

# MASTER SPECIFICATION

## Lightning Protection Systems

For

- EARLY STREAMER EMISSION (ESE)
- FARADAY MULTI-POINT

- **EARLY STREAMER EMISSION (ESE) LIGHTNING PROTECTION SYSTEM – SECTION 26 41 19:**

ESE lightning protection systems for compliance with UL-96 and HBP-21 (Manufacturer's Installation Standard). Third-party inspection and certification.

The ESE air terminal is a versatile lightning protection system and can be used on any structure or facility.

- **FARADAY MULTI-POINT LIGHTNING PROTECTION SYSTEMS - SECTION 26 41 13:**

Faraday multi-point systems for compliance with UL96, UL96A and NFPA-780 standards. Third-party inspection and certification.

The multi-point system is a versatile lightning protection system and can be used on any structure or facility.

### **SPECIFICATIONS INDEX:**

Early Streamer Emission (ESE) Air Terminal System.....Pages 2-4

Faraday Multi-point Systems:

Set 1 - Class I copper, building less than 75 ft. in height.....Page	5-6
Set 2 - Class I aluminum, building less than 75 ft. in height.....Page	7-8
Set 3 - Class II copper, building over 75 ft. in height.....Page	9-10
Set 4 - Class II aluminum, building over 75 ft. in height.....Page	11-12

# **EARLY STREAMER EMISSION (ESE) AIR TERMINAL SYSTEM**

## SECTION 26 41 19 LIGHTNING PROTECTION SYSTEMS

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Provide all labor, components, equipment, and services to perform all operations required for the complete installation and related work as specified herein.
- B. Any such work in any other section of these specifications that is not specifically described therein shall comply with the requirements of this section.
- C. The following items of work are specifically included in, but not necessarily limited to, the work of this section without limiting the generality implied by these specifications:
  - 1. ESE lightning protection air terminal
  - 2. Mast, complete with base and supports
  - 3. Down conductors
  - 4. Grounds
  - 5. Transient Voltage Surge Suppression

#### **1.02 SUBMITTALS**

- A. Provide shop drawings for review, showing location of ESE air terminal, mast, conductors, installation procedures and details.
- B. Detailed manufacturer's data sheets on all components, accessories and miscellaneous equipment shall also be submitted.

#### **1.03 DESCRIPTION OF SYSTEM**

- A. Provide a complete installation of equipment to comprise a complete system in accordance with Manufacturer's Installation Standard HBP-21.
- B. The ESE installer shall be responsible for all components and labor to accomplish this result.
- C. The system, including the ESE air terminal, conductors, mast and complementary parts, shall be installed so that completed work is unobtrusive and does not detract from the building appearance.

#### **1.04 CODES, REGULATIONS, PERMITS**

- A. The completed system shall comply with the ESE manufacturer's standard, equipment supplier drawings and specification requirements for installation of ESE lightning protection systems.
- B. The installer, at his expense, shall accomplish any corrections required by the inspection.
- C. Noncompliance shall be reported to the equipment supplier for consideration.

#### **1.05 STANDARDS OF QUALITY**

- A. The ESE system equipment supplier, contractor, and installer shall install the ESE system in compliance with the Manufacturer's Installation Standard HBP-21.

#### **1.06 INSPECTION AND CERTIFICATION**

- A. Provide manufacturer's guarantees and warranties upon completion of the installation.
  - a. Provide video of the installation to the manufacturer for review and compliance with the manufacturer's requirements.
  - b. The lightning protection system installing contractor shall provide a video of the installation, including but not limited to; ESE air terminal, mast mounting, bonding connections (waterline & structural steel), down conductors, ground rods/grids and all buried, concealed or inaccessible connections and components. Video shall be forwarded to the ESE manufacturer.
  - c. The ground resistance of the completed system shall be measured using IEEE "Fall of Potential Method". Written test results shall be forwarded to the ESE manufacturer.
    - i. Ground resistance shall be ten (10) ohms or less.
- B. Listing of components shall be by Underwriter's Laboratories (UL 96) or approved equal.
- C. Certification of installation: A third-party inspection agency shall inspect and certify the installation of the ESE lightning protection systems for compliance with Manufacturer's Installation Standard HBP-21.

