

# **WASHINGTON STATE BUILDING CODE**

## **CHAPTER 51-54A 2021 Edition**

### **Washington State Amendments to the 2021 INTERNATIONAL FIRE CODE**



**Washington State Building Code Council**

**Effective July 1, 2023\***

Copies of the State Building Codes and  
complete copies of the International Fire Code  
as published by the International Code Council  
may be obtained from:

Washington Association of Building Officials  
Post Office Box 7310  
Olympia, Washington 98507-7310  
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International Fire Code  
Chapter 51-54A WAC  
Effective July 1, 2023

## ***Preface***

**Authority:** The International Fire Code (Chapter 51-54A WAC) is adopted by the Washington State Building Code Council pursuant to Chapters 19.27 and 70.92 RCW. These codes were first adopted by reference by the Washington State Legislature in 1974. In 1985, the Legislature delegated the responsibility of adoption and amendment of these codes to the State Building Code Council.

**Supersession of Previous Codes:** Chapter 51-54A WAC supersedes Chapters 51-44 and 51-45 WAC.

**Code Precedence:** The State Building Code Act, Chapter 19.27 RCW, establishes the following order of precedence among the documents adopted as parts of the State Building Code:

- International Building Code, Standards and amendments -WAC 51-50;
- International Residential Code, Standards and amendments – WAC 51-51;
- International Mechanical Code, Standards and amendments - WAC 51-52;
- International Fire Code, Standards and amendments - WAC 51-54A;
- Uniform Plumbing Code, Standards and amendments - WAC 51-56.

Where there is a conflict between codes, an earlier named code takes precedence over a later named code. In the case of conflict between the duct insulation requirements of the International Mechanical Code and the duct insulation requirements of the Energy Code, the Energy Code, or where applicable, a local jurisdiction's energy code, shall govern.

Where, in any specific case, different sections of this Code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

**Organization and Numbering:** These rules are written to allow compatible use with the International Fire Code. All sections which are amended, deleted, or added are referenced.

**Enforcement:** The State Building Code Act requires that each local jurisdiction enforce the State Building Code within its jurisdiction. Any jurisdiction can contract with another jurisdiction or an inspection agency to provide the mandated enforcement activities.

### **Amendments to the State Building Code:**

The State Building Code Council has adopted review procedures and approval criteria for local amendments. These procedures and criteria are found in Chapter 51-04 WAC. The Council has exempted from its review any amendments to the administrative provisions of the various codes.

Forms for proposing statewide amendments to the State Building Code are available from the State Building Code Council staff.

- A. **Amendments of Statewide Application:** The State Building Code Council will consider proposals to amend the Code every three years to coincide with the model code publication. The Council is not scheduled to enter formal rulemaking until 2024 as part of its consideration of adoption of the 2024 series of codes.

Proposals to amend the Code shall be made on forms provided by the Building Code Council.

- B. **Local Amendments:** Any jurisdiction may amend the State Building Code provided the amendments do not reduce the minimum performance standards of the codes. There are areas where local amendments are limited or prohibited:

**Prohibited Amendments:** Residential provisions of the State Energy Code (WAC 51-11R and 51-11C), the Ventilation provisions of the International Residential Code (WAC 51-51) or International Mechanical Code (WAC 51-52); any provision of the International Building Code (WAC 51-50) or International Residential Code affecting accessibility; and standards specifically adopted in Chapters 19.27 and 19.27A cannot be amended by any local jurisdiction.

**Residential Amendments:** Amendments by local jurisdictions which affect the construction of single family and multi-family residential buildings must be reviewed and approved by the State Building Code Council before such amendments can be enforced. The State Building Code Act provides the following definition:

Multi-family residential building: means common wall residential buildings that consist of four or fewer units, that do not exceed two stories in height, that are less than 5,000 square feet in area, and that have a one-hour fire-resistive occupancy separation between units.

Application forms for Council review of local amendments are available from the State Building Code Council Staff.

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**Printing Format:** This version of the rules is published as a series of insert or replacement pages and is intended to be printed as a two-sided document. Each page provides instructions for installing them in the model code book. Amendments to the model code, are indicated by a double line in the margin next to the revised portions and underlined text. Any portion of the model code that has been deleted in the amendment will be marked with ~~strikethrough text~~

**Effective Date:** These rules were adopted by the State Building Code Council on April 22, 2022. These rules are effective throughout the state on July 1, 2023.

**Building Permit Fees:** The activities of the State Building Code Council are supported by permit fees collected by each city and county. Section 19.27.085 of the State Building Code Act requires that a fee of \$6.50 be imposed on each residential permit and \$25.00 on each commercial building permit issued by each city and county. In addition, a fee of \$2.00 per unit shall be imposed for each dwelling unit after the first unit, on each building containing more than one residential unit. For the purpose of this fee, WAC 365-110-035 defines building permits as any permit to construct, enlarge, alter, repair, move, improve, remove, convert or demolish any building or structure regulated by the Building Code. Exempt from the fee are plumbing, electrical, mechanical permits, permits issued to install a mobile/manufactured home, commercial coach or factory built structure, or permits issued pursuant to the International Fire Code.

Each city and county shall remit moneys collected to the state treasury quarterly. No remittance is required until a minimum of \$50.00 has accumulated.

These permit fees are the amounts current in January 2020. Such fees may be changed by the State Legislature.

**Opinions:** RCW 19.27.031 grants the council authority to render opinions relating to the building code at the request of a local code official. For the purposes of this section, the term "code official" means the local or state official, or their designee, responsible for implementation and enforcement of the specific code provision on which the opinion is requested. At the request of a code official, the council will issue opinions relating to the codes adopted under chapters 19.27, 19.27A, and 70.92 RCW, and council amendments to the model codes. At the request of a local code official, the council may issue opinions on the applicability of WAC 51-04-030 to a local government ordinance regulating construction. Council related opinions may be developed and approved by a standing committee of the council. Opinions approved by a standing committee may be reviewed and modified by the council.

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**Authority.**

These rules are adopted under the authority of chapter [19.27](#) RCW.

**Purpose.**

The purpose of these rules is to implement the provisions of chapter [19.27](#) RCW, which provides that the State Building Code Council shall maintain the State Building Code in a status which is consistent with the purpose as set forth in RCW [19.27.020](#). In maintaining the codes the council shall regularly review updated versions of the codes adopted under the act, and other pertinent information, and shall amend the codes as deemed appropriate by the council.

**International Fire Code.**

The 2021 edition of the International Fire Code, published by the International Code Council is hereby adopted by reference with the following additions, deletions, and exceptions.

**Exceptions.**

The exceptions and amendments to the International Fire Code contained in the provisions of chapter [19.27](#) RCW shall apply in case of conflict with any of the provisions of these rules.

Codes referenced which are not adopted through RCW [19.27.031](#) or chapter [19.27A](#) RCW shall not apply unless specifically adopted by the authority having jurisdiction.

The provisions of this code do not apply to temporary growing structures used solely for the commercial production of horticultural plants including ornamental plants, flowers, vegetables, and fruits. "Temporary growing structure" means a structure that has the sides and roof covered with polyethylene, polyvinyl, or similar flexible synthetic material and is used to provide plants with either frost protection or increased heat retention. A temporary growing structure is not considered a building for purposes of this code.

The provisions of this code do not apply to the construction, alteration, or repair of temporary worker housing except as provided by rule adopted under chapter [70.114A](#) RCW or chapter 37, Laws of 1998 (2SSB 6168). "Temporary worker housing" means a place, area, or piece of land where sleeping places or housing sites are provided by an employer for his or her employees or by another person, including a temporary worker housing operator, who is providing such accommodations for employees, for temporary, seasonal occupancy, and includes "labor camps" under RCW [70.54.110](#).

The manufacture, storage, handling, sale and use of fireworks shall be governed by chapter [70.77](#) RCW and by chapter 212-17 WAC and local ordinances consistent with chapter 212-17 WAC.

**Implementation.**

The International Fire Code adopted by chapter 51-54A WAC shall become effective in all counties and cities of this state on July 1, 2023.



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**105.5.14.1 Lithium batteries.** An operational permit is required for an accumulation of more than 15 cubic feet (0.42 m) of lithium-ion and lithium metal batteries, where required by Section 322.1. ||

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**105.5.32 Mobile food preparation vehicles.** A permit is required for mobile preparation vehicles equipped with appliances that produce smoke or grease-laden vapors or utilize LP-gas systems or CNG systems.

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**105.6.25 Underground supply piping for automatic sprinkler system.** A construction permit is required for the installation of the portion of the underground water supply piping, public or private, supplying a water-based fire protection system. The permit shall apply to all underground piping and appurtenances downstream of the first control valve on the lateral piping or service line from the distribution main to one foot above finished floor of the facility with the fire protection system. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

EXCEPTIONS: 1. When the underground piping is installed by the aboveground piping contractor.

2. Underground piping that serves a fire protection system installed in accordance with NFPA 13D.

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**ADULT FAMILY HOME.** A dwelling, licensed by the state of Washington department of social and health services, in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services. An existing adult family home may provide services to up to eight adults upon approval from the department of social and health services under RCW [70.128.066](#) and in accordance with Section 903.



**ALERT SIGNAL.** A distinctive signal indicating the need for trained personnel and occupants to initiate a specific action, such as shelter-in-place.



**ALERT SYSTEM.** Approved devices, equipment and systems or combinations of systems used to transmit or broadcast an alert signal.



**ASSISTED LIVING FACILITY.** A home or other institution, licensed by the state of Washington, providing housing, basic services and assuming general responsibility for the safety and well-being of residents under chapters [18.20](#) RCW and 388-78A WAC. These facilities may provide care to residents with symptoms consistent with dementia requiring additional security measures.

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**CHILD CARE.** For the purposes of these regulations, child care is the care of children during any period of a 24-hour day.

**CHILD CARE, FAMILY HOME.** A child care facility, licensed by Washington state, located in the dwelling of the person or persons under whose direct care and supervision the child is placed, for the care of 12 or fewer children, including children who reside at the home.

**CLUSTER.** Clusters are multiple *portable school classrooms* separated by less than the requirements of the building code for separate buildings.

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**COVERED BOAT MOORAGE.** A pier or system of floating or fixed access ways to which vessels on water may be secured and any portion of which are covered by a roof.



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**ELECTRICAL CODE.** The National Electrical Code, promulgated by the National Fire Protection Association, as adopted by rule or local ordinance under the authority of chapter [19.28](#) RCW.

**EMERGENCY RESPONDER COMMUNICATIONS ENHANCEMENT SYSTEM (ERCES).** An infrastructure solution installed within a building to enhance the communications capabilities for first responders that utilizes solutions such as a signal booster, voting receiver, base station, or other technology capable of enhancing the radio frequency (RF) to ensure effective public safety communications.



**FREQUENCY.** The particular waveband at which a communications system broadcasts or transmits.

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**FREQUENCY LICENSE HOLDER(S).** The person(s) or entity(s) that are issued the license from the frequency licensing authority of United States or other country of jurisdiction for the frequencies being used by both the in-building emergency responder communications enhancement system and the emergency services communications system that it enhances.

|||

**FREQUENCY LICENSING AUTHORITY.** The government authority in a country or territory that issues frequency licenses for the use of communications frequencies by authorized entities and individuals.

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**GRAVITY-OPERATED DROP OUT VENTS.** Automatic smoke and heat vents containing heat-sensitive glazing designed to shrink and drop out of the vent openings when exposed to fire.



**HOSPICE CARE CENTER.** A building or portion thereof used on a 24-hour basis for the provision of hospice services to terminally ill inpatients.



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**MOBILE FOOD PREPARATION VEHICLE.** Mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors or utilize LP-gas systems or CNG systems for the purpose of preparing and serving food to the public. Vehicles intended for private recreation shall not be considered mobile food preparation vehicles.

**MOTOR VEHICLE.** Includes, but not limited to, a vehicle, machine, tractor, trailer or semitrailer, or any combination thereof, propelled or drawn by mechanical power and designed for use upon the highways in the transportation of passengers or property. It does not include a vehicle, locomotive or car operated exclusively on a rail or rails, or a trolley bus operated by electric power derived from a fixed overhead wire, furnishing local passenger transportation similar to street-railway service. The term "motor vehicle" also includes freight containers or cargo tanks used, or intended for use, in connection with motor vehicles.

**NIGHTCLUB.** An A-2 Occupancy use under the 2006 International Building Code in which the aggregate area of concentrated use of unfixed chairs and standing space that is specifically designated and primarily used for dancing or viewing performers exceeds 350 square feet, excluding adjacent lobby areas. "Nightclub" does not include theaters with fixed seating, banquet halls, or lodge halls.



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**OCCUPANCY CLASSIFICATION.** For the purposes of this code, certain occupancies are defined as follows:

**Institutional Group I-1.** Institutional Group I-1 occupancy shall include buildings, structures or portions thereof for more than 16 persons excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care. Buildings of Group I-1 shall be classified as one of the occupancy conditions indicated below. This group shall include, but not be limited to, the following: Assisted living facilities licensed under chapter 388-78A WAC and residential treatment facilities licensed under chapter 246-337 WAC shall be classified as Group I-1, Condition 2. ||

**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 incapable of self-preservation. This group shall include, but not be limited to, the following: ||

- Foster care facilities
  - Detoxification facilities
  - Hospice care centers
  - Hospitals
  - Nursing homes
  - Psychiatric hospitals
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**(I-4) Five or fewer persons receiving care.** A facility such as the above with five or fewer persons receiving such care shall be classified as Group R-3 or shall comply with the *International Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 or with Section P2904 of the *International Residential Code*.

**(I-4) Family home child care.** Family home child care licensed by Washington state for the care of 12 or fewer children shall be classified as Group R-3 or shall comply with the *International Residential Code*.

**(I-4) Adult care facility.** A facility that provides accommodations for less than 24 hours for more than 5 unrelated adults and provides supervision and personal care services shall be classified as Group I-4.

EXCEPTION: Where the occupants are capable of responding to an emergency situation without physical assistance from the staff, the facility shall be classified as Group R-3.

**(I-4) Child care facility.** Child care facilities that provide supervision and personal care on a less than 24-hour basis for more than 5 children 2 1/2 years of age or less shall be classified as Group I-4.

EXCEPTIONS: 1. A child day care facility that provides care for more than five but no more than 100 children 2 1/2 years or less of age, where the rooms in which the children are cared for are located on a level of exit discharge serving such rooms and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.  
2. Family child care homes licensed by Washington state for the care of 12 or fewer children shall be classified as Group R-3.

**Residential Group R.** Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *International Residential Code*. This group shall include:

**R-1** Residential occupancies containing sleeping units where the occupants are primarily transient in nature, including:

- Boarding houses (transient) with more than 10 occupants
- Congregate living facilities (transient) with more than 10 occupants
- Hotels (transient)
- Motels (transient)

**R-2** Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

- Apartment houses
- Boarding houses (nontransient) with more than 16 occupants
- Congregate living facilities (nontransient) with more than 16 occupants
- Convents
- Dormitories
- Fraternities and sororities
- Hotels (nontransient)
- Live/work units
- Monasteries
- Motels (nontransient)
- Vacation timeshare properties

**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.
- Boarding houses (nontransient) with 16 or fewer occupants.
- Boarding houses (transient) with 10 or fewer occupants.
- Care facilities that provide accommodations for five or fewer persons receiving care.
- Congregate living facilities (nontransient) with 16 or fewer occupants.
- Congregate living facilities (transient) with 10 or fewer occupants.

**Care facilities within a dwelling.** Care facilities for five or fewer persons receiving care that are within a single-family dwelling 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 with Section P2904 of the *International Residential Code*.

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**Adult family homes, family home child care.** Adult family homes and family home child care facilities that are within a single-family home are permitted to comply with the *International Residential Code*.

**Foster family care homes.** Foster family care homes licensed by Washington state are permitted to comply with the *International Residential Code*, as an accessory use to a dwelling, for six or fewer children including those of the resident family.

**R-4** Classification is not adopted. Any reference in this code to R-4 does not apply.

**PORTABLE SCHOOL CLASSROOM.** A prefabricated structure consisting of one or more rooms with direct exterior egress from the classroom(s). The structure is transportable in one or more sections, and is designed to be used as an educational space with or without a permanent foundation. The structure shall be capable of being demounted and relocated to other locations as needs arise.

**POWERED MICROMOBILITY DEVICES.** Motorized bicycles, motorized scooters, and other personal mobility devices powered by a rechargeable battery. The term does not include motor vehicles that are required to be registered with the department of motor vehicles for the state or jurisdiction.

**RECALL SIGNAL.** An electrically or mechanically operated signal used to recall occupants after an emergency drill or to terminate a shelter-in-place event that shall be distinct from any alarm or alert signal used to initiate an emergency plan, or other signals.

