

IS : 10905 (Part 1) - 1984

Indian Standard

RECOMMENDATIONS FOR
BASIC REQUIREMENTS OF GENERAL
HOSPITAL BUILDINGS

**PART 1 ADMINISTRATIVE AND HOSPITAL SERVICES
DEPARTMENT BUILDINGS**

UDC 725.51.054/.055



© Copyright 1984

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

Indian Standard

RECOMMENDATIONS FOR BASIC REQUIREMENTS OF GENERAL HOSPITAL BUILDINGS

PART 1 ADMINISTRATIVE AND HOSPITAL SERVICES DEPARTMENT BUILDINGS

Functional Requirements in Buildings Sectional Committee, BDC 12

Chairman

SHRI G. C. MATHUR
National Buildings Organization, ' G ' Wing,
Nirman Bhavan, New Delhi 110011

Members

SHRI AJAYA BHARADWAJ
SHRI S. SHARMA (*Alternate*)
CHIEF ARCHITECT

SENIOR ARCHITECT (*Alternate*)
DIRECTOR, ARCHITECTURE

JOINT DIRECTOR, ARCHITECTURE (*Alternate*)
SHRI P. C. JAITLY

SHRI B. D. KSHIRSAGAR

SHRI L. R. LALLA (*Alternate*)
SHRI H. R. LAROYA

SHRI R. K. AGGARWAL (*Alternate*)
PROF G. M. MANDALIA
LT-GEN T. B. NANDA
SHRI BIMAL KRISHNA ROY
SHRI SAYED S. SHAFI

SHRI C. S. SAINI (*Alternate*)
SHRI M. R. SHARMA

SHRI K. S. SRINIVASAN
SHRI M. M. MISTRY (*Alternate*)

Representing

Indian Institute of Architects, Bombay

Public Works Department, Government of Tamil
Nadu, Madras

Ministry of Railways (Research, Design and
Standards Organization, Lucknow)

Director General of Health Services (Ministry of
Health and Family Welfare), New Delhi
Engineer-in-Chief's Branch, Army Headquarters,
New Delhi

Central Public Works Department, New Delhi

University of Roorkee, Roorkee
The Institution of Engineers (India), Calcutta
Corporation of Calcutta, Calcutta
Institute of Town Planners, New Delhi

Central Building Research Institute (CSIR),
Roorkee

National Buildings Organization, New Delhi

(*Continued on page 2*)

© Copyright 1984

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI S. SUBBA RAO	All India Institute of Hygiene and Public Health (Directorate General of Health Services), Calcutta
SHRI A. V. RAO (<i>Alternate</i>)	
SHRI R. L. SURI	Suri & Suri Consulting Acoustical Engineers, New Delhi
SHRI GAUTAM SURI (<i>Alternate</i>)	
SHRI G. RAMAN, Director (Civ Engg)	Director General, ISI (<i>Ex-officio Member</i>)
	<i>Secretary</i>
	SHRI A. K. SAINI Assistant Director (Civ Engg), ISI

Panel For Basic Requirements of Hospitals and Other Health
Buildings, BDC 12 : PI

MAJ-GEN P. K. BASU ROY	Directorate General, Armed Forces Medical Services, New Delhi
CHIEF ENGINEER (ELECTRICAL-I)	Central Public Works Department, New Delhi
SHRI ANTONY T. D'SOUZA	Voluntary Health Association of India, New Delhi
DR P. N. GHEI	Directorate General of Health Services (Ministry of Health and Family Welfare), New Delhi
SHRI P. C. JAITLEY	Central Designs Bureau for Medical and Health Buildings (Directorate General of Health Services), New Delhi
SHRI B. C. MISTRY (<i>Alternate</i>)	
DR V. V. KAYARKAR	Directorate of Health Services, Bombay
SHRI B. D. KSHIRSAGAR	Engineer-in-Chief's Branch, Army Headquarters, New Delhi
SHRI L. R. LALLA (<i>Alternate</i>)	
SHRI J. C. MEHTA	Post Graduate Institute of Medical Education and Research, Chandigarh
DR C. R. ROY	Directorate of Health Services, Calcutta
DR A. N. SAFAYA	All India Institute of Medical Sciences, New Delhi
SHRI R. P. SINHA (<i>Alternate</i>)	
SHRI R. D. SRIVASTAVA	Central Building Research Institute (CSIR), Roorkee
SHRI V. J. NENE (<i>Alternate</i>)	
SHRI GAUTAM SURI	Suri and Suri Consulting Acoustical Engineers, New Delhi
DR M. G. TALWAR	Indian Hospital Association, New Delhi
DR P. N. GHEI (<i>Alternate</i>)	

