



# FIRE/SMOKE BARRIER FUNDAMENTALS FOR HEALTH CARE FACILITIES

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# OBJECTIVE

- Identify the different types of barriers used in health care facilities
- Identify the key characteristics for each barrier
  - Continuity
  - Protection of openings
- List at least three strategies that can be used to improve a barrier management program

# TYPES OF WALL ASSEMBLIES

- Exterior walls
- Fire walls
- Fire barriers
- Fire partitions – No such assembly in NFPA
- Smoke barriers
- Smoke partitions

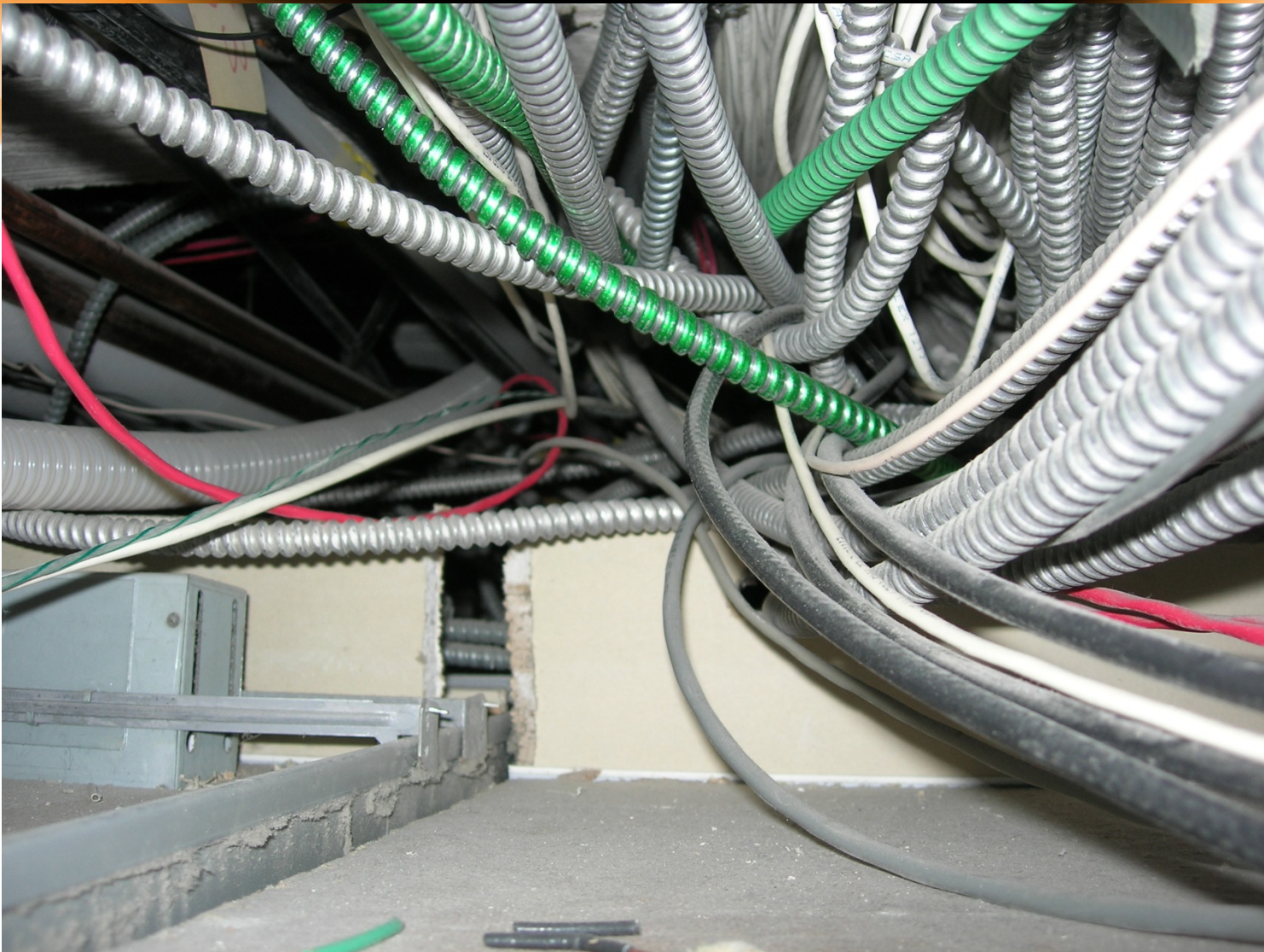
# FIRE TESTED WALL ASSEMBLIES

- In accordance with ASTM E119/UL263
- Resist passage of heat and hot gases
- Structural integrity during the test fire
- Have something left at the end of the test

