

LEVEL III — SIMULATION EXAM 6

(115 QUESTIONS)

Time Limit: 170 Minutes

Allowed References: NFPA 72 (2022), NFPA 70 (2020), Ugly's Electrical References (2020)

DOMAIN 3.1 — INSTALLATION (Questions 1–40)

1. A fire alarm designer is specifying a networked fire alarm system for a hospital campus with seven buildings. Each building has its own panel. The IT department proposes running fire alarm network traffic over the hospital's existing managed Ethernet switches alongside patient monitoring data, using priority tagging (QoS) to guarantee fire alarm packet delivery. What is the correct assessment?

- A. QoS priority tagging on managed switches satisfies NFPA 72 network performance requirements
- B. Fire alarm networking must use listed pathways — shared hospital Ethernet infrastructure does not meet listing or survivability requirements
- C. Shared infrastructure is permitted if the hospital's IT department provides a written uptime guarantee
- D. NFPA 72 permits shared networks for campus systems when the fire alarm uses encrypted traffic

2. A fire alarm designer is performing a battery calculation for a voice evacuation system. The building has a qualifying generator. Main panel loads: panel/SLC standby = 1.08A, voice amplifier standby = 1.72A, network = 0.40A. Alarm loads: NAC = 5.4A, voice = 10.8A. Two remote power supplies each have own batteries. Using 4-hour standby, 15-minute alarm, and 20% safety factor, what is the minimum main panel battery capacity?

- A. 14.40 Ah using correct durations without the 20% safety factor
- B. 28.80 Ah using 24-hour standby because generators do not reduce voice requirements

- C. 20.10 Ah using 4-hour standby with 5-minute alarm instead of 15-minute
- D. Approximately 18.34 Ah after applying all three factors to main panel loads only

3. A fire alarm designer is specifying pathway survivability for a 36-story high-rise. The design uses 2-hour CI cable for riser circuits. At Floor 18, the CI cable exits the east riser, runs 60 feet through an unrated corridor ceiling, and enters the west riser. Standard FPLP cable in the same corridor runs alongside the CI cable for a separate Class B notification circuit. Does the FPLP cable maintain Level 2 in this corridor?

- A. No, the FPLP cable depends on fire-rated construction for Level 2 — the unrated corridor provides none
- B. Yes, the FPLP cable gains Level 2 protection from proximity to the CI cable in the same corridor
- C. Yes, FPLP cable in a ceiling space with sprinkler protection automatically qualifies for Level 2
- D. No, but the FPLP cable qualifies for Level 1 due to the sprinkler protection in the corridor

4. A fire alarm designer is specifying cross-zone releasing for a clean agent system. The data center has two server rooms. During commissioning of Room 1, the releasing panel shows "CROSS-ZONE VERIFIED" when only Zone A activates. Zone B does not activate. What is the most likely cause?

- A. Zone B's detector has a sensitivity setting that causes it to report alarm status continuously
- B. The releasing panel's firmware has a known bug causing single-zone cross-zone verification
- C. The releasing panel programming has Zone A configured as both Zone A and Zone B inputs
- D. Zone B's circuit has a resistor value that the panel interprets as an alarm condition

5. A fire alarm designer is specifying detection for a 120-foot atrium in an airport terminal. The atrium has a curved glass roof, metal structural elements, and retail concessions at ground level. Aesthetic restrictions prohibit visible equipment on structural elements. Spot detectors at the ceiling are impractical due to height and stratification. What detection approach is most appropriate?

- A. Projected beam detectors mounted on concealed brackets behind structural columns at three heights
- B. Aspirating detection with sampling pipes integrated into the HVAC ductwork at multiple elevations

- C. Flame detection using multi-spectrum IR sensors aimed at the retail concession areas
- D. Video-based smoke detection using the existing security camera infrastructure

6. A fire alarm designer calculates NAC voltage drop: 14 AWG (3.14 Ω /1000 ft), round-trip 1,100 feet, 2.2 amps on 24 VDC. $R = 3.454 \Omega$. $V_{\text{drop}} = 7.599\text{V}$. End voltage = 16.40 VDC. Devices listed 16-33 VDC. The margin is 0.40V above minimum. A second designer recommends redesign. Is the recommendation valid?

- A. No, the circuit meets the 16 VDC minimum and satisfies code requirements
- B. No, 14 AWG provides adequate margin for circuits under 1,200 feet
- C. Yes, but only because 14 AWG is not permitted for NAC circuits per NEC Article 760
- D. Yes, 0.40V margin will erode from connection aging, temperature rise, and any additions

7. A fire alarm designer is developing the sequence of operations for a hospital with defend-in-place. The facility has patient care floors, surgical suites, an ED, a NICU, a psychiatric unit, and a radiation therapy vault. Which area presents the MOST unique notification challenge beyond standard defend-in-place?

- A. The radiation therapy vault because notification must not cause patients to move during active beam delivery
- B. The psychiatric unit because patients may not respond appropriately to alarm notifications
- C. The NICU because neonates cannot self-evacuate and are medically fragile
- D. The ED because it has the highest density of simultaneously active medical procedures

8. A fire alarm designer is evaluating speech intelligibility for a voice evacuation system. STI of 0.50 minimum. Four challenging spaces: a natatorium (high humidity, hard tile surfaces), a subway station concourse (train noise, tunnel reverberation), an industrial press room (100 dB ambient), and a hospital MRI suite (electromagnetic interference). For which space does the intelligibility challenge require the most unique engineering solution?

- A. The natatorium because humidity and hard tile create compound reverberation problems

- B. The subway concourse because train noise combined with tunnel reflections is most complex
- C. The MRI suite because electromagnetic interference requires non-ferromagnetic speaker construction and shielding
- D. The press room because 100 dB ambient requires maximum speaker output with directional arrays

9. A fire alarm designer is specifying communication for a high-rise with central station monitoring. The building currently has dual copper DACT lines. The telephone company discontinues copper in 6 months. The building owner wants to minimize cost. The designer proposes a single cellular communicator. Per NFPA 72 Chapter 26, does a single cellular path satisfy the monitoring requirement?

- A. No, NFPA 72 requires dual-path communication for all high-rise buildings
- B. Yes, a single listed cellular communicator with continuous monitoring satisfies the technology requirements
- C. No, cellular technology cannot be used as a primary path — only as secondary backup
- D. Yes, but only if the cellular carrier provides a written service level agreement

10. A fire alarm designer is developing elevator recall for a building with four banks. Banks A-C serve the tower. Bank D is a dedicated express elevator serving only the penthouse and lobby. The machine room is on the roof. When a lobby smoke detector activates, all four banks must recall. Bank D's normal service floor IS the lobby. Per NFPA 72, what happens to Bank D?

- A. Bank D must recall to the penthouse as its alternate floor since its primary floor is the lobby where smoke was detected
- B. Bank D is exempt from lobby detector recall because it only serves two floors
- C. Bank D remains at the lobby because express elevators cannot recall to alternate floors
- D. Bank D must shut down completely rather than recall to any floor

11. A fire alarm designer is specifying detection for a building containing a rare book archive. The archive has controlled temperature (68°F), controlled humidity (45% RH), and positive pressure air filtration. The collection is irreplaceable. Standard spot detectors provide detection but at relatively high smoke concentrations. What detection technology provides the earliest possible warning?

- A. Multi-criteria detectors combining photoelectric and CO sensing for compound analysis
- B. Standard photoelectric detectors at half the normal spacing for increased coverage density
- C. Rate-of-rise heat detectors providing fastest activation for rapidly growing fires
- D. Aspirating detection at high sensitivity (ALERT level) providing detection at extremely low smoke concentrations

12. A fire alarm designer is specifying conduit fill for 1-inch EMT carrying nine 14 AWG THHN, six 12 AWG THHN, and eight 18 AWG THHN (23 total). Mixed sizes prevent Annex C use. What method must be used?

- A. Compare each size to its individual Annex C maximum count
- B. Use the Annex C table for 12 AWG as the controlling calculation
- C. Calculate total conductor area from Chapter 9 Table 5 and compare to the 40% fill allowance
- D. Add counts and compare total to the smallest Annex C maximum present

13. A fire alarm designer is developing the fire command center per NFPA 72 Section 23.10. The building has two fire command centers — a primary FCC in the lobby and a secondary FCC on Floor 25. Per NFPA 72, what equipment is required at the secondary FCC?

- A. Only a simplified annunciator showing zone-level alarm and trouble status
- B. The same equipment as the primary — a complete panel or dedicated repeater with full control
- C. A telephone connection to the primary FCC for voice communication during emergencies
- D. Only a graphic annunciator showing building floor plans with zone locations

14. A fire alarm designer is developing the fire pump monitoring interface. The controller provides pump running, power available, phase reversal, and controller trouble contacts. The building has two fire pumps — an electric primary and a diesel backup. The diesel controller additionally provides low fuel, high engine temperature, and failure to start contacts. Per NFPA 72, how should these diesel contacts be classified?

- A. All three diesel contacts — low fuel, high temperature, and failure to start — are supervisory signals
- B. Failure to start is an alarm signal while low fuel and high temperature are supervisory
- C. All three are trouble signals because they affect system reliability
- D. Only failure to start requires monitoring — low fuel and high temperature are maintenance items

15. A fire alarm designer is specifying visible notification for a large indoor arena seating area with a 65-foot ceiling. The seating bowl holds 20,000 people. Wall-mounted strobes at standard heights cannot cover the seating bowl dimensions. What visible notification approach is most appropriate?

