

**KOFFEL ASSOCIATES, INC.**

EXPERTLY ENGINEERING SAFETY FROM FIRE

# NFPA 13 Updates, 2016 Edition

# Agenda

- **NFPA 13**
- **Which Edition applies to your project**
- **Review Significant Changes to NFPA 13, 2016**
  - **New & Updated Commodity Classification Tables**
  - **Exposed Expanded Group A Plastics**
  - **Cloud Ceilings**
  - **Drop-Out Ceilings and Ceiling Materials**
  - **Metric Conversions**
  - **Sprinkler Protected Glazing**

# Scope

- NFPA 13, Installation of Sprinkler Systems
  - Provides the minimum requirements for the design and installation of automatic fire sprinkler systems
- Does not identify when a system is required
  - Local building codes and insurance regulations

# NFPA 13 Updates

- **2013 Edition is current edition**
- **2016 Edition is scheduled to be released in August.**
- **Standard went before NFPA Committee Membership for approval at the 2015 NFPA Conference in Chicago on June 24-25, 2015.**
- **Five committees responsible for NFPA 13 deliberated over several hundred proposals and comments.**

# Which Edition Applies

- **Federal Agencies (DOD & VA)**
  - Most current edition applies
- **Jurisdictions adopt 2012 IBC, 2012 LSC**
  - 2010 Edition of NFPA 13
- **Jurisdictions adopt 2015 IBC, 2015 LSC**
  - 2013 Edition of NFPA 13 applies
- **CMMS (currently)**
  - 2000 Edition of LSC (currently)
    - 1999 Edition of NFPA 13
  - 2012 Edition of LSC (eventually)
    - 2010 Edition of NFPA 13
- **Global front**
  - Apply NFPA 5000, 2015 Edition

# New Commodity Classification Tables

- **Complete Revision**
  - Ch. 5 Annex
  - Updated examples reflect modern day storage facilities
  - Materials evolved from wood & metal to plastics



# Exposed Expanded Group A Plastics in Racks

- **New Protection Scheme in Chapter 17**
  - NFPA 13 has historically been silent.
  - Common in today's marketplace
  - Driven by FPRF Findings & UL Testing



# Exposed Expanded Group A Plastics in Racks

- **New Section 17.2.3.5**
  - Single, double, multiple-row racks
  - 25 ft. max storage height
  - 40 ft. max ceiling height
  - Intermediate temperature-rated ESFR pendent sprinklers, K-25.2
  - 12 hydraulically demanding sprinkler design area
  - 60 psi min. operating pressure
  - 8 ft min. isle width
  - Solid vertical barrier, 3/8 in. plywood or 22 gauge sheet metal, from face of rack to face of rack, 16.5 ft intervals
  - Extend 4 in. above floor to max storage height
  - Area of storage between vertical barriers & isles shall not exceed 124 ft<sup>2</sup>
  - Vertical fire barrier shall extend across the longitudinal flue
  - Commodity shall be permitted to extend a nominal 4 in. beyond the vertical barrier at the isle

# Cloud Ceilings

- **New Definition (3.3.5.1)**



# Cloud Ceilings

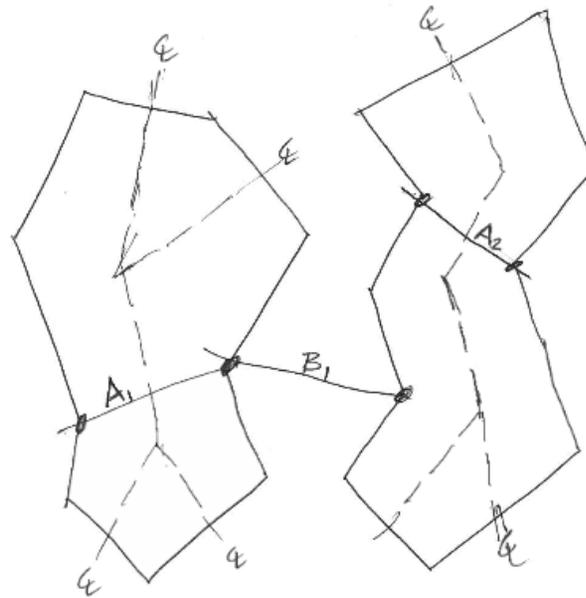
- **FPRF & Academy of Fire Sprinkler Technology**
- **New Chapter 8 Design Criteria**
  - Sprinklers omitted above clouds where
    - Combined area of openings < 20% of ceiling and comply with Table 8.15.2.4.1.
    - QR Standard Spray or EC pendent or upright
    - EC, max spacing of 16 ft.
    - Max 20 ft cloud ceiling height
    - Max sprinkler spacing per Tables 8.6.2.2.1.a&b
    - Cloud ceilings, smooth ceiling construction
    - Irregular shape clouds

