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ELECTRONIC SECURITY EXPO
**MANAGEMENT TRACK | FIRE
FOCUS**

**THE BUSINESS OF FIRE ALARMS – PART 2:
UNDERSTANDING CODES, STANDARDS, AND
NEW TECHNOLOGIES**

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ESX FEEDBACK



- 1**
ANSWER 5 QUESTIONS ABOUT THIS SESSION
- 2**
GAIN ACCESS TO THE PPT SLIDES
- 3**
BE ENTERED TO WIN A \$100 GIFT CARD

3 GIFT CARDS (\$100 EACH) AVAILABLE FOR SURVEY RESPONDENT RAFFLES

WINNERS WILL BE NOTIFIED THROUGH THE ESX APP

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COURSE OBJECTIVES:

The Business of Fire Alarms: Understanding Codes, Standards, and New Technologies – Part 2

- The difference between codes and standards
- New or updated codes that you need to know about
- Next-gen fire alarm products and signal transmission technologies coming of age
- Fire alarm best practices that keep you out of the red
- The adoption of BDAs (bidirectional amplifiers) and Area of Refuge

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MEET THE SPEAKER




LARRY D. RIETZ, SET, CFPS
VP, SERVICE LINE LEADER, FIRE DETECTION & ALARM
JENSEN HUGHES

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FIRE ALARM CODES AND STANDARDS



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What is the difference between a Code and standard?

- **Code**
 - Model Building Codes
 - International Building Code / International Fire Code (ICC)
 - NFPA 1 / 5000 (NFPA)
 - NFPA 101® *Life Safety Code*®
 - Local Ordinances (State, Local)
- When and Where to install a FA System or Device
- **Standard**
 - NFPA 72® *National Fire Alarm and Signaling Code*®
 - NFPA 70® *National Electric Code*®
 - NFPA 13 *Standard for the Installation of Sprinkler Systems*
 - NFPA 90A *Standard for the Installation of Air-Conditioning and Ventilating Systems*
- How to install a FA System or Device

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What Code and Standard apply?

- Must do research with your state and local jurisdiction.
- All ICC and NFPA codes are updated every 3 years, but not necessarily adopted in that same frequency.
- Note the lag between the Code and Standard editions



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Educational Occupancies


- IBC/IFC 907.2.3 Group E – 2015 Edition
- Requires Emergency Voice/Alarm Communications System (EVACS) if occupancy is over 100.
 - Manual fire alarm boxes (pull stations) are not required, where:
 - Interior corridors are protected by smoke detectors
 - Auditoriums, cafeterias, gymnasiums and similar areas are protected by heat detector or other approved detection
 - Shops and laboratories involving dusts or vapors are protected by heat detectors
 - Building is equipped throughout with an approved sprinkler system
 - EVACS will activate on sprinkler water flow
 - Manual activation is provided from a normally occupied location

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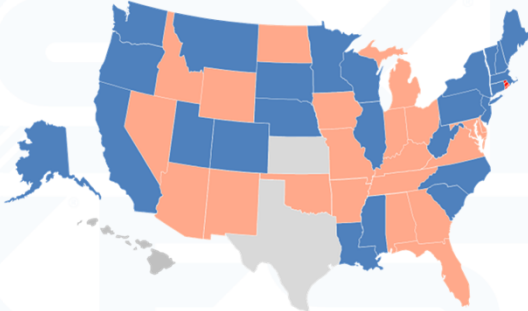
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Carbon Monoxide



Carbon Monoxide Regulations

- No Federal Regulations
- Homes: 46 States and DC have some level of CO Alarm legislation (Exceptions are Hawaii, Kansas, Missouri, and Texas)
- Apartments: 46 States and DC
- Hotels/Dormitories: 45 States and DC
- Nursing Homes: 37 States and DC
- Schools/Educational: 36 States
- Daycares: 45 States and DC
- Assembly Occupancies : 4 States (Maine, Maryland, New Jersey, and New York)



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Carbon Monoxide



• IFC 2018

- Group A – New or Exist = NO
- Group E – New = YES
- Group E – Exist = NO
- Day Care – New or Exist = YES
- Group I-2 – New or Exist = YES
- Group I-1 – New or Exist = YES
- Group R-1/2/3/4 – New or Exist = YES
- Homes – New or Exist = YES

