



CHELMSFORD FIRE DEPARTMENT
FIRE PREVENTION OFFICE

50 Billerica Road – Chelmsford, MA 01824
(978) 251-4288

"Smoke Detectors Save Lives"



**INTERNAL FIRE ALARM
REQUIREMENTS**

Revision 4

March 10, 2020

1. General Requirements

- 1.1. Any person performing work or testing on any fire alarm system shall be licensed by the Commonwealth of Massachusetts to perform such work.
- 1.2. Persons working on a fire alarm system for maintenance repairs, or inspection must possess a permit to impair or shut down the fire alarm system on the premises, regardless of the presence of a master box or not.
- 1.3. Shutdown permits must be obtained from the Chelmsford Fire Department online permitting system.
- 1.4. Technicians shall call CFD dispatch ((978) 250-5265) when a system is impaired and again when the system is placed back in service.
- 1.5. Placing a fire alarm system in test with a monitoring agency shall be considered impairment of a fire alarm system and requires a permit.
- 1.6. Any work more than testing of a system or replacing a faulty device shall require a separate review by the Fire Prevention Office and a permit from the building department.
 - 1.6.1. Emergency repairs may be undertaken before the required permits are in hand, but in no event shall a system be worked on or tampered with without calling dispatch at (978) 250-5265 to avoid a false alarm
- 1.7. All test reports shall be forwarded to the Fire Prevention office within fourteen days of testing.
- 1.8. Master boxes may only be tripped through for testing/impairment from 7AM to 10PM without prior approval.
- 1.9. Any person who impairs or trips a sprinkler or fire alarm system without a valid permit shall be subject to fines of up to \$1000 according to 527 CMR 1 and MGL Ch. 148A.

2. Fire Alarm Systems

- 2.1. The location of any fire alarm devices (initiating or indicating) shall be at the discretion of the Chelmsford Fire Prevention Office
- 2.2. A red rotating beacon or an approved strobe device (red or white in color) shall be installed a minimum of eight (8) feet to a maximum of twelve (12) feet above ground level so that the beacon is plainly visible from the nearest public way.
 - 2.2.1. No other device or location is acceptable unless prior authorization is obtained through the Fire Prevention Office.
 - 2.2.2. The indicating device must have a minimum of 250,000 candlepower, and activate on alarm only.
- 2.3. Fire alarm systems shall be installed to NFPA 72 requirements, and shall meet ADA requirements for occupant notification.
 - 2.3.1.
- 2.4. Permit/Plan review cost shall be based on the total number of devices to be installed.
 - 2.4.1. This shall include initiating devices, notification appliances, booster panels, the FACP, and RFACP
- 2.5. Up to 50 Devices - \$50 51 to 150 Devices - \$100 151 Devices and over - \$150

3. Permit Submission Requirements

- 3.1. Plans and specifications shall be submitted to the Chelmsford Fire Prevention Office with sufficient detail to describe the adequacy and scope of the work.
- 3.2. No work shall be done before plans are submitted and approved by the Fire Prevention Office.
- 3.3. Required documentation includes, but is not limited to:
 - 3.3.1. Permit application through the building department and a fire alarm plan review application through the CFD online permitting system
 - 3.3.2. Fire Protection Narratives
 - 3.3.3. Electronic drawings in pdf permit
 - 3.3.4. Valid Massachusetts Fire Alarm Technician's license or valid Massachusetts Electrician's license
 - 3.3.5. Cut sheets for all devices to be installed, including device covers.
 - 3.3.6. Battery Calculations
- 3.4. Work involving the upgrade or replacement of a fire alarm control panel and renovations involving 50% or more of the building floor area shall require installation of central station monitoring equipment and removal of Gamewell master box (if equipped).
- 3.5. All documents shall be submitted electronically. Contact the Fire Prevention Office for instructions. Required documents may be modified on a case-by-case basis by this office.

