

BUILD & PROTECT

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Building Lightning Safe Communities to Save Lives & Protect Property

Reroofing Specification for Lightning Protection Systems

I. General:


- A) The contractor shall provide and install a complete Lightning Protection System for the building(s) in this project after reroofing is completed.
- B) Compliance Requirements
 - 1) System Design: NFPA 780 Standard, LPI 175, UL96A latest edition.
 - 2) Component Design: UL 96 Standard
 - 3) Certification: LPI Certified Master Installer
- C) Submittals – Submit catalog data showing complete description of material components.
- D) The contractor shall furnish an LPI Reconditioned Master Certificate or a Limited Scope report upon completion of installation.

II. Technical Compliance:

- A) Manufacturer – A Manufacturer member in good standing with the Lightning Protection Institute (LPI) listed on their website: <http://www.lightning.org>
- B) Installation Contractor – The installation shall be made by a contractor that specializes in the installation of Lightning Protection Systems. The installer shall be a Dealer Contractor member in good standing with the Lightning Protection Institute (LPI) listed on their website: <http://www.lightning.org>
- C) Materials listed and labeled in accordance with Underwriters' Laboratories, Inc. (UL) Standard 96, current edition.

III. System Design:

- A) System to consist of air terminals, interconnecting conductors, down



conductors, grounding, bonding, and surge protection complete per current NFPA 780 requirements to appear as a part of the building.

- B) Class I materials shall be used for systems on structures not exceeding 75 feet in height and Class II materials shall be used for systems on structures exceeding 75 feet above grade.
- C) Copper shall be of the grade ordinarily required for commercial electrical work, generally designated as being 95 percent conductive when annealed. Aluminum conductors shall be of electrical grade aluminum.
- D) Lightning protection materials shall be coordinated with building construction materials to assure compatibility. Aluminum lightning protection materials shall not be embedded in concrete or masonry, installed on or below copper surfaces, or used where contact with the earth is possible terminating 18" above grade level minimum. Copper lightning protection materials shall not be installed on aluminum surfaces. Copper system components within 2 feet of chimney exhausts shall be tin coated to protect against deterioration.
- E) Strike termination devices shall be provided to place the entire structure under a zone of protection as defined by the Standards. Air terminals shall project a minimum of 10 inches above protected areas or objects. Air terminals shall be located within 2 feet of exposed corners and roof edges.
- F) Metallic bodies having a thickness $3/16$ " or greater may serve as strike termination devices without the addition of air terminals. These bodies shall be made a part of the lightning protection system by connection(s) according to the Standards using main size conductors and bonding fittings with 3 square inches of surface contact area.
- G) Cable conductors shall provide a two-way path from strike termination devices horizontally and downward to connections with the ground system. Cable conductors shall be free of excessive splices and sharp bends. No bend of a conductor shall form a final included angle of less than 90 degrees nor have a radius of bend less than 8 inches. Structural elements and design features shall be used whenever possible to minimize the visual impact of exposed conductors.
- H) Grounding system and down conductor materials determined to meet the overall design requirements shall remain in place during reroofing and be interconnected with new lightning protection system elements on the roof areas. In the case of structural steel frame construction, roof conductors shall be connected to the structural steel frame at intervals averaging not more



than 100 feet around the protected perimeter of the structure.

- I) When additional cable down conductors are required, cable down conductors may be concealed within the building construction or enclosed within PVC conduit from roof to grade level. Where exposed down conductors are subject to environmental hazards at grade level, guards shall be used to protect the conductor to a point 6 feet above grade.
- J) Ground terminations suitable for the soil conditions shall be provided for each new downlead conductor required to meet design requirements.
- K) Exposed cable conductors shall be secured to the structure at intervals not exceeding 3 feet – 0 inches. Fasteners, nails, screws, or bolts shall be of suitable configuration for the intended application and of the same material as the conductor or of electrolytically compatible materials. Galvanized or plated steels are not acceptable.
- L) Connectors and splicers shall be of suitable configuration and type for the intended application and of the same material as the conductors or of electrolytically compatible materials.
- M) Common interconnection of all grounded systems within the building using main size conductors at grade level shall be verified. Grounded metal bodies located within the calculated bonding distance as determined by the formulas of the Standards shall be bonded to the system using properly sized bonding conductors.
- N) The owner shall verify the location and condition of surge protection for each service entrance of power, communication, and antenna systems. Surge protection shall be provided at every system entrance to the structure to prevent massive lightning overvoltages from entering the structure. Additional surge protection for internal electronic equipment may be determined through cost-benefit analysis by a trained engineer. Proper protection for communication systems entrances shall be coordinated with the communications system supplier.

IV. Installation:

- A) The installing contractor company shall be listed with the Lightning Protection Institute. The installation contractor shall have personnel on staff Certified by the LPI as a Master Installer or Master Installer – Designer of lightning protection systems. LPI qualified staff shall provide supervision of



the installation to the Standards.

- B) The installation shall comply with the requirements of NFPA 780, LPI 175, and UL 96A.
- C) The installation of the lightning protection system components shall be done in a neat and workmanlike manner.
- D) Roof penetrations required for down conductors or for connections to structural steel framework shall be made using through-roof assemblies with solid rods and appropriate roof flashings. The roofing contractor shall furnish the methods and materials required at roofing penetrations of the lightning protection components and any additional roofing materials or preparations required by the roofing manufacturer for lightning conductor runs to assure compatibility with the warranty for the roof.

(Note: The roofing contractor will be responsible for sealing and flashing all lightning protection roof penetrations as per the roof manufacturer's recommendations. The lightning protection roof penetrations and/or method of conductor attachment should be addressed in the roofing section of the specifications.)

V. Final Acceptance/Certification:

- A) At completion of the project, the Master Installer representing the Dealer Contractor member of the Lightning Protection Institute (LPI) shall submit for third party inspection and certification through the LPI inspection program.
- B) When there is an existing LPI-IP Master Certificate or UL Master Label, the project will receive a Reconditioned Master Certificate. If there is no documentation for the concealed work and grounding, the roof system will receive a Limited Scope Certification.