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**Note:** Section 213.15, Stats., regulates fire hose threads and fittings and reads as follows: "All fire hose fittings, apparatus fittings, 1.5 and 2.5 inches in diameter purchased or procured by a fire department or fire company shall be of the national standard hose thread as adopted by the national fire protection association. No fire department shall utilize hose and equipment not in conformance with the requirement that all threads shall be national standard hose thread as adopted by the national fire protection association. Any person offering for sale nonstandard hose couplings, fittings or apparatus fittings may be fined not less than \$100 nor more than \$500."

**Note:** NFPA 1963 contains the specifications for national standard hose thread.

**Comm 62.0902 Definition.** Substitute the following definition and informational note for the corresponding definition listed in IBC section 902.1: "Automatic sprinkler system" or "Automatic fire sprinkler system" has the meaning given in s. 145.01 (2), Stats.

**Note:** Section 145.01 (2), Stats., reads as follows: "'Automatic fire sprinkler system,' for fire protection purposes, means an integrated system of underground and overhead piping designed in accordance with fire protection engineering standards. The system includes a suitable water supply, such as a gravity tank, fire pump, reservoir or pressure tank or connection beginning at the supply side of an approved gate valve located at or near the property line where the pipe or piping system provides water used exclusively for fire protection and related appurtenances and to standpipes connected to automatic sprinkler systems. The portion of the sprinkler system above ground is a network of specially sized or hydraulically designed piping installed in a building, structure or area, generally overhead, and to which sprinklers are connected in a systematic pattern. The system includes a controlling valve and a device for actuating an alarm when the system is in operation. The system is usually activated by heat from a fire and discharges water over the fire area."

**Comm 62.0903 Automatic fire sprinkler systems. (1) ALTERNATIVE PROTECTION.** Substitute the following wording for the requirements in IBC section 903.1.1: Alternative automatic fire-extinguishing systems complying with IBC section 904 shall be permitted in lieu of automatic sprinkler protection where recognized by the applicable standard.

**(2) MULTIFAMILY DWELLINGS.** For multifamily dwellings only, substitute the following wording for the requirements, but not the exception, in IBC section 903.2.8: An automatic fire sprinkler system or 2-hour fire resistance shall be provided in every multifamily dwelling that contains floor areas or dwelling units exceeding any of the thresholds established in Table 62.0903. The floor areas specified in the thresholds do not include any of the following:

(a) Areas that are outside a building, as in the following:

1. Porches that are open to the outside atmosphere.
2. Exterior stairs.
3. Exterior platforms.
4. Exterior landings.
5. Exterior decks.

(b) An attached garage that meets all of the following criteria:

1. Has a floor area of 600 square feet or less.
2. Serves a single dwelling unit.
3. Is accessed directly from the dwelling unit.
4. Is separated from the remainder of the building by at least 1-hour rated fire-resistive construction.

**Note:** Housing units that receive federal funding may be required by federal regulations to have sprinkler protection regardless of building size.

**TABLE 62.0903**  
**Thresholds Above Which a Sprinkler System or 2-Hour Fire Resistance Is Required in a Multifamily Dwelling**

Class of Construction	Total Floor Area Within Individual Dwelling Units	Number of Units	Total Floor Area of Nondwelling Unit Portions (Common use areas, such as corridors, stairways, basements, cellars, vestibules, community rooms, laundry rooms, pools, etc.)
Type IA	16,000 sq ft	20 units	16,000 sq ft
Type IB			12,000 sq ft
Type IIA			8,000 sq ft
Type IIB			5,600 sq ft
Type III			
Type IV			
Type VA			
Type VB		4,800 sq ft	

**(3) UNIVERSITY DORMITORIES.** This is a department informational note to be used under IBC section 903.2.8:

**Note:** Under s. 101.14 (4) (b) 3, Stats., an automatic sprinkler system must be installed at the time of construction of each floor of any University of Wisconsin System residence hall or dormitory that is constructed after April 26, 2000, regardless of the height of the building.

**(4) EXEMPT LOCATIONS.** Substitute the following wording for exempt location 2 in IBC section 903.3.1.1.1: Any room or space where sprinklers are considered undesirable because of the nature of the contents, where approved by the department.

**(5) FIRE DEPARTMENT CONNECTION.** Substitute the following wording for the requirements in IBC section 903.3.7: The fire department connection shall be installed in an accessible location acceptable to the fire chief.

**Comm 62.0904. Alternative automatic fire-extinguishing systems.** These are department rules in addition to the requirements in IBC section 904:

**(1) WATER MIST FIRE PROTECTION SYSTEMS.** Where a water mist fire protection system is installed, it shall comply with NFPA 750.

(2) MANUAL-WET SPRINKLER SYSTEMS. (a) *Where allowed.* A manual-wet sprinkler system may not be installed in a building unless all of the following conditions are met:

1. There is no municipal water system available to serve the property.
2. There is no provision under this code that requires the building or a portion of the building to have an automatic fire sprinkler system.
3. The municipality where the building is to be located has an adopted ordinance that requires the installation of manual-wet sprinkler systems and requires these systems to meet the provisions of this subsection.

(a) *General requirements.* 1. A building protected with a manual-wet sprinkler system shall be considered unsprinklered under all other code provisions.

2. Each manual-wet sprinkler system shall be provided with a fire department connection. The fire department connection shall be installed in an accessible location acceptable to the fire chief.

3. All above ground system piping throughout the building shall be labeled as a "manual-wet sprinkler system." Labels shall be placed at all of the following locations:

- a. On the piping at intervals of not more than 25 feet and at each side where the piping passes through a wall, floor or roof.
- b. At the fire department connection.
- c. At all valves and hose outlets.

4. The manual-wet sprinkler system design and installation shall comply with the automatic fire sprinkler system requirements of NFPA 13 or NFPA 13R, as applicable, except that the system comprised of the pilot line, fire department connection and fire department apparatus is considered as the approved water supply for the system.

5. A manual-wet sprinkler system shall be supplied with water through the fire department connection using fire department apparatus.

6. The plumbing well, water service and pressure tank shall be of a size and capacity to supply the hydraulically most remote sprinkler with the required waterflow and pressure for a minimum of 10 minutes.

7. A pilot line shall be connected from the manual-wet sprinkler system to the plumbing water supply system at the well pressure tank. The pilot line shall be of a size that is adequate to supply the hydraulically most remote sprinkler in the system.

8. The connection of a manual-wet sprinkler system to a plumbing water supply system shall be protected against backflow conditions in accordance with s. Comm 82.41.

9. The actuation of any sprinkler in the system shall operate the waterflow indicating device, which shall initiate a fire alarm within the building.

10 Upon actuation of the building fire alarm, a fire alarm signal shall be sent automatically to the fire department providing fire protection to the building.

(c) *Installer qualifications.* The installation or alteration of a manual-wet sprinkler system shall be performed by a licensed individual as specified for the installation of an automatic fire sprinkler system under subch. V of ch. Comm 5.

**Comm 62.0907 Fire alarm and detection systems. (1) CONSTRUCTION DOCUMENTS.** The requirements in IBC section 907.1.1 are not included as part of this code.

**(2) SMOKE ALARMS.** These are department informational notes to be used under IBC section 907.2.10 (intro.):

**Note:** Section 101.145 (2) and (3) (a), Stats., address installation of smoke detectors and read as follows: Section 101.145 (2) "A smoke detector required under this section shall be approved by underwriters laboratory."

(3) (a) "The owner of a residential building shall install any smoke detector required under this section according to the directions and specifications of the manufacturer of the smoke detector."

**Note:** Section 101.145 (4), Stats., addresses retroactivity requirements for buildings constructed prior to the effective date of this section. This statute section states "The owner of a residential building the initial construction of which is commenced before, on or after May 23, 1978, shall install and maintain a functional smoke detector in the basement and at the head of any stairway on each floor level of the building and shall install a functional smoke detector either in each sleeping room of each unit or elsewhere in the unit within 6 feet of each sleeping area and not in a kitchen."

**Note:** Under Section 101.145 (1) (b), Stats., "sleeping area" means the area of the [dwelling] unit in which the bedrooms or sleeping rooms are located. Bedrooms or sleeping rooms separated by another use area such as a kitchen or living room are separate sleeping areas but bedrooms or sleeping rooms separated by a bathroom are not separate sleeping areas.

**(3) PROTECTIVE COVERS.** Substitute the following wording for the requirements in IBC section 907.3.5: The building official is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or provide the manual fire alarm box with protection from physical damage. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions.

**Comm 62.0909 Smoke control systems. (1) INSPECTION AND TEST REQUIREMENTS.** Substitute the following wording for the requirements in IBC section 909.3: In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of IBC section 909 shall undergo inspections and tests sufficient to verify the proper

commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved.

(2) **INSPECTIONS FOR SMOKE CONTROL.** Substitute the following wording for the requirements in IBC section 909.18.8: Smoke control systems shall be tested by a qualified agency.

(3) **SCOPE OF TESTING.** Substitute the following wording for the requirements in IBC section 909.18.8.1: Inspections shall be conducted in accordance with the following:

(a) During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.

(b) Prior to occupancy and after sufficient completion for the purposes of pressure-difference testing, flow measurements, and detection and control verification.

(4) **QUALIFICATIONS.** Substitute the following wording for the requirements in IBC section 909.18.8.2: Inspection agencies for smoke control shall have expertise in fire protection engineering, mechanical engineering and certification as air balancers.

(5) **REPORT FILING.** Substitute the following wording for the requirements in IBC section 909.18.8.3.1: A copy of the final report shall be maintained and made available to the building official upon request.

(6) **SYSTEM ACCEPTANCE.** The requirements in IBC section 909.19 are not included as part of this code.

**Comm 62.1003 Egress for outdoor areas.** Substitute the following wording for the requirements, but not the exceptions, in IBC section 1003.2.2.10: Yards, patios, courts and similar outdoor areas accessible to and usable by the building occupants shall be provided with means of egress as required by IBC chapter 10. The occupant load of such outdoor areas shall be based on the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, means of egress requirements for the building shall be based on the sum of the occupant loads of the building plus the outdoor areas.

**Comm 62.1005 Guard tower exiting.** This is an additional department exception to the requirements in IBC section 1005.2.2: Buildings of Group I-3 occupancy that are used as guard towers, provided they are no taller than two stories, have no more than 10 occupants, and have a travel distance of no more than 75 feet.

**Comm 62.1006 Safe dispersal areas.** This is a department rule in addition to the requirements in IBC section 1006.2: On sites where a public way is more than 100 feet from

the building, the exit discharge may lead to a safe dispersal area such as a parking lot or fire access lane. The safe dispersal area may not be less than 50 feet from the building served and shall be large enough to accommodate all occupants of the building, based on at least 3 square feet of area per occupant.

**Comm 62.1101 Accessibility.** Substitute the following wording for the requirements in IBC section 1101.2: Buildings and facilities shall be designed and constructed to be accessible in accordance with this chapter, with ICC/ANSI A117.1 and with the following changes, additions, or omissions to the ICC/ANSI A117.1 requirements:

(1) **DOORS AND DOORWAYS.** This is a department informational note to be used under ICC/ANSI A117.1 section 1003:

**Note:** In accordance with s. 101.132 (2) (a) 4., Stats., a renter of a dwelling unit in covered multifamily housing may request the landlord to install lever door handles on any doors inside the dwelling unit or install single-lever controls on any plumbing fixtures used by the renter. These requests shall be provided by the landlord at no additional cost to the renter.

(2) **OPERABLE CONTROLS.** This is a department rule in addition to the requirements in ICC/ANSI A117.1 section 1003.9: Circuit controls, when provided for use by the tenants, shall comply with ICC/ANSI A117.1 sections 309.2 and 309.3.

**Comm 62.1104 Multilevel buildings and facilities.** Substitute the following wording for the requirements and exceptions in IBC section 1104.4:

(1) **ACCESSIBLE ROUTE.** Except as specified in sub. (2), at least one accessible route shall connect each level, including mezzanines, in all multilevel buildings and facilities.

(2) **EXCEPTIONS.** (a) An accessible route is not required to floors that are above and below accessible levels and that have an aggregate area of not more than 3,000 square feet unless the level contains offices of health care providers (Group B or Group I), government-owned or operated facilities, passenger transportation facilities and airports (Group A-3 or Group B) or multiple tenant facilities of Group M.

(b) In Groups A, I, R and S occupancies and care facilities in accordance with IBC section 1107.4, levels that do not contain accessible elements or other spaces required by IBC section 1107 are not required to be served by an accessible route from an accessible level.

(c) An accessible route is not required to levels located above or below the accessible level in government-owned or operated buildings or facilities which are less than three stories and which are not open to the general public, if the floor level above or below the accessible level has a capacity of no more than 5 persons and is less than 500 square feet in area. The floor level above or below the accessible level that is less than 500 square feet shall have a sign stating a maximum capacity of 5 persons, and the sign shall be placed in a conspicuous location at the main entrance to the floor level.

**Note:** Examples include drawbridge towers and boat traffic towers, lock and dam control stations, press boxes, and train dispatching towers.

**Comm 62.1106 Groups R-2 and R-3.** Substitute the following wording for the requirements in IBC section 1106.2: Two percent, but not less than one, of each type of parking space provided for occupancies in Groups R-2 and R-3, which are required to have Type A or Type B dwelling units, shall be accessible. Where parking is provided within or beneath a building, accessible parking spaces shall also be provided within or beneath the building.

**Comm 62.1107 Accessible dwelling units.** Substitute the following wording for the requirements and exceptions in IBC section 1107.5.4:

(1) NUMBER AND TYPE OF DWELLING UNITS. (a) Except as specified in subs. (2) and (3), Type A and Type B dwelling units complying with ICC/ANSI A117.1 shall be provided in Group R-2 and R-3 occupancies in accordance with all of the following:

1. In buildings containing 3 or more dwelling units, all of the dwelling units shall be Type A or Type B dwelling units.

2. In occupancies of Group R-2 containing more than 20 dwelling units, at least 2 percent, but not less than 1, of the dwelling units shall be a Type A dwelling unit.

