


2020 Connecticut State Building & Fire Codes: Projected Development Timetable

Most current schedule will be posted at <https://portal.ct.gov/DASCodeChange>

- Drafting of 2020 SBC amendments 1/1/19 - 2/28/19
- Code Change Proposals Received 2/1/19 - 4/30/19
Code Change Proposal Form on Web
- Committees/Work groups Review 3/1/19 - 6/30/19
 - Codes Amendment Subcommittee
 - Work groups
- Final drafts development 7/1/19 - 8/31/19
- Review drafts 9/1/19 - 10/31/19
- Codes & Standards Drafts Approval 11/13/19
- Public comment period 12/1/19 - 2/29/20
- Legislative review/approval 3/1/20 - 5/31/20
- Effective 10/1/20




Focus on Height & Area: 2015 IBC Chapters 3-10

Spring 2019 Career Development Series

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Errata Central

<http://www.iccsafe.org/errata-central>



- IBC 2012 had 35 changes between first and eleventh printings
- IBC 2015 had 28 changes between the first and third printings
- IBC 2018 already has 17 changes in its first two printings

<https://www.iccsafe.org/submit-errata>



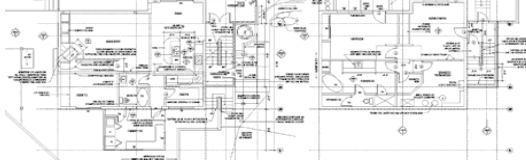
Course Objectives

At the end of this session participants will be able to

- Locate requirements within the 2015 IBC portion of the 2018 CT State Building Code that will influence a building's height and area.
- Identify information required to be included in construction documents and on plans for building permit applications.
- Cite key building code requirements for each of the major classifications of use and occupancy.
- Explain the procedure for determining the maximum Height and Area for a building.

Information on the Documents

Section 107.2 – Submittal Documents



- 107.2.1 Documents indicate location, nature, extent of work, conformity to the code, laws, ordinances, rules, and regulations
- 107.2.2 Fire protection system details - as shop drawings.
- 107.2.3 Means of egress
- 107.2.4 Exterior wall envelope
- 107.2.5 Site Plan
- 107.2.6 Structural Information per 1603.1.3
- 107.6 29-276c requirements
- 107.7 Threshold requirements

Information on Documents

Section 107.2.5 Site Plan

CD's shall show (to scale):

- Accurate boundary survey
- Established street grades
- New & Existing structures
- Other constructed site features
- Lot line separations for all
- Any flood hazard areas/floodways/design elevations
- All proposed finish grades





Definitions / General

202 Definitions; 501.2 Address I.D.

- Height - Building
- Area - Building
- Multi-story Unit
- Live/Work Unit (2012)
- Penthouse
- Mezzanine
- Exercise spa (CT)
- Special Flood Hazard Area
- Story Above Grade Plane
- Lowest Floor (Appdx. G)
- Wood – Fire-retardant treated
- Wood – Pressure treated



- Stepped aisles (assembly seating)
- Address Identification (required for both new and existing buildings)

Definitions, Acronyms

Section 201 – CT Amendments – Definitions Added or Amended

Added

- BED & BREAKFAST ESTABLISHMENT
- COMPLEX, GUEST ROOM, HOTEL
- SELF-PRESERVATION, STORY
- STREET FLOOR
- SUNROOM (greenhouse undefined)



Amended

- BUILDING, EXISTING.
- EXISTING STRUCTURE
- FIRE SEPARATION DISTANCE
- REGISTERED DESIGN PROFESSIONAL
- SPECIAL AMUSEMENT BUILDING

Acronyms – None in ICC

NFPA Codes & Standards

101.4.5.1 CT SFSC - IBC Chapter 35 Referenced Standards - NFPA



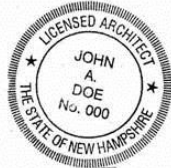
- NFPA 13 Sprinkler Systems
- NFPA 14 Standpipe Systems
- NFPA 30 Flammable and Combustible Liquids
- NFPA 31 Oil-Burning Equipment
- NFPA 58 LPG Code
- NFPA 70 National Electrical Code
- NFPA 72 National Fire Alarm Code
- NFPA 96 Hoods
- *NFPA 101 Life Safety Code
- (and many others)

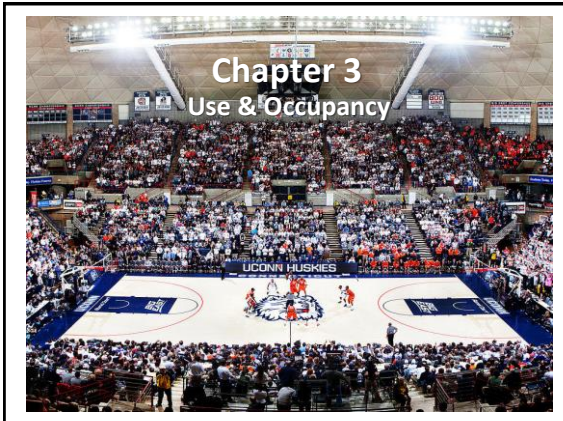


Fire Protection Shop Drawings

Section 107.2.2 CT Amendments

- Conform to Code and to CT Law
- Approved prior to start of installation
- Contain all information required per Chapter 9
- Drawings accompanied by evidence of licensure





Classification of Use & Occupancy

Section 302 IBC Classification - General

- Major Use Groups
 - ✓ hierarchy within subgroups.
 - ✓ how characteristics are dissimilar.
- Activity type; Familiarity, type.
- Sub-Classification w/Fire Code
- Addition of new subsections.
- New definitions added.
- Section numbers slightly different than those of CT 2012



Use & Occupancy – Group A

Section 303 Group A: Assembly

General:

- A-1 – fixed seating
- A-2 – food and/or drink consumption
- A-3 – general assembly
- A-4 – indoor sporting events with spectator seating
- A-5 – outdoor sporting events

