

# **Bellevue Building Code**

**Amendment Insert Pages  
to the  
2015 Edition  
of the  
IBC**



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**[F] HIGH-RISE BUILDING.** A building with an occupied floor or occupied roof located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access. ■

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**[F] STANDBY POWER SYSTEM.** All references to Standby Power System shall be considered to indicate Legally Required Power in accordance with the Washington Cities Electrical Code, and NFPA 70 (National Electrical Code), and shall be in accordance with Chapter 27 Legally Required Standby Power, as a source of automatic electric power of a required capacity and duration to operate required building, hazardous materials or ventilation systems in the event of a failure of the primary power. Standby power systems are required for electrical loads where interruption of the primary power could create hazards or hamper rescue or fire-fighting operations.

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**[F] WATER SUPPLY.** The source and delivery system supplying the required flow (gpm) and pressure (psi) to a sprinkler system or other fire protection system/equipment. |

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**302.1 General.** Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed in this section. A room or space that is intended to be occupied at different times for different purposes shall comply with all of the requirements that are applicable to each of the purposes for which the room or space will be occupied. Structures with multiple occupancies or uses shall comply with Section 508. Where a structure is proposed for a purpose that is not specifically provided for in this code, such structure shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved. Occupied roofs shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved and shall comply with Section 503.1.4.

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5.
2. Business (see Section 304): Group B.
3. Educational (see Section 305): Group E.
4. Factory and Industrial (see Section 306): Groups F-1 and F-2.
5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5.
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4.
7. Mercantile (see Section 309): Group M.
8. Residential (see Section 310): Groups R-1, R-2, R-3 and R-4.
9. Storage (see Section 311): Groups S-1 and S-2.
10. Utility and Miscellaneous (see Section 312): Group U.

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**403.2.1.1 Type of construction.** The following reductions in the minimum *fire-resistance rating* of the building elements in Table 601 shall be permitted as follows:

1. For buildings not greater than 420 feet (128 000 mm) in *building height*, the *fire-resistance rating* of the building elements in Type IA construction, other than structural frame and bearing walls, shall be permitted to be reduced to the minimum fire-resistance ratings for the building elements in Type IB.
2. In other than Groups F-1, M and S-1 occupancies, the *fire-resistance rating* of the building elements in Type IB construction, other than structural frame and bearing walls, shall be permitted to be reduced to the *fire-resistance ratings* in Type IIA.
3. The *building height* and *building area* limitations of a building containing building elements with reduced *fire-resistance ratings* shall be permitted to be the same as the building without such reductions.



**403.3.1.2 High-rise building sprinkler system design.** Combination standpipe/sprinkler risers using 6 in. pipe minimum, shall be used. Shut-off valves and water-flow devices shall be provided on each floor at the sprinkler system connection to each standpipe. Two four-way fire department connections serving the combination system shall be provided on separate streets well separated from each other. At least one of the fire department connections shall be connected to the riser above a riser isolation valve. Dry pipe sprinkler systems serving parking garages may use one separate two-way fire department connection. The dry pipe sprinkler system shall be supplied by the on-site water tank.

**[F] 403.3.2 Water supply to required fire pumps.** In buildings that are more than 450 feet in *building height*, required fire pumps shall be supplied by connections to no fewer than two water mains located in different streets and shall not serve other buildings. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

**Exception:** When approved by the fire code official, two connections to the same main shall be permitted provided the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through no fewer than one of the connections.

**[F] 403.3 Automatic sprinkler system. – High-rise building.** Buildings and structures shall be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 403.3.3.



**[F] 403.3.3 Secondary water source.** A secondary on-site water source shall be provided for high-rise building as follows:

1. High-rise buildings containing R or B occupancy only shall be provided with a net useable volume of 15,000 gallons.
2. High-rise buildings containing an S-2 occupancy shall be provided with a net useable volume of 40,000 gallons.
3. High-rise buildings containing an M occupancy shall be provided with a net useable volume of 50,000 gallons.
4. Multi high-rise complexes that are less than 450' in height may share a common secondary water source shall by combining the highest demand of number 2 or 3 above, with number 1 above. Only one parking/retail area and 2 high-rise buildings may share a common secondary water source.



An acceptable alternative to items 1 through 4 above, is to prove a calculated net useable volume capable of meeting the hydraulically calculated sprinkler demand, including the total (combined inside and outside) hose stream requirement, as per NFPA 13. The duration of the calculated source shall have a duration of not less than 30 minutes for buildings with light hazard occupancies only and a 60 minute duration for building with ordinary hazard occupancies as defined by NFPA 13.

**Exception:** Existing buildings, including those undergoing substantial renovation.

**403.4.8.1 Equipment room.** If the standby or emergency power system includes a generator set inside a building, the system shall be in accordance with Section 2702.1.8.

**Exception:** In Group I-2, Condition 2, manual start and transfer features for the critical branch of the emergency power are not required to be provided at the *fire command center*.

**403.4.8.1.1 Penetrations.** Penetrations into and openings through an equipment room containing a standby or emergency generator set inside a building, are prohibited except for required exit doors, equipment and ductwork necessary for heating, cooling or ventilation, sprinkler branch line piping, or electrical raceway, serving the generator set equipment room or being served by the generator set. Such penetrations shall be protected in accordance with Section 713.

**Exception:** Metallic piping with no joints or openings where it passes through the generator set equipment room.

**403.4.8.2 Fuel line piping protection.** Fuel lines supplying a generator set inside a building shall be

separated from areas of the building other than the room the generator is located in by an approved method or assembly that has a fire resistance rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the required fire-resistance rating may be reduced to 1 hour.

**403.5 Means of egress and evacuation.** The means of egress in high-rise buildings shall comply with Sections 403.5.1 through 403.5.6, and in addition to these requirements, shall comply with Bellevue City Code 23.11.907.5.2.2.6, which requires either Phased Evacuation, an additional stair, or occupant evacuation elevators, to facilitate simultaneous building evacuation and firefighter response into the building.

**403.5.1 Remoteness of interior exit stairways.**

Required interior exit stairways shall be separated by a distance not less than 30 feet (9144 mm) or not less than one-fourth of the length of the maximum overall diagonal dimension of the building or area to be served, whichever is less. The distance shall be measured in a straight line between the nearest points of the enclosure surrounding the interior exit stairways. In buildings with three or more interior exit stairways, no fewer than two of the interior exit stairways shall comply with this section. Interlocking or scissor stairs shall be counted as one interior exit stairway.

**403.5.2 Additional interior exit stairway.**

For buildings other than Group R-2 that are more than 420 feet (128 000 mm) in building height, one additional interior exit stairway meeting the requirements of Sections 1011 and 1023 shall be provided in addition to the minimum number of exits required by Section 1006.3. The total width of any combination of remaining interior exit stairways with one interior exit stairway removed shall be not less than the total width required by Section 1005.1. Scissor stairs shall not be considered the additional interior exit stairway required by this section.

**Exception:** An additional interior exit stairway shall not be required to be installed in buildings having elevators used for occupant self-evacuation in accordance with Section 3008.

**403.5.3 Stairway door operation.**

Stairway doors other than the exit discharge doors shall be permitted to be locked from the stairway side. Stairway doors that are locked from the stairway side shall be capable of being unlocked simultaneously without unlatching upon a signal from the fire command center.

