

AMENDMENTS TO THE WISCONSIN STATE BUILDING CODE

Effective December 12, 1949

**ISSUED BY THE
INDUSTRIAL COMMISSION OF WISCONSIN**

MADISON, WISCONSIN

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INDUSTRIAL COMMISSION OF WISCONSIN

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AMENDMENTS TO THE BUILDING CODE

The following orders 5124, 5305, 5328, 5416, 5507, 5551, 5552, 5553, 5554, 5555, 5556, 5557, 5558, 5559, 5560, 5561, 5562, 5563, 5564, 5565, 5566, 5567, 5611, 5619, 5700 and 5722 were adopted by the Industrial Commission October 18, 1949 and became effective as a part of the Wisconsin State Building Code December 12, 1949.

WISCONSIN STATE BUILDING CODE REVISIONS

1949

Order 5124—Fire Alarm Systems.

Interior fire alarm systems required under Orders 5416, 5619, and 5722 shall be designed and constructed in conformity with the following requirements.

All such alarm systems shall consist of operating stations on each floor of the building, including the basement, with bells, gongs or other attention compelling devices, which are effective throughout the building.

Electrical alarm systems shall operate on a closed circuit electric current and shall be so arranged that the operation of any one station will actuate all devices connected to the system.

In buildings more than 3 stories in height, a device shall be provided at one central location to indicate the story of the structure in which the signal originated. All such alarm systems shall be electrically supervised to indicate a failure or serious reduction of operating current.

Operating stations shall be prominently located in an accessible position at all required exit doors and required exit stairways. Boxes at operating stations shall be of an approved type and shall be conspicuously identified. All such boxes shall be of a type, which after being operated, will indicate that an alarm has been sent therefrom until re-set by an authorized means. (A box with a "Break Glass" panel will be acceptable for operating stations.)

Electric wiring in connection with fire alarm systems shall be installed in armored cable, metal raceways or other approved non-combustible tubing.

All such alarm systems shall be tested at least once every week. Not less than one test each month shall be made in the presence of a member of the fire department and a record of such tests shall be kept by the fire department.

Existing fire alarm systems that are effective in operation will be accepted if approved by the Industrial Commission.

Order 5305—Building Brick.

1. Definition. By *Building Brick* is meant a structural unit of burned clay or shale, sand lime or concrete, usually solid and about 8 inches by 3 1/4 inches by 2 1/4 inches in size.

2. Structure. All building brick shall be rectangular in form, free from cracks, laminations and other defects which may interfere with proper laying of the brick or impair the strength or permanence of the structure.

3. Manufacture. Concrete building brick shall be manufactured from a mixture of Portland cement and approved aggregates, such as sand, gravel, crushed stone, bituminous or anthracite cinders, burned clay or shale, or blast furnace slag.

4. Identification. All building brick shall be of distinctive design or appearance, or marked so that the identity of the manufacturer may be known at any time.

5. Strength and Absorption.

(a) The strength and absorption of all building brick manufactured from burned clay or shale shall conform to the following minimum requirements:

Grade	Compressive Strength (bricks flatwise) lbs. per square inch Average Gross Area		Water Absorption by 5 hour boiling per cent		C/B Ratio	
	Average of 5 bricks	Individual Minimum	Average of 5 bricks	Individual Maximum	Average of 5 bricks	Individual Maximum
S.W.	3000	2500	17.0	20.0	0.78	0.80
M.W.	2500	2200	22.0	25.0	0.88	0.90
N.W.	1500	1250	No Limit	No Limit	No Limit	No Limit

Note: The ratio C/B is the ratio of absorption by 24-hour submersion in water at room temperature to that after 5-hour submersion in boiling water.

If the average compressive strength is greater than 8000 pounds per square inch and the average water absorption is less than 8 per cent by weight after 24 hours submersion in cold water, the C/B ratio shall be waived.

Grade S. W. brick shall be used in exterior and exposed locations where a high degree of resistance to frost action is desired and the exposure is such that the brick may be frozen when permeated with water.

