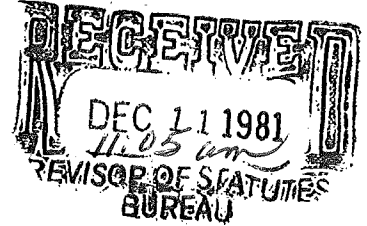


Ind 50 to 64

RULES CERTIFICATE

STATE OF WISCONSIN)
) SS
DEPT. OF INDUSTRY,)
LABOR & HUMAN RELATIONS)



TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Lowell B. Jackson, Secretary of the Department of Industry, Labor and Human Relations, and custodian of the official records

of said department, do hereby certify that the annexed rule(s) relating to Chs. Ind 50-64 Bldg. & Htg., Ventilating & Air Conditioning Code
Miscellaneous Code Sections were duly

(Subject)
approved and adopted by this department on Dec. 10, 1981.
(Date)

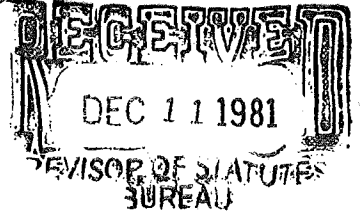
I further certify that said copy has been compared by me with the original on file in this department and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the department at Rain in the city of Madison, this 10th day of December A.D. 1981.

Lowell B. Jackson
Secretary

1-10-82

ORDER OF ADOPTION



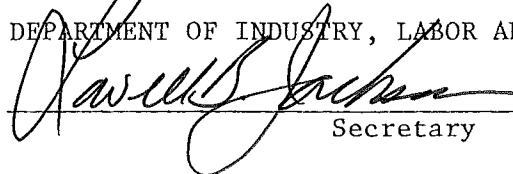
Pursuant to authority vested in the Department of Industry, Labor and Human Relations by section(s) 101.02(1), 101.02(15)(h)-(j), Stats., the Department of Industry, Labor and Human Relations hereby creates; amends; repeals and recreates; and repeals and adopts rules of Wisconsin Administrative Code chapter(s):

Ind. 50-64 Bldg. & Htg., Ventilating & Air Conditioning Code
(Number) Miscellaneous Code Sections
(Title)

The attached rules shall take effect on The First Day Following Publication
in the Wisconsin Administrative Register, pursuant to section
227.026, Stats.

Adopted at Madison, Wisconsin, this 10th
day of December, A.D., 1981.

DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS


Secretary



RULES in FINAL DRAFT FORM

Rule: Ch. Ind 50-64

Relating to: Building & Heating, Ventilating & Air Conditioning
Code - Miscellaneous Code Sections

Administrative rules to repeal ss. Ind 51.163, Ind 51.26 (2), Ind 51.26 (3), Ind 54.01 (2) (b) 3. Note, Ind 50.14, Ind 64.67 (4) (c) Note; to renumber s. Ind 50.12 (1) (f) to be (g); to renumber s. Ind 50.12 (1) (g) (intro) to be (i) (intro) and to amend; to amend ss. Ind 50.10 (intro), Ind 50.12 (1) (d), Ind 50.12 (2) (c) 2., Ind 50.12 (4) (a), Ind 50.22 Note, Ind 51.01 (124), Ind 51.03 (7) (e), Ind 51.03 (8) (d), Ind 51.045 (1) (intro), Ind 51.047 (1), Ind 51.049 (3) (intro), Ind 51.15 (2), Ind 51.24 (3), Ind 51.25, Ind 51.27 (1), Ind 51.27 (3), Ind 51.27 (4), Ind 51.27 (5), Ind 51.27 (6), Ind 51.27 (6a), Ind 51.27 (7a), Ind 51.27 (8), Ind 51.27 (9), Ind 51.27 (10), Ind 52.57, Ind 53.11 (1) (d) 5. b. - Table 53-I, Ind 53.11 (1) (e) 5. - Table 53-I, Ind 53.322 (6) (a), Ind 53.34 (1), Ind 53.40, Ind 53.61 (2), Ind 53.63 (1), Ind 53.63 (6) (intro), Ind 54.001, Ind 54.01 (2) (b) 2., Ind 54.01 (3), Ind 54.02 (4), Ind 54.07, Ind 54.14, Ind 55.02 (2) (a) 1., Ind 55.02 (2) (a) 3. c., Ind 55.05 (1), Ind 55.06 (2) (k), Ind 55.32 (2), Ind 56.15 (1) (intro), Ind 56 subch. 2 Title, Ind 56 subch. 3 Title, Ind 60.36, Ind 62.30 (1) (b), Ind 62.32 (1), Ind 63.11 (3) and (4), Ind 63.12, Ind 63.22 (1) (a), Ind 63.41, Ind 64.06 (3) (c) 3., Ind 64.19 (1) (a), Ind 64.34 (1) Note, Ind 64.39, Ind 64.41 Title, Ind 64.41 (1) (intro), Ind 64.41 (6), Ind 64.41 (10), Ind 64.42 (1), Ind 64.42 (2), Ind 64.48 (2) (a), Ind 64.48 (2) (e) Note, Ind 64.56 (3), Ind 64.65 (3) (b) 1., Ind 64.67 (2) (a), Ind 64.68; to repeal and recreate ss. Ind 50.12 (1) (e), Ind 51.045 (1) Table 1, Ind 51.08 (2); Ind 51.15 (3) (a) (intro), Ind 51.18, Ind 51.27 (11), Ind 53.11 (4) (a) 1., Ind 54.01 (1) Table 54.01, Ind 54.12 (2) - Table 54.12-A, Ind 54.12 (2) (a) 1., Ind 55.29, Ind 60.13 (2), Ind 63.40, Table 63.41, Ind 63.42, Ind 64.05 Table 1; to create ss. Ind 50.12 (1) (h), Ind 51.03 (7) (f), Ind 51.045 (1) (q), Ind 51.06 (3) (b) 11, Ind 51.27 (12), Ind 53.11 (1) (e) 7., Ind 53.11 (4) (e), Ind 54.105, ch. Ind 56, subch. 1 Title, Ind 60.12 (1) (d), Ind 63.11 (5), Ind 64.07 (2), A53.11 (4) (e) relating to miscellaneous code sections.

Analysis of Rules

The Division of Safety and Buildings of the Department of Industry, Labor and Human Relations, is responsible for the promulgation of the Building and Heating, Ventilating and Air Conditioning Code, chapters Ind 50-64. Sections of this code are being updated, expanded and clarified to reflect the most current national standards.

The proposed rules include provisions to update adopted standards to the most current editions, modify floor and roof design loads, expand fire wall and masonry details, to expand infiltration requirements, modify ventilation rules, expand plenum rules, clarify fire damper rules and update and amend miscellaneous code sections.

Section Ind 60.36 of this proposal references s. Ind 51.245. Section Ind 51.245 is proposed to be created in Clearinghouse Rule 81-99.

Pursuant to the authority vested in the state of Wisconsin, Department of Industry, Labor and Human Relations by s. 101.02 (1), ss. 101.02 (15) (h) through (j), Stats., the department hereby creates, amends, repeals and recreates and repeals rules interpreting s. 101.02 (1) and ss. 101.02 (15) (h) through (j), Stats., as follows:

SECTION 1. Ind 50.10 (intro.) is amended to read:

Ind 50.10 SUPERVISION. All constructions or installations described in ~~section s.~~ Ind 50.07 (2) shall be supervised by a Wisconsin registered architect or engineer, except that a Wisconsin registered designer may supervise the installation of heating, ventilating and air conditioning systems and illumination systems. The person responsible for supervision shall also be responsible for the construction and installation being in substantial compliance with the approved plans and specifications. Should the supervising architect, engineer, designer, or the department, be confronted with a nonconformance to the code during, or at the end of, construction, said parties, together with the designing architect, engineer or designer shall effect compliance or shall notify the department of the noncompliance.

SECTION 2. Ind 50.12 (1) (d) is amended to read:

Ind 50.12 (1) (d) Apartment Buildings, Hotels, Motels and Places of ~~Detention~~ Abode (ch. Ind 57).

SECTION 3. Ind 50.12 (1) (e) is repealed and recreated to read:

Ind 50.12 (1) (e) Health Care Facilities and Places of Detention (ch. Ind 58).

SECTION 4. Ind 50.12 (1) (f) is renumbered to be (g).

SECTION 5. Ind 50.12 (1) (g) (intro.) is renumbered to be (i) (intro.) and is amended to read:

Ind 50.12 (1) (i) ~~Structures~~ Specialty occupancies and structures (see ~~Ind 51.01 (125)~~ and (ch. Ind 62)).

SECTION 6. Ind 50.12 (1) (h) is created to read:

Ind 50.12 (1) (h) Community-Based Residential Facilities (CBRF) (ch. Ind 61).

SECTION 7. Ind 50.12 (2) (c) 2. is amended to read:

Ind 50.12 (2) (c) 2. The replacement of a major piece of heating or air conditioning equipment is subject to written approval by the department.

SECTION 8. Ind 50.12 (4) (a) is amended to read:

Ind 50.12 (4) (a) Structural data. Sample structural calculations, including assumed bearing value of soil, live loads and itemized dead loads, unit stresses for structural materials, ~~stress diagrams for trusses,~~ typical calculations for slabs, beams, girders ~~and,~~ columns, ~~and trusses and diagrams indicating bracing and stability of the structure and components in required facilities and other open type buildings~~ shall be submitted. Typical wind and bracing calculations and diagrams including the manner in which shear transfer is made between resisting elements shall also be included. Complete structural calculations shall be furnished upon request of the department or other authorized approving official.

~~Note: Diagrams are intended to apply to the appropriate final designs of buildings regardless of materials of construction. For job bracing of buildings, see Wis. Adm. Code chapter Ind-35, a supplement to chapter Ind-1000-2000, Wis. Safety and Health Code.~~

1. The building designer shall submit the following minimum information for structural components such as but not limited to wood trusses, precast concrete, laminated wood members, steel joists and steel girders when the component fabricator is specified as being responsible for the component design:

- a. Structural framing plan;
- b. Bearing support and connection details of the component to the structure;
- c. Design loads, including location and magnitude of: uniform superimposed dead and live loads; concentrated dead and live loads; nonuniform snow loads; wind and bracing loads for component system; and wind, bracing and gravity forces required to be developed at interfaces with other materials.
- d. Required fire rating;
- e. Outside configuration of components; and
- f. Permanent bracing system.

2. The building designer shall submit the following information unless it has been explicitly specified to be submitted by the component supplier:

- a. A framing plan showing all members and labels and special installation (e.g., handling and erection) instructions and any required permanent bracing required which was the basis for the component design.

b. Information regarding the member design of the following structural components: Web configuration, stress diagram or tabulation of axial force in the members, member size, grade of lumber; fabricated splices and member bracing for wood trusses; Web configuration, stress diagram or tabulation of axial force in the members, member size, steel yield, fabricated splices and member bracing for steel joists and joist girders subjected to nonuniform loading; Specified concrete strengths; prestressing data including final effective forces and centroids, mild reinforcing including release and confinement steel, shear reinforcing, and stripping, transportation and erection handling points for precast concrete members; Species of wood, bending stress of wood, adhesive and member sizes for laminated wood members.

c. Information pertaining to the design of connections within or between like components for the following structural components: Web and chord connection details and connector plate holding values for wood trusses; Web and chord connection details for steel joist and joist girders subjected to nonuniform loading; Bearing confinement steel, dapped end reinforcing, corbel reinforcing, bearing pads, and loose and embedded connection steel including welding and bolting requirements for precast concrete members; Member connection and bearing details for laminated wood members.

SECTION 9. Ind 50.22 Note is amended to read:

Note: The following cities have been certified by the department:

Appleton	Janesville	Racine
Beloit	Kaukauna	Sheboygan
Brookfield	Kenosha	Stevens Point
Cudahy	La Crosse	<u>Sun Prairie</u>
Eau Claire	Madison	<u>Superior</u>
Fond du Lac	Manitowoc	Two Rivers
Glendale	<u>Marshfield</u>	<u>Watertown</u>
Green Bay	Muskego	Waukesha
Greenfield	New Berlin	Wausau
	Oshkosh	<u>Wauwatosa</u>
		West Allis
		West Bend
		Wisconsin Rapids

SECTION 10. Ind 51.01 (124) is amended to read:

Ind 51.01 (124) "Street" means any legally established public thoroughfare or all-weather hard surfaced area 30 feet or more in width whether designated or not by name or number such as avenue, boulevard, circle, court, drive, lane, place, road or way. All-weather hard surfaced areas 30 feet or more in width, and extending at least 50% of the length of that side of the building and accessible to fire fighting equipment will be acceptable in lieu of streets. Streets must extend at least 50% of the length of that side of the building and must be accessible to fire fighting equipment.