**403.5.3.1 Stairway communication system.** A telephone or other two-way communications system connected to an approved constantly attended station shall be provided at not less than every fifth floor in each stairway where the doors to the stairway are locked.

**403.5.4 Smokeproof enclosures.** Every required interior exit stairway serving floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall be a smokeproof enclosure in accordance with Sections 909.20 and 1023.11.

**403.5.5 Luminous egress path markings.** Luminous egress path markings shall be provided in accordance with Section 1025.

**403.5.6 Emergency escape and rescue.** Emergency escape and rescue openings specified in Section 1030 are not required.

**403.7 Smoke control.** A smoke-control system meeting the requirements of Section 909 shall be provided in all areas containing a Group I or Group R occupancy within high-rise buildings. Such areas shall be separated in accordance with Section 709 and Section 909 to create separate smoke zones, or smoke control shall be provided in all such unseparated areas of the building.

**405.1 General.** The provisions of this section apply to building spaces having a floor level used for human occupancy more than 30 feet (9144 mm) below the finished floor of the lowest level of exit discharge.

**Exceptions:**

1. One- and two-family dwellings, sprinklered in accordance with Section 903.3.1.3.
2. Parking garages with automatic sprinkler systems in compliance with Section 405.3 and pressurized stair enclosures provided with emergency power in compliance with Sections 909.20, 909.20.5, and 909.20.6.
3. Fixed guideway transit systems, complying with NFPA 130 as amended by the City of Bellevue.
4. Grandstands, bleachers, stadiums, arenas and similar facilities.
5. Where the lowest story is the only story that would qualify the building as an underground building and has an area not exceeding 1,500 square feet (139 m<sup>2</sup>) and has an occupant load less than 10.
6. Pumping stations and other similar mechanical spaces intended only for limited periodic use by service or maintenance personnel.

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**424.1 Children's play structures.** Children's play structures installed inside all occupancies covered by this code that exceed 10 feet (3048 mm) in height or 150 square feet (14 m<sup>2</sup>) in area shall comply with Sections 424.2 through 424.5. |

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**503.1.4 Occupied roofs.** A roof level or portion thereof shall be permitted to be used as an occupied roof provided the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the story immediately below the roof. The area of the occupied roofs shall not be included in the building area as regulated by Section 506.

**Exceptions:**

1. The occupancy located on an occupied roof shall not be limited to the occupancies allowed on the story immediately below the roof where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and occupant notification in accordance with Section 907.5 is provided in the area of the occupied roof.
2. Assembly occupancies shall be permitted on roofs of open parking garages of Type I or Type II construction, in accordance with the exception to Section 903.2.1.6.

Elements or structures enclosing the occupied roof areas shall not extend more than 48 inches above the surface of the occupied roof.

**Exception:**

Penthouses constructed in accordance with Section 1510.2, towers, domes, spires, and cupolas constructed in accordance with Section 1510.5.

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**708.6 Openings.** Openings in a *fire partition* shall be protected in accordance with Section 716.

**Exception:**

A smoke and draft control door assembly is not required at a hoistway opening if the hoistway is pressurized in accordance with IBC Section 909.

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**[F] 903.2.11 All occupancies.** In all occupancies other than Group U, an *automatic sprinkler system* shall be installed for building design or hazards in the locations set forth in Section 903.2.11.1 through 903.2.11.7.

**[F] 903.2.11.1 Stories and basements without openings.** An *automatic sprinkler system* shall be installed throughout all stories, including basements, of all buildings where the floor area exceeds 1,500 square feet (139.4 m<sup>2</sup>) and where there is not provided at least one of the following types of *exterior wall* openings:

1. Openings below grade that lead directly to ground level by an exterior *stairway* complying with Section 1009 or an outside ramp complying with Section 1010. Openings shall be located in each 50 linear feet (15,240 mm), or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm).
2. Openings entirely above the adjoining ground level totaling at least 20 square feet (1.86 m<sup>2</sup>) in each 50 linear feet (15,240 mm), or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm). The height of the bottom of the clear opening shall not exceed 44 inches (1118 mm) measured from the floor.

**[F] 903.2.11.1.1 Opening dimensions and access.** Openings shall have a minimum dimension of not less than 30 inches (762 mm). Such openings shall be accessible to the fire department from the exterior and shall not be obstructed in a manner that firefighting or rescue cannot be accomplished from the exterior.

**[F] 903.2.11.1.2 Openings on one side only.** Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet (22,860 mm) from such openings, the story shall be equipped throughout with an *approved automatic sprinkler system* or openings as specified above shall be provided on at least two sides of the story.



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

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

**[F] 903.2.11.3 Buildings 55 feet or more in height.** An automatic sprinkler system shall be installed throughout buildings with a floor level having an occupant load of 30 or more that is located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access.

**[F] 903.2.11.4 Ducts conveying hazardous exhausts.** Where required by the International Mechanical Code, automatic sprinklers shall be provided in ducts conveying hazardous exhaust, flammable or combustible materials.

**Exception:** Ducts where the largest cross-sectional diameter of the duct is less than 10 inches (254 mm).

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

**[F] 903.2.11.6 Other required suppression systems.** In addition to the requirements of Section 903.2, the provisions indicated in Table 903.2.11.6 also require the installation of a fire suppression system for certain buildings and areas.

**[F] 903.2.11.8 Buildings exceeding 10,000 square feet.** Notwithstanding any provision of the *International Building Code* or *International Fire Code*, as such codes are adopted by the City, throughout all buildings where the total floor area, including basements, exceeds 10,000 square feet. For purposes of this paragraph, portions of buildings separated by one or more fire walls will

not be considered a separate building. Existing buildings shall comply with this section when an addition is made to the building and the total floor area, including the basements, of the existing building and the addition combined exceeds 10,000 square feet, or when the value of a structural alteration or repair of an existing building 10,000 square feet in area or greater exceeds 50 percent of the assessed valuation of such existing building, or exceeds 50 percent of the recognized replacement cost of the structure, without consideration of depreciation, as determined under the Marshall Valuation Service Cost Handbook, whichever is greater.

**[F] 903.3.1 Standards.** Sprinkler systems shall be designed and installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3 and other chapters of this code, as applicable. In addition sprinkler systems shall be designed with a buffer to account for water system fluctuations to include a low reservoir condition. Such buffer shall be 5 p.s.i. for static pressures less than 50 p.s.i. and 10% for static pressures above 50 p.s.i.

**Exception:**

Buffers are not required for systems designed in accordance with Section 903.3.1.3 (NFPA 13 D)

Permit applicants shall independently verify site specific static pressure:

- Prior to initiating sprinkler system.
- Prior to installing any sprinkler piping, including the underground supply.
- Prior to requesting any cover inspections.

**[F] 903.3.1.1.1 Exempt locations.**

Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard, when *approved* by the fire code official.

2. A room or space where sprinklers are considered undesirable because of the nature of the contents, where *approved* by the fire code official.

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3. In rooms or areas that are of noncombustible construction with wholly noncombustible contents.

4. Fire service access elevator machine rooms and machinery spaces.

5. Machine rooms, machinery spaces, control rooms and control spaces associated with occupant evacuation elevators designed in accordance with Section 3008.

6. Elevator machine rooms, elevator machinery spaces, control spaces, or hoistways of traction elevators that comply with NFPA 13 (2013) Section 8.15.5.3.

