

Seminar Notes

Notable Changes to the 2012 International Fire Code

Career Development Seminar
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This seminar highlights the significant changes of the 2012 IFC only. Whether or not these changes make it into the Connecticut Fire Safety Code is the subject of the code adoption process currently underway with the State Fire Marshal's Office and the State Codes and Standards Committee.

Change: Requirements for different types of medical care and their occupancy classifications based on definable terms, number of persons and capabilities for self-preservation.

**SECTION 202
GENERAL DEFINITIONS**

24 Hour Care. The actual time that a person is an occupant within a facility for the purpose of receiving care. It shall not include a facility that is open for 24 hours and is capable of providing care to someone visiting the facility during any segment of the 24 hours.

Ambulatory Health Care Facility. Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to persons who are rendered incapable of self-preservation by the services provided.

Custodial Care. Assistance with day-to-day living tasks; such as assistance with cooking, taking medication, bathing, using toilet facilities and other tasks of daily living. Custodial care include occupants who evacuate at a slower rate and/or who have mental and psychiatric complications.

Detoxification Facilities. Facilities that provide treatment for substance abuse and serving care recipients who are incapable of self-preservation or who are harmful to themselves or others.

Foster Care Facilities. Facilities that provide care to more than five children, 2½ years of age or less.

Group Home. A facility for social rehabilitation, substance abuse or mental health problems that contain a group housing arrangement that provides custodial care but does not provide acute care.

Hospitals and Mental Psychiatric Hospitals. Facilities that provides care or treatment for the medical, psychiatric, obstetrical, or surgical treatment of inpatients who care recipients that are incapable of self-preservation.

Incapable of Self Preservation. Persons because of age; physical limitations; mental limitations; chemical dependency; or medical treatment cannot respond as an individual to an emergency situation.

Medical Care. Care involving medical or surgical procedures, nursing or for psychiatric purposes.

Nursing Homes. Facilities that provide care, including both intermediate care facilities and skilled nursing facilities, where any of the persons are incapable of self-preservation.

Personal Care Service. The care of persons who do not require medical care. Personal care involves responsibility for the safety of the persons while inside the building.

TABLE 202-A Care Categories by Type

Care Category	Are Occupants Capable of Self-Preservation?
Ambulatory Care	No; the person cannot respond as an individual to an emergency situation.
Custodial	Yes, but at a slower rate of egress and the occupants may have mental illnesses.
Detoxification	No; individuals may cause injury to themselves or others and may be either medicated or secured with limited or no ability to egress.
Personal Care Service	Yes
Medical	Depends on the disease, injury, or illness and whether the patient is rendered incapable of self-preservation.
Incapable of Self-Preservation	No; the person cannot respond as an individual to an emergency situation.

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INSTITUTIONAL GROUP I. Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which care or supervision is provided to individuals who are or are not capable of self-preservation without physical assistance or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

GROUP I-1. This occupancy shall include buildings, structures or portions thereof for more than 16 persons who reside on a 24 hour basis in a supervised environment and receive custodial care. The occupants are capable of self-preservation.

Five or fewer persons receiving care. A facility such as the above with five or fewer *residents* shall be classified as Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2 provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or *International Residential Code* Section P2904.

Six to Sixteen Persons Receiving Care. A facility such as above, housing at least six and not more than 16 persons receiving such care, shall be classified as Group R-4.

GROUP I-2. This occupancy shall include buildings and structures used for medical care on a 24 hour basis for more than five persons who are not capable of self-preservation. This group shall include, but not be limited to, the following:

- Foster Care facilities
- Detoxification facilities
- Hospitals
- Nursing homes
- Psychiatric hospitals

Five or fewer persons receiving care. A facility such as the above with five or fewer residents shall be classified as Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2 provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or Section P2904 of the *International Residential Code*.

GROUP I-4, DAY CARE FACILITIES. This group shall include buildings and structures occupied by more than five persons of any age who receive custodial care for less than 24 hours per day by individuals other than parents or guardians, relatives by blood, marriage or adoption, and in a place other than the home of the person cared for. This group shall include, but not be limited to, the following:

- Adult day care
- Child day care

Classification as Group E. A child day care facility that provides custodial care for more than five but no more than 100 children 2½ years or less of age, when the rooms where such children are cared for are located on the level of exit discharge and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.

Rooms and spaces within places of worship providing such care during religious functions shall be classified as part of the primary occupancy.

A facility having five or fewer persons receiving custodial care shall be classified as part of the primary occupancy.

A facility such as the above within a dwelling unit and having five or fewer persons receiving custodial care shall be classified as a Group R-3 occupancy or shall comply with the *International Residential Code*.

R-3. Residential occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, or I, including:

Buildings that do not contain more than two dwelling units.

Care facilities that provide accommodations for five or fewer persons.

Congregate living facilities with 16 or fewer individuals.

Care facilities for 5 or fewer individuals receiving care that are within a single-family home dwellings are permitted to comply with the *International Residential Code* provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or *International Residential Code* section P2904.