# **EARLY STREAMER EMISSION AIR TERMINAL SYSTEM**

## SECTION 26 41 19 LIGHTNING PROTECTION SYSTEMS

### **PART 2 PRODUCTS**

#### **2.01 ESE AIR TERMINAL**

- A. The complete air terminal assembly shall be chrome plated copper, 5/8" air terminal, lock nut and washer and support structure. Sphere shall be threaded to the air terminal.
- B. The ESE air terminal shall be threaded for interconnection to top of mast.

#### **2.02 CONDUCTORS**

- A. Copper conductors shall be 28 strands of 14-gauge wire rope lay, with a net weight of 375 pounds per 1,000 feet (60mm<sup>2</sup>), minimum.
- B. The structural steel may be utilized as the main conductor provided the steel is electrically continuous or is made so via other means.
  - 1. Every other column or an average of 60'-0" (18m) intervals shall be bonded and connected to the ground system.
- C. All conductors shall be secured every 3'-0" (900mm) maximum.
- D. Fasteners and clips utilized shall be of equal corrosion resistance as the components being secured.
- E. Bare copper components shall not be installed on dissimilar metals.
- F. Corrosion resistant copper conductors and fittings shall be utilized where corrosive atmospheres are present.
- G. Conductors shall be installed so that a conductor shall always have a horizontal or downward path, free of "U" and "V" pockets, with the exception that an 8" (203mm) maximum rise, or a rise of 3" (80mm) maximum for every 12" (300mm) of conductor length shall be permitted in a main conductor run.
- H. Each ESE terminal shall have two (2) paths to ground from the base plate of the mast, with the exception of an elevated mast that may have a single conductor run for a maximum of 16'-0" (4880mm) before two (2) down conductors shall be initiated.
- I. The electrical contractor shall furnish and install all necessary PVC conduit for concealed down conductors.
- J. No bend of a conductor shall be less than 90° and shall not have a radius of bend of less than 8" (203mm). Exceptions are through roof and wall assemblies and "T" connections.

#### **2.03 MAST**

- A. Aluminum or stainless steel mast with threaded connection for the ESE air terminal and bonding plate for cable connection.
- B. Mast mounting support base, depending upon application, shall be flat mounting base, side mounting base or structural support. A flagpole may be utilized.

#### **2.04 GROUNDING SYSTEM**

- A. Ground rods shall be copperbond 3/4" x 10'-0", minimum.
- B. One set of tripod grounds shall be installed for each down conductor.
- C. Ground plates of high conductivity copper sheet, 20 gauge minimum, 24 in. sq., may be used in lieu of, or in combination with ground rods, to achieve the ten (10) ohm resistance grounding system requirement.
- D. The cable attachments to the ground rods must be accomplished via mechanical clamp. Cable attachments to ground plates shall be via copper bond plates of eight 8in<sup>2</sup> (5161mm<sup>2</sup>) of contact area.
- E. A ground loop may be substituted for the ground rods or ground plates. The ground loop must be of a main size conductor and shall comply with the ten (10) Ohm resistance requirement of the grounding system.
- F. Ground rods, ground plates, and ground loop conductors shall be installed a minimum of 1ft. (300mm) below grade and a minimum of 2ft. (600mm) away from the foundation.
- G. Bond to waterlines (fire & domestic).
- H. Bonding of grounded systems shall be via main size conductors. The bonding shall be accomplished to achieve equal potential of all grounds.

#### **2.05 CONNECTORS, FITTINGS, FASTENERS, AND HARDWARE**

- A. Provide all connectors, fittings, fasteners, hardware, clamps, guards, lugs, etc., as required to connect, and install all parts of the system.
- B. All equipment shall be fabricated from copper and/or bronze components.