Note: Brick used for foundation courses, retaining walls, parapet walls and similar locations shall conform to this grade.

Grade M. W. brick may be used where exposed to temperatures below freezing but where brick are not likely to be permeated with water or where a moderate degree of resistance to frost action is permissible.

Note: Brick conforming to this grade may be used in the face of a wall above grade.

Grade N. W. brick may be used for backup or for interior construction or if exposed for use where no frost action occurs.

(b) The strength of all concrete and sand lime brick used in masonry construction shall conform to the following minimum requirements:

Compressive Strength (bricks flatwise) Pounds Per Square Inch Average Gross Area		Modulus of Rupture (bricks flatwise) Pounds Per Square Inch	
Average of 5 Tests	Individual Minimum	Average of 5 Tests	Individual Minimum
2500	2000	450	300

6. Tests. Typical specimens of all types of building brick shall be tested originally to prove compliance with the provisions of this code, and all concrete and sand-lime brick shall be retested at intervals of not more than one year. Further tests may be demanded at any time there is reasonable suspicion of non-conformance to the requirements of this code.

The testing of all brick shall be in accordance with the Standard Methods of Testing Brick (A. S. T. M. Designation C 67) of the American Society for Testing Materials.

Order 5328—Wood Construction.

1. Quality of Material. The quality and design of all wood used in the construction of all buildings and structures or parts thereof, shall conform to the minimum standards under this section.

All members shall be so framed, anchored, tied and braced together as to develop the maximum strength and rigidity necessary for the purpose for which they are used. No member shall be stressed in excess of the strength of its details and connections.

All wood structural members shall be of sufficient quality, size and strength, as to carry their imposed loads safely and without exceeding the allowable working stresses as specified in this order.

The requirements stated are a minimum standard and apply primarily to conventional types of construction.

The substitution of materials other than those called for in the code will be permitted when shown by an approved authority to be equal to or better than those specified.

Workmanship in fabrication, preparation, installation, joining of wood members and the connectors and mechanical devices for the fastening thereof, shall conform throughout to good engineering practice.