SECTION 11. Ind 51.03 (7) (e) is amended to read:

Ind 51.03 (7) (e) Buildings of wood frame protected construction may be located less than 10 feet to from a property line or other building providing provided any wall closer than 10 feet to its adjacent from a property line or building is a 4-hour fire division wall, without openings, as specified in section s. Ind 51.02 (13).

SECTION 12. Ind 51.03 (7) (f) is created to read:

Ind 51.03 (7) (f) Buildings 3 stories in height of wood frame protected construction may be located between 10 feet and 30 feet from a property line provided any wall within 10 feet to 30 feet from a property line is a 4-hour fire division wall, without openings, as specified in s. Ind 51.02 (13).

SECTION 13. Ind 51.03 (8) (d) is amended to read:

Ind 51.03 (3) (d) Buildings of wood frame unprotected construction may be located less than 10 feet ~~to~~ from a property line ~~or other building providing~~ provided any wall closer than 10 feet ~~to its adjoining~~ from a property line ~~or building~~ is a 4-hour fire division wall, without openings, as specified in ~~section s.~~ s. Ind 51.02 (13).

SECTION 14. Ind 51.045 (1) Table 2 is repealed and recreated to read:

TYPICAL EXAMPLES OF CONSTRUCTION METHODS FOR PROTECTING STRUCTURAL COMPONENTS

TYPE OF CONSTRUCTION	ROW NO.	STRUCTURAL COMPONENTS	SKETCHES	INSULATING MATERIAL		PROTECTION				
				1	2	1	2	3	4	
COMPONENTS WITH SUSPENDED OR ATTACHED PROTECTION	STEEL FRAMING	17. Concrete Joists or Waffle		1. Type I or II Masonry or III 1/2" concrete	2. Insulation Thickness	1. Plaster Thickness	2. Insulation Thickness			
		18. Steel Columns		Type I & II Masonry of 1-1/2" air space	1. Insulation Thickness	4" solid				
		19. Steel Girders...Beams...Trusses...Joists, Columns Individually Protected		Sprayed Fibre...Cementitious Mixture...Lath & Plaster			By Tests... or Listing by Approval Testing Lab			
		20. Steel Beams, Girders, Trusses & Joists...w/Ceiling Protection & Minimum 2-1/2" Th. Type I, II or III Concrete Slab		Sprayed Fibre...Cementitious Mixture...Lath & Plaster Acoustical Tile			By Tests... or Listing by Approval Testing Lab			
		21. Steel Stud Partition Nonbearing, Min. 2-1/2" Stud		Gypsum...Perlite Plaster on Perforated Gyp. Lath Gypsum Wall Board	1. Plaster 2. Lath		1 3/4" - 3 1/2"	1 3/4" - 3 1/2"	1 3/4" - 3 1/2"	1 3/4" - 3 1/2"
	COMBUSTIBLE CONSTRUCTION	22. Wood Joists Min. 2" x 10", Wood Floor Attached Ceiling		Gypsum Wallboard Below 2" x 10" Max. 24" o/c 1/2" Plywood or 1" x 4" T & S Sub-Floors	1. Wallboard Thickness	2. Flooring			4 1/2"	1 1/2" Plywood or 1" x 4" T & S
		23. Wood Joists Min. 2" x 10", Wood Floor Suspended Ceiling		Noncombustible Acoustical Tile Below 2" x 10" Max. 24" o/c 1/2" Plywood or Non. 1" x 4" T & S Sub-Floors	1. Insulation	2. Flooring			4 1/2"	1 1/2" Plywood or Non. 1" x 4" T & S
24. Wood Stud Partition Min. 2" x 4" Stud			Gypsum Wallboard Gypsum Perlite Plaster on 1/2" Wood Lath Gypsum & Sand Plaster on 1/2" Lister Wire Lath Gypsum & Perlite Plaster on Metal Lath	No. Layers / Th. of Each 1. 2. 3.		Two 5/8"	Two 3/8" or 1/2" 5/8"	Two 3/8" or 1/2" 5/8"	Two 3/8" or 1/2" 5/8"	
HEAVY TIMBER CONSTRUCTION TABLE										
HEAVY TIMBER SOLID OR LAMINATED	25. Columns			Wood All Species		Floor...width X Depth Min. Nom. Roof...width X Depth Min. Nom.				
						4" x 8"				
	26. Girders & Beams			Wood All Species		Min. Width X Depth (Nom.)				
						4" x 10"				
27. Arch & Truss for Roof Only			Wood All Species		Min. Width X Depth Each Member					
					4" x 4"					
28. Floor & Roof Deck			Wood All Species		Floor Roof					
					2" Nom. 24" or 3" Solid 1" Nom. 24" or 4" Solid					

SECTION 15. Ind 51.045 (1) (intro.) is amended to read:

Ind 51.045 (1) Basic design and construction for specified fire-resistive protection of structural components listed in Table 2, including references (a) through ~~(p)~~ (q), shall be acceptable.

SECTION 16. Ind 51.045 (1) (q) is created to read:

Ind 51.045 (1) (q) 5/8" gypsum wallboard shall be type "X" or "C".

SECTION 17. Ind 51.047 (1) is amended to read:

Ind 51.047 (1) FIRE-RATED DOOR ASSEMBLIES. Door openings, where permitted in fire-rated walls, shall be protected with fire-rated door assemblies ~~in accordance with the following table~~ as specified Table 51.047. Fire-rated door assemblies shall be tested in accordance with ASTM E-152. ~~standard method (Ind 51.25-(52))~~

TABLE 51.047
FIRE-RATED DOOR ASSEMBLIES

Fire-resistive Rating of Wall (in hours)	Minimum Fire-resistive Rating of Required Fire Door Assembly (in hours)
4-hour	3-hour
3-hour	3-hour
2-hour	1-1/2-hour
1-hour	3/4-hour
3/4-hour	3/4-hour
<u>see occupancy chs. Ind 54-62</u>	<u>1/3-hour (20 min.)</u>

(a) Exception. Doors leading to fire escapes, except doors leading to Class A fire escapes in apartments and row houses, shall be at least 3/4-hour fire-rated door assemblies.

(b) Where the occupancy chapters of this code permit, 20-minute fire-rated door assemblies, or equivalent, may be provided without a closing device.

SECTION 18. Ind 51.049 (3) (intro.) is amended to read:

Ind 51.049 (3) PLASTIC PLUMBING AND ELECTRICAL SYSTEM COMPONENTS. Penetration of required fire-resistive rated floor, wall, ceiling and roof assemblies by plastic plumbing and electrical system components shall be in accordance with one of the following:

SECTION 19. Ind 51.06 (3) (b) 11. is created to read:

Ind 51.06 (3) (b) 11. 'Protection from ultraviolet light.' Foam plastic insulation installed on the exterior of buildings abovegrade shall be permanently covered or protected to prevent degradation caused by exposure to ultraviolet light.

SECTION 20. Ind 51.08 (2) is repealed and recreated to read:

(2) CLASSIFICATION OF SEPARATION. Occupancy separations shall be classified as absolute, special and ordinary and shall apply to both horizontal and vertical separations.

(a) An absolute occupancy separation shall consist of walls or floors or both of not less than 4-hour fire-resistive construction as specified in ss. Ind 51.04 to Ind 51.049. All openings in walls forming such a separation shall be protected by self-closing fire-resistive door assemblies as specified in s. Ind 51.047. The total width of all openings in any such separating wall in any one story shall not exceed 25% of the length of the wall in that story and no single opening shall have an area greater than 120 square feet. Floor openings shall be protected by 4-hour rated shaft enclosures or fire dampers as specified in s. Ind 64.42.

1. All openings in floors forming an absolute occupancy separation shall be protected by vertical enclosures extending above and below such openings.

2. The walls of such vertical enclosures shall be of not less than 3-hour fire-resistive construction as specified in ss. Ind 51.04 to Ind 51.049, and all openings shall be protected by self-closing fire-resistive door assemblies as specified in Ind 51.047.

(b) A special occupancy separation shall consist of walls or floors or both of not less than 3-hour fire-resistive construction as specified in ss. Ind 51.04 to Ind 51.049. All openings in walls forming such separation shall be protected by self-closing fire-resistive door assemblies as specified in s. Ind 51.047. The total width of all openings in any such separating wall in any one story shall not exceed 25% of the length of the wall in that story and no single opening shall have an area greater than 120 square feet. Floor openings shall be protected by 3-hour rated shaft enclosures or fire dampers as specified in s. Ind 64.42.

1. All openings in floors forming a special occupancy separation shall be protected by vertical enclosures extending above and below such openings.

2. The walls of such vertical enclosures shall be of not less than 2-hour fire-resistive construction as specified in ss. Ind 51.04 to Ind 51.049 and all openings shall be protected by self-closing fire-resistive door assemblies as specified in Ind 51.047.

(c) An ordinary occupancy separation shall have walls or floors or both of not less than 1-hour fire-resistive construction as specified in ss. Ind 51.04 to Ind 51.049. All openings in such separations shall be protected by self-closing fire-resistive door assemblies as specified in s. Ind 51.047.

SECTION 21. Ind 51.15 (2) is amended to read:

Ind 51.15 (2) Every standard exit door shall swing outward or toward the natural means of egress. It shall be level with the floor, and shall be so hung that, when open, it will not block any part of the required width of any other doorway, passageway, stairway or fire escape. No revolving door, overhead door or sliding door shall be considered as a standard exit. ~~Sliding doors serving as horizontal exits, in accordance with section Ind 51.19 (2) (a) 1., shall be considered standard exits.~~

SECTION 22. Ind 51.15 (3) (a) (intro.) is repealed and recreated to read:

Ind 51.15 (3) (a) The installation of hardware requiring use of a key for opening an exit door from the inside, except on doors serving individual living units, shall be prohibited. This paragraph shall apply to all buildings in existence and to any building built after the effective date of this rule.

SECTION 23. Ind 51.163 is repealed.

SECTION 24. Ind 51.18 is repealed and recreated to read:

Ind 51.18 INTERIOR ENCLOSED STAIRWAY. (1) GENERAL. An interior enclosed stairway shall be separated from other areas of the building by fire-resistive rated construction as specified in ss. Ind 51.04 to Ind 51.049 with the hourly ratings as specified in Table 51.03-A.

(2) EXTENT OF ENCLOSURE. (a) The enclosure shall include at each floor level a portion of the floor which will be at least as wide as the stairway.

(b) The enclosure shall provide uninterrupted passage from the uppermost floor to an outside door without leaving the enclosure.

(c) The enclosure shall also include any passageway, if provided, on the floor of exit discharge leading from the stairway to the exit discharge, so as to afford uninterrupted passage from the uppermost floor to the exit discharge, without leaving the enclosure.

(3) OPENINGS IN THE ENCLOSURE. Openings in the stairway enclosure shall be limited to exit doors serving public passageways or corridors or serving floors occupied by a single tenant.

Note: See ch. Ind 4, Wis. Adm. Code, for additional requirements pertaining to the location of elevator equipment room access doors.

(4) PROTECTION OF OPENINGS. (a) All openings for doors shall be protected by fire-rated door assemblies as specified in s. Ind 51.047.

(b) If windows are provided in the enclosure, the window openings shall be protected by fixed fire-rated window assemblies as specified in s. Ind 51.048, except in outside walls.

SECTION 25. Ind 51.24 (3) is amended to read:

Ind 51.24 (3) (a) Except as provided in par. (b), ~~In buildings more than 3 stories in height,~~ coded fire alarm systems shall be provided in buildings more than 3 stories in height and the systems shall be so arranged that the code transmitted shall indicate the location and story of the structure in which the signal originated.

(b) The department shall approve noncoded continuous sounding fire alarm systems under constant electrical or gas activated supervision in apartment buildings.

SECTION 26. Ind 51.25 is amended to read:

Ind 51.25 ADOPTION OF ASTM STANDARDS. Pursuant to s. 227.025, Stats., the attorney general and the revisor of statutes have consented to the incorporation by reference of the following standards of the American Society of Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103. Copies of the standards in reference are on file in the offices of the department, the secretary of state, and the revisor of statutes.

~~Note: Part numbers refer to 1973 set of standards unless otherwise noted.~~

(1) GENERAL REQUIREMENTS FOR ~~DELIVERY OF~~ ROLLED STEEL PLATES, SHAPES, SHEET PILING AND BARS FOR STRUCTURAL USE. Part 4 ASTM Designation ~~A6-72~~ A6-80a.

(2) STRUCTURAL STEEL. Part 4 ASTM Designation ~~A36-70a~~ A36-77a.

