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Indian Standard

DESIGN OF BUILDINGS FOR ARCHIVES — RECOMMENDATIONS RELATING TO ITS PRIMARY ELEMENTS

(Second Revision)

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FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 7 February 1989, after the draft finalized by the Planning, Byelaws and Dimensional Co-ordination Sectional Committee had been approved by the Civil Engineering Division Council.

The bulk of documents to be preserved for their historical, legal and administrative value is ever on the increase and government departments, universities, local bodies and many commercial firms do need expansion of existing archival facilities or establishments of new archives for this purpose. Archives have to satisfy the basic requirement that all the records that are received are housed, maintained and preserved properly. Further, archives also cater to all types of materials which vary from one collection to another and also in their nature and sizes.

Archives of all types are expanding at an enormous rate. Increasing literacy and demand of old documents or records also necessitates expansion of archives. Since the completion of a new archives building takes several years, the stock to be accommodated on the opening day, therefore, is larger than what was estimated at the planning stage. Unless the building for the archives is planned to meet the futuristic requirements, it may result in an unscientific arrangement of records.

This standard was first published in 1964 and revised in 1977. The present revision has been undertaken with a view to updating its contents. In this revision, building design and construction aspect has been incorporated covering fire safety. The site location requirements have been covered in detail.

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 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DESIGN OF BUILDINGS FOR ARCHIVES— RECOMMENDATIONS RELATING TO ITS PRIMARY ELEMENTS

(Second Revision)

1 SCOPE

1.1 This standard covers the recommendations concerning primary elements in the design of buildings for archives for proper storing, maintenance and preservation of records on paper and parchment, maps, photographs, microfilms and likewise.

1.1.1 This standard does not cover requirements for buildings for storing motion picture films, sound recording and allied media.

2 REFERENCES

2.1 The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 LOCATION AND SITE

3.1 Preservation of documents is an essential function of archives. Environmental factors which may adversely affect the preservation of documents, such as, polluted atmosphere, subsoil water and termite infestation shall be taken into consideration while selecting the site.

3.2 Convenience and requirements of major users of archives material, such as, creating agencies and scholars, is a primary consideration for determining the location of the site. However, where scholars are the primary users, proximity to a good library, easy availability of city transport and pleasant surroundings are advantageous.

3.3 Since archival holdings are ever growing, the site and plans should provide for future expansion. It should preferably cater to future needs for 20 to 25 years.

NOTE — The rate of increase of permanent archives over the past five years will give a basis to know the future requirements.

3.4 The site selected for building should satisfy the following norms:

a) Adequate separation (about 10 m) should preferably be available between the building and the other neighbouring buildings;

b) The site shall not be in the immediate neighbourhood of any hazardous occupancy;

c) The site shall abut on a road of not less than 12 m width; one end of the road shall join another road of the same width and the road shall not have a dead end;

d) Adequate supply of water is assured for fire fighting purposes; and

e) A public fire brigade is within easy running distance from the site.

4 DESIGN

4.1 Archives enshrine the past history and cultural heritage. The architectural design of the building should, therefore, reflect this character of the institute.

4.2 Design of the building should be modular to facilitate addition and alterations to the structure whenever required.

4.3 It shall provide adequate safety for stored materials against fire, flood, theft or pilferage and deteriorating agents, such as, fungus, pests, dirt, direct sunlight and extremes of temperature and humidity.

4.4 The site shall be large enough to ensure that:

a) adequate passageway (not less than 6 m wide) and clearances required for fire appliances to enter the premises is provided; the width of main entrance shall be not less than 4·5 m; if an arch or covered gate is constructed, it shall have a clear head-room of not less than 5 m;

b) separate open space is available to park cars and/or other vehicles in addition to (a); and

c) a clear passageway of 6 m width is maintained contiguous to and around the buildings.

4.5 The design shall provide for adequate safety against termites in accordance with IS 6313 (Parts 1 to 3) : 1981.

4.6 It shall be functional; providing optimum utilization of space and convenience of movement of men and material.

4.7 A space of at least 2 m × 2 m shall be provided in front of the elevators for the movement of trolleys and other equipment likely to be used in the storage area.

4.8 Only one entrance shall be provided for staff and visitors. Space for enquiry and reception shall be provided near this entrance. A separate entrance shall be provided for receiving of records.