(Continued on page 21)

Indian Standard

RECOMMENDATIONS FOR BASIC REQUIREMENTS OF GENERAL HOSPITAL BUILDINGS

PART 1 ADMINISTRATIVE AND HOSPITAL SERVICES DEPARTMENT BUILDINGS

0. FOREWORD

0.1 This Indian Standard (Part 1) was adopted by the Indian Standards Institution on 15 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 a 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 a good working condition 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 can be brought down to a minimum but at the same time they function in a manner for which it is intended. With this object in view, this standard has been developed 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 m^2 based on basic space unit of 3.5 m^2 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, $3.2 \times 4.8 \text{ m}$ will lead to a carpet area of about 14 m^2 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 requirement of administrative and hospital services department buildings. The other parts of the standard, namely, Part 2 and 3, cover basic requirements of medical services department buildings and engineering services 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 1) covers spatial, functional and environmental requirements of administrative and hospital 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 for teaching, tuberculosis, cancer, etc.

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

2. GROUPING OF GENERAL HOSPITALS

2.1 For the purpose of this standard the hospitals have been divided into 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 ADMINISTRATIVE AND HOSPITAL SERVICES BUILDINGS

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

a) *Administrative Department:*

- 1) General, and
- 2) Medical records.

b) *Hospital Services Department:*

- 1) Central Sterilization and Supply Department,
- 2) Dietary,
- 3) Laundry,
- 4) Hospital stores,
- 5) Workshops,
- 6) Transport services,
- 7) Community services, and
- 8) Mortuary.

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 recommendations contained in IS : 7662 (Part 1)-1974*.

6. RESIDENTIAL ACCOMMODATION

6.1 If adequate land is not available residential accommodation for the essential staff only which may include resident medical officer, house surgeons, nurses, class IV staff and hospital engineering service maintenance should be provided.

6.1.1 Residential accommodation for a major proportion of nursing staff should be provided close to hospital block in the form of a hostel. The area of single room may be 10.5 m².

NOTE — It is recommended that at least 60 percent of the total staff should be provided with residential accommodation within the hospital complex for all categories of hospital.

7. ADMINISTRATIVE DEPARTMENT

7.1 The administration department of any hospital shall essentially look after an organised group of people, patients and resources in order to accomplish the task of providing best patient care. It shall have two main sections, namely, general and medical records. General section shall deal with all matters relating to overall upkeep of the hospital as well as welfare of its staff and patients. Medical records section shall function for professional work in diagnosis, treatment and care of patients. Medical record section is only required for hospitals of category C, D and E.

7.1.1 The administrative department shall preferably be located close to the main entrance of the hospital.

7.2 Space Requirement — Space requirements for various facilities in the administrative unit are given in Table 1.

8. CENTRAL STERILIZATION AND SUPPLY DEPARTMENT (CSSD)

8.1 General — Sterilization, being one of the most essential services in a hospital, requires the utmost consideration in planning. Centralization increases efficiency, results in economy in the use of equipment and ensures better supervision and control. The materials and equipments dealt in CSSD should fall under three categories; (a) those related to the operation theatre department, (b) common to operating and other departments, and (c) pertaining to other departments alone.

*Recommendations of orientation of buildings : Part 1 Non-industrial buildings.

