



## EXHIBIT B FIRE & LIFE SAFETY GROUP

Fire Code Requirements Guide No. 001  
Approved by: University Fire Marshal Josep Pedrola

Effective: 02/13/2015  
Revised: 02/25/2015

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### TENTS AND OTHER MEMBRANE STRUCTURES

#### PURPOSE

To assist the reader in understanding and complying with the requirements of the Oregon Fire Code (OFC) governing the use of tents and other membrane structures. This guideline can be viewed on line at <http://ehs.uoregon.edu/fire-life-safety>

#### SCOPE

This guide shall apply to any and all individuals, groups, organizations, and contractors wishing to provide, erect, operate, use or maintain tents and other membrane structures on University of Oregon (UO) property.

#### REFERENCES

- 2010 Oregon Fire Code, Chapter 24
- Oregon State Fire Marshal Technical Advisory No.11-09
- National Fire Protection Association (NFPA) Standard 102

#### DEFINITIONS

**Air Inflated Structure.** A building where the shape of the structure is maintained by air pressurization of cells or tubes to form a barrel vault over the usable area. Occupants of such structure do not occupy the pressurized areas used to support the structure.

**Air Supported Structure.** A structure wherein the shape of the structure is attained by air pressure, and occupants of the structure are within the elevated pressure area.

**Membrane Structure.** An air inflated, air supported, cable or frame covered structure as defined by the Oregon Fire Code and not otherwise defined as a tent.

**Tent.** A structure, enclosure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported by any manner except by air or the contents that it protects.

#### GENERAL REQUIREMENTS

##### Permits

1. An operational permit from the University Fire Marshal is required for the use of tents and other membrane structures on UO property. Issued permits shall be kept on the premises or venue for which they were issued at all times and shall be readily presented to UO Fire and Life Safety staff, or representatives of other governing agencies having jurisdiction upon request.



2. In addition to any permits required by the University Fire Marshal, an operational permit may also be required by the Eugene Springfield Fire Marshal's Office for any of the activities referenced herein. Please contact the Eugene Springfield Fire Marshal's Office at 541-682-5411 or visit [www.eugene-or.gov](http://www.eugene-or.gov).
3. The filing of the operational permits referenced above are the responsibility of the contractor, event operator or agent whose services have been secured by UO department(s) sponsoring said events. Please contact UO Fire and Life Safety staff at 541-346-2958 or 541-346-3270 at least three weeks prior to the event date to discuss this type of use. This is to obtain approval for and fire prevention guidelines related to your specific event.

### **Use Period**

Temporary tents, air-supported, air-inflated or tensioned membrane structures shall not be erected for a period of more than 180 days within a 12 month period on a single premise or venue, or as approved by the University Fire Marshal.

### **Construction Documents**

A detailed site and floor plan for tents or membrane structures with an occupant load of 50 or more shall be provided to the University Fire Marshal with each permit application. The tent or membrane structure site plan shall indicate the location of the tent or membrane structure with respect to nearby structures, access roads, etc.); the floor plan shall indicate details of the means of egress facilities (exits, aisles, etc.), seating capacity, arrangement of seating, and location and type of heating and electrical equipment.

### **Insurance Requirements**

Contractors, vendors, agents and other third party representatives having secured written approval from the University Fire Marshal to erect, operate, use or maintain tents and other membrane structures on UO property as authorized in this guideline, must provide evidence of commercial general liability insurance by way of certificate of insurance that names the University of Oregon as additional insured for the event. Minimum insured amounts will be \$1 million per occurrence, and \$2 million aggregate; required amounts may be increased depending on the risk analysis of the event. Certificates of insurance must be provided to the UO event sponsor and UO Office of Risk Management.

### **Inspection Requirements**

1. Tent(s), or membrane structure(s) systems shall be inspected at regular intervals, but not less than two times per permit use period, by the permittee, event operator or agent to determine that the installation is maintained in accordance with the requirements referenced in this guide.

