Chapter Ind 51

DEFINITIONS AND STANDARDS

Ind 51.001 Fire-resistive construction. (1) A building is of fire-resistive construction if all the walls, partitions, piers, columns, floors, ceilings, roof and stairs are built of incombustible material, except as hereinafter provided, and if all metallic structural members are protected by an incombustible fire-resistive covering, all as specified in this section.

(2) All exterior and inner court walls shall be of not less than 4-hour fire-resistive construction, as specified in section Ind 51.05, except that non-load bearing exterior walls which face streets, alleys, outer or inner courts 20 feet or more in width may be constructed of incombustible panels of not less than 1-hour fire-resistive construction.

Effective January 1, 1972 (2) is created to read:

(2) All exterior and inner court walls shall be of not less than 1-hour fire-resistive construction, as specified in section Ind 51.04, except that nonload bearing exterior walls which face streets, alleys, outer or inner courts 20 feet or more in width may be constructed of noncombustible panels of not less than 1-hour fire-resistive construction.

(a) Non-load bearing exterior walls which face streets, alleys, outer or inner courts 30 feet or more in width may be constructed of incombustible panels with no fire-resistive rating.

(3) Interior partitions shall be constructed of incombustible materials, except that dividing partitions in stores, offices, and similar places not exceeding 3,000 square feet in area, occupied by one tenant only, may be constructed of wood panels or similar light construction.

(a) Partitions entirely within apartments having a floor area of not more than 800 square feet shall be of 1-hour fire-resistive construction but such partitions may be constructed with wood studs as specified in section Ind 51.05 Doors in such partitions may be wood panel doors.

Effective January 1, 1972 (3) (a) is created to read:

(3) (a) Partitions entirely within apartments having a floor area of not more than 500 square feet shall be of 1-hour fire-resistive construction but such partitions may be constructed with wood studs as specified in section Ind 51.04. Doors in such partitions may be wood panel doors.

(4) Enclosures for elevator or dumbwaiter shafts, vent shafts, stair wells, waste paper chutes and other similar vertical shafts shall be of 2-hour fire-resistive construction as specified in section Ind 51.05, with all interior openings therein protected by fire-resistive doors or windows as specified in section Ind 51.09.

Effective January 1, 1972 (4) is created to read:

(4) Enclosures for elevator or dumbwaiter shafts, vent shafts, stairwells, waste paper chutes and other similar vertical shafts shall be of 2-hour fire-resistive construction as specified in section Ind 51.04 with all interior openings therein protected by fire-resistive doors or windows as specified in section Ind 51.047.

(5) Structural framework shall be of structural steel or reinforced concrete. All structural steel members, not including structural members for elevators and elevator enclosures shall be thoroughly fire-protected with not less than 4-hour fire-resistive protection for columns, beams and girders and 3-hour fire-resistive protection for floors, for all buildings more than 8 stories or 85 feet in height; and with not less than 3-hour fire-resistive protection for columns, beams and girders and 2-hour fire-resistive protection for floors, for all buildings which are 8 stories or 85 feet or less in height. All such fire-resistive protection shall be as specified in section Ind 51.04.

(6) All reinforced concrete columns, beams and girders shall be thoroughly fire-protected with 4-hour fire-resistive protection, and all floors, joists and slabs shall be thoroughly fire-protected with not less than 3-hour fire-resistive protection for all buildings more than 8 stories or 85 feet in height; and with not less than 3-hour fire-resistive protection for columns, beams and girders and 2-hour fire-resistive protection for all floors, joists and slabs, for all buildings which are 8 stories or 85 feet or less in height. All such fire-resistive protection shall be as specified in section Ind 51.04.

(7) Floor construction shall consist of any approved floor system providing not less than 3-hour fire-resistive construction for all buildings more than 8 stories or 85 feet in height; and providing not less than 2-hour fire-resistive construction, for buildings which are 8 stories or 85 feet or less in height. All such fire-resistive protection shall be as specified in section Ind 51.06.

Effective January 1, 1972 (7) is created to read:

(7) Floor construction shall consist of any approved floor system providing not less than 3-hour fire-resistive construction for all buildings more than 8 stories or 85 feet in height; and providing not less than 2-hour fire-resistive construction, for buildings which are 8 stories or 85 feet or less in height. All such fire-resistive protection shall be as specified in section Ind 51.04.

(8) Roofs shall be constructed as specified for floors, except that wood sheathing of not less than 2 inch nominal thickness may be used for buildings not more than 8 stories or 85 feet in height when all of such sheathing is more than 25 feet distant from any floor, balcony or gallery, or wood sheathing of not less than 1 inch nominal thickness may be used at any distance not exceeding 5 feet from a 2-hour fire-resistive attic floor, and when such sheathing is covered

on the outside by a fire-retardant roof covering, except as provided under occupancy requirements.

Effective January 1, 1972 (8) is created to read:

(8) Roofs shall be constructed as specified for floors, except that wood sheathing of not less than 2 inch nominal thickness may be used for buildings not more than 3 stories or 35 feet in height when all of such sheathing is more than 25 feet distant from any floor, balcony or gallery, or wood sheathing of not less than 1 inch nominal thickness may be used at any distance not exceeding 5 feet from a 2-hour fire-resistive attic floor, and when such sheathing is covered on the outside by a class "A" or equal fire-retardant roof covering, except as provided under occupancy requirements.

(9) Stairs and stair platforms shall be constructed of reinforced concrete, iron or steel. Brick, concrete, marble, tile, terrazzo or other hard incombustible materials may be used for the finish of treads and risers.

(10) Doors and windows may be of wood except as otherwise specified under occupancy requirements and in Wis. Adm. Code sections Ind 51.17, 51.19, 51.20 and 52.21.

(11) Projections from the building, including bays, oriels, and penthouses, together with other roof structures shall be constructed of incombustible material as specified in this section.

(12) Wood may be used for finished floors and also for trim, including picture molds, chair rails, wainscoting and baseboards, if spaces between wood sleepers and wood grounds are fire-stopped with incombustible materials.

(13) Acoustical materials may be used on ceilings and on walls from a level of 6 feet above the floor provided they are attached directly thereto, and all spaces between wood grounds are fire-stopped with incombustible materials.

History: 1-2-56; am. (2); (2) (a); (3); (3) (a); Register, June, 1956, No. 6, eff. 7-1-56; am. (2) intro. par., (2) (a), (4), (7) and (8), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (2) intro. par., (3) (a), (4), (7) and (8), eff. 8-1-71 and expiring 1-1-72; cr. (2) intro. par., (3) (a), (4), (7) and (8) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.01 Mill construction. (1) In a building of mill construction the structural frame shall consist of steel or iron which shall be fire-protected, of reinforced concrete, of masonry, or of heavy timbers, except that in buildings not exceeding one story in height the structural steel or iron may have the fire-protection omitted.

(2) Exterior and court walls shall be 2-hour fire-resistive construction as specified in section Ind 51.05, except that non-load bearing exterior walls which face streets, alleys, outer or inner courts 30 feet or more in width may be constructed of incombustible panels of not less than 1-hour fire-resistive construction.

Effective January 1, 1972 (2) is created to read:

(2) Exterior and court walls shall be 2-hour fire-resistive construction as specified in section Ind 51.04, except that nonload bearing exterior walls which face streets, alleys, outer or inner courts 20 feet or more in width may be constructed of noncombustible panels of not less than 1-hour fire-resistive construction.

(a) Non-load bearing exterior walls which face streets, alleys, outer or inner courts 30 feet or more in width may be constructed of incombustible panels with no fire-resistive rating.

(3) All wood columns in the structural frame shall be directly

superimposed, one above the other, and shall be provided with steel or cast iron caps, unless the floor or roof beams and girders are carried on blocks securely fastened to the columns and with the loads transmitted to the columns by metal ring or similar type connectors or by caps of otherwise suitable material. They shall not rest on wood bolsters or floor timbers. Wood bolsters may be used to support roof timbers. No wood column shall be less than 8 inches nominal in its least dimension, and no beam, girder or joist shall be less than 6 inches nominal in its least dimension nor less than 45 square inches in cross-sectional area. Where wood arches or wood trusses are used to support roof loads, the framing members shall not be less than 4 inches by 6 inches, nominal dimensions. In no case shall masonry or reinforced concrete be supported on wood construction except tile or concrete floor finishes not more than 3 inches in thickness.

(4) For structural steel or iron members, the fire-protection shall be not less than 3-hour fire-resistive protection for columns and not less than 2-hour fire-resistive protection for beams, girders and floor systems, as specified in section Ind 51.04.

(5) All reinforcement in concrete columns shall be fire-protected with not less than 3-hour fire-resistive protection, and all joists, beams, girders, slabs and steel floors with not less than 2-hour fire-resistive protection outside of all steel reinforcing as specified in section Ind 51.04.

(6) Wood floor construction shall be of tongues and grooves, or splined lumber not less than 3 inches nominal thickness, with a top layer of flooring of one inch nominal thickness laid thereon, or of solid lumber placed on edge and securely spiked together to make a floor not less than 4 inches nominal thickness.

(7) Roof construction shall be as specified for floors, except that the minimum nominal thickness shall be 2 inches. Roof coverings shall be a fire-retardant roofing as specified in section Ind 51.07 and shall be required over all combustible roof construction.

Effective January 1, 1972 (7) is created to read:

(7) Roof construction shall be as specified for floors, except that the minimum nominal thickness shall be 2 inches. Roof coverings shall be class "A" or equal fire-retardant roofing as specified in section Ind 51.04 and shall be required over all combustible roof construction.

(8) Enclosures for elevator or dumbwaiter shafts, vent shafts, stair wells, wastepaper chutes, and other similar vertical shafts shall be of 2-hour fire-resistive construction as specified in section Ind 51.05, with all interior openings therein protected by fire-resistive doors as specified in section Ind 51.09

Effective January 1, 1972 (8) is created to read:

(8) Enclosures for elevator or dumbwaiter shafts, vent shafts, stairwells, wastepaper chutes and other similar vertical shafts shall be of 2-hour fire-resistive construction as specified in section Ind 51.04, with all interior openings therein protected by fire-resistive doors as specified in section Ind 51.047.

(9) Stair construction may be of wood in buildings not exceeding 3 stories in height. In buildings 4 or more stories in height all stairs and stair construction shall be as required for fire-resistive construction specified in section Ind 51.001.

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(10) Doors and windows may be of wood except as otherwise specified under occupancy requirements in this code.

History: 1-2-56; am. (2); (2) (a); Register, June, 1956, No. 6, eff. 7-1-56; r. and recr. Register, September, 1959, No. 45, eff. 10-1-59; am. (2) intro. par., (7) and (8), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (2) intro. par., (7) and (8) eff. 8-1-71 and exp. 1-1-72; and cr. (2) intro. par., (7) and (8) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.02 Ordinary construction. (1) A building is of ordinary construction if all enclosing walls are constructed entirely of incombustible material, and the roof has a fire-retardant covering as specified in section Ind 51.07.

Effective January 1, 1972 (1) is created to read:
Ind 51.02 Ordinary construction. (1) A building is of ordinary construction if All enclosing walls are constructed entirely of a noncombustible material, and the roof has a class "C" or equal fire-retardant covering as specified in section Ind 51.04

(2) The interior structural framework shall be of steel, iron, reinforced concrete, masonry, or wood. Fire protection of steel, iron or wood structural members may be omitted, except that all members carrying masonry in buildings more than one story in height shall be fire protected with not less than one-hour protection as specified in section Ind 51.04.

(3) Floors, roof and partitions may be of wood but no joist, rafter, or stud shall be less than 2 inches in nominal thickness. In buildings of 4 stories or more in height, the lower side of all metal or wood floor or roof construction as specified in section Ind 51.06, unless otherwise provided under the occupancy requirements.

Effective January 1, 1972 (3) is created to read:
(3) Floors, roof and partitions may be of wood but no joist, rafter, or stud shall be less than 2 inches in nominal thickness. In buildings of 4 stories or more in height, the lower side of all metal or wood floor or roof construction shall be protected by a ceiling of 1-hour fire-resistive construction as specified in section Ind 51.04, unless otherwise provided under the occupancy requirements.

(4) Stairs may be of steel, iron, reinforced concrete, masonry or wood, with enclosures as specified under occupancy requirements.

(5) Bays, oriels and similar projections from the walls shall be constructed of incombustible materials as specified in this section. Penthouses and other roof structures shall be of not less than one-hour fire-resistive construction as specified in section Ind 51.06.

Effective January 1, 1972 (5) and (6) are created to read:
(5) Bays, oriels and similar projections from the walls shall be constructed of noncombustible materials as specified in this section. Penthouses and other roof structures shall be of not less than 1-hour fire-resistive construction as specified in section Ind 51.04.
(6) Roof coverings shall be class "C" or equal.

History: 1-2-56; r. and recr., Register, September, 1959, No. 45, eff. 10-1-59; am. (1), (2) and (5), and cr. (6), Register, February, 1971, No. 182, eff. 7-1-71; r. (6) and r. and recr. (1) (3) and (5) eff. 8-1-71 and expiring 1-1-72; and cr. (1), (3), (5) and (6) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.03 Frame construction. (1) A building is of frame construction if the structural parts and enclosing walls are of wood, or of wood in combination with other materials. If such enclosing walls are veneered, encased or faced with stone, brick, tile, concrete, plaster or metal, the building is also termed a frame building.

Effective January 1, 1972 (2) is created to read as follows:
(2) Roof coverings shall be class "C" or equal.

History: 1-2-56; cr. (2), Register, February, 1971, No. 182, eff. 7-1-71; eff. 8-1-71; cr. (2) eff. 1-1-72, Register, July, 1971, No. 187.

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NOTE: SECTIONS IND 51.04 THROUGH 51.07 ARE REPEALED EFFECTIVE JANUARY 1, 1972. SEE SPECIAL NOTICE SECTION FOLLOWING SECTION IND 51.07.

Ind 51.04 Fire-resistive standards; structural members. (1) MINIMUM THICKNESS IN INCHES FOR VARIOUS FIRE-RESISTIVE MATERIALS.

MINIMUM THICKNESS IN INCHES FOR VARIOUS FIRE-RESISTIVE MATERIALS

Struct. Steel Parts to be Protected	Fire Resistive Material Used	Minimum Thickness of Material in Inches for the Following Fire-Resistive Periods			
		4 Hr.	3 Hr.	2 Hr.	1 Hr.
Steel or Cast Iron Columns; All Members of Primary Trusses or Primary Girders	Concrete	2	2	1½	1
	Gunite	2	1½	1	¾
	Brick of Clay, Shale, Concrete or Sand Lime All Spaces Filled	3¾	3¾	2¼	2¼
	Clay Tile or Hay-tile or Waffle or Concrete Block or Gypsum Block or Poured Gypsum. All Spaces Filled. Metal Ties in Horizontal Joints	2 Thicknesses 2 Inches Each	4	2	2
	Portland Cement Plaster on Metal Lath	.....	.....	1¼ with ¼ airspace	1
	Clay Tile, End Const. have less than 25% Voids with all Spaces Filled and Metal Ties in Horizontal Joints	3¾	3¾	1¼ No Filling	1¾ No Filling
Webs and Flanges of Steel Beams and Secondary Girders	Concrete	2	2	1½	1
	Gunite	2	1½	1	¾
	Brick of Clay, Shale, Concrete or Sand Lime	2¼	2¼	2¼	2¼
	Clay Tile, Concrete Block, Gypsum Block or Poured Gypsum	2	2	2	2
	Metal Lath and Gypsum or Portland Cement Plaster	.....	.....	1¼	1
Reinforcing Steel in Columns, Beams Girders & Trusses	Concrete	1½	1½	1½	1
Reinforcing Steel in Reinforced Concrete Joists	Concrete	1¼	1¼	1	¾
Reinforcing Steel in Reinforced Concrete Slabs	Concrete	1	1	¾	¾
Reinforcing Steel in Reinforced Concrete Slabs	Gypsum	1	1	¾	¾

(2) CONCRETE. Concrete shall have a coarse aggregate of limestone, calcareous gravel, traprock, blast furnace slag, burnt clay, burnt shale or other coarse aggregates containing not more than 65% of siliceous material such as granite, sandstone, chert, flint or quartz.

(3) APPROVAL OF OTHER MATERIALS. Other materials, assemblies and thicknesses of necessary strength and durability for the use intended and which have successfully performed under tests made by a recognized laboratory in accordance with the requirements of the "Standard Specifications for Fire Tests of Building Construction and Materials" (C19–33) of the American Society for Testing Materials, shall be accepted for specific ratings in addition to those prescribed in this section.

History: 1–2–56; r. Register, February, 1971, No. 182, eff. 7–1–71; cr. Register, July, 1971, No. 187, eff. 8–1–71 and expiring 1–1–72.

Ind 51.05 Fire-resistive standards; walls and partitions.

(1) Wall Construction	Minimum Thickness in Inches, Face to Face			
	4 Hr.	3 Hr.	2 Hr.	1 Hr.
Solid Brick, Load Bearing, Unplastered	8	8	8	8
Solid Brick, Non-Load Bearing, Unplastered	8	8	4	4
Solid Brick, Load Bearing, Plastered Two Sides	8	8	8	8
Solid Brick, Non-Load Bearing, Plastered Two Sides	8	8	4	4
Hollow Clay Tile, Load Bearing, Unplastered	12 4-Cell	12 3-Cell	8 4-Cell	8 2-Cell
Hollow Clay Tile, Non-Load Bearing, Unplastered	12 4-Cell	8 3-Cell	6 2-Cell	4 1-Cell
Hollow Clay Tile, Load Bearing, Plastered Two Sides	12 3-Cell	8 3-Cell	8 2-Cell	8 2-Cell
Hollow Clay Tile, Non-Load Bearing, Plastered Two Sides	12 3-Cell	8 3-Cell	4 1-Cell	3 1-Cell
Concrete Block, Load Bearing, Unplastered	12	12	8	8
Concrete Block, Non-Load Bearing, Unplastered	12	12	6	4
Concrete Block, Load Bearing, Plastered Two Sides	12	8	8	8
Concrete Block, Non-Load Bearing, Plastered Two Sides	12	8	4	3
Solid Plain Concrete, Load Bearing	8	8	8	6
Solid Plain Concrete, Non-Load Bearing	8	6	4	4
Solid Reinforced Concrete, Load Bearing	8	5	4	4
Solid Reinforced Concrete, Non-Load Bearing	6	5	4	3
Solid Gypsum Block, Non-Load Bearing, Unplastered	6	6	3	3
Solid Gypsum Block, Non-Load Bearing, Plastered Two Sides	6	4	3	3
Hollow Gypsum Block, Non-Load Bearing, Unplastered	8	8	4	4
Hollow Gypsum Block, Non-Load Bearing, Plastered Two Sides	8	8	4	4
Solid Cement or Gypsum Plaster on Metal Base, Non-Load Bearing	------	------	2	2
Hollow Partitions, Lath and Plaster shall have a minimum thickness of ⅝ inch. Lath may be of metal or ½ inch perforated gypsum. If constructed of wood studs, they shall be fire-stopped.	------	------	------	5

(2) Other materials, assemblies and thicknesses of necessary strength and durability for the use intended and which have successfully performed under tests made by a recognized laboratory in accordance with the requirements of the "Standard Specifications for Fire Tests of Building Construction and Materials" (C19–33) of the American Society for Testing Materials, shall be accepted for specific ratings in addition to those prescribed in this section.

(3) Thicknesses as established in this section shall be construed as establishing minimum requirements for fire-resistance and shall not preclude the application of other requirements of this code where considerations of strength, durability or stability require greater thicknesses.

(4) Where plaster is required in this section it shall have a minimum thickness of ½ inch except that for hollow partitions the thickness shall be not less than ⅝ inch. Either Portland cement or gypsum plaster may be used.

History: 1–2–56; r, Register, February, 1971, No. 182, eff. 7–1–71; cr. Register, July, 1971, No. 187, eff. 8–1–71 and expiring 1–1–72.

Ind 51.06 Fire-resistive floor construction. (1) Fire-resistive floor construction shall be accepted for the following respective degrees of fire-resistive protection when constructed as specified in this section. They shall be constructed entirely of incombustible materials.

(2) FOUR-HOUR CONSTRUCTION. Four-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum or solid masonry slabs or arches not less than 4 inches in thickness, or shall consist of hollow masonry slabs or arches not less than 4 inches in thickness with a top covering of not less than 2 inches of solid masonry, or shall consist of steel joists or steel floor construction protected with fire-resistive materials as tabulated in this section. Except in the case of steel joisted construction, all reinforcing, tie rods and supporting structural members in such floors shall be protected with not less than 4-hour fire-resistive construction as specified in section Ind 51.04.

(3) THREE-HOUR CONSTRUCTION. Three-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum or solid masonry slabs or arches not less than 2½ inches in thickness, or shall consist of hollow masonry slabs or arches not less than 4 inches in thickness with a top covering of solid masonry not less than 1½ inches in thickness, or shall consist of steel joists or steel floor construction protected with fire-resistive materials as tabulated in this section. Except in the case of steel joisted construction all reinforcing, tie rods and supporting structural members in such floor construction shall be protected with not less than 3-hour fire-resistive construction as specified in section Ind 51.04.

(4) TWO-HOUR CONSTRUCTION. Two-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum or solid masonry slabs or arches not less than 2½ inches in thickness, or shall consist of hollow masonry slabs or arches not less than 3 inches in thickness with a top covering of not less than one inch of solid masonry, or shall consist of steel joists or steel floor construction protected with fire-resistive materials as tabulated in this section. Except in the case of steel joisted construction all reinforcing, tie rods and

supporting structural members in such floor construction shall be protected with not less than 2-hour fire-resistive construction as specified in section Ind 51.04.

(5) ONE-HOUR CONSTRUCTION. One-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum or solid masonry slabs not less than 2½ inches in thickness, or shall consist of hollow masonry slabs or arches not less than 3 inches in thickness with all joints in such hollow unit construction thoroughly filled with cement or gypsum mortar, or shall consist of steel joists or steel floor construction protected with fire-resistive materials as tabulated in this section, or shall consist of wood joisted construction with a double wood floor on top (the sub-floor not less than ¾ inch thick, and the total thickness of the two layers not less than 1¼ inches thick) and with a fire-resistive ceiling as tabulated in this section, securely fastened to or suspended from the under side of such joists, except that the metal lath and plaster ceiling shall not be required below the lowest floor joist over unusable space.

(6) Except in the case of steel joisted construction, all reinforcing, tie rods and supporting structural members shall be protected with not less than one-hour fire-resistive construction as specified in section Ind 51.04.

(7) MINIMUM PROTECTION FOR METAL AND WOOD JOISTS BASED ON TIME PERIODS FOR VARIOUS INSULATING MATERIALS.

MINIMUM PROTECTION FOR METAL AND WOOD JOISTS BASED ON TIME PERIODS FOR VARIOUS INSULATING MATERIALS

Joists to be Protected	Insulating Material	Minimum thickness of material in inches for the following fire-resistive materials			
		4 Hr.	3 Hr.	2 Hr.	1 Hr.
Ceiling protection of steel joists, where incombustible slab not less than 2½ in. thick is placed above	Metal or wire lath and gypsum or Portland cement plaster, concrete, burned clay products or cement	2	1½	1	¾
	Gypsum	1½	1	½	¾
Ceiling Protection of wood joists with double floor on top	Metal or wire lath and gypsum or Portland cement plaster, ½ in. perforated gypsum lath, ½ in. gypsum plaster, joints reinforced with 3 in. wide strips of metal lath.				¾

(8) All flat ceilings where the ceiling protection for beams, girders or flat slabs is suspended to form a free air space between the member and the protection, the protection thickness may be ½ inch less than required in the tabulation contained in this section for flat ceiling protection, but no thickness shall be less than ¾ inch minimum protection of metal and wood joists.

(9) In any reinforced concrete floor construction which includes a metal lath and cement or gypsum plastered ceiling on the under side,

not less than ¾ inch thick, the required slab thickness may be reduced ½ inch but in no case shall be less than 2½ inches thick.

History: 1-2-56; r. Register, February, 1971, No. 182, eff. 7-1-71; cr. Register, July, 1971, No. 187, eff. 8-1-71, expiring 1-1-72.

Ind 51.07 Fire retardant roof coverings. (1) Fire-retardant roof coverings have no time resistance ratings by governmental testing laboratories. The Underwriters' Laboratories in their "List of Inspected Fire Protection Equipment and Materials" classifies their degree of fire-resistance by the letters A, B and C. Class A roof coverings have the highest resistance and Class C the lowest.

(2) Roof coverings on buildings of fire-resistive and mill construction shall be not less than Class A, or equal, those on buildings of ordinary construction shall be not less than Class B, or equal, and those on frame buildings shall be not less than Class C, or equal.

(3) The department of industry, labor and human relations will accept roof coverings for different fire-resistance values as established by, and if installed according to, the requirements of the Underwriters' Laboratories.

Note: The Underwriters' Laboratories "List of Inspected Materials" is obtainable from the Fire Insurance Rating Bureau and Fire Insurance Agencies.

(4) The department of industry, labor and human relations will approve, subject to the provisions of this section, any roof covering which has developed the required fire-resistance in tests as specified in the "Standard Specifications of Fire Tests of Building Construction and Materials" (A.S.T.M. Designation C19-33) when conducted by a nationally recognized testing laboratory.

History: 1-2-56; r. Register, February, 1971, No. 182, eff. 7-1-71; cr. Register, July, 1971, No. 187, eff. 8-1-71 expiring 1-1-72.

SPECIAL NOTICE!

THE FOLLOWING RULES FOR "FIRE-RESISTIVE STANDARDS FOR MATERIALS OF CONSTRUCTION," SECTIONS IND 51.04 THROUGH IND 51.048, WILL BECOME EFFECTIVE JANUARY 1, 1972.

Fire-Resistive Standards for Materials of Construction

Ind 51.04 Scope. This section shall include standards applicable to various types of fire-resistive construction. Requirements established herein are considered minimum safety standards and will not necessarily result in the most advantageous insurance rates.

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r. eff. 8-1-71 and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.041 Definitions. (1) APPROVED. Means approval granted by the department of industry, labor and human relations.

(2) AUTOMATIC. Automatic as applied to a fire protective device, is one which functions without human intervention and is actuated as a result of the predetermined temperature rise, rate of rise of temperature, combustion products or smoke density such as an auto-

matic sprinkler system, automatic fire door, automatic fire shutter, or automatic fire vent.

(3) CEILING PROTECTION. The fire protection membrane suspended beneath the floor or ceiling construction which, when included with the construction, develops the fire-resistive rating for the overall assembly.

(4) COMBUSTIBLE CONSTRUCTION. An assembly such as a wall, floor or roof having components of combustible material.

(5) CLOSING DEVICE (FIRE DOOR). A closing device is one which will close the door, and be adequate to latch and/or hold hinged or sliding door in a closed position.

(a) *Automatic.* An automatic closing device is one which functions without human intervention, and is actuated as a result of the predetermined temperature rise, rate of rise of temperature, combustion products or smoke density.

(b) *Self-closing.* A self-closing device is one which will maintain the door in a closed position.

(6) COMBUSTIBLE MATERIAL. All materials not classified as "noncombustible" are considered combustible. This property of a material does not relate to its ability to structurally perform under fire exposure. The degree of combustibility is not defined by standard fire test procedures.

(7) DEPARTMENT. Means the department of industry, labor and human relations.

(8) FIRE DOOR. A door so constructed as to give protection against the passage of fire.

(9) FIRE DOOR ASSEMBLY. The assembly of fire door and its accessories, including all hardware, frames, closing devices and their anchors, so constructed as to give protection against the passage of fire.

(10) FIRE-RESISTIVE CLASSIFICATION. Fire-resistive classification is the time in hours during which a material or assembly continues to exhibit fire resistance under conditions of tests and performance as specified in ASTM E-119, ASTM E-152 and ASTM E-163.

(11) FIRE-RESISTIVE RATING. Refer to fire-resistive classification.

(12) FIRE RESISTANCE AND FIRE-RESISTIVE MATERIAL. Having the property to withstand fire or give protection from it. As applied to elements of building, it is characterized by the ability to confine a fire or to continue to perform a given structural function, or both.

(13) FIRE-RESISTIVE PROTECTION. An insulating material applied directly, attached to, or suspended from a structural assembly, to maintain the structural integrity of a member or system for the specified time rating.

(14) FIRE-RESISTIVE PROTECTION, DIRECTLY APPLIED. A coating material applied directly to the structural element for the purpose of fire protection.

(15) FIRE-RETARDANT ROOF COVERINGS. Roof coverings shall be classified on the basis of protection provided against fire originating outside the building or structure on which they have been installed.

(a) Class A roof coverings are those which are effective against severe fire exposures (meeting the three methods for fire tests of class A roof coverings (ASTM Standard E-108)) and possess no flying brand hazard.

(b) Class B roof coverings are those which are effective against moderate fire exposures (meeting the three methods for fire tests of class B roof coverings (ASTM Standard E-108)) and possess no flying brand hazard.