# FIVE POINTS

- Required fire-resistance rating
- Continuity
- Openings and penetrations
- Types of materials
- Structural robustness

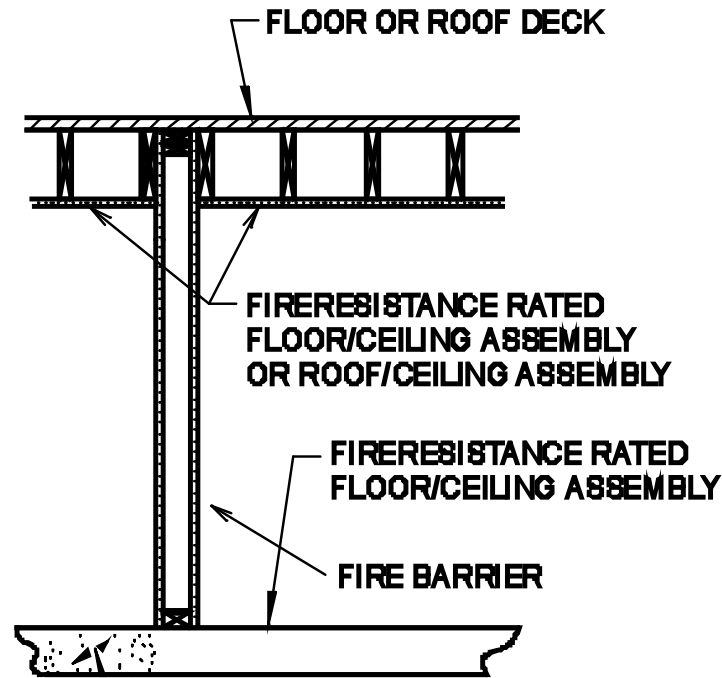
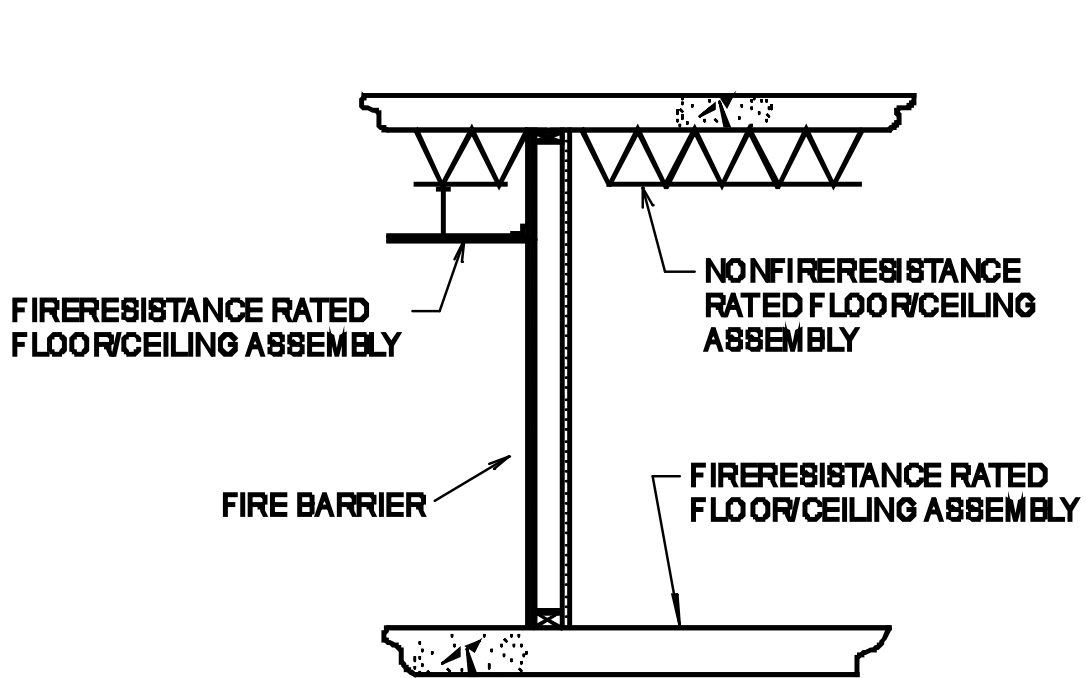




