

Objectives

- Identify the differences between 2024 IBC and the 2018 edition.
- Determine if the change is an addition, deletion, modification or clarification.
- Identify changes in format and technical requirements.
- Explain the intent and application of the changes.













104 Building Official Duties and Powers

- Provisions of Section 104 have been reformatted for consistency with other I-Codes
- In addition, approach for reviewing for code compliance significantly updated to reflect current manner that alternate materials, methods and designs are evaluated
- Four methods identified for determination of compliance:
- Listed compliance
- Technical assistance
- Alternate materials, design and methods
 Modifications



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104 Building Official Duties and Powers

- For listed compliance, listing to be based on specified standard.
 Where listing standard is not specified, listing to be based on an approved listing criteria.
- Technical assistance to be used to determine compliance where required by building official, with technical opinion and report prepared by a qualified individual, laboratory or organization.
- Performance-based alternatives acceptable when complying with ICC Performance Code.
 - Not applicable to alternative structural materials or alternative structural designs.

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- Applicable to Group I-1 and R-4 occupancies, more clarity provided for determining if Condition 2 designation is appropriate for group homes, assisted living facilities and other custodial care uses
 Category includes persons who may not independently recognize, respond or
- evacuate without limited verbal or physical assistance during an emergency situation
- Limited verbal assistance includes prompting, giving and repeating instructions
- Limited physical assistance includes help with transfer to walking aids or mobility devices and assistance with egress



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- New definition of noncombustible protection addresses the passive fire protection required for mass timber.
 - Depending on the building's type of construction, mass timber may have a fire-resistance rating obtained:
 - By its own fire-resistive rating, or
 Through a combination of the inherent mass timber fire-resistance plus protection
 - with noncombustible insulating materials, or
 - Entirely by the noncombustible protection
- Use of noncombustible protection recognizes its value in delaying the combustion of mass timber members.

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202 Definition of Occupiable Roof

- New definition of occupiable roof recognizes exterior space on a roof that is designed for human occupancy, other than maintenance or repair
 Revisions throughout code from "occupied roof," which was previously undefined, to "occupiable roof" will provide better consistency when applying provisions
- Egress is required from occupiable roof whether it is occupied or not



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306.2, 306.3 Group F Occupancy Classification

- Distilleries and similar alcohol beverage alcoholic beverage manufacturing facilities now considered as Group F-1. occupancies where alcohol content exceeds 20 percent.
- Previous threshold for Group F-1 classification was 16 percent.
 Group F-2 classification now applicable where alcohol content is 20 percent or less.
- Provides consistency with recognition that:
 Beverages with alcohol content greater than 20 percent is considered an ignitable liquid requiring further regulation.
- Where alcohol content does not exceed 20 percent, beverages in glass or ceramic containers considered as Class I commodities.



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307.1.1 Group H Occupancy Exemptions

- Two new items have been added to the list of uses that store, use and/or handle hazardous materials but are <u>not</u> to be classified as Group H.
 Distilling or brewing of alcohol beverages
 - Storage of beer, distilled spirits and wines in barrels and casks
- Removal of Group H status applicable regardless of alcohol content and quantity of liquid.
- IFC has added additional requirements to address hazards, including automatic sprinkler systems in Group F-1 and S-1 fire areas where such liquids are located.



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2021 IBC Transition from the 2018 IBC



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2018 to 2024 IBC Format Changes for Group H Occupancy Exemptions					
Material Classification	Occupancy or Classification	2021 Source			
Combustible fiber	Baled cotton	Table 307.1(1), note o			
Corrosive	Building materials	Section 307.1.1, item 11			
	Personal and household products	Section 307.1.1, item 10			
	Retail and wholesale sales occupancies	Table 307.1(2), note c			
Explosives	Groups B, F, M and S	Section 307.1.1, item 14			
	Groups M and R-3	Section 307.1.1, item 14			
Flammable and combustible liquid	and Aerosols	Section 307.1.1, item 12			
gases	Alcoholic beverages	Sections 307.1.1, items 6, 18 and 19: Table 307.1(1), note c			
	Cleaning establishments with combusti- ble liquid solvents	Section 307.1.1, items 4 and 5			
	Closed piping systems	Section 307.1.1, item 3			
	Fuel	Table 307.1(1), notes p #1 - #4			
	Fuel oil	Table 307.1(1), note i			