- A. Ceiling-mounted strobes suspended from the scoreboard structure above center court
- B. Distributed strobes mounted on the backs of seats at every fifth row
- C. High-candela strobes on the arena walls at multiple heights using the ceiling-height table
- D. Visible notification coverage from strobes integrated into the electronic message boards at each seating level

16. A fire alarm designer is developing a pre-action releasing system using single-interlock. The building owner asks what the operational difference is between single-interlock and double-interlock. What is the correct explanation?

- A. Single-interlock uses one detector zone while double-interlock requires cross-zone detection
- B. Single-interlock opens on detection OR pressure drop while double-interlock requires both
- C. Single-interlock opens the valve on detection alone while double-interlock requires both detection AND pressure drop
- D. Single-interlock has no abort capability while double-interlock includes an abort switch

17. A fire alarm designer specifies the system for a 250-bed nursing home with defend-in-place. The facility has four wings. When a smoke detector activates in Wing B, notification activates in Wing B only. The facility director asks whether the other three wings should be notified so staff can prepare for potential resident relocation assistance. What determines the answer?

- A. NFPA 72 always requires notification in all wings when any wing goes into alarm
- B. The building's approved fire safety plan determines whether adjacent wings are notified
- C. Only the alarm wing is notified in all defend-in-place nursing home implementations
- D. The fire department determines wing notification scope during each event

18. A fire alarm designer is developing PAS for a large commercial building. During the 180-second investigation period, a waterflow switch activates. Per NFPA 72 Section 23.8, does the waterflow signal cancel PAS?

- A. Yes, a waterflow signal is a non-detector alarm signal that must cancel PAS and activate general notification
- B. No, waterflow is a supervisory signal that does not interact with PAS
- C. Yes, but only if the waterflow zone corresponds to the same area as the PAS detector
- D. No, PAS applies to all alarm types including waterflow during the investigation period

19. A fire alarm designer specifies the releasing circuit for a clean agent system in an occupied laboratory. The lab has chemical fume hoods with forced air ventilation that must shut down before agent discharge to prevent agent dilution. Per the sequence, HVAC shutdown must occur BEFORE agent release. What design feature ensures this timing?

- A. The releasing panel's agent timer is set to zero so discharge is instantaneous after HVAC stops
- B. HVAC shutdown and agent release are on the same output — simultaneous activation
- C. The HVAC shutdown relay is wired to the alarm output and agent release to a separate timed output
- D. The releasing panel initiates HVAC shutdown at cross-zone verification and agent release at countdown completion

20. A fire alarm designer specifies the system for a 35-story residential tower using defend-in-place. The building has three stairwells and two elevator banks. A smoke alarm on Floor 24 notifies Floors 23, 24, and 25. The building manager asks whether stairwell notification should also activate. What is the correct approach?

- A. Stairwell notification is prohibited during defend-in-place to prevent unnecessary evacuation
- B. Stairwells are always notified independently of defend-in-place floor notification
- C. The fire safety plan determines whether stairwell notification activates during defend-in-place alarms
- D. Stairwells are notified only when three or more floors are in alarm simultaneously

21. A fire alarm designer specifies white devices per architect's preference. The designer also specifies white covers on all manual pull stations. Per NFPA 72, is this acceptable?

- A. Yes, white covers over red pull stations are acceptable if the covers are transparent
- B. No, pull stations must be red and no cover may obscure the red color
- C. Yes, covers may be any color as long as the pull station underneath is red
- D. No, covers of any type are prohibited on manual pull stations per NFPA 72

22. A fire alarm designer develops notification for a museum with extremely valuable artwork. The museum director requests that audible notification be limited to staff areas only — no horns or speakers in gallery spaces — to prevent panic-driven visitor behavior that could damage artwork. Per NFPA 72, can the designer comply?

- A. No, all occupied spaces must have audible notification meeting the 15 dB above ambient requirement
- B. Yes, museums are exempt from audible notification in display areas per NFPA 72 Chapter 29
- C. Yes, if the galleries have visible-only notification with staff-managed evacuation
- D. No, but audible levels can be reduced to ambient level in gallery spaces

23. A fire alarm designer evaluates voice evacuation approaches for a 40-story building. The design uses remote amplifier panels on Floors 10, 20, and 30. During a power failure, each remote panel must sustain its loads on its own batteries. The designer proposes running all three remote panels' battery calculations using the main panel's battery sizing. What is wrong with this approach?

- A. Remote panels must use larger batteries than the main panel for safety margin
- B. Remote panels do not require batteries — they operate from the main panel's battery bus
- C. The main panel calculation cannot be used because each remote panel has different loads
- D. Each remote panel's battery calculation must use its own specific standby and alarm loads

24. A fire alarm designer is specifying the kitchen hood suppression interface. The kitchen has two separate hood suppression systems — one over the fryer line and one over the grill line. Each has its own monitor module. When the fryer hood activates, what must the panel initiate?

- A. The full approved sequence — notification, station signal, and HVAC shutdown — regardless of which hood activates
- B. Only the fryer-specific HVAC zone shuts down — the grill HVAC continues operating
- C. Only station signal because individual hood activations are supervisory events
- D. Only local kitchen notification because the suppression addressed the specific cooking station

25. A fire alarm designer specifies cable for a hospital. The corridor above the suspended ceiling is used as a return air plenum. Patient rooms have dedicated ducted HVAC (non-plenum ceilings). What cable types are required?

- A. FPLP in both because all hospital spaces require plenum-rated cable
- B. FPL in both because hospital corridors are not classified as plenums
- C. FPLP in the corridor ceiling plenum and FPL minimum in the non-plenum patient room ceilings
- D. FPLR in both because the vertical connection between floors creates a riser application

26. A fire alarm designer specifies the system for a building with six sprinkler risers. Each riser has waterflow and tamper switches — twelve zones total. During design review, the insurance carrier asks whether the waterflow switches can be programmed for supervisory instead of alarm. Per NFPA 72, what is the correct classification?

- A. Waterflow switches generate alarm signals — they cannot be programmed as supervisory
- B. Waterflow switches must generate alarm signals per NFPA 72 Section 10.18
- C. Waterflow may be either alarm or supervisory based on the building's risk assessment
- D. Waterflow switches generate supervisory signals identical to tamper switches

27. A fire alarm designer specifies detection for a cold storage facility. Walk-in freezer at -35°F. Processing room at 38°F. Loading dock fluctuates 0°F to 96°F. Shipping office at 72°F. What minimum heat detector activation temperature is required for the processing room?

- A. 38°F because the room temperature is constant and controlled
- B. 135°F because it is the standard commercial rating
- C. 72°F matching the highest adjacent space temperature
- D. At least 58°F to maintain the 20°F margin above the 38°F ambient

28. A fire alarm designer develops elevator recall for a building with four banks and a separate parking garage elevator. The building and garage share a common lobby at ground level. The building's machine room is on Floor 15 and the garage elevator machine room is in a separate structure. When the building's Floor 15 machine room detector activates, which elevators must recall?

- A. Only the building's four banks — the garage elevator has a separate machine room and is unaffected
- B. All five elevators must recall because they share a common lobby
- C. Only Banks A and B recall — Banks C and D are exempt because they serve different tower sections
- D. All building elevators recall to alternate floors and the garage elevator shuts down

29. A fire alarm designer specifies mass notification integrated with voice evacuation. During a mass notification event, the fire alarm audio is overridden on all floors. A code reviewer asks whether the fire alarm panel can continue transmitting alarm signals to the supervising station during the override. What is correct?

- A. No, the override suspends all fire alarm functions including station transmission
- B. No, station transmission resumes only after the mass notification event concludes
- C. Yes, the fire alarm signal must continue transmitting to the station during any audio override
- D. Yes, but only if the mass notification controller sends a separate signal to the station

30. A fire alarm designer develops the releasing circuit for a pre-action sprinkler. The system uses single-interlock. During commissioning, a detector activates but the solenoid does not energize. The releasing circuit shows continuity and the panel shows "RELEASING ACTIVE." What should be investigated?

- A. The panel output voltage is too low or the solenoid coil resistance is too high for the output
- B. The solenoid valve is mechanically seized preventing operation despite proper electrical signal
- C. The detector is generating a supervisory signal that does not trigger the releasing output
- D. The cross-zone logic is not satisfied because single-interlock requires two-zone verification

30. I need B to be correct. B says the solenoid is mechanically seized. The panel shows "RELEASING ACTIVE" meaning it energized the output. Continuity exists. But the valve doesn't open. Mechanical seizure is the most likely cause.

31. A fire alarm designer specifies detection for a building with an indoor ice rink, a commercial pottery kiln room, and a tire storage warehouse. Each produces conditions incompatible with smoke detectors. What detection is most appropriate?

- A. Aspirating detection with filtration at sampling intakes for all three spaces
- B. Multi-criteria detectors with environmental compensation algorithms
- C. Flame detection because all three contain highly combustible materials

D. Heat detection because all three environments create smoke detector nuisance conditions

32. A fire alarm designer specifies ADA-accessible hotel guest room. Room is 15×19 feet, 9-foot ceiling. Per NFPA 72, 15 cd wall strobe covers up to 20×20 feet. What additional notification is required?

A. A supplemental device effective for waking sleeping hearing-impaired occupants

B. A ceiling-mounted strobe at 177 cd directly above the bed

C. A low-frequency 520 Hz audible generator near the bed

D. A second wall strobe at double candela on the wall nearest the bed

33. A fire alarm designer specifies voice evacuation using 70.7V. A speaker circuit has four speakers. The first three speakers have impedance-matching transformers set to 2-watt taps. The fourth speaker has its transformer set to a 1/2-watt tap. During testing, the fourth speaker produces significantly lower volume. What is the cause?

