

Overhead Grounding Seminar

Personal Protective & System Grounding

COURSE BENEFITS: Increased fault currents, crowded transmission, and distribution corridors have rendered single point and multi point or bracket protective grounding methods obsolete in many locations. Workers are always a parallel path when contacting electrical equipment and/or lines. Personal Protective Grounding must provide a low impedance path to divert most of the current around a worker. Higher fault currents and increased induced voltage levels have made this a greater challenge for all systems and engineers.

WHY ATTEND: This course teaches all level of workers the inherent dangers of contacting grounded lines becoming energized from inadvertent energization or grounded lines adjacent to and energized by induction. It also provides workers the knowledge to understand such hazards, appropriate protective measures, and actions they should take to work such equipment safely. A course for managers, supervisors, safety professionals, and electrical workers it explains ground potential rise (GPR) and stresses proper grounding theory, design, and application of modern grounding schemes. Circuit analysis kept to the most basic level is used to explain the issue to all levels of electrical workers.

Personnel protective ground application, installation, and removal, and inspection of grounding systems and equipment are explained using more than 600 animated PPT slides. Practical exercises associated with grounding transmission and distribution conductors are covered in detail using examples. Vehicle grounding advantages and disadvantages are discussed in detail. Grounding substation equipment, busses, conductors, and the use of grounding transformers are explained. Actual field test results of grounding sets being closed in on are discussed effectively comparing single point, bracket, and equal potential grounding.

WHO SHOULD ATTEND: Managers, Supervisors, Engineers, Safety Professionals, Electrical Craft Workers, or any person who works on electrical equipment, lines or visits electrical work sites has a vested interest in safe work practices and protective grounding. With fault currents magnitudes exceeding 200,000 amps, there are now some locations where standing on the earth is hazardous under certain conditions. All field personnel benefit from this intensive and revealing course.

COURSE OUTLINE: #459 Two (2) days

Grounding Terms & Definitions

Why Ground

- Safety Considerations
- Range of Acceptable Currents
- Permissible Body Currents
- Step & Touch Potentials
- Fault Currents

Substation Grounding

- Design Considerations & Limitations
 - Ground Electrode
 - Grounding Grid & Mats
 - Grounding & Bonding System
 - Equipment
- Conductor & Connector Selection
 - Selection & Application
 - Evaluation

Soil Resistivity Measurements

- Theory & Application
- Soil Considerations

Inspecting Grounding Systems

- Visual
- Testing

Special & Unique Hazards

- Switch Handles
- Substation Fences
- Cable Sheath Grounding

Portable Protective Grounds

- Equal Potential Grounding
- Conductor, Clamps Sizing & Selection
- Protective Grounds
 - Test, Inspect & Maintain

Applying Protective Grounds

- Test Results of:
 - Bracket Grounding
 - Single Point Grounding
 - Equal Potential Grounding

Case Studies of Applied Grounds

- Distribution Lines
- Transmission Lines
- Substations

Grounding Transformers

Summary & Review