

SPECIFICATIONS FOR THE INSTALLATION OF FIRE ALARM SYSTEMS,  
SPRINKLER SYSTEMS, AND MASTER BOXES IN THE POQUONNOCK BRIDGE  
FIRE DISTRICT

The purpose of these specifications is to insure that there are minimum requirements for the installation of fire alarm systems, sprinkler systems and master boxes in the Poquonnock Bridge Fire District.

General

- 1.1 When it is required that a fire alarm system be installed at a particular location or structure by either The Connecticut Fire Safety Code, Town of Groton regulation or requirement of The Poquonnock Bridge Fire District said system shall meet with the following requirements.
- 1.2 All buildings that by code or ordinance are required to have a monitored fire alarm system shall have said system connected to the municipal system of the Poquonnock Bridge Fire District.
- 1.3 All buildings that are protected by an automatic sprinkler system or a fire protective signaling system shall be equipped with a Rapid Entry System approved by the Poquonnock Bridge Fire District.  
Exception: Buildings with 24 hour a day / 7 days a week occupancy
- 1.4 Municipal fire alarm circuits with pedestal street boxes shall be installed along any new road or in any residential or commercial area being developed.
- 1.5 Submittals shall include the following:
  - A. Site plans showing all utilities and building prints showing all proposed devices and their installed locations.
  - B. A riser diagram of the complete fire alarm system.
  - C. A complete point to point wiring diagram.
  - D. A complete list of current drain requirements during normal supervisory, trouble, and alarm condition.
  - E. Battery standby calculations showing the total standby power required to meet the specified system requirements.
  - F. Manufacturer's original catalog giving descriptive information, operational data and compatibility of all components of the system.
  - G. Supplies qualifications indicating years in business, service policies, warranty definitions, part availability and a list of similar installations.
  - H. Contractor qualifications indicating years in business, prior alarm system installations, location of prior installations using the same equipment as that proposed.
  - I. All pertinent information regarding service life reliability and operation of the equipment to be installed

The above, along with fire alarm application shall be supplied to the Fire Marshal and Fire Alarm Superintendent of the Poquonnock Bridge Fire District 30 days prior to the installation of any fire alarm system.

- 1.6 Prior to the backfilling or wall construction that would cover part of a municipal conduit run, the installation shall be inspected by a representative of the Poquonnock Bridge Fire District. A representative shall also be present at the time the municipal fire alarm cable is pulled into the conduit.
- 1.7 All equipment used and the installation thereof shall meet with the requirements of the Poquonnock Bridge Fire District, local and state building and fire safety codes, and those of the state recognized edition of the National Fire Protection Association Codes 13, 13A, 14, 70, 72, 72A, 72B, 72E, 72F, 72H, 1221 and any other referenced Standards in the Connecticut Fire Safety Code.
- 1.8 Upon completion of any interior fire alarm system, the appropriate verification sheet shall be completed and a test of all initiation and signaling systems in the presence of a representative of the Poquonnock bridge Fire District. A blank copy of the verification sheet is enclosed.

#### Pedestal Street Boxes

- 2.1 The pedestal street box shall be a weatherproof Gamewell threefold Municipal fire alarm box, or equivalent, equipped with the following features: positive noninterference, quick succession, telegraph key, tap bell, test panel and lock.
- 2.2 The fire alarm box shall have a ½ sec timed brass code wheel, the number of which shall be assigned by the Poquonnock Bridge Fire District. This number shall also appear on the front of the fire box by use of a numbered plate. The box is to be installed on an Allow Castings type AC-1 pedestal mount.
- 2.3 Pedestal alarm boxes shall be located approximately every 500 feet in residential housing areas. Plans for the location of boxes shall be submitted for approval.
- 2.4 Fire alarm street boxes are generally located in the vicinity of fire hydrants.
- 2.5 Pedestal alarm boxes shall have a vandal proof red-lensed 120 volt box indicator light installed above alarm boxes. Pedestal alarm boxes shall be supplied with 120 volt AC electricity in a manner approved by the local electrical utility.
- 2.6 All municipal alarm locations shall have a 5/8" X 10 ft copper clad ground rod, with a six foot #8 pig tail.
- 2.7 Pedestal may use an Alloy Castings aluminum sub-base or a site poured concrete base 24 inches square by 18 inches deep. Poured bases must have a spare 2 inch conduit in addition to those conduits needed for the municipal run and electrical service.

- 2.8 An approved hand hole may be required to be placed alongside the pedestal base if a large number of conduits are branching from a single location.

