



**Directive: 28-1 Fire Alarm Detection & Emergency Communication Systems**

**Responsible Office: Design & Construction**

**Last Revised Date: August 2021**

## **SUMMARY**

This Directive provides the consultants with the requirements of the SUNY Construction Fund for all projects across the SUNY State Campuses. The requirements below are to be implemented into the design of the project. The implemented requirements are to be clearly called for in the project specifications, drawings, or both. The Specifications or Drawings are to describe or show the requirement. The intent is not for the Specifications or Drawings to reference back to this document for compliance.

In addition to state and local codes and standards, the following requirement listed below are to be included in the contract documentation. The intent of this document is not to override or amend the local or state codes where such are more stringent. The drawings and specifications must comply with the Code (see Directive 1B-1 Building Codes).

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## Section 1 - DEFINITIONS

### Section 2 - CODE & REFERENCE STANDARDS

1. Refer to Directives of section 1A for required submittal requirements. In addition, provide specific requirements of the following directives:
  - a. 1A-4 "Schematic Design Phase."
  - b. 1A-5 "Design Manual Phase."
2. Codes, Standards, Regulations and Guidelines:
  - a. Building Code of NYS (BCNYS)
  - b. National Fire Protection Association (NFPA) Standards
    - 1) NFPA 72, "National Fire Alarm and Signaling Code".
    - 2) NFPA 70, "National Electrical Code".
  - c. American Society of Mechanical Engineers (ASME)
    - 1) A17.1 Safety Code for Elevator and Escalators
  - d. New York State Department of Health (NYSDOH) Regulations
  - e. Facility Guidelines Institute (FGI) Guidelines
  - f. Local Codes

### Section 3 - FIRE ALARM & DETECTION SYSTEMS

#### General

1. Provide fire alarm and detection systems in accordance with the BCNYS and per this Directive which may exceed minimum code requirements.
2. Provide area smoke detectors that are connected to the fire alarm system in mechanical equipment rooms, electrical and transformer rooms, generator rooms, telephone/data equipment rooms, elevator machine rooms and elevator lobbies in all buildings.
3. Provide heat detectors in non-sprinklered electrical rooms.

#### New Building Construction

1. Provide an automatic smoke detection system in non-sprinklered Group A occupancies.
2. Provide a manual fire alarm system in Group A and B occupancies. Pull stations shall be located not more than 5' from the entrance to each exit and additional pull stations shall be provided so that travel distance to the nearest station does not exceed 200'.

#### Existing Building Construction

1. Alterations – Level 1
  - a. Provide fire alarm and detection system devices in the work areas which maintain the existing level of fire protection.
  - b. The existing level of fire protection can be reduced when in compliance with the BCNYS for new construction with campus approval.
2. Alterations – Level 2
  - a. Provide fire alarm and detection system devices in the work areas which maintain the existing level of fire protection.
  - b. The existing level of fire protection can be reduced when in compliance with the BCNYS for new construction with campus approval.
  - c. Where the work area exceeds 50% of the floor area in an Alterations – Level 2, the fire alarm system requirements shall be applied through the floor.

3. Alterations – Level 3, Change of Occupancy or Addition
  - a. Comply with the requirements of the Existing Building Code of NYS

## Section 4 - CARBON MONOXIDE DETECTION SYSTEMS

1. Provide carbon monoxide detection as required by the BCNYS .
2. Carbon monoxide detectors shall be connected to the building's fire alarm system.
3. Provide visible and audible alarm notification via the emergency voice/alarm communications system speakers and strobes.

## Section 5 - ELEVATORS

### Elevator Recall

1. Provide elevator recall in accordance with the BCNYS, NFPA 72 and ASME A17.1.
2. Elevator recall shall be initiated by the smoke detector located at the lobby served by the elevator; smoke detector in the elevator machine room, control space, or control room; smoke detector at the top of a sprinklered hoistway; smoke detector in the sprinklered elevator hoistway pit.