(b) For the purposes of calculating the number of Type A and Type B dwelling units, structurally connected buildings as specified in IBC section 3104 and buildings separated by fire walls specified in IBC section 705 shall be considered one structure.

**Note:** Type A and Type B dwelling units specified in IBC section 1107.5.4 have the same meaning as "covered multifamily housing" as defined in s. 101.132 (1) (d), Stats. Section 101.132 (1) (d), Stats., reads as follows: "Covered multifamily housing" means any of the following:

"1. Housing that is first ready for occupancy on or after October 1, 1993, consisting of 3 or more dwelling units if the housing has one or more elevators.

"2. Grade-level dwelling units, in housing without elevators, that are first ready for occupancy on or after October 1, 1993, consisting of 3 or more dwelling units."

(2) EXCEPTIONS. (a) *Buildings without elevator service.* Where no elevator service is provided within a building, only those stories specified in pars. (b) and (c) shall be provided with dwelling units complying with Type A and Type B dwelling units. The minimum number of Type A dwelling units shall be determined in accordance with sub. (1) (a) 2. Where no elevator service is provided in a building, and the ground floor does not contain dwelling units, only those dwelling units located on the lowest floor containing dwelling units shall comply with the requirements of this section.

(b) *One story with type B units.* At least one story containing dwelling units shall be provided with an accessible entrance from the exterior of the building. All entrances on the

accessible story shall be accessible. All dwelling units on that story shall be Type A or Type B dwelling units.

(c) *Additional stories with type B dwelling units.* On all other stories that have a building entrance in proximity to arrival points intended to serve units on that story, as indicated in subd. 1. and 2., all dwelling units shall be Type A or Type B dwelling units. Where no such arrival points are within 50 feet of the entrance, the closest arrival point shall be used unless that arrival point serves the story specified in par. (b).

1. Where the slopes of the undisturbed site measured between the planned entrance and all vehicular or pedestrian arrival points within 50 feet of the planned entrance are 10 percent or less, all dwelling units served by that entrance on that story shall be Type A or Type B dwelling units.

2. Where the slopes of the planned finished grade measured between the entrance and all vehicular or pedestrian arrival points within 50 feet of the planned entrance are 10 percent or less, all dwelling units served by that entrance on that story shall be Type A or Type B dwelling units.

(d) *Multistory dwelling units.* 1. Multistory dwelling units located in buildings without elevator service are not required to comply with the requirements for Type A or Type B dwelling units.

2. Where a multistory dwelling unit is located in a building with elevator service, the dwelling units on the story that is served by the elevator shall comply with the requirements for a Type B dwelling unit. The story of the dwelling unit served by the elevator shall be the primary entry to the unit, shall comply with the requirements for type A or type B dwelling units, and shall have a toilet facility.

(e) *Elevator service to the lowest story with dwelling units.* Where elevator service in a building provides an accessible route only to the lowest story containing dwelling units, only the dwelling units on that story are required to be Type A or Type B units.

(3) **SITE IMPRACTICALITY EXCEPTIONS.** Pursuant to ss. 101.132 (2) (b) 4. and (c) 2., Stats., the owner may request a reduction in accessible dwelling units due to site impracticality through the petition for variance procedures specified in ch. Comm 61. The reduction may not be less than 50 percent of the dwelling units required to be accessible in par. (a).

**Note:** Section 101.132 (2) (b) 4., Stats., reads as follows: "The department may grant a variance or waiver from the requirements under this paragraph relating to exterior accessibility using the standards and procedures under par. (c)."

**Note:** Section 101.132 (2) (c) 2., Stats., reads as follows: "The department may grant a variance from the requirements relating to exterior accessibility under par. (a) 1. or (b), or from administrative rules promulgated under par. (e) 2., if the person designing, constructing or remodeling the housing shows that meeting those requirements is impractical because of the terrain or unusual characteristics of the site. The department shall use a slope analysis of the undisturbed site for covered multifamily housing under par. (a) or the existing site for



remodeling under par. (b) to determine the minimum number of accessible entrances at each site, with a minimum goal of exterior accessibility of 50% of the dwelling units of covered multifamily housing at one site. The department may impose specific conditions in granting a variance to promote exterior accessibility of the housing to persons with disabilities. If the department finds exterior site accessibility is impractical to all dwellings units at a site, it may grant a waiver from the requirements under par. (a) 1. or (b)."

**Comm 62.1108 Unisex toilet and bathing rooms.** Substitute the following wording for the requirements in IBC section 1108.2.1 and the exception:

(1) **GENERAL.** Except as specified in sub. (2), in recreational facilities where separate-sex bathing rooms are provided, an accessible unisex bathing room shall be provided. Fixtures located within unisex toilet and bathing rooms shall be included in determining the number of fixtures provided in an occupancy.

(2) **EXCEPTION.** Where each separate-sex bathing room has only one shower or bathtub fixture, a unisex bathing room is not required.

**Comm 62.1109 Emergency escape and rescue. (1) SIGNS.** Substitute the following wording for the requirements in IBC section 1109.1:

(a) *General.* Except as specified in par (b), required accessible elements shall be identified by the International Symbol of Accessibility at the following locations:

1. Accessible passenger loading zones.
2. Accessible areas of refuge required by IBC section 1103.2.13.5.
3. Accessible rooms where multiple single-user toilet or bathing rooms are clustered at a single location.
4. Accessible entrances where not all entrances are accessible.
5. Accessible check-out aisles where not all aisles are accessible. The sign, where provided, shall be above the check-out aisle in the same location as the check-out aisle number or type of check-out identification.
6. Unisex toilet and bathing rooms.
7. Accessible dressing, fitting, and locker rooms where not all such rooms are accessible.

(b) *Exception.* Accessible parking spaces required in IBC section 1106 shall be identified with a sign complying with the accessible parking sign requirements specified in s. Trans 200.7.

(2) **OTHER SIGNS.** Substitute the following wording and informational note for the introductory paragraph in IBC section 1109.3: Signage providing directional information,

information about functional spaces, or signage indicating special accessibility provisions shall be provided as follows:

**Note:** Refer to s. 101.123, Stats., for requirements for designating smoking areas.

**Comm 62.1203 Interior environment.** Substitute the following wording for the requirements and exception in IBC section 1203.1: Interior spaces intended for human occupancy shall conform to the IMC.

**Comm 62.1205 Court Drainage.** Substitute the following wording and informational note for the requirements in IBC section 1205.3.3: The bottom of every court shall be properly graded and drained.

**Note:** See ch. Comm 82 for requirements for storm water piping.

**Comm 62.1209 Toilet Rooms.** These are department rules in addition to the requirements in IBC section 1209.5:

(1) **PRIVACY AND ACCESS.** Every toilet room shall be enclosed and separated from other areas of the building in a manner that will ensure privacy of the users of the toilet rooms. Restriction of access to toilet rooms, such as by use of key locks or other similar devices, is prohibited, except as provided in sub. (2).

(2) **EXCEPTIONS** (a) Toilet rooms for a service or filling station that are accessed from the exterior may be key locked.

(b) A self-service filling station that has a key- or card-operated fuel dispensing device which can be used while the station is unattended by an employee is not required to have toilet rooms available during the unattended periods.

(c) Single-occupant toilet rooms may have privacy locks.

**Comm 62.1403 Exterior Walls.** These are department rules in addition to the requirements in IBC section 1403.3:

(1) **AIR BARRIERS.** (a) Except as specified in sub. (2), a durable air retarder shall be provided when a building component or assembly separates interior conditioned space from an exterior wall system.

(b) The air retarder shall be located on the interior side of the wall insulation.

(2) **EXCEPTIONS.** An air retarder is not required in the following locations:

(a) Where other approved means to avoid condensation and frost within the wall assembly are provided.

(b) In plain or reinforced concrete exterior walls that are designed and constructed in accordance with IBC chapter 19.

**Note:** Although air retarders are to reduce transmission of water vapor by convection (air movement), and vapor retarders are to reduce transmission of water vapor by diffusion, these functions may be combined in a single membrane. In practice, considerably more moisture is transported by convection than by diffusion.

**Comm 62.1407 Aluminum composite materials. (1) APPROVAL.** Substitute the following wording for the requirements in IBC section 1407.5: Results of approved tests or an engineering analysis shall be made available to the code official upon request to verify compliance with the requirements of IBC chapter 16 for wind loads.

**(2) FIRE-RESISTANCE RATING.** Substitute the following wording for the requirements in IBC section 1407.8: Where ACM systems are used on exterior walls required to have a fire-resistance rating in accordance with IBC section 704, evidence shall be made available to the code official upon request that the required fire-resistance rating is maintained.

**(3) FULL-SCALE TESTS.** Substitute the following wording for the requirements in IBC section 1407.9.4: Results of full-scale fire tests, which reflect an end-use configuration and demonstrate that the ACM system in its final form does not propagate flame over the surface or through the core when exposed on the exterior face to a fire source, shall be made available to the code official upon request, for approval. Such testing shall be performed on the ACM system with the ACM in the maximum thickness intended for use.

**Comm 62.1505 Roof covering classification.** The requirements in Footnote a in IBC Table 1505.1. are not included as part of this code.

**Comm 62.1506 Roof covering materials.** Substitute the following wording for the requirements in IBC section 1506.3: Roof covering materials shall conform to the applicable standards listed in IBC chapter 15.

**Comm 62.1603 Construction documents. (1) LIVE LOADS POSTED.** Substitute the following wording for the requirements in IBC section 1603.3: Where the live loads for which each floor or portion thereof of a commercial or industrial building is or has been designed to exceed 100 pounds per square foot, such design live loads shall be conspicuously posted by the owner in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.

**(2) OCCUPANCY PERMITS.** The requirements in IBC section 1603.4 are not included as part of this code.

**Comm 62.1604 In-situ load tests.** Substitute the following wording for the requirements in IBC section 1604.6: The building official is authorized to require an engineering analysis or a load test, or both, of any construction whenever there is reason to question the safety of the construction for the intended occupancy.

**Comm 62.1607 Truck and bus garages.** Substitute the following wording for the requirements in IBC section 1607.6: Minimum live loads for garages having trucks or buses shall be as specified in IBC Table 1607.6, but shall not be less than 50 pounds per square foot. Actual loads shall be used where they are greater than the loads specified in the table.

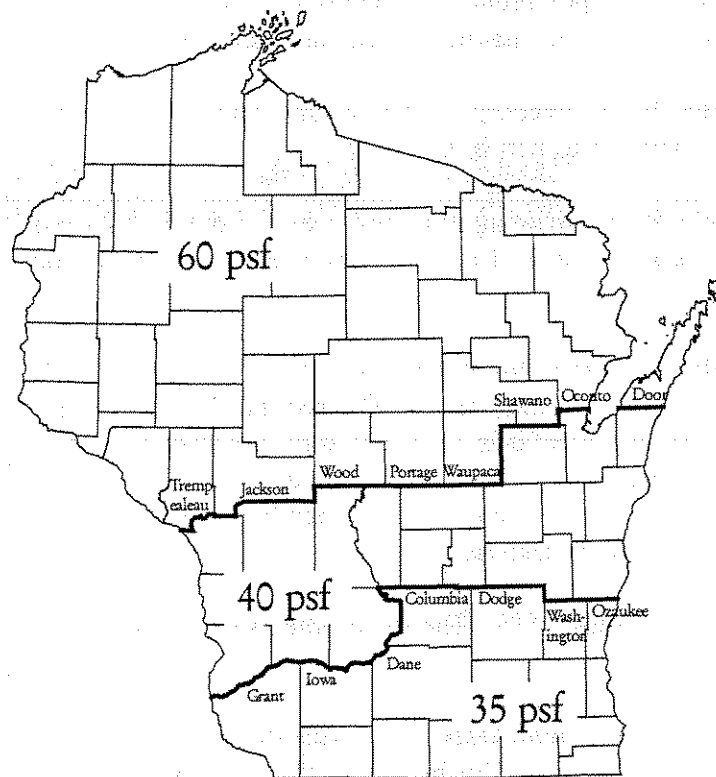
**Comm 62.1608 Snow Loads. (1) GROUND SNOW LOAD.** This is a department alternative to the requirements in IBC section 1608.2:

(a) A ground snow load of 35 pounds per square foot may be assumed for the south zone in Figure 62.16-1.

(b) A ground snow load of 40 pounds per square foot may be assumed for the middle zone in Figure 62.16-1.

(c) A ground snow load of 60 pounds per square foot may be assumed for the north zone in Figure 62.16-1.

**Figure 62.16-1  
Ground Snow Load Zones**



**(2) SNOW EXPOSURE FACTOR.** This is a department alternative to the requirements in IBC section 1608.3.1: A snow exposure factor of 1.0 may be used for any flat roof.

**Comm 62.1609 Determination of wind loads.** This is a department alternative to the requirements in IBC section 1609.1.1: For buildings that meet all of the following conditions, wind loads may be determined by applying only Table 6-2 in ASCE 7-98:

- (1) The total building volume is less than 50,000 cubic feet.
- (2) The building height is less than 30 feet.
- (3) The wind exposure is Category C.
- (4) Roof overhangs are designed to resist an uplift load of at least 30 pounds per square foot.

