

crete such reinforcing may be omitted when the plastering is not more than 1 inch thick.

Plaster protections of over 1 inch in thickness shall have an additional layer of metal lath, embedded not more than 3/4 of an inch from the surface and securely tied to the supporting members.

Lath.

4.—Lath used in fire resistive coverings shall conform to the following requirements.

Metal lath, or wire mesh, used as a plaster base or tie shall weigh not less than 2.2 pounds per square yard, and shall have 2 1/2 or more meshes per inch or equivalent.

Metal lath used on walls and ceilings and fastened to studs or joists or other supports shall be of a weight not less than that shown in the following table.

Table with columns: Spacing of Supports, Weight per Square Yard in Lbs. For Walls, For Ceilings. Rows include 12", 16", 20", 24" spacings.

Gypsum plaster board shall be not less than 3/8 inches in thickness and shall be composed of gypsum, with not more than 15 per cent, by weight, of fiber intimately mixed.

Measurement of Protective Covering.

5.—The dimensions given as the required thickness of fire resistive materials shall be the thickness outside the extreme edges of structural shapes of iron or steel, except that projecting edges of lugs and brackets shall be given a minimum protection of 1 inch in thickness. For reinforced concrete members the thickness shall be the clear distance outside of the reinforcement.

Plaster protection when applied on metal lath shall be measured to the back of the metal lath.

Miscellaneous Requirements.

6.—Where the fire resistive covering is exposed to damage, it shall be jacketed or otherwise adequately protected. No pipes, conduits, wires, cables or other similar materials shall be embedded in the required fire resistive covering.

Section 10.2—FIRE RESISTANCE RATING OF MATERIALS

Walls and Partitions.

10.201 Walls and partitions required to be of fire resistive construction shall be constructed as provided in this section for the rating required.

Structural Requirements.

(a) The thicknesses and construction of walls and partitions as given in this section are the minimum for the fire resistance ratings shown and all walls and partitions shall conform to the other provisions of this Code as regards structural requirements.

Rating for Various Walls and Partitions.

(b) Walls and partitions of the materials and construction types listed herein shall, for the purposes of this Code, have the fire resistance ratings as specified in the following table.

MINIMUM THICKNESS OF VARIOUS WALLS AND PARTITIONS FOR GIVEN MATERIALS AND CONSTRUCTION

Table with columns: Fire Resistance Rating in Hours (4 hrs, 3 hrs, 2 hrs, 1 hr), Minimum Thickness in Inches (4 in, 3 in, 2 in, 1 in). Rows include Brick, Concrete, Hollow Clay Tile, Gypsum Block, etc.

REINFORCED CONCRETE—Not less than 0.4 of 1 per cent reinforcement in each direction

GYPNUM BLOCK PARTITIONS

HOLLOW PARTITIONS

COMBUSTIBLE STUDDING—First stopp

NOTE:—Plaster of this mean plastered with not less than 3/4 inch gypsum or portland cement plaster on each side of the wall or partition.

10.202 Columns, beams, girders and trusses required to be of fire resistive construction shall be constructed as provided in this section for the rating required.

Rating for Various Protections.

(a) Columns, beams, girders and trusses of the materials and construction types listed herein shall, for the purposes of this Code, have the fire resistance ratings as specified in the following table:

MINIMUM THICKNESS OF PROTECTIVE COVERINGS OF COLUMNS, BEAMS, GIRDERS AND TRUSSES FOR GIVEN FIRE RESISTANCE RATINGS

Table with columns: Fire Resistance Rating in Hours (4 hrs, 3 hrs, 2 hrs, 1 hr), Minimum Thickness in Inches (4 in, 3 in, 2 in, 1 in). Rows include Silicious coarse aggregate, Reinforced Concrete, etc.

CAST IRON COLUMNS

REINFORCED CONCRETE COLUMNS

STEEL BEAMS, GIRDERS AND TRUSSES

CONCRETE JOIST CONSTRUCTION, not over 24 inches between joists, 3/4 inch protection below steel

WOOD JOISTS, double floor above

NOTE: Silicious aggregate is aggregate containing 60 per cent or more of quartz, chert, flint or similar materials.

Concrete aggregates whose mineral composition is unknown or undetermined shall, for the application of this Code, be classed as silicious aggregate.

Plaster, where not called for in the above table, shall add 1 hour's rating to any of the above protection. Such plaster shall be not less than 3/4 inch in thickness and shall be applied on metal lath, except that when the plaster is applied to masonry or reinforced concrete the metal lath may be omitted.

Floors and Roofs.

10.203 Floors and roofs required to be of fire resistive construction shall be constructed as provided in this section for the rating required.

(a) Floors and roofs of the materials and construction types listed herein shall, for the purposes of this Code, have the fire resistance ratings as specified in the following table:

Table with columns: Fire Resistance Rating in Hours (4 hrs, 3 hrs, 2 hrs, 1 hr), Minimum Thickness in Inches (4 in, 3 in, 2 in, 1 in). Rows include Reinforced Concrete Slabs, Concrete Protection below steel, etc.

