

# 2021 Fire Alarm Shop Drawings

This list is to be used in conjunction with the attached General Correction List. Note that this correction list is not all inclusive. See additional items on the General Correction List.

Items listed require amended construction documents such as revised plans, supplemental instructions, addenda, field orders, or change orders before plans approval will be issued. Answers in letter form may be provided to explain the changes to the construction documents. All drawing revisions should be clouded with a corresponding revision number tag.

This review does not authorize construction to begin. Starting construction before plans approval may result in a Stop Work Order. Rule 0780-02-03-.02(1)

## General

1. Shop drawings for fire alarm systems shall be submitted for review and approval prior to system installation in accordance with 2021 IBC & IFC 907 and 2019 NFPA 72.
2. Construction documents for fire alarm systems shall be of sufficient clarity to indicate the location, nature and extent of the work proposed. IBC 907.1.1
3. A design for new systems or for a system replacement requires a complete design intent properly sealed, signed, and dated by a Tennessee registrant in accordance with the Architects and Engineers Licensing Law and Rules, IBC Section 107, Rule 0780-02-03-.03(3) and A&E Rule 0120-02-.08(3). Shop drawings are not acceptable for new systems or complete system replacements.
4. A written statement of work that includes adequate documents for construction, including but not limited to manufacturer's product specifications or shop drawings, with the appropriate review fee shall be accepted instead of sealed plans and specifications for the alteration or repair of a fire alarm system or its components in an existing structure. The Division may require a Tennessee registered architect or engineer sealed plans and specifications for review based on the size or complexity of a project. 0780-02-03-.03 (4)
5. The fire alarm contractor must be certified in accordance with the Tennessee Alarm Contractors Licensing Act of 1991, TCA Title 62, Chapter 32, Part 3 "Alarm Contractors Licensing Act.", available at: <http://www.lexisnexis.com/hottopics/tncode/>. Provide note on drawings and in specifications.
6. The shop drawings shall include, but not be limited to, all the following:
  - (1) A floor plan that indicates the use of all rooms.
  - (2) Locations of alarm-initiating devices.
  - (3) Locations of alarm notification appliances, including candela ratings for visible alarm notification appliances.
  - (4) Location of fire alarm control unit, transponders, and notification power supplies.
  - (5) Annunciators.
  - (6) Power connection.

- (7) Battery calculations.
  - (8) Conductor type and sizes.
  - (9) Voltage-drop calculations.
  - (10) Manufacturers' data sheets indicating model numbers and listing information for equipment, devices, and materials.
  - (11) Details of ceiling height and construction.
  - (12) The interface of fire safety control functions.
  - (13) Classification of the supervising station.
7. Provide a fire alarm system for all occupancies required by the 2021 International Building Code.
  8. Provide a scaled Life Safety Plan. This plan shall include egress routes, occupant loads for places of assembly, all required exits including horizontal exits, exit stairs, and exterior exit doors, and point of Fire Department entry. A letter from the local Fire Official may be required to show entry point. Show initiating devices such as pull stations, audible and visual devices, and the distances between devices. and 2019 NFPA 72, 10.4.1
  9. Drawings shall be legible prints, and all drawn to scale.
  10. Identify use of rooms and spaces. IBC 302.1
  11. Show all initiating devices, notification devices, auxiliary circuits, initiating circuits, and circuit designations. NFPA 72 17.1
  12. Specify type of system installed. NFPA 72, 17.5.3
  13. Show fire/smoke wall ratings on electrical drawings.
  14. System designer shall provide fire alarm legend on first sheet of the Fire Alarm design drawings.
  15. Provide the required minimum State of Tennessee adopted codes on the plans.
  16. Provide note on drawings stating the following: "All required documentation regarding the design of fire detection, alarm, and communications systems and the procedures for maintenance, inspection, and testing of fire detection, alarm, and communications systems shall be maintained at an approved, secured location for the life of the system." IFC 901.6.3

