WESTERN SECTION ANNUAL MEETING
SEPTEMBER 18-21, 2011
LOUISVILLE, KENTUCKY

1. Please explain the difference between listed and approved as addressed in the NEC.

2. What is the real difference between an Emergency System and a Legally Required Standby System?

3. Are expansion fittings required where a conduit emerges from the ground and runs up a wall to a junction box? For arguments sake, the expansion will exceed ¼ inch. Is the earth considered a "securely mounted item"?

4. Would article 250.56 apply to parking lot pole bases, traffic signal poles and the roadway lighting pole bases that do not have the electrical service on it? Most of the authorities request a ground rod to be installed at each location and attached to the steel or aluminum parts of the pole.

5. Can a dry type transformer be loaded to its full rating (i.e. can a 75 kva transformer be used with 75kva of load) or is the maximum load 80%?

6. Could you explain the difference between primary injection testing of Ground-fault protection and secondary injection testing?

7. Please explain the electronic ballast FCC47cfr class A and B ratings. How critical is it not to use class A type in residential use?

8. Does a satellite TV system fall under Section 810 or 820 and should a permit be issued and inspections made on the installation?

9. I have a 3000 amp generator with no main breaker, the conductors from the generator terminals to the first distribution switchboard is over 115% of the nameplate current of the generator. The overcurrent protection is set at 3200 amps. Is this OK?

10. Can you legally use a roll of NM cable with cord ends installed as an extension cord?

11. What is the separation distance for communication conductors in a raceway from power conductors?

12. Can SO cord be dropped from a bar joist to a display shelf (end cap) and hard-wired to a junction box on that display unit or does it have to be installed in conduit?

13. Can I install GFCI protection on the feeder to a sub-panel for a pool installation instead of the insulated equipment ground conductor in a raceway?

14. What type of "connection" is required for the anchor bolts on a steel column to the re-enforcing steel in the footing for the column to be considered OK for the structural steel to be an approved grounding electrode conductor?

15. If the data cable manufacturers can make a cable with an acceptable covering for air plenums, why can't the electrical cable manufacturers make a non-metallic electrical cable suitable for ceiling air plenums?

16. How many #12 AWG, 2 conductor w/gnd. NM cables can I bundle before it actually affects the size of the overcurrent protection rating for a 20 amp circuit?

17. Why doesn't the Code just do away with allowing non-grounding receptacles and just require replacement with GFCI receptacles and grounding receptacles downstream? Then all the receptacles could be tamper-resistant.

18. A power supplier requires a disconnecting means ahead of the meter (across the line only) for a 277/480 volt service. Can this be considered the service disconnect? Does it have to be used as the service disconnect? What about isolating the neutral from the meter socket enclosure?

19. We are being told that we must GFCI- protect the receptacle for the washing machine if it is located within 6 feet of the laundry sink. Even though we chose to use a single receptacle for the washer, the inspector still won't pass it. Who is correct?

20. Is there a name for the fitting required in 300.4 (G)? Also, what is the identified insulating material?

21. Can a 120/240 volt breaker be installed with one pole landed on the high leg?

22. Do we need to drive a ground rod at a backup generator as required by some inspectors in my state? My interpretation is the generator is not a separately derived system if you install 4 wires to the generator AND you do not break the neutral in the transfer switch. Thus this is not a separately derived system. When a grounding electrode is installed at the generator location, does that electrode have to be bonded to the existing grounding electrode system and if so, how?

23. Is Sect. 400.7 meant to allow flexible cord only for the wiring within a luminare, or can it also be used for the branch circuit?

24. Can any portion of a feeder or branch circuit to a hot tub utilize UF cable?

25. Are electrical inspectors required to wear PPE when doing inspections?

26. Are there any specific code articles that state that you have to install an expansion fitting on the Rigid Nonmetallic PVC conduit between two slabs that have a one inch expansion joint installed between the slabs? The conduit passes horizontally from one slab to the other.

27. Can I run 100-amp SER cable through 2" PVC underground for a main feed to another panel?

28. Can we use Electrical Metallic Tubing in a masonry wall, or must we use Rigid Metal Conduit?

29. Can a receptacle installed to meet the requirements of 210.52 (E)(1), Outdoor Outlets also be used to meet the requirements of 210.63, Heating, Air-conditioning, and Refrigeration Equipment Outlet if all conditions apply?

