

1 RCNY §15-01

CHAPTER 15 FIRE PROTECTION

§15-01 Communication and Alarm Systems ("Mini-Class 'E' Systems") for Certain Buildings under 100 Feet in Height.

(a) *Number of occupants.* The subject subsection (27-972(h)) of the Building Code states that a communication and alarm system, acceptable to the Commissioner of Buildings, shall be provided in buildings classified in occupancy group E, less than 100 feet in height, occupied or arranged to be occupied for an occupant load of more than one hundred persons above or below the street floor or more than a total of five hundred persons in the entire building. The provisions regarding occupant load are to be interpreted to apply where one or more of the following prevail:

- (1) The sum of the occupants on all the floors below the street floor exceeds 100 persons; or
- (2) The sum of the occupants on all the floors above the street floor exceed 100 persons; or
- (3) A total of more than 500 persons in the entire building including the street floor.

(b) *Occupancy load.* Occupant load shall be determined by the existing certificate of occupancy. In the absence of such certificate of occupancy, the occupant load shall be the greater of the actual number of occupants or on the basis of 1 person per 100 square feet net floor area. Net floor area shall be all space within the building exterior walls, excluding the following areas:

- (1) areas enclosing stairs.
- (2) public corridors.
- (3) elevators and shafts.
- (4) rest rooms.
- (5) storage rooms.

(For example, a net floor area of 10,100 square feet is capable of an occupancy of 101 persons).

The Communication and Alarm System, acceptable to the Commissioner of Buildings, shall have the following capabilities and components:

(c) *Capabilities and components.* (1) Fire command station. A communications center, located in the lobby of the building on the entrance floor as part of the elevator control panel if such exists, or located in the immediate vicinity of the elevators if they exist, to provide:

(i) Individual two-way voice communication from the fire command station to a fire warden station on each floor and to the regularly assigned location of the fire safety director, to consist of a telephone handset or approved speaker microphone system or other approved voice communication system. Initiation of a call from the fire command station shall sound a loud and distinctive sound or an audible device, selectively on the entire floor which is being called or at all floors throughout the building, through the use of a general all call button. This call shall be immediately answered by the fire wardens of the floors involved.

(ii) Manual pull station located adjacent to the fire command station to transmit a fire alarm signal to the fire department via a central station of a franchised operating company.

(iii) Annunciation of associated fire safety systems at the fire command station is optional; however, such annunciation shall not be connected to the mini-class "E" system.

(iv) This system shall be a "supervised" system. A "supervised" system is one that is electrically monitored so that the occurrence of a single open or single ground fault condition of its wiring which prevents the required normal operation of the system or causes the failure of its primary (main) power supply source is indicated by a distinctive trouble signal.

(2) Fire Warden Station. A station located on each floor within view of the passenger elevator lobby if such exists; however, when an elevator lobby does not exist, the station shall be located in the path of egress to an exit stairway. The fire warden station shall have two-way communication with the Fire Command Station and:

(i) Shall consist of telephone handset or a speaker microphone system or other approved equivalent voice communication system.

(ii) The initiation of a call from a fire warden shall cause a loud and distinctive sound at the Fire Command Station and at the Fire Safety Director's Office, which call shall be immediately answered by the Fire Safety Director from the Fire Command Station.

(3) Fire Safety Director's Office. A station located within the building at the principal work location of the Fire Safety Director arranged the same as a warden's station. There shall be a two-way voice communication system to the Fire Command Station. A two-way voice communication system described above shall also be provided at the mechanical control center should one exist.

(4) General requirements.

(i) The components of the system shall require New York City Department of Buildings Material Equipment Acceptance ("M.E.A.") approval.

(ii) A. SOURCES OF ELECTRICAL POWER

Two sources of electrical power shall be provided as follows:

1. The primary source shall be generated electric power not exceeding 277/480 volts, supplied by utility company power, or isolated plant.

