	14	1	17·5	2	17·5	2	17·5	
c)	Health educator and social worker room	—	—	—	—	1	17·5	1	17·5	1	17·5	
d)	Recovery	—	—	—	—	1	14	1	21	1	28	
e)	Waiting	1	10·5	1	14	1	21	1	28†	1	35†	
10. Paediatric Clinic												
a)	Consultation and examination	1	17·5	1	17·5	2	17·5	2	17·5	3	17·5	
b)	Dressing treatment and dispensing	1	14	1	14	1	17·5	2	17·5	2	17·5	
c)	Therapy room	—	—	—	—	—	—	1	10·5	1	17·5	
d)	Immunisation room	1	14	1	14	1	17·5	1	17·5	1	21·0	
e)	Recreation and playroom	—	—	—	—	—	—	1	14	1	17·5	
f)	Waiting	1	14	1	21	1	28†	1	35†	1	42†	
11. Skin & STD Clinic												
a)	Consultation and examination	—	—	—	—	1	17·5	2	17·5	2	17·5	
b)	Treatment rooms	—	—	—	—	2	17·5	3†	17·5	3†	17·5	

(Continued)

**TABLE 1 PROVISION FOR VARIOUS FLOOR AREAS IN
OUT-PATIENT DEPARTMENT (OPD) — Contd**

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
c)	Biopsy room	—	—	—	—	—	—	1	10·5	1	10·5
d)	Superficial therapy	—	—	—	—	1	14	1	17·5	1	17·5
e)	Skin laboratory	—	—	—	—	1	21	1	28	1	28
f)	Barber's room	—	—	—	—	—	—	1	7	1	7
g)	Waiting	—	—	—	—	1	21	1	28†	1	35†
12. Psychiatric Clinic											
a)	Consultation and examination	—	—	—	—	1	17·5	2	17·5	2	17·5
b)	ECT room	—	—	—	—	1	21	1	17·5	1	17·5
c)	Recovery room	—	—	—	—	—	—	1	17·5	1	17·5
d)	Psychologist room	—	—	—	—	1	17·5	1	17·5	1	17·5
e)	Social worker room	—	—	—	—	1	17·5	1	17·5	1	17·5
f)	Electro-encephalography room	—	—	—	—	—	—	—	—	1	17·5
g)	Occupational therapy room	—	—	—	—	—	—	—	—	1	28
h)	Waiting	—	—	—	—	1	21	1	28†	1	35†
13. Supporting Facilities											
a)	Central injection room	1	14	1	14	1	14	1	17·5	1	21

(Continued)

**TABLE 1 PROVISION FOR VARIOUS FLOOR AREAS IN
OUT-PATIENT DEPARTMENT (OPD) — Contd**

Sl. No.	FACILITY	CATEGORY OF HOSPITAL										
		Category A		Category B		Category C		Category D		Category E		
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
b)	Specimen collection room	1	14	1	17·5	1	17·5	1	1·75	1	21	
c)	Clinical laboratory							1	17·5	1	21	
d)	Social worker room	—	—	—	—	1	14	1	17·5	1	17·5	
e)	Waiting	1	10·5	1	14	1	21†	1	28†	1	35†	

NOTE 1 — An attached toilet of 3·5 m² comprising of WC and wash basin shall be provided for a pair of consultation and examination room in each of the clinics (2 to 12).

NOTE 2 — Wherever ' with toilet ' is mentioned it is to be 3·5 m² inclusive in the total requirements of room.

*Lavatory facilities shall be provided at convenient places in general OPD and common to number of clinics depending upon utility value. Floor areas should be suitably subdivided to this effect. For number of fittings, refer to Table 10.

†Waiting spaces shall be provided in two categories, namely, general waiting and sub-waiting. Sub-waiting may be shared in common for two consulting-cum-examination rooms.

‡One for leprosy.

6.2.5 Pharmacy (Dispensary) — The dispensary should be located in an area conveniently accessible from several clinics. The size should be adequate to contain 5 percent of the total clinical visits to the out-patient department in one session at the rate of 0·8 m² per patient. The dispensing and compounding room shall have multiple dispensing windows, compounding counters, drug storage cabinets and shelves. The pattern of arranging the counters and shelves shall depend on the size of the room. In hospitals of category C, D and E a separate store attached to dispensary shall be provided for storing weekly requirements which are drawn from main stores and for preparing stock mixtures, etc. Medicines which require cold storage may be kept in refrigerators. The provisions of various areas required for pharmacy department are given in Table 2.

TABLE 2 PROVISION FOR VARIOUS FLOOR AREAS FOR PHARMACY DEPARTMENT

Sl. No.	FACILITY	CATEGORY OF HOSPITALS										
		Category A		Category B		Category C		Category D		Category E		
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1.	Crystalloid production centre	—	—	Requirements as laid down by Government of India								
2.	Pharmacy											
a)	Office with toilet			—	—	1	10·5	1	14	1	17·5	
b)	Dispensing area with issue counter					1	21	1	28	1	35	
c)	Preparation and compounding area			1	28	1	17·5	1	14	1	17·5	
d)	Bottle washing area							1	10·5	1	14	
e)	Queuing area	1	17·5	—	—	Adequate		Adequate		Adequate		
f)	Pharmacists room with toilet			1	14	1	14	1	17·5	1	17·5	
g)	Pre-packaging area			1	14	2	14	1	14	1	17·5	
h)	Stores							2	14	2	17·5	
j)	Janitors closet			—	—	1	3·5	1	3·5	1	3·5	
k)	Trolley bay			—	—	1	10·5	1	10·5	1	14	

NOTE — Wherever 'with toilet' is mentioned it is to be 3·5 m² inclusive in the total requirement of the room.

6.2.6 Blood Bank — The function of blood bank is to maintain current blood groupings, to collect, store and issue blood and also to supply the blood for transfusion to the patients. The blood bank shall be in close proximity to pathology department and at an accessible distance to operation-theatre department, intensive care units and emergency and accident department. The units shall include a reception-cum-waiting room, bleeding room, laboratory for groupings, recovery room and a room for storage of blood.

Blood taking also requires a comfortable reception with toilets. Bleeding room should be quiet and not a thoroughfare and should be divided into cubicles for privacy. A rest room should also be provided for donors to rest and take light refreshment before returning home. The provision of areas shall be as given in Table 3.

TABLE 3 PROVISION OF VARIOUS FLOOR AREAS IN THE BLOOD BANK

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Reception and waiting	—	—	1	10·5	1	17·5	1	21	1	28
2.	Bleeding area	—	—	1	17·5	1	21	1	17·5	1	17·5
3.	Donor's rest room with kitchenette	—	—	—	—	—	—	1	17·5	1	17·5
4.	Laboratory and blood storage area	—	—	1	14	1	21	1	28	1	28
5.	Office	—	—	—	—	1	10·5	1	10·5	1	10·5
6.	Stores	—	—	—	—	1	10·5	2	10·5	2	10·5
7.	Bottle washing area	—	—	—	—	1	10·5	1	14	1	17·5
8.	Doctor's room with toilet	—	—	—	—	—	—	1	17·5	1	17·5
9.	Social worker with motivator's room with attached toilet	—	—	1	17·5	1	17·5	1	17·5	1	17·5
10.	Lavatory	—	—	1	7·0	1	7·0	1	10·5	1	10·5
11.	Janitors closet	—	—	—	—	1	3·5	1	3·5	1	3·5

NOTE — Wherever 'with toilet' is mentioned, it is to be 3·5 m² inclusive in the total requirement of the room.

7. ACCIDENT AND EMERGENCY DEPARTMENT

7.1 The department is also termed as casualty wing for emergent cases as such it should have a distinct entry independent of OPD main entry so that a very minimum time is lost in giving immediate treatment to casualties arriving in the hospital. In hospitals of category C, D and E it should be an independent department working round the clock like a mini hospital. In hospitals of category A and B it should again be independent but may be scheduled to function outside working hours of other clinics in OPD. It should be located in the complex of the OPD for reasons of easy accessibility and sharing medical facilities with the OPD. It shall be placed on ground floor of the hospital. Guidance to the route from main gate to the doorways of reception hall shall be ensured. The physical facilities of the department particularly in hospitals of category C, D and E should include accommodation for out-patients and in-patients in one block with a separate entrance for ambulance, all facilities for reception and immediate treatment including X-ray unit, operation theatres, clinical laboratory, the necessary supporting services and resuscitation services.

7.1.1 There should be an easy ambulance approach with adequate space for free passage of vehicles and covered area for alighting patients. The arrangements for reception of trollies and walking patients should be close by but independent. It should serve as waiting space also for persons accompanying the patients. As the accident cases are closely associated with police department, a separate room for their use shall be provided in this area. Separate toilet facility for men and women should be provided nearby.