#### **2.06 SURGE SUPPRESSION**

- A. Provide surge protection on the electrical, telephone, and antenna and TV lead wires.
- B. The surge suppresser for the main electrical panel shall be industrial grade, with replaceable modules, fused, indicator lights.

## **EARLY STREAMER EMISSION AIR TERMINAL SYSTEM**

### SECTION 26 41 19 LIGHTNING PROTECTION SYSTEMS

- C. The electrical surge suppression equipment shall be installed at the main entrance of the electrical system with a disconnecting mechanism.
- D. The surge suppresser shall have the capability of being disconnected without shutting down the electrical system.
- E. Telephone surge suppression shall be to the standards of the telephone system carrier.
- F. The suppresser shall be industrial grade with replaceable modules, and a reaction time of less than one (1) nanosecond.
- G. This surge equipment shall be installed at the main entrance of the telephone system.
- H. Antenna and TV lead wire suppressers shall be industrial grade suitable for the conductor, coax or hard wire. The suppresser shall have a reaction time of less than one (1) nanosecond and shall be installed as close to the antenna or TV camera as possible.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION-GENERAL**

- A. Installation shall be accomplished in a professional manner by an installer of verifiable ESE system installations or a licensed electrical contractor.
- B. All work installed within the building shall be concealed.
- C. All work installed in accessible locations shall be properly guarded and protected.
- D. All components shall be installed in a manner to prevent electrolytic action under presence of moisture.
- E. All roof, wall or other building penetrations shall be made in a manner to prevent the ingress of water or moisture.
- F. Roof penetrations, flashings/pitch pans shall be furnished and installed by the roofing contractor.
- G. PVC conduit shall be provided by the electrical contractor.

### **PART 4 ACCEPTABLE MANUFACTURERS AND SUPPLIERS**

#### **4.01 MANUFACTURER**

- A. Heary Bros. Lightning Protection Co., Inc. Tel.: 716-941-6141 EMAIL: sales@hearybros.com
- B. Lightning Preventor of America Tel.: 800-421-6141 EMAIL: sales@lightningpreventor.com

**END OF SECTION**

**FARADAY MULTI-POINT SYSTEM**  
**CLASS I – BUILDINGS UNDER 75 FT. HIGH (COPPER)**

**Set 1**

SECTION 26 41 13  
LIGHTNING PROTECTION SYSTEM

**PART I GENERAL**

**1.01 Summary**

- A. The work covered by this section of the specifications consists of furnishing all labor, components and items of service required for the completion of a functional and unobtrusive lightning protection system as approved by the architect 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 Contractor, details of such departures and reasons therefore shall be submitted as soon as practicable to the architect for approval. No such departures shall be made without the prior written approval of the architect.

**1.02 Quality Assurance**

- A. Listing of components:  
Third-party inspection agency shall list the components:  
UL 96 or approved equal.
- B. Inspection and certification of installations: Third-party inspection agency shall inspect and certify the installation for compliance with:  
UL-96A  
NFPA 780
- C. 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.
- D. The equipment manufacturer shall be an approved manufacturer. All components specified for this work shall be manufactured by Heary Bros. Lightning Protection Co., Inc., Springville, New York, or approved equal. For approval of a manufacturer other than specified, proposed component data and installation drawings must be submitted for review not less than 10 days prior to bid.

**1.03 Submittals**

- A. Complete shop drawings showing the type, size, and locations for all equipment, grounds, and cable routings, etc., shall be submitted to the architect for approval prior to start of work.
- B. Catalog data shall be submitted to the architect for approval.

**PART 2 PRODUCTS**

**2.01 Standard**

- A. All equipment shall be new, the product of a single manufacturer as outlined above, and of a design and construction to suit the application where it is used in accordance with accepted industry standards.