(c) Class C roof coverings are those which are effective against light fire exposures (meeting the three methods for fire tests of class C roof coverings (ASTM Standard E-108)) and possess no flying brand hazard.

(16) FIRE RETARDANT—TREATED WOOD. Fire-retardant wood includes lumber or plywood that has been treated with a fire-retardant chemical to provide classifications (flame-spread (FSC) and fuel contributed (FCC)) of 25 or less by ASTM method E-84, shows no progressive combustion during 30 minutes of fire exposure by this method, and is so labeled. Fire-retardant wood for decorative and interior finish purposes provides reduced flame-spread classification (FSC) by ASTM method E-84 as specified by the code for materials used in the particular applications.

(17) FIRE WINDOW ASSEMBLY. A fire window includes glass, frame, hardware and anchors constructed and glazed to give protection against the passage of flame.

(18) FLAME-SPREAD CLASSIFICATION. Flame-spread classification (FSC) is a comparative rating of the measure of flame-spread on a surface of a material or assembly as determined under conditions of tests and performance as specified in ASTM E-84.

(19) FLAME-SPREAD RATING. Refer to flame-spread classification.

(20) FUEL CONTRIBUTED CLASSIFICATION. Fuel contributed classification (FCC) is a comparative measure of the fuel contribution of a material or an assembly in the flame-spread test per ASTM E-84.

(21) NONCOMBUSTIBLE CONSTRUCTION. An assembly such as a wall, floor or roof having components of noncombustible material.

(22) NONCOMBUSTIBLE MATERIAL. A noncombustible material is one which, in the form in which it is used, meets one of the requirements 1., 2. or 3. listed below. Materials used adjacent to or in contact with heat-producing appliances, warm air ducts, plenums and chimneys shall be classified as noncombustible only on the basis of requirement 1. Noncombustible does not apply to the flame-spread characteristics of interior finish or trim materials. No material shall be classed as noncombustible building construction material which is subject to increase in combustibility or flame-spread classification (FSC) beyond the limits herein established through the effects of age, moisture or other atmospheric conditions.

1. Materials which pass the test procedure of ASTM E-136 for defining noncombustibility of elementary materials when exposed to a furnace temperature of 1,382 degrees F. for a minimum period of 5 minutes, and do not cause a temperature rise of the surface or

interior thermocouples in excess of 54 degrees F. above the furnace air temperature at the beginning of the test and which do not flame after an exposure of 30 seconds.

2. Materials having a structural base of noncombustible material as defined in paragraph 1., with a surfacing not more than ½ inch thick which has a flame-spread classification (FSC) not greater than 50 when tested in accordance with the method of test for surface burning characteristics of building materials (ASTM E-84).

3. Materials other than defined in paragraphs 1. and 2., having a flame-spread classification (FSC) not greater than 25 without evidence of continued progressive combustion, and of such composition that surfaces that would be exposed by cutting through the material in any way would not have a flame-spread classification (FSC) greater than 25 when tested in accordance with the method of test for surface burning characteristics of building materials (ASTM E-84).

(23) RESTRAINED SUPPORT. A flexural member where the supports and/or the adjacent construction provides complete or partial restraint against rotation of the ends of the member and/or partial restraint against horizontal displacement when subject to a gravity load and/or temperature change.

(24) SIMPLE SUPPORT. A flexural member where the supports and/or the adjacent construction allows free rotation of the ends of the member and horizontal displacement when subject to a gravity load and/or a temperature change.

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r. eff. 8-1-71, and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.042 General requirements. (1) Construction details and quality of material used for these systems must be those used by the testing laboratory for the test, and/or those dictated by good construction practice.

(2) Connection of structural members. (a) The minimum fire-resistive protection of a connection shall be equal to the maximum required for the members to which it is attached.

(3) For structural components with a fire-resistive rating obtained by test with restrained ends, the supporting structure shall be designed to provide for this restraint.

(4) ASTM standard methods of test. (a) All products manufactured and tested according to ASTM standard methods prior to effective dates of standards specified in "Fire-Resistive Standards for Materials of Construction" shall be accepted unless the ASTM standard method used in the test is judged to be inadequate in comparison with the currently adopted standard method.

(5) The heat transmission requirements of ASTM E-119 (25b), with the exception of high hazard areas, penal and health care facilities and warehouses for combustible materials, may be reduced to one-half (½) of the hourly rating required by this code, but not less than one hour.

NOTE: For ASTM E-119 Standard adopted see Ind 51.25 (20).

(a) The fire-resistive rating for structural integrity required by this code shall be maintained where the heat transmission criteria has been reduced.

(6) The use of fire-resistive protection implies consent by owner to maintain material in a serviceable condition. Where this protection is concealed, provisions shall be made for periodic visual inspection of the structural insulating material at each story.

NOTE: Definition of owner—see 101.01 (13), Wis Stats.

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r. eff. 8-1-71, and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.043 Approved rating methods. (1) Ratings of fire-resistive assemblies shall be determined by one of the following methods:

(a) Test by approved testing laboratories (see Ind 51.044).

(b) Typical examples as listed in this code in lieu of approved test (see Ind 51.045).

(c) Approved method of calculation in lieu of approved test (see Ind 51.046).

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r. eff. 8-1-71, and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.044 Approved testing laboratories. (1) Fire rating tests conducted according to table 1 listed ASTM standards shall be acceptable if conducted by the recognized testing laboratory for referenced test.

NOTE: Other testing laboratories will be recognized as an approved agency if accepted in writing by the department.

TABLE 1

Name of Recognized Laboratories	ASTM Standard Tests					
	E-84	E-108	E-119	E-136	E-152	E-163
Forest Prod. Lab. *Madison, Wis.*	.....	.....	X	.....	X	.....
Nat'l. Bureau of Stds., Washington, D.C.	.....	.....	X	X	.....	.....
Ohio State Univ., Columbus, Ohio	.....	.....	X	X	X	X
Portland Cement Assoc., Skokie, Ill.	.....	.....	X	.....	.....	.....
Southwest Research Inst., San Antonio, Tex.	X	.....	.....	.....	.....	.....
Underwriters' Lab., Inc., Chicago, Ill.	X	X	X	.....	X	X
Underwriters' Lab., Inc., Scarborough, Ont., Canada	X	X	X	X	X	X
Univ. of Calif., Berkeley, Calif.	.....	X	X	.....	.....	X

*NOTE: Reference based on research and development data. Facility is not available for conducting routine rating tests.

NOTE: For column identification and specific standards adopted, see subsections Ind 51.25 (88) thru (93).

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r. eff. 8-1-71, and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.045 Typical examples of Fire-Resistive Structural Components. (1) Basic design and construction for specified fire-resistive protection of structural components listed in table 2, including references (a) through (p), shall be acceptable.

NOTE: The following table is based on performance. Interpretation of various test data and/or data from ASTM E-119 test (see table 2).

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(a) Types of concrete.

1. Type I—normal weight concrete with limestone, calcareous gravel and air-cooled slag aggregate.

2. Type II—normal weight concrete with siliceous gravel, granite or quartz aggregate containing more than 40% quartz, chert or flint. Values given for type I apply except where values are tabulated for type II.

3. Type III—lightweight aggregate with expanded slag, shale or clay aggregate. Includes sanded—lightweight concretes not over 115 lbs. per cu. ft. oven-dried density.

(b) Cover on reinforcing steel is for sides and bottoms. Where tensile reinforcing elements have different cover, the tabulated cover is the average of the minimum values of the individual elements. The cover of an individual element shall not be less than ½ the tabulated value. Top cover to be a minimum of ¾ inch.

(c) For the heat transmission requirements of floor and roof construction, the thickness of the top slab may be reduced if noncombustible insulation is directly applied to either side of the slab and provided the U-factor is equaled or reduced.

(d) The thickness of top slab is in accordance with ASTM E-119 heat transmission requirements. For variations in thickness of top slab see section Ind 51.042 (5).

NOTE: For ASTM E-119 standard adopted see Ind 51.25 (90).

(e) Longitudinal joints between individual precast floor or roof units, or individual wall units shall be installed as tested or shall be grouted solid for the thickness required by the fire-resistive rating. Noncombustible insulation may be substituted for the grout if the U-factor is equaled or reduced providing the integrity of insulation remains as installed. The topping used in floor or roof units may be included.

(f) Type I Hollow Masonry is a masonry with calcareous or siliceous aggregate. Type II Hollow Masonry is a masonry with expanded slag, clay, shale or pumice aggregate.

(g) Equivalent thickness $= \frac{\text{Total volume minus volume of voids}}{\text{length times height}}$

(h) t_e-equivalent thickness $= \frac{\text{Total conc. area minus area of void}}{\text{width}}$

(i) Clay, shale, concrete or sand lime—with less than 25% voids or with all spaces filled.

(j) 1½ inch space between column and masonry unit—no fill required.

(k) For restrained conditions, thickness of fire protection may be reduced if substantiated by test data or calculation method.

(l) Elements with this minimum size are recognized for heavy timber construction, acceptable for certain buildings in lieu of one hour noncombustible construction.

(m) Where combustible members are framed into a wall, the wall shall be of such thickness or be so constructed that the fire barrier between the member and the opposite face of the wall, or

tween adjacent members set in from opposite sides will be 93% of the equivalent thickness shown in table 2.

(n) Cover thickness on reinforcing steel as indicated is based on continuity of system. For simple span conditions increase cover thickness by 50%.

(p) Wire mesh reinforced and with a minimum area of 0.015 inches square per foot of length or equivalent.

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r. eff. 8-1-71, and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.046 Calculation method. (1) The rational design of structural members for fire resistance shall be submitted to the department and shall be based on the type of span (simple or restrained), the magnitude of longitudinal restraint, accepted structural engineering principals and methods.

(a) Appropriate research data and design criteria to substantiate the method, interpreting between known information, shall accompany the above material and shall include:

1. Time—temperature relationship ASTM E-110.

2. The temperature—strength characteristics of the structural components.

3. The time—temperature characteristics of the insulating material, at temperature range designated by ASTM E-119.

4. The expansion characteristics of the materials comprising the member, at the temperature range designated by ASTM E-119.

NOTE: 1. For ASTM E-119 standard adopted see Ind 51.25 (90).

2. The department will accept published research data from Portland Cement Association, American Iron & Steel Institute, and American Institute of Steel Construction, Inc.

5. The safety factor of not less than 1.0 shall be maintained at the end of the time requirement for the full design live and dead load.

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r. eff. 8-1-71, and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.047 Openings in fire rated construction. (1) Openings in fire rated construction where permitted by other sections of the code shall satisfy the following appropriate requirements.

(a) *Fire door assemblies.* 1. Openings. Where openings are permitted in fire rated walls protected with door assemblies they shall be time rated and labeled as 3, 1½, 1, ¾ hour by an approved laboratory and tested in accordance with ASTM E-152 standard method.

NOTE: 1. For ASTM E-152 standard adopted see section Ind 51.25 (92).

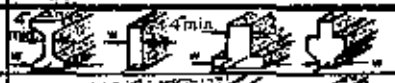
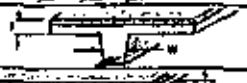
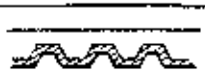
2. Three-hour rated doors are accepted for all openings in 3 and 4-hour fire-resistive walls. One and one-half (1½) hour rated doors are accepted for all openings in 2-hour fire-resistive interior and exterior walls. Three-quarter (¾) hour rated doors are accepted for openings in 1-hour fire-resistive walls and openings to exterior fire escapes. Door assemblies with glued solid wood core flush doors, 1¾ inches thick, quality certified as meeting National Woodwork Manufacturers Association Industry Standard IS-1-69, and in addition possessing no core voids, may be used where the occupancy sections of this code permit.

2. The door assemblies shall be installed with frame, hinges, latches, closing devices and counterweights in accordance with methods and standards approved by the department.

3. Methods of securing door frame to adjacent construction shall be illustrated on the plans submitted to the department for approval.

NOTE: The department will accept recommended practices for installation covered in "Standard for Fire Door and Windows" N.F.P.A. No. 80.

TYPICAL EXAMPLES OF FIRE RESISTIVE STRUCTURAL COMPONENTS, TABLE 2

TYPE OF CONSTRUCTION		No.	STRUCTURAL COMPONENTS	SKETCHES	INSULATING MATERIAL	DESCRIPTION	MINIMUM REQUIREMENTS 4 HR.			3 HR.			2 HR.			1 HR		
COMPONENTS WITHOUT APPLIED PROTECTION	CONCRETE CAST IN PLACE AND PRECAST MILD STEEL REINF.	1.	COLUMNS		CONCRETE TYPE I II & III ⓐⓑ	REINF. COVER	I 2	II 2	III 2	I 2	II 2	III 2	I 1½	II 1½	III 1½	I 1½	II 1½	III 1½
						MIN. DIM. & AREA-SQ. IN.	12-144			10-120			8-64			8-48		
		2.	GIRDERS AND BEAMS		CONCRETE TYPE I II & III ⓐⓑⓝ	REINF. COVER	2	2	2	1½	1½	1½	1½	1½	1½	1	1	1
						WIDTH (w)	8	8	8	8	8	8	6	6	4	4	4	4
		3.	JOISTS & WAFFLES WITHOUT FILLERS OR PARTIAL FILLERS OF TYPE I OR II MASONRY OR CLAY TILE		CONCRETE TYPE I II & III ⓐⓑⓒⓓⓔⓗⓝ	REINF. COVER	1	1	1	1	1	1	¾	¾	¾	¾	¾	¾
						WIDTH WEB (w)	6	6	6	5	5	5	4	4	4	4	4	4
						TH. TOP SLAB (t)	6¾	7	5½	5¾	6¼	4½	4¾	5	3½	3¾	3½	2¾
		4.	SLABS OR JOISTS & WAFFLES WITH TYPE I OR II MASONRY OR CLAY TILE FILLER		CONCRETE TYPE I II & III ⓐⓑⓒⓓⓔⓗⓝ	REINF. COVER	1	1	1	1	1	1	¾	¾	¾	¾	¾	¾
						TOP SLAB (t)	6¾	7	5½	5¾	6¼	4½	4¾	5	3½	3¾	3½	2¾
		5.	WALLS AND PARTITIONS BR'G. & NON-BR'G.		CONCRETE TYPE I II & III ⓐⓑⓔ	REINF. COVER	1	1	1	1	1	1	¾	¾	¾	¾	¾	¾
						THICKNESS (t)	6	6½	5	5	5½	4½	4	4½	4	3	3	3
	CONCRETE PRECAST & CAST IN PLACE POSTTENSION OR PRETENSIONED SIMPLE SPAN	6.	GIRDERS AND BEAMS		CONCRETE TYPE I II & III ⓐⓑⓚ	AVE. COVER (w)	I & II 3½ 11		III 3 10	I & II 3 9½		III 2¾ 9	I & II 2½ 7		III 2 6½	I & II 1¾ 4		III 1¾ 4
		7.	JOISTS AND WAFFLES		CONCRETE TYPE I II & III ⓐⓑⓒⓓⓔⓚ	AVE. COVER	3½		3	3		2¾	2½		2	1¾		1¾
						AVE. WEB TH. (w)	11		10	9½		8	7		6½	4		4
						SLAB TH. (t)	6¾	7	5½	5¾	6	4¾	4¾	5	3¾	3¼	3½	2¾
		8.	SINGLE TEE		CONCRETE TYPE I II & III ⓐⓑⓒⓓⓔⓚ	AVE. COVER	2¾		2¾	1¾		1¾	1¾		1¾	1¾		1¾
						AVE. WEB TH. (w)	8		8	8		8	8		8	4		4
						TOP THICK'S (t)	6¾	7	5½	5¾	6	4¾	4¾	5	3¾	3¼	3½	2¾
		9.	MULTI-TEE UNITS		CONCRETE TYPE I II & III ⓐⓑⓒⓓⓔⓚ	AVE. COVER	BY TEST OR LISTING BY APPROVED TESTING LAB.						2		1¾	1½		1½
						AVE. WEB TH. (w)							4	4	4	2½	2½	2½
						TOP THICK'S (t)							4¾	5	3¾	3¼	3½	2¾
		10.	SOLID & CORED SLABS		CONCRETE TYPE I II & III ⓐⓑⓒⓓⓔⓗⓚ	t_1 OR t_2	6¾	7	5½	5¾	6	4	4¾	5	3¾	3¼	3½	2¾
						AVE. COVER	2½		2¼	2		1¾	1¾		1½	1		1
	MASONRY BEARING AND NON BEARING	11.	UNREINFORCED CONCRETE WALLS & PARTITIONS		CONCRETE TYPE I II & III ⓐⓜ	WALL TH. (t)	6	6½	5	5	5½	4½	4	4½	4	3	3	3
		12.	HOLLOW MASONRY WALLS & PARTITIONS...BLOCK TILE CORED BRICKS CAVITY WALLS		MASONRY TYPE I	EQUIV. THICK'S	6.7			5.7			4.5			3.0		
					MASONRY TYPE II ⓕⓖⓜ	EQUIV. THICK'S	5.7			4.6			3.8			2.6		
		13.	SOLID MASONRY BRICK BLOCK...CLAY TILE WITH LESS THAN 25% VOIDS OR WITH THE CORES FILLED		MASONRY TYPE I & II CLAY, SHALE, CONCRETE, SAND OR LIME ⓜ	WALL TH. (t)	8"			8"			8"			4"		
COMPONENTS WITH DIRECT APPLIED PROTECTION	STEEL	14.	COLUMNS		CONCRETE TYPE I II & III ⓐⓟ	THICKNESS OF (t) PROTECTION	I 2	II 2½	III	I 1½	II 2	III	I 1	II 1½	III	I 1	II 1	III
					SOLID MASONRY ⓘ		3¾	3¾		3¾	3¾		2¼	2¼		2¼	2¼	
		15.	GIRDERS...BEAMS...TRUSSES		CONCRETE TYPE I II & III ⓐⓟ	THICKNESS OF (t) PROTECTION	I 2	II 2½	III	I 1½	II 2	III	I 1	II 1½	III	I 1	II 1	III
		16.	COLUMNS...BEAMS...GIRDERS...TRUSSES...JOISTS & STEEL FLOOR UNITS		SPRAYED FIBER...CEMENTITIOUS MIXTURE...INTUMESCENT PAINTS		BY TESTS...OR LISTING BY APPROVED TESTING LAB.											

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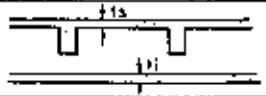
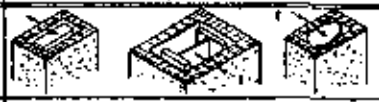
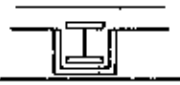
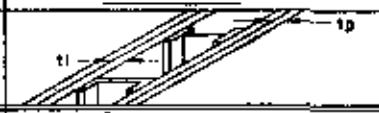
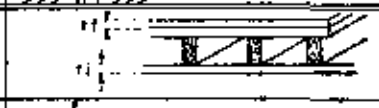
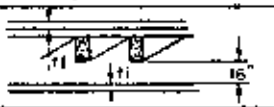
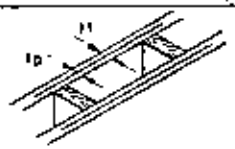
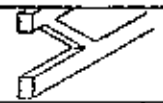
TYPICAL EXAMPLES OF FIRE RESISTIVE STRUCTURAL COMPONENTS, TABLE 2 (CONT.)

TYPE OF CONSTRUCTION		ROW NO.	STRUCTURAL COMPONENTS	SKETCHES	INSULATING MATERIAL	DESCRIPTION	MINIMUM REQUIREMENTS 4 HR.	3 HR.	2 HR.	1 HR.
COMPONENTS WITH SUSPENDED OR ATTACHED PROTECTION	CONC.	17.	CONCRETE JOISTS OR WAFFLE		ⓑ ⓒ ⓓ CONCRETE TYPE I, II OR III 3/4" COVER	t_s THICK OF SLAB	3"	2"		
					VERMICULITE...GYPSUM...OR PERLITE GYPSUM ON METAL LATH	t_i THICK OF INSULATION	1"	3/4"		
	STEEL FRAMING	18.	STEEL COLUMNS		TYPE I & II MASONRY ⓕ 1 1/2" AIR SPACE ⓘ	THICK OF INSULATION	4" SOLID			
		19.	STEEL GIRDERS...BEAMS... TRUSSES...JOISTS, COLUMNS INDIVIDUALLY PROTECTED		SPRAYED FIBRE...CEMENTITIOUS MIXTURE...LATH & PLASTER		BY TESTS...OR APPROVED TESTING LAB.		LISTING	BY
		20.	STEEL BEAMS, GIRDERS, TRUSSES & JOISTS ..W/CEILING PROTECTION & MINIMUM 2 1/2" TH. TYPE I, II OR III CONCRETE SLAB ⓑ ⓒ ⓓ		SPRAYED FIBRE...CEMENTITIOUS MIXTURE...LATH & PLASTER ACOUSTICAL TILE		BY TESTS...OR APPROVED TESTING LAB.		LISTING	BY
		21.	STEEL STUD PARTITION NON BEARING		GYPSUM...PERLITE PLASTER ON PERFORATED GYP. LATH...2 1/2" STUD	t_p PLASTER t_l LATH			3/4" / 3/8"	1/2" / 3/8"
					GYPSUM WALL BOARD...3 5/8" STUD	NO. LAYERS THICK. EACH			TWO 5/8"	ONE 5/8"
	COMBUSTIBLE CONSTRUCTION	22.	WOOD JOISTS MIN. 2" X 10", WOOD FLOOR ATTACHED CEILING		GYPSUM WALL BOARD...2-2" X 10" @ 4'-0" c, 1/8" PLYWOOD FLOORING	t_i INSUL.				5/8"
					GYP. WALL BOARD...2" X 10" @ 16" c 1/2" PLYWOOD OR 1" X 6" T & G. SUB-FLRG	t_i INSUL. t_f FLOORING				5/8" PLYWOOD OR 1" X 3" T & G
		23.	WOOD JOISTS MIN. 2" X 10", WOOD FLOOR SUSPENDED CEILING		NON COMBUSTIBLE ACOUSTICAL TILE W/ 5/8" PLYWOOD	t_i INSUL.				5/8" 1/2" PLYWD
					OR 1" X 4" T. & G. SUB FLOORING	t_f FLOORING				OR 1" X 5" T & G
		24.	WOOD STUD PARTITION MIN. 2" X 4" STUD		GYPSUM WALLBOARD	NO. LAYERS / TH. OF EACH			TWO 5/8"	TWO 3/8"
					GYPSUM PERLITE PLASTER ON 3/8" GYPSUM LATH	t_p			1" PLASTER W/ 1" HEX. MESH	9/16"
					GYPSUM & SAND PLASTER ON U.L. LISTED WIRE LATH	t_l				3/4"
					GYPSUM & VERMICULITE PLASTER ON METAL LATH	t_l				3/4"
ⓕ HEAVY TIMBER CONSTRUCTION TABLE										
HEAVY TIMBER SOLID OR LAMINATED		25.	COLUMNS		WOOD ALL SPECIES	FLOOR...WIDTH X DEPTH MIN. NOM.				8" X 8"
						ROOF...WIDTH X DEPTH MIN. NOM.				6" X 8"
		26.	GIRDERS & BEAMS		WOOD ALL SPECIES	MIN. WIDTH X DEPTH (NOM.)				6" X 10"
		27.	ARCH & TRUSS FOR ROOF ONLY		WOOD ALL SPECIES	MIN. WIDTH X DEPTH EACH MEMBER				4" X 6"
		28.	FLOOR & ROOF DECK		WOOD ALL SPECIES	ROOF				2" T & G. OR 3" SOLID
						FLOOR				3" T & G. + 1" T & G. OR 4" SOLID

4. The maximum swinging door clearances to frame shall be ⅛ inch on sides and top and ¾ inch at bottom between sill or floor.

5. All labeled fire doors where required shall be equipped with an approved closing device.

a. Doors with self-closing device shall remain in a closed position except when in use.

NOTE: The intent was to accept normal usage of door but not permit doors with this device to be blocked open at any time.

b. Where a pilot weight is used, it shall be suspended from a chain or wire cable and shall be installed in a protective housing.

NOTE: For type of closing device permitted please refer to chapters for classes of construction and/or occupancy.

6. Adequate clearance shall be maintained to permit free operation of fire doors.

Note: 1. See section Ind 51.15 for exit door requirements.

2. Transoms, vision panels and/or louvers may be incorporated if tested in accordance with ASTM E-152 standard method.

(b) *Fire window assemblies.*" 1. Openings. Where openings are permitted in fire rated walls protected with fire window assemblies they shall be time rated as ⅔ hour by an approved laboratory and tested in accordance with ASTM E-163 standard method.

NOTE: For ASTM E-163 standard adopted see section Ind 51.25 (33).

2. *Size.* The fire window assembly size shall not exceed size tested. Windows combined in multiple assemblies shall be separated by approved nonbearing metal mullions.

3. *Wired Glass.* Labeled wired glass ¼ inch thick shall be installed in a fire window assembly.

"NOTE: Fire windows have been classified for either moderate or light fire exposure. For moderate fire exposure the individual glass size is limited to 720 sq. inches. (Size limitation either 48 inch max. width or 54 inch max. height.) For light fire exposure the individual glass size is limited to 1,296 sq. inches. (Size limitation either 54 inch max. width or 54 inch max. height.) Please refer to chapters for classes of construction and/or occupancy for fire window classifications.

4. *Installation.*" a. Frames shall be securely fastened to the construction and be capable of resisting all wind stresses and other stresses to which they are likely to be subjected.

b. The wired glass shall be well bedded in approved glazing compound and all exposed joints between the metal shall be struck and pointed. The clearance between the edges of the glass and metal framing shall not exceed ⅛ inch.

"NOTE: The department will accept recommended practices for installation covered in "Standard for Fire Doors and Windows" N.F.P.A. No. 80.

(c) *Glass block.* 1. *Openings.* Where openings are permitted in fire rated walls protected with glass block they shall be time rated as ¾ hour by an approved laboratory and tested in accordance with ASTM E-163 standard method.

NOTE: For ASTM E-163 standard adopted see section Ind 51.25 (33).

2. *Size of opening.* Glass blocks are suitable for openings not exceeding 120 square feet in area, with neither the width nor height exceeding 12 feet.

3. *Installation.*

NOTE: The department will accept recommended practices for installation covered in "Standard for Fire Doors and Windows" N.F.P.A. No. 80.

(d) *Labels.* 1. The label shall identify the time rating for fire door assemblies and class of fire window assemblies and glass block.

2. The label shall identify the testing laboratory, listing agency and manufacturer.

3. The label shall be securely attached and located to permit visual inspection after installation.

(e) *Miscellaneous openings.* 1. Openings around ducts, pipes, conduit or other service installations penetrating required fire-resistive rated floor, wall and roof assemblies shall be filled solidly with material of fire-resistive rating equal to the required rating of assembly penetrated.

2. Duct openings in required fire-resistive rated floor and wall assemblies shall be protected as specified under section Ind 59.69 (13).

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r, eff. 8-1-71 and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.048 Roof coverings. (1) Roof coverings of class A, B, C or unclassified shall be provided as specified under "Classes of Construction" or under the specific occupancy requirements.

NOTE: Brick, concrete tile, slate, ferrous and cupreous metals and their alloys will be accepted as "Class A" roof coverings.

History: Cr. Register, February, 1971, No. 182, eff. 7-1-71; r, eff. 8-1-71, and recr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.08 Occupancy separations. (1) When a building is used for more than one occupancy purpose, each part of the building comprising a distinct occupancy division shall be separated from any other occupancy division as provided for under the occupancy requirements of this code.

(2) Occupancy separations shall be classed as "Absolute", "Special" and "Ordinary" and shall apply to both horizontal and vertical separations.

(a) An absolute occupancy separation shall have no openings therein and shall be of not less than 4-hour fire-resistive construction as specified in sections Ind 51.05 and Ind 51.06.

Effective January 1, 1972 (2) (a) is created to read:

(a) An absolute occupancy separation shall have no openings therein and shall have walls and doors of not less than 4-hour fire-resistive construction as specified in section Ind 51.05.

(b) A special occupancy separation shall be of not less than 2-hour fire-resistive construction as specified in sections Ind 51.05 and 51.06. All openings in walls forming such separation shall be protected on each side thereof by self-closing fire-resistive doors as specified in section Ind 51.09, and such doors shall be kept normally closed. The total width of all openings in any such separating wall in any one story shall not exceed 25% of the length of the wall in that story and no single opening shall have an area greater than 120 square feet.

1. All openings in floors forming this type of separation shall be protected by vertical enclosures extending above and below such openings. The walls of such vertical enclosures shall be of not less than 2-hour fire-resistive construction as specified in section Ind 51.05 and all openings therein shall be protected on one side thereof by self-

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closing one-hour fire-resistive doors as specified in section Ind 51.09 and such doors shall be kept normally closed.

Effective January 1, 1972 (2) (b) is created to read:

(b) A special occupancy separation shall have walls and floors of not less than 2-hour fire-resistive construction as specified in section Ind 51.04. All openings in walls forming such separation shall be protected on each side thereof by self-closing fire-resistive doors as specified in section Ind 51.09, and such doors shall be kept normally closed. The total width of all openings in any such separating wall in any one story shall not exceed 25% of the length of the wall in that story and no single opening shall have an area greater than 120 square feet.

