Balloting Version First Draft NFPA® 101
Life Safety Code
Proposed 2015 Edition

About This Document: This document is the Balloting Version of the First Draft of the proposed 2015 edition of NFPA 101. It has been compiled by NFPA staff for the purpose of balloting by the responsible Technical Committee(s) in accordance with the Regulations Governing the Development of NFPA Standards ("Regs.") This Balloting Version of the First Draft incorporates the changes made through First Revisions developed by the Technical Committee at its First Draft Meeting, and it is made available to Technical Committee members for their review during balloting. Only First Revisions that Pass the Technical Committee ballot will be included in the Final First Draft that will be published for public review. See, generally, Regs. at Section 4.3, Committee Activities: Input Stage.
Chapter 11  Special Structures and High-Rise Buildings

11.1  General Requirements.
11.1.1  Application. The requirements of Sections 11.1 through 11.11 shall apply to occupancies regulated by Chapters 12 through 42 that are in a special structure. The applicable provisions of Chapters 12 through 42 shall apply, except as modified by this chapter. Section 11.8 shall apply to high-rise buildings only where specifically required by Chapters 12 through 42.

11.1.2  Multiple Occupancies. See 6.1.14.

11.1.3  Definitions.
11.1.3.1  General. For definitions see Chapter 3 Definitions.
11.1.3.2  Special Definitions. Special terms used in this chapter are located within each special structure section.

11.1.4  Classification of Occupancy. Occupancies regulated by Chapters 12 through 42 that are in special structures shall meet the requirements of those chapters, except as modified by this chapter.

11.1.5  Classification of Hazard of Contents. Classification of hazard of contents shall be in accordance with Section 6.2.

11.1.6  Minimum Construction Requirements. Minimum construction requirements shall be in accordance with the applicable occupancy chapter.

11.1.7  Occupant Load. The occupant load of special structures shall be based on the use of the structure as regulated by Chapters 12 through 42.

11.1.8  Automatic Sprinkler Systems. Where another provision of this chapter requires an automatic sprinkler system, the automatic sprinkler system shall be installed in accordance with the subparts of 9.7.1.1 as permitted by the applicable occupancy chapter.

11.2  Open Structures.

11.2.1  Application.
11.2.1.1  General. The provisions of Section 11.1 shall apply.

11.2.1.2  Definition — Open Structure. See 3.3.271.6.

11.2.2  Means of Egress.
11.2.2.1  General. The means of egress provisions of the applicable occupancy chapter, Chapters 12 through 42, shall apply, except as modified by 11.2.2.2 through 11.2.2.10.

11.2.2.2  Means of Egress Components.
11.2.2.2.1  Fire Escape Ladders. Open structures that are designed for occupancy by not more than three persons shall be permitted to be served by fire escape ladders complying with 7.2.9.

11.2.2.2.2  Reserved.

11.2.2.3  Capacity of Means of Egress. Open structures shall be exempt from the requirements for capacity of means of egress.

11.2.2.4  Number of Means of Egress.

11.2.2.4.1* Open structures at the finished ground level are exempt from the requirements for number of means of egress.

11.2.2.4.2  Open structures occupied by not more than three persons, with travel distance of not more than 200 ft (61 m), shall be permitted to have a single exit.

11.2.2.5  Arrangement of Means of Egress. (No modifications.)

11.2.2.6  Travel Distance to Exits. Open structures shall be exempt from travel distance limitations.

11.2.2.7  Discharge from Exits. Open structures permitted to have a single exit per 11.2.2.4 shall be permitted to have 100 percent of the exit discharge through areas on the level of exit discharge.
11.2.2.8  **Illumination of Means of Egress.** Open structures shall be exempt from illumination of means of egress requirements.

11.2.2.9  **Emergency Lighting.** Open structures shall be exempt from emergency lighting requirements.

11.2.2.10  **Marking of Means of Egress.** Open structures shall be exempt from marking of means of egress requirements.

11.2.3  **Protection.**

11.2.3.1  **Protection of Vertical Openings.** Open structures shall be exempt from protection of vertical opening requirements.

11.2.3.2  **Protection from Hazards.** Every open structure, other than those structures with only occasional occupancy, shall have automatic, manual, or other protection that is appropriate to the particular hazard and that is designed to minimize danger to occupants in case of fire or other emergency before they have time to use the means of egress.

11.2.3.3  **Interior Finish.** (No modifications.)

11.2.3.4  **Detection, Alarm, and Communications Systems.** Open structures shall be exempt from requirements for detection, alarm, and communications systems.

11.2.3.5  **Extinguishing Requirements.** (No modifications.)

11.3  **Towers.**

11.3.1  **Application.**

11.3.1.1  **General.** The provisions of Section 11.1 shall apply.

11.3.1.2  **Definition — Tower.** See 3.3.280.

11.3.1.3  **Use of Accessory Levels.**

11.3.1.3.1  **Sprinklered Towers.** In towers protected throughout by an automatic sprinkler system in accordance with Section 9.7, the levels located below the observation level shall be permitted to be occupied only for the following uses that support tower operations:

(1) Use as electrical and mechanical equipment rooms, including emergency power, radar, communications, and electronics rooms

(2)* Incidental accessory uses

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11.3.1.3.2  Electronic supervision of supervisory signals shall be provided in accordance with 9.7.2.1. Waterflow alarms shall be monitored in accordance with 9.7.2.2.

11.3.2  **Means of Egress.**

11.3.2.1  **General.** The means of egress provisions of the applicable occupancy chapter, Chapters 12 through 42, shall apply, except as modified by 11.3.2.2 through 11.3.2.10.

11.3.2.2  **Means of Egress Components.**

11.3.2.2.1  **Fire Escape Ladders.** Towers, such as forest fire observation or railroad signal towers, that are designed for occupancy by not more than three persons shall be permitted to be served by fire escape ladders complying with 7.2.9.

11.3.2.2.2  **Elevators.** Towers subject to occupancy by not more than 90 persons shall be permitted to use elevators in the means of egress in accordance with 7.2.13.

11.3.2.3  **Capacity of Means of Egress.**

11.3.2.3.1  Means of egress for towers shall be provided for the number of persons expected to occupy the space.

11.3.2.3.2  Spaces not subject to human occupancy because of machinery or equipment shall be excluded from consideration.
11.3.2.4* Number of Means of Egress.

11.3.2.4.1 Towers shall be permitted to have a single exit, provided that the following conditions are met:

(1) The tower shall be subject to occupancy by fewer than 25 persons.
(2) The tower shall not be used for living or sleeping purposes.
(3) The tower shall be of Type I, Type II, or Type IV construction. (See 8.2.1.)
(4) The tower interior wall and ceiling finish shall be Class A or Class B.
(5) No combustible materials shall be located within the tower, under the tower, or within the immediate vicinity of the tower, except necessary furniture.
(6) No high hazard occupancies shall be located within the tower or within its immediate vicinity.
(7) Where the tower is located above a building, the single exit from the tower shall be provided by one of the following:
   (a) Exit enclosure separated from the building with no door openings to or from the building
   (b) Exit enclosure leading directly to an exit enclosure serving the building, with walls and door separating the exit enclosures from each other, and another door allowing access to the top floor of the building that provides access to a second exit serving that floor

11.3.2.4.2 Towers with 360-degree line-of-sight requirements shall be permitted to have a single means of egress for a distance of travel not exceeding 75 ft (23 m), or 100 ft (30 m) if the tower is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.

11.3.2.4.3 Electronic supervision of sprinkler system supervisory signals shall be provided in accordance with 9.7.2.1 and waterflow alarms shall be monitored in accordance with 9.7.2.2.

11.3.2.5 Arrangement of Means of Egress. (No modifications.)

11.3.2.6 Travel Distance to Exits. Towers where ladders are permitted by 11.3.2.2.1 shall be exempt from travel distance limitations.

11.3.2.7 Discharge from Exits. Towers permitted to have a single exit per 11.3.2.4 shall be permitted to have 100 percent of the exit discharge through areas on the level of exit discharge.

11.3.2.8 Illumination of Means of Egress. Towers where ladders are permitted by 11.3.2.2.1 shall be exempt from illumination of means of egress requirements.

11.3.2.9 Emergency Lighting.

11.3.2.9.1 Towers where ladders are permitted by 11.3.2.2.1 shall be exempt from emergency lighting requirements.

11.3.2.9.2 Locations not routinely inhabited by humans shall be exempt from emergency lighting requirements.

11.3.2.9.3 Structures occupied only during daylight hours, with windows arranged to provide the required level of illumination of all portions of the means of egress during such hours, shall be exempt from emergency lighting requirements where approved by the authority having jurisdiction.

11.3.2.10 Marking of Means of Egress.

11.3.2.10.1 Towers where ladders are permitted by 11.3.2.2.1 shall be exempt from marking of means of egress requirements.

11.3.2.10.2 Locations not routinely inhabited by humans shall be exempt from marking of means of egress requirements.

11.3.3 Protection.

11.3.3.1 Protection of Vertical Openings.
11.3.3.1.1 Towers where ladders are permitted by 11.3.2.2.1 shall be exempt from protection of vertical opening requirements.

11.3.3.1.2 In towers where the support structure is open and there is no occupancy below the top floor level, stairs shall be permitted to be open with no enclosure required, or fire escape stairs shall be permitted.

11.3.3.2 Protection from Hazards. Every tower, other than structures with only occasional occupancy, shall have automatic, manual, or other protection that is appropriate to the particular hazard and that is designed to minimize danger to occupants in case of fire or other emergency before they have time to use the means of egress.

11.3.3.3 Interior Finish. (No modifications.)

11.3.3.4 Detection, Alarm, and Communications Systems. Towers designed for occupancy by not more than three persons shall be exempt from requirements for detection, alarm, and communications systems.

11.3.3.5 Extinguishing Requirements. (No modifications.)

11.3.3.6 Corridors. (No modifications.)

11.3.4 Additional Requirements for Air Traffic Control Towers.

11.3.4.1 Definition — Air Traffic Control Tower. See 3.3.280.1.

11.3.4.2 Use of Accessory Levels. The levels located below the observation level shall be permitted to be occupied only for the following uses that support tower operations:

1. Use as electrical and mechanical equipment rooms, including emergency and standby power, radar, communications, and electronics rooms

2. Incidental accessory uses

11.3.4.3 Minimum Construction Requirements. New air traffic control towers shall be of Type I or Type II construction. (See 8.2.1.)

11.3.4.4 Means of Egress.

11.3.4.4.1 Number of Means of Egress. Air traffic control towers shall be permitted to have a single exit, provided that the following conditions are met in addition to the requirements of 11.3.2.4:

1. Each level of new air traffic control towers, served by a single exit, shall be subject to a calculated occupant load of 15 or fewer persons.

2. The requirements of 11.3.2.4.1(1) shall not apply to existing air traffic control towers.

3. Smoke detection shall be provided throughout air traffic control towers to meet the requirements of partial coverage, as defined in 5.5.2.2 of NFPA 72, National Fire Alarm and Signaling Code, and shall include coverage of all of the following:

   a. Occupiable areas
   b. Common areas
   c. Work spaces
   d. Equipment areas
   e. Means of egress
   f. Accessible utility shafts

4. The requirements of 11.3.2.4.1(5) shall not apply.

5. Rooms or spaces used for the storage, processing, or use of combustible supplies shall be permitted in quantities deemed acceptable by the authority having jurisdiction.

11.3.4.4.2 Egress for Occupant Load. Means of egress for air traffic control towers shall be provided for the occupant load, as determined in accordance with 7.3.1.

11.3.4.4.3 Areas Excluded from Occupant Load. Shafts, stairs, and spaces and floors not subject to human occupancy shall be excluded from consideration in determining the total calculated occupant load of the tower as required by 11.3.2.4.1(1) and 11.3.4.4.1(1).
11.3.4.4.4 **Single Means of Egress.** A single means of egress shall be permitted from the observation level of an air traffic control tower, as permitted by 11.3.2.4.2.

11.3.4.4.5 **Smokeproof Enclosures.** For other than existing, previously approved air traffic control towers, smokeproof exit enclosures complying with 7.2.3 shall be provided for all air traffic control tower exit stair enclosures.

11.3.4.4.6 **Discharge from Exits.**

11.3.4.4.6.1 Air traffic control towers shall comply with the requirements of 7.7.2, except as permitted by 11.3.4.4.6.2.

