



TOWN OF FOXBOROUGH

Department of Fire/Rescue & Emergency Services

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Rules and Regulations for Fire Protection Systems **Both Fire Alarm and Sprinkler**

Section 1: General Requirements:

- 1-1 The following rules and regulations shall govern the installation, use, and maintenance of all required fire alarm system and sprinkler systems in the Town of Foxborough. All other fire detection and suppression systems shall be installed and maintained in accordance with applicable N.F.P.A. standards and approved by the Foxborough Fire Department. For specific N.F.P.A standards see 527 CMR 1.00, The Massachusetts Comprehensive Fire Safety Code, Based on the 2018 edition of NFPA 1, as listed in Chapter 2.
- 1-2 All existing fire alarm systems shall be maintained in accordance with these regulations and as prescribed in N.F.P.A. 72 as well as directed by the Foxborough Fire Department. System Inspections and tests shall be performed quarterly so that at the end of the year, a 100% test will have been completed.
- 1-3 These rules and regulations shall not be construed to be complete but only as a guide. All questions regarding fire alarm systems shall be resolved with the Foxborough Fire Department before proceeding with the construction.
- 1-4 The authority having jurisdiction, (Foxborough Fire Department) for the purpose of this document, shall be the Chief of the Fire Department, Deputy Fire Chief, or their designees.
- 1-5 A permit for the connection of any/all fire detection or suppression systems shall be obtained from the Foxborough Fire Department. There shall be a non-refundable permit fee as set by the Town and this fee shall be submitted with the completed permit prior to any official meetings with the Foxborough Fire Department.
- 1-6 It shall be the responsibility of each engineer, electrical contractor, or fire alarm installer to familiarize themselves with the up-to-date requirements of the Foxborough Fire Department Fire Alarm Division

Section 2: Engineer/Contractor Submittal and Plan Review

- 2-1 The Foxborough Fire Department shall receive 1 (one) set of professionally drawn plans stamped by a professional engineer and an electronic, PDF, version prior to any building permits being issued by the building inspector.
- 2-2 Plans shall be a size acceptable to the Foxborough Fire Department, but in no case shall a dimension be submitted less than (11"x17").
- 2-3 All plans shall have a complete and appropriate legend, symbol, list, and title block that shall contain the facility name and address, name and address of the engineer and the date.
- 2-4 All plans shall be drawn to scale with devices accurately located relative to the facility depicted and a graphic scale shall be shown on said plans.
- 2-5 The Foxborough Fire Department assumes no responsibility for items omitted on the plans, but required by this document or any other applicable codes. "Final approval" is given only after completion of all aspects of this agreement and is signified by the signing off of the fire department section of the building occupancy permit.
- 2-6 All plans shall include a complete point-to-point wiring diagram and a complete riser diagram.
- 2-7 Accompanying all plans shall be a complete contractor submittal.

General submittal requirements are as follows:

- 2-7.1 A riser diagram of the complete fire alarm system shall be provided (Typical riser diagrams are not acceptable)
- 2-7.2 A complete point-to-point installation diagram shall be provided (Typical diagrams are not acceptable)
- 2-7.3 A complete list of current drain requirements during normal supervisory, trouble, and alarm mode of operation.

- 2-7.4 Battery back-up calculations showing total battery back-up power required to meet the specified system requirements shall be provided.
- 2-7.5 Manufacturers original catalog data and descriptive information shall be supplied for all major components of the equipment and devices to be supplied.
- 2-7.6 All pertinent information regarding the reliability and operation of the equipment to be installed shall be provided.
- 2-7.7 Installation and final test/acceptance dates of the equipment to be supplied shall be provided.
- 2-7.8 Sufficient information shall be provided so that the exact function is known of each installed device.
- 2-7.9 Submittal of shop drawings shall contain original manufacturers specification sheets. All equipment and devices on the shop drawings to be furnished under this contract shall be clearly marked in the specification sheets, if any equipment and/or devices required in the system is not so marked, the engineer shall mark the sheet and this equipment and/or devices shall be made part of the system and shall be provided. Equipment other than specified shall be considered for approval provided the following is submitted in writing to the Foxborough Fire Department.

Complete lists, descriptions and drawings of materials to be used.

- A complete riser diagram of the fire alarm system.
- A complete point-to-point installation diagram. Typical wiring diagrams are not acceptable.
- A complete list of current drain requirements during normal supervisory trouble and alarm conditions.