2. The secondary source shall be an emergency power system (as per Section 27-396 of the Building Code), an emergency generator and/or battery power.

3. One source of power shall be connected to the system at all times. The primary and secondary power sources shall be so arranged and controlled by automatic transfer switches and/or circuitry that when the primary source of power fails, the secondary

source will be connected automatically to the fire alarm signal system. Intermediary devices between the system supply and the source of power, other than fused disconnect switches, transformers, fused cutouts and automatic transfer switches, are prohibited. Such disconnect switches, cutouts, transformers and automatic transfer switches shall supply only the fire alarm system and other systems covered by this reference standard. When the utility company requires the installation of metering current transformers, the system supply shall be connected on the load side of the current transformers. All installations shall comply with the applicable sections of the New York City Electrical Code.

The primary source of power and the secondary source (if said secondary source is an emergency power system or generator) shall each be provided with a means of disconnect from the fire alarm system. For buildings supplied at 120/208 volts, each disconnect shall consist of a fused cutout panel, utilizing cartridge fuses, with provision for interrupting the unfused neutral and all ungrounded conductors. The neutral shall be provided with a removable solid copper bar. The incoming service neutral shall be bonded to the metallic housing of the cutout panel on the line side of the removable bar. The fused cutout panel housing shall consist of a locked metallic cabinet with hinged door, painted fire department red, and permanently identified as to the system served. For buildings served at 265/460 volts, the primary and secondary service disconnects shall be fused disconnect switches (in lieu of fused cutout panels) in locked, red painted, permanently identified enclosures. The service voltage shall be transformed to 120/208 volts and a fused cutout panel provided within 5 feet of the transformer on the 120/208 volt side. The incoming supply connections shall comply with the New York City Electrical Code, and the fused cutout panel shall comply with the requirements specified herein before.

B. PRIMARY POWER SOURCE

The primary service to the fire alarm system shall be so arranged that the building source of supply can be disconnected without de-energizing the fire alarm supply. To accomplish this, the primary fire alarm supply shall be connected ahead of all building over current protection and/or switching devices.

C. SECONDARY POWER SOURCE

The secondary service to the fire alarm system shall be provided as follows:

1. If the building has a required emergency power system, the secondary source shall be the emergency power system, regardless of whether the primary source is utility company power or an isolated plant.
2. If the building has an emergency generator supplying power to any of the loads listed in Section 27-396.4 of the Building Code, the secondary source shall be the generator.
3. For all other buildings, the secondary source shall be a battery supply provided in accordance with Reference Standard 17-5 for storage batteries. The battery shall be designed for 24-hour supervisory operation of the system, followed by 15 minutes of total system load.

(iii). WIRING

A. Power Conductors (Above 75 volts) shall be:

1. Copper: THHN, THWN\THHN, TFFN, TFN, FEP, RHH, RHW-2, XHH, or XHHW minimum 600 volts; 90 C; for installation in rigid metallic conduit (RMC), intermediate metallic conduit (IMC) or electric metallic tubing (EMT).
2. Cable type MI, M.E.A. approved for fire alarm service.

B. Low Voltage Conductors (75 volts and less) shall be:

1. Copper: THHN, THWN\THHN, TFFN, TFN, FEP, RHH, RHW, XHH, or XHHW minimum 600 volts; 90 C; for installation in rigid metallic conduit (RMC), intermediate metallic conduit (IMC) or electric metallic tubing (EMT)
2. Minimum wire size No. 18 AWG.
3. Multi-conductor cables run in raceways, or exposed as described hereinafter, shall meet the following additional requirements:

(a) Type FPLP only; minimum insulation thickness 15 mils; minimum temperature 150 C; colored red.

(b) Red colored jacket overall; minimum thickness 25 mils.

(c) Cable printing as per UL1424; must bear additional description "ALSO CLASSIFIED NYC CERT. FIRE ALARM CABLE" legible without removing jacket.

