

Filed Aug 5-1959  
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IND 51.01-57.51

STATE OF WISCONSIN )  
DEPT. OF INDUSTRIAL COMMISSION ) SS.

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Helen E. Gill, Secretary of the Industrial Commission, and custodian of the official records of said commission, do hereby certify that the attached rules and regulations relating to the Wisconsin Building Code were duly approved and adopted by this commission on August 4, 1959.

I further certify that said copy has been compared by me with the original on file in this commission and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have here-  
unto set my hand and affixed the  
official seal of the department  
at the Capitol, in the city of  
Madison, this 5th day of  
August, A. D., 1959.

  
Secretary

ORDER OF THE INDUSTRIAL COMMISSION  
ADOPTING, AMENDING AND REPEALING RULES

Pursuant to authority vested in the Industrial Commission by sections 101.01 - 101.29 Wisconsin Statutes, the Industrial Commission hereby repeals, amends and adopts rules relative to its Building Code as follows:

✓ Ind 51.01	Old order repealed and new order adopted.	✓
✓ " 51.02	" " " " " " " "	✓
✓ " 51.09	" " " " " " " "	✓
✓ " 51.16	" " " " " " " "	✓
✓ " 52.58	" " " " " " " "	✓
✓ " 52.60	" " " " " " " "	✓
✓ " 53.09	" " " " " " " "	✓
✓ " 53.10	" " " " " " " "	✓
✓ " 53.12	" " " " " " " "	✓
✓ " 53.22 (5)	New Section adopted.	✓
✓ " 53.24 (15)	" " " "	✓
✓ " 53.25	Old order repealed and new order adopted.	✓
✓ " 53.28 (9)	Old section repealed and new section adopted.	✓
✓ " 54.01 (2)	Amended.	✓
✓ " 54.02 (1)(c)	New Section adopted.	✓
✓ " 54.12 (3)(a)(b)	Amended.	✓
✓ (6)	Amended.	✓

*Am. 54.01 (2)*

- ✓ Ind 54.20 New order adopted.
- ✓ " 55.03 Repealed and new order adopted.
- ✓ " 55.29 (1) Amended.
- ✓ " 55.68 Repealed and new order adopted.
- ✓ " 56.06 (1) Amended.
- ✓ " 56.06 (1)(a) New section adopted.
- ✓ " 56.11 (3) Amended.
- am 56.16(2) ✓ " 56.16 (3), (4) and (4)(a) Amended.
- ✓ " 57.01 (3) Amended.
- ✓ " 57.19 Repealed and new order adopted.
- ✓ " 57.20 (1) Amended.
- ✓ " 57.50 (2)(c) Repealed and new section adopted.
- ✓ " 57.51 (2)(a) Amended.
- ✓ (2)(a)(1) New section adopted.

**PROPOSED AMENDMENTS  
TO  
THE WISCONSIN ADMINISTRATIVE CODE - BUILDING CODE  
1959**

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 20 feet or more in width may be constructed of incombustible 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-retardent roofing as specified in section Ind 51.07 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.

(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.

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

~~PROPOSED AMENDMENTS~~

~~to~~

~~THE WISCONSIN ADMINISTRATIVE CODE - BUILDING CODE~~

~~1959~~

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

(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 shall be protected by a ceiling of one-hour fire-resistive construction as specified in section Ind 51.06, 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.

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 industrial commission to approve, subject to the provisions of this section, any door given a rating by the Underwriters' Laboratories in their <sup>"Building Materials List"</sup> ~~"List of Fire Protection Equipment and Materials"~~, listed 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 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, 1-3/4 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.

Note. The Underwriters' Laboratories Fire Protection Equipment List is obtainable from the Fire Insurance Rating Bureau and fire insurance companies.

Ind 51.16 Stairways. (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 (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 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 ~~than 3~~ 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 7-3/4 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 7-3/4 inches and a uniform tread of not less than 9 1/2 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) For stairways to elevated walks, platforms and runways in places of employment see section Ind 1.17 of the general orders on safety issued by the industrial commission.



(c) 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.

Ind 52.58 Walls and Ceilings. (1) The walls and ceiling of every toilet room shall be completely covered with smooth plaster, galvanized or enameled metal, gypsum wallboard 5/8" in thickness with taped joints, or constructed of brick, tile or other masonry units with flush joints or other equivalent smooth, non-absorbent material. Wood may be used only if it is smooth and well covered with 2 coats of body paint and one coat of enamel paint or spar varnish. Wood shall not be used for partitions between toilet rooms nor for partitions which separate a toilet room from any room used by the opposite sex. All such partitions shall be made soundproof. This is not intended to prohibit the use of wood stud partitions between rooms if partitions are lathed and plastered on both sides.