30. For a portable or mobile sign that is cord- and plug-connected, what is required to protect personnel who may touch or contact the sign?

31. What is the manufacturing difference between a weather resistant receptacle and a regular receptacle?

32. Is there a burial depth for grounding electrode conductors? A local inspector insists that they (Grounding Electrode Conductors) are subject to Table 300.5 burial depths and the minimum is 12 inches. Is the answer the same for a conductor of #8 AWG, #6, #4 or larger?

33. Should you count the clamp when calculating box fill for 2-gang or larger plastic boxes?

34. I have a customer who insists on using motor starters and panelboards as a raceway. I can't seem to find the code section that allows or does not allow this. Also they continue to put 2 or more conductors under the load side lugs of 400 and 200 amp fused switches and the extra conductors are #12. Where can I find the code section(s) that address these problems?

35. Is it permissible to use NM cable in an Assembly Occupancy of non-rated construction?

36. We installed a raceway that ended up 22 inches below grade. Can we install an additional 2 inches of dirt or concrete to get the required 24 inch depth? The inspector said we cannot add dirt or concrete over the raceway, so he had us dig it up and lower it 2 inches.

37. Can Square D single pole circuit breakers have two conductors terminated on them? According to the manufacturer, if their breaker has a so- called double groove in the plate that holds the wire in place, you can place one wire under each groove and as long as you don't exceed the wire size for the amperage of the breaker then it is acceptable to place two conductors under the screw on the circuit breaker. Is this correct?

38. Is the grounding conductor for a TV antenna sized the same as a grounding conductor for a satellite dish?

39. Can we terminate Type AC or Type MC cables in a nonmetallic box?

40. Is it permissible to use a grounding receptacle w/ a pigtail from the ground screw on the receptacle to the box on an old 2 wire armored cable in a 1920's house?

41. Why can I not splice 3#12 THWN conductors in a 1" LB condulet? The code says I can put 26 number twelve in one inch GRC conduit at 40% fill? What does 10.5 cu. In. stamped inside mean?

42. Is it necessary to run a 4-wire lateral to a 3-phase fire pump?

43. Do non-grounding replacement outlets need to be tamper- resistant?

44. Does NEC Section 250.64(E) require a grounding electrode conductor that is installed in a ferrous metal raceway to be bonded to the raceway “at each end”? Does the connection of the metal raceway to the enclosure where the GEC is terminated constitute this bonding or must a separate, direct connection from the conduit termination to the conductor be made using a grounding bushing or a special fitting? Is there any difference between a utility supplied system or a separately derived system with regard to this requirement?

45. What written warnings are needed for the flash protection requirement of NEC 110.16 and how will the electrician know the correct PPE to be worn?

46. When I have too many equipment grounding conductors inside a junction box, I usually install a ground bar with at least 12 screws/spaces or more. This ground bar is just the same as the one that you see inside a panelboard. Is this acceptable?

47. What wiring methods may be used for the wiring in escalators, moving walkways, platform lifts, stairway chairlift runways, machinery spaces, control spaces, or machine/control rooms (not including the traveling cables connecting the car, or counterweight and hoistway wiring)?

48. A service is installed using (6) 100-ampere disconnecting means in separate enclosures in accordance with the provisions on 230.71(A) and 230.40 Exception No. 2. The service is an underground arrangement with (2) parallel 300 kcmil copper conductors (for each ungrounded phase conductor and the grounded conductor) supplying an auxiliary gutter to which the service disconnecting means are connected. The size of the service-entrance conductor from the auxiliary gutter to each 100-ampere service disconnect is 1/0 copper. The grounding electrode for the building is structural steel in accordance with 250.25(A)(2). What is the minimum size required for a common grounding electrode conductor for a service that is made up of six individual service disconnects in separate enclosures with grounding electrode conductor taps installed from the common grounding electrode conductor to each service disconnect?

49. Should carbon monoxide detectors be installed near the floor or the ceiling?

50. Are the side screws of a receptacle required to be tightened when the conductors are stabbed in the back of the receptacle? The untightened screws decrease the clearance to the sides of metal boxes and also may cause a shock hazard.

