SIGNIFICANT CHANGES TO THE 2018 BUILDING CODES

PRESENTED TO CONTRACTORS AND DEVELOPERS ON OCTOBER 5TH 2018

City of New Braunfels

PURPOSE

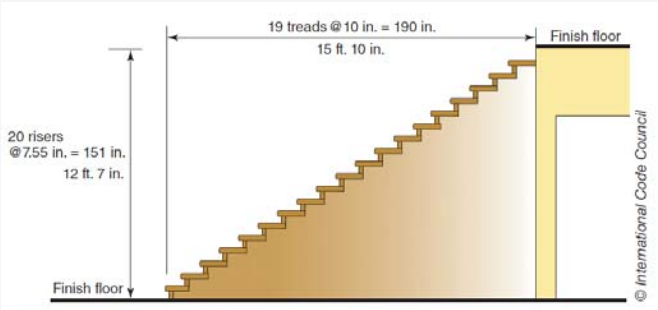
Inform you about some of the significant changes to the International Building Codes

SIGNIFICANT CHANGES TO THE 2018 IRC

R311.7.3 Maximum Stair Rise Between Landings

Change Summary: The maximum rise of a flight of stairs has increased by 4 inches, from 147 to 151 inches.

2018 Code: R311.7.3 Vertical rise. A flight of stairs shall not have a vertical rise larger than ~~147~~ 151 inches (~~3734~~ 3835 mm) between floor levels or landings.

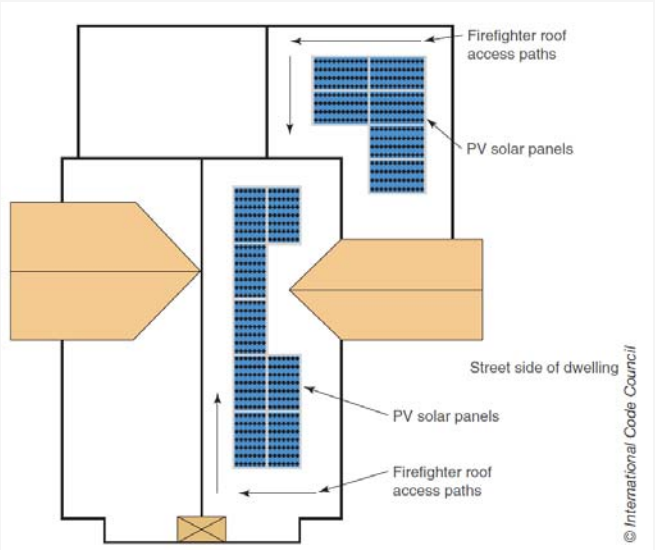


Maximum 151-inch total rise between floors or landings

R324.6

Roof Access for Photovoltaic Solar Energy Systems

Change Summary: Requirements for roof access and pathways for firefighters have been introduced into the IRC provisions for rooftop mounted photovoltaic solar energy systems.



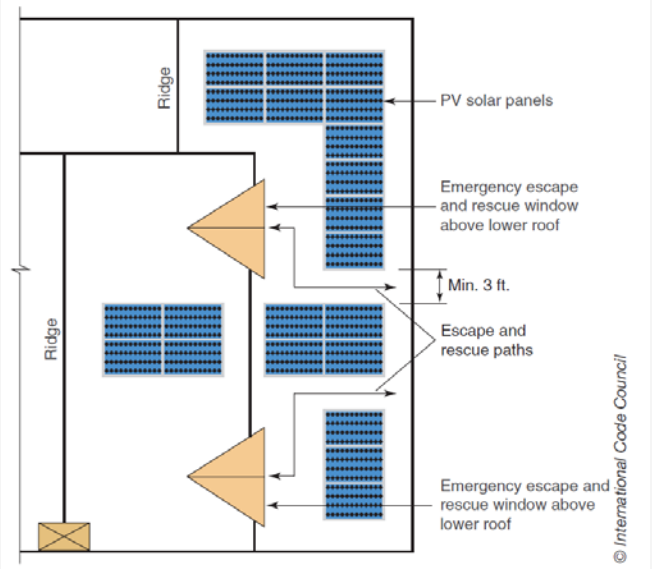
Required roof access and pathways for firefighters for roof-mounted PV solar systems

R324.6.2.2

Solar Panels near Emergency Escape and Rescue Openings

Change Summary: Rooftop-mounted photovoltaic solar energy panels and modules are not permitted to be installed directly below emergency escape and rescue openings.

R324.6.2.2 Emergency escape and rescue opening. Panels and modules installed on dwellings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A pathway not less than 36-inches (914 mm) wide shall be provided to the emergency escape and rescue opening.



