

## **FIRE ALARM SYSTEM**

**Royse City Fire Department - Fire Marshal's Office**  
305 N Arch St. • Royse City, TX 75189 • Phone: 972.524.4819  
Website: <http://www.roysecity.com/departments/fire/>  
Email: [rcfd@roysecity.com](mailto:rcfd@roysecity.com)

These guidelines are to be followed when a fire alarm system within the City of Royse City is to be installed or modified. These guidelines are not to be interpreted as containing all data required for proper design, installation, or approval.

All fire alarm systems shall conform to the 2018 International Fire Code, as adopted and amended by the City of Royse City and current edition of NFPA 72. These guidelines are not intended to replace, nor supersede any codes and/or ordinances adopted by the City of Royse City, or determinations and positions of the Royse City Fire Department.

For fire sprinkler monitoring system see Fire Sprinkler Monitoring System Requirements Guideline.

### **Fire Alarm Panel / Notification Power Supplies**

- ❖ Only one fire alarm panel is allowed per building
- ❖ New fire alarm systems, or replacement of, shall be addressable
- ❖ New fire alarm systems, or replacement of, for all strip retail centers, and multiple tenant buildings, shall have the capability of a minimum of 50 addressable devices unless otherwise approved
- ❖ The fire alarm control panel or an annunciator panel is required in the fire riser room and at the main entry unless otherwise approved
- ❖ Systems shall be resettable without any special knowledge or the use of an access code
- ❖ Primary power shall be a dedicated circuit that is labeled both in the fire alarm panel / notification power supply (panel A circuit 2) and the circuit breaker in the electrical panel is indicated in red and labeled "Fire Alarm Circuit" and locked or otherwise secured from unauthorized access

### **Wiring**

- ❖ All initiating device circuits, and signal line circuits shall be Class "A" with a minimum of 4-foot separation between supply and return circuit conductors
- ❖ All notification appliance circuits shall be Class "B"
- ❖ The Initiating Device Circuit from an addressable device used to monitor the status of a suppression system may be wired Class B, provided the distance from the addressable device is within 10-feet of the suppression system device
- ❖ Wiring may not be supported by the ceiling grid support wires
- ❖ Suspended wires added to support the fire alarm wiring must be painted red and attached to the above structure and to the ceiling grid

### **Devices**

- ❖ Waterflow switches must activate an alarm within 45-90 seconds and shall be non-silenceable
- ❖ Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system
- ❖ Manual dry standpipe systems shall be supervised with a minimum of 10 psig and a maximum of 40-psig air pressure with a high / low air supervisory alarm

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Updated: 10/2022



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- ❖ A smoke detector is required over all fire alarm control panels, notification power supplies, and monitoring transmitting equipment
- ❖ Pull stations shall be a double action type
- ❖ A pull station is required to be located near the fire sprinkler riser
- ❖ Duct detectors shall be supervisory
- ❖ Duct detectors shall be provided a remote reset switch with LED accessible from the floor without a ladder, or have the ability to reset the duct detector from the fire alarm panel
- ❖ Tamper switches shall be individually addressed and labeled to match the description that is programmed in the fire alarm control panel (Example: Tamper 1)
- ❖ All valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures, and water-flow switches on all sprinkler systems shall be electronically supervised. Exception: fire department hose connection valves
- ❖ Where two or more strobes are visible, they shall be synchronized
- ❖ Provide a weatherproof horn strobe minimum 75-candela strobe rating, installed as close as practicable to the fire department connection

### **Documentation**

- ❖ An installation certificate shall be provided
- ❖ A record of completion in accordance with NFPA 72 verifying that the system has been installed in accordance with the approved plans and specifications shall be provided
- ❖ Operating, testing and maintenance instructions and record drawings (“as-builts”) and equipment specifications shall be provided at an approved location

### **For residential structures, three or more stories in height, but not classified as a high-rise**

- ❖ Each residential unit shall be equipped with a minimum of one fire alarm horn (mini-horn) to provide the adequate decibel level in accordance with NFPA 72

### **Fire Pumps**

- ❖ Fire pumps shall be monitored for:
  - Supervisory condition – pump running
  - Supervisory condition – phase reversal and loss of power

### **Elevators**

- ❖ Detectors shall not be located in the top of elevator shafts
- ❖ Elevator recall shall be from smoke detector activation in the elevator lobbies, or machine room
- ❖ Where the rooms are unconditioned, heat detectors shall be provided (135° to 165°)
- ❖ Shunt tripping shall be initiated (only) from the elevator machine room. The shunt shall be tripped by the activation of a 165° to 200° heat detector located within 2' of each fire sprinkler

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- ❖ If hydraulic elevators are used and sprinklers are required in the bottom of the pit, a 135° to 165° heat detector shall be required within 2' of each sprinkler