# FIRE BARRIERS

- Fire barriers are used in the following applications:
  - Fire area separations
  - Mixed occupancy separations
  - Incidental use areas
  - Hazardous area separations
  - Exit enclosures
  - Shaft enclosures
  - Horizontal exits
  - Corridor walls – NFPA only

# CONTINUITY





# SUPPORT

- Supported by construction with the same fire-resistance rating as the fire barrier
- Some exceptions
  - Vary between NFPA and ICC

# SUMMARY OF FIRE BARRIERS

Issue	Requirement
Required Fire-Resistance Rating	Depends upon specific use
Required continuity	Floor/ceiling below to deck above
Openings	General: Aggregate glazing area (or width) <25% wall area/length; maximum size 120 sf. Specific: Rules based on use of barrier
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

# FIRE PARTITIONS

- Fire partitions are used in the following applications:
  - Dwelling units separations
  - Sleeping units in Group R-1, R-2 and I-1
  - Tenant separation in covered malls
  - Exit access corridor walls
  - Elevator lobby separation
- Remember, NFPA does not use this phrase

# SUMMARY OF FIRE PARTITIONS

Issue	Requirement
Required Fire-Resistance Rating	1 hour, with exceptions, depending on use. For corridors see Table in Chapter 10 – IBC only
Required continuity	Floor/ceiling below to deck above or tight to underside of fire-resistance rated assembly. Supported by fire-resistance rated construction, except in corridors, tenant, and guestroom separations in Types IIIB and VB construction
Openings	20 minutes (w/o hose stream) for corridors 45 minutes for all others
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

# SMOKE BARRIERS

- Smoke barriers are used in the following applications:
  - Group I-2
  - Group I-3
  - Areas or refuge
  - Other specific applications



# SUMMARY OF SMOKE BARRIERS

Issue	Requirement
Required Fire-Resistance Rating	1-hour with the exception that a construction of a minimum 0.1” thick steel in Group I-3 buildings is allowed
Required continuity	Horizontal: Outside wall to outside wall Vertical: Floor to slab or deck above, continuous through interstitial spaces Supporting construction may be required based upon the applicable codes
Openings	20 minutes – but not a true fire door in NFPA 101 Smoke- and draft-controlled doors tested in accordance with UL 1784 – IBC only
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

