NFPA No.
220
File: 200 Series
Building Construction

Standard Types of
BUILDING CONSTRUCTION

May
1954

Price: Twenty-five Cents*

NATIONAL FIRE PROTECTION ASSOCIATION
International
60 Batterymarch St., Boston 10, Mass.

2M-6-54 R. & S. *Discount for quantities Printed in U. S. A.

NATIONAL FIRE PROTECTION ASSOCIATION

INTERNATIONAL

Executive Office: 60 Batterymarch St., Boston 10, Mass.

The National Fire Protection Association was organized in 1896 to promote the science and improve the methods of fire protection and prevention, to obtain and circulate information on these subjects and to secure the cooperation of its members in establishing proper safeguards against loss of life and property by fire. Its membership includes over a hundred and eighty national and regional societies and associations (list on outside back cover) and more than fifteen thousand individuals, corporations, and organizations. Anyone interested may become a member; membership information is available on request.

This pamphlet is one of a large number of publications on fire safety issued by the Association; a complete list is available without charge on request. The standards, prepared by the technical committees of the National Fire Protection Association and adopted in the annual meetings of the Association, are intended to prescribe reasonable measures for minimizing losses of life and property by fire. All interests concerned have opportunity through the National Fire Protection Association to participate in the development of the standards and to secure impartial consideration of matters affecting them.

NFPA standards are purely advisory as far as the Association is concerned, but are widely used by law enforcing authorities in addition to their general use as guides to fire-safety.

Definitions

The official NFPA definitions of "shall", "should" and "approved" are:

SHALL is intended to indicate requirements.

SHOULD is intended to indicate recommendations, or that which is advised but not required.

APPROVED refers to approval by the authority having jurisdiction.

Units of measurements used here are U. S. standard. 1 U. S. gallon= 0.83 Imperial gallons=3.785 liters.

Approved Equipment

The National Fire Protection Association does not "approve" individual items of fire protection equipment, materials or services. The standards are prepared, as far as practicable, in terms of required performance, avoiding specifications of materials, devices or methods so phrased as to preclude obtaining the desired results by other means. The suitability of devices and materials for installation under these standards is indicated by the listings of nationally recognized testing laboratories, whose findings are customarily used as a guide to approval by agencies applying these standards. Underwriters' Laboratories, Inc., Underwriters' Laboratories of Canada and the Factory Mutual Laboratories test devices and materials for use in accordance with the appropriate standards, and publish lists which are available on request.

Standard Types of Building Construction.

NFPA No. 220—1954

The following text on Standard Types of Building Construction is the result of several years consideration of the subject by the Building Construction Committee and is intended to supersede all previous NFPA classifications, which date back to 1901.

In 1952, the Committee submitted a tentative standard which was adopted by the Association at its 1952 Annual Meeting. The present text is a revision of the 1952 standard and was adopted by the National Fire Protection Association at the 1954 Annual Meeting, Washington, D. C., May 17-21, 1954.

It is the purpose of this standard to establish definitions of types of building construction as a guide to other NFPA committees and others who may wish to specify structural requirements without detailing specific assemblies of materials.

*Serving in a personal capacity.

STANDARD TYPES OF BUILDING CONSTRUCTION. NFPA No. 220—1954

Introduction.

This standard outlines standard types of building construction for the guidance of committees operating under the procedure of the National Fire Protection Association.

The fire resistance of building construction varies with the susceptibility to damage by fire of the building materials used, and the degree of fire protection, if any, provided for the structural members. Fire resistance ratings of structural members shall be determined as described in "Standard Method of Fire Test of Building Construction and Materials," a standard prepared by a joint committee of the American Society for Testing Materials, the Associated Factory Mutual Fire Insurance Companies, the National Board of Fire Underwriters, National Bureau of Standards, National Fire Protection Association and Underwriters' Laboratories, Inc., under procedure of the American Standards Association (NFPA No. 251, ASTM No. E119, ASA No. A2.1). The above standard is published as a pamphlet and in National Fire Codes, Vol. III, Building Construction and Equipment, by the National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass., and in the Book of Standards by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

In this standard only those factors considered necessary to the classification of building types have been included, so that it will be necessary for the user to consider the influence of location, occupancy, exterior exposure, possibility of mechanical damage to fireproofing, and other features which may impose additional requirements for safeguarding life and property, as commonly covered in detail in building codes. In addition, fire detection and extinguishing facilities, both public and private, available or to be provided, will influence the use of the terms in this standard.

This standard provides the following classifications of building types:

Fire-resistive construction	Ordinary construction
Heavy timber construction	Wood frame construction
Noncombustible construction	

Fire-Resistive Construction.

Definition: That type of construction in which the structural members including walls, partitions, columns, floor and roof constructions are of noncombustible materials with fire resistance ratings not less than those specified in the following table.

The two classifications are identified by the required fire resistance of floors as a matter of convenience.

