2015 IBC SIGNIFICANT CODE CHANGES AND AMENDMENTS

COLUMBIA, MISSOURI

Our Vision

Columbia is the best place for everyone to live, work, learn and play.

Our Mission

To serve the public through democratic, transparent and efficient government

Our Core Values

- **Service** - We exist to provide the best possible service to all.
- **Communication** - We listen and respond with clear, compassionate and timely communication.
- **Continuous Improvement** - We value excellence through planning, learning and innovative practices.
- **Integrity** - Our employees are ethical, fair, honest and responsible.
- **Teamwork** - We achieve results by valuing diversity and partnerships within our own organization and the community.
- **Stewardship** - We are responsible with the resources the community entrusts to us.

THANK YOU BCCC!!!

It has been a long arduous process to review, suggest amendments, and to adopt the 2015 family of ICC Codes. The BCCC has, for years, done an incredible job of amending the codes to fit our community. Please join me in a round of applause for their painstaking efforts.

All but a handful of the BCCC recommendations were approved and adopted by Council and this board has thus successfully tailored the codes to meet City of Columbia needs.

2015 INTERNATIONAL BUILDING CODE (IBC)

Most of the IBC code changes in this cycle consist of clarifications and reformatting. These changes focus on ease of compliance and interpretation for the purpose of promoting life safety, public health, protection of property, and energy efficiency of buildings. There were also major code changes with substantial cost implications including required storm shelters for educational (K through 12 schools) and critical emergency operation use groups (911 call stations, fire, rescue, ambulance, and police stations), as well as increased energy efficiency requirements.

We will go through most of the more substantial changes to the 2015 IBC in this presentation and will also review local amendments.

BUSINESS GROUP B

1. Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2500 square feet in area.

2. Training and skill development not in a school or academic program–this shall include but not be limited to, tutoring centers, martial arts studios, gymnastics and similar uses regardless of the ages served, and where not classified as a Group A occupancy (50 or more occupants).

BUSINESS GROUP B-
FOOD PROCESSING ESTABLISHMENT

BUSINESS GROUP B-
TRAINING AND SKILL DEVELOPMENT

GROUP I-2 CONDITIONS 1 & 2

Group I-2
§308.4

- Condition 1 – nursing and medical care, ***but not*** emergency care, surgery, psychiatric care

Nursing Home

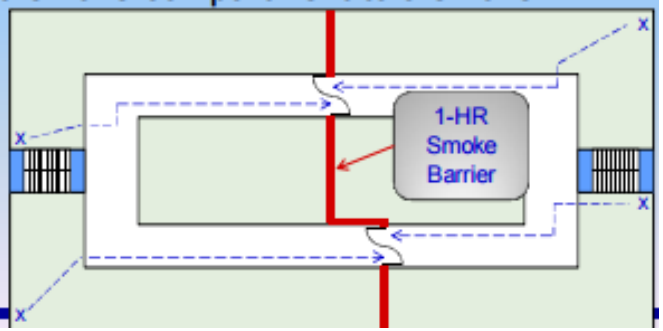
- Condition 2 – nursing and medical care ***and*** emergency care, surgery, or in-patient psychiatric care

Hospital

I-2 SMOKE COMPARTMENT SIZING

Size of Group I-2 Smoke Compartments §407.5

- Smoke compartments required on every story used by ≥50 persons, or persons receiving care, treatment or sleeping
- Group I-2, Condition 1 – smoke compartments ≤22,500 ft²
- Group I-2, Condition 2 – smoke compartments ≤40,000 ft²
- Travel distance in a smoke compartment to a smoke barrier door ≤200'



R-4 CONDITIONS 1 & 2—DETERMINES HEIGHT, # OF STORIES AND AREA

Group R-4
§310.6

- Condition 1 – ***all*** persons receiving custodial care are capable of responding to an emergency situation to complete building evacuation without any assistance
- Condition 2 – ***any*** persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation

Halfway House

Congregate Care

STORM SHELTERS

Since 2009 the IBC has referenced ICC 500 to establish minimum requirements for structures and spaces designed as tornado shelters. In the 2009 and 2012 editions of the IBC there are no scoping provisions to enact these technical requirements .

The 2015 IBC now provides scoping provisions that mandate the construction of complying storm shelters in critical emergency operations facilities and most Group E occupancies.

REQUIRED STORM SHELTERS

423.3 Critical emergency operations. 911 call stations, emergency operations centers and fire, rescue, ambulance and police stations.