7.2 Space Requirements — The space requirements for various facilities required for the department are given in Table 4.

8. PATHOLOGY DEPARTMENT

8.1 General — Pathology is concerned with the analysis of diseased tissue or fluids and other elements in the body. The pathology department in a hospital is mainly diagnostic in function and depending on the bed strength of the hospital may comprise activities like biochemistry, microbiology, clinical pathology and haematology, histology, cytology and serology. Other activities connected with the department is mortuary and autopsy.

8.1.1 Location — The department should be located at a place which may be easily accessible to both indoor and outdoor patients. In hospitals of category B it may form a part of OPD.

8.2 Space Requirement — The space requirements for various facilities required for the department are given in Table 5.

8.3 Laboratory — Separate laboratories should be provided for biochemistry, microbiology, clinical pathology and haematology, histology and

cytology, and serology. Each laboratory should be provided with 600 mm wide and 800 mm high bench of length about 2 m per technician and to full width of room for pathologist incharge of the laboratory. Each laboratory bench shall have laboratory sink with swan neck fittings, reagent shelving, gas and power point and under counter cabinet. Top of the laboratory bench shall be of acid and alkali-proof material.

TABLE 4 PROVISION OF VARIOUS FLOOR AREAS IN THE ACCIDENT AND EMERGENCY DEPARTMENT

(Clause 7.2)

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Drive-in ambulance (reception, public telephone booths, trolley bay, relatives waiting areas with toilets, staff toilets, police, special worker room, etc)	1	14	1	42	1	56	1	98	1	126
2.	Doctor's duty room with toilet	—	—	—	—	1	17.5	1	17.5	1	17.5
3.	Examination cubicles	1	10.5	2	10.5	3	10.5	4	10.5	4 to 6	10.5
4.	Medico legal specimen and record room	—	—	—	—	1	10.5	1	10.5	1	10.5
5.	Brought in dead room	—	—	—	—	1	10.5	1	10.5	1	10.5
6.	Retiring room for ambulance drivers and nursing assistant	—	—	1	10.5	1	10.5	1	14	1	17.5
7.	ECG room	—	—	1	10.5	1	14	1	14	1	14

(Continued)

**TABLE 4 PROVISION OF VARIOUS FLOOR AREAS IN THE
ACCIDENT AND EMERGENCY DEPARTMENT — Contd**

SL No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
8.	Fracture treatment room with plaster preparation	—	—	1	17.5	1	17.5	1	17.5	1	17.5
9.	Treatment room	—	—	—	—	1	14	1	14	1	14
10.	Operation theatre unit										
*a)	Operation theatre	1	17.5	1	21	2	21	1	35 + (plus) 1 28	1	35 + (plus) 1 28
b)	Instrument sterilization	1	7.0	1	7.0	1	10.5	1	10.5	1	10.5
c)	Scrub up	—	—	1	7.0	1	7.0	1	10.5	1	10.5
d)	Dirty wash	—	—	1	7.0	1	7.0	1	10.5	1	10.5
e)	Anaesthesia room	—	—	—	—	1	10.5	1	10.5	1	10.5
†11.	Resuscitation room	—	—	1	21 (2 beds)	1	35 (3 beds)	1	42 (4 beds)	1	63 (6 beds)
12.	X-ray room with dark room facility	—	—	1	21	1	28	1	35	1	35
13.	Clinical laboratory	1	17.5	1	17.5	1	17.5	1	21	1	21
14.	Blood storage area	—	—	—	—	1	10.5	1	10.5	1	10.5
15.	Drug dispensing facility	—	—	—	—	1	10.5	1	10.5	1	10.5

(Continued)

**TABLE 4 PROVISION OF VARIOUS FLOOR AREAS IN THE
ACCIDENT AND EMERGENCY DEPARTMENT — Contd**

SL No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
16.	Stores	—	—	—	—	1	14	2	14	2	14
17.	Sluice room and janitor closet	—	—	1	10·5	1	10·5	1	10·5	1	10·5
18.	Nurses station with toilet	—	—	—	—	1	17·5	1	17·5	1	17·5
19.	Observation room	1	14 (1 bed)	1	21 (2 beds)	1	28 (3 beds)	1	35 (4 beds)	1	52·5 (6 beds)
20.	Emergency ward	—	—	1	8 beds	1	12 beds	1	20 beds	1	24-30 beds
21.	Pantry	—	—	1	10·5	1	10·5	1	10·5	1	10·5

NOTE — Whenever ' with toilet ' is mentioned it is to be 3·5 m² inclusive in the total requirement of the room.

*Piped oxygen, nitrous oxide and suction supply.

†With additional space for toilet facilities.

8.3.1 Biochemistry — Laboratory is concerned with the chemical analysis of body tissue and fluids.

8.3.2 Microbiology — Laboratory is concerned with the bacteria or pathogens found in the body or the environment.

8.3.3 Clinical Pathology and Haematology — Laboratory is concerned with the study of urine, stool and blood specimens.

8.3.4 Histology and Cytology — Laboratory is concerned with the structural composition and function of tissues and also with the preparation of tissue for analysis.

8.3.5 Serology — Laboratory is concerned with the analysis of medicine effect on body tissue or fluid of animals.

9. RADIOLOGY DEPARTMENT

9.1 General — The role of radiology department should be radio-diagnostic and radiotherapy. The diagnostic units generally deal with radiography, ultrasound, nuclear medicine, CAT scanner, etc. The therapy unit includes treatment of various types of radiations, ranging from superficial therapy to megavoltage therapy. The size of the department depends upon the load, the scope of work and the type of equipment employed. Radiology is a fast developing technique and the department should be designed keeping in view the future scope of expansion.

TABLE 5 PROVISION OF VARIOUS FLOOR AREAS IN THE PATHOLOGY DEPARTMENT

(Clause 8.2)

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Reception and specimen collection/distribution	—	—	1	21	1	28	1	35	1	42
2.	Patients waiting area with toilet	—	—	1	21	1	28	1	35	1	42
3.	Pathologic laboratory with toilet	—	—	2	17.5	3	17.5	4	17.5	4	17.5
4.	Office and record	—	—	—	—	1	14	1	14	1	21
5.	Technician's room with toilet	—	—	1	17.5	1	14	1	14	1	21
6.	Stores	—	—	2	10.5	3	10.5	4	10.5	4	14
7.	Biochemistry	—	—	1	21	1	28	1	35	1	42
8.	Microbiology with incubator	—	—	1	17.5	1	28	1	35	1	42
9.	Media room	—	—	1	10.5	1	14	1	14	2	14

(Continued)

**TABLE 5 PROVISION OF VARIOUS FLOOR AREAS IN THE
PATHOLOGY DEPARTMENT — Contd**

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
10. a)	Clinical pathology and heamotology	See Table 1 Item 13 (c)				1 28		1 35		2 28	
b)	Photometry and other electronic equipment room	— —		— —		— —		— —		1 14	
11. a)	Histology and cytology	— —		— —		1 14		1 21		1 28	
b)	Microphotography	— —		— —		— —		— —		1 14	
12.	Washing and sterilizing area	— —		1 10·5		1 14		1 14		1 21	
13.	Serology laboratory	— —		— —		1 10·5		1 14		1 21	
14.	Animal room with washing, weighing and feeding facilities	— —		— —		1 17·5		1 21		1 28	
15.	Janitors closet	— —		1 3·5		1 3·5		1 3·5		1 3·5	
16.	Specimen disposal and sluice room	— —		1 7·0		1 7·0		1 10·5		1 10·5	

NOTE — Wherever 'with toilet' is mentioned, it is to be 3·5 m² inclusive in the total requirement of the room.

9.1.1 Location — The department shall be located at a place which is easily accessible to both OPD and IPD and also to the operation theatre department. As the department deals with the high voltage, presence of moisture in the area should be avoided. All the equipments of the department should be earthed. Sometimes a radiotherapy department may be located underground (basement).

9.2 Radiography and Fluoroscopy (Radio Diagnostic Unit) —

Radiography is a device of making pictorial records by means of X-ray on sensitised film whereas fluoroscopy is direct visualization through medium of X-ray. Various facilities required in this unit are given in 9.2.1 to 9.2.9. The space requirements for these facilities are given in Table 6.

9.2.1 Reception cum Registration with Waiting Areas and Toilet — An independent registration section shall be provided where radiology forms an independent department. The size of the counter should be sufficient to accommodate a clerk's seat and record chests. It may be interposed with the waiting area. In all categories of hospitals one waiting hall should be sufficient but it should be so planned as to serve the patients waiting before and after registration. Toilet facilities, separately for men and women patients, may be placed close to waiting areas.

9.2.2 Radiography and Fluoroscopy Room — The size of the room shall depend upon the category of the equipment installed. The number of rooms should be one or more depending upon the category of the hospital. Each room should have a subwaiting area with toilet facility, and a changeroom facility if required. The fluoroscopy room shall be completely cut off from the direct light through provision of airlocks. The radiography units should be operated from separate control room or behind a lead mobile protection screen of 1.5 mm lead equivalent, wherever necessary.