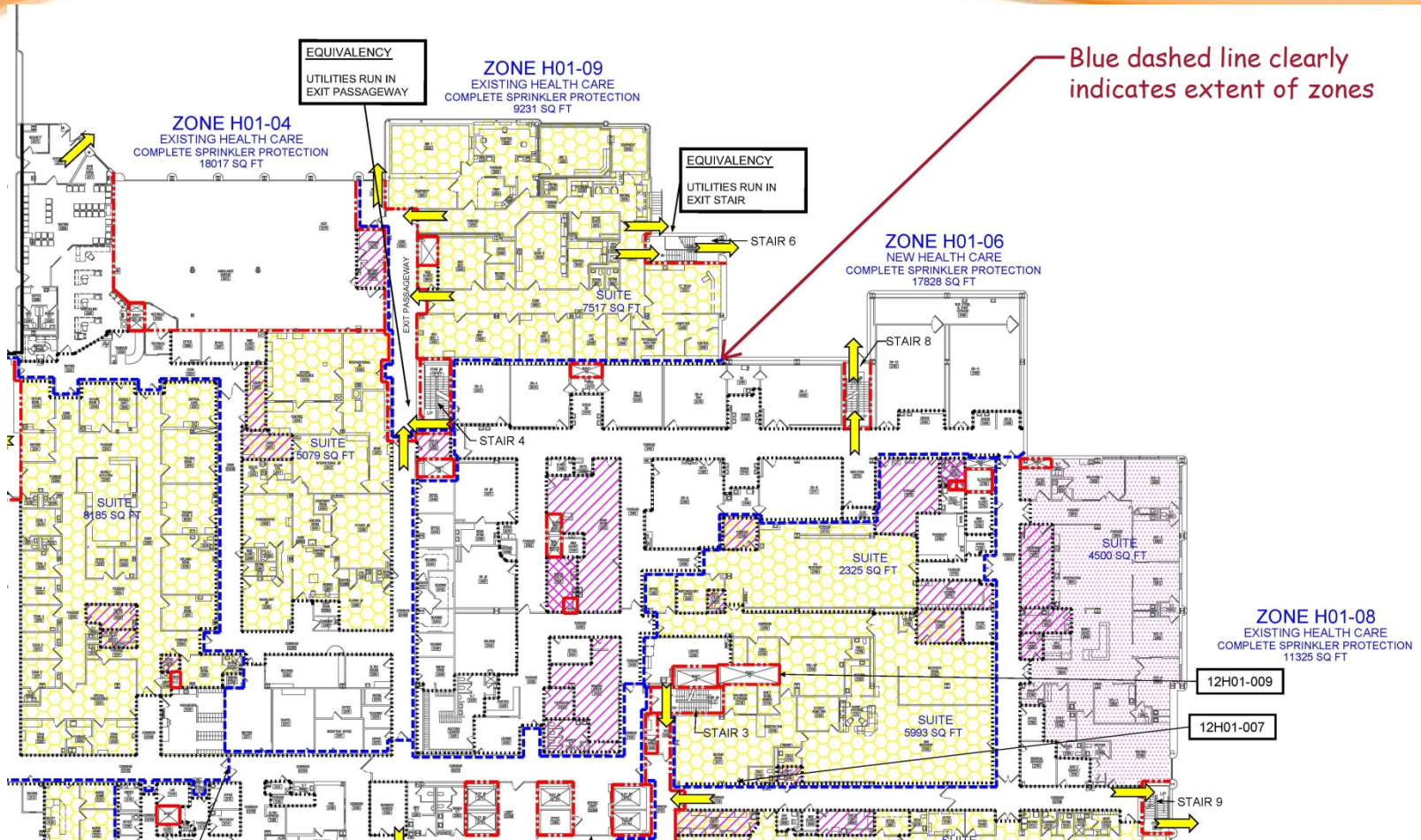
# SMOKE PARTITIONS

- Smoke partitions are used in the following applications:
  - Corridor walls in Group I-2 – IBC only
  - Sprinkler protected hazardous areas – NFPA

# SUMMARY OF SMOKE PARTITIONS

Issue	Requirements
Required Fire-Resistance Rating	Not required (unless otherwise required)
Required continuity	Floor/ceiling below to deck above or tight to underside of ceiling membrane in ceiling membrane designed to limit passage of smoke - Difference between NFPA/ICC for ceiling tiles
Openings	Windows: Sealed to resist free passage of smoke Doors: No louvers Air leakage rated (UL 1784) – IBC??? Self closing, or automatic closing by smoke detectors
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

# LS DRAWING INFORMATION





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- A legend that clearly identifies features of fire safety
- Areas of the building that are fully sprinklered (if the building is partially sprinklered)
- Locations of all hazardous storage areas
- Locations of all rated barriers
- Locations of all smoke barriers
- Suite boundaries, including the size of the identified suites—both sleeping (max 5,000 sq ft) and non-sleeping (max 10,000 sq ft) – **CMS Memorandum dated August 30, 2013**
- Locations of designated smoke compartments
- Locations of chutes and shafts
- Any approved equivalencies or waivers



# SUCCESSFUL STRATEGIES

- **BUILD IT CORRECTLY**

- Thorough plan review process
- Contractor qualifications
- Commissioning systems and buildings
  - NFPA 3, NFPA 4, ASHE documents, pending ICC std.
- Complete SOC documentation while contractor still on site
- Use of certified inspectors or special inspectors



# BUILD IT CORRECTLY!!



# SUCCESSFUL STRATEGIES

- Make sure all rehabilitation work is done correctly
  - Refer to previous slides
- Above ceiling work permits
  - Means to identify “approved” individuals
- Proper identification
  - Labels
  - Marking
  - Life Safety Drawings





# ADDITIONAL RESOURCES

- Visit [www.koffel.com](http://www.koffel.com) for links to a LinkedIn Life Safety Code Discussion Group
- NFPA
  - [www.NFPA.org/###](http://www.NFPA.org/###)

- ASHE







# QUESTIONS AND DISCUSSION