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311.2, 311.3 Group S Occupancy Classification

- Group S-1 classification for storage of lithium-ion and lithium metal batteries, as well as repair garages for vehicles powered by lithium-ion or lithium metal batteries consistent with Group F-1 manufacturing classification for similar materials and activities.
- In addition, storage of aerosol cooking spray and plastic aerosol 3 products to be considered Group S-1 occupancies.
- Classification as Group S-1 and S-2 facilities where alcohol beverages are stored consistent with Group F-1 and F-2 manufacturing designations based on threshold of 20 percent alcohol content.



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- Fire barrier no longer required between atrium and adjoining spaces in Group I-2 and I-1, Condition 2 occupancies provided:
 Adjoining spaces do not include or provide access to care recipient sleeping and
 - Applicable to no more than three stories, and
 - Adjoining spaces included in design of smoke control system
- New allowance provides equivalency with federal guidelines for certification of health care facilities.



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407.6.1 Automatic-Closing Doors in Group I-2

- In Group I-2, the closing of any automatic-closing doors on hold-open devices must now also occur upon activation of fire alarm system, sprinkler system or both.
 - Activation continues to also occur upon actuation of smoke detectors or loss of power to the hold-open device or smoke detector.
- In addition, all automatic-closing doors with hold-open devices that are located in the same smoke compartment to release upon the automatic release of the hold-open device on any one of such doors.
- New provisions also provide consistency with CMS federal standard.



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- Sprinkler protection is now mandated in the following incidental use areas in ambulatory care facilities:
 - Storage rooms greater than 50 square feet
- Waste and linen collection rooms with an aggregate volume of 8.67 cubic feet or greater
 Such rooms now require both the previously mandated 1-hour fire barrier/horizontal assembly separations as well as the new mandate for sprinkler protection
- Additional changes include lowering the following thresholds for inclusion as an incidental use for consistency with CMD federal standard:
- Waste/linen collection rooms: Reduction from ≥ 10 cf to ≥ 8.67 cf
- Storage rooms: Reduction from < 100 sf to < 50 sf

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2021 IBC Transition from the 2018 IBC



- Where the horizontal building separation allowance (podium buildings) of Section 510 is applied, the restriction on occupant loads for the upper building has been eliminated
 Previously, the only Group A occupancies permitted above the podium level were those with an occupant load of less than 300
 In addition, where vertical offsets occur in the horizontal separation
 - required between the upper and lower buildings, the offsets shall be constructed as for fire barriers

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- Limited changes to existing heavy timber provisions now designated as Type IV-HT.
- Combustible concealed spaces permitted in all Type IV categories where in conformance with Sections 602.4.1 through 602.4.4.
- Publication "Mass Timber Buildings and the IBC" by ICC and AWC addresses Type IV construction in detail.



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A combination of unprotected wall and ceiling areas determined by applying the unity formula.

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- Concealed spaces now permitted provided no combustibles other than building elements and electrical, mechanical, fire protection and plumbing materials permitted in plenums per IMC Section 602, and protected by one of following:
 - Building is sprinklered throughout, including within concealed space, or
 - Concealed space is completely filled with noncombustible insulation, or
 Surfaces within concealed space to be fully covered with minimum 5/8" Type X gypsum board
- Exception allows concealed spaces within interior walls and partitions having minimum 1-hour rating with no additional protection.