A 36-inch-wide pathway is required for emergency escape and rescue openings above roof-mounted PV solar panels.

R507
Decks

Change Summary: Section R507 is reorganized for ease of use and additional provisions are added to simplify prescriptive construction of a deck. Along with the addition and modification of Tables.

TABLE 5-1 Deck Section Reorganization

2018 IRC Section Numbers		2015 IRC Section Numbers		2012 IRC Section Numbers	
Section	**Topic**	**Section**	**Topic**	**Section**	**Topic**
R507.1	Decks	R507.1	General	R507.1	Decks
R507.2	Materials	New			
R507.2.1	Wood materials				
R507.2.1.1	Engineered wood products				
R507.2.2	Plastic composite elements	R507.3	Plastic composite elements	R507.3	Wood/plastic composites
R507.2.2.1	Labeling	R507.3.1	Labeling	New	
R507.2.2.2	Flame spread	R507.3.2	Flame spread		
R507.2.2.3	Decay	R507.3.3	Decay		
R507.2.2.4	Termites	R507.3.4	Termites		
R507.2.2.5	Installation	R507.3.5	Installation	R507.3.1	Wood/plastic composites
R507.2.3	Fasteners and connectors	New			
R507.2.4	Flashing	New			
R507.2.5	Alternate materials	New			
R507.3	Footings	New			
R507.3.1	Minimum size				
R507.3.2	Minimum depth				
R507.4	Posts	R507.8	Posts	New	
R507.4.1	Post to footing	R507.8.1	Post to footing		
R507.5	Beams	R507.6	Beams	New	
R507.5.1	Beam bearing	R507.7	Beam bearing		
R507.5.2	Beam connection to supports	R507.7.1	Post to beam		
R507.6	Joists	R507.5	Joists	New	
R507.6.1	Joist bearing	R507.7	Joist bearing		
R507.6.2	Lateral restraint	R507.5.1	Lateral restraint		
R507.7	Decking	R507.4	Decking	New	
R507.8	Vertical and lateral supports	New			
R507.9	Vertical and lateral support at band joists	R507.1, R507.2	Decks, Deck ledger connection	R507.2	Ledger to connection
R507.9.1	Vertical support	New			
R507.9.1.1	Ledger	R507.2.1	Ledger details	New	
R507.9.1.2	Band joist	R507.2.2	Band joist	New	
R507.9.1.3	Ledger to band joist	R507.2.3	Ledger to band joist	R507.2, R507.2.1	Ledger - band joist conn., Placement of lag screws
R507.9.1.4	Alternate ledger details	R507.2	Deck ledger connection	R507.2.2	Alternate ledger connection
R507.9.2	Lateral connection	R507.2.4	Deck lateral load connection	R507.2.3	Deck lateral load connection

A last note on terminology within this section, a lateral load in Section R507 is described as a horizontal load.

R507.3
Deck Footings

Change Summary: A new section on footing minimum size is added to help describe minimum prescriptive (non-engineered) requirements for an exterior deck footing based on snow load, soil quality and footing shape and size.

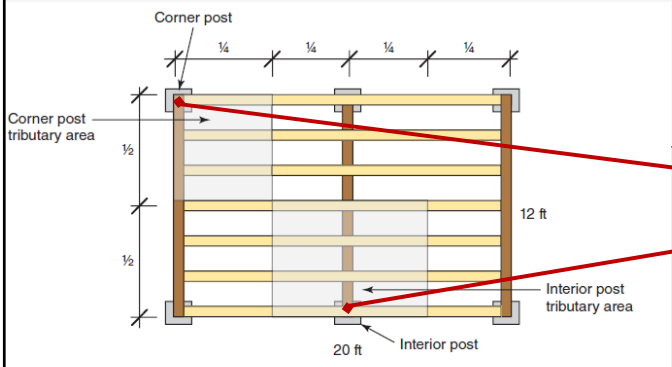
TABLE R507.3.1 Minimum Footing Size for Decks

		Load Bearing Value of Soils[a,c,d] (psf)					
		1500[e]			2000[e]		
Live or Ground Snow Load[b] (psf)	Tributary Area (sq. ft.)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
40	20	12	14	6	12	14	6
	40	14	16	6	12	14	6
	60	17	19	6	15	17	6
	80	20	22	7	17	19	6
	100	22	25	8	19	21	6
	120	24	27	9	21	23	7
	140	26	29	10	22	25	8
	160	28	31	11	24	27	9
50	20	12	14	6	12	14	6
	40	15	17	6	13	15	6
	60	19	21	6	16	18	6
	80	21	24	8	19	21	6
	100	24	27	9	21	23	7
	120	26	30	10	23	26	8
	140	28	32	11	25	28	9
	160	30	34	12	26	30	10
60	20	12	14	6	12	14	6
	40	16	19	6	14	16	6
	60	20	23	7	17	20	6
	80	23	26	9	20	23	7
	100	26	29	10	22	25	8
	120	28	32	11	25	28	9
	140	31	35	12	27	30	10
	160	33	37	13	28	32	11
70	20	12	14	6	12	14	6
	40	18	20	6	15	17	6
	60	21	24	8	19	21	6
	80	25	28	9	21	24	8
	100	28	31	11	24	27	9
	120	30	34	12	26	30	10
	140	33	37	13	28	32	11
	160	35	40	15	30	34	12