2-7.9.1 If any attempt is made to substitute the brand of equipment specified it shall be the contractor's obligation to submit the above data and information to

allow the specifying engineer time to consider the equality of the substituted item(s) to that specified. It is the contractor's responsibility to meet the entire intent of the specifications. Deviations from the specified item(s) shall be at the risk of the contractor until the date of final acceptance by the architect, engineer and owner's representative. Approved submittals on substitute equipment shall only allow the contractor to proceed with installing a substituted item(s) and shall not be considered equal until such time as the architect, engineer, the owner's representative, and the authority having jurisdiction have completely accepted the substituted item(s). All cost for removal, relocation, or replacement of a substituted item(s) shall be at the risk of the contractor.

- 2-7.10 A letter on official company stationary, signed and stamped by the design engineer shall accompany the plans. This letter shall state that the plans meet or exceed all applicable State and N.F.P.A. Codes (i.e.: Location and spacing of devices.)
- 2-7.11 All devices on the plans shall be sequentially numbered in order to simplify discussions and inspections.
- 2-7.12 Any and all deviations (additions, subtractions, alterations, or reallocations) from the original set of plans must be submitted in writing to the Foxborough Fire Department prior to this deviation taking place.
- 2-7.13 Any major revisions from the original plans as decided by the Foxborough Fire Department shall require a plan review fee as set forth by the Town.

Section 3: Interior System Design and Layout

- 3-1 All equipment used shall be of a type approved by the Foxborough Fire Department and U.L. listed
- 3-2 All systems shall be direct current (DC), fully supervised, battery back-up fire alarm systems. Addressable type fire detection and alarm systems shall control and annunciate in English all detectors and

control devices at the FACP per N.F.P.A. 72, which shall be connected to the Foxborough Fire Department via either central station monitoring or AES radio box.

- 3-3 A separate alternating current circuit shall be provided for the fire alarm system.
- 3-4 At a minimum the secondary power supply shall have sufficient capacity to operate the system under quiescent load (system operating in a non-alarm condition) for a minimum of 24 hours and, at the end of that period, shall be capable of operating all alarm notification appliances used for evacuation or to direct aid to the location of an emergency for 5 minutes.
- 3-5 The calculation used to determine battery capacity shall be presented to the Foxborough Fire Department at the time of plan review. This shall show each device and how much they each draw, etc.
- 3-6 The back-up batteries as well as the charging system shall be supervised.
- 3-7 All fire alarm control panels shall be red in color and have a white label with the words FIRE ALARM CONTROL on the front of the panel with a minimum one-inch letter size.
- 3-8 Upon activation of any alarm device, the fire alarm control panel (FACP) shall sound the evacuation signals, flash the evacuation lights, indicate the zone or detector of activation, send an alarm signal to Foxborough Fire, and operate any special devices such as automatic door closures, etc.
 - 3-8-1 Carbon Monoxide (CO) alarms are to be sent to the Fire Station as an alarm, but an evacuation of the building is NOT necessary
- 3-9 City disconnect switches are not allowed on the fire alarm control panel unless authorized by the Foxborough Fire Department.
- 3-10 All zones of the control panel shall have red alarm indicating lamps and yellow trouble lamps, except addressable systems which shall annunciate each device at the FACP and its associated condition i.e. trouble alarms. Power lamps shall be green in color.

- 3-11 A trouble silence switch shall silence the trouble audible signal while the trouble visual signal shall remain illuminated.
 - 3-11.1 The trouble silence and drill switches shall have a ring back feature to supervise correct switch position.
 - 3-11.2 Trouble signals shall have a resound provision.
 - 3-11.3 When a switch is "silenced", any subsequent alarms from another device shall re-sound the evacuation signals.
 - 3-11.4 All control panels shall have a system silence switch and a system reset switch.
 - 3-11.5 An acknowledge trouble switch is allowable.
- 3-12 The Foxborough Fire Department may require that systems installed in high-rise, educational, handicapped or health care facilities allow the visual indicators of the evacuation signals to stay illuminated after the alarm silence switch is operated and remain illuminated until the system is reset.
- 3-13 Where smoke detectors are installed in concealed locations more than 10 ft. above the finished floor or in arrangements where the detector's alarm or supervisory indicator is not visible to responding personnel, the detectors shall be provided with remote alarm or supervisory indication in a location acceptable to the authority having jurisdiction.
- 3-14 Firefighter telephones shall be designed and installed where required (Complete phone set and locked enclosure) by N.F.P.A. 72 and 101. Voice evacuation systems shall be installed where required by N.F.P.A. 72 and 101 inclusive. Tape-recorded voice evacuation messages shall not be utilized; however, methods of voice recording other than tape are acceptable.
- 3-15 Installation of equipment shall be in a neat and workmanlike manner.
- 3-16 All wiring shall be Class "A"

