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3

Course Description

- This seminar addresses the key issues of the 2021 International Building Code[®] (IBC[®]) regarding the proper classification of buildings for type of construction.
- The process for correctly evaluating a building for code compliance relies on a systematic approach to the determination of occupancy classification and construction type.

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5





6

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11







14



Concept of Building Classification

 Although owner/architect would prefer that all options are available, as building becomes larger and/or more hazardous, available choices become limited.



16



17







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23





Determination of Allowable Height and Area—Introduction

- Although many buildings can be evaluated quickly, it is typically a bit more complex to verify compliance with the height and area limitations.
- It most cases, it is necessary to utilize the allowable height and area tables (along with permitted increases) to determine the limitations on building size.

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 This determination identifies those types of construction permissible for the building under consideration.

26

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29







Allowable Building Size Section 504

- When starting the process of determining a building's allowable height and area, it is often more efficient to first look at the building's height.
- If the building complies with both the allowable height in feet and the allowable height in stories, then the evaluation of allowable building area can be undertaken.
- The building is deemed compliant only if all three limitations on building size are not exceeded.

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8	2021 IBC Types of Construction

31

Mixed Occupancies Section 508

- Three options established in Section 508 to address mixed-occupancy buildings include:
 - Accessory Occupancies.
 - Nonseparated Occupancies.
 - Separated Occupancies.
- Methods for determining maximum allowable size, height and area and separations are identified for each option.
- One of the three options must be applied to a mixed-occupancy condition.

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32

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Mixed Occupancies Section 508 Occupancy Classification Proper occupancy classifications determined - Section 302. • Two or more different occupancies - Section 508. • Allowable Building Height and Area Final analysis for allowable building height and area cannot be done until one of the three mixedoccupancy options has been chosen. Separation Separation is not required between occupancies; or • Some degree of fire-resistance-rated separation is mandated to isolate one occupancy from another. center 2021 IBC Types of Construction





- The provisions of Section 507 allow for buildings with large floor areas to be constructed with no requirement for:
 - Fire-resistance-rated construction, or
 - Fire walls.
- Risks have been addressed to the point that the regulation for allowable area is unnecessary.



35

Unlimited Area Buildings Section 507

 The combination of limited height, low-to-moderate hazard uses, full sprinkler protection and significant fire department access from the exterior severely reduces the potential fire severity to a level that the allowance for unlimited area is reasonable.

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Special Provisions Section 510.1

- Section 510 allows for modifications or exceptions to the general requirements for building areas and heights, taking precedence over any general provisions that may apply.
- Because Section 510 permits, rather than requires the use of its special conditions, the provisions are *optional*.

38

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Horizontal Building Separation Section 510.2

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- A common application of Section 510 is found in Section 510.2 addressing horizontal building separation.
 - The benefit of Section 510.2 is the ability to create two separate buildings, one above the other, for the purpose of applying several specific code provisions independently to each building.
- The allowance is similar in application to the use of a fire wall, but in a vertical arrangement rather than horizontal.

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Page 85





 Similar allowances for various occupancy combinations provided with horizontal building separations are also found in Section 510:

- Group S-2 enclosed parking garage with open parking garage above
- Parking beneath Group R
- Open parking garage beneath Groups A, I, B, M and R
 Group B or M buildings with Group S-2 open parking garage above

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41

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44







Noncombustible Tests Section 703.3, 703.3.1

- The acceptability of noncombustible materials as required for Type I, II, III and IV construction is based on tests:
 - ASTM E136, or
 - ASTM E2652 using ASTM E136 acceptance criteria
- Conditions of test consider that materials will not:

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- Aid in combustion, or
- Add appreciable heat to a fire

47

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Noncombustible Tests Section 703.3

- Materials passing test are permitted to have limited flaming
- The term "noncombustible" does not apply to flame spread characteristics of interior finish or trim materials.

Noncombustible Materials Section 703.3.1, Exception

- Materials shall also be acceptable as "noncombustible" where three conditions are met:
 - Structural base of noncombustible material, and
 - Surfacing material not more than 1/8-inch in thickness, and
 - Surfacing material has a maximum flame spread index of 50.