(2) The interior surface of walls and partitions shall be of light color to improve illumination and facilitate cleaning.

Ind 52.60 Fixtures. (1) Only individual water closets of porcelain or vitreous china shall be used. Water closet seats shall be of wood or other non-heat absorbing material, and shall have a surface that is impervious to water or cleaning agents, ~~and shall be finished with varnish or other substance~~ ~~so as to be impervious to water.~~ In public buildings, places of employment, and guest rooms in hotels and motels, and all other public places except apartments, the water closets shall have ~~projecting lips, or elongated bowls, and open front seats without cover.~~ All water closets except in apartments shall have open front seats without cover.

(2) Only individual urinals of porcelain, vitreous china, or stainless steel shall be used. Such urinals shall be set into the floor, the floor graded to the urinal and the urinals shall be equipped with an effective automatic or foot operated flushing device.

Ind 53.09 Bearing masonry walls, bearing partitions and piers. (1) General requirements. All masonry units used in the construction of bearing walls, bearing partitions and piers shall conform in all respects to the requirements for bearing units.

(2) Unit stresses. The unit stresses in bearing masonry walls, partitions and piers shall not exceed those specified in sections Ind 53.04 and Ind 53.07.

(3) Mortars. Cement mortar shall be used for all masonry which will have one or more faces in contact with soil. Lime-cement mortar or cement mortar shall be used for all masonry in isolated piers, parapet walls, chimneys where exposed to the weather, and for all hollow masonry units. All other masonry may be laid in cement mortar, lime-cement mortar or lime mortar.

(4) Masonry bond. In brick masonry, or in combination brick and other masonry units, the bonding of each tier of units to that adjoining shall be secured by means of a full header course of brick every sixth course of brick, or equivalent. The use of metal ties for bonding masonry is not approved.

(a) By equivalent, is meant that  $1/6$  of the <sup>surface</sup> ~~volume~~ of a wall shall be header, or bond, units.

(b) Where masonry units are larger or smaller than brick, the bond courses shall be placed at intervals not exceeding 16 inches.

(c) Stack bond.

Stack bonded masonry units used in the construction of bearing walls and partitions shall be bonded with  $3/16$  inch diameter steel rods or metal ties of equivalent stiffness embedded in the mortar joints. The vertical distance between ties shall not exceed 16 inches.

(5) Use of hollow clay tile and hollow concrete masonry units. Approved clay tile and concrete masonry units may be used in bearing and exterior walls of buildings not more than 3 stories, or 45 feet in height, or in panel walls in buildings of any height. In determining this height, the basement or foundation wall shall be considered a story if constructed of clay tile or concrete masonry units.

(6) Loading. Concentrated loads shall be transmitted to hollow clay tile or hollow concrete block masonry by at least 3 courses of brick or equivalent concrete or by a metal plate of sufficient thickness and size to distribute the allowable load to the webs and shells in such a manner as not to exceed the  $\Delta$  unit stress.

(7) Party wall construction. Where hollow clay tile or hollow concrete masonry units are used in party walls, there shall be not less than 2 such units, each 8 inches in thickness as a minimum, used in making up the thickness of the wall unless solid masonry is used for building all chases, recesses, framing of all openings, and for the support, anchorage, and protection of all joists and beams carried into such wall.

(8) Wall construction. Clay tile and concrete masonry units used in bearing walls shall be well bedded in mortar. The net bearing area of all clay tile and concrete masonry units as laid in the wall shall be such that the allowable unit stress in the mortar is not exceeded.

(9) Same. All clay tile laid with cells vertical shall be laid in Portland cement mortar. All clay tile laid with cells horizontal and all concrete masonry units shall be laid in cement-lime mortar, or better.

(10) Height and thickness. All bearing walls, party walls and standard division walls, except as hereinafter provided, shall be not less than 12 inches thick in the upper 3 stories, increasing 4 inches in thickness for each 3 stories, or fraction, below. No such 3 story height shall exceed 40 feet.

(11) Wall thickness. A building not more than 3 stories in height may have 8 inch bearing walls in the upper story, provided such story is not more than 10 feet high in the clear, and the span is not more than 20 feet, and the wall is not more than 30 feet long between cross walls, offsets or pilasters.