11.3.4.4.6.2 Existing, single-exit air traffic control towers shall be permitted to have discharge of the exit comply with one of the following:

(1) Discharge of the exit in a previously approved, single-exit air traffic control tower is permitted to a vestibule or foyer complying with the requirements of 7.7.2(4)(b).

(2) Discharge of the exit in a single-exit air traffic control tower is permitted within the building to a location where two means of egress are available and are arranged to allow travel in independent directions after leaving the exit enclosure, so that both means of egress do not become compromised by the same fire or similar emergency.

11.3.4.5 **Protection.**

11.3.4.5.1 **Detection, Alarm, and Communications Systems.** For other than existing, previously approved air traffic control towers, air traffic control towers shall be provided with a fire alarm system in accordance with Section 9.6. Smoke detection shall be provided throughout the air traffic control tower to meet the requirements for selective coverage, as defined in 17.5.3.2 of NFPA 72, *National Fire Alarm and Signaling Code*, and shall include coverage of all of the following:

(1) At equipment areas

(2) Outside each opening into exit enclosures

(3) Along the single means of egress permitted from observation levels in 11.3.2.4.2

(4) Outside each opening into the single means of egress permitted from observation levels in 11.3.2.4.2

11.3.4.5.2 **Extinguishing Requirements.** New air traffic control towers shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.

11.3.4.5.3 **Standpipe Requirements.** New air traffic control towers where the floor of the cab is greater than 30 ft (9.1 m) above the lowest level of fire department vehicle access shall be protected throughout with a Class I standpipe system in accordance with Section 9.7. Class I standpipes shall be manual standpipes, as defined in NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, where permitted by the authority having jurisdiction.

11.3.4.6 **Contents and Furnishings.** Contents and furnishings in air traffic control towers shall comply with 10.3.1, 10.3.2, 10.3.6, and 10.3.7.

11.3.4.7 **Uses.** Sleeping areas shall be prohibited in air traffic control towers.

11.4 **Water-Surrounded Structures.**

11.4.1 **Application.**

11.4.1.1 **General.** The provisions of Sections 11.1 and 11.4 shall apply to those structures that are not under the jurisdiction of the U.S. Coast Guard and not designed and arranged in accordance with U.S. Coast Guard regulations.

11.4.1.2 **Definition — Water-Surrounded Structure.** See 3.3.271.12.

11.4.2 **Means of Egress.**

11.4.2.1 **General.** The means of egress provisions of the applicable occupancy chapter, Chapters 12 through 42, shall apply, except as modified by 11.4.2.2 through 11.4.2.10.

11.4.2.2 **Means of Egress Components.** (No modifications.)
11.4.2.3 **Capacity of Means of Egress.** Spaces in water-surrounded structures that are not subject to human occupancy because of machinery or equipment shall be exempt from the requirements for capacity of means of egress.

11.4.2.4 **Number of Means of Egress.** (No modifications.)

11.4.2.5 **Arrangement of Means of Egress.** (No modifications.)

11.4.2.6 **Travel Distance to Exits.** (No modifications.)

11.4.2.7 **Discharge from Exits.** Structures permitted to have a single exit per the applicable occupancy chapter shall be permitted to have 100 percent of the exit discharge through areas on the level of exit discharge.

11.4.2.8 **Illumination of Means of Egress.** (No modifications.)

11.4.2.9 **Emergency Lighting.**

11.4.2.9.1 Locations not routinely inhabited by humans are exempt from emergency lighting requirements.

11.4.2.9.2 Structures occupied only during daylight hours, with windows arranged to provide the required level of illumination of all portions of the means of egress during such hours, shall be exempt from emergency lighting requirements where approved by the authority having jurisdiction.

11.4.2.10 **Marking of Means of Egress.** Locations not routinely inhabited by humans shall be exempt from marking of means of egress requirements.

11.4.3 **Protection.**

11.4.3.1 **Protection of Vertical Openings.** (No modifications.)

11.4.3.2 **Protection from Hazards.** Every water-surrounded structure, other than structures with only occasional occupancy, shall have automatic, manual, or other protection that is appropriate to the particular hazard and that is designed to minimize danger to occupants in case of fire or other emergency before they have time to use the means of egress.

11.4.3.3 **Interior Finish.** (No modifications.)

11.4.3.4 **Detection, Alarm, and Communications Systems.** (No modifications.)

11.4.3.5 **Extinguishing Requirements.** (No modifications.)

11.4.3.6 **Corridors.** (No modifications.)

11.5** Piers.

11.5.1 **Application.** The provisions of Section 11.1 shall apply.

11.5.2 **Number of Means of Egress.**

11.5.2.1 Piers used exclusively to moor cargo vessels and to store material shall be exempt from number of means of egress requirements where provided with proper means of egress from structures thereon to the pier and a single means of access to the mainland, as appropriate to the pier’s arrangement.

11.5.2.2 Buildings on piers not meeting the requirements of 11.5.2.1 and occupied for other than cargo handling and storage shall be in accordance with both of the following:

1. Means of egress shall be arranged in accordance with Chapters 12 through 43.

2. One of the following measures shall be provided on piers extending over 150 ft (46 m) from shore to minimize the possibility that fire under or on the pier blocks the escape of occupants to shore:

   a. The pier shall be arranged to provide two separate ways to travel to shore, such as by two well-separated walkways or independent structures.

   b. The pier deck shall be open, fire resistive, and set on noncombustible supports.

   c. The pier shall be open, unobstructed, and not less than 50 ft (15 m) in width if less than 500 ft (150 m) long, or its width shall be not less than 10 percent of its length if more than 500 ft (150 m) long.
(d) The pier deck shall be provided with an approved automatic sprinkler system in accordance with Section 9.7 for combustible substructures and all superstructures.

(e) The sprinkler system specified in 11.5.2.2(2)(d) shall be supervised where required by the applicable occupancy chapter, Chapters 12 through 42.

11.6* Vehicles and Vessels.

11.6.1 Vehicles. Where immobile, attached to a building, or permanently fixed to a foundation, and where subject to human occupancy, the following vehicles shall comply with the requirements of this Code that are appropriate to buildings of similar occupancy:

(1) Trailers
(2) Railroad cars
(3) Streetcars
(4) Buses
(5) Conveyances similar to those in 11.6.1(1) through (4)

11.6.2 Vessels. Any ship, barge, or other vessel permanently fixed to a foundation or mooring, or unable to get underway by means of its own power, and occupied for purposes other than navigation shall be subject to the requirements of this Code that apply to buildings of similar occupancy.


11.7.1 Application. The provisions of Section 11.1 shall apply.

11.7.2 Special Definitions. A list of special terms used in Section 11.7 follows:

(1) Limited Access Structure. See 3.3.271.3.
(2) Underground Structure. See 3.3.271.11.


11.7.3.1 A structure or portion of a structure that does not have openings in compliance with 11.7.3.1.1 and 11.7.3.1.2 shall be designated as a limited access structure and shall comply with 11.7.3.4 and 11.7.3.5.

11.7.3.1.1 One-Story Structures. One-story structures shall have finished ground level doors or emergency access openings in accordance with 11.7.3.2 on two sides of the building, spaced not more than 125 ft (38 m) apart on the exterior walls.

11.7.3.1.2 Multiple-Story Structures. Multiple-story structures shall comply with the following:

(1) The story at the finished ground level shall comply with 11.7.3.1.1.
(2) Other stories shall be provided with emergency access openings in accordance with 11.7.3.2 on two sides of the building, spaced not more than 30 ft (9.1 m) apart.

11.7.3.2 Emergency access openings shall consist of a window, panel, or similar opening that complies with all of the following:

(1) The opening shall have dimensions of not less than 22 in. (560 mm) in width and 24 in. (610 mm) in height and shall be unobstructed to allow for ventilation and rescue operations from the exterior.
(2) The bottom of the opening shall be not more than 44 in. (1120 mm) above the floor.
(3) The opening shall be readily identifiable from both the exterior and interior.
(4) The opening shall be readily openable from both the exterior and interior.

11.7.3.3 A structure or portion of a structure shall not be considered an underground structure if the story is provided, on not less than two sides, with not less than 20 ft² (1.9 m²) of emergency access opening located entirely above the adjoining finished ground level in each 50 lineal ft (15 lineal m) of exterior enclosing wall area.

11.7.3.4 Underground and limited access structures, and all areas and floor levels traversed in traveling to the exit discharge, shall be protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7, unless such structures meet one of the following criteria:
(1) They have an occupant load of 50 or fewer persons in new underground or limited access portions of the structure.

(2) They have an occupant load of 100 or fewer persons in existing underground or limited access portions of the structure.

(3) The structure is a one-story underground or limited access structure that is permitted to have a single exit per Chapters 12 through 43, with a common path of travel not greater than 50 ft (15 m).

11.7.3.5 Underground or limited access portions of structures and all areas traversed in traveling to the exit discharge, other than in one- and two-family dwellings, shall be provided with emergency lighting in accordance with Section 7.9.

11.7.4 Additional Provisions for Underground Structures.

11.7.4.1 A structure or portion of a structure shall not be considered an underground structure if the story is provided, on not less than two sides, with not less than 20 ft² (1.9 m²) of emergency access opening located entirely above the adjoining finished ground level in each 50 lineal ft (15 lineal m) of exterior enclosing wall area.

11.7.4.2 The requirements of 11.7.3 shall apply.

11.7.4.3 Exits from underground structures with an occupant load of more than 100 persons in the underground portions of the structure and having a floor used for human occupancy located more than 30 ft (9.1 m) below the lowest level of exit discharge, or having more than one level located below the lowest level of exit discharge, shall be provided with outside smoke-venting facilities or other means to prevent the exits from becoming charged with smoke from any fire in the areas served by the exits.

11.7.4.4 The underground portions of an underground structure, other than an existing underground structure, shall be provided with approved automatic smoke venting in accordance with Section 9.3 where the underground structure has the following features:

(1) Occupant load of more than 100 persons in the underground portions of the structure

(2) Floor level used for human occupancy located more than 30 ft (9.1 m) below the lowest level of exit discharge, or having more than one level located below the lowest level of exit discharge

(3) Combustible contents, combustible interior finish, or combustible construction

11.7.4.5 Exit stair enclosures in underground structures having a floor level used for human occupancy located more than 30 ft (9.1 m) below the lowest level of exit discharge, or having more than one level located below the lowest level of exit discharge, shall be provided with signage in accordance with 7.2.2.5.4 at each floor level landing traversed in traveling to the exit discharge. The signs shall include a chevron-shaped indicator to show direction to the exit discharge.

11.8 High-Rise Buildings.

11.8.1 General.

11.8.1.1 The provisions of Section 11.8 shall apply to the following:

(1) New high-rise buildings, as defined in 3.3.36.7

(2) Existing high-rise buildings as required by Chapters 13, 15, 17, 19, 21, 23, 26, 29, 31, 33, 37, 39, 40, 41, or 43

11.8.1.2 In addition to the requirements of Section 11.8, compliance with all other applicable provisions of this Code shall be required.

11.8.2 Means of Egress Requirements.

11.8.2.1 Reserved.

11.8.2.2 Elevator Lobby Exit Access Door Locking. In other than newly constructed high-rise buildings, locks in accordance with 7.2.1.6.3 shall be permitted.
11.8.3 Extinguishing Requirements.

11.8.3.1* High-rise buildings shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7. A sprinkler control valve and a waterflow device shall be provided for each floor.

11.8.3.2 High-rise buildings shall be protected throughout by a Class I standpipe system in accordance with Section 9.7.

11.8.4 Detection, Alarm, and Communications Systems.

11.8.4.1* A fire alarm system using an approved emergency voice/alarm communication system shall be installed in accordance with Section 9.6.

11.8.4.2 Two-way telephone service shall be in accordance with 11.8.4.2.1 and 11.8.4.2.2.

11.8.4.2.1 Two-way telephone communication service shall be provided for fire department use. This system shall be in accordance with NFPA 72, National Fire Alarm and Signaling Code. The communications system shall operate between the emergency command center and every elevator car, every elevator lobby, and each floor level of exit stairs.

11.8.4.2.2 The requirement of 11.8.4.2.1 shall not apply where the fire department radio system is approved as an equivalent system.