C. Installation of Conductors and Raceway shall be in accordance with the following:

1. Power conductors shall not be installed in common raceways with low voltage conductors.
2. Comply with applicable requirements of New York City Electrical Code, except where requirements are exceeded by this Reference Standard.
3. Conductors other than M.I. cable shall be run in raceway, except as specifically described below.
4. Multi-conductor cables may be installed without raceway protection where cable is protected by building construction. Where not protected by building construction, cables shall be located 8 feet or more above the finished floor and not subject to physical tampering or hazard. Locations within eight feet of the finished floor that are deemed as "protected by building construction" shall include raised floors, shafts, telephone and communication equipment rooms and closets, and rooms used exclusively for fire alarm system equipment.
5. All wiring within mechanical and elevator equipment rooms shall be run in raceways.
6. Raceways run within 8 feet of finished floor in garage areas, loading docks, mechanical rooms, and elsewhere where subject to mechanical damage, shall be rigid galvanized steel conduit only.

7. Where wiring is required to be run in raceway, install conductors in rigid metallic conduit (RMC), intermediate metallic conduit (IMC) or electric metallic tubing (EMT), except that multi-conductor cables may also be run in surface metal raceway. Conductors for other electrical systems shall not be installed in raceways containing REFERENCE STANDARD 17 conductors.

8. Where allowed to be run without raceway protection, multi-conductor cables shall be installed as follows:

(a) Cables shall not depend on ceiling media, pipes, ducts, conduits, or equipment for support; Cables must be supported independently from the building structure.

(b) Cables must be secured by cable ties, straps or similar fittings, so designed and installed as not to damage the cable. Cables must be secured in place at intervals not exceeding 5'-0" on centers and within 12" of every associated cabinet, box or fitting.

9. Installation of raceways, boxes and cabinets shall comply with the following general requirements:

(a) Covers of boxes and cabinets shall be painted red and permanently identified as to their use.

(b) Penetrations of fire-rated walls, floors or ceilings shall be fire stopped.

(c) Within stairways, raceways within 8 feet of the floor shall not be installed so as to reduce or obstruct the stairway radius.

(d) Raceways or cables shall not penetrate top of any equipment box or cabinet.

10. All conduits supplying 120-volt power to the fire alarm control unit and/or to outlying control cabinets, shall contain a green insulated grounding conductor sized in accordance with the New York City Electrical Code (#10 AWG minimum). The grounding conductor shall be connected to the ground bus or other suitable grounding terminal in each box and cabinet in which it enters. At the fuse cutout panel supplying the fire alarm system, provide a grounding electrode conductor sized and installed in accordance with the New York City Electrical Code (#10 AWG minimum).

11. For cabinets whose 120 volt supply is not derived from the main fire alarm system cutout panel, provide green insulated separate grounding electrode conductors, sized and installed as per New York City Electrical Code (#10 AWG minimum). In steel-framed buildings, a connection to local steel structure will be acceptable.

12. Splices and terminations of wires and cables shall be as follows:

(a) Permitted only in boxes or cabinets specifically approved for the purpose.

(b) Utilize mechanical connections specifically approved by U.L.486 A & C for the conductors, or if soldered, first joined so as to be mechanically and electrically secure prior to soldering and insulating. Temperature rating of completed splices shall equal or exceed the temperature rating of the highest rated conductor.

13. Wiring for audible notification devices shall be arranged so that a loss of a portion of the wiring on a floor will not render more than 60% of the devices inoperative, and the devices shall be so connected to the circuitry (i.e. by means of alternate circuits) as to maintain at least partial audibility throughout the entire floor.

(iv) The name and telephone number of the central office company shall be displayed at the manual pull station.

(v) There shall be a Fire Safety Director on duty at all times that the premises is actually occupied by the number of persons specified in the opening paragraphs of these rules. The Director shall have a Certificate of Fitness issued by the New York City Fire Department.

(vi) Applications shall be filed and permits obtained as required by departmental memoranda concerning fire alarm systems.