51. Is a standard wire-nut approved for a wet location as in an outside j-box? Is there a listed wet location wire-nut other than the ones approved for direct burial or in below grade j-boxes?

52. A foundation wall having the necessary steel rods in it to qualify it as a grounding electrode has styrofoam on its exterior. May the wall be used as a grounding electrode?

53. An industrial control panel is being designed for a pallet-handling conveyor system. Motors for the system are ½ hp, 460V motors, whose full-load current is 0.9 A. Feeder breakers for the system are rated 15 Amperes. The most economical system will include the most motors possible on one feeder breaker. Starters are included with properly-sized heaters.
Disregarding operational characteristics of the conveyor system (whether all motors operate simultaneously or individually) what is the maximum number of motors that may be applied to one feeder breaker?

54. Is it necessary to group the PV system AC-disconnect with the service disconnect?

55. I have heard that AFCI breakers provide GFCI protection. Is this true that they also provide GFCI protection?

56. The GEC from a PV array is run to a separate ground rod. How can the interconnection to the main GEC system be accomplished? Can the equipment grounding system be used?

57. Is it permissible to connect a standby generator to a load center in a home by back-feeding a circuit breaker? The circuit breaker is not interlocked with the main breaker.

58. Cable is needed for a switchboard with 800A main circuit breaker. It is equipped with two mechanical lugs per phase; conductor sizes accommodated by the lugs are #4-500 kcmil. The equipment is not marked for temperature rating for the conductors or the lugs. The contractor looked on the web site for the lug manufacture to that the lugs are rated for 900 C.
The contractor wants to use copper cable rated for 900 C. What size cable can be used?

59. What rating is needed for a disconnect switch for a long-time rated X-ray machine?

60. Does the NEC require an equipotential grid for a new hot tub installation placed on an existing stamped concrete pad? (Will it need to be torn out and re-poured)?

61. What is the “service factor” that is required to be marked on Fire Pumps?

62. Could the GEC connected to the PV roof arrays possibly draw lightning to the PV arrays?

63. Are electronic ballasts considered non-linear loads?

64. What is an acceptable means of securing NMB cable to the bottom of metal floor joists above a T-grid ceiling in a residence?

65. A kitchen island has a 4' long framed and drywall backside facing the family room. Can the small appliance circuit serving the countertop also serve the receptacle located on this wall?

66. How could the calculations of the selective coordination, required by NEC 700.27, be verified by the electrical plan review?

67. A kitchen counter has a 60" window behind it in lieu of a wall. There is no backsplash high enough to install a receptacle within the 24" rule. Would a receptacle installed at each end of the glass be sufficient?

68. Are general-use Rigid Metal Conduit compression-type fittings allowed in a Class 1 Division 2 location?

69. Is Ground Fault Protection required for service equipment rated at 1000 amps but fused at 800 amps? The service is a 3-phase, 4-wire, 277/480 volt.

70. Why does the equipment grounding conductor in a feeder to a mobile home have to be insulated?

71. Is it permissible to run non-metallic cable through kitchen cabinets at peninsulas and islands where it is not subject to damage or does it always have to be sleeved?

72. I have a store being constructed in our city. All of the footings are over-dug and then rock is brought in and compacted. All of the exterior footings are poured on a rock base. Does the concrete-encased electrode function in this situation? Do we need to bond the rebar?

73. Can you cut the plug end from the cord on a sump pump and wire it directly through the switch so you don't have to GFCI- protect the sump pump? If this violates the listing on the pump could you get it field approved?

74. I want to wire a 75 KVA, 3-phase, 480-volt primary, 208-volt secondary transformer, with both sets of the wiring in the same conduit from a large junction box. There is overcurrent protection on the primary conductors. Is this a NEC violation?

75. Is there any means in the Code to restrict the placement of chlorinators in the same room as the electrical panels associated with the pool? There is a definite deleterious effect to the panels.

76. Is there any code section that would prohibit reducing the size of the grounded circuit conductor on manufactured home service conductors?

77. In a shopping mall, does a medical office used primarily for diagnosing colds and flu and CDL exams need hospital -grade receptacles?

