



**President:** Mark Chrysler  
**1st Vice President:** James (Rusty) Anderson  
**2nd Vice President:** Martin Montessoro  
**Secretary:** Tiffany Kirk  
**Treasurer:** Steve Jones  
**Membership Chair:** Dean Mastrovic  
**Education Chair:** Bruce Barnes  
**Sergeant at Arms:** Nancy Martinez  
**Ex-Officio:** Bruce Barnes  
**Other Members:** Billy Duggins and Pat Healy

**IAEI Border County Division**  
San Diego, California  
**Minutes for June 14, 2011**  
12:00 p.m. No-Host Lunch  
**1:00 p.m. - 3:00 p.m. Meeting**  
Sizzler Restaurant (Meeting Room)  
**3755 Murphy Canyon Road**  
San Diego, CA 92123

## **1. Call to Order and Self Introductions**

Meeting was called to order by Mark Chrysler, President of the Border County Division, at 1:00 P.M. 28 in attendance made self introductions. There were 2 first timers.

## **2. Review and Approval of Minutes**

Minutes from the May 10, 2011 meeting were reviewed and approved as presented.

## **3. Reports**

Treasurer's Report: Steve Jones was not present.

Membership: Dean Mastrovic reported there are 2 new members bringing the total to 78 members.

Education: Bruce Barnes report the BCIAEI will be dark in July and August. September's education will be presented by Billy Duggins on "Changes to the Code". If you have a particular topic that you would like Billy to cover, please send your requests to Bruce. October's education will be presented by ETI on "Ground Fault & Medium Voltage". November's education will be presented by Chuck Skinner on "Used Equipment in New Location". December's education will be presented by Chuck Leisher on "Medium Voltage Switchgear".

## **4. Old Business**

Mark Chrysler reported the raffle to raise funds for the BCIAEI will return in September.

## **5. New Business**

Mark Chrysler reported the next Chapter meeting is on July 20, 2011 in Downey, CA. The education is on "Motor Fuel Dispensing Facilities". Pat Healy mentioned significant changes have occurred in this area of the code. Mark reported the BCIAEI is planning on another "Code Update" seminar for the beginning of 2012. Any requests on specific topics should be sent to any of the board members. A suggestion was made to start at the end of the Code and move forward.

## 6. Education Program

Presenter: Eric Jensen – EsGil Corporation

Subject: California Electric Code "Design Requirements"

The following were covered in the presentation:

- **Maximum Number of Conductors in Raceways**
- **Don't heave your '93 Code**
- **Let's Talk Life/Safety**
  - Water & electricity versus the human heart
    - **1962 NEC:** "No attachment plug receptacles shall be installed within 10' of the inside walls of the pool".
    - **1971 Code** added "GFCI protection" if within 10' to 15' of the pool.
    - Now, after **50 years** of the 10' requirement, **6'** is okay.
    - **Best guess on the clearance reduction:** No electrocutions recently at 10'.
- **Previous Code**
  - **"10' distance rule"** necessitated dangerous slip/trip hazards when accessing electrical utilization equipment
- **New Code**
  - End-user may safety access appliance when required
- **Pool? Let's Talk Consistency:**
  - If I'm providing power for my **new** pool from an **existing** rusted out Zinsco subpanel missing its dead front, full of a mouse nest, not a knockout left in it, is supplied by a dried out flaking cloth and tar insulated romex feeder - - it's A-OK with the NEC.
  - But a **new** subpanel with **new** electricity and **new** state of the art SE or NM cable types.....you better hop, hop, hop, quick as you can, out of that pool...because it's not wired to Code. CEC 680.25(A)
  - **Why??.....**
    - **The age old question:** When does a "new" panelboard turn into an "existing" panelboard?
    - **Best guess:** The minute it's dumped out of the carton.
- Let's ground a 3 unit multi-dwelling Residential building:
  - **Basic premise:** Determine the appropriate grounding electrode(s) and make sure the water is bonded to the electrical service.
  - **Things we need (for service design):**
    - Civil site grading plans delineating property lines, both assumed and real.
    - 1935 NEC definition of a "fire wall".
    - Architectural description of the project: Are the three units apartments or condominiums?
    - Civil site utility plans for the site water supply pipe design with lateral and pipe material type descriptions
    - Plumbing design for the building.
    - An electrical code book (hopefully you still have the '93 one somewhere)
  - **Issue No. 1:** Is the meter service restricted to one location or may it be installed at each individual unit?
    - Electrical design items required:
      - Civil site grading plans delineating property lines.
      - 1935 NEC definition of a "fire wall".
      - Architectural description of the project: Are the three units apartments or condominiums?
    - Civil site grading plans delineating property lines:

