

Policy: Tents, Temporary Special Event Structures and other Membrane Structures	Effective Date: 08/01/2019	Revised: 08/01/2019
Policy Number: FP003	Section: Fire Prevention	Prior Policy Number: N/A
Department: District	Initial Policy Date: 11/01/2011	Prior Effective Date: 12/07/2016

Purpose:

This policy is intended to help groups or businesses that use tents, temporary special event structures and other membrane structures during special events in understanding the *2018 International Fire Code* requirements that relate to these types of events. This policy applies to the use of tents and other membrane structures that are not erected on a single premise greater than 180 days within a 12-month period AND temporary special event structures that are erected for a period longer than 6 consecutive weeks. This policy is general in nature and may not be all inclusive of all codes that may apply for each event. The Windsor Severance Fire Rescue (WSFR) Life Safety Division staff member will make the final decision at each event on any matters not clearly defined in this policy.

Definitions:

- **Air-Inflated Structure** A structure that uses air-pressurized membrane beams, arches or other elements to enclose space. Occupants of such a structure do not occupy the pressurized areas used to support the structure.
- **Air-Supported Structure** A structure wherein the shape of the is attained by air pressure, and occupants of the structure are within the elevated pressure area. Air supported structures are of two basic types:

Single skin-where there is only the single outer skin and the air pressure is directly against the skin.

Double skin-similar to a single skin, but with an attached liner that is separated from the outer skin and provides an air space that serves for insulation, acoustic, aesthetic or similar purposes.

- **Canopy** A structure or architectural protection of rigid construction over which a covering is attached that provides weather protection, identity or decoration, and may be structurally independent or supported by attachment to a building on one end and by not less than one stanchion on the outer end.
- **Membrane Structure** An air-inflated, air-supported, cable or frame-covered structure as defined by the *International Building Code (IBC)* and not otherwise defined as a tent.

IBC (Chapter 31-Special Construction) Membrane structures include structures that are air-inflated, air-supported, membrane-covered cable, membrane-covered frame and tensile membrane structures.

- **Temporary Special Event Structure** Any temporary ground-supported structure, platform, stage, stage scaffolding or rigging, canopy, tower supporting audio or visual effects equipment or similar structures not regulated within the scope of the *International Building Code*.
- **Tent** A structure, enclosure, umbrella structure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported in any manner except by air of the contents it protects.
- **Umbrella Structure:** A structure, enclosure or shelter with or without sidewalls or drops, constructed of fabric or pliable material supported by a central pole or poles.

Procedure:

Permitting

- Tents and temporary membrane structures having an area in excess of 700 sq.ft. are required to obtain a permit and meet the 2018 International Fire Code, Article 31 and other safety requirements of WSFR. (Referred to as a *large tent*).
- Temporary special structures having an area in excess of 400 sq.ft. are required to obtain a permit and meet the 2018 International Fire Code, Article 31 and other safety requirements per WSFR.

Tent and Temporary Membrane Structures

Safety Requirements

- Permits submitted for inspection and approval must include-
 1. Construction documents that provide a detailed site and floor plan for tents or temporary membrane structures with a planned occupant load greater than 50 people.
 2. Documentation of structural stability.
 3. Certificate of flame resistance based on NFPA 701 standards and executed by an approved testing laboratory.
- The location of tents or temporary membrane structures shall not be within 20 feet of lot lines, buildings, other tents or temporary membrane structures, parked vehicles or

internal combustion engines. Ropes and guy wires are considered part of the structure of a tent or temporary membrane structure.

- Provide a minimum width of 20 feet, not including roadway shoulders, for fire vehicle access.
- Tents or temporary membrane structures and their appurtenances (associated accessory components) shall be designed and installed to withstand the elements of weather and prevent collapsing.
- Exits shall be placed at approximately equal intervals around the perimeter of the tent or membrane structure. Any path to an exit inside the structure shall be less than 100 feet. Occupancy load exit requirements are listed in Table 3103.12.2 (*2018 International Fire Code*). Exit signage is required for occupancies greater than 50 people. Guy wires, guy ropes and other support members shall not cross exits at a height of less than 8 feet.

