

Hands-On

# Installation Bonding and Grounding for TeleCom



MN State License Course Program ID 2104678

## Course Description

The State of Minnesota Board of Electricity requires that technicians doing electrical work in a residence or commercial building must hold an Electricians License. This includes low voltage systems, such as telecommunications voice or data circuits, which requires the individual to have a Low Voltage Electrical License. The License is renewable every two years and requires 16 hours of Continuing Education 4 hours on the NEC Code and 12 hours on the statutes and rules governing electrical installations or technical topics related to electrical installations and equipment. This seminar is Certified by the Department of Labor & Industry (course number 101203.01) and meets the requirements for 8 hours of non-NEC Code Continuing Education.

This 8-hour training seminar is specifically related to the electrical installation of telecommunications equipment for proper bonding and grounding for personnel and equipment protection from lightning and AC power fault conditions. This seminar pertains to telecommunications circuits and equipment that are in, on or service to buildings including residential, commercial and telephone buildings (Central Offices, Remotes, Cabinets, etc.). This seminar explains not only the requirements but also the technical reasons for the requirements. The attendee will have a much better understanding of why the requirements exist.

References used for this seminar

- &9642 Rural Utilities Service (RUS) documents.
- &9642 National Electric Safety Code (NESC 2017/2018) or current edition.
- &9642 Telecommunications company specific requirements.
- &9642 References to the National Electrical Code (NEC 2017/2018)

## Students Will Learn

- **After completing this training seminar, the attendee will have 8 hours of non-NEC Continuing Education credits toward their Power Limited Electrical License renewal.**
- **The attendee will be able to state NESC, RUS and industry standard requirements and the reasons for the requirements.**
- **The attendee will also be better qualified to install and maintain bonding & grounding cabling and equipment at the customer premise, in the outside plant, and in the Central Office building.**

## Prerequisites

## Course Outline

Lesson 1 Installing Bonding & Grounding for Telecommunications Cables and Equipment in the Outside Plant. 2 hours

This lesson covers general requirements for the safe installation bonding and grounding of telecommunications equipment in the telephone outside plant cables, pedestals, cross-connect boxes and aerial closures for the protection of people, buildings and equipment in accordance with NESC (National Electric Safety Code) and the RUS (Rural Utility Services) practices and requirements.

- Installation and termination requirements for grounding cable shields and support strands.
- Installation and grounding requirements for aerial closures and pedestals.
- Ground rod installation requirements and resistance objectives.
- Installation requirements for bonding to the electrical power MGN.

Lesson 2 Installing Bonding & Grounding for Telecommunications Cables and Equipment at Residential and Commercial Buildings. 2 hours

This lesson covers general requirements for the installation bonding and grounding of telecommunications equipment at residential and commercial buildings for the safety and protection of people, buildings and equipment in accordance with RUS (Rural Utility Services) practices and requirements:

- Installation of telecommunications NID (Network Interface Device).
- Installation and termination of aerial and buried drop cable.
- Use and requirement for Gas Tube protection.
- Proper grounding of the NID.
- Requirement for ground rods.
- Methods and requirements for bonding to the building grounding system.
- Fiber Optic cable termination and equipment grounding procedures.
- Running and routing telephone and data cables inside buildings.
- Installation of telecommunications equipment at Mobile Home sites.

Lesson 3 Installing Bonding & Grounding for Telecommunications Central Office Circuits and Equipment. 2 hours

This lesson covers general requirements for installation bonding and grounding of telecommunications Central Office cables and equipment for the safety and protection of people, buildings and equipment per the RUS (Rural Utilities Service):

- MGB (Master Ground Bar) as the single-point-ground for the Central Office.
- MGB location and isolation.
- MGB P-A-N-I connections for effective surge dissipation.
- CEGB (Cable Entrance Ground Bar) installation and cabling requirements.
- MDFGB (Main Distributing Frame Ground Bar) installation and cabling.
- Installation of Central Office ground system and resistance objectives.
- Considerations for the Central Office IGZ and ground window bar.
- Installation of ground cables, sizing, routing and terminating.

Lesson 4 Installing Bonding & Grounding at Telecommunications Remote Electronic Equipment Sites. 1 hour

This lesson covers general requirements for safe installation bonding and grounding of telecommunications electronic equipment located in remote cabinets and housings for the safety and protection of people, buildings and equipment per the NESC and RUS (Rural Utilities Services).

- Installation requirements for bonding and grounding remote equipment.
- Ground rod and ground field installation.
- Isolation of cable shields and pedestal grounding.
- Gas tube requirements for equipment protection.

Lesson 5 Testing Telecommunications Bonding & Grounding Installations. 1 hour

This lesson covers the standard requirements for testing of telecommunications bonding and grounding systems to verify a proper and effective installation per the RUS (Rural Utilities Service).

- Test cable shield current flow to verify shield continuity.
- Requirement to have between 50mA and 5A of shield current flow.
- Ground rod resistance objective of 25 ohms or less.
- Central Office ground resistance objective of 5 ohms or less.

## **Delivery Method**

Instructor-Led with exercises throughout the training

## **Equipment Requirements**

**(This apply's to our hands-on courses only)**

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

## **Course Length**

1 Day