11.8.5 Emergency Lighting and Standby Power.

11.8.5.1 Emergency lighting in accordance with Section 7.9 shall be provided.

11.8.5.2 Requirements for standby power shall be as specified in 11.8.5.2.1 through 11.8.5.2.4.

11.8.5.2.1 Type 60, Class 1, Level 1, standby power in accordance with Article 701 of NFPA 70, National Electrical Code, and NFPA 110, Standard for Emergency and Standby Power Systems, shall be provided.

11.8.5.2.2 The standby power system shall have a capacity and rating sufficient to supply all equipment required to be connected by 11.8.5.2.4.

11.8.5.2.3 Selective load pickup and load shedding shall be permitted in accordance with NFPA 70, National Electrical Code.

11.8.5.2.4 The standby power system shall be connected to the following:

1. Electric fire pump
2. Jockey pump, except as otherwise provided in 40.4.2 for special-purpose industrial occupancies
3. Air compressor serving dry-pipe and pre-action systems, except as otherwise provided in 40.4.2 for special-purpose industrial occupancies
4. Emergency command center equipment and lighting
5. Not less than one elevator serving all floors, with standby power transferable to any elevator
6. Mechanical equipment for smokeproof enclosures
7. Mechanical equipment required to conform with the requirements of Section 9.3

11.8.5.3 Power for detection, alarm, and communications systems shall be in accordance with NFPA 72, National Fire Alarm and Signaling Code.

11.8.6* Emergency Command Center.

11.8.6.1 An emergency command center shall be provided in a location approved by the fire department.

11.8.6.2 The emergency command center shall contain the following:

1. Voice fire alarm system panels and controls
2. Fire department two-way telephone communication service panels and controls where required by another section of this Code
3. Fire detection and fire alarm system annunciation panels
4. Elevator floor location and operation annunciators
(5) Elevator fire recall switch in accordance with ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*

(6) Elevator emergency power selector switch(es) where provided in accordance with ASME A17.1/CSA B44

(7) Sprinkler valve and waterflow annunciators

(8) Emergency generator status indicators

(9) Controls for any automatic stairway door unlocking system

(10) Fire pump status indicators

(11) Telephone for fire department use with controlled access to the public telephone system

11.8.7 **Emergency Plans.** *Emergency Action Plans.* Emergency plans shall be provided in accordance with 4.8.2.

11.9 **Permanent Membrane Structures.**

11.9.1 **Application.**

11.9.1.1 **General.** The provisions of Section 11.1 shall apply.

11.9.1.2 **Use of Membrane Roofs.** Membrane roofs shall be used in accordance with the following:

(1) Membrane materials shall not be used where fire resistance ratings are required for walls or roofs.

(2) Where every part of the roof, including the roof membrane, is not less than 20 ft (6100 mm) above any floor, balcony, or gallery, a noncombustible or limited-combustible membrane shall be permitted to be used as the roof in any construction type.

(3) With approval of the authority having jurisdiction, membrane materials shall be permitted to be used where every part of the roof membrane is sufficiently above every significant fire potential, such that the imposed temperature cannot exceed the capability of the membrane, including seams, to maintain its structural integrity.

11.9.1.3 **Testing.** Testing of membrane materials for compliance with the requirements of Section 11.9 for use of the categories of noncombustible and limited-combustible materials shall be performed on weathered-membrane material, as defined in 3.3.169.5.

11.9.1.4 **Flame Spread Index.** The flame spread index of all membrane materials exposed within the structure shall be Class A in accordance with Section 10.2.

11.9.1.5 **Roof Covering Classification.** Roof membranes shall have a roof covering classification, as required by the applicable building codes, when tested in accordance with ASTM E 108, *Standard Test Methods for Fire Tests of Roof Coverings*, or ANSI/UL 790, *Test Methods for Fire Tests of Roof Coverings*.

11.9.1.6 **Flame Propagation Performance.**


11.9.1.6.2 One of the following shall serve as evidence that the fabric materials have the required flame propagation performance:

(1) The authority having jurisdiction shall require a certificate or other evidence of acceptance by an organization acceptable to the authority having jurisdiction.

(2) The authority having jurisdiction shall require a report of tests made by other inspection authorities or organizations acceptable to the authority having jurisdiction.

11.9.1.6.3 Where required by the authority having jurisdiction, confirmatory field tests shall be conducted using test specimens from the original material, which shall have been affixed at the time of manufacture to the exterior of the structure.

11.9.2 **Tensioned-Membrane Structures.**
11.9.2.1 The design, materials, and construction of the building shall be based on plans and specifications prepared by a licensed architect or engineer knowledgeable in tensioned-membrane construction.

11.9.2.2 Material loads and strength shall be based on physical properties of the materials verified and certified by an approved testing laboratory.

11.9.2.3 The membrane roof for structures in climates subject to freezing temperatures and ice buildup shall be composed of two layers separated by an air space through which heated air can be moved to guard against ice accumulation. As an alternative to the two layers, other approved methods that protect against ice accumulation shall be permitted.

11.9.2.4 Roof drains shall be equipped with electrical elements to protect against ice buildup that can prevent the drains from functioning. Such heating elements shall be served by on-site standby electrical power in addition to the normal public service. As an alternative to such electrical elements, other approved methods that protect against ice accumulation shall be permitted.

11.9.3 Air-Supported and Air-Inflated Structures.

11.9.3.1 General. In addition to the general provisions of 11.9.1, the requirements of 11.9.3 shall apply to air-supported and air-inflated structures.

11.9.3.2 Pressurization (Inflation) System. The pressurization system shall consist of one or more operating blower units. The system shall include automatic control of auxiliary blower units to maintain the required operating pressure. Such equipment shall meet the following requirements:
   (1) Blowers shall be powered by continuous-rated motors at the maximum power required.
   (2) Blowers shall have personnel protection, such as inlet screens and belt guards.
   (3) Blower systems shall be weather protected.
   (4) Blower systems shall be equipped with backdraft check dampers.
   (5) Not less than two blower units shall be provided, each of which has capacity to maintain full inflation pressure with normal leakage.
   (6) Blowers shall be designed to be incapable of overpressurization.
   (7) The auxiliary blower unit(s) shall operate automatically if there is any loss of internal pressure or if an operating blower unit becomes inoperative.
   (8) The design inflation pressure and the capacity of each blower system shall be certified by a professional engineer.

11.9.3.3 Standby Power System.

11.9.3.3.1 A fully automatic standby power system shall be provided. The system shall be either an auxiliary engine generator set capable of running the blower system or a supplementary blower unit that is sized for 1 times the normal operating capacity and is powered by an internal combustion engine.

11.9.3.3.2 The standby power system shall be fully automatic to ensure continuous inflation in the event of any failure of the primary power. The system shall be capable of operating continuously for a minimum of 4 hours.

11.9.3.3.3 The sizing and capacity of the standby power system shall be certified by a professional engineer.

11.9.4 Maintenance and Operation.

11.9.4.1 Instructions in both operation and maintenance shall be transmitted to the owner by the manufacturer of the tensioned-membrane, air-supported, or air-inflated structure.

11.9.4.2 Annual inspection and required maintenance of each structure shall be performed to ensure safety conditions. At least biennially, the inspection shall be performed by a professional engineer, registered architect, or individual certified by the manufacturer.

11.9.5 Services.

11.9.5.1 Fired Heaters.
11.9.5.1.1 Only labeled heating devices shall be used.
11.9.5.1.2 Fuel-fired heaters and their installation shall be approved by the authority having jurisdiction.
11.9.5.1.3 Containers for liquefied petroleum gases shall be installed not less than 60 in. (1525 mm) from any temporary membrane structure and shall be in accordance with the provisions of NFPA 58, *Liquefied Petroleum Gas Code*.
11.9.5.1.4 Tanks shall be secured in the upright position and protected from vehicular traffic.

11.9.5 Electric Heaters.
11.9.5.2.1 Only labeled heaters shall be permitted.
11.9.5.2.2 Electric heaters, their placement, and their installation shall be approved by the authority having jurisdiction.
11.9.5.2.3 Heaters shall be connected to electricity by electric cable that is suitable for outside use and is of sufficient size to handle the electrical load.

11.10 Temporary Membrane Structures.

11.10.1 Application.
11.10.1.1 General. The provisions of Section 11.1 shall apply.
11.10.1.2 Required Approval. Membrane structures designed to meet all the requirements of Section 11.10 shall be permitted to be used as temporary buildings subject to the approval of the authority having jurisdiction.
11.10.1.3 Alternative Requirements. Temporary tensioned-membrane structures shall be permitted to comply with Section 11.11 instead of Section 11.10.

11.10.1.4 Roof Covering Classification. Roof membranes shall have a roof covering classification, as required by the applicable building codes, when tested in accordance with ASTM E 108, *Standard Test Methods for Fire Tests of Roof Coverings*, or ANSI/UL 790, *Test Methods for Fire Tests of Roof Coverings*.

11.10.1.5 Flame Propagation Performance.
11.10.1.5.1 All membrane structure fabric shall meet the flame propagation performance criteria contained in NFPA 701, *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*.
11.10.1.5.2 One of the following shall serve as evidence that the fabric materials have the required flame propagation performance:
   (1) The authority having jurisdiction shall require a certificate or other evidence of acceptance by an organization acceptable to the authority having jurisdiction.
   (2) The authority having jurisdiction shall require a report of tests made by other inspection authorities or organizations acceptable to the authority having jurisdiction.
11.10.1.5.3 Where required by the authority having jurisdiction, confirmatory field tests shall be conducted using test specimens from the original material, which shall have been affixed at the time of manufacture to the exterior of the structure.

11.10.2 Fire Hazards.
11.10.2.1 The finished ground level enclosed by any temporary membrane structure, and the finished ground level for a reasonable distance but for not less than 10 ft (3050 mm) outside of such a structure, shall be cleared of all flammable or combustible material or vegetation that is not used for necessary support equipment. The clearing work shall be accomplished to the satisfaction of the authority having jurisdiction prior to the erection of such a structure. The premises shall be kept free from such flammable or combustible materials during the period for which the premises are used by the public.
11.10.2.2 Where prohibited by the authority having jurisdiction, smoking shall not be permitted in any temporary membrane structure.
11.10.3 Fire-Extinguishing Equipment. Portable fire-extinguishing equipment of approved types shall be furnished and maintained in temporary membrane structures in such quantity and in such locations as directed by the authority having jurisdiction.

11.10.4 Tensioned-Membrane Structures.
11.10.4.1 The design, materials, and construction of the building shall be based on plans and specifications prepared by a licensed architect or engineer knowledgeable in tensioned-membrane construction.
11.10.4.2 Material loads and strength shall be based on physical properties of the materials verified and certified by an approved testing laboratory.
11.10.4.3 The membrane roof for structures in climates subject to freezing temperatures and ice buildup shall be composed of two layers separated by an air space through which heated air can be moved to guard against ice accumulation. As an alternative to the two layers, other approved methods that protect against ice accumulation shall be permitted.
11.10.4.4 Roof drains shall be equipped with electrical elements to protect against ice buildup that can prevent the drains from functioning. Such heating elements shall be served by on-site standby electrical power in addition to the normal public service. As an alternative to such electrical elements, other approved methods that protect against ice accumulation shall be permitted.

11.10.5 Air-Supported and Air-Inflated Structures.
11.10.5.1 General. In addition to the general provisions of 11.10.1, the requirements of 11.10.5 shall apply to air-supported and air-inflated structures.

11.10.5.2 Pressurization (Inflation) System. The pressurization system shall consist of one or more operating blower units. The system shall include automatic control of auxiliary blower units to maintain the required operating pressure. Such equipment shall meet the following requirements:

(1) Blowers shall be powered by continuous-rated motors at the maximum power required.
(2) Blowers shall have personnel protection, such as inlet screens and belt guards.
(3) Blower systems shall be weather protected.
(4) Blower systems shall be equipped with backdraft check dampers.
(5) Not less than two blower units shall be provided, each of which has capacity to maintain full inflation pressure with normal leakage.
(6) Blowers shall be designed to be incapable of overpressurization.
(7) The auxiliary blower unit(s) shall operate automatically if there is any loss of internal pressure or if an operating blower unit becomes inoperative.
(8) The design inflation pressure and the capacity of each blower system shall be certified by a professional engineer.