- Apartment vs. Condominiums: If the dwelling units are zero lot line, that is to say the property line is the footprint of the unit, the unit layout design appears to satisfy all requirements for separate buildings and the meter service would be permitted at each unit.
  - However –
  - Could I still have a grouped service location for the building? If so, do I need (electrical) easements through one unit to another unit?
  - If the three units were installed on a shared piece of property, could I still have individual unit electrical services or am I required by code to have a common service location?
- Article 230 – Services
  - **230.2 Number of Services.** A building other structure served shall be supplied by only one service unless permitted in 230.2(a) through (D).
  - **(B) Special Occupancies.** By special permission, additional services shall be permitted for either of the following:
    - (1) Multiple-occupancy buildings where there is no available space for service equipment accessible to all occupants
    - (2) A single building or other structure sufficiently large to make two or more services necessary
- Bottom Line: The Code has never adjusted to the concept of a “Condominium”.
  - as an aside -
  - Condominiums may also be considered “Townhomes” – but maybe not. Townhomes are found in the California Residential Code.
  - Townhome units are separated by a common 1-hour fire-resistant wall assembly tested in accordance with ASTM E 119 or UL 263 walls or, alternately, a wall that is structurally independent from another unit.
- The Code restricts the electrical service to one building location (with exceptions) but leaves a loophole:
  - One structure may be subdivided into multiple buildings with the use of fire walls thereby allowing multiple service locations...on a structure subdivided by *fire walls*...
- **What is a “Fire Wall”?**
  - **NEC definition of a “fire wall”:**
    - **1935 NEC: *Building (Definitions):*** “A structure which stands alone or which is cut off from adjoining structures by unpierced **fire walls.**”
    - **Current NEC: *Building:*** “A structure that stands alone or that is cut off from adjoining structures by **fire walls** with all openings therein protected by approved fire doors.  
*(Amazingly, the NEC does to define a firewall)*
  - **Popular Building Code wall descriptions:**  
(Fire) Rated wall, occupancy separation wall, area separation wall, shaft, unit separation wall, fire partition, **fire wall**, fire barrier wall.  
Which one(s) is a NEC fire wall?
- Three different Code groups have wall descriptions:
  - **The NFPA** (also publishes the NEC). They have Standard 221: “Standard for Fire Walls and Fire Barrier Walls”. Unfortunately, the NEC predated the NFPA standard by 60 years.
  - **The Uniform Building Code** (the Building Code for many years in California) had area separations walls, occupancy separation walls, and fire-resistive walls and partitions. Maybe one of these is what was meant by “Fire Wall” in the NEC. But which one? This Code is obsolete and doesn’t exist anymore, anyhow.

- The current Building Code, the **California Building Code**, is based upon the International Building Code and was first adopted statewide in 2007. It has fire walls, but it also has fire barriers, and fire partitions? Does the NEC mean this fire wall design or another type of wall (fire barrier or fire partition?).
- The NFPA NEC (National Electrical Code) and the ICC CBC (California Building Code) are not the same code group.
- **The bottom line:**
  - To determine the number of service locations allowed to a structure requires a "fire wall" definition.
- **Net result:** No definite "Fire Wall" design
  - Inconsistency city to city. There's always the potential for a design to be rejected.
- Now that we've settled the number of services to a building once and for all, we're ready to design the grounding for it.
- **Goal:** Determine the appropriate grounding electrode(s) and make sure the water is bonded to the service.
- Typically, I attached a conductor to a "UFER" (rebar) and connect the same conductor to a cold water pipe.
- **Issue No. 2:** Determine the grounding electrodes, connect the service thereto.....oh, and also connect to the water pipe.
  - The issue of how many services allowed to a building is officially laid to rest for the remainder of this design:
  - I have arbitrarily picked a grouped, four-meter service (three units with a house meter) that is located at one end of the building with feeders installed to three unit panelboards:  
One electrical service, a standard grounding electrode (UFER), and now those pesky water pipes.

Electrical design items required:

  - Civil site utility plans for the site water supply pipe design with lateral and pipe material type descriptions...
  - Plumbing design for the building
  - An electrical code book (hopefully you still have that '93 one somewhere)
  - How many water services? 1 per building or 1 per unit?
  - Is the site water supply plastic or metal?
  - Are the water service laterals plastic or metal?
    - If metal, is more than 10' of metal in the ground?...or less?
  - Is the interior water piping metal or plastic?  
If 10' or more of metallic piping is in the ground then it's considered a grounding electrode and each units cold water lateral would be required to be connected to the "service" as a grounding electrodes
  - If the site piping is all metallic, then one connection would work.
  - If the site plumbing is nonmetallic with metallic laterals exceeding 10', each unit would need to be connected.
  - If metallic and less than 10' of metallic piping is installed underground then the interior piping system is required to be bonded to their respective panelboard with No. 8 copper, no connection to the service is required.  
The interior water piping, if non-metallic, is not required to be bonded.
- **Bottom Line:** The civil utility site plan determines the definition of the site plumbing as an "electrode" or the necessity of a water bond.
  - If an electrode: The service is required to be connected to each water supply lateral.
    - Does anybody run a 1/0 copper from one end of the building to the far unit's water supply piping?