**Comm 62.1610 Soil lateral loads.** Substitute the following Table for IBC Table 1610.1

**Table 62.1610  
Soil Lateral Load**

Description of Backfill Material <sup>a</sup>	Unified Soil Classification	Active Condition <sup>b</sup> Design Lateral Soil Load psf Per Foot of Depth	At-rest Condition <sup>c</sup> Design Lateral Soil Load psf Per Foot of Depth
Well-graded clean gravels; gravel & sand mixes	GW	30	50
Poorly graded clean gravels; gravel & sand mixes	GP	30	50
Silty gravel, poorly graded gravel & sand mixes	GM	40	60
Clayey gravel, poorly graded gravel & clay mixes	GC	45	65
Well-graded clean sand; gravel & sand mixes	SW	30	50
Poorly graded clean sand; sand & gravel mixes	SP	30	50
Silty sands, poorly graded sand & silt mixtures	SM	45	65
Sand-silt-clay mix with plastic fines	SM-SC	45	65
Clayey sand, poorly graded sand & clay mixes	SC	60	100
Inorganic silts and clayey silts	ML	45	100
Mixture of inorganic silt and clay	ML-CL	60	100
Inorganic clays of medium plasticity	CL	60	100
Organic silt and silty clay, low plasticity	OL	d	d
Inorganic clayey silt, elastic silt	MH	d	d
Inorganic clays of high plasticity	CH	d	d
Organic clays and organic silty clay	OC	d	d

<sup>a</sup>The definition and classification of soil materials shall be in accordance with ASTM D 2487.

<sup>b</sup>Where wall is expected to deflect a minimum of 0.001 times the retained soil height. Design lateral soil loads are for moist conditions for the specified soil at typical specified compacted densities. Actual field conditions shall govern. The lateral pressure of improperly drained, submerged, or saturated soils shall include the buoyant unit soil weight times appropriate  $K_a$ , plus the hydrostatic pressure.  $K_a$  is the coefficient of active earth pressure.

<sup>c</sup>Where wall is expected to deflect less than 0.001 times the retained soil height. Design lateral soil loads are for moist conditions for the specified soil at typical specified compacted densities. Actual field conditions shall

govern. The lateral pressure of improperly drained, submerged, or saturated soils shall include the buoyant unit soil weight times appropriate  $K_o$ , plus the hydrostatic pressure.  $K_o$  is the coefficient of earth pressure at rest.

<sup>d</sup>Unsuitable as backfill material.

**Comm 62.1612 Flood loads.** The requirements in IBC section 1612 are not included as part of this code.

**Comm 62.1614 Earthquake loads – general.** Substitute the following wording for the requirements, but not the exceptions, in IBC section 1614.1:

(1) Every structure, and portion thereof, shall as a minimum, be designed and constructed to resist the effects of earthquake motions and assigned a Seismic Design Category as set forth in IBC section 1616.3. Structures determined to be in Seismic Design Category A, and the following structures, need only comply with the requirements in IBC section 1616.4.

(a) Structures north of the 4% g contour line in IBC Figure 1615(2).

(b) Structures south of the 4% g contour line in IBC Figure 1615(2) that have a site class of A to C in IBC Table 1615.1.1.

(c) Structures south of the 4% g contour line in IBC Figure 1615(2) which are classified as Category IV in IBC Table 1604.5 and which have a site class of D, E or F in IBC Table 1615.1.1.

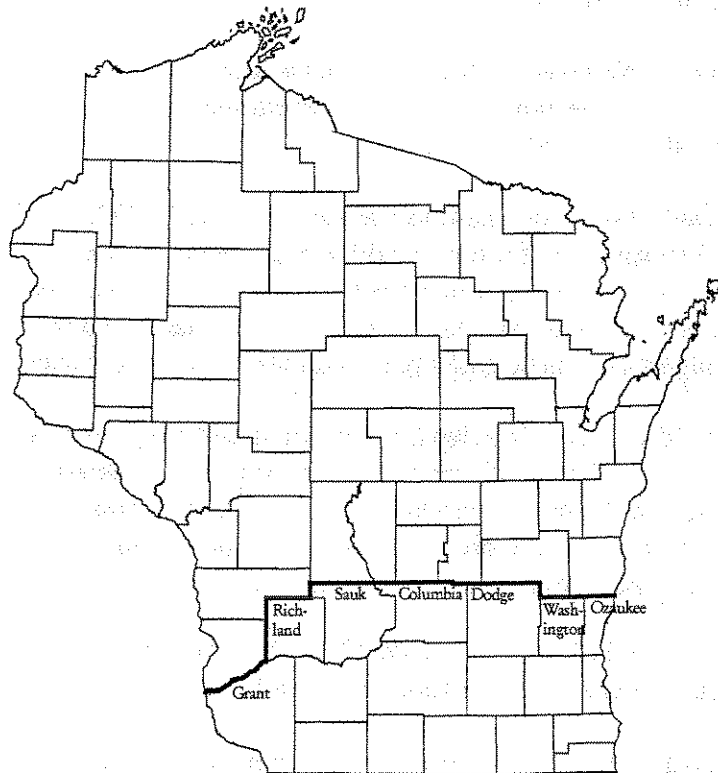
(2) Structures south of the 4% g contour line in IBC Figure 1615(2) which are classified as Category I, II or III in IBC Table 1604.5 and which have a site class of D, E or F in IBC Table 1615.1.1 shall comply with the applicable design requirements in IBC sections 1616 through 1623.

**Comm 62.1615 Earthquake loads – site ground motion.** These are department alternatives to the contour lines shown in IBC Figures 1615(1) and (2):

(1) The contour line in IBC Figure 1615(1) that extends through southern Rock, Walworth, and Kenosha Counties may be ignored.

(2) The 4% g contour line in IBC Figure 1615(2) may be applied as occurring in the location shown in Figure 62.16-2.

**Figure 62.16-2**  
**Alternate 4% g Contour Location**



**Comm 62.1621 Component certification.** The requirements in IBC section 1621.3.5 are not included as part of this code.

**Comm 62.1700 Structural tests and special inspections.** The requirements in IBC chapter 17, except for the requirements in IBC section 1715, are not included as part of this code.

**Comm 62.1802 Foundation and soil investigation. (1) GENERAL.** Substitute the following wording for the requirements in IBC section 1802.1: Foundation and soils investigations shall be conducted in conformance with IBC sections 1802.2 through 1802.6.

**(2) WHERE REQUIRED.** Substitute the following wording for the requirements, but not the exception, in IBC section 1802.2: The owner or applicant shall make a foundation and soils investigation available to the building official, upon request, where required in IBC sections 1802.2.1 through 1802.2.7.

**(3) QUESTIONABLE SOIL.** Substitute the following wording for the requirements in IBC section 1802.2.1: Where the safe-sustaining power of the soil is in doubt, or where a load-bearing value superior to that specified in this code is claimed, an investigation complying with the provisions of IBC sections 1802.4 through 1802.6 shall be made.

(4) **EXPANSIVE SOILS.** Substitute the following wording for the requirements in IBC section 1802.2.2: In areas likely to have expansive soil, soil tests shall be conducted to determine where such soils do exist.

**Comm 62.1805 Alternate setback and clearance.** Substitute the following wording for the requirements in IBC section 1805.3.5: Alternate setbacks and clearances are permitted, subject to the approval of the building official.

**Comm 62.1807 Pier and pile foundations (1) DEFINITION OF NEUTRAL PLANE.** This is a department definition in addition to the definitions in IBC section 1807.1: **NEUTRAL PLANE.** A pile's neutral plane is the level at which drag load, accumulated from the top down, added to the long-term static service load, equals the upward acting shaft resistance accumulated from the bottom up, added to the pile's toe resistance.

(2) **DOWNDRAG.** This is a department rule in addition to the requirements in IBC section 1807.2.1: Investigations and reports for pier or pile foundations shall include analysis of whether downdrag is anticipated. Where downdrag is anticipated, the report shall include a determination of the position of the pile's neutral plane, an estimate of the soil settlement at the neutral plane, and a determination of the maximum load at the neutral plane.

(3) **DETERMINATION OF ALLOWABLE LOADS.** Substitute the following wording for the requirements in IBC section 1807.2.8.1:

(a) The allowable axial and lateral loads on piers or piles shall be determined by an approved formula, load tests or static analysis.

(b) The factor of safety to be used for pier or pile design shall depend on the extent of field testing performed to verify capacity.

(c) If the ultimate capacity is assessed solely by static analysis, a minimum factor of safety of 3.0 shall be applied to the ultimate capacity to determine allowable load capacity.

(d) If only static analysis and dynamic field testing are performed, a minimum factor of safety of 2.5 shall be applied to the ultimate capacity to determine load capacity.

(e) If one or more static load tests are performed, in addition to the analysis and tests described above, a minimum factor of safety of 2.0 shall be applied to the ultimate allowable capacity.

(f) A minimum factor of safety of 2.0 shall be used for occupiable structures provided that all of the conditions in subds. 1 to 5 are met. A minimum factor of safety of 1.5 may be used for non-occupiable structures, provided that the deep foundations are required only to control settlement, and it can be demonstrated that deep foundations are not required to prevent a bearing capacity failure.



(4) **LOAD TESTS.** This is a department alternative to the requirements in IBC section 1807.2.8.3: The ultimate capacity of the pile shall be defined as the load at which the average pile head deflection is defined by the following equation:

$$\delta = (P/AE) + 0.15'' + (B/120)$$

Where:

$\delta$  = average pile head deflection, inches

P = applied load, pounds

l = pile length, inches

A = transformed pile area of pile (to steel)

E = modulus of elasticity (of steel)

B = outside diameter (or width) of pile, inches

The calculation shall be predicated on an assumed end-bearing condition.

(5) **PILES IN SUBSIDING AREAS.** Substitute the following wording for the requirements in IBC section 1807.2.11:

(a) Where piles are driven through subsiding fills or other subsiding strata and derive support from underlying firmer materials, consideration shall be given to the downward drag load that may be imposed on the piles by the subsiding upper strata.

(b) Where the influence of subsiding fills is considered as imposing loads on the pile, the allowable stresses specified in this chapter are permitted to be increased where satisfactory substantiating data are submitted.

(c) The position of the pile's neutral plane shall be determined, and the settlement of the soil at the level of the neutral plane shall be estimated. The maximum load in the pile, which occurs at the neutral plane, shall be determined.

**Comm 62.1808 Driven pile foundations.** Substitute the following wording for the requirements in IBC section 1808.1.3: Any sudden decrease in driving resistance of an end-supported timber pile shall be investigated with regard to the possibility of damage. If the sudden decrease in driving resistance cannot be correlated to load-bearing data, the pile shall be removed for inspection or rejected, or shall be assigned a reduced capacity commensurate with the loss of end-bearing in lieu of removing or rejecting the pile.

**Comm 62.1809 Concrete pile foundations.** (1) **DIMENSIONS FOR DRILLED OR AUGERED UNCASSED PILES.** Substitute the following wording for the exception in IBC section 1809.3.2: The length of the pile is permitted to exceed 30 times the diameter, provided that the design and installation of the pile foundation is under the direct supervision of a registered design professional knowledgeable in the field of soil mechanics and pile foundations.

(2) **DIMENSIONS FOR DRIVEN UNCASSED PILES.** Substitute the following wording for the exception in IBC section 1809.4.2: The length of the pile is permitted to exceed 30 times the diameter, provided that the design and installation of the pile foundation is under the direct supervision of a registered design professional knowledgeable in the field of soil mechanics and pile foundations.

**Comm 62.1914 Shotcrete clearance.** The exception in IBC section 1914.4.2 is not included as part of this code.

**Comm 62.1916 Column approvals.** Substitute the following wording for the requirements in IBC section 1916.6.: Details of column connections and splices shall be shop-fabricated by approved methods and testing. Shop-fabricated concrete-filled pipe columns shall be inspected by a representative of the manufacturer at the plant.

**Comm 62.2101 Masonry construction materials. (1) CONSTRUCTION DOCUMENTS.** The requirements in IBC section 2101.3 are not included as part of this code.

(2) **FIREPLACE DRAWINGS.** The requirements in IBC section 2101.3.1 are not included as part of this code.

**Comm 62.2103 Cast stone masonry units.** These are department rules in addition to the requirements in IBC section 2103.3:

(1) Cast stone masonry units covered under this category are homogeneous or faced, dry cast concrete products other than conventional concrete masonry units (brick or block), but of similar size.

(2) Cast stone masonry units shall be made with portland cement, water and suitable mineral aggregates, with or without admixtures, and reinforced if required.

(3) Cast stone masonry units shall have a minimum compressive strength of 6500 psi and a maximum water absorption of 6% when tested as 2- x 2-inch cylinders or cubes.

**Comm 62.2105 Masonry quality.** The requirements in IBC section 2105.1 are not included as part of this code.

**Comm 62.2108 Quality assurance provision.** The requirements in IBC section 2108.2 are not included as part of this code.

**Comm 62.2109 Empirical design of masonry. (1) BEARING ON MASONRY.** This is a department rule in addition to the requirements in IBC section 2109.1: Lintels shall be considered structural members and shall be designed in accordance with the applicable provisions of IBC chapter 16.

(2) **OPENINGS.** This is a department rule in addition to the requirements in IBC section 2109.4.1: Unless evidence is provided to show that openings do not cause lateral

stability and stress requirements to be exceeded, the amount of openings in a masonry wall shall not exceed the limits set forth in Table 62.2109-1.

**Table 62.2109-1**  
**Maximum Ratio of Laterally Unsupported Height or Length to Thickness for Exterior Walls With Openings<sup>†</sup>**

Type of Masonry	Percent of Openings at Any Horizontal Plane of Wall			
	20	40	60	Over 60
Single wythe walls of solid or grouted walls of solid units	20	16	12	Submit design calculations
All other masonry	18	14	10	

<sup>†</sup>The percentage of openings shall be calculated for each 100 lineal feet of wall or portion thereof at any horizontal plane of wall.

