

ENGLEWOOD AMENDMENTS TO THE 2024 INTERNATIONAL FIRE CODE (2024 IFC)

The following sections of the 2024 IFC have been amended as follows

(Amended) 101.1 Title. These regulations shall be known as the *Fire Code* of The City of Englewood, Colorado, hereinafter referred to as “this code.”

(Added) 102.12 Adoption of Appendices. Appendices **B** (as amended), **C** (as amended), **D** (as amended), **F** and **O** of the *International Fire Code* are hereby adopted as part of this code and shall have the same force and effect as if included in the body of the code. Appendix **P** was added and adopted. Amendments to any adopted appendix, where applicable, are set forth within the respective appendix.

(Added) 102.13 Referenced proprietary systems. For the purposes of this code, references to certain proprietary products of systems shall be interpreted as follows:

1. “Knox” refers the Knox Rapid Entry System of an equivalent rapid-entry system as *approved*.
2. “AutoTURN” refers to vehicle turning-movement analysis software or an equivalent method of demonstrating complaint fire apparatus turning movements as *approved*.

(Amended) 103.1 Creation of agency. The Englewood Fire Marshal’s Office is hereby created and the official in charge thereof shall be known as the *fire code official*. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.

(Amended) 103.2 Appointment. *The fire code official* shall be appointed by the City of Englewood City Manager.

(Added) 104.4.2 Interference with enforcement. It shall be unlawful for persons to interfere with or cause conditions that would interfere with the *fire code official* in carrying out any duties or functions prescribed by this code.

(Amended) 104.7 Official records. The *fire code official* shall keep official records as required by Sections 104.7.1 through 104.7.6 related to inspections, investigations, and plan reviews only until the Certificate of Occupancy is issued.

Any modifications to fire protection systems made after the Certificate of Occupancy has been issued shall be documented and maintained by the *fire code official* in the manner most beneficial to the City. When such modifications are part of a renovation or project requiring a *change of occupancy* or a new Certificate of Occupancy, the record-keeping provisions of this section shall apply accordingly.

(Amended) 104.7.3 Fire records. Records of fires within the jurisdiction shall be maintained in accordance with intergovernmental agreements with the responding fire suppression agencies.

(Amended) 105.5 Required operational permits. The *fire code official* is authorized to issue operational permits for the operations set forth in Sections 105.5.2 through 105.5.53. The *fire code*

official may determine which operational permits are enforced within the jurisdiction based on local needs and available resources.

(Amended) Section 105.6 Required construction permits. The *fire code official* is authorized to issue construction permits for work as set forth in Sections 105.6.1 through 105.6.25. Permit documents must comply with submittal requirements of Section 106.1.

(Amended) 106.1 Submittals. *Construction documents* and supporting data shall be submitted for each permit in such form and detail as required by the *fire code official* and in accordance with Appendix P. The *construction documents* shall be prepared by a *registered design professional* licensed by the Colorado Department of Regulatory Agencies (DORA) or otherwise acceptable to the *fire code official*.

(exception remains)

(Amended) Section 113.4 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair, or do work in violation of the *approved construction documents* or directive of the *fire code official*, or of a permit or certificate used under the provisions of this code, shall be subject to penalties, fines, fees and enforcement actions as authorized by the City of Englewood municipal code

(Added, including subsection) Section 316.7 Fences, walls, retaining walls and similar barriers. The use of barbed wire or any other sharp-pointed material, devices or features that deliver a physical or health hazard on, as, or on top of, fences, walls, retaining walls, or similar barriers, regardless of height, is prohibited except as provided in accordance with Section 316.7.1.

Exception: Barbed wire may be installed where *approved* by the *fire code official*.

Section 316.7.1 Electrified fences. Electrified fences may be permitted by specific approval of the *fire code official*. Only fences powered by a 12-volt direct current (DC) power source shall be considered. A means of disconnecting the electricity to the fence must be provided for use by emergency responders and must be accessible from outside of the fence. Additionally, an indicator light must be installed, visible from the street at the fire department access point, to indicate when power is applied to the electric portion of the fence.

(Added) 401.3.4 Evidence of emergency. Upon discovery of evidence of an unwanted fire, hazardous materials discharge, medical incident, or environmental calamity, even though it appears to have been extinguished or otherwise stabilized, the *owner* or owner's agent shall immediately notify the Fire Department of the evidence. Such evidence shall not be disturbed, thus preserving data for investigators.

(Added) 401.3.5 Elevator entrapment communication procedures for new, altered, and existing conveyances. All active elevator entrapments will be reported to the fire department via the most expeditious means.

(Amended) 503.1.1 Buildings and facilities. *Approved* fire apparatus access roads shall be provided for every facility, building or portion of a building, and interior courts, hereafter constructed or moved into or within the jurisdiction. The fire apparatus road shall comply with the requirements of this section and shall extend to within 150 feet (45,720 mm) of all portions of the facility and all portions of the *exterior walls* of the first story of the building as measured by an *approved* route around the exterior of the building or facility and including a minimum of a 3-foot-wide access walkway leading from the fire apparatus road to the exterior walls and interior courts.

[Amended Exception (503.1.1)]

Exception 1.1. The building is equipped throughout with an *approved automatic sprinkler system* installed in accordance with Sections 903.3.1.1, 903.3.1.2 or 903.3.1.3, the 150-foot dimension may be increased to 250 feet.

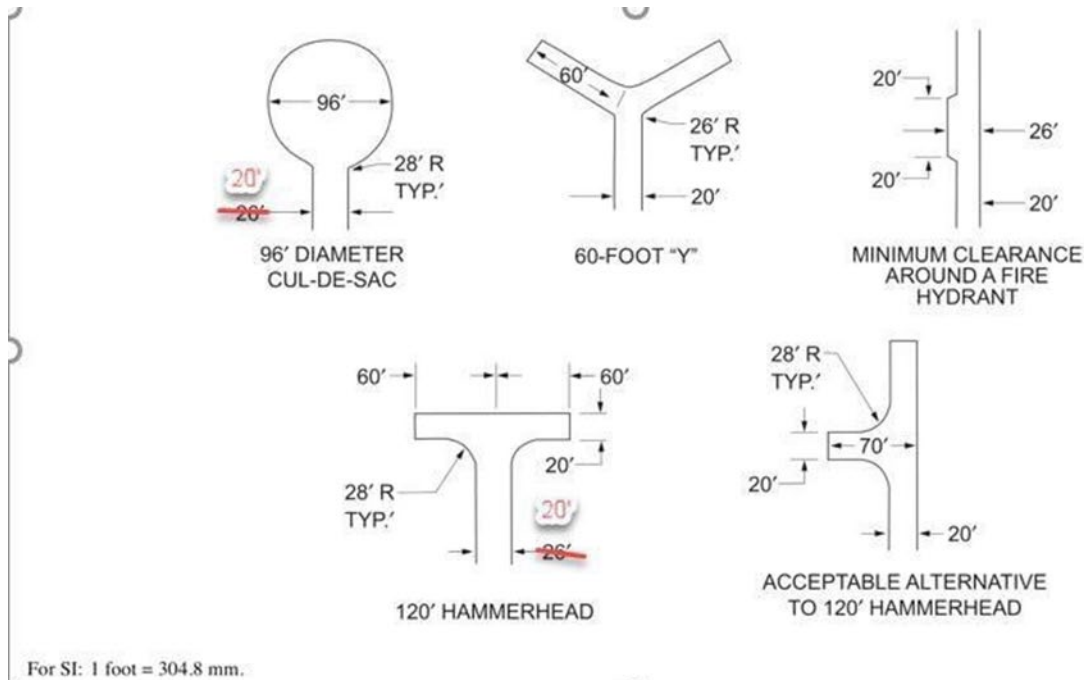
(Added) 503.2.1.1 Department of Transportation and Infrastructure (DOTI) guidelines. In accordance with the City of Englewood and Denver Fire Department Intergovernmental Agreement, DOTI Rules and Regulations for Standard Right-of-Way as found in Denver Fire Code Section 503.2.1 and Table 503.2.1 will apply for all fire apparatus access road dimensions.

(Amended) 503.2.3 Surface. Permanent fire apparatus access road surfaces shall be asphalt, concrete or other *approved* surface providing all weather driving capabilities. Temporary fire apparatus access roads used during construction are permitted to consist of a gravel road base or asphalt or other *approved* surfaces.

(Amended) 503.2.4 Turning radius. The required turning radius of a *fire apparatus access road* shall be a minimum of 25 feet inside and 50 feet outside unless *approved*. An AutoTURN submittal utilizing Denver Fire Department's platform truck may be *approved* with a 10 percent safety factor.

(Amended) 503.2.5 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45,720 mm) in length shall be provided with an approved area for turning around fire apparatus in accordance with Figure 503.2.5

(Added) Figure 503.2.5 – DEAD END FIRE APPARATUS ACCESS ROAD TURN-AROUNDS



(Added) 503.2.6.1 Grade-level structural deck. All structural decks shall have permanent, all-weather load-posting sign(s) indicating gross maximum vehicle loads, maximum tandem axle load and maximum single-axle load. Signs shall be posted in a conspicuous location at each deck entrance and shall be maintained by the owner at all times. Where not designed for emergency vehicle use, *approved* barriers and signs shall be installed and maintained at each deck entrance.

(Amended) 503.2.7 Grade. The grade of the fire apparatus access road shall not exceed 7 percent (4 degrees).

(Amended) 503.2.8 Angle of approach and departure. The *approved* ramp angle is the lesser of 6 degrees or the manufacturer's published approach, departure, or breakover angle among all current Denver Fire Department's apparatuses.

(Added) 503.6.1 Width. *Approved* security gates across fire apparatus access roads shall be a minimum of 16 feet wide.

(Added) 503.6.2 Approved means of emergency operation. Security gates across a fire apparatus access road shall be provided by the owner with one or more of the following means to allow access by emergency responders and inspectors:

1. **Electronically controlled gates** shall be equipped with a Knox brand gate and key switch operated by the *Englewood Fire Department Master Key* to allow override of the gate controls.