Where wood is used in parts of a building or structure habitually exposed to moisture, ample ventilation or sufficient preservative treatment, or both, shall be provided.

2. Allowable Working Stresses. In the design of wood structural members and the construction of structures of wood, the following unit stresses in pounds per square inch shall not be exceeded.

Stresses that exceed those given in the following table for the lowest grade of any species shall be used only when the higher grade of that species is identified by the grade mark or a certificate of inspection issued by a recognized lumber grading or inspection agency:

ALLOWABLE WORKING STRESSES FOR WOOD

Species	Commercial Grade	Rules Under Which Graded	Allowable Unit Stresses in Pounds Per Square Inch				Modulus of Elasticity
			Tension and Extreme Fiber in Bending	Maximum Horizontal Shear	Compression Perpendicular to Grain	Compression Parallel to Grain	
ASH WHITE	2150 # f Grade	J & P	1,950	130		1,550	1,500,000
	1900 # f Grade	J & P-B&S	1,700	130		1,400	
	1700 # f Grade	J & P-B&S	1,550	130		1,200	
	1450 # f Grade	J & P-B&S	1,300	110		1,050	
BEECH	1300 # f Grade	B & S	1,150	110	550	950	1,600,000
	2150 # f Grade	J & P	1,950	130		1,575	
	1900 # f Grade	J & P-B&S	1,700	130	550	1,475	
	1450 # f Grade	J & P-B&S	1,300	110		1,050	
BIRCH	2150 # f Grade	J & P	1,950	130		1,575	1,600,000
	1900 # f Grade	J & P-B&S	1,700	130		1,475	
	1700 # f Grade	J & P-B&S	1,550	130		1,225	
	1450 # f Grade	J & P-B&S	1,300	110		1,050	
CHESTNUT	2150 # f Grade	J & P	1,950	130		1,575	1,600,000
	1900 # f Grade	J & P-B&S	1,700	130		1,475	
	1700 # f Grade	J & P-B&S	1,550	130	550	1,225	
	1450 # f Grade	J & P-B&S	1,300	110		1,050	
CYPRESS SOUTHERN	1450 # f Grade	J & P	1,300	110		1,075	1,000,000
	1200 # f Grade	J & P-B&S	1,100	110	325	850	
	1075 # c Grade	P & T	1,100	110		875	
	1700 # f Grade	J & P-B&S	1,550	130		1,275	
DOUGLAS FIR— COAST REGION	1450 # c Grade	J & P-B&S	1,150	110	325	1,025	1,200,000
	1200 # c Grade	P & T	1,150	110		1,300	
	1700 # f Grade	J & P-B&S	1,550	130		1,275	
	1450 # c Grade	P & T	1,150	110		1,075	
DOUGLAS FIR— COAST REGION	Dense Select Structural	J & P-B&S	1,950	130	410	1,400	1,600,000
	Select Structural	J & P-B&S	1,700	110	375	1,300	
	1700 # f Dense No. 1	J & P-B&S	1,550	130	410	1,200	
	1450 # f No. 1	J & P-B&S	1,300	110	350	1,075	
	1100 # f No. 2	J & P	1,000	100	350	975	
	Dense Select Structural	P & T			410	1,400	
	Select Structural	P & T			375	1,300	
	Dense No. 1	P & T			410	1,250	
	No. 1	P & T			350	1,075	

