

28 31 00 Fire Detection and Alarm

Revision 01/04/2019

Purpose:

The Architect and/or Engineer shall incorporate the Rice specific requirements indicated in this standard's section into their design. The Architect and/or Engineer shall further produce project specifications in line with industry standards that are updated to reflect these Rice specific requirements.

1. Contractor Qualifications

- a. Contractor to have at least (1) NICET Level 3 or 4 Planning Superintendent for supervision of system design and to stamp and approve designs.
- b. Contractor to have 10 years of experience on record.
- c. Contractor to have minimum of 5 networked systems previously installed.

2. System

- a. The design is required to be based on extension of the existing campus-wide fire alarm system network. Addressable-only (non-networked) systems will not be acceptable.
- b. Install a complete conduit raceway system for all new construction. Discuss with Rice Project Manager for retro-fit projects.
- c. If conduit is provided, minimum size is $\frac{3}{4}$ ".
- d. If open wiring (fire alarm cable without conduit) is allowed, cabling is required to be routed parallel and perpendicular to building lines, and required to be supported clear of access panels, equipment maintenance spaces, etc.
- e. Conduit will always be required in the following locations:
 - a. Inaccessible locations
 - b. Inside concealed walls
 - c. All mechanical rooms
 - d. Other areas where exposed and subject to damage
 - e. Vertical wiring and main trunk/riser wiring (complete system)

3. Network Requirements.

- a. Manufacturer of existing campus-wide system is Notifier. New equipment to be Notifier and to be able to communicate on the Notifier network.
- b. Network communications protocol to utilize non-proprietary LAN technology incorporated token-passing feature. Systems utilizing collision recovery software will be unacceptable.
- c. Points added to the Network shall also be programmed on the existing Notifier network terminal located at the Rice University Campus Police Station.
- d. Existing network has the capacity of at least 100 nodes and provides at least 200,000 points of detection.
- e. Network communications path shall be style 7.

- f. All fire alarm control panel networking firmware and IC chips shall be compatible with existing firmware version.
- g. Existing Network Reporting Terminal (NRT) shall remain and be programmed to accept additional panels (nodes).

4. Fire Alarm System Requirements:

- a. Alarm verification to be field programmed for each respective detector
- b. System shall have capability to employ analog "intelligent" smoke detectors and addressable interface devices.
- c. System shall include a special non-lock "walk test" mode.
- d. System shall include a special automatic detector test feature permitting reading and adjustment of the sensitivity of all intelligent detectors from the fire alarm control panel.
- e. System shall be able to generate a print of system status reports.
- f. System shall be 100% field programmable locally or across the network without replacement of memory IC's. Factory programming/reprogramming or replacement of IC memory chips will not be acceptable.
- g. System shall be able to store a minimum of 400 system events in order of occurrence. Systems not employing event history memory storage will be required to furnish a printer/recorder for recording system events.

5. Fire Alarm System Components:

- a. Smoke detectors to be the Intelligent Analog type to provide with automatic sensitivity "drift" compensation and "maintenance alert" features.
- b. Intelligent thermal detectors to utilize dual electronic thermostats and to be capable of providing data to the fire alarm panel representing the analog temperature level.
- c. Manual pull stations shall be addressable type
- d. LDC annunciators to be Notifier LCD-160 type, to operate on 24V DC power and function during system power failure via standby batteries. Annunciator to be flush mounted wherever possible.
- e. Electronic audio-visual appliances shall provide two different field selectable tones. Electromechanical devices will not be acceptable.
- f. Electronic audible signaling appliances shall provide two different field selectable tones. Electromechanical devices shall not be acceptable.
- g. Electronic mini-sounder shall produce a minimum output of 82 dB at 10 feet.
- h. Wire shall be UL Listed FPL for limited energy and fire alarm applications. Wire for signaling line circuits (SLC) to be twisted shielded, low capacitance type.
- i. Fiber to be single mode, dual window 62.5/125 15dB loss maximum, 10,000' maximum.
- j. A digital voice package and speakers shall be provided to allow paging throughout the building.
- k. Horn-strobes shall be ceiling mounted.

6. Performance

- a. No power line wiring or any other wiring shall be run in the same conduit as fire alarm wiring.

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- b. Pre-Inspection Report. Installing contractor to prepare a pre-inspection report verifying proper alpha-numeric labeling and device function.
- c. Factory trained, state licensed manufacturer's representative to perform the final fire alarm control panel connections and shall supervise testing of the system.
- d. Installing contractor shall functionally test each and every device in the entire system. Testing to be performed by a licensed fire alarm superintendent.
- e. Installation shall comply with current adopted NFPA and City of Houston standards.