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Fire Alarm System Installation Plan Review and Permit Submission Requirements

Scope

This packet outlines the minimum requirements set forth in the 2015 International Fire Code, local amendments, and departmental policies and procedures as they relate to the installation of Fire Alarm Systems. This packet is not intended to provide an all-inclusive listing of submittal and inspections requirements, as it would be virtually impossible to cover all situations. This packet only covers requirements set forth in the adopted 2013 edition of NFPA 72. Also included in this packet is information covering items required to be included on the working drawings and supporting documents.

Purpose

This information packet has been developed in an effort to provide the highest level of service to the customers of the City of Syracuse. The major goal of fire alarm plan reviews conducted by the Fire Prevention Bureau is to ensure the design of fire alarm systems meet the minimum requirements of the adopted codes and ordinances. To meet this goal, the submitted plans and supporting documentation must contain the information needed to conduct a thorough review.

Legal Requirements

Submittals to the City of Syracuse shall satisfy the requirements set forth in Section 907.1.2 of the 2015 International Fire Code and Section 7.2 of the 2013 Edition of NFPA 72. All applications for permit must also include a photocopy of the State of New York license of the installing vendor/contractor to engage in the business of installing, servicing or maintaining security or fire alarm systems. Three sets of construction documents shall be provided to the permits desk located on the first floor of City Hall Commons. All documents must be reviewed by the City of Syracuse **before the installation** of any part of the fire alarm system. The only exception for work without a permit is maintenance of fire alarm systems where existing devices are replaced with identical devices.

Per the State Education Board: All construction documents shall bear the seal of a design professional in accordance with the N.Y. Educ. Law §7209 and Title 19 NYCRR Part 1203.3(a)(3)(i).

Where design construction documents are developed, a stamped/sealed set must accompany the contractors shop drawings. In addition the contractors shop drawings must bear a licensed professional engineer's stamp/seal *or* review stamp and signature.

Where design construction documents are not developed, the contractors shop drawings may act as both design construction documents and shop drawings as long as all required information is present. The submission must bear a licensed professional engineer's stamp/seal. Review stamps will not be accepted without separate design construction documents.

Administration

A design engineer or licensed design professional will typically provide a preliminary design within the construction documents that will contain sufficient detail to identify the scope of the work and allow for competitive bidding. The design engineer's or licensed design professional's responsibilities include but are not limited to:

1. Evaluate the broad range of hazards and fire protection schemes required to develop a workable, integrated fire alarm solution.
2. Provide design documents as outlined in this guideline.
3. Review shop drawings and submittals to ensure conformance with design documents and applicable codes and standards.
4. Monitor the installation of fire protection systems and participate in their acceptance and commissioning.

Construction Documents

Fire Protection drawings and specifications prepared by the design engineer or licensed design professional and included in the bid documents constitute a 'preliminary design' and shall be sealed by the design engineer or licensed design professional of record registered in New York State as required by the New York State Department of Education Law.

This 'preliminary' design is a basis for bidding and may be referenced to herein as 'construction documents'. A basic understanding of hazard and occupancy classifications; and a working knowledge of fire protection codes and standards is expected from the design engineer or licensed design professional of record.

Construction Documents should comply as applicable with NFPA 72, NFPA 70, International Fire Code, the Property Conservation Code of the City of Syracuse, and this guideline.

Details such as wiring sizes and head locations are not required to be part of the Construction Documents. Such layouts when provided shall be denoted as being provided for general coordination and information only.

Fire alarm system plans and specifications shall be developed in accordance with this code by persons who are experienced in the proper design, application, installation, and testing of fire alarm systems. (NFPA 72 - 10.5.1.1)

Review and Approval of Shop Drawings

The following procedure for review and approval of working shop drawings is applicable and shall be included in the construction documents as necessary to ensure the fire alarm contractor understands their responsibility.

Working shop drawings can be produced by technicians, designers or contractors meeting the minimum standards of NICET Level III or better "Fire Alarm Systems". However, the working shop drawings, battery calculations, and product data shall be reviewed and approved by the design professional or licensed design professional in responsible charge prior to submittal to the Office of the Fire Marshal.

