NC DEPARTMENT OF INSURANCE
OFFICE OF STATE FIRE MARSHAL

Significant Changes to the 2024 North Carolina Fire Code

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2024 NC Fire Code

- Adopted by Building Code Council on **June 13, 2023**
- Approved by Rules Review Commission on **June 26, 2024**
- Is based on the 2018 and 2021 editions of the *International Fire Code*

Becomes effective on July 1, 2025

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102 Applicability

- **[A] 102.1 Construction and design provisions.** The construction and design provisions of this code shall apply to:
- 1. Structures, facilities and conditions arising after the adoption of this code.
- 2. Existing structures, facilities and conditions not legally in existence at the time of adoption of this code.
- 3. ~~Existing structures, facilities and conditions where required in Chapter 11.~~ The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as specifically covered in this code or the *International Building Code*, or when there exists a distinct hazard to life or property.
- ~~4. Existing structures, facilities and conditions that, in the opinion of the fire code official, constitute a distinct hazard to life or property.~~

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102.13 Exceptions to applicability

- The highlighted changes were made to the listed exceptions

- 2. Farm buildings not exempt by N.C.G.S. 143-138(b4) not used for:
  - a. Sleeping purposes; or
  - b. Storage of hazardous materials in excess of those listed in Tables 5003.1.1(1) and 5003.1.1(2) within the building rules jurisdiction of any municipality.
- 7. Buildings used for temporary motion picture, television, and theater stage sets and scenery are exempt from use and occupancy classification under the North Carolina State Building Code by N.C.G.S. 143-138(b20).

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105 Permits

- **105.1.2 Types of permits.** There shall be two types of permits as follows:
  - 1. Operational permit. An operational permit allows the applicant to conduct an operation or a business for which a permit is required by Section 105.5 for either:
    - 1.1. A prescribed period **determined by the authority having jurisdiction**.
    - 1.2. Until renewed or revoked.
  - 2. Construction permit. A construction permit allows the applicant to install or modify systems and equipment for which a permit is required by Section 105.6.

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105.5 New/Modified Operational Permits

- Additive manufacturing – mandatory
- Aerosol cooking spray products, and plastic aerosol 3 products – optional
- Adds the following to Table 105.5.9: 875 cu. ft. (100 lb) - optional
  - Carbon dioxide used in carbon dioxide enrichment systems
  - Carbon dioxide used in insulated liquid carbon dioxide beverage dispensing applications
- Adds combustible pallets to 105.5.31 – misc. combustible storage - optional
- Energy storage systems – mandatory
- Flammable/combustible liquids adds "in accordance with Section 5706.5.4 or to engage in on-demand mobile fueling operations in accordance with Section 5707" to #10 – mandatory
- Flammable/combustible liquids adds "in accordance with Section 5706.5.4 or, where required by the fire code official, to utilize a site for on-demand mobile fueling operations in accordance with Section 5707 to #11 - mandatory

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105.5 New/Modified Operational Permits

- High-piled storage – previously optional now mandatory
- Mobile food preparation vehicles – optional
- Motor fuel-dispensing facilities - previously optional now mandatory
- Outdoor assembly event >1,000 people – mandatory
- Nightclubs - mandatory
- Plant extraction systems – mandatory
- Adds temporary event structure >400 sq. ft. to replace temporary stage canopy – mandatory
- Temporary sleeping units for disaster relief workers – mandatory (amendment to current code)

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105.6 New Construction Permits

- Energy storage systems regulated by 1207
- Stationary fuel cell power systems
- Gas detection systems
- High-piled combustible storage >500 sq. ft.
- Motor vehicle repair rooms and booths
- Plant extraction systems
- Special event structures

Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit – removed from multiple locations and added to 105.6

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Chapter 1 Reorganization

2018

- 101-105 – no changes
- 106 – Inspections
- 107 – Maintenance
- 108 – Board of Appeals
- 109 – Violations
- 110 – Unsafe Buildings
- 111 – Stop Work Orders
- 112 – Service Utilities
- 113 – Fees
- 114 – Maintaining a Fire Hazard
- 115 – Local Modification

2024

- 101-105 – no changes
- 106 – Construction Documents
- 107 – Fees
- 108 – Inspections
- 109 – Maintenance
- 110 – Service Utilities
- 111 – Means of Appeals
- 112 – Violations
- 113 – Stop Work Order
- 114 – Unsafe Structures or Equipment
- 115 – Maintaining a Fire Hazard
- 116 – Local Modification

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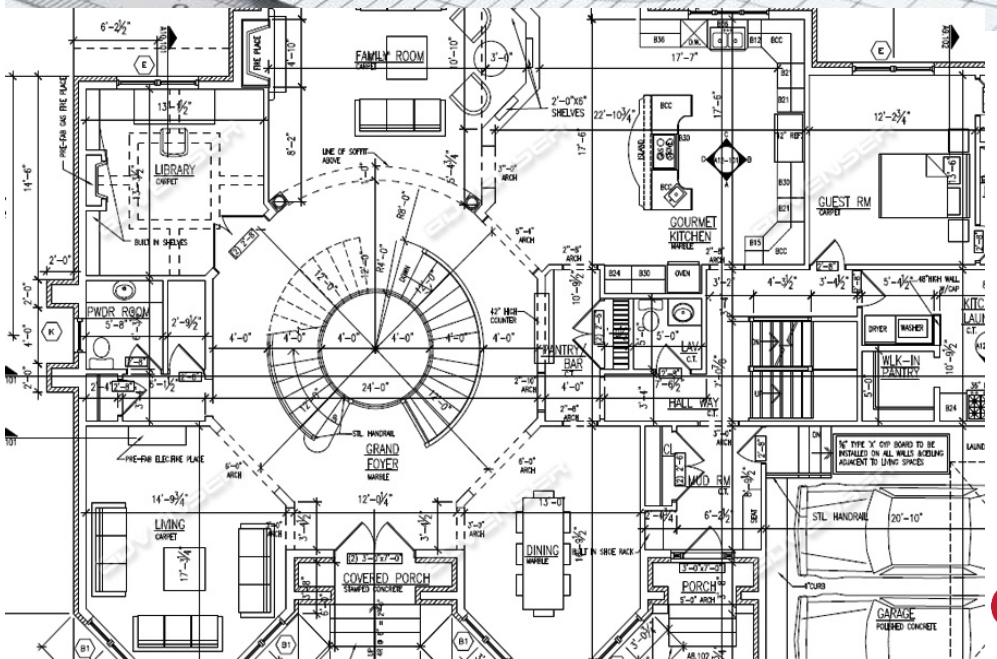
106 Construction documents

- **Revised section**
- Inspections moved to Section 108
- Requirements previously found in Section 105.4 (Construction Documents) were moved here to create this section
- No real substantive changes other that adding option for FCO to allow documents to be submitted in digital format



114 Unsafe Structures or Equipment

- Adds **insanitary** and **inadequate light and ventilation** as triggers for an unsafe condition
- Adds "Unsafe structures shall be taken down and removed or made safe, as the fire code official deems necessary and as provided for in this section." to 114.1.1
- Adds the following new subsections:
  - **114.3 Record** – requires FCO to file a report and state the occupancy and nature of the unsafe condition
  - **114.4 Notice** – requires FCO to file written notice with owner or authorized agent
  - **114.5 Method of service** –
    1. Delivered to owner personally
    2. Certified or registered mail with return receipt – if not delivered post in conspicuous place on the structure
    3. Any other manner prescribed by local law

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202 – New Definitions

- **74 new or modified definitions not including the occupancy changes**

- **Occupancy classification changes**
  - A-3 - *Greenhouses* for the conservation and exhibition of plants that provide public access
  - B - Educational occupancies for students above the 12th grade including *higher education laboratories*
  - B - Motor vehicle showrooms, including vehicle service check-in areas
  - F-I - *Energy storage systems (ESS)* in dedicated use buildings
  - F-I - Processing and extraction facilities
  - U - Communication equipment structures with a gross floor area of less than 1,500 square feet (139 m2)
  - U- Greenhouses not classified as another occupancy shall be classified as Use Group U.

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202 – New Definitions

- **Occupancy classification changes**
- **Not Group H additions: (203.7.1 in the fire code and 307.1.1 in the building code)**
  - 12. Buildings and structures occupied for aerosol product storage, aerosol cooking spray products or plastic aerosol 3 products shall be classified as Group S-1, provided that such buildings conform to the requirements of Chapter 51.
  - 15. Stationary fuel cell power systems installed in accordance with this code.
  - 16. Capacitor energy storage systems in accordance with this code.
  - 17. Group B higher education laboratory occupancies complying with Section 428 of the *International Building Code* and Chapter 38 of this code.
  - 18. Distilling or brewing of beverages conforming to the requirements of this code.
  - 19. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements of this code.

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304 Combustible Waste Material

- **304.1.3.1 Spaces underneath grandstands and bleachers.** New section that limits use other than egress underneath unless protected with sprinklers or fire-rated separation (903.2.1.5.1 and 1030.1.1.1 – we'll discuss this more in Chapter 9)

- **304.3.3 Capacity exceeding 1.5 cubic yards.**
  - Exceptions:
  - 1. Dumpsters or containers that are placed inside buildings in areas protected by an approved automatic sprinkler system installed throughout in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.
  - 3. Dumpsters or containers that are located adjacent to buildings where the exterior area is protected by an approved automatic sprinkler system.

- **304.4 Valet Trash Collection Services for R-2 Apartment Occupancies.** Amendment to current code that adds requirements for valet trash collection.

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308 Open Flames

- **308.1.8.3 Serving of flaming food.** The serving of flaming foods or beverages shall be done in a ~~safe~~ manner that avoids danger or risk to building occupants and ~~shall not create high~~ flame~~s~~ height shall be restricted to limit contact with combustible materials. The pouring, ladling or spooning of liquids is restricted to a maximum height of 8 inches (203 mm) above the receiving receptacle.

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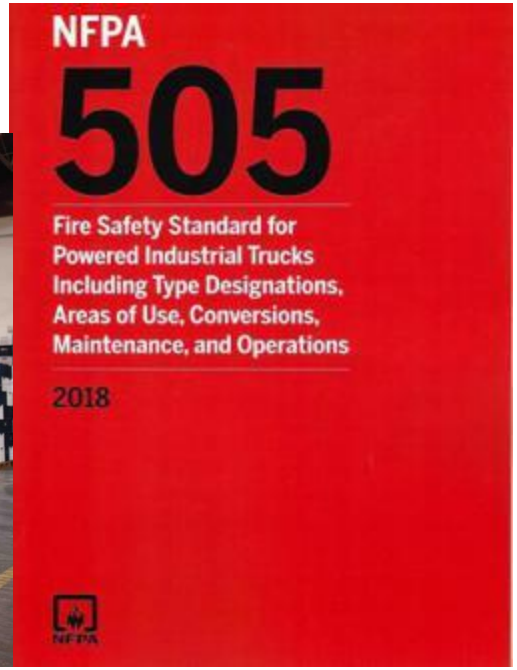
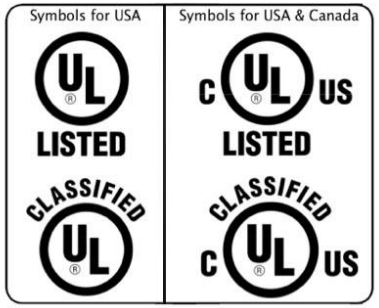
309 Powered Industrial Trucks

- **309.2 Use in hazardous (classified) locations.** New section that adds requirement for trucks to be listed and labeled in accordance with NFPA 505 in classified areas
- 2018 edition is referenced



DIVISION MARKINGS



310 Smoking

- **310.2 Prohibited areas.** Adds exception to allow patients in Group I-2 to smoke in designated patient care areas based on clinical needs of patient.

- **310.2.1 Group I-2.** New section that eliminates the above exception where oxygen is used, stored or handled.

- **310.3 "No Smoking" signs.** Adds option to use international symbol for no smoking.

- **310.6 Ash trays.** Adds "In Group I-2 occupancies, noncombustible metal containers with self-closing covers shall be provided in areas where smoking is permitted."

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311 Vacant premises

- **311.2.2 Fire protection.** Adds new exception #3:
  - 3. Where approved by the fire code official, fire alarm and automatic sprinkler systems are permitted to be placed out of service in **seasonally occupied buildings**:

1. that will not be heated;
2. where fire protection systems will be exposed to freezing temperatures;
3. where fire areas do not exceed 12,000 square feet (1115 m2); and
4. that do not store motor vehicles or hazardous materials.

314 Indoor displays

- **314.4 Vehicles.** This section is revised to clarify it applies to liquid-fueled or gaseous-fueled vehicles, boats and aircraft.
- Section modified to allow the Fire Code Official the ability to determine the best method of safeguarding the vehicle regarding the battery and electrical system.
- Additionally, the NC amendments to items 1-3 were retained

315 General storage

- **315.7 Outdoor pallet storage.** Requirements are added to the code for height limitation and separation to buildings and property lines for the outdoor storage of idle pallets constructed of wood or plastic.
- **315.7.6.1 Building separation.** Table 315.7.6(1) for wood pallets and Table 315.7.6(2) for plastic pallets.
- **315.7.6.2 Separation from other pallets and on-site storage.** Table 315.7.6(3) for wood pallets and Table 315.7.6(4) for plastic pallets.

- See also Significant Change to Section 2810 for pallet storage at pallet recycling and manufacturing facilities.

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TABLE 315.7.6(1)
SEPARATION DISTANCE BETWEEN WOOD PALLET STACKS AND BUILDINGS

WALL CONSTRUCTION	OPENING TYPE	WOOD PALLET SEPARATION DISTANCE (feet)		
		≤ 50 Pallets	51 to 200 Pallets	> 200 Pallets
Masonry	None	2	2	2
Masonry	Fire-rated glazing with open sprinklers	2	5	20
Masonry	Fire-rated glazing	5	10	20
Masonry	Plain glass with open sprinklers	5	10	20
Noncombustible	None	5	10	20
Wood with open sprinklers	—	5	10	20
Wood	None	15	30	90
Any	Plain glass	15	30	90

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TABLE 315.7.6(2)
SEPARATION DISTANCE BETWEEN PLASTIC PALLET STACKS AND BUILDINGS

WALL CONSTRUCTION	OPENING TYPE	PLASTIC PALLET SEPARATION DISTANCE (feet)		
		≤ 50 Pallets	51 to 200 Pallets	> 200 Pallets
Masonry	None	2	2	2
Masonry	Fire-rated glazing with open sprinklers	10	20	50
Masonry	Fire-rated glazing	15	40	100
Masonry	Plain glass with open sprinklers	15	40	100
Noncombustible	None	15	40	100
Wood with open sprinklers	—	15	40	100
Wood	None	30	80	150
Any	Plain glass	30	80	150

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TABLE 315.7.6(3)
SEPARATION FROM OTHER PALLET PILES AND ON-SITE STORAGE (WOOD PALLETS)

	WOOD PALLET SEPARATION DISTANCE (feet)		
	≤ 50 Pallets	51 to 200 Pallets	> 200 Pallets
Between pallet piles	7.5	15	45
Other on-site storage	7.5	15	45

For SI: 1 foot = 304.8 mm.

TABLE 315.7.6(4)
SEPARATION FROM OTHER PALLET PILES AND ON-SITE STORAGE (PLASTIC PALLETS)

	PLASTIC PALLET SEPARATION DISTANCE (feet)		
	≤ 50 Pallets	51 to 200 Pallets	> 200 Pallets
Between pallet piles	15	40	75
Other on-site storage	15	40	75

For SI: 1 foot = 304.8 mm.

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316 Hazards to Fire Fighters

- **316.6.3 Parking.** ~~Transient~~ On grade parking of passenger vehicles is allowed if all of the following are met: ~~as follows:~~
  - 1. The utility provider grants written permission to park within their easement or right of way;
  - 2. Each vehicle shall be 10,000 pounds or less gross vehicle weight;
  - 3. The lowest conductor of the transmission line shall be 25 feet (7620 mm) above the parking lot surface;
  - 4. The transmission line voltage shall be 230kv or less ~~and~~
  - ~~5. Transient parking is a time period of no more than 12 consecutive hours~~

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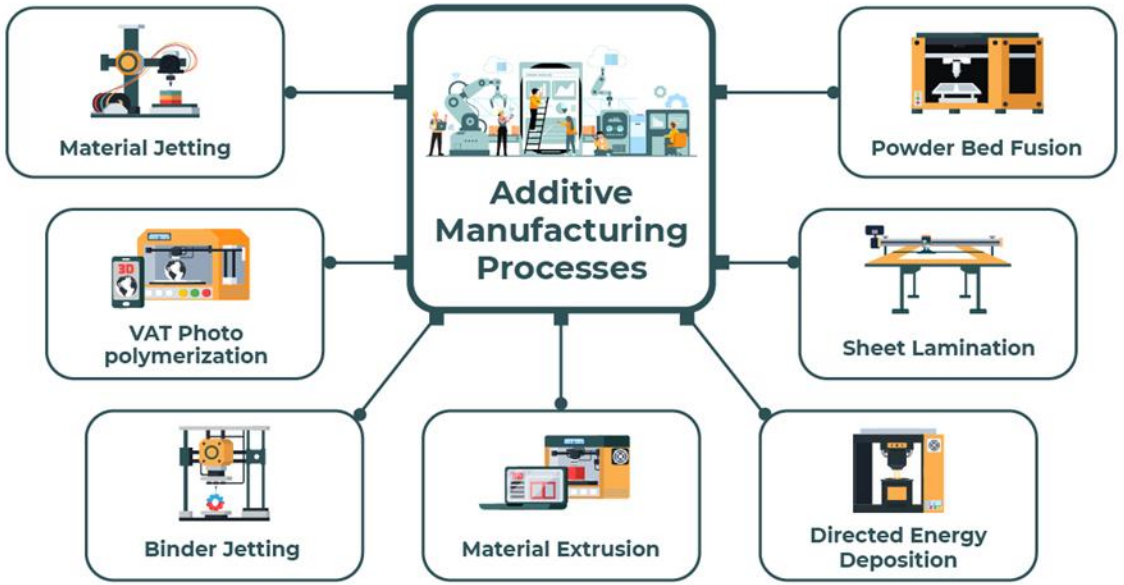
319 Mobile food preparation vehicles

- New section to provide requirements for vehicles that are equipped with appliances that produce **smoke or grease-laden vapors**.
- Permits
- Exhaust hoods
- Appliance connections
- Cooking oil storage
- LP/CNG systems
- Maintenance
- Operation – NC amendments
  - Chock blocks
  - Emergency brakes

320 Additive Manufacturing

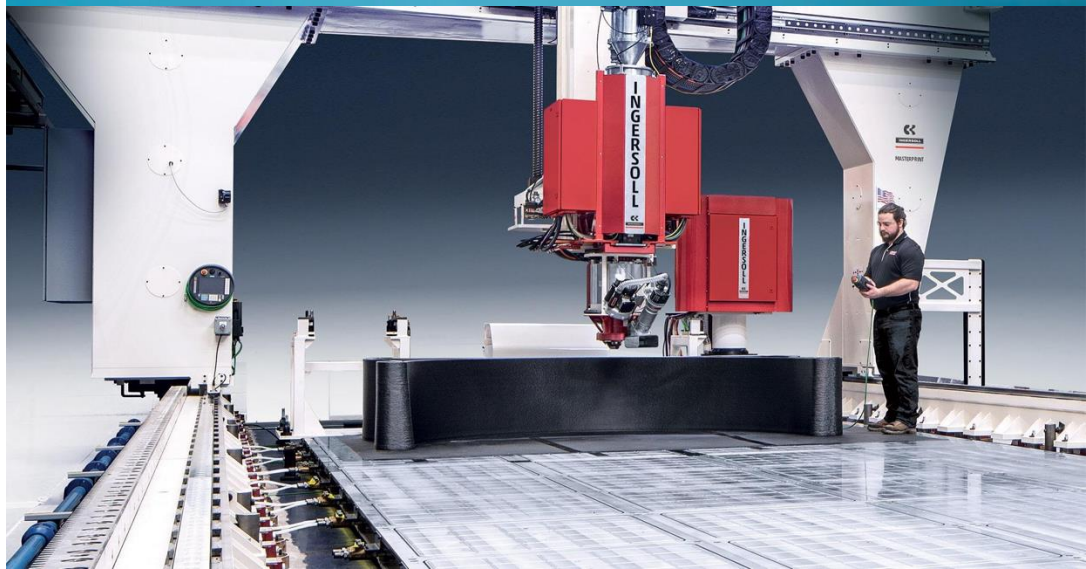
- Additive manufacturing is a process of joining materials to make objects from 3D model data, usually layer upon layer
- **2 types of additive manufacturing:**
  1. **Industrial additive manufacturing**

     Utilize combustible powders or metals, an inert gas supply, a combustible dust collection system, or creates a hazardous (classified) location area or zone outside of the equipment



320 Additive Manufacturing

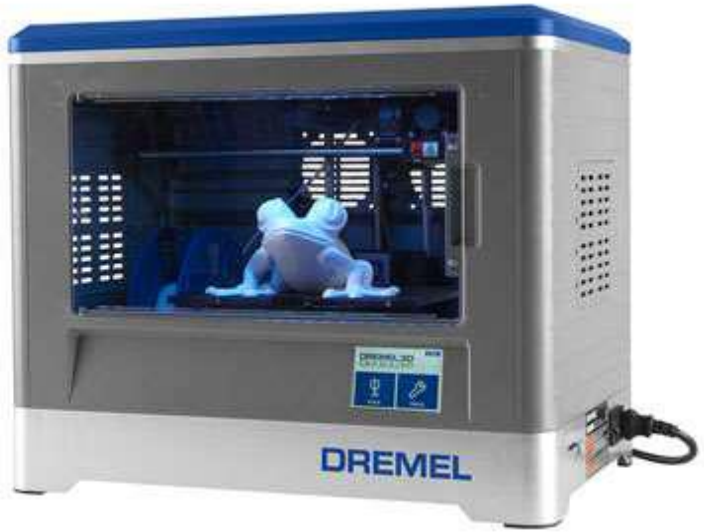
- **Industrial additive manufacturing requirements:**
  - Operational permit
  - Listed to UL 2011
  - Use of gases must comply with Ch 53
  - FCO can require technical assistance and require an evaluation report
  - Only allowed in manufacturing facilities (Group F)
  - If the quantities of hazardous materials exceed the maximum allowable quantity per control area, the room or building will become Group H



320 Additive Manufacturing

2. *Non-industrial* additive manufacturing:

- 3D printing operations that do not create a hazardous (classified) location area outside of the equipment, and do not utilize an inert gas supply or a combustible dust collection system
- Must be listed



- **Self-contained unit**
- **≤30 L of production material**

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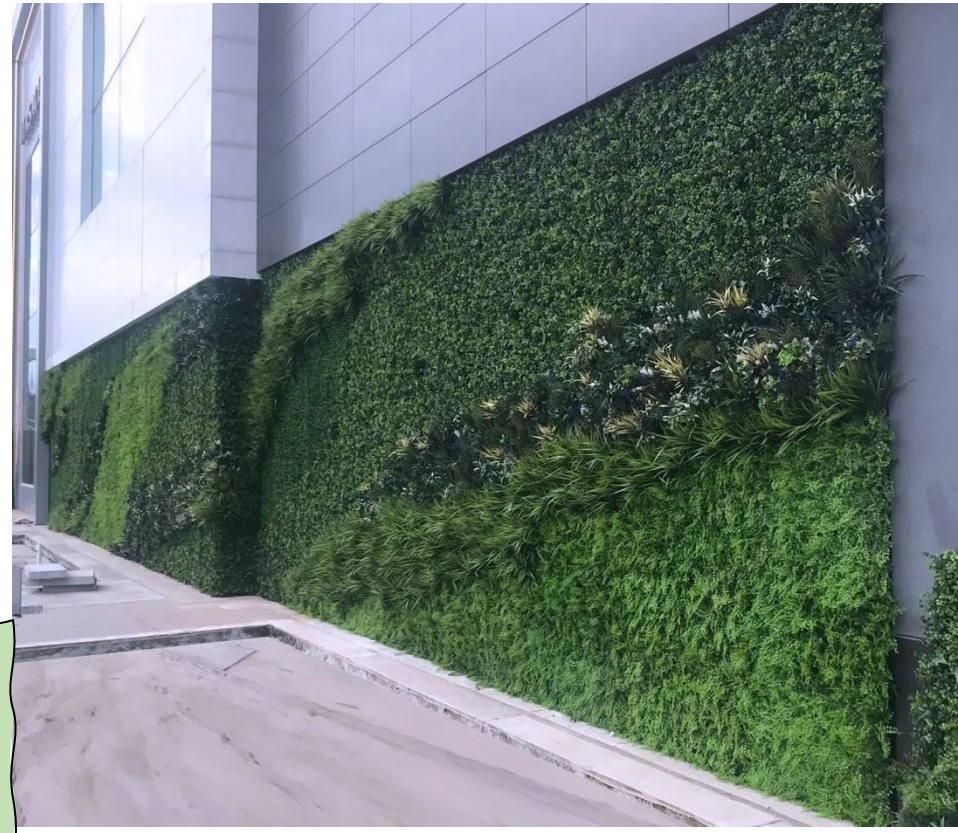
807.4.1 Flammability. Artificial decorative vegetation shall meet the flame propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701. Meeting such criteria shall be documented and certified by the manufacturer in an approved manner. Alternatively, the artificial decorative vegetation shall be tested in accordance with NFPA 289, using the 20 kW ignition source, and shall have a maximum heat release rate of 100 kW.