ALLOWABLE WORKING STRESSES FOR WOOD—Continued

Species	Commercial Grade		Rules Under Which Graded	Allowable Unit Stresses in Pounds Per Square Inch				Modulus of Elasticity
				Tension and Extreme Fiber in Bending	Maximum Horizontal Shear	Compression Perpendicular to Grain	Compression Parallel to Grain	
DOUGLAS FIR—INLAND REGION	Select Structural	J & P	Western Pine Association	1,950	130	410	1,575	1,600,000
	Structural	J & P		1,700	90	360	1,250	1,600,000
	Common Structural	J & P		1,300	85	340	1,125	1,600,000
	Select Structural	P & T		-----	-----	410	1,575	1,600,000
	Structural	P & T		-----	-----	360	1,250	1,600,000
ELM, ROCK	Common Structural	P & T	National Hardwood Lumber Association	-----	-----	340	1,125	1,600,000
	2150 # f Grade	J & P		1,950	130	-----	1,575	1,800,000
	1900 # f Grade	J & P-B&S		1,700	130	-----	1,375	
	1700 # f Grade	J & P-B&S		1,550	130	550	1,225	
	1450 # f Grade	J & P-B&S		1,300	110	-----	1,025	
GUM, BLACK & RED	1550 # c Grade	P & T	National Hardwood Lumber Association	-----	-----	-----	1,400	1,200,000
	1450 # c Grade	P & T		-----	-----	-----	1,300	
	1200 # c Grade	P & T		-----	-----	-----	1,075	
	1700 # f Grade	J & P		1,550	110	-----	1,100	
	1450 # f Grade	J & P-B&S		1,300	110	325	950	
HEMLOCK, EASTERN	1200 # f Grade	J & P-B&S	Northern Hemlock & Hardwood Manufacturers Assn.	1,100	110	-----	800	1,100,000
	1075 # c Grade	P & T		-----	-----	-----	975	
	Select Structural	J & P-B&S		1,200	75	-----	775	
	Prime Structural	J & P		1,100	55	325	700	
	Common Structural	J & P		1,000	55	-----	600	
HEMLOCK, WEST COAST	Utility Structural	J & P	West Coast Bureau of Lumber Grades & Inspection	850	55	-----	550	1,400,000
	Select Structural	P & T		-----	-----	-----	775	
	1600 # f Select Structural	J & P		1,450	90	325	1,000	
	1450 # f No. 1	J & P-B&S		1,300	90	325	975	
	1100 # f No. 2	J & P		1,000	80	325	775	
HICKORY	No. 1 Hemlock Timbers	P & T	National Hardwood Lumber Association	-----	-----	-----	1,000	1,800,000
	2150 # f Grade	J & P-B&S		1,950	130	-----	1,550	
	1900 # f Grade	J & P-B&S		1,700	130	650	1,400	
	1700 # f Grade	J & P-B&S		1,550	130	-----	1,225	
	1550 # c Grade	P & T		-----	-----	-----	1,400	
	1450 # c Grade	P & T		-----	-----	-----	1,300	1,200,000
	1325 # c Grade	P & T		-----	-----	-----	1,200	
	2150 # f Grade	J & P	Western Pine Association	1,950	130	410	1,575	
	1900 # f Grade	J & P		1,700	110	375	1,300	
	Common Structural	J & P		1,300	110	350	1,200	
MAPLE, HARD	Select Structural	P & T		-----	-----	410	1,575	1,600,000
	Structural	P & T		-----	-----	375	1,300	
	Common Structural	P & T		-----	-----	350	1,200	
	Select Structural	P & T	National Hardwood Lumber Association	1,950	130	-----	1,575	
	Common Structural	P & T		1,700	130	-----	1,375	
OAK, RED & WHITE	2150 # f Grade	J & P		1,550	130	550	1,225	1,500,000
	1900 # f Grade	J & P-B&S		1,300	110	-----	1,025	
	1700 # f Grade	J & P-B&S		-----	-----	-----	1,400	
	1450 # f Grade	J & P-B&S		-----	-----	-----	1,300	
	1300 # f Grade	B & S		-----	-----	-----	850	
PINE, NORWAY	1325 # c Grade	P & T	Northern Hemlock & Hardwood Manufacturers Assn.	1,150	110	-----	1,200	1,200,000
	1200 # c Grade	P & T		-----	-----	-----	1,075	
	1075 # c Grade	P & T		-----	-----	-----	975	
	Prime Structural	J & P		1,100	65	-----	800	
	Common Structural	J & P		1,000	65	325	700	
PINE, SOUTHERN	Utility Structural	J & P	Southern Pine Inspection Bureau	850	65	-----	575	1,600,000
	Dense Select Structural	J & P-B&S		2,150	110	410	1,575	
	Dense Structural	J & P-B&S		1,800	110	410	1,250	
	Dense Structural S E & S	J & P-B&S		1,600	110	410	1,175	
	Dense No. 1—Structural	J & P-B&S		1,450	110	410	1,025	
	No. 1—Dense	J & P		1,550	135	410	1,250	1,600,000
	No. 1	J & P		1,300	115	350	1,075	
	No. 2—Dense	J & P		1,100	90	410	925	
	No. 2	J & P		1,000	75	350	775	
	Dense Select Structural	P & T		-----	-----	410	1,575	