MINIMUM THICKNESS OF PROTECTIVE COVERING OF FLOOR AND ROOF MATERIALS AND CONSTRUCTION

NOTE: Silicious aggregate is aggregate containing 60 per cent or more of quartz, chert, flint or similar materials.

Concrete aggregates whose mineral composition is unknown or undetermined shall, for the application of this Code, be classed as silicious aggregate.

Plaster, where not called for in the above table, shall add 1 hour's rating to any of the above protection. Such plaster shall be not less than 3/4 inch in thickness and shall be applied on metal lath, except that when the plaster is applied to masonry or reinforced concrete the metal lath may be omitted.

Section 10.3—PROTECTION OF VERTICAL OPENINGS

General Requirements.

10.301. Shafts and other vertical openings in all buildings where they are required to be enclosed shall be enclosed in fire resistive enclosures affording protection at least equivalent to that required for the floors of the building, shall conform to the requirements of Section 6.202 and to the following additional requirements:

(a) All stairways, elevators, escalators, ramps, dumbwaiters, and other vertical openings extending thru more than one floor shall be enclosed in a fire resistive enclosure as required in this section. No unobstructed vertical opening shall pierce more than one floor and the enclosure shall be such that smoke from a fire on any floor shall not effect more than one additional floor.

(b) In all buildings every stairway or series of openings required to be enclosed shall be protected by an enclosure having a fire resistance rating of at least one hour in the case of shafts of less than 9 square feet in area and of at least 2 hours in the case of shafts of greater area unless greater protection is required in other sections of this Code. Such partitions shall be continuous thru all stories. Openings in such shafts shall be limited to those necessary for the purpose of the shaft and shall be properly protected.

(c) Such enclosures need not be provided in single or two-family residences.

Section 10.4 PROTECTION OF WALL AND PARTITION OPENINGS

General Requirements.

10.401 Openings in fire walls, fire division walls, and all other fire separations shall be as few as the nature of the business will permit, giving due consideration to the possible necessity of their use as an exit in case of fire.

All openings in walls, partitions, party walls, fire separations, stair enclosures, or other partitions or walls required to be of fire resistive construction shall be provided with fire doors or windows, such doors and windows shall be smoke tight, shall have a fire resistance appropriate to the wall or partition in which they are placed, shall be of a type to function properly under the conditions of installation and exposure and shall be installed in the manner prescribed in the Regulations of the National Board of Fire Underwriters for the Protection of the Openings in Walls and Partitions Against Fire" Dated October 15th, 1930.

Openings in Exterior Walls.

(a) Openings in exterior walls shall be restricted and protected as required in section 4.401.

(b) All doors, which together with their frames, sills and hardware will successfully pass the following test, shall be classed as fire doors.

Test. The size of test sample shall conform to the dimensions required for the maximum size of wall opening for which the door is designed, in every respect except 5 feet by 7 feet, and shall be mounted and hung in a continuous fire upon one side for at least 1 hour, the temperature increasing to eighteen hundred degrees Fahrenheit within 30 minutes, and then rising gradually to a final temperature of 2,000 degrees at the end of the hour. Immediately after the expiration of the fire test, while the door is still hot, it shall be subjected to a stream of water from a 3/4 inch nozzle 20 feet distant from the door under a pressure of 60 pounds per square inch at the nozzle. The stream shall be kept moving over the test sample for 1 minute.

A door to successfully pass this test shall not develop serious structural weakness; shall prevent the development of flames, on the unexposed side of the door, which extend more than 4 inches from the door surface; shall prevent temperatures in excess of 300 degrees Fahrenheit 36 inches from the unexposed side of the door or 6 inches to the side of either jamb of the door.

Classification.

(a) Fire doors shall be classed as Class A, Class B, Class C and Class D fire doors in accordance with their ability to resist the action of fire. Class A fire doors being the most fire resistive.

1.—Class A fire doors shall be of the hollow metal, sheet

metal, steel rolling, 3 ply wood-core tin-clad or other approved type door, and shall be constructed so as to be of equivalent strength and fire resistive qualities as those doors approved by the Underwriter's Laboratories for Class A openings.

Class B Fire Doors. 2.—Class B fire doors shall be of any of the types listed for Class A doors or may be metal clad or 3-ply wood-core tin-clad type doors and shall be constructed so as to be of equivalent strength and fire resistive qualities as those doors approved by the Underwriter's Laboratories for Class B openings.

Class C Fire Doors. 3.—Class C fire doors may be of any of the types permitted for Class B fire doors and may be provided with panels of an area of not to exceed 1296 square inches of wired glass of a thickness not less than 1/4 inch, and shall be constructed so as to be of equivalent strength and fire resistive qualities as those doors approved by the Underwriter's Laboratories for Class C openings.

Class D Fire Doors. 4.—Class D fire doors shall be doors constructed of wood of comparatively low resin content and shall be not less than 1 1/2 inches in thickness in any part and shall be doors of equivalent strength and fire resistive qualities.