## Design

17. Where required by other sections of this Code, actuation of the complete fire alarm system shall be initiated by, but shall not be limited to, any or all of the following means in accordance with IFC 907.2.6.3.1.
  - (1) Manual fire alarm initiation IFC 907.2.6.3.2
  - (2) Automatic detection IFC 907.2.6.3.3
  - (3) Extinguishing system operation
18. Manual fire alarm pull stations shall be located as described below:

- (1) Each manual fire alarm box shall be securely mounted throughout the protected area so that the operable part is between 42 in. and 48 in. above floor level, and shall be conspicuous, unobstructed, and accessible. NFPA 72, 17.15.3, 17.15.4, 17.15.5, 17.15.6
- (2) Manual fire alarm boxes shall be located within 60 in. of the exit doorway opening at each exit on each floor. NFPA 72, 17.15.9.4
- (3) Manual fire alarm boxes shall be mounted on both sides of grouped openings over 40 ft. in width, and within 60 in. of each side of the opening. NFPA 72, 17.15.9.6
- (4) Additional manual fire alarm boxes shall be provided so that the travel distance to the nearest fire alarm box will not exceed 200 ft. measured horizontally on the same floor. NFPA 72, 17.15.9. and NFPA 101, 9.6.2.5
- (5) A manual fire alarm box shall be provided in the natural exit access path near each required exit from an area.
- (6) Each manual fire alarm box on a system shall be accessible, unobstructed, and visible.

NFPA 72 17.15.9.2

19. Smoke/heat detectors shall be located as described below, and surface mounted unless tested and listed for recessed mounting. NFPA 72, Chapter 17

- (1) Total (Complete) Coverage. If required and unless otherwise modified by 17.5.3.1.1 through 17.5.3.1.5 total coverage shall include all rooms, halls, storage areas, basements, attics, lofts, spaces above suspended ceilings, and other subdivisions and accessible spaces as well as the inside of all closets, elevator shafts, enclosed stairways, dumbwaiter shafts, and chutes. NFPA 72, Chapter 17.5.3.1,
- (2) Partial Coverage. Where partial coverage is required, detection devices shall be provided in all common areas and workspaces, such as corridors, lobbies, storage rooms, equipment rooms, and other tenantless spaces where detector operation is in accordance with this Code for the environment in those spaces. NFPA 72, 17.5.3.2
- (3) Selective Coverage. Where codes, standards, laws, or authorities having jurisdiction require the protection of selected areas only, the specified areas shall be protected in accordance with this Code. NFPA 72, 17.5.3.2
- (4) Spot-type heat or spot-type smoke sensing detectors shall be located on the ceiling or on the sidewalls between the ceiling and 12 in. down from the top of the detector, unless otherwise modified by section NFPA 72 17.6.1.4 & 17.6.3.1.1 NFPA 72 17.7.3.2.1.

20. All visible/audible appliances shall be located and mounted per NFPA 72, Chapter 18.

- (1) If ceiling heights allow and unless otherwise permitted by 18.4.9.2 through 18.4.9.5, wall-mounted audible appliances shall have their tops above the finished floors at heights of not less than 90 in. and below the finished ceilings not less than 6 in. ceiling-mounted or recessed appliances shall be permitted. NFPA 72, and 18.4.9.1, 18.4.9.2
- (2) Wall- mounted visible appliances shall be mounted such that the entire lens is not less than 80 in. and not greater than 96 in. above the finished floor or at the mounting height specified using performance-based alternative of 18.5.5.7. NFPA 18.5.1
- (3) If combination audible/visible appliances are installed, the location of the installed appliance shall be determined by the requirements of NFPA 72 18.5.5. NFPA 72 18.4.9.3
- (4) Spacing of visible appliances shall be in accordance with Figure 18.5.5.5.1 and either Table 18.5.5.5.1(a) or Table 18.5.5.5.1(b). More than two visible notification appliances in the same room or adjacent space within the field of view must flash in synchronization. NFPA 72 18.5.5.4.2(3).
- (5) All Visible/Audible appliances shall be located and mounted in corridors per NFPA 72 18.5.5.6.

