rized to approve an alternative material or method of construction where the fire code official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the fire code official shall respond in writing, stating the reasons why the alternative was not approved.

[A] 104.9.1 Research reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

[A] 104.9.2 Tests. Where there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the fire code official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the fire code official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the fire code official for the period required for retention of public records.

104.10 Fire investigations. The fire code official, the fire department or other responsible authority shall have the authority to investigate the cause, origin and circumstances of any fire, explosion or other hazardous condition. Information that could be related to trade secrets or processes shall not be made part of the public record, except as directed by a court of law.

104.10.1 Assistance from other agencies. Police and other enforcement agencies shall have authority to render necessary assistance in the investigation of fires when requested to do so.

104.11 Authority at fires and other emergencies. The fire chief or officer of the fire department in charge at the scene of a fire or other emergency involving the protection of life or property, or any part thereof, shall have the authority to direct such operation as necessary to extinguish or control any fire, perform any rescue operation, investigate the existence of suspected or reported fires, gas leaks or other hazardous conditions or situations, or take any other action necessary in the reasonable performance of duty. In the exercise of such power, the fire chief is authorized to prohibit any person, vehicle, vessel or thing from approaching the scene, and is authorized to remove, or cause to be removed or kept away from the scene, any vehicle, vessel or thing that could impede or interfere with the operations of the fire department and, in the judgment of the fire chief, any person not actually and usefully employed in the extinguishing of such fire or in the preservation of property in the vicinity thereof.

104.11.1 Barricades. The fire chief or officer of the fire department in charge at the scene of an emergency is authorized to place ropes, guards, barricades or other obstructions across any street, alley, place or private property in the vicinity of such operation so as to prevent accidents or interference with the lawful efforts of the fire department to manage and control the situation and to handle fire apparatus.

104.11.2 Obstructing operations. Persons shall not obstruct the operations of the fire department in connection with extinguishment or control of any fire, or actions relative to other emergencies, or disobey any lawful command of the fire chief or officer of the fire department in charge of the emergency, or any part thereof, or any lawful order of a police officer assisting the fire department.

104.11.3 Systems and devices. Persons shall not render a system or device inoperative during an emergency unless by direction of the fire chief or fire department official in charge of the incident.

SECTION 105

PERMITS

[A] 105.1 General. Permits shall be in accordance with Sections 105.1.1 through 105.7.18.

105.1.1 Permits required. A property owner or owner’s authorized agent who intends to conduct an operation or business, or install or modify systems and equipment that are regulated by this code, or to cause any such work to be performed, shall first make application to the fire code official and obtain the required permit. The Topeka Fire Department will issue operational permits for the following:

1. Explosives;
2. Flammable and combustible liquids;
3. Liquid or gas fueled vehicles or equipment in assembly buildings;
4. LP gas;
5. Open burning;
6. Pyrotechnic special effects materials; and
7. Temporary membrane structures, tents, and canopies

105.1.2 Types of permits. There shall be two types of permits as follows:

1. Operational permit. An operational permit allows the applicant to conduct an operation or a business for which a permit is required by Section 105.6 for either:
   1.1. A prescribed period.
   1.2. Until renewed or revoked.
2. Construction permit. A construction permit allows the applicant to install or modify systems and equipment for which a permit is required by Section 105.7.

105.1.3 Multiple permits for the same location. Where more than one permit is required for the same location, the fire code official is authorized to consolidate such permits into a single permit provided that each provision is listed in the permit.

[A] 105.1.4 Emergency repairs. Where equipment replacement and repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the fire code official.
[A] 105.1.5 Repairs. Application or notice to the fire code official is not required for ordinary repairs to structures, equipment or systems. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or change of any required means of egress, or...
105.6.28 **LP-gas.** An operational permit is required for:

1. Storage and use of LP-gas.
   
   **Exception:** A permit is not required for individual containers with a 500-gallon (1893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500 gallons (1893 L), serving occupancies in Group R-3.

2. Operation of cargo tankers that transport LP-gas.

105.6.29 **Magnesium.** An operational permit is required to melt, cast, heat treat or grind more than 10 pounds (4.54 kg) of magnesium.

105.6.30 **Miscellaneous combustible storage.** An operational permit is required to store in any building or upon any premises in excess of 2,500 cubic feet (71 m³) gross volume of combustible empty packing cases, boxes, barrels or similar containers, rubber tires, rubber, cork or similar combustible material.

105.6.31 **Motor fuel-dispensing facilities.** An operational permit is required for the operation of automotive, marine and fleet motor fuel-dispensing facilities.

105.6.32 **Open burning.** An operational permit is required for the kindling or maintaining of an open fire or a fire on any public street, alley, road, or other public or private ground. Instructions and stipulations of the permit shall be adhered to.

   **Exception:** Recreational fires defined at subsections (a) and (b):

   (a) An outdoor fire burning approved material, at ground level, other than rubbish with a total fuel area of 3 feet (914 mm) or less in diameter and 2 feet (610 mm) or less in height for pleasure, religious, ceremonial, cooking warmth or similar purposes.

   (b) An outdoor fire burning approved material other than rubbish in a commercially produced fire pit or fireplace with a total fuel area of 3 feet (914 mm) or less in diameter and 2 feet (610 mm) or less in height for pleasure, religious, ceremonial, cooking warmth or similar purposes.

105.6.33 **Open flames and torches.** An operational permit is required to remove paint with a torch; or to use a torch or open-flame device in a wildfire risk area.

105.6.34 **Open flames and candles.** An operational permit is required to use open flames or candles in connection with assembly areas, dining areas of restaurants or drinking establishments.

105.6.35 **Organic coatings.** An operational permit is required for any organic-coating manufacturing operation producing more than 1 gallon (4 L) of an organic coating in one day.

105.6.36 **Places of assembly.** An operational permit is required to operate a place of assembly.

105.6.37 **Private fire hydrants.** An operational permit is required for the removal from service, use or operation of private fire hydrants.

   **Exception:** A permit is not required for private industry with trained maintenance personnel, private fire brigade or fire departments to maintain, test and use private hydrants.

105.6.38 **Pyrotechnic special effects material.** An operational permit is required for use and handling of pyrotechnic special effects material.

105.6.39 **Pyroxylin plastics.** An operational permit is required for storage or handling of more than 25 pounds (11 kg) of cellulose nitrate (pyroxylin) plastics, and for assembly or manufacture of articles involving pyroxylin plastics.

105.6.40 **Refrigeration equipment.** An operational permit is required to operate a mechanical refrigeration unit or system regulated by Chapter 6.

105.6.41 **Repair garages and motor fuel-dispensing facilities.** An operational permit is required for operation of repair garages.

105.6.42 **Rooftop heliports.** An operational permit is required for the operation of a rooftop heliport.

105.6.43 **Spraying or dipping.** An operational permit is required to conduct a spraying or dipping operation utilizing flammable or combustible liquids, or the application of combustible powders regulated by Chapter 24.

105.6.44 **Storage of scrap tires and tire byproducts.** An operational permit is required to establish, conduct or maintain storage of scrap tires and tire byproducts that exceed 2,500 cubic feet (71 m³) of total volume of scrap tires, and for indoor storage of tires and tire byproducts.

105.6.45 **Temporary membrane structures and tents.** An operational permit is required to operate an air-supported temporary membrane structure, a temporary stage canopy or a tent having an area in excess of 400 square feet (37 m²).

   **Exceptions:**

1. Tents used exclusively for recreational camping purposes.

2. Tents open on all sides, which comply with all of the following:

   2.1. Individual tents having a maximum size of 700 square feet (65 m²).

   2.2. The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed 700 square feet (65 m²) total.

   2.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be provided.

105.6.46 **Tire-rebuilding plants.** An operational permit is required for the operation and maintenance of a tire-rebuilding plant.

105.6.47 **Waste handling.** An operational permit is required for the operation of wrecking yards, junk yards and waste material-handling facilities.

105.6.48 **Wood products.** An operational permit is required to store chips, hogged material, lumber or plywood in excess of 200 cubic feet (6 m³).