TABLE 1 PROVISION OF VARIOUS FLOOR AREAS IN THE ADMINISTRATIVE UNIT

(Clause 7.2)

SL No.	FACILITY	CATEGORIES OF HOSPITALS											
		Category A		Category B		Category C		Category D		Category E			
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
a)	<i>General</i>												
1.	Medical Supdt (M. S.) room with toilet	1	21	1	21	1	31·5	1	31·5	1	31·5		
2.	Dy/Asstt. Medical Supdt. room with toilet	—	—	—	—	1	21	1	21	2	21		
3.	P. S. to Medical Supdt/Dy M.S./Asstt. M.S.	—	—	—	—	1	14	1	14	1	14		
4.	Admn Officer	1	10·5	1	14	1	21	1	21	1	21		
5.	Waiting room	1	14	1	14	1	21	1	21	2	14		
6.	Library-cum-Conference room	—	—	1	35	1	56	1	35	1	49	1	70
7.	Nursing Officer's room with toilet	1	17·5	1	17·5	1	31·5	1	31·5	1	31·5		
8.	Accounts Officer	—	—	—	—	1	14	1	14	1	14		
9.	Cashier	—	—	—	—	1	14	1	14	1	14		
10.	Purchase Officer	—	—	—	—	1	14	1	14	1	14		
11.	Clerical Staff	←-----5·25 m ² per staff member-----→											
12.	Reception-cum-Enquiries	—	—	—	—	1	28	1	42	1	56		
13.	Welfare/Labour Officer	—	—	—	—	1	14	1	14	1	14		
14.	Stationery/Records	1	28	1	35	1	42	1	49	1	56		
15.	Security Officer	—	—	—	—	1	14	1	14	1	14		
16.	Lavatory for staff (Separate for male and female)	2	7·0	2	7·0	2	10·5	2	10·5	2	14·0		

(Continued)

**TABLE 1 PROVISION OF VARIOUS FLOOR AREAS IN THE
ADMINISTRATIVE UNIT — Contd**

Sl No.	FACILITY	CATEGORIES OF HOSPITALS										
		Category A		Category B		Category C		Category D		Category E		
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
b)	<i>Medical Records Deptt.</i>											
1.	Medical Records Store											
	a) Active (up to 2 years)	—	—	—	—	1	28	1	42	1	56	
	b) Inactive (Between 2 to 10 years)	—	—	—	—	1	84	1	126	1	140	
2.	Medical Records Officer with toilet	—	—	—	—	1	21	1	17·5	1	17·5	
3.	Staff Office with toilet	—	—	—	—			1	17·5	1	17·5	
4.	Medical Record Processing area	—	—	—	—	1	21	1	28	1	35	
5.	Doctors Record Completion room	—	—	—	—			1	14	1	14	
6.	Room for various automations	—	—	—	—	1	21	1	14	1	14	
7.	Printed Stationery Store	—	—	—	—	1	17·5	1	10·5	1	14	
8.	General Store	—	—	—	—			1	10·5	1	14	

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

8.1.1 Location — Since the operation theatre department is the major consumer of this service, it is recommended to locate the department at a central position but at an easy access to operation theatre department. In hospital of category A and B this may be an element of the operation theatre department.

8.2 Space Requirements — The facilities should be provided for the following functions to be carried out in the unit:

- a) Administration and unsterile storage,
- b) Reception and cleaning of used and unsterile material and assembling pack,
- c) Sterilizing area, and
- d) Storage and issue of sterile supplies.

8.2.1 The schedule of areas needed for different functions depending upon the category of hospital shall be as given in Table 2.

9. DIETARY SERVICE

9.1 General — The dietary service of a hospital is an important therapeutic tool. Properly rendered, it should be a clinical and administrative means of stimulating rapid recovery of patients thereby shortening patients stay in the hospital. The aim in hospital catering, therefore, should be to produce well cooked, appetising and nutritious food as economically as possible. The achievement of this objective should depend on administrative efficiencies of the staff, planning department, layout and equipment. The hospital kitchen could be alone responsible for spreading diseases if hygienic conditions are not maintained. Use of cooking gas and electricity will definitely improve the hygienic conditions of a hospital kitchen. Good natural light and ventilation is of great importance.

9.1.1 Location — Location should ensure that any noise or cooking odours emanating from the department do not cause any inconvenience to the other departments. At the same time the location should involve the shortest possible time in delivering food to the wards.

9.2 Space Requirements — The facilities in the dietary service department should include the following activities:

- a) Reception area comprising of store, receiving space for fuel, provisions of vegetables, meat, milk, fruit and other eatables;
- b) Cooking area comprising of space needed for general preparation and cooking normal as well as therapeutic diets;
- c) Trolley loading for distribution of diet to respective wards;
- d) Walk in cold storage for food items;
- e) Washing area for utensils and food trolley;
- f) Staff accommodation for dietitian, steward, cook and staff with toilet facility; and
- g) Refuse disposal area for waste dishes and empties to be returned or disposed.