Fire Resistance Rating of Structural Members in Hours	Classification	
	3-hour	2-hour
Bearing walls or bearing portions of walls, exterior or interior	4	3
Bearing walls and bearing partitions must have adequate stability under fire conditions in addition to the specified fire resistance rating.		
Nonbearing walls or portions of walls, exterior or interior	NC	NC
NC-Noncombustible. Fire resistance may be required in such walls by conditions such as fire exposure, location with respect to lot lines, occupancy or other pertinent conditions.		
Columns, girders and trusses, supporting one floor or roof only	3	2
Columns, girders and trusses, supporting more than the above	4	3
Floor construction, including slabs, beams and joists	3	2
Roof construction, including slabs, beams and joints	2	1½
Interior partitions enclosing stairways and other openings through floors	2	2
One-hour noncombustible partitions may be permitted under certain conditions.		

Heavy Timber Construction.

Definition: That type of construction in which bearing walls or bearing portions of walls are of noncombustible materials having a minimum fire resistance of two hours and stability under fire conditions; nonbearing exterior walls are of noncombustible construction; columns, beams and girders are of heavy timber, solid or laminated; floor and roof construction are of wood without concealed spaces, except as permitted in paragraph (c) below. Fire resistance may be required for nonbearing exterior walls and fire resistance additional to that speci-

fied may be required in bearing walls or bearing portions of walls, by conditions such as occupancy, location with respect to lot lines, fire exposure and other pertinent conditions. (Dimensions given in the following paragraphs are nominal dimensions.)

(a). Columns, if of wood, shall be not less than 8 inches in any dimension. Beams and girders, if of wood, shall be not less than 6 inches in least dimension nor less than 10 inches in depth. Interior structural members, columns, beams, girders or trusses, of materials other than wood and having fire resistance ratings not less than 1 hour, may be substituted for heavy timber members.

(b). Floors shall be constructed of splined or tongued and grooved plank not less than 3 inches in thickness covered with 1 inch flooring, laid cross-wise or diagonally, or of laminated planks not less than 4 inches width, set on edge close together, spiked at intervals of 18 inches and covered with 1 inch flooring.

(c). Timber arches or trusses may be used to support roof loads. The framing members shall be not less than 4 inches by 6 inches, except that spaced members may be composed of two or more pieces not less than 3 inches in thickness when blocked solidly throughout their intervening spaces or when such spaces are tightly closed by a continuous wood cover plate of not less than 2 inches thickness secured to the underside of members. Splice scabs shall be not less than 3 inches thickness.

(d). Roof decks shall be of matched or splined plank not less than 2 inches thickness, or of laminated planks not less than 3 inches width, set on edge close together and laid as required for floors. Beams and girders supporting roof loads only shall be not less than 6 inches in least dimension.

(e). Interior partitions enclosing stairways and other openings through floors shall have not less than 1 hour fire resistance.

Noncombustible Construction.

Definition: That type of construction in which the walls, partitions and structural members are of noncombustible construction not qualifying as Fire Resistive Construction.

"Noncombustible" as applied to a building material or combination of materials means that which will not ignite and burn when subjected to fire, such as the following: steel, iron, brick, tile, concrete, slate, asbestos, glass or plasters.

Protected Noncombustible Construction. Noncombustible Construction may be designated Protected Noncombustible Construction when bearing walls or bearing portions of walls, exterior or interior, are of noncombustible construction having a minimum fire resistance rating of 2 hours and are stable under fire conditions; roof and floor construction and their supports have 1 hour fire resistance; and stairways and other openings through floor are enclosed with partitions having 1 hour fire resistance.

Ordinary Construction.

Definition: That type of construction in which exterior bearing walls or bearing portions of exterior walls are of noncombustible construction having a minimum fire resistance of two hours and stability under fire conditions; nonbearing exterior walls are of noncombustible construction; and in which the roofs, floors and interior framing are wholly or partly of wood (or other combustible material) of smaller dimensions than required for Heavy Timber Construction. Fire resistance may be required for nonbearing exterior walls, and fire resistance additional to that specified may be required for bearing walls or bearing portions of walls, by conditions such as occupancy, location with respect to lot lines, fire exposure and other pertinent conditions.

Protected Ordinary Construction. Definition: Ordinary Construction may be designated Protected Ordinary Construction when roof and floor construction and their supports have 1-hour fire resistance, and stairways and other openings through floors are enclosed with partitions having 1-hour fire resistance.

Wood Frame Construction.

Definition: That type of construction in which exterior walls, bearing walls and partitions, floor and roof constructions and their supports are of wood or other combustible material, when the construction does not qualify as Heavy Timber Construction or Ordinary Construction.

Protected Wood Frame Construction. Definition: Wood Frame Construction may be designated Protected Wood Frame Construction when roof and floor construction and their supports have 1-hour fire resistance, and stairways and other openings through floors are enclosed with partitions having 1-hour fire resistance.