✓ Exception – assembly spaces < 50 people or < 750 sf can be treated as Use Group B

NEW IBC Sub-Sections:

- 303.1.1 Small Buildings & Tenant Spaces (CT amends)
- 303.1.2 Small Assembly Spaces
- 303.1.3 Associated w/ Group E occupancies
- 303.1.4 Accessory to places of religious worship

Use & Occupancy Classifications

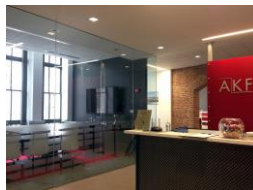
Chapter 3: Assembly Classifications: Exceptions

- 303.1.3 Assembly Uses included within Group E
- 303.1.4 Education/rooms < 100 part of A-3 worship
- 303.3 Kitchens included in A-2 dining facilities
- 303.4 Gyms, pools, courts with no spectator seating
- 303.4 Indoor sports with spectator seating

Use & Occupancy – Group B

Section 304.1 Business

- Airport traffic control towers
- **Ambulatory care facilities (CT FSC)**
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- **Clinic, outpatient (IBC)**
- Dry cleaning
- Educational occupancies for students above the 12th grade
- And More.....



Use & Occupancy - Group E

Section 305 Group E: Educational



New Sub-Sections

- Schools for 6+ people ≤ 12th grade
 - ✓ 305.1.1 Accessory to places of religious worship: classified as Group A-3
- Day care for > 6 children at least age 3± years old.
 - ✓ 305.2.1 within places of religious worship
 - ✓ 305.2.2 Five or fewer children
 - ✓ Six or fewer children in a dwelling unit classified as Group R-3

Use & Occupancy – Group F

Section 306 Group F: Factory

- F-1 moderate-hazard – all factory industrial uses not classified as Use Group F-2:
 - ✓ Aircraft manufacturing
 - ✓ Automobiles
 - ✓ Food processing & commercial kitchens not associated with restaurants/cafes
 - ✓ And Many More...

- F-2 low-hazard –industrial fabrication/ manufacturing of noncombustible materials:
 - ✓ Brick & Masonry
 - ✓ Metal products
 - ✓ Beverages



Use and Occupancy – Group H

Section 307 Group H – High Hazard

- H-1 – detonation hazard
- H-2 – deflagration or accelerated burning hazard
- H-3 – readily supports combustion or poses physical hazard
- H-4 – health hazard
- H-5 – semiconductor fabrication and similar R&D
- Detached Building (IBC errata)
307.1 Lots of new exceptions for uses (13) added.
- 307.1.1 New H-Use Requirements (IFC 415)
- 307.2 New Definitions moved to Chapter 2:
 - ✓ Baled Cotton (AMD)
 - ✓ Baled Cotton; Densely Packed (ADD)
 - ✓ Day Box (ADD) - H1 storage method
 - ✓ Inert Gas
- 307.5.2 Consumer Fireworks (coordinated w/FSC NFPA 1124)



Use and Occupancy – Institutional Care

308.3 I-1 Conditions 1 & 2

- 202 Definitions:
 - Personal Care –assistance in general task
 - Medical Care – unable to respond
 - Incapable of Self-preservation
 - 24-hour care
 - Custodial Care – evacuate during emergencies
- 308.3 I-1; R-4 limited: 4 to 16 occupants; uses 13R
 - ✓ Condition 1 - Physical limitations (slow)
 - ✓ Condition 2 - Cognitive limitations; 10% HCP
- 308.4.3 – See 407.13 alternative for I-2 homes w/ 4-6 clients



Use and Occupancy – Institutional Care

I-1 308.3 Classifications

Condition 1

- (AMD) Now allows for “house” living arrangements
- Patient rooms – suite arrangements
- Shared living spaces w/kitchens

Condition 2

- More single-occupancy rooms
- Increased smoke compartmentation to 40 ksf from 22 ksf
- Other changes
- Door locking arrangements
- Moving beds through egress corridors
- Limits on flammable materials
- Evacuation arrangements (defend in place strategy)

Use & Occupancy - Institutional

Section 308 – Group I

General:

- (AMD) 308.6 Group I-4 – Adult and child day care facilities.
 - ✓ (AMD) 308.6.1 Adult care facility
 - ✓ Group A-3 if incapable of responding to emergency w/o help.
 - (AMD) 308.6.2 Child care facility
 - ✓ Group E if located on level of exit discharge w/ exit door leading directly to exterior.
 - ✓ Group R-3 if Family day care home ≤ 6 children
- Coordinates w/state fire code





Use & Occupancy - Mercantile

Section 309.1 – Group M

- Display and sale of merchandise
- Includes C-stores dispensing motor fuels
 - ✓ Subject to special increased storage limits for hazardous materials; Table 414.2.5

Use & Occupancy - Residential

Section 310 – Group R: CT Amendments

New terms added/amended:

- Bed & Breakfast Establishment
- Guest Room
- Hotel



- 3010.3 R-1 – transient hotels, motels; B&B's
- R-2, 3, 4 residential > 3 stories high
- 310.4 R-2 – non-transient apartments, dormitories
- 310.5 R-3 – Adult and child day care for < 5 people, < 24-hrs
- (DEL) 310.5.2 Lodging-houses
- 310.6 R-4 – Residential care/assisted living with 5 to 16 people excluding staff

Chapter 3 – Classification of Use & Occupancy

Section 311 – Group S: Storage

- S-2 low-hazard – storage of noncombustible materials
- S-1 moderate-hazard – storage uses not classified as Use Group S-2





Chapter 3 – Classification of Use & Occupancy

Section 312 – Group U: Utility & Miscellaneous



- Carports/Private Garages
- Barns/Sheds
- Fences > 6 ft and retaining walls
- Tanks/Towers
- Retaining wall guards

Special Detailed Requirements

General Information – Use Groups

- Some sub-sections deleted from old 2003 edition.
- New definitions added to existing terms.