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m², 1 pound per square foot = 0.0479 kPa

a. Interpolation permitted, extrapolation not permitted
b. Based on highest load case: Dead + Live or Dead + Snow
c. Assumes minimum square footing to be 12 inches × 12 inches × 6 inches for 6 × 6 post.
d. If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
e. Area, in square feet, of deck surface supported by post and footings.

(Only a portion of the table is shown for brevity and clarity.)

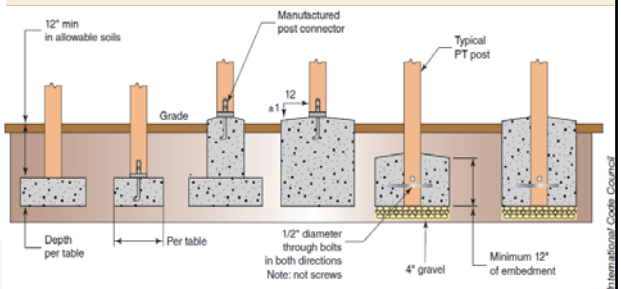


Tributary area – Corner post
Length is ¼ of total length = 20 ft × ¼ = 5 ft
Width is ½ of total width = 12 ft × ½ = 6 ft
Area = 5 ft × 6 ft = 30 ft²

Tributary area – Interior post
Length is ½ of total length = 20 ft × ½ = 10 ft
Width is ½ of total width = 12 ft × ½ = 6 ft
Area = 10 ft × 6 ft = 60 ft²

Deck tributary area

Load Bearing Valu				
		1500[e]		
Live or Ground Snow Load[b] (psf)	Tributary Area (sq.ft.)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
	20	12	14	6
	40	14	16	6
	60	17	19	6
	80	20	22	7
40	100	22	25	8
	120	24	27	9
	140	26	29	10
	160	28	31	11



Note: Posts must be centered on or in footing.

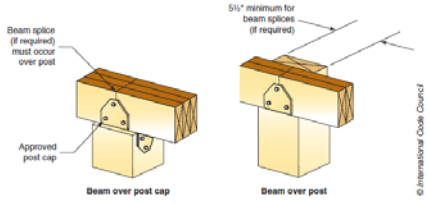
Deck post to deck footing connection

R507.5
Deck Beams

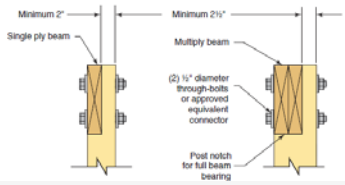
Change Summary: The table on maximum beam span now includes single-ply beams. Beam bearing and connection to posts are clarified.

TABLE R507.6 R507.5 Deck Beam Span Lengths[a, b, g] (feet-inches)

Species[c]	Size[d]	Deck Joist Span Less Than or Equal to (feet)						
		6	8	10	12	14	16	18
Southern Pine	1 – 2 × 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 × 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10



Deck beam to deck post connection

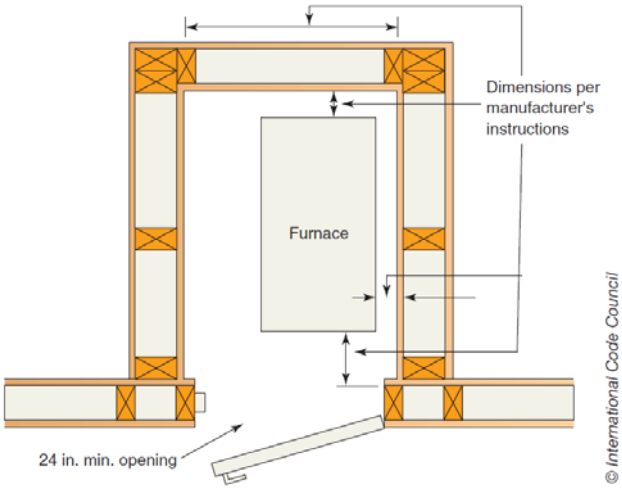


R703.2
Water-Resistive Barrier

Change Summary: Water-resistive barrier materials other than No. 15 asphalt felt must be installed following the manufacturer's installation instructions. The exemption for detached accessory buildings is deleted.

