

Rocky Mountain Chapter IAEI
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1. A 2" PVC conduit was installed in the ground prior to setting a factory manufactured home on the foundation. The required service is 100 amps. Can 1 1/4" PVC reducing bushings be installed at the 90-degree elbows for 1 1/4" PVC runs to the panel and service equipment?
Yes; 352.6, 300.12, 300.18, 110.12
2. Does the NEC limit the length of the raceway between pull or junction boxes?
No
3. Why are NEMA standards not recognized as a nationally recognized testing laboratory (NRTL) by OSHA? Why is there no identifying mark on the equipment to indicate the product meets NEMA standards?
NEMA is not a Testing Laboratory
4. Is the food serving areas located in front of food preparation area used solely for handling of cash and distribution of food purchases by customers considered kitchen area's which require GFCI protection for receptacles?
No; 210.8(B)
5. May the wiring for a receptacle that is on the same circuit as the fluorescent fixtures run through and beyond the fixtures?
Yes if listed for the purpose; 410.31
6. Are standard conduit lock nuts approved for grounding continuity requirements (some do not score the painted surface of junction boxes when cinched down)?
Yes; 250.96(A)
7. How often do AFCI breakers need to be tested?
Look at manufacturers recommendations (most are twice a year)
8. A kitchen waste disposal nameplate states: 1/4 hp, 120 volts, 60hz, 11.2 amps. Should the disconnect switch be sized to the hp rating or the full load current?
Either one; 430.109(C)
9. If wire nuts used for a circuit are not marked 75 deg. C are the circuit conductors limited to 60 deg. C?
No; 110.14(B)(C)

10. Could a recessed lighting fixture contaminated by paint or texture be used if the socket and thermal overload is cleaned or does the entire inner surface need to be cleaned?
No; if the fixture is cleaned it may violate the listing and need to be replaced, 110.11
11. Does NEC 300.5 apply for burial depth requirements for the upper floors of a parking garage? *No* Can NMC *No*, PVC coated MC or LFNC be used? *Yes if listed.*
12. Is it a violation of the NEC to separate the stripped end of a conductor that is too large to fit into a neutral bus bar terminal and install it into two side-by-side terminals?
Yes, 110.3(B)
13. An A/C condenser nameplate requires a minimum circuit ampacity of 28 amps and maximum OC protection of 40 amps. Can a #10 cu wire be protected at 40 amps for this installation?
Yes; 440.4(B), 440.33
14. Can 4/0 AL conductors be spliced in a LB conduit body?
No; 314.16(C)(2)
15. Are fuse reducers listed and allowed by the NEC?
Yes
16. Is NM cable allowed in a raceway from a disconnect switch to an A/C condenser installed outside in a wet location?
No; 334.12(A)
17. Do disconnects for heating units installed above a t-grid ceiling need the 36" working space in front? If yes, then how can this be achieved when the main T's cannot be removed for access or a duct is installed less than 36" in front of the disconnecting means?
Yes; 110.26
18. A basement is finished except for the concrete floor which remains original. Is GFCI protection required for all 120volt outlets in this area?
19. Is a transformer considered serviceable equipment subject to the working clearances of NEC 110.26(A)?

20. Are there any recessed troffers or can luminaires that are listed for use in a fire rated ceiling?
21. Does the NEC allow a 4" square box for t-grid lighting fixture branch circuit conductors to be attached to the t-grid if a support bracket made for this purpose is used?
22. An electric floor heat system for a bathroom utilizes a transformer with a 30 volt secondary for the heat coils. Will GFCI protection on the primary only, be compliant?
23. Are sump pump motors and sub-floor ventilation fans allowed to be protected by GFCI devices?
24. A hot tub is surrounded by a wooden fence with metal poles that are within 5' of the waters edge. Do all of the metal poles need to be bonded to the equipotential grid?
25. Are all lighting fixtures required to be listed and labeled?
26. Is a warning ribbon required to be installed above underground service conductors between a meter/main at the property line and the disconnecting means at the house?
27. Should clothes closets with no lights or receptacles to be included in the square footage area calculations for AFCI circuit coverage?
28. Lots of low voltage wiring is being installed in houses. Is the enforcement for bored holes, notch plates and running boards the same as for line voltage romex?
29. A clothes dryer is rated at 8000 watts. Does the branch circuit ampacity need to be multiplied by 125% for continuous duty?
30. How can manufacturers get a listing on equipment when terminal blocks (the same as we use and are limited by code to a single conductor per terminal) are connected with multiple conductors in each terminal hole for circuits to equipment and devices?