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49

Types I and II Construction Section 602.2

- The use of specified combustible materials is permitted by Section 603.
- As an example, and specific to Type I and II buildings, the use of fire-retardant-treated (FRT) wood is permitted, with limitations, in:
 - Nonbearing partitions
 - Nonbearing exterior walls
 - Roof construction
 - Balconies, porches, decks and exterior stairways

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50

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Type III Construction Section 602.3

- In Type III buildings, exterior walls to be of noncombustible materials.
 - Fire-retardant-treated wood framing and sheathing permitted within exterior wall assemblies where wall rating is < 2 hours
- Interior elements of Type III buildings to be of any materials permitted by IBC

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53

54

Type IV Construction Section 602.4

- In buildings of Type IV-A, IV-B and IV-C construction with an occupied floor > 75 feet above lowest level of fire department vehicle access, mass timber interior exit stairways and elevator enclosures to be additionally protected where:
 - \leq 12 stories or 180 feet: Interior faces of mass timber to be covered with noncombustible protection

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> 12 stories or 180 feet: Only noncombustible materials





Type IV-HT Construction Section 602.4.4

- Interior elements of Type IV-HT buildings to be:
 - Solid wood
 - Laminated wood
 - Heavy timber HT
 - Structural composite lumber (SCL)
- Concealed spaces are not allowed within such wall elements unless complying with Section 602.4.4.3.
- In addition, one-hour fire-resistance-rated construction is permitted for interior walls and partitions

Based on Table 601 and Section 2304.11.2

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56



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59



Stairway Construction Section 1011.7 Stairways to be built of materials consistent with the types permitted for the building's type of construction, except that wood handrails are permitted for all construction types. Noncombustible stairways required in Type I and II buildings Exception for podium buildings Noncombustible or combustible stairways permitted in Type III, IV and V buildings.

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61



62

Fire-Resistance Ratings

- A significant aspect of classifying buildings based on type of construction is the degree of fireresistance-rated protection assigned to the various building elements.
- The minimum fire-resistance ratings required for the various types of construction are primarily established in Table 601.
 - In addition, fire-resistance for Type IV-HT buildings is established by the minimum required dimensions for heavy timber members as set forth in Table 2304.11.

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65

Tested Assemblies Section 703.2.1

- Fire-resistance rating of building elements to be determined by test procedures set forth in ASTM E119 or UL 263.
- For purposes of construction type, hourly ratings of 1-hour, 1½-hour, 2-hour and 3-hour are applied to those building elements regulated by Table 601.

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Approved Alternate Method Section 703.2.3

• Where fire resistance of building elements does not comply as a tested assembly or with a listed analytical method, fire resistance permitted to be established as an alternate method protection per Section 104.11.



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68

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70



71









74

Primary Structural Frame Section 202

• Where the fire resistance of primary structural frame elements is required by Table 601, it is important to identify which structural members fall into that category. The primary structural frame is:

Columns.

- Girders, beams, trusses and spandrels connecting directly to the columns.
- Members of the floor and roof construction that have direct connection to the columns



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Column Protection Section 704.2

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- Columns are to be protected by individual encasement on all sides for the full height of the column.
 - Exception for light-frame construction per Sec. 704.4.1
- Where column extends through a ceiling membrane, the individual encasement protection must be provided in a continuous manner from the top of the foundation or floor/ceiling assembly below to the top of the column.

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76



77

Protection of the Primary Structural Frame other than Columns Section 704.3

- Primary structural members required to have a fire-resistance rating and do <u>not</u> support more than 2-stories, one floor and roof, load bearing wall or 2-stories of non-load bearing wall shall be protected by any one of the following:
 - Individual encasement; or

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- Membrane or ceiling protection in accordance with Section 711; or
- **IBC** Combination of both.







Secondary Members Section 202

- Components built into an assembly that supports a portion of a floor, roof or only their own self-weight are considered as **secondary members**, including:
 - Roof trusses connected to a girder truss
 - Roof purlins and subpurlins connect to beams
 - Floor joists and trusses
 - Nonbearing walls
 - Bracing in the roof, floor or walls specifically designed to resist wind or seismic loads and is redundant for gravity systems.

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80

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Protection of Secondary Members Section 704.4

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- Secondary members also to be protected by individual encasement, with exception for vertical elements in light-frame construction and horizontal assemblies
- Section 704.4 permits horizontal assemblies to be protected with a membrane or ceiling that provides the required fire-resistance rating and is installed per Section 711 (Horizontal Assemblies)

81

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Protection of Secondary Members – Light Frame Construction Section 704.4.1

- Columns in light-frame construction are permitted to have required fire-resistance ratings provided by membrane protection where they are:
 - Integral elements in the wall of light-frame construction, and
 Located entirely between top and bottom plates or tracks.