R-4. This occupancy shall include buildings, structures or portions thereof for more than five but not more than 16 persons, excluding staff, who reside on a 24 hour basis in a supervised residential environment and receive custodial care. The occupants are capable of self-preservation. This group shall include, but not be limited to, the following:

- Alcohol and drug centers
- Assisted living facilities
- Congregate care facilities
- Convalescent facilities
- Group homes
- Halfway houses
- Initial stage Alzheimer’s facilities
- Residential board and custodial care facilities
- Social rehabilitation facilities

Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.

TABLE 202-B Care Occupancy Classification Criteria

Occupancy & Function	Number of Persons & Age	Type of Care	Duration of Care
Group B Ambulatory Care Facility	4 or more persons; Age is not relevant	Incapable of Self Preservation	Less than 24 hours
Group E Day Care Facility	More than 5; Over 2½ years	Personal Care Services	Less than 24 hours
Group E Day Care Facility	More than 5 but not more than 100; Less than 2½ years	Custodial	Less than 24 hours
Group I-1	More than 16; Age is not relevant	Custodial	24 hours
Group I-2	More than 5; Age is not relevant	Medical or Detoxification; Incapable of Self Preservation	24 hours
Group I-4 Day Care Facility	More than 5; Age is not relevant	Custodial	Less than 24 hours
Group R-3	5 or less; Age is not relevant	Not relevant	Not relevant
Group R-4	More than 5 but not more than 16; Age is not relevant	Custodial	24 hour

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Change : Guards required on certain roof obstructions.

316.4 Obstructions On Roofs. Wires, cables, ropes, antennas, or other suspended obstructions installed on the roof of a building having a roof slope of less than 30 degrees shall not create an obstruction that is less than 7 feet (2133 mm) high above the surface of the roof.

Exceptions:

1. Such obstruction shall be permitted where the wire, cable, rope, antennae or suspended obstruction is encased in a white 2 minimum diameter plastic pipe or an approved equivalent.
2. Such obstruction shall be permitted where there is a solid obstruction below such that accidentally walking into the wire, cable, rope, antennae or suspended obstruction is not possible.

Change: New requirements to manage roof top fire loading.

**SECTION 317
ROOF GARDENS AND LANDSCAPED ROOFS**

317.1 General. Rooftop gardens and landscaped roofs shall be installed and maintained in accordance with this code and Sections 1505 and 1507.16 of the *International Building Code*.

317.2 Rooftop Garden or Landscaped Roof Size. Rooftop garden or landscaped roof areas shall not exceed 15,625 ft² (1,450 m²) in size for any single area with a maximum dimension of 125 ft (39 m) in length or width. A minimum 6 ft (1.8 m) wide clearance consisting of a Class A rated roof system complying with ASTM E108 or UL790 shall be provided between adjacent rooftop garden or landscaped roof areas.

317.3 Rooftop Structure and Equipment Clearance. For all vegetated roofing systems abutting combustible vertical surfaces, a Class A-rated roof system complying with ASTM E108 or UL790 shall be achieved for a minimum 6 ft (1.8 m) wide continuous border placed around rooftop structures and all rooftop equipment including, but not limited to, mechanical and machine rooms, penthouses, skylights, roof vents, solar panels, antenna supports, and building service equipment.

317.4 Vegetation. Vegetation shall be maintained as described in Sections 317.4.1 and 317.4.2.

317.4.1 Irrigation. Supplemental irrigation shall be provided as necessary to maintain levels of hydration necessary to keep green roof plants alive and to keep dry foliage to a minimum.

317.4.2 Dead Foliage. Excess biomass, such as overgrown vegetation, leaves and other dead and decaying material, shall be removed at regular intervals not less than two times per year.

317.4.3 Maintenance Plan. The fire code official is authorized to require a maintenance plan for vegetation placed on roofs due to the size of a roof garden, materials used, or when a fire hazard may exist to the building or exposures due to the lack of maintenance.

317.5 Maintenance Equipment. Fueled equipment stored on roofs and used for the care and maintenance of vegetation on roofs shall be stored in accordance with Section 313.

905.3.8 Roof Gardens and Landscaped Roofs. Buildings or structures that have roof gardens or landscaped roofs that are equipped with a standpipe shall extend the standpipe to the roof level on which the roof garden or landscaped roof is located.

Change: New requirements for fire service elevator keys.

506.1.2 Non-standardized Fire Service Elevator Keys. Key boxes provided for non-standardized fire service elevator keys shall comply with Section 506.1 and all of the following:

1. The key box shall be compatible with an existing rapid entry key box system in use in the jurisdiction and approved by the fire code official.
2. The front cover shall be permanently labeled with the words “Fire Department Use Only – Elevator keys.”
3. The key box shall be mounted at each elevator bank at the lobby nearest to the lowest level of fire department access.
4. The key box shall be mounted 5’6” above the finished floor to the right side of the elevator bank.
5. Contents of the key box are limited to fire service elevator keys. Additional elevator access tools, keys and information pertinent to emergency planning or elevator access shall be permitted when authorized by the fire code official.
6. In buildings with two or more elevator banks, a single key box shall be permitted to be used when such elevator banks are separated by not more than 30 feet. Additional key boxes shall be provided for each individual elevator or elevator bank separated by more than 30 feet.

Exception: A single key box shall be permitted to be located adjacent to a fire command center or the nonstandard fire service elevator key to be secured in a key box used for other purposes and located in accordance with Section 506.1.