M1305.1.1
Access to Furnaces within Compartments

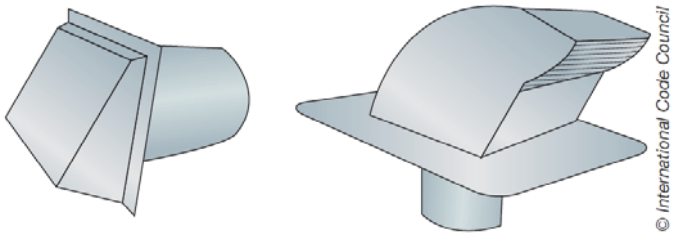
Change Summary: The appliance access and clearance requirements for furnaces in compartments have been removed from the code in favor of other code provisions and the manufacturer's instructions.



The access and clearance requirements for furnaces in compartments have been removed in favor of the manufacturer's instructions.

M1502.3.1
Dryer Exhaust Duct Termination

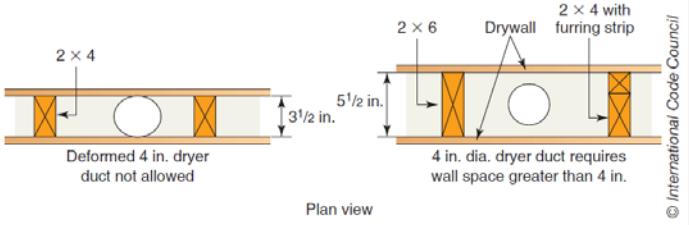
Change Summary: A minimum area of 12.5 square inches has been established for the terminal outlet of dryer duct exhaust.



Wall and roof terminations for dryer exhaust must be undiminished in size and provide 12.5 square inches of area.

M1502.4.2
Concealed Dryer Exhaust Ducts

Change Summary: Wall and ceiling cavities enclosing dryer exhaust ducts must provide sufficient space that the 4-inch duct is not squeezed out of its round shape.



Dryer exhaust duct in concealed spaces

Table M2101.9
Hanger Spacing for PEX Tubing

Change Summary: Support spacing requirements for PEX tubing 1¼ inches and greater in diameter have been added to Table M2101.9.

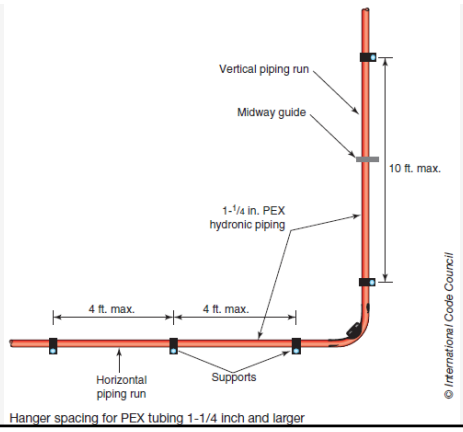
TABLE M2101.9 Hanger Spacing Intervals

Piping Material	Maximum Horizontal Spacing (feet)	Maximum Vertical Spacing (feet)
PEX tubing ≤ 1 inch	2.67	4
PEX tubing ≥ 1 ¼ inches	4	10[a]

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe.

(Portions of table not shown remain unchanged.)



Hanger spacing for PEX tubing 1-1/4 inch and larger

G2447.2 Commercial Cooking Appliances

Change Summary: Commercial cooking appliances are now permitted in dwelling units when installed in accordance with an engineered design and the manufacturer's instructions.

Commercial cooking appliances are permitted with an engineered design

P2503.7 Air Testing of PEX Piping

Change Summary: Compressed-air testing of PEX water-supply piping is now allowed when testing is in accordance with the manufacturer's instructions.

Air testing of PEX water piping is permitted

P2713.1 Bathtub Overflow

Change Summary: Overflow outlets are no longer required for bathtubs.