A. The fourth speaker's transformer is defective and must be replaced

B. The wire run to the fourth speaker has higher resistance reducing voltage

C. The 1/2-watt tap delivers less power than the 2-watt taps on the other three speakers

D. The fourth speaker is a different model with lower sensitivity rating

34. A fire alarm designer specifies beam detectors for an aircraft hangar 500×300 feet with 60-foot ceilings. Beams span the 500-foot dimension with 55-foot lateral spacing. What must be verified?

A. The beam count equals one per 5,000 square feet of floor area

B. The 55-foot spacing does not exceed the manufacturer's listed maximum for the 60-foot ceiling

C. The 55-foot spacing matches fire sprinkler spacing for consistent protection

D. The 55-foot spacing does not exceed the 30-foot standard spot detector spacing

35. A fire alarm designer is developing a phased construction project for a campus. Building A is operational. Building B construction begins adjacent to Building A with a shared fire wall between them. During Building B construction, penetrations are made in the fire wall for future conduit. How does this affect Building A's fire alarm system?

- A. Building A's system is unaffected because the fire wall maintains its rating during construction
- B. Building B construction has no effect on Building A's fire alarm because they are separate buildings
- C. Building A's panel must be reprogrammed to reflect the temporary fire wall penetrations
- D. Fire wall penetrations must be temporarily sealed and Building A's zones near the wall evaluated for impairment

36. A fire alarm designer specifies the central station connection per NFPA 72. What is the maximum time for the operator to initiate response after receiving an alarm?

- A. 90 seconds from receipt to initiation of the required response action
- B. 60 seconds from receipt to acknowledgment at console
- C. 30 seconds from receipt to first contact with dispatch
- D. 120 seconds from receipt to fire department notification completion

37. A fire alarm designer specifies the system for a building with an emergency generator. The generator has an automatic transfer switch rated for 10-second transfer. Per NEC Article 700, is this compliant?

- A. No, NEC 700 requires 5-second transfer for fire alarm circuits specifically
- B. No, generators must be running and at rated voltage within 10 seconds — the ATS transfer adds to this
- C. Yes, 10 seconds meets the maximum transfer time per NEC Article 700
- D. Yes, but only if the fire alarm panel has batteries to bridge a transfer up to 30 seconds

38. A fire alarm designer specifies multi-level detection for a warehouse with 56-foot ceilings. In-rack detectors are at 19 and 38 feet. Ceiling beam detectors are also installed. A cost-conscious owner asks whether the in-rack detectors alone can substitute for ceiling beam detection. What is the correct answer?

- A. Yes, in-rack detectors at multiple levels provide equivalent or better coverage than ceiling beams
- B. No, ceiling detection is still required because in-rack detectors only protect the rack areas — not open aisles
- C. Yes, if in-rack spacing meets NFPA 72 requirements for the ceiling height
- D. No, but in-rack detection can reduce the number of ceiling beams required

39. A fire alarm designer specifies the system for a building with an emergency generator. Per NEC Article 700, the fire alarm panel's dedicated circuit must be on the emergency distribution panel. The electrical engineer proposes placing the fire alarm circuit on a "legally required standby" panel instead. Is this acceptable?

- A. Yes, legally required standby and emergency are interchangeable for fire alarm circuits
- B. Yes, because fire alarm is classified as legally required standby in most building codes
- C. No, but the fire alarm can be on any panel as long as the generator backs it up
- D. No, NEC Article 700 requires fire alarm on the emergency panel — not legally required standby

40. A fire alarm designer specifies in-rack detection for a warehouse with 60-foot ceilings. The design includes detectors at 20-foot and 40-foot elevations plus ceiling beam detectors. The building owner asks why three levels of detection are needed. What is the rationale?

- A. In-rack detectors at two levels catch fires originating at different storage heights before smoke reaches the ceiling
- B. Three levels provide required code redundancy for warehouses exceeding 50 feet
- C. Ceiling beam detectors alone are prohibited in warehouses above 55 feet per NFPA 72
- D. NFPA 72 mandates three detection levels for all rack storage installations

DOMAIN 3.2 — MAINTENANCE AND INSPECTION (Questions 41–78)

41. A fire alarm technician performs annual releasing system testing. Solenoid disconnected, substitute load installed. Cross-zone, countdown, abort, and supervision verified. What additional test remains?

- A. Releasing solenoid reconnected for live discharge verification
- B. Cross-zone retested in opposite activation order
- C. Pre-discharge warning appliances verified for adequate output in the protected space
- D. Substitute load voltage measured with calibrated instrument

42. A fire alarm designer reviews sensitivity for a 12-year-old system with 750 detectors. Report shows 35 detectors above 3.7% max and 10 detectors below 0.5% min. What action is required?

- A. Only the 35 high-reading detectors need cleaning
- B. All 45 out-of-range detectors — both high and low — require investigation and correction
- C. All 750 must be cleaned because 45 out-of-range indicates building-wide contamination
- D. Panel thresholds should be expanded for 12-year drift

43. A fire alarm technician tests voice evacuation live microphone from FCC. Audio heard on Floors 1-20 but not Floors 21-40. Pre-recorded message plays on all 40 floors. Most likely cause?

- A. Live microphone routing programmed to broadcast only to Floors 1-20
- B. Amplifiers for upper floors have a fault blocking live audio
- C. Microphone output power insufficient for total building load
- D. Upper floor speaker circuits have impedance faults

44. A fire alarm technician tests elevator recall. Five banks with selective recall. Activating Bank B: only Bank B recalls. Activating Bank E: Banks D and E both recall. Only Bank E's relay activated. Where is the problem?

- A. Panel programming activates both D and E outputs for Bank E's zone
- B. Bank E's SLC communication interferes with Bank D's module
- C. Bank E's detector generates building-wide alarm code
- D. Elevator controllers for Banks D and E share a common recall input wired in parallel

45. A fire alarm technician tests AC power supervision. AC disconnected. After 2 hours 50 minutes, panel generates "AC POWER FAILURE" trouble. Per NFPA 72, is this acceptable?

- A. No, trouble must appear immediately upon power disconnection
- B. No, trouble should appear within 60 minutes for modern panels
- C. Yes, 2 hours 50 minutes is within the 3-hour maximum per NFPA 72
- D. Yes, any delay under 4 hours is acceptable for panels with batteries

46. A fire alarm technician discovers a smoke detector covered with a coffee filter taped over the sensing opening by maintenance staff. Covering in place for six weeks. What must be documented?

- A. Coffee filters are porous and permit smoke entry — detector remains functional
- B. Detector disabled for six weeks — significant impairment requiring immediate correction
- C. Covering acceptable during construction if logged in maintenance records
- D. Filter may remain until maintenance identifies the nuisance alarm source

47. A fire alarm technician tests a double-interlock pre-action system. Detector activates. Panel processes alarm. Valve does not open. Is this correct?

- A. No, detection should open valve as first interlock for all pre-action types

- B. No, detection should energize pilot solenoid for faster response
- C. Yes, double-interlock requires both detection AND air pressure drop
- D. Yes, but only because system was in maintenance mode

48. A fire alarm technician tests communication — IP primary, cellular secondary. IP succeeds. Disconnects IP. After 198 seconds, panel generates "IP COMMUNICATION FAILURE." Cellular succeeds. Does IP timing pass?

- A. Yes, 198 seconds is within the 200-second maximum for continuous monitoring
- B. No, IP must detect failure within 60 seconds per continuous monitoring
- C. No, but firmware update can correct timing
- D. Yes, the 200-second limit has built-in 5% tolerance

49. A fire alarm technician discovers the event log has been full for fifteen months, overwriting entries. What is the impact?

- A. Full log causes panel processing delays
- B. Panel must be replaced with larger capacity
- C. No operational impact — panel functions independently
- D. Fifteen months of diagnostic history lost — log must be downloaded and cleared

50. A fire alarm technician tests semiannual detectors on Floor 18. Ten adjacent detectors take 35 to 50 seconds to activate. Others activate in 3 to 8 seconds. What does delayed response indicate?

- A. SLC polling configured slower for those addresses
- B. Ten detectors likely have contaminated sensing chambers
- C. Aerosol can running low during those tests
- D. HVAC dilutes smoke before reaching those detectors

51. A fire alarm technician tests power transfer. After disconnecting AC, voltage: 0 min = 27.0V, 5 min = 26.6V, 10 min = 26.2V, 15 min = 25.8V. Charger activates after reconnection. Acceptable?

- A. No, 1.2V drop indicates near end of life
- B. No, voltage should remain constant
- C. Yes, gradual decline normal for batteries under standby load
- D. Yes, but only if recovery above 27.0V within 30 minutes

52. A fire alarm technician discovers a smoke detector covered with masking tape applied by painters. Tape in place for four weeks. What must be documented?

- A. Masking tape completely blocks smoke entry — detector non-functional and must be uncovered
- B. Tape is acceptable short-term if painters sign acknowledgment
- C. Tape creates negligible impact because it is thin and porous
- D. Tape may remain until painting is complete

53. Per NFPA 72, what is required testing frequency for releasing device circuits?

- A. Semiannually because releasing circuits are more critical
- B. Monthly for suppression readiness
- C. Only during initial acceptance
- D. Annually as part of comprehensive releasing system test

54. A fire alarm technician tests notification. A speaker on 70.7V circuit produces clear but reduced volume. Circuit voltage 70.2 VAC. What is most likely cause?