1. All openings in floors forming this type of separation shall be protected by vertical enclosures extending above and below such openings. The walls of such vertical enclosures shall be of not less than 2-hour fire-resistive construction as specified in section Ind 51.04 and all openings therein shall be protected on one side thereof by self-closing 1-hour fire-resistive doors as specified in section Ind 51.09 and such doors shall be kept normally closed.

(c) An ordinary occupancy separation shall be of not less than one-hour fire-resistive construction as specified in sections Ind 51.03 and 51.06. All openings in such separations shall be protected by self-closing fire-resistive doors as specified in section Ind 51.09 and such doors shall be kept normally closed.

Effective January 1, 1972 (2) (c) is created to read:

(c) An ordinary occupancy separation shall have walls and floors of not less than 1-hour fire-resistive construction as specified in sections Ind 51.04. All openings in such separations shall be protected by self-closing fire-resistive doors as specified in section Ind 51.09 and such doors shall be kept normally closed.

History: 1-2-56; r. and recr. (2) (c), Register, October, 1967, No. 142, eff. 11-1-67; am. (2) (a), (b) and (c), Register, February, 1971, No. 182, eff. 3-1-71; r. and recr. (2) (a), (b) and (c) eff. 8-1-71 and expiring 1-1-72 and eff. (2) (a), (b) and (c) eff. 1-1-72, Register, July, 1971, No. 187.

NOTE: SECTIONS Ind 51.09 THROUGH Ind 51.11 ARE REPEALED EFFECTIVE JANUARY 1, 1972.

Ind 51.09 Fire-resistive doors. (1) Fire-resistive doors have no time resistance rating established by governmental agencies. It will be the policy of the department of industry, labor and human relations to approve, subject to the provisions of this section, any door given a rating by the Underwriters' Laboratories in their "Building Materials List" as class A, B, C, D and E having varying degrees of resistance, and suitable for various locations.

(2) Where fire-resistive doors are required, class A doors, or equal shall be used for all openings in 3 and 4 hour fire-resistive walls. Class B, 1½-hour fire-resistive doors, or equal shall be used for all openings in 2-hour walls. Doors for elevator shafts shall be of class B type or equal. Class C doors, or equal, shall be used in openings in corridor partitions in fire-resistive buildings and for openings in one-hour fire-resistive partitions except that wood doors of solid flush type, 1¾ inches thick may be used in such buildings which are less than 85 feet in height. Class D and E doors, or better, shall be used in outside wall openings where required for fire escapes.

(3) All required fire-resistive doors shall be equipped with a self-closing device.

History: 1-2-56; r. and recr. Register, September, 1959, No. 45, eff. 10-1-59; am. Register, December, 1962, No. 84, eff. 1-1-63; am. (2) Register, December, 1967, No. 144, eff. 1-1-68; r. Register, February, 1971, No. 182, eff. 7-1-71; cr. eff. 8-1-71 and expiring 1-1-72, Register, July, 1971, No. 187.

Ind 51.10 Fire-resistive windows. (1) Windows shall be of a design approved by the department of industry, labor and human relations for the intended use as provided under occupancy classifications. The term "window" in this section shall include the frame, sash and all other parts of a complete assembly. Approved wire glass ¼ inch in thickness shall be used for glazing.

(2) Windows shall be limited to sizes for which effective fire-resistance has been demonstrated by actual fire test, and which in no case exceed 84 square feet in area and 12 feet in greatest dimension. Such windows may be combined in multiple assemblies when separated by approved metal mullions, which shall be considered non-bearing.

(3) Individual glass lights shall not exceed 720 square inches in area, and 54 inches in vertical and 48 inches in horizontal dimension.

Note: It will be the policy of the department of industry, labor and human relations to approve, subject to the provisions of this section, any window bearing the inspection manifest of the Underwriters' Laboratories for the situation of installation.

History: 1-2-56; r. Register, February, 1971, No. 182, eff. 7-1-71; cr. eff. 8-1-71 and expiring 1-1-72, Register, July, 1971, No. 187.

Ind 51.11 Glass block. (1) USE. Approved glass block may be used in non-load bearing panels in walls where ordinary glass will be permitted, unless specifically prohibited by occupancy requirements of this code.

(2) INSTALLATION. Glass block panels shall not exceed 144 square feet in unsupported area, with a maximum height of 20 feet and a maximum width of 20 feet. The horizontal and vertical mortar joints between each block shall be composed of one part of Portland cement, one part of lime and 4 parts of sand, or its equivalent.

(a) All panels over 6 feet in width shall be supported on each side by chases, not less than 1⅛ inches in depth, of metal or other incombustible material.

(b) Approved continuous metal bond ties shall be provided in each horizontal mortar joint for block of nominal 12 x 12 inch size and in at least every third joint for block of smaller dimension.

(c) Provision shall be made in all panels for expansion, using approved expansion material not less than ½ inch thick for heads and lintels and not less than ¼ inch thick for jambs.

History: 1-2-56; r. Register, February, 1971, No. 182, eff. 7-1-71; cr. eff. 8-1-71 and expiring 1-1-72, Register, July, 1971, No. 187.

Ind 51.12 Height of building. The height of a building is measured at the center line of its principal front, from the sidewalk grade (or, if setting back from the sidewalk, from the grade of the ground adjoining the building) to the highest part of the roof, if a flat roof, or to a point 2/3 of the height of the roof, if a gabled or hipped roof. If the grade of the lot or adjoining sidewalk in the rear or alongside of the building falls below the grade at the front, the height shall be measured at the center of the lowest side.

Ind 51.13 Basement; first floor; number or stories. A basement is that portion of a building whose floor level is more than 3½ feet below the average contact ground level at the exterior walls of the building. The next floor above shall be considered the first story. The

number of stories of a building includes all stories except the basement.

History: 1-2-56; r. and recr. Register, February, 1971, No. 182, eff. 3-1-71.

Ind 51.14 Street; alley; court. (1) A street is any public thoroughfare 30 feet or more in width.

(2) An alley is any public thoroughfare less than 30 feet, but not less than 10 feet, in width.

(3) A court is an open, unoccupied space other than a street or alley and bounded on one or more sides by the walls of a building.

Ind 51.15 Standard exit. (1) Every door which serves as a required exit from a public passageway, stairway or building shall be a standard exit door unless exempted by the occupancy requirements of this code.

Note: For required exits see Wis. Adm. Code sections Ind 54.06, 55.20, 56.08 and 57.09.

(2) Every standard exit door shall swing outward or toward the natural means of egress (except as below). It shall be level with the floor, and shall be so hung that, when open, it will not block any part of the required width of any other doorway, passageway, stairway or fire escape. No revolving door, and no sliding door except where it opens onto a stairway enclosure or serves as a horizontal exit, shall be considered as a standard exit door.

(3) A standard exit door shall have such fastenings or hardware that it can be opened from the inside by pushing against a single bar or plate or turning a single knob or handle.

(a) The use of a key for opening door from the inside is prohibited.

(b) The door shall not be barred, bolted or chained at any time.

(4) A standard exit doorway shall not be less than 6 feet 4 inches high by 3 feet 4 inches wide, except where especially provided under occupancy classifications and in Wis. Adm. Code section Ind 51.20. Where double doors are provided with or without mullions, the width of each single door may be reduced to 2 feet 6 inches.

(5) All exit doors, unless otherwise exempted by the occupancy requirements of this code, shall be plainly marked by a red illuminated translucent exit sign bearing the word EXIT or OUT in plain letters not less than 5 inches in height and in such other places as may be necessary to direct the occupants to exit doorways.

(6) Doors, windows or other openings which are not exits but which give the appearance of exits shall be effectively guarded.

(a) *Glass doors.* All glass doors shall be provided with a push bar or plate inside and outside. The push bar or plate shall be within 32 inches to 44 inches above the floor.

(b) *Glass walls panels.* Glass wall panels having a curb or sill less than 24 inches in height shall be protected by a horizontal bar or rail at least 1½ inches wide and located within 3 feet 6 inches to 4 feet 6 inches above the floor. The bar or rail assembly shall be capable of withstanding a lateral force of 100 pounds applied at any point.

(7) Safeguards for physically handicapped persons:

(a) Any place of employment or public building, the initial construction of which is commenced after July 1, 1970, shall be so designed and constructed as to provide reasonable means of ingress and egress by the physically handicapped with the exception of:

1. Apartment houses with less than 20 units, row houses and rooming houses;

2. Convents and monasteries;

3. Jails or other places of detention;

4. Garages, hangars and boathouses;

5. All buildings classified as hazardous occupancies;

6. Warehouses, and

7. State buildings specifically built for field service purposes such as but not limited to conservation fire towers, fish hatcheries, tree nursery buildings.

8. University residence halls at universities which have at least three residence halls for men and three residence halls for women so constructed as to allow physically handicapped persons reasonable means of ingress and egress to such buildings.

(b) The requirements of section Ind 51.15 (7) (a) may be accomplished by at least one ground or street level entrance and exit without steps.

The entrance and exit shall be by:

1. Ramps with slopes not more than one foot of rise in 12 feet coated with a nonskid surface, or

2. By elevator or such other arrangements as may be reasonably appropriate under the circumstances and which meets with the approval of the department of industry, labor and human relations or in lieu thereof with the approval of the municipality wherein the building is located.

3. Doors having a clear opening of at least 40 inches in width and shall otherwise conform to the department of industry, labor and human relations building code.

(c) If any ground or street level entrance or exit is not so designed or constructed a sign shall be placed at such entrance or exit indicating the location of the entrance or exit available for wheel chair service.

(d) Where requirements of section Ind 51.15 (7) (a) apply, there shall be reasonable means of access from a parking lot, if any, ancillary to such buildings and reasonable means of ingress and egress to at least one floor on which the primary business of such building is located.

(e) The ramp shall be at least 4 feet in width of which not more than 4 inches on each side may be occupied by a handrail.

(f) All ramps shall have a handrail on each side.

1. Handrail shall be not less than 2 feet 6 inches in height with an intermediate rail at mid height.

(g) The floor on the inside and outside of each ramp doorway shall be level for a distance of 6 feet from the door.

(h) Every ramp shall have at least 6 feet of level clearance at the bottom.

(i) All ramps shall have a level platform at 30 feet intervals and shall have a level platform at least 6 feet in length wherever they turn.

(j) The requirements of section Ind 51.15 (7) (a) through (i) shall apply to buildings presently exempt or existing should there be a change in occupancy of such building to that of a place of employment or public building not otherwise exempt after July 1, 1970.

Note: See section Ind 52.59 for further requirements.

History: 1-2-56; am. Register, December, 1962, No. 84, eff. 1-1-63; am. (5) and cr. (7), Register, November, 1963, No. 95, eff. 12-1-63; r. and recr., Register, October, 1967, No. 142, eff. 11-1-67; am. (7) (j), Register, May, 1968, No. 149, eff. 6-1-68; r. and recr. (7), Register, December, 1970, No. 180, eff. 1-1-71; r and recr. (3), Register, February, 1971, No. 182, eff. 2-1-71.

Ind 51.16 Stairways and elevated platforms. (1) DEFINITION. By a stairway is meant one or more flights of steps and the necessary platforms connecting them to form a continuous passage from one level to another within a building or structure, except as provided in subsection (3) (b).

(2) WIDTH. Every required exit stairway, whether enclosed or not, shall be not less than 3 feet 8 inches wide of which not more than 4 inches on each side may be occupied by a handrail. Every platform shall be at least as wide as the stairway, measuring at right angles to the direction of travel. Every straight run platform shall measure at least 3 feet in the direction of travel. Wherever a door opens onto a stairway, a platform shall be provided extending at least the full width of the door in the direction of travel. *Exception:*

(a) In apartment buildings not more than 2 stories in height and having not more than 2 apartments on a floor and in rooming houses, hospitals, hotels and similar buildings not more than 2 stories in height and having not more than 6 living or sleeping rooms on a floor, such stairways shall not be less than 3 feet wide.

(b) If other stairways are provided in addition to those required by this code, such additional stairways need not conform to the width requirements of this code.

(3) HANDRAILS. All stairways and steps of more than 3 risers shall have at least one handrail. Stairways and steps 5 feet or more in width, or open on both sides, shall have a handrail on each side. Stairways and steps which are less than 5 feet in width shall have a handrail on the left hand side as one mounts the stairs and on the open side, if any.

(a) Stairways which are more than 8 feet wide shall be divided by center rails into widths not more than 8 feet nor less than 3 feet 8 inches. Rails shall be not less than 2 feet 6 inches above the nose of the treads or 3 feet 6 inches above the platform except as specified in Wis. Adm. Code section Ind 51.20. Railings on the open sides of stairways and platforms shall be provided with an intermediate member at midheight or with vertical members having a maximum spacing of 11 inches, or its equivalent in safety.

(b) Stairways on the outside of buildings and an integral part thereof, having more than 3 risers, shall have a handrail at each side, and if the stairway is more than 50 feet wide, one or more intermediate handrails shall be provided.

(c) Where an exit door leads to an outside stairway, platform or sidewalk, the level of the platform or sidewalk shall not be more than 7¾ inches below the door sill except as provided in section Ind 51.20 (4) (g).

(4) RISERS AND TREADS. All stairways and steps required as exits by this code shall have a uniform rise of not more than 7¾ inches and a uniform tread of not less than 9½ inches, measuring from tread to tread, and from riser to riser. No winders shall be used. There shall not be more than 18, nor less than 3 risers between platforms or between floor and platform and not more than 22 risers from floor to floor with no platform.

(a) Stairways and steps not required as exits by this code shall have a uniform rise of not more than 8 inches and a uniform tread of not less than 9 inches. If winders are used, the tread shall be at least 7 inches wide at a point one foot from the narrow end.

(b) The edges of all treads and the edges of all stairway landings shall be finished with a non-slippery surface not less than 3 inches in width.

(5) ELEVATED PLATFORMS. Elevated platforms, walks and runways not otherwise mentioned, which are an integral part of a building or structure, shall have railings as required by this section.

(a) For stairways to elevated platforms, walks and runways in places of employment see Wis. Adm. Code, chapter I, Safety.

History: 1-1-68; am. (2); (2) (a); (3) (b); Register, June, 1968, No. 6, eff. 7-1-68; r. and recr. Register, September, 1959, No. 45, eff. 10-1-59; r. (4) (b), renum. (c) to be (b), and cr. (5), Register, February, 1971, No. 182, eff. 3-1-71.

Ind 51.17 Smokeproof stair tower. (1) A smokeproof stair tower shall be an enclosed stairway which is entirely cut off from the building and which is reached by means of open balconies or platforms. The stairways, landings, platforms and balconies shall be of incombustible material throughout. The enclosing walls shall be of not less than 4-hour fire-resistive construction as specified in section Ind 51.05, and the floors and ceilings of not less than 2-hour fire-resistive construction as specified in section Ind 51.06.

(2) The doors leading from the buildings to the balconies and from the balconies to the stairways shall be fire-resistive doors as specified in section Ind 51.09, and all openings within 10 feet of any balcony shall be protected with fire-resistive windows as specified in section Ind 51.10, or fire-resistive doors.

Effective January 1, 1972 (1) and (2) are created to read as follows:

Ind 51.17 Smokeproof stair tower. (1) A smokeproof stair tower shall be an enclosed stairway which is entirely cut off from the building and which is reached by means of open balconies or platforms. The stairways, landings, platforms and balconies shall be of noncombustible material throughout. The enclosing walls shall be of not less than 4-hour fire-resistive construction, and the floors and ceilings of not less than 2-hour fire-resistive construction as specified in section Ind 51.01.

(2) The doors leading from the buildings to the balconies and from the balconies to the stairways shall be fire-resistive doors, and all openings within 10 feet of any balcony shall be protected with fire-resistive windows, or fire-resistive doors as specified in section Ind 51.047.

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(3) Each balcony shall be open on at least one side, with a railing not less than 3'6" high on all open sides.

History: 1-2-56; am. Register, December, 1962, No. 84, eff. 1-1-63; am. (1) and (2), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (1) and (2) eff. 8-1-71 and exp. 1-1-72, and cr. (1) and (2) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.18 Interior enclosed stairway. (1) An interior enclosed stairway shall be completely enclosed with walls of not less than 2-hour fire-resistive construction as specified in section Ind 51.05, except that in ordinary or frame buildings and in mill or fire-resistive buildings not more than 3 stories in height one-hour fire-resistive enclosures may be used. All doors opening into such enclosures shall be as specified in section Ind 51.09.

Effective January 1, 1971 (1) is created to read as follows:

Ind 51.18 Interior enclosed stairway. (1) An interior enclosed stairway shall be completely enclosed with walls of not less than 2-hour fire-resistive construction as specified in section Ind 51.04, except that in ordinary or frame buildings and in mill or fire-resistive buildings not more than 3 stories in height 1-hour fire-resistive enclosures may be used. All doors opening into such enclosures shall be as specified in section Ind 51.047.

(2) The enclosure shall include at each floor level a portion of such floor which will be at least as wide as the stairway; and such enclosure shall also include the passageway of the first floor level (if any) leading from the stairway to an outside door, so as to afford uninterrupted passage from the uppermost floor to such outside door without leaving the enclosure.

(3) If windows are placed in any such enclosure they shall be fixed fire-resistive windows as specified in section Ind 51.10, except in outside walls.

Effective January 1, 1972 (3) is created to read as follows:

(3) If windows are placed in any such enclosure they shall be fixed fire-resistive windows as specified in section Ind 51.047 except in outside walls.

History: 1-2-56; am. (1) and (2), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (1) and (2), eff. 8-1-71 and exp. 1-1-72, and cr. (1) and (3), eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.19 Horizontal exit. (1) A horizontal exit shall consist of one or more openings through or around an exterior wall or occupancy separation, or of one or more bridges or balconies connecting 2 buildings or parts of buildings entirely separated by occupancy separations as described in section Ind 51.08.

(2) Openings used in connection with horizontal exits shall be protected by fire-resistive doors as specified in section Ind 51.09. If swinging doors are installed in pairs, they shall be arranged to swing in opposite directions; with direction of travel indicated by signs, except that where the travel is in one direction only, both doors shall swing in that direction. Such doors shall be kept continuously unlocked whenever the building is occupied and be normally closed or be self-closing and equipped with fusible links.

Effective January 1, 1972 (2) is created to read as follows:

(2) Openings used in connection with horizontal exits shall be protected by fire-resistive doors as specified in section Ind 51.047. If swinging doors are installed in pairs, they shall be arranged to swing in opposite directions; with direction of travel indicated by signs, except

that where the travel is in one direction only, both doors shall swing in that direction. Such doors shall be kept continuously unlocked whenever the building is occupied and be normally closed or be self-closing and equipped with fusible links.

(3) Floors in horizontal exits shall have a slope of not more than one foot in 6.

(4) All doors and windows within 10 feet of any balcony or bridge shall be fire-resistive doors as specified in Wis. Adm. Code section Ind 51.09, or fire-resistive windows as specified in section Ind 51.10, except that if such doors or windows are in the same plane, this requirement shall apply only to those within 5 feet of the balcony or bridge.

Effective January 1, 1972 (4) is created to read as follows:

(4) All doors and windows within 10 feet of any balcony or bridge shall be fire-resistive doors or fire resistive windows as specified in section Ind 51.047, except that if such doors or windows are in the same plane, this requirement shall apply only to those within 5 feet of the balcony or bridge.

(5) The floor on each side of a horizontal exit and all passageways leading thereto shall be kept clear and unobstructed at all times

History: 1-2-56; am. (2) and (4), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (2) and (4) eff. 8-1-71 and exc. 1-1-72, and cr. (2) and (4) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.20 Fire escapes. (1) LOCATION. Every fire escape shall be so located as to lead directly to a street, alley, or open court connected with a street.

(a) Every fire escape shall be placed against a blank wall if possible. If such a location is not possible then every wall opening which is less than 6 feet distant horizontally from any tread or platform of the fire escape shall be protected by a fire-resistive door as specified in section Ind 51.09 or by a fire-resistive window as specified in section Ind 51.10.

Effective January 1, 1972 (1) (a) is created to read as follows:

(a) Every fire escape shall be placed against a blank wall if possible. If such a location is not possible then every wall opening which is less than 6 feet distant horizontally from any tread or platform of the fire escape shall be protected by a fire-resistive door or by a fire-resistive window as specified in section Ind 51.047.

(2) EXITS TO FIRE ESCAPES. Every fire escape shall be accessible from a public passageway or shall be directly accessible from each occupied room. Exits to fire escapes shall be standard exit doors as specified in section Ind 51.15, except that doors to "A" fire escapes may be not less than 2 feet 6 inches wide.

(3) DESIGN AND FABRICATION. Each part of every fire escape (except counterweights for balanced stairways) shall be designed and constructed to carry a live load of 100 pounds per square foot of horizontal area over the entire fire escape. Each part of every fire escape shall be designed and constructed in accordance with the requirements of section Ind 53.16, except that the unit stresses therein specified shall be reduced by one-fourth. The minimum sections and sizes specified below shall be increased whenever necessary so that under full load the allowable unit stresses will not be exceeded.

(a) No other material than wrought iron, soft steel or medium steel shall be used for any part of a fire escape, except for weights, separators and ornaments. No bar material less than ¾ inch thick shall be used in the construction of any fire escape, except for separators,

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ornaments, structural shapes over 3 inches and rigidly built up treads and platforms of approved design. In the fabrication of a fire escape, all connections or joints shall be made by riveting, bolting or welding in an approved manner. All bolts or rivets, except for ornamental work, shall be not less than ⅝ inch in diameter.

(4) PLATFORMS. Each platform on an "A" fire escape shall be at least 28 inches wide; each platform on a "B" fire escape shall be at least 3 feet 4 inches wide. Such widths shall be the clear distance between stringers, measuring at the narrowest point. Each platform shall extend at least 4 inches beyond the jambs of exit opening. The above minimum widths and lengths shall be increased, wherever necessary, so that no exit door or window will, when open, block any part of the required width of the fire escape. Every platform shall consist of either:

(a) Flat bars on edge, not less than 1 x ¼ inch, but not less than 1¼ x ¼ inch where bolts and separators are used except that platforms and treads constructed of flat bars on edge may be made of material ⅛ inch in thickness provided the material is galvanized after fabrication. Bars shall not be spaced more than 1¼ inches, center to center.

(b) ½ inch or ⅝ inch square bars with sharp edge up, not more than 1½ inches, center to center.

(c) ⅝ inch round bars, not more than 1¾ inches, center to center.

(d) Platform and treads may be solid if covered by a roof.

(e) The platform frame shall consist of not less than 2 x ⅜ inch flat bars on edge or equivalent, provided the brackets are not more than 4 feet apart. If brackets are more than 4 feet apart, the frame shall be correspondingly stronger and stiffer. Every platform wider than 30 inches, if made of square or round bars, shall have a third frame bar through the center; if made of flat bars, the platform shall have separators and bolts through the center. Frame bars shall not project more than ¼ inch above platform bars, except around the outside of platform.

(f) There shall be a platform at each story above the first, and intermediate platforms if floors are more than 18 feet apart vertically.

(g) Platforms shall not be more than 8 inches below the door sill.

(5) BRACKETS. Brackets for a 28 inch or 30 inch platform, when spaced not more than 4 feet apart, shall be made of not less than ⅞ inch square bars or 1½ x 1½ x ¼ inch angles; such bars or angles shall be larger if the platform is wider or if the brackets are farther apart. Each bracket shall be fastened at the top to the wall by a through bolt (at least ⅝ inch diameter), nut, and washer (at least 4 inch diameter). The slope of the lower bracket bar shall be not less than 30 degrees with the horizontal. The lower bar shall have a washer or shoulder to give sufficient bearing against the wall.

(a) The strength of the wall to which brackets are to be attached shall be carefully considered in determining the spacing, shape and inside connection of brackets, so that under full load the wall will not be unduly strained. Where it is necessary to install brackets adjacent to wall openings they shall be located at a suitable distance therefrom, or the wall shall be properly reinforced.

(6) STAIRWAYS. (a) Each stairway of an "A" fire escape shall be at least 24 inches wide between stringers; such stairway shall have a uniform rise of not more than 8 inches and a uniform run of not less than 8 inches.

(b) Each stairway of a "B" fire escape shall be at least 3 feet 4 inches wide between stringers; such stairway shall have a uniform rise of not more than 8 inches, and a uniform run of not less than 9 inches.

1. The rise is the vertical distance from the extreme edge of any step to the corresponding extreme edge of the next step. The run is the horizontal distance between the same points.

(c) Stairway stringers shall consist of either:

1. A 5 inch channel or larger.

2. Two angles 2 x 2 x ¼ inch or larger.

3. Two flat bars 2 x ⅜ inch or larger.

4. One flat bar 6 x ¼ inch or larger.

5. If 2 angles or 2 flat bars are used, they shall be properly tied together by lattice bars, vertical as well as horizontal. If flat bars are used, every stairway of more than 10 risers shall have lateral bracing. The connection of stringers to platform, at top and bottom, shall be at least equal in strength to the stringers and shall safely carry the full live and dead loads. If stringers are carried by intermediate brackets, the stringers shall have a horizontal bearing on the brackets and shall be properly and securely connected thereto.

6. Treads shall consist of either flat or square bars, (not round), of the size and spacing specified for platforms. An "A" tread shall consist of at least 6 square bars, or 7 flat bars. A "B" tread shall consist of at least 7 square bars, or 8 flat bars. A "B" tread made of flat bars shall have separators and bolt through the center. A "B" tread made of square bars shall be trussed.

7. Treads and platforms may be solid if covered by a roof.

(7) BALANCED STAIRWAY. All "B" fire escapes, and all fire escapes on schools, theaters, assembly halls, hospitals, nursing homes, residential care institutions, group foster homes, and homes for the elderly either shall reach to the ground or shall have a balanced stairway reaching to the ground. "A" fire escapes which are not on schools, theaters, assembly halls, hospitals, nursing homes, residential care institutions, group foster homes and homes for the elderly may terminate in a platform at least 3 feet long, located not more than 10 feet above the ground and does not serve more than 8 persons.

(8) RAILINGS. A railing at least 42 inches in height and having 2 intermediate rails, uniformly spaced, measuring vertically from the floor of the platform, shall be provided on all open sides of platforms. Railings at least 36 inches in height, measuring vertically from the nose of the treads, shall be provided on the open sides of all stairways and on both sides of balanced stairways. Either a railing or a handrail fastened to the wall shall be provided on each side of all "B" fire escape stairways.

(a) Every railing shall have posts, not more than 5 feet apart made of not less than 1⅛ x 1½ x ¼ inch angles or tees, or 1¼ inch pipe; top rail not less than 1¼ x 1¼ x ¼ inch angle or equivalent; center rail not less than 1¼ x ¼ flat bar or equivalent. All connec-

tions shall be such as to make the railing stiff; 2 bolts (⅜ inch or larger) shall be used at the foot of each post wherever possible, or at least one ½ inch bolt shall be used. Railing shall be continuous. No projections on the inside of the railing shall be permitted. Where a railing returns to the wall, it shall be fastened thereto with a through bolt (at least ⅝ inch diameter), nut, and washer; or (in reinforced concrete) with an approved insert; or the railing shall be made equally secure with a diagonal brace extending at least 3 feet horizontally and 3 feet vertically.

(b) All outside railings which are more than 60 feet above grade shall be at least 6 feet high, measuring vertically from floor of platform or from nose of step. Such railings shall be of special design approved by the department of industry, labor and human relations, having not less than 4 longitudinal rails, and vertical lattice bars not more than 8 inches apart, and proper stiffening braces or brackets.

(9) LADDER TO ROOF. Every fire escape which extends higher than the second floor shall be provided with a ladder leading from the upper platform to the roof, unless the fire escape stairway leads to the roof. The ladder shall have stringers not less than 1½ inch pipe, or not less than 2 x ⅜ inch flat bars, at least 17 inches apart in the clear. The rungs shall be not less than ½ inch square or ⅝ inch round bars, 14 inches center to center. The stringers shall be securely tied together at intervals no greater than every fifth rung. The stringers of each ladder shall extend not less than 4 feet above the roof coping and return to within 2 feet of the roof, with the top rung of the ladder level with the coping.

(10) OTHER TYPES OF FIRE ESCAPES. Sliding or chute fire escapes may be used, upon the approval of the department of industry, labor and human relations, in place of "A" or "B" fire escapes. Every sliding fire escape shall be provided with a ladder constructed as in subsection Ind 51.20 (9), extending from 5 feet above grade, to 4 feet above the roof coping.

History: 1-2-56; am. Register, December, 1962, No. 84, eff. 1-1-63; am. (1) (a), Register, February, 1971, No. 182, eff. 7-1-71; am. (7), Register, February, 1971, No. 182, eff. 8-1-71; r. and recr. 51.20 (1) (a) eff. 8-1-71 and exp. 1-1-72 and cr. (1) (a) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 51.21 Standpipes. (1) CLASSES OF SERVICE. Standpipe systems are designed for 2 classes of service: (a) for use by fire departments or others trained in handling heavy streams from 2½ inch hose, and (b) for use by occupants of a building on incipient fires. These are referred to in these sections as fire departments, and first aid standpipes, respectively. The features of each system may be combined in a single equipment, if served by an automatic water supply conforming to subsection (2) (g) or (h). All threads on hose and hose connections shall be interchangeable with those of the public fire department.

