



FIRE PREVENTION DIVISION STANDARD DETAILS & SPECIFICATIONS

SUBJECT: Tents, Canopies and Temporary Membrane Structures	SPEC NO: 11-S EFFECTIVE DATE: 01/01/13 REVISED:
---	--

SCOPE

These standards shall apply to any temporary membrane structure or tent in or under which 10 or more persons may gather in accordance with California Code of Regulations (CCR) Title 19.

Temporary membrane structures and tents shall be used for a period of not more than 180 days within any 12-month period at a single facility unless approved by the local building and/or zoning code official.

A. **Permits**

A tent or temporary membrane structure having an area in excess of 400 square feet may be required to have a permit and/or an inspection prior to being erected. Permits and approvals shall be in accordance with requirements of the local fire code official. **[CFC §105.6.43]**

B. **Definitions**

For the purposes of this document, the following definitions shall apply:

Tent - A shelter, structure or enclosure made of fabric or similar pliable material. **[CFC §2402]**

Membrane Structure - An air-inflated, air-supported, cable or frame-covered structure as defined by the California Building Code and not otherwise defined as a tent. See Chapter 31 of the California Building Code. **[CFC §2402]**

C. **Access, Location, and Parking**

1. Fire apparatus access shall be provided as outlined in CFC §503. Access roads shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of 13 feet, 6 inches. **[CFC §503.2.1]**
2. Temporary membrane structures and tents shall not be located within 20 feet of buildings, lot lines, parked vehicles, internal combustion engines, or other temporary membrane structures or tents. 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:

- a. Separation distance between temporary membrane structures and tents not used for cooking is not required when the aggregate floor area does not exceed 15,000 square feet;
 - b. Temporary membrane structures or tents need not be separated from buildings when all of the following conditions are met:
 1. The aggregate floor area of the membrane structure or tent shall not exceed 10,000 square feet;
 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 California Building Code;
 3. Required means of egress are provided for both the building and the membrane structure or tent including travel distances;
 4. Fire apparatus access roads are provided in accordance with Section 503 of the California Fire Code;
 - c. The Fire Code official may approve tents located in, or on, permanent buildings provided that such use does not constitute an undue hazard. **[CFC §2403.8.2]**
3. Vehicles necessary to the operation of the establishment shall be parked at least 20 feet from any tent. No other vehicle shall be parked less than 100 feet from any tent except vehicles parked on a public street shall park at least 20 feet from any tent. **[CFC §2403.8.2]**

D. Anchorage and Structural Stability

1. Membrane structures and tents and their appurtenances shall be adequately roped, braced and anchored to withstand the elements of weather and prevent against collapsing. **[CFC §2403.9]**
2. Documentation of structural stability shall be furnished to the fire code official upon request. **[CFC §2403.9]**

E. Flame Resistance and Flame Retardant Treatment and Standards

1. Before a permit is granted, the owner or agent shall file with the fire code official a certificate executed by the State Fire Marshal certifying that the tents and membrane structures and their appurtenances; sidewalls, drops and tarpaulins are made from a flame resistant fabric or material approved by the State Fire Marshal. **[CFC §§2402.1, 2404.2, 2404.4]**
2. Required Label, Stencil or Stamp:
 - a. Each section of top and sidewall of large tents and temporary membrane structures (i.e., those designed for use by 10 or more persons) shall have a permanently-affixed a durable label bearing the following

information: [CFC§2404.3(a)]

- i. The seal of registration.
- ii. If treated fabric, the name and registration number of the approved application concern and approved chemical used and the date of treatment.
- iii. If registered fabric, the trade name and registration number of the approved fabric and the date of production.

In lieu of the permanent label, the registration information may be applied directly to the fabric by print, stamp or stencil. [CFC §2404.3(a)]

b. Small tents shall have a permanently affixed label bearing all of the information listed above for large tents, or shall meet the provisions of CPAI-84 (1975), as follows: [CFC §2404.3]

- i. A statement that the materials used in the manufacture of the item meet the flame resistance requirements of CPAI-84.
- ii. An identification of the manufacturer of the item. If the item bears a private label, it shall identify the private labeler and shall also contain a code mark which will permit the seller of the item to identify the manufacturer to the purchaser upon request.
- iii. A number enabling the manufacturer to identify from his records the suppliers and suppliers' lot number of the certified materials used in the item. The manufacturer shall also maintain records identifying the parties to whom he sold camping tentage. Further, the manufacturer shall maintain records identifying items manufactured from lots of certified material. Records shall be maintained for four years.
- iv. A warning label in accordance with the following, or its equivalent, must be permanently affixed to the tent at one conspicuous location and must be black letters on a white background:

24 Point Type WARNING

16 Point Type KEEP ALL FLAMES AND HEAT SOURCES AWAY
FROM THIS FABRIC

12 Point Type This tent is made with flame resistant fabric which
meets CPAI-84 specifications. It is not fireproof. The
fabric will burn if left in continuous contact with any flame
source.
The applicant of any foreign substance to the tent fabric
may render the flame resistant properties ineffective.