**[F] 903.3.1.1.3 Seismic coefficient.** The coefficient  $C_p$  for seismic bracing design calculations in accordance with NFPA 13 shall either use a value of 0.70, or shall use a value based on site specific USGS data.

**[F] 903.3.1.2 NFPA 13R sprinkler systems.** *Automatic sprinkler systems* in Group R occupancies up to and including four stories in height shall be permitted to be installed throughout in accordance with NFPA 13R.

A *building* designed in accordance with Washington Administrative Code 51-50-0504, 0510 or Section 510.4 of the *International Building Code* shall be sprinkled throughout in accordance with NFPA 13.

**[F] 903.3.3 Obstructed locations.** Automatic sprinklers shall be installed in accordance with NFPA 13 obstruction criteria and the listing requirements of the sprinkler head. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands, or equipment that exceeds 4 feet (1219 mm) in width and depth, and for all multi-level exhibit booths. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers.

**Exception:** Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with Section 904.

**[F] 903.4.3 Floor control valves.** *Approved* supervised indicating control valves shall be provided at the point of connection to the riser on each floor. The floor control valves shall be located within *interior exit stairways* and within 6' of floors or landings unless chains or other approved devices are readily available.

**Exception:** In buildings without *interior exit stairways*, the location of the floor control valves shall be determined by the fire code official.

**[F] 903.5 Testing and maintenance.** Sprinkler systems shall be tested and maintained in accordance with Section 903.5.1.

**[F] 903.5.1 Fire sprinkler and standpipe main/express drains.** Fire sprinkler and standpipe main/express drains shall be positioned to drain to the sanitary sewer. Additionally maintenance or testing discharges from fire pumps shall be treated in order to comply with the National Pollution Discharge Elimination System (NPDES) requirements.

**Point of Information**

Water drained or otherwise discharged from a fire sprinkler system, standpipe or fire pump is considered an "illicit discharge" and must drain to the sanitary sewer or be treated in order to discharge to storm drains, ditches, or water bodies. See [http://www.bellevuewa.gov/pdf/Utilities/Fire\\_Confidence-WQ\\_3-14-12.pdf](http://www.bellevuewa.gov/pdf/Utilities/Fire_Confidence-WQ_3-14-12.pdf) for additional information.

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**[F] 905.3 Required installations.** Standpipe systems shall be installed where required by Sections 905.3.1 through 905.3.9. Standpipe systems are allowed to be combined with *automatic sprinkler systems*.

**Exception:** Standpipe systems are not required in Group R-3 occupancies.

**[F] 905.3.1 Height.** Class I standpipe systems shall be installed throughout buildings where the floor level of the highest *story* is located more than 30 feet (9144 mm) above the lowest level of fire department vehicle access, or where the floor level of the lowest *story* is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.

**Exception:**

1. In determining the lowest level of fire department vehicle access, it shall not be required to consider:
  - 1.1. Recessed loading docks for four vehicles or less, and
  - 1.2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

**[F] 905.3.9 High Rise Building Standpipes.**

Standpipe risers shall be combination standpipe/sprinkler risers using a minimum pipe size of 6 inch. One 2-1/2 inch hose connection shall be provided on every intermediate floor level landing in every required stairway and elsewhere as required by NFPA 14. Where, and only where, static or residual water pressures at any hose outlet exceeds 175 psi (1207 kPa), approved pressure-regulating devices shall be installed to limit the pressure to a range between 125 and 175 psi at not less than 300 gpm. The pressure on the inlet side of the pressure-regulating device shall not exceed the rated working pressure of the device. An additional non-regulated hose connection located directly below the PRV or an equally sized bypass around the pressure regulating device with a normally closed control valve shall be provided at each reduced pressure connection.

Each non-regulated hose connection shall be labeled "High Pressure – No PRV". The sign shall have 1/2" white letters on a red background.

Point of Information

Additional flow and pressure requirements are contained in NFPA 14. Designers should be cognizant of space considerations within stair shafts and additional signage needed for the PRV by-pass control valves.

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

1. In every required *interior exit stairway*, a hose connection shall be provided for each story above and below grade. Hose connections shall be located at an intermediate landing between stories, unless otherwise *approved* by the fire code official. Where stairs are required to provide roof access, the standpipe roof connections shall be located adjacent to the stair opening on the roof.

2. On each side of the wall adjacent to the *exit* opening of a *horizontal exit*.

**Exceptions:**

1. Where floor areas adjacent to a *horizontal exit* are reachable from an *interior exit stairway* hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the *horizontal exit*.

2. When the *Fire Code Official* determines that a standpipe connection is not needed.

3. In every *exit* passageway, at the entrance from the *exit* passageway to other areas of a building.

**Exception:**

Where floor areas adjacent to an *exit* passageway are reachable from an *interior exit stairway* hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the *exit* passageway to other areas of the building.

4. In covered and open mall buildings, adjacent to each exterior public entrance to the mall, adjacent to each entrance from an *exit* passageway or *exit* corridor to the mall, at each intermediate landing within required enclosed stairways, and at other locations as necessary so that the distance to reach all portions of a tenant space does not exceed 200 feet (60 960 mm) from a hose connection.

5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), at least one standpipe shall be provided with a 2 1/2 in. hose connection located on the roof. Additional hose connections shall be provided so that all portions of the roof are within 200 feet of hose travel distance from a standpipe hose connection. The hose connection(s) shall be at least 10 feet (3048 mm) from the roof edge, skylight, light well or other similar openings, unless protected by a 42-inch-high (1,067 mm) guardrail or equivalent. All roof hose connections shall be arranged to be operable without entering the building. Roof connections in high-rise buildings are allowed to be located at the highest landing of a stairway with stair access to the roof. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.

6. Where the most remote portion of a nonsprinklered floor or *story* is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or *story* is more than 200 feet (60 960 mm) from a hose connection, additional hose connections shall be provided in interior exit stairways or protected locations that are accessed through protected enclosures. The protected enclosure shall be a corridor constructed as a smoke barrier from the exit enclosure to the standpipe connection.

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**Exception:** Hose connections in parking garages must be located in vertical exit enclosures, protected locations, immediately adjacent to exterior exit doors, loading docks or other areas as approved by the fire code official. Subject to the approval of the fire code official the travel distance may also be increased to a maximum distance of 240 feet.

Point of Information:

Chapter 10 of this code outlines the requirements for stairways to the roof and roof access. This section (905.4) identifies the locations of standpipes and hose connections, but does not dictate the need for additional stairways to the roof or roof access.

**905.8 Dry standpipes.** Dry standpipes shall not be installed.

**Exception:**

Where subject to freezing and in accordance with NFPA 14 when approved by the fire code official.

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12. Details of ceiling height and construction.
13. The interface of fire safety control functions.
14. Classification of the supervising station.
15. A narrative and input/output matrix that supports the approved exiting plan for the building.

**[F] 907.1 General.** This section covers the application, installation, performance and maintenance of fire alarm systems and their components in new and existing buildings and structures. The requirements of Section 907.2 are applicable to new buildings and structures and new fire alarm systems including replacement of existing fire alarm control panels being installed in existing buildings and structures. The requirements of *International Fire Code* Section 907.9 are applicable to existing buildings and structures. For the purpose of this section, fire barriers shall not be considered to create a separate building or structure. Buildings and structures required by this section to be provided with a fire alarm system shall be provided with a single fire alarm system unless otherwise approved by the fire code official.