(3) COLD-DRAWN STEEL WIRE FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation ~~A82-72~~ A82-79.

(4) ZINC-COATED (GALVANIZED) IRON OR STEEL FARM-FIELD AND RAILROAD RIGHT-OF-WAY WIRE FENCING. Part 3 ASTM Designation ~~A116-74~~ A116-73 (1978).

(5) ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE. Part 3 ASTM Designation ~~A153-73~~ A153-80.

(6) DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation ~~A615-72~~ A615-81.

(7) RAIL-STEEL DEFORMED AND PLAIN BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation ~~A616-72~~ A616-79.

(8) AXLE-STEEL DEFORMED AND PLAIN BARS FOR CONCRETE REINFORCEMENT. Part 4 ASTM Designation ~~A617-72~~ A617-79.

(9) GYPSUM. Part 9 13 ASTM Designation ~~C22-50 (1972)~~ C22-77.

(10) CHEMICAL ANALYSIS OF LIMESTONE, QUICKLIME, AND HYDRATED LIME. Part 9 13 ASTM Designation ~~C25-72~~ C25-79.

(11) STRUCTURAL CLAY LOAD-BEARING WALL TILE. Part ~~42~~ 16 ASTM Designation ~~C34-62 (1970)~~ C34-62 (1975).

(12) COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS. Part ~~40~~ 14 ASTM Designation ~~C39-72~~ C39-72 (1979).

(13) OBTAINING AND TESTING DRILLED CORES AND SAWED BEAMS OF CONCRETE. Part ~~40~~ 14 ASTM Designation ~~C42-68~~ C42-77.

(14) SAMPLING, INSPECTION, PACKING, AND MARKING OF LIME AND LIMESTONE PRODUCTS. Part ~~9~~ 13 ASTM Designation ~~C50-57~~ C50-78.

(15) GYPSUM PARTITION TILE OR BLOCK. Part ~~42~~ 13 ASTM Designation ~~C52-54~~ C52-54 (1977).

(16) CONCRETE BUILDING BRICK. Part ~~42~~ 16 ASTM Designation ~~C55-74~~ C55-75.

(17) STRUCTURAL CLAY NON-LOAD-BEARING TILE. Part ~~42~~ 16 ASTM Designation ~~C56-74~~ C56-71 (1976).

(18) STRUCTURAL CLAY FLOOR TILE. Part ~~42~~ 16 ASTM Designation ~~C57-57~~ C57-57 (1978).

(19) BUILDING BRICK (SOLID MASONRY UNITS MADE FROM CLAY OR SHALE). Part ~~42~~ 16 ASTM Designation ~~C62-69~~ C62-75a.

(19a) REFRACTORIES FOR INCINERATORS AND BOILERS. Part 17 ASTM Designation C64-72 (1977).

(20) SAMPLING AND TESTING BRICK AND STRUCTURAL CLAY TILE. Part ~~42~~ 16 ASTM Designation ~~C67-66~~ C67-78.

(21) HOLLOW LOAD-BEARING CONCRETE MASONRY UNITS. Part ~~42~~ 16 ASTM Designation ~~C90-70~~ C90-75.

(22) MASONRY CEMENT. Part ~~9~~ 13 ASTM Designation ~~C91-74~~ C91-78.

(23) ABSORPTION AND BULK SPECIFIC GRAVITY OF NATURAL BUILDING STONE. Part ~~42~~ 19 ASTM Designation ~~C97-47~~ C97-47 (1977).

(24) MODULUS OF RUPTURE OF NATURAL BUILDING STONE. Part ~~42~~ 19 ASTM Designation ~~C99-52~~ C99-52 (1976).

(24a) GROUND FIRE CLAY AS A REFRACTORY MORTAR FOR LAYING-UP FIRECLAY BRICK. Part 17 ASTM Designation C105-47 (1976).

(25) PHYSICAL TESTING OF QUICKLIME ~~AND~~, HYDRATED LIME, AND LIMESTONE. Part ~~9~~ 13 ASTM Designation ~~C110-74~~ C110-76a.

~~(26) SAMPLING AND TESTING STRUCTURAL CLAY TILE. Part 12 ASTM Designation C112-60 (1970) Not Used.~~

(27) Not Used.

(28) SAMPLING AND TESTING CONCRETE MASONRY UNITS. Part ~~42~~ 16 ASTM Designation ~~C140-70~~ C140-75.

(29) AGGREGATE FOR MASONRY MORTAR. Part ~~42~~ 16 ASTM Designation ~~C144-70~~
C144-76.

(30) SOLID LOAD-BEARING CONCRETE MASONRY UNITS. Part ~~42~~ 16 ASTM
Designation ~~C145-74~~ C145-75.

(31) PORTLAND CEMENT. Part ~~9~~ 14 ASTM Designation ~~C150-73a~~ C150-80.

(32) COMPRESSIVE STRENGTH OF NATURAL BUILDING STONE. Part ~~42~~ 19 ASTM
Designation ~~C170-50-(1970)~~ C170-50 (1976).

(33) HYDRATED LIME FOR MASONRY PURPOSES. Part ~~9~~ 13 ASTM Designation
~~C207-49-(1968)~~ C207-79.

(34) MORTAR FOR UNIT MASONRY. Part ~~42~~ 16 ASTM Designation ~~C270-74~~
C270-80a.

(35) GYPSUM CONCRETE. Part ~~9~~ 13 ASTM Designation ~~C317-64-(1970)~~
C317-76.

(36) MICROSCOPICAL DETERMINATION OF AIR-VOID CONTENT AND PARAMETERS OF THE
AIR-VOID SYSTEM IN HARDENED CONCRETE. Part ~~40~~ 14 ASTM Designation C457-71.

(37) CHEMICAL ANALYSIS OF GYPSUM AND GYPSUM PRODUCTS. Part ~~9~~ 13 ASTM
Designation ~~C471-72~~ C471-76.

(38) PHYSICAL TESTING OF GYPSUM PLASTERS AND GYPSUM CONCRETE. Part ~~9~~ 13
ASTM Designation ~~C472-73~~ C472-79.

(39) PHYSICAL TESTING OF GYPSUM BOARD PRODUCTS, GYPSUM LATH, AND GYPSUM
PARTITION TILE OR BLOCK, AND PRECAST REINFORCED GYPSUM SLABS. Part ~~9~~ 13 ASTM
Designation ~~C473-68~~ C473-76a.

(40) MORTAR AND GROUT FOR REINFORCED MASONRY. Part ~~42~~ 16 ASTM Designation
~~C476-74~~ C476-71 (1976).

(41) HOLLOW BRICK (HOLLOW MASONRY UNITS MADE FROM CLAY OR SHALE). Part ~~42~~
16 ASTM Designation ~~C652-70~~ C652-77.

(42) TEST FOR RESISTANCE OF CONCRETE TO RAPID FREEZING AND THAWING. Part
~~40~~ 14 ASTM Designation ~~C666-73~~ C666-80.

(43) ESTABLISHING STRUCTURAL GRADES AND RELATED ALLOWABLE PROPERTIES FOR
VISUALLY GRADED LUMBER. Part ~~40~~ 22 ASTM Designation D245-74.

(44) EVALUATING THE PROPERTIES OF WOOD-BASE FIBER AND PARTICLE PANEL
MATERIALS. Part ~~46~~ 22 ASTM Designation ~~D1037-72a~~ D1037-78.

(45) ~~LOAD-SETTLEMENT RELATIONSHIP FOR INDIVIDUAL PILES UNDER STATIC AXIAL~~
~~LOAD TESTING PILES UNDER AXIAL COMPRESSIVE LOAD~~. Part ~~44~~ 19 ASTM Designation
~~D1143-69~~ D1143-81.

(46) CONDUCTING STRENGTH TESTS OF PANELS FOR BUILDING CONSTRUCTION. Part
~~44~~ 18 ASTM Designation ~~E72-68~~ E72-77.

(47) TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS. Part ~~44~~ 18 ASTM Designation ~~E84-70~~ E84-80.

(48) FIRE TESTS OF ROOF COVERINGS. Part ~~44~~ 18 ASTM Designation ~~E108-58~~ ~~(1970)~~ E108-80a.

(49) FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS. Part ~~44~~ 18 ASTM Designation ~~E119-73~~ E119-80.

(50) ~~NONCOMBUSTIBILITY OF ELEMENTARY MATERIALS~~ TEST FOR BEHAVIOR OF MATERIALS IN A VERTICAL TUBE FURNACE AT 750° C. Part ~~44~~ 18 ASTM Designation ~~E136-73~~ E136-79.

(51) TEST FOR BOND STRENGTH OF MORTAR TO MASONRY UNITS. Part ~~44~~ 18 ASTM Designation ~~E149-66~~ E149-76.

(52) FIRE TESTS OF DOOR ASSEMBLIES. Part ~~44~~ 18 ASTM Designation ~~E152-73~~ E152-80.

(53) FIRE TESTS OF WINDOW ASSEMBLIES. Part ~~44~~ 18 ASTM Designation ~~E163-65~~ ~~(1972)~~ E163-80.

~~(55)~~ (53a) ~~STANDARD METHOD OF TEST FOR RATE OF AIR LEAKAGE THROUGH EXTERIOR WINDOWS, CURTAIN WALLS AND DOORS.~~ Part 18 ASTM Designation E283-73.

(54) TESTS FOR COMPRESSIVE STRENGTH OF MASONRY ASSEMBLAGES PRISMS. Part ~~44~~ 18 ASTM Designation ~~E447-72~~ E447-74.

(55) TEST FOR CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS USING A RADIANT HEAT SOURCE. Part 18 ASTM Designation E 648-78.

SECTION 27. Ind 51.26 (2) and (3) are repealed.

SECTION 28. Ind 51.27 (1) is amended to read:

Ind 51.27 (1) Aluminum Association ~~(The) 750 Third Avenue, New York City 10017,~~ 818 Connecticut Avenue, N.W., Washington, D.C. 20006. SPECIFICATIONS FOR ALUMINUM STRUCTURES, Aluminum Construction Manual, Section 1, ~~second~~ third edition, ~~November 1974,~~ April, 1976.

SECTION 29. Ind 51.27 (3) is amended to read:

Ind 51.27 (3) American Institute of Timber Construction, 333 West Hampden Ave., Englewood, Colorado 80110, STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF DOUGLAS FIR, WESTERN LARCH SOUTHERN PINE AND CALIFORNIA REDWOOD, SOFTWOOD SPECIES. AITC 117-74 AITC 117-79-DESIGN. STANDARD SPECIFICATIONS FOR HARDWOOD GLUED LAMINATED TIMBER, ~~AITC 119-74,~~ AITC 119-76. ~~STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER USING "E" RATED AND VISUALLY GRADED LUMBER OF DOUGLAS FIR SOUTHERN PINE HEM FIR AND LODGEPOLE PINE, AITC 120-74,~~

SECTION 30. Ind 51.27 (4) is amended to read:

Ind 51.27 (4) American Iron and Steel Institute, 1000 16th St. NW, Washington, D.C. 20036, SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS, ~~1968 edition, including Addendum No. 1, Nov. 19, 1970, and Addendum No. 2, Feb. 4, 1977,~~ September 3, 1980, edition; STAINLESS STEEL COLD-FORMED STRUCTURAL DESIGN MANUAL 1974 edition; MANUAL FOR STRUCTURAL APPLICATIONS OF STEEL CABLES FOR BUILDINGS, 1973 edition.

SECTION 31. Ind 51.27 (5) is amended to read:

Ind 51.27 (5) American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018, SPECIFICATION FOR REINFORCED GYPSUM CONCRETE, ~~ANSI A59.1-1968,~~ ANSI A59.1-1968 (R-1972); SPECIFICATION FOR VERMICULITE CONCRETE ROOFS AND SLABS ON GRADE, ANSI A122.1-1965; PERFORMANCE SPECIFICATIONS AND METHODS OF TESTING FOR SAFETY GLAZING MATERIALS USED IN BUILDINGS, ~~ANSI Z97.1-1972~~ Z97.1-1975.

SECTION 32. Ind 51.27 (6) is amended to read:

Ind 51.27 (6) American Welding Society, 2501 NW 7th Street, Miami, Florida 33125, STRUCTURAL WELDING CODE, ~~AWS D1.1-79,~~ D1.1-81; SPECIFICATION FOR WELDING SHEET STEEL IN STRUCTURES, AWS D1.3-78.

