CHAPTER 31

TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES

User note:

About this chapter: *Chapter 31 provides requirements that are intended to protect temporary as well as permanent tents and air-supported and other membrane structures and temporary stage special event structures from fire and similar hazards. The provisions regulate structure location and access, anchorage, egress, heat-producing equipment, hazardous materials and operations, combustible vegetation, ignition sources, and waste accumulation. This is accomplished through requiring regular inspections and certifying continued compliance with fire safety regulations. This chapter also addresses outdoor assembly events, which are not limited to those events with tents or other membrane structures, but are regulated due to the number of people, density of those people and hazards associated with large outdoor events related to egress, fire hazards from cooking and other related concerns.*

SECTION 3101
GENERAL

3101.1 Scope. Tents, temporary special event structures and *membrane structures* shall comply with this chapter. The provisions of Section 3103 are applicable only to temporary tents and membrane structures. The provisions of Sections 3104 and 3106 are applicable to temporary and permanent tents and membrane structures. The provisions of Section 3105 are applicable to temporary special event structures. The provisions of Section 3106 are applicable to outdoor assembly events. Other temporary structures shall comply with the *International Building Code*.

SECTION 3102
DEFINITIONS

3102.1 Definitions. The following terms are defined in Chapter 2:

AIR-INFLATED STRUCTURE.

AIR-SUPPORTED STRUCTURE.

MEMBRANE STRUCTURE.

TEMPORARY SPECIAL EVENT STRUCTURE.

TENT.

SECTION 3103
TEMPORARY TENTS AND MEMBRANE STRUCTURES

3103.1 General. Tents and membrane structures used for temporary periods shall comply with this section and Section 3106. Other temporary structures erected for a period of 180 days or less shall comply with the *International Building Code*.

[S] 3103.2 Approval required. Tents and membrane structures having an area in excess of 400 square feet (37 m^2) shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the *fire code official*.

Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. Tents open on all sides that comply with all of the following:
   - 2.1. Individual tents having a maximum size of 700 square feet (65 m^2).
   - 2.2. The aggregate area of multiple tents placed side by side without a fire break clearance of 12 feet (3658 mm), not exceeding 700 square feet (65 m^2) total.
   - 2.3. A minimum clearance of 12 feet (3658 mm) to all structures and other tents.
3. Funeral tents and curtains or extensions attached thereto, when used for funeral services.

3103.3 Outdoor assembly event. For the purposes of this chapter, an outdoor assembly event shall include a circus, carnival, tent show, theater, skating rink, dance hall or other place of assembly in or under which persons gather for any purpose.

3103.3.1 Special amusement building. Tents and other membrane structures erected as a special amusement building shall be equipped with an *automatic sprinkler system* in accordance with Section 411.3 of the *International Building Code*.

3103.4 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7.

[W] 3103.5 Use period. Temporary tents, air-supported, air-inflated or tensioned membrane structures ((~~shall not be~~)) are permitted to be erected for a period of ((~~more~~)) less than 180 days within a 12-month period on a single premises. Such structures erected for 180 days or more within a 12-month period shall comply with the *International Building Code*.

[S] 3103.6 Construction documents. A detailed site and floor plan for tents or membrane structures with an *occupant load* of 50 or more shall be provided with each application for approval. The tent or membrane structure floor plan shall indicate details of the *means of egress* facilities, seating capacity, arrangement of the seating and location and type of heating and electrical equipment. The *construction documents* shall include an analysis of structural stability, when required by the *fire code official*.

3103.7 Inspections. The entire tent, air-supported, air-inflated or tensioned membrane structure system shall be inspected at regular intervals, but not less than two times per permit use period, by the permittee, *owner* or agent to determine that the installation is maintained in accordance with this chapter.

Exception: Permit use periods of less than 30 days.

3103.7.1 Inspection report. Where required by the *fire code official*, an inspection report shall be provided and shall consist of maintenance, anchors and fabric inspections.