**[F] 907.1.2 Fire alarm shop drawings.** Shop drawings for fire alarm systems shall be submitted for review and approval prior to system installation, and shall include, but not be limited to, all of the following where *applicable to the system being installed*:

1. A floor plan that indicates the use of all rooms.
2. Locations of alarm-initiating devices.
3. Locations of alarm notification appliances, including candela ratings for visible alarm notification appliances.
4. Design minimum audibility level for occupant notification
5. Location of fire alarm control unit, transponders and notification power supplies.
6. Annunciators.
7. Power connection.
8. Battery calculations.
9. Conductor type and sizes.
10. Voltage drop calculations.
11. Manufacturers' data sheets indicating model numbers and listing information for equipment, devices and materials.

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**[F] 907.2.13.2 Fire department communication system.** An approved two-way, fire department communication system designed and installed in accordance with NFPA 72 shall be provided for fire department use. It shall operate between a fire command center complying with Section 911, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, *areas of refuge* and inside *interior exit stairways*. The fire department communication device shall be provided at each floor level within the *interior exit stairway*.

**[F] 907.2.13.1.1 Area smoke detection.** Area smoke detectors shall be provided in accordance with this section. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this section, other than duct smoke detectors, shall activate the emergency voice/alarm communication system in accordance with Section 907.5.2.2. In addition to smoke detectors required by Sections 907.2.1 through 907.2.10, smoke detectors (where such locations are within unconditioned spaces, other devices may be installed in accordance with 907.4.3) shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room that is not provided with sprinkler protection.
2. In each elevator machine room, machinery space, control room and control space and in elevator lobbies.
3. Within 5 feet (1524 mm) of doors opening into stairways that are smoke proof enclosures, or are pressurized stairways.

**[F] 907.2.18.1 Smoke detectors.** A minimum of one smoke detector *listed* for the intended purpose shall be installed in all of the following areas:

1. Electrical, non- Utility owned transformer vault rooms, telephone equipment, elevator machine or similar rooms.
2. Elevator lobbies.
3. The main return and exhaust air plenum of each air-conditioning system serving more than one *story* and located in a serviceable area downstream of the last duct inlet.

4. Each connection to a vertical duct or riser serving two or more floors from return air ducts or plenums of heating, ventilating and air-conditioning systems, except that in Group R occupancies, a *listed* smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m<sup>3</sup>/s) and serving not more than 10 air-inlet openings.

5. Within 5 ft. of doors opening into stairways that are smokeproof enclosures, or that are pressurized stairways.

**Exception:** Where any such locations in items 1 through 5 above are within unconditioned spaces, other devices may be installed in accordance with 907.4.3.

**[F] 907.5 Occupant notification systems.** A fire alarm system shall annunciate at the fire alarm control unit and shall initiate occupant notification upon activation, in accordance with Sections 907.5.1 through 907.5.2.3.3. Where a fire alarm system is required by another section of this code, it shall be activated by:

1. Automatic fire detectors.
2. *Automatic sprinkler system* waterflow devices.
3. Manual fire alarm boxes.
4. Automatic fire-extinguishing systems.

**907.5.2.1.1 Average sound pressure.** The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupiable space within the building, or in the case of a partial alarm system, throughout the space that is being provided with the fire alarm system. The minimum sound pressure levels shall be: 75 dBA in occupancies in Groups R and I-1; 90 dBA in mechanical equipment rooms; and 60 dBA in other occupancies. In occupancies with high sound levels such as nightclubs, bars, theaters, auditoriums, sanctuaries, etc. an interface shall be provided between the fire alarm system and the noise source to eliminate the noise source upon activation of the fire alarm system.

**Exception:**

Private mode signaling in accordance with NFPA 72 shall be allowed in areas of group I-2 and I -3 occupancies where occupants are not expected to self-evacuate.

**[F] 907.5.2.2 Emergency voice/alarm communication systems.** Emergency voice/alarm communication systems required by this code shall be designed and installed in accordance with NFPA 72. The operation of any automatic fire detector, sprinkler waterflow device or manual fire alarm box shall automatically sound an alert tone followed by voice instructions giving *approved* information and directions for a general or staged evacuation in accordance with the building's fire safety and evacuation plans required by Section 404 of the *International Fire Code*. In high-rise buildings, the system shall operate on at least the alarming floor, the floor above and the floor below. Speakers shall be provided throughout the building by paging zones. At a minimum, paging zones shall be provided as follows:

1. Elevator groups.
2. *Interior exit stairways*.
3. Each floor.
4. *Areas of refuge* as defined in Chapter 2.

**Exception:** In Group I-1 and I-2 occupancies, the alarm shall sound in a *constantly attended location* and a general occupant notification shall be broadcast over the overhead page.

**[F] 907.5.2.2.1 Manual override.** A manual override for emergency voice communication shall

be provided on a selective and all-call basis for all paging zones.

**[F] 907.5.2.2.2 Live voice messages.** The emergency voice/alarm communication system shall have the capability to broadcast live voice messages by paging zones on a selective and all-call basis.

Point of Information:

See Fire Department Emergency Voice/Alarm Public Information Sheet F-44 for detailed messaging requirements.

**[F] 907.5.2.2.3 Alternate uses.** The emergency voice/alarm communication system shall be allowed to be used for other announcements, provided the manual fire alarm use takes precedence over any other use.

**[F] 907.5.2.2.4 Emergency voice/alarm communication captions.** Where stadiums, arenas and grandstands are required to caption audible public announcements in accordance with Section 1108.2.7.3, the emergency/voice alarm communication system shall be captioned. Prerecorded or live emergency captions shall be from an *approved* location constantly attended by personnel trained to respond to an emergency.

**[F] 907.5.2.2.5 Emergency power.** Emergency voice/alarm communications systems shall be provided with emergency power in accordance with Section 2702. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72.

**[F] 907.5.2.2.6 Phased Evacuation.** All buildings more than 10 stories above grade plane shall utilize an approved phased evacuation plan.

**Exceptions:**

1. When an additional exit stairway meeting the requirements of Sections IBC 1011 and 1023 are provided in addition to the minimum number of exits required by Section IBC 1006.
2. Where the width of each required exit stairway as specified in Section 1011.2 is increased by not less than 24" of additional width.
3. Where occupant self-evacuation elevators in accordance with IBC Section 3008 have been installed.

4. Where full tenant evacuation can be demonstrated to be accomplished in less than 7 minutes.

Point of Information:

These provisions are intended to facilitate the simultaneous building evacuation and firefighter response into the building.

**[F] 907.5.2.3 Visible alarms.** Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through 907.5.2.3.3.

**Exceptions:**

1. Visible alarm notification appliances are not required in *alterations*, except where an existing fire alarm system is replaced, or a new fire alarm system is installed.
2. Visible alarm notification appliances shall not be required in *exits* as defined in Chapter 2.
3. Visible alarm notification appliances shall not be required in elevator cars.
4. Visual alarm notification appliances are not required in critical care areas of Group I-2 Condition 2 occupancies that are in compliance with Section 907.2.6, Exception 2.

**[F] 907.6.3.1 Annunciator panel.** All fire alarm systems in buildings without a fire command center shall be provided with an annunciator panel (or the main fire alarm control panel) located inside the building at the main addressed building entrance.

