

Soares Grounding and Bonding Basics

Goals

Grounding and Bonding from the NEC has been one of the most misunderstood and unfortunately the one topic with most incorrect installations completed. This stems from many reasons, not the least is the continued incorrect use of terminology. Trade slang and hand me down training inbred into each new generation of journeymen concepts and language that is hard to unlearn and retrain. The Soares Book on Grounding and Bonding is widely recognized as one of the best informational books available on this subject. It is widely used for apprenticeship training as well as for continuing education courses.

The objective for the grounding and bonding continuing education class outlined in this submittal has the goals of providing the attendees with a clear understanding of the terminology and the correct meaning of the terms used for grounding and bonding. The various course segments then establish basic understandings of the requirements for a proper installation including

- ❖ Grounding electrode and grounding electrode conductor
- ❖ Service grounding and bonding

This submittal will be instructed by Chuck Mello of cdcmello Consulting LLC and is presented using the IAEI Soares Grounding and Bonding power point program based on the 2020 NEC. The students will have the option to purchase the Soares Book on Grounding, and use the book to follow in the class. No other handouts or materials are provided in accordance with copyright requirements. See additional attachments for instructor qualifications.

The following outline provides the course structure and details for the 4-hour Soares Grounding and Bonding course. All the material in this course is related to Article 250 of the 2020 National Electrical Code.

Course Outline

Grounding Electrode and Grounding Electrode Conductor.....[2 hour]

- Definitions of grounding electrode and grounding electrode conductor
- Grounding electrode system present required to be used
- Sizing interconnecting bonding jumpers for the grounding electrode system
- Description and installation of grounding electrodes
- Common grounding electrode
- General requirements for grounding electrode conductors
- Functions of the grounding electrode conductor
- Sizing grounding electrode conductors
- Grounding electrode conductor installation
- Grounding electrode conductor connection
- Material and protection for grounding electrode conductors

Grounding and Bonding for Electrical Services[2 hour]

- Definitions for Bonding, Main Bonding Jumper, Supply Side Bonding Jumper and Grounded Conductor
- Rules for which system conductor to be grounded
- Proper identification of grounded conductor
- Methods of grounding electrical systems
- Delta bank grounding
- Grounding rules for ungrounded systems
- Important requirements for grounding electrical services
- Proper location of service grounding connection
- Grounded conductor sizes for dwelling unit services and feeders
- Proper sizing of grounded service conductor
- Rules for parallel service conductors
- Rules for multiple services to one building
- Rules for high-impedance grounded systems
- Hazards of services from grounded systems without grounded conductor
- Functions of the main bonding jumper
- Sizing of main and supply-side bonding jumpers
- Methods for bonding at service equipment
- Use of neutral for bonding equipment on line side of service

Total Hours.....4 Hours