78. On occasion I find a fourth (equipment grounding) conductor run from the meter base to the main panel. The electrician states some inspectors require this. I require this 4th conductor to be removed, is this correct? Also, if there is an overcurrent device at the meter base location then is the 4th wire (ground) required?

79. Should the inspector require that all fixtures be lamped- out before a final inspection in order to make sure the fixtures are equipped with the correct type and wattage bulb?

80. Can countertop receptacles be placed underneath the upper cabinets (not in the backsplash) and still meet the requirements of 210.52 (C) (5)?

81. Is Allied the only company manufacturing boxes with a reduced horizontal clearance requirement in a fire rated assembly?

82. Can the laundry circuit go to more than one room?

83. Section 240.4 (F) allows delta/delta transformers to be installed without secondary transformer protection. Why can't this be applied to wye/wye or delta/wye transformers?

84. Can you run flexible cord between permanently installed strip fluorescent fixtures if it is not attached to the building surface?

85. Are there any requirements in the NEC that address the openings created in walls when wiring methods run from the interior to the exterior?

86. Can a 20ft run of copper pipe buried in the ground be used as a grounding electrode for a temporary service?

87. I have a kitchenette in a commercial occupancy. There is a sink in the 6' countertop, a refrigerator at the end of the counter and a microwave above the countertop. Do I need GFCI protection for the fridge and the microwave?

88. Can you use the remote control provided with a ceiling fan/ light combination unit as the required wall switch when entering the room?

89. Can the circuit conductors for a fire pump be installed where they are outside the building and routed to go over the roof?

90. I have a code question regarding multiple services in one building. I understand the issues with services in a building served by the same utility but what about multiple utilities. We have a territorial agreement with the City of Arcadia and an existing grain company is within the city territory and is served by the city utility. The grain company is expanding and is now adding additional grain bins which will be located in the co-op territory. There will be elevator legs connecting the new and existing facilities. Does an elevator leg connecting the two structures make this one building? Common sense aside, is there anything in the code preventing the co-op from serving the new addition. If the city serves this addition, they plan on adding an additional new three-phase service.

91. A motor nameplate does not state "thermally protected", but has a winding embedded motor thermostat. Can you consider that this thermostat provides the thermal protection for the motor?

92. What type of sealing compound can be used for the conduit seals at the boundaries of a Class 1 Division 2 location where they are not required to be explosion-proof?

93. Is a chiropractor business considered a health care facility? Is an optometry office considered a health care facility?

94. As defined in Art. 604, manufactured wiring systems (also known as prefabricated assemblies by UL) may incorporate multi-pole connectors, AC cable, MC cable, flexible metal conduit, hard usage cord, outlet boxes, splitter assemblies, remote control switching assemblies, and devices. Where exactly can these types of systems be installed?

95. What is the ampacity of three #8 XHHW conductors installed in a wet location with an ambient temperature of 45 deg. C?

96. A kitchen counter has the required number of receptacles. After the counter ends, there is a two foot wall space. Does this wall space also require a receptacle?

97. Are we required to use anti-short bushings when we terminate Type MC (metal clad) cable?

98. We install a lot of generators for residences, and only recently have been getting written up on our transfer switches. The inspectors are saying that if I use the transfer switch to transfer the entire house — and I put it between the meter and the service disconnect — then the transfer switch must be "service rated." Did something change recently that is now causing the “red tags”?

99. On an kitchen island that is six feet from a sink does the receptacle outlet on the side of the island have to be GFCI protected?

100. We have a heat tape system installed on a metal roof. The heat tape has arced against the metal before, and we are concerned we will burn the place to the ground. Someone told us to use a GFCI on the circuit, and someone else told us not to. What does the NEC say about this? How about manufacturer’s instructions or listing requirements?

101. I have 2 new operating rooms each with a duplex isolation panel serving 120 volt loads. Each operating room also has a 208 Volt receptacle for a portable laser unit. I have a separate isolation panel to serve both these receptacles. Can this panel serve both operating room laser receptacles even if the panel is located in one of the two rooms?

102. Can we install a 3-wire feeder (no equipment ground) to a pool house and bond the neutral and ground at the new panel?