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TABLE-602 705.5 Fire-Resistance Rating Requirements for Exterior Walls Based on Fire Separa Distance ^{4,dg}					
Fire Separation Distance = X (feet)	Type Of Construction	Occupancy Group H ^e	Occupancy Group F-1, M, S-1 ^f	Occupancy Group A, B, E, F-2, I, R ¹ , S-2, U	
$X < 5^{\rm b}$	All	3	2	1	
$5 \leq X \leq 10$	IA <u>, IV-A</u> Others	3 2	2 1	1 1	
$10 \leq X \leq 30$	IA, IB <u>, IV-A, IV-B</u> IIB, VB Others	2 1 1	1 0 1	1° 0 1°	
X > 30	All	0	0	0	

































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716.4 Fire-Protective Curtain Assemblies

- New definition in Section 202 defining fire-protective curtain assembly as: an assembly consisting of a fabric curtain, bottom bar, guides, coil, and an operating and closing system
 New provisions establish guidance on how such assemblies are to be
- tested, labeled and installed.



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	903.3.1.2 NFPA 13R Sprinkler Systems				
			2018 IBC All Group R buildings	2024 IBC Group R-2 Apartment Buildings only	2024 IBC All Occupancies other than Group R-2
		Maximum Number of Stories	4 total	4 above grade plane	4 above grade plane
		Maximum Height in Feet	60	45	30
		Lower Datum Point for Height in Feet Measurement	Grade plane	Lowest level of fire department vehicle access	Lowest level of fire department vehicle access
		Upper Datum Point for Height in Feet Measurement	Average height of highest roof surface	Eave of highest pitched roof, intersection of highest roof and exterior wall, or top of highest parapet, whichever is greatest height	Floor level of highest story
116	21.24	Lower Datum Point for Number of Stories Permitted for Podium Buildings (Sec. 510.2, 510.4)	Horizontal assembly separating upper and lower buildings	Grade plane	Grade plane











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907.2.1 Group A Occupancy Fire Alarms

 Manual fire alarm system or EV/AC system no longer required for Group A-5 outdoor bleacher-type seating where occupant load
 <u>></u> 300 and < 15,000 occupants, if:

- Public address system with standby power provided
- Any enclosed spaces attached or within 5 feet of seating limited to 10% of seating area or 1,000 square feet, whichever is less
- Spaces under seating areas to be separated from seating area per Section 1030.1.1.1 (minimum 1-hour construction)
- All means of egress open to outside



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907.2.1 Group A Occupancy Fire Alarms

- Temporary Group A-5 seating facilities also not required to have manual fire alarms system or EV/AC system, if:
 No enclosed spaces under or attached to bleacher-type seating
 - Seating erected for less than 180 days
 - Evacuation of seating area included in approved fire safety plan
- Both new exceptions provide clarity and remove inconsistent application of
- requirements. Based on Section 309 of ICC 300 Standard on Bleachers, Folding and Telescoping Seating
- and Grandstands

 Neither pull stations nor occupant notification system required.
- Fire safety plan will require an occupant notification procedure

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- Manual fire alarm system now required in Group S public- and self-storage occupancies where both of following conditions occur:
 Three stories or greater in height, and
 - Interior corridors and/or interior common areas
- Visible notification appliances not required within storage units.
- Manual fire alarms boxes not required where building is fully sprinklered and occupant notification appliances activate throughout notification zones upon sprinkler water flow.



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915 Carbon Monoxide Detection

- Detection now required in all normally occupied occupancies where a carbon monoxide producing device is present.
- Previously was only required in Group I-1, I-2, I-4 and R occupancies and in classrooms of Group E occupancies.
- An exception exempts detection requirement in F, S and U occupancies that are not normally occupied.
- Requirements have also been substantially revised and reformatted.
- Relies on definition in Chapter 2 which helps limit scope to permanent CO sources or commonly used vehicles (vehicles in garage, propane forklifts, etc.) and not temporary or infrequent sources.