2. **Manually operated gates** shall be secured with a Knox brand exterior padlock operated by the *Englewood Fire Department Master Key* and with a shackle length suitable for the application.
3. **Chains used with a Knox padlock** to secure a manually operated gate shall be a minimum of ¼ inch non-case-hardened steel.

(Amended) 504.1 Required access. Exterior doors and openings required by this code or the *International Building Code* shall be maintained with ready access for emergency access by the fire department. An *approved* access walkway at least 5 feet (1524 mm) wide leading from the fire apparatus access road to the exterior openings shall be provided where required by the *fire code official*, who may approve a reduced width where appropriate.

(Added) 504.3.1 Roof access hatch requirements. Where roof access is provided by a hatch, the hatch shall have a minimum area of 16 square feet (1.5 m²), with a minimum dimension of 2 feet (610 mm) on one side and shall be openable to the exterior of the building.

Exception: Pressurized stairway enclosures.

(Added) 504.5 Courts. For buildings of Type III, IV, or V construction, access shall be provided to exterior walls of *courts* located on the level of exit discharge. Access points to the *court* shall be comprised of an open-air breezeway not less than 6 feet (1829 mm) wide with an unobstructed height equal to, or exceeding, the height of the first story of the building. The breezeways shall lie perpendicular to the building to allow a direct view of the *court* from the frontage location. Exterior wall access shall be within 150 feet of the fire apparatus access road for non-sprinklered buildings or 250 feet for sprinklered buildings. Where access distances cannot be met, additional breezeways shall be provided. Where access gates are provided, *approved* access shall be placed at each entrance.

(Amended) 505.1 Address identification. New and existing buildings shall be provided with an *approved* address identification. The address identification shall be legible and placed in a position visible from the street or road fronting the property. Address identification shall contrast with their background. Address numerals shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 6 inches (153 mm) high with a minimum stroke width of ¾ inch (19.1 mm). Where required by the *fire code official*, address identification shall be provided in additional *approved* locations to facilitate emergency response. Where access is by means of a private road and the building cannot be viewed from the *public way*, a monument, pole or other sign or means shall be used to identify the structure. Where a series of buildings or complex shares a common address, or where required by the *fire code official*, a Graphic Site Map Monument (GSMM) shall be provided.

GSMMs shall comply with all the following:

1. *Approved* by the *fire code official*.
2. Located on the premises, not within the Right-of-Way, and clearly viewable from the *fire department access road*.

3. The complex's name and address shall be located conspicuously on the top or side of the monument with a minimum letter height of 1 inch (25 mm) and contrast with the background.
4. Include a north orientation arrow and a clearly identifiable "YOU ARE HERE" locator.
5. Streets interior to the complex shall be identified with a minimum letter height of 1 inch (25 mm) and contrast with the background.
6. Occupiable structures within the complex must be identified with a minimum letter height of 1 ¼ inches (31 mm) and contrast with the background.
7. Fire hydrants, security gates, and other features within the complex shall be identified.
8. Maintained by the owner to ensure visual clarity and accuracy.

(Amended) 507.2 Type of water supply. A water supply shall be connected to a reliable public water works system

(Removed) 507.2.1 Private fire service mains.

(Amended) 507.2.2 Water tanks. New water tanks for fire protection shall be prohibited.

Exceptions:

1. For *approved* NFPA 13D systems in accordance with Section 903.3.1.3
2. Existing water tanks for fire protection that were previously *approved*. These tanks shall be inspected, tested, and maintained in accordance with NFPA 25.

(Added) 507.2.3 Water supply serving high-rise buildings. *High-rise buildings* shall be supplied by connections to a minimum of two public water mains located on different streets. Separate supply piping shall be provided between each water main connection and the building. Backflow prevention devices, in accordance with Section 912.6, and flow switches shall be provided at each water main entry to the structure. Each fire main shall be sized to meet the full demand of the fire protection system at each connection to achieve redundancy.

Exception: Where *approved*, *high-rise buildings* without access to water mains on two different streets shall have two fire main connections to the same public main. The public main shall have valves such that each water supply line can be isolated to prevent interruption in both supplies simultaneously. The two fire mains shall have a minimum separation distance of five feet at all points from the public main to the building. Each fire main shall be sized to meet the full demand of the fire protection system at each connection to achieve redundancy.

(Amended) 507.3 Fire flow. Fire flow requirements shall be determined by Appendix B. Each new or existing fire hydrant shall be in accordance with Appendix C and shall be capable of providing not less than 1,500 gpm at 20 psi residual pressure.

(Amended) 507.5.5 Clear space around hydrants. A 5-foot (1524 mm) clear space shall be maintained around the circumference of fire hydrants, except as otherwise *approved*.

(Amended) 508.1.1 Location and access. Unless otherwise *approved*, the *fire command center* shall be located on the ground floor, have a secured entrance directly accessible to and in immediate proximity to the main building entrance, and have access within the building to all fire service access elevators.

[Added to list (508.1.6 Required features)]

19. A *key box* housing mechanical, electrical, and elevator control room keys, and other access keys/codes as required by the *fire code official*.

20. A two-way communication system and elevator communication system in accordance with ASME A17.1

21. A building Mass Notification System communication station.

(Added) 508.1.6.1 Elevator status / control panel. An elevator status / control panel shall be provided. The following information must be provided on the panel:

1. Identify each elevator car alphanumerically and the floors they serve. Identify corresponding cab numbers in the elevator cab.
2. Indicate elevator cars that are operating on emergency power. Visual indicators in accordance with ASME 17.1 are required.
3. Have a placard at the elevator status / control panel indicating how many elevators can operate under emergency power simultaneously.
4. Indicate elevator car positions and direction of travel.
5. Indicate operational elevator cars.
6. Have key switches for selective activation of elevator cars if all are not capable of simultaneous operation on emergency power.
7. Have Phase I Fire Service Recall key switches in accordance with ASME 17.1.
8. The two-way communication system from the elevator car to the *fire command center* shall be incorporated into the elevator status / control panel. Two-way communication systems shall meet ASME A17.1.
9. Indicate hoistway doors positions as open or closed.
10. A visual signal for each elevator car that has a corresponding in-car visual signal (flashing firefighter hat). The in-car warning shall include the wording “WHEN FLASHING DO NOT USE ELEVATOR” engraved on the panel or adjacent placard.

(Added, including subsection) 508.2 Fire command room. A fire command room shall be provided, if *approved*, for the following:

1. Buildings with an emergency voice/alarm communication system.
2. Buildings where the owner requests that the fire alarm and life safety equipment not be installed in the lobby or entryway.
3. Buildings where elevator cars or lobbies must be monitored by surveillance equipment.

508.2.1 Fire command room features. The fire command room shall not be less than 48 feet square (4.46 m²) with a minimum dimension of 8 feet (2.44 m) on one wall. A minimum clear space of at least 6 feet (1.82 m) shall be provided in front of the fire safety equipment. The room shall be separated by a minimum 1-hour fire rating in accordance with Sections 707 and/or 711 of the *International Building Code*. The fire command room shall be located in accordance with Section 508.1.1 and shall contain the following items, where provided:

1. Fire alarm control panel.
2. Emergency voice/alarm communication equipment.
3. Smoke control panel.
4. Emergency / standby generator status panel.
5. Fire pump status panel.
6. Mass Notification System equipment.
7. Two-way communication systems, including those required for elevator communication in accordance with ASME A17.1.
8. Elevator surveillance equipment.

(Added) 509.3 Location and access to indoor fire pumps. Location of the fire pump shall be *approved*. Fire pumps shall be located at grade level and accessible directly through an exterior access door.

Exceptions:

1. Fire pumps may be located one level below grade if all the following requirements are met:
 1. The fire pump must be in a room separated by a minimum 1-hour fire rating in accordance with Sections 707 and/or 711 of the International Building Code. Maximum travel distance from the exterior access door at grade level to the most remote portion of the fire pump system / controls shall not exceed 60 feet.

2. *Stairways* providing access to the fire pump location shall comply with Section 1011 of the *International Building Code* and shall terminate at a grade-level *exit*. Curved *stairways*, *spiral stairways*, *alternating tread devices*, ship's ladders, and ladders are prohibited.
3. The travel pathway from the exterior access door to the fire pump shall be through a corridor or *exit passageway* with a minimum *fire-resistance rating* matching the *exit access stairway* rating requirements for the building.
4. There can be no intervening rooms between the *stairway* termination and the fire pump room
2. In *high-rise buildings* where the use of fire pumps arranged in series is required due to maximum pressure limitation, the fire pumps supplying the higher zones may be located above grade level.
3. In existing buildings, where a new fire pump is being added or an existing fire pump is being replaced with that of a different nominal rating, the location and access shall be *approved*.
4. Existing fire pumps, including where an existing fire pump and/or controller are being replaced with new equipment of the same nominal rating.

(Added) 510.2.10 Equipment protection. Active components of the ERCES, such as bi-directional amplifiers, distributed amplifier system controllers, and power supplies, shall be installed in a secure, conditioned, and protected room or space. Where the backbone cables and backbone cable components are required to have a *fire-resistance rating* per NFPA 1225, the room or space shall match the *fire-resistance rating*. All power supplies shall be on a dedicated circuit, and any connections shall be secured in an *approved* enclosure to prevent inadvertent disconnection. The dedicated circuit shall be connected to emergency power, where provided, and be equipped with a “lock-on” device.

(Added) 510.5.1.1 Donor antenna beam width. The donor antenna horizontal half-power (-3 dB) beam width shall not exceed 45 degrees.

(Added) 510.5.6 Signage. A legible sign stating “THIS BUILDING IS EQUIPPED WITH A PUBLIC SAFETY RADIO REPEATER SYSTEM” shall be conspicuously posted near the fire alarm panel. Additional signage stating “THIS BUILDING IS EQUIPPED WITH A PUBLIC SAFETY RADIO REPEATER SYSTEM – DO NOT TAMPER WITH OR DISCONNECT” shall be located at each ERCES amplifier location. Signs shall be permanent, constructed of plastic or metal, and subject to approval by the *fire code official*.