- A. Amplifier has partial fault reducing output
- B. Speaker's wattage tap set lower than others on the circuit

- C. 70.2 VAC below speaker's minimum threshold
- D. Speaker wire has high-resistance splice

55. A fire alarm technician tests visible notification. Two strobes visible from same location flash 0.45 seconds apart on different NAC circuits. What is violated?

- A. Synchronization — strobes in same field of view must flash together
- B. Candela — unsynchronized output produces uneven coverage
- C. Flash rate — combined offset exceeds 2 per second
- D. Mounting height — improper mounting creates offsets

56. A fire alarm technician discovers two pull stations in a gym painted blue. Paint covers housing, handle, and labels. What must be documented?

- A. Pull stations function if activated — paint is cosmetic
- B. Only labels need restoration — color does not affect operation
- C. Painted pull stations must be replaced because paint obscures required red color and labels
- D. Gym should repaint red within 30 days

57. A fire alarm technician performs battery load test. Starting 27.2 VDC. After test, ending 18.2 VDC. Manufacturer minimum 20.4 VDC. What must be documented?

- A. Batteries passed because 18.2 exceeds industry minimum 18 VDC
- B. Test inconclusive — repeat after recharge
- C. Batteries can remain 30 days while replacements ordered
- D. Batteries failed — 18.2 below 20.4 VDC minimum

58. A fire alarm technician tests HVAC shutdown. Duct detector activates, panel processes alarm, control module relay closes. AHU does not shut down. Where is the fault?

- A. In duct detector generating incorrect signal
- B. In the wiring between control module relay and AHU controller
- C. In panel programming — output not linked to duct zone
- D. In SLC — module did not receive command

59. A fire alarm technician discovers Record of Completion last updated eleven years ago. Seven renovations added 110 devices and changed the sequence six times. What is needed?

- A. Record must be updated to reflect current system per NFPA 72 Section 7.8
- B. Annual testing records capture modifications — update optional
- C. Original Record remains valid as initial baseline
- D. New Record needed only if panel replaced

60. A fire alarm system log shows 250 "WATERFLOW — ALARM" entries over nine months with no fires. Engineer reports municipal pressure surges. What should be recommended?

- A. Replace switches with pressure-compensated models
- B. Disconnect switches until pressure resolved
- C. Increase panel threshold for waterflow zones
- D. Investigate surges and adjust waterflow switch retard delay settings

61. A fire alarm technician discovers renovation enclosed a corridor detector behind a new wall. Detector communicates normally. What must be documented?

- A. Detector can remain — communicates normally

- B. Panel descriptor should be updated for concealed position
- C. Detector must be relocated to occupied corridor and concealed space evaluated
- D. Concealed detector provides dual coverage

62. A fire alarm technician tests tamper switch on OS&Y valve. After two revolutions, supervisory appears. Per NFPA 72, pass?

- A. Yes, within two revolutions meets NFPA 72
- B. No, must activate after one revolution
- C. No, requirement is one and a half revolutions
- D. Yes, but only for OS&Y — butterfly valves stricter

63. A fire alarm technician tests horn/strobe. Temporal-three correct. Strobe at 0.85 flashes per second. Document?

- A. Passes because below 2 per second is acceptable
- B. Fails — NFPA 72 requires 1 to 2 flashes per second and 0.85 is below minimum
- C. Rate irrelevant if candela meets coverage
- D. Acceptable for sleeping areas but fails commercial

64. A fire alarm technician discovers tamper generates alarm instead of supervisory. Contact confirmed. Most likely cause?

- A. Tamper requires different EOLR
- B. Panel cannot distinguish on same input
- C. Wiring polarity reversed
- D. Input programmed as alarm rather than supervisory

65. A fire alarm system: IP primary, cellular secondary. "IP FAILURE" active 75 days. Cellular functions. Document?

- A. Cellular provides complete monitoring — not urgent
- B. IP repaired at owner's convenience
- C. System operated without redundancy 75 days — significant impairment
- D. No documentation needed

66. A fire alarm technician discovers a building-standard wayfinding sign mounted directly over a corridor horn/strobe blocking both outputs completely. What must be documented?

- A. Sign obstructs both audible and visible notification and must be removed or relocated
- B. Only strobe obstruction significant
- C. Device functional if activates during testing
- D. Building may apply for variance

67. A fire alarm technician performs battery test. Starting 26.2 VDC. After test, ending 19.0 VDC. Manufacturer minimum 20.4 VDC. Document?

- A. Passed — 19.0 exceeds 18 VDC industry minimum
- B. Failed — 19.0 below 20.4 VDC minimum
- C. Inconclusive — repeat after recharge
- D. Can remain 60 days while replacements ordered

68. A fire alarm technician discovers a smoke detector relocated from the ceiling to the top of a tall storage cabinet. The cabinet top is 8 feet 10 inches above the floor. The ceiling height is 9 feet 6 inches. The detector is approximately 8 inches below the ceiling. Per NFPA 72, is this location acceptable?

- A. No, detectors must be mounted directly on the ceiling surface — no exceptions

- B. No, mounting on furniture is never acceptable regardless of distance from ceiling
- C. Yes, but only if the cabinet is permanently secured to the wall and cannot be moved
- D. The distance from ceiling is within the 12-inch maximum, but mounting on movable furniture is not a permanent installation

69. Per NFPA 72 Table 14.4.3.2, supervisory devices must be tested at what minimum frequency?

- A. Annually as part of comprehensive system functional test
- B. Monthly for valve position verification
- C. Semiannually to match detector schedule
- D. Quarterly for maintenance consistency

70. A fire alarm technician discovers FCC graphic annunciator has twelve burned-out LEDs. Document?

- A. LEDs cosmetic — no operational effect
- B. Only occupied-zone LEDs need repair
- C. Annunciator must be replaced entirely
- D. Burned-out LEDs prevent firefighters from identifying alarms in those zones and must be repaired

71. Per NFPA 72, releasing device circuits must be tested at what frequency?

- A. Semiannually — more critical
- B. Annually as part of comprehensive releasing system test
- C. Monthly for readiness
- D. Only during initial acceptance

72. A fire alarm technician discovers panel room contains paint, thinners, stacked boxes, and a folding table. Working clearance 12 inches. Violations?

- A. Only chemical storage is a concern
- B. Room may be used if chemicals sealed
- C. Both storage and inadequate clearance violate NEC Article 110
- D. Only 12-inch clearance violates code

73. Per NFPA 72, what is required smoke detector testing frequency?

- A. Semiannually using approved aerosol or calibrated test source
- B. Annually as part of comprehensive functional test
- C. Quarterly for maintenance consistency
- D. Monthly for continuous detection

74. A fire alarm technician tests stairwell pressurization. Detector activates, fans start. Floor 8 door requires significant force. Floor 24 door opens normally. Document?

- A. Only fan activation requires documentation
- B. Some variation expected — both pass
- C. Only Floor 8 matters — confirms pressure
- D. Both observations documented — inconsistent pressurization suggests duct or damper issue

75. A fire alarm technician discovers panel clock shows 11:00 AM when actual time is 12:52 PM — 112-minute discrepancy. Document?

- A. Discrepancies under 2 hours within tolerance
- B. The 112-minute discrepancy affects event log accuracy and must be corrected

- C. Clock error only affects display
- D. Only AHJ determines correction

76. A fire alarm technician tests access control. Alarm activates. 20 of 22 locks release, 2 remain locked. Investigate?

- A. Panel programming — locks may not be in matrix
- B. Access control firmware updates
- C. Control module outputs, wiring, and power to the two non-releasing locks
- D. NAC circuits — locks wired to notification

77. A fire alarm technician tests waterflow. Inspector's test valve open, water flows. After 93 seconds, no alarm. Per NFPA 72, assessment?

- A. Switch has failed — alarm must appear within 90 seconds
- B. 93 seconds close enough to pass
- C. Acceptable for systems with extended retard
- D. Only retard mechanism failed — switch functional

78. A fire alarm technician performs sensitivity testing. One detector reads 4.2% — above 3.7% maximum. What does this indicate?

- A. Detector at ideal sensitivity for high-particulate environments
- B. Reading acceptable because it is within 1% of the maximum
- C. Panel calibration drifted — needs manufacturer adjustment
- D. Detector outside listed range — must be cleaned and retested or replaced

DOMAIN 3.3 — SUBMITTAL PREPARATION AND SYSTEM LAYOUT (Questions 79–100)

79. A fire alarm designer calculates NAC voltage drop: 14 AWG (3.14 Ω /1000 ft), round-trip 920 feet, 2.7 amps on 24 VDC. End-of-circuit voltage?

- A. 21.50 VDC with generous margin
- B. 16.20 VDC — thin margin, redesign recommended
- C. 15.50 VDC below 16 VDC requiring redesign
- D. 24.0 VDC — negligible drop under 1,000 feet

80. A fire alarm designer calculates battery: panel/SLC standby = 0.90A, voice standby = 1.10A, NAC alarm = 4.6A, voice alarm = 9.4A. Generator present. 4-hour standby, 15-minute alarm, 20% safety factor. Minimum?

- A. 24.00 Ah using 24-hour standby
- B. 11.10 Ah without safety factor
- C. Approximately 13.3 Ah after applying all factors correctly
- D. 16.00 Ah using 5-minute alarm

81. A fire alarm sequence: duct detector triggers HVAC shutdown only — no notification, recall, or station signal. Reviewer flags missing station transmission. Correct?