TABLE 2 PROVISION FOR VARIOUS FLOOR AREAS IN CENTRAL STERILIZATION AND SUPPLY DEPARTMENT

(Clause 8.2.1)

Sl. No.	FACILITY	CATEGORIES OF HOSPITALS									
		Category A		Category B		Category C		Category D		Category E	
		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Bulk storage	—	—	—	—	2	10.5	3	14	3	17.5
2.	Officer-in-charge with toilet	—	—	—	—	1	17.5	1	14	1	17.5
3.	Technicians room with toilet	—	—	—	—	—	—	1	14	1	17.5
4.	Receipt counter							1	10.5	1	17.5
5.	Deassembling and Decontamination							1	14	1	17.5
6.	Washing and cleaning	1	21	1	28	1	28	1	14	1	17.5
7.	Assembly and Set packing room							1	21	1	28
8.	Gloves preparation room and Gauze cutting area					1	21	1	14	1	17.5
9.	Autoclave area	1	14	1	17.5	1	21	1	28	1	28
10.	Hot air-oven room	—	—	—	—	—	—	1	10.5	1	10.5
11.	Sterile store	1	14	1	17.5	1	28	1	28	1	35
12.	Issue counter							1	10.5	1	17.5
13.	Class IV room	—	—	—	—	1	10.5	1	10.5	1	10.5
14.	Trolley bay	—	—	—	—	1	10.5	1	10.5	1	10.5
15.	Switch room	—	—	—	—	1	7.0	1	7.0	1	10.5

NOTE 1 — Wherever 'with toilet' is mentioned, it is to be 3.5 m² inclusive in the total requirements of the room area.

NOTE 2 — Theatre supply service may also be provided if desired.

9.2.1 The facilities to be provided in the dietary unit, with the recommended areas for different categories of hospitals are given in Table 3.

TABLE 3 PROVISION OF VARIOUS FLOOR AREAS IN DIETARY UNIT

Sl. No.	FACILITY	CATEGORIES OF HOSPITALS									
		Category A		Category B		Category C		Category D		Category E	
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Reception area			1	14	1	28	1	35	1	42
2.	Cooking area			1	35	1	56	1	70	1	84
3.	Therapeutic diet preparation and cooking area	1	28	1	10.5	1	10.5	1	14	1	17.5
4.	a) Dietetion with toilet	—	—	1	14	1	14	1	17.5	1	17.5
	b) Stewards and Staff with toilet	—	—	—	—	1	14	1	17.5	1	17.5
5.	Trolley loading	—	—	1	10.5	1	10.5	1	14	1	14
6.	Walk in cold storage	—	—	1	7.0	1	10.5	1	10.5	1	10.5
7.	Dry ration storage	1	10.5	1	7.0	1	7.0	1	10.5	1	10.5
8.	Washing areas										
	a) Pots							1	10.5	1	14
	b) Trolleys	1	21	1	28	1	35	1	14	1	17.5
	c) Dishes							1	14	1	17.5
9.	Garbage collection area	1	3.5	1	7.0	1	7.0	1	10.5	1	10.5
10.	Switch room	—	—	—	—	—	—	1	10.5	1	10.5

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

10. LAUNDRY SERVICES

10.1 General — Laundering of hospital linen should satisfy two basic considerations, namely, cleanliness and disinfection. For small hospitals, that is, of category A and B manual laundry can be provided with necessary facilities for drying, pressing and storage of soiled and cleaned linens. In hospitals of category C, D and E the service shall be rendered by well equipped mechanical laundry for various activities listed below:

- a) Collection and receiving of dirty, soiled and fouled linen from the wards and department;
- b) Sorting of linen;
- c) Removal of blood stains;
- d) Disinfecting or autoclaving;
- e) Washing and drying;
- f) Repairs to linen;
- g) Pressing;
- h) Clean clothe storage; and
- j) Issue.

NOTE — Air change in laundry area may be 10 times per hour.