21. Provide DBA ratings of all audible notification devices on drawings next to each notification device in accordance with NFPA 72, 18.4.1.5.4. In residential sleeping areas dBA at the pillow must be whichever is greater:
  - At least 75 dBA, or;
  - 15 dBA above the average ambient sound level, or;
  - 5 dBA above the maximum sound level having a duration of at least 60 seconds or a sound level of at least 75 dBA, whichever is greater, measured at the pillow level in the area required to be served by the system using the A-weighted scale (dBA). NFPA 72.18.4.6.1
  - If any barrier, such as a door, curtain, or retractable partition, is located between the notification appliance and the pillow, the sound pressure level shall be measured with the barrier placed between the appliance and the pillow. NFPA 72, 18.4.6.2
22. Provide the candela (cd) rating of all visible notification devices on drawings next to each signaling device. NFPA 72 Table A.18.4.4, IBC 107.1.1, 907.5.2
23. Sprinkler system control valves and switches shall be monitored. Activation of the initiating device shall occur within 90 seconds of water flow at the alarm-initiating device when flow occurs that is equal to or greater than that from a single sprinkler of the smallest orifice size installed in the system. NFPA 72, 17.13.2, 17.2
24. Smoke detectors controlling hold open devices must be located in accordance with NFPA 72 17.7.5.6. Hold open devices must release in accordance with [NFPA 101 7.2.1.8] and must be tied into the fire alarm system. Provide details.
  - A. If the depth of wall section above the door is 24 in. (610 mm) or less, one ceiling-mounted smoke detector shall be required on one side of the doorway only, or two wall-mounted detectors shall be required, one on each side of the doorway. Figure 17.7.5.6.5.1(A), part A or B, shall apply. NFPA 72, 17.7.5.6.5.1(A)
  - B. If the depth of wall section above the door is greater than 24 in. (610 mm) on one side only, one ceiling-mounted smoke detector shall be required on the higher side of the doorway only, or one wall-mounted detector shall be required on both sides of the doorway. Figure 17.7.5.6.5.1(A), part D, shall apply. NFPA 72, 17.7.5.6.5.1(B)
  - C. If the depth of wall section above the door is greater than 610 mm (24 in.) on both sides, two ceiling-mounted or wall-mounted detectors shall be required, one on each side of the doorway. Figure 17.7.5.6.5.1(A), part F, shall apply. NFPA 72, 17.7.5.6.5.1(C)
  - D. If a detector is specifically listed for door frame mounting or if a listed combination or integral detector-door closer assembly is used, only one detector shall be required if installed in the manner recommended by the manufacturer published instructions. Figure 17.7.5.6.5.1(A), parts A, C, and E, shall apply. 17.7.5.6.5.1(D)
25. FIRE STOPPING- Specify test number, hourly rating, and provide detail(s) in their entirety which include application instructions, material specifications and design illustrations without modification or manipulation directly on plans of current U.L. (or other approved third party nationally recognized testing laboratory) tested systems for each size and type of penetrating object such as metallic and nonmetallic electrical, fire protection piping, electrical wiring, or conduit through fire resistive assemblies in accordance with The details must be provided directly in the plan set and not in Architectural Supplemental Instruction (ASI), addenda, or within the specifications or project manual.

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<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/gfilenbr.html>

26. Each power supply shall be of adequate capacity for the application. Provide Fire Alarm Systems Secondary Power source load calculations per NFPA 72 10.6.3.3 & 10.6.7.2
27. Show on plans or specifications that system has an emergency power source. [NFPA 72 10.6.7.3]
28. The Fire Alarm Control Panel circuit disconnecting means shall have a red marking, shall be accessible only to authorized personnel, and shall be identified as "FIRE ALARM CIRCUIT." The location of the circuit disconnecting means shall be permanently identified at the fire alarm control unit. NFPA 72 10.6.5.2
29. Where audible appliances are provided to produce signals for sleeping areas, they shall produce a low frequency alarm signal that complies with the following: NFPA 18.4.6  
The alarm signal shall be a square wave or provide equivalent awakening ability.
  - (1) The wave shall have a fundamental frequency of 520 Hz  $\pm$  10 percent. NFPA 72, 18.4.6.3
  - (2) The notification equipment shall be listed for producing the low frequency waveform.