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**SHELTER-IN-PLACE.** An emergency response used to minimize exposure of facility occupants to chemical or environmental hazards by taking refuge in predetermined interior rooms or areas where actions are taken to isolate the interior environment from the exterior hazard.



**SPECIAL HAZARDS SUPPRESSION SYSTEMS.** Wet-chemical systems (NFPA 17A), Dry-chemical systems (NFPA 17), Foam systems (NFPA 11), 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), and Explosion prevention systems (NFPA 69).

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**301.2 Permits.** Permits shall be required as set forth in Section 105.5 for the activities or uses regulated by Sections 306, 307, 308, 315, 320, and 322.

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**302.1 Definitions.** The following terms are defined in Chapter 2:

3D PRINTER;  
ADDITIVE MANUFACTURING;  
BONFIRE;  
HI-BOY;  
HIGH-VOLTAGE TRANSMISSION LINE;  
MOBILE FOOD PREPARATION VEHICLE;  
OPEN BURNING;  
PORTABLE OUTDOOR FIREPLACE;  
POWERED INDUSTRIAL TRUCK;  
RECREATIONAL FIRE;  
SKY LANTERN.

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**307.2.1 Authorization.** Where required by state or local law or regulations, open burning shall only be permitted with prior approval from the state or local air and water quality management authority, provided that all conditions specified in the authorization are followed. See also chapter [173-425](#) WAC.

||

**307.4.2 Recreational fires.** Recreational fires shall not be conducted within 25 feet of a structure or combustible material. Conditions which could cause a fire to spread within 25 feet of a structure shall be eliminated prior to ignition. See also chapter [173-425](#) WAC.

||

**308.1.7 Religious ceremonies.** Participants in religious ceremonies shall not be precluded from carrying hand-held candles. See RCW [19.27.031](#)(3).

**308.1.7.1 Aisles and exits.** Candles shall be prohibited in areas where occupants stand, or in an aisle or exit.  
EXCEPTION: Candles used in religious ceremonies.

**308.1.9 Decorative open flame tables.** Gas-fired portable or fixed open flame fire tables and fireplaces are required to be provided with approved protection devices to prevent occupants from using flame, and from flame being exposed to combustible material. A fire extinguisher shall be located within 75 feet of travel distance or as approved. Where located indoors, the supply gas valve shall be interlocked with building fire alarm and/or fire sprinklers, where provided.

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**314.4 Vehicles.** Liquid- or gas-fueled vehicles, boats, aircraft or other motorcraft shall not be located indoors except as follows: ||

1. The engine starting system is made inoperable or ignition batteries are disconnected except where the fire code official requires that the batteries remain connected to maintain safety features. ||
2. Fuel in fuel tanks does not exceed any of the following: ||
  - 2.1. Class I, II, and III liquid fuel does not exceed one-quarter tank or 5 gallons (19 L), whichever is less.
  - 2.2. LP gas does not exceed one-quarter tank or 6.6 gallons (25 L), whichever is less.
  - 2.3. CNG does not exceed one-quarter tank or 630 cubic feet (17.8 m3), whichever is less.
  - 2.4. Hydrogen does not exceed one-quarter tank or 2000 cubic feet (0.57 m3), whichever is less.
3. Fuel tanks and fill openings are closed and sealed to prevent tampering.
4. Vehicles, aircraft, boats or other motorcraft equipment are not fueled or defueled within the building.

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**319.1 General.** Mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors or utilize LP-gas systems or CNG systems shall comply with this section.

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**321.1 Artificial combustible vegetation on roofs and near buildings.** Artificial combustible vegetation exceeding 6 feet (1829 mm) in height and permanently installed outdoors within 5 feet (1524 mm) of a building or on the roof of a building shall comply with Section 807.4.1. The placement of artificial combustible vegetation shall also comply with Sections 806.3 and 807.4.2.

EXCEPTIONS: 1. Artificial decorative vegetation located more than 30 feet (9144 mm) from the exterior wall of a building.

2. Artificial decorative vegetation used at structures regulated by the International Residential Code.

**322.1 General.** The storage of lithium-ion and lithium metal batteries shall comply with Section 322.

EXCEPTIONS: 1. New or refurbished batteries installed in the equipment, devices, or vehicles they are designed to power.

2. New or refurbished batteries packed for use with the equipment, devices, or vehicles they are designed to power.

3. Batteries in original retail packaging that are rated at 300 watt-hours or less for lithium-ion batteries or contain 25 grams or less of lithium metal for lithium metal batteries.

4. Temporary storage of batteries or battery components during the battery manufacturing process prior to completion of final quality control checks.

5. Temporary storage of batteries during the vehicle manufacturing or repair process.

**322.2 Permits.** Permits shall be required for an accumulation of more than 15 cubic feet (0.42 m) of lithium-ion and lithium metal batteries, other than batteries listed in the exceptions to Section 322.1, as set forth in Section 105.5.14.1.

**322.3 Fire safety plan.** A fire safety plan shall be provided in accordance with Section 403.10.6. In addition, the fire safety plan shall include emergency response actions to be taken upon detection of a fire or possible fire involving lithium-ion or lithium metal battery storage.

**322.4 Storage requirements.** Lithium-ion and lithium metal batteries shall be stored in accordance with Section 322.4.1, 322.4.2, or 322.4.3, as applicable.

**322.4.1 Limited indoor storage in containers.** Not more than 15 cubic feet (0.42 m) of lithium-ion or lithium metal batteries shall be permitted to be stored in containers in accordance with the following:

1. Containers shall be open-top and constructed of noncombustible materials or shall be approved for battery collection.

2. Individual containers and groups of containers shall not exceed a capacity of 7.5 cubic feet (0.21 m).

3. A second container or group of containers shall be separated by not less than 3 feet (914 mm) of open space, or 10 feet (3048 mm) of space that contains combustible materials.

4. Containers shall be located not less than 5 feet (1524 mm) from exits or exit access doors.

**322.4.2 Indoor storage areas.** Indoor storage areas for lithium-ion and lithium metal batteries, other than those complying with Section 322.4.1, shall comply with Sections 322.4.2.1 through 322.4.2.6.

**322.4.2.1 Technical opinion and report.** Where required by the *fire code official* a technical opinion and report complying with Section 104.8.2 shall be prepared to evaluate the fire and explosion risks associated with the indoor storage area and to make recommendations for fire and explosion protection. The report shall be submitted to the fire code official and shall require the fire code official's approval prior to issuance of a permit. In addition to the requirements of Section 104.8.2, the technical opinion and report shall specifically evaluate the following:

1. The potential for deflagration of flammable gases released during a thermal runaway event.

2. The basis of design for an automatic sprinkler system or other approved fire suppression system. Such design basis shall reference relevant full-scale fire testing or another approved method of demonstrating sufficiency of the recommended design.

**322.4.2.2 Construction requirements.** Where indoor storage areas for lithium-ion and lithium metal batteries are located in a building with other uses, battery storage areas shall be separated from the remainder of the building by 2-hour rated fire barriers or horizontal assemblies. Fire barriers shall be constructed in accordance with Section 707 of the International Building Code, and horizontal assemblies shall be constructed in accordance with Section 711 of the International Building Code.

EXCEPTIONS: 1. Where battery storage is contained in one or more approved prefabricated portable structures providing a complete two-hour fire resistance rated enclosure, fire barriers and horizontal assemblies are not required.  
2. Where battery storage is limited to new batteries in packaging that has been demonstrated to and approved by the fire code official as sufficient to isolate a fire in packaging to the package interior, fire barriers and horizontal assemblies are not required.

**322.4.2.3 Fire protection systems.** Indoor storage areas for lithium-ion and lithium metal batteries shall be protected by an automatic sprinkler system complying with Section 903.3.1.1 or an approved alternative fire suppression system. The system design shall be based on recommendations in the approved technical opinion and report required by Section 322.4.2.1.

**322.4.2.4 Fire alarm systems.** Indoor storage areas for lithium-ion and lithium metal batteries shall be provided with an approved automatic fire detection and alarm system complying with Section 907. The fire detection system shall use air-aspirating smoke detection, radiant energy-sensing fire detection, or both.

**322.4.2.5 Explosion control.** Where the approved technical opinion and report required by Section 322.4.2.1 recommends explosion control, explosion control complying with Section 911 shall be provided.

**322.4.2.6 Reduced requirements for storage of partially charged batteries.** Indoor storage areas for lithium-ion and lithium metal batteries with a demonstrated state of charge not exceeding 30 percent shall not be required to comply with Section 322.4.2.1, 322.4.2.2, or 322.4.2.5, provided that procedures for limiting and verifying that the state of charge will not exceed 30 percent have been approved.

**322.4.3 Outdoor storage.** Outdoor storage of lithium-ion or lithium metal batteries shall comply with Sections 322.4.3.1 through 322.4.3.3.

**322.4.3.1 Distance from storage to exposures.** Outdoor storage of lithium-ion or lithium metal batteries, including storage beneath weather protection in accordance with Section 414.6.1 of the International Building Code, shall comply with one of the following:

1. Battery storage shall be located not less than 20 feet (6096 mm) from any building, lot line, public street, public alley, public way, or means of egress.
2. Battery storage shall be located not less than 3 feet (914 mm) from any building, lot line, public street, public alley, public way, or means of egress, where the battery storage is separated by a 2-hour fire-resistance rated assembly without openings or penetrations and extending 5 feet (1524 mm) above and to the sides of the battery storage area.
3. Battery storage shall be located not less than 3 feet (914 mm) from any building, lot line, public street, public alley, public way, or means of egress, where batteries are contained in approved prefabricated portable structures providing a complete 2-hour fire-resistance rated enclosure.

**322.4.3.2 Storage area size limits and separation.** Outdoor storage areas for lithium-ion or lithium metal batteries, including storage beneath weather-protection in accordance with Section 414.6.1 of the International Building Code, shall not exceed 900 sq. ft (83.6 m). The height of battery storage in such areas shall not exceed 10 feet (3048 mm). Multiple battery storage areas shall be separated from each other by not less than 10 feet (3048 mm) of open space.

**322.4.3.3 Fire detection.** Outdoor storage areas for lithium-ion or lithium metal batteries, regardless of whether such areas are open, under weather protection or in a prefabricated portable structure, shall be provided with an approved automatic fire detection and alarm system complying with Section 907. The fire detection system shall use radiant energy-sensing fire detection.

**323.1 General.** Lithium-ion and lithium metal battery powered micromobility devices and powered industrial trucks shall be operated and maintained in accordance with this section.

EXCEPTIONS: 1. Storage, repair and charging in residential occupancies of powered mobility devices, provided that such devices are for personal use by its *owner*.  
2. Charging of a single powered mobility device in any occupancy by its *owner*.

**323.1.1 Prohibited locations.** The use of a residential occupancy as a business for the charging of commercially owned powered mobility devices or powered industrial trucks as part of a rental or sales service shall not be permitted.

**323.2 Battery chargers and equipment.** Powered micromobility devices and powered industrial trucks shall be charged in accordance with their listing and the manufacturer's instructions using only the original equipment manufacturer-supplied charging equipment or charging equipment in accordance with the listing and manufacturer's instructions.

**323.3 Listing.** Powered micromobility devices shall be listed and labeled in accordance with UL 2272 or UL 2849, as applicable.

**323.4 Battery charging areas.** Where approved, powered micromobility devices and powered industrial trucks shall be permitted to be charged in a room or area that complies with all of the following:

1. Only listed devices utilizing listed charging equipment shall be permitted to be charged.
2. Is provided with sufficient electrical receptacles to allow the charging equipment for each device to be directly connected to a receptacle. Extension cords and relocatable power taps shall not be used.
3. Storage of combustible materials, combustible waste or hazardous materials shall not be permitted.
4. The charging operation shall not be conducted in or obstruct any required means of egress.
5. Removable storage batteries shall not be stacked or charged in an enclosed cabinet unless the cabinet is specially designed and approved for such purpose.
6. A minimum distance of 18 inches (457.2 mm) shall be maintained between each removable storage battery during charging operations unless each battery is isolated from neighboring batteries by an approved fire-resistant material.
7. A minimum of 18 inches (457.2 mm) shall be maintained between the locations of the batteries on each powered micromobility devices or powered industrial truck during charging operations.
8. The indoor room or area shall be protected by a fire alarm system utilizing air-aspirating smoke detectors or radiant energy-sensing fire detection.

**323.5 Fire safety plan.** A fire safety plan shall be provided in accordance with Section 403.10.6. In addition, the fire safety plan shall include emergency response actions to be taken upon detection of a fire or possible fire involving lithium-ion or lithium metal battery storage.

**401.2 Approval.** Where required by the fire code official, fire safety plans, emergency procedures and employee training programs shall be approved by the fire official.

**402.1 Definitions.** The following terms are defined in Chapter 2:

**ALARM SIGNAL;**  
**ALERT SIGNAL;**  
**ALERT SYSTEM;**  
**EMERGENCY EVACUATION DRILL;**  
**LOCKDOWN;**  
**SHELTER-IN-PLACE;**  
**RECALL SIGNAL.**



**403.4.3 Assembly points and fire operations.** Assembly points shall not be in areas likely to be utilized for fire service operations.



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**403.9.2 Group R-2 occupancies.** Group R-2 occupancies shall comply with Sections 403.9.2.1 through 403.9.2.4. ||

**403.9.2.4 Group R-2 assisted living and residential care facilities.** Assisted living and residential care facilities licensed by the state of Washington shall comply with Section 403.7.1 as required for Group I-1 Condition 2 occupancies.

**403.9.3 Group R-4 occupancies.** This section not adopted.

**403.10.6 Buildings with lithium-ion or lithium metal battery storage.** An approved fire safety plan in accordance with Section 404 shall be prepared and maintained for buildings with lithium-ion or lithium metal battery storage.

**403.11.3 Crowd managers for gatherings exceeding 1,000 people.** Where facilities or events involve a gathering of more than 1,000 people, or as required by the fire *code official*, crowd managers shall be provided in accordance with Sections 403.11.3.1 through 403.11.3.3.

**404.2.3 Lockdown plans.** This section is not adopted.

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**406.1 General.** Employees in the occupancies listed in Section 403 shall be trained in the emergency procedures described in their emergency plans. Training shall be based on these plans and as described in Sections 406.2 through 406.3.4.

**406.2 Frequency.** Employees shall receive training in the contents of the emergency plans and their duties as part of new employee orientation and at least annually thereafter. Records shall be kept and made available to the fire code official upon request.

**406.3 Employee training program.** Employees shall be trained in fire prevention, evacuation, sheltering-in-place, and fire safety in accordance with Sections 406.3.1 through 406.3.4.



**406.3.4 Emergency lockdown training.** This section is not adopted.

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**406.3.5 Emergency shelter-in-place training.** Where a facility has a shelter-in-place plan, employees shall be trained on the alert and recall signals, communication system, location of emergency supplies, the use of the incident notification and alarm system, and their assigned duties and procedures in the event of an alarm or emergency.

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**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 3303.

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**503.1 Where required.** Fire apparatus access roads shall be provided and maintained in accordance with locally adopted street, road, and access standards.

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**503.1.1 Buildings and facilities,** is not adopted.

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**503.1.2 Additional access,** is not adopted.

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<b>503.1.3 High-piled storage,</b> is not adopted.	
<b>503.2 Specifications.</b> This section is not adopted.	
<b>503.3 Marking.</b> This section is not adopted.	
<b>503.4 Obstruction of fire apparatus access roads.</b> This section is not adopted.	
<b>503.4.1 Traffic calming devices.</b> This section is not adopted.	

**507.3 Fire flow.** Fire flow requirements for buildings or portions of buildings and facilities shall be determined by an approved method.

EXCEPTIONS: 1. Fire flow is not required for structures under 500 square feet with a B, U or R-1 occupancy where structures are at least 30 feet from any other structure and are used only for recreation.  
2. In rural and suburban areas in which adequate and reliable water supply systems do not exist, the fire *code official* is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code*.

**508.1.2 Separation.** The fire command center shall be separated from the remainder of the building by not less than a 2-hour fire barrier constructed in accordance with Section 707 of the International Building Code or horizontal assembly constructed in accordance with Section 711 of the International Building Code, or both.

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**510.1 Emergency responder communication coverage in new buildings.** Approved in-building, *emergency responder communications enhancement system (ERCES)* for emergency responders shall be provided in all new buildings. In-building ERCES within the building shall be based on the existing coverage levels of the public safety communication systems utilized by the jurisdiction, measured at the exterior of the building. The two-way emergency responder communications coverage system where required, shall be of a type determined by the fire code official and the frequency license holder(s). This section shall not require improvement of the existing public safety communication systems.

EXCEPTIONS: 1. Where approved by the building official and the fire code official, a wired communication system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained instead of an approved communication coverage system.

2. Where it is determined by the *fire code official* that the communication coverage system is not needed.

3. In facilities where emergency responder communication coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the *fire code official* shall have the authority to accept an automatically activated *emergency responder communication coverage system*.