[A] 105.7 **Required construction permits.** The fire code official is authorized to issue construction permits for work as set forth in Sections 105.7.1 through 105.7.18.
903.2.7.1 **High-piled storage.** An *automatic sprinkler system* shall be provided as required in Chapter 32 in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

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

**903.2.8.1 Group R-3.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

**903.2.8.2 Group R-4 Condition 1.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4 Condition 1 occupancies.

**903.2.8.3 Group R-4 Condition 2.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4 Condition 2 occupancies. Attics shall be protected in accordance with Section 903.2.8.3.1 or 903.2.8.3.2.

**Exceptions:**
1. An automatic sprinkler system is not required for a building containing not more than two (2) one- or two-family dwelling units, either individually or in combination with other nonresidential occupancies, provided however, that a fire alarm and detection system shall be installed in the residential units as well as the nonresidential occupancy areas.
2. An automatic sprinkler system is not required for buildings consisting solely of four (4) units or less.

**903.2.8.3.1 Attics used for living purposes, storage or fuel-fired equipment.** Attics used for living purposes, storage or fuel-fired equipment shall be protected throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.2.

**903.2.8.3.2 Attics not used for living purposes, storage or fuel-fired equipment.** Attics not used for living purposes, storage or fuel-fired equipment shall be protected in accordance with one of the following:

1. Attics protected throughout by a heat detector system arranged to activate the building fire alarm system in accordance with Section 907.2.10.
2. Attics constructed of noncombustible materials.
3. Attics constructed of fire-retardant-treated wood framing complying with Section 2303.2 of the *International Building Code.*
4. The *automatic sprinkler system* shall be extended to provide protection throughout the attic space.

**903.2.8.4 Care facilities.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five or fewer individuals in a single-family dwelling.

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

1. A Group S-1 *fire area* exceeds 12,000 square feet (1115 m²).
2. A Group S-1 *fire area* is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).

4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).

5. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

903.2.9.1 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with Section 406.8 of the International Building Code, as shown:

1. Buildings having two or more stories above grade plane, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (929 m²).

2. Buildings not more than one story above grade plane, with a fire area containing a repair garage exceeding 12,000 square feet (1115 m²).


4. A Group S-1 fire area used for the repair of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).

903.2.9.2 Bulk storage of tires. Buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet (566 m³) shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

903.2.10 Group S-2 enclosed parking garages. An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.6 of the International Building Code where either of the following conditions exists:

1. Where the fire area of the enclosed parking garage exceeds 12,000 square feet (1115 m²).

2. Where the enclosed parking garage is located beneath other groups.

   Exception: Enclosed parking garages located beneath Group R-3 occupancies.

903.2.10.1 Commercial parking garages. An automatic sprinkler system shall be provided throughout buildings used for storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).

903.2.11 Specific buildings areas and hazards. In all occupancies other than Group U, an automatic sprinkler system shall be installed for building design or hazards in the locations set forth in Sections 903.2.11.1 through 903.2.11.6.

903.2.11.1 Stories without openings. An automatic sprinkler system shall be installed throughout all stories, including basements, of all buildings where the
CHAPTER 11
CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

SECTION 1101
GENERAL

1101.1 Scope. The provisions of this chapter shall apply to existing buildings constructed prior to the adoption of this code.

1101.2 Intent. The intent of this chapter is to provide a minimum degree of fire and life safety to persons occupying existing buildings by providing minimum construction requirements where such existing buildings do not comply with the minimum requirements of the International Building Code.

1101.3 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7 and the International Building Code.

1101.4 Owner notification. When a building is found to be in noncompliance with this chapter, the owner shall, subject to the following time limits, take necessary actions to comply with the provisions of this chapter.

1101.4.1 Construction documents. Construction documents necessary to comply with this chapter shall be completed and submitted within a time schedule approved by the fire code official.

1101.4.2 Completion of work. Work necessary to comply with this chapter shall be completed within a time schedule approved by the fire code official.

1101.4.3 Extension of time. The fire code official is authorized to grant necessary extensions of time when it can be shown that the specified time periods are not physically practical or pose an undue hardship. The granting of an extension of time for compliance shall be based on the showing of good cause and subject to the filing of an acceptable systematic plan of correction with the fire code official.

SECTION 1102
DEFINITIONS

1102.1 Definitions. The following terms are defined in Chapter 2:

DUTCH DOOR.

EXISTING.

SECTION 1103
FIRE SAFETY REQUIREMENTS FOR EXISTING BUILDINGS

1103.1 Required construction. Existing buildings shall comply with not less than the minimum provisions specified in Table 1103.1 and as further enumerated in Sections 1103.2 through 1103.10.

The provisions of this chapter shall not be construed to allow the elimination of fire protection systems or a reduction in the level of fire safety provided in buildings constructed in accordance with previously adopted codes.

Exceptions:
1. Where a change in fire-resistance rating has been approved in accordance with Section 803.6 of the International Existing Building Code.
2. Group U occupancies.

TABLE 1103.1
OCCUPANCY AND USE REQUIREMENTS*

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### Table 1103.1

**OCCUPANCY AND USE REQUIREMENTS—continued**

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<td>1103.1.1 Historic buildings. Facilities designated as historic buildings shall develop a fire protection plan in accordance with NFPA 914. The fire protection plans shall comply with the maintenance and availability provisions in Sections 404.3 and 404.4.</td>
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| 1103.2 Emergency responder radio coverage in existing buildings. Existing buildings that do not have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building, shall be equipped with such coverage according to one of the following:  
1. Where an existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with Section 510.1, Exception 1.  
2. Within a time frame established by the adopting authority.  
**Exception:** Where it is determined by the fire code official that the radio coverage system is not needed. |
| 1103.3 Existing elevators. Existing elevators, escalators and moving walks shall comply with the requirements of Sections 1103.3.1 and 1103.3.2. |
| 1103.3.1 Elevators, escalators and moving walks. Existing elevators, escalators and moving walks in Group I-2 Condition 2 occupancies shall comply with ASME A17.3. |
| 1103.3.2 Elevator emergency operation. Existing elevators with a travel distance of 25 feet (7620 mm) or more above or below the main floor or other level of a building and intended to serve the needs of emergency personnel for fire-fighting or rescue purposes shall be provided with emergency operation in accordance with ASME A17.3.  
**Exceptions:**  
1. Buildings without occupied floors located more than 55 feet (16764 mm) above or 25 feet (7620 mm) below the lowest level of fire department vehicle access where protected at the elevator shaft openings with additional fire doors in accordance with Section 716.5 of the International |
CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

Building Code and where all of the following conditions are met:

1. The doors shall be provided with vision panels of approved fire protection-rated glazing so located as to furnish clear vision of the approach to the elevator. Such glazing shall not exceed 100 square inches (0.65 m²) in area.

2. The doors shall be held open but be automatically closing by activation of a fire alarm initiating device installed in accordance with the requirements of NEPA 72 as for Phase I Emergency Recall Operation, and shall be located at each floor served by the elevator, in the associated elevator machine room, control space, or control room; and in the elevator hoistway, where sprinklers are located in those hoistways.

3. The doors, when closed, shall have signs visible from the approach area stating: WHEN THESE DOORS ARE CLOSED OR IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRWAYS.

Elimination of previously installed Phase I emergency recall or Phase II emergency in-car systems shall not be permitted.

1103.4 Vertical openings. Interior vertical openings, including but not limited to stairways, elevator hoistways, service and utility shafts, that connect two or more stories of a building, shall be enclosed or protected as specified in Sections 1103.4.1 through 1103.4.10.

1103.4.1 Group I-2 and I-3 occupancies. In Group I-2 and I-3 occupancies, interior vertical openings connecting two or more stories shall be protected with 1-hour fire-resistance-rated construction.

Exceptions:

1. In Group I-2, unenclosed vertical openings not exceeding two connected stories and not concealed within the building construction shall be permitted as follows:

1.1. The unenclosed vertical openings shall be separated from other unenclosed vertical openings serving other floors by a smoke barrier.

1.2. The unenclosed vertical openings shall be separated from corridors by smoke partitions.

1.3. The unenclosed vertical openings shall be separated from other fire or smoke compartments on the same floors by a smoke barrier.

1.4. On other than the lowest level, the unenclosed vertical openings shall not serve as a required means of egress.

2. In Group I-2, atriums connecting three or more stories shall not require 1-hour fire-resistance-rated construction where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3, and all of the following conditions are met:

2.1. For other than existing approved atriums with a smoke control system, where the atrium was constructed and is maintained in accordance with the code in effect at the time the atrium was created, the atrium shall have a smoke control system that is in compliance with Section 909.