10.1.1 Location — Laundry unit for hospitals of category A and B may be provided close to linen stores of hospital stores services department whereas manual washing facilities may be in one corner of the hospital complex. Mechanical laundry unit for hospitals of category C, D and E should be so located so as to minimize carriage of the linens. This should however be integrated into the service complex. Care shall be taken to avoid boiler smoke to wards.

10.2 Space Requirements — The schedule of areas required for various activities and facilities for the unit are given in Table 4.

11. HOSPITAL STORES

11.1 General — Hospital stores comprises of stores needed for various hospital functioning and should be grouped centrally in the service complex. The area for each type of stores should be utilized to the optimum by providing built in shelves at different heights according to the type of stores. Adequate ventilations and security arrangement shall be provided. Stores should also be provided with fire fighting arrangement. A cold storage area within the medical store for storage of medicines shall also be provided.

11.2 Space Requirements — The schedule of areas required for various types of stores are given in Table 5.

TABLE 4 PROVISION OF VARIOUS FLOOR AREAS IN LAUNDRY UNIT

(Clause 10.2)

Sl. No.	FACILITY	CATEGORIES OF HOSPITALS									
		Category A		Category B		Category C		Category D		Category E	
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Dirty clothes receiving and sorting area (with weighing facility)	1	10.5	1	14	1	21	1	35	1	42
2.	Sluice and autoclaving machine area	—	—	—	—	1	14	1	21	1	28
3.	Washing area	By use of <i>Dhobi Ghats</i> (Manual washing)				1	28	1	42	1	56
4.	Hydroextractor area					1	28	1	42	1	56
5.	Drying tumbler area					1	28	1	42	1	56
6.	Calandering machine area					1	17.5	1	28	1	28
7.	Tailor desk	—	—	—	—	1	10.5	1	10.5	1	14
8.	Steam pressing	—	—	—	—	1	14	1	21	1	28
9.	Manual press area	1	14	1	21	1	14	1	21	1	28
10.	Clean clothes storage area	1	10.5	1	14	1	21	1	28	1	35
11.	Issue area	1	10.5	1	14	1	17.5	1	21	1	28
12.	Boiler room	—	—	—	—	1	14	1	21	1	21
13.	Trolley bay	—	—	—	—	1	10.5	1	14	1	14
14.	Store	—	—	—	—	1	10.5	1	14	1	21
15.	Laundry supervisor office with toilet	—	—	—	—	1	14	1	17.5	1	17.5
16.	Laundry staff room with toilet	—	—	—	—	1	14	1	21	1	21
17.	Switch room	—	—	—	—	1	3.5	1	3.5	1	7.0

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

TABLE 5 PROVISION OF VARIOUS FLOOR AREAS IN THE HOSPITAL STORE

(Clause 11.2)

Sl. No.	FACILITY	CATEGORIES OF HOSPITALS										
		Category A		Category B		Category C		Category D		Category E		
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1.	Receipt of stores (weighing, ins- pection, testing)	—	—	—	—	1	14	1	21	1	28	
2.	Medical store	1	24.5	1	35	1	45.5	1	70	1	91	
3.	General store	1	21	1	35	1	21	1	31.5	1	42	
4.	Linen store					1	28	1	42	1	56	
5.	Furniture store	1	21	1	31.5	1	42	1	63	1	84	
6.	Surgical store	1	21	1	35	1	28	1	42	1	56	
7.	Equipment store					1	42	1	63	1	84	
8.	Areas for storage of mechanical trans- port spares	1	14	1	17.5	1	42	1	63	1	84	
9.	Area for storage of articles awaiting condemnation					1	28	1	42	1	56	
10.	Store office room with toilet	1	21	1	28	1	14	1	17.5	1	17.5	
11.	Office					1	28	1	42	1	56	
12.	Stationery store	—	—	—	—	1	14	1	21	1	28	

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

12. WORKSHOP

12.1 General — For running a hospital efficiently workshop comprising of various trades like machine shop fittings, welding, pattern making, plumbing, moulding, electroplating, etc, should be provided for day to day repair of hospital equipments and their maintenance. This unit should be integrated to hospital stores department in the service complex.