- New section to regulate artificial vegetation
  - Exceeding 6 ft. in height and permanently installed with 5 ft. of building
  - Must comply with 807.4.1
  - Placement must comply with 806.3 and 807.4.2
  - Requirements do not apply if installed more than 30 ft. from exterior wall of building



806.3 Open flame. Candles and open flames shall not be used on or near decorative vegetation. Natural cut trees shall be kept a distance from heat vents and any open flame or heat-producing devices not less than the height of the tree.

807.4.2 Electrical fixtures and wiring on artificial vegetation. The use of unlisted electrical wiring and lighting on artificial decorative vegetation shall be prohibited. The use of electrical wiring and lighting on artificial trees constructed entirely of metal shall be prohibited.

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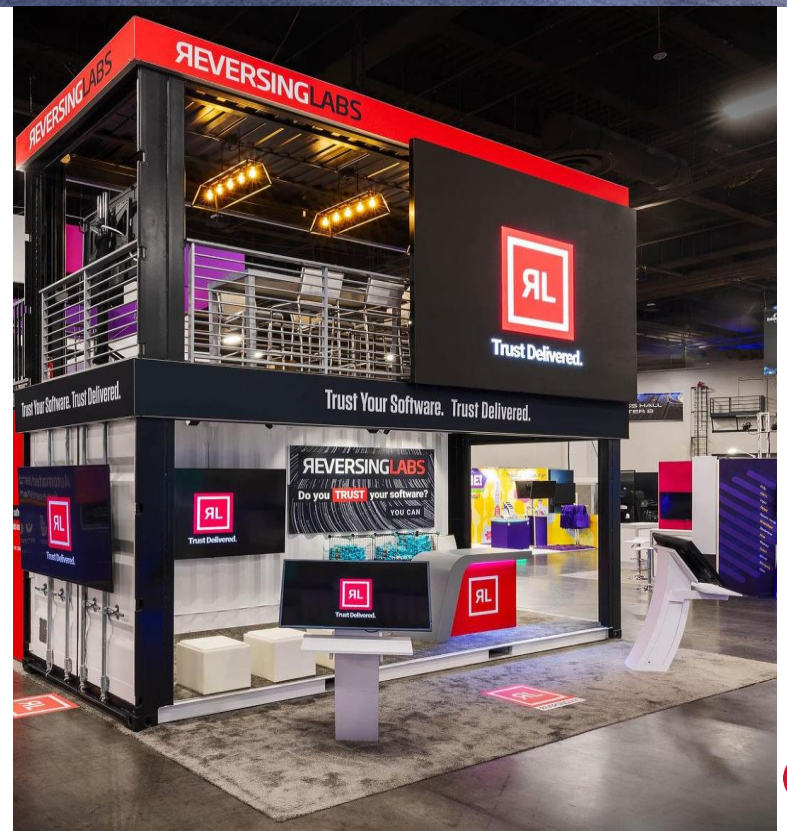
325 Indoor trade shows

- **325.1 Scope.** Indoor trade shows and exhibitions with temporary vendor displays or booths within any indoor occupancy classification shall be in accordance with **Appendix N** and all other applicable requirements of this code.

- We may need to further evaluate this section. 2027 IFC has proposed to delete the appendix due to difficulty with enforcement.



403 Emergency preparedness

- Ambulatory care facility requirements moved under Group B (403.3.1)
  - Location of smoke compartments and refuge areas and path of travel to adjacent compartments no longer required for fire safety plan
  - Staff training now every three months instead of two
  - Training of new staff required on entrance to duty
  - Staff training now must include proper use of fire extinguishers and other manual suppression equipment

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403 Emergency preparedness

- Group I-1 (403.7.1.1)
  - Staff training now every three months instead of two
  - Training of new staff required on entrance to duty
  - Staff training now must include proper use of fire extinguishers and other manual suppression equipment

- Group I-2 (403.7.2)
  - Adds #5 to plan contents
  - Staff periodically instructed of their duties
  - Staff training now every three months instead of two
  - Training of new staff required on entrance to duty
  - Staff training now must include proper use of fire extinguishers and other manual suppression equipment
  - Fire loss prevention in surgical operating rooms must comply with NFPA 99, Section 16.14

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403 Emergency preparedness

- Group I-3 (403.7.3)
  - Adds requirement for fire safety and evacuation plans
  - Procedures for evacuation of detainees
  - Defend-in-place strategy
  - Procedures for full-floor or building evacuation, if needed
  - Fire Safety Plans must include location and number of cells and any special locking arrangements

403 Emergency preparedness

- Group R-4 (403.9.3)
  - Staff training now every three months instead of two
  - Training of new staff required on entrance to duty
  - Staff training now must include proper use of fire extinguishers and other manual suppression equipment

403 Emergency preparedness

- **New section 403.10.5** to require fire safety and evacuation plans for high-piled combustible storage
  - 500,000 sq. ft. for Class I-IV commodities
  - 300,000 sq. ft. for high-hazard commodities
  - Located in a Group H occupancy
  - Located in a Group F or M occupancy with an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge
  - Where required by the fire code official for other high-piled storage areas

403 Emergency preparedness

- **403.11.3 Crowd managers**
- The threshold for crowd managers dropped from 1,000 to 500
- Not fewer than two and not fewer than one for each 250 persons or portion thereof
- Two new exceptions added
  - 1. Outdoor events with fewer than 1,000 persons in attendance shall not require crowd managers.
  - 2. Assembly occupancies used exclusively for religious worship with an occupant load not exceeding 1,000 shall not require crowd managers.

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405 Emergency evacuation drills

- **New section 405.2** to require actual evacuation of occupants to a selected assembly point
- **5 exceptions**
  - 1. In ambulatory care facilities and Group I-2, the movement of care recipients to a safe area or to the exterior of the building is not required.
  - 2. In Group I-1, Condition 2, the assembly point for residents is permitted to be within an adjacent smoke compartment.
  - 3. In Group R-4, actual exiting from emergency escape and rescue openings shall not be required. Opening the emergency escape and rescue openings and signaling for help shall be an acceptable alternative.
  - 4. In Group I-3, Conditions 2 through 5 where a defend-in-place response is permitted, the assembly point for detainees is permitted to be within an adjacent smoke compartment.
  - 5. In Group I-3, Conditions 2 through 5, movement of detainees is not required to an assembly point where there are security concerns.

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405 Emergency evacuation drills

Table 405.2 – 2018 NCFC footnotes

- a. In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill frequency.
- b. Emergency evacuation drills are required in Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.
- c. Emergency evacuation drills are required in ambulatory care facilities in accordance with Section 403.3.
- d. Emergency evacuation drills in Group R-2 college and university buildings shall be in accordance with Section 403.10.2.1. Other Group R-2 occupancies shall be in accordance with Section 403.10.2.2.
- e. Cooperative innovative high school programs taught at colleges, community colleges or universities when required to have a fire alarm system in accordance with Section 907.2.2 or as required in accordance with Section 403.4.

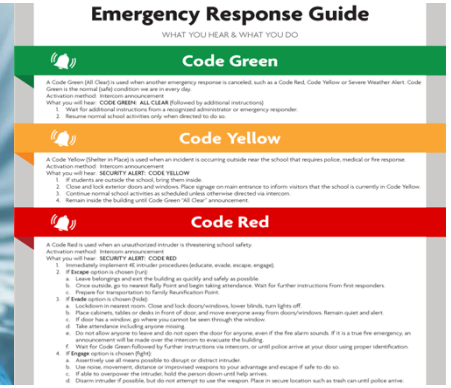
Table 405.3 – 2024 NCFC footnotes

- a. Emergency evacuation drills are required in Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.
- b. Emergency evacuation drills in Group R-2 college and university buildings shall be in accordance with Section 403.9.2.1. Other Group R-2 occupancies shall be in accordance with Section 403.9.2.2.
- c. Cooperative innovative high school programs taught at colleges, community colleges or universities when required to have a fire alarm system in accordance with Section 907.2.2 or as required in accordance with Section 403.4

405 Emergency evacuation drills

- **2 new exceptions for Section 405.5 for drill times**
  - 1. In severe weather ~~climates~~, the fire code official shall have the authority to modify the emergency evacuation drill termination points and frequency.
    - Previously was footnote a to Table 405.2

- 2. In Groups I-1, I-2, I-3 and R-4, where staff-only emergency evacuation drills are conducted after visiting hours or where care recipients are expected to be asleep, a coded announcement shall be an acceptable alternative to audible alarms.



501 General

- **501.3 Construction documents.**

- **New subsection added:**
- **501.3.1 Site safety plan.** The owner or owner's authorized agent shall be responsible for the development, implementation and maintenance of an approved written site safety plan in accordance with Section 3308.

503 Fire Apparatus Access Roads

- **503.1.1 Buildings and facilities.**

- **Exception 1 modified as follows:**
  - **Exceptions:**
    - 1. The fire code official is authorized to increase the dimension of 150 feet (45 720 mm) where any of the following conditions occur:
      - 1.1. ~~When t~~ The building is equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1, ~~or~~ 903.3.1.2, or 903.3.1.3., ~~the dimension shall increase to a minimum of 200 feet (60 960 mm).~~
      - 1.2 and 1.3 no changes

- **The changes were made to allow an increase for NFPA 13D systems and to eliminate the 200 ft. minimum**

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Chapter 5 Changes – Fire Service Features

- **Appendix B and D provisions from 2018 code have been incorporated into Chapter 5 and each appendix deleted**
  - Appendix B – Fire-flow requirements for buildings
  - Appendix D – Fire apparatus access roads
  - Previously required local ordinance adoption for enforcement
  - Adding those requirements into Chapter 5 mandates consistent application throughout the state

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503 Fire Apparatus Access Roads

- **Two means of access required for buildings:**
  - Exceeding 3 stories or 30 feet in height
  - Exceeding 62,000 sq. ft.
    - Single access allowed for sprinklered buildings up to 124,000 sq. ft.
  - Multi-family residential projects with more than 100 dwelling units
    - Single access allowed for up to 200 dwelling units if equipped with NFPA 13 or 13R sprinkler system
    - Multi-family residential projects with more than 200 dwelling units

- **Remotely located** – one-half overall diagonal distance of lot or area
  - Retained exception for one- and two-family dwelling developments (SL 2021-183)

503.1.4 Fire Apparatus Access Roads

- **Aerial apparatus access required:**
  - Where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet (9144 mm).
    - Exception for Type IA, IB or IIA when equipped with sprinklers and have access to all roof surfaces by an enclosed stairway with a Class I standpipe
  - Minimum width of 26 ft.
  - Not less than 15 ft. and not more than 30 ft. from the building and positioned parallel to one entire side of the building
  - Overhead utility and power lines shall not be located over the aerial fire apparatus access road or between the aerial fire apparatus road and the building

503 – Fire Apparatus Access Roads

503.2.5 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) in length shall be provided with ~~an *approved* area for turning around fire apparatus~~ a turnaround as required in Table 503.2.5.

TABLE 503.2.5
REQUIREMENTS FOR DEAD-END
FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0-150	20	None required
151-500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure 503.2.5
501-750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure 503.2.5
Over 750	As required by the *fire code official*	

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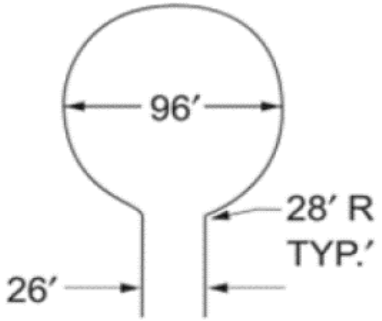
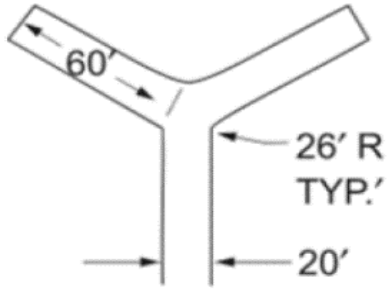
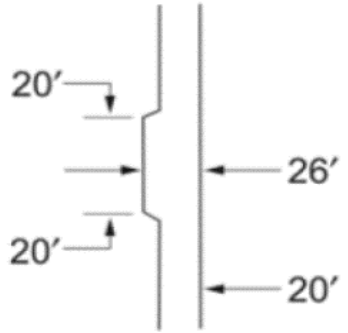
Figure 503.2.5



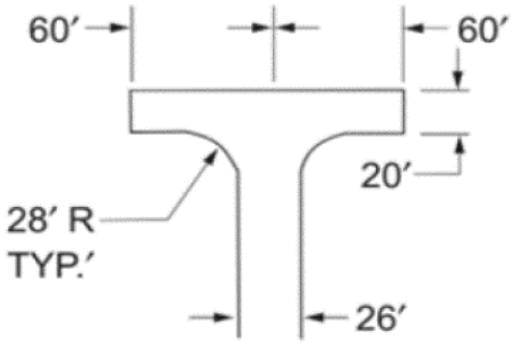
96′ DIAMETER
CUL-DE-SAC



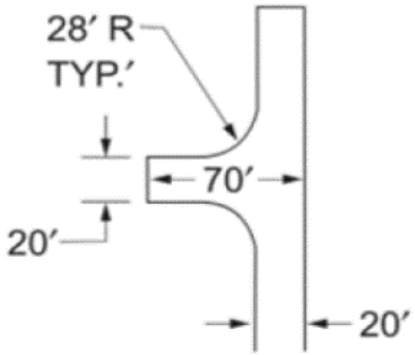
60-FOOT "Y"



MINIMUM CLEARANCE
AROUND A FIRE
HYDRANT



120′ HAMMERHEAD

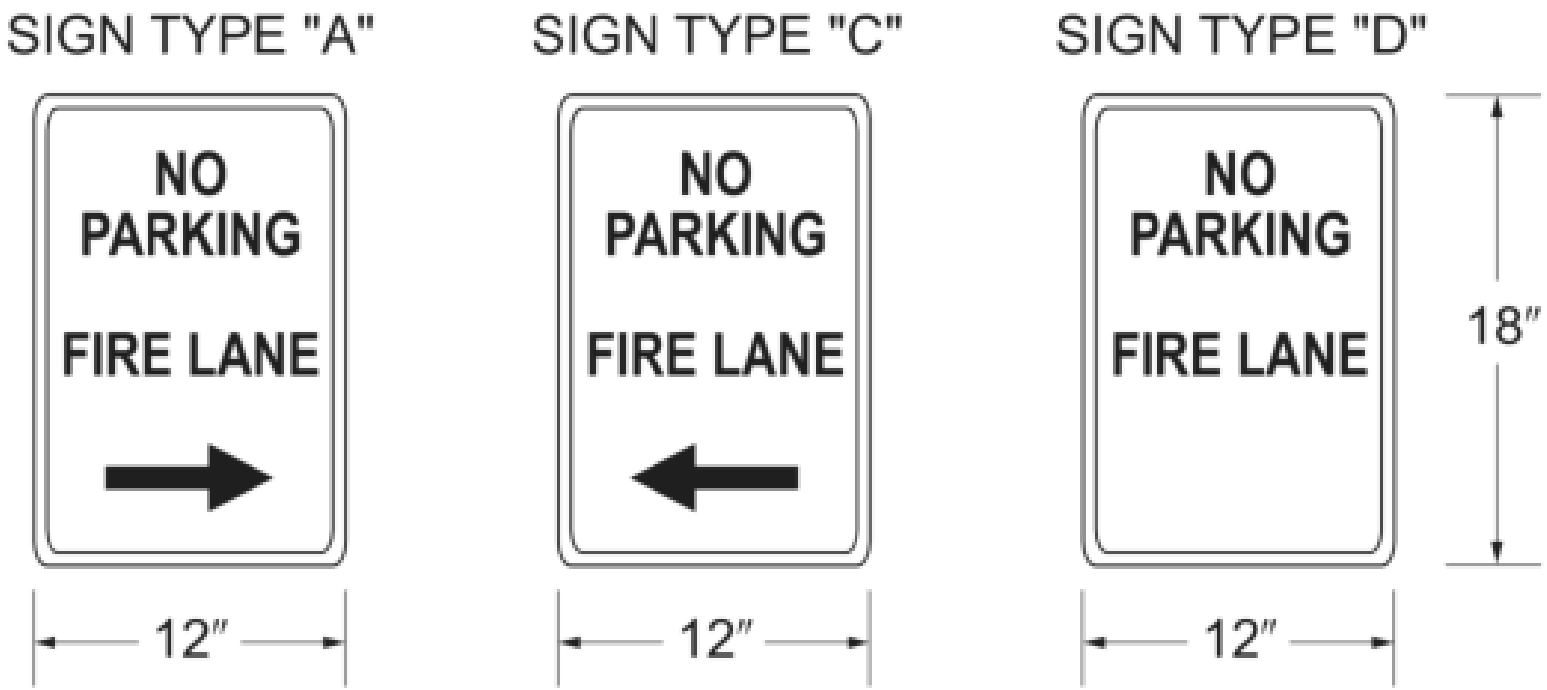


ACCEPTABLE ALTERNATIVE
TO 120′ HAMMERHEAD

OSFM

503.3 Fire Lane Marking

- Added size and color requirements – 12″ X 18″ red letters on a white reflective background



503.6 Gates

- **Replaced current Section 503.6 with language from D103.5**
- 1. Where a single gate is provided, the gate width shall be not less than 20 feet (6096 mm). Where a fire apparatus road consists of a divided roadway, the gate width shall be not less than 12 feet (3658 mm).
- 2. Gates shall have an approved means of emergency operation and constructed to allow manual operation by one person.
- 3. Gates shall be of the horizontal swing, horizontal slide, vertical lift or vertical pivot swinging or sliding type and approved by the fire code official.
- 4. Gate components, to include emergency operation method, shall be maintained in an operative condition at all times and replaced or repaired when defective.
- 5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by the fire code official.
- 6. Methods of locking shall be submitted to the fire code official for approval.
- 7. Electric gate operators, where provided, shall be listed in accordance with UL 325.
- 8. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

OSFM

Examples

OSFM

505 Premises Identification

- **505.1.1 Suite/Room identification.** Where numerical addresses are posted to identify suites or rooms within buildings, the first digit of the suite or room number shall match the floor number signage.

- The delayed effective date of this Rule is January 1, 2021 – This was an amendment to the 2018 code and was included in 2024 code.

507 – Needed Fire Flow

- **Fire flow requirements for buildings or portions of buildings and facilities as determined by the fire code official shall be in accordance with Sections 507.3.1 through 507.3.4.**
  - 507.3.1 – One- and two-family dwellings and townhomes as required by Section 511
  - 507.3.2 – Buildings other than one- and two-family dwellings and townhomes – Tables 507.3(1) and 507.3(2) or ISO
  - 507.3.3 – Water supply for buildings equipped with an automatic sprinkler system
    - Greater of either sprinkler demand + hose stream or required fire flow
  - Areas without water supply systems or limited systems – NFPA 1142 *Wildland-Urban Interface Code* or other approved methods

OSFM

507 – Needed Fire Flow

TABLE 507.3(1)
REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table 507.3(2)	Duration in Table 507.3(2)
Section 903.3.1.1 of the *International Fire Code*	25% of the value in Table 507.3(2)[a]	Duration in Table 507.3(2) at the reduced flow rate
Section 903.3.1.2 of the *International Fire Code*	25% of the value in Table 507.3(2)[b]	Duration in Table 507.3(2) at the reduced flow rate

For SI: 1 gallon per minute = 3.785 L/m.

a. The reduced fire flow shall be not less than 1,000 gallons per minute.

b. The reduced fire flow shall be not less than 1,500 gallons per minute.

OSFM

507 – Needed Fire Flow

TABLE 507.3(2)
REFERENCE TABLE FOR TABLE 507.3(1)

FIRE-FLOW CALCULATION AREA (square feet)					FIRE FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0–22,700	0–12,700	0–8,200	0–5,900	0–3,600	1,500	2
22,701–30,200	12,701–17,000	8,201–10,900	5,901–7,900	3,601–4,800	1,750	
30,201–38,700	17,001–21,800	10,901–12,900	7,901–9,800	4,801–6,200	2,000	
38,701–48,300	21,801–24,200	12,901–17,400	9,801–12,600	6,201–7,700	2,250	
48,301–59,000	24,201–33,200	17,401–21,300	12,601–15,400	7,701–9,400	2,500	
59,001–70,900	33,201–39,700	21,301–25,500	15,401–18,400	9,401–11,300	2,750	
70,901–83,700	39,701–47,100	25,501–30,100	18,401–21,800	11,301–13,400	3,000	3
83,701–97,700	47,101–54,900	30,101–35,200	21,801–25,900	13,401–15,600	3,250	
97,701–112,700	54,901–63,400	35,201–40,600	25,901–29,300	15,601–18,000	3,500	
112,701–128,700	63,401–72,400	40,601–46,400	29,301–33,500	18,001–20,600	3,750	

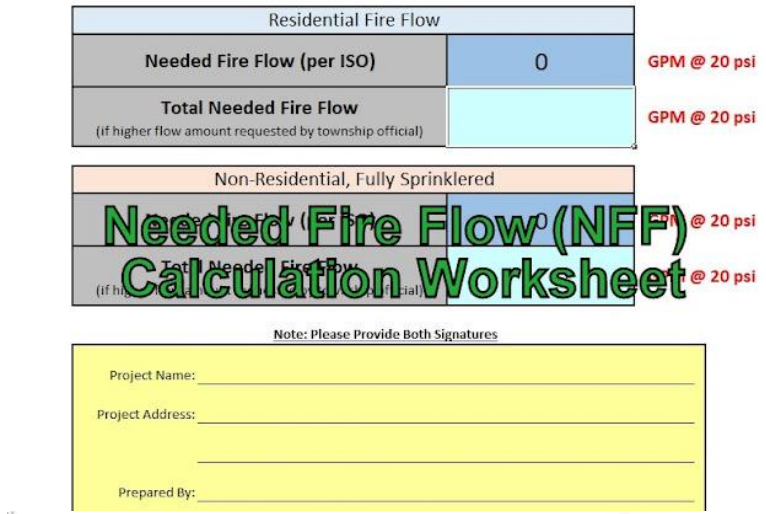
OSFM

507.3.4 Fire Flow Calculation Area

- Total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section 507.3.4.3

- Portions of buildings that which are separated by fire walls without openings, constructed in accordance with the International Building Code, are allowed to be considered as separate fire-flow calculation areas.

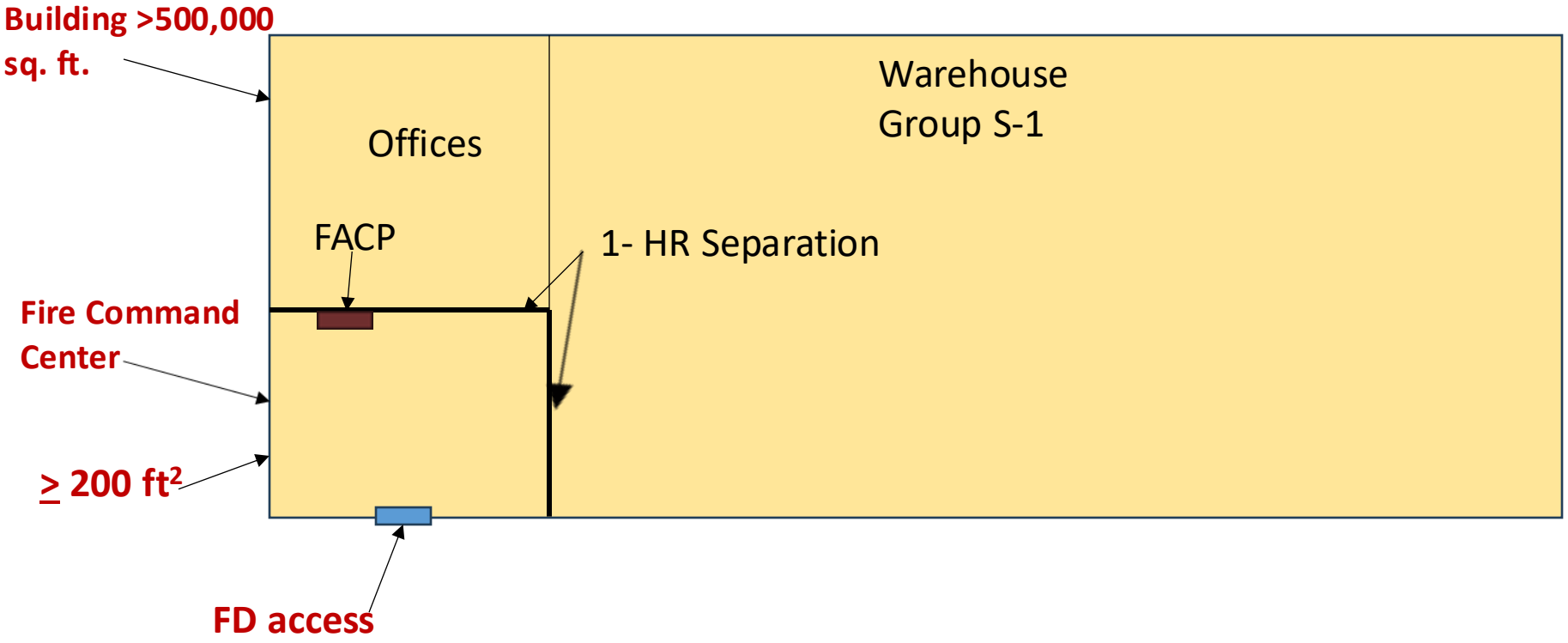
- Buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.
  - Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.