**510.2 Emergency responder communication enhancement system in existing buildings.** Existing buildings shall be provided with approved in-building, emergency responder communications enhancement system for emergency responders as required in Chapter 11.

**510.3 Permit required.** A construction permit for the installation of or modification to in-building, emergency responder communication enhancement systems and related equipment is required as specified in Section 105.6.4. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

**510.4 Technical requirements.** Equipment required to provide in-building, emergency responder communication enhancement system shall be *listed* in accordance with UL 2524. Systems, components and equipment required to provide the in-building, emergency responder communication enhancement system shall comply with Sections 510.4.1 through 510.4.2.8.

**510.4.1 Emergency responder communication enhancement system signal strength.** The building shall be considered to have an acceptable in-building, emergency responder communication enhancement system where signal strength measurements in 95 percent of all areas and 99 percent of areas designated as critical areas by the fire code official on each floor of the building meet the signal strength requirements in Sections 510.4.1.1 through 510.4.1.3.

**510.4.1.1 Minimum signal strength into building.** The minimum inbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the *fire code official*. The inbound signal level shall be a minimum of -95 dBm in 95 percent of the coverage area and 99 percent in *critical areas* and sufficient to provide not less than a delivered audio quality (DAQ) of 3.0 or an equivalent signal-to-interference-plus-noise ratio (SINR) applicable to the technology for either analog or digital signals.

**510.4.2 System design.** The in-building, *emergency responder communication enhancement system* shall be designed in accordance with Sections 510.4.2.1 through 510.4.2.8 and NFPA 1221.

**510.4.2.1 Amplification systems and components.** Buildings and structures that cannot support the required level of in-building, *emergency responder communication system* shall be equipped with systems and components to enhance the radio signals and achieve the required level of in-building, *emergency responder communication enhancement system* specified in Sections 510.4.1 through 510.4.1.3. In-building, *emergency responder communication enhancement systems* utilizing radio-frequency-emitting devices and cabling shall be approved by the *fire code official*. Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use.

**510.4.2.2 Technical criteria.** The fire code official shall maintain a document providing the specific technical information and requirements for the in-building, emergency responder communication enhancement system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, the effective radiated power of radio sites, the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design. ||

**510.4.2.3 Standby power.** In-building, emergency responder communication enhancement systems coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the in-building, *emergency responder communication enhancement system* at 100 percent system capacity for a duration of not less than 12 hours. ||



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**510.4.2.4 Signal booster requirements.** If used, signal boosters shall meet the following requirements:

1. All signal booster components shall be a National Electrical Manufacturer's Association (NEMA) 4, IP66-type waterproof cabinet or equivalent.

EXCEPTION: Listed battery systems that are contained in integrated battery cabinets.

2. Battery systems used for the emergency power source shall be contained in a NEMA 3R or higher-rated cabinet, IP65-type waterproof cabinet or equivalent.

EXCEPTION: Listed battery systems that are contained in integrated battery cabinets.

3. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation.
4. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20 dB greater than the system gain under all operating conditions.
5. Bi-directional amplifiers (BDA) used for in-building, emergency responder communication enhancement systems shall be fitted with anti-oscillation detection and control circuitry and per-channel AGC.
6. The installation of amplification systems or enhancement systems that operate on or provide the means to cause interference on any in-building, *emergency responder communication enhancement system* network shall be coordinated and approved by the fire code official.
7. Only channelized signal boosters shall be permitted.

EXCEPTION: Broadband BDAs may be utilized when specifically authorized in writing by the *frequency license holder*.

**510.4.2.5 System monitoring.** The in-building, *emergency responder communication enhancement system* shall include automatic supervisory and trouble signals that are monitored by a supervisory service and are annunciated by the *fire alarm system* in accordance with NFPA 72. The following conditions shall be separately annunciated by the *fire alarm system*, or, if the status of each of the following conditions is individually displayed on a dedicated panel on the in-building, *emergency responder communication enhancement system*, a single automatic supervisory signal may be annunciated on the *fire alarm system* indicating deficiencies of the in-building, *emergency responder communication enhancement system*:

1. Loss of normal AC power supply.
2. System battery charger(s) failure.
3. Malfunction of the donor antenna(s).
4. Failure of active RF-emitting device(s).
5. Low-battery capacity at 70 percent reduction of operating capacity.
6. Active system component malfunction.
7. Malfunction of the communications link between the *fire alarm system* and the in-building, *emergency responder communication enhancement system*.
8. Oscillation of active RF-emitting device(s).

**510.4.2.6 Additional frequencies and change of frequencies.** The in-building, *emergency responder communication coverage enhancement system* shall be capable of modification or expansion in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority.

**510.4.2.7 Design documents.** The *fire code official* shall have the authority to require "as-built" design documents and specifications for in-building, *emergency responder communication enhancement systems*. The documents shall be in a format acceptable to the *fire code official*.

**510.4.2.8 Radio communication antenna density.** Systems shall be engineered to minimize the near-far effect. In-building, emergency responder communication enhancement system designs shall include sufficient antenna density to address reduced gain conditions.

EXCEPTION: Systems where all portable devices within the same band use active power control features.

**510.5 Installation requirements.** The installation of the in-building, emergency responder communication enhancement system shall be in accordance with NFPA 1221 and Sections 510.5.1 through 510.5.7.

**510.5.1 Mounting of the donor antenna(s).** To maintain proper alignment with the system designed donor site, donor antennas shall be permanently affixed on the highest possible position on the building or where *approved* by the *fire code official*. A clearly visible sign stating "MOVEMENT OR REPOSITIONING OF THIS ANTENNA IS PROHIBITED WITHOUT APPROVAL FROM THE FIRE CODE OFFICIAL." shall be posted. The antenna installation shall be in accordance with the applicable requirements in the *International Building Code* for weather protection of the building envelope.

**510.5.3 Minimum qualifications of personnel.** The minimum qualifications of the system designer and lead acceptance test personnel shall include both of the following:

1. A valid FCC-issued general radio telephone operators license.
2. Certification of in-building system training issued by an *approved* organization or *approved* school, or a certificate issued by the manufacturer of the equipment being installed.

**510.5.4 Acceptance test procedure.** Where an in-building *emergency responder communication enhancements* system is required, and upon completion of installation, the building *owner* shall have the radio system tested to verify that two-way coverage on each floor of the building is in accordance with Section 510.4.1. The test procedure shall be conducted as follows:

1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas, with a maximum test area size of 6,400 square feet. Where the floor area exceeds 128,000 square feet, the floor shall be divided into as many approximately equal test areas as needed, such that no test area exceeds the maximum square footage allowed for a test area.
2. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system or equipment approved by the *fire code official*.
3. Coverage testing of signal strength shall be conducted using a calibrated spectrum analyzer for each of the test grids. A diagram of this testing shall be created for each floor where coverage is provided, indicating the testing grid used for the test in Section 510.5.4(1), and including signal strengths and frequencies for each test area. Indicate all critical areas.
4. Functional talk-back testing shall be conducted using two calibrated portable radios of the latest brand and model used by the agency's radio communications system or other equipment approved by the *fire code official*. Testing shall use digital audible quality (DAQ) metrics, where a passing result is a DAQ of 3 or higher. Communications between handsets shall be tested and recorded in the grid square diagram required by Section 510.5.3(2); each grid square on each floor; between each critical area and a radio outside the building; between each critical area and the fire command center or fire alarm control panel; between each landing in each stairwell and the fire command center or fire alarm panel.
5. Failure of more than 5 percent of the test areas on any floor shall result in failure of the test.

**EXCEPTION:** Critical areas shall be provided with 99 percent floor area coverage.

6. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40 area test, the system shall be altered to meet the 95 percent coverage requirement.
7. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered to be a failure of that test area. Additional test locations shall not be permitted.
8. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building *owner* so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building *owner* shall be required to rerun the acceptance test to reestablish the gain values.
9. As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and at subsequent annual inspections.

10. Systems shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One portable radio shall be positioned not greater than 10 feet (3048 mm) from the indoor antenna. The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna. With both portable radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in Sections 510.4.1.1 and 510.4.1.2.

11. **Documentation maintained on premises.** At the conclusion of the testing, and prior to issuance of the building certificate of occupancy, the building owner or owner's representative shall place a copy of the following records in the Distributed Antenna System enclosure or the building engineer's office. The records shall be available to the fire code official and maintained by the building owner for the life of the system:

- a. A certification letter stating that the *emergency responder enhancement coverage system* has been installed and tested in accordance with this code, and that the system is complete and fully functional.
- b. The grid square diagram created as part of testing in Sections 510.5.3(2) and 510.5.3(3).
- c. Data sheets and/or manufacturer specifications for the *emergency responder enhancement coverage system* equipment; back up battery; and charging system (if utilized).
- d. A diagram showing device locations and wiring schematic.
- e. A copy of the electrical permit.

**510.5 Installation requirements.** The installation of the public safety radio coverage system shall be in accordance with NFPA 1221 and Sections 510.5.1 through 510.5.7.

**510.5.5 FCC compliance.** The in-building, *emergency responder communication enhancement system* installation and components shall comply with all applicable federal regulations including, but not limited to, FCC 47 C.F.R. Part 90.219.

**510.5.6 Wiring.** The backbone, antenna distribution, radiating, or any fiber optic cables shall be rated as plenum cables. The backbone cables shall be connected to the antenna distribution, radiating, or copper cables using hybrid coupler devices of a value determined by the overall design. Backbone cables shall be routed through an enclosure that matches the building's required fire-resistance rating for shafts or interior exit stairways. The connection between the backbone cable and the antenna cables shall be made within an enclosure that matches the building's fire-resistance rating for shafts or interior exit stairways, and passage of the antenna distribution cable in and out of the enclosure shall be protected as a penetration per the *International Building Code*.

**510.5.7 Identification signs.** *Emergency responder enhancement systems* shall be identified by an approved sign located on or near the fire alarm control panel or other approved location stating "This building is equipped with an *Emergency Responder Enhancement Coverage System*. Control Equipment located in ..... or as approved by the *Fire Code Official*." A sign stating "*Emergency Responder Enhancement Coverage System Equipment*" shall be placed on or adjacent to the door of the room containing the main system components.

**510.6 Maintenance.** The in-building, *emergency responder communication enhancement system* shall be maintained operational at all times in accordance with Sections 510.6.1 through 510.6.4.

**510.6.1 Testing and proof of compliance.** The *owner* of the building or *owner's* authorized agent shall have the in-building, two-way *emergency responder communication coverage system* inspected and tested annually or where structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following items 1. through 7.:

1. In-building coverage test as required by the *fire code official* as described in Section 510.5.4 or 510.6.1.1.

EXCEPTION: Group R Occupancy annual testing is not required within dwelling units.

2. Signal boosters shall be tested to verify that the gain/output level is the same as it was upon initial installation and acceptance or set to optimize the performance of the system.

3. Backup batteries and power supplies shall be tested under load of a period of 1 hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.

4. All other active components shall be checked to verify operation within the manufacturers specification.

5. If a fire alarm system is present in the building, a test shall be conducted to verify that the fire alarm system is properly supervising the emergency responder communication coverage system as required in 510.4.2.5. The test is performed by simulating alarms to the fire alarm control panel. The certifications in 510.5.2 are sufficient for the personnel performing this testing.

6. At the conclusion of testing, a record of the inspection and maintenance along with an updated grid diagram of each floor showing tested strengths in each grid square and each critical area shall be added to the documentation maintained on the premises in accordance with Section 510.5.3.

7. At the conclusion of the testing, a report, which shall verify compliance with Section 510.6.1, shall be submitted to the *fire code official*.

**510.6.1.1 Alternative in-building coverage test.** When the comprehensive test documentation required by Section 510.5.3 is available, or the most recent full five-year test results are available if the system is older than six years, the in-building coverage test required by the fire code official in Section 510.6.1(1), may be conducted as follows:

1. Functional talk-back testing shall be conducted using two calibrated portable radios of the latest brand and model used by the agency's radio communications system or other equipment approved by the fire code official. Testing shall use digital audible quality (DAQ) metrics, where a passing result is a DAQ of 3 or higher.

Communications between handsets in the following locations shall be tested: Between the fire command center or fire alarm control panel and a location outside the building; between the fire alarm control panel and each landing in each stairwell.

2. Coverage testing of signal strength shall be conducted using a calibrated spectrum analyzer for:

a. Three grid areas per floor. The three grid areas to be tested on each floor are the three grid areas with poorest performance in the acceptance test or the most recent annual test, whichever is more recent;

b. Each of the critical areas identified in acceptance test documentation required by Section 510.5.3, or as modified by the fire code official; and

c. One grid square per serving antenna.

3. The test area boundaries shall not deviate from the areas established at the time of the acceptance test, or as modified by the *fire code official*. The building shall be considered to have acceptable emergency responder communication coverage when the required signal strength requirements in Sections 510.4.1.1 and 510.4.1.2 are located in 95 percent of all areas on each floor of the building and 99 percent in critical areas, and any nonfunctional serving antenna are repaired to function within normal ranges. If the documentation of the acceptance test or most recent previous annual test results are not available or acceptable to the fire code official, the radio coverage verification testing described in Section 510.5.3 shall be conducted.

**510.6.2 Additional frequencies.** The building owner shall modify or expand the in-building, *emergency responder communication enhancement system* at their expense in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority. Prior approval of an in-building, *emergency responder communication enhancement system* on previous frequencies does not exempt this section.

**510.6.3 Nonpublic safety system.** Where other nonpublic safety amplification systems installed in buildings reduce the performance or cause interference with the in-building, emergency responder communication enhancement system, the nonpublic safety amplification system shall be corrected or removed.

**510.6.4 Field testing.** Agency personnel shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage or to disable a system adversely impacting the *emergency responder communication enhancement system* in the region.

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**605.4.1.1 Approval.** Outdoor fuel oil storage tanks shall be in accordance with UL 142, UL 142A, or UL 2085.

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**605.4.2.1 Approval.** Indoor fuel oil storage tanks shall be in accordance with UL 80, UL 142, UL 142A, or UL 2085.

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**605.4.2.2 Quantity limits.** One or more fuel oil storage tanks containing Class II or III combustible liquid shall be permitted in a building. The aggregate capacity of all tanks shall not exceed the following:

1. 660 gallons (2,498 L) in unsprinklered buildings, where stored in a tank complying with UL 80, UL 142, UL 142A, or UL 2085.
2. 1,320 gallons (4,996 L) in buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1, where stored in a tank complying with UL 142 or UL 142A. The tank shall be listed as a secondary containment tank, and the secondary containment shall be monitored visually or automatically.
3. 3,000 gallons (11,356 L) in buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1, where stored in protected above-ground tanks complying with UL 2085 and Section 5704.2.9.7. The tank shall be listed as a secondary containment tank, as required by UL 2085, and the secondary containment shall be monitored visually or automatically.

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**606.2 Where required.** A Type I hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease laden vapors.

- EXCEPTIONS:**
1. Factory-built commercial exhaust hoods that are listed and labeled in accordance with UL 710, and installed in accordance with Section 304.1 of the *International Mechanical Code*, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4, and 507.5 of the *International Mechanical Code*.
  2. Factory-built commercial cooking recirculating systems that are listed and labeled in accordance with UL 710B, and installed in accordance with Section 304.1 of the *International Mechanical Code*, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4, and 507.5 of the *International Mechanical Code*. Spaces in which such systems are located shall be considered to be kitchens and shall be ventilated in accordance with Table 403.3.1.1 of the *International Mechanical Code*. For the purpose of determining the floor area required to be ventilated, each individual appliance shall be considered as occupying not less than 100 square feet (9.3 m<sup>2</sup>).
  3. Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood shall not be required at or above them.
  4. A Type I hood shall not be required for an electric cooking appliance where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m<sup>3</sup> or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m<sup>3</sup>/s) in accordance with UL 710B.
  5. A Type I hood shall not be required to be installed in an R-2 occupancy with not more than 16 residents.

**606.2.1 Domestic cooking appliances used for commercial purposes.** Domestic cooking appliances utilized for commercial purposes shall be provided with Type I, Type II, or residential hoods as required for the type of appliances and processes in accordance with Table 606.2.1 and Sections 507.2 and 507.3 of the *International Mechanical Code*.