(3) **JOINTING.** These are department rules in addition to the requirements in IBC section 2109:

(a) *Expansion and shrinkage.* Joints commensurate with lateral stability requirements shall be installed in all exterior masonry to allow for expected growth of clay products and shrinkage of concrete products.

(b) *Vertical jointing.* Vertical movement joints shall be provided at a spacing in compliance with Table 62.2109-2.

**Table 62.2109-2**  
**Maximum Spacing Of Exterior Masonry Movement Joints Between Unrestrained Ends<sup>†</sup> (Feet)**

Loading Conditions	Type of Material	Openings (Percent of Total Wall Area)			
		0 to 20		More than 20	
		Joint to Joint	Joint to Corner	Joint to Joint	Joint to Corner
Load-bearing	Clay units	140	70	100	50
	Concrete units	60	30	40	20
Nonload-bearing walls	Clay units	100	50	60	40
	Concrete units	50	25	30	20

<sup>†</sup>Jointing required is a minimum and is not intended to prevent minor cracking. The distances given for maximum spacing of joints are for a single wall plane. For composite walls, the maximum spacing of joints shall be governed by the masonry material type used in the exterior wythe.

**Note:** To accomplish the intended purpose, joints should be located at critical locations, such as changes in building heights, changes in framing systems, columns built into exterior walls, major wall openings, and changes in materials.

(c) *Horizontal jointing.* Where supports such as shelf angles or plates are required to carry the weight of masonry above the foundation level, a pressure-relieving joint shall be provided between the structural support and any masonry that occurs below this level. The joint width shall be such as to prevent any load being transmitted from the support to any

element directly below. All mortar and rigid materials shall be kept out of this joint. This type of joint shall be provided at all such supports in a concrete frame structure where clay masonry is exposed to the weather.

**Comm 62.2208 Welding of structural steel.** Substitute the following wording and informational note for the requirements in IBC section 2208.1: The details of design, workmanship and technique for welding, inspection of welding, and qualifications of welding operators shall conform to the requirements of the specifications listed in IBC sections 2204, 2205, 2206 and 2207.

**Note:** The rules pertaining to registration of structural welders are specified in ch. Comm 5.

**Comm 62.2303 Truss design drawings.** The requirements in IBC section 2303.4.1 are not included as part of this code.

**Comm 62.2304 Girder ends.** This is a department rule in addition to the requirements in IBC section 2304.11.2.4: A moisture barrier shall be provided between an untreated or nondurable wood girder and an exterior masonry or concrete bearing surface.

**Comm 62.2503 Gypsum board and plaster.** The requirements in IBC section 2503.1 are not included as part of this code.

**Comm 62.2900 Additional criteria for toilets.** These are department rules in addition to the requirements in IBC chapter 29:

(1) **MAINTENANCE.** Every toilet room and every part thereof shall be kept clean and in good repair.

(2) **SERVICE SINK.** In every building where a service sink is required by Table 2902.1, the service sink shall be located in a service closet or room that is provided with the supplies necessary for the sanitary upkeep of the toilet rooms.

(3) **PERMANENT AND PORTABLE OUTDOOR TOILETS.** (a) *General.* Where local conditions or situations make it impractical to install a private onsite wastewater treatment system, permanent or portable outdoor toilets, or other sanitation systems or devices as described in ch. Comm 91, may be used, except as specified in par. (b).

**Note:** See ch. Comm 83 for detailed requirements for private onsite wastewater treatment systems.

(b) *Exception.* For places of employment for more than 10 persons, schools larger than 2 rooms, and apartment houses, water-flush toilets shall be provided, unless outdoor toilets or other sanitation systems or devices are permitted in writing by the department.

(c) *Permanent outdoor toilets.* Permanent outdoor toilets, consisting of composting toilet systems, incinerating toilets, or privies shall comply with ch. Comm 91, s. Comm 62.1209, and this section.

1. A permanent outdoor toilet shall be provided with a suitable approach, such as a concrete, gravel, or cinder walk.

2. All windows, ventilators, and other openings for permanent outdoor toilets shall be screened to prevent the entrance of flies, and all doors shall be self-closing.

(d) *Portable outdoor toilets.* 1. No portable outdoor toilet may be erected or maintained within 50 feet of any well; within 10 feet of the line of any street or public thoroughfare, unless vehicular traffic has been detoured while the portable toilet is in use; within 5 feet of the property line between premises; or within 25 feet of a door, window, or other outdoor opening of any building.

2. A portable outdoor toilet shall be stabilized to prevent it from tipping over.

3. A portable outdoor toilet shall be located with an approach such that access is unobstructed and free of brush, debris, and standing water.

**Note:** Chapter Comm 91 contains requirements for storage chambers of portable toilets.

**Note:** Chapters NR 113 and NR 114 contain requirements for servicing portable toilets.

(4) **ENCLOSURE OF FIXTURES.** (a) Water closets and urinals within a toilet room shall be arranged to ensure privacy. Except as provided in par. (b), each water closet shall occupy a separate compartment, with walls or partitions and a door enclosing the fixtures to ensure privacy. Urinals shall be placed against walls at least 6 feet 8 inches high and arranged individually with or without partitions.

(b) 1. Water closet compartments may be omitted in a single-occupant toilet room having a door with a privacy lock.

2. Toilet rooms located in day-care and child-care facilities and containing two or more water closets may have one water closet without an enclosing compartment.

**Comm 62.2902 Plumbing fixtures. (1) MINIMUM NUMBER OF FIXTURES.** (a) *Exception.* This is a department exception to the requirements in IBC section 2902.1: Where more than one water closet is required for males, urinals may be substituted for up to 50 percent of the required number of water closets.

(b) *Additional fixtures.* These are department informational notes to be used under IBC sections 2902.1 and 2902.2:

**Note:** Additional plumbing fixtures may be required for employees by the U.S. department of labor, occupational safety and health act (OSHA) regulations.

**Note:** Additional plumbing fixtures may be required by the department of health and family services for restaurants, mobile home parks, camping grounds, camping resorts, recreational camps and educational camps.

**Note:** Chapter Comm 90 also has requirements for minimum numbers of sanitary fixtures for a public swimming pool, as based on the pool area. For some buildings, the minimum number of sanitary fixtures determined in that manner may be larger than the minimum number determined in accordance with this section. Compliance with this section does not relieve an owner from complying with ch. Comm 90.

(2) **LAVATORIES FOR TOILET ROOMS.** This is a department rule in addition to the requirements in IBC section 2902.1: At least one lavatory shall be provided in each toilet room or in a sex-designated lounge adjacent to the toilet room. If a multiple-use lavatory is provided, 24 lineal inches of wash sink, or 20 inches measured along the edge of a circular basin will be considered equivalent to one lavatory.

(3) **SIGNAGE FOR TOILET ROOMS.** This is a department rule in addition to the requirements in IBC section 2902.2: Toilet rooms shall be designated by legible signs.

(4) **PUBLIC FACILITIES.** This is a department alternative to the requirements in IBC section 2902.6: Toilet rooms may be omitted in a small retail or mercantile building where all of the following requirements are met:

(a) No more than 25 occupants are accommodated.

(b) Other restrooms are conveniently located and available to the patrons and employees during all hours of operation.

(c) The omission is approved in writing by the local unit of government.

(d) A copy of the written approval from the local unit of government is provided to the department or its authorized representative upon request.

(5) **LOCATION OF RESTAURANT TOILET ROOMS.** This is a department informational note to be used under IBC section 2902.6:

**Note:** Additional location requirements for restaurant toilet rooms may be applied by the department of health and family services.

(6) **MERCANTILE TOILET ROOMS.** This is a department rule in addition to the requirements in IBC section 2902.6: Toilet rooms for customers in business and mercantile occupancies shall be directly accessible to the customers, rather than accessible through employe work areas.

(7) **PAY FACILITIES.** Substitute the following wording for the requirements in IBC section 2902.6.2: All toilet facilities shall be free of charge.

**Note:** Section 146.085, Stats., prohibits charging a fee for the use of toilet facilities and imposes a fine of \$10 to \$50 for violations.

**Comm 62.3001 Elevators. (1) SCOPE.** Substitute the following wording for the requirements in IBC section 3001.1: This chapter governs the design, construction, installation, alteration and repair of elevators, dumbwaiters, escalators, moving walks and their components.

(2) REFERENCED STANDARDS. Substitute the following wording for the requirements in IBC section 3001.2: Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators, dumbwaiters, escalators, moving walks and their components shall comply with ch. Comm 18.

(3) CHANGE IN USE. Substitute the following wording for the requirements in IBC section 3001.4: A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with ch. Comm 18.

**Comm 62.3004 Hoistways.** (1) VENTING. This is a department rule in addition to the requirements in IBC section 3004.3: A ventilation opening in a hoistway wall, where provided, shall have guards securely anchored to the supporting structure inside the hoistway. The guards shall consist of a wire-mesh screen of at least 0.0915-inch diameter steel wire with openings that will reject a ball one-inch in diameter, or expanded metal screen of equivalent strength and open area.

(2) PLUMBING AND MECHANICAL SYSTEMS. Substitute the following wording for the exception in IBC section 3004.5: Floor drains, sumps and sump pumps shall be permitted at the base of the shaft provided they are directly connected to the storm or clear water drain system. Connection to a sanitary system is prohibited.

**Comm 62.3006 Machine rooms.** (1) PRESSURIZATION. This is a department exception to the requirements in IBC section 3006.3: An elevator machine room which serves a pressurized elevator hoistway and which is not directly connected to the pressurized elevator shaft is not required to be pressurized.

(2) PLUMBING SYSTEMS. Substitute the following wording for the requirements in IBC section 3006.6: Plumbing systems not used in connection with the operation of the elevator may not be located in elevator equipment rooms.

**Comm 62.3100 Assembly seating facilities.** This is a department rule in addition to the requirements in IBC chapter 31: Every bleacher, grandstand, or other assembly seating facility that is intended primarily to support persons for the purpose of spectator seating shall be inspected at least annually. Any loose connections and any defective or broken members shall be repaired before the facility is used. All repairs and maintenance shall conform with this code.

**Comm 62.3102 Blower equipment.** Substitute the following wording for exception 2 in IBC section 3102.8.1.2: Blowers shall be provided with inlet screens, belt guards and other protective devices as required to provide protection from injury.

**Comm 62.3103 Temporary structures.** This is a department rule in addition to the requirements in IBC section 3103: Under IBC sections 3103.1.1 and 3103.2, the requirements for permits and construction documents for temporary structures are at the option of the local code official.

**Comm 62.3104 Pedestrian walkways and tunnels. (1) SEPARATE STRUCTURES.** Substitute the following wording for the requirements and exception in IBC section 3104.2: Buildings that are connected in accordance with IBC section 3104 shall be considered to be separate structures.

**(2) CONTENTS.** The requirements in IBC section 3104.4 are not included as part of this code.

**Comm 62.3109 Swimming pool enclosures.** Substitute the following informational note for the requirements in IBC section 3109.

**Note:** See ch. Comm 90 for requirements for swimming pool enclosures.

**Comm 62.3200 Encroachments into the public right-of-way.** The requirements in IBC chapter 32 are not included as part of this code.

**Comm 62.3300 Safeguards during construction. (1) GENERAL.** Except for the requirements in IBC sections 3302.1 and 3303.5, the requirements in IBC chapter 33 are not included as part of this code.

**(2) PROTECTION OF ADJOINING PROPERTY.** This is a department informational note to be used under IBC chapter 33:

**Note:** Sections 101.111 (1) to (6), Stats., read as follows: "(1) DEFINITION. In this section 'excavator' means any owner of an interest in land making or causing to be made an excavation.

"(2) CAVE-IN-PREVENTION. Any excavator shall protect the excavation site in such a manner so as to prevent the soil of adjoining property from caving in or settling.

"(3) LIABILITY FOR UNDERPINNING AND FOUNDATION EXTENSIONS. (a) If the excavation is made to a depth of 12 feet or less below grade, the excavator may not be held liable for the expense of any necessary underpinning or extension of the foundations of buildings on adjoining properties.

"(b) If the excavation is made to a depth in excess of 12 feet below grade, the excavator shall be liable for the expense of any necessary underpinning or extension of the foundations of any adjoining buildings below the depth of 12 feet below grade. The owners of adjoining buildings shall be liable for the expense of any necessary underpinning or extension of the foundations of their buildings to the depth of 12 feet below grade.

"(4) NOTICE. Unless waived by adjoining owners, at least 30 days prior to commencing the excavation the excavator shall notify, in writing, all owners of adjoining buildings of his or her intention to excavate. The notice shall state that adjoining buildings may require permanent protection. The owners of adjoining property shall have access to the excavation site for the purpose of protecting their buildings.

"(5) EMPLOYEES NOT LIABLE. No worker who is an employe of an excavator may be held liable for his or her employer's failure to comply with this section.

"(6) FAILURE TO COMPLY; INJUNCTION. If any excavator fails to comply with this section, any aggrieved person may commence an action to obtain an order under ch. 813 directing such excavator to comply with this section and restraining the excavator from further violation thereof. If the aggrieved person prevails in



the action, he or she shall be reimbursed for all his or her costs and disbursements together with such actual attorney fees as may be approved by the court."

**Comm 62.3400 Existing structures. (1) EXCLUSIONS.** The requirements in IBC sections 3401 to 3405, 3407 and 3409 are not included as part of this code.

**(2) COMMUNITY-BASED RESIDENTIAL FACILITIES SERVING 20 OR FEWER UNRELATED RESIDENTS.** This is a department rule in addition to the requirements in IBC chapter 34: Where an existing building or portion thereof is converted to a community-based residential facility serving 20 or fewer residents who are not related to the operator or administrator, the building or portion thereof shall be classified as Group R-4. The building or portion thereof shall comply with the provisions of this code that are applicable to a Group R-4 occupancy.