3103.8 Access, location and parking. Access, location and parking for temporary tents and membrane structures shall be in accordance with this section.

3103.8.1 Access. Fire apparatus access roads shall be provided in accordance with Section 503.

3103.8.2 Location. Tents or membrane structures shall not be located within 20 feet (6096 mm) of *lot lines*, buildings, other tents or membrane structures, parked vehicles or internal combustion engines. For the purpose of determining required distances, support ropes and guy wires shall be considered as part of the temporary membrane structure or tent.

Exceptions:

1. Separation distance between membrane structures and tents not used for cooking is not required where the aggregate floor area does not exceed 15,000 square feet (1394 m^2).
2. Membrane structures or tents need not be separated from buildings where all of the following conditions are met:
   - 2.1. The aggregate floor area of the membrane structure or tent shall not exceed 10,000 square feet (929 m^2).
   - 2.2. The aggregate floor area of the building and membrane structure or tent shall not exceed the allowable floor area including increases as indicated in the *International Building Cod*e.
   - 2.3. Required *means of egress* are provided for both the building and the membrane structure or tent including travel distances.
   - 2.4. Fire apparatus access roads are provided in accordance with Section 503.

3103.8.3 Location of structures in excess of 15,000 square feet in area. Membrane structures having an area of 15,000 square feet (1394 m^2) or more shall be located not less than 50 feet (15 240 mm) from any other tent or structure as measured from the sidewall of the tent or membrane structure unless joined together by a corridor.

3103.8.4 Membrane structures on buildings. Membrane structures that are erected on buildings, balconies, decks or other structures shall be regulated as permanent membrane structures in accordance with Section 3102 of the *International Building Code*.

3103.8.5 Connecting corridors. Tents or membrane structures are allowed to be joined together by means of corridors. *Exit* doors shall be provided at each end of such corridor. On each side of such corridor and approximately opposite each other, there shall be provided openings not less than 12 feet (3658 mm) wide.

3103.8.6 Fire break. An unobstructed fire break passageway or fire road not less than 12 feet (3658 mm) wide and free from guy ropes or other obstructions shall be maintained on all sides of all tents and membrane structures unless otherwise *approved* by the *fire code official*.

[S] 3103.9 Structural stability and anchorage required. Tents or membrane structures and their appurtenances shall be designed and installed to withstand the elements of weather and prevent collapsing. Documentation of structural stability shall be furnished to the *fire code official* on request.

3103.9.1 Tents and membrane structures greater than one story. Tents and membrane structures exceeding one story shall be designed and constructed to comply with Sections 1606 through 1609 of the *International Building Code*.

3103.9.2 Tents and membrane structures greater than 7,500 square feet. *Tents* and *membrane structures* greater than 7,500 square feet (697 m^2) shall be designed and constructed to comply with Sections 1606 through 1609 of the *International Building Code*.

3103.9.3 Tents and membrane structures with an occupant load greater than 1,000. *Tents* and *membrane structures* with an occupant capacity greater than 1,000 persons shall be designed and constructed to comply with Sections 1606 through 1609 of the *International Building Code*.

3103.10 Temporary air-supported and air-inflated membrane structures. Temporary air-supported and air-inflated membrane structures shall be in accordance with Sections 3103.10.1 through 3103.10.4.

3103.10.1 Door operation. During high winds exceeding 50 miles per hour (22 m/s) or in snow conditions, the use of doors in air-supported structures shall be controlled to avoid excessive air loss. Doors shall not be left open.

3103.10.2 Fabric envelope design and construction. Air-supported and air-inflated structures shall have the design and construction of the fabric envelope and the method of anchoring in accordance with Architectural Fabric Structures Institute FSAAS.

3103.10.3 Blowers. An air-supported structure used as a place of assembly shall be furnished with not less than two blowers, each of which has adequate capacity to maintain full inflation pressure with normal leakage. The design of the blower shall be so as to provide integral limiting pressure at the design pressure specified by the manufacturer.