**Table 606.2.1**  
**Type of Hood Required for Domestic Cooking Appliances in the Following Spaces** <sup>a,b</sup>

Type of Space	Type of Cooking	Type of Hood
Church	1. Boiling, steaming, and warming precooked food 2. Roasting, pan frying, and deep frying	Residential hood or Type II hood Type I hood
Community or party room in apartment and condominium	1. Boiling, steaming, and warming precooked food 2. Roasting, pan frying, and deep frying	Residential hood or Type II hood Type I hood
Day care	1. Boiling, steaming, and warming precooked food 2. Roasting, pan frying, and deep frying	Residential hood or Type II hood Type I hood
Dormitory, assisted living facility, nursing home	1. Boiling, steaming, and warming precooked food 2. Roasting, pan frying, and deep frying	Residential hood or Type II hood Type I hood
Office lunch room	1. Boiling, steaming, and warming precooked food 2. Roasting, pan frying, and deep frying	Residential hood or Type II hood Type I hood

- a. Commercial cooking appliances shall comply with Section 507.2 of the *International Mechanical Code*.
- b. Requirements in this table apply to electric or gas fuel appliances only. Solid fuel appliances or char broilers require Type I hoods.
- c. Residential hood shall ventilate to the outside.
- d. Type II hood required when more than one appliance is used.

**606.3 Operations, inspection, and maintenance.** Commercial cooking systems shall be operated, inspected, and maintained in accordance with Sections 606.3.1 through 606.3.4 and Chapter 12 of NFPA 96.

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**806.1.1 Restricted occupancies.** Natural cut trees shall be prohibited in the following occupancies:

1. Group I; and
2. R-2 occupancies providing licensed care to clients in one of the categories listed in the International Building Code, Section 310.1, licensed by Washington state.

**806.1.2 Support devices.** The support device that holds the tree in an upright position shall be of a type that is stable and that meets all of the following criteria:

1. The device shall hold the tree securely and be of adequate size to avoid tipping over of the tree.
2. The device shall be capable of containing a minimum supply of water in accordance with Table 806.1.2.
3. The water level, when full, shall cover the tree stem at least 2 inches (51 mm). The water level shall be maintained above the fresh cut and checked at least once daily.

**Table 806.1.2**  
**Support Stand Water Capacity**

Tree Stem Diameter (inches)	Minimum Support Stand Water Capacity (gallons)	Typical Daily Water Transpiration Amount (gallons)
Up to 4	1	1/4 to 1
4 to 6	1 1/2	1 1/4 to 1 1/2
7 to 8	2	1 3/4 to 2
9 to 12	3	2 1/4 to 3
13 and over	4	Over 3

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**901.4.2 Nonrequired fire protection systems and life safety systems.** A *fire protection* and *life safety system* or portion thereof not required by this code or the *International Building Code* shall be allowed to be furnished for partial or complete protection provided such installed system meets the applicable requirements of this code and the *International Building Code*. Such systems or portion of system shall be provided with signage stating "NON-REQUIRED SYSTEM." Signage shall be durable and permanent in nature, with contrasting color and background, and with lettering of not less than 1 inch in height. Location of such signage shall be approved.



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**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 all of the following conditions exist:

1. Installation is not required by this code, the *International Building Code*, or a previously approved alternative method.
2. The hose line would not be utilized by trained personnel or the fire department.
3. The remaining outlets are compatible with local fire department fittings.

**903.2 Where required.** Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12.

EXCEPTIONS: 1. Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour *fire barriers* constructed in accordance with Section 707 of the *International Building Code* or not less than 2-hour *horizontal assemblies* constructed in accordance with Section 711 of the *International Building Code*, or both.

2. Bottom of the elevator hoistway in an enclosed and noncombustible elevator shaft.

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**903.2.1.3 Group A-3.** An automatic sprinkler system shall be provided throughout stories containing Group A-3 occupancies and throughout all stories from the Group A-3 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m<sup>2</sup>).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

EXCEPTION: For fixed guideway transit and passenger rail system stations, an automatic sprinkler system shall be provided in accordance with Section 4901.

**903.2.1.6 Assembly occupancies on roofs.** Where an occupied roof has an assembly occupancy with an occupant load exceeding 100 for Group A-2, and 300 for other Group A occupancies, the building shall be equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.

EXCEPTION: Open parking garages of Type I or Type II construction.

**903.2.1.8 Nightclub.** An automatic sprinkler system shall be provided throughout Group A-2 nightclubs as defined in this code.

**903.2.3 Group E.** An automatic sprinkler system shall be provided for fire areas containing Group E occupancies where the fire area has an occupant load of 51 or more, calculated in accordance with Table 1004.5.

EXCEPTIONS: 1. Portable school classrooms with an occupant load of 50 or less calculated in accordance with Table 1004.5, provided that the aggregate area of any cluster of portable classrooms does not exceed 6,000 square feet (557 m<sup>2</sup>); and clusters of portable school classrooms shall be separated as required by the building code; or

2. Portable school classrooms with an occupant load from 51 through 98, calculated in accordance with Table 1004.5, and provided with two means of direct independent exterior egress from each classroom in accordance with Chapter 10, and one exit from each class room shall be accessible, provided that the aggregate area of any cluster of portable classrooms does not exceed 6,000 square feet (557 m<sup>2</sup>); and clusters of portable school classrooms shall be separated as required by the building code; or

3. Fire areas containing day care and preschool facilities with a total occupant load of 100 or less located at the level of exit discharge where every room in which care is provided has not fewer than one exit discharge door.

**903.2.6 Group I.** An *automatic sprinkler system* shall be provided throughout buildings with a Group I *fire area*.

EXCEPTIONS: 1. An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group I-1 Condition 1 facilities.

2. Where new construction or additions house less than 16 persons receiving care, an automatic sprinkler system installed in accordance with Section 903.2.8.3 shall be permitted for Group I-1, Condition 2, assisted living facilities licensed under chapter 388-78A WAC and residential treatment facilities licensed under chapter 246-337 WAC.

**903.2.6.1 Group I-4.** An automatic sprinkler system shall be provided in fire areas containing Group I-4 occupancies where the fire area has an occupant load of 51 or more, calculated in accordance with Table 1004.5.

EXCEPTIONS: 1. An automatic sprinkler system is not required where Group I-4 day care facilities with a total occupant load of 100 or less, and located at the level of exit discharge and where every room where care is provided has not fewer than one exterior exit door.

2. In buildings where Group I-4 day care is provided on levels other than the level of exit discharge, an automatic sprinkler system in accordance with Section 903.3.1.1 shall be installed on the entire floor where care is provided, all floors between the level of care and the level of exit discharge and all floors below the level of exit discharge other than areas classified as an open parking garage.

**903.2.8 Group R.** An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

EXCEPTION: Group R-1 if all of the following conditions apply:

1. The Group R fire area is no more than 500 square feet and is used for recreational use only.
2. The Group R fire area is on only one story.
3. The Group R fire area does not include a basement.
4. The Group R fire area is no closer than 30 feet from another structure.
5. Cooking is not allowed within the Group R fire area.
6. The Group R fire area has an occupant load of no more than eight.
7. A hand-held (portable) fire extinguisher is in every Group R fire area.

**903.2.8.5 Adult family home.** An adult family home with a capacity of seven or eight that serves residents who require assistance during an evacuation must install an automatic sprinkler system that meets the requirements of NFPA 13D.

**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 new walls, partitions or other similar obstructions are installed that increase the exit access travel distance to more than 75 feet, the basement shall be equipped throughout with an approved automatic sprinkler system.

**903.2.11.5 Commercial cooking operations.** An *automatic sprinkler system* shall be installed in commercial kitchen exhaust hood and duct systems where an *automatic sprinkler system* is used to comply with Section 904.

EXCEPTION: An *automatic fire sprinkler system* is not required to protect the ductwork that is in excess of 75 feet when the commercial kitchen exhaust hood is protected by a system listed per UL 300.

**Table 903.2.11.6  
Additional Required Fire Protection Systems**

Note: Add section and subject to existing model code table.

Section	Subject
321.2	Lithium-ion and lithium metal battery storage

**903.2.11.7 Relocatable buildings within buildings.** Relocatable buildings or structures located within a building with an approved fire sprinkler system shall be provided with fire sprinkler protection within the occupiable space of the building and the space underneath the relocatable building.

EXCEPTIONS: 1. Sprinkler protection is not required underneath the building when the space is separated from the adjacent space by construction resisting the passage of smoke and heat and combustible storage will not be located there.  
2. If the building or structure does not have a roof or ceiling obstructing the overhead sprinklers.  
3. Construction trailers and temporary offices used during new building construction prior to occupancy.  
4. Movable shopping mall kiosks with a roof or canopy dimension of less than 4 feet on the smallest side.

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**903.3.1.2 NFPA 13R sprinkler systems.***Automatic sprinkler systems* in Group R occupancies up to and including four stories in height in buildings not exceeding 60 feet (18,288 mm) in height above grade plane shall be permitted to be installed throughout in accordance with NFPA 13R. The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the *International Building Code* shall be measured from the horizontal assembly creating separate buildings.



**903.3.5.3 Underground portions of fire protection system water supply piping.** The portion of the installation or modification of an underground water main, public or private, dedicated to supplying a water-based fire protection system shall be in accordance with NFPA 24 and chapter [18.160](#) RCW. Piping and appurtenances downstream of the first control valve on the lateral or service line from the distribution main to one-foot above finished floor shall be approved by the fire *code official*. Such underground piping shall be installed by a fire sprinkler system contractor licensed in accordance with chapter [18.160](#) RCW and holding either a Level U or a Level 3 license. For underground piping supplying systems installed in accordance with Section 903.3.1.2, a Level 2, 3, or U licensed contractor is acceptable.

EXCEPTIONS: 1. Portions of underground piping supplying automatic sprinkler systems installed in accordance with Section 903.3.1.3.  
2. Portions of underground water mains serving sprinkler systems that are designed and installed in accordance with Section 903.3.1.2 and are less than four inches (100 mm) in nominal diameter.

**904.1.1 Certification of personnel for alternative fire-extinguishing equipment.** Personnel performing system design, installation, maintenance, programming or testing on automatic fire-extinguishing systems, other than automatic sprinkler systems, shall possess the appropriate National Institute for Certification in Engineering Technologies (NICET) *Special Hazards Suppression Systems* certification.

EXCEPTION: A current ICC/NAFED certification for pre-engineered kitchen fire extinguishing system technician is allowed in lieu of NICET Level II or higher in *Special Hazards Suppression Systems* for the design, installation, inspection/testing or maintenance on pre-engineered kitchen suppression systems.

**904.1.1.1 Design.** All construction documents shall be reviewed by a NICET Level III in special hazard suppression systems or a licensed professional engineer (PE) in the state of Washington prior to being submitted for permitting. The reviewing professional shall submit a stamped, signed, and dated letter; or a verification method approved by the *fire code official* indicating the system has been reviewed and meets or exceeds the design requirements of the state of Washington and the local jurisdiction.

**904.1.1.2 Installation.** Installation not defined as "electrical construction trade" by chapter [19.28](#) RCW or "Fire Protection Sprinkler Fitting" by chapter [18.270](#) RCW, shall be completed by or directly supervised by a NICET Level II or higher in *special hazards suppression systems*. Supervision shall consist of a person being on the same job site and under the control of a NICET Level II or higher in *special hazards suppression systems*.

**904.1.1.3 Testing/maintenance.** Inspection, testing, commissioning, maintenance, and programming not defined as "electrical construction trade" by chapter [19.28](#) RCW or "Fire Protection Sprinkler Fitting" by chapter [18.270](#) RCW, shall be completed by a NICET Level II or higher in *special hazards suppression systems*.

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**904.13 Commercial cooking systems.** The automatic fire-extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Preengineered automatic dry- and wet-chemical extinguishing systems shall be tested in accordance with UL 300 and *listed* and *labeled* for the intended application. Other types of automatic fire-extinguishing systems shall be *listed* and *labeled* for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, NFPA 96, its listing and the manufacturer's installation instructions. Additional protection is not required for ductwork beyond 75 feet when hood suppression system complies with UL 300. Signage shall be provided on the exhaust hood or system cabinet, indicating the type and arrangement of cooking appliances protected by the automatic fire-extinguishing system. Signage shall indicate appliances from left to right, be durable, and the size, color, and lettering shall be approved. Automatic fire-extinguishing systems of the following types shall be installed in accordance with the referenced standard indicated, as follows:

1. Carbon dioxide extinguishing systems, NFPA 12.
2. *Automatic sprinkler systems*, NFPA 13.
3. Automatic water mist systems, NFPA 750.
4. Foam-water sprinkler system or foam-water spray systems, NFPA 16.
5. Dry-chemical extinguishing systems, NFPA 17.
6. Wet-chemical extinguishing systems, NFPA 17A.

EXCEPTIONS: 1. Factory-built commercial cooking recirculating systems that are tested in accordance with UL 710B and listed, labeled and installed in accordance with Section 304.1 of the *International Mechanical Code*.

2. Protection of duct systems beyond 75 feet when the commercial kitchen exhaust hood is protected by a system listed in accordance with UL 300.

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**907.2.3 Group E.** Group E occupancies shall be provided with a manual fire alarm system that initiates the occupant notification signal utilizing one of the following:

1. An emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6; or
2. A system developed as part of a safe school plan adopted in accordance with RCW 28A.320.125 or developed as part of an emergency response system consistent with the provisions of RCW 28A.320.126. The system must achieve all of the following performance standards:
  - 2.1 The ability to broadcast voice messages or customized announcements;
  - 2.2 Includes a feature for multiple sounds, including sounds to initiate a lock down;
  - 2.3 The ability to deliver messages to the interior of a building, areas outside of a building as designated pursuant to the safe school plan, and to personnel;
  - 2.4 The ability for two-way communications;
  - 2.5 The ability for individual room calling;
  - 2.6 The ability for a manual override;
  - 2.7 Installation in accordance with NFPA 72;
  - 2.8 Provide 15 minutes of battery backup for alarm and 24 hours of battery backup for standby; and
  - 2.9 Includes a program for annual inspection and maintenance in accordance with NFPA 72.

**EXCEPTIONS:** 1. A manual fire alarm system is not required in Group E occupancies with an occupant load of 50 or less.

2. Emergency voice/alarm communication systems meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall not be required in Group E occupancies with occupant loads of 100 or less, such as individual portable school classroom buildings; provided that activation of the manual fire alarm system initiates an approved occupant notification signal in accordance with Section 907.5.

3. Where an existing approved alarm system is in place, an emergency voice/alarm system is not required in any portion of an existing Group E building undergoing any one of the following repairs, alteration or addition:

3.1 Alteration or repair to an existing building including, without limitation, alterations to rooms and systems, and/or corridor configurations, not exceeding 35 percent of the fire area of the building (or the fire area undergoing the alteration or repair if the building is comprised of two or more fire areas); or

3.2 An addition to an existing building, not exceeding 35 percent of the fire area of the building (or the fire area to which the addition is made if the building is comprised of two or more fire areas).

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

4.1 Interior corridors are protected by smoke detectors.

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

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

5. Manual fire alarm boxes shall not be required in Group E occupancies where all of the following apply:

5.1 The building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

5.2 The emergency voice/alarm communication system will activate on sprinkler waterflow.

5.3 Manual activation is provided from a normally occupied location.

**907.2.3.1 Sprinkler systems or detection.** When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.

**907.2.6.1 Group I-1.** An automatic smoke detection system shall be installed in *corridors*, waiting areas open to *corridors* and *habitable spaces* other than *sleeping units* and kitchens. The system shall be activated in accordance with Section 907.4.

EXCEPTIONS: 1. For Group I-1 Condition 1 occupancies, smoke detection in *habitable spaces* is not required where the facility is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1.

2. Smoke detection is not required for exterior balconies.

**907.2.6.4 Group I-4 occupancies.** A manual fire alarm system that 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 I-4 occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.

EXCEPTIONS: 1. A manual fire alarm system is not required in Group I-4 occupancies with an occupant load of 50 or less.

2. Emergency voice alarm communication systems meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall not be required in Group I-4 occupancies with occupant loads of 100 or less, provided that activation of the manual fire alarm system initiates an approved occupant notification signal in accordance with Section 907.5.



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**907.2.11.1 Group R-1.** Single or multiple-station smoke alarms shall be installed in all of the following locations in Group R-1:

1. In sleeping areas.
2. In each *loft* constructed in accordance with Section 420.13 of the *International Building Code*.
3. In every room in the path of the means of egress from the sleeping area to the door leading from the sleeping unit.
4. In each story within the sleeping unit, including basements. For sleeping units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

**907.2.11.2 Groups R-2, R-3, and I-1.** Single- or multiple-station smoke alarms shall be installed and maintained in Groups R-2, R-3, and I-1 regardless of occupant load at all of the following locations:

1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.
2. In each room used for sleeping purposes.
3. In each *loft* constructed in accordance with Section 420.13.
4. In each story within a *dwelling unit*, including *basements* but not including crawl spaces and uninhabitable attics. In *dwellings* or *dwelling units* with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

**907.5.2.1.2 Maximum sound pressure.** The maximum sound pressure level for audible alarm notification appliances shall be 110 dBA at the minimum hearing distance from the audible appliance. For systems operating in public mode, the maximum sound pressure level shall not exceed 30 dBA over the average ambient sound level. Where the average ambient noise is greater than 95 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.



