

Sprinklers for Atrium Floor Areas

Protecting an atrium space is not always simple. There is a misconception that fire sprinklers offer little protection under high ceilings. However, the effectiveness is tied to the height as well as the fuel that is in the space.

The International Building Code (IBC) defines an atrium as “a floor opening or a series of floor openings connecting two or more stories that is covered at the top of the series of openings and is used for purposes other than an enclosed stairway; elevator hoistway; escalator opening; or utility shaft used for plumbing, electrical, air conditioning or communication facilities.” Depending on the height of the building, as well as its design, atriums can come in a variety of shapes and heights. The height, however, is the key factor in determining if sprinklers are permitted to be omitted.

The IBC has an exception that allows sprinklers to be omitted from the ceiling of an atrium space if it is more than 55 ft high. This value was adopted because most laboratories cannot test over 55 ft high due to the constraints of their laboratory buildings. There have been a few tests conducted in higher buildings, but not enough to alter the recommendation of the IBC. Yet it should be noted that sprinklers installed in a variety of occupancies have proven effective in the field even when more than 55 feet high.

Most atrium spaces are a light hazard occupancy. A common arrangement might be a reception area in a hotel or office building with a few seats, but mostly open floor area. Based on the minimal amount of fuel that is found in this type of space, a fire would not necessarily grow to a substantial size where it produces enough heat to reach sprinklers and operate them. This too plays into the decision to allow sprinklers to be omitted from an atrium with a high ceiling.

If an atrium space had a function that could create more than a low fire hazard, sprinklers would not be allowed to be omitted from the ceiling of the space. Section 404.2 in the 2015 IBC states, “The floor of the atrium shall not be used for other than



Upcoming Technical Tuesday

Nov 18
Protection of Aerosol Storage

[Register Here](#)



View older issues in the "Members Only" section.

Upcoming In-Class Seminars

Nov 5-6 Yarmouth, MA
Sprinkler System Plan Review

low fire hazard uses and only approved materials and decorations in accordance with the International Fire Code shall be used in the atrium space.” However, there is an exception that permits the floor area to be approved for any use if sprinklers are installed in the atrium space. The commentary for the IBC indicates that when an atrium has storage areas, fabrication areas, and/or office areas it would have to be approved and sprinklered.

It is important to remember that this allowance to omit sprinklers from the ceiling level only applies to atrium spaces with ceilings over 55 ft. A high ceiling alone is not the only variable for the omission. A space with more fuel than a typical atrium will operate sprinklers at the ceiling level even if a high ceiling is present.



Nov 5 Columbus, OH
Rough & Final Inspections

Nov 6 Columbus, OH
Pumps for Fire Protection

Nov 7 Columbus, OH
Understanding, Applying &
Enforcing NFPA 25

[Register Here](#)

Did You Know??

The NFSA keeps a member of the Engineering Department staff on duty every business day to answer your technical questions live. We call this the Expert of the Day (EOD) program and it is available to our members by phone, fax, or e-mail. Call us at (845) 878-4200 and press 5, or you can send a fax to (845) 878-4215, or you can e-mail us at eod@nfsa.org. Last year we answered more than 2600 requests for assistance.

NFSA Tuesday eTechNotes is c. 2014 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 Victoria B. Valentine P.E., valentine@nfsa.org.