Change: Building documentation required to be maintained at fire command center.

Section 508.1.5 Required Features (Fire Command Center)

13. An approved Building Information Card that contains, but is not limited to, the following information:

- (a) general building information that includes: property name, address, the number of floors in the building (above and below grade), use and occupancy classification (mixed

used identify the different types of occupancies on each floor), estimated building population (i.e., day, night, weekend);

(b) building emergency contact information that includes: a list of the building's emergency contacts (e.g., building manager, building engineer, etc.) and their respective work phone number cell phone number, e-mail address;

(c) building construction information that includes: the type of building construction (e.g., floors, walls, columns, and roof assembly);

(d) exit stair information that includes: number of exit stairs in building, each exit stair designation and floors served, location where each exit stair discharges, exit stairs that are pressurized, exit stairs provided with emergency lighting, each exit stair that allows reentry, exit stairs providing roof access; elevator information that includes: number of elevator banks, elevator bank designation, elevator car numbers and respective floors that they serve, location of elevator machine rooms, location of sky lobby, location of freight elevator banks;

(e) building services and system information that includes: location of mechanical rooms, location of building management system, location and capacity of all fuel oil tanks, location of emergency generator, location of natural gas service;

(f) fire protection system information that includes: locations of standpipes, location of fire pump room, location of fire department connections, floors protected by automatic sprinklers, location of different types of sprinkler systems installed (e.g., dry, wet, preaction, etc.);

(g) hazardous material information that includes: location of hazardous material, quantity of hazardous material.

Change: Testing requirements added for emergency lighting equipment.

604.5 Emergency Lighting Equipment. Emergency lighting shall be inspected and tested in accordance with Section 604.5.1 through 604.5.2.1.

604.5.1 Activation Test. An activation test of the emergency lighting equipment shall be completed monthly. The activation test shall ensure the emergency lighting activates automatically upon normal electrical disconnect and stays sufficiently illuminated for a minimum of 30 seconds.

604.5.1.1 Activation Test Record. Records shall be maintained on the premises for a minimum of 3 years and submitted to the fire code official upon request. The record shall include the location of the emergency lighting tested, whether the unit passed or failed, the date of the test, and the person completing the test.

604.5.2 Power Test. For battery powered emergency lighting, a power test of the emergency lighting equipment shall be completed annually. The power test shall operate the emergency lighting for a minimum of 90 minutes and shall remain sufficiently illuminated for the duration of the test.

604.5.2.1 Power Test Record. Records shall be maintained on the premises for a minimum of 3 years and submitted to the fire code official upon request. The record shall include the location of the emergency lighting tested, whether the unit passed or failed, the date of the test, and the person completing the test.

604.5 604.6 Supervision of Maintenance and Testing. Routine maintenance, inspection and operational testing shall be overseen by a properly instructed individual.

Change: Requirements added for the installation of photovoltaic power systems

605.11 Solar Photovoltaic Power Systems. Solar photovoltaic power systems shall be installed in accordance with Sections 605.11.1 through 605.11.4, the *International Building Code* and NFPA 70.

Exception: Detached Group U non-habitable structures including but not limited to parking shade structures, carports, solar trellises, and similar type structures are not subject to the requirements of this section.

605.11.1 Marking. Marking is required on all interior and exterior Direct Current (DC) conduit, enclosures, raceways, cable assemblies, junction boxes, combiner boxes, and disconnects.

605.11.1.1 Materials. Marking as required in sections 605.11.1.2 through 605.11.1.4 shall have all letters capitalized with a minimum of 3/8 inch (9.5 mm) white on red background.

605.11.1.2 Marking Content. The marking shall contain the words “WARNING: PHOTOVOLTAIC POWER SOURCE”

605.11.1.3 Main Service Disconnect. The marking shall be placed adjacent to the main service disconnect in a location clearly visible from the location where the disconnect is operated.

605.11.1.4 Location of Marking. Marking shall be placed on all interior and exterior dc conduit, raceways, enclosures and cable assemblies every 10 feet (3048 mm) within 1 foot (305 mm) of all turns or bends and within 1 foot (305 mm) above and below all penetrations of roof/ceiling assemblies and all walls and /or barriers.

605.11.2 Locations of DC Conductors. Conduit, wiring systems, and raceways for photovoltaic circuits shall be located as close as possible to the ridge or hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities. Conduit runs between sub arrays and to DC combiner boxes shall be installed in a manner that minimizes total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box. The DC combiner boxes shall be located such that conduit runs are minimized in the pathways between arrays. DC wiring shall be installed in metallic conduit

or raceways when located within enclosed spaces in a building. Conduit shall run along the bottom of load bearing members.

605.11.3 Access and Pathways. Roof access, pathways, and spacing requirements shall be provided in accordance with Sections 605.11.3.1 through 605.11.3.3.3

Exceptions:

1. Residential structures shall be designed so that each photovoltaic array is no greater than 150 feet (45 720 mm) by 150 feet (45 720 mm) in either axis.

2. Panels/modules shall be permitted to be located up to the roof ridge where an alternative ventilation method approved by the fire chief has been provided or where the fire chief has determined vertical ventilation techniques will not be employed.

605.11.3.1 Roof Access Points. Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors, and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires, or signs.