3103.10.4 Auxiliary inflation systems. Places of public assembly for more than 200 persons shall be furnished with an auxiliary inflation system capable of powering a blower with the capacity to maintain full inflation pressure with normal leakage in accordance with Section 3103.10.3 for a minimum duration of 4 hours. The auxiliary inflation system shall be either a fully automatic auxiliary engine-generator set or a supplementary blower powered by an internal combustion engine that shall be automatic in operation. The system shall be capable of automatically operating the required blowers at full power within 60 seconds of a commercial power failure.

3103.11 Seating arrangements. Seating in tents or membrane structures shall be in accordance with Chapter 10.

3103.12 Means of egress. *Means of egress* for temporary tents and membrane structures shall be in accordance with Sections 3103.12.1 through 3103.12.8.

3103.12.1 Distribution. *Exits* shall be spaced at approximately equal intervals around the perimeter of the tent or membrane structure, and shall be located such that all points are 100 feet (30 480 mm) or less from an *exit.*

3103.12.2 Number. Tents, or membrane structures or a usable portion thereof shall have not less than one *exit* and not less than the number of *exits* required by Table 3103.12.2. The total width of *means of egress* in inches (mm) shall be not less than the total *occupant load* served by a *means of egress* multiplied by 0.2 inches (5 mm) per person.

TABLE 3103.12.2
MINIMUM NUMBER OF MEANS OF EGRESS AND MEANS OF EGRESS WIDTHS FROM TEMPORARY MEMBRANE STRUCTURES AND TENTS

OCCUPANT LOAD	MINIMUM NUMBER OF MEANS OF EGRESS	MINIMUM WIDTH OF EACH MEANS OF EGRESS (inches)	MINIMUM WIDTH OF EACH MEANS OF EGRESS (inches)
		Tent	Membrane Structure
10 to 199	2	72	36
200 to 499	3	72	72
500 to 999	4	96	72
1,000 to 1,999	5	120	96
2,000 to 2,999	6	120	96
Over 3,000[a]	7	120	96

For SI: 1 inch = 25.4 mm.

a. When the occupant load exceeds 3,000, the total width of means of egress (in inches) shall be not less than the total occupant load multiplied by 0.2 inches per person.

3103.12.3 Exit openings from tents. *Exit* openings from tents shall remain open unless covered by a flame-resistant curtain. The curtain shall comply with the following requirements:

1. Curtains shall be free sliding on a metal support. The support shall be not less than 80 inches (2032 mm) above the floor level at the *exit*. The curtains shall be so arranged that, when open, no part of the curtains obstructs the *exit*.
2. Curtains shall be of a color, or colors, that contrasts with the color of the tent.

3103.12.4 Doors. *Exit* doors shall swing in the direction of *exit* travel. To avoid hazardous air and pressure loss in air-supported membrane structures, such doors shall be automatic closing against operating pressures. Opening force at the door edge shall not exceed 15 pounds (66 N).

3103.12.5 Aisle. The width of *aisles* without fixed seating shall be in accordance with the following:

1. In areas serving employees only, the minimum *aisle* width shall be 24 inches (610 mm) but not less than the width required by the number of employees served.
2. In public areas, smooth-surfaced, unobstructed *aisles* having a minimum width of not less than 44 inches (1118 mm) shall be provided from seating areas, and *aisles* shall be progressively increased in width to provide, at all points, not less than 1 foot (305 mm) of *aisle* width for each 50 persons served by such *aisle* at that point.

3103.12.5.1 Arrangement and maintenance. The arrangement of *aisles* shall be subject to approval by the *fire code official* and shall be maintained clear at all times during occupancy.

3103.12.6 Exit signs. *Exits* shall be clearly marked. *Exit* signs shall be installed at required *exit* doorways and where otherwise necessary to indicate clearly the direction of egress where the *exit* serves an *occupant load* of 50 or more.

