(2) Where encased in not less than 50 mm (2 in.) of concrete, any of the following wiring methods shall be permitted:

a. Schedule 40 or Schedule 80 rigid polyvinyl chloride conduit (PVC)
b. Reinforced thermosetting resin conduit (RTRC)
c. Electrical metallic tubing (EMT)
d. Flexible nonmetallic or jacketed metallic raceways
e. Jacketed metallic cable assemblies listed for installation in concrete

(3) Where provisions must be made for flexibility at equipment connection, one or more of the following shall also be permitted:

a. Flexible metal fittings
b. Flexible metal conduit with listed fittings
c. Liquidtight flexible metal conduit with listed fittings

Δ **(2) Fire Protection for Feeders.** Feeders shall meet one of the following conditions:

(1) The cable or raceway is protected by a listed electrical circuit protective system with a minimum 2-hour fire rating.

Informational Note No. 1: See UL 1724, *Fire Tests for Electrical Circuit Protective Systems*, for one method of defining an electrical circuit protective system, by establishing a rating when tested. UL *Guide Information for Electrical Circuit Integrity Systems* (FHIT) contains information to identify the system and its installation limitations to maintain a minimum 2-hour fire resistive rating.

(2) The cable or raceway is a listed fire-resistive cable system with a minimum 2-hour fire rating.

Informational Note No. 2: See UL 2196-2017, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for testing requirements for fire-resistive cables.

Informational Note No. 3: The listing organization provides information for fire-resistive cable systems on proper installation requirements to maintain the fire rating.

(3) The cable or raceway is protected by a listed fire-rated assembly that has a minimum fire rating of 2 hours.

Unlike the emergency system feeders covered in Article 700, COPS feeders are required to employ another fire protection technique even where located in building spaces that are fully protected by a fire suppression system.

The feeder-circuit wiring requires a minimum 2-hour fire rating provided by a listed electrical circuit protective system or a listed fire-rated assembly unless encased in 2 inches of concrete.

It is important to understand the difference between a 2-hour fire rating of an electrical circuit, such as a conduit with wires, and a 2-hour fire resistance rating of a structural member, such as a wall. At the end of a 2-hour fire test on an electrical conduit with wires, its insulation must be intact and the circuit must function electrically; no short circuits, grounds, or opens are permitted. A wall subjected to a 2-hour fire resistance test must only prevent a fire from passing through or past the wall, without regard to damage to the wall. All fire ratings and fire resistance ratings are based on the assumption that the structural supports for the assembly are not impaired by the effects of the fire.

Listed electrical circuit protective systems are described in the UL *Guide Information for Electrical Equipment*. The four-letter codes (shown in parentheses) are the UL product category guide designations. Examples of these systems include electrical circuit protective systems (FHIT), electrical circuit protective materials (FHIY), and fire-resistive cables (FHJR). Circuit integrity cable is covered under category FHJR.

(4) The cable or raceway is encased in a minimum of 50 mm (2 in.) of concrete.

(3) Floodplain Protection. Where COPS feeders are installed below the level of the 100-year floodplain, the insulated circuit conductors shall be listed for use in a wet location and be installed in a wiring method that is permitted for use in wet locations.

(D) COPS Branch Circuit Wiring.

(1) *Outside the DCOA.* COPS branch circuits installed outside the DCOA shall comply with the physical and fire protection requirements of 708.10(C)(1) through (C)(3).

(2) *Within the DCOA.* Any of the wiring methods recognized in Chapter 3 of this *Code* shall be permitted within the DCOA.

708.11 Branch Circuit and Feeder Distribution Equipment.

(A) Branch Circuit Distribution Equipment. COPS branch circuit distribution equipment shall be located within the same DCOA as the branch circuits it supplies.

(B) Feeder Distribution Equipment. Equipment for COPS feeder circuits (including transfer equipment, transformers, and panelboards) shall comply with the following:

(1) Be located in spaces with a 2-hour fire resistance rating

(2) Be located above the 100-year floodplain

708.12 Feeders and Branch Circuits Supplied by COPS. Feeders and branch circuits supplied by the COPS shall supply only equipment specified as required for critical operations use.

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.