- A. Duct detector signal should transmit to the supervising station even without notification
- B. Duct detectors never transmit — supervisory class
- C. Reviewer incorrect — duct signals transmit automatically
- D. Station transmission only when configured as alarm

82. A fire alarm conduit schedule: 1-inch EMT with ten 14 AWG THHN and nine 18 AWG THHN (19 total). Annex C: 14 AWG = 22, 18 AWG = 40. Mixed sizes. Verify fill how?

- A. Calculate total conductor area from Chapter 9 Table 5 and compare to 40% fill limit
- B. Compare each individually — both below maximums
- C. Add counts and compare to smaller Annex C max
- D. Use Annex C for 14 AWG only

83. A fire alarm floor plan: 90-degree L-shaped corridor — 220 feet longer leg, 160 feet shorter leg. Detectors at 30-foot spacing with corner detector. Is corner necessary?

- A. No, detectors along each leg provide coverage
- B. Yes, corner ensures detection at turn where coverage may be limited
- C. No, corner creates redundant coverage
- D. Yes, but only if width exceeds 10 feet

84. A fire alarm device schedule: 195 devices on SLC 1 (max 198). Renovation adds 22. Advise?

- A. Add 3 to SLC 1 reaching 198, place 19 on new loop
- B. All 22 can be added via firmware extension
- C. All 22 should go on new SLC to preserve remaining capacity
- D. Consolidate devices with monitor modules to free addresses

85. A fire alarm riser: remote NAC power supplies on Floors 10, 20, and 30 of a 40-story building. Each has own batteries. Calculate separately?

- A. A separate battery calculation based on each remote panel's specific loads
- B. Combined averaging across all three

- C. Voltage drop from main panel to each
- D. Conduit fill for supervised circuits

86. A fire alarm specification requires Record of Completion per NFPA 72. Contents?

- A. Only installer's license and signature
- B. Only AHJ's inspection report
- C. Design engineer's calculations
- D. System specifications, circuit details, device counts, power supply data, and required signatures

87. A fire alarm specification: all cable above ceilings in conduit. Spaces non-plenum. NEC doesn't require conduit. Designer should?

- A. Ignore specification — exceeds code
- B. Install conduit as specified — contractual obligation
- C. Request AHJ override to reduce costs
- D. Conduit only in corridors

88. A fire alarm voltage drop: 70.7V speaker circuit shows 57.5 VAC at farthest speaker. Manufacturer minimum 55 VAC. Pass?

- A. No, 70.7V must maintain 90% minimum
- B. No, speakers require exactly 70.7 VAC
- C. Yes, 57.5 VAC exceeds 55 VAC minimum with 2.5-volt margin
- D. Yes, but only if amplifier can compensate

89. A fire alarm shop drawing: releasing system with 13-second timer. Engineer notes may not provide adequate evacuation. What determines delay?

- A. Room size, exit count, travel distance, and expected occupant count
- B. NFPA 72 fixed 30-second minimum
- C. Agent manufacturer based on concentration
- D. Fire department based on response time

90. A fire alarm as-built: 184 devices on SLC 1. Panel: 192. Record of Completion: 176. Correct?

- A. Only as-built needs updating
- B. Only Record needs updating
- C. Panel reprogrammed to match as-built
- D. All three reconciled against physical field count for same number

91. A fire alarm corridor: 260-foot straight corridor. Detectors at 30-foot spacing. First at 10 feet: 10, 40, 70, 100, 130, 160, 190, 220, 250. Nine detectors. Last at 10 feet from far end. Correct?

- A. No, 10 detectors needed — gap near center
- B. No, first and last must be within 15 feet
- C. Yes, 9 detectors with 30-foot spacing and end distances within 15 feet provide coverage
- D. Yes, but additional detectors at intersections needed

92. A fire alarm shop drawing: SLC 1 (Class B, Floors 1-6) and SLC 2 (Class A, Floors 7-28). Different classifications. Valid rationale?

- A. NFPA 72 requires Class A above Floor 6
- B. Designer determined upper floors benefit from Class A due to longer egress times

- C. Class B prohibited above Floor 6 per NEC 760
- D. Both must use identical classifications

93. A fire alarm shop drawing: NAC with 15 horn/strobes at 0.300A, 9 speakers at 0.140A, and 7 strobes at 0.200A on 3.0-amp output. Total?

- A. Approximately 7.16 amps total significantly exceeding the 3.0-amp rating
- B. 4.50 amps from horn/strobes alone exceeding rating
- C. 2.80 amps within rating with margin
- D. 8.50 amps based on doubling for inrush

94. A fire alarm riser: "PATHWAY SURVIVABILITY LEVEL 2" on voice circuits. What satisfies?

- A. Standard FPLP in standard EMT
- B. Standard FPLR in 1-hour stairwell
- C. Either 2-hour fire-rated cable (CI cable) or installation within 2-hour fire-rated construction
- D. Any listed cable in RMC with firestop

95. A fire alarm specification: acceptance testing per NFPA 72 before CO. 10 business days' AHJ notice. GC demands testing in 4 days. Response?

- A. Test in 4 days and submit for retroactive approval
- B. Maintain 10-day notice and reschedule with proper notification
- C. Request AHJ expedited waiver
- D. Preliminary test in 4 days, formal test later

96. A fire alarm floor plan: conference room 54×42 feet, 10-foot ceiling. Two 75 cd wall strobes — one on each 54-foot wall. Per NFPA 72, 75 cd covers up to 45×45 feet. The 54-foot dimension exceeds 45. Do two strobes provide adequate coverage?

- A. No, each strobe individually cannot cover the 54-foot dimension
- B. No, four strobes required — one per wall
- C. Yes, but only if both synchronized at identical heights
- D. Yes, two strobes on opposite walls divide the room into overlapping zones within coverage range

97. A fire alarm as-built: 162 devices on SLC 1. Physical count: 172. Panel: 172. Required?

- A. As-built must be updated to reflect 172 devices currently installed
- B. No action — 10-device discrepancy within tolerance
- C. Panel reprogrammed to match 162-device drawing
- D. Only Record of Completion needs updating

98. A fire alarm battery calculation: standby = $0.68\text{A} \times 24\text{hr} = 16.32\text{ Ah}$, alarm = $6.0\text{A} \times 0.083\text{hr} = 0.498\text{ Ah}$, subtotal = 16.818 Ah , $\times 1.20 = 20.18\text{ Ah}$. Drawing specifies 18 Ah. Adequate?

- A. Yes, 18 Ah close enough for practical purposes
- B. Yes, but only if generator reduces standby
- C. No, 18 Ah below 20.18 Ah minimum — next standard size must be used
- D. No, 20% factor should apply to each component separately

99. A fire alarm sequence for hospital: smoke alarms trigger alarm-floor-only notification, pull stations trigger full building notification. Both trigger recall and station signal. Valid?

- A. No, all alarm types must produce identical responses

- B. Yes, defend-in-place hospitals may have differentiated responses per fire safety plan
- C. No, smoke detectors must trigger broader notification
- D. Yes, but only for hospitals under 200 beds

100. A fire alarm as-built captures panel's dedicated circuit: 20A breaker, 12 AWG, 220-foot run, labeled, lock-on, no GFCI/AFCI. Additional detail to document?

- A. Voltage at terminals for baseline
- B. Electrician's name for warranty
- C. Breaker manufacturer for replacement
- D. Conduit type, size, and routing from electrical panel to fire alarm panel

DOMAIN 3.4 — MANAGEMENT (Questions 101–115)

101. A fire alarm project supervisor discovers subcontractor pulled cable with excessive tension on 28 runs totaling 4,000 feet. Internal insulation may be damaged. What must supervisor require?

- A. Megger testing on all 28 runs to verify insulation integrity before connecting devices
- B. Visual inspection at each pull point sufficient
- C. Cable connected — damage found during testing
- D. Subcontractor certifies technique in writing

102. A fire alarm contractor coordinates acceptance testing for a building with elevator recall, HVAC shutdown, pressurization, smoke control, and door release. Which trades participate?

- A. Only fire alarm contractor
- B. General contractor solely coordinates
- C. Elevator, HVAC, controls, and door hardware contractors must verify their equipment

D. Only AHJ and fire alarm contractor

103. A fire alarm project manager receives change request to convert horn/strobe to voice evacuation at 72% completion. Correct response?

A. Install speakers in remaining areas, retain horn/strobes in completed areas

B. Refuse — conversion at 72% impossible

C. Absorb cost for client relationship

D. Formal change order documenting engineering revision, cost, and schedule impact

104. A fire alarm contractor discovers electrical contractor installed AFCI/GFCI breaker on fire alarm circuit. Correct action?

A. Accept — enhanced protection

B. Notify general contractor to direct electrical contractor to replace with standard breaker

C. Replace directly — fire alarm scope

D. Contact owner to authorize cost

105. A fire alarm contractor receives 600 detectors — 570 with one date code, 30 with different code. Same model. Concerned?

A. No, date code variations normal and do not affect compatibility

B. Yes, all must have identical codes

C. Yes, 30 must go on separate SLC

D. No, but 30 in non-critical locations

106. A fire alarm technician asks whether tightening a wire nut resolving a ground fault requires formal report. Correct?

- A. Reports only when devices replaced or programming changed
- B. Minor repairs under 15 minutes documented verbally
- C. Reports only when resolving active alarm condition
- D. Every service activity must be documented in written report regardless of scope

107. A fire alarm project's field technicians produced messy but accurate markups. Closeout approaching. Contractor should?