• IFC 2021

- Group A – New or Exist = NO
- Group E – New = YES
- Group E – Exist = YES
- Day Care – New or Exist = YES
- Group I-2 – New or Exist = YES
- Group I-1 – New or Exist = YES
- Group R-1/2/3/4 – New or Exist = YES
- Homes – New or Exist = YES

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Significant NFPA 72[®] Changes

2019 – Chapter 7

- 7.7.2.3* All record documentation shall be stored in the documentation cabinet. **No record documentation shall be stored in the control unit.**
- A.7.7.2.3 The intent is that paper **and/or electronic** documents should not be stored inside the control unit because control units are not typically approved for the storage of combustible material.



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Significant NFPA 72[®] Changes

2016 and 2019 – Chapter 10

- **10.6.5.2.2*** The system circuit disconnecting means shall be permanently identified as to its purpose and marked as a fire alarm system and/or a signaling system.
- Can include the following:
 - “FIRE ALARM” for fire alarm systems
 - “EMERGENCY COMMUNICATIONS” for emergency communications systems
 - “FIRE ALARM/ECS” for combination fire alarm and emergency communications systems
 - “CARBON MONOXIDE” for carbon monoxide detection systems.



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Significant NFPA 72[®] Changes

2019 – Chapter 21 Emergency Control

- 21.3 Elevator Phase I Emergency Recall Operation
- 21.4 Elevator Power Shutdown
- 21.5 Fire Service Access Elevators
- 21.6 Occupant Evacuation Elevators (OEE)
- *All sections updated/revised to be consistent with ANSI/ASME A17.1/CSA B44.*

ASME 17.1-2016/CSA B44-16
(Revision of ASME 17.1-2013/CSA B44-13)

Safety Code for Elevators and Escalators

Includes Requirements for Elevators,
Escalators, Dumbwalkers, Moving Walks,
Material Lifts, and Dumbwalkers With
Automatic Transfer Devices

AN AMERICAN NATIONAL STANDARD



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Significant NFPA 72® Changes

2019 – Chapter 21 Elevator Hoistway Access

- Where initiating devices are required to be installed inside the hoistway, it shall be accessible for service, testing, and maintenance from outside the hoistway! [21.3.7]
 - Annex A Examples:
 - Access hatch door with protective guard
 - Air sampling detector per 17.7.3.6
 - Linear heat detection with connection points outside the hoistway.

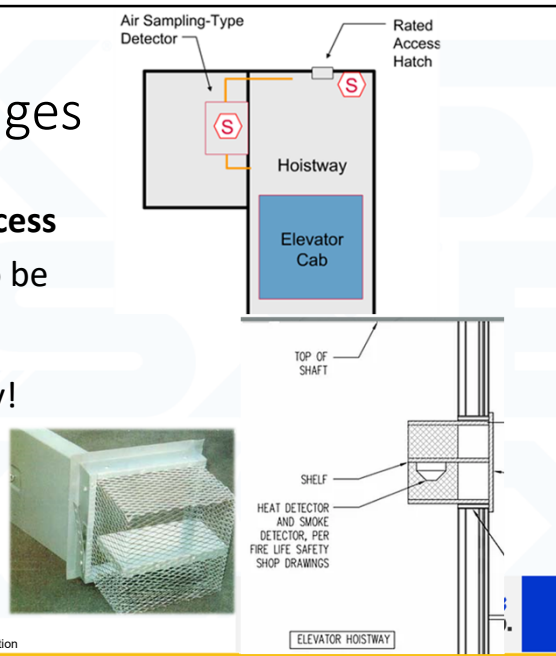
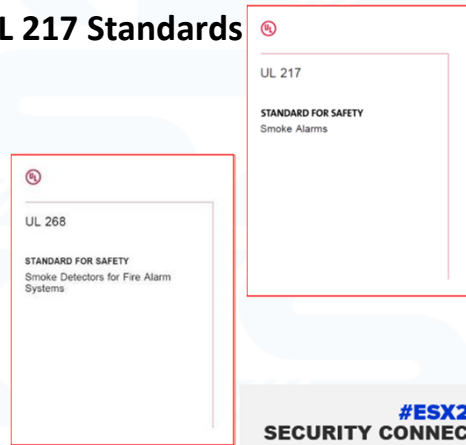