11.10.5.3 Standby Power System.
11.10.5.3.1 A fully automatic standby power system shall be provided. The system shall be either an auxiliary engine generator set capable of running the blower system or a supplementary blower unit that is sized for 1 times the normal operating capacity and is powered by an internal combustion engine.
11.10.5.3.2 The standby power system shall be fully automatic to ensure continuous inflation in the event of any failure of the primary power. The system shall be capable of operating continuously for a minimum of 4 hours.
11.10.5.3.3 The sizing and capacity of the standby power system shall be certified by a professional engineer.

11.10.6 Maintenance and Operation.
11.10.6.1 Instructions in both operation and maintenance shall be transmitted to the owner by the manufacturer of the tensioned-membrane, air-supported, or air-inflated structure.
11.10.6.2 Annual inspection and required maintenance of each structure shall be performed to ensure safety conditions. At least biennially, the inspection shall be performed by a professional engineer, registered architect, or individual certified by the manufacturer.

11.10.7 Services.

11.10.7.1 Fired Heaters.
11.10.7.1.1 Only labeled heating devices shall be used.
11.10.7.1.2 Fuel-fired heaters and their installation shall be approved by the authority having jurisdiction.
11.10.7.1.3 Containers for liquefied petroleum gases shall be installed not less than 60 in. (1525 mm) from any temporary membrane structure and shall be in accordance with the provisions of NFPA 58, *Liquefied Petroleum Gas Code*.
11.10.7.1.4 Tanks shall be secured in the upright position and protected from vehicular traffic.

11.10.7.2 Electric Heaters.
11.10.7.2.1 Only labeled heaters shall be permitted.
11.10.7.2.2 Heaters used inside a temporary membrane structure shall be approved.
11.10.7.2.3 Heaters shall be connected to electricity by electric cable that is suitable for outside use and is of sufficient size to handle the electrical load.

11.11 Tents.

11.11.1 General.
11.11.1.1 The provisions of Section 11.1 shall apply.
11.11.1.2 Tents shall be permitted only on a temporary basis.
11.11.1.3 Tents shall be erected to cover not more than 75 percent of the premises, unless otherwise approved by the authority having jurisdiction.

11.11.2 Flame Propagation Performance.
11.11.2.1 All tent fabric shall meet the flame propagation performance criteria contained in NFPA 701, *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*.
11.11.2.2 One of the following shall serve as evidence that the tent fabric materials have the required flame propagation performance:

- (1) The authority having jurisdiction shall require a certificate or other evidence of acceptance by an organization acceptable to the authority having jurisdiction.
- (2) The authority having jurisdiction shall require a report of tests made by other inspection authorities or organizations acceptable to the authority having jurisdiction.

11.11.2.3 Where required by the authority having jurisdiction, confirmatory field tests shall be conducted using test specimens from the original material, which shall have been affixed at the time of manufacture to the exterior of the tent.

11.11.3 Location and Spacing.
11.11.3.1 There shall be a minimum of 10 ft (3050 mm) between stake lines.
11.11.3.2 Adjacent tents shall be spaced to provide an area to be used as a means of emergency egress. Where 10 ft (3050 mm) between stake lines does not meet the requirements for means of egress, the distance necessary for means of egress shall govern.

11.11.3.3 Tents not occupied by the public and not used for the storage of combustible material shall be permitted to be erected less than 10 ft (3050 mm) from other structures where the authority having jurisdiction deems such close spacing to be safe from hazard to the public.
11.11.3.4 Tents, each not exceeding 1200 ft² (112 m²) in finished ground level area and located in fairgrounds or similar open spaces, shall not be required to be separated from each other, provided that safety precautions meet the approval of the authority having jurisdiction.
The placement of tents relative to other structures shall be at the discretion of the authority having jurisdiction, with consideration given to occupancy, use, opening, exposure, and other similar factors.

Fire Hazards.

The finished ground level enclosed by any tent, and the finished ground level for a reasonable distance, but for not less than 10 ft (3050 mm) outside of such a tent, shall be cleared of all flammable or combustible material or vegetation that is not used for necessary support equipment. The clearing work shall be accomplished to the satisfaction of the authority having jurisdiction prior to the erection of such a tent. The premises shall be kept free from such flammable or combustible materials during the period for which the premises are used by the public.

Smoking.

Smoking shall not be permitted in any tent, unless approved by the authority having jurisdiction.

In rooms or areas where smoking is prohibited, plainly visible signs shall be posted that read as follows:

NO SMOKING

Fire-Extinguishing Equipment. Portable fire-extinguishing equipment of approved types shall be furnished and maintained in tents in such quantity and in such locations as directed by the authority having jurisdiction.

Services.

Fired Heaters.

Only labeled heating devices shall be used.

Fuel-fired heaters and their installation shall be approved by the authority having jurisdiction.

Containers for liquefied petroleum gases shall be installed not less than 60 in. (1525 mm) from any tent and shall be in accordance with the provisions of NFPA 58, Liquefied Petroleum Gas Code.

Tanks shall be secured in the upright position and protected from vehicular traffic.

Electric Heaters.

Only labeled heaters shall be permitted.

Heaters used inside a tent shall be approved.

Heaters shall be connected to electricity by electric cable that is suitable for outside use and is of sufficient size to handle the electrical load.

Chapter 40 Industrial Occupancies

General Requirements.

Application.

The requirements of this chapter shall apply to both new and existing industrial occupancies.

Administration. The provisions of Chapter 1, Administration, shall apply.

General. The provisions of Chapter 4, General, shall apply.

Industrial occupancies shall include factories making products of all kinds and properties used for operations such as processing, assembling, mixing, packaging, finishing or decorating, repairing, and similar operations.

Incidental high hazard operations protected in accordance with Section 8.7 and 40.3.2 in occupancies containing low or ordinary hazard contents shall not be the basis for high hazard industrial occupancy classification.

Classification of Occupancy. Classification of occupancy shall be in accordance with 6.1.12.
40.1.2.1 Subclassification of Occupancy. Each industrial occupancy shall be subclassified according to its use as described in 40.1.2.1.1, 40.1.2.1.2, and 40.1.2.1.3.

40.1.2.1.1 General Industrial Occupancy. General industrial occupancies shall include all of the following:
(1) Industrial occupancies that conduct ordinary and low hazard industrial operations in buildings of conventional design that are usable for various types of industrial processes
(2) Industrial occupancies that include multistory buildings where floors are occupied by different tenants, or buildings that are usable for such occupancy and, therefore, are subject to possible use for types of industrial processes with a high density of employee population

40.1.2.1.2 Special-Purpose Industrial Occupancy. Special-purpose industrial occupancies shall include all of the following:
(1) Industrial occupancies that conduct ordinary and low hazard industrial operations in buildings designed for, and that are usable only for, particular types of operations
(2) Industrial occupancies that are characterized by a relatively low density of employee population, with much of the area occupied by machinery or equipment

40.1.2.1.3 High-Hazard Industrial Occupancy. High-hazard industrial occupancies shall include all of the following:
(1) Industrial occupancies that conduct industrial operations that use high-hazard materials or processes or house high-hazard contents in excess of the maximum allowable quantities (MAQ) as permitted by the fire code.
(2) Industrial occupancies in which incidental high-hazard operations in low- or ordinary-hazard occupancies that are protected in accordance with Section 8.7 and 40.3.2 are not required to be the basis for overall occupancy classification.

40.1.2.2 Change of Industrial Occupancy Subclassification. A change from one subclassification of industrial occupancy to another shall comply with Chapter 43.

40.1.3 Multiple Occupancies. All multiple occupancies shall be in accordance with 6.1.14.

40.1.4 Definitions.
40.1.4.1 General. For definitions, see Chapter 3, Definitions.
40.1.4.2 Special Definitions. Special terms applicable to this chapter are defined in Chapter 3.

40.1.5 Classification of Hazard of Contents. Classification of hazard of contents shall be in accordance with Section 6.2.

40.1.6 Minimum Construction Requirements. (No requirements. Reserved.)

40.1.7* Occupant Load. The occupant load, in number of persons for whom means of egress and other provisions are required, shall be determined on the basis of the occupant load factors of Table 7.3.1.2 that are characteristic of the use of the space, or shall be determined as the maximum probable population of the space under consideration, whichever is greater.

40.2 Means of Egress Requirements.
40.2.1 General.
40.2.1.1 Each required means of egress shall be in accordance with the applicable portions of Chapter 7.

40.2.2* Means of Egress Components. Normally unoccupied utility chases that are secured from unauthorized access and are used exclusively for routing of electrical, mechanical, or plumbing equipment shall not be required to comply with the provisions of Chapter 7.
40.2.2.1 Components Permitted General. Components of means of egress shall be limited to the types described in 40.2.2.2 through 40.2.2.13.

40.2.2.2 Doors.

40.2.2.2.1 Doors complying with 7.2.1 shall be permitted.

40.2.2.2.2 Delayed-egress locks complying with 7.2.1.6.1 shall be permitted.

40.2.2.2.3 Access-controlled egress doors complying with 7.2.1.6.2 shall be permitted.

40.2.2.2.4 Locks in accordance with 7.2.1.6.3 shall be permitted.

40.2.2.2.4* Approved existing horizontal-sliding fire doors shall be permitted in the means of egress where they comply with all of the following conditions:

1. They are held open by fusible links.
2. The fusible links are rated at not less than 165°F (74°C).
3. The fusible links are located not more than 10 ft (3050 mm) above the floor.
4. The fusible links are in immediate proximity to the door opening.
5. The fusible links are located above a ceiling.
6. The door is not credited with providing any protection under this Code.

40.2.2.3 Stairs.

40.2.2.3.1 Stairs shall comply with 7.2.2 and shall be permitted to be modified by any of the following:

1. Noncombustible grated stair treads and noncombustible grated landing floors shall be permitted.
2. Industrial equipment access stairs in accordance with 40.2.5.2 shall be permitted.

40.2.2.3.2 Spiral stairs complying with 7.2.2.2.3 shall be permitted.

40.2.2.3.3 Existing winders complying with 7.2.2.2.4 shall be permitted.

40.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 7.2.3 shall be permitted.

40.2.2.5 Horizontal Exits.

40.2.2.5.1 Horizontal exits complying with 7.2.4 shall be permitted.

40.2.2.5.2* In horizontal exits where the opening is protected by a fire door assembly on each side of the wall in which it is located, one fire door shall be of the swinging type, as provided in 7.2.4.3.78, and the other shall be permitted to be an automatic-sliding fire door that shall be kept open whenever the building is occupied.

40.2.2.6 Ramps. Ramps shall comply with 7.2.5, except that industrial equipment access ramps shall be permitted to be in accordance with 40.2.5.2. Ramps complying with any of the following shall be permitted:

1. Ramps in accordance with 7.2.5
(2) Industrial equipment access in accordance with 40.2.5.2.

40.2.2.7 Exit Passageways. Exit passageways complying with 7.2.6 shall be permitted.
40.2.2.8 Escalators and Moving Walks. Existing previously approved escalators and moving walks complying with 7.2.7 and located within the required means of egress shall be permitted.
40.2.2.9 Fire Escape Stairs. Existing fire escape stairs complying with 7.2.8 shall be permitted.
40.2.2.10 Fire Escape Ladders.
40.2.2.10.1 Fire escape ladders complying with 7.2.9 shall be permitted.
40.2.2.10.2 Fixed industrial stairs in accordance with the minimum requirements for fixed stairs in ANSI A1264.1, Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems, shall be permitted where fire escape ladders are permitted in accordance with 7.2.9.1.
40.2.2.11 Slide Escapes.
40.2.2.11.1 Approved slide escapes complying with 7.2.10 shall be permitted as components in 100 percent of the required means of egress for both new and existing high hazard industrial occupancies.
40.2.2.11.2 Slide escapes permitted by 40.2.2.11.1 shall be counted as means of egress only where regularly used in emergency egress drills to ensure that occupants are familiar with their use through practice.
40.2.2.12 Alternating Tread Devices. Alternating tread devices complying with 7.2.11 shall be permitted.
40.2.2.13 Areas of Refuge. Areas of refuge complying with 7.2.12 shall be permitted.
40.2.3 Capacity of Means of Egress. Capacity of means of egress shall comply with either 40.2.3.1 or 40.2.3.2.
40.2.3.1 The capacity of means of egress shall be in accordance with Section 7.3.
40.2.3.2 In industrial occupancies, means of egress shall be sized to accommodate the occupant load as determined in accordance with 40.1.7; spaces not subject to human occupancy because of the presence of machinery or equipment shall not be included in the computation.
40.2.4 Number of Means of Egress. See also Section 7.4.
40.2.4.1 The number of means of egress shall comply with either 40.2.4.1.1 or 40.2.4.1.2.
40.2.4.1.1 Not less than two means of egress shall be provided from every story or section, and not less than one exit shall be reached without traversing another story.
40.2.4.1.2 A single means of egress shall be permitted from any story or section in low and ordinary hazard industrial occupancies, provided that the exit can be reached within the distance permitted as a common path of travel.
40.2.4.2 In new buildings, floors or portions thereof with an occupant load of more than 500 shall have the minimum number of separate and remote means of egress specified by 7.4.1.2.
40.2.4.3 Areas with high hazard contents shall comply with Section 7.11.

