

be secured to prevent horizontal movement or sway. The intention is to prevent the loss of grounding continuity provided by the raceway that could result from horizontal movement.

Sections 300.11(B)(1) and (B)(2) are quite similar. Unless the exceptions apply, these sections prohibit all types of wiring from being attached in any way to the support wires of a ceiling assembly or ceiling grid not part of the building structure.

Refer to the appropriate wiring method article in Chapter 3 for cable and raceway supporting requirements.

#### See also

**Article 410, Part IV**, for the proper support of luminaires

**314.23** for the support of outlet boxes

**760.24** and **770.24** for various low-voltage fire alarm and optical fiber cable supports

**800.110(C)** for requirements on communications systems cable supports

**(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 and shall be permitted to be attached to the assembly. Where independent support wires are used, they shall be distinguishable by color, tagging, or other effective means.

*Exception: The ceiling support system shall be permitted to support branch-circuit wiring and associated equipment where installed in accordance with the ceiling system manufacturer's instructions.*

**(C) Raceways Used as Means of Support.** Raceways shall be used only as a means of support for other raceways, cables, or nonelectrical equipment under any of the following conditions:

- (1) Where the raceway or means of support is identified as a means of support
- (2) Where the raceway contains power supply conductors for electrically controlled equipment and is used to support Class 2 or Class 3 circuit conductors or cables that are solely for the purpose of connection to the equipment control circuits
- (3) Where the raceway is used to support boxes or conduit bodies in accordance with 314.23 or to support luminaires in accordance with 410.36(E)

As a general rule, this section prohibits supporting cables by securing them to the exterior of a raceway. Electrical, telephone, and data cables wrapped around a raceway can impede dissipation of heat from the raceway, thus affecting the temperature of the conductors contained in the raceway. The weight from large bundles of cables can compromise the mechanical integrity of the raceway system. For those reasons, this section also prohibits the use of a raceway as a means of support for nonelectrical equipment, such as suspended ceilings, water pipes, and signs.

Class 2 conductors or cables are allowed to be supported by a raceway as long as the power supply conductors are inside the

raceway or functionally associated with the attached Class 2 circuit conductors. For example, the thermostat conductors for heating or air-conditioning units are permitted to be supported by the conduit supplying power to the unit.

**(D) Cables Not Used as Means of Support.** Cable wiring methods shall not be used as a means of support for other cables, raceways, or nonelectrical equipment.

**300.12 Mechanical Continuity — Raceways and Cables.** Raceways, cable armors, and cable sheaths shall be continuous between cabinets, boxes, conduit bodies, fittings, or other enclosures or outlets.

*Exception No. 1: Short sections of raceways used to provide support or protection of cable assemblies from physical damage shall not be required to be mechanically continuous.*

*Exception No. 2: Raceways and cables installed into the bottom of open bottom equipment, such as switchboards, motor control centers, and floor or pad-mounted transformers, shall not be required to be mechanically secured to the equipment.*

**300.13 Mechanical and Electrical Continuity — Conductors.**

**(A) General.** Conductors in raceways shall be continuous between outlets, boxes, devices, and so forth. There shall be no splice or tap within a raceway unless permitted by 300.15, 368.56(A), 376.56, 378.56, 384.56, 386.56, 388.56, or 390.56.

**(B) Device Removal.** In multiwire branch circuits, the continuity of a grounded conductor shall not depend on device connections such as lampholders, receptacles, and so forth where the removal of such devices would interrupt the continuity.

Grounded conductors (neutrals) of multiwire branch circuits supplying receptacles, lampholders, or other devices are not permitted to depend on terminal connections for continuity between devices. For multiwire installations, a splice can be made with a jumper connected to the terminal or the neutral can be looped. This allows a receptacle or device to be replaced without interrupting the continuity of energized downstream line-to-neutral loads. Opening the neutral could cause unbalanced voltages, and a considerably higher voltage would be impressed on one part of a multiwire branch circuit, especially if the downstream line-to-neutral loads were appreciably unbalanced.

**300.14 Length of Free Conductors at Outlets, Junctions, and Switch Points.** At least 150 mm (6 in.) of free conductor, measured from the point in the box where it emerges from its raceway or cable sheath, shall be left at each outlet, junction, and switch point for splices or the connection of luminaires or devices. The 150 mm (6 in.) free conductor shall be permitted to be spliced or unspliced. Where the opening to an outlet, junction, or switch point is less than 200 mm (8 in.) in any dimension, each conductor shall be long enough to extend at least 75 mm (3 in.) outside the opening.