508 Fire Command Center

New Section 508.1.7 requires "FIRE COMMAND CENTER" sign on door to FCC

- In addition to high-rise, fire command centers are now required in **Group F-1 and S-1** where the building footprint **>500,000 ft²**



510 Emergency Responder Communication Coverage

- **510.1 Emergency responder communication coverage in new buildings.**
- **Exceptions:**

1. no change

2. no change

3. no change

4. New buildings 7,500 square feet or less and not more than 1 story above *grade plane*.

- 4.1. This exception does not apply to windowless buildings, underground buildings or buildings with a *basement*.

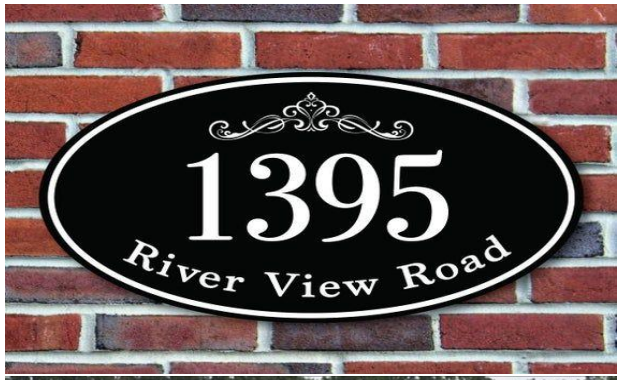
SL 2024-49 directs the BCC to modify exception #4 to read as follows:
One-story buildings not exceeding 12,000 square feet with no below-ground areas.

Law became effective on 9/11/24 and the increase is effective until the code is changed

OSFM

511 1- And 2-Family Dwelling Subdivisions and Townhouse Developments

- **[A] 102.5 Application of residential code.** Where structures are designed and constructed in accordance with the *International Residential Code*, the provisions of this code shall apply as follows:
- 1. Construction and design provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, **premises identification, fire apparatus access and water supplies**.
- 2. Administrative, operational and maintenance provisions of this code shall apply.



511 1- and 2-Family Dwelling Subdivisions/Townhomes

- **511.1 General**
  - 3 or more 1- and 2-family dwellings – exception for minor limited subdivisions as prescribed in GS 160D-802
- **511.2 Fire Flow**
  - Tables 511.2(1) 511.2(2) or ISO method
  - NFPA 1142, International Wildland-Urban Interface Code or other approved method in areas without water supply systems or those areas with water mains less than 6 inches in diameter
- **511.3 Fire Apparatus Access**
  - Up to 100 dwellings allowed to have one access – more than 100 2nd access or sprinklers
  - 2 access roads if more than 200 even if sprinklers are installed
- **511.4 Premise Identification**
  - R319 of International Residential Code
  - 106.4 of NC Administrative Code

OSFM

511 Needed Fire Flow

- **511.2 Fire flow.** The minimum fire-flow and flow duration requirements for one- and two-family dwellings and townhouses shall be as specified in Tables 511.2(1) and 511.2(2) or ISO Guide for Determination of Needed Fire Flow.

- **511.2.1 Areas without water supply systems or with limited water supply systems.** The fire code official is authorized to utilize NFPA 1142, the International Wildland-Urban Interface Code or other approved method for areas without water supply systems or those areas with mains less than 6 inches in diameter.

OSFM

511 Needed Fire Flow

TABLE 511.2(1)
REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
0–3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table 511.2(2)	Duration in Table 511.2(2) at the required fire-flow rate
0–3,600	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	500	1/2
3,601 and greater	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	1/2 value in Table 511.2(2)	1

OSFM

511 Needed Fire Flow

TABLE 511.2(2)
REFERENCE TABLE FOR TABLE 511.2(1)

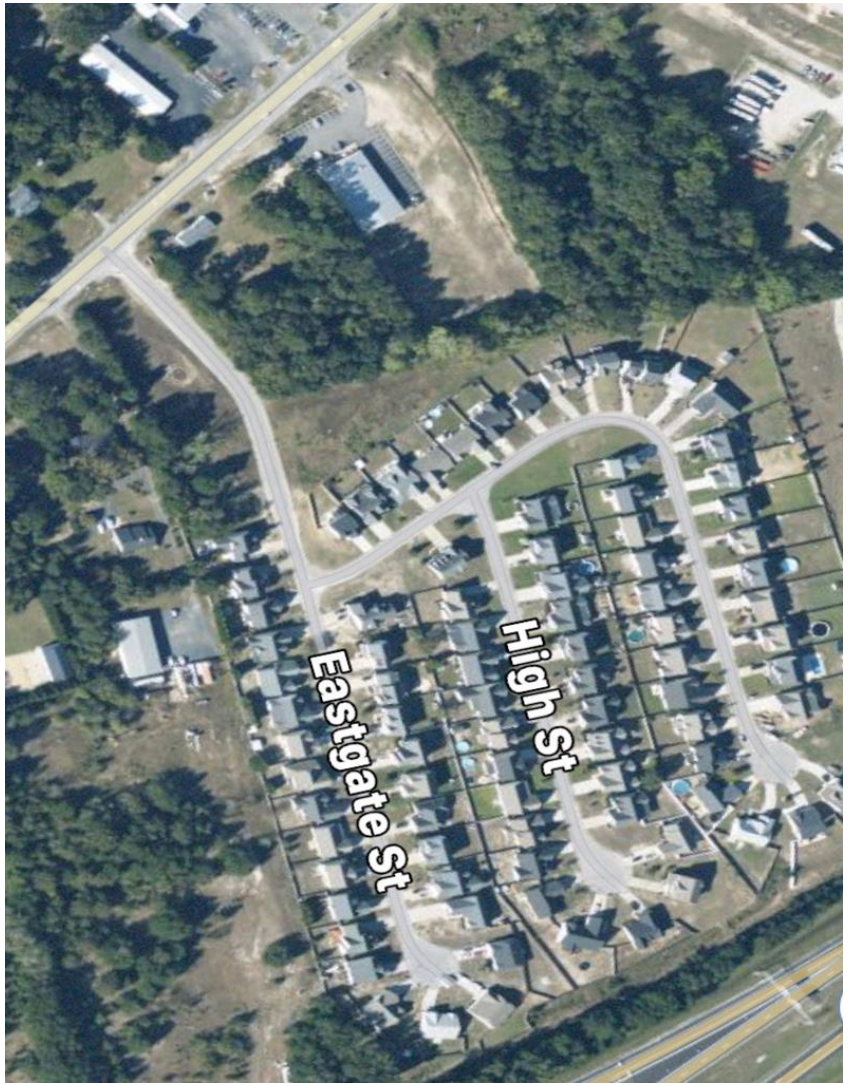
FIRE-FLOW CALCULATION AREA (square feet)					FIRE FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0–22,700	0–12,700	0–8,200	0–5,900	0–3,600	1,500	2
22,701–30,200	12,701–17,000	8,201–10,900	5,901–7,900	3,601–4,800	1,750	
30,201–38,700	17,001–21,800	10,901–12,900	7,901–9,800	4,801–6,200	2,000	
38,701–48,300	21,801–24,200	12,901–17,400	9,801–12,600	6,201–7,700	2,250	
48,301–59,000	24,201–33,200	17,401–21,300	12,601–15,400	7,701–9,400	2,500	

OSFM

511 Fire Apparatus Access

- **511.3.1 One- or two-family dwelling residential developments.** Developments of one- or two-family dwellings where the number of dwelling units exceeds 100 shall be provided with two separate and approved fire apparatus access roads.

    - **Exception:** Where there are more than 100 dwelling units accessed from a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3 of the International Fire Code, access from two directions shall not be required.



OSFM

511 Fire Apparatus Access

- **511.3.2 Projects having more than 200 dwelling units.** One- or two-family residential projects having more than 200 dwelling units shall be provided with two separate and approved fire apparatus access roads regardless of whether they are equipped with an approved automatic sprinkler system.

503.1.6 – Access roads shall be separated by one-half overall diagonal distance of lot or area.
Retained exception for one- and two-family dwelling developments (SL 2021-183)

Exception: For one- or two-family dwelling residential developments where compliance is technically infeasible be-cause of road connectivity limitations, real property dimensions or limitations, real property acquisition constraints, or environmental constraints, as determined by the property owner or developer, the fire code official shall either not re-quire two fire apparatus access roads or allow for alterations that provide for fire apparatus access road remoteness to the maximum extent technically feasible.

511 Premise Identification

- **511.4 Premises identification.** Section R319 of the *International Residential Code* and
- Section 106.4 of the *North Carolina Administrative Code and Policies*.
  - Temporary for construction sites
  - Permanent based on
    - R319 for Residential
    - 505.1 of Fire Code for commercial
- Street and road signs shall comply with Section 505.2.

OSFM

Chapter 6 Reorganization

2018

- 601 General
- 602 Definitions
- 603 Fuel-fired Appliances
- 604 Emergency/Standby Power – moved to Chapter 12
- 605 Electrical
- 606 Mechanical Refrigeration
- 607 Elevators
- 608 Stationary Battery Systems – moved to Chapter 12
- 609 Commercial Kitchen Hoods
- 610 Cooking Oil Storage
- 611 Hyperbaric Facilities

2024

- 601 General
- 602 Definitions
- 603 Electrical
- 604 Elevators
- 605 Fuel-fired Appliances
- 606 Commercial Kitchen Hoods
- 607 Cooking Oil Storage
- 608 Mechanical Refrigeration
- 609 Hyperbaric Facilities
- 610 Clothes Dryer Exhaust - new

OSFM

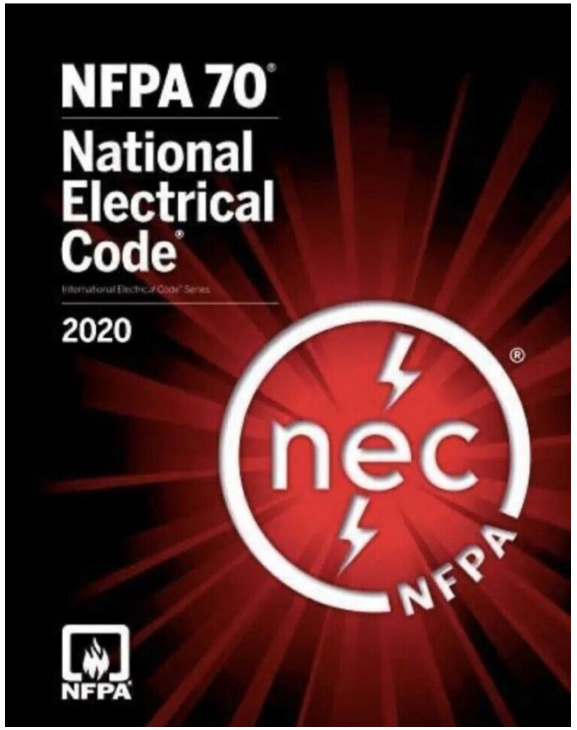
601 General

- **New sections that apply to all service systems covered in this chapter**
- **601.2 Hazard abatement.** Operations or conditions deemed unsafe or hazardous by the fire code official shall be abated. Equipment, appliances, materials and systems that are modified or damaged and constitute an electrical shock or fire hazard shall not be used.
  - **601.2.1 Correction of unsafe conditions.** The fire code official shall be authorized to require the owner, the owner's authorized agent, operator or occupant of a building or premises to abate or cause to be abated or corrected such unsafe operations or conditions either by repair, rehabilitation, demolition or other approved corrective action in compliance with this code.

OSFM

603.1 Electrical

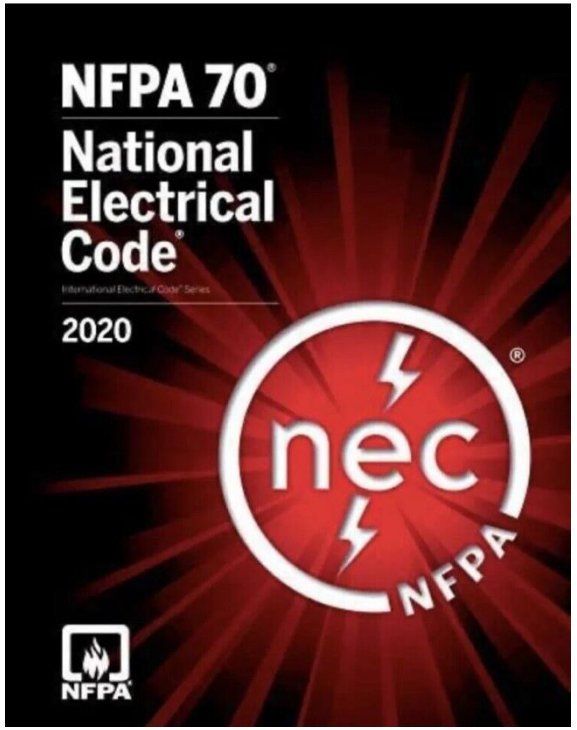
- New charging requirements in 603.1 – all equipment shall be installed, used and maintained in accordance with NFPA 70 and following sections
- **603.1.1** – new section that requires all electrical to be tested, *listed* and *labeled*
- **603.1.2** – new section that requires all electrical in Group I-2 to be maintained and tested in accordance with NFPA 99



OSFM

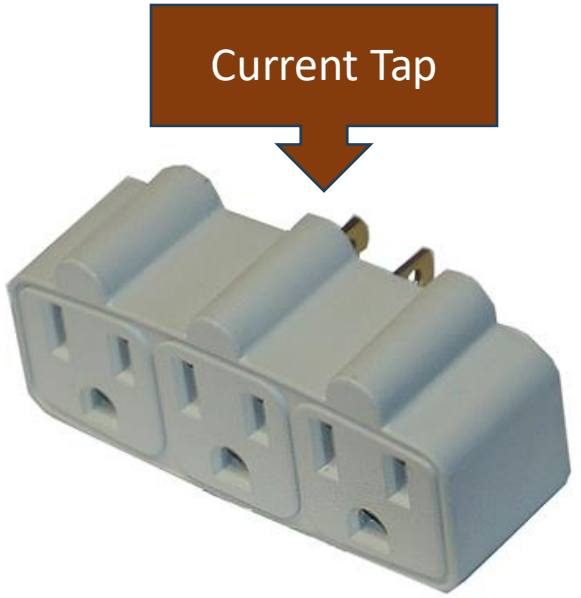
603.4 Working Space

- **603.4** – adds requirements for working space around electrical equipment
  - Section 110.26 of NFPA 70 for electrical equipment rated 1,000 volts or less
  - Section 110.33 of NFPA 70 for electrical equipment rated over 1,000 volts
- **603.4.1** – Adds labeling requirements if buildings are supplied by more than one power source
  - at each service equipment location
  - at all interconnected electric power production sources



603.5 Relocatable Power Taps/Current Taps

- **603.5.1 Listing.**
- Current taps shall be listed and labeled in accordance with UL 498A
- **603.5.1.1** - In Group I-2 occupancies and ambulatory care facilities, relocatable power taps shall be listed in accordance with UL 1363 except:
  - UL 1363A or UL 60601-1 can be used for
  - Group I-2, Condition 2 occupancies, patient care-related electrical equipment in the patient care vicinity
  - Group I-2, Condition 1 facilities, in care recipient rooms using line-operated patient care-related electrical equipment
  - In ambulatory care facilities, providing power to patient care-related electrical equipment in the patient care vicinity



603.5 Relocatable Power Taps/Current Taps

- **New requirements:**
- **603.5.2 Application and use.** Relocatable power taps and current taps shall be directly connected to a permanently installed receptacle.
- Exceptions:
- 1. Where approved for use in a Group A occupancy or in a meeting room in a Group B occupancy, not more than five relocatable power taps shall be permitted to be connected together or connected to an extension cord for temporary use to supply power to electronic equipment.
- 2. Current taps and relocatable power taps shall not be required to connect directly to a permanently installed receptacle outlet where used for 90 days or less for the purpose of testing the performance of such devices.

OSFM

603.6 Extension Cords

- **New requirements:**
- Shall be listed and labeled in accordance with UL 817
- Extension cords marked for indoor use shall not be used outdoors

OSFM

603.9 Portable, Electric Space Heaters

- Adds new Section 603.9.5
- **Group I-2 occupancies and ambulatory care facilities.** Where used in Group I-2 and ambulatory care facilities, portable, electric space heaters shall be limited to those having a heating element that cannot exceed a temperature of 212°F (100°C), and such heaters shall only be used in nonsleeping staff and employee areas.

OSFM

603.10 Abandoned Plenum Wiring

- **New requirement:**
- **603.10 Abandoned wiring in plenums.** Abandoned cables in plenums that are able to be accessed without causing damage, or requiring demolition to the building, shall be tagged for future use or shall be removed.

604 Elevators

- **2 new sections added**
- **604.5.3 Storage within elevator lobbies.** Where hoistway opening protection is required by Section 3006.2 of the International Building Code, elevator lobbies shall be maintained free of storage.
- **604.7 Storage.** Storage is prohibited in elevator cars or elevator machine rooms.
  - Exceptions:
  - 1. Blankets used for protection of elevator cab walls during construction or renovation.
  - 2. Materials necessary for the operation and maintenance of the elevator equipment.

OSFM

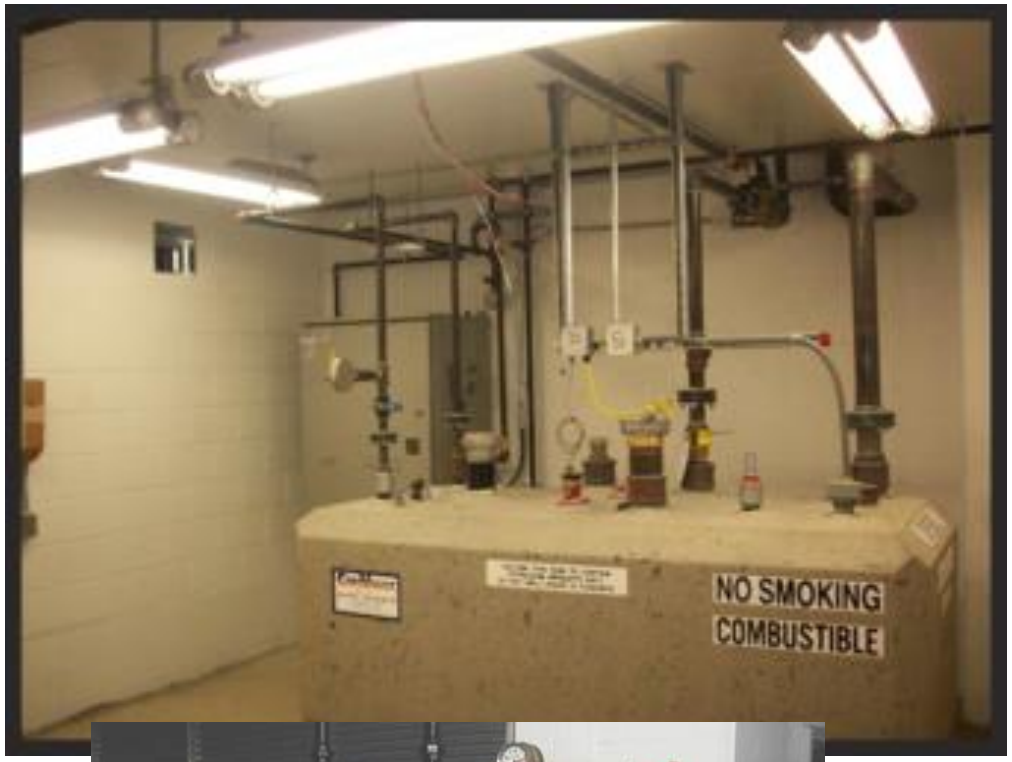
605.4.2 Fuel Oil Storage

- Adds listed tank options – UL 80, 142, and 2085
- Fuel oil storage allowances in Section 605 have been revised to clarify applicability to internal combustion engines, such as generators and fire pumps.
- **Fuel oil storage is increased to 1,320 gallons if the building is sprinklered and the tank is listed to UL 142**.

TANK DESIGN	NONSPRINKLERED BUILDING	FIRE SPRINKLERS PROVIDED IN THE ROOM	FIRE SPRINKLERS PROVIDED IN THE BUILDING
UL 80	660 gallons	660 gallons	660 gallons
UL 142	660 gallons	660 gallons	1,320 gallons
UL 2085	660 gallons	3,000 gallons	3,000 gallons

605.4.2 Fuel Oil Storage

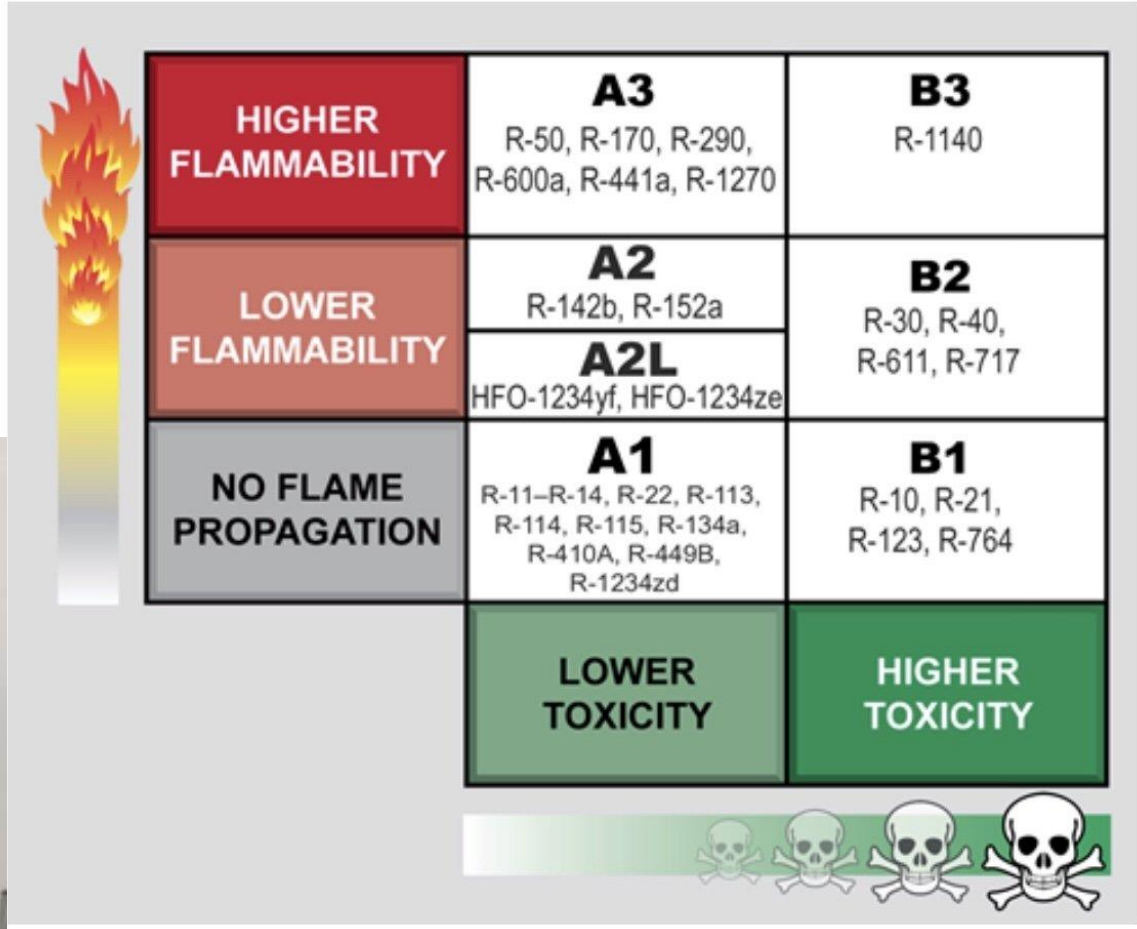
- **605.4.2.6** – new section that requires rooms containing fuel oil tanks for internal combustion engines to be separated from the remainder of the building with 1-hour fire-resistance rating
  - Exception if UL 2085 tank is used
- **605.4.2.7** – new section to require spill control for tanks exceeding 60 gallons or an aggregate of 1,000 gallons unless equipped with integral secondary containment.



