**SECTION 26 41 13.13**

**LIGHTNING PROTECTION FOR BUILDINGS**

**BASED ON DFD MASTER ELECTRICAL SPEC DATED 03/01/23**

This section has been written to cover most (but not all) situations that you will encounter. Depending on the requirements of your specific project, you may have to add material, delete items, or modify what is currently written. The Division of Facilities Development expects changes and comments from you.

## PART 1 - GENERAL

## SCOPE

The work under this section includes all labor, material, equipment and related services necessary to install a new building lightning protection system.

PART 1 - GENERAL

 Scope

 Related work

 Reference Standards

 Design and Installation Criteria

 Qualifications of Manufacturing and Designing/Installing Firms

 Submittals

 Guarantee

PART 2 - PRODUCTS

 Fabrication and Materials

PART 3 - EXECUTION

 Installation

## RELATED WORK

Applicable provisions of Division 1 govern work under this section.

Section 07 63 00 – Sheet Metal Roofing Specialties

Section 26 05 26 – Grounding and Bonding for Electrical Systems

## REFERENCE STANDARDS

NFPA 780 - Standard for the Installation of Lightning Protection Systems

UL 96A - Standard for Installation Requirements for Lightning Protection Systems

UL 96 – Standard for Lightning Protection Components

## DESIGN AND INSTALLATION CRITERIA

Lightning protection system shall be designed, furnished and installed in compliance with the specifications and standards of the most current editions of NFPA 780, UL 96 and UL 96A, and shall meet the materials, design and installation requirements of the Underwriters Laboratories, Inc. Master Label Program for lightning protection systems. Note: The UL Master Label Certification process is NOT required for this project.

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 DFD Representative.

After installation, submit a written report certifying that the lightning protection system is up to the indicated current standards.

## QUALIFICATIONS OF EQUIPMENT MANUFACTURER AND DESIGNING/INSTALLING FIRM

Manufacturer: Equipment manufacturer shall be listed with Underwriters Laboratories, Inc. as a lightning protection equipment manufacturer. Minimum 10 years experience.

Designer/Installer: Lightning protection system shall be designed and installed by a contractor that is listed with Underwriters Laboratories for lightning protection. Minimum 10 years experience.

**SUBMITTALS**

**Shop Drawings:**

Complete shop drawings shall be prepared by the system designer/installer, and submitted for approval prior to start of work.

Submit installation drawings showing the type, size and location of all equipment, ground connections and cable routings, etc.

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

## GUARANTEE

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

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

# PART 2 - PRODUCTS

## FABRICATION AND MATERIALS

All components used in the lightning protection system shall be listed and labeled for compliance with UL 96 – Standard for Lightning Protection Components.

**Air Terminals:**

Air terminals shall be [3/8”] [1/2"] x [12”] [18"] copper, blunt tip, and shall project at least 10" above the object to be protected. All air terminal bases shall be copper.

**Main and Down Conductors:**

Main and down conductors shall be UL listed, Class I or Class II copper. Main conductors shall have cross-sectional area of 65,000 circular mils minimum. Each main conductor shall be connected to at least 2 down conductors. Down conductors shall be spaced at intervals averaging not more than 100 feet around the protected perimeter of the structure. Conductors that are identified to be concealed shall be installed in Schedule 40, 1” PVC conduit.

**Cable Holders, Clamps, and Fasteners:**

Cable holders, clamps, and fasteners shall be [copper] [an approved type of non-corrosive metal]. Conductor fasteners shall be ample strength to support conductors and shall be spaced not to exceed 3'-0" centers. [All holders, and clamps used on copper roofing shall be adhesive-mounted. Adhesive shall be Chem Link M-1 structural adhesive, or approved equal.] Masonry type cable fasteners shall be used on masonry.

**Ground Terminals:**

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.

Each down conductor shall terminate at a ground terminal dedicated to the lightning protection system.

If rock or other conditions make it impossible to comply with the above, provide a copper plate meeting the Underwriters Laboratories, Inc. requirements.

# PART 3 - EXECUTION

## INSTALLATION

Install system in accordance with UL 96 and 96A, and NFPA 780 requirements.

Installation shall include any third-party inspection that is required by the UL and NFPA requirements.

[Main and down conductors shall be run on exterior of the building, as hidden as possible. Down conductors shall be run in corners, adjacent to or behind gutters, or other locations that keep the conductors as concealed as possible.]

Interconnect lightning protection system to the building’s other grounded systems such as electrical and telephone service, to provide a common ground potential.

**Interconnection of Metals:**

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.

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.

Secondary conductors must pass continuously horizontally or down from point of bond to point of connection to main conductor.

**SYSTEM TEST**

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.

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