- NEW sections introduced in 2012; mostly by IBC
- **419 Live / Work Units**
- **420 Groups I-1, R-1, R-2, R-3 & R-4**
- **421 Hydrogen Fuel Gas Cutoff Rooms**
- **422 Ambulatory Care Facilities (including CT 420)**
- **423 Storm Shelters**
- **424 Play Structures (Within Buildings)**
- **425 Hyperbaric Facilities**
- **426 Combustible Dusts, Grain Processing & Storage**
- **427 Group E Preschool and Primary Occupancies**

Covered Mall Buildings

Section 402 Large Mixed-Use Spaces



- 402.1.1 Must be surrounded on all sides by permanent open space.
- 402.1.2 Perimeter line shall be established.



High Rise Buildings

Section 403.3 Construction over 75 feet high

403.2 Automatic Sprinkler System— Construction
403.2.1.1 Type IA construction in buildings ≤ 420 feet height permitted to be reduced to the min. fire-resistance ratings for the building elements in Type IB.

- 403.4 Emergency Systems
- Smoke Detection
 - Fire Alarms
 - Standpipes
 - Voice Alarms
 - Responder Radio
 - Fire Command Center
 - Smoke Removal
 - Standby & Emergency Power

- 403.5.2 Additional Egress stairway - 2012 (over 1006.3 # of exits)
- Communications system
 - Smokeproof enclosures
 - Luminous egress path markings

Building Height in Stories

403.6 High-Rise Buildings



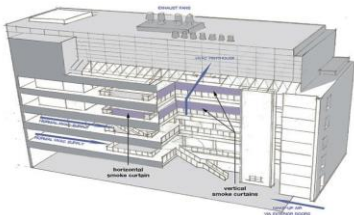
- High-Rise > 75 feet;
- Special Provisions for buildings ≥ 420 feet
- Elevator / Lobby Requirements (3006.1 - new)

Atriums

Section 404.3 Automatic Sprinkler Protection

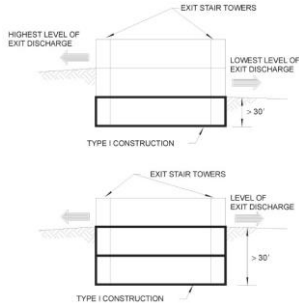
- 404.1.2 Not applicable to vertical openings in Group R-1 bed & breakfast
- (AMD) 404.3 Automatic sprinkler system installation required.
- 404.4 Fire Alarm system required
- 404.5 Smoke control system required for buildings connecting > 2 stories.

404.6 Exception: Glazed wall substitute for fire barrier under 3 distinct conditions



Underground Buildings

Section 405 Construction requirements



Motor Vehicle-Related Occupancies

Section 406 Garages; Fuel Dispensing; Repairs

- 406.2 Definitions:
 - ✓ Mechanical-Access Open Parking Garages
 - ✓ Open Parking Garage
 - ✓ Ramp-Access Open Parking Garages
- 406.3.4 Separation of private garages (AMD)
 - ✓ Garage walls, Ducts
- 406.4 Public Parking Garages amends height, guards & barriers (IBC)
- 406.5 Open Parking Garages
- 406.7 Motor fuel-dispensing facilities
- 406.8 Repair garages

Table 406.5.4 Open Parking Garages Area & Height

TYPE OF CONSTRUCTION	AREA PER TIER (square feet)	HEIGHT (in tiers)		
		Ramp access	Mechanical access	
			No	Yes
IA	Unlimited	Unlimited	Unlimited	Unlimited
IB	Unlimited	12 tiers	12 tiers	18 tiers
IIA	50,000	10 tiers	10 tiers	15 tiers
IIB	50,000	8 tiers	8 tiers	12 tiers
IV	50,000	4 tiers	4 tiers	4 tiers

For SI: 1 square foot = 0.0929 m².

Open Parking Garages

Table 406.5.4 Area & Height

Construction Type	Area per Tier (9'6"/tier)	Height (in tiers)		
		Ramp Access	Mechanical Access	
			NO	YES
IA	Unlimited	Unlimited	Unlimited	Unlimited
IB	Unlimited	12	12	18
IIA	*50,000 sf	10	10	15
IIB	*50,000 sf	8	8	12
IV	50,000 sf	4	4	4

406.5.5 : Area & height Increases

- 50% open perimeter: 25% and one tier
- 100% open perimeter: 50% and one tier
- Type II unlimited area with 100% open perimeter



Ambulatory Care Facilities

NEW Section 422 – Use Group B

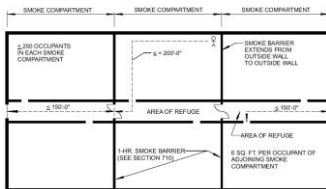


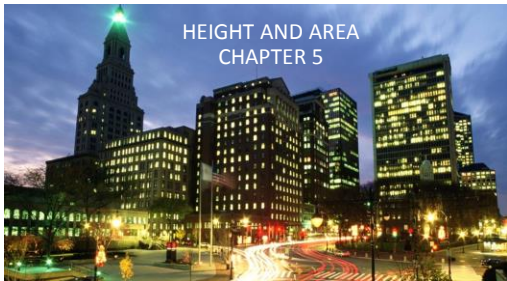
- 422.2 Separation
- 422.3 Smoke compartments
- 422.4 Refuge area
- 422.5 Independent egress
- 422.6 Laboratories
- 422.7 Medical Gas systems

Group E

NEW SECTION 427

- 427.1 Proximity to the level of exit discharge
 - ✓ 427.1.1 Preschool, kindergarten & first grade located on level of discharge
 - ✓ 427.1.2 Second grade rooms located not more than 1 story above level of discharge
- 427.2 Compartmentation – Group E occupancies subdivided into compartments by smoke barriers





