



Tuesday e-Tech Alert
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Number 83

Sprinklers Under Awnings and Canopies

An authority having jurisdiction recently contacted the NFSA through its Engineer of the Day program to inquire about the installation of sprinklers under exterior fabric awnings, suggesting that NFPA 13 has traditionally contemplated the installation of sprinklers under all combustible and limited combustible overhangs 48 inches or wider. The AHJ asked if this meant that any awning other than one made of concrete or steel would call for sprinkler protection. The response was “no” but the issue is not a simple one.

The 2006 edition of the *International Building Code*® separately defines an “awning” and “canopy” as follows:

Awning. An architectural projection that provides weather protection, identity or decoration, and is wholly supported by the building to which it is attached. An awning is comprised of a lightweight, rigid skeleton structure over which a covering is attached.

Canopy. An architectural projection that provides weather protection, identity or decoration and is supported by the building to which it is attached and at the outer end by not less than one stanchion. A canopy is comprised of a rigid structure over which a covering is attached.

It should be noted that these definitions differ in two ways: the use of the term “lightweight” in defining the awning and the presence of an outside support for the canopy. Presumably an architectural projection that is not lightweight but does not require a support at the outer end would be considered either an extension of the roof structure or a cantilevered balcony, depending on whether the top surface was to be used as a floor.

The NFPA 5000® *Building Construction and Safety Code*® does not separately define the terms, and both Codes address the requirements for awnings and canopies together, making the distinction a moot point.

For Type I and Type II (fire resistive and noncombustible) construction, NFPA 5000 requires that the awnings and canopies be of rigid frames consisting of either noncombustible materials, heavy timber, fire retardant treated wood or one-hour fire-resistive rated construction with noncombustible covers. For other building construction types the materials simply need to be “approved”, i.e. acceptable to the authority having jurisdiction.

The IBC specifies that the awnings or canopies be designed and constructed to meet wind and other lateral and live loads, and specifically allows them to be either fixed, retractable, folding or collapsible. Regardless of building construction type it requires that the awnings and canopies be of either noncombustible materials, heavy timber, fire retardant treated wood or one-hour fire-

resistive rated construction, but it allows the latter to have either combustible or noncombustible covers.

New sections added to the 2006 edition of both codes allow the use of combustible coverings that meet the flame propagation requirements of NFPA 701 – *Standard Methods of Test for Flame Propagation of Textiles and Films* – 2004 edition, or materials that have a Class A fire rating, i.e. a flame spread index not greater than 25 when tested in accordance with ASTM E84.