(2) FIRE DEPARTMENT STANDPIPES. (a) Standpipes shall be provided for all buildings exceeding 60 feet in height. Required standpipes shall be installed as construction progresses, to make them available to the fire department in the topmost floor constructed.

(b) Standpipes shall be sufficient in number so that any part of every floor area can be reached within 30 feet by a nozzle attached

to 100 feet of hose connected to the standpipe. When 2 or more standpipes are required, they shall be cross connected at the bottom, and equipped with individual controlling valves located not higher than the first story.

(c) Standpipes shall be protected against mechanical and fire damage, with outlets in stairway enclosures; where stairways are not enclosed, outlets shall be at inside or outside of outside walls, within one foot of a fire tower, interior stairway or fire escape. Dry standpipes shall be accessible for inspection and not concealed.

(d) No required standpipe shall be less than 4 inches in diameter, and not less than 6 inches in diameter for buildings exceeding 75 feet in height. Material shall be steel or wrought iron pipe with approved fittings, designed for a working pressure of 100 pounds in excess of the static pressure due to elevation. An approved 2½ inch hose valve shall be located at each story, not over 5 feet above the floor level. An approved pressure reducing device shall be installed at hose valves where the pressure would otherwise be in excess of 50 pounds. Where a standpipe is not normally under pressure, hose valves shall be equipped with a tight fitting cap on a chain and having lugs for a spanner wrench.

(e) An approved siamese connection with a check valve in each inlet shall be installed on a 4 inch pipe connecting with each standpipe system and shall be marked "To Standpipe". The elevation of the connection shall be not over 3 feet above the sidewalk or ground. An automatic drip valve shall be installed where necessary to prevent freezing. In buildings with several standpipes, more than one siamese connection may be required.

(f) Fire department standpipes need not be equipped with attached hose.

(g) Automatic water supplies will not ordinarily be required, except as provided in subsection (2) (h), or where judged necessary by reason of the high combustibility or potential hazard of the occupancy. When required, they shall be designed to provide not less than 40 pounds flowing pressure at the top outlet, with volume for two fire streams. Any of the following supplies will be acceptable:

1. Connection to city water works system when providing required minimum volume and pressure.

2. Gravity tank of not less than 3,500 gallons capacity, elevated 50 feet above the top story.

3. Pressure tank of 5,250 gallons gross capacity (3,500 gallons water capacity).

4. Automatic pump or pumps, with combined effective capacity of 500 gallons per minute.

(h) An automatic water supply from an approved fire pump shall be provided in buildings over 150 feet high, or in buildings over 10,000 square feet in area per floor and requiring a standpipe. The capacity of the pump shall be not less than 500 gallons per minute for a 4 inch standpipe, 750 gallons per minute for 2 interconnected 4 inch or single 6 inch standpipes, and 1,000 gallons per minute for larger systems.

(3) FIRST AID STANDPIPES. (a) Standpipes shall be provided as required in sections Ind 54.14, 55.33, and 57.21.

(b) Standpipes shall be sufficient in number so that any part of every floor area can be reached within 20 feet by a nozzle attached to not more than 75 feet of hose connected to a standpipe.

Note: Standpipe outlets should be located in occupied areas, and usually at interior columns in large area buildings. Asylums and places of detention may require special arrangements. It should be possible in all cases to direct the stream into all important enclosures, such as closets, etc.

(c) No required standpipe shall be less than 2 inches in diameter, and not less than 2½ inches in diameter for buildings 5 stories or more in height. Material shall be wrought iron or steel and pipe and fittings shall be of suitable weight for the pressure used. An approved 1½ inch hose valve shall be located in each story, not more than 5 feet above the floor level; valves of the gate type shall be equipped with a suitable open drip connection. An approved pressure-reducing device shall be installed at hose valves where pressure would otherwise be over 50 pounds.

(d) Not more than 75 feet of hose shall be attached to each outlet. Hose shall be of unlined linen construction, 1½ inches in diameter, with a ½ inch nozzle attached, and shall be located in approved cabinets or racks.

(e) Water supply shall be automatic, and be designed for 70 gallons per minute for 30 minutes with 25 pounds flowing pressure at the top outlet. Such supply may be from city connection, gravity tank, pressure tank or pump.

Note: Data on the design of standpipe systems can be found in the Standards of the National Board of Fire Underwriters for the Installation of Standpipe and Hose Systems. The department of industry, labor and human relations will ordinarily approve any installation which is approved by the Underwriters.

Ind 51.22 Fire extinguishers. (1) Where fire extinguishers are required, they shall be of a type approved by the department of industry, labor and human relations. All fire extinguishers shall be charged in accordance with the instructions of the manufacturer.

(2) Extinguishers shall be conspicuously located where they will always be readily accessible and so distributed as to be immediately available in event of fire. They shall be hung on hangers or set on brackets or shelves so that the top of the extinguisher is not more than 5 feet above the floor.

Note: The department of industry, labor and human relations will ordinarily approve any extinguisher which bears the Underwriters' label and which is of the size, and suitable, for the hazard for which it is intended. Consult the department of industry, labor and human relations for lists of approved extinguishers.

Ind 51.23 Automatic sprinklers. (1) Required automatic sprinkler systems shall be designed and constructed in conformity with good established practice. Only materials and devices approved by the department of industry, labor and human relations may be used. Reinstallation of used sprinkler heads is prohibited, and other second-hand devices may be installed by special permission only.

(2) Where an automatic sprinkler system is required throughout a building, supply shall be from a city water main, or from a gravity or pressure tank. If the city water supply is inadequate in either

pressure or volume, a tank of not less than 5,000 gallons capacity shall be provided. The bottom of a gravity tank shall be not less than 35 feet above the under side of the roof.

(3) Where automatic sprinklers are required in a basement only, the supply shall be from a city water main. Where there is no city water supply, such basement sprinklers need not be installed; but at such time as a city supply becomes available, such required basement sprinklers shall be installed.

(4) Every basement sprinkler system shall also include sprinklers in all shafts (except elevator shafts) leading to the story above.

(5) Every sprinkler system shall have a suitable audible alarm and an approved siamese connection marked "To Automatic Sprinklers", and otherwise conforming to section Ind 51.21 (2) (e).

Note: It will be the policy of the department of industry, labor and human relations to approve equipment conforming to standards of the National Board of Fire Underwriters for Sprinkler Equipment, also materials and devices currently listed by the Underwriters' Laboratories. The commission reserves the right to order a sprinkler system in any building, regardless of height or number of persons, if the occupancy is especially hazardous.

Ind 51.24 Fire alarm systems. Interior fire alarm systems required under Wis. Adm. Code sections Ind 54.16, 56.19 and 57.22 shall be designed and constructed in conformity with the following requirements:

(1) All such alarm systems shall consist of operating stations on each floor of the building, including the basement, with bells, horns, or other approved sounding devices which are effective throughout the building. The system shall be so arranged that the operation of any one station will actuate all alarm devices connected to the system except in the case of a presignal system. Fire alarms shall be readily distinguishable from any other signalling devices used in the building. A system designed for fire alarm and paging service may be used if the design is such that fire alarm signals will have precedence over all others.

(2) Every fire alarm system shall be electrically operated or activated by non-combustible, non-toxic gas except as provided in section Ind 56.19. Electrically operated systems shall be operated on closed circuit current under constant electrical supervision, so arranged that upon a circuit opening and remaining open or in case of a ground or short circuit in the undergrounded conductor, audible trouble signals will be given instantly. Gas activated systems shall be mechanically supervised and under constant gas pressure, so arranged that in case of a pressure drop an audible trouble signal will be given instantly. Means shall be provided for testing purposes.

(3) In buildings more than 3 stories in height, coded fire alarm systems shall be provided, and the systems shall be so arranged that the code transmitted shall indicate the location and the story of the structure in which the signal originated.

Exception: (a) In apartment buildings, non-coded continuous sounding fire alarm systems under constant electrical or gas activated supervision will be approved.

(4) Operating stations shall be prominently located in an accessible position at all required exit doors and required exit stairways. Oper-

ating stations shall be of an approved type and shall be conspicuously identified. All such operating stations shall be of a type, which after being operated, will indicate that an alarm has been sent therefrom until reset by an authorized means. (Operating stations having a "Break Glass" panel will be acceptable. On coded systems having a device to permanently record the transmission of an alarm, "Open Door" type stations may be used). The fire alarm operating stations shall be mounted not less than 4 feet nor more than 5 feet above the finished floor as measured from the floor to the center of the box.

(5) All such alarm systems shall be tested at least once a week and a record of such tests shall be kept.

(6) Existing fire alarm systems that are effective in operation will be accepted if approved by the department of industry, labor and human relations.

(7) The gas for operation of non-combustible, non-toxic gas activated fire alarm systems shall be supplied from approved pressure cylinders on the premises. The cylinders shall have sufficient capacity and pressure to properly operate all sounding devices connected to the system for a period of not less than 10 minutes. Cylinders shall be removed for recharging immediately after use and shall be replaced by fully charged cylinders.

(8) Spare cylinders shall be kept on the premises at all times for immediate replacement and separate cylinders for testing shall be incorporated in the system.

(9) Tubing in connection with non-combustible, non-toxic gas activated fire alarm systems shall be installed in rigid metal conduit, flexible metal conduit, or surface metal raceways where subject to mechanical injury. Non-corrosive metallic tubing not less than 3/16" in diameter which will withstand a bursting pressure of not less than 500 pounds per square inch shall be used. The maximum length of 3/16" tubing shall not exceed 300 feet between charged cylinders. All tubing and other component parts shall be installed by skilled workmen in accordance with the provisions of this code.

Note: The following sections are taken from the Wisconsin Administrative Electrical Code.

(10) The energy for the operation of electrical fire alarm systems shall be taken from sources suited to the design of the system. Batteries on systems of less than 110 volts shall not be used.

(11) A 3-wire 120–240 volt or 120–208 volt (3 phase 4 wire) service will be accepted for supervised systems provided the operating current is secured from one ungrounded conductor and the neutral, or ungrounded conductor, and the current for operating trouble signal or signals is secured from the other ungrounded conductor and the neutral or grounded conductor.

(12) Electrical wiring in connection with fire alarm systems shall be installed in rigid metal conduit, flexible metal conduit, electrical metallic tubing or surface metal raceways. Armored cable (metal) may be used where it can be fished in hollow spaces of walls or partitions in apartments or rooming houses not over 3 stories in height. Where the wiring is subject to excessive moisture or severe mechanical injury, rigid metal conduit shall be used. The smallest size conductor to be used in any fire alarm system in a building over 3

stories in height shall be No. 14 AWG or No. 16 AWG for buildings not over 2 stories in height. The wires shall be provided with insulation suitable for use on circuits not exceeding 600 volts. Fire alarm systems shall be connected to the line inside of the main service switch or to the emergency feeder through 2 single pole breakers or switches used for no other purpose and arranged so they can be locked in the "on" position, and under the supervision of a qualified person. The breaker or switches shall be identified by a red color. Two pole breakers shall not be used.

History: 1-2-56; am. (4) (a), Register, November, 1963, No. 95, eff. 12-1-63; am. Register, August, 1964, No. 104, eff. 9-1-64.

Ind 51.25 Specifications cited in this code. The specifications of the American Society for Testing and Materials referred to in this code are listed below.

(1) CLAY BUILDING BRICK. (Solid masonry units made from clay or shale.) Part 12 ASTM Designation C 62–66.

(2) SAND-LIME BUILDING BRICK. Part 12 ASTM Designation C 73–31 (1965).

(3) CONCRETE BUILDING BRICK. Part 12 ASTM Designation C 55–66T.

(4) SAMPLING AND TESTING BRICK. Part 12 ASTM Designation C 67–66.

(5) STRUCTURAL CLAY LOAD-BEARING WALL TILE. Part 12 ASTM C 34–62.

(6) SAMPLING AND TESTING STRUCTURAL CLAY TILE. Part 12 ASTM C 112–60.

(7) SAMPLING AND TESTING CONCRETE MASONRY UNITS. Part 12 ASTM Designation C 140–65T.

(8) STRUCTURAL CLAY NON-LOAD-BEARING TILE. Part 12 ASTM Designation C 56–62.

(9) STRUCTURAL CLAY FLOOR TILE. Part 12 ASTM Designation C 57–57 (1965).

(10) PORTLAND CEMENT. Part 10 ASTM Designation C 150–66.

(11) AIR-ENTRAINING PORTLAND CEMENT. Part 10 ASTM Designation C 175–66.

(12) PORTLAND BLAST-FURNACE SLAG CEMENT. Part 10 ASTM Designation C 205–64T.

(13) MASONRY CEMENT. Part 9 ASTM Designation C 91–66.

(14) QUICKLIME FOR STRUCTURAL PURPOSES. Part 9 ASTM Designation C 5–59.

(15) HYDRATED LIME FOR MASONRY PURPOSES. Part 9 ASTM Designation C 207–49 (1961).

(16) AGGREGATE FOR MASONRY MORTAR. Part 10 ASTM Designation C 144–66T.

(17) AGGREGATES FOR MASONRY GROUT. Part 10 ASTM Designation C 404–01.

(18) PORTLAND-POZZOLAN CEMENT. Part 9 ASTM Designation C 340–66T.

(19) CONCRETE AGGREGATES. Part 10 ASTM Designation C 33–66.

(20) LIGHTWEIGHT AGGREGATES FOR STRUCTURAL CONCRETE. Part 10 ASTM Designation C 330–64T.

(21) BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A15–66.

(22) RAIL-STEEL BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A 16–66.

(23) DEFORMED RAIL STEEL BARS FOR CONCRETE REINFORCEMENT WITH 60,000 P.S.I. MINIMUM YIELD STRENGTH. Part 4 ASTM Designation A 61–66.

(24) AXLE-STEEL BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A 160–66.

(25) SPECIAL LARGE SIZE DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A 408–66.

(26) HIGH-STRENGTH DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT WITH 75,000 P.S.I. MINIMUM YIELD STRENGTH. Part 4 ASTM Designation A 431–66.

(27) MINIMUM REQUIREMENTS FOR THE DEFORMATIONS OF DEFORMED STEEL BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A 305–65.

(28) BLEEDING OF CONCRETE. Part 10 ASTM Designation C 232–58 (1966).

(29) FABRICATED STEEL BAR OR ROD MATS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A 184–65.

(30) COLD-DRAWN STEEL WIRE FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A 82–66.

(31) WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation A 185–64.

(32) UNCOATED SEVEN-WIRE STRESS-RELIEVED STRAND FOR PRESTRESSED CONCRETE. Part 4 ASTM Designation A 416–64.

(33) UNCOATED STRESS-RELIEVED WIRE FOR PRESTRESSED CONCRETE. Part 4 ASTM Designation A 421–65.

(34) STEEL FOR BRIDGES AND BUILDINGS. Part 4 ASTM Designation A 7–66.

(35) STRUCTURAL STEEL. Part 4 ASTM Designation A 36–66.

(36) FLEXURAL STRENGTH OF CONCRETE (using simple beam with third-point loading). Part 10 ASTM Designation C 78–64.

(37) WELDED AND SEAMLESS STEEL PIPE. Part 1 ASTM Designation A 53–65.

(38) CAST IRON AND DUCTILE IRON PRESSURE PIPE. Part 2 ASTM Designation A 377–66.

(39) AIR-ENTRAINING ADMIXTURES FOR CONCRETE. Part 10 ASTM Designation C 260–66T.

(40) CHEMICAL ADMIXTURES FOR CONCRETE. Part 10 ASTM Designation C 494–65T.

(41) FLY ASH FOR USE AS AN ADMIXTURE IN PORTLAND CEMENT CONCRETE. Part 10 ASTM Designation C 350–65T.

(42) RAW OR CALCINED NATURAL POZZOLANS FOR USE AS ADMIXTURES IN PORTLAND CEMENT CONCRETE. Part 10 ASTM Designation C 402–65T.

(43) METHODS AND DEFINITIONS FOR MECHANICAL TESTING OF STEEL PRODUCTS. Part 4 ASTM Designation A 370–65.

(44) DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT WITH 60,000 P.S.I. MINIMUM YIELD STRENGTH. Part 4 ASTM Designation A 432–66.

(45) MAKING AND CURING CONCRETE COMPRESSION AND FLEXURE TEST SPECIMENS IN THE FIELD. Part 10 ASTM Designation C 31–66.

(46) COMPRESSIVE STRENGTH OF MOLDED CONCRETE CYLINDERS. Part 10 ASTM Designation C 39–66.

(47) OBTAINING AND TESTING DRILLED CORES AND SAWED BEAMS OF CONCRETE. Part 10 ASTM Designation C 42–64.

(48) READY-MIXED CONCRETE. Part 10 ASTM Designation C 94–65.

(49) SAMPLING FRESH CONCRETE. Part 10 ASTM Designation C 172–64.

(50) MAKING AND CURING CONCRETE COMPRESSION AND FLEXURE TEST SPECIMENS IN THE LABORATORY. Part 10 ASTM Designation C 192–66.

(51) SPLITTING TENSILE STRENGTH OF MOLDED CONCRETE CYLINDERS. Part 10 ASTM Designation C 496–66.

(52) METHODS OF MECHANICAL TESTINGS. Part 31 ASTM Designation E 6–66.

(53) MILD STEEL COVERED ARC-WELDING ELECTRODES. Part 4 ASTM Designation A 233–64T.

(54) RECOMMENDED PRACTICE FOR PROBABILITY SAMPLING OF MATERIALS. Part 30 ASTM Designation E 105–58.

(55) CALCIUM CHLORIDE. Part 10 ASTM Designation D 98–59.

(56) CHEMICAL ANALYSIS OF HYDRAULIC CEMENT. Part 9 ASTM Designation C 114–67.

(57) FINENESS OF PORTLAND CEMENT BY THE TURBIDIMETER. Part 9 ASTM Designation C 115–58.

(58) FINENESS OF PORTLAND CEMENT BY AIR PERMEABILITY APPARATUS. Part 9 ASTM Designation C 204–55.

(59) COMPRESSIVE STRENGTH OF HYDRAULIC CEMENT MORTARS (using 2-in. cube specimens). Part 9 ASTM Designation C 109–64.

(60) AUTOCLAVE EXPANSION OF PORTLAND CEMENT. Part 9 ASTM Designation C 151–66.

(61) SPECIFIC GRAVITY OF HYDRAULIC CEMENT. Part 9 ASTM Designation C 188–44 (1958).

(62) RESISTANCE TO ABRASION OF SMALL SIZE COARSE AGGREGATE BY USE OF THE LOS ANGELES MACHINE. Part 10 ASTM Designation C 131–66.

(63) MATERIALS FINER THAN NO. 200 SIEVE IN MINERAL AGGREGATES BY WASHING. Part 10 ASTM Designation C 117–66.

(64) FRIABLE PARTICLES IN AGGREGATES. Part 10 ASTM Designation C 142–66T.

(65) LIGHTWEIGHT PIECES IN AGGREGATES. Part 10 ASTM Designation C 123–66.

(66) ORGANIC IMPURITIES IN SANDS FOR CONCRETE. Part 10 ASTM Designation C 40–66.

(67) SIEVE OR SCREEN ANALYSIS OF FINE AND COARSE AGGREGATES. Part 10 ASTM Designation C 136–63.

(68) SOUNDNESS OF AGGREGATES BY USE OF SODIUM SULFATE OR MAGNESIUM SULFATE. Part 10 ASTM Designation C 88–63.

(69) SPECIFIC GRAVITY AND ABSORPTION OF COARSE AGGREGATE. Part 10 ASTM Designation C 127–59.

(70) SPECIFIC GRAVITY AND ABSORPTION OF FINE AGGREGATE. Part 10 ASTM Designation C 128–59.

(71) SURFACE MOISTURE IN FINE AGGREGATE. Part 10 ASTM Designation C 70–66.

(72) UNIT WEIGHT OF AGGREGATE. Part 10 ASTM Designation C 29–60.

(73) VOIDS IN AGGREGATE FOR CONCRETE. Part 10 ASTM Designation C 30–37 (1964).

(74) EFFECT OF ORGANIC IMPURITIES IN FINE AGGREGATE ON STRENGTH OF MORTAR. Part 10 ASTM Designation C 87–63T.

(75) PETROGRAPHIC EXAMINATION OF AGGREGATES FOR CONCRETE. Part 10 ASTM Designation C 295–65.

(76) POTENTIAL REACTIVITY OF AGGREGATES (CHEMICAL METHOD). Part 10 ASTM Designation C 289–66.

(77) POTENTIAL ALKALI REACTIVITY OF CEMENT-AGGREGATE COMBINATIONS (MORTAR BAR METHOD). Part 10 ASTM Designation C 227–65.

(78) TERMS RELATING TO CONCRETE AND CONCRETE AGGREGATES. Part 10 ASTM Designation C 125–66.

(79) WEIGHT PER CUBIC FOOT, YIELD, AND AIR CONTENT (GRAVIMETRIC) OF CONCRETE. Part 10 ASTM Designation C 138–63.

(80) AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE VOLUMETRIC METHOD. Part 10 ASTM Designation C 173–66.

(81) AIR CONTENT OF FRESHLY MIXED CONCRETE BY PRESSURE METHOD. Part 10 ASTM Designation C 231–62.

(82) SLUMP OF PORTLAND CEMENT CONCRETE. Part 10 ASTM Designation C 143–66.

(83) FLOW OF PORTLAND CEMENT CONCRETE BY USE OF THE FLOW TABLE. Part 10 ASTM Designation C 124–39 (1966).

(84) COMPRESSIVE STRENGTH OF CONCRETE USING PORTIONS OF BEAMS BROKEN IN FLEXURE. Part 10 ASTM Designation C 116–65T.

(85) FUNDAMENTAL TRANSVERSE, LONGITUDINAL, AND TORSIONAL FREQUENCIES OF CONCRETE SPECIMENS. Part 10 ASTM Designation C 215–60.

(86) CEMENT CONTENT OF HARDENED PORTLAND CEMENT CONCRETE. Part 10 ASTM Designation C 85–66.

(87) LENGTH CHANGE OF CEMENT MORTAR AND CONCRETE. Part 10 ASTM Designation C 157–64T.

Effective January 1, 1972 (88), (89), (90), (91), (92) and (93) are created to read:

(88) SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS. Part 14 ASTM Designation E 84–68.

(89) FIRE TESTS OF ROOF COVERINGS. Part 14 ASTM Designation E 108–70.

(90) FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS. Part 14 ASTM Designation E 119–69.

(91) NONCOMBUSTIBILITY OF ELEMENTARY MATERIALS. Part 14 ASTM Designation E 136–65.

(92) FIRE TESTS OF DOOR ASSEMBLIES. Part 14 ASTM Designation E 152–66.

(93) FIRE TEST OF WINDOW ASSEMBLIES. Part 14 ASTM Designation E 163–65.

Note: The above standards may be obtained for personal use from American Society of Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103. They are available for inspection in the office of the department, the secretary of state and the revisor of statutes.

History: Cr. Register, October, 1967, No. 142, eff. 11–1–67; cr. (88), (89), (90), (91), (92), and (93), Register, February, 1971, No. 182, eff. 7–1–71; r. (88), (89), (90), (91), (92) and (93) eff. 8–1–71 and recr. (88), (89), (90), (91), (92) and (93) eff. 1–1–72, Register, July, 1971, No. 187.

Ind 51.26 Specifications cited in this code. The specifications of the American Concrete Institute referred to in this code are listed below.

(1) Building code requirements for reinforced concrete ACI 318–63.

(2) Minimum standard requirements for precast concrete floor and roof units ACI 512–67.

(3) Minimum requirements for thin-section precast concrete construction ACI 525–63.

Note: The above standards may be obtained for personal use from American Concrete Institute, 7400 Second Boulevard, Detroit, Michigan. They are available for inspection in the office of the department, the secretary of state and the revisor of statutes.

History: Cr. Register, October, 1967, No. 142, eff. 11–1–67.

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Chapter Ind 52

GENERAL REQUIREMENTS

Ind 52.001 Design and supervision. (1) Every new building containing more than 50,000 cubic feet total volume, or addition to a building which by reason of such addition results in a building containing over 50,000 cubic feet total volume, or structural alteration to a building containing over 50,000 cubic feet total volume shall be designed by an architect or engineer in accordance with the provisions of this code; and shall be constructed under the supervision of an architect or engineer who shall be responsible for its erection in accordance with the plans and specifications of the designer. No change from the original plans and specifications shall be made except with the knowledge and consent of the designer, and as provided in Wis. Adm. Code section Ind 50.10.

(2) On completion of the construction, the supervising architect or engineer shall file a written statement with the department of industry, labor and human relations certifying that, to the best of his knowledge and belief, the construction has been performed in accordance with the plans and specifications approved by the department.

(3) No owner shall construct or alter any building, or portion of a building, or permit any building to be constructed or altered, except in accordance with the provisions of this section.

Note: By the term "architect" or "engineer" above is meant "registered architect" or "registered professional engineer", as defined in the Architects and Professional Engineers Registration Act, Section 101.31, Wis. Stats.

History: 1-2-56; cr. (2) Register, August, 1957, No. 20, eff. 9-1-57.

Ind 52.01 Height and class of construction. (1) All buildings higher than 75 feet above the adjacent grade shall be of fire-resistive construction.

(2) Buildings of mill construction shall not exceed a height of 75 feet in which height there shall not be more than 7 stories; provided, that the height of a building erected on sloping ground may be not to exceed 75 feet plus a vertical distance equal to the vertical change

in slope along the length of any side of such building, but in no case shall such height exceed 85 feet above the adjacent finished ground level. Towers, other than tanks, spires and steeples erected as a part of the building and not used for habitation or storage may extend not to exceed 20 feet above such height limit.

(3) Buildings of ordinary construction shall not exceed a height of 60 feet in which height there shall be not more than 4 stories; provided, that the height of a building erected on sloping ground may be 50 feet plus a vertical distance equal to the vertical change in slope along and in the length of any side of such building, but in no case shall such height exceed 60 feet above the adjacent finished ground level. Towers, other than tanks, spires and steeples not exceeding 20% of the roof area, erected as a part of such building and not used for habitation or storage may extend not to exceed 15 feet above such height limit.

(4) Buildings of frame construction shall not exceed a height of 35 feet in which height there shall be not more than 2 stories, except as provided in section Ind 57.01; provided, that the height of a building erected on sloping ground may be 35 feet plus a vertical distance equal to the vertical change in slope along the length of any side of such building, but in no case shall such height exceed 40 feet above the adjacent finished ground level. Spires, towers, other than tanks, or steeples not exceeding 20% of the roof area, erected as a part of such building and not used for habitation or storage may extend not to exceed 20 feet above such height limit.

(5) In every building more than 4 stories in height, all doors, windows and other openings in outside walls shall be protected with fire-resistive doors or shutters as specified in Wis. Adm. Code section Ind 51.09 or fire-resistive windows as specified in section Ind 51.10, unless such openings are on streets or on alleys or outer courts 20 feet or more in width.

Effective January 1, 1972 (5) is created to read as follows:

(5) In every building more than 4 stories in height, all doors, windows and other openings in outside walls shall be protected with fire-resistive doors or shutters or fire-resistive windows as specified in section Ind 51.047, unless such openings are on streets or on alleys or outer courts 20 feet or more in width.

History: 1–2–56; am. (5) Register February 1971, No. 182, eff. 7–1–71; r. and recr. (5) eff. 8–1–71 and exc. 1–1–72; cr. (5) eff. 1–1–72; Register, July, 1971, No. 187.

Ind 52.02 Windows. (1) Every room in which one or more persons live, sleep, or are employed, (except storage rooms or other rooms where the nature of the occupancy will not permit) shall be lighted by a window or windows opening directly upon a street or alley, or upon a court (as defined in section Ind 52.04) on the same lot with the building. The windows shall be so constructed and distributed as to afford proper light and ventilation. Every building more than 40 feet deep (measuring at right angles to the windows) shall have windows on at least 2 sides. *Exception:*

(a) The provisions of this rule may be waived for factory, office, mercantile, schools or places of instruction if provisions are made for proper artificial lighting; and if ventilation is provided in accordance with the provisions of chapter Ind 59 of the Building and Heating, Ventilating and Air Conditioning Code.

1. Requirements applicable to schools or places of instruction shall be as stated in section Ind 56.05.

Chapter Ind 54

FACTORIES, OFFICE AND MERCANTILE BUILDINGS

Ind 54.001 Scope. This classification includes all factories and workshops (including all places where manual labor is employed), office buildings, telegraph and telephone offices, mercantile establishments where commodities are bought or sold, taverns, warehouses, railroad stations, exhibition buildings, and places where not more than 100 persons assemble for recreation, entertainment, worship, or dining purposes.