Q. Are CT-specific editions of IBC/IRC barred to show: changes? Amendments?



EXAMPLE: Single-Story Area Increase

Use of Equation 5-1

- Group A-3 Free-Standing Restaurant with Banquet Facility
 - Type VB construction; **14,000 square feet** – requires sprinkler (504.3"d")
 - 100% Open Perimeter (no parking that blocks fire access)
 - EQUATION 5-5 Increase (includes sprinkler allowance*)
- $A = 24,000* + [6,000 \times (1.00 - 0.75)] = \mathbf{33,000 \text{ square feet}}$
- T506.2 T506.2 Open Perimeter*

Area Increase Due to Building Perimeter

506.2.3 Single-Occupancy, Multi-story Buildings

$A_a = [A_t + (NS \times I_f)] \times S_a$ [Equation 5-2]

- A_a = Allowable area
- A_t = Tabular allowable area (NS, S1, S13R) per Table 506.2
- NS = Non-sprinklered tabular allowable area factor per Table 506.2
- I_r = Area factor frontage increase (per 506.3)
- S_a = Actual # stories (cannot exceed four)
 - ✓ ≤ 3 (NS)
 - ✓ ≤ 4 (S13R)

EXAMPLE: Multi-Story Area Increase

Use of Equation 5-2

- Group B; R-2 Residential Building; 36 dwelling units; 12,000 sf/floor
- Type IIIB Construction; four-story; surface parking; sprinkled
 - ✓ Number of actual floors cannot exceed four using 13R system
- 75% Open Perimeter; fire access unavailable one side; surface parking
- Equation 5-5 increase (includes sprinkler allowance)
- $A = [16,000 + (7,000 \times 0.75 \times 0.75)] \times 4 = \mathbf{63,750 \text{ square feet}}$
- $A_{\text{actual}} = \mathbf{48,000 \text{ square feet}}$



Area Increase Due to Building Perimeter

506.3 Mixed Occupancy, Multi-Story Buildings

$$A_a = A_t + (NS \times I_f) \quad \text{[Equation 5-3]}$$

- A_a = Allowable area
- A_t = Tabular allowable area (NS, S1, S13R) per Table 506.2
- NS = Non-sprinklered tabular allowable area factor per Table 506.2
- I_r = Area factor frontage increase (per 506.3)
- S_a = Actual # stories
 - ✓ ≤ 3 (NS)
 - ✓ ≤ 4 (S13R)

EXAMPLE: Multi-Story Area Increase

Use of Equation 5-3

- Group B Business Occupancies First Floor: 12,000 sf
- Group R-2 18 Dwelling Unit Occupancies: 12,000 sf - floors 2&3
- Type IIIB Construction; Three-story; surface parking; sprinkled
- 75% Open Perimeter; fire access unavailable one side; surface parking
- Equation 5-5 increase (includes sprinkler allowance)
- $A_B = [19,000 + (9,000 \times 0.75 \times 0.75)] \times 1^* = 24,062.5$ sf
- $A_R = [16,000 + (7,000 \times 0.75 \times 0.75)] \times 2^* = 39,875.0$ sf
 - Number of actual floors cannot exceed four using 13R system
- **Total Allowable is 63,937.5 sf**
- $A_{\text{actual}} 3 \times 12,000$ sf = 36,000 sf

Open Space (Unobstructed)

506.3 Frontage Increase Rules

- Minimum 25% of building perimeter faces:
- Unobstructed open space ≥ 20 feet from:
 1. Closest interior lot line to face of wall +
 2. Width of street, ROW +
 3. Exterior face of another building on lot
 - ✓ Calculate average width of any perimeter ≥ 20 but < 30 feet (Equation 5-4)
 - ✓ Add to remainder of perimeter ≥ 30 feet
- Amount of Increase is 75% of tabular value multiplied by adjusted perimeter factor (Equation 5-5)
- Highlight is the side access to the street, limited by a retaining wall next to the P/L and a 3 ft. wide areaway against the side of the building





Calculating Frontage Increase

Where To Begin???



Frontage Increase

506.3 Access Rules Limitations



- | | |
|--|--|
| Buildings Using 503, 504, 506, 507 | Unlimited area buildings (507)
– rules change |
| <ul style="list-style-type: none"> ■ Adjoin or have access to a public way ■ Have ≥ 25 % perimeter ≥ 20' setback <ul style="list-style-type: none"> ✓ On the same lot ✓ From space dedicated for public use ✓ Accessed from street or approved fire lane | <ul style="list-style-type: none"> ■ Have 100% perimeter ≥ 60' setback ■ Limitations: <ul style="list-style-type: none"> ✓ Uses ✓ Stories ✓ Egress |

Calculating Frontage Increase

506.2 $W = (l_1 \times w1 + l_2 \times w2 + l_3 \times w3 + \dots + l_{30} \times w_{30}) / F$ [Equation 5-4]



- W = weighted average of wall segments ≥ 20' to 30'+
- l = wall segment setback (or average setback)
- F = Overall portion of Building Perimeter facing on setback ≥ 20 feet
- P = Entire perimeter of the building walls
- I_f = Increased area due to increased frontage:
 $I_f = [E/P - 0.25] W/30$ [Equation 5-5]





Unlimited Area Buildings

507.1 General

- Use Group(s)
- Types of Construction
- Sprinkler Protection
- Building Area - Limitations
- Building Height
- Open Perimeter
- Perimeter Exceptions
- Limitations



Unlimited Area Buildings

Section 507.1 General (New)

- 507.1 General (New section added)
 - ✓ Requires determination of open yards, public spaces around building
- 507.6 Group A-3 buildings of Type II Construction (Types Split)
- 507.7 Group A-3 buildings of Type III & IV Construction
 - ✓ Many additional specific limitations



Unlimited Area Buildings

507 Allowable Uses, Conditions

Use Groups	Code	S/NS	Stories	Setback	Limitations
F-2, S-2	507.3	NS	1	60'	
B, F, M, S	507.4	S	1	60' (40')	
A-4	"	S	1	60'	Exc. Type V
Mixed w/A-1 & A-2	"	S	1		Areas ≤ Tabular (w/o S)
B, F, M, S	507.5	S	2	60'	
A-3	507.6	S	1	60'	
A-3 Type III/IV	507.7	S	1	60'	M.O.E. ramps rqd.
H-2*, H-3, H-4	507.8	S	1*	60'	10% within Use Group
H-5	507.9	S	2	60'	Type 1 or II; ≤ tabular
E	507.10	S	1	60'	Or 1 ½ times height
E	507.11	S	1	60'	Type II, IIA, IV – 2 M.O.E.