(Amended) 604.1 General. Where elevators and conveying systems are installed, they shall comply with Chapter 30 of the *International Building Code*, Colorado State Regulation 7CCR 1101-8, and Sections 604.2 through 604.15 of this code.

(Added) 604.3.3.1 Two or more elevators in a high-rise building without fire service elevators. In *high-rise buildings* without fire service elevators, no less than two elevators shall remain simultaneously operable on standby/emergency power. At least one of these elevators shall be able to accommodate an ambulance stretcher.

(Added) 604.4.1 Signage for existing elevators without a visual indicator. Existing elevators with shunt trip capability that do not provide a visual signal (flashing firefighter hat) shall have an *approved* sign mounted near the FACP stating “CAUTION-Elevator is not equipped with Visual Signal.” The sign shall be of black lettering on a yellow background.

(Added) 604.8 Removal from service. Prior to any elevator or conveyance system being removed from service, made dormant, or otherwise rendered inoperable; approval must be obtained from the *fire code official* or through a construction/demolition permit.

(Added) 604.9 Inspections. Acceptance and periodic inspections of elevators and conveyance systems shall comply with Colorado State Conveyance Regulation 7 CCR 1101-8.

(Added) 604.10 Communications for elevator rise of 60 feet (18.5 m) or more. Where two-way communication is required by ASME A17.1, the equipment to communicate from the elevator to the *fire command center* shall be incorporated into the elevator status panel.

(Added) 604.11 Elevators used during construction. Temporary elevators and personnel hoists used during construction shall comply with ASME A17.1. Prior to use, an installation and acceptance test certificate showing the performance is in accordance with the manufacturer’s instructions, and *approved* plans must be received by the *fire code official*. Periodic inspections/tests showing continued compliance must be provided to the *fire code official* at intervals not exceeding every 90 days. All inspections and tests must be conducted by an *approved* conveyance inspector.

(Added) 604.12 Disconnect location. The location of each elevator electrical disconnect shall be detailed on a matrix and included on the graphic map in accordance with Section 907.6.4.1. The matrix shall be posted within a display, located adjacent to the elevator panels, where provided, or next to the fire alarm control panel. The display shall be of durable construction, easily readable in normal lighting, protected by a transparent plastic surface and include all of the following information:

1. The room name(s) or number(s) and the floor number(s) where the disconnect(s) are located
2. The elevator that each disconnect operates.

(Added) 604.13 Fire-rated suspension and controller replacements. Noncircular elastomeric-coated or polyurethane-coated steel belts used in new elevator installations and alterations shall be fire rated. Coated steel belts utilized in existing elevators shall be replaced with the fire-rated type at time of suspension means or controller replacement. The fire rating shall not be less than an FT-1 rating when tested to the vertical burn test requirements of UL 2556, Wire and Cable Test Methods, where the suspension means shall not continue to burn for more than 60 seconds, nor shall the indicator flag be burned more than 25 percent.

(Added) 604.14 Elevator recall for high-rise buildings with pressurized hoistways. In addition to the requirements of ASME A17.1, Firefighters' service elevator operation in high-rise buildings with pressurized hoistways shall be as follows:

1. The elevator doors shall automatically open when the car reaches the designated level. After a period of one minute, elevators shall automatically close their doors. The doors shall be responsive by pressing the designated return floor call button in the elevator lobby or by pressing the door open button in the interior of the elevator cab. Elevators shall remain at that level until manually overridden by the key-operated switch required by ASME A17.1. Only the hall call button at the designated return level (the level the car(s) have returned to) shall function as door open buttons. All doors shall open simultaneously when operating under normal building power. When operating under emergency power, only the cars selected for emergency operation shall open their doors simultaneously.
2. During Phase 1 operation, the door recall shall be 60 seconds.
3. Once the car is placed on Phase II, the fire department has control of the elevator; it shall operate in accordance with ASME A17.1, Section 2.27.3.3.

(Added) 604.15 Elevator Access Control. For new and existing elevators where access control is being installed, no wiring conduit, wires, or interface equipment shall be installed in the hoistway. No access control interface equipment shall be installed in the elevator machine room, elevator machine space, elevator control room, or elevator control space. Wiring conduit and wire being connected directly to the elevator controller may be installed in the elevator machine room, elevator machine space, elevator control room, or elevator control space.

Exception: Elevator access control interface equipment provided by the elevator manufacturer and maintained by an elevator contractor as stated in the building's Maintenance Control Program may be installed in the elevator machine room, elevator machine space, elevator control room, or elevator control space.

(Amended) 903.3.5 Water supplies. Water supplies for *automatic sprinkler systems* shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with the requirements of this section, the *International Plumbing Code*, and the Colorado Cross-Connection Manual. For connections to public waterworks systems, the water supply test used for design of the *fire protection system* shall be adjusted to account for seasonal and daily pressure fluctuations based on information from the City of Englewood Utilities Department and approved by the *fire code official*. Water supply information shall be obtained within the previous 12 months. Hydraulic calculations shall be based on the water data provided with static and residual pressures reduced by 10 percent of the static value or 10 psi, whichever is smaller. Where water supply data is provided by the City of Englewood Utilities Department, the static pressure shall be used to verify that fire pump churn pressures shall be maintained below the system design pressure. Shop drawings shall indicate the initial pressures and the reduced values used in the hydraulic calculations.

(Added) 903.3.10 Pressure reducing valves in high-rise buildings. Where Pressure Reducing Valves (PRVs) are utilized in high-rise buildings, each sprinklered level shall be provided with an individual Pressure Reducing Valve (PRV).

Exception: Multiple sprinklered levels may be supplied by a PRV on a system riser where all the following conditions are met. (See Figure 903.3.10

1. A method to isolate the PRV shall be provided for maintenance and repair.
2. To provide redundancy, PRVs shall be arranged in series so that failure of any single device does not allow downstream pressure more than 10 psi (0.7 bar) below the minimum rated pressure of any component within that portion of the system.
3. An equally sized bypass around the PRVs, with normally closed control valves, shall be installed.
4. The PRV arrangement shall be installed not more than 7 feet 6 inches (2.31 m) above the floor.
5. The PRVs shall be provided with inlet and outlet pressure gauges.
6. The PRVs shall be provided with a relief valve of not less than 3/4 inch (20 mm) in accordance with the manufacturer's recommendations.
7. Means shall be provided downstream of all PRVs for flow tests at sprinkler system demand.
8. The system riser does not supply any fire hose connections.

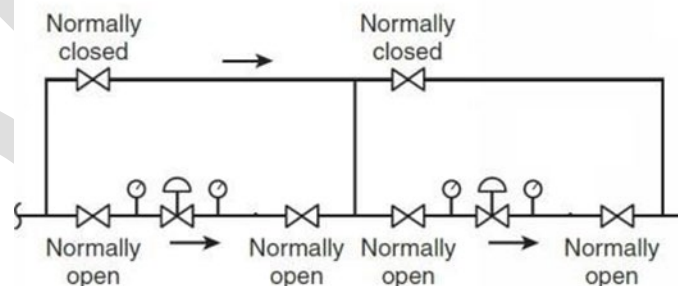


Figure 903.3.10 Example of a PRV arrangement

(Added) 903.4.3.1 Exterior alarm device. The exterior alarm device shall track waterflow, be non-latching, at least 10 feet (3048 mm) above grade and within 25 feet (7620 mm) of, and visible from, the fire department connection.

(Added) 904.3.4.1 Visible notification. Visible notification shall be provided by yellow or amber strobes. Pending discharge and discharge warning strobes shall be in conspicuous locations and activated by the agent releasing panel. Pending discharge and discharge visual warnings may be provided by combined audible/visible appliances if *approved*. No more than two flash rates shall be possible in a single field of view. Where pending-discharge and discharge warning strobes are provided in addition to visible fire alarm notification appliances, the strobes must be synchronized. A warning sign shall be provided near

the notification device that reads, “**WARNING – Fire Extinguishing Agent Release in Progress.**” The warning sign format, color, and letter style shall be *approved*. Warning signs shall be posted at each entrance door stating: “**In the event of a system discharge, DO NOT enter without a self-contained breathing apparatus or until the area is thoroughly ventilated.**”

(Added) 904.3.5.1 Releasing panel. Pre-action and clean agent automatic fire-extinguishing system releasing panels shall be installed in accordance with Section 907.6.3.3.

(Added) 905.2.1 Pressure reducing valve requirements. Where pressure-reducing valves are required, they shall be located at the hose valve outlet only, be field-adjustable, and have all the following features:

1. The valve shall have five field-adjustable valve settings (A-E) on a color-coded indication label.
2. Pin-in-hex security screws shall be installed to secure the handwheel, and a high-impact plastic shield covering the pressure-reducing adjustment mechanism shall be provided.
3. A pin-in hex bit shall be supplied with each valve.
4. The pressure adjustment mechanism shall be actuated using an aluminum adjustment rod provided with each valve and actuated by rotating in either a clockwise or counterclockwise direction.
5. Pressure gauge taps shall be provided on inlet and discharge sides of each valve.
6. A reflective decal shall be installed on the high-impact plastic shield with arrows and words indicating the direction to increase or decrease pressure.
7. If special tools are required to make field adjustments, a minimum of four such tools shall be provided at locations *approved* by the Fire Department.

(Added) 905.2.2 Maximum pressure. The maximum pressure at any point in the standpipe system shall not exceed 350 psi at any time.

(Amended) 905.3.1 Height. Class I standpipe systems shall be installed throughout buildings where any of the following conditions exist:

1. Four or more stories are above or below *grade plane*.
2. The floor level of the highest story or occupied roof is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access.
3. The floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of the fire department vehicle access.