*If not an electrode: Each unit panelboard is permitted to be bonded to the unit metallic water piping. CEC 250-104(A)(2).*

○ **Unknowns:**

- Does the 10' metallic piping material qualifier for water piping include interior copper underslab loops, say to a kitchen island? What if the pipes are sleeved in a plastic wrap? What if the pipes are run below the slab but above a vapor barrier?
- Should we ground the gas piping? Or should we bond the gas piping? Or should we do nothing? Why do some jurisdictions insist on physically bonding the gas pipe when it is so clear in the CEC that it is already bonded? CEC 250-104(B)
- What about the fire service? Is that an electrode?

CEC 250.52 has the following categories:

- 1) "Metal underground water pipe" and
- 5) "Rod and pipe electrodes".
  - Do I use the (water pipe) or the (rod and pipe) requirements in or both for my water systems described in CEC 250.50?
  - Why two categories for piping? If 1) is for water pipe only, what kind of piping is 5) attempting to describe?
  - Do both 1) & 5) apply to water piping?

## 7. Code Question(s) of the Month – None

## 8. Organizational Time

Inspectors – Rusty Anderson asked about 210.12(B), for the NCI that are installed. What is the interpretation of a parlor to the other jurisdictions since it's not in the definitions? Is it a room for entertainment or a recreational room? Mark commented he thinks it depends on what was the layout of the residence depending on the type of home.

Consultants – None

Testing Agencies – None

Contractors – Tim O'Brien had a question about Article 110.26. The question is on a 1200amp service, over 6'-1", with other equipment in the room. There's not enough room for 2 doors so double the working space is required. There is double the working space in front of pull-section but not in front of the transformer. Tim asked if this was acceptable. The question was asked if the transformer and pull-section were separated or contiguous. The consensus is the working space is in front of the pull-section and not the transformer.

Mike asked about the Intersystem Bonding Terminals. Is there a specific exterior grounding bus or can he take an existing grounding bus and add it to the exterior where it's exposed and call it an exterior grounding bus? Eric Jensen stated that a grounding bar can be mounted externally next to the grounding electrode or next to the service. Mark mentioned significant changes in the 2008 Codes and to look over the 2008 NEC Article 800.100 on grounding methods.

Mike also asked whether arc fault and/or ground fault is required on existing circuits that are not being modified but is a part of a service upgrade. The consensus from the jurisdiction is that it is not required. Mike indicated the City of Imperial Beach does require arc fault and ground fault on the existing circuits.

Manufacturers – None

Utilities – Rusty asked if SDG&E receives a signal when a Smart Meter is removed from the meter panel. Bruce stated SDG&E Smart Meter programs do receive notification when a meter is removed from the

meter base. Rusty stated that an electrician was contacted by SDG&E and threatened to be turned into the CSLB since he removed the Smart Meter on a disconnect/reconnect (D/R) for his overhead service. Rusty wanted to know if the policy at SDG&E regarding D/R has changed in anyway. Bruce clarified there is a process to breaking the seal on a meter and this request goes through the project management department and is noted on the customer's account. Therefore, it would appear that the customer must have acted on their own which resulted in a notification to the customer from SDG&E. Also, when a customer removes the meter from the panel, they are performing this type of work at their own risk.

Rusty had another question on contract employees for SDG&E based out of Anaheim, CA who does the D/R. Rusty wanted to know if this business practice will delay the customer's requests for D/R. Bruce will look into this and get back to the committee at the next meeting. Bruce confirmed that SDG&E request inspections from the jurisdictions to be called in by 2pm.

Pat Healy asked whether or not SDG&E would pull in a neutral on a single phase, 12K volt, primary service. Bruce said there won't necessary be a neutral but SDG&E no longer provides a single phase primary service. Bruce will look further into this and report back at the next meeting.

Per Rusty's question from last month, Tiffany quoted SDG&E schedule "PA" is for general power service utilized to pump water, or in the production of agricultural products including feed choppers, milking machines, heaters for incubators, brooders, poultry house and flower production lighting, but excluding power service used for the processing of agricultural products, general or protective lighting, or domestic household uses. For more information, please go to [sdge.com](http://sdge.com) under rates & regulation.

Steve Schinko had a question regarding the net Energy metering. The requirement is up to 1MW, including 1MW.

Someone had a question on the definition of medium voltage. The consensus is that medium voltage is 600 volts or higher. Bruce Barnes stated for the utility, medium voltage is 600 volts or higher.

## **9. Final Business**

Per Bruce Barnes, an email will be sent out the group when the Service Standards and Guide is updated on line.

## **10. Adjournment**

There being no further business, meeting was adjourned at 2:40 P.M.

Next meeting: Tuesday, September 13, 2011 at 1:00 P.M.

Respectfully submitted,

Tiffany Kirk  
BCIAEI Secretary