

TECHNICAL BULLETIN

MEMBRANE STRUCTURES FOR GROUP U OCCUPANCIES

TB-45

INTRODUCTION

The purpose of this technical bulletin is to clarify the permitting and construction requirements for both temporary and permanent membrane structures used for Group U (Utility and Miscellaneous) occupancies, typically greenhouses and hoop houses, as defined in the California Building Code and California Fire Code.

It is not intended to address temporary or permanent membrane structures used for Group A (Assembly) occupancies, typically associated with special events, such as, but not limited to, winery events, weddings, races, etc.

DEFINITIONS

- A. California Building Code (CBC) Volume I Chapter 2 Section 202 (Definitions) defines membrane structures typically used as hoop houses / greenhouses:

MEMBRANE-COVERED FRAME STRUCTURE. A non-pressurized building wherein the structure is composed of a rigid framework to support a tensioned membrane which provides the weather barrier.

- B. California Building Code (CBC) Volume I Chapter 2 Section 202 (Definitions) defines membrane structures typically used as event structures:

TENSILE MEMBRANE STRUCTURE. A membrane structure having a shape that is determined by tension in the membrane and the geometry of the support structure. Typically, the structure consists of both flexible elements (e.g., membrane and cables), nonflexible elements (e.g., struts, masts, beams and arches) and the anchorage (e.g. supports and foundations). This includes frame –supported tensile membrane structures.

- C. California Fire Code (CFC) Chapter 31 (Tents and Other Membrane Structures) Section 3103 (Temporary Tents and Membrane Structures) 3103.5 (Use Period) defines the length of time that temporary membrane structures can be erected and states:

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 premises.

TECHNICAL DETAILS

- A. Sonoma County Code Chapter 7 Section 7-13 (C) (2) amends California Building Code Chapter 1 Section 105 and includes a building permit exemption which states:

Prefabricated structures no more than 500 square feet in area, constructed of light frame materials and covered with cloth or flexible plastic which has a thickness no greater than 5/1000 of an inch, accessory to a single family dwelling, with no associated electrical, plumbing, or mechanical equipment and the height above grade does not exceed 12 feet.

This building permit exemption shall not apply to “site-built” framework or any method of construction.

This building permit exemption shall not apply to structures designed or used which are not accessory to a single family dwelling.

This building permit exemption does apply to structures where parts are fabricated at a factory and where construction consists of assembling and uniting these standardized parts.

- B. California Building Code Volume II Chapter 31 (Special Construction) relates to membrane structures. Section 3102 (Membrane Structures) addresses requirements for membrane structures erected for a period of 180 days or more:

3102.1 General. The provisions of Sections 3102.1 through 3102.8 shall apply to air-supported, air-inflated, membrane covered cable, membrane-covered frame and tensile membrane structures, collectively known as membrane structures, erected for a period of 180 days or longer. Those erected for a shorter period of time shall comply with the California Fire Code.

- C. California Fire Code Chapter 31 Section 3103 (Temporary Tents and Membrane Structures), section 3103.2 states approval is required for temporary membrane structures over 400 square feet and which are erected for 180 days or less.

Tents and membrane structures having an area in excess of 400 square feet shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the fire code official.

- D. Sonoma County Code (SCC) Chapter 26 Article 88 Section 26-88-258 (a) (2) states:

Maximum Personal Cultivation. Cultivation of cannabis for personal use is limited to no more than one hundred (100) square feet per residence, of which up to six (6) plants can be cultivated for adult use purposes. Cannabis cultivation exceeding these limits is considered “commercial cultivation.”

PROCEDURE

Using all available information including verbal disclosures, aerial photography, permit history, apparent age of construction, etc. staff shall make a determination if the framework supporting the membrane has been in place for more than 180 days. The membrane itself may or may not be present and is not required to make this determination.

A. For structures erected over 180 days and greater than 120 square feet of floor area:

1. These structures are considered permanent and are subject to the provisions of the California Building Code and shall be classified by type of construction based upon combustibility and flame resistance. These structures shall also have an engineered design pursuant to CBC Section 3102.7 to sustain loading and conform to other applicable sections of the CBC for construction methods and materials.
2. Separation distance, allowable floor area, and maximum height requirements shall be subject to the limitations of the CBC.
3. Such membrane structures are considered permanent buildings and a building permit is required to construct. A demolition permit is required to remove permanent membrane structures.

B. For structures erected less than 180 days:

1. Membrane structures erected for less than 180 days are considered temporary and are subject to the provisions of the California Fire Code. Structures, or groups of structures, with a floor area greater than 400 square feet shall file for written approval of the fire code official. Such structures are subject to permitting requirements pursuant to California Fire Code Chapter 1 Section 105.6.45. The fire code official may provide a written approval or may require a permit.
2. Separation distance between temporary membrane structures is not required where the aggregate floor area does not exceed 15,000 square feet and the structures are not used for cooking (CFC 3103.8.2 Ex. 1). The separation distance shall be no less than twenty feet (20 feet) between structures or groups of structures. Membrane structures placed less than 20 feet apart will be considered one structure for purposes of determining occupant load and permitting requirements.
3. Membrane structures erected for less than 180 days and less than 3,000 square feet do not require a building permit to construct or a demolition permit to remove.

C. In General:

1. In all cases, a building permit is required for the installation of any electrical, plumbing, or mechanical systems serving a membrane structure. A demolition permit is required to remove these systems.

Summary of Permitting Requirements Membrane Structures – Group U Occupancies

Structure Type	Use Period	Area (square feet)	Fire Permit*	Building Permit*
Non-Commercial	Permanent	Equal or Less Than 120	Exempt	Exempt
Non-Commercial (Not Pre-Fabricated)	Permanent	Greater Than 120	Exempt	Required
Non-Commercial (Pre-Fabricated)	Permanent	Equal or Less Than 500	Exempt	Exempt
Non-Commercial (Pre-Fabricated)	Permanent	Greater Than 500	Exempt	Required
Non-Commercial	Temporary	Equal or Less Than 400	Exempt	Exempt
Commercial**	Permanent	Greater Than Zero	Exempt	Required
Commercial**	Temporary	Equal or Less Than 400	Exempt	Exempt
Commercial**	Temporary	Greater Than 400	Required	Exempt

* Electrical/Mechanical/Plumbing systems always require building permit.

**Membrane structures containing over 100 sq. ft. of cannabis or over six (6) plants is not a residential use.

REFERENCES

2016 California Building Code Volumes I and II
 2016 California Fire Code
 Sonoma County Code Chapters 7 and 26

