



## Tuesday e-Tech Alert August 16, 2005

### Stairs and Shafts

A recent NFSA Technical Tuesday Online Seminar dealt with the subject of vertical shafts. The following are some recent questions that have come to the NFSA Engineering staff on the protection of shafts and stairs:

**Q:** In an open mechanical chase with multiple floors, should sprinklers be placed on every other floor?

**A:** Sections 8.14.1.2.14 and 8.14.2.1.1 deal with the permissible elimination of sprinklers from both combustible and noncombustible/limited combustible pipe chases under specified conditions, including a requirement that they be inaccessible, i.e. concealed spaces. The placement of sprinklers within other shafts is addressed in Section 8.14.2 and 8.14.3. Combustible shafts require sprinklers at every other floor, plus at the top of trapped sections (offsets), and 3-sprinkler design criteria is specified in Section 11.2.3.4.1. Noncombustible accessible shafts require one sprinkler near the bottom.

**Q:** For noncombustible stair shafts with noncombustible stairs, Section 8.14.3.2.1 requires a sprinkler at the top of the shaft and “under the first landing above the bottom of the shaft?” Is this the next floor up, the intermediate landing, or both?

**A:** The intent is to provide sprinkler protection to protect the typical dead area beneath the lowest stair riser, which often becomes an impromptu storage space. Prior to the 2002 edition of NFPA 13 this section contained an exception requiring that sprinklers be installed beneath all landings or stairways where the area beneath is used for storage. That exception is now Section 8.14.3.2.3, which more clearly states the intent.

**Q:** Do you need to sprinkler under a combustible staircase that is totally enclosed with gypsum board with no storage below?

**A:** Yes. Wood construction sheathed with a limited combustible material like gypsum board, or even sheathed with a noncombustible material, is still considered combustible construction.

**Q:** There are situations in which there are three floors, with corridors open on both sides and arranged such that you can stand on the first floor and look up to the ceiling of the third floor. If the corridors are typically sized as long rectangular spaces (perhaps 6 ft wide by 50 ft long) do such vertical openings require draft stops and water curtains?

**A:** Yes, in accordance with the wording of NFPA 13. It may seem inappropriate to require the additional draft stops and close-spaced sprinklers if the applicable building code would allow this type of unprotected vertical opening in a nonsprinklered building, but the NFPA 13 Committee has not yet acted to extend the concept of the allowed convenience opening beyond those connecting two stories within dwelling units. This is currently being considered during the development of the 2007 edition of NFPA 13.

Upcoming NFSA Technical Tuesday Online Seminar

**Topic:** Atria and High Ceilings  
**Instructor:** Kevin J. Kelly, P.E.  
**Date:** August 23, 2005

The concept of sprinkler protection located at very high ceilings or in open areas connecting multiple floors has been an area of study for many years and has the potential for future research. This seminar will cover the current rules

from NFPA standards and the model building codes for sprinklers in these areas. This seminar will also cover research that has led to the current rules and recommendations.

Information and registration for this seminar is available at [www.nfsa.org](http://www.nfsa.org).

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