605.11.3.2 Residential Systems for Group R-3 One- and Two-Family Residential Dwellings. Access shall be provided in accordance with Sections 605.11.3.2.1 through 605.11.3.2.4.

605.11.3.2.1 Group R-3 Buildings with Hip Roof Layouts. Panels/modules shall be located in a manner that provides a 3 foot (914 mm) wide clear access pathway from the eave to the ridge on each roof slope where panels/modules are located. The access pathway shall be located at a structurally strong location on the building capable of supporting the live load of fire fighters accessing the roof.

Exception: These requirements shall not apply to roofs with slopes of two units vertical in twelve units horizontal (2:12) or less.

605.11.3.2.2 Group R-3 Buildings with a Single Ridge. Panels/ modules shall be located in a manner that provides two 3 foot (914 mm) wide access pathways from the eave to the ridge on each roof slope where panels/modules are located.

Exception: This requirement shall not apply to roofs with slopes of two units vertical in twelve units horizontal (2:12) or less.

605.11.3.2.3 Group R-3 Buildings with Roof Hips and Valleys: Panels/modules shall be located no closer than 18 inches (457 mm) to a hip or a valley if panels/modules are to be placed on both sides of a hip or valley. If the panels are to be located on only one side of a hip or valley that is of equal length then the panels shall be permitted to be placed directly adjacent to the hip or valley.

Exception: These requirements shall not apply to roofs with slopes of two units vertical in twelve units horizontal (2:12) or less.

605.11.3.2.4 Group R-3 Building Smoke Ventilation. Panels/ modules installed on residential buildings shall be located no higher than 3 feet (914 mm) below the ridge in order to allow for fire department smoke ventilation operations.

605.11.3.3 Occupancies in Other than Group R-3 Buildings. Access to systems other than one- and two-family dwellings shall be provided in accordance with Sections 605.11.3.3.1 through 605.11.3.3.3.

Exception: Where it is determined by the *fire code official* that the roof configuration is similar to a one- or two-family dwelling, the residential access and ventilation requirements provided in 605.11.3.2.1 through 605.11.3.2.4 shall be permitted to be used.

605.11.3.3.1 Access. There shall be a minimum 6 foot (1829 mm) wide clear perimeter around the edges of the roof.

Exception: Where either axis of the building is 250 feet (76 200 mm) or less, there shall be a minimum 4 foot (1290 mm) wide clear perimeter around the edges of the roof.

605.11.3.3.2 Pathways. The solar installation shall be designed to provide designated pathways. The pathways shall meet the following requirements:

1. The pathway shall be over areas capable of supporting the live load of fire fighters accessing the roof.
2. The center line axis pathways shall be provided in both axis of the roof. Center line axis pathways shall run where the roof structure is capable of supporting the live load of firefighters accessing the roof.
3. Shall be straight line not less than 4 feet (1290 mm) clear to skylights and/or ventilation hatches.
4. Shall be straight line not less than 4 feet (1290 mm) clear to roof standpipes.
5. Shall provide not less than 4 feet (1290 mm) clear around roof access hatch with at least one not less than 4 feet (1290 mm) clear pathway to parapet or roof edge.

605.11.3.3.3 Smoke Ventilation. The solar installation shall be designed to meet the following requirements:

1. Arrays shall be no greater than 150 feet (45 720 mm) by 150 feet (45 720 mm) in distance in either axis in order to create opportunities for smoke ventilation operations.

2. Smoke ventilation options between array sections shall be one of the following:

2.1 A pathway 8 feet (2438 mm) or greater in width.

2.2 A 4 feet (1290 mm) or greater in width pathway and bordering roof skylights or smoke and heat vents.

2.3 A 4 feet (1290 mm) or greater in width pathway and bordering 4 foot (1290 mm) x 8 foot (2438 mm) “venting cutouts” every 20 feet (6096 mm) on alternating sides of the pathway.

605.11.4 Ground Mounted Photovoltaic Arrays. Ground mounted photovoltaic arrays shall comply with Sections 605.11 through 605.11.2 and this section. Setback requirements shall not apply to ground-mounted, free standing photovoltaic arrays. A clear, brush-free area of 10 feet (3048 mm) shall be required for ground mounted photovoltaic arrays.

105.7.13 Solar Photovoltaic Power Systems. A construction permit is required to install or modify solar photovoltaic power systems.

Change: Provisions for cooking oil storage added

SECTION 610 COMMERCIAL KITCHEN COOKING OIL STORAGE

610.1 General. Storage of cooking oil (grease) in commercial cooking operations shall comply with Chapter 57. Systems used to store cooking oils in larger than 60 gallon (227 L) aboveground tanks shall also comply with Sections 610.2 through 610.5. For purposes of this section, cooking oil shall be classified as a Class IIIB liquid unless otherwise determined by testing.

610.2 Storage Tanks. Cooking oil storage tanks shall be listed in accordance with UL 142 or UL 80, and shall be installed in accordance with Section 5704 and the tank manufacturer’s instructions.

610.3 Other Storage Components. Cooking oil storage system components, including but not limited to piping, connections, fittings, valves, tubing, and other related components used for the transfer of cooking oil from the cooking appliance to the storage tank, and from the storage tank to the discharge point, shall be installed in accordance with Section 5703.6.

