Hands-On

TeleCommunications Bonding & Grounding

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 2017
Definitions of Terms
Grounding Conductor Sizes

Module III: Ground Window

Ohms 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