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)	
		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.

- Large tents, canopies or temporary membrane structures are required to be flame resistant and certified by an approved testing laboratory. Floor coverings, bunting, combustible decorative materials and effects, including saw dust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with a flame retardant in an approved manner. A certificate of flame resistance must be submitted to WSFR and another copy kept onsite where the tent, canopy or temporary membrane structure is located. The certificate must include the following information:
 1. Names and addresses of the owners of the tent, canopy or air-supplied structure.
 2. Date the fabric was last treated with flame-retardant solution.
 3. Trade name or kind of chemical used in the treatment.
 4. Name of person or firm treating the material.
 5. Name of the testing agency and test standard by which the fabric was tested.
- Small tents and canopies are not required by the *2018 International Fire Code* to be flame resistant and certified. WSFR does strongly recommend utilizing tents and canopies that are rated for your own safety.

Operational Requirements

- **Combustible materials** Hay, straw, shavings or similar combustible materials shall not be located within any tent or membrane structure containing an assembly occupancy, the materials necessary for the daily feeding and care of animals. Sawdust and shavings utilized for 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 and seats at any time.
- **Smoking** is prohibited inside tents and temporary membrane structures. Approved “No Smoking” signs shall be conspicuously posted.
- **Open or exposed flame** open flame or other devices emitting flame, fire or heat, or any flammable or combustible liquid gas, charcoal or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet of a tent or membrane structure.
- **Fireworks** shall not be used within 100 feet of tent or membrane structures.
- **Spot and effect lighting** shall only be powered by electricity.
- **Safety film** Motion pictures shall only be displayed in tents or membrane structures if safety film is utilized.
- **Clearance** The minimum clearance between the fabric envelope and all the contents located inside a membrane structure is 3 feet.
- **Portable fire extinguishers** will be located on site according to direction of WSFR Life Safety Division staff.
- **Fire protection equipment** Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site as required by WSFR Life Safety Division staff.
- **Occupant load factors** are determined for specific events based on the *2018 International Fire Code*.
- **Heating and cooking equipment** Warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or similar devices that do not pose an ignition hazard are approved for use inside tents and temporary membrane structures. All equipment must be at least 10 feet from exits or combustible materials.
- **LP-gas containers** must be located outside tent and membrane structures with a minimum clearance determined by the regulations of the *2018 International Fire Code* and the WSFR Life Safety Division staff member. LP-gas containers, tanks, piping, valves and fittings that are being use to fuel equipment inside a tent or membrane structure must be protected to prevent tampering, damage from vehicles or other hazards and located in an approved location.
- **Flammable and combustible liquids** shall not be used inside tents or membrane structures. All flammable and combustible liquids shall be stored outside and 50 feet away from a tent or membrane structure. Refueling shall be performed at least 20 feet away from a tent or membrane structure.

- **Display of motor vehicles** Any liquid and gas-fueled motor vehicles used as part of a display shall have their batteries disconnected, have a maximum of one-quarter tank or 5 gallons of fuel in the fuel tank (whichever is less), the fuel system inspected for leaks and the fuel tank openings locked and sealed to prevent escape of vapors. Vehicles fueled by compressed natural gas (CNG) and LP-gas must meet additional requirements.
- **Competitions and demonstrations** The storage of fuel and refueling of liquid and gas-fueled vehicles and equipment used for competition and demonstration shall occur outside a tent or membrane structure. All fuel spills cleaned up immediately.
- **Separation of generators and internal combustion power sources** shall be at least 20 feet from a tent or membrane structure and protected from contact with the public by fencing, enclosure or other approved means.
- **Standby personnel** Where WSFR Life Safety Division staff deem there is an essential need for public safety in a tent or membrane structure, they can require the use of standby personnel before and during an event(s) to extinguish fires and aid with the evacuation of the public from a structure. There shall be at least one trained crowd manager or supervisor per 250 occupants.
- **Combustible vegetation** that could create a fire hazard shall be removed from the area occupied by a tent or membrane structure and from any areas within 30 feet of such structures.
- **Combustible waste material** The floor surface inside tents and membrane structures and all areas within 30 feet of those structures, 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 at least once a day during the period that structure is occupied by the public.

