



P100 - Training

2021

The Facilities
Standards for the
Public Buildings
Service

This session is being recorded.





Fire Protection

7

FIRE PROTECTION



Figure 15: National Support
Center Social Security
Administration
Frederick, MD

←

David Frable, FSFPE

Central Office, Manager
Fire Protection Program

dave.frable@gsa.gov



John Morders, P.E.

National Capital Region,
Fire Protection Engineer

john.morders@gsa.gov





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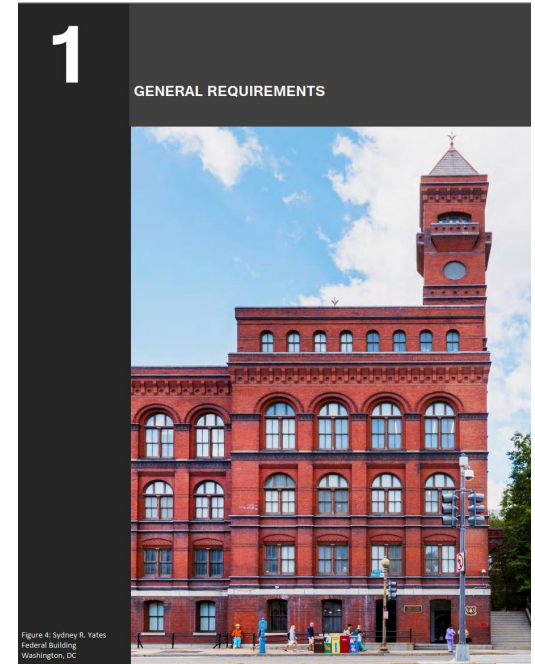
01

Overview of Key Fundamentals



PURPOSE OF FACILITIES STANDARDS

- **MANDATORY** standard for all projects.
- Current state of design practice for GSA Facilities
- Applicable Regardless of Funding Source



ASSIGNED ROLE

- **P100, 7.1.3.2, GSA Regional Fire Protection Engineer**
 - For All Projects, references to Building Official, Fire Code Official, or Authority Having Jurisdiction (AHJ)
- **PBS 5921.1, Public Buildings Service, Fire Protection Program Policy**

WAIVERS & DEVIATIONS

- **P100, 1.2.4.1, Chapter 7 Waivers are NOT permitted**
- **P100, 1.2.4.2, Alternatives and Equivalent Compliance**
- **Consider proposed equivalencies or alternatives for deviations from the requirements of PBS P-100**
 - **Alternative systems, methods, or technologies**
 - **Technical Documentation - Review & Approval**
 - **Equivalent Design & P100 Compliance**

LOCAL JURISDICTION REVIEW

- **P100, 1.5, State and Local Codes**
- **Design Review for Code Compliance by State and/or Local Government Officials**
- **GSA will review all recommendations made by State and Local Government Officials**



PROJECT TEAM FIRE PROTECTION ENGINEER

- **P-100, 7.1.3.1 Project Team Fire Protection Engineer**
- **Design Scope Responsibilities**
 - Codes and Standards Analysis
 - Calculations
 - Fire Protection and Life Safety System Design

CERTIFICATE OF OCCUPANCY

1. CERTIFICATE NUMBER F - [] - []
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- P100, 7.1.3.4
- Issuance by GSA Regional Fire Protection Engineer
- Prior to Occupancy by Tenant
 - Temporary
 - Final
- Form GSA 3686B

2. PROPERTY NAME		3. PROPERTY ADDRESS		4. CITY, STATE, ZIP CODE	
5. GSA PROJECT MANAGER			6. SPECIFIC AREA OF BUILDING FOR THIS CERTIFICATE		
7. APPROVED USES			8. PREVIOUS USES		
9. APPROVED OCCUPANCIES			10. PREVIOUS OCCUPANCIES		
11. TYPE (Check One) New Construction <input type="checkbox"/> Renovation <input type="checkbox"/> Change of Occupancy <input type="checkbox"/>		12. OCCUPIED AREA		13. DESIGN OCCUPANT LOAD	
14. SPRINKLERS REQUIRED? Yes <input type="checkbox"/> No <input type="checkbox"/>	15. SPRINKLERS INSTALLED? Yes <input type="checkbox"/> No <input type="checkbox"/>	16. BUILDING CODE NAME AND EDITION		17. TYPE OF CONSTRUCTION	
18. DESCRIPTION OF USE					
19. SPECIAL STIPULATIONS OR CODE MODIFICATIONS					
<small>This certificate ensures that all fire protection and life safety systems have been completed, inspected, successfully tested and approved for the specific area of the building specified above to provide a reasonable degree of safety to the occupants from fire and similar emergencies.</small>					
20. NAME OF GSA APPROVING OFFICIAL		21. SIGNATURE		22. DATE	