610.4 Tank Venting. Normal and emergency venting for cooking oil storage tanks shall terminate outside the building as specified in Sections 5704.2.7.3 and 5704.2.7.4.

610.5 Electrical Equipment. Electrical equipment used for the operation and heating of the cooking oil storage system shall be listed and comply with NFPA 70.

Change: Requirements for newly installed interior finishes added.

803.5.2 Newly Introduced Textile Wall and Ceiling Coverings. Newly introduced textile wall and ceiling coverings shall comply with one of the following:

1. The wall or ceiling covering shall have a class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.
2. The wall covering shall meet the criteria of Section 803.5.1.2 when tested in the manner intended for use in accordance with NFPA 265 using the product mounting system (including adhesive) of actual use, or
3. The wall or ceiling covering shall meet the criteria of Sections 803.1.2.1 when tested in accordance with NFPA 286 using the product mounting system (including adhesive) of actual use.

803.6 Expanded Vinyl or Ceiling Coverings. Expanded vinyl wall or ceiling coverage shall comply with one of the following:

1. The wall or ceiling covering shall have a class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.
2. The wall covering shall meet the criteria of Section 803.5.1.2 when tested in the manner intended for use in accordance with NFPA 265 using the product mounting system (including adhesive) of actual use.
3. The wall or ceiling covering shall meet the criteria of Sections 803.1.2.1 when tested in accordance with NFPA 286 using the product mounting system (including adhesive) of actual use.

Change: Lockers constructed of combustible materials treated as interior finish

808.4 Combustible Lockers. Where lockers constructed of combustible materials are used, the lockers shall be considered interior finish and shall comply with Section 803.

Exception: Lockers constructed entirely of wood and noncombustible materials shall be permitted to be used wherever interior finish materials are required to meet a Class C classification in accordance with 803.1.1.

Change: Requires rooms for fire protection equipment to be adequately sized.

901.4.6 Pump and Riser Room Size. Fire pump and automatic sprinkler system riser rooms shall be designed with adequate space for all equipment necessary for the installation as defined by the manufacturer with sufficient working room around the stationary equipment. Clearances around equipment to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire resistance-rated assembly. Fire pump and automatic sprinkler riser rooms shall be provided with a door(s) and unobstructed passageway large enough to allow removal of the largest piece of equipment.

Change: Requires that the fire code official be notified when required monitoring services are terminated.

901.9 Discontinuation or Change of Service. For fire alarm systems required to be monitored by this code, notice shall be made to the fire code official whenever alarm monitoring services are terminated. Notice shall be made in writing to the fire code official by the monitoring service provider being terminated.

Change: Automatic sprinkler requirements for ambulatory care facilities revised to cover entire floor of the facility and all intervening floors to the level of exit discharge.

903.2.2 Ambulatory Care Facilities. An automatic sprinkler system shall be installed throughout all the entire floor containing an ambulatory care facility and all floors between the ambulatory care facility and the *level of exit discharge* serving such a facility, when either of the following conditions exist at any time:

1. Four or more care recipients are incapable of self preservation.
2. One or more care recipients that are incapable of self preservation are located at other than the *level of exit discharge* serving such a facility.

In buildings where care is provided on levels other than the level of exit discharge, an automatic sprinkler system shall be installed on the entire floor where care is provided as well as all floors below, and all floors between the level of care and the closest level of exit discharge, including the level of exit discharge.

Change: Automatic sprinklers required in occupancies storing, selling or manufacturing upholstered furniture.

903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

1. Where a Group F-1 fire area exceeds 12,000 square feet (1115 m²);
2. Where a Group F-1 fire area is located more than three stories above grade plane; or
3. Where the combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. Where a Group M fire area exceeds 12,000 square feet (1115 m²);
2. Where a Group M fire area is located more than three stories above grade plane; or
3. Where the combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²); or
4. A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m²).

903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m²);
2. A Group S-1 fire area is located more than three stories above grade plane; or
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group S-1 fire area used for the storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (464 m²).
5. A Group S-1 occupancy is used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

Change: Basement sprinkler provisions modified.

903.2.11.1.3 Basements. Where any portion of a basement is located more than 75 feet (22 860 mm) from openings required by Section 903.2.11.1, or where walls, partitions or other obstructions are installed that restrict the application of water from hose streams, the basement shall be equipped throughout with an approved automatic sprinkler system.

Change: Sprinkler provisions for linen and laundry chutes modified.

903.2.11.2 Rubbish and Linen Chutes. An *automatic sprinkler system* shall be installed at the top of rubbish and linen chutes and in their terminal rooms. Chutes shall have additional sprinkler heads installed at alternate floors and at the lowest intake. When a rubbish chute extends through a building more than one floor below the lowest intake the extension shall have sprinklers installed which are recessed from the drop area of the chute and protected from freezing in accordance with Section 903.3.1.1. Such sprinklers shall be installed at alternate floors beginning with the second level below the last intake and ending with the floor above the discharge. Chute sprinklers shall be accessible for servicing.

Change: Secondary water supplies required to operate automatically.