OSFM

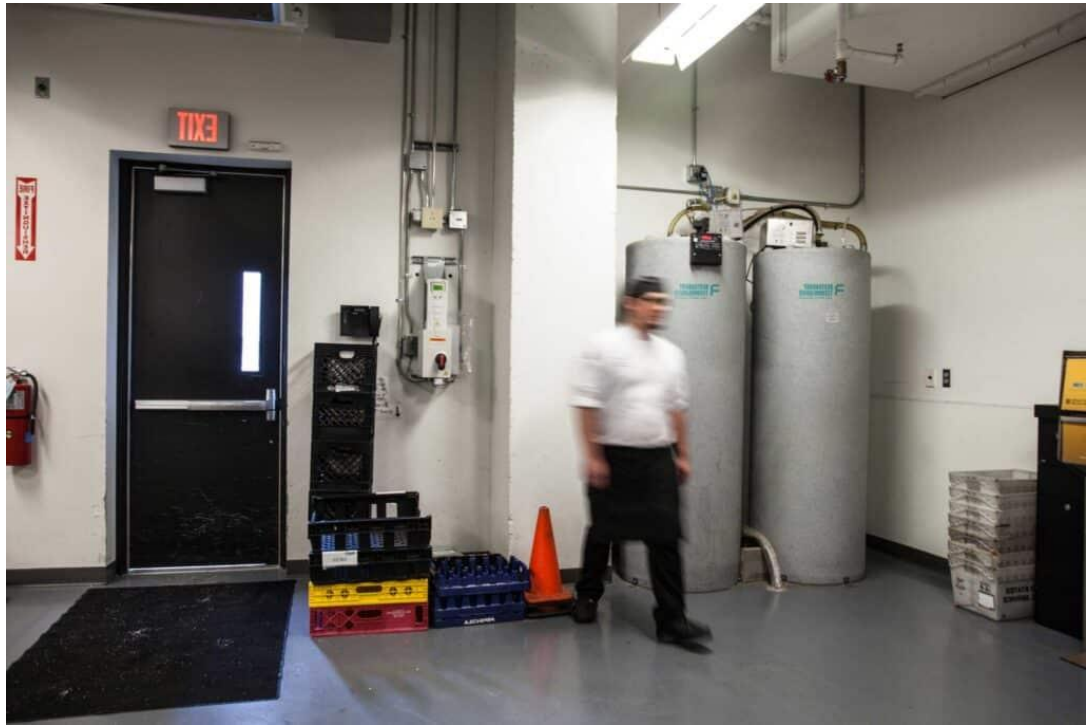
608 Mechanical Refrigeration

- Adds new requirements for A2L refrigerants
- 2024 IFC requirements were adopted early at the request of ICC – other codes also



607 Commercial Cooking Oil Storage

- 607.3 was modified to require nonmetallic cooking oil storage tanks to be listed in accordance with UL 2152
- Current code only required tanks to be installed in accordance with mfg.'s instructions
- Tank capacity still limited to 200 gallons



610 Clothes Dryer Exhaust

- New section that requires systems to be installed by IMC, IFGC and manufacturer's installation instructions
- Maintenance provision also added that requires lint trap, mechanical and heating components, and the exhaust duct system of a clothes dryer to be maintained in accordance with the manufacturer's operating instructions

OSFM

Chapter 7 Reorganization

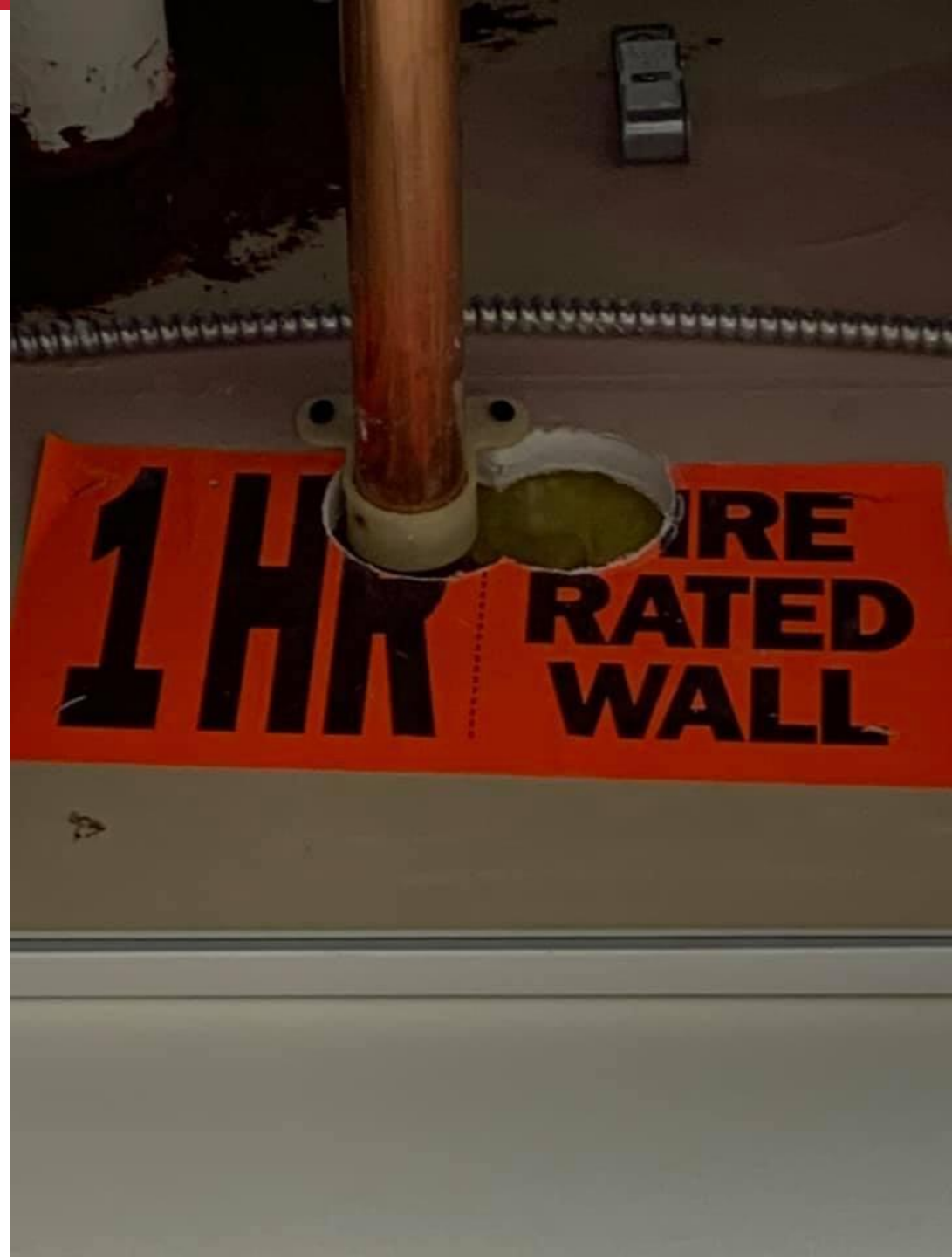
- **Current**
- 701 General
- 702 Definitions
- 703 Fire-Resistance-Rated Construction
- 704 Floor Openings and Shafts

- **2024**
- 701 General
- 702 Definitions
- 703 Penetrations
- 704 Joints and Voids
- 705 Door and Window Openings
- 706 Duct and Air Transfer Openings
- 707 Concealed Spaces
- 708 Spray Fire-Resistant Materials and Intumescent Fire-Resistant Materials

OSFM

703 Penetrations

- **New sections**
- **703.1 Maintaining protection.** Materials and firestop systems used to protect membrane and through penetrations in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be maintained. The materials and firestop systems shall be securely attached to or bonded to the construction being penetrated with no openings visible through or into the cavity of the construction. Where the system design number is known, the system shall be inspected to the listing criteria and manufacturer's installation instructions.
- **703.2 Repair of penetrations.** Where damaged, materials used to protect membrane- and through-penetrations shall be replaced or restored with materials or systems that meet or exceed the code requirements applicable at the time when the assembly was constructed, remodeled or altered.



704 Joints and Voids

- **New sections**
- **704.1 Maintaining protection.**
  - 1. Joints in or between fire-resistance-rated walls, floors or floor/ceiling assemblies and roof or roof/ceiling assemblies.
  - 2. Joints in smoke barriers.
  - 3. Voids at the intersection of a horizontal floor assembly and an exterior curtain wall.
  - 4. Voids at the intersection of a horizontal smoke barrier and an exterior curtain wall.
  - 5. Voids at the intersection of a nonfire-resistance-rated floor assembly and an exterior curtain wall.
  - 6. Voids at the intersection of a vertical fire barrier and an exterior curtain wall.
  - 7. Voids at the intersection of a vertical fire barrier and a nonfire-resistance-rated roof assembly.

OSFM

704 Joints and Voids

- Unprotected joints and voids do not need to be protected where such joints and voids were not required to be protected when the building was originally constructed.
- Where the system design number is known, the system shall be inspected to the listing criteria and manufacturer's installation instructions.
- **704.2 Repair of joints and voids.** Where damaged, materials used to protect joints and voids shall be replaced or restored with materials or systems that meet or exceed the code requirements applicable at the time when the assembly was constructed, remodeled or altered.

OSFM

705 Door and Window Openings

- **New sections**
- **705.1 General.** Opening protectives installed in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall be inspected and maintained in accordance with this section.
- **705.2.1 Labeling requirements.** Where approved by the fire code official, the application of field-applied labels associated with the maintenance of opening protectives shall follow the requirements of the approved third-party certification organization accredited for listing the opening protective.
- **705.2.5 Smoke- and heat-activated doors.** Smoke-activated doors shall be maintained to self-close or automatically close upon detection of smoke. Existing fusible-link-type automatic door-closing devices are permitted if the fusible link rating does not exceed 135°F (57°C).

OSFM

706 Duct and Air Transfer Openings

- **New sections**
- **706.1 Maintaining protection.** Dampers protecting ducts and air transfer openings shall be inspected and maintained in accordance with NFPA 80 and NFPA 105.
- Other products or materials used to protect the openings for ducts and air transfer openings shall be securely attached to or bonded to the construction containing the duct or air transfer opening, without visible openings through or into the cavity of the construction.
- Any damaged products or materials protecting duct and air transfer openings shall be repaired, restored or replaced.
- **706.2 Unprotected openings.** Unprotected duct and air transfer openings in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be protected so as to comply with requirements that were in effect when the building was constructed, remodeled or altered.

OSFM

708 SPRAY FIRE-RESISTANT MATERIALS AND INTUMESCENT FIRE-RESISTANT MATERIALS

- **New section**
- **708.1 Maintaining protection.** Where required when the building was constructed, remodeled, or altered, spray fire-resistant materials and intumescent fire-resistant materials shall be visually inspected to verify that the materials do not exhibit exposure to the substrate .

803 Interior Wall and Ceiling Finish

- Addition to 803.1 to allow wall and ceiling finishes to be classified in accordance with UL 723
- Footnote m added to Table 803.3 to require minimum Class B interior finish for ambulatory care facilities
- Adds requirement in 803.4 that fire-retardant paint must be tested over the same substrate used in application
- 803.13 provides requirements for laminated products factory produced with an attached wood substrate
- 0.036 thickness exemption relocated from 803.1 exception#1 to 803.14
- New 803.15 adds heavy timber exemption for Type IV construction

OSFM

806 Natural Decorative Vegetation in New and Existing Buildings

- **New section:**
- **806.1.4 Fire-retardant treatments for natural cut trees.** Where fire-retardant treatments are applied to natural cut trees, the fire-retardant treatment shall be tested by an approved agency and shall comply with both Test Method 1 and Test Method 2 of ASTM E3082.

OSFM

807 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings

- **Current**
- **807.2 Combustible decorative materials.** In other than Group I-3, curtains, draperies, fabric hangings and other similar combustible decorative materials suspended from walls or ceilings shall comply with Section 807.3 and shall not exceed 10 percent of the specific wall or ceiling area to which such materials are attached.

- **2024**
- **807.2 Combustible decorative materials.** In Groups A, B, E, I, M and R-1 and in dormitories in Group R-2, curtains, draperies, fabric hangings and other similar combustible decorative materials suspended from walls or ceilings shall comply with Section 807.3 and shall not exceed 10 percent of the specific wall or ceiling area to which such materials are attached.

Adds # 4 exception - 4. The 10-percent limit shall not apply to curtains, draperies, fabric hangings and similar combustible decorative materials used as window coverings.

OSFM

807 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings

- **New Section 807.4** that addresses requirements for artificial decorative vegetation
  - Must also comply with 806.2 and 806.3 (Egress and open flames)
  - Testing of vegetation is not required In I-1, I-2, Condition 1, R-2, R-3 or R-4 if equipped with an NFPA 13 sprinkler system and
    - 1. Wreaths and other decorative items on doors shall not obstruct the door operation and shall not exceed 50 percent of the surface area of the door.
    - 2. Decorative artificial vegetation shall be limited to not more than 30 percent of the wall area to which it is attached.
    - 3. Decorative artificial vegetation not on doors or walls shall not exceed 3 feet (914 mm) in any dimension.
  - Must comply with Test Method 1 or 2 of NFPA 701 or NFPA 289
  - Unlisted electrical wiring and lighting is prohibited
  - Use of electrical wiring and lighting is prohibited on metal artificial trees

808 Furnishings

- 808.1 adds Group B ambulatory care facilities for restrictions on wastebaskets and linen containers – previously only applicable to I-1, I-2 and I-3

- **New additions to section:**
- **Exception:** Recycling containers complying with Section 808.1.2 are not required to be stored in waste and linen collection rooms.
- **808.1.1 Capacity density.** The average capacity density of containers located in an individual room or space, other than waste and linen collection rooms, shall not be greater than 0.5 gal/ft2 (20.4 L/m2).
- **808.1.2 Recycling clean waste containers.** Recycling clean waste containers, including their lids, shall not exceed an individual capacity of 96 gallons (363 L).

OSFM

808 Furnishings

- **New section**
- **808.5 Play structures added to existing buildings.** Where play structures that exceed 10 feet in height or 150 square feet in area are added inside an existing building, they shall comply with Section 424 of the *International Building Code*.
  - Materials
  - Fire protection
  - Separation
  - Area limits
    - Design

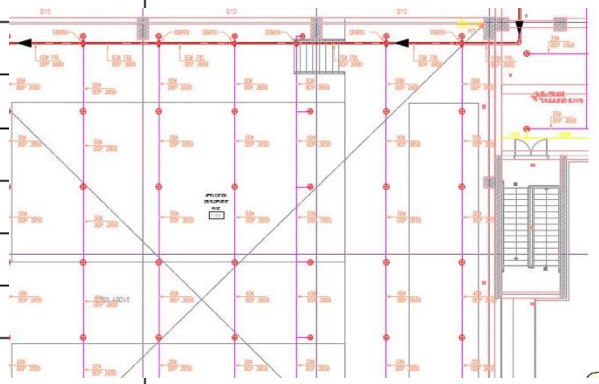
901 General

- New section and Table 901.2.2 to require fire protection shop drawings

Table 901.2.2

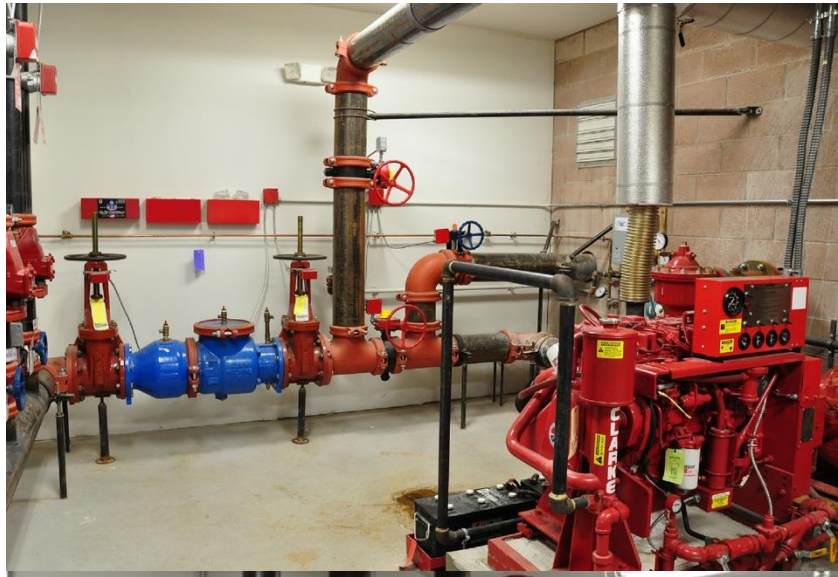
Standards for Shop Drawings

Automatic sprinkler systems	NFPA 13, NFPA 13R, NFPA 13D
Water tanks for private fire protection	NFPA 22
Wet-chemical systems	NFPA 17A
Dry-Chemical systems	NFPA 17
Foam systems	NFPA 11 and NFPA 16
Carbon dioxide systems	NFPA 12
Halon systems	NFPA 12A
Clean agent systems	NFPA 2001
Automatic water mist systems	NFPA 750
Aerosol fire-extinguishing systems	NFPA 2010
Standpipe systems	NFPA 14
Fire alarm and detection systems	NFPA 72
Fire pumps	NFPA 20
Smoke control systems	NFPA 92



901 General

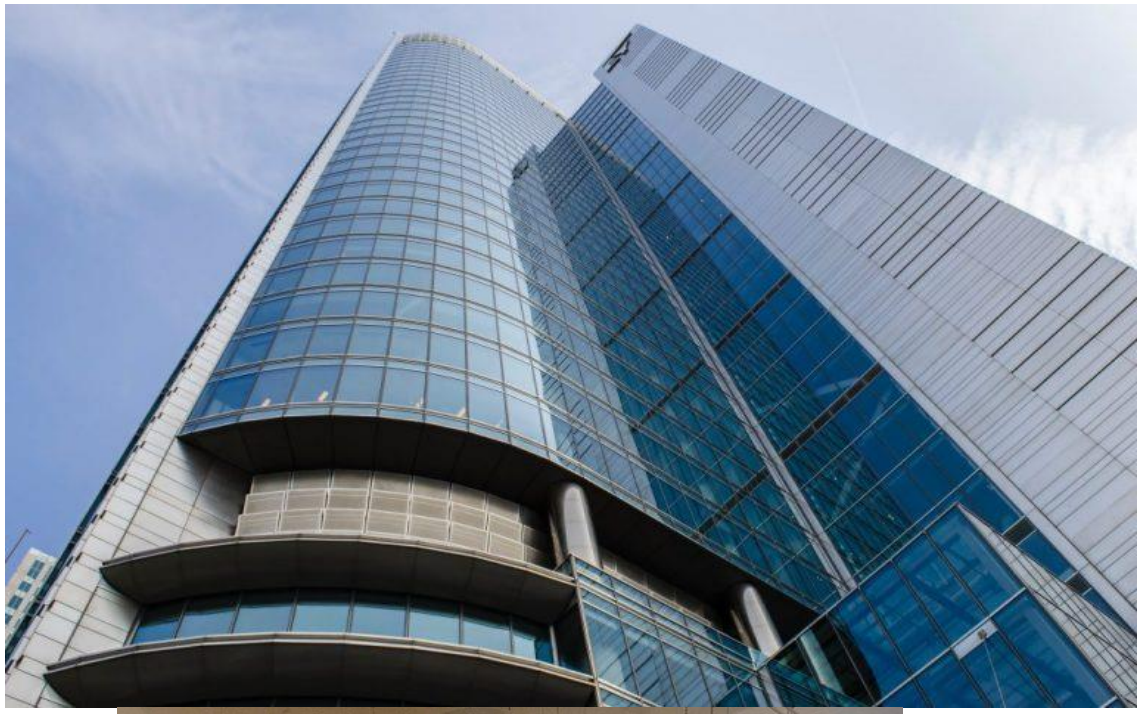
- Adds the following new sections that provide additional requirements for fire pump and sprinkler riser rooms:
  - **901.4.7.1** Must be provided with ready access. Doors can be locked provided key is available at all times
  - **901.4.7.2** Labeled with approved sign on a contrasting color and minimum 2 inch letters and minimum 3/8 inch stroke
  - **901.4.7.3** Maintained room temperature not less than 40°F. Heating unit must be permanent
  - **901.4.7.4** Permanently installed artificial lighting shall be installed

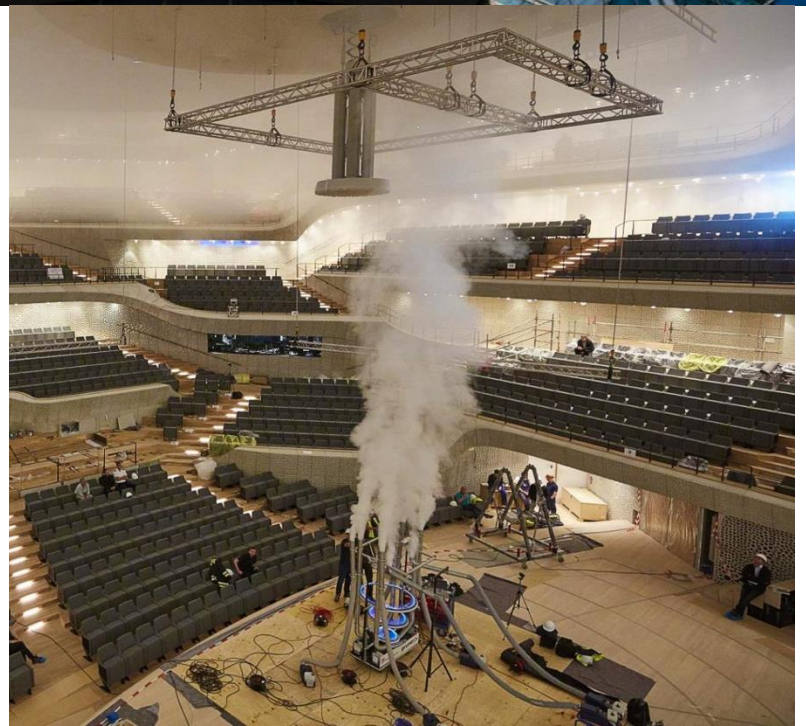


OSFM

901 General

- **New section 901.6.2 for integrated testing**
- **901.6.2.1 – High-rise buildings**
  - Testing must comply with NFPA 4
  - Performed prior to CO issuance and 10 year intervals unless more frequent from NFPA 4 test plan
  - If equipment failure is detected a repeat integrated test isn't required, only testing of replaced equipment
- **901.6.2.2 – Smoke control systems**
  - Where a fire alarm system is integrated with a smoke control system, same requirements as above for high-rise

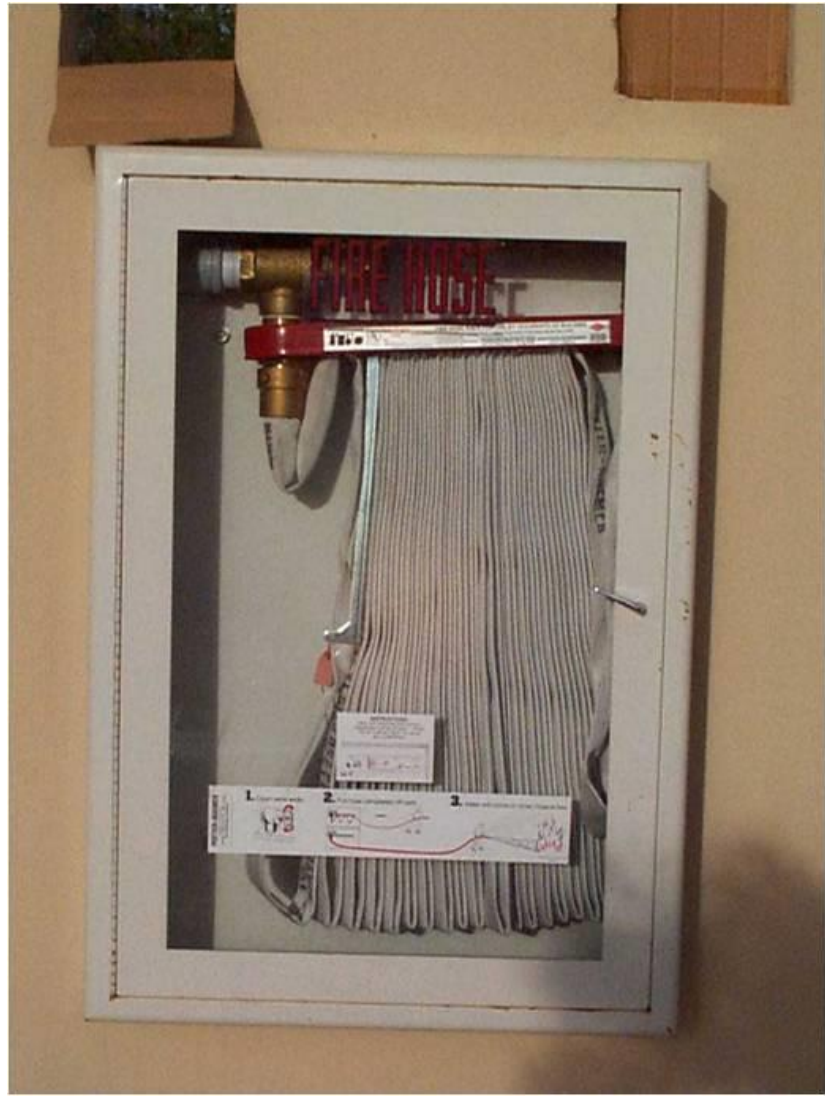




OSFM

901 General

- **901.8.2 Removal of existing occupant-use hose lines.** The *fire code official* is authorized to permit the removal of existing occupant-use hose lines where both of the following conditions exist:
  - ~~1. Installation is not required by this code or the *International Building Code*.~~
  - 1.~~2.~~ The hose line would not be utilized by trained personnel or the fire department.
  - 2.~~3.~~ The remaining outlets are compatible with local fire department fittings.



OSFM

903 – Sprinklers - A-5 Bleachers & Grandstands

- **903.2.1.5.1 Spaces under grandstands or bleachers**. Enclosed spaces under grandstands or bleachers shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 where either of the following exist:
- 1. The enclosed area is 1,000 square feet or less and is not constructed in accordance with Section 1030.1.1.1.
- 2. The enclosed area exceeds 1,000 square feet.

[BE] 1030.1.1.1 Spaces under *grandstands* and bleachers. Spaces under *grandstands* or *bleachers* shall be separated by *fire barriers* complying with Section 707 of the *International Building Code* and *horizontal assemblies* complying with Section 711 of the *International Building Code* with not less than 1-hour *fire-resistance-rated* construction.