**2.02 Equipment**

- A. All components shall be copper or bronze and of the size, weight and construction to suit the application where used in accordance with requirements for Class I structures, and in accordance with manufacturer recommendations.
- B. **Conductors** shall be copper, 17 strands 14-gauge minimum, 62,000 cm, 200 pounds per 1000ft.
- C. **Air terminals** shall be solid round copper bar 3/8" x 12" minimum. Air terminals shall project 10" minimum above the object to be protected. Locate and space according to requirements.
- D. **Air terminal bases** shall be copper or bronze with bolt pressure cable connectors and shall be securely mounted with stainless steel screws or bolts.
  - 1. Bases on flat and/or built-up tar and gravel roofs shall be secured with a proper adhesive and shall have a minimum surface contact area of 18.5 sq. inches.
- E. **Ground rods** shall be 5/8" x 10'-0" minimum. They shall be connected to the system with a two-bolt copper clamp having a minimum length of 1-1/2" and employing stainless steel cap screws.
- F. **Cable fasteners** shall be substantial in construction, electrolytically compatible with the conductor and mounting surface and shall be spaced according to requirements.
- G. **Bonding devices**, cable splicers and miscellaneous connectors shall be of copper or bronze with bolt pressure cable connectors.

**FARADAY MULTI-POINT SYSTEM**  
**CLASS I – BUILDINGS UNDER 75 FT. HIGH (COPPER)**

- H. Bonding devices, cable splicers and miscellaneous connectors shall be of copper with bolt pressure cable connectors.
- I. Equipment on stacks and chimneys shall be protected from corrosion and sized in accordance with requirements.
- J. All miscellaneous bolts, nuts and screws shall be stainless steel.

**PART 3 EXECUTION**

**3.01 Installation**

- A. The installation shall be accomplished by an experienced installer or a licensed electrical contractor. The installer shall work under the direct supervision of a manufacturer as listed herein or a qualified distributor of such manufacturer's products.
- B. All equipment shall be installed in a neat workmanlike manner in the most inconspicuous manner possible.
- C. The system shall consist of a complete cable network on the roof involving all air terminals, splices, and bonds with cable downloads routed concealed in the building construction and in conduit to ground.
  - a. The electrically continuous steel frame of the building may serve as the down conductors for the lightning protection system. The number, size, type and location of grounds and connections to steel at roof and grade level shall be as required.
- D. Download cables shall not be brought directly through the roof. Thru-roof connectors with solid rods or conduit through proper roof flashing shall be utilized for this purpose.
- E. Roof penetrations, proper roof flashings/pitch pans shall be furnished and installed by the roofing contractor.
- F. The electrical contractor shall furnish and install all necessary PVC conduit for concealed down conductors.
- G. Copper equipment shall not be connected to aluminum surfaces except by means of a bimetal transition fitting. Lead coating is not an acceptable bimetal transition.

**3.02 Coordination**

- A. The lightning protection installer will work with other trades to insure a correct, neat and unobtrusive installation.
- B. A sound bond shall be made to the main water service (fire and domestic), and interconnection with other building ground systems, including both telephone and electrical.
- C. Proper arresters shall be installed on the power and telephone service by either the utility or the electrical contractor as applicable.

**3.03 Completion**

- A. Provide as-built shop drawings upon completion of the installation.
- B. Upon completion of installation a third-party inspection agency shall provide certification.

**PART 4 ACCEPTABLE MANUFACTURERS AND SUPPLIERS**

**4.01 NAMES AND PHONE NUMBERS**

- A. Heary Bros. Lightning Protection Co., Inc.  
11291 Moore Road  
Springville, NY 14141 USA  
Tel: 800-421-6141 or 716-941-6141  
EMAIL: sales@hearybros.com

**END OF SECTION**

**FARADAY MULTI-POINT SYSTEM**  
**CLASS I – BUILDINGS UNDER 75 FT. HIGH (ALUMINUM)**

**Set 2**

SECTION 26 41 13  
LIGHTNING PROTECTION SYSTEM

**PART I GENERAL**

**1.01 Summary**

- A. The work covered by this section of the specifications consists of furnishing all labor, components and items of service required for the completion of a functional and unobtrusive lightning protection system as approved by the architect 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 Contractor, details of such departures and reasons therefore shall be submitted as soon as practicable to the architect for approval. No such departures shall be made without the prior written approval of the architect.