9.2.3 Film Developing and Processing Room — Film developing and dark rooms shall be provided in the department for loading, unloading, developing and processing of X-ray films. The room should be provided between a pair of radiography rooms so that new and exposed X-ray films may be easily passed through the cassette pan with 2.0 mm lead backing installed in the wall in between. The room should be completely cut off from direct light through provision of airlock. For ventilations, exhaust fans shall be provided. The room shall have a loading bench (with acid and alkali resistant top), processing tank, washing tank and a sink. Flooring for the room shall be acid and alkali proof. Processing tank should be of size 900 × 560 × 600 mm with water outlet at bottom of tank and other outlet at a height of 510 mm from bottom for solution, whereas washing tank should be of the size 1 500 × 550 × 600 mm fitted with two 10 mm rods 1 550 mm long fitted at a distance of 375 mm from each other at a height of 500 mm from bottom of tank.

**TABLE 6 PROVISION OF VARIOUS FLOOR AREAS IN
RADIOLOGY DEPARTMENT**

(Clauses 9.2 and 9.3)

Sl No.	FACILITY	CATEGORY OF HOSPITAL											
		Category A		Category B		Category C		Category D		Category E			
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
<i>1. Radio Diagnostic Unit</i>													
a)	Reception registration with waiting area and toilet	—	—	1	28	1	35	1	42	1	56	1	56
b)	Radiography and fluoroscopy (X-ray rooms) with waiting area, toilet and dressing facility 17.5 m ² per X-ray room :												
	i) 100 mA Units*	1	28	1	28	1	28	1	28	2	28	2	28
	ii) 200 mA Units	—	—	—	—	1	42	1	24	2	42	2	42
	iii) 500 mA Units	—	—	—	—	—	—	1	56	1	56	1	56
	iv) 700 mA Units	—	—	—	—	—	—	1	70	1	70	1	70
c)	Film developing and processing area (common for two X-ray rooms)	1	10.5	1	10.5	1	10.5	2	10.5	3	10.5	3	10.5
d)	Film drying room	—	—	—	—	1	10.5	1	10.5	2	10.5	2	10.5
e)	Contrast studies and preparation room	—	—	—	—	1	10.5	1	10.5	2	10.5	2	10.5
f)	Stores												
	i) Film storage	—	—	1	10.5	1	17.5	1	10.5	1	14	1	14
	ii) Chemical store	—	—	—	—	—	—	1	10.5	1	14	1	14
g)	X-ray record room	—	—	1	14	1	21	1	28	1	35	1	35

(Continued)

TABLE 6 PROVISION OF VARIOUS FLOOR AREAS IN RADIOLOGY DEPARTMENT — Contd

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	h) Radiologists office with toilet	—	—			1	17·5	1	17·5	2	17·5
	j) Technicians room with toilet	—	—	1	17·5	1	14	1	14	1	17·5
	k) Nurses room with toilets	—	—	—	—	1	14	1	14	1	17·5
	m) Film viewing room	—	—	—	—	1	10·5	1	10·5	1	14
	n) Office	—	—	—	—	1	10·5	1	14	1	17·5
	p) Trolley bay	—	—	—	—	1	10·5	1	10·5	1	10·5
	q) Switch room	—	—	1	7	1	10·5	1	17·5	1	21
	r) Janitors closet	—	—	1	3·5	1	3·5	1	3·5	1	3·5

2. Radio Therapy Unit†

a) Contact therapy (45 kV)	1	14	1	14	1	14	1	14	1	14
b) Superficial therapy (100 kV)	—	—	—	—	1	14	1	14	1	14
c) Intermediary therapy with dressing cubicles and control desk 3·5 m ² each	—	—	—	—	1	14	1	14	1	14
d) Deep therapy (200 kV)	—	—	—	—	—	—	1	28	1	35

(Continued)

**TABLE 6 PROVISION OF VARIOUS FLOOR AREAS IN
RADIOLOGY DEPARTMENT — Contd**

Sl. No.	FACILITY	CATEGORY OF HOSPITAL										
		Category A		Category B		Category C		Category D		Category E		
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
e)	Cobalt therapy with dressing cubicle 3.5 m ² and control room 7 m ² . Room height to be 4.5 m including thickness	—	—	—	—	—	—	1	70		1	70
f)	Megavoltage therapy (12 Mev) with dressing cubicle 3.5 m ² and control room 7 m ² and transformer room wherever required. Room height to be 4.5 m including thickness	—	—	—	—	—	—	1	91		1	91
g)	Radiotherapists room with examination room and toilet facility	—	—	—	—	—	—	1	28		1	28
h)	Physicist room with laboratory and toilet	—	—	—	—	1	21	1	42		1	42
j)	Mould room	—	—	—	—	—	—	1	21		1	21
k)	Simulator room with control room 7 m ² and waiting area 14 m ²	—	—	—	—	—	—	1	35		1	35

(Continued)

TABLE 6 PROVISION OF VARIOUS FLOOR AREAS IN RADIOLOGY DEPARTMENT — Contd

SL No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
m)	Treatment planning system (TPS) room	—	—	—	—	—	—	1	17.5	1	17.5
n)	CT Scanner control room with computer 10.5 m ²	—	—	—	—	—	—	1	17.5	1	17.5
p)	Transformer room	—	—	—	—	—	—	1	7	1	7
q)	Dressing room/preparation room with dark room facility	—	—	—	—	—	—	1	10.5	1	10.5
r)	Records room	—	—	—	—	—	—	1	42	1	42
s)	Reception and waiting with toilet	—	—	—	—	1	21	1	56	1	56

NOTE — Wherever 'with toilet' is mentioned, it is to be 3.5 m² inclusive of the total requirement of the room.

*Or 200 MA units with one table and ceiling suspension and spot film device.

†Shall be grouped in a separate unit away from radiology department for radiation protection and safety.

9.2.4 Film Drying — Provision of a space shall be made for drying films either by atmospheric drying or by mechanical contrivances in the form of hot chambers.

9.2.5 Contrast Studies and Preparation Room — In certain cases of radiography, in order to produce an opaque silhouette for the exposure of stomach, intestine or other body cavities, the patient is given a cocktail of barium. The drink is prepared in the room. Besides, barium there are other contrast media which are administered to the patients. The room should also have sinks and electric outlet for mixer.

9.2.6 Stores — The cupboards or built-in cupboards required for storing films and chemicals may either be placed in the radiologist's room or in a separate store. The unexposed films should be stored away from the radiography room. However, in case the unexposed films are to be stored in the dark room adjacent to radiography room for temporary period, these may be stored in a 2.0 mm lead lined box.

9.2.7 X-Ray Record Room — A separate room for maintaining the records of developed X-ray films which may be needed at subsequent visit of patients should also be located in the department.

9.2.8 Radiologist's Room — For hospitals of category C, D and E, the department is placed under the charge of a radiologist. Size of this room may be governed by the space needed for study of films, holding discussion with other specialists. Adequate number of viewing boxes are essential.

9.2.9 Other Areas — Other facilities for the department include room for technicians, nurses, trolley bay, switch room to house phase changer for each static machine and sanitary facilities for patients, separately for men and women.

9.3 Radiotherapy Unit — The radiotherapy unit should include its associated facilities such as radiotherapist room, physicist room, electronics laboratory, mould room, workshop, simulator, treatment planning system (TPS), etc. The size of various facilities will depend on the size of the unit, work load envisaged, etc. The types of therapy treatments to be provided in a hospital should depend upon the category of the hospital. The size of various facilities in the unit are given in Table 6. The following treatments depending upon the order of capacity for penetration should be provided in the categories of hospitals marked against them:

	<i>Category of Hospital</i>
a) Infra X-ray therapy	All categories
b) Contact therapy	All categories
c) Superficial therapy	C, D and E
d) Intermediary therapy	C, D and E
e) Deep therapy	D and E (optional)
f) Cobalt therapy	D and E (optional)

Each therapy installation should have adequate space for accommodating the therapy apparatus and free movement of couch, etc, the high voltage generator (whenever necessary), control desk and dressing cubicle for the patients. The control desk and dressing cubicle should be kept outside the therapy treatment room. A viewing system such as closed circuit TV (CCTV)/lead glass viewing window may be provided near the control

desk for viewing the patients undergoing radiotherapy. The radiotherapy room and room with control desk should preferably be air-conditioned for the efficient functioning of the electronic equipments.

9.3.1 *Infra X-ray and Contact Therapy* — Apparatus for both these therapy is of simple character, occupies little space and may not need elaborate structural requirements. The department of skin, gynaecology and ophthalmology make use this apparatus.

9.3.2 *Superficial Therapy and Intermediary Therapy* — This room shall include space for the apparatus and a couch (bed) control desk and dressing cubicle may be provided outside the therapy room (influence of radiation). There should be a lead glass viewing window for viewing the patients undergoing therapy.