Exceptions:

1. Ticket booths less than 100 square feet (9 m2) in area.
2. Toilet rooms.
3. Other accessory use areas 1,000 square feet (93 m2) or less in area and equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

This section ties back to the requirement we discussed earlier in 304.1.3.1 limiting the use under grandstands and bleachers

OSFM

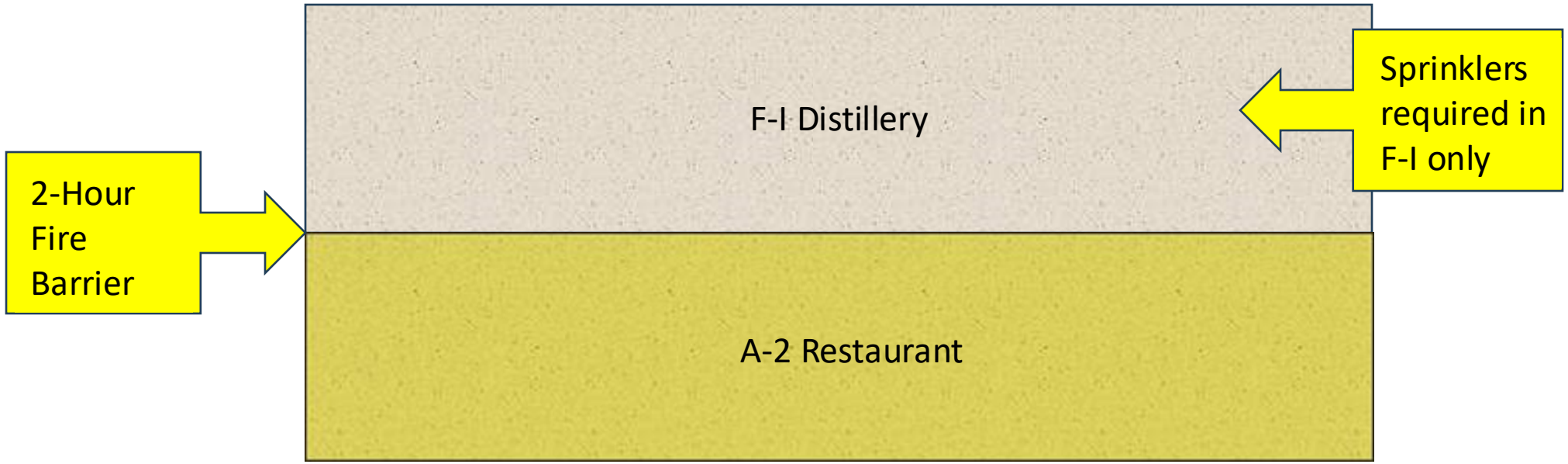
903 Sprinklers – Group E

- **903.2.3 Group E.** An *automatic sprinkler system* shall be provided for Group E occupancies as follows:
  - 1. Throughout all Group E *fire areas* greater than 12,000 square feet (1115 m^2) in area.
  - 2. ~~Throughout every portion of educational buildings below the lowest *level of exit discharge* serving that portion of the building.~~ Throughout Group E fire areas located on a floor other than the level of exit discharge and any fire areas traversed to the entrance of an exit, and throughout stories from the Group E occupancy to, and including, the nearest level of exit discharge.
    - **Exception:** ~~An *automatic sprinkler system* is not required in any area below the lowest *level of exit discharge* serving that area where every classroom throughout the building has not fewer than one exterior *exit* door at ground level.~~ In buildings where every classroom has not fewer than one exterior exit door at ground level, an *automatic sprinkler system* is not required in any area below the lowest *level of exit discharge* serving that area.
  - 3. The Group E *fire area* has an *occupant load* of 300 or more.

OSFM

903 – Sprinklers - F-1 Distilled Spirits

- **903.2.4.2 Group F-1 distilled spirits.** An automatic sprinkler system shall be provided throughout a Group F-1 fire area used for the manufacture of distilled spirits.



903 – Sprinklers – Group M Upholstered Furniture & Mattresses

- **903.2.7.2 Group M upholstered furniture or mattresses.** An automatic sprinkler system shall be provided throughout a Group M fire area where the area used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m2).

903 Sprinklers – Emergency Service Sleeping Area

- **Modified Section 903.2.8.6**
- **903.2.8.6 Emergency service sleeping area.** Group R~~-2~~ fire areas in fire or emergency medical service buildings ~~fire stations~~ may install a ~~13D~~ sprinkler system in accordance with Sections 903.3.1.3 and 903.3.5.1 when separated from other occupancies by a fire wall where all of the following conditions exist.

- 1. The building shall not exceed one story in height,
- 2. The fire area shall not exceed 2500 square feet (232 m2) in area.
- 3. The fire area has two remote means of egress.

2024 IFC change clarifies emergency services sleeping areas are nontransient
More than 16 – R-2
16 or less – R-3

OSFM

903 – Sprinklers – Sprinklers - S-1 Distilled Spirits

- **903.2.9.3 Group S-1 distilled spirits or wine.** An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine.

Wine storage with alcohol content of ≤16% would be classified as Group S-2

OSFM

903 – Sprinklers – Group S-1 Upholstered Furniture & Mattresses

- **903.2.9.4 Group S-1 upholstered furniture and mattresses.** An automatic sprinkler system shall be provided throughout a Group S-1 fire area where the area used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m2).
  - Exception: Self-service storage facilities not greater than one story above grade plane.

OSFM

903 – Sprinklers – Group S-2 Parking Garages

- **903.2.10 Group S-2 parking garages.** An automatic sprinkler system shall be provided throughout buildings classified as parking garages where any of the following conditions exist:
- 3. Where the fire area of the open parking garage, in accordance with Section 406.5 of the International Building Code, exceeds 48,000 square feet (4460 m2).
  - Exception: Open parking garages of Type I-A construction

OSFM

903 – Sprinklers – Mechanical-access Parking Garage

- **903.2.10.2 Mechanical-access enclosed parking garages.** An approved automatic sprinkler system shall be provided throughout buildings used for the storage of motor vehicles in a mechanical-access enclosed parking garage.
- The portion of the building that contains the mechanical-access enclosed parking garage shall be protected with a **specially engineered automatic sprinkler system.**

OSFM

903.3.1.1 – NFPA 13 Sprinkler Systems

- **903.3.1.1.2 Bathrooms.** In Group R occupancies, ~~other than Group R-4 occupancies,~~ sprinklers shall not be required in bathrooms that do not exceed 55 square feet (5 m^2) in area and are located within individual *dwelling units* or *sleeping units*, provided that walls and ceilings, including the walls and ceilings behind a shower enclosure or tub, are of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating.

- Allows omission of sprinklers from small bathrooms in R-4 occupancies (alcohol and drug centers, assisted living, congregate care, group homes, halfway houses, residential board and care)

903.3.1.2 – Sprinklers – NFPA 13R

- NFPA 13R design allowed IF:

4 or less stories above grade plane

No longer allows 4 stories above podium construction

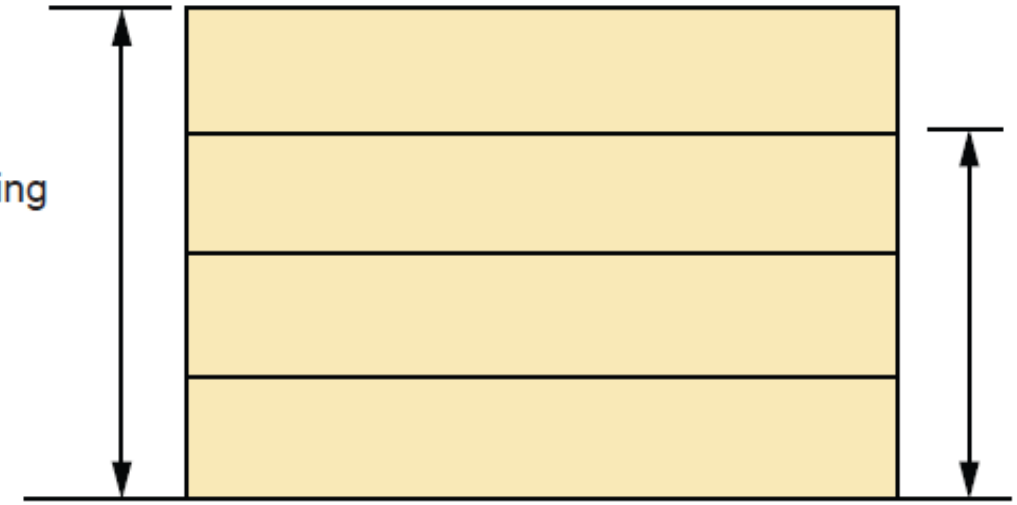
OSFM

903.3.1.2 – Sprinklers – NFPA 13R

Group R occupancy
permitted to use NFPA 13R
sprinkler system

2018

- ≤ 4 stories
- ≤ 60 foot building height



2021

- ≤ 4 stories*

* Number of stories is measured to grade plane when constructed using 510.2 or 510.4 (podium provisions)

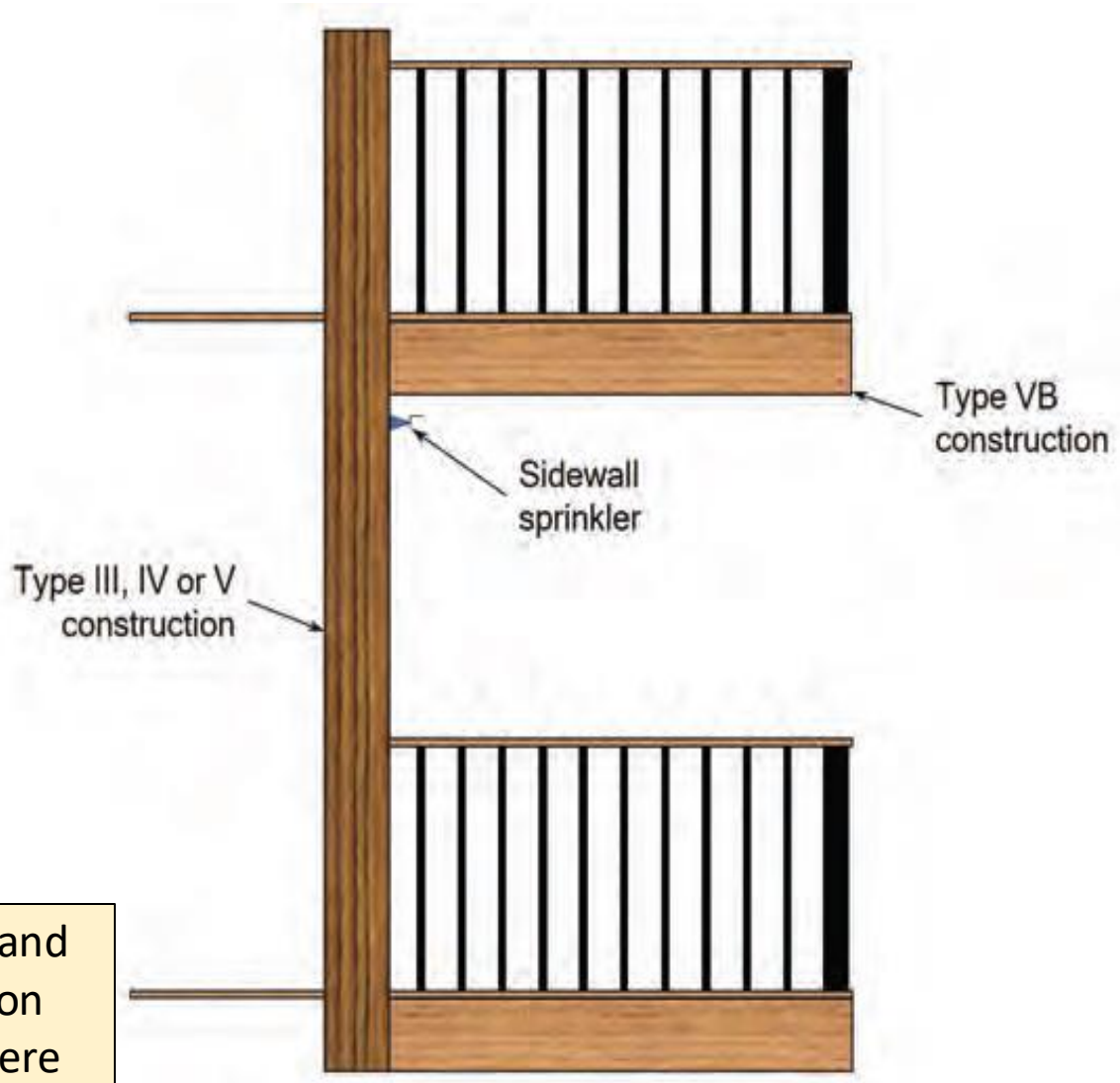
Limits for using a 13R sprinkler system.

OSFM

903 – Sprinklers – NFPA 13R

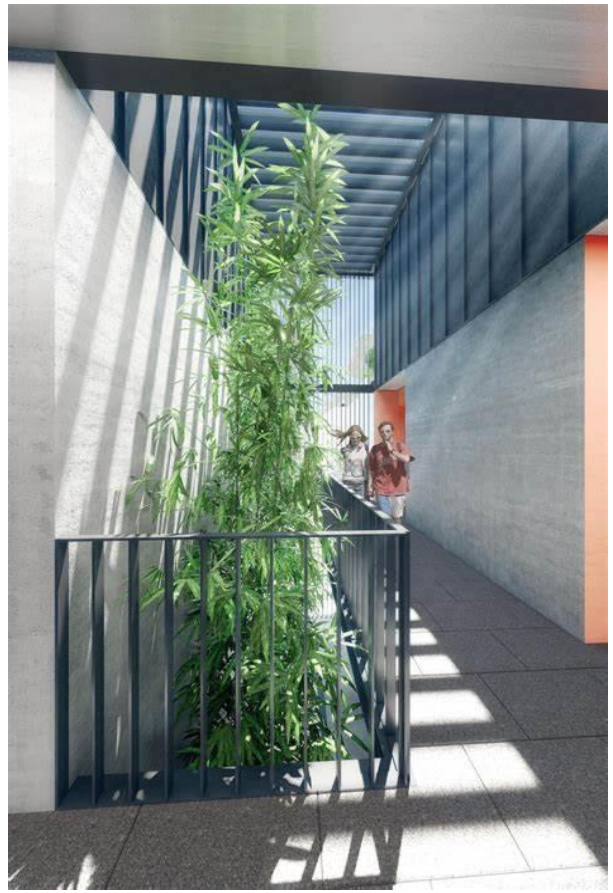
- **903.3.1.2.1 Balconies and decks.** Sprinkler protection shall be provided for exterior balconies, decks and ground floor patios of dwelling units and sleeping units where either of the following conditions exists:
  - 2. Exterior balconies, decks and ground floor patios of dwelling units and sleeping units are constructed in accordance with Section 705.2.3.1, Exception 3 of the International Building Code.

Balconies and similar projections on buildings of Type III, IV and V construction shall be permitted to be of Type V construction and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas.



903 – Sprinklers – NFPA 13R

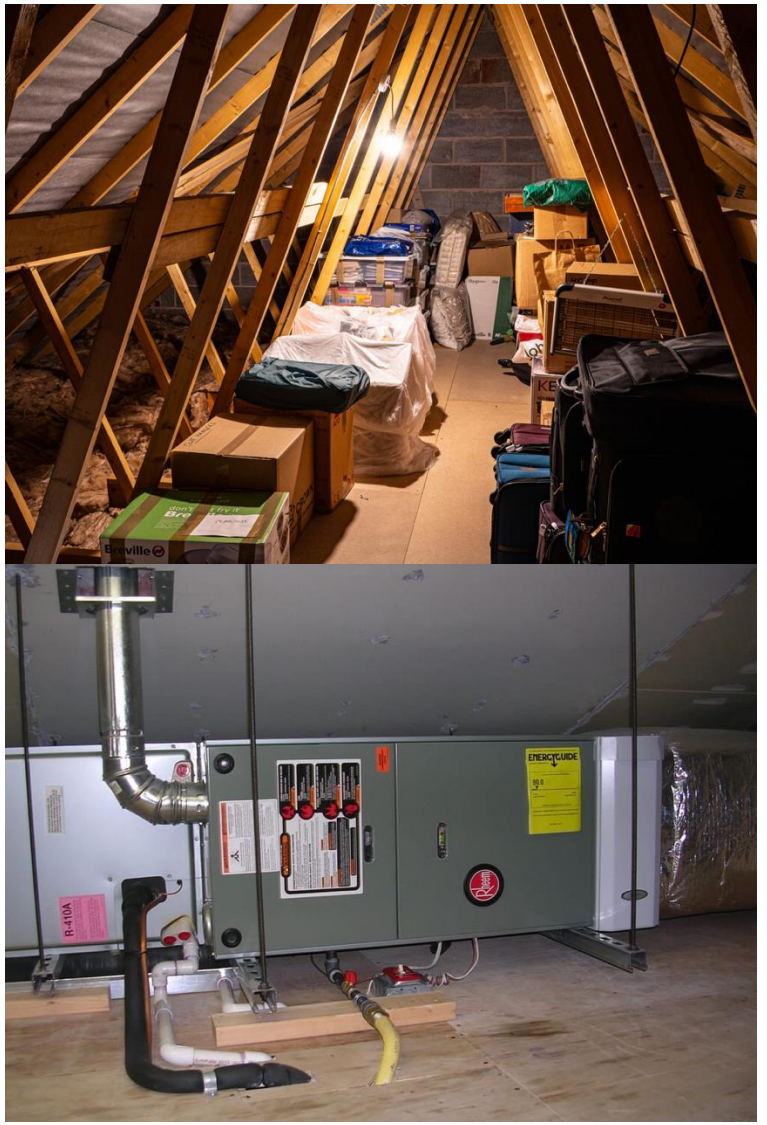
- **903.3.1.2.2 Corridors and balconies in the means of egress.** Sprinkler protection shall be provided in corridors and for balconies in the means of egress where any of the following conditions apply:
  - 1. Corridors with combustible finishes. floor or walls.
  - 2. Corridors with an interior change of direction exceeding 45 degrees (0.79 rad).
  - 3. Corridors that are less than 50 percent open to the outside atmosphere at the ends.
  - 4. Open-ended corridors and associated exterior stairways and ramps as specified in Section 1027.6, Exception 3.
  - 5. Egress balconies not complying with Sections 1021.2 and 1021.3.



OSFM

903 – Sprinklers – NFPA 13R

- **903.3.1.2.3 Attics.** Attic protection shall be provided as follows:
- **1.** Attics that are used or intended for storage shall be protected by an automatic sprinkler system.
- **2.** Where fuel-fired equipment is installed in an unsprinklered attic, not fewer than one quick-response inter-mediate temperature sprinkler shall be installed above the equipment.



903 – Sprinklers – NFPA 13R

- **3.** Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or 510.4 of the International Building Code, attics not required by Item 1 to have sprinklers shall comply with **one of the following** if the roof assembly is located more than 55 feet (16 764 mm) above the lowest level of fire department vehicle access needed to meet the provisions in Section 503:
  - 3.1. Provide automatic sprinkler system protection.
  - 3.2. Construct the attic using noncombustible materials.
  - 3.3. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the International Building Code.
  - 3.4. Fill the attic with noncombustible insulation.

OSFM

903 – Sprinklers – NFPA 13R

- The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the
  - eave of the highest pitched roof,
  - the intersection of the highest roof to the exterior wall, or
  - the top of the highest parapet,
  - whichever yields the greatest distance.
- For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with Section 503.

OSFM

903 – Sprinklers – NFPA 13R

- **4.** Group R-4, Condition 2 occupancy attics not required by Item 1 to have sprinklers shall comply with one of the following:
  - 4.1. Provide automatic sprinkler system protection.
  - 4.2. Provide a heat detection system throughout the attic that is arranged to activate the building fire alarm system.
  - 4.3. Construct the attic using noncombustible materials.
  - 4.4. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the International Building Code.
  - 4.5. Fill the attic with noncombustible insulation.

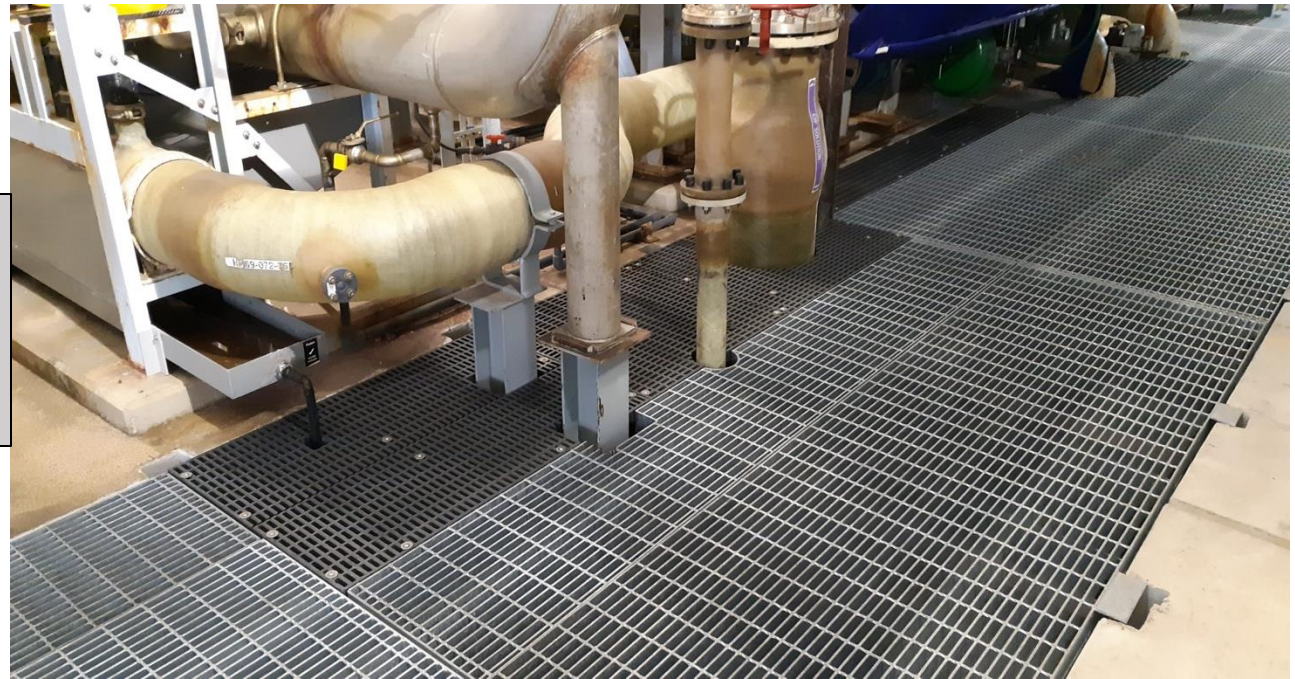
Condition 2. This occupancy condition shall include buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation.

OSFM

903 Sprinklers

- **903.3.3 Obstructed locations.** Automatic sprinklers shall be installed with regard to obstructions that will delay activation or obstruct the water distribution pattern and shall be in accordance with the applicable *automatic sprinkler system* standard that is being used. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands or equipment that exceeds 4 feet (1219 mm) in width. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of *combustible fibers*.

Example – NFPA 13 Chapter 8 addresses obstructions to water spray greater than 4 ft. such as open floor grating, distances to beams and soffits, etc.



OSFM

904.12 – Aerosol Fire-Extinguishing Systems

- **New section**
- Aerosol fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 2010 and their listing.
  - Must be listed and installed per manufacturer's instructions
  - Semiannual maintenance inspection to ensure system is working
  - More thorough annual inspection, testing, service and maintenance shall be performed
  - Records of all inspections and testing

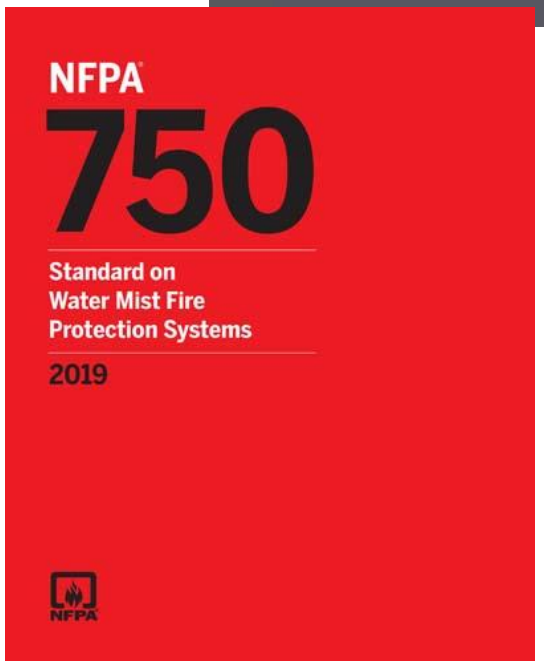
OSFM

904.13 – Commercial Cooking Systems

- **Two significant changes to this section:**

- The system shall be installed in accordance with this code, NFPA 96, its listing and the manufacturer's installation instructions.

- 3. Automatic water mist systems, NFPA 750.
- FM Global has approved water mist systems from multiple companies for use in industrial oil cookers commonly used in the food industry.



OSFM

904.13 – Commercial Cooking Systems

- **904.13.1 Manual system operation.** ~~A manual actuation device shall be located at or near a means of egress from the cooking area not less than 10 feet (3048 mm)~~ At least one readily accessible means for manual actuation shall be located in the path of egress or at a location approved by the fire code official and not more than 20 feet (6096 mm) from the kitchen exhaust system……

OSFM

904.14 – Domestic Cooking Facilities

- Cooktops and ranges installed in the following occupancies shall be protected in accordance with Section 904.14.1:
  - 1. Group I-1 - Section 420.9 of the International Building Code.
  - 2. Group I-2 - Section 407.2.7 of the International Building Code.
  - 3. Group R-2 college dormitories - Section 420.11 of the International Building Code.