(12) Same. A building not more than one story in height may have 8 inch bearing walls, provided the clearstory height is not more than 12 feet, the roof span is not more than 25 feet, and the distance between cross walls, offsets or pilasters is not more than 20 feet.

(a) A building not more than one story in height may have 6-inch bearing walls provided the clearstory height is not more than 9 feet, the roof span is not more than 18 feet and the distance between cross walls, offsets, or pilasters is not more than 15 feet. All other 1-story buildings shall have all bearing walls not less than 12 inches thick.

(13) Lateral support. All bearing masonry walls shall have substantial lateral support at right angles to the wall face at intervals, measured either vertically or horizontally, not exceeding 18 times the wall thickness. Such lateral support shall be obtained by masonry cross walls, piers or buttresses when the limiting distance is measured horizontally, or by floors or roof when the limiting distance is measured vertically.

(14) Walls below grade. Masonry walls which are in contact with the soil in any story shall be increased 4 inches in thickness in that story, except that for places of abode as specified in section Ind 57.001, not over 2 stories in height, 12 inch walls will be accepted if substantial lateral supports consisting of masonry walls, offsets or pilasters are provided at intervals not to exceed 20 feet.

(15) Stone walls. Rubble and rough cut stone walls shall be 4 inches thicker than required for walls of artificially formed units or of ashlar masonry.

(16) Same. Stone and similar solid facing not less than 4 inches thick may be considered as part of the required thickness of a wall if bonded to the backing as required for brickwork. No such wall shall be less than 12 inches thick.

(17) Piers. In all buildings, the section of masonry supporting trusses or girders shall be considered as isolated piers, the least dimension of which, in inches, shall be not less than  $1/30$  of the span of the truss, or girder, in inches, and the height shall not exceed 12 times the minimum horizontal dimension.

(a) The height of masonry piers which are not built into, and as a part of bearing walls, shall be not more than 10 times the minimum horizontal dimension.

(b) Support for long span joist. Where long span steel joist or laminated structural wood members <sup>or precast concrete members</sup> are used on spans of more than 40 feet, and the spacing exceeds 4 feet, pilasters shall be provided to support each joist or spandrel beam supported on pilasters, or steel columns shall be provided to support the joist.

(18) Chases, recesses and openings. There shall be no chases in 8 inch walls or in any pier. No chase in any wall shall be deeper than  $\frac{1}{3}$  the wall thickness. No horizontal chase shall exceed 4 feet in length nor shall the horizontal projection of any diagonal chase exceed 4 feet. No vertical chase shall be closer than 2 feet to any pilaster, cross wall, end wall or other stiffener.

(a) The aggregate area of recesses and chases in the wall of any one story shall not exceed  $\frac{1}{4}$  the whole area of the face of the wall in that story. No chases or recesses shall be permitted in any wall which will reduce the fire resistance of such wall below the minimum required by this code.

(b) The maximum percentage of openings in the horizontal cross section of any wall shall not exceed 50%, unless the wall is increased 4 inches in thickness, or such portions of the wall between openings shall be as required for piers for the entire wall height.

Ind 53.10 Non-bearing <sup>masonry</sup> walls. (1) General Requirements. All exterior non-bearing masonry walls if constructed with one course of brick to the weather may be backed with common brick, concrete masonry units, or non-bearing clay tile, conforming to the requirements of sections Ind 53.05 and Ind 53.06. If walls are built of concrete masonry units or clay tile, with or without exterior stucco, such walls shall be constructed of concrete masonry units or clay tile conforming to the requirements of section Ind 53.06.

(2) Interior non-bearing walls. Interior non-bearing partition walls may be built of materials conforming to the requirements of sections Ind 53.05 and Ind 53.06, or of gypsum block or other approved materials.

(3) Type of mortar. Lime, lime-cement or cement mortar shall be used for all non-bearing masonry, except as follows:

- (a) Lime mortar shall not be used in <sup>normally</sup> ~~habitually~~ wet or damp locations.
- (b) Gypsum shall be used for gypsum masonry.
- (c) Gypsum may be used for interior clay tile masonry.

(4) Masonry bond and anchorage. In non-load bearing brick masonry or in combinations of brick and other masonry units, the bonding of each tier of units to that adjoining, shall be secured by means of a full header course of brick or other units placed at intervals not exceeding 32 inches. The height of such bond course shall not exceed 5 inches and the width of bed joint used to effect the masonry bond shall be at least 4 inches.

(a) All exterior and interior non-bearing walls and partitions shall be securely anchored to supporting members by means of corrosion resistant ties of at least No. 13 U.S. Standard Gauge metal spaced not more than 18 inches center to center.