### **Fire Alarm Monitoring**

- ❖ All alarm systems, new or replacement, shall transmit alarm, supervisory and trouble signals descriptively to the approved central station, remote supervisory station or proprietary supervising station as defined in NFPA 72, with the correct device designation and location of addressable device identification. Alarms shall not be permitted to be transmitted as a General Alarm or Zone condition

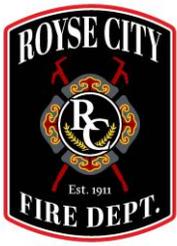
### **Inspection Requirements**

- ❖ Rough Wiring/ above ceiling
  - All fire alarm wiring will be inspected for proper installation and penetration of any firewalls
  - Fire alarm wiring shall not be tied to ceiling grid wire
- ❖ Audible Device Test
  - Ensure audible notification devices provide occupant notification for all areas without strobe devices
- ❖ Visual Device Test
  - Ensure that all areas that do not have audible notification have visual coverage
- ❖ Initiating Device Test
  - Test all fire alarm initiating devices for Alarm conditions
- ❖ Waterflow
  - The waterflow alarm will be tested by opening the inspectors test connection
  - The time delay feature on the flow switch switches must be set to a minimum delay of 30 seconds
- ❖ Central Station Monitoring
  - Verify Contact ID
  - Standard response to contact Fire Department shall be within 3 minutes
- ❖ Device Address Test
  - All analog or addressable system will have all devices pulled and/or activated
  - The print out must comply with the devices that were pulled
- ❖ Final
  - Final inspection
  - Including all required documentation

**Fire Alarm System Modification Requirements** – Plan submittal is only required for the following modifications and will require Third Party Plan Review (See Approved Firms List):

- ❖ Addition or modification to initiation devices (such as smoke, heat, pulls and water flow switches)
- ❖ Panel Replacement (requires acceptance test)
- ❖ Addition of Power Supply or Panel of any type

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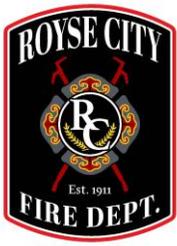
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Minor fire alarm system modifications (such as adding horn / strobe for fire sprinkler monitoring or expanded notification coverage) do not require plan submittal. Work not requiring plans submittal: Contractors shall install a white service tag indicating location (i.e., Suite #) and scope of work (i.e., "Added horn/strobe")

### **Submittal Requirements**

- ❖ Plans shall be clear and legible and all sheets shall be in a common and appropriate scale (preferably computer generated). A stamped set of plans and one (1) set of specifications / cut sheets shall be submitted electronically. Plans shall contain sufficient detail to enable the plan reviewer to accomplish a complete review. **Plans that do not conform to the submittal requirements and/or are not clearly legible will be rejected and require a re-submittal**
- ❖ Each submittal shall have a:
  - Royse City Fire Department Permit Application
  - A copy of State of Texas Fire Alarm APS license is required for the designing contractor
  - If System is designed by a PE: A State of Texas Engineers stamp is required on all pages
  - A copy of State of Texas Fire Alarm ACR license is required for the installing company
- ❖ The following information shall be provided on the plans:
  - "Wet" APS or PE signature and stamp
  - Licensing information
  - A. H. J. as the City of Royse City
  - Designed in accordance with the 2018 International Fire Code, and current edition of NFPA 72
  - Title block that contains the following:
    - Business name and address of installation
    - Installing company's name, address, and phone number
    - Licensing information
    - Date drawn and drawn by
  - A legend that contains the following: Symbols, descriptions, manufacturer, model number, and quantity for all devices shown on plans
  - North arrow
  - Floor plan
  - Plans shall not show ceiling tiles
  - Device locations
  - Device address numbers provided for addressable/analog intelligent systems
  - Type of device
  - Provide a "point-to-point" wiring configuration
  - Fire alarm control panel
  - Annunciators
  - Square footage
  - Location of doors
  - Intended use of each room
  - Location of all air-handling units

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- Show location of all fire sprinkler risers, flow switches, tamper switches, and fire pumps (if equipped)
- Notification devices with candela rating
- Heat detectors with temperature rating
- Length of wiring between devices
- The notification device wiring shall be shown different from the initiating device wiring. When necessary to provide clearly legible drawings, they shall be provided on separate pages
- The notes shall clearly indicate that the initiating circuit wiring shall be Class A
- Primary power to be a dedicated circuit
- The riser diagram shall include all devices as they are shown on the plans, or wired. Sequence of Operations in matrix format
- Specification booklet shall contain the following:
  - Scope of Work
  - Data specifications sheets for all devices and equipment
  - Listing of the system design, operation, and rest functions
  - Specific materials in the specification booklet are to be identified by an arrow or highlighter
  - Battery discharge curves
  - Wire specifications, identification on the gauge and type of wire used
  - Equipment List
  - Contact ID / Address table
  - Type of primary power and secondary power (i.e., size and number of batteries to be provided)
  - Device mounting height diagrams
  - Voltage drop calculations clearly indicating each notification device and wire length
  - Battery calculations including Standby and Alarm

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