5 ACCOMMODATION REQUIRED IN ARCHIVAL BUILDINGS

5.1 Essential accommodation required in archival buildings is as given below:

a) Stack rooms and muniment rooms,

b) Record receiving room,

c) Repairs and rehabilitation rooms,

d) Research rooms, and

e) Room for administrative purposes.

NOTE — The essential areas for the above rooms are given in **8** to **12** and include the necessary provision for storage areas as well.

5.1.1 The following accommodation, where required, shall be provided:

a) Exhibition room,

b) Conference hall,

c) Microfilming and photo-duplicating room,

d) Research laboratory,

e) Oral history room,

f) Rooms for library,

g) Computer cell, and

h) Any other rooms needed for specific purpose.

5.2 Adequate provision should also be made for canteen, rest rooms for the readers and the staff, parking areas, first aid room, etc, where necessary.

6 CIRCULATION

6.1 The main movement of records is illustrated by a flow diagram (*see* Fig. 1).

6.2 Each floor of the archival building shall be at one single level to facilitate the movement of records trolley from one part to another. Thresholds shall not be provided anywhere inside the building. All external doors shall be provided either with threshold or some other device so as to make them rodent and dust proof.

6.2.1 The movement of the records trolley from one tier to another where there are three or more tiers in the stack room, shall be through lifts provided within the stack room with landing at every tier of the stack room and at every floor of the other adjacent rooms.

7 STACK ROOMS AND MUNIMENT ROOMS

7.1 Stack room, as far as possible, shall be located as a separate unit. At the same time, it shall have easy access from records, reception or other servicing units. Requirements for future extension shall be taken into account while designing the stack room. The stack room should preferably be oriented so as to run generally from east to west to avoid direct sun.

7.1.1 The floor of the repository shall be capable of taking a live load of 1 000 kgf/m^2 for the records and storage equipment.

7.2 Gangways

All gangways providing access to the stacks and near the wall shall be 1·5 m wide except that the gangway between the stacks shall not be less than 0·80 m wide.

7.3 The dimensions of the stack room shall be as follows (*see* Fig. 2):

a) *Clear length*

1·6 ($n-1$) +3·80 in metres where n is the number of rows of double-faced racks, assuming:

1) the widths of main and cross gangways to be 1·5 and 0·80 m respectively, and

2) the depth of rack to be 0·80 m.

NOTE — One square metre of stack room area may be assumed to provide 4 linear metres of shelf space.

b) *Clear width*

Length of one row of racks, +3 m.

c) *Clear height*

Floor to ceiling, 2·40 m.

NOTE — The height of the rack is 2·20 m and allowance for bay guides is 0·20 m.