2 options for protection

OSFM

904.14 – Domestic Cooking Facilities

- **Option 1 – Automatic fire-extinguishing system**
  - Listed and labeled as UL 300A and comply with mfg. instructions
  - Manual actuation method provided
  - Fuel and electric power shutdown upon actuation
- **Option 2 – Ignition prevention**
  - Burners tested and listed to prevent ignition of cooking oil with burners turned on to their maximum heat settings and allowed to operate for 30 minutes.
  - UL 858 – Standard for Safety for Household Electric Ranges now includes a new Section 60A that evaluates the ability of burners to not ignite cooking oil

OSFM

905 – Standpipes

905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations:

- 1. In every required *interior exit stairway* and required *exterior exit stairway*, a hose connection shall be provided for each story above and below *grade plane*. Hose connections shall be located at ~~an intermediate~~ the main floor landing unless otherwise *approved* by the *fire code official*.
  - **Exception:** A single hose connection shall be permitted to be installed in the open *corridor* or open breezeway between open *stairs* that are not greater than 75 feet (22 860 mm) apart.

2.-6. no changes

905 – Standpipes

- **New Section**
- **905.11 Locking standpipe outlet caps.** The fire code official is authorized to require locking caps on the outlets on standpipes where the responding fire department carries key wrenches for the removal that are compatible with locking FDC connection caps.

906 – Fire Extinguishers

- **New Exceptions #2 and #3 under 906.1 #1**
- 2. Permits FE's in Group E occupancies to be installed only in in areas noted in Items 2 through 6 where each classroom has a 2-A:20-B:C.
- 3. In Group S occupancies where industrial truck operators are the primary occupants, fixed extinguishers are not required if 5 listed conditions are met
  - 3.1. Use of vehicle-mounted extinguishers shall be approved by the fire code official.
  - 3.2. Each vehicle shall be equipped with a 10-pound, 40 A:80B:C extinguisher affixed to the vehicle using a mounting bracket approved by the extinguisher manufacturer or the fire code official for vehicular use.
  - 3.3. Not less than two spare extinguishers of equal or greater rating shall be available on-site to replace a discharged extinguisher.
  - 3.4. Vehicle operators shall be trained in the proper operation, use and inspection of extinguishers.
  - 3.5. Inspections of vehicle-mounted extinguishers shall be performed daily.

OSFM

906 – Fire Extinguishers

- **906.1 Where required.**
- 2. Within 30 feet (9144 mm) distance of travel from commercial cooking equipment and from domestic cooking equipment in Group I-1; I-2, Condition 2; and R-2 college dormitory occupancies.

- Exception: Portable fire extinguishers are not required at normally unmanned Group U occupancy buildings or structures where a portable fire extinguisher suitable to the hazard of the location is provided on the vehicle of visiting personnel.

- Table 906.1 added Section 1204.10 for portable generators

OSFM

906 – Fire Extinguishers

- **906.4** Changed from cooking grease fires to cooking equipment fires
- Requirements from 904.12.5 in current code have been relocated here
- **906.4.1** – Portable fire extinguishers for solid fuel cooking appliances
- **906.4.2** – Class K portable fire extinguishers for deep fat fryers

907.2.10 – Group R-4 Fire Alarm

- The requirement to install a manual fire alarm system and automatic smoke detection system in R-4 occupancies has been deleted
- Single and multiple station smoke alarms are still required as stated in 907.2.11

- Because the section was deleted we had to relocate the following:

- ~~**907.2.10.1.1 Adult and child day care in Group R-4.** A manual fire alarm system listed for residential use shall be installed in new adult or child day care facilities in existing R-4 occupancies.~~
- **907.2.24 Adult and child day care in Group R-4.** A manual fire alarm system approved by the *licensing agency* shall be installed in new adult or child day care facilities in existing R-4 occupancies.
  - Removed "listed for residential use"

OSFM

907.2.10 – Group S Fire Alarm

- **Manual fire alarm system required in Group S self-storage facilities ≥3 stories**
  - Cover interior corridors and interior common areas
  - Visible notification not required in storage units
  - Only 1 manual fire alarm boxes required IF building is sprinklered

OSFM

907.5.2.1.3 – R-1/R-2 Audible Alarm

- Sleeping rooms in Group R-1 and R-2 shall be provided with a notification signal with a 520 Hz low-frequency signal
- This alarm signal frequency is more effective in waking children and adults over 65 or alcohol impaired

Low-frequency signals can be provided by the alarm itself, or by mounting the alarm on a sounder base

907.5.2.3.3 – Group R-2 Expansion

- Fire alarm systems in Group R-2 shall be designed for future visible notification by 1 of the following:
  1. Replacement of audible appliances with audible/visible appliances
  2. Extension of existing wiring from the unit smoke alarm locations to visible appliances
  3. Fire alarm power supply and circuits shall provide ≥5% excess capacity with a single access point to such circuits shall be available on every story

OSFM

907.10 Smoke alarm maintenance

- **New section to require:**

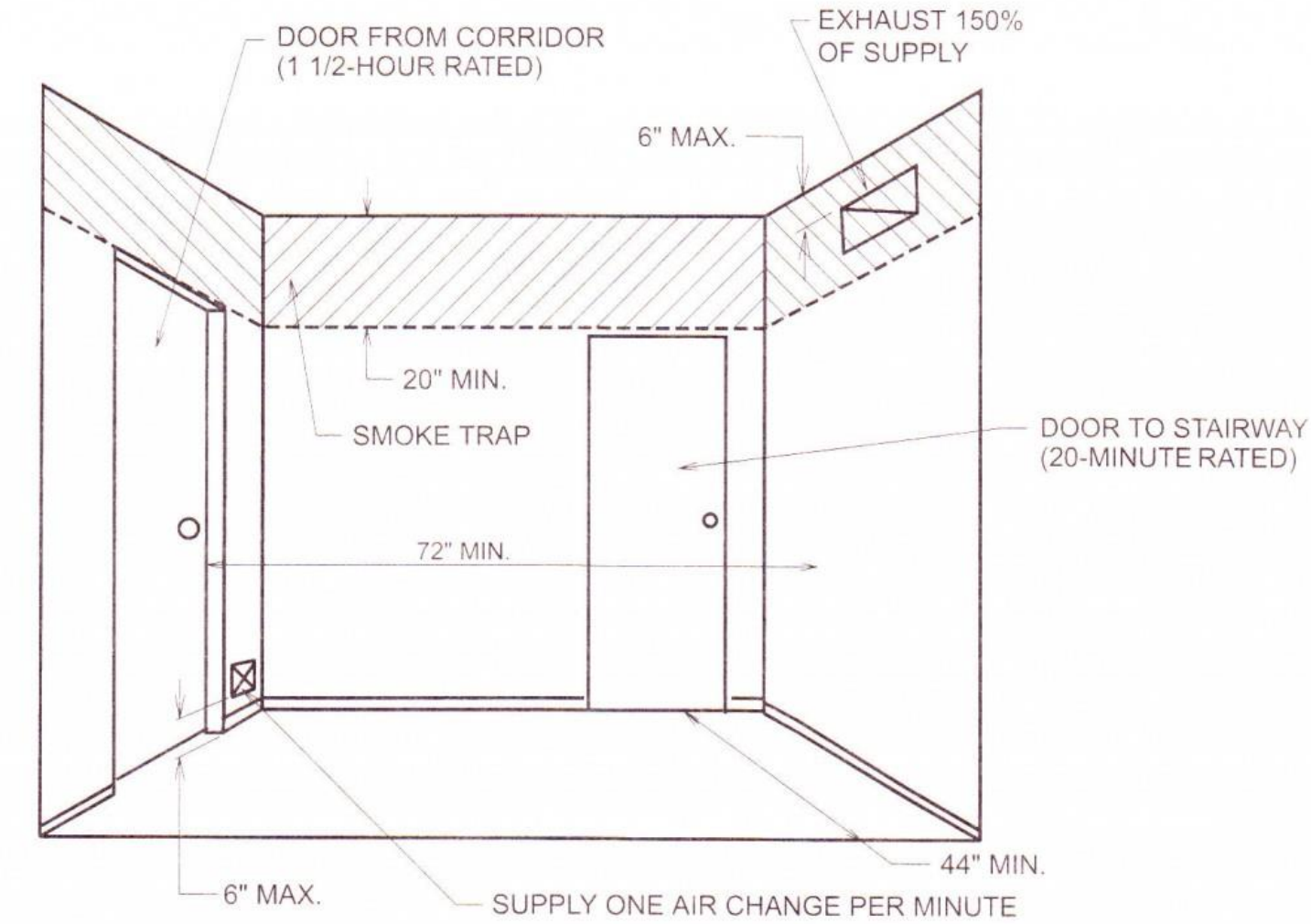
- Smoke alarms shall be tested and maintained in accordance with the manufacturer's instructions.

- Smoke alarms shall be replaced when they fail to respond to operability tests, or when they exceed 10 years from the date of manufacture, unless an earlier replacement is specified in the manufacturer's published instructions.

OSFM

909 – Smoke Control

- New section 909.20 added for smokeproof enclosures where required by 1023.12
  - Access
  - Construction
  - Natural ventilation alternative
  - Mechanical ventilation alternative
  - Stairway and ramp pressurization alternative
  - Ventilating equipment



913 Fire pumps

- **913.1 General.** Where provided, fire pumps for fire protection systems shall be installed in accordance with this section and NFPA 20.

- Exception: Pumps for automatic sprinkler systems installed in accordance with Section 903.3.1.3 or Section P2904 of the International Residential Code.

OSFM

913.2.2 – Fire Pump Circuits

- Must be protected with one of the following 4 options unless located within separated fire pump room or generator room:
  - 1. UL 2196 listed cable with not less than 1 hour fire-resistance rating
  - 2. Electrical circuit protective systems with not less than 1 hour fire-resistance rating.
  - 3. Construction having a fire-resistance rating of not less than 1 hour.
  - 4. The cable or raceway is encased in a minimum of 2 inches of concrete.

New options

914.7 – Special Amusement Areas

- Revised definition for Special Amusement Areas, and includes puzzle rooms

A special amusement area is any temporary or permanent building or portion thereof that is occupied for amusement, entertainment or educational purposes and is arranged in a manner that:
1. Makes the means of egress path not readily apparent due to visual or audio distractions.
2. Intentionally confounds identification of the means of egress path.
3. Otherwise makes the means of egress path not readily available because of the nature of the attraction or mode of conveyance through the building or structure.

- Sprinkler system & smoke detection system required
  - Sprinklers not required if <1,000 ft^2
- Section 411 of NCBC also contains requirements for special amusement

915 – Carbon Monoxide Detection

- New requirement added to 915.1 - Carbon monoxide detection shall be installed in existing buildings in accordance with **NCGS 143-138(b2)** and applicable sections of the ***International Existing Building Code***.
- 915.1.1 was modified to require detection in all Group I – previously excluded I-3
  - 915.2.2 adds new exception #2
  - 2. In Group I-3 , carbon monoxide detection shall be allowed to be installed outside of each separate sleeping area in the immediate vicinity of the sleeping unit.

- New section 915.6.1 added to address maintenance of CO and nitrogen dioxide in enclosed parking garages
  - 404.1 IMC
  - Maintained in accordance with manufacturer's instructions and replaced as required

OSFM

916 – Gas Detection Systems

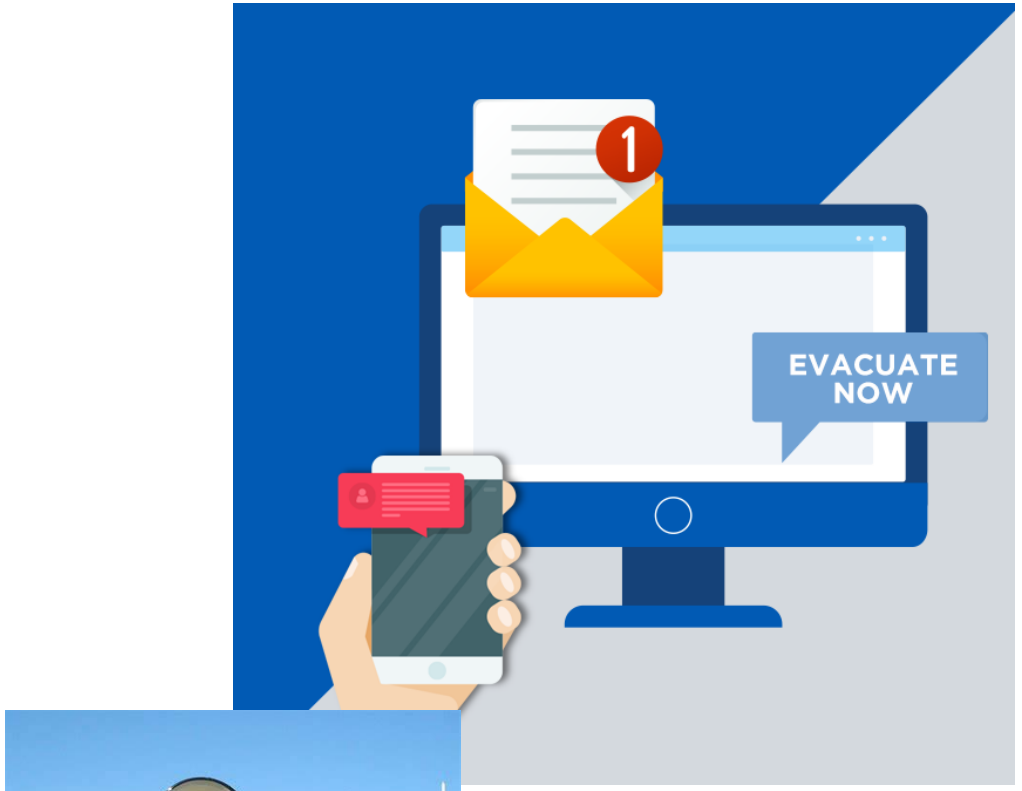
New Section

- Construction permit required based on 105.6.10
- Equipment must be designed for use and installed per mfg. instructions
- Connected to building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means
- Standby or emergency power
- Sensors in approved locations
- Continuous gas sampling
- Activation
  - Flammable – 25 LFL
  - Nonflammable – ½ IDLH
- Signage to instruct occupants upon activation
- NOT connected to fire alarm unless approved
- ITM annually and calibration as required by mfg.

OSFM

917.1 – Mass Notification Systems

- **New Section**
- College and university campuses with cumulative occupant load ≥1,000.
- *Registered design professional* shall conduct a risk analysis - NFPA 72.
- System must be provided where risk analysis determines a need



OSFM

1004 – Occupant Load

- **New sections:**

- **[BE] 1004.3 Multiple-function occupant load.** Where an area under consideration contains multiple functions having different occupant load factors, the design occupant load for such area shall be based on the floor area of each function calculated independently.

- **[BE] 1004.4 Multiple occupancies.** Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served.

OSFM

1006.2.1 – Egress Based on OL and Common Path

- Adds new requirement to calculate cumulative OL based on 1004.2
- Adds 2 new exceptions:
  - 1. The number of exits from foyers, lobbies, vestibules or similar spaces need not be based on cumulative occupant loads for areas discharging through such spaces, but the capacity of the exits from such spaces shall be based on applicable cumulative occupant loads.
  - 3. Unoccupied mechanical rooms and penthouses are not required to comply with the common path of egress travel distance measurement.
- Removes exception #1 in current code and adds footnote g to Table 1006.2.1 to address the issue:
  - g. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6.

OSFM

1006.2.2 – Egress based on use

- Adds requirement for refrigeration machinery rooms to be equipped with panic hardware regardless of OL – also addressed in 1010.2.9.1

- Adds new section 1006.2.2.4 for electrical rooms
  - Number based on Section 110.26 of NFPA 70 if 1,000 volts or less
  - Section 110.33 if equipment is over 1,000 volts
  - Panic hardware as required by 1010.2.9.2

- Adds new section 1006.2.2.6 for R-3 and R-4
  - R-3 with 13D system – exit access travel distance shall not be more than 125 ft.
  - R-4 with 13D system – exit access travel distance shall not be more than 75 ft.

OSFM

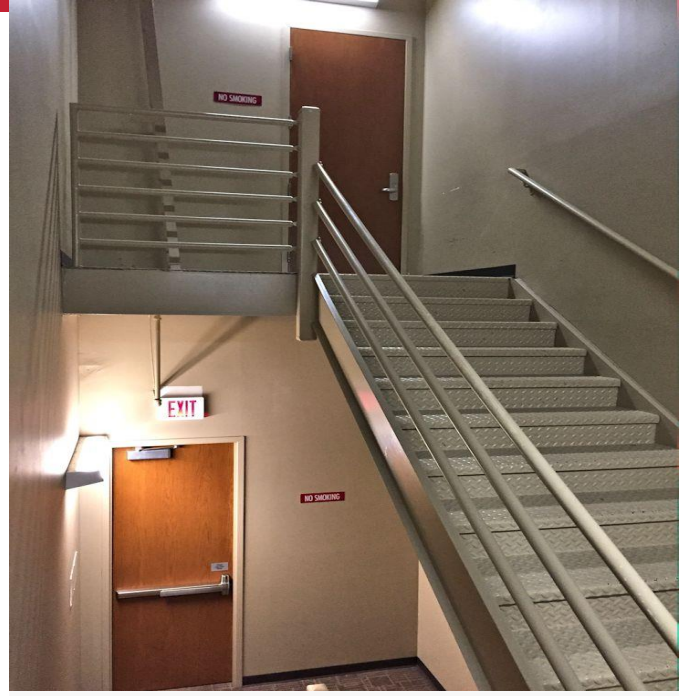
1006.3 – Egress from stories or occupied roofs

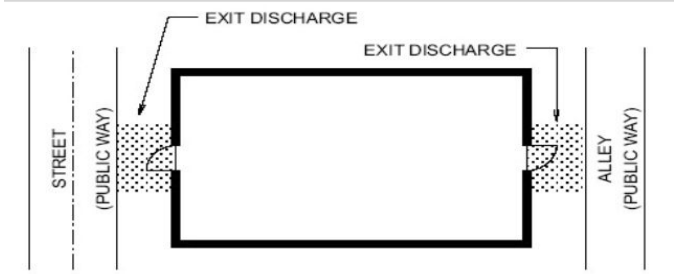
- Adds new section 1006.3.1 for occupant load
  - When stairways serve more than one story or an occupied roof, only the OL of each story shall be used to calculate exits or access serving that story
- Adds new section 1006.3.2 for path of egress travel
  - Provides 7 conditions under new exception that allows paths of egress travel to pass through more than one adjacent story
- Table 1006.3.4(1) and 1006.3.4(2) travel distance measurement changed from common path to exit access

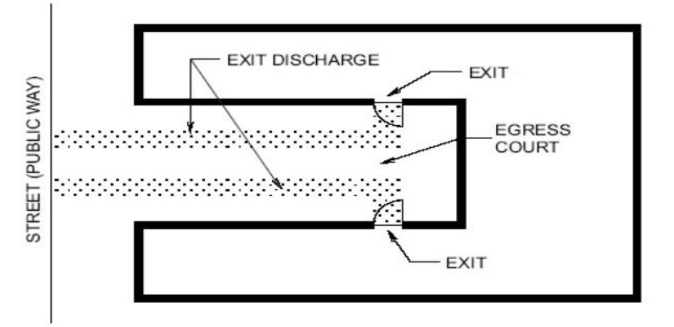
1008 – Illumination

- Adds requirement to 1008.2.1 to provide minimum 10 footcandles at the walking surface for exit stairways and landings when in use

- **New section:**
- **[BE] 1008.2.3 Exit discharge.** Illumination shall be provided along the path of travel for the exit discharge from each exit to the public way.
  - **Exception**: Illumination shall not be required where the path of the exit discharge meets both of the following requirements:
  - 1. The path of exit discharge is illuminated from the exit to a safe dispersal area complying with Section 1028.5.
  - 2. A dispersal area shall be illuminated to a level not less than 1 footcandle (11 lux) at the walking surface.







1008 – Illumination

- **[BE] 1008.3.3 Rooms and spaces.** In the event of power supply failure, an emergency electrical system shall automatically illuminate all of the following areas:
- 1. ~~Electrical~~ Main electrical equipment rooms.
- 2. Fire command centers.
- 3. Fire pump rooms.
- 4. Generator rooms.
- 5. Public restrooms ~~with an area greater than 300 square feet (27.87 m2)~~ where two or more water closets are required by Table 2902.1 of the International Building Code.
- 6. Sprinkler riser rooms.
- 7. Fire protection and life safety system control units.

OSFM

1010 – Doors, Gates and Turnstiles

- 1010.2.4 Locks and latches – adds new Items 2, 7-10

- 2. In Group I-1, Condition 2 and Group I-2 occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by all clinical staff at all times or all clinical staff have the codes or other means necessary to operate the locks at all times.

- 7. Doors serving roofs not intended to be occupied shall be permitted to be locked, preventing entry to the building from the roof.

OSFM

1010 – Doors, Gates and Turnstiles

- 8. Other than egress courts, where occupants must egress from an exterior space through the building for means of egress, exit access doors shall be permitted to be equipped with an approved locking device where installed and operated in accordance with all of the following:
  - 8.1. The maximum occupant load shall be posted where required by Section 1004.9. Such sign shall be permanently affixed inside the building and shall be posted in a conspicuous space near all the exit access doorways.
  - 8.2. A weatherproof telephone or two-way communication system installed in accordance with Sections 1009.8.1 and 1009.8.2 shall be located adjacent to not less than one required exit access door on the exterior side.
  - 8.3. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.
  - 8.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m2) in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.
  - 8.5. A readily visible durable sign shall be posted on the interior side on or adjacent to each locked required exit access door serving the exterior area stating: "THIS DOOR TO REMAIN UNLOCKED WHEN THE OUTDOOR AREA IS OCCUPIED." The letters on the sign shall be not less than 1 inch (25.4 mm) high on a contrasting background.
  - 8.6. The occupant load of the occupied exterior area shall not exceed 300 occupants in accordance with Section 1004.

OSFM

1010 – Doors, Gates and Turnstiles

- 9. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.

- 10. Locking devices are permitted on doors to balconies, decks or other exterior spaces of 250 square feet (23.23 m2) or less, serving a private office space.

OSFM

1010 – Doors, Gates and Turnstiles

- **New section:**
- **[BE] 1010.2.8 Locking arrangements in educational occupancies.** In Group E occupancies, Group B educational occupancies and Group I-4 occupancies, egress doors from classrooms, offices and other occupied rooms with locking arrangements designed to keep intruders from entering the room shall comply with all of the following conditions:
  - 1. The door shall be capable of being unlocked from outside the room with a key or other approved means.
  - 2. The door shall be openable from within the room in accordance with Section 1010.2.
  - 3. Modifications shall not be made to listed panic hardware, fire door hardware or door closers.
  - 4. Modifications to fire door assemblies shall be in accordance with NFPA 80.
- Remote locking or unlocking of doors from an approved location shall be permitted in addition to the unlocking operation in Item 1.

OSFM

1010 – Doors, Gates and Turnstiles

- **1010.2.9 Panic and fire exit hardware.** Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

- **Adds the following new exceptions:**

- 3. Exit access doors serving occupied exterior areas shall be permitted to be locked in accordance with Section 1010.2.4, Item 8.
- 4. Courtrooms shall be permitted to be locked in accordance with Section 1010.2.13, Item 3.

OSFM

1010 – Doors, Gates and Turnstiles

- **New sections:**

- **1010.2.9.1 Refrigeration machinery room.** Refrigeration machinery rooms larger than 1,000 square feet (93 m2) shall have not less than two exit or exit access doorways that swing in the direction of egress travel and shall be equipped with panic hardware or fire exit hardware. **(1006.2.2.2)**
- **1010.2.9.2 Rooms with electrical equipment.** See the NC Electrical Code, Article 110 for electrical room egress hardware requirements. **(1006.2.2.4)**
  - Same language from current code – just added section #

OSFM

1010 – Doors, Gates and Turnstiles

- **New section:**
- **[BE] 1010.2.10 Monitored or recorded egress.** Where electrical systems that monitor or record egress activity are incorporated, the locking system shall comply with Section 1010.2.11, 1010.2.12, 1010.2.13, 1010.2.14 or 1010.2.15, or shall be readily openable from the egress side without the use of a key or special knowledge or effort.
  - Electrically locked doors
  - Sensor release doors
  - Delayed egress
  - Controlled egress
  - Correctional facilities

OSFM

1010 – Doors, Gates and Turnstiles

- **New section:**
- **[BE] 1010.5.2 Security access turnstiles**. Security access turnstiles that inhibit travel in the direction of egress utilizing a physical barrier shall be permitted to be considered as a component of the means of egress, provided that all of the following criteria are met:
  - 5 listed conditions that must be met

OSFM

1017 – Exit Access Travel Distance

- **New sections:**
- **1017.3.2 Atriums.** Exit access travel distance for areas open to an atrium shall comply with the requirements of Sections 1017.3.2.1 through 1017.3.2.3.
  - **1017.3.2.1 Egress not through the atrium.** Where required access to the exits is not through the atrium, exit access travel distance shall comply with Section 1017.2.
  - **1017.3.2.2 Exit access travel distance at the level of exit discharge.** Where the path of egress travel is through an atrium space, exit access travel distance at the level of exit discharge shall be determined in accordance with Section 1017.2.
  - **1017.3.2.3 Exit access travel distance at other than the level of exit discharge.** Where the path of egress travel is not at the level of exit discharge from the atrium, that portion of the total permitted exit access travel distance that occurs within the atrium shall be not greater than 200 feet (60 960 mm).