Shop drawings shall include and be in accordance with working plan requirements of Section 7.4 of NFPA 72.

Product data should include and identify all material, equipment, and accessory selections to be installed.

The fire alarm contractor must provide all necessary materials and labor for a system fully compliant with all applicable NFPA requirements and the construction documents.

Any discrepancies should be brought to the attention of the Specifying Engineer or licensed design professional of record.

The Specifying Engineer or licensed design professional has primary responsibility for review and approval of fire detection system working shop drawings and battery calculations. The Specifying Engineer or licensed design professional review shall determine compliance with applicable codes and standards and the project contract documentation.

All construction documents shall bear the seal of a design professional in accordance with the N.Y. Educ. Law §7209 and Title 19 NYCRR Part 1203.3(a)(3)(i). Plans must be stamped and signed *on each page* of a set of plans to indicate the shop drawings have been reviewed and have been found in general compliance to the design document(s). Spec books and/or submittal packages are required to be stamped on the cover, in addition any plans/drawings included within must also be stamped and signed. Product Data and Calculations may be the work of a fire alarm vendor or contractor, but must be reviewed by a design professional. Loose documents will not be accepted!

If comments by the design engineer or licensed design professional are limited, the specifying engineer may, at their discretion, forward the shop drawings to the Office of the Fire Marshal in parallel with comment resolution by the fire alarm contractor.

All comments made by the specifying designer or licensed design professional shall be forwarded to the Office of the Fire Marshal with the review package including comments from previous review iterations, if any.

As noted above the documents outlining the design strategy must be stamped by the registered Engineer/Architect and the shop drawings and other supporting documents must bear a SHOP DRAWING REVIEW stamp indicating review and approval from the originating design engineer or licensed design professional.

For additional information on the roles and responsibilities of the designer and technician see the NSPE Position Statement No. 08-1749— SFPE/NSPE/NICET Joint Position on the Engineer and the Engineering Technician Designing Fire Protection Systems.

Minimum Required Submittal Information

1. Drawing Size.

1. Drawings shall be submitted on sheets no less than 24 x 36 inches and shall be drawn to 1/8"=1' scale. Where 1/8" scale is not large enough to show pertinent details, then a 1/4"=1' scale shall be used in a detail drawing.

2. Number of Drawing Sets.

1. A minimum of three (3) sets of working shop drawings designed by NICET Level III or better "Fire Alarm Systems" shall be submitted and shall include the items found in the checklist provided within this packet.
2. Three (3) copy of the construction documents plans stamped by a New York State licensed design professional shall be submitted for review.
3. Copies shall all be the same size, drawn in indelible ink. Plans that are not legible may be rejected as unacceptable for plan review purposes.
4. Sheets that are cut and pasted, taped, or that have been altered by any means (pen, pencil, marking pen, etc.) will not be accepted for plan check.
5. Distinguish new from existing alarm equipment with "N" and "E" subscripts.

3. Cut Sheets/Specifications.

1. A minimum of three (3) sets of the manufacture's product information (cut sheets) shall be provided. This is to include the information on all devices that are part of, or being connected to, the fire alarm system. When cut sheets show multiple models/type of devices, the specific item being installed shall be highlighted.
2. If component parts from different manufacturers are to be mixed in any system, then a manufacturer's statement of compatibility of said parts shall be included in the submission.
3. As an example, the use of multi-candela horn/strobes shall have the specific model number highlighted and the current draws associated with that model and candela rating highlighted.
4. Cut sheets shall be stapled, bound, placed in a binder or otherwise neatly organized when submitted.