**Comm 62.3406 Historic buildings.** Substitute the following wording for the requirements in IBC section 3406.1: The construction, repair, alteration, addition, restoration, movement, and change of occupancy of historic structures shall comply with ch. Comm 70.

**Comm 62.3408 Accessibility for existing buildings. (1) SCOPE.** Substitute the following wording for the requirements and exception in IBC section 3408.1:

(a) *General.* Except as specified in par. (b), the requirements in IBC sections 3408.2 to 3408.7.14 apply to maintenance, change of occupancy, additions and alterations to existing buildings, including those identified as historic buildings.

(b) *Exception.* When dwelling units are remodeled in housing with 3 or more dwelling units, the dwelling units shall comply with sub. (2). The term "remodeled" has the meaning given in s. 101.132 (1) (h), Stats and the term "housing" has the meaning given in s. 106.50 (1) (L), Stats.

**Note:** Under section 101.132 (1) (h), Stats., "remodel" means to substantially improve, alter, extend or otherwise change the structure of a building or change the location of exits, but does not include maintenance, redecoration, reroofing or alteration of mechanical or electrical systems.

**Note:** Under section 106.50 (1) (L), Stats., "housing" means any improved property, or any portion thereof, including a mobile home as defined in s. 66.0435 (1) (d) or condominium, that is used or occupied, or is intended, arranged or designed to be used or occupied, as a home or residence. "Housing" includes any vacant land that is offered for sale or rent for the construction or location thereon of any building, structure or portion thereof that is used or occupied, or is intended, arranged or designed to be used or occupied, as a home or residence.

**(2) ACCESSIBILITY REQUIREMENTS FOR REMODELED HOUSING.** These are department rules in addition to the requirements in IBC section 3408.5:

(a) *Remodeled housing.* When housing with 3 or more dwelling units is remodeled, the remodeling percentages specified in s. 101.132 (2) (b), Stats., shall be applied, and the remodeling shall comply with the applicable portions of IBC chapter 11.

**Note:** Section 101.132 (2) (b), Stats., reads as follows: "1. If more than 50% of the interior square footage of any housing with 3 or more dwelling units is to be remodeled, the entire housing shall conform to the standards in par. (a), regardless of when the housing was first intended for occupancy.

"2. If 25% to 50% of the interior square footage of any housing with 3 or more dwelling units is to be remodeled, that part of the housing that is to be remodeled shall conform to the standards in par. (a), regardless of when the housing was first intended for occupancy.

"3. If less than 25% of the interior square footage of any housing with 3 or more dwelling units is to be remodeled, the remodeling is not subject to the standards in par. (a) unless the alteration involves work on doors, entrances, exits or toilet rooms, in which case the doors, entrances, exits or toilet rooms shall conform to the standards in par. (a) regardless of when the housing was first intended for occupancy."

(b) *Remodeled buildings with multiple occupancies.* 1. Except as specified in subd. 2., if a building that has multiple occupancies including housing with 3 or more dwelling units is remodeled, an accessible route shall be provided to the remodeled dwelling units.

2. An accessible route to the remodeled area is not required, if the cost to provide the accessible route exceeds 20 percent of the cost of the alteration, as specified in IBC section 3408.6.

(3) **PLATFORM LIFTS.** Substitute the following wording for the requirements in IBC section 3408.7.2: Platform lifts complying with ch. Comm 18 shall be permitted as a component of an accessible route.

**Comm 62.3500 Referenced standards.** (1) Substitute the following NFPA standards for the corresponding standards listed in IBC chapter 35: NFPA 13-1999, 13R-1999, and 72-1999.

(2) This is a department rule in addition to the requirements in IBC chapter 35: The following NFPA standard is hereby incorporated by reference into this code: NFPA 750-1996.

**Comm 62.3600 Appendices.** (1) **EXCLUSIONS.** The provisions in IBC Appendices A, B, and D to J are not included as part of this code.

(2) **APPENDIX C.** The provisions in IBC Appendix C apply to Group U agricultural buildings, as described in IBC section C101.1, that are not exempt from this code as outlined in ss. Comm 61.01 and Comm 61.02 (2) and (3).

File ref: IBC/Comm 62C Ir

## Chapter Comm 63 ENERGY CONSERVATION

### Subchapter I — Purpose, Scope, Application and Compliance

**Comm 63.0001 Purpose.** The purpose of this chapter is to regulate the design of building envelopes for adequate thermal resistance and low air leakage and the design and selection of mechanical, electrical, service water-heating and illumination systems and equipment which will enable effective use of energy in new building construction.

**Comm 63.0002 Scope. (1) GENERAL.** The scope of this chapter is as specified in s. Comm 61.02, except as exempted in sub. (2).

**(2) EXEMPT BUILDINGS AND STRUCTURES.** The following buildings or portions of buildings shall be exempt from this chapter.

(a) Buildings, or portions thereof, without space heating or cooling, service water heating, or illumination are exempt from the requirements of this chapter that apply to those systems.

(b) Buildings and structures, or portions thereof separated by building envelope assemblies from the remainder of the building, that have a peak design rate of energy usage less than  $3.4 \text{ Btu/h}\cdot\text{ft}^2$  of floor area for all purposes are exempt.

**Comm 63.0003 Application. (1) GENERAL.** This chapter shall be applied as specified in s. Comm 61.03 and as modified in subs. (2) to (5).

**(2) ADDITIONS. (a) Building Envelope.** Additions to existing buildings or structures may be made without the existing building or structure having to comply with the building envelope requirements of this chapter, but the addition envelope shall comply with this chapter.

(b) *HVAC systems.* Where an existing HVAC system serves both an existing building and a proposed addition, any portion of the HVAC system or equipment that is altered shall comply with this chapter.

(c) *Lighting systems.* Lighting systems installed in a new addition or in conjunction with an increase of floor area, such as the addition of a mezzanine, shall comply with this chapter.

**(3) ALTERATIONS. (a) Building envelope.** Alterations to the building envelope shall comply with one of the following:

1. The alteration shall not increase the rate of heat loss through the portion of the building envelope containing the alteration.

2. The alteration shall not increase the annual energy use from heat gain or loss through the entire building envelope.

3. The building envelope shall be brought into compliance with the requirements of this chapter.

(b) *HVAC systems.* Rooftop fan systems that replace existing fan systems shall be provided with economizers that comply with this chapter's requirements for new construction.

(c) *Lighting systems.* 1. When alterations to an existing lighting system increase the connected interior lighting load of the building or replace more than 50% of the lighting fixtures, the interior lighting system shall comply with ss. Comm 63.1044 to 63.1049.

2. When alterations to an existing lighting system increase the connected exterior lighting load or replace more than 50% of the lighting fixtures, the entire exterior lighting system shall comply with ss. Comm 63.1041 to 63.1043.

3. a. Except as specified in subpar. b., alterations to controls shall comply with ss. Comm 63.1050 and 63.1051.

b. Shut-off lighting controls in s. Comm 63.1050 (4) are not required in contiguous altered spaces of less than 5,000 square feet unless shut-off controls were required by the building code at the time of the original lighting design or if an exception to s. Comm 63.1050 (4) (b) is no longer applicable.

(4) **CHANGE IN OCCUPANCY.** (a) Any change in the occupancy classification of a building or structure that would increase the required minimum inside temperature as specified in Table 64.0403 shall comply with the requirements of this chapter.

(b) Any change in a building or structure that would result in an increase in demand for either fossil fuel or electrical energy supply shall comply with this chapter.

(5) **MIXED RESIDENTIAL AND COMMERCIAL OCCUPANCY.** (a) *General.* Except as specified in par. (b), when a building houses both a residential and a commercial occupancy, each portion of the building shall conform to the requirements for the occupancy, residential or commercial, housed therein. Where minor accessory uses do not occupy more than 10 percent of the area of any floor of a building, the major use shall determine whether the building is a residential or commercial building.

(b) *Exception.* All buildings with a height of four or more stories above grade shall be considered a commercial building for purposes of this chapter.

**Comm 63.0004 Compliance.** (1) **GENERAL.** All buildings shall comply with the International Energy Conservation Code (IECC), with the changes, additions or omissions specified in subch. II, and with the compliance approaches specified in sub. (2) for residential building and sub. (3) for commercial buildings.

(2) RESIDENTIAL BUILDINGS. (a) Except as specified in par. (b), for residential buildings one of the following approaches for compliance shall be used:

1. A systems approach for the entire building and its energy-using subsystems, which uses renewable sources as specified in IECC chapter 4.

2. An approach based on performance of individual components of the building envelope as specified in IECC chapter 5.

3. An approach based on performance of the total building envelope specified in IECC chapter 5.

4. An approach based on acceptable practice for each envelope component specified in IECC chapter 5.

5. An approach by prescriptive specification for individual components of the building envelope specified in IECC chapter 5.

6. An approach based on simplified, prescriptive specification specified in IECC chapter 6 when the glazing areas does not exceed 25 percent of the gross areas of exterior walls.

(b) This chapter does not apply to type A-1 residential buildings as defined in IECC section 201.1 as one and two family dwellings.

(3) COMMERCIAL BUILDINGS. For commercial buildings one of the following approaches for compliance shall be used:

(a) A prescriptive, system, or energy cost budget approach specified in subch. III.

(b) A prescriptive or performance option specified in IECC chapter 8.

### **Subchapter II-Changes, Additions or Omissions to the International Energy Conservation Code (IECC)**

**Comm 63.0100 Changes, additions or omissions to IECC.** Changes, additions or omissions to the IECC are specified in this subchapter and are rules of the department and are not requirements of the IECC.

**Note:** This subchapter is numbered to correspond to the numbering used within the model code; i.e. s. Comm 63.0101 refers to section IECC 101. With a few exceptions, subchapter III of this chapter is numbered to correspond to the numbering in the previous energy requirements of Comm 63; i.e., s. Comm 63.1005 was previously Comm 63.05.

**Note:** Copies of the International Energy Conservation Code are on file in the offices of the department, the secretary of state and the revisor of statutes.

**Note:** Copies of the International Energy Conservation Code can be obtained from organizations as specified in s. Comm 61.05.

**Note:** Copies of department forms are available from the Safety and Buildings Division, P.O. Box 7162, Madison, WI 53707-7162; telephone (608) 266-3151 or TTY (608) 264-877; or on the Commerce webpage at: [www.commerce.state.wi.us](http://www.commerce.state.wi.us)

**Comm 63.0101 Scope and general requirements.** Substitute the following wording for the requirements in IECC section 101: Requirements relating to purpose, scope and application are contained in subch. I.

**Comm 63.0102 Materials, systems and equipment.** These are department rules in addition to the requirements specified in IECC section 102:

**(1) 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 or egress by the physically disabled required under s. 101.13 (2). No person may construct a heated exterior pedestrian traffic surface. The department or any city, village, town or county is prohibited from approving any plan under s. 101.12 which includes such heated surface. The department shall order any existing heated exterior pedestrian traffic surface in operation to be shut off. This section does not apply to any inpatient health care facility as defined in s. 50.135 (1), or community-based residential facility, as defined in s. 50.01 (1g)."

**(2) MATERIAL PROPERTIES.** Thermal properties, performance of building envelope sections and components and heat transfer properties shall be determined in accordance with s. Comm 63.1018.

**Comm 63.0103 Alternate materials-method of construction, design or insulating systems.** The requirements in IECC section 103 are not included as part of this code.

**Comm 63.0104 Construction documents.** Substitute the following wording for the requirements in IECC section 104: Construction documents and other supporting documents shall be submitted in accordance with ch. Comm 61.

**Comm 63.0105 Inspections.** Substitute the following wording for the requirements in IECC section 105: Inspections shall be performed in accordance with ch. Comm 61.

**Comm 63.0107 Conflicting requirements.** Substitute the following wording for the requirements in IECC section 107.2: The process for dealing with conflicting rules shall be as specified in ch. Comm 61.

**Comm 63.0201 General definitions.** (1) This is a department definition in addition to the definitions in IECC section 201.1: "Circulating system" means service water heating system without a heat trap, or systems with circulating pump.

(2) Substitute the following wording for the definition specified in IECC section 201.1: "Approved" has the meaning given in ch. Comm 62.0202 (2) (a).

**Comm 63.0302 Exterior design parameters. (1) WEATHER ADJUSTMENTS.** Substitute the following wording for the requirements in IECC Table 302.1 footnote a: The outdoor design temperature shall be selected from the columns of 97-1/2 percent values for winter and 2-1/2 percent values for summer from tables in the ASHRAE *Handbook of Fundamentals*. Adjustments shall be permitted to reflect local climates, which differ from the tabulated temperatures, or local weather experience as determined by other weather resources.

(2) DEGREE-DAYS. Substitute the following wording for the requirements in IECC Table 302.1, footnote b: The degree days heating (base 65° F) and cooling (base 65° F) shall be selected from National Oceanic and Atmospheric Administration "Annual Degree Days to Selected Bases Derived from the 1961-1990 Normals," the ASHRAE *Handbook of Fundamentals*, data available from adjacent military installations, or other sources of local weather data.

**Comm 63.0402 System analysis.** Substitute the following wording for the requirements in IECC section 402.4.7: The same calculation tool shall be used to estimate the annual energy usage for space heating and cooling of the Standard design and the Proposed design. The calculation tool shall be approved by the department.

**Comm 63.0502 Building envelope. (1) GENERAL.** Substitute the following wording for the requirements and the exceptions in IECC section 502.1.1:

(a) *Moisture control.* Except as specified in par. (2), the design shall not create conditions of accelerated deterioration from moisture condensation. Vapor retarders shall be provided on all warm-in winter sides of frame walls, floors and ceilings. The vapor retarder shall have a maximum permeance rating of 1.0 perm when tested in accordance with Procedure A of the ASTM E96. The vapor retarder shall be installed on the warm-in winter side of the thermal insulation.