9.3.3 *Deep Therapy* — Room shall be designed functionally similar to superficial and intermediary therapy rooms. Since the intensity of radiation is relatively high and penetration is deep, higher order of protection is required against radiation. The protection measures should be ensured by providing walls, floors and roofs of adequate thickness duly cleared by the competent authority that is the Division of Radiological Protection of the Bhabha Atomic Research Centre. For monitoring the therapy lead glass viewing system or closed circuit TV (CCTV) may be employed.

9.3.4 *Cobalt Therapy|Megavoltage Therapy* — It involves deeper penetration and greater radiation. The protection against radiation of still higher order should be provided. Access to the room shall be through a covered passage along one length of the room. The entrance doors of the room should be interlocked with the control panel of the machine. These therapy room need air-conditioning. However, megavoltage room will need central air-conditioning. These rooms may be constructed in the basement to save on thick concrete walls. However, excavation cost may be taken into account before going in for a basement plan. These rooms are of more height compared to other ordinary rooms.

9.3.4.1 *Radiotherapist's room* — The radiotherapist doctor of the department should be provided with a separate room with examination cabin and toilet facility.

9.3.5 *Physicist's Room* — The physicist of the hospital should be provided with a separate room and toilet facility. An area for this laboratory for radiation measuring instrument should also be provided. In hospital of category C, D and E, another room for staff may also be provided.

9.3.5.1 *Simulator room* — It is a machine with X-ray unit, used for localizing the tumours. It is necessary for a hospital having radiotherapy machines.

9.3.5.2 Treatment planning systems (TPS) — It is a facility with computer for getting isodose curves. This may be provided along with the physicist's room. This room also needs air-conditioning.

9.3.6 Essential Constructional Requirements — The structure should be such as to prevent the escape of radiation. Walls shall have radiation protection of 2 mm lead lining up to a height of 2 m. For superficial and intermediary therapy rooms, 300 mm thick brick walls and 150 mm thick RCC roofs should be adequate. These may be painted with lead borne paints. For deep and cobalt therapy rooms the walls and ceiling should be of reinforced cement concrete 300 to 350 mm thick. Doors should also be made radiation proof by lead cladding or lined steel doors either hinged or sliding.

10. PHYSIOTHERAPY DEPARTMENT

10.1 General — The physiotherapy department provides treatment facilities to patients suffering from crippling diseases and disabilities. Treatments may be classified as physical and electro-therapy, hydrotherapy, occupational therapy and exercise (gymnasium).

10.1.1 Location — The department is more frequently visited by out-patients but should be located at a place which may be at convenient access to both outdoor and indoor patients. Availability of natural light, fresh air and adequate ventilation are of extreme importance for the department. Physiotherapy demands complete privacy. Accommodation should therefore be provided in the form of booths. A long room provided with curtains which could be drawn to form cubicles and afford adequate privacy should be suitable.

10.2 Space Requirements — The provision for various facilities in the physiotherapy department are given in Table 7.

10.2.1 Physical- and Electro-therapy — The nature of treatment and equipment employed may be of various kinds such as diathermy, ultra-violet, combined treatment, infra red, radiant heat and massage, etc. Facilities for all kinds may not be provided in all categories of hospitals. Each cubicle for treatment should be large enough for the physical therapist to work on either side of table without having to move the equipment. Cubicles should be divided by curtains for easy movement of wheel chairs and stretcher.

10.2.2 Hydrotherapy — All general hospitals of category C, D and E should provide facilities for hydrotherapy. A small tank should be provided with arrangements to fill with hot water also. The tank should be 2 × 3 m partly sunk in the floor having 1.2 m depth at deep end and 0.5 m at shallow end. Pipe railing above water level along long side of the tank shall also be provided. Arrangement for shower bath and dressing cubicle shall also be provided. The therapy rooms should have non-skid type floor.

10.2.3 Gymnasium — A large hall shall be provided for group or individual exercise activities including parallel bars, pulleys, wall bars, ladders, etc, in hospitals of category C, D and E. It is used extensively by patients in wheel chairs, crutches or with walking sticks or other disabilities which limit motion and ability. It may be oblong in shape with the wall bars, and climbing bars fixed to one of the long walls. Mirrors should be provided for correcting walking disabilities. Flooring of gymnasium shall be wooden parquet type.

TABLE 7 PROVISION OF VARIOUS FLOOR AREAS IN PHYSIOTHERAPY DEPARTMENT

(Clause 10.2)

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)		Room Area (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Reception with waiting area and toilets	—	—	1	21	1	28	1	35	1	42
2.	Physical and electric therapy										
	a) Diathermy	—	—	1	10·5	1	10·5	1	10·5	1	10·5
	b) Ultra violet										
	c) Infra red	2	7·0	2	7·0	3	7·0	3	7·0	6	7·0
	d) Radiant heat										
	e) Selective/combined treatment	—	—	1	10·5	1	10·5	1	10·5	2	10·5
	f) Traction	—	—	—	—	1	10·5	1	10·5	1	10·5
	g) Wax bath	—	—	—	—	—	—	1	10·5	1	10·5
3.	Hydro-therapy comprising of a tank, shower and dressing cubicles	—	—	—	—	1	28	1	35	1	35
4.	Gymnasium	1	21	1	28	1	42	1	63	1	91
5.	Occupational therapy	—	—	—	—	—	—	1	35	1	42
6.	Physiotherapist office including toilet of 3·5 m ²	—	—	1	17·5	1	17·5	1	21	1	21
7.	Store	—	—	1	14	1	21	1	28	1	28

10.2.4 Occupational Therapy — A variety of gadgets and articles which patients use in daily life are required for occupational therapy. The facilities for training of hands in hospitals of category D and E which may comprise tailoring, carpentry, canning, hosiery, watch and radio making, book making, etc, should be provided in a big hall or in separate cubicles.

10.2.5 Office — The physiotherapist should have an office room where patients may be interviewed and examined. In addition there shall be sufficient space for staff to maintain clinical records of patients.

10.2.6 Store — Articles and equipment which are not in use should have space for storage.

10.2.7 Toilets — Separate toilet facility for patients should be provided and they should be designed to accommodate wheel chairs.

11. OPERATION THEATRE DEPARTMENT

11.1 General — Operating suite is technically a therapeutic aid in which a team of surgeons, anaesthetists, nurses and sometime pathologists and radiologists operate upon or care for the patients. For optimum utilization of the operating units, the operation theatres, as a rule, should not be reserved rigidly for use by a particular department. The operation theatres should further be similar in design and character to make it easy for all surgeons and nurses to use them without the necessity of familiarizing themselves every time with a new set of conditions.

11.1.1 Location — The location of the department should be decided on the following factors:

- a) Quiet environment;
- b) Freedom from noise and other disturbances;
- c) Freedom from contamination and possible cross infection;
- d) Maximum protection from solar radiation; and
- e) Convenient relationship with surgical ward, intensive care unit, radiology, pathology, blood bank and CSSD.

This unit also needs constant specialized services such as piped suction and medical gases, electric supply, heating, air-conditioning, ventilation and efficient lift service if the theatres are located on upper floors.

11.1.2 Zoning — A high degree of asepsis should be ensured to provide appropriate environment for staff and patients. For this, the passing of the patients and the equipments through long corridors and other unprotected areas should be avoided. Zoning shall be done to keep the theatres free

from micro organisms. There may be four well defined zones of varying degree of cleanliness.

- a) *Protective zone (A)* — Containing mostly theatre supply, changing rooms, pre-anaesthetic examination room and waiting area.
- b) *Clean zone (B)* — It includes the casualty theatres, recovery wards, plaster room, theatre pack preparation and pre-operative wards.
- c) *Aseptic or sterile zone (C)* — It consists of operation theatres, anaesthetic and sterilizing rooms. It shall provide the highest degree of antibacterial precautions.
- d) *Disposal or dirty zone (D)* — The soiled instruments and dressings are transacted through this area for washing and resterilization or disposal. It includes the sluice rooms and disposal corridor.

11.1.2.1 It should be ensured that flow of traffic from one zone to another is arranged through proper barrier nursing. All soiled material both disposable and non-disposable should move without crossing the sterile and clean zone. The disposable material should go for the incineration directly and non-disposable material like instruments, etc, should be cleaned in dirt washing rooms and they shall be returned for sterilization. All communication between the operation theatres, dirty utility, and instrument sterilization shall be carried out through well designed hatches or a door through which the material is passed.

11.1.3 Circulation — Normally there are three types of traffic flow, namely (a) patients, (b) staff, and (c) supplies. All these should be properly channelized.

11.1.3.1 Patients — Patients are brought from the ward and should not cross the transfer area in their ward clothing which is a great source of infection. Change-over of trolleys should be effected at a place which will link up both pre-anaesthesia and recovery rooms.

