

Lightning Protection Installation Training Course Outline

Number of Participants:	Up to Maximum of 25 (<i>First-come, first-served</i>)
Number of Course Hours:	12
Course/Presentation Description:	To review lightning protection design and installation requirements compliant with nationally recognized standards NFPA 780 and UL 96A.

Section 1: Introduction to Lightning Protection: Definition of a lightning protection system and its four main components: Intercept Lightning, Provide Paths Safely to Ground, Disperse Lightning Strikes Safely, and Surge Suppression Devices. Review Relevant Standards: NFPA 780, UL 96, UL 96A, The use of “Shall and Should”, Class I and Class II Materials and Components used; Copper, Aluminum, Lengths, Heights, Bi-Metallic Connectors, Understanding UL Markings, Corrosion Protection and Precautions

Section 2: Ground Work : Ground work aspect of a lightning protection system, Key Definitions; Grounding, Loop conductor, Ground Ring, Ground Rod Electrodes, Grounding Requirements, System Components; Copper Clad, Solid Copper, Stainless Steel, Sectionals, Ground Rod Terminations, Mechanical Connections, Suggested Tools and Understanding Critical Points

Section 3: Down Conductors & Bonding : Down conductors and related bonding aspects of a lightning protection system, Bonding Conductors, Metal Clad/Metal Frame Structures, Key Definitions and Requirements, Techniques and Installation Practices; Thru Roof, EDPM Roofing, Thru-Wall Connectors, Bonding Plates, Exothermic Connections, Suggested Tools, Requirements of Down Conductors and Critical Points

Section 4: Rooftops : Requirements for Roof Types; Flat, Mansard, Gambrel, Gable, Hip and Broken Gable, Zone of Protection, Components used on rooftops; Air Terminals & Bases, Cable Connectors, Pipe Clamps, Strike Termination Devices, Conductors, Understanding Zone of Protection, Requirements of Installed Components, Critical Points, Bad Installation Examples of Down Conductors, Incorrect Cable Fasteners, Air Terminals , Corrected Versions of Poor Installations,

(how to correct) Understanding Requirements of Installing Roof Top System,
Suggested Tools

Section 5: Concealed Systems : Concealed Systems Installation Guidelines and Examples; Under Roof, Behind Exterior Façade, Copper Conductor in Concrete or Masonry, Structural Steel Systems Installation Guidelines and Examples; Using the structure as a Down Conductor, 3 Ways to Connect Conductor to Structural Metal: Mechanically, Welding, or Brazing, Bad Installation Examples

Section 6: Bonding Requirements & Potential Equalization : Bonding of Metal Bodies, Understanding the Distance Requirements, Understanding NFPA 780 Formula for Bonding Requirements, Isolated (Non-Grounded) Metallic Bodies, Achieving Potential Equalization

Section 7: Surge Protection Devices : Definitions, Understanding Surge, Transient, Voltage Protection Rating, Maximum Discharge Current, Power Service Entrances Requirements, Communications Surge Protection Requirements, NFPA 70, National Electrical Code, Installation Requirements,

Section 8: Project Management : Bidding Process; Creating or Obtaining Layout of LP System, Required Specs & Why, Elevations, Roofing Types, Construction Drawings, What's Included; Height, Roof Top Details, Building Sections, Electrical Drawings, LP Drawings, Obtaining Materials Estimates, Pricing (list) Submittal Process, Installation, Certification Process, Common Installation Errors, Maintenance Programs; Visual Inspection, Continuity Tests, Ground Resistance Testing, New additions to Building

Section 9: UL Listed LP Installer : What it means to be a UL Listed Installer, Companies & Products are Listed, Not People, UL Master Label Certificate, How to Become a UL Listed Installer, Requirements, Fees, Benefits to Using Harger, Harger Materials, Shop Drawings, Field Support



Lightning Protection • Grounding Equipment

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