Table 40.2.5.1 Arrangement of Means of Egress
### Level of Protection

<table>
<thead>
<tr>
<th>General Industrial Occupancy</th>
<th>Special-Purpose Industrial Occupancy</th>
<th>High Hazard Industrial Occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ft</td>
<td>m</td>
<td>ft</td>
</tr>
<tr>
<td><strong>Dead-End Corridor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td><strong>Common Path of Travel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>100</td>
<td>30</td>
</tr>
<tr>
<td>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>50</td>
<td>15</td>
</tr>
</tbody>
</table>

### Ancillary Facilities.

**40.2.5.42** Ancillary Facilities.

**40.2.5.42.1** New ancillary facilities shall be arranged to allow travel in independent directions after leaving the ancillary facility so that both means of egress paths do not become compromised by the same fire or similar emergency.

**40.2.5.42.2** New ancillary facilities in special-purpose industrial occupancies where delayed evacuation is anticipated shall have not less than a 2-hour fire resistance–rated separation from the predominant industrial occupancy, and shall have one means of egress that is separated from the predominant industrial occupancy by 2-hour fire resistance–rated construction.

### Industrial Equipment Access.

**40.2.5.23** Industrial Equipment Access.

**40.2.5.23.1** Industrial equipment access doors, walkways, platforms, ramps, and stairs that serve as a component of the means of egress from the involved equipment shall be permitted in accordance with the applicable provisions of Chapter 7, as modified by Table 40.2.5.2.1.

### Table 40.2.5.23.1 Industrial Equipment Access Dimensional Criteria

<table>
<thead>
<tr>
<th>Feature</th>
<th>Dimensional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum horizontal dimension of any walkway, landing, or platform</td>
<td>22 in. (560 mm) clear</td>
</tr>
<tr>
<td>Minimum stair or ramp width</td>
<td>22 in. (560 mm) clear between rails</td>
</tr>
<tr>
<td>Minimum tread width</td>
<td>22 in. (560 mm) clear</td>
</tr>
</tbody>
</table>
Minimum tread depth
10 in. (255 mm)

Maximum riser height
9 in. (230 mm)

Handrails are permitted to terminate, at the required height, at a point directly above the top and bottom risers.

Maximum height between landings
12 ft (3660 mm)

Minimum headroom
6 ft 8 in. (2030 mm)

Minimum width of door openings
22 in. (560 mm) clear

40.2.5.2 Any means of egress component permitted by 40.2.5.2.1 shall serve not more than 20 people.

40.2.6 Travel Distance to Exits.

40.2.6.1 Travel distance, measured in accordance with Section 7.6, shall not exceed that provided by Table 40.2.6.1.

<table>
<thead>
<tr>
<th>Level of Protection</th>
<th>General Industrial Occupancy</th>
<th>Special-Purpose Industrial Occupancy</th>
<th>High Hazard Industrial Occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ft</td>
<td>m</td>
<td>ft</td>
</tr>
<tr>
<td>Protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>250†</td>
<td>76†</td>
<td>400</td>
</tr>
<tr>
<td>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>200</td>
<td>61</td>
<td>300</td>
</tr>
</tbody>
</table>

NP: Not permitted.
† In one-story buildings, a travel distance of 400 ft (122 m) is permitted, provided that a performance-based analysis demonstrates that safe egress can be accomplished.


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40.2.7 Discharge from Exits.
40.2.7.1 Discharge from exits shall be in accordance with Section 7.7.
40.2.7.2 Occupant travel to the public way shall be permitted to be delayed within the exit discharge in accordance with 7.7.7.

40.2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 7.8 or with natural lighting that provides the required level of illumination in structures occupied only during daylight hours.

40.2.9* Emergency Lighting.

40.2.9.1 Emergency lighting shall be provided in accordance with Section 7.9, except as otherwise exempted by 40.2.9.2.

40.2.9.2 Emergency lighting shall not be required for any of the following:
(1) Special-purpose industrial occupancies without routine human habitation
(2) Structures occupied only during daylight hours, with skylights or windows arranged to provide the required level of illumination on all portions of the means of egress during such hours

40.2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 7.10.

40.2.11 Special Means of Egress Features.
40.2.11.1 Reserved.
40.2.11.2 Lockups.
40.2.11.2.1 Lockups in new industrial occupancies shall comply with the requirements of 22.4.5.
40.2.11.2.2 Lockups in existing industrial occupancies, other than approved existing lockups, shall comply with the requirements of 23.4.5.

40.3 Protection.

40.3.1 Protection of Vertical Openings. Any vertical opening shall be protected in accordance with Section 8.6, unless otherwise permitted by one of the following:
(1) In special-purpose industrial and high-hazard industrial occupancies where unprotected vertical openings exist and are necessary to manufacturing operations, such openings shall be permitted beyond the specified limits, provided that every floor level has direct access to one or more
enclosed stairs or other exits protected against obstruction by any fire or smoke in the open areas connected by the unprotected vertical openings.

(2) Approved existing open stairs, existing open ramps, and existing escalators shall be permitted where connecting only two floor levels.

(3) Approved, existing, unprotected vertical openings in buildings with low- or ordinary-hazard contents that are protected throughout by an approved automatic sprinkler system in accordance with 9.7.1.1(1) shall be permitted, provided that the following conditions exist:
   (a) The vertical opening does not serve as a required exit.
   (b) All required exits consist of outside stairs in accordance with 7.2.2, smokeproof enclosures in accordance with 7.2.3, or horizontal exits in accordance with 7.2.4.

(4) Vertical openings in accordance with 8.6.9.1 shall be permitted.

(5) Vertical openings in accordance with 8.6.9.2 shall be permitted.

40.3.2 Protection from Hazards.

40.3.2.1 All high hazard industrial occupancies, operations, or processes shall have approved, supervised automatic extinguishing systems in accordance with Section 9.7 or other protection appropriate to the particular hazard, such as explosion venting or suppression.

40.3.2.2 Protection in accordance with 40.3.2.1 shall be provided for any area subject to an explosion hazard in order to minimize danger to occupants in case of fire or other emergency before they have time to use exits to escape.

40.3.2.3 Activation of the fire-extinguishing or suppression system required by 40.3.2.1 shall initiate the required building fire alarm system in accordance with 40.3.4.3.4.

40.3.2.4 Hazardous areas in industrial occupancies protected by approved automatic extinguishing systems in accordance with Section 9.7 shall be exempt from the smoke-resisting enclosure requirement of 8.7.1.2.

40.3.2.5 Alcohol-based hand-rub dispensers in accordance with 8.7.3.3 shall be permitted.

40.3.2.6 Commercial cooking equipment shall be protected in accordance with NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations. (See Section 9.2.3.)

40.3.3 Interior Finish.

40.3.3.1 General. Interior finish shall be in accordance with Section 10.2.

40.3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A, Class B, or Class C in operating areas and shall be as required by 7.1.4 in exit enclosures.

40.3.3.3 Interior Floor Finish.
40.3.3.3.1 Interior floor finish in exit enclosures and in exit access corridors shall be not less than Class I or Class II in accordance with 10.2.7.4.

40.3.3.3.2 Interior floor finish in areas other than those specified in 40.3.3.3.1 shall not be required to comply with Section 10.2.7.

40.3.4 Detection, Alarm, and Communications Systems.

40.3.4.1 General. A fire alarm system shall be required in accordance with Section 9.6 for industrial occupancies, unless the total occupant load of the building is under 100 persons and unless, of these, fewer than 25 persons are above or below the level of exit discharge.

40.3.4.2 Initiation. Initiation of the required fire alarm system shall be by any of the following means:

1. Manual means in accordance with 9.6.2.1(1)
2. Approved automatic fire detection system in accordance with 9.6.2.1(2) throughout the building, plus a minimum of one manual fire alarm box in accordance with 9.6.2.6
3. Approved, supervised automatic sprinkler system in accordance with 9.6.2.1(3) throughout the building, plus a minimum of one manual fire alarm box in accordance with 9.6.2.6

40.3.4.3 Notification.

40.3.4.3.1 The required fire alarm system shall meet one of the following criteria:

1. It shall provide occupant notification in accordance with 9.6.3.
2. It shall sound an audible and visible signal in a constantly attended location for the purposes of initiating emergency action.

40.3.4.3.2 Positive alarm sequence in accordance with 9.6.3.4 shall be permitted.

40.3.4.3.3 Existing presignal systems in accordance with 9.6.3.3 shall be permitted.

40.3.4.3.4 In high hazard industrial occupancies, as described in 40.1.2.1.3, the required fire alarm system shall automatically initiate an occupant evacuation alarm signal in accordance with 9.6.3.

40.3.5 Extinguishment Requirements. (No requirements.) Reserved. (Reserved)

40.3.6 Corridors. The provisions of 7.1.3.1 shall not apply.

40.4 Special Provisions —

40.4.1 Limited Access or Underground Structures. Limited-access or underground structures shall comply with 11.7

40.4.2 High-Rise Buildings.

40.4.2.1 New high-rise industrial occupancies shall comply with Section 11.8.

40.4.2.2 The provisions of 11.8.5.2.4(2) for jockey pumps and 11.8.5.2.4(3) for air compressors serving dry-pipe and pre-action systems shall not apply to special-purpose industrial occupancies.

40.5 Building Services.

40.5.1 Utilities. Utilities shall comply with the provisions of Section 9.1.

40.5.2 Heating, Ventilating, and Air-Conditioning. Heating, ventilating, and air-conditioning equipment shall comply with the provisions of Section 9.2.
40.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 9.4.

40.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 9.5.

40.6+ Special Provisions for Aircraft Servicing Hangars.
40.6.1 The requirements of Sections 40.1 through 40.5 shall be met, except as modified by 40.6.1.1 through 40.6.1.4.
40.6.2 The requirements for exits from aircraft servicing areas shall comply with 40.6.2.1 through 40.6.2.4.
40.6.1.1 There shall be not less than two means of egress from each aircraft servicing area.
40.6.1.2 Exits from aircraft servicing areas shall be provided at intervals not exceeding 150 ft (46 m) on all exterior walls.
40.6.1.3 Where horizontal exits are provided, doors shall be provided in the horizontal exit fire barrier at intervals not exceeding 100 ft (30 m).
40.6.1.4 Where dwarf, or “smash,” doors are provided in doors that accommodate aircraft, such doors shall be permitted for compliance with 40.6.1.1 through 40.6.1.3.
40.6.23 Means of egress from mezzanine floors in aircraft servicing areas shall be arranged so that the travel distance to the nearest exit from any point on the mezzanine does not exceed 75 ft (23 m), and such means of egress shall lead directly to a properly enclosed stair discharging directly to the exterior, to a suitable cutoff area, or to outside stairs.
40.6.34 Dead ends shall not exceed 50 ft (15 m) for other than high-risk-hazard contents areas and shall not be permitted for high-risk-hazard contents areas.

40.7 Operating Features.
40.7.1 Upholstered Furniture and Mattresses. The provisions of 10.3.2 shall not apply to upholstered furniture and mattresses.
40.7.2 Soiled Linen and Trash Receptacles. The requirements of 10.3.9 for containers for rubbish, waste, or linen with a capacity of 20 gal (75.7 L) or more shall not apply.

Chapter 42 Storage Occupancies

42.1 General Requirements.
42.1.1 Application.
42.1.1.1 The requirements of this chapter shall apply to both new and existing storage occupancies.
42.1.1.2 Administration. The provisions of Chapter 1, Administration, shall apply.
42.1.1.3 General. The provisions of Chapter 4, General, shall apply.
42.1.1.4 Storage occupancies shall include all buildings or structures used primarily for the storage or sheltering of goods, merchandise, products, or vehicles.
42.1.2 Classification of Occupancy.
42.1.2.1 Storage occupancies shall include all buildings and structures or parts thereof with occupancy as defined in 6.1.13.
42.1.2.2 Incidental storage in another occupancy shall not be the basis for overall occupancy classification.