82

Fire-resistance Ratings Sections 703.2.1.1, 705.5

- Interior walls to be tested assuming fire exposure from both sides.
- Exterior walls shall be rated for exposure to fire from:
 - Both sides where the separation distance is < 10 feet.



83

Type of Construction Section 602

- Since the provisions for type of construction primarily address the structural integrity of building elements under fire conditions, nonbearing walls are not regulated for fire resistance due to construction type.
- However, limitations on the use of combustible materials do apply to nonbearing walls and partitions (both interior and exterior).

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Type of Construction Section 602.1

 Protection of openings, such as door and window assemblies, ducts and air transfer openings in building elements not required unless mandated by other provisions of IBC.



85

Ty Se	pes I and II Co ction 602.2	nst	ruc	tio	n	
	BUILDING FLEMENTS		TYPE I		EII	
		Α	В	Α	В	
	Primary structural frame	3 ^{a,b}	2 ^{a,b,c}	1 ^{b,c}	0°	
	Bearing walls					
	Exterior	3	2	1	0	
	Interior	3ª	2ª	1	0	
	Nonbearing walls and partitions Exterior		See Tab	le 705.5		
	Nonbearing walls and partitions Interior	0	0	0	0	
	Floor construction and associated secondary structural members	2	2	1	0	
	Roof construction and associated secondary structural members	1½b	1 ^{b,c}	1 ^{b,c}	0 ^c	TELEARNING.
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	2021 IBC Types of	Constructio	in			86

86

Ty Se	pe III Constructio ction 602.3	n	
		TYP	'E III
	BOILDING ELEWIENTS	Α	В
	Primary structural frame	1 ^{b,c}	0
	Bearing walls		
	Exterior	2	2
	Interior	1	0
	Nonbearing walls and partitions Exterior	See 70	Table 5.5
	Nonbearing walls and partitions Interior	0	0
c	Floor construction and associated secondary structural members	1	0
	Roof construction and associated secondary structural members	1 ^{b,c}	0
202	2021 IBC Types of Constructio	in	



Ty Ta	pe IV Construc ble 601	ctio	n			
		TYPE IV				
	BOILDING ELEMENTS	Α	В	С	HT	
	Primary structural frame	3ª	2 ^a	2 ^a	HT	
	Bearing walls					
	Exterior	3	2	2	2	
	Interior	3	2	2	1/HT ^s	
	Nonbearing walls and partitions Exterior		See Ta	ble 705.	5	
	Nonbearing walls and partitions Interior	0	0	0	Sec. 2304.11.2	
	Floor construction and associated secondary structural members	2	2	2	нт	
IBC	Roof construction and associated secondary structural members	1½	1	1	нт	
12						Cente
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89

Concealed Spaces Section 602.4

- Concealed spaces in Type IV-A, IV-B and IV-C buildings shall not contain combustibles other than electrical, mechanical, fire protection and plumbing materials and equipment permitted in plenums per IMC Section 602.
 - Combustible construction forming concealed spaces to be protected with noncombustible materials with minimum assigned time of:

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- 80 minutes in Types IV-A and IV-B
- 40 minutes in Type IV-C



Mass Timber Shaft Construction Section 602.4

- In shaft construction, both shaft and room sides of mass timber elements to be protected with noncombustible materials with minimum assigned time of:
 - 80 minutes in Types IV-A and IV-B
 - 40 minutes in Type IV-C



91

Exterior Wall Construction Section 602.4

• Combustible exterior walls of Type IV-A, IV-B and IV-C buildings to be provided with noncombustible protection with a minimum assigned time of 40 minutes.



92



Type IV-A, IV-B and IV-C Buildings Sections 602.4.1- 602.4.3

- The extent of noncombustible protection for mass timber elements is the primary difference between Type IV-A, IV-B and IV-C construction.
- Type IV-A construction mandates that faces of all timber members be protected with noncombustible materials.
- Type IV-B construction permits some degree of exposed timber elements, with remainder protected with noncombustible protection.

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• Type IV-C construction permits almost all timber elements to be unprotected.