Diagram Courtesy: JJM Construction

Significant NFPA 72® Changes

2022 – References to New UL 268 and UL 217 Standards


- Flaming Polyurethane Foam Test
 - UL217 8th Edition
 - Section 51.4 Flaming Polyurethane Foam Test
 - UL 268 7th Edition
 - Annex 12 Flaming Polyurethane Foam Test
- Smoldering Polyurethane Foam Test
 - UL217 8th Edition
 - Section 53 Smoldering Polyurethane Foam Test
 - UL 268 7th Edition
 - Annex 13 Smoldering Polyurethane Foam Test
- Cooking Nuisance Smoke Test
 - UL217 8th Edition
 - Section 54 Cooking Nuisance Smoke Test
 - UL 268 7th Edition
 - Annex 14 Cooking Nuisance Smoke Test



Significant NFPA 72[®] Changes

2022 – References to New UL 268 and UL 217 Standards

Nuisance Alarm Source Test



Pre-Test

Post-Test

In Test

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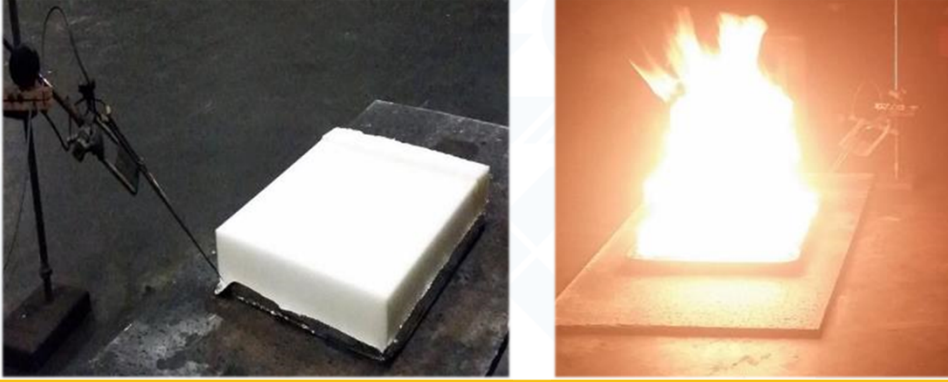
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Significant NFPA 72[®] Changes

2022 – References to New UL 268 and UL 217 Standards

PU Foam Flaming Fire Test



PU Foam Flaming Fire Test

PU Foam Flaming Fire Test

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Significant NFPA 72[®] Changes

2022 – References to New UL 268 and UL 217 Standards

PU Foam Smoldering Fire Test



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Significant NFPA 72[®] Changes

2022 – Chapter 10 Fundamentals – Battery

- Battery safety factor on calculations increased from 20% to 25% [10.6.7.2.14]
- Effective January 1, 2024, rechargeable batteries used as secondary power supply for control units, devices, and accessories shall be listed
 - Examples include UL 1989 and UL 2054
 - Power Sonic
 - Eagle Picher
 - Yuasa



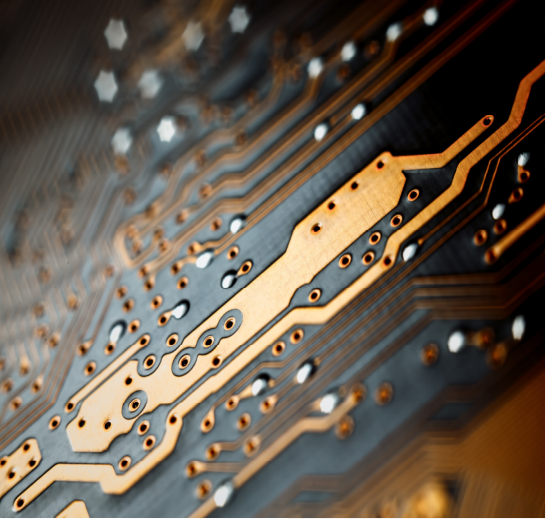
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FIRE ALARM NEXT-GEN PRODUCTS AND TECHNOLOGIES





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Remote Access & Cybersecurity

- Remote Access
 - Installation or modification of site-specific software
 - Testing
 - Diagnostics
- Rules added in Chapter 23 for:
 - Testing and Maintenance Activities
 - Performing Remote Diagnostics
 - Software Updating



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Remote Access & Cybersecurity

Why worry about fire alarm systems?