*Note:* This requirement applies to *all sleeping areas*.

30. Occupant notification shall be by means of visible signals and audible notification devices initiated by manual pull stations near each required exit, or by a fire detection system or an automatic sprinkler system throughout the building. IBC 907.5.1
31. Educational occupancies shall be provided with a fire alarm system in accordance with IBC/IFC 907.2.3.  
A manual fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of IBC Section 907.5.2.2 and installed in accordance with IBC Section 907.6 shall be installed in Group E occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. IBC 907.2.3  
*Exception—* [IFC 907.2.3]:
  - (1) A manual fire alarm system is not required in Group E occupancies with an occupant load of 30 or less.
  - (2) Manual fire alarm boxes are not required in Group E occupancies where all of the following apply:
    - 2.1. Interior corridors are protected by smoke detectors.
    - 2.2. Auditoriums, cafeterias, gymnasiums, and similar areas are protected by heat detectors or other approved detection devices.
    - 2.3. Shops and laboratories involving dusts or vapors are protected by heat detectors or other approved detection devices.
  - (3) Manual fire alarm boxes shall not be required in Group E occupancies where the building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, the emergency voice/alarm communication system will activate on sprinkler water flow and manual activation is provided from a normally occupied location.

32. A manual fire alarm system that activates the occupant notification system in accordance with IBC Section 907.5 shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more, or where the Group A occupant load is more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with IBC Section 707.3.10 shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.  
IBC 907.2.1

*Exception:* Manual fire alarm boxes are not required where the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler waterflow.

33. System initiation in Group A occupancies with an occupant load of 1,000 or more (IBC 907.2.1.1): Activation of the fire alarm in Group A occupancies with an occupant load of 1,000 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with Section 907.5.2.2.

*Exception: Where approved,* the prerecorded announcement is allowed to be manually deactivated for a period of time, not to exceed 3 minutes, for the sole purpose of allowing a live voice announcement from an approved, *constantly attended location*.

34. Supervisory signals shall sound and shall be displayed either at a location within the protected building that is constantly attended by qualified personnel or at an approved, remotely located receiving facility. 2019 NFPA 72 10.14 and IBC 907.5.1
35. Where fire department notification is required, the fire alarm system shall be arranged to transmit the alarm automatically.
36. The fire alarm control panel or an annunciating device must be located in an area where trouble signals can be monitored both audibly and visually. This is to be distinguished from a general alarm system. IBC 907.3, 2019 NFPA 72 10.10.6
37. A fire alarm zone indicator panel must be located at grade level at the normal point of fire department access or at a constantly attended building security control center. IBC 907.6.4.1, NFPA 72 10.16.3
38. Initiating devices shall be installed in all areas, compartments, or locations where required by other NFPA codes and standards or as required by the authority having jurisdiction. NFPA 72 17.4.4
39. No one fire alarm zone may exceed 22,500 square feet. Each floor shall be zoned separately.  
IBC 907.6.4, IFC 907.6.4

## Mechanical

40. Show location of all duct mounted smoke detectors mounted downstream of the air filters and ahead of any branch connection in air supply systems having a capacity greater than 2000ft<sup>3</sup>/min. (NFPA 90A, 6.4.2.1(1)) and in the return air stream prior to any exhausting from the building or mixing with fresh air makeup. Smoke detectors required by this section shall be installed in accordance with NFPA 72. The required smoke detectors shall be installed to monitor the entire airflow conveyed by the system including return air and exhaust or relief air. Access shall be provided to smoke detectors for

inspection and maintenance. [IMC 606.3] These detectors must be wired to a central control panel which is constantly monitored or be wired to a general building alarm. NFPA 90A, 6.4.4, NFPA 72 23.8.5.4.6 and IBC 907.3.1