42.1.2.3 Storage occupancies or areas of storage occupancies that are used for the purpose of packaging, labeling, sorting, special handling, or other operations requiring an occupant load greater than that normally contemplated for storage shall be classified as industrial occupancies. (See Chapter 40.)

42.1.3 Multiple Occupancies. All multiple occupancies shall be in accordance with 6.1.14.

42.1.4 Definitions.

42.1.4.1 General. For definitions, see Chapter 3, Definitions.

42.1.4.2 Special Definitions. Special terms applicable to this chapter are defined in Chapter 3.

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42.1.5 Classification of Hazard of Contents.

42.1.5.1 Contents of storage occupancies shall be classified as low hazard, ordinary hazard, or high hazard in accordance with Section 6.2, depending on the quantity and character of the materials stored, their packaging, and other factors.

42.1.5.2 Hazardous materials that exceed the maximum allowable quantities (MAQ) as permitted in the fire code shall be classified as high-hazard contents.

42.1.6 Minimum Construction Requirements. (No requirements Reserved.)

42.1.7* Occupant Load. The occupant load, in number of persons for whom means of egress and other provisions are required, shall be determined on the basis of the maximum probable population of the space under consideration.

42.2 Means of Egress Requirements.

42.2.1 General.

42.2.1.1 Each required means of egress shall be in accordance with the applicable portions of Chapter 7.

42.2.1.2* Normally unoccupied utility chases that are secured from unauthorized access and are used exclusively for routing of electrical, mechanical, or plumbing equipment shall not be required to comply with the provisions of Chapter 7.

42.2.2 Means of Egress Components.

42.2.2.1 Components Permitted. Components of means of egress shall be limited to the types described in 42.2.2.2 through 42.2.2.12.

42.2.2.2 Doors.

42.2.2.2.1 Doors complying with 7.2.1 shall be permitted.

42.2.2.2.2 Delayed-egress locks complying with 7.2.1.6.1 shall be permitted.

42.2.2.2.3 Access-controlled egress doors complying with 7.2.1.6.2 shall be permitted.

42.2.2.4 Locks in accordance with 7.2.1.6.3 shall be permitted.

42.2.2.45 Approved existing horizontal-sliding fire doors shall be permitted in the means of egress where they comply with all of the following conditions:

(1) They are held open by fusible links.
(2) The fusible links are rated at not less than 165°F (74°C).
(3) The fusible links are located not more than 10 ft (3050 mm) above the floor.
42.2.2.3  Stairs.
42.2.2.3.1  Stairs shall comply with 7.2.2 and shall be permitted to be modified by any of the following:
(1) Noncombustible grated stair treads and noncombustible grated landing floors shall be permitted.
(2) Industrial equipment access stairs in accordance with 40.2.5.2 shall be permitted.
42.2.2.3.2  Spiral stairs complying with 7.2.2.2.3 shall be permitted.
42.2.2.3.3  Existing winders complying with 7.2.2.2.4 shall be permitted.
42.2.2.4  Smokeproof Enclosures. Smokeproof enclosures complying with 7.2.3 shall be permitted.
42.2.2.5  Horizontal Exits.
42.2.2.5.1  Horizontal exits complying with 7.2.4 shall be permitted.

42.2.2.5.2*  In horizontal exits where the opening is protected by a fire door assembly on each side of the wall in which it is located, one fire door shall be of the swinging type, as provided in 7.2.4.3.7, and the other shall be permitted to be an automatic-sliding fire door that shall be kept open whenever the building is occupied.

42.2.2.6  Ramps.
42.2.2.6.1  Ramps complying with 7.2.5 shall be permitted.
42.2.2.6.2  Industrial equipment access ramps in accordance with 40.2.5.2 shall be permitted.
42.2.2.7  Exit Passageways. Exit passageways complying with 7.2.6 shall be permitted.
42.2.2.8  Fire Escape Stairs. Existing fire escape stairs complying with 7.2.8 shall be permitted.
42.2.2.9  Fire Escape Ladders.
42.2.2.9.1  Fire escape ladders complying with 7.2.9 shall be permitted.
42.2.2.9.2  Fixed industrial stairs in accordance with the minimum requirements for fixed stairs in ANSI A1264.1, Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems, shall be permitted where fire escape ladders are permitted in accordance with 7.2.9.1.
42.2.2.10  Slide Escapes. Existing slide escapes complying with 7.2.10 shall be permitted.
42.2.2.11  Alternating Tread Devices. Alternating tread devices complying with 7.2.11 shall be permitted.
42.2.2.12  Areas of Refuge. Areas of refuge complying with 7.2.12 shall be permitted.
42.2.3  Capacity of Means of Egress. The capacity of means of egress shall be in accordance with Section 7.3.

42.2.4  Number of Means of Egress. The number of means of egress shall comply with 42.2.4.1 through 42.2.4.3. (See also Section 7.4.)

42.2.4.1  The number of means of egress shall comply with any of the following:
(1) In low hazard storage occupancies with low-hazard contents, a single means of egress shall be permitted from any story or section.

(2) In ordinary hazard storage occupancies with ordinary-hazard contents, a single means of egress shall be permitted from any story or section, provided that the exit can be reached within the distance permitted as a common path of travel.

(3) All buildings or structures not complying with 42.2.4.1(1) or (2) and used for storage, and every section thereof considered separately, shall have not less than two separate means of egress as remotely located from each other as practicable.

42.2.4.12 The number of means of egress shall comply with any of the following:
(1) In low hazard storage occupancies, a single means of egress shall be permitted from any story or section.

(2) In ordinary hazard storage occupancies, a single means of egress shall be permitted from any story or section, provided that the exit can be reached within the distance permitted as a common path of travel.

(3) All buildings or structures not complying with 42.2.4.1(1) or (2) and used for storage, and every section thereof considered separately, shall have not less than two separate means of egress as remotely located from each other as practicable.

42.2.4.23 In new buildings, floors or portions thereof with an occupant load of more than 500 persons shall have the minimum number of separate and remote means of egress specified by 7.4.1.2.

42.2.4.34 Areas with high hazard of storage occupancies with high-hazard contents shall comply with Section 7.11.

42.2.5 Arrangement of Means of Egress. Means of egress, arranged in accordance with Section 7.5, shall not exceed that provided by Table 42.2.5.

Table 42.2.5 Arrangements of Means of Egress

<table>
<thead>
<tr>
<th>Level of Protection</th>
<th>Low-Hazard Storage Occupancies with Low-Hazard Contents</th>
<th>Ordinary Hazard Storage Occupancies with Ordinary-Hazard Contents</th>
<th>High-Hazard Storage Occupancies with High-Hazard Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead-End Corridor</td>
<td>Protected throughout by an NL 100 30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1) permitted by 7.11.4

<table>
<thead>
<tr>
<th>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
</tr>
</tbody>
</table>

**Common Path of Travel**

<table>
<thead>
<tr>
<th>Protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
</tr>
</tbody>
</table>

NL: Not limited.

**42.2.6* Travel Distance to Exits.** Travel distance, measured in accordance with Section 7.6, shall not exceed that provided by Table 42.2.6.

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**Table 42.2.6 Maximum Travel Distance to Exits**

<table>
<thead>
<tr>
<th>Level of Protection</th>
<th>Low-Hazard Storage Occupancies with Low-Hazard Contents</th>
<th>Ordinary Hazard Storage Occupancies with Ordinary-Hazard Contents</th>
<th>High-Hazard Storage Occupancies with High-Hazard Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>NL</td>
<td>400</td>
<td>122</td>
</tr>
<tr>
<td>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>NL</td>
<td>200</td>
<td>61</td>
</tr>
<tr>
<td>Flammable and combustible liquid products stored and protected in accordance with NFPA 30,</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
42.2.7  Discharge from Exits.
42.2.7.1  Discharge from exits shall be in accordance with Section 7.7.
42.2.7.2  Occupant travel to the public way shall be permitted to be delayed within the exit discharge in accordance with 7.7.7.

42.2.8  Illumination of Means of Egress.
42.2.8.1  Means of egress shall be illuminated in accordance with Section 7.8.
42.2.8.2  In structures occupied only during daylight hours, means of egress shall be permitted to be illuminated with windows arranged to provide the required level of illumination on all portions of the means of egress during such hours, when approved by the authority having jurisdiction.

42.2.9  Emergency Lighting.  Emergency lighting shall be provided in normally occupied storage occupancies in accordance with Section 7.9, except for spaces occupied only during daylight hours with natural illumination in accordance with 42.2.8.2.

42.2.10  Marking of Means of Egress.  Means of egress shall have signs in accordance with Section 7.10.

42.2.11  Special Means of Egress Features.
42.2.11.1  Reserved.
42.2.11.2  Lockups.
42.2.11.2.1  Lockups in new storage occupancies shall comply with the requirements of 22.4.5.
42.2.11.2.2  Lockups in existing storage occupancies, other than approved existing lockups, shall comply with the requirements of 23.4.5.

42.3  Protection.

42.3.1  Protection of Vertical Openings.  Any vertical opening shall be protected in accordance with Section 8.6, unless otherwise permitted by one of the following:
   (1) Vertical openings in accordance with 8.6.9.1 or 8.6.9.2 shall be permitted.
   (2) Existing open stairs, existing open ramps, and existing open escalators shall be permitted where connecting only two floor levels.
   (3) Existing unprotected vertical openings in buildings with low- or ordinary-hazard contents, and protected throughout by an approved automatic sprinkler system in accordance with 9.7.1.1(1), shall be permitted where they do not serve as required exits, and where all required exits consist of outside stairs in accordance with 7.2.2, smokeproof enclosures in accordance with 7.2.3, or horizontal exits in accordance with 7.2.4.

42.3.2  Protection from Hazards.  (No requirements.) See also Section 8.7.
42.3.2.1  Alcohol-based hand rub dispensers in accordance with 8.7.3.3 shall be permitted.
42.3.3  Interior Finish.
42.3.3.1  General. Interior finish shall be in accordance with Section 10.2.

42.3.3.2  Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A, Class B, or Class C in accordance with 10.2 in storage areas and shall be as required by 7.1.4 in exit enclosures.

42.3.3.3  Interior Floor Finish.

42.3.4  Detection, Alarm, and Communications Systems.
42.3.4.1  General. A fire alarm system shall be required in accordance with Section 9.6 for storage occupancies, except as modified by 42.3.4.1.1, 42.3.4.1.2, and 42.3.4.1.3.
42.3.4.1.1  Storage occupancies limited to low hazard contents shall not be required to have a fire alarm system.
42.3.4.1.2  Storage occupancies with ordinary or high hazard contents not exceeding an aggregate floor area of 100,000 ft² (9300 m²) shall not be required to have a fire alarm system.
42.3.4.1.3  Storage occupancies protected throughout by an approved automatic sprinkler system in accordance with Section 9.7 shall not be required to have a fire alarm system.
42.3.4.2  Initiation. Initiation of the required fire alarm system shall be by any of the following means:
(1) Manual means in accordance with 9.6.2.1(1)
(2) Approved automatic fire detection system in accordance with 9.6.2.1(2) throughout the building, plus a minimum of one manual fire alarm box in accordance with 9.6.2.6
(3) Approved, supervised automatic sprinkler system in accordance with 9.6.2.1(3) throughout the building, plus a minimum of one manual fire alarm box in accordance with 9.6.2.6
42.3.4.3  Notification.
42.3.4.3.1  The required fire alarm system shall meet one of the following criteria:
(1) It shall provide occupant notification in accordance with 9.6.3.
(2) It shall sound an audible and visible signal in a constantly attended location for the purposes of initiating emergency action.
42.3.4.3.2  Positive alarm sequence in accordance with 9.6.3.4 shall be permitted.
42.3.4.3.3  Existing presignal systems in accordance with 9.6.3.3 shall be permitted.