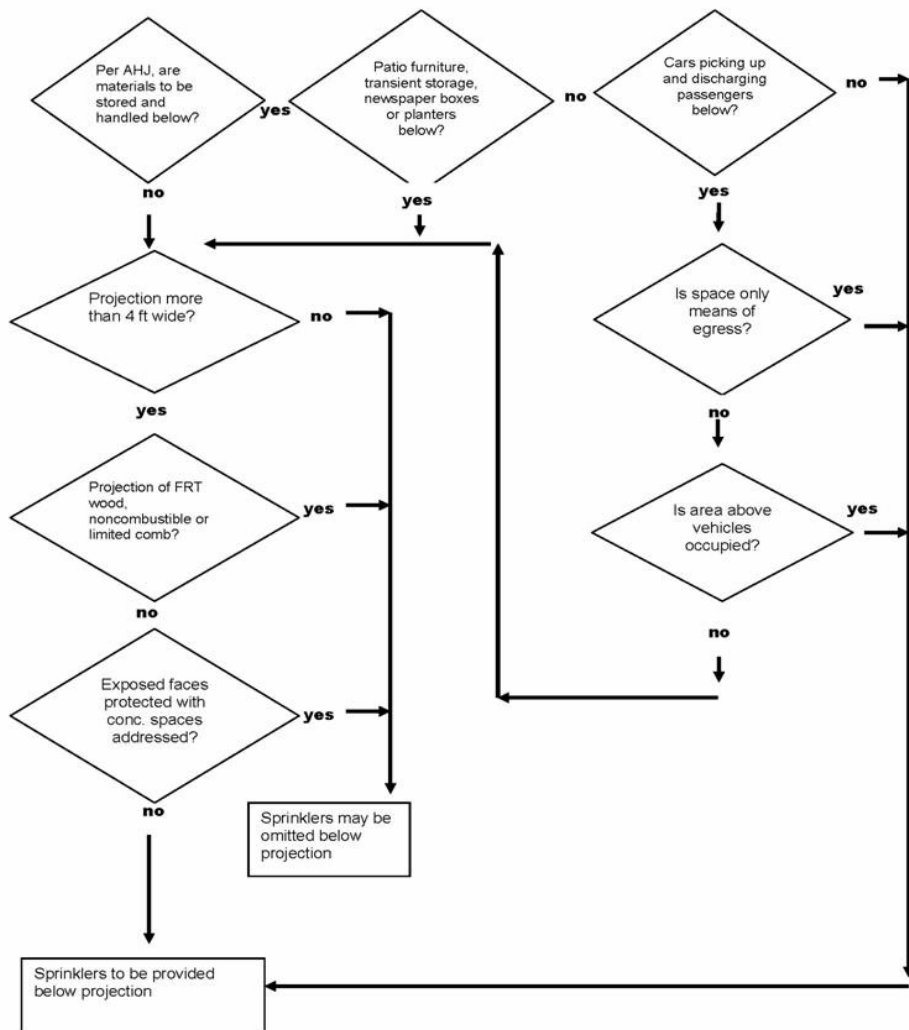
What does this mean in terms of sprinklers? First it should be noted that there is no distinction between temporary and permanent awnings and canopies. Also, neither code makes an exception to the NFPA 13 criteria for exterior roofs, canopies, and porte-cocheres (Section 8.15.7 in the 2007 edition). Annex section A.8.15.7.1 of NFPA 13 clarifies that this criteria also applies to balconies, decks and similar projections from the building. The standard calls for sprinklers under all projections over areas where combustibles are stored and handled (8.15.7.5) and, with certain exceptions, under all projections exceeding 4 ft in width (8.15.7.1). For areas where combustibles are not stored and handled, three subsections permit omission of sprinklers from under projections exceeding 4 ft in width under certain conditions:

- Section 8.15.7.2 permits omission of sprinklers where the canopy, roof or other projection is constructed with materials that are noncombustible, limited-combustible or fire retardant treated wood.
- Section 8.15.7.3 permits omission of sprinklers where the exposed finish material is noncombustible, limited-combustible or fire retardant treated wood and concealed spaces within the roof, canopy or other projection are either sprinklered, filled with noncombustible insulation, or isolated such that the spaces do not exceed 55 sq. ft in area, or, for light and ordinary hazard occupancies, or formed by the attachment of the noncombustible or limited combustible materials directly to the underside of solid wood joists so as to create enclosed joist spaces 160 ft³ in volume, including spaces below insulation laid directly on top of or within joists in an otherwise sprinklered attic.
- Section 8.15.7.4 permits sprinklers to be omitted from exterior exit corridors when the exterior walls are at least 50 percent open and the corridor is entirely of noncombustible construction.

Annex section A.8.15.7.5 clarifies that the presence of planters, newspaper machines, or short-term transient storage such as package delivery is not considered storage or handling of combustibles. Similarly, annex section A.8.15.7.2 states that areas where automobiles temporarily park to pick up and discharge passengers are not considered storage areas, although the guidance goes on to say that sprinklers should be provided where the area is the only means of egress or where there is occupancy above the ceiling. The NFPA *Automatic Sprinkler Systems Handbook* commentary somewhat confuses the issue of dining furniture under an awning, canopy or balcony, claiming “the committee has stated that combustibles such as patio furniture, which may be wood or plastic and include cushions, are not sufficient to justify sprinkler protection for balconies that would not otherwise require sprinkler protection. However, judgment is needed, and sprinklers may be justified where the balcony contains combustible loading, such as patio furniture, and where barbecue grills are allowed or other sources of ignition are present”. This commentary appears to contradict itself, and a review of the development of the 2007 edition of the standard shows that the intent was simply to avoid an arbitrary requirement for sprinklers under balconies based on the presence of patio furniture. The author of the handbook commentary

has attempted to suggest a difference based on whether a source of ignition is present, but there is no support for this distinction in the consensus process.