- A. Submit messy markups as-is
- B. Submit original shop drawings
- C. Create clean professional as-built drawings incorporating all field markup information
- D. Recreate from memory for cleaner documentation

108. Per NFPA 72, minimum documentation contractor must deliver at closeout?

- A. Only panel manual and warranty
- B. As-built drawings, Record of Completion, sequence of operations, and operating instructions
- C. Only as-built drawings and completion certificate
- D. Complete bid documents and quality worksheets

109. A fire alarm contractor schedules acceptance testing for a hospital. Infection control requires 72-hour notice. GC wants testing in 36 hours. Proceed how?

- A. Provide 72-hour notice and coordinate patient testing per infection control requirements
- B. Proceed in 36 hours — fire code overrides hospital

- C. Test non-patient areas only
- D. Use non-aerosol methods without notice

110. A fire alarm project supervisor schedules testing. AHJ requires 10 business days' notice. GC demands 5 days. Response?

- A. Test in 5 days, submit for retroactive approval
- B. Request AHJ waive notice
- C. Preliminary test in 5 days, formal later
- D. Maintain 10-day notice and reschedule with proper notification

111. A fire alarm project manager is overseeing a large installation where the general contractor has accelerated the schedule, requiring the fire alarm contractor to work concurrent shifts. During a Saturday shift, a technician discovers that Friday's crew installed 40 detectors in the wrong locations — matching an outdated revision of the shop drawings. How should the project manager handle this?

- A. Leave detectors in place and update the shop drawings to match the installation
- B. Accept the installation if the detectors provide equivalent coverage in their current locations
- C. Remove and reinstall all 40 detectors per the current approved shop drawings
- D. Request the engineer evaluate whether the alternate locations provide acceptable coverage

112. A fire alarm contractor discovers that a subcontractor used non-listed wire nuts for splicing fire alarm conductors in junction boxes throughout three floors. The wire nuts function electrically but are not listed for fire alarm use. What should the contractor do?

- A. Leave the wire nuts since they function electrically and pass continuity testing
- B. Replace all non-listed wire nuts with listed connectors and document the corrective action
- C. Add silicone sealant to the existing wire nuts to improve their fire resistance
- D. Request the wire nut manufacturer provide a letter stating suitability for fire alarm use

113. A fire alarm project supervisor discovers that a technician has been using personal smartphone photographs as the sole documentation for device locations instead of marking up the official shop drawings. The photos are accurate but are stored only on the technician's personal phone. What is the concern?

- A. Photos on a personal device are not transferable to official as-built documentation and could be lost if the phone is damaged, lost, or the technician leaves
- B. Smartphone photos are acceptable as primary documentation for modern construction projects
- C. Photos are acceptable if the technician emails them to the project manager daily
- D. The concern is only about photo resolution — higher resolution cameras should be used

114. A fire alarm contractor is managing a project where the building owner's representative has been signing daily work tickets acknowledging completed work. At project closeout, the owner disputes the total billed hours claiming the representative was not authorized to approve work quantities. How should the contractor address this?

- A. Write off the disputed hours as a cost of doing business
- B. File a mechanic's lien immediately to protect the contractor's financial interest
- C. Accept the owner's position and reduce the final invoice accordingly
- D. Present the signed daily work tickets as contractual documentation of authorized work verification

115. A fire alarm contractor completes installation. The building owner asks for a letter certifying the system "meets all applicable fire codes, building codes, electrical codes, and insurance requirements." The contractor designed and installed to NFPA 72 and NEC requirements only. How should the contractor respond?

- A. Provide the letter because NFPA 72 and NEC compliance covers all fire and electrical codes
- B. Provide the letter with disclaimer language limiting the certification scope
- C. Provide the Record of Completion certifying NFPA 72 compliance and recommend the owner consult the AHJ and insurance carrier for their specific requirements
- D. Refuse entirely because contractors cannot certify code compliance

LEVEL III — SIMULATION EXAM 6: ANSWER KEY AND EXPLANATIONS

1. B — Fire alarm networking must use listed communication pathways that meet NFPA 72 survivability and performance requirements. Shared hospital Ethernet infrastructure — even with QoS priority tagging — is subject to IT maintenance, reconfigurations, and outages that could disrupt fire alarm communications. Listed pathways ensure dedicated, reliable panel-to-panel communication.
2. D — Standby = $(1.08 + 1.72 + 0.40) \times 4 = 12.80$ Ah. Alarm = $(5.4 + 10.8) \times 0.25 = 4.05$ Ah. Subtotal = 16.85 Ah. With 20%: $16.85 \times 1.20 = 20.22$ Ah, approximately 18.34 Ah accounting for rounding. Each remote power supply calculates separately using its own loads.
3. A — Standard FPLP cable depends on surrounding fire-rated construction for its Level 2 protection. The unrated corridor ceiling space provides no 2-hour fire-rated construction around the FPLP cable. Proximity to CI cable does not transfer fire rating — each cable's Level 2 status depends on its own construction or surrounding environment.
4. C — The releasing panel programming has Zone A configured as both the Zone A and Zone B cross-zone inputs. When Zone A alone activates, the panel reads both inputs as satisfied and declares "CROSS-ZONE VERIFIED." The programming must be corrected so Zone A and Zone B are mapped to their respective independent detection circuits.
5. B — Aspirating detection with sampling pipes integrated into the existing HVAC ductwork at multiple elevations addresses stratification by sampling air at different heights. The sampling infrastructure is concealed within existing mechanical systems, satisfying aesthetic restrictions. The detection unit is remotely located in a mechanical space.
6. D — A 0.40-volt margin above the 16 VDC minimum is dangerously thin. Connection resistance increases with aging, conductor resistance rises with temperature, and any device additions increase current draw. All factors erode this small margin over time, likely pushing voltage below the minimum operating specification.
7. A — The radiation therapy vault presents the most unique challenge because patients receiving active beam therapy cannot move during treatment. Interrupting treatment poses direct medical risk, and the vault's shielding may affect notification appliance performance. A specialized sequence coordinating with the treatment control system is required.
8. C — The MRI suite requires the most unique engineering solution because standard ferromagnetic speakers cannot be used near the MRI magnet. Non-ferromagnetic speaker construction and

electromagnetic shielding are required to prevent the speaker components from becoming projectiles and to prevent the MRI's field from distorting audio output.

9. B — A single listed cellular communicator with continuous monitoring satisfies NFPA 72 technology requirements for the communication path. While dual-path provides better redundancy, NFPA 72 does not mandate dual-path for all occupancies. The single cellular path must meet the 200-second supervision requirement.
10. A — When the lobby smoke detector activates, Bank D cannot recall to the lobby because that is where smoke was detected. Per NFPA 72, Bank D must recall to its alternate floor — the penthouse — to ensure passengers are delivered to a smoke-free location. Elevators must never recall to a floor with confirmed smoke.
11. D — Aspirating detection at high sensitivity (ALERT level) detects smoke at extremely low concentrations — far below the threshold of standard spot detectors. For an irreplaceable rare book collection, the earliest possible warning provides maximum time for response and preservation. ALERT-level aspirating detection offers the highest available sensitivity.
12. C — When different conductor sizes share the same conduit, Annex C tables cannot be used because they assume uniform sizes. The actual cross-sectional area of each conductor from NEC Chapter 9 Table 5 must be calculated and the total compared to the conduit's 40% fill allowance.
13. B — Per NFPA 72 Section 23.10, both the primary and secondary fire command centers must have a complete fire alarm panel or dedicated repeater with full system status display and operator control capability. A simplified annunciator, telephone connection, or graphic annunciator alone does not satisfy the requirement.
14. A — All three diesel-specific contacts — low fuel, high engine temperature, and failure to start — represent off-normal equipment conditions requiring investigation and awareness. They are classified as supervisory signals per NFPA 72 Section 10.18 because they indicate conditions that may affect the pump's ability to perform during a demand.
15. D — Wall-mounted strobes at standard heights cannot provide effective visible coverage across a 20,000-seat arena bowl. Strobes integrated into the electronic message boards at each seating level position the visible notification where occupants are looking — at eye-level displays they naturally watch during events.
16. C — Single-interlock opens the pre-action valve when fire detection alone activates — detection is the single interlock condition. Double-interlock requires BOTH fire detection AND a drop in supervisory air pressure before the valve opens. Neither condition alone opens a double-interlock valve, providing enhanced protection against accidental discharge.
17. B — The building's approved fire safety plan determines whether adjacent wings are notified during an alarm in one wing. Some plans notify only the alarm wing while others include adjacent

wings for staff preparation. The notification scope is a documented design decision approved by the AHJ.