(Amended) 905.3.7 Vegetative roofs and landscaped roofs. Buildings or structures that have landscaped roofs or *vegetative roofs* and are equipped with a standpipe system shall have the standpipe

system extended to the roof level on which the *landscaped roof* or *vegetative roof* is located. The standpipe hose outlet shall be located within 230 feet (70.1 m) of all vegetated areas.

[Replaced Items 1 & 2 (905.4 Location of Class I Standpipe hose connections)]

1. In every required interior exit stairway, a hose connection shall be provided for each story above and below *grade plane*. Hose connections shall be located at an intermediate landing between stories, unless otherwise *approved*. Where exterior stairways are provided as part of the required exit stairway, hose connections shall be located at the floor landing or as otherwise *approved*.
2. Hose valves at horizontal exits shall be located per NFPA 14.

(Amended) 905.4.1 Protection. Risers and laterals of Class I standpipe systems not located within an *interior exit stairway* shall be protected by a degree of *fire resistance* equal to that required for vertical enclosures in the building in which they are located.

Exceptions:

1. In buildings equipped throughout with an *approved automatic sprinkler system*, laterals that are not located within an *interior exit stairway* are not required to be enclosed within fire-resistance-rated construction.
2. Where additional standpipes are needed to meet travel distance requirements in non-high-rise buildings, protection of piping is not required in buildings equipped with an *approved automatic sprinkler system*.

(Amended) 905.8 Dry standpipes. Dry standpipes shall not be installed.

Exceptions:

1. Where subject to freezing and in accordance with NFPA 14.
2. Class I manual wet standpipes served by an automatic dry valve shall be permitted in mixed-use open parking garages where the highest floor is located not more than 75 feet (22.8 m) above the lowest level of fire department vehicle access. The standpipe system serving the open parking garage shall be integrated with the fire protection system serving the other occupancies and shall not be a stand-alone system.
3. Class I manual wet standpipes served by an automatic dry valve shall be permitted in single-use open parking garages where the highest floor is located not more than 75 feet (22.8 m) above the lowest level of fire department vehicle access.
4. Class I manual dry standpipes shall be permitted in single-use open parking garages where the highest floor is less than 55 feet (16.8) from the lowest level of fire department vehicle access. This provision is applicable to open parking garages with one level of underground enclosed parking garage.

(Added) 905.13 Combined systems. Pressure reducing valve requirements for combined sprinkler and standpipe systems shall be based on the manual standpipe system demand pressure provided at the most remote fire department connection.

(Added) 907.1.4 Control units, annunciators, and access keys. All fire alarm control units and annunciators shall be UL 864 listed or equivalent. Locations shall be within 10 feet (3048 mm) of the main building entrance, excluding vestibules, unless an alternate location is *approved*. All control panel locations are subject to field approval prior to installation. Installation shall comply with NFPA 72. Access keys to locked fire alarm equipment shall be maintained in an *approved* location. Fire alarm control units shall not be equipped with a key or special numeric code to access system reset and silence functions. Access to the reset and silence operator interface shall be secured behind a locked door. Field modification of control units or annunciators is not permitted. System zone and device disable functions shall not be accessible without a maintenance-level access code. Alarm signals shall be protected from unauthorized deactivation. This applies to disconnection of the panel alarm transmission to the monitoring station and the alarm output circuit(s) to notification appliances.

Exceptions:

1. In existing buildings undergoing a panel replacement, remote annunciators with silence and reset functions may be *approved*. These units shall not be equipped with “enable/disable” switches and shall be contained behind a transparent, lockable cover.
2. Low-power radio (wireless) systems shall comply with NFPA 72 and are permitted only for installations where the total system coverage does not exceed 1500 square feet (139.36 m²). Multiple low-power systems in a building are not permitted. Installation of both low-power and wired systems is not permitted in the same building.

(Amended) 907.2.6 Group I. A manual *fire alarm system* that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group I occupancies. An *automatic smoke detection system* that activates the occupant notification system in accordance with Section 907.5 shall be provided in accordance with Sections 907.2.6.1, 907.2.6.2 and 907.2.6.3.3. An emergency voice/alarm communication system in accordance with Section 907.5.2.2 shall be installed where partial evacuation is provided.

(exceptions remain)

(Amended) 907.2.13 High-rise buildings. High-rise buildings shall be provided with an *automatic smoke detection system* in accordance with Section 907.2.13.1, a fire department communication system in accordance with Section 907.2.13.2, an emergency voice/alarm communication system in accordance with Section 907.5.2.2, a manual fire alarm system with fire alarm boxes located in accordance with Section 907.4.2, and annunciation in accordance with 907.6.3.1.

(exceptions remain)

[Added items 3-6 (907.2.13.1.1 Area smoke detection)]

3. In all interior corridors serving as a means of egress for Group R-1, R-2, and R-4 occupancies, with an occupant load of 10 or more.
4. Not less than one foot (304.8 mm) but no more than three feet (914.4 mm) on the occupied side of each door that enters a refuge area, elevator lobby and exit stairway which does not directly exit from a refuge area, for occupancies other than R-1, R-2 and R-4.
5. At the top of stairwells and in elevator hoistways (automatic fire detectors in accordance with Section 907.3.3). These devices shall initiate an alarm condition and illuminate the respective indicator at the graphic annunciator. They shall not initiate occupant notification or the smoke control sequence.
6. Where unenclosed vertical openings are permitted by Section 712 of the *International Building Code* smoke detectors shall be located around the perimeter of the opening, on each level, not less than four feet (1219.2 mm) from the edge of the opening. Unenclosed stairway and escalator openings shall comply with this Section and Section 712.1.3 of the *International Building Code*. Two-story openings in other than Group I-2 and I-3 occupancies shall comply with Section 712.1.9 of the *International Building Code*. Atriums in *high-rise buildings* must comply with Section 907.2.14.

[Added exception (907.5.1 Alarm activation and annunciation)]

Exception: In high-rise buildings, occupant notification shall not activate upon operation of smoke detectors at the top of stairwells or elevator hoistways, nor upon operation of waterflow switches serving only main or service chutes.

(Added) 907.5.1.2 Alarm reset and silence of notification appliances. The fire alarm control panel shall incorporate an alarm silencing switch that shall only de-activate the audible notification appliances until the system is manually reset. Alarms shall be provided in accordance with Section 907.5 and as required by other sections of this code.

Exception: The silencing switch is not permitted in healthcare facilities regulated by the Colorado Division of Fire Prevention & Control (DFPC) on behalf of the Center for Medicaid Services (CMS).

(Amended) 907.5.2 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. In high-rise buildings, the system shall operate on at least the alarming

floor, the floor above, floor below, and the level of exit discharge. Speakers shall be provided throughout the building by paging zones. At a minimum, paging zones shall be provided as follows:

(items remain)

(Added) 907.5.2.2.6 Background noise reduction. Assembly occupancies shall be provided with a means to reduce or eliminate background audio noise upon activation of the emergency voice/alarm communication system.

(Amended) 907.6.3.1 Annunciation. The initiating device status shall be annunciated at an *approved on-site* location. Location of annunciators shall be field *approved*. Locations depicted on reviewed drawings are not permitted until field verification is secured. Visual zone indications shall lock in until the system is reset and shall not be canceled by the operation of an audible alarm-silencing switch. Zones shall be annunciated separately as follows:

1. Manual fire alarm boxes
2. Automatic smoke and heat detectors
3. Fire sprinkler water flow zones
4. Other, *approved* types of automatic fire protection systems
5. Emergency alarms / gas detection systems
6. Carbon monoxide detection systems

(Added, including subsections) 907.6.3.2 Annunciator panels. Annunciator panels shall be point-lit graphic or computer graphic, or a directory LED point display type as *approved* by the *fire code official*. Upon initiation of an alarm, supervisory or trouble condition the panel shall record the status. Alarms shall “lock-in” until the fire alarm system is reset with a dedicated reset switch located at the main fire alarm control panel. Annunciator panels may be secured when keyed to the fire alarm panel lock.

Exception: Where a monitored building fire alarm control unit is not provided, annunciator panels are not required for a dedicated-function elevator recall control and supervisory control unit or sprinkler waterflow and supervisory control unit.

907.6.3.2.1 Directory annunciator. A directory annunciator shall be provided as required by the *fire code official*. The annunciator shall be provided with individual alarm indications in accordance with Section 907.6.4. Indicators shall be of sufficient size and intensity to be visible in normal lighting. Scaled floor plans shall be permanently mounted adjacent to directory-type annunciator panels. Plans shall be of durable construction, easily readable in normal lighting, protected by a smooth, transparent, plastic surface and shall include every building level including mezzanines and roofs.

907.6.3.2.2 Point-lit graphic annunciator. A point-lit graphic annunciator is required for the following: underground buildings, high-rise buildings, buildings with a smoke control system in accordance

with Section 909 and where required for a pre-action fire sprinkler or clean agent extinguishing system in accordance with Section 907.6.7.

907.6.3.2.2.1. Graphics. The annunciator shall consist of permanently mounted, scaled floor plan mounted near the annunciator, with the addition of discrete LED indications for each alarm initiating device. The annunciator shall be provided with a momentary push-button “Lamp Test.”

907.6.3.2.3 Computer graphic display annunciator. Computer graphic displays may be *approved* for individual system designs. Systems shall be fully compliant with UL 864. Systems shall contain a full color primary and secondary display. Demonstration of the specific equipment to be installed with the actual operating software for the proposed system shall be presented to the *fire code official*. Scaled floor plans must be readily available on-site, near the, for reference/back-up use. Operator interface to the graphic shall be based on:

1. Ease of use - The primary operator interface shall be standard 2-button mouse driven. Optional secondary interfaces may be provided.
2. Adequacy of display for operational purposes - Displays shall be capable of presenting the entire floor plate with all devices and device status shown on an initial alarm screen. On any alarm indication, the floor plate in alarm shall come up on the screen with all devices shown and the device in alarm highlighted. Display segmentation from this initial view shall be possible for expanding the view of the area of alarm incidence. Displays shall be contrasting black lines and lettering on a white background.
3. Flexibility of system upgrades.
4. Minimal proprietary components.
5. Accepts standard picture file types.
6. Report generation of events, histories, maintenance schedules, device status, settings and user access are presented in English.
7. UL-864 listed event-driven primary display. Secondary display(s) as *approved*. All displays shall be specified for 24-hour, 7-day continuous operation.
7. Secure access.
8. Fire alarm device icons shall be in accordance with NFPA 70 or graphic icons as *approved* by the *fire code official*.