F. Maximum Occupant Load

1. The occupant load allowed in an Assembly structure shall be determined in accordance with Chapter 10 of the CFC. [CFC §2404.14]

2. Every room or space that is an Assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place near the main exit or exit access doorway from the room or space. [CFC §1004.3]
3. For areas without fixed seating, the number of occupants shall be computed at the rate of one occupant per unit of area as prescribed below: [CFC §1004.1.1]

Table 1004.1.1	Floor area in square feet per occupant
Concentrated (chairs only – not fixed)	7 net
Standing Space	5 net
Unconcentrated (tables & chairs)	15 net

G. Exits

Exits shall be spaced at approximately equal intervals around the perimeter of the temporary membrane structure or tent and shall be located such that all points are 100 feet or less from an exit. [CFC §2403.12.1]

1. Exits shall be provided in accordance with the following table:

**CFC TABLE 2403.12.2
MINIMUM NUMBER OF EXITS AND EXIT WIDTHS FOR TENTS AND
TEMPORARY MEMBRANE STRUCTURES***

Occupancy Load	Minimum Number of Means of Egress	Minimum Width of Each Means of Egress - Tent	Minimum Width of each Means of Egress – Membrane Structure
10 to 199	2	72 in.	36 in.
200 to 499	3	72 in.	72 in.
500 to 999	4	96 in.	72 in.
1,000 to 1,999	5	120 in.	96 in.
2,000 to 2,999	6	120 in.	96 in.
Over 3,000	7	120 in.	96 in.

* The total width of means of egress in inches shall not be less than the total occupant load served by a means of egress multiplied by 0.2 inches per person. Such widths of means of egress shall be divided approximately equally among the separate means of egress.

2. Exit openings from tents shall remain open unless covered by a flame-resistant curtain as follows: [CFC §2403.12.3]
 - a. Curtains shall be free sliding on a metal support. The support shall be a minimum of 80 inches above the floor level at the exit. Curtains shall be so arranged that, when open, no part of the curtains obstruct the exit; and
 - b. Curtains shall be of a color, or colors, that contrast with the color of the tent.

I. Doors

Exit doors shall swing in the direction of exit travel. To avoid hazardous pressure loss from air supported structures, such doors shall be automatic closing against operating pressures. Opening force at the door edge shall not exceed 15 pounds (66 N). [CFC §2403.12.4]

J. Maintenance of Means of Egress

1. The required width of exits, aisles and passageways to a public way shall be maintained at all times. [CFC §2403.12.8]
2. Guy wires, guy ropes, and other support members shall not cross a means of egress at a height of less than eight (8) feet. [CFC §2403.12.8]
3. The surface of means of egress shall be maintained in an approved manner. [CFC §2403.12.8]
4. Exits, aisles and passageways shall not be blocked or have their minimum clear width obstructed in any manner by ticket offices, turnstiles, concessions, chairs, equipment, animal chutes, poles or guy wires, or anything whatsoever, nor shall they be blocked by persons for whom no seats are available. [CFC §2404.23]

K. Exit Illumination and Signage

1. Means of egress shall be illuminated with light having an intensity of not less than one (1) footcandle 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. [CFC §2403.12.7]
2. Exit signs shall be clearly marked. Exit signs shall be installed at required exit doorways and where otherwise necessary to clearly indicate the direction of egress when the exit serves an occupant load of 50 or more. [CFC §2403.12.6]
3. Exit signs shall be either listed and labeled in accordance with UL 924 as the internally illuminated type and used in accordance with their listing or shall be externally illuminated by luminaries supplied in the following manner:
 - a. For occupant loads of 300 or less, two separate circuits, one of which shall be separate from all other circuits, shall be provided;
 - b. When the occupant load exceeds 300, two separate sources of power, one of which shall be an approved emergency system, shall be provided. Emergency systems shall be supplied from storage batteries or on-site generator set, and the system shall be installed in accordance with the Electrical Code. The emergency system provided shall have a minimum duration of 90 minutes at full design demand. [CFC §2403.12.6.1]

L. Seating Arrangements and Aisle Spacing

1. Seating arrangements and aisle spacing shall be in accordance with Chapter 10 of the CFC and meet the approval of the fire code official. [CFC §§2403.11, 2403.12.5.1]

