

SECTION 26 41 00
FACILITY LIGHTNING PROTECTION
(ADDENDA 1)

PART 1 – GENERAL

- 1.1 Work Included: Reinstall salvaged lightning protection system and furnish and install new components, as needed to ensure that the lightning protection system meets or exceeds UL 96 requirements.
- 1.2 Related Work:
 - 1.2.1 Section 02 41 13 – Selective Demolitions and Preparations
 - 1.2.2 Section 07 54 23 – Thermoplastic Polyolefin (TPO) Roofing
 - 1.2.3 Section 07 60 00 – Flashing and Sheet Metal
- 1.3 References
 - 1.3.1 NFPA 780 – Standard for the Installation of Lightning Protection Systems
 - 1.3.2 UL 96 – Standard for Safety for Lightning Protection Equipment
 - 1.3.3 UL 96A – Standard for Safety for Installation Requirements for Lightning Protection Systems
- 1.4 Submittals
 - 1.4.1 In accordance with Section 01 33 00 of this Specification
 - 1.4.2 Submit product data sheets showing application, dimensions, and material of each component utilized in the lightning protection system.
 - 1.4.3 Submit shop drawings showing layout of air terminals, bonding connections to metal objects, bonding connections to the structure, and ground electrodes. Include sizes of air terminals, conductors, ground electrodes, and connections/termination details.
 - 1.4.4 Submit proof of UL listing in accordance with UL 96.
- 1.5 Environmental Conditions: Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.6 Warranty: Refer to Section 01 78 36
 - 1.6.1 Comply with the General Conditions of the Contract concerning warranties and bonds. The Contractor shall agree that the work covered under this Contract shall remain free from any physical defects caused by defective workmanship or materials for the warranty period. Warranty shall be executed on Contractor's company letterhead and signed by an authorized officer of the company.
 - 1.6.2 Warranty Period: One-year (1)
- 1.7 Quality Control

- 1.7.1 This work shall be performed by a U.L. listed Contractor licensed to perform such work in the state of the work, and a minimum of five (5) years' experience installing lightning protection systems.
- 1.7.2 Provide certification in accordance with UL 96 AND UL96A for all components and installation.

PART 2 – PRODUCTS

- 2.1 All products shall be U.L. listed and be capable of meeting the requirements of this Section.
- 2.2 Lightning Protection System: Shall comply with NFPA 780 and U.L. 96; Class II.
- 2.3 Replacement Materials:
 - 2.3.1 Air Terminal, solid: Nominal ½” diameter aluminum. Blunt tip terminals shall be provided. Terminal length shall extend a minimum of 10 inches above the top of parapets, eaves, and/or equipment to be protected.
 - 2.3.2 Main Conductor, cable: Nominal 15 AWG, nominal 375 lb/1,000 feet.
 - 2.3.3 Bonding Conductor, cable, stranded: Nominal 17 AWG
 - 2.3.4 Stainless-Steel Fasteners: As approved by the lightning protection system manufacturer.
 - 2.3.5 Miscellaneous Items: As required by the lightning protection system manufacturer.
 - 2.3.6 Air Terminal Bases: Air Terminal Base, Horizontal or Vertical Mount, Imperial Thread as manufactured by Pentair.
- 2.4 Sealant: As approved by the roofing system manufacturer and lightning protection manufacturer to adhere lightning protection components to roofing.

PART 3 – EXECUTION

- 3.1 Preparation
 - 3.1.1 Coordinate installation with the roofing contractor.
 - 3.1.2 Verify that surfaces are ready to receive work. Installation of materials is indicative that the surfaces are acceptable to the Contractor.
 - 3.1.3 Perform all appropriate calculations to determine the location of all terminals at perimeters and/or in the field of the roof. Design calculations and drawings shall be submitted to the Designer for approval prior to the start of work.
- 3.2 Installation
 - 3.2.1 Bond the pipe penetrations, rooftop units, roof hatch, roof drains, and any other rooftop equipment to the lightning protection system in accordance with applicable local codes and National Fire Protection Association (NFPA) recommendations.
 - 3.2.2 All work shall conform to the requirements/recommendations of NFPA 780, Standard for the Installation of Lightning Protection Systems (current edition).
 - 3.2.3 Main conductors shall interconnect all strike termination devices and shall form two or more paths

- from each strike termination device downward, horizontally, or rising at no more than ¼ pitch to connections with ground terminals.
- 3.2.4 No bend of a conductor shall form an included angle of less than 90 degrees, nor shall it have a radius of bend less than 8 inches.
- 3.2.5 Conductors shall be permitted to be coursed through air without support for 3 feet or less. Conductors that must be coursed through air for longer distances shall be provided with a positive means of support that will prevent damage or displacement of the conductor.
- 3.2.6 Contractor shall connect main connectors to the existing down conductors. No work shall be performed on the existing down conductor system.
- 3.2.7 At any locations where conductors or air terminals must be secured over the roofing, secure the component bases using specified sealant.
- 3.2.8 At any locations where air terminals or conductors are to be installed at the parapet, set the component over specified sealant on the substrate. Furnish and install vertical anchors to secure lightning protection materials; these shall have a minimum outside diameter of ¼ inch and shall be set with care and in accordance with accepted industry standards. Where anchors are installed, anchor fit shall be tight against moisture, thus reducing the possibility of damage due to freezing.
- 3.2.9 Connector fittings shall be used at all end-to-end, tee, or Y splices of lightning conductors. They shall be attached to withstand a pull test of 200 lbs. Fittings used for required connections to metal bodies in or on a structure shall be secured to the metal body by bolting, brazing, or welding. Crimp type connections shall not be used with Class II conductors.
- 3.2.10 Upon completion of all work, the system shall be inspected and certified that it meets or exceeds UL 96 requirements. The written certification shall be provided to the Owner prior to final payment.
- 3.2.11 Contractor shall provide the Owner with an inspection form template (in either Word or Excel format) and instructions for performing periodic inspection of the lightning protection system. The inspection report and instructions shall provide provisions for:
- 3.2.11.1 Inspection of all conductors and system components.
- 3.2.11.2 Tightening of all clamps and splices
- 3.2.11.3 Measurement of lightning protection system resistance
- 3.2.11.4 Measurement of resistance of ground terminals
- 3.2.11.5 Inspection or testing, or both, of surge suppression devices to determine their effectiveness compared with similar new devices
- 3.2.11.6 Re-fastening and tightening of components and conductors, as required.
- 3.2.11.7 Inspection and testing, as required, to determine if the effectiveness of the lightning protections system has been altered due to additions to, or changes, in the structure.

END OF SECTION