# Cloud Ceilings

- **New Table 8.15.2.4.1** Maximum Sprinkler Protection Area Based on Ceiling Cloud Width and Opening Width

Ceiling Cloud – Minimum Width Dimension(ft)	Maximum Area (ft <sup>2</sup> ) – Opening Width ≤ 0.5 in./ft of Ceiling Height	Maximum Area (ft <sup>2</sup> ) – Opening Width ≤ 0.75 in./ft of Ceiling Height	Maximum Area (ft <sup>2</sup> ) – Opening Width ≤ 1 in./ft of Ceiling Height
2-<2.5	175	70	NP
2.5-4	225	120	70
>4	225	150	150

# Cloud Ceilings



A = MINIMUM CLAD WIDTH  
B = MAXIMUM GAP WIDTH

FIGURE A.8.15.23.2.4

# 8.15.15. Drop-Out Ceilings

- **Drop-out ceilings**
  - Suspended ceiling system
  - Heat sensitive panels
  - Fall when exposed to heat
  - Sprinklers located above panels



# 8.15.15. Drop-Out Ceilings and Ceiling Materials

- Criteria expanded to include ceiling materials
  - Membrane products
    - Evaluated by UL Using UL 723S
    - Test evaluates activation time and obstruction
    - Seams fail early enough in the fire growth
    - Does not affect the sprinkler activation or discharge
    - Perform similar to drop-out ceilings

# Metric Conversions

- **Recognizes ever increasing global application of the standard**
- **Intent is to make standard more usable**
- **More accurately reflect the metric nominal pipe sizes and measurements used abroad**
- **3 in. pipes converts to 76.2 mm (use 75 or 80 mm?)**
- **Rounding rules, example 2,000 gallons converts to 7,570.824 liters**

# Sprinkler-Protected Glazing

- **Code Officials have historically permitted their use**
  - **Atriums and exterior walls**
- **Previous editions of NFPA 13 has not provided installation criteria**
  - **New prescriptive criteria in 2016 Edition**
  - **Not the intent to apply to glass atrium enclosures or pedestrian walkways, which are covered by codes**
- **Committee Statement - Recent actions in building codes have attempted to diminish use of these systems**
  - **By providing specific provisions in NFPA 13, questions regarding the lack of appropriate installation requirements would be resolved.**

# Sprinkler-Protected Glazing

- **New Section 8.15.26**
  - **Where sprinklers are used in combination with glazing as an alternative to a required fire-rated wall or window assembly, the sprinkler-protected assembly shall comply with the following:**
    - **Sprinklers listed as specific application window sprinklers (unless the standard spray sprinklers is permitted by building code)**
    - **Wet-pipe system**
    - **Glazing shall be heat-strengthened, tempered, or glass ceramic & fixed**
    - **If assembly requires protection on both sides, sprinkler both sides of glazing**
    - **Limited to non-load-bearing walls**
    - **No horizontal members in glazing that would interfere with water distribution over glazing, and no spray pattern obstructions**
    - **Water supply duration for design area shall not be less than required rating of the assembly**

# Summary

- **Which edition applies to your project**
- **Keep abreast of current trends & criteria**
- **2016 has new criteria which may benefit your project**
- **Take-away main topics discussed, not the details**
- **Questions?**