2. Aisle width for areas with no fixed seating shall be as follows:
 - a. In public areas without fixed seats, the minimum clear aisle width shall be 44 inches and aisles shall be progressively increased in width to provide, at all points, not less than 1 foot of aisle width for each 50 persons served by such aisle at that point. [CFC §2403.12.5]
 - b. In areas serving employees only, the minimum aisle width shall be 24 inches but not less than the width required by the number of employees served in accordance with CFC Table 2403.12.2.
3. Aisles shall terminate at a cross aisle, foyer, doorway, or vomitory having access to an exit. [CFC §1028.9.5]
4. Aisles shall not have a dead end greater than 20 feet in length. [CFC §1028.9.5]
5. Where seating rows have 14 or fewer seats, the minimum clear aisle access way shall not be less than 12 inches measured as the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind. [CFC §1028.10]

The clear width shall be increased as follows:

- a. For rows of seating served by aisles or doorways at both ends, there shall not be more than 100 seats per row. A minimum clear width of 12 inches between rows shall be increased by 0.3 inch for every additional seat beyond 14, but the minimum clear width is not required to exceed 22 inches. [CFC §1028.10.1]
 - b. For rows of seating served by an aisle or a doorway at one end only, the minimum clear width of 12 inches between rows shall be increased by 0.6 inch for every additional seat beyond seven, but the minimum clear width is not required to exceed 22 inches. [CFC §1028.10.2]
6. Aisle access ways serving arrangements of seating at tables shall provide a minimum of 12 inches of width plus $\frac{1}{2}$ inch of width for each additional 1 foot, or fraction thereof, beyond 12 feet of aisle access way length measured from the center of the seat farthest from an aisle. [CFC §1017.4.2]
7. The distance to the point where the occupant has a choice of two directions of travel to an exit shall not exceed 30 feet from the point where the occupant is seated. In addition, where one of the two paths of travel is across the aisle through a row of seats to another aisle, there shall not be more than 24 seats between the two aisles, and the minimum clear width between the rows for the row between the aisles shall be 12 inches plus 0.6 inch for each additional seat above seven in the row between aisles. [CFC §§1028.8, 1028.8.1]
8. When there are 300 or more loose seats, folding chairs, or similar seating facilities that are not fixed to the floor, chairs shall be bonded together in groups of three or more. Bonding of chairs is not required when tables are provided for dining or similar purposes. [CFC §1014.4]

M. Smoking and Open or Exposed Flames

1. Smoking shall not be permitted in any tent or temporary membrane structure or in any adjacent areas where hay, straw, or any other combustible materials are stored or used. Approved "NO SMOKING" signs shall be conspicuously posted. **[CFC §2404.6]**
2. Open flame or other devices emitting flame, fire, spark or heat or any flammable liquids, gas, charcoal or other cooking device or any other unapproved devices shall not be used in, or located within 20 feet of the tent or membrane structure while open to the public unless approved by the fire code official. **[CFC §2404.7]**

N. Flammable or Combustible Liquids and Liquefied Petroleum Gas (LP-gas)

1. Flammable-liquid-fuel equipment shall not be used in temporary membrane structures or tents. **[CFC §2404.17.1]**
2. Refueling shall be performed in an approved location not less than 20 feet from temporary membrane structures and tents. **[CFC §2404.17.3]**
3. Flammable and combustible liquids shall be stored outside in an approved manner not less than 50 feet from temporary membrane structures and tents. **[CFC §2404.17.2]**
4. LP-gas shall be located outside. Safety release valves shall be pointed away from temporary membrane structures and tents. **[CFC §2404.16.2]**
5. Portable LP-gas containers having a capacity of 500 gallons or less shall have a minimum separation between the container and structure of not less than 10 feet. **[CFC §2404.16.2.1]**
6. Portable LP-gas containers having a capacity of 500 gallons or more shall have a minimum separation between the container and structure of not less than 25 feet. **[CFC §2404.16.2.2]**
7. Portable LP-gas containers, piping, valves and fittings located outside and being used to fuel equipment inside a tent or membrane structure shall be adequately protected to prevent tampering, damage by vehicles or other hazards, and shall be located in an approved location. **[CFC §2404.16.3]**
8. Portable LP-gas containers shall be securely fastened to prevent unauthorized movement. **[CFC §2404.16.3]**

O. Generators

Generators and other internal combustion power sources shall be separated from tents or membrane structures by a minimum of 20 feet and shall be isolated from contact with the public by fencing, enclosure, or other approved means. **[CFC §2404.19]**