ALLOWABLE WORKING STRESSES FOR WOOD—Continued

Species	Commercial Grade		Rules Under Which Graded	Allowable Unit Stresses in Pounds Per Square Inch				Modulus of Elasticity
				Tension and Extreme Fiber in Bending	Maximum Horizontal Shear	Compression Perpendicular to Grain	Compression Parallel to Grain	
LARCH	Select Structural	J & P	Western Pine Association	1,950	130	410	1,575	1,300,000
	Structural	J & P		1,700	110	375	1,300	
	Common Structural	J & P		1,300	110	350	1,200	
	Select Structural	P & T		-----	-----	410	1,575	
	Common Structural	P & T		-----	-----	375	1,300	
MAPLE, HARD	2150 # f Grade	J & P	National Hardwood Lumber Association	-----	-----	350	1,200	1,600,000
	1900 # f Grade	J & P-B&S		1,950	130	-----	1,575	
	1700 # f Grade	J & P-B&S		1,700	130	-----	1,375	
	1450 # f Grade	J & P-B&S		1,550	130	550	1,225	
	1550 # c Grade	P & T		1,300	110	-----	1,025	
OAK, RED & WHITE	1450 # c Grade	P & T	National Hardwood Lumber Association	-----	-----	-----	1,400	1,500,000
	1300 # f Grade	B & S		-----	-----	-----	850	
	1325 # c Grade	P & T		-----	-----	-----	1,200	
	1200 # c Grade	P & T		-----	-----	-----	1,075	
	1075 # c Grade	P & T		-----	-----	-----	975	
PINE, NORWAY	Prime Structural	J & P	Northern Hemlock & Hardwood Manufacturers Assn.	1,100	65	-----	800	1,200,000
	Common Structural	J & P		1,000	65	325	700	
	Utility Structural	J & P		850	65	-----	575	
	Dense Select Structural	J & P-B&S		2,150	110	410	1,575	
	Dense Structural	J & P-B&S		1,800	110	410	1,250	
PINE, SOUTHERN	Dense Structural S E & S	J & P-B&S	Southern Pine Inspection Bureau	1,600	110	410	1,175	1,600,000
	Dense No. 1—Structural	J & P-B&S		1,450	110	410	1,025	
	No. 1—Dense	J & P		1,550	135	410	1,250	
	No. 1	J & P		1,300	115	350	1,075	
	No. 2—Dense	J & P		1,100	90	410	925	
	No. 2	J & P		1,000	75	350	775	1,600,000
	Dense Select Structural	P & T		-----	-----	410	1,575	
	Dense Select Structural	J & P	Western Pine Association	1,950	130	410	1,575	
	Structural	J & P		1,700	110	375	1,300	
	Common Structural	J & P		1,300	110	350	1,200	
MAPLE, HARD	Select Structural	P & T		-----	-----	410	1,575	1,600,000
	Structural	P & T		-----	-----	375	1,300	
	Common Structural	P & T		-----	-----	350	1,200	
	Select Structural	P & T	National Hardwood Lumber Association	1,950	130	-----	1,575	
	Common Structural	P & T		1,700	130	-----	1,375	
OAK, RED & WHITE	2150 # f Grade	J & P		1,550	130	550	1,225	1,500,000
	1900 # f Grade	J & P-B&S		1,300	110	-----	1,025	
	1700 # f Grade	J & P-B&S		-----	-----	-----	1,400	
	1450 # f Grade	J & P-B&S		-----	-----	-----	1,300	
	1300 # f Grade	B & S		-----	-----	-----	850	
PINE, NORWAY	1325 # c Grade	P & T	Northern Hemlock & Hardwood Manufacturers Assn.	1,150	110	-----	1,200	1,200,000
	1200 # c Grade	P & T		-----	-----	-----	1,075	
	1075 # c Grade	P & T		-----	-----	-----	975	
	Prime Structural	J & P		1,100	65	-----	800	
	Common Structural	J & P		1,000	65	325	700	
PINE, SOUTHERN	Utility Structural	J & P	Southern Pine Inspection Bureau	850	65	-----	575	1,600,000
	Dense Select Structural	J & P-B&S		2,150	110	410	1,575	
	Dense Structural	J & P-B&S		1,800	110	410	1,250	
	Dense Structural S E & S	J & P-B&S		1,600	110	410	1,175	
	Dense No. 1—Structural	J & P-B&S		1,450	110	410	1,025	
	No. 1—Dense	J & P		1,550	135	410	1,250	1,600,000
	No. 1	J & P		1,300	115	350	1,075	
	No. 2—Dense	J & P		1,100	90	410	925	
	No. 2	J & P		1,000	75	350	775	
	Dense Select Structural	P & T		-----	-----	410	1,575	