11.1.3.2 Staff — The doctors, nurses, technicians and class IV staff should enter from a separate route and through a set of change rooms and through an air lock. They should communicate with the sterile corridor. A shoe change and gowning space near the air lock should also be provided.

11.1.3.3 Supplies — All sterile goods should have a separate entry point reaching the clean corridor independently, soiled material should be taken out by the exit only.

11.1.4 Orientation — The primary consideration should be to ensure glare free natural light which will also reduce the radiation of heat. Good natural light and ventilation is of added advantage.

11.1.5 Comfort Condition — An optimum comfort level in the operation theatres is of vital importance. Temperature between 16 to 21°C with 50 percent relative humidity shall be maintained through central air-conditioning plant. For hospitals of category A and B window type air-conditioners are recommended. Ventilation should be of 15 to 20 air changes per hour.

11.1.6 Safety — In order to minimize the electrical, and explosive hazards, the following precautions shall be provided for:

- a) Adequate fire-fighting arrangement.
- b) Electro-conductive flooring in operation theatres and anaesthesia room. It can be achieved by brass or copper grid embedded in the suitable material floor spaced at 100 to 150 mm to ensure that a person's foot would have contact with the grid at all times. All crossings of the grid are to be soldered together to ensure continuity of conductivity and finally the grid is to be grounded through a resistance coil to a metal riser preferably a cold water pipe.
- c) Provision of concealed conduit wiring circuit. Moreover electrical wiring layout shall be flexible enough to take care of new developments and changing technology of medical science gadgets.

11.2 Space Requirements — The area required for various facilities of the department are given in Table 8.

11.2.1 Relatives Waiting Room — Space adjoining to recovery ward should be provided for the relatives attending the patients to wait and meet them after the operations. Toilet facilities may also be provided attached to the waiting room.

11.2.2 Change Rooms — Separate change rooms for doctors, nurses and technicians should be provided, with arrangement for lockers, bathing and toilet facilities.

11.2.3 Storage — Store rooms should be provided for storing theatre supplies like stretcher, trolley, sterile material, medical gas cylinders, instruments and linen.

11.2.4 Casualty Theatre — For operating septic cases of minor nature a casualty theatre should be provided. Facilities for plaster preparation, splint storage for fracture cases should also be located close to this theatre.

11.2.5 Pre-anaesthesia Room — Patients are transferred from respective ward to this room for premedication before operation. Segregation of male and female patients is needed to be taken care of. The room should have toilet facility separately for men and women.

11.2.6 Recovery Room — Immediately after the operation, the patients are kept in a ward situated close to the operation theatre until such time they are found fit to be taken back to their parent ward/room.

11.2.7 Theatre Pack Preparation Room — It should be a work room for arranging of sutures, dressings and all other surgical items.

TABLE 8 PROVISION OF VARIOUS FLOOR AREAS IN OPERATION THEATRE DEPARTMENT

(Clause 11.2)

Sl. No.	FACILITY	CATEGORY OF HOSPITAL											
		Category A		Category B		Category C		Category D		Category E			
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
ZONE A													
1.	OT reception bay	—	—	1	10.5	1	10.5	1	10.5	1	10.5	1	10.5
2.	Relatives waiting room (including 2 toilets of 3.5 m ² each)	—	—	1	21.0	1	24.5	1	35	1	35	1	35
3.	Officer-in-charge of OT with toilet	—	—	1	17.5	1	17.5	1	17.5	1	17.5	1	17.5
*4.	Doctor's change room	1	10.5	1	17.5	1	21	2	14	2	14	2	14
*5.	Nurses change room	1	10.5	1	17.5	1	21	2	14	2	14	2	14
*6.	Technician change room	—	—	1	10.5	1	10.5	1	14	1	17.5	1	17.5
*7.	Class IV staff change room	—	—	1	10.5	1	10.5	1	14	1	17.5	1	17.5
8.	Sterile storage area	1	10.5	1	17.5	1	21	1	28	1	35	1	35

(Continued)

**TABLE 8 PROVISION OF VARIOUS FLOOR AREAS IN
OPERATION THEATRE DEPARTMENT — Contd**

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
9.	Instrument and linen room	—	—	1	17.5	1	21	1	28	1	35
10.	Trolley bay	—	—	1	10.5	1	14	1	14	1	14
11.	Gas cylinder storage	—	—	—	—	1	10.5	1	10.5	1	10.5
12.	Switch room (keep light)	—	—	—	—	1	10.5	1	10.5	1	14

ZONE B

1.	Fracture-cum Casualty theatre	—	—	—	—	1	28	1	28	1	28
a)	Instrument sterilization	—	—	—	—	1	10.5	1	10.5	1	10.5
b)	Scrub up	—	—	—	—	1	10.5	1	10.5	1	10.5
c)	Dirty wash up	—	—	—	—	1	10.5	1	10.5	1	10.5
†2.	Plaster preparation	—	—	—	—	1	10.5	1	10.5	1	10.5
†3.	Splint store	—	—	—	—	1	10.5	1	10.5	1	10.5
4.	Pre-operative room with toilet	—	—	1	14	1	21	1	28	1	28
†5.	Recovery room	1	21 (2 beds)	1	35 (4 beds)	1	52.5 (6 beds)	1	87.5 (10 beds)	1	10.5 (12 beds)
6.	Nurses duty room	—	—	1	10.5	1	10.5	1	14	1	14
7.	Theatre pack preparation room	—	—	1	10.5	1	14	1	14	1	17.5
8.	Frozen section	—	—	—	—	1	10.5	1	10.5	1	10.5
9.	X-ray with dark room	—	—	1	10.5	1	14	1	14	1	14

(Continued)

**TABLE 8 PROVISION OF VARIOUS FLOOR AREAS IN
OPERATION THEATRE DEPARTMENT — Contd**

Sl. No.	FACILITY	CATEGORY OF HOSPITAL											
		Category A		Category B		Category C		Category D		Category E			
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
10.	Pantry	—	—	—	—	1	10·5	1	10·5	1	10·5	1	10·5

ZONE C

1. a)	Operation theatres (Major)	1	35	2	35	3 to 4	35	4 to 6	35	6 to 8	35
b)	Operation theatres (Minor)	1	28	1	28	2	28	2 to 3	28	3 to 5	28
§2.	Instrument sterilization	1	10·5	2	10·5	3	10·5	3 to 5	10·5	5 to 7	10·5
§3.	Scrub up	1	10·5	2	10·5	3	10·5	3 to 5	10·5	5 to 7	10·5
4.	Anaesthetist room	—	—	1	14	1	14	1	14	2	14
5.	Anaesthetic storage	—	—	—	—	1	10·5	1	10·5	1	10·5
6.	Anaesthesia room	—	—	1	21	2	21	2	21	3	21
7.	Doctor's work room	1	10·5	1	17·5	1	21	2	14	2	17·5
8.	Nurses work room	—	—	1	17·5	1	10·5	1	14	1	17·5

ZONE D

1.	Dirty utility	1	10·5	2	10·5	3	10·5	3 to 5	10·5	5 to 7	10·5
2.	Janitor's closet	—	—	1	7·0	1	7·0	1	10·5	1	10·5

NOTE 1 — Wherever ' with toilet ' is mentioned, it is to be 3·5 m² inclusive in the total requirement of room area.

NOTE 2 — This department should have provision for piped oxygen, nitrous oxide and suction facility, in all OTs, fracture-cum-casualty theatre and recovery room.

NOTE 3 — Additional space for weather maker room should be provided.

NOTE 4 — Additional space for TSSU may be provided.

*Change room includes attached toilet.

†To be located adjoining to fracture-cum-casualty theatres.

‡With additional space for toilet facilities.

§Common for two operation theatres, to be located between theatres.

11.2.8 Frozen Section — It is a section of pathology department where examination of specimens can be made and a report made available to the surgeon within short time.

11.2.9 X-ray with Dark Room — This room should have a mobile X-ray unit with arrangement for developing and processing X-ray films of immediate cases.

11.2.10 Operation Theatres — One operation theatre per 50 beds is recommended for larger hospitals to take care of all medical discipline operative needs, and they should be major and minor in size. All operating rooms should be made dust-proof and corners and junctions of walls, floor, ceiling shall be rounded to prevent accumulation of dust and to facilitate cleaning. Floor, wall and ceiling finishes should be moisture-proof. All doors should be two leaf type with a minimum 1.5 m width and shall have self closing devices. Natural lighting shall be provided with large windows and general illumination by means of fluorescent tubes. The operating rooms should be normally arranged in pairs with scrub-up and instrument sub-sterilizing rooms.

11.2.11 Scrub-up — In this room the operating team washes and scrub-up their hands and arms, but on their sterile gowns, gloves and other covers before entering the operation theatre. It should have a single leaf door with self-closing devices and a viewing window to communicate with the O.T. A pair of surgeon's sinks with elbow or knee operated taps are essential to be provided in this space.

