

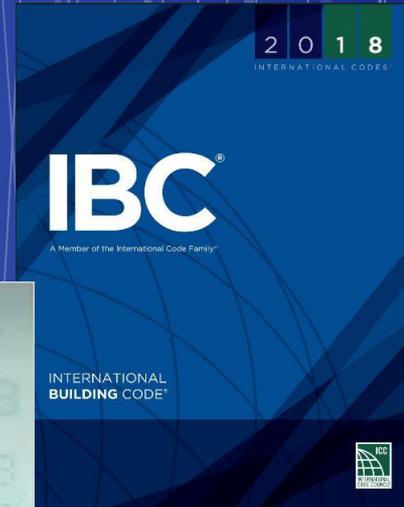
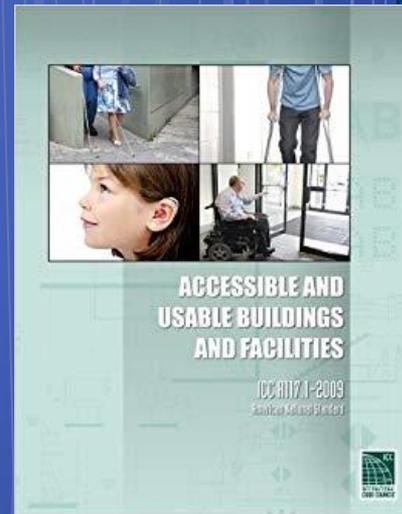


2018

Knoxville Building Code

Significant Changes (proposed)

October 30, 2018



By James Tente, MCP, CBO

jtente@knoxvilletn.gov

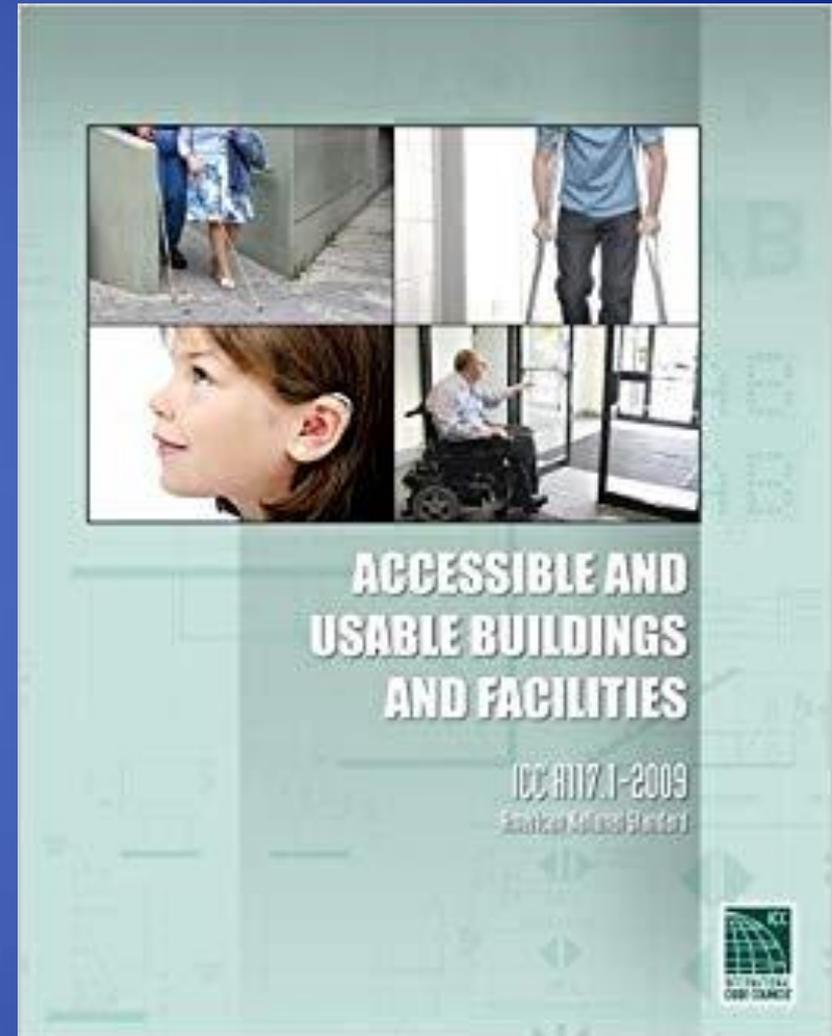
Goals

- The goal of these presentations is to identify and discuss the building code changes and the impacts on our stakeholders.
- The position of the building department is to adopt the codes **without** amendments.
- The following provisions may not be inclusive of all I-code changes.
- The is **subject to change**.



Accessibility

- Significant Changes
- NONE! The 2017 A117.1-2017 was not completed in time, therefore the 2009 version is still the code to enforce.



202 Change of Occupancy

- A change in the use of a building or a portion of a building which results in one of the following:
 - A change of occupancy classification
 - i.e., B-Business to A-Assembly
 - A change from one group to another group within an occupancy classification
 - i.e., R-3 to R-2
- Any change in use within a group for which there is a change in the application of the code
 - i.e., Retail store to Mattress Store

Certificate of Occupancy Office of the Building Official		
Property Address:	Stipulations, Conditions, Variances:	
Approved As: Pre-Existing Condition (No Change) New Structure Alteration Change of Occupancy Temporary Occupancy	This Certificate represents an approval that is valid only when the building and its facilities are used as stated and is conditional upon all building systems being maintained and tested in accordance with the applicable Board of Building Standards rules and applicable equipment or system schedules. This certifies conformance with Chapters 3781. and 3791. of the Revised Code and the applicable provisions of the rules of the Board of Building Standards. Plan Approval Application # _____ Approved pursuant to the following editions of: _____ OBC _____ OMC _____ OPC	
Use Groups:		Occupancy Description:
Primary:		
Accessory:		
Mixed Uses:		
Attached Floor Plan dated _____ indicates how areas are approved and design occupancy loads		
Construction Type:		
Fire Sprinkler Systems:		
N/A <input type="checkbox"/> Required <input type="checkbox"/> Non-Required <input type="checkbox"/>		
System Type:	Location:	
Hazard Classification:	This approval is limited to the following portion of the building:	
Storage Height:	Date: _____	
Aisle Width:	The balance of the building is approved pursuant to the following dated C of Os:	
Sprinkler System Demand @ base of riser:		
Standpipe System Demand @ base of riser:	Building Official: _____	

302.1 Classification of Outdoor Areas

- Occupied roofs shall be classified in the group that the occupancy most nearly resembles in accordance with:
 - Fire Safety
 - Relative Hazard and shall
 - Comply with 503.1.4.

503.1.4 Occupied roofs.

A roof level or portion thereof shall be permitted to be used as an occupied roof provided the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the story immediately below the roof. The area of the occupied roofs shall not be included in the *building area* as regulated by Section 506.