### Elevator Shutdown

1. Provide provisions to automatically disconnect power (main or secondary) to the elevator, prior to the application of water from the sprinkler system installed in the elevator machine room, machinery space, control space, control room or hoistway, in accordance with the BCNYS, NFPA 72 and ASME A17.1.
2. Elevator shutdown shall be initiated by heat detectors located within 24" of each sprinkler head.
3. The heat detector shall have both a lower temperature rating and higher sensitivity as compared to the sprinkler.
4. Upon activation of the heat detector, there shall be a delay in the activation of power shut down. This delay shall be the time that it takes the elevator cab to travel from the top of the hoistway to the lowest recall level and open its doors.

## Section 6 - SMOKE DETECTION & AIR DISTRIBUTION SYSTEMS CONTROL

1. Smoke detection for the air distribution system shall be designed in accordance with the Mechanical Code of New York State (MCNYS) and NFPA 72.
2. Upon activation of the MCNYS required smoke detectors installed in the return air systems, common supply and return systems, and return air risers, all operational capabilities of the air distribution system serving the affected area(s) shall be shut down. This shall be performed with a relay listed for use and connected to the fire alarm system and be located within 3' of the motor controller. Shut down shall not be through the building management system or other similar systems.
3. Combination fire/smoke dampers shall close upon activation of a listed duct type smoke detector and a fire alarm control module. Control modules are to be provided with auxiliary contacts for monitoring by the building management system.

## Section 7 - EMERGENCY COMMUNICATIONS SYSTEMS

### In-Building Emergency Voice/Alarm Communications Systems

1. All new fire alarm systems shall be provided with an emergency voice/alarm communications system and shall be designed in accordance with NFPA 72.

2. Audible alarm notification shall be provided by speakers located throughout the building and have dedicated paging zones for each floor, elevator groups (speakers in elevator cabs and lobbies), interior exit stairways and areas of refuge. Speakers shall be located to meet the voice intelligibility requirements from NFPA 72.
3. Visible alarm notification shall be provided by strobes located in public use areas and common use areas.
4. Covers for the speakers and strobes shall have the word "ALERT" printed on them.

#### In-Building Mass Notification Systems

1. In-Building mass notification systems shall be provided for new building construction or when projects include a new fire alarm system and shall be designed in accordance with NFPA 72.
2. The emergency voice/alarm communications system speakers and strobes shall be used for the in-building mass notification system.
3. Coordinate the design of the mass notification system with the Campus and determine if this system is to be tied into any existing campus-wide system.

#### Areas of Refuge & Elevator Landings Two-Way Emergency Communications Systems

1. A two-way communication system shall be provided in the areas of refuge or at the landings of each public elevator that is one or more stories above or below the level of exit discharge per the BCNYS.
2. The two-way communication system shall provide communication between each required location and the fire command center (if applicable) or at the building entrance that will be used by emergency responders.
3. The two-way communication system shall be monitored by the Campus at a constantly attended location.
4. Provide illuminated area of refuge signage at doors providing access to an area of refuge.

#### Emergency Responder Radio Coverage

1. New buildings shall have approved radio coverage for emergency responders within the building as required by the Fire Code of NYS.
2. Determine existing coverage levels of the public safety communication systems utilized by the jurisdiction (fire, police, etc.) measured at the exterior of the building.
3. Provide interior amplification systems and components to achieve sufficient signal strength. The system shall be designed in accordance with the Fire Code of NYS and NFPA 1221.
4. For projects that determined during design that an amplification system was not required, confirm signal strength and coverage levels with the Campus and local jurisdictions during construction prior to substantial completion.

### Section 8 - WIRING & RACEWAY METHODS

1. For new systems, signaling line circuits shall be Class A as defined in NFPA 72.
2. For new systems, initiating device circuits and notification appliance circuits shall be Class B as defined in NFPA 72.
3. When adding devices to an existing system, the wiring Class shall match existing.
4. Provide wiring in raceway as required per NFPA 70, NFPA 72 (pathway survivability) and SUCF Directive 16-4.
5. Provide U.L. Listed 2-hour fire rated cable or 2-hour fire rated enclosure where required by NFPA 72.
6. Fire alarm plenum rated red colored jacket metal clad cable Types MC-FPLP and MC-FPLR are acceptable for use, with Campus approval, except for the following locations:

- a. Where subject to physical damage by normal building use.
- b. Exposed in finished spaces, mechanical rooms, electrical rooms, elevator hoistways and elevator machine rooms.
- c. Passing through a floor or wall.
- d. All other locations as indicated in NFPA 70 and 72.
- e. Fire alarm cable that is not metal clad, or not installed in raceway, is not permitted without SUCF approval.