Exception: Buildings meeting the requirements for shelter design in ICC 500.

423.4 Group E occupancies. All group E occupancies with an occ. load of 50 or more.

Exceptions:

Group E daycare facilities.

Group E occupancies accessory to places of religious worship.

Buildings meeting the requirements for shelter design in ICC 500.

STORM SHELTER REQUIREMENTS FOR ADDITIONS & ALTERATIONS

The code is not clear about when the requirement for a storm shelter will be triggered for additions and alterations. For instance would we require a storm shelter sized for the occupant load of the whole school if adding a kitchen? On the other hand if a new classroom wing is added to the building the code clearly states (See section 1101 of the International Existing Building Code) the new wing would be required to meet the IBC.

After speaking with an ICC representative it became clear that the authority having Jurisdiction would determine the requirement for constructing a storm shelter for an addition on a case by case basis. An administrative policy has been established to clarify the issue.

STORM SHELTER REQUIREMENTS FOR ADDITIONS & ALTERATIONS

Our policy will require a storm shelter if an addition adds 25% of existing floor area. The 25% trigger is based upon the ratio of the occupant density of a classroom (20 s.f. /person) vs. the occupant density of a community tornado shelter (5 s.f./person). If the new building increases the floor area of the school by that much, there should be enough square footage to accommodate a storm shelter big enough to house the entire school population.

ICC 500 REQUIREMENTS

Without getting into too much detail there will be many additional structural, engineering, and procedural requirements for shelters designed in compliance with ICC 500. In addition to the very rigorous structural design criteria there are other extraordinary requirements including, but not limited to the following.

1. Peer review by an independent registered design professional including a signed and sealed report. Section 106.
2. The building owner shall employ a registered design professional to conduct visual observations of the construction of the structural system-provide final report.
3. A quality assurance plan must be prepared and submitted. Section 107.
4. Contractors must submit a written statement of responsibility.
5. Ventilation, sanitation and emergency power including sanitation support systems. (e.g., bladders, storage tanks or vessels, etc.) Section 702
6. The debris impact test missile for all components of the shelter envelope shall be a 15 lb. sawn lumber 2X4 traveling at 100 mph for vertical surfaces and 67 mph for horizontal surfaces

IFC 3105 TEMPORARY STAGE CANOPIES

REQUIRED DOCUMENTS STAGE CANOPIES

Temporary stage canopies in excess of 400 square feet shall not be erected, operated or maintained for any purpose without first obtaining approval and a permit from the fire code official and the building code official.

1. Detailed design documents must be prepared by a registered design professional
2. Must include a designation of responsible party.
3. Must have an “operations plan”.
4. The owner must employ a qualified third party agency to inspect the installation.
5. The inspection report must be furnished to the fire code official.

CHAPTER 5 BUILDING HEIGHT AND AREA

The 2015 IBC now has user friendly tables to determine allowable building height, number of stories and building area.

TABLE 504.3

TABLE 504.3[a,d]
ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
A, B, E, F, M, S, U	NS[b]	UL	160	65	55	65	55	65	50	40
	S	UL	180	85	75	85	75	85	70	60
H-1, H-2, H-3, H-5	NS[c,d]	UL	160	65	55	65	55	65	50	40
	S									
H-4	NS[c,d]	UL	160	65	55	65	55	65	50	40
	S	UL	180	85	75	85	75	85	70	60
I-1 Condition 1, I-3	NS[d,e]	UL	160	65	55	65	55	65	50	40
	S	UL	180	85	75	85	75	85	70	60
I-1 Condition 2, I-2	NS[d,f,e]	UL	160	65	55	65	55	65	50	40
	S	UL	180	85						
I-4	NS[d,g]	UL	160	65	55	65	55	65	50	40
	S	UL	180	85	75	85	75	85	70	60
R	NS[d,h]	UL	160	65	55	65	55	65	50	40
	S13R	60	60	60	60	60	60	60	60	60
	S	UL	180	85	75	85	75	85	70	60

For SI: 1 foot = 304.8 mm.

Note: UL = Unlimited; NS = Buildings not equipped throughout with an automatic sprinkler system; S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2.

