SECTION 264113: LIGHTNING PROTECTION SYSTEM

PART I GENERAL

1.0 OBJECTIVE

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

1.1 STANDARDS

A. The following specifications and standards of the latest issue form a part of this specification:
   (1) Lightning Protection Institute Installation Standard, LPI 175
   (2) Underwriters Laboratories, Inc. Installation Requirements, UL96A
   (3) National Fire Protection Association Lightning Protection Standard, NFPA 780

1.2 SYSTEM DESIGN

A. 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.

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

1.3 SUBMITTALS

A. Complete design drawings shall be prepared by a Lightning Protection Contractor that employs LPI certified Master Installer Designers 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.

1.4 QUALITY ASSURANCE

A. The lightning protection system shall conform to the requirements and standards for lightning protection systems of the LPI, UL, and NFPA. Upon completion, a certification letter and warranty by the installing contractor, i.e: Bonded Lightning Protection Systems, Ltd. shall be delivered to the owner. The certification letter and warranty ensures the system has been installed by a contractor who employs LPI certified Master Installer Designers and the building structure is protected by a lightning protection system meeting current standards.

B. Upon completion of the installation, the Lightning Protection Contractor is required to provide a LPI Master Installation Certification, LPI Re-conditioned Certification or LPI Limited Scope Report from the Lightning Protection Institute – Inspection Program (LPI-IP), depending on the lightning protection scope of work.

C. The Lightning Protection Contractor shall have a minimum of 10 years lightning protection installation experience, be a member of the LPI and employ LPI certified Master Installer Designers.

D. Lightning protection components shall be UL listed and labeled.

PART II PRODUCTS

2.0 STANDARDS

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

B. All materials 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 standard requirements.

QUALIFIED MANUFACTURERS: (1) Advanced Lightning Technology
(2) East Coast Lightning Equipment

2.1 LIGHTNING PROTECTION MATERIALS

A. All materials shall be copper/bronze or aluminum 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. All mounting hardware shall be stainless steel to prevent corrosion.

2.2 ALUMINUM MATERIALS

A. Aluminum components shall be used 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 roofing components exist, the entire roof lightning protection system shall utilize aluminum components to ensure compatibility. However, the down leads and grounding shall utilize copper with the bimetal transition occurring at the through roof assembly with an approved bimetal through roof assembly.

2.3 CABLE CONNECTIONS

A. Class I structures shall utilize crimped or bolt type connectors for all conductor splices and connections between conductors and other components.
B. Class II structures shall utilize bolt type connectors for all conductor splices and connections between conductors and other components.
C. Crimp/pressure squeeze conductor supports are acceptable for Class I and Class II structures.

2.4 GROUNDING

A. Ground rods shall be copper-clad steel, 5/8 inch in diameter by 10 feet long.

B. If a ground counterpoise is required it shall be a minimum of main size lightning protection conductor.

C. At least one test well shall be provided for testing purposes.

2.5 SURGE PROTECTION DEVICES

A. A surge protection device at the main electrical service entrance is required by lightning protection standards. The surge protection device must comply with the most current version of UL Standard 1449 as a Type 1 or Type 2 lightning rated unit of 20kA or more. It shall be the responsibility of the Electrical Contractor to furnish and install or verify that such surge protection device is installed on the main electrical service.

PART III EXECUTION

3.0 INSTALLATION

A. The installation shall be accomplished by a Lightning Protection Contractor with a minimum of 10 years documented experience that is a member of the LPI and an employer of LPI certified Master Installer Designers of lightning protection systems and UL Listed. For example: Bonded Lightning Protection Systems, Ltd. 1-800-950-7933 with locations in Dallas, Fort Worth, Houston, Austin, San Antonio, Oklahoma, Louisiana, Alabama, Georgia and Tennessee.

B. A LPI Certified Master Installer shall supervise the installation.

C. All materials 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 shall not be brought directly through the roof. Through roof assemblies with solid brass, aluminum or stainless steel rods shall be utilized for this purpose. The structural steel framework may be utilized in the installation as outlined by LPI, UL, and NFPA standards.

D. For pitched roofs with eave height exceeding 50 feet, eave level protection shall be addressed as outlined by LPI, UL, and NFPA standards.

E. For structures exceeding 200 feet in height, an intermediate loop (potential equalization) shall be addressed as outlined by LPI, UL, and NFPA standards.

3.1 COORDINATION

A. The Lightning Protection Contractor shall work with other trades to insure a correct, neat and unobtrusive installation. Coordinate installation of lightning protection with installation of other building systems and components, including electrical wiring, supporting structures and building materials, metal bodies requiring bonding to the lightning protection components and building finishes.

B. The Lightning Protection Contractor shall be required to coordinate locations of through roofs and submit details of through roof penetrations as required. The roofing contractor shall be responsible for sealing and flashing all lightning protection roof penetrations as per the roof manufacturer's recommendations.

C. 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.

D. 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 Contractor shall be responsible for marking the roof with all conductor and/or pad locations.

E. It shall be the responsibility of the Lightning Protection Contractor to assure a common bond to all incoming media such as the main water, gas, and electric and to assure interconnection with other ground systems.

3.2 FIELD QUALITY CONTROL

A. The lightning protection installation shall conform to the requirements and standards for lightning protection systems of the LPI, UL, and NFPA. Upon completion, the following certifications shall be delivered to the owner; a certification letter and warranty by the Lightning Protection Contractor, i.e: Bonded Lightning Protection Systems, Ltd., and a LPI Master Installation Certification, LPI Re-conditioned Certification or LPI Limited Scope Report from Lightning Protection Institute – Inspection Program (LPI-IP), depending on the lightning protection scope of work.

B. It is recommended the lightning protection system be visually inspected at least annually per NFPA by a Lightning Protection Contractor that is a member of the LPI and UL Listed.

C. Upon completion of the installation, a systems test shall be performed and a written test report provided.

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

PART IV. CLARIFICATION

4.1 CLARIFICATION

A. This specification recognizes additions that are attached to an existing structure may not fully comply with current lightning protection standards. Therefore, lightning protection shall be provided for new structures only. Upon completion of the installation, the Lightning Protection Contractor shall furnish a certification letter and warranty for the new structure only.

B. At the owner's request, the Lightning Protection Contractor shall review the existing structure for compliance with current lightning protection standards. If existing lightning protection system complies with current standards, the completion certification and warranty shall be provided for the entire structure. If repairs are required, a change order shall be provided.