SECTION 33. Ind 51.27 (6a) is amended to read:

Ind 51.27 (6a) American Wood Preservers Bureau, ~~2740~~ 2772 S. Randolph St., P.O. Box 6085, Arlington, Virginia 22206, STANDARD FOR SOFTWOOD LUMBER, TIMBER AND PLYWOOD PRESSURE TREATED WITH WATER-BORNE PRESERVATIVES FOR ABOVE GROUND USE, AWPB standard ~~LP-2, 1975,~~ LP-2, 1980; STANDARD FOR SOFTWOOD LUMBER, TIMBER AND PLYWOOD PRESSURE TREATED WITH WATER-BORNE PRESERVATIVES FOR GROUND CONTACT USE, AWPB standard ~~LP-22, 1975,~~ LP-22, 1980; QUALITY CONTROL PROGRAM FOR SOFTWOOD LUMBER, TIMBER AND PLYWOOD PRESSURE TREATED WITH WATER-BORNE PRESERVATIVES FOR GROUND CONTACT USE IN RESIDENTIAL AND LIGHT COMMERCIAL FOUNDATIONS, AWPB standard ~~FDN, 1975~~ FDN, 1980.

SECTION 34. Ind 51.27 (7a) is amended to read:

Ind 51.27 (7a) National Fire Protection Association, ~~470 Atlantic Avenue, Boston,~~ Batterymarch Park, Quincy, Mass. 02210, 02269; STANDARD FOR PORTABLE FIRE EXTINGUISHERS, NFPA No. 10-1978; STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, NFPA No. ~~43-1974,~~ 13-1980; STANDARD FOR THE CARE AND MAINTENANCE OF SPRINKLER SYSTEMS, NFPA No. 13A-1978; STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS, NFPA No. ~~20-1974,~~ 20-1980; STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION, NFPA No. ~~22-1974,~~ 22-1978; STANDARD FOR OUTSIDE PROTECTION, NFPA No. ~~24-1973,~~ 24-1977; STANDARD FOR THE INSTALLATION OF OIL-BURNING EQUIPMENT, NFPA No. 31-1978; NATIONAL FUEL GAS CODE, NFPA No. 54-1974; STANDARD FOR CENTRAL STATION PROTECTIVE SIGNALING SYSTEMS, NFPA No. ~~71-1974,~~ 71-1977; STANDARD FOR AUXILIARY PROTECTIVE SIGNALING SYSTEMS, NFPA No. ~~72B-1974,~~ 72B-1979; STANDARD FOR REMOTE STATION PROTECTIVE SIGNALING SYSTEMS, NFPA No. ~~72C-1974,~~ 72C-1975; STANDARD FOR PROPRIETARY PROTECTIVE SIGNALING SYSTEMS, NFPA No. ~~72D-1974,~~ 72D-1979; STANDARD ON AUTOMATIC FIRE DETECTORS, NFPA No. ~~72E-1974,~~ 72E-1978; STANDARD FOR HOUSEHOLD FIRE WARNING EQUIPMENT, NFPA No. 74-1980; MANUAL ON CLEARANCES FOR HEAT PRODUCING APPLIANCES, NFPA No. 89M-1976; STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS, NFPA No. 90A-1981; STANDARD FOR CHIMNEYS, FIREPLACES AND VENTS, NFPA No. ~~211-1977~~ 211-1980.

SECTION 35. Ind 51.27 (8) is amended to read:

Ind 51.27 (8) National Forest Products Association, 1619 Massachusetts Ave. NW, Washington, D.C. 20036, NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION, 1977 edition, with amendments to sections 2.2.5.3, 4.1.7 and 4.2.2, including DESIGN VALUES FOR WOOD CONSTRUCTION, a July, 1981 supplement to the 1977 edition of National Design Specification for Wood Construction; THE ALL-WEATHER WOOD FOUNDATION SYSTEM, BASIC REQUIREMENTS, Technical Report No. 7, Revised 1976, with amendments to section 6.7, including supplement to Technical Report No. 7, dated June 1, 1977, with amendments to Article 3.3.1 of section 3.3.

SECTION 36. Ind 51.27 (9) is amended to read:

(9) Steel Joist Institute, 1703 Parnum Blvd., Suite 204, Richmond, Virginia 23229, STANDARD SPECIFICATIONS, LOAD TABLES AND WEIGHT TABLES FOR STEEL JOISTS AND JOIST GIRDERS, ~~1979~~ 1981.

SECTION 37. Ind 51.27 (10) is amended to read:

Ind 51.27 (10) Truss Plate Institute, Inc., ~~4800 Pickwick Ave., Glenview, Illinois 60025,~~ 2400 East Devon Street, Des Plaines, Illinois 60018, DESIGN SPECIFICATION FOR METAL PLATE CONNECTED WOOD TRUSSES, TPI-78.

SECTION 38. Ind 51.27 (11) is repealed and recreated to read:

Ind 51.27 (11) American Plywood Association, 7011 South 19th Street, Tacoma, Washington 98460, U.S. PRODUCT STANDARD FOR CONSTRUCTION AND INDUSTRIAL PLYWOOD, PS 1-74.

SECTION 39. Ind 51.27 (12) is created to read:

Ind 51.27 (12) Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, MINIMUM REQUIREMENTS OF CONSTRUCTION AND EQUIPMENT FOR HOSPITALS AND MEDICAL FACILITIES, DHEW PUBLICATION No. (HRA) 79-14500, Revised, August, 1979.

SECTION 40. Ind 52.57 is amended to read:

Ind 52.57 FLOOR AND BASE. Every toilet room, except those within living units of apartment buildings, shall have the entire floor and the side walls to a height of not less than 6 4 inches made waterproof with ceramic tile, terrazzo, painted concrete, marble slate, monolithic asphalt or other approved material impervious to water.

Note: This section is also intended to prohibit the use of wall registers within 6 4 inches of the floor, baseboard registers and floor registers.

SECTION 41. Table 53-I, Ind 53.11 (1) (d) 5. b. is amended to read:

TABLE 53-I
FLOOR LOADINGS

OCCUPANCY		PSF
b. Top floors, if open to sky, shall be designed for 50% of the floor <u>roof</u> load {Ind 53.11 (4)} specified in sub. (4) in addition to		50

SECTION 42. Table 53-I, Ind 53.11 (1) (e) 5. is amended to read:

TABLE 53-I
FLOOR LOADINGS

OCCUPANCY		PSF
5. Floors supporting portable reviewing stands grandstands or bleachers and <u>assembly seating facilities with vertical dead load less than 15 pounds per square foot</u>		100 100

Note: ~~See Ind 55.56 for designing of portable units.~~

SECTION 43. Table 53-I, Ind 53.11 (1) (e) 7. is created to read:

TABLE 53-I
FLOOR LOADINGS

OCCUPANCY		PSF
7. Floors supporting portable reviewing stands and assembly seating facilities with vertical dead load of 15 pounds per square foot or more		100 plus the actual vertical dead load of reviewing stand or assembly seating facility

SECTION 44. Ind 53.11 (4) (a) 1. is repealed and recreated to read:

Ind 53.11 (4) (a) 1. 'Exception'. Roofs with an unobstructed slippery surface such as glass, plastic, metal, slate or similar material that will allow snow to slide off the eaves and having a slope (α) exceeding 30° may be designed for a load determined by multiplying the roof load specified in par. (a) by a slope factor (C_R) using one of the following formulas:

a. For buildings other than greenhouses

$$C_R = 1.0 - \frac{\alpha - 30^\circ}{40^\circ} \quad ; \text{ or}$$

b. For greenhouses

$$C_R = 0.75 \left[1.0 - \frac{\alpha - 30^\circ}{40^\circ} \right]$$

SECTION 45. Ind 53.11 (4) (e) is created to read:

Ind 53.11 (4) (e) *1. Roof designs incorporating storm drain sizes less than those specified in s. H62.05 (3), Wis. Adm. Code, shall be investigated by calculation to determine if stability of the building or structure due to ponding is achieved.

2. When roof drains are needed to remove precipitation and are the sole means of water escape, there shall be placed in all parapet walls, scuppers or relief openings to prevent overloading of the roof.

SECTION 46. Ind 53.322 (6) (a) is amended to read:

Ind 53.322 (6) (a) General. All masonry dependent upon structural elements for continuity or lateral support except as specified in s. Ind 53.63 (3) shall be securely anchored thereto in such a manner as to resist all forces, especially wind and all lateral forces acting either inward or outward.

SECTION 47. Ind 53.34 (1) is amended to read:

Ind 53.34 MISCELLANEOUS DESIGN-CONSTRUCTION DETAILS. (1) SPECIAL USE WALLS. (a) Hollow Walls. 1. In the exterior hollow walls, suitable flashing shall be installed at the bottom of the cavity so as to drain any water outward.

2. Open vertical joints or weep holes of 3/8 inch minimum diameter shall be provided in the facing just above the flashing at the horizontal spacing not exceeding 3 feet.

~~(b) Parapet Walls. 1. See Ind 51.02 (12) for requirements of parapet walls.~~

~~2. When roof drains are needed to remove precipitation and are the sole means of water escape, there shall be placed in all parapet walls scuppers or relief openings to prevent overloading of the roof.~~

*See Appendix for further explanatory material

~~(a)~~ (b) Retaining Walls. The tops of exposed retaining walls shall be coped with noncombustible weatherproof material.

~~(a)~~ (c) Reuse of Existing Walls. Existing masonry may be used in the alteration or extension of a structure, provided that under the new conditions imposed it meets the requirements of ~~this code~~ chs. Ind 50-64 or is made so by reasonable repairs.

Note #1: See s. Ind 51.02 (12) for requirements of parapet walls.

Note #2: See s. Ind 53.11 (4) (e) 2. for requirements for scuppers or relief openings.

SECTION 48. Ind 53.40 is amended to read:

Ind 53.40 CONCRETE REQUIREMENTS. ~~(1) General.~~ The design and construction of structures in concrete of cast-in-place or precast construction, plain, reinforced or prestressed shall conform to the rules and principles of the following standard: ~~(a)~~ ACI Std. 318, Building Code Requirements for Reinforced Concrete.

~~(b) ACI Std. 512 (Ind 51.26 (2)), Recommended Practice for Manufactured Reinforced Concrete Floor and Roof Units.~~

~~(c) ACI Std. 525 (Ind 51.26 (3)), Minimum Requirements for Thin Section Precast Concrete Construction.~~

Note: The following standards and recommendations are recognized by the department as being good engineering practice: (1) "Commentary on Building Code Requirements for Reinforced Concrete," ACI Report 318; (2) "Recommended Practice for Selecting Proportions for Concrete," ACI Std, 211.1; (3) "Recommended Practice for Selecting Proportions for Structural Lightweight Concrete," ACI Std. 211.2; (4) "Recommended Practice for Hot Weather Concreting," ACI Std. 605; (5) "Recommended Practice for Cold Weather Concreteing," ACI Std. 306; (6) "Manual of Standard Practice for Detailing Reinforced Concrete Structures," ACI Std. 315; (7) "Recommended Practice for Evaluation of Compression Test Results of Field Concrete," ACI Std. 214; (8) "Recommended Practice for Measuring, Mixing and Placing Concrete," ACI Std. 614; (9) "Recommended Practice for Concrete Formwork," ACI Std. 347; (10) "Specification for the Design and Construction of Reinforced Concrete Chimneys," ACI Std. 505; (11) "Suggested Design of Joints and Connections in Precast Structural Concrete," ACI Report 512; (12) "Guide for Cellular Concretes Above 50 pcf, and for Aggregate Concretes Above 50 pcf with Compressive Strengths Less than 2500 psi," ACI JOURNAL, February 1975 (Copies of above standards and recommendations may be obtained from American Concrete Institute, P.O. Box 19150, Redford Station, Detroit, Michigan 48219); (13) "Recommended Practices for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction," AWS Std. 12.1 (American Welding Society, 2501 NW 7th St., Miami, Florida 33125).

SECTION 49. Ind 53.61 (2) is amended to read:

Ind 53.61 (2) STRUCTURAL GLUED-LAMINATED TIMBER. Structural glued-laminated timber is an engineered, stress-rated product of a timber laminating plant comprising assemblies of specially selected and prepared wood laminations securely bonded together with adhesives. The grain of all laminations is approximately parallel longitudinally. The following standards are adopted as part of this building code for the design and production of structural glued-laminated timber, except that the modification of design stresses for duration of load shall be as specified in s. Ind 53.61 (1) (a) 1. c.

(a) AITC 117 [Ind 51.27 (3)], "Standard Specifications for Structural Glued-Laminated Timber of ~~Douglas Fir, Western Larch, Southern Pine and California Redwood.~~" Softwood Species."

(b) AITC 119 [Ind 51.27 (3)], "Standard Specifications for Hardwood Glued-Laminated Timber."