THIS CERTIFICATE IS VALID ONLY FOR THE PREMISES OF THE PROJECT ADDRESS



02

2021 P100 Updates

Chapter 7, Fire Protection

REVISED REFERENCE

- Previous edition: Design Team Fire Protection Engineer
- Replaced “Design Team” with “Project Team”
- Applicable to all project delivery methods

***** See Sections 7.1.3, 7.1.3.3, 7.3.4, 7.67, 7.7, 7.8.2(9), 7.13.2, 7.13.3**

SECTION 7.3

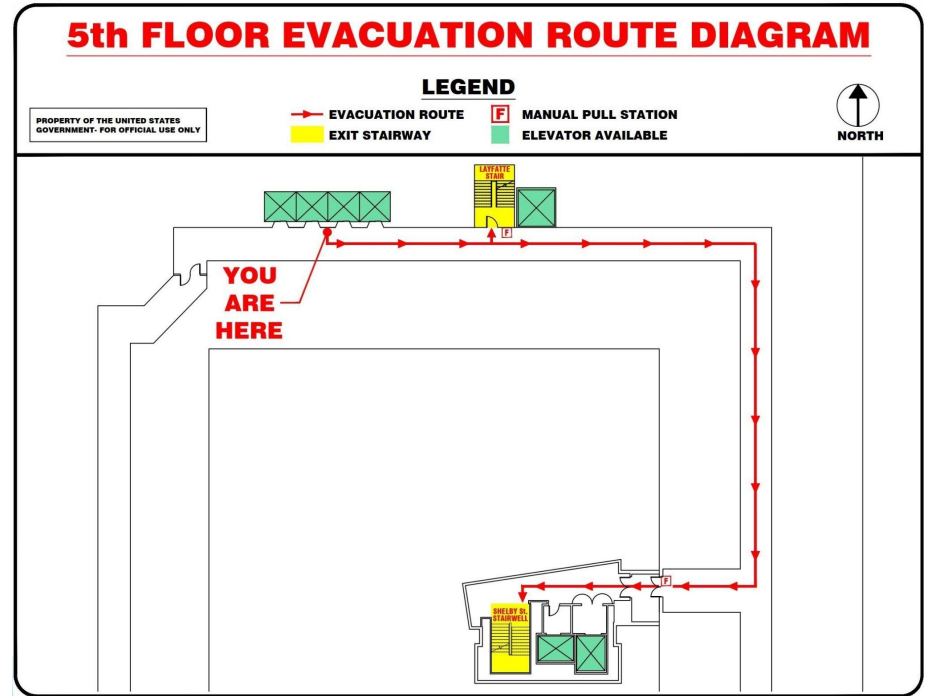
FIRE SAFETY DURING PROJECTS

- **Revised Title of Section 7.3- Fire Safety During Projects**
- **Revised Title of Section 7.3.2 - Fire Safety During Repair and Alteration Projects**

SECTION 7.4.2

EVACUATION ROUTE DIAGRAMS

- Section revised to replace “Signage” with “Diagram”