- 3-16.1 All wiring shall be in accordance with the National Electrical Code, National Fire Protection Association standards, current edition as amended, and all state and local codes.
- 3-17 Fire alarm control panels having zone labeling on an outside door with zone lamps mounted on an inside panel shall have zone labeling inside the panel also, to indicate zones when the door is opened.
- 3-18 All wiring shall be, as required by the National Electric Code and NFPA-72.
- 3-18.1 All pull box and junction box covers, as well as 6" of any conduit or cable entering or leaving a junction box or pull box shall be painted red.
- 3-18.2 No wire shall be installed exposed.
- 3-19 Horns shall be of the combination horn strobe type. Horns shall be used for no other purpose, unless approved in writing by Foxborough Fire Department, and shall be of such character and so located as to be effectively heard above all other sounds by all occupants in every occupied space in the building.
- 3-19.1 In bedroom areas, alarm-sounding levels shall be at least fifteen (15) dBA above average ambient room noise levels of approximately fifty five (55) dBA.
- 3-19.2 Other approved sounding devices may be used subject to the approval in writing of the Foxborough Fire Department.
- 3-20 Detector spacing shall not exceed the linear maximum indicated for that particular device by the National Fire Protection Association (N.F.P.A.-72).
- 3-20.1 In locations where thermal detectors are required, the type and/or temperature rating of the detector as required by the State Building or Fire Code, may be modified by the Foxborough Fire Department if, in his/her judgment, the type or temperature setting of the unit is unsuitable due to environmental conditions unique to that location.

- 3-20.2 Smoke detectors shall be covered (bagged) in place prior to completion of construction. These bags are to be removed prior to system testing.
- 3-21 All wires shall be cut and attached to terminal screws securely.
 - 3-21.1 There shall be no looping of the wire onto terminals. Crimp type wire connectors shall be used.
 - 3-21.2 All conductor splices shall be made on screw type terminal blocks and wire nuts shall not be allowed. All terminals within terminal cabinet shall be properly labeled.
- 3-22 All conductors shall be minimum sixteen- (16) gauge solid copper type and shall be rated a minimum of ninety (90) degrees centigrade.
 - 3-22.1 An equipment-bonding conductor shall be provided in all flexible metallic raceways.
- 3-23 No heat, smoke, sprinkler, or other fire detection/suppression system zone shall cover more than one (1) floor or exceed more than twenty-two thousand five hundred (22,500) square feet, or be more than three hundred (300) feet in any one direction.
- 3-24 Manual fire alarm boxes shall be located within 60 inches of the exit doorway opening at each exit on each floor. The operable part of each manual fire alarm box shall be not less than 42 in. and not more than 48 in. above floor level.
- 3-25 All manual fire alarm boxes and horn/light units shall be **RED** and shall be labeled "FIRE" and shall be in compliance with NFPA-72.
- 3-26 A remote annunciator is required on all buildings having more than four (4) zones or where required by Foxborough Fire Department.
 - 3-26.1 The remote annunciator shall be located near the main entrance of the building and shall be L.E.D. type with sufficient brilliance to be seen in normal direct sunlight. Location is to be approved by Foxborough Fire Department.

3-26.2 All remote annunciators shall have a trouble indication, which shall show any system trouble and shall remain illuminated when the trouble silence switch is engaged.

3-26.3 Annunciator panel detail plan and drawing shall be submitted to the Foxborough Fire Department before installation for approval.

3-26.4 The color of the annunciator shall be **RED** with all labeling clearly marked in English.

3-26.5 A building schematic as-built drawing shall show location of devices in zones, zones by floors, sprinkler zones, sprinkler risers and fire suppression systems and any other items deemed appropriate by the Foxborough Fire Department. This is to be placed next to the FACP in a frame no bigger than 11"x17" and be clearly legible.