103. Are tamper-resistant receptacles required if the receptacle is higher than 51/2 feet above the floor in a dwelling? How about if a receptacle is installed in a cabinet? Finally, what if a receptacle is part of a listed luminaire?

104. If the tab is removed from a duplex receptacle so you are switching half of the duplex receptacle, will the remaining half, that is energized all the time, meet the requirement for receptacles in Section 210.52 (A)? There is only one circuit to the receptacle.

105. The pedestal panel at the RV parking lot is a 60A, 120/240 volt panel fed by a 400 Ampere service. There are 2 ungrounded conductors, one grounded conductor and an equipment-grounding conductor sized for 60 A breakers. Do I need to install a ground rod for this service?

106. When we rewire apartments we can't always re-use all the receptacles and we would like to install grounded receptacles in place of the non-grounding ones. Much of the existing wiring does not have an equipment grounding conductor. Should we install an arc fault breaker or a ground fault breaker to be code compliant?

107. On the roof of a school we have 8 exhaust fans from science classrooms. Is a receptacle for maintenance in accordance with Section 210.63 of the NEC required for these fans? If so, could 1 receptacle cover all the fans assuming it is within 25 feet of all of them?

108. Will the wiring methods for a Kerosene Dispensing Unit fall under the requirements of Art.514? There are Gasoline dispensing pumps located nearby (40-50 ft.) but the kerosene unit would be away from any classified area. Kerosene is considered a combustible liquid and not flammable, because of the higher flashpoint, will the area inside the pump enclosure be considered Class 1 Division 1, the same for gasoline, or could it be a Class 1 Division 2 location or maybe not classified at all.

109. When are two or more control circuits for permanent amusement attractions permitted to occupy the same cable, cable tray, enclosure, or raceway, without regard to whether the individual circuits are alternating current or direct current?

110. If we utilize a qualified electrician and he/she complies with the job assessment and wears the required Personal Protective Equipment (PPE) as described in Table 130.7(C)(10) of NFPA 70E, will that person be allowed to install circuit breakers in a 208/120-volt panel for a computer room without shutting down the entire panel?

111. What is the required working space for a storage battery installation in accordance with the 2011National Electrical Code? The depth of the battery rack supporting the batteries is 12 inches extending from a wall. Directly across from the battery rack is electrical switchgear with an operating voltage of 480V. Based on this information, what is the required minimum depth of the working space?

112. A question has been raised on how to measure wall space in accordance with Section 210.52 (A)(2)(1) of the NEC. In this case a dwelling basement is turned into living space and the round steel posts supporting the beam were boxed out providing a square column that is greater than 6 inches per side. The wall space is now more than 24 inches. Is a receptacle required?

113. Can CFL or LED lamps be used in luminaries that are not listed for their use?

114. Can three single-pole breakers be used for multi-wire branch circuits?

115. I have run into an interpretation issue on one our construction projects regarding junction box accessibility above gypsum board ceilings. The building is predominately acoustical lay-in tile ceilings except in restrooms and storage room areas. In the restrooms and storage areas, it has been a common practice to lift out the 2x4 fluorescent light fixture to gain access to any junction boxes installed above the ceiling. Section 314.29 would seem to further restrict the code definition of "Accessible," but, if taken to that literal extreme, then would removing a ceiling tile to gain access to a junction box also be a violation?

116. What is the minimum size for an equipment bonding jumper on the supply side of a service with 5-parallel 500 kcmil copper conductors?

117. We are installing operating rooms in a group B (business) occupancy. Would the electrical system in the rooms be required to meet the wiring requirements for critical care areas in accordance with Article 517 of the NEC? The building is classed as B for business and not I for institutional such as a hospital.

118. Is a grounding electrode system required for a fire pump service?

119. Is there any code requirement to connect all equipment grounding conductors together before connecting to the devices such as a switch or outlet? Does this requirement change if there are multiple circuits in one box?

120. I am seeking some clarification on the new requirements of the “additional receptacle outlet in the basement” as specified in 210.52 (G). I am under the assumption that this would require a second box and receptacle if one of the receptacles in a duplex receptacle is used. Is an additional receptacle required or is the unused portion of the duplex acceptable to meet the requirement?