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**907.8.4.1 Testing/maintenance:** All inspection, testing, maintenance and programing not defined as "*electrical construction trade*" by chapter [19.28](#) RCW shall be completed by a NICET II or ESA/NTS Certified Fire Alarm Technician (CFAT) Level II Fire in fire alarms (effective July 1, 2018).



**907.11 NICET: National Institute for Certification in Engineering Technologies and ESA/NTS: Electronic Security Association/National Training School.**

**907.11.1 Scope.** This section shall apply to new and existing fire alarm systems.

**907.11.2 Design review:** All construction documents shall be reviewed by a NICET III, an ESA/NTS Certified Fire Alarm Designer (CFAD) Level III Fire in fire alarms, or a licensed professional engineer (PE) in Washington prior to being submitted for permitting. The reviewing professional shall submit a stamped, signed, and dated letter; or a verification method approved by the local authority having jurisdiction indicating the system has been reviewed and meets or exceeds the design requirements of the state of Washington and the local jurisdiction (effective July 1, 2018).

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**909.21.12 Hoistway venting.** Hoistway venting need not be provided for pressurized elevator shafts.

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**909.21.13 Machine rooms.** Elevator machine rooms shall be pressurized in accordance with this section unless separated from the hoistway shaft by construction in accordance with Section 707 of the *International Building Code*.

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**913.2.1 Protection of fire pump rooms and access.** Fire pumps shall be located in rooms that are separated from all other areas of the building by 2-hour fire barriers constructed in accordance with Section 707 of the *International Building Code* or 2-hour horizontal assemblies constructed in accordance with Section 711 of the *International Building Code*, or both. Fire pump rooms not directly accessible from the outside shall be accessible through an enclosed passageway from an interior exit stairway or exterior exit. The enclosed passageway shall have a *fire-resistance rating* not less than the *fire-resistance rating* of the fire pump room (see NFPA 20 Section 4.14.2.1.2).

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**915.1.1 Where required.** Carbon monoxide detection shall be provided in Group I and R occupancies and in classrooms in Group E occupancies in the locations specified in Section 915.2 where any of the conditions in Sections 915.1.2 through 915.1.6 exist.

EXCEPTIONS: 1. R-2 occupancies, with the exception of R-2 college dormitories, are required to install carbon monoxide detectors without exception.

2. Sleeping units or dwelling units in I and R-1 occupancies and R-2 college dormitories, hotel, DOC prisons and work releases and assisted living facilities and residential treatment facilities licensed by the state of Washington, which do not themselves contain a fuel-burning appliance, a fuel-burning fireplace, or have an attached garage, need not be provided with carbon monoxide alarms provided that they comply with the exceptions of Section 915.1.4.

**915.2.1 Dwelling units.** Carbon monoxide detection shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each level of the dwelling. Where a fuel-burning appliance or a fuel-burning fireplace is located within a bedroom or its attached bathroom, carbon monoxide detection shall be installed within the bedroom. ||

**915.2.3 Group E occupancies.** When required by Section 915.1 in new buildings, or by Chapter 11 of the *International Fire Code*, carbon monoxide detection shall be installed in classrooms in Group E occupancies. Carbon monoxide alarm signals shall be automatically transmitted to an on-site location that is staffed by school personnel. ||

EXCEPTIONS: 1. Carbon monoxide alarm signals shall not be required to be automatically transmitted to an on-site location that is staffed by school personnel in Group E occupancies with an occupant load of 50 or less. ||

2. Carbon monoxide alarm signals shall not be required to be automatically transmitted to an on-site location that is staffed by school personnel in Group E occupancies where an exception contained in Section 915.1 applies, or in Group E occupancies where signals are transmitted to an off-site service monitored by a third party, such as a service that monitors fire protection systems in the building. ||

**915.5.1 General.** Carbon monoxide detection systems shall comply with NFPA 72. Carbon monoxide detectors shall be listed in accordance with UL 2075. ||

**915.5.2 Locations.** Carbon monoxide detectors shall be installed in the locations specified in Section 915.2. These locations supersede the locations specified in NFPA 72. ||

**915.6 Maintenance.** Carbon monoxide alarms and carbon monoxide detection systems shall be maintained in accordance with NFPA 72. Carbon monoxide alarms and carbon monoxide detectors that become inoperable or begin producing end-of-life signals shall be replaced. ||

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**1003.7 Elevators, escalators, and moving walks.** Elevators, escalators, and moving walks shall not be used as a component of a required means of egress from any other part of the building.

**EXCEPTIONS:** 1. Elevators used as an accessible means of egress in accordance with Section 1009.4.

2. Escalators used as a means of egress for fixed transit and passenger rail system accordance with Section 4901.

**1004.5 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 1004.5. For areas without fixed seating, the occupant load shall be not 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 1004.5. Where an intended function is not listed in Table 1004.5, the *fire code 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 1004.5  
Maximum Floor Area Allowances Per Occupant**

<b>Function of Space</b>	<b>Occupant Load Factor <sup>a</sup></b>
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Exhibit gallery and museum	30 net
Billiard table/game table area	50 gross
Assembly with fixed seats	See Section 1004.6
Assembly without fixed seats	
Concentrated (chairs only - Not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway and for additional areas	7 net
Business areas	150 gross
Concentrated business use areas	See Section 1004.8
Courtrooms - Other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Fixed guideway transit and passenger rail systems	
Platform	100 gross (See Section 4901)
Concourse/lobby	
Group H-5 fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross

**Insert Facing Page 10-3**

**Table 1004.5 (continued)**  
**Maximum Floor Area Allowances Per Occupant**

Library	
Reading rooms	50 net
Stack area	100 gross
Locker rooms	50 gross
Mall buildings - Covered and open	See Section 402.8.2 of the IBC
Mercantile	
Storage, stock, shipping areas	60 gross 300 gross
Parking garages which is correct	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross
For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m <sup>2</sup>	

a. Floor area in square feet per occupant.

**1004.5.1 Increased occupant load.** The occupant load permitted in any building, or portion thereof, is permitted to be increased from that number established for the occupancies in Table 1004.5, provided that all other requirements of the code are met based on such modified number and the occupant load does not exceed one occupant per 7 square feet (0.65 m<sup>2</sup>) of occupiable floor space. Where required by the *fire code official*, an approved aisle, seating or fixed equipment diagram substantiating any increase in occupant load shall be submitted. Where required by the *fire code official*, such diagram shall be posted.

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

EXCEPTIONS: 1. Aisles and aisle access ways in rooms or spaces used for assembly purposes complying with Section 1030.

2. The capacity in inches, of means of egress components for fixed guideway transit and passenger rail stations, shall meet the requirements of Section 4901.



**1006.2.1 Egress based on occupant load and common path of egress travel distance.** Two *exits* or *exit* access doorways from any space shall be provided where the design occupant load or the common path of egress travel distance exceeds the values listed in Table 1006.2.1. The cumulative *occupant load* from adjacent rooms, areas or spaces shall be determined in accordance with Section 1004.2.

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.  
2. Care suites in Group I-2 occupancies complying with Section 407.4 of the *International Building Code*.  
3. Unoccupied mechanical rooms and penthouses are not required to comply with the common path of egress travel distance measurement.  
4. The common path of travel for fixed transit and passenger rail system stations shall be in accordance with Section 4901.

**1006.2.1.1 Three or more exits or exit access doorways.** Three *exits* or *exit* access doorways shall be provided from any space with an occupant load of 501 to 1,000. Four exits or exit access doorways shall be provided from any space with an occupant load greater than 1,000.

EXCEPTION: The number of required exits for fixed transit and passenger rail systems may be reduced by one at open stations.

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**1008.2.3 Exit discharge.** This subsection is not adopted.

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**1009.1 Accessible means of egress required.** Accessible *means of egress* shall comply with this section. Accessible spaces shall be provided with not less than one accessible *means of egress*. Where more than one *means of egress* is required by Section 1006.2 or 1006.3 from any *accessible* space, each *accessible* portion of the space shall be served by not less than two *accessible means of egress*.

EXCEPTIONS: 1. One *accessible means of egress* is required from an *accessible* mezzanine level in accordance with Section 1009.3, 1009.4 or

1009.5.

2. In assembly areas with ramped *aisles* or stepped *aisles* one *accessible means of egress* is permitted where the *common path of egress travel* is *accessible* and meets the requirements in Section 1030.8.

3. In parking garages, *accessible means of egress* are not required to serve parking areas that do not contain accessible parking spaces.

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**1009.8 Two-way communication.** A two-way communication system complying with Sections 1009.8.1 and 1009.8.2 shall be provided at the landing serving each elevator or bank of elevators on each accessible floor that is one or more stories above or below the *level of exit discharge*.

EXCEPTIONS: 1. Two-way communication systems are not required at the landing serving each elevator or bank of elevators where the two-way communication system is provided within *areas of refuge* in accordance with Section 1009.6.5.

2. Two-way communication systems are not required on floors provided with *ramps* that provide a direct path of egress travel to grade or the level of exit discharge conforming to the provisions of Section 1012.

3. Two-way communication systems are not required at the landings serving only service elevators that are not designated as part of the accessible *means of egress* or serve as part of the required *accessible route* into a facility.

4. Two-way communication systems are not required at the landings serving only freight elevators.

5. Two-way communication systems are not required at the landing serving a private residence elevator.

6. Two-way communication systems are not required in Group I-2 or I-3 facilities.

**1009.8.1 System requirements.** Two-way communication systems shall provide communication between each required location and the *fire command center* or a central control point location *approved* by the fire department. Where the central control point is not a *constantly attended location*, the two-way communication system shall have a timed automatic telephone dial-out capability that provides two-way communication with an approved supervising station. The two-way communication system shall include both audible and visible signals. The two-way communication system shall have a battery backup or an approved alternate source of power that is capable of 90 minutes use upon failure of the normal power source.

**1010.2.4 Locks and latches.** Locks and latches shall be permitted to prevent operation of doors where any of the following exists:

1. Places of detention or restraint.
2. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M, and S, and in places of religious worship, the main door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
  - 2.1. The locking device is readily distinguishable as locked;
  - 2.2. A readily visible sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background; and
  - 2.3. The use of the key-operated locking device is revocable by the building official for due cause.
3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts has no doorknob or surface-mounted hardware.
4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt, or security chain, provided such devices are openable from the inside without the use of a key or a tool.
5. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.
6. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.
7. Approved, listed locks without delayed egress shall be permitted in Group I-1 condition 2 assisted living facilities licensed under chapter 388-78A WAC and Group I-1 Condition 2 residential treatment facilities licensed under chapter 246-337 WAC by the state of Washington, provided that:
  - 7.1. The clinical needs of one or more patients require specialized security measures for their safety.
  - 7.2. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.
  - 7.3. The doors unlock upon loss of electrical power controlling the lock or lock mechanism.
  - 7.4. The lock shall be capable of being deactivated by a signal from a switch located in an approved location.
  - 7.5. There is a system, such as a keypad and code, in place that allows visitors, staff persons and appropriate residents to exit. Instructions for exiting shall be posted within six feet of the door.
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 occupant load of the occupied exterior area shall not exceed 300 as determined by IBC Section 1004.
  - 8.2. 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.
  - 8.3. 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.
  - 8.4. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.
  - 8.5. A clear window or glazed door opening, not less than 5 square feet (0.46 m<sup>2</sup>) sq. ft. in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.
  - 8.6. 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 high on a contrasting background.
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 or less, serving a private office space.

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**1010.2.14 Controlled egress doors in Groups I-1 and I-2.** Electric locking systems, including electromechanical locking systems and electromagnetic locking systems, shall be permitted to be locked in the means of egress in Group I-1 or I-2 occupancies where the clinical needs of persons receiving care require their containment. Controlled egress doors shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following:

1. The doors shall unlock on actuation of the automatic sprinkler system or automatic smoke detection system.
2. The door locks shall unlock on loss of power controlling the lock or lock mechanism.
3. The door locking system shall be installed to have the capability of being unlocked by a switch located at the fire command center, a nursing station or other approved location. The switch shall directly break power to the lock.
4. A building occupant shall not be required to pass through more than one door equipped with a controlled egress locking system before entering an exit.
5. The procedures for unlocking the doors shall be described and approved as part of the emergency planning and preparedness required by Chapter 4 of the *International Fire Code*.
6. There is a system, such as a keypad and code, in place that allows visitors, staff persons and appropriate residents to exit. Instructions for exiting shall be posted within six feet of the door.
7. All clinical staff shall have the keys, codes or other means necessary to operate the locking systems.
8. Emergency lighting shall be provided at the door.
9. The door locking system units shall be listed in accordance with UL 294.

**EXCEPTIONS:** 1. Items 1 through 4 and 6 shall not apply to doors to areas where persons, which because of clinical needs, require restraint or containment as part of the function of a psychiatric treatment area.  
2. Items 1 through 4 and 6 shall not apply to doors to areas where a listed egress control system is utilized to reduce the risk of child abduction from nursery and obstetric areas of a Group I-2 hospital.

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**1010.3.4 Security grilles.** In Groups B, F, M and S, horizontal sliding or vertical security grilles are permitted at the main exit and shall be openable from the inside without the use of a key or special knowledge or effort during periods that the space is occupied. The grilles shall remain secured in the full-open position during the period of occupancy by the general public. Where two or more *exits* or *access to exits* are required, not more than one-half of the *exits* or *exit access* doorways shall be equipped with horizontal sliding or vertical security grilles.

**1010.3.4.1 Fixed transit and passenger rail systems.** In fixed transit and passenger rail system stations horizontal and vertical security grilles are permitted at station entrances as a component in the means of egress when the station is under constant supervision by on-site security personnel and an exit door with panic hardware that swings in the direction of egress, with a minimum clear width of 32 inches, provided within 10 feet of the gate. The security grilles shall remain secured in the full-open position during the period of occupancy by the general public.

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**1011.17 Stairways in individual dwelling units.** Stairs or ladders within an individual dwelling unit used for access to areas of 200 square feet (18.6 m<sup>2</sup>) or less, and not containing the primary bathroom or kitchen, are exempt from the requirements of Section 1009.

**1012.1 Scope.** The provisions of this section shall apply to ramps used as a component of a means of egress.

EXCEPTIONS:

1. Other than ramps that are part of the accessible routes providing access in accordance with Sections 1108.2 through 1108.6 of the *International Building Code* ramped aisles within assembly rooms or spaces shall conform with the provisions in Section 1030.
2. Curb ramps shall comply with ICC A117.1.
3. Vehicle ramps in parking garages for pedestrian exit access shall not be required to comply with Sections 1012.3 through 1012.10 of the *International Building Code* when they are not an accessible route serving accessible parking spaces or other required accessible elements.
4. In a parking garage where one accessible means of egress serving accessible parking spaces or other accessible elements is provided, a second accessible means of egress serving that area may include a vehicle ramp that does not comply with Sections 1012.5, 1012.6, and 1012.9 of the *International Building Code*. A landing complying with Sections 1012.6.1 and 1012.6.4 of the *International Building Code* shall be provided at any change of direction in the accessible means of egress.

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**Table 1017.2**  
**Exit Access Travel Distance<sup>a</sup>**

<b>Occupancy</b>	<b>Without Sprinkler System (feet)</b>	<b>With Sprinkler System (feet)</b>
A, E, F-1, M, R, S-1	200 <sup>e</sup>	250 <sup>b</sup>
I-1	Not Permitted	250 <sup>b</sup>
B	200	300 <sup>c</sup>
F-2, S-2, U	300	400 <sup>c</sup>
H-1	Not Permitted	75 <sup>d</sup>
H-2	Not Permitted	100 <sup>d</sup>
H-3	Not Permitted	150 <sup>d</sup>
H-4	Not Permitted	175 <sup>d</sup>
H-5	Not Permitted	200 <sup>c</sup>
I-2, I-3	Not Permitted	200 <sup>c</sup>
I-4	150	200 <sup>c</sup>

- a. See the following sections for modifications to exit access travel distance requirements:
  - Section 402.8 of the *International Building Code*: For the distance limitation in malls.
  - Section 407.4 of the *International Building Code*: For the distance limitation in Group I-2.
  - Sections 408.6.1 and 408.8.1 of the *International Building Code*: For the distance limitations in Group I-3.
  - Section 411.2 of the *International Building Code*: For the distance limitation in special amusement areas.
  - Section 412.6 of the *International Building Code*: For the distance limitations in aircraft manufacturing facilities.
  - Section 1006.2.2.2: For the distance limitation in refrigeration machinery rooms.
  - Section 1006.2.2.3: For the distance limitation in refrigerated rooms and spaces.
  - Section 1006.3.4: For buildings with one exit.
  - Section 1017.2.2: For increased distance limitation in Groups F-1 and S-1.
  - Section 1030.7: For increased limitation in assembly seating.
  - Section 3103.4 of the *International Building Code*: For temporary structures.
  - Section 3104.9 of the *International Building Code*: For pedestrian walkways.
  - Section 4901: For fixed guideway and passenger rail stations.
- b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.
- c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
- d. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.1.
- e. Group R-3 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.