2018 Code: P2713.1 Bathtub waste outlets and overflows.

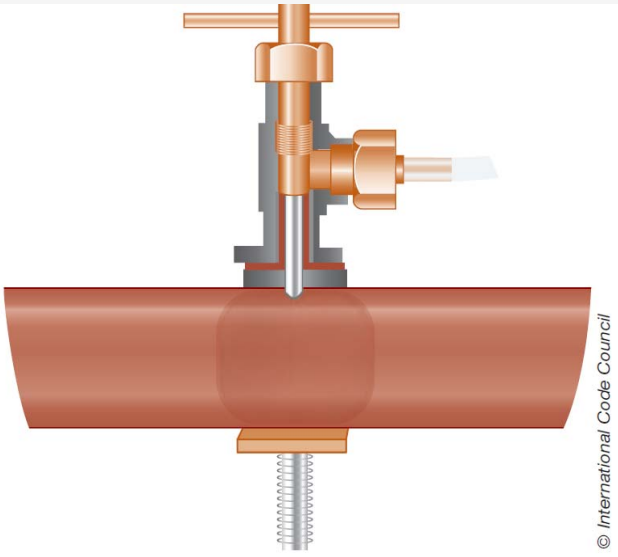
Bathtubs shall be equipped with a waste outlet ~~and an overflow outlet. The outlets shall be connected to waste tubing or piping~~ that is not less than 1½ inches (38 mm) in diameter. The waste outlet shall be equipped with a water-tight stopper. Where an overflow is installed, the overflow shall be not less than 1½ inches (38 mm) in diameter.

An overflow is not required for a bathtub

P2906.6.1 Saddle Tap Fittings on Water Distribution Piping

Change Summary: Saddle tap fittings are no longer permitted on water distribution system piping.

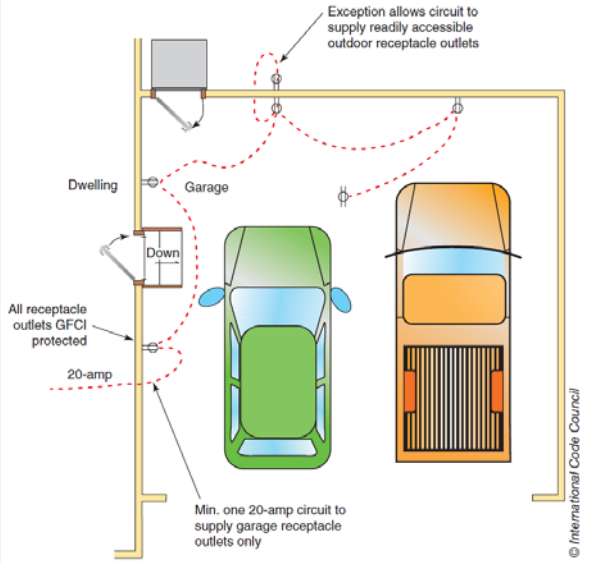
2018 Code: P2906.6.1 Saddle tap fittings. The use of saddle tap fittings and combination saddle tap and valve fittings shall be prohibited.



Saddle tap fitting

E3703.5 Garage Branch Circuits

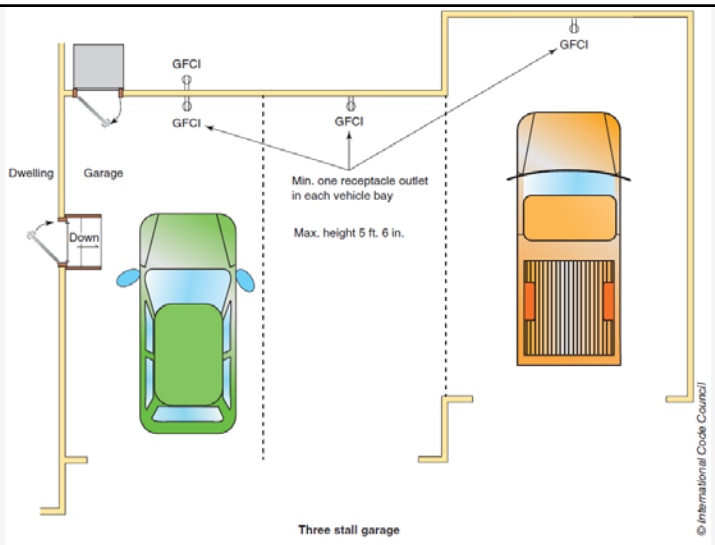
Change Summary: A separate 20-ampere branch circuit is now required to serve receptacle outlets of attached garages and detached garages with electric power.



20-amp circuit to supply garage receptacle outlets

E3901.9 Garage Receptacle Outlet Location

Change Summary: A receptacle outlet must be located in each vehicle bay in a garage.



Receptacle outlet required in each vehicle space in garage

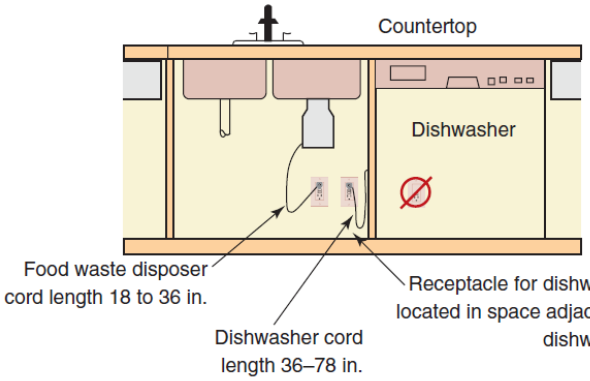
E4101.3
Cord-and-Plug–Connected Appliances

Change Summary: The maximum cord lengths for range hoods and built-in dishwashers have increased, and the code clarifies that the receptacle outlet for the dishwasher has to be in the space adjacent to the appliance.