Species	Commercial Grade	Rules Under Which Graded	Allowable Unit Stresses in Pounds Per Square Inch				Modulus of Elasticity	
			Tension and Extreme Fiber in Bending	Maximum Horizontal Shear	Compression Perpendicular to Grain	Compression Parallel to Grain		
PINE, SOUTHERN	Dense Structural	P & T	---	---	410	1,250	1,600,000	
	Dense Structural	P & T	---	---	410	1,175		
	Dense No. 1 Structural	P & T	---	---	410	1,025		
PINE, SOUTHERN LONG LEAF	Select Structural Long Leaf	J & P-P&S	2,150	110	---	1,575	1,600,000	
	Prime Structural Long Leaf	J & P-P&S	1,800	110	---	1,250		
	Merchantable Structural Long Leaf	J & P-P&S	1,600	110	410	1,175		
	Structural SE & S Long Leaf	J & P-P&S	1,600	110	---	1,175		
	No. 1 Structural Long Leaf	J & P-P&S	1,450	110	---	1,025		
	No. 1 Long Leaf	J & P	1,450	135	---	1,250		
	No. 2 Long Leaf	J & P	1,150	90	---	1,025		
	Prime Structural Long Leaf	P & T	---	---	---	1,250		
	Prime Structural Long Leaf	P & T	---	---	---	1,250		
	Merchantable Structural Long Leaf	P & T	---	---	---	1,175		
RED CEDAR, WESTERN	Structural SE & S Long Leaf	P & T	---	---	---	1,175	1,000,000	
	Structural SE & S Long Leaf	P & T	---	---	---	1,175		
	No. 1—Structural Long Leaf	P & T	---	---	---	1,025		
RED CEDAR, WESTERN	Structural	---	1,000	100	200	800	1,000,000	
	---	---	---	---	---	---		---
	---	---	---	---	---	---		---
REDWOOD	Dense Structural	J & P-P&S	1,550	100	290	1,300	1,200,000	
	Heart Structural	J & P-P&S	1,150	85	---	1,000		
	Dense Structural	P & T	---	---	---	1,000		
SPRUCE, EASTERN	1450 # f Structural Grade	J & P	1,300	100	---	950	1,200,000	
	1300 # f Structural Grade	J & P	1,150	85	270	875		
	1200 # f Structural Grade	J & P	1,050	85	---	800		

**ABBREVIATIONS: J & P—Joist and Plank
B & S—Beams and Stringers
P & T—Posts and Timbers
SE & S—Square Edge and Sound**

A fire alarm system complying with Order 5124 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.

Order 5507—Number and Location of Exits.

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.

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.

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

Section 3. GRANDSTANDS, BLEACHERS, TENTS AND PLACES OF OUTDOOR ASSEMBLY

Order 5551—Grandstands.

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 two-hour fire-resistive construction or better and all openings therein are protected with fire-resistive doors and windows as specified in Orders 5109 and 5110.

No wood grandstand unit shall exceed 10,000 square feet in ground area or 200 feet in length.

Wood grandstand units shall be placed not less than 20 feet apart or shall be separated by walls of not less than two-hour fire-resistive construction.

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.

All grandstands shall be designed and constructed to conform with the structural requirements of Chapter 5 of this code.

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.

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 Industrial Commission.

Order 5552—Exits.

Every grandstand, balcony or tier considered separately shall be provided with at least two 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.

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.

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.

Order 5553—Aisles and Passageways.

All ramps, stairs, doorways and doors used for exit purposes shall conform to the requirements of Orders 5508, 5509, and 5510 of this code.

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.

Trailer seating mounted on incombustible decking not exceeding 300 capacity each shall be provided with aisles or stairways not less than 36 inches in width.

Order 5554—Seating.

The seating arrangement shall comply with the requirements of Order 5513 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.

Where the same level is not used for both seat bench and foot rest, independent foot rests shall be provided.

All seat boards and foot boards shall be securely fastened in place in such a manner that they cannot be accidentally displaced.

Where the rise of a seat bench or platform exceeds 11 inches, intermediate steps shall be provided the full width of the aisle. 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.

Order 5555—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 36 inches above such front foot rest shall be provided.

Order 5556—Portable Grandstands or Bleachers.

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.

A portable grandstand shall not be used for public occupancy until it has been securely assembled in accordance with this requirement.

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.

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.

A-frames or other supports and seat stringers for portable grandstands or bleachers shall be secured to prevent accidental displacement during occupancy.

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.

Wood members in tension shall be connected at each end by not less than two 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.

Order 5557—Inspection.

