



NFPA 2 Hour Fire-Rated Cable Code Requirements

NFPA 70

700.16(B) System Reliability. Emergency lighting systems shall be designed and installed so that the failure of any illumination source cannot leave in total darkness any space that requires emergency illumination. Control devices in the emergency lighting system shall be listed for use in emergency systems. Listed unit equipment in accordance with 700.12(F)(I) shall be considered as meeting the provisions of this section.

708.14 Wiring of HVAC, Fire Alarm, Security, Emergency Communications, and Signaling systems. All conductors or cables shall be installed using any of the metal wiring methods permitted by 708.10 (C) (1) and, in addition, shall comply with the following, as applicable:

- (1) All cables for fire alarm, security, signaling systems, and emergency communications shall be shielded twisted pair cables or installed to comply with the performance requirements of the system.
- (2) Shields of cables for fire alarm, security, signaling systems, and emergency communications shall be arranged in accordance with the manufacturers published installation instructions.
- (3) Optical fiber cables shall be used for connections between two or more buildings on the property and under single management.
- (4) A listed primary protector shall be provided on all communications circuits.
- (5) Conductors, for all control circuits shall use relays with contact ratings that exceed circuit voltage and current ratings in the controlled circuit.
- (6) Communications, fire alarm, and signaling circuits voltage and current ratings in the controlled circuit.
- (7) All cables for fire alarm, security, and signaling systems shall be riser-rated and shall be listed 2 hour electrical circuit protective system. Emergency communications cables shall be Type CMR-CI or shall be riser rated and shall be listed 2 hour electrical circuit protective system.
- (8) Control, monitoring, and power wiring to HVAC systems shall be a listed 2 hour electrical circuit protective system.

NFPA 72

24.3.13.9.1 Area of Refuge emergency communications systems shall have a pathway survivability of Level 2 or Level 3. (Level 1 is permitted where the building is less than 2 hour fire-rated construction)

12.4.3 Pathway Survivability Level 2 shall consist of one or more of the following:

- (1) 2 hour fire-rated circuit integrity (CI) or fire-resistive cable
- (2) 2 hour fire-rated cable system (electrical circuit protective systems)
- (3) 2 hour fire-rated enclosure or protected area
- (4) performance alternatives approved by the authority having jurisdiction

12.4.4 Pathway Survivability Level 3: shall consist of pathways in buildings that are fully protected by an automatic sprinkler system in accordance with NFPA 13 and one or more of the following.

- (1) 2 hour fire-rated circuit integrity (CI) or fire-resistive cable.
- (2) 2 hour fire-rated cable system (electrical circuit protective systems)
- (3) 2 hour fire-rated enclosure or protected area
- (4) performance alternatives approved by the authority having jurisdiction

NFPA 130

12.5 Fire-Resistive Cables

12.5.1 Fire-resistive cables shall be certified or listed as having been tested to the normal (ASTM E119) time-temperature curve in accordance with ANSI/UL 2196.

12.5.2 The cables shall comply with the requirements for no less than a 1 hour fire resistance rating when tested in accordance with ANSI/UL 2196.

12.5.3 The cables and systems shall comply with the following:

- (1) Be tested as a complete system, in both the vertical and horizontal orientation, of conductors, cables, and raceways, as applicable.
- (2) For fire-resistive cables intended for installation in a raceway, be tested in the type of raceway in which they are intended to be installed.
- (3) Have installation Instructions that describe the tested assembly, with only the components included in the tested assembly acceptable for installation.

NFPA 502

12.1.2 Emergency circuits installed in a road tunnel and ancillary areas shall remain functional for a period of not less than 1 hour for the anticipated fire condition by one of the following methods:

(1) Fire-resistive cables shall be approved or listed for no less than 2 hours when tested to time-temperature curve of ASTM E119, Standard test methods for Fire Tests of Building Construction and Materials, in accordance with ANSI/UL 2196, Standard for Fire Test for Circuit Integrity of Fire Resistive Power, Instrumentation, Control and Data Cables, or other approved, recognized standards, as follows:

(a) Fire-resistive cables shall be tested as a complete system, in both vertical and horizontal orientations, on conductors, cables, and raceways applicable.

(b) Fire-resistive cables intended for installation in a raceway shall be tested in the type of raceway in which they are intended to be installed.

(c) Each fire-resistive cable system shall have installation instructions that describe the tested assembly with only the components included in the tested assembly acceptable for installations.

(2) Circuits shall be protected by a 2 hour fire barrier system in accordance with UL 1724, Outline of Investigation for Fire Tests for Electrical Circuit Protective Systems. The cable or conductors shall maintain functionality at the operating temperature within the fire barrier system.

12.1.4 The Electrical systems shall maintain ventilation, lighting, communications, drainage, a fixed water-based fire extinguishing system, fire alarm and fire detection, exit signs, traffic control, and others for areas of refuge, exits, and exit routes, under all normal and emergency modes associated with the facility.

Installation Per Article 760:

760.24(A) General

Fire alarm circuits shall be installed in a neat workmanlike manner. Cables and conductors installed exposed on the surface of ceiling 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, cable ties, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also comply with 300.4(D).

760.24(B) Circuit Integrity (CI) Cable

Circuit Integrity (CI) cables shall be supported at a distance not exceeding 610mm (24in). Where located within 2.1m (7ft) of the floor, as covered in 760.53(A) (1) and 760.130(1), as applicable, the cable shall be fastened in an approved manner at intervals of not more than 450mm (18in.). Cable supports and fasteners shall be steel.

760.5 Locate cables so they do not prevent the removal of ceiling panels for access to electrical equipment.

760.6 Install equipment and cabling in a neat and workmanlike manner and support them. If you install cables on the exposed surface of ceilings and sidewalls, support them by the structural components of the building in a manner that prevents damage from normal use. You can secure the cables to structural components by straps, staples, hangers, or similar fittings designed and installed so as not to damage the cable.

If you install cables next to framing members, you must protect them against physical damage from penetration by screws or nails by 1-1/4 in. separation from the face of the framing member or by a suitable metal plate per 300.4(D).

Authorities Having Jurisdiction (AHJ) should always be consulted before installation.