## Section 9 - ACCEPTANCE TEST & COMPLETION

1. Upon completion of the installation, the fire alarm system and all fire alarm components shall be tested in accordance with NFPA 72.
2. The installing contractor shall provide a record of completion in accordance with NFPA 72 indicating that the fire alarm system has been installed and tested in accordance with the approved plans and specifications.

## Section 10 - DRAWING AND SPECIFICATION REQUIREMENTS

1. Drawings - Provide dedicated 1/8" scale building floor plans indicating the layout of the fire alarm, detection and emergency communications systems equipment. These plans shall not be used for other electrical systems, i.e. power distribution, lighting, data/telephone, audio/visual or security equipment.
2. Drawings – Provide a fire alarm system matrix indicating the fire alarm system inputs and their associated system outputs.
3. Drawings - Provide a fire alarm riser diagram indicating each type of fire alarm device and how they are wired to the protected premises control unit (building fire alarm control panel) and proprietary supervising station (campus head end).
4. Drawings – Provide wiring diagrams for smoke control equipment and fan shutdown.
5. Drawings – Indicate the location of all combination fire/smoke dampers and how they are powered.
6. Drawings - Provide typical details indicating the mounting height for the fire alarm, detection and emergency communications systems equipment.
7. Specifications - Work involving the installation of fire alarm system components shall be performed by firms and employees currently licensed by the NYS Department of State Division of Licensing Services.
8. Specifications - Coordinate the acceptable manufacturers of the fire alarm, detection and emergency communications systems with the Campus. These systems need to be UL Listed for use with existing systems.
9. Specifications – Include requirements for reprogramming the campus-wide proprietary supervising station (PSS).
10. Specifications – The fire alarm, detection and emergency communications systems shall be tested in accordance with NFPA 72.

## APPENDIX I PROJECT CHECKLIST

Review the following items which may pertain to a particular project and include in design:

### **General Note:**

Projects that are primarily fire alarm system projects still have a significant architectural component. The project documents need to include existing conditions (based on a site assessment) and show ceiling types (coffers, suspended clouds, spline) as well as wall finishes and wall fire ratings. Room types should be shown as well (gyms, stages, balconies, atriums, lecture halls). Recommendations for patching, painting or refinishing wall and ceiling areas should be included, deteriorated or difficult to restore area should be recommended for replacement.

- a. How is supervisory (PSS) reporting to be accomplished?
- b. Does the campus have adequate phone lines, fiber optic lines etc. for the project? Is a survey of existing capacity required?
- c. Are there spare conduits in the campus signal ducts for new cables?
- d. On multiple building projects, guarantee period start date for each building may be based on completion of that building only; or on completion of the entire project. Determine with campus and Fund input how to proceed.
- e. Consider software updates, programming revisions, usability, and accessibility of programming.
- f. Can future floor plan revisions be programmed into the graphics display by the campus, or must it be by the fire alarm manufacturer?
- g. Will installation of a new PSS require modification of the space designated for it? Will it require new cabinetry, lighting, ventilation, etc.?
- h. What training does the campus need?
- i. What work must be done during off-hours or in the summer?
- j. What as-built documents are required by the campus?
- k. What hazardous materials remediation is required?
- l. What other related devices/functions/systems such as kitchen hoods, elevator recall and shutdown, door hold-open devices, sprinkler tamper and flow switches, server room fire suppression systems, and smoke/heat vents will require tie-in? Are existing devices compatible with the new system?
- m. Note ceiling types and type of raceway to be used in each area.
- n. Should the contractor provide all service or just repairs during the one-year guarantee period as part of the contract?
- o. Should there be a retest at the end of the one-year guarantee period?
- p. Should there be included in the project the reprogramming of any miscellaneous changes in point description (say 10% of the total points), by the contractor prior to the end of the one-year guarantee period?
- q. Should the installer perform acceptance test or should it be by a third party?
- r. Are all detectors and other system components accessible for testing and maintenance?
- s. Are there existing smoke or heat vents?
- t. Are there existing smoke or fire dampers?