907.6.3.3 Pre-action and clean agent extinguishing systems. Where provided, pre-action and clean agent extinguishing systems shall have a dedicated releasing panel and annunciator connected to the building fire alarm system. The following conditions apply:

1. Pre-action and clean agent systems shall be provided with a local directory annunciator zoned for manual, smoke detector, flow alarm indications in accordance with Section 907.6.3.2.1. Systems with under floor and/or above ceiling detection devices shall be provided with a point-lit graphic annunciator in accordance with Section 907.6.3.2.2. Systems shall annunciate alarm and supervisory conditions at the main building fire alarm panel.
2. Control panels shall be listed for releasing service, and in an *approved* located outside the protected area. Areas protected by a single releasing panel shall be contiguous.
3. Cross-zoned detection systems shall transmit a building alarm on activation of the first initiating device. Double-interlock pre-action systems shall not have cross-zoned detection.

(Amended) 907.6.4 Zones. All fire alarm systems shall be divided into alarm zones. Each floor shall be zoned separately, and the zone shall not exceed 22,500 square feet (2,090 m²). The length of any zone shall not exceed 300 feet (91,440 mm) in any direction. When two or more alarm zones are provided, visible zone indication shall be provided at an *approved* location. Annunciation shall be in accordance with Section 907.6.3.1.

(exception remains)

(Amended) 907.6.4.1 Zoning indicator panels. Zoning indicator panels shall be in accordance with Section 907.6.3.1.

(Removed) Section 907.6.4.2 Zones

(Added) Section 907.9.1 Phased fire alarm system replacement. Where practical difficulties are associated with replacement of an existing fire alarm detection systems, phased replacement of the system may be permitted as follows:

1. An Administrative Modification (AM) request for the phased replacement of the fire alarm and detection system shall be submitted to the *fire code official* for evaluation and approval prior to submission of shop drawings. The request must include, at minimum, the scope of work, the reasons for the request, a phased replacement schedule of the system and components, and a detailed description of coordination/sequence of operations between the new and existing fire alarm panels during construction.
2. A maximum of two fire alarm control panels may be allowed during a phased system replacement. Existing and new fire alarm control panels shall be co-located as *approved* by the *fire code official*. It is acceptable to have a points of system reset at each fire alarm control panel during a phased system replacement. A wall map showing each fire alarm panel's control area(s) shall be posted adjacent to the fire alarm control panels during construction. Upon completion of new equipment installation and as *approved* by the *fire code official*, the old devices and components may be removed. Once all devices and components have been transferred to the new fire alarm panel, and as *approved* by the *fire code official*, the old fire

alarm panel shall be removed. To avoid overlapping, notification devices from both the old and new systems should not be active when located within the same area. Notification devices in adjacent areas must comply with visual and audible requirements of NFPA 72.

3. Phased replacement work shall be conducted in sections/area/floors as *approved*. Work within each area shall be completed prior to commencement of work on any other area unless the contractor can complete multiple areas simultaneously.
4. Project duration shall not exceed 24 months from the date the fire alarm permit is issued, nor shall the total duration, including project planning, design, and installation, exceed 36 months. Subject to the approval by the *fire code official*, a single extension of a maximum of one year may issues. The extension must be requested in writing and submitted by at least 60 days prior to the expiration of the existing permit. Extensions shall be granted only in cases of unforeseen difficulties. Building owners and contractors shall make every effort to minimize any delay to project completion.
5. Fire alarm and detection system protection shall be maintained at all times, in all areas, except where system/component replacement is actively taking place (installers are present). All devices and appliances not affected by work in the active installation area shall be maintained fully operational at all times.
6. Phasing of fire alarm system replacement shall be in an organized, coherent, and logical sequence to reduce system disruption and allow work while maintaining the life safety systems of the building.
7. Where the building has a smoke control system, detailed interface of the new fire alarm system with the existing or upgraded smoke control system shall be provided in the AM submission with details also shown on the shop drawings.

(Added) 909.10.5.1 Variable Frequency Drives (VFD). Upon smoke control activation, VFDs shall operate in override or life safety mode where faceplate commands and non-smoke control commands are ignored. In addition, non-critical faults (safeties) shall be ignored to ensure the continued and stable performance of the smoke control fan. VFDs for smoke control system fans shall not be equipped with a manual or automatic bypass switch except where fans are designed and set for 60 hertz nominal. VFDs shall be located in a locked room or other approved location and be accessible without the use of a ladder.

(Amended) 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. The control unit shall be the building *fire alarm control unit* taking control of all smoke control systems or elements with priority over any building automated systems, temperature control systems, or other air movement controls.

(Removed) 1103.7.6 Group R-2

(Added, including subsections) 1108.1 Compressed gas systems. Existing compressed gas systems located within existing buildings shall meet the requirements of Sections 1108.1.1 through 1108.1.4.

1108.1.1 Carbon dioxide (CO₂) systems used in beverage dispensing applications. Existing carbon dioxide (CO₂) systems used in beverage dispensing applications shall comply with Section 5307.3.

1108.1.2 Carbon dioxide (CO₂) gas enrichment systems using on-site supply tanks and/or cylinders in plant-growing (husbandry) applications. Existing carbon dioxide (CO₂) gas enrichment systems using on-site supply tanks and/or cylinders in plant growing (husbandry) applications shall comply with Section 5307.4.

1108.1.3 Carbon dioxide (CO₂) gas enrichment systems using on-site supply tanks and/or cylinders in plant growing (husbandry) applications. Existing carbon dioxide (CO₂) gas enrichment systems using on-site supply tanks and/or cylinders in plant growing (husbandry) applications shall comply with Section 5307.4.

1108.1.4 Carbon dioxide (CO₂) gas enrichment systems using a natural gas burner in plant growing (husbandry) applications. Existing carbon dioxide (CO₂) gas enrichment systems using a natural gas burner in plant growing (husbandry) applications shall comply with Section 5307.5.

(Added) 1203.2.2 Elevators and platform lifts. Standby power shall be provided for elevators and platform lifts as required in Sections 606.2, 1009.4.1, and 1009.5. Standby power for platforms shall comply with ASME A18.1.

(Added) 5701.5.1 Elevation correction. Due to the Denver Metro Area's elevation, the flash point and boiling point of flammable and combustible liquids are reduced by 8°F and may cause reclassification of flammable and combustible liquids. Elevation adjustments and any reclassification shall be documented on submitted plans.

(Removed) 5704.3.8.5 Warehouse hose lines.

(Added under Chapter 80, ASME)

A18.1 – 2023 Safety Standard for Platform Lifts and Stairway Chairlifts

604.3.3, 1203.2.2

(Amended) B104.1 General. The fire-flow calculation area shall be the total area of all floor levels within the *exterior walls*, and under the horizontal projections of the roof of a building, except as modified in Section B104.3 of the *International Fire Code*. In buildings with mixed construction types as defined in the *International Building Code*, the fire-flow calculations shall follow the method described in the *2024 International Fire Code Commentary*.

(Exceptions remain)

(Added) B104.3 Fire flow data. For new building construction or additions, each set of construction drawings submitted for permit shall contain the required fire flow calculation as follows in the fire flow data block:

TOTAL FIRE FLOW REQUIRED IS ____ GPM MINIMUM @ 20 PSI RESIDUAL PRESSURE.

THIS FLOW MUST BE PROVIDED FROM A MINIMUM OF ____ FIRE HYDRANTS.

EACH FIRE HYDRANT SHALL SUPPLY A MINIMUM OF 1,500 GPM @ 20 PSI RESIDUAL PRESSURE AT THE HYDRANT OUTLET TO BE ACCEPTABLE.

CODE USED FOR ANALYSIS: 2024 IFC WITH AMENDMENTS

OCCUPANCY GROUP(S):

CONSTRUCTION TYPE(S):

FIRE FLOW CALCULATION AREA:

THIS BUILDING IS/IS NOT FULLY PROTECTED WITH AN AUTOMATIC SPRINKLER SYSTEM.

(Amended) B105.1 One- and two-family dwellings, Group R-3 and R-4 buildings and townhouses. The minimum *fire-flow* and flow duration requirements for one- and two-family *dwellings*, Group R-3 and R-4 buildings and *townhouses* shall be as specified in Table B105.1(2). All hydrants, new and existing, shall flow no less than 1,500 gpm (5,679 L/min) with a minimum residual pressure of 20 psi.

Exception: A reduction in required fire flow of up to 50 percent, as approved, is allowed for one- and two-family *dwellings* when the building is protected throughout with an *automatic sprinkler system* installed in accordance with NFPA 13D

(Removed) Table B105.1(1)

(Amended) B105.2 Buildings other than one- and two-family dwellings. The minimum *fire-flow* and flow duration for buildings other than one- and two-family *dwellings* shall be as specified in Table B105.1(2).

Exception: A reduction in required *fire-flow* of up to 50 percent, as *approved*, is allowed when the building is protected throughout with an *automatic sprinkler system* installed in accordance with NFPA 13 or NFPA 13R. The resulting *fire-flow* shall not be less than 1,500 gpm (5,678 L/min) for the prescribed duration as specified in Table B105.1(2). All hydrants, new or existing, shall flow no less than 1,500 gpm (5,678 L/min) with a minimum residual pressure of 20 psi.

(Removed) Table B105.2

(Removed footnotes) Table C102.2 footnotes f and g

(Amended) D103.1 Access road with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be in accordance with section 503.2.5.

(Removed) Figure D103.1

(Replaced item) Fire apparatus access road gates.