41. Systems having a capacity greater than 15,000 CFM must have a duct mounted smoke detector at each story prior to the connection to a common return and prior to any recirculation or fresh air inlet connection in air return systems [NFPA 90A 6.4.2.1(2)] and installed in return air systems with a design capacity greater than 2,000 cfm (0.9 m<sup>3</sup>/s), in the return air duct or plenum upstream of any filters, exhaust air connections, outdoor air connections, or decontamination equipment and appliances. [IMC 606.2.1] These detectors must be wired to a central control panel which is constantly monitored or be wired to a general building alarm. NFPA 90A, 6.4.4, NFPA 72 23.8.5.4.6 and IBC 907.3.1
42. Smoke damper shall be installed in systems with a capacity over 15,000 CFM to isolate the air-handling equipment, including filters, from the remainder of the system on both the building supply side and the return side, in order to restrict the circulation of smoke, unless specifically exempted by 4.3.10.2.1 or 4.3.10.2.2. [NFPA 90A 4.3.10.2 and IMC 606.2.3] These detectors must be wired to a central control panel which is constantly monitored or be wired to the general building alarm. NFPA 90A, 6.4.4, NFPA 72 23.8.5.4.6 and IBC 907.3.1
43. At least one manual actuation device shall be located a minimum of 10 ft. and a maximum of 20 ft. from the protected kitchen appliance(s) within the path of egress. NFPA 96, 10.5.1.1, IBC 904.14.1

## Electrical

44. The height of the manual fire alarm boxes shall be not less than 42 inches (1067 mm) and not more than 48 inches (1372 mm) measured vertically, from the floor level to the activating handle or lever of the box. IBC 907.4.2.2. NFPA 72 17.15.9.2
  - Manual fire alarm boxes shall be installed so that they are conspicuous, unobstructed, and accessible. NFPA 72 17.15.9.2
  - Manual fire alarm boxes shall be located 5 feet of each exit doorway on each floor. NFPA 72 17.15.9.4
  - Additional manual fire alarm boxes shall be provided so that the travel distance to the nearest manual fire alarm box will not exceed 200 ft (61 m), measured horizontally on the same floor. NFPA 72 17.15.9.5.
  - Manual fire alarm boxes shall be mounted on both sides of grouped openings over 40 ft (12.2 m) in width, and within 5 ft (1.5 m) of each side of the grouped opening. NFPA 17.15.9.6.
45. In areas that have controlling equipment, not continuously occupied, automatic smoke detection must be provided at each control unit(s) (i.e., fire alarm control panel). Heat detection is permitted if ambient conditions prohibit installation of smoke detection. NFPA 72 10.4.5

Unless otherwise permitted by 10.4.6, in areas that are not continuously occupied, early warning fire detection shall be at the location of each control unit(s), notification appliance circuit power extender(s), and supervising station transmitting equipment to provide notification of fire at that location by one of the following means:

- (1) An automatic smoke detector at the location of each control unit(s), notification appliance circuit power extender(s), and supervising station transmitting equipment

- (2) An automatic heat detector where ambient conditions prohibit installation of an automatic smoke detector

Smoke or heat detector(s) shall not be required to be installed at the location of dedicated function(s) fire alarm control unit(s) that are not required to provide local or supervising station notification signals. NFPA 72 10.4.6

46. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group H-5 occupancies and in occupancies used for the manufacture of organic coatings. An automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with Chapters 60, 62 and 63, respectively, of the International Fire Code. IBC 907.2.5
47. The operation of fire extinguishing systems or suppression systems shall initiate an alarm signal by alarm-initiating devices installed in accordance with their individual listings. NFPA 72 17.13 and IBC 907.4
48. Provide Supervisory Signal-Initiating Devices in accordance with NFPA 72 17.16. A fire extinguisher electronic monitoring device shall indicate those conditions for a specific fire extinguisher required by NFPA 10 to a fire alarm control unit or other control unit.
- Control Valve Supervisory Signal-Initiating Device NFPA 17.17.1
  - High/ Low Pressure Supervisory Signal-Initiating Device NFPA 17.17.2
  - Water Level Supervisory Signal-Initiating Device NFPA 17.17.3
  - Water Temperature Supervisory Signal-Initiating Device and Room Temperature Supervisory Signal-Initiating Device NFPA 17.17.4
  - Room Temperature Supervisory Signal-Initiating Device. NFPA 17.17.5
49. System-type smoke detectors or other automatic fire detection devices located in elevator lobbies, elevator hoist ways, and elevator machine rooms including machine space, control room, and control space used to initiate fire fighters' service recall shall be connected to the building fire alarm system. NFPA 72 21.3 Elevator Phase I Emergency Recall Operation.
- All fire alarm initiating devices used to initiate elevator Phase I Emergency Recall Operation shall be connected to the required building fire alarm system. NFPA 21.3.1
  - In facilities without a required building fire alarm system, fire alarm initiating devices used to initiate elevator Phase I Emergency Recall Operation shall be connected to either a nonrequired building fire alarm system or a dedicated function fire alarm control unit that shall be designated as "elevator recall control and supervisory control unit," permanently identified on the dedicated function fire alarm control unit and on the record drawings. NFPA 21.3.2
  - Phase I Emergency Recall Operation Initiation. NFPA 21.3.3
    - Unless otherwise permitted by 21.3.3.2 or required by the authority having jurisdiction, only the elevator lobby, elevator hoist way, elevator machine room, elevator machinery space, elevator control room, and elevator control space smoke detectors or other automatic fire detection as permitted by 21.3.10 shall be used to initiate Elevator Phase I Emergency Recall Operation.
    - A waterflow switch shall be permitted to initiate Elevator Phase I Emergency Recall Operation upon activation of a sprinkler installed at the bottom of the elevator hoist way (the elevator pit), provided the waterflow switch and pit sprinkler are installed on a

separately valved sprinkler line dedicated solely for protecting the elevator pit, and the waterflow switch is provided without time-delay capability.

- Each fire alarm initiating device used to initiate elevator Phase I Emergency Recall Operation shall be capable of initiating the elevator recall function when all other devices on the same initiating device circuit have been manually or automatically placed in the alarm condition. NFPA 21.3.4
- Elevator Lobby Detector Location. NFPA 21.3.5
  - A lobby smoke detector shall be located on the ceiling within 21 ft (6.4 m) of the centerline of each elevator door within the elevator bank under control of the detector.
  - For lobby ceiling configurations exceeding 15 ft (4.6 m) in height or that are other than flat and smooth, detector locations shall be determined in accordance with Chapter 17.
- Smoke detectors or other automatic fire detection as permitted in 21.3.10 shall not be installed in unsprinklered elevator hoist ways unless they are required by ASME A17.1/CSA B44, Safety Code for Elevators and Escalators, for actuation of the elevator hoist way smoke relief equipment and/or to initiate Elevator Phase I Emergency Recall Operation as specified in 21.3.14.1(2) and 21.3.14.2(2) for either of the following: NFPA 21.3.6
  - (1) Hoistway machinery spaces containing a motor controller or driving machine
  - (2) Control spaces located in the hoist way
- Fire alarm initiating device(s) required to be installed inside an elevator hoist way by other sections of this Code or by other governing laws, codes, or standards shall be required to be accessible for service, testing, and maintenance from outside the elevator hoist way. NFPA 72 21.3.7
- When sprinklers are required in elevator hoistways by other codes and standards, fire alarm initiating devices shall be installed to initiate Elevator Phase I Emergency Recall Operation in accordance with ASME A17.1/CSA B44, Safety Code for Elevators and Escalators, and the following shall apply: NFPA 72 21.3.8
  - (1) Where sprinklers are located at the top of the hoistways, the fire detection device(s) shall be located at the top of the hoistway.
  - (2) Where sprinklers are located at the bottom of the hoistway (the pit), fire detection device(s) shall be installed in the pit in accordance with Chapter 17.
  - (3) Outputs from the fire alarm system to the elevator system shall comply with 21.3.14.
  - (4) The fire alarm initiating device(s) shall be installed in accordance with Chapter 17.
- Smoke detectors shall not be installed in elevator hoistways to initiate Elevator Phase I Emergency Recall Operation unless listed for the environmental conditions. NFPA 72 21.3.9
- If ambient conditions prohibit installation of automatic smoke detection used to initiate elevator Phase I Emergency Recall Operation, other automatic fire detection initiating devices shall be permitted. NFPA 21.3.10
- When actuated, any fire alarm initiating device that is used to initiate elevator Phase I Emergency Recall Operation shall be annunciated at the building fire alarm control unit or at the fire alarm control unit described in 21.3.2. NFPA 72 21.3.11
- Actuation of the elevator hoistway, elevator machine room, elevator machinery space, elevator control space, or elevator control room smoke detectors or other automatic fire detection as permitted by 21.3.10 shall cause separate and distinct visible annunciation at the building fire alarm control unit or at the fire alarm control unit described in 21.3.2. NFPA 72 21.3.12
- Where approved by the authority having jurisdiction, the detectors used to initiate Elevator Phase I Emergency Recall Operation shall be permitted to initiate a supervisory signal in lieu of an alarm signal. NFPA 72 21.3.13