Awnings and canopies are used in many applications. Some, such as restaurant seating, bear a strong similarity to patios with furniture. Others are located outside retail occupancies and may or may not be permitted to have occasional combustible storage under local zoning restrictions and ordinances. Depending on the combustibility factors discussed above and the perceived use of the space under the awning or canopy, it may be the decision of the Authority Having Jurisdiction as to whether or not sprinklers can be omitted. As shown in the following flowchart, the most important step is the first – determining whether the area below the projection is expected to involve the “storage and handling of combustibles”.



Upcoming NFSA “Business Thursday” Online Seminar – May 17th

Topic: Construction Defect Laws

Instructor: Buddy Dewar, NFSA Director of Regional Operations

Date: May 17, 2007

The cost of correcting construction defects can be quite expensive but often pales to the cost of litigation that may or may not accompany the conflict. Often fire sprinkler contractors are faced with litigation to correct construction defects caused by other trades. And this litigation often leads to negative insurance claim history that surface during renewal periods. This seminar reviews legislation that has passed many state Legislatures and details language necessary for inclusion in legislation to help protect the contractor. A sample draft law will be provided.

Information and registration for this seminar is available at www.nfsa.org or by calling Dawn Fitzmaurice at 845-878-4200 ext. 133 or email: dawn@nfsa.org.

Upcoming NFSA “Technical Tuesday” Online Seminar – May 22nd

Topic: Changes to the Standpipe Rules

Instructor: Cecil Bilbo, Jr., C.E.T., NFSA Director of Technical Services

Date: May 22, 2007

The publication of NFPA 14 was delayed by a few months because the NFPA members wanted to propose changes to the document at the NFPA annual meeting. This seminar will discuss the major changes to NFPA 14, including the discussion and results of the voting at the annual meeting on the use of master pressure reducing valves.

Information and registration for this seminar is available at www.nfsa.org or by calling Dawn Fitzmaurice at 845-878-4200 ext. 133 or email: dawn@nfsa.org.

NFSA Announces “Technical Tuesday” Schedule for 2nd Half of 2007

The following topics have been selected for the online technical classes for the second half of 2007:

Date	Topic	Instructor
July 17	Multipurpose Piping Systems	Russell P. Fleming, P.E.
Aug 7	Flammable and Combustible Liquids – Part 1	Victoria B. Valentine, P.E.
Aug 21	Concealed Space Area Calculations	Cecil Bilbo, Jr.
Sept 11	Smoke and Heat Vents	Michael Friedman, P.E.
Sept 25	Cloud Ceilings	Kenneth E. Isman, P.E.
Oct 9	Special Considerations for Dry Systems	Cecil Bilbo, Jr.
Oct 23	Flammable and Combustible Liquids – Part 2	Victoria B. Valentine, P.E.
Nov 6	Spec Buildings	Kenneth E. Isman, P.E.
Nov 20	NFPA 25 – 2007 Update	Russell P. Fleming, P.E.
Dec 11	Special Storage Sprinkler Systems	Cecil Bilbo, Jr.

The following are the descriptions for each class:

July 17, 2007 – **Multi-Purpose Piping Systems** – Russell P. Fleming, P.E, Executive Vice President – Basic/Intermediate

NFPA 13 specifically recognizes the use of sprinkler systems with non-fire protection connections, and NFPA 13D and NFPA 13R also contemplate some types of combined piping systems. This seminar will provide a historical review of combination system concepts, review the current applicable rules of the NFPA standards, and discuss the potential impacts of their use. Do these systems simply represent an available alternative or are they the future of the fire sprinkler industry?