302.1 Classification of Outdoor Areas

503.1.4 Occupied roofs.

A roof level or portion thereof shall be permitted to be used as an occupied roof provided the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the story immediately below the roof. The area of the occupied roofs shall not be included in the *building area* as regulated by Section 506.

Exceptions:

1. The occupancy located on an occupied roof shall not be limited to the occupancies allowed on the *story* immediately below the roof where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2 and occupant notification in accordance with Section 907.5 is provided in the area of the occupied roof.
2. Assembly occupancies shall be permitted on roofs of open parking spaces of Type I or Type II construction, in accordance with the exception to Section 903.2.1.6.



Self Storage

- Self/Mini-Storage – IBC 311.2 The mini-storage or self-storage building is now specifically classified as a S-1 occupancy in Chapter 3.
- Based on an ICC interpretation this change gives code officials a definite classification for mini-storage buildings.
- This change correlates the fire sprinkler requirement for S-1 occupancies in Chapter 9, meaning, ministorage fire areas that exceed 12,000 sq.ft., located more than three stories or where all fire areas exceed 24,000 sq.ft. require a NFPA 13 fire sprinkler system.
- According to the Self-Storage Association, there are 58,000 self-storage facilities with an average of 566 units per facility. The average size of each facility is 39,620 sq.ft. and if each were built new to the 2018 IBC, fire sprinklers would be required.



303.4 Assembly Use of Greenhouses

- Green houses that are for the conservation and exposition of plants that provide public access. (A-3, Assembly).
- Why the distinction??



309.1 Mercantile Use of Greenhouses

- Green houses for the display and sale of plants that provide public access. (M-Mercantile).



310.4.2 Owner Occupied Lodging

- Owner occupied lodging houses are permitted to comply with the IRC where:
 - 5 or fewer guest rooms AND
 - 10 or fewer total occupants
 - The criteria permitting compliance with the IRC for the design and construction of owner-occupied lodging houses has been expanded by now also requiring that the total number of lodging house occupants be limited to 10.



311.1.1 Accessory Storage Spaces

- A room or space used for storage purposes that is accessory to another occupancy.
- Space shall be classified the same as part of that occupancy.



404.6 Enclosure of Atriums

- Separation between atrium and adjoining spaces not required where smoke control system not required.
- The requirement that those spaces not separated from an atrium be accounted for in the design of the smoke control system now applies only in those cases where the atrium is provided with a smoke control system.



406.1 Motor Vehicle Related Occupancies

- Provisions specific to motor-vehicle-related uses have been reformatted in a manner such that those requirements that apply to all such uses have been relocated in a single Section 406.1.
- Completely reformatted in 2012.
- Reformatted AGAIN.



420.7 Corridor Protection in Assisted Living Units

- Shared living spaces, group meeting spaces and multipurpose therapeutic spaces are now permitted to be open to fire-rated corridors in Group I-1 assisted living housing facilities provided specific conditions are met:
 - Walls and ceilings constructed as required for corridors
 - Spaces not occupied as resident sleeping rooms, treatment rooms, incidental uses (509) or hazardous uses.
 - Open space protected by auto-fire detection system (907).
 - I-1, Condition 1: corridor protected by automatic fire detection or QR Sprinklers (903.3.2).
 - I-1, Condition 2: corridors onto which the spaces open, in same smoke compartment are protected by an automatic fire detection, or smoke compartment has QR Sprinklers.
 - Arranged so as not to obstruct access to exits.



420.10 Dormitory Cooking Facilities, R-2



420.10.1 Cooking Appliances shall comply with all the following:

- Ovens, cooktops, ranges, warmers, coffee makers and microwaves only.
- Approved locations.
- Protected in accordance with 904.13.
- Domestic cooking hood in accordance with 505 of IMC.

428 Higher Education Laboratories

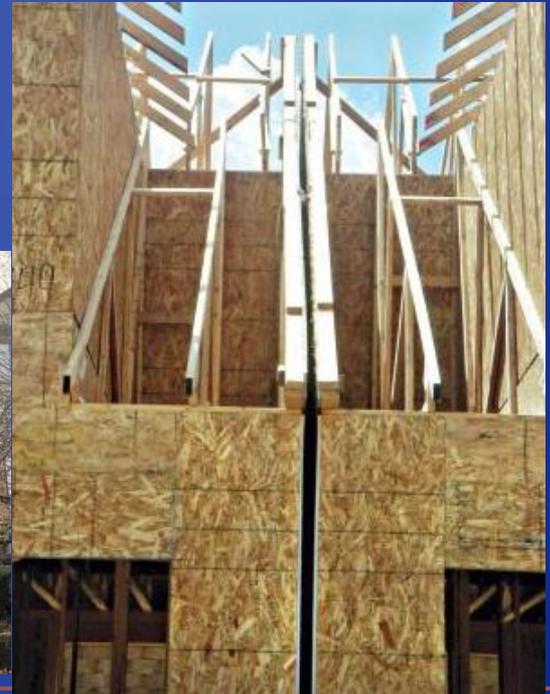
- Higher education laboratories using hazardous materials can now be considered Group B occupancies provided such laboratories comply with new Section 428 which provides an alternative approach to the existing control area provisions.



- **NEW Section!**

503.1 Scope of Fire Wall Use

- The use of fire walls is now strictly limited to only the determination of permissible types of construction, based upon allowable building area and height.
- Fire walls to continue to be used for horizontal exits, fire area separations, fire-flow calculations, etc



503.1.4 Allowable Height of Occupied Roofs

503.1.4 Occupied roofs.

A roof level or portion thereof shall be permitted to be used as an occupied roof provided the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the story immediately below the roof. The area of the occupied roofs shall not be included in the *building area* as regulated by Section 506.

Exceptions:

1. The occupancy located on an occupied roof shall not be limited to the occupancies allowed on the *story* immediately below the roof where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2 and occupant notification in accordance with Section 907.5 is provided in the area of the occupied roof.
2. Assembly occupancies shall be permitted on roofs of open parking spaces of Type I or Type II construction, in accordance with the exception to Section 903.2.1.6.

503.1.4.1 Enclosures over occupied roof areas.

Elements or structures enclosing the occupied roof areas shall not extend more than 48 inches (1220 mm) above the surface of the occupied roof.

Exception: Penthouses constructed in accordance with Section 1510.2 and towers, domes, spires and cupolas constructed in accordance with Section 1510.5.

New criteria is now provided establishing the appropriate methodology in the regulation of building height in stories above grade plane where one or more occupancies is located on the roof.

508.4.1 Occupancy Separation

- **508.4 Separated Occupancies vs. Fire Area Separations**

New provisions in Section 508.4.1 and Table 508.4 clarify that the fire separations used for mixed occupancy purposes and those used for fire area purposes address different concerns, and as such the most restrictive fire-resistance-rated conditions shall apply.

508.4.1 Occupancy classification.

Separated occupancies shall be individually classified in accordance with Section 302.1. Each separated space shall comply with this code based on the occupancy classification of that portion of the building. The most restrictive provisions of Chapter 9 that apply to the separate occupancies shall apply to the total non-fire barrier separated occupancy areas. Occupancy separations that serve to define area limits established in Chapter 9 for requiring a fire protection system shall also comply with section 901.7.