(c) Stack bond. Stack bonded masonry units used in the construction of non-load bearing walls and partitions shall be bonded with 3/16" steel rods or metal ties of equivalent stiffness embedded in the mortar joint. The vertical distance between ties shall not exceed 32 inches.

(b) Masonry veneer on frame structures shall be securely anchored to the structure with corrosion resistant ties of at least No. 13 U.S. Standard Gauge metal or equal. The maximum vertical distance between ties shall not exceed 18 inches and the maximum horizontal distance shall not exceed 36 inches and the ties in alternate courses shall be staggered.

(5) Height and thickness. Interior non-bearing <sup>masonry</sup> walls which are supported by fire-resistive construction and have tight contact with not less than 2-hour fire-resistive construction at the top, shall be not more than 36 times their thickness in clear height. Similar non-bearing walls which contact less than 2-hour fire-resistive support at the top shall be not more than 24 times their thickness in clear height. Plastering shall be included in computing the thickness.

(6) Thickness of exterior non-bearing walls. The thickness of exterior non-bearing walls shall be not less than 1/24 of the clear height and not less than 1/30 of the horizontal distance between vertical supports, but in no case less than 8 inches.

Ind 53.12 Bonding and anchoring stone and cast stone veneers. (1) For bearing walls, stone shall be bonded to the backing every 16 inches of wall height with bond courses at least 4 inches in height, and the width of bed joint used to effect the masonry bond shall be at least 4 inches.

(2) For non-bearing walls, individual stones shall be anchored to the supporting framework and dowelled to each other at all horizontal joints, and anchored to the backing at all horizontal joints and at vertical joints so that one anchor is provided for every 6 square feet of wall surface. All anchors shall be not less than 1/4 square inch in cross section and made of wrought iron galvanized after forming, or of commercial bronze.

(3) The backing of all stone or cast stone bearing or non-bearing walls shall be of brick conforming to the requirements of section Ind 53.05 or other solid material weighing at least 130 pounds per cubic foot except where the stone facing is not more than 4 inches in thickness, the backing may be of hollow masonry units conforming to the requirements of section Ind 53.06, *or other similar non-corrosive material.*

Ind 53.22 Allowable working stresses.

~~(1), (2), (3), (4) No change.~~

(5) Ultimate strength method of design.

(a) The ultimate strength method of design for reinforced concrete may be used under the following conditions if approved in writing by the industrial commission.

1. Where the ultimate strength method of design is used, all other features of the design shall conform to the requirements of the building code.

2. Positive control shall be provided for the concrete mix. This includes periodic tests of regular concrete cylinders to determine the strength of the concrete.

3. ~~Constant~~ Supervision shall be provided by the supervising architect or engineer during mixing and pouring operations where this method of design is involved.

Ind 53.24 Structural Steel.

(1) to (14), inclusive. No change.

(15) Plastic design and fabrication. The design, fabrication and erection of structural steel for buildings and structures by the plastic design method shall conform with recognized good engineering practice as approved by the industrial commission.

Note. It will be the policy of the industrial commission to accept methods of ~~plastic~~<sup>plastic</sup> design which conform with the Rules for Plastic Design and Fabrication of Structural Steel Issued by the American Institute of Steel Construction.

Ind 53.25 Steel joist construction. (1) Definition. Steel joist construction shall consist of decks or top slabs defined in section Ind 53.25 (7), supported by separate steel members referred to as steel joists. Any steel member suitable for supporting floors and roofs between the main supporting girders, trusses, beams, or walls when used as hereinafter stipulated shall be known as a "steel joist". Such steel joists may be made of hot or cold formed sections, strip or sheet steel, riveted or welded together, or by expanding.

(2) Limit of span and spacing. The clear span of steel joist shall not exceed 24 times the depth of the steel portion of the steel joist.

(a) The spacing of steel joist shall not exceed 24 inches on centers for floors. In no case shall the joist spacing exceed the safe span of the top slab, deck, or flooring over the said joist. The spacing of steel joist for roofs shall not exceed the safe span of the top slab or roof deck.

(b) Where these spans or spacings are exceeded, the requirements for steel joist construction shall not apply, but the steel members shall be designed in accordance with the requirements of section Ind 53.24.



Filed 8/14/59

Ind 53.25 Steel Joist Construction.

(3) Materials. All steel joist used in the construction of buildings and structures shall be fabricated from materials of uniform quality and free from defects that would impair the strength or stability of the structure.

(a) All steel joist shall receive one coat of asphalt base paint or an equivalent protective covering before leaving the fabricating shop.