SECTION 7.6

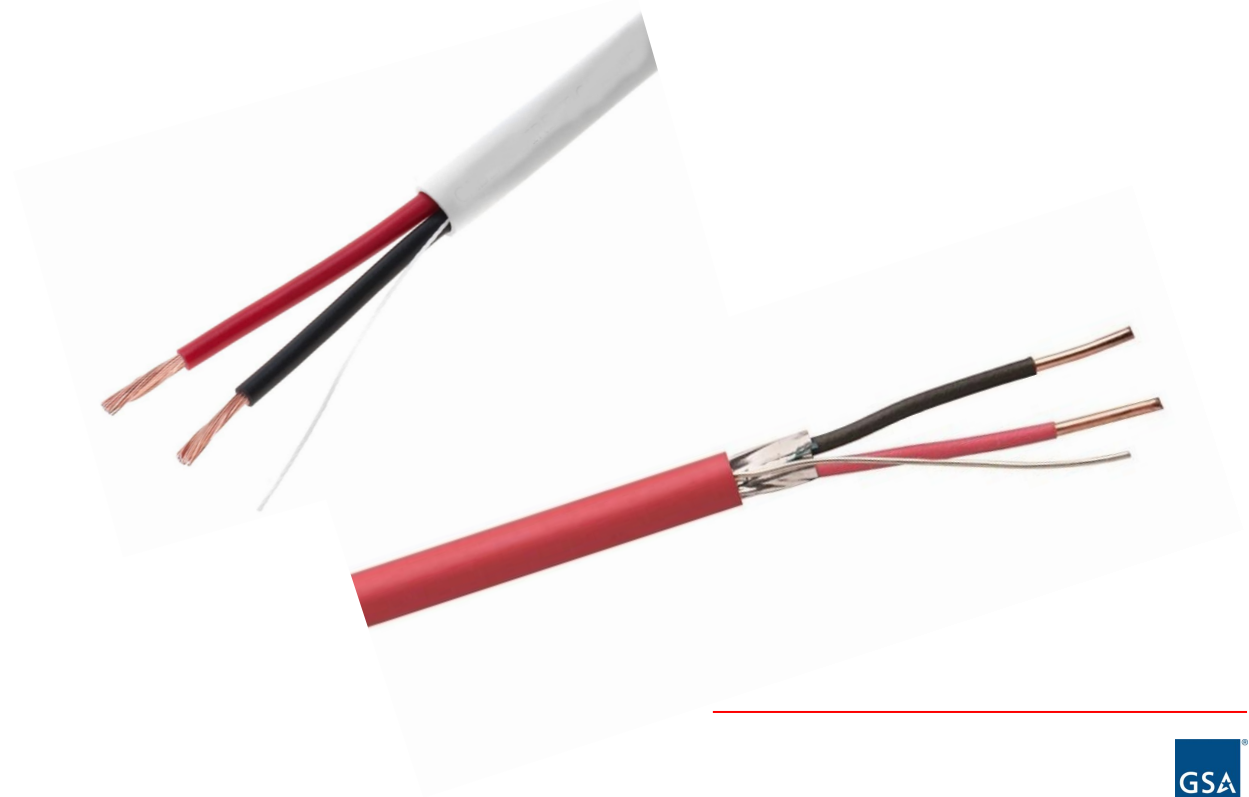
FIRE ALARM & EMERGENCY COMMUNICATION SYSTEMS

Fire alarm and emergency communication systems must be installed in accordance with the requirements in NFPA 72 and the IBC. All documentation requirements in NFPA 72 are required to be submitted for review and approval.

SECTION 7.6

FIRE ALARM & EMERGENCY COMMUNICATION SYSTEMS

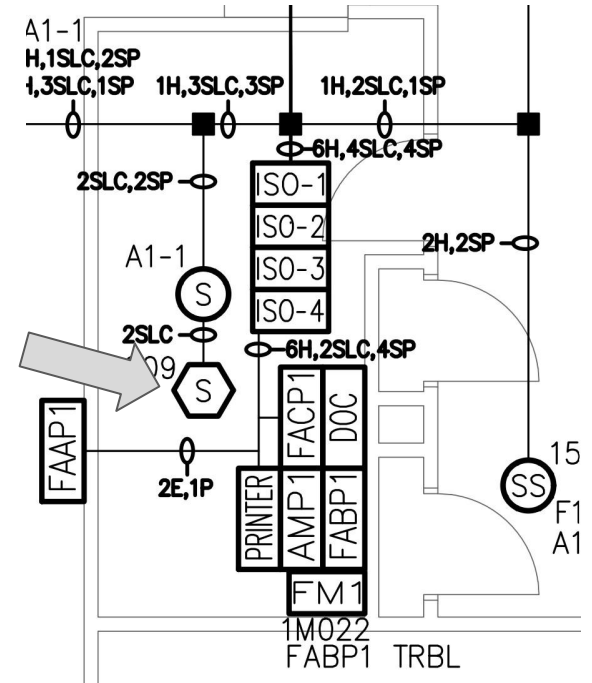
Special requirement (7) now permits the use of solid or stranded copper wiring for fire alarm installation.