~~(c) AITC 120 [Ind 51.27 (3)], "Standard Specifications for Structural Glued Laminated Timber Using 'E' Rated and Visually Graded Lumber of Douglas Fir, Southern Pine, Hem Fir and Lodgepole Pine."~~

SECTION 50. Ind 53.63 (1) is amended to read:

Ind 53.63 (1) FIRE STOPS. Fire stops shall be provided at all intersections of interior and exterior walls with floors, ceilings and roof in such manner as to effectively cut off communication by fire through hollow concealed spaces and prevent both vertical and horizontal drafts.

(a) Furred walls shall have fire stops placed immediately above and below the junction of any floor construction with the walls, or shall be firestopped the full depth of the joist.

(b) All spaces between chimney and wood framing shall be solidly filled with noncombustible material at floor levels.

(c) All concealed spaces between stair stringers at the top and bottom of the stair run shall be firestopped.

~~(e)~~ (d) All wood fire stops as required in this section shall be lumber not less than 2 inches in nominal thickness, or 3/4-inch thick plywood with joints backed, and not less in width than the enclosed space within the partition except as provided for chimneys. Fire stops may also be of 1/2" gypsum board, ~~cement asbestos board, mineral wool~~ or other approved noncombustible materials, securely fastened in place.

SECTION 51. Ind 53.63 (6) (Intro.) is amended to read:

Ind 53.63 (6) DECAY PREVENTION. Where wood is used in parts of a building exposed to moisture that causes the moisture content of wood to exceed 19%, the wood shall be adequately ventilated or treated with preservative. All lumber and plywood required to be treated with a preservative shall be identified by a quality mark or certificate of inspection of an approved inspection agency which maintains continued supervision, testing and inspection over the quality of the product in accordance with the adopted standards of the American Wood Preservers Bureau.

~~Note. The department will accept wood products treated in accordance with the standards of the American Wood Preservers Association and the American Wood Preservers Bureau.~~

SECTION 52. Ind 54.001 is amended to read:

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

SECTION 53. Ind 54.01 (1) Table 54.01 is repealed and recreated to read:

TABLE 54.01
ALLOWABLE HEIGHT STORIES & AREA
(MAXIMUM GROSS FLOOR AREA)

Class of Construction	Building Frontage Street Exposure				
		1	2	3	
1. Fire-Resistive Type A	1				
	2				
	3				
	4				
2. Fire-Resistive Type B	1	NO RE-	20,000	17,000	1
	2	STRIC-	25,000	22,000	1
	3	TION	31,000	27,000	2
	4		37,000	32,000	2
3. Metal Frame Protected	1	21,000	18,000	15,000	1
	2	26,500	23,000	19,500	1
	3	32,000	28,000	24,000	2
	4	37,500	33,000	28,500	2
4. Heavy Timber	1	17,000	14,000	11,000	
	2	22,000	19,000	16,000	1
	3	27,000	24,000	21,000	1
	4	32,000	29,000	26,000	2
5A. Exterior Masonry Protected	1	15,500	13,000	9,500	
	2	20,000	17,000	14,000	1
	3	24,500	21,500	18,500	1
	4	29,000	26,000	23,000	1
5B. Exterior Masonry Unprotected	1	14,000	11,500	9,000	
	2	18,000	15,000	12,500	
	3	22,000	19,000	16,000	
	4	26,000	23,000	19,500	
6. Metal Frame Unprotected	1	14,000	11,500	9,000	
	2	18,000	15,000	12,500	
	3	22,000	19,000	16,000	
	4	26,000	23,000	19,500	
7. Wood Frame Protected	1	12,500	7,500	5,500	
	2	16,000	10,000	7,000	
	3	19,000	12,000	8,500	
	4	22,000	14,000	10,000	
8. Wood Frame Unprotected	1	10,000	5,000		
	2	12,000	6,000		
	3	14,000	7,000		
	4	16,000	8,000		

SECTION 54. Ind 54.01 (2) (b) 2. is amended to read:

Ind 54.01 (2) (b) 2. Construction meets the requirements for Type No. 5 or 6 ~~of totally noncombustible construction~~ with all building elements listed in Table 51.03A of noncombustible materials and is protected by an approved automatic sprinkler system.

a. Exception. Nonbearing partitions may be of fire-retardant treated wood or combustible one-hour rated materials. Openings need not be protected by rated fire door or rated fire window assemblies. Class A roof coverings may be used.

SECTION 55. Ind 54.01 (2) (b) 3. Note is repealed.

SECTION 56. Ind 54.01 (3) is amended to read:

Ind 54.01 (3) No building shall be limited in area when divided into sections which do not exceed the maximum areas tabulated in this section by fire division walls. Such fire division walls shall be as specified in ~~section s.~~ Ind 51.02 (13). All openings in such walls shall be protected by swinging, sliding or overhead fire-resistive door assemblies as specified in ~~section s.~~ Ind 51.047. Doors protecting such openings may be left open if equipped with an automatic closing device activated by smoke density or products of combustion other than heat. The automatic closing device may be installed to prevent accidental closing of the fire door in the event of a power outage to the building if it is installed with a fusible link backup mechanism in addition to the smoke detection release device. Doors used as required exits shall be standard exit doors and shall comply with the requirements of ~~section s.~~ Ind 51.19 (2).

SECTION 57. Ind 54.02 (4) is amended to read:

Ind 54.02 (4) *EXIT DISTANCE. ~~Additional exits~~ (a) Exits shall be provided distributed or located so that no part of any ~~factory, office, mercantile or other~~ building within the scope of this chapter will be more than ~~400~~ 150 feet distant from an exit.

(b) Where approved automatic sprinklers are provided throughout the building, an increase in exit distance to ~~450~~ 200 feet will be permitted. ~~Hazardous occupancies, as specified in sections Ind 54.50-54.52, and~~

(c) Buildings 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, shall have exits provided so that the maximum distance to exit is limited to 75 feet.

(d) All of the above distances shall be measured along public passageways and aisles.

Note: ~~The department uses the "triangulation triangle method" to determine exit distance. The use of arcs to determine exit distance does not satisfy the intent of the rule.~~

*See Appendix A for further explanatory material.

SECTION 58. Ind 54.07 is amended to read:

Ind 54.07 PASSAGEWAYS. Where there is not direct access to outside exit doors, safe and continuous passageways, aisles or corridors leading directly to every exit shall be maintained at all times on all floors of all buildings. Every passageway, aisle or corridor shall conform in width to the rule for width of stairways as specified in ~~section Ind 54.04~~ ss. Ind 51.15 (6) and Ind 51.16 (3). Widths shall be measured in the clear, at their narrowest points produced by any projection, radiator, pipe or other object and the required width shall be maintained clear and unobstructed at all times.

SECTION 59. Ind 54.105 is created to read:

Ind 54.105 TOEBOARDS. A toeboard shall be provided at the exposed edges of all elevated platforms, walks, balconies, mezzanines, ramps and floor openings to prevent the fall of materials where the elevation difference is greater than 5 feet. The toeboard shall extend 4 inches above the finished floor. Where material is stockpiled to a height where the toeboard does not provide adequate protection, additional measures shall be taken to prevent the fall of materials.

(1) EXCEPTION. Toeboards are not required on stairways or ramps and their landings or platforms.

SECTION 60. Ind 54.12 (2) Table 54.12-A is repealed and recreated to read:

TABLE 54.12-A
NUMBER OF FIXTURES REQUIRED FOR OCCUPANTS

Number of Occupants	TYPE OF FIXTURE					Drinking Facilities (DF)
	Water Closets(WC)		Urinals(U)	Lavatories	Showers	
	Males(M)	Females(F)	Males(M)	(L)	(S) ¹	
1-100 occupants of each sex	1	1	0			
101-200 occupants of each sex	1	2	1			
201-300 occupants of each sex	1	3	2			
301-400 occupants of each sex	2	4	2			One (DF) for each 150 occupants up to 600 or
401-500 occupants of each sex	2	5	3	One (L) for each 2 (WC) or (U) or both or fraction	None re-quired	fraction
501-600 occupants of each sex	2	6	4			
over 600 occupants of each sex	One (WC) for each additional 600 (M) or fraction	One (WC) for each additional 275 (F), or fraction	One (U) for each additional 500 (M), or fraction			One additional (DF) for each additional 3000 occupants, or fraction

¹ Showers shall be provided in public pool facilities and for occupants exposed to occupational hazards such as poisons, infections or irritating materials.

SECTION 61. Ind 54.12 (2) (a) 1. is repealed and recreated to read:

Ind 54.12 (2) (a) 1. Sanitary fixtures for taverns and restaurants shall be provided in accordance with Table 55.32.

SECTION 62. Ind 54.14 is amended to read:

Ind 54.14 ISOLATION OF HAZARDS. (1) GENERAL. All fuel-fired heating boilers and furnaces, power boilers, fuel rooms and breeching, storage vaults for paints, oils, and similar combustibles and other similar hazards in a building shall be isolated from the rest of the building by at least 2-hour fire-resistive enclosure construction as specified in ~~section ss.~~ Ind 51.04 to Ind 51.049; except that in buildings not more than 2 stories in height and having a floor area of not more than 3,000 square feet per floor, 1-hour fire-resistive enclosure construction as specified in ~~section ss.~~ Ind 51.04 to Ind 51.049, or better, shall be provided.

Note: See ch. Ind 8, Wis. Adm. Code, for isolation of flammable and combustible liquids.

(2) PROTECTION OF OPENINGS. All openings shall be protected with self-closing fire-resistive ~~doors~~ door assemblies as specified in ~~section s.~~ Ind 51.047.

(3) SUSPENDING EQUIPMENT. Gas and liquid fuel-fired space heaters, suspended furnaces, ~~and~~ vented and unvented unit heaters and boilers and water heaters up to 200,000 BTU input may be used without an enclosure where approved by the department. Where suspended furnaces, ~~and~~ vented and unvented unit heaters, boilers and water heaters are used without an enclosure, all such units shall be located at least 7 feet above the floor. The blow-off pipe for suspended boilers and water heaters shall be extended down to within 6 inches of the floor.

SECTION 63. Ind 55.02 (2) (a) 1. is amended to read:

1. Exception. Places of worship are permitted to have a full basement or ground floor and a balcony ~~seating~~ having an occupant load of not more than 30 persons.

SECTION 64. Ind 55.02 (2) (a) 3. c. is amended to read:

Ind 55.02 (2) (a) 3. c. The addition does not contain a basement ~~or~~, second floor or ground floor.

SECTION 65. Ind 55.05 (1) is amended to read:

Ind 55.05 (1) Every theater and assembly hall shall be separated from any other occupancy by an absolute occupancy separation as specified in ~~section s.~~ Ind 51.08, except that a special occupancy separation as specified in ~~section s.~~ Ind 51.08 may be used between an assembly hall accommodating not more than 750 persons and any other nonhazardous occupancy. ~~Where a special occupancy separation is permitted in this section, a single fire resistive door may be used for the protection of openings.~~

SECTION 66. Ind 55.06 (2) (k) is amended to read:

Ind 55.06 (2) (k) Skating rinks ~~45~~ 45 sq. ft. per person

SECTION 67. Ind 55.29 is repealed and recreated to read:

Ind 55.29 (1) GENERAL. All fuel-fired heating boilers and furnaces, fuel rooms and breeching, storage vaults for paints, oils and similar combustibles, and other similar hazards in a building shall be enclosed with 3-hour fire-resistive construction as specified in s. Ind 51.04, except that in case of an assembly hall accommodating not more than 300 persons, an enclosure of 2-hour fire-resistive construction, as specified in ss. Ind 51.04 to Ind 51.049, may be used.

(2) PROTECTION OF OPENINGS. All openings shall be protected by fire-rated door assemblies equipped with self-closing devices as specified in s. Ind 51.047.

(3) WATER HEATING APPLIANCES. 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.

SECTION 68. Ind 55.32 (2) is amended to read:

Ind 55.32 (2) SANITARY FIXTURES. The number of water closets ~~and~~ urinals, lavatories and drinking facilities required for the total number of occupants of each sex shall be determined in accordance with the ratios established in Table 55.32, but in no case shall the ratio of the number of fixtures to number of employes be less than those specified in Table 54.12-B. The total number of persons will be considered equally divided between men and women unless a different ratio is established.