503.1, 706.6 Fire Walls

- Use of a fire wall to create separate buildings now limited to only the determination of permissible types of construction, based upon allowable building height and area.
- Fire walls can no longer to divide fire areas so as to avoid sprinkler requirements.
- Fire walls continue to be used for horizontal exits, fire area separations, fire flow calculations etc.



601, Fire Protection of Structural Roof Members

- All portions of the roof construction, including primary structural frame members such as girders and beams, are now selectively exempted from fire-resistance requirements based on Table 601 where every portion of the roof construction is at least 20 feet above any floor below.
- Except:
 - F-1
 - H
 - M
 - S-1
- Occupancies.



602.3 602.4.1 FRT Sheathing in Exterior Walls

- It has now been **clarified** that wood sheathing, as well wood framing, is permitted in exterior walls of Type III and IV buildings where fire-retardant-treated wood is used.



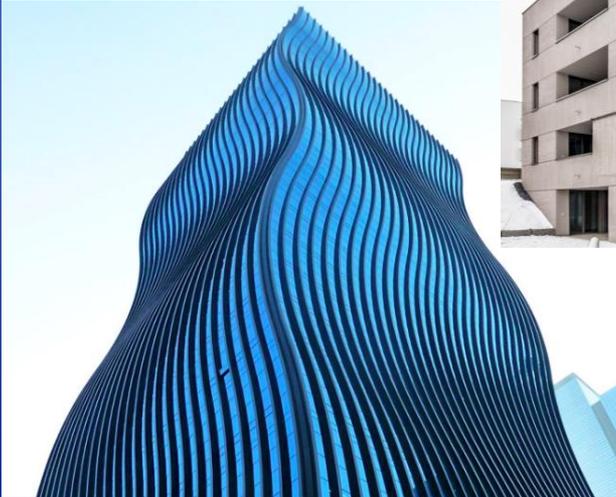
704.2, 704.4.1 Column Protection

- In walls of light-frame construction (wood and metal) where primary structural frame members require fire-resistive protection, columns extending only between the bottom and top plates do not need to be provided with individual encasement protection.



705.8.1 Measurement of FSD for Opening Protection

- Fire separation distance is measured story per story.
- Offset buildings.



706.1.1 Party Walls Not Fire Walls

- Construction as a fire wall is no longer required for a party wall provided:
 - the aggregate height and area of the buildings on each side of the party wall are compliant with Chapter 5
 - applicable easements and agreements are established addressing the maintenance of all fire and life safety systems of both buildings.



2012/2015 IBC:

706.1.1 Party walls. Any wall located on a *lot line* between adjacent buildings, which is used or adapted for joint service between the two buildings, shall be constructed as a *fire wall* in accordance with Section 706. Party walls shall be constructed without openings and shall create separate buildings.

803.3 Interior Finish for Heavy Timber

- Materials considered heavy timber construction must now comply with interior finish requirements where exposed in interior exit stairways and exit passageways.



Is this an exit passageway?

903.3.1.2.3 Protection of Group R Attics

- Sprinkler protection or acceptable alternative methods for the protection of attics are now addressed for mid-rise buildings housing multi-family occupancies and equipped with an NFPA 13R sprinkler system.

[F] 903.3.1.2.3 Attics.

Attic protection shall be provided as follows:

1. Attics that are used or intended for living purposes or storage shall be protected by an *automatic sprinkler system*.
2. Where fuel-fired equipment is installed in an unsprinklered attic, not fewer than one quick-response intermediate temperature sprinkler shall be installed above the equipment.
3. Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or 510.4, attics not required by Item 1 to have sprinklers shall comply with one of the following if the roof assembly is located more than 55 feet (16 764 mm) above the lowest level of required fire department vehicle access:
 - 3.1. Provide *automatic sprinkler system* protection.
 - 3.2. Construct the attic using noncombustible materials.
 - 3.3. Construct the attic using fire-retardant-treated wood complying with Section 2303.2.
 - 3.4. Fill the attic with noncombustible insulation.

The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with Section 503 of the *International Fire Code*.

4. Group R-4, Condition 2 occupancy attics not required by Item 1 to have sprinklers shall comply with one of the following:
 - 4.1. Provide *automatic sprinkler system* protection.
 - 4.2. Provide a heat detection system throughout the attic that is arranged to activate the building fire alarm system.
 - 4.3. Construct the attic using noncombustible materials.
 - 4.4. Construct the attic using fire-retardant-treated wood complying with Section 2303.2.
 - 4.5. Fill the attic with noncombustible insulation.



904.13 Domestic Cooking Protection

- Automatic fire-extinguishing system now required at required hood over any domestic cooktop or range in: Group I-1 occupancies, Group R-2 college dormitories. As alternative, burners tested and listed to prevent ignition of cooking oil permitted



903.2.1 Sprinklers in Group A Occupancies

- The extent to which automatic sprinkler systems are required in multi-story Group A occupancies has been clarified.
- All stories from the assembly occupancy to the level of exit discharge shall be sprinkler protected.



1004.5, 1004.8 Occupant Load for B-Business



- Floor area per occupant now at 150sq.ft per person rather than 100.
- Concentrated business use areas now in accordance with 1004.8.



1004.8 Concentrated business use areas.

The occupant load factor for concentrated business use shall be applied to telephone call centers, trading floors, electronic data processing centers and similar business use areas with a higher density of occupants than would normally be expected in a typical business occupancy environment. Where approved by the *building official*, the occupant load for concentrated business use areas shall be the actual *occupant load*, but not less than one occupant per 50 square feet (4.65 m²) of gross occupiable floor space.

1004.5 Occupant Load for M-Mercantile



- ~~30sq.ft.~~ 60sq.ft. per person.
- ~~30sq.ft. basements and grade floor areas.~~
- 300sq.ft. stock, storage and shipping

Mall buildings—covered and open

See Section 402.8.2

Mercantile

60 gross

Storage, stock, shipping areas

300 gross

Parking garages

200 gross

1006.2.1, Ex 1. Cumulative Occupant Load

- Cumulative occupant loads only applied for capacity purposes in foyers and lobbies.
- Intent: simultaneous egress through all spaces until the foyer or lobby.



1008.2.3 Illumination of the Exit Discharge

- Where a safe dispersal area is utilized, illumination is required along the exit discharge path as well as in the dispersal area.



