

## Course Description

This course is designed to educate telecom installers how to correctly bond and ground telecommunications equipment and transmission facilities. Central office entrance facilities both copper and fiber will be covered in this course. Bonding and grounding procedures will follow NEC and RUS practices/procedures, as well as any proprietary bonding and grounding rules. Ground testing procedures and parameters will be covered. We will show you what grounding hardware and components you should and should not be using. Other topics such as loss prevention, quality of service and liability are contained in this technical course.

Proper grounding of telecommunications equipment is crucial to protecting personnel and equipment. It is critical to not only understand the grounding terms used in the industry today, but also to use them appropriately. **GROUNDING** covers the information you need to install, maintain and ensure that adequate telecommunications grounding (protection) is in place.

This course is based on the latest industry standards. Case studies and lab activities reinforce concepts presented in this course. You will develop an understanding of how to implement complex grounding schemes.

Note When this course is delivered on-site at your location, a field trip to a job site where you perform some of the lab activities can be included if facilities are available.

## Students Will Learn

- Network Interface Devices
- Line Protection
- Codes and Standards
- Central Office Bonding and Grounding
- Bonding and Grounding Entrance Cables

- Bonding and Grounding Requirements at the NID
- Bonding and Grounding Hardware
- Ground Rod Placement
- Ground Rod Systems
- Electrical Safety
- Bonding and Grounding Drops
- Bonding and Grounding OSP Cables
- Special Grounding Situations
- Testing Grounds
- Protecting Customer Owned Equipment
- And Much More

## Target Audience

Vendors and telecommunications personnel (engineers, planners, supervisors and technicians) responsible for ensuring that proper grounding requirements have been employed for buildings, power, switches and transport systems. Personnel responsible for maintaining and accepting new or rearranged equipment.

## Prerequisites

An understanding of basic electrical concepts and telecommunications equipment terminology is required. This knowledge can be obtained by attending our Hands-On Basic Telephony & TeleCom Electronics

## Course Outline

Module I: Installation Skill Level Assessment

- Competency Skills
- Critical Network Elements
- Network Elements by Complexity
- Installer Skill Levels 1 through 4

#### Module II: Introduction to Grounding Requirements

- Purpose and Definitions Based on TR-NWT-000295, GR-1275 and NEC 1999
- Definitions of Terms
- Grounding Conductor Sizes

#### Module III: Ground Window

- Ohm's Law
- Reasons for Ground Window
- Location and Size
- Sequence of Connections

#### Module VI: Connections and Cabling

- Contact Resistance
- Types of Connections
- Connectors
- Placing, Supporting and Securing Conductors
- Cadweld Demonstration

#### Module V: Electrostatic Discharge

- ESD Generators
- How Can I Control It?

#### Module VI: Building Ground Applications

- Types of Building Grounds

#### Module VII: AC Grounding

- AC Service Grounding
- Equipment Grounding System

#### Module VIII: Telecommunications Office Ground System

- Resistance/Impedance of Path to Earth
- Grounding System
- Methods of Employing Grounding Systems
- Isolated Ground System
- Integrated Ground System

#### Module IX: Power Plant Grounding

- Power Plant Grounding Requirements
- Power Plant Frame Grounding
- Shared Power Plant
- Non-shared Power Plant

#### Module X: Isolated Ground Plane

- Ground Window
- Frame Insulation
- Test
- Girdling
- Nearby Conductive Components
- Analog Systems
- Digital Systems

#### Module XI: Miscellaneous Integrated Systems

- Roof-mounted Towers
- Radio Room
- Computer Systems
- Distributing Frame

- CEF
- Optical Fiber Cable
- Below-ground Electric Equipment Enclosures
- Above-ground Electric Equipment Enclosures

## Delivery Method

Instructor led with numerous Hands-On labs and exercises.

## 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

2 Days