

## **SECTION 16670: LIGHTNING PROTECTION SYSTEM**

### **PART I. GENERAL**

1.01 Objective: To provide safety for the building and occupants by preventing damage to building structure caused by lightning.

1.02 Standards: The following specifications and standards of the latest issue form a part of this specification:

- (1) Lightning Protection Institute Installation Standard, LPI 175
- (2) National Fire Protection Association Lightning Protection Standard, NFPA 780
- (3) Underwriters Laboratories, Inc. Installation Requirements, UL96A

1.03 System Design: The work covered by this section of the specifications consists of furnishing all labor, materials, and items of service required for the completion of a functional and unobtrusive lightning protection system as approved by the architect, engineer, and in strict accordance with this section of the specifications and the applicable contract drawings.

If any departure from the contract drawings or submittal drawings covered below are deemed necessary by the Contractor, details of such departures and reasons therefore shall be submitted as soon as practical to the architect/engineer for approval.

1.04 Submittals: Complete design drawings showing the type, size, and locations of all grounding down conductors, through roof/through wall assemblies, roof conductors, and air terminals shall be submitted to the architect and engineer for approval.

1.05 Quality Assurance: The lightning protection system shall conform to the requirements and standards for lightning protection systems of the LPI, UL, and NFPA. Upon completion, an application shall be made to the Underwriters Laboratories, Inc. for inspection and certification and shall be delivered to the owner ensuring that the concealed components have also been monitored during job progress.

### **PART II. PRODUCTS**

2.01 Standard: The system to be furnished under this specification shall be the standard product of manufacturers regularly engaged in the production of lightning protection equipment and shall be the manufacturer's latest approved design. The equipment shall be UL listed and properly UL labeled.

All equipment shall be new and of a design and construction to suit the application where it is used in accordance with accepted industry standards and LPI, UL, and NFPA code requirements.

QUALIFIED MANUFACTURERS:

- (1) Advanced Lightning Technology
- (2) East Coast Lightning Equipment

2.02 Lightning Protection Equipment: All materials shall be copper and bronze and of the size, weight, and construction to suit the application and used in accordance with LPI, UL, and NFPA code requirements. Class I sized components may be utilized on roof levels 75 feet and below in height. Class II sized components are required for roof levels over 75 feet in height. Bolt type connectors and splicers shall be utilized on Class I and Class II structures. Pressure squeeze clamps are not acceptable. All mounting hardware shall be stainless steel to prevent corrosion.

2.03 Aluminum Components: Aluminum materials may not be used except on roofs that utilize aluminum, galvalume or galvanized metal roofing components. On aluminum, galvalume or galvanized metal roofs or where aluminum, galvalume or galvanized metal parapet caps exist, the entire roof lightning protection equipment shall utilize aluminum components to insure compatibility. However, the down leads and grounding are to utilize copper with the bimetal transition occurring at the through roof assembly with an approved bimetal through roof assembly.

2.04 Lightning Arresters: A surge arrester at the main electrical service entrance is required by Underwriters Laboratories UL96A lightning protection codes and in order to obtain the UL Master Label Certificate of Inspection. It shall be the responsibility of the electrical contractor to install or verify that a surge arrester is installed on the main electrical service.

### **PART III. EXECUTION**

3.01.1 Installation: The installation shall be accomplished by an experienced installation company that is UL listed, a member of the Lightning Protection Institute and an employer of Certified Master Installers of lightning protection systems. For example: Bonded Lightning Protection Systems – Dallas/Ft. Worth 972-247-1988, Houston 713-688-1909, Austin 512-477-9855, San Antonio 210-657-0400, New Orleans 504-464-8800, Mobile 334-433-4466. A Certified Master Installer shall directly supervise the work. All equipment shall be installed in a neat, workmanlike manner. The system shall consist of a complete conductor network at the roof and include air terminals, connectors, splicers, bonds, copper down leads, and proper ground terminals. Copper down lead conductors shall be utilized even when aluminum is required on the roof. Down lead conductors in conduit shall not be brought directly through the roof. Through roof assemblies with solid brass or stainless steel rods shall be utilized for this purpose. Structural steel may be utilized in the installation as outlined by UL, NFPA, and LPI.

3.02 Coordination: The lightning protection installer will work with other trades to insure a correct, neat and unobtrusive installation. The roofing contractor will be responsible for sealing and flashing all lightning protection roof penetrations as per the roof manufacturer's recommendations. However, the lightning protection contractor will be required to coordinate locations of through roofs and submit details of through roof penetrations as required. The lightning protection contractor shall use a compatible adhesive to adhere lightning protection components to the roof when required. The lightning protection contractor shall furnish and install the adhesive and obtain an approval of the compatible adhesive from the roof manufacturer/contractor prior to the installation. Should the roofing contractor/manufacturer require any special walk pads, membrane patches, pavers, etc. under the components of the lightning protection system, it shall be the responsibility of the roofing contractor to furnish and install such items. The lightning protection installer shall be responsible for marking the roof with all conductor and/or pad locations.

It shall be the responsibility of the lightning protection installer to assure a sound bond to the main water service and to assure interconnection with other ground systems.

3.03 Completion: Upon completion of the installation, the lightning protection installer shall secure and deliver to the owner the Underwriters Laboratories, Inc. Certificate of Inspection.

**NOTE: FOR PROJECT CLARIFICATION, USE ONE PARAGRAPH OF PART IV IF PROJECT CONNECTS TO AN EXISTING STRUCTURE.**

### **PART IV. CLARIFICATION**

4.01 Clarification: This specification recognizes that UL will not certify structures or additions that are attached to a structure which does not fully comply with current UL96A lightning protection standards. Therefore, all attached structures shall be reviewed for compliance. The attached structure(s) not fully complying because of damaged systems, missing systems or improperly installed systems shall be fully protected and/or repaired in order to obtain all required inspections and certifications for the owner.

4.02 Clarification: This specification recognizes that UL will not certify structures or additions that are attached to a structure which does not fully comply with current UL96A lightning protection standards. Therefore, lightning protection shall be provided for new buildings only. Upon completion of the installation, the installer shall furnish a written guarantee of UL compliance. In addition, a written report of work and cost needed on attached structure(s) in order for the facility to qualify for the UL Master Label Certificate of Inspection will be required. If no work is necessary, the UL Master Label Certificate of Inspection shall be provided.

**NOTE: SPECIFYING PERSONNEL SHOULD USE ONLY ONE PARAGRAPH 4.01 IN ORDER TO CLARIFY PROJECT REQUIREMENTS AT BID TIME. IF PROJECT IS NOT ATTACHED TO EXISTING STRUCTURE (S) DELETE PART IV.**

**NOTE: LIGHTNING PROTECTION PENETRATIONS AND/OR ATTACHMENT PROCEDURES SHOULD BE ADDRESSED IN THE ROOFING SECTION OF THE SPECIFICATIONS.**

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