1. Gates across a fire apparatus access road shall be in accordance with section 503.6.1

(Added with subsections) Appendix P

APPENDIX P

SHOP DRAWINGS AND SYSTEM GRAPHIC REQUIREMENTS FOR FIRE PERMIT APPLICATION

SECTION P101 GENERAL

P101.1 Scope. Acceptance of any submittal is at the discretion of the *fire code official*. All documents submitted for approval shall bear the stamp, signature and registration number of the responsible design professional in accordance with the requirements below or as permitted by the *fire code official*. Submittals will be processed through the applicable digital program currently in use by the City of Englewood. If required by the *fire code official*, paper submittals shall be of a minimum drawing sheet size of 24 inches by 36 inches and of sufficient detail and legibility to affect an adequate review of the scope of the work for which a permit is requested.

SECTION P102 Reserved.

SECTION P103 TECHNICAL REQUIREMENTS

P103.1 Sprinkler system shop drawings submittal.

1. Shop drawings (working plans) shall be prepared in accordance with Section P103.2.2. Shop drawings shall identify the flow and reduced pressures required by Section 903.3.5 in the hydraulic calculations. Hydraulic calculations and equipment cut sheets are required. Drawings shall be stamped and signed by a Colorado licensed professional engineer. A water flow test certificate acceptable to the fire code official or hydraulic model letter shall be provided with all submittals.
2. Pre-action sprinkler and clean agent suppression systems shall include the requirements for the suppression and detection system in a single permit application. Separate permits are required for fire detection and sprinkler/clean agent installations.
3. Submittals shall include the monitoring company name and station license number.
4. Upon submittal of sprinkler system shop drawings, an applicant may request issuance of a "conditional sprinkler installation permit" (conditional permit). Conditional permits shall not include installation of any fire pump or pump controller components or installation of sprinklers in fittings. Conditional permits are subject to payment of permit fees. Work under a conditional permit is subject to subsequent plan review and field inspection for proper and code compliant installation. Corrections identified in the field or by design plan review shall be the responsibility

of the contractor. Conditional permits will only be issued to contractors in good standing, with a history of permit compliance, and at the discretion of the fire code official.

5. Dry sprinkler system designs shall include water delivery time calculations required by NFPA13, 8.2.3.

P103.2 Fire sprinkler modification (scope of work) permits. For modification of existing wet fire sprinkler systems only: Where shop drawings are required, they shall be stamped and signed by a Colorado licensed professional engineer responsible for the design and submittals, except when 20 or fewer sprinkler heads are being added/removed from a system, when the submittals are permitted to be signed by a NICET III or higher preparer.

P103.2.1 Projects qualifying for fire sprinkler modification permits. The project scope is limited to relocating, adding and plugging sprinklers in accordance with the following:

1. Tenant finish work on an existing sprinkler system involving both sprinkler relocations and additions in a light hazard occupancy for up to 75 sprinklers.
2. Tenant finish work on an existing sprinkler system involving both sprinkler relocations and additions to Ordinary Hazard Group 1 up to 30 sprinklers, Group 2 up to 20 sprinklers, and in other than Group H or high pile storage occupancies.
3. Tenant finishes in warehouses where scope of work is within the office only, and in accordance with Item 2 above.
4. Backflow preventors on pipe schedule systems or like for like replacements on hydraulically calculated systems (original system calculations shall be submitted for verification).
5. For tenant work on all light hazard existing sprinkler systems involving sprinkler relocations and additions, the contractor shall ensure that no more than two sprinklers are fed from any 1-inch outlet in the new construction area. A maximum of 20 added sprinklers is permitted per zone or floor level. Where the design requires more than two sprinklers to be fed from a 1-inch outlet, hydraulic calculations shall be provided to ensure the friction loss permits adequate flow for the required design-area demand. A full-floor layout showing all sprinkler locations and pipe sizes shall be submitted.

P103.2.2 Plan submittal - Required information for sprinkler modification permit. Shop drawings showing all floors that are affected shall include the following information:

1. Name of owner and occupant
2. Location, including street address
3. Point of compass
4. Full height cross-section, or schematic diagram, as required for clarity, including ceiling construction and method of protection for nonmetallic piping
5. Location of partitions
6. Location of firewalls

7. Building construction type and occupancy classification
8. Location and size of concealed spaces, closets, attics, and bathrooms
9. Sources of water supply with pressure or elevation
10. Make, type, temperature, coverage characteristics, nominal orifice size and K-factor of sprinkler heads. Method of protection for nonmetallic piping.
11. Location of high-temperature sprinklers
12. Total area protected by each system on each floor
13. Pipe type and schedule of wall thickness
14. Nominal pipe size and cutting lengths of pipe (or center-to-center dimensions)
15. Location and size of riser nipples
16. Type of fittings and joints and location of all welds and bends. The contractor shall specify on drawings any sections to be shop welded and the type of fittings or formations to be used
17. Type and locations of hangers, sleeves, braces and methods of securing sprinklers when applicable
18. Layout identifying sizes and locations of existing piping serving the affected floor or area
19. Pipe schedule system justification where such systems are permitted by NFPA 13.

P103.3 Fire alarm system shop drawings submittal. Where shop drawings are required, they shall be stamped and signed by a Colorado licensed professional engineer. Drawings shall be submitted for permit application in accordance with this Section with the following information:

Upon submission of fire alarm shop drawings for review, an applicant may request issuance of a fire alarm “conduit only rough-in” installation permit without *approved* submitted plans. The contractor shall be responsible for all changes required by the subsequent plan review. A conduit only rough-in permit may only be issued to contractors in good standing, with a history of permit compliance, and at the discretion of the *fire code official*. Only back boxes, conduit stubs and fire alarm raceway systems are permitted for installation with a conduit only rough-in permit. Conduit only rough-in permits are subject to payment of permit fees. Raceway systems shall only be installed by State and City licensed electrical contractors. Work under a conduit only rough-in permit is subject to subsequent plan review and field inspection for proper and code compliant installation. Corrections identified in the field or by design plan review shall be the responsibility of the contractor.

P103.3.1 Fire alarm shop drawings shall contain the following information:

1. Exact address, including building and unit numbers; location of work; name and address of responsible design agency.
2. Building occupancy classifications and occupant loads for each occupancy classification.
3. Manufacturers’ specification sheets for all equipment, equipment, appliances and devices.

4. Code reference used as a basis for design, including any administrative modifications or Board of Appeals decisions.
5. Identification of system as code-required, non-required code-compliant or user defined.
6. Complete sequence of operation input/output matrix with initiating events (input) as the rows and response events (output) as the columns.
 - A. Initiating events shall include [per zone(s) per floor]:
 - 1) Manual initiation of alarm or supervisory features
 - 2) Automatic initiation by detection, e.g., smoke, heat, fire, other emergency alarms; devices activating specific mechanisms or life safety functions, such as individual smoke control components, elevator recall, opening protection, etc., shall be identified separately; devices in elevator shafts, elevator machine rooms, stair enclosures shall be identified separately.
 - 3) Manual initiation of special extinguishing systems; devices shall be identified separately per system per zone.
 - 4) Automatic initiation of fire suppression systems; flow switches and special suppression systems shall be identified separately.
 - 5) Functions monitored by the fire alarm system, including but not limited to:
 - a) Equipment/device/appliance/system trouble
 - b) Equipment/device/appliance/system supervisory shall be listed per zone
 - c) Equipment/systems monitored for integrity; identify each system separately
 - i. Elevator shunt trip power
 - ii. RES system power
 - iii. FACP and ancillary equipment power
 - iv. Refuge area communication power
 - v. Emergency firefighter communication system(s)
 - B. Response events shall include:
 - 1) System alarm and system/component supervisory and trouble.
 - 2) Alarm notification including signal transmission to central station, interior and exterior appliances, voice evacuation, special suppression pre-discharge alarms, etc.
 - 3) Required safety functions including (not limited to):
 - a) Elevator recall (list groups or banks separately)
 - b) Smoke control fan activation (list each fan separately)
 - c) Damper activation (list smoke control and opening protection separately per zone per floor)
 - d) Activation of other opening protection (list separately per zone per floor)
 - e) Activation of all electronic access control functions controlled by the fire alarm (list per zone per floor)
 - f) HVAC system shutdown

- g) Power shunt; list each component/feature/system separately (entertainment visual and audio features and increasing general illumination levels may be listed together per fire area)
7. Identification of air-handling units with airflow exceeding 2,000 cfm (.94 cu m/s) and 15,000 cfm 7.08cu m/s).
8. Identification of air-handling units used for smoke control.
9. Voltage-drop calculations using either the component-by-component method or aggregating the entire load at the end of the circuit. The calculations shall use the listed UL max for new systems. The voltage on a circuit shall not drop below 16 volts at the last appliance. The “R” values used for conductors shall be in accordance with NFPA 70 (NEC) for uncoated copper conductors. Voltage-drop calculations for additional devices on existing systems shall be done in the same manner with the same values, as the original calculations for the system.
10. Battery calculations for control panels and power supplies. Calculation shall include 20 percent de-rating.
11. Scale drawings of each area where work on the fire alarm system is proposed, including north arrow, building address and local street intersections. The drawings shall show the locations of all equipment, appliances, and devices including existing components and end-of-line resistors, room identification by number and function, attic and ceiling details for areas with automatic detection.
12. Mounting heights of wall-mounted devices.
13. Symbol list with quantities of each device. Symbols shall comply with NFPA 170.
14. Power supply connection details. System single-line riser showing all devices.
15. A separate single line drawing of the power supplies, pre-amps, amplifiers, interconnecting wiring, and methods used to provide survivability of the voice evacuation system.
16. Fire alarm circuit identification, in accordance with NFPA 72, including wire color code.
17. Interconnection wiring.
18. Supervising station designation (Central, Proprietary, Remote).
19. Full-scale drawings of annunciators, zone maps and firefighter’s smoke control panels.
20. Reflected ceiling plan, where full smoke detection is provided.
21. Conduit-fill calculations.
22. List of control unit bypass features.
23. Amplifier load calculations and audio circuit loading (not to exceed manufacturer's maximum circuit dB loss).
24. Name, address, and license number of the supervising station.
Facilities monitoring the radio communication systems shall meet connectivity requirements acceptable to the *fire code official*.
25. Fire and smoke construction ratings of walls and barriers.
26. Seal and signature of a Colorado registered professional engineer.