3.3.70 Cybersecurity.
The protection of systems from theft or damage of data, or damage to hardware or software, as well as from unauthorized command or control or access

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New Technologies

Self-Testing Notification Appliances

- Available from Simplex and Autocall
 - Strobes, Horns, and Loudspeakers
 - Xenon or LED Strobes
 - Individually Addressable
 - Regulated Voltage of 29VDC
 - T-Tapping of Circuits Allowed
 - Individual Device Test Capability
 - Automatic or Scheduled Device Test Capability

- 1. AUTOMATIC**
Program the fire panel to automatically test a group of appliances or every one on the system. Each appliance will beep and/or flash and the panel will inform you of the individual appliance results.
- 2. SCHEDULED**
Set the fire panel to automatically test at a pre-programmed time. Make sure your system is in working order while you sleep!
- 3. MANUAL**
Switch the system into manual test mode and check one device at a time with the handheld magnet. One technician, one appliance at a time—and no disruption.

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New Technologies

Single Current Draw Strobes

- Available from Edwards / Kidde
 - Genesis LED Series
 - Single Current Draw for 15, 30, 75, 110 or 115cd
 - Low-Profile Design
 - Improved High-Fidelity Performance for Loudspeakers
 - Mass Notification Options

Horn-Strobes

GENESIS LED G1
Compact wall-mounted strobes, horns & horn-strobes

- Low-profile design protrudes about 1" from the mounting surface
- Selectable high- or low-dB horn output
- Diagnostics Port
- Strobe current draw of 24mA across all candela settings

GENESIS LED G4
Wall-mounted strobes, horns & horn-strobes

- Field-selectable 15, 30, 75 or 110 cd light output
- Room-side wiring with continuity check
- Diagnostics Port
- Strobe current draw of 28mA across all candela settings

GENESIS LED GC
Ceiling-mounted strobes, horns & horn-strobes

- Field-selectable 15, 30, 75 or 115 cd light output
- Room-side wiring with continuity check
- Diagnostics Port
- Strobe current draw of 35mA across all candela settings

Speakers-Strobes

- Selectable 1/4, 1/2, 1, and 2 watt taps for Speakers
- Speakers capable of both 25V and 70V systems in a single model
- High-fidelity performance with excellent STI rating of .81
- Low-frequency (520Hz) capable
- Room-Side Wiring Plate with continuity check
- Diagnostics Port

GENESIS LED G4S
Wall-mount speakers and speaker strobes

- Field-selectable 15, 30, 75 or 110 cd light output
- Strobe current draw of 28mA across all candela settings

GENESIS LED GCS
Ceiling-mount speakers and speaker strobes

- Field-selectable 15, 30, 75 or 115 cd light output
- Strobe current draw of 35mA across all candela settings

G4SE
G4 Strobe Expander

- Mass-notification solution designed to work with Genesis LED G4 and G4S series appliances
- Available in amber, red, green and blue lenses

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New Technologies

Self-Testing Smoke Detectors

- Available from Notifier
 - Introduces small amounts of smoke and heat into the chamber to test the sensors
 - Automatically tests if the photo sensor smoke entry ports are blocked by the dust cover
 - Verifies that the technician has completed the visual inspection through its built-in beacon and the self-test app
 - Multiple tests simultaneously
 - Listed to UL 268 7th Edition and/or UL 521



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New Technologies

Fire Sprinkler Solutions

- Available from Potter
 - Solenoid CoilKeeper™
 - Supervises the Solenoid position for preaction / deluge releasing valves
 - Required by NFPA 13
 - Auto-Test Flow Switch (VSR-AT)
 - Remotely tested without flowing water
 - UL Listed and FM Approved – 2” – 8”
 - Confirms alarm activation for set retard period






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New Technologies

Fire Sprinkler Solutions

- Available from Potter
 - Signalink™ Bridge
 - Wireless Supervisory System
 - Monitor any dry-contact switch including tamper or flow switches
 - Maximum clear line-of-sight communications is ~800 feet
 - UL 864 Listed
 - 2.4 GHz Communication format
 - Compatible with ANY fire alarm system





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FIRE ALARM BEST PRACTICES



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Fire Alarm Best Practices

Four Fire Alarm Best Practices

- Design
- Equipment
- Installation
- Inspection & Maintenance



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Design



- Proper design is critical!
- Designers need training to understand the Codes and Standards that apply.
- Have you considered the big picture?
- What systems or equipment within the building need to be interfaced with now or in the future?
- What advantages will a voice fire alarm system provide for your and what design changes are required to make that happen?