Ind 54.01 Construction, height and allowable area. (1) Buildings in this classification shall be of the type of construction, and shall not exceed the number of stories as specified in this section. The floor area of any such building shall not exceed that permitted for the corresponding type of construction and number of stories.

Types of Construction	Number of Stories	Maximum Floor Areas (Sq. Ft.) When Building Fronts on		
		1 Street	2 Streets	3 or more Streets
Fire Resistive	No Restrictions			
Mill Construction	6 or 7 stories	6,000	9,000	12,000
	4 and 5 stories	10,000	15,000	18,000
	2 and 3 stories	15,000	18,000	20,000
	1 story	20,000	25,000	30,000
Ordinary Construction	4 stories	6,000	9,000	12,000
	2 and 3 stories	7,500	11,000	15,000
	1 story	12,000	15,000	20,000
Frame Construction	2 stories	5,000	8,000	7,000
	1 story	10,000	12,000	14,000

(2) When the entire building is protected by an automatic sprinkler system, the above areas may be increased 66⅔%. There shall be no area restriction in one story mill constructed buildings protected by an approved automatic sprinkler system. In one story buildings of

ordinary construction, whose contents are incombustible, and whose floors, roofs, and structural framing are of incombustible material there shall be no area restriction.

(3) No building shall be limited in area when divided into sections which do not exceed the maximum areas tabulated in this section by division walls. Such division walls shall have not less than a 4-hour fire-resistive rating as specified in Wis. Adm. Code section Ind 51.05 and shall extend 3 feet above the roof unless the roof is of fire-resistive construction. All openings in such walls shall be protected by fire-resistive doors as specified in section Ind 51.09. Such doors may normally remain open if held in that position by fusible links.

Effective January 1, 1972 section (3) is created to read as follows:
(3) No building shall be limited in area when divided into sections which do not exceed the maximum areas tabulated in this section by division walls. Such division walls shall have not less than a 4-hour fire-resistive rating as specified in Wis. Adm. Code section Ind 51.05 and shall extend 3 feet above the roof unless the roof is of fire-resistive construction. All openings in such walls shall be protected by fire-resistive doors as specified in section Ind 51.09. Such doors may normally remain open if held in that position by fusible links.

History: 1–2–56; am. (2) and (3), Register, September, 1959, No. 45, eff. 10–1–59; am. (3), Register, February, 1971, No. 182, eff. 7–1–71; r. and recr. (3) eff. 8–1–71 and exp. 1–1–72; r. (3) eff. 1–1–72, Register, July, 1971, No. 187.

Ind 54.02 Number and location of exits. (1) Every building and every story thereof shall have at least 2 exits, with the following exceptions:

(a) First and second story storage rooms not over 3000 square feet in area.

(b) The second story of a 2 story building, provided such story is used only for offices; is not over 3000 square feet in area; and has a stairway enclosed with not less than one-hour fire-resistive construction, as specified in section Ind 51.05, leading directly to the outside and not leading to the basement. Such enclosure shall be unpierced except for the entrance and exit doors.

Effective January 1, 1972 section (1) (b) is created to read as follows:
(b) The second story of a 2 story building, provided such story is used only for offices; is not over 3,000 square feet in area; and has a stairway enclosed with not less than 1-hour fire-resistive construction, as specified in section Ind 51.05, leading directly to the outside and not leading to the basement. Such enclosure shall be unpierced except for the entrance and exit doors.

(c) Only one exit will be required for a retail establishment or office occupancy having a floor area of not more than 600 square feet provided the entrance door opens directly to the outside, and no part of the room is more than 50 feet from the exit.

(2) Additional exits shall be provided so that no part of any factory or mercantile building having contents which are liable to burn with extreme rapidity or from which poisonous fumes may be liberated or explosions occur in case of fire, will be more than 75 feet distant from an exit. In other buildings in this classification this distance may be increased to 100 feet and where approved sprinklers are provided throughout the building, a further increase to 150 feet will be permitted. All of the above distances are to be measured along public passageways and aisles.

(3) Exits in all buildings of this classification shall be so located and distributed so as to afford the best possible egress.

History: 1-2-56; cr. (1) (c), Register, September, 1959, No. 45, eff. 10-1-59; am. (1) (b), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (1) (b) eff. 8-1-71 and exp. 1-1-72, and cr. (1) (b) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 54.03 Type of exits. (1) At least one-half of the exits above required shall be stairways as specified in sections Ind 51.16–51.18. The other exits shall be either stairways or horizontal exits as specified in section Ind 51.19, or fire escapes as specified in section Ind 51.20. No fire escape, however, will be accepted as a required exit on any building more than 5 stories or 55 feet in height. In a 2 story building, an outside wooden stairway may be used as an exit.

(2) Every building which will accommodate more than 50 persons above the second story shall have at least 2 stairways.

(3) Wherever stairways are required under this classification, ramps with a slope not greater than one foot in 6 feet may be substituted. Ramps shall comply with all the requirements for stairways as to construction, enclosures, width, landing and lighting, and shall be surfaced with an approved non-slip material. Handrails shall not be required where the slope of the ramp is less than one foot in 10 feet.

Ind 54.04 Total width. (1) In a building not provided with horizontal exits, the total width of stairways shall be not less than the following:

(a) In ordinary or frame buildings, 60 inches per 100 persons; if sprinklered, 40 inches per 100 persons.

(b) In fire-resistive and mill buildings:

	Fire-resistive Sprinklered	Fire-resistive not Sprinklered	Mill Sprinklered	Mill not Sprinklered	
	30	50	10	50	in. per 100 persons on 2nd floor
plus	15	25	20	30	in. per 100 persons on 3rd floor
plus	12	20	16	24	in. per 100 persons on 4th floor
plus	9	15	12	18	in. per 100 persons on 5th floor
plus	6	10	8	12	in. per 100 persons on 6th floor
plus	3	5	4	6	in. per 100 persons on 7th floor
plus	0	0	0	0	in. per 100 persons on 8th floor and above
	but in no case shall such total width be less than				
	30	50	40	60	in. per 100 persons on any one floor.

(2) Standard fire escapes (section Ind 51.20) may be substituted for stairways to the extent of not more than ⅓ of the required total width, subject to the provision of section Ind 54.02.

(3) If horizontal exits (section Ind 51.19), are provided for any floor, the number of persons accommodated on such floor may be increased at the rate of 100 persons for each 40 inches of width of such exits, provided such increase shall not exceed 100% of the number of persons accommodated by the stairways.

Example: As examples of calculations under this section where the same number of persons are to be accommodated on each floor, the

following table shows the number accommodated by 2 stairways of minimum width (each 44 inches wide):

(a) Frame and ordinary buildings, 147 persons total, above first story; if sprinklered, 220 persons.

(b) Fire-resistive and mill buildings:

Height of building	Fire-resistive Sprinklered	Fire-resistive not Sprinklered	Mill Sprinklered	Mill not Sprinklered	
2 stories	293	222	220	147	Persons on each floor
3 stories	196	147	147	98	Persons on each floor
4 stories	154	92	116	77	Persons on each floor
5 stories	143	88	100	67	Persons on each floor
6 stories	132	74	92	61	Persons on each floor
More than 6 stories	117	70	....	....	Persons on each floor

(4) Where one minimum stairway and one "A" fire escape are provided, take ¾ of the above numbers; subject to the limitations of section Ind 54.02.

Ind 54.05 Capacity of buildings. (1) In calculating the aggregate width of exits, the capacity of the buildings shall be established as follows:

(a) Stores, first floor and basement	30	sq. ft. per person
(b) Stores, second floor and above	60	" " " "
(c) Dining rooms, cafes, taverns, etc.	10	" " " "
(d) Places of seated assemblage	7	" " " "
(e) Warehouses	300	" " " "
(f) Factories and offices	75	" " " "

(2) The above figures are based on the net area of each occupied space. Where dining rooms, cafes, dance halls and places of seated assemblage accommodate more than 100 persons, see section Ind 55.01.

(3) In other occupancies not specified above, the capacity shall be determined by the actual number of persons liable to be accommodated therein and no greater number of persons will be permitted therein.

Ind 54.06 Exit doors. (1) Every door which serves as an exit from a room accommodating more than 10 persons, or which is an exit from a public passageway or stairway shall be a standard exit door as specified in section Ind 51.15, except that such exit door need not swing outward if it accommodates less than 25 persons, is not located at the foot of a stairway, or is not more than 4 risers above the outside grade.

(2) Every exit doorway from each floor, other than the principal entrance on the first floor, shall be indicated by an approved illuminated sign over the door bearing the word EXIT or OUT in plain letters not less than 5 inches in height.

Ind 54.07 Passageways. Where there is not direct access to outside exit doors, safe and continuous passageways, aisles or corridors lead-

ing directly to every exit shall be maintained at all times on all floors of all buildings. Every passageway, aisle or corridor shall conform in width to the rule for width of stairways as specified in section Ind 54.04. Widths shall be measured in the clear, at their narrowest points produced by any projection, radiator, pipe or other object and the required width shall be maintained clear and unobstructed at all times.

Ind 54.08 Enclosure of stairways and shafts. (1) All stairways, ramps and elevator shafts in buildings 3 or more stories in height, including landings shall be enclosed as follows:

(a) Fire-resistive buildings, not less than 2-hour fire-resistive construction as specified in section Ind 51.05,

(b) Mill constructed buildings, not less than 2-hour fire-resistive construction as specified in section Ind 51.05,

(c) Ordinary constructed buildings, not less than one-hour fire-resistive construction as specified in section Ind 51.05.

(d) Frame constructed buildings, not less than one-hour fire-resistive construction as specified in section Ind 51.05.

(2) All doors opening into such enclosures shall be as specified in section Ind 51.09, and all windows shall be of wired glass and metal frames and sash.

Effective January 1, 1972 sections (1) (a), (b), (c), (d) and (2) are created to read:

(a) Fire-resistive buildings, not less than 2-hour fire-resistive construction as specified in section Ind 51.04.

(b) Mill constructed buildings, not less than 2-hour fire-resistive construction as specified in section Ind 51.04.

(c) Ordinary constructed buildings, not less than 1-hour fire-resistive construction as specified in section Ind 51.04.

(d) Frame constructed buildings, not less than 1-hour fire-resistive construction as specified in section Ind 51.04.

(2) All doors opening into such enclosures shall be as specified in section Ind 51.17, and all windows shall be of wired glass and metal frames and sash.

(3) *Exception:* Monumental stairs leading from the street floor to the second floor or to a basement used for commercial purposes need not be enclosed, provided they are effectively cut off at the second floor (and basement) by partitions having fire-resistance as specified above.

Note: Elevators and Elevator Enclosures: For requirements governing the installation and operation of elevators and the construction and protection of elevator shaftways, see the elevator code issued by the department of industry, labor and human relations, which code applies to all public buildings and places of employment.

History: 1–2–56; am. (1) (a), (b), (c), (d) and (2), Register, February, 1961, No. 182, eff. 7–1–61; r. and recr. (1) (a), (b), (c), (d) and (2) eff. 8–1–71 and exp. 1–1–72; cr. (1) (a), (b), (c), (d) and (2) eff. 1–1–72, Register, July, 1971, No. 187.

Ind 54.09 Opening to roof. Every building, or section of a building, 2 stories or more in height shall have a permanent means of access to the roof from the inside. Where such access consists of a scuttle in the roof, the opening shall be not less than 20 by 30 inches and there shall be a permanent ladder or stairway leading thereto.

Ind 54.10 Trap doors and floor openings. Every opening through any floor or through any roof used by the public or by employes shall be

guarded by a substantial enclosure or rail not less than 3 feet 6 inches high. Floor openings in buildings of more than 2 stories, unless enclosed with fire-resistive enclosures as specified in section Ind 54.08 shall be protected by fire-resistive doors as specified in section Ind 51.09.

Effective January 1, 1972 section Ind 54.10 is created to read as follows:

Every opening through any floor or through any roof used by the public or by employes shall be guarded by a substantial enclosure or rail not less than 3 feet 6 inches high. Floor openings in buildings of more than 2 stories, unless enclosed with fire-resistive enclosures as specified in section Ind 54.08 shall be protected by fire-resistive doors as specified in section Ind 51.09.

History: 1-2-56; am. Register, February, 1971, No. 182, eff. 7-1-71; r, and recr. eff. 8-1-71 and exp. 1-1-72; cr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 54.11 Lighting. (1) All stairways, fire escapes and exits and the passageways leading thereto when used at night shall be properly illuminated to facilitate egress. The intensity of illumination shall be not less than 2.5 foot candles.

(2) All gas jets or gas lights in factories or workshops where combustible material is used, shall be properly enclosed by globes or wire cages, or otherwise properly guarded.

Ind 54.12 Sanitary equipment. (1) Toilet facilities shall be provided and maintained in connection with every public building and place of employment under this classification.

(2) In all public buildings under this classification, separate toilet rooms shall be provided for males and females, except as in section Ind 52.51 and as otherwise provided hereunder.

(3) In public places where stimulating drinks, such as beer, wines and other alcoholic beverages, are served for consumption on the premises, except in dining rooms, restaurants and similar places where the serving of drinks is only incidental to the regular food service, and where no public bar is provided, toilet fixtures shall be provided in connection with the area served, for the sex (or sexes) served, as follows:

(a) One water-closet for every 40 females, or fraction thereof;

(b) One water-closet for every 75 males, or fraction thereof, and

(4) Where there are more than 25 males accommodated there shall be one urinal for every 50 males, or fraction thereof, in excess of 25.

(5) The numbers indicated above refer to the number of persons that can be accommodated at the same time and shall be determined on the basis specified in section Ind 54.05.

(6) In toilet rooms used by males, all water-closets shall have an elongated bowl and open front seat without cover. All urinals shall be of the type of construction specified in section Ind 52.60. Where a urinal is not provided, the water-closet shall have an elongated bowl with self-rising seat. In toilet rooms used by females, all water-closets shall have an elongated bowl and open front seats without cover.

(7) In public occupancies other than those where stimulating drinks (as defined above) are served for consumption on the premises, one water-closet of the type described above shall be provided in connection therewith for each sex accommodated. Except that a small mercantile establishment where normally not more than 25 patrons are expected to be on the premises at the same time, need have in connection therewith only one toilet room to accommodate both the public and employes.

(a) *Toilets in places of employment.* See section Ind 22.03 of the general orders on sanitation following this section.

(b) *General requirements.* For general toilet room requirements in regard to location, construction, ventilation, fixtures, etc., see sections Ind 52.50 to Ind 52.64, inclusive.

(8) Where toilet rooms used by males and females adjoin, the walls between such toilet rooms, if of studding with lath and plaster, the lath shall be of metal.

(9) DRINKING WATER. Sufficient pure drinking water piped from mains, or in sanitary containers, shall be provided in connection with every public building under this classification. Drinking fountains separate from other fixtures and constructed as provided in the state plumbing code, or individual drinking cups of a type approved by the state board of health, shall be provided, except in places where food or drink is served and in public buildings where normally not more than 25 patrons are expected to be on the premises at the same time. Drinking fountains shall not be placed in toilet rooms.

(a) For drinking water requirements in places of employment see section Ind 22.17 of the general orders on sanitation following this section. See also section 146.07, Wis. Stats., which prohibits the use of common drinking cups.

(10) WASHING FACILITIES. In every public building and in every place of employment, except as provided in section Ind 22.13, wash bowls shall be provided in connection with toilet rooms, one for every 2 water-closets or urinals, or fraction. Clean individual cloth or paper towels and soap shall be provided in connection with every lavatory installation. The installation of a towel for common use, or the use of any common towel is not permissible.

See also sections Ind 22.13 to Ind 22.15, inclusive.

History: 1-2-56; am. (3) (a) and (b) and (6), Register, September, 1959, No. 45, eff. 10-1-59.

Note: The following sections, Ind 22.03, Ind 22.13, Ind 22.14, Ind 22.15 Ind 22.17, and Ind 22.18 are taken from the general orders on sanitation issued by the department of industry, labor and human relations. For further requirements on sanitation, see that publication.

Ind 22.03 Number of closets and urinals. (1) In every place of employment, whether heretofore or hereafter constructed, one water-closet shall be provided for every 20 persons, or fraction thereof, of either sex.

(2) In addition thereto, where more than 10 males are employed, one urinal shall be provided for every 40 males, or fraction thereof. Where not more than 10 males are employed, either a urinal shall be provided or the water-closet shall have an elongated bowl and self-rising seat.

(3) The requirements in subsections (1) and (2) shall be computed on the basis of the maximum number of employes on any one shift.

(4) In all new installations, only individual urinals shall be used. Such individual urinals shall be of porcelain, vitreous china, or stain-

less steel, set into the floor, the floor graded to the urinal, and shall be equipped with an effective automatic tank or valve or a satisfactory foot operating flushing device.

(5) All water-closets hereafter installed shall be of the individual type having elongated bowls and open front seats.

Ind 22.13 Lavatories; location. Washing facilities shall be provided in or adjacent to every toilet room. In new installations, there shall be at least one lavatory for every 5 fixtures (closets and urinals), or fraction.

***Cross reference*—See section Ind 22.14 for additional requirements for places of employment.**

See section Ind 22.14 on material from which lavatories shall be made and for allowable types of installations.

Note: One lavatory for every 2 or 3 fixtures is recommended.

Ind 22.14 Washing facilities for places of industrial employment. (1) LAVATORIES. (a) There shall be at least one lavatory supplied with hot and cold water provided for every 10 employes or fraction in the following places of employment:

1. In all places of employment where lead, arsenic or other poisonous or injurious materials are handled by the employes.

2. In all places of employment where food is prepared or manufactured.

3. In all other places of employment where the employes' hands become dirty or greasy.

(b) Wash rooms shall be constructed according to the requirements for toilet rooms.

(c) Twenty inches of trough wash sink, or of the edge of a circular wash fountain shall be considered the equivalent of one lavatory. The trough wash sink or circular wash fountain shall not be equipped with a plug or other stopper. Each lavatory and each 20 inches of trough wash sink shall be equipped with either a faucet or spray pipe, so connected as to supply water of the desired temperature.

(d) All lavatories shall be made of porcelain, enameled iron, or other similar impervious material.

(2) SHOWERS. Shower facilities shall be provided in accordance with the following requirements.

(a) In places of employment where poisonous or irritating materials which penetrate the clothing are handled at least one shower shall be provided for every 10 employes or fraction who handle or come in contact with such materials.

(b) In glue factories, canneries, foundries, mines, and other places of employment where materials which penetrate the clothing are handled at least one shower for every 20 such employes, or fraction, shall be provided.

(c) Showers shall be provided with hot and cold water and be equipped with a hot and cold regulating valve. The regulating device or valve shall be plainly marked and shall be so located that the valve can be operated without standing under the shower. Supply or feed pipes to showers shall be placed overhead or protected to avoid the possibility of a person coming in contact with the hot water pipes.

(d) Each shower room or compartment shall be constructed of material impervious to moisture, and the floor under each shower head shall be of such construction or be so provided with a suitable footrest device, so as to prevent slipping.

(3) SOAP. For all hand washing facilities in places of employment, an adequate quantity of bland, non-irritating, non-abrasive soap which shall effectively cleanse the skin shall be provided.

Ind 22.15 Towels. In all places of employment, the use of towels in common is prohibited. Where hand washing facilities are required, individual cloth towels, magazine type roll cloth towels, or paper towels shall be furnished by the employer. Electric hand dryers may be used if approved by the industrial commission.

Ind 22.17 Drinking water. (1) Every place of employment shall be supplied with sufficient pure drinking water and the faucets or outlets for the same shall be placed convenient to the employes, but not in toilet rooms. Common drinking cups are prohibited. Sanitary drinking fountains shall be installed or individual cups shall be provided by the employers.

***Cross reference*—See the state plumbing code for required construction of sanitary drinking fountains.**

(2) Where running water is not available, a covered drinking water container equipped with a faucet or bubbler shall be provided. The

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container shall be cleaned and sterilized at frequent intervals and kept in a sanitary condition and in good repair.

Ind 22.18 Rest rooms. (1) A rest room shall be provided at the principal place of business (owned, leased, or rented), where 5 or more persons are employed.

(2) Rest rooms shall be furnished with a cot or couch, and shall be lighted, heated and ventilated in accordance with the applicable standards published in Wisconsin administrative codes.

(3) A toilet room shall not, under this rule, be construed to be one may it serve as a rest room. A first aid room may serve as a rest room.

History: 1–2–56; r. and recr. Register, August, 1967, No. 140, eff. 9–1–67.

Ind 51.13 Isolation of hazards. (1) All heating boilers and furnaces, power boilers, fuel rooms, storage vaults for paints, oils, and similar combustibles and other similar hazards in a building shall be isolated from the rest of the building by at least a 2-hour fire-resistive enclosure as specified in sections Ind 51.05 and Ind 51.06; except that in buildings not more than 2 stories in height and having a floor area of not more than 3000 square feet per floor, a one-hour fire-resistive enclosure as specified in sections Ind 51.05 and Ind 51.06, or better, shall be provided.

(2) All openings shall be protected with self-closing fire-resistive doors as specified in section Ind 51.09.

Effective January 1, 1972 sections (1) and (2) are created to read as follows:

(1) All heating boilers and furnaces, power boilers, fuel rooms, storage vaults for paints, oils, and similar combustibles and other similar hazards in a building shall be isolated from the rest of the building by at least a 2-hour fire-resistive enclosure as specified in sections Ind 51.04; except that in buildings not more than 2 stories in height and having a floor area of not more than 3,000 square feet per floor, a 1-hour fire-resistive enclosure as specified in section Ind 51.04, or better, shall be provided.

(2) All openings shall be protected with self-closing fire-resistive doors as specified in section Ind 51.047.

(3) Space heaters, suspended furnaces, and direct-fired unit heaters, fired with various fuels, may be used without an enclosure where approved by the department of industry, labor and human relations. Where suspended furnaces and direct fired unit heaters are used without an enclosure, all such units shall be located at least 7 feet above the floor.

History: 1–2–56; am. (1) and (2), Register, February, 1971, No. 182, eff. 7–1–71; r. and recr. (1) and (2) eff. 8–1–71, and exp. 1–1–72; cr. (1) and (2) eff. 1–1–72, Register, July, 1971, No. 187.

Ind 54.14 Standpipes and fire extinguishers. (1) For exterior standpipes see section Ind 51.21.

(2) Standard interior first aid standpipes, as specified in section Ind 51.21 shall be provided in all buildings of more than 2 stories and more than 3000 square feet undivided floor area, where flammable material or any other hazardous condition is present, unless an approved automatic sprinkler system is provided.

(3) Wherever water supply of sufficient pressure is not available, 2 standard fire extinguishers as specified in section Ind 51.22 shall be provided on each floor in place of each required interior standpipe.

Ind 54.15 Automatic sprinklers. (1) A complete automatic sprinkler system, as specified in section Ind 51.23, shall be provided in every

building of this classification where more than 50 persons are employed or accommodated above the third story except as provided below:

(a) Office buildings.

(b) In 3 story buildings other than office buildings with more than 50 persons on the third floor, only basements and sub-basements must be sprinklered.

(c) An office building in which one or more floors are used for mercantile purposes, only the mercantile portion must be sprinklered.

(d) Buildings of fire-resistive construction whose contents are not readily combustible.

History: 1-2-56; r. and recr., Register, December, 1970, No. 180, eff. 1-1-71.

Ind 54.16 Fire alarm. A fire alarm system complying with section Ind 51.24 shall be provided in every factory or workshop where more than 10 persons are employed above the second story except buildings which are provided with a complete automatic sprinkler system and except fire-resistive buildings whose contents are practically incombustible.

Ind 54.17 Floor load signs. (1) In every factory, workshop, warehouse, or other building where material is piled, notices of a permanent character shall be painted or otherwise prominently displayed, stating the live load in pounds per square foot which the floor is designed to carry. Such notices shall be placed in full view, on each floor.

(2) Where floors are always used for the storage of some particular material, the walls shall be marked to the height to which the material shall be piled without exceeding the safe load.

Ind 54.18 Signs indicating number of persons. In all buildings of this classification where 50 or more persons are accommodated on any floor above the second, notices shall be prominently displayed stating the maximum number of persons on each floor for whom stairways and other exits have been provided according to sections Ind 54.02–Ind 54.06. Such notices shall be placed in full view, on each floor.

Ind 54.19 No smoking signs. Smoking shall not be permitted in retail establishments where flammable materials are handled or sold. Suitable signs bearing the words "No Smoking" shall be erected in all places where such hazard exists.

Ind 54.20 Tents. All tents used for sales or storage purposes shall conform to the requirements specified for tents in sections Ind 55.68–Ind 55.68, inclusive, of this code.

History: Cr. Register, September, 1959, No. 45, eff. 10-1-59.

Chapter Ind 55

THEATERS AND ASSEMBLY HALLS

Ind 55.001 Theaters. In the theater classification, are included all buildings or parts of buildings, containing an assembly hall, having a stage which may be equipped with curtains or permanent or movable scenery, or which is otherwise adaptable to the showing of plays, operas, motion pictures or similar forms of entertainment.

Ind 55.01 Assembly halls. (1) In the assembly hall classification, are included all buildings, or parts of buildings, other than theaters, which will accommodate more than 100 persons for entertainment, recreation, instruction, worship or dining purposes.

(a) Every assembly hall which will accommodate not more than 100 persons shall conform to the requirements of Wis. Adm. Code chapter Ind 54, covering factories, office and mercantile buildings.

Ind 55.02 Class of construction. (1) The capacities of buildings or parts of buildings in this classification for the various types of construction shall not exceed, and shall comply, with the following requirements:

MAXIMUM CAPACITIES

Type of Construction	With Stage	Without Stage
Fire Resistive	No limit	No limit
Mill	750	1,500
Ordinary	500	1,000
Frame	300	750

(a) *Exception.* The fire protection for structural steel supporting the roof may be omitted in one-story buildings in this classification provided the roof and its supports are of incombustible or mill construction throughout.

(2) **Frame construction.** Where a building of this classification is erected of frame construction, the following restrictions shall apply:

(a) Not more than one story in height without a balcony, and with no basement except a heating and fuel room enclosed with fire-resistive construction as specified in section Ind 55.29, with all interior openings protected with self-closing fire-resistive doors as specified in section Ind 51.09.

Effective January 1, 1972 section (2) (a) is created to read as follows:
(a) Not more than one story in height without a balcony, and with no basement except a heating and fuel room enclosed with fire-resistive construction as specified in section Ind 55.29, with all interior openings protected with self-closing fire-resistive doors as specified in section Ind 51.047.

(b) Located at least 20 feet from any other building or adjoining property line.

(c) Is not built in connection with a building used for any other purpose.

(d) Is provided with foundation walls and piers of masonry construction.

(e) Where motion picture booths are required, they shall be enclosed with 2-hour fire-resistive construction.

Exception: In places of worship, a full basement and a balcony seating not more than 30 persons may be provided.

(3) Balconies accommodating more than 100. In any theater or assembly hall, balconies which accommodate more than 100 persons shall be of fire-resistive construction as specified in section Ind 51.001.

History: 1-2-56; (1); (1) (a); (2); (2) (a); (2) (b); (2) (c); (2) (d); (2) (e); (2) (f); (3); am. Register, June, 1956, No. 6, eff. 7-1-56; am. (1) (a), Register, August, 1957, No. 20, eff. 9-1-57; am. Register, January, 1961, No. 61, eff. 2-1-61; am. (2) (a), Register, February, 1971, No. 182, eff. 7-1-71; [illegible] eff. 8-1-71 and [illegible] eff. 1-1-72, Register, July, 1971, No. 187.

Ind 55.03 **Height above grade.** (1) THEATERS. The height of the sills of the principal entrance doors to any theater, as defined in section Ind 55.001, shall be not more than 18 inches above the outside grade at that point. The floor level at the highest row of seats on the main floor shall not be more than 6 feet above the outside grade at the main entrance; the floor level at the lowest row of seats on the main floor shall be not more than 6 feet below, or above, the grade at the nearest exit.

(2) ASSEMBLY HALLS AND ROOF GARDENS ABOVE FIRST STORY. Where assembly halls are provided above the first story, the following limitation of occupancy, type of construction and exit facilities shall apply:

Type of Construction	Maximum No. of Occupants	Height Above Grade
Fire-resistive	No limit	No limit*
Mill, or Ordinary	400	2nd story or 22 feet
Mill, or Ordinary	200	3rd story or 35 feet

*One smokeproof stairtower from the level of the assembly hall leading directly to the exterior at street grade shall be provided for every 750 persons capacity, or fraction thereof. These stairways shall be at least 44 inches wide and shall be in addition to other required stairways in the building.

(3) BASEMENT ASSEMBLY HALL. An assembly hall may be placed in the basement of a fire-resistive building if the capacity does not exceed 2,500 persons or in the basement of a building of mill or ordinary construction if the capacity does not exceed 400 persons.

History: 1-2-58; r. and recr. Register, September, 1959, No. 45, eff. 10-1-59.

Ind 55.04 Exposure and courts. (1) Every theater or assembly hall which accommodates more than 600 persons shall have at least 3 walls abutting on streets, alleys, or open courts.