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502

94

Type IV-A Buildings Section 602.4.1

- Type IV-A construction mandates:
- Outside face of exterior walls of mass timber construction to have noncombustible protection with minimum assigned time of 40 minutes.
- Interior faces of all mass timber elements, including inside faces of exterior mass timber walls and mass timber roofs, to have noncombustible protection with minimum assigned time of 80 minutes.
- Floor assemblies to contain a noncombustible material at least 1 inch thick above mass timber with underside protected to same criteria as for other interior faces (80 minutes).

 Interior surfaces of roof assemblies to meet same criteria as for other interior faces (80 minutes).

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95

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<section-header><section-header><list-item><list-item><list-item><list-item><list-item> <section-header> **Dype IV-B Buildings Section 602.4.2** 9 17/20 Provide the construction requires same degree of noncombustible protection as mandated for Type IV-B. 0 Unprotected portions of mass timber ceilings and walls permitted in Type IV-B buildings where: 1 Limited to a wall area equal to 40% of the floor area in any dwelling unit or fire area, or 1 A combination of unprotected wall and ceiling areas determined by applying the unity formula. Image: A construction of the protected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling areas 1 A combination of unprotected wall and ceiling area





98



		MINIMUM	NOMINAL AWN SIZE	MINIMUN	A GLUED-	MINIMUM S	RUCTURAL
SUPPORTING	HEAVY TIMBER STRUCTURAL ELEMENTS	Width, inch	Depth, inch	Width, inch	Depth, inch	Width, inch	Depth, inch
Floor loads only or combined floor and roof loads	Columns, Framed sawn or glued- laminated timber arches that spring from the floor line; Framed timber trusses	8	8	63/4	81/4	7	71/2
	Wood beams and girders	6	10	5	10 ¹ / ₂	51/4	91/2
	Columns (roof and ceiling loads); Lower half of: wood-frame or glued-laminated arches that spring from the floor line or from grade	6	8	5	81/4	51/4	71/2
Roof loads only	Upper half of: wood-frame or glued-laminated arches that spring from the floor line or from grade	6	6	5	6	51/4	51/2
	Framed timber trusses and other roof framing," Framed or glued- laminated arches that spring from the top of walls or wall abutments	46	6	36	67/ ₈	31/2	51/2

Type IV-HT Buildings Section 602.4.4

- Exterior walls shall be constructed of:
 - Noncombustible materials, or
 - Fire-retardant-treated wood (where 2-hour rating or less), or

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- CLT not less than 4 inches in thickness (where 2-hour rating or less), provided exterior surface is protected by:
 - FRT sheathing at least 15/32" thick, or
- Minimum ½" gypsum board, or
- Noncombustible material



101

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Ty S€	pe V Constructior ction 602.5	า	
		TYPE V	
	BOILDING ELEMENTS	Α	В
	Primary structural frame	1 ^{b,c}	0
	Bearing walls		
	Exterior	1	0
	Interior	1	0
	Nonbearing walls and partitions Exterior	See 70	Table 5.5
	Nonbearing walls and partitions Interior	0	0
DC I	Floor construction and associated secondary structural members	1	0
	Roof construction and associated secondary structural members	1 ^{b,c}	0
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104

Notes to Table 601 Note a

- In buildings of Type IA, IB, IV-A, IV-B and IV-C construction, the required fire-resistance ratings of primary structural frame members is permitted to be reduced by 1 hour if only supporting a roof.
 This allowance does not apply to exterior bearing walls.
 In addition, the 1-hour reduction is permitted for
- interior bearing walls in Type IA and IB buildings.

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Notes to Table 601 Note b

• For buildings of Type I, IIA, IIIA and VA construction, fire protection of the roof construction, including the primary structural frame members, framing and decking, is not required if every part of the roof is at least 20 feet above the floor below.



106



107



Notes to Table 601 Note e

- Exterior bearing walls must be evaluated for fire-resistance-rated protection based on both Table 601 and Table 705.5.
- The most restrictive requirement will regulate the minimum required rating of the exterior bearing wall.

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50 1	2021 IBC Types of Construction	109

109

Notes to Table 705.5 Note e

- Table 705.5 also regulates the fire-resistance of exterior walls.
 - Unlike Table 601, provisions apply for both bearing and nonbearing walls.