**1019.3 Occupancies other than Groups I-2 and I-3.** In other than Groups I-2 and I-3 occupancies, floor openings containing exit access stairways or ramps shall be enclosed with a shaft enclosure constructed in accordance with Section 713 of the *International Building Code*.

- EXCEPTIONS:
1. Exit access stairways and ramps that serve or atmospherically communicate between only two stories. Such interconnected stories shall not be open to other stories.
  2. In Group R-1, R-2, or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit or sleeping unit or live/work unit.
  3. Exit access stairways serving and contained within a Group R-3 congregate residence are not required to be enclosed.
  4. Exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or ramp and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.
  5. Exit access stairways and ramps within an atrium complying with the provisions of Section 404 of the *International Building Code*.
  6. Exit access stairways and ramps in open parking garages that serve only the parking garage.
  7. Exit access stairways and ramps serving smoke-protected or open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7.
  8. Exit access stairways and ramps 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.
  9. Exterior exit access stairways or ramps between occupied roofs.

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**1020.6 Air movement in corridors.** Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

- EXCEPTIONS:
1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.
  2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.
  3. Where located within tenant spaces of 1,000 square feet (93 m<sup>2</sup>) or less in area, utilization of corridors for conveying return air is permitted.
  4. Incidental air movement from pressurized rooms within health care facilities, provided that a corridor is not the primary source of supply or return to the room.
  5. Where such air is part of an engineered smoke control system.
  6. Air supplied to corridors serving residential occupancies shall not be considered as providing ventilation air to the dwelling units subject to the following:
    - 6.1. The air supplied to the corridor is 100 percent outside air; and
    - 6.2. The units served by the corridor have conforming ventilation air independent of the air supplied to the corridor; and
    - 6.3. For other than high-rise buildings, the supply fan will automatically shut off upon activation of corridor smoke detectors which shall be spaced at no more than 30 feet (9144 mm) on center along the corridor; or
    - 6.4. For high-rise buildings, corridor smoke detector activation will close required smoke/fire dampers at the supply inlet to the corridor at the floor receiving the alarm.

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**1023.12 Smokeproof enclosures.** Where required by Section 403.5.4, 405.7.2 or 412.2.2.1, of the *International Building Code*, interior exit stairways and ramps shall be smokeproof enclosures in accordance with Section 909.20 of the *International Building Code*. Where interior exit stairways and ramps are pressurized in accordance with Section 909.20.5 of the *International Building Code*, the smoke control pressurization system shall comply with the requirements specified in Section 909.6.3 of the *International Building Code*.



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**1103.2 Emergency responder communication enhancement in existing buildings.** Existing buildings other than Group R-3, that do not have approved in-building, emergency response communication enhancement system for emergency responders in the building based on existing coverage levels of the public safety communication systems, shall be equipped with such coverage according to one of the following: ||

1. Where an existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with Section 510.1, Exception 1.

2. Within a time frame established by the adopting authority.

EXCEPTION: Where it is determined by the fire code official that the in-building, emergency responder communication enhancement system is not needed. ||



**1103.4.3 More than five stories.** In other than Group I occupancies, interior vertical openings connecting more than five stories shall be protected by fire-resistant and smoke-rated construction. ||

EXCEPTIONS: 1. Vertical opening protection is not required for Group R-3 occupancies.

2. Vertical opening protection is not required for open parking garages and ramps.

3. Vertical opening protection for escalators shall be in accordance with Section 1103.4.8. ||

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**1103.5.6 Nightclub.** An automatic sprinkler system shall be provided throughout A-2 nightclubs as defined in this code. No building shall be constructed for, used for, or converted to occupancy as a nightclub except in accordance with this section.



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**1103.9 Carbon monoxide alarms.** Existing Group I or Group R occupancies shall be provided with single station carbon monoxide alarms in accordance with Section 915.4.3. An inspection will occur when alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 72 and the manufacturer's instructions.

**EXCEPTIONS:**

1. For other than R-2 occupancies, if the building does not contain a fuel-burning appliance, a fuel-burning fireplace, or an attached garage.
2. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck, or electrical permits.
3. Installation, alteration or repairs of noncombustion plumbing or mechanical systems.
4. Sleeping units or dwelling units in I and R-1 occupancies and R-2 college dormitories, hotel, DOC prisons and work releases and assisted living facilities and residential treatment facilities licensed by the state of Washington which do not themselves contain a fuel-burning appliance, a fuel-burning fireplace, or have an attached garage, need not be provided with carbon monoxide alarms provided that:
  - 4.1. The sleeping units or dwelling unit is not adjacent to any room which contains a fuel-burning appliance, a fuel-burning fireplace, or an attached garage; and
  - 4.2. The sleeping units or dwelling unit is not connected by duct work or ventilation shafts with a supply or return register in the same room to any room containing a fuel-burning appliance, a fuel-burning fireplace, or to an attached garage; and
  - 4.3. The building is provided with a common area carbon monoxide detection system.
5. 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 considered an attached garage.

**1104.1 General.** Means of egress in existing buildings shall comply with Section 1031 and 1104.2 through 1104.25.

**EXCEPTION:** Means of egress conforming to the requirements of the building code under which they were constructed and Section 1031 shall not be required to comply with 1104.2 through 1104.22 and 1104.25.

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**1105.1 General.** This section shall be applied by jurisdictions conducting surveys for compliance with the federal centers for medicare and medicaid reimbursement program. Existing Group I-2 shall meet all of the following requirements:

1. The minimum fire safety requirements in Section 1103.
2. The minimum means of egress requirements in Section 1104.
3. The additional egress and construction requirements in Section 1105.

Where the provisions of this chapter conflict with the construction requirements that applied at the time of construction, the most restrictive provisions shall apply.



**1205.1 General.** Installation, modification, or alteration of solar photovoltaic power systems shall comply with this section. Due to the emerging technologies in the solar photovoltaic industry, it is understood fire code officials may need to amend prescriptive requirements of this section to meet the requirements for firefighter access and product installations. Section 104.10 Alternative materials and methods of this code shall be considered when approving the installation of solar photovoltaic power systems. Solar photovoltaic power systems shall be installed in accordance with Sections 1205.2.1 through 1205.6, the *International Building Code*, and chapter [19.28](#) RCW.

**1205.2.1 Solar photovoltaic systems for Group R-3 residential and buildings built under the *International Residential Code*.** Solar photovoltaic systems for Group R-3 residential and buildings built under the *International Residential Code* shall comply with Sections 1205.2.1.1 through 1205.2.1.3.

EXCEPTIONS:

1. Residential dwellings with an approved automatic fire sprinkler system installed.
2. Residential dwellings with approved mechanical or passive ventilation systems.
3. Where the fire code official determines that the slope of the roof is too steep for emergency access.
4. Where the fire code official determines that vertical ventilation tactics will not be utilized.
5. These requirements shall not apply to roofs where the total combined area of the solar array does not exceed 33 percent as measured in plan view of the total roof area of the structure, where the solar array will measure 1,000 sq. ft. or less in area, and where a minimum 18 inches unobstructed pathway shall be maintained along each side of any horizontal ridge.

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**1205.6 Size of solar photovoltaic array.**

1. Each photovoltaic array shall be limited to 150 feet (45,720 mm) by 150 feet (45,720 mm). Multiple arrays shall be separated by a 3-foot wide (914 mm) clear access pathway.
2. Panels/modules shall be located up to the roof ridge where an alternative ventilation method approved by the fire *code official* has determined vertical ventilation techniques will not be employed.

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**1207.1.4 Hazard mitigation analysis.** Failure modes and effects analysis (FMEA) or other *approved* hazard mitigation analysis shall be provided in accordance with Section 104.8.2 under any of the following conditions:

1. Where ESS technologies not specifically identified in Table 1207.1.1 are provided.
2. More than one ESS technology is provided in a room or enclosed area where there is a potential for adverse interaction between technologies.
3. Where allowed as a basis for increasing maximum allowable quantities. See Section 1207.5.2.
4. Where flammable gases can be produced under abnormal conditions.

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**2404.2.1 Prohibited enclosures for spray application operations.** Inflatable or portable enclosures shall not be used for spray application of flammable finishes.  
EXCEPTION: Enclosures for the spray application of flammable finishes in marinas, dry docking areas, or construction areas shall comply with Section 2404.3.5.



**2404.3.5 Membrane enclosures.** The design, construction, protection, operation and maintenance of membrane enclosures shall be in accordance with NFPA 33.



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**3103.5 Use period.** Temporary tents, air-supported, air-inflated or tensioned membrane structures are permitted to be erected for a period of less than 180 days within a 12-month period on a single premises. Such structures erected for 180 days or more within a 12-month period shall comply with the IBC.

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**3303.1.1 Components of site safety plans.** Site safety plans shall include the following as applicable:

1. Name and contact information of site safety director.
2. Documentation of the training of the site safety director and fire watch personnel.
3. Procedures for reporting emergencies.
4. Fire department vehicle access routes.
5. Location of fire protection equipment, including portable fire extinguishers, standpipes, fire department connections, and fire hydrants.
6. Smoking and cooking policies, designated areas to be used where approved, and signage locations in accordance with Section 3305.7.
7. Location and safety considerations for temporary heating equipment.
8. Hot work permit plan.
9. Plans for control of combustible waste material.
10. Locations and methods for storage and use of flammable and combustible liquids and other hazardous materials.
11. Provisions for site security.
12. Changes that affect this plan.
13. Other site-specific information required by the fire code official.

**3303.2.1 Training.** Training of fire watch and other responsible personnel in the use of fire protection equipment shall be the responsibility of the site safety director. Records of training shall be kept and made a part of the written plan for the site safety plan.

**3303.3 Daily fire safety inspection.** The site safety director shall be responsible for completion of a daily fire safety inspection at the project site. Each day, all building and outdoor areas shall be inspected to ensure compliance with the inspection list in this section. The results of each inspection shall be documented and maintained on-site until a certificate of occupancy has been issued. Documentation shall be immediately available on-site for presentation to the fire code official upon request.

1. Any contractors entering the site to perform hot work each day have been instructed in the hot work safety requirements in Chapter 35, and hot work is performed only in areas approved by the site safety director.
2. Temporary heating equipment is maintained away from combustible materials in accordance with the equipment manufacturer's instructions.
3. Combustible debris, rubbish and waste material is removed from the building in areas where work is not being performed.
4. Temporary wiring does not have exposed conductors.
5. Flammable liquids and other hazardous materials are stored in locations that have been approved by the site safety director when not involved in work that is being performed.
6. Fire apparatus access roads required by Section 3307 are maintained clear of obstructions that reduce the width of the usable roadway to less than 20 feet (6096 mm).
7. Fire hydrants are clearly visible from access roads and are not obstructed.
8. The location of fire department connections to standpipe and in-service sprinkler systems are clearly identifiable from the access road and such connections are not obstructed.
9. Standpipe systems are in service and continuous to the highest work floor, as specified in Section 3307.5.
10. Portable fire extinguishers are available in locations required by Sections 3306.6 and 3305.10.2.

**3303.5 Fire watch.** Where required by the *fire code official* or the site safety plan established in accordance with Section 3303.1, a fire watch shall be provided for building demolition and for building construction.  
EXCEPTION: New construction that is built under the IRC.

**3303.5.1 Fire watch during construction.** A fire watch shall be provided during nonworking hours for new construction that exceeds 40 feet (12,192 mm) in height above the lowest adjacent grade at any point along the building perimeter, for new multistory construction with an aggregate area exceeding 50,000 square feet (4645 m) per story or as required by the fire code official.

**3303.5.2 Fire watch personnel.** Fire watch personnel shall be provided in accordance with this section.

**3303.5.2.1 Duties.** The primary duty of fire watch personnel shall be to perform constant patrols and watch for the occurrence of fire. The combination of fire watch duties and site security duties is acceptable.

**3303.5.2.2 Training.** Personnel shall be trained to serve as an on-site fire watch. Training shall include the use of portable fire extinguishers. Fire extinguishers and fire reporting shall be in accordance with Sections 3303.6 and 3306.6.

**3303.5.2.3 Means of notification.** Fire watch personnel shall be provided with not fewer than one approved means for notifying the fire department.

**3303.5.3 Fire watch location and records.** The fire watch shall include areas specified by the site safety plan established in accordance with Section 3303.

**3303.5.4 Fire watch records.** Fire watch personnel shall keep a record of all time periods of duty, including the log entry for each time the site was patrolled and each time a structure was entered and inspected. Records shall be made available for review by the fire code official upon request.

**3303.6 Emergency telephone.** Emergency telephone facilities with ready access shall be provided in an approved location at the construction site, or an approved equivalent means of communication shall be provided. The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone. Alternatively, where an equivalent means of communication has been approved, the site address and fire department emergency telephone number shall be posted at the main entrance to the site, in guard shacks, and in the construction site office.

**3304.1 Combustible debris, rubbish, and waste.** Combustible debris, rubbish, and waste material shall comply with the requirements of Sections 3304.1.1 through 3304.2.

**3304.1.1 Combustible waste material accumulation.** Combustible debris, rubbish, and waste material shall not be accumulated within buildings.

**3304.1.2 Combustible waste material removal.** Combustible debris, rubbish, and waste material shall be removed from buildings at the end of each shift of work.

**3304.1.3 Rubbish containers.** Where rubbish containers with a capacity exceeding 5.33 cubic feet (40 gallons) (0.15 m) are used for temporary storage of combustible debris, rubbish, and waste material, they shall have tight-fitting or self-closing lids. Such rubbish containers shall be constructed entirely of materials that comply with either of the following:

1. Noncombustible materials.
2. Materials that meet a peak rate of heat release not exceeding 300 kW/m when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m in the horizontal orientation.

**3304.2 Spontaneous ignition.** Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a listed disposal container.

**3305.1 Listed.** Temporary heating devices shall be listed and labeled. The installation, maintenance and use of temporary heating devices shall be in accordance with the listing and the manufacturer's instructions.

**3305.1.1 Oil-fired heaters.** Oil-fired heaters shall comply with Section 605.

**3305.1.2 LP-gas heaters.** Fuel supplies for liquefied-petroleum gas-fired heaters shall comply with Chapter 61 and the International Fuel Gas Code.

**3305.1.3 Refueling.** Refueling operations for liquid-fueled equipment or appliances shall be conducted in accordance with Section 5705. The equipment or appliance shall be allowed to cool prior to refueling.

**3305.1.4 Installation.** Clearance to combustibles from temporary heating devices shall be maintained in accordance with the labeled equipment. When in operation, temporary heating devices shall be fixed in place and protected from damage, dislodgement or overturning in accordance with the manufacturer's instructions.

**3305.1.5 Supervision.** The use of temporary heating devices shall be supervised and maintained only by competent personnel.

**3305.2 Smoking.** Smoking shall be prohibited except in approved areas. Signs shall be posted in accordance with Section 310. In approved areas where smoking is permitted, approved ashtrays shall be provided in accordance with Section 310.

**3305.5 Cutting and welding.** Welding, cutting, open torches and other hot work operations and equipment shall comply with Chapter 35.

**3305.6 Electrical.** Temporary wiring for electrical power and lighting installations used in connection with the construction, alteration or demolition of buildings, structures, equipment or similar activities shall comply with NFPA 70.

**3305.7 Cooking.** Cooking shall be prohibited except in approved designated cooking areas separated from combustible materials by a minimum of 10 feet (3048 mm). Signs with a minimum letter height of 3 inches (76 mm) and a minimum brush stroke of one-half inch (13 mm) shall be posted in conspicuous locations in designated cooking areas and state:

- Designated cooking area;
- Cooking outside of a designated area;
- Cooking area is prohibited.

**3305.8 General.** Portable generators used at construction and demolition sites shall comply with Section 1204.

**3305.9 Hot work operations.** The site safety director shall ensure hot work operations and permit procedures are in accordance with Chapter 35.



**3305.10 Safeguarding roof operations general.** Roofing operations utilizing heat-producing systems or other ignition sources shall be conducted in accordance with Sections 3305.10.1 and 3305.10.2 and Chapter 35.

**3305.10.1 Asphalt and tar kettles.** Asphalt and tar kettles shall be operated in accordance with Section 303.

**3305.10.2 Fire extinguishers for roofing operations.** Fire extinguishers shall comply with Section 906. There shall be not less than one multiple-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.

**3306.1 Fire protection devices.** The site safety director shall ensure that all fire protection equipment is maintained and serviced in accordance with this code. Fire protection equipment shall be inspected in accordance with the fire protection program.

**3306.2 Impairment of fire protection systems.** The site safety director shall ensure impairments to any fire protection system are in accordance with Section 901.