August 7, 2007 – **Flammable and Combustible Liquids – Part 1** – Victoria B. Valentine, P.E., Manager of Product Standards – Basic/Intermediate

Flammable and combustible liquids offer a challenge to many fire protection systems. The amount of liquids and the storage arrangement can affect the ability of a fire to be controlled. NFPA 30, Flammable and Combustible Liquids Code, offers some guidelines on how to protect specific arrangements. This seminar will review the different types of systems that can be used to protect these hazardous liquids and some scenarios that fall outside the scope of the standardized protection schemes.

August 21, 2007 – **Concealed Space Area Calculations** – Cecil Bilbo, Jr., Director of Technical Services – Basic/Intermediate

There are many different requirements for defining the remote areas of a sprinkler system when concealed spaces are present. This seminar will discuss the calculation of sprinkler systems when there are concealed spaces present. It will define concealed spaces and explain the differences between the types of concealed spaces. In addition, the 3,000 sq ft rule and how eaves and overhangs affect these decisions will be included. Also, optional methods of protection for these spaces will be reviewed.

September 11, 2007 – **Smoke Vents, Heat Vents, and Draft Curtains** – Michael J. Friedman, P.E., NFSA Consultant – Intermediate

While not the primary function of a sprinkler design technician, the effect of smoke vents, heat vents, and draft curtains on sprinkler performance is critical to proper sprinkler placement and integration of venting systems. This seminar will provide information a technician needs to know and the effect on sprinkler layout.

September 25, 2007 – **Cloud Ceilings** – Kenneth E. Isman, P.E, Vice President of Engineering – Intermediate

They have been called “Cloud Ceilings”, “Non-continuous Ceilings” and even “Islands in the Sky” by architects. These architectural features can be described as any ceiling that is not continuous across an entire room or space creating multiple objects in between the observer on the floor and the eventual roof of the room or space. As far as fire sprinklers are concerned, the issues are whether to sprinkle above or below these features (or both). This seminar will address all of the relevant concerns of matching a sprinkler system to a variety of different architectural features that have the potential to block hot gasses from getting to sprinklers and the potential to block discharge from the sprinklers from getting to the floor below.

October 9, 2007 – **Special Considerations for Dry Systems** – Cecil Bilbo, Jr., Director of Technical Services – Intermediate

This seminar will discuss the special requirements that are often overlooked on dry systems. The discussion will include the calculation of water delivery times and the new manifolds for testing systems in this manner, as well as the new requirements for signs and information on a dry sprinkler system. Also, find out if the small room rule and the largest room method can be used on dry systems. More importantly, the TIA recently issued for dry systems and its affect on the development of the 2007 edition of NFPA 13 will be discussed. In addition, this seminar will take a look at the history of the requirements for water delivery in NFPA 13 over the last hundred years.

October 23, 2007 – **Flammable and Combustible Liquids – Part 2** – Victoria B. Valentine, P.E., Manager of Product Standards – Intermediate

Automatic fire protection for inside storage of flammable and combustible liquids is one of the most common topics that sprinkler contractors have to deal with in NFPA 30. There are many protection schemes that are laid out for the users based on testing data. This seminar will focus on the different arrangements of inside storage and the options put forth by NFPA 30 including the flow charts used for determining protection. In addition, where in-rack protection is needed the schemes will be reviewed.

November 6, 2007 – **Spec Buildings** – Kenneth E. Isman, P.E., Vice President of Engineering – Intermediate

A fundamental assumption of NFPA 13 is that the sprinkler system is designed to match the use of the building. But what do sprinkler contractors do if the use of the building has not been established by the owner? What if the owner does not know how the building is going to be used and is just putting up the building in the hopes that someone else will buy or lease it? This seminar will provide strategies that sprinkler contractors can use to adequately protect these buildings that are being constructed without specific uses in mind.

November 20, 2007 – **NFPA 25 Update** – Russell P. Fleming, P.E., Executive Vice President – Basic/Intermediate

The 2008 edition of NFPA 25, presented at the June 2007 NFPA conference, includes new responsibilities for system inspectors. Among other items, the committee has been concerned about the lack of signage and the need for an air pressure integrity test for dry pipe systems. The committee has also attempted to address long-standing gray areas such as the degree to which a water supply can deteriorate before an investigation of adequacy is warranted, and the tests needed following component replacement or repair. Even in areas where older editions of NFPA 25 are enforced, the new provisions represent the state of the art that can impact the liability of companies performing inspection, testing and maintenance.

