

TechNotes Issue # 415 February 26, 2019

"Sprink-lish" - Sprinkler English 101

As we all know, the 2019 edition of NFPA 13 was reorganized and after a lot of hard work from the multiple technical committees, the correlating committee, and NFPA staff over the last three years, the new edition of the standard has been published and circulated. Perhaps my favorite aspect of the reorganization was the alphabetization of the definitions in Chapter 3. This TechNotes will focus on the definitions in this chapter and how the NFPA definitions of commonly defined words may stump the average reader when looking through the lens of the fire sprinkler industry. It has been prepared by Kevin Hall, P.E., NFSA's Manager of Engineering Research.

If someone was walking through your house, there would be no doubt which room is the bathroom. It's the one with a toilet and sink for a half-bathroom, or a toilet, sink, and shower/bathtub for a full-bathroom. NFPA 13-2019 defines a bathroom below:

3.3.16* Bathroom. *Within a dwelling unit, any room or compartment dedicated to personal hygiene, containing a toilet, sink, or bathing capability such as a shower or tub.*

While most of us think of bathrooms having the two or three items discussed above, NFPA 13 clarifies that a bathroom, within a dwelling unit, must only contain only one of these items or another fixture with "bathing capability." This is a key designation, especially when laying out sprinkler systems for hotels, motels and other residential structures. NFPA 13 permits the omission of sprinklers from bathrooms that do not exceed 55 ft² per section 9.2.4.1:

9.2.4.1 Bathrooms.

9.2.4.1.1* *Unless sprinklers are required by 9.2.4.1.2 or 9.2.4.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.*

9.2.4.1.2 *Sprinklers shall be required in bathrooms of limited care facilities and nursing homes, as defined in NFPA 101.*

Upcoming Technical Tuesdays

March 19, 2019

Using UFC and NFPA
Standards for DoD
Projects

Presented by Mark
Hopkins, P.E., Vice
President of
Engineering

[Register Here](#)



View older issues in the
"Member's Only" section

Did You Know??

The NFSA assigns a member of the Engineering Department staff every business day to answer your technical questions. We call this the Expert of the Day (EOD) program and it is available to our members by phone, or e-mail. Call us at (845) 878-4200 and press 2, or you can e-mail us at eod@nfsa.org. Last year we answered more than 1400 requests for assistance.

9.2.4.1.3 *Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.*

Often times in hotels and contemporary homes, the bathroom will be split up into separate spaces for the sink, toilet, and shower. If all three of these spaces individually meet the definition of a bathroom per section 3.3.16, then sprinkler protection could be omitted from all of them...if they are a room or compartment:

3.3.38 Compartment. *A space completely enclosed by walls and a ceiling. Each wall in the compartment is permitted to have openings to an adjoining space if the openings have a minimum lintel depth of 8 in. (200 mm) from the ceiling and the total width of the openings in each wall does not exceed 8 ft (2.4 m). A single opening of 36 in. (900 mm) or less in width without a lintel is permitted where there are no other openings to adjoining spaces.*

Make sure your general contractor is installing a layer of gypsum board behind the shower enclosure or tub and the minimum lintel depth and maximum openings are met, otherwise you may be stuck installing sprinklers in the room as it no longer meets the requirement to have 15-minute thermal barrier and that room with a toilet and a shower is no longer a bathroom per NFPA 13. Note that NFPA 13 does not define the term "room," so the "ordinarily accepted meanings" contained within Merriam-Webster's Collegiate Dictionary, 11th Edition shall be used. The tolerance of "ordinarily accepted meanings" would be up to the discretion of the AHJ.

While the following definitions have been in NFPA 13 since at least the 1996 edition, it is important to know what each pipe in a sprinkler system is defined as based on what it is connected to, how it is orientated, and how many sprinklers it supplies:

3.2.215 System Riser. *The aboveground horizontal or vertical pipe between the water supply and the mains (cross or feed) that contains a control valve (either directly or within its supply pipe), a pressure gauge, a drain, and a waterflow alarm device.*

3.3.181 Risers. *The vertical supply pipes in a sprinkler system.*

3.3.72 Feed Mains. *The pipes supplying cross mains, either directly or through risers.*

3.3.53 Cross Mains. *The pipes supplying the branch lines, either directly or through riser nipples.*

3.3.180 Riser Nipple. *A vertical pipe between the cross main and branch line.*

3.3.19 Branch Lines. *The pipes supplying sprinklers, either directly or through sprigs, drops, return bends, or arm-overs.*

3.3.7 Arm-Over. *A horizontal pipe that extends from the branch line to a single sprinkler or a sprinkler above and below a ceiling.*

3.3.204 Sprig. *A pipe that rises vertically and supplies a single sprinkler.*

NFPA 13-2019 uses the eight definitions listed above to



describe all of the various piping configurations in a sprinkler system. Some notable omissions include "return bends" and "drops." Even though "drops" may not necessarily need a definition due to its simplicity, the term can be used in combination with a few of the options detailed above and may require clarification. "Return bends" are called out in several sections, especially those discussing requirements for mitigating or reducing the risk of trapped water in dry pipe and double-interlock preaction systems. To eliminate confusion, the committees may want to consider the definition of return bend to include a sprig, arm-over, and drop connected to the top of a branch line.