3103.12.6.1 Exit sign illumination. *Exit* signs shall be either *listed* and *labeled* in accordance with UL 924 as the internally illuminated type and used in accordance with the listing or shall be externally illuminated by luminaires supplied in either of the following manners:

1. Two separate circuits, one of which shall be separate from all other circuits, for *occupant loads* of 300 or less.
2. Two separate sources of power, one of which shall be an *approved* emergency system, shall be provided where the *occupant load* exceeds 300. Emergency systems shall be supplied from storage batteries or from the on-site generator set, and the system shall be installed in accordance with NFPA 70. The emergency system provided shall have a minimum duration of 90 minutes when operated at full design demand.

3103.12.7 Means of egress illumination. *Means of egress* shall be illuminated with light having an intensity of not less than 1 foot-candle (11 lux) at floor level while the structure is occupied. Fixtures required for *means of egress* illumination shall be supplied from a separate circuit or source of power.

3103.12.8 Maintenance of means of egress. The required width of *exits*, *aisles* and passageways shall be maintained at all times to a *public way*. Guy wires, guy ropes and other support members shall not cross a *means of egress* at a height of less than 8 feet (2438 mm). The surface of *means of egress* shall be maintained in an *approved* manner.

SECTION 3104
TEMPORARY AND PERMANENT TENTS AND MEMBRANE STRUCTURES

3104.1 General. Tents and membrane structures, both temporary and permanent, shall be in accordance with this section and Sections 3106 and 3107. Permanent tents and membrane structures shall also comply with the *International Building Code*.

[S] 3104.2 Flame propagation performance treatment. Before a permit is granted, the *owner* or agent shall file with the *fire code official* a certificate executed by an *approved* testing laboratory. The certificate shall indicate that the floor coverings, tents, membrane structures and their appurtenances, which include sidewalls, drops and tarpaulins, are composed of materials meeting the flame propagation performance of Test Method 2 of NFPA 701, or other approved standard. Additionally, it shall indicate that the bunting and combustible decorative materials and effects are composed of material meeting the flame propagation performance criteria of Test Method 1 or Test Method 2 of NFPA 701, or other approved standard as applicable. Alternatively, the materials shall be treated with a flame retardant in an *approved* manner and meet the flame propagation performance criteria of the applicable test method of NFPA 701, or other approved standard. The flame propagation performance criteria shall be effective for the period specified by the permit.

3104.2 Point of Information

Accepted flame certificates for decorative materials include:

1. Certificates indicating compliance with NFPA 701.
2. Certificates verifying approval through the California State Fire Marshal.
3. Certificates indicating compliance with CPAI-84 (Canvas Products Association International).

3104.3 Label. Membrane structures or tents shall have a permanently affixed label bearing the identification of size and fabric or material type.

3104.4 Certification. An affidavit or affirmation shall be submitted to the *fire code official* and a copy retained on the premises on which the tent or air-supported structure is located. The affidavit shall attest to all of the following information relative to the flame propagation performance criteria of the fabric:

1. Names and address of the *owners* of the tent or air-supported structure.
2. Date the fabric was last treated with flame-retardant solution.
3. Trade name or kind of chemical used in treatment.
4. Name of person or firm treating the material.
5. Name of testing agency and test standard by which the fabric was tested.

SECTION 3105
TEMPORARY SPECIAL EVENT STRUCTURES

3105.1 General. Temporary special event structures shall comply with Section 3104, Sections 3105.2 through 3105.9 and ANSI E1.21.

3105.2 Approval. Temporary special event structures in excess of 400 square feet (37 m^2) shall not be erected, operated or maintained for any purpose without first obtaining approval and a permit from the *fire code official* and the building official.

3105.3 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7.

3105.4 Use period. Temporary special event structures erected in accordance with ANSI E1.21 shall not be erected for a period of more than six consecutive weeks.