SECTION 7.6.3

SMOKE DETECTORS

Deleted Special Requirement (2) which omitted smoke detection for the protection of fire alarm control equipment in fully sprinklered buildings.



SECTION 7.6.4

AUDIBLE NOTIFICATION APPLIANCES

Special Requirement (1)

In addition, all new emergency communication systems must include audible notification appliances in all normally occupied rooms and spaces unless an engineering analysis demonstrates adequate sound levels will be achieved without appliances in each room or space.

SECTION 7.6.6

OCCUPANT NOTIFICATION

Special Requirement (1.b.)

Exception: Where approved by the GSA Regional Fire Protection Engineer, a fire alarm system designed and operated with NFPA 72 Presignal features can only be operated in a fully sprinkler protected building, and the presignal arrangement is only permitted for building smoke detection or smoke detection systems.

SECTION 7.6.8

SURVIVABILITY FOR FIRE ALARM AND EMERGENCY COMMUNICATION SYSTEMS

Special Requirements revised to include new survivability language for:

- **Buildings protected throughout by automatic sprinkler protection**
- **Buildings NOT protected throughout by automatic sprinkler protection**
- **Two-way communication systems**

SECTION 7.7.1

FIRE PUMPS

Special Requirement (2)

A fire pump must start automatically at 69 kPa (10 psi) below pressure maintenance pump (jockey pump) start pressure. The fire pump must be manually shut down. The fire pump installation must include a test header and a closed loop with a flow meter.



SECTION 7.8

AUTOMATIC SPRINKLER AND STANDPIPE

Special Requirement (8)

Dry-pipe sprinkler systems must incorporate a nitrogen inerting process that replaces air with nitrogen gas when used to charge, maintain, or supervise a dry-pipe sprinkler system, unless specified otherwise by the GSA regional fire protection engineer.

SECTION 7.8

AUTOMATIC SPRINKLER AND STANDPIPE

Special Requirement (16)

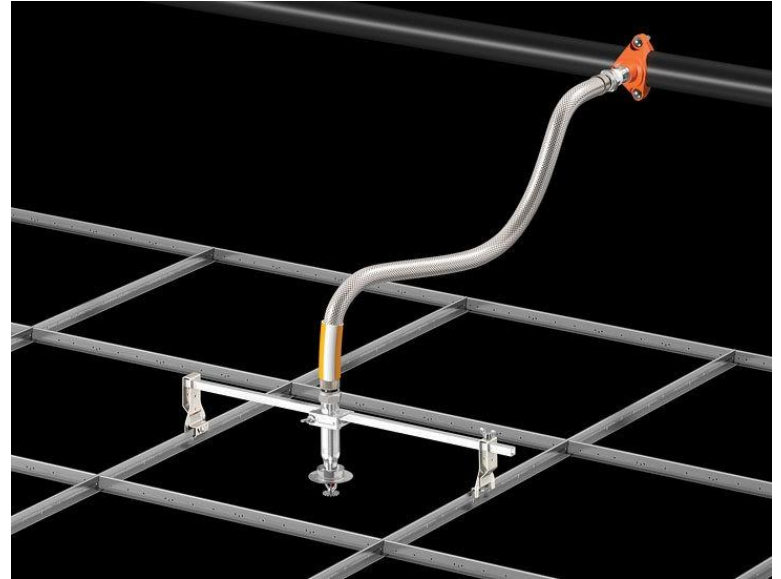
Sprinklers installed in main electric rooms and transformer vaults must be provided with separate manual isolation valves and a separate water flow switch located outside the room in an accessible location. Tamper switches must be provided on all such valves. A means to test the water flow switch must be provided by fixed piping to a location approved by the regional fire protection engineer.

SECTION 7.8.2

SPRINKLER PIPING

Special Requirement (9)

FM-approved flexible sprinkler hose fittings and their anchoring components intended for use in installations connecting the sprinkler system piping to sprinklers is permitted to be installed.



SECTION 7.8.6

FIRE DEPARTMENT HOSE OUTLETS

Special Requirement

Fire department hose outlets provided on the standpipe shall consist of a 63 mm (2 ½ inch) hose connection and a cap. Threads of hose connections must be compatible with local fire department equipment. The outlets must be In the stair shaft.