- The following three separate outputs from the building fire alarm control unit or the fire alarm control unit described in 21.3.2 to the elevator system shall be provided to implement Elevator Phase I Emergency Recall Operation in accordance with Section 2.27 of ASME A17.1/CSA B44, Safety Code for Elevators and Escalators, as required in 21.3.14.1 and 21.3.14.2: NFPA 72 21.3.14
    - (1) Designated level associated output
    - (2) Alternate level associated output
    - (3) Elevator machine room, elevator machinery space, elevator control space, or elevator control room associated output
50. Unless otherwise required by the authority having jurisdiction, *only the elevator lobby*, elevator hoist ways, and the elevator machine room smoke detectors or other automatic fire detection as permitted by NFPA 72 21.3.9 and initiating devices used to initiate shutdown of elevator power in accordance with section 21.4 shall be used to recall elevators for fire fighters' service. NFPA 72 21.3.3
51. Show the following electrical and fire alarm connections:
- (1) Location of connections of all air handling shutdowns. NFPA 72 27.7.2
  - (2) Location of connections to the kitchen hood fire extinguishing system that activates the fire alarm system. Show other required shutdowns in the event the extinguishing system is activated. NFA 72 17.14, NFPA 96 10.6.2, IBC 904.3.5
  - (3) Location of flow switch or alarm check valve connection to the general building alarm and central station or fire department.
  - (4) Location of supervisory alarm connection from tamper switches on sprinkler system.
  - (5) Location of water alarm switch and specify connection to general building alarm. NFPA 13 7.7
    - a. Waterflow alarm devices shall be listed for the service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler of the smallest K-factor installed on the system will result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops.
  - (6) Location of provisions for the monitoring of other fire suppression systems, and other systems (fire pumps, etc.) for the protection of life and property for the initiation of a supervisory signal indicating an off-normal condition that could adversely affect the performance of the system. NFPA 72 17.17
52. The connections between fire alarm systems and the HVAC system for the purpose of monitoring and control shall operate and be monitored in accordance with applicable NFPA standards. Smoke detectors mounted in the air ducts of HVAC systems shall initiate either an alarm signal at the protected premises or a supervisory signal at a constantly attended location or supervising station. NFPA 72 17.7.4
53. The connections to the fire alarm system serving the protected premises, all detection devices used to cause the operation of HVAC systems smoke dampers; fire dampers, fan control, smoke doors, and fire doors shall be monitored for integrity in accordance with NFPA 72 23.8.2.7.
54. Digital Alarm Communicator Transmitter (DACT) shall be connected to a managed facilities-based voice network upstream of any private telephone system at the protected premises in accordance with NFPA 72 26.6.4.1. The requirements for operation and configuration should be included in the project specification manual.

55. Smoke-activated doors. Automatic-closing doors installed in the locations listed in IBC 716.2.6.6 shall be permitted to have hold-open devices and shall automatically close by the actuation of smoke detectors installed in accordance with Section 907.3 or by loss of power to the smoke detector or hold-open device. Doors that are automatic closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated. IBC 716.2.6.6