[S] 3105.5 Required documents. The following documents shall be submitted to the *fire code official* ((~~and the building official~~)) for review before a permit is *approved*:

1. Construction documents: *Construction documents* shall be prepared by a *registered design professional* in accordance with the *International Building Code* and ANSI E1.21 where applicable. *Construction documents* shall include:
   1.1. A summary sheet showing the building code used, design criteria, loads and support reactions.
   1.2. Detailed construction and installation drawings.
   1.3. Design calculations.
   1.4. Operating limits of the structure explicitly outlined by the *registered design professional* including environmental conditions and physical forces.
   1.5. Effects of additive elements such as video walls, supported scenery, audio equipment, vertical and horizontal coverings.
   1.6. Means for adequate stability including specific requirements for guying and cross-bracing, ground anchors or ballast for different ground conditions.
2. Designation of responsible party: The *owner* of the temporary special event structure shall designate in writing a person to have responsibility for the temporary special event structure on the site. The designated person shall have sufficient knowledge of the construction documents, manufacturer's recommendations and operations plan to make judgments regarding the structure's safety and to coordinate with the *fire code official.*
3. Operations plan: The operations plan shall reflect manufacturer's operational guidelines, procedures for environmental monitoring and actions to be taken under specified conditions consistent with the *construction documents.*

[S] 3105.6 Inspections. Inspections shall comply with Section ((~~106~~)) 107 and ((~~Sections 3105.6.1 and 3105.6.2~~)) as required by the *fire code official.*

((~~**3105.6.1 Independent inspector.** The *owner* of a temporary special event structure shall employ a qualified, independent *approved* agency or individual to inspect the installation of a temporary special event structure.~~

~~**3105.6.2 Inspection report.** The inspecting agency or individual shall furnish an inspection report to the *fire code official*. The inspection report shall indicate that the temporary special event structure was inspected and was or was not installed in accordance with the approved *construction documents*. Discrepancies shall be brought to the immediate attention of the installer for correction. Where any discrepancy is not corrected, it shall be brought to the attention of the *fire code official* and the designated responsible party.~~))

3105.7 Means of egress. The *means of egress* for temporary special event structures shall comply with Chapter 10.

3105.8 Location. Temporary special event structure shall be located a distance from property lines and buildings to accommodate distances indicated in the construction drawings for guy wires, cross-bracing, ground anchors or ballast. Location shall not interfere with egress from a building or encroach on fire apparatus access roads.

3105.9 Portable fire extinguishers. Portable fire extinguishers shall be provided as required by Section 906.

SECTION 3106
OUTDOOR ASSEMBLY EVENTS

3106.1 Scope. Outdoor assembly events shall comply with this section.

3106.2 General. Outdoor assembly events shall be in accordance with this section and Section 403.12. Temporary structures erected for outdoor assembly events shall comply with this chapter.

3106.2.1 Approval required. Outdoor assembly events shall be *approved* by the *fire code official*.

3106.2.2 Permits. An operational permit shall be required as set forth in Section 105.6.

3106.2.3 Access. An *approved* means of fire apparatus access shall be provided.

3106.2.3.1 Fire service features. Unobstructed access to fire hydrants, drafting sources and other fire protection features shall be maintained at all times.

3106.3 Occupancy and means of egress. The number and location of emergency egress and escape routes shall be *approved* by the *fire code official*.

3106.3.1 Occupant load. The *fire code official* shall establish an *occupant load* for the event site.

3106.3.2 Maintenance of emergency egress and escape routes. Emergency egress and escape routes shall be maintained at all times.

3106.4 Public safety for events. Outdoor assembly events shall comply with Sections 3106.4.1 through 3106.4.7.

3106.4.1 Public safety plan for gatherings. A public safety plan shall be prepared where required by Section 403.12.2. The public safety plan shall be submitted to the *fire code official* with the application for an operational permit as required by Section 3106.2.2.

3106.4.2 Weather monitoring person. Where required by the *fire code official*, the event operator or agent shall designate one qualified individual to continuously monitor local weather reports, forecasts and conditions. Said person shall be responsible for initiating weather-related event mitigation activities, ordering the suspension or cancellation of the outdoor assembly event and issuing the evacuation signal in accordance with the *approved* public safety plan.