P103.4 Fire alarm modification (scope of work) permit. For modification of existing fire alarm systems only: Where shop drawings are required, they shall be stamped and signed by a Colorado licensed professional engineer responsible for the design and submittals.

P103.4.1 Projects qualifying for fire alarm modification permits. The project scope is limited to the following:

1. Devices and/or appliances connected to existing fire alarm systems: Installation shall be limited to a maximum of 24 new or relocated notification appliances on a single floor and 12 new or relocated initiating devices on an existing circuit.
2. Addition of one power supply to support appliances identified in item 1 above.
3. Transferring existing monitoring companies
4. Removal and reinstallation of devices in the same location
5. Installing a new replacement dialer or communicator or reprogramming same to new central station.
6. Installation of emergency responder radio enhancement systems in non-high-rise buildings.
7. Conduit only permit requests where the final shop drawings are logged for review.
8. Emergency fire alarm panel replacement for an existing system. An emergency panel replacement permit shall be acquired within one normal business day of the commencement of work. The proposed panel shall be compatible with the fire alarm system. A complete permit application shall be submitted within ten normal business days of the commencement of work. The emergency replacement panel is subsequently subject to the requirements for a planned replacement panel.

P103.4.2 Plan submittal - Required Information for fire alarm permit. A complete set of electronic plans shall be submitted through the online portal that includes the following (as applicable):

1. Completed permit application
2. Building code occupancy classification
3. Manufacturers' specification sheets and equipment listing sheets for new equipment and devices
4. Installation codes and standards used
5. Type of system and reason system is provided (required, non-required)
6. Sequence of operation
7. Identification of duct detectors in air-handling units exceeding 2,000 cfm (0.94cu m/s) (not required in VAV boxes less than 2000 cfm (0.94cu m/s) each, but aggregate air flow exceeding 2000 cfm (.94cu m/s) boxes served by central fan system)
8. Voltage drop calculations and battery calculations
9. Description of annunciation assignments (complete zone schedule)

10. Shop drawings, drawn to scale, including a drawing for each building level involved, with a north arrow for compass orientation and depicting all control and annunciation panels and peripheral devices. Shop drawings shall bear the seal and signature of a professional engineer licensed by the State of Colorado: Where the scope involves 6 or fewer notification appliances and 4 or fewer initiating devices, signature by a NICET III or higher is acceptable.
11. Plan for upgrading existing annunciator panel, if applicable
12. One-line diagram showing scope of work and identifying new devices
13. Site address, identification of each room's usage, and areas having automatic detection
14. Provide building details (i.e., attics, ceiling cavities, etc.)
15. Mounting heights for manual fire alarm boxes and strobes
16. Primary power supply connection details and symbol list

P103.5 Building plans for graphic map. Plans shall be of durable construction, easily readable in normal lighting, protected by a smooth, transparent, plastic surface and shall include every building level including mezzanines and roofs. Plans shall contain the following information as applicable:

1. Building name
2. Building address
3. Construction type(s)
4. Scale
5. North orientation arrow
6. **"You Are Here"** in contrasting and bold font
7. Latest date plans were drawn/revised
8. Floor plans
9. Concealed spaces below floors and above ceilings, e.g., crawl spaces and attics
10. Site plan
11. Adjacent streets
12. Local fire hydrants
13. Major uses, e.g., kitchens, restaurant, offices, gymnasium, parking, etc.
14. Areas of emergency function, e.g., areas of refuge, fire command center
15. Utility areas, e.g., electrical/telephone rooms/closets, water entry
16. All stair enclosures with distinct designation for each, matching floor signage
17. All elevators with distinct designation for each and associated machine rooms
18. All trash/linen chutes
19. All utility shafts including HVAC and light wells
20. All interior and exterior utility (communication, electricity, gas, water, etc.) shutoff locations
21. Locations of hazardous materials such as:
 - A. Control areas
 - B. Fuel storage

- C. Battery rooms
 - D. Medical gas rooms
 - E. Emergency and standby power equipment locations
 - F. Fuel fill location
 - G. Identify fuel type and tank size
22. Sprinkler zones
 23. All control valve locations including elevators and paint booths
 24. Standpipe outlet locations
 25. Special suppression systems, e.g., FM-200; UL-300; pre-action
 26. Specialized fire protection equipment, e.g., water tanks
 27. Fire pump location
 28. Fuel fill location for diesel pumps
 29. Identify fuel type and tank size as applicable
 30. Fire department connections
 31. Pump test headers
 32. Wall hydrants as applicable
 33. Smoke control zones
 34. Fire-resistance-rated construction, fire walls, fire barriers, fire partitions, smoke barriers, smoke partitions
 35. All initiating devices including water flow
 36. Fire alarm zones
 37. NAC power extender locations
 38. Roof plan
 - A. Access
 - B. Vents
 - C. Occupied areas
 39. Stamp and signature of a professional engineer licensed by the State of Colorado
 40. Control areas in accordance with Section 5003.8.3 of the International Fire Code
 41. Other features required by the *fire code official*

P103.6 Shop drawing submittals (deferred submittals) for smoke control systems. Shop drawings shall be electronically submitted bearing the stamp and signature of a professional engineer licensed by the State of Colorado and containing the following:

1. Code reference used as a basis for design, including any Administrative Modifications or Board of Appeals decisions.
2. Plans identifying each smoke control zone including a listing of smoke control equipment (fans) associated with each respective zone. A combination of vertical (section) and/or horizontal (plan) views may be necessary to clearly depict each zone.
3. Certification of coordination of sprinkler, smoke control and fire alarm/detection zones.

4. Plans identifying control equipment including wiring diagrams and tubing schematics as applicable
5. Manufacturers' specification sheets for all equipment and devices associated with the smoke control system including, but not limited to, the following: Fans, dampers, louvers, CT switches, end-switches, pressure sensors, control tubing, etc. Fan and damper specifications shall include operating temperature to 250 degrees F, minimum number of fan drive belts required for load and number of belts provided. 1.5 x the minimum drive belts required shall be installed.
6. Detailed description of the required testing criteria in Section 909.18. Printed reports must be maintained on site in the fire command center.
7. Final acceptance testing plan indicating systems testing. Refer to Section 909.19

P103.6.1 Firefighter's smoke control panel (FSCP). Firefighter's smoke control panel submission shall bear the stamp and signature of a professional engineer licensed by the State of Colorado and shall incorporate the items below as well as a complete sequence of operations for all activation nodes. The following features shall be incorporated and color-coded as follows:

1. General building layout (black lines on white background)
2. Exhaust systems — RED
3. Pressurization systems — GREEN
4. Ducts associated with smoke control elements but not active in smoke control mode — GREY
5. Dampers associated with smoke control elements that serve as containment in smoke mode — GREY
6. Garage supply and exhaust systems shall be energized manually to purge smoke (ON — AUTO only). System need not be connected to emergency power.
7. The status of smoke control equipment shall be indicated by LED lamps and appropriate legends. Fans, major ducts and dampers within the building that are components of the smoke control systems shall be clearly identified as to purpose (e.g., "STAIR PRESSURIZATION FAN") on the FSCP. Lettering shall be 16 point Helvetica bold; equipment identification (e.g., "SPF-1") shall be 12 point Helvetica bold.

P103.6.1.2 LED status indicators shall be provided for each component of the smoke control system as follows:

1. Fans operating, dampers open, power on — GREEN
2. Fans off, dampers closed — YELLOW
3. Fans and dampers fault status — YELLOW
4. Containment dampers associated with smoke control elements in closed positions. — CLOSED — YELLOW, FAULT — YELLOW
5. Panel switch not in auto position — RED

6. Duct detectors as required in accordance with Section 907.3.1 of the International Fire Code, shall be identified — YELLOW
7. Provide lamp test with momentary contact push button(s) to illuminate all LEDs simultaneously.
8. All status LEDs shall be active all the time and will always indicate true equipment status.

P103.6.1.2.1 Monitoring for fault status for pressurization and smoke removal fans shall include:

1. Loss of power to the fan or VFD/motor starter.
2. Open electrical disconnect at pressurization and smoke removal fan, whether the fire alarm system is in alarm or not.
3. Fan fails to move air by program or switch on FSCP.
4. VFD/motor start failure

P103.6.1.2.2 When the fire alarm system is not in alarm, moving a switch on the firefighters smoke control panel out of the “auto” position shall, in addition to the fault light, cause a supervisory signal to the FACP.

P103.6.1.3 The FSCP shall provide control capability over all smoke-control system equipment within the building. Control switches are active only during an alarm condition except through a secured and supervised bypass method *approved* by the Fire Department.

1. ON-AUTO-OFF control over each individual piece of operating smoke control equipment that can also be controlled from other sources within the building. This includes; stairway pressurization fans, smoke exhaust fans, supply, return and exhaust fans, elevator shaft pressurization fans and other operating equipment used or intended for smoke control purposes.
2. OPEN-AUTO-CLOSE control over individual dampers relating to smoke control and that are also controlled by other sources within the building.
3. ON-OFF or OPEN-CLOSE control over smoke control and other critical equipment associated with a fire or smoke emergency and that can only be controlled from the fire-fighter’s control panel.

Exceptions:

1. Complex systems, when *approved* by the *fire code official*, where the controls and indicators are combined to control and indicate all elements of a single smoke zone as a unit.
2. Complex systems, when *approved* by the *fire code official*, where the control is accomplished by a computer interface using plain English commands.

