



## **MINUTES**

Orange Empire Division  
International Association of Electrical Inspectors

Date: 01 March 2011.

Location: Santa Ana Elks Lodge, 212 S. Elk Lane, Santa Ana, California.

Called to order by Randy Buck at 11:53 a.m.

New attendees performed self-introductions.

Minutes of last month's meeting were accepted without dissent.

### **Membership Comm. Rep.**

Jill Fisher reported that there were two new members: Sonny Rae from Intertek and David Whitney of the Port of Long Beach.

### **Treasurers Report**

The report was given by Randy Buck. The full Mike Holt library was purchased and will soon be available to division members. The treasurer's report is postponed until next month.

### **Old Business**

None conducted.

### **New Business**

Tom Griffith announced: 1) The March Chapter meeting is on the 16<sup>th</sup> here at the Elks Lodge; 2) there was a very good turnout at Mike Holt's grounding and bonding training at Long Beach City College. Russ Helmick suggested that our information should come from IAEI and NFPA sources. Tom responded that Mike Holt's books are available on the IAEI website.

John Hamo of CEMCO Electric reported on a test of GFCI devices on the load side of an AFCI device. He reported that tests of the GFCI device had no effect on the AFCI breaker and that line-to-neutral tests of the AFCI breaker had no effect on the GFCI device.

### **Code Questions**

#### **1) Are ground bushings required for existing disconnects that are not being replaced?**

Scott Davis answered: If something is permitted and approved at the time of the installation, it can remain as long as it is not altered, relocated, or replaced. "Repair" is a little vague and will be decided by the individual inspector.

#### **2) Is there a Voltage range for which the use of ground bushings is required for bonding?**

Scott Davis answered: The ground rules commonly change for systems that are more than 300 Volts, phase-phase, or 150 Volts phase-ground. At those voltages, when no equipment ground conductor is present, inspectors like to see a ground bushing, ground wedge, ground lock nut, or a similar device, but many manufacturers now have had their equipment approved or listed for use with these higher voltages. UL Standards for these raceways and their fittings include testing for grounding; i. e., if the device is listed, it is okay for grounding up to 600 Volts.

#### **3) For the change-out of an existing piece of mechanical equipment with an existing 120-V convenience receptacle, must the receptacle be changed to a code-required GFCI when the mechanical equipment is replaced?**

Scott Davis answered: Rules that are written for safety can be interpreted by the AHJ as being retroactive when new work is performed. The State Attorney General has supported Santa Ana's use of such requirements. Therefore, the change out may require the the receptacle be GFCI, depending on the local AHJ.

Some discussions followed about reconnecting an existing disconnect.

4) Scott spoke about the structure of the NEC and the philosophy applied to the applicability of each section and subsection. In summary, the requirements of a subsection do not apply to previous subsections; for a requirement to apply to subsections, it must be stated before the subsection.

### **Consultant Time**

None taken.

### **Testing Lab Time**

None taken.

### **Contractor Time**

None taken.

### **Manufacturer Time**

John Bush with Nelson Associates announced that, at the next meeting, he will bring articles on 2008 Code changes with regard to 2-hour fire assembly ratings.

Bob Burnell with GE asked if inspectors make distinctions between UL-Classified and UL-Listed when doing inspections. Scott Davis mentioned that UL has a very good handout for classified overcurrent devices and panels on their website. Bob mentioned that a UL handout read, "*Classification* complies with the definition of listed in model installation codes." Scott added that molded case breakers that interchange are *classified*; there are several of them classified as replacement breakers. Steve Schinko of Eaton added that classified breakers are classified for use in specific loadcenters and are never series rated; mostly found in single-family dwellings but usually not in multi-family because of series ratings.

### **Utility Time**

None taken.

### **Inspector Time**

Randy Buck stated that plans were coming in to Plan Check for which the overcurrent-protection device for PV is too high but the the wire is upsized per the protection. He added that he would be asking John Wiles and/or Bill Brooks about this and report to the group.

### **Good of the Order**

Tom Griffith announced that copies of the IAEI Analysis of Changes were on sale here and that name badges were available. He encouraged non-IAEI members to join and and urged members to spread the word of the benefits of joining.

### **Education Program: Analysis of Changes, 2008 NEC, Part 3**

by Scott Davis:

Scott covered the following Code revisions.

110.26(C)(2). The six-ft rule is back; include the UGPS.

110.26(C)(3) Personnel Doors: multiple doors within 25 feet may need panic hardware and all need to swing outward.

210.4 Multiwire Branch Circuits. Being made safer; multi-pole or handle ties for all multi-wire circuits.

210.4(D) Circuit conductors must be grouped in the panel with the grounded conductor.

210.5(C) Ungrounded Conductors. Identified by phase and system.

210.12(B) Expands requirements for AFCIs. Kitchen, garage, and bathrooms are the only rooms that do not require AFCIs. 2-pole and 1-pole AFCIs available; GE has a 1-pole breaker that will work on a multiwire circuit with a handle tie.