5.—All Class A and B fire doors shall be automatic or self-closing. (See definitions Chap. II.)

Where Required.

(b) Fire doors shall be installed in the locations and shall be of the class specified in this Section.

1.—Class A fire doors shall be installed on both sides of wall when protecting openings in fire walls or absolute fire separations, and shall also be installed where required by other provisions of this Code.

2.—Class B fire doors shall be installed in all openings in vertical shafts requiring type 1 or type 2 enclosures, in all openings in special fire separations and where required by other provisions of this Code.

3.—Class C fire doors shall be installed in all openings in type 3 stair enclosures, for openings in corridor partitions in Type I and II buildings and where required by other provisions of this Code.

4.—Class D fire doors shall be installed in all openings connecting private garages and Class B occupancies, in all openings in Ordinary fire separations, as defined in Section 4.501 (b), and where required by other provisions of this Code.

Inspection.

(c) Every type of fire door, before being used, shall have been subjected to the required fire test in a properly equipped laboratory approved by the Building Inspector. All doors to receive the same rating as the door tested shall bear the identifying mark of some organization of independent inspectors acceptable to the Building Inspector certifying that the doors have been inspected during the manufacture thereof and are constructed in accordance with the specifications of the Underwriter's Laboratories labels as door for Class A, B and C openings shall be accepted as Class A, B and C doors as defined in this Code. Class D doors need not be inspected during manufacture nor shall it be required to bear an identifying label.

(d) Fire doors shall be installed in accordance with methods and materials which have been tested and shown to develop the degree of fire resistance equivalent to that provided by the door.

Fire Windows and Shutters.

10.403 Fire windows and shutters may be of any type, which will successfully pass the fire test as specified in section 10.402, except that the duration of the test need not exceed 1500 degrees Fahrenheit for the full duration of the test and there shall be no restriction of transmitted heat.

Windows of the following construction, or windows bearing the label of the Underwriter's Laboratories, shall be accepted as fire resistive windows.

Fire resistive windows shall have frames and sash of solid metal bars or hollow metal forms fabricated by pressing, welding or crimping together. No solder, or other alloy fusible at less than 1800 degrees Fahrenheit, shall be used in the fabrication of such windows. All glass used in fire resistive windows shall be wire glass of not less than 3/4 inch thickness and no single light shall exceed 720 square inches in area. Grooves not less than 3/8 inch in depth providing 1/4 inch bearing shall be provided in hollow frames and not less than 1/4 inch grooves and 3/8 inch bearing shall be provided in solid metal frames.

Section 10.5 ROOFS AND ROOF COVERINGS.

Roof Coverings

10.501 Roof coverings of all buildings shall conform to the following requirements.

Classification. (a) Roof coverings shall be classified as Class 1, 2, or 3, depending upon their resistance to fire and to the spread of fire, Class 1 being the most fire resistive.

Class 1. Class 1 roofings shall include those which are effective against a moderate fire exposure, afford a moderate degree of heat insulation, do not slip from position, and possess no flying brand hazard. Such shall consist of brick, tile, stone, concrete, slate, sheet metal, or built up roofing of the following type: 3 layers of 16 pound asphalt saturated felt surfaced with not less than 300 pounds of crushed stone per 100 square feet, or construction of at least equivalent fire resistive qualities.

Class 2. Class 2 roofings shall include those roof coverings which are effective against light fire exposure, are not readily flammable, afford a slight degree of heat insulation, do not slip from position, and possess no flying brand hazard. Such shall consist of asphalt shingles, roll roofing or other materials of equivalent fire resistive qualities.

Class 3. Class 3 roofings shall include wood shingles conforming to the following requirements: Wood shingles must be edge grain and of a thickness measuring not less than 5 shingles to 2 inches at the butt, and not less than 16 inches long to be laid not more than 5 inches to the weather for 16 inch shingles and not more than 5 1/2 inches for 18 inch shingles, or other materials of equivalent fire resistive qualities. All wood shingles shall be nailed firmly with copper, zinc, zinc-coated or commercially pure iron nails of at least 12 gauge and not less than 1 1/4 inches long. Each shingle shall be nailed with at least 2 nails driven into the supporting roof construction.

Roof coverings conforming to the requirements of the Underwriter's Laboratories for Class A or B roofings shall be accepted as Class 1 roofings.

Roof coverings conforming to the requirements of the Underwriter's Laboratories for Class C roofings shall be accepted as Class 2 roofings.

Roof Covering Required by Location.

(b) All roofs of new buildings in the fire limits shall be constructed of Class 1 roofings; roofs of existing buildings in the fire limits may be replaced by Class 2 roofing, except that roofs of existing one and two-family residences within the fire limits may be replaced by class 3 roofings.

All roofs of new buildings outside the fire limits shall be of Class 2 roofings, except one and two-family residences and frame buildings, which may be of Class 3 roofing.

Roof Covering Required by Type of Construction.

(c) Roofs of buildings required to be of type I or II construction