2.2. Glass walls forming a smoke partition or a glass block wall assembly shall be permitted when in compliance with Condition 2.2.1 or 2.2.2.

2.2.1. Glass walls forming a smoke partition shall be permitted where all of the following conditions are met:

2.2.1.1. Automatic sprinklers are provided along both sides of the separation—wall and doors, or on the room side only if there is not a walkway or occupied space on the atrium side.

2.2.1.2. The sprinklers shall be not more than 12 inches (305 mm) away from the face of the glass and at intervals along the glass of not greater than 72 inches (1829 mm).

2.2.1.3. Windows in the glass wall shall be non-operating type.

2.2.1.4. The glass wall and windows shall be installed in a gas-backed frame in a manner that the framing system deflects with-
CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

1103.4.3 More than five stories. In other than Group I-2 and I-3 occupancies, interior vertical openings connecting five or more stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system, shall be installed throughout the building in accordance with Section 903.3.1.1 or 903.3.1.2.

Exceptions:
1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages.
3. Exit access stairways and ramps shall be in accordance with Section 1103.4.8.

1103.4.4 Atriums and covered malls. In other than Group I-2 and I-3 occupancies, interior vertical openings in a covered mall building or a building with an atrium shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system shall be installed throughout the building in accordance with Section 903.3.1.1 or 903.3.1.2.

Exceptions:
1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages.
3. Exit access stairways and ramps shall be in accordance with Section 1103.4.8.

1103.4.5 Escalators in Group B and M occupancies. In Group B and M occupancies, escalators creating vertical openings connecting any number of stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system in accordance with Section 903.3.1.1 installed throughout the building, with a draft curtain and closely spaced sprinklers around the escalator opening.

1103.4.6 Escalators connecting four or fewer stories. In other than Group B and M occupancies, escalators creating vertical openings connecting four or fewer stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 shall be installed throughout the building, and a draft curtain with closely spaced sprinklers shall be installed around the escalator opening.

1103.4.7 Escalators connecting more than four stories. In other than Group B and M occupancies, escalators creating vertical openings connecting five or more stories shall be protected by 1-hour fire-resistance-rated construction.

1103.4.8 Occupancies other than Group I-2 and I-3. In other than Group I-2 and I-3 occupancies, floor openings containing exit access stairways or ramps that do not comply with one of the conditions listed in this section shall be protected by 1-hour fire-resistance-rated construction.

1. Exit access stairways and ramps that serve, or atmospherically communicate between, only two stories. Such interconnected stories shall not be open to other stories.
2. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit or sleeping unit or live/work unit.
3. Exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does
not exceed twice the horizontal projected area of the stairway or ramp, and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.

4. Exit access stairways and ramps within an atrium complying with the provisions of Section 404 of the International Building Code.

5. Exit access stairways and ramps in open parking garages that serve only the parking garage.

6. Exit access stairways and ramps serving open-air seating complying with the exit access travel distance requirements of Section 1029.7 of the International Building Code.

7. Exit access stairways and ramps serving the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.

1103.4.9. Waste and linen chutes. In Group I-2 occupancies, existing waste and linen chutes shall comply with Sections 1103.4.9.1 through 1103.4.9.5.

1103.4.9.1 Enclosure. Chutes shall be enclosed with 1-hour fire-resistance-rated construction. Opening protective openings shall be in accordance with Section 716 of the International Building Code and have a fire protection rating of not less than 1 hour.

1103.4.9.2 Chute intakes. Chute intakes shall comply with Section 1103.4.9.2.1 or 1103.4.9.2.2.

1103.4.9.2.1 Chute intake direct from corridor. Where intake to chutes is direct from a corridor, the intake opening shall be equipped with a chute intake door in accordance with Section 716 of the International Building Code and have a fire protection rating of not less than 1 hour.

1103.4.9.2.2 Chute intake via a chute intake room. Where the intake to chutes is accessed through a chute intake room, the room shall be enclosed with 1-hour fire-resistance-rated construction. Opening protective for the intake room shall be in accordance with Section 716 of the International Building Code and have a fire protection rating of not less than 1/2 hour. Opening protective for the chute enclosure shall be in accordance with Section 1103.4.9.1.

1103.4.9.3 Automatic sprinkler system. Chutes shall be equipped with an approved automatic sprinkler system in accordance with Section 903.11.2.

1103.4.9.4 Chute discharge rooms. Chutes shall terminate in a dedicated chute discharge room. Such rooms shall be separated from the remainder of the building by not less than 1-hour fire-resistance-rated construction. Opening protective shall be in accordance with Section 716 of the International Building Code and have a fire protection rating of not less than 1 hour.

1103.4.9.5 Chute discharge protection. Chute discharge openings shall be equipped with a self-closing or automatic-closing opening protective in accordance with Section 716 of the International Building Code and having a fire protection rating of not less than 1 hour.

1103.4.10 Flue-fed incinerators. Existing flue-fed incinerator rooms and associated flue shafts shall be protected with 1-hour fire-resistance-rated construction and shall not have other vertical openings connected with the space other than the associated flue. Opening protective shall be in accordance with Section 716 of the International Building Code and have a fire protection rating of not less than 1 hour.

1103.5 Sprinkler systems. An automatic sprinkler system shall be provided in existing buildings in accordance with Sections 1103.5.1 through 1103.5.4.

1103.5.1 Group A-2. An automatic sprinkler system shall be installed in accordance with Section 903.3.1.1 throughout existing buildings or portions thereof used as Group A-2 occupancies with an occupant load of 300 or more.

1103.5.2 Group I-2. In Group I-2, an automatic sprinkler system shall be provided in accordance with Section 1105.3.

1103.5.3 Group I-2 Condition 2. In addition to the requirements of Section 1103.5.2, existing buildings of Group I-2, Condition 2 occupancy shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. The automatic sprinkler system shall be installed as established by the adopting ordinance.

1103.5.4 Pyroxylin plastics. An automatic sprinkler system shall be provided throughout existing buildings where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg). Vaults located within buildings for the storage of raw pyroxylin shall be protected with an approved automatic sprinkler system capable of discharging 1.66 gallons per minute per square foot (68 L/min/m²) over the area of the vault.

1103.6 Standpipes. Existing structures shall be equipped with standpipes installed in accordance with Section 905 where required in Sections 1103.6.1 and 1103.6.2. The fire code official is authorized to approve the installation of manual standpipe systems to achieve compliance with this section where the responding fire department is capable of providing the required hose flow at the highest standpipe outlet.

1103.6.1 Existing multiple-story buildings. Existing buildings with occupied floors located more than 50 feet (15.24 m) above the lowest level of fire department access or more than 50 feet (15.24 m) below the highest level of fire department access shall be equipped with standpipes.

1103.6.2 Existing helistops and heliports. Existing buildings with a rooftop helistop or heliport located more than 30 feet (9.14 m) above the lowest level of fire department access to the roof level on which the helistop
CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

1103.7. Fire alarm systems. An approved fire alarm system shall be installed in existing buildings and structures in accordance with Sections 1103.7.1 through 1103.7.7 and provide occupant notification in accordance with Section 907.5 unless other requirements are provided by other sections of this code.

Exception: Occupancies with an existing, previously approved fire alarm system.

1103.7.1 Group E. A fire alarm system shall be installed in existing Group E occupancies in accordance with Section 907.2.3.

Exceptions:

1. A manual fire alarm system is not required in a building with a maximum area of 1,000 square feet (93 m²) that contains a single classroom and is located not closer than 50 feet (15 240 mm) from another building.

2. A manual fire alarm system is not required in existing Group E occupancies with an occupant load less than 50.

1103.7.2 Group I-1. An automatic fire alarm system shall be installed in existing Group I-1 facilities in accordance with Section 907.2.6.1.

Exception: Where each sleeping room has a means of egress door opening directly to an exterior egress balcony that leads directly to the exit in accordance with Section 1021, and the building is not more than three stories in height.

1103.7.3 Group I-2. In Group I-2, an automatic fire alarm system shall be installed in accordance with Section 1105.9.

1103.7.4 Group I-3. An automatic and manual fire alarm system shall be installed in existing Group I-3 occupancies in accordance with Section 907.2.6.3.

1103.7.5 Group R-1. A fire alarm system and smoke alarm system shall be installed in existing Group R-1 occupancies in accordance with Sections 1103.7.5.1 through 1103.7.5.2.1.