FIRE OF ALL THE	CE RATING REQUIREMEN	TS FOR EXTERIOR W	ILLS BASED ON FIRE SE	PARATION DISTANCE
DISTANCE = X (feet)	CONSTRUCTION	GROUP H*	GROUP F-1, M, S-1	GROUP A, B, E, F-2, I, R ⁱ , S-2, U ^h
$X \le 5^b$	All	3	2	1
5 < Y < 10	IA, IVA	3	2	1
7 5 X ~ 10	Others	2	1	1
	IA, IB, IVA, IVB	2	1	1°
$10 \le X \le 30$	IIB, VB	1	0	0
	Others	1	1	1.c
$X \ge 30$	All	0	0	0
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				110

110









- Allowances have been made for small amounts of combustibles that will not effectively increase the fire load.
- In addition, some combustible materials are permitted because there are safeguards in place such that the hazards are effectively mitigated.

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114





Fire-Retardant-Treated Wood Section 2303.2

- · Fire-retardant-treated wood is considered any wood product that:
 - Is impregnated with chemicals by a pressure process or other means during manufacture
 - When tested, has a listed flame spread < 25, and
 - Shows no evidence of significant progressive combustion when tested for additional 20 minutes, and
 - Flame front does not progress more than 10.5 feet beyond the centerline of the burners at any time.

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116







119









123





125



Wall and Ceiling Finishes Section 603.1, #7

- Combustible interior wall and ceiling finishes are permitted in Type I and II buildings where in compliance with Section 803.
- Section 803 requires all wall and ceiling finish materials be classified for fire performance and smoke development unless specifically exempted.



127

Wall and Ceiling Finishes Section 603.1, #7

• Purpose is to limit flame spread and smoke development.

terms of ability to propagate flame

- < 0.036 inches thick applied directly to surface of walls and ceilings not required to be tested (Sec. 803.2)
- Exposed heavy timber of Type IV construction not regulated for interior finish requirements in other than interior exit stairways and exit passageways (Sec. 803.3)
 Combustible materials are acceptable as finish for walls,
- ceilings, floor and other interior surfaces (Sec. 802.5)
 Decorative materials are restricted by combustibility, fire performance and flame propagation performance criteria per Section 806 (Sec. 803.2)
 The focus is on combustibility and flame resistance in

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128

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Show Windows Section 603.1, #9 In Type I and II buildings, combustible show windows, nailing and furring strips, and wooden bulkheads below show windows permitted, including their frames, aprons and showcases, provided such elements are installed no more than 15 feet above grade.



130

Finish Flooring Section 603.1, #10

- Based on Section 805, combustible materials are permitted to be installed on, or embedded in, floors of buildings of Type I or II construction.
- Floor sleepers to be noncombustible unless space between floor assembly and flooring is:
 - Solidly filled with noncombustible materials, or
 - Fireblocked per Section 718 with no open spaces under or through permanent partitions or walls
- Wood finished flooring permitted to be attached directly to embedded or fireblocked wood sleepers
 Comburtible inculating boarde limited to 1/ inch

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 Combustible insulating boards limited to ½-inch thickness

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131

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Partitions Dividing Stores and Offices Section 603.1, #11

• In buildings of Type I or II construction, partitions of stores, offices and similar places are permitted to be constructed of:

- Fire-retardant-treated wood, or
- 1-hour fire-resistance-rated construction
- Maximum 6-foot-high wood panels or similar light construction
- Such partitions cannot be a part of corridor construction where the corridor serves an occupant load of 30 or more

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Stages Section 410.2 • In buildings of Type I or II construction, stages are required to be constructed of materials as require

- required to be constructed of materials as required for floors based on the building's construction type.
- Stages are permitted to be constructed of combustible materials where:
 - In Type IIB construction, stage floors with a nominal 2-inch wood deck may be of combustible construction.
 - In Type IIA construction, stage floors need not be fireresistance-rated provided the space below the floor is protected by a fire conjulate on fire-extinguishing system
 - protected by a fire sprinkler or fire-extinguishing system.
 Finished floor may be constructed of wood. Openings through floor to be equipped with tight-fitting, solid wood doors with approved safety locks.