(b) *Exceptions.* Where other approved means to avoid condensation in unventilated framed wall, floor, roof and ceiling cavities are provided.

(2) FLOORS OVER UNHEATED SPACES. Substitute the following wording for the requirements in IECC section 502.2.3.3: The floor section over an unheated space shall be selected from IECC Appendix Table 502.2.3.3 for the overall thermal transmittance factor ( $U_o$ ) not exceeding the value specified for floors over unheated spaces in IECC Table 502.2. For floors over outdoor air, such as overhangs,  $U_o$ -factors for heating shall meet the same requirement as shown for floors over unheated spaces in IECC Table 502.2.

(3) FLOORS. Substitute the following wording for the requirements in IECC section 502.2.4.8: Floor R-values shall apply to floors over unconditioned spaces and floors over outside air.

**Comm 63.0503 Building mechanical systems and equipment. (1) LOAD CALCULATIONS.** Substitute the following wording for the requirements in IECC section 503.3.1: Heating load calculations shall be determined in accordance with s. Comm 63.1023.

**(2) DISTRIBUTION, SYSTEM, CONSTRUCTION AND INSULATION. (a) Hydronic piping insulation.** Substitute the following wording for the requirements and the exceptions in IECC section 503.3.3.1: All system piping shall be thermally insulated in accordance with Comm 63.1029 (1) and (2).

**(b) Duct and plenum insulation.** Substitute the following wording for the requirements and the exceptions in IECC section 503.3.3.3. Duct and plenum insulation shall be provided in accordance with s. Comm 63.0803 (2) (f).

**(c) Sealing required.** Substitute the following wording for the requirements in IBC section 503.3.3.4.3: Tapes and mastics used with rigid fibrous glass ducts shall be listed and labeled in accordance with UL 181A. Tapes and mastics used with flexible air ducts shall be listed and labeled in accordance with UL 181B. Duct tape is not permitted as a sealant on any metal ducts.

**(d) Mechanical ventilation.** Substitute the following wording for the requirements in IECC section 503.3.3.5: Each mechanical ventilation system (supply or exhaust, or both) shall be equipped with a readily accessible switch or other means for shutoff, or volume reduction and shutoff, when ventilation is not required. Automatic or gravity dampers that close when the system is not operating shall be provided for all outdoor air exhausts. Motorized dampers that close when the system is not operating shall be provided on all outdoor air intakes.

**(e) Balancing.** Substitute the following wording for the requirements in IECC 503.3.3.7: Balancing and documentation of the HVAC system shall conform to the IMC.

**Comm 63.0504 Service water heating. (1) COMBINATION SERVICE WATER-HEATING AND SPACE HEATING BOILERS.** The requirements in IECC section 504.2.2, Exception 1, are not included as part of this code.

**(2) PIPE INSULATION.** Substitute the following wording for the requirements and the exception in IECC section 504.5: Pipe insulation shall be provided in accordance with s. Comm 63.1029 (1) and (2).

**(3) SWIMMING POOLS.** The requirements in IECC section 504.3, and IECC sections 504.3.1 to 504.3.3 are not included as part of this code.

**Comm 63.0505 Lighting power budget.** Substitute the following wording for the requirements and the exception in IECC section 505.2: Lighting systems shall comply with ss. Comm 63.1040 to Comm 63.1053.



**Comm 63.0602 Building envelope. (1) THERMAL PERFORMANCE CRITERIA, FLOORS OVER OUTSIDE AIR.** Substitute the following wording for the requirements in IECC section 602.1.4: The required R-value in Tables 602.1 shall apply to all floors.

**(2). BASEMENT WALLS.** Substitute the following wording for the requirements in IECC section 602.1.5: Where the basement is considered a conditioned space, the basement shall be insulated in accordance with IECC section 502.2.3.3 and s. Comm 63.0502.

**(3) CAULKING, SEALANTS AND GASKETING.** This is a department rule in addition to the requirements in IECC section 602.1.10: When installed in the building envelope, recessed lighting fixtures shall comply with IECC section 502.1.3.

**Comm 63.0701 General scope and application.** Substitute the following wording for the requirements in IECC section 701.1: Commercial buildings shall meet the requirements of subch. III or they shall comply with the requirements specified in IECC chapter 8.

**Comm 63.0802 Building envelope requirements. (1) GENERAL.** These are department rules in addition to the requirements of IECC 802.1: Glazed structures or glazed portions of buildings used for the production of plant life or for maintaining plant life as the primary purpose of the structure are exempt from the building envelope requirements. When the glazed areas are attached to a building with a different class of construction, these glazed areas shall be separated from the remainder of the building with construction material complying with the building envelope requirements.

**(2) MOISTURE CONTROL.** Substitute the following wording for the requirements and exceptions in IECC section 802.1.2:

**(a) Moisture control.** Except as specified in par (b), vapor retarders shall be provided on all warm-in winter sides of frame walls, floors and ceilings. The vapor retarder shall have a maximum permeance rating of 1.0 perm when tested in accordance with Procedure A of the ASTM E 96, Standard Test Methods for Water Vapor Transmission of Materials.

**(b) Other approved means.** Where other approved means to avoid condensation in unventilated framed wall, floor, roof and ceiling cavities are provided.

**(3) CRITERIA.** Substitute the following wording for the requirements in footnote a. in IECC Tables 802.2(1), 802.2(2), 802.2(3) and 802.2(4): Values shall be determined from IECC Tables 802.2(5) through 802.2(37) using climate zone 15 specified in IECC Table 302.1 (50).

**(4) ROOF ASSEMBLY.** This is a department rule in addition to the requirements in IECC section 802.2.4: The thermal transmittance value for ceilings next to unconditioned spaces shall comply with s. Comm 63.1015 (5).

(5) **SEALING OF THE BUILDING ENVELOPE.** This is a department rule in addition to the requirements in IECC section 802.3.2: When installed in the building envelope, recessed lighting fixtures shall comply with IECC section 502.1.3.

**Comm 63.0803 Building mechanical systems. (1) GENERAL.** This is a department rule in addition to the requirements in IECC section 803.1: Electrical motors shall comply with s. Comm 63.1032.

(2) **SIMPLE HVAC SYSTEMS AND EQUIPMENT.** (a) *Equipment and system sizing.* Substitute the following wording for the requirements in IECC section 803.2.1.1: Heating and cooling equipment and systems shall be sized to provide the minimum space and system loads calculated in accordance with IECC section 803.2.1.

(b) *Temperature controls.* Substitute the following wording for the requirements in IECC section 803.2.3.1: Each heating and cooling system shall have at least one temperature control device that complies with IECC sections 803.3.3.1.1, 803.3.3.2 and 803.3.3.3.

(c) *Humidity controls.* This is a department rule in addition to the requirements in IECC section 803.2.3.2: If a system is equipped with a means for adding moisture to maintain specific humidity levels in a zone, a humidistat shall be provided.

(d) *Cooling with outdoor air.* Substitute the following wording for the requirements in IECC section 803.2.6: Each fan system shall have economizer controls complying with s. Comm 63.1031.

(e) *Shutoff dampers.* Substitute the following wording for the requirements in IECC section 803.2.7 and the exceptions:

1. 'Outdoor air supply and exhaust ducts.' Except as specified in subd. 2., automatic or gravity dampers that close when the system is not operating shall be provided for all outdoor air exhausts and motorized dampers that close when the system is not operating shall be provided on all outdoor air intakes.

2. 'Exceptions.' Outdoor air supply and exhaust ducts restricted by health and life safety requirements are exempt.

(f) *Duct and plenum insulation.* Substitute the following wording for the requirements and the exceptions in IECC section 803.2.8: 1. 'Supply and return air ducts and plenums.' Except as specified in subd. 2., all supply ducts and return air ducts and plenums shall be insulated with a minimum of R-4 insulation when located in unconditioned spaces and with a minimum of R-7.5 insulation when located outside the building envelope. When located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by a minimum of R-7.5 insulation. All supply ducts located in plenums within the building envelope shall be insulated to R-4.

2. 'Exceptions.' a. When located within equipment.

b. When the design temperature difference between the interior and exterior of the duct or plenum does not exceed 15°F.

3. 'Joints, longitudinal and transverse seams and connections.' All joints, longitudinal and transverse seams, and connections in ductwork, shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded fabric systems, or tapes. Tapes and mastics used to seal ductwork shall be listed and labeled in accordance with UL-181A or UL-181B. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Duct tape is not permitted as a sealant on any metal ducts.

**(3) COMPLEX HVAC SYSTEMS AND EQUIPMENT.** (a) *Equipment and system sizing.* Substitute the following wording for the requirements in IECC section 803.3.1.1: Heating and cooling equipment and system capacity shall be sized to provide the minimum space and system loads calculated in accordance with IECC section 803.2.1.

(b) *Shutoff damper controls.* Substitute the following wording for the requirements and the exception in IECC section 803.3.3.4: 1. Except as specified in subd. 2., automatic or gravity dampers that close when the system is not operating shall be provided for all outdoor air exhausts and motorized dampers that close when the system is not operating shall be provided on all outdoor air intakes.

2. Outdoor air supply and exhaust ducts restricted by health and life safety requirements are exempt.

(c) *Economizers.* Substitute the following wording for the requirements and the exception in IECC section 803.3.3.5: Each fan system shall have economizer controls complying with s. Comm 63.1031.

(d) *Piping insulation.* Substitute the following wording for the requirements and the exceptions in IECC section 803.3.7: All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with s. Comm 63.1029 (1) and (2).

(e) *HVAC system completion.* Substitute the following wording for the requirements in IECC sections 803.3.8, 803.3.8.1, 803.3.8.2, and 803.3.8.3: Balancing and documentation of HVAC systems shall conform to the IMC.

**Comm 63.0804 Service water heating. (1) TEMPERATURE CONTROLS.** The requirements in IECC section 804.3 are not included as part of this code.

**(2) HEAT TRAPS.** Substitute the following wording for the requirements in IECC section 804.4: Plumbing piping systems, including those without an integral heat trap shall comply with s. Comm 63.1029 (1) and (2).

(3) **PLUMBING PIPE INSULATION.** Substitute the following wording for the requirements in IECC section 804.5: All system piping shall be thermally insulated in accordance with s. Comm 63.1029 (1) and (2).

**Comm 63.0805 Lighting systems.** Substitute the following wording for the requirements in IECC section 805: Lighting systems shall comply with ss. Comm 63.1040 to Comm 63.1053.

**Comm 63.0900 Referenced standards.** This is a department rule in addition to the requirements in IECC chapter 9: The following standards are hereby incorporated by reference into this code:

(1) ASTM C177-85, Test method for steady-state heat flux measurements and thermal transmission properties by means of the guarded-hot-plate apparatus.

(2) ASTM C335-84, Test method for steady state heat transfer properties of horizontal pipe insulation.

(3) ASHRAE Standard 90.1-89, Energy Efficient Design of New Buildings, Except Low Rise Residential Buildings.

(4) National Concrete Masonry Association (NCMA) Evaluation Procedures of Integrally-Insulated Concrete Masonry Walls, January 1, 1999.

**Note:** NCMA Evaluation Procedures may be obtained from National Concrete Masonry Association, 2302 Horse Pen Road, Herndon, Virginia 20171-3499, telephone (703) 713-1900 or fax (703) 713-1910.

**Comm 63.0901 Appendix.** The IECC appendix is not included as part of this code.

### **Subchapter III Building Design for Commercial Buildings**

#### **Part 1 Application**

**Comm 63.1001 Application.** This subchapter shall be applied to all commercial buildings unless the building complies with IECC chapter 8.

#### **Part 2 Definitions**

**Comm 63.1005 Definitions.** In this subchapter:

(1) "Ambient Lighting" is lighting designed to provide a substantially uniform level of illumination throughout an area, exclusive of any provision for special visual tasks or decorative effect. When designed for lower-than-task illuminance used in conjunction with other specific task lighting systems, it is also called "general" lighting.

(2) "Automatic" means self-acting, operating by its own mechanism when actuated by some impersonal influence, such as, a change in current strength, pressure, temperature, or mechanical configuration.

(3) "Automatic time switch control devices" means control devices that are capable of automatically turning loads off and on based on time schedules.

(4) "Building envelope" means the elements of a building that enclose conditioned spaces through which thermal energy may be transferred to or from the exterior or to or from unconditioned spaces.

(5) "Comfort cooling" or "comfort heating" means treating air to control one or more of the following: temperature, relative humidity, or distribution to meet the comfort requirements of the human occupants of the conditioned space.

(6) "Conditioned floor area" or "CFA" means the floor area in square feet of enclosed conditioned space on all floors of a building, as measured at the floor level of the exterior surfaces of exterior walls enclosing the conditioned space.

(7) "Commercial building" means a building as defined in IECC section 201.1.

(8) "Conditioned space" means a cooled space, heated space, or indirectly conditioned space.

(9) "Cooled space" means an enclosed space within a building that is conditioned by a cooling system with a sensible capacity that either exceeds 5 Btu/hr sq ft or is capable of maintaining a space dry-bulb temperature of 90°F or less at design conditions.

(10) "Daylighting control" means a device that automatically regulates the power input to electric lighting near the fenestration to maintain the desired workplace illumination, thus taking advantage of direct or indirect sunlight.

(11) "Daylit area" means the space on the floor that is the larger of par. (a) or (b) as follows:

(a) 1. For areas daylit by vertical glazing, the daylit area has the length of 15 feet, or the distance on the floor, perpendicular to the glazing, to the nearest 60-inch or higher opaque partition, whichever is less; and a width of the window plus either 2 feet on each side, the distance to an opaque partition, or one-half the distance to the closest skylight or vertical glazing, whichever is least.