1103.7.5.1 Group R-1 hotel and motel manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 hotels and motels more than three stories or with more than 20 sleeping units.

Exceptions:

1. Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, egress court or yard.

2. Manual fire alarm boxes are not required throughout the building where the following conditions are met:
   2.1. The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
   2.2. The notification appliances will activate upon sprinkler water flow.
   2.3. Not less than one manual fire alarm box is installed at an approved location.

1103.7.5.2 Group R-1 boarding and rooming houses manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 boarding and rooming houses.

Exception: Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, egress court or yard.

1103.7.5.2.1 Group R-1 boarding and rooming houses automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 boarding and rooming houses throughout all interior corridors serving sleeping rooms not equipped with an approved, supervised sprinkler system installed in accordance with Section 903.

Exception: Buildings equipped with single-station smoke alarms meeting or exceeding the requirements of Section 907.2.11.1 and where the fire alarm system includes not less than one manual fire alarm box per floor arranged to initiate the alarm.

1103.7.6 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-2
occupancies more than three stories in height or with more than 16 dwelling or sleeping units.

Exceptions:

1. Where each living unit is separated from other contiguous living units by fire barriers having a fire-resistance rating of not less than 1/2 hour, and where each living unit has either its own independent exit or its own independent stairway or ramp discharging at grade.

2. A separate fire alarm system is not required in buildings that are equipped throughout with an approved supervised automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and having a local alarm to notify all occupants.

3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1027.6, Exception 3.

4. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units, do not exceed three stories in height and comply with both of the following:

   4.1. Each dwelling unit is separated from other contiguous dwelling units by fire barriers having a fire-resistance rating of not less than 1/2 hour.

   4.2. Each dwelling unit is provided with hard-wired, interconnected smoke alarms as required for new construction in Section 907.2.11.

1103.7.7 Group R-4. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-4 residential care/assisted living facilities in accordance with Section 907.2.10.1.

Exceptions:

1. Where there are interconnected smoke alarms meeting the requirements of Section 907.2.11 and there is not less than one manual fire alarm box per floor arranged to continuously sound the smoke alarms.

2. Other manually activated, continuously sounding alarms approved by the fire code official.

1103.8 Single- and multiple-station smoke alarms. Single- and multiple-station smoke alarms shall be installed in existing Group I-1 and R occupancies in accordance with Sections 1103.8.1 through 1103.8.3.

1103.8.1 Where required. Existing Group I-1 and R occupancies shall be provided with single-station smoke alarms in accordance with Section 907.2.11. Interconnection and power sources shall be in accordance with Sections 1103.8.2 and 1103.8.3, respectively.

Exceptions:

1. Where the code that was in effect at the time of construction required smoke alarms and smoke alarms complying with those requirements are already provided.

2. Where smoke alarms have been installed in occupancies and dwellings that were not required to have them at the time of construction, additional smoke alarms shall not be required provided that the existing smoke alarms comply with requirements that were in effect at the time of installation.

3. Where smoke detectors connected to a fire alarm system have been installed as a substitute for smoke alarms.

1103.8.2 Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling or sleeping unit, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

Exceptions:

1. Interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind.

2. Smoke alarms in existing areas are not required to be interconnected where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available that could provide access for interconnection without the removal of interior finishes.

1103.8.3 Power source. Single-station smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery backup shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exceptions:

1. Smoke alarms are permitted to be solely battery operated in existing buildings where construction is not taking place.
2. Smoke alarms are permitted to be solely battery-operated in buildings that are not served from a commercial power source.

3. Smoke alarms are permitted to be solely battery-operated in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available that could provide access for building wiring without the removal of interior finishes.

1103.9 Carbon monoxide alarms. Existing Group I-1, I-2, I-3 and R occupancies shall be equipped with carbon monoxide alarms in accordance with Section 915, except that the carbon monoxide alarms shall be allowed to be solely battery-operated.

1103.10 Medical gases. Medical gases stored and transferred in health care-related facilities shall be in accordance with Chapter 53.

SECTION 1104
MEANS OF EGRESS FOR EXISTING BUILDINGS

1104.1 General. Means of egress in existing buildings shall comply with the minimum egress requirements where specified in Table 1103.1 as further enumerated in Sections 1104.2 through 1104.25, and the building code that applied at the time of construction. Where the provisions of this chapter conflict with the building code that applied at the time of construction, the most restrictive provision shall apply. Existing buildings that were not required to comply with a building code at the time of construction shall comply with the minimum egress requirements where specified in Table 1103.1 as further enumerated in Sections 1104.2 through 1104.25.

1104.2 Elevators, escalators and moving walks. Elevators, escalators and moving walks shall not be used as a component of a required means of egress.

Exceptions:
   1. Elevators used as an accessible means of egress where allowed by Section 1009.4.
   2. Previously approved elevators, escalators and moving walks in existing buildings.

1104.3 Exit sign illumination. Exit signs shall be internally or externally illuminated. The face of an exit sign illuminated from an external source shall have an intensity of not less than 5 footcandles (54 lux). Internally illuminated signs shall provide equivalent luminance and be listed for the purpose.

Exception: Approved self-luminous signs that provide evenly illuminated letters shall have a minimum luminance of 0.06 footlamberts (0.21 cd/m²).

1104.4 Power source. Where emergency illumination is required in Section 1104.5, exit signs shall be visible under emergency illumination conditions.

   Exception: Approved signs that provide continuous illumination independent of external power sources are not required to be connected to an emergency electrical system.

1104.5 Illumination emergency power. Where means of egress illumination is provided, the power supply for means of egress illumination shall normally be provided by the premises’ electrical supply. In the event of power supply failure, illumination shall be automatically provided from an emergency system for the following occupancies where such occupancies require two or more means of egress:

   1. Group A having 50 or more occupants.

      Exception: Assembly occupancies used exclusively as a place of worship and having an occupant load of less than 300.

   2. Group B buildings three or more stories in height, buildings with 100 or more occupants above or below a level of exit discharge serving the occupants or buildings with 1,000 or more total occupants.

   3. Group E in interior exit access and exit stairways and ramps, corridors, windowless areas with student occupancy, shops and laboratories.

   4. Group F having more than 100 occupants.

      Exception: Buildings used only during daylight hours and that are provided with windows for natural light in accordance with the International Building Code.

   5. Group I.

   6. Group M.

      Exception: Buildings less than 5,000 square feet (279 m²) in gross sales area on one story only, excluding mezzanines.

   7. Group R-1.

      Exception: Where each sleeping unit has direct access to the outside of the building at grade.


      Exception: Where each dwelling unit or sleeping unit has direct access to the outside of the building at grade.


      Exception: Where each sleeping unit has direct access to the outside of the building at ground level.

1104.5.1 Emergency power duration and installation. Emergency power for means of egress illumination shall be provided in accordance with Section 604. In other than
1104.4 Guards.

1104.4.1 Height of guards. Guards shall form a protective barrier not less than 42 inches (1067 mm) high.

Exceptions:
1. Existing guards on the open side of exit access and exit stairways and ramps shall be not less than 30 inches (760 mm) high.
2. Existing guards within dwelling units shall be not less than 36 inches (910 mm) high.
3. Existing guards in assembly seating areas.

1104.4.2 Opening limitations. Open guards shall have balusters or ornamental patterns such that a 6 inch diameter (152 mm) sphere cannot pass through any opening up to a height of 34 inches (864 mm).

Exceptions:
1. At elevated walking surfaces for access to, and use of, electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.
2. In occupancies in Group I-3, F, H or S, the clear distance between intermediate rails measured at right angles to the rails shall not exceed 21 inches (533 mm).
3. Where this section requires a minimum clear width of 28 inches (711 mm), the height of door openings shall be not less than 32 inches (813 mm).

1104.7 Size of doors. The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a clear width of not less than 28 inches (711 mm). Where this section requires a minimum clear width of 28 inches (711 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 28 inches (711 mm). In ambulatory care facilities, doors serving as means of egress from patient treatment rooms or patient sleeping rooms shall provide a clear width of not less than 32 inches (813 mm). In Group I-2, means of egress doors where used for the movement of beds shall provide a clear width not less than 41⅛ inches (1054 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. The height of door openings shall be not less than 80 inches (2032 mm).