3106.4.3 Crowd managers. Where events involve a gathering of more than 1,000 people, trained crowd managers shall be provided in accordance with Section 403.12.3.

3106.4.4 Portable fire extinguishers. *Approved* portable fire extinguishers complying with Section 906 shall be provided and placed in locations *approved* by the *fire code official*.

3106.4.5 Smoking. Smoking shall be permitted only in designated areas. Other areas shall have *approved* "No Smoking" signs conspicuously posted and maintained in accordance with Section 310.

3106.4.6 Combustible vegetation. Combustible vegetation that could create a fire hazard shall be removed from the outdoor assembly event area.

3106.4.7 Combustible refuse. Combustible refuse shall be kept in noncombustible containers with tight-fitting or self-closing lids. Combustible refuse shall be removed from the event site at regular intervals to prevent an unsafe accumulation within the event site.

3106.5 Cooking appliances or devices. Outdoor assembly events with concession stands or booths using cooking appliances or devices shall comply with Sections 3106.5.1 through 3106.5.3.

3106.5.1 Separation from tents or structures. Cooking appliances or devices that produce sparks or grease-laden vapors or flying embers (firebrands) shall not be used within 20 feet (6096 mm) of a tent or temporary structure.

Exceptions:

1. Designated cooking tents not occupied by the public when *approved* by the *fire code official.*
2. *Tents* or structures where cooking appliances are protected with an automatic fire-extinguishing system in accordance with Section 904.12.

3106.5.2 Protection. Cooking equipment using combustible oils or solids shall meet the following:

1. A noncombustible lid shall be immediately available. The lid shall be of sufficient size to cover the cooking well completely.
2. The equipment shall be placed on a noncombustible surface.
3. An *approved* portable fire extinguisher for protection from cooking grease fires shall be provided at a location *approved* by the *fire code official*.

3106.5.3 Liquefied petroleum gas (LP-gas). The use of liquefied petroleum gas (LP-gas) shall be in accordance with Chapter 61.

3106.6 Electrical equipment and wiring. Outdoor assembly events with concession stands or booths using electrical equipment and temporary wiring for electrical power or lighting shall comply with the applicable provisions of NFPA 70 and Sections 3106.6.1 through 3106.6.3.

3106.6.1 Outdoor use. Electrical equipment and wiring shall be *listed* and *labeled* for outdoor use.

3106.6.2 Generators. Generators shall be installed not less than 10 feet (3048 mm) from combustible materials, and shall be isolated from the public by physical guard, fence or enclosure installed not less than 3 feet (914 mm) away from the internal combustion power source.

3106.6.3 Portable fire extinguishers. Each generator shall be provided with an *approved* portable fire extinguisher complying with Section 906.

SECTION 3107
OPERATIONAL REQUIREMENTS

3107.1 General. Temporary and permanent *tents* and *membrane structures* shall comply with this section. **

3107.2 Combustible materials. Hay, straw, shavings or similar combustible materials shall not be located within any tent or membrane structure containing an assembly occupancy, except the materials necessary for the daily feeding and care of animals. Sawdust and shavings utilized for a public performance or exhibit shall not be prohibited provided that the sawdust and shavings are kept damp. Combustible materials shall not be permitted under stands or seats at any time.

3107.3 Smoking. Smoking shall not be permitted in *tents* or *membrane structures*. *Approved* "No Smoking" signs shall be conspicuously posted in accordance with Section 310.

3107.4 Open or exposed flame. Open flame or other devices emitting flame, fire or heat or any flammable or *combustible liquids*, gas, charcoal or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet (6096 mm) of the *tent* or *membrane structures* while open to the public unless *approved* by the *fire code official*.