**Exception:** Other approved locations.

**[F] 907.6.4.1 Graphic annunciator.** Graphic annunciators, when provided, shall be mounted to maintain the viewer's directional orientation. The visual zone indication on the annunciator panel shall lock in until the system is reset and shall not be canceled by the operation of an audible-alarm silencing switch. Alarm panels and annunciators shall not be installed where they would obstruct exiting. The required exit width plus 12 inches shall be provided when the panel is located in a means of egress. Alarm panels shall not be installed in an exit enclosure providing the sole exit from any space.



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**[F] 909.1 Scope and purpose.** This section applies to mechanical or passive smoke control systems when they are required by other provisions of this code. The purpose of this section is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, or the timely restoration of operations. Smoke control systems regulated by this section serve a different purpose than the smoke- and heat-venting provisions found in Section 910. Mechanical smoke control systems shall not be considered exhaust systems under Chapter 5 of the *International Mechanical Code*.

**[F] 909.4.6 Duration of operation.** All portions of active or engineered smoke control systems shall be capable of continued operation after detection of the fire event for a period of not less than that time period specified in accordance with Section 2702 or 1.5 times the calculated egress time, whichever is greater.

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**[F] 909.10.2 Ducts, including shafts acting as ducts.** Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 909.10.1. Ducts shall be constructed and supported in accordance with the *International Mechanical Code*. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.

**Exception:**

Flexible connections for the purpose of vibration isolation, complying with the *International Mechanical Code* and that are constructed of *approved* fire-resistance-rated materials.

**[F] 909.10.3 Equipment, inlets and outlets.** Equipment shall be located so as to not expose uninvolved portions of the building to an additional fire hazard. Outdoor air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be so located as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard. In addition, supply air shall be taken directly from an outside, uncontaminated source located a minimum distance of 20 feet from any air exhaust system or outlet.

**[F] 909.11 Emergency power.** Smoke control systems, including energy management systems used for smoke control or smoke removal, shall be provided with emergency power in accordance with Section 2702.

**Exception:**

In other than high-rise buildings, underground buildings, atriums, and covered mall buildings, smoke control systems shall be provided with legally required standby power in accordance with Section 2702.

presence of power downstream of all disconnects shall be verified weekly by a listed control unit.

2. Testing of all components bypassed from the preprogrammed weekly test shall be in accordance with Section 909.20.6 of the *International Fire Code*.



**909.11.1 Power sources and power surges.**

Elements of the smoke control system relying on volatile memories or the like shall be supplied with uninterruptable power sources of sufficient duration to span 15-minute primary power interruption. Elements of the smoke control system susceptible to power surges shall be suitably protected by conditioners, suppressors or other *approved* means.

**909.12 Detection and control systems.** Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and *listed* as smoke control equipment.

**909.12 Detection and control systems.** Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and *listed* as smoke control equipment.

**Exception:** Shaft pressurization equipment in *buildings* constructed in accordance with Washington Administrative Code 51-50-0504 or WAC 51-50-0510, or *International Building Code* Section 510.4 may utilize a fire detection system that is *listed* as releasing equipment.

**[F] 909.12.1 Verification.** Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override and the presence of power downstream of all disconnects. A preprogrammed weekly test sequence shall report abnormal conditions audibly, visually, by printed report or other approved means. The preprogrammed weekly test shall operate all devices, equipment and components used for smoke control.

**Exception:**

Where verification of individual components tested through the preprogrammed weekly testing sequence will interfere with, and produce unwanted effects to, normal building operation, such individual components are permitted to be bypassed from the preprogrammed weekly testing, where *approved* by the fire code official and in accordance with both of the following:

1. Where the operation of components is bypassed from the preprogrammed weekly test,

(Insert facing page 239)

**[F] 909.17 System response time.** Smoke-control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as *dampers* and fans) in the sequence necessary to prevent physical damage to the fans, *dampers*, ducts and other equipment. For purposes of smoke control, the fire fighter's control panel response time shall be the same for automatic or manual smoke control action initiated from any other building control point. The total

response time, including that necessary for detection, shutdown of operating equipment and smoke control system startup, shall allow for full operational mode to be achieved before the conditions in the space exceed the design smoke condition. Upon receipt of an alarm condition at the fire alarm control panel, fans, dampers and automatic doors shall have achieved their expected operating state and confirmation of proper operation shall be indicated at the smoke control panel within 60 seconds. Documentation shall be provided in the required final report.

**[F] 909.18.8.3.2 Certificate of compliance.** A certificate of compliance shall be provided by the special inspector and responsible registered design professional certifying that the referenced property is in substantial compliance. The certificate shall identify the company, designer, special inspector that performed the testing, name, date and address of the property being tested. The following statement must also be included: "I have reviewed the report and by personal knowledge and on-site observation certify that the smoke control system is in substantial compliance with the approved design documents, and to the best of my understanding complies with requirements of the applicable codes as identified in the smoke control report."

**909.20 Smokeproof enclosures.** Where required by Section 1023.11, a smokeproof enclosure shall be constructed in accordance with this section. All portions of the smokeproof enclosure ventilation system and equipment must comply with the provisions of Section 909. A smokeproof enclosure shall consist of an *interior exit stairway or ramp* that is enclosed in accordance with the applicable provisions of Section 1023 and an open exterior balcony or ventilated vestibule meeting the requirements of this section. Where access to the roof is required by the *International Fire Code*, such access shall be from the smokeproof enclosure where a smokeproof enclosure is required.

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**909.20.6.3 Acceptance and testing.** Special inspection for performance shall be required in accordance with Section 909.18.8.

**909.21.3 Ducts for system.** Any duct system that is part of the pressurization system shall be protected with the same *fire-resistance rating* as required for the elevator shaft enclosure, and equipment, control wiring, power wiring, and ductwork shall comply with one of the methods specified in Section 909.20.6.1. Ducts shall be in accordance with Section 909.10.2.

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**909.21.4.4 Fan capacity.** The supply fan shall be either adjustable with a capacity of not less than 1,000 cfm (.4719 m<sup>3</sup>/s) per door, or that specified by a *registered design professional* to meet the requirements of a designed pressurization system. Fans shall be in accordance with Section 909.10.5.

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**[F] 911.1.2 Separation & penetrations.** 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 or *horizontal assembly* constructed in accordance with section 711, or both. Penetrations into and openings through a fire command center are prohibited except for required exit doors, equipment and ductwork necessary for heating, cooling or ventilation, sprinkler branch line piping, electrical raceway for fire department communication and control and electrical raceway serving the fire command center or being controlled from the fire command center. Such penetrations shall be protected in accordance with Section 714.

**Exception:**

Metallic piping with no joints or openings.

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**[F] 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 or 2-hour *horizontal assemblies* constructed in accordance with Section 711, 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 4.12.2.1.2).

**[F] 912.5 Signs.** A red metal sign with white raised letters not less than 1 inch (25 mm) in size shall be mounted on all fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: SPRINKLERS, STANDPIPES, COMBINED, DRY S/PIPES, DRY S/P & SPKRS, BOOST TO \_\_\_\_\_ (as specified by the fire code official) PSI, or TEST CONNECTION or a combination thereof as applicable. If it is not readily apparent which building or portion the fire department connection serves, the sign shall also include the premise address or building identification, and the portion of the building protected.

**Exception:**

A metal sign with letters at least 1 inch (25 mm) in size may match the fire department connection where chrome, brass, or other approved decorative finish is utilized.

**912.5.1 Markings.** The fire department connection stand-alone pipe shall be painted red for greater visibility.

Exception: Fire department connections such as chrome, brass, or other approved decorative finish.