3-26.6 In the event that a building has a fire pump or generator, provisions shall be made at the remote annunciator for visible indication of generator/fire pump operation.

3-27 NFPA 72 Section 7.7.2 Document Accessibility.

3-27.1 With every new system, a documentation cabinet shall be installed at the system control unit or at another approved location at the protected premises.

3-27.2 All record documentation shall be stored in the documentation cabinet.

3-27.3 Where the documentation cabinet is not in the same location as the system control unit, its location shall be identified at the system control unit.

3-27.4 The documentation cabinet shall be prominently labeled **SYSTEM RECORD DOCUMENTS**.

3-27.5 The contents of the cabinet shall be accessible by authorized personnel only.

Section 4: Sprinkler and Standpipe Systems

- 4-1 All sprinkler systems shall have a direct notification connection to the Foxborough Fire Department. This connection shall be via either central station monitoring or AES radio box.
 - 4-1.1 Inspection, testing, and maintenance of sprinkler systems shall be done in accordance with applicable NFPA standards and as directed by the Foxborough Fire Department.
- 4-2 All sprinkler risers shall have water flow alarm devices installed.
- 4-3 All sprinkler risers shall have a low pressure switch installed on the system side of the check valve.
- 4-4 All vane flow switches shall have zero (0) to sixty (60) second retard devices and shall be set for forty-five (45) seconds.
- 4-5 Tamper switches are required on all sprinkler shut-off devices and shall be wired so as to cause a sprinkler trouble alarm for each device at the FACP and to also transmit a signal to an approved off-site monitoring facility. Rational for sprinkler off-site monitoring is that this connection provides trouble signals only. Water flow alarms are provided by the fire alarm control panel, then via central station monitoring or AES radio box, to generate a required fire department response.
- 4-6 Each floor of the building shall be zoned separately with an inspectors test and drain.
 - 4-6.1 A test valve shall be installed on each sprinkler zone.
- 4-7 There shall be no means of shutting off the water flow to the alarm device.
- 4-8 All devices shall be U.L. listed or F.M. approved for the function they are designed.
- 4-9 A legend shall be placed at the main shut-off valve indicating the location of shut-off valves and inspection test valve.
- 4-10 All valves in the sprinkler system shall have permanent tags indicating their purpose.

- 4-11 In addition to the sprinkler/standpipe risers flow switches, flow switches shall be installed on each zone.
- 4-11.1 Sprinklers shall be zoned as per fire alarm zones.
- 4-11.2 Any alarm originating from a sprinkler head or a standpipe cabinet, shall provide two indications on the system annunciator; one to indicate which sprinkler or standpipe riser is flowing, and one to indicate the zone where the flow is occurring.
- 4-12 Foxborough Fire utilizes different thread types per size of pipe. For 1-1/2" thread this shall conform to Iron Pipe and for 2-1/2" thread this shall conform to National Standard.
- 4-13 Fire Department connections shall utilize a 4" Storz connection to the sprinkler system and a sign as shown in Appendix A shall be placed over the connection at eye level before a final sign off.
- 4-14 Storz Connection shall utilize a 30° pattern if installed over 30" from the finished grade.
- 4-15 Inspectors test discharge shall be of the same size orifice in diameter as the smallest sprinkler head discharge orifice.
- 4-16 If fire suppression control valves are located in a separate room or concealed space, a sign shall be provided on the entrance door or near the concealed space. Control valves shall be chain locked in the "OPEN" position.
- 4-15.1 The lettering for such sign shall be red and at least four (4) inches in height and shall read, "SPRINKLER CONTROL VALVE" or "STANDPIPE CONTROL VALVE".
- 4-17 If a fire pump is used, its operation shall be indicated on the fire alarm control panel and annunciator.
- 4-18 A flashing strobe light shall be installed above the sprinkler alarm bell tied into the sprinkler flow switch. The location shall be subject to approval by the Foxborough Fire Department. Location shall be visible

to apparatus responding. The light shall be red in color and of high intensity.