4. Secondary Power Calculations (Battery Calculations).

1. A minimum of three (3) sets of the secondary power (battery) calculations shall be provided for all power supplies being installed within the system. This is to include the voltage and amperage information on all batteries being installed within the main panel and any supplemental power panels being provided. One copy of the battery calculations will be returned to the contractor and must remain with the approved plans, on the job site.
2. Calculations shall include battery calculations, which shall follow an approved format. A battery calculation shall include a listing of the current used by any and all energy consuming devices or equipment, each device powered by the batteries for both standby and alarm mode, and the current rating of the power supply. 30% shall be added under "standby" and "alarm" modes for battery depletion buffer.
3. A battery calculation formula format sheet (with all values used) showing that battery power is adequate for 24 hours of standby power and 5 minutes of alarm power. Standby Battery Calculations for each Control Panel, Sub Panel, Power Booster, Central Station Transmitter, Power supply.
4. 4. Battery calculations shall include the following information:
 - a. Standby and Alarm current draws for each device/appliance connected to the fire alarm system.
 - b. The Model number of each device/appliance.
 - c. Description of each device/appliance.
 - d. Standby time (i.e. 24 hours, 60 hours, etc.)
 - e. Alarm time (i.e. 5 minutes, 15 minutes, 60 minutes etc.)
 - f. Total current draw of the system.
 - g. Batteries provided, size of batteries and whether wired in series or parallel.

5. Voltage Drop Calculations.

1. A minimum of three (3) sets of voltage drop calculations shall be submitted with the plans. One copy of the voltage drop calculations will be returned to the contractor and must remain with the approved plans, on the job site.
2. These calculations are to include the following information:
 - a. The total number of devices on each wiring circuit.
 - b. The current draw of each device.
 - c. The maximum length of wire utilized on each circuit.
 - d. The wire size being used.
 - e. The voltage remaining at the last device.
 - f. Intelligent Horn/Strobes must show the manufactures information of how the voltage drops shall be calculated.
 - g. Adjustable Multi-Candela Horn/Strobes - the battery calculations shall be calculated according to the candela rating on the fire alarm plans. For example, if the fire alarm plans indicate the candela rating is 110, the battery calculation shall be

calculated for 110 candela.

3. Voltage drop calculations shall be attached to the battery calculation form.
4. Provide formula used for voltage drop calculation for all notification circuits in the FACP and for each subpanel with a battery backup. Account for each notification appliance's voltage draw, and provide total draw and drop for each circuit.
5. Indicate notification appliance model and voltage drop corresponding with those listed in the applicable manufacturer's product data sheet (Cut Sheets).
6. Voltage drop calculations shall also identify (for the acceptance test) the acceptable minimum end of line voltage for the specific equipment used.
7. Voltage Drop, percent not to exceed listed manufacturer's operating range.

NOTE: Providing a 10% safety factor will allow the expansion of the circuit/addition of appliances in the future.

6. Sequence of Operations.

1. The sequence of operation of the fire alarm system shall be provided in matrix format. An example of the typical input/output matrix format is located in NFPA 72 Figure A.14.6.2.4. The sequence of operations shall be specific to each submittal and shall not include functions that do not pertain to the specific submittal.

General Information and Requirements

A. FACP'S and FAA'S.

1. The Fire alarm control panel shall be located at the main entrance to the building. If the FACP is not located at the entry, a Fire Alarm Annunciator shall be provided at the main entrance. FACP's and Annunciators shall be affixed such that the top of the panel/device does not exceed 6ft in height. (NFPA 72:10.18.3)

B. Initiating Device Identification.

1. The fire alarm system shall identify the specific initiating device address, location, device type, floor level where applicable and status including indication of normal, alarm, trouble and supervisory status, as appropriate, except in the following situations:

- A. Fire alarm systems in single-story buildings less than 22,500 square feet (2090 m²) in area.
- B. Fire alarm systems that only include manual fire alarm boxes, waterflow initiating devices, and not more than 10 additional alarm-initiating devices.
- C. Special initiating devices that do not support individual device identification.
- D. Fire alarm systems or devices that are replacing existing equipment.

C. Zoned Systems

1. Each floor of a multi-floor building shall be zoned separately. (NFPA 72:10.18.5)
2. If floors exceed 22,500 feet squared, then each floor shall be divided into zones less than 22,500 feet squared. The length of any zone shall not exceed 300 feet in any direction.
3. Manual and automatic initiation devices located within the same fire zone or floor may be wired on the same zone. Duct detectors shall be zoned separately from manual and automatic devices.