Every portable grandstand or bleacher shall be carefully inspected by a building official before each period of public occupancy and any loose connections, defective or broken members or loose supports

shall be properly repaired before the structure is used. In cities or towns which do not have a building official, such inspections shall be made by the chief of the fire department or other public official designated by the Industrial Commission.

Order 5558—Tents.

For the purpose of this order, a tent is a portable, temporary shelter or a structure, the covering of which is made of a pliable material.

No tent shall be erected to cover more than 75 per cent of the premises on which it is located.

Tents used for assembly purposes which cover 1500 square feet or more of ground area shall be located at least 20 feet from any other structure or adjoining property lines.

Stake lines of adjacent tents used for assembly purposes shall be sufficient distance from each other to provide an emergency exit passageway not less than 6 feet in width between stake lines. Proper protection shall be provided along such stake lines to eliminate tripping hazards.

Concession and other tents not used for assembly purposes need not be separated from each other and may be located less than 20 feet from other structures.

Note: This order does not apply to tents or shelters used exclusively for construction purposes.

Order 5559—Structural Requirements.

Poles and other members supporting tents shall be of sufficient size and strength to support the structure safely without exceeding the stresses specified in Chapter 5 of this code.

All tents shall be adequately guyed, supported and braced to withstand a wind pressure or suction of not less than 10 pounds per square foot.

The poles, guys, stakes, fastenings, etc. shall be of sufficient strength and so attached as to resist a wind pressure of at least 20 pounds per square foot of projected area of the tent.

Order 5560—Flame Resistance.

All tents used for assembly purposes or in which animals are stabled and other tents located on premises used by the public shall be effectively flame-proofed. The owner shall furnish a certificate or test report by a recognized testing engineer or laboratory as evidence that such tents have the required flame resistance.

Order 5561—Fire Hazards.

The ground enclosed by any tent used in connection with a place of outdoor assembly and for a distance of not less than 10 feet outside such structure on all sides shall be cleared of all flammable

material or vegetation which will transmit fire. The premises shall be kept free from such flammable material during the period the premises are used by the public.

No hay, straw, shavings or similar combustible materials other than that necessary for the current feeding and care of animals shall be permitted within any tent used for public assembly except that sawdust and shavings may be used if kept damp.

No smoking or unapproved open flame of any kind shall be permitted in any tent while occupied by the public. "No Smoking" signs shall be conspicuously posted in all tents open to the public.

Tents shall not be used for motion picture performances unless safety film is used.

Order 5562—Exits.

Every tent occupied by the public shall have at least two standard exits located at or near opposite ends of the structure.

In tents used for assembly purposes, exits shall be provided on 3 sides if the capacity exceeds 600 persons and on 4 sides where the capacity exceeds 1,000 persons. Exits shall be uniformly distributed but in no case shall the line of travel to an exit be greater than 150 feet.

The total width of exits from a tent used for assembly purposes shall not be less than 44 inches per 100 persons. Exit openings shall comply in all respects with the requirements of Orders 5510 and 5115 of this code.

Order 5563—Electrical Installations.

Electrical systems in all places of outdoor assembly shall be installed in accordance with the requirements of the Wisconsin State Electrical Code. All such systems shall be maintained and operated in a safe and workmanlike manner.

The electrical system and equipment shall be isolated from the public by proper elevation and guarding. All electrical fuses and switches shall be installed in approved enclosures. Cables laid on the ground or in areas traversed by the public shall be placed in trenches or protected by approved covers.

Order 5564—Fire Extinguishing Equipment.

One or more fire extinguishers of approved type and size shall be provided in connection with every wood grandstand and in all tents used for assembly purposes. Such extinguishers shall be maintained in proper working order and shall be located where they are easily accessible, preferably in or near the ticket office. In large installations, additional fire extinguishing equipment shall be provided as directed by the building official.

Order 5565—Illumination—Exit Lights and Signs.

All exits, aisles and passageways leading to exits in grandstands and other places of outdoor assembly shall be kept adequately lighted at all times when the structure is occupied by the public. Artificial illumination having an intensity of not less than 2.5 foot candles at the floor line shall be provided when natural light is inadequate.