Exceptions:
1. The minimum and maximum width shall not apply to door openings that are not part of the required means of egress in occupancies in Groups R-2 and R-3.
2. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum width.
3. Width of door leaves in revolving doors that comply with Section 1010.1.1 shall not be limited.
4. Door openings within a dwelling unit shall be not less than 78 inches (1981 mm) in height.
5. Exterior door openings in dwelling units, other than the required exit door, shall be not less than 76 inches (1930 mm) in height.
6. Exit access doors serving a room not larger than 70 square feet (6.5 m²) shall be not less than 24 inches (610 mm) in door width.
7. Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the floor.

1104.8 Opening force for doors. The opening force for interior swinging doors without closers shall not exceed a 5-pound (22 N) force. The opening forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. For other side swinging, sliding and folding doors, the door latch shall release when subjected to a force of not more than 15 pounds (66 N). The door shall be in motion when subjected to a force not exceeding 30 pounds (133 N). The door shall swing to a full-open position when subjected to a force of not more than 50 pounds (222 N). Forces shall be applied to the latch side.

1104.9 Revolving doors. Revolving doors shall comply with the following:

1. A revolving door shall not be located within 10 feet (3048 mm) of the foot or top of stairways or escalators. A dispersal area shall be provided between the stairways or escalators and the revolving doors.
2. The revolutions per minute for a revolving door shall not exceed those shown in Table 1104.9.
3. Each revolving door shall have a conforming side-hinged swinging door in the same wall as the revolving door and within 10 feet (3048 mm).

Exceptions:
1. A revolving door is permitted to be used without an adjacent swinging door for street-floor elevator lobbies provided a stairway, escalator or door from other parts of the building does not discharge through the lobby and the lobby does not have any occupancy or use other than as a means of travel between elevators and a street.
2. Existing revolving doors where the number of revolving doors does not exceed the number of swinging doors within 20 feet (6096 mm).
CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

1104.13.1 Height. Handrail height, measured above stair tread nosings, shall be uniform, not less than 30 inches (762 mm) and not more than 42 inches (1067 mm).

1104.14 Slope of ramps. Ramp runs utilized as part of a means of egress shall have a running slope not steeper than one unit vertical in 10 units horizontal (10-percent slope). The slope of other ramps shall not be steeper than one unit vertical in eight units horizontal (12.5-percent slope).

1104.15 Width of ramps. Existing ramps are permitted to have a minimum width of 30 inches (762 mm) but not less than the width required for the number of occupants served as determined by Section 1005.1. In Group I-2, ramps serving as a means of egress and used for the movement of patients in beds shall comply with Section 1105.5.4.

1104.16 Fire escape stairways. Fire escape stairways shall comply with Sections 1104.16.1 through 1104.16.7.

1104.16.1 Existing means of egress. Fire escape stairways shall be permitted in existing buildings but shall not constitute more than 50 percent of the required exit capacity.

1104.16.2 Protection of openings. Openings within 10 feet (3048 mm) of fire escape stairways shall be protected by opening protectives having a minimum 1/2-hour fire protection rating.

Exception: In buildings equipped throughout with an approved automatic sprinkler system, opening protection is not required.

1104.16.3 Dimensions. Fire escape stairways shall meet the minimum width, capacity, riser height and tread depth as specified in Section 1104.10.

1104.16.4 Access. Access to a fire escape stairway from a corridor shall not be through an intervening room. Access to a fire escape stairway shall be from a door or window meeting the criteria of Section 1005.1. Access to a fire escape stairway shall be directly to a balcony, landing or platform. These shall not be higher than the floor or window sill level and not lower than 8 inches (203 mm) below the floor level or 18 inches (457 mm) below the window sill.

1104.16.5 Materials and strength. Components of fire escape stairways shall be constructed of noncombustible materials. Fire escape stairways and balconies shall support the dead load plus a live load of not less than 100 pounds per square foot (4.78 kN/m²). Fire escape stairways and balconies shall be provided with a top and intermediate handrail on each side.

1104.16.5.1 Examination. Fire escape stairways and balconies shall be examined for structural adequacy and safety in accordance with Section 1104.16.5 by a registered design professional or others acceptable to the fire code official every 5 years, or as required by the fire code official. An inspection report shall be submitted to the fire code official after such examination.

### TABLE 1104.9

<table>
<thead>
<tr>
<th>INSIDE DIAMETER (feet-inches)</th>
<th>POWER-DRIVEN-TYPE SPEED CONTROL (rpm)</th>
<th>MANUAL-TYPE SPEED CONTROL (rpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-6</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>7-0</td>
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<tr>
<td>9-6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>10-0</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

1104.9.1 Egress component. A revolving door used as a component of a means of egress shall comply with Section 1104.9 and all of the following conditions:

1. Revolving doors shall not be given credit for more than 50 percent of the required egress capacity.

2. Each revolving door shall be credited with not more than a 50-person capacity.

3. Revolving doors shall be capable of being collapsed when a force of not more than 130 pounds (578 N) is applied within 3 inches (76 mm) of the outer edge of a wing.

1104.10 Stair-dimensions for existing stairways. Existing stairways in buildings shall be permitted to remain if the rise does not exceed 8 1/4 inches (210 mm) and the run is not less than 9 inches (229 mm). Existing stairways can be rebuilt.

Exception: Other stairways approved by the fire code official.

1104.10.1 Dimensions for replacement stairways. The replacement of an existing stairway in a structure shall not be required to comply with the new stairway requirements of Section 1009 where the existing space and construction will not allow a reduction in pitch or slope.

1104.11 Winders. Existing winders shall be allowed to remain in use if they have a minimum tread depth of 6 inches (152 mm) and a minimum tread depth of 9 inches (229 mm) at a point 12 inches (305 mm) from the narrowest edge.

1104.12 Curved stairways. Existing curved stairways shall be allowed to continue in use, provided the minimum depth of tread is 10 inches (254 mm) and the smallest radius shall be not less than twice the width of the stairway.

1104.13 Stairway handrails. Stairways shall have handrails on at least one side. Handrails shall be located so that all portions of the stairway width required for egress capacity are within 44 inches (1118 mm) of a handrail.

Exception: Aisle stairs provided with a center handrail are not required to have additional handrails.
1104.16.6 Termination. The lowest balcony shall not be more than 18 feet (5486 mm) from the ground. Fire escape stairways shall extend to the ground or be provided with counterbalanced stairs reaching the ground.

Exception: For fire escape stairways serving 10 or fewer occupants, an approved fire escape ladder is allowed to serve as the termination.

1104.16.7 Maintenance. Fire escape stairways shall be kept clear and unobstructed at all times and shall be maintained in good working order.

1104.17 Corridor construction. Corridors serving an occupant load greater than 30 and the openings therein shall provide an effective barrier to resist the movement of smoke. Transoms, louver doors and other openings shall be kept closed or be self-closing. In Group I-2, corridors in areas housing patient sleeping or care rooms shall comply with Section 1105.4.

Exceptions:
1. Corridors in occupancies other than in Group H, that are equipped throughout with an approved automatic sprinkler system.
2. Corridors in occupancies in Group E where each room utilized for instruction or assembly has not more than one-half of the required means of egress doors opening directly to the exterior of the building at ground level.
3. Corridors that are in accordance with the International Building Code.

1104.17.1 Corridor openings. Openings in corridor walls shall comply with the requirements of the International Building Code.

Exceptions:
1. Where 20-minute fire door assemblies are required, solid wood doors not less than 1 1/4 inches (32 mm) thick or insulated steel doors are allowed.
2. Openings protected with fixed wire glass set in steel frames.
3. Openings covered with 0.5-inch (12.7 mm) gypsum wallboard or 0.75-inch (19.1 mm) plywood on the room side.
4. Opening protection is not required where the building is equipped throughout with an approved automatic sprinkler system.

1104.18 Dead-end corridors. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that dead ends do not exceed the limits specified in Table 1104.18. In Group I-2, in smoke compartments containing patient sleeping rooms and treatment rooms, dead end corridors shall be in accordance with Section 1105.5.6.

Exception: A dead-end passageway or corridor shall not be limited in length where the length of the dead-end passageway or corridor is less than 2.5 times the least width of the dead-end passageway or corridor.