42.3.4.3.4  In high hazard storage occupancies, the required fire alarm system shall automatically initiate an occupant evacuation alarm signal in accordance with 9.6.3.
42.3.5 Extinguishment Requirements. (No requirements.) Reserved. (Reserved)

42.3.6 Corridors. The provisions of 7.1.3.1 shall not apply.

42.4 Special Provisions—.
42.4.1 Limited Limited-Access or Underground Structures. Limited-Limited-access or underground structures shall comply with 11.7.

42.4.2 High-Rise Buildings. New high-rise storage occupancies shall comply with Section 11.8.

42.5 Building Services.
42.5.1 Utilities. Utilities shall comply with the provisions of Section 9.1.

42.5.2 Heating, Ventilating, and Air-Conditioning. Heating, ventilating, and air-conditioning equipment shall comply with the provisions of Section 9.2.

42.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 9.4.

42.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 9.5.

42.6* Special Provisions for Aircraft Storage Hangars.
42.6.1 The requirements of Sections 42.1 through 42.5 shall be met, except as modified by 42.6.1.1 through 42.6.3.

42.6.1.1 There shall be not less than two means of egress from each aircraft storage area.

42.6.1.2 Exits from aircraft storage areas shall be provided at intervals not exceeding 150 ft (46 m) on all exterior walls.

42.6.1.3 Where horizontal exits are provided, doors shall be provided in the horizontal exit fire barrier at intervals not exceeding 100 ft (30 m).

42.6.1.4 Where dwarf, or “smash,” doors are provided in doors that accommodate aircraft, such doors shall be permitted for compliance with 42.6.1.1, 42.6.1.2, and 42.6.1.3.

42.6.2 Means of egress from mezzanine floors in aircraft storage areas shall be arranged so that the travel distance to the nearest exit from any point on the mezzanine does not exceed 75 ft (23 m), and such means of egress shall lead directly to a properly enclosed stair discharging directly to the exterior, to a suitable cutoff area, or to outside stairs.

42.6.3 Dead ends shall not exceed 50 ft (15 m) for other than high hazard contents areas and shall not be permitted for high hazard contents areas.

42.7* Special Provisions for Grain Handling, Processing, Milling, or Other Bulk Storage Facilities.
42.7.1 General. The requirements of Sections 42.1 through 42.5 shall be met, except as modified by 42.7.2 through 42.7.4.2.

42.7.2 Number of Means of Egress. There shall be not less than two means of egress from all working levels of the head house, as modified by 42.7.2.1, 42.7.2.2, and 42.7.2.3.

42.7.2.1 One of the two means of egress shall be a stair to the level of exit discharge, and, if this means of egress is interior to the structure, it shall be enclosed by a dust-resistant, 1-hour fire resistance–rated enclosure in accordance with 7.1.3.2. Exterior stair means of egress shall be
protected from the structure by a 1-hour fire resistance–rated wall that extends at least 10 ft (3050 mm) beyond the stair.

42.7.2.2 The second means of egress shall be one of the following:
(1) Exterior stair or basket ladder–type fire escape that is accessible from all working levels of the structure and provides a passage to the finished ground level
(2) Exterior stair or basket ladder–type fire escape that is accessible from all working levels of the structure, provides access to adjoining structures, and provides a continuous path to the means of egress described in 42.7.3

42.7.2.3 Stair enclosures in existing structures shall be permitted to have non-fire-rated dust-resistant enclosures.

42.7.3 Fire Escapes Means of Egress to Finished Ground Level. An exterior stair or basket ladder–type fire escape shall provide passage to the finished ground level from the top of the end of an adjoining structure, such as a silo, conveyor, gallery, or gantry.

42.7.4 Extinguishment Requirements. Reserved. (Reserved)

42.7.4.1 Number of Means of Egress.
42.7.4.1.1 Underground spaces shall have not less than two means of egress, one of which shall be permitted to be a means of escape, except as permitted in 42.7.4.1.2.
42.7.4.1.2 Where the horizontal travel distance to the means of egress is less than 50 ft (15 m) in normally unoccupied spaces, a single means of egress shall be permitted.

42.7.4.2 Travel Distance to Exits. Travel distance, measured in accordance with Section 7.6, shall not exceed that provided by Table 42.7.4.2.

<table>
<thead>
<tr>
<th>Level of Protection</th>
<th>Travel Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>400 ft (122 m)</td>
</tr>
<tr>
<td>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>200 ft (61 m)</td>
</tr>
<tr>
<td>Existing structures</td>
<td>Unlimited</td>
</tr>
</tbody>
</table>

42.8 Special Provisions for Parking Structures.

42.8.1 General Requirements.
42.8.1.1* Application. The provisions of 42.8.1 through 42.8.5.4 shall apply to parking structures of the closed or open type, above or below grade plane, but shall not apply to assisted mechanical-type
or automated-type parking facilities that are not occupied by customers. The requirements of Sections 42.1 through 42.7 shall not apply.

42.8.1.2 Multiple Occupancies.

42.8.1.2.1 Where both parking and repair operations are conducted in the same building, the entire building shall comply with Chapter 40, except as modified by 42.8.1.2.2.

42.8.1.2.2 Where the parking and repair sections are separated by not less than 1-hour fire-rated construction, the parking and repair sections shall be permitted to be treated separately.

42.8.1.2.3 In areas where repair operations are conducted, the means of egress shall comply with Chapter 40.

42.8.1.3 Open Parking Structures. Open parking structures shall comply with 42.8.1.3.1 through 42.8.1.3.3.

42.8.1.3.1 Each parking level shall have wall openings open to the atmosphere for an area of not less than 1.4 ft$^2$ for each linear foot (0.4 m$^2$ for each linear meter) of its exterior perimeter. [88A: 5.5.1]

42.8.1.3.2 The openings addressed in 42.8.1.3.1 shall be distributed over 40 percent of the building perimeter or uniformly over two opposing sides. [88A: 5.5.2]

42.8.1.3.3 Interior wall lines and column lines shall be at least 20 percent open, with openings distributed to provide ventilation. [88A: 5.5.3]

42.8.1.4 Classification of Occupancy. Incidental vehicle parking in another occupancy shall not be the basis for overall occupancy classification.

42.8.1.5 Classification of Hazard of Contents. Parking structures used only for the storage of vehicles shall be classified as ordinary hazard in accordance with Section 6.2.

42.8.1.6 Minimum Construction Requirements. (No requirements.)

42.8.1.7 Occupant Load. (No requirements.)

42.8.2 Means of Egress Requirements.

42.8.2.1 General. Means of egress shall be in accordance with Chapter 7 and 42.8.2.

42.8.2.2 Means of Egress Components.

42.8.2.2.1 Components Permitted. Components of means of egress shall be limited to the types described in 42.8.2.2.2 through 42.8.2.2.9.

42.8.2.2.2 Doors.

42.8.2.2.2.1 Doors complying with 7.2.1 shall be permitted.

42.8.2.2.2.2 Special locking arrangements complying with 7.2.1.6 shall be permitted.

42.8.2.2.2.3 An opening for the passage of automobiles shall be permitted to serve as an exit from a street floor, provided that no door or shutter is installed therein.

42.8.2.2.3 Stairs.

42.8.2.2.3.1 Stairs complying with 7.2.2 shall be permitted, unless otherwise permitted by 42.8.2.2.3.2.

42.8.2.2.3.2 In open parking structures, stairs complying with 7.2.2.5.1 shall not be required.

42.8.2.2.3.3 Existing winders complying with 7.2.2.4 shall be permitted.

42.8.2.2.3.4 Paragraph 7.2.2.4.5.3(2) shall not apply to guards for parking garages that are accessible to the general public.

42.8.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 7.2.3 shall be permitted.

42.8.2.2.5 Horizontal Exits. Horizontal exits complying with 7.2.4 shall be permitted.

42.8.2.2.6 Ramps.

42.8.2.2.6.1 Ramps shall be permitted in accordance with any of the following conditions:

1) Ramps complying with 7.2.5 shall be permitted and shall not be subject to normal vehicular traffic where used as an exit.
(2) In a ramp-type open parking structure with open vehicle ramps not subject to closure, the ramp shall be permitted to serve in lieu of the second means of egress from floors above the level of exit discharge, provided that the ramp discharges directly outside at the street level.

(3) For parking structures extending only one floor level below the level of exit discharge, a vehicle ramp leading directly to the outside shall be permitted to serve in lieu of the second means of egress, provided that no door or shutter is installed therein.

42.8.2.2.6.2 Paragraph 7.2.2.4.5.3(2) shall not apply to guards for parking structures that are accessible to the general public.

42.8.2.2.7 Exit Passageways. Exit passageways complying with 7.2.6 shall be permitted.

42.8.2.2.8 Fire Escape Stairs. Fire escape stairs complying with 7.2.8 shall be permitted for existing parking structures only.

42.8.2.2.9 Areas of Refuge.

42.8.2.2.9.1 Areas of refuge complying with 7.2.12 shall be permitted, as modified by 42.8.2.2.9.2.

42.8.2.2.9.2 In open-air parking structures, the area of refuge requirements of 7.2.12.1.2(2) shall not apply.

42.8.2.3 Capacity of Means of Egress. See also 42.8.2.4 and 42.8.2.5.

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42.8.2.4 Number of Means of Egress. The number of means of egress shall comply with 42.8.2.4.1 and 42.8.2.4.2. (See also Section 7.4.)

42.8.2.4.1 Not less than two means of egress shall be provided from every floor or section of every parking structure.

42.8.2.4.2 In new buildings, floors or portions thereof with an occupant load of more than 500 persons shall have the minimum number of separate and remote means of egress specified by 7.4.1.2.

42.8.2.5 Arrangement of Means of Egress. See also Section 7.5.

42.8.2.5.1 A common path of travel shall be permitted for the first 50 ft (15 m) from any point in the parking structure.

42.8.2.5.2 Dead ends shall not exceed 50 ft (15 m).

42.8.2.5.3 Where fuel-dispensing devices are located within a parking structure, 42.8.2.5.3.1 and 42.8.2.5.3.2 shall apply.

42.8.2.5.3.1 Travel away from the fuel-dispensing device in any direction shall lead to an exit with no dead end in which occupants might be trapped by fire.

42.8.2.5.3.2 Within closed parking structures containing fuel-dispensing devices, exits shall be arranged and located to meet all of the following additional requirements:

(1) Exits shall lead to the outside of the building on the same level or to stairs, with no upward travel permitted, unless direct outside exits are available from that floor.

(2) Any story below the story at which fuel is being dispensed shall have exits leading directly to the outside via outside stairs or doors at the finished ground level.

42.8.2.6 Travel Distance to Exits.

42.8.2.6.1 Travel distance, measured in accordance with Section 7.6, shall not exceed that provided by Table 42.8.2.6.1, except as otherwise permitted in 42.8.2.6.2.

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Table 42.8.2.6.1 Maximum Travel Distance to Exits
### Table 2-2.2.1—Protection of Parking Structures

<table>
<thead>
<tr>
<th>Level of Protection</th>
<th>Enclosed Parking Structure</th>
<th>Open Parking Structure</th>
<th>Parking Structure Open Not Less than 50% on All Sides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ft</td>
<td>m</td>
<td>ft</td>
</tr>
<tr>
<td>Protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>200</td>
<td>61</td>
<td>400</td>
</tr>
<tr>
<td>Not protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1)</td>
<td>150</td>
<td>46</td>
<td>300</td>
</tr>
</tbody>
</table>

#### 42.8.2.6.2 In open parking structures, travel distance shall comply with one of the following:

1. The travel distance to an exit shall not exceed the travel distance specified in Table 42.8.2.6.1.
2. The travel distance to a stair that does not meet the provisions for an exit enclosure shall not exceed the travel distance specified in Table 42.8.2.6.1, and travel along the stair shall not be limited.

#### 42.8.2.7 Discharge from Exits. Exit discharge shall comply with Section 7.7.

#### 42.8.2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 7.8 or with natural lighting that provides the required level of illumination in structures occupied only during daylight hours.

#### 42.8.2.9 Emergency Lighting. Parking structures shall be provided with emergency lighting in accordance with Section 7.9, except for structures occupied only during daylight hours and arranged to provide the required level of illumination of all portions of the means of egress by natural means.

#### 42.8.2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 7.10.

#### 42.8.2.11 Special Means of Egress Features. (Reserved)

#### 42.8.3 Protection

#### 42.8.3.1 Protection of Vertical Openings.

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#### 42.8.3.1.1 Vertical Openings in Enclosed Parking Structures.