**3306.3 Smoke detectors and smoke alarms.** Smoke detectors and smoke alarms located in an area where airborne construction dust is expected shall be covered to prevent exposure to dust or shall be temporarily removed. Smoke detectors and alarms that were removed shall be replaced upon conclusion of dust-producing work. Smoke detectors and smoke alarms that were covered shall be inspected and cleaned, as necessary, upon conclusion of dust-producing work.

**3306.4 Temporary covering of fire protection devices.** Coverings placed on or over fire protection devices to protect them from damage during construction processes shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.

**3306.5 Automatic sprinkler system.** In buildings where an automatic sprinkler system is required by this code or the International Building Code, it shall be unlawful to occupy any portion of a building or structure until the automatic sprinkler system installation has been tested and approved, except as provided in Section 105.3.4.

**3306.5.1 Operation of valves.** Operation of sprinkler control valves shall be allowed only by properly authorized personnel and shall be accompanied by notification of duly designated parties. Where the sprinkler protection is being regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

**3306.6 Portable fire extinguishers.** Structures under construction, alteration or demolition shall be provided with not less than one approved portable fire extinguisher in accordance with Section 906 and sized for not less than ordinary hazard as follows:

1. At each stairway on all floor levels where combustible materials have accumulated.
2. In every storage and construction shed.
3. Additional portable fire extinguishers shall be provided where special hazards exist including, but not limited to, the storage and use of flammable and combustible liquids.

**3307.1.2 Key boxes.** Key boxes shall be provided as required by Chapter 5.

**3307.1.3 Stairways required.** Where building construction exceeds 40 feet (12,192 mm) in height above the lowest level of fire department vehicle access, a temporary or permanent stairway shall be provided. As construction progresses, such stairway shall be extended to within one floor of the highest point of construction having secured decking or flooring.

**3307.1.4 Maintenance.** Required means of egress and required accessible means of egress shall be maintained during construction and demolition, remodeling or alterations and additions to any building.

EXEMPTION: Approved temporary means of egress and accessible means of egress systems and facilities.

**3307.2 Water supply for fire protection.** An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible building materials arrive on the site, on commencement of vertical combustible construction and on installation of a standpipe system in buildings under construction, in accordance with Sections 3307.2.1 through 3307.4.

EXCEPTION: The fire code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

**3307.2.1 Combustible building materials.** When combustible building materials of the building under construction are delivered to a site, a minimum fire flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used to provide this fire-flow supply shall be within 500 feet (152 m) of the combustible building materials, as measured along an approved fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within 500 feet (152 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.

**3307.2.2 Vertical construction of Types III, IV, and V construction.** Prior to commencement of vertical construction of Type III, IV, or V buildings that utilize any combustible building materials, the fire flow required by Sections 3307.2.2.1 through 3307.2.2.3 shall be provided, accompanied by fire hydrants in sufficient quantity to deliver the required fire flow and proper coverage.

**3307.2.2.1 Fire separation up to 30 feet.** Where a building of Type III, IV, or V construction has a fire separation distance of less than 30 feet (9144 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide either a minimum of 500 gallons per minute (1893 L/m) or the entire fire flow required for the building when constructed, whichever is greater.

**3307.2.2.2 Fire separation of 30 feet up to 60 feet.** Where a building of Type III, IV, or V construction has a fire separation distance of 30 feet (9144 mm) up to 60 feet (18,288 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide a minimum of 500 gallons per minute (1893 L/m) or 50 percent of the fire flow required for the building when constructed, whichever is greater.

**3307.2.2.3 Fire separation of 60 feet or greater.** Where a building of Type III, IV, or V construction has a fire separation of 60 feet (18,288 mm) or greater from a property lot line, a water supply of 500 gallons per minute (1893 L/m) shall be provided.

**3307.3 Vertical construction, Type I and II construction.** If combustible building materials are delivered to the construction site, water supply in accordance with Section 3307.2.1 shall be provided. Additional water supply for fire flow is not required prior to commencing vertical construction of Type I and II buildings.

**3307.4 Standpipe supply.** Regardless of the presence of combustible building materials, the construction type or the fire separation distance, where a standpipe is required in accordance with Section 3307, a water supply providing a minimum flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used for this water supply shall be located within 100 feet (30,480 mm) of the fire department connection supplying the standpipe.

**3307.5 Standpipes.** In buildings required to have standpipes by Section 905.3.1, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet (12,192 mm) in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at locations adjacent to stairways complying with Section 3307.1.3. As construction progresses, such standpipes shall be extended to within one floor of the highest point of construction having secured decking or flooring.

**3307.5.1 Buildings being demolished.** Where a building is being demolished and a standpipe is existing within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.

**3307.5.2 Detailed requirements.** Standpipes shall be installed in accordance with the provisions of Section 905.  
**EXCEPTION:** Standpipes shall be either temporary or permanent in nature, and with or without a water supply, provided that such standpipes comply with the requirements of Section 905 as to capacity, outlets, and materials.

**3308.1 Conditions of use.** Internal-combustion-powered construction equipment shall be used in accordance with all of the following conditions:

1. Equipment shall be located so that exhausts do not discharge against combustible material.
2. Exhausts shall be piped to the outside of the building.
3. Equipment shall not be refueled while in operation.
4. Fuel for equipment shall be stored in an approved area outside of the building.

**3309.1 Storage of flammable and combustible liquids.** Storage of flammable and combustible liquids shall be in accordance with Section 5704.

**3309.1.1 Class I and Class II liquids.** The storage, use and handling of flammable and combustible liquids at construction sites shall be in accordance with Section 5706.2. Ventilation shall be provided for operations involving the application of materials containing flammable solvents.

**3309.1.2 Housekeeping.** Flammable and combustible liquid storage areas shall be maintained clear of combustible vegetation and waste materials. Such storage areas shall not be used for the storage of combustible materials.

**3309.1.3 Precautions against fire.** Sources of ignition and smoking shall be prohibited in flammable and combustible liquid storage areas. Signs shall be posted in accordance with Section 310.

**3309.1.4 Handling at point of final use.** Class I and II liquids shall be kept in approved safety containers.

**3309.1.5 Leakage and spills.** Leaking vessels shall be immediately repaired or taken out of service and spills shall be cleaned up and disposed of properly.

**3309.2 Storage and handling of flammable gas.** The storage, use, and handling of flammable gases shall comply with Chapter 58.

**3309.2.1 Cleaning with flammable gas.** Flammable gases shall not be used to clean or remove debris from piping open to the atmosphere.

**3309.2.2 Pipe cleaning and purging.** The cleaning and purging of flammable gas piping systems, including cleaning new or existing piping systems, purging piping systems into service and purging piping systems out of service, shall comply with NFPA 56.

**EXCEPTIONS:**

1. Compressed gas piping systems other than fuel gas piping systems where in accordance with Chapter 53.
2. Piping systems regulated by the International Fuel Gas Code.
3. Liquefied petroleum gas systems in accordance with Chapter 61.

**3309.3 Storage and handling.** Explosive materials shall be stored, used and handled in accordance with Chapter 56.

**3309.3.1 Supervision.** Blasting operations shall be conducted in accordance with Chapter 56.

**3309.3.2 Demolition using explosives.** Approved fire hoses for use by demolition personnel shall be maintained at the demolition site wherever explosives are used for demolition. Such fire hoses shall be connected to an approved water supply and shall be capable of being brought to bear on post-detonation fires anywhere on the site of the demolition operation.

**3310.1 Storage.** Combustible materials associated with construction, demolition, remodeling or alterations to an occupied structure shall not be stored in exits, enclosures for stairways and ramps, or exit access corridors serving an occupant load of 30 or more.

EXCEPTIONS: 1. Where the only occupants are construction workers.

2. Combustible materials that are temporarily accumulated to support work being performed when workers are present.

**3311.1 Separations between construction areas.** Separations used in Type I and Type II construction to separate construction areas from occupied portions of the building shall be constructed of materials that comply with one of the following:

1. Noncombustible materials.

2. Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.

3. Materials exhibiting a peak heat release rate not exceeding 300 kW/m when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m in the horizontal orientation on specimens at the thickness intended for use.

**3312.1 Fire safety requirements for buildings of Types IV-A, IV-B, and IV-C construction.** Buildings of Types IV-A, IV-B, and IV-C construction designed to be greater than six stories above grade plane shall comply with the following requirements during construction unless otherwise approved by the *fire code official*:

1. Standpipes shall be provided in accordance with Section 3307.

2. A water supply for fire department operations, as approved by the *fire code official* and the fire chief.

3. Where building construction exceeds six stories above grade plane and noncombustible protection is required by Section 602.4 of the *International Building Code*, at least one layer of noncombustible protection shall be installed on all building elements on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

EXCEPTIONS: 1. Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

2. Noncombustible protection on the top surface of mass timber floor assemblies shall not be required before erecting additional floor levels.

4. Where building construction exceeds six stories above grade plane, required exterior wall coverings shall be installed on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

EXCEPTION: Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

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**3601.3 Permits.** For permits to operate marine motor fuel-dispensing stations, application of flammable or combustible finishes, and hot works, see Section 105.5.

**3602.1 Definitions.** The following terms are defined in Chapter 2:

- COVERED BOAT MOORAGE**
- FLOAT**
- GRAVITY-OPERATED DROP OUT VENTS**
- MARINA**
- PIER**
- VESSEL**
- WHARF**

**3604.2 Standpipes.** Marinas and boatyards shall be equipped throughout with Class I manual, dry standpipe systems in accordance with NFPA 303. Systems shall be provided with hose connections located such that no point on the marina pier or float system exceeds 150 feet from a standpipe outlet.

**3604.3 Access and water supply.** Piers and wharves shall be provided with fire apparatus access roads and water-supply systems with on-site fire hydrants when required and *approved* by the *fire code official*. At least one fire hydrant capable of providing the required fire flow shall be provided within an *approved* distance of standpipe supply connections.

**3604.4 Portable fire extinguishers.** One 4-A:40:BC rated fire extinguisher shall be provided at each standpipe hose connection. Additional portable fire extinguishers, suitable for the hazards involved, shall be provided and maintained in accordance with Section 906.

**3604.7 Smoke and heat vents.** Approved automatic smoke and heat vents shall be provided in covered boat moorage areas exceeding 2,500 sq. ft. (232 m2) in area, excluding roof overhangs.

EXCEPTION: Smoke and heat vents are not required in areas protected by automatic sprinklers.

**3604.7.1 Design and installation.** Where smoke and heat vents are required they shall be installed near the roof peak, evenly distributed and arranged so that at least one vent is over each covered berth. The effective vent area shall be calculated using a ratio of one square foot of vent to every fifteen square feet of covered berth area (1:15). Each vent shall provide a minimum opening size of 4 ft. x 4 ft.

**3604.7.1.1 Smoke and heat vents.** Smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at 100°F (56°C) above ambient.

EXCEPTION: Gravity-operated drop out vents.

**3604.7.1.2 Gravity-operated drop out vents.** Gravity-operated drop out vents shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire represented by a time-temperature gradient that reaches an air temperature of 500°F (260°C) within 5 minutes.

**3604.8 Draft curtains.** Draft curtains shall be provided in covered boat moorage areas exceeding 2,500 sq. ft. (232 m2) in area, excluding roof overhangs.

EXCEPTION: Draft curtains are not required in areas protected by automatic sprinklers.

**3604.8.1 Draft curtain construction.** Draft curtains shall be constructed of sheet metal, gypsum board or other approved materials that provide equivalent performance to resist the passage of smoke. Joints and connections shall be smoke tight.

**3604.8.2 Draft curtain location and depth.** The maximum area protected by draft curtains shall not exceed 2,000 sq. ft. (186 m2) or two slips or berths, whichever is smaller. Draft curtains shall not extend past the piling line. Draft curtains shall have a minimum depth of 4 feet and shall not extend closer than 8 feet (2438 mm) to the walking surface of the pier.

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**4901.1 Scope NFPA 130. General.** Fixed guideway transit and passenger rail systems shall be in accordance with NFPA 13, as modified below.

**4901.2 NFPA 130 Section 3.3.44.2.** Add new definition as follows:

**3.3.44.2** Traction power sub station (TPSS): A TPSS is an electrical substation consisting of switchgear transformers/rectifiers, emergency trip equipment, and other systems that converts AC electric power provided by the electrical power industry for public utility service to DC voltage to supply light rail vehicles with traction current.

**4901.3 NFPA 130 Section 5.4.4** Modify NFPA 130 Sections 5.4.4.1 and 5.4.4.1.1 to read as follows:

**5.4.4.1** An automatic sprinkler system shall be provided throughout enclosed stations.

EXCEPTIONS: 1. Traction power substation (TPSS) when located in a transformer vault designed in accordance with the NFPA 70.  
2. Other high voltage equipment located in a transformer vault designed in accordance with the NFPA 70 when approved by the fire code official.  
3. Fire command centers, communication room(s), and signal rooms when protected with clean agent fire suppression and separated from other spaces with two-hour fire rated construction.  
4. Other operational critical rooms when protected with clean agent fire suppression and separated from other spaces with two-hour fire rated construction, when approved by the fire code official.

**5.4.4.1.1** An automatic sprinkler system shall be provided in areas of open stations used for concessions, markets, storage areas and similar areas with combustible loadings, and in trash rooms, electrical rooms, mechanical rooms, machinery rooms, communication rooms, and other enclosed rooms.

EXCEPTIONS: 1. Stations at grade with less than 1,500 sq. ft. of ancillary area/ancillary space.  
2. Fire command centers, communication room(s), and signal rooms when protected with clean agent fire suppression and separated from other spaces with two-hour fire rated construction.  
3. Other operational critical rooms when protected with clean agent fire suppression and separated from other spaces with two-hour fire rated construction, when approved by the fire code official.

**5.4.4.2** Sprinkler protection shall be permitted to be omitted in areas of open stations separated from the station by a distance of 20 feet.

**4901.4 NFPA 130 Section 5.4.5.** Modify NFPA 130 Sections 5.4.5.1 as follows:

**5.4.5.1** Class I standpipes shall be installed in enclosed stations in accordance with International Fire Code Section 905 except as modified herein.

**4901.5 NFPA 130 Section 5.4.6.** Modify NFPA 130 Sections 5.4.6 as follows:

**5.4.6** Portable fire extinguishers in such number, size, type, and location in accordance with the International Fire Code Section 906.

**5.4.6.1** Portable fire extinguishers are not required in public areas of at-grade stations.

**4901.6 NFPA 130 Section 5.4.7.** Modify NFPA 130 Section 5.4.7 as follows:

**5.4.7** Emergency ventilation shall be provided in enclosed stations in accordance with Chapter 7 and the International Building Code Section 909.

**4901.6 NFPA 130 Section 5.2.2.** Modify NFPA 130 Section 5.2.2.2 as follows:

**5.2.2.2** Construction types shall conform to the requirements in the International Building Code, Chapter 6, unless otherwise exempted in this section.

**Table 5.2.2.1**  
**Minimum Construction Requirements for New Station Structures**

<b>Station Configuration</b>	<b>Construction Type†</b>
Stations erected entirely above grade and in a separate building:	
Open stations	Type IIB
Enclosed stations	Type IIA
Stations erected entirely or partially below grade:	
Open above grade portions of below grade structures*	Type IIA
Below grade portions of structures	Type IB
Below grade structures with occupant loads exceeding 1000	Type IA

\* Roofs not supporting an occupancy above are not required to have a fire resistance rating.

† Construction types are in accordance with the International Building Code.

**4901.7 NFPA 130 Section 5.2.2.** Modify NFPA 130 Section 5.2.4.3 as follows:

**5.2.4.3 Ancillary spaces.** Fire resistance ratings of separations between ancillary occupancies shall be established as required for accessory occupancies and incidental uses by the International Building Code and in accordance with ASTM E119 and ANSI/UL 263.

**4901.8 NFPA 130 Section 5.2.5.** Modify NFPA 130 Section 5.2.5.4 as follows:

**5.2.5.4** Materials used as interior finish in open stations shall comply with the requirements of the International Building Code, Chapter 8.

**4901.9 NFPA 130 Section 5.3.1.** Modify NFPA 130 Section 5.3.1.1 as follows:

**5.3.1.1** The provisions for means of egress for a station shall comply with the International Building Code, Chapter 10, except as herein modified.

**4901.10 NFPA 130 Section 5.3.2.** Add a New Section to NFPA 130 Section 5.3.2.2.1 as follows:

**5.3.2.2.1** Where station occupancy is anticipated to be greater than design capacity during a major event the operating agency shall initiate approved measures to restrict access to the station, when required by the fire code official, to ensure existing means of egress are adequate as an alternate to account for peak ridership associated with major events.