1104.19 Exit access travel distance. Exit shall be located so that the maximum length of exit access travel, measured from the most remote point to an approved exit along the natural and unobstructed path of egress travel, does not exceed the distances given in Table 1104.18.

1104.20 Common path of egress travel. The common path of egress travel shall not exceed the distances given in Table 1104.18.

1104.21 Stairway discharge identification. An interior exit stairway or ramp that continues below its level of exit discharge shall be arranged and marked to make the direction of egress to a public way readily identifiable.

Exception: Stairways that continue one-half story beyond their levels of exit discharge need not be provided with barriers where the exit discharge is obvious.

1104.22 Exterior stairway protection. Exterior exit stairways shall be separated from the interior of the building as required in Section 1027.6. Openings shall be limited to those necessary for egress from normally occupied spaces.

Exceptions:
1. Separation from the interior of the building is not required for buildings that are two stories or less above grade where the level of exit discharge serving such occupancies is the first story above grade.
2. Separation from the interior of the building is not required where the exterior stairway is served by an exterior balcony that connects two remote exterior stairways or other approved exits, with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be not less than 30 percent of the height of the enclosing wall, with the top of the opening not less than 7 feet (2134 mm) above the top of the balcony.
3. Separation from the interior of the building is not required for an exterior stairway located in a building or structure that is permitted to have unenclosed interior stairways in accordance with Section 1023.
4. Separation from the open-ended corridors of the building is not required for exterior stairways provided that:
   1. The open-ended corridors comply with Section 1020.
   2. The open-ended corridors are connected on each end to an exterior exit stairway complying with Section 1027.
   3. At any location in an open-ended corridor where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet (3.3 m²) or an exterior stairway shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.
1104.23 Minimum aisle width. The minimum clear width of aisles shall be:

1. Forty-two inches (1067 mm) for aisle stairs having seating on each side.
2. Thirty-six inches (914 mm) for stepped aisles having seating on only one side.
3. Twenty inches (508 mm) between a stepped aisle handrail and seating where the aisle is subdivided by the handrail.
4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.
5. Thirty-six inches (914 mm) for level or ramped aisles having seating on one side.
6. In Group I-2, where aisles are used for movement of patients in beds, aisles shall comply with Section 1105.5.

In Group I-2, in smoke compartments containing care recipient sleeping rooms and treatment rooms, dead-end corridors shall comply with Section 1105.5.6.

Where a tenant space in Group B, S and U occupancies has an occupant load of not more than 30, the length of a common path of egress travel shall not be more than 100 feet.

**Table 1104.18**

<table>
<thead>
<tr>
<th>OCCUPANCY</th>
<th>COMMON PATH LIMIT</th>
<th>DEAD-END LIMIT</th>
<th>TRAVEL DISTANCE LIMIT</th>
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<tr>
<td></td>
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<td>Sprinklered</td>
<td>Unsprinklered</td>
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<td>20/75</td>
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<tr>
<td>Group I-2</td>
<td>Notes e, g</td>
<td>Notes e, g</td>
<td>Note f</td>
</tr>
<tr>
<td>Group I-3</td>
<td>100</td>
<td>100</td>
<td>NR</td>
</tr>
<tr>
<td>Group I-4 (Day care centers)</td>
<td>NR</td>
<td>NR</td>
<td>20</td>
</tr>
<tr>
<td>Group M (Covered or open mall)</td>
<td>75</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Group M (Mercantile)</td>
<td>75</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Group R-1 (Hotels)</td>
<td>75</td>
<td>75</td>
<td>50</td>
</tr>
<tr>
<td>Group R-2 (Apartments)</td>
<td>75</td>
<td>125</td>
<td>75</td>
</tr>
<tr>
<td>Group R-3 (One- and two-family)</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Group R-4 (Residential care/assisted living)</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Group U&lt;sup&gt;c&lt;/sup&gt;</td>
<td>75</td>
<td>100</td>
<td>20</td>
</tr>
</tbody>
</table>

NR = No requirements.

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

<sup>a</sup> 20 feet for common path serving 50 or more persons; 75 feet for common path serving less than 50 persons.

<sup>b</sup> See Section 1029.9.5 for dead-end aisles in Group A occupancies.

<sup>c</sup> This dimension is for the total travel distance, assuming incremental portions have fully utilized their allowable maximums. For travel distance within the room, and from the room exit access door to the exit, see the appropriate occupancy chapter.

<sup>d</sup> See the International Building Code for special requirements on spacing of doors in aircraft hangars.

<sup>e</sup> In Group I-2, separation of exit access doors within a care recipient sleeping room, or any suite that includes care recipient sleeping rooms, shall comply with Section 1105.5.7.

<sup>f</sup> In Group I-2, in smoke compartments containing care recipient sleeping rooms and treatment rooms, dead-end corridors shall comply with Section 1105.5.6.

<sup>g</sup> In Group I-2, in condition 2, care recipient sleeping rooms, or any suite that includes care recipient sleeping rooms, shall comply with Section 1105.6.

<sup>h</sup> Where a tenant space in Group B, S and U occupancies has an occupant load of not more than 30, the length of a common path of egress travel shall not be more than 100 feet.
1104.24 Stairway floor number signs. Existing stairways shall be marked in accordance with Section 1023.9.

1104.25 Egress path markings. Existing high-rise buildings of Group A, B, E, I, M and R-1 occupancies shall be provided with luminous egress path markings in accordance with Section 1025.

Exception: Open, unenclosed stairwells in historic buildings designated as historic under a state or local historic preservation program.

SECTION 1105
CONSTRUCTION REQUIREMENTS FOR EXISTING GROUP I-2

1105.1 General. Existing Group I-2 shall meet all of the following requirements:

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

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

1105.2 Construction. Group I-2 Condition 2 shall not be located on a floor level higher than the floor level limitation in Table 1105.2 based on the type of construction.

1105.3 Incidental uses in existing Group I-2. Incidental uses associated with and located within existing single occupancy or mixed occupancy Group I-2 buildings and that generally pose a greater level of risk to such occupancies shall comply with the provisions of Sections 1105.3.1 through 1105.3.2.1. Incidental uses in Group I-2 occupancies are limited to those listed in Table 1105.3.

1105.3.1 Occupancy classification. Incidental uses shall not be individually classified in accordance with Section 302.1 of the International Building Code. Incidental uses shall be included in the building occupancies within which they are located.

1105.3.2 Area limitations. Incidental uses shall not occupy more than 10 percent of the building area of the story in which they are located.

1105.3.3 Separation and protection. The incidental uses listed in Table 1105.3 shall be separated from the remainder of the building or equipped with an automatic sprinkler system, or both, in accordance with the provisions of that table.

1105.3.3.1 Separation. Where Table 1105.3 specifies a fire-resistance-rated separation, the incidental uses shall be separated from the remainder of the building in accordance with Section 509.4.1 of the International Building Code.

1105.3.3.2 Protection. Where Table 1105.3 permits an automatic sprinkler system without a fire-resistance-rated separation, the incidental uses shall be equipped with an automatic sprinkler system in accordance with Section 1105.8.

### Table 1105.2
FLOOR LEVEL LIMITATIONS FOR GROUP I-2 CONDITION 2

<table>
<thead>
<tr>
<th>CONSTRUCTION TYPE</th>
<th>AUTOMATIC SPRINKLER SYSTEM</th>
<th>ALLOWABLE FLOOR LEVEL*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Note-b</td>
<td>1</td>
</tr>
<tr>
<td>IA</td>
<td>Note-c</td>
<td>P</td>
</tr>
<tr>
<td>IB</td>
<td>Note-c</td>
<td>P</td>
</tr>
<tr>
<td>II A</td>
<td>Note-c</td>
<td>P</td>
</tr>
<tr>
<td>II B</td>
<td>Note-c</td>
<td>NP</td>
</tr>
<tr>
<td>III A</td>
<td>Note-c</td>
<td>P</td>
</tr>
<tr>
<td>III B</td>
<td>Note-c</td>
<td>NP</td>
</tr>
<tr>
<td>IV</td>
<td>Note-c</td>
<td>NP</td>
</tr>
<tr>
<td>VA</td>
<td>Note-c</td>
<td>NP</td>
</tr>
<tr>
<td>VB</td>
<td>Note-c</td>
<td>NP</td>
</tr>
</tbody>
</table>

P = Permitted; NP = Not permitted.

a. Floor level shall be counted based on the number of stories above grade.

b. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

c. The building is equipped with an automatic sprinkler system in accordance with Section 1105.8.
rated separation, the incidental uses shall be separated from the remainder of the building by construction capable of resisting the passage of smoke in accordance with Section 509.4.2 of the International Building Code.

