



Fire Systems Guide

Sprinkler Systems

- Fire department connections shall be a 5" Storz fitting and shall not be obstructed by parking spaces, bushes, trees, and the like. The connection may be straight pipe and does not need an elbow. Sprinkler connections shall be clearly labeled as such. A sign with minimum 6 inch letters identifying the location of the connection may be required for visibility.
- A spare sprinkler head box with each type of spare heads and an appropriate wrench shall be provided in the sprinkler room.
- Sprinkler heads shall not be mounted closer than 4 inches to a wall.
- Storage shall be a minimum of 18 inches below sprinkler heads.
- Sprinkler heads must be located under any object (typically duct work and garage doors) that are greater than 4 feet in diameter.
- Inspectors test valves shall be easily accessible and labeled as such.
- If there is more than one (1) riser, they shall be labeled, and a map provided indicating which risers serve specific area(s).
- Sprinkler system flow and tamper switches shall always be monitored by an approved monitoring system.
- Except for minor alterations, a completed NFPA 13 form shall be submitted at the time of Hydrostatic and flow tests.

The following inspections shall be requested for a sprinkler system:

- **Hydrostatic Test.** System shall be pumped up to and hold at 200 psi or more for a minimum of two (2) hours.
- **Visual Inspection** when the work is complete.
- **Flow/Tamper Valve Test.** These tests will not be conducted until the system is connected to a functioning alarm monitoring system that is on-line. Flow alarm activation shall occur within 30-60 seconds upon initiation flow. An exterior horn strobe or water gong shall be located at the exterior fire department connection and shall activate upon sprinkler water flow activation.

Standpipe Systems

- Fire department connections shall be 5" Storz fitting and shall not be obstructed by parking spaces, bushes, trees, and the like. The connection may be straight pipe and does not need an elbow. Standpipe connections shall be clearly labeled as such. A sign with minimum 6 inch letters identifying the location of the connection may be required for visibility.
- Interior fire department hose threads shall be National Standard.
- Each standpipe on each floor level shall be labeled.



The following inspection shall be requested for a standpipe system:

- **Hydrostatic Test.** System shall be pumped up to and hold at 200 psi or more for a minimum of two (2) hours. An NFPA form shall be provided for this test.
- **Visual Inspection.** When the work is complete.

Kitchen Hood Suppression Systems

- Kitchen hood suppression systems shall be connected to and monitored at all times by an approved fire alarm monitoring system as described under the "Fire Alarm Systems" section below when a fire alarm system has been installed.
- If a fire alarm system has not been installed in the building, a separate horn/strobe shall be located near the suppression system and activate upon system activation.
- Suppression system heads shall have the proper temperature setting for the cooking equipment it serves (typically 500 degrees for fryers and 350 degrees for most other cooking equipment).
- Suppression system heads shall be covered to prevent grease build-up on the nozzles.
- Pull handle actuating levers shall be located between 10 feet to 20 feet from the cooking equipment or as close as possible in the path of egress.
- Pull handle actuating levers shall be located a maximum of 48 inches above finished floor.
- Exhaust ducts shall have a solid smooth inner surface and be tested with light or smoke. If the exhaust duct is not easily visible, a smoke test will be required.
- Activation of the suppression system shall automatically shut off all cooking equipment electrical power and gas.
- An NFPA installation form shall be submitted at the final inspection.

The following inspections shall be requested for kitchen hood suppression systems:

- **Visual Duct Test.** Light or smoke test for exhaust duct.
- **Visual Inspection.** When the work is complete .
- **Activation Test.** System activation test shall be performed to ensure all nozzles, fusible links, and pull stations are in proper working order (this is typically done with a canister of CO2). The activation test will not be conducted until the fire alarm or standalone horn/strobe and cooking equipment shut offs have been installed.

Fire Alarm Systems

- Wall mounted strobes shall be mounted a minimum of 80-inches to the bottom of the lens to 96-inches to the top of the lens above finished floor.
- Pull stations shall be red in color and mounted at 42 inches to 48 inches above finished floor to the actuating lever.