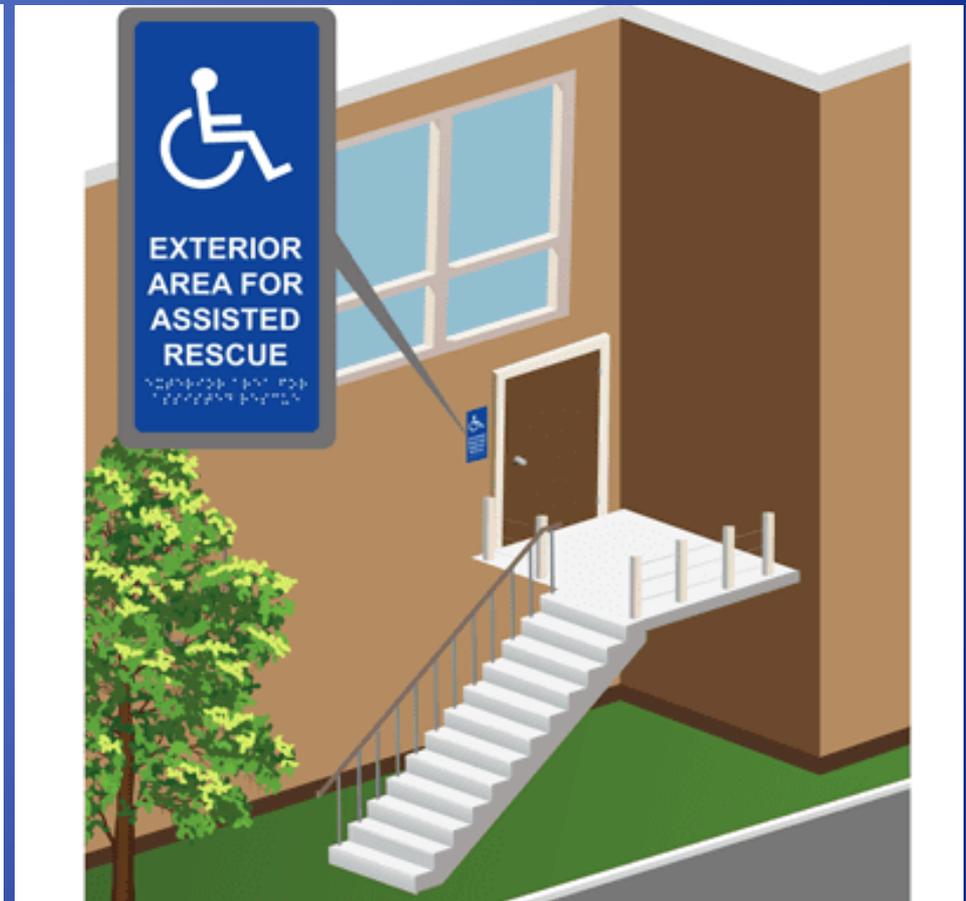
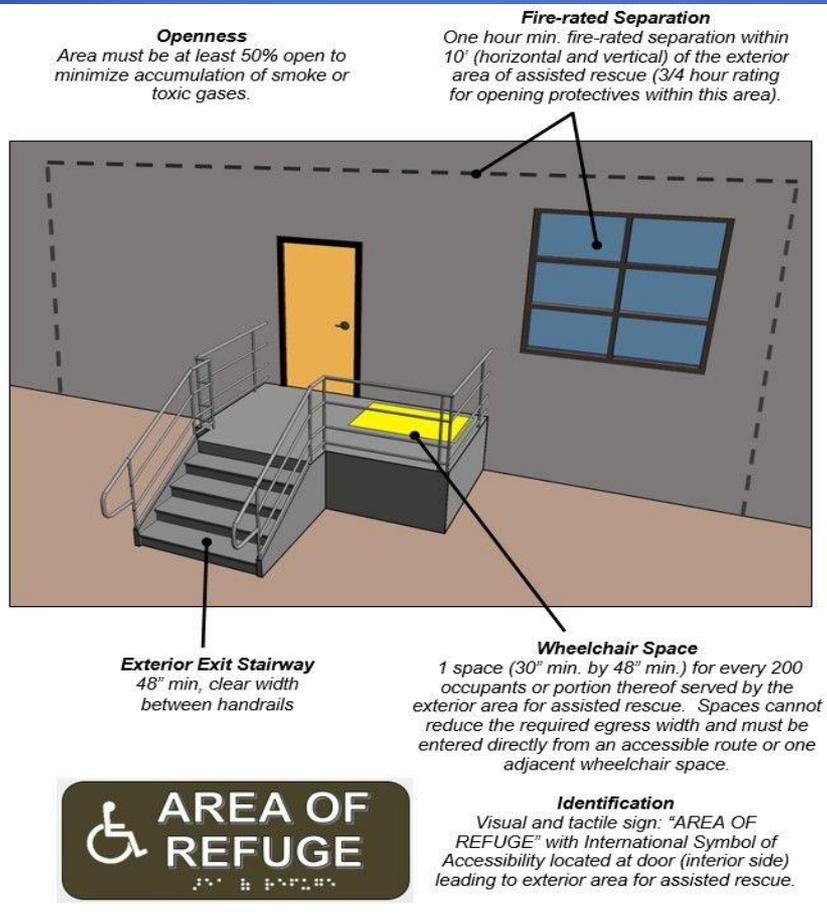
1009.1 Accessible Means of Egress

- ~~Exception: Accessible means of egress are not required to be provided in existing buildings.~~
- IEBC 305.6 Exception #2: Accessible means of egress required by Chapter 10 of the IBC are not required to be provided in existing facilities.
- NO CHANGE to the exception, but moved to the IEBC in the further removal of references to existing buildings in the IBC.



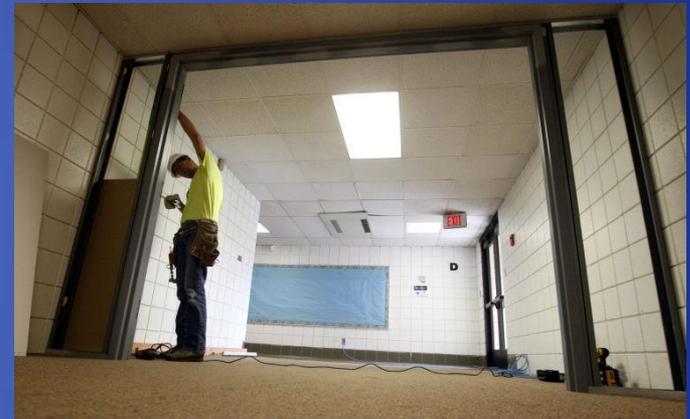
1009.7.2 Exterior Area of Assisted Rescue

- Wall rating and opening protectives not required where building is fully sprinklered.



1010.1.4.4 Locking Arrangements in Group E

- Guidance has been provided to allow for enhanced security measures on educational classroom egress doors and yet still continue to comply with applicable means of egress requirements.
- Addresses locking devices designed to keep intruders from entering room
 - **Conditions include:**
 - **Allows for outside unlocking**
 - **Openable from within room**
 - **Modifications to door hardware or closers not permitted**



1010.1.4.4 Locking arrangements in educational occupancies.

In Group E and Group B educational occupancies, egress doors from classrooms, offices and other occupied rooms shall be permitted to be provided with locking arrangements designed to keep intruders from entering the room where all of the following conditions are met:

1. The door shall be capable of being unlocked from outside the room with a key or other *approved* means.
2. The door shall be openable from within the room in accordance with Section 1010.1.9.
3. Modifications shall not be made to listed *panic hardware*, fire door hardware or door closers.