1105.3.3.1 Protection limitation. Except as otherwise specified in Table 1105.2 for certain incidental uses, where an automatic sprinkler system is provided in accordance with Table 1105.3, only the space occupied by the incidental use need be equipped with such a system.

1105.4 Corridor construction. In Group I-2, in areas housing patient sleeping or care rooms, corridor walls and the opening protectives therein shall provide a barrier designed to resist the passage of smoke in accordance with Sections 1105.4.1 through 1105.4.7.

1105.4.1 Materials. The walls shall be of materials permitted by the building type of construction.

1105.4.2 Fire-resistance rating. Unless required elsewhere in this code, corridor walls are not required to have a fire-resistance rating.

1105.4.3 Corridor wall continuity. Corridor walls shall extend from the top of the foundation or floor below to one of the following:

1. The underside of the floor or roof sheathing; deck or slab above.

2. The underside of a ceiling above where the ceiling membrane is constructed to limit the passage of smoke.

3. The underside of a lay-in ceiling system where the ceiling system is constructed to limit the passage of smoke and where the ceiling tiles weigh not less than 1 pound per square foot (4.88 kg/m²) of tile.

1105.4.4 Openings in corridor walls. Openings in corridor walls shall provide protection in accordance with 1105.4.4.1 through 1105.4.4.3.

1105.4.4.1 Windows. Windows in corridor walls shall be sealed to limit the passage of smoke, or the window shall be automatic-closing upon detection of smoke, or the window opening shall be protected by an automatic closing device that closes upon detection of smoke.

Exception: In smoke compartments not containing patient sleeping rooms, pass-through windows or similar openings shall be permitted in accordance with Section 1105.4.4.2.

1105.4.4.2 Doors. Doors in corridor walls shall comply with Sections 1105.4.4.2.1 through 1105.4.4.2.3.

1105.4.4.2.1 Louvers. Doors in corridor walls shall not include louvers, transfer grills or similar openings.

Exception: Doors shall be permitted to have louvers, transfer grills or similar openings at toilet rooms or bathrooms; storage rooms that do not contain storage of flammable or combustible material; and storage rooms that are not required to be separated as incidental uses.

### TABLE 1105.3

<table>
<thead>
<tr>
<th>INCIDENTAL USES IN EXISTING GROUP I-2 OCCUPANCIES</th>
<th>SEPARATION AND/OR PROTECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furnace room where any piece of equipment is over 400,000 Btu per hour input</td>
<td>4 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower</td>
<td>1 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Refrigerant machinery room</td>
<td>1 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Hydrogen fuel gas rooms, not classified as Group H</td>
<td>4 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Incinerator rooms</td>
<td>2 hours or 1 hour and provide automatic sprinkler system</td>
</tr>
<tr>
<td>Paint shops not classified as Group H</td>
<td>2 hours or 1 hour and provide automatic sprinkler system</td>
</tr>
<tr>
<td>Laboratories and vocational shops, not classified as Group H</td>
<td>4 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Laundry rooms over 100 square feet</td>
<td>1 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Patient rooms equipped with padded surfaces</td>
<td>1 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Physical plant maintenance shops</td>
<td>4 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Waste and linen collection rooms with containers with total volume of 10 cubic feet or greater</td>
<td>1 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Storage rooms greater than 100 square feet</td>
<td>4 hour or provide automatic sprinkler system</td>
</tr>
<tr>
<td>Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons for flooded lead-acid, nickel cadmium or VRLA, or more than 1,000 pounds for lithium-ion and lithium metal polymer used for facility, standby power, emergency power or uninterruptable power supplies</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

For SI: 1 square foot = 0.0929 m², 1 pound per square inch (psi) = 6.9 kPa, 1 British thermal unit (Btu) per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L.
1105.4.4.2 Corridor doors. Doors in corridor walls shall limit the transfer of smoke by complying with the following:

1. Doors shall be constructed of not less than 1 1/2 inch-thick (44 mm) solid-bonded-core wood or capable of resisting fire not less than 1 1/2 hour.

Exception: Corridor doors in buildings equipped throughout with an automatic sprinkler system.

2. Frames for side-hinged swinging doors shall have stops on the sides and top to limit transfer of smoke.

3. Where provided, vision panels in doors shall be a fixed glass window assembly installed to limit the passage of smoke. Existing wired glass panels with steel frames shall be permitted to remain in place.

4. Door undercut shall not exceed 1 inch (25 mm).

5. Doors shall be positive-latching with devices that resist not less than 5 pounds (22.2 N). Roller latches are prohibited.

6. Mail slots or similar openings shall be permitted in accordance with Section 1105.4.4.3.

1105.4.4.3 Dutch doors. Where provided, dutch doors shall comply with Section 1105.4.4.2. In addition, dutch doors shall be equipped with latching devices on either the top or bottom leaf to allow leaves to latch together. The space between the leaves shall be protected with devices such as astragals to limit the passage of smoke.

1105.4.4.4 Self- or automatic-closing doors. Where self- or automatic-closing doors are required, closers shall be maintained in operational condition.

1105.4.4.3 Openings in corridor walls and doors. In other than smoke compartments containing patient sleeping rooms, mail slots, pass-through windows or similar openings shall not be required to be protected where the aggregate area of the openings between the corridor and a room are not greater than 80 square inches (516.9 mm²) and are located with the top edge of any opening not higher than 48 inches above the floor.

1105.4.5 Penetrations. The space around penetrating items shall be filled with an approved material to limit the passage of smoke.

1105.4.6 Joints. Joints shall be filled with an approved material to limit the passage of smoke.

1105.4.7 Ducts and air transfer openings. The space around a duct penetrating a smoke partition shall be filled with an approved material to limit the passage of smoke. Air transfer openings in smoke partitions shall be provided with a smoke damper complying with Section 717.3.2.2 of the International Building Code.

Exception: Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.

1105.5 Means of egress. In addition to the means of egress requirements in Section 1104, Group I-2 facilities shall meet the means of egress requirements in Section 1105.5.1 through 1105.5.8.

1105.5.1 Exit signs and emergency illumination. The power system for exit signs and emergency illumination for the means of egress shall provide power for not less than 90 minutes and consist of storage batteries, unit equipment or an on-site generator.

1105.5.2 Emergency power for operational needs. The essential electrical system shall be capable of supplying services in accordance with NEPA 99.

1105.5.3 Size of door. Means of egress doors used for the movement of patients in beds shall provide a minimum clear width of 41 1/2 inches (1054 mm). The height of the door opening shall be not less than 80 inches (2032 mm).

Exceptions:

1. Door closers and door stops shall be permitted to be 78 inches (1981 mm) minimum above the floor.

2. In Group I-2 Condition 1, existing means of egress doors used for the movement of patients in beds that provide a minimum clear width of 32 inches (813 mm) shall be permitted to remain.

1105.5.4 Ramps. In areas where ramps are used for movement of patients in beds, the clear width of the ramp shall be not less than 48 inches (1219 mm).

1105.5.5 Corridor width. In areas where corridors are used for movement of patients in beds, the clear width of the corridor shall be not less than 48 inches (1219 mm).

1105.5.6 Dead-end corridors. In smoke compartments containing patient sleeping rooms and treatment rooms, dead end corridors shall not exceed 30 feet (9144 mm) unless approved by the fire code official.

1105.5.7 Separation of exit access doors. Patient sleeping rooms, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (92.9 m²) shall have not less than two exit access doors placed a distance apart equal to not less than one-third of the length of the maximum overall diagonal dimension of the patient sleeping room or suite to be served, measured in a straight line between exit access doors.

1105.5.8 Aisles. In areas where aisles are used for movement of patients in beds, the clear width of the aisle shall be not less than 48 inches (1219 mm).
1105.6 Smoke compartments. Smoke compartments shall be provided in existing Group I-2 Condition 2, in accordance with Sections 1105.6.1 through 1105.6.4.

1105.6.1 Design. Smoke barriers shall be provided to sub-divide each story used for patients sleeping with an occupant load of more than 30 patients into fewer than two smoke compartments.