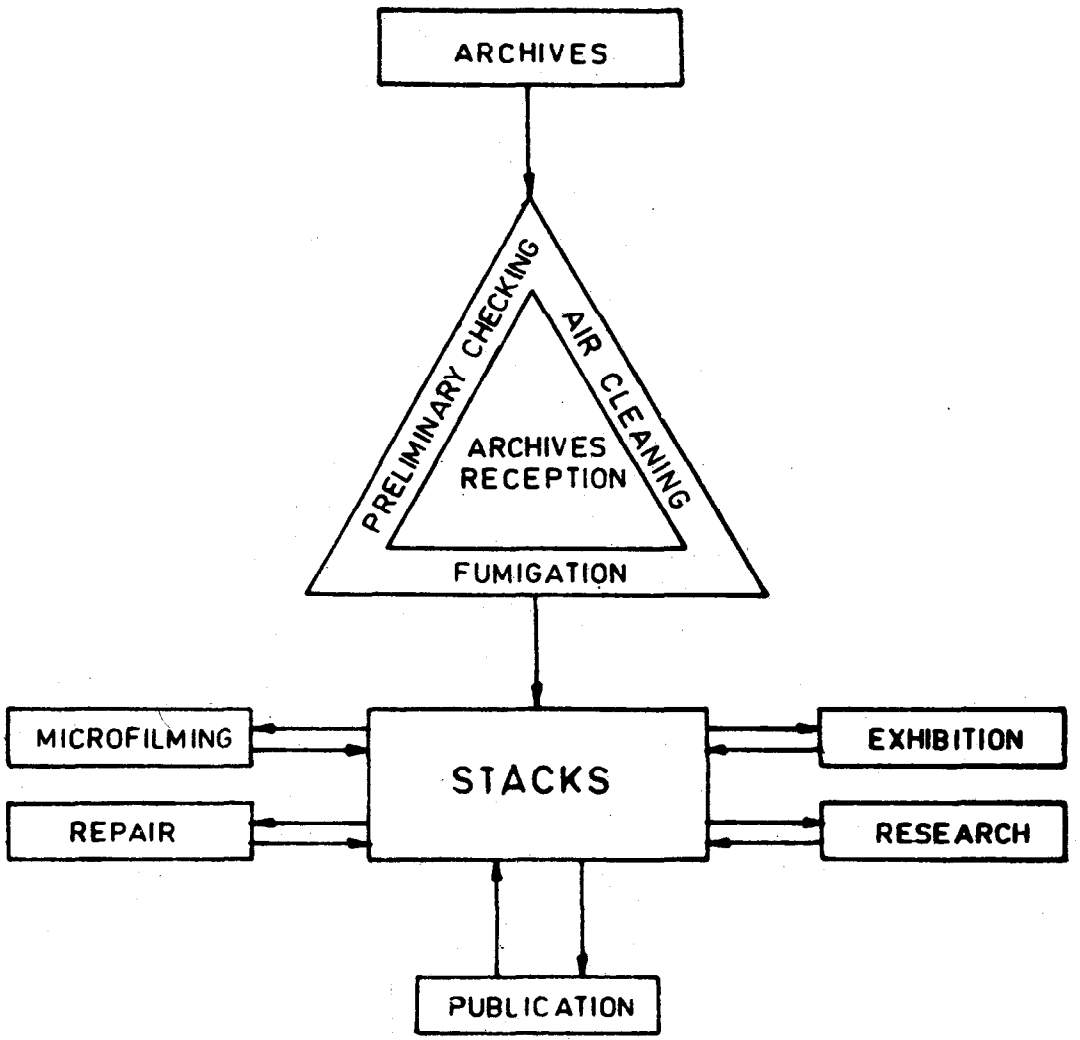


FIG. 1 TYPICAL FLOW DIAGRAM FOR MOVEMENT OF ARCHIVES

8 RECORD RECEIVING ROOM

8.1 The record receiving room shall be near the stack room.

8.2 One square metre for every three linear metres of records received at a time shall be provided subject to a minimum of 15 m^2. Additional space for cleaning and fumigation of records shall be provided as given in **8.3.**

8.3 Fumigation

8.3.1 *Vacuum Fumigation*

Vacuum fumigation chamber of 10 cubic metres capacity requires a space of 60 m^2 for equipment and handling of documents. This chamber can fumigate 25 to 30 linear metres of records in one operation.