1010.1.4.4.1 Remote operation of locks.

Remote operation of locks complying with Section 1010.1.4.4 shall be permitted.

1010.1.9.8 Delayed Egress Locking Arrangements in Group E

- Delayed egress locking devices now permitted on Group E classrooms with an occupant load < 50 Also permitted on courtroom means of egress doors other than main door(s) where building is sprinklered.



1015.7 Fall Arrest for Roof Top

- Why is this in Means of Egress??

1015.7 Roof access.

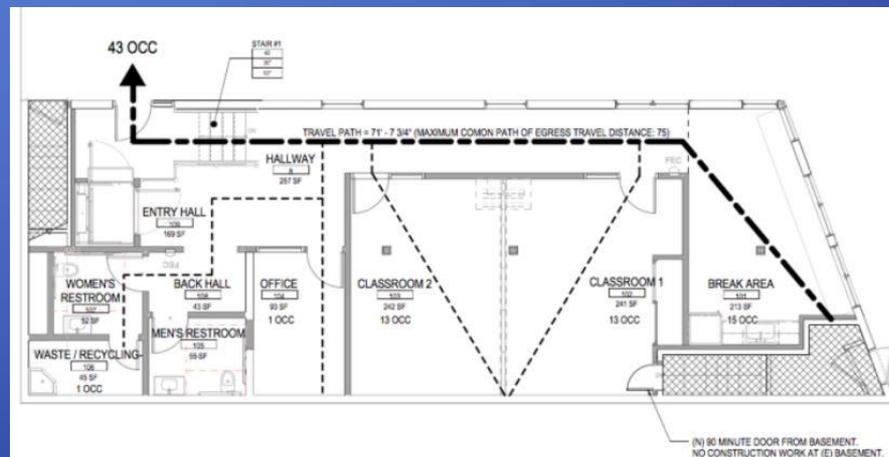
Guards shall be provided where the roof hatch opening is located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The *guard* shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter.

Exception: *Guards* are not required where personal fall arrest anchorage connector devices that comply with ANSI/ASSE Z 359.1 are installed.



1017.3 Measurement of Egress Travel

- Common path measurement applicable to every room, area or space
- Removed reference to “within a story”
 - 2018—1017.3 Exit access travel distance shall be measured from the most remote point of each room, area or space along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit.
 - 2012—1016.3 Measurement. Exit access travel distance shall be measured from the most remote point with a story along a the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit.

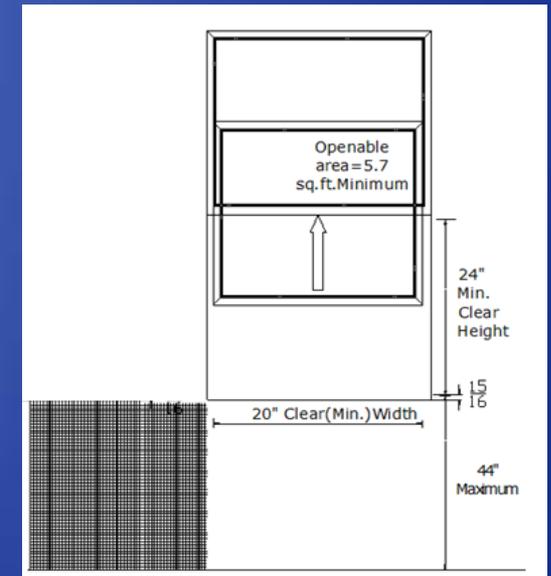


1030.1 Emergency Escape and Rescue Openings

- C-2 Zoning District

Amend Section [A] 1029.1 General by adding a fourth exception to the numbered list to read as follows:

4. In all locations zoned C-2, in other than Group R-3 occupancies, buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 of 903.3.1.2.



3004 Hoistway Venting

- Deleted in 2015 IBC
- Counterintuitive to the need for enclosed elevator lobbies in the code.
- The provisions were historic in nature and were provided for the fire service, but they were no longer seen as necessary.
- Hoistway venting requirements often conflicted with the hoistway pressurization option for elevator lobby enclosures.



1020.1.1 Elevator Hoistway Protection

- New provision
- Elevator hoistway openings shall be protected in accordance with 3006.2.1
- 3006.2.1 Rated Corridors. Where corridors are required to be fire resistance rated in accordance with 1020.1, elevator hoistway openings shall be protected in accordance with 3006.3.



3006 Hoistway Protection (2015)

- Elevator hoistway connects more than three stories.
- Elevator hoistway is required to be enclosed within a shaft enclosure 712.1.1 and where ANY of the following apply:
 - Non-sprinklered buildings
 - Group I-1, (Condition 2), I-2, I-3.
 - Highrise with >75ft tall hoistway.



1030.1 Basement Egress Window

- The 2018 IBC and IRC provides an exception for basement sleeping room (bedroom) emergency escape and rescue openings (egress windows or doors).
- The provision only applies to IRC, R-2 and R-3 occupancies that are **fully sprinklered** per NFPA 13, NFPA 13R, NFPA 13D and P2904.
- The sleeping room window can be eliminated when the basement either has: one means of egress and one egress window OR two means of egress.



1607.1 Live Loads on Decks and Balconies

- Minimum uniformly distributed live loads shall be 150% of the live load for the area served, not required to exceed 100lbs.