**EXCEPTION:** Permit use periods of less than 30 days.



2. The permittee, event operator or agent is also responsible for scheduling a compliance inspection by contacting UO Fire and Life Safety staff at 541-346-2958 or 541-346-3270 at **least three business days prior to the date of the first performance.**

## **REQUIREMENTS FOR TEMPORARY TENTS AND MEMBRANE STRUCTURES**

Contractors, event operators or agents are responsible for implementing and complying with all fire and life safety requirements referenced herein:

### **Access**

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

### **Location**

Tents or membrane structures shall not be located within 20 feet 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:**

- a. Separation distance between membrane structures and tents not used for cooking is not required when the aggregate floor area does not exceed 15,000 square feet.
- b. Membrane structures or tents need not be separated from buildings when all of the following conditions are met:
  - The aggregate floor area of the membrane structure or tent shall not exceed 10,000 square feet.
  - 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 Oregon Structural Specialty Code (OSSC).
  - Required means of egress are provided for both the building and the membrane structure or tent including travel distances.
  - Fire apparatus access roads are provided in accordance with OFC Section 503.

### **Location of structures in excess of 15,000 Square Feet in Area**

Membrane structures having an area of 15,000 square feet or more shall be located not less than 50 feet from any other tent or structure as measured from the sidewall of the tent or membrane structure unless joined together by a corridor.

### **Membrane Structures on Buildings**

Membrane structures that are erected on buildings, balconies, decks or other structures shall be regulated a permanent membrane structures in accordance with Section 3102 of the OSSC.



### **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 corridors. On each side of such corridors and approximately opposite each other, there shall be provided openings not less than 12 feet wide.

### **Fire Break**

An unobstructed fire break passageway or fire road not less than 12 feet 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 University Fire Marshal.

### **Anchorage Required**

Tents or membrane structures and their appurtenances shall be adequately roped, braced and anchored to withstand the elements of weather and prevent against collapsing. The anchoring of any tents or membrane structures on UO property shall be in accordance with Eugene Springfield Fire Marshal's Office Technical Advisory 14-02. Documentation of structural stability shall be furnished to the Eugene Springfield Fire Marshal's Office to the extent required in Technical Advisory 14-02.

### **Temporary Air-Supported and Air-Inflated Membrane Structures**

Temporary air-supported and air-inflated membrane structures shall be in accordance with the following:

1. Door Operation. During high winds exceeding 50 miles per hour 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.
2. Fabric Envelop 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 ASI 77.
3. Blowers. An air-supported structure used as a place of assembly shall be furnished with no 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.
4. Auxiliary Power. Places of public assembly for more than 200 persons shall be furnished with either a fully automatic auxiliary engine-generator set capable of powering one blower continuously for 4 hours, or a supplementary blower powered by an internal combustion engine which shall be automatic in operation.

### **Seating Arrangements**

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



## **Means of Egress**

Means of egress for temporary tents and membrane structures shall be in accordance with the following:

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 or less from an exit.
2. Number. Tents, or membrane structures or a usable portion thereof shall have at least one exit and not less than the number of exits required by OFC Table 2403.12.2. (next page) 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.



OFC TABLE 2403.12.2
MINIMUM NUMBER OF MEANS OF EGRESS AND MEANS OF EGRESS WIDTHS FROM TEMPORARY MEMBRANE STRUCTURES AND TENTS

Table with 4 columns: OCCUPANT LOAD, MINIMUM NUMBER OF MEANS OF EGRESS, MINIMUM WIDTH OF EACH MEANS OF EGRESS (inches) Tent, MINIMUM WIDTH OF EACH MEANS OF EGRESS (inches) Membrane Structure. Rows include occupant load ranges from 10 to 199 to Over 3000a.

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

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:

- 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. The curtains shall be so arranged that, when open, no part of the curtain obstructs the exit.
B. Curtains shall be of a color, or colors, that contrasts with the color of the tent.

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.

5. Aisle. The width of aisles without fixed seating shall be in accordance with the following:
A. 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.
B. In public areas, smooth-surfaced, unobstructed aisles having a minimum width of not less than 44 inches shall be provided from seating areas, 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 that point.



6. Arrangement and Maintenance. The arrangement of aisles shall be subject to approval by the University Fire Marshal and shall be maintained clear at all times during occupancy.

### **Exit Signs**

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

### **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 luminaries supplied in the following manner:

1. Two separate circuits, one of which shall be separated from all other circuits, for Occupant loads of 300 or less; or
2. Two separate sources of power, one of which shall be an approved emergency system, shall be provided when 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.

### **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.

### **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 and other support members shall not cross a means of egress at a height of less than 8 feet. The surface of means of egress shall be maintained in an approved manner.