Mixed Use and Occupancy

508.1 Accessory Uses; Limitations

- More than one Occupancy Group
- Exceptions:
 - ✓ Separated per 510 requirements
 - ✓ Group H-1, H-2, H-3 required to be detached structures by Table 415.6.2
 - ✓ Uses within *live/work units*
- Tabular area(NS) limits based on each classification 508.2.3
- 508.2 Allowable Building area and height
- 508.3 Non-separated occupancies
- 508.4 Separated Occupancies



Mixed Use and Occupancy

508.2 Accessory Uses

- 508.2.1 Code requirements comply for each separate Occupancy
- 508.2.2 Building height/# stories shall be for the principal Occupancy
- 508.2.3 Accessory Use aggregate area shall not exceed:
 - ✓ 10% of floor area of story wherein located
 - ✓ ≤ NS tabular area value in Table 506.2 for each Accessory Use
 - ✓ Non-separated other than for certain H, I-1, R-1, R-2, R3 Uses



Mixed Use and Occupancy

508.3 Non-separated Occupancies

- 508.3.1 Classification based on the most restrictive height/area for uses
- High-rise buildings shall be restricted further by 403 compliance
- 508.3.2 Height and Area based on the most restrictive tabular value
- Separations required for:
 - Group H-2, H-3, H-4, H-5 occupancies
 - Group R-1, R-2 and R-3 occupancies

Mixed Use and Occupancy

508.4 Separated Occupancies

- 508.4.1 Occupancy separations shall comply with Table 508.4 values
- 508.4.2 Ratios of aggregate areas of each occupancy shall not exceed 1.
- 508.4.3 Each occupancy shall comply with height/# stories for its Use
- 508.4.4 Individual use areas shall be separated

Mixed Use and Occupancy

Table 508.4 Required Separation of Occupancies

OCCUPANCY	A ^d , E		I-1, I-3, I-4		I-2		R		F-2, S-2 ^b , U		B, F-1, M, S-1		H-1		H-2		H-3, H-4, H-5		
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	
A ^d , E	N	N	1	2	NP	1	2	N	1	1	2	NP	NP	3	4	2	3 ^a		
I-1, I-3, I-4	-	-	N	N	2	NP	1	NP	1	2	1	2	NP	NP	3	NP	2	NP	
I-2	-	-	-	-	N	N	2	NP	2	NP	2	NP	NP	NP	3	NP	2	NP	
R	-	-	-	-	-	N	N	1 ^a	2 ^c	1	2	NP	NP	3	NP	2	NP		
F-2, S-2 ^b , U	-	-	-	-	-	-	-	N	N	1	2	NP	NP	3	4	2	3 ^a		
B, F-1, M, S-1	-	-	-	-	-	-	-	-	N	N	NP	NP	2	3	1	2 ^a			
H-1	-	-	-	-	-	-	-	-	-	-	N	NP	NP	NP	NP	NP			
H-2	-	-	-	-	-	-	-	-	-	-	-	N	NP	1	NP				
H-3, H-4, H-5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 ^{a, f}	NP			

S = Buildings equipped with an automatic sprinkler system in accordance with 903.3.1.1
 NS = Buildings not equipped throughout with an automatic sprinkler system
 N = No separation requirement
 NP = Not permitted Required separation
 a. See Section 420
 b. Required separation from areas used only for private or pleasure vehicles shall be reduced 1 hr, but not less than 1hr
 c. See Section 406.3.4
 d. Separation is not required between occupancies of the same classification
 e. See Section 422.2 for ambulatory care facilities



Special Provisions

510.3 Groups S-2 Enclosed Garage; Open Garage Above

- Allowable building area \leq sum of the individual actual areas divided by their tabular areas shall not exceed 1.0
- Enclosed garage Type I or II construction is equivalent to the fire resistant requirements of the open parking garage
- Height and # tiers of S-2 open parking garage must comply with Table 406.5.4
- Floor assembly separation shall meet S-2 requirements. Openings other than exits between the uses shall not be required to be protected
- S-2 parking garage is used exclusively for private motor vehicles but may contain incidental office, waiting and toilet rooms \leq 1,000 sf

Special Provisions

510.4 Parking Beneath Group R

- One story S-2 parking garage, Type I (enclosed) or Type IV (open) construction beneath an R Use Group building, the number of stories determining the minimum construction type shall be measured from the separating floor, provided that floor is the same type as the garage construction underneath, with a fire rating as required in 508.4

Special Provisions

510.5 / 510.6 Group R-1 & R-2

510.5 Type IIIA Construction

- Height of Group R-1 and R-2 buildings may be increased to six stories / 75 feet where the first floor above the basement has a fire rating of not less than 3 hours and the building is subdivided into not more than 3,000 square feet by 2 hour firewalls

510.6 Type IIIA Construction

- Height of Group R-1 and R-2 buildings may be increased to nine stories / 100 feet where the first floor above the basement has a fire rating of not less than 1½ hours and the building is separated by not less than 50 feet from any other building and from the lot lines, and exits segregated in 2 hour enclosures.



Special Provisions

510.7 Open Parking Beneath Groups A, I, B, M, R

- Open parking garages under A, I, B, M and R Uses shall not exceed height and area limitations of 406.5. Uppermost story of the building shall not exceed the limitations of 503 for its Use Classification. Overall height and stories of garage and upper floors shall be measured from the grade plane of the building.