NS = buildings not sprinklered
S = NFPA 13 sprinklered buildings
S13R = NFPA 13R sprinklered buildings

TABLE 504.4

TABLE 504.4[a, b]—continued
ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION									
	SEE FOOTNOTES	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
R-1	NS[d, h]	UL	11	4	4	4	4	4	3	2
	S13R	4	4						4	3
	S	UL	12	5	5	5	5	5	4	3
R-2	NS[d, h]	UL	11	4	4	4	4	4	3	2
	S13R	4	4	4					4	3
	S	UL	12	5	5	5	5	5	4	3
R-3	NS[d, h]	UL	11	4	4	4	4	4	3	3
	S13R	4	4						4	4
	S	UL	12	5	5	5	5	5	4	4
R-4	NS[d, h]	UL	11	4	4	4	4	4	3	2
	S13R	4	4						4	3
	S	UL	12	5	5	5	5	5	4	3
S-1	NS	UL	11	4	2	3	2	4	3	1
	S	UL	12	5	3	4	3	5	4	2
S-2	NS	UL	11	5	3	4	3	4	4	2
	S	UL	12	6	4	5	4	5	5	3
U	NS	UL	5	4	2	3	2	4	2	1
	S	UL	6	5	3	4	3	5	3	2

Note: UL = Unlimited; NP = Not Permitted; NS = Buildings not equipped throughout with an automatic sprinkler system; S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2.

NS = buildings not sprinklered
S = NFPA 13 sprinklered buildings
S13R = NFPA 13R sprinklered buildings

TABLE 506.2

TABLE 506.2[a, b]
ALLOWABLE AREA FACTOR (A_t = NS, S1, S13R, or SM, as applicable) IN SQUARE FEET

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
A-1	NS	UL	UL	15,500	8,500	14,000	8,500	15,000	11,500	5,500
	S1	UL	UL	62,000	34,000	56,000	34,000	60,000	46,000	22,000
	SM	UL	UL	46,500	25,500	42,000	25,500	45,000	34,500	16,500
A-2	NS	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	45,000	34,500	18,000
A-3	NS	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	45,000	34,500	18,000
A-4	NS	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	45,000	34,500	18,000
A-5	NS	UL	UL	UL	UL	UL	UL	UL	UL	UL
	S1									
	SM									
B	NS	UL	UL	37,500	23,000	28,500	19,000	36,000	18,000	9,000
	S1	UL	UL	150,000	92,000	114,000	76,000	144,000	72,000	36,000
	SM	UL	UL	112,500	69,000	85,500	57,000	108,000	54,000	27,000
E	NS	UL	UL	26,500	14,500	23,500	14,500	25,500	18,500	9,500
	S1	UL	UL	106,000	58,000	94,000	58,000	102,000	74,000	38,000
	SM	UL	UL	79,500	43,500	70,500	43,500	76,500	55,500	28,500
F-1	NS	UL	UL	25,000	15,500	19,000	12,000	33,500	14,000	8,500
	S1	UL	UL	100,000	62,000	76,000	48,000	134,000	56,000	34,000
	SM	UL	UL	75,000	46,500	57,000	36,000	100,500	42,000	25,500
F-2	NS	UL	UL	37,500	23,000	28,500	18,000	50,500	21,000	13,000
	S1	UL	UL	150,000	92,000	114,000	72,000	202,000	84,000	52,000
	SM	UL	UL	112,500	69,000	85,500	54,000	151,500	63,000	39,000
H-1	NS[e]	21,000	16,500	11,000	7,000	9,500	7,000	10,500	7,500	NP
	S1									

NS = buildings not sprinklered
S1 = sprinklered 1-story buildings
SM = sprinklered multiple-story buildings

TABLE 601
1 HOUR SUBSTITUTION DELETED

Sprinklers for 1-HR Substitution Table 601, Footnote d

- 2012 allowed fire sprinklers as substitute for 1-HR construction, but prohibited any modifications based on sprinklers
- Footnote deleted which allowed 1-HR substitution
- Sprinkler system is no longer allowed as a substitution for 1-HR construction

Occupancy Classification	Type Of Construction *(PARTIAL)*									
	See Footnotes	Type I		Type II		Type III		Type IV	Type V	
		A	B	A	B	A	B	HT	A	B
A-2	NS	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	45,000	34,500	18,000

903.2.1.6

Sprinkler Systems—Assembly Occupancies

CHANGE TYPE: Addition

CHANGE SUMMARY: An automatic sprinkler system is now required to be installed in a building when the roof is used for a Group A-2 assembly occupancy with an occupant load exceeding 100, as well as for other Group A occupancies where the occupant load exceeds 300.