**4901.11 NFPA 130 Section 5.3.4.** Modify NFPA 130 Section 5.3.2.4(1) as follows:

1. The occupant load for that area shall be determined in accordance with the provisions of the International Building Code as appropriate for the use.

**4901.12 NFPA 130 Section 5.3.3.** Modify NFPA 130 Section 5.3.3.4 as follows:

**5.3.3.4 Travel distance.** For open stations the maximum travel distance on the platform to a point at which a means of egress route leaves the platform shall not exceed 100 m (325 ft.). For enclosed stations the travel distance to an exit shall not exceed 76 m (250 ft.).

**4901.13 NFPA 130 Section 5.3.5.** Modify NFPA 130 Section 5.3.5.3(2) as follows:

2.\* Travel speed - 14.6 m/min (48 ft./min) (indicates vertical component of travel speed).

**5.3.5.4** Escalators shall not account for more than one-half of the egress capacity at any one level.

**4901.14 NFPA 130 Section 5.3.5.** Delete NFPA 130 Section 5.3.5.5.

**4901.15 NFPA 130 Section 5.3.7.** Modify NFPA 130 Section 5.3.7 as follows:

**5.3.7\*** Doors, gates, security grilles and exit hatches.

**5.3.7.2.1** Security grilles are allowed when designed and operated in accordance with the International Building Code.

**4901.16 NFPA 130 Section 5.3.9.** Modify NFPA 130 Section 5.3.9 as follows:

**5.3.9\* Horizontal exits.** Horizontal exits shall comply with the International Building Code Section 1026.

**4901.17 NFPA 130 Section 5.3.11.** Modify NFPA 130 Section 5.3.11 as follows:

**5.3.11.1** Illumination of the means of egress in stations, including escalators that are considered a means of egress, shall be in accordance with the International Building Code Section 1008.

**5.3.11.2** Means of egress, including escalators considered as means of egress, shall be provided with a system of emergency lighting in accordance with the International Building Code Section 1008.

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**5306.1 General.** Compressed gases at hospitals and similar facilities intended for inhalation or sedation including, but not limited to, analgesia systems for dentistry, podiatry, veterinary and similar uses shall comply with Sections 5306.2 through 5306.4 in addition to other requirements of this chapter.

EXCEPTION: All new distribution piping, supply manifolds, connections, regulators, valves, alarms, sensors and associated equipment shall be in accordance with the Plumbing Code.

**5306.5 Medical gas systems.** The maintenance and testing of medical gas systems including, but not limited to, distribution piping, supply manifolds, connections, pressure regulators and relief devices and valves, shall comply with the maintenance and testing requirements of NFPA 99 and the general provisions of this chapter.

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**5601.1 Scope.** The provisions of this chapter shall govern the possession, manufacture, storage, handling, sale and use of explosives, explosive materials, and small arms ammunition. The manufacture, storage, handling, sale and use of fireworks shall be governed by chapter [70.77](#) RCW, and by chapter [212-17](#) WAC and local ordinances consistent with chapter [212-17](#) WAC.

EXCEPTIONS:

1. The Armed Forces of the United States, Coast Guard or National Guard.
2. Explosives in forms prescribed by the official United States Pharmacopoeia.
3. The possession, storage and use of small arms ammunition when packaged in accordance with DOT packaging requirements.
4. The possession, storage and use of not more than 1 pound (0.454 kg) of commercially manufactured sporting black powder, 20 pounds (9 kg) of smokeless powder and 10,000 small arms primers for hand loading of small arms ammunition for personal consumption.
5. The use of explosive materials by federal, state and local regulatory, law enforcement and fire agencies acting in their official capacities.
6. Special industrial explosive devices which in the aggregate contain less than 50 pounds (23 kg) of explosive materials.
7. The possession, storage and use of blank industrial-power load cartridges when packaged in accordance with DOT packaging regulations.
8. Transportation in accordance with DOT 49 C.F.R. Parts 100-185.
9. Items preempted by federal regulations.

**5601.1.1 Explosive material standard.** In addition to the requirements of this chapter, NFPA 495 shall govern the manufacture, transportation, storage, sale, handling and use of explosive materials. See also chapter [70.74](#) RCW and chapter [296-52](#) WAC.



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**5704.2.11 Underground tanks.** Underground storage of flammable and combustible liquids in tanks shall comply with Section 5704.2 and Sections 5704.2.11.1 through 5704.2.11.4.2. Corrosion protection shall comply with WAC [173-360-305](#).

**5706.5.4.5 Commercial, industrial, governmental or manufacturing.** Dispensing of Class II and III motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles located at commercial, industrial, governmental or manufacturing establishments is allowed where permitted, provided such dispensing operations are conducted in accordance with the following: (Those sections not noted here remain unchanged.)

12. Fuel delivery vehicles shall be equipped with spill clean-up supplies in accordance with the department of ecology's Source Control Best Management Practices. Such supplies shall be readily available for deployment by the operator at all times and include nonwater absorbents capable of absorbing 15 gallons (56.76 L) of diesel fuel, storm drain plug or cover kit, a nonwater absorbent containment boom of a minimum 10 foot long (3038 mm) length with a 12-gallon (45.41 L) absorbent capacity, a nonmetallic shovel, and two 5-gallon (19 L) buckets with lids.

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**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.

EXCEPTION: Fueling from an *approved* portable container in cases of an emergency or for personal use.

**5707.1.1 Approval required.** Mobile fueling operations shall not be conducted without first obtaining a *permit* and approval from the fire code official. Mobile fueling operations shall occur only at *approved* locations. The fire code official is authorized to *approve* individual locations or geographic areas where mobile fueling is allowed.

**5707.1.2 Coordination of permits.** *Permits* across multiple authorities having jurisdiction shall be coordinated in accordance with Sections 5707.1.2.1 through 5707.1.2.4.

**5707.1.2.1 Acceptance of permits issued by other authorities having jurisdiction.** Local authorities having jurisdiction that allow mobile on demand fueling trucks may accept conforming *permits* issued and/or inspections performed by any other local authorities having jurisdiction in Washington state. Local authorities having jurisdiction that choose to accept conforming *permits* issued by other local authorities having jurisdiction in Washington state retain the right to enforce the provisions of this section.

**5707.1.2.2 Local authorities having jurisdiction not offering operator or truck certification.** A conforming operator or vehicle *permit* issued by one local authority having jurisdiction shall be recognized and accepted by all local authorities having jurisdiction in Washington state, if those local authority having jurisdictions allow mobile on-demand fueling and do not offer such operator or truck certification. Under no circumstances will an issuing local authority having jurisdiction be expected to perform permissive inspections beyond their jurisdiction.

**5707.1.2.3 Commencing permit issuance.** When a local authority having jurisdiction that has previously authorized mobile fueling operations but not issued their own *permits* commences *permit* issuance for mobile fueling operations or vehicles, that local authority having jurisdiction shall continue to accept *permits* previously issued by another local authority having jurisdiction in Washington state for three months or until their expiration date, whichever is sooner.

**5707.1.2.4 Permit record maintenance.** Issuing local authorities having jurisdiction shall maintain a publicly available list of current *permits* or other information source to enable all parties to have information about whether *permits* are in good standing.

**5707.2 Mobile fueling vehicle.** An on-demand mobile fueling vehicle shall be utilized in on-demand fueling operations for the dispensing of Class I, II or III liquids into the fuel tanks of motor vehicles and shall comply with Sections 5707.2.1 and 5707.2.2.

**5707.2.1 Mobile fueling vehicle classifications.** An on-demand mobile fueling vehicle shall be classified as one of the following:

1. **Type 1** Mobile Fueling Vehicle - A tank vehicle that complies with NFPA 385 and that has chassis-mounted tanks where the aggregate capacity does not exceed 1600 gallons (6057 L).
2. **Type 2** Mobile Fueling Vehicle - A vehicle with one or more chassis-mounted tanks or chassis-mounted containers, not to exceed 110 gallons (415 L) capacity for each tank or container and having an aggregate capacity not exceeding 800 gallons (3028 L) or the weight capacity of the vehicle in accordance with DOTn.
3. **Type 3** Mobile Fueling Vehicle - A vehicle that carries a maximum aggregate capacity of 60 gallons (227 L) of motor fuel in metal safety cans *listed* in accordance with UL 30 or other *approved* metal containers, each not to exceed 5 gallons (19 L) in capacity.

**5707.2.2 Mobile fueling vehicle requirements.** Each mobile fueling vehicle shall comply with all local, state and federal requirements, and the following:

1. Mobile fueling vehicles with a chassis-mounted tank in excess of 110 gallons (415 L) shall also comply with the requirements of Section 5706.6 and NFPA 385.
2. The mobile fueling vehicle and its equipment shall be maintained in good repair.
3. Safety cans and *approved* metal containers shall be secured to the mobile fueling vehicle except when in use.
4. Fueling a motor vehicle from tanks or containers mounted in a trailer connected to a mobile fueling vehicle shall be prohibited.

**5707.3 Required documents.** Documents developed to comply with Sections 5707.3.1 through 5707.3.3 shall be updated as necessary by the owner of the mobile fueling operation and shall be maintained in compliance with Section 108.3.

**5707.3.1 Safety and emergency response plan.** Mobile fueling operators shall have an *approved* written safety and emergency response plan that establishes policies and procedures for fire safety, spill prevention and control, personnel training and compliance with other applicable requirements of this code. The safety and emergency response plan shall specifically address and require that all operators assess surroundings prior to fueling to consider the presence of items listed in Section 5707.3.3.

**5707.3.2 Training records.** Mobile fueling vehicles shall be operated only by designated personnel who are trained on proper fueling procedures and the safety and emergency response plan. Training records of operators shall be maintained.

**5707.3.3 Site plan.** Where required by the fire code official, a site plan shall be developed for each location or area at which mobile fueling occurs. The site plan shall be in sufficient detail to indicate but not be limited to the following:

1. All buildings, structures.
2. Lot lines or property lines.
3. Electric car chargers.
4. Solar photovoltaic parking lot canopies.
5. Appurtenances on-site and their use or function.
6. All uses adjacent to the lot lines of the site.
7. Fueling locations.
8. Locations of all storm drain openings and adjacent waterways or wetlands.
9. Information regarding slope, natural drainage, curbing, and impounding.
10. How a spill will be kept on the site property.
11. Scale of the site plan.

**5707.3.4 Tiered sites.** Where a site permitting process is required by the local jurisdiction, a site shall be designated by the fire code official to be one of the following and based on local provisions as necessitated by zoning laws, environmental laws, public safety, and other characteristics.

**5707.3.4.1 Tier 1 sites.** Sites that do not present atypical geographic, safety or environmental concerns shall be provided expedited permitting review and shall allow *permit* issuance prior to site inspection. The fire code official may impose additional conditions and may perform a site inspection during the period of *permit* validity.

**5707.3.4.2 Tier 2 sites.** Sites that require an inspection shall be approved by the fire code official prior to *permit* issuance.

**5707.4 Mobile fueling areas.** During fueling, the mobile fueling vehicle and point of connection of the vehicle being fueled shall not be located on public streets, public ways or inside buildings. Fueling on the roof level of parking structures or other buildings is prohibited.

**5707.4.1 Separation.** During fueling, the point of connection of the vehicle being fueled shall not take place within 25 feet (7620 mm) of buildings, lot lines, property lines or combustible storage. Mobile fueling vehicles shall not park within 10 feet (3048 mm) of buildings, lot lines, property lines or combustible storage.

EXCEPTIONS: 1. The fire code official shall be authorized to decrease the separation distance for dispensing from metal safety cans or other *approved* metal containers in accordance with Section 5707.2.  
2. The point of fueling shall not take place within 10 feet (3048 mm) of buildings, lot lines, property lines or combustible storage when the mobile fueling vehicle has an approved vapor recovery system or is servicing vehicles with on board refueling vapor recovery.

Where dispensing operations occur within 15 feet (4572 mm) of a storm drain, an *approved* storm drain cover or an *approved* equivalent method that will prevent any fuel from reaching the drain shall be used.

**5707.4.2 Sources of ignition.** Smoking, open flames and other sources of ignition shall be prohibited within 25 feet (7620 mm) of fuel dispensing activities. Signs prohibiting smoking or open flames within 25 feet (7620 mm) of the vehicle or the point of fueling shall be prominently posted on the mobile fueling vehicle. The engines of vehicles being fueled shall be shut off during fueling.

**5707.4.3 Electrical equipment.** Mobile fueling shall not occur within 20 feet of electrical equipment located within 18 inches of the ground unless such electrical equipment is rated for Class 1, Division 2 hazardous locations in accordance with NFPA 70.

**5707.5 Equipment.** Mobile fueling equipment shall comply with Sections 5707.5.1 through 5707.5.5.

**5707.5.1 Dispensing hoses and nozzles.** Where equipped, the dispensing hose shall not exceed 50 feet (15240 mm) in length. The dispensing nozzles and hoses shall be of an *approved* and *listed* type. Where metal-to-metal contact cannot be made between the nozzle and the fuel fill opening, then a means for bonding the mobile fueling vehicle to the motor vehicle shall be provided and employed during fueling operations.

**5707.5.2 Break-away device.** A listed break-away device shall be provided at the nozzle.

EXCEPTION: Mobile fueling vehicles equipped with an approved brake interlock tied to the nozzle holder that prohibits movement of the mobile fueling vehicle when the nozzle is removed from its holder or tied to the delivery of fuel that prevents activation of the pumping system.

**5707.5.3 Shut-off valve and fuel limit.** Mobile fueling vehicles shall be equipped with a *listed* shut-off valve assembly and a fuel limit switch set to a maximum of 30 gallons (116 L).

**5707.5.4 Fire extinguisher.** An *approved* portable fire extinguisher complying with Section 906 with a minimum rating of 4A:80-B:C shall be provided on the mobile fueling vehicle with signage clearly indicating its location.

**5707.5.5 Spill kit.** Mobile fueling vehicles shall contain a minimum 5 gallon (19 L) spill kit of an *approved* type.

**5707.6 Operations.** Mobile fueling vehicles shall be constantly attended during fueling operations with brakes set and warning lights in operation. Mobile fueling vehicles shall not obstruct emergency vehicle access roads.

**5707.6.1 Dispensing hose.** Where equipped, mobile fueling vehicles shall be positioned in a manner to preclude traffic from driving over the dispensing hose. The dispensing hose shall be properly placed on an *approved* reel or in an *approved* compartment prior to moving the mobile fueling vehicle.

**5707.6.2 Drip control.** Operators shall place a drip pan or an absorbent pillow under the nozzle and each fuel fill opening prior to and during dispensing operations to catch drips.

**5707.6.3 Safety cones.** Safety cones or other visual barriers shall be employed as warning devices to highlight the vehicle fueling area. Signs prohibiting smoking or open flames within 25 feet (7620 mm) shall be prominently posted in the vehicle fueling area.

**5707.6.4 Vehicle lights.** The *mobile fueling* vehicle flasher lights shall be in operation while dispensing operations are in progress.

**5707.6.5 Nighttime deliveries.** Nighttime deliveries shall only be made in areas adequately lighted per WAC [296-800-21005](#).

**5707.6.6 Spill reporting.** Spills shall be reported in accordance with Section 5003.3.1.



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**6108.1 General.** Storage, handling and transportation of liquefied petroleum gas (LP-gas) and the installation of LP-gas equipment pertinent to systems for such uses shall comply with this chapter and NFPA 58. Properties of LP-gas shall be determined in accordance with Appendix B of NFPA 58.

EXCEPTION: The use and storage of listed propane fired barbeque grills on R-2 decks and balconies with an approved container not exceeding a water capacity of 20 pounds (9 kg) that maintain a minimum clearance of 18 inches on all sides, unless listed for lesser clearances.

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## Referenced Standards

NFPA 13-19: Standard for the Installation of Sprinkler Systems (except 9.3.6.3(5)) . . . 903.3.1.1,  
903.3.2, 903.3.8.2, 903.3.8.5, 904.13, 905.3.4, 907.6.4, 914.3.2, 1019.3, 1103.4.8, 3201.1, 3204.2, 3205.5, Table  
3206.2, 3206.4.1, 3206.10, 3207.2, 3207.2.1, 3208.2.2, 3208.2.2.1, 3208.4, 3210.1, 3401.1, 5104.1, 5104.1.1,  
5106.5.7, 5704.3.3.9, Table 5704.3.6.3(7), 5704.3.7.5.1, 5704.3.8.4  
NFPA 33 Membrane Enclosures . . . 2404.3.5  
NFPA 96-21 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations . . . 606.2,  
606.3, 904.13  
NFPA 130-20 Standard for Fixed Guideway Transit and Passenger Rail Systems . . . 4901.1  
UL 142A-2018: Special Purpose Above ground Tanks for Specific Flammable or Combustible Liquids . . . 605.4  
UL 2272-2016: Electrical Systems for Personal E-Mobility Devices  
UL 2849-2020: Electrical Systems for eBikes