SECTION 69. Chapter Ind 56, Subchapter I Title is created to read:

Subchapter I - General Requirements

SECTION 70. Ind 56.15 (1) (intro) is amended to read:

Ind 56.15 (1) GENERAL. All fuel-fired heating boilers and furnaces, power boilers, fuel rooms and breeching, storage vaults for paints, oils and similar combustibles, fuel-fired kilns and dryers, and other similar hazards, shall be enclosed as follows:

SECTION 71. Chapter Ind 56, Part II Title is amended to read:

~~Part~~ Subchapter II - Relocatable Classrooms

SECTION 72. Chapter Ind 56, Part III Title is amended to read:

~~Part~~ Subchapter III - Mobile Training Classrooms

SECTION 73. Ind 60.12 (1) (d) is created to read:

Ind 60.12 (1) (d) Sliding glazed patio-type doors may serve as the second exit. A means to prevent accumulation of snow and ice in the door track or freezing of the door shall be provided.

SECTION 74. Ind 60.13 (2) is repealed and recreated to read:

Ind 60.13 (2) The windows or vision panels shall have a total glazed area of at least 8 percent of the floor area of the room. The openable area of the windows shall be equal to at least 4 percent of the floor area of the room served.

SECTION 75. Ind 60.14 is repealed.

SECTION 76. Ind 60.36 is amended to read:

Ind 60.36 FIRE ALARM AND DETECTION SYSTEMS. ~~(1)~~ Every building accommodating more than 20 children shall be provided with a fire alarm system complying with the requirements of section as specified in s. Ind 51.24 or an approved smoke detection system as specified in s. Ind 51.245.

~~(a) Exception. Buildings used for other purposes prior to occupancy as a day care center shall be provided with an approved fire alarm system. The department will accept fire alarm systems complying with the requirements of NFPA standard No. 72A, Local Protective Signaling Systems, or portable alarms approved by the department.~~

SECTION 77. Ind 62.30 (1) (b) is amended to read:

Ind 62.30 (1) (b) Standpipes shall be provided in each stair enclosure and shall be provided with ~~a siamese connection~~ approved 2-1/2 inch valve hose connections at each floor level with one valve connection in the stair ~~towers~~ enclosure and one valve connection immediately outside the stair tower.

SECTION 78. Ind 62.32 (1) is amended to read:

Ind 62.32 ISOLATION OF HAZARDS. (1) FIRE PROTECTION. Boilers, furnaces, including fuel rooms and breeching, and all open-flame equipment within open parking structures shall be isolated from the rest of the open parking structure by at least a 2-hour fire-resistive enclosure construction as specified in section ss. Ind 51.04 to Ind 51.049.

SECTION 79. Ind 63.11 (3) and (4) are amended to read:

Ind 63.11 (3) INFILTRATION. (a) Exterior Openings. The following openings, and all other similar openings in the exterior building envelopes, shall be caulked, gasketed, weatherstripped or otherwise sealed:

1. Exterior joints around window and door frames;
2. Between wall cavities and window or door frames;
3. Between walls and floors;

4. Between separate wall panels; and

5. At penetrations of utility services through walls, floors and roofs.

~~(a)~~ (b) All Exterior Windows and Doors. All exterior windows and doors shall be designed to limit air leakage into or from the building and shall be caulked, gasketed, weatherstripped or otherwise sealed.

~~(b)~~ (c) Factory Manufactured Exterior Windows and Doors. Factory manufactured exterior windows and doors shall be designed and manufactured to have a rate of infiltration equal to or less than the rates specified in Table 63.11-A.

TABLE 63.11-A

AIR INFILTRATION RATES FOR FACTORY MANUFACTURED
EXTERIOR WINDOWS AND DOORS

Component	Infiltration Rate (Expressed in CFM/Linear foot of perimeter crack of operable sash, unless otherwise specified)
Operable windows, prime	
Residential*	.30
All other occupancies	.15
Prehung, swing-type doors	.50
Glazed, sliding (patio type) doors	.50 CFM/square foot of door area

*Residential occupancies include apartments, row houses, town houses, condominiums, convents and monasteries.

1. Compliance with the air infiltration rates specified in Table 63.11-A shall be certified by an independent testing laboratory or a Wisconsin registered architect or professional engineer using the criteria for air leakage specified in ASTM E-283-73, Standard Method of Test for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Door as specified in s. ~~(Ind 51.25 (55))~~ at a pressure differential of 1.567 pounds per square foot (equivalent to effect of 25 ~~miles~~ mile per hour wind).

Note: The term "factory manufactured" does not apply to units constructed or fabricated in the field or to units assembled from individual components at a lumber yard or building material center.

(4) DESIGN TEMPERATURE DIFFERENTIALS. (a) Winter. The winter design temperature differential shall be determined using the indoor design temperature as given in Table 1 of ~~chapter~~ ch. Ind 64 and the outdoor design temperature as given in ~~the following~~ Figure 1.

(b) Summer. The summer design temperature differential shall be determined using an indoor design temperature of 78° F and the outdoor design temperature as given in ~~the following~~ Figure 1.

SECTION 80. Ind 63.11 (5) is created to read:

Ind 63.11 (5) PROHIBITION OF HEATED SIDEWALKS. The installation or use of heated sidewalks is prohibited as specified in s. 101.124, Stats.

Note: Section 101.124, Stats., reads as follows:

Heated Sidewalks Prohibited. In this section "exterior pedestrian traffic surface" means any sidewalk, ramp, stair, stoop, step, entrance way, plaza or pedestrian bridge not fully enclosed within a building and "heated" means heated by electricity or energy derived from the combustion of fossil fuels, but not including the use of waste thermal energy. "Exterior pedestrian traffic surface" does not include any means of ingress and egress by the physically disabled required under s. 101.13 (2), Stats. No person may construct a heated exterior pedestrian traffic surface. The department may not approve any plan under s. 101.12, Stats., which includes such heated surface. The department shall order any existing heated exterior pedestrian traffic surface in operation after April 30, 1980, to be shut off. This section does not apply to any inpatient health care facility as defined in s. 140.85 (1), Stats.

SECTION 81. Ind 63.12 is amended to read:

Ind 63.12 DESIGN CRITERIA. (1) THERMAL PERFORMANCE. (a) Except as provided in par. (b), the thermal performance values for the exterior envelope of ~~all buildings, other than residential buildings (i.e., apartments, row houses, town houses, condominiums, convents and monasteries) of 2 stories or less in height,~~ shall not exceed the values specified in Table 63.12-A.

TABLE 63.12-A
THERMAL PERFORMANCE VALUES

Number of Stories	Thermal Performance Values*
1-2	12
3-4	13
5-7	16
8-12	18
13-20	20
Over 20	21

*Expressed in Btu/hour/square foot of above-grade exterior envelope.

(b) 1. The thermal performance values for the exterior envelope of residential buildings ~~(i.e.,~~ including but not limited to apartments, row houses, town houses, condominiums, convents and monasteries) of 2 stories or less in height shall not exceed 9 Btu/hour/square foot of above-grade exterior envelope.

2. The thermal performance values specified in Table 63.12-A shall not apply to special use buildings, such as greenhouses, tents, inflatable and other similar types of structures.

~~(c) Exception~~ 3. The thermal performance values specified in par. (a) or (b) may be increased or decreased provided the U value for ~~floors over unheated spaces~~ other components is decreased or increased so ~~that~~ the total heat gain or loss for the entire building envelope and floor area does not exceed the total heat gain or loss resulting from conformance to the values specified in subs. (1) and (2) through (3). ~~of this section~~

Note: To determine the thermal performance value of a building, the designer may use a static or dynamic method of calculation provided such calculation method is acceptable to the department.

(2) FLOORS OVER UNCONDITIONED SPACES. The overall heat transmission coefficient (U-value) for floors of heated or mechanically cooled spaces over unconditioned spaces shall not exceed 0.08 ~~Btu/H-Ft²-F^o~~ Btu/°F. sq. ft. hour.

(3) SLAB-ON-GRADE PERIMETER INSULATION. For slab-on-grade floors, the thermal resistance of the insulation around the perimeter of the floor shall not be less than the values shown in Table 63.12-B. The insulation shall extend downward from the top of the slab for a minimum distance of 24 inches, or downward to the bottom of the slab then horizontally beneath the slab for a minimum total distance of 24 inches.

TABLE 63.12-B

PERIMETER INSULATION REQUIREMENTS

Slab-On-Grade Perimeter Insulation	Zone 1	Zone 2	Zone 3	Zone 4
R = °F Ft² Hour Btu	6.7	6.2	5.9	5.2
R = <u>°F Sq. Ft. Hour</u> <u>Btu</u>				

SECTION 82. Ind 63.22 (1) (a) is amended to read:

Ind 63.22 (1) (a) All duct systems, or portions thereof, shall be insulated to provide a thermal resistance, excluding film resistances, of:

$$R = \frac{\Delta T}{15} \quad \text{H-Ft}^2\text{-F}^{\circ}\text{/Btu} \quad \text{°F. Sq. Ft. Hour/Btu}$$

Where ΔT equals the design temperature differential in degrees F. between the air in the duct, plenum or similar enclosure and the surrounding air medium. For underground duct insulation, the surrounding medium (ground) temperature for ducts within the building perimeter shall be 40° F. and for ducts outside the building perimeter shall be 30° F.

SECTION 83. Ind 63.40 is repealed and recreated to read:

Ind 63.40 POWER FACTOR. Building service utilization equipment rated greater than 1,000 watts and lighting equipment greater than 30 watts, with an inductive reactance load component, shall have a power factor of not less than 85% under rated conditions. Building service utilization equipment with a power factor of less than 85% shall be corrected to at least 90% under rated load conditions.

SECTION 84. Ind 63.41 is amended to read:

Ind 63.41 (1) LIGHTING POWER BUDGET. (a) Except as provided in par. (b), for purposes of establishing a budget, the power allowed for the lighting load shall not exceed the value for the space use as indicated in Table 63.41. Each area of space shall be multiplied by its maximum lighting load respective value as indicated in Table 63.41. This calculation shall be made for all areas of the building and these values shall be summed to yield a total allowable lighting wattage. This total allowable lighting wattage is the maximum amount of lighting power for the building, which may then be allocated as desired provided this value is not exceeded.

~~(a) Exception~~ (b) The following areas or classes of lighting equipment ~~may be~~ are exempt from the criteria of ~~(4)~~ par. (a).

1. Local task lighting fixtures applied to an individual location with switching under the user's immediate control, such as, but not limited to, a portable desk lamp, a work light on a machine, or a hospital examination light.

2. Lighting for special applications where the lighting is an essential technical element for the function performed, such as theatrical performances.

(2) ILLUMINATION BUDGET. If the total allowable lighting wattage value determined by the calculations outlined in sub. (1) above is exceeded, then the illumination shall be determined by a method acceptable to the department.

Note #1: ~~The department will accept calculations in accordance with chapter 9 of the ASHRAE 90-75 standard~~ See s. PSC 113.315, Wis. Adm. Code, for individual electric metering requirements for nontransient multi-dwelling unit residential buildings.

Note #2: The material in this section is not intended to be used as a lighting design procedure. The purpose of this section is solely to outline a procedure for determining the maximum power limit for the lighting.

SECTION 85. TABLE 63.41 is repealed and recreated to read:

TABLE 63.41

LIGHTING POWER VALUES

<u>Area/Use</u>	<u>Maximum Connected Lamp Load (Watts/Sq. Ft.)</u>
<u>General</u>	
Conference Room	2.0
Corridor	1.0
Employee Cafeteria	2.0
Janitor Closet	0.5
Lobby	1.0
Locker Room	2.0
Lunch Room	2.0
Mechanical Room	0.5
Parking, Indoor	0.25
Parking, Outdoor	0.05
Office	3.0
Perimeter Facade	5.0/Linear ft.
Reception or Waiting Room	3.0
Shower Room	2.0
Stairway	1.0
Storage	0.5
Toilet	2.0
<u>Assembly (Chs. Ind 54 and Ind 55)</u>	
Auditorium	2.0
Church Nave and Sanctuary	2.0
Dining Area	2.0
Gymnasium	2.0
Kitchen, Commercial	2.5
Natatorium	2.0
Racquet Court	2.0
Recreation Area	2.0
Tavern	2.0
Theatre	2.0
<u>Educational (Chs. Ind 56 and Ind 60)</u>	
Auditorium	2.0
Classroom	2.5
Day Care/Nursery	2.5
Gymnasium	2.0
Laboratory	2.5
Library, Reading Area	3.0
Library, Stack Area	0.5
Museum	2.5
Natatorium	2.0
Vocational Shop	2.5

Area/Use	Maximum Connected Lamp Load (Watts/Sq. Ft.)
<u>Health Care (Ch. Ind 58)</u>	
Examination Room	3.0
Laboratory	2.5
Nurse Station	3.0
Operating Room	3.0
Patient Room	1.0
Physical Therapy	2.0
Treatment Room	3.0
<u>Industrial (Ch. Ind 54)</u>	
Assembly	2.5
Inspection	2.5
Laboratory	2.5
Manufacturing	2.5
Shipping and Receiving	2.5
Storage (Including Warehouse Storage)	0.5
<u>Mercantile (Ch. Ind 54)</u>	
Garage, Repair	1.0
Kitchen, Commercial	2.5
Laundry, Commercial	2.5
Mall	2.0
Sales Area (Including Display Lighting)	2.5
Stock Room	1.0
<u>Residential (Ch. Ind 57)</u>	
Bathroom	2.0
Closet	0.5
Hotel or Motel Bedroom	1.0
Kitchen, Residential	2.5
Laundry Area	2.5
Living or Sleeping Area	1.0
Storage	0.5

NOTES:

1. Use the most similar area/use designation for unlisted occupancies.
2. In general, canopy lighting is given the value assigned for similar indoor tasks. For example, a shopping center canopy is given the 2.0 watts/sq. ft. value of mall.