4. Sprinkler Hardware/ Fire Alarm Devices Monitoring Requirements

- 4.1. TO ALARM
 - 4.1.1. Alarm check valve with retard chamber and pressure switch (If installed)
 - 4.1.2. Sprinkler flow switch
 - 4.1.3. Duct Smoke detectors
- 4.2. TO SUPERVISORY
 - 4.2.1. Sprinkler low pressure switch, system side
 - 4.2.2. Sprinkler tamper switches on all shutoffs.
 - 4.2.2.1. *If monitored by master box only, or if FACP is incapable of transmitting supervisory signals, tamper switches must be wired to alarm*
 - 4.2.2.2. *If monitored by central station/direct dialer and FACP is capable of transmitting supervisory signals, may be wired for supervisory*
 - 4.2.2.3. *Shall be zoned separately from alarm switches*
- 4.3. At minimum, an electric bell shall be installed at the exterior of the building near the Fire Department Connection. Water Motor Gongs may be used with the permission of Fire Prevention.
- 4.4. A minimum of one (1) horn strobe device wired to the alarm system shall be mounted in an area remote of the electric bell. The location must be preapproved by the Fire Prevention Office and must be visible from the nearest public way.

5. Fire Alarm Control Panel

- 5.1. Panel must be UL-Approved.
- 5.2. All zones must have the capability to be zoned out individually.
- 5.3. FIRE ALARM CONTROL PANELS SHALL NOT HAVE A MASTER BOX DISCONNECT SWITCH OR SIMILAR DEVICE.
- 5.4. The room or space that contains the fire alarm panel shall be protected by a system smoke detector.
- 5.5. Fire alarm panel and annunciator must be permanently labeled with zone names that are alike.
 - 5.5.1. Acceptance of zone names as well as labelling is at the discretion of the Fire Prevention Office.
 - 5.5.2. Zones must be marked by an acceptable permanent means; pencil, ink, dymotape are not acceptable means for zone markings.
- 5.6. Spare zones shall be provided as follows
 - 5.6.1. One spare zone must be present for panels having up to eight (8) zones;
 - 5.6.2. two spare zones must be present for panels having nine (9) to sixteen (16) zones;
 - 5.6.3. three spare zones must be present for panels having seventeen (17) or more zones.
- 5.7. All occupancies likely to need fire drills shall have a drill switch that sounds horns but does not transmit an alarm.

6. Remote Annunciator

- 6.1. Remote annunciators shall be fully functional, and shall be mounted at the master box location.
 - 6.1.1. Remote annunciators shall have the capability to acknowledge, silence, and reset alarms.
- 6.2. In buildings that do not use master box monitoring, the remote annunciator may be mounted either directly inside of or outside of the main entrance doors. Any other locations must be preapproved by the Fire Prevention Office.
- 6.3. If the remote annunciator is located outdoors, it shall be protected from the elements by approved means.
- 6.4. Remote annunciator zone lights shall be visible at all levels of lighting, including direct sunlight. Remote annunciators must have system trouble indicators.

7. Wiring

- 7.1. All fire alarm wiring must be copper and UL listed for that purpose and per the Massachusetts State Electrical Code.
- 7.2. Wiring shall be MC-FA or as otherwise approved by the Chelmsford Wiring Inspector.
- 7.3. Wiring must be sized to meet the demands of each circuit.
- 7.4. All devices must be installed with a junction or workbox.
- 7.5. Fire alarm wiring must be marked red to distinguish it from high voltage wiring.

8. System Devices

- 8.1. Pull Stations
 - 8.1.1. Pull stations shall be double action devices.