12.2 Space Requirements — The floor space needed for various trades and facilities of the unit are given in Table 6.

TABLE 6 PROVISION OF VARIOUS FLOOR AREAS FOR WORKSHOP

Sl. No.	FACILITY	CATEGORIES OF HOSPITALS											
		Category A		Category B		Category C		Category D		Category E			
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
1.	Office	—	—	—	—	1	10.5	1	14	1	14	1	14
2.	Painting area	—	—	—	—	1	14	1	21	1	28	1	28
3.	Carpentry area	—	—	—	—	1	10.5	1	14	1	17.5	1	17.5
4.	Electrician	—	—	—	—	1	10.5	1	14	1	17.5	1	17.5
5.	Blacksmith	—	—	—	—	1	10.5	1	14	1	17.5	1	17.5
6.	Store receipt	—	—	—	—	1	10.5	1	14	1	17.5	1	17.5
7.	Stores for repaired equipment	—	—	—	—	1	10.5	1	14	1	17.5	1	17.5
8.	Store room	—	—	—	—	1	14	2	14	2	14	2	14

13. TRANSPORT SERVICES

13.1 General — All categories of hospital shall maintain a fleet of transport like ambulance, mortuary van, trucks, etc. Parking and garage facilities for these should be suitably sited close to the services department.

13.2 Space Requirements — The floor space required for garages are given in Table 7.

TABLE 7 PROVISION OF VARIOUS FLOOR AREAS FOR TRANSPORT SERVICE

Sl. No.	FACILITY	CATEGORIES OF HOSPITALS									
		Category A		Category B		Category C		Category D		Category E	
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Ambulance	1	21	1	21	3	21	5	21	7	21
2.	Mortuary van	—	—	—	—	1	21	1	21	1	21
3.	Tempo	—	—	1	21	1	21	1	21	1	21
4.	Staff car	—	—	—	—	1	21	1	21	2	21

14. COMMUNITY SERVICES

14.1 General — Community services in a general hospital should include facilities of essential needs for the staff and patients.

14.1.1 Facilities like *DHARAMSHALA* and auditorium-cum-library in the hospital of category D and E may be provided. *DHARAMSHALA* of 30 to 50 beds may be provided for patients' relatives who arrive at the hospital from far off places or when their presence to look after the patients at all hours is of utmost importance. The accommodation may be in the form of dormitory and cubicles with general kitchen, toilets and drinking water facilities. Auditorium-cum-library in a general hospital may help educating the patients regarding the upkeep of health and preventive measures. Library for doctors in addition to one for patients may be provided.

14.2 Space Requirements — The floor space required for such facilities are given in Table 8.

15. MORTUARY

15.1 General — Mortuary shall provide facilities for keeping of dead bodies and conducting autopsy. It should be so located that the dead bodies can be transported unnoticed by the general public and patients. Relatives and mourners should have direct access to the mortuary. The mortuary shall have facilities for walk in cooler, post mortem area, prayer room, doctors' office, etc.

TABLE 8 PROVISION OF VARIOUS AREAS FOR COMMUNITY SERVICES

(Clause 14.2)

Sl. No.	FACILITY	CATEGORIES OF HOSPITALS									
		Category A		Category B		Category C		Category D		Category E	
		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)		Room Areas (No.) (m ²)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Central admission office and hospital enquiry	—	—	—	—	1	14	1	21	1	28
2.	Parking area	Adequate		Adequate		Adequate		Adequate		Adequate	
a)	Milk van, trucks, etc.										
b)	Cars										
c)	Scooters										
d)	Cycles										
3.	Community centre	1 14		1 21		1 28		1 17.5		1 21	
b)	Provision store							1 17.5		1 21	
c)	Canteen	— —		1 21		1 14		1 21		1 28	
d)	Snack bar	1 14				1 14		1 21		1 28	
e)	Fruit & Flower shop	— —		— —		1 10.5		1 14		1 14	
f)	News stand	— —		— —		1 10.5		1 14		1 14	
g)	Community hall	— —		— —		1 42		1 56		1 70	
h)	Bank	— —		— —		1 21		1 28		1 42	
j)	Post office	— —		— —				1 21		1 28	
k)	Library for patients	— —		— —		1 21		1 28		1 35	

15.2 Space Requirements — The schedule of areas required for various activities in the mortuary are given in Table 9.

16. CONSTRUCTIONAL REQUIREMENTS

16.1 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.