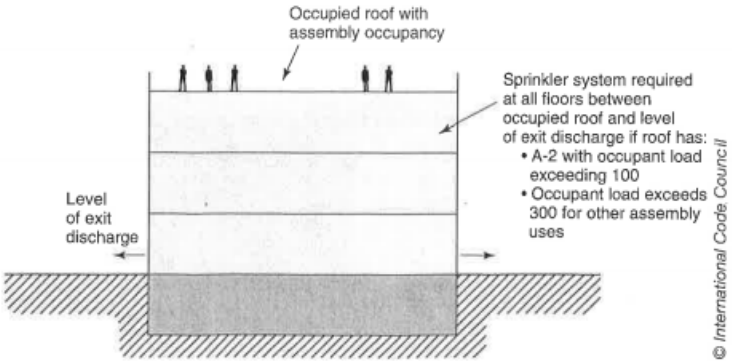
2015 CODE: **903.2.1.6 Assembly Occupancies on Roofs.** Where an occupied roof has an assembly occupancy with an occupant load exceeding 100 for Group A-2 and 300 for other Group A occupancies, all floors between the occupied roof and the level of exit discharge shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

Exception: Open parking garages of Type I or Type II construction.

CHANGE SIGNIFICANCE: As a general provision, assembly occupancies require the installation of an automatic sprinkler system when the fire area containing the Group A use is "located on a floor other than a level of exit discharge." Where the assembly use is located on the roof of the building, the stories of the building that the occupants must pass through are also now required to be sprinklered. The new sprinkler requirement applies to buildings where the Group A-2 roof-top occupancy exceeds 100 occupants. For the other Group A occupancy classifications, the provisions are applicable where the occupant load exceeds 300.

Because an occupied roof does not meet the definition for a fire area, the provisions are addressed separately from the other Group A requirements. By requiring the building beneath the assembly occupancy to be sprinklered, the requirement is consistent with other provisions of Section 903.2.1 and protects the occupants from hazards elsewhere in the building. Whether building occupants are located on an upper story or on the roof, they are exposed to a similar hazard as they travel down through the building prior to reaching the level of exit discharge. It should be noted that this provision does not require the roof to be sprinklered or provided with any alternative fire-extinguishing system. The sprinkler protection is mandated only on the floors between the occupied roof and the level of exit discharge.

903.2.1.6 continues



Assembly occupancy on roof

CHAPTER 17–SPECIAL INSPECTIONS

A new special inspection form details the code sections and whether the inspections are periodic or continuous. The special inspection agents must also be identified.

SCHEDULE OF SPECIAL INSPECTION SERVICES

Per IBC Section 1704 of the 2015 International Building Code the following items require Special Inspections. **Special inspectors must be employed by the Owner or registered design professional in responsible charge acting as the owner's agent.**

PROJECT ADDRESS	123 XYZ		PERMIT NO.	XX-XXXX
		APPLICABLE TO THIS PROJECT		
MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT	AGENT^
1704.2.5 Inspection of Fabricators				
Verify fabrication/quality control procedures	In-plant review (3)		Periodic	
1705.1.1 Special Cases (work unusual in nature, including but not limited to alternative materials and systems, unusual design applications, materials and systems with special manufacturer's requirements)	Submittal review, shop (3) and/or field inspection			
1705.2 Steel Construction				
1. Fabricator and erector documents (Verify reports and certificates as listed in AISC 360, chapter N, paragraph 3.2 for compliance with construction documents)	Submittal Review		Each submittal	
2. Material verification of structural steel	Shop (3) and field inspection		Periodic	
3. Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)	Field inspection		Continuous	
4. Verify member locations, braces, stiffeners, and application of joint details at each connection comply with construction documents	Field inspection		Periodic	
5. Structural steel welding:				
a. Inspection tasks Prior to Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (3) and field inspection		Observe or Perform as noted (4)	
b. Inspection tasks During Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (3) and field inspection		Observe (4)	
c. Inspection tasks After Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table	Shop (3) and field inspection		Observe or Perform as noted (4)	

GEOTECHNICAL REQUIREMENTS PER AMENDMENT

1803.2 at the end of the first paragraph ADD; A geotechnical investigation is not required for one story buildings 2500 sf or less in risk categories 1 and 2.