**1.02 Quality Assurance**

- A. Listing of components:  
Third-party inspection agency shall list the components:  
UL 96 or approved equal.
- B. Inspection and certification of installations: Third-party inspection agency shall inspect and certify the installation for compliance with:  
UL-96A  
NFPA 780
- C. 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.
- D. The equipment manufacturer shall be an approved manufacturer. All components specified for this work shall be manufactured by Heary Bros. Lightning Protection Co., Inc., Springville, New York, or approved equal. For approval of a manufacturer other than specified, proposed component data and installation drawings must be submitted for review not less than 10 days prior to bid.

**1.03 Submittals**

- A. Complete shop drawings showing the type, size, and locations for all equipment, grounds, and cable routings, etc., shall be submitted to the architect for approval prior to start of work.
- B. Catalog data shall be submitted to the architect for approval.

**PART 2 PRODUCTS**

**2.01 Standard**

- A. All equipment shall be new, the product of a single manufacturer as outlined above, and of a design and construction to suit the application where it is used in accordance with accepted industry standards.

**2.02 Equipment**

- A. All components shall be copper or aluminum as described below, and of the size, weight, and construction to suit the application where used in accordance with requirements for Class I structures, and in accordance with manufacturer recommendations.
- B. **Roof conductors** shall be aluminum of 24 strands 14-gauge minimum, 98,600 cm, net weight 110 pounds per 1000ft.
- C. **Down conductors** from roof to ground shall be copper, 17 strands, 14-gauge minimum, 62,000 cm, 200 pounds per 1000ft.
- D. **Air terminals** shall be solid round aluminum bar 1/2" x 12" minimum. Air terminals shall project 10" minimum above the object to be protected. Locate and space according to requirements
- E. **Air terminal bases** shall be aluminum with bolt pressure cable connections and shall be securely mounted with stainless steel screws or bolts.
  - 1. Bases on flat and/or built-up tar and gravel roofs shall be secured with a proper adhesive and shall have a minimum surface contact area of 18.5 sq. inches.

**FARADAY MULTI-POINT SYSTEM**  
**CLASS I – BUILDINGS UNDER 75 FT. HIGH (ALUMINUM)**

- F. **Ground rods** shall be a 5/8" x 10'-0" minimum. They shall be connected to the system with a two-bolt copper clamp having a minimum length of 1-1/2" and employing stainless steel cap screws.
- G. **Cable fasteners** shall be substantial in construction, electrolytically compatible with the conductor and mounting surface and shall be spaced according to requirements.
- H. **Bonding devices**, cable splicers and miscellaneous connectors shall be of aluminum with bolt pressure cable connectors.
- I. Equipment on stacks and chimneys shall be protected from corrosion and sized in accordance with requirements.
- J. All miscellaneous bolts, nuts and screws shall be stainless steel.
- K. An approved bimetal transition fitting shall be used at the roof level to change from aluminum roof conductor to copper down conductor.

**PART 3 EXECUTION**

**3.01 Installation**

- A. The installation shall be accomplished by an experienced installer or licensed electrical contractor. The installer shall work under the direct supervision of a manufacturer as listed herein or a qualified distributor of such manufacturer's products.
- B. All equipment shall be installed in a neat workmanlike manner in the most inconspicuous manner possible.
- C. The system shall consist of a complete cable network on the roof involving all air terminals, splices, and bonds with cable downleads routed concealed in building construction and in conduit to ground.
  - a. The electrically continuous steel frame of the building may serve as the down conductors for the lightning protection system. The number, size, type and location of grounds and connections to steel at roof and grade level shall be as required.
- D. Downlead cables shall not be brought directly through the roof. Thru-roof connectors with solid rods or conduit through proper roof flashings shall be utilized for this purpose.
- E. Roof penetrations, proper roof flashings/pitch pans shall be furnished and installed by the roofing contractor.
- F. The electrical contractor shall furnish and install all necessary PVC conduit for concealed down conductors.
- G. The limitations on areas of usage for aluminum cables and for copper and aluminum components together as outlined shall be observed using bimetallic connections.