2. For areas daylit by horizontal glazing, the daylit area is the footprint of the skylight plus, in each of the lateral and longitudinal dimensions of the skylight, the lesser of the floor-to-ceiling height, the distance to the nearest 60-inch or higher opaque partition, or one-half the horizontal distance to the edge of the closest skylight or vertical glazing.

(b) The daylit area calculated using a method acceptable to the department.

**Note:** See Appendix A for additional illustrative information.

(12) "Deadband" means the range of values within which an input variable can be varied without initiating any noticeable change in the output variable.

(13) "Degree day" means a unit based upon temperature difference and time, used in estimating annual heating or cooling energy consumption. One degree day accrues for each degree of difference between the daily mean temperature and a reference temperature.

(14) "Display lighting" means lighting confined to the area of a display that provides a higher level of illuminance than the level of surrounding ambient illuminance.

(15) "Economizer, air" means a ducting arrangement and automatic control system that allows a cooling supply fan to supply outside air to reduce or eliminate the need for mechanical refrigeration during mild or cold weather.

(16) "Economizer, water" means a system by which the supply air of a cooling system is cooled directly or indirectly or both by evaporation of water or other appropriate fluid in order to reduce or eliminate the need for mechanical refrigeration during some time periods.

(17) "Effective aperture" or "EA" means for windows, the visible light transmittance times the window wall ratio per wall; and for sky lights, the well efficiency times the visible light transmittance times the sky light area times 0.85 divided by the gross exterior roof area.

(18) "Efficacy" means the ratio of light from a lamp to the electrical power consumed, including ballast losses, expressed in lumens per watt.

(19) "Emissivity" means the ratio of the rate of radiant heat energy emitted by a body at a given temperature to the rate of radiant heat energy emitted by a standard called a blackbody, at the same temperature in the same surroundings.

(20) "Exterior envelope" has the same meaning as "building envelope."

(21) "Exterior roof or ceiling" means an exterior partition, or partition separating a conditioned space from an enclosed unconditioned space, that has a slope less than 60° from horizontal, that has conditioned space below, and that is not an exterior door or skylight.

(22) "Exterior roof or ceiling area" means the area of the exterior surface of an exterior roof or ceiling.

(23) "Exterior wall" means an exterior partition that is not an exterior floor or soffit, exterior door, exterior roof or ceiling, window, or skylight.

(24) "Exterior wall area" means the area of the opaque exterior surface of exterior walls.

(25) "Fenestration" means any light-transmitting section in a building wall or roof. The fenestration includes glazing material, which may be glass or plastic, framing such as mullions, muntins, and dividers, external shading devices, internal shading devices, and integral or between glass shading devices.

(26) "Fenestration area" means the total area of fenestration measured using the rough opening and including the glazing material, sash, and frame.

(27) "General lighting" means lighting designed to provide a substantially uniform level of illumination throughout an area, exclusive of any provision for special visual tasks or decorative effect. When designed for lower-than-task illuminance used in conjunction with other specific task lighting systems, it is also called "ambient" lighting.

(28) "Gross exterior wall area" means the gross area of exterior walls separating a conditioned space from the outdoors or from unconditioned spaces as measured on the exterior above grade. It consists of the opaque wall, excluding vents and grills, including between floor spandrels, peripheral edges of flooring, window areas including sash, and door areas.

(29) "Gross floor area" means the sum of the floor areas of the conditioned spaces within the building including basements, mezzanine and intermediate-floored tiers, and penthouses of headroom height 7.5 ft or greater. It is measured from the exterior faces of exterior walls or from the centerline of walls separating buildings, excluding covered walkways, open roofed-over areas, porches and similar spaces, pipe trenches, exterior terraces or steps, chimneys, roof overhangs, and similar features.

(30) "Gross floor area over outside or unconditioned spaces" means the gross area of a floor assembly separating a conditioned space from the outdoors or from unconditioned spaces as measured from the exterior faces of exterior walls or from the center line of walls separating buildings. The floor assembly shall be considered to include all floor components through which heat may flow between indoor and outdoor or unconditioned environments.

(31) "Gross lighted area" or "GLA" means the sum of the total lighted areas of a building measured from the inside of the perimeter walls for each floor of the building.

(32) "Gross roof area" means the gross area of a roof or ceiling assembly separating a conditioned space from the outdoors or from unconditioned spaces, measured from the exterior faces of exterior walls or from the centerline of walls separating buildings. The roof assembly shall be considered to include all roof or ceiling components through which heat may flow between indoor and outdoor environments including skylights but excluding service openings.

(33) "Gross exterior roof area" means the sum of the skylight area and the exterior roof/ceiling area.

(34) "Heat capacity" or "HC" means the amount of heat necessary to raise the temperature of a given mass one degree. Numerically, it is the mass multiplied by the specific heat.

(35) "Heated space" means an enclosed space within a building that is conditioned by a heating system with an output capacity either exceeding 10 Btu/h·ft<sup>2</sup> or capable of maintaining a space dry-bulb temperature of 50°F or more at design conditions.

(36) "Heating, ventilating, and air conditioning system" or "HVAC system" means the equipment, distribution network, and terminals that provide either collectively or individually the process of heating, ventilating, or air conditioning to a building.

(37) "Indirectly conditioned space" means an enclosed space including, but not limited to, unconditioned volume in atria, that is not directly conditioned space; and either has an area-weighted heat transfer coefficient to directly conditioned space exceeding that to the outdoors or to unconditioned space, or is a space through which air from directly conditioned spaces is transferred at a rate exceeding three air changes per hour.

(38) "Informational sign" means a sign used to give building or room identification direction or a warning for safety purposes in a building, but does not include advertising signs for product or merchandise displays.

(39) "Listed space area" or "LS" means any interior space with an identified area of activities for which a lighting power budget is calculated and listed in the lighting power allowance determination.

(40) "Lumen maintenance control device" means a device capable of automatically adjusting the light output of a lighting system throughout a continuous range to provide a preset level of illumination.

(41) "Luminaire" means a complete lighting unit consisting of at least one lamp and the parts designed to distribute the light, to position and protect the lamp, to connect the lamp to the power supply and ballasting, when applicable. Luminaires are commonly referred to as "lighting fixtures" or "instruments."

(42) "Manual" means capable of being operated by personal intervention.

(43) "Mass wall" means a wall assembly with a heat capacity (HC) greater than or equal to 5 Btu/ft<sup>2</sup>·°F.

(44) "Mass wall insulation position" means:

(a) Exterior insulation position: a wall having all or nearly all of its mass exposed to the room air with the insulation on the exterior of that mass.



(b) Integral insulation position: a wall having mass exposed to both room and outside air with substantially equal amounts of mass on the inside and outside of the insulation layer.

(c) Interior insulation position: a wall not meeting either par. (a) or (b), particularly a wall having most of its mass external to an insulation layer.

(45) "Medical and clinical care" means the promotion of the condition of being sound in body or mind through medical, dental or psychological examination and treatment.

(46) "Multiscene dimming system" means a lighting control device that has the capability of setting light levels throughout a continuous range, and that has pre-established settings within the range.

(47) "Occupant-sensing device" means a device that automatically controls the lights based on occupancy.

(48) "Opaque areas" means all exposed areas of a building envelope which enclose conditioned space except fenestration areas and building service openings such as vents and grilles.

(49) "Ornamental chandeliers" means ceiling-mounted, close-to-ceiling, or suspended decorative luminaires that use glass, crystal, ornamental metals, or other decorative material and that typically are used in hotels, motels, restaurants, or churches as a significant element in the interior architecture.

(50) "Precision commercial or industrial work" means an art, craft, or manufacturing operation requiring a certain degree of refinement.

(51) "Private driveways, walkways, and parking lots" means exterior transit areas that are associated with a commercial or residential building and intended for use solely by the employees or tenants and not by the general public.

(52) "Public driveways, walkways, and parking lots" means exterior transit areas that are intended for use by the general public.

(53) "Recooling" means lowering the temperature of air that has been previously heated by a heating system.

(54) "Recovered energy" means energy utilized from an energy-using system which would otherwise be wasted or not contribute to a desired end use.

(55) "Reduced flicker operation" means the operation of a light, in which the light has a visual flicker less than 30% for frequency and modulation.

(56) "Reheating" means raising the temperature of air that has been previously cooled either by refrigeration or an economizer system.

**Note:** Introducing outdoor air necessary to meet ventilation requirements or to assure adequate indoor air quality is not considered to be cooling.

(57) "Reset" means adjustment of the controller set point to a higher or lower value automatically or manually.

(58) "Residential building" means a building as defined in IECC section 201.1.

(59) "Sconce" means a wall mounted decorative light fixture.

(60) "Shading coefficient" or "SCx" means the ratio of solar heat gain through a fenestration, with or without integral shading devices, to that occurring through unshaded 1/8-in. thick clear double strength glass.

(61) "Shell building" means a building for which the envelope is designed, constructed, or both prior to knowing the occupancy type.

**Note:** See also speculative building.

(62) "Speculative building" means a building for which the envelope is designed, constructed, or both prior to the design of the lighting, HVAC systems, or both. A speculative building differs from a shell building in that the intended occupancy is known for the speculative building.

**Note:** See also shell building.

(63) "Support area" means an area for functions that are different from but necessary to accomplish the main activity or purpose of other listed space areas.

(64) "Tandem wired" means pairs of luminaires operating with one lamp in each luminaire powered from a single two-lamp ballast contained in the other luminaires.

(65) "Task oriented lighting" means lighting that is designed specifically to illuminate a task location, and that is generally confined to the task location.

(66) "Thermal break" means an element of low thermal conductivity placed in an assembly to reduce the flow of heat between highly conductive materials.

(67) "Thermal conductance" or "C" means the constant time rate of heat flow through a unit area of a body induced by a unit temperature difference between the surfaces, expressed in  $\text{Btu/h}\cdot\text{ft}^2\cdot^\circ\text{F}$  or equivalent units. It is the reciprocal of thermal resistance.

(68) "Thermal resistance" or "R" means the reciprocal of thermal conductance,  $1/C$  expressed in  $\text{h}\cdot\text{ft}^2\cdot^\circ\text{F}/\text{Btu}$  or equivalent units. The total thermal resistance of an assembly is  $1/U_o$ .

(69) "Thermal transmittance" or "U" means the overall coefficient of heat transfer from fluid to fluid. It is the time rate of heat flow per unit area under steady conditions from the fluid on the warm side of the barrier to the fluid on the cold side, per unit temperature difference between the 2 fluids, expressed in Btu/h·ft<sup>2</sup>·°F or equivalent units.

(70) "Thermal transmittance, overall" or "U<sub>o</sub>" means the gross overall (area weighted average) coefficient of heat transfer from air to air or fluid to fluid for a gross area of the building envelope, expressed in Btu/h·ft<sup>2</sup>·°F or equivalent units. The U<sub>o</sub> value applies to the combined effect of the time rate of heat flows through the various parallel paths such as windows, doors, and opaque construction areas comprising the gross area of one or more building envelope components such as walls, floors, and roof or ceiling.

(71) "Thermostat" means an automatic control device responsive to temperature.

(72) "Unconditioned space" means a space within a building that is not a conditioned space.

Note: See conditioned space.

(73) "Unlisted space" means the difference in area between the gross lighted area and the sum of all listed space areas.

(74) "Variable air volume HVAC system" or "VAV HVAC system" means HVAC systems that control the dry-bulb temperature within a space by varying the volume of air supply to the space.

(75) "Visible light transmittance" or "VLT" means the ratio, expressed as a decimal, of visible light that is transmitted through a glazing material to the light that strikes the material.

(76) "Wall heat capacity" or "HC" means the sum of products of the mass of each individual material in the wall per unit area of wall surface times its individual specific heat, Btu/(ft<sup>2</sup>·°F).

(77) "Well efficiency" means the ratio of the amount of visible light leaving a skylight well to the amount of visible light entering the skylight well and is calculated as follows:

(a) for rectangular wells:

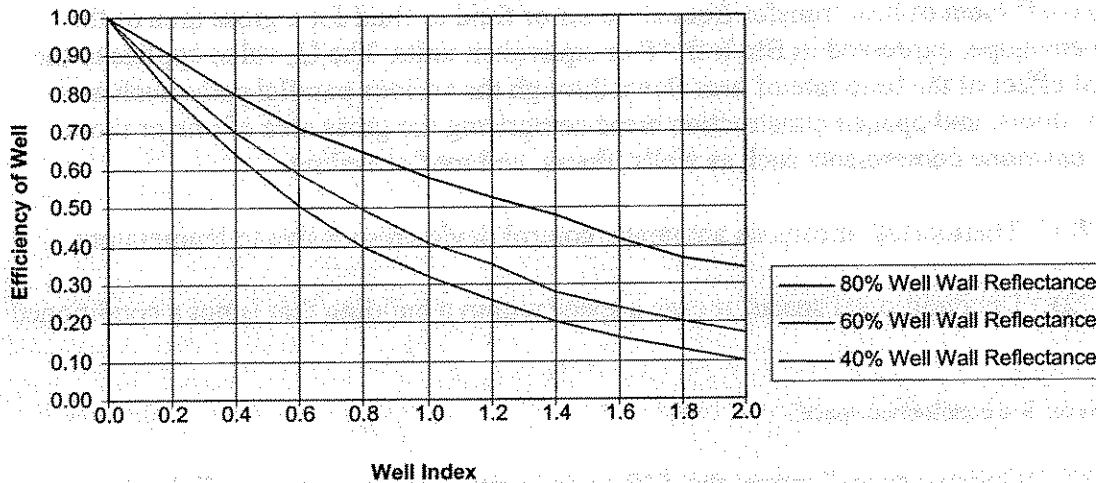
$$\frac{\text{Well height (well length + well width)}}{2 \times \text{well length} \times \text{well width}} = \text{the well index}$$

(b) for irregular shaped wells:

$$\frac{\text{Well height} \times \text{well perimeter}}{4 \times \text{well area}} = \text{the well index}$$

(c) The length, width, perimeter, and area expressed in pars. (a) and (b) are measured at the bottom of the well. The well index and the weighted average well wall reflectance are used in Figure 63.1005 to determine the well efficiency.