**Point of Information**

These provisions originate in NFPA 20 (2013) and are intended to facilitate fire department access to the fire pump room. Ideally fire pump rooms are located on the perimeter of the building affording direct access. Where that is not possible, a protected passageway is required. This passageway is not synonymous with an *exit passageway* and therefore not subject to the significant limitations of allowable penetrations. Fire pump rooms are not permitted to open directly into an *exit passageway* or *interior exit stairway*; rather the fire pump room must open into a vestibule before access to an *exit passageway* or an *interior exit stairway*.

**Point of Information**

Systems utilizing Pressure Reducing Valves (PRV's) must note the required boosted pressure at the Fire Department Connection, in order to overcome the PRV setting.

**913.1.1 Fire Pump Controls.** Fire pump controllers supplying standpipes in excess of 130 psi shall be soft start.

**[F] 913.2 Protection against interruption of service.** The fire pump, driver and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

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**1008.3.4 Duration.** The emergency power system shall provide power for a duration of not less than 90 minutes, or such time as stipulated by Section 2702 when applicable for high-rise or underground buildings, and shall consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702.



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**1011.7 Stairway construction.** *Stairways* shall be built of materials consistent with the types permitted for the type of construction of the building, except that wood *handrails* shall be permitted for all types of construction.

**Exception:**

In buildings with a 3-hour horizontal assembly used to establish two separate buildings in accordance with Section 510, a stairway constructed of combustible materials may extend below the 3-hour horizontal assembly if it is enclosed within a 3-hour *fire-resistance rated* shaft enclosure in accordance with Section 713, extending from the 3-hour horizontal assembly through the lowest basement level.

**1011.12.2 Roof access.** Where a stairway is provided to a roof, access to the roof shall be provided through a penthouse complying with Section 1510.2.

**Exception:**

In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet in area and having a minimum dimension of 3 feet.

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**1612.3 Establishment of flood hazard areas.** To establish *flood hazard areas*, the applicable governing authority shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The Flood Insurance Study for King County," dated May 16, 1995, as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section.

**1612.3.1 Design flood elevations.** Where design flood elevations are not included in the flood hazard areas established in Section 1612.3, or where floodways are not designated, the building official is authorized to require the applicant to:

1. Obtain and reasonably utilize any design flood elevation and floodway data available from a federal, state or other source; or
2. Determine the design flood elevation and/or floodway in accordance with the City of Bellevue LUC 20.25H.175A and Engineering Standards, Section D4-04.5, "Floodplain/Floodway Analysis" to define special flood hazard areas. Determinations shall be undertaken by a *registered design professional* who shall document that the technical methods used reflect currently accepted engineering practice.

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**1612.3.2 Determination of impacts.** In riverine *flood hazard areas* where design flood elevations are specified but floodways have not been designated, the applicant shall provide a floodway analysis that demonstrates that the proposed work will meet the City of Bellevue Engineering Standards, Section D4-04.5, "Floodplain/Floodway Analysis."

**1612.4 Design and construction.** The design and construction of buildings and structures located in *flood hazard areas*, including flood hazard areas subject to high-velocity wave action, shall be in accordance with Chapter 5 of ASCE 7 ASCE 24 and with BCC Section 20.25H.175.

**1613.1 Scope.** Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, excluding Chapter 14 and Appendix 11A. The *seismic design category* for a structure is permitted to be determined in accordance with Section 1613 or ASCE 7.

**Exceptions:**

1. Detached one- and two-family dwellings, assigned to *Seismic Design Category* A, B, or C, or located where the mapped short-period spectral response acceleration,  $S_s$ , is less than 0.4 g.
2. The seismic force-resisting system of wood-frame buildings that conform to the provisions of Section 2308 are not required to be analyzed as specified in this section.
3. Agricultural storage structures intended only for incidental human occupancy.
4. Structures that require special consideration of their response characteristics and environment that are not addressed by this code or ASCE 7 and for which other regulations provide seismic criteria, such as vehicular bridges, electrical transmission towers, hydraulic structures, buried utility lines and their appurtenances and nuclear reactors.
5. Seismic design of automatic sprinkler systems when hanging, bracing, and restraint is designed and installed in accordance with the 2013 edition of NFPA 13 and the coefficient  $C_p$  for seismic bracing design calculations in accordance with NFPA 13 is either a value of 0.70, or a value based on site specific USGS data.

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➡ **[BF] 1705.17 Fire-resistant penetrations and joints.** Section 1705.17 is hereby deleted.

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**2701.1 Scope.** This chapter governs the electrical components, equipment and systems used in buildings and structures covered by this code. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of the Washington Cities Electrical Code.

## SECTION 2702 EMERGENCY AND LEGALLY REQUIRED STANDBY POWER SYSTEMS

**[F] 2702.1 Installation.** Emergency power systems and legally required standby power systems shall comply with Sections 2702.1.1 through 2702.1.7 and Table 2702.

**[F] 2702.1.1 Stationary generators.** Stationary emergency and legally required standby power generators required by this code shall be *listed* in accordance with UL 2200.

**[F] 2702.1.2 Electrical.** Emergency power systems and legally required standby power systems required by this code or the *International Fire Code* shall be installed in accordance with the *International Fire Code*, the Washington Cities Electrical Code, NFPA 110 and NFPA 111.

**[F] 2702.1.3 Load transfer.** Emergency power systems shall automatically provide secondary power within 10 seconds after primary power is lost, unless specified otherwise in this code. Legally required standby power systems shall automatically provide secondary power within 60 seconds after primary power is lost, unless specified otherwise in this code. Transfer to full emergency or legally required standby power shall take place within the maximum time to energize loads specified in Table 2702.

**[F] 2702.1.4 Load duration.** Emergency power systems and legally required standby power systems shall be designed to provide the required power for a minimum duration of 8 hours for fire pumps serving high-rise buildings in accordance with NFPA 20, and 2 hours for other systems without being refueled or recharged, unless specified otherwise in this code.

**[F] 2702.1.5 Uninterruptable power source.** An uninterrupted source of power shall be provided for equipment when required by the manufacturer's instructions, the listing, this code or applicable referenced standards.

**[F] 2702.1.6 Interchangeability.** Emergency power systems shall be an acceptable alternative for installations that require standby power systems.

**[F] 2702.1.7 Group I-2 occupancies.** In Group I-2 occupancies, in new construction or where the building is substantially damaged, where an essential electrical system is located in flood hazard areas established in Section 1612.3, the system shall be located and installed in accordance with ASCE 24.

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**[F] 2702.1.8 Equipment room.** If a legally required standby or emergency power system includes a generator set inside or serving a building, the generator set shall be located in a separate room enclosed with 2-hour *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 711, or both, to separate it from the remainder of the building, the transfer switches, and from the normal power source including transformers and distribution equipment. The transfer switches shall also be located in a separate room enclosed with 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, to separate it from the remainder of the building. Power distribution from the emergency source to the emergency transfer switch shall be by an independent route from the normal power source. System supervision with manual start and transfer features shall be provided at the *fire command center* or an *approved* location when a fire command center is not required. Such equipment rooms shall be ventilated directly to the exterior for generator combustion air and radiator cooling air. Any ducts required for such ventilation shall not be dampered, and shall be *fire-resistance rated* to the same level of protection as that required for the equipment room. The requirements of this subsection 2702.1.8 do not apply to optional tenant-owned or landlord-owned generator sets.

