Protection of Concealed Spaces

James D. Lake
Vice President of Training
and Communication
Learning Objectives

• Describe a concealed space within a building.
• Use the NFPA 13 standard to determine where sprinklers are permitted to be omitted in concealed spaces of buildings.
• Explain why sprinklers are permitted to be omitted from these spaces.
• Explain the differences between NFPA 13 and NFPA 13R with regard to concealed spaces.

What is a Concealed Space?

[Diagram showing different types of concealed spaces]
What is a Concealed Space?

• No Formal Definition

However:
• Enclosed on All Sides
• Limited or No Access
• Not Intended for Occupancy
• Not Intended for Storage

Why are Concealed Spaces Important?

[Image of a fire, courtesy of Drake Exhibits]
8.15.1.1

• Concealed spaces of exposed combustible construction shall be protected by sprinklers.

• Except in concealed spaces where sprinklers are not required to be installed by 8.15.1.2.1 through 8.15.1.2.18 and 8.15.6.

Question

• Where NFPA 13 refers to noncombustible and limited combustible construction, is the use of the terms in reference to building construction or to the type of combustible loading within the space?
8.15.1.2

• Why are sprinklers permitted to be omitted from certain concealed spaces?

• Access
• Fuel Load
• Physically Impractical

8.15.1.2.1

• 8.15.1.2.1* Concealed spaces of noncombustible and limited-combustible construction with minimal combustible loading having no access shall not require sprinkler protection.
8.15.1.2.1

• The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.
Small Openings?
8.15.1.2.2

- 8.15.1.2.2 Concealed spaces of noncombustible and limited-combustible construction with limited access and not permitting occupancy or storage of combustibles shall not require sprinkler protection.

8.15.1.2.3

Wood Decking

6 in. Max

Ceiling
8.15.1.2.4

Floor Deck

Ceiling

8.15.1.2.5

Wood Joists or Similar Solid Members

Wood Decking

14 in. Max

6 in. Max

Ceiling
8.15.1.2.6

Roof or Floor Above

Batt Insulation

3.5 in

Gypsum Board

Firestopping

Resilient Channel

8.15.1.2.7

Roof or Floor Above

Ceiling
8.15.1.2.8

Fire Stop

160 ft³

Insulation

Questions

??Questions???
8.15.1.2.9
Concealed spaces over isolated small rooms not exceeding 55 ft$^2$ in area

8.15.1.2.10
8.15.1.2.10

8.15.1.2.11

Fire Retardant Treated Wood Decking

Fire Retardant
Treated
Wood Joists

Ceiling
8.15.1.2.12

• Noncombustible concealed spaces having exposed combustible insulation where the heat content of the facing and substrate of the insulation material does not exceed 1000 Btu/ft² shall not require sprinkler protection.
8.15.1.2.15

Combustible Exterior Roof
With Sprinkler Protection

5 ft diameter
Hollow Column
No Sprinklers
Required

8.15.1.2.16

Roof or Subfloor
Sprinklers within the Trusses
Wood Truss
Insulation
Concealed Space Below
Truss Bottom Chords

Ceiling
8.15.1.2.17

Roof or Floor Above

2 in. Max

Composite or Solid wood joist

Wrapped/overlapped and stapled per manufacturers recommendation

Batt insulation meeting non or limited combustible

Noncombustible Ceiling

8.15.1.2.18

<160 ft³
8.15.6

- Spaces Under ground Floors, Exterior Docks, and Platforms
  - The space is not accessible
  - Protected against wind-borne debris accumulation
  - No fuel-fired equipment
  - Floor above is of tight construction
  - No combustible/flammable liquids handled above

???Questions???
NFPA 13R and Concealed Spaces

6.6.2

- **Bathrooms.** Sprinklers shall not be required in bathrooms where the bathroom area does not exceed 55 ft².
6.6.3

- **Small Closets.** Except where specified in 6.6.4, sprinklers shall not be required in clothes closets, linen closets, and pantries within dwelling units that meet all of the following conditions:
  - The area of the space does not exceed 24 ft²
  - The least dimension does not exceed 3 ft
  - The walls and ceilings are surfaced with noncombustible or limited-combustible materials as defined by NFPA 220.

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**Closets with HVAC Equipment**

- 6.6.4* Sprinklers shall be installed in any closet used for heating and air-conditioning equipment except as permitted by 6.6.7
6.6.5

- Sprinklers not be required
  - porches,
  - balconies,
  - corridors,
  - carports,
  - stairs that are open and attached.

6.6.6

- Sprinklers shall not be required...
  - Attics
  - Penthouse equipment rooms
  - Elevator Machine Rooms
  - Concealed Spaces
  - Crawl Spaces
  - Floor Ceiling Spaces
6.6.6

• Sprinklers shall not be required...
  – Noncombustible Elevator Shafts
  – other concealed spaces that are not used or intended for living purposes or storage and do not contain fuel-fired equipment.

6.6.6.1

• When fuel-fired equipment is present, at least one quick-response intermediate temperature sprinkler shall be installed above the equipment.
6.6.7

Apartment A

Storage

Storage

Exterior Corridor

Apartment B

???Questions???
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Resources

www.nfsa.org
Thank You