**Figure 63.1005 Well**



Information taken from: Fig 7-38, IES Lighting Handbook, 1984 Reference

(78) "Window" means glazing that is not a skylight.

(79) "Window area" means the area of the surface of a window, plus the area of the frame, sash, and mullions.

(80) "Window wall ratio" means the ratio of the window area, including glazed areas of doors, to the gross exterior wall area.

(81) "Zone" means a space or group of spaces within a building with any combination of heating, cooling, or lighting requirements sufficiently similar so that desired conditions can be maintained throughout by a single controlling device.

### Part 3 — Building Envelope

**Comm 63.1010 Exempt buildings.** This part applies to buildings or separately enclosed identifiable areas that have a mechanical space heating or air conditioning system.

**Comm 63.1011 Air leakage and moisture migration.** (1) GENERAL. The requirements of this section apply to those building components that separate interior building conditioned space from the outdoors or from unconditioned spaces or crawl spaces.

Compliance with the criteria for air leakage through building components shall be determined by tests conducted in accordance with specified standards.

**(2) AIR LEAKAGE FOR FACTORY MANUFACTURED WINDOWS, DOORS AND CURTAIN WALL ASSEMBLIES.** Factory manufactured windows, doors and curtain wall assemblies shall comply with IECC section 802.3.1.

**(3) AIR LEAKAGE REQUIREMENTS FOR EXTERIOR ENVELOPE.** Openings and penetrations in the building envelope shall be sealed or gasketed in accordance with s. Comm 63.0802 (4).

**(4) MOISTURE CONDENSATION.** The design of buildings shall not create conditions of accelerated deterioration from moisture condensation and shall comply with s. Comm 63.0802 (2).

**Comm 63.1012 Daylight credits for skylights. (1) COMMERCIAL BUILDINGS.** Credits for skylights may be used in commercial buildings if the IECC section 802 requirements and any modifications or additions specified in subch. II are met.

**(2) RESIDENTIAL BUILDINGS.** Day light credits may be used in residential buildings if the IECC section 502.1.2 requirements are met.

**Comm 63.1014 Building envelope thermal performance. (1) GENERAL.** Except as provided in sub. (2), building envelopes shall comply with either the component standards of s. Comm 63.1015 or the system standards of s. Comm 63.1016. The calculation procedures of s. Comm 63.1019 shall be used to show compliance.

**(2) EXCEPTIONS. (a)** Buildings and areas of buildings that are used as factories and automatic car washes shall comply with s. Comm 63.1017.

**(b)** Buildings and areas of buildings that are used as warehouses that have documentation provided to verify that the HVAC system to be installed does not use energy primarily to provide human comfort shall comply with s. Comm 63.1017.

**Note:** See s. Comm 63.1010 for exempt buildings and spaces.

**Comm 63.1015 Component standards option. (1) GENERAL.** This section describes the component standards for building envelope thermal performance. Because component requirements consider the effect of solar gain as well as conductive heat transfer, the requirements for each component shall be met independently under this option. The wall and roof trade-off exception in sub. (4) may be used with this option. The system analysis design method specified in IECC section 806 shall be used to demonstrate the acceptability of trade-offs between component energy-conserving features. Separate occupancies in the same building shall meet the requirements of this section independently.

(2) DETERMINATION OF APPROPRIATE ACP TABLE. The appropriate alternate component package or ACP table shall be determined based on building location using Figures 63.1015-1 and 63.1015-4.

(3) MAXIMUM ALLOWABLE WINDOW WALL RATIO. In this subsection, the percentage of windows, including glazed areas of doors, relative to the gross exterior wall area of the building shall be less than or equal to the maximum allowable window wall ratio chosen from the appropriate ACP table for the glazing type of the building. The window wall ratio is the total area of window assemblies, including glazed areas of doors, divided by the total gross exterior wall area, considering all elevations of the building. The maximum allowable window wall ratio shall be determined using the following steps:

(a) Select the shading coefficient (SC<sub>x</sub>) range that is no less than the fenestration SC<sub>x</sub> including permanently installed internal, integral and external shading devices, but excluding the effect of external shading projections. Note that this includes curtains, shades, or blinds that are permanently installed. For a shell or speculative building for which the envelope is designed or constructed prior to the design of the lighting, HVAC systems, or both, only those shading devices that are part of the design when it is being evaluated for compliance shall be considered when determining compliance.

**Note:** Refer to ASHRAE Handbook, Fundamentals Volume, Chapter 27 for more information on shading coefficients. Shading coefficients for fenestration may be obtained from the manufacturer or from IECC Table 102.5.2 (3) when the conversion factor for solar heat gain coefficient (SHGC) to SC<sub>x</sub> given in IECC section 102.5.2 is applied. See also s. Comm 63.1019 (5).

(b) Select appropriate fenestration type. This is determined by the thermal transmittance value (U<sub>or</sub>) of the fenestration assembly. The U<sub>or</sub> of all assemblies must fall within the range, or lower, to determine the maximum window wall ratio, or an area-weighted average thermal transmittance value may be used.

(4) WALL AND ROOF TRADE-OFF. Trade-offs between the above grade exterior wall opaque areas and the gross roof area shall be allowed if either of the following conditions are met:

(a) 1. Except as specified in subd. 2., the thermal transmittance, overall value (U<sub>o</sub>) for any above grade exterior opaque wall area or gross roof area may be increased or decreased, provided that the total annual energy use due to heat gain and loss for the building envelope is less than or equal to the total annual energy use due to heat gain and loss resulting from the use of the values in the appropriate ACP table given in Figures 63.1015-1 to 63.1015-4. Calculation of the total annual energy use of the building designs shall be done in accordance with IECC section 806.

2. The latest version of the ComCheck-EZ computer program or other programs subject to the approval of the department may be used to determine required thermal transmittance values in lieu of the ACP tables.

**Note:** ComCheck-EZ is a computer program that may be used only for determining building envelope compliance. The ComCheck-EZ computer program may be downloaded at:

[http://www.eren.doe.gov/buildings/codes\\_standards/buildings/com\\_download.html](http://www.eren.doe.gov/buildings/codes_standards/buildings/com_download.html). The federal Department of Energy has issued a computer package called ComCheck-Plus, which establishes trade-offs between the building envelope, lighting, and HVAC equipment; however, this program has not been approved for use in Wisconsin since Wisconsin's lighting allowances are not the same as those included in the program.

(b) A submittal to the department for review and approval, incorporating recognized engineering practices, that the annual energy use due to heat gain and loss for the building envelope shall be less than or equal to that established in par (a).

**(5) THERMAL TRANSMITTANCE VALUES FOR ROOFS, WALLS AND CEILINGS NEXT TO UNCONDITIONED SPACES, AND FLOORS OVER UNCONDITIONED SPACES.** (a) The U-values for the building roofs, walls and ceilings next to unconditioned spaces, and floors over unconditioned spaces shall be less than or equal to those listed in the appropriate ACP table given in Figures 63.1015-1 to 63.1019-4.

(b) Skylights for which daylight credit cannot be taken in accordance with s. Comm 63.1012 shall be included in the calculation of the overall thermal transmittance value of the roof assembly ( $U_{or}$ ).

(c) Unconditioned below-grade spaces that have floor or ceiling assemblies insulated as specified on the appropriate ACP table do not require below-grade wall insulation.

**(6) THERMAL RESISTANCE VALUE FOR SLAB-ON-GRADE FLOORS.** (a) Unheated slab-on-grade floors shall have insulation around the perimeter of the floor with the thermal resistance ( $R_u$ ) of the insulation as listed in the appropriate ACP table given in Figures 63.1019-1 to 63.1019-4.

(b) For heated slabs-on-grade, the required minimum R-value shall be the R-value for the unheated slab-on-grade plus 2.0.

(c) The slab insulation specified shall extend either in a vertical plane downward from the top of the slab for the minimum distance given in the appropriate ACP table or downward to the bottom of the slab then in a horizontal plane beneath the slab or outward from the building for the minimum distance given in the ACP table. Vertical insulation shall not be required to extend below the foundation footing.

(d) The R-value and dimensions required for slabs refer only to the building insulation materials. Insulative continuity shall be maintained in the design of slab edge insulation systems. Continuity shall be maintained from the wall insulation through the intersection of the slab, wall and footing to the body of the slab edge insulation.

**Figure 63.1015-1**  
**Degree Day Regions for Use with ACP Tables**





**Figure 63.1015-2**  
**Alternate Component Package**  
**ACP Table A**

<b>Part A1: Maximum Window Area / Gross Exterior Wall Area</b>						
Exterior Wall $U_o$	Shading Coefficient Range $SC_x$	$U_{of}$ Range				
		0.60 to 0.56	0.55 to 0.51	0.50 to 0.46	0.45 to 0.41	$\leq 0.40$
$\leq 0.06$	0.80 - 0.71	0.20	0.21	0.23	0.25	0.27
	0.70 - 0.61	0.20	0.22	0.24	0.26	0.28
	0.60 - 0.51	0.21	0.22	0.25	0.27	0.30
	0.50 - 0.41	0.21	0.23	0.25	0.28	0.31
	$\leq 0.40$	0.21	0.23	0.26	0.29	0.33
0.061 to 0.070	0.80 - 0.71	0.18	0.20	0.21	0.23	0.25
	0.70 - 0.61	0.18	0.20	0.22	0.24	0.27
	0.60 - 0.51	0.19	0.21	0.23	0.25	0.28
	0.50 - 0.41	0.19	0.21	0.23	0.26	0.30
	$\leq 0.40$	0.19	0.21	0.24	0.27	0.31
0.071 to 0.080	0.80 - 0.71	0.16	0.18	0.20	0.22	0.24
	0.70 - 0.61	0.17	0.18	0.20	0.23	0.25
	0.60 - 0.51	0.17	0.19	0.21	0.23	0.26
	0.50 - 0.41	0.17	0.19	0.21	0.24	0.27
	$\leq 0.40$	0.18	0.19	0.22	0.25	0.28
0.081 to 0.090	0.80 - 0.71	0.15	0.16	0.18	0.20	0.22
	0.70 - 0.61	0.15	0.17	0.18	0.21	0.23
	0.60 - 0.51	0.15	0.17	0.19	0.21	0.24
	0.50 - 0.41	0.16	0.17	0.19	0.22	0.25
	$\leq 0.40$	0.16	0.17	0.20	0.22	0.26

<b>Part A2: Other Criteria</b>
Roof Max $U_o = 0.040$
Wall and Ceiling Adjacent to Unconditioned Space Max $U_o = 0.10$
Floor Over Unconditioned Space Max $U_o = 0.040$
Wall Below Grade Min R-Value = 13

<b>Part A3: Unheated Slab-On-Grade Minimum R-Value</b>			
Insulation Orientation	Length of Insulation		
	24"	36"	48"
Horizontal	R=18	R=15	R=11
Vertical	R=8	R=6	R=4

**Figure 63.1015-3**  
**Alternate Component Package**  
**ACP Table B**

<b>Part B1: Maximum Window Area / Gross Exterior Wall Area</b>						
Exterior Wall $U_o$	Shading Coefficient Range $SC_x$	$U_o$ Range				
		0.60 to 0.56	0.55 to 0.51	0.50 to 0.46	0.45 to 0.41	$\leq 0.40$
$\leq 0.06$	0.80 - 0.71	0.20	0.21	0.22	0.23	0.24
	0.70 - 0.61	0.21	0.22	0.24	0.25	0.27
	0.60 - 0.51	0.22	0.24	0.25	0.27	0.29
	0.50 - 0.41	0.24	0.25	0.27	0.30	0.32
	$\leq 0.40$	0.25	0.27	0.29	0.32	0.35
0.061 to 0.070	0.80 - 0.71	0.19	0.20	0.21	0.22	0.23
	0.70 - 0.61	0.20	0.21	0.22	0.24	0.25
	0.60 - 0.51	0.21	0.23	0.24	0.26	0.28
	0.50 - 0.41	0.22	0.24	0.26	0.28	0.31
	$\leq 0.04$	0.24	0.26	0.28	0.31	0.34
0.071 to 0.080	0.80 - 0.71	0.18	0.19	0.20	0.21	0.23
	0.70 - 0.61	0.19	0.20	0.21	0.23	0.24
	0.60 - 0.51	0.20	0.21	0.23	0.25	0.27
	0.50 - 0.41	0.21	0.23	0.25	0.27	0.29
	$\leq 0.40$	0.22	0.24	0.27	0.29	0.32
0.081 to 0.090	0.80 - 0.71	0.17	0.18	0.19	0.20	0.21
	0.70 - 0.61	0.18	0.19	0.20	0.21	0.23
	0.60 - 0.51	0.19	0.20	0.21	0.23	0.25
	0.50 - 0.41	0.20	0.21	0.23	0.25	0.28
	$\leq 0.40$	0.21	0.23	0.25	0.27	0.30

<b>Part B2: Other Criteria</b>
Roof Max $U_o = 0.045$
Wall and Ceiling Adjacent to Unconditioned Space Max $U_o = 0.11$
Floor Over Unconditioned Space Max $U_o = 0.040$
Wall Below Grade Min R-Value = 12

<b>Part B3: Unheated Slab-On-Grade Minimum R-Value</b>			
Insulation	Length of Insulation		
Orientation	24"	36"	48"
Horizontal	R=18	R=15	R=11
Vertical	R=8	R=6	R=4