### Exception:

Legally required standby or emergency power system generator sets inside a building other than a high-rise building in accordance with Section 403 and other than an underground building space in accordance with Section 405, may be located in equipment rooms with a 1-hour *fire-resistance rating*.

**[F] 2702.1.9 Routing of legally required standby and emergency power.** Equipment and systems requiring legally required standby or emergency power shall be supplied with two sources of power. Primary power shall be from the normal building power system. Legally required standby power or emergency power shall be from an *approved* source complying with the Washington Cities Electrical Code. The legally required standby power or emergency power source and its transfer

switches shall be in separate rooms from the normal power transformers and switch gears, and ventilated directly to and from the exterior. The room shall be completely enclosed in not less than 1-hour fire barriers constructed in accordance with Section 707, or 1-hour horizontal assemblies constructed in accordance with Section 711, or both, except 2-hour fire-resistance construction shall be required for high-rise and underground buildings per Sections 403 and 405 respectively. Power distribution from the two sources shall be by independent routes to the room containing the automatic transfer switch(s). Independent routes shall mean either a minimum 1-hour fire-resistance separation, or a physical distance of not less than 50 feet. Transfer to full emergency power shall be automatic and shall take place within the maximum time to energize loads. The systems shall comply with the *Washington Cities Electrical Code*. [F] **2702.1.10 Fuel-fired generator sets and fuel storage location.** Fuel-fired generator sets and associated fuel storage, including optional landlord-owned or tenant-owned generator sets, located more than 75 feet above the lowest level of Fire Department vehicle access, or located at a floor level more than 30 feet below the lowest level of exit discharge, require the approval of the fire code official.

[F] **2702.2 Where required.** Emergency and legally required standby power systems shall be provided where required by Sections 2702.2.1 through 2702.2.16 and other sections of this code.

[F] **2702.2.1 Emergency alarm systems.** Emergency power shall be provided for emergency alarm systems as required by Section 415.5.

[F] **2702.2.2 Elevators and platform lifts.** Legally required standby power shall be provided for elevators and platform lifts used as accessible means of egress as required in Sections 1009.4 and 1009.5. Emergency power shall be provided for elevators in high-rise buildings as required in Section 403.4.8.4.

[F] **2702.2.3 Emergency responder radio coverage systems.** Standby power shall be provided for emergency responder radio coverage systems required in Section 915 and the *International Fire Code*. The standby power supply shall be capable of operating the emergency

responder radio coverage system for a duration of not less than 24 hours.

[F] **2702.2.4 Emergency voice/alarm communication systems.** Emergency power shall be provided for emergency voice/alarm communication systems as required in Section 907.5.2.2.5. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72.

[F] **2702.2.5 Exit signs.** Emergency power shall be provided for exit signs as required in Section 1013.6.3. The system shall be capable of powering the required load for a duration of not less than 90 minutes.

[F] **2702.2.6 Group I-2 occupancies.** Essential electrical systems for Group I-2 occupancies shall be in accordance with Section 407.10.

[F] **2702.2.7 Group I-3 occupancies.** Emergency power shall be provided for power-operated doors and locks in Group I-3 occupancies as required in Section 408.4.2.

[F] **2702.2.8 Hazardous materials.** Emergency or legally required standby power shall be provided in occupancies with hazardous materials where required by the *International Fire Code*.

[F] **2702.2.9 High-rise buildings.** Emergency power shall be provided in high-rise buildings as required in Section 403.4.8.

[F] **2702.2.10 Horizontal sliding doors.** Legally required standby power shall be provided for horizontal sliding doors as required in Section 1010.1.4.3. The standby power supply shall have a capacity to operate not fewer than 50 closing cycles of the door.

[F] **2702.2.11 Means of egress illumination.** Emergency power shall be provided for means of egress illumination as required in Section 1008.3. The system shall be capable of powering the required load for a duration of not less than 90 minutes.

[F] **2702.2.12 Membrane structures.** Legally required standby power shall be provided for auxiliary inflation systems in permanent membrane structures as required in Section 3102.8.2. Legally required standby power shall be provided for a duration of not less than 4 hours. Auxiliary inflation systems in temporary air-supported and air-inflated membrane structures shall be provided in accordance with Section 3103.10.4 of the *International Fire Code*.



**[F] 2702.2.13 Pyrophoric materials.** Emergency power shall be provided for occupancies with silane gas in accordance with the *International Fire Code*.

**[F] 2702.2.14 Semiconductor fabrication facilities.** Emergency power shall be provided for semiconductor fabrication facilities as required in Section 415.11.10.

**[F] 2702.2.15 Smoke control systems.** Emergency power shall be provided for smoke control systems as required in Sections 404.7, 909.11, 909.20.5.7, 909.20.6.2 and 909.21.5. Legally required standby power systems shall be provided for pressurization systems in low-rise buildings in accordance with Washington State Building Code Section 504.4.1 and Section 909.20.6.

**[F] 2702.2.16 Underground buildings.** Emergency power shall be provided in underground buildings as required in Section 405.

**[F] 2702.3 Critical circuits.** Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196. Electrical circuit protective systems shall be installed in accordance with their listing requirements.

**[F] 2702.4 Maintenance.** Emergency and standby power systems shall be maintained and tested in accordance with the *International Fire Code*.

**\*\***

**TABLE 2702  
LEGALLY REQUIRED STANDBY AND EMERGENCY POWER**

Type of Equipment	Maximum Time to Energize Loads	Minimum Run Time (Duration)	IBC Section	IFC or NFPA Section
<b>Emergency Power Systems<sup>1</sup></b>				
Exit signs	10 seconds	2 hours	1013.6.3	604.2.9 High rises  604.2.16 Underground buildings  1013.6.3 Exit signs  604.2.13 Temporary tents, canopies, membrane structures  NFPA 70
Exit illumination	10 seconds	2 hours	1008.3	1008.3  604.2.9 High rises  604.2.16 Underground buildings
Any emergency voice/alarm communication including area of refuge communication systems (barrier-free and horizontal exits)	NFPA 72	24 hours (battery) 4 hours (generator)	402.7.3, 402.7.4, and 907.5.2.2 Covered mall buildings  403.4.8 and 907.5.2.2 High rises  405.8, , and 907.5.2.2 Underground buildings  907.2.1, and 907.5.2.2 Assembly occupancies	907.2.20 Covered mall building    604.2.9 High rises  604.2.16 Underground buildings  907.2.1.1 Assembly occupancies  NFPA 72
Fire detection and fire alarms	NFPA 72	24 hours (battery) 4 hours (generator)	403.4.8 High rises  405.8 Underground buildings	604.2.9 High rises  604.2.16 Underground buildings
			909.20.6.2 Smokeproof enclosures  907	907.6.2  NFPA 72