Note. It will be the policy of the industrial commission to approve, subject to the provisions of this section, steel joist that conform to the following Standard Specifications of the American Society for Testing Materials.

1. Steel for bridges and buildings, A.S.T.M.

Designation A-7.

2. Flat rolled carbon steel sheets of structural quality, Grade C, A.S.T.M. Designation A 245.

3. Hot rolled carbon steel strip of structural quality, Grade C, A.S.T.M. Designation A 303.

(3) Materials. All steel joist shall conform to the following Standard Specifications of the American Society for Testing Materials.

- Handwritten: H.S. 8.19.39
- (a) Steel for bridges and buildings. A.S.T.M. Designation A7.
  - (b) Flat rolled carbon steel sheets of structural quality, Grade C, A.S.T.M. Designation A245.
  - (c) Hot rolled carbon steel strip of structural quality, Grade C, A.S.T.M. Designation A303.
  - (d) All steel joist shall receive one coat of asphalt base paint or an equivalent protective covering before leaving the fabricating shop.

(4) Design of steel joist. An open web steel joist built up of bars or other sections, or one fabricated by expanding a rolled section shall be designed as a truss. The compressive stress in chord members and diagonals of the joist shall not exceed those given in section Ind 53.24 for main members. The tensile stress shall not exceed 20,000 pounds per square inch in any member. The minimum shear to be used in designing the web members at any point in an open web steel joist shall not be less than 50 per cent of the required maximum end reaction for such steel joist.

(a) A solid web steel joist shall be designed as a beam in accordance with the requirements of section Ind 53.24.

(b) In the completed structure, the top chords of open web steel joists or the top flanges of solid web steel joists may be considered as being stayed laterally when the deck or top slab over the steel joists complies with the provisions of section Ind 53.25 (7).

(c) All joints and connections of an open web steel joist shall be capable of withstanding a load at least 3 times the designed load and shall be sufficiently rugged to resist the stresses incident to transportation and erection when handled in a reasonable manner.

(d) All elements of an open web joist shall have their lines of center of gravity meet at a point if practicable; if not, stresses arising from eccentricity shall be included with other stresses in designing these elements.

(e) Ends of steel joists shall be designed to resist the bending produced by the eccentricity of the reaction at the support.

(5) Erection. The ends of steel joist shall extend a distance of at least 4 inches on to masonry or reinforced concrete supports and at least  $2\frac{1}{2}$  inches on steel supports. In floor construction every third steel joist and in roof construction every steel joist supported on concrete or masonry supports shall be anchored thereto with an anchor equivalent to a  $\frac{3}{8}$  inch round bar. All steel joist supported on steel beams shall be secured thereto by welding or with an anchor made of not less than  $\frac{3}{16}$  inch bar fastened over the flanges of the supporting beams.

(a) The ends of long span steel joist shall extend a distance of not less than 6 inches on masonry or reinforced concrete supports and at least 4 inches on steel supports.

(b) During the construction period, care shall be exercised to prevent excessive concentrated or moving loads. The construction contractor shall provide for adequate distribution of such loads so that the carrying capacity of any steel joist is not exceeded during that period. When erected and bridged, the total concentrated load on any one steel joist shall not exceed 800 pounds and in the case of open web steel joists, such concentrated load shall not be imposed between panel points.

(6) Bridging. As soon as steel joist are erected, bridging shall be installed between the joist before the application of construction loads. This bridging shall be adequate to support the top chords or flanges against lateral movement during the construction period and shall hold the steel joist in a vertical plane passing through the bearings.

(a) Horizontal bridging shall consist of two continuous horizontal steel members, one of which is attached to the top chord and the other attached to the

bottom chord. Attachment to the joist shall be made by welding or by mechanical means, and the attachments shall be capable of resisting a horizontal force of not less than 500 pounds. The ratio of unbraced length to the least radius of gyration ( $\frac{L}{r}$ ) of the bridging member shall not exceed 300. Where a round bar is used for bridging the diameter shall be at least 1/2 inch.

(b) Diagonal cross bridging may be used for joist spacing up to 30 inches. The ratio of unbraced length to the least radius of gyration ( $\frac{L}{r}$ ) shall not exceed 200. Connections to the top and bottom chords of the joist shall be made by positive mechanical means or by welding.

(c) In roof construction, where the slope is perpendicular to the longitudinal axis of the joist, sag rods may be used in lieu of bridging. The rods shall not be less than 1/2 inch in diameter and the number of lines shall be the same as specified for bridging.