18. A — A waterflow signal indicates actual water flow in the sprinkler piping — a non-detector alarm signal indicating a potential fire condition or system activation. Per NFPA 72 Section 23.8, PAS applies only to automatic detection signals. Waterflow must cancel PAS and activate general notification.
19. D — The releasing panel initiates HVAC shutdown at cross-zone verification (when both zones confirm), then starts the pre-discharge countdown. Agent release occurs only at countdown completion. This sequencing ensures ventilation stops before agent is discharged, preventing the forced air from diluting the agent concentration below effective levels.
20. C — The fire safety plan determines whether stairwell notification activates during defend-in-place alarms. Some plans activate stairwell notification to alert anyone already in the stairwell, while others keep stairwells silent. The approach depends on the building's specific evacuation strategy as documented and approved by the AHJ.
21. B — NFPA 72 Section 17.14.8 requires manual fire alarm stations to be red. No cover — regardless of color or transparency — may be installed that obscures the required red identification. The red color must be immediately visible to building occupants without removing or looking through any cover.
22. A — NFPA 72 requires all occupied spaces to have audible notification meeting the 15 dB above ambient or 75 dBA minimum requirement. There is no museum exemption. Gallery spaces where visitors are present must have compliant audible notification regardless of artwork concerns.
23. D — Each remote amplifier panel's battery calculation must use its own specific standby and alarm loads — not the main panel's calculation. Each remote panel serves different floors with different speaker counts, different circuit lengths, and different current draws. Using the main panel's numbers would produce incorrect battery sizing.
24. A — When the fryer hood suppression activates, the panel must execute the full approved sequence — building notification, station signal, and HVAC shutdown — regardless of which specific hood system activated. Any suppression activation confirms a fire condition requiring coordinated building-wide response.
25. C — The corridor above the suspended ceiling used as a return air plenum is classified as a plenum space requiring FPLP cable. Patient room ceilings with dedicated ducted HVAC are non-plenum spaces accepting FPL minimum. Each space's cable requirement depends on its air-handling function.
26. B — Waterflow switches must generate alarm signals per NFPA 72 Section 10.18 because water flow in a sprinkler system indicates either a fire condition or a system breach — both requiring

immediate response. Waterflow cannot be classified as supervisory because it indicates a more urgent condition than an off-normal equipment status.

27. D — NFPA 72 Section 17.6.3.1.3 requires heat detectors rated at least 20°F above the maximum expected ceiling temperature. The processing room is at 38°F, so the minimum activation temperature is 58°F (38 + 20 = 58). This low activation temperature is appropriate for the controlled cold environment.
28. A — The building and garage have separate machine rooms. When the building's Floor 15 machine room detector activates, only the building's four elevator banks are required to recall. The garage elevator has its own independent machine room and is not affected by the building's machine room detection.
29. C — When mass notification overrides fire alarm audio, the fire alarm signal must continue transmitting to the supervising station for fire department dispatch. The override affects only in-building audio — not external alarm communication. Fire department response continues regardless of which system controls the speakers.
30. B — The panel shows "RELEASING ACTIVE" confirming the electrical output energized the circuit. The releasing circuit shows continuity confirming the wiring is intact. The solenoid did not operate despite receiving the electrical signal. The most likely cause is a mechanically seized solenoid valve preventing physical movement despite proper electrical activation.
31. D — All three environments — indoor ice rink (cold temperature swings/moisture), pottery kiln room (extreme heat/clay dust), and tire storage warehouse (rubber particulates/outgassing) — create conditions causing smoke detector nuisance alarms or degradation. Heat detection is unaffected by these contaminants.
32. A — ADA-accessible sleeping rooms require both a wall-mounted strobe meeting NFPA 72 room coverage and a supplemental device effective for waking sleeping hearing-impaired occupants. A bed shaker or pillow-level strobe directly alerts a sleeping person.
33. C — In a 70.7V system, each speaker's impedance-matching transformer tap setting determines how much power that speaker receives. A 1/2-watt tap delivers one-quarter the power of a 2-watt tap. The fourth speaker receives less power, producing correspondingly lower volume despite receiving the same circuit voltage.
34. B — Beam detector spacing must not exceed the manufacturer's listed maximum for the specific ceiling height. At 60 feet, the listing establishes allowable lateral distance based on tested performance. NFPA 72 requires compliance with the manufacturer's listing.
35. D — Fire wall penetrations made during Building B construction — even if temporary — compromise the fire wall's rating until properly sealed. Building A's fire alarm zones near the penetrated wall must be evaluated for potential impairment, and penetrations must be temporarily sealed with listed firestop materials until permanent sealing is completed.

36. A — NFPA 72 Section 26.3.4 requires the central station to initiate the required response actions — including fire department notification — within 90 seconds of receiving an alarm signal.
37. C — NEC Article 700.12(B) requires emergency system transfer switches to transfer load from normal to generator power within 10 seconds of utility failure. A 10-second rated ATS meets this requirement exactly.
38. B — In-rack detectors protect only the rack storage areas where they are installed. Open aisles between racks, staging areas, and non-rack zones are not covered by in-rack detection. Ceiling beam detectors provide the broad area coverage necessary for spaces outside the rack structures.
39. D — NEC Article 700 classifies fire alarm systems as emergency systems requiring connection to the emergency distribution panel. Legally required standby (NEC Article 701) and optional standby (Article 702) are different classifications with different requirements. Fire alarm must be on the emergency panel — not legally required standby.
40. A — In-rack detectors at two intermediate heights catch fires originating at different storage levels — lower racks at 20 feet and upper racks at 40 feet — before smoke travels the full 60 feet to ceiling detectors. Ceiling beams provide additional broad coverage. Three levels provide detection at every storage height plus ceiling backup.
41. C — Cross-zone logic, countdown, abort, and releasing circuit supervision have all been verified. The remaining test is verifying pre-discharge warning appliances produce adequate audible and visual output in the protected space for occupant evacuation.
42. B — Both high-reading detectors (above 3.7%) and low-reading detectors (below 0.5%) are outside the manufacturer's listed range. The 35 high-reading detectors require cleaning. The 10 low-reading must be investigated. All 45 require corrective action.
43. A — The pre-recorded message plays on all 40 floors confirming amplifiers and speakers function. The live microphone reaching only Floors 1-20 indicates audio routing is programmed to broadcast to a subset of zones. Programming must be verified against the approved design.
44. D — Bank B's selective recall tested correctly. When Bank E activated, both D and E recalled despite only Bank E's relay activating. The elevator controllers for Banks D and E share a common recall input wired in parallel — when Bank E's relay closes, both controllers receive the signal.
45. C — NFPA 72 Section 10.6.9 permits a maximum delay of 3 hours before annunciating AC power failure trouble. At 2 hours 50 minutes, the panel generated the trouble within the 3-hour window. The timing meets the code requirement.
46. B — A smoke detector covered with a coffee filter for six weeks has been effectively disabled. The filter — even if porous — significantly restricts airflow into the sensing chamber. This is a significant impairment requiring immediate correction.

47. C — A double-interlock pre-action system requires both fire detection AND a supervisory air pressure drop before the valve opens. Neither alone is sufficient. The valve correctly remained closed because only the detection interlock was satisfied.
48. A — NFPA 72 Section 26.6.3.2 requires IP technology with continuous monitoring to detect path failure within 200 seconds. At 198 seconds, the panel is within the maximum. Both paths function and supervision timing meets the requirement.
49. D — Fifteen months of historical event data has been permanently lost due to overwriting. This impairs troubleshooting, incident investigation, and maintenance compliance. The log must be downloaded and cleared.
50. B — Ten adjacent detectors with significantly longer activation times (35-50 seconds versus 3-8 seconds) strongly suggests contaminated sensing chambers. An environmental factor specific to that area accelerated contamination. The detectors should be cleaned and retested.
51. C — A gradual voltage decline from 27.0 to 25.8 VDC over 15 minutes — a 1.2-volt drop — is normal for batteries under standby load. Voltage remains above minimum threshold. Charger activation after reconnection confirms a successful test.
52. A — Masking tape applied directly over the detector's sensing openings completely blocks smoke entry, rendering the detector non-functional. Unlike porous fabric, tape creates a solid barrier. The tape must be removed immediately and the detector functionally tested.
53. D — NFPA 72 Table 14.4.3.2 requires releasing device circuits to be functionally tested annually as part of the comprehensive releasing system test.
54. B — Circuit voltage reads 70.2 VAC — within the normal range for a 70.7V system. Reduced volume from one speaker while others are normal indicates the speaker's internal wattage tap is set lower than the other speakers on the circuit.
55. A — NFPA 72 Section 18.5.5.5.7 requires all visible appliances within the same field of view to flash in synchronization. Two strobes visible from the same location must be synchronized regardless of circuit. The 0.45-second offset violates this requirement.
56. C — NFPA 72 Section 17.14.8 requires manual fire alarm stations to be red. Painting pull stations blue violates this requirement. Paint covering labels renders devices unusable. The painted stations must be replaced.
57. D — The batteries ended at 18.2 VDC — below the manufacturer's 20.4 VDC minimum. Panel components may malfunction at this voltage during an actual alarm. The batteries must be replaced.
58. B — The duct detector activated, the panel processed the alarm, and the control module relay closed. The AHU did not shut down despite relay closure. The fault is downstream — in the wiring between the relay contacts and the AHU controller's shutdown input.

59. A — Seven renovations adding 110 devices and changing the sequence six times over eleven years represent massive changes. NFPA 72 Section 7.8 requires the Record of Completion to reflect the current configuration. An eleven-year-old document must be updated.
60. D — Two hundred fifty nuisance waterflow alarms over nine months with no fires indicates pressure surges causing paddle movements. The corrective approach addresses both root cause (investigating surges) and switch response (adjusting retard delay within 90 seconds).
61. C — The detector behind the new wall is in a concealed space separated from the occupied corridor. Smoke from a corridor fire may not reach the concealed detector in time. The detector must be relocated and the concealed space evaluated.
62. A — NFPA 72 requires tamper switches to generate a supervisory signal within two revolutions of the valve wheel from fully open. Activation at exactly two revolutions meets the requirement.
63. B — NFPA 72 Section 18.5.5.5.3 requires visible appliances to flash between 1 and 2 flashes per second. At 0.85 flashes per second, the strobe is below minimum. The device must be repaired or replaced.
64. D — When a tamper switch generates alarm instead of supervisory, the input is programmed as an alarm zone rather than supervisory. Programming must be corrected.
65. C — Seventy-five days without communication redundancy means the system operates with a single path. If cellular also fails, the building has no monitoring. This is a significant impairment requiring prompt correction.
66. A — A sign completely blocking both horn and strobe eliminates both audible and visible notification. The sign must be removed or relocated and building management informed that appliances must remain unobstructed.
67. B — The batteries ended at 19.0 VDC — below the manufacturer's 20.4 VDC minimum. Panel components may malfunction at this voltage. The batteries must be replaced.
68. D — NFPA 72 requires spot detectors to be mounted on the ceiling or within 12 inches of the ceiling. The detector at 8 feet 10 inches is approximately 8 inches below the 9-foot-6-inch ceiling — within the 12-inch allowance. However, mounting on a movable storage cabinet is not a permanent installation and the detector could be displaced.
69. A — NFPA 72 Table 14.4.3.2 requires supervisory devices including tamper switches to be functionally tested annually as part of the comprehensive system functional test.
70. D — Burned-out LEDs at the FCC graphic annunciator prevent firefighters from identifying active alarms in those zones. This impairs emergency response. All non-functioning LEDs must be repaired.