(2) The wall containing the main entrance to any theater or assembly hall shall abut on a street. The lobby or passageway leading from the main entrance doors to the foyer or auditorium shall be direct and unobstructed and of a minimum width equal to the sum of the widths of the main entrance doors. There shall be no openings from other occupancies to such a corridor or passageway.

(3) The width of every exit court shall be at least 6 feet for an occupancy not exceeding 500 persons, and shall be increased at the rate of one foot per each 500 persons additional. Every such court shall lead to a public thoroughfare, either directly, or through a passageway of equal width, not less than 8 feet high enclosed with unpierced 4-hour fire-resistive walls, ceiling and floor as specified in sections Ind 51.05 and Ind 51.06. The floor and ceiling shall be designed for a live load of not less than 150 pounds per square foot. No such court, or passageway shall be used for storage or any other purpose whatsoever.

Effective January 1, 1972 section (3) is created to read as follows:

(3) The width of every exit court shall be at least 6 feet for an occupancy not exceeding 500 persons, and shall be increased at the rate of one foot per each 500 persons additional. Every such court shall lead to a public thoroughfare, either directly, or through a passageway of equal width, not less than 8 feet high enclosed with unpierced 4-hour fire-resistive walls, ceiling and floor as specified in section Ind 51.06. The floor and ceiling shall be designed for a live load of not less than 150 pounds per square foot. No such court, or passageway shall be used for storage or any other purpose whatsoever.

History: 1-2-58; am. (3), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (3) eff. 8-1-71 and exp. 1-1-72; cr. (3) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 55.05 Separation from other occupancies. (1) Every theater and assembly hall shall be separated from any other occupancy by an absolute occupancy separation as specified in section Ind 61.08, except that a special occupancy separation as specified in section Ind 61.08 may be used between an assembly hall accommodating not more than 750 persons and any other non-hazardous occupancy. Where a special

occupancy separation is permitted in this section, a single fire-resistive door may be used for the protection of openings.

(2) For assembly halls of unlimited capacity located on upper floors of fire-resistive buildings which are served by elevators, the elevator openings may be permitted under the requirements for special occupancy separation specified in section Ind 51.08, but otherwise, absolute occupancy separation is required.

(3) Where a garage which is more than 500 square feet in area, chemical laboratory or other occupancy where flammable or explosive liquids or gases are used or stored is built in connection with a building used for a theater or assembly hall, it shall be separated therefrom by means of 4-hour fire-resistive walls as specified in section Ind 51.05 and unpierced 4-hour fire-resistive floors above and below as specified in section Ind 51.06. All openings in the wall to adjoining parts of the building shall be protected by means of self-closing fire-resistive doors as specified in section Ind 51.09.

Effective January 1, 1972 section (3) is created to read as follows:

(3) Where a garage which is more than 500 square feet in area, chemical laboratory or other occupancy where flammable or explosive liquids or gases are used or stored is built in connection with a building used for a theater or assembly hall, it shall be separated therefrom by means of 4-hour fire-resistive walls and unpierced 4-hour fire-resistive floors above and below as specified in section Ind 51.04. All openings in the wall to adjoining parts of the building shall be protected by means of self-closing fire-resistive doors as specified in section Ind 51.047.

History: 1-2-56; am. Register, January, 1961, No. 61, eff. 2-1-61; am. (3), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (3), eff. 8-1-71 and exp. 1-1-72; cr. (3) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 55.66 Capacity. (1) The following table includes various types of occupancy within the scope of this section, together with the method to be used in determining the capacity.

(2) No greater number of persons than the number thus established shall be permitted in any theater or assembly hall.

Use or Occupancy	Basis of Capacity
(a) Arenas and field houses	4 sq. ft. per person. Use seated areas only.
(b) Assembly halls, with stage	7 sq. ft. per person.
(c) Banquet halls	10 sq. ft. per person.
(d) Churches (auditoriums)	7 sq. ft. per person.
(e) Churches (dining rooms)	10 sq. ft. per person.
(f) Dance halls	10 sq. ft. per person.
(g) Dining rooms	10 sq. ft. per person.
(h) Gymnasiums	6 sq ft. per person for seated space.
	15 sq. ft. per person for unseated space.
(i) Lecture halls	7 sq. ft. per person.
(j) Lodge halls	6 sq. ft. per person for seated space.
	15 sq. ft. per person for unseated space.
(k) School auditoriums	7 sq. ft. per person.

(l) Skating rinks ..... 15 sq. ft. per person.
(m) Theaters ..... 7 sq. ft. per person.
(n) Theater lobbies ..... 7 sq. ft. per person.

(3) The capacity of theaters and theater lobbies must be combined to determine the theater capacity.

(4) (a) Every theater or assembly hall having movable seats shall display a sign stating the maximum number of persons permitted by code.

1. The sign shall be placed in a conspicuous place at the main entrance to each theater or assembly hall.

2. The sign shall have the following wording: "Limit (Number) Persons." The maximum number of persons shall be determined by the capacity as permitted by subsection (2) and section Ind 55.12. The lettering shall be white on a dark background. The letters shall be not less than 1½ inches in height and the number shall be not less than 3 inches in height.

History: 1–2–66; cr. (4) (a), Register, July, 1966, No. 127, eff. 8–1–66.

Ind 55.07 Number and location of exits. (1) Every floor and balcony of a theater and assembly hall shall be provided with not less than 2 exits, placed as far apart as practicable and so located that if any exit is blocked, some other exit will still be available from every part.

Exception: **In places of worship, only one exit will be required from a balcony seating not more than 30 persons.**

(2) Where more than 600 persons are accommodated, there shall be at least 3 exits and where more than 1,000 persons are accommodated, there shall be at least 4 exits.

(3) Exits shall be distributed on all sides which adjoin streets, alleys or open courts.

Ind 55.08 Type of exits. (1) The required exits from any part of a theater or assembly hall shall be exit doorways, stairways or ramps.

(2) All exits to grade from a higher or lower level shall be stairways or approved ramps. In all theaters and in assembly halls having a capacity of more than 400 persons, where the exit rise is not more than 3 feet approved ramps shall be used. By approved ramp is meant an incline located inside the building and having a slope of not more than one foot of rise in 8 feet.

(3) Stairway exits shall be interior stairways, or smokeproof towers as specified in section Ind 51.17; except that "B" type fire escapes may be used as exits from balconies for not more than one-half the required exit width, if located against blank walls.

Ind 55.09 Stairways. (1) Every stairway in a theater or assembly hall shall be enclosed as specified in sections Ind 51.17 and 51.18 with the following exceptions:

(a) Stairways from the main floor to the first balcony need not be enclosed.

(b) Stairways from the basement to the first floor of a single story place of worship need not be enclosed if they lead directly to the exits.

(2) No storage closets shall be placed under any stairway, platform or landing. A room may be placed under a stairway or stair-landing of 2-hour fire-resistive construction or better provided such room does not have combustible material or hazardous equipment stored or operated therein. All such rooms shall have a ceiling height of not less than 7 feet and the door thereto shall be a self-closing solid flush type wood door 1¾ inches in thickness or better.

(3) Stairways and steps which have more than 3 risers shall have handrails on both sides.

(4) Every stairway used by the public in a theater or assembly hall shall have a uniform rise of not more than 7½ inches and a uniform tread of not less than 10 inches, measuring from tread to tread and from riser to riser. No winders shall be used and there shall be not less than 3 nor more than 16 risers in any run.

Note. See section Ind 51.16 for general stairway requirements.

History: 1-2-56; am. Register, January, 1961, No. 49, eff. 2-1-61; r. and recr. Register, February, 1965, No. 146, eff. 3-1-65; am. (4), Register, February, 1971, No. 182, eff. 7-1-71.

Ind 55.10 Exit doorways and doors. (1) Every required single exit doorway shall contain a standard exit door as specified in section Ind 51.15. For double doors, with or without mullions, the width of each door may be reduced to 2 feet 6 inches.

(2) No single door or leaf of a double door, shall be more than 3 feet 6 inches wide, and no 2 doors shall be hinged together.

(3) No rolling, sliding or revolving door shall be counted as an exit from any theater or assembly hall, nor shall any such door be permitted where it would be liable to be used by the public as an exit.

(4) Sills at all exit doorways shall be level and flush with adjacent inside floors and ramps. Where an aisle or passageway leads to an exit from either side of the exit doorway there shall be a level floor space at the doorway subtending the width of the aisle and the doorway.

Ind 55.11 Exit lights. (1) In every theater and assembly hall, except church auditoriums, exit lights shall be provided immediately over all exit doorways, and in such other places as may be necessary to direct the occupants to exit doorways and to a street, alley or exit court. The installation of such exit lights shall comply in all respects with the provisions of the Wisconsin state electrical code.

(2) Every light over an exit doorway shall be a red illuminated sign bearing the word EXIT or OUT in plain letters not less than 5 inches in height.

(3) All exit lights shall remain lighted during each occupancy and until the occupants have left the building.

Ind 55.12 Width of exits. (1) The total width of exits from every theater and assembly hall, and from every part thereof, shall not be less than the following: Buildings of fire-resistive construction, 36

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inches per 100 persons. Buildings of ordinary construction, 40 inches per 100 persons. Buildings of frame construction, 44 inches per 100 persons.

(2) In theaters, the width of the front entrance shall be not less than ⅛ of the total required exit width.

Ind 55.13 Seating. (1) All seats, chairs and benches shall be placed not less than 32 inches back to back measured horizontally, except that for grandstands and bleachers without back rests this dimension may be reduced to 22 inches. For benches without arms, grandstands, and bleacher seats, the seating capacity shall be established by allowing one sitting or seat to each 18 inches of length. (See section Ind 55.54).

(2) All seats, chairs, and benches, except chairs in boxes or loggias, shall be securely fastened to the floor; or if the floor is level, the seats or chairs may be fastened together in groups of 3 or more. Loose chairs or seats shall not be used unless a special permit is secured from the department of industry, labor and human relations.

(3) There shall not be more than 12 seats in a row between aisles, nor more than 6 seats in a row which has an aisle on one side only except that for grandstands or bleachers without back rests and with a railing along the front, these figures may be doubled. No aisles will be required for such grandstands or bleachers where the seats extend to the floor or ground without a railing along the front.

(4) The number of seats in a row may be increased to 100 where self-raising seats are provided which leave an unobstructed passageway between rows of not less than 13 inches in width leading to a side aisle on each side of the auditorium in which exit doorways are located at not more than 20 feet intervals to an exit corridor or exit court.

(4) No seat bench or platform on which seats are placed shall be more than 22 inches in height of riser.

(5) No seat bench, or other platform or floor area on which seats are placed, or the top seat of any bleachers shall be nearer to the ceiling than 8 feet, nor nearer to the bottom of any truss or girder than 6 feet 4 inches.

(6) The requirements of this section do not apply to restaurants, dining or dance halls.

History: 1-2-56: am. Register, January, 1961, No. 61, eff. 2-1-61.

Ind 55.14 Width of aisles. (1) Aisles having seats on both sides shall not be less than 2 feet 10 inches wide at the beginning and shall increase in width toward the exits at the rate of ½ inch per foot of run; or the aisle may have a uniform width not less than the average width of the foregoing calculation. No wall aisle shall be less than 3 feet wide and no other straight aisle shall be less than 3 feet 6 inches wide.

(2) There shall be a cross aisle leading to each required side exit. Cross aisles shall not be less than 6 feet 8 inches back to back of adjacent rows of seats.

Ind 55.15 Lobbies and foyers. The width of lobbies and foyers shall be determined on the same basis as required for exits in section Ind 55.12, but shall in no case be less than 5 feet wide, and shall be so designed and apportioned as to prevent congestion and confusion. Lobbies and foyers which serve as means of egress shall be at least equal in combined width to the required width of the stairways, passageways, aisles or exit doorways leading to them.

Ind 55.16 Inclines and aisle steps. (1) To overcome any difference in level between courts, corridors, lobbies, passageways or aisles required, or used, in egress from a theater or an assembly hall, approved ramps as specified in section Ind 55.08 shall be employed where the difference in elevation does not exceed 3 feet, except that this requirement need not apply to balconies.

(2) Steps in balcony aisles shall extend the full width of the aisle and shall have a uniform rise and run as specified in section Ind 55.09. No handrails will be required.

Ind 55.17 Obstruction. (1) All lobbies, aisles, passageways and doorways shall be kept free from furniture, drapes, display equipment, merchandise, vending machines and other obstructions, and no person except an employe shall be allowed to stand in, or occupy, any of the aisles, passageways, corridors or lobbies during any performance or public gathering. Except that patrons may be allowed to wait in a lobby or similar space if such use does not encroach upon the required clear width of the exits. Such waiting shall be restricted to areas separated from the required exit ways by fixed railings not less than 42 inches high. In entrance lobbies only, the exit space may be divided by railings not less than 36 inches high set up in the direction of travel in an approved manner for the regulation of ingress and egress.

(2) A booth or counter for the sale of package merchandise may be placed in the lobby or foyer of a theater where there is sufficient excess space so that the front of the booth or counter can be located not less than 5 feet back of the line marking the width of the lobby or foyer required for exit purposes.

Ind 55.18 Mirrors and false openings. (1) No mirror shall be placed in any part of a theater or assembly hall used by the public for exit purposes, including lobbies, corridors, stairways, ramps or any other exit facility. Where a mirror is used in an auditorium, it shall be placed flush with the wall and with the bottom at least 7 feet above any floor, balcony, gallery or platform.

(2) No false opening or decorative device giving the appearance of a door or window, where none exists, shall be placed in any part of a theater or assembly hall used by the public.

Ind 55.19 Decorations. Fabric decorations used in theaters and assembly halls shall be flame proof.

Ind 55.20 Elevator and vent shafts. Enclosures for elevator and vent shafts shall be of 2-hour fire-resistive construction as specified

in section Ind 51.05 and all openings therein protected by fire-resistive doors or windows as specified in sections Ind 51.09 and Ind 51.10.

Effective January 1, 1972 section Ind 55.20 is created to read as follows:

Enclosures for elevator and vent shafts shall be of 2-hour fire-resistive construction as specified in section Ind 51.04 and all openings therein protected by fire-resistive doors or windows as specified in section Ind 51.047.

History: 1-2-56; am. Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. eff. 8-1-71 and exp. 1-1-72; r. and recr. 1-1-72, Register, July, 1971, No. 187.

Ind 55.21 Stage separation. (1) In every theater and assembly hall the stage shall be completely separated from the auditorium by a proscenium wall of 4-hour fire-resistive construction as specified in section Ind 51.05, except as follows:

(a) In theaters and assembly halls having a capacity not exceeding 500 persons, the proscenium wall shall be of 2-hour fire-resistive construction as specified in section Ind 51.05, or better.

Effective January 1, 1972 section (1) (intro. par.) and (a) are created to read as follows:

(1) In every theater and assembly hall the stage shall be completely separated from the auditorium by a proscenium wall of 4-hour fire-resistive construction as specified in section Ind 51.04, except as follows:

(a) In theaters and assembly halls having a capacity not exceeding 500 persons, the proscenium wall shall be of 2-hour fire-resistive construction as specified in section Ind 51.04, or better.

(b) In theaters and assembly halls an open stage or platform will be permitted without the proscenium wall separation from the auditorium, provided the stage or platform is not more than 6 feet higher or wider than the proscenium opening.

History: 1-2-56; am. (1) (intro. par.) and (1) (a), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (1) (intro. par.) and (a), eff. 8-1-71 and exp. 1-1-72, and cr. (1) (intro. par. and (a), eff. 1-1-72, Register, July, 1971, No. 187.

Ind 55.22 Proscenium wall. (1) The proscenium wall shall extend from an incombustible foundation, or from the lowest fireproof floor below the stage floor, to the highest adjoining roof, except that where a 4-hour fire-resistive wall is required it shall extend at least 2 feet above the highest adjoining roof.

(2) There shall be not more than 2 openings in the proscenium wall below the level of the auditorium floor, and not more than 2 openings other than the proscenium opening, in the proscenium wall above the level of the auditorium floor, except that in addition to the above openings there may be one opening to provide access through the proscenium wall to the orchestra pit.

(3) Each such opening shall not exceed 21 square feet in area and shall be protected by a fire-resistive door as specified in section Ind 51.09, or equal.

Ind 55.23 Proscenium curtain. Where a proscenium wall is required for the separation of a stage from an auditorium, the proscenium opening shall be provided with a curtain as approved by the department.

Note: The department will accept standards for the design and installation of "Proscenium Curtains" as specified in the 1970 edition of the "Uniform Building Code" published by the International Conference of Building Officials.

History: 1-2-56; r. and recr. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 55.24 Automatic smoke outlet. Where a fireproof proscenium curtain is required, or provided, the stage shall be provided with one or more automatic smoke outlets, constructed of metal or other incombustible material, placed near the center and above the highest part of the stage, and having a combined area equal to not less than 5% of the area of the stage floor. Vertical louver openings shall be placed not less than 3 feet above the roof and shall be not less than twice the area of the shaft. The smoke outlet shall be designed and constructed so as to open by gravity, and so as to effectively overcome the effects of neglect, rust, dirt, frost, snow, heat, twisting, or warping of the frame work. The louvers, or dampers in the openings shall be held closed by cotton or hemp cords running to the stage floor close to each stage door. Fusible links, or other approved heat release devices, shall be inserted in each cord near the outlets.

Ind 55.25 Stage vestibules. All entrances to the stage shall be vestibuled in such manner as to protect the curtain, scenery, and auditorium from drafts of air.

Ind 55.26 Footlight trough. The footlight trough shall be made of, or lined with, incombustible material.

Ind 55.27 Fireproof paint. All stage scenery, properties, curtains, and decorations made of combustible material, and all woodwork in or about the stage, shall be effectively flame-proofed.

Ind 55.28 Stage accessory rooms. (1) All dressing rooms, property rooms, and other storage or workrooms shall be built of incombustible material throughout, and shall be separated from the stage by a special occupancy separation as specified in Wis. Adm. Code section Ind 51.08.

(2) No dressing room or employes' room shall be placed more than one story below the grade line, and no dressing room shall be placed above or below the auditorium unless separated therefrom by a special occupancy separation as specified in section Ind 51.08.

Ind 55.29 Boiler and furnace rooms. (1) Every boiler or furnace room, including the breeching and fuel room, shall be enclosed with a 3-hour fire-resistive enclosure as specified in sections Ind 51.05 and 51.06, except that in case of an assembly hall accommodating not more than 300 persons, a 2-hour fire-resistive enclosure as specified in sections Ind 51.05 and 51.06 may be used. All openings shall be protected with self-closing fire-resistive doors as specified in section Ind 51.09.

Effective January 1, 1972 section (1) is created to read as follows:

(1) Every boiler or furnace room, including the breeching and fuel room, shall be enclosed with a 2-hour fire-resistive enclosure as specified in section Ind 51.04, except that in case of an assembly hall accommodating not more than 300 persons, a 2-hour fire-resistive enclosure as specified in section Ind 51.04 may be used. All openings shall be protected with self-closing fire-resistive doors as specified in section Ind 51.047.

(2) All appliances used for heating water which are fired with solid fuel, liquid fuel or gas shall be located in a boiler or furnace room except that gas fired booster water heaters used exclusively

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for sanitizing dishes and cooking utensils need not be installed in a fire-resistive enclosure.

History: 1–2–50; r. and recr. (2), Register, August, 1957, No. 24, eff. 9–1–57; am. (1), Register, September, 1959, No. 45, eff. 10–1–59; am. (1), Register, February, 1971, No. 182, eff. 7–1–71; r. and recr. (1), eff. 8–1–71, and exp. 1–1–72; cr. and (1) eff. 1–1–72, Register, July, 1971, No. 187.

Ind 55.30 Lights and lighting. (1) Electric lights shall be used for lighting where electric current is available. No oil lamps or other open lights shall be used in or about any stage containing scenery.

(2) No gas lighting of any kind shall be used on any stage containing scenery, nor in any property room, storage room, scene dock, or fly gallery, except in localities where electricity is not available.

(3) In all theaters and assembly halls, all stairways, passageways, and exit doors shall be properly lighted and shall remain lighted throughout every performance or entertainment and until the audience has left the building.

Ind 55.32 Sanitary equipment. (1) TOILETS AND URINALS. Separate toilet rooms in connection with the auditorium shall be provided for males and females. One water-closet shall be installed for each 200 females or fraction, and one water-closet and one urinal for each 300 males or fraction, assuming the audience to be equally divided between males and females; except that in dance halls there shall be provided one water-closet for each 100 females or fraction, one water-closet for each 300 males or fraction and one urinal for each 150 males or fraction.

(2) NUMBER OF TOILETS WHERE ALCOHOLIC BEVERAGES ARE SERVED ON PREMISES. Where stimulating drinks, such as beer, wines and other alcoholic beverages, are served for consumption on the premises, there shall be provided one water-closet for every 40 females, or fraction, one water-closet for every 150 males, or fraction, and one urinal for every 60 males, or fraction; except that where the capacity in such places exceeds 300 persons, the ratio of the number of fixtures to the number of persons accommodated in excess of 300 need be only one-half of the above.

(3) TOILETS IN CONNECTION WITH STAGE. There shall be separate water-closets provided for males and females in connection with the stage of every theater and assembly hall which is equipped for the showing of stage productions.

(4) TOILETS IN CONNECTION WITH MOTION PICTURE BOOTH. In theaters where motion picture machines are run continuously for a period of more than 2 hours without at least 10 minutes intermission for the motion picture machine operator for each 2 hour period, toilets shall be provided in direct connection with the motion picture booth.

Note: For general toilet room requirements see Wis. Adm. Code sections Ind 52.50 to Ind 52.64, inclusive.

(5) DRINKING WATER. Separate drinking fountains of a type approved by the state board of health shall be provided for the stage and auditorium where water supply is available. Drinking fountains shall not be placed in toilet rooms.

(6) WASHING FACILITIES. Washbowls shall be provided in connection with toilet rooms, one for every 2 closets and urinals or fraction.

Ind 55.33 Standpipes. Where proper water supply is available, at least one first aid standpipe, as specified in section Ind 51.21, shall be provided on the stage of every theater and assembly hall where a fire curtain is required. Each hose shall be not more than 75 feet long, and where such hose will not reach every part of the stage section additional hose connections and hose, or additional standpipes, shall be provided.

Ind 55.34 Fire extinguishers. (1) Standard fire extinguishers of an appropriate type as specified in section Ind 51.22 shall be provided for all theaters and assembly halls as follows:

(a) Two on stage, if scenery is used.

(b) One on stage, if no scenery is used.

(c) One in motion picture booth, or in ticket office if there is no booth.

(d) One in dressing room section.

(2) Extinguishers shall be properly exposed to view and always accessible.

Ind 55.35 Automatic sprinklers. In every theater and assembly hall where a proscenium curtain is required, approved automatic sprinklers, as specified in section Ind 51.23, shall be provided under the stage, under the stage roof, and in the dressing rooms, but not in the automatic smoke outlet.

Ind 55.39 Use of "safety-base" film. (1) The requirements of sections Ind 55.40 through 55.49 will not apply in buildings in which movie projectors are used with "safety-base" film provided the conditions of (a) and (b) in this subsection are met.

(a) The owner shall submit an affidavit to the Department of Industry, Labor and Human Relations stating that "safety-base" film only will be used in all movie projectors.

(b) The affidavit shall be signed by the owner and the signature notarized.

Note: For definition of "owner" see section Ind 1.01 (13), Wis. Stats.

History: Cr. Register, April, 1971, No. 184, eff. 5–1–71.

Ind 55.40 Motion picture machine booths, general. Every motion picture machine using nitro-cellulose film, together with all auxiliary and associated equipment, shall be enclosed in a booth so arranged as to permit the operator to walk freely on either side and in back of the machine. At least 48 square feet in area shall be provided for one machine, and 24 square feet additional for each machine over one. The ceiling height shall be not less than 7 feet.

Ind 55.41 Construction of booth. The floor of each motion picture booth shall be constructed of masonry or reinforced concrete, or shall be covered with not less than 2 inches of fire-resistive material. The walls and ceiling shall be not less than 2-hour fire-resistive construction as specified in section Ind 51.05.

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Effective January 1, 1972 section Ind 55.41 is created to read as follows:

The floor of each motion picture booth shall be constructed of masonry or reinforced concrete, or shall be covered with not less than 2 inches of fire-resistive material. The walls and ceiling shall be not less than 2-hour fire-resistive construction as specified in section Ind 51.01.

History: 1-2-56; am. Register, February, 1971, No. 182, eff. 3-1-71; r. and recr. eff. 8-1-71 and exp. 1-1-72; cr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 55.42 Doors. (1) The door to the booth shall be not larger than necessary for the safe and proper use and maintenance of the booth and equipment, but in no case shall its dimensions be smaller than 2 feet by 5 feet or larger than 3 feet by 7 feet. The top of the door shall be not less than 12 inches below the ceiling of the booth.

(2) The door shall be a tight-fitting self-closing fire door as specified in section Ind 51.09, shall open outwardly, and shall not be equipped with any latch.

Effective January 1, 1972 section (2) is created to read as follows:

(2) The door shall be a tight-fitting self-closing fire door as specified in section Ind 51.047, shall open outwardly, and shall not be equipped with any latch.

History: 1-2-56; am. (2), Register, February, 1971, No. 182, eff. 3-1-71; r. and recr. (2) eff. 8-1-71 and exp. 1-1-72; cr. (2) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 55.43 Openings. (1) Two openings for each motion picture machine may be provided. The one for the operator's view shall not be larger than 200 square inches and the one for projection not larger than 120 square inches. Where separate stereopticon, spot, or floodlight machines are installed, not more than one opening shall be provided for each such machine for both the operator's view and the projection of light. All such openings shall be as small as practicable.

(2) Each opening shall be provided with an approved gravity shutter set into guides not less than one inch at sides and bottom, and overlapping the top of the opening by at least one inch when closed. Shutters shall be not less than No. 10 U.S. Standard gauge iron or equivalent, arranged to move freely in guides of like material and thickness bolted to the wall. Each shutter shall be suspended by a cord, and shall be so arranged that closing is by gravity action. A fusible link shall be provided in the cord over each shutter. A link shall also be provided over each magazine, which on operating will close all shutters. A manual release shall be provided near each exit door by which all shutters can be closed simultaneously. Shutters shall not be blocked open nor held open in any manner except by the harness of cords and links as herein described.

Ind 55.44 Ventilation of booths. Every booth or room housing projection, sound or any other equipment which vitiates good air conditions or requires the attention of an attendant shall be ventilated as required by section Ind 50.43 of the building and heating, ventilating and air conditioning code issued by the department of industry, labor and human relations. Fresh air intakes in booth walls, except for outside air, shall not exceed 72 square inches in area, nor be more than 3 inches above the floor. They shall be equipped with automatic shutters as described for projection openings.

History: 1-2-56; r. and recr. Register, October, 1967, No. 142, eff. 11-1-67.

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Ind 55.45 Relief outlets. Every booth or room housing projection, sound or other equipment which constitutes a fire, smoke, explosion or fuming hazard shall be equipped with one or more gravity outlets extending upward from the ceiling through the roof. The net area of such gravity relief outlets shall be equal to one per cent of the room or booth floor area, but not less than 12 inches in diameter. Such outlets shall be constructed as sheet metal ducts having double walls with ½ inch air space between, or better construction. Where a relief outlet passes through, or is within 18 inches of any combustible construction, or passes through any other occupancy, approved masonry flues as specified for chimneys, section Ind 52.10, shall be used. The relief outlets shall be equipped, at the booth or room outlets, with a gravity shutter which will open automatically under excessive heat conditions. The automatic shutter shall normally be tightly closed where mechanical exhaust ventilation is required in the same room.

Ind 55.46 Electric wiring. All lights and electric wiring, also motors, arc lamps, rheostats, and associated electrical equipment shall conform in type and arrangement to the requirements of the Wisconsin state electrical code.

Ind 55.47 Motion picture machine. Every projection machine shall be securely fastened to the floor, and together with sound head and other associated equipment, shall be of safe design. No part of the film shall be outside of a tight metal enclosure during projection, and the feed and take-up reels shall have riveted, flanged, or welded joints. A shutter shall be placed in front of the condenser, arranged so as to be closed except when held open by the operator, or by some mechanical device which will assure immediate closure when operation of the machine is stopped.

Ind 55.48 Fire protection in booth; care and use of film. (1) All shelves, furniture and fixtures shall be incombustible. No combustible material shall be permitted to be within such booth, except films and film cement not exceeding one pint. Smoking is prohibited. Heating equipment in booths shall be limited to steam, warm air, hot water or electric convection heaters with low surface temperature elements. Radiators shall be protected by ¼ inch mesh screen with the top sloped at least 45 degrees to the horizontal.

(2) Films not in process of rewinding, examination or projection shall be kept in metal containers. Up to 40 pounds of film may be kept in the projection booth in interstate commerce commission shipping containers. Excess over 40 pounds shall be kept in an approved film cabinet, but the total quantity of film in any booth shall not exceed 125 pounds.

