

SECTION 264113 - LIGHTNING PROTECTION SYSTEM

PART 1 GENERAL

1.1 SCOPE

- A. The work under this section includes all labor, material, equipment and related services necessary to install a new building lightning protection system. Submit a written report and document certification that the system is up to current standards after installation. System grounding shall be verified and identified as internal grounding or external driven ground rods, and tested to verify that all grounding is functional.

1.2 RELATED WORK

- A. Applicable provisions of Division 1 govern work under this section.
 - 1. Section 07 63 00 – Sheet Metal Roofing Specialties
 - 2. Section 23 05 29 – Hangers and Supports for HVAC Piping and Equipment
 - 3. Section 26 05 26 – Grounding and Bonding for Electrical Systems
 - 4. Section 26 05 33 – Raceways and Boxes for Electrical Systems

1.3 REFERENCE STANDARDS

- A. LPI- Lightning Protection Institute
- B. NFPA - 780 "Lightning Protection Code"
- C. UL-96A "Installation Requirements for Lightning Protection Systems"

1.4 DESIGN CRITERIA

- A. Lightning protection system shall be furnished and installed in compliance with provisions of the latest edition of Applicable codes and standards to obtain a UL Inc. "Master Label". The "Master Label" certification process is required for this project.
- B. If any departures from the contract documents are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted as soon as practicable to the Architect/Engineer for approval. No such departures shall be made without the prior written approval of the contracting officer and the Owner's Representative.

1.5 QUALIFICATIONS OF MANUFACTURING AND INSTALLING FIRMS

- A. The system to be furnished under this specification shall be the standard product of a manufacturer regularly engaged in the production of lightning protection systems and shall be the manufacturer's latest approved design.
- B. Equipment manufacturer shall be a UL listed and approved manufacturer and a fully certified manufacturer member in good standing of the Lightning Protection Institute (LPI).

- C. Installation of equipment shall be done under the direct on-site supervision of an LPI manufacturer as listed above; or their authorized LPI Certified Master Installer representative; or an experienced installer who is a Certified Master Installer of the LPI.

1.6 SUBMITTALS

A. Shop Drawings:

1. Shop drawings shall be submitted for all materials provided under this Section.
2. Submit installation drawings showing the type, size and location of all equipment, ground connections and cable routings, etc.

B. Samples shall be submitted to Architect/Engineer for approval upon request.

1.7 GUARANTEE

A. Guarantee for one year after acceptance by the Owner's Representative all equipment, materials and workmanship to be free from defect.

B. Provide replacement parts for components found defective at no extra cost to the Owner.

PART 2 PRODUCTS

2.1 FABRICATION AND MATERIALS

A. Air Terminals:

1. Air terminals shall be 1/2" x 18" solid copper and shall project at least 10" above the object to be protected. All air terminal bases shall be cast copper/bronze with stainless steel bolt-pressure cable connectors.

B. Main Conductors:

1. Main conductors shall consist of U.L. listed; Class 11, 115,000 CM, minimum 16 AWG strands, copper wire installed in accordance with the U.L. Code.

C. Concealed Conductors:

1. All concealed conductors shall be installed in Schedule 40 1" PVC conduit. Conduit to be furnished and installed by the Electrical Contractor.

D. Down Conductors:

1. Each main conductor shall be connected to at least 2 down conductors. The average distance between down conductors shall not exceed 100 feet.

E. Fasteners:

1. Conductor fasteners shall be an approved type of non-corrosive metal, have ample strength to support conductors and shall be spaced not to exceed 3'-0" centers. Masonry type cable fasteners spaced every 3'-0" on masonry. Adhesive type cable fasteners spaced every 3'-0" on flat surfaces.

F. Cable Connectors:

1. All cable connectors shall be cast copper/bronze with bolt-pressure type stainless steel bolts and nuts. Cast or stamped crimp fittings are not acceptable.

G. Ground Terminals:

1. Ground rods shall be 3/4" in diameter and 10'-0" long and shall be driven to minimum depth of 10' or more if necessary to reach permanent moisture.
2. Locate ground rods at the perimeter of the structure, at intervals not exceeding 100'-0".
3. If rock or other conditions make it impossible to comply with the above, provide a copper plate, providing it will meet the Underwriters Laboratories, Inc. requirements.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install system in accord with UL and NFPA requirements.

B. Interconnection of Metals:

1. Bond all metal bodies within 6' of the conductors to the system with approved fittings and conductor. Connections between dissimilar metals shall be made with approved bimetallic connections.
2. Bond all metallic objects and systems at roof levels and elsewhere on the structure. Primary bonds for metal bodies of conductance shall be bonded with appropriate fittings and full-size secondary conductor; and shall consist of but not be limited to the following: exhaust fans, ductwork, exhaust vents and any other piping systems, handrails and/or screens, ladders, metal plumbing stacks, etc. Exterior architectural metal fascia and/or curtain walls or mullions, which extend the full height of the structure, shall also be bonded, if not inherently bonded thru the building frame.
3. Secondary conductors must pass continuously horizontally or down from point of bond to point of connection to main conductor.

3.2 SYSTEM TEST

- A. Provide a Ground Loop Conductor (GLC) continuity test, wire to wire to test resistance. Submit written results of the test. Statement shall be provided on Installer's letterhead paper.
- B. Perform an Ohm test at each down conductor. Submit written results of the test. Statement shall be provided on Installer's letterhead paper.

END OF SECTION 264113