P103.6.2 Control action and priorities. The firefighter's control panel actions shall be as follows:

1. ON-OFF and OPEN-CLOSE control actions shall have the highest priority of any control point within the building. Once issued from the firefighter's control panel, no automatic or manual control from any other control point within the building shall contradict the control action. Where automatic means are provided to interrupt normal, non-emergency equipment operation or produce a specific result to safeguard the building or equipment (i.e., duct freeze stats, duct smoke detectors, high-temperature cutouts, temperature-actuated linkage and similar devices), such means shall be capable of being overridden by the firefighter's control panel. The last control action as indicated by each firefighter's control panel switch position shall prevail. In no case shall control actions require the smoke control system to assume more than one configuration at any one time.

Exception: Power disconnects required by the NFPA 70 (NEC).

2. Only the AUTO position of each three-position firefighter's control panel switch shall allow automatic or manual control action from other control points within the building. The AUTO position shall be the normal, non-emergency, building control position. Where a firefighter's control panel is in the AUTO position, the actual status of the device (on, off, open, closed) shall continue to be indicated by the status indicator described above. When directed by an automatic signal to assume an emergency condition. All devices and indications shall assume the position required by the sequence of operations. In no case shall control actions require the smoke control system to assume more than one configuration at any one time.
3. Manual operation of any control switch from the "AUTO" position shall command the selected equipment to assume the position/operation required. Indicator lights shall register the appropriate change in state. When returned to the "AUTO" position while still in alarm mode, the equipment shall return to the position required by the smoke control programming.

P103.6.3 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. The total response time for individual smoke control systems to achieve their desired operating mode shall not exceed the following time periods:

Fan operating at desired state — 75 seconds

Damper position travel — 60 seconds

P103.7 Emergency responder radio enhancement system (RES) shop drawings: Shop drawings shall be submitted bearing the stamp and signature of a professional engineer licensed by the State of Colorado and containing the following:

1. Facility address and name where applicable
2. Name and address of system design and installation contractor
3. Stamp and dated signature of a professional engineer licensed by the State of Colorado
4. Manufacturer cut sheets for all cables, connectors, terminations, amplifiers, UPS, batteries, and antenna
5. Manufacturer's installation instructions
6. Design calculations, (Link Budget) for signal levels at each terminal point and initial input signal strength
7. Wiring riser and distribution diagrams
8. Grounding details
9. Battery calculations
10. Location of all RES equipment
11. "North" reference arrow
12. Copies of FCC authorizations
13. Grid layout and test readings

Exception: For buildings not classified as a *high-rise building*, RES installation drawings may be processed on a scope-of-work permit basis.

P103.8 High-piled combustible storage installation drawings.

1. Two complete sets of scaled floor plans and vertical sections (as necessary) of the building showing locations and dimensions of use areas including office, battery storage, show rooms, etc. High-piled storage areas shall be depicted and identified including usable storage height for each area. Walls used to separate piles, rack systems, arrays, etc., shall be identified as well as their functions (e.g., fire wall, fire barrier, etc.) and ratings.
2. Scaled plans of all storage arrays identifying all aisles, cross-aisles, catwalks and similar access features.
3. Means of egress in sufficient detail to substantiate compliance of all components with Chapter 10 of the *International Building Code*. Floor plans shall be of sufficient clarity and scale to determine travel distance, dead-end corridors, aisle widths, etc.
4. Location of the required fire department access doors: Height above adjacent floors, landings, grade planes, etc. shall be identified.
5. Typical scaled sections of each unique rack showing rack height, storage height, number of tiers within each rack, dimensions and locations of catwalks, bridges, pass-throughs, and transverse and longitudinal flues.
6. Fire sprinkler data sheets providing existing or new fire sprinkler design criteria.
7. Clearance between top of storage and the sprinkler deflectors for each storage arrangement.

8. Maximum pile volume for each storage array.
9. Completed Hazards Material Inventory Statement (HMIS) and Hazardous Material Management Plan.
10. Location and classification of commodities in accordance with Section 3203.
11. Location of commodities which are banded or encapsulated.
12. Type and description of fire suppression and detection systems.
13. Location of all valves controlling the water supply for all standpipes and sprinklers (ceiling, in-rack, etc.).
14. A roof or reflected ceiling plan showing the types, locations and specifications of curtain boards, other draft curtains, and all active and passive smoke removal/exhaust systems
15. A structural analysis including rack and pile stability under seismic loads shall be submitted. Analysis shall also account for occupancy, wind and snow loading in storage systems exposed to such. Analysis shall be in accordance with Chapters 16 and 22 of the *International Building Code*. Where specialized systems fall outside of these chapter, approval shall be in accordance with Section 104.7 of the *International Fire Code*. Installation and use of manufactured and pre-engineered storage systems shall also be in accordance with the systems listings, where applicable, and manufacturer specifications.
16. Any additional information required by the *fire code official* regarding required design features, commodities, storage arrangement, fire protection, access, egress, etc., within the high-piled storage areas.

P103.9 Kitchen hood extinguishing system permit. Provide engineered plans for the suppression system that include the following information:

1. Systems shall be UL-300 listed and compliant with NFPA 96
2. Product cut sheets (panel, nozzles, cylinders, etc.)
3. All nozzle types, locations, and flow point calculations
4. Location of a manual pull station at least 10 feet (3 m) away but no more than 20 feet (6.1 m) from the cooking appliance(s) and between the cooking equipment the exit door, where feasible.
5. Kitchen hood shall be zoned separately and annunciated separately to the building FACP where provided
6. One duct required for every 12 feet (3.67 m) of hood
7. Shop drawings signed by professional engineer licensed by the State of Colorado

P103.10 Elevator and conveyance permits. Applications and construction documents for the installation or alteration of elevators, inclined platform lifts, stairway chair lifts, and other conveyances shall be submitted to the Building Department for permit processing. The *fire code official* shall review such submittals for fire code compliance only, as required. All elevator or conveyance submittals reviewed by the *fire code official* must contain:

1. Building address and name (if applicable)

2. Submittals must bear the seal and signature of a Colorado registered architect and/or professional engineer responsible for the conveyance design.
3. Location of the fire command center and/or fire alarm panel as applicable
4. Location of elevator annunciator panel as applicable
5. Layout of car operating panel and hall call stations
6. Quantity and designation s of elevators operating simultaneously on an emergency or standby power generator, as provided.
7. Conformance with visual signal (flashing fire hat) requirements of this code.
8. Location of power supply cut-off switches

P103.11 Emergency alarm systems and gas detection systems shop drawings

submittal. Shop drawings shall contain the following information:

1. Exact address, including building and unit numbers; location of work; name and address of responsible design agency.
2. Building code occupancy classification(s) for each area or room.
3. Manufacturers' specification sheets for all equipment, appliances and devices.
4. Code references used as a basis for design and installation, including any administrative modifications or Board of Appeals decisions.
5. Type of system and reason system is being provided.
6. Complete sequence of operation input/output matrix with initiating events (input) as the rows and response events (output) as the columns.
7. Voltage drop calculations for notification circuits and battery calculations for secondary power supply.
8. Scaled drawings of each area where work on the emergency alarm system is proposed, including north arrow, building address and local street intersections. The drawings shall show the locations of all equipment, initiating devices, notification appliances, signage, and room designations.
9. One-line diagram showing scope of work and identifying initiating devices, notification appliance.es, conductors, etc.
10. Symbol list with quantities of each device or equipment.
11. Primary power supply connection details and type of secondary power supply.
12. Description of connection to building fire or sprinkler alarm system.
13. Seal and signature of a Colorado registered professional engineer.

P103.12 Area of rescue assistance communication permit. A complete set of electronic plans shall be submitted though the online portal that includes the following (as applicable):

1. Exact address, including applicable building and unit numbers
2. Building code occupancy classification
3. Manufacturers' specification sheets and equipment listing sheets for new equipment and devices

4. Code references used as a basis for design and installation, including any administrative modifications or Board of Appeals decisions.
5. Type of system and reason system is provided (required, non-required)
6. Sequence of operation
7. Shop drawings, drawn to scale, including a drawing for each building level involved, with a north arrow for compass orientation and depicting all call boxes, master stations and power supplies. Shop drawings shall bear the seal and signature of a professional engineer licensed by the State of Colorado.
8. One-line diagram.
9. Mounting heights for call boxes
10. Primary power supply connection details and symbol list
11. Backup battery calculations

P103.13 Emergency and standby (required or optional) power generator shop drawings submittal. Shop drawings shall contain the following information:

1. Exact address, including building and unit numbers; location of work; name and address of responsible design agencies.
2. Building code analysis.
3. Code references used as a basis for design and installation, including any administrative modifications or Board of Appeals decisions.
4. Type of generator system and reason system is being provided.
9. Manufacturers' specification sheets for all equipment (i.e., generator, vent piping, fill connection and piping, overfill spill containers, overkill prevention alarms and automatic shut off valve, etc.) including fuel tank(s), where applicable.
10. Provide size of fuel tank (i.e., useable capacity) and load duration calculations for the sizing of the proposed fuel tank.
11. Scaled drawings indicating the location (inside or outside the building) and layout of the proposed generator and supply tanks where applicable. The drawings shall locate the new generator in relation to existing buildings, property lines, street/alley right of way lines and transformers for exterior generators and the room construction for interior generators.
12. Provide engineered foundation plan/details for exterior generator including vehicle impact protection. For interior generators, provide a structural engineers' report for the floor support.
13. Provide normal and emergency venting with piping diagrams and elevations.
14. Provide fill pipe connection location with piping diagrams and elevations.
15. Provide overfill prevention including spill containers, audible/visual alarms and automatic shut off of the flow of fuel to the tank.
16. Provide engine exhaust systems including the exhaust termination outside the building for inside generators.

17. Provide an identified/labeled remote manual stop station outside the room housing the generator or external to the weatherproof enclosure if located outside.
18. Provide generator remote status panel. Indicate the proposed location of the remote status panel and the safety indicator functions. A graphic map to assist the responding fire fighters shall be provided adjacent to the remote status panel indicating the location of the generator, equipment served by the generator, location of emergency disconnect and remote manual stop station.
19. Seal and signature of a Colorado registered professional engineer or architect.

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