1105.6.1.1 Refuge areas. Refuge areas shall be provided within each smoke compartment. The size of the refuge area shall accommodate the occupants and care recipients from the adjoining smoke compartment. Where a smoke compartment is adjoined by two or more smoke compartments, the minimum area of the refuge area shall accommodate the largest occupant load of the adjoining compartments.

The size of the refuge area shall provide the following:
1. Not less than 30 net square feet (2.8 m²) for each care recipient confined to a bed or stretcher.
2. Not less than 15 square feet (1.4 m²) for each resident in a Group I-2 using mobility assistance devices.
3. Not less than 6 square feet (0.56 m²) for each occupant not addressed in Items 1 and 2.

Areas of spaces permitted to be included in the calculation of the refuge area are corridors, sleeping areas, treatment rooms, lounge or dining areas and other low-hazard areas.

1105.6.2 Smoke barriers. Smoke barriers shall be constructed in accordance with Section 709 of the International Building Code.

Exceptions:
1. Existing smoke barriers are permitted to remain where the existing smoke barrier has a minimum fire resistance rating of 1/2 hour.
2. Smoke barriers shall be permitted to terminate at an atrium enclosure in accordance with Section 404.6 of the International Building Code.

1105.6.3 Opening protectives. Openings in smoke barriers shall be protected in accordance with Section 716 of the International Building Code. Opening protectives shall have a minimum fire protection rating of 1/4 hour.

Exception: Existing wired glass vision panels in doors shall be permitted to remain.

1105.6.4 Penetrations. Penetrations of smoke barriers shall comply with the International Building Code.

Exception: Approved existing materials and methods of construction.

1105.6.5 Joints. Joints made in or between smoke barriers shall comply with the International Building Code.

Exception: Approved existing materials and methods of construction.

1105.6.6 Duct and air transfer openings. Penetrations in a smoke barrier by duct and air transfer openings shall comply with Section 717 of the International Building Code.

Exception: Where existing duct and air transfer openings in smoke barriers exist without smoke dampers, they shall be permitted to remain. Any changes to existing smoke dampers shall be submitted for review and approved in accordance with Section 717 of the International Building Code.

1105.7 Group I-2 care suites. Care suites in existing Group I-2 Condition 2 occupancies shall comply with Sections 407.4.3 through 407.4.3.6.2 of the International Building Code.

1105.8 Group I-2 automatic sprinkler system. An automatic sprinkler system installed in accordance with Section 903.3.1.1 shall be provided throughout existing Group I-2 fire areas. The sprinkler system shall be provided throughout the floor where the Group I-2 occupancy is located, and in all floors between the Group I-2 occupancy and the level of exit discharge.

1105.9 Group I-2 automatic fire alarm system. An automatic fire alarm system shall be installed in existing Group I-2 occupancies in accordance with Section 907.2.6.2.

Exception: Manual fire alarm boxes in patient sleeping areas shall not be required at exits if located at nurse control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2.1 are not exceeded.

1105.10 Essential electrical systems. Essential electrical systems in Group I-2 Condition 2 occupancies shall be in accordance with Sections 1105.10.1 and 1105.10.2.

1105.10.1 Where required. In Group I-2 Condition 2 occupancies, where life support is being provided, an essential electrical system shall be provided in accordance with NFPA 99.

1105.10.2 Installation and duration. In Group I-2 Condition 2 occupancies, the installation and duration of operation of existing essential electrical systems shall be based on a hazard vulnerability analysis conducted in accordance with NFPA 99.

SECTION 1106
REQUIREMENTS FOR OUTDOOR OPERATIONS

1106.1 Tire storage yards. Existing tire storage yards shall be provided with fire apparatus access roads in accordance with Sections 1106.1.1 and 1106.1.2.

1106.1.1 Access to piles. Access roadways shall be within 150 feet (45720 mm) of any point in the storage yard where storage piles are located not less than 20 feet (6096 mm) from any storage pile.

1106.1.2 Location within piles. Fire apparatus access roads shall be located within all pile clearances identified in Section 3405.4 and within all fire breaks required in Section 3405.5.
5704.1 General. The storage of flammable and combustible liquids in containers and tanks shall be in accordance with this section and the applicable sections of Chapter 50.

5704.2 Tank storage. The provisions of this section shall apply to:

1. The storage of flammable and combustible liquids in fixed above-ground and underground tanks.
2. The storage of flammable and combustible liquids in fixed above-ground tanks inside of buildings.
3. The storage of flammable and combustible liquids in portable tanks whose capacity exceeds 660 gallons (2498 L).
4. The installation of such tanks and portable tanks.

5704.2.1 Change of tank contents. Tanks subject to change in contents shall be in accordance with Section 5704.2.7. Prior to a change in contents, the fire code official is authorized to require testing of a tank.

Tanks that have previously contained Class I liquids shall not be loaded with Class II or Class III liquids until such tanks and all piping, pumps, hoses and meters connected thereto have been completely drained and flushed.

5704.2.2 Use of tank vehicles and tank cars as storage tanks. Tank cars and tank vehicles shall not be used as storage tanks.

5704.2.3 Labeling and signs. Labeling and signs for storage tanks and storage tank areas shall comply with Sections 5704.2.3.1 and 5704.2.3.2.

5704.2.3.1 Smoking and open flame. Signs shall be posted in storage areas prohibiting open flames and smoking. Signs shall comply with Section 5073.5.

5704.2.3.2 Label or placard. Tanks more than 100 gallons (379 L) in capacity, which are permanently installed or mounted and used for the storage of Class I, II or IIIA liquids, shall bear a label and placard identifying the material therein. Placards shall be in accordance with NFPA 704.

Exceptions:
1. Tanks of 300-gallon (1136 L) capacity or less located on private property and used for heating and cooking fuels in single-family dwellings.
2. Tanks located underground.

5704.2.4 Sources of ignition. Smoking and open flames are prohibited in storage areas in accordance with Section 5003.7.

Exception: Areas designated as smoking and hot work areas, and areas where hot work permits have been issued in accordance with this code.

5704.2.5 Explosion control. Explosion control shall be provided in accordance with Section 911 for indoor tanks.

5704.2.6 Separation from incompatible materials. Storage of flammable and combustible liquids shall be separated from incompatible materials in accordance with Section 5003.9.8.

Grass, weeds, combustible materials and waste Class I, II or IIIA liquids shall not be accumulated in an unsafe manner at a storage site.

5704.2.7 Design, fabrication and construction requirements for tanks. The design, fabrication and construction of tanks shall comply with NFPA 30. Each tank shall bear a permanent nameplate or marking indicating the standard used as the basis of design.

5704.2.7.1 Materials used in tank construction. The materials used in tank construction shall be in accordance with NFPA 30. The materials of construction for tanks and their appurtenances shall be compatible with the liquids to be stored.

5704.2.7.2 Pressure limitations for tanks. Tanks shall be designed for the pressures to which they will be subjected in accordance with NFPA 30.

5704.2.7.3 Tank vents for normal venting. Tank vents for normal venting shall be installed and maintained in accordance with Sections 5704.2.7.3.1 through 5704.2.7.3.5.

5704.2.7.3.1 Vent lines. Vent lines from tanks shall not be used for purposes other than venting unless approved.

5704.2.7.3.2 Vent-line flame arresters and pressure-vacuum vents. Listed or approved flame arresters or pressure-vacuum (PV) vents that remain closed unless venting under pressure or vacuum conditions shall be installed in normal vents of tanks containing Class IB and IC liquids.

Exception: Where determined by the fire code official that the use of such devices can result in damage to the tank.

Vent-line flame arresters shall be installed in accordance with their listing or API 2000 and maintained in accordance with Section 21.8.6 of NFPA 30 or API 2000. In-line flame arresters in piping systems shall be installed and maintained in accordance with their listing or API 2028. Pressure-vacuum vents shall be installed in accordance with Section 21.4.3 of NFPA 30 or API 2000 and maintained in accordance with Section 21.8.6 of NFPA 30 or API 2000.

5704.2.7.3.3 Vent pipe outlets. Vent pipe outlets for tanks storing Class I, II or IIIA liquids shall be located such that the vapors are released at a safe point outside of buildings and not less than 12 feet (3658 mm) above the finished ground level. Vapors shall be discharged upward or horizontally away from adjacent walls to assist in vapor dispersion. Vent outlets shall be located such that flammable