TABLE 9 PROVISION OF VARIOUS FLOOR AREAS IN THE MORTUARY

(Clause 15.2)

Sl No.	FACILITY	CATEGORIES OF HOSPITALS									
		Category A		Category B		Category C		Category D		Category E	
		Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)	Room Areas (No.) (m ²)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Walk in cooler (to store)	1	10.5 (4 bodies)	1	10.5 (4 bodies)	1	14 (6 bodies)	1	14 (8 bodies)	1	21 (10 bodies)
2.	Post mortem area	—	—	1	14	1	17.5	1	21	1	28
3.	Autopsy stores	—	—	—	—	1	7.0	1	10.5	1	14
4.	Body wash and prayer room	—	—	1	10.5	1	14	1	21	1	28
5.	Relative waiting area with toilet and drinking water facilities	1	14	1	14	1	17.5	1	21	1	28
6.	Doctor's office with toilet	—	—	1	14	1	17.5	1	17.5	1	17.5
7.	Staff room with toilet	1	14	—	—	—	—	1	17.5	1	17.5
8.	Office	—	—	—	—	—	—	1	10.5	1	10.5
9.	Stores	—	—	1	10.5	1	10.5	1	10.5	1	10.5
10.	Janitors closet	1	3.5	1	3.5	1	3.5	1	3.5	1	3.5
11.	Trolley bay	—	—	—	—	1	10.5	1	10.5	1	10.5

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

16.2 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 2.50 m measured vertical under such beam, fan or light.

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

16.3 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.

16.4 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 preferably be done with marble or polished stone and dado or glazed/ceramic tile finish given on wall.

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

17. SANITARY FITMENTS

17.1 The requirements for sanitary fitments shall be in accordance with Table 10.

TABLE 10 REQUIREMENTS FOR SANITARY FITMENTS IN HOSPITALS (ADMINISTRATIVE AND HOSPITAL SERVICES BUILDING, MEDICAL STAFF, NURSES' HOMES)

(Clause 17.1)

Sl No.	FITMENTS	FOR ADMINISTRATIVE AND HOSPITAL SERVICES BUILDINGS		FOR MEDICAL STAFF LIVING (HOTEL TYPE)		FOR NURSES' HOMES (HOSTEL TYPE)
		For Male Personnel	For Female Personnel	For Male Staff	For Female Staff	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Water-closets*	1 for every 25 persons or part thereof	1 for every 15 persons or part thereof	1 for 4 persons	1 for 4 persons	1 for 4 persons
ii)	Ablution tap	1 in each water-closet Plus 1 water tap in the vicinity of water-closets and urinals.	1 in each water-closet	1 in each water-closet	1 in each water-closet	1 in each water-closet lavatory block in the vicinity of water-closets and urinals.
iii)	Urinals	1 for 25 persons or part thereof but nil up to 10 persons	—	—	—	—
iv)	Wash basins	1 for every 25 persons or part thereof	1 for every 25 persons or part thereof	1 for every 8 persons or part thereof	1 for every 8 persons or part thereof	1 for every 8 persons or part thereof
v)	Baths (with shower)	—	—	1 for 4 persons or part thereof	1 for 4 persons or part thereof	1 for 4 persons or part thereof
vi)	Drinking water fountains	1 per 50 persons or part thereof with a minimum of 1 on each floor.				
vii)	Cleaner's sinks	← ————— Minimum 1 per floor ————— →				

*Some of the water-closets may be of European style, if desired.

(Continued from page 2)

Ad-hoc Panel for Hospital Buildings, BDC 12 : 1 : 1

Convener

DR P. N. GHEI

Members

SHRI P. C. JAITLEY

SHRI L. R. LALLA

SHRI J. C. MEHTA

LT-COL R. K. RAKSHIT

DR R. P. SINHA

Representing

Directorate General of Health Services, New Delhi

Central Designs Bureau for Medical and Health Buildings (Directorate General of Health Services), New Delhi

Engineer-in-Chief's Branch, Army Headquarters, New Delhi

Post-Graduate Institute of Medical Education and Research, Chandigarh

Directorate General, Armed Forces Medical Services, New Delhi

All India Institute of Medical Sciences, New Delhi

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>	<i>Definition</i>
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
pressure, stress	pascal	Pa	1 Pa = 1 N/m ²