9 REPAIR AND REHABILITATION

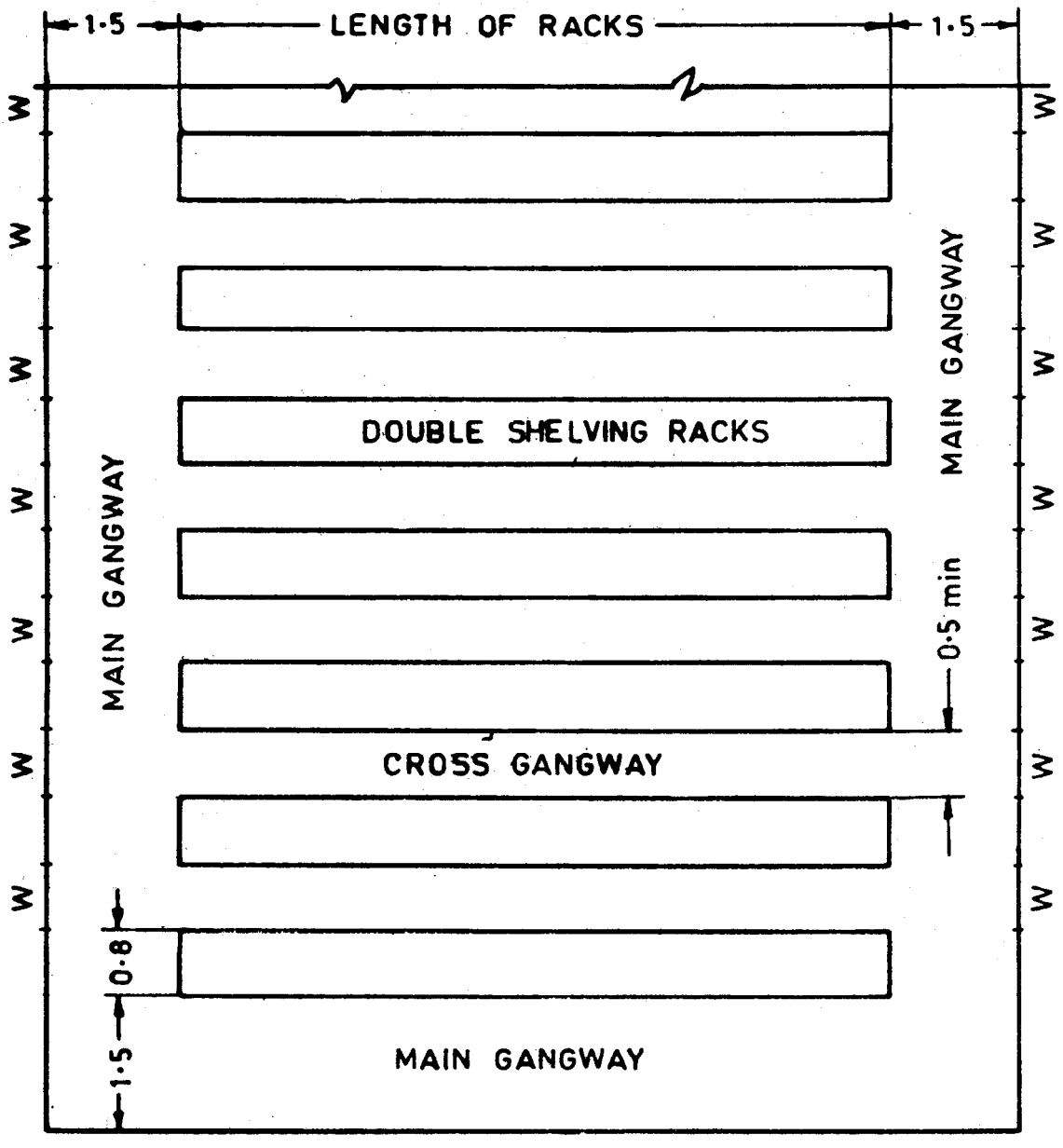
9.1 Repair and Rehabilitation Room

Proximity of repair and rehabilitation room to the stack area is desirable. The area required per worker is 5 m^2 subject to a minimum of 20 m^2 for the repair and rehabilitation room.

10 RESEARCH ROOM

10.1 Research room shall be so located that it can be conveniently approached from the main entrance; it shall also be conveniently served from all parts of the stack room.

10.2 The walls and ceiling of research rooms may be acoustically treated to minimize noise, and the floor shall have a noiseless covering.



W = Window

All dimensions in millimetres.

FIG. 2 TYPICAL LAYOUT OF STACK ROOM (SCHEMATIC)

10.3 An area of 7 m² shall be provided for each scholar.

10.4 Enclosed space for temporary housing of records deposited or requisitioned by the scholars shall also be provided.

10.5 For reading of microfilms, cubicles of 5 m² area shall be provided.

11 ADMINISTRATIVE ACCOMMODATION

11.1 Administrative accommodation shall provide for the following:

a) Space for officers	15 m² per person
b) Space for administration staff	5 m² per person
c) Space for technical staff engaged in research publications, description of records, etc	10 m² per person
d) Space for stores	As required

12 MICROFILMING AND PHOTO DUPLICATION ROOM

12.1 An area of not less than 40 m^2 shall be provided for accommodating one microfilming camera and processing equipment. For every additional camera, a space of 15 m^2 will be required.

12.2 The location of the room should be such that it is free from the effects of vibrations caused by air-conditioning plants, heavy traffic, etc.

13 BUILDING DESIGN AND CONSTRUCTION

13.1 Building design and construction should take into account the following aspects specially to ensure fire safety at the design and construction stage itself. For details of fire protection, reference shall be made to IS 11460 : 1985.

13.2 Building Design

13.2.1 *Stack Room*

This is the most important and valuable feature of any archive. It is, therefore, essential that it is suitably compartmented, both horizontally and vertically, to ensure that fire in any compartment cannot spread to other compartments.

13.2.1.1 Stack room shall be so oriented as to avoid direct sun through windows, etc.

13.2.1.2 Relative position of each stack room, *vis-a-vis* other rooms or buildings, shall be such that any fire outside the stack room cannot spread to it. As far as possible, stack room should be separated from administrative room.