Smoke control systems in high-rise buildings, underground buildings and covered mall buildings including energy management systems if used for smoke control or smoke removal	60 seconds	2 hours	403.4.8 High rises 404.7 Atriums 405.8 Underground buildings 909.11 Smoke control	909.11
Fire pumps in high-rise buildings and underground buildings	10 seconds	8 hours (NFPA 20)	403.4.8 High rises 405.8 Underground buildings	604.2.9 High rises and NFPA 20 604.2.16 Underground buildings 913.2 All Fire Pumps
Smokeproof enclosures and elevator shaft pressurization	60 seconds for pressurization	4 hours	403.4.8 High rises 909 and 909.20.6.2	
Any shaft exhaust fans required to run continuously in lieu of dampers	60 seconds	4 hours	717.5.3	
Fire service or occupant evacuation elevator car operation in high-rise and underground buildings (including control system, motor controller, operation control, signal equipment, machine room cooling/heating, etc.)	60 seconds	4 hours	3003, 3007, and 3008	604.2.9 High rises 604.2.16 Underground buildings
Elevator car lighting and communications in high-rise and underground buildings	10 seconds	4 hours	3003, 3007, and 3008	604.2.9 High rises 604.2.16 Underground buildings 604.2.1 Elevators
Lights, heating, and cooling for building fire command center and mechanical equipment rooms serving the fire command center	60 seconds	24 hours		604.2.9 High rises
Power (other than lights, heating and cooling) for building fire command center	60 seconds	4 hours		
Mechanical and electrical systems required by IFC 27 (hazardous materials including UPS rooms)	60 seconds	4 hours		Chapter 27
<b>Legally Required Standby<sup>1</sup> (Cont. next page)</b>				

Exhaust fans for any loading dock located interior to a building	60 seconds	4 hours		
Transformer vault ventilation equipment	60 seconds	4 hours		
Heat tape for sprinkler lines and heating in sprinkler riser rooms	60 seconds	24 hours		
Fuel pump system for any legally required system	60 seconds	4 hours		
Elevators in high rise or underground buildings used for accessible means of egress	60 seconds	2 hours		
Any shaft exhaust fans required to run continuously in lieu of dampers	60 seconds	4 hours	717.5.3	

**TABLE 2702 FOOTNOTE:**

1. The fuel pump and associated systems for the emergency or legally required generator shall be provided with power from the generator to maintain fuel supply.

**3007.1 General.** Where required by Section 403.6.1, every floor of the building shall be served by fire service access elevators complying with Sections 3007.1 through 3007.9. Except as modified in this section, fire service access elevators shall be installed in accordance with this chapter and ASME A17.1/CSA B44.

**Exceptions:**

1. When below grade portions of high rise buildings are served by elevators not serving above grade portions extending more than 75 feet above the lowest Fire department access and such elevators do not serve levels more than 80 feet below grade plane.
2. Elevators serving mezzanines located below the 7<sup>th</sup> story.

**3007.6.2 Lobby enclosure.** The fire service access elevator lobby shall be enclosed with a *smoke barrier* having a *fire-resistance rating* of not less than 1 hour, except that lobby doorways shall comply with Section 3007.6.3.

**Exceptions:**

1. Enclosed fire service access elevator lobbies are not required at the *levels of exit discharge*.
2. Enclosed fire service access elevator lobbies are not required for elevators with pressurized hoistways.

**3007.10 Phase I Emergency recall operation.**

Actuation of any building fire alarm-initiating device shall initiate Phase I emergency recall operation on all fire service access elevators in accordance with the requirements in ASME A17.1/CSA B44 with a 5 minute delay except for smoke detectors located in associated elevator lobbies, hoistways or elevator machine rooms. All other elevators shall remain in normal service unless Phase I emergency recall operation is manually initiated by a separate, required three-position, key-operated "Fire Recall" switch or automatically initiated by the associated elevator lobby, hoistway or elevator machine room smoke detectors. In addition, if the building also contains occupant evacuation elevators in accordance with Section 3008, an independent, three-position, key-operated "Fire Recall" switch conforming to the applicable requirements in ASME A17.1/CSA B44 shall be provided at the designated level for each fire service access elevator.

**3008.6.7 Lobby status indicator.** Each occupant evacuation elevator lobby shall be equipped with a status indicator arranged to display all of the following information:

1. An illuminated green light and the message, "Elevators available for occupant evacuation," when the elevators are operating in normal service and the fire alarm system is indicating an alarm in the building.
2. An illuminated red light and the message, "Elevators out of service, use exit stairs" when the elevators are in Phase I emergency recall operation in accordance with the requirements in ASME A17.1/CSA B44.
3. No illuminated light or message when the elevators are operating in normal service.

**3008.6.7.1 Location of lobby status indicator.** Visual signals for each elevator group shall be installed on each floor served. They shall be located 84 in. (2,130 mm) to 120 in. (3,000 mm) above the floor and centered above a hall call button. Lettering shall be a minimum of 2 in. (50 mm) high and conform to A17.1 requirement 703.2.

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**3304.1.5. Excavation and shoring near improved public places.** No person, firm or corporation shall excavate and/or install shoring in excess of four feet, measured vertically, on private property within any area between the vertical prolongation of the margin of an improved public place and a 100 percent slope plane (45 degrees from a horizontal plane) from the existing elevation of the margin of the traveled surface of an improved public place to the proposed elevation of the private property without first obtaining a permit from the building official to do so, and no work shall commence toward such excavation and shoring until a permit therefor has been issued by the building official. Improved public place means any street, alley, easement for water, sewer or storm drainage, or similar parcel of land which is deeded, dedicated or otherwise permanently made available to the City or public for city or public use.

demolition, the building official is authorized to require protection as indicated in this chapter and Table 3306.1.

**3306.2 Walkways.** A walkway shall be provided for pedestrian travel in front of every construction and demolition site unless the applicable governing authority authorizes the sidewalk to be fenced or closed. Walkways shall be of sufficient width to accommodate the pedestrian traffic, but in no case shall they be less than 4 feet (1219 mm) in width. Walkways shall be provided with a durable walking surface. Walkways shall be *accessible* in accordance with Chapter 11 and shall be designed to support all imposed loads and in no case shall the design live load be less than 150 pounds per square foot (psf) (7.2 kN/m<sup>2</sup>). Where a sidewalk or walkway passes into or through, or adjacent to, an area under construction or

**TABLE 3306.1  
PROTECTION OF PEDESTRIANS**

HEIGHT OF CONSTRUCTION	DISTANCE FROM CONSTRUCTION TO SIDEWALK, WALKWAY, OR LOT LINE	TYPE OF PROTECTION
8 feet or less	Less than 5 feet	Construction railings
	5 feet or more	None
More than 8 feet	Less than 5 feet	Barrier and covered walkway
	5 feet or more, but not more than one-fourth the height of construction	Barrier and covered walkway
	5 feet or more, but between one-fourth and one-half the height of construction	Barrier
	5 feet or more, but exceeding one-half the height of construction	None

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**(Insert Facing Page 593)**



POINT OF INFORMATION

Please insert this amendment into your 2015 ISPSC

23.16.010 Barrier requirements – Specifications.

The following requirements shall apply to all outdoor swimming pools, spas and hot tubs associated with one- and two- family residential dwellings heretofore or hereafter constructed or presently under construction within the city. Each such pool, spa, or hot tub shall be enclosed with a pool or yard fence, designed per Section 305 of the 2015 International Swimming Pool and Spa Code, whichever shall apply to the primary use and structure with which the pool, spa, or hot tub is associated.

**Exception:** Any outdoor swimming pool, spa or hot tub which was constructed prior to adoption of the International Building Code or the International Residential Code under Chapter 23.10 BCC under this chapter need not comply with the terms of this section if such swimming pool, hot tub or spa is enclosed with a pool or yard fence which complies with the applicable Bellevue City Code provision regarding pool, spa, or hot tub enclosures which was in effect at the time the enclosure was constructed.