903.3.5.2 Secondary Water Supply. An automatic secondary on-site water supply having a capacity not less than the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for high-rise buildings in Seismic Design Category C, D, E or F as determined by the *International Building Code*. An additional fire pump shall not be required for the secondary water supply unless needed to provide the minimum design intake pressure at the suction side of the fire pump supplying the automatic sprinkler system. The secondary water supply shall have a duration of not less than 30 minutes as determined by the occupancy hazard classification in accordance with NFPA 13.

Exception: Existing buildings

Change: Personnel performing maintenance on fire extinguishers and extinguishing systems required to have certificate for the type of system and work performed.

904.1.1 Certification of Service Personnel for Fire Extinguishing Equipment. Service personnel providing or conducting maintenance on automatic fire extinguishing systems, other than automatic sprinkler systems, shall possess a valid certificate issued by an approved governmental agency or other approved organization for the type of system and work performed.

906.3 Certification of Service Personnel. Service personnel providing or conducting maintenance shall possess a valid certificate issued by an approved governmental agency or other approved organizations for the type of work performed.

Change: When two or more systems protect a hazard, they must operate simultaneously.

904.3.2 Actuation. Automatic fire-extinguishing systems shall be automatically activated and provided with a manual means of activation in accordance with Section 904.11.1. Where more than one hazard could be simultaneously involved in fire due to their proximity, all hazards shall be protected by a single system designed to protect all hazards that could become involved.

Exception: Multiple systems may be installed if they are designed to operate simultaneously.

Change: Requirements for Class I standpipe locations clarified for malls.

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

Items 1 through 3 are unchanged

4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an *exit* passageway or *exit corridor* to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an exit passageway or exit corridor to the mall.

5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), a hose connection shall be located to serve the roof or at the highest landing of a stairway with stair access to the roof provided in accordance with Section 1009.16

Item 6 is unchanged

Change: Portable fire extinguishers required in most occupancies.

906.1 Where Required. Portable fire extinguishers shall be installed in the following locations.

1. In new and existing Group A, B, E, F, H, I, M, R-1, R-2, R-4 and S occupancies.

Exception: In Group R-2 occupancies, portable fire extinguishers shall be required only in locations specified in Items 2 through 6 where each dwelling unit is provided with a portable fire extinguisher having a minimum rating of 1-A:10-B:C.

Items 2 through 6 remain unchanged

907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more. Group A occupancies not separated from one another in accordance with Section 707.3.9 of the *International Building Code* shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

Change: Mass notification fire alarm signals require captioned messages in large assemblies.

907.2.1.2 Emergency Voice/Alarm Communication Captions. Stadiums, arenas and grandstands required to caption audible public announcements shall be in accordance with Section 907.5.2.2.4.

907.5.2.2.4 Emergency Voice/Alarm Communication Captions. Where stadiums, arenas and grandstands are required to caption audible public announcements in accordance with Section 1108.2.7.2 of the *International Building Code*, the emergency/voice alarm communication system shall also be captioned. Prerecorded or live emergency captions shall be from an *approved* location constantly attended by personnel trained to respond to an emergency.



Change: Voice evacuation system required in Use Group E occupancies.

907.2.3 Group E. A manual fire alarm system that activates initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.

1. A manual fire alarm system is not required in Group E occupancies with an occupant load of 30 or less.

2. Manual fire alarm boxes are not required in Group E occupancies where all of the following apply:

2.1. Interior corridors are protected by smoke detectors.

2.2. Auditoriums, cafeterias, gymnasiums and similar areas are protected by heat detectors or other approved detection devices.

2.3. Shops and laboratories involving dusts or vapors are protected by heat detectors or other approved detection devices.

3. Manual fire alarm boxes shall not be required in Group E occupancies where the building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, the emergency voice/alarm communication system will activate on sprinkler waterflow and manual activation is provided from a normally occupied location.

Change: New section requires CO alarms in Group R and I occupancies.

908.7 Carbon Monoxide Alarms. Group I or R occupancies located in a building containing a fuel burning appliance or a building which has an attached garage shall be provided with single station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in the *International Building Code*, or enclosed parking garage ventilated in accordance with Section 404 of the *International Mechanical Code* shall not be deemed to be an attached garage.

Exception: Sleeping units or dwelling units which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be provided with single station carbon monoxide alarms provided that:

1. The sleeping unit or dwelling unit is located more than one story above or below any story which contains a fuel-burning appliance or an attached garage;
2. The sleeping unit or dwelling unit is not connected by ductwork or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and
3. The building is provided with a common area carbon monoxide alarm system.

908.7.1 Carbon Monoxide Detection Systems. Carbon monoxide detection systems, that include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be listed as complying with UL 2075.

Change: Occupant load factors added for museums and exhibit halls that are reflective of the actual use of the space.

1004.1.1 1004.1.2 Areas Without Fixed Seating. The number of occupants shall be computed at the rate of one occupant per unit of area as prescribed in Table 1004.1.2. For areas without fixed seating, the occupant load shall not be less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table 1004.1.2. Where an intended function is not listed in Table 1004.1.2, the

building official shall establish a function based on a listed function that most nearly resembles the intended function.

Exception: Where approved by the fire code official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design occupant load.

