

U.S. Fire Administration / National Fire Academy

Coffee Break Training

Topic: Protecting Electrical Conductors

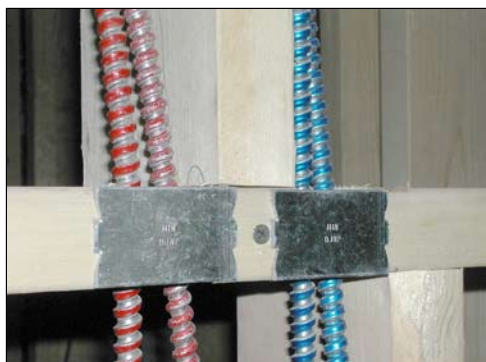
Learning objective: The student shall be able to identify required physical protection for electrical conductors.

The flexible metal conduit (FMC) pictured here meets the NFPA 70, National Electrical Code® (NEC) definition of a “raceway”: an enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or bus-bars.

When electrical wires or raceways are installed in combustible construction members like this wood-frame wall, the electrical equipment must be protected from nails or screws that can be driven into the wires.

The NEC recognizes two methods for protecting electrical wires and raceways in wooden members:

- By boring holes in joists, rafters, studs or other wood members so the hole is at least 1-1/4-inch (32 mm) from the nearest edge of the wooden member, or,
- As illustrated, the cable or raceway is protected from penetration by a steel plate or bushing at least 1/16-inch (1.6 mm) thick, and that is long and wide enough to cover the area of the wiring.



The NEC allows an exception for rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit, and electrical metallic tubing, all of which are defined in the NEC.

Code officials who identify arrangements where the wiring could be damaged should report this finding to the electrical inspection authority in their jurisdiction.

For additional information, refer to NFPA 1, Uniform Fire Code®, Chapter 11; International Fire Code®, Chapter 6; or NFPA 70, Article 300.