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134

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Platforms Section 410.3 • In buildings of Type I or II construction, platforms are required to be constructed of materials as required for building's type of construction. • Platforms permitted to be constructed of fireretardant-treated wood where: • Not more than 30 inches above main floor, and • Not more than 1/3 of room floor area, and • No more than 3,000 square feet in area. • Minimum 1-hour construction required for space beneath platform where used for: Storage, or Any purpose other than equipment, wiring or plumbing. center 2021 IBC Types of Construc







137

Water-Resistive Barriers in Exterior Walls Section 1402.5

- Exterior walls of Type I, II, III and IV buildings that are greater than 40 feet in height above grade plane and contain a combustible waterresistive barrier to be tested and comply with acceptance criteria of NFPA 285, except:
 - Where a water-resistive barrier is the only combustible component in the exterior wall, and:
 There is a wall covering of brick, concrete, stone, terra
 - cotta, stucco or steel, or • The barrier has complying flame spread index ≤ 25, a smoke-developed index ≤ 450, and a complying heat release rate.

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Combustible Materials on the Exterior Side of Exterior Walls Section 1405.1.1

- Section 1405.1.1 permits combustible wall coverings on the exterior side of exterior walls of buildings of Type I, II, III and IV where limited to:
 - 10% of the wall surface where fire separation distance is less than 5 feet, and
 - 40 feet in height above grade plane regardless of fire separation distance
- No limit on surface area and allowed to be 60 feet in height where of fire-retardant-treated wood.

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139







Metal Composite Materials (MCM) Section 1406.10

- Further regulation is established where MCMs are installed more than 40 feet above grade plane on buildings of Type I, II, III or IV construction.
- In addition to the general mandate regulating flame spread, smoke development and thermal barrier protection, such MCM systems are to be tested and comply with acceptance criteria of NFPA 285.

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• Testing to be performed with the MCM in the maximum thickness intended for use.

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142





144





146







installed in accordance with Section 803.15 are permitted in buildings of Type I and II construction.

- Interior finishes to be applied directly against noncombustible construction or to furring strips not exceeding 1% inches, applied directly to such surfaces
- If applied to furring strips, the intervening spaces between furring strips to be filled with an inorganic, noncombustible or Class A material, or fireblocked at maximum 8-foot intervals

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• With exceptions, finishes set out more than 1³⁄₄ inches shall be minimum Class A

149

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Aggregates and Admixtures Section 603.1, #20

- Combustible aggregates, component materials and admixtures may be used in Type I and II buildings as permitted by Section 703.2.1.2.
- In fire-resistance-rated construction, combustible aggregates are permitted in gypsum and Portland cement mixtures.
 - Any component material or admixture is permitted in assemblies if the resulting tested assembly meets the fire-resistance testing requirements of the IBC.

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151



152

Penetrations Section 603.1, #22 • Combustible materials used to protect penetrations in fire-resistance-rated assemblies are permitted in Type I and II construction where the conditions of Section 714 (Penetrations) are met. Image: Construction of the penetration of the pene



Concealed Spaces Section 603.1, #24

- Combustible materials are permitted in concealed spaces of buildings of Type I and II construction where in accordance with Section 718.5.
- General provision mandates that combustible materials not be permitted in concealed spaces of buildings of Type I or II construction.
 - Six exceptions allow for use of specified combustible materials

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155

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Concealed Spaces Section 718.5, Exceptions

• The following combustible materials are permitted in concealed spaces of Type I and II buildings:

- Materials permitted in accordance with Section 603
- Materials exposed within plenums complying with Section 602 of the IMC
- Class A interior finish materials classified per Section 803
- Piping within partitions or shaft enclosures installed in
- accordance with IBC
 Piping within concealed ceiling spaces installed in accordance with IMC and IPC
- Insulation and covering on pipe and tubing installed in concealed spaces, other than plenums
 - Maximum flame spread index of 25

Maximum smoke-developed index of 450
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158



159





161

Ducts, Piping and Electrical Sections 603.1.1 through 603.1.3

• In buildings of Type I and II construction: • The use of nonmetallic ducts is permitted where

- installed in accordance with the limitations of the IMC. • The use of combustible piping materials is permitted
- where installed in accordance with the limitations of IPC and IMC.
- The use of electrical wiring methods with combustible insulation, tubing, raceways and related components is permitted where installed in accordance with IBC.

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• Section 2701 references NFPA 70 for electrical installations.

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Final Reflection This slide will help the learner to reflect on the day and what they will take back to the job and apply. • What? What happened and what was observed in the training?

- So what? What did you learn? What difference did this training make?
- Now what? How will you do things differently back on the job as a result of this training?

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164

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 Thank you for participating!

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