TABLE 1004.1.1 1004.1.2 Maximum Floor Area Allowances Per Occupant

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR ^a FLOOR AREA IN SQ. FT. PER OCCUPANT
Assembly	11 gross
Gaming floors (keno, slots, etc.)	<u>30 net</u>
<u>Exhibit Gallery and Museum</u>	
<u>Mall buildings – covered and open</u>	<u>See Section 402.4.1</u>

For SI: 1 square foot = 0.0929 m².

a. Floor area in square feet per occupant.

Change: Exit width/capacity requirements re-arranged and reduced exit width factors established for sprinkler protected buildings with emergency voice communication system.

1005.1 General. All portions of the means of egress system shall be sized in accordance with this section.

Exception: Means of egress complying with Section 1028.

1005.2 Minimum Width Based on Component. The minimum width, in inches, of any means of egress components shall not be less than that specified for such component, elsewhere in this code.

1005.3 Required Capacity Based on Occupant Load. The required capacity, in inches, of the means of egress for any room, area, space or story shall not less than that determined in accordance with the following:

1005.3.1 Stairways. The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.3 inches (7.62 mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.

Exception: For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.2 inches (5.1 mm) per occupant in buildings equipped throughout with and automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

1005.3.2 Other Egress Components. The capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inches (5.08 mm) per occupant.

Exception: For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress components other than stairways shall be calculated multiplying the occupant load served by such component by a means of egress capacity factor of 0.15 inches (3.8 mm) per occupant in buildings equipped throughout with and automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

Change: Door swing in the means of egress is based upon the entire occupant load of the space served by the doors and not on assigned exit capacity.

1008.1.2 Door Swing. Egress doors shall be of the pivoted or side-hinged swinging.

Exceptions:

1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Critical or intensive care patient rooms within suites of health care facilities.
4. Doors within or serving a single dwelling unit in Groups R-2 and R-3.
5. In other than Group H occupancies, revolving doors complying with Section 1008.1.4.1.
6. In other than Group H occupancies, horizontal sliding doors complying with Section 1008.1.4.3 are permitted in a means of egress.
7. Power-operated doors in accordance with Section 1008.1.4.2.
8. Doors serving a bathroom within an individual sleeping unit in Group R-1.
9. In other than Group H occupancies, manually operated horizontal sliding doors are permitted in a means of egress from spaces with an occupant load of 10 or less.

Doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy.

Change: Coordinates requirements for when an unenclosed stairway can be used within the means of egress.

SECTION 1009 STAIRWAYS

1009.1 General. Stairways serving occupied portions of a building shall comply with the requirements of this section.

1009.2 Interior Exit Stairways. Interior exit stairways shall lead directly to the exterior of the building or shall be extended to the exterior of the building with an exit passageway conforming to the requirements of Section 1023, except as permitted in Section 1027.1.

1009.2.1 Where Required. Interior exit stairways shall be included, as necessary, to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance.

1009.2.2 Enclosure. All interior exit stairways shall be enclosed in accordance with the provisions of Section 1022.

1009.3 Exit Access Stairways. Floor openings between stories created by exit access stairways shall be enclosed.

Exceptions:

- 1.** In other than Group I-2 and I-3 occupancies, exit access stairways that serve, or atmospherically communicate between, only two stories, are not required to be enclosed.
- 2.** Exit access stairways serving and contained within a single residential dwelling unit or sleeping unit in Group R-1, R-2 or R-3 occupancies are not required to be enclosed.
- 3.** In buildings with only Group B or M occupancies, exit access stairway openings are not required to be enclosed provided that the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the area of the floor opening between stories does not exceed twice the horizontal projected area of the exit access stairway, and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13.
- 4.** In other than Groups B and M occupancies, exit access stairway openings are not required to be enclosed provided that the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the floor opening does not connect more than four stories, the area of the floor opening between stories does not exceed twice the horizontal projected area of the exit access stairway, and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13.
- 5.** Exit access stairways within an atrium complying with the provisions of Section 404 are not required to be enclosed.
- 6.** Exit access stairways and ramps in open parking garages that serve only the parking garage are not required to be enclosed.
- 7.** Stairways serving outdoor facilities where all portions of the means of egress are essentially open to the outside are not required to be enclosed.

8. Exit access stairways serving stages, platforms and technical production areas in accordance with Sections 410.6.2 are not required to be enclosed.
9. Stairways are permitted to be open between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
10. In Group I-3 occupancies, exit access stairways constructed in accordance with Section 408.5 are not required to be enclosed.

Change: Adds the requirement for floor level exit signs in R1 occupancies.

1011.2 Floor-level Exit Signs in Group R-1. Where exit signs are required in Group R-1 occupancies by Section 1011.1, additional low-level exit signs shall be provided in all areas serving guest rooms in Group R-1 occupancies and shall comply with Section 1011.5 The bottom of the sign shall be not less than 10 inches (254 mm) nor more than 12 inches (305 mm) above the floor level. The sign shall be flush mounted to the door or wall. Where mounted on the wall, the edge of the sign shall be within 4 inches (102 mm) of the door frame on the latch side.

Change: Clarifies when a single exit is permitted from a dwelling unit and allows exits to be arranged where they serve a portion of a story.