**3.02 Coordination**

- A. The lightning protection installer will work with other trades to insure a correct, neat and unobtrusive installation.
- B. A sound bond to the main water service (fire and domestic) shall be provided.
- C. Interconnection with other building ground systems shall be provided, including both telephone and electrical.
- D. Proper arresters shall be installed on the power and telephone service by either the utility or the Electrical Contractor as applicable.

**3.03 Completion**

- A. Provide as-built shop drawings upon completion of the installation.
- B. Upon completion of installation a third-party inspection agency shall provide certification.

**PART 4 ACCEPTABLE MANUFACTURERS AND SUPPLIERS**

**4.01 NAMES AND PHONE NUMBERS**

- A. Heary Bros. Lightning Protection Co., Inc.  
11291 Moore Road  
Springville, NY 14141 USA  
Tel: 800-421-6141 or 716-941-6141  
EMAIL: sales@hearybros.com

**END OF SECTION**



**FARADAY MULTI-POINT SYSTEM**  
**CLASS II – BUILDINGS OVER 75 FT. HIGH (COPPER)**

**Set 3**

SECTION 26 41 13  
LIGHTNING PROTECTION SYSTEM

**PART I GENERAL**

**1.01 Summary**

- A. The work covered by this section of the specifications consists of furnishing all labor, components and items of service required for the completion of a functional and unobtrusive lightning protection system as approved by the architect 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 Contractor, details of such departures and reasons therefore shall be submitted as soon as practicable to the architect for approval. No such departures shall be made without the prior written approval of the architect.

**1.02 Quality Assurance**

- A. Listing of components:
  - Third-party inspection agency shall list the components:  
UL 96 or approved equal.
- B. Inspection and certification of installations: Third-party inspection agency shall inspect and certify the installation for compliance with:
  - UL-96A
  - NFPA 780
- C. 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.
- D. The equipment manufacturer shall be an approved manufacturer. All components specified for this work shall be manufactured by Heary Bros. Lightning Protection Co., Inc., Springville, New York, or approved equal. For approval of a manufacturer other than specified, proposed component data and installation drawings must be submitted for review not less than 10 days prior to bid.

**1.03 Submittals**

- A. Complete shop drawings showing the type, size, and locations for all equipment, grounds, and cable routings, etc., shall be submitted to the architect for approval prior to start of work.
- B. Catalog data shall be submitted to the architect for approval.

**PART 2 PRODUCTS**

**2.01 Standard**

- A. All equipment shall be new, the product of a single manufacturer as outlined above, and of a design and construction to suit the application where it is used in accordance with accepted industry standards.

**2.02 Equipment**

- A. All components shall be copper or bronze and of the size, weight, and construction to suit the application where used in accordance with requirements for Class II structures, and in accordance with manufacturer recommendations.
- B. **Conductors** shall be of 28 strands 14-gauge minimum diameter, 115,000cm, 375 pounds per 1000ft.
- C. **Air terminals** shall be solid round copper bar 1/2" x 12" minimum. Air terminals shall project 10" minimum above the object to be protected. Locate and space according to requirements.
- D. **Air terminal bases** shall be copper or bronze with bolt pressure cable connections and shall be securely mounted with stainless steel screws or bolts.
  - 1. Bases on flat and/or built-up tar and gravel roofs shall be secured with a proper adhesive and shall have a minimum surface contact area of 18.5 sq. inches.
- E. **Ground rods** shall be 3/4" x10'-0" minimum. They shall be connected to the system with a two-bolt copper clamp having a minimum length of 1-1/2" and employing stainless steel cap screws.