P. General Fire Safety

1. There shall be a minimum clearance of at least 3 feet between the fabric envelope and all contents located inside tents and membrane structures. **[CFC §2404.11]**
2. Combustible vegetation, hay, straw, trash and similar combustible material shall be removed from the area occupied by a temporary membrane structure or tent and from areas within 50 feet of tents and membrane structures to which the public is admitted. **[CFC §§2404.21, 2404.5]**
3. Floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material meeting performance criteria of NFPA 701 or shall be treated with a flame retardant in an approved manner and meet the flame propagation criteria of NFPA 701. **[CFC §2404.2]**
4. Hay, straw, shavings or similar combustible materials shall not be located within, or used on the floor of, any tent or membrane structure unless it is made flame resistant in an approved manner, or when approved by the fire code official, kept adequately damp when the tent is occupied. **[CFC §2404.5]**
5. The floor surface inside tents or membrane structures and the grounds outside and within a 30-foot perimeter shall be kept free and clear of combustible waste and other combustible materials that could create a fire hazard. Such wastes shall be stored in approved containers until removed from the premises at least once a day during the period the structure is occupied. **[CFC §2404.22]**
6. Any condition that presents a fire hazard, would contribute to the rapid spread of fire, interfere with the rapid exit of persons from tents, or interfere with or delay the extinguishment of a fire, shall be immediately corrected as ordered by the fire code official. **[CFC §2402.1]**

Q. Heating and Cooking Equipment

1. Cooking equipment is permitted only inside tents and temporary membrane structures used exclusively for the cooking of food. No other uses such as public assembly, sales, displays, ect. are permitted inside a tent where cooking is allowed. [Exception: 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 may be approved by the fire code official for use inside a tent or temporary membrane structure occupied by the public.] **[CFC §§2404.7, 2404.15.4]**
2. Gas, liquid and solid fuel-burning equipment shall be vented to the outside air as specified in the California Mechanical Code. Where vents or flues are used, all portions of the tent membrane structure shall be not less than 12 inches from the flue or vent. Solid fuel burning equipment shall be equipped with a spark arrester having openings not exceeding ¼-inch wire mesh. **[CFC §2404.15.2]**
3. Tents with sidewalks or drops where cooking is performed shall be separated from other temporary membrane structures and tents by a minimum of 20 feet. **[CFC §2404.15.5]**
4. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet of a tent or membrane structure. **[CFC §2404.15.6]**

5. Open flame or other devices emitting flame, fire, spark or heat or any flammable liquids, gas, charcoal or other cooking device or any other unapproved devices shall not be used in, or located within 20 feet of the tent or membrane structure while open to the public unless approved by the fire code official. All other cooking equipment shall be located a minimum of 10 feet from temporary membrane structures and tents. **[CFC §§2404.7, 2404.15.3]**
6. Heating and cooking equipment shall not be located within 10 feet of exits or combustible materials. **[CFC §2404.15.3]**
7. All cooking and heating equipment, tanks, piping, hoses, fittings, valves, tubing, and other related components shall be installed in accordance with the California Mechanical Code and shall be approved by the fire code official. **[CFC §2404.15.1]**

R. Portable Fire Extinguishers and Other Fire Protection Equipment

1. Minimum fire extinguisher coverage shall be provided in every tent and temporary membrane structure as follows:
 - a. 200 to 500 square feet of floor area: one 2-A extinguisher plus one in each auxiliary adjacent tent; **[CFC §2404.12(a)]**
 - b. Each additional 2,000 square feet of floor area or fraction thereof: one 2-A extinguisher. **[CFC §2404.12(a)]**
2. At least one 10 B-C extinguisher shall be provided for each generator or transformer. **[CFC §2404.12(b)]**
3. At least one 10 B-C extinguisher shall be provided in the kitchen, dining areas and at locations where flammable or combustible liquids or flammable gases are used, stored or dispensed. **[CFC §2404.12(c)]**
4. Tents having a capacity of 1,000 or more persons shall be protected along the long sides with fire hose lines of at least 1½-inch inside diameter and of sufficient length to reach either end of the tent. The water supply shall either be from the public water mains or from tanks having a capacity of not less than 500 gallons. There shall be at least 65 pounds of flowing pressure at the nozzle of the hose line when a 1/2 – inch tip is used. **[CFC §2404.13]**
5. Other fire protection equipment shall be maintained at the site as required by the fire code official. **[CFC §2404.13]**

S. Standby Personnel and Crowd Managers

1. Trained crowd managers shall be provided where more than 1,000 people congregate or in tents and membrane structures when required by the fire code official. The minimum number of crowd managers shall be established at a ratio of one crowd manager to every 250 persons. Where approved by the fire code official, the ratio of crowd managers may be reduced where the facility is equipped throughout with an approved automatic sprinkler system or based on the nature of the event. **[CFC §§403.3, 2404.20.2]**

2. When, in the opinion of the fire code official, it is essential for public safety in a tent or membrane structure, because of the number of persons, or the nature of the event 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 event is being conducted. **[CFC §2404.20]**