- Duct smoke detectors are required for all systems that are 2,000 cfm (5-ton) or greater and shall activate as a fire alarm; **NOT a trouble**. There shall be an accessible test switch located near the detectors or in one (1) central location as approved by the Fire Code Administrator. Duct detectors shall also have an easily accessible re-set switch if the smoke detector cannot be re-set by the fire alarm panel and/or annunciator. Switches shall be labeled to correspond with each unit. Exterior units and the associated breakers shall also be labeled. HVAC systems shall shut down immediately upon detector activation.
- All other alarm initiating devices (smoke/heat detectors, pull stations, sprinkler flows, and tampers and kitchen hood suppression systems) shall be labeled and correctly identified at the panel and annunciator.
- In larger buildings, a map shall be located at the annunciator and/or main panel identifying the location of each initiating device with their corresponding label. The location will be determined by the Fire Code Administrator.
- The activation of an initiating device shall activate all interior horns/strobes. Activation of sprinkler water flow shall also activate the exterior horn/strobe at the fire department connection. **The exterior horn/strobe at the fire department connection shall ONLY activate upon sprinkler water flow; it shall NOT activate upon any other initiating device activation.**
- **Horns shall be able to be silenced with the strobes still activated for all initiating devices INCLUDING sprinkler water flow.**
- Smoke detectors within multi-unit residential occupancies only need to activate the smoke detectors within the individual unit unless required otherwise by code.
- Except for minor alterations, an NFPA 72 Record of Installation and Completion form shall be submitted for all fire alarm systems.

The following inspections shall be requested for fire alarm systems:

- **Visual Inspection.** When the work is complete.
- **Alarm Test.** This test will not be conducted until the system is connected to a monitoring company and all devices are in place. The alarm test will include all other systems connected to the fire alarm system (i.e. sprinkler system, kitchen hood suppression system and elevators). Although elevators are inspected and approved by the PA Department of Labor and Industry, the inspection will confirm the emergency operations (returning to correct floor and opening as well as emergency fire mode) are working properly when the elevator lobby smoke detector is activated. It is strongly recommended that a representative be present for each system on the day of testing. Also, a person with the proper contact and password to have the system placed on test shall be present.

Fire Systems Located in Multi-Tenant Buildings

Fire systems in multi-tenant buildings shall function per the following requirements:

- All tenants may be connected to one (1) central addressable fire alarm panel and dialer for the entire building (this would be the most efficient and easiest way).



- Alternatively, if a tenant or multiple tenants have their own individual fire alarm system and dialer, it shall only activate in the space it was installed. If the building has one (1) main sprinkler riser that is monitored by a main "house" panel, each individual tenant fire alarm system must be connected to the "house" panel to ensure the horns/strobes throughout all spaces in the building activate upon sprinkler water flow activation.

Fire Department Knox Box

- A fire department Knox box shall be installed at a location specified by the Fire Code Administrator. Accessible height requirements (less than 48 inches above finished grade) do NOT apply to Knox boxes.
- Keys or electronic access keys for all doors including but not limited to exterior, interior, mechanical room, sprinkler room, attic hatches, electrical rooms and the like shall be provided and labeled as such. It is preferred to have one (1) master key for as many doors as possible.
- Keys for fire pull stations, duct smoke detector test/reset stations, annunciators, and emergency fire operation elevator operations shall be in the Knox box.
- A list of emergency contact names and numbers shall be placed in the Knox box.
- It is very important that management advise the Fire or Building Code Administrator if any keys change and to ensure the key is replaced in the Knox box.
- Knox boxes shall not be obstructed in any way.
- One (1) larger sized Knox box may be installed for a multi-tenant building versus separate Knox boxes at each business.
- Knox Box order forms are available by contacting the Fire Code Administrator.

Area of Rescue Systems

- Areas of rescue systems shall be located at each accessible stairwell per code and the approved construction documents.
- Instructions on how to use the system and the floor number and stairwell ID (i.e. West/East or stairwells A & B, etc.) shall be posted at each system and shall be in text and braille.
- The system shall ring to a central station located in an approved location specified by the Fire Code Administrator (typically near the main entrance and fire alarm annunciator). If the call to the central station receiver box is not answered, it shall automatically dial out to a central station monitoring company or 911.
- Onsite central station system receiver box shall be capable of communicating with the caller.
- Illuminated signs and braille signage shall be located on the outside of doors leading into stairwells with areas of rescue.
- The receiver box located at the approved central station location shall be labeled to indicate where each area of rescue is located. A map of the facility shall also be posted at the central station receiving box to indicate which locations have been activated.



The following inspections shall be requested for fire alarm systems:

- **Visual Inspection.** When the work is complete.
- **Alarm Test.** This test will not be conducted until the system is connected to the central station monitoring box and company or 911 and all devices and signage are in place. Typically, this system is tested at the same time as the fire alarm system alarm test.

THIS FORM IS A GUIDE AND IS NOT ALL INCLUSIVE OF ALL CODE REQUIREMENTS