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- All clinical staff can readily unlock doors at all times, and
- All such locks are keyed to keys carried by clinical staff at all times, or clinical staff have codes or other means necessary to operate the locks at all times.
- Consistent with federal healthcare regulations
- Locking devices now also permitted on doors to balconies, decks and other exterior spaces serving:
 - Private office spaces where exterior space
 <u>250 sf</u>
 - Individual dwelling or sleeping units

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- Where occupants must egress from an exterior space through the building, exit access doors permitted to equipped with an approved locking device.
 - Applicable to enclosed courtyards, occupied roofs, decks and other exterior areas
 Not applicable to egress courts
- Six conditions must be met in order for the locking devices to be permitted:





















































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1106.7.1 Accessible Parking for Groups R-2, R-3 and R-4

- Previous item 4 of Section 1106.2 moved to "location" requirements of Section 1106.7.1.
- Requires accessible parking be provided beneath the building if any parking is provided beneath the building.
- Previously applicable to only Group I-1, R-1, R-2, R-3 and R-4 occupancies, scope has been expanded for application to all occupancies.

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1108.6.1.1 Group R-1 Accessible Units

- New exception permits more limited bathing options where none of the Accessible units in the building contain bathtubs.
- Where NONE of the units within the building contain tubs, standard or alternate roll-in showers with seats are permitted.
- Maintains concept that people with disabilities to be provided with same options as other occupants.
- A second exception allows transfer showers to be substituted for all but the minimum number of roll-in showers from Table 1108.6.1.1

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- Such acoustics to be in compliance with Section 808 of ICC A117.1, including regulation of:
 - Reverberation times based on either the performance method or prescriptive method
 - Ambient sound levels from sources both inside and outside of the classroom
- In addressing reverberation times, both performance and prescriptive methods are available.
- Ambient sound levels not to exceed 35 dBA and 55 dBC



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1409 Insulated Metal Panels (IMP)

- New provisions now regulate the materials, construction and quality of insulated wall panels (IMP) used as exterior walls and exterior wall coverings.
 Provisions vary based upon whether insulating materials are combustible or noncombustible.
- Although regulated similar to MCMs, they need their own provisions due to variety of insulating materials that are permitted.

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17	05.2.6 Special Inspection-	-Metal Buildii	ng Systems
	TABLE 1705.2.6 Special Inspection	s Of Metal Building S	systems
	Туре	Continuous Special	Periodic Special Inspection
	1. Installation of rafter/beam flange braces and column flange braces.	=	X
	2. Installation of purlins and girts, includ- ing specified lapping.	=	X
	3. Purlin and girt restraint/bridging/ bracing.	=	X
	4. Installation of X-bracing, tightened to remove any sag.	=	X
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1705.3 Special Inspection—Reinforcing Bar Welding					
т	ABLE 1705.3 Required Special Inspection	ns and Tests of Concre	te Construction		
	Туре	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard [®]	IBC Reference
	2. Reinforcing bar welding:				-
	 Verify weldability of reinforcing bars other than ASTM A706; 	-	X	AWS D1.4 ACI 318: 26:6:4 26:13.1.4	
	k. Inspect welding of reinforcement for special moment frames, boundary elements of spe- cial structural walls, and coupling beams;	х.	=	AWS D1.4 ACI 318: 26.13.3	
	E. Inspect welded reinforcement splices;	×	=	=	
	d. Inspect welding of primary tension rein- forcement in corbels;	X	=	= 1	
	$\mathbf{g}_{ab} \mathbf{b}_{v}$ Inspect single-pass fillet welds, maximum ${}^{3}/{}_{16}$, and	-	x	AWS D1.4 ACI 318: 26.13.3	
	fixer inspect all other welds.	×=	×	AWS D1.4 ACI 318: 26.13.3	







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Table 2902.1 Minimum Number of Fixtures for
Institutional Facilities
 Additional and more detailed information, along with reformatting, brings the Institutional portion of Table 2902.1 current with the best practices of the health-care industry. Previous table did not adequately distinguish between employees, customers, patients and inmates in certain types of facilities.
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2021 IBC Transition from the 2018 IBC