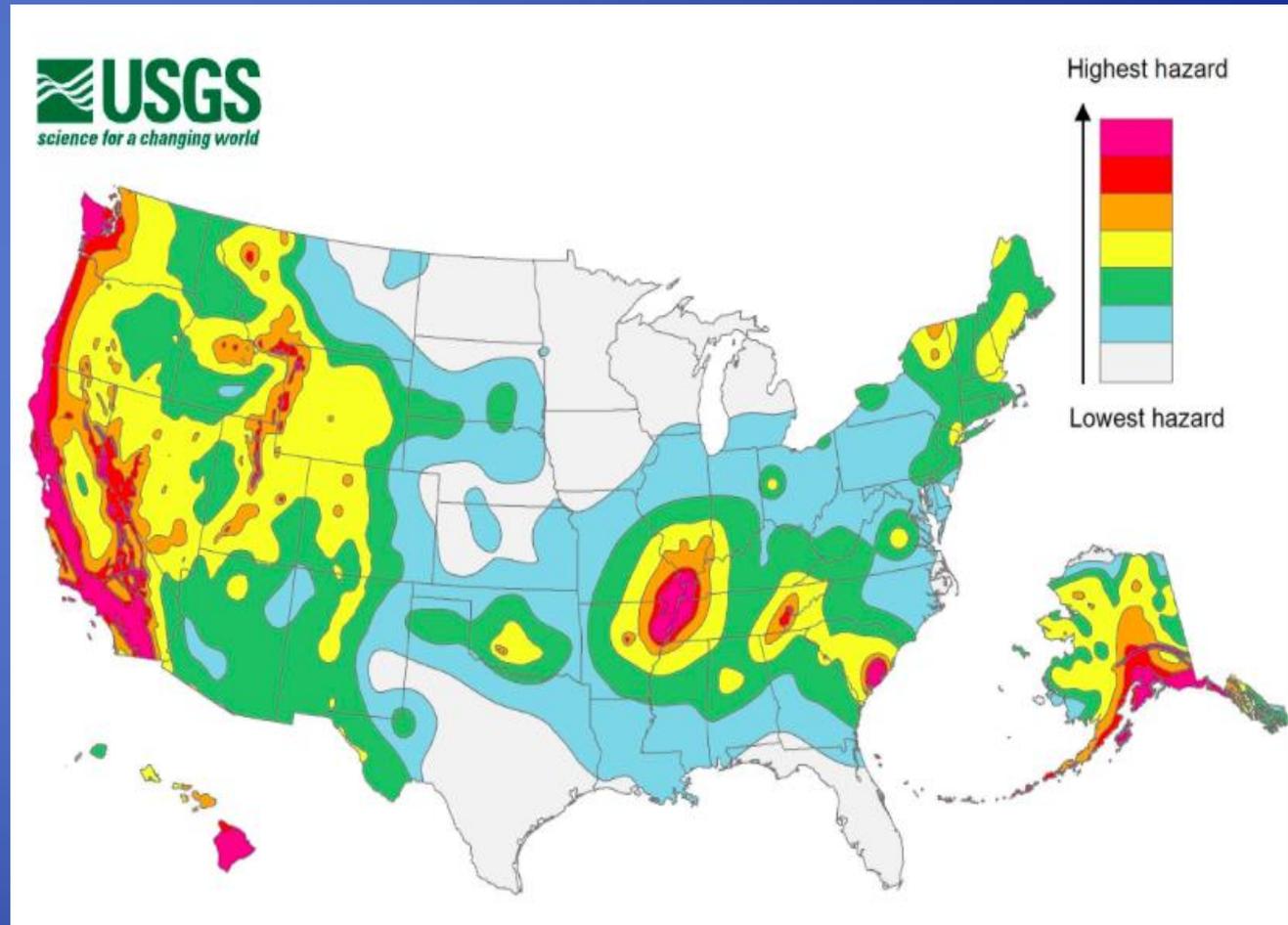
1607.14.2 Fire Walls-Minimum Lateral Loads

- Minimum lateral loading required for fire walls now established at 5 psf.
- Based on assumption that structure on one side of the wall has collapsed.
- Consistent with fire walls designed in accordance with NFPA 221.



1613.2.1 Site Soil Coefficients/Seismic Maps

- Seismic maps now updated to match new maps in:
 - 2015 NEHRP
 - 2016 ASCE 7



1704.6 Structural Observation

- Structural Observation now required in ALL buildings categorized as:
 - HIGH RISE
 - RISK CATEGORY IV



Buildings and other structures designated as essential facilities, including but not limited to:

- Group I-2, Condition 2 occupancies having emergency surgery or emergency treatment facilities.
- Ambulatory care facilities having emergency surgery or emergency treatment facilities.
- Fire, rescue, ambulance and police stations and emergency vehicle garages
- Designated earthquake, hurricane or other emergency shelters.
- Designated emergency preparedness, communications and operations centers and other facilities required for emergency response.
- Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures.
- Buildings and other structures containing quantities of highly toxic materials that:
 - Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and
 - Are sufficient to pose a threat to the public if released.^b
- Aviation control towers, air traffic control centers and emergency aircraft hangars.
- Buildings and other structures having critical national defense functions.
- Water storage facilities and pump structures required to maintain water pressure for fire suppression.

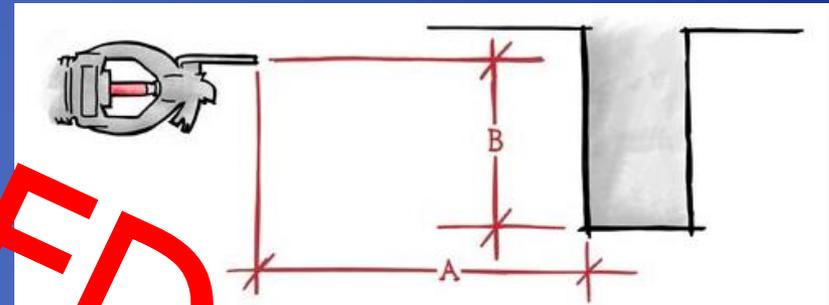
1705.5.2 Special Inspection for Trusses

- Special inspection of wood trusses required where:
 - Clear span exceeds 60 feet.
 - Overall height is 60 inches or greater.
 - Re: Inspection to verify installation of permanent individual truss member restraint/bracing installed per approved truss submittal package.



1705.12.6 Fire Sprinkler Clearance

- Provisions for periodic special inspection of minimum clearance of fire sprinkler components to mechanical, electrical and plumbing systems.
- Not required where flexible sprinkler hose fittings are used.



6. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic fire sprinkler systems are installed in structures assigned to *Seismic Design Category C, D, E or F* to verify one of the following:

6.1. Minimum clearances have been provided as required by Section 13.2.3 ASCE/SEI 7.

6.2. A nominal clearance of not less than 3 inches (76 mm) has been provided between fire protection sprinkler system drops and sprigs and: structural members not used collectively or independently to support the sprinklers; equipment attached to the building structure; and other systems' piping.

Where flexible sprinkler hose fittings are used, special inspection of minimum clearances is not required.

1804.4 Site Grading

- Impervious surfaces now permitted to slope less than 2% where surface is a door landing or ramp for egress.
- General requirements: 2% slope to allow for water drainage away from building.



2308.5.5.1 Openings in Bearing (wood) Walls

- Single member headers now permitted.
- Limited spans.
- Increase energy efficiency by allowing for greater insulation cavity.