Section 5: Direct Connections to the Foxborough Fire Department

- 5-1 All required fire detection and alarm systems shall be connected to either a central station monitoring company or AES radio box
- 5-2 Radio Master boxes shall be installed at a location determined by the Foxborough Fire Department.
- 5-3 Radio Master boxes shall be installed in accordance with NFPA 1221.
- 5-4 The Town of Foxborough or any of its agencies assumes no responsibility for the proper operation of internal fire alarm systems.
- 5-5 All equipment shall be made available for test and inspection when required by the Fire Department or Fire Department Fire Alarm Division with reasonable notice to be given except in an emergency.
- 5-6 Any commercial, industrial, or residential type building that has an interior fire alarm system connected to an approved pre-existing central station or has a direct connection to the municipal fire alarm circuit shall have installed at a location approved by the Foxborough Fire Department a security "Knox Box".
 - 5-6.1 The Knox Box shall be a size and style approved by the Foxborough Fire Department for each specific application. Excessive number of keys or "right to know documents" shall require a lock vault (See Section 3-27).
 - 5-6.2 An application for a Knox Box shall be acquired by going to <https://www.knoxbox.com/> and following directions.

Section 6: Final Inspections and Maintenance

(see Appendix B for list)

- 6-1 Before the Foxborough Fire Department shall perform a final inspection on a building, the following list of items shall be provided to the Foxborough Department Inspector.
 - 1. The complete submittal as outlined in Section 2.

2. The letter of certification of the plans as stated in Section 2
 3. A complete set of "As Wired" plans.
 4. Documentation that all fees have been paid.
 5. Documentation verifying that a Knox Box is on order.
 6. A copy of a valid contract between the building owners and a qualified alarm company, stating that the alarm company has been retained for a minimum period of one year from the test date and shall be responsible for maintaining the systems and periodic inspections as set forth in this section. This letter shall state the names of both the owners of the building and the alarm company emergency contact people as well as their telephone numbers.
- 6-2 The installer shall notify the Foxborough Fire Department that they are ready for a final inspection and have met all the criteria in 6-1. An inspection time shall be set up by the Foxborough Fire Department at the earliest possible time convenient to the inspectors involved.
- 6-3 The installer may be billed for the fire alarm personnel involved in the inspection per their contract requirement.
- 6-3.1 In the event the installer needs to cancel a scheduled inspection, he/she shall do so within twenty-four (24) hours of the scheduled inspection or he/she may be billed for a re-inspection fee as set forth by the Town.
- 6-4 A building schematic as-built drawing shall show location of devices in zones, zones by floors, sprinkler zones, sprinkler risers and fire suppression systems and any other items deemed appropriate by the Foxborough Fire Department. This is to be placed next to the FACP in a frame no larger than 11"x17". Font size used shall be clearly legible.

Acceptance Testing

- 6-5 The installer shall be allowed enough time for complete testing of all devices for both function and supervision.

- 6-5.1 It shall be the installer's responsibility to supply sufficient personnel to perform all aspects of the test. Fire alarm personnel are there to witness the test and shall not under any instance render assistance.
- 6-5.2 The installer shall provide a mechanism for performing a "true function" test of each device. This means that all smoke detectors shall be tested by some means to show sensitivity
- 6-5.3 In addition to the true function test, an actual function test of the smoke and heat detectors shall be performed. For the smoke detectors, smoke from any form of combustion shall be allowed. For heat detectors that are rate of rise, a heat source such as a spotlight or hand held blow dryer may be used. On fixed type temperature detectors, manual tripping of the detector shall be allowed if applying heat shall destroy the detector.
- 6-5.4 The fire alarm system shall be tested as a complete system. If any part of the system fails, the installer may be, at the sole discretion of the Foxborough Fire Department, required to arrange for another complete test in accordance with Section 6-2.
- 6-6 The Foxborough Fire Department and/or the Building Commissioner may hold up signing or issuing an occupancy permit if the Town Treasurer/Collector feels that a reasonable effort to pay any related bills has not been made.
- 6-7 The Knox Box shall be in place and all keys needed to access the facility shall be turned over to Fire Department personnel. The installer shall have notified the owner of the need for the fire department to have keys to all sections of the building and these keys shall be placed in the Knox Box.
- 6-8 Upon acceptance of the fire alarm system by the Foxborough Fire Department, the owner of the building where the system is installed shall maintain the system in one hundred (100%) percent operating condition at all times.
 - 6-8.1 The owner of the building where the system is installed shall provide evidence to the Foxborough Fire Department that a maintenance program is in force for the fire detection and

suppression systems, which provides for periodic testing of the systems per applicable NFPA standards.