### **REQUIREMENTS FOR TEMPORARY AND PERMANENT MEMBRANE STRUCTURES**

All tents and membrane structures, both temporary and permanent, shall be in accordance with the following, and shall also comply with the OSSC:

### **Flame Propagation Performance Treatment**

Before a permit is granted, contractors, event operators or agents shall file with the University Fire Marshal a certificate executed by an approved testing laboratory certifying that the tents and membrane structures and their appurtenances; sidewalls, drops and tarpaulins; floor coverings, bunting and combustible decorative materials and effects, including sawdust when used on floors or passageways, are composed of material meeting the flame propagation performance criteria of NFPA 701 or shall be treated with a flame retardant in an approved



manner and meet the flame propagation performance criteria of NFPA 701, and that such flame propagation performance criteria are effective for the period specified by the permit. Tents and membrane structures must also comply with ORS 479.130.

### **Label**

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

### **Certification**

An affidavit or affirmation shall be submitted to the University Fire Marshal and a copy retained on the premises on which the tent or air-supported structure is located. The affidavit shall attest to the following information relative to the flame propagation performance criteria of the fabric:

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

### **Combustible Materials**

Hay, straw, shavings or similar combustible materials shall not be located within any tent or membrane structure containing 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 the sawdust and shavings are kept damp. Combustible materials shall not be permitted under stands or seats at any time.

### **Smoking**

Smoking is **prohibited** on UO property including tents or membrane structures. Approved 'No Smoking' signs shall be conspicuously posted in accordance with OFC Section 310.

### **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 or located within 20 feet of tent or membrane structures while open to the public unless approved by the University fire Marshal.

### **Fireworks**

Fireworks shall not be used within 100 feet of tents or membrane structures. The use of fireworks on UO property shall be approved by the University Fire Marshal.





### **Spot Lighting**

Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet of such equipment shall be protected with approved non-combustible insulation not less than 9 ¼ inches thick.

### **Safety Film**

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

### **Clearance**

There shall be a minimum clearance of at least 3 feet between the fabric envelope and all contents located inside membrane structures.

### **Fire Protection Equipment**

Fire protection equipment for tents and membrane structures and the uses within or around them shall be provided in accordance with the following:

1. Minimum fire extinguisher coverage:
  - A. Structures 200 to 500 square feet of floor area – One multipurpose portable fire extinguisher, with a UL classification of 2-A:10-B:C, plus one on each auxiliary tent or membrane structure.
  - B. Each additional 2000 square feet of floor area of fraction thereof – One multipurpose portable fire extinguisher, with a UL classification of 2-A:10-B:C.
  - C. At least one multipurpose portable fire extinguisher, with a UL classification of 2-A:40-B:C shall be provided for each generator or transformer.
  - D. At least one multipurpose portable fire extinguisher, with a UL classification of 2-A:10-B:C shall be provided in kitchen, dining areas, and at locations where flammable or combustible liquids or flammable gases are used, stored or dispensed.
  - E. Tents and membrane structures using commercial cooking equipment shall be provided with a 40-B:C portable fire extinguisher within a 30 feet travel distance of commercial type cooking equipment. Cooking equipment involving solid fuels or vegetable or animal oils and fats shall also be protected by a Class K rated portable fire extinguisher as follows:
    - All solid fuel appliances whether or not under a hood, with fireboxes 5 cubic feet or less in volume shall be protected at a minimum with one 2.5 gallon or two 1.5 gallon Class K wet chemical portable fire extinguishers.
  - F. When deep fat fryers are used, listed Class K portable fire extinguishers shall be provided as follows:



- For up to four fryers having a maximum cooking medium capacity of 80 lbs. each – One Class K portable fire extinguisher of a minimum 1.5 gallon capacity.
- For every additional group of four fryers having a maximum cooking medium capacity of 80 lbs. each – One additional Class K portable fire extinguisher of a minimum 1.5 gallon capacity.
- For individual fryers exceeding 6 square feet in surface area – Class K portable fire extinguishers shall be installed in accordance with the extinguisher \*manufacturer’s recommendations.

G. The rea to be protected shall be surveyed, and fire extinguishers must be located according to these guidelines:

- Uniform distribution.
- Provide easy accessibility.
- Readily Visible and free from blocking by storage and equipment.
- Near normal paths of travel.
- Near entrance and exit doors.
- Away from areas that lend to physical damage.
- Installed on each floor where applicable.