SECTION 86. Ind 63.42 is repealed and recreated to read:

Ind 63.42 LIGHTING CONTROL. Each room enclosed by ceiling-height partitions shall have independent control of the lighting in that room through control devices located within the room.

SECTION 87. Ind 64.05 Table 1 is repealed and recreated to read:

Ind 64.05 TABLE 1

Use or Occupancy	Minimum Inside Temp. (Deg. F.)	Ventilation Classification ²	Ventilation Requirements ¹			Applicable Occupancy Code Section (Ind No.)
			Basis of Capacity			
			Determination of No. of Persons ³ Net sq. ft. Per Person	Percent of Openings ⁴	CFM/net sq. ft. Floor Area	
Factories, office and mercantile buildings						
Barber and beauty salons	67	(b)	20	3	--	64.54
(where hair spray is used)	67	(d)	20	--	--	64.1B
Canning factories	60	(b)	75	3	--	64.54, 64.5B
Conference rooms	67	(b)	7	3	--	64.54
Court rooms	67	(b)	6	3	--	64.54
Factories and machine shops	60	(b)	75	3	--	64.54
First aid rooms	67	(b)	6	3	--	64.54
Flammable liquids storage	NMR	(d)	--	--	--	64.1B
Foundries and boiler shops	50	(b)	75	3	--	64.13, 64.54
Funeral homes:						
Chapel	67	(b)	6	3	--	64.54
Embalming room	67	(d)	--	--	2	64.54
Office	67	(b)	75	3	--	64.54
Places of worship, entertainment and recreation which accommodate less than 100 persons	1	(b)	1	3	--	64.54
Printing establishments	60	(b)	--	3	--	64.1B, 64.54
Retail establishments (basement)	65	(b)	40	3	--	64.54
(other floors)	65	(b)	60	3	--	64.54
Shopping malls corridor areas (except mercantile areas)	NMR	(g)	Aggregate capacity of stores served by mall	--	--	64.54
Security vaults (occupied)	65	(a)	300	--	--	64.54
Warehouses	NMR	--	--	--	--	64.1B, 64.54
Theaters and places of assembly (which accommodate more than 100 persons)						
Arenas and field houses (use seated area)	60	(a)	6	--	--	64.55
Armory drill floors	55	(b)	30	3	--	64.55
Assembly halls (other than church)	67	(a)	6	--	--	64.55
Bowling alleys	67	(a)	15	--	--	Based on occupied areas
Cafeterias, dining areas, restaurants, billiard rooms	67	(a)	15	--	--	64.55
Churches and places of worship:						
Chapels	67	(b)	6	3	--	64.55 (3)
Dining and social rooms	67	(b)	15	3	--	64.55 (3)
Nave or auditorium	67	(b)	6	3	--	64.55 (3)
Sunday school rooms	67	(b)	20	3	--	64.55 (3)
Club rooms (seated)	67	(a)	6	--	--	64.55
(unseated)	67	(a)	15	--	--	64.55
Dance halls	67	(a)	15	--	--	64.55
Ice skating rinks (indoor)	NMR	(a)	15	--	--	64.55
Ice resurfacing (indoor)	NMR	(d)	--	--	--	64.1B, 64.55
Lodge halls	65	(a)	15	--	--	64.55
Lodges	50	(a)	15	--	--	64.55
Roller skating rinks (indoor)	67	(a)	20	--	--	64.55
Taverns	67	(a)	--	--	--	64.55
Tennis courts (indoor)	60	(a)	--	--	--	64.55
Theaters	67	(a)	6	--	--	64.55
Lobbies	67	(a)	15	--	--	64.55
Lounge rooms	67	(a)	15	--	--	64.55
Motion picture booths	60	(a) or (c)	--	--	2	64.55 (5)
Health Care Facilities						

See Ind 64.57

CA = cooking appliance.

LF = linear foot.

NMR = no minimum requirements.

TC = toilet facilities (water closets and urinals).

Use Theaters and places of assembly for inside design temperature and net square feet per person.

Ventilation requirements. See ss. Ind 64.06, Ind 64.07 and Ind 64.08 for mechanical, natural and exhaust ventilation systems; and ss. Ind 64.11 through Ind 64.1B for ventilation and air standards.

¹Ventilation classifications.

(a) Requires a supply of outside air and an equal amount of exhaust ventilation be provided at the rate of 5 CFM per person and a minimum air movement of 6 air changes per hour.

(b) Requires a supply of outside air and an equal amount of exhaust ventilation be provided at the rate of 5 CFM per person and a minimum air movement of 6 air changes per hour, or a percentage of openings.

(c) Requires a supply of outside air and exhaust ventilation determined on the basis of CFM per square foot of floor area.

(d) Requires exhaust ventilation determined on the basis of CFM per square foot of floor area. The area shall be provided with negative pressure relative to adjacent areas. A supply of outside air is required when the total building exhaust exceeds one air change per hour, unless otherwise exempted. In multiple-use occupancies, the area of each occupancy shall be considered separately.

(e) Requires a supply of outside air and exhaust ventilation determined on the basis of CFM per square foot of floor area. The area shall be provided with a negative pressure relationship with respect to the adjacent areas.

(f) Requires a percentage of openings.

(g) Does not require a separate supply of outside air provided the outside air introduced in the store areas adjacent to the mall is circulated through and exhausted from the shopping mall corridor area.

²Determination of number of persons. In determining the number of occupants in a given space, the department will accept the net square foot per person as listed in Table 1 or the actual number of persons, provided the expected occupancy is indicated on the plans and is reasonable. Where no value is indicated for net square feet per person, use the actual number of occupants to determine the required amount of outside air.

⁴Percent of openings. See a. Ind 64.07 for special considerations on natural ventilation.

Use or occupancy	Minimum Inside Temp. (Deg. F.)	Ventilation Classification ²	Ventilation Requirements ¹			Applicable Occupancy Code Section (Ind. Div.)
			Basis of Capacity			
			Determination of No. of Persons ³ Per Person	Percent of Openings ⁴	CFM/net sq. ft. Floor Area	
Schools and other places of instruction						
Administration office space	67	(b)	35	1	--	64.56
Arts, crafts, drafting rooms	67	(A)	35	--	--	64.56
Classrooms	67	(A)	20	--	--	64.56
Gymnasiums, field houses, auditoriums, theaters (fixed seats)	67	(A)	6	--	--	64.56
Bleachers	--	(A)	2.75 or 10 ² /ft ²	--	--	64.56
Locker and shower rooms	70	(c) or (d)	--	--	2	64.65
Gymnasiums, field houses, auditoriums, theaters (nonseated areas)	55	(A)	75	--	--	64.56
Home economics (cooking)	67	(A)	10	--	--	64.56
Kitchens	67	(c) or (d)	--	--	2	64.67
Laboratories (science)	67	(A)	10	--	--	64.18
Lecture halls	67	(A)	6	--	--	64.56
Libraries and resource centers	67	(A)	20	--	--	64.56
Reading rooms	67	(A)	20	--	--	64.56
Stack areas	67	(A) or (d)	100	--	1/4	64.56
Lunchrooms	65	(A)	10	--	--	64.56
Museums and art galleries	67	(A)	40	--	--	64.56
Music rooms (instrumental)	67	(A)	20	--	--	64.56
(vocal)	67	(A)	10	--	--	64.56
Special education	67	(A)	35	--	--	64.56
Study halls, common areas with nonfixed seating	67	(A)	10	--	--	64.56
Toilet rooms	65	(d)	--	--	2 or 60/TF	64.65
Vocational shops:						
With vehicle service and repair	60	(c) or (d)	--	--	3/4	64.10
Without vehicle service and repair	60	(A)	50	--	--	64.10
Wardrobes	NM0	(d)	--	--	2	64.65
Detention and correctional facilities						
Sleeping rooms	67	(b)	--	4	--	64.58
Residential occupancies						
Living and sleeping areas	67	(f)	--	4	--	64.59
DAY care facilities						
	67	(b)	35	4	--	64.60
Garages and service stations						
Automobile showrooms:						
Less than 6 vehicles	60	(b)	--	3	--	64.64
6 or more vehicles	60	(c) or (d)	--	--	1/2	64.64
Garages: less than 6 vehicles	NM0	(b)	--	3	3	64.62, 64.63
Garages: 6 or more vehicles	NM0	(c) or (d)	--	--	1/2	64.63
Repair areas	60	(c) or (d)	--	--	1/4	64.63
Vehicle service buildings	60	(c) or (d)	--	--	1/2	64.62
General sanitation and service areas						
Chlorine storage rooms	NM0	(d)	--	--	1	64.65
Janitor closets	NM0	(d)	--	--	2	64.65
Locker rooms and shower rooms	70	(c) or (d)	--	--	2	64.65
Toilet rooms	65	(d)	--	--	2 or 60/TF	64.65
Restrooms	65	(c)	--	--	1 or 2/ 60/TF	64.66
Fit rooms	65	(c) or (d)	--	--	2	64.67
Seasonal occupancies						
Camps and lodges:						
Dining and recreational areas	NM0	(b)	15	3	--	64.60
Living and sleeping areas	NM0	(f)	--	4	--	64.60
Club houses	NM0	(b)	15	3	--	64.60
Bathrooms	NM0	(b)	15	3	--	64.60
Fit rooms	NM0	(c) or (d)	--	--	2	64.67
Outdoor toilets	NM0	(d)	--	--	2	64.65

- CA - Cooking appliances.
- CF - Local food.
- NM0 - No minimum requirements.
- TF - Toilet facilities (water closets and urinals).

¹Ventilation requirements. See s. Ind 64.96, Ind 64.97 and Ind 64.98 for mechanical, natural and exhaust ventilation systems; and ss. 151-154.11 through Ind 64.99 for ventilation and air standards.

²Ventilation classifications.

- (a) Requires a supply of outside air and an equal amount of exhaust ventilation to be provided at the rate of 5 CFM per person and a minimum air movement of 0 air changes per hour.
- (b) Requires a supply of outside air and an equal amount of exhaust ventilation to be provided at the rate of 5 CFM per person and a minimum air movement of 0 air changes per hour, or a percentage of openings.
- (c) Requires a supply of outside air and exhaust ventilation determined on the basis of CFM per square foot of floor area.
- (d) Requires exhaust ventilation determined on the basis of CFM per square foot of floor area. The area shall be provided with negative pressure relative to adjacent areas. A supply of outside air is required when the total building exhaust exceeds one air change per hour, unless otherwise exempted. In multiple-use occupancies, the area of such occupancy shall be considered separately.
- (e) Requires a supply of outside air and exhaust ventilation determined on the basis of CFM per square foot of floor area. The area shall be provided with a negative pressure relationship with respect to the adjacent areas.
- (f) Requires a percentage of openings.
- (g) Does not require a separate supply of outside air provided the outside air introduced in the store area adjacent to the mall is circulated through and exhausted from the shopping mall corridor area.

³Determination of number of persons. In determining the number of occupants in a given space, the department will accept the net square foot per person as listed in Table 1 or the actual number of persons, provided the expected occupancy is indicated on the plans and is reasonable. Where no value is indicated for net square feet per person, use the actual number of occupants to determine the required amount of outside air.

⁴Percent of openings. See s. Ind 64.97 for special considerations on natural ventilation.

SECTION 88. Ind 64.06 (3) (c) 3. is amended to read:

Ind 64.06 (3) (c) 3. Buildings utilizing ~~ventilation classification (b)~~ with percentage of openings as specified in ~~Table 4 of section s.~~ Ind 64.05, Table 1.

SECTION 89. Ind 64.07 (2) is created to read:

Ind 64.07 (2) VESTIBULE OPENINGS. Vestibule type openings may be used to satisfy the requirements specified in sub. (1) only for the areas of the building into which the vestibule opens.