31. Can the concrete pillars used to support a manufactured home be used for the Ufer grounding electrode?
32. Does the NEC allow a sub-panel to be installed in a craw space of a single-family residence?
33. Why does a 20 amp, 120-volt receptacle installed behind a gas range in a commercial kitchen need GFCI protection since it is not accessible?
34. A residential furnace is located in the crawl space with a GFCI receptacle within 25' of the equipment. A simplex receptacle is installed for the A/C condensate pump and is not GFCI protected. Is this a violation?
35. Is a standard 4" square box with KO's acceptable as a pendant box hanging from type SO cord?
36. Solar panels and a backup generator power a residence only. What are the grounding electrode requirements? Is this considered a separately derived system?
37. Is a disconnect switch used for a HVAC unit located 80' from the panel required to have working clearance in front of the panel? This disconnect contains no fuses and would not normally require servicing.
38. Is it acceptable to install a low voltage control switch for a gas log in the same box with the 120-volt switch for lighting?
39. Are the locations of smoke detectors mandated in the NEC?
40. Can a 30-amp water heater use a cord connector and receptacle as the disconnecting means?
41. The requirement for a GFCI receptacle for a swamp cooler on a roof is not uniformly enforced in many jurisdictions because of rumors that it may be removed at the next code change, is this true?
GFCI is required; it may be changed in the next code cycle

42. Rumor has it that the State of Wyoming does not require U/L listed signs. Isn't this a violation of the NEC?
The rumor is false, it is a violation of the NEC; 600.3
43. What is the proper way to remove the insulation from a 300KCM or larger conductor for termination? A "pencil point" or "ringed method"?
Either, just don't damage the conductors; 110.12, 110.14(A)
44. Will the NEC code panel ever get a better definition for a "bathroom area" and "space" for outlets and lights?
Only if you write one and submit it to the code panel.
45. Is a supplemental ground required for a shed, barn or garage containing power when no metallic water piping exists to the structure?
Before we can really answer we have to clarify some language posed in the question. A "supplemental ground" is assumed to mean a "supplemental grounding electrode" and by the NEC that is covered under 250.53(D). If this is correct, then the answer to the question is no. The supplemental grounding electrode is only required where a metallic water pipe grounding electrode is used. If the questioner meant "supplementary grounding electrode" then that is covered by 250.54 and it is not ever required, but is optional as long as it is installed in accordance with 250.54. Now lastly if the question is about grounding electrode requirements at separate buildings, then that is covered by 250.32 and unless the electric supply to the separate building or structure is a single branch circuit, multiwire branch circuit is considered a single branch circuit, a grounding electrode is required in accordance with 250.50.
46. An old furnace is replaced with a new furnace. The existing furnace circuit has other loads, there is no light at the furnace and there is no receptacle in the room. Do all of the above existing conditions need to be corrected to meet the current NEC regulations for the furnace replacement?
Check with your AHJ
47. Does the NEC regulate the distance requirements for a switch or receptacle from a bathtub or shower?
No; 404.4, 406.8
48. How many linear feet of lighting track can be installed on a 20-amp circuit in a commercial application?
12' Show window, 32' residential; 220.12(a)
49. 4/0 SER cable is paralleled to a single-phase panel to compensate for voltage drop. Is it allowed to use the red and black conductors in one cable for "A" phase and the same configuration in the other cable for "B" phase or does each cable have to carry both phases?
Each cable must carry both phases; 300.3(b)(1)

50. The NEC allows the grounding electrode conductor to be spliced at bus bars. Can it be spliced at the equipment ground bar in a sub panel?
The 2002 NEC does not allow the grounding electrode conductor to be spliced at busbars. It allows busbar stock that is being used as a grounding electrode conductor to be spliced which is different. The only permitted “splicing” of grounding electrode conductors is by irreversible crimp connectors listed for the purpose (meaning listed for grounding and bonding under UL 467) or by the exothermic welding process.
51. Are the receptacles in a horse barn required to be GFCI protected?
Under certain conditions; 547.5(g)
52. Table 402.5 (allowable ampacity of fixture conductors) allows 8 amps for a # 16 AWG conductor. Is it allowed to daisy chain four 2' X 4' fluorescent troffers (at 2.0 amps each) together with 6' fixture whips?
No; 210.19, 402.10, 402.11
53. The service to a commercial building is 600 amps, 120 volts, 3-phase, 4-wire Delta system. The 3-phase motor loads total 175 amps. Can the “wild leg” conductor be reduced to 3/0 copper and fused at 200 amps or does it have to be rated and fused at 600 amps also?
No; 310.15(b)(6)
54. Why does a pool motor plugged into a receptacle require GFCI protection when a direct-wired motor does not? What are the safety differences?
680.21, 680.22
55. Four sets of 350 KCM conductors are installed from a service disconnect to a feeder panel. What difference does it make if a few inches are cut off of some conductors, to closer terminals for a neater installation, when several conductors are paralleled?
The provisions in 310.4 require all the conductors for any phase set to be the same length which is to ensure the equal distribution of current, and therefore the distribution of heat, over each conductor within the set. A change of even a “few inches” can change the overall impedance of the conductors and parallel and therefore force more current to flow on shorter conductors and less current to flow on the longer ones. Since the temperature is found by I^2R even a slight change in current distribution causes a squared function is heat generated. For example a 4% change in current has approximately a 16% change in the amount of heat energy that is created on this shorter (lower impedance) conductor. If there is enough difference, the shorter conductors could have current in excess of the conductor ampacity.