### Master Boxes

- 3.1 Master boxes shall meet the requirements and be installed in the same manner as pedestal street boxes in addition to the following.
- 3.2 Master boxes shall be Gamewell local energy type or equivalent, equipped with the following features: positive noninterference, quick succession, telegraph key, tap bell, test panel, and lock.
- 3.2.1 Digitize Telegraph Transmitters will generally be mounted as near as practical to an outside wall with secondary consideration to the Fire Alarm Control Panel. Final Location will be approved prior to installation.
- 3.2.2 The External disconnect box shall be, as a minimum, an 8" X 10" X 4" deep NEMA type 4 cabinet with continuous hinge and panel. (Lee products style JN4-8104CH or equivalent.) It will be installed a minimum of 18" above finished grade before the Municipal Alarm Conduit enters the building. Larger size cabinets may be required if more than 6 inputs are assigned.
- 3.2.3 Conduit from the disconnected box to the Fire Alarm Control Panel shall be Rigid Galvanized if exposed on the exterior of the building. Otherwise EMT conduit is acceptable. For single input systems ¾" conduit is minimum size. For more than one input, but less than seven, 1" conduit is minimum size. Systems using seven or more inputs shall have conduit sized for 16 gauge solid conductor cable meeting IMSA 20-4 specifications.
- 3.3 The fire alarm master box protecting a property shall be centrally located outside of the building to be protected, in a readily accessible location that meets with the approval of the Fire Marshal of the Poquonnock Bridge Fire District.
- 3.4 All alarm systems shall be arranged so that no one master box protects more than 100,000 sq. ft. of fire area.
- 3.5 Master boxes may be mounted directly upon the protected building if the site location makes a pedestal mount difficult, subject to approval by the Fire Marshal of the Poquonnock Bridge Fire District. Boxes so mounted shall have the pull handle at 54 inches from the finished grade around the box and have 30 inches of clear area around the box. The red box indicating light shall be installed approximately 18 inches above the box.

### Multiple Building Complexes

- 4.1 In installations where more than one building is protected by a master box, the following shall apply.

- 4.2 An annunciator shall be installed at the entrance to the complex that will identify the location of the initiating signal.
- 4.3 Each building shall have a weatherproof exterior strobe light oriented to the entrance of the complex to identify the initiating building. Each building shall have a weatherproof exterior strobe light oriented to the entrance of the complex to identify the initiating building.

#### Fire Alarm Control Panels

- 5.1 All fire alarm control panels connected to master boxes shall be installed in a normally occupied area near the entrance of the protected building so that the fire department has rapid and ready access to it. If the design of the building prevents such installation, a remote annunciator and trouble bell will normally be acceptable. The final location shall meet the approval of the Fire marshal of the Poquonnock Bridge Fire District.
- 5.2 All fire alarm control panels and all connected devices shall be U.L or F.M. listed, used in a manner consistent with such listing and used only if listed as to be compatible with said system.
- 5.3 The fire alarm control panel shall provide electrical supervision of the entire alarm system, including the local energy trip, so that the occurrence of a break or ground fault condition of its wiring circuits, or problems that could prevent the operation of the system or the failure of its main or secondary power supply, shall be indicated by a distinctive trouble signal.
- 5.4 The fire alarm control panel shall also have the following features:
  - A. Zone disconnect
  - B. Alarm silence or acknowledge
  - C. Trouble silence
  - D. Lamp Test.

All zones shall be marked in plain language as to the location of the zone. The Fire Marshal shall approve the zone selection and assignment.

- 5.5 No single zone shall protect more than 10,000 sq. ft.
- 5.6 Batteries used for secondary power shall be secondary storage type and marked with their date of installation.
- 5.7 Batteries used for secondary power shall be secondary storage type and marked with their date of installation.
- 5.8 Batteries shall be monitored and recharged by the fire alarm control panel.

- 5.9 Any initiating device alarm activation light which is not observable from the normally occupied area shall have a remote indicating lamp, be installed on its own zone or be an adduceable type of detector.
- 5.10 Signaling devices shall be of sufficient number and volume to produce a sound level that is 15 db above the occupied areas background noise. Signaling devices shall also meet with the requirements of the Americans with Disabilities Act.