TABLE E4101.3 Flexible Cord Length

Appliance	Minimum Cord Length (inches)	Maximum Cord Length (inches)
Electrically operated in-sink waste disposal	18	36
Built-in dishwasher	36	~~48~~78
Trash compactor	36	48
Range hoods	18	~~36~~48

For SI: 1 inch = 25.4 mm.



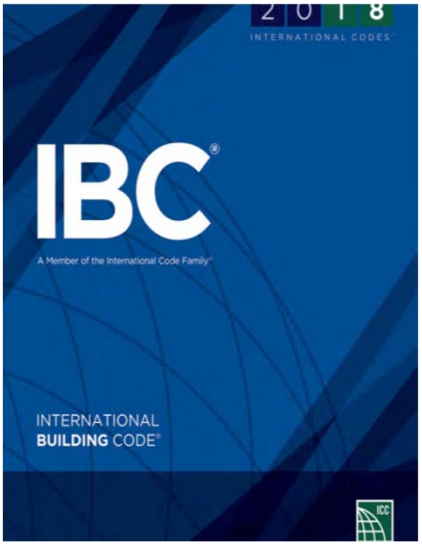
Cord and plug kitchen appliances

Appendix Q
Tiny Houses

Change Summary: A new Appendix Q covers provisions for tiny houses, defined as dwellings with a maximum floor area of 400 square feet.

TABLE A-1

Element	General requirement
Egress roof access window	A skylight or roof window for emergency escape from a loft
Loft	Open on one side with a ceiling height of less than 6 feet 8 inches
Tiny house	Maximum area 400 square feet excluding lofts
Ceiling heights	Generally 6 feet 8 inches or less
Minimum loft area	35 square feet with 5-foot minimum dimension
Stairway	Width: 17 to 25 inches Headroom: 6 feet 2 inches Risers: 7 to 12 inches Treads: Calculated based on riser height
Ladders	Width: 12 inches Rung spacing: 10 to 14 inches Incline 70 to 80 degrees
Loft guard height	One-half of the clear height to ceiling Not required to be over 36 inches



SIGNIFICANT CHANGES TO THE 2018 IBC

311.1.1 Classification of Accessory Storage Spaces

Change Summary: Regardless of size, storage rooms and storage spaces that are accessory to other uses are to be classified as part of the occupancy to which they are accessory.

Tyler Olson/Shutterstock.com

Hospital storage room

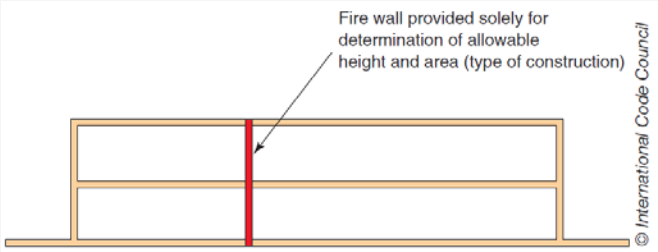
Self-storage units

311.2 Classification of Self-Service Storage Facilities

Change Summary: Due to the reasonable expectation that self-storage facilities will contain a considerable amount of combustible materials, such facilities are now specifically identified as Group S-1 occupancies.

503.1, 706.1 Scope of Fire Wall Use

Change Summary: 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.



Use of fire wall

904.12 Commercial Cooking Operations

Change Summary: The installation of fire-extinguishing systems as protection for commercial cooking operations must now also comply with NFPA 96. In addition, commercial cooking systems are now permitted to be protected with a water mist fire-extinguishing system complying with NFPA 750.

Automatic water mist system protecting commercial cooking operation

Table1004.5, 1004.8 Occupant Load Calculation in Maximum Floor Area Allowances Business Use Areas

Change Summary: The method of calculating occupant load in business areas has been revised, which will typically result in reduced design occupant loads. However, higher design occupant loads can now be assigned to concentrated business areas such as telephone call centers and similar uses.

TABLE ~~1004.1.2~~ 1004.5 Maximum Floor Area Allowances Per Occupant

Function of Space	Occupant Load Factor[a]
Business areas	~~100~~150 gross
Concentrated business use areas	See Section 1004.8

(No changes to other portions of table.)

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.

308.10 Thermal Expansion Tank Support

CHANGE SUMMARY: A thermal expansion tank cannot be supported by the piping connected to the tank.