13.2.1.3 Where the stack room has several tiers of racks, each tier shall be separated from the succeeding one by a non-combustible floor. The intervening floor shall not have any aperture in it. Any arrangement where the book racks extend through several floor levels and the stack floors are merely platforms which provide a walkway through the stacks and result in slot-like openings, between the stacks and the walk-ways, shall be strictly avoided to prevent rapid uninterrupted upward spread of a possible fire.

13.2.1.4 Each stack room shall be divided into compartments so that no single compartment shall have a floor area exceeding 400 m^2. Where possible, the area of each compartment may be further reduced.

13.2.1.5 Each compartmentation wall shall entirely be of non-combustible construction with a fire resistance rating of not less than two hours. No opening shall be provided in any compartmentation wall except for a door, if unavoidable. In all such cases, the door shall be a self-closing fire/smoke check door with a fire resistance rating of not less than one hour.

13.2.1.6 Windows in the side walls of the stack room shall be opposite each cross gangway. Each window shall be provided with glazed shutters and shall be additionally protected with wire fabric. The wire fabric shall be of suitable mesh to prevent squirrels, rats, etc, from passing through. The glazed shutter, when fully open, shall not project into the gangway.

13.2.1.7 The stack room shall be so located that it is easily accessible from and proximate to every part of this archive.

13.2.1.8 Each stack room shall be at the same level as the rest of the floor served by it. The stack room shall not be provided with any threshold.

13.2.1.9 In multi-storeyed buildings where lift(s) may be required for vertical movement of books/records, the lift(s) shall be electrically operated with landing at each level in the stack room. The lift(s) shall have solid non-combustible doors with a fire resistance rating of 2 hours and shall not be used as passenger lift(s). Where passenger lifts are required, these shall be installed separately and away from the stack rooms.

13.2.1.10 Stack room shall be so designed that it cannot get flooded and rain water cannot enter it through windows, ventilators, etc. The room shall be damp-proof.

13.2.1.11 All services, such as a lighting and electrical fittings, air-conditioning, sound insulation, etc, as may be necessary, shall be considered at the initial stages of design of the archive and its building.

13.2.2 *Other Rooms*

Other rooms may be located according to the convenience of the user in relation to day-to-day working. Some examples are given below.

13.2.2.1 Cubicles, rooms for group study, committee room, etc, may be placed in a separate wing or on a separate floor.

13.2.2.2 Exhibition room may be combined with the entrance lobby or may be placed as close to it as possible.

13.2.2.3 Rooms in proximity of or directly communicating with the catalogue room and the stack room shall be filled with self-closing fire/smoke check doors not less than 1 hour rating.

13.2.2.4 All windows and ventilators in the rooms accessible from outside shall be provided with wire fabric to avoid pilferage.

13.2.2.5 Canteen for the readers and the staff shall preferably be placed in an independent building well separated from other buildings. Where this is not possible, the canteen kitchen shall be isolated from the adjoining rooms by fire resisting walls of not less than 2 hours rating, fitted with self-closing fire/smoke check doors of not less than 1 hour rating. In any case, the canteen shall not be placed in proximity of the catalogue and the stack rooms.

13.2.3 *Compound*

A compound with adequate open space all round the buildings shall be provided to ensure adequate separation of buildings from the adjoining property and adequate space for internal roads, car park, water sources for fire fighting and an incinerator.

13.2.3.1 Entry gate to the compound shall have a clear width of not less than 4·5 m.

13.2.3.2 Paved access-ways shall be provided within the compound to enable vehicles to have access to parking areas and fire appliances to have access to water sources and various buildings in the complex. Each of these access-ways shall be not less than 5 m in width. Turnings shall be widened and hand standing(s) provided, where necessary, to ensure easy manoeuverability of fire appliances.

13.2.3.3 Parking area for cars and/or other vehicles shall be placed well away (not less than 6 m clear) from any building.

13.2.3.4 Location of the incinerator shall be well away from any building or adjacent property. Where necessary, a suitable fire resisting enclosure of suitable height shall be provided for the incinerator to ensure its fire separation from the buildings.

13.2.3.5 Paved surface shall be provided up to a distance of 3 m around each building so as to prevent the growth of grass or other vegetation in that area.