- 8.1.2. Pull stations shall be installed at locations and height limitations as required by 527 CMR 1 and Massachusetts State Building Code.
- 8.1.3. All new pull stations shall be keyed alike and shall be keyed uniformly with existing devices.
- 8.2. Notification Appliances
 - 8.2.1. Audible devices shall be mounted so that sounds levels of no less than 75 dba at ten feet or no more than 130 dba at the minimum hearing distance from the audible appliance.
 - 8.2.2. Audible devices shall be located so sound levels are not less than 15 dba above normal ambient noise levels for that space.
 - 8.2.3. Low Frequency devices, where required by 780 CMR and NFPA 72 are required.
 - 8.2.4. Acceptance will be determined by Fire Prevention at the final acceptance test.
 - 8.2.5. Common bathrooms shall comply with ADA.
- 8.3. Duct smoke detectors and elevator smoke/heat detectors shall have a remote test/alarm switch and indicators situated at a central location, proximate to the FACP or Remote FACP.
 - 8.3.1. The alarm test switch, the duct itself, and the corresponding roof top unit must be marked alike.
 - 8.3.2. All keyed duct smoke test indicators shall be keyed alike and keyed uniformly with existing devices.
- 8.4. Smoke detectors shall be UL approved.
 - 8.4.1. They shall have a power indicator light and a means to show alarm activation.
 - 8.4.2. In buildings with fully addressable panels, smoke detectors shall be marked with the corresponding device name per panel programming.
- 8.5. All spaces containing fire alarm control equipment shall be labelled with appropriate signage.
- 8.6. Electric rooms or any other room that is required by NFPA standards to have sprinklers must be sprinklered unless the following steps are taken
 - 8.6.1. A written request must be made to the Fire Prevention Office stating that you want to remove or plug existing or new sprinklers in these rooms. All rooms must be noted on request.
 - 8.6.2. The insurance underwriter for the property must approve of the proposed elimination of sprinkler coverage in writing.
 - 8.6.3. Each room where sprinklers are removed must have system smoke detectors installed, that meet NFPA 72 standards. A remote alarm indicator light shall be mounted outside of that room. The remote alarm indicator location shall be approved by the Fire Prevention Office.
- 8.7. ELEVATOR ROOMS must comply with the requirements of the state elevator inspector. A remote alarm indicator light will be required in an approved location.

9. Addressable Fire Alarm Requirements

- 9.1. There will be a minimum of two LED displays located at the discretion of the Fire Prevention Office.
- 9.2. A map (floor plan) showing main building features, access points, location of all devices and device addresses or the equivalent shall be posted in the main lobby, or other approved location per the Fire Prevention Office
- 9.3. System shall be programmed to allow a device in alarm to be acknowledged, silenced, and left in alarm but still allow the master box to be reset.
- 9.4. A list of proposed addresses shall be submitted to the Fire Prevention Office thirty (30) days prior to programming for approval.
- 9.5. Device Addresses
 - 9.5.1. Do not use geographical terms such as north, south, etc. in addresses. Designations of side A, B, C, and D are preferred. A is the front side (main entry side) B is left side, C is the rear, and D is the right side. The point of reference will be the front door.
 - 9.5.2. If possible, use syntax –
 - 9.5.2.1. Device type, level of building, side, specific location
 - 9.5.2.2. Example – Pull Station First Floor Side A
 - 9.5.2.3. Front Lobby by main entrance

10. Final Inspections

- 10.1. All work involving more than a one-for-one device replacement shall be subject to final inspection in the presence of the fire department.
- 10.2. All protective device covers must be removed prior to final test. Testing will include tripping the master box (if equipped) and sending a live signal to the central station service to time the call to CFD dispatch.
- 10.3. Fire Alarm Contractors must provide the following at final inspection:
 - 10.3.1. Record of Completion
 - 10.3.2. Testing and inspection report
 - 10.3.3. Central Station agency UL certificate
 - 10.3.4. As built drawings uploaded to plan review application. May be sent electronically to fire prevention prior to inspection.
 - 10.3.5. Device map attached to wall at front lobby or location approved by fire prevention.
 - 10.3.6. Keys for all devices and doors
 - 10.3.7. Affidavits for fire alarm systems. (Contractor and Engineers, if applicable)
- 10.4. All rooms containing fire alarm control panels shall be labelled with appropriate signage. Letters must be at minimum 2 ½" tall and must be red on a white background or white on a red background.
- 10.5. Fire extinguisher locations shall be marked with tent style indicators.

- 10.6. Sprinkler, suppression systems, and Emergency Responder Radio systems shall have their own requirements. Refer to CFD policies on these systems.
- 10.7. Emergency lights shall be marked to indicate the location of their test buttons; color-coding is acceptable.