(3) Rewinding in the projection booth is prohibited unless done in an approved enclosed type rewind machine. An approved can with self-closing hinged cover shall be provided for scrap film.

(4) Up to 125 pounds of film in addition to that permitted in a projection booth, may be kept in containers as specified above, providing this excess is in a rewind room of not less than 80 square feet

area, and of the construction specified in sections Ind 55.41 and Ind 55.42. Such room shall have a vent of at least 50 square inches area extending upward to the outside of the building, with a clearance to combustible material conforming to section Ind 55.45. Furniture and heating shall be as for the projection booth, and smoking is prohibited.

Note: In the foregoing section the weight of a 1000 foot roll of 35 millimeter film is assumed as 5 pounds.

Ind 55.49 Portable booths. (1) Every portable booth used to confine the fire hazards of a motion picture machine shall be of approved design conforming to the requirements for permanent booths.

(2) Every booth used for more than 3 consecutive performances in one location will be considered a permanent booth.

Ind 55.50 Maintenance. All theaters and assembly halls, and all parts thereof, shall be kept clean, sanitary and in good repair.

GRANDSTANDS, BLEACHERS, TENTS AND PLACES OF OUTDOOR ASSEMBLY.

Ind 55.51 Grandstands. (1) Grandstands erected of frame construction shall be located at least 20 feet from any other building or adjoining property line unless the exterior walls of such adjacent building are of 2-hour fire-resistive construction or better and all openings therein are protected with fire-resistive doors and windows as specified in sections Ind 51.09 and Ind 51.10.

Effective January 1, 1972 section (1) is created to read as follows:
(1) Grandstands erected of frame construction shall be located at least 20 feet from any other building or adjoining property line unless the exterior walls of such adjacent building are of 2-hour fire-resistive construction or better and all openings therein are protected with fire-resistive doors and windows as specified in section Ind 51.017.

(2) No wood grandstand unit shall exceed 10,000 square feet in ground area or 200 feet in length.

(3) Wood grandstand units shall be placed not less than 20 feet apart or shall be separated by walls of not less than 2-hour fire-resistive construction.

(4) The highest level of seat platforms of any wood grandstands shall not be more than 20 feet. Portable grandstands or bleachers within tents shall not be more than 12 feet above the ground or surface at the front of the grandstand.

(5) All grandstands shall be designed and constructed to conform with the structural requirements of chapter Ind 53 of this code.

(6) Seat boards and foot boards shall be designed to safely support a live load of not less than 120 pounds per lineal foot. The width of foot boards shall not be less than 7½ inches.

(7) The space under a grandstand shall be kept free from extraneous flammable materials and shall not be occupied for other than exit purposes except that such space, if enclosed with one-hour fire-resistive construction or better, may be used for non-hazardous purposes if approved in writing by the department of industry, labor and human relations.

History: 1-2-56; am. (1), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (1) eff. 8-1-71 and exp. 1-1-72; cr. (1) eff. 1-1-73, Register, July, 1971, No. 187.

Ind 55.52 Exits. (1) Every grandstand, balcony or tier considered separately shall be provided with at least 2 exits located as remotely from each other as practicable and leading directly to the outside at grade. If the capacity of any such structure, balcony, or tier exceeds 1,000 persons, there shall be at least 3 exits and where the capacity exceeds 4,000 persons, there shall be at least 4 exits.

(2) Exits shall be distributed uniformly to prevent congestion and shall be so located that the line of travel to an exit or to the entrance to an exit passageway is not greater than 150 feet.

(3) The total width of exits from any grandstand, balcony or tier shall not be less than 22 inches per 100 persons, except that for grandstands which are constructed of incombustible material throughout and have a closed incombustible deck under the seats, the total width of exits may be not less than 22 inches for each 500 persons or fraction.

Ind 55.53 Aisles and passageways. (1) All ramps, stairs, doorways and doors used for exit purposes shall conform to the requirements of sections Ind 55.08, 55.09 and 55.10 of this code.

(2) Aisles having seats on both sides shall not be less than 3 feet 6 inches in width and aisles having seats on one side only shall not be less than 24 inches wide. Cross aisles shall not be less than 48 inches in width. No aisles will be required for grandstands or bleachers where the seats extend to the floor or to the ground without a railing along the front.

(3) Trailer seating mounted on incombustible decking not exceeding 300 capacity each shall be provided with aisles or stairways not less than 30 inches in width.

Ind 55.54 Seating. (1) The seating arrangement shall comply with the requirements of section Ind 55.13 except that for seats without backs the horizontal distance from back to back of seats shall not be less than 22 inches. There shall be a space of not less than 12 inches between the back of each seat and the front of the seat immediately behind it. All measurement is to be taken between plumb lines.

(2) Where the same level is not used for both seat bench and foot rest, independent foot rests shall be provided.

(3) All seat boards and foot boards shall be securely fastened in place in such a manner that they cannot be accidentally displaced.

(4) Where the rise of a seat bench or platform exceeds 11 inches, intermediate steps shall be provided the full width of the aisles. Such steps shall have a rise of not more than 11 inches and a tread of not less than 10 inches *nominal width*. In no case shall the angle of seating exceed 45 degrees.

Ind 55.55 Guard rails. A substantial guard rail not less than 42 inches in height and having 2 intermediate rails shall be provided along the back and ends of all grandstands where the seats are more than 4 feet above the ground. Where the front foot rest of any

grandstand is more than 2 feet above the ground, a guard rail extending not less than 30 inches above such front foot rest shall be provided.

Ind 55.56 Portable grandstands or bleachers. (1) Portable grandstands or bleachers shall be self-contained units having all necessary parts to withstand and restrain all forces which may be developed during occupancy. They shall be so designed and constructed that if any structural member essential to the strength and stability of the structure is omitted during erection, the presence of unused connections or fittings will make the omission self-evident.

(2) A portable grandstand shall not be used for public occupancy until it has been securely assembled in accordance with this requirement.

(3) Portable grandstands shall be provided with base plates, sills, floor runners, or sleepers of sufficient area and strength to support safely the total live and dead loads.

(4) Where portable grandstands rest directly on the ground, mud sills of suitable material and having sufficient area to prevent dangerous settlement shall be provided under the base plates or sleepers. All mud sills shall be properly anchored to the ground and all bearing surfaces shall be in contact.

(5) A-frames or other supports and seat stringers for portable grandstands or bleachers shall be secured to prevent accidental displacement during occupancy.

(6) Field connections to wood members shall be by means of rivets, bolts, connectors, lag screws, friction or other approved devices. Lag screws shall not be used for direct tension. The use of nails and wood screws is permissible for holding wood posts together except that they shall not be used for demountable connections.

(7) Wood members in tension shall be connected at each end by not less than 2 bolts or lag screws or by approved connectors or other approved devices. Adequate provision shall be made to prevent the splitting or shearing of wood at such connections.

(8) The following requirements shall apply to folding and movable bleachers used in places of assembly in addition to the other requirements of sections Ind 55.56 and Ind 55.57.

(a) Shop drawings, specifications and calculations or a test report made by a recognized testing agency covering each bleacher model

Chapter Ind 56

SCHOOLS AND OTHER PLACES OF INSTRUCTION

Ind 56.001 Scope. The requirements of this chapter, sections Ind 56.001 to Ind 56.19 inclusive, shall apply to all public and private schools, universities, colleges, academies, seminaries, libraries, museums and art galleries; including all buildings or parts of buildings used primarily for instructional purposes.

History: 1-2-56; am. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.01 History: 1-2-56; r. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.02 Classes of construction. (1) Every building not more than one story in height may be of frame construction as specified in Section Ind 51.03.

(2) Every 2-story building shall be not less than ordinary class of construction as specified in Section Ind 51.02 with exception that all floors and their supports shall be at least noncombustible one-hour fire-resistive rating.

(3) Every building 3 or more stories in height shall be of fire-resistive class of construction as specified in Section Ind 51.001 except that roofs may be constructed of noncombustible 1-hour construction.

(a) Exception: The fire protection for structural steel supporting the roof may be omitted in 1-story sections of this classification provided the roof and its supports are of noncombustible or mill construction throughout.

History: 1-2-56; r. and recr. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.03 History: 1-2-56; am. Register, February, 1971, No. 182, eff. 7-1-71; r. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.04 Subdivisions and fire stops. Every building of this classification which is built in connection with a building of a lower grade of construction shall be separated from such other building by walls of 4-hour fire-resistive construction as specified in section Ind 51.05, and all communicating openings shall be protected by fire-resistive doors as specified in section Ind 51.09 or equal. If such openings are used as a means of egress, they shall be kept normally open during the occupancy of the building.

(2) Effective January 1, 1972 section Ind 56.04 is created to read as follows:

Every building of this classification which is built in connection with a building of a lower grade of construction shall be separated from such other building by walls of 4-hour fire-resistive construction as specified in section Ind 61.04, and all communicating openings shall be protected by fire-resistive doors as specified in section Ind 51.047 or equal. If such openings are used as a means of egress, they shall be kept normally open during the occupancy of the building.

History: 1-1-56; am. Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. eff. 8-1-71 and exp. 1-1-72; cr. eff. 1-1-72, Register, July, 1971, No. 187

Ind 56.05 Exterior wall openings. (1) Every building more than one story shall be provided with wall openings for emergency purposes above the first story as specified in subsection Ind 52.02 (1) (b) with exception to the following:

(a) The requirement for wall openings is waived where the building design provides for installation of equipment to satisfy one of the following:

1. The building is equipped throughout with an approved automatic sprinkler system as specified in section Ind 51.23 connected to a fire alarm (see Ind 56.19).

2. The building is equipped throughout with an approved automatic fire protection device connected to a fire alarm (see section Ind 56.19), or to a sprinkler system (see section Ind 51.23).

Note: See definition section Ind 51.041 (2) for automatic.

(2) One story buildings with no floor levels below the first floor need not be provided with wall openings as referred to in subsection Ind 56.05 (1).

(3) Every building with floor levels below the first story shall at such levels be protected with an approved automatic sprinkler or fire protection system referred to in subsection (1) (a) 1. or 2.

History: 1-2-56; am. Register, January, 1961, No. 61, eff. 2-1-61; r. and recr., Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.06 Number, location and type of exits. (1) The number and location of exits shall be such that in case any exit is blocked at any point some other exit will still be accessible through public passageways, from every room used by the public or by the occupants generally. Except that in a high school, university, college, library or museum building not more than 2 classrooms of ordinary size (900 square feet area) may be placed between an exit and the end of the building, provided that the exit doors from such classrooms are not more than 10 feet beyond the exit.

(a) Travel distance to an exterior exit door or a required fire rated enclosure from any point in a building shall not exceed 150 feet. Exception:

1. For building service and similar areas not accessible to the general public the travel distance may be increased to 300 feet.

(2) Number, location and type of exits for auditoriums, gymnasiums and field houses.

(a) Every floor and balcony shall be provided with not less than 2 exits, placed as far apart as practicable and so located that if any exit is blocked, some other exit will still be available from every part.

(b) All required exit doors from these areas shall be identified by approved exit lights.

(3) In buildings of more than one story, there shall be at least 2 stairway exits, each leading directly out of doors. The remaining exits shall be either such stairways or horizontal exits as specified in section Ind 51.19. Where such stairways lead to the basement they shall be enclosed below the first floor as specified in section Ind 51.18.

(4) In buildings of more than 2 stories, all stairways shall be enclosed as specified in sections Ind 51.17–51.18.

(5) Fire escapes may only be used as exits from the temporary end of incomplete or unit type buildings, as approved in writing by the department of industry, labor and human relations. Such fire escapes shall be of the "B" type where more than 100 persons can be accommodated above the first story.

(6) Handrails shall be provided on both sides of all exit stairs used by pupils.

(7) No storage closet or storage space shall be placed under any stairway, platform or landing. A room may be placed under a stairway or stair landing of two-hour fire resistive construction or better provided such room does not have any combustible material or hazardous equipment, stored or operated therein. All such rooms shall have a ceiling height of not less than 7 feet and the door thereto shall be a self-closing solid flush type wood door 1¾ inches in thickness or better.

(8) A room may be placed under a stairway or stair landing of 2-hour fire-resistive construction or better provided such room does not have any combustible material or hazardous equipment, stored or operated therein.

History: 1-2-56; am. (1), cr. (1) (a), Register, September, 1959, No. 45, eff. 10-1-59; am. Register, January, 1961, No. 61, eff. 2-1-61; r. and recr. (1) (a), renum. (2) to be (3), (3) to be (4), (4) to be (5), (5) to be (6) and (6) to be (7), and cr. (2) and (8), Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.07 Total width of exits. (1) The total width of exits from any floor shall be not less than the following rates, based on the total capacity of such floor and of the floors above.

(a) Fire-resistive buildings, 30 inches per 100 persons.

(b) Ordinary or frame buildings, 40 inches per 100 persons.

(2) Where permitted under Wis. Adm. Code section Ind 56.06, standard fire escapes may be used for not to exceed one-third of the above total widths.

(3) The capacity of educational buildings or any individual story or section thereof for the purpose of determining exits shall be the maximum capacity designated on approved plans.

(a) The maximum capacity shall not exceed the requirements of subsection (b).

(b) The computed capacities of all rooms and spaces as listed below shall be determined on the basis of the minimum net square feet area per person shown for that occupancy unless otherwise designated on the plans.

	Minimum Square Feet Per Occupant
1. Administrative and office space	75
2. Auditoriums, gymnasiums, field houses, theatres, lecture rooms (fixed seating)	6
3. Gymnasiums, field houses, multipurpose rooms, cafeterias, study halls, commons and other level floor areas with nonfixed individual seating	10
4. Bleachers (one seat per 18 inches of bench length)	
5. Regular academic classrooms	20
6. Libraries and resource centers	20
7. Laboratories—Science (fixed lab. tables)	30
8. Home economics, business education	30
9. Music	
a. Vocal	10
b. Instrumental	20
10. Arts, crafts, drafting	30
11. Industrial arts—vocational shop	50
12. Special education	
a. Mentally retarded, physically handicapped, etc.	35

History: 1-2-56; r. and recr. (3), Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.08 Exit doors. Exit doors shall comply with the requirements of Wis. Adm. Code section Ind 51.15, except that in elementary schools the width may be reduced to 3 feet. The aggregate width of exit doors shall be as required in section Ind 56.07. No single door or leaf of a double door shall be more than 42 inches wide.

Ind. 56.09 Passageways.

(1) The minimum unobstructed width of corridors and passageways which are used by the public or by the occupants generally, shall be determined in the same manner as specified for stairways in section Ind 56.07, but in no case shall this width be less than 4 feet. Corridors and passageways serving as a means of egress shall be at least equal in combined width to the required width of the stairways or passageways leading to them.

History: 1-2-56; r. (1) and renum. (2) to be (1), Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.10 Access to attic and roof. Every building more than one story in height shall have permanent means of access to the roof and attic space from inside the building. Where a scuttle opening is provided, the opening shall be not less than 20 x 30 inches, with a permanent enclosure for a stairway or ladder leading thereto.

Ind 56.11 History: 1-2-56; am. (3), Register, September, 1959, No. 45, eff. 10-1-59; am. Register, January, 1961, eff. 2-1-61; r. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.12 History: 1-2-56; am. Register, December, 1962, No. 84, eff. 1-1-63; am. (1) (intro. par.) Register, October, 1967, No. 142, eff. 11-1-67; r. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.13 Auditoriums, gymnasiums and field houses. (1) AUDITORIUMS, GYMNASIUMS, field houses and other large group occupancy

areas shall comply with the requirements of Chapter 56. Where any area of building in this category has a stage loft in excess of 25'-0" in height above the stage floor and is equipped with permanent or movable scenery, it shall comply with sections Ind 55.21 to 55.24 inclusive.

Note: It is the intent to differentiate between a theatre and an auditorium, gymnasium, field house or other large group occupancy area.

(2) SEATING. (a) All seats, chairs and benches shall be placed so as to provide a minimum unobstructed passage of 12 inches measured horizontally between plumb lines at the farthest projection of the back of one seat and the front of seat immediately behind.

Note: 1. Above measurements are relative to the farthest projection when seat is in its normal unseated position such as self-raising seat. 2. See alternate method [illegible] (3) (b) 3. For exception see Ind 56.13 (2) (b) 3.

(b) The maximum number of seats in a row.

1. With aisles on both sides of row the maximum number of seats shall be 14.

2. With an aisle on only one end of row the maximum number of seats shall be 7.

3. The number of seats in a row may be increased to 100 where:

a. A minimum unobstructed passage of 18 inches between rows of seats measured horizontally between plumb lines at the farthest projection of the back of one seat and the front of seat immediately behind.

Note: For measurements see "Note No. 1" under Ind 56.13 (2) (a).

b. The unobstructed passage between rows leads to a side aisle on each end of row where exit doors are located at no more than 20 foot intervals leading to an exit corridor or exit court.

(c) No platform on which seats are placed shall be more than 22 inches in height of riser.

(d) The highest level of any floor or platform whether level, tiered or sloped, shall provide no less than 7 feet vertical clearance between floor and any ceiling construction or projection beneath the ceiling.

(3) WIDTH OF AISLES. (a) Aisles having seats on both sides shall not be less than 2 feet 10 inches wide at the beginning and shall increase in width toward the exits at the rate of ½ inch per foot of run; or the aisle may have a uniform width not less than the average width of the foregoing calculation. No wall aisle shall be less than 3 feet wide and no other straight aisle shall be less than 3 feet 6 inches wide.

(b) There shall be a cross aisle leading to each required side exit. Cross aisles shall not be less than 6 feet 8 inches back to back of adjacent rows of seats.

History: 1-2-56; r. and recr., Register, May, 1971, No. 185, eff. 6-1-71

Ind 56.14 Seats, desks and aisles. (1) Seats, desks, tables and other loose equipment need not be fastened to the floor or to each other provided that any seating arrangement use, will maintain during occupancy, free and unobstructed intermediate, cross and wall aisles leading to the exit.

(a) Stepped floors or tiered platforms shall be no less than 48 inches in width to permit the above arrangement.

(b) Seats, desks, tables and other loose equipment used in instructional occupancies shall be of a durable type of construction to assure safety and stability.

History: 1–2–56; r. and recr., Register, May, 1971, No. 185, eff. 6–1–71.

Ind 56.15 Heating plants. (1) In every building more than one story in height, all heating plants and fuel rooms shall be enclosed with not less than 4-hour fire-resistive construction as specified in Wis. Adm. Code sections Ind 51.05 and 51.06. All openings shall be protected with self-closing fire-resistive doors as specified in section Ind 51.09.

(2) In one story buildings all heating plants and fuel rooms shall be enclosed with not less than 2-hour fire-resistive construction as specified in sections Ind 51.05 and 51.06, except that this requirement shall not apply to buildings where jacketed stoves or school room heaters are permitted. All openings shall be protected by self-closing fire-resistive doors as specified in section Ind 51.09.

Effective January 1, 1972 section Ind 56.15 is created to read as follows:

(1) In every building more than one story in height, all heating plants and fuel rooms shall be enclosed with not less than 4-hour fire-resistive construction as specified in Wis. Adm. Code section Ind 51.04. All openings shall be protected with self-closing fire-resistive doors as specified in section Ind 51.047.

(2) In one story buildings all heating plants and fuel rooms shall be enclosed with not less than 2-hour fire-resistive construction as specified in section Ind 51.04, except that this requirement shall not apply to buildings where jacketed stoves or school room heaters are permitted. All openings shall be protected by self-closing fire-resistive doors as specified in section Ind 51.047.

History: 1–2–56; am. Register, February, 1971, No. 182, eff. 7–1–71; r. and recr. eff. 8–1–71 and exp. 1–1–72; cr. eff. 1–1–72, Register, July, 1971, No. 187.

Ind 56.16 Sanitary facilities. (1) The following tabulated groups or combinations thereof shall be provided with one fixture of each type to serve the maximum number of persons designated for the appropriate group or groups.

Type of Fixture	K–6	7–12	Post High School	Large Group Occupancy Areas	Administrative Areas
Water Closets (F)	35	50	100	200	10
Water Closets (M)	75	100	200	300	15
Urinals	35	50	100	150	40
Lavatories	75	100	150	150	15
Drinking Fountains	1 per 6,000 sq. ft. floor area and/or 1 per floor				

(a) Where a theatre is a part of an educational facility the requirements listed under "large group occupancies" shall apply.

History: 1–2–56; am. (2), (3), (4) and (4) (a), Register, September, 1959, No. 45, eff. 10–1–59, r. and recr. (4), intro. par., Register, December, 1967, No. 141, eff. 1–1–68; r. and recr. Register, May, 1971, No. 185, eff. 6–1–71.

Ind 56.17 Lighting. (1) ELECTRIC LIGHTING. Every class, study or recitation room shall be equipped with sufficient electrical lighting units to maintain the illumination required in Wis. Adm. Code Chapter Ind 19, Illumination Code.

(2) GENERAL. All other rooms and spaces in school buildings shall be equipped with means for supplying electric illumination in the quantity required for the purpose for which the room or space is used. All electrical work shall be installed to conform to the requirements of the Wisconsin State Electrical Code.

History: 1-2-56; am. Register, January, 1961, No. 61, eff. 2-1-61; cr. (3), Register, November, 1963, No. 95, eff. 12-1-63; am. (3) (c), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.18 Fire extinguishers. In every building, standard fire extinguishers, as specified in Wis. Adm. Code section Ind 51.22, shall be provided in the proportion of one extinguisher to each 2,500 square feet, or fraction, of floor area, but there shall be at least the fire extinguisher on each floor including basement. In addition to the fire extinguishers for general protection there shall be at least one extinguisher of appropriate type and size in each laboratory, art, shop or other vocational room. Every fire extinguisher shall be prominently exposed to view and always accessible.

History: 1-2-56; am. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 56.19 Fire alarms. Every building shall be provided with a proper alarm system complying with Wis. Adm. Code section Ind 51.24.

History: 1-2-56; am. Register, May, 1971, No. 185, eff. 6-1-71.

Chapter Ind 57

APARTMENT BUILDINGS, HOTELS AND PLACES OF DETENTION

Ind 57.001 Scope. (1) The requirements of this chapter shall apply to all apartment buildings, row houses, rooming houses, hotels, dormitories, convents, monasteries, hospitals, children's homes, homes for the aged and infirm, nursing homes, convalescent hospitals, convalescent homes, asylums, mental hospitals, jails, and other places of abode or detention, except as provided in section Ind 57.25 (2).

(2) *By place of abode* is meant a building or part of a building, such as apartment building, row house, rooming house, hotel, dormitory, convent, hospital, as follows:

(a) Occupied as a residence of 3 or more families living independently or occupied by 2 such families and used also for business purposes, or

(b) Occupied for sleeping or lodging purposes by 3 or more persons not members of the same family.

(3) *By place of detention* is meant a building or part of a building used as a place of abode and wherein persons are forcibly confined, such as asylums, mental hospitals, and jails.

Note 1: The attorney general has ruled that all persons committed to an insane asylum by court order come within the meaning of the words "forcibly confined". Also that the words "forcibly confined" apply to all persons confined without their consent.

Note 2: For requirements regarding migrant labor camps see Wis. Adm. Code chapter Ind 49.

Ind 57.005 History: Cr. Register, July, 1967, No. 139, eff. 8-1-67; r. Register, December, 1970, No. 180, eff. 1-1-71.

Ind 57.01 Class of construction. (1) All places of abode which are more than 3 stories in height shall be of fire-resistive construction as specified in section Ind 51.001.

(2) All 3-story places of abode, other than hospitals and places of detention, shall be at least of ordinary construction as specified in section Ind 51.02, except that a 3-story apartment building which will accommodate not more than one family on each floor and a 3-story hotel or rooming house which will accommodate not more than 6 persons on each floor may be of frame construction as specified in section Ind 51.03, except as provided in section Ind 57.02.

(3) All places of detention shall be of fire-resistive construction throughout as specified in section Ind 51.001. All hospitals, convalescent hospitals, and nursing homes 3 or more stories in height shall be of fire-resistive construction as specified in section Ind 51.001.

History: 1-2-56; am. (3), Register, September, 1958, No. 45, eff. 10-1-58.

Ind 57.02 **First floor fire-resistive.** (1) In 3 story buildings, except those having not more than one family on each floor, the first floor and its supports shall be of not less than 3-hour fire-resistive construction as specified in section Ind 51.06, except that in a 3 story apartment house which will accommodate not more than 4 families, or a 3 story hotel or rooming house which will accommodate not more than 30 persons, above the first story, the basement ceiling shall be of not less than one-hour fire-resistive construction as specified in section Ind 51.06 or shall be protected by automatic sprinklers as specified in section Ind 51.23.

Effective January 1, 1972 section Ind 57.02 (1) is created to read as follows:

(1) In 3 story buildings, except those having not more than one family on each floor, the first floor and its supports shall be of not less than 3-hour fire-resistive construction as specified in section Ind 51.01, except that in a 3 story apartment house which will accommodate not more than four families, or a 3 story hotel or rooming house which will accommodate not more than 30 persons, above the first story, the basement ceiling shall be of not less than 1-hour fire-resistive construction as specified in section Ind 51.01 or shall be protected by automatic sprinklers as specified in section Ind 51.23.

(2) Spaces between floor joists, below or above stud partitions where the studs extend through one or more stories, shall be fire-stopped.

History: 1-2-56; am. (1), Register, February, 1971, No. 182, eff. 3-1-71; r. and recr. (1) eff. 8-1-71 and exp. 1-1-72; amended, (1) eff. 1-1-72, Register, July, 1971, No. 187.

Ind 57.03 **Garage and business separation.** (1) In every building in which a lower story is used for garage purposes, the ceiling over the garage shall be of unpierced 4-hour fire-resistive construction as specified in section Ind 51.06. Stairways from garages leading to the upper stories shall be separated from the garage area with walls of 4-hour fire-resistive construction as specified in section Ind 51.05, with openings protected as specified for special occupancy separation, section Ind 51.08.

(2) In a building more than 2 stories in height where the lower story is used for business purposes, other than the hazards listed in Chapter Ind 57 of this code, the ceiling over the lower story shall be of not less than one-hour fire-resistive construction as specified in section Ind 51.06.

Effective January 1, 1972 section Ind 57.03 is created to read as follows:

(1) In every building in which a lower story is used for garage purposes the ceiling over the garage shall be of unpierced 1-hour fire-resistive construction as specified in section Ind 51.04. Stairways from garages leading to the upper stories shall be separated from the garage area with walls of 4-hour fire-resistive construction as specified in section Ind 51.01, with openings protected as specified for special occupancy separation, section Ind 51.08.

(2) In a building more than 2 stories in height where the lower story is used for business purposes, other than the hazards listed in Chapter Ind 57 of this code, the ceiling over the lower story shall be of not less than 1-hour fire-resistive construction as specified in section Ind 51.01.

History: 1-2-56; am. Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. eff. 8-1-71 and exp. 1-1-72; cr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 57.01 Corridor and dividing partitions. (1) All 3 story places of abode which have more than one apartment or 8 rooms on any floor, shall have the public passageways enclosed with partitions of not less than one-hour fire-resistive construction as specified in section Ind 51.05. If there is more than one apartment on any floor, such apartments shall be separated by such partitions. If there are more than 8 rooms on any floor, they shall be divided by such partitions into groups of not more than 8 rooms each.

(2) Doors in such corridor partitions may be solid slab doors, 1¾ inches in thickness, and need not be self-closing.

History: 1-2-56; am. (1) Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (1) eff. 8-1-71 and exp. 1-1-72; cr. (1) eff. 1-1-72; Register, July, 1971, No. 187.

Ind 57.05 Court walls. The walls of courts and similar interior shafts for light and air shall be of not less than 2-hour fire-resistive construction as specified in section Ind 51.05, except that when the building is permitted to be of ordinary construction, the court walls may be of one-hour fire-resistive construction.

Effective January 1, 1972, section Ind 57.05 is created to read as follows:

The walls of courts and similar interior shafts for light and air shall be of not less than 2-hour fire-resistive construction as specified in section Ind 51.04, except that when the building is permitted to be of ordinary construction, the court walls may be of 1-hour fire-resistive construction.

History: 1-2-56; am. Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. eff. 8-1-71 and exp. 1-1-72; cr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 57.06 Yards. (1) Behind every apartment house, the rear of which does not abut on an alley or street, there shall be a yard across the entire width of the lot, open and unobstructed from the ground to the sky. The width of the yard behind a 2 story building shall be either:

(a) At least 5 feet of unobstructed width; or

(b) At least 10 feet from the rear lot line to the building line, of which at least 3 feet shall be unobstructed, and the remainder may **be occupied by an open (or screened) porch.**

(2) For apartment houses of more than 2 stories, the unobstructed width of the entire yard shall be increased one foot for each additional story, except in the case of corner lots.

(3) No apartment house shall be placed behind any other building unless there is at least 50 feet between the buildings.

Ind 57.07 Number, location and type of exits. (1) There shall be at least 2 exits accessible from each room or apartment by means of stairways, ramps or horizontal exits. The number and location of such exits shall be such that in case any exit or passageway is blocked at any point, some other exit will still be accessible through public passageways from every room or apartment.