Special Provisions

510.8 Group B or M With Group S-2 Open Parking Above

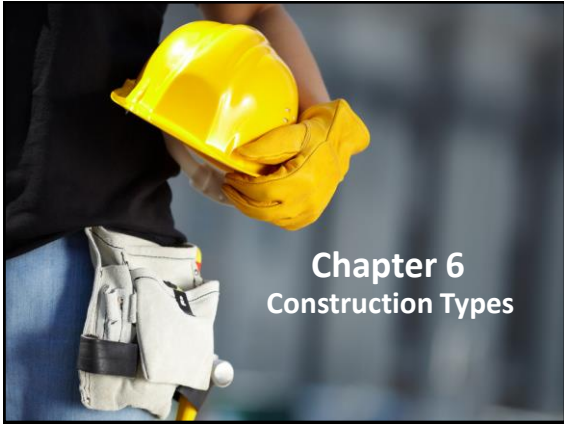
- Group B or M buildings located beneath a Group S-2 open parking garage of a lesser type of construction shall be considered as a separate and distinct building for determining the type of construction when in compliance with all of the following:
 1. Horizontal assembly separation of ≥ 2 hours
 2. Occupancies beneath are limited to Groups B and M
 3. Occupancy above limited to S-2 parking garage
 4. Building below is Type IA construction (see Exception Type IB/II)
 5. Height and Area of lower building shall not exceed limits of 503
 6. Height and Area of S-2 shall not exceed limits of 406.5
 7. Exits for S-2 garage shall be separated by 2 hour enclosures from B, M exits and discharge directly to the public way.

Special Provisions

510.9 Multiple Buildings Above a Horizontal Assembly

- Two or more buildings above the horizontal assembly separating an S-2 parking garage or building below and in compliance with 510.2, 510.3 or 510.8 shall be considered as separate and distinct from each other and shall comply with all other provisions applicable to each separate and distinct building.





Chapter 6 Construction Types

Types of Construction

Table 601 Fire Resistant Ratings for Building Elements (hours)

Building Element	Type I		Type II		Type III		Type IV		Type V	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B	
Primary structural frame	3	2	1	0	1	0	HT	1	0	
Bearing Walls / Exterior	3	2	1	0	1	0	2	1	0	
Interior	3	2	1	0	1	0	1/HT	1	0	
Nonbearing walls; partitions Exterior	See Table 602									
Nonbearing walls; partitions Interior	0	0	0	0	0	0	Section 602.4.6	0	0	
Floor construction; secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0	
Roof construction; secondary members (see Section 202)	1.5	1	1	0	1	0	HT	1	0	

R-2 Mid-Rise Dwelling Units

602.3 Performance of R-2 Framing: 4 & 5 Stories



- Issues:
- Construction Type
 - Use of FRT
 - Penetrations and sealing
 - Effective compliance



Chapter 7 – Fire & Smoke Protection

Section 701.2 Multiple Use Fire Assemblies

- Multiple purpose fire assemblies must comply with requirements for each adjoining use fire assembly.
- For example:** Some building elements are required by two or more different code provisions to be fire-resistance rated.

Chapter 7 – Fire & Smoke Protection

Section 703.4 Automatic Sprinklers

- Sprinklers SHALL not be used to establish fire-resistance rating.

Section 703.7 Marking & Identification

- Label fire walls/barriers/partitions, smoke barriers/partitions
- Permanent marking above ceilings.
- Located within 15ft of the end of each wall at intervals ≤ 30ft.
- Include lettering ≥ 3inches in height.

Chapter 7 – Fire and Smoke Protection

Section 705.2 Combustible Projections

- Projections into separation distances
- Structural stability

TABLE 705.2 MINIMUM DISTANCE OF PROJECTION

FIRE SEPARATION DISTANCE (FSD)	MINIMUM DISTANCE FROM LINE USED TO DETERMINE FSD
0 feet to less than 2 feet	Projections not permitted
2 feet to less than 5 feet	24 inches
5 feet or greater	40 inches

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

Section 603.1 Fire-Retardant-Treated Wood

- Permitted:
 - ✓ Nonbearing partitions w/ fire-resistance rating 2 hours or less.
 - ✓ Nonbearing exterior walls where fire-resistance rated construction is not required.
 - ✓ Roof construction

Chapter 7 – Fire and Smoke Protection

Section 706.1 CT Amendments – Fire Walls

- Portions of buildings separated by one or more fire walls shall be considered separate buildings.
- Specific wall assemblies must comply with requirements.



Fire Separations of S-2 / R-2

706.4 Parking Garages Attached to Apartments

- Fire separation construction Table 706.4 – 2 hr.
- Allows single 90 min. access door opening on S-2 side (new 2015)
- Smoke barriers separating areas of refuge; elevator lobbies
- HVAC shaftway transitions protected with fire dampers where allowed
- New prescriptive requirements for plastic decking materials
- New provisions for water mist suppression systems (residential)
- Stand-alone section for CO detection Group E (from fire alarm rqmts)




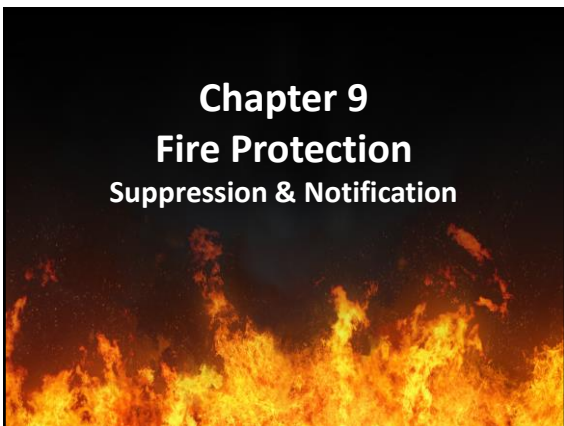


Interior Floor Finish

Section 804.4.2 Minimum Critical Radiant Flux

- Groups I-1, I-2 & I-3;
✓ Not less than Class I
- Groups A, B, E, H, I-4, M, R-1, R-2, S;
✓ Not less than Class II