D. Monitoring

1. Requirement. In accordance with IFC 907.15, all fire alarm system shall be monitored by an approved supervising station. The Fire Prevention Bureau considers all UL listed or FM approved central, remote or proprietary supervising stations as approved supervising stations.
2. Communication Methods. Supervising station systems shall have communication methods that are approved.
3. Monitoring Company Identification Label: A label identifying the company name, address, business telephone and 24 hour telephone shall be provided. This label shall be adhesive and placed on the front of the primary fire alarm panel.
4. The 2013 edition of NFPA 72 outlines all requirements for transmission methods used by supervising station systems. In general, all transmission methods shall meet the requirements of Sections NFPA 72 (2013 Edition) 26.6.3.1.1 through 26.6.3.1.16, in addition to these requirements digital alarm communicator (DACT) systems and radio systems shall meet the requirements of 26.6.3.2 and 26.6.3.3 respectively.
 - I. Internet Protocol DACTs: IP DACTs shall be allowed, provided they meet the criterion set forth in Sections 26.6.3.1.1 through 26.6.3.1.16 of the 2013 edition of NFPA 72.

NOTE: IP DACTs must be supplied with the required stand-by and alarm back-up power.

E. Signage

1. Approved signage must be provided on the door of the enclosure in which any fire alarm control panels are located. The sign shall read "Fire Alarm Control Panel" (IFC Section 509).
2. Signs shall be permanent, weatherproof and appropriately secured. Please refer to the FACP and Sprinkler Zone Map Requirements.

F. Audible Notification

1. Office of the Fire Marshal requires all newly installed or system upgrades devices shall utilize the 3-pulse temporal pattern for notification.
2. If the existing system does not currently provide the Temporal Three Pattern, additions/modifications to the system do not have to meet that requirement. The pattern used on any particular system must be uniform throughout the building. Synchronization of the patterns is required to eliminate "overlapping" of tones or patterns.
 - I. The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupied space within the building.
 - II. The minimum sound pressure levels shall be 75 dBA in spaces used as sleeping areas, measured at the pillow level (NFPA 72:18.4.5.1). The maximum sound pressure level for audible alarm notification appliances shall be 110 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than 95 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.
3. Audible appliances provided for sleeping areas to awaken occupants shall produce a low frequency alarm signal (NFPA 72:18.4.5.3)
4. Note on the face of the plans indicating the ambient noise range for all the various spaces identified in the plans and the justification (i.e., national standard or previous test) for this ambient level. Also indicate the minimum audibility level (dBA) to be used for the acceptance test.
5. Provide mounting details of all components as applicable (ie: manual audible, visible and combination visible/audible notification appliances).

G. Visual Notification.

1. Show the candela rating of each visible notification appliance adjacent to the device on the floor plans in compliance with UL Standard 1971 and NFPA 72.
2. The new strobe devices are required to be synchronized amongst each other. The new strobe devices do not have to be synchronized with existing strobe devices, unless there are more than two visible notification appliances in the same room or adjacent space within the same field of view (NFPA 72:18.5.5.4). Visual notification appliances shall be in accordance with the applicable sections within NFPA 72.
3. If utilizing ceiling mounted visible notification appliances indicate the height of the applicable ceilings.
4. Residential fire alarm systems for R-2 occupancies are required to provide all dwelling units and sleeping units with the capability to support visible alarm notification appliances in accordance with Chapter 10 of ICC A117.1.

H. FACP Replacements

1. If the panel is being replaced due to damage, a plan submittal is not required unless panel replacement will negatively impact the existing battery and voltage drop calculations. The Fire Prevention Bureau shall witness a test of the system, please contact the Fire Prevention Bureau when ready for testing. Please refer to the Fire Prevention Bureau - Fire Alarm Control Panel Replacement Bulletin.