3107.5 Fireworks. Fireworks shall not be used within 100 feet (30 480 mm) of *tents* or *membrane structures*.

3107.6 Spot lighting. Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet (1829 mm) of such equipment shall be protected with *approved* noncombustible insulation not less than 9-1/4 inches (235 mm) thick.

3107.7 Safety film. Motion pictures shall not be displayed in *tents* or *membrane structures* unless the motion picture film is safety film.

[S] 3107.8 Clearance. ((~~There~~)) Where required by the *fire code official*, there shall be a clearance of not less than 3 feet (914 mm) between the fabric envelope and all contents located inside *membrane structures*.

3107.9 Portable fire extinguishers. *Approved* portable fire extinguishers complying with Section 906 shall be provided and placed in locations as required by *the fire code official*.

3107.10 Fire protection equipment. Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the *fire code official*.

3107.11 Occupant load factors. The *occupant load* allowed in an assembly structure, or portion thereof, shall be determined in accordance with Chapter 10.

3107.12 Heating and cooking equipment. Heating and cooking equipment shall be in accordance with Sections 3107.12.1 through 3107.12.7.

3107.12.1 Installation. Heating or cooking equipment, tanks, piping, hoses, fittings, valves, tubing and other related components shall be installed as specified in the *International Mechanical Code* and the *International Fuel Gas Code*, and shall be *approved* by the *fire code official*.

3107.12.2 Venting. Gas, liquid and solid fuel-burning equipment designed to be vented shall be vented to the outside air as specified in the *International Fuel Gas Code* and the *International Mechanical Code*. Such vents shall be equipped with *approved* spark arresters where required. Where vents or flues are used, all portions of the tent or membrane structure shall be not less than 12 inches (305 mm) from the flue or vent.

3107.12.3 Location. Cooking and heating equipment shall not be located within 10 feet (3048 mm) of *exits* or combustible materials.

3107.12.4 Operations. Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar devices that do not pose an ignition hazard, shall be *approved*.

[S] 3107.12.5 Cooking tents. ((~~Tents~~)) Where required by the *fire code official*, tents with sidewalls or drops where cooking is performed shall be separated from other tents or membrane structures by not less than 20 feet (6096 mm).

[S] 3107.12.6 Outdoor cooking. ((~~Outdoor~~)) Where required by the *fire code official*, outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet (6096 mm) of a tent or membrane structure.

3107.12.7 Electrical heating and cooking equipment. Electrical cooking and heating equipment shall comply with NFPA 70.

3107.13 LP-gas. The storage, handling and use of LP-gas and LP-gas equipment shall be in accordance with Sections 3107.13.1 through 3107.13.3.

3107.13.1 General. LP-gas equipment such as containers, tanks, piping, hoses, fittings, valves, tubing and other related components shall be *approved* and in accordance with Chapter 61 and with the *International Fuel Gas Code*.

3107.13.2 Location of containers. LP-gas containers and tanks shall be located outside in accordance with Table 6104.3. Pressure relief devices shall be pointed away from the *tent* or *membrane structure*.

3107.13.3 Protection and security. Portable LP-gas containers, tanks, piping, valves and fittings that are located outside and are being used to fuel equipment inside a tent or membrane structure shall be adequately protected to prevent tampering, dam-

age by vehicles or other hazards and shall be located in an *approved* location. Portable LP-gas containers shall be secured to prevent unauthorized movement.

3107.14 Flammable and combustible liquids. The storage of flammable and *combustible liquids* and the use of flammable-liquid-fueled equipment shall be in accordance with Sections 3107.14.1 through 3107.14.3.

3107.14.1 Use. Flammable-liquid-fueled equipment shall not be used in *tents* or *membrane structures*.

[S] 3107.14.2 Flammable and combustible liquid storage. ((~~Flammable~~)) Where required by the *fire code official*, flammable and *combustible liquids* shall be stored outside in an *approved* manner not less than 50 feet (15 240 mm) from *tents* or *membrane structures*. Storage shall be in accordance with Chapter 57.

