



GROUNDING - Telecom Grounding Methods

Length: 4.5 Days

Overview

GROUNDING is a course that will provide instruction on the current industry standards for telecommunications grounding. The terminology and methods discussed in this course are consistent with wireline and wireless industry accepted guidelines i.e.; AT&T, Verizon, Telcordia and National Electrical Code (NEC).

Implementing suitable grounding applications in a telecommunications environment is essential for protecting personnel and equipment from the effects of internal and external disturbances. It is vital not only to identify and understand the grounding procedures and terms used in the industry today, but to understand how to apply them correctly and ensure personal safety, equipment operation and service continuity.

GROUNDING offers broad instruction into the technical and visual aspects of industry accepted grounding guidelines required for installation activity and telecommunications equipment acceptance. To help reinforce the complex grounding schemes discussed casework / lab activities are included.

Who should attend: GROUNDING is recommended for all personnel involved in system installation and maintenance, and for those responsible for implementing and overseeing the installation and maintenance activities. Installation and maintenance technicians, as well as engineers, auditors and managers can benefit from the topics discussed.

Throughout the course, knowledge assessments are used to reinforce the topics discussed. At the completion of the course you will be tested to document your knowledge. Successful completion of this test will earn TPI Trainers Certification. The test results will also provide you with an appreciation of your attained knowledge through classroom participation. The results will also help to determine areas for further study.

Note: When GROUNDING is delivered at your location (client-site), our instructors can enhance your learning experience by performing a grounding audit at your site, thereby specifically targeting the lessons learned in the classroom.

Customization: GROUNDING depicts the current industry standards and can be customized to meet the needs of your specific work group. To discuss the need to customize this course you can contact Vicki Johnson by calling 1-630-607-9302.

Course Outline

- Installation Skill Level
 - competency
 - critical activity
- Introduction to Grounding
 - purpose
 - definition
- Connections and Cabling
 - contact resistance
 - conductor sizes
 - girdling (choking)
 - induction effects
 - lightning and fault current carrying conductors
 - thermal weld connections
 - ground clamps
 - compression connections
 - supporting, securing, and splicing
 - miscellaneous grounding connections
- Building Ground Applications
 - office grounding electrodes
 - AC switchgear
 - supplemental ground systems
- AC Grounding
 - AC service grounding
 - equipment grounding system
 - house service panels
 - AC power distribution
 - EC Equipment grounding conductor (ACEG)
 - AC receptacles
 - grounding internal AC power supplies
 - receptacles powered from internal AC power supplies
 - AC/SPCB connections requirements
- Telecommunications Office Ground System
 - central office ground system
 - methods used to employing grounding systems
- Single Point Connection Window (SPCW)
 - sequence of connections
 - size of SPCW
 - location of SPCW
 - co-located
 - remote

- Power Plant Grounding
 - DC power distribution
 - external DC power sources
 - bonding of battery return (BR) terminals
 - DC-I power distribution applications
 - DC-C power distribution applications
 - power plant frame grounding
 - power plant grounding for IBN loads
 - shared power plants
 - general purpose power plant for CBN
 - engine room grounding
 - remote SPCW
- CBN/MBN (Common Bonding Network / Mesh-Bonding Network)
 - Mesh-BN requirements
 - power system requirements
 - intra-system signal cables
 - signal cable connections between systems
- IBN (Isolated Bonding Network)
 - SPCB (Single Point Connection Bus)
 - sequence of connections to SPCB
 - frame cabling
 - insulation resistance
 - grounding groups of frames in an IBN
 - bonding of elements near to IBN
- Grounding of Miscellaneous Integrated Systems
 - roof mounted towers on reinforced concrete buildings
 - roof mounted towers on steel framed buildings
 - radio rooms
 - computer systems / raised floor systems
 - cable entrance facility outside plant bonding and grounding
 - bonding and grounding of CEF with insulating joints
 - optical fiber cable per NEC
 - distributing and protection frames grounding
 - grounding during removal activities
 - grounding in a CEV (BG/EEE)
 - grounding in a telecommunication hut (AG/EEE)



- Ground System Tests
 - Performance verification
 - AC power verification
 - Power supply grounding
 - SPCB connections
 - Insulation test
 - Noise test IBN star / chain
 - Corrections
 - Mesh-IBN (Mesh-Isolated Bonding Network) tests
 - Mesh-CBN (Mesh-Common Bonding Network) tests

Exercises and Activities:

For public sessions GROUNDING provides a slide presentation that is used to conduct a virtual grounding audit, thereby reinforcing the lessons learned in the classroom.

When GROUNDING is delivered at your location (client-site), our instructors can enhance your learning experience by performing a grounding audit at your site, thereby specifically targeting the lessons learned in the classroom. Where applicable, hands-on lab exercises include:

- Visiting a telecommunication site and conducting a grounding survey using checklists based on the latest industry grounding guidelines or your company's grounding guidelines.
- Documenting any examples of grounding defects found.
- Recommend corrective actions for the defects found based on:
 - cost
 - risk
 - safety
 - service

Take Home Materials:

A complete course manual will be provided. This manual will be a valuable reference as you return to your job. You will also receive a grounding audit checklist based on the most current industry grounding requirements.

Who Can Benefit:

GROUNDING is a benefit for all personnel involved in system installation and maintenance, and for those responsible for implementing and overseeing the installation and maintenance activities. Installation and maintenance technicians, as well as engineers, auditors and managers can benefit from the topics discussed.