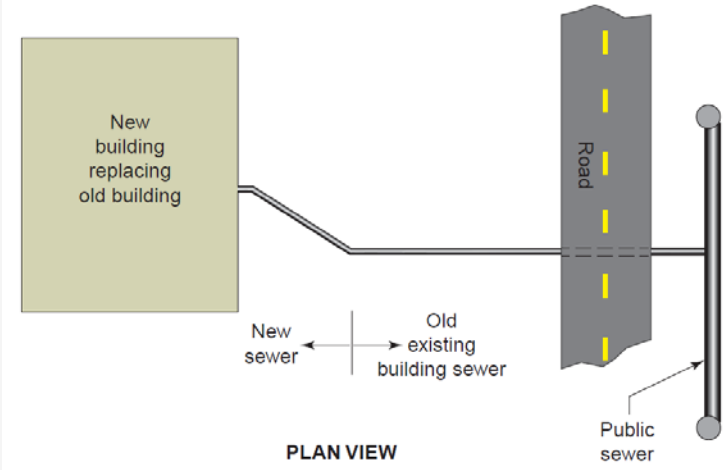
2018 CODE: 308.10 Thermal expansion tanks. A thermal expansion tank shall be supported in accordance with the manufacturer's instructions. Thermal expansion tanks shall not be supported by the piping that connects to such tanks.

One method of independent tank support

Unsupported thermal expansion tank

703.4 Reuse of Buried Drain and Sewer Piping

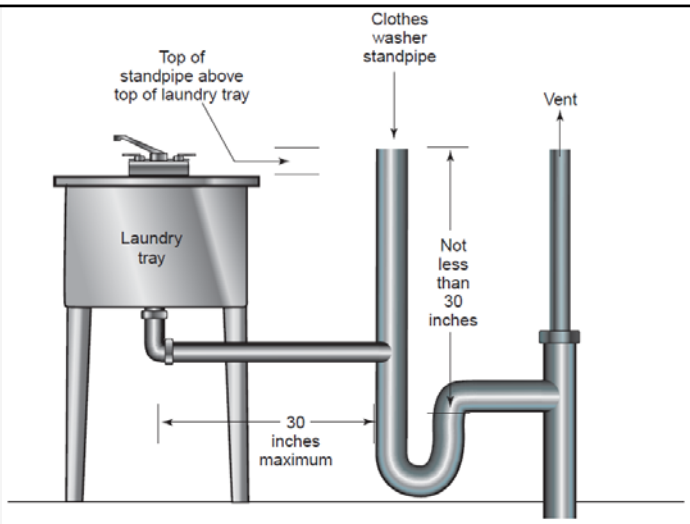
CHANGE SUMMARY: The use of existing building sewers and existing building drains for new building plumbing system is clarified.



Old existing building sewer need not be replaced

802.4.3.1
Laundry Tub Connection to Clothes Washer Standpipe

CHANGE SUMMARY: An alternative method for connecting a laundry tub drain, without a fixture trap, to a clothes washer standpipe is added to the code.

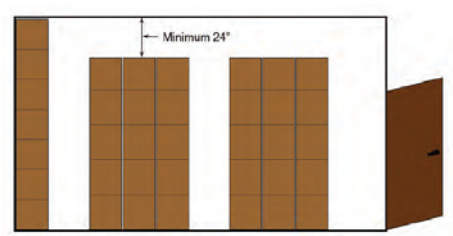


Laundry tray connected to clothes washer standpipe

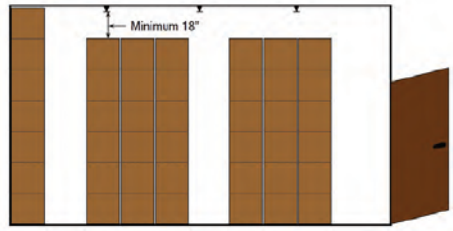
SIGNIFICANT CHANGES TO THE 2018 IFC

315.3.1 Ceiling Clearance for Indoor Storage

CHANGE SUMMARY: Exceptions have been added which allow an increase in the height of storage along walls in sprinklered and non-sprinklered buildings.



Storage in a nonsprinklered room can extend to the ceiling along the walls, but must maintain 24 inches clear to the ceiling in the remainder of the room.



Storage in a room with sprinklers can extend to the ceiling along the walls, but must maintain 18 inches clear below the fire sprinkler deflectors in the remainder of the room.

403.12.3, 403.12.3.1 Crowd Managers

CHANGE SUMMARY:

The threshold for crowd managers dropped from 1,000 to 500 people for certain events.