I. FACP Upgrades

1. If the panel is being upgraded due to age because system parts are no longer available or the system is no longer serviceable, all components not compatible with the new panel must be replaced or upgraded as well. Any work done will require the full submittal of construction documents as described in this packet. Please refer to the Fire Prevention Bureau - Fire Alarm Control Panel Replacement Bulletin.

J. Magnetic Locks , Door Releasing Service and Delayed Egress

1. Magnetic-held door locks shall drop/release upon activation of the fire alarm system.

2. Door releasing for high ceiling areas (>15-ft) where the depth of the lintel exceeds 60 inches on both sides of the door will require an engineering evaluation to be conducted in accordance with NFPA 72.

K. Elevators / Elevator Recall

(NFPA 72:21.3 AND ANSI/ASME A17.1A/CSA B44A)

1. Automatic detection (smoke or heat) is not permitted in the elevator shaft, unless protected by automatic sprinklers or required for activation of hoistway smoke relief systems (NFPA 72:21.3.6).
2. Elevator Recall functions shall include a 3rd circuit to indicate to emergency responders the elevator is no longer safe to use. When the elevator machine room smoke detector activates, it shall cause the firefighters hat in the elevator cars controlled by that machine room to flash (NFPA 72:21.3.11 and 72:21.3.14.3). Elevator recall functions shall be in accordance with ANSI/ASME A17.1a/CSA B44a and NFPA 72.
3. Elevator Recall system shall be tied to the building fire alarm system if provided (NFPA 72:21.3.2).
4. In facilities without a building fire alarm system, automatic smoke detection shall be connected to a dedicated fire alarm system control unit that shall be designated an "Elevator Recall Control/Supervisory Panel" permanently identified on the control unit. The control unit and/or annunciator panel for the elevator recall system shall be located within a normally occupied location. The LED's and piezo's on the panel provide the required notification of supervisory and trouble conditions. No form of general notification or evacuation is intended by a dedicated function elevator recall system. Monitoring of this system is also not required.

L. Water Flow Alarm Systems

1. In accordance with the IFC section 903.4, all valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically supervised.
2. There must be an exterior horn/strobe placed above the FDC. The exterior horn/strobe shall activate upon a water flow only, and de-activate when the water flow stops. No other devices are required to be monitored by a water flow alarm system. The intent of the water flow alarm system is merely to monitor the status of the suppression systems.

M. Duct Detectors and Smoke Damper Detectors

1. If any duct smoke detectors are installed, they shall be supervised by this system and shall be wired to a supervisory zone only, not an alarm-initiating zone, as provided in NFPA 72 and 90A. (Required in HVAC systems > 2000 CFM.)
2. Duct smoke detectors and visible and audible supervisory signal at a constantly attended location. (IFC 907.3.1)
3. If the fire alarm panel is monitoring smoke damper detectors, the smoke damper detectors shall initiate a supervisory signal not a general alarm signal. Remote test switches shall be labeled to the designate which air handling unit they monitor.

N. Special Hazard Extinguishing Systems

1. Dry/wet chemical, carbon dioxide, halon, and clean agent systems shall be connected to the building fire alarm system, if provided, in accordance with the requirements of NFPA 72 (IFC 904.3.5). The actuation of the extinguishing system shall annunciate an alarm signal to fire alarm control panel as well as provide the function of the extinguishing system. (Reference the NFPA standard applicable to the type of system).

Information Required on Cover Page

1. Compass direction and clearly marked scale.
2. Owner's name, address, and telephone number.
3. Occupant's name, address and telephone number, if different from owner.
4. Contractor/Professional contact name, address, telephone, fax numbers.
5. Installation Company, address, and telephone number.
6. Name, address, UL Listing #, and type (central, remote, proprietary) of monitoring agency.
7. A list of the codes and standards, including the edition dates, that were used to design the fire alarm system.
8. Authority Having Jurisdiction (Syracuse Fire Department—Fire Prevention Bureau)
9. Type of fire alarm system – manual, automatic, voice, zoned, addressable, or intelligent.
10. Indication of whether or not the building is sprinkled an extent of coverage (partial/full).
11. Include description of occupancy, IBC classification, and proposed use of structure(s).
12. Any specific notes that would be applicable to the specific project.
13. Scope of work: Brief project description as it pertains to your plan submittal.
14. Must notate that the strobes will remain flashing on system silence.