Adding to the confusion and misinterpretation is the use of regionally adopted terminology within the sprinkler industry. In some areas return bends are referred to a "goose necks" due to their shape. In other areas, the term "rooster" is used which consists of a sprig installed with a tee and a plug in the side (bull) outlet to facilitate tenant fit-outs in the future. Even though this may be called a "rooster" in your region, the requirements for hanging and bracing of a "sprig" would need to be followed. "Buddy hangers" sound like they could do no wrong, but you should probably reference "shared support structures" in Chapter 17 and get the assembly certified by a registered professional engineer.

In the same regard, we recently have seen a developing theme in EOD questions where the submitters are asking if "break-overs" or "extensions" connecting to flexible drops need to follow the requirements of section 17.4.3.5 Unsupported Armover Lengths. By definition, this pipe extending from the branch line to a flexible drop for a single sprinkler is an armover, and section 17.4.3.5 would apply.

One final definition that may get glossed over is Miscellaneous Storage. At first glance, one may assume that storage of various commodities would be classified using this term; however, the definition is more complex:

3.3.123* Miscellaneous Storage. *Storage that does not exceed 12 ft (3.66 m) in height, is incidental to another occupancy use group, does not constitute more than 10 percent of the building area or 4000 ft² (370 m²) of the sprinklered area, whichever is greater, does not exceed 1000 ft² (93 m²) in one pile or area, and is separated from other storage areas by at least 25 ft (7.62 m).*

Just like the definition of a bathroom, this term is complex, often misunderstood, and has several levels that need to be evaluated. This definition outlines the requirements of this type of storage, and it is so important that it is said twice:

4.3.1.4* Miscellaneous Storage.

4.3.1.4.1 *Miscellaneous storage shall not constitute more than 10 percent of the building area or 4000 ft² (370 m²) of the sprinklered area, whichever is greater.*

4.3.1.4.2 *Miscellaneous storage shall not exceed 1000 ft² (93 m²) in one pile or area.*

4.3.1.4.3 *Miscellaneous storage shall be separated from other storage piles or areas by at least 25 ft (7.6 m).*

VIKING®



UL Listed Up
To 2,000 ft²*
Without Draft
Curtains

VK950 5.6K
COIN® Sprinkler

*Conditions apply,
see tech data
for details.

LEARN MORE >

VIKING®
Trusted above all.

**Upcoming In-Class
Seminars**

**Sprinkler Installation
Requirements**
Dover, DE
March 20, 2019

**Sprinkler Installation
Requirements**
Conshohocken, PA
March 21, 2019

Two Week Layout

With the exception of the 12 ft maximum storage height, the requirements are repeated in section 4.3.1.4. Per the committee statement from the first revision, "Miscellaneous and low-piled storage have been incorporated into the occupancy classifications so that the user stays in the occupancy requirements for protection, eliminating the confusion with applying design methods and other criteria."

English may be one of the hardest languages in the world due to numerous contradictions in its rules and structure, but the language of the sprinkler industry (sprink-lish) may just be a little bit harder. Get familiar with the definitions in NFPA 13 as in most instances it comes down to not what we say, but what we mean.

Technician Training

Baltimore, MD
March 25 - April 5, 2019

Layout Technician Blended

Learning - In Class
Practicum

Baltimore, MD
April 1 - 5, 2019

**Sprinkler Protection of
Storage**

Pataskala, OH
April 9 - 10, 2019

Pumps for Fire Protection
Glenwood Springs, CO
April 10, 2019

Register Here

**This Month in
Engineering**

Preparing for
Top Tech 2019

Live Competition
May 15 - 18, 2019
Nashville, TN





WORK
SMARTER,
NOT
HARDER



STYLE AB6
BRACKET

LEARN HOW
TO OPTIMIZE
COLD STORAGE
INSTALLATIONS



NFSA TechNotes is c. 2019 National Fire Sprinkler Association, and is distributed to NFSA members on Tuesdays for which no NFSA Technical Tuesday Online Seminar is scheduled. Statements and conclusions are based on the best judgment of the NFSA Engineering staff, and are not the official position of the NFPA or its technical committees or those of other organizations except as noted. Opinions expressed herein are not intended, and should not be relied upon, to provide professional consultation or services. Please send comments to Mark Hopkins, P.E. at Hopkins@nfsa.org.