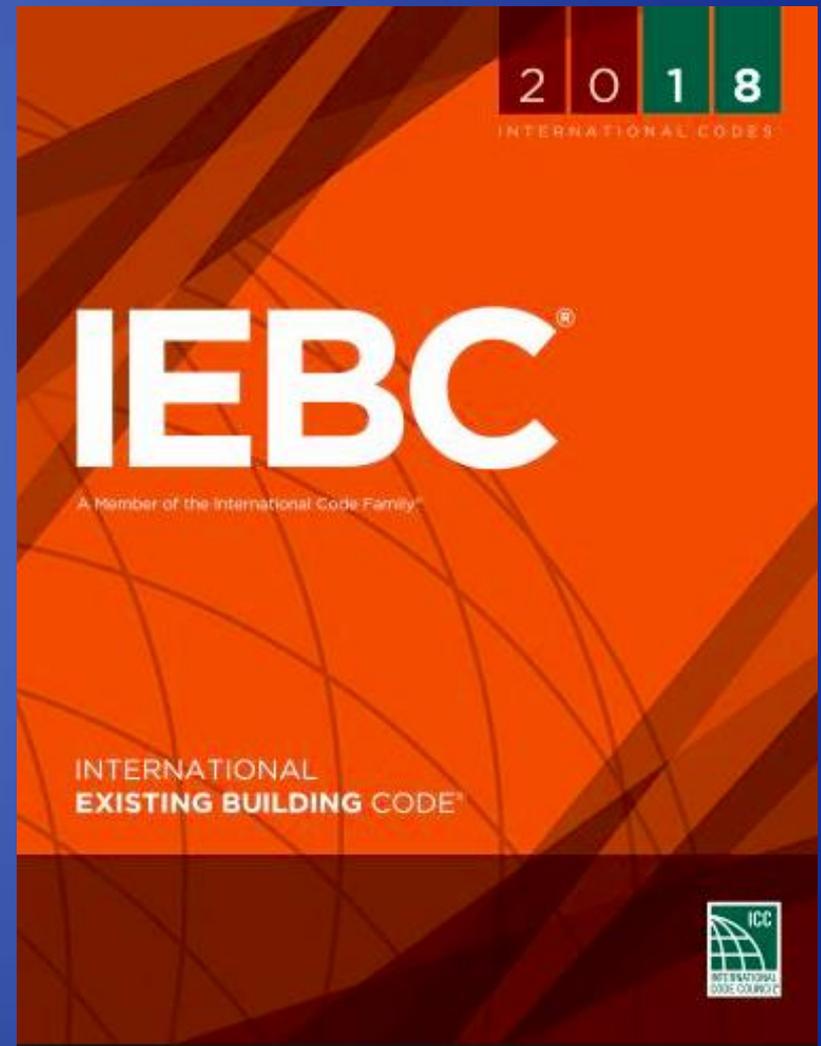
3001.2 Emergency Elevator Communication Systems

- Two way communication system in accessible elevators.
- Visual and Text based, 24/7 live interactive.
- Deaf, hard of hearing and speech impaired.



Chapter 34—Existing Buildings

- Deleted.
- International Existing Building Code.
- IBC Chapter 34 is now Chapter 4-
Prescriptive Method.
- Work Area Method.
- Performance Method



C403.2 Energy Code—Building Envelope Insulation Entirely Above Roof Deck

2012 IECC

TABLE C402.1.3
OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS, R-VALUE MET

CLIMATE ZONE	1		2		3		4 EXCEPT MARINE		5 AND MARINE 4	
	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R
Roofs										
Insulation entirely above roof deck	R-20ci	R-25ci	R-25ci	R-25ci	R-25ci	R-25ci	R-30ci	R-30ci	R-30ci	R-30ci
Metal buildings ^b	R-19 + R-11 LS	R-19 + R-11 LS	R-19 + R-11 LS	R-19 + R-11 LS	R-19 + R-11 LS	R-19 + R-11 LS	R-19 + R-11 LS			
Attic and other	R-38	R-38	R-38	R-38	R-38	R-38	R-38	R-38	R-38	R-49
Walls, above grade										
Mass ^g	R-5.7ci ^c	R-5.7ci ^c	R-5.7ci ^c	R-7.6ci	R-7.6ci	R-9.5ci	R-9.5ci	R-11.4ci	R-11.4ci	R-13.3ci
Metal building	R-13 + R-6.5ci	R-13 + R-6.5ci	R-13 + R-6.5ci	R-13ci	R-13ci	R-13ci	R-13ci	R-13ci	R-13ci	R-13ci
Metal framed	R-13 + R-5ci	R-13 + R-5ci	R-13 + R-5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci
Wood framed and other	R-13 + R-3.8ci or R-20	R-13 + R-3.8ci or R-20	R-13 + R-3.8ci or R-20	R-13 + R-3.8ci or R-20	R-13 + R-3.8ci or R-20	R-13 + R-3.8ci or R-20	R-13 + R-7.5ci or R-20 + R-3.8ci			
Walls, below grade										
Below-grade wall ^d	NR	NR	NR	NR	NR	NR	R-7.5ci	R-7.5ci	R-7.5ci	R-7.5ci
Floors										
Mass ^e	NR	NR	R-6.3ci	R-8.3ci	R-10ci	R-10ci	R-10ci	R-10.4ci	R-10ci	R-12.5ci
Joist/framing	NR	NR	R-30	R-30	R-30	R-30	R-30	R-30	R-30	R-30
Slab-on-grade floors										
Unheated slabs	NR	NR	NR	NR	NR	NR	R-10 for 24" below			
Heated slabs ^h	R-7.5 for 12" below + R-5 full slab	R-7.5 for 12" below + R-5 full slab	R-7.5 for 12" below + R-5 full slab	R-7.5 for 12" below + R-5 full slab	R-10 for 24" below + R-5 full slab	R-10 for 24" below + R-5 full slab	R-15 for 24" below + R-5 full slab	R-15 for 24" below + R-5 full slab	R-15 for 36" below + R-5 full slab	R-15 for 36" below + R-5 full slab
Opaque doors										
Nonswinging	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75

4 EXCEPT MARINE	
All Other	Group R
Roofs	
R-25ci	R-25ci
R-19 + R-11 LS	R-19 + R-11 LS
R-38	R-38
Walls, Above Grade	
R-9.5ci	R-11.4ci
R-13 + R-13ci	R-13 + R-13ci
R-13 + R-7.5ci	R-13 + R-7.5ci
R-13 + R-3.8ci or R-20	R-13 + R-3.8ci or R-20
Walls, Below Grade	
R-7.5ci	R-7.5ci
Floors	
R-10ci	R-10.4ci
R-30	R-30
Slab-on-Grade Floors	
R-10 for 24" below	R-10 for 24" below
R-15 for 24" below	R-15 for 24" below
Opaque Doors	
U-0.61	U-0.61
R-4.75	R-4.75

C405.3.2 Energy Code-Reduced Lighting Power

- Reductions based on improved efficacy of LED lighting
- Exterior lighting power reduced approximately 30%
- Interior 'space by space' reduced on average 26%
- Decorative & Retail display reduced 25%
- Open office areas now require occupancy sensors



