



PATHWAY SURVIVABILITY

A PRESENTATION BY AARON D. SMITH

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES

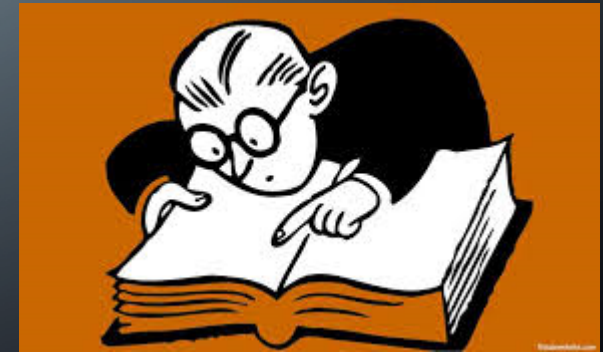
BASIC HOUSEKEEPING/CAVEATS

- I am not NFPA
- I am not (insert jurisdiction other than MoCo) and yes they're crazy!
- I am not the smartest guy in the room but, I am an AHJ
- I reserve the right to revise and extend my comments
- Share this with whomever
- 240.994.0335 Call/text if you have questions

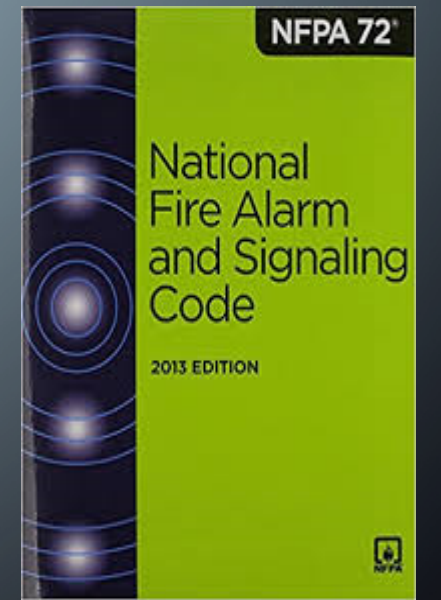
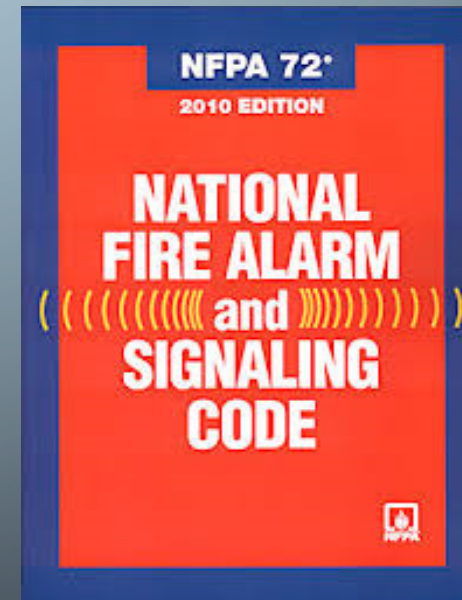
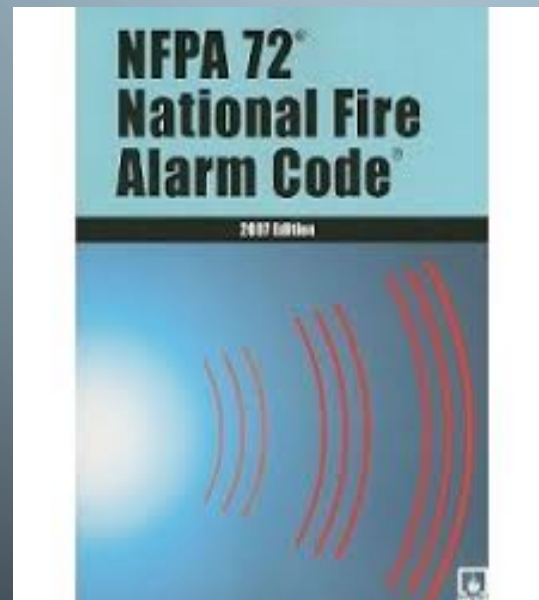
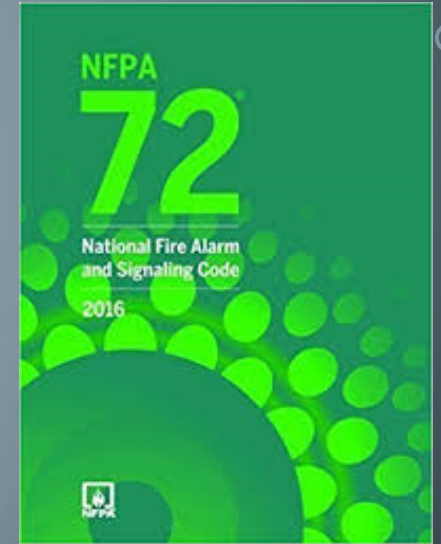
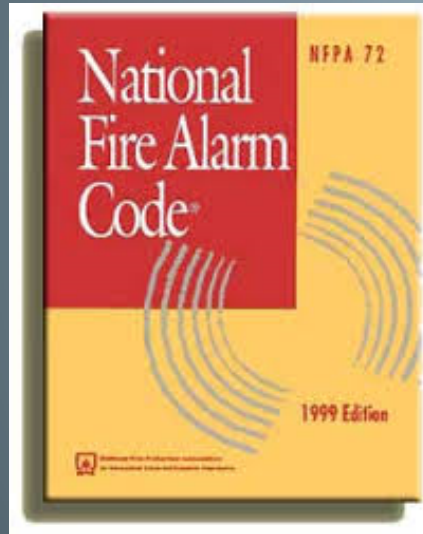


DEFINITIONS YOU NEED TO KNOW (2013 ED.)