121. Are there any “open splice connectors” listed for new work that can be buried in a wall or ceiling?

122. The electrical service on a residential property is installed on the exterior of the detached garage. Can the feeder from this service to the house be sized by table 310.15(B)(6)?

123. Is it necessary to consider the available fault current when installing a fire pump controller?

124. When does a fire pump connected ahead of a main service require a generator backup system?

125. Are there special wiring requirements for commercial woodworking shop fluorescent lighting?

126. Why is # 4 AWG copper GEC the maximum size required for a concrete- encased electrode?

127. Where can I find information in the NEC detailing requirements for sealing conduit that passes from ambient temperature rooms into a refrigerated room? I know that condensation will form inside the raceway unless sealed.

128. Do we still have to bond the deck of an outdoor swimming pool if the deck is constructed of paving blocks?

129. We have the circuit for an A/C and also a GFCI circuit in the same raceway, but the GFCI needs to be mounted a few feet away. Can the A/C disconnect be used as a raceway for the circuit?

130. We installed a separately derived system (transformer) at the far end of a large warehouse. We proposed to use a primary equipment grounding conductor that would be sized based on the required grounding electrode for the derived system. This way one conductor acts as both the equipment grounding conductor and grounding electrode conductor. Is this installation prohibited?

131. A standby generator with a 400-amp main and transfer switch is located 35' from a building. Its underground feed terminates in a main lug panel located inside of the building. Does this main lug panel need to have a main breaker?

132. Does Section 230.71(A)1 require a service disconnect on the structure or could it be located away from the structure (pole)? If it can be located away, what is the maximum distance?

133. If a building or structure has more than one water pipe that meets the requirements of a grounding electrode, do both water pipes need to be used or is one sufficient?

134. A service is calculated at 600-amp. The utility installs a 75kva transformer (208-amp secondary). As inspector/plan reviewer, do I require equipment fault current protection for the utility's possible future installation of a larger transformer?

135. A #6 cu conductor is connected to the 20-amp breaker for parking lot lighting to allow for voltage drop. What size does the grounding conductor need to be?

136. As an inspector, should I refuse to accept 15 amp receptacles installed in a building where the engineer specified 20 amp receptacles?

137. Can I run NMB cable directly from PV micro-inverters with A/C outputs, through attics and other areas of the house?

138. Can a 50-amp receptacle be used on a 40-amp circuit?

139. What is the proper way to deal with XO on an isolation transformer for a VFD drive? Primary is 480 delta. Secondary is 480 Y. Some of the VFD drive manufacturers leave the XO floating. How does the floating XO affect the overcurrent device not having a reference point?

140. Is the bonding grid requirement for an above ground portable hot tub the same as a built -in hot tub? If this tub is on a deck 36" above grade and made of wood, how would you bond it?

141. An accessory building (shed) needs an electrical disconnect switch. If the outside electric panel feeding the building is within sight (less than 50') does this rule still apply?

142. If a metallic conduit sleeve containing a grounding electrode conductor is run from a panel to the Grounding electrode, does the panel- end of the sleeve need to have a bonding fitting installed in addition to the conduit connector?

143. What is the maximum unsupported length of type MC that may be used to supply a luminaire in an accessible ceiling?

144. Why would someone put both arc fault and GFI protection on the same circuit? I've been taught the arc fault breakers are for all living areas, while GFI's are for garage and exterior receptacles and bath and kitchen counters. Have I missed something?

CODE PANEL ASSIGNMENTS

Panel 1
Dick Owen, Moderator
Mark Early 1, 9, 17, 25, 33, 41, 49, 57, 65,
Keith Lofland 2, 10, 18, 26, 34, 42, 50, 58, 66,
Dave Kendall 3, 11, 19, 27, 35, 43, 51, 59, 67,
Richard Loyd 4, 12, 20, 28, 36, 44, 52, 60, 68,
Alan Manche 5, 13, 21, 29, 37, 45, 53, 61, 69,
Chuck Mello 6, 14, 22, 30, 38, 46, 54, 62, 70
Don Iverson 7, 15, 23, 31, 39, 47, 55, 63, 71
Dave Williams 8, 16,24, 32, 40, 48, 56, 64, 72

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OP Post, Moderator
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