2902.1	1.2 Plumbing Fixture Calculations
EXAMPLE:	
Given: At	theater having 2000 occupants, the male water closet (WC) ratio is 1/125 and the
female rat	io is 1/65:
Design lay	out: Four single-user toilet facilities with the remainder of fixtures in multiple-user
toilet facili	ities (separate sex).
Step 1:	Determine minimum required number of male water closets, all located in a
multiple-u	iser toilet facility: 1000/125 = 8
Step 2:	Determine minimum required number of female water closets, all located in a
multiple-u	iser toilet facility: 1000/65 = <u>15.4</u>
Step 3:	Add minimum required number of male and female water closets
Tota	al = 23.4 WCs
	2902 EXAMPLE: Given: A ti female rati Design lay toilet facili Step 1: multiple-u Step 2: multiple-u Step 3:

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2902.2.1 Toilet Facility Designations

- Confusing and partially redundant provisions addressing designation of single-user and family/assisted-use toilet and bathing facilities have been deleted.
- Section 2902.1.2 requires such toilet facilities to be identified as being available for use by all persons regardless of their sex
 However, Section 2902.2.1 previously indicated that these facilities "shall not be
- required to be identified for exclusive use by either sex" (not required, but permitted) • Deletion of Section 2902.2.1 clarifies that single-user and family/assisted-use toilet and bathing facilities required to be identified as being available for use by all persons regardless of their sex.



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3103.6.1 Structur	L Public-Oo al Loads	ccupancy Tem	porary Struct	tures—	
Public-oc except as as well as	ccupancy tem s modified, an s temporary f action factors for Group	nporary structure nd include snow, foundations.	s to be designed wind, seismic, id	l per Chapter ce and tsunan	16, ni loads,
Acceptine () Historia () Acc	Servi	ice Life			
Risk Category	Servi ≤10.yr	ice Life ≥10 yr			
Risk Category II	Servi ≤10 yr 0.7	ce Life >10 yr 10	TABLE 3103.6.1.2 Red	uction Factors for Wind L	oads for Public-
Risk Category II	Servi ≤.10 yr 0.7 0.0	ce Life ≥18 yr 1.0 1.0	TABLE 3103.6.1.2 Red	action Factors for Wind L actures	oads for Public:
Risk Category II III IV	Servi <u><18 x</u> 0.7 0.8 1.0	ca Life 218 yr 1.0 1.0 1.0	TABLE 3103.6.1.2 Red Occupancy Temporary Str	uction Factors for Wind L actures Servio	oads for Public: te Life
Risk Category II II II IV	Servi <38 yr 0.7 0.8 1.0	218 pr. 218 pr. 2.0 2.0 2.0	TABLE 3103.6.1.2 Red Occupancy Temporary Stro Risk Category	action Factors for Wind L actures Servio 210 yr	oads for Public: te Life >10.yr
Risk.Category II III IX	Servi <38 yr 0.7 0.8 1.0	se Life 238 yr 10 10 10	TABLE 3103.6.1.2 Red Occupancy Temporary Str Risk Category II	action Factors for Wind L actures इसरसं द्रीर प्रर ध्रीर प्रर	oads for Public. or Life 218 yr L0
Risk.Category II III IX	54rxi <18yr 0.7 0.8 10	501.1/6 2.88.3r 1.0 1.0 1.0	TABLE 3103.6.1.2 Red Occupancy Temporary Str Rink Category II III	action Factors for Wind L ectures दाश्र ज ्राश्र ्र ्र ्र	oads for Public. ce.Life 218.yr 1.0 1.0

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- New requirements designed to provide a consist set of code provisions that cover minimum safety requirements without duplicating existing code provisions.
- Mandates verification of a container's construction, condition and structural integrity to assist structural engineer in the evaluation for building construction.
- Provides for specific pointers to IBC provisions addressing protection against decay and termites, under-floor ventilation, roof assemblies and joints/voids.
- Introduces structural provisions unique to such containers.

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- Provisions intended to supplement existing applicable IBC requirements, as well as :
 - Inspection by approved agency
 - Verification of data plate
 - Method of structural design (detailed design procedure or simplified method for single-units)
- Three ISO reference standards relevant to construction of intermodal shipping containers have been added to Chapter 35.
- New provisions intended to eliminate need for patchwork of potentially conflicting or duplicative requirements.





















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