- Circuit- 3.3.44- Either a means of providing power or a connection path between locations
- Path (Pathways)- 3.3.190- Any circuit, conductor, optic fiber, radio carrier, or other means of connecting two or more locations
- Pathway Survivability- 3.3.191- The ability of any conductor, optic fiber, radio carrier, or other means for transmitting system information to remain operational during fire condition.

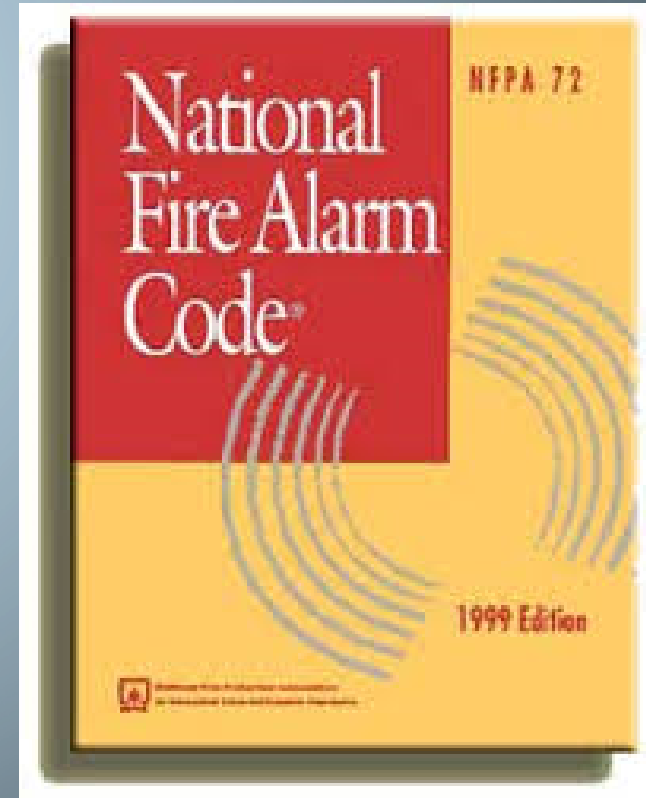


THEN TO NOW



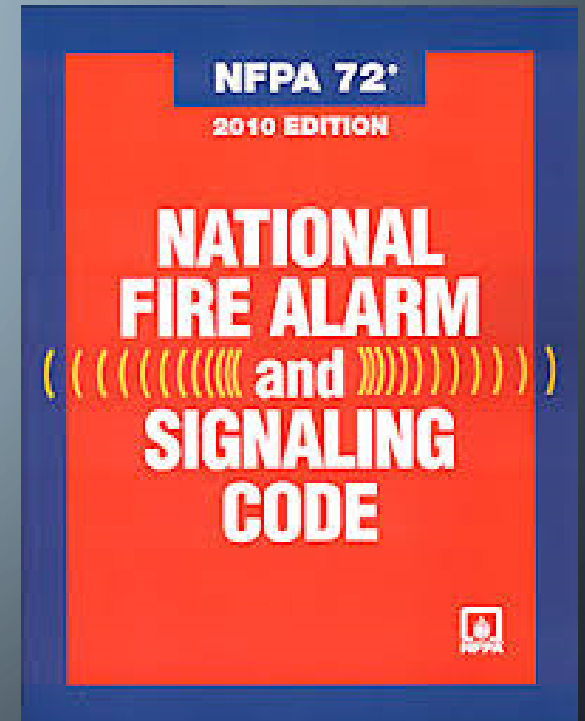
1999 ED. OF NFPA 72

- Survivability makes 1st appearance in code
 - Enclose cabling in 2 hr. stair (NFPA 13 System)
 - 2 hr. rated cable
 - 2 hr. rated cable system (MI)
 - 2 hr. enclosure
 - Limited to systems used for partial evacuation or relocation only



2010 ED. OF NFPA 72

- 2 new chapters created
 - Chapter 12 Circuits and Pathways
 - Chapter 24 Emergency Communications Systems (ECS)
- Survivability levels defined by Code
 - 0, 1, 2 and 3



WHERE DO I FIND REQUIREMENTS IN 72? (2013)

- Section 12.4- Level Definitions
- Paragraph 24.3.6- Pathway Survivability
- Each Section of Chapter 24 (e.g. 24.3, 24.4, 24.5) READ CAREFULLY!!!!