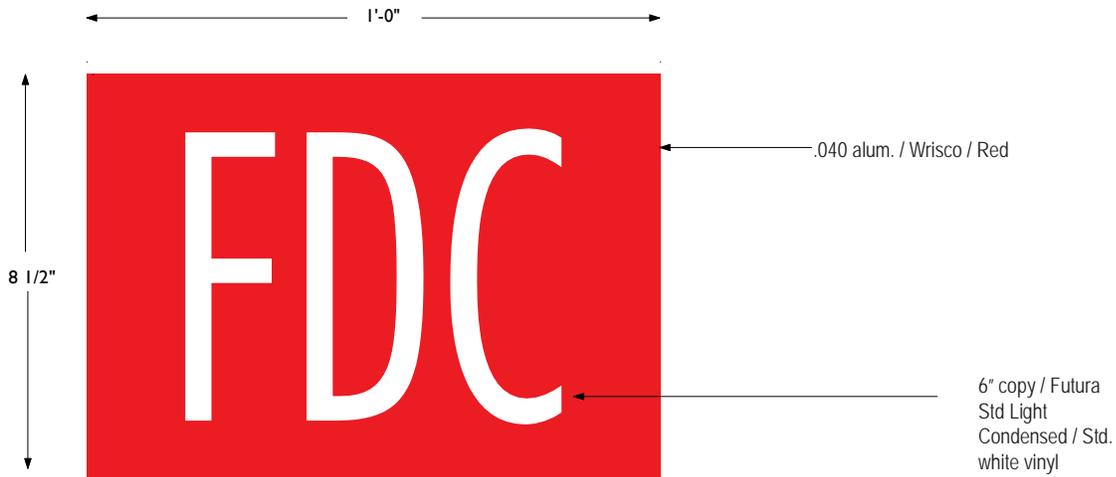
- 6-9 All required affidavits per NFPA regulations shall be available for signing by the Fire Department at the time of the acceptance test.

Section 7: Special Requirements

- 7-1 In all areas that utilize loud music inside the premises which includes fitness centers and/or where live entertainment performs, Foxborough Fire requires that the sound system shuts down during an alarm event.

Appendix A

Foxborough Fire & Rescue Fire Department Connection Sign Detail



Minimum requirement

To be mounted at Eye Level over the Storz Connection or as approved by AHJ

Appendix B

List used by Fire Department Inspectors for Final Inspections for both Fire Alarm Acceptance and Sprinkler Acceptance. This list is not all inclusive and the inspector may ask for additional testing and/or documentation. It is the installer's responsibility to follow this guide and all NFPA required documentation as written and to obtain clarification from AHJ for any parts that they are uncertain about.

Final Commercial Fire Alarm Inspections

- Final Contractor's Acceptance Test Report
- Copy of completed and signed Construction Control Affidavit
- Maintenance contract for one Year
- Complete test report from monitoring company
- Knox Box installed with proper keys ready
- Fire Alarm Control Panel (FACP) Properly Labeled, including operating instructions
- Fire alarm devices properly labeled
- Remote indicators for devices in concealed locations
- Radio Master Box - Where required
- Ducts tied into the Devices (Alarm activation NOT Supervisory)
- Carbon Monoxide (CO) detectors will send an Alarm to Fire Department.
- Graphic Map framed and permanently mounted next to FACP (Legible)
- NFPA Certificates and Affidavits
- Keys in Knox Box

Sprinkler Final Inspection

- Test Report
- Valves Labelled
- Valve Chained and Locked with key to FD
- Flow valves trip alarm no greater than 45 seconds
- Spare sprinklers and wrench provided in cabinet
- "FDC" Sign over fire department connection at eye level (Appendix A)

- Contractor's material and test certificate for aboveground piping form received, filled out, and signed
- Contractor's material and test certificate for underground piping form received, filled out, and signed
- Hydraulic design information sign provided at valve

Ansul System Test Report for Commercial Kitchens

- Air test of the system with shut down of gas appliances and all electrical outlets underneath of the hood
- CO detector test
- Activation of Ansul system trips fire alarm system and sends signal to Fire Department by installed notification method (radio or central station)
- K-type Extinguisher mounted and sign conspicuously placed near each extinguisher that states that the fire protection system shall be activated prior to using the fire extinguisher