C402.4 Energy Code-SHGC now based on orientation

**TABLE C402.4
BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC REQUIREMENTS**

CLIMATE ZONE	1		2		3		4 EXCEPT MARINE		5 AND MARINE 4		6		7		8	
Vertical fenestration																
U-factor																
Fixed fenestration	0.50		0.50		0.46		0.38		0.38		0.36		0.29		0.29	
Operable fenestration	0.65		0.65		0.60		0.45		0.45		0.43		0.37		0.37	
Entrance doors	1.10		0.83		0.77		0.77		0.77		0.77		0.77		0.77	
SHGC																
Orientation ^a	SEW	N	SEW	N	SEW	N	SEW	N	SEW	N	SEW	N	SEW	N	SEW	N
PF < 0.2	0.25	0.33	0.25	0.33	0.25	0.33	0.36	0.48	0.38	0.51	0.40	0.53	0.45	NR	0.45	N
0.2 ≤ PF < 0.5	0.30	0.37	0.30	0.37	0.30	0.37	0.43	0.53	0.46	0.56	0.48	0.58	NR	NR	NR	NR
PF ≥ 0.5	0.40	0.40	0.40	0.40	0.40	0.40	0.58	0.58	0.61	0.61	0.64	0.64	NR	NR	NR	NR
Skylights																
U-factor	0.75		0.65		0.55		0.50		0.50		0.50		0.50		0.50	
SHGC	0.35		0.35		0.35		0.40		0.40		0.40		NR		NR	

NR = No Requirement, PF = Projection Factor.

a. "N" indicates vertical fenestration oriented within 45 degrees of true north. "SEW" indicates orientations other than "N." For buildings in the southern hemisphere, reverse south and north. Buildings located at less than 23.5 degrees latitude shall use SEW for all orientations.

C402.1.4 Garage Door Glazing

- A U-factor of 0.31 has been added to table C402.1.4 as a minimum requirement for garage doors with glazing <math>< 14\%</math>.



C404.9 Shower Head Flow Rate

- A new mandatory code requirement was added to the 2018 IECC.
- Flow rate of shower heads shall not exceed 2.0gpm at 80psi in all buildings.



C406 Added Efficiency Measures

- 2012/2015 Options:
 - More efficient HVAC (2012)
 - Reduced Indoor Lighting Power (2012)
 - Enhanced Lighting Controls (2015)
 - On-site supply of renewable (2012)
 - Provision of dedicated outdoor air system for certain HVAC (2015)
 - High Efficiency Service Water Heating (2015)
- More OPTIONS added:
 - Tested air barrier at 0.25cfm/sq/ft—Reduced Air Infiltration
 - 15% UA reduction—Enhanced Envelope Performance

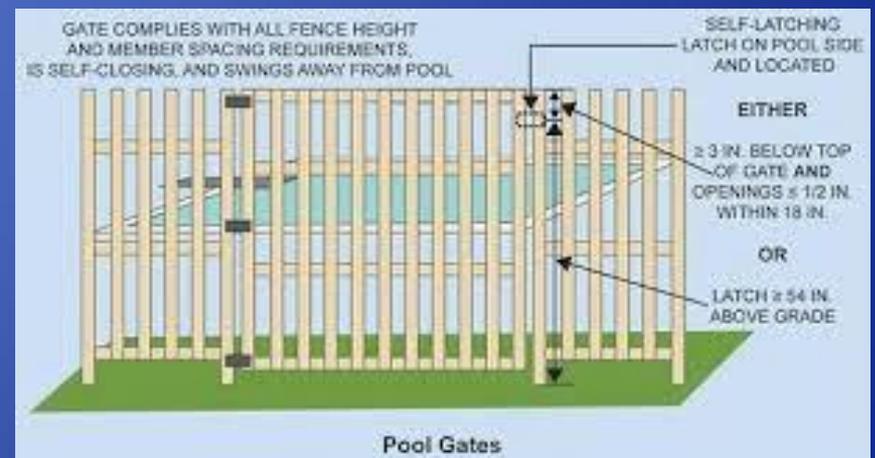




ISPSC

International Swimming Pool and Spa Safety Code

- Pool barrier requirements previously found in IBC 3109.
- In addition to any other pool related safety requirements.
- Design criteria for pool structures.

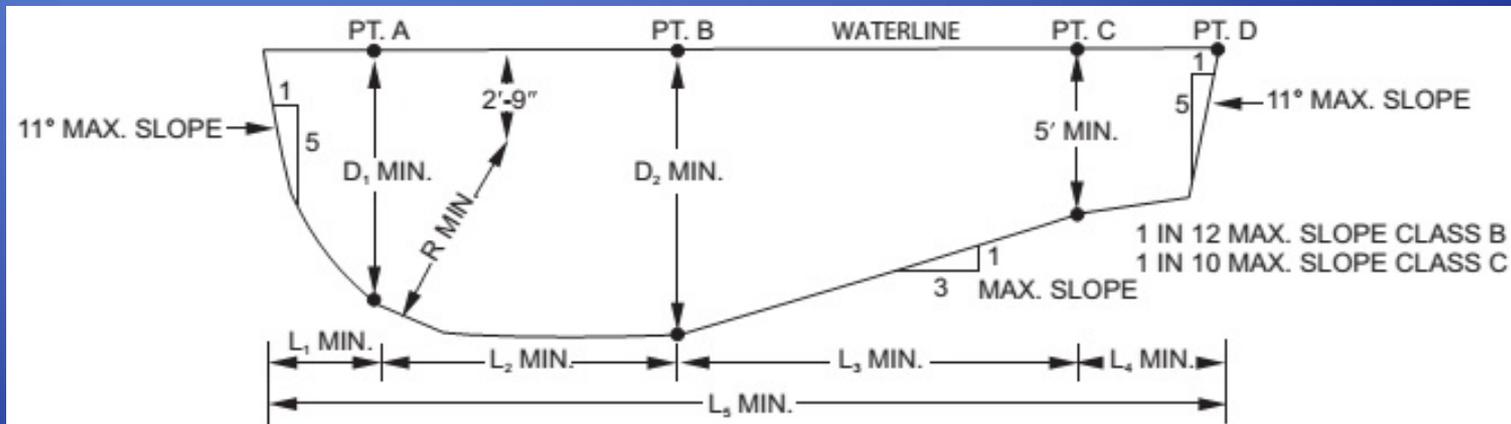




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Appendices--Adopted

- 2012, Appendices adopted except:
 - **A-Employee Qualifications**
 - ~~B-Board of Appeals~~
 - **C-Group U-Agricultural Buildings**
 - **D-Fire District**
 - **E-Supplemental Accessibility Requirements**
 - **F-Rodent Proofing**
 - ~~G-Floor Resistant Construction~~
 - **H-Signs**
 - ~~I-Patio Covers~~
 - ~~J-Grading~~
 - ~~K-Administrative Provisions~~
 - ~~L-Earthquake Recording Instrument Provisions~~
- 2018, Appendices:
 - ~~A-Employee Qualifications~~
 - ~~B-Board of Appeals~~
 - C-Group U-Agricultural Buildings
 - D-Fire District
 - ~~E-Supplemental Accessibility Requirements~~
 - ~~F-Rodent Proofing~~
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 - ~~H-Signs~~
 - ~~I-Patio Covers~~
 - ~~J-Grading~~
 - ~~K-Administrative Provisions~~
 - ~~L-Earthquake Recording Instrument Provisions~~
 - ~~M-Tsunami Floor Hazards~~
 - ~~N-Replicable Buildings~~



2018

Knoxville Building Code

Significant Changes (proposed)

July 31, 2018

The End. Thank You

By James Tente, MCP

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