CHAPTER 8: COMMUNICATIONS SYSTEMS

Chapter 8 of the National Electrical Code covers the wiring requirements for communications systems such as telephones, radio and TV antennas, satellite dishes, closed-circuit television (CCTV), and cable TV (CATV) systems, as well as network-powered broadband communications systems, not under the exclusive control of the communications utility.

Communications systems aren’t subject to the general requirements contained in Chapter 1 through Chapter 4 or the special requirements of Chapter 5 through Chapter 7, except where there’s a specific reference in Chapter 8 to a rule in one of those chapters [90.3].

Also, installations of communications equipment under the exclusive control of communications utilities located outdoors, or in building spaces used exclusively for such installations, are exempt from the NEC [90.2(B)(4)].

ARTICLE 800

COMMUNICATIONS CIRCUITS

This article has its roots in telephone technology. Consequently, it addresses telephone and related systems that use twisted-pair wiring. Here are a few key points that you need to remember from Article 800:

- Don’t attach incoming cables to the service entrance power mast.
- It is critical to determine the “point of entrance” for these circuits.
- You must ground the primary protector as close as practicable to the point of entrance.
- Keep the grounding conductor for the primary protector as straight and as short as possible.
- If you locate cables above a suspended ceiling, route and support them to allow access via panel removal.
- Keep these cables separated from lightning-protection circuits.
- If you install cables in a Chapter 3 raceway, you must do so in conformance with the NEC requirements for the raceway system.
- Special labeling and marking provisions apply—follow them carefully.

PART I. GENERAL

800.3 Other Articles

- Text revised to specify that the accessible portion of communications cables must be removed.
  
(C) Spread of Fire or Products of Combustion.
To limit the spread of fire or products of combustion within a building, the accessible portion of optical fiber cable that isn’t terminated at equipment and not identified for future use with a tag must be removed. (Figure 800-1)

Author’s Comment: This rule doesn’t require the removal of concealed cables that are abandoned in place.

800.24 Mechanical Execution of Work

- New FPN alerts the Code user to a comprehensive standard that identifies what “installed in a neat and workmanlike manner” means.
  
Equipment and cabling must be installed in a neat and workmanlike manner.

FPN: Information describing industry practices can be found in ANSI/NECA/BICSI 568, Standard for Installing Commercial Building Telecommunications Cabling.
PART IV. GROUNDING METHODS

800.100 Cable and Primary Protector Grounding

• New FPN alerts the Code user that limiting the length of the grounding conductor for the primary protector should reduce voltages that may develop between the building’s power and communications systems during a lightning event.

(A) Grounding Conductor. The grounding conductor must be:

(4) Length. The grounding conductor must be as short as practicable. In one- and two-family dwellings, the grounding conductor cannot exceed 20 ft. (Figure 800-2)

FPN: Limiting the length of the grounding conductors reduce differences in potential between the building’s power and communications systems during lightning events.

Ex: Where it isn’t practicable to limit the grounding conductor to 20 ft for one- and two-family dwellings, a separate ground rod not less than 5 ft. long [800.100(B)(2)(2)] with fittings for the application [800.100(C)] must be installed. The additional ground rod must be bonded to the power grounding electrode system with a minimum 6 AWG conductor [800.100(D)].

ARTICLE 810

RADIO AND TELEVISION EQUIPMENT

This article has its roots in communications. Consequently, it addresses transmitter and receiver equipment—and wiring and cabling associated with that equipment.

Here are a few key points to remember from Article 810:

• Avoid contact with conductors of other systems.
• Don’t attach antennas or other equipment to the service entrance power mast.
• If you do not ground the mast properly, voltage surges caused by nearby lightning strikes could destroy it.
• Keep the grounding conductor straight, and protect it from physical damage.
• If you do not bond the mast properly, you risk flashovers and possible electrocution.
• Keep in mind that the purpose of bonding is to prevent a difference of potential between metallic objects and other conductive items, such as swimming pools. Thus, Article 810 provides several different bonding requirements.
• Clearances are critical. Article 810 provides extensive clearance requirements. For example, it provides separate clearance requirements for indoor and outdoor locations.