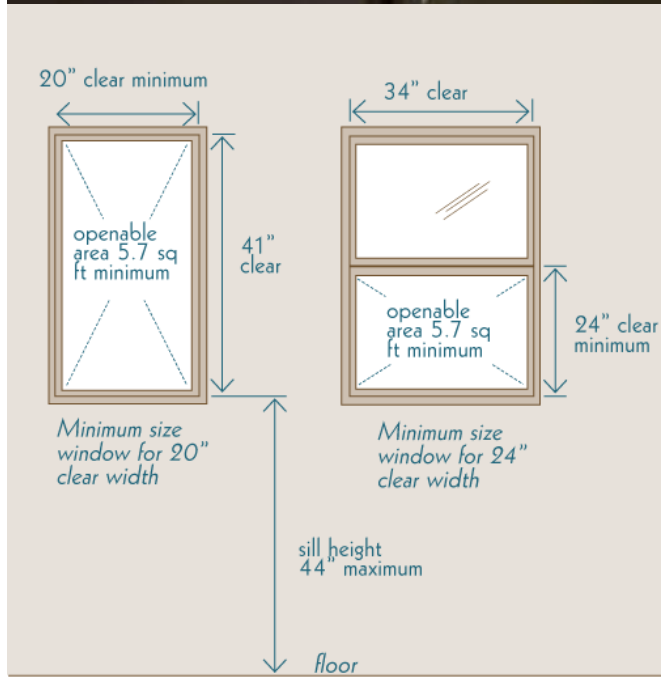
1030 – Assembly

- **Adds automatic sprinkler requirements for open-air seating in new Section 1030.6.3.1**
- **[BE] 1030.6.3.1 Automatic sprinklers.** Enclosed areas with walls and ceilings in buildings or structures containing open-air assembly seating shall be protected with an approved automatic sprinkler system in accordance with Section 903.3.1.1.
  - **Exceptions:**
  - 1. The floor area used for contests, performances or entertainment, provided that the roof construction is more than 50 feet (15 240 mm) above the floor level and the use is restricted to low-fire hazard uses.
  - 2. Press boxes and storage facilities less than 1,000 square feet (93 m2) in area.
  - 3. Open-air assembly seating facilities where seating and the means of egress in the seating area are essentially open to the outside.

OSFM

1031 – Emergency Escape and Rescue

- **1031.2 Where required.**
- 1. Group R-2 occupancies located in stories with only one exit or access to only one exit as permitted by Tables 1006.3.4(1) and 1006.3.4(2).
- 2. R-4 occupancies.
- 3. Group R-2 and R-3 occupancies located below the fourth story without automatic fire sprinkler systems.
- 4. Group E classrooms without automatic fire sprinkler systems where a minimum of one of the following applies:
  - 1. Cooperative Innovative High School Programs.
  - 2. Places of worship not used as a private or public school.
  - 3. Classrooms with less than 2 means of egress.
  - 4. Classrooms or spaces complying with all the following:
    - 4.1 Doors open directly to a corridor with exit access in one direction and provide access through adjacent classrooms or directly to a separate smoke compartment with exit access in the other direction, and
    - 4.2 The compartments are separated by smoke barriers having a 1-hour fire resistance rating with self-closing or automatic closing doors, and
    - 4.3 The length of travel to exits along such paths shall not exceed 150 ft. (45 m) and
    - 4.4 Each communicating door shall be identified, and
    - 4.5 No locking device shall be allowed on the communicating doors.



1031 – Emergency Escape and Rescue

- **Exceptions:**
- 1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.
- 2. Emergency escape and rescue openings are not required from ~~classrooms with 2 means of egress~~, basements, or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior egress balcony that opens to a public way.
- 3. Basements without habitable spaces and having not more than 200 square feet (18.6 m2) in floor area shall not be required to have emergency escape and rescue openings.
- 4. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500.
- 5. ~~Within individual dwelling and sleeping units in Groups R-2 and R-3, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, sleeping~~ Sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
  - 5.1. One means of egress and one emergency escape and rescue opening.
  - 5.2. Two means of egress.

OSFM

1032 – Maintenance of Means of Egress

- **New section:**
- **1032.2.1.1 Fire escapes.** Security enclosures, fences or screening for fire escape stairways and ladders shall be approved by the fire code official and shall be constructed such that they do not impede egress to the public way. Means shall be provided for emergency personnel to access the fire escape stairways and ladders from the exterior of the enclosure.

OSFM

1032 – Maintenance of Means of Egress

- **New section:**
- **[BE] 1032.2.2 Locking arrangements in educational occupancies.** In Group E occupancies, Group B educational occupancies and Group I-4 occupancies, egress doors from classrooms, offices and other occupied rooms shall be permitted to be provided with locking arrangements designed to keep intruders from entering the room where all of the following conditions are met:
  - 1. The door shall be capable of being unlocked from outside the room with a key or other approved means.
  - 2. The door shall be openable from within the room in accordance with Section 1010.2.
  - 3. Modifications shall not be made to existing listed panic hardware, fire door hardware or door closers.
  - 4. Modifications to fire door assemblies shall be in accordance with NFPA 80.

Duplicated requirement from Section 1010.2.8 – this section is specifically for the maintenance of these locking arrangements

OSFM

1032 – Maintenance of Means of Egress

- **Relocated from 604.6**
- **1032.10 Emergency lighting equipment inspection and testing.** Emergency lighting, including means of egress illumination and exit signs, not covered by NFPA 110 and NFPA 111 shall be maintained in accordance with Section 109 and shall be inspected and tested in accordance with Sections 1032.10.1 and 1032.10.2.
  - **1032.10.1 Activation test.** Emergency lighting equipment and exit signs shall be tested monthly for a duration of not less than 30 seconds. The test shall be performed manually or by an automated self-testing and self-diagnostic routine. Where testing is performed by self-testing and self-diagnostics, a visual inspection of the emergency lighting equipment shall be conducted monthly to identify any equipment displaying a trouble indicator or that has become damaged or otherwise impaired.
  - **1032.10.2 Power test.** Battery-powered emergency lighting equipment and exit signs shall be tested annually by operating the equipment on battery power for not less than 90 minutes.

OSFM

1032 Maintenance Of The Means Of Egress

Section 1032.11 Fire Escape Stairways. All fire escape *stairways* and *ladders* shall be kept clear and unobstructed at all times and shall be maintained in good working order. All fire escape *stairways* that need to be replaced or repaired shall comply with the requirements of the *International Existing Building Code*.

Section 1032.11.1 Examination. Fire escape *stairways*, balconies, and *ladders* shall be examined for structural adequacy and safety in accordance with Section 1031.10 by a *registered design professional* every 5 years, or as required by the fire code official.

Section 1032.11.2 Examination Report. Records of inspections, testing, and maintenance shall be maintained in accordance with Section 107.3.

Section 1032.11.3 Marking. The open space under fire escape *stairways* or *ladders* shall not be used for any purpose. *Approved* signs or other *approved* markings that include the words FIRE ESCAPE – KEEP CLEAR shall be provided to prohibit the obstruction thereof.

The delayed effective date of this Rule is January 1, 2021.

OSFM

Example of why this is needed

2024 NCFC – Chapter 12 Energy Systems

- **Consolidates new and existing energy related requirements**
- 1201 General
- 1202 Definitions
- 1203 Emergency and standby power systems – relocated from 604 in current code
- 1204 Portable generators
- 1205 Solar photovoltaic power systems – relocated from 605 in the current code
- 1206 Stationary fuel cell energy systems
- 1207 Electrical energy storage systems

OSFM

Modern Battery Technologies

- Flow batteries
- Sodium-sulfur batteries
- Lithium-ion batteries
- Other technologies on the way

Hazard Mitigation Analysis

- **Hazard mitigation analysis (HMA) shall be provided for:**
- Battery technologies not specifically covered
- Multiple battery technologies in a room with a potential for adverse interactions
- When allowed as a basis for increasing MAQs

OSFM

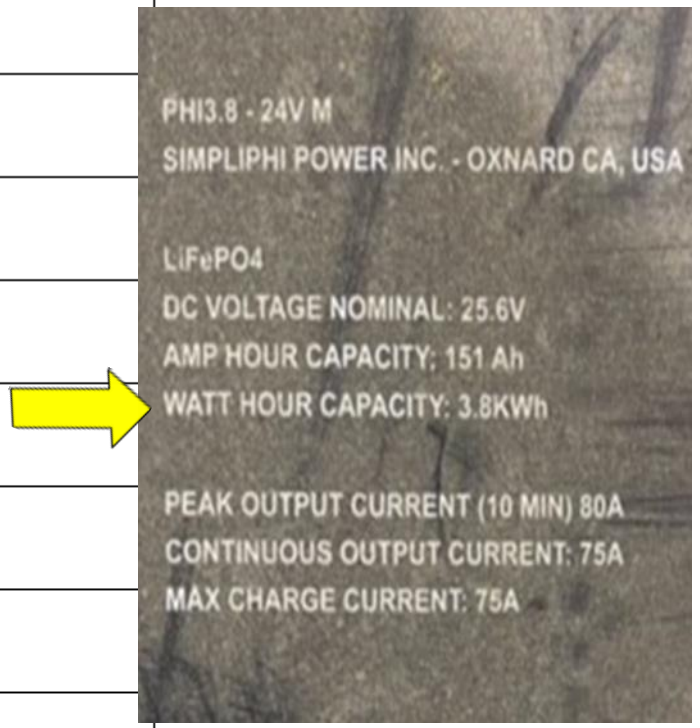
Section 1207 – Electrical Energy Storage Systems

- Construction permit and operational permit required
- Mobile ESS systems addressed
- UL 9540A is used to evaluate thermal runaway
- Amount of stored power can only exceed Table 1207.5 if based on hazard mitigation analysis or large-scale fire testing
  - No longer becomes Group H
  - Mitigation measures provided to address the hazards
- No longer treated as Incidental Use in the IBC

OSFM

Table 1207.1.1 – ESS Threshold Quantities

TECHNOLOGY	ENERGY CAPACITY[a]
Capacitor ESS	3 kWh
Flow batteries[b]	20 kWh
Lead-acid batteries, all types	70 kWh[c]
Lithium-ion batteries	20 kWh
Nickel metal hydride (Ni-MH)	70 kWh
Nickel-cadmium batteries (Ni-Cd)	70 kWh
Other battery technologies	10 kWh
Other electrochemical ESS tech-nologies	3 kWh



OSFM

Table 1207.5 – Electrochemical ESS MAQ

TECHNOLOGY	MAXIMUM ALLOWABLE QUANTITIES [a]
STORAGE BATTERIES	
Flow batteries[b]	600 kWh
Lead-acid, all types	Unlimited
Lithium-ion	600 kWh
Nickel metal hydride (Ni-MH)	Unlimited
Nickel-cadmium (Ni-Cd)	Unlimited
Other battery technologies	200 kWh
CAPACITORS	
All types	20 kWh
OTHER ELECTROCHEMICAL ESS	
All types	20 kWh

Table 1207.6 – Electrochemical ESS Technology-Specific Requirements

COMPLIANCE REQUIRED[b]		BATTERY TECHNOLOGY				OTHER ESS AND BATTERY TECHNOLOGIES[b]	CAPACITOR ESS[b]
Feature	Section	Lead-acid	Ni-Cd and Ni-MH	Lithium-ion	Flow		
Exhaust ventilation	1207.6.1	Yes	Yes	No	Yes	Yes	Yes
Explosion control	1207.6.3	Yes[a]	Yes[a]	Yes	No	Yes	Yes
Safety caps	1207.6.4	Yes	Yes	No	No	Yes	Yes
Spill control and neutralization	1207.6.2	Yes[c]	Yes[c]	No	Yes	Yes	Yes
Thermal runaway	1207.6.5	Yes[d]	Yes	Yes[e]	No	Yes[e]	Yes

OSFM

Table 1207.7 – Indoor Installations

COMPLIANCE REQUIRED		DEDICATED-USE BUILDINGS[a]	NONDEDICATED-USE BUILDINGS[b]
Feature	Section		
Dwelling units and sleeping units	1207.7.3	NA	Yes
Elevation	1207.5.3	Yes	Yes
Fire suppression systems	1207.5.5	Yes[c]	Yes
Fire-resistance-rated separations	1207.7.4	Yes	Yes
General installation requirements	1207.4	Yes	Yes
Maximum allowable quantities	1207.5.2	No	Yes
Size and separation	1207.5.1	Yes	Yes
Smoke and automatic fire detection[e]	1207.5.4	Yes[d]	Yes
Technology specific protection	1207.6	Yes	Yes

OSFM

Table 1207.8 – Outdoor Installations

COMPLIANCE REQUIRED		REMOTE INSTALLATIONS[a]	INSTALLATIONS NEAR EXPOSURES[b]
Feature	Section		
All ESS installations	1207.4	Yes	Yes
Clearance to exposures	1207.8.3	Yes	Yes
Fire suppression systems	1207.5.5	Yes[c]	Yes
Maximum allowable quantities	1207.5.2	No	Yes
Maximum enclosure size	1207.5.6	Yes	Yes
Means of egress separation	1207.5.8	Yes	Yes
Size and separation	1207.5.1	No	Yes[d]
Smoke and automatic fire detection	1207.5.4	Yes	Yes
Technology-specific protection	1207.6	Yes	Yes
Vegetation control	1207.5.7	Yes	Yes

Remote outdoor installations are separated by ≥100’ from lot lines, buildings, public ways, stored combustibles, haz-mat

OSFM

Table 1207.8 – Outdoor Installations

- ESS can be installed outdoors on the exterior wall IF:
  1. Energy capacity of individual ESS units ≤20 kWh
  2. ESS must comply with technology-specific provisions
  3. ESS is installed in accordance with the manufacturer's instructions and listing
  4. Individual ESS units shall be separated ≥3'
  5. ESS separated ≥5' from doors, windows, operable openings into buildings or HVAC inlets

FCO can approve lesser separation distances in Items 4 and 5 when based on large-scale fire testing

OSFM

Table 1207.9 – Special ESS Installations

COMPLIANCE REQUIRED		ROOFTOPS[a]	OPEN PARKING GARAGES[b]
Feature	Section		
All ESS installations	1207.4	Yes	Yes
Clearance to exposures	1207.9.3	Yes	Yes
Fire suppression systems	1207.9.4	Yes	Yes
Maximum allowable quantities	1207.5.2	Yes	Yes
Maximum enclosure size	1207.5.6	Yes	Yes
Means of egress separation	1207.5.8	Yes	Yes
Open parking garage installations	1207.9.6	No	Yes
Rooftop installations	1207.9.5	Yes	No
Size and separation	1207.5.1	Yes	Yes
Smoke and automatic fire detection	1207.5.4	Yes	Yes
Technology-specific protection	1207.6	Yes	Yes

OSFM

1207.10 – Mobile ESS

COMPLIANCE REQUIRED		DEPLOYMENT[a]
Feature	Section	
All ESS installations	1207.4	Yes[b]
Fire suppression systems	1207.5.5	Yes[c]
Maximum allowable quantities	1207.5.2	Yes
Maximum enclosure size	1207.5.6	Yes
Means of egress separation	1207.5.8	Yes
Size and separation	1207.5.1	Yes[d]
Smoke and automatic fire detection	1207.5.4	Yes[e]
Technology-specific protection	1207.6	Yes
Vegetation control	1207.5.7	Yes

Section 1207.11 –ESS in Group R-3 & R-4

- Must be listed for residential installation – UL 9540
- Individual ESS units ≤20 kWh
  - Detached garages & detached accessory structures - 80 kWh
  - Attached garages - 80 kWh - Separated from the dwelling unit and sleeping units per IBC
  - Utility closets, storage or utility spaces within dwelling units and sleeping units - 40 kWh
  - Outdoors on exterior walls/ground - 80 kWh - ≥3’ from doors and windows

Use of electric vehicles to power a dwelling unit shall comply with manufacturer’s instructions and NFPA 70

OSFM

What you need to know?

- Resiliency/cost savings are driving demand for new energy solutions
- Installations are being integrated into new projects
- Hazards associated with various energy technologies
- Prudent to share information with emergency responders and other stakeholders
- New code requirements cover traditional, new and future technologies
- Future ESS code changes are still needed

OSFM

ESS Resources

- Clean Energy Clearinghouse - Sustainable Energy Action Committee – ESS based on IBC, IFC, IRC and NEC

ESS Resources

- Energy Storage Systems Resource - UL Code Authorities

Chapter 22 Combustible Dust-Producing Operations

- Adds 5 new exceptions to the scoping provisions
- Section 2203 changed from precautions to dust explosion prevention
  - Critical depth layers
  - Dust handling equipment
  - Dust collection systems
  - Sources of ignition
  - Housekeeping
  - Standard operational procedures
  - Emergency response plan
  - Training
- Section 2204 changed from explosion protection to dust explosion screening tests
- New Section 2205 provides list of referenced standards

OSFM

2303.2.1 - Height

2303.2.1 Height.

The height of the emergency disconnect switch shall be not less than 42 inches (1067 mm) and not more than 48 inches (1219 mm) measured vertically, from the floor level to the activating button.

The delayed effective date of this Rule is January 1, 2022.

OSFM

2304 Dispensing Operations

- **2304.2.4 Obstructions to view.** ~~Dispensing devices shall be in clear view of~~ The attendant shall have a direct line of sight to observe fuel-dispensing operations at all times. Obstructions shall not be placed between the dispensing area and the attendant.
- **Exception:** Video monitoring systems shall be permitted to supplement direct line of sight supervision where *approved* by the *fire code official*.

OSFM

2305 Operational Requirements

- **2305.1.1 Delivery vehicle location.** Where liquid delivery to above-ground storage tanks is accomplished by positive-pressure operation, tank vehicles shall be positioned not less than 25 feet (7620 mm) from tanks receiving Class I liquids and 15 feet (4572 mm) from tanks receiving Class II and IIIA liquids, measured from the tank to the nearest unloading valve on the tank vehicle.

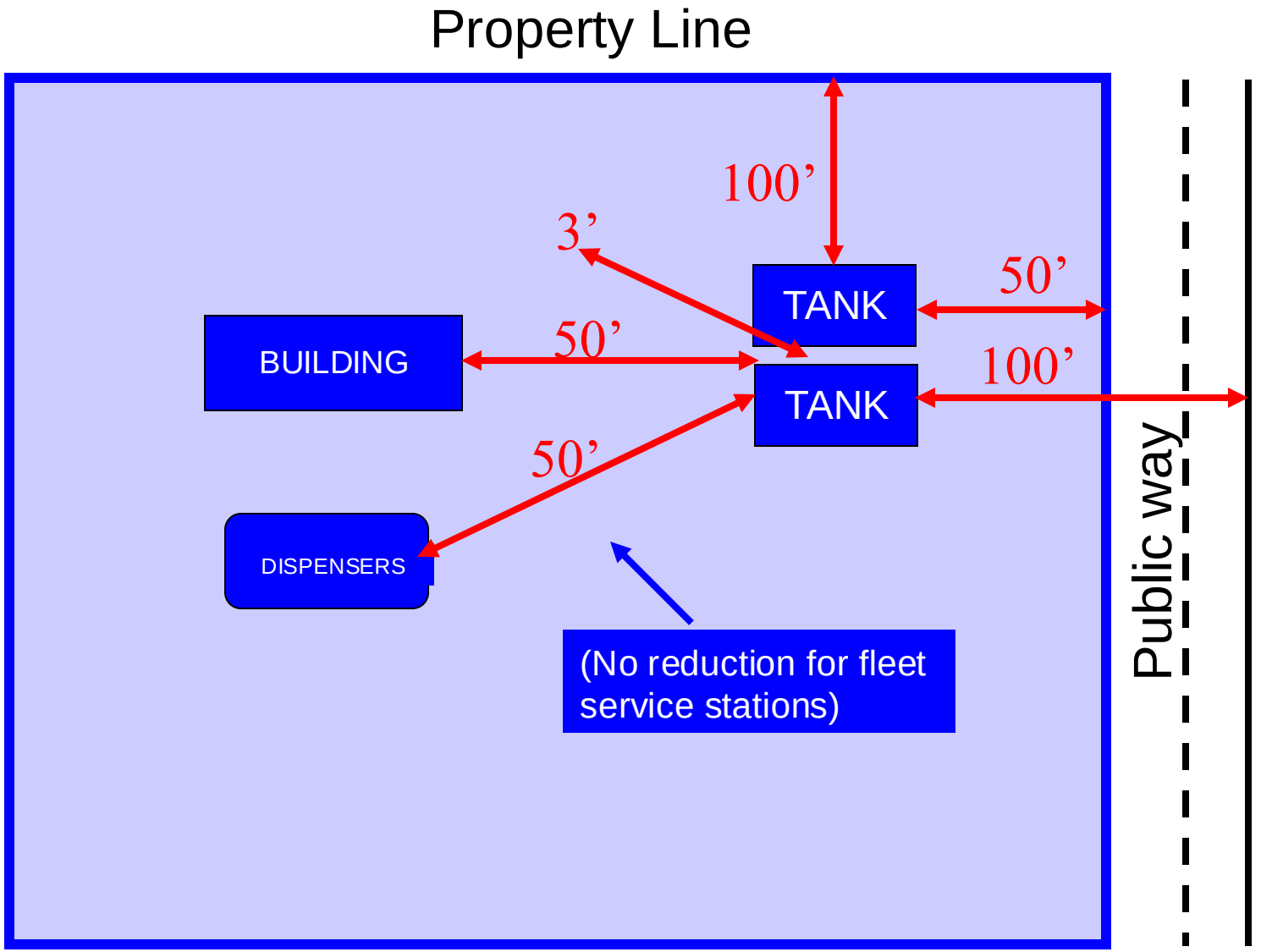
OSFM

2306 Fuel Dispensing Facilities

2306.2.3 Above-ground tanks located outdoors, above grade.

6. ~~Listed UL 142 above ground storage tanks with spill control, 1,100 gallons(4164 L) or less in capacity, shall be permitted to be used to store Class I liquids at fleet service stations.~~

Above-ground tanks used for outdoor, above-grade storage of Class I liquid motor fuels at a *fleet vehicle motor fuel-dispensing facility* shall be limited to a maximum individual capacity of 1,100 gallons if *listed* and *labeled* in accordance with UL 142. Tank locations shall be in accordance with Table 2306.2.3. Secondary containment shall be provided in accordance with Section 2306.5



2306 Fuel Dispensing Facilities

- Adds new subsection under 2306.7.3

- **2306.7.3.1 Additional impact protection.** The *fire code official* is authorized to require additional impact protection in accordance with Section 312 where dispensing devices are located in areas near parking areas, multiple dispensing devices, highway on- and off-ramps, and other areas where there is a higher potential for vehicle impacts.

2307 LP Gas Fuel Dispensing Facilities

Entire section was added after being deleted from 2018 edition. Section doesn't apply if exception is applicable.

2307.1 General. Motor fuel-dispensing facilities for liquefied petroleum gas (LP-gas) fuel shall be in accordance with this section and Chapter 61. ~~A license is required by the North Carolina Department of Agriculture and shall be readily available upon request.~~

Exception: Facilities licensed by the North Carolina Department of Agriculture. The license shall be readily available upon request.

2308 Compressed Natural Gas Dispensing Facilities

- **Adds the following new sections:**
- **2308.2.3 Residential fueling appliance (RFA).** Residential fueling appliances shall be listed and installed in accordance with the installation requirements of CSA/ANSI NGV 5.1, manufacturer's installation instructions and Section 413 of the International Fuel Gas Code. The capacity of an RFA shall not exceed 5 cubic feet per minute (0.14 m3/min) of natural gas.
- **2308.2.4 Vehicle fueling appliance (VFA).** Nonresidential fueling appliances shall be listed and installed in accordance with the installation requirements of CSA/ANSI NGV 5.2, manufacturer's installation instructions and the requirements of Section 413 of the International Fuel Gas Code for VFAs. The capacity of the VFA shall not exceed 10 cubic feet per minute (0.28 m3/min) of natural gas.

2309 Hydrogen Fuel Dispensing Facilities

- **Deletes the entire Section 2309.6 and replaces it with a new section**
- **2309.6 Repairs, purging, defueling and discharge.** The repair, purging, defueling or discharge activities associated with hydrogen motor fuel-dispensing and generation systems, storage tanks and the installation of the systems shall be in accordance with Chapters 53 and 58 and NFPA 2.
- Exception provided for motor fuel tank and piping unless required to be defueled
- Also a requirement for documented procedure to be onsite and available to fire code official upon request

OSFM

Section 2404.3.3.6 – Spray Booth Size

- **Individual spray booths are no longer limited to 1,500 ft²**

- Now limited to the smaller of:
  - 10% of the floor area of the building
  - Basic allowable area for Group H-2

- A single booth can be 500 ft²
  - Even when it exceeds 10%

H-2 Areas

50,000 sq. ft. Group F-1

Type IIB Construction

5,000 sq. ft. maximum area (aggregate)

- Type IA – 21,000
- Type IB – 16,500
- Type IIA – 11,000
- Type IIB – 7,000
- Type IIIA – 9,500
- Type IIIB – 7,000
- Type IV – 10,500
- Type VA – 7,500
- Type VB – 3,000

NC Building Code Table 506.2 – 7,000 square feet maximum area for Type IIB in H-2 occupancy

OSFM

2810 – Outdoor Pallet Storage – Mfg. and Recycling Facilities

- **2810.1 General.** The outside storage of wood pallets and wood composite pallets on the same site as a pallet manufacturing or pallet recycling facility shall comply with Sections 2810.2 through 2810.11.
  - Site plan
  - Fire prevention plan
  - Fire safety and evacuation plan
  - Security management plan
  - Clearances to exposures – property lines and buildings
  - Storage height
  - Fire flow
  - Fire protection
  - Alternate approach to clearances if 3 conditions are met

Chapter 31 – Tents/Membrane Structures

- **New Sections:**
- **3103.3.1 Special amusement area.** *Tents* and other *membrane structures* erected as a special amusement area shall be equipped with an *automatic sprinkler system* in accordance with Section 914.7.1.
- **3103.9.2 Tents and membrane structures greater than 7,500 square feet.** *Tents* and *membrane structures* greater than 7,500 square feet (697 m^2) shall be designed and constructed to comply with Sections 1606 through 1609 of the *International Building Code*.
- **3103.9.3 Tents and membrane structures with an occupant load greater than 1,000.** *Tents* and *membrane structures* with an occupant capacity greater than 1,000 persons shall be designed and constructed to comply with Sections 1606 through 1609 of the *International Building Code*.