SECTION 90. Ind 64.19 (1) (a) is amended to read:

Ind 64.19 (1) (a) Location to prevent contamination. Outside air intake openings shall be located so as to minimize contamination of outdoor air, but in no case shall the distance be less than 10 feet ~~(measured in any direction)~~ from outlets emitting products of combustion, exhaust vents and plumbing vents. Openable windows are exempt from the provisions of this paragraph, except that power vents from gas fired equipment shall be located at least 12 inches measured in any direction from any openable windows.

SECTION 91. Ind 64.34 (1) Note is amended to read:

Ind 64.34 (1) Note: The department will accept the standards for ducts in the ASHRAE Handbook ~~of Fundamentals~~, Equipment Volume published by the American Society of Heating, Refrigerating and Air Conditioning Engineers, or as illustrated in the Low Pressure or High Pressure Duct Construction Standards published by the Sheet Metal and Air Conditioning Contractors National Association, Inc.

SECTION 92. Ind 64.39 is amended to read:

Ind 64.39 VENTILATION DISCHARGE. All gravity and mechanical ventilation ducts shall be protected from the weather and shall be so located and constructed as to prevent contamination of an outside air supply. Gravity ventilation ducts shall extend not less than 2 feet above the highest portion of the roof ~~or~~ and parapet wall and shall be ~~surmounted~~ provided with an approved type of siphon roof ventilator.

SECTION 93. Ind 64.41 (Title) is amended to read:

Ind 64.41 ~~SUSPENDED-CEILING-PLENUM~~ PLENUMS.

SECTION 94. Ind 64.41 (1) (intro) is amended to read:

Ind 64.41 (1) GENERAL. Plenums ~~above ceilings~~ used for the supply, return and or transfer of air shall be of noncombustible construction ~~as defined in section Ind 51.01 (86) (a).~~

SECTION 95. Ind 64.41 (6) is amended to read:

Ind 64.41 (6) OPENINGS. Openings into the plenum that would affect the fire-resistive rating of the ~~roof and ceiling~~ structural component or system are prohibited.

SECTION 96. Ind 64.41 (10) is amended to read:

Ind 64.41 (10) SMOKE DETECTION. (a) New Construction. Air-handling plenums which contain ductwork, duct connectors, insulation, ~~or plumbing or control tubing~~ which do not meet the requirements of subs. (2) to (4), and (8) and (9) respectively, ~~of this section,~~ shall be provided with an approved smoke detection system ~~acceptable to the department and shall be~~ capable of stopping the air flow in and from the plenum and giving an audible alarm in the occupied area when activated.

(b) Existing Construction. When existing plenum construction contains combustible insulation, wiring, ~~or plumbing, or control tubing,~~ and is altered or added to according to ~~section s.~~ Ind 50.03 (1) or (2), the entire plenum space, new and existing, shall be provided with a smoke detection system according to sub. (10) (a) ~~of this section.~~

1. "Exception." Building additions separated from existing construction by one-hour noncombustible construction need not be provided with a smoke detection system provided the plenum is constructed according to subs. (1) to (8) ~~of this section.~~

~~Note: The department will accept smoke detection systems designed, installed and maintained in accordance with National Fire Protection Association standard No. 72E.~~

SECTION 97. Ind 64.42 (1) and (2) are amended to read:

Ind 64.42 FIRE DAMPERS AND FIRE CURTAIN DOORS. (1) REQUIRED FIRE DAMPERS AND FIRE CURTAIN DOORS. All heating and ventilating ducts, except underground ducts, which terminate at or pierce code-required, hourly rated wall, floor or floor-ceiling assemblies ~~(Table 51.03-A)~~ as specified in Table 51.03-A and rated enclosures shall be protected as follows:

(a) One-hour rated assemblies and enclosures shall be protected with 1-1/2 hour rated fire dampers where continuous ductwork to the air handling device is not provided on either side of the assembly or enclosure.

~~(a)~~ (b) Two-hour rated assemblies and enclosures shall be protected with 1-1/2 hour rated fire dampers.

~~(b)~~ (c) Three-hour and 4-hour rated assemblies and enclosures shall be protected with 3-hour "A" labeled fire curtain doors.

(2) EXCEPTIONS. Exceptions to ~~Ind 64.42~~ sub. (1) are:

(a) Any assembly, such as a floor-ceiling assembly, that has been certified for use without fire dampers and approved by a nationally recognized testing laboratory;

(b) Metal ducts which do not exceed a maximum area of 20 square inches; or

~~(c) Combustion air ducts which extend from the exterior of the building and terminate at 2-hour rated enclosures and which do not pierce any other fire rated assembly in other areas of the building.~~

~~(d)~~ (c) Interior bearing walls and partitions if unrated openings are permitted by other sections of ~~this code~~ chs. Ind 50-64.

SECTION 98. Ind 64.48 (2) (a) is amended to read:

Ind 64.48 (2) (a) Residential type and building heating appliance. An approved "residential type and building heating appliance" chimney or "building heating appliance ~~only~~" chimney may be used with solid, liquid- or gas-fired heating appliances where the flue gas temperature does not exceed 1000° F continuously, and does not exceed 1400° F. for infrequent brief periods of forced firing.

SECTION 99. Ind 64.48 (2) (e) Note is amended to read:

Ind 64.48 (2) (e) Note: The department recognizes, as approved, chimneys designated as "residential ~~types and building heating appliance~~" type, "building heating appliance", "B", "BW" and "L" types listed by Underwriters' Laboratories, Inc.

SECTION 100. Ind 64.56 (3) is amended to read:

Ind 64.56 (3) ~~SCHOOL SHOP EQUIPMENT AND LABORATORY EXHAUST~~ EXHAUST SYSTEMS AND HEAT RECOVERY. (a) An exhaust system, ~~in accordance with the requirements of section as specified in s. Ind 64.54 (3),~~ shall be provided for all equipment and processes that create dust, fumes, vapors and gases injurious to health. ~~Makeup air may be transferred from other areas of the building to replace the air exhausted from the equipment or process.~~

(b) Exhaust systems whose operation is more than 3600 hours per year shall be equipped with heat recovery devices to reduce the energy consumption in the building.

1. 'Exception'. a. Systems exhausting explosive materials, such as perchloric acid need not be so equipped.

b. Fan systems exhausting 250 CFM or less need not be so equipped.

SECTION 101. Ind 64.65 (3) (b) 1. is amended to read:

Ind 64.65 (3) (b) 1. "Exception". ~~Mechanical~~ Exhaust ventilation may be omitted from toilet rooms or bathrooms having one water closet or urinal, or from janitor closets having one service sink or receptor, where an approved ductless air circulating and treatment device is provided.

~~Note #1: The department will accept ductless air circulating and treatment devices conforming to standard C-10 as adopted by the National Sanitation Foundation (NSF).~~

~~Note #2: The department of health and social services prohibits the use of ductless air circulating and treatment devices in licensed hospitals and nursing homes. See Wis. Adm. Code section H 32.27 (2) (e) and Hill-Burton, "Minimum Requirements of Construction and Equipment for Hospital and Medical Facilities, "HEW publication no. (HRA) 74-4000.~~

SECTION 102. Ind 64.67 (2) (a) is amended to read:

Ind 64.67 (2) (a) Required Exhaust Ventilation. When cooking equipment is being operated, mechanical exhaust ventilation shall be provided at a rate not less than 2 cubic feet per minute per square foot of floor area for every occupied area within the scope of this section. When cooking equipment is not being operated, a minimum supply of outside air and exhaust at the rate of 5 CFM per person or natural ventilation as specified in s. Ind 64.07 shall be provided during periods of occupancy.

SECTION 103. Ind 64.67 (4) (c) Note is repealed.

SECTION 104. Ind 64.68 is amended to read:

Ind 64.68 SEASONAL OCCUPANCIES. When approved in writing by the department, heating requirements may be waived but not ventilation required by ~~section s.~~ Ind 64.05, Table 1 during the period of ~~June 4~~ May 15 through September 15 for the following or similar occupancies: drive-in eating places, club houses, outdoor toilets, camp lodge buildings, canning factories and migrant labor camps ~~also see chapter Ind 49 - Migrant Labor Camps~~.

Note: Rules on migrant labor can be found in ~~chapter~~ ch. Ind 201, Wis. Adm. Code.

SECTION 105. Appendix 53.11 (4) (e) is created to read:

A 53.11 (4) (e) Roof Designed for Control Flow Drainage. This section refers to the requirements of the Wisconsin Administrative Plumbing Code (H-62) for storm drain sizes where control flow drainage roof design is used. The following information from the plumbing code is provided for use by the building designer:

H62.05 (3) (b) Storm. The building storm drain size shall be determined on the total area to be drained thereby and other wastes tributary to the drain. The minimum size of the roof leaders shall be determined from table 5 or shall be calculated using the formula following the table. The size of the building storm drain shall be not less than that specified in tables 11, and 11a and 11b. See Wis. Adm. Code s. H 62.12 (3) (c).

Table 5

Type of Roof	Allowable Roof Area in Square Feet for Given Size of Inside Leader					
	2-1/2"	3"	4"	5"	6"	8"
Roof covered with gravel, slag or similar material with incline 1/4" to 1' or less	Up to 1,645	1,646 to 2,120	2,121 to 3,780	3,781 to 5,885	5,886 to 8,490	8,491 to 15,125
Same with incline 1/2" to 1' or more and sawtoothed roofs	Up to 1,220	1,221 to 1,770	1,771 to 3,150	3,151 to 4,905	4,906 to 7,075	7,076 to 12,600
Metal, tile, brick, slate, or similar roofs of any incline	Up to 975	976 to 1,415	1,416 to 2,520	2,521 to 3,925	3,926 to 5,660	5,661 to 10,080

Tables 11, 11a and 11b of s. H 62.12 (3) (c)

Table 11
SIZE OF HORIZONTAL STORM DRAINS ACCORDING
TO ROOF AREA SERVED

Pipe Size	Pitch 1/16" per 1' sq. ft. area	Pitch 1/8" per 1' sq. ft. area	Pitch 1/4" per 1' sq. ft. area	Pitch 1/2" per 1' sq. ft. area
3"-----	650	910	1,300	1,820
4"-----	1,300	1,950	2,990	3,770
5"-----	2,470	3,640	5,070	7,020
6"-----	4,160	5,980	8,320	11,700
8"-----	9,320	13,000	18,200	26,000
10"-----	17,680	24,700	33,800	50,440
12"-----	27,300	41,080	57,200	81,900
15"-----	52,000	72,800	105,300	146,640
18"-----	85,800	121,550	174,200	247,000
21"-----	156,520	179,660	256,880	374,400
24"-----	187,200	261,560	382,200	546,000

Table 11a
MINIMUM SIZE OF HORIZONTAL STORM DRAINS SERVING
PAVED OR GRAVELED GROUND SURFACE AREAS

Pipe Size	Pitch 1/16" per 1' sq. ft. area	Pitch 1/8" per 1' sq. ft. area	Pitch 1/4" per 1' sq. ft. area	Pitch 1/2" per 1' sq. ft. area
3"-----	810	1,140	1,625	2,270
4"-----	1,625	2,430	3,740	4,720
5"-----	3,090	4,550	6,350	8,760
6"-----	5,200	7,470	10,400	14,600
8"-----	11,650	16,250	22,750	32,600
10"-----	22,100	30,850	44,250	63,000
12"-----	34,150	52,300	71,500	102,200
15"-----	65,000	91,000	131,500	183,000
18"-----	107,000	152,000	210,800	321,000
21"-----	195,000	224,000	321,000	468,000
24"-----	234,000	336,000	478,000	682,000

Table 11b
MINIMUM SIZE OF HORIZONTAL STORM DRAINS SERVING
LAWNS, PARKS AND SIMILAR LAND SURFACES

Pipe Size	Pitch 1/16" per 1' sq. ft. area	Pitch 1/8" per 1' sq. ft. area	Pitch 1/4" per 1' sq. ft. area	Pitch 1/2" per 1' sq. ft. area
3"-----	2,600	3,640	5,200	7,280
4"-----	5,200	7,800	11,960	15,080
5"-----	9,880	13,560	20,280	28,080
6"-----	16,640	23,920	33,280	46,800
8"-----	37,280	52,000	72,800	112,000
10"-----	69,720	98,800	135,200	201,760
12"-----	109,200	164,320	228,800	327,600
15"-----	208,000	291,200	421,200	586,560
18"-----	343,200	490,200	596,800	988,000
21"-----	526,080	718,640	1,027,520	1,497,600
24"-----	748,800	1,046,240	1,528,800	2,184,000

EFFECTIVE DATE

Pursuant to s. 227.026 (1), Intro., Stats., these rules shall take effect on the first day of the month following publication in the Wisconsin Administrative Register.
