

27. The building or structure grounding electrode system shall be used as the _____ electrode for the separately derived system.
- (a) grounding
 - (b) bonding
 - (c) grounded
 - (d) bonded
28. The common grounding electrode conductor installed for multiple separately derived systems shall be permitted to be the metal structural frame of the building or structure that complies with 250.68(C)(2) or is connected to the grounding electrode system by a conductor not smaller than _____.
- (a) 3/0 AWG copper
 - (b) 250 kcmil aluminum
 - (c) a or b
 - (d) none of these
29. Metal in-ground support structures permitted as grounding electrodes include, but aren't limited to, pilings, casings, and other _____.
- (a) water piping
 - (b) gas piping
 - (c) structural metal
 - (d) none of these
30. When a ground ring is used as a grounding electrode, it shall be installed at a depth below the earth's surface of not less than _____.
- (a) 18 in.
 - (b) 24 in.
 - (c) 30 in.
 - (d) 8 ft
31. A(n) _____ AWG or larger copper or aluminum grounding electrode conductor exposed to physical damage shall be protected in rigid metal conduit, IMC, PVC conduit, reinforced thermosetting resin conduit Type XW (RTRC-XW), EMT, or cable armor.
- (a) 10
 - (b) 8
 - (c) 6
 - (d) 4
32. If a building or structure is supplied by a service or feeder with _____ or more disconnecting means in separate enclosures, the grounding electrode connections shall be made in accordance with 250.64(D)(1), 250.64(D)(2), or 250.64(D)(3).
- (a) one
 - (b) two
 - (c) three
 - (d) four
33. Bonding jumper(s) from grounding electrode(s) shall be permitted to be connected to an aluminum or copper busbar not less than _____ and of sufficient length to accommodate the number of terminations necessary for the installation in accordance with 250.64(F).
- (a) 1/8 in. thick x 1 in. wide
 - (b) 1/8 in. thick x 2 in. wide
 - (c) 1/4 in. thick x 1 in. wide
 - (d) 1/4 in. thick x 2 in. wide
34. Interior metal water piping that's electrically continuous with a metal underground water pipe electrode and is located more than _____ ft from the point of entrance to the building shall not be used as a conductor to interconnect electrodes of the grounding electrode system.
- (a) 2
 - (b) 4
 - (c) 5
 - (d) 6
35. Metal components in a run of an underground nonmetallic raceway and isolated from possible contact by a minimum cover of _____ in. to all parts of the metal components shall not be required to be connected to the grounded system conductor, supply-side bonding jumper, or grounding electrode conductor.
- (a) 6
 - (b) 12
 - (c) 18
 - (d) 24

36. Communications system bonding termination connections to an aluminum or copper busbar must not be less than ¼ in. thick x 2 in. wide and be of sufficient length to accommodate at least _____ terminations for communications systems in addition to other connections.
- (a) two
 - (b) three
 - (c) four
 - (d) five
37. Equipment bonding jumpers shall be of copper, aluminum, copper-clad aluminum, or other corrosion-resistant material.
- (a) True
 - (b) False
38. The bonding jumper used to bond the metal water piping system shall be sized in accordance with _____, except as permitted in 250.104(A)(2) and 250.104(A)(3).
- (a) Table 250.102(C)(1)
 - (b) Table 250.122
 - (c) Table 310.15(B)(16)
 - (d) Table 310.15(B)(6)
39. Metal gas piping installed in or attached to a building shall be considered bonded when one or more grounding electrodes are used, if the grounding electrode conductor or bonding jumper to the grounding electrode is of sufficient size.
- (a) True
 - (b) False
40. Metal water piping systems and structural metal that's interconnected to form a building frame shall be bonded to separately derived systems in accordance with 250.104(D)(1) through 250.104(D)(3).
- (a) True
 - (b) False
41. If exposed structural metal that's interconnected to form the building frame exists in the area served by the separately derived system, it shall be bonded to the grounded conductor of each separately derived system and each bonding jumper shall be sized in accordance with Table 250.102(C)(1) based on the largest ungrounded conductor of the service.
- (a) True
 - (b) False
42. Where circuit conductors are installed in parallel in multiple raceways or cables and include an EGC of the wire type, the equipment grounding conductor must be installed in parallel in each raceway or cable, sized in compliance with 250.122 based on the overcurrent protective device for the feeder or branch circuit.
- (a) True
 - (b) False
43. Except as provided in 250.122(F)(2)(b) for raceway or cable tray installations, the equipment grounding conductor in each multiconductor cable shall be sized in accordance with 250.122 based on the _____.
- (a) largest circuit conductor
 - (b) overcurrent protective device for the feeder or branch circuit
 - (c) smallest branch circuit conductor
 - (d) overcurrent protective device for the service

CHAPTER 3— WIRING METHODS AND MATERIALS

44. For locations not specifically identified in Table 300.5, a lesser cover depth than required in Column 5 shall be permitted where specified in the installation instructions of a(n) _____ low-voltage lighting system.
- (a) approved
 - (b) labeled
 - (c) listed
 - (d) none of these

45. For locations not specifically identified in Table 300.5, a cover depth of _____ in. shall be permitted for pool, spa, and fountain lighting, installed in a nonmetallic raceway, limited to not more than 30V where part of a listed low-voltage lighting system.
- (a) 6
 - (b) 12
 - (c) 18
 - (d) 24
46. Where raceways or cables are exposed to direct sunlight on or above rooftops, raceways or cables shall be installed a minimum of _____ in. above the roof to the bottom of the raceway or cable.
- (a) $\frac{1}{4}$
 - (b) $\frac{1}{2}$
 - (c) $\frac{3}{8}$
 - (d) $1\frac{1}{8}$
47. The wiring space within enclosures for switches and overcurrent devices shall be permitted for other wiring and equipment subject to limitations for specific equipment as provided in _____.
- (a) 312.8(A)
 - (b) 312.8(B)
 - (c) a and b
 - (d) none of these
48. _____ drainage openings not smaller than $\frac{1}{8}$ in. and not larger than $\frac{1}{4}$ in. in diameter shall be permitted to be installed in the field in boxes or conduit bodies listed for use in damp or wet locations.
- (a) Listed
 - (b) Approved
 - (c) Labeled
 - (d) Identified
49. When calculating box fill, each space within a box installed with a barrier shall be calculated separately.
- (a) True
 - (b) False
50. Outlet boxes required in 314.27 shall be permitted to support _____ locking, support, and mounting receptacles used in combination with compatible attachment fittings.
- (a) identified
 - (b) listed
 - (c) approved
 - (d) labeled
51. Unless otherwise specified, the applicable product standards evaluate the fill markings covered in 314.28(A)(3), based on conductors with Type _____ insulation.
- (a) THHW
 - (b) RHW
 - (c) THHN
 - (d) XHHW
52. Type MC cable shall be supported and secured by staples; cable ties _____ for securement and support; straps, hangers, or similar fittings; or other approved means designed and installed so as not to damage the cable.
- (a) listed
 - (b) identified
 - (c) a and b
 - (d) none of these
53. Nonmetallic-sheathed cable shall be permitted to be unsupported where the cable is _____.
- (a) fished between access points through concealed spaces in finished buildings or structures and supporting is impracticable
 - (b) not more than 4½ ft from the last point of cable support to the point of connection to a luminaire or other piece of electrical equipment and the cable and point of connection are within an accessible ceiling in one-, two-, or multifamily dwellings
 - (c) a and b
 - (d) none of these
54. Type TC-ER cable used for interior wiring in one- and two-family dwelling units that's suitable for pulling through structural members is marked "TC-ER-JP."
- (a) True
 - (b) False