OSFM

Chapter 31 – Tents/Membrane Structures

- **New section 3106 for Outdoor Assembly Events**

- **OUTDOOR ASSEMBLY EVENT.** ~~An outdoor gathering of persons for any purpose.~~ An outdoor area attended by more than 1000 persons, which includes a theatrical exhibition, fair, festival, display, entertainment, amusement, rally, or similar gatherings, but does not include assemblages held in a manner consistent with the *approved* property or occupancy use.

Chapter 31 – Tents/Membrane Structures

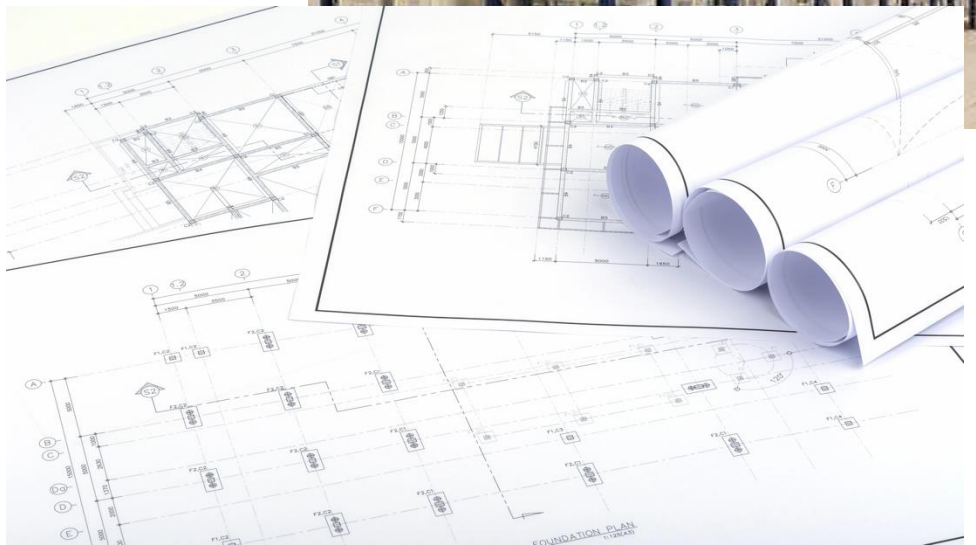
- **New section 3107 for Operational Requirements**

- These requirements were relocated from 3104

- Adds new Table 3107.13.2 for location LP gas containers – IFC referenced Table 6104.3 but because NC deletes that table, we had to move it and renumber it

Section 3201.3.1 – High-Piled Combustible Storage – Construction Plans

- **3201.3.1 Approved construction documents.** Following approval of the construction documents, a copy of the approved plans shall be maintained on the premises in an approved location.



Section 3201.3.1 – High-Piled Combustible Storage – Approved Layout

- **3201.3.2 Approved storage layout.** A floor plan, of legible size, shall be provided, mounted on a wall and protected from damage. The floor plan shall be mounted in an approved location and show the following as applicable:
- 1. Locations, dimensions and rack layout of high-piled storage areas.
- 2. Design storage height for each storage area.
- 3. Types Class of commodities.
- 4. Commodity clearance between top of storage and the sprinkler deflector for each storage arrangement.
- 5. Aisle dimensions between each storage array.
- 6. For palletized and solid-piled storage, the maximum pile volume for each storage array.
- 7. Location and classification of commodities in accordance with Section 3203.
- 8. Location of required fire department access doors.
- 9. Location of valves controlling the water supply of ceiling and in-rack sprinklers.

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Section 3206.3 – High-Piled Storage Areas

- **2 changes as it relates to determining area for Table 3206.2**

1. **3206.3.1 Size of high-piled storage area.** The size of each high-piled storage area shall include the footprint of the actual high-piled storage racks, shelves or piles and the following aisles:
   1. Interior aisles within the footprint of the storage area.
   2. An aisle around the perimeter of the footprint with a minimum width as required in Section 3206.10.1 or the dimension to a full height wall, whichever is less.

Section 3206.3 – High-Piled Storage Areas

2. 3206.3.2 Multiple high-piled storage areas. Where a building contains multiple high-piled storage areas, the aggregate of all high-piled storage areas shall be used for the application of Table 3206.2 unless the high-piled storage areas are separated in accordance with one of the following:

1. High-piled storage areas separated by fire barriers with a minimum fire-resistance-rating of 1 hour constructed in accordance with Section 707 of the International Building Code.

2. In buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, high-piled storage areas separated by 100 feet (30 480 mm) or more. The area providing the separation shall not contain high-piled combustible storage.

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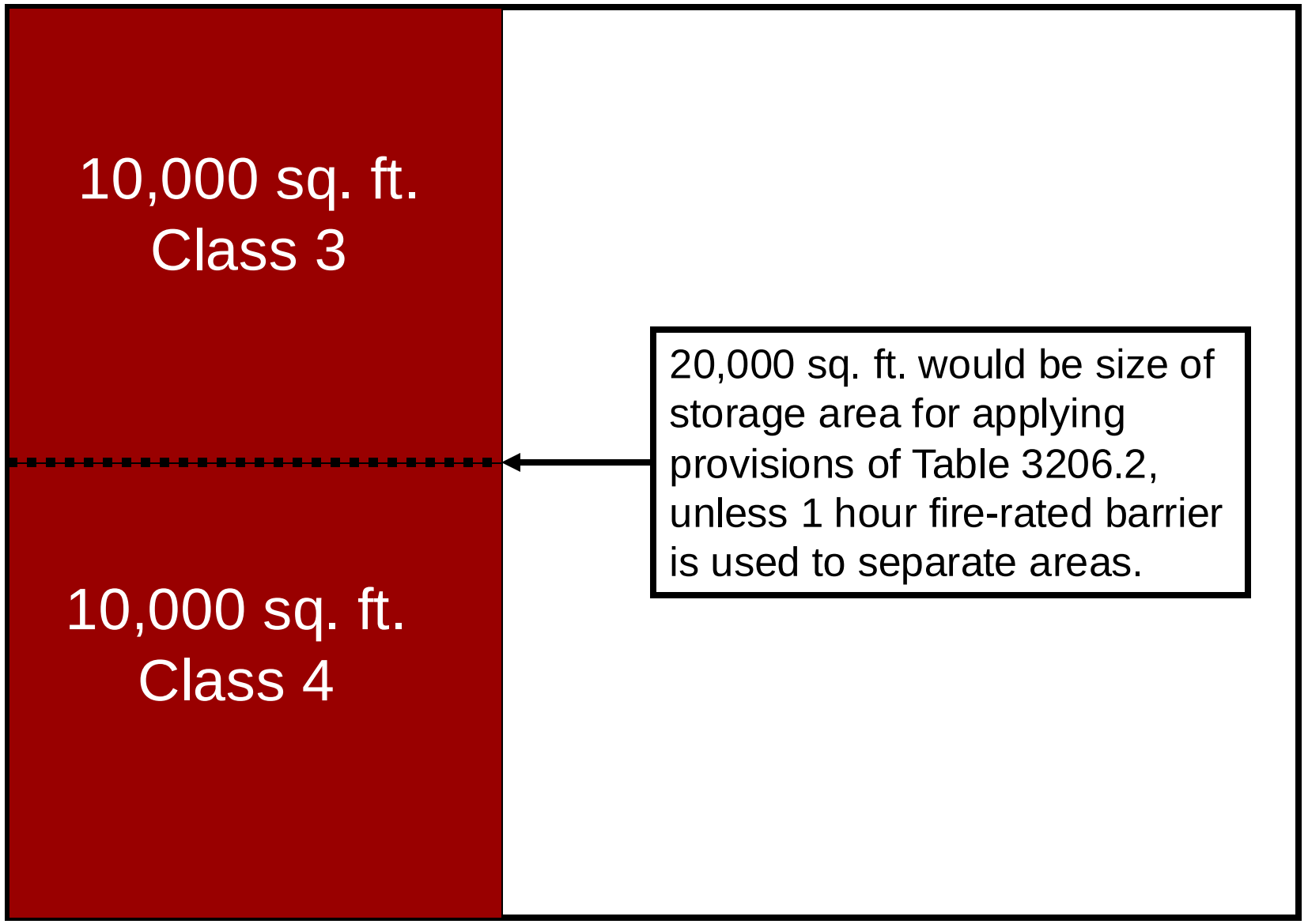
3206.3.2 Multiple high-piled storage areas



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Section 3303 – Owner's Responsibility

- Site safety plan must be developed
  - Components listed in Section 3303.1.1
- Submitted and approved prior to the start of construction
- Site safety director
  - Designated by the owner
  - Must ensure compliance with site safety plan
  - Responsible for guard service if provided
  - Must complete daily fire safety inspections – maintain until CO
    - Items to inspect are listed in Section 3303.3
  - Training and qualifications shall be submitted to FCO for approval

Section 3303.5 - Types IV-A, IV-B and IV-C construction

- For buildings >6 stories in height that require noncombustible protection
- Standpipe require when construction >40’ above LLFDVA
  - Connections provided to within 1 floor of active construction with a floor or deck
- Water supply required during construction
- 1 layer of noncombustible protection to be applied on all **interior** levels >4 levels below active mass timber construction
- 1 layer of noncombustible protection to be applied on all **exterior** levels >4 levels below active mass timber construction

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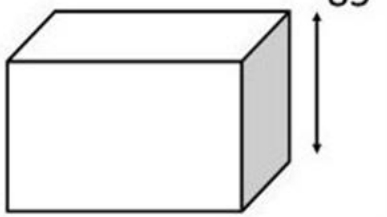
CODE UNLIMITED

2021 Code Change Proposals

Type IV Construction - Tall Wood Buildings

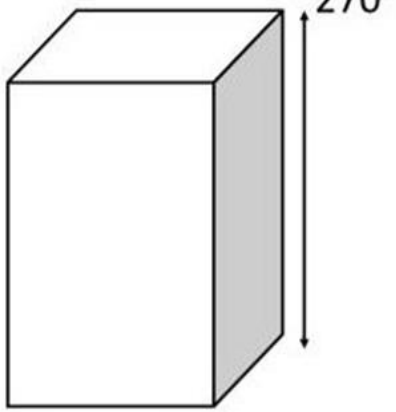
IBC 2015

TYPE IV-HT

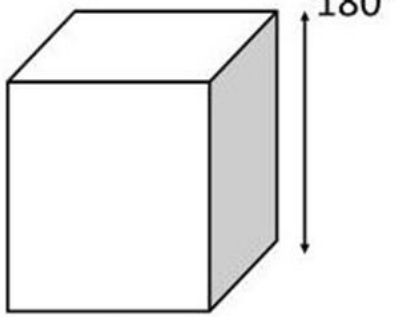


IBC 2021

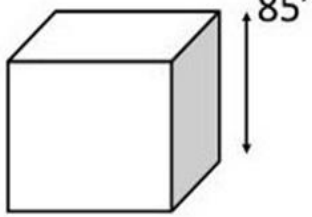
TYPE IV-A



TYPE IV-B



TYPE IV-C



Occupancy Groups: A, B, M, R, and S				
Max. Building Height (ft)				
	85	270	180	85
Max. Stories per Occupancy				
A-3 & A-4	4	18	12	6
B	6	20	12	9
M	5	12	8	6
R-2	5	18	12	9
S-1	5	10	7	5

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Section 3305.5 – Fire Watch Requirements

- Fire watch provided for **demolition** IF:
  - Required by fire safety plan, or
  - Required by FCO

- Fire watch provided for **new construction** IF:
  - >40’ above lowest adjacent grade,
  - New multi-story construction >50,000 ft² per story,
  - Required by fire safety plan, OR
  - Required by FCO

OSFM

Section 3313 – Water Supply during Construction

- **Water supply required when combustible building materials arrive on site**
  - Minimum 500 GPM
  - Fire hydrant ≤500’ of the combustible materials

- **Water supply required when standpipe is available**
  - Minimum 500 GPM
  - Fire hydrant ≤100’ of FDC

Section 3313 – Water Supply during Construction

- **Minimum fire flow of 500 GPM is increased for Type III, IV or V buildings before vertical construction commences**
  - Full fire flow if building ≤30’ of property line that can be built on
  - 50% of full fire flow if building >30’ and ≤60’ of property line that can be built on
  - Minimum of 500 GPM is acceptable during construction if building >60’ of property line that can be built on

OSFM

Chapter 38 – Higher Education Laboratories

- **New Chapter**
- Addresses the unique needs of laboratories in higher education institutions.
- Addresses both new and existing buildings and new and existing laboratories.
- In aggregate, the quantities will exceed the MAQs and could result in the need for a Group H occupancy classification.
- However, it is believed that the lower density of hazardous materials often mitigates the overall risk.
- Requires certain safety measures such as the use of storage cabinets and fume hoods.
- See Section 428 of the International Building Code for construction requirements

Section 3803 – General Requirements

- **3803 – General safety provisions**
- **3804 – Laboratory suite construction**
  - Table 3804.1.1 for the number of suites and percentage of MAQ's
  - Separation of nonlab and lab suites
  - General construction features – MOE, standby/emergency power, ventilation, liquid-tight floors, fire-extinguishing systems
- **3805 – Nonsprinklered laboratories**
  - Restricted to Chapter 50 MAQ's
  - 3805.2.1 – restricted storage
  - 3805.2.2 – restricted use
  - Percentage of MAQ as prescribed in Table 3805.4
- **3806 – Existing sprinklered laboratories**
  - Must comply with specific hazard chapters (50-67)
  - MAQ in accordance with Table 3806.2.1

Table 3804.1.1 – Design & Number of Lab Suites

FLOOR LEVEL		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER LAB SUITE[a]	NUMBER OF LAB SUITES PER FLOOR	FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS[b]
Above grade plane	21+	Not Allowed	Not Allowed	Not Allowed
	16–20	25	1	2[c]
	11–15	50	1	2[c]
	7–10	50	2	2[c]
	4–6	75	4	1
	3	100	4	1
	1–2	100	6	1
Below grade plane	1	75	4	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

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Table 3805.4 – Design & Number of Control Areas in Existing Nonsprinklered Labs

FLOOR LEVEL		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA[a, e]	NUMBER OF CONTROL AREAS PER FLOOR	FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS[b, c, d]
Above grade plane	Higher than 9	5	1	2[c]
	7–9	10	2	2[c]
	4–6	25	2	2[c]
	3	75	2	1
	1–2	100	4	1
Below grade plane	1	100	3	1
	2	75	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

OSFM

Table 3805.4 – Design & Number of Control Areas in Existing Sprinklered Labs

FLOOR LEVEL		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA[a]	NUMBER OF CONTROL AREAS PER FLOOR	FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS[b, d]
Above grade plane	21+	5	1	2[c]
	11–20	10	1	2[c]
	7–10	25	2	2[c]
	4–6	50	2	2[c]
	3	75	3	1
	1–2	100	4	1
Below grade plane	1	100	3	1
	2	75	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

OSFM

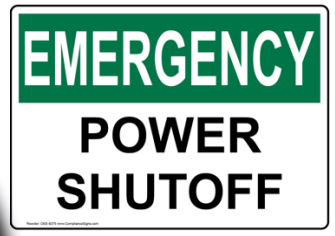
Chapter 39 – Processing/Extraction Facilities

- **New Chapter**
- 39 focuses on the processing and extraction of oils and fats from various plants.
- This process includes extraction by use of a solvent, desolventizing the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery.
- The processes used are not necessarily typical hazardous material processes, and often the systems and equipment associated with such processes may not be listed.
- This chapter provides the tools to appropriately address the hazards while also meeting the unique needs of industry.
- This chapter has provisions for a technical report prepared by a registered design professional and requires site inspections to make sure equipment and systems are installed as designed and approved.

OSFM

Chapter 39 – Processing/Extraction Facilities

- Facilities must comply with *International Building Code*
- Chapter is applicable to new and existing buildings
- **Section 3903 – Processing/extraction**
- **Section 3904 – Systems and equipment**
  - Listed and labeled to UL 1389 and mfg. installation requirements, OR
  - Registered design professional prepares technical report and submits to FCO for approval
- **Section 3905 – Safety systems**
  - Gas detection
  - Emergency shutoff



OSFM

Chapter 40 – Storage of Distilled Spirits & Wine

- **New Chapter**
  - Designed to coordinate the codes when addressing this operation
  - Distilled spirits have properties consistent with flammable liquids and proper safeguards must be provided for the occupancies housing these liquids
  - Group F-1 and S-1 for beverages >16% alcohol
  - Group F-2 and S-2 for beverages ≤16% alcohol

Reasons for this new chapter…..

- Clears up conflict with building code by adding these two exceptions in Chapter 3 of building code **(307.1.1 Uses other than Group H)**:
  - *18. Distilling or brewing of beverages conforming to the requirements of the International Fire Code*
  - *19. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements in the International Fire Code.*
- Removed *wooden* so the new codes will apply to storage in barrels or casks of any material
- The Distilled Spirits Council of United States (DISCUS) developed "Recommended Fire Protection for Distilled Spirits Beverage Facilities"
  - These guidelines were the basis for the new Chapter 40 requirements

Section 4003 – Precautions Against Fire

- **Protection of storage areas**
  - Fire sprinklers
  - Spill control — secondary containment not required
  - Ventilation
    - Continuous ventilation at 1 cfm/ft^2, OR
    - Monitored and ventilated to maintain ≤25% LFL
- **Control of ignition sources**
  - No smoking
  - Listed equipment for hazardous (classified) areas – NFPA 505 for industrial trucks
- **Lightning protection – NFPA 70 & 780**

Section 4004 - Storage

- Must be in accordance with Section 315 – general storage restrictions
- Unless purged, empty containers shall be treated as full
- Basement storage
  - Class I liquids not exceeding maximum allowable quantity with fire sprinklers
  - Class II and IIIA allowed with fire sprinklers
- No storage of combustible materials in the bulk beverage storage areas not related to the beverage storage activities

Section 4005 – Fire Protection

- ***903.2.9.3 Group S-1 distilled spirits or wine.*** *An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine.*

TYPE OF HAZARD	BASIC MINIMUM EXTINGUISHER RATING	MAXIMUM DISTANCE OF TRAVEL TO EXTINGUISHERS (feet)
Light (Low)	5-B	30
	10-B	50
Ordinary (Moderate)	10-B	30
	20-B	50
Extra (High)	40-B	30
	80-B	50

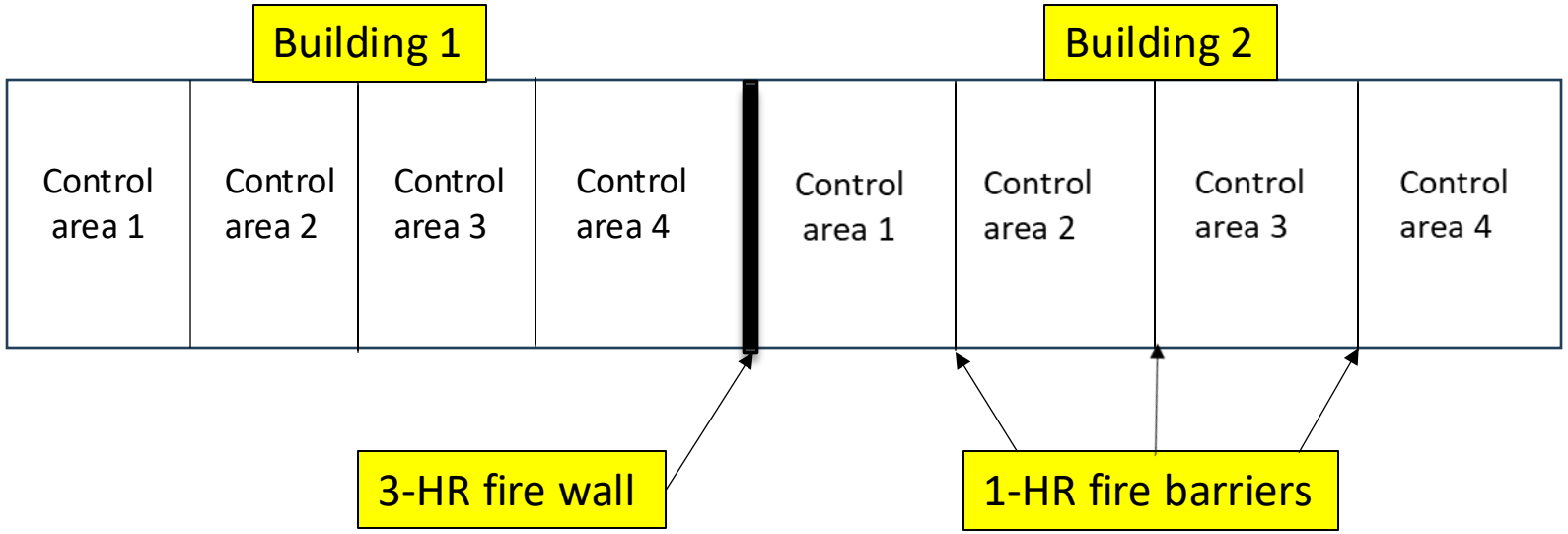
Section 4006 - Signage

- **NFPA 704 placards required for:**
  - stationary containers and above-ground tanks;
  - at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit;
  - and at specific entrances and locations designated by the fire code official.

OSFM

Section 5003.8.3.3 – # of Control Areas

- For the purposes of determining the number of control areas, each portion of a building separated by 1 or more fire walls shall be considered a separate building



5306 Medical Gases

- **5306.1 General.** Medical gases at health care-related facilities intended for patient ~~care, inhalation or sedation including, but not limited to, analgesia systems for dentistry, podiatry, veterinary and similar uses~~ or veterinary care shall comply with Sections 5306.2 through ~~5306.4~~ 5306.5 in addition to other requirements of this chapter and Section 427 of the *International Building Code*.
  - Ambulatory care wasn't listed so rather than trying to capture all types of care, it was simplified
  - Also added reference to Section 427 in building code
  - Construction requirements for the three storage were modified
  - Size of ventilation openings changed from 24 sq. inches to 36 for each 1,000 cu. ft. of gas
  - Also now correlates the gas cabinets and interior rooms
    - Current code required supply and exhaust ducts to be located within a 1 hour rated enclosure
    - New code was modified to have the same requirement when gas cabinets are used

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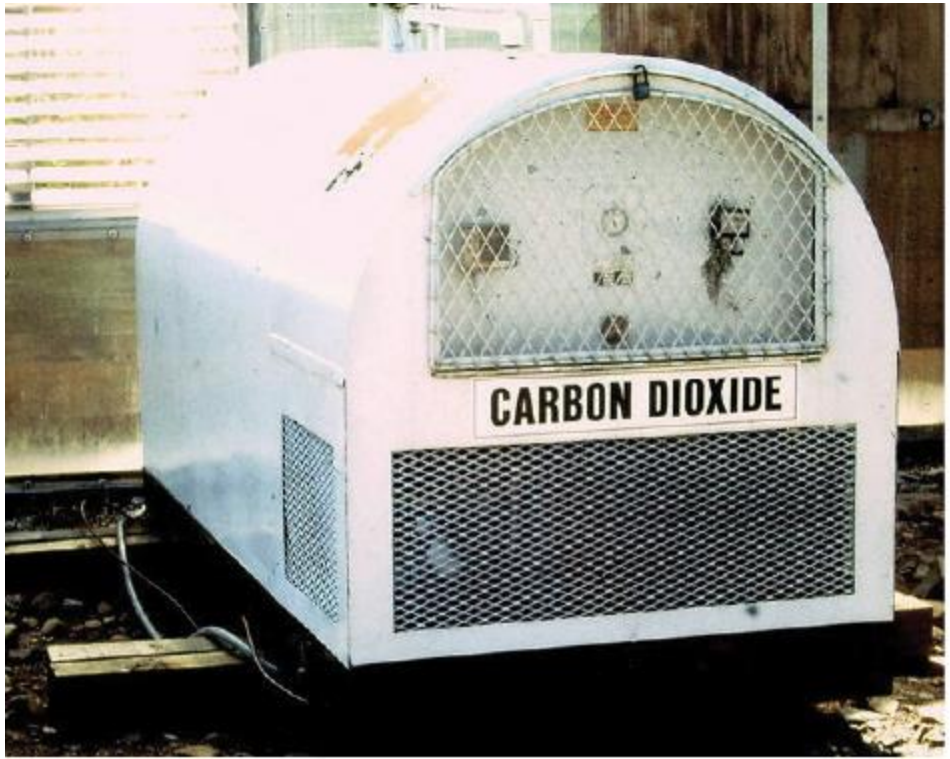
5307 Compressed gases not otherwise regulated

- Section was modified to distinguish the requirements between *insulated liquid carbon dioxide systems used in beverage dispensing applications* and *carbon dioxide enrichment systems*



5707 Mobile Fueling Operations

5707.1 General. On-demand mobile fueling operations that dispense Class I, II and III liquids into the fuel tanks of motor vehicles shall comply with Sections 5707.1 through 5707.6.6.

- Fueling vehicle – 3 tiers based on amount carried
  - 1 – up to 1,600 gallons
  - 2 – 110 gallons with aggregate of 800
  - 3 – 5 gallon safety cans with aggregate of 60 gallons
- Required documents
- Mobile fueling areas
- Equipment
- Operations

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