Vertical openings through floors in buildings four or more stories in height shall be enclosed with walls or partitions having a minimum 2-hour fire resistance rating. Unless otherwise provided in 42.8.3.1.1.3, 42.8.3.1.1.4, or 42.8.3.1.1.5, vertical openings through floors in enclosed parking structures four stories or more in height shall be enclosed with walls or partitions having a fire resistance rating of not less than 2 hours. [88A, 88A:5.4.3]

#### 42.8.3.1.1.2 For buildings three or fewer stories in height, the walls or partitions required by 42.8.3.1.1.1 shall have a minimum 1-hour fire resistance rating. Unless otherwise provided in 42.8.3.1.1.3, 42.8.3.1.1.4, or 42.8.3.1.1.5, vertical openings through floors in enclosed parking structures less than four stories in height shall be enclosed with walls or partitions having a fire resistance rating of not less than 1 hour. [88A, 88A:5.4.4]
42.8.3.1.3 Ramps in enclosed parking structures shall not be required to be enclosed when one of the following safeguards is provided:

1. An approved automatic sprinkler system fully protecting the enclosed parking structure
2. An approved, supervised automatic fire detection system installed throughout the enclosed parking structure, and a mechanical ventilation system capable of providing a minimum of 1 ft³/min/ft² (300 L/min/m²) of floor area during hours of normal operation
3. Where a parking structure consists of sprinklered enclosed parking levels, and sprinklered or non-sprinklered open parking levels

42.8.3.1.3 Ramps in enclosed parking structures shall not be required to be enclosed in accordance with 42.8.3.1.1.1 or 42.8.3.1.1.2 where the parking structure is protected throughout by an approved, automatic sprinkler system. [88A: 88A:5.4.5]

42.8.3.1.4 Ramps in enclosed parking structures shall not be required to be enclosed in accordance with 42.8.3.1.1.1 or 42.8.3.1.1.2 where the parking structure is protected throughout by an approved, supervised automatic fire detection system and a mechanical ventilation system in accordance with 6.3.1 of NFPA 88A, Standard for Parking Structures. [88A: 88A:5.4.6]

42.8.3.1.5 Openings in the floor assembly between an enclosed parking structure and an open parking structure, except exit openings, shall not be required to be enclosed where the enclosed parking structure is protected in accordance with 42.8.3.1.1.1 or 42.8.3.1.1.2. [88A, 88A:5.4.7]

42.8.3.1.46 Sprinkler systems provided in accordance with 42.8.3.1.1.3 or 42.8.3.1.1.5 shall be supervised in accordance with 9.7.2.

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[FR 8044: FileMaker]

42.8.3.1.2 Open Parking Structures. Unprotected vertical openings through floors in open parking structures shall be permitted. [88A, 88A:5.4.8]

42.8.3.2 Protection from Hazards. (No requirements.)

42.8.3.3 Interior Finish.

42.8.3.3.1 General. Interior finish shall be in accordance with Section 10.2.

42.8.3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A, Class B, or Class C in parking structures and shall be as required by 7.1.4 in exit enclosures.

42.8.3.3.3 Interior Floor Finish.

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[FR 8034: FileMaker]

42.8.3.3.3.1 Interior floor finish in exit enclosures and exit access corridors shall be not less than Class II.

42.8.3.3.3.2 Interior floor finish in areas other than those specified in 42.8.3.3.3.1 shall not be required to comply with Section 10.2.6.

42.8.3.4 Detection, Alarm, and Communications Systems.

42.8.3.4.1 General. A fire alarm system shall be required in accordance with Section 9.6 for parking structures, except as modified by 42.3.4.1.1, 42.3.4.1.2, and 42.3.4.1.3.

42.8.3.4.1.1 Parking structures not exceeding an aggregate floor area of 100,000 ft² (9300 m²) shall not be required to have a fire alarm system.

42.8.3.4.1.2 Open parking structures shall not be required to have a fire alarm system.
42.8.3.4.1.3 Parking structures protected throughout by an approved automatic sprinkler system in accordance with Section 9.7 shall not be required to have a fire alarm system.

42.8.3.4.2 Initiation. Initiation of the required fire alarm system shall be by one of the following means:

(1) Manual means in accordance with 9.6.2.1(1)
(2) Approved automatic fire detection system in accordance with 9.6.2.1(2) throughout the building, plus a minimum of one manual fire alarm box in accordance with 9.6.2.6
(3) Approved, supervised automatic sprinkler system in accordance with 9.6.2.1(3) throughout the building, plus a minimum of one manual fire alarm box in accordance with 9.6.2.6

42.8.3.4.3 Notification.

42.8.3.4.3.1 The required fire alarm system shall sound an audible alarm in a continuously attended location for purposes of initiating emergency action.

42.8.3.4.3.2 Positive alarm sequence in accordance with 9.6.3.4 shall be permitted.

42.8.3.4.3.3 Existing presignal systems in accordance with 9.6.3.3 shall be permitted.

42.8.3.5 Extinguishing Requirements. (No requirements.) Reserved. (Reserved)

42.8.3.6 Corridors. The provisions of 7.1.3.1 shall not apply.

42.8.4 Special Provisions — High-Rise Buildings. (No requirements.) See Section 11.8. (See Section 11.8.)

42.8.5 Building Services.

42.8.5.1 Utilities. Utilities shall comply with the provisions of Section 9.1.

42.8.5.2 Heating, Ventilating, and Air-Conditioning. Heating, ventilating, and air-conditioning equipment shall comply with the provisions of Section 9.2.

42.8.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 9.4.

42.8.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 9.5.

42.9 Operating Features.

42.9.1 Upholstered Furniture and Mattresses. The provisions of 10.3.2 shall not apply to upholstered furniture and mattresses.

42.9.2 Soiled Linen and Trash Receptacles. The requirements of 10.3.3 for containers for rubbish, waste, or linen with a capacity of 20 gal (75.7 L) or more shall not apply.

42.9.3 Inspection of Door Openings. Door openings shall be inspected in accordance with Section 7.2.1.15.
A.11.2.2 Escape chutes, controlled descent devices, and elevators are permitted to provide escape routes in special structures; however, they should not be substituted for the provisions of this Code.

A.11.2.2.4.1 The grade level of open structures, which by their very nature contain an infinite number of means of egress, are exempt from the requirements for number of means of egress.

A.11.3.1.3(2) The incidental accessory uses are intended to apply to small office spaces or lounge areas and similar uses that are used by tower employees.

A.11.3.2.4 The Washington Monument in Washington, DC, is an example of a tower where it would be impracticable to provide a second stairway.

A.11.3.4.2(2) The incidental accessory uses are intended to apply to small office spaces or lounge areas and similar uses that are used by tower employees.

A.11.3.4.6.2(2) Occupants of air traffic control towers might be required by administrative controls to remain in the facility when a fire occurs so they can perform orderly transfer of operations. Methods to limit compromising the means of egress might include a fire resistance-rated separation between discharge paths or smoke control in large spaces.

A.11.5 For further information on pier fire protection, see NFPA 307, Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves.

A.11.6 Fire safety information for manufactured home parks is found in NFPA 501A, Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities.

A.11.7.3.2 It is not the intent that emergency access openings be readily openable from the exterior by the public but that they be easily opened with normal fire department equipment.

A.11.8.3.1 Where an occupancy chapter (Chapters 12 through 42) permits the omission of sprinklers in specific spaces, such as small bathrooms and closets in residential occupancies, the building is still considered to be protected throughout for the purposes of 11.8.3.1.

A.11.8.4.1 The need for voice communication can be based on a decision regarding staged or partial evacuation versus total evacuation of all floors. The determination of need is a function of occupancy classification and building height.

A.11.8.6 It is not the intent of the paragraph to require any of the equipment in the list, other than the telephone for fire department use, but only to provide the controls, panels, annunciators, and similar equipment at this location if the equipment is provided or required by another section of the Code.

A.11.9.3.3.1 The requirements of this paragraph can be considered as a Class 4, Type 60, system per NFPA 110, Standard for Emergency and Standby Power Systems.

A.40.1.2.1.3 Additional information on the definition of high hazard industrial occupancy can be found in A.3.3.188.8.2.

A.40.1.7 In most cases, the requirements for maximum travel distance to exits will be the determining factor, rather than number of occupants, because exits provided to satisfy travel distance requirements will be sufficient to provide egress capacity for all occupants, except in cases of an unusual arrangement of buildings or the high occupant load of a general manufacturing occupancy.

A.40.2.1.2 Horizontal and vertical utility chases in large industrial buildings used for routing of piping, ducts, and wiring must provide a reasonable level of access for occasional maintenance workers but do not warrant compliance with the comprehensive egress requirements of Chapter 7. Minimum access in these cases is governed by electrical and mechanical codes; 40.2.5.2, Industrial Equipment Access; and the Occupational Safety and Health Administration (OSHA) for facilities in the United States. Utility chases governed by 40.2.1.2 might involve tunnels or large open spaces located above or below occupied floors; however, such spaces differ from mechanical equipment rooms, boiler rooms, and furnace rooms, based on the anticipated frequency of use by maintenance workers. Portions of utility chases where the anticipated presence of maintenance workers is routine are not intended to be included by this paragraph.
A.40.2.5.2 The customary building code requirement for fire doors on both sides of an opening in a fire wall is permitted to be met by having an automatic-sliding fire door on one side and a self-closing fire door swinging out from the other side of the wall. This arrangement qualifies only as a horizontal exit from the sliding door side. For further information, see A.7.2.4.3.10.

A.40.2.5.4.1 Ancillary facilities located within industrial occupancies might include administrative office, laboratory, control, and employee service facilities that are incidental to the predominant industrial function and are of such size that separate occupancy classification is not warranted.

A.40.2.5.4.2 Occupants of ancillary facilities located within special-purpose industrial occupancies might be required by administrative controls to remain in the facility when a fire occurs in the predominant industrial area, so that they can perform an orderly shutdown of process equipment to control the spread of the fire and minimize damage to important equipment or perform other safety or security functions.

A.40.2.9 The authority having jurisdiction should review the facility and designate the stairs, aisles, corridors, ramps, and passageways that should be required to be provided with emergency lighting. In large locker rooms or laboratories using hazardous chemicals, for example, the authority having jurisdiction should determine that emergency lighting is needed in the major aisles leading through those spaces.

A.40.3.2 Emergency lighting should be considered where operations require lighting to perform orderly manual emergency operation or shutdown, maintain critical services, or provide safe start-up after a power failure.

A.40.6 For further information on aircraft hangars, see NFPA 409, Standard on Aircraft Hangars.

A.42.1.7 There is no occupant load factor specified for storage occupancies. Rather, the probable maximum number of persons present needs to be considered in determining the occupant load.

A.42.2.1.2 Horizontal and vertical utility chases in large industrial buildings used for routing of piping, ducts, and wiring must provide a reasonable level of access for occasional maintenance workers but do not warrant compliance with the comprehensive egress requirements of Chapter 7. Minimum access in these cases is governed by the electrical and mechanical code; 40.2.5.2, Industrial Equipment Access; and the Occupational Safety and Health Administration (OSHA) for facilities in the United States. Utility chases governed by 42.2.1.2 might involve tunnels or large open spaces located above or below occupied floors; however, such spaces differ from mechanical equipment rooms, boiler rooms, and furnace rooms, based on the anticipated frequency of use by maintenance workers. Portions of utility chases where the anticipated presence of maintenance workers is routine are not intended to be included by this paragraph.

A.42.2.2.5.2 The customary building code requirement for fire doors on both sides of an opening in a fire wall is permitted to be met by having an automatic-sliding fire door on one side and a self-closing fire door swinging out from the other side of the wall. This arrangement qualifies only as a horizontal exit from the sliding door side. For further information, see A.7.2.4.3.10.

A.42.2.6 The travel distance to exits specified recognizes a low population density. Consideration should be given to locating areas that have a relatively high population density, such as lunchrooms, meeting
rooms, packaging areas, and offices, near the outside wall of the building to keep the travel distance to a minimum.

A.42.6 For further information on aircraft hangars, see NFPA 409, *Standard on Aircraft Hangars.*

A.42.7 For further information, see NFPA 61, *Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities.* The egress requirements for storage elevators are based on the possibility of fire and are not based on the possibility of grain dust explosions.

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A.42.8.1.1 For further information on garages, including a definition of the term open garage, see NFPA 88A, *Standard for Parking Structures.*