Exit lights and signs complying with the requirements of Order 5511 shall be provided in all places of outdoor assembly where more than 100 persons can be accommodated.

Order 5566—Boiler and Furnace Room.

Every boiler or furnace room, including the breeching and fuel room, in places of outdoor assembly, shall be enclosed with a two-hour fire-resistive enclosure or better and all interior openings in walls forming such enclosures shall be protected by self-closing fire-resistive doors. Gas-fired appliances for heating water shall be installed in a boiler or furnace room. Chimneys shall be constructed in conformity with the requirements of Order 5210 of this code.

Order 5567—Toilet Facilities.

Separate toilets shall be provided for each sex in connection with all places of outdoor assembly. Toilet rooms and equipment shall comply in all respects with the requirements of Orders 5250–5264, inclusive, of this code.

Order 5611—Floor Space and Height of Ceiling.

All class and recitation rooms shall have a minimum floor space of 18 square feet per person. Rooms used only for study purposes shall have a minimum floor space of 15 square feet per person.

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.

All rooms used for educational purposes shall be not less than 10 feet high in the clear. Toilet rooms, service rooms, store rooms and similar spaces shall be not less than 8 feet high in the clear.

Note: The following are the minimum requirements recommended by the Department of Public Instruction:

(1) A standard classroom should be from 22 feet to 23 feet in width and from 31 feet to 33 feet in length.

(2) Although the minimum space between the first window and the front blackboard is required to be 4 feet, a 6 foot space is recommended. This space should be left entirely blank.

(3) Blackboards should be not less than 24 inches above the floor for even the smallest children; 30 to 34 inches is recommended for

front blackboards. Blackboards should not be higher than 48 inches; 42 inches is recommended.

(4) Ample bulletin board space the full width of the blackboards should be provided in all rooms and especially in the kindergarten and primary rooms. This is in addition to tack boards over the blackboards.

Order 5619—Fire Alarms.

Every building two or more stories in height and every one-story building with 6 or more classrooms and an assembly hall or gymnasium accommodating more than 100 persons shall be provided with a proper alarm system complying with Order 5124.

Exception: A hand operated alarm if permanently installed and so arranged that it can be operated from any story, including the basement, may be used in school buildings not more than two stories in height and having not more than 2 standard size classrooms on the second floor.

Order 5700—Scope.

The requirements of this chapter shall apply to all apartment buildings, rooming houses, hotels, dormitories, convents, monasteries, hospitals, children's homes, homes for the aged and infirm, nursing homes, convalescent hospitals, convalescent homes, asylums, jails and other places of abode or detention.

By place of abode is meant a building or part of a building as follows:

(1) Occupied as a residence of 3 or more families living independently or occupied by 2 such families and used also for business purposes, or

(2) Occupied for sleeping or lodging purposes by 3 or more persons not members of the same family.

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 and jails.

Note: 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.

Order 5722—Fire Alarm.

Every building which accommodates 20 or more persons except hospitals and places of detention shall be provided with an approved fire alarm system complying with Order 5124. This order applies to buildings now in existence and to buildings hereafter constructed.

Every hospital which accommodates 20 or more persons shall be provided with a signal system of a type approved by the Industrial Commission.

Note: See Chapter 440, Laws of 1949, Section 160.055 for requirements for watchman patrol in hotels having more than 12 bedrooms above the second story.

REVISION OF ORDER 5720
WISCONSIN STATE BUILDING CODE
EFFECTIVE APRIL 24, 1950

Order 5720. Isolation of Fire Hazards.

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 all buildings accommodating transients and in all hospitals, asylums and other places of detention shall be enclosed with a four-hour fire-resistive enclosure as specified in Orders 5105 and 5106. All openings shall be protected by self-closing fire-resistive doors as specified in Order 5109.

In all other buildings under this classification, such rooms shall be enclosed with a two-hour fire-resistive enclosure as specified in Orders 5105 and 5106, or better.

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.