**FARADAY MULTI-POINT SYSTEM**  
**CLASS II – BUILDINGS OVER 75 FT. HIGH (COPPER)**

- F. **Cable fasteners** shall be substantial in construction, electrolytically compatible with the conductor and mounting surface and shall be spaced according to requirements.
- G. **Bonding devices**, cable splicers and miscellaneous connectors shall be of copper or bronze with bolt pressure cable connectors.
- H. Equipment on stacks and chimneys shall be protected from corrosion in accordance with requirements.
- I. All miscellaneous bolts, nuts and screws shall be stainless steel.

**PART 3 EXECUTION**

**3.01 Installation**

- A. The installation shall be accomplished by an experienced installer or a licensed electrical contractor. The installer shall work under the direct supervision of a manufacturer as listed herein or a qualified distributor of such manufacturer's products.
- B. All equipment shall be installed in a neat workmanlike manner in the most inconspicuous manner possible.
- C. The system shall consist of a complete cable network on the roof including all air terminals, splicers and bonds with cable downloads routed concealed in the building construction and in conduit to ground.
  - a. The electrically continuous steel frame of the building may serve as the down conductors for the lightning protection system. The number, size, type and location of grounds and connections to steel at roof and grade level shall be as required.
- D. Downlead cables shall not be brought directly through the roof. Thru-roof connectors with solid rods or conduit through proper roof flashings or pitch pockets shall be utilized for this purpose.
- E. Roof penetrations, proper roof flashings/pitch pans shall be furnished and installed by the roofing contractor.
- F. The electrical contractor shall furnish and install all necessary PVC conduit for concealed down conductors.
- G. Copper equipment shall not be connected to aluminum surfaces except by means of a bimetal transition fitting. Lead coating is not to be accepted as a bimetal transition.

**3.02 Coordination**

- A. The lightning protection installer will work with other trades to insure a correct, neat and unobtrusive installation.
- B. 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 building ground systems, including both telephone and electrical.
- C. Proper arresters shall be installed on the power and telephone service by either the utility or the Electrical Contractor as applicable.

**3.03 Completion**

- A. Provide as-built shop drawings upon completion of the installation.
- B. Upon completion of installation a third-party inspection agency shall provide certification.

**PART 4 ACCEPTABLE MANUFACTURERS AND SUPPLIERS**

**4.01 NAMES AND PHONE NUMBERS**

- A. Heary Bros. Lightning Protection Co., Inc.  
11291 Moore Road  
Springville, NY 14141 USA  
Tel: 800-421-6141 or 716-941-6141  
EMAIL: sales@hearybros.com

**END OF SECTION**

**FARADAY MULTI-POINT SYSTEM**  
**CLASS II – BUILDINGS OVER 75 FT (ALUMINUM)**

**Set 4**

SECTION 26 41 13  
LIGHTNING PROTECTION SYSTEM

**PART I GENERAL**

**1.01 Summary**

- A. The work covered by this section of the specifications consists of furnishing all labor, components and items of service required for the completion of a functional and unobtrusive lightning protection system as approved by the architect, 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 Contractor, details of such departures and reasons therefore shall be submitted as soon as practicable to the architect for approval. No such departures shall be made without the prior written approval of the architect.

**1.02 Quality Assurance**

- A. Listing of components:  
Third-party inspection agency shall list the components:  
UL 96 or approved equal.
- B. Inspection and certification of installations: Third-party inspection agency shall inspect and certify the installation for compliance with:  
UL-96A  
NFPA 780
- C. 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.
- D. The equipment manufacturer shall be an approved manufacturer. All components specified for this work shall be manufactured by Heary Bros. Lightning Protection Co., Inc., Springville, New York, or approved equal. For approval of a manufacturer other than specified, proposed component data and installation drawings must be submitted for review not less than 10 days prior to bid.

**1.03 Submittals**

- A. Complete shop drawings showing the type, size, and locations for all equipment, grounds, and cable routings, etc., shall be submitted to the architect for approval prior to start of work.
- B. Catalog data shall be submitted to the architect for approval.

**PART 2 PRODUCTS**

**2.01 Standard**

- A. All equipment shall be new, the product of a single manufacturer as outlined above, and of a design and construction to suit the application where it is used in accordance with accepted industry standards.