56. Is a service receptacle required in a furnace room located in the middle of a finished residential basement where there are receptacles in other rooms within 25' of the equipment? If so does it need to be GFCI protected?
1st question, No. 2nd question Yes if unfinished, otherwise No.
57. Can a detached garage be fed with a 2-pole, 50-amp feeder when it has more than two circuits or does the 60 amp minimum supply apply?
Yes, if load allows it. 225.5, 225.34
58. A 3' high chest of drawers is permanently installed in the center of a clothes closet, a recessed totally enclosed luminaire is installed in the ceiling directly over it, would this be a violation of the NEC?
Check with the AHJ, 410.8
59. The words "space", "zone" and "area" seem to be used synonymously in NEC 110.26(F). NEC 410.8(A) also used "space" in the definitions. Are the words: "space", "zone" and "area" synonymous for NEC 404.4, 406.8(C), and 410.4(D)?
Look at the dictionary.
60. Where is the point of origin of the equipment-grounding conductor?
Depending on the source of the power system and the location, there are two possibilities. One is the service, and the second is the source of a separately derived system. 250.30(a) & (b)
61. Is there a minimum height requirement for the protection of Romex in a residential garage? *No; 334.15(b), 334.17*
62. Can a 12KW range be fed with # 8 NMC protected by a 2-pole 40-amp breaker?
Yes; 220.4(c)
63. Are 3-way switch legs and travelers counted for conductor fill calculations?
Yes; Table 1, chapter 9. No for derating
64. If a mobile home installation meets the standards of a manufactured home as per 550.32(B), do the requirements of 550.32(C), (D), (E), (F), and (G) apply as well?
Yes; 550.2
65. A service has a grounding electrode conductor to an underground water pipe and a UFER ground. Is a ground rod electrode still required?
No. 250.53(D) specifies that a water pipe grounding electrode must be supplemented by a single additional electrode as specified in 250.52(A)(2) to 250.52(A)(7). The "Ufer" ground (concrete encased electrode) would serve that requirement and an additional ground rod would not be required.

66. An inspector rejects an island receptacle that is located under a counter top with an overhang of 7". The electrician installs another receptacle that is in compliance but leaves the original rejected receptacle installed. Can it remain or does it need to be removed?

Must be removed; 210.52(d)(5)

67. Do the support wires for lay-in-fixtures need to be painted for identification in non-rated t-grid ceilings?

No; 300.11(a)(1)

68. Does a residential hydraulic pool cover motor installed 50' from the pool need to be GFCI protected if the control circuit for the key switch operator located near the pool is GFCI protected?

No; 680.27(b)(1 & 2)

69. I like to use 3-wire NM cable for 3 and 4 way switches. I use the black conductor for the feed and return and the white and red conductors for travelers. My inspector says this is a violation of 200.7(C)(2). Is this a correct interpretation?

No, but he is the AHJ

70. The utility company will only provide a 120/240-volt, 3-phase, 4-wire Delta service for an irrigation well pump motor. A 240-volt Delta to 480 volt Wye step-up transformer is installed near the service for voltage drop and cost efficiency. The service disconnect provides for the transformer primary overcurrent protection. Is secondary overcurrent required at the transformer (the motor is 1400' from the service)?

No; 450.3(b), 240.4(f)

71. Do the 3-way switches for steps need to be located at the top and bottom of the steps in the stairway or can they be in the rooms adjacent to the stairways?

Check with your AHJ. 210.70(a)(2)(c)

72. Is an outdoor receptacle less than 6'6" above grade "accessible" by definition when located above a deck with or without steps to grade (requires approach by elevation)?

Yes with steps, No without steps, 210

73. Can a water proof (jelly jar) type lighting fixture be mounted on the wall of a shower at a height of 6'3" if it is GFCI protected?

Yes; 410.4(a)(b)

74. Is a house, with a calculated load of 35 amps supplied by solar power only, required to have a minimum of a 100 amp service (solar or utility ready)?

No

75. Why are low voltage lighting (less than 30 volts) not permitted to have one leg grounded? **In this case ungrounded systems are safer.**

76. Is there a minimum height requirement for service or equipment disconnecting means?
No
77. Are the feeders for sub-panels sized from tables 310.16 or 310.15?
310.16
78. Where, in the NEC, are the access requirements for a whirlpool motor located?
110.26, Art 100
79. Are field made "MC" lighting whips that are 6' long excepted from the same support rule as factory made fixture whips?
Yes; 330.30
80. Is a farm service pole considered a structure (NEC 250.50)? Are two ground rods required at this location? *A grounding electrode is required. 547.9*
81. Is a grounding electrode system required for a 20amp, 120 volt feed to a garage panel that has three 15-amp breakers (calculated load is less than 20amp)?
Yes. 250.32(a)