300.9 Raceways in Wet Locations Above Grade. Interior of the raceway is a wet location.

Table 310.15(B)(2)(c) Rooftop Conductors. Design temperature for City of Santa Ana is 88 degrees Fahrenheit from the ASHRAE handbook. Other demands must also apply. Scott has a spreadsheet available for the different heights above the roof.

#### Chapter 4

410.141(B) and multiple other sections required locking hardware to stay with the circuit breaker.

Table 400.4 Superscript Note 8 (in part). Heater Cords.

Table 400.5(A) (in part) New wire sizes: 15 and 17 (for premanufactured cords).

#### 404.4 Damp or Wet Locations

404.8(C) Multipole Snap Switches for only one circuit.

404.9(B) Grounding. "Effectively grounded" wording is gone.

404.9(B)(1) Grounding. Ground pigtail to switches and receptacle outlets not required when metal-to-metal surfaces are flat and device is in contact.

404.9(B) General- Use Snap Switches (grounding). If no equipment ground conductor, no grounding required when replacing the switch. Plate must be plastic or gfci-protected if close to earth or a grounded surface.

406.4(G) Voltage Between Adjacent Devices. Look for a notch in the switch ring to accommodate a divider.

406.8(A) and (B)(1) Damp and Wet Locations. Weather resistance for receptacles. New receptacles are available that are constructed like the old clock outlets, i.e., the receptacle is recessed into the outlet box. Now required in all wet locations.

406.11 Tamper-Resistant Receptacles in Dwelling Units. All 210.52 receptacles shall be tamper-resistant. Over a ten-year period, over 24,000 kids went to a hospital for treatment from sticking something in a receptacle. He suggests we read and apply the 2011, 406.12 wording to this code cycle enforcement.

408.3(F) High-Leg Identification. Must have the notification at all distribution boards. C-phase in service equipment including branch-circuit devices and B-phase in all downstream equipment. 2-pole breakers must use the high leg to maintain balance. Bill Brownell added that the change in the phase used does not have to occur in the same piece of service equipment.

408.4 Circuit Directory or Circuit Identification. Do not use transient conditions for identifying the breaker. In 2011 NEC 408.4(B), source of supply must be identified at each distribution board.

408.36 Overcurrent Protection for Panelboard. No more 42-circuit limit; quantity limited by the minimum and maximum heights of the switches.

409.21(B) Location (Industrial Control Panels).

409.104(B) Wire Bending Space (within industrial control panels).

410 Luminaires. Reorganized. The word "luminaires" includes the lamps.

401.6 All luminaires and lampholders must be listed. Ron Reed mentioned that LEDs are not lamps.

410.16 Closet Luminaires; listed LED luminaires suitable for installations in clothes closets; luminous pole (closet rod) on which to hang clothes.

410.30(B)(1) Handhole. Suitable for wet locations.

410.62(C)(1)(2)(c) Cord-Connected Installation (for electric-discharge luminaires).

410.130(G) Disconnect Means. In sight or within the luminaire. Simultaneously disconnect all conductors. Normal switching might comply with a condition is that no area may be left dark.

410.151(B) FPN. Loads for track lighting rules do not limit the length of the track or the number of fixtures installed.

411.2 Definition: Low-Voltage Lighting System.

411.3 Listing is Required.

411.4 Specific Location.

422.51 Cord-and-Plug Vending Machines. New definition: + Outlet or the machine must have ground-fault circuit-interrupter protection.

422.52 Electric Drinking Fountains. Need GFCI in outlet or in the unit. Does not apply to bottled-water dispensers.

424.19 Disconnecting Means for fixed elec heating.

430.2 Valve Actuator Motor Assemblies.

430.11 Protection Against Liquids.... "injurious" is removed.

430.32(C) Selection of Overload Device.

430.52(C)(1), Ex. No. 2 Branch circuit, Disconnect.

430.74 Electrical Arrangement of Control Circuits. No changes – just reorganized.

430.103 Time Clock may not be used for a disconnect.

430.126(A) Motor Overtemperature Protection. High frequency of VFDs may destroy old motors that are not designed for use with VFDs. "Inverter-duty motors."

430.243 Portable Motors.

430.245 Method of Grounding... "where required" limitation was removed.

440.12(A)(1) and (B)(2) Exceptions (fuse holders) Unfused switches are okay for HVAC equipment if horsepower rating is okay for the load. Switch 115% capability no longer required if horsepower rated.

440.14 Location. Cannot put the disconnect over the label or orient the unit so that nameplate is unreadable.

440.54(A) Overload Protection. Changed "approved" to "identified". Circuit sized by label.

480.5 Disconnects required for ungrounded conductors from battery systems.

Meeting adjourned at 2:04 p.m.

Respectfully submitted by Dan Vaughan