December 11, 2007 – **Special Storage Sprinkler Systems** - Cecil Bilbo, Jr., Director of Technical Services – Intermediate/Advanced

There have been numerous types of sprinklers listed for use in Storage Applications in recent years. Now there are entire systems listed for use in Storage Applications. This seminar will discuss the many options available and the history behind their development. From Large

Orifice, to Large Drop, to ESFR, to Big Box, to Antifreeze, all of the available options on the market will be discussed. Also included will be a conversation about “surrounding and drowning” a fire. Understanding the limitations faced by all of these products will help you choose the best strategy for winning the next bid on a storage project.

Additional NFSA Training Opportunities

Two-Week Technician Training Seminar

September 24- October 5 Kansas City, MO

This seminar, the last available for 2007, also serve as a starting point for the NFSA’s two-year Certificate Program for Fire Sprinkler Technicians. For more information, contact Nicole Sprague at 845-878-4200 ext. 149 or email: Sprague@nfsa.org.

3-day Advanced Technician Training Classes

July 24-26 Chicago, IL
September 5-7 St Louis, MO

For more information, contact Nicole Sprague at 845-878-4200 ext. 149 or email: Sprague@nfsa.org.

NICET Inspector Certification Review Classes

June 19-21 Wilmington, DE
August 14-16 San Antonio, TX
November 6-8 Providence, RI

For more information, contact Nicole Sprague at 845-878-4200 ext. 149 or email: Sprague@nfsa.org.

In-Class Training Seminars

NFSA also offers in-class training on a variety of subjects at locations across the country. Here are some upcoming seminars:

May 15-16	Two-day NFPA 13 Overview & Intro to Plan Review////Richmond, CA
May 17	Inspection, Testing & Maintenance////Richmond, CA
May 29	Introduction to Sprinkler Systems (1/2 day)(AM)////Southfield, MI
May 29	NFPA 13 2002 Update (1/2 day)(PM)////Southfield, MI
May 30	Sprinkler Protection for General Storage////Southfield, MI
May 31	Sprinkler Protection for Rack Storage////Southfield, MI
May 29-30	Two-day NFPA 13 Overview & Intro to Plan Review////Rogers, AR
May 31	Hydraulics for Fire Protection////Rogers, AR

June 5-6	Two-day NFPA 13 Overview & Intro to Plan Review////Anchorage, AK
June 7	Inspection, Testing & Maintenance////Anchorage, AK
June 5-6	Two-day NFPA 13 Overview & Intro to Plan Review////Willoughby, OH
June 7	Underground Piping (1/2 day) (AM)////Willoughby, OH
June 7	Advanced Pump Layout Procedures (1/2 day)(PM)////Willoughby, OH
June 5	Hydraulics for Fire Protection////Albany, NY
June 6	NFPA 13 2002 Update////Albany, NY
June 7	Pumps for Fire Protection////Albany, NY
June 12-13	Two-day NFPA 13 Overview & Intro to Plan Review////Holland, MI
June 14	Hydraulics for Fire Protection////Holland, MI
July 31	Introduction to Sprinkler Systems (1/2 day)(AM)////Pataskala, OH
July 31	Underground Piping (1/2 day) (PM)////Pataskala, OH
Aug 1	Pumps for Fire Protection////Pataskala, OH
Aug 2	Sprinkler Protection for Rack Storage////Pataskala, OH

For more information or to register, visit www.nfsa.org or call Michael Repko at 845-878-4207 or email: seminars@nfsa.org.

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In the promotion of the fire sprinkler concept, the National Fire Sprinkler Association represents all fire sprinkler industry interests including fire sprinkler contractors, manufacturers and suppliers of fire sprinklers and related equipment and fire protection professionals. Established in 1905, the National Fire Sprinkler Association provides publications, nationally accredited seminars, representation in codes and standards-making, market development, labor relations and other services to its membership. Headquartered in Patterson, New York, the National Fire Sprinkler Association has regional operations offices throughout the country.