(a) In fire-resistive buildings a total area of not more than 1,200 square feet may be placed between an exit and the end of the building.

(2) Exits shall be distributed so that the entrance to each room or apartment will be not more than 50 feet distant from an exit, measuring along public passageways, if in a building of non-fire-resistive construction, or 75 feet in a fire-resistive building.

(3) At least one-half of the required exits, in buildings of more than one story, shall be stairways as specified in section Ind 51.16. The remaining exits shall be either stairways, or horizontal exits; or fire escapes may be used as exits from floors which are not more than 40 feet above grade if they are placed against blank walls. Every building which accommodates more than one family, or 8 persons, above the second story shall have at least 2 stairways.

(4) Apartment buildings 3 stories or less in height whose floors and supporting members are of not less than 2-hour fire-resistive construction, as specified in section Ind 51.06, and which have a plan so arranged that not more than 2 occupancies on any floor make use of a common stairway, may be constructed with one common stairway as a single exit, provided the walls between occupancies and those enclosing the stairway are of 2-hour fire-resistive construction as specified in section Ind 51.05. In this case, the stairways must be of not less than 2-hour fire-resistive construction, must lead directly to the outside and have all interior openings protected by approved fire-resistive doors as specified in section Ind 51.09.

Effective January 1, 1972 subsection (4) is created to read as follows:

(4) Apartment buildings 3 stories or less in height whose floors and supporting members are of not less than 2-hour fire-resistive construction as specified in section Ind 51.01, and which have a plan so arranged that not more than 2 occupancies on any floor make use of a common stairway, may be constructed with one common stairway as a single exit, provided the walls between occupancies and those enclosing the stairway are of 2-hour fire-resistive construction as specified in section Ind 51.04. In this case, the stairways must be of not less than 2-hour fire-resistive construction, must lead directly to the outside and have all interior openings protected by approved fire-resistive doors as specified in section Ind 51.047.

(5) Where a jail or other place of detention wherein persons are forcibly confined is located on the upper floors of a court house or office building, at least one of the exits from the jail shall be a separate smokeproof stair tower leading directly from the jail section to the outside at street grade. This stairway shall serve only the

jail area and there shall be no doors opening into it from the office or court house section of the building.

History: 1–2–56; r. and recr. (1), Register, December, 1970, No. 180, eff. 1–1–71; am. (1), Register, February, 1971, No. 182, eff. 7–1–71; r. and recr. (4) eff. 8–1–71 and exp. 1–1–72; cr. (4) eff. 1–1–72, Register, July, 1971, No. 187.

Ind 57.08 Aggregate width of exits. The aggregate width of exits shall be as provided for in section Ind 54.04.

Ind 57.09 Exit doors. Exit doors shall be as specified in section Ind 51.15; except that a door which is used by not more than 6 families, or 40 persons, shall be not less than 3 feet wide and shall not be required to open outward.

Ind 57.10 Passageways. Every public passageway leading from an exit shall be at least as wide as the required width of such exit. Every public passageway leading to an exit shall be at least 3 feet wide. The required width shall be kept clear and unobstructed at all times.

Ind 57.11 Lighting of exits. In every building which accommodates more than 4 families, or 30 persons, and in every building which accommodates transients, the public passageways and stairways and exit doors shall be illuminated from one hour after sunset to one hour before sunrise. This illumination shall include lights at all intersections of passageways, at all exits, and at the head, foot and landing of every stairway. The lights at emergency exit doors shall be red lights and shall be accompanied by a sign bearing the word "EXIT" or "OUT", in plain letters.

Ind 57.12 Enclosure of stairways and shafts. (1) In 3 story buildings all stairways shall be enclosed as provided in sections Ind 51.17 or 51.18, with one-hour fire-resistive partions, as specified in section Ind 51.05, or better, unless the building is either of fire-resistive construction or equipped throughout with automatic sprinklers. The doors may be omitted in the stories above the basement in one stairway enclosure. In all 3 story buildings accommodating more than 2 families, or 15 persons, above the first story, all basement stairways shall be enclosed with 2-hour fire-resistive partitions as specified in section Ind 51.05.

(2) In buildings more than 3 stories in height, all stairways shall be enclosed with 2-hour fire-resistive partitions, as specified in section Ind 51.05, except that one stairway may be unenclosed in the first and second stories, provided such stairway does not lead to the basement.

(3) In all buildings more than 2 stories in height in which the first story is used for business purposes, at least one stairway shall be enclosed in the first story with an unpierced wall of 2-hour fire-resistive construction, as specified in section Ind 51.05, and such stairway shall not connect with the basement.

(4) Every elevator shaftway, dumbwaiter shaftway, clothes chute, waste paper chute, pipe shafts and other similar vertical shafts in buildings more than 2 stories in height shall be enclosed with 2-hour

fire-resistive partitions, as described in section Ind 51.05, except that for 3 story buildings, one-hour fire-resistive partitions may be used where the enclosure does not pass through a business portion. In all cases the basement enclosure shall be of not less than 1-hour fire-resistive construction.

Effective January 1, 1972 section Ind 57.12 is created to read as follows:

(1) In 3 story buildings all stairways shall be enclosed as provided in sections Ind 51.17 or 51.16, with 1-hour fire-resistant partitions, as specified in section Ind 51.04, or better, unless the building is either of fire-resistive construction or equipped throughout with automatic sprinklers. The doors may be omitted in the stories above the basement at one stairway enclosure. In all 3 story buildings accommodating more than 2 families, or 15 persons, above the first story, all basement stairways shall be enclosed with 2-hour fire-resistive partitions as specified in section Ind 51.04.

(2) In buildings more than 3 stories in height, all stairways shall be enclosed with 2-hour fire-resistive partitions, as specified in section Ind 51.04, except that one stairway may be unenclosed in the first and second stories, provided such stairway does not lead to the basement.

(3) In all buildings more than 2 stories in height in which the first story is used for business purposes, at least one stairway shall be enclosed in the first story with an unpierced wall of 2-hour fire-resistive construction, as specified in section Ind 51.04, and such stairway shall not connect with the basement.

(4) Every elevator shaftway, dumbwaiter shaftway, clothes chute, wastepaper chute, pipe shafts and other similar vertical shafts in buildings more than 2 stories in height shall be enclosed with 2-hour fire-resistive partitions, as described in section Ind 51.04, except that in 3 story buildings, 1-hour fire-resistive partitions may be used where the basement enclosure shall be of not less than 1-hour fire-resistant construction.

History: 1-2-56; am. Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. eff. 8-1-71 and exp. 1-1-72; cr. eff. 1-1-72, Register, July, 1971, No. 187.

Ind 57.13 Toilet rooms. (1) Every building within this occupancy classification shall be provided with toilet rooms meeting the requirements of this section and the requirements for general sanitation, section Ind 52.50 through 52.64.

(a) Each living unit of an apartment or row house building shall be provided with a toilet room having a water closet, lavatory and bathing facilities.

(2) Every building within this occupancy classification, except apartment buildings, shall have at least one water closet for every 15 persons or fraction thereof.

(a) Occupants of rooms with private water closets shall not be considered in counting either the number of persons or the number of fixtures.

Note: For general toilet room requirements, see sections Ind 52.50 to Ind 52.64, inclusive.

History: 1-2-56: am. (1), (2) and (3), Register, June, 1956, No. 6, eff. 7-1-56; cr. (4), Register, July, 1967, No. 139, eff. 8-1-67; r. and recr., Register, December, 1970, No. 180, eff. 1-1-71.

Ind 57.14 Washing facilities. Every building within this occupancy classification where water supply is available or can be made available, there shall be at least one sink or wash bowl in connection with each toilet fixture.

History: 1-2-56; r. and recr., Register, December, 1970, No. 180, eff. 1-1-71; am. Register, May, 1971, No. 185, eff. 6-1-71.

Ind 57.15 Repairs. Every building of this classification, and all parts thereof, shall be kept in good repair and the roof shall be maintained to prevent leakage. All rainwater shall be so drained and conveyed therefrom to prevent dampness in the walls and ceilings.

Ind 57.16 Cleanliness. Every building shall be kept clean, and shall also be kept free from any accumulation of dirt, filth, rubbish, garbage, or other matter in or on the same or in the yards, courts, passages, areas or alleys connected with or belonging to the same.

Ind 57.17 Size of rooms. (1) Every sleeping room shall be of sufficient size to afford at least 400 cubic feet of air space for each occupant over 12 years of age, and 200 cubic feet for each occupant under 12 years, except that a minimum of 150 cubic feet may be provided for infants in hospital nurseries. No greater number of occupants than the number thus established, shall be permitted in any such rooms.

History: 1–2–56; r. and recr. Register, June, 1967, No. 138, eff. 7–1–67; r. and recr. (2), Register, July, 1967, No. 139, eff. 8–1–67; r. (2), Register, December, 1970, No. 180, eff. 1–1–71.

Ind 57.18 Basement rooms. (1) No living or sleeping room shall have its floor level below the adjoining yard, court, alley or street grade.

(2) No rooms wherein persons are forcibly confined shall be located in a basement.

Ind 57.19 Windows. (1) The outside windows in every sleeping or living room shall have a total sash area of at lesst 1/10th of the floor area of the room but not less than 12 square feet. The openable area of such windows shall be equal to not less than 5% of the floor area of the room served.

History: 1–2–56; r. and recr. Register, September, 1959, No. 45, eff. 10–1–59; r. and recr. Register, June, 1967, No. 138, eff. 7–1–67; r. and recr. (2), Register, July, 1967, No. 139, eff. 8–1–67; r. (2), Register, December, 1970, No. 180, eff. 1–1–71.

Ind 57.20 Isolation of fire hazards. (1) All boiler and furnace rooms, fuel-oil or fuel rooms and bunkerings, all laundries, drying rooms, rubber shops, paint shops, and other hazardous work rooms and storage rooms in hospitals and buildings accommodating transients which are more than 3 stories in height and in all asylums and other places of detention shall be enclosed with a 1-hour fire-resistive enclosure as specified in sections Ind 51.05 and 51.06. All openings shall be protected by self-closing fire-resistive doors as specified in section Ind 51.09.

(2) In all other buildings under this classification, such rooms shall be enclosed with a 2-hour fire-resistive enclosure as provided in sections Ind 51.05 and 51.06, or better, except as otherwise provided in this section.

(3) In apartment buildings not more than 2 stories in height, such rooms shall be enclosed with a one-hour fire-resistive enclosure as specified in section Ind 51.05 and 51.06, or better, except as provided in subsection (5).

(4) In one-story buildings having a floor area of not more than 3,000 square feet and 2-story buildings having a floor area of not more

than 1,500 square feet per floor which are used for business purposes and also accommodate not more than 2 families, such rooms shall be enclosed with a one-hour fire-resistive enclosure, as specified in sections Ind 51.05 and 51.06, or better.

(5) The enclosure for the heating plant may be omitted in apartment buildings not more than 2 stories in height and having not more than 2 apartments on a floor and in rooming houses not more than 2 stories in height and having not more than 8 living or sleeping rooms on a floor, provided no part of the building is used for business purposes and all interior basement stairways are enclosed with a one hour fire-resistive enclosure as specified in sections Ind 51.05 and Ind 51.06, or better. See section Ind 57.25 for exception for row house installations. *Exception:*

(a) Gas-fired space heaters may be used in private apartments and in guest rooms in motels or tourist courts without an enclosure if approved by the department of industry, labor and human relations. Space heaters fired with liquid fuel may be used without an enclosure in motels and apartment buildings not more than one story in height.

Effective January 1, 1972 section Ind 57.20 is created to read as follows:

(1) All boiler and furnace rooms, including fuel rooms and breechings, all laundries, drying rooms, carpenter shops, paint shops, and other hazardous work rooms and storage rooms in hospitals and buildings accommodating transients which are more than 2 stories in height and in all asylums and other places of detention shall be enclosed with a 1-hour fire-resistive enclosure as specified in section Ind 51.05. All openings shall be protected by self-closing fire-resistive doors as specified in section Ind 51.07.

(2) In all other buildings not of this classification, such rooms shall be enclosed with a 2-hour fire-resistive enclosure as provided in section Ind 51.04, or better, except as otherwise provided in this section.

(3) In apartment buildings not more than 2 stories in height, such rooms shall be enclosed with a 1-hour fire-resistive enclosure as specified in section Ind 51.04, or better, except as provided in subsection (5).

(4) In one-story buildings having a floor area of not more than [illegible] and hotels and buildings having a basement floor area of not more than 1,500 square feet per floor which are used for business purposes and also accommodate not more than 2 families, such rooms shall be enclosed with a 1-hour fire-resistive enclosure, as specified in section Ind 51.05, or better.

(5) The enclosure for the heating plant may be omitted in apartment buildings not more than 2 stories in height and having not more than 2 apartments on a floor and in rooming houses not more than 2 stories in height and having not more than 8 living or sleeping rooms on a floor, provided no part of the building is used for business purposes and all interior basement stairways are enclosed with a 1-hour fire-resistive enclosure, as specified in section Ind 51.05, or better. See section Ind 57.25 for exception for row house installations.

Exception:

(a) Gas-fired space heaters may be used in private apartments and in guest rooms in motels or tourist courts without an enclosure if approved by the Department of Industry, Labor and Human Relations. Space heaters fired with liquid fuel may be used without an enclosure in motels and apartment buildings not more than one story in height.

History: 1-2-56; am. (1), Register, September, 1959, No. 45, eff. 10-1-59; am., Register, February, 1971, eff. 7-1-71; r. and recr., eff. 8-1-71 and exc. 1-1-72; cr., eff. 1-1-72, Register, July, 1971, No. 187.

Ind 57.21 Fire protection equipment. (1) Standard first-aid standpipes shall be provided in every building which is more than 2 stories high and accommodates 20 or more transients, and in all hospitals, asylums and other places of detention.

(2) In the above buildings where adequate water supply is not available, and in buildings accommodating less than 20 transients where first-aid standpipes are not provided, a standard fire extinguisher shall be placed on each floor at the head of each stairway and at each elevator or group of elevators.

Ind 57.22 Fire alarms. (1) Every building which accommodates 20 or more persons except hospitals, places of detention, and motels not more than one story in height in which each unit has an outside door at grade level, shall be provided with a fire alarm system complying with section Ind 51.24.

(2) Every hospital which accommodates 20 or more persons shall be provided with a fire alarm complying with section Ind 51.24 except that chimes or other approved sounding devices shall be used when within hearing distance of the patients. Visual attention compelling devices may be used in hospitals where approved by the department of industry, labor and human relations.

(a) A presignal fire alarm system may be installed in hospitals or hotels when not less than 4 employes are on duty at all times to respond to fire alarms.

(b) Where presignal systems are installed, it is recommended that the fire department be called immediately after the pre-alarm signal is received.

(3) This section applies to buildings now in existence and to buildings hereafter constructed.

History: 1-2-56; am. Register, October, 1958, No. 34, eff. 11-1-58.

Ind 57.23 Scuttle. Every building more than one story in height which accommodates more than 4 families, or 20 persons, shall have a permanent means of access to the roof from the inside. The opening shall be not less than 20 x 30 inches and there shall be a permanent ladder or stairway leading thereto.

Ind 57.24 Directions for escape. (1) In every room liable to be used by transients, a notice shall be conspicuously posted giving complete and plain directions for reaching at least 2 exits.

(2) In addition to this, a red exit light shall be provided over each exit on every floor.

Ind 57.25 Row house. (1) DEFINITION. A row house is a place of abode not more than 2 stories in height, arranged to accommodate 3 or more attached row dwelling units in which each dwelling unit is separated from the adjoining unit by an unpierced vertical occupancy separation of not less than one-hour fire-resistive construction, extending from the basement or lowest floor to the under side of the roof boards.

(2) REQUIREMENTS. (a) Each dwelling unit shall have separate entrances and exits leading directly to the outside.

(b) Heating ducts may be installed in the space between studs in the occupancy separation wall provided all such ducts are covered with ¼ inch corrugated asbestos or the equivalent protection. Heating

ducts shall not be installed back to back in the occupancy separation wall.

(c) Where each living unit has a separate heating system, the requirements of sections Ind 57.20 and 57.22 need not be complied with.

(d) Each living unit shall have access to the attic from the inside by means of an opening not less than 20 x 30 inches located above the stair landing on the second floor, but the other provisions of section Ind 57.23 need not be complied with.

HAZARDOUS OCCUPANCIES

Ind 57.50 Garages. (1) DEFINITIONS. (a) A garage is a building, or part of a building, which accommodates or houses self-propelled vehicles. For the purpose of this code the term vehicle includes land, air and water vehicles.

(b) A private garage is one used in connection with a private residence for the purpose of housing self-propelled vehicles owned by the occupant of the residence and used only for personal or family service.

(2) CONSTRUCTION REQUIREMENTS. (a) All garages except private garages, which are more than 500 square feet in area shall have walls and roof of ordinary construction, as specified in section Ind 51.02, or better, and all floors of vehicle storage rooms, salesrooms, and repair shops shall be of not less than 4-hour fire-resistive construction, as specified in section Ind 51.06.

Effective January 1, 1972 subsection (2) (a) intro. par. is created to read as follows:

(a) All garages, except private garages, which are more than 500 square feet in area shall have walls and roof of ordinary construction, as specified in section Ind 51.02, or better, and all floors of vehicle storage rooms, salesrooms, and repair shops shall be of not less than 4-hour fire-resistive construction, as specified in section Ind 51.04

Exception. 1. A garage not more than one story in height and 2,000 square feet in area may have walls and roof of frame construction if located at least 100 feet from any other building or boundary line between premises.

2. A hangar for the storage of not more than one airplane or a boat house for the storage of not more than one motor boat may be of frame construction if located at least 15 feet from any property line or other building.

(b) All walls, or parts of walls, nearer than 5 feet to a boundary line between premises or to any other building shall be unpierced; all walls, or parts of walls, nearer than 10 feet, but not nearer than 5 feet, to a boundary line between premises or to any other building shall have all openings therein protected by means of fire-resistive doors and windows as specified in sections Ind 51.09 and 51.10.

(c) Where a garage which is more than 500 square feet in area is built in connection with a building used for other purposes, it shall be permitted therefrom by means of 4-hour fire-resistive walls as specified in section Ind 51.05 and unpierced 4-hour fire-resistive floors above and below as specified in section Ind 51.06. All open-

ings in the walls to adjoining parts of the building shall be protected by means of self-closing fire-resistive doors as specified in section Ind 51.09. Stairways from garages leading to upper stories shall be separated from the garage area with walls of 4-hour fire-resistive construction as specified in section Ind 51.05 with all openings protected by means of self-closing fire-resistive doors as specified in section Ind 51.09.

(d) Where a garage which is less than 500 square feet in area is built in connection with a public building or place of employment under this code, the garage shall have walls and ceiling of not less than one-hour fire-resistive construction as specified in sections Ind 51.05 and Ind 51.06, and the openings to adjoining parts of the building shall be protected by means of fire-resistive doors as specified in section Ind 51.09.

(3) FIRE PROTECTION. Boilers, furnaces and all open flame equipment within garages and service stations shall be effectively separated from other areas by not less than 2-hour fire-resistive walls, floors and ceilings as specified in sections Ind 51.05 and 51.06, such enclosures in basements shall have no openings into other basement areas. All stairways leading to such basement enclosures from the first floor shall be enclosed on the first floor with not less than 2-hour fire-resistive construction as specified in sections Ind 51.05 and Ind 51.06, and the opening thereto protected with a fire-resistive door as specified in section Ind 51.09.

Effective January 1, 1972 subsections (2) (d), (e), (g) and (3) intro. par. are created to read as follows:

(b) All walls, or parts of walls, nearer than 5 feet to a boundary line between premises or to any other building shall be unpierced. All walls, or parts of walls, nearer than 10 feet, but not nearer than 5 feet, to a boundary line between premises or to any other building shall have all openings therein protected by means of fire-resistive doors and windows as specified in section Ind 51.017.

(e) Where a garage which is more than 500 square feet in area is built in connection with a building used for other purposes, it shall be separated therefrom by a series of 1-hour fire-resistive walls as specified in section Ind 51.01 and unpierced 1-hour fire-resistive floors above and below as specified in section Ind 51.01. All openings in the walls to adjoining parts of the building shall be protected by means of self-closing fire-resistive doors as specified in section Ind 51.017. Stairways from garages leading to upper stories shall be separated from the garage area with walls of 1-hour fire-resistive construction as specified in section Ind 51.01 with all openings protected by means of self-closing fire-resistive doors as specified in section Ind 51.017.

(d) Where a garage which is less than 500 square feet in area is built in connection with a public building or place of employment under this code, the garage shall have walls and ceilings of not less than 1-hour fire-resistive construction as specified in section Ind 51.01, and the openings to adjoining parts of the building shall be protected by means of fire-resistive doors as specified in section Ind 51.017.

(3) FIRE PROTECTION. Boilers, furnaces and all open flame equipment within garages and service stations shall be effectively separated from other areas by not less than 2-hour fire-resistive walls, floors and ceilings as specified in section Ind 51.01. Such enclosures in basements shall have no openings into other basement areas. All stairways leading to such basement enclosures from the first floor shall be enclosed on the first floor with not less than 2-hour fire-resistive construction as specified in section Ind 51.01 and the opening thereto protected with a fire-resistive door as specified in section Ind 51.017.

(a) Suspended furnaces and direct fired unit heaters fired with liquid fuel or gas may be used without an enclosure where approved by the department of industry, labor and human relations. Where approved, the equipment and installation shall satisfy requirements of section Ind 59.66.

(b) In garages or service stations which are heated by a suspended furnace located in a utility room or storage room, the enclosing walls, floor and ceiling shall be of 2-hour fire-resistive construction unless one side of the room is left open.

(4) FLOOR PITS. There shall be no pits or other depressions in the floor of any garage area, except that this requirement shall not apply to the shallow depressions formed to secure floor drainage, nor to catch basins installed in compliance with the provisions of the plumbing code issued by the state board of health nor to floor openings for access to regular basements.

(a) This will permit service openings in the floors of garages or service stations provided that the area below can be classed as regular basements and are ventilated in accordance with the requirements of the building, heating, ventilating and air conditioning code.

History: 1-2-56; r. and recr. (2) (c), Register, September, 1958, No. 33, eff. 10-1-58; am. Register, January, 1961, No. 61, eff. 2-1-61; am. (2) (a), Register, December, 1967, No. 144, eff. 1-1-68; am. (2) (a) intro. par., (b), (c), (d) and (3) intro. par., Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (2) (a) intro. par.; (2) (b), (c), (d) and (3) intro. par. eff. 8-1-71, exp. 1-1-72; cr. (2) (a) intro. par., (2) (b), (c), (d) and (3) intro. par., eff. 1-1-72, Register, July, 1971, No. 187.

Ind 57.51 Filling stations; buildings and structures. (1) DEFINITIONS. (a) By filling station is meant one or more pumps, tanks, and other pieces of equipment used in the storage and dispensing of liquid fuels and arranged for the sale of such liquid fuels to the public.

(b) By dispensing area is meant any area within 15 feet of any pump or other dispensing equipment.

(c) By basement or open space under a floor or dispensing area is meant any space that does not have an outlet at its lowest level, at or above grade.

(2) CONSTRUCTION. (a) All buildings having a service space of more than 500 square feet in area, designed to accommodate motor driven vehicles, and all other buildings erected within 15 feet of the dispensing equipment shall be of ordinary construction as specified in section Ind 51.02, or better, except where canopies are provided over the dispensing equipment, such canopies shall be of incombustible construction throughout.

1. Pumps or other dispensing equipment serving liquid fuel to the public which are located within or under any occupied part of any building or structure shall be installed in compliance with the provisions of the flammable liquids code.

(b) Buildings not more than one story in height and not exceeding 500 square feet in area may be of frame construction if located at least 15 feet from dispensing equipment and 10 feet from the boundary lines between premises and from other buildings on the same premises.

(c) Buildings more than 500 square feet in area used as offices buildings exclusively, or in connection with other non-hazardous occupancies may be of frame construction if not more than one story in height and located at least 30 feet from boundary lines between premises, from other buildings on the same premises and from the dispensing equipment.

(d) All walls, or parts of walls, in buildings under (a) which are nearer than 5 feet to a boundary line between premises or to any other building shall be unpierced; all walls, or parts of walls nearer premises or to any other building shall have all openings therein protected by means of fire-resistive doors and windows as specified in sections Ind 51.09 and 51.10.

Effective January 1, 1972 subsection (2) (d) is created to read as follows:

(d) All walls, or parts of walls, in buildings under par. (a) which are nearer than 5 feet to a boundary line between premises or to any other building shall be unpierced. All walls, or parts of walls nearer than 10 feet, but not nearer than 5 feet, to a boundary line between premises or to any other building shall have all openings therein protected by means of fire-resistive doors and windows as specified in section Ind 51.047.

(e) The main floor level of any building erected within 15 feet of equipment used to dispense liquid fuel shall not be below the level of the driveway or grade at such equipment.

(f) There shall be no basement or other open space under the floor of the dispensing area outside of the building. There shall be no basement or other open space under the floor of any filling station building, unless:

1. The main floor level is at least 6 inches above the driveway or grade at the dispensing equipment, and

2. There is no outside door, window or other wall opening to such under floor space, except fuel chutes or other similar vertical openings having a tight-fitting cover, with the bottom of such opening at least 6 inches above the driveway or grade at the dispensing equipment.

3. The floor and enclosure of the under floor space is of 4-hour fire-resistive construction as specified in sections Ind 51.05 and 51.06.

Effective January 1, 1972, subsection (2) (f) 3. is created to read as follows:

3. The floor and enclosure of the underfloor space is of 4-hour fire-resistive construction as specified in section Ind 51.04.

4. The under floor space is effectively vented by gravity means.

Note: For requirements applying to floor pits, see section Ind 57.50.

History: 1-2-56; am. (2) (a); cr. (2) (a) 1., Register, September, 1959, No. 45, eff. 10-1-59; am. (2) (d) and (2) (f) 3., Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (2) (d) and (2) (f) 3., eff. 8-1-71, exp. 1-1-72; cr. (2) (d) and (2) (f) 3 eff. 1-1-72, Register, July, 1971, No. 187.

Ind 57.52 Automobile tire or battery shops. (1) Any building, or part of a building, in which tires are repaired or fitted to vehicles shall be constructed, equipped and maintained as a garage under section Ind 57.50.

(2) Any building or part of a building, in which electric storage batteries are charged, repaired, or are installed in vehicles shall be constructed, equipped and maintained as a garage under section Ind 57.50.

Ind 57.53 Automobile parking decks. (1) DEFINITION. For the purpose of this code, a parking deck is an unenclosed or partially enclosed

structure used for the parking or storage of self-propelled vehicles, which are driven into the structure and are parked under their own power with no facilities for the repairing of such vehicles.

(2) CONSTRUCTION REQUIREMENTS. (a) Parking decks may be erected without enclosing walls except that unpierced enclosing walls of not less than 2-hour fire-resistive construction, as specified in Wis. Adm. Code section Ind 51.05, shall be provided on all sides which are located less than 10 feet from the boundary line between premises or from any other building.

Effective January 1, 1972 subsection (2) (a) is created to read as follows:

(a) Parking decks may be erected without enclosing walls except that unpierced enclosing walls of not less than 2-hour fire-resistive construction, as specified in section Ind 51.04, shall be provided on all sides which are located less than 10 feet from the boundary line between premises or from any other building.

(b) Parking decks of 4-hour fire-resistive construction shall not be limited in height or in floor area.

(c) Parking decks having floor and supporting members of 2-hour fire-resistive construction or better shall not exceed 75 feet in height or 40,000 square feet in area. This area may be increased to 50,000 square feet where the structure faces 2 streets and to 60,000 square feet where the structure faces 3 or more streets.

(d) Parking decks of unprotected incombustible construction shall not exceed 50 feet in height or 20,000 square feet in area. This area may be increased to 25,000 square feet where the structure faces 2 streets and to 30,000 square feet where it faces 3 or more streets.

(e) A continuous wheel guard not less than 10 inches in height shall be provided on all sides of the structure on all floors.

(f) A guard rail not less than 3 feet 6 inches in height and having an intermediate rail at mid-height and a toeboard at least 6 inches high at the base, or the equivalent, shall be provided on all open sides of the structure on each floor.

(g) All parking decks and parts thereof shall be designed and constructed to support the following minimum superimposed live loads in pounds per square foot of horizontal area, in addition to the dead load:

Passenger Cars Only	*Pounds Per Square Foot*
Top floor	80
First floor	80
Intermediate floors	50
Ramps	80

Busses and Trucks	
All floor and ramp areas	8,000 pound axle load in any possible position or 80 pounds per square foot, whichever produces the greater stress.

History: Cr. Register, June, 1956, No. 6, eff. 7-1-56; cr. (2) (g), Register, August, 1957, No. 20, eff. 9-1-57; am. Register, December, 1962, No. 84, eff. 1-1-63; am. (2) (a), Register, February, 1971, No. 182, eff. 7-1-71; r. and recr. (2) (a) eff. 8-1-71 and exp. 1-1-72; cr. (2) (a) eff. 1-1-72, Register, July, 1971, No. 187.