Automatic Sprinkler Systems

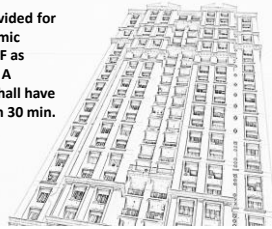
Table 903.2.11.6 Specific Building Areas & Hazards

Section	Subject
402.5, 402.6.2	Covered and Open Mall Buildings
403.3	High-Rise Buildings
404.5	Atriums
405.3	Underground Structures
407.6	Group I-2
410.7	Stages
411.4	Special Amusement Buildings
412.3.6	Aircraft Traffic Control Towers
412.4.6, 412.4.6.1, 412.6.5	Aircraft Hangers
415.11.11	Group H-5 HPM exhaust ducts
416.5	Flammable Finishes
417.4	Drying Rooms
419.5	Live-Work Units
424.3	Children's Play Structures
507	Unlimited Area Buildings
509.4	Incidental Uses
1020.6.2.3	Smoke-Protected Assembly Uses
IFC	Requirements per Section 903.2.11.6 of the IFC

Secondary Water Supply

Section 403.3.3 CT Amendments – High-Rise Buildings

- A secondary on-site water supply equal to the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for high-rise buildings in Seismic design category C, D, E or F as determined by this code. A secondary water supply shall have a duration of not less than 30 min.



Piping Design - Standpipes

905.2.1 CT IFC/IBC Coordination



- Riser, supply and water service piping shall be sized to maintain residual pressure of ≥ 100 psi at the topmost outlet of each riser while flowing minimum specified water quantities based upon an available pressure of 150 psi at the service connection
- ✓ Exception: In buildings equipped throughout with an automatic sprinkler system per 903.3.1.1 or 903.3.1.2, and where the highest floor level is not more than 150 ft. above the lowest level of fire department access, Class I standpipes shall have an automatic or manual-wet supply.

Fire Alarm & Detection Systems

Section 907

- Fire sprinklers and other suppressions systems/devices
- Emergency notification alarms



Smoke Control Panel

Section 909.16 CT Amendments (see Section 911)



Fire Fighter smoke control panel

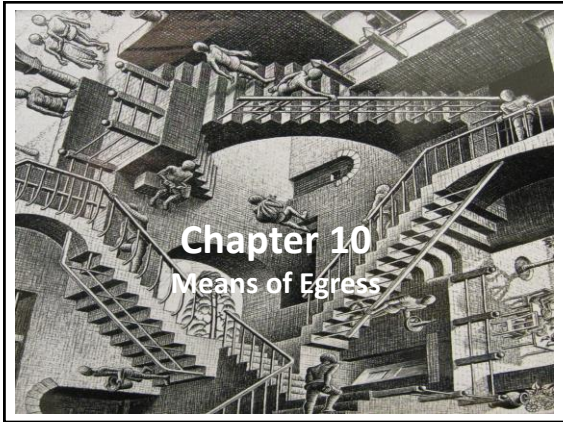
- Located in Fire Command center
- Used solely for emergency response
- In high-rise buildings
- In other buildings with smoke-protected assembly seating

Fire Department Connections

Section 912 (NEW)

- Locations
- Access
- Connection identifications
- Backflow prevention





Chapter 10 Means of Egress

Means of Egress - General

Section 1003 IBC General M.O.E.

- Controls the design, construction, & arrangement of the required means of egress
- Unlawful to alter a building to reduce the number of exits or capacity of the means of egress
- Headroom 1003.2 adds 3 ceiling height exceptions: mezzanines, ramps, parking garages



Maximum Floor Area Allowances

Table 1004.1.2 (Partial) - Occupant Loads by Use Type

TABLE 1004.1.2 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR*
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Cinema floors (benches, seats, etc.)	11 gross
Exhibit, Gallery and Museum	30 net
Assembly with fixed seats	See Section 1004.4
Assembly without fixed seats	
Concentrated (chairs only-not fixed)	7 net
Dispersed (chairs only-not fixed)	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runways, and for additional areas	7 net
Business areas	100 gross
Courtyards-other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Group H-3 Fabrication and manufacturing areas	200 gross

(NEW Uses)

■ Day Care

■ Malls

■ Museums



Means of Egress Sizing

AMD Section 1005.1 Egress Width by Component, by Occupant Load



- Minimum width of M.O.E.
- (DEL) Table 1005.1; adds text
- Multiple M.O.E. widths (AMD) Encroachments
- Doors & handrails shall not decrease the means of egress by > seven (7) inches - **Except when 34-48 inches AFF**
- Non-structural protrusions shall not decrease the means of egress more than 1 ½ inches on each side

Exit Access

Section 1015 Spaces with Single Exit Access

TABLE 1015.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAXIMUM OCCUPANT LOAD
A, B, E ^a , F, M, U	49
H-1, H-2, H-3	3
H-4, H-5, I-1, I-3, I-4, R	10
S	29

Travel Distance

Section 1016 Travel Distance Measurement

- Maximum distance, measured from the most remote point on the story along the natural and unobstructed path of egress travel

Table 1016.1 Exit Access Travel Distance

OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200	250
I-1	Not Permitted	250
B	200	300
F-2, S-2, U	300	400
H-1	Not Permitted	75
H-2	Not Permitted	100
H-3	Not Permitted	150
H-4	Not Permitted	175
H-5	Not Permitted	200
I-2, I-3, I-4	Not Permitted	200