SECTION 7.9.5

PORTABLE FIRE EXTINGUISHERS

Special Requirement

In office buildings protected throughout with quick-response sprinklers, portable fire extinguishers must only be installed in areas such as mechanical and elevator equipment areas, computer rooms, UPS rooms, generator rooms, kitchen areas, security screening stations, and special hazard areas (e.g. laboratories, flammable, and combustible liquid storage, etc.)

SECTION 7.10

ELEVATOR SYSTEMS

Special Requirement (1)

Elevator machine rooms, machinery spaces, control rooms and control spaces containing elevator control equipment must be protected with automatic sprinklers unless specifically approved otherwise by the GSA regional fire protection engineer.

FIXED DRAIN AND TEST CONNECTION

A means to test the waterflow switch must be provided by fixed piping to a location approved by the regional fire protection engineer.

- **ELEVATOR SYSTEMS** - 7.10, Special Requirement (2)
- **INFORMATION TECHNOLOGY EQUIPMENT ROOMS** - 7.11.2, Special Requirement (3)

SECTION 7.11.9

FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE ARRANGEMENTS

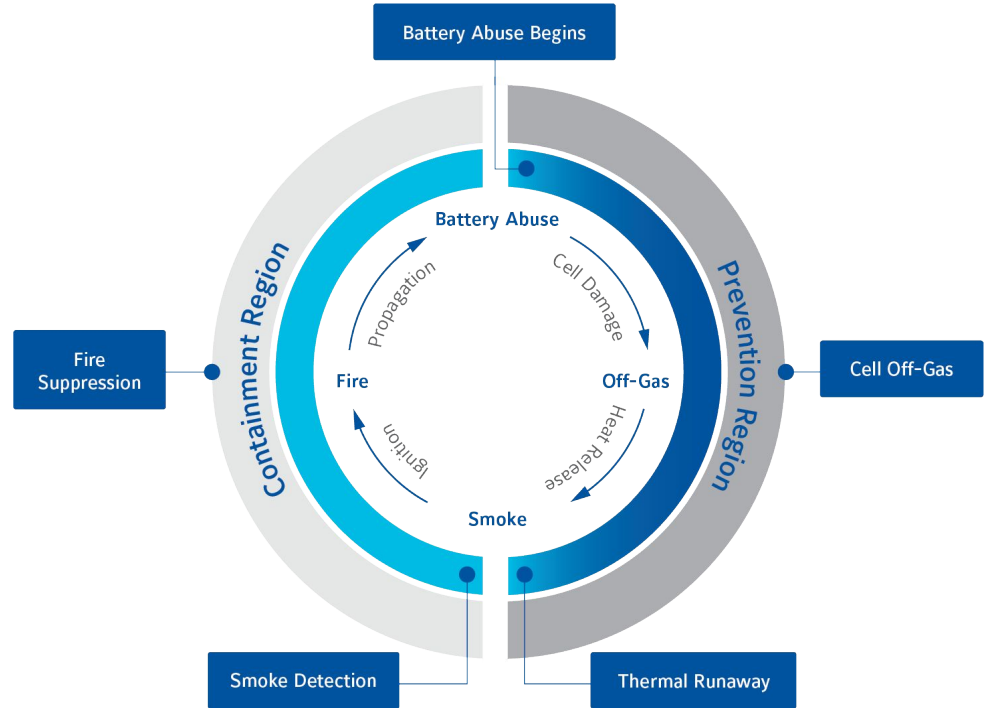
The storage arrangements and protection of a flammable and combustible liquid storage area must meet the requirements in IFC. For situations where storing flammable and combustible liquids is either unavailable or unacceptable inside a building, consider storing flammable and combustible liquid outdoors on federally owned property meeting the requirements in NFPA 30.



SECTION 7.11.11

STATIONARY ENERGY STORAGE SYSTEMS

Stationary energy storage systems must meet the requirements of NFPA 855, Standard for the Installation of Stationary Energy Storage Systems.



SECTION 7.15

PERFORMANCE BASED DESIGN

GSA encourages the use of performance-based design for new construction and major repair and alteration projects.