### Sprinkler Systems

- 6.1 Stamped working plans from a current state of Connecticut recognized registered engineer for a proposed sprinkler system showing calculated flows, all head and device locations and all other items under Sec. 1-9.2 of NFPA 13 shall be submitted for approval to the Fire Marshal of the Poquonnock Bridge Fire District 30 days prior to any construction. Sprinkler plans shall also be reviewed by a third party as per BOCA (1990) 108.2.2.
- 6.2 All sprinkler risers where they enter the building shall be flushed and flow tested in the presence of a representative of the Poquonnock Bridge Fire District prior to installation of the alarm check valve.
- 6.3 All hydrostatic and operational testing as well as a testing of all tamper and alarm switches shall be done in the presence of a representative of the Poquonnock Bridge Fire District.
- 6.4 All sprinkler systems shall have the following components:
- A. Alarm check valve
  - B. Retard chamber with pressure type water flow alarm
  - C. Pressure switch on alarm line (see attached drawing)
  - D. Local alarm
  - E. System side low pressure alarm
  - F. Supply side low pressure supervisory trouble alarm
  - G. OS+Y valve tamper supervisory trouble alarm
  - H. Excess pressure pump system
  - I. 2 inch main drain
  - J. System and supply side pressure gauges
  - K. A plate listing the location of all Inspector's test valves and isolation valves
- 6.5 The low pressure alarm switch shall be set using the standard industrial calculations ( $P = \text{height of building} \times .434 + 15P$ )
- 6.6 All back flow prevention devices shall be listed for full flow or fire flow applications by U.L. or F.M. or other recognized testing agencies.
- 6.6.1 If a backflow preventer is being installed retroactively on an existing fire sprinkler system, a through hydraulic analysis, including revised hydraulic calculations to

accommodate the additional friction loss, shall be preferment prior to the installation of the backflow prevention device.

- 6.7 Vane type flow switches shall be acceptable for zoning of the system only.
- 6.8 The inspectors test valve shall be located at the furthest and most remote point from the sprinkler riser.
- 6.9 Operating the inspectors test shall cause alarm activation within 90 seconds.
- 6.10 Contractor's material and test certificates for above and below ground piping along with the completed function testing inspection is mandatory prior to any request for a certificate of occupancy. (Ref. NFPA 13)

#### Municipal System Conduit

- 7.1 The connection from a fire alarm box to the municipal alarm circuit shall be in minimum of 1 inch rigid galvanized conduit for single station installations and 2 inch in street system installations.
- 7.2 Schedule 40 nonmetallic rigid conduit may be used in the underground portion of a run, provided there is no danger of damage due to ledge or low burial depth.
- 7.3 All conduit runs will generally follow those of other utilities servicing a building; however, they may not enter into the building.
- 7.4 Entrances by way of alarm boxes, pedestals or hand holes are generally placed every 250 ft and placed along with other utility hand holes. Entrances at pedestals and hand holes shall be fitted with bell ends.
- 7.5 Quazite hand holes shall be installed to facilitate long or difficult runs and in areas where future development is possible. Hand holes shall have an open bottom and be set upon crushed stone for drainage. Minimum interior size is 10 inches wide by 17 inches long by 17 inches deep. Hand holes shall have 'FIE ALARM' embossed on its cover and be rated to withstand anticipated traffic loads.
- 7.6 Conduit runs shall start at the nearest existing utility pole capable of fire alarm service, or from the end of a previous underground system and run to the alarm box location, and in road projects to the end of the development.
- 7.7 Conduit runs shall use only galvanized elbows for bends and in underground locations and be surrounded by 6 inches of sand 30 inches below finished grade in high load areas and 18 inches in low traffic areas.
- 7.8 No other cable or wire may be un in the municipal alarm conduit.

- 7.9 As it is utility policy not to allow private contractors to work on distribution poles, the provided riser on the pole will be installed by Poquonnock Bridge Fire District personnel

#### Municipal Alarm Wire

- 8.1 Fire conductor 12 gauge solid copper insulated wire in cable meeting the International Municipal Signal Assoc. (I.M.S.A) specification # 20-1 shall be used for the municipal alarm connection.
- 8.2 When ordering cable, request a copy of the certified lab test for the cable and have this available to give the personnel of the fire district when cable is pulled into the conduit.
- 8.3 Cable having higher conductor counts may be needed due to the size and location of the project.
- 8.4 Ten feet of wire shall be left at all pedestal and hand hole locations. Thirty feet of wire is needed at the base of the distribution pole for the riser.
- 8.5 All connections of the municipal fire alarm cable shall be performed by personnel of the Poquonnock Bridge Fire District.
- 8.6 All splicing of municipal alarm wire shall be in pedestal bases only.

#### Testing and Maintenance

- 9.1 Street boxes and master boxes are tested as regular procedure of the Poquonnock Bridge Fire District.
- 9.2 The interior fire alarm system, along with the local energy trip will not be tested by the fire district and must be maintained and tested by code on a regular basis by trained personnel. The alarm systems shall be tested through to the Groton Emergency Dispatch Center. The fire district will make personnel available to reset master boxes at no cost from 8:00 AM until 5:00 PM daily whenever the owner of a protected needs to test their system. Twenty-four hours notice shall be given prior to any request to reset an alarm system. After maintenance and testing of the system, a Poquonnock Bridge Fire District work report shall be completed by the person testing or working on the system stating what work was done.
- 9.3 Groton Emergency Dispatch Center (860-448-1562) shall be contacted before any such test is conducted.

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