International Code Council®

Crowd managers are required to be trained. Training is available via the internet and a link is available through the ICC Preferred Provider Program at www.crowdmanagers.com.

510 Emergency Responder Radio Coverage

CHANGE SUMMARY: Requirements for emergency responder radio coverage have been revised to address industry and equipment enhancements with a new reference to NFPA 1221.

The new Section 510.4.2.5 requires that the system is monitored by a fire alarm control unit. The items monitored are:

1. Loss of normal AC power supply.
2. Failure of the battery charger.
3. Malfunction of the donor antennae.
4. Failure of active RF-emitting devices.
5. Battery capacity of standby power supply falling to 70 percent of operating capacity or less.
6. Failure of critical system components.
7. The communications link between the fire alarm system and the emergency responder radio enhancement system.

903.2.3 Sprinklers in Group E Occupancies

CHANGE SUMMARY: Provides occupant load threshold for automatic sprinkler system requirements in Group E occupancies.

Group E occupancies now require an automatic sprinkler system when the occupant load in a fire area is 300 or more.

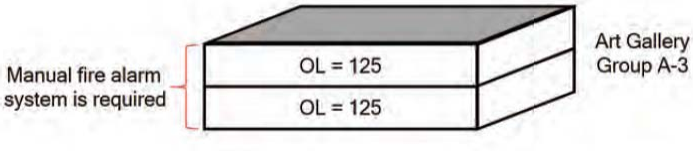
903.3.1.2.3 Protection of Attics in Group R Occupancies

Change Summary: 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.

Construction of mid-rise residential building

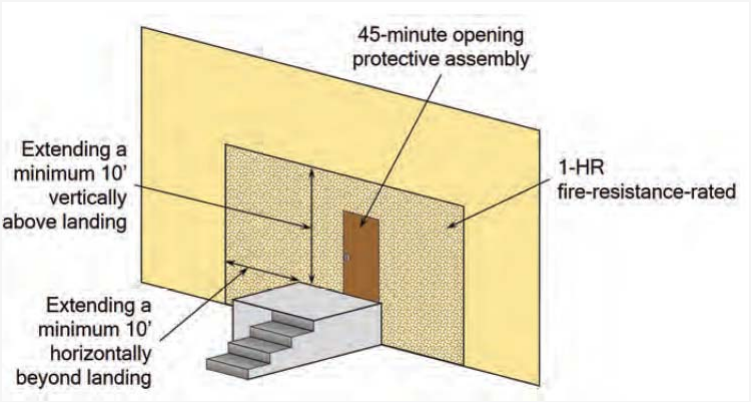
907.2.1 Fire Alarms in Group A Occupancies

CHANGE SUMMARY: A new fire alarm threshold has been added for Group A occupancies where an occupant load of 100 or more is located on a level other than the level of exit discharge.



1009.7.2 Protection of Exterior Areas of Assisted Rescue

CHANGE SUMMARY: The 1-hour fire-resistance-rated separation between an exterior of assisted rescue and the building is not required if the building is protected with an automatic sprinkler system designed to NFPA 13 or 13R.



1010.1.4.4 Locking Arrangements in Educational Occupancies

CHANGE TYPE: Addition

CHANGE SUMMARY: Guidance is provided to allow enhanced security measures yet still meet egress requirements for classroom doors.

Photo courtesy of Schlage Lock Co., LLC (part of Allegion plc)

This electrically operated lock is openable from outside the classroom by entering the proper pass code.

1031.2.2 Locking Arrangements in Existing Educational Occupancies

CHANGE TYPE: Addition

CHANGE SUMMARY: Guidance is provided to allow enhanced security measures yet still meet egress requirements on classroom doors.

Photo courtesy of ASSA ABLOY

A fob is used to operate this classroom security lock from inside the room.

1103.5.1 Fire Sprinklers in Existing Group A-2 Occupancies

CHANGE TYPE: Addition

CHANGE SUMMARY: A section has been added to Chapter 11 which requires the retrofit installation of a fire sprinkler system in existing Group A-2 occupancies where alcoholic beverages are consumed if the occupant load is 300 or more.

International Code Council®

Existing Group A-2 occupancies will be required to install an automatic sprinkler system if the occupant load is 300 or more.

3106 Outdoor Assembly Events

CHANGE TYPE: Addition

CHANGE SUMMARY: This section adds requirements specific to outdoor public gatherings and improves the correlation of requirements in the IBC and IFC.

International Code Council®

An outdoor event where vehicular access and access to fire protection equipment is impeded.

3314 Fire Watch During Construction

Change Summary: In order to protect adjacent properties from fire in a building of considerable height when under construction, new provisions have been established to give authority to the fire code official to require a fire watch during those hours where no construction work is being done.

Building under construction