SECTION 7.16

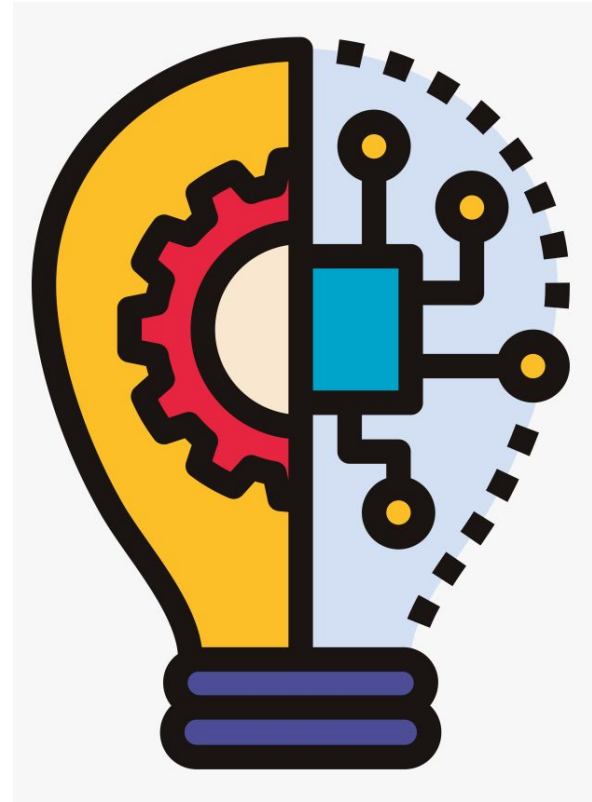
COMMISSIONING FIRE PROTECTION & LIFE SAFETY SYSTEMS

Replaced the term “fire commissioning agent (FCxA)” with “fire commissioning provider (FCxP)” throughout this section.

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03
**New Topics &
Technologies**

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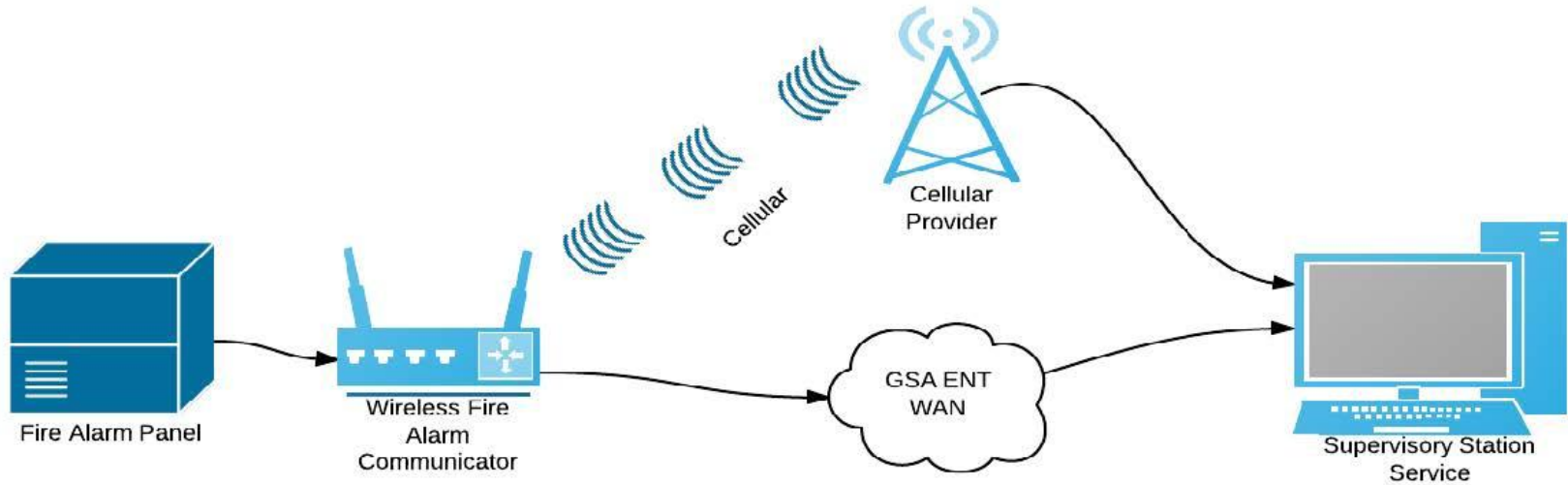
TRANSMISSION OF FIRE ALARM SIGNALS

- **History**
 - **P100, 7.6 Special Requirements (6)**
 - Transmit Alarm, Trouble, Supervisory Signals to Supervising Monitoring Station
 - **Two (2) Plain Old Telephone Service (POTS) Lines**
 - Two (2) different communication pathways
 - NFPA 72