H. Fire hoses, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the University Fire Marshal.

**Occupant Load Factors**

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

**Heating and Cooking Equipment**

Heating and Cooking Equipment shall be in accordance with the following:

1. Installation. Heating or cooking equipment, tanks, piping, hoses, fittings, valves, tubing and other related components shall be installed as specified in the Oregon Mechanical Specialty Code (OMSC) and the International Fuel Gas Code, and shall be approved by the University Fire Marshal.



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 OMSC. Such vents shall be equipped with approved spark arresters when required. Where vents or flues are used, all portions of the tent or membrane structure shall be not less than 12 inches from the flue or vent.
3. Location. Cooking and heating equipment shall not be located within 10 feet of exits or combustible materials.
4. Operations. Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar device which do not pose an ignition hazard, shall be approved.
5. Cooking Tents. Tents with sidewalls or drops where cooking is performed shall be separated from other tents or temporary membrane structures by minimum of 20 feet.
6. Outdoor Cooking. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet of a tent or membrane structure.
7. Electrical Heating and Cooking Equipment. Electrical cooking and heating equipment shall comply with NFPA 70.

### **L.P.-Gas**

The storage, handling and use of LP-gas and LP-gas equipment shall be in accordance with the following:

1. General. LP-gas equipment such as tanks, piping, hoses, fittings, valves, tubing and other related components shall be approved in accordance with Chapter 38 and with International Fuel Gas Code.
2. Location of Containers. LP-gas containers shall be located outside. Safety release valves shall be pointed away from the tent or membrane structure.
3. Containers 500 gallons or less. Portable LP-gas containers with a capacity of 500 gallons or less shall have a minimum separation between the container and the structure not less than 10 feet.
4. Containers More than 500 gallons. Portable LP-gas containers with capacity of more than 500 gallons shall have a minimum separation between the container and structures not less than 25 feet.
5. Protection and Security. Portable LP-gas containers, piping, valves and fittings which are located outside and are 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. Portable LP-gas containers shall be securely fastened in place to prevent unauthorized movement.

### **Flammable and Combustible Liquids**

The storage of flammable and combustible liquids and the use of flammable-liquid-fueled equipment shall be in accordance with the following:

1. Use. Flammable-liquid-fueled equipment shall not be used in tents or membrane structures.
2. Flammable and Combustible Liquid Storage. Flammable and combustible liquids shall be stored outside in an approved manner not less than 50 feet from tents or membrane structures. Storage shall be in accordance with Chapter 34.
3. Refueling. Refueling shall be performed in an approved location not less than 20 feet from tents or membrane structures.

### **Display of Motor Vehicles**

Liquid-and gas-fueled vehicles and equipment used for display within tents or membrane structures shall be in accordance with the following:

1. Batteries. Batteries leads shall be disconnected and their ends covered with electrical tape.
2. Fuel. Vehicles or equipment shall not be fueled or defueled within tents or membrane structures.
4. Quantity Limit. Fuel in the fuel tank shall not exceed one-quarter of the tank capacity or 5 gallons, whichever is less.
5. Inspection. Fuel systems shall be inspected for leaks.
6. Closure. Fuel tank openings shall be locked and sealed to prevent the escape of vapors.
7. Location. The location of vehicles or equipment shall not obstruct means of egress.

### **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 shut-off 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. Batteries leads shall be disconnected and their ends covered with electrical tape.
3. Dual-fuel vehicles equipped to operate on gasoline and CNG or LP-gas shall comply with this section and the sections for gasoline-powered vehicles.

### **Competitions and Demonstrations**

Liquid and gas-fueled vehicles and equipment used for competition or demonstration within a tent or membrane structure shall comply with all of the following:

1. Fuel Storage. Fuel for vehicles or equipment shall be stored in approved containers in an approved location outside of the tent or structure.
2. Fueling. Refueling shall be performed outside of tents and structures only.
3. Spills. Fuel spills shall be cleaned up immediately.

### **Separation of 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 placed on an approved surface. Such equipment shall be isolated from contact with the public by fencing, enclosure or other approved means.

### **Standby Personnel**

When in the opinion of the University Fire Marshal, 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 permittee, event operator or agent 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.

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 tent or membrane structure.
2. Crowd Managers. There shall be trained crowd managers or crowd manager/supervisors at a ratio of one crowd manager/supervisor for every 250 occupants, as approved.

### **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 of such structures.



**Combustible Waste Material**

The floor surface inside tents or membrane structures and the grounds outside and within a 30 foot 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 and venues at least once a day during the period the structure is occupied by the public.