Wiring Riser Diagram

1. Include a "Point-to-Point" (identify devices in the sequence intended to be wired per the riser) wiring riser diagram detailed for each type of device or appliance being installed.
2. Device/ System Legend to include: Make, model, temperature rating if applicable, candela rating if applicable.
3. Symbols shown on the Symbol Legend must match those in Architectural, General Electrical, and Floor plans for the Fire Alarm System. NOTE: To expedite plan review, exclude symbols for components that are not part of the project.
4. Show all devices, appliances, components and equipment by symbols matching the symbol legend for each circuit
5. Sequentially number each circuit and component. The labels must correspond with the Riser Wiring Diagram.
6. The class and/or style are shown for all initiating device circuits, signal line circuits and notification appliance
7. Type of system: conventional hardwired, wireless, addressable, analog addressable, Class "A", Class "B".
8. Show all wiring, indicating number, type and size of wires for each circuit.
9. Identify each appliance for both initiating devices and notification.
For example: (sequentially number each circuit and component)
A1-1 = Audible circuit #1, device #1
P3-4 = Initiation circuit #3, device #4, etc.
10. Spare conductors shall be identified.
11. Zone identification when (or where) applicable.
12. Maximum number of detection devices allowed on two-wire circuits.
13. Maximum number of detection devices allowed on four-wire circuits.
14. Location of sprinkler system waterflow and tamper supervision, if applicable.
15. Sprinkler system water flow and tamper switches shall be zoned separately.
16. Location of range hood fire suppression systems discharge contacts, if applicable.
17. The source of primary power and its wiring riser diagram.
18. The source of secondary power.

Installation

A. Smoke Detection

1. Where possible, smoke detectors should not be installed until the construction clean up of all trades is complete. The shipping covers that come with the smoke detectors are not considered listed dust covers and are not to be considered as protection against dust or other contaminants. Smoke detector heads found installed prior to clean up will need to be replaced or re-certified by the manufacturer. (NFPA 72:17.7.1.11.2)
2. The installer to coordinate with the mechanical contractor when determining installation of smoke detectors or sensors (i.e., not closer than 3 feet from any supply/return diffuser and that additional detection may be required due to the relocation or spacing adjustment of detectors, as a result).
3. Provide cross sectional elevation of the building showing ceiling heights and spaces above suspended ceilings etc. Indicate all conditions which would impact detector spacing and location. Refer to NFPA 72:Chapter 17 for criteria. State the type of ceiling being installed (suspended, sheetrock, open joist etc...)
4. Show mounting heights and "Beam Detector" installation directives maximum height above finished floor, horizontal spacing, etc.).
5. Provide drawings of reflected ceiling plans or identify and beams (beam pockets), soffits, etc. which will affect device spacing and locations.

B. Manual Pull Stations

1. All pull stations located in public areas or areas where they are subject to impact damage are to be fitted with protective sounding covers.
2. Any/all keys and or tools required to reset all components of the fire alarm system will be left on site. (This includes panel keys, proper size Allen keys or proper type of screwdriver(s) necessary to reset pull stations).

C. Stereo / Visual Shunt / Shut Down

1. Stereo shunt is to be installed that will shut down all music systems in the establishment. Music system will not reset until fire alarm system is reset.
2. Is the fire alarm system arranged to stop or reduce ambient background noise (via relays, circuits or other such interfaces) in areas such as theaters, dance halls, nightclubs, machine shops and other such high noise areas, and will the notification appliances produce

a sound level at least 15dB above the reduced average ambient sound level or 5dB above the maximum sound level lasting at least 60 seconds after reduction of the ambient noise level, whichever is greater, measured 5' above the floor in the occupiable area, using the A-weighted scale (dBA)? (NFPA 72 18.4.3.5 - 18.4.3.5.3)

Final Acceptance Testing

Certificate of Compliance

1. Before requesting final approval of the installation, the installing contractor shall furnish a written statement stating that the system has been installed in accordance with approved plans and tested in accordance with the manufacturer's published instructions and the appropriate NFPA requirements. (NFPA 72 - 7.5.2)

A. Any deviations from the design standards shall be noted and copies of the approvals for such deviations shall be attached to the written statement. (IFC §F901.2.1)

Testing

1. It shall be the duty of the person doing the work authorized by a permit to notify the Fire Prevention Bureau that the work is ready for inspection.