**2.02 Equipment**

- A. All components shall be copper or aluminum as described below and of the size, weight, and construction to suit the application where used in accordance with requirements for Class II structures, and in accordance with manufacturer recommendations.
- B. **Roof conductors** shall be aluminum, 37 strands 13-gauge minimum, 211,600 cm, 200 pounds per 1000ft.
- C. **Down conductors** from roof to ground shall be copper, 28 strands 14-gauge minimum, 375 pounds per 1000ft.
- D. **Air terminals** shall be solid round aluminum bar, 5/8" x 12" minimum. Air terminals shall project 10" minimum above the object to be protected. Locate and space according to requirements.
- E. **Air terminal bases** shall be aluminum with bolt pressure cable connections and shall be securely mounted with stainless steel screws or bolts.
  - 1. Bases on flat and/or built-up tar and gravel roofs shall be secured with a proper adhesive and shall have a minimum surface contact area of 18.5 sq. inches.
- F. **Ground rods** shall be 3/4" x 10'-0" minimum. They shall be connected to the system with a two-bolt copper clamp having a minimum length of 1-1/2" and employing stainless steel cap screws.

**FARADAY MULTI-POINT SYSTEM**  
**CLASS II – BUILDINGS OVER 75 FT (ALUMINUM)**

- G. **Cable fasteners** shall be substantial in construction, electrolytically compatible with the conductor and mounting surface and shall be spaced according to requirements.
- H. **Bonding devices**, cable splicers and miscellaneous connectors shall be of aluminum with bolt pressure cable connector.
- I. Equipment on stacks and chimneys shall be protected from corrosion in accordance with requirements.
- J. All miscellaneous bolts, nuts and screws shall be stainless steel.
- K. An approved bimetal transition fitting shall be used at the roof level to change from aluminum roof conductor to copper down conductor.

**PART 3 EXECUTION**

**3.01 Installation**

- A. The installation shall be accomplished by an experienced installer or a licensed electrical contractor. The installer shall work under the direct supervision of a manufacturer as listed herein or a qualified distributor of such manufacturer's products.
- B. All equipment shall be installed in a neat workmanlike manner in the most inconspicuous manner possible.
- C. The system shall consist of a complete cable network on the roof including all air terminals, splices, and bonds with cable downleads routed concealed in the building construction and in conduit to ground.
  - a. The electrically continuous steel frame of the building may serve as the down conductors for the lightning protection system. The number, size, type and location of grounds and connections to steel at roof and grade level shall be as required.
- D. The copper downlead cables shall not be brought directly through the roof. Thru-roof connectors with solid rods or conduit through proper roof flashings or pitch pockets shall be utilized for this purpose.
- E. Roof penetrations and proper roof flashings/pitch pans shall be furnished and installed by the roofing contractor.
- F. The electrical contractor shall furnish and install all necessary PVC conduit for concealed down conductors.
- G. An approved bimetal transition fitting shall be used at the roof level to change from aluminum roof conductor to copper down conductor.

**3.02 Coordination**

- A. The lightning protection installer will work with other trades to insure a correct, neat and unobtrusive installation.
- B. Provide a sound bond to the main water service (fire and domestic).
- C. Provide interconnection with other building ground systems, including both telephone and electrical.
- D. Proper arresters shall be installed on the power and telephone service by either the utility or the electrical contractor as applicable.

**3.03 Completion**

- A. Provide as-built shop drawings upon completion of the installation.
- B. Upon completion of installation a third-party inspection agency shall provide certification.

**PART 4 ACCEPTABLE MANUFACTURERS AND SUPPLIERS**

**4.01 NAMES AND PHONE NUMBERS**

- A. Heary Bros. Lightning Protection Co., Inc.  
11291 Moore Road  
Springville, NY 14141 USA  
Tel: 800-421-6141 or 716-941-6141  
EMAIL: sales@hearybros.com

END OF SECTION