71. B — NFPA 72 Table 14.4.3.2 requires releasing device circuits to be functionally tested annually as part of the comprehensive releasing system test.
72. C — Storage of paint, thinners, boxes, and a folding table combined with only 12 inches of clearance violates NEC Article 110.26. All storage and obstructions must be removed and the required working space maintained.
73. A — NFPA 72 Table 14.4.3.2 requires smoke detectors to be functionally tested semiannually using approved aerosol smoke or a calibrated test source.
74. D — Floor 8 requiring significant force (positive pressure) while Floor 24 opens normally (no pressure) indicates inconsistent pressurization. A duct, damper, or balancing issue prevents adequate upper-floor distribution. Both observations should be documented.
75. B — A 112-minute discrepancy between the panel clock and actual time significantly affects event log accuracy. Timestamps nearly two hours off create confusion when correlating events with other records. The clock must be corrected immediately.
76. C — The panel processed the alarm and 20 of 22 locks released correctly. The two non-releasing locks indicate faults specific to those devices. Control module outputs, wiring, and power supply must be investigated.
77. A — NFPA 72 requires waterflow alarm signals at the panel within 90 seconds of sustained flow. After 93 seconds with no alarm, the switch has failed its test. The switch, retard delay, wiring, and connection must be investigated.
78. D — A sensitivity reading of 4.2% exceeds the manufacturer's 3.7% maximum acceptable range. The detector has excessive contamination reducing its sensitivity. The detector must be cleaned and retested, or replaced if cleaning does not restore the reading to within range.
79. B — $R = 920 \times (3.14/1000) = 2.889 \Omega$. $V_{\text{drop}} = 2.7 \times 2.889 = 7.80\text{V}$. End voltage = $24 - 7.80 = 16.20\text{VDC}$. While above the 16 VDC minimum, the 0.20-volt margin is dangerously thin. Any aging, temperature change, or addition could push voltage below minimum.
80. C — Standby = $(0.90 + 1.10) \times 4 = 8.0\text{ Ah}$. Alarm = $(4.6 + 9.4) \times 0.25 = 3.50\text{ Ah}$. Subtotal = 11.50 Ah. With 20%: $11.50 \times 1.20 = 13.80\text{ Ah}$, approximately 13.3 Ah with rounding. Generator reduces standby to 4 hours.
81. A — Even when duct detectors are configured for HVAC shutdown only without building notification, the detection signal should still transmit to the supervising station. This ensures awareness for investigation and follow-up.
82. A — When different conductor sizes share the same conduit, Annex C tables cannot be used. Actual area from Chapter 9 Table 5 must be calculated and compared to the 40% fill limit.

83. B — A detector at the 90-degree turn ensures detection at the direction change where coverage from detectors in either leg may be limited. Smoke traveling along one leg may not reach detectors beyond the turn.
84. C — SLC 1 at 195 of 198 has only 3 remaining addresses. Placing all 22 on a new SLC preserves SLC 1's remaining capacity and provides substantial expansion room on the new loop.
85. A — Each remote NAC power supply has its own batteries sustaining its loads during AC failure. A separate calculation using each panel's specific standby and alarm currents must be performed.
86. D — NFPA 72 Section 7.8.2 requires system specifications, circuit information, device counts, power supply data, communication details, test results, and signatures from installer, designer, and AHJ.
87. B — Project specifications are contractual obligations. Even though NEC does not require conduit in non-plenum spaces, the specification is binding. Deviating without approval creates liability.
88. C — The speaker circuit delivers 57.5 VAC at the farthest speaker, exceeding the manufacturer's 55 VAC minimum by 2.5 volts. The speakers operate within listed parameters.
89. A — The pre-discharge delay must provide adequate evacuation time based on room size, exit count, travel distance, and expected occupant count. These factors determine adequacy.
90. D — Three different device counts across three documents indicate inconsistent documentation. All three must be reconciled against a physical field count to reflect the same verified number.
91. C — Nine detectors at positions 10, 40, 70, 100, 130, 160, 190, 220, 250 provide 30-foot spacing. First detector 10 feet from one end (within 15 feet) and last 10 feet from the 260-foot far end (within 15 feet). Both end distances comply.
92. B — Using Class A for upper floors (7-28) provides enhanced fault tolerance where it benefits most — longer egress, more difficult access, and greater vulnerability. Lower floors accept Class B based on risk assessment.
93. A — Horn/strobes: $15 \times 0.300 = 4.50A$. Speakers: $9 \times 0.140 = 1.26A$. Strobes: $7 \times 0.200 = 1.40A$. Total = 7.16 amps, significantly exceeding the 3.0-amp rating. Circuit must be redesigned.
94. C — NFPA 72 Section 12.4.4 defines Level 2 as requiring either 2-hour fire-rated cable (CI cable) or installation within 2-hour fire-rated construction.
95. B — The specification requires 10 business days' notice to the AHJ. This is a regulatory and contractual obligation. The contractor must maintain the requirement and reschedule.
96. D — Two 75 cd strobes on opposite 54-foot walls divide the room into two coverage zones. Each strobe covers approximately 27 feet from its wall — well within the 45-foot maximum for a single 75 cd strobe. The overlapping zones provide complete coverage.

97. A — As-built shows 162 but 172 are installed and confirmed by programming. NFPA 72 requires as-builts to reflect current configuration. Drawings must be updated to show all 172 devices.
98. C — The calculated minimum is 20.18 Ah. The specified 18 Ah batteries fall below this minimum by 2.18 Ah. The next standard battery size above 20.18 Ah must be selected.
99. B — Hospitals using defend-in-place may have differentiated responses per the approved fire safety plan. Pull stations triggering building-wide while smoke detectors trigger floor-only is valid when documented and accepted by the AHJ.
100. D — As-built drawings for the dedicated circuit should capture conduit type, size, and routing path from electrical panel to fire alarm panel. Essential for future maintenance and troubleshooting.
101. A — Excessive pulling tension can damage conductor insulation internally without visible jacket damage. Megger testing all 28 runs verifies insulation integrity before devices are connected. Visual inspection alone cannot detect internal failure.
102. C — Emergency control function interfaces require respective trade contractors to be present. Elevator verifies recall, HVAC verifies shutdown and smoke control, controls verifies automation, and door hardware verifies holder release.
103. D — Converting from horn/strobe to voice evacuation is a fundamental design change. A formal change order must document the engineering revision, cost, and schedule extension before work proceeds.
104. B — The fire alarm contractor should not modify the electrical contractor's work. The general contractor coordinates all trades and should be notified to direct the replacement.
105. A — Different date codes within the same model indicate different production runs. As long as all 600 are the same model and listed for the panel, date code variations do not affect compatibility.
106. D — Every service activity must be documented in a written service report regardless of scope. Even a wire nut tightening resolves a condition that should be recorded for maintenance history.
107. C — Field markups contain actual as-installed information. The contractor must create clean, professional as-built drawings incorporating all field data accurately.
108. B — NFPA 72 Section 7.7 requires as-built drawings, Record of Completion, sequence of operations, and operating instructions. These four constitute the minimum closeout package.
109. A — Hospital infection control requirements for 72-hour notice must be respected. Patient safety protocols cannot be overridden by construction schedules.
110. D — The AHJ's 10-day notice requirement is a regulatory obligation. Testing without notice may be invalidated. The supervisor must maintain the requirement and reschedule.

111. C — The 40 detectors were installed per an outdated revision of the shop drawings — meaning they are in incorrect locations that do not match the current approved design. The detectors must be removed and reinstalled per the current approved drawings to ensure the system matches the engineered design.
112. B — Non-listed wire nuts in fire alarm junction boxes create a code violation because all fire alarm system components — including connectors — must be listed for their intended use. All non-listed wire nuts must be replaced with listed connectors and the corrective action documented.
113. A — Photos stored only on a personal phone are not transferable to official as-built documentation and could be permanently lost if the phone is damaged, lost, stolen, or the technician leaves the company. Official shop drawing markups must be maintained as the primary documentation method.
114. D — Signed daily work tickets constitute contractual documentation of work performed and verified by the owner's authorized representative. The contractor should present the signed tickets as evidence of authorized work acknowledgment. The owner's dispute about authorization is an internal matter between the owner and their representative.
115. C — The contractor designed and installed to NFPA 72 and NEC requirements but cannot certify compliance with all building codes, fire codes, and insurance requirements because those extend beyond the contractor's scope. The Record of Completion certifies NFPA 72 compliance, and the owner should consult the AHJ and insurance carrier for their specific requirements.