TRANSMISSION OF FIRE ALARM SIGNALS

- **Industry/GSA Trend to Move Away from POTS**
 - **Cost Savings**
- **Alternate Means of Transmitting Fire Alarm Signals**
 - **Fire Alarm Communicators**
 - Ethernet
 - Cellular
- **Must meet GSA-IT Requirements**

FIRE ALARM COMMUNICATORS



FIRE ALARM COMMUNICATORS

- **Fire Alarm Communicator**
 - **Compatible with Fire Alarm Manufacturer**
 - **Listed to Underwriters Laboratories, Inc. Standard 864**
 - **Reviewed and Tested by GSA-IT Security Prior to Installation**
 - **Security Assessment Report**
 - **Identifies Potential Security Vulnerabilities**
 - **Critical, High, Moderate, & Low**

FIRE ALARM COMMUNICATORS

- **Developing List of GSA-IT Reviewed & Tested Fire Alarm Communicators**
 - **BOSCH B465 Universal Dual Path Communicator**



NFPA 72 - CYBERSECURITY

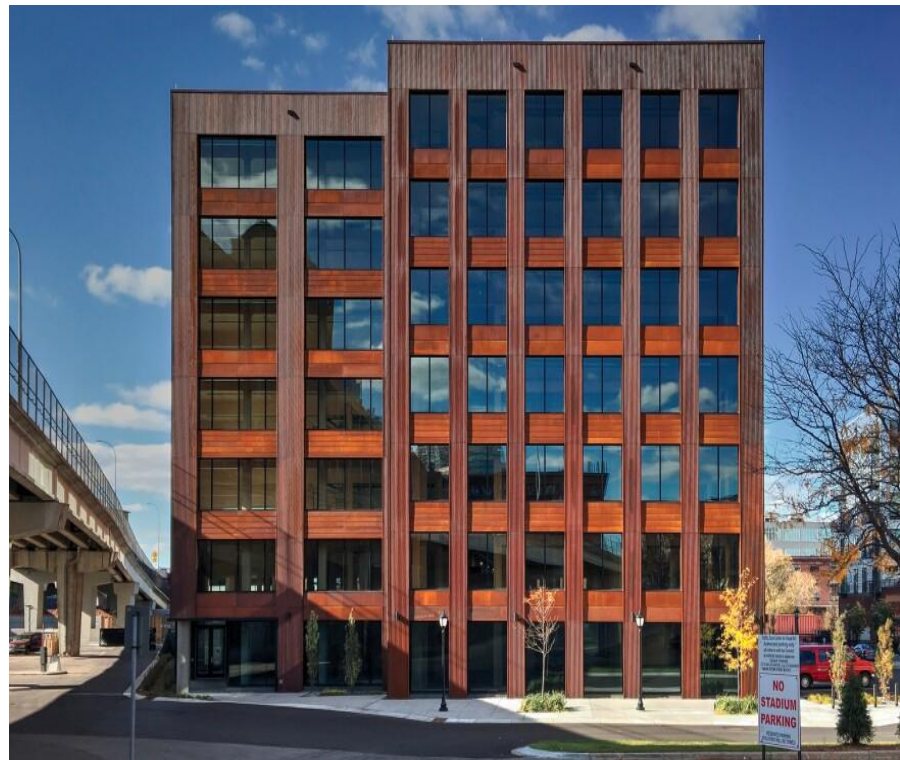
NATIONAL FIRE ALARM AND SIGNALING CODE

- **Currently Located in Annex J:
Guidelines for Cybersecurity**
- **Fire Alarm & Emergency
Communication Systems**
 - **Interface with Network &
Internet**
 - **Vulnerable to Cybersecurity
Threats**
- **NFPA 72 (2025 Edition)**



MASS TIMBER CONSTRUCTION

- **Alternative to Conventional Construction Materials**
- **Cross-Laminated Timber**
 - Prefabricated Engineered Wood Product
- **IBC 2021 Compliant**
 - New Construction Types (IV-A, IV-B, IV-C)



MASS TIMBER CONSTRUCTION

Advantages

- Environmental
 - Reduce Carbon Footprint
 - Less Energy Consumption
- Construction Time Less

Disadvantages

- Initial Costs
- Installation Learning Curve
- Height Limitations



Do you have any questions?

dave.frangle@gsa.gov
john.morders@gsa.gov