1021.2 Single Exits from Stories. Two exits, or exit access stairways or ramps providing access to exits shall be provided where one of the following conditions exists:

1. The occupant load or number of dwelling units exceeds one of the values in Table 1021.2(1) or 1021.2(2).
2. The exit access travel distance exceeds that specified in Table 1021.2(1) or 1021.2(2) as determined in accordance with Section 1016.1.
3. Helistop landing areas on buildings or structures shall be provided with two exits, or exit access stairways or ramps providing access to exits.

Exceptions (Exceptions 1-6 not shown)

7. Exits serving specific spaces or areas need not be accessed by the remainder of the story when all of the following are met:
 - 7.1 The number of exits from the entire story complies with Table 1021.1(1) or 1021.2(2).;
 - 7.2 The access to exits from each individual space in the story complies with Section 1015.1; and
 - 7.3 All spaces within each portion of a story shall have access to the minimum number of approved independent exits as specified in Table 1021.1(1) or 1021.2(2) based on the occupant load of that portion of the story.

1021.2.3 Single-story or multi-story dwelling units. Individual single-story or multi-story dwelling units shall be permitted to have a single exit within and from the dwelling unit provided that all of the following criteria are met:

1. The dwelling unit complies with Section 1015.1 as a space with one means of egress and
2. Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.

Change: Penetrations of the outside membrane of the fire barrier enclosing an exit stair or ramp are permitted when the penetration is properly protected.

1022.5 Penetrations. Penetrations into and openings through interior exit stairways and ramps are prohibited except for required exit doors, equipment and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication systems and electrical raceway serving the interior exit stairway and ramp and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 714 of the International Building Code. There shall be no penetrations or communication openings, whether protected or not, between adjacent interior exit stairways and ramps.

Exception: Membrane penetrations shall be permitted on the outside of the interior stairway and ramp. Such penetrations shall be protected in accordance with Section 714.3.2 of the International Building Code.

Change: Revised requirements for exit reliability, security, or locking devices on means of egress components.

1030.2 Reliability. Required exit accesses, exits or exit discharges shall be continuously maintained free from obstructions or impediments to full instant use in the case of fire or other emergency when the building area served by the means of egress is occupied. An exit or exit passageway shall not be used for any purpose that interferes with a means of egress.

1030.2.1 Security Devices and Egress Locks. Security devices affecting means of egress shall be subject to approval of the fire code official. Special locking arrangements including, but not limited to access-controlled egress doors, security grills, locks and latches, and delayed egress locks shall be installed and maintained as required by this chapter.

1030.6 Finishes, Furnishings and Decorations. Means of egress doors shall be readily maintained in such a manner as to be distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Furnishings, decorations or other objects shall not be placed so as to obstruct exits, access thereto, egress there from, or visibility thereof. Hangings and draperies shall not be placed over exit doors or otherwise be located to conceal or

obstruct an exit. Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.

1030.9 Floor Identification Signs. The floor identification signs required by Sections 1022.8 and 1104.23 shall be maintained in an approved manner.

Using Part III of the 2005 Connecticut Fire Safety Code

1. Determine the building construction type and height of the building.
 - a. Requirements usually found on the plans and are important to applying other requirements of the code.
2. Determine the occupancy classification (aka Use Group).
 - a. Section 202-Definitions
3. Determine if there are any special requirements based upon use and occupancy.
 - a. Part III Chapter 4. This chapter is a series of pointers over to Chapter 4 of the Building Code.
 - b. Apply provisions as required.
4. Determine if a fire protection system is required.
 - a. Sprinkler Systems- Section 903.2 - Where Required
 - b. Alternative Fire Protection Systems - Section 904.2- Where Required
 - c. Standpipe Systems -Section 905.3 - Required Installations
 - d. Fire Alarm Systems-Section 907.2- Where Required
 - e. Emergency Alarm Systems-Section 908
 - f. Smoke Control Systems-Section 909
 - g. Smoke and Heat Vents-Section 901.2-Where Required
 - h. Explosion Control-Section 911
 - i. Carbon Monoxide Detectors-Section 914
5. Evaluate the Means of Egress.
 - a. Establish or verify occupant load-Section 1004
 - b. Determine required number of exits-Section 1018
 - c. Determine required exit capacity-Section 1005
 - d. Evaluate egress components
 - i. Exit Access-Section 1013
 1. Doors- Section 1008
 2. Corridors-Section 1016
 - a. Dead Ends-Section 1016.3
 - b. Common Path-Section 1013.3
 3. Aisles-Section 1013.4 & 1024 (Assembly)
 4. Travel Distance-Section 1015
 - ii. Exits
 1. Stairs-Section 1009
 - a. Vertical Exit Enclosures-Section 1019
 2. Ramps-Section 1010
 3. Exit Passageways-Section 1020
 4. Horizontal Exits-Section 1021
 5. Remoteness-Section 1014.2.1

- iii. Exit Discharge-Section 1023
 - iv. Illumination-Section 1006
 - 1. Normal
 - 2. Emergency
 - v. Marking-Section 1011
 - 1. Signs
 - 2. Illumination
 - 3. Egress Path markings
 - vi. Accessible Means of Egress-Section 1007
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- 6. Evaluate Interior Finishes-Section 801-806
 - 7. Evaluate Building Services-Section 601 - 610