2. Functional Pre-Test Requirement. A full operational pre-test of the fire alarm system shall be performed **PRIOR** to the scheduled fire inspection and shall be documented on the Installers Certification form. Failure to pre-test will result in immediate failure of the inspection and the assessment of a re-inspection fee.

3. Notification appliances and circuits, alarm- supervisory- and trouble-initiating devices and circuits, primary and secondary power supplies, shall be tested in accordance with NFPA 72. (IFC §907.7)

4. Battery/Voltage Drop Test Procedure: Systems are to be taken off of AC power 24 hours prior to scheduled final testing. Once the inspector arrives on site, the 5 or 15 minute alarm test shall commence. One initiating device will be activated and visual/audible devices will continue to operate for 5 minutes (15 minutes for voice alarms).

5. Phone lines/monitoring devices are still required to be provided for final testing even if there is no occupant for the building. Without verification of monitoring, the system cannot undergo final testing.

6. When any initiating device, notification appliance or control relay is added, it shall be functionally tested.

7. If any of the above is deleted, another item of the same description on the circuit shall be tested

8. When any modification to the control equipment is made, the control equipment shall be tested in accordance with NFPA 72:14.4.

9. Verify manual pull stations not more than 5 feet from entrance to each exit and located so that travel distance to nearest box does not exceed 200 feet. (IFC §907.4.2)

10. Fire alarm detection and notification devices shall be visually inspected for proper location, candela rating and installation (NFPA 72:14.3).

11. Verify visual alarm notification mounting heights such that entire lens is not less than 80" and not greater than 96" above the finished floor or at a performance based alternative. (NFPA 72:18.5.5.1, IFC §907.2 and 907.9)

12. All areas shall be tested using a sound level meter, and witnessed by the Fire Prevention Bureau. Provide additional audible notification appliances as necessary to attain 15dBA above ambient.

13. All corridor spaced strobes are placed a maximum of 100' feet apart and within 15' feet from ends of the corridor.

14. Circuit disconnecting means shall have a red marking, shall be accessible only to authorized personnel, and shall be identified as "FIRE ALARM," "EMERGENCY COMMUNICATIONS," or "FIRE ALARMS/ECS" (NFPA 72:10.6.5.2)

15. The location of the circuit disconnecting means shall be permanently identified at the fire alarm control unit. (NFPA 72:10.6.5.2.1)

16. Circuit breaker and panel number as well as the central station account number are to be noted on the inside of the FACP door.

17. Batteries shall be permanently marked with the month and year of manufacture, using the month/year format. (NFPA 72:10.6.10.1.1)

Completion Documents

1. A record of completion verifying that the system has been installed in accordance with the approved plans and specifications shall be presented to the Office of the Fire Marshal at the time of the final acceptance test. An example of this form can be found in NFPA 72. (NFPA 72:Figure 7.8.2(a))

2. Permanent records in accordance with NFPA 72:7.7 shall be provided to the owner to remain on site.

3. A clearly marked pictograph of the building layout indicating the fire alarm zone configurations shall be provided adjacent to the fire alarm control panel, at the main entrance, or in a location as specified by the Fire Marshal.

4. All fire alarm control panels shall be outfitted with permanent signs measure at least four (4) inches wide by two (2) inches tall and shall have letters on a contrasting background on or adjacent to the front panel door as follows: NOTICE TO TECHNICIANS NOTIFY YOUR CENTRAL STATION. False alarms resulting from a technician's failure to notify the fire department and central station prior to system service may result in fine.

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