Egress Components

1001.2 The Exitway: Putting the Pieces Together

- EXIT ACCESS
 - Common Path of Travel
 - Dead Ends
 - Corridors
 - Access stairways
- EXIT
 - Remote Locations
 - Exit Stairs
 - Exit Convergence
 - Lobby / Vestibule
 - Exit Passageway
 - Horizontal Exits
- EXIT DISCHARGE
 - Public Way
 - Area of Refuge
 - Balconies
 - Exterior Egress stairs
- ACCESSIBLE EXIT
 - Remote Exit Locations
 - Stairway
 - Lobby
 - Exit Passageway

Egress Illumination

1006.2 Emergency Power

- CLICK



- Emergency electrical system power in buildings with two or more exits shall serve:
 - Corridors
 - Interior exit stairways
 - Interior exit ramps
 - Exit passageways
 - Exterior landings

Emergency Lighting

2015 Changes 1009.4, 1024; 1008.3

1009.2 MOE

- Exit Access
- Area of Refuge
- Exit Access stairs & ramps

EXIT

- Exit Stairways & ramps
- Exit Passageway
- 1009.4 Elevators & Access
- 1009.5 LULU's
- Vestibules, lobbies level of exit discharge
- Horizontal Exit
- Exit Discharge

2015 1008.3.3 (ADD)

- Electrical Equipment Rooms
- Fire Command Centers
- Fire Pump Room
- Generator Room
- Public Restrooms > 300sf



Other Requirements – M.O.E.

1006; 1007 Elevators Used as Exits

- M.O.E. 1015 Exit from Space & 1021 Exit from story folded into 1006 # exits/access doorways and 1007 Exit / exit access doorway configuration
- Exit access stair openings moved to 713; enclosure requirements given a section
- Mercantile first floor & basement occupant load reduced to 60sf from 30sf/person

Travel Distance

Section 1016 Travel Distance Measurement

- Maximum distance, measured from the most remote point on the story along the natural and unobstructed path of egress travel

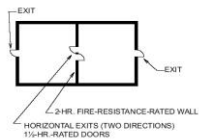
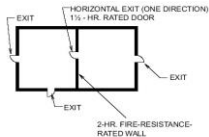
Table 1016.1 Exit Access Travel Distance

OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200	250
I-1	Not Permitted	250
B	200	300
F-2, S-2, U	300	400
H-1	Not Permitted	75
H-2	Not Permitted	100
H-3	Not Permitted	150
H-4	Not Permitted	175
H-5	Not Permitted	200
I-2, I-3, I-4	Not Permitted	200

Horizontal Exit Requirements, Limitations

Section 1025 IBC Horizontal Exits

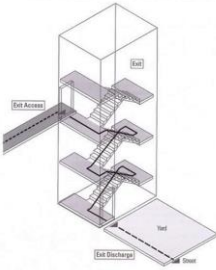
- Limited to not more than 1/4 of the total # of exits
- 2-hr fire wall or 2-hr fire barrier
- Extend though all levels unless supported by 2-hr rated floors
- Refuge area
 - 3 nsf / person, in general
 - 6 nsf / person for I-3
 - 15 nsf / person for ambulatory I-2
 - 30 nsf / person for non-ambulatory I-2





Exit Discharge Requirements

Section 1027 Exit Discharge



- Discharge directly to the exterior of the building at grade level or provide access to grade, w/o re-entering the building
- The capacity of the exit discharge is greater than the discharge capacity of the exits being served
- The exit discharge must provide a direct and unobstructed access to a public way or area of refuge
- The exit discharge located min. 10 feet from adjacent lot lines & other buildings on the same lot.

Elevator Lobbies

Chapter 30

- Lobbies moved to elevator requirements
- Coordinate with other construction, safety and controls required
- Revised lobby provisions for additional protection of hoistway openings and minimization of smoke spread



Plan Review Checklists

R103.2 Information on Documents



PLAN REVIEW RECORD (modified)

ICC Review Record Communication Tool

- ✓ Plan detail / Spec section
- ✓ Code Reference
- ✓ Reason for Citation
- ✓ Record of response
- ✓ Record of Resolution

#	DWG	Spec	AHJ	Code #	Rqmt.	Comment	Response	Resolution
1	A003	72006		R103.2	Info on CDs	Missing		
2	A109		CT	R202	Definition	Incorrect		
3								
4								
5								

Other Key CT Changes

- 105.1.3 SFC Abatements list
- 407.13 Small I-2 homes compliance
- 907.2 Additions: B&B fire alarms; R-4 I-4 & E day care additional smoke alarms
- 913.6 Standby power for sprinkler systems
- CO interconnected detector locations in Group E, with signage
- R-1, I-1, I-2, I-4 & B&B CO detectors w/o interconnection



Other Key CT Changes

Chapter 10 M.O.E.

- 915.5.4 Interconnected CO detector locations in Group E, with signage
- 915.7 R-1, I-1, I-2, I-4 & B&B CO detectors w/o interconnection
- 1003.8 Prohibits obscuring the exitway
- 1010.9.5.1 R-4 Closet & bathroom doors
- 1013.1.1 Adds HCP symbols to exit signs
- 1013.2 Exempts B&B from floor exit path
- 1015.9 Guard rails on retaining walls > 4'
- 1025.6.3 Luminous exit markings required in even of power failure
- 1030.1.2 Emergency escape provided in Group E spaces w/o direct exit to outside





Other Key CT Changes to B&B's

Chapter 10 M.O.E.

- Prohibits obscuring the exitway 1003.8
- 1010.1.1.2 Door clearances; swing
- 1011.5.2(5) B&B stair requirements
- 1011.11(1) B&B Stair handrails
- 1015.3(4) Guard/rail height lowered ≤ 34"
- 1015.4(7) Guardrail openings ≤ 6"
- 1019.3(4) Stair enclosures 1st to 2nd story
- 1020.1.1 Unrated corridors permitted



Where to Find, Purchase and Maintain

- 2015 IBC, IFC, IEBC, IMC, IPC, IECC
 - ✓ www.iccsafe.org/publications
 - ✓ Errata Central
- CT Amendments
 - ✓ portal.ct.gov/das/osbi







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