11.2.12 Instrument Sterilization — It is a sub-sterilizing unit attached to the operation theatre, limiting its role to operating instruments on an emergency basis only. This room should be equipped with high pressure, quick sterilizing apparatus. Instrument cupboard and a work bench with sinks are essential to be provided in this room.

11.2.13 Anaesthetising Facilities — Separate rooms for anaesthetists with toilet facility, anaesthesia material administering area and anaesthesia storage should be provided. These rooms should be grouped together and placed very close to operation theatres. Storage areas should have enough space for storing anaesthesia equipment medicines and gases. The rooms shall be dust- and moisture-proof with doors minimum 1.5 m wide.

11.2.14 Dirty Utility — Theatre refuse such as dirty linen, used instruments and other disposable/non-disposable stuff is removed to this room after each operation. Non-disposable instruments after initial wash is given back to instrument sterilization and rest of the disposable items are disposed and destroyed. Dirty linen is sent to laundry through a separate exit. The room should be provided with sink, slop sink, or bed pan sink, work bench and draining boards.

12. IN-PATIENTS NURSING UNITS

12.1 General — In-patients unit, that is ward, concept is fast changing due to policy of early ambulation and in fact only a few patients really need to be in the bed. Nursing care should fall under the following categories:

- a) *General Wards* — Wards of traditional type of patients who are not critically ill but need continuous care or observation and have to be in bed. These includes wards for medical, surgical ENT and eye disciplines.
- b) *Ward for Specialities* — Wards for patients who are suffering and needs hospitalization in particular specialities like post operation, orthopaedic, paediatric, psychiatry, infection, skin, obstetric and gynaecology, etc.
- c) *Intensive Care Unit* — Wards for acute coronary, post operative and critically ill patients.

The basic consideration in placing wards is to ensure sufficient nursing care, segregating patients according to three categories, locating them according to the needs of treatment in respective medical discipline and checking cross infection.

12.1.1 Location — Wards should be relegated at the back to ensure quietness and freedom from unwanted visitors. General ward units are of repetitive nature and hence they may be conveniently piled up vertically one above the other which will result in efficiency, easy circulation and services economy. Wards for particular specialities, however, should be located closer to their respective department to act as self-contained centres. In such case post-operative ward may be placed horizontal to operation theatre and maternity ward to the delivery rooms.

12.1.2 Planning of a Ward Unit — In planning a ward, the aim should be to minimize the work of the nursing staff and provide basic amenities to the patients within the unit. The distances to be travelled by a nurse from bed areas to treatment room, pantry, etc, should be kept to be minimum.

12.1.2.1 Normally, a ward unit shall comprise 24 to 36 beds, unless small strength wards are needed for specific reasons in multiple beds and isolation unit. An area of 7 m² per bed is recommended, and should be arranged with a minimum distance of 2.25 m between centres of two beds and a clearance of minimum 200 mm between the bed and wall. The space should accommodate a patient bed and a bedside locker. Separate ward units shall be provided for male and female patients for each medical discipline. In wards the width of doors shall not be less than 1.2 m and all wards should have dado to a height of 1.2 m.

12.1.2.2 Isolation unit in the form of two single bedded rooms per nursing unit should be provided to cater for certain cases requiring isolation from other patients. An area of 14 m² for such rooms to contain a bed, bedside locker, easy chair for patient, a chair for the visitor and a built in cupboard for storing clothes is recommended. These isolation unit should have separate toilet facilities.

12.1.2.3 In hospitals of category C, D and E few single and two bedded units may be provided for patients on the basis of hotel type accommodation with independent toilet facility. Area recommended for these rooms is 14 and 21 m² respectively.

12.1.3 *Type of Ward* — Wards may be either nightingale or rigs type. In the former, beds are arranged at right angle to the wall with the feet towards the central corridor and in the latter 4 to 6 beds are arranged parallel to the longitudinal walls and facing each other. A rigs type ward is recommended from socio environmental stand point.

12.2 General Ward Facilities — Each ward unit should have a set of ward ancillaries, requirement of such facilities are given in Table 9.

12.2.1 *Nursing Station* — It should be positioned in such a way that the nurse can keep a continuous watch over the patients. The room shall contain a cupboard to hold materials which might otherwise be placed in clean utility room, a drug cupboard, sink, chair, small table and space for call system points and records. Separate toilet facilities for nurses shall be provided.

12.2.2 *Treatment Room* — Major dressing and complicated treatments should be carried out in the treatment room to avoid the risk of cross-infection.

12.2.3 *Ward Pantry* — For collection and distribution of meals and preparation of beverages, a ward pantry shall be provided. It should be fitted with a hot-water supply geyser, refrigerator and a hot case and should have the facilities for storing cutlery, etc.

12.2.4 *Ward Store* — A store shall be provided for storing the weekly requirements of clothes, bed sheets, and other ward equipments.

12.2.5 *Sluice Room* — A room shall be provided for emptying and cleaning bed pans, urine bottles, and sputum mugs, disposing of used dressing and similar material, storage of stool and urine specimen, etc.

12.2.6 *Day Space* — For those patients who are allowed to sit and relax, a room shall be provided in the ward unit itself. It should afford an easy access to patients and supervision by the nursing staff and should be provided with easy chairs, book shelves and small tables. It may also serve as dining space.

**TABLE 9 PROVISION OF VARIOUS FLOOR AREAS IN
WARD UNIT AND WARD ANCILLARIES**

(Clauses 12.2, 12.3.2, 13.3.1 and 13.4)

SL No.	FACILITY	WARD UNIT — IN-PATIENT NURSING UNIT					
		8 to 15 Beds		16 to 23 Beds		24 to 30 Beds	
		Room (No.)	Area (m ²)	Room (No.)	Area (m ²)	Room (No.)	Area (m ²)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. General Ward							
a)	Nursing station with work area and toilet	1	14	1	17.5	1	17.5
*b)	Doctor's duty room with toilet	—	—	1	17.5	1	17.5
c)	Treatment room	1	10.5	1	10.5	1	14
*d)	Laboratory	—	—	1	7	1	7
e)	Ward pantry	1	10.5	1	10.5	1	10.5
f)	Ward store	1	10.5	1	10.5	1	14
g)	Trolley bay	—	—	—	—	1	10.5
h)	Sluice room	1	10.5	1	10.5	1	14
j)	Janitor's closet	—	—	1	3.5	1	3.5
k)	Day space	—	—	1	14	1	14
m)	Patient's relatives waiting area with toilets	1	14.0	1	17.5	1	17.5
n)	Sanitary annexe	←—Refer to Table 10—→					
Additional for Paediatric Ward							
a)	Formula room	1	10.5	1	10.5	1	10.5
b)	Clothes room	—	—	1	14	1	14
c)	Play room	1	10.5	1	14	1	21

(Continued)

**TABLE 9 PROVISION OF VARIOUS FLOOR AREAS IN
WARD UNIT AND WARD ANCILLARIES — Contd**

Sl. No.	FACILITY	WARD UNIT — IN-PATIENT NURSING UNIT					
		8 to 15 Beds		16 to 23 Beds		24 to 30 Beds	
		Room (No.)	Area (m ²)	Room (No.)	Area (m ²)	Room (No.)	Area (m ²)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	d) Dining room	—	—	—	—	1	10·5
	e) Class room	—	—	1	10·5	1	10·5

Additional for Antenatal Ward

a) Additional to (c)	1	7·0	1	7·0	1	7·0
b) Additional to (d)	1	7·0	1	7·0	1	7·0

	UP TO 32 MATERNITY BEDS		OVER 32 MATERNITY BEDS	
	Room (No.)	Areas (m ²)	Room (No.)	Areas (m ²)

2. Neonatal Unit

a) Nursery				
i) Premature	1	10·5	1	21
ii) Septic	1	10·5	1	14
iii) Normal	1	10·5	1	14
b) Nurses station with toilet	1	14	1	17·5
c) Doctor's duty room with toilet	—	—	1	17·5
d) Formula cum breast feeding room	1	10·5	1	10·5
e) Store	1	7·0	1	10·5
f) Phototherapy room	1	7·0	1	10·5
g) Sluice room	1	7·0	1	10·5

NOTE 1 — Wherever ' with toilet ' is mentioned it is to be 3·5 m² inclusive of the total area of the room.

NOTE 2 — Instead of doctors duty room in every ward a duty room in every floor may be provided. Area recommended is 17·5 m².

*Common for two wards (Nursing Units).

12.2.7 Sanitary — Toilet for an individual room (single or two bedded) in a ward unit shall be 3.5 m² comprising a bath, a wash basin and WC. Toilet common to serve two such rooms shall be 5.25 m² to comprise a bath, a WC in separate cubicle and a wash basin. For multiple beds of a ward unit, requirement of fitments are given in Table 10.

