



Addison Fire Department Fire Alarm Installation

The purpose of this document is to identify minimum requirements necessary to establish acceptable installation practices for fire alarm and life safety systems. These standards can be found in detail in NFPA 70, The National Electrical Code.

I. Wire Installations:

300.11 Securing and Supporting.

(A) **Secured in Place.** Raceways, cable assemblies, boxes, cabinets, and fittings shall be securely fastened in place. Support wires that do not provide secure support shall not be permitted as the sole support. Support wires and associated fittings that provide secure support and that are installed in addition to the ceiling grid support wires shall be permitted as the sole support. Where independent support wires are used, they shall be secured at both ends. Cables and raceways shall not be supported by ceiling grids.

(1) **Fire-Rated Assemblies.** Wiring located within the cavity of a fire-rated floor-ceiling or roof-ceiling assembly shall not be secured to, or supported by, the ceiling assembly, including the ceiling support wires. An independent means of secure support shall be provided. Where independent support wires are used, they shall be distinguishable by color, tagging, or other effective means from those that are part of the fire-rated design.

(2) **Non-Fire-Rated Assemblies.** Wiring located within the cavity of a non-fire-rated floor-ceiling or roof-ceiling assembly shall not be secured to, or supported by, the ceiling assembly, including the ceiling support wires. An independent means of secure support shall be provided.

Suspended Ceilings: A dropped, suspended, or similar ceiling that does not add strength to the building structure shall not be considered a structural ceiling.

760.8 Mechanical Execution of Work. Fire alarm circuits shall be installed in a neat and workmanlike manner. Cables and conductors installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be supported by straps, staples, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also conform to 300.4(D).

760.25 NPLFA Circuit Wiring Methods

Installation of non-power-limited fire alarm circuits shall be in accordance with 110.3(B), 300.11(A), 300.15, 300.17, and other appropriate articles of Chapter 3.

760.52 Wiring Methods and Materials on Load Side of the PLFA Power Source.

(B) PLFA Wiring Methods and Materials. Power-limited fire alarm conductors and cables described in 760.82 shall be installed as detailed in 760.52 (B) (1), (2), or (3) of this section. Devices shall be installed in accordance with 110.3(B), 300.11(A) and 300.15.

(1) Exposed or Fished in Concealed Spaces. In raceway or exposed on the surface of ceiling and sidewalls or fished in concealed spaces, cable splices or terminations shall be made in listed fittings, boxes, enclosures, fire alarm devices, or utilization equipment. Where installed exposed, cables shall be adequately supported and installed in such a way that maximum protection against physical damage is afforded by building construction such as baseboards, door frames, ledges, and so forth. Where located within 2.1 m (7 ft) of the floor, cables shall be securely fastened in an approved manner at intervals of not more than 450 mm (18 in.).

(2) Passing through a Floor or Wall. In metal raceways or rigid nonmetallic conduit where passing through a floor or wall to a height of 2.1 m (7 ft) above the floor, unless adequate protection can be afforded by building construction such as detailed in 760.52 (B) (1) or unless an equivalent solid guard is provided.

(3) In Hoistways. In rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, or electrical metallic tubing where installed in Hoistways.

760.58 Support of Conductors.

Power-limited fire alarm circuit conductors shall not be strapped, taped, or attached by any means to the exterior of any conduit or other raceway as a means of support.

760.2 Definitions.

Abandoned Fire Alarm Cable - Installed fire alarm cable that is not terminated at equipment other than a connector and not identified for future use with a tag. This definition was added in the 2002 edition for use with:

760.3 (A) Spread of Fire or Products of Combustion: Section 300.21 “The accessible portion of abandoned fire alarm cables shall be removed”. Abandoned cable increases fire loading unnecessarily, and, where installed in plenums, it can affect air flow. This shall also apply to support boxes, fire alarm devices, etc.

II. Support Boxes for Devices:

314.23 Supports.

(D) Suspended Ceilings. An enclosure mounted to structural or supporting elements of a suspended ceiling shall be not more than 1650 cm³ (100 in.³) in size and shall be securely fastened in place in accordance with either (D) (1) or (D) (2).

(1) Framing Members. An enclosure shall be fastened to the framing members by mechanical means such as bolts, screws, or rivets, or by the use of clips or other securing means identified for use with the type of ceiling framing member(s) and enclosure(s) employed. The framing members shall be adequately supported and securely fastened to each other and to the building structure.

(2) Support Wires. The installation shall comply with the provisions of 300.11(A). The enclosure shall be secured, using methods identified for the purpose, to ceiling support wire(s), including any additional support wire(s) installed for that purpose. Support wire(s) used for enclosure support shall be fastened at each end so as to be taut within the ceiling cavity.

Plastic (PVC) utility boxes SHALL NOT be installed in any application where environmental air is served.

314.20 In Wall or Ceiling.

In walls or ceilings with a surface of concrete, tile, gypsum, plaster, or other noncombustible material, boxes employing a flush type cover or faceplate shall be installed so that the front edge of the box, plaster ring, extension ring or listed extender will not be set back of the finished surface more than 6 mm (¼ in.).

In walls and ceilings constructed of wood or other combustible surface material, boxes, plaster rings, extension rings or listed extenders shall be flush with the finished surface or project there from.

III. Protection against Physical Damage:

300.4 Protection against Physical Damage: Where subject to physical damage, conductors shall be protected.

300.4 (B) Nonmetallic-Sheathed Cables and Electrical Nonmetallic Tubing through Metal Framing Members

(1) Nonmetallic-Sheathed Cable. In both exposed and concealed locations where nonmetallic-sheathed cables pass through either factory or field punched, cut, or drilled slots or holes in metal members, the cable shall be protected by listed bushings or listed grommets covering all metal edges that are securely fastened in the opening prior to installation of the cable. This should also include metal boxes as well.

300.4 (D) Cables and Raceways Parallel to Framing Members & Furring Strips

(D) Cables and Raceways Parallel to Framing Members. In both exposed and concealed locations, where a cable- or raceway-type wiring method is installed parallel to framing members, such as joists, rafters, or studs, the cable or raceway shall be installed and supported so that the nearest outside surface of the cable or raceway is not less than 32 mm (1¼ in.) from the nearest edge of the framing member where nails or screws are likely to penetrate. Where this distance cannot be maintained, the cable or raceway shall be protected from penetration by nails or screws by a steel plate, sleeve, or equivalent at least 1.6 mm (1/16 in.) thick.

It is the responsibility of the fire alarm contractor to recognize, understand and practice the installation standards prescribed in NFPA 70, The National Electrical Code to ensure the reliability, survivability and serviceability of fire alarm and life safety systems.

Any omission or error by the Fire Department should not be misinterpreted as permission to install a system incorrectly.

Upon Arrival of Fire Inspector for Final Acceptance Test:

- Fire alarm contractor will provide a ladder for the inspector's use.
- Ceiling tile shall be removed closest to each fire alarm device for inspection.
- All fire alarm testing will be performed on battery power.
- Inspections and tests before 8:00 AM and after 5:00 PM are available for an additional fee.

If you have any questions, or require additional information please call:

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