

Course Title

RV-11543 - 2020 NEC® Changes: Overvoltage and Grounding & Bonding

Contact Hours: 1

This interactive online course covers the changes in Articles 242 and 250 of the National Electrical Code®. The new article 242 contains the requirements for overvoltage, or surge, protection. Article 250 covers the grounding and bonding of systems and equipment. Notable changes include the creation of Article 242 and deletion of Article 280 and 285, a new section addressing the bonding of equipment on the line side of the service, specific requirements for aluminum conductors, limiting the role of rebar in the grounding electrode system, fixing an error about the sizing of bonding jumpers, reducing the identification requirements for equipment ground conductors, and providing relief for the sizing of equipment grounding conductors in certain applications.

Course Objectives:

By the end of this course, you will be able to:

- Explain why Articles 280 and 285 were combined into Article 242
- Describe the evolution of Article 250 since 2008
- Identify some of the system grounding configurations that are allowed in the NEC
- Identify the increased allowances and requirements for aluminum conductors
- Explain the clarifications that were made for grounding separately derived systems
- Explain the use of rebar as a connection point
- Describe the use of metal enclosures as equipment grounding conductors

Content Outline

| | |
|--|--------------------|
| Introduction Course Overview | (1 minutes) |
| Article 242 Overvoltage Protection Scope | (1 minute) |
| Article 250 Grounding and Bonding | |
| Article 250.12 250.12 Clean Surfaces | (2 minutes) |
| Article 250.20 250.20 AC Systems Required to be Grounded 250.20(B) AC Systems 50V to 1,000V | (6 minutes) |
| Article 250.25 250.25 Systems on the Supply-Side of the Service Disconnect 250.25(A) Grounded Systems | (2 minutes) |
| Article 250.28 250.28 Main and/or Bonding Jumpers (MBJ) and SBJ) | (2 minutes) |

250.28(A) Material

Article 250.30

(15 minutes)

250.30 Separately Derived AC Systems
250.30(A)(1) System Bonding Jumper
250.30(A)(1)(b) SBJ at First Disconnect
250.30(A)(3) Grounded/Neutral Conductor
250.30(A)(6) GEC for Multiple Separately Derived Systems
250.30(A)(6)(a) Common GEC Types
250.30(A)(6)(b) GEC Tap Conductor Size
250.30(A)(6)(c) Connections

Article 250.53

(2 minutes)

250.53 Grounding Electrode System Installation
250.53(C) Bonding Jumpers

Article 250.64

(10 minutes)

250.64 Grounding Electrode Conductor (GEC) Installation
250.64(A) Aluminum or Copper-Clad Aluminum GECs
250.64(B) Securing and Protection
250.64(B)(1) Where Not Exposed to Physical Damage
250.64(B)(2) Where Exposed to Physical Damage
250.64(B)(3) Smaller Than 6 AWG
250.64(B)(4) In Contact with Earth
250.64(E)(1) General
250.64(E)(2) Methods
250.64(E)(3) Size
250.64(E)(4) Wiring Methods

Article 250.68

(2 minutes)

250.68 GEC and Bonding Jumper Connections to Electrodes
250.68(C) Connections

Article 250.104

(2 minutes)

250.104 Bonding of Piping Systems/Exposed Structural Metal
250.104(A) Metal Water Piping
250.104(A)(1) General

Article 250.109

(2 minutes)

250.109 Metal Enclosures

Article 250.119

(5 minutes)

250.119 Identification of Equipment Grounding Conductors
250.119(B) Cables

Article 250.122

(5 minutes)

250.122 Size of Equipment Grounding Conductors
250.122(B) Size Increases

Article 250.4 (2 minutes)
250.4(A)(3) Bonding Electrical Equipment

Conclusion (1 minute)
Summary and Implications

1. List of reference and source materials/bibliography

All material necessary to complete the course is included in the course. A subject matter expert using his or her own personal knowledge writes the course. Students are not directed to additional material as a requirement for course completion, only as added information for personal interest.

2. Instructor Information

Ryan Jackson – Resume Attached

3. Totals hours of Instruction

1 Hour(s) – this course is online and available 365/24/7 to anyone with internet access

4. Certificate of completion

sample is attached

5. Proof of compliance with interactive distance learning requirements

- a. Courses are being developed with interactivity as a key component in its development. RedVector's 'rule of thumb' is to insert an activity every 3 to 5 minutes or 500 to 800 words of text. We offer a variety of activities through the coursework to keep the user involved and requiring knowledge of the course materials being reviewed in order to move forwards.
- b. Users sign into an account with a unique User Name and Password. We request that a user agree to an affidavit stating that they are the owner of the account before proceeding to the exam. Course completion is measured by passing the exam with a minimum score of 75%.
- c. FL Contractors are notified at the beginning of the course that they are required to spend 50 minutes per credit hour in the course in order to receive an accreditation certificate. The LMS will not allow a certificate to be issued or reflect course completion until the time requirement is not by the user.
- d. By one click of the button on each screen of the coursework, the user is given the option to obtain information in several ways. We have a FAQ page, direct email request to Client Support

or they may call through a Toll Free number. Our Client Support Team is available from 8 am to 6 pm, Monday thru Friday. If there is a general question, RedVector consults with several Subject Matter Experts that respond to questions in a timely manner. If the question is more specific requiring a direct response from the course author, communication is made with the author to provide the user a response.

- e. There is a statement required to be agreed upon by the User confirming their identity before and after taking the test.
- f. Each account is established with a unique user name and password in order to access. If a user is taking a longer than normal time to review a section, they will receive a pop-up and have 90 seconds to respond or their session will time out requiring the user to sign into the site again if they wish to continue the coursework.