1807.2.2 ADD–The geotechnical engineer must state either way if a global stability analysis is required.

STANDARDS FOR CROSS LAMINATED TIMBER

Structural Glued Cross-Laminated Timber §2303.1.4

- *"A prefabricated engineered wood product consisting of at least three layers of solid-sawn lumber or structural composite lumber where the adjacent layers are cross-oriented and bonded with structural adhesive to form a solid wood element."*
- Referred to as CLT
- ANSI/APA PRG 320-2011

Photo courtesy of FP Innovations

NEW DEFINITIONS/NAMES

Engineered Wood Rim Board §2303.1.13

- *"A full-depth structural composite lumber, wood structural panel, structural glued laminated timber, or prefabricated wood I-joist member designed to transfer horizontal (shear) and vertical (compression) loads, provide attachment for diaphragm sheathing, siding and exterior deck ledgers, and provide lateral support at the ends of floor or roof joists or rafters."*
- ANSI/APA PRR 410
- ASTM D 7672

Photo courtesy of APA – The Engineered Wood Association

Gypsum Panel Products Chapter 25

- *"The general name for a family of sheet products consisting essentially of gypsum."*
- Essentially gypsum sheet products that are manufactured unfaced or with a facing other than paper
  - Glass mat-faced
  - Unfaced gypsum sheet materials

Photo courtesy of Gypsum Association

OTHER MINOR CHANGES

Plastic Composites §2612

- **Plastic Composite –** A generic designation that refers to wood/plastic composites and plastic lumber.
- **Plastic Lumber –** A manufactured product made primarily of plastic materials (filled or unfilled) which is generally rectangular in cross-section.
- **Wood/Plastic Composite –** A composite material made primarily from wood or cellulose-based materials and plastic.
- Flame spread index ≤200

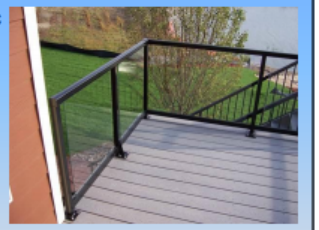
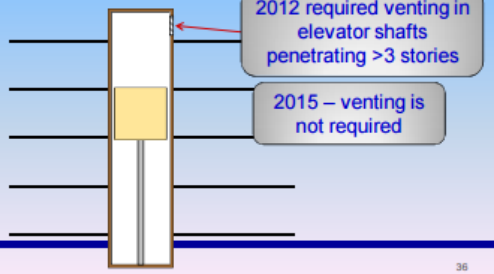


Photo courtesy of Peter Kulczyk

Allowed for exterior deck boards, stair treads, handrails and guards in Type VB buildings

Elevator Hoistway Venting §3004

- Requirement for elevator hoistway venting in §3004 has been deleted
- Elevator hoistways are no longer required to be vented to the exterior



2012 required venting in elevator shafts penetrating >3 stories

2015 – venting is not required

IMPORTANT DISTINCTION

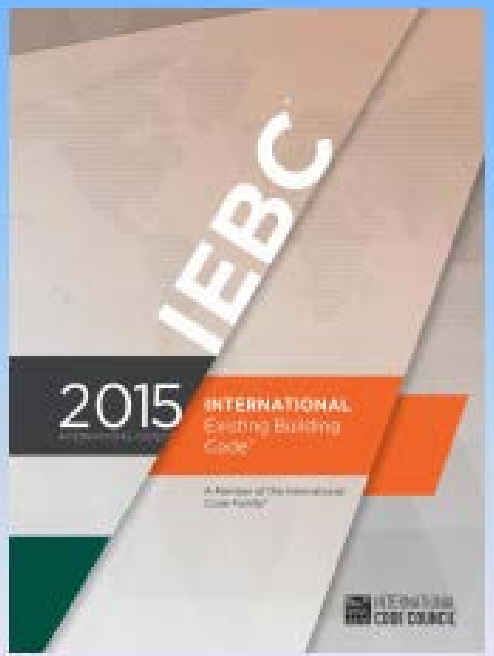
Residential Building. For this code , includes detached one- and two-family dwellings and multiple single family dwellings (townhouses) as well as group R-2, R-3 and R-4 buildings *three stories or less in height above grade plane*.

This means buildings meeting this definition will be required to meet the same residential energy efficiency requirements as dictated in the IRC. This will include duct and air leakage rate testing. The residential energy codes requirement diagram may be used for compliance. Solar ready provisions apply.

INTERNATIONAL EXISTING BUILDING CODE

Existing Buildings Chapter 34

- Ch 34 deleted
- §101.4.7 – provisions of the IEBC shall apply
- Repairs, alterations, change of occupancy, additions, relocations



MAKING COLUMBIA GREAT THROUGH TEAMWORK!