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Equipment




- Quality equipment, not just 'what will work'!
- Increased variety provides competitive pricing.
- Your designer should have a good understanding of the various strengths and weaknesses of various manufacturers.
- What new technologies exist to improve your system performance?

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Installation




- Does your company have the installation skills for a large fire alarm installation, replacement or upgrade?
- Does the electrical contractor lack knowledge of specific low voltage or fire alarm specific techniques?
- Even “parts-and-smarts” needs to include acceptance testing!
- Design meets installation meets programming!

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Inspection & Maintenance



- Inspection and Maintenance ensures long-term reliability and operational effectiveness
- Will the new system require a significant amount of inspection, test, or maintenance?
- Is there capacity for additions or modifications?
- What is the test plan and who can perform it?
- Increase life span and return on investment.

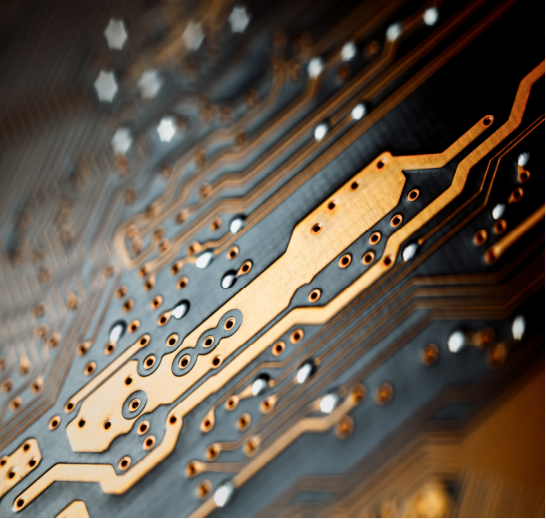
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EMERGENCY RESPONDER COMMUNICATION ENHANCEMENT SYSTEMS (ERCES) and AREA OF RESCUE ASSISTANCE SYSTEMS



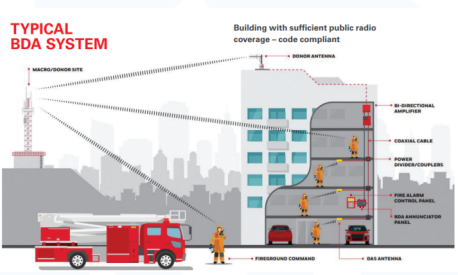
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Emergency Responder Communication Enhancement Systems (ERCES)

- Commonly known as Bi-Directional Amplifiers (BDA), Distributed Antenna Systems (DAS), or ARCS (in NYC)
- Increasing requirements since IFC 2015/18/21/24
- Local requirements, many retroactive
- Installation per NFPA 72 – 2010 & 2013
- Taken out of NFPA 72 in 2016 and moved to NFPA 1221
- As of 2022, NFPA 1221 was folded into NFPA 1225
- Safer Buildings Coalition (saferbuildings.org)



Complete ERCES Handbook
 with NFPA 1221 Building Public Safety Communications (B-PCS) Study Guide
 by Chad Alan Perford and John S. Foley
 with Mike Stronach
 SAFER BUILDINGS COALITION

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Two-Way Emergency Communications Systems for Rescue Assistance



- Formerly known as Area of Refuge or Area of Rescue Assistance
- Related to Stairway, Elevator Landing and Elevator Lobby Communications Systems
- NFPA 72 – 2022: Systems must be listed (UL 2525)
 - Secondary Power: 24 Hours Standby / 4 Hours of Full Use
 - Power Supplies must be monitored
- IBC/IFC 2024 will remove all requirements and require UL 2525 and installation per NFPA 72



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**GENERAL
SESSION**

11:15AM

MAIN STAGE

"THE BUCKET LIST LIFE"
Create More Experiences,
Share More Stories, and
Live More Fulfilled!

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