12.3 Ward Unit for Particular Specialities — The provision recommended for general ward unit shall apply with additional requirements as described in 12.3.1 to 12.3.5.

12.3.1 Post Operative and Orthopaedic Wards — Bed space should be 8.75 m² to accommodate treatment apparatus and wheel chair. Post operative wards should be located close to the operation theatres department. Air-conditioning of the post operative ward is essential.

12.3.2 Paediatric Ward — A separate ward unit shall be provided in hospital of category C, D and E. The ward unit shall have at least 25 percent of patients in isolated cubicles in single and two bedded rooms. These cubicles should be separated by glazed partition for better supervision. Each pair of cubicles may be provided with a common toilet of 5.25 m² having WC, bath and wash basin. Further 25 percent of beds should be in the form of cubicles of 4 to 6 beds to provide extra space for mother's bed along with sick paediatric cot. Floor space per bed, therefore, shall be 10.5 m². Additional ancillaries for the ward are given in Table 9.

12.3.3 Psychiatry Ward — All windows and verandahs opening should be protected with steel grill or concrete jali. The ward shall be located on the ground floor or lower floors. All electrical fittings and fixtures shall also be suitably protected.

12.3.4 Skin Ward — Twentyfive percent of the beds in the ward shall be in the form of 2- and 4-bedded rooms for segregation. Arrangement for long bath should be provided in the toilet.

12.3.5 Infectious Disease Ward — This unit should accommodate both male and female patients suffering from infectious ailments. It should be planned as a separate building connecting the main building through a covered passage. The unit may be placed in the main ward block itself but should be separated by an airgap and shall be provided for 4 to 6 percent of male and female patients. Additional ward ancillaries to that of general ward are a sink room of 10.5 m², two staff changing room 10.5 m² each and a discharge room 10.5 m².

13. OBSTETRIC AND GYNAECOLOGY DEPARTMENT

13.1 General — Maternity service includes antenatal care, delivery and postnatal care. Before and after child birth, the patient should be attended to in the out-patient clinic and during labour the patient is confined to bed in the nursing unit. The out-patient clinic should also

TABLE 10 REQUIREMENTS FOR SANITARY FITMENTS IN HOSPITALS FOR PATIENTS

(Clause 12.2.7)

Sl. No.	FITMENTS	REQUIREMENTS												
<i>In-Patient Wards or Nursing Units (For Males and Females)</i>														
1.	Water-closets	1 for every 8 beds or part thereof (male) 1 for every 6 beds or part thereof (female)												
2.	Ablution taps	1 for each water-closet plus one water tap with draining arrangements in the vicinity of water closets												
3.	Urinals	1 for every 12 beds or part thereof (males only)												
4.	Wash basins	1 for every 12 beds or part thereof												
5.	Baths	1 bath with shower for every 12 beds or part thereof												
6.	Bed pan washing sinks	1 for each ward }												
7.	Cleaner's sinks and sink/slab for cleaning mackintosh	1 for each ward } in dirty utility and sluice room												
8.	Kitchen sinks and dishwashers	1 for each ward in ward pantry												
<i>Outdoor-Patient and Other Department (Lavatory Block)</i>														
		<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;"><i>For Males</i></th> <th style="width: 50%;"><i>For Females</i></th> </tr> </thead> <tbody> <tr> <td>1 for every 40 persons or part thereof</td> <td>2 for every 50 persons or part thereof</td> </tr> <tr> <td>1 in each water-closet</td> <td>1 in each water-closet</td> </tr> <tr> <td colspan="2">Plus 1 water tap with draining arrangement shall be provided in the vicinity of water-closet and urinals per lavatory block</td> </tr> <tr> <td>1 for every 25 persons or part thereof</td> <td style="text-align: center;">—</td> </tr> <tr> <td>1 for every 50 persons or part thereof</td> <td>1 for every 50 persons or part thereof</td> </tr> </tbody> </table>	<i>For Males</i>	<i>For Females</i>	1 for every 40 persons or part thereof	2 for every 50 persons or part thereof	1 in each water-closet	1 in each water-closet	Plus 1 water tap with draining arrangement shall be provided in the vicinity of water-closet and urinals per lavatory block		1 for every 25 persons or part thereof	—	1 for every 50 persons or part thereof	1 for every 50 persons or part thereof
<i>For Males</i>	<i>For Females</i>													
1 for every 40 persons or part thereof	2 for every 50 persons or part thereof													
1 in each water-closet	1 in each water-closet													
Plus 1 water tap with draining arrangement shall be provided in the vicinity of water-closet and urinals per lavatory block														
1 for every 25 persons or part thereof	—													
1 for every 50 persons or part thereof	1 for every 50 persons or part thereof													
1.	Water-closets													
2.	Ablution taps													
3.	Urinals													
4.	Wash basins													

NOTE 1 — Some of the water closets may be of European style, if desired.

NOTE 2 — Additional and special fitments for specific needs of hospitals may be provided.

provide diagnostic facilities for gyneo patients. Since these services are cyclic, it is recommended to place the in-patient unit close to the out-patient clinic making it easily accessible to the child bearing women. The in-patient unit shall comprise (a) delivery suite unit, (b) nursing unit, and (c) neonatal unit, and they should be placed on the same floor.

13.2 Delivery Suite Unit — The delivery suite unit should include the facilities of accommodation for various facilities as given in 13.2.1 to 13.2.9. The areas for these facilities for various categories of hospitals are given in Table 11.

13.2.1 Reception and Admission — As the patients many a time, arrive in a state of imminent delivery, the registration counter should open into an entrance lobby.

13.2.2 Examination and Preparation Room — The room should accommodate one or two beds and provide space for the doctor with the work table, etc. A change room with attached toilet facilities shall be provided with the examination cubicle. The provision of lockers for keeping the personal clothes and articles may also be kept in view.

13.2.3 Labour Room — Labour rooms should preferably be in the form of cubicles; two labour rooms for every 10 maternity beds. As birth follows labour, the labour rooms should be placed adjacent to delivery rooms. In hospitals of category A and B the examination-cum-preparation room and labour room may be combined into a single room.

13.2.4 Delivery Rooms — Delivery rooms shall be of the following types:

- a) Clean delivery room for normal deliveries,
- b) Operation theatre for caesarean, and
- c) Septic delivery room.

Delivery rooms shall be provided at the rate of one for every 20 maternity beds. The size of the operating theatre for caesarean rooms shall be the same as that of the operating theatres. Sterility and other requirements shall be maintained like operation theatres department.

13.2.5 Sterilizing Room — The facilities for sterilization of the equipment in the delivery suites should be made. This room should house a work counter, sink, small high-speed pressure instruments sterilizer, etc.

13.2.6 Sterile Store Room — Close to the sterilizing room, a room to store sterile material should be provided. It should be provided with issue windows.

13.2.7 Scrubbing Room — Scrub-up facilities may be provided between two delivery rooms similar to those provided in operation theatre department.

TABLE 11 PROVISION OF VARIOUS FLOOR AREAS IN DELIVERY SUITE UNIT

(Clause 13.2)

Sl No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Reception admission and with waiting area	—	—	—	—	1	21	1	35	1	42
2.	Examination and preparation room with toilet	1	14.0	1	14	1	17.5	1	21	1	21
*3.	Doctor's change room	1	10.5	1	10.5	1	10.5	1	10.5	1	10.5
*4.	Nurses change room	—	—	1	10.5	1	10.5	1	10.5	1	10.5
*5.	Class IV change room	—	—	—	—	1	10.5	1	10.5	1	10.5
*6.	Technician change room	—	—	—	—	—	—	1	10.5	1	10.5
7.	Sterile storage	—	—	1	14	1	21	1	28	1	28
8.	Instrument and linen store	—	—	—	—	1	10.5	1	10.5	1	10.5
9.	Trolley bay	—	—	—	—	1	10.5	1	10.5	1	10.5
10.	Switch room	—	—	1	7.0	1	10.5	1	10.5	1	10.5
§11.	Recovery room	—	—	1	14	1	21	1	28	1	35
12.	Pack preparation room	—	—	1	10.5	1	10.5	1	14	1	17.5
13.	Anaesthesia room	—	—	—	—	1	14	1	21	1	21
†14.	Labour room	1	10.5	1	21 (2 cubicles)	1	31.5 (3 cubicles)	1	52.5 (5 cubicles)	1	73.5 (7 cubicles)

(Continued)

TABLE 11 PROVISION OF VARIOUS FLOOR AREAS IN DELIVERY SUITE UNIT — Contd

Sl. No.	FACILITY	CATEGORY OF HOSPITAL									
		Category A		Category B		Category C		Category D		Category E	
		Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)	Room Area (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
15.	Delivery room	1	21	1	21	2	21	3	21	4	21
†16.	Operating delivery room	—	—	1	28	1	28	1	35	1	35
17.	Instrument sterilizing	—	—	1	10·5	1	14	1	17·5	1	17·5
§18.	Scrub up	—	—	1	7·0	2	7·0	2	10·5	3	10·5
19.	Children birth	—	—	1	7·0	1	10·5	1	10·5	1	10·5
20.	Eclampsia room	—	—	—	—	—	—	1	14	1	21
21.	Dirty utility	1	7·0	1	10·5	1	10·5	1	14	1	17·5
22.	Janitors closet	—	—	1	3·5	1	3·5	1	7·0	1	7·0

NOTE — Whenever ' with toilet ' is mentioned, it is to be 3·5 m² inclusive in the total requirement of the room area.