[S] 3107.14.3 Refueling. ((~~Refueling~~)) Where required by the *fire code official*, refueling shall be performed in an *approved* location not less than 20 feet (6096 mm) from *tents* or *membrane structures*.

3107.15 Display of motor vehicles. Liquid- and gas-fueled vehicles and equipment used for display within *tents* or *membrane structures* shall be in accordance with **Sections** 3107.15.1 through 3107.15.5.3.

[S] 3107.15.1 Batteries. Batteries shall be disconnected ((~~in an appropriate manner~~)) except where the *fire code official* requires that the batteries remain connected to maintain safety features.

3107.15.2 Fuel. Vehicles or equipment shall not be fueled or defueled within the tent or membrane structure.

3107.15.2.1 Quantity limit. Fuel in the fuel tank shall not exceed one-quarter of the tank capacity or 5 gallons (19 L), whichever is less.

3107.15.2.2 Inspection. Fuel systems shall be inspected for leaks.

3107.15.2.3 Closure. Fuel tank openings shall be locked and sealed to prevent the escape of vapors.

3107.15.3 Location. The location of vehicles or equipment shall not obstruct *means of egress.*

3107.15.4 Places of assembly. When a compressed natural gas (CNG) or liquefied petroleum gas (LP-gas) powered vehicle is parked inside a place of assembly, all the following conditions shall be met:

1. The quarter-turn shutoff valve or other shutoff valve on the outlet of the CNG or LP-gas container shall be closed and the engine shall be operated until it stops. Valves shall remain closed while the vehicle is indoors.
2. The hot lead of the battery shall be disconnected.
3. Dual-fuel vehicles equipped to operate on gasoline and CNG or LP-gas shall comply with this section and Sections 3107.15.1 through 3107.15.3 for gasoline-powered vehicles.

3107.15.5 Competitions and demonstrations. Liquid and gas-fueled vehicles and equipment used for competition or demonstration within a tent or membrane structure shall comply with Sections 3107.15.5.1 through 3107.15.5.3.

3107.15.5.1 Fuel storage. Fuel for vehicles or equipment shall be stored in *approved* containers in an *approved* location outside of the structure in accordance with Section 3107.14.2.

3107.15.5.2 Fueling. Refueling shall be performed outside of the structure in accordance with Section 3107.14.3.

3107.15.5.3 Spills. Fuel spills shall be cleaned up immediately.

[S] 3107.16 Separation of generators. ((~~Generators~~)) Where required by the *fire code official*, generators and other internal combustion power sources shall be separated from tents or membrane structures by not less than 20 feet (6096 mm) and shall be isolated from contact with the public by fencing, enclosure or other *approved* means.

3107.17 Standby personnel. Where, in the opinion of the *fire code official*, it is essential for public safety in a tent or membrane structure used as a place of assembly or any other use where people congregate, because of the number of persons, or the nature of the performance, exhibition, display, contest or activity, the *owner*, agent or lessee shall employ one or more qualified persons, as required and *approved*, to remain on duty during the times such places are open to the public, or when such activity is being conducted.

3107.17.1 Duties. Before each performance or the start of such activity, standby personnel shall keep diligent watch for fires during the time such place is open to the public or such activity is being conducted and take prompt measures for extinguishment of fires that occur and assist in the evacuation of the public from the structure.

3107.17.2 Crowd managers. There shall be trained crowd managers or trained crowd supervisors at a ratio of one crowd manager or supervisor for every 250 occupants, as *approved*.

3107.18 Combustible vegetation. Combustible vegetation that could create a fire hazard shall be removed from the area occupied by a *tent* or *membrane structure*, and from areas within 30 feet (9144 mm) of such structures.

3107.19 Combustible waste material. The floor surface inside *tents* or *membrane structures* and the grounds outside and within a 30-foot (9144 mm) perimeter shall be kept free of combustible waste and other combustible materials that could create a fire hazard. Such waste shall be stored in *approved* containers and removed from the premises not less than once a day during the period the structure is occupied by the public.