(d) In no case shall the spacing of bridging be greater than specified in the following table.

<u>CLEAR SPAN</u>	<u>NUMBER OF LINES OF BRIDGING</u>
Up to 14 feet	One row near center.
14 to 21 feet	Two rows placed at 1/3 point of span.
21 to 32 feet	Three rows placed at 1/4 point of span.
32 to 40 feet	Four rows placed at 1/5 point of span.
40 to 48 feet	Five rows placed at 1/6 point of span.

(e) Bridging for long span joist shall consist of cross bracing with an  $\frac{L}{r}$  ratio of not more than 200. The maximum spacing of lines of bridging for long span joist shall not exceed the following:

<u>JOIST DEPTH IN INCHES</u>	<u>MAXIMUM SPACING OF LINES OF BRIDGING</u>
18 to 24 inches, inclusive	10 feet
Over 24 to 36 inches, inclusive	12 feet
Over 36 inches	16 feet

(7) Decks and top slabs. Decks or top slabs over steel joist may be of concrete or gypsum poured on metal lath centering attached to the top chords or flanges of steel joists as required elsewhere in this section or on removable centering provided the top chords or flanges of the steel joists are properly stayed by the concrete or gypsum slab. Other equally suitable permanent centering

may be used, provided it is substantially attached to the top chords or flanges as required elsewhere in this section and provided these attachments (or the centering itself) are securely anchored into the concrete or gypsum slab. Precast concrete or precast gypsum slabs when securely attached to the top chords or flanges and anchored thereto and brought to a firm bearing, wood decks as stipulated below, and corrugated or other steel roof decks securely anchored to the top chords or flanges may be used over steel joists. Any attachment or pair of attachments when applied shall be capable of staying the top chord or flange laterally in both directions and in the case of open web steel joists, shall be spaced not farther apart than the panel point spacing. Decks or top slabs over steel joists shall not be assumed to carry any part of the compression stress in the steel joist.

(a) Flat wood decks of single thickness of one inch nominal material shall not have a span of more than 20 inches for floors, or 30 inches for roofs. All such decks shall be securely fastened to the ~~wood nailer strips~~ joist.

(b) Poured structural slabs of concrete, gypsum or other similar material shall not be less than 2 inches thick. They shall be poured upon 3/8 inch ribbed metal lath weighing not less than 4 pounds per square yard for spans not exceeding 24 inches and upon 3/4 inch rib lath weighing not less than 4.5 pounds per square yard for spans not exceeding 30 inches. Other material equally suitable as a form or centering for casting concrete or gypsum slabs may be used in place of rib lath. Rib lath or other centering which remains in place shall be substantially attached to the top chord or flange of each steel joist at intervals of not over 8 inches. Such slabs shall be reinforced with mesh or rods, in addition to the rib lath, except that when slabs are to be covered with a wood strip top floor, the rib lath or centering may, if adequate, serve also as the reinforcement.

(c) Any material used as centering for the top slab shall be installed so as not to exert an undue lateral pull on the top chords or flanges of the steel joists.

Ind 53.28 Wood Construction.

(1) to (8), inclusive. No change.

(9) Post and columns. Wood posts, when used in basements, shall bear on a concrete ~~concrete~~ base which shall extend at least 3 inches above the finish floor. The base shall bear directly on the post footing.

(a) Short columns are those having an  $\frac{l}{d}$  ratio of 10 or less in which  $l$  = unsupported length in inches and  $d$  the least side in inches.

(b) Safe load for short columns may be obtained by the formula  $\frac{P}{A} = S$  in which  $\frac{P}{A}$  represents the working stress for the column and  $S$  represents the safe unit compressive stress parallel to the grain given in the table of working stresses.

(c) Safe load for long columns of square or rectangular shape may be obtained by the formula  $\frac{P}{A} = \frac{0.30E}{\left(\frac{l}{d}\right)^2}$  where  $E$  is the modulus of elasticity as given in the table on working stresses. The value of  $\frac{P}{A}$  calculated by this formula shall in no case exceed  $S$ .

~~(10) No change.~~

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	6,000	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 66-2/3%. 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 order <sup>at least</sup> by division walls. Such division walls shall have not less than a 4-hour fire-resistive rating as specified in 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.

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.

(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.

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 ~~one~~ 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 employees.

(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 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.

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 industrial commission. For further requirements on sanitation, see that publication.

Ind 54.20 Tents. All tents used for ~~manufacturing~~ sales or storage purposes shall conform to the requirements specified for tents in sections Ind 55.58 - 55.63, inclusive, of this code.