*Inclusive of toilet 3·5 m².

†This room should have provision for piped oxygen, nitrous oxide and suction facility.

‡Common for delivery and operating delivery room.

§With additional space for toilet facilities.

13.2.8 Dirty Utility — For collection and transferring of blood stained clothes to the laundry unit, a sluice room shall be provided. It is desirable to install mechanical aid for washing of bed pans, urinals, etc.

13.2.9 Other Facilities — Other facilities for the unit should include change rooms for doctors, nurses, technicians, anaesthesia room, pack preparation room, instrument and linen storage, recovery room, etc, and these should be identical to operation theatres department. They should be arranged in the same degree of asepsis.

13.3 Nursing Unit — Nursing unit for the department shall include antenatal, postnatal, eclampsia, post operative, and gynaecological units.

13.3.1 Antenatal Ward — The female patients admitted for treatment during the period of their pregnancy should be housed in a ward separate from those who have undergone the labour. The ward would need the same facilities as recommended for general ward in Table 9. The ward should also have provision for a fully equipped laboratory. The treatment room should also be bigger in such ward unit.

13.3.2 Eclampsia Ward — These patients fall under antenatal and postnatal category. The ward should either form part of antenatal nursing unit or placed close to delivery suite unit. Number of beds shall be one in every 20 postnatal beds. Single and two-bedded rooms with attached toilet should be provided.

13.3.3 Postnatal or Lying-in Ward — Patients who have had normal deliveries and do not suffer any complication, calling for medical care are admitted to this ward. The size of the ward depends upon whether the babies are kept with the mothers or all babies are kept in the central nursery. It is recommended that in case of normal deliveries, the healthy babies may be kept with the mothers in the baby cradle attached to the bed side of the patients. The unit should be close to maternity ward.

13.3.4 Formula Room — A formula room shall be provided close to the nursery for the preparation of food for the infants who are not fully breastfed. The size of the room shall be increased, if washing and sterilizing of feeding bottles is done in the room.

13.3.5 Post-Operative Ward — The post-operative ward for the patients who have undergone operation shall be able to accommodate two beds per delivery room including operating delivery room. Area per bed may be 8.75 m². The unit should be placed in between the delivery suite and lying-in ward. Ward ancillaries should be same as for general ward unit.

13.4 Neonatal Unit — Well being of the new born becomes the responsibility of the paediatrician. A separate neonatal unit for prematures, high risk babies, and sick new borns should be established as independent unit. Facilities like nurseries, nurses station, formula-cum-breast feeding room, store, photo therapy and a sluice room should be provided. The area required for all these facilities shall be as given in Table 9.

13.4.1 Premature Nursery — Premature babies in individual heated bassinets or incubators with temperature and humidity control should be accommodated and oxygen outlet installed. Floor space per bassinet may be 3.5 m².

13.4.2 Septic Nursery — Babies known to be or suspected of being infected shall be kept in an isolated room with cubicles. They should be segregated from normal and premature nurseries. Floor space per bassinet should be 3.5 m².

13.4.3 Normal Nursery — An independent nursery for normal and healthy babies is not considered essential. However, a nursery with 2 to 4 bassinets may be provided. Floor space per bassinet may be 3.5 m².

13.4.4 Nurses Station — It should be so placed so as to ensure continuous watch over the nurseries and to render efficient treatment to infants.

13.4.5 Photo Therapy Room — A room with a one transparent side wall for observation of babies in natural light.

13.5 Gynaecological Unit — The proportion of gynaecological beds should be 40 percent of the maternity beds. The space requirements for various facilities to be provided in the unit shall be same as recommended for general ward.

14. INTENSIVE CARE UNIT

14.1 General — In this unit, critically ill patients requiring highly skilled life saving medical aid and nursing care are concentrated. These should include major surgical and medical cases, head injuries, severe haemorrhage, acute coronary occlusion, kidney and respiratory catastrophes, poisoning, etc. It should be the ultimate medicare the hospital can provide with highly specialized staff and equipment. The number of patients requiring intensive care may be about 2 to 5 percent of total medical and surgical patients in a hospital. A unit shall not have less than 4 beds nor more than 12 beds.

14.1.1 Location — This unit should be located close to operation theatre department and other essential department such as X-ray or pathology so that the staff and ancillaries could be shared. Easy and convenient access from emergency and accident department is also essential. This unit will also need all the specialized services such as piped suction and medical gases, continuous electric supply, heating, ventilation, air-conditioning and efficient lift services. A good natural light and pleasant environment should also be of great help to the patients and staff as well.

14.1.2 Floor Space — All beds in this unit are to be arranged in glazed cubicles with centrally located nurses station. The area per bed in this unit should be 10.5 m² to cater for free movement, check against infection and at time utilization of specialized bulky equipments.

14.1.3 Planning of the Ward — The basic consideration in planning should be to have :

- a) a fully visible patients area with adequate space all round for positioning of specialized equipment,

- b) a central nurses station with minimum possible walking distance,
- c) an adequate stock of medicines, and
- d) distinct clean and dirty utility area where movement of staff and supplies could be minimized.

14.2 Facilities — Various facilities required for the unit along with the recommended areas are given in Table 12.

14.2.1 Nurses Station — This should be planned as an open area with adequate counter space for writing, telephones, patients monitoring equipments, X-ray viewing boxes, etc. Open planning should be adopted for visibility as well as audibility of the entire patients area. A small pantry space along with the nurses station may be helpful.

14.2.2 Clean Utility Area — This should contain all the essential supplies, linen, medicines, lotions, syringes, trolleys, various mobile equipments, etc.

TABLE 12 PROVISION OF VARIOUS FLOOR AREAS OF WARD ANCILLARIES IN INTENSIVE CARE UNIT

(Clause 14.2)

SL No.	FACILITY	ONLY IN C, D AND E CATEGORIES OF HOSPITALS	
		Room (No.)	Areas (m ²)
(1)	(2)	(3)	(4)
1.	Patients relatives waiting area	1	17.5
2.	Nurses station with toilet	1	17.5
3.	Doctor's room with toilet	1	17.5
4.	Intensive care laboratory	1	14
5.	Equipment room	1	14
6.	Stores	2	14
7.	Pantry	1	10.5
8.	Switch room	1	10.5
9.	Trolley bay	1	10.5
10.	Sluice room	1	10.5
11.	Janitors closet	1	3.5

NOTE — This ward should have provision for piped oxygen nitrous oxide and suction facility. Wherever 'with toilet' is mentioned, it is to be 3.5 m² inclusive in the total requirement of the room area.

14.2.3 Equipment Room and Intensive Care Laboratory — This should provide for immediate clinical tests and investigations. All essential testing equipments should be housed in it.

15. CONSTRUCTIONAL REQUIREMENTS

15.1 Circulation Areas — Circulation areas such as corridors, entrance halls, staircases, etc, in the hospital buildings should not be less than 30 percent of the total floor area of the building.

15.2 Floor Height — The height of all the rooms in the hospital should not be less than 3.00 m and not more than 3.65 m, measured at any point from the surface of the floor to the lowest point of the ceiling. The minimum head-room such as under the bottom of beams, fans and lights shall be 2.5 m measured vertical under such beam, fan or light.

15.2.1 The height of the operation theatres may be suitably increased if viewing galleries are provided.

15.3 Room shall have for the admission of light and air, one or more apertures, such as windows and fan lights, opening directly to the external air or into an open verandah. The minimum aggregate areas (*see Note*) of such opening excluding doors inclusive of frames, shall be not less than 20 percent of the floor area in case such apertures are located in one wall and not less than 15 percent of the floor area in case such apertures are located in two opposite walls at the same sill level.

NOTE — If a window is partly fixed, the openable area shall be counted.

15.4 The architectural finishes in hospitals shall be of high quality in view of maintenance of better hygienic conditions specially in sanitary blocks. Flooring in sanitary blocks should be done with marble or polished stone; and dado or glazed ceramic tile finish given on walls.

15.5 The design of building shall ensure control of noise due to walking, movement of trolleys and banging of doors, etc. Expansion joints should have a non-metallic beading finish.

(Continued from page 2)

Ad-hoc Panel for Hospital Buildings, BDC 12 : P1

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