Temporary Special Event Structure

Safety Requirements

- Permits submitted for inspection and approval must include-
 1. Construction documents prepared by a registered design professional containing the following-
 - a. A summary sheet showing the building code used, design criteria, loads and support reactions.
 - b. Detailed construction and installation drawings.
 - c. Design calculations.
 - d. Operating limits of the structure explicitly outlined by the registered design professional including environmental conditions and physical forces.
 - e. Effects of additive elements such as video walls, supported scenery, audio equipment, vertical and horizontal coverings.

- f. Means for adequate stability including specific requirements for guying and cross-bracing, ground anchors or ballast for different conditions.
- 2. Designation of a person responsible for the temporary special event structure while it is on site. The designated person shall have sufficient knowledge of the construction documents, manufacturer's recommendations and operations plan to make judgements regarding the structure's safety and to coordinate with WSFR staff.
- 3. An operations plan that reflects the manufacturer's operational guidelines, procedures for environmental monitoring and actions to be taken under specified conditions consistent with the supplied construction documents.
- 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. An inspection report will be provided to WSFR Life Safety Division staff. Any uncorrected discrepancies found during the inspection will also be reported to WSFR and the designated responsible person.
- The number, type and location of portable fire extinguisher(s) installed for a temporary special event structure shall be determined by WSFR Life Safety Division staff. Once installed for use, all portable fire extinguishers shall be unobstructed or unobscured from view and immediately available for use.



Tents, Temporary Special Event Structures and other Membrane Structures

Permitting and Inspection

All applications for Tents, Temporary Special Event Structures and other Membrane Structures are reviewed and inspected according to 2018 International Fire Code (IFC 2018) requirements and the adopted fire prevention policies (FP003) of Windsor Severance Fire Rescue (WSFR).

Tents and other membrane structures greater than 700 sq. ft. and temporary special event structures greater than 400 sq. ft. cannot be used or occupied without a WSFR inspection and signed permit.

- A minimum of 48 hours notice is required to accommodate the scheduling of inspections. To schedule an inspection prior to the start on an event, please call 970.686.2626.
- A member of the installation team *must be present* during the inspection of tents, temporary special event structures and other membrane structures in order to correct any deficiencies found during an inspection.
- WSFR will not issue a signed permit for tents, temporary special event structures and other membrane structures until all deficiencies are corrected.
- Permitting fees can be paid with a credit card prior to inspection by calling 970.686.2626 x 329 or by check at the time of an inspection. A re-inspection fee of \$75.00 must be paid by the installation contractor if an inspection deficiency cannot be corrected immediately and a repeat inspection is required.



LIFE SAFETY DIVISION

Windsor Severance Fire Rescue
100 N. 7th Street, Windsor, Colorado 80550
970.686.2626
firemarshal@wsfr.us

Tents, Temporary Special Event Structures and other Membrane Structures

Permit and Inspection Application

Organization or Point of Contact: _____

Name of Activity: _____

Date(s) of Activity: _____

Location of Activity: _____

Description of Activity: _____

This permit is to be used for the above date(s) and activity only. The area shall be restored to its original conditions following the event. Compliance with the requirements of the 2018 International Fire Code, 2018 International Building Code, WSFR Fire Prevention Policy FP003 (Tents, Temporary Special Event Structures and other Membrane Structures) and the following conditions:

WSFR Life Safety Division conditions:

Permit Fees:

- Tents and other membrane structures having an area in excess of 700 sq. ft. \$50.00 each
X ____ = _____
- Temporary special event structures having an area in excess of 400 sq. ft.
\$50.00 each X ____ = _____
- Re-inspection fee of \$75.00 each

Total fees to be paid for WSFR inspection = _____

Applicant: _____ Title: _____

Contact Phone: _____ Email: _____

Signature: _____ Date: _____

WSFR Life Safety Division

Permit Issued By: _____ Title: _____

Contact Phone: _____ Email: _____

Signature: _____ Date: _____