SURVIVABILITY CODE LANGUAGE



- EVACS- 24.4.2.8.5.1- Fire alarm systems used for partial evacuation and relocation shall be designed and installed such that attack by fire within an evacuation signaling zone does not impair control and operation of the notification appliances outside the evacuation signaling zone
- FF Telephones- 24.5.1.19- All circuits necessary for the operation of the two-way telephone communications systems shall be installed in accordance with the pathway survivability requirements of 24.3.6.7

SURVIVABILITY CODE LANGUAGE (2013)

- 2-way Radio Communications Enhancement Systems- 24.3.6.8.1- Where a 2-way radio communications enhancement system is used in lieu of a 2-way in-building wired emergency communications system, it shall have a pathway survivability of Level 1, Level 2, or Level 3.
- Area of Refuge Communication Systems- 24.3.6.9.1- Area of refuge emergency communications systems shall have a pathway survivability of Level 2 or Level 3



SPECIFIC SURVIVABILITY REQUIREMENTS (2013)

- Partial/selective evacuation or relocation (24.3.6.4.1) Level 2 or 3
- Area of Refuge Emergency Communications Systems (24.3.6.9.1) Level 2 or 3
- 2-way, In Building Wired Emergency Services Communications Systems (24.3.6.7) Level 2 or 3
- 2-way Radio Communications Enhancement System (24.3.6.8.1) Level 1, 2 or 3
- By Determination of a Risk Analysis/Code Modification

IT'S ALL ABOUT THE LEVEL

- All systems require survivability to some level
- The survivability level required can make or break you
- Levels are not necessarily progressive. Meeting a higher level does not always mean you have met the lower
- There is always a performance option



SURVIVABILITY LEVELS DEFINED (2013- 12.4)

PATHWAY SURVIVABILITY LEVEL 0

- NO (0) provisions required for pathway survivability

PATHWAY SURVIVABILITY LEVEL 1

- Pathway survivability Level 1 shall consist of pathways in buildings that are fully protected by an automatic sprinkler system in accordance with NFPA 13 with any interconnecting conductors, cables or other physical pathways installed in metal raceways.

SURVIVABILITY LEVELS DEFINED (2013-12.4)

PATHWAY SURVIVABILITY LEVEL 2

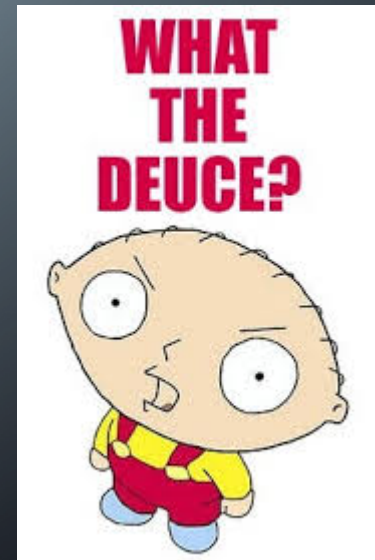
- Must have 1 or more:
 - 2 hr. fire rated circuit integrity (CI) cable
 - 2 hr. fire rated cable system
 - 2 hr. fire rated enclosure or protected area
 - 2 hr. performance alternatives approved by AHJ

PATHWAY SURVIVABILITY LEVEL 3

- Must have everything required in Level 2 plus be fully protected by an NFPA 13 automatic sprinkler system.

WHY?

- Requirements are focused on ensuring a system or system features continue to operate in parts of the building that are not in fire conditions during fire suppression operations. The code allows for some latitude in requirements based on the idea that other protections are in place and, when additional occupant measures are necessary, the systems that they need to use function.



WHAT'S NEXT? (2016)

- Exceptions allowing for less than 2-hr. fire rating where construction is not 2-hr.
- Level reduction (to 1) for Class X or N wiring with remoteness of multiple pathways
- As more and more mass notification systems are installed/required expect to see risk analysis data that requires survivability
- Expect more systems to require survivability such as elevator emergency communications systems and new requirements pertaining to wireless technology

GET READY
changes are coming.

WHEN DOES THIS APPLY (MOCO)

- New fire alarm/mass notification systems
- Upgraded fire alarm/mass notification systems
- BDA to replace FF telephones
- New FF telephones
- Changing general evacuation to partial or selective evacuation
- New/replacement/upgrade of Area of Refuge Communication Systems



IF THIS, THEN THAT

- When using CI cable the listing must be provided and it must meet UL 2196
- When using a listed cable system all components must be listed and installation shall be in strict compliance with the listing
- When using construction to meet requirements the construction must be on the approved building plans
- Multiple means to achieve compliance is permissible

A diagram illustrating an 'If-Then' relationship. It consists of a white rectangular box with a thin blue border. Inside the box, the word 'If' is written in white serif font on a blue rectangular background. To the right of 'If' is a blue right-pointing arrow. To the right of the arrow is the word 'Then' written in white serif font on another blue rectangular background.

If → Then

Q&A

You are always
welcome to call,
visit, email or write!



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