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 limitations 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 stair tower 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.

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.

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

Ind 55.68 Outdoor theaters. (1) Definition and scope. For the purpose of this code, an outdoor theater is a place of outdoor assembly used for the showing of plays, operas, motion pictures and similar forms of entertainment in which the audience views the performance from self-propelled vehicles parked within the theater enclosure. The requirements of this section shall apply to outdoor theaters now in existence and to outdoor theaters hereafter constructed, except as provided in paragraph 5.

(2) Entrances and exits. All entrances and exits for outdoor theaters shall comply with the regulations of the state highway commission for driveways from property abutting state highways and the following additional requirements:

(a) Not more than one entrance shall be provided for each access road but each such entrance may be divided into 2 roadways and channelized to properly provide for vehicles turning right or left from the highway.

(b) That portion of an entrance or exit lying within the highway right-of-way shall comply with the regulations of the authority in charge of the maintenance of the highway or in the event this authority has no regulation, it shall comply with regulations prescribed by the state highway commission.

(c) Not more than one exit shall be provided for each access highway but such exit may be suitably channelized to provide for right and left turns to the highway, and not more than one traffic lane shall be permitted for each traffic lane on the highway available to vehicles leaving the theater.

(3) Vehicle storage. (a) Sufficient area shall be provided between the highway and the ticket booth to provide storage space for vehicles equal to not less than 10% of the theater capacity. In all cases, sufficient storage space shall be provided so the vehicles will not back up on the traveled way of the highway. Storage area shall be calculated on the basis of 162 square feet per vehicle.

(b) A hold-over storage area having sufficient capacity to accommodate not less than 15% of the theater capacity shall be provided between the ticket booth and the ramp area.

(4) Tower construction. The tower supporting the motion picture screen shall be designed to resist a horizontal wind pressure of not less than 30 pounds for every square foot of exposed surface.

(5) Location of tower. The screen shall be so oriented that the picture is not visible from any major highway. This requirement does not apply to towers erected prior to January 1, 1952.

(6) Concession and motion picture machine booth. The motion picture booth and equipment shall comply in all respects with the requirements of sections Ind 55.40-Ind 55.49, inclusive, of this code.

(a) Concession buildings in connection with outdoor theaters shall comply with the requirements of Chapter 54 of this code.

(7) Sanitary equipment. Separate toilet rooms shall be provided for males and females in connection with all outdoor theaters as required by section Ind 55.32. Toilet rooms and equipment shall comply in all respects with the requirements of sections Ind 52.50-Ind 52.64 of this code.

(a) In determining the number of fixtures required for toilet rooms in connection with outdoor theaters, the capacity of the theater is established by allowing  $2\frac{1}{4}$  persons for each vehicle accommodated, exclusive of vehicles parked in the waiting or hold-over area.

(b) Where the public toilet rooms are so located that the patrons must cross the ramp area in order to reach the toilet rooms, a suitable approach or passageway leading thereto shall be maintained. Such passageways shall be properly lighted and they shall be kept free from obstructions.

(8) Ramps and speaker equipment. (a) Ramps shall be spaced not less than 38 feet apart. The ramps shall be so designed that any vehicle can move from its parked position to the exit driveway without being required to back up.

(b) All ramps, parking areas, entrance and exit driveways shall be properly

surfaced with a gravel surfacing or better, adequate to withstand the weight of the vehicles accommodated.

(c) Where additional seating space is provided in the theater enclosure for patrons using public transportation facilities, the speaker arrangement shall be such that the sound will be confined to the immediate seating area and not broadcast beyond the theater enclosure.

(d) There shall not be less than 18 feet distance between speaker posts, measured parallel to the ramps, except in seated areas for patrons using public transportation. All electrical wiring and electrical equipment shall be installed in accordance with the provisions of the Wisconsin state electrical code. Each speaker post shall be wired with wire approved for underground use laid in trenches not less than 12 inches in depth.

(9) Lighting. All entrance and exit driveways shall be adequately lighted and properly marked to avoid congestion and confusion and shall remain lighted throughout the performance and until the audience has left the area.

(10) Speed limit. In every outdoor theater, notices of a permanent character shall be prominently displayed designating the maximum speed limit permitted for cars driven within the area. Parking lights shall be used when cars are moving in the theater enclosure.

(11) Running of engines. At each performance, an instructive trailer shall be shown on the screen informing the patrons of the danger of carbon monoxide poisoning when the engine is running and stating that when it becomes necessary to run the engine, the windows of the vehicle should be opened at least one inch.