13.3 Building Construction

Building/compartment of a building for housing books/valuable vital and permanent records shall have a fire resistance equal to not less than that of Type I construction, as specified in IS 1642 : 1960 and shall comply with the following minimum requirements:

a) Use of combustible materials shall be avoided in the construction of the building/compartment or any portion thereof, including the floor, roof, lining, surface finish, doors, and windows.

b) Each compartment/room for storage of books/records shall be effectively segregated from other compartments/rooms and from other portions of the building, both laterally and vertically. For this purpose, openings between floors in multi-storeyed buildings shall be protected so that a fire on one floor cannot spread to the floors above or below. Stairways, lifts and cable/pipe shaft shall be properly enclosed or protected so that openings do not detract from the ability of the floor assembly to resist the passage of fire. The separating walls/enclosures, including enclosures for all vertical openings, such as, stair-walls, shall have a fire resistance of not less than that of Type I construction, as specified in the National Building Code of India (1983), Part IV Fire protections, with all openings protected by fire/smoke check doors of not less than 1 hour fire resistance.

c) Floors/stagings in storeyed buildings or specially built records facilities shall not be grated or perforated because such construction aids the rapid vertical spread of fire.

d) Roofs of buildings/compartments housing books/records and floors of storeyed records storage facilities shall be leakproof. In the latter case, adequate drainage shall be provided at all floor levels to prevent accumulation of water during fire fighting operations.

14 SANITARY REQUIREMENTS

14.1 The installation and maintenance of sanitary appliances shall conform to IS 2064 : 1973.

14.2 Water closets, urinals, wash-basins and other similar facilities shall be provided in accordance with the requirements laid down for a library in IS 1172 : 1983.

15 LIGHTING

15.1 Lighting shall be provided as given in IS 2672 : 1966.

15.2 Stack Room

At least two independent circuits for lighting, so arranged as to supplement each other, throughout the stack room shall be provided.

15.2.1 All wiring for the purpose of lighting or otherwise shall be enclosed in conduits. The wiring shall be done in accordance with IS 732 (Part 2) : 1983.

15.2.2 The main control switches shall be located outside the stack room in an easily accessible position.

15.2.3 An automatic cutout device for switching off the circuit in case of short-circuiting should be provided as an added safety measure.

16 AIR-CONDITIONING AND VENTILATION

16.1 Uninterrupted air-conditioning of the archival buildings throughout the year for maintaining optimum storage conditions for preservation of the collection is desirable.

16.1.1 The design and installation of air-conditioning equipment shall conform to IS 660 : 1963.

16.2 Where air-conditioning is not provided, provision shall be made for ventilation and movement of air in all parts of the stack room providing for a minimum of three air changes per hour.

16.3 Passage to air-conditioned stacks shall be through a vestibule.

17 NOISE CONTROL

17.1 Internal noise consisting generally of conversation, frictional noise (chairs scrapping the floor and the impact of heels on hard floor) and mechanical noises (from book hoists and typewriters) shall be controlled effectively, for example, by using noise absorbing materials in ceiling, walls, floors and partitioning surfaces.

17.1.1 All legs of movable furniture should be provided with rubber shoes. The book trolleys should be with rubber tyres.

17.2 The maximum acceptable noise level in a library should be 40 to 45 dB.

17.3 For details of methods for achieving noise reduction and sound insulation, reference shall be made to IS 1950 : 1962.

ANNEX A

(*Clause* 2.1)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
660 : 1963	Safety code for mechanical refrigeration (*revised*)
732 (Part 2) : 1983	Code of practice for electrical wiring installations: Part 2 Design and construction (*second revision*)
1172 : 1983	Code of basic requirements for water supply, drainage and sanitation (*third revision*)
1642 : 1989	Code of pratice for fire safety of buildings (general): Details of construction (*first revision*)
1950 : 1962	Code of practice for sound insulation of non-industrial buildings
2064 : 1973	Code of practice for selection, installation and maintenance of sanitary appliances (*first revision*)
2672 : 1966	Code of practice for library lighting
6313 (Part 1) : 1981	Code of practice for anti-termite measures in buildings: Part 1 Constructional measures (*first revision*)
6313 (Part 2) : 1981	Code of pratice for anti-termite measures in buildings: Part 2 Pre-constructional chemical treatment measures (*first revision*)
6313 (Part 3) : 1981	Code of practice for anti-termite measures in buildings: Part 3 Treatment for existing buildings (*first revision*)
11460 : 1985	Code of practice for fire safety of libraries and archives

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Revision of Indian Standards

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