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 (750 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.

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(a) Exits shall be distributed so that the entrance to each class, study, or recitation room will not be more than 75 feet distant from an exit measuring along public passageways if the building is of non-fire-resistive construction or 100 feet in a fire-resistive building.

(2) 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.

(3) In buildings of more than 2 stories all stairways shall be enclosed as specified in sections Ind 51.17-Ind 51.18.

(4) Fire escapes may only be used as exits from the temporary end of incomplete or unit type buildings, as approved in writing by the industrial commission. Such fire escapes shall be of the "B" type where more than 100 persons can be accommodated above the first story.

(5) Handrails shall be provided on both sides of all exit stairs used by pupils.

(6) Closets shall not be placed below stairways or stairway landings.

Ind 56.11 Floor space and ceiling height. (1) All class and recitation rooms shall have a minimum floor space of 23 square feet per person. Rooms used only for study purposes shall have a minimum floor space of 15 square feet per person.

(2) In colleges or universities, classrooms seated with tablet arm chairs or seats without desks shall have a minimum floor space of 10 square feet per person.

(3) All rooms used for educational purposes shall be not less than 9 feet high in the clear except that school buildings which have a sloping ceiling may have a ceiling height of not less than 8 feet on the low side of the classroom provided the average ceiling height is not less than 9 feet <sup>in the clear</sup>. Toilet rooms, service rooms, store rooms and similar spaces shall not be less than 8 feet in the clear.

~~(Note: The committee did not approve the proposal to reduce the ceiling height of classrooms to 9 feet but recommended that the proposal be submitted to the public for criticism at public hearings.)~~

Ind 56.16 Sanitary equipment. (1) Toilets. School buildings shall have

the following toilet equipment:

(a) In high schools, one water closet for every 30 females or fraction.

(b) One water closet for every 60 males or fraction and one urinal for every 30 males or fraction.

(c) In junior high and elementary schools, one water closet for every 25 females or fraction, one water closet for every 50 males or fraction and one urinal for every 25 males or fraction.

(2) Drinking water. One drinking fountain shall be installed in each story classroom and basement, for each 6000 square feet of floor area, or fraction. Drinking fountains shall not be installed in toilet rooms.

(3) Washing facilities. Lavatories shall be provided in connection with toilet rooms in the ratio of one lavatory for every <sup>60 persons of each sex in high</sup> ~~2 toilet fixtures (closets and~~ schools and one lavatory for every 50 persons of each sex in junior high schools ~~urinals)~~ and elementary schools.

(4) Cloakrooms and wardrobes. In every school building, there shall be provisions for the placing and storage of the wraps of occupants. Such provisions shall consist of wardrobes, open front wardrobes, lockers or cloak rooms constructed and arranged in a manner to insure and facilitate the ventilation and sanitation of the contents. Ventilation shall conform to the provisions of section Ind 58.47 of the heating, ventilation and air conditioning code.

(a) This prohibits the use of corridors and vestibules for cloak room purposes unless ventilated lockers, wardrobes, or open front wardrobes are provided in the corridors. Open hooks and hangers will not be approved.

Note. Heating and ventilation. For heating and ventilation in schools, libraries, etc., see the heating, ventilation and air conditioning code issued by the industrial commission which code applies to all public buildings and places of employment.

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 deten-



tion, 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.

Ind 57.19 Windows. The outside windows in every sleeping or living room shall have a total sash area of at least  $1/10$ th 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.

Ind 57.20 Isolation of fire hazards. (1) All boiler and furnace rooms, including fuel rooms and breeching, 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 3 stories in height and in all asylums and other places of detention shall be enclosed with a 4-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 Ind 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 sections Ind 51.05 and Ind 51.06, or better, except as provided in paragraph 5 of this section.

(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 Ind 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: 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 industrial commission. Space heaters fired with liquid fuel may be used without an enclosure in motels and apartment buildings not more than one story in height.

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.

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 Ind 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 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 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 51.09.

(3) Fire protection. Boilers, furnaces and all open flame equipment within garages 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 Ind 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.

(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 heating, ventilation and air conditioning code.

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 office 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 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 Ind 51.10.

(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 Ind 51.06.

4. The under floor space is effectively vented by gravity means.

Note: For requirements applying to floor pits, see section Ind 57.50.

The rules, amendments and repeals herein shall